



 synseal<sup>®</sup>

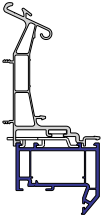
## Conservatory Roof Assembly Guide

Effective from February 2009



## Assembly Guide

### 3.1 Fixing the eaves beam



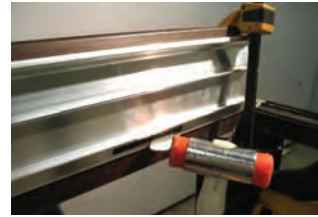
Synseal eaves beam

Before the roof installation commences make sure the conservatory footprint dimensions are correct, with the frames level and plumb. The internal sizes at the head of the frames should correspond with those on the supplied roof plan.

We recommend that silicone is used to form a seal between the head of the frame and the bottom of the eaves beam. **Note:** Do not seal the front of the eaves beam as this will restrict the fitting of the gutter under trim.

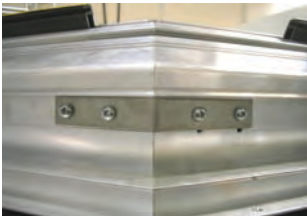


Position each eaves beam in turn onto the frame head ensuring the turnbuckles are in the open position. The internal eaves beam leg fits over the inside frame edge. The bottom of the eaves beam must fit down tight to the head of the frame the use of clamps is recommended to achieve this. In the event that a turnbuckle falls over a frame joint or connector the turnbuckle can be removed and a screw fixing used to secure this section of beam to the frame.

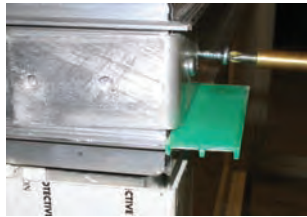


**Note:** It is recommended that when frame connectors are used then they should be cut 3mm shorter than the frame height to allow for the legs on the bottom of the eaves beam.

Once you are happy with the eaves beam setting out, engage each turnbuckle making sure of a positive connection with the frame.



Position the external stainless steel eaves beam connecting bracket centrally between the two extrusion lines on the outside of the eaves beam. Fix the bracket to the eaves beams using the supplied self drilling screws (XM48-13).



When the eaves beams join to an internal corner a larger connecting bracket is supplied. In this picture a glazing packer has been temporarily used to form a gap between the bracket and cladding bar to allow space for the later fitting of the internal eaves clads.



This bracket is fixed using the supplied self drilling screws (XM48-13).

### 3.2 Fixing the gable support platform



When a gable support system is used, the eaves beam includes a separate aluminium extrusion that forms the gable platform. Occasionally this section will require fitting into the eaves beam onsite.

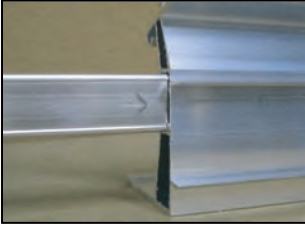


Slide the gable platform into the eaves beam parabolic head. Centralize the platform with the eaves beam (or gable frame when used in a gable fronted lean-to). Secure the gable platform into the eaves beam with a 25mm self drilling screw (not supplied).

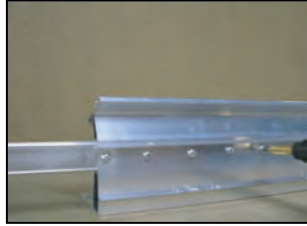


## Assembly Guide

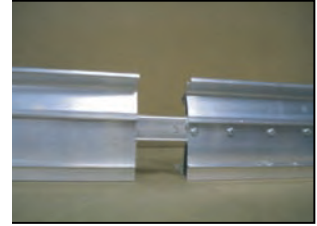
### 3.3 Joining the eaves beam



Find and mark the centre of the eaves beam joiner, slide the joiner in to the eaves beam cavity upto the centre mark.

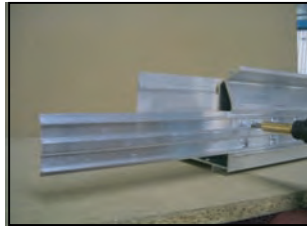


Fix the joiner to the eaves beam using the supplied 13mm self drilling screws (XM48-13).

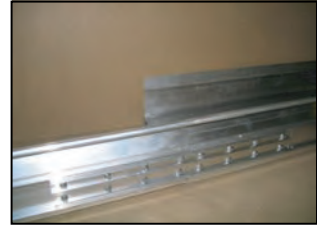


Slide the next section of eaves beam over the joiner until it meets the end of the first section of eaves beam. Fix in place using the 13mm self drilling screws (XM48-13).

### Eaves beam to box gutter

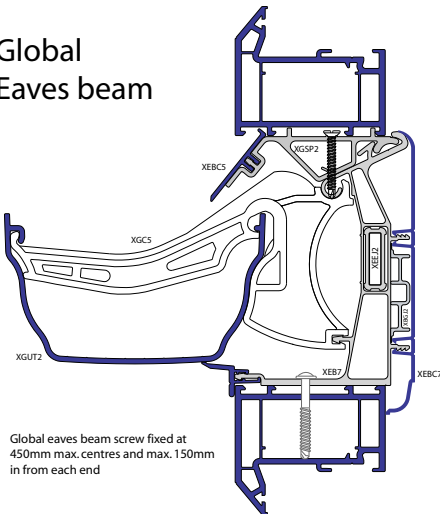


Find and mark the centre of the box gutter to eaves beam joiner. Fit the joiner centrally between the box gutter cladding barbs and fix using the supplied 13mm self drilling screws.



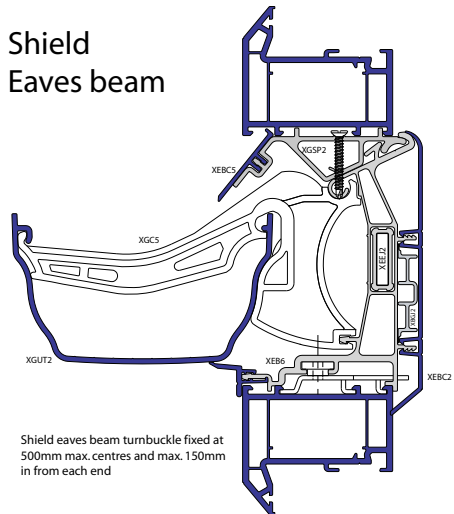
Slide the eaves beam onto the joiner until it meets the end of the box gutter. Fix in place using the 13mm self drilling screws (XM48-13).

#### Global Eaves beam



Global eaves beam screw fixed at 450mm max.centres and max. 150mm in from each end

#### Shield Eaves beam

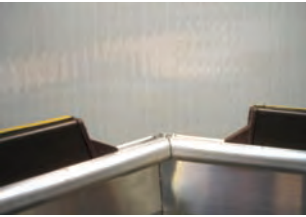


Shield eaves beam turnbuckle fixed at 500mm max.centres and max. 150mm in from each end



## Assembly Guide

### 4.1 Ridge & radius end rafters

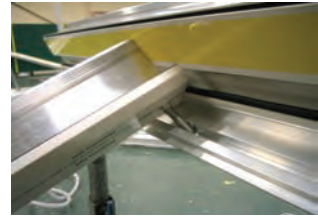


Before the installation of the rafters it is necessary to install the glazing support adapters. These are designed to fill in the gap left between the shaped rafter bottom cap and the polycarbonate support trim.



These come in two sizes, the larger for Georgian hips and the smaller for Victorian, jacks and transom rafters.

**Note:** To establish the correct position of a ridge on a gable designed roof place the holes which are drilled at 28mm from the end of the ridge against the house wall. This will leave the holes drilled at 38mm at the front .



Determine the height and position of the ridge and support it in this position. Next locate the main ridge to eaves rafters using the roof plan as a guide to their positions. Each rafters connects into a pre-drilled hole via a single bolt to the top and bottom.

**Note:** If a security bolt is fitted it is important that this is checked for tightness on site. If it is found to be loose then it must be fully tightened using a 4mm allen key.



Ensure the ridge or wallplate is level and in its correct position prior to securing the rafter bolt with a M8 flanged nut. These need to be securely tightened with a 13mm socket or spanner.

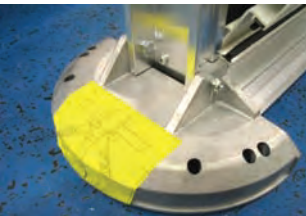
**Note:** If the fitting of the rafter is restricted where it fits under the canopy of the ridge or wallplate then loosen both security bolts (when fitted) slide back the aluminium rafter to release the bolt. Locate the bolt through the bottom cap and fixing hole, then slide the aluminium rafter back over the bolt into its finished position.



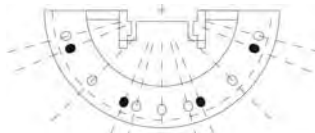
The rafters against the house wall should be secured back using suitable masonry fixings at 600mm maximum centres and a maximum of 150mm in from either end of the rafter. **Note:** drill hole below the soaker level.



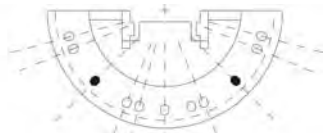
Some of the rafters, which fit onto the standard multi-holed radius ends will have a pre-fitted plastic bar end cap and bolt. Make sure the shoulder of this cap fits over the rafter bottom cap before installation.



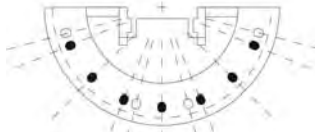
**Standard Radius End:** When a standard radius is used then the table to the side is used to establish the rafter positions. It is important that each rafter is positioned correctly or problems will arise with the installation of the remaining roof skeleton and glazing.



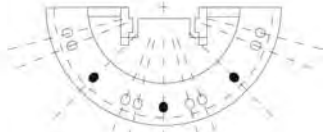
Standard 3 facet Victorian, no centre rafters



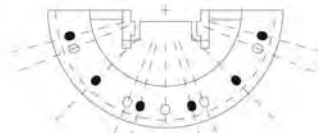
Standard Georgian, no centre rafter



Standard 3 facet Victorian, with centre rafters



Standard Georgian, with a centre rafter

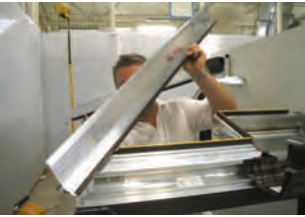


Standard 5 facet Victorian

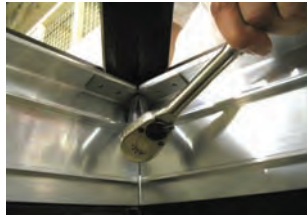


## Assembly Guide

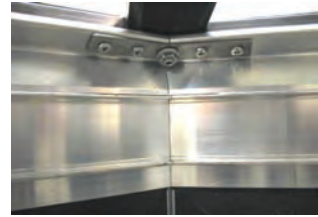
### 4.1 Ridge & radius end rafters



On Georgian designed roofs the access to the bottom fixing nut of the Georgian hip can be restricted by the shape of the eaves beams. To help gain access for a 13mm socket lift up the back of the hip rafter as shown in the picture above.



Place the internal stainless steel eaves bracket (XSC2) over the hip bolt then fit and tighten the washered nut. Use a 4mm drill to pilot hole through the four holes in the eaves bracket through the eaves beam.



Secure the bracket with four 10mm screws (XM48-10).

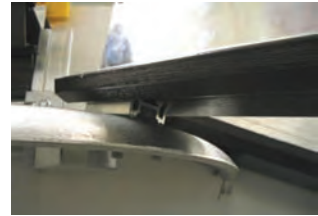
**Note:** An internal bracket (XSC2) needs to be fitted to every hip rafter.



The non standard radius end (XRE4) will have been pre-drilled in the factory with one hole per rafter. This will also have a pre-fitted clip and bolt to attach the radius end bottom cap.



Some of the rafters will be pre-fitted with an aluminium packer. This has been designed to fit between the rafter and radius end as shown. The rafter is then fixed with a flanged nut on the underside of the radius end.



The purpose of this packer is to raise the height of the rafters so that all of the bottom cap glazing gaskets are at the same level.

### 4.2 Jack rafter connection



Jack rafters connect onto the hip via a hook fitted to the jack and a spring fitted to the hip. Raise the bottom of the jack rafter and clip the jack hook over the gasket section on the hip rafter. Once the jack is located position the jack rafter bolt into the pre-drilled hole in the eaves beam or valley wing (do not tighten the nut at this time).



Using pliers pull the loop of the spring over the side lug on the jack spring (do not fit the spring under the main hook).

**Note:** Check that the hook on the jack rafter does not clash with the hip rafter bolt channel as this could leave a gap between the jack and hip bottom caps.



Pull up the jack rafter bottom cap so that the milled section fits up to the hip rafter bottom cap. If a slight gap is left this can be helped by elongating the bolt hole in the jack rafter bottom cap. Once this joint has been achieved, fit and tighten the fixing nut.

**Note:** These joints may re-open slightly during glazing. Use a rubber or nylon mallet to tap the jacks back into position.



## Assembly Guide

## 6.1 3 & 5-Way tie bars



Place the tie-bar bracket on to the factory fitted bolts and fasten using the supplied 13mm nuts.

**Note:** If the bracket is a tight fit over the bolts, loosen the security bolts with a 4mm allen key fit the bracket and re-tighten the bolts.



Clip the ridge under channel (XR3) in to the bottom of the ridge so that it is in-line with the tied rafters and fix using 13mm self-drilling screws (XM48-13).



Place the ridge under cladding on to the bottom of the ridge and clip it in to position using a rubber or nylon hammer.



Centralise the ridge tie-bar bracket with the tied rafters making sure it runs in-line with the ridge. Drill four 5mm pilot holes and fix using the four supplied screws within the tie-bar kit. Cover the screws heads with the push on screw covers.



Fasten the clevis to the bracket using a bolt and 17mm nut. On a three-way tie-bar three clevises will be required, one for each rafter and one for the ridge.



Determine and cut the 3 lengths of threaded rod and rod covers. Screw one end of each rod at least 20mm into each clevis. Slide on the rod covers then push the remaining ends into the central boss.



Tighten the three nuts in the central boss with a 17mm spanner until the window frames are plumb and the internal roof dimensions are correct. Make sure the rods are plumb and level.



Use the supplied double sided tape to fit the central boss covers to both sides.

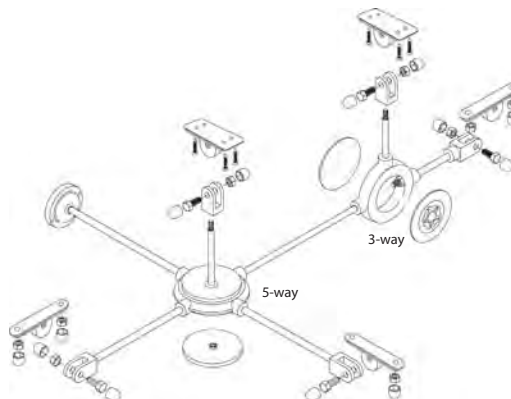


Cover all of the exposed nut and bolt heads with the supplied push on cover caps.

To establish the length of the rod covers, assemble the tie bar with just the threaded rods then measure for the covers. The tie bar will then require re-assembly.

### 5-way tie bars

These are generally supplied on hip-back 'p' shape designs as part of a designed tie bar system. Depending on the layout of the roof, this system can incorporate other 3 or 5 way tie bars as the drawing (right) illustrates.



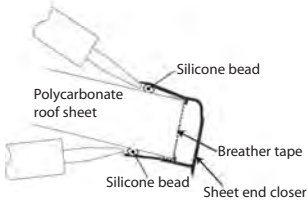


## Assembly Guide

## 7.1 Fitting the roof sheets

Careful consideration must be given to the sequence of glazing a conservatory roof. Please consider the following points:

- Sequence the glazing so access is available for sealing the critical ridge areas
- With glass roofs, sequence the glazing so loadings are progressively balanced across the ridge
- Allow access to box gutters for fixing of rafter end caps

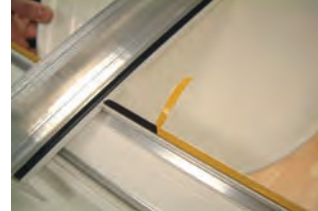


Cut the sheet closer to the bottom width of the panel and remove the drip 20mm in from each end. Slide the closer onto the end of the panel. Push the sealant nozzle under the lip of the closer and run a continuous line to form a seal onto the roof sheet.

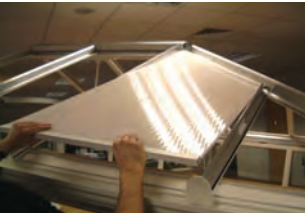


Seal the bottom lip of the closer to the sheet and then seal up the open ends. Clean away any excess sealant.

**Ensure the closer is sealed to the panel and not the breather tape!**



Peel back a start on the support trim security tape so it can be pulled off from the inside when the panel is in position.



Offer the roof panels into position so they are central between the rafters. See the notes above for positioning panels.



With the panel in its final position, remove the film from the security tape on the support trim and press the panel down. If the roof is 10° pitch or lower then run a sealant line between the underside of the roof sheet and the support trim.



With a roof panel in each side of the rafter, knock the rafter top cap down onto the rafter using a rubber headed mallet. Use a piece of timber when knocking on the foiled aluminium top caps to avoid denting the caps.



Jack rafter top caps are supplied over size and will require cutting down on site. Foiled aluminium top caps are supplied with the gasket over-length.



Seal the rafter top cap to ridge rain excluder joint.



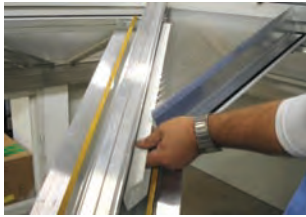
Seal the jack to hip rafter top cap joint.

## Assembly Guide

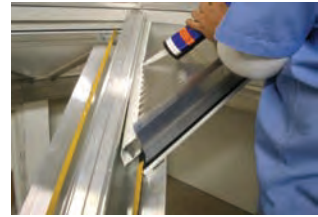
### 7.2 Glazing the valley



Roof panels at the top of the valley may require the jack rafter to be released to allow the panel to be positioned. This is best done without the panel having the end closer fitted.



Remove the film off the security tape and press the panel down once in position. Re-connect the jack rafter and then slide the end closer up onto the roof panel as shown.



Push the sealant nozzle under the top lip of the end closer and run a continuous line of sealant to form a gasket.

### 7.3 Glass roofs



Secure each glass retainer with the 2 screws provided. Transom rafter glass retainers should finish flush with the end of the rafter as shown.

**Note:** XGS6 packer within sheet closer.

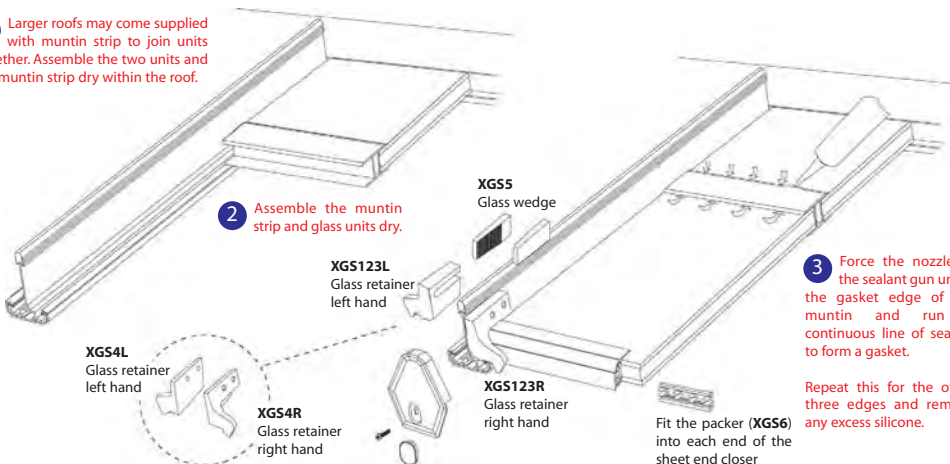


Please note that the hip rafter glass retainer when pushed up to the roof glass will be fixed shy of the rafter end.



Wedge packers should be used to pack the glass between the rafters, 2 packers per corner are supplied.

**1** Larger roofs may come supplied with muntin strip to join units together. Assemble the two units and the muntin strip dry within the roof.



**2** Assemble the muntin strip and glass units dry.

**3** Force the nozzle of the sealant gun under the gasket edge of the muntin and run a continuous line of sealant to form a gasket.

Repeat this for the other three edges and remove any excess silicone.

Fit the packer (XGS6) into each end of the sheet end closer

**Note:** Long span rafters use thinner glass retainers and NO wedges

Glass roofs are supplied with glass kits as shown above. Position the glass and push the glass retainer up to the sheet closer and screw it into position using the XM425 screws provided. Wedge the glass against the retainer using the wedges when provided.

**Secure each glass retainer with 2 No. XM425 screws**



## Assembly Guide

### 8.1 Fitting the foam bung



Fully glaze and cap all of the rafters, which fall onto the radius end.



Using a hacksaw blade cut down the width and height of the bridged section of foam bung so that it fits snugly between the rafter top caps and finishes level with the top of the ridge.



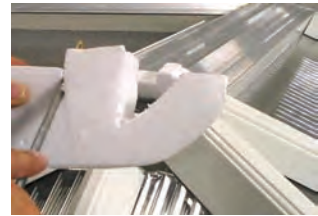
Remove the bung and silicone seal around the ridge profile making sure the silicone runs down to the glazing level on both sides.



Insert the cut down section of bung making sure it is pushed firmly in to the silicone seal.



Test fit the half round foam bung making sure the chamfer runs downwards.



If the bung is too large for the aperture, cut two v-notches in to the bung using a hacksaw blade.



Adjust the size of the v-notches depending on the size of the aperture.



Push the bung in to the aperture so it finishes just above the rafter top caps.



Silicone seal the joint between the two foam bungs including the joints between the two v-notches.



Finally run a continuous seal around the foam bung so it is sealed to the glazing and rafter top caps.

# Assembly Guide

## 9.1 Ridge & wallplate top cap



Centralise the two clips on the ridge top cap with the two barbs on the main ridge.

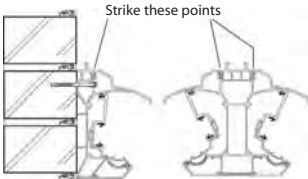


Starting at one end knock the top cap in to position using a rubber mallet.



The top cap is in its correct position when the wings of the top cap touch the wings of the main ridge.

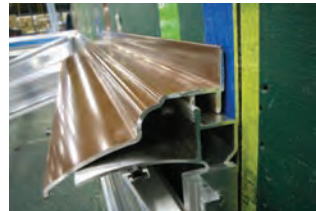
**Refer to Section 9.2 for fitting the aluminium ridge top cap**



Make sure the correct position is struck when fitting the top caps. In colder weather conditions a block of timber can be used to spread the impact over the PVC-U top cap.



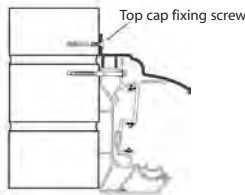
The PVC-U wallplate top cap is exactly half of a ridge top cap and is fastened in the same manner.



The painted aluminium wallplate top caps do not clip onto the wallplate but are held in place with plugs and screws.



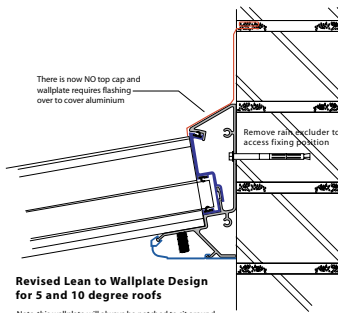
An extrusion line has been incorporated along the back upstand of the aluminium wallplate top cap for the positioning of the fixing screws.



Picture showing the positions of the wallplate fastening and the top cap fixing screw.



Bay and hip-ended lean to roofs require a radius end top cap. This should be sealed and secured to the wallplate top cap with the plastic rivets supplied.

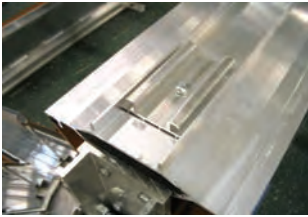


### Revised Lean to Wallplate Design for 5 and 10 degree roofs

Note: this wallplate will always be notched to sit around the gable window frame as shown in Option 2 - Page 13.

## Assembly Guide

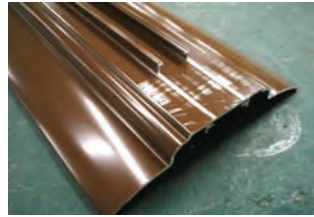
### 9.2 Ridge flashing trim



The painted aluminium ridge top caps are attached to the ridge using clips (XR4), which are pre-fitted to the main ridge during manufacture.



First prepare the ridge for the fitting of the ridge flashing trim (XFT1). Place the flashing trim over the wall end of the ridge top cap and mark where its front edge finishes.



Using a hacksaw cut back the creasting upstands up to the mark line making sure they are cut level with the surface of the top cap.



Run two continuous beads of sealant over the ridge top cap where the creasting bars were removed.



Fit the flashing trim and fasten using the supplied push fit rivets through a 5mm drilled hole.



Slide the ridge top cap onto the ridge.

**Note:** Slide the ridge top cap onto the ridge before the fitting of the hip rafter top caps. Always check the roof design to make sure the top cap can be fitted without restriction.

### 9.3 Radius end top cap



The radius or gable end of the ridge top cap will have been notched during manufacture. Cut off the creasting bars so that they finish level with the notch depth. File this area flat.



Run two beads of silicon over the ridge top cap.

**Note:** The foam bung will need to be fitted prior to the fastening of the radius end top cap.



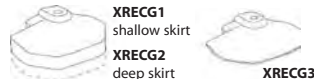
Fit the radius end top cap and fasten using the push fit rivets through 5mm drilled holes.



Slide the creasting over the radius end top cap into the creasting channel. The length of the last creasting may require shortening to fit behind the finial point.



Finally insert the finial by turning it in to the screw port in the radius end top cap.



Certain roofs will be supplied with blank radius end top caps that require the skirt notching around the rafters. A non-skirted version is available as an extra if required.

Certain roofs will have the radius end top cap pre-notched.

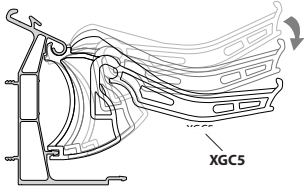


Supplied when no centre rafter and roof pitch is 25° on all sides.

Supplied when there is a centre rafter and roof pitch is 25° on all sides.

# Assembly Guide

## 10.1 Guttering



Position the top of the gutter bracket (XGC5) in to the eaves beam monkey tail. Rotate the bracket downwards until the bottom of the bracket clips in to the eaves beam clip. A Nylon or rubber mallet can be used to locate the clips if required.



Position the brackets at a maximum of 600mm centres and a maximum of 150mm in from each end of the eaves beam.



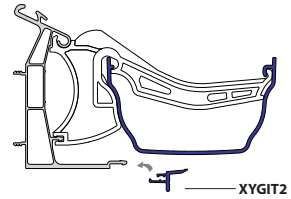
Position the main gutter so that the monkey tail clip faces outwards. Push the back of the main gutter (XYGUT2) up in to the gutter bracket clip (XGC5). Continue this procedure until the back of the main gutter is installed in to all of the gutter brackets.



Pull up and clip the front of the gutter bracket in to the main gutter monkey tail.



Next fit the gutter corner unions, this is made easier by lifting up the front of main gutter.



The gap between the bottom of the gutter and the top of the frames is cloaked off with an under gutter trim (XYGIT2).



The gutter under trim is sent oversize. Measure and cut the trim so that it fits between the gutter unions, stop ends or both.



An injection moulded trim will be supplied to fit under the angled gutter unions. These have been designed for 90° and 135° gutter unions.



These are installed by pushing them up in to place under the gutter union.



When a running outlet or stop end are used a straight under gutter trim (XUGT180) will be supplied. This will require marking and cutting to length.

**Note:**  
 Ensure all gutter union gaskets are fully inserted into the fitting prior to fitting the gutter.  
 Use a silicone lubricant on the gaskets to ensure correct fitting and ease of installation

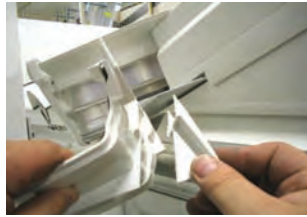


## Assembly Guide

### 10.2 Gutter union to box gutter



Remove the screw lug off the end of any gutter union that fits onto a box gutter adaptor.



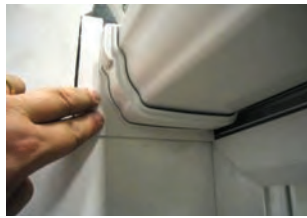
On straight unions the support webs will also need to be removed on the back and bottom sides.



Slide the union over the adaptor making sure the union gasket remains in situ.



The box gutter end cap can now be installed. On some roof designs this may need trimming to suit.



The end cap is then fitted by pushing it in to the end of the box gutter.



Finish off by fitting the main gutter and under gutter trims.

### 11.1 Internal eaves cladding



**Eaves Beam:** Seal all of the internal corner joints.



Place an internal eaves clad joint on to the end of an internal eaves clad. Position the clad over the eaves beam so that it's clips line up with the eaves cladding barbs. Knock the cladding on using a rubber mallet.



Slide the next section of eaves clad in to the eaves clad joint and knock the eaves clad in to position as before. Carry on with this procedure until all of the eaves clads are fitted.



## Assembly Guide

## 11.2 Internal ridge cladding



**Ridges:** Prior to fitting check the length of the ridge under clad by measuring the distance of the ridge up to the radius end bottom cap, which can be fitted first. Place the ridge under cladding on to the bottom of the ridge and clip it in to position using a rubber or nylon hammer.



The radius end bottom cap is either fitted by clipping it on to the radius end or using a nut and bolt. This will depend on the type of radius end used. When the large radius bottom cap is supplied it is fixed with a nut and bolt.



The quarter radius end bottom cap is fitted with a nut and bolt. Fit this prior to fitting the ridge under clads.



Typical detail showing the intersection of multiple ridges. These under clads will be cut to suit during manufacture.

## 11.3 Internal valley cladding



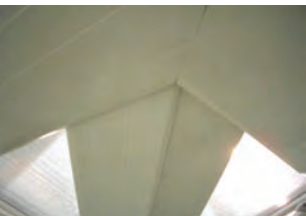
**Valley:** Fit the internal eaves beam clads and eaves clad joint.



Fit the ridge bottom caps. Each internal valley wing clad will be cut oversize and will require trimming. Fit the top of the clad up to the ridge bottom caps.



Trim the bottom of the valley clad so it fits up to the internal eaves beam clads. Attach the valley clad in the same manner as the internal eaves clads.



Repeat the process to fit the second valley bottom clad.

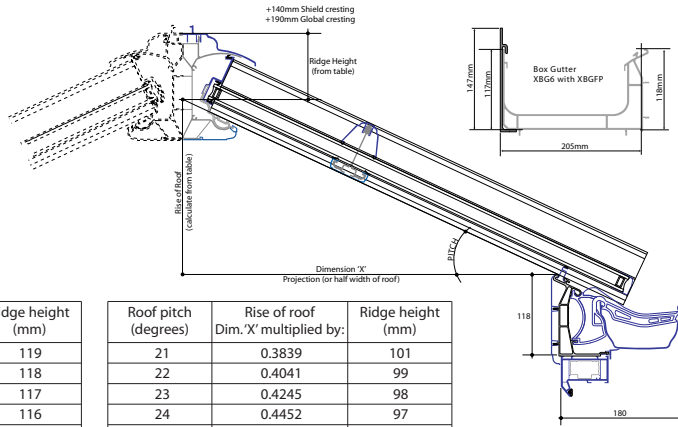


Picture showing how a valley finishes against an in-line gable frame. The valley wing clad, which fits against the gable will need to be trimmed to suit.



# Assembly Guide

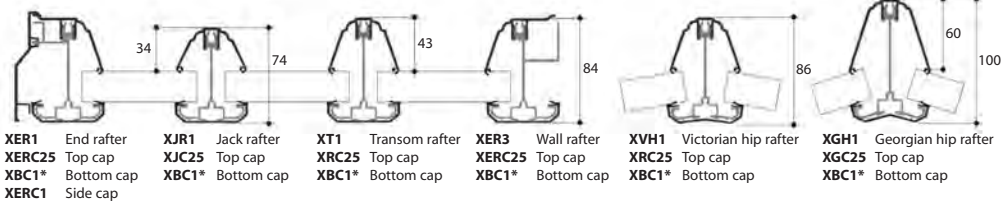
# 13 Useful information



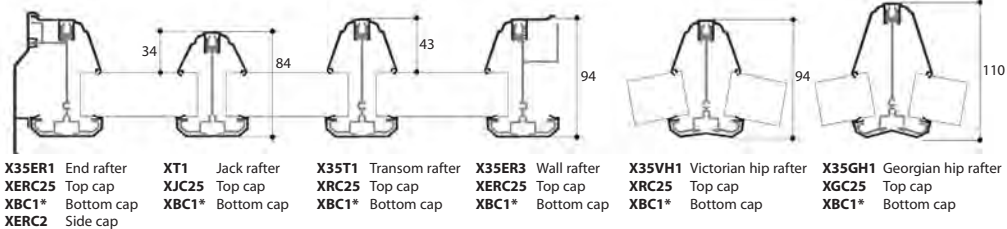
Roof pitch (degrees)	Rise of roof Dim. 'X' multiplied by:	Ridge height (mm)
5	0.0875	119
6	0.1051	118
7	0.1228	117
8	0.1405	116
9	0.1584	115
10	0.1763	114
11	0.1944	113
12	0.2125	112
13	0.2309	111
14	0.2493	110
15	0.2679	109
16	0.2867	108
17	0.3057	107
18	0.3249	106
19	0.3443	104
20	0.3639	102

Roof pitch (degrees)	Rise of roof Dim. 'X' multiplied by:	Ridge height (mm)
21	0.3839	101
22	0.4041	99
23	0.4245	98
24	0.4452	97
25	0.4663	96
26	0.4877	95
27	0.5095	94
28	0.5317	92
29	0.5543	90
30	0.5773	88
31	0.6009	87
32	0.6249	86
33	0.6494	85
34	0.6745	84
35	0.7002	82

## 25mm rafters



## 35mm rafters



\*XBC1 for Shield Roofs, XBC3 for Global Roofs



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