

4

Interlocking tiles and slates

Interlocking tiles

- 53 Setting out
- 58 Eaves
- 59 Verges
- 60 Hips
- 61 Valleys
- 64 Ridges
- 66 Repair and replacement
of broken interlocking tiles
- 67 Ashmore interlocking tiles
- 71 Symphony interlocking tiles
- 80 Domino interlocking tiles

Interlocking slates

- 89 Melbourn interlocking slates
- 98 Repair and replacement
of Melbourn slates

Setting out

It is important that the tiler should set out the roof prior to fixing. This will help to save time and avoid unequal overhangs at verges and expensive labour costs in cutting tiles at abutments (Fig 1).

Position of top and bottom battens

- 1 Batten gauge required must be worked out on site. Fix eaves course batten first and position using one of the following methods:-
- 2 Tack a short length of batten into position and locate tile over fascia so it hangs the correct amount into centre of gutter (45 to 55mm for a 100mm gutter) (Fig 2).

Or

- 3 Position eaves batten and measure distance from top edge to outside edge of fascia. This distance should approximately equal length of tile less nib depth and gutter overhang e.g. (Mendip length 420mm, nib depth 20mm, overhang 50mm hence = $420\text{mm} - 20\text{mm} - 50\text{mm} = 350\text{mm}$).
- 4 Fix top course batten so that ridge tile provides a minimum 75mm cover to top course tile (Fig 3).

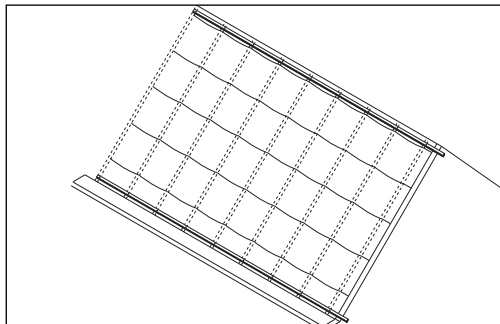


Fig 1 – Setting out

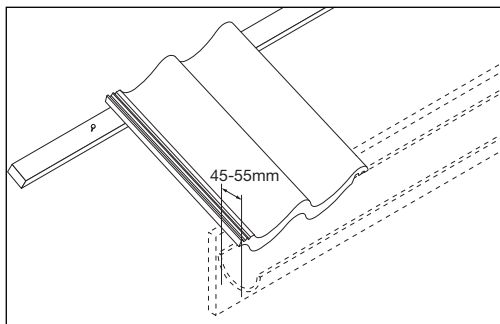


Fig 2 – Measuring tile overhang into gutter

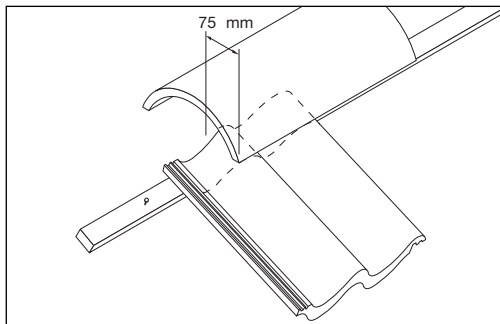


Fig 3 – Fixing top (ridge) course batten

Setting out

Calculating the batten gauge (Fig 4)

- 1 Measure distance between top of eaves batten and top of ridge batten.
- 2 Divide distance by maximum gauge of tile being used.
- 3 Round figure up to give number of courses up slope as a whole number.
- 4 Divide measured distance by number of courses to give batten gauge.
- 5 The practice of adjusting gauge over last few courses at eaves or ridge is technically acceptable, provided maximum gauge for tile is not exceeded.
- 6 It is important, with deeply profiled tiles, to maintain a fixed gauge up roof to avoid a 'dog leg' diagonal.
- 7 If necessary, tiles should only be cut in ridge course, drilled and nailed.

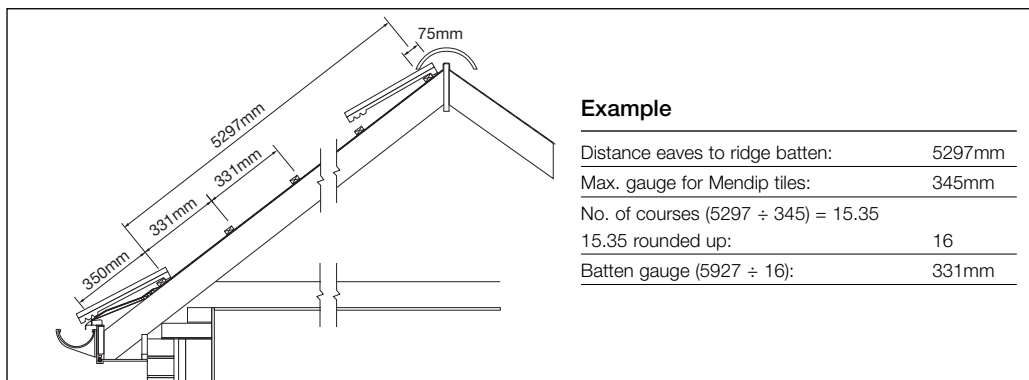


Fig 4 – Calculating batten gauge

Example

Distance eaves to ridge batten:	5297mm
Max. gauge for Mendip tiles:	345mm
No. of courses $(5297 \div 345) = 15.35$	
15.35 rounded up:	16
Batten gauge $(5297 \div 16)$:	331mm

Notes

- i) The above applies only to a roof pitch with no features such as dormers, chimneys etc. Batten gauges between all such fixed points should be calculated individually.
- ii) Where two roof slopes of varying pitch intersect, batten gauge should be set to lower or longer rafter pitch.

Setting out

Horizontal alignment

There are several ways of achieving true horizontal alignment:

- 1 Strike a chalk/ochre line at 90° to perpendicular line (Fig 5).
- 2 Measure two pieces of timber, each length of batten gauge minus width of one batten (advantageous for vertical tile hanging).
- 3 Drive nails through a length of timber the distance of batten gauge apart and protruding approximately 5mm. Scribe required gauge onto underlay.

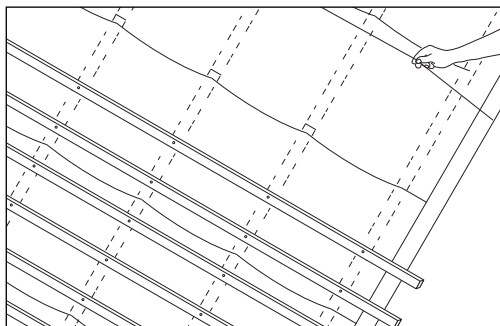


Fig 5 – Striking chalk lines

Perpendicular alignment

- 1 Set out roof along eaves starting with correct overhang at right-hand verge.
- 2 Correct overhang on left-hand verge can be achieved using full tiles by opening or closing side lap between tiles.
- 3 Marley Eternit interlocking tiles allow a tolerance ('shunt') of approximately 3mm in side lock for adjustment (Fig 6).
- 5 Overhang at verges should not be more than 50mm.
- 5 On a short eaves, tiles may require cutting. Cut tiles at verges should be at least half width of a full tile. Half tiles are available for use at verges with Modern and Edgemere (produced in pairs for cutting on site) to enable broken-bond laying.
- 6 Strike perpendicular chalk or ochre lines over eaves to ridge at three tile intervals to coincide with edges of tiles.
- 7 A gauge rod the width of three tiles can be used as an alternative to actual tiles.

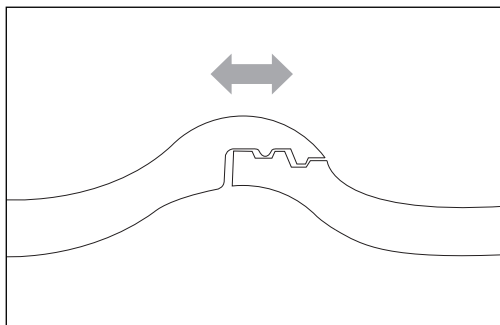


Fig 6 – Interlocking tile 3mm 'shunt'

Setting out

Achieving broken bond pattern (Duo Modern and Duo Edgemere)

Duo Modern and Duo Edgemere interlocking slates are laid quarter bonded, using half or three-quarter width tiles at verges, cut on site.

- 1 Ensure that the eaves course right hand or left hand verge starts with either a three-quarter width, half width or standard tile as indicated in Figs 7 and 8.
- 2 Continue subsequent courses of slates laid in a quarter bond, ensuring that left and right verge tiles are cut as either half tiles, three quarter tiles or standard tiles (see Fig 7).
- 3 Mechanically fix all verge tiles by either nailing, clipping, or nailing and clipping in accordance with the recommended fixing specification.

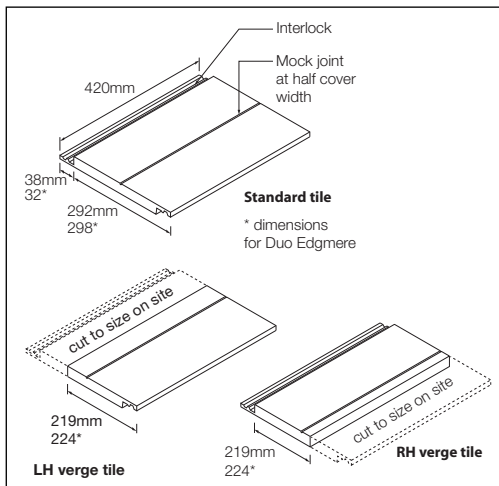


Fig 7 – Cutting dimensions for LH and RH verge (Duo Modern and Duo Edgemere)

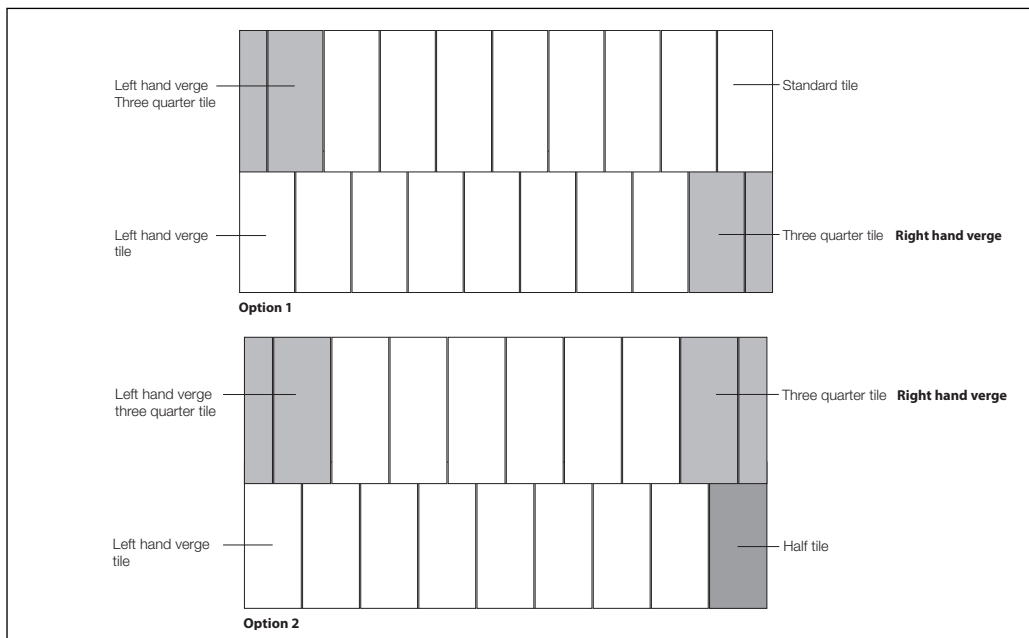


Fig 8 – Two tile laying options to achieve broken bond

Setting out

Completion of tiling

- 1 Load out all tiles on the roof evenly before commencing tiling (see page 11).
- 2 Work from right to left (Fig 9). Depending on fixing specifications, you may leave out some tiles towards left-hand verge and make use of tile battens as a ladder enabling upper part of roof to be reached for fixing ridges.
- 3 On a hipped roof, cut tiles so that end tiles of each course align with rake of hip.

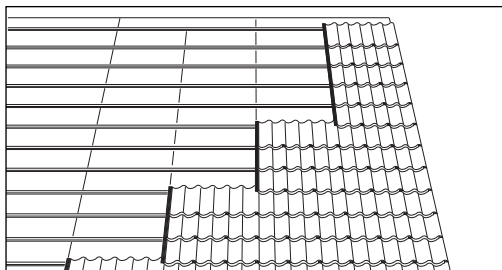


Fig 9 – Completion of tiling

Setting out check points

- Never exceed maximum gauge for tile used at recommended pitch.
- Avoid cutting tiles wherever possible.
- Never cut bottom edge of a tile.
- Vertical cuts should never be less than half a tile width.
- On adjacent roof slopes of varying pitch, set batten gauge to the lower roof pitch to ensure alignment at intersections.
- Ensure ridge tiles provide a minimum 75mm cover to top course tiles.
- Eaves tiles should lie over the centre line of the gutter.

Eaves

Interlocking tiles

- 1 Lay out full course of eaves tiles.
- 2 Tiles must overhang fascia board so that water discharges into centre of gutter (Fig 10).
- 3 If gutter is not fixed, an overhang of min. 50mm should be allowed (Fig 11).
 Note: Fascia heights shown in tables on page 167. Assume the 50mm distance is measured between bottom right corner of tile and fascia board, that is bottom corner of overlock.
- 4 Fit underlay protector or draw underlay taut over tilting fillet and front edge of fascia board before fixing.
- 5 Fix eaves course tiles with nail or purpose-made eaves clip nailed to top of fascia board (Fig 12).
- 6 If fascia board has been fixed at right height, eaves course will automatically be at correct pitch.
 Note: Sprockets are not recommended with interlocking tiles.
- 7 Eaves ventilation should be provided for all new projects.

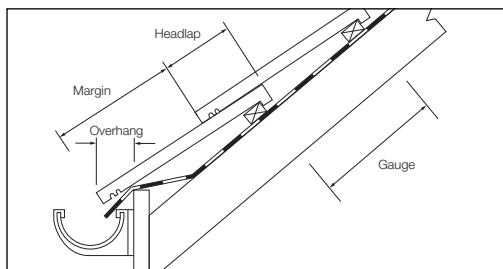


Fig 10 – Typical layout at eaves

- 8 For deep profile tiles, nail comb filler to top of fascia board (Fig 13).

Note: Eaves ventilation can be achieved unobtrusively by using Marley Eternit Universal eaves ventilation systems (10mm and 25mm).

See page 205 for Eaves fascia heights without ventilation.

Eaves check points

- Nail or clip all eaves tiles.
- Make sure eaves course does not tilt backwards.
- Where appropriate, fit correct eaves comb filler strip.
- Use Marley Eternit Eaves Ventilation Systems (10mm continuous ventilation above 15° pitch, or 25mm at 15° and below) and in warm roof constructions.
- If above is not used, a tilting fillet or fascia must take its place.
- Ensure bottom tile course overhangs into gutter approx. 50mm.

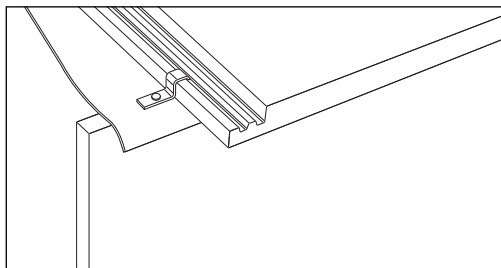


Fig 12 – Eaves clip

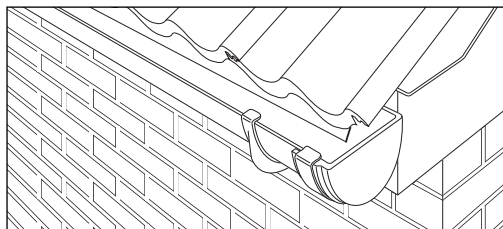


Fig 11 – Overhanging tiles ensuring water discharges into the gutter

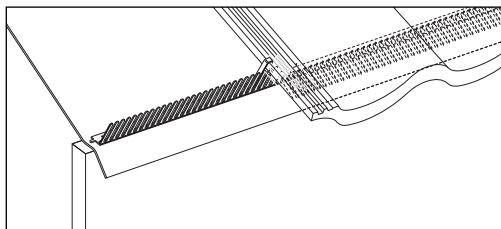


Fig 13 – Eave clip and comb fillers for deep profile tiles (> 16mm gap)

Verges

Groundwork

- 1 Form verges by bedding tiles onto undercloak of fibre cement strip (1200mm x 150mm).
- 2 Lay undercloak rough side upwards, closely butted together, with a slight tilt outwards to provide drip at outside edge.
- 3 Level off irregularities in brickwork by laying undercloak onto a buttering of mortar, bringing height up to adjacent rafter.
- 4 Carry roofing underlay over cavity wall and cover by inside edge of undercloak.
- 5 When laid on boarding, nail each length of undercloak at maximum of 300mm centres.

Tiling battens

- 1 Tiling battens should finish 100mm from edge of brickwork or bargeboard.
- 2 Place undercloak below battens, overhanging by maximum of 50mm (Fig 14).
- 3 Provide about 50mm of mortar width.

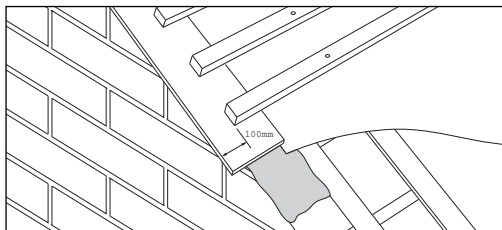


Fig 14 – Fibre cement undercloak fitted over tiling batten

- 4 Ensure that batten ends remain clear.
- 5 Bed all verge tiles and fix either by nailing or clipping.

External clipping

- 1 When required, nail verge clips to top of battens with upstand level with edge of undercloak (Fig 15).
- 2 Under normal conditions, set roof out to avoid cutting. Where not possible, ensure that cut tiles are symmetrical at both verges.
- 3 Remove interlocks where necessary to facilitate the fixing of external verge clips.
- 4 Strike all mortar bedding off flush and neatly point.

Note: It is recommended that tiles are not swept up at verges.

Verge at eaves

- 1 Verges at eaves should overhang by same amount as rest of tiling.
- 2 Adjust or remove a small piece of undercloak to prevent first tile from riding up.

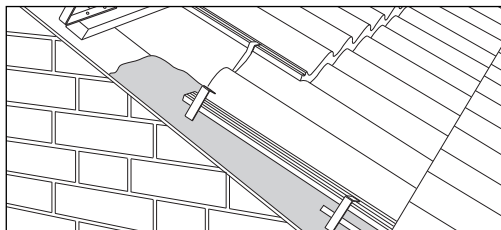


Fig 15 – Clip all verge tiles

Verge check points

- Nail or clip all verge tiles.
- Continue underlay across wall cavity and below undercloak (where appropriate).
- Mortared verges should have an overhang of 38 to 50mm.
- Undercloak should have an outward tilt on mortared verges.
- Avoid pointing with a separate mix of mortar.

Hips

Groundwork

Hips should be weathered by covering the junction of the tiles, often achieved by securing hip tiles along the length of hip.

- 1 Mitre tiling battens and fix to continuous structural member.
- 2 Fix a galvanised hip iron minimum 5mm thick at base of hip tree with two 5mm diameter nails, or suitable screws.
- 3 Cut tiles closely to rake of hip.
- 4 Edge-bed, hip tiles with solid bedding at butt joints, onto roof tiles.
- 5 Shape first hip tile at foot to line of tiling at eaves and fill fair end with mortar inset with pieces of tile. Neatly point.
- 6 Edge and solid bed hip tiles continuing along length of hip (Fig 16).

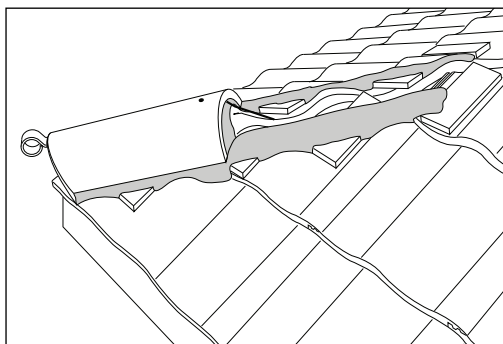


Fig 16 – First hip tile bedded and supported with tile slips and mechanically fixed

Hip/roof apex junction

- 1 Mitre junction of hip and roof apex using a standard three-way mitre and solid bed (Fig 17).
- 2 In exposed situations, it is recommended that a lead saddle Code 4 is used beneath the apex junction.
- 3 For Mendip, Wessex, Malvern and Anglia, lay a course of dentil slips into pans and bed in mortar.
- 4 Where a bedded hip tile meets a dry ridge line, height of bedding should be same as that of profiled filler units so that ridge height is even and line continuous.
- 5 Use Security Hip tiles for a distance of 900mm from face of rigid masonry supports, abutments, or separating walls (see Fig 22, page 64).

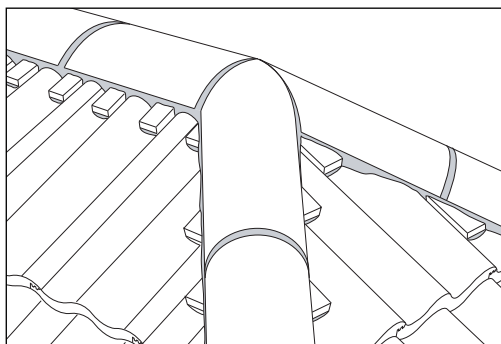


Fig 17 – At ridge hip junction, cut tiles with three-way mitre to ensure continuous line

Hip check points

- Fix a suitable hip iron to the base of rafter.
- Close mitre roof tiles where they meet hip and ensure each tile is nailed or clipped.
- Bed and fix all small pieces of tile.
- Mitre hip tiles at ridge junctions ensuring that the end tile does not ride up.
- Cut bottom hip tile to align with eaves.

Valleys

Metal valleys

Sheet metal valleys can be used at roof pitches down to 15°, and are especially useful where a valley forms a junction between slopes of different pitch.

Metal used to form the valley should be not less than 500mm wide, and should extend a minimum of 250mm up each side of the valley (Fig 18).

Valley widths

A traditional valley gutter width of 125mm is satisfactory for most gutter lengths. For pitches below 35°, or valley lengths exceeding 5 metres, valley width may require increasing to cope with the additional flow experienced during storm conditions.

Support for metal valley linings

- 1 Support all metal linings adequately along their entire length.
- 2 Valley boards for valleys below 30° pitch may be inset into suitably housed traditional rafters, or fitted between trussed rafters.
- 3 Lay a 4mm thick ply lining board over valley boards to provide a smooth surface for metal lining.
- 4 If roof pitch is 35° or more, valley boards may be laid on top of the rafters and the tiling battens swept up to valley by packing them with timber furring pieces. (This detail is not recommended for small valleys, such as at dormers, where sweep of tile courses will be clearly visible.)

Lead sheet valleys

Where lead is used, use minimum Code 4, preferably Code 5. To avoid staining, the Lead Sheet Association recommends an application of patination oil immediately after the lead is fixed.

- 1 Dress metal lining down tightly onto lay boards and fix in lengths not exceeding 1500mm with copper nails across the top of each piece.
- 2 Laps should be a min. 150mm although below 30°, this increases to 290mm min. at 15° valley pitch (see LSA recommendations).
- 3 Dress metal lining over tilting fillets at each side of valley and tack to form a welt.
- 4 Restrict any fixings down sides to top third of each piece of gutter lining.
- 5 Cut roofing underlay so that it laps over tilting fillets.
- 6 Cut roof tiles to a rake and bed with mortar onto a suitable undercloak laid onto lead lining. Ensure that tile interlocks are kept free and a gap is maintained between tilting fillets and mortar bedding.
- 7 Never lay mortar directly onto lead as there is a risk of differential movement causing mortar to crack and lead to split.
- 8 Nail or clip all tiles adjacent to valley and ensure small tile cuts are well bedded in mortar.

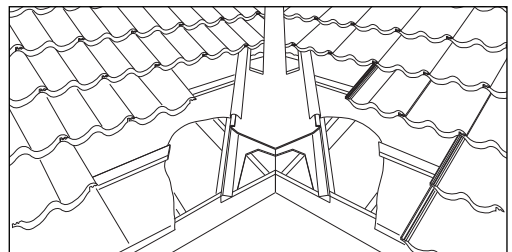


Fig 18 – Metal valley construction for interlocking tiles

Valleys

Marley Eternit GRP valley trough for bedded interlocking tiles

Always fit valley troughs over timber valley boards. These should be of sufficient width to provide end support for the tiling battens and outside counter battens.

Where rafters are at centres up to 600mm, valley boards should be either a minimum of 19mm softwood (or 12mm ply) lay boards set between the rafters supported on timber noggins, or 6mm continuous ply boards laid over the rafters.

- 1 Lay a single strip of roofing underlay in accordance with BS 8747 (or suitable breather membrane to EN 13859-1), full width of valley boards, up centre of valley, directly on top of valley boards.
- 2 Counter battens (BS 5534, Clause 4.12 and Table 1) should be same depth as tiling battens and be fitted onto valley boards, (over valley underlay), and nailed through these into main rafter/truss.
- 3 Where battens are deeper than 25mm, provide packing above valley boards, between counter battens, to provide correct support for GRP Valley Trough whilst accommodating standard 25mm upstand.
- 4 Firmly locate batten ends onto valley boards with ends supported on lip of GRP Valley Trough (Fig 20).

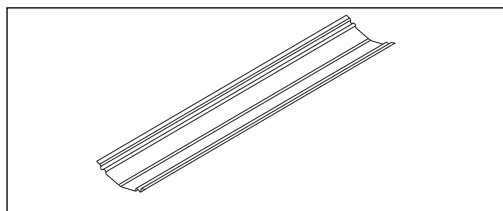


Fig 19 – Marley Eternit GRP valley trough (Code 30577)

- 5 Main roofing underlay can be laid either under or over GRP valley trough. Cut out fascia to allow GRP preformed valley trough to pass through and discharge into gutter without flattening out.
- 6 Trim end of GRP Valley Trough using a fine toothed hacksaw to the centreline of gutter – which normally entails a ‘V shape’ cut.

Note: Where design does not permit cutting to fascia board, a saddle of minimum Code 4 lead should be fitted and dressed into gutter.
- 7 Fit GRP Valley Trough to ensure centre is located firmly into trough between valley boards, and nail sides into counter battens at maximum 500mm centres, using 25mm clout nails.
- 8 Lap any additional lengths of valley by a minimum 150mm (300mm minimum at 22.5° rafter pitch – see NFRC Technical Bulletin 28 ‘Inclined Preformed GRP valley troughs’). Secure overlap with 2 No. nails on each side.

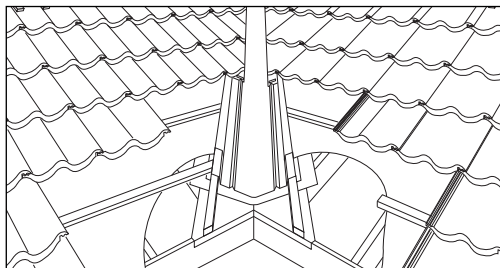


Fig 20 – Bedded valley with Marley Eternit GRP valley trough

Valleys

- 9 Where tiles require bedding, lay them dry, mark desired cut line, then remove and cut away from the roof.
- 10 Re-lay tiles, mechanically fix and bed onto sanded strip on GRP valley trough with correct mortar mix and point off.
- 11 At head of valley, fix a saddle of minimum Code 4 lead. Length of lap of saddle over GRP Valley Trough should be the same as required by the lap of two GRP valley trough units at same pitch.
- 12 Where ridge intersects a roof slope, step the ridge back where it meets head of intersecting GRP Valley Troughs; dress a saddle of minimum Code 4 lead under adjacent tiling, and over both valley troughs.
- 13 When a valley discharges onto a roof slope (e.g. at dormers), a lead saddle will be required at base of GRP valley trough to dress onto adjacent tiling.

Valley check points

- Keep an open channel between cut edges of roof tiles (125mm minimum).
- Do not block interlock laps of tiles with mortar since this may cause water damming.
- Do not lay bituminous underlay directly beneath a lead valley; heat causes underlay to expand. This may split lead.
- Do not apply mortar direct to lead.
- Tile slips or undercloak beneath mortar bedding is generally recommended to prevent differential movement between the mortar and lead lining.
- Mechanically fix all tiles either side of valley.

Ridges

Duo-pitch ridges

The apex of the roof should be covered using ridge tiles of complementary colour, or contrasting, and texture to that of main roof tiles. Always check that the ridge tile design suits the pitch and type of roof tile being used. (See Marley Eternit Roofing Product Catalogue).

- 1 Edge-bed ridge tiles onto the top course tiles with solid bedding at butt joints (Fig 21).
- 2 Support mortar at these butt joints using pieces of tile.
- 3 A minimum of 75mm cover should be provided over top course tiles.
- 4 Exposed mortar should be neatly pointed.

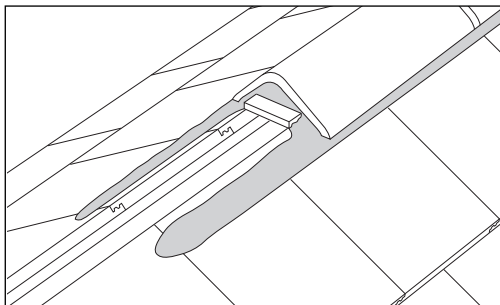


Fig 21 – Bedded ridge with tile slips to support mortar at butt joints

Ridges at gable ends

- 5 Allow for mechanically fixing of two ridge tiles at gable ends, abutments, above separating walls, or for a minimum distance of 900mm (whichever is greater).
- 6 For trussed rafter roofs, fix a length of batten approximately 2m long at the apex or wall and adjacent trusses.
- 7 Drive a nail into batten and attach a Security Ridge tile to it using the galvanised wire provided in tile (Fig 22) (concrete ridges), or security strap (clay ridges).
- 8 Fill fair ends of ridges with mortar inset with pieces of Plain tile and neatly point.

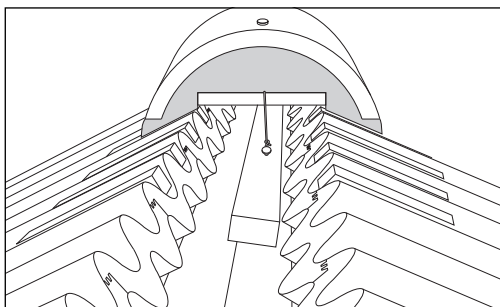


Fig 22 – Security Ridge fixing at gable ends (concrete ridges)

Dentil slips

- 9 For Mendip, Wessex, Anglia, Malvern or Double Roman (optional) tiles, lay dentil slips into pans of top courses.
- 10 A mortar bed approx 10mm thick should be provided to bed the dentil onto (Fig 23).

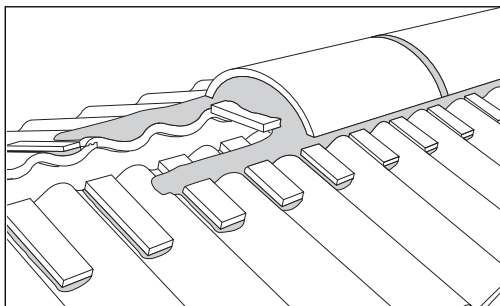


Fig 23 – Mortar bedded ridge using dentil slips for deep profiled tiles

Ridges

Mono-ridge

- 1 Carry roofing underlay over ridge line and cut below vertical leg of mono-ridge tile.
- 2 Lay mono-ridge tiles for Interlocking profiles as standard ridge tiles and mechanically fix each by using 2 No. 50mm x 10g stainless steel screws (supplied) to timber fascia behind vertical leg (Fig 24) (concrete mono-ridge tiles only).

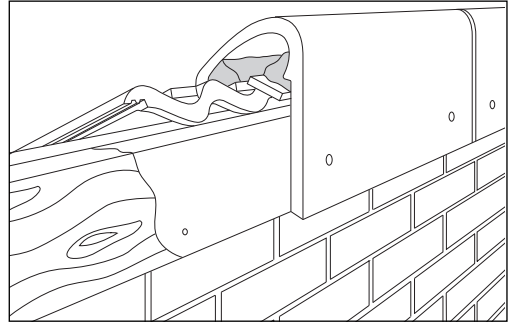


Fig 24 – Bedded mono-ridge tile with two screw fixings (concrete)

Ridge check points

- Nail and/or clip all top course tiles either side of ridge.
- Bed dentil slips in mortar in pans of deep profile tiles.
- Overlap ridge underlay by minimum 150mm.
- Ensure minimum 75mm cover by ridge tile over top course.
- Keep ridge tiles set in a true line.
- Do not over-tighten screws to fix mono-ridge tiles.

Repair and replacement of broken tiles and slates

Introduction

Individual tiles or slates that are damaged during or after installation should be replaced as soon as possible using a sound matching unit fixed in accordance with the nailing and/or clipping specification. In some cases, this may not be possible without stripping back a large area of tiling/slating.

Superficial coatings or repairs to damaged units using adhesives or other mechanical devices should not be used as their long term performance may be limited.

If extensive repairs to the roof are required, sectional or complete re-tiling/slating should be considered, as this may be the most practical and economic solution.

Roofs and walls clad with tiles and slates should be treated as fragile, and adequate precautions should be taken including the use of crawling boards and roof ladders (suitably packed to prevent damage to the roof covering) or access platforms when accessing the roof for the purposes of maintenance or repair. Failure to use adequate access equipment can damage the tiles and fixings and may be in contravention of Health and Safety Regulations.

- For an unfixed tile, remove the damaged unit by first easing it up slightly, using a trowel and timber wedges, so that the tile can be slid out with the nibs clearing the top of the batten. The replacement tile can be inserted using the same procedure.
- For a tile that is nailed, the neighbouring tiles should be lifted to expose the nail(s), which should be extracted carefully using a slate ripper or hacksaw blade and disposed of safely. The replacement tile can be inserted using the same procedure and re-fixed to the

adjacent fixed tiles by using an epoxy resin adhesive applied to the interlock/overlap and head lap area. Care must be taken not to bridge anti-capillary bars or interlocking water channels so that water can drain freely.

- For a tile that is clipped, the clip can be prised off the interlock and the nail extracted, with the damaged tile removed as described above. The new clip and nail can then be fitted as normal (avoiding the previous nail hole), allowing the clip to rest in the clip recess of the adjacent tile. Hold up the clip, and slide the replacement tile into position, allowing the clip to be released onto the sidelock of the tile.
- For a tile that is both nailed and clipped, it is necessary to establish the position of the tile nail holes of the in the course directly below the replacement tile. Mark out the corresponding hole positions on the top surface near the tail of the tile. Fit the replacement using the above procedure. Drill a 4mm dia. hole through the top of the replacement tile, directly above the nail hole of the tile below. Secure both courses using a stainless steel screw with cap and washer (40mm -120mm long dependent on tile depth) to provide a minimum 15mm penetration into the batten.
- The above procedure can also be used to secure the tail of the course above the replacement tile.
- If there are a number of damaged tiles that are clipped, it may be necessary to strip back the roof to the nearest verge or valley/hip in order to re-clip the replacement tiles.

Note : It is important that both washer and cap form a waterproof seal around the hole. If necessary, a mastic sealant should be applied around the screw where it passes through the lower tile nail holes.

Ashmore interlocking tiles

Ashmore single lap interlocking roof tiles have a 'mock bond' joint to give the appearance of two traditional double-lap plain tiles when laid on the roof. Tiles are laid single lap with a broken bond, utilising left hand and right hand $\frac{3}{4}$ tiles for use in alternate courses at verges and abutments. Tile-and-a-half tiles are also available to assist with setting out to hips and valleys to avoid small cut sections of tile.

Tiles requiring fixing are either once or twice nailed using 45mm x 3.35mm aluminium or stainless steel nails with a self fixing stainless steel wire tile clip which is additionally used for exposed locations or roofs with pitches of 55° and above.

Setting out

- 1 Position eaves course batten first and measure distance from top of outer edge of fascia. This should be equal to length of tile, less nib and tile overhang to centre line of gutter width, i.e. 267mm less 50mm (overhang) less 28mm (nib width and indent) = 189mm from outer edge of fascia or tilting fillet. Top course batten should be fixed so that ridge tile provides a minimum 75mm cover over top course tiles.
- 2 Measure distance between the top of eaves batten and top of ridge course batten. Divide distance by 190mm (maximum gauge of Ashmore tile). Round this figure up to give number of courses up roof slope as a whole number.
- 3 Where two roof slopes of varying pitch intersect, set batten gauge to the lower or longer rafter pitch.
- 4 The practice of adjusting gauge over last few courses at eaves or ridge is technically acceptable, provided maximum gauge is not exceeded. Tiles should only be cut at top, and drilled, nailed/clipped as required.
- 5 Horizontal alignment can be checked by striking a chalk/ochre line at 90° to vertical line.
- 6 Check perpendicular alignment by setting out roof along eaves starting with correct overhang at the right hand verge. Overhang at left hand verge can be achieved using full and $\frac{3}{4}$ tiles by opening or closing side lock shunt (max. verge overhang 50mm).
- 7 Cut tiles at verge should never be less than $\frac{3}{4}$ the width of a standard tile, unless cut from a tile and a half tile.

Divide measured distance by number of courses to give required batten gauge.

Note: Batten gauges between fixed points should be calculated individually.

Ashmore interlocking tiles

Fixing

Before commencing to tile the roof, check to ensure the correct fixing specification is being used.

Ashmore tiles should be mechanically fixed in the following manner:

Step A - Tiles requiring once nailing should be nailed through right hand nail hole using a 45mm x 3.35mm aluminium or stainless steel nail. For roof pitches over 45°, all tiles should be at least twice nailed.

Step B - Tiles requiring clipping should be nailed through the left-hand nail hole using a 45mm x 3.35mm aluminium or stainless steel nail and clipped using Ashmore stainless steel wire clip, which is located over side lock of tile with tail push fitted under back edge of the nailed course of tiles beneath.

For exposed sites and for roof pitches over 55°, each tile should be twice nailed and clipped.

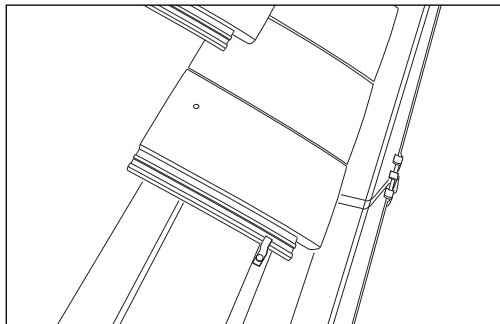


Fig 25 - Clipping eaves course

Eaves

- 1 The eaves course of tiles may be fixed by either nailing or clipping, or both.
- 2 Purpose made eaves clips are nailed to fascia board and located over side lock of the eaves course tile. (Fig.25)
- 3 Eaves course must be laid at same pitch as remainder of roof.
- 4 Care should be taken to adjust height of fascia or tilting fillet to accommodate any eaves vent strips (see tables on page 167).

Ashmore interlocking tiles

Bedded verges

- Verges should be formed using standard tiles with left hand or right hand 3/4 width verge tiles in alternate courses. Standard tiles on left hand verges will require the sidelock to be removed (Fig 26).
- Form verges by mortar bedding tiles onto an undercloak of fibre reinforced cement strip (1200mm x 150mm).
- Lay undercloak rough side up and closely butted together with a slight tilt outwards to provide a drip edge with a maximum 50mm overhang from brickwork gable or bargeboard.
- Provide 65mm width of mortar to bed all verge tiles and fix each verge tile by twice nailing and clipping.
- Use purpose made verge clips on both left hand and right hand verges and twice nailed to battens with upstand level with edge of the undercloak.
- Strike all mortar bedding off flush and neatly point in one operation.

For Ashmore Dry verge system, see page 135.

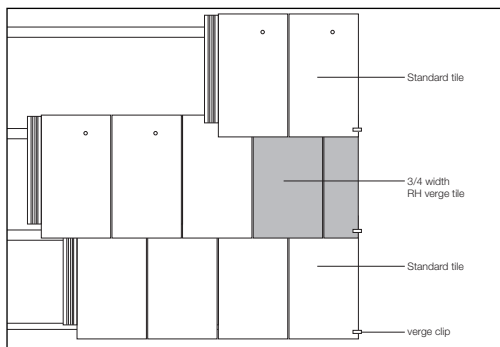


Fig 26 – Typical bedded verge (right hand)

Ridges

- Roof apexes may be covered using Marley Eternit Segmental ridge tiles or any other ridge tile design suitable for the pitch of the roof (see Marley Eternit Product Catalogue).
- Edge bed all mortar bedded ridge tiles onto top course of tiles with solid bedding at butt joints.
- Support mortar at butt joints with pieces of cut tile.
- Ensure that a minimum 75mm cover is provided by ridge tile over top course of tiles with any exposed mortar neatly pointed (Fig 27).
- Provide two Security Ridge tiles at each end ridge (or for a distance of 900mm from gable ends, separating walls whichever is the greater), which should be mechanically fixed to a ridge board or supplementary batten.

Note: For details of Marley Eternit Dry Ridge systems refer to pages 168-188

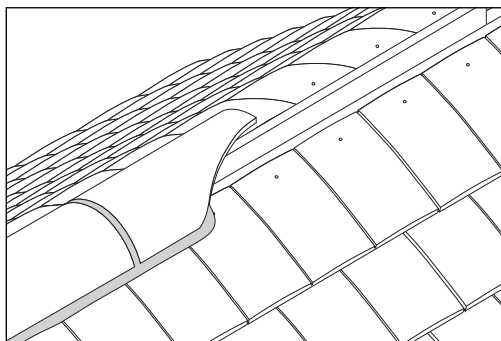


Fig 27 – Typical bedded ridge

Ashmore interlocking tiles

Hips

Hips should be formed using Tile-and-a-half tiles, each tile being nailed or nailed and clipped.

- 1 Cut tiles to rake of hip and cover with Third Round Hip tiles or alternative suitable hip tiles, edge bedded, with solid bedding at butt joints, onto adjacent tiles. Support mortar at butt joints with pieces of cut tile.
- 2 Ensure that a minimum 75mm cover is provided by hip tile over adjacent courses of tiles with any exposed mortar neatly pointed.
- 3 Fix a hip iron at base of hip rafter and shape first hip tile at front to align with tiling at the eaves (Fig 28).
- 4 Provide two security hip tiles for use for a distance of 900mm from face of rigid masonry supports, abutments or separating walls.
- 5 Mitre junction of hip and ridge, using a concealed lead saddle in exposed locations.

Note: For details of Marley Eternit Dry Hip systems refer to pages 142-160.

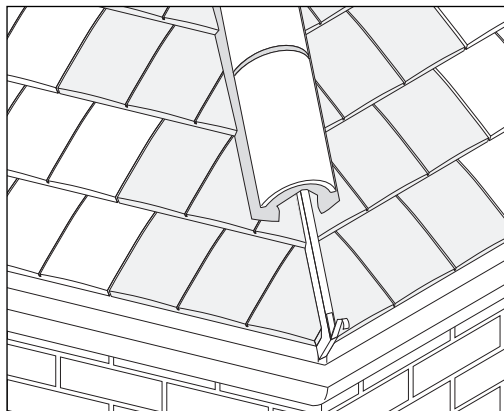


Fig 28 - Typical bedded hip using third round ridge units as hip capping
Tile and a half tiles shown shaded

Valleys

Valleys should be formed using Tile-and-a-half tiles, each tile being nailed and clipped.

- 1 Cut tiles to rake of valley trough, leaving a clear channel of minimum 125mm wide.
- 2 Form valley with either a metal lining (Code 4 lead sheet) of not less than 500mm wide (see LSA recommendations) or with the Marley Eternit GRP Valley Trough, or Dry Valley Trough (low profile).
- 3 Bed raking cut tiles at edges of valley using mortar, ensuring that there is adequate space kept clear behind mortar to avoid water capillarity (Fig 29).

Note: For details of Marley Eternit GRP Valley Trough refer to page 162.

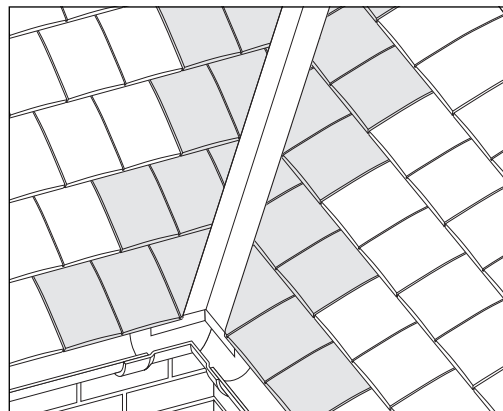


Fig 29 - Typical bedded valley. Tile and a half tiles shown shaded.

Symphony clay interlocking tiles

Introduction

Marley Eternit Symphony single lap clay interlocking roof tiles have the appearance of a traditional single pantile when laid on the roof. Tiles are laid single lap with a straight bond, utilising special Left Hand Verge Finishing tiles at bedded left-hand verges and at abutments. Dentil slips are available for bedded ridges and hips.

Tiles requiring fixing are either once or twice clipped using a one piece clip fitted over the tile side-interlock, or in addition, a one piece clip fitted over the head-lock of the tile, both nailed to the batten. All tiles on roof pitches above 45° should be clipped using a head clip, and a side interlock clip.

All eaves and verge tiles should be fixed using purpose made eaves and verge clips.

Ridge and hip tiles are available for use with Symphony tiles in addition to the following Dry Fix and Ventilation products:

- Universal 10mm and 25mm Eaves Ventilation systems
- Marley Eternit In-line vent
- Marley Eternit GRP Dry Valley (deep profile)

General

Before commencement of sitework, the following installation guidance for the laying and fixing of Marley Eternit Symphony tiles should be considered. Designers and installers should consult BS 5534 'Code of practice for slating and tiling', taking into account local conditions and current good practice, which should be undertaken in accordance with BS 8000-6 and the manufacturers' recommendations.

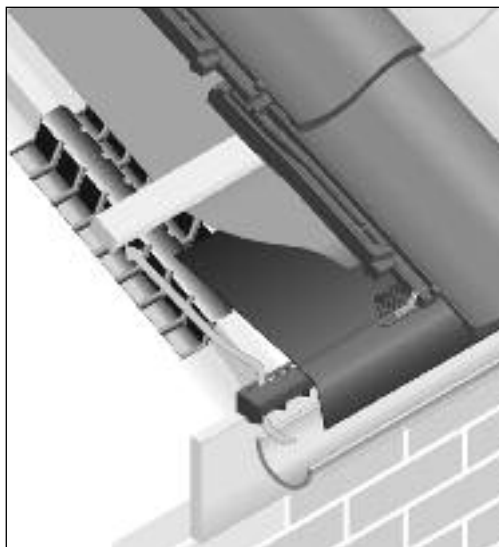


Fig 30 - Typical eaves detail with over fascia vent strip, underlay support tray, comb filler and eaves clip

Symphony clay interlocking tiles

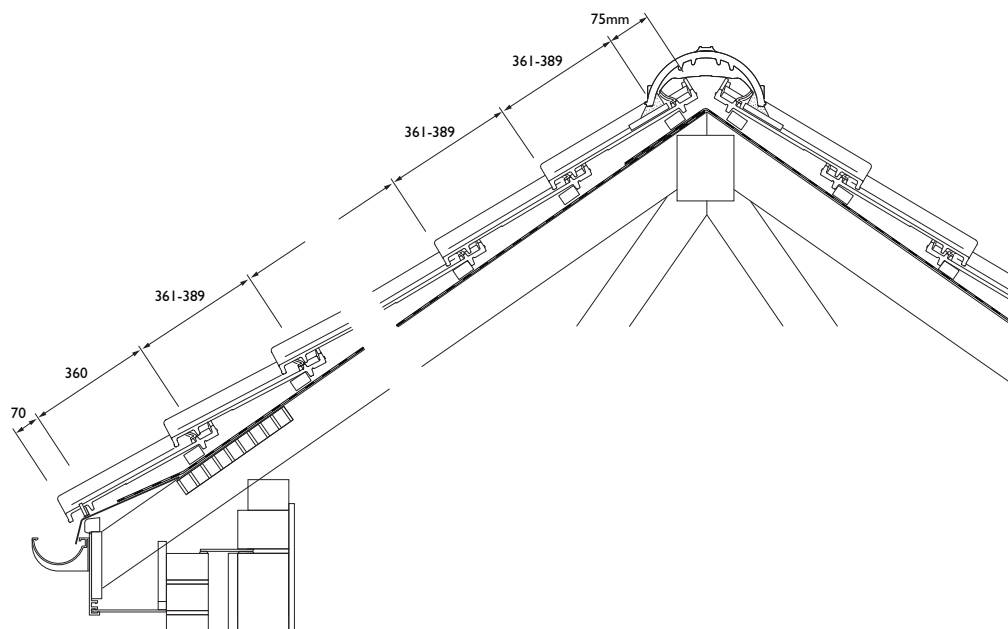


Fig 31 - Eaves to ridge setting out

Setting out

Vertical coverage

- 1 The tile battens should be set out at a maximum spacing of 389mm to ensure a minimum headlap of 96mm. Symphony tiles have a built in head lock adjustment which allows the gauge to be reduced within the range 389mm – 361mm.

When setting out the batten gauge for the Symphony tile, lay a sample set of seven to ten tiles on a flat surface with headlaps and interlocks engaged. Lay the tiles first with a tight headlock and calculate the average margin. Re-lay the files with an open headlock and re-calculate the margin again. The gauge used to set out the roof battens should equal a figure between these two averages. (Figs 33 and 34, page 73).

Where two roof slopes of varying pitch intersect, the batten gauge should be set to the lower or longer rafter pitch.

- 2 Position the eaves course batten to allow the bottom edge of the eaves course tiles to overhang the fascia, tilting fillet and under eaves protector tray by 70mm i.e just over the centre of the gutter.
- 3 Measure the distance between the top of the eaves batten and the top of the ridge course batten which should be fixed so that the ridge tile provides a minimum 75mm cover over top course tile.

Symphony clay interlocking tiles

- 4 Divide the distance by 389mm, the maximum gauge of the Symphony tile. Round this figure up to give the number of courses up the roof slope as a whole number. Divide the measured distance of by the number of courses to give the required batten gauge.
- 5 The practice of adjusting the gauge over the last few courses at eaves or ridge is technically acceptable provided the maximum gauge is not exceeded, although the resulting distortion of the diagonal lines may not be aesthetically acceptable.

NOTE : Batten gauges between fixed points should be calculated individually.

- 6 Tiles should only be cut at the top edge, for use at the Top course (mortar bedded ridges only), drilled and nailed using a 45mm x 3.35mm aluminium nail.

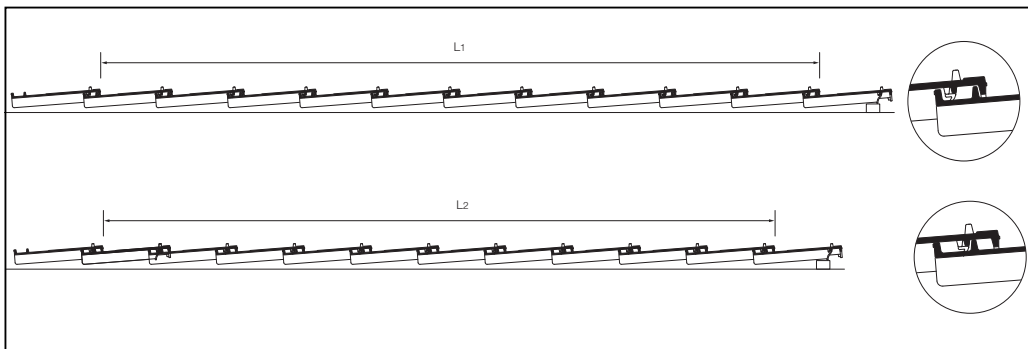


Fig 32 - Using tile 'shunt' to adjust linear coverage

Symphony clay interlocking tiles

Linear coverage

The average linear coverage (cover width) of the Symphony tile is 230mm. There is a 3mm – 4mm adjustment (shunt) built into the side interlocks to aid setting out across the roof.

- 1 Lay a course of tiles along the eaves length, setting the tiles at the average linear coverage, and make adjustment in the shunt to allow for a 38mm – 50mm overhang at the verges.
- 2 Ensure that a Symphony LH Verge Finishing Tile is used to complete the linear tile array and that the verge overhang is equal on both left and right hand verges.

Using a gauging rod

- 1 An alternative method is to use a gauging rod (a short length of batten) and mark the position of three tiles with their sidelocks fully closed, then mark the position of the three tiles 'open'. Set the average coverage by making a third mark midway between the two previous two marks on the rod. Use this third position to set out the linear coverage on both eaves and top course battens.
- 2 Strike a chalk or ochre line from the eaves to ridge at each mark so that the tiles can be laid to a straight perpendicular alignment.

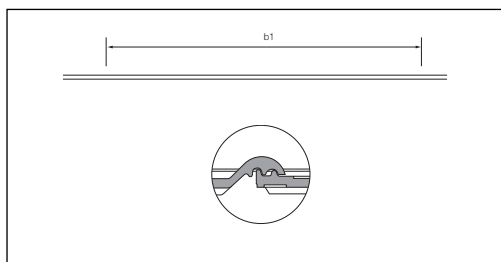


Fig 33 - Using tile 'shunt' to adjust linear coverage inwards

Alignment and cutting of tiles

Horizontal alignment can be checked by striking a chalk/ochre line at 900mm to the vertical line.

Perpendicular alignment should be checked by setting out the roof along the eaves starting with the correct overhang at the right hand verge. The left-hand verge can be achieved using special LH Verge finishing tiles (max. verge overhang 50mm).

- 1 Cut tiles at the verge should be avoided wherever possible, but if this is unavoidable, should never be less than half the width of the standard tile.
- 2 Bedded verge tiles should be mechanically fixed using an aluminium verge clip nailed to the batten using two 25mm x 3.35mm aluminium nails.

Note: Check verge tiles are available to special order where maximum durability is required e.g. coastal locations.

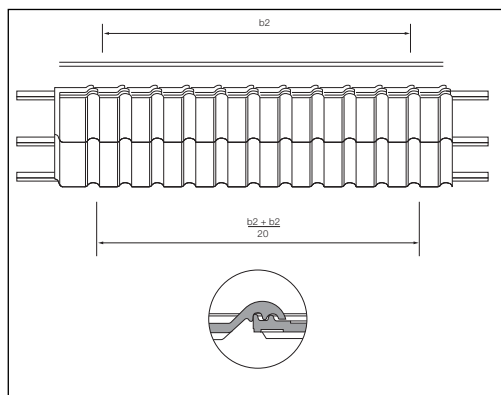


Fig 34 - Using tile 'shunt' to adjust linear coverage outwards

Symphony clay interlocking tiles

General fixing

Before commencing to tile the roof, check to ensure the correct fixing specification is being used. Load out all sides of the roof uniformly, randomly mixing tiles from different pallets.

- 1 Symphony tiles should be laid straight bonded, commencing at the right hand side of the roof and working from right to left.
- 2 The following is the minimum specification for fixing Symphony tiles :

A – Tiles requiring once clipping (side) should be fixed using a Symphony one piece Tile clip, located over the side lock of the tile (Fig 35).

B – Tiles requiring twice clipping (side and head) should be fixed using a Symphony one piece tile clip, located over the side lock of the tile, and in addition, a Symphony one piece head clip, located over the head lock of the tile (Fig 36).

- 3 All verge tiles should be clipped using a Symphony verge clip nailed to the battens with two 25mm x 3.35mm aluminium nails.
- 4 All eaves course tiles should be clipped using a Symphony eaves clip nailed to the fascia or tilting fillet with two 25mm x 3.35mm aluminium nails.
- 5 For roof pitches 45° - 60° each tile must be twice clipped using both the Symphony one piece tile clip and Symphony Head clip.

Contact the Technical Advisory Service for fixing specifications.

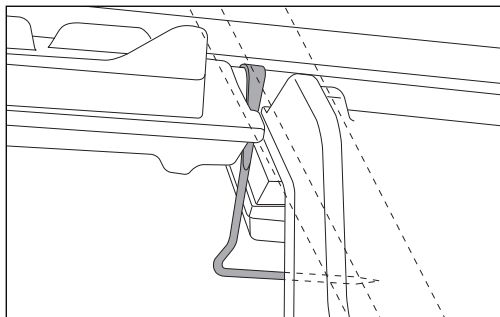


Fig 35 - Symphony tile clip

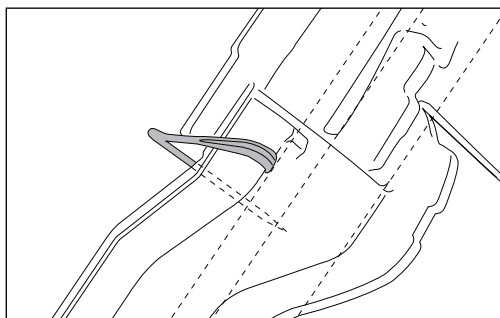


Fig 36 - Symphony head clip

Symphony clay interlocking tiles

Eaves

The eaves course tiles should be laid at the same pitch as the remainder of the roof with the fascia board or tilting fillet fixed at the correct height, taking account of any over fascia ventilation strip.

- 1 An eaves protector tray (1.5 x 0.22m) should be fitted over the fascia, tilting fillet or eaves vent strip and nailed to each rafter. The roof underlay should lap the protector tray by a minimum 150mm (Fig 37).
- 2 The eaves course of tiles should be fixed by clipping. Purpose made eaves clips are nailed to the fascia board and located over the side lock of the eaves course tile (Fig 38).
- 3 A comb filler strip should be fitted above the fascia/tilting fillet/eaves vent strip to prevent the ingress of birds or vermin.

See page 166 for fascia heights with Universal eaves vent systems, and page 204 for fascia heights without ventilation.

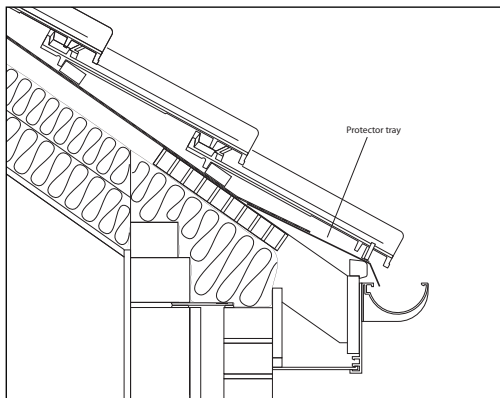


Fig 37 - Section through typical eaves showing protector tray

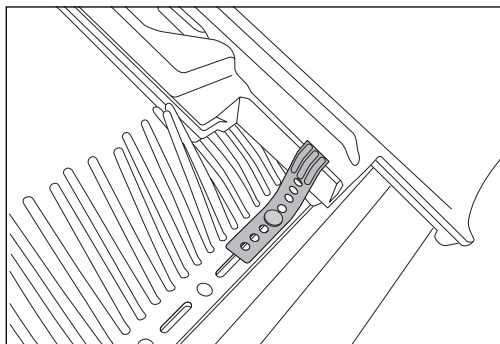


Fig 38 - Eaves clip and comb filler

Symphony clay interlocking tiles

Bedded verges

Verges should be formed using standard tiles for right-hand verges with special Left-hand Verge Finishing tiles for left-hand verges.

- 1 Verges should be formed by mortar bedding the tiles onto an undercloak of fibre reinforced cement strip (1200mm x 150mm).
- 2 Lay the strips of undercloak rough side up and closely butted together, with a slight tilt outwards to provide a drip edge with a maximum 50mm overhang from the brickwork gable or bargeboard (Fig 39).
- 3 Provide 65mm width of mortar to bed all verge tiles and fix each verge tile by clipping each tile with purpose made verge clips on both left-hand and right-hand verges, twice nailed to the battens with the upstand level with the edge of the undercloak (Fig 40).
- 4 Strike all mortar bedding off flush and neatly point in one operation.
- 5 When used with a bedded ridge, the gable end Symphony ridge tile should be finished with a Block Ridge tile.

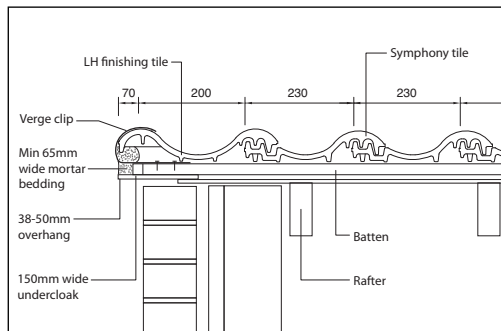


Fig 39 - Section through typical brickwork verge showing verge clips

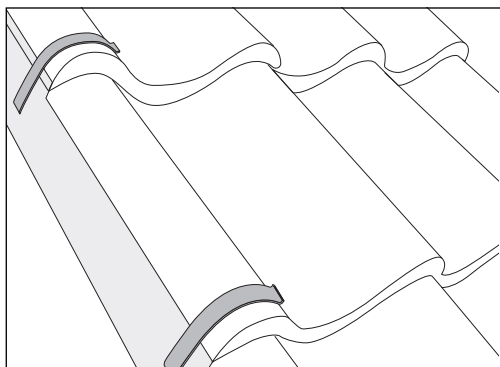


Fig 40 - Symphony verge clips

Symphony clay interlocking tiles

Ridges

Bedded ridges

The roof apex should be covered using Symphony socketed ridge tiles, edge bedded onto the top course of tiles with dentil slips bedded into the pans.

- 1 Ensure that a minimum 75mm cover is provided by the ridge tile over the top course of tiles with any exposed mortar neatly pointed (Fig 41).

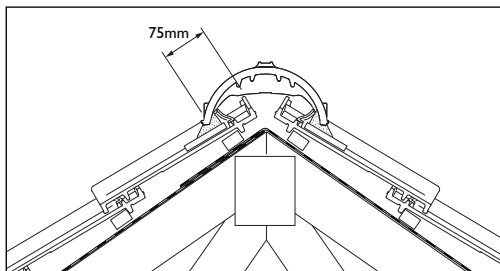


Fig 41 - Section through bedded ridge

Security ridges

- 1 The two ridge tiles at each gable end, or over any supporting walls or junctions, should be mechanically fixed using a wire (and washer) passed through a pre-drilled hole in the ridge unit. This wire may be secured to the top course tiling batten or secured to a ridge board.
- 2 Drill a 6mm diameter hole in the ridge tile, approximately 75mm from the end, using a sharp masonry drill bit.
- 3 Fit the security ridge wire around the top course tile batten, ensuring that the end loop closes over the wire above the rectangular loop (Fig 42).
- 4 Pull the wire tight so that the loop closes tightly around the batten, and feed the end up through the hole in the ridge tile (Fig 43).
- 5 Feed the rubber washer and stainless steel clip onto the wire, and using pliers pull the wire tight through the self-locking slot in the top of the clip (Fig 44).
- 6 Bend over the wire and cut any excess with a wire cutter.

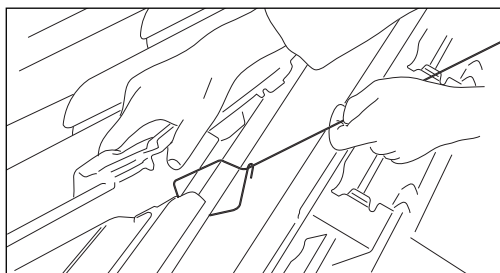


Fig 42 - Securing ridge wire to tiling batten

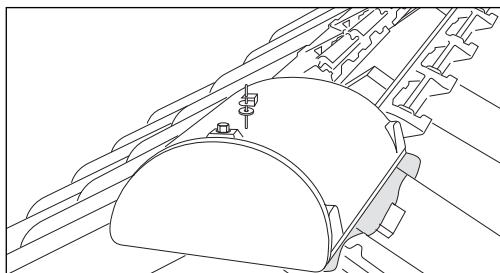


Fig 43 - Passing ridge wire through ridge unit

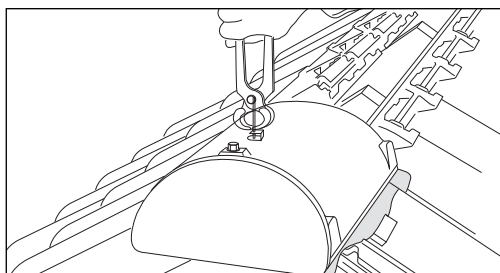


Fig 44 - Securing and trimming of wire

Note: Security ridge may also be fixed using a stainless steel screw and washer of suitable length secured to a ridge board or supplementary ridge batten (contact the Technical Advisory Service for further information).

Symphony clay interlocking tiles

Bedded hips

- 1 Cut tiles to the rake of the hip and cover with Symphony Ridge/Hip tiles, edge bedded, with dentil slips bedded in the pans of the adjacent raking cut tiles.
- 2 Ensure that a minimum 75mm cover is provided by the hip tile over the adjacent courses of tiles with any exposed mortar neatly pointed.
- 3 Fix a hip iron at the base of the hip rafter and shape the first hip tile at the front to align with the tiling at the eaves. Mitre the junction of the hip and ridge, using a concealed lead saddle in exposed locations (Fig 45).
- 4 The two hip tiles at each hip end, or over any supporting walls or junctions should be mechanically fixed using a wire (and washer) (see page 78).

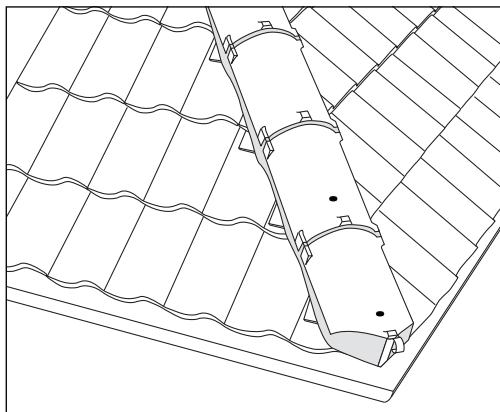


Fig 45 - Bedded hip

Valleys

- 1 Cut tiles to the rake of the valley trough, leaving a clear channel of minimum 125mm wide.
- 2 Form the valley with either a metal lining (Code 4 or 5 lead sheet) of not less than 500mm wide (see LSA recommendations) or with a Marley Universal Dry Valley (deep profile – see pages 158-161).
- 3 For mortar bedded valleys, bed raking cut tiles at the edges of the valley using mortar, ensuring that tile interlocks are kept free and there is adequate space kept clear behind the mortar to avoid water capillarity (Fig 46).
- 4 Ensure the mortar is laid onto a fibre cement undercloak strip above the lead valley gutter lining.

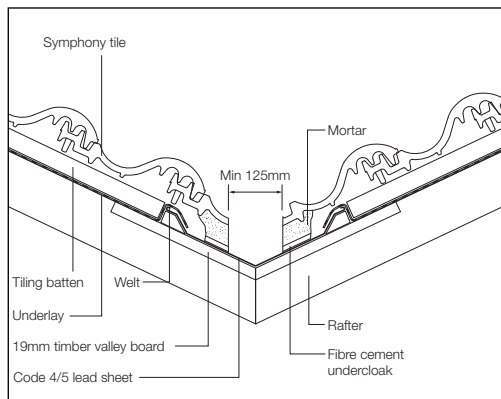


Fig 46 - Section through bedded, metal lined valley

Domino clay interlocking tiles

Introduction

Marley Eternit Domino clay interlocking roof tiles have the appearance of a small format flat tile when laid on the roof. Tiles are laid single lap with a broken bond, utilising special half tiles and left hand verge tiles at bedded verges and abutments.

Tiles requiring fixing are either once or twice clipped using a one piece clip fitted over the tile side-interlock, or in addition, a one piece clip fitted over the head-lock of the tile, both nailed to the batten. All tiles on roof pitches above 45° should be clipped using a head clip, and a side interlock clip.

All eaves and verge tiles should be fixed using purpose made eaves and verge clips.

Ridge and hip tiles are available for use with Domino tiles in addition to the following Dry Fix and Ventilation products:

- Universal 10mm and 25mm Eaves Ventilation systems
- Marley Eternit In-line vent tile
- Marley Eternit GRP Dry Valley (low profile)

General

Before commencement of sitework, the following installation guidance for the laying and fixing of Marley Eternit Domino tiles should be considered. Designers and installers should consult BS 5534 'Code of practice for slating and tiling', taking into account local conditions and current good practice, which should be undertaken in accordance with BS 8000-6 and the manufacturers' recommendations.

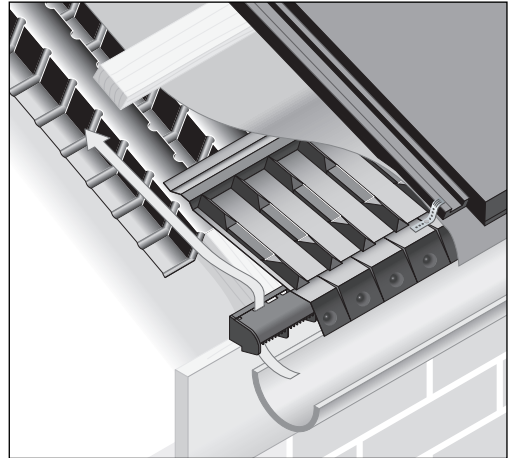


Fig 47 Typical eaves detail with over fascia vent strip, felt support tray and eaves clip

Domino clay interlocking tiles

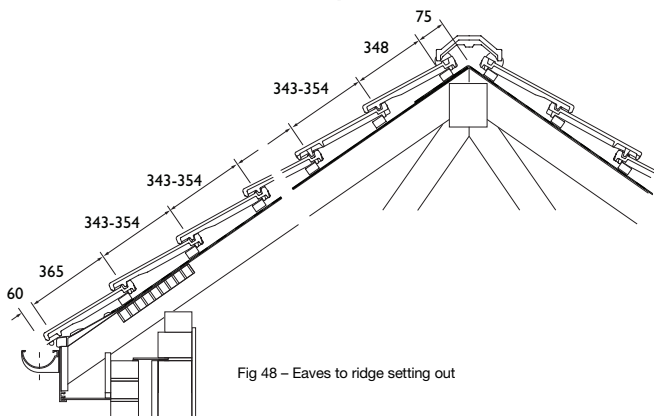


Fig 48 – Eaves to ridge setting out

Setting out

Vertical coverage

The tile battens should be set out at a maximum spacing of 354mm to ensure a minimum headlap of 83mm. Domino tiles have a built in head lock adjustment which allows the gauge to be reduced within the range 354mm – 343mm.

When setting out the batten gauge for the Domino tile, lay a sample set of seven to ten tiles on a flat surface with headlaps and interlocks engaged. Lay the tiles first with a tight headlock and calculated the average margin. Re-lay the tiles with an open headlock and re-calculate the margin again. The gauge used to set out the roof battens should equal a figure between these two averages (Figs. 48 and 49).

- 1 Position the eaves course batten to allow the bottom edge of the eaves course tiles to overhang the fascia or tilting fillet by approximately 60 mm i.e just over the centre of the gutter.
- 2 Measure the distance between the top of the eaves batten and the top of the ridge course batten which should be fixed so that the ridge tile provides a minimum 75mm cover over the top course tiles.
- 3 Divide this distance by 354mm, the maximum gauge of the Domino tile. Round this figure up to give the number of courses up the roof slope as a whole number. Divide the measured distance by the number of courses to give the required batten gauge.

Note : Batten gauges between fixed points should be calculated individually.

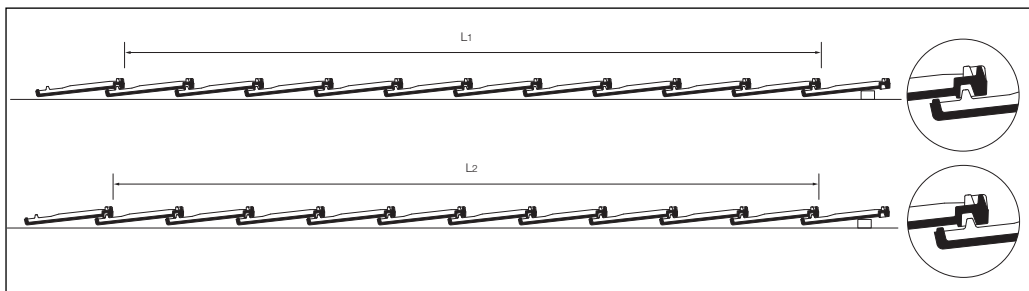


Fig 49 – Using tile 'shunt' to adjust linear coverage

Domino clay interlocking tiles

Linear coverage

The average linear coverage (cover width) of the Domino tile is 224mm. There is a 3mm adjustment (shunt) built into the side interlocks to aid setting out across the roof.

- 1 Lay a course of tiles along the eaves length, setting the tiles at the average linear coverage, and make adjustment in the shunt to allow for a 38mm – 50mm overhang at the verges.
- 2 Ensure that a Domino LH Verge Finishing Tile is used to complete the linear tile array and that the verge overhang is equal on both left and right hand verges.

Using a gauging rod

- 1 An alternative method is to use a gauging rod (a short length of batten) and mark the position of three tiles with their sidelocks fully closed, then mark the position of the three tiles 'open'.
- 2 Set the average coverage by making a third mark midway between the two previous two marks on the rod. Use this third position to set out the linear coverage on both eaves and top course battens.
- 3 Strike a chalk or ochre line from the eaves to ridge at each mark so that the tiles can be laid to a straight perpendicular alignment.

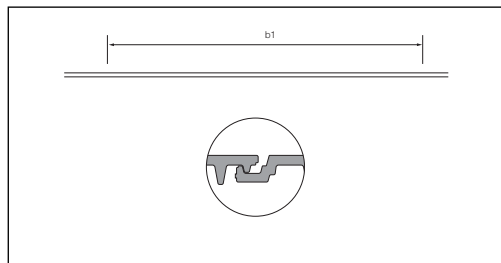


Fig 50 – Using tile 'shunt' to adjust linear coverage inwards

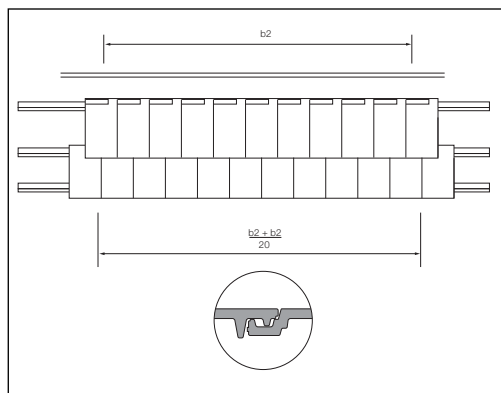


Fig 51 – Using tile 'shunt' to adjust linear coverage outwards

Domino clay interlocking tiles

Alignment and cutting of tiles

The practice of adjusting the gauge over the last few courses at eaves or ridge is technically acceptable provided the maximum gauge is not exceeded, although the resulting distortion of the diagonal lines may not be aesthetically acceptable.

- 1 Tiles should only be cut at the top edge, for use at the Top course (mortar bedded ridges only), drilled and nailed using a 45mm x 3.35mm aluminium nail.
- 2 Horizontal alignment can be checked by striking a chalk/ochre line at 900mm to the vertical line.
- 3 Perpendicular alignment should be checked by setting out the roof along the eaves starting with the correct overhang at the right hand verge (Fig 52). The left-hand verge can be achieved using special Domino LH Verge finishing tiles (max. verge overhang 50mm) (Fig 53).
- 4 Cut tiles at the verge should be avoided wherever possible, but if this is unavoidable, should never be less than half the width of the standard tile.
- 5 Bedded verge tiles should be mechanically fixed using an aluminium verge clip nailed to the batten using two 25mm x 3.35mm aluminium nails.

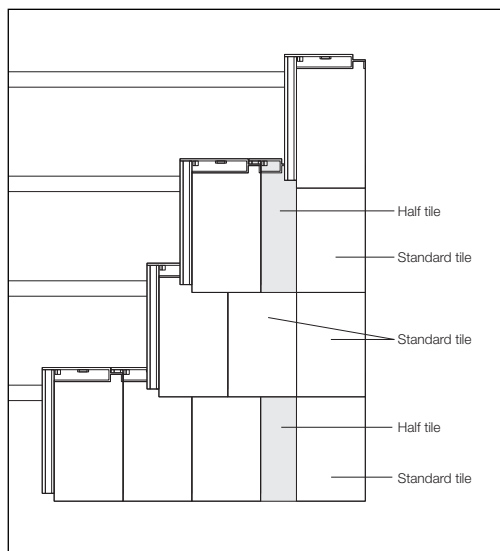


Fig 52 – Right hand verge achieving broken bond using half tile and standard tiles (clips omitted for clarity)

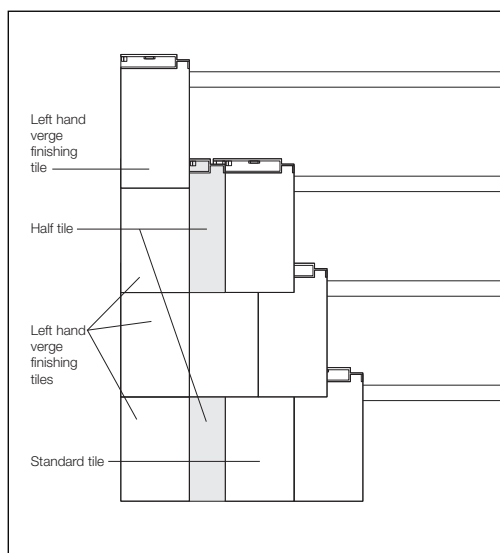


Fig 53 – Left hand verge achieving broken bond using left hand verge finishing tiles and half tiles (clips omitted for clarity)

Domino clay interlocking tiles

General fixing

Before commencing to tile the roof, check to ensure the correct fixing specification is being used. Load out all sides of the roof uniformly, randomly mixing tiles from different pallets.

- 1 Domino tiles should be laid broken bonded, commencing at the right hand side of the roof and working from right to left, utilising purpose made Half tiles located adjacent to standard tiles and Left hand Finishing tiles in alternate courses.
- 2 The following is the minimum specification for fixing Domino tiles :
 - A – Tiles requiring once clipping (side) should be fixed using a Domino one piece Tile clip, located over the side lock of the tile (Fig 54).
 - B – Tiles requiring twice clipping (side and head) should be fixed using a Domino one piece Tile clip, located over the side lock of the tile, and in addition, a Domino one piece Head clip, located over the head lock of the tile (Fig 55).
- 3 All verge tiles should be clipped using a Domino verge clip nailed to the battens with two 25mm x 3.35mm aluminium nails.
- 4 All eaves course tiles should be clipped using a Domino eaves clip nailed to the fascia or tilting fillet with two 25mm x 3.35mm aluminium nails.
- 5 For roof pitches 45° - 60° each tile must be twice clipped using both the Domino one piece Tile clip and Head clip.

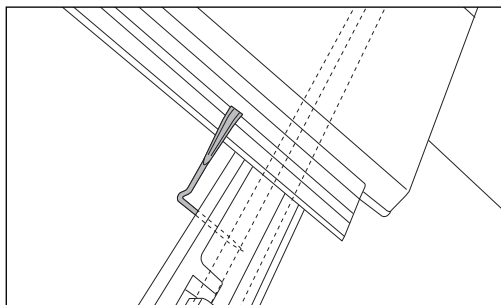


Fig 54 – Domino tile clip

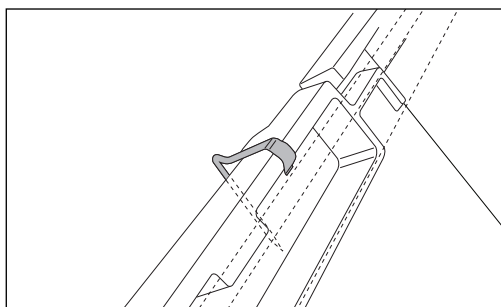


Fig 55 – Domino head clip

Domino clay interlocking tiles

Eaves

In order to ensure that the eaves course of tiles is laid at the same pitch as the remainder of the roof, the fascia board or tilting fillet should be fixed at the correct height taking account of any over fascia ventilation strip (Fig 56).

- 1 The eaves course of tiles should be fixed by clipping. Purpose made eaves clips are nailed to the fascia board and located over the side lock of the eaves course tile (Fig 57).

See page 166 for fascia heights with Universal eaves vent systems, and page 204 for fascia heights without ventilation.

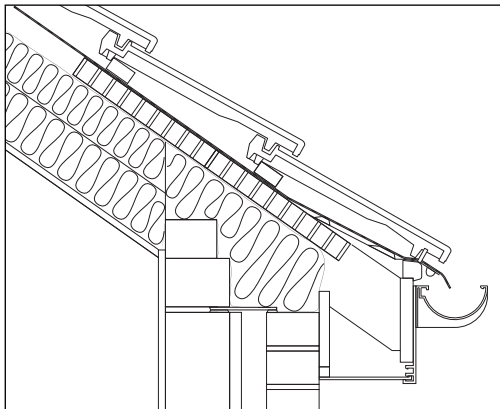


Fig 56 – Section through eaves

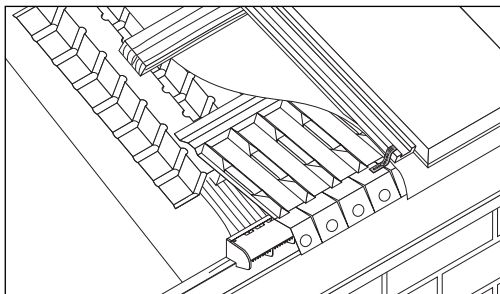


Fig 57 – Clipping at eaves

Domino clay interlocking tiles

Bedded verges

Verges should be formed using standard tiles for right-hand verges with special Left hand Verge Finishing tiles for left hand verges. Half tiles are laid adjacent to standard tiles and left hand finishing tiles in alternate courses to create a broken bond (Fig 58).

Verges should be formed by mortar bedding the tiles onto an undercloak of fibre reinforced cement strip (1200mm x 150mm).

- 1 Lay the strips of undercloak rough side up and closely butted together, with a slight tilt outwards to provide a drip edge with a maximum 50mm overhang from the brickwork gable or bargeboard.
- 2 Provide 65mm width of mortar to bed all verge tiles and fix each verge tile by clipping each tile with purpose made verge clips on both left hand and right hand verges, twice nailed to the battens with the upstand level with the edge of the undercloak. Strike all mortar bedding off flush and neatly point in one operation (Fig 59).
- 3 When used with a bedded ridge, the gable end Domino Block End ridge tile should be used.

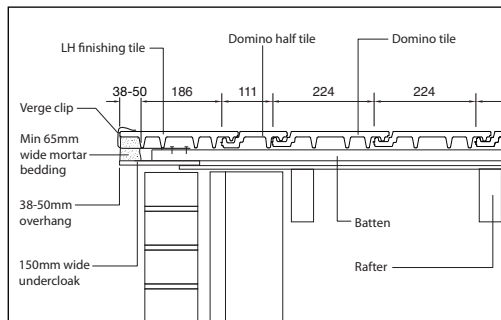


Fig 58 – Section through typical brickwork verge

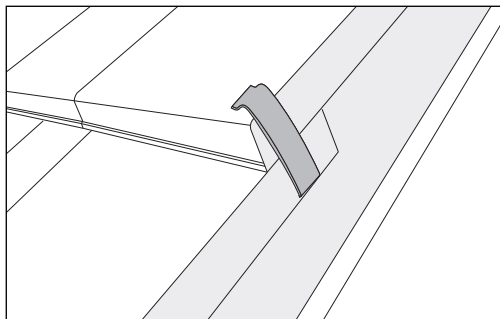


Fig 59 – Verge clip

Domino clay interlocking tiles

Bedded ridges

The apex of the roof should be covered using Domino socketed ridge tiles, edge bedded onto the top course of tiles. Ensure that a minimum 75mm cover is provided by the ridge tile over the top course of tiles with any exposed mortar neatly pointed (Fig 60).

Security ridges

- 1 The two ridge tiles at each gable end, or over any supporting walls or junctions, should be mechanically fixed using a wire (and washer) passed through a pre-drilled hole in the ridge unit. This wire may be secured to the top course tiling batten or secured to a ridge board.
- 2 A Block End Ridge tile should be used at the gable end.
- 3 Drill a 6mm diameter hole in the ridge tile, approximately 75mm from the end, using a sharp masonry drill bit.
- 4 Fit the security ridge wire around the top course tile batten, ensuring that the end loop closes over the wire above the rectangular loop (Fig 61).
- 5 Pull the wire tight so that the loop closes tightly around the batten, and feed the end up through the hole in the ridge tile (Fig 62).
- 6 Feed the rubber washer and stainless steel clip onto the wire, and using pliers pull the wire tight through the self-locking slot in the top of the clip (Fig 63).
- 7 Bend over the wire and cut any excess with a wire cutter.

Note: Security ridge may also be fixed using a stainless steel screw and washer of suitable length secured to a ridge board or supplementary ridge batten (contact the Technical Advisory Service for further information).

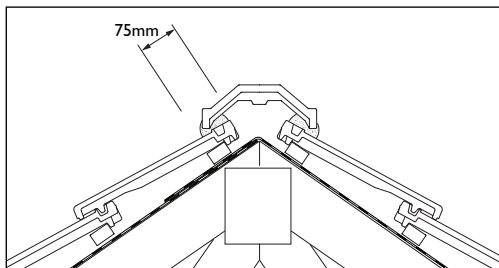


Fig 60 – Typical bedded ridge

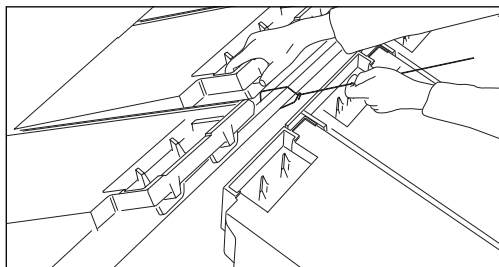


Fig 61 – Securing ridge wire to tiling batten

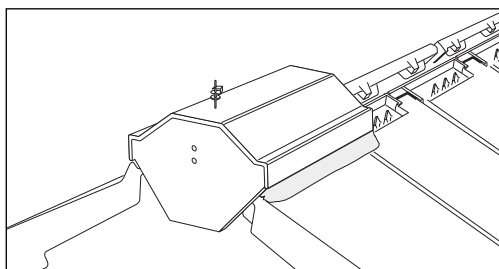


Fig 62 – Passing ridge wire through ridge unit

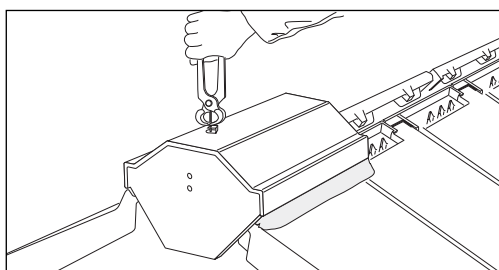


Fig 63 – Securing and trimming of wire

Domino clay interlocking tiles

Bedded hips

- 1 Cut tiles to the rake of the hip and cover with Domino Ridge/Hip tiles, edge bedded onto raking cut tiles.
- 2 Ensure that a minimum 75mm cover is provided by the hip tile over the adjacent courses of tiles with any exposed mortar neatly pointed.
- 3 Fix a hip iron at the base of the hip rafter and shape the first hip tile at the front to align with the tiling at the eaves. Mitre the junction of the hip and ridge, using a concealed lead saddle in exposed locations (Fig 64).
- 4 The two hip tiles at each hip end or over any supporting walls or junctions should be mechanically fixed using a wire (and washer) (see page 87).

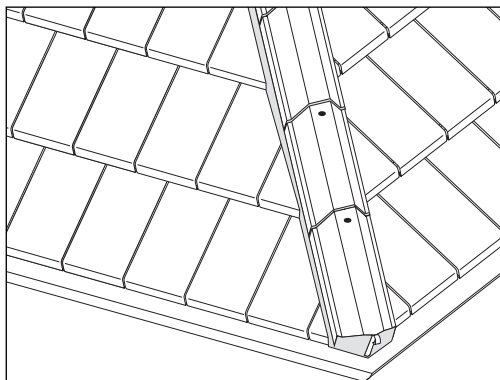


Fig 64 – Typical bedded hip

Valleys

- 1 Cut tiles to the rake of the valley trough, leaving a clear channel of minimum 125mm wide. Form the valley with either a metal lining (Code 4 or 5 lead sheet) of not less than 500mm wide (see LSA recommendations) or with a Marley Universal Dry Valley (deep profile – see pages 158-161).
- 2 For mortar bedded valleys, bed raking cut tiles at the edges of the valley using mortar, ensuring that tile interlocks are kept free and there is adequate space kept clear behind the mortar to avoid water capillarity (Fig 65).
- 3 Ensure the mortar is laid onto a fibre cement undercloak strip above the lead valley gutter lining.

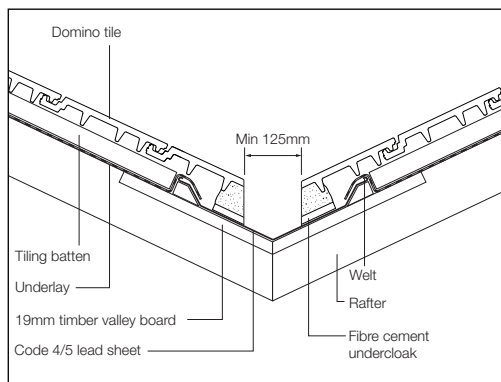


Fig 65 – Typical bedded valley

Melbourn Interlocking slates

Before commencing the installation of the slates, ensure the following is carried out:

Battens

- 1 The batten gauge is 250mm maximum, and recommended softwood batten size is 50 x 25mm graded in accordance with BS 5534.
- 2 Position eaves batten so that eaves course overhangs fascia by a maximum of 50mm (Fig 67).
- 3 Fix subsequent battens at a maximum gauge of 250mm (minimum 235mm) up to ridge, where top batten spacing may be less than 250mm to suit ridge detail (see Interlocking tiles setting out)

Fixing

- 1 Melbourn slates are designed to be fixed with one nail per slate, at bottom left hand corner, at roof pitches of 25° - 65°, but nail penetrates through head of slate below (twice nailed over 65°).
- 2 Correct alignment of slates is essential (see Figs 68-69).

Note: Two nails per slate are needed at eaves, verges, ridges, hips, valleys and on roof pitches of between 15° and 24°.

(When using a 25mm eaves ventilator or at steeper pitches, a special Melbourn stainless steel nail and clip are required.) (See Fig. 71)

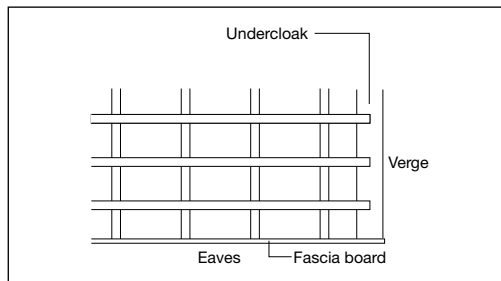


Fig 67 - Batten configuration at eaves

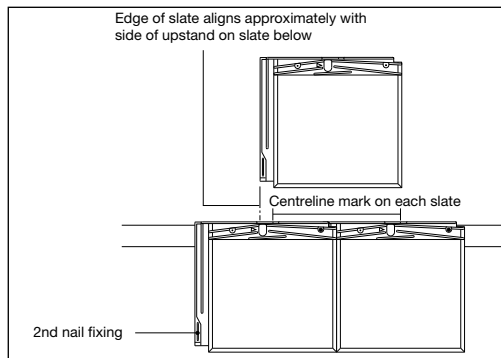


Fig 68 - Standard eaves

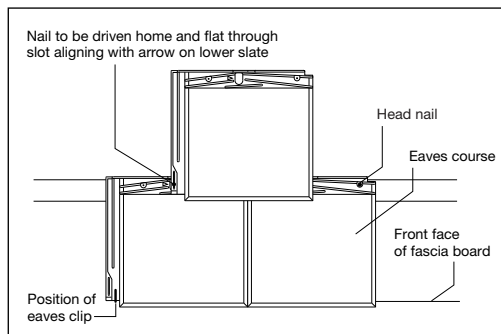


Fig 69 - Eaves with 25mm Eaves ventilator strip

Melbourn interlocking slates

Nailing positions

These fixing recommendations apply to wind suction loadings up to 2kN/m^2 ; for greater loadings contact the Technical Advisory Service.

- 1 Each slate is generally nailed once at position A (See Fig.70), but additional nail fixings are required around perimeter of roof and at pitches shallower than 25° and greater than 65° .
- 2 Special clip fixings are also required for some details.
- 3 For body of roof, single slates are generally nailed at point A only, but for roof pitches below 25° or above 65° a second fixing is required at position C.
- 4 For single slates, slate-and-a-half slates and double slates, additional fixings at positions B, D and E may be required, (see table, below).

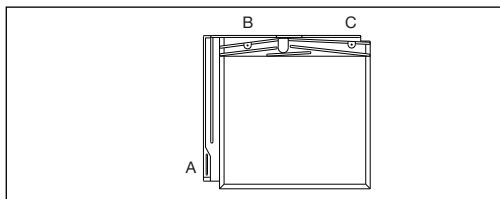


Fig 70 - Single slate

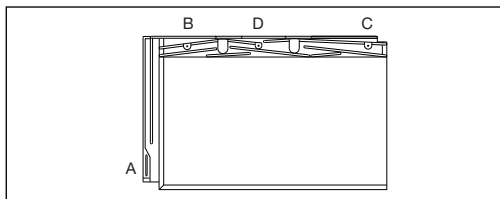


Fig 71 - Slate and a half slate

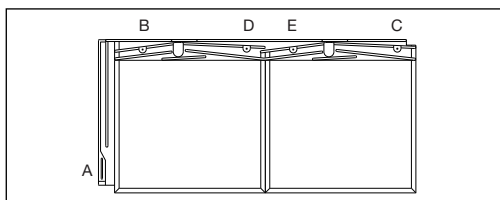


Fig 72 - Double slate

Use of different nailing positions at roof perimeters

	Eaves	Ridge	Verge/valley/hip/ abutment	
			Right-hand	Left-hand
Single slate	A,C	A,C	A, B	C
Slate-and-a-half	-	-	A, D, B	D, C
Double slate	-	-	A, B & E (or D)	C, D or E

Melbourn interlocking slates

Eaves

- 1 The eaves batten should be set out so that the eaves slates overhang the fascia by 50mm. The height of the fascia, or eaves ventilator, if used, should be in accordance with the table on page 90 so that the eaves course does not kick up or down (Fig 73).
- 2 The eaves slates should be nailed at position 'C' and, if they bear directly onto a timber fascia, or onto the 10mm eaves vent used with a timber fascia, at point 'A' as well (Fig 71).
- 3 If a 25mm eaves ventilator is used, an eaves clip should be nailed through the ventilator into the timber fascia to restrain the tail of each slate at the perpendicular joint (Fig 74).
- 4 If a composite fascia is being used which cannot take a nail fixing, the clip should be fixed into the tilting fillet; in this instance roof ventilation should be provided by soffit vents.
- 5 The eaves clip should be bent on site to suit the roof pitch.
- 6 At a left hand bedded verge, an eaves clip should be used to restrain the bottom left hand corner of the last eaves slate (as shown in Fig. 76, on page 92).

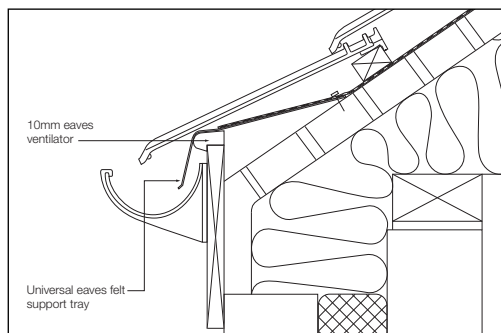


Fig 73 - Eaves detail with 10mm eaves ventilator

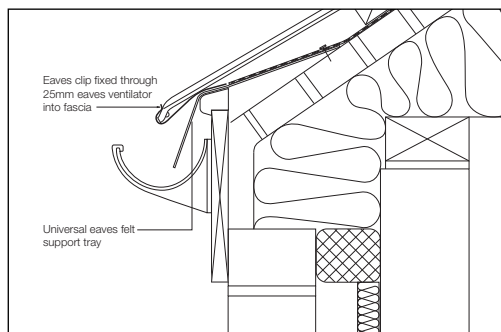


Fig 74 - Eaves detail with 25mm eaves ventilator

Melbourn interlocking slates

Bedded verge

The slates should be laid as described in Figs 67-69 with the addition of a Melbourn stainless steel verge clip which should be used at the bottom corner of each verge slate.

- 1 Fix undercloak over underlay to give 38mm to 50mm projection at the verge. (The battens should be cut 100mm back from the edge of the undercloak.) (Fig. 75)
- 2 Fix verge clips to battens using the 2 No. 25mm × 2.8mm nails supplied, so that the verge slates align with the edge of the undercloak.
- 3 Insert verge slates into clip and nail at positions shown on page 90.
- 4 Point verge in 3:1 aggregate (sand)/cement mortar with a weathered joint. To ensure greater adhesion, the underside of the verge slates should be coated with a bonding agent and the mortar should contain a non-shrink additive.
- 5 At a left hand verge, an eaves clip, with the hook opened out to 12mm, should be used to restrain the bottom left hand corner of the last eaves slate. (Fig.76)

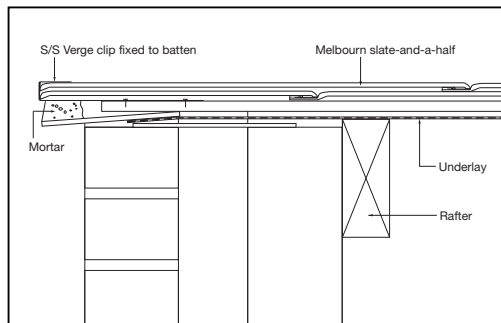


Fig 75 - Bedded verge section showing verge clip

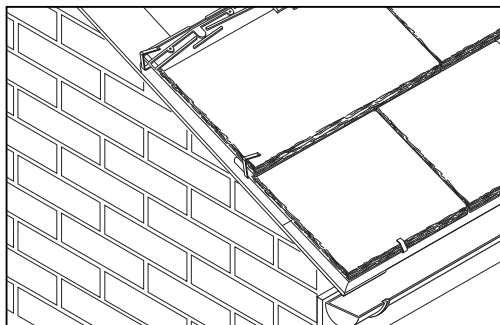


Fig 76 - Left hand bedded verge showing verge clip and additional eaves clip

Melbourn interlocking slates

Hips

Hips can be close mitred or capped with bedded hip ridge tiles. Where raking cuts are required, either slate-and-a-half slates or double slates should be used (dependent on roof pitch)

Close mitred hips

For close mitred hips the minimum rafter pitch is 22.5° and the maximum is 60°, assuming a plan angle of 90° and equal pitches on either side of the hip. A mitred hip pack is available, containing 10 each of soakers, hip clips and nails. (See page 155).

Capped hips

- 1 **Bedded Hip Tiles**
Hip tiles are available to suit a range of hip angles, although mechanical fixings may be required in addition to the mortar bedding. The slates should be fixed as described for a close mitred hip, excluding soaker packs.
- 2 Before bedding the hip tile, it is recommended that a coat of bonding agent be applied at the appropriate position on the slates and to the inside of the hip tile. The mortar should contain an additive to prevent shrinkage (Fig 77).
- 3 Use security hip tiles for a distance of 900mm from the face of rigid masonry supports, abutments or separating walls.

Note: For pitches below 20° refer to the Technical Advisory Service.

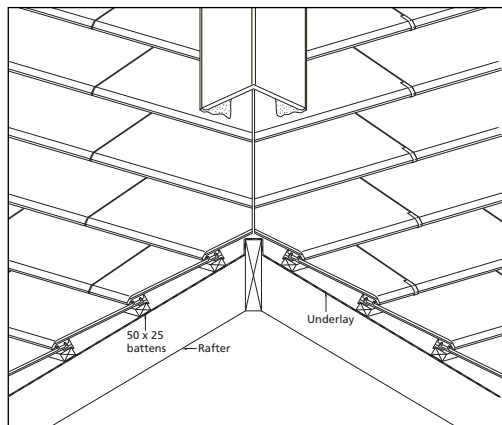


Fig 77 - Section through bedded hip (eaves not shown)

Melbourn interlocking slates

Open lead valley

Open lead valleys should be formed from minimum Code 4 lead laid on 19mm thick external grade WBP plywood boards, minimum width 225mm, dressed over valley fillets and welted (Fig 78).

The width of the valley should be designed in accordance with the recommendations of the Lead Sheet Association, Tel: 01622 872432.

- 1 The valley clips should be twice nailed to the battens, so that they clamp two layers of slate at the lap, allowing the slates to overhang the valley by 50mm.
- 2 The raking cut slates should be cut from double slates and inserted into the valley clips and head nailed in the positions shown in Figs.70-72, page 90.
- 3 Raking cuts should be made by using a disc cutter, following Health and Safety guidelines.
- 4 Ensure that nibs which foul on valley fillets are removed prior to nailing.
- 5 To the right of the valley, an eaves clip should be used to restrain the bottom left hand corner of the last eaves slate.

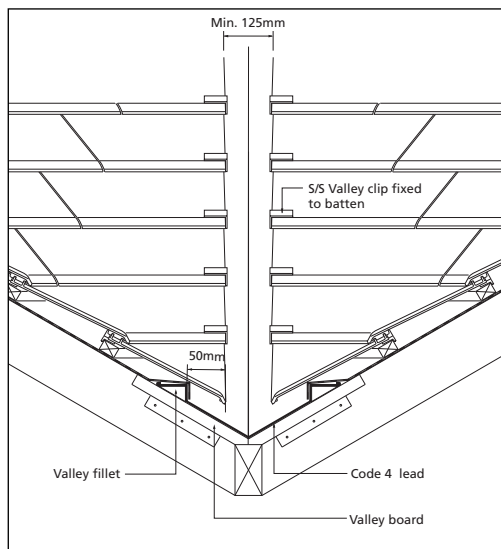


Fig 78 - Section through open lead valley (eaves not shown)

Melbourn interlocking slates

Duo and mono-pitch ridges

The apex of the roof should be covered using ridge tiles of complementary colour, or contrasting, and texture to that of main roof slates. Always check that the ridge tile design suits the pitch and type of roof tile being used. (See Marley Eternit Roofing Product Range catalogue).

- 1 Edge-bed ridge tiles onto the top course slates with solid bedding at butt joints (Figs 79 and 80).
- 2 Support mortar at these butt joints using pieces of tile.
- 3 A minimum of 75mm cover should be provided over top course slates.

Note: Top course slates may require cutting and drilling for nailing dependent on setting out.

- 4 Exposed mortar should be neatly pointed.

Ridges at gable ends

- 1 Allow for mechanically fixing of two ridge tiles at gable ends, abutments, above separating walls, or for a minimum distance of 900mm (whichever is the greater).
- 2 For trussed rafter roofs, fix a length of batten approximately 2m long at the apex of wall and adjacent trusses.
- 3 Drive a nail into batten and attach a Security Ridge tile to it using the galvanised wire or security strap provided with the tile.
- 4 Fill fair ends of ridges with mortar inset with pieces of Plain tile and neatly point.
- 5 Point ridge in 3:1 aggregate (sand) cement mortar or 4:1 aggregate (sand) with a weathered joint. To ensure greater adhesion, the top surface of the top course slates should be coated with a bonding agent and the mortar should contain a non-shrink additive.

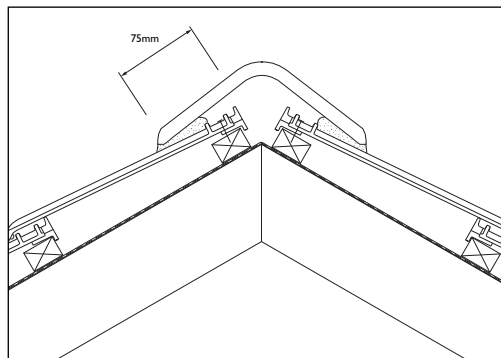


Fig 79 - Modern ridge bedded onto Melbourn slates

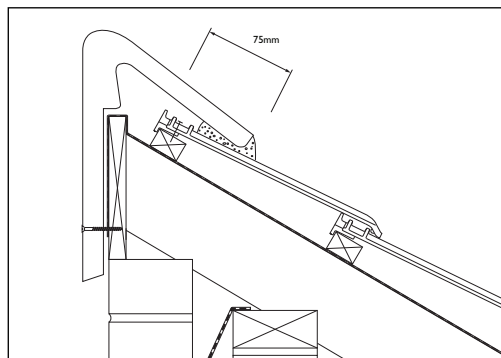


Fig 80 - Modern mono ridge bedded onto Melbourn slates

Melbourn interlocking slates

Abutment

Abutments should be weathered with either a secret gutter and/or a stepped lead cover flashing, constructed in accordance with the recommendations of the Lead Sheet Association.

Preparation

- 1 The last rafter should be spaced 75mm clear of the wall and the gap closed with a valley board on timber supports.
- 2 The slating battens should finish 100mm from the wall, be nailed to the rafter and be closed with a 25mm x 25mm timber trimmer.
- 3 The underlay should be trapped between the ends of the battens and the trimmer, and be cut off level with the top of the battens.
- 4 At the eaves, the fascia board should be notched where possible to accept the gutter depth. If the sole of the gutter has to be raised, the side of the gutter should be splayed out to avoid the risk of an overflow and the lead should be welted on the timber trimmer.

Fixing

- 1 Code 4 lead should be dressed into the gutter, and turned up the wall at least 65mm above the top of the slates.
- 2 Verge clips should be twice nailed to the battens so that the slates overhang the gutter to within 15mm of the wall (secret gutter only).
- 3 Slates at the abutment should alternate standard slates and slate-and-a-half slates, cut down in width where necessary. The slates should be inserted into the clips and nailed in the positions detailed on page 90.

- 4 The stepped lead cover flashing should overlap the gutter upstand by at least 75mm, and be fixed as recommended by the Lead Sheet Association.

Severe exposure

In conditions of severe exposure, on pitches of less than 25°, or where there is a risk of blockage, the stepped cover flashing should be dressed over the slates by 150mm - 200mm. In this instance, the width of the gutter can be reduced to 50mm. (See Figs. 81 and 82 below.)

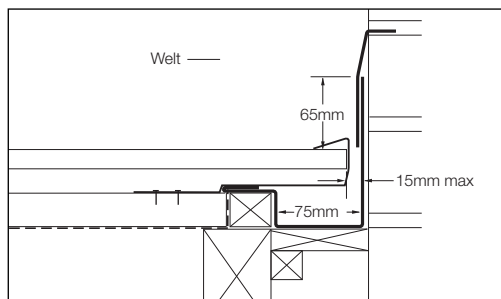


Fig 81 - Secret gutter detail

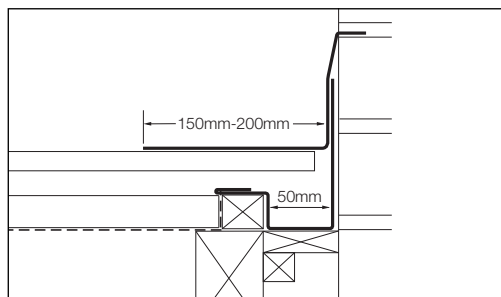


Fig 82 - Secret gutter detail with stepped cover flashing

Repair and replacement of Melbourn interlocking slates

Introduction

Individual tiles or slates that are damaged during or after installation should be replaced as soon as possible using a sound matching unit fixed in accordance with the nailing and/or clipping specification. In some cases, this may not be possible without stripping back a large area of tiling/slating.

Superficial coatings or repairs to damaged units using adhesives or other mechanical devices should not be used as their long term performance may be limited.

If extensive repairs to the roof are required, sectional or complete re-tiling/slating should be considered, as this may be the most practical and economic solution.

Roofs and walls clad with tiles and slates should be treated as fragile, and adequate precautions should be taken including the use of crawling boards, roof ladders (suitably packed to prevent damage to the slates) or access platforms when accessing the roof for the purposes of maintenance or repair. Failure to use adequate access equipment can damage the tiles and fixings and may be in contravention of Health and Safety Regulations.

Marley Eternit Melbourn reconstituted slates are interlocking slates which are always fixed with one (occasionally two) stainless steel ring-shanked nails, into softwood battens.

Because each stainless steel fixing is concealed and protected from the elements by an overlapping adjacent slate, replacement of a damaged slate must be carried out with care, and in accordance with the following procedure:

- 1 At bottom left hand corner of damaged slate, immediately adjacent to neighbouring slate, insert a hacksaw blade and cut through shank of fixing nail (Fig 17).
- 2 This releases lower edge of damaged slate and allows it to be broken gently into smaller pieces, and removed, all except for head or upper portion of the slate (Fig 18).

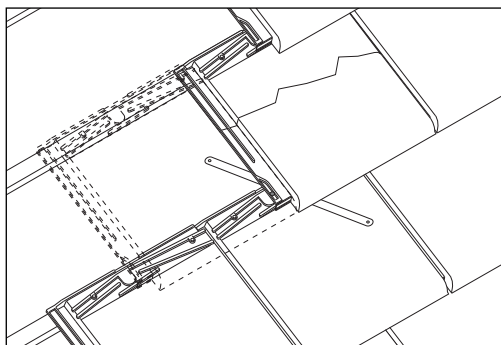


Fig 83 - Cutting fixing nail with hacksaw blade

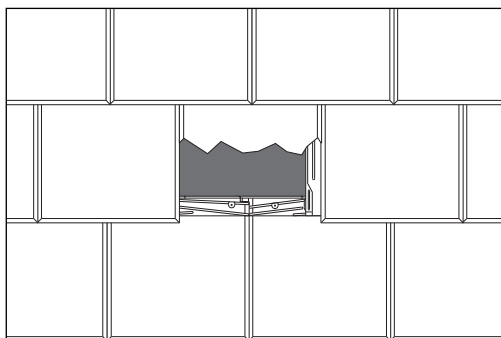


Fig 84 - Removal of lower part of slate

Repair and replacement of Melbourn interlocking slates

- 3 With a larger opening, it is now possible to cut head off nail that retains slate directly above damaged slate.
- 4 The remaining portion of damaged slate can now be pushed upwards over batten and removed.
- 5 If resistance is felt, cut second nail fixing in remaining head portion in a similar manner (Fig 85).
- 6 Pliers or a saw may be used to remove any lengths of nail left in battens, so that replacement slate may be fitted without obstruction.

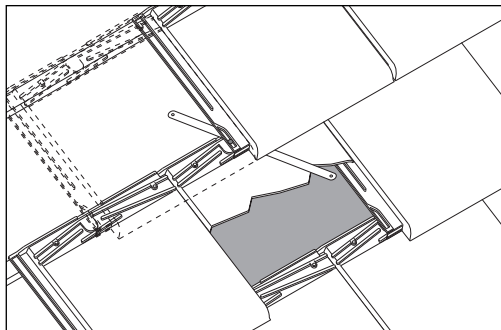


Fig 19 Removal of further fixings

- 7 On new slate, batten nibs at positions 'A' and 'B' should be carefully removed (Fig 86).
- 8 In addition, top upstand 'X' should be slightly reduced in height to allow easy insertion of new slate (Fig 86).
- 9 Slip modified slate into position by carefully lifting surrounding slates. Hook onto batten with remaining nib and align with adjacent slates.

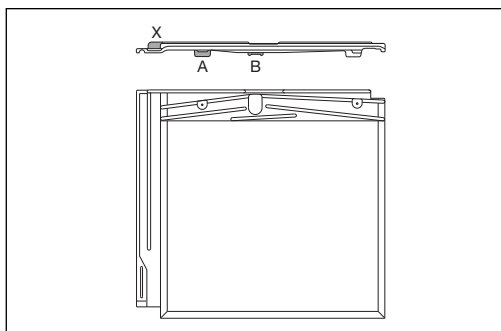


Fig 20 Removal of nibs

- 10 Fix replacement slate through slate immediately to left of new slate. To position fixing, measure 260mm up from tails of slates on course below, and mark a light parallel line on adjacent slate. Then mark a vertical line on same slate 25mm in from right hand edge of slate. At intersection of two lines on adjacent slate, carefully drill a 3mm-diameter hole through the two thicknesses of slate (Fig 87).

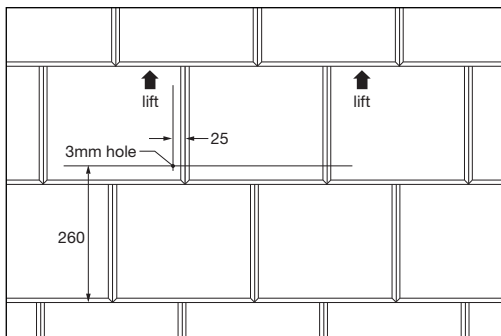


Fig 21 Position new slate

- 11 Screw through drilled hole and both layers of slate into batten below using No. 9 countersunk stainless steel screw with washer.
- 12 Use same procedure to secure tail of slate above replacement slate.