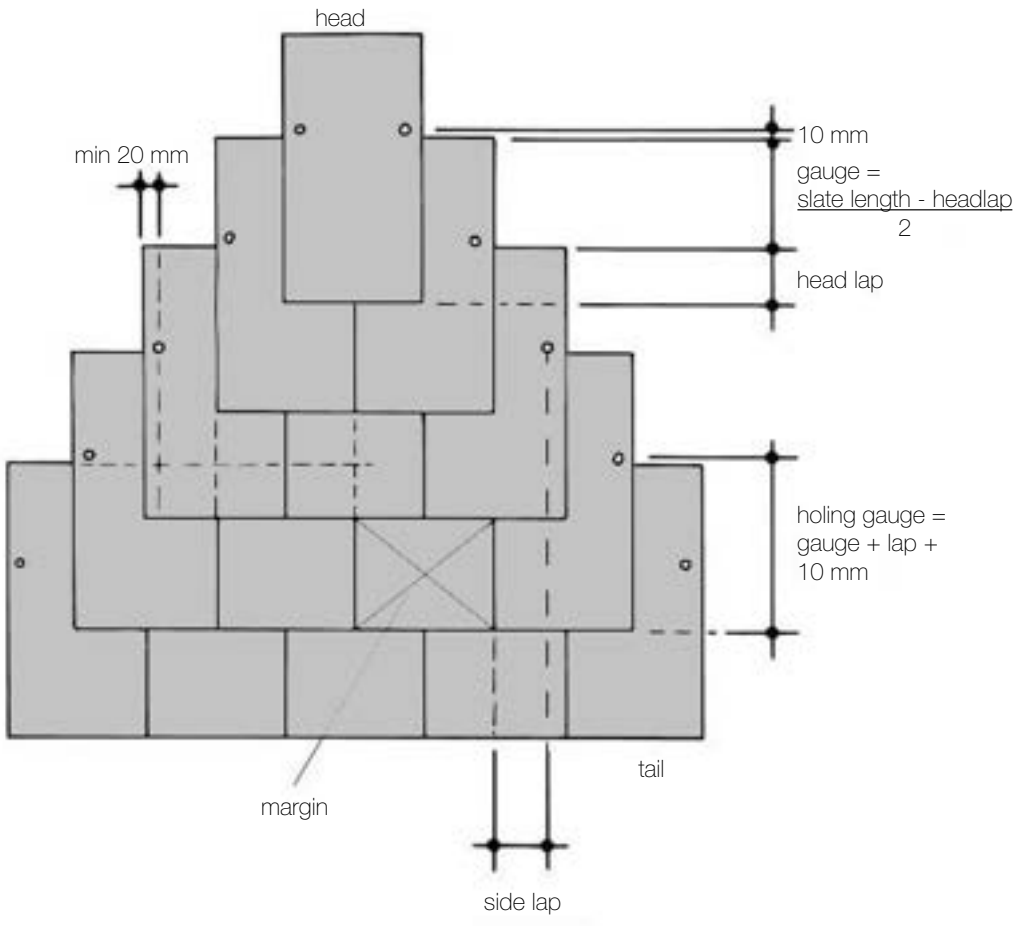
NAIL FIXING


head
min 20 mm
10 mm
gauge =
slate length - headlap
2
head lap
holing gauge =
gauge + lap +
10 mm
tail
margin
side lap

NAIL FIXING SITEWORK

Storage on site

Slates should be stored in pallets whenever possible.

Slates should be stacked no more than 2 pallets high on their long edge on dry, level ground. Two battens should be placed under each row of slates.

Preparatory work

SORTING AND STACKING SLATES

Each slate should be inspected and the thicker end selected for the tail, after being holed, they should be stacked into three separate stacks.

Thick slates should be used on the lower roof (eaves), medium slates on the middle roof area and the thin slates on the upper roof (ridge) section.

DRESSING AND HOLING SLATES

Slates up to 4mm thick can be dressed and holed by hand using a spike hammer. Thicker slates can be holed by hand or machine.

When holing by hand, the slate must be laid flat over a narrow iron and holed from the reverse side (bed) towards to face, thus leaving a small countersunk hole which allows for the head of the fixing nail.

Each slate should be holed twice at a distance from the tail equal to the holing gauge (gauge + head lap + 10 mm) and between 20 and 25mm from the long edge of the slate.

When holing by machine, a boring method is recommended. If a machine with a punching method is used, care must be taken to ensure proper maintenance and adjustment of the holing machine to prevent excessive breakage. If slates are drilled, do not drill more than one at a time.

CUTTING SLATE

When using a slate cutting machine for cuts to hips and valleys etc, proper adjustment and maintenance is required.

To maintain adequate laps and allow proper fixing, slates must not be cut too narrow. As a general rule, no slate should be less than one half the width of the slate.

At verges and abutments, the alternate courses must be started with a slate and a half or a slate of not less than 145mm.

At valleys, hips and other angled surfaces, the slates must be cut on the rake using wider slates to maintain an adequate width of head or tail of no less than 95mm.

Traditonal holing and nailing method

When holing and nailing it is imperative that slates are fixed in accordance with BS 5534, Code of practice for slating and tiling.

Reference should also be made to BS 8000:6 Workmanship on building sites. SSQ will not entertain claims for loss or damage where this has not been strictly adhered to. The main stages are outlined below:

1. Hole slates to correct gauge, measuring from the tail of the slates. The position of the holes can be calculated using the formula:

   Holing gauge = gauge + lap + 10 mm

   Holes should be between 20 and 25mm from the long edges of the slate. At the same time, sort the slates into three or four groups of equal thickness.

   See BS 8000:6.
2. Fix underlay as specified.
3. Mark out the roof to the correct batten gauge.

   The gauge may be adjusted to provide equal numbers of courses up the slope length, provided that the specified lap is not reduced.
4. Fix battens.
5. Using a chalk string, set out the vertical perp lines of the slates from eaves to ridge to maintain a straight line.
6. Load slates on roof so that the thinnest slates near the ridge.
7. Fix slates to perpend lines, laying to give an overall appearance, with the tails of the slates aligned.

Use slates of consistent thickness in any one course, laid with the thicker end as the tail. Form verges by using slate and a half slates and full slates in alternate courses to maintain bond. Fix each slate with two nails through prepared holes.

Nail fixing installation

With this system, straight lines must be maintained in the courses of slates and it is necessary to mark out these lines prior to fixing.

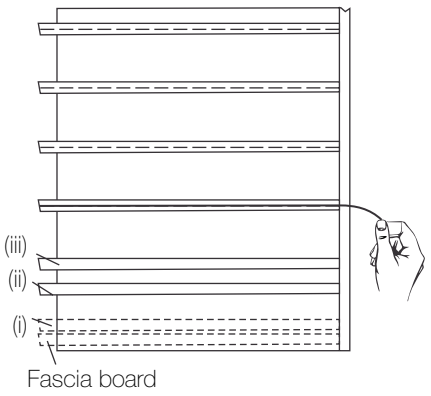
MARKING OUT

1. Using a chalk string, mark the centre line of each batten (see fig 1), checking that the batten are positioned at the chosen gauge.

   Vertical battens must be fixed at the verges to accept nail fixing.

   The felt underlay is to be draped over batten (i) at the eaves (see FIXING below).

Fig 1.



2. Mark out the position of each slate joint along the battens (see fig 2) as follows:

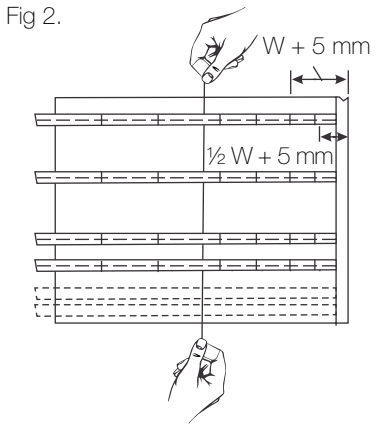
   a. Working from the verge, first mark out a full slate width on both the eaves and apex battens. Then, continue marking along these battens at intervals of a full slate width.

   b. Using the chalk string from eaves to ridge, copy the positions of these markings onto all the other battens.

   c. Starting again from the original verge, mark a half width slate onto the eaves and apex battens. Continue as before marking along those battens at a full slate width.

   d. Using the chalk string as before from eaves to ridge, copy the positions of all these markings onto all the other battens up the roof slope.

Fig 2.



NAIL FIXING DESIGN WORK

Design considerations

Effective designs of a slate roof must consider several inter-related factors including site exposure, the pitch of the roof, the type slae selected and the slate lap.

General guidance on the most important points to be considered is given below. Full application and sitework details are given on pages 8 to 26. Further information can be obtained from BS 5534:2014+A2:2018, Code of practice for slating and tiling.

Reference should be made also to BS 8000-6:2013, Workmanship on building sites series, Code of practice for sating and tiling of roofs and claddings.

Environmental conditions

RAIN EXPOSURE

The degree of driving rain exposure to a building determines the minimum lap which should be specified.

The anticipated degree of exposure is given in Figure 1 (taken from BS 5534:2014+A2:2018).

Localised factors such as high buildings, buildings on slopes or tops of hills and coastal sites, can increase the exposure grading which should be applied in a specific project. Table 1 on page 9 shows the recommended minimum lap for moderate and severe exposure sites.

For more detailed information on exposure to rain refer to BS 8104:1992.

WIND UPLIFT

Adequate resistance to wind load and wind uplift can be provided by following the application details shown on pages 8 to 26, taking into consideration the minimum lap recommendations given in Table 1.

Design calculations for wind load and wind uplift are given in BS5534:2014, BRE Digest 346: Parts 1 to 7 and BS EN 1991-1-4:2005.

Pitch of roof

In general, the lower the roof pitch, the greater the head lap should be. This longer lap will help to resist both capillary action and wind uplift.

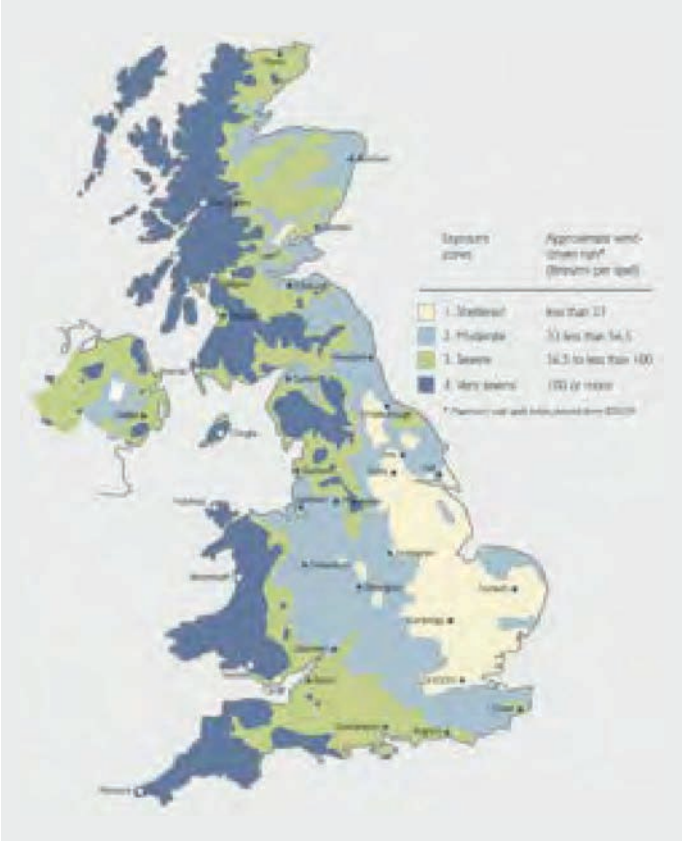
On steeper pitches with free-flowing drainage, smaller slates may be used.

For exposed sites, wide slates with a greater lap should be used (see section 5.5 of BS 5534:2014).

Head lap

The head lap is calculated by taking account of wind uplift, exposure to driving rain and the roof pitch. Table 1 gives the recommended minimum laps for various roof pitches and building exposures.

Map Based on BS 5534 Driving Rain Index.



Map Based on NSAI – S.R. 82:2017 Driving Rain Index

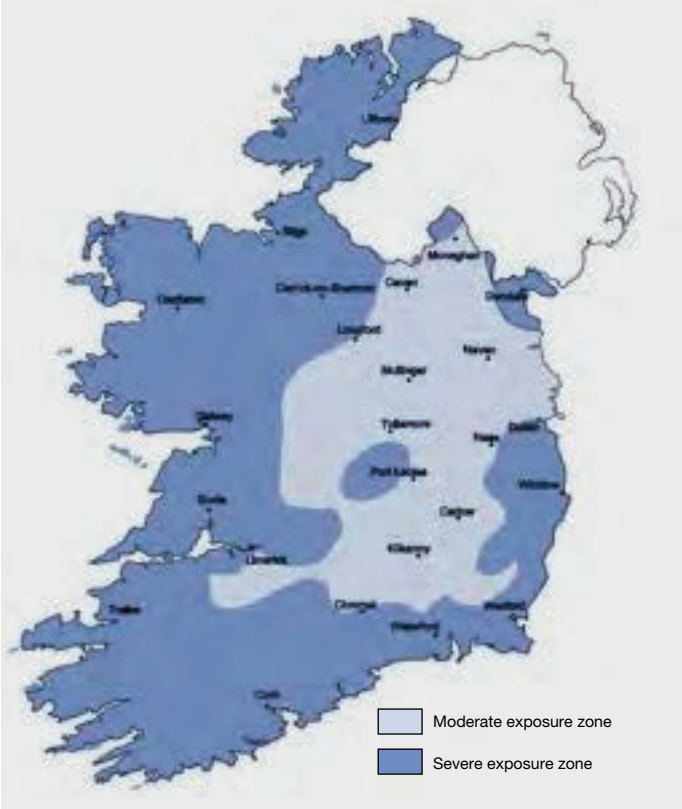


Table 1

Minimum head lap for fixing slates with nails or hooks according to BS 5534:2014

Moderate exposure (less than 56.5 l/m)

Slate size (mm)	20°	22.5°	25°	27.5°	30°	35°	40°	45°	80°
600 x 300	130	120	95	85	80	70	60	55	50
500 x 300	130	120	95	85	80	70	60	55	50
500 x 250		150	120	100	80	70	60	55	50
450 x 300					80	70	60	55	50
450 x 220					80	70	60	55	50
400 x 300					80	70	60	55	50
400 x 250					80	70	60	55	50
400 x 220					80	70	60	55	50
400 x 200					80	70	60	55	50
350 x 250					80	70	60	55	50
350 x 200					80	70	60	55	50
320 x 220					80	70	60	55	50
300 x 200					80	70	60	55	50
270 x 180					80	70	65	55	50
250 x 150						70	65	55	50

Severe exposure (56.5 l/m or over)

Slate size (mm)	20°	22.5°	25°	27.5°	30°	35°	40°	45°	80°
600 x 300	150	140	130	120	100	90	80	70	65
500 x 300	150	140	130	120	100	90	80	70	65
500 x 250				130	100	90	80	70	65
450 x 300					100	90	80	70	65
450 x 220					130	120	100	90	65
400 x 300					100	90	80	70	65
400 x 250					100	90	80	70	65
400 x 220					100	90	80	70	65
400 x 200					120	110	105	100	65
350 x 250					100	90	80	70	65
350 x 200					100	90	80	70	65
320 x 220					100	90	80	70	65
300 x 200						90	80	70	65
270 x 180						90	80	70	65
250 x 150								70	65

Rafter Length Table

Sheltered Exposure - driving rain index less than 3m²/s

	Length of Slope (m)		
Roof Pitch	0 to 5.5	5.6 to 10.0	11.0 - 16.0
14°	145	155	
20°	120	130	140
25°	110	120	130
30°	100	105	115
35°	90	100	100
40°	80	90	100
45°	75	80	90
75°	60	60	70

Moderate Exposure - driving rain index between 3m²/s and 7m²/s

	Length of Slope (m)		
Roof Pitch	0 to 5.5	5.6 to 10.0	11.0 - 16.0
14°			
20°	135	145	155
25°	120	130	140
30°	110	120	125
35°	100	110	110
40°	90	100	110
45°	80	90	100
75°	65	70	75

Severe Exposure - driving rain index greater than 7m²/s

	Length of Slope (m)		
Roof Pitch	0 to 5.5	5.6 to 10.0	11.0 - 16.0
14°			
20°	150		
25°	135	145	155
30°	120	130	140
35°	105	110	120
40°	100	110	110
45°	90	100	100
75°	70	75	80

Battens

Recommended timber batten sizes for natural slate roofs are 50x25mm up to 600mm rafter spans according to BS 5534:2014.

Battens should be set out horizontally across the roof at a gauge calculated from the formula:

Gauge = (Slate length - head lap) / 2

Battens should be nailed at maximum 600mm centres, with the end of each length fully supported and be not less than 50mm wide by 25mm thick.

Note: If used, counter battens should be a minimum 38x25mm.

Underlay

Underlay should be selected to meet the requirements of section 4.9 of BS 5534:2014.

Ventilation

To comply with the Building Regulations F2:2010 and BS 5250:2011 Code of practice for control of condensation in buildings, 10mm continuous ventilation must be provided at all eaves for a cold roof construction and 25mm continuous ventilation for a warm roof construction.

Note: 25mm continuous eaves ventilation is required on roofs of 15° or less regardless of warm or cold roof construction.

Additional ventilation at or near the ridge equivalent to a 5mm continuous vent is required in the case of warm roofs and is also recommended for cold roofs with a greater pitch of 35° or if the span exceeds 10m.

Cold roofs are defined as being those where the insulation is at ceiling level and warm roofs where the insulation is at rafter level.

Fixing methods

All SSQ natural slates can be fixed by using either traditional holing and nailing (see pages 8 to 26) or hooks (see pages 28 to 44).

Nails

Nails should be copper to BS 1202-2: 1974.

The gauge of the nail shall be 3.3mm minimum and shall have a head of no less than 10mm diameter.

They should be 20 to 25mm longer than two thicknesses of slate, but longer nails should be used at the eaves course especially if a sprocket detail is used.

Coverage of slates

See table 2 for coverage of all slate sizes at different head lap.

Total weight of slate roof

The total weight of slates on a roof can be calculated as follows:

Example:

Slate Type	Del Carmen
Slate Size	400mm x 250mm
Weight of Slates (per 1000)	1235kg
Exposure	Moderate
Roof Pitch	40°
Roof Area	150m²
Length of Roof Slope	9.5m

The head lap can be found in Table 1 by reference to slate size, roof pitch and exposure = 65mm

The slate coverage per m² can be found in Table 2 =23.9

The total weight of slates for a roof project can be found using the following formula:

Weight of slates (kg) / 1000 x Area of roof (m²) x Slate coverage

Therefore:

1235 / 1000 x150 x 23.9 = 4427kg Total weight

Holing

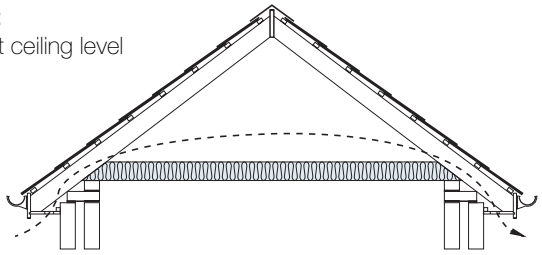
The position of the hole is measured up from the tail of the slate at a position calculated using the following formula:

Holing = Batten gauge + Head lap + 10mm

Figure 2

Cold and Warm Roof Ventilation

Cold Roof:
Insulation at ceiling level



Warm Roof:
Insulation at rafter level

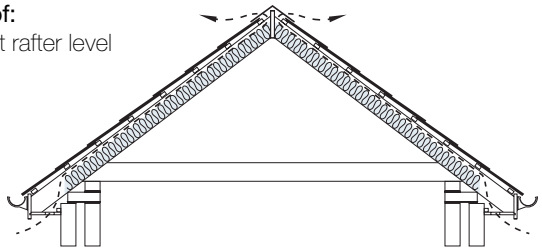


Table 2

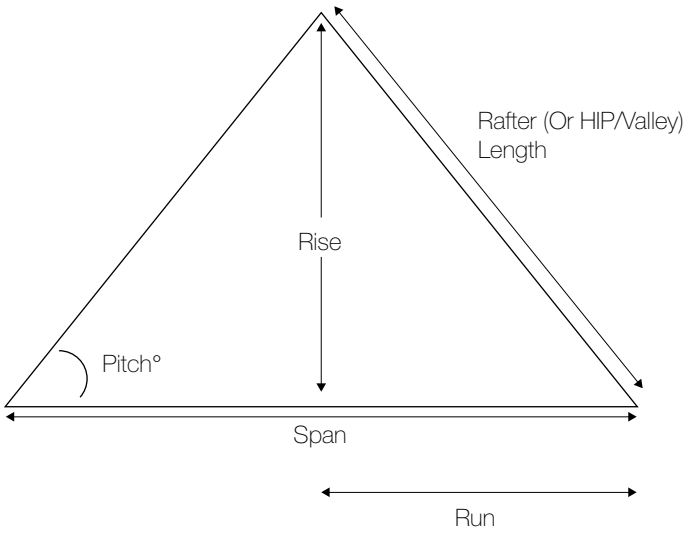
Coverage of SSQ slates with nail fixing method

	Head Lap (mm)											
Slate size (mm)	60	65	75	80	90	100	110	115	120	130	140	150
600 x 300	12.1	12.5	12.7	12.8	13.1	13.3	13.6	13.7	13.9	14.2	14.5	14.8
500 x 300	14.8	15.3	15.7	15.9	16.3	16.7	17.1	17.3	17.5	18	18.5	19
500 x 250	17.8	18.4	18.8	19	19.5	20	20.5	20.8	21	21.6	22.2	
450 x 300	16.7	17.3	17.8	18	18.5	19	19.6	19.9	20.2	20.8	21.5	
450 x 220	20	20.8	21.3	21.6	22.2	22.9	23.5	23.9	24.2	25	25.8	
400 x 300	19	19.9	20.5	20.8	21.5	22.2	23	23.4	23.8			
400 x 250	22.9	23.9	24.6	25	25.8	26.7	27.6	28.1	28.6			
400 x 200	28.6	29.9	30.8	31.3	32.3	33.3	34.5	35.1	35.7			
350 x 250	26.7	28.1	29.1	29.6	30.8	32	33.3					
350 x 200	33.3	35.1	36.4	37	38.5	40	41.7					
320 x 220	33.7	35.7	37.1	37.9	39.5	41.3	43.3					
300 x 200	40	42.6	44.4	45.5	47.6	50						

NB: No allowance has been made for wastage

Rafter Constants and Equations

Pitch	Rise	Rafter	Hip/Valley
12.5	0.22	1.02	1.43
15	0.27	1.04	1.44
17.5	0.32	1.05	1.45
20	0.36	1.06	1.46
22.5	0.41	1.08	1.47
25	0.47	1.10	1.49
27.5	0.52	1.13	1.51
30	0.58	1.15	1.53
32.5	0.64	1.19	1.55
35	0.7	1.22	1.58
37.5	0.77	1.26	1.61
40	0.84	1.31	1.64
42.5	0.92	1.36	1.69
45	1.00	1.41	1.73
47.5	1.09	1.48	1.79
50	1.19	1.56	1.85



Measure the Pitch of the Roof

Measure the Length of the Run
(ie Half the Span)

Rafter Length = Run x Rafter Constant
(for Roof Pitch)

Hip/Valley Length = Run x Hip/Valley Constant
(for Roof Pitch)

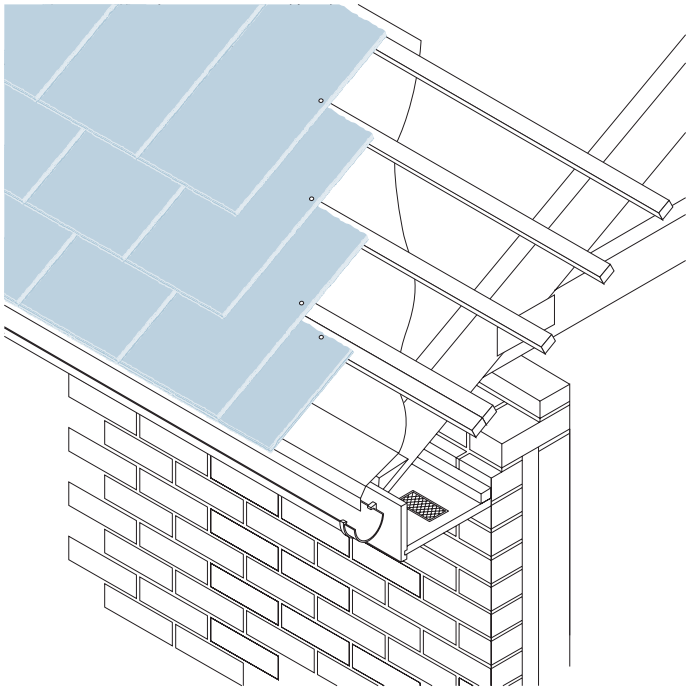
Eaves

At all eaves, a double course of slates is required, comprising a course of short slates over which the first course of full length slates is fixed.

The length of the eaves slates should be gauge + lap.

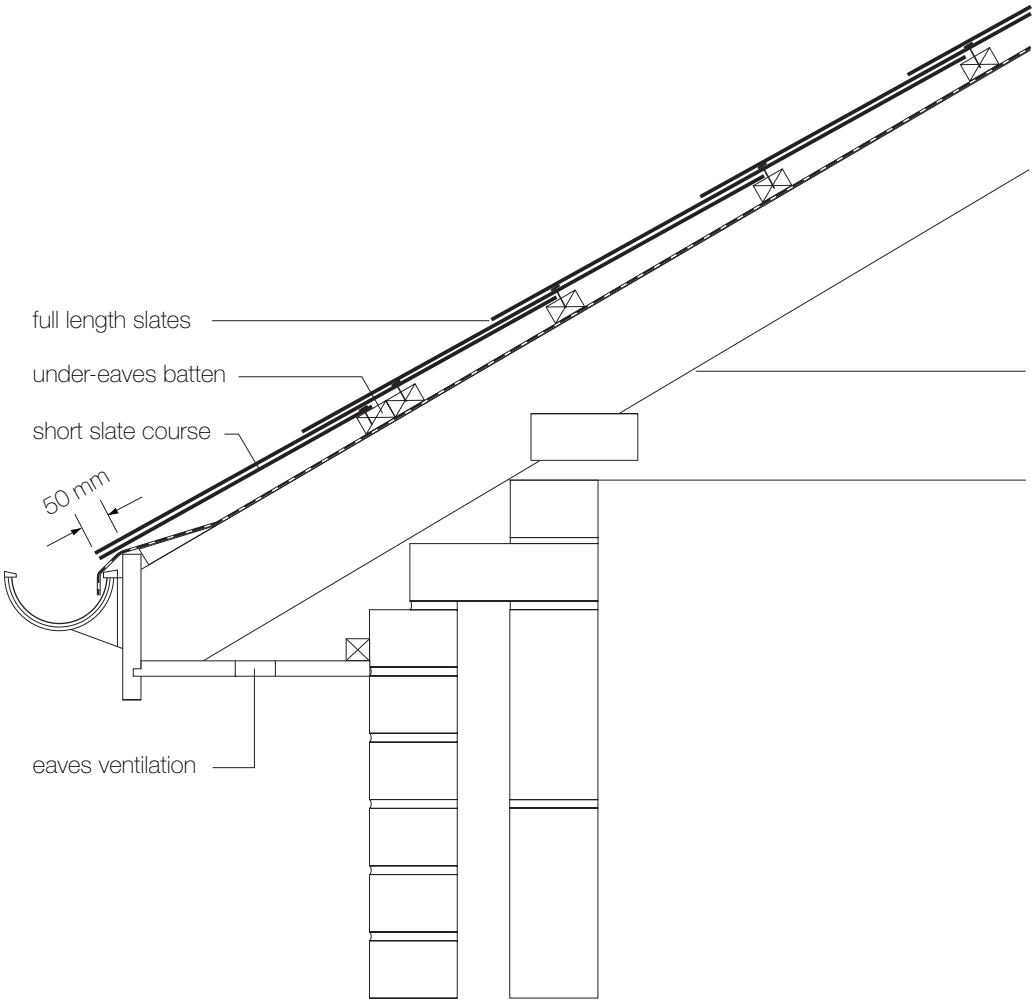
FIXING SEQUENCE AT EAVES:

1. Fix the underlay to extend over the tilting fillet and fascia board into the gutter. The underlay should overhang the fascia board by 50mm.
2. Fix the first full course batten (the eaves batten) so that the tails of the slates in the eaves and the under eaves courses align, ensuring that they will overhang 40 to 50mm into the gutter. Fix the under eaves batten immediately below the eaves batten (see page 6 for minimum batten dimensions).
3. Lay the slates forming the under course on their backs and head nail them to the under eaves batten.
4. Fix the eaves course with tails of the slates aligning with the tails of slates in the under eaves course.



Eaves ventilation

When an over fascia vent is installed, the fascia depth needs to be reduced by the depth of the ventilator. This will accommodate the vent and will not change the lay of the roof and will avoid a change of pitch detail at the eaves.



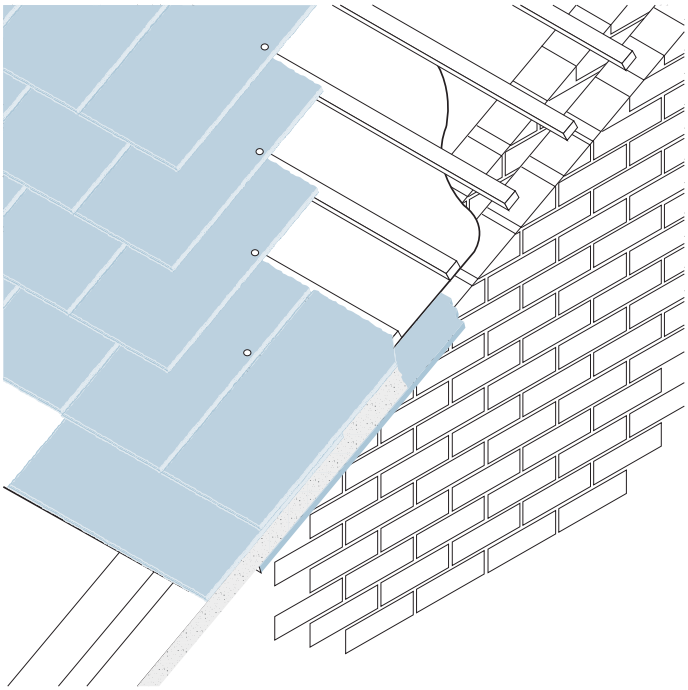
Verge

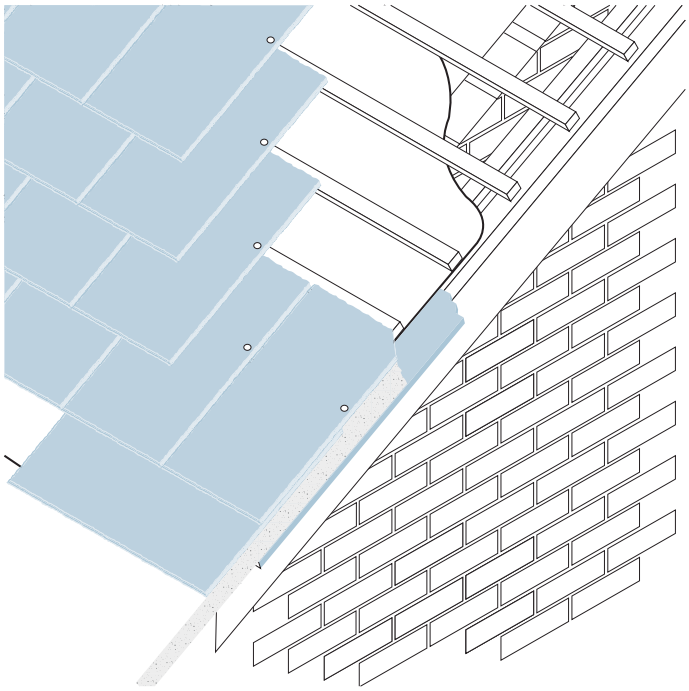
Where an undercloak is fixed it should consist of one or more course of slates not less than 4.5mm thick, laid riven side up and closely butted.

If more than one course is used, joints should be staggered.

Verges should be finished with slate and slate-and-a-half in alternate courses. Provision may be made for a slight inward tilt from the verge.

Mortar for bedding and pointing; 1:3 cement/sand pigmented to match colour of slates.



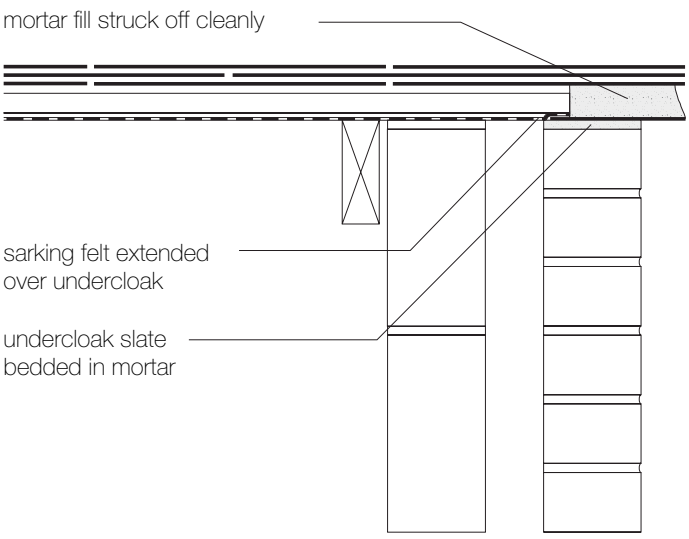


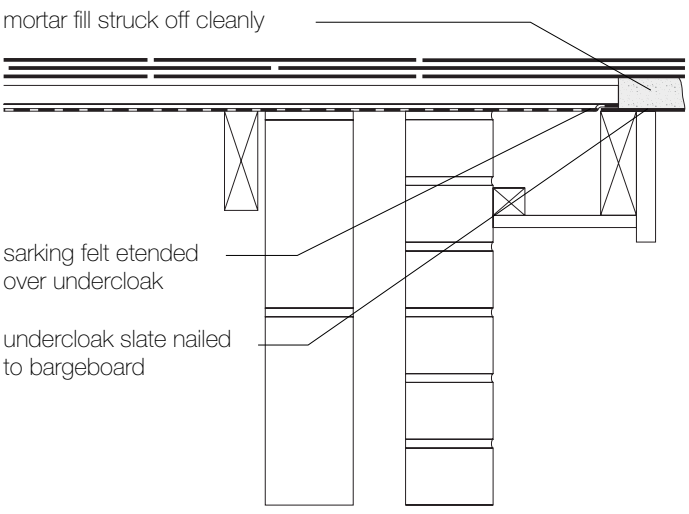
FIXING SEQUENCE AT VERGE ON BRICKWORK

1. Bed the undercloak in mortar so that it extends 40-50mm from the face of the wall.
2. Fix verge slates flush with the undercloak.
3. Fill the gap between the undercloak and the slates with mortar and strike off smoothly to provide a flush joint.

FIXING SEQUENCE AT VERGE ON BARGEBOARD

1. Fix the undercloak with nails so that it overhangs the face of the bargeboard by 40-50mm.
2. Fill the gap between the undercloak and slates with mortar and strike off smoothly to provide a flush joint.





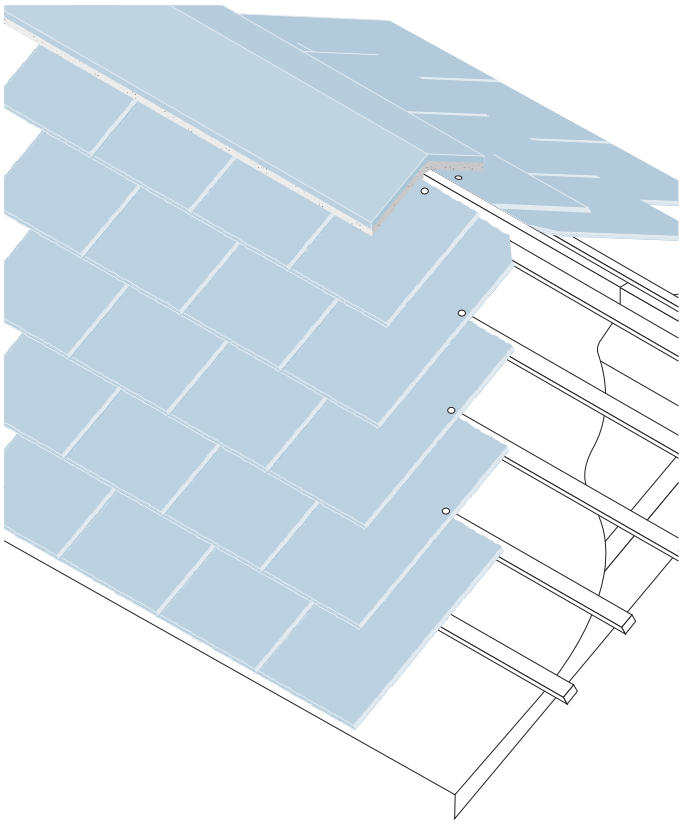
Ridge

The length and gauge of slate in the top courses at the ridge must be sufficient to ensure that the appropriate lap is maintained.

Shouldered slates should be used in the course below the top course to enable the short top course slates to be nailed directly to the batten.

FIXING SEQUENCE WITH TILED RIDGE

1. Fix underlay over the ridge so that it overlaps the main underlay by at least 150mm. when using ventilated ridges, a gap of 50mm should be allowed between the top of the underlay of each pitch.
2. Fix the top course of slates to maintain gauge.
3. Lay ridge tiles true. Joint ridge tiles in mortar and firmly bed the edges along the roof slope in mortar. Where ridge tiles meet, squeeze up the bedding to fill the joint and strike it off smoothly; no separate pointing is necessary.
4. Fill the ends of the ridges at the gables with mortar and slips of slate finished flush with the ridge tile.

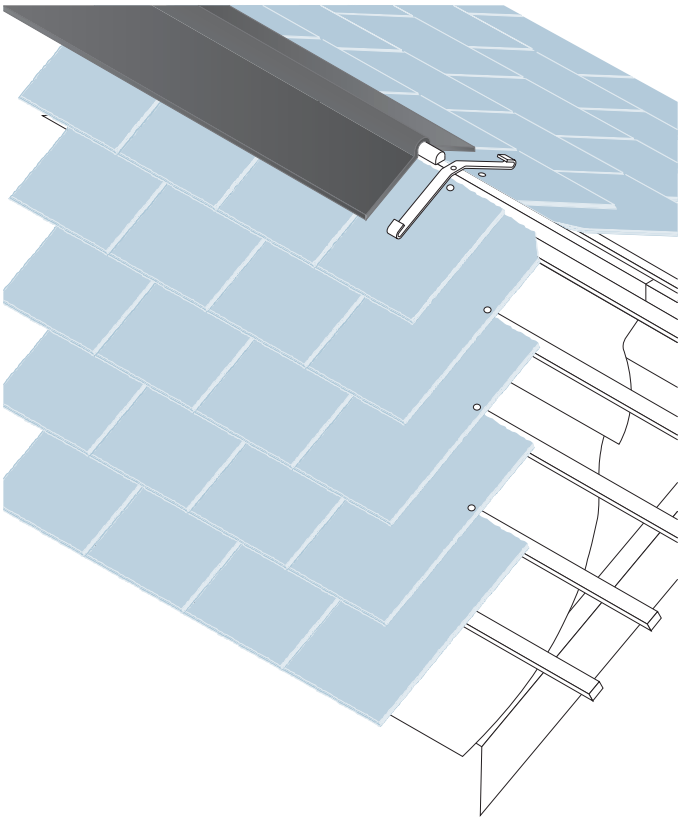


FIXING SEQUENCE WITH SHEET METAL RIDGE (NOT ILLUSTRATED)

If required, stainless steel, copper or zinc ridges can be made by the roofer on site.

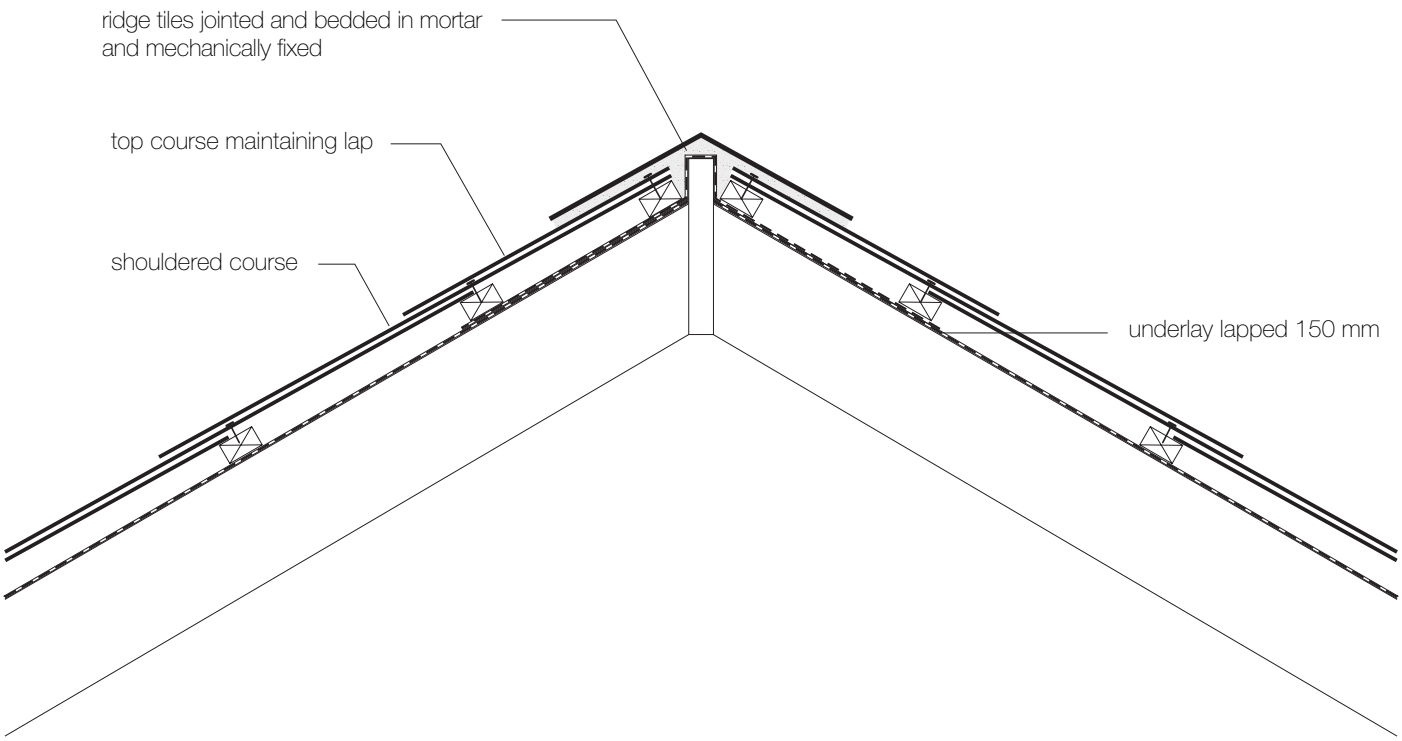
1. Fix underlay over the ridge so that it overlaps the main underlay by at least 150mm. when using ventilated ridges, a gap of 50mm should be allowed between the top of the underlay of each pitch.
2. Fix the top course of slates to maintain gauge.
3. Fix 50mm zinc tack at 500mm intervals.
4. Fix the sheet metal ridge, overlapping each ridge piece by 100mm and nailing it with two clout nails on each pitch wherever an overlapping end of the ridge with pre-bonded clips. At the verges, hips etc, cut and shape the ridge accordingly.

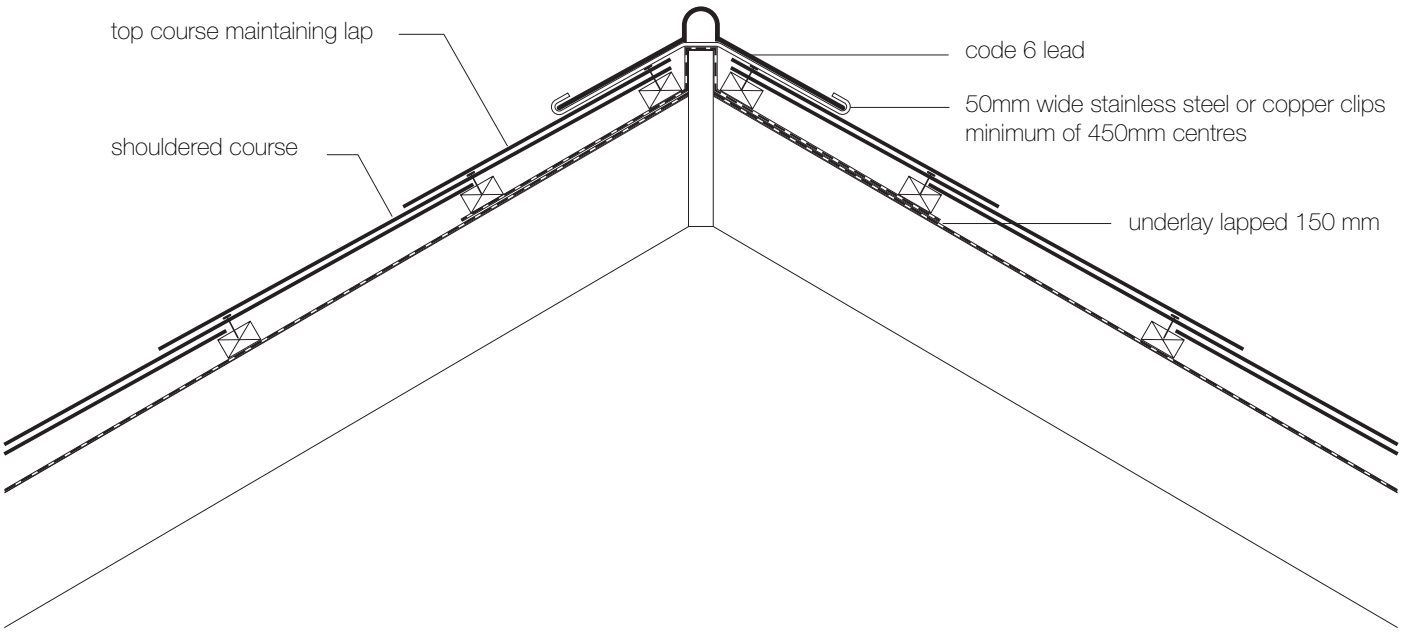
Note: To ensure resistance to wind pull-out, the length of the ridge pieces should not exceed 1m.



FIXING SEQUENCE WITH LEAD ROLL RIDGE

1. Fix underlay over the ridge so that it overlaps the main underlay by at least 150mm. when using ventilated ridges, a gap of 50mm should be allowed between the top of the underlay of each pitch.
2. Fix the top course of slates to maintain gauge.
3. Cover the timber roll with Code 6 lead strips 450-500mm wide and 1.5-1.8m long. Lap the strips 75mm at the joints; secure the lead with screws; top sealed with a lead dot under the overlap.
4. Fix 50mm lead clips at 450mm.


ridge tiles jointed and bedded in mortar
and mechanically fixed
top course maintaining lap
shouldered course
underlay lapped 150 mm


top course maintaining lap
shouldered course
code 6 lead
50mm wide stainless steel or copper clips
minimum of 450mm centres
underlay lapped 150 mm

Hips

In cutting the slates for hips, care must be taken to preserve an adequate bond, using slate and a half slate.

Where pitches at hips are almost vertical, the hips can be treated in the same way as verges.

FIXING SEQUENCE AT MITRED HIP

1. Fix 600mm wide underlay, overlapping the main underlay.
2. Cut slates carefully, ensuring that adequate width is maintained at the head. Neither SSQ nor BS 5534 recommend the fixing of mitred hips on roofs where the angle of the hip is 30° or less.
3. Hip slates must have an even size and shape at every course.
4. Fix hip slates interleaved with lead soakers nailed to battens at the top edge to provide a weathertight close mitred joint.
5. Cut slates of adequate width to connect with main roof slates and hip slates. The slate nearest the hip slate must remain a full slate.

Note: Mitred hips in exposed locations are subject to high wind loads. Where mitred hips are specified in exposed locations external tail fixing such as hooks may be necessary.

FIXING SEQUENCE WITH LEAD ROLL HIP

1. Fix 600mm wide underlay, overlapping the main underlay.
2. Finish slating as close to the timber roll as possible.
3. Cover the timber roll with Code 6 lead strips 450-500mm wide and 1.5-1.8m long. Lap the strips 75mm at the joints equal to the lap of the slates.
4. Fix 50mm lead clips at minimum 450mm centres, under the timber roll.

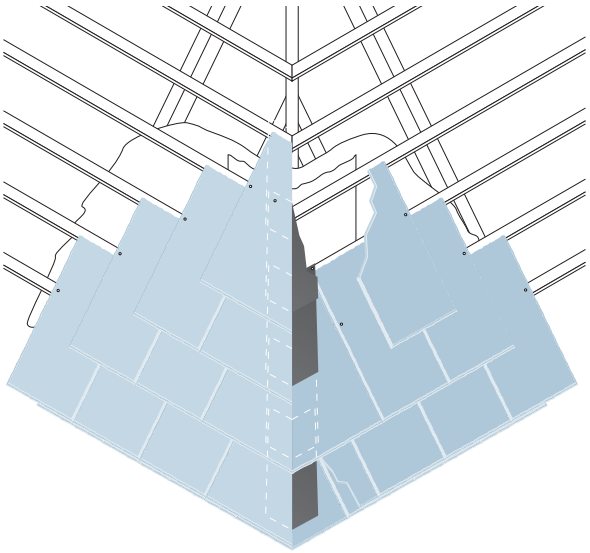
FIXING SEQUENCE WITH RIDGE TILED HIP

Mortar 1:3 cement/sand pigmented to approved colour.

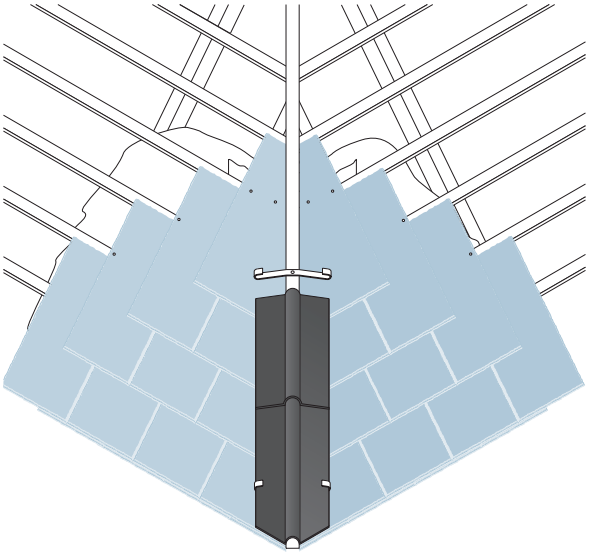
1. Fix 600mm wide underlay, overlapping the main underlay.
2. Fix hip iron (to BS 5534) to hip rafter.
3. Cut slates to fit closely at junction.
4. Lay hip ridge tiles true and bed edges and joints firmly in mortar, struck off smoothly to provide a flush finish.
5. Cut first tile to align with corner of eaves.
6. Fill end of hip with mortar and slips of slate finished flush.

Note: All ridge tiles hips to be twice mechanically fixed in line with BS 5534

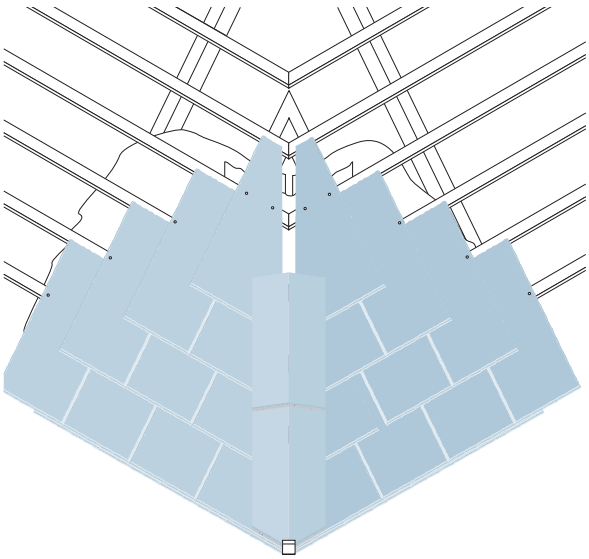
Mitred Hip

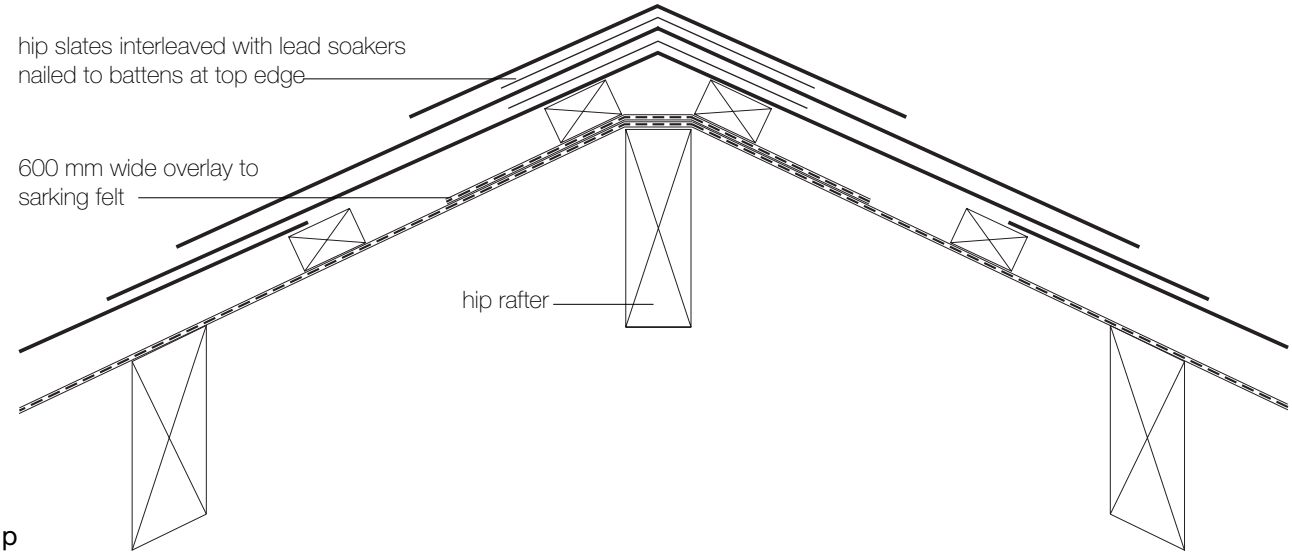


Lead Roll Hip

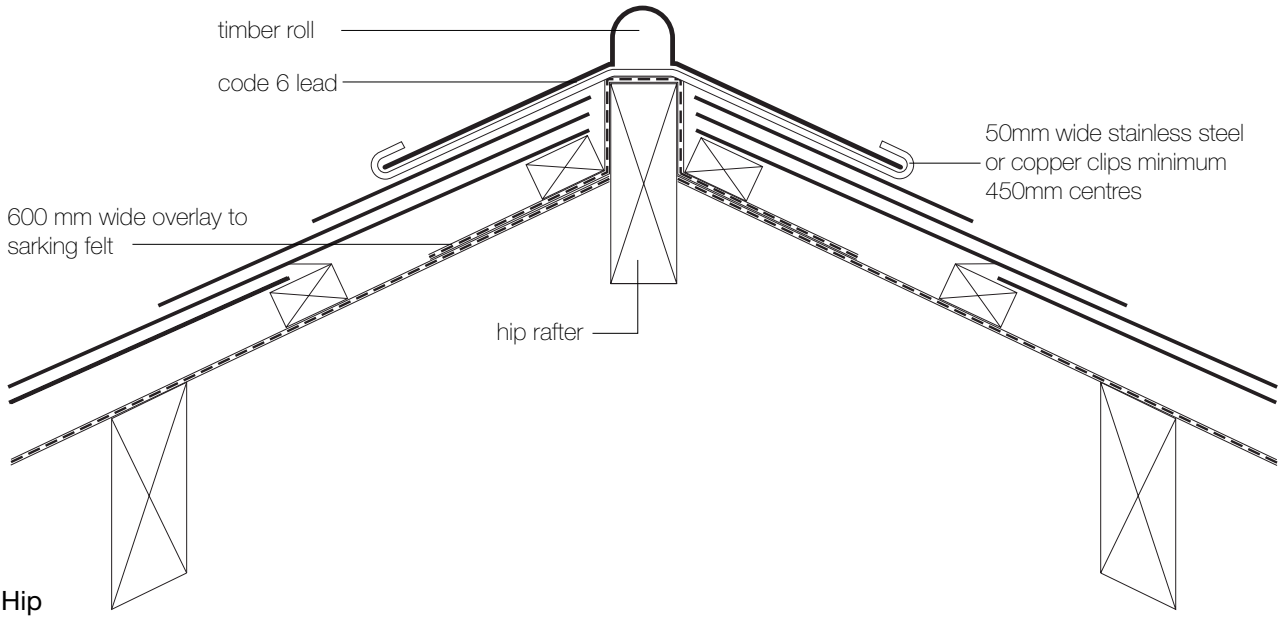


Ridge Tiled Hip

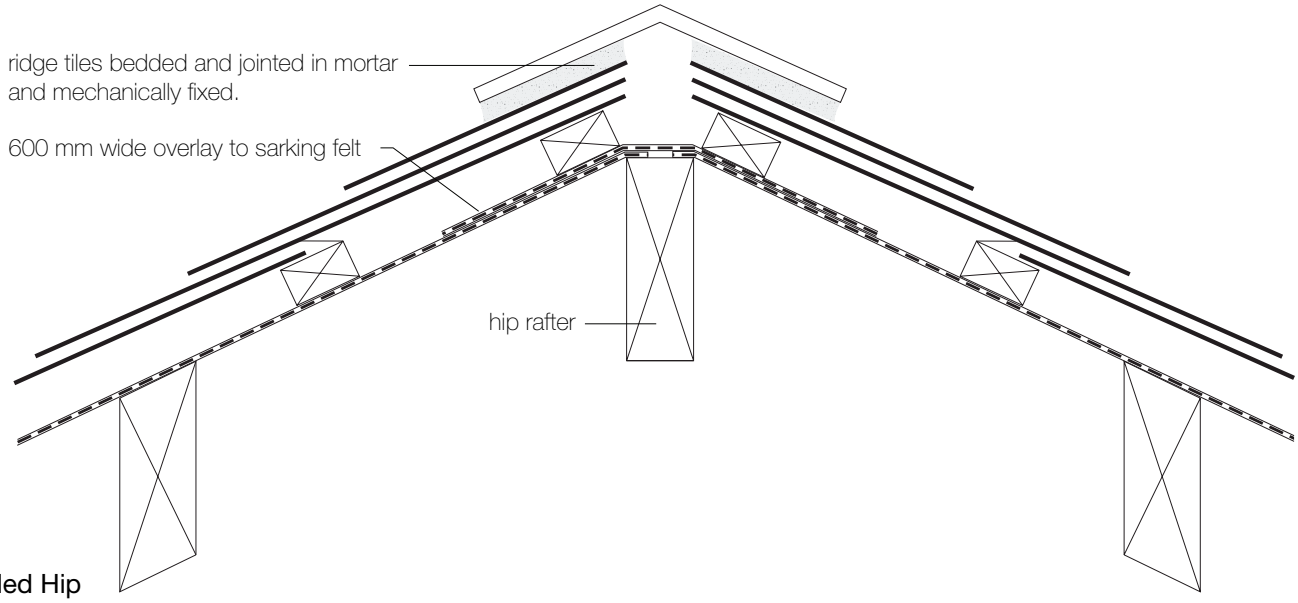




Mitred Hip



Lead Roll Hip



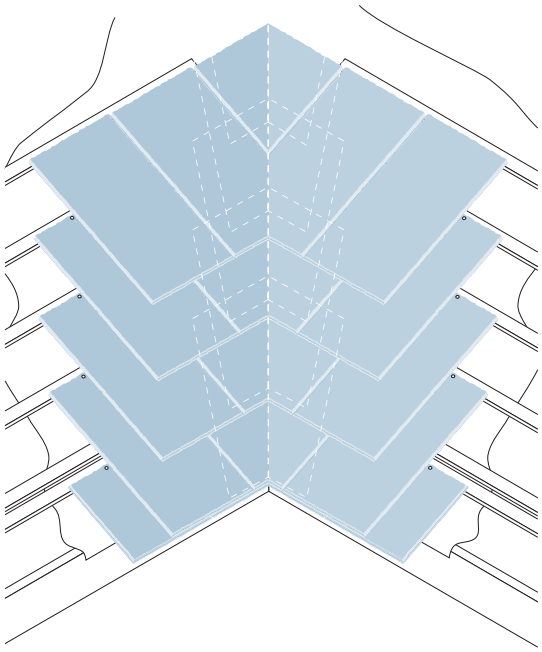
Ridge Tiled Hip

Valleys

Special care should be taken to ensure that valleys feature a clear unobstructed channel, at least 100mm wide. Increased kerbing may be required to accommodate mass flow where the pitches on either side a valley are unequal.

FIXING SEQUENCE AT MITRED VALLEY

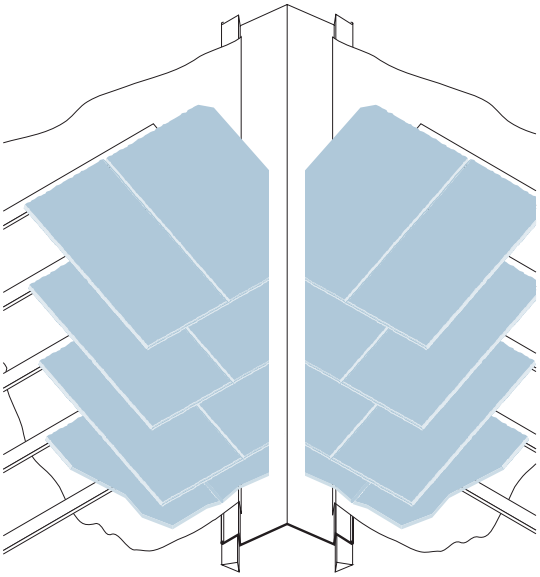
1. Lay a strip of underlay 600mm wide over the valley, underlapping the main underlay.
2. Cut slate and a half slates carefully, ensuring that adequate width is maintained at the tail.
3. Fix slates to interleave with Code 3 lead or stainless steel soakers, nailed to battens at the top edge to provide a straight, weathertight, close mitred joint. The size of the soaker must not be less than one slate length; in width, it should be at least a slate on both sides at the head and at least half a slate on both sides at the tail.



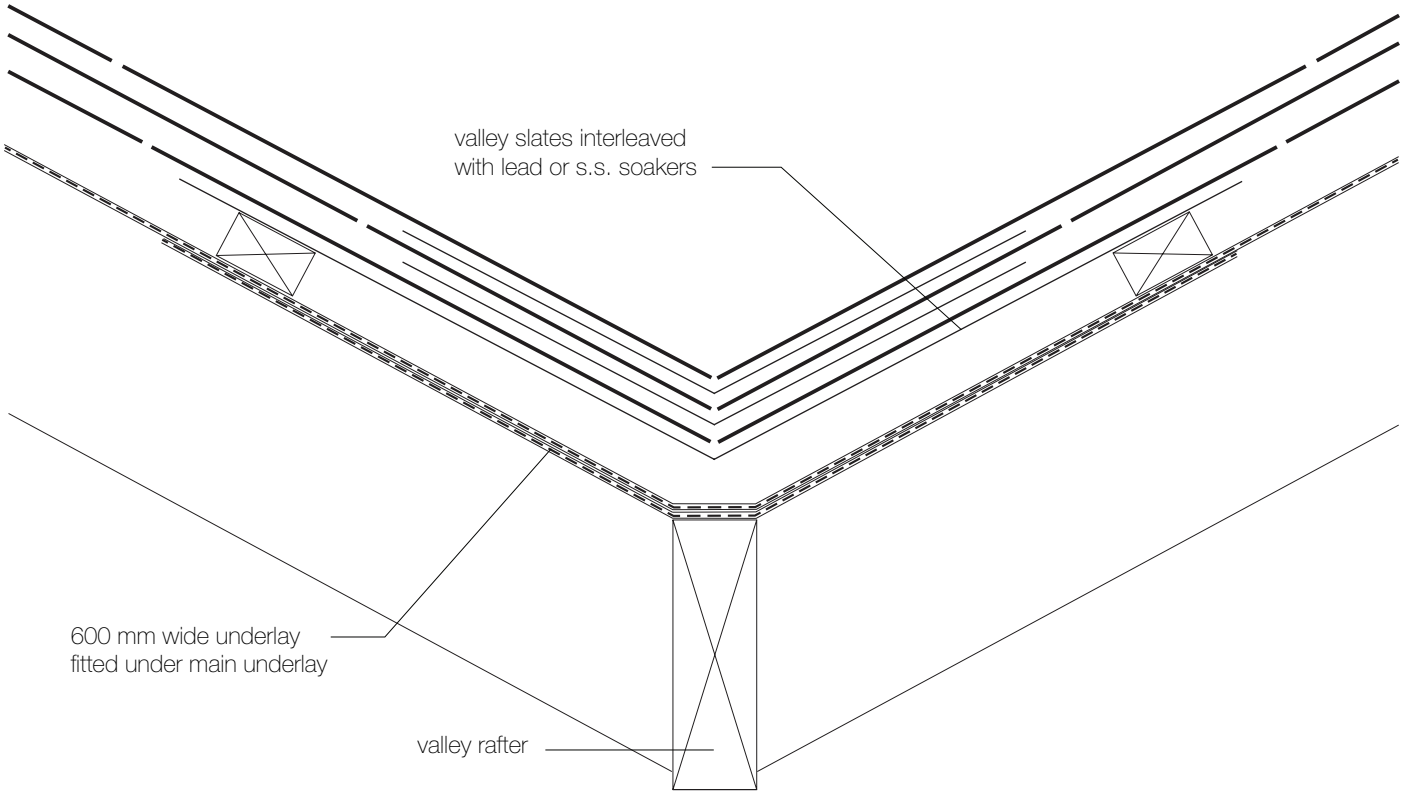
FIXING SEQUENCE AT VALLEY GUTTER AND OPEN VALLEY

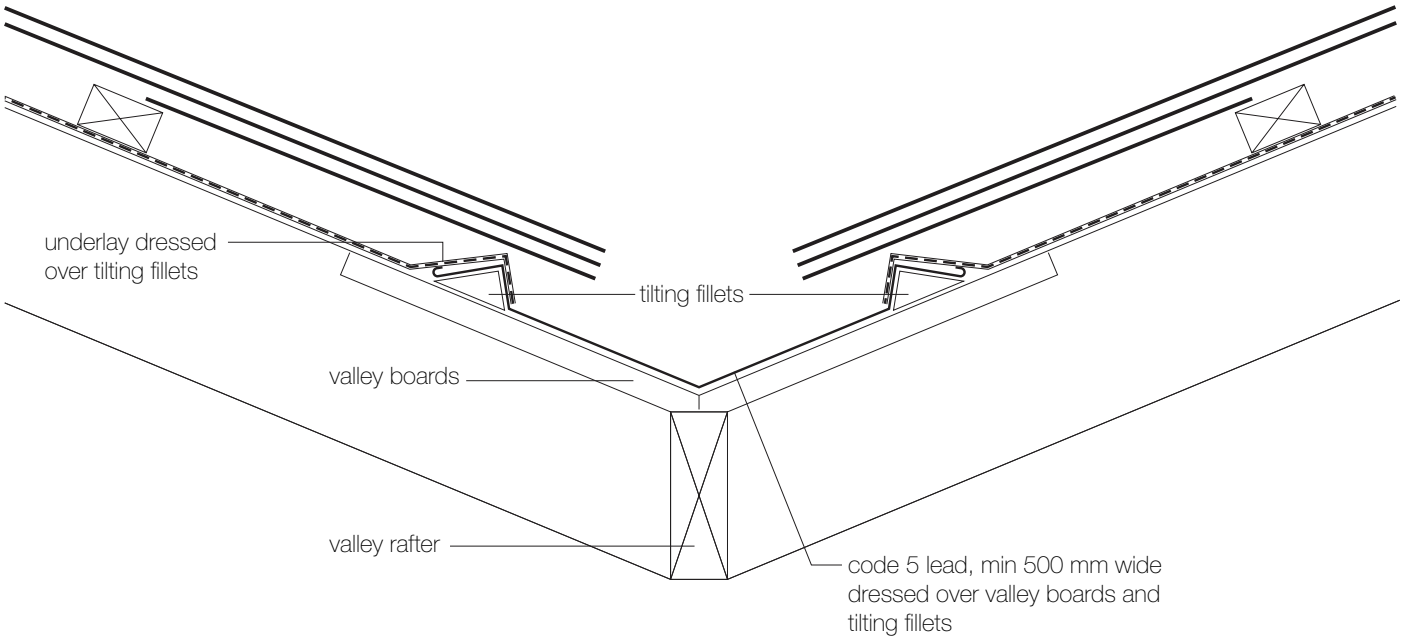
1. Fix valley boards down the length of the gutter.
2. Fix tilting fillets on either side of the valley board and dress underlay over these tilting fillets.
3. Dress Code 5 lead strip at least 500mm wide, into the gutter and over the tilting fillets, extending at least 40mm beyond each tilting fillet.
4. Cut slates accurately, ensuring sufficient width is retained at the tail, to overhang the tilting fillet but leave a minimum of 100mm clear width of valley.

Note: The edges of the slating should not be tilted up over open valleys.



For more information on open lead valleys, please contact:
The Lead Sheet Training Academy
Unit 20 Archers Park
Brandbridges Road
East Peckham
Tonbridge
Kent
TN12 5HP
Telephone: 01622 812 432
Or contact the SSQ Technical Department at
technical@ssq.co.uk

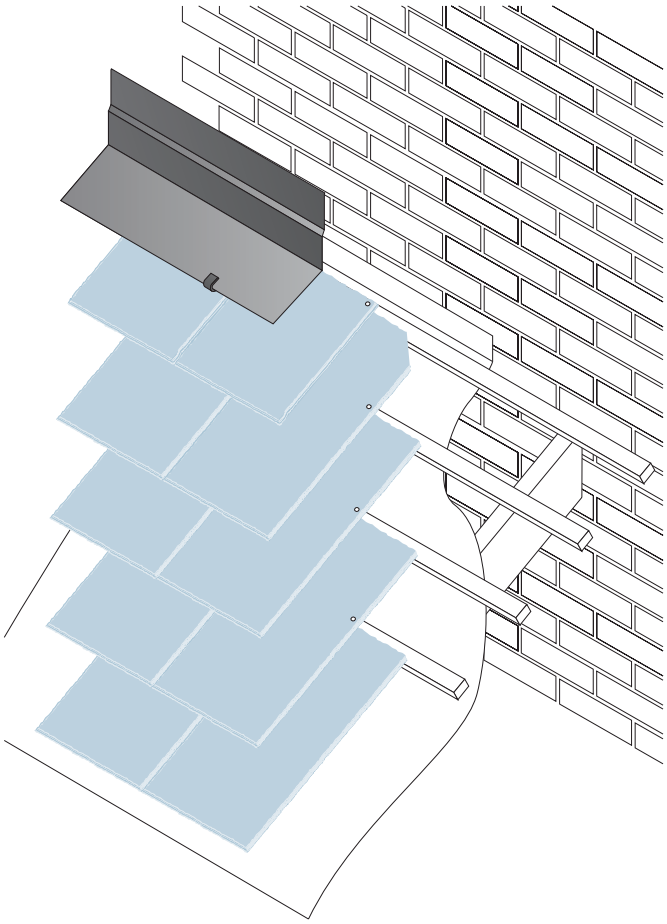

valley slates interleaved
with lead or s.s. soakers
600 mm wide underlay
fitted under main underlay
valley rafter

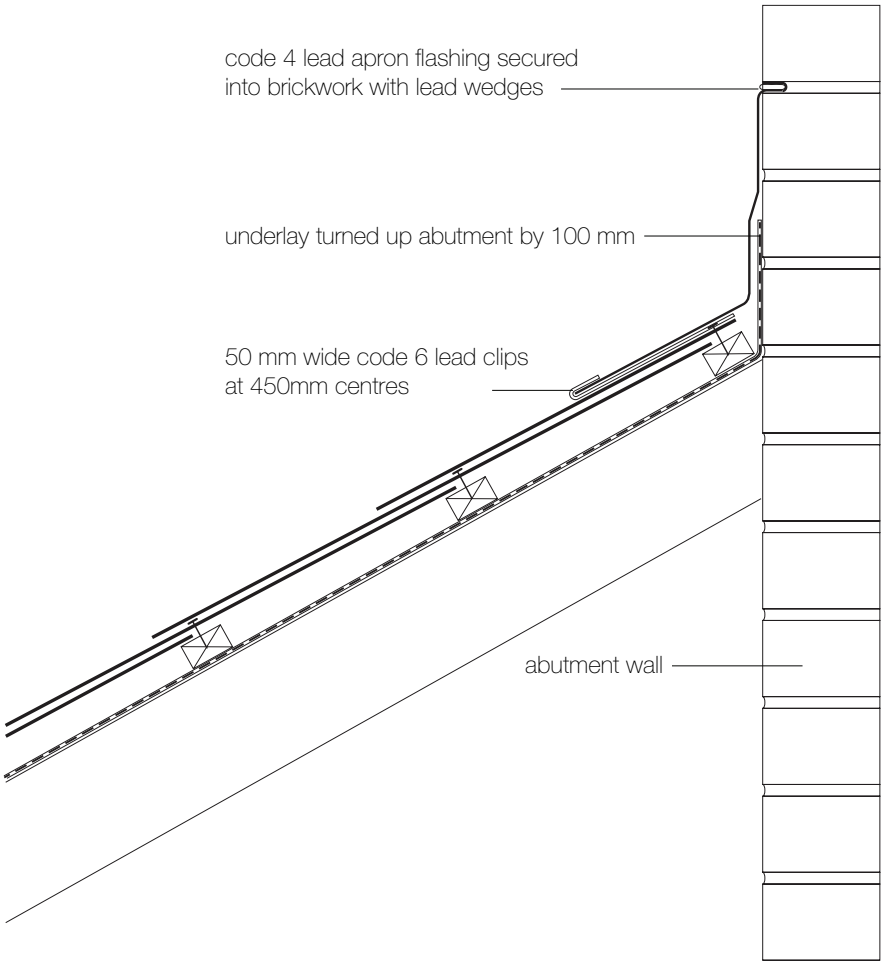

underlay dressed
over tilting fillets
tilting fillets
valley boards
valley rafter
code 5 lead, min 500 mm wide
dressed over valley boards and
tilting fillets

TOP ABUTMENT

1. Furn underlay 100mm up abutments.
2. Fix short slates as the top course to maintain gauge.
3. Fix Code 6 clips, 50mm wide at 450 mm centres and laps.
4. Fix Code 4 lead apron flashing in 1.5-2m lengths, wedge at the laps and secure into the brickwork joints to a depth of at least 25mm, dressed down 150mm over the slates.

Note: Avoid staining when lead is used, a smear coat of patination oil should be applied to the surface of the lead before fixing.





Abutments and parapets

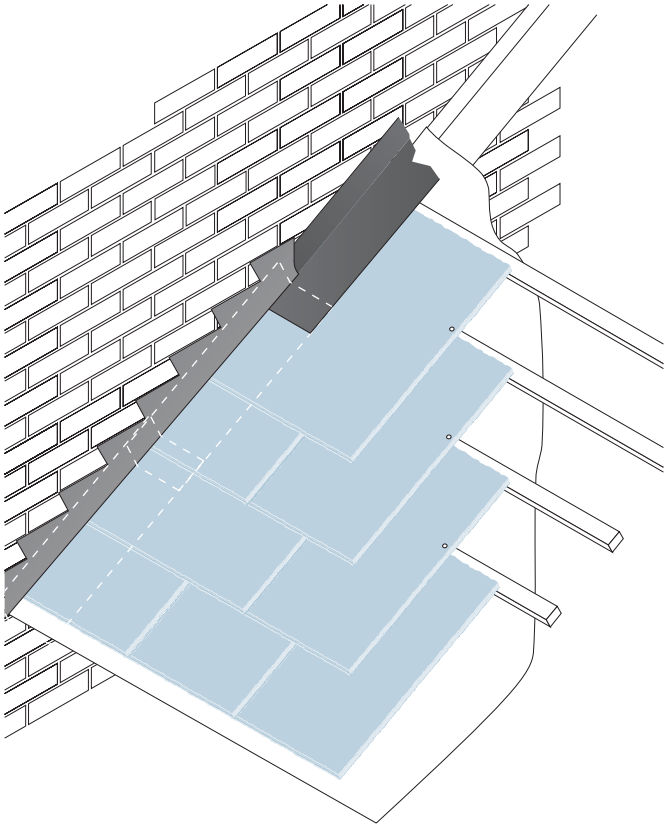
SIDE ABUTMENT

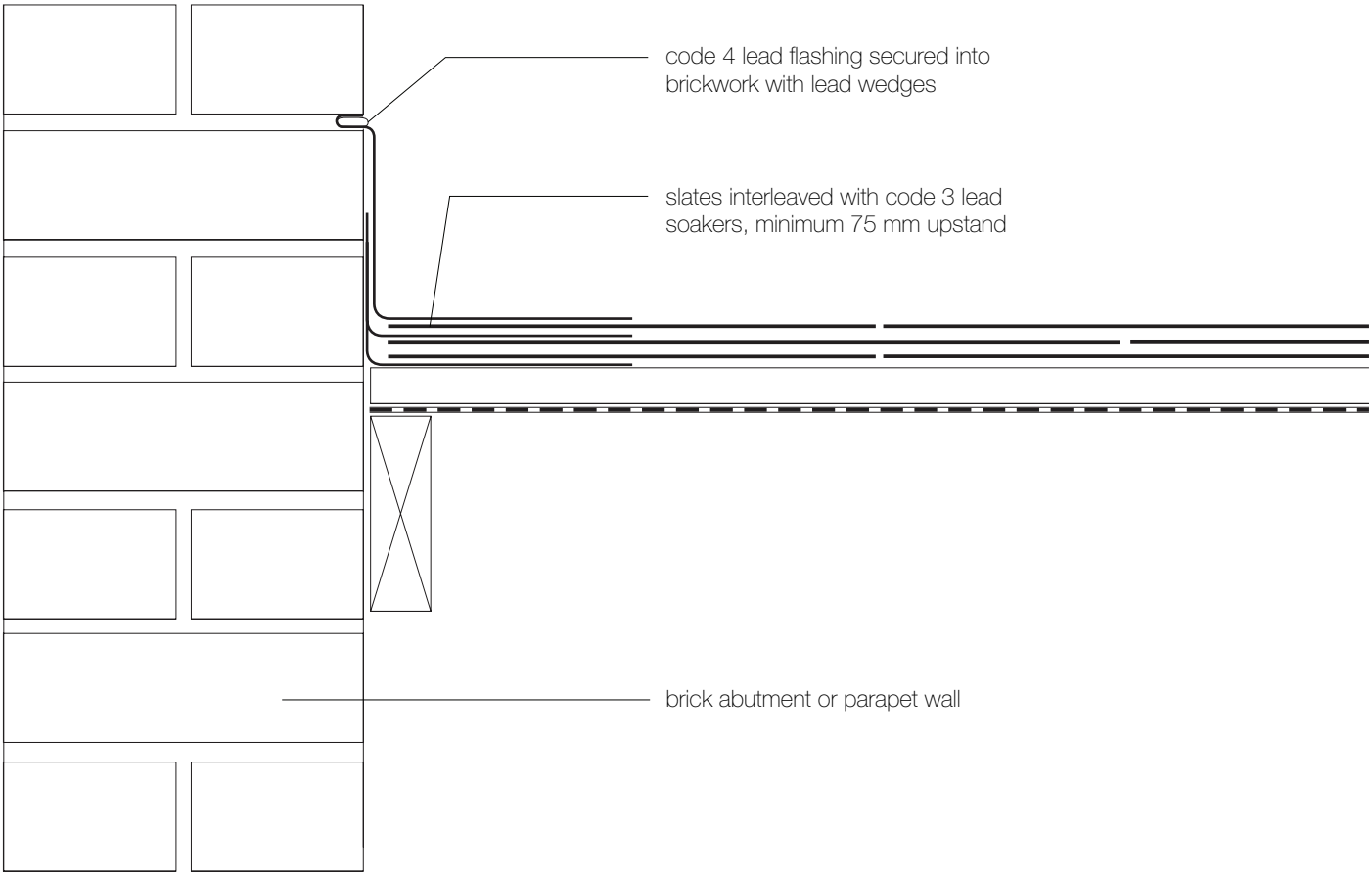
As nearly as possible, the abutment slates should be slate and slate and a half in alternate courses. Soakers should be equal to slate length plus 15mm. the width should be equal to half the standard slate width.

Note: Avoid staining when lead is used, a smear coat of patination oil should be applied to the surface of the lead before fixing.

FIXING SEQUENCE

1. Cut slates as required and interleave with Code 3 lead soakers, dressed to provide at least 75mm upstand to form a close, weathertight abutment, fix soakers by turning down over the head of each slate.
2. Fix Code 4 lead flashing over soaker. Welt top edge, secure into the brickwork joints, to a depth of at least 25mm, with lead wedges and point in mortar.

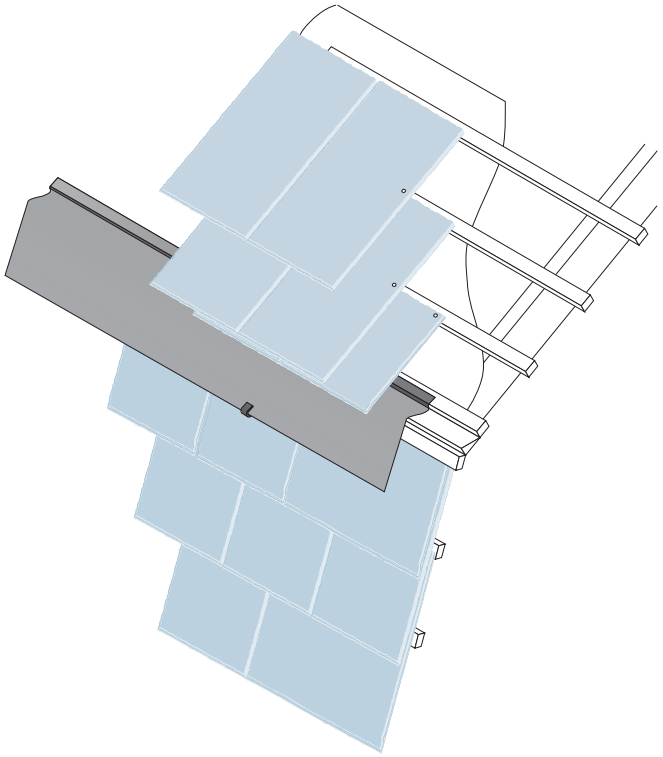


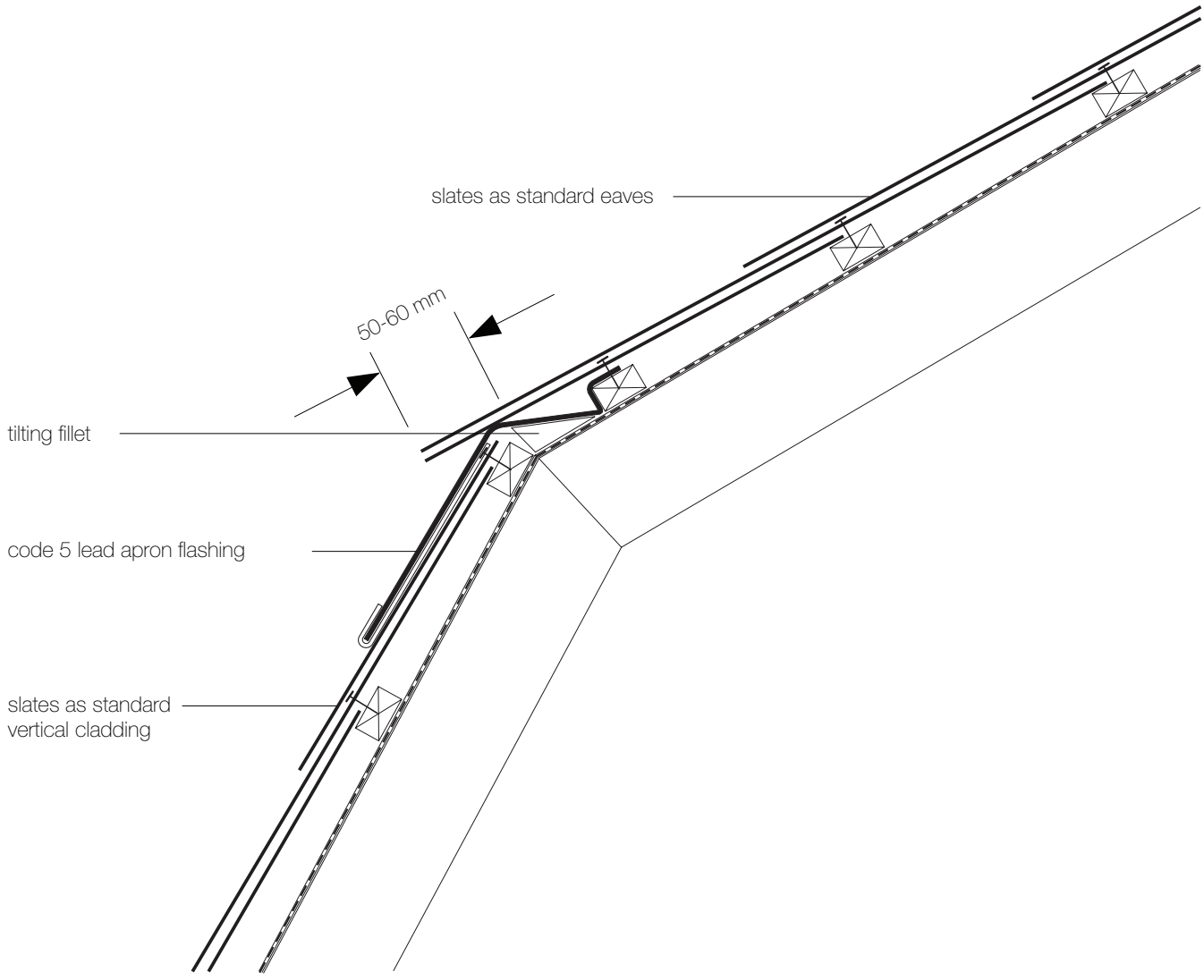


Change of roof pitch

MANSARD

1. Slate lower slope as for standard vertical cladding
   a. (see pages 25)
2. Fix a tilting fillet to the upper slope to form an upstand equal to the batten thickness.
3. Fix first batten to the upper edge.
4. Fix Code 5 lead apron flashing over the first batten and tilting fillet, dress down over the heads of slates below at least 150mm. Fix using 50mm stainless or copper clips at minimum 450mm centres.
5. Slate the upper slope as standard eaves with the bottom edge of the upper slates overhanging the flashing by 50 - 60mm.

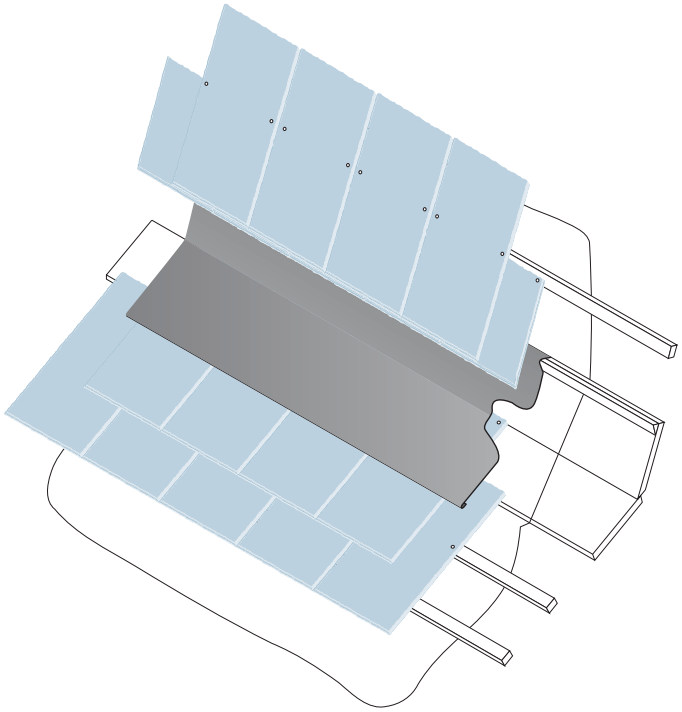


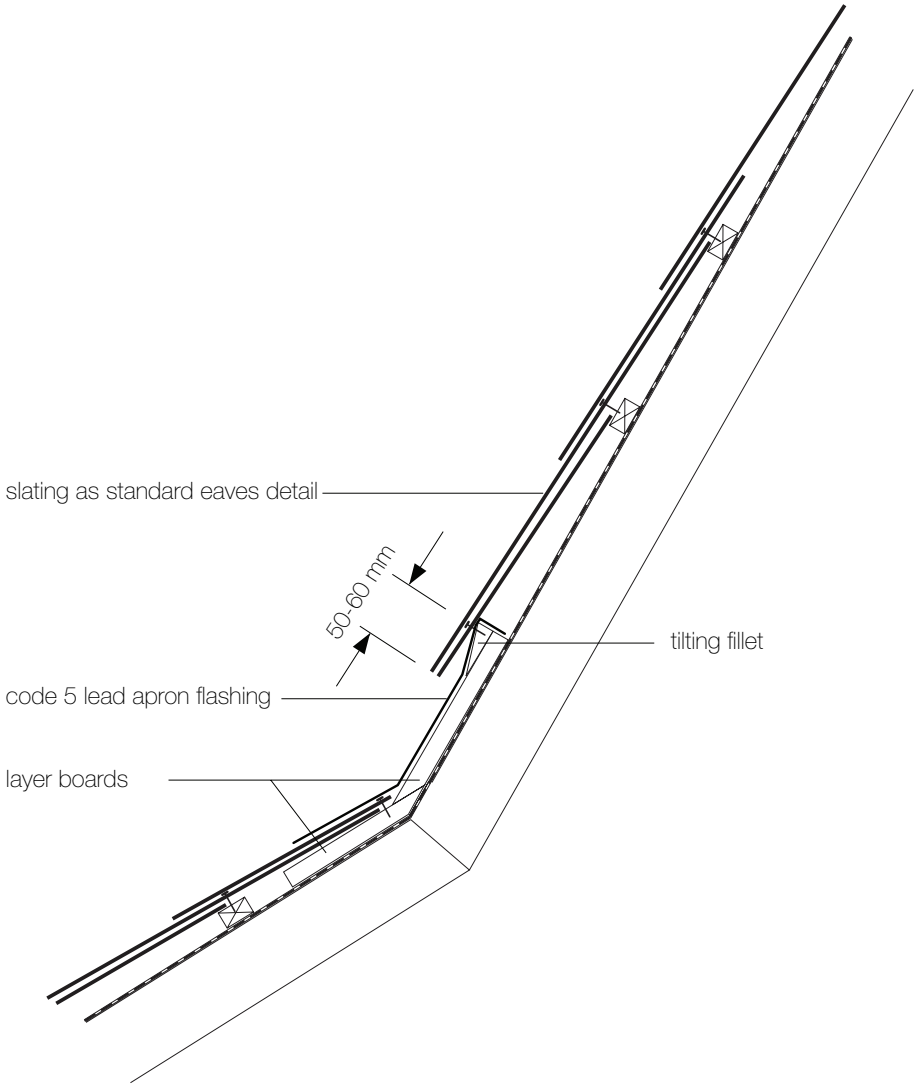


Change of roof pitch

SPROCKET

1. Complete slating lower slope as for standard roof upper edge.
2. Fix layer boards to the rafters at the intersection of the two roof slopes, equal in thickness to the battens.
3. Fix tilting fillet to the to top edge of the upper layer board, equal in thickness to the battens.
4. Fox Code 5 lead apron flashing over the tilting fillet and dress down over the heads of the slate below by at least 150mm.
5. Slate and batten upper slope as standard eaves, with bottom course projecting below tilting fillet by 50-60mm.





Vertical cladding

SSQ Slates used for external wall cladding provide a highly aesthetic appearance as well as being extremely functional.

A wide range of cladding patterns can be achieved, which can offer benefits of economy and weather resistance as well as allowing versatility in design.

FIXING SEQUENCE FOR VERTICAL CLADDING

1. General

Vertical slating or cladding may be fixed either directly to batten or to battens and counter batten soundly fixed on the wall face (see BS 5534). The minimum recommended head lap is 50mm.

If vertical slating or cladding is used as a facing for timber framed construction, a suitable underlay is required to act as a breather membrane.

2. At Lower Edge

Fix slates at the lower edge of vertical work in the same way as roof slating.

At external corners, or next to openings, full slate and half width slates should be used on alternate courses and soakers should be fixed at every course

3. At Top Edge

Cut slates for the top course to maintain gauge.

4. At Abutments

Form abutments with full slate and half slate on alternate courses.

5. At Angles

Cut slates as appropriate and interleave with lead soakers fixed by nailing to battens at the top edge, which is formed with full slate and half slate in alternate courses.

6. At Abutments Adjacent to Openings

Fix full slate and half slate on alternate courses, interleaving with lead soakers. Fix flashings, suitable for the window installations, around all opening.

7. At Gable Ends

Splay cut slates at the ends of courses to fit closely under the verge, either by cutting wide slates to leave a 5mm gap adjacent to the abutment or cutting the last two slates at the end of every course so that the tail of the end slate is almost at right angles to the verge.