Hambleside Danelaw
Building Products

www.hambleside-danelaw.co.uk

Roofing and Ventilation Products Technical Manual

Edition 3.1

Company Information

INTRODUCTION

Hambleside was estabiliahed in 1975. We specialise in manufacturing products for the building industry in the UK.

We have sophisticated plant for the production of our GRP (fibreglass) based products located near Inverness in Scotland. Our injection moulding and vacuum forming manufacturing facilities are based in Daventry which is also the centre for our warehousing and distribution, servicing our customer base within the EU.

ROOFING PRODUCTS

Hambleside Danelaw has three specific product ranges supplying domestic housing for new build and refurbishment, industrial, warehousing and out of town retail styles of construction (metal envelope buildings) plus a fibreglass roofing system for roof refurbishment and new build suited to historical buildings, public sector estate, commercial and private sector buildings.

Danelaw:
Roof and Roof Ventilation products

- Roof edge flashings and trims
- Dry Fix valleys and bonding gutters
- Roof space ventilation
- Cavity wall ventilation

StepSafe and Contour Rooflights:
Rooflights and Cladding Materials

- GRP translucent fibreglass rooflights
- GRP over roofing systems
- GRP translucent fibreglass wall lights
- Insulated rooflight assemblies
- Low carbon GRP rooflights

Dryseal Roofing System:
Fibreglass Roofing materials (GRP)

- Component based GRP Fibreglass roofing systems
- Flat roofing system
- Fibreglass GRP Pitched roofing system
- GRP waterproofing membranes
- Heritage and historical buildings roofing system as an alternative to lead.

WASTE AND RESOURCES ACTION PROGRAMME

Many of the products manufactured by the Company meet the required standard under the UK Governments Waste and Resources Action Programme (WRAP) scheme. Further information on these products may be obtained from our website.

ACCREDITATION AND TRADE MEMBERSHIPS

BS EN ISO 9001:2008 approved (Quality)BS EN ISO 14001:2004 approved (Environmental)
OHSAS 18001:2007 approved (Health and safety)

EMS 500154
FM 23063
OHS 532271

Hambleside Danelaw is registered as a CPD Certified provider.

Hambleside Danelaw is a member of the RIBA NBS Plus electronic library service.

Hambleside Danelaw is an associate member of the Builders Merchant Federation.

Hambleside Danelaw is an associate manufacturing member of the National Federation of Roofing Contractors and participates in their co-partnership guarantee scheme.

BBA CERTIFICATION

Full BBA Approval is held for the following products:

Danelaw GRP roof flashing products
Danelaw Dry Fix valley troughs
Danelaw Dry Fix bonding gutters
Danelaw Stormforce 225 GRP valley troughs
Dryseal fibreglass roofing system
Contour GRP translucent rooflights
StepSafe Low Carbon GRP translucent rooflights
Insulator thermally efficient GRP translucent rooflight

CPD (CONTINUING PROFESSIONAL DEVELOPMENT)

The Company presents a series of RIBA approved CPD seminars for current information please go to our website

THIS PUBLICATION

This Technical Manual provides specific information in connection with the performance and installation methods for our range of Roofing and Ventilation products.

ROOF VENTILATION

The UKs housing stock is amongst the most poorly insulated within the western world. This results in a considerable waste of energy resources which of course leads to increased emissions of greenhouse gases and global warming.

The UK Government is seeking to address this issue and will in late 2012 introduce legislation within the Green Deal and New Energy Company Obligation. The Government is expecting to achieve a revolution in British property as a result of the introduction of this new legislation. The Energy Act of 2011 enshrined the principal behind the Green Deal by allowing private companies to offer upfront energy efficiency investments and to recover the costs through future energy bills. The purpose being to make it is as straightforward as possible for domestic housing, in particular, to be upgraded to meet the target of reducing carbon emissions by 80% by 2050.

Owing to the traditional manner of building within the UK, a cold roof is typical of most domestic roof constructions. Whilst it is straightforward to upgrade roof space insulation, it is also very important to ensure adequate ventilation for that roof space is achieved. The products manufactured by Hambleside Danelaw are designed to achieve just that and to prevent the risk of improved roof insulation leading to high levels of condensation which can result in damage to the basic roof structure.

For information on any of the range of Hambleside Danelaw products please contact our sales office on 01327 701900 or visit our website at: www.hambleside-danelaw.co.uk

Roof Ventilation

Ventilation to negate the effects of condensation in roofs is essential to comply with Building Regulations, Building Standards and British Standards. Ventilation openings should be provided on the longer sides of rectangular roofs and designed to prevent the ingress of rain, snow, birds and large insects. Minimum mesh/grille sizes should not be smaller than 4mm to avoid excessive airflow resistance. Particular attention should be paid to potential restrictions at changes in roof slope or changes in constructional details and at junctions with walls. The Hambleside Danelaw range of ventilation products is manufactured to enable compliance with all current technical requirements and standards.

BUILDING REGULATIONS – THE REQUIREMENTS

Approved Document C2 (2004 Edition) requires that roofs be designed and constructed so that their structural and thermal performance are not adversely affected by interstitial condensation.

This requirement will be met if the roof is designed and constructed in accordance with Clause 8.4 of BS 5250:2002 'Code of practice for control of condensation in buildings' and BS ENISO13788:2001 'Hygrothermal performance of building components and building elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation. Calculation methods.' Further guidance is given in BRE Report BR262 'Thermal insulation: avoiding risks', 2002 edition.

To avoid excessive moisture transfer into roof voids, gaps and penetrations for pipes and electrical wiring should be filled and sealed, particularly in areas of high humidity such as kitchens and bathrooms and an effective draught seal should be provided to loft hatches to reduce the inflow of warm air and moisture. Vapour control layers can reduce the amount of vapour entering roof voids but cannot be relied on as an alternative to ventilation. A complete barrier to moisture is needed for this.

Scottish Building Standards Handbook 3.15 requires that dwellings shall be so constructed as to protect the building and its users, so far as may be reasonably practicable, from harmful effects caused by surface and interstitial condensation. Both these requirements are deemed to be satisfied by following the guidance given in BS 5250.

BS 5534:2003 'Code of practice for slating and tiling (including shingles)' recommends that roof ventilation be provided in accordance with BS 5250.

COLD ROOFS WITH A PITCH OF 15° OR MORE

Pitched roof spaces should have ventilation openings at eaves level (Fig. A) on opposite sides of the structure at least equal to an opening of 10mm wide and running the full length of the eaves to promote cross ventilation. For roof pitches above 35° or spans in excess of 10m, additional high level ventilation at or close to the ridge equivalent to a continuous opening of 5mm should be provided.

A pitched roof that has a single slope or abuts a wall (Fig. F) should have ventilation at high level equal to a continuous opening of 5mm wide in conjunction with an opening of at least 10mm wide at the eaves.

High level ventilation should never be used on its own as the wind suction effect created will increase water vapour transfer into the roof void.

Pitched roofs where part or all the insulation follows the pitch of the roof (Fig. C) should have ventilation openings on opposite sides of the structure at least equal to a continuous opening of 25mm wide. In addition, such structures require ventilation at or close to the ridge equivalent to a continuous opening of at least 5mm. The void between the underside of the roof covering and the insulation should have a free air space of at least 50mm. In this application, a vapour control layer should also be provided on the warm side of the insulation.

COLD ROOFS WITH A PITCH OF LESS THAN 15°

Roof spaces in low pitched and flat roofs should have ventilation openings at eaves level (Figs. B, D & E) on opposite sides of the structure at least equal to an opening of 25mm wide to promote cross ventilation. Roof voids should have a free air space of at least 50mm between the roof deck or underside of the roof covering and the insulation.

Mono pitched roofs should be provided with ventilation of at least the equivalent of a 25mm continuous opening at eaves and 5mm at the ridge.

WARM ROOFS

Condensation should be controlled by ventilation beneath the underlay and above the insulation by the provision of a 25mm wide continuous ventilation opening or equivalent at eaves or low level and a 5mm continuous ventilation opening or equivalent at the ridge or high level. The space between the underlay and the insulation should be at least 50mm deep with a minimum of 25mm at the centre of the underlay drape. A well sealed ceiling and separate vapour control layer should be used on the warm side of the insulation.

VAPOUR PERMEABLE UNDERLAYS

BS 5250:2002 provides recommendations and alternative approaches when using vapour permeable or 'Low Resistance' (type LR) underlays that when followed, can achieve compliance with Building Regulations. Caution should be taken when proposing to use VPU's and reduce ventilation levels on re-roof & refurbishment projects.

Horizontal Insulation:

With slated or tiled roofs containing horizontal insulation over a horizontal ceiling, the use of an LR underlay with unsealed laps can allow for a reduction in the area of roof ventilation openings providing that the roof covering can be determined as sufficiently air open in accordance with Annnex L of BS 5534:2003 but with equipment designed to measure low pressure differences down to 2 Pascals. On buildings 'typical' of housing, with insulation at ceiling level and with the LR underlay laid above or below counterbattens or onto open jointed sarking boards, the requirement is for low level continuous equivalent ventilation openings that may be reduced from 10mm to 7mm for a 'normal' ceiling and 3mm for a well sealed ceiling as defined in BS 9250:2007. For larger roofs of this type, such as supermarkets, schools, hospitals etc., the minimum equivalent opening remains at 10mm for a normal ceiling but may be reduced to 5mm for a well sealed ceiling with an additional continuous 5mm opening at high level.

Where continuous boarding or close jointed sarking boards are used under the slates or tiles, an LR underlay should be treated as a 'High Resistance' (type HR) and ventilation should always be provided to the roof space below the underlay. When an existing roof is being recovered, it may be impossible to achieve a ceiling that is as well sealed as in new build therefore caution must be taken and consideration given to providing the equivalent to at least a continuous 7mm opening or the addition of the equivalent to a continuous 5mm opening at high level.

Most proprietary low level ventilation products that provide an area equivalent to a 10mm continuous opening will easily satisfy all of the reduced ventilation requirements. BS 5250:2002 does not cover situations where it is proposed to provide no ventilation in cold roof applications. In such cases, all of the conditions and requirements of independent technical approval certification (e.g. BBA) should be met.

Inclined Insulation:

Slated or tiled roofs that are air open containing inclined insulation above inclined ceilings may be constructed without ventilation if an LR underlay is used that can either be laid fully supported on the insulation or draped and unsupported. It is essential to provide a well sealed ceiling in accordance with BS 9250:2007 and a separate vapour control layer.

If there is any doubt about the ability to provide and maintain an effectively sealed vapour control layer then ventilation should be provided as if the underlay was impermeable or an HR type in accordance with the section headed 'Warm Roofs'.

With this type of construction, an effective vapour control layer of high vapour resistance, sealed at the laps and at all roof details, e.g. hips, valleys, ridges, abutments, firewalls and around all penetrations created by services, etc., should be provided. The designer should be sure that the vapour control layers and/or insulation can be installed and maintained air tight for the design life of the building.

FIRE PERFORMANCE OF ROOF VENTILATION PRODUCTS

In general, and for the purposes of Building Regulations requirement B4, small plastic components such as slate and tile ventilators and soil pipe penetrations that occur on the surface of the roof and jointing and ventilation strips that appear at ridges, hips and soffits are regarded as insignificant and are therefore not covered in Approved Document B and can normally be ignored.

SUSPENDED FLOORS AT GROUND LEVEL

Any suspended floor next to the ground will meet the requirements of Building Regulations Approved Document C, Scottish Building Standards Handbook 3.4 and BS 5250:2002 provided that:

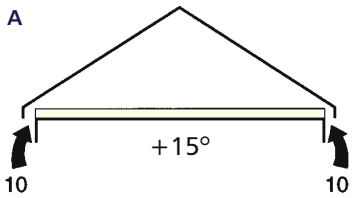
a) the ground is covered so as to resist moisture and prevent plant growth and;
b) there is a ventilated air space between the ground covering and the floor construction of at least 150mm and;
c) there are damp-proof courses between the floor construction and any material that can carry moisture from the ground.

Two opposing external walls should have ventilation openings placed so that the ventilating air will have a free path between opposite sides and to all parts. The openings should be large enough to give an actual opening of at least equivalent to 1500mm^2 for each metre run of wall or 500mm^2 per m^2 of floor area whichever gives the greater opening area, this opening area also being provided in internal sleeper walls or similar obstructions to maintain the underfloor ventilation. Any pipes needed to carry this ventilating air should have a diameter of at least 100mm.

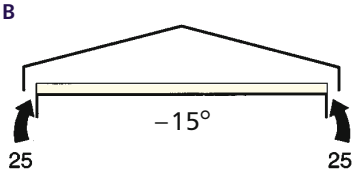
The illustrations below reflect the basic ventilation requirements which would normally be applicable. For additional information please refer to the current Building Regulations and appropriate British Standards.

Dimensions in millimetres.

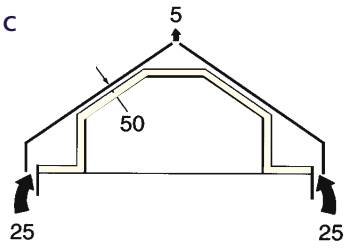
A



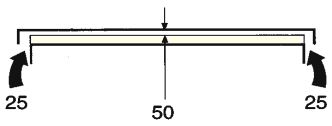
B



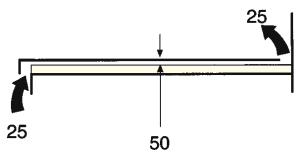
C



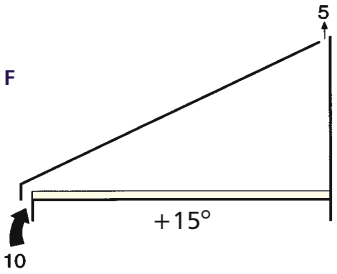
D



E

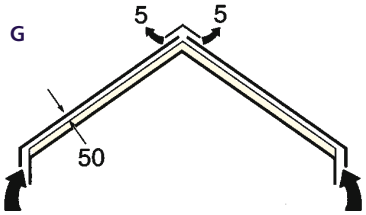


F



(Less than 15°, 25mm required at eaves)

G



ROOF VENTILATION

THROUGH WALL AND UNDERFLOOR VENTILATION

GRP FLASHINGS

OTHER PRODUCTS

HAMBLESIDE DANELAW

Eaves and Soffit Ventilation

INSTALLATION

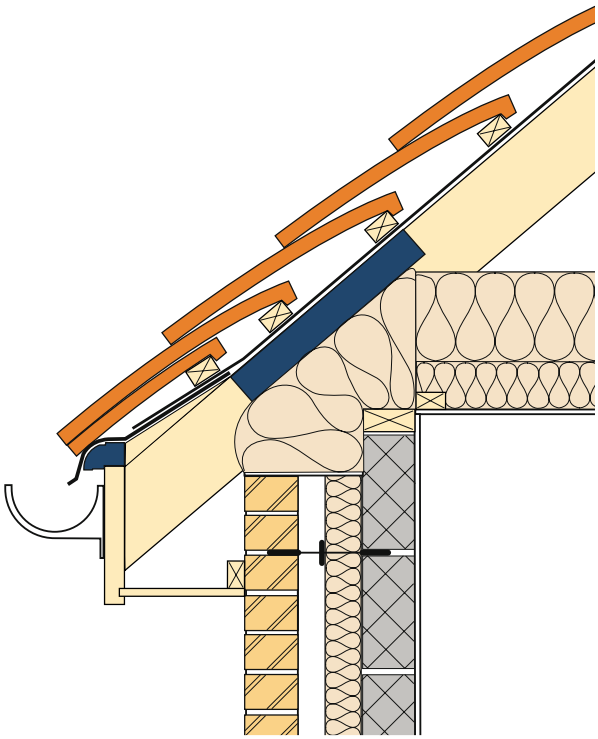
The requirement for increased insulation in cold roofs, where the insulation is at ceiling level, has created problems for the designer who is seeking to avoid cold bridging when carrying the loft insulation over the wall plate to link with the wall insulation as required in DTLR (Department of Transport, Local Government and Regions) Robust Details.

The depth of insulation should be maintained across the width of the ceiling and linked to the wall insulation. However, to achieve this it is often necessary for the truss setting out point to be moved beyond the wall plate to obtain a greater depth. The truss will then require a blocking piece or similar to strengthen it due to the cantilever action at the setting out point, see Building Research Establishment BR 262 Thermal insulation: avoiding risks.

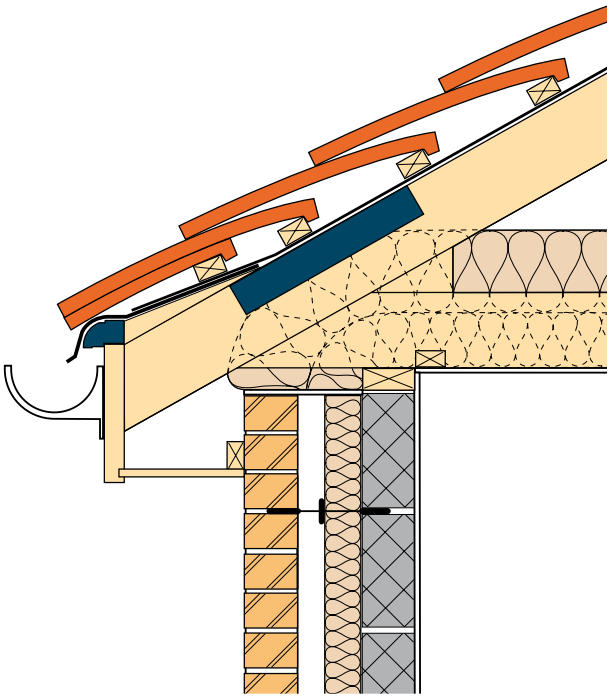
Failing to achieve this greater depth between the top of the wall plate and underside of the roof covering will result in the compressing of the insulation as it passes over the wall plate. This compression will reduce the thermal performance of the insulation and create a cold bridge effect as well as increasing the contact area of the insulation to the underside of the roof covering resulting in the need for unnecessarily oversized rafter trays or roll panels.

If the truss setting out point is correctly detailed, standard rafter tray and roll panel depths are adequate to fulfill air cross flow requirements as their positioning becomes the only critical feature, i.e. the contact area of the non-compressed insulation. To achieve the correct positioning of rafter trays and roll panels it is necessary to mark the height of the insulation to be used onto the rafter. This is usually done by measuring up from the underside of the ceiling or joist.

TYPICAL DTLR ROBUST DETAIL

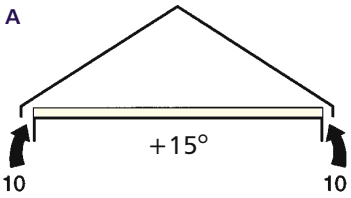


BRE RECOMMENDED DETAIL

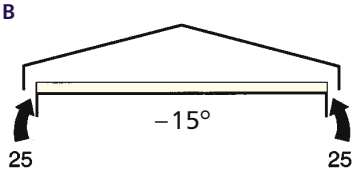


Product Applications

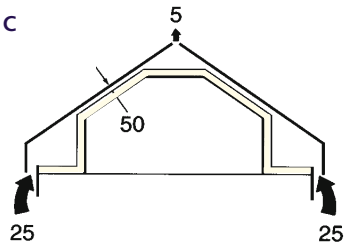
A



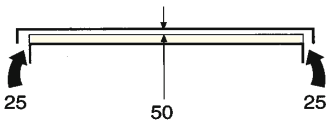
B



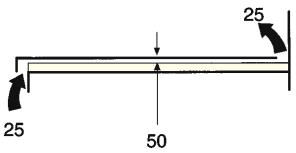
C



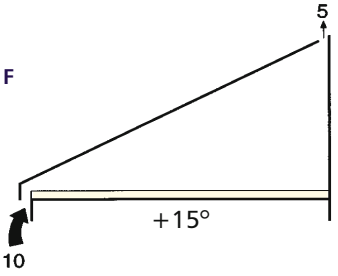
D



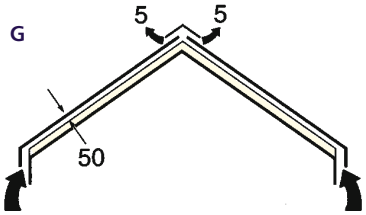
E



F

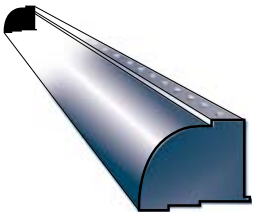


G

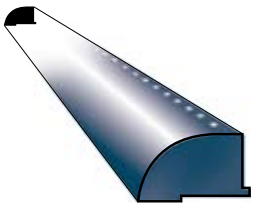


SOFFIT VENTILATORS

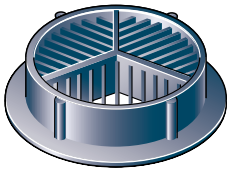
HD 12000U
A, B, C, D, E, F, G



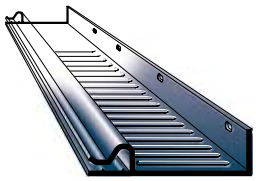
HD 12000M
A, F



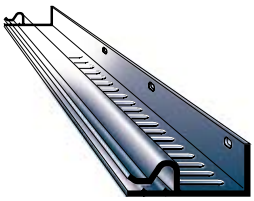
HD 7000
A, F



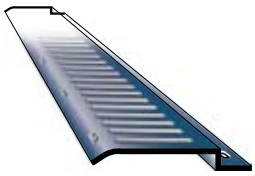
HD 8250
B, C, D, E, G



HD 8000
A, F

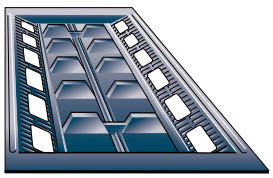


HD 8210
A, F

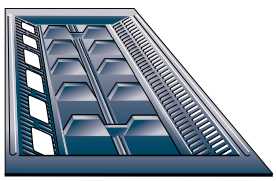


PANEL VENTILATORS

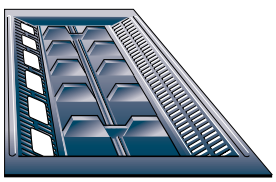
HD 4000, HD 4500 and HD 6000
A, B, C, F, G



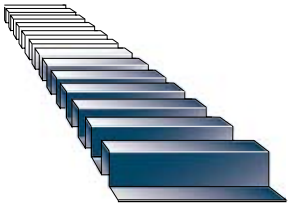
HD 4050, HD 4550 and HD 6050
A, F



HD 4025, HD 4525 and HD 6025
B, C, G

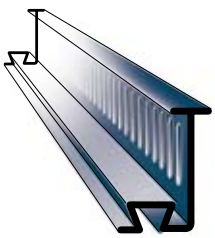


UNIVERSAL ROLL PANEL
HD 5000
A, B, C, F, G



UNIVERSAL REFURBISHMENT TRAY
HD URT
A, B, C, F

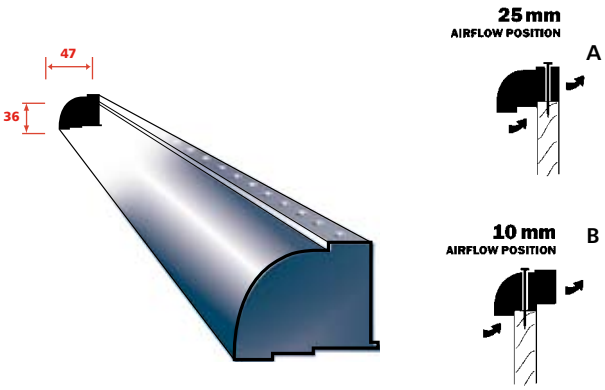
CORBEL VENTILATOR
HD 8310
A, F



Eaves and Soffit Ventilation

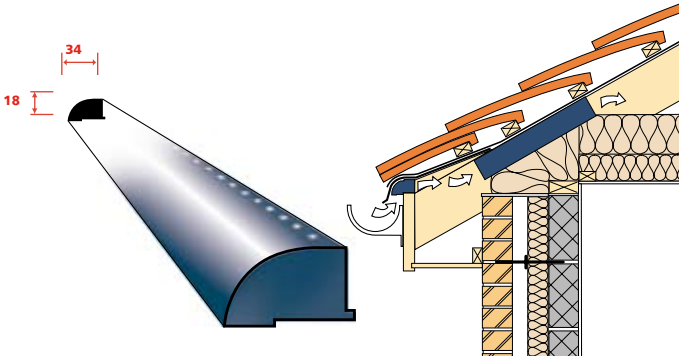
UNIVERSAL OVER FASCIA VENTILATOR
HD 12000U

Designed to satisfy both regulation requirements of 10,000mm² continuous opening per metre on roof pitches above 15° and 25,000mm² on pitches below 15°, for warm roof applications and where ventilating above a vapour permeable underlay. HD 12000U is fixed in either of its two airflow positions, Fig. A or B, and nailed through the reinforced guides using nails of an acceptable quality. Subsequent lengths are joined by abutting to the previous length.



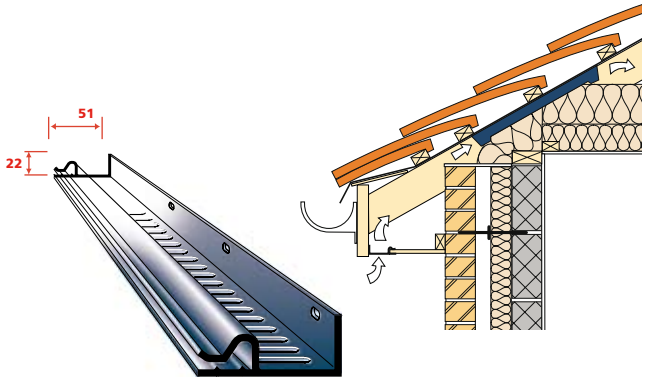
STANDARD OVER FASCIA VENTILATOR
HD 12000M

HD 12000M provides a through flow of ventilating air equilivant to an opening of 10,000mm² per metre and conforms to building regulations when fitted to roofs above 15° pitch. The over fascia ventilator is fixed through the reinforced guides using nails of an acceptable quality, subsequent lengths are joined by abutting to the previous length.



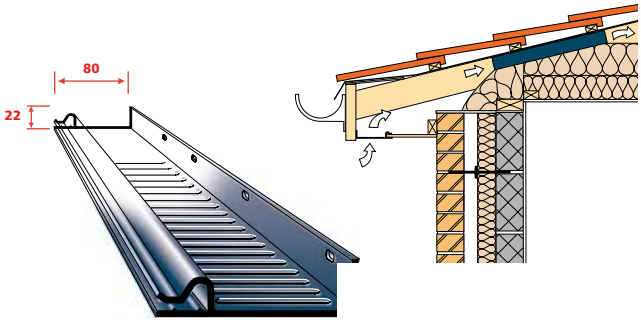
SOFFIT STRIP VENTILATOR
HD 8000

Permits entry of air equilivant to an opening of 10,000mm² per metre and conforms to Building Regulations when fitted to roofs above 15° pitch. The HD 8000 is fixed to the back of the fascia board using screws of acceptable quality. The soffit board (4mm to 10mm thick) is inserted into the jaws of the ventilator and secured to a batten fixed to the wall.



SOFFIT STRIP VENTILATOR
HD 8250

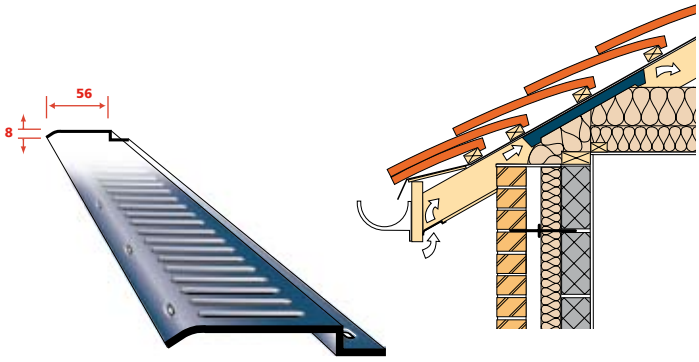
HD 8250 Soffit Strip Ventilator is for use on roof pitches below 15° or roof details where the insulation follows the line of the rafter. The HD 8250 will provide an opening equilivant to 25,000mm² per metre and conforms to Building Regulation requirements. The HD 8250 is fixed to the back of the fascia board using screws of acceptable quality. The soffit board (4mm to 10mm thick) is inserted into the jaws of the ventilator and secured to a batten fixed to the wall.



Eaves and Soffit Ventilation

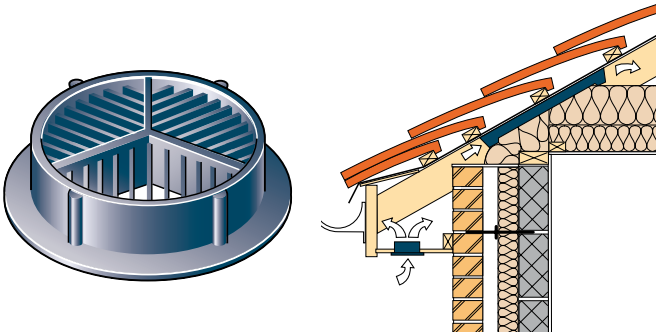
SOFFIT STRIP VENTILATOR
HD 8210

Designed for use where the soffit board is fixed directly to the underside of the rafters. The HD 8210 permits entry of air equilivant to a continuous opening of 10,000mm² per metre for use on roof pitches above 15°. The HD 8210 is fixed through the sloping pre-holed flange into the back of the fascia board; the soffit board is located into the right angle step of the ventilator strip and fixed through the underside using nails of acceptable quality.



CIRCULAR SOFFIT VENTILATOR
HD 7000

Primarily designed as a refurbishment product, the HD 7000 when fitted at 250mm centres permits entry of airflow equivalent to a continuous opening of 10,000mm² per metre. The soffit board is drilled with 70mm diameter holes and the circular HD 7000 push fitted into place. It conforms to regulation requirements for roof pitches of 15° and above; Equilivant opening area 2,500mm² per ventilator.

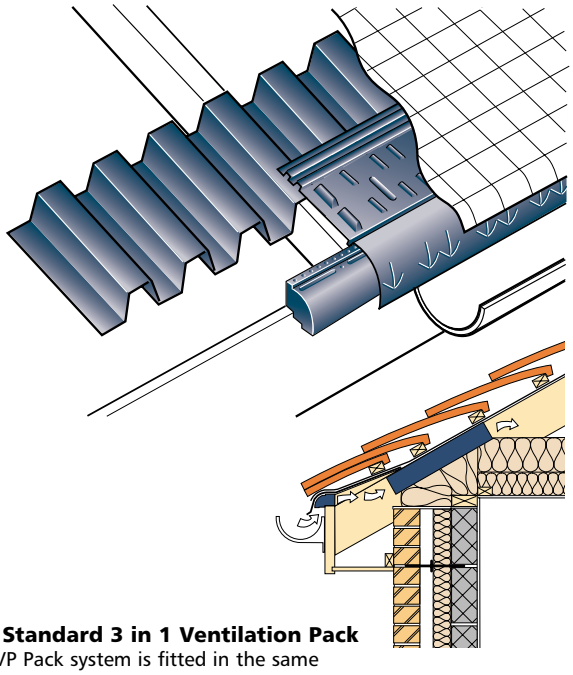


UNIVERSAL 3 IN 1 VENTILATION PACK
HD 3025VP

The HD 3025VP 6m pack ensures that all the required elements of an eaves to eaves ventilation system are provided. When fitted to roofs of all pitches the system will provide continuous opening equilivant of 10,000mm² or 25,000mm² per metre as per Building Regulation requirements. The HD 3025 is fitted by first determining the airflow required and fixing the HD 12000U (Universal Over Fascia Ventilator) to suit in either its 10,000mm² or 25,000mm² position on top of the fascia board through the reinforced nail guides.

The HD 5000 (Continuous 6m Roll Panel) is fitted in accordance with the area of contact to be made by the insulation quilt to the underside of the underlay or VPU. Any compression of the insulation quilt at the point of it passing over the wall plate and linking with the cavity insulation should be avoided by the insulation installer to avoid cold bridging. The roll panel is tack nailed or stapled to the rafters at the appropriate height.

The HD 3000 (Underlay Support/Eaves Protection Tray) is placed on top of the Over Fascia Ventilator and secured in place by nailing through the guide holes in the Over Fascia Ventilator. If using profiled tiles, Eaves Comb Filler (HD ECF) may be fitted at this stage by fixing through the HD 3000 and Over Fascia Ventilator. The curved edge of the HD 3000 should always face towards the gutter. The top edge of the support tray is then tack nailed or stapled to the rafter. Consecutive trays are overlapped 50mm and snapped together using the raised locaters formed into the tray sides.

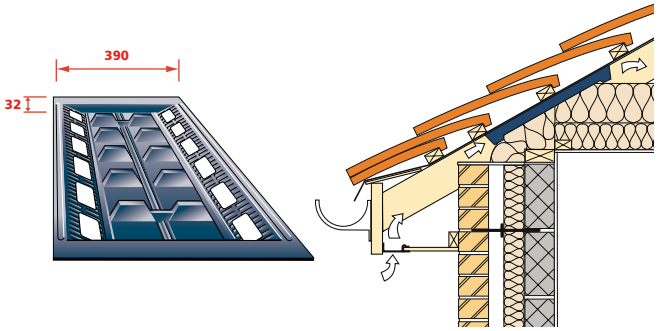


HD 3000VP Standard 3 in 1 Ventilation Pack
The HD 3000VP Pack system is fitted in the same manner as the HD 3025VP other than the Over Fascia Ventilator HD 12000M which is a single position fix to the fascia board, creating 10,000 mm² equivalent opening that conforms to Building Regulation requirements for roof pitches above 15°.

Eaves and Soffit Ventilation

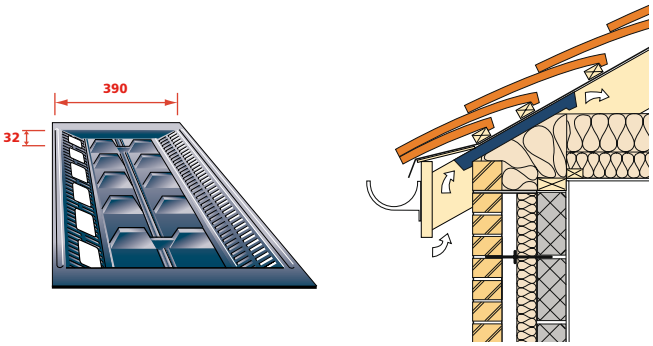
UNIVERSAL PANEL VENTILATORS
HD 6000, HD 4500 & HD 4000

This range of panel ventilators is suitable for use on all roof pitches and for rafter centres of 600mm, 450mm and 400mm to achieve regulation opening requirements of either 10,000mm² or 25,000mm² per metre. The siting of the panel is specific to the area of contact made by the insulation quilt to the underside of the roofing underlay or VPU. The panel is tack nailed or stapled to the rafter.



SINGLE FLY SCREEN PANEL +15° PITCH
HD 6050, HD 4550 & HD 4050

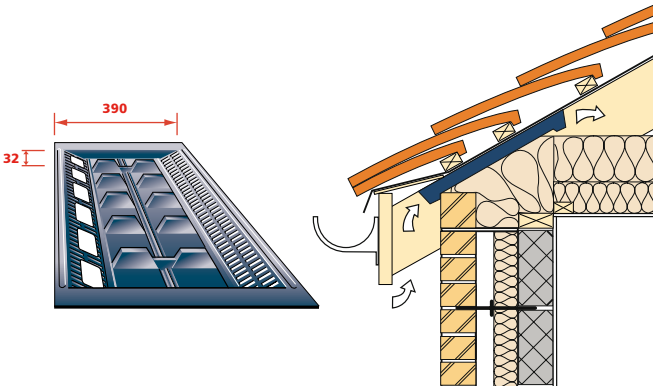
A range of single row fly screen panels to suit 600mm, 450mm and 400mm rafter centres in an open eaves or cottage detail. When fitted to roofs of 15° and above the panels will achieve the regulation requirement of 10,000mm² airflow opening per metre. Siting of the panels is with the fly screen section resting on the outer leaf and fly screen facing out to the outside. The panel is then fixed by either tack nailing or stapling to the rafters.



DOUBLE FLY SCREEN PANEL -15° PITCH
HD 6025, HD 4525 & HD 4025

The HD 6025 range offers an opening equivalent to 25,000mm² per metre, when fitted to roof pitches of below 15° this achieves regulation requirements. Siting of the panels is with the double fly screen section resting on the outer leaf and fly screen facing out to the outside. The panel is then fixed by either tack nailing or stapling to the rafters.

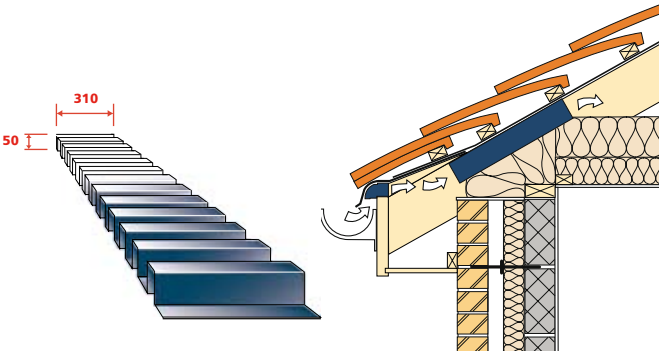
NOTE: When using Fly Screen Panel Ventilators special consideration should be given to ensuring that through flow of air is adequately maintained above the insulation and behind the panel, e.g. by using a second panel.



UNIVERSAL ROLL PANEL VENTILATOR
HD 5000

The 6m roll of HD 5000 is suitable for use on all roof pitches and meets regulation requirements of either 10,000mm² or 25,000mm² equivalent opening per metre. The siting of the roll panel is specific to the area of contact made by the insulation quilt to the underside of the roofing underlay or VPU. Compression of the quilt insulation at the point of it passing over the wall plate and linking with the cavity insulation should be minimized to prevent cold bridging. Due to its design the HD 5000 may be fitted to all rafter centres including non-standard types found with older buildings. Having determined the position of the roll panel it is tack nailed or stapled to the rafters.

It may be necessary in some circumstances to use two rolls of roll panel to ensure adequate flow of air above the insulation. Care should be taken to avoid stretching the roll panel when fixing.



The range of panel ventilators are suitable for use on all roof pitches and for rafter centres of 600mm, 450mm and 400mm to achieve regulation opening requirements of either 10,000mm² or 25,000mm² per metre. The siting of the panel is specific to the area of contact made by the insulation quilt to the underside of the roofing underlay or VPU. Any compressing of the insulation at the point of passing over the wall plate and linking with the cavity insulation should be minimized to prevent cold bridging. They are all equally suitable for new and refurbishment projects.

Eaves and Soffit Ventilation

UNIVERSAL REFURBISHMENT RAFTER TRAY
HD URT

The Universal Refurbishment Tray ventilator is designed to be fitted from inside the roof space and to suit most rafter spacings to ensure that ventilating air into the roof space is maintained and not blocked by the insulation.

The HD URT provides an equivalent opening in excess of 25,000mm² per metre. When fitting the panel to rafter centres below 450mm and 600mm it is necessary to trim the panel to suit.

The panel may be trimmed from one or both sides using a sharp knife or scissors. For rafters at 450mm centres the panel should fit without modification. For rafter centres between 450mm and 600mm it is necessary to extend the panel. This is achieved by cutting a second panel in half and attaching one half to the full panel, see Fig.1. The panel can then be further trimmed if required. The insulation material should be laid into the back of the panel ensuring a snug fit. See Fig.2.

FIG. 1

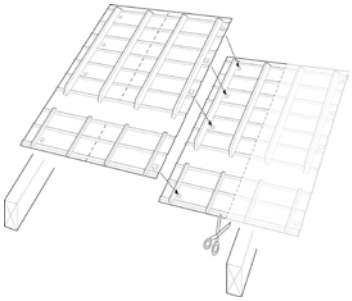
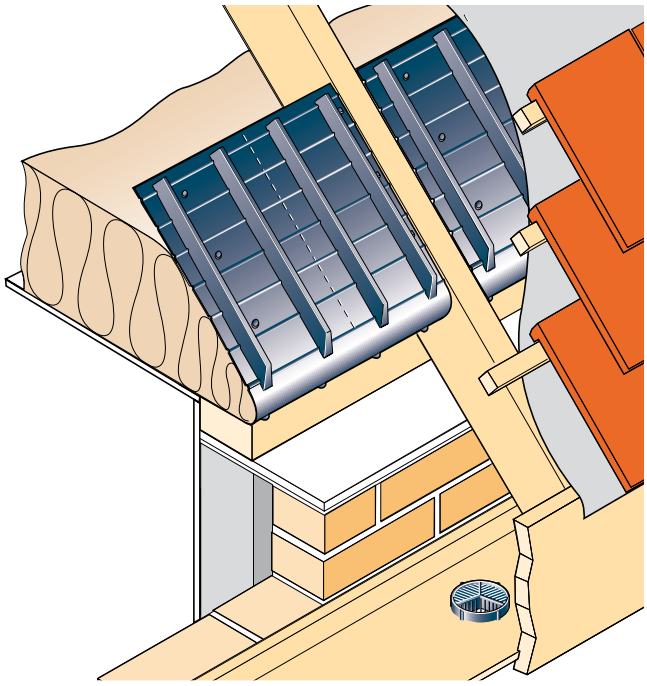


FIG. 2

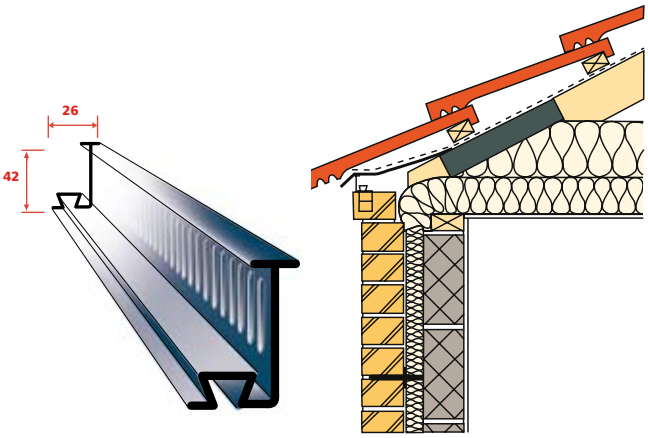


CORBEL VENTILATOR
HD 8310

Ventilation is generally achieved at eaves level by either the incorporation of a soffit strip into the soffit board or mounting an over fascia vent to the top of the fascia board. In the event that neither soffit nor fascia exists and a continuous masonry corbel is constructed, an alternative approach is necessary. The HD 8310 Corbel Ventilator is designed for such details, providing an equivalent opening of 10,000mm² airflow per metre run and conforming to regulation requirements.

The Corbel Ventilator has a dovetailed anchoring slot to the rear at the base, this permits securing ties to be attached at any point to suit the corbel joints. As an alternative to this fixing method the HD 8310 can be secured using screws.

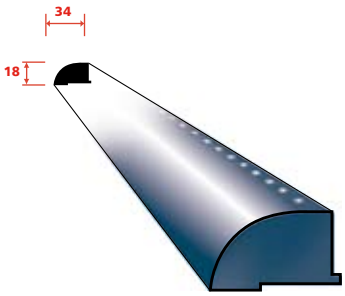
Fit the Corbel Ventilator when laying corbelled masonry. Lock the ties onto the ventilator at 225mm centres and secure fully within the vertical mortar joints of masonry on which the ventilator is located.



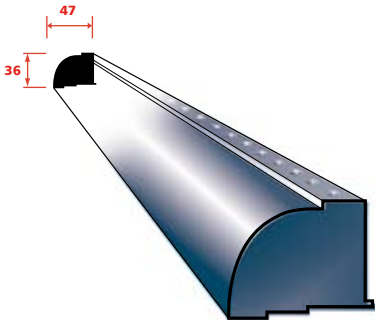
Over Fascia Ventilators

OTHER APPLICATIONS

OVER FASCIA VENTILATOR HD 12000M



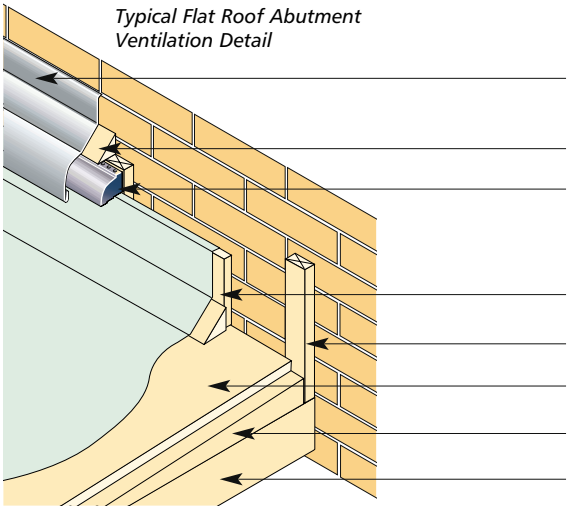
OVER FASCIA VENTILATOR HD 12000U



FLAT ROOF ABUTMENTS

In cold flat roofs where it is necessary to ventilate the airspace above the insulation, the equivalent continuous opening of 25mm can be provided at wall abutments using the HD 12000U Over Fascia Ventilator fixed in the 25mm airflow position to an upstand or skirting set 25mm off the wall. A lead cover flashing should be installed and dressed over the detail to provide weathertightness.

Typical Flat Roof Abutment Ventilation Detail



Lead Cover Flashing

Fillet

HD 12000U Universal Over Fascia Ventilator (Fixed in the 25,000 mm² airflow position)

Upstand/Skirting (recommended 150mm high)

25 mm thick battens at each joist position

Decking

Firrings

Roof Joists

CLOSED EAVES VENTILATION WITHOUT A FASCIA

HD 12000M Over Fascia Ventilators can be incorporated into eaves details to provide the minimum ventilation openings where no fascia boards exist. It is recommended that they are fixed in accordance with the specific requirements of the detail whilst ensuring that they remain supported continuously on the underside.

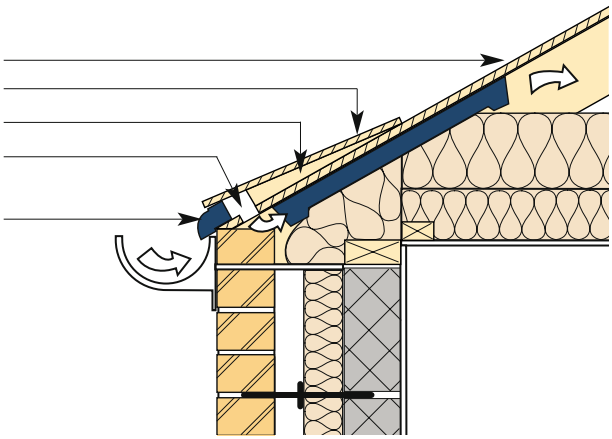
Sarking Boards

Plywood layboard if required

Tilt fillet

Gap in boarding to minimum opening requirements

HD 12000M or HD 12000U to suit application



Dry Fix Ventilated Ridge Systems

INTRODUCTION

Dry Fix ridge systems have been available to the roofing industry for some time now. Their advantages over traditional mortar bedded methods are becoming more appreciated and as a consequence increasingly finding their way onto more roofs.

The all weather fixing and low maintenance of systems provide obvious benefits to both installer and client, whilst introducing the bonus of ventilation and providing secure fixing against the worst of the weather.

UNIVERSAL DRY FIX VENTILATED ROOF SYSTEMS DFR3

The DFR3 system has added an extra dimension to previous systems, that of being truly universal. Adaptable to all commonly available ridges, tiles and slate types it has a minimum number of components and is simple and quick to install with no requirement for special tools.

Quality materials throughout are chosen for their performance in the uniquely patented product design features, resulting in no cost premiums for ventilation and at a very competitive price. The HD DFR3 has no reliance on any adhesive strips or components. It is difficult to find or achieve clean and dry surfaces on site, a limiting factor with many such systems. Independently tested by the BRE (Building Research Establishment) the HD DFR3 provides 5,000mm^2 airflow areas per linear metre to both roof slopes making it ideally suited to cold and warm roofs and batten space ventilation.

IDENTIFICATION OF COMPONENTS

Uni-Ridge Gasket
A truly universal joining gasket made from recyclable low density polyethylene to suit different sizes of ridge tile and easily trimmed if necessary. The flexible gasket incorporates double water channels and integral screw fixing seal for a high level of watertight security. The result of this unique design is a more aesthetically pleasing discreet ridge joint.

Uni-Ridge Gasket showing how it can accommodate differing tile profiles

Uni-Fixing Clip shown in its low and high positions

Uni-Fixing Clip
The Uni-Fixing Clip is designed to be fitted in either of its two positions to suit different ridge heights and roof pitches. Made from durable and recyclable polypropylene, it is non-corrosive unlike other galvanized strap systems, and very easily adjusted for position as required. By avoiding the commonly used stacked ridge battens, the clip enables a secure and stable ridge fix and facilitates accurate ridge tile alignment.

Uni-Vent Strip

Uni-Filler Strip

Uni-Filler Strip with comb removed

Uni-Vent Strip
Made from robust recyclable polypropylene, the slim line appearance of the Uni-Vent Strip provides an aesthetically discreet finish to the ridge line. A clear ventilation air path is provided in accordance with regulation requirements along the 750mm lengths of ventilator. Successive lengths of vent are joined with an integral expansion link for accurate positioning and continuity. The Uni-Vent Strip is self aligning and incorporates surface guidelines for simple ridge tile alignment.

Uni-Filler Strip
Universal to all profiles of tile, the 755mm lengths of Uni-Filler Strip are butt jointed to provide a continuous barrier to bird access, nesting and build-up of wind driven debris and snow. Made from recyclable low density polypropylene, a closed cell foam seal is incorporated in the strip to provide extra weather tight security at the head of profiled tiles. This seal, with the comb section removed is utilized on the surface of flat, plain tiles and slates to conform the surface shape e.g. double cambers on plain tiles and riven slate surfaces, for superior resistance to water penetration.

Dry Fix Ventilated Ridge Systems

INSTALLATION

The roof should be set out to achieve a gap between the clip retaining battens either side of the roof apex of between 10mm minimum and 25mm maximum. The Uni-Filler Strip is trapped into position by the clip retaining batten that is the same size as the slating or tiling battens but fixed on edge. This determines the position of the top slating/tiling batten which is fixed prior to the fixing of the clip retaining batten.

When using the HD DFR3 with low profile tiles (e.g. Double Roman, Mendip/Grovebury, Ludlow/Renown types) the Uni-Filler Strips are fitted with the foam seal across the head of the tiles and butt joined with the combs folded back under, thus filling the profile shape of the tile (see Fig. 1). When using the DFR3 with high profile tiles (e.g. Bold Roll Anglia Plus/Norfolk types) an additional batten should be fixed on edge on top of the clip retaining batten (see Fig.2). This is necessary to retain the Uni-Vent Strip in position. When using the HD DFR3 with flat and plain tiles or slates, the comb on the Uni-Filler Strip is not required and removed by trimming along the marked line. It is fitted with the foam seal on top of the slates or tiles and butt joined (see Fig.3).

If ventilating the roof space at the ridge, the underlay should be tacked to the top of the clip retaining battens on each side to avoid any obstruction to the airflow. When ventilating the batten space, or when ventilation is not required at the ridge, the underlay should be laid continuously over the ridge.

The Uni-Vent Strip has an interlock for connection with subsequent lengths and is fitted by inserting in between the Uni-Filler Strip and clip retaining batten, thereby compressing the foam seal against the head of profiled tiles or the surface of slates or flat tiles.

The legs of the Uni-Fixing Clip may be folded either way to accommodate variations in the fixing height of the ridge and to allow screw penetration into the clip of 12mm minimum. The legs of the clips are inserted between the clip retaining battens and the clip rotated 90º to engage with the battens. Where the ridge tile joints coincide with the trusses, the Uni-Fixing Clip will straddle over the truss or alternatively, timber blocking pieces may be fixed between the clip retaining battens to allow direct fixing of the ridge screw.

The Gasket is fitted snugly to the underside of each ridge tile with retaining tabs located on the outside of the ridge. The screw is passed through the fixing plate and the Gasket is screwed loosely into the Uni-Fixing Clip. Subsequent sections of ridge are then fitted, aligned and the screw tightened to secure the ridge into position. The Gasket accommodates a wide variety of ridge tiles; consequently smaller ridge tiles may require the Gasket to be trimmed. If the channelled section of the Gasket extends beyond the ridge tile (see Fig. 4a) the Gasket should be trimmed to match the internal profile of the ridge (see Fig.4b) For larger ridge profiles, trimming is not necessary (see Fig.4c).

The Uni-Fixing Clips are not used with ridge boards/trees as the ridge tiles can be fixed directly to the ridge tree using the Uni-Ridge Gasket. The clip retaining battens may still be required to retain the Uni-Filler and Uni-Vent Strips in position during installation. When fitted ensure that a 5mm ventilation gap is maintained where necessary. Where counter battens are used, they should be mitered together at the apex or to the ridge tree to provide improved bearing for the clip retaining batten.

Where the ridge meets with a verge, hip or abutment, it is recommended that a mechanical fixing be provided to suit the application in accordance with good roofing practice and the ridge tile manufacturers recommendations.

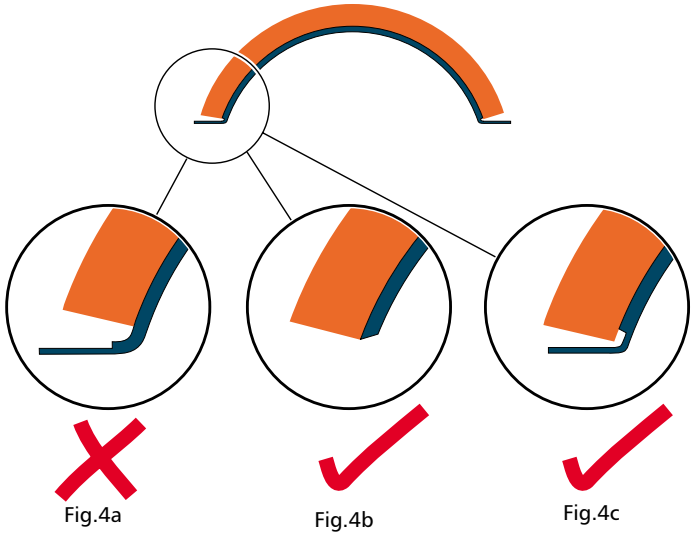


Fig.4a Fig.4b Fig.4c

Dry Fix Ventilated Ridge Systems

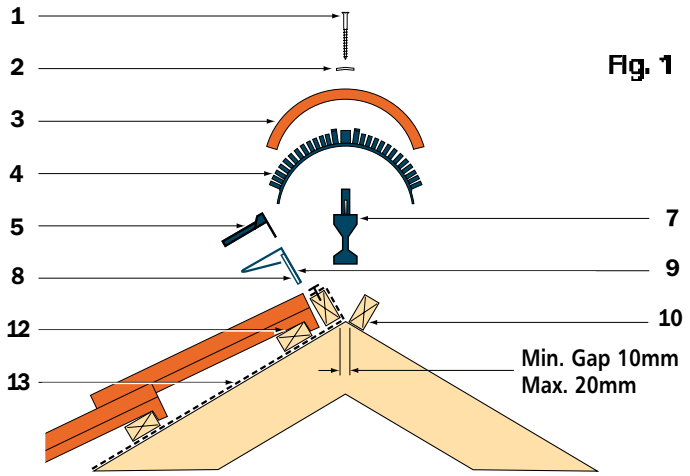


Fig. 1

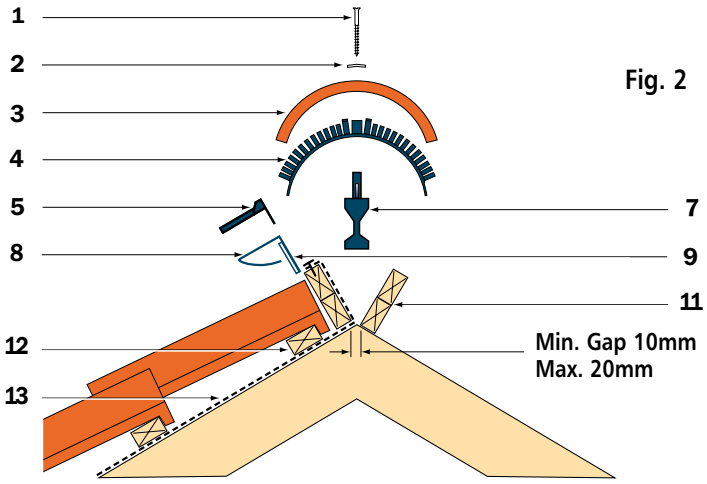


Fig. 2

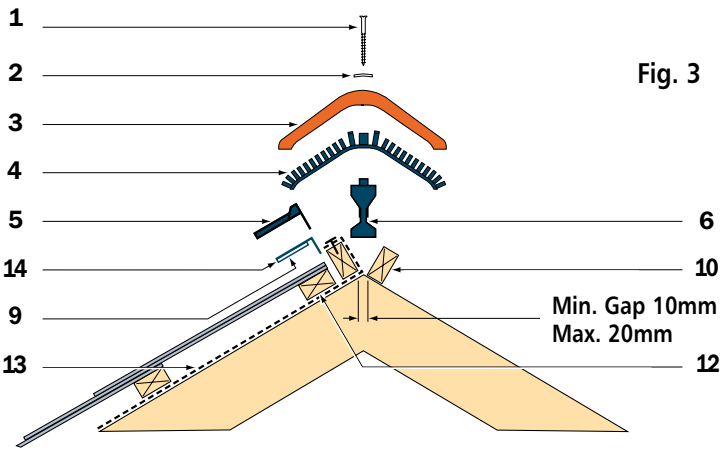


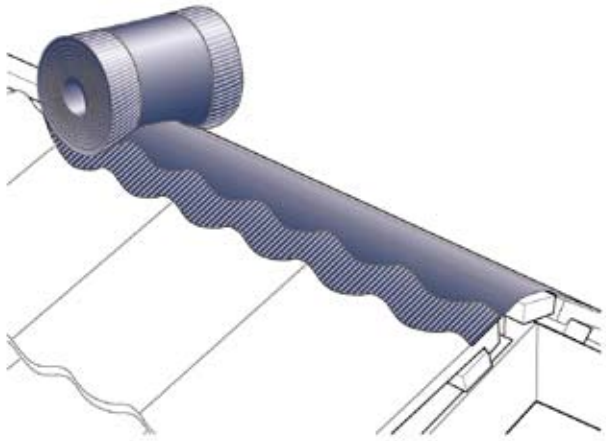
Fig. 3

1	Ridge Screw	8	Uni-Filler Strip
2	Fixing Plate	9	Foam Seal
3	Ridge Tile	10	Clip Retaining Battens
4	Uni-Ridge Gasket	11	Additional Battens
5	Uni-Vent Strip	12	Top Tiling/Slating Batten
6	Uni-Vent Clip low position	13	Roofing Underlay
7	Uni-Vent Clip high position	14	Uni-Filler Strip comb removed

Dry Fix Ventilated Ridge Systems

UNIVERSAL ROLLOUT RIDGE AND HIP SYSTEM
HD ROR3 AND HD ROR6

RollOut is a universal dry fix ridge and hip system that can be used with all commonly available ridge, tiles and slate types.



ADVANTAGES

RollOut an be fitted to all roof pitches with no special tools required. The single unique universal jointing gasket adds flexibility and allows compatibility with the most commonly available ridge and hip tile profiles. Broader corrugations than other similar systems at the edge of RollOut accommodate more types of ridge design and different pitches of roof. Suitable for Hip and Ridge applications. Clips for hip tile cuts provided separately if required.

RollOut is available in either 6m (HD ROR6) or 3m (HD ROR3) packs to suit all requirements, large or small.

AIRFLOW

HD ROR3 & HD ROR6 provides 5,000mm^2 airflow area per linear metre making them ideally suited to cold and warm roofs and for batten space ventilation.

NOTE

OPTIONAL HIP TRAY
1.65m long, available in packs of 10, code HDL HT165. Also available in 3m length HDL HT300.

OPTIONAL TILE CLIP
Code HD DVC is available for connecting small cuts of interlocking tiles on all Dry Fix hip systems.

Dry Fix Ventilated Ridge Systems

INSTALLATION INSTRUCTIONS FOR HIPS

1. Install the underlay and tiling/slating battens as normal ensuring that the ends of the battens are fixed to the hip rafter or to bearers fixed to either side of the hip rafter. A 5mm continuous gap should be maintained either side of the hip rafter if roof ventilation is required at the hip.

2. 50mm wide timber hip batten support blocks screwed to the hip rafter between the tiling/slating battens and at the ridge and eaves to support a screw fixed continuous hip batten. Hip batten to be of sufficient height to allow the fixing of the hip tiles with the screws & gaskets provided.

3. Complete the installation of the tiles or slates, cutting them neatly and close to the hip batten or leaving a 5mm ventilation gap if required. Small cuts of tile should be secured at the head using tile clips (available seperately, code HD DVC) or other mechanical means. When using double lap tiles or slates, a wider tile or slate should be used to avoid small cuts.

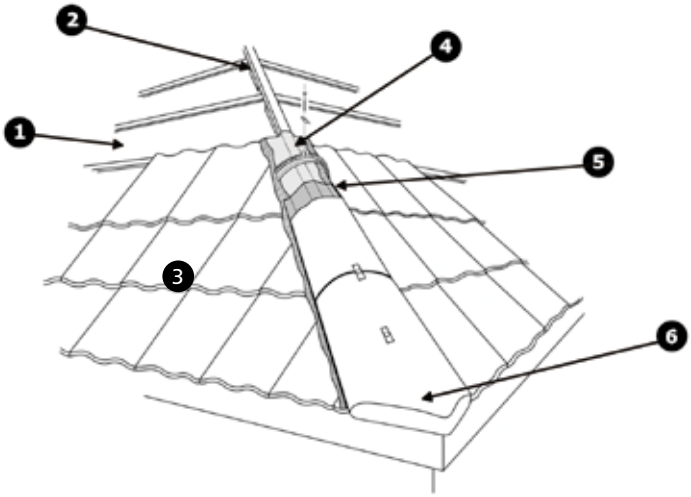
4. Starting from the eaves, the Rollflex should be placed centrally over the hip batten and tacked into position using corrosion resistant nails or staples. Subsequent lengths should be overlapped by 100mm and the Rollflex terminated at the apex of the roof. If Rollflex is also used at the ridge, it should be overlapped by 100mm onto the hip Rollflex and trimmed. If not, a lead saddle should be used at the ridge/hip junction.

5. Peel off the protective tape from the adhesive strips on the Rollflex and press down firmly onto a clean, dry and dust free tile or slate surface. For profiled tiles, care should be taken to ensure that the Rollflex follows the tile profile closely to provide continuous surface contact. If using the optional GRP hip tile support tray (Code HT 165), it should be positioned centrally onto the hip battens and over the Rollflex strip allowing 150mm overlap of each length before tacking into position using anti-corrosive nails.

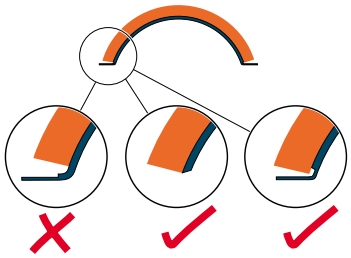
Note: The hip tile support tray is designed for universal use. Most common hip tiles will sit snugly into the outer channels however the product is also designed to carry larger hip tiles on the outer upturned flanges that will deflect downwards. This is not detrimental.

6. Starting at the eaves, drill and fix a block end hip tile into position. Continue to fix the hip tiles centrally along the hip and join using the flexible universal gasket, screw and plate provided by fixing through the GRP tray (if used) and Rollflex into the hip battens ensuring that the hip tiles are butted up tight to the gasket. The gasket should be trimmed to the inside profile of the hip tile when using smaller hip tile types.

Once at the ridge, both hip tiles and the ridge tile should be close mitred and drilled to permit screw fixing into the ridge and hip battens with the screws and plates provided. A full length hip tile should be used at the ridge, with any adjustment made by reducing the length of the adjacent hip tiles.



Tile Clip Detail - see Step 3



NOTE:-
The Rollflex should be stored at temperatures not exceeding 35°C.
It is recommended that the installation of the Rollflex strip be suspended when external temperatures fall below 5°C or exceed 30°C.
The tile or slate surface to be adhered to by the Rollflex strip should be clean and dry and free from dust, debris, grease and other contaminants.
The Rollflex strip should be installed ensuring that the ventilating rubber membrane is not stretched and that both the rubber membrane and the adhesive strips are not exposed to direct UV solar radiation.
The hip tile edges should sit on corrugated metal edges of the Rollflex strip and not be over-tightened crushing the corrugations.

Dry Fix Ventilated Ridge Systems

INSTALLATION INSTRUCTIONS FOR RIDGES

1. Install the underlay and tiling/slating battens as normal. If ventilating the roof space (below the underlay), leave the underlay approximately 30mm short of the apex on both sides.

2. For a trussed rafter roof, fix a 50mm wide ridge batten or battens along the centreline of the roof apex using the metal straps provided. They may be nailed to the rafters either above or below the underlay. If a ridge board exists, it may be necessary to build up the height using battens that should be secured to either the rafters or ridge board using the metal straps.

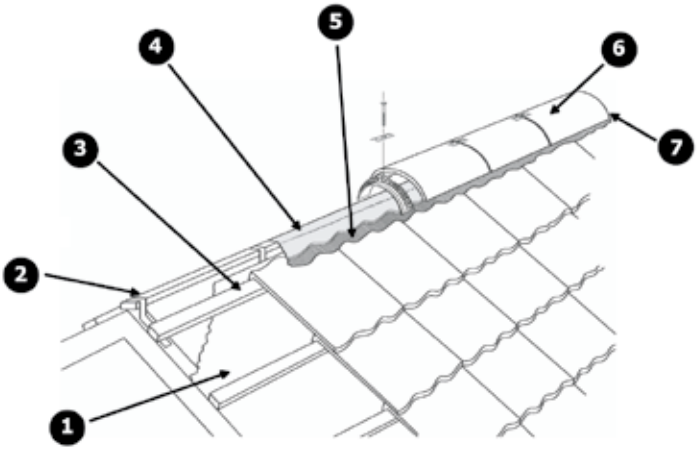
3. Fix the top tiling/slating battens and complete the tiling or slating in the usual manner ensuring that a ventilation gap is maintained where required.

4. Lay the Rollflex strip centrally along the ridge batten and tack into position using corrosion resistant nails or staples. Subsequent lengths should be overlapped by 100mm. At the gable end, the Rollflex should be trimmed down the face of the verge for a cloaked or dry fix application, or trimmed back by approximately 50mm where a bedded verge is used.

5. Peel off the protective tape from the adhesive strips on the Rollflex and press down firmly onto a clean, dry and dust free tile or slate surface. For profiled tiles, care should be taken to ensure that the Rollflex follows the tile profile closely to provide continuous surface contact.

6. Place the ridge tiles centrally along the ridge and join using the flexible universal gasket, screw and plate provided by fixing through the Rollflex and into the ridge battens ensuring that the ridges are butted up tight to the gasket. The gasket should be trimmed to the inside profile of the ridge tile when using smaller ridge tile types (see Fig.1).

7. At the ends of the ridge, whether using a block-end ridge or ridge cap, the last ridge tile should be drilled in the conventional manner and an additional screw and plate used to secure the tile to the ridge battens.



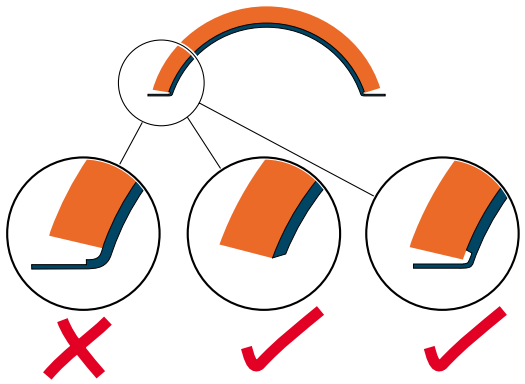


Fig.1

NOTE:-
The Rollflex should be stored at temperatures not exceeding 35°C.
It is recommended that the installation of the Rollflex strip be suspended when external temperatures fall below 5°C or exceed 30°C.
The tile or slate surface to be adhered to by the Rollflex strip should be clean and dry and free from dust, debris, grease and other contaminants.
The Rollflex strip should be installed ensuring that the ventilating rubber membrane is not stretched and that both the rubber membrane and the adhesive strips are not exposed to direct UV solar radiation.
The hip tile edges should sit on corrugated metal edges of the Rollflex strip and not be over-tightened crushing the corrugations.

Flush Fit Tile Ventilators

INTRODUCTION

The use of surface ventilators, whether slate or tile, is by no means new but the design and scope of their application and uses are moving forward at a pace in an effect to keep up with the changes seen in ventilation requirements and methods.

The introductions of alternative ventilation solutions e.g. vapour permeable underlays; acknowledge that all cold roofs require ventilation. This applies to the conventional ventilated loft space and to both non-ventilated and sealed type systems where the batten space has to be ventilated. Here the ventilated requirements are greater than for the conventional method and a surface ventilation system is often the system of choice.

The range of Hambleside Danelaw Flush Fitting Tile Ventilators covers all popular tile manufacturers' interlocking profiles and includes the double lapped plain tile types in concrete or clay. The decision to design and manufacture the range without hoods or cowls acknowledges that homebuyers are more discerning in the appearance of their property, and specifiers, when giving the choice, prefer their projects to be of maximum aesthetic appeal.

In addition to appearance, performance and function are important factors. As well as providing ventilation into the roof void the Hambleside Danelaw range can be used with great effect when linked to mechanical extraction in bathrooms or kitchens or used for soil ventilation. All of these functions are achieved by the use of an additional flexi-pipe adapter kit which connects the required service to the discreet flush fitting tile ventilator terminal, thereby removing unsightly penetrations through the roof.

The range is manufactured using UV stabilized self coloured material thereby avoiding painted or similar treated surface coatings that could lead to premature deterioration.

When specifying or using the range of Hambleside Danelaw Flush Fitting Tile Ventilators it is important and reassuring to know that their suitability for use has been examined and tested independently to exacting standards by the Birmingham City Laboratory, a respected and accredited testing facility to both the private and public sectors.

HD TV15/4

HD TV15/2

HD TV10/8

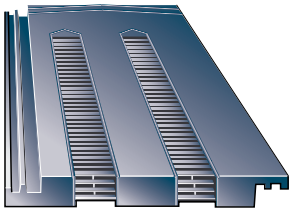
HD TV10/5

Flush Fit Tile Ventilators

PRODUCT IDENTIFICATION

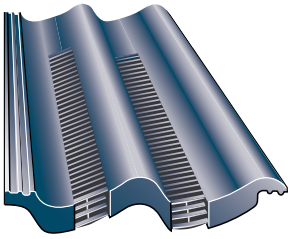
HD TV15/1

Tile Compatibility	Colours	Vent Area
Marley Modern Type	Brown	15,000mm²
Redland Mini Stonewold Type	Terracotta	
Russell Grampian Type	Antique Red	
Sandtoft Calderdale Type	Grey	
Quinn Western Slate Mk 2 Type	Black	
Lagan Flat Type	Others to special order	



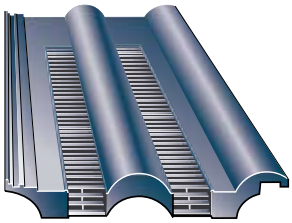
HD TV15/2

Tile Compatibility	Colours	Vent Area
Marley Mendip Type	Brown	15,000mm²
Redland Grovebury Type	Terracotta	
Quinn Locherne Type	Antique Red	
	Grey	
	Black	
	Others to special order	



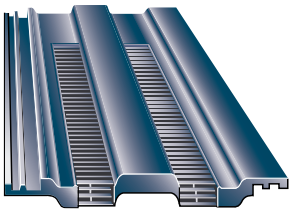
HD TV15/3

Tile Compatibility	Colours	Vent Area
Marley Double Roman Type	Brown	15,000mm²
Redland Double Roman Type	Terracotta	
Russell Double Roman Type	Antique Red	
Sandtoft Double Roman Type	Grey	
Lagan Double Roll Type	Black	
	Others to special order	



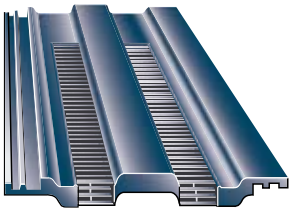
HD TV15/4

Tile Compatability	Colours	Vent Area
Marley Ludlow Major Type	Brown	15,000mm²
Russell Cheviot Type	Terracotta	
	Antique Red	
	Grey	
	Black	
	Others to special order	



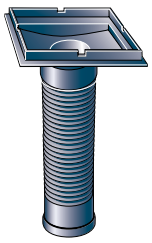
HD TV15/7

Tile Compatibility	Colours	Vent Area
Redland Renown Type	Brown	15,000mm²
	Terracotta	
	Antique Red	
	Grey	
	Black	
	Others to special order	



HD TVSPA

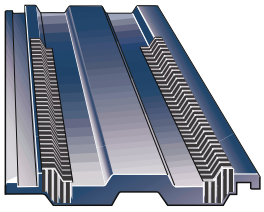
Available for soil ventilation and mechanical extraction for HD TV15 series - Code HD TVSPA



Flush Fit Tile Ventilators

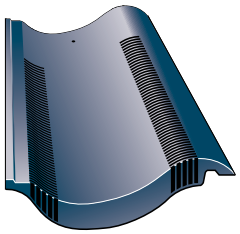
HD TV10/6

Tile Compatibility	Colours	Vent Area
Marley Ludlow Plus Type	Brown	10,000mm²
Redland 49 Type	Terracotta	
Sandtoft Standard Pattern Type	Antique Red	
	Grey	
	Others to special order	



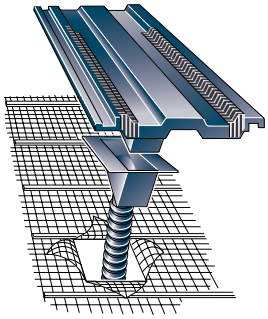
HD TV10/8

Tile Compatibility	Colours	Vent Area
Marley Anglia Plus Type	Brown	10,000mm²
Redland Norfolk Pantile Type	Terracotta	
Sandtoft Shire Pantile Type	Antique Red	
	Grey	
	Anthracite (Black)	
	Others to special order	



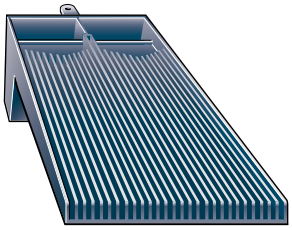
HD RSPA

Available for soil pipe ventilation and mechanical extraction for HD TV10/6 and HD TV10/8 ventilators
Code HD RSPA



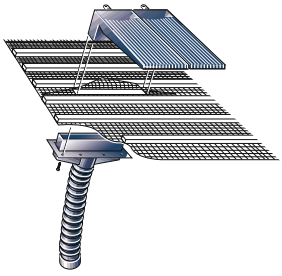
HD TV10/5

Tile Compatibility	Colours	Vent Area
All plain clay and concrete tiles	Brown	2,000mm²
	Terracotta	
	Antique Red	
	Grey	
	Anthracite (Black)	
	Others to special order	



HD PCSPA

Available for soil pipe ventilation for HD TV10/5 ventilators
Code HD PCSPA
(Use two ventilators per adaptor. Not recommended for mechanical extraction)



Flush Fit Tile Ventilators

INSTALLATION

TILE ROOF VENTILATORS HD TV15/1/2/3/4/7, HD TV10/6 AND HD TV10/8

The position of the ventilator should be determined and located between the rafters. The underlay should be diagonally cut to a rectangle in accordance with Fig.1 (HD TV15 Series) or Fig. 2 (HD TV10 Series). The triangular shapes created by the cuts in the underlay should be folded outwards and underneath the vent with the top and bottom shapes tacked to the battens to deflect and prevent water and debris penetrating through the underlay.

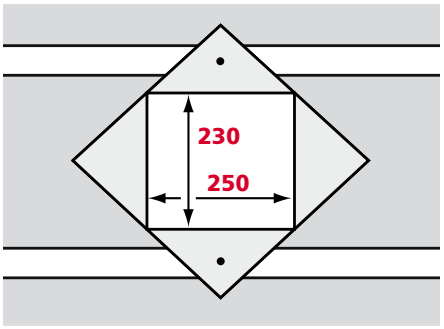
If the ventilators should be required to be fixed in a boarded roof, as typically found in Scottish roofing practice, the sark boards should be cut into rectangle shapes of Fig.1 or Fig. 2, and the underlay cut and folded back into the same manner as previously described.

The tile vents should be laid in the normal manner to that of the tiles, the integral clip of the tile vent situated at the bottom right corner of the vent overlock will locate and secure with the adjacent tile. Hambleside Danelaw recommends in accordance with recognised good tiling practice, that all interlocking tiles should be laid as close to the mid shunt position as possible, Fig 3. Tiles laid too closely together cannot always accommodate the expansion and contraction of the tiles and roof structure below; this could result in the possibility of the tiles lifting and the interlocks cracking. Likewise the tile vents may also lift or distort under the compression forces created.

Should difficulty occur in providing conventional cross flow ventilation, at eaves level, when maintaining insulation thickness to avoid cold bridging for example, Hambleside Danelaw recommends the use of slate or tile vents positioned as close to eaves level as possible whilst ensuring that they are located above the level of internal insulation layers.

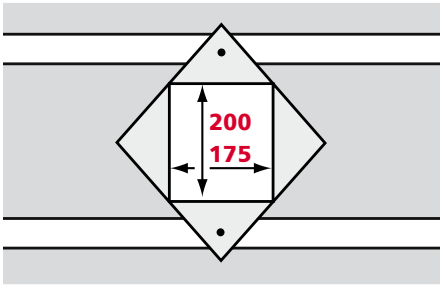
Should the vents be required for mechanical extraction or to ventilate soil pipes, kits are available to facilitate this, See Fig.4 and Fig.5.

Fig. 1.



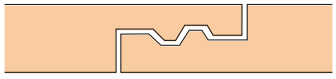
15 Series

Fig. 2.

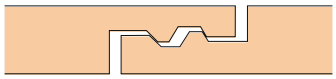


10 Series

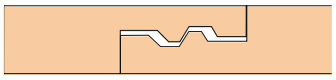
Fig. 3.



Mid Shunt



Open Shunt



Closed Shunt

Fig. 4.

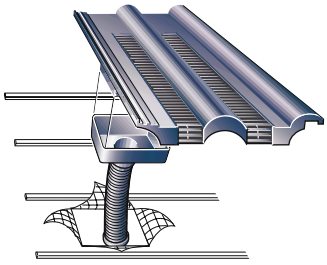
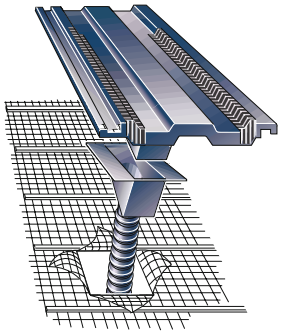


Fig. 5.



Flush Fit Tile Ventilators

INSTALLATION

HD TV10/5 TILE ROOF VENTILATOR FOR USE WITH DOUBLE LAP PLAIN CLAY OR CONCRETE TILES

When the position of the tile ventilator has been selected, the underlay should be cut diagonally to a rectangle of 170mm x 30mm, Fig. 2. The top and side triangular shapes should be folded outwards and underneath the ventilator. Where possible the top triangle should be tacked to the batten above. It is important that the cuts form a snug fit to the ventilator to deflect and prevent water and debris penetration through the underlay. For a fully boarded roof a corresponding hole should be cut in the sark board.

If the HD TV10/5 is required to ventilate soil pipes, an adapter kit (HD PCSPA) is available which is fitted to two vents side by side prior to installation on the roof, Fig.1.

The underlay should be cut diagonally to a rectangle of 240mm x 35mm, folded and tacked to the top batten in the same matter. The soil pipe adapter unit is secured from within the roof space through the underlay and into the battens using the screws provided.

When using the ventilator in a fully boarded roof application it is recommended that extension spigots ES10/5 are fitted to the vents to ensure effective roof space ventilation. These extension spigots should also be used when using the soil pipe adapter kit, which should be secured to the underside of the sark board.

Fig. 1.

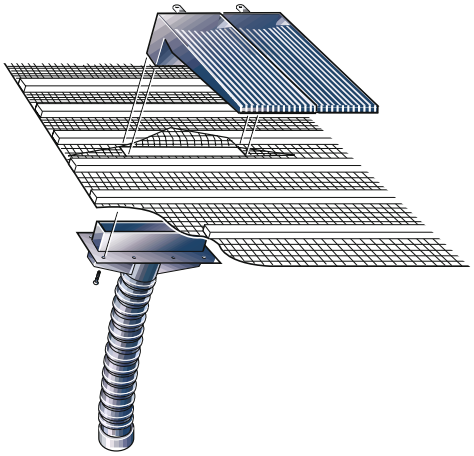


Fig. 2.

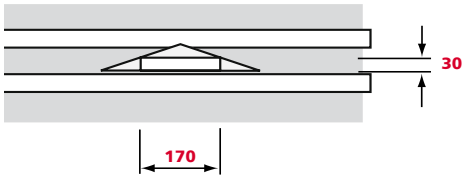
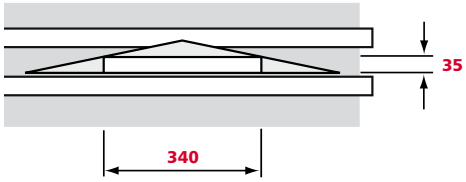


Fig. 3.



PERFORMANCE DATA					SPACING DATA	
Product Code	Aperture Area mm²	Airflow Litres/Sec	Pressure Drop Pascals	Min. Rafter Pitch Degrees	Equivalent Opening mm²	Spacing Centres
HD TV15/1/2/3/4/7	15,000	15 30 60	5 19 68	17.5	25,000 10,000 5,000	0.6 m 1.5 m 3 m
HD TV10/6/8	10,000	15 30 60	8 29 115	22.5	25,000 10,000 5,000	0.4 m 1 m 2 m
HD TV10/5	2,000	15 30 60	5 20 105	35	25,000 10,000 5,000	12.5 m 5 per m 2.5 per m

Hooded Slate Ventilators

INTRODUCTION

Hooded slate ventilators are a range of first generation slate roof ventilators whose originality continues to have its ardent supporters due to the simplicity of their installation and functional benefits. The three product range benefits from a flexible approach to fit two slate sizes commonly used in the industry, more in the case of the HD SRV680.

Both the HD SRV5U and HD SRV10U are manufactured to suit 600mm x 300mm slates, whether natural or man-made, but due to the design of the ventilators, guide lines provided on the base allow for trimming to suit 500mm x 250mm slates. Watertightness is not compromised by maintaining minimum head and side laps.

For the ultimate solution to different slate sizes, with the largest ventilation capacity in the Hambleside Danelaw range, the HD SRV680 slate ventilator utilizes a base size of 680mm x 450mm to great effect by allowing slates to be laid over and fixed through the base. In addition to accommodating different sized slates, the HD SRV680 is the ideal choice for projects with randomly laid slate or diminishing courses.

When specifying or using the range of hooded slate ventilators it is important, and reassuring to know, that their suitability for use has been examined and tested independently to exacting standards by Birmingham City Laboratories, a respected and accredited testing facility to both the private and public sectors.

PERFORMANCE DATA					SPACING DATA	
Product Code	Aperture Area mm^2	Airflow Litres/Sec	Pressure Drop Pascals	Min. Rafter Pitch Degrees	Equilivant Opening mm^2	Spacing Centres
HD SRV5U	5,000	15 30 60	12.8 48 175	22.5 at 100mm headlap	25,000 10,000 5,000	5 per m 0.5 m 1 m
HD SRV10U	10,000	15 30 60	4.6 19.6 74	22.5 at 100mm headlap	25,000 10,000 5,000	0.4 m 1 m 2 m
HD SRV680	20,000	15 30 60	3.7 18 52	25 at 75mm headlap	25,000 10,000 5,000	0.8 m 2 m 4 m

Hooded Slate Ventilators

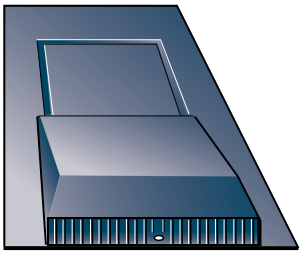
PRODUCT IDENTIFICATION

HD SRV5U

Slate Sizes
600mm x 300mm
500mm x 250mm
(Not recommend for soil pipe ventilation or mechanical extraction)

Colours
Black
Grey to special order

Vent Area
5,000mm²

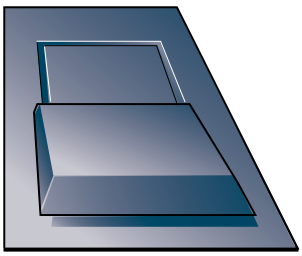


HD SRV10U

Slate Sizes
600mm x 300mm
500mm x 250mm

Colours
Black
Grey to special order

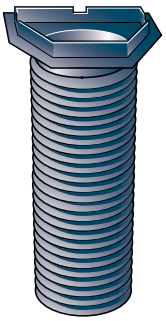
Vent Area
10,000mm²



HD SPA

Available for soil pipe ventilation and mechanical extraction for HD SRV10U ventilators

Code HD SPA



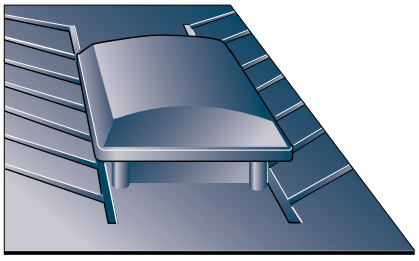
HD SRV680

Slate Sizes
Suits all slate sizes, random and diminishing courses.

Colours
Black
Grey to special order

Vent Area
20,000mm²

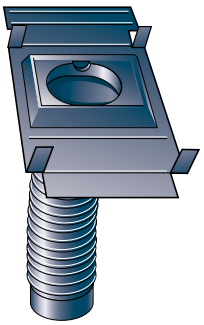
Bat access vent option to special order



HD SPA680

Available for soil pipe ventilation and mechanical extraction for HD SRV680

Code HD SPA680



Hooded Slate Ventilators

INSTALLATION

HD SRV5U SLATE ROOF VENTILATOR
FOR USE WITH SLATE SIZES OF 600MM X 300MM OR 500MM X 250MM

1. Once the position of the HD SRV5U has been selected, mark on the batten the course the slate vent is to be fitted to. Proceed to slate the roof to comply with manufacturer's specification until reaching the course immediately below the location selected for the slate vent to be fitted.

2. Remove equal sized corners from the two slates directly beneath the vent by cutting diagonally from a point 150mm across the top of each slate to a meeting point 230mm down the slate thereby creating a triangle pointing down the roof, Fig. 1.

3. Cut an upside down 'T' shape in the roofing underlay from the bottom edge of the top batten. Fold the triangle shaped flaps outwards and under the vent to deflect and prevent water and debris penetration through the roof underlay, Fig.2.

4. Fit the ventilator as per a normal slate. When using either natural or man-made slates, secure the tail of the vent with a copper disc rivet through the hold provided.

5. The base of the vent may be trimmed along the 'trim lines' on the underside to suit 500mm x 250mm slates, Fig. 3.

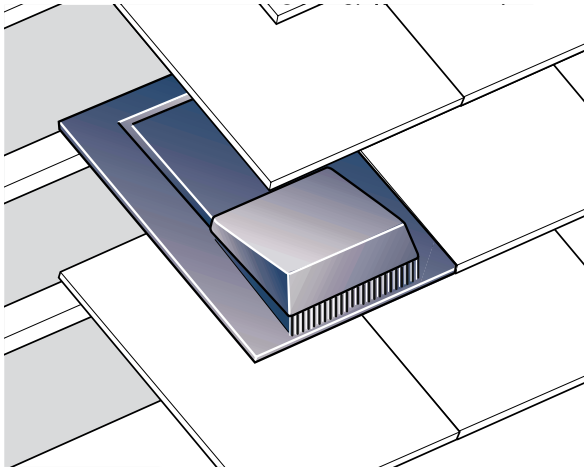


Fig. 1

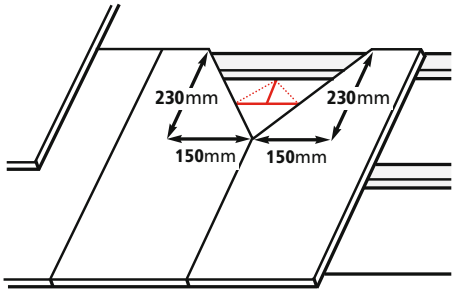


Fig. 2

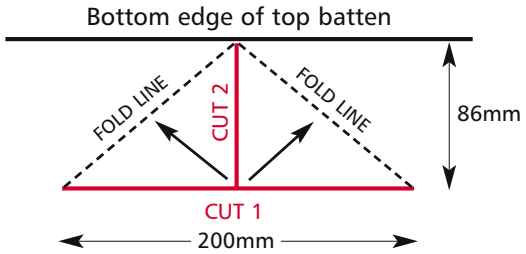
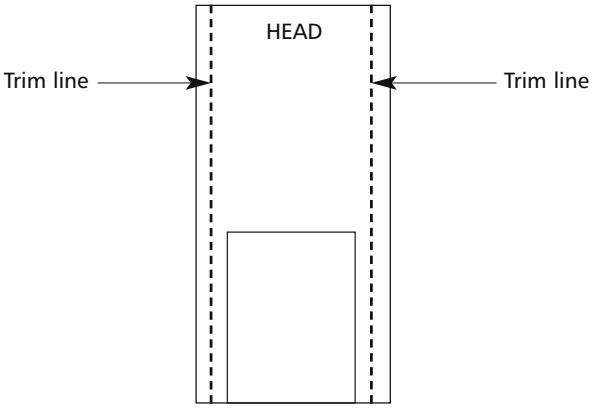


Fig. 3



Hooded Slate Ventilators

INSTALLATION

HD SRV10U SLATE ROOF VENTILATOR
FOR USE WITH SLATE SIZES OF 600MM X 300MM OR 500MM X 250MM

Once the position of the HD SRV10U has been determined the roof is slated to the manufacturer's specification until the course immediately below the location for the slate vent is reached. The two lower slates are cut to fit around the spigot of the ventilator using templates provided.

The underlay is cut to the shape and dimensions, as shown in Fig.2 ensuring a snug fit to the ventilator spigot is maintained. The triangular shapes created by the cuts in the underlay should be folded outwards and underneath the vent to deflect and prevent water and debris penetration through the underlay.

The ventilator is fitted as per a normal slate. When using either natural or man made slates, the tail of the ventilator should be secured against uplift using a copper disc rivet through the hold provided.

Trimming the HD SRV10U Ventilator
This ventilator has a standard base of 600mm x 300mm. If the vent is required for use with 500mm x 250mm slates the size can be reduced by scoring along the three lines marked on the underside of the ventilator body with a sharp knife. The edges can then be fitted in the normal manner. Note that the head of the vent base is longer than 600mm. This can be left at this length, although it will increase the head lap, unless it causes undue problems, in which case it can be trimmed off to suit.

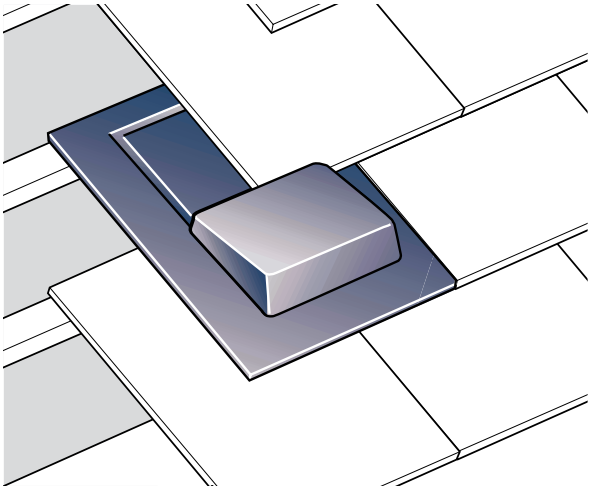


Fig. 1

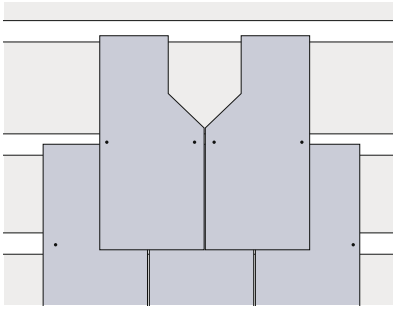


Fig. 2

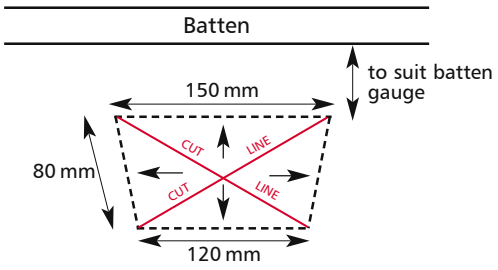
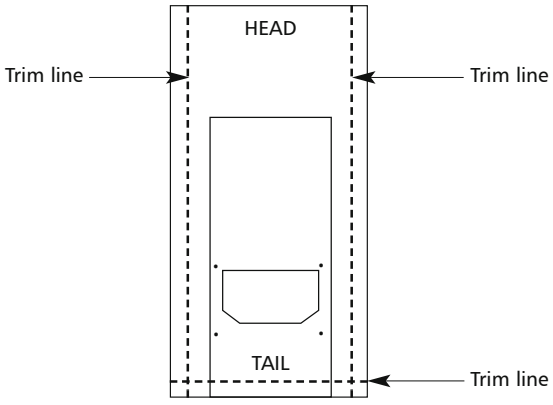


Fig. 3



Hooded Slate Ventilators

INSTALLATION

HD SRV680 SLATE ROOF VENTILATOR
FOR USE WITH STANDARD AND NON STANDARD SLATE SIZES, RANDOM OR DIMINISHING COURSE APPLICATIONS

Having selected the position of the vent, proceed to slate the roof to comply with the manufacturers specification, until the course is reached immediately below the place selected for the vent to be fixed.

If the vent is to be used in conjunction with 600mm x 300mm slates, the base can be trimmed with a sharp knife along the guidelines, or should extreme exposure be a consideration, left at 680mm x 450mm for maximum protection.

The two slates immediately underneath the vent should be cut to dimensions as Fig. 1.

Slate Cutting
Dimension **A** (see Fig. 1)

100 mm headlap	**75 mm headlap**
600 x 300mm =150mm	600 x 300mm =140mm
500 x 250mm =100mm	500 x 250mm =90mm
450 x 225mm =75mm	450 x 225mm =65mm

If a Soil Pipe Adapter is to be used, dimension B may be reduced to 60 mm for all slate sizes.

Before proceeding to fit the vent, the roofing underlay should be cut to the diagonals of a rectangle of 165mm x 125mm and folded back on the dotted line. Where possible the top and bottom triangular flaps should be tacked to the battens above and below, the right and left hand triangular shapes are to be folded outwards and underneath the ventilator. Whether using natural or man-made slate, a copper disc rivet must be positioned between the two slates immediately below the bottom edge of the ventilator and the tang of the rivet placed through the hole provided in the bottom of the ventilator and bent over to secure it.

When slating over the two sides and rear of the vent the slates should be cut to abut the two sides and rear of the vent upstand as tight as possible to afford maximum protection, ensuring the slating bond is maintained throughout. This must be done correctly to ensure the integrity of the roof. Care must be taken to maintain adequate side and headlaps. Refer to guidelines in BS 5534: 2003, Code of Practice for Slating and Tiling (including shingles).

Soil Pipe/Mechanical Adapter
Should the HD SRV680 be required to perform soil pipe ventilation or mechanical extraction, the roof underlay should be cut and folded back on the dotted lines as in Fig.3 and the HD SRV680 adapter kit used. This should be fitted to the vent prior to installation. Any pipework passing through a cold roof void being used for mechanical extraction should be lagged to minimise condensation forming on the inside of the pipe.

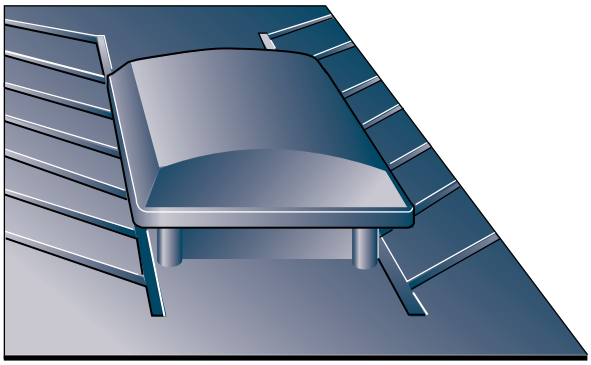


Fig. 1 Slate cutting dimensions

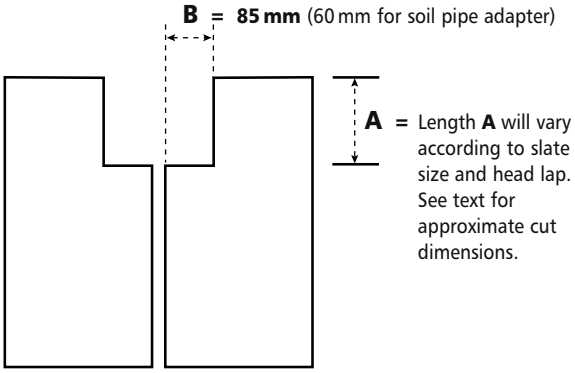
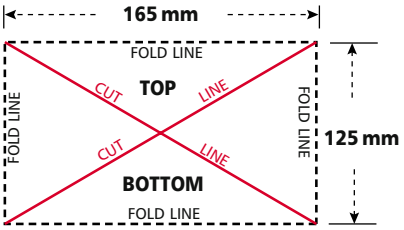
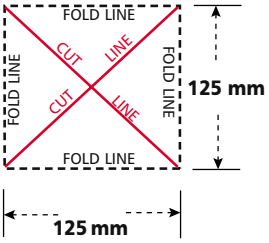


Fig. 2 Roof underlay cutting and folds
to achieve full 20,000 mm² through flow of air



Note: When cutting the slates and underlay it is important to ensure that the opening in the roof aligns with the opening on the underside of the vent.

Fig. 3 Roof underlay cutting/folding for soil pipe adapter



The solid lines on these diagrams show where the cuts in the roof underlay should be made. The triangular underlay flaps are then lifted and folded back along the dotted lines.

Flush Fit Slate Ventilators

INTRODUCTION

The benefits of using a flush fitting surface ventilator are discussed in the tile ventilation section of this technical manual. The Hambleside Danelaw range of Flush Fitting Slate Ventilators enjoy all of these benefits with additional advantage, in the case of the model HD ILSRV10/U, of being compatible with a range of slate sizes and ideally suited to the Scottish practice of boarding out roofs.

The models in the range are suitable for use with natural or man-made slates, slates with riven edges and surfaces as well as the ubiquitous fibre cement smooth surface straight edge designs.

The two model types in the range approach their installation into the roof in two different ways, each with its own benefit. The HD ILSRV10/U requires a batten to be cut to allow the ventilation spigot to pass through. This design allows for a vent which will accommodate 600mm x 300mm, 500mm x 250mm and 450mm x 230mm slate sizes, a distinct advantage with the smaller natural slates now being quarried or imported. The HD ILSRV10/20 and HD ILSRV10/24 are designed to be fitted without the need to cut battens.

Both designs of ventilator benefit from being able to ventilate soil pipes, or to allow mechanical extraction from bathrooms or kitchens if required, by using the additional flexi-pipe adapter kit provided.

When specifying or using the range of Hambleside Danelaw Flush Fitting Slate Ventilators it is important and reassuring to know that their suitability for use has been examined and tested independently to exacting standards by Birmingham City Laboratories, a respected and accredited testing facility to the private and public sector.

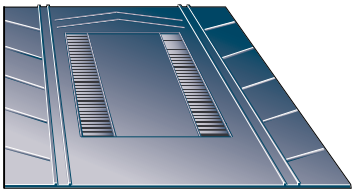
PERFORMANCE DATA					SPACING DATA	
Product Code	Aperture Area mm²	Airflow Litres/Sec	Pressure Drop Pascals	Min. Rafter Pitch Degrees	Equivalent Opening mm²	Spacing Centres
HD ILSRV10U	10,000	15 30 60	8 29 115	25	25,000 10,000 5,000	0.4 m 1 m 2 m
HD ILSRV10/20 and HD ILSRV10/24	10,000	15 30 60	10 39 157	25	25,000 10,000 5,000	0.4 m 1 m 2 m

Flush Fit Slate Ventilators

PRODUCT IDENTIFICATION

HD ILSRV10/U

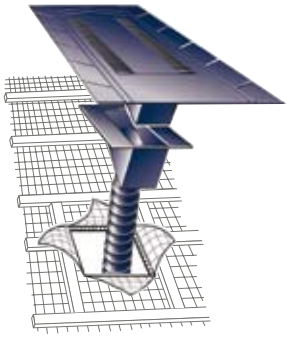
Slate Sizes	Colours	Vent Area
600mm x 300mm	Black	10,000mm²
500mm x 250mm	Grey to special order	
450mm x 230mm		



HD ILSPAU

Available for soil pipe ventilation and mechanical extraction for HD ILSRV10/U ventilators

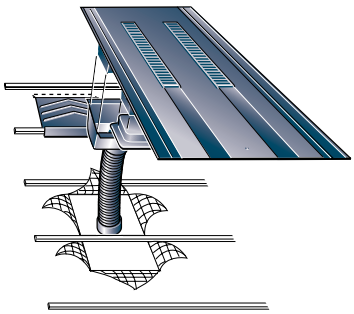
Code HD ILSPAU



HD ILSRV10/24
HD ILSRV10/20

Slate Sizes (HD ILSRV10/24)	Colours	Vent Area
600mm x 300mm	Black	10,000mm²
	Grey to special order	

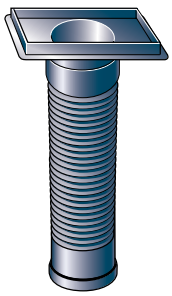
Slate Sizes (HD ILSRV10/20)	Colours	Vent Area
500mm x 250mm	Black	10,000mm²
	Grey to special order	



HD ILSPA

Available for soil pipe ventilation and mechanical extraction for HD ILSRV10/20 and HD ILSRV10/24 ventilators

Code HD ILSPA



Flush Fit Slate Ventilators

INSTALLATION

HD ILSRV10/U UNIVERSAL SLATE ROOF VENTILATOR FOR USE WITH SLATE SIZES OF 600MM X 300MM, 500MM X 250MM OR 450MM X 230MM

1. Marking the Battens
The position of the slate vent must be located between rafters. The middle batten at the vent position must be cut to allow installation therefore trimmer or support battens should be fitted. This batten should be cut to allow for a minimum gap of 200mm after fixing the support battens, as shown in Fig.1.

2. Fixing the Support Battens
Trim the central batten and fix by nailing/skew nailing support battens for 450mm x 230mm slates. When using slates longer than 450mm, it is recommended that an additional support batten is fixed across the rafters and between the main battens to provide fixing for the support battens and to support the head of the vent, Fig. 3a. Cut the diagonals of a 230mm x 180mm rectangle in the underlay, fold out the flaps and tack to the surrounding battens to deflect and prevent water and debris ingress through the underlay. Fig. 2.

3. Cutting the Slates
Slate up to the course below where the vent is to be fitted. Trim the two slates to be located under the vent using template 2 marked 'bottom slates' supplied with the ventilator, allowing for any variations due to different headlaps and slate sizes, and fix as shown is Fig. 3 and Fig. 3a.

4. Positioning the Vent
Fit the vent into the aperture created by the cut slates and the corresponding aperture cut into the roof underlay. Fix the adjacent slates, ensuring that they overlap the vent base to maintain the bond and creep angle.

Trim the top two slates to be fitted over the vent using the template supplied marked TOP and fix as shown in Fig.4 for 450mm x 230mm slates. When using slates longer and wider than this size, half a slate should be fitted over the head of the ventilator to maintain adequate headlap. To allow nailing of the next course of slate over the vent, which should be cut around the vent grille area, a double batten is required above the vent, Fig. 4a.

5. Slating
Continue to slate the roof in the normal manner. Fig.5

6. Sark Board Details
Common Scottish practice is to nail slates and ancillaries directly to the sark boards through the roof underlay. In order to ensure a snug fit between the vent, sark board and the underlay, a 260mm deep x 200mm wide aperture should be cut into the sark board and the underlay. The underlay should be cut diagonally 260mm deep x 200mm wide and an aperture cut in the sark board to the same dimensions. The triangular flaps of the underlay are folded back and should be tacked to the sarking to help maintain the integrity of the roof.

7. Soil Pipe Ventilation and Mechanical Extraction
When using the vent for either soil or pipe ventilation or mechanical extraction it is necessary to first of all fit the adapter kit (HD ILSPA) to the vent. The complete assembly can then be fixed into position, Fig. 6. When fitting the adapter to the spigot make sure that it is pushed home firmly (the adapter should be the correct way round to the spigot) ensuring that the four locator pins on the vent are fully secured into the holes in the adapter. Any pipework passing through a cold roof being used for mechanical extraction should be lagged to minimise condensation forming on the inside of the pipe.

Fig. 1

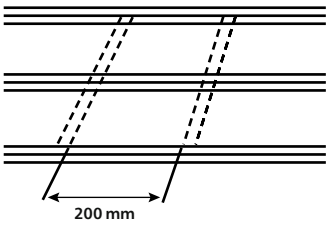


Fig. 2

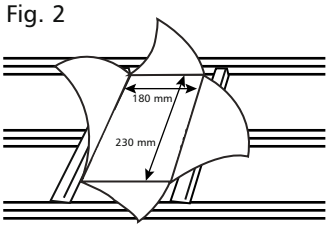


Fig. 3

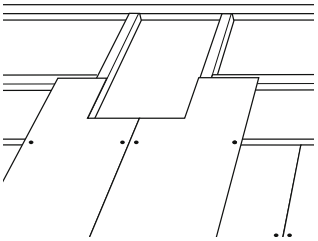


Fig. 3a

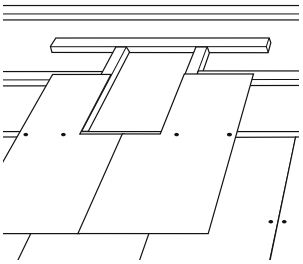


Fig. 4

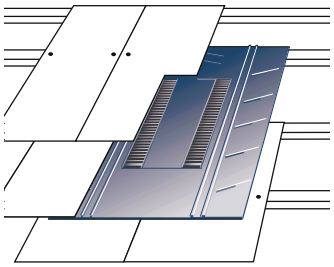


Fig. 4a

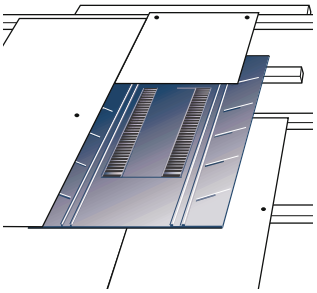


Fig. 5

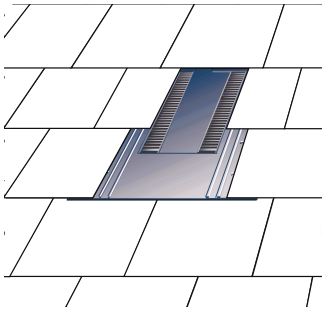
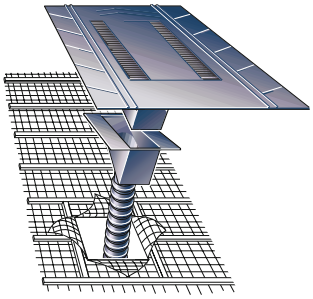


Fig. 6



Flush Fit Slate Ventilators

INSTALLATION

HD ILSRV10/24 SLATE ROOF VENTILATOR
BASE SIZE 615MM X 300MM TO SUIT 600MM X 300MM SLATE SIZE

HD ILSRV10/20 SLATE ROOF VENTILATOR
BASE SIZE 565MM X 290MM TO SUIT 500MM X 250MM SLATE SIZE

The unique design of these two flush fitting ventilators allows them to be fitted with the two vent spigots either side of the slating batten, Fig.1. After determining the position of the ventilator, the lower and upper slates to the vent should be cut using the templates provided with each ventilator.

The underlay should be cut to the pattern and dimensions shown in Fig. 2. The top triangular shape of the lower smaller rectangle aperture should be folded outwards and secured by tacking it to the slating batten. Fold all the triangular shaped flaps outwards and back under the vent to deflect and prevent water and debris penetration through the underlay. It is essential that a snug fit to both ventilator and spigots is achieved.

Continue to fit the slate ventilator as a normal slate. The tail of the vent should be secured against uplift using a copper disc rivet through the hole provided. Note: The base size of the HD ILSRV10/20 is 565mm x 290mm therefore the adjacent slates should be overlapped onto the vent. An additional moisture/debris diversion plate code IL/DP (Fig. 3D) may be fitted if required.

For soil pipe ventilation or mechanical extraction it is essential that the blanking plug provided (Fig. 3A) is fitted to the smaller spigot before installing the ventilator to prevent back-venting. The blanking plug should not be fitted when the vent is used for roof space ventilation purposes only, in order to achieve full 10,000mm² airflow.

When using the soil pipe adapter kit (Fig. 3 B and C) to allow mechanical extraction from either a bathroom or kitchen, it is recommended to insulate, by means of lagging, any pipework passing through a cold roof void to minimize condensation forming on the inside of the pipe.

Fig 1.

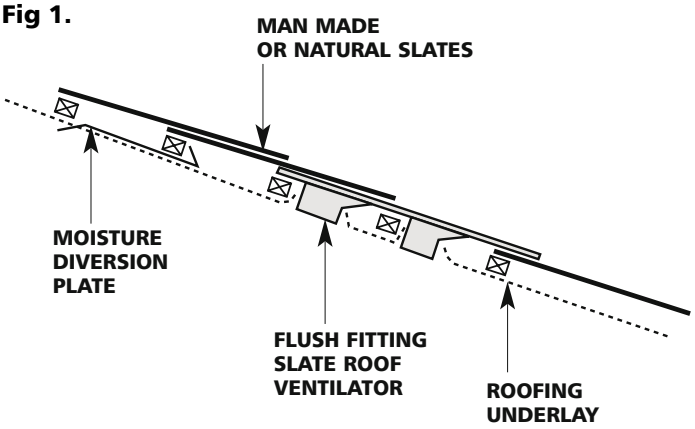


Fig 2.

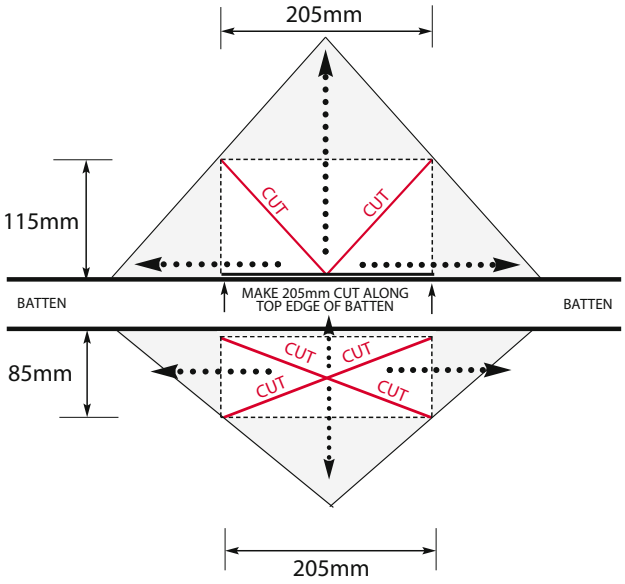
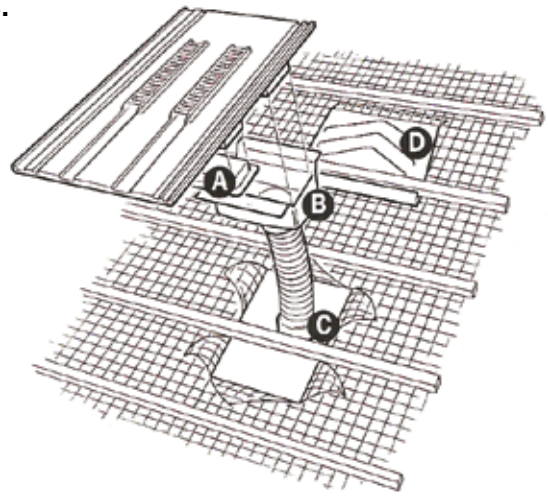


Fig 3.



Soil Pipe Adaptor Kit Code HD ILSPA

A. Blanking Plug

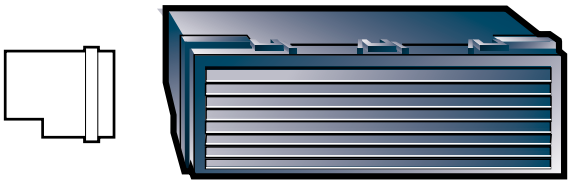
B. Vent Adaptor

C. 100mm Flexible Hose

D. Optional Extra - Moisture Diversion Plate Code IL/DP

Combination Airbrick Ventilators

COMBINATION AIRBRICK VENTILATOR
HD 9300



Allows higher levels of airflow (in excess of 7,000mm²) compared to traditional clay air bricks and the ability to interconnect with a range of accessories/ancillary products. The HD 9300 has additional design features to prevent the ingress of nesting insects (4mm fly screen) and integral baffles to prevent wind-driven rain from passing through the vent.

Bricks may be clipped together vertically to form other standard sizes, i.e. 225mm x 150mm and 225mm x 225mm

These are available in Buff, Terracotta, Brown or Black.

INSTALLATION

The air brick ventilator is used in conjunction with either a straight through-wall sleeve or vertical telescopic sleeve.

Building Regulations Approved Document C and BS 5250 require that ventilation openings equivalent to 1,500mm²/m run of external wall, or 500mm²/m² of floor area (whichever gives the greater opening area), should be provided in opposing external walls and placed so that ventilating air will have a free path between and to all parts.

NHBC Standards require one clay airbrick to be fitted at 1.5m centres for timber floors and at 2m centres for concrete floors (1.5m centres in Scotland).

Hambleside Danelaw recommends that HD 9300 airbrick ventilators should be installed at 3m centres maximum.

AIRBRICK VENTILATOR WITH GAS GRILLE
HD 9300G

HD 9300G is used to allow air into buildings containing gas burning appliances and is similar to the standard air brick HD 9300 but with a different factory fitted grille aperture to comply with the requirements of BS 5440 Part 2: 2000. The airflow is depicted on the grille which conforms to gas board requirements.

These are available in Buff, Terracotta, Brown or Black.

AIRBRICK VENTILATOR SLEEVES
HD 9350/1/2/3

The range of semi-rigid sleeves accommodates various air brick configurations up to 225mm x 220mm, they are 280mm long and can be trimmed to suit.

The sleeve can be used in conjunction with an internal grille (code HD 9400/1, 2 or 3) fixed to the surface of the wall where required.

HD 9350/1 = 225mm x 70mm
HD 9350/2 = 225mm x 140mm
HD 9350/3 = 225mm x 210mm

Telescopic Underfloor Ventilators

TELESCOPIC UNDERFLOOR VENTILATOR
HD 9600M

The HD 9600M is designed to be used where the external vent aperture is required to be at a higher level than the underfloor void. It is used in conjunction with other products in the Hambleside Danelaw through wall and underfloor range.

INSTALLATION

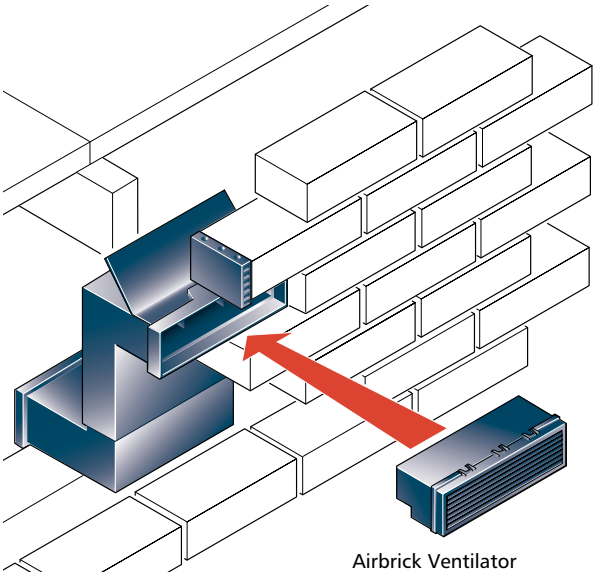
The HD 9600M can be fitted to ventilate the void below any type of suspended ground floor. Where appropriate, the floor manufacturers fitting recommendations should be adhered to. Pre-cast concrete floor manufacturers recommend installation of the lower aperture to be below the level of the floor beams and not between.

The standard unit HD 9600M is also used in conjunction with a single air brick vent (HD 9300) and gives adjustment between 4 and 5 courses height of brickwork (down to 2 when trimming is required). A two course vertical extension sleeve (HD 9610/2) is available for use with the HD 9600M which can be used in multiples to achieve any desired height.

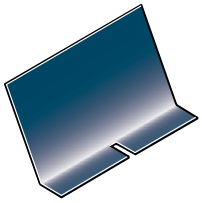
Horizontal extension sleeves (HD 9660M & HD 9660T) are available to extend the lower horizontal reach of the underfloor ventilator up to 215mm for varying cavity and inner leaf widths. Top extension sleeve (HD 9660T) 140mm long for an outer leaf width up to 170mm, bottom extension sleeve (HD 9660M) 155mm long for an inner leaf extension width up to 215mm.

Where underfloor voids adjoin ground supported floors, or where it is necessary to ventilate remote voids, a Square to Round Adapter is also available (HD 9620) to connect HD 9600M to standard 110mm diameter soil or drainage pipes providing direct ducted air.

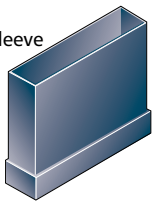
A separate and optional Cavity Tray (HD 9600CT) is available to be clipped to the top of the unit.



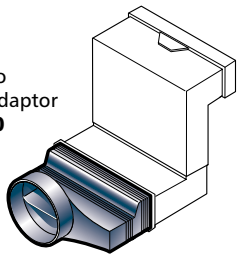
Airbrick Ventilator
HD 9300



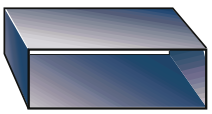
Cavity Tray
HD 9600CT



Extension Sleeve
HD 9610/2



Square to
Round Adaptor
HD 9620



Extension Sleeve
HD 9660M & HD 966OT

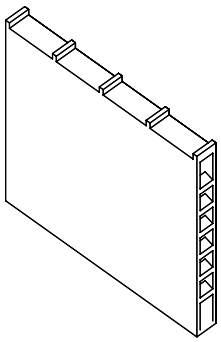
UNIVERSAL WEEP VENTILATORS
HD 9500

When incorporated into facing brickwork this product allows ventilating air into the cavity. When used immediately above a cavity tray it allows moisture permeating the cavity area to be returned to the outside. The HD 9500 has the advantage of two functions in one product – a wall weep and cavity ventilator. These are ideal for use with all types of cavity trays and window/door lintels.

The HD 9500 unique design allows for fitting in either direction in the mortar joint. Internal baffles prevent penetration of driving rain and the external grille prevents the ingress of nesting insects.

Height = 68mm
Length = 100mm
Airflow = 260mm^2

Colours available: White, Black, Buff, Terracotta, Brown, Grey and Translucent.



Perp Weep and Lintel Stop End

PERP WEEP
HD 9100

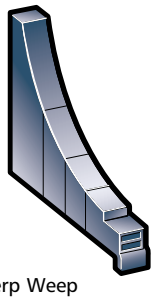
When incorporated into the construction of the outer leaf of a cavity wall, and in the vertical joints of the brickwork or blockwork, this product allows the release of moisture from the cavity. It is fitted immediately above a cavity tray or lintel to allow any moisture permeating the cavity to be returned harmlessly to the outside.

Height = 70mm - Length = 100mm

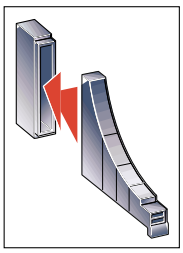
Colours available: Translucent, Buff and Terracotta.

The HD 9200 Perp Weep Extension clips onto the Perp Weep singularly or in multiples to accommodate differing thicknesses of the outer leaf construction.

Height = 70mm - Length = 30mm



Perp Weep
HD 9100



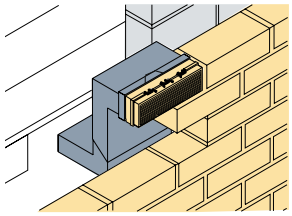
Perp Weep Extension
HD9200

UNIVERSAL LINTEL STOP END
HD 9800

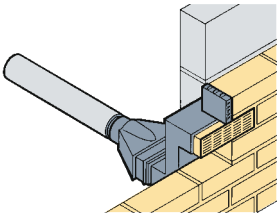
The HD 9800 will suit most popular steel lintels. The stop end should be fitted wherever water may collect on a lintel, they should be positioned directly onto the front flange of the lintel or over lintel DPC and as close to the end as the brick bonding will allow.

The stop end is flexible to adjust to different angles and has a butyl sealant strip with peel off backing to ensure successful adhesion and sealing to the lintel or DPC.

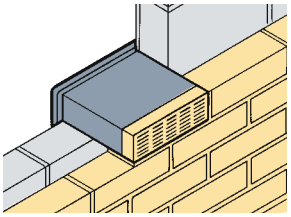
TYPICAL APPLICATIONS



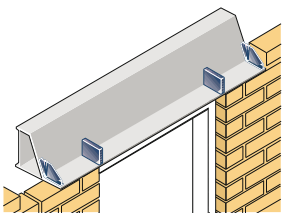
Telescopic
Underfloor Vent
HD 9600M



Square to Round
Adapter
HD 9620



Airbrick/Sleeve HD 9300
and HD 9350/1, shown
with HD 9400/1 Internal
Grille



Weep Vent and
Stop End Vent
Assembly

Dry Fix Valley Troughs

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 87/1915

INTRODUCTION




These mortarless products manufactured from GRP (Fibreglass) are now increasingly used in house construction. The Danelaw Dry Fix Valley Trough and Bonding Gutter range is a UK manufactured product and as it is the original design it is protected by a Patent. The range is also covered by full BBA approval with a service life expectancy of well in excess of 35 years and is supported by a manufacturers' materials guarantee of 30 years.

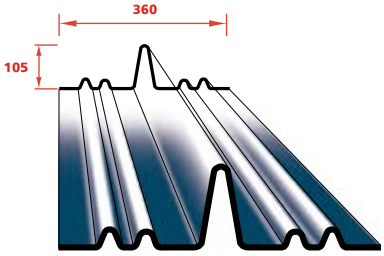
Danelaw Dry Fix products replace wet verge, ridge and hips for use in conjunction with natural slates or man-made, interlocking tiles and all double lap tiles.

The Dry Fix range offers advantages over traditional materials such as lead. They are simple and quick to install, have substantially lower costs than lead and are thermally stable with a low rate for the co-efficient of expansion. The NHBC have recognised the advantages of a mortarless based dry fix system and are actively encouraging their use to reduce the risk of incurring remedial works due to mortar failure.

They are installed using similar methods to traditional valleys but without the need for any mortar. This also makes their installation more practical in damp conditions. When installed they provide a neat appearance with a close cut finish.

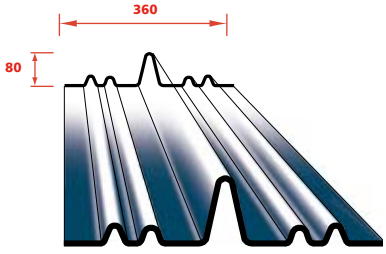
IDENTIFICATION OF PROFILES

HD DVT/1 AND HD DVT/2



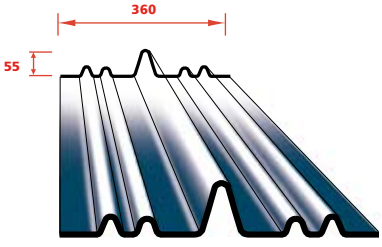
The HD DVT/1 is 3m long and HD DVT/2 is 2.4m long with a manufactured width of 360mm and a central upstand of 105mm. This valley trough is suited to the highest profile shape of all manufacturers' tiles.

HD DVLPT/1 AND HD DVLPT/2



The HD DVLPT/1 is 3m long and HD DVLPT/2 is 2.4m long with a manufactured width of 360mm and a central upstand of 80mm making it suitable for use with flat and low profile tiles.

HD DVS/1 AND HD DVS/2



The HD DVS/1 is 3m long and HD DVS/2 is 2.4m long with a manufactured width of 360mm and a central upstand of 55mm to suit all man-made slates and natural slates.

Dry Fix Valley Troughs

INSTALLATION

The range of mortarless Hambleside Danelaw Dry Fix Valley Troughs is fitted in all circumstances to a supporting valley board or sark board. The valley boards can be of the inset type between the rafters or overlaid on to the top of the rafters. The inset boards should be a minimum of 12mm thick plywood and overlaid boards a minimum of 6mm plywood.

The Dry Fix Valley Troughs are suitable for use where rafter pitches are 17.5° and above. They are manufactured with their base in a flat plane, the flexibility of the profile allowing angles of 12.5° to 60° to be achieved and installation with a maximum pitch differential up to 20°.

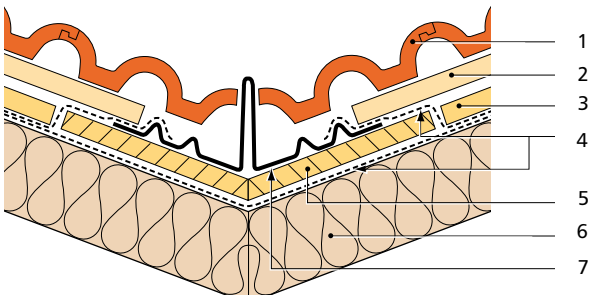
Roofs intersecting at 90° are regarded as a standard intersection. For roofs of a non-standard intersection advice from our technical department should be sought.

Dormer details occurring mid roof slope will require the foot of the dry fix valley trough to be 'soakered' out on to the main roof slope in lead, the intersecting head of the valleys should also have a lead saddle fitted over.

WARM ROOF CONSTRUCTION

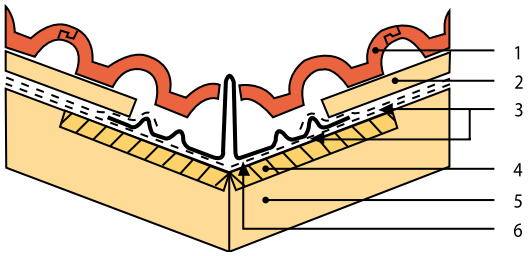
The Dry Fix Valley Trough range is ideally suited to warm pitched roofs and roof constructions where the insulation follows the line of the rafter. There are many different ways of constructing these roofs, most of which include a requirement for counterbattens below the slating or tiling battens. It is therefore recommended, whether using a traditional or vapour permeable underlay, that provision for ventilation is made to suit the application in accordance with the requirements of BS 5250: 2002.

1 Tiles
2 Tile Batten
3 Counter Batten
4 Roof Underlay
5 Valley Board
6 Insulation
7 Dry Fix Valley



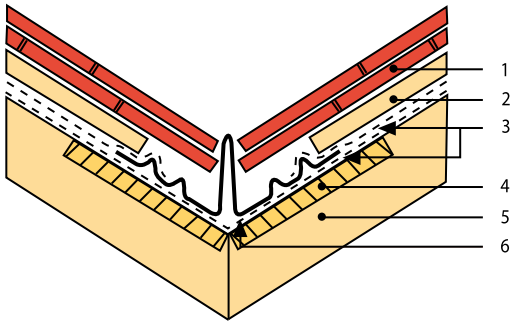
DRY FIX VALLEY FOR HIGH PROFILE TILE
HD DVT/1 AND HD DVT/2

1 Tiles
2 Batten
3 Roof Underlay
4 Valley Board
5 Rafter
6 Dry Fix Valley



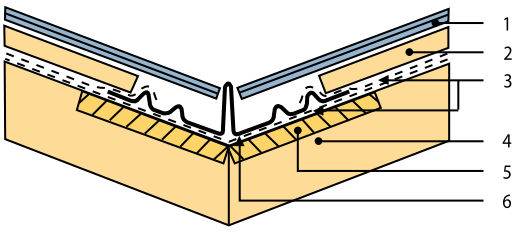
DRY FIX VALLEY FOR PLAIN/LOW PROFILE TILES
HD DVLPT/1 AND HD DVLPT/2

1 Plain Tiles
2 Batten
3 Roof Underlay
4 Valley Board
5 Rafter
6 Dry Fix Valley



DRY FIX VALLEY FOR SLATES
HD DVS/1 AND HD DVS/2

1 Slates
2 Batten
3 Roof Underlay
4 Rafter
5 Valley Board
6 Dry Fix Valley



Dry Fix Valley Troughs

INSTALLATION

Valley Board Construction
In all cases valley boards or sark boards should be fitted. Valley boards may be inset or continuous over the rafters. Where they are inset, they should be a minimum of 12mm thick plywood (or 19mm softwood) and supported on bearers of 50mm x 25mm or similar and set at a depth to suit the thickness of the valley board. (Fig.1) Continuous overlaid boards, Fig. 2, should be a minimum of 6mm thick plywood and only butt jointed over a supporting rafter, (Fig.2).

The width of the valley board should extend by a minimum of 50mm beyond the edge of the valley trough. For overlaid boards on rafter spacings above 450mm, it is recommended that support noggins of 75mm x 50mm are fixed under the outer ledge of the valley board between the rafters, (Fig.3). The fascia or barge board may be trimmed to allow the valley trough to pass through without flattening the profile; alternatively a lead soaker may be used if required.

Lining the Valley
A single strip of roofing underlay, at least the full width of the valley boards, should be laid up the centre and directly on top of the boards allowing for an overlap beyond the fascia line where appropriate and which may be trimmed later, (Fig. 4).

Fixing the Valley Trough
When fixing the Dry Valley, the raised centre section should be pinched together at the base and the trough pushed down firmly, locating it centrally onto the valley boards, (Fig. 5). The foot of the valley trough, when discharging into a gutter, should be trimmed either prior to fixing or in situ to provide a 50mm overhang into the guttering.

Where a lead soaker is to be used at the foot of the valley, i.e. where the Dry Valley terminates above eaves level, (Fig. 7), or where eaves intersects with a verge or it is not appropriate to notch the fascia boards, the soaker should e welted at the edge and supported with suitable timber work. The valley trough should be trimmed to suit before fixing if necessary.

With the Dry Valley in position, it is nailed through the outer flange into the supporting timbers at 500mm centres maximum. The small exposed void in the upstand at the end of the trough can be filled using suitable mastic.

Joining Valley Sections
Additional lengths can be joined by overlapping, (Fig. 6). No sealant or joining material is required if the following overlap lengths are used:

Roof Pitch	Over 39°	30-39°	22.5 – 29°	below 22.5°
Overlap	150mm	200mm	300mm	350mm

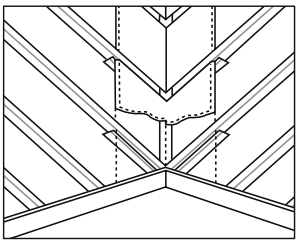


Fig. 1

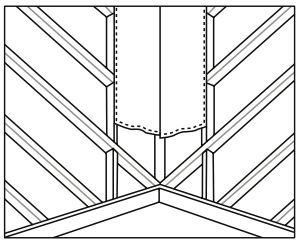


Fig. 2

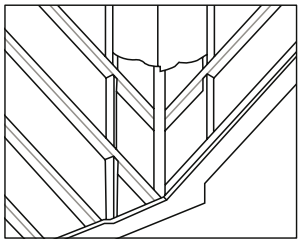


Fig. 3

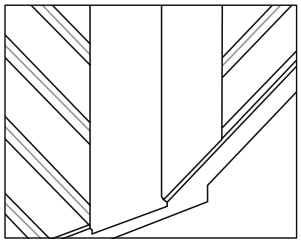


Fig. 4

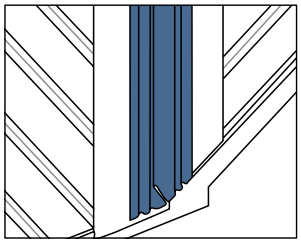


Fig. 5

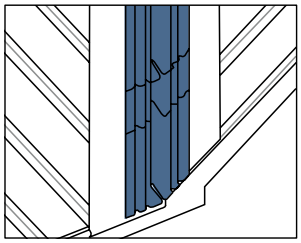


Fig. 6

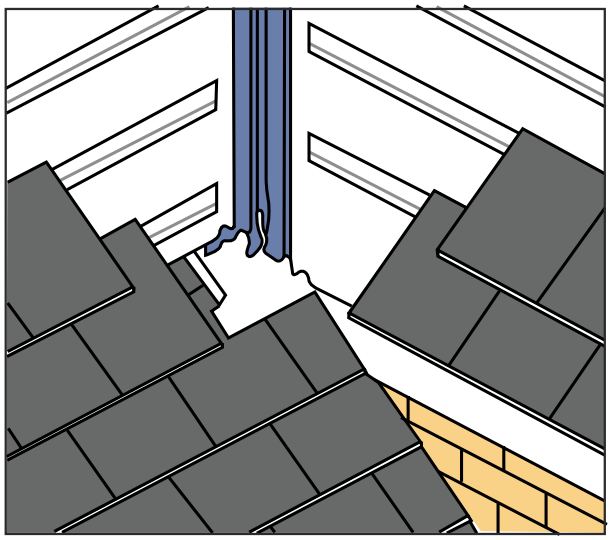


Fig. 7

Dry Fix Valley Troughs

Joining Valley Sections
Where a section of Dry Valley intersects with another section of Dry Valley, e.g. at the ridge of a dormer roof, or where one or more sections intersect with the ridge of a roof, it is necessary to mark the angle of intersection and cut the valley trough prior to fixing.

A minimum code 4 lead saddle should then be dressed over the mitred sections of the Dry Valley(s) and ridge if necessary. The length of the overlap of the saddle onto the Dry Valley should be in accordance with the overlap lengths given on the previous section, (Fig. 8 and Fig. 9). Alternatively the lead saddle may be dressed over the slates or tiles.

Installation of Underlays and Battens
The underlay can now be installed in the recommended manner and overlapped onto the Dry Valley before trimming between the two outer water bars either side of the central upstand.

The battens should be mitre cut to the angle of the valley, located on to the flat outer flanges of the valley trough and nailed in to the supporting timber work outside the line of the Dry Valley.

LAYING THE TILES OR SLATES

Interlocking Tiles
Tile the roof to within one full tile width of the central upstand the full length of the valley. Measure the cover width of the tile being used, double this measurement and transfer it from the side of the central upstand closest to the tiles to be cut and in line with the coursing of the tiles. Mark the bottom edge of the first tile at the base of the valley and the last tile at the top of the valley, (Fig. 11a). It is important for the tape measure to be on top of the tile when transferring this measurement.

Using a chalk line (or straight edge) between the two marked points, snap a line to establish the position for the cuts to be made. When using a chalk line to make the cut in profiled tiles, it may be necessary to mark the tiles further using a straight edge. The tiles may be numbered or marked prior to removal from the roof to establish the correct repositioning after cutting.

Replace each removed tile with a full tile. The cut tiles can then be fitted back into the appropriate course taking care not to force the tiles too heavily against the central upstand to avoid distortion and maintain the straight line appearance of the valley, (Fig. 11b).

Where small cuts of tiles occur, and there is insufficient support from adjacent tiles on the left side of the valley, it becomes necessary to use either an anti-corrosive tile clip to hold the interlock together, (Fig. 12), or alternatively the Tile Support Bridge can be placed over the water bar adjacent to the central upstand, (Fig. 13), and underneath the tile, held in position by the double sided tape on the underside of the Bridge.

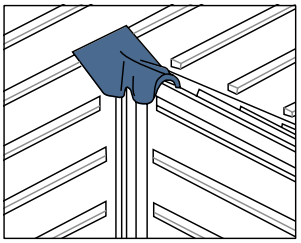


Fig. 8

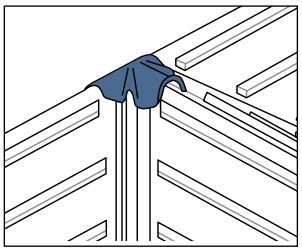


Fig. 9

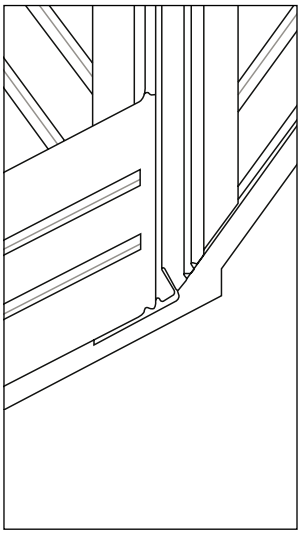


Fig.10

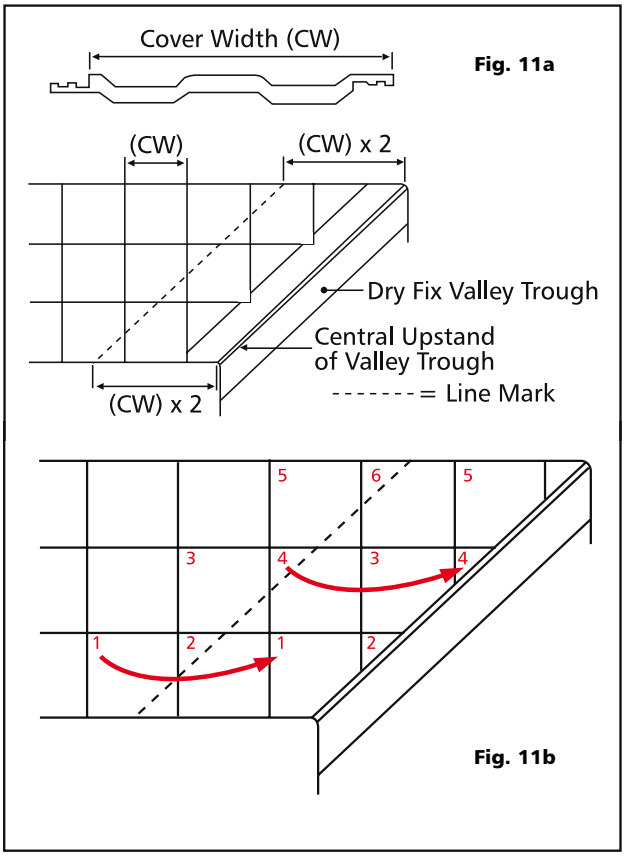


Fig. 11a

Fig. 11b

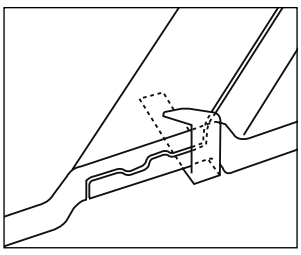


Fig. 12

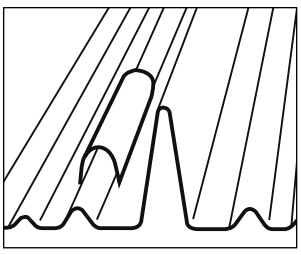


Fig. 13

Dry Fix Valley Troughs

INSTALLATION

Double Lap Tiles and Slates
Commencing with the eaves course and each subsequent course thereafter, the positioning, marking and cutting for both sides of the valley should be carried out in accordance with the following sequence:

Slate or tile the roof into the valley up to the last full slate or tile '**A**' that will fit. (Fig. 1)

Place slate or tile '**B**' over '**A**' ensuring that the bottom edges are in line and the corner of **B** is lightly touching the central upstand of the Dry Valley. Mark the bottom edge of '**A**' where '**B**' overlaps. (Fig. 2)

Reposition slate or tile '**B**' alongside '**A**' with the bottom of corner of '**B**' still in contact with the central upstand. Mark the side of '**A**' in line with the bottom edge of '**B**'. (Fig. 3)

Remove slate or tile '**A**' and cut to the established marks. (Fig. 4)

Position and fix full slate or tile '**B**' in position previously occupied by '**A**'. (Fig. 5)

Fit slate or tile '**A**' against central upstand taking care not to nail through the valley or force the slate or tile against the central upstand to avoid distortion and maintain the straight line appearance of the Dry Valley. (Fig. 6)

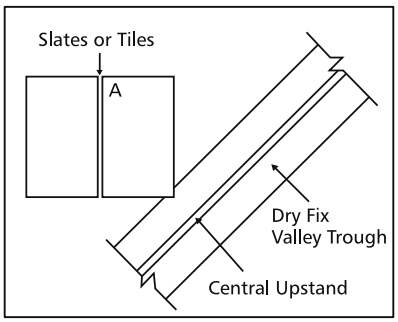


Fig. 1

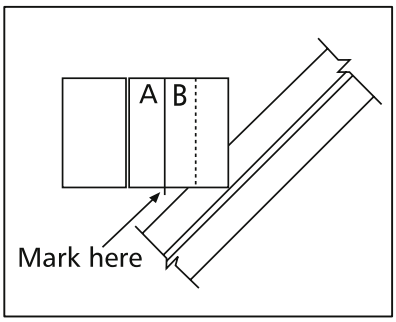


Fig. 2

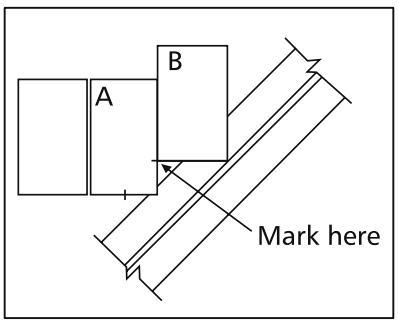


Fig. 3

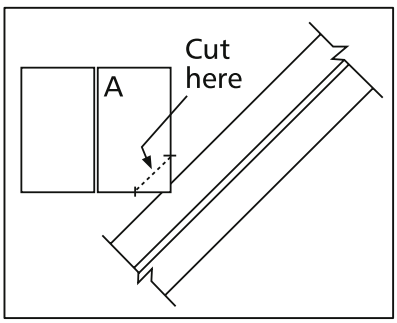


Fig. 4

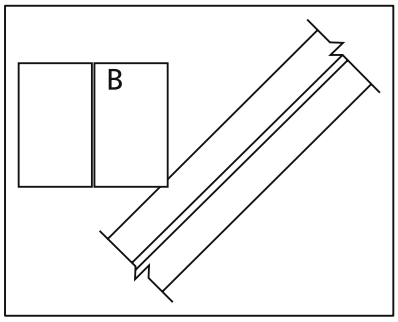


Fig. 5

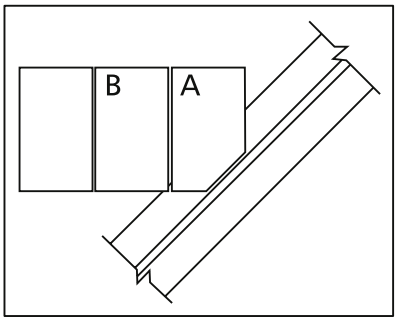


Fig. 6

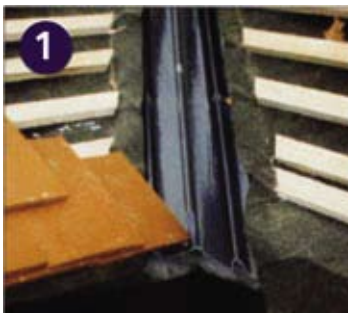
Note:
To avoid small cuts of slate or tile occurring that are difficult to fix, it is recommended that a tile-and-a-half or wider slate is used. Alternatively a bridge support piece is available (Code HD DVBP) to support any small cuts that may occur.

Dry Fix Valley Troughs

INSTALLATION WITH PLAIN CLAY TILES

The following photographs illustrate, step by step, the sequence of installation of plain clay tiles with the HD DVLPT/1 Dry Fix Valley Trough. Here one rafter pitch is 35° and the other 45°.

The first course is abutting the Dry Valley upstand – in this case there is no need to cut an angle as the next course will cover the gap on the eaves tile. Both under eaves and first course of tiles have nailing capability.



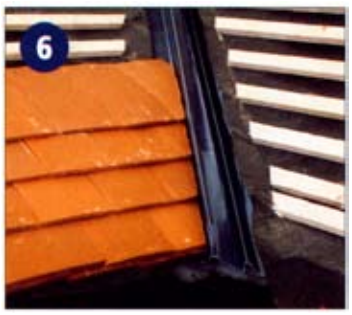
Tiles being cut to the correct angle to suit the Dry Valley upstand.

Removing the tile nib will prevent 'kicking up' on the Dry Valley water bar while still allowing a nail hole for fixing.

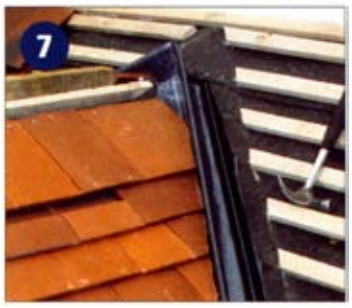
Positioning the cut tile up to the Dry Valley upstand.

The cut tile is then positioned and nailed avoiding penetration of the Dry Valley.

Subsequent coursing in place. The pitch of the roof here is 35° – the untitled main slope of the roof is 45°.



The Dry Valley mitred at the ridge and awaiting the final tile course.



In this situation the bridge piece is placed in position to support the smaller cut tile section. Alternatively a tile-and-a-half may be used to avoid small cuts of tile.

Here the lead saddle is dressed over the intersecting valleys and welted under the ridge tile for a dry ridge application.

The dry ridge is fitted – note the last section is 'notched' to clear the Dry Valley upstand.

Stormforce 225 Valley Troughs

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 87/1915

INTRODUCTION

The range of Stormforce 225 Valley Troughs for inclined valleys on slate and tile roofs have been designed to accommodate the maximum design rainfall rate used in the UK, with different widths of profile to suit large and small roof areas across a wide range of roof pitches. Selection of the appropriate product and profile for its application has been made simple by referring to criteria taken from BS 5534 that covers the roof area, maximum length of valley, minimum overlap and the rafter pitch.

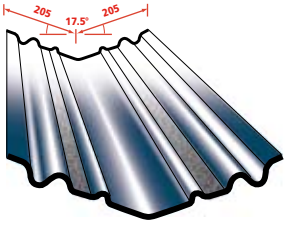
Whilst most commonly used at junctions where roofs of equal pitch intersect, the Stormforce 225 range of Valley Troughs are also suitable for use at the intersections of roof pitch differentiating up to 15°. Where the differential between the two rafter pitches is more than 10°, the selection of valley profile and lap length should be based on the more onerous requirement of either rafter pitch or the valley length. For applications outside this scope, please refer to Hambleside Danelaw for specific advice.

Made from glass reinforced polyester (GRP), a proven and successful choice of material ensures that Stormforce 225 and all other Hambleside Danelaw GRP flashings benefit from a durable construction and a low coefficient of expansion. Lightweight and simple to install they are suitable for water harvesting and offer a cost effective alternative to other materials.

Stormforce 225 Valley Troughs

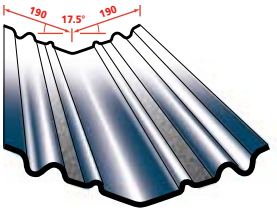
HDL 401 AND HDL 402

The HDL 401 is 3m long and the HDL 402 is 2.4m long with a manufactured angle of 17.5° and width of 410mm. These valley troughs are suitable for use with all types of plain and interlocking clay or concrete tiles, which are bedded onto the two mortar bonding strips provided on the valley surface incorporating mortar retaining ribs.



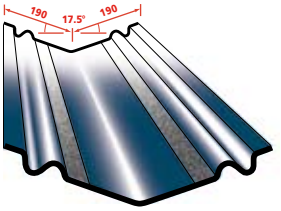
HDL 361 AND HDL 362

The HDL 361 is 3m long and the HDL 362 is 2.4m long with a manufactured angle of 17.5° and width of 380mm. These valley troughs are suitable for use with all types of plain and interlocking clay or concrete tiles, which are bedded onto the two mortar bonding strips provided on the valley surface incorporating mortar retaining ribs.



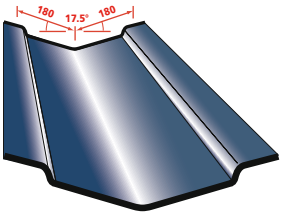
HDL RP3 AND HDL RP4

The HDL RP3 is 3m long and the HDL RP4 is 2.4m long with a manufactured angle of 17.5° and width of 380mm. These valley troughs are suitable for use with all types of plain and interlocking clay or concrete tiles, which are bedded onto the two mortar bonding strips provided on the valley surface incorporating mortar retaining ribs.



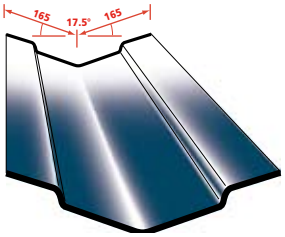
HDL SVTU

The HDL SVTU is 3m long with a manufactured angle of 17.5° and width of 360mm. This valley trough is suitable for use with all types of natural and fibre cement type slates.



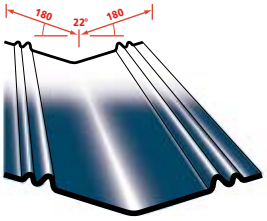
HDL SVT

The HDL SVT is 3m long with a manufactured angle of 17.5° and width of 330mm. This valley trough is suitable for use with all types of natural and fibre cement type slates.



HDL SSVT

The HDL SSVT is 3m long with a manufactured angle of 22° and width of 360mm. This valley trough is designed to be compatible with the Scottish slating practice of fixing slates directly to the sark boarding. This valley trough is suitable for use with all types of natural and fibre cement type slates.



Rafter Pitch (Degrees)	Roof Area Less than 25m²		Roof Area from 25m² to 100m²		Minimum Lap Length(mm)
	Required Valley Product Code	Maximum Length (m)	Required Valley Product Code	Maximum Length(m)	
17.5 to 22	401/2, SVTU	7.0	Not Applicable	Not Applicable	350
22.5 to 29	RP3/4, 361/2, 401/2, SVT, SVTU, SSVT	7.0	401/2, SVTU	14.5	300
30 to 34	RP3/4, 361/2, 401/2, SVT, SVTU, SSVT	7.5	401/2, SVTU	15.0	200
35 to 39	RP3/4, 361/2, 401/2, SVT, SVTU, SSVT	7.5	401/2, SVTU	15.5	200
40 to 44	RP3/4, 361/2, 401/2, SVT, SVTU, SSVT	8.0	401/2, SVTU	16.5	150
45 to 49	RP3/4, 361/2, 401/2, SVT, SVTU, SSVT	8.5	401/2, SVTU	17.0	150
50 to 55	401/2, SVTU	9.0	401/2, SVTU	18.5	150

Stormforce 225 Valley Troughs

INSTALLATION

When using preformed open GRP valley trough units, BS 5534 : 2003, Code of Practice for slating and tiling (including shingles), recommends that the detailing and installation should be in accordance with the manufacturers recommendations and further guidance is given in NFRC Technical Bulletin 28, Inclined Preformed GRP Valley Troughs.

The Valley Troughs should always be fitted over timber valley boards (or sarking boards). Valley boards should be either 6mm continuous ply boards laid over the rafters or 12mm ply (or 19mm softwood) layboards set between the rafters. These should be supported on timber noggins or bearers and be sufficient width to support the ends of the slating/tiling battens. These boards are not designed to support foot traffic, which should always be avoided. A single strip of roofing underlay, the full width of the valley boards, should be laid directly on top and up the centre of the valley boards.

Counter battens of the same depth as the slating/tiling battens should be fitted onto the valley boards over the underlay at the appropriate distance from the valley centre to accommodate the GRP Valley Trough and nailed through into the main rafters/trusses below.

The main roofing underlay should then be laid and dressed over the counter batten. Roofing battens should be fitted with the ends firmly located onto the valley boards, positioned close to the counter batten with care taken to avoid damaging the underlay.

The GRP Valley Trough should then be fitted, with care taken to ensure it is located centrally on the valley boards, before nailing the sides into the counter battens at 500mm centres maximum. When joining lengths of Valley Trough use the minimum lengths of overlap as follows:

Roof Pitch	Over 39°	30-39°	22.5–29°	below 22.5°
Overlap:	150mm	200mm	300mm	350mm

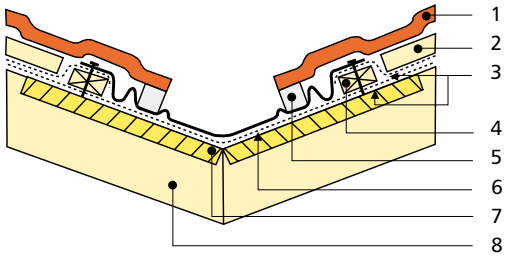
The main roofing underlay can be laid either under or over the GRP Valley Trough. If laid over the Valley Trough, it should not extend beyond the outer water channel.

The fascia board should be cut to allow the GRP Valley Trough to pass through and discharge into the gutter without flattening out. The end of the valley trough should be trimmed using a fine toothed hacksaw to the approximate centre line of the gutter. This normally entails a 'V' shaped cut, alternatively a lead soaker may be used if required to avoid cutting the fascia and Valley Trough.

Where tiles are to be bedded, they should be laid dry, the cut line marked and the tiles removed for cutting. The tiles can then be re-laid in position and bedded onto the mortar bonding strip, with care taken to ensure that blockage of water channels behind the bedding line does not occur. When using a high profile tile, dentil slips are recommended to reduce the mortar mass and minimize shrinking and cracking.

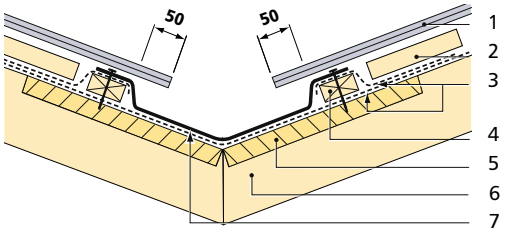
TILE VALLEY TROUGHS
HDL 401, HDL 361 AND HDL RP3

1 Tiles
2 Batten
3 Roof Underlay
4 Counter Batten
5 Mortar
6 Valley Trough
7 Valley Board
8 Rafter



SLATE VALLEY TROUGHS
HDL SVT AND HDL SVTU

1 Slates
2 Batten
3 Roof Underlay
4 Counter Batten
5 Valley Board
6 Rafter
7 Valley Trough



Stormforce 225 Valley Troughs

INSTALLATION

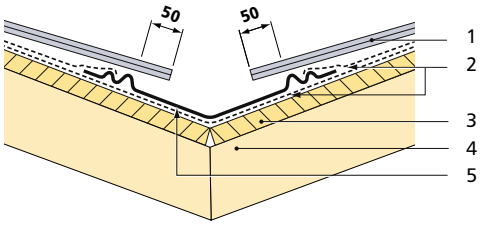
At any significant change in pitch (e.g. at sprocketted eaves or mansards), separate lengths of GRP Valley Trough should be fitted above and below with a lead saddle of sufficient lap length used to link the two parts. It should be noted that where the differential between rafters pitches either side of the valley is less than 10° and the roof area is less than 25m² the narrow section Valley Trough can be used. For pitch differentials between 10° and 15° the wider section valley trough should always be used. Roofs intersecting at 90° are regarded as a standard intersection, for roofs of a non-standard intersection advice from our Technical Department should be sought.

SCOTTISH PRACTICE

Hambleside Danelaw produces a unique valley trough profile for the Scottish practice of fixing slates directly to sarking boards. In this case the valley is lined with a single strip of roofing underlay at least the width of the Valley Trough and the trough is then nailed directly to the sarking boards at 500mm centres maximum.

SCOTTISH SLATE VALLEY TROUGH
HDL SSVT

1 Slates
2 Roof Underlay
3 Sarking Board
4 Rafter
5 Valley Trough

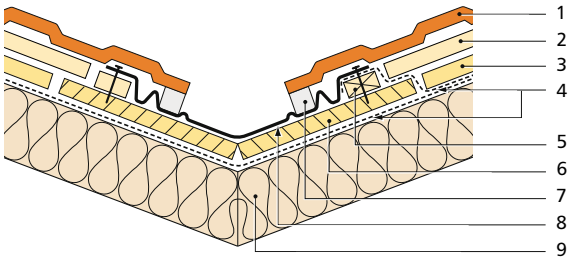


Warm Roof Construction

The Stormforce 225 Valley Trough Range is ideally suited to pitch warm roofs and roof constructions where the insulation follows the line of the rafter. There are many different ways of constructing these roofs, most of which include a requirement for counterbattens below the slating or tiling battens. It is therefore recommended, whether using a traditional or vapour permeable underlay, that provision for ventilation is made to suit the application in accordance with the requirements of BS 5250: 2002. A typical warm roof valley construction shown right.

TYPICAL WARM ROOF INSTALLATION

1 Tiles
2 Tiling Batten
3 Counter Batten
4 Roof Underlay
5 Counter Batten
6 Valley Board
7 Mortar
8 Valley Trough
9 Insulation



Dry Fix Bonding Gutters and Bonding Gutter

INTRODUCTION

Creating a successful weather-tight joint between dissimilar roof coverings, whether slate to tile or interlocking tile to plain tile has always given cause for concern. Conventional methods have their advantages and disadvantages, the most common being a lead box or secret gutter, lead batten roll with individual soakers or a folded upstand with a cover flashing. The advantages of these designs are that they are traditional and established. The disadvantages are primarily cost of time and materials, a high skill level to install and considerable disturbance to the adjoining property that is not being re-roofed.

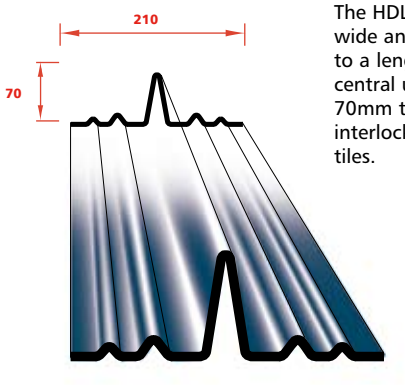
Other less traditional methods fall short of good practice with no guarantee of a successful outcome. The most common of these is likely to be the bedding of half round ridge over the abutting tiles/or slates. This method has a total reliance on large quantities of mortar being used to bed the ridge and an attempt to prevent water penetration. A less sophisticated method is the practice of overlapping the new slate or tile being used onto the surface of the adjoining roof, again with large quantities of mortar between to finish the joint and be relied upon to provide weather-tightness.

There are viable and cost effective alternative solutions to these methods that are simple and quick to install. They are Bonding Gutter and Dry Fix Bonding Gutter, both manufactured from the GRP (Glass Reinforced Polyester). The Bonding Gutter retains the use of mortar at the joint in the roof coverings whilst the Dry Fix Bonding Gutter eliminates the requirement for mortar altogether.

The Bonding Gutter (HDL BG) has a flat design profile that minimizes the disturbance to the adjoining roof whilst providing an excellent base and key for a mortar bond between the roof coverings. Secondary weather protection is provided by our twin bars, preventing water ingress and channeling it down to the rainwater guttering. The resulting detail is low on material and installation costs and has a high level of weathertight security.

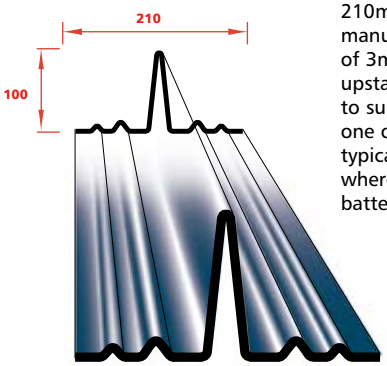
Dry Fix Bonding Gutter (HDL DBG1 and HDL DBG2) adopts a different approach. This narrow profile again minimises disturbance to the adjoining roof and retains a twin water bar design on each side but also features a raised central upstand. Weather-tightness is achieved by fitting the slates or tiles close up to the central upstand. Any water that passes between the edges of the slates or tiles and the central upstand is channelled away into the guttering at eaves level. This provided a clean and neat finish to the edges of different roof coverings that may also be at different heights. There are two profiles available with different heights to suit the application.
Minimum roof pitch = 17.5°.

DRY FIX BONDING GUTTER
HDL DBG1



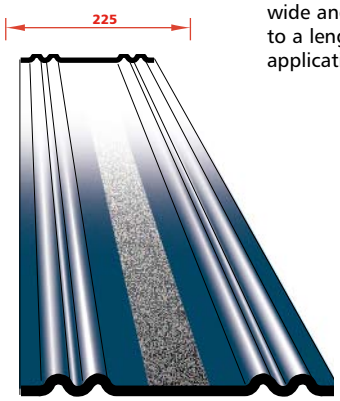
The HDL DBG1is 210mm wide and manufactured to a length of 3m with a central upstand height of 70mm to suit slates, flat interlocking tiles and plain tiles.

DRY FIX BONDING GUTTER
HDL DBG2



The HDL DBG2 is also 210mm wide and manufactured to a length of 3m with a central upstand height of 100mm to suit profiled tiles on one or both sides and also typical Scottish practice where there may be tiling battens on one side only

BONDING GUTTER
HDL BG



Bonding Gutter is 225mm wide and manufactured to a length 3m to suit all applications.

Dry Fix Bonding Gutters

INSTALLATION

Positioning
The Dry Fix Bonding Gutter should be placed to allow the slate or tile bond to be maintained and using either a replacement tile and a half or wider slate if possible. Where the tile nibs may interfere with the bonding gutter profile, they should be removed. It is recommended that a mechanical fix be provided to replace them.

Preparation
The Dry Fix Bonding Gutter is designed to fix directly over the tiling or slating battens of both new and adjacent roof or over the underlay and directly into the sarking boards in a fully boarded roof, typical of Scottish practice. Any battens and underlay on the adjacent roof should be checked for condition and if necessary renewed back to the nearest appropriate rafter, any defective nails should be replaced.

Fixing the Dry Fix Bonding Gutter
Before installing the Dry Fix Bonding Gutter, mark the centre line of its intended position onto the roof and then remove the slates or tiles for cutting. With the slates or tiles removed, install the bonding gutter to the established centre line between the old and new roof, commencing at the eaves. Allowing for a 50mm overhang of the Dry Fix Bonding Gutter into the rainwater gutter, the central upstand should be pinched together before fixing with nails of acceptable quality through the outer flanges and into the battens on both sides and at 500mm centres maximum. When joining lengths of Dry Fix Bonding Gutter use the minimum lengths of overlap as follows:

Roof Pitch	Over 39°	30-39°	22.5-29°	below 22.5°
Overlap:	150mm	200mm	300mm	350mm

The slates or tiles, when fitted onto the Dry Fix Bonding Gutter, should be close or touching the central upstand on both sides but with care taken to avoid any pressure or distortion and maintain the straight line appearance of the profile. When nailing the slates or tiles, care should be taken to avoid nailing into or between the water channels.

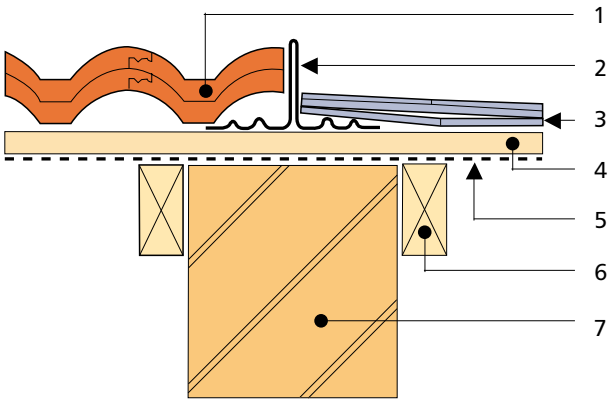
At the ridge, consideration should be given to fitting a minimum code 4 lead saddle over the apex of the roof and dressed over the Dry Fix Bonding Gutter. The length of overlap of the saddle onto the Dry Fix Bonding Gutter should be in accordance with the overlap lengths given previously. Ridge tiles, whether dry fixed or mortar bedded, are fitted in the normal manner.

Fire Break Installation
When creating a fire break installation, e.g. at a party wall, the battens should be cut to allow a smooth trowelled mortar barrier to be built up off the wall and finished level with the top of the slating or tiling battens.

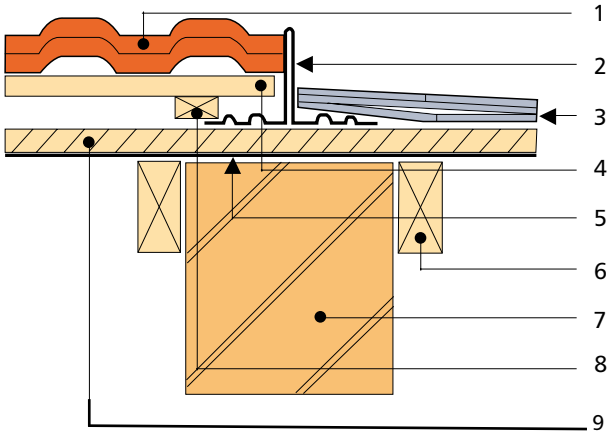
When dealing with an existing fire break detail, any loose mortar or mortar that may be sound but rose above the level of battens should be removed and the mortar barrier reinstated or made good.

The underlay on both sides of the mortar barrier should be folded back over the battens before nailing the Dry Fix Bonding Gutter into position and proceeding with the installation as previously described.

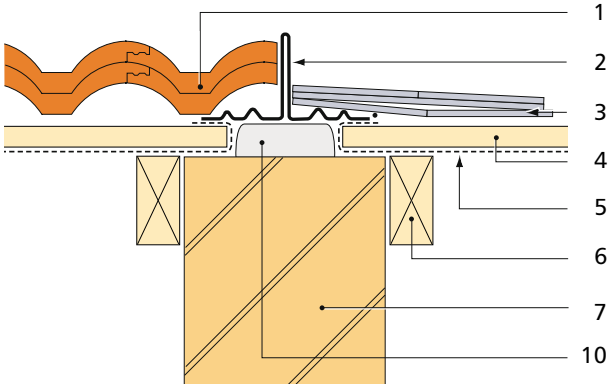
TYPICAL STANDARD INSTALLATION



TYPICAL SCOTTISH INSTALLATION



TYPICAL FIRE BREAK INSTALLATION



1	Tiles	**5**	Roof Underlay	**9**	Sarking Board
2	Dry Fix Bonding Gutter	**6**	Rafter	**10**	Mortar Barrier
3	Slates	7	Party Wall		
4	Batten	**8**	Counter Batten		

Bonding Gutters

INSTALLATION

Positioning
The Bonding Gutter should be placed to allow the slate or tile bond to be maintained and using either a replacement tile and a half or wider slate if possible. Where the tile nibs may interfere with the Bonding Gutter profile, they should be removed. It is recommended that a mechanical fix be provided to replace them.

Preparation
The Bonding Gutter is designed to fix directly over the tiling or slating battens of both new and adjacent roofs. Battens and roofing underlay on the adjacent roof should be checked for condition and, if necessary renewed back to the nearest appropriate rafter, any defective nails should also be replaced.

Fixing the Bonding Gutter
Before installing the Bonding Gutter, mark the centre line of its intended position onto the roof and then remove the slates or tiles for cutting. With the slates or tiles removed, install the Bonding Gutter to the established centre line between the old and new roof, commencing at the eaves. Allow for a 50mm overhang of the Bonding Gutter into the rainwater gutter and fix the Bonding Gutter with nails of acceptable quality through the outer flanges into the battens at both sides and at 500mm centres maximum. The last section of Bonding Gutter should be fitted as close to the ridge as possible whilst avoiding any deflection to the section when laid flat on the battens. When joining lengths of Bonding Gutter use the minimum lengths of overlap as follows:

Roof Pitch	Over 39°	30-39°	22.5-29°	below 22.5°
Overlap:	150mm	200mm	300mm	350mm

New Roof Tiles on the Left Side of the Bonding Gutter
In addition to providing a mortar bed on the central mortar bonding strip of the Bonding Gutter, a mechanical fix of the tiles is recommended. There are two types of suggested method to achieve this; clipping with a standard tile clip on the left hand side of the tile interlock or head nailing through a purpose made nail hole in the tile ensuring its position is in line with that of the tile manufacturers in order to maintain head lap fixing specifications.

New roof tiles on the right side of the Bonding Gutter
In addition to providing a mortar bed on the central mortar bonding strip of the Bonding Gutter, a mechanical fix to the tiles is recommended. A standard tile clip cannot be used, therefore nail fixing either through the manufacturers nail hole or a hole drilled on site is the best method available for both cut pieces of tile.

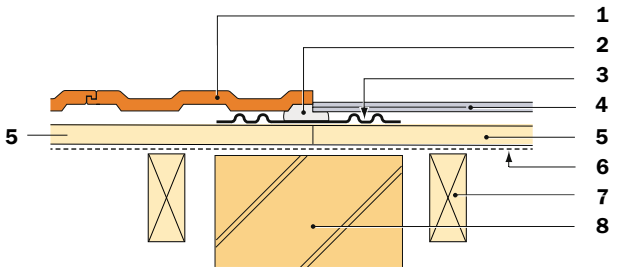
When nailing, care should be taken to avoid nailing in or between the water channels of the Bonding Gutter. Using either of these fixing methods, the tiles should be laid onto the mortar bed taking care to ensure that the mortar does not spread into the water channels, and abutted to the adjacent roof covering without leaving any gaps between the two.

Where a height differential occurs between the roof covering, i.e. an interlocking tile to a plain tile or slates, the finished appearance can be improved by pointing up the difference as successive tiles are laid.

Ridge tiles, whether dry fixed or mortar bedded, are fitted in the normal manner to finish the roof covering.

TYPICAL STANDARD INSTALLATION

1 Tiles
2 Mortar Bed
3 Bonding Gutter
4 Slates
5 Batten
6 Roof Underlay
7 Rafter
8 Party Wall



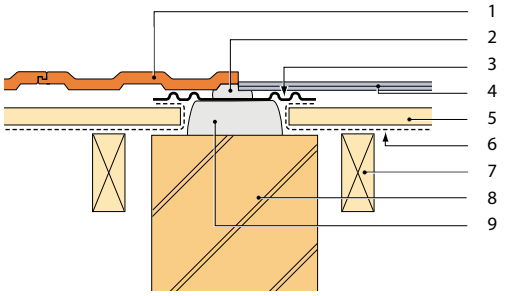
Fire Break Installation
When creating a fire break installation, e.g. at a party wall, the battens should be cut to allow a smooth trowelled mortar barrier to be built up off the wall and finished level with the top of the slating or tiling battens.

When dealing with an existing fire break detail, any loose mortar or mortar that may be sound but raised above the level of battens should be removed and the mortar barrier reinstated or made good.

The underlay on both sides of the mortar barrier should be folded back over the battens before nailing the Bonding Gutter into position and proceeding with the installation as previously described.

TYPICAL FIRE BREAK INSTALLATION

1 Tiles
2 Mortar Bed
3 Bonding Gutter
4 Slates
5 Batten
6 Roof Underlay
7 Rafter
8 Mortar Barrier
9 Party Wall



Conti-Soaker™ Continuous Soakers

INTRODUCTION

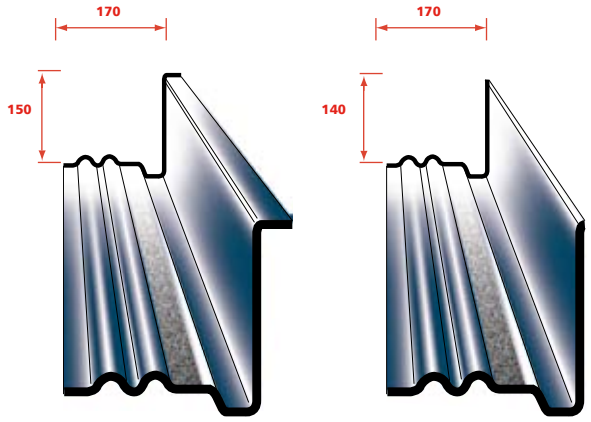
Hambleside Danelaw Conti-Soakers™ is a range of preformed GRP continuous flashings designed for use where a tiled or slated roof slope terminates against a vertical abutment.

They have been specially developed to provide a quick, easy and efficient method of forming a secret gutter and weatherproof protection at this junction. They are ideally suited as an alternative to a lead step and cover flashing over single lap interlocking tiles and slates or where there is a risk of water penetration, especially on low pitches, under the lead.

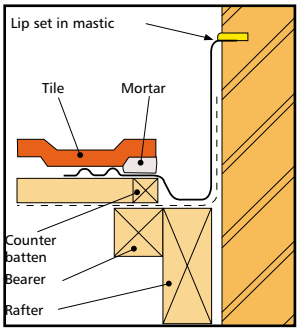
Being manufactured in GRP (Glass Reinforced Polyester), they have a low coefficient of expansion, resist the build up of debris and fungi, require little maintenance and provide uncontaminated water run-off into the drainage system.

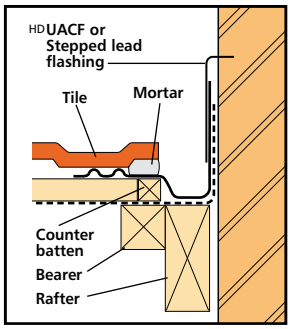
They are finished in an attractive lead grey colour and are available in 3m lengths for use with slates and tiles. The HDL CST Conti-Soaker for tiles incorporate an eco-friendly bonding strip for maximum mortar adhesion. Both types of Conti-Soaker are available lipped for terminating directly into the abutment wall or unlipped for use with stepped or continuous GRP or lead cover flashings.

CONTI-SOAKER™ FOR TILES
HDL CST

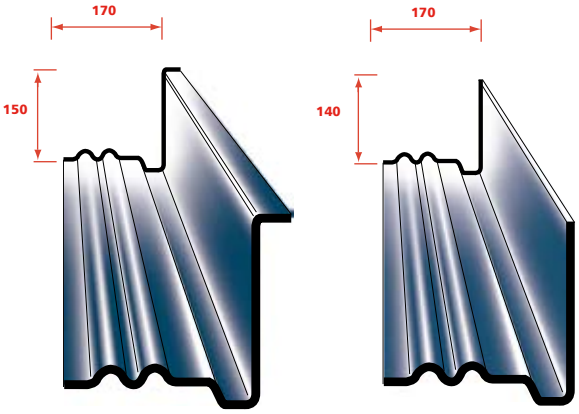


LIPPED TILE VERSION

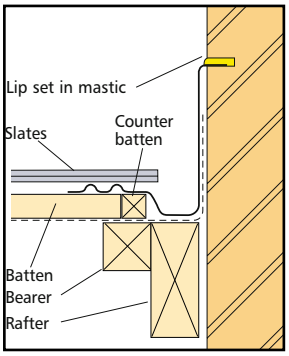




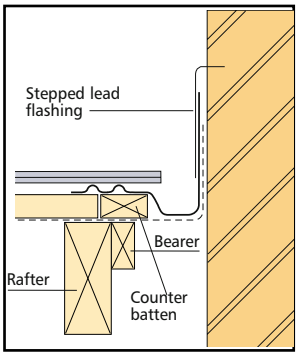
CONTI-SOAKER™ FOR SLATE
HDL CSS



LIPPED SLATE VERSION



UNLIPPED SLATE VERSION



Conti-Soaker™ Continuous Soakers

INSTALLATION

Where the rafter is positioned next to the abutment wall, it is necessary to provide a timber bearer of appropriate width, flush with the top of the rafter along the inside face and for the full length of the rafter. These are required to support the slate or tile battens. If there is no gap between the rafter and abutment wall, noggins or a bearer should be provided. A counter-batten 25mm thick and of at least 25mm wide set 55mm from the abutment should be provided. Lay the roofing underlay with 100mm minimum turned up against the abutment.

Using nails of acceptable quality in good roofing practice; nail the battens and counter batten through the underlay into the rafter and any other supporting timberwork.

Where the Conti-Soaker is to discharge onto the main roof area, e.g. at dormer cheeks, a code 4 welted lead soaker may be required. Where the discharge is to be at the eaves, the fascia boards should be trimmed or notched to allow discharge directly into the gutter. Alternatively a lead soaker may be used. When using a lead soaker to discharge run-off over the fascia boards, it should be splayed out and welted to avoid risk of overflow at the edge.

When fitting the lipped Conti-Soakers, using the profile as a gauge, mark out and cut a chase 30mm deep into abutment to accommodate the Conti-Soaker lip. Care and consideration should be taken to ensure the suitability of the lipped version in respect of the condition of any bricks that may require cutting. If any bricks are in poor condition, it is recommended that the unlipped Conti-Soaker is used with a separate stepped GRP or lead cover flashing.

Starting at the bottom of the abutment detail, lay the Conti-Soaker against the abutment and nail through the outside edge, avoiding the water bars and channel, into each batten or at 500mm centres maximum. When joining lengths of Conti-Soaker, use the minimum lengths of overlap as follows;

Roof Pitch	Over 39°	30-39°	22.5-29°	below 22.5°
Overlap:	150mm	200mm	300mm	350mm

At the top or head of the abutment on a mono-pitched roof or where two lengths of Conti-Soaker are mitred at the apex of a roof, a minimum Code 4 lead saddle should be used with the same overlap lengths as shown above.

The top flange of the lipped Conti-Soakers should be secured and sealed into the chase using lead wedges and a high quality external grade of sealant or mastic. When using the unlipped Conti-Soakers, a suitable cover flashing of GRP or lead should be fitted in an approved manner to the abutment and dressed over the Conti-Soaker.

When laying slates, they should be fitted in the normal manner leaving no more than a 50mm gap over the water channel. The use of double slates is recommended whenever necessary to avoid small cuts into the abutment.

When laying tiles, they should be bedded in mortar onto the bonding strip, taking care to avoid blocking the water channel under the tiles and leaving no more than a 50mm gap between tiles and abutment.

Clean out any surplus mortar from the main water channel. Pointing after the tiles have been laid is not recommended. It may be necessary in some instances to remove the nib of the tile over the Conti-Soaker to prevent the tile from kicking up. If plain tiles are being laid, the use of double tiles is recommended wherever necessary to avoid small cuts into the abutment. Minimum roof pitch 17.5°.

Note: The decision to leave an exposed water channel or gutter, as opposed to when the slates or tiles are close cut to the abutment, should be made with consideration to future maintenance.

For situations where the flow of rainwater may surcharge the secret gutter, or there is significant risk of blockage from leaves, pine needles, etc., a lead step and cover flashing over the channel and onto the slates or tiles is recommended to be used in conjunction with the unlipped Conti-Soaker.

SCOTTISH CONTINUOUS SOAKER FOR SLATES HDL SCSS

The Scottish Conti-Soaker for slates has been specially designed for use with fully boarded roofs where slating battens are not used, the slates being nailed directly to the sarking boards. Minimum roof pitch 25°.

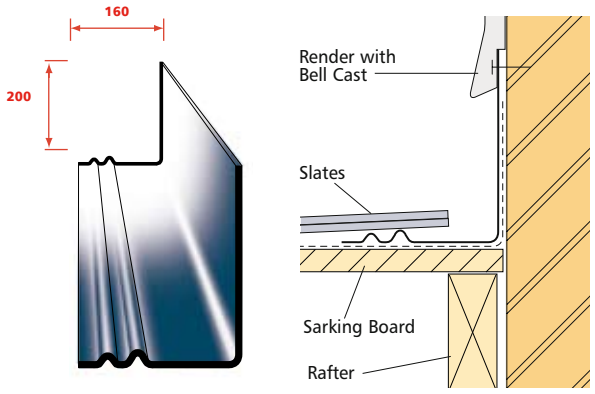
Installation

The roofing underlay is laid directly onto the sarking boards with 100mm minimum turned up against the abutment.

The Conti-Soaker is laid directly onto the underlay and snugly against the abutment, nailing through the outermost flange into the roof boards at 500mm centres maximum. The Conti-Soaker overlaps and top and bottom detailing is all as previously described.

The slates are then fixed in the normal manner leaving a gap to the abutment not exceeding 50mm and taking care not to nail through the water bars or water channels of the conti-soaker profile.

The vertical flange of the Conti-Soaker against the abutment may be trimmed and can be weathered by providing a suitable GRP or lead cover flashing fitted in an approved manner, or alternatively, the top of the flange may be secured to the wall behind a proprietary galvanized or stainless steel render stop and a bell-cast formed.



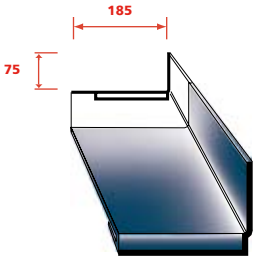
Individual Dry Soakers

PRODUCT IDENTIFICATION AND INSTALLATION

A range of charcoal grey pre-formed individual soakers for slates and tiles. They are made from lightweight high density polypropylene chosen for its thermal stability, resistance to UV light and acid rain and cracking under temperature change. These Individual Soakers represent savings in time to install, are of no value to the would-be-thief and create no harmful run off into water courses and drains.

FOR INTERLOCKING TILES (LEFT & RIGHT HAND VERSIONS) HD MDS/L AND HD MDS/R

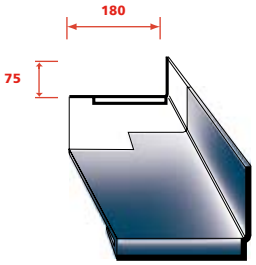
Suitable for use with Marley Modern, Redland Stonewold and equivalent tile types. The soaker is pushed on to the tile and the tile is then laid in the normal manner. When all soakers are installed the preformed 75mm upstand can be covered using a stepped lead flashing in the traditional manner or a GRP abutment cover flashing, code HD UACF.



HD MDS/R

FOR INTERLOCKING TILES (LEFT & RIGHT HAND VERSIONS) HD RRS/L AND HD RRS/R

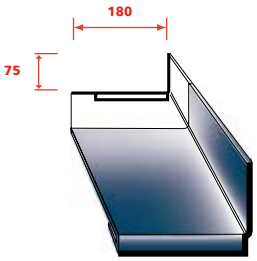
These are suitable for use with Redland Richmond type tiles. The soaker is fitted in the exact same manner as the HD MDS/L and HD MDS/R soakers.



HD RRS/R

FOR INTERLOCKING TILES (LEFT & RIGHT HAND VERSIONS) HD SRRS/L AND HD SRRS/R

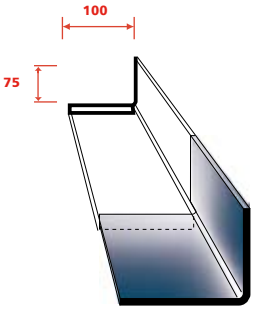
These are suitable for use with Russell Galloway and Marley Edgemere type tiles. The soaker is fitted in the exact same manner as the HD MDS soakers.



HD SRRS/R

PLAIN CLAY OR CONCRETE TILES (LEFT & RIGHT HAND VERSIONS) HD PCS/L AND HD PCS/R

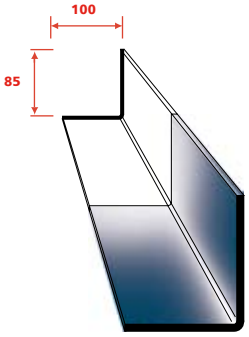
The plain soakers are laid on top of each consecutive abutment tile with the 90° turndown locating over the head of the tile, the weight of the following courses of tiles keeping the soaker in position against the abutment. The 75mm upstand can be covered using a traditional lead flashing or an HD UACF GRP Abutment Flashing.



HD PCS/R

FOR SLATES HD SS500 AND HD SS600

The HD SS500 is suitable for use with natural or man-made slate sizes of 500mm x 250mm and the HD SS600 with 600mm x 300mm slates. The HD SS500 and the HD SS600 are laid in conjunction with appropriate abutment slates and nailed into position with the slate in accordance with BS 5534: 2003 Code of Practice for slating and tiling. The finished soaker upstand can be covered using a traditional lead flashing or an HD UACF GRP Abutment Flashing.



HD SS500 & HD SS600

Abutment Cover Flashings

INTRODUCTION AND INSTALLATION

UNIVERSAL ABUTMENT COVER FLASHING HD UACF

The Universal Abutment Cover Flashing has been introduced by Hambleside Danelaw as an attractive and cost effective alternative to the conventional lead cover flashing. It is suitable for both horizontal and sloping abutments and for all types of coverings to both flat and pitched roofs. Finished in a lead grey colour, it is available in 3m lengths.

The HD UACF is suitable for new build and refurbishment work. It is quick and easy to fit, requires no further finishing and may be readily trimmed to suit the installation if required. Manufactured in GRP (Glass Reinforced Polyester), it has a low coefficient of expansion, resists discolouration, requires little maintenance and does not pollute or contaminate the surface water run-off into the drainage system.

Installation

The intended location of the HD UACF should first be determined before marking and cutting a chase into the wall or raking out the mortar in the relevant course or courses of masonry. The depth should ideally allow for a minimum penetration into the wall of 25mm. Where the HD UACF is to be fitted close to the line of the wall. When cutting into brickwork, rather than into the joints, care and consideration should be taken to ensure suitability due to the condition of the bricks.

The HD UACF should be secured into the chase or masonry joint using conventional lead wedges or proprietary stainless steel clips at 500mm centres maximum. It is not normally required to provide any clips to restrain the bottom edge of the cover flashing from the effects of wind lift; however in some cases of extreme exposure, it may be provident for them to be considered.

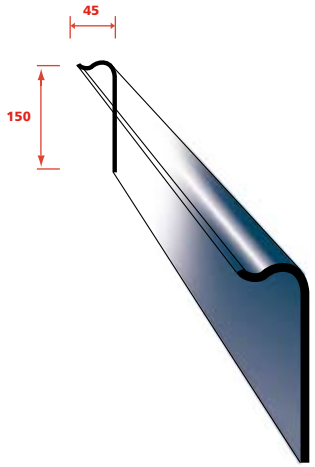
When joining successive lengths of the cover flashing, it should in all cases be overlapped by a minimum of 150mm and in cases of severe exposure; consideration may be given to the application of a line of mastic or sealant under the overlap.

The HD UACF should be sealed into the chase and along the top edge using a high quality external grade sealant or mastic. Pointing with mortar is not recommended as the bond to the surface of the GRP will be poor.

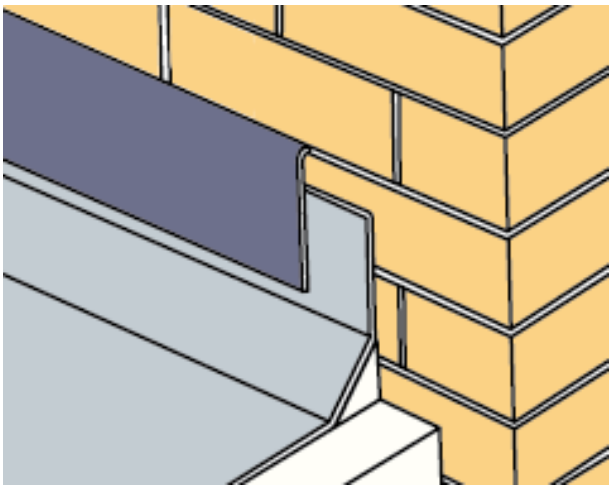
At internal and external corners, it is necessary to first install a lead 'under' flashing around the corner in the conventional manner at least 150mm in length and in both directions before covering with the HD UACF and securing. External corners require the top flange of the GRP to be mitred to allow a close fit at the corner.

Special care should be taken when fitting the HD UACF to a wall surface that is bowed or curved, has deeply recessed joints or has an uneven surface such as irregular brick/ stonework or rough cast renders. In some instances the top flange may not have sufficient length to permit secure fixing or adequate sealing against moisture ingress. When fitting in conjunction with a cavity tray and DPC, the flashing should always be fitted below the DPC.

HD UACF used at a Flat Roof Abutment Detail



TYPICAL INSTALLATION DETAIL



Dry Fix Verges

INTRODUCTION

Hambleside Danelaw Dry Verges are a unique range of pre-formed GRP continuous profiles designed for use with either natural or man-made slates.

The Dry Verges are manufactured in an attractive UV resistant lead grey colour from GRP (Glass Reinforced Polyester) a tried and tested material that has the benefits of a low coefficient of expansion, is resistant to the build up of fungi and debris and requires little maintenance.

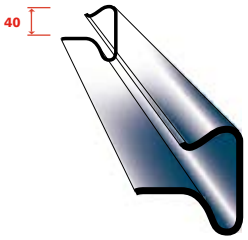
They have been designed to fix continuously along the verge and are available in four profile types with under batten fixing for new projects and face fixing for refurbishment work.

The Dry Verge systems eliminate the need for any mortaring to the verge. The use of the Dry Verge system provides important protection from wind uplift and driving rain to this very vulnerable perimeter of the roof, especially in high or exposed areas.

IDENTIFICATION OF PROFILES

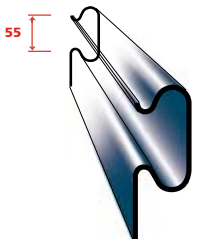
HDL DV6

The HDL DV6 is 3m long and is designed to be fitted underneath the battens or natural of man-made slates.



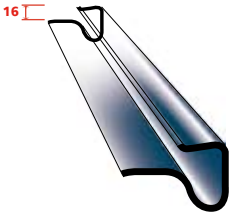
HDL DV8

The HDL DV8 is 3m long and is designed for refurbishment projects and is face fixed over the verge into the gable. HDL DV8 can also be used to accommodate a plain tile verge, and on new build projects if required.



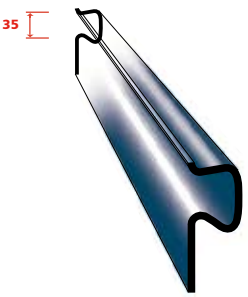
HDL DV7 SCOTVERGE

The HDL DV7 is 3m long and is designed to fit directly onto the sark board surface, or as an over batten fix if required.



HDL DV9 SCOTVERGE

The HDL DV9 is 3m long and designed for sark board refurbishment projects and is face fixed over the verge into the gable, it can also be used on new build projects if required.



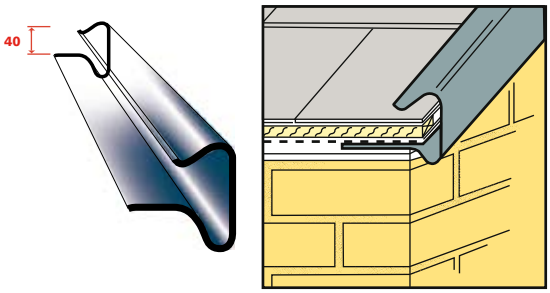
Dry Fix Verges

INSTALLATION

HDL DV6

The HDL DV6 is designed to fit underneath the slating battens. It is therefore recommended that whether used for new or refurbishment work, the gable brickwork be constructed or prepared to allow a flat and even contact surface for the Dry Verge.

Installation
With the slating battens already fitted, commence fitting the HDL DV6 from ridge to eaves. The horizontal flange of the HDL DV6 should be inserted underneath the battens and roofing underlay, then fixed by nailing through the batten and HDL DV6 into the gable masonry using suitable masonry nails of an acceptable quality at 500mm centres maximum. The roofing underlay should then be trimmed into the channel of the HDL DV6. Openings between slating battens at the verge should be closed using short lengths of slating batten. When joining sections of Dry Verge it is essential to interlock the upper section into that of the next lower section allowing approximately 150mm overlap for in-line joints.

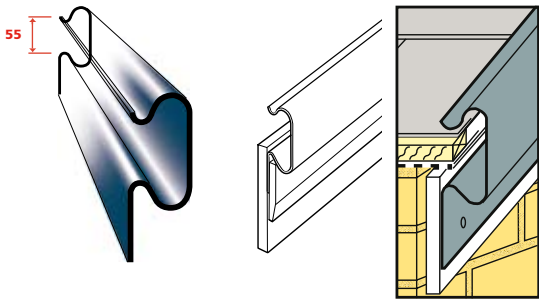


HDL DV8

The HDL DV8 is designed primarily as a refurbishment system but can also be used on new build if required. When used on refurbishment work it is recommended that any loose or defective brickwork or mortar is removed or made good prior to fitting to avoid future blockages.

Installation
The HDL DV8 can either be fixed directly to the brickwork using plugs and anti-corrosive screws of an acceptable quality, or into an adequately secured timber batten or barge board and the Dry Verge nailed directly through at 500mm centres maximum. The roofing underlay should be trimmed into the channel of the DV8. Openings between slating battens at the verge should be closed using short lengths of slating batten.

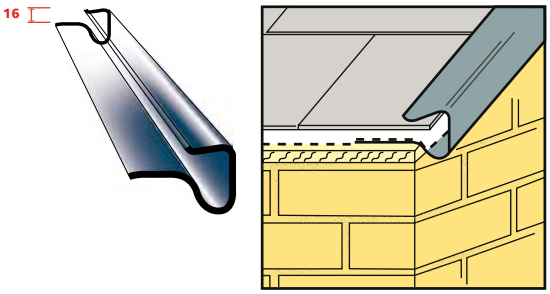
Commence fitting the HDL DV8 from ridge to eaves (into the brickwork or timber). It is essential to interlock the upper section into that of the next lower section allowing approximately 150mm overlap for in-line joints. To further enhance the appearance of the HDL DV8 system, an optional section of covering or architectural moulding may be fitted to conceal the Dry Verge fixing flange.



HDL DV7 SCOTVERGE

The HDL DV7 is designed to fit underneath the roofing underlay and directly on top of the sark boarding in a typical Scottish roof detail where the slates are fixed directly to the boards.

Installation
Commence fitting the HDL DV7 from ridge to eaves. The horizontal flange should be positioned onto the sarking boards and fixed through using nails of acceptable quality at 500mm centres maximum. The roofing underlay should be trimmed into the channel of the HDL DV7. When joining sections of Dry Verge it is essential to interlock the upper section into that of the next lower section allowing approximately 150mm overlap for in-line



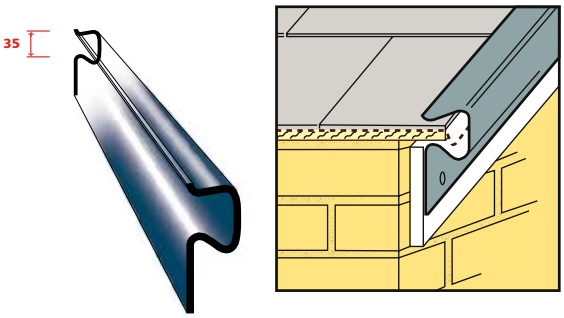
Dry Fix Verges

HDL DV9 SCOTVERGE

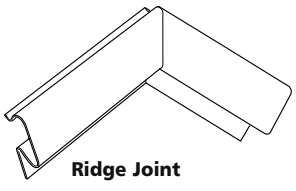
The HDL DV9 is designed primarily as a refurbishment system but can also be used on new builds if required and where the slates are fixed directly to the Ssrk board roof in typical Scottish slating practice. When used on refurbishment work it is recommended that any loose or defective brickwork or mortar is removed or made good prior to fitting to avoid future blockages.

Installation
The HDL DV9 can either be fitted directly to the brickwork using plugs and anti-corrosive screws of an acceptable quality, or into an adequately secured timber batten or barge board and the Dry Verge nailed directly through at 500mm centres maximum. The roofing underlay should be trimmed into the channel of the HDL DV9.

Commence fitting the HDL DV9 from ridge to eaves (into the brickwork or timber). It is essential to interlock the upper section into that of the next lower section allowing approximately 150mm overlap for in-line joints. To enhance the appearance of the HDL DV9 system, an optional section of covering or architectural moulding may be fitted to conceal the Dry Verge fixing flange.

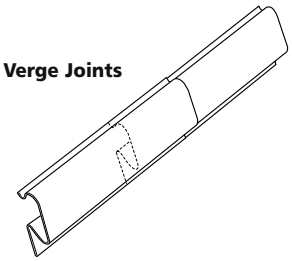


TYPICAL DRY VERGE JOINT DETAILS



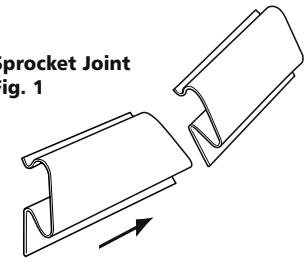
Ridges The Dry Verges are cut with a vertical mitre and butt jointed. A lead saddle may be fitted over the joint if required. The ridge tile should be trimmed if necessary to suit.

Verge Joints



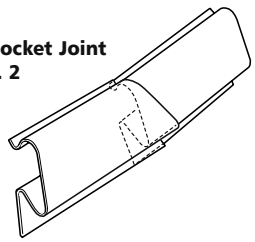
Verge Joints Where joints in the Dry Verge are required along the edge of the roof, they should be overlapped with the lower section fitted over /around the upper section

Sprocket Joint Fig. 1



Sprockets Slight or gentle sprockets can easily be accomodated by cutting the lower section to a slight rake and fitting over the upper or main Dry Verge section.

Sprocket Joint Fig. 2



NOTE:
These jointing methods are suitable for all of the Dry Verge profiles.

Continuous Eaves Course for Slate Roofs

INTRODUCTION AND INSTALLATION

The Hambleside Danelaw Continuous Eaves Course for Slate (HDL CECS) is an innovative product designed to reduce the time taken to cut and install a traditional support eaves course when using man-made or natural slates. HDL CECS is made from Glass Reinforced Polyester (GRP) a proven choice of material, and produced in a 3m x 355mm roll for ease of site handling and installation.

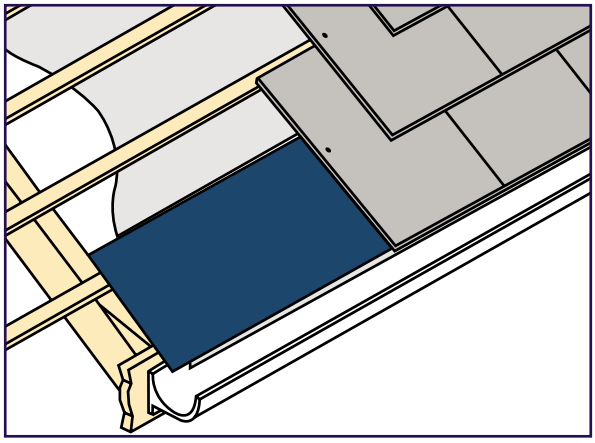
The durability and low coefficient of expansion of GRP and its rigidity when installed go together to make the ideal combination and choice for a support eaves course.

Installation
The roof should be set out in the usual manner, and in accordance with BS 5534: 2003 Code of Practice for slating and tiling (including shingles), but without the double batten normally required to fix the slate eaves course. The first batten should be set out and fixed to accommodate the nailing of the first full slate course and not to the depth of the HDL CECS.

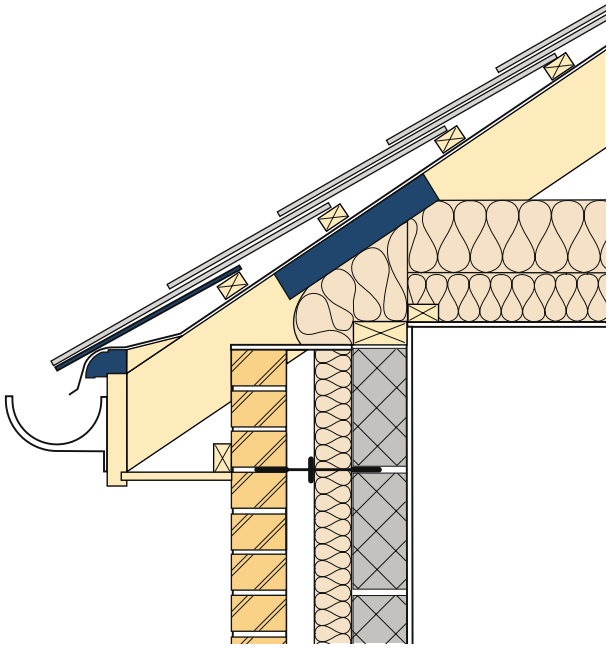
The lengths of HDL CECS are installed above the underlay and slate battens as a direct replacement for the eaves course of slates. They should be positioned over the fascia board or over fascia ventilator allowing a 45mm to 55mm overhang into the gutter, consistent with or slightly less than the overhang of the slates. The HDL CECS should be nailed to the first slating batten at centres sufficient to retain it in position, and without any distortion, until the slates are fitted.

With the HDL CECS in position the first full course of slates are installed in the normal manner, nailing through the Continuous Eaves Course and into the batten. When using fibre cement slates a copper disc rivet should be used. The HDL CECS should be either drilled or a hole provided using a bradawl for the rivet to be pushed through and the tang bend over in the normal manner.

CECS CONTINUOUS EAVES COURSE



TYPICAL INSTALLATION DETAIL



Damp Proof Course

INTRODUCTION AND INSTALLATION

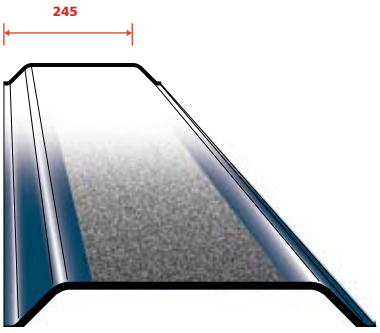
DAMP PROOF COURSE
HDL DPC

The Damp Proof Course has been specially developed for use on new or refurbished sloping parapet walls up to 240mm thick, typically party walls protruding through the roof of older terraced and semi-detached properties.

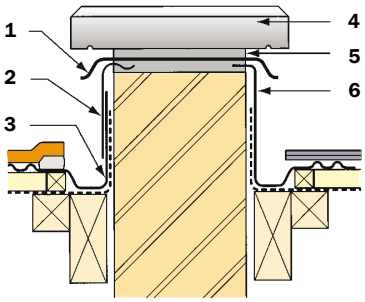
The Damp Proof Course can be used in conjunction with a lead flashing, or Hambleside Danelaw GRP Universal Abutment Cover Flashing, (HD UACF) and/or our Conti-Soaker. It is produced in a pleasing lead grey colour in 3 metre lengths with ground glass bonding strips along the entire top and bottom width thereby providing a superior base for the mortar bedding.

Installation
The Damp Proof Course section is laid onto a mortar bed covering the full width of the parapet directly above the cover flashing or GRP Continuous Soaker. To join consecutive lengths of the Damp Proof Course a minimum overlap of 100mm is recommended and for the overlap to be sealed using a high quality mastic or sealant.

The brickwork or coping stone is then bedded in mortar directly onto the integral mortar bonding strip that is provided on the Damp Proof Course.



TYPICAL INSTALLATION DETAIL



1	HDL DPC Section	**4**	Coping Stone
2	HDL GRP Flashing Code UACF	**5**	Mortar Bed
3	HDL GRP Conti-Soaker Unlipped – Code CST	**6**	HDL GRP Conti-Soaker for slates Lipped – Code CSS

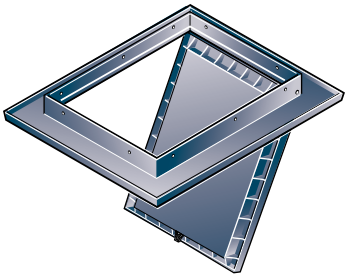
Loft Access Doors

INTRODUCTION AND PRODUCT IDENTIFICATION

The range of Hambleside Danelaw Loft Access Doors is designed to provide easy access through ceilings into the roof void of most typically constructed dwellings. The choice of models includes the traditional push-up type, and the more popular and versatile drop-down design which can allow the use of loft access ladders. The aesthetic appearance of access doors is of considerable importance to the homebuyer. This has been acknowledged in the design and finish of a range which is easy to clean and maintain as well as pleasing to the eye. For added security lockable designs are also available.

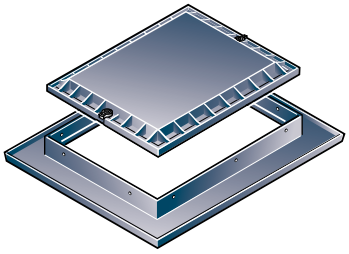
DROP-DOWN LOFT ACCESS DOOR
HD TRAPDD

These are made from white injection moulded polypropylene with insulation integral to the lid. A single security catch ensures good location against the draft/vapour seals and thermal performance rating of 0.85 W/m²K. Also available 0.35 W/m²K rated push-up trap code HD TRAPDD35.



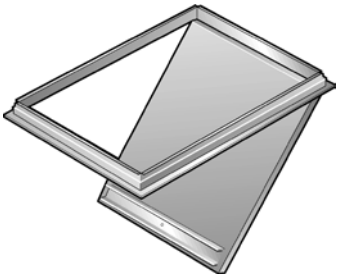
PUSH-UP LOFT ACCESS DOOR
HD TRAPPU

These are made from white injection moulded polypropylene with insulation integral to the lid. Two security catches ensure good location against the draft/vapour seals and protect against uplift. It has a thermal performance rating of 0.85 W/m²K. Also available 0.35 W/m²K rated push-up trap code HD TRAPPU35.



DROP-DOWN FIRE RATED LOFT ACCESS DOOR
HD TRAPDDF

These are made from steel pressing and moulding, the Class O fire rated trap has a white powder coated finish with insulation integral to the lid. A single security catch ensures good location against the draft/vapour seals.

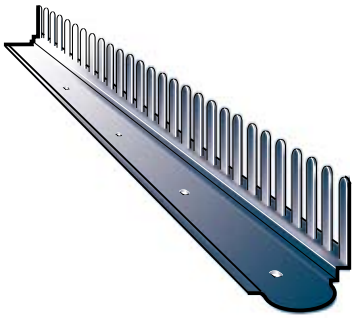


Installation
All models meet or exceed the NHBC minimum opening size requirement of 520mm in any direction and suit 600mm joist centres. They can be used with other joist centres by trimming the opening in an approved manner.

Thermal Performance
Building Regulations Approved Document C 2004 Edition requires that in order to resist surface condensation and mould growth, a roof should be designed and constructed so that thermal transmittance does not exceed 0.35 W/m²K at any point.

PRODUCT IDENTIFICATION

UNIVERSAL EAVES COMB FILLER
HD ECFM

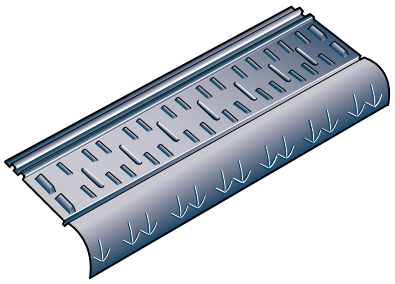


USE: Continuous eaves closure and vermin stop which adapts to the tile profile.

BENEFITS: Easy to handle and maintenance free. It is also quick to fix, with slotted nail holes and compatible with pantile.s Prevents 'cocking' of tiles at the fascia.

SIZE: Height: 66mm Length: 1 metre **MATERIAL:** LDPE

UNDERLAY SUPPORT TRAY
HD 3000

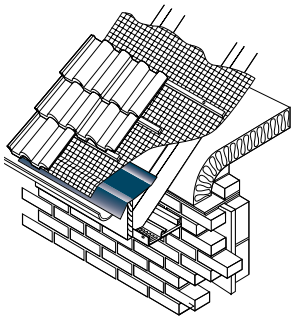


USE: Provides full support and eaves protection for roofing underlay at eaves level and combines to provide drip into guttering.

BENEFITS: Clips together for universal rafter spacing. Hinged at fascia to prevent panel distortion on low pitches. Fixed with HD 12000M or HD 12000U or directly to the top of the fascia board.

SIZE: Length: 600mm when clipped. **MATERIAL:** Black PVC.

RIGID UNDERLAY SUPPORT TRAY
HD RFST

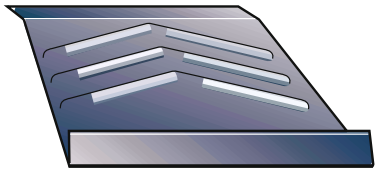


USE: Ideally suitable for eaves refurbishment details, this rigid PVC unit provides an immediate and cost effective solution to situations where damage to the underlay has occurred.
NOTE: The Rigid Underlay Support Tray should be nailed to the top of the fascia board.

BENEFITS: The Rigid Underlay Support Tray can be used in conjunction with either traditional soffit strip ventilators (HD 8000 and HD 8250) or with over fascia ventilators (HD 12000M or the universal HD 12000U).

SIZE: Length per unit = 1.5 metres **MATERIAL:** Black PVC

MOISTURE DIVERSION PLATE
HD IL/DP



USE: This is an optional extra; the diversion plate provides additional security, if required, against debris and moisture penetration when fitted with either flush fitting slate or tile ventilators.

MATERIAL: Black PVC

FLEXI-PIPE CONNECTOR
HD FPC

USE: Flexi-pipe can be used as an extension to all HD Soil Pipe Adapter Kits. Suitable for internal and external fit to 110mm plastic pipes for soil pipe ventilation and mechanical extraction, may also be compiled using offcuts of rigid pipework to form longer lengths. It can also be connected to HD 9620 Square to Round Adapters for underfloor applications.

LENGTH OVERALL = 510mm

Product Guarantees

Hambleside Danelaw Limited (Hambleside) hereby guarantee that:

The following products which are manufactured by Hambleside from GRP, hereinafter referred to as the product, will have a service life as defined below of thirty years.

- Dry Fix Bonding Gutter and Bonding Gutter
- GRP Slate and Tile Valley Trough product range
- Dry Fix Valley Trough
- Continuous Dry Verges
- Damp Proof Course
- Continuous Soaker for Slate or Tiles

The following products which are manufactured by Hambleside from high density polypropylene or polyethylene hereinafter referred to as the product, will have a service life as defined below of twenty years.

- Slate Roof Ventilators
- Tile Roof Ventilators
- Dry Soakers
- Dry Fix Ridge System (HD DFR3 only)
- Cavity and Underfloor Ventilators
- Over Fascia and Soffit Ventilators

The Guarantee shall only apply to product exposed to normal weather conditions within Northern European Union Countries. Normal weather conditions is defined as there being no unusually high levels of chemical or other pollutants within the external or internal atmosphere of the premises where the product is incorporated which would adversely affect the service life expectancy of the product.

Should the product fail to meet the service life expectancy then Hambleside will replace the defective product.

The decision to replace is to be at the sole discretion of Hambleside.

This guarantee is subject to the following conditions and exclusions;

Section 1: Conditions

The installation of the product must be completed in accordance with the instructions and specifications of Hambleside in respect of the product which are detailed within the current technical manual.

Section 2: Exclusions

This Guarantee shall not extend to the following:

- Damage resulting from the movement, subsidence or any failure in the structure or building in which the product has been installed.
- Damage resulting from abnormal use of the roof.
- Damage as a result of accidental or malicious damage.
- Damage resulting from the incorrect storage or handling of the product prior to its installation.
- Deterioration of the product colour as a result of natural weathering conditions.

Section 3: Claim Procedures

Any claim under this Guarantee must be recorded in writing to Hambleside at its address within five working days of the discovery of the fault.

Hambleside will then arrange for the defect to be inspected in order to determine the cause. Thereafter Hambleside will indicate in writing whether or not it accepts liability under the Guarantee.

In the event that a claim has not been resolved between the parties within a reasonable time then arbitration will be arranged in accordance with Hambleside's Conditions of Sale.

Section 4

Hambleside will under no circumstances be liable for any incidental or consequential damage to the building structure or contents of the building or any other direct or indirect loss resulting from damage to the relevant product.

Service Life

Service life is defined as the actual period of time during which no excessive expenditure is required on operation, maintenance, or repair of a component. The start of the service life is taken from the time of installation of the product. The end of service life is taken from the point in time when the only way to deal with the unacceptable loss of performance is by replacement. For further guidance on the durability of building components refer to BS 7543: 2003.

References

BRITISH STANDARDS

BS 476-3: 2004

Fire tests on building materials and structures and classification and method of test for external fire exposure to roofs.

BS 476-7: 1997

Fire tests on building materials and structures and method of test to determine the classification of the surface spread of flame of products.

BS 493: 1995

This was a specification for airbricks and gratings for wall ventilation.

BS 2782-3: Methods 320A to 320F: 1976

This was methods of testing plastics, mechanical properties, tensile strength, elongation and elastic modulus.

BS 2782-4: Method 432A: 1991

This was methods of testing plastic, chemical properties, and determination of residual styrene monomer content in reinforced plastics based on unsaturated polyester resins.

BS 2782-6: Methods 620A to 620D: 1991

This was methods of testing plastics, dimensional properties and determination of density and relative density of non-cellular plastics.

BS 2782-10: Method 1001: 1977

This was methods of testing plastics, glass reinforced plastics and measurement of hardness by means of a Barcol impressor.

BS 5250: 2002

This was a code of practice for control of condensation in buildings.

BS 5440-2: 2000

Installation of flues and ventilation for gas appliances of rated input not exceeding 70 kW net.

BS 5534: 2003

This was a code of practice for slating and tiling (including shingles).

BS 5925: 1991

This was a code of practice for ventilation principles and designing for natural ventilation.

BS 6367: 1983

This was a code of practice for drainage of roofs and paved areas.

BS 6399-2: 1997

This is loading for buildings and a code of practice for wind loads.

BS 7543: 2003

This was a guide to the durability of buildings and building elements, products and components.

OTHER REFERENCES

DTLR

Building Regulations Approved Document C, 2004 Edition.
C2 Resistance to moisture.

Building Regulations Approved Documents L1 and L2, 2002 edition;

L1 is conservation of fuel and power in dwellings.

L2 is Conservation of fuel and power in buildings other than dwellings.

(It is anticipated that the requirements of the regulations currently contained in parts L1 and L2 will be revised and updated for publication in 2005 and implementation in 2006).

Limiting thermal bridging and air leakage:
Robust construction details for dwellings and similar buildings.

Scottish Executive

This is the Technical Standards, 6th Amendment 2001.

Part G: Preparation of sites, resistance to moisture and resistance to condensation.

Part J: Conservation of fuel and power.

Building Research Establishment

BR 262: 2002, Thermal insulation: avoiding risks.

GBG 37, insulating roofs at the rafter level: Sarking insulation.

GBG 51, ventilated and unventilated cold pitched roofs.

NFRC

Technical Bulletin 28: Inclined preformed GRP valley troughs.

NHBC

Technical Standards Chapter 7.2

The references detailed on this page are a guide only and other standards may be applicable.

Hambleside Danelaw
Building Products

In accordance with our policy for continuous improvement we reserve the right, should the need arise, to amend product specifications without prior notice.

Our full Terms and Conditions of Sale are available upon request.

Hambleside Danelaw Limited
Long March
Daventry
Northamptonshire
NN11 4NR

Telephone
01327 701910
Fax
01327 701919
E-mail
marketing@hambleside-danelaw.co.uk
Web
www.hambleside-danelaw.co.uk