

CRAFTSMAN'S GUIDE

TO

ROLLED LEAD SHEET

SPECIAL EDITION
RCI 2017

enviro
LEAD

WHY ROLLED LEAD SHEET?

Accurately predicting the performance of a roofing material initially depends on the quality of the material concerned.

Rolled lead sheet is the only lead sheet produced to a British and European Standard, BSEN 12588.

Under this standard, the thickness consistency of the sheet must not exceed a tolerance of +/- 5% at any one point.

It is this consistency which means the performance of rolled lead sheet can be predicted with confidence to ensure optimum performance when specified and fitted correctly in any given application.

The recommendations and technical advice provided by the Lead Sheet Association are based solely on the performance of *rolled lead sheet to BSEN 12588*.

OTHER PRODUCTS AVAILABLE INCLUDE

- Expansion Joints
- Fixings for Lead
- Flashpoint
- Flexislates
- Hall Clips
- Lead Slates
- Patination Oil
- Restorers
- Underlays
- Wood Cored Roll
- Metwash

For further information contact your nearest sales office listed on page 53.

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This Guide has been printed with amendments made in agreement with the Lead Sheet Association, which do not conflict with the technical data/detail.

INTRODUCTION

The technical information provided in this official guide is extracted from 'The Complete Manual' designed and published by the Lead Sheet Association

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TECHNICAL ADVICE

Technical officers are available to offer independent advice and guidance to anyone involved with the use of rolled lead sheet to BSEN 12588. Some of the services currently available incur a charge. Enquiries may be made by telephone, fax, email or by letter. A small administration charge is made for written replies and comments on letters and drawings. Site surveys and follow-up reports can be carried out for an appropriate fee.

The Lead Sheet Association
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Branbridges Road, East Peckham
Tonbridge
Kent TN12 5HP
Telephone: 01622 872 432
Fax: 01622 871 649
email: info@leadsheetassociation.org.uk
website: www.leadsheetassociation.co.uk

HEALTH AND SAFETY

When using lead sheet:

- Lift with care - seek assistance
- Do not eat, drink or smoke
- Wear appropriate clothing
- Apply a hand barrier cream where possible
- Wash hands thoroughly afterwards using METWASH®

A detailed information booklet entitled A Guide to Health, Safety and Environmental Care is available from the Lead Sheet Association.

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EXPANSION JOINTS

- An economic option to drip joints on shallow falls.
- Suitable for stone cornices and eave gutters.
- Life expectancy greater than 20 years.



Premium Lead Expansion joints have been designed to overcome the problems arising when laying lead lined gutters with restricted falls and to provide a lower cost alternative to the restructuring of existing gutter detail.

Traditionally in applications such as lead lined gutters, lead sheet lengths are joined by overlapping them at drips that stand at least 50mm high. However, if the fall is sufficient for this to be possible, a length of Lead Expansion Joint may be welded between the upper and lower sheets. A weather tight joint is thus effected that is sufficiently flexible to absorb the strains exerted by the thermal expansion and contraction of the adjoining lead sheets.

The changes in length that lead sheet undergoes during expansion and contraction are absorbed by the neoprene insert in the Lead Expansion Joint. The neoprene is vulcanised at elevated temperature and pressure whilst in contact with the lead wings, forming a very strong rubber-metal bond. The metal wings of the joint are manufactured from BS EN 12588, Code 5 rolled lead sheet.

Lead Expansion Joints have been recommended by the Lead Sheet Association for cases where it is impossible to incorporate drip joints in the refurbishment of the lead lined parapet or eave gutters.

Lead Expansion joints are able to operate satisfactorily in temperatures between -40°C and 100°C . They carry a manufacturer's guarantee of 10 years and have an expected life of greater than 20 years, if correctly installed.

Expansion Joint PLUS - is a new product, which incorporates a strip of BS EN 12588, Code 3 lead covering the neoprene section of the joint. This modification has the advantage of:

- Providing an uninterrupted appearance of the leadwork.
- Protecting the neoprene against UV radiation.
- Providing better resistance to damage from foot traffic.
- Extending life of the joint.

EXPANSION JOINTS

ADVICE ON USE

1. Lead Expansion Joints should be fixed at intervals conforming to Lead Sheet Association guidelines.
2. Overlay each length of lead sheet to be joined on either lead wing of the Lead Expansion Joint and trim the sheet on both sides, so that both overlays are a minimum of 25mm in width.
3. Protect the rubber in the Lead Expansion Joint with a damp cloth before starting to weld.
4. Using standard lead burning techniques, weld the Lead Expansion Joint to both lengths of sheet. A single weld should be sufficient when lap welding Code 5 rolled sheet.
5. Always apply a coat of Premium Patination Oil or Prepat to all exposed lead surfaces. Take care that Patination Oil does not come into contact with the rubber section of the joint.
6. If the Lead Expansion Joint PLUS is used, ensure that the bonded edge of the cover strip is on the upper side of the neoprene strip with respect to the gutter fall.

LOT SIZES

Standard Expansion Joint

3.0m x 260mm Code 5

one per box

3.0m x 400mm Code 5

one per box

Expansion Joint PLUS

1.5m x 400mm Code 5

one per box

HEALTH & SAFETY ADVICE

- Keep out of the reach of children.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash – Soap and Bodywash.
- Lead is a dense material. Take suitable precautions when lifting or carrying.

PRODUCT DESCRIPTION AND PROPERTIES

Composite:

Lead alloy sheet is manufactured to BS EN 12588 Code 5 and neoprene rubber

Density of lead:

11,340 kg.m⁻³

Melting point of lead:

327°C

FIXINGS FOR LEAD



- Fixing clips are required for securing free edges of lead sheet against wind lift.
- Copper or stainless steel fixing clips are recommended for most applications.
- Cast lead domes are the preferred alternative to lead burning exposed fixings and can be used with lead sheet or lead clad steel panels.
- Copper and stainless steel annular ring shank nails are recommended for fixing sheet and clips to timber.

PREMIUM FIXING CLIPS AND STRIP

Premium Roofing Products provide a selection of fixing clips together with strip, from which fixing clips of the desired size may be cut. Both clips and strip are available in copper and stainless steel.

Clips either from 0.6mm gauge copper or 0.4mm stainless steel are normally recommended. However, when clips are required to be malleable enough to follow complex profiles, only copper clips can be used. Steel clips are preferred when the clip can only be fixed at its top extremity and rigidity is required, e.g. over a glass roof.

PREMIUM ANNULAR RING SHANK NAILS

Premium Annular Ring Shank Nails are available in both copper and stainless steel. These are recommended by The Lead Sheet Association for fixing the lead sheet panels, clips etc. to a timber substrate.

PREMIUM CAST LEAD DOMES

For intermediate cladding fixings and for fixing to stone masonry, brass or stainless steel screws are required. For intermediate fixings, the screw must be covered. Premium Cast Lead Domes are ideal for this application as they are supplied as sets of brass screws, lead buttons and serrated edged washers, over which the buttons are crimped.

FIXINGS FOR LEAD

ADVICE ON USE

1. Clips should not be less than 50mm wide.
2. In sheltered conditions, copper and stainless steel clips may be fixed at a maximum spacing of 500mm for each lap of lead sheet. Clips should be spaced more closely in exposed situations.
3. Clip strength is increased the closer the clip is fixed to the free edge of the lead sheet or flashing. Although fixing near the base of the clip is not recommended for lower pitched roofs, due to the risk of water penetration through the fixing hole.
4. An expansion gap of at least 6mm should be left between the edge of the lead sheet and the clip to allow for thermal movement.
5. Positions of fixings, particularly intermediate fixings, should be chosen carefully so that the thermal movement of the lead sheet is not impeded.
6. The nylite washer included in the Cast Lead Dome Set is specifically for use with lead clad steel and can be omitted when fixing lead sheet.

LOT SIZES

Fixing Clips:

Copper	300mm (or 600mm) x 50mm x 0.6mm	10 per pack
Stainless Steel	300mm (or 600mm) x 50mm x 0.4mm	10 per pack

Annular Ring Shank Nails:

Copper or Stainless Steel	3.35mm 20mm, 25mm, 30mm, 38mm	1kg per box
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Cast Lead Domes Set:	20 of each component per set (includes lead dome, nylite washer, brass cup washer and brass screw)	5 sets per box
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HEALTH & SAFETY ADVICE

- Premium Fixings may be handled without special precautions.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash - Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

Copper Clips and Strip:	Cut from copper sheet - conform to BS EN 1172
Stainless Steel Clips and Strip:	Cut from fully annealed strip - conform to BS EN 10088
Copper and Stainless Steel nails:	Large headed nails - conform to BS 1202: Parts 1 & 2
Brass Screws:	Present in the Cast Lead Domes Set - conform to BS 1210

FLASHPOINT



- Designed for lead-masonry and lead-brick pointed work.
- Avoids problems of cracking and lack of adhesion associated with mortar joints.
- Gives a permanent, flexible and waterproof joint.
- Cleaner, quicker and easier to use than mortar, with high adhesion to both lead and masonry.
- Neutral cure product; an acid cure will give rise to white stains on the lead.
- Life expectancy of 20 years.
- Recommended by the Lead Sheet Association.

Flashpoint provides a preferred alternative to the use of mortar as a pointing material for lead-brick and lead-masonry joints. Mortar is unable to expand and contract with lead and masonry during temperature variations, leading in some cases to the mortar cracking and allowing ingress of water.

Flashpoint is a one part, silicone based sealant that once applied will cure to give a flexible, durable and elastic seal, capable of accommodating the high degree of thermal expansion and contraction often encountered with lead flashing exposed to direct sunlight.

Because of its water content, mortar cannot be applied in cold, frosty conditions. However, Premium Flashpoint with its large service temperature range (see Product Description and Properties overleaf), can be used at temperatures down to -65°C.

FLASHPOINT

ADVICE ON USE

1. The minimum depth of the sealant injection is 10mm, but in the majority of situations the mortar in a joint should be removed to a depth of 25mm.
2. Ensure all mortar is removed from the masonry and lead faces to be sealed by Flashpoint.
3. Ensure that joint is completely dry and free of dust before applying sealant.
4. Cut the plastic nozzle to an internal diameter suitable to the height of the joint and such that it allows sealant to fill its full depth.
5. In order to obtain a professional finish, smooth the face of the Flashpoint joint with a dampened pointing iron before the sealant has skinned over.
6. Premium Flashpoint is not an adhesive and is not recommended for joining lead to lead.

JOINTS WITHOUT A DPC

1. Turn lead sheet into a joint or chase to a depth of not less than 25mm and secure with wedges or clips.
2. Lead sheet folded into wide joints over 18mm cannot be fixed by wedges or clips. Turn up the sheet at the back of the joint and fix with stainless steel screws and washers at 450mm intervals.
3. Ensure any space in the joint behind the sealant is plugged with a suitable gap fill product, allowing a depth of at least 10mm for sealant.
4. Introduce sealant. To complete the outer layer on a wide joint, cut the sealant nozzle at an angle and apply sealant to top and bottom of the joint before filling the centre.

JOINTS WITH A DPC*

1. Fixing lead sheet under a dpc without it being damaged can be difficult because of the reduction in joint width. Replacing the outer 25mm of mortar under the dpc during the build with narrow timber fillets is preferable to raking out green mortar from this narrow gap after laying the course.
2. Remove timber fillets once mortar has set and insert lead sheet.
3. Introduce sealant between lead and dpc, ensuring no voids.

*Flashpoint is not recommended in cases where it will be in contact with tarry products such as bituminous dpc's or roofing felts.

LOT SIZES

310ml tubes

12 tubes per box

HEALTH & SAFETY ADVICE

- Keep out of the reach of children
- Avoid contact with skin or eyes. In case of contact with eyes, rinse with plenty of water and seek medical advice.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash - Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

Shore A hardness: 25 (approx.)

Shelf Life: One Year

Tack free time:

Cure period:

Maximum movement capability:

Service temperature range:

Performance life expectancy:

Coverage:

Base Composition: Silicone rubber

Appearance: Ductile paste

≥30 minutes - dependent on temperature

3mm depth - 1 to 3 days; 10mm depth ≤14 days

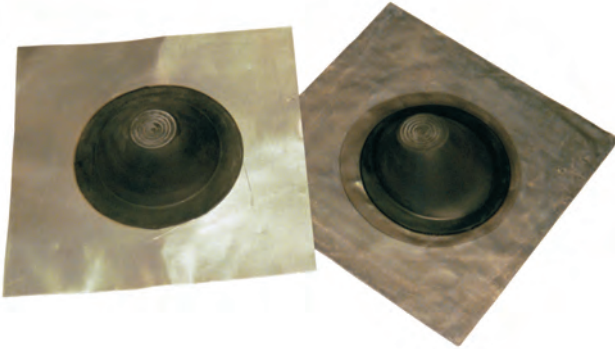
±25%

-65°C to 165°C

At least 20 years, if installed correctly

A 310ml tube, extruded into a 6mm x 12mm joint, will point approx. 5 linear metres.

FLEXISLATES



- For use on any pitched or flat roofs.
- Suits all common pipe diameters and pitch.
- One size slate will seal pipes of diameter between 25mm and 125mm.
- Suitable for flue pipes at temperature up to 100°C.
- Lead Flexislates provide a weather-tight joint where flue pipes and soil stacks penetrate a slate, tile, asphalt, felt or lead covered roof.

The flexibility of lead allows the slate base to be dressed to tiles of all profiles, avoiding wind lift or chatter problems.

Premium Flexislate bases are cut from BS EN 12588 Code 4 rolled lead sheet.

The Neoprene conical upstand is vulcanised at elevated temperature and pressure in contact with the base, forming a very strong rubber-metal bond.

Two conical upstand profiles are available, flat for 0°-30° roof pitched for 20°-40° roof pitches.

Premium Flexislates are able to operate satisfactorily at temperatures between -40°C and 100°C and have an expected life of greater than 20 years, if correctly installed.

Premium Flexislates are also available in aluminium.

FLEXISLATES

ADVICE ON USE

1. Select a lead Flexislate with an upstand angle suitable to the pitch of the roof. If fitting over the boiler flue, ensure that the outer wall of the flue pipe in contact with the slate does not exceed a constant 100°C.
2. The upper surface of the rubber sleeve has a pattern of concentric grooves that should be used as knife guides. Select a groove diameter that is slightly smaller than the required diameter, to ensure a weather-tight fit. Take care to not cut across the grooves.
3. Use liquid soap to lubricate the neck of the rubber sleeve of the Flexislate prior to fitting.
4. Always apply a coat of Prepat or Patination Oil to all exposed lead surfaces, as well as the underside of the leading edge. Take care that the Patination Oil does not come into contact with the rubber sleeve.
5. Fit over the pipe and on a pitched roof, finish the top edge of the tile with a welt.

LOT SIZES

Flat profile flexislate	5 per box
Pitched profile flexislate	5 per box

HEALTH & SAFETY ADVICE

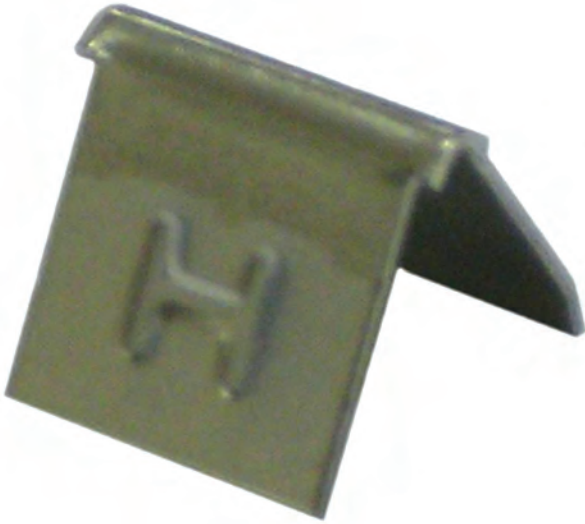
- Keep out of reach of children
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash - Soap and Bodywash.
- Lead is a dense material. Take suitable precautions when lifting or carrying.

PRODUCT DESCRIPTION AND PROPERTIES

Composition:	Lead alloy sheet manufactured to BS EN 12588, Code 4 and neoprene rubber
Density of lead:	11,340 kg.m ⁻³
Melting point of lead:	327°C
Base dimensions:	450mm x 450mm
Sleeve profile:	Flat profile 0° - 30° roof pitches Pitched profile 20°-40° roof pitches
Pipe size range:	25mm to 125mm
Weight:	4kg (approx.) per slate

Premium Flexislates are also available in aluminium.

HALL CLIPS



- Faster and easier to install than traditional lead wedges.
- Suits chases from 6mm to 18mm.
- No cutting or folding required.
- No special tools required.

Hall Clips were the concept of a working roofer designed to save time and money during the installation of lead flashings.

The Hall Clip firmly grips lead in place and is installed literally in seconds without the use of any 'special' tools.

Hall Clips come supplied in bags of approximately 50 clips which are small enough, and light enough, to easily fit the tool box or pocket and will secure any flashings in a chase from 6mm to 18mm.

Fixed the same as the traditional lead wedge it fastens flashings up to 20 times faster.

HALL CLIPS

ADVICE ON USE

1. The Hall Clip grips firmly in place in seconds so it can be dressed easily before being finally pointed in with Flashpoint for a clean professional finish.
2. For best results insert Hall Clips with the 'H' uppermost.
3. No cutting or folding is required.
4. Hall clips can be pushed into the chase securely with a screwdriver or similar tool.

LOT SIZES

50 Clips per bag (approximately)

10 Bags per box

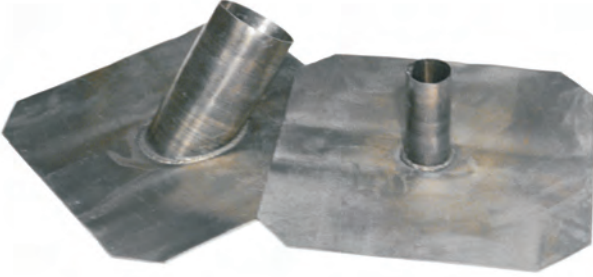
HEALTH & SAFETY ADVICE

- Hall Clips may be handled without special precautions.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove metal residues from skin after working with metal by washing with Premium Metwash - Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

Stainless Steel Strip: Cut from grade 304 tempered stainless steel strip.

LEAD SLATES



- For use on any pitched or flat roofs.
- Suits all common pipe diameters and pitch.
- Easily dressed to shape.
- Suitable for flue pipes.

Lead slates provide weather-tight joints where flue pipes and soil stacks penetrate a slate, tile, asphalt, felt or lead covered roof.

The flexibility of lead allows the slate base to be dressed to tiles of all profiles, avoiding wind lift or chatter problems.

Premium lead slates are cut for BS EN 12588 Code 4 rolled lead sheet and fabricated by lead welding.

Slate upstands are available in five diameters from the 50mm to 150mm, at angles of 30° and 45° to the base for pitched roofs and 90° for flat roofs.

The base dimensions of the slates are 450mm x 450mm and the minimum upstand height at the saddle side of the pipe-base joint is 150mm.

Non standard sizes are available. When stipulating dimensions, remember to specify the pipe dimension and the slate pitch required.

LEAD SLATES

INSTRUCTIONS FOR USE

1. Select a lead slate with an upstand angle suitable to the pitch of the roof of internal diameter such that it allows about 2mm tolerance over the external diameter of the pipe.
2. Always apply coat of Pre-pat or Patination Oil to all exposed surfaces, as well as the underside of the landing edge.
3. Fit over the pipe and on a pitched roof finish the top edge of tile with a welt.
4. When fitting over cast iron pipes, allow extra height to the lead upstand so that it may be dressed into the top of the pipe.
5. When fitting over the plastic pipes you can obtain a solvent welded collar that will provide a weathering over the top of the pipe.

LOT SIZES

50mm dia. (2") x 150mm upstand	5 slates per box
75mm dia. (3") x 150mm upstand	5 slates per box
100mm dia. (4") x 150mm upstand	5 slates per box
125mm dia. (5") x 150mm upstand	5 slates per box
150mm dia. (6") x 150mm upstand	5 slates per box

HEALTH & SAFETY ADVICE

- Keep out of reach of children.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash – Soap and Bodywash.
- Lead is a dense material. Take suitable precautions when lifting or carrying.

PRODUCT DESCRIPTION AND PROPERTIES

Composition:	Lead alloy sheet manufactured to BS EN 12588 Code 4.
Density of lead:	11,340 kg.m ⁻³
Melting point of lead:	327°C
Base dimensions:	450mm x 450mm
Upstand height:	≥150mm
Upstand angle to base:	30°, 45° or 90°
Weight:	5.5kg (approx.) Per slate

PATINATION OIL



- Helps prevent run-off staining
- Gives a pleasing finish to leadwork.
- Economical and easy use.
- Recommend by The Lead Sheet Association

In damp conditions, untreated lead sheet will quickly generate a white carbonate layer, which rainfall will frequently transfer to neighbouring slates, tiles or brickwork, causing unsightly stains.

Premium Patination Oil is an alkyd resin based liquid which, when applied to lead sheet, provides a permeable coating through which the metal surface will oxidise at a controlled rate. Over time this oxidised layer develops into uniform dull grey adherent patina. This patina is stable, pleasing in appearance and replaces the protection initially supplied by the Patination Oil.

Premium Patination Oil should be applied to all visible lead sheet surfaces, especially where rain water from these surfaces will run over other exposed building materials. It is recommended that hidden surfaces, past which rain water may flow e.g. behind lead motifs and clips, should also be treated with Patination Oil before installation.

This oil should be applied to new leadwork before the end of the day of installation (preferably out of direct sunlight), before the unsightly carbonate has a chance to form.

If the lead surface becomes wet before Patination Oil is applied, make sure that it is thoroughly dried before you start work. Water trapped below the Patination Oil layer can give rise to unsightly oxidation products, which are impossible to remove without first stripping away the Patination Oil.

PATINATION OIL

ADVICE ON USE

1. Shake the container vigorously for about 2 minutes before use.
2. Apply one coat only to the lead surface with a soft, clean cloth.
3. Work across the lead surface, applying the Patination Oil from top to bottom of the installation, in straight, vertical lines. Don't apply in a circular motion as this will leave an uneven appearance.
4. Remember to apply oil to the underside of the leading edges of leadwork and to cover lead clips and fixings.
5. Leave for at least one hour to dry. Close the container tightly on completion of work.

LOT SIZES

Small tins - 0.5 litre each
Medium tins - 1.0 litre each
Large tins - 2.5 litre each

10 tins per box
10 tins per box
4 tins per box

HEALTH & SAFETY ADVICE

- Keep out of the reach of children.
- Use only in well ventilated areas, away from naked flames and sources of ignition.
- Wear suitable rubber gloves as repeated exposure to the product may cause skin dryness and cracking.
- The product contains ethyl methyl ketoxime and may cause an allergic reaction.
- Dispose of any residual product and container as hazardous waste.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash – Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

Composition:	A mixture of white spirit, naphtha, soya alkyd resin, silica and metallic soaps.
Appearance:	Pale amber liquid
Flash Point:	37°C
Specific Gravity:	0.9 (approximately) at 20°C
Coverage:	Approximately 60 m ² per litre

RESTORERS



- Three products designed to improve, restore and enhance the appearance of lead sheet.
- Dirt and grime is removed by Lead Sheet Cleaner before lead surface restoration with:

Lead Sheet Restorer Formula G1 for recent leadwork ie. less than 50 years old.

or

Lead Sheet Restorer Formula G3 for old leadwork ie. over 50 years old.

Lead Sheet Cleaner has been designed to remove all types of grime, bird fouling, airborne pollution and dust from lead surfaces, either as part of a general clean-up or as a pre-treatment in preparation for surface restoration. *Lead Sheet Cleaner will not remove Patination Oil, bitumen or tar.*

Lead Sheet Restorer Formula G1 has been designed to remove oxide/carbonate patinas that form before the slower developing, but more adherent sulphite/sulphate based patinas. This will be on leadwork ranging from recently installed, up to as much as 50 years old.

Lead Sheet Restorer Formula G3 was designed for renovating leadwork during the restoration of old buildings and statuary. As it is in gel form, it will remain in contact with the surface to be restored for a period of time long enough to break down the adherent patina found on leadwork greater than 50 years of age. It may also be used to restore an area of leadwork to match an adjacent new lead repair.

RESTORERS

ADVICE ON USE

1. Before use, test on a small area to be cleaned.
2. Protect surrounding materials and where possible, collect all washings and dispose of them safely.
3. Remove any previously applied Patination Oil (contact Premium Roofing Products for advice on Patination Oil removal), clean and dry.
4. Apply Lead Sheet Cleaner with a cloth or nylon scourer, wash down and dry.
5. If further surface renovation is not required apply a coat of Patination Oil or Prepat.
6. For further renovation employ either Lead Sheet Restorer G1 or G3 as applicable. Apply G1 with a cloth or nylon scourer or G3 with a staff paintbrush, wash down, dry and return to step 4 to ensure restorer is neutralised.

LOT SIZES

Premium Lead Sheet Cleaner	1 litre ea.
Premium Lead Sheet Restorer Formula G1	1 litre ea.
Premium Lead Sheet Restorer Formula G3	1 litre ea.

HEALTH & SAFETY ADVICE

Premium Lead Sheet Cleaner and Premium Lead Sheet Restorer Formula G3

- Keep out of the reach of children.

Premium Lead Sheet Restorer Formula G1

- Keep out of the reach of children
- Contains nitric acid, causes burns.
- Wear suitable protective clothing when handling.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash – Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

	Cleaner	Formula G1	Formula G3
Composition:	An aqueous solution containing sodium metasilicate	An aqueous solution containing nitric acid	An aqueous solution containing ammonium acetate
Appearance:	Pale amber liquid	Clear liquid	Translucent gel
pH	11.5	n/a	n/a
Specific Gravity	1.09 (approx.) at 20°C	1.06 – 1.08 at 20°C	1.07 – 1.09 at 20°C
Coverage	5-10m ² per litre	approx. 10m ² per litre	approx. 1m ² per litre

UNDERLAYS



Premium Underlays for lead roofing, cladding and weathering applications:

- Reduce drag arising from thermal movement of lead sheet over substrate.
- Assist in the protection of lead against condensation corrosion, or chemical attack from stone, concrete or timber.
- Protect lead from damage due to any uneven nature of substrate and provide support against downward pressure.

There are two categories of Premium Underlay:

Building Papers

- Conform to BS 1521 / AIF.
- Are suitable for smooth plywood decking (underside of decking must be ventilated).
- Can prevent chemical attack from smooth concrete, stone or oak surfaces.
- Must be fitted over whole substrate area.

Geotextiles

- Are needle punched, non-woven, geotextile polyester materials in two unit weights – 200 and 220g.m⁻²
- Are suitable for more uneven surfaces, e.g. traditional timber boards.
- Do not rot or cause adhesion.
- Allow space for air flow between lead sheet and substrate.

UNDERLAYS

ADVICE ON USE

1. When using wood rolls, fit them over the underlay.
2. Lay underlay in strips across the fall of the roof, lapping the upper layer over the lower and stapling the lengths in position (nails may damage underside of lead sheet).
3. Create an upturn at abutments. Avoid draping underlays downwards at edges, as moisture may be drawn up by wick effect.
4. Take care when lead welding etc, as flames will ignite paper and melt textile.
5. Ensure that the lead sheet is laid on dry substrate and underlay.

LOT SIZES

Building Papers:

Standard AIF	1000mm x 25m
Polybit Moistop	1000mm x 25m

Geotextiles:

Geotec	1000mm x 25m
--------	--------------

HEALTH & SAFETY ADVICE

- Premium Underlays may be handled without special precautions.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash – Soap and Bodywash.

PRODUCT DESCRIPTION AND PROPERTIES

Building Papers:

Standard AIF: Waterproof, reinforced building paper for use as underlay, separation, curling layer and vapour check membrane.

Polybit Moistop: Polyethylene coated, building paper for use as a damp proof membrane.

Geotextiles: Geotec

Unit weight: 220g.m⁻²

Colour: Green

Tensile strength: 16.5 kN.m⁻²

Pore size: 0.09mm

Puncture resistance: 2500 N

Water permeability: 220 l.m⁻² .s⁻¹

Flame test: Satisfactory according to BS479:Part 12:1991

WOOD CORED ROLL



50mm Lead treated

75mm Lead treated

75mm Zinc treated

50mm Zinc treated

38mm Zinc treated

Sizes stated are approximate

- For lead sheet joints on flat or shallow pitched roofs.
- Recommended for areas where ponding or storm flooding is possible.
- Resistant to damage by foot traffic.
- Forms aesthetically pleasing joint.

Premium Wood Cored Roll is used as the basis for lead sheet joints on flat roofing and pitched roofing as well as traditional 'hard' metal roofing.

When there is the prospect of foot traffic, the wood cored roll joint is preferable to a hollow roll joint, as it is less prone to pressure damage.

Premium Wood Cored Rolls have been subjected to high pressure impregnation of a wood preservative, which protects the wood against timber rotting fungi and wood destroying insects.

Premium Wood Cored Rolls are unsuitable for use on curved surfaces of small radii, such as semi-circular dormer tops.

WOOD CORED ROLL

ADVICE ON USE

1. Fix a suitable length of Premium Wood Cored Roll to the substrate using 75mm stainless steel screws at 450mm centres.
2. Avoid cutting timber if possible, as this will expose untreated surfaces.
3. Turn the lead sheet undercloak over the top of the roll, just above the crown and fix using copper annular ring shank nails, leaving the bottom two-thirds of the sheet free to move.
4. Dress the overcloak over the roll, extending 40mm over the far side of the rolls as a splash lap. This serves to stiffen the free edge and keep it in position.

LOT SIZES

50mm lead x 2.4m in length and 38mm zinc x 2.4m in length (pre-bundled in quantities of 144).

All other sizes as shown overleaf x 2.4m in length are not pre-bundled.

HEALTH & SAFETY ADVICE

- Treated timber may be handled without special precautions, other than observing standard hygiene procedures, such as washing hands before eating, drinking or smoking.
- If timber must be cut or worked, avoid inhalation of dust from saws or mechanical sanders.
- Dispose of treated timber waste through an authorised waste contractor; do not use as domestic fuel, animal bedding or litter.
- When working with lead, follow standard health and safety procedures as laid out in Control of Lead at Work Regulations 2002. Always wash hands well before eating, drinking or smoking.
- Remove lead residues from skin after working with lead metal by washing with Premium Metwash (Soap and Bodywash).

PRODUCT DESCRIPTION AND PROPERTIES

Composition:

Preservative is applied to treated timber by high pressure impregnation.

Appearance:

Treated timber is greenish in appearance.

Preservatives:

Osmose Celcure A0 - containing copper, chromium and arsenic oxides, or Osmose Celcure AC500 - containing copper salts, an organic co-biocide and boric acid.

METWASH



- After working with lead, and other metals, washing with conventional soap and water can leave significant metal residues on skin.
- Premium Metwash will wash all metal residue from soiled skin.
- No solvents or abrasives are added to Premium Metwash.
- Premium Metwash contains conditioners and emollients to care for skin.
- Premium Metwash is non-toxic and biodegradable.

Premium Metwash is a new advance in soap technology. Ingredients in Premium Metwash will bond with metal residues and allow them to be cleansed.

Comparison tests showed that Premium Metwash removed metal residues from soiled skin, while other industrial soaps left substantial amounts of the residue behind.

There are no harsh solvents, abrasives or phosphates added to Premium Metwash, so hands are left clean without being chapped or irritated. The special conditioners and emollients added to Premium Metwash also make it an ideal all-over body soap.

Premium Metwash poses no threat to the environment. It is both non-toxic and biodegradable. It is also safe for use with waste water treatment systems without the need for additional chemicals, as the active ingredient is neutralised by the chlorine and calcium already present in water supplies.

METWASH

ADVICE ON USE

1. After working with lead and other metals and before eating, drinking or smoking, pour a little Premium Metwash Soap and Bodywash onto your hands, work up to a good lather with warm water and thoroughly clean all skin surfaces exposed to the metal and its residues.
2. Premium Metwash may be used safely as a hand soap or as an all-over body cleanser.

LOT SIZES

500ml bottles

6 bottles per presentation box

HEALTH & SAFETY ADVICE

- Mild irritant to eyes. In case of contact with eyes rinse well with water.
- May cause nausea, vomiting and diarrhoea if ingested

PRODUCT DESCRIPTION AND PROPERTIES

Base Composition:	Surfactants, detergents and conditioners
Appearance:	Clear, amber liquid with a pleasant odour
pH:	8.5 - 9.5
Specific gravity:	1.03
Viscosity:	1500 - 2200 cps (Brookfield)

STANDARD LEAD SHEET SIZES

(Other sizes are available to order)
FOR FLASHINGS AND WEATHERINGS

Widths (mm)	Code 3		Code 4		Code 5	
	3m	6m	3m	6m	3m	6m
150			9	18	11	23
210	9	19	13	26	16	32
240			15	29	18	37
300	13	27	18	37	23	46
360			22	44	27	55
390			24	48	30	59
450			28	55	34	69
600			37	73	46	91

Weights of rolls in kg

FOR ROOFING, CLADDING AND GUTTER LININGS

Dimensions	Code 4	Code 5	Code 6	Code 7	Code 8
6m x 1.2m	147	183	216	257	290
3m x 2.4m	147	183	216	257	290
6m x 2.4m	294	366	433	514	580
12m x 2.4m	588	732	865	1029	1159

Weights of rolls in kg

Guide to BSEN 12588 Codes and Thicknesses

Codes	Thickness (mm)	Weight kg/m ²	Use for
3	1.32	14.97	(A)
4	1.80	20.41	(ABF)
5	2.24	25.40	(BCDEFGH)
6	2.65	30.05	(BCDEFGH)
7	3.15	35.72	(CDEGH)
8	3.55	40.26	(CDGH)

Key to uses:

- | | |
|---|----------------------------|
| (A) Soakers | (E) Pitched Roofs |
| (B) Flashings | (F) Vertical Cladding |
| (C) Flat Roofing | (G) Dormers |
| (D) Parapet, Box and Tapered Valley Gutters | (H) Bay Roofs and Canopies |

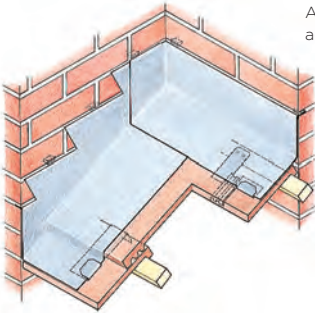
PRODUCT INFORMATION SHEET



Maximum Recommended Sizes of Sections, Bays and Panels
Oversizing may cause failure. Compare sizes with this chart.

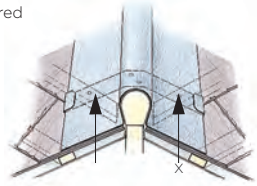
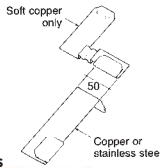
BSEN 12588:	Code Number	4	5	6	7	8
FLAT ROOFS 10° or less						
		mm	mm	mm	mm	mm
Maximum spacing of joints with the fall		500	600	675	675	750
Maximum spacing of drips		1500	2000	2250	2500	3000
PITCHED ROOFS 11° to 60°						
Maximum spacing of joints with the fall		500	600	675	675	750
Maximum distance between laps		1500	2000	2250	2400	2500
PITCHED ROOFS above 60° and up to 80°						
Maximum spacing of joints with the fall		500	600	675	675	750
Maximum distance between laps		1500	2000	2250	2400	2500
GUTTERS - BOX OR TAPERED						
Maximum spacing of drips		1500	2000	2250	2500	3000
Maximum overall girth		750	800	850	900	1000
see chart on page 32						
VERTICAL CLADDING						
Maximum spacing of vertical joints		500	600	600	650	700
Maximum distance between laps		1500	2000	2000	2250	2250
SOFFITS						
Up to 150mm deep		1000	1200	1200		
Up to 200mm deep		750	1200	1200		
Up to 500mm deep		500	600	600		
PROJECTIONS, CORNICES AND PARAPET CAPPINGS						
Not exceeding 450mm wide - nominal fall		1000	1500	2000	2000	
450mm to 650mm wide with nominal fall		1000	1500	1500	2000	
Not exceeding 450mm wide sloping up to 10°		1000	1500	1500	1500	
450mm to 650mm wide sloping up to 10°		1000	1500	1500	1500	
FLASHINGS						
All flashings, weatherings and pitched valleys (except for the verges of asphalt & felt roofs)		1500	1500	1500		
Flashings to verges of asphalt & felt roofs		1000	1000	1000		
Ridge roll cappings		1500	2000	2000		
Hip roll cappings		1500	1500	1500		

FIXING OF LEAD SHEET FLASHINGS



a. Clips for flashings over interlocking tiles

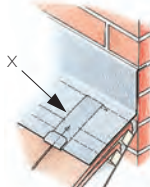
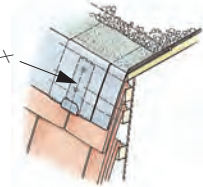
All flashings should be secured against the risk of wind lift. Position fixing clips at between 300-500mm centres depending upon the degree of exposure to wind.



b. Clip to ridge or hip roll

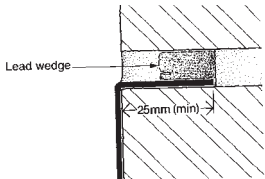
Clips should be made from quarter hard copper, 0.6mm thick, terne coated or stainless steel 0.38mm thick. Turn the clips over by at least 25mm.

X=For moderate to severe exposures additional fixings should be positioned at not more than 75mm from the free edge. Secure clips with copper or stainless steel nails or brass or stainless steel screws.



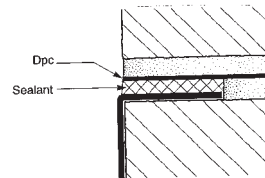
c. Clip to apron flashings

FIXINGS TO ABUTMENT WALLS



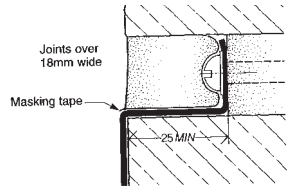
a. Wedging to lead flashing

Wedge flashings at laps and at 450mm centres.

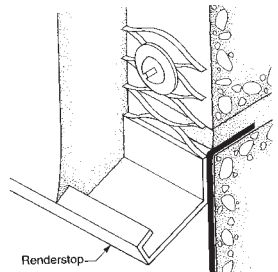


c. Lead flashing tucked under D.P.C.

Tuck in 25mm if wedged or 50mm if built in.



b. Fixing using brass or stainless steel screw and washer

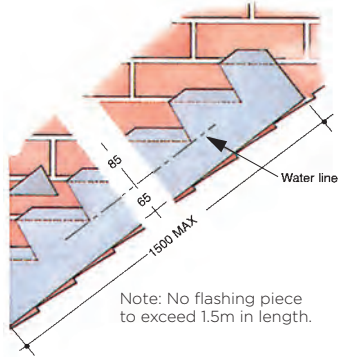
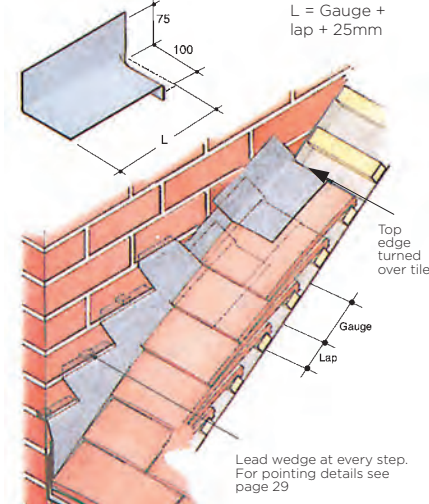


d. Detail for rendered wall using a renderstop bead

SOAKERS AND STEP FLASHINGS

a. Soakers

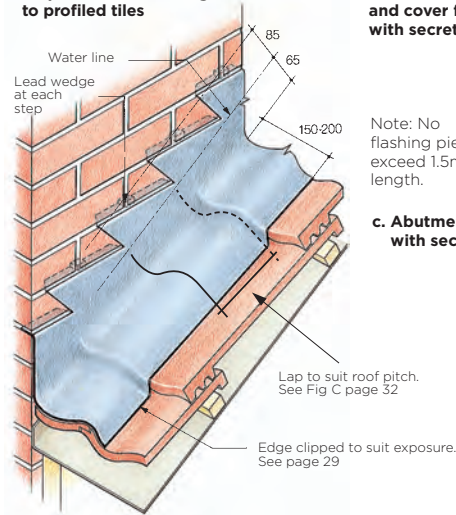
Size of soaker.
L = Gauge + lap + 25mm



b. Marking-out step flashing

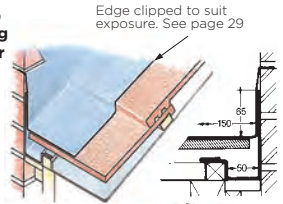
STEP AND COVER FLASHINGS AND SECRET GUTTERS

a. Step and cover flashing to profiled tiles

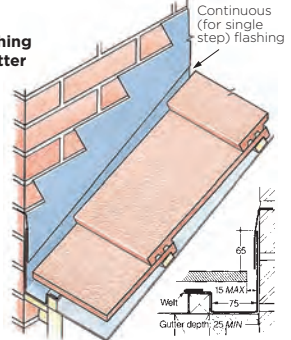


b. Abutment step and cover flashing with secret gutter

Note: No flashing piece to exceed 1.5m in length.



c. Abutment flashing with secret gutter

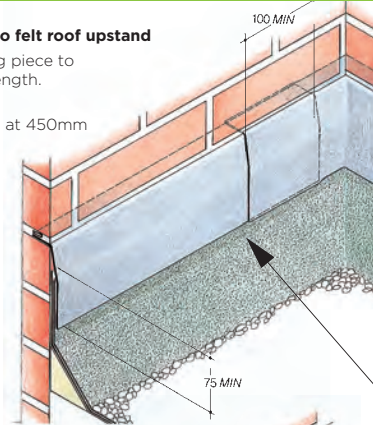


COVER FLASHINGS

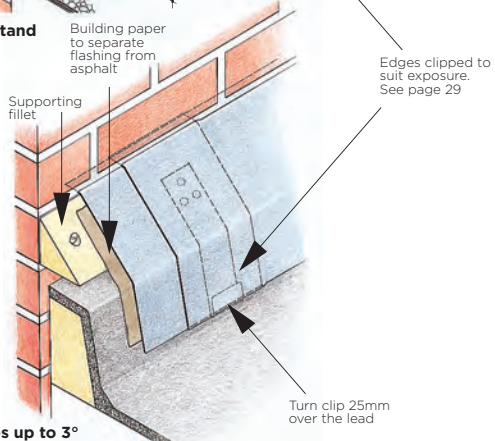
a. Cover flashing to felt roof upstand

Note: No flashing piece to exceed 1.5m in length.

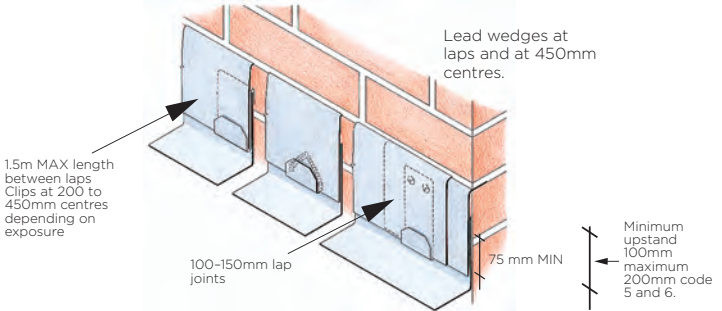
Wedge flashings at 450mm centres.
See page 29



b. Cover flashing to asphalt upstand



c. Cover flashings, roof pitches up to 3°

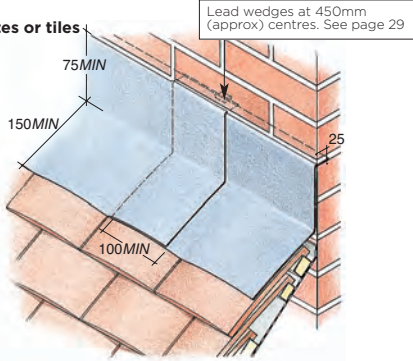


APRON FLASHINGS

a. Apron flashings over slates or tiles

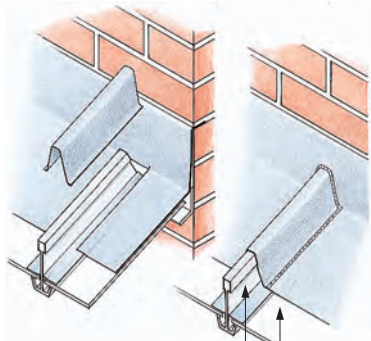
Lap to suit roof pitch.
See Fig C.

Edges clipped to suit exposure.
See page 29.



Note: No flashing piece to exceed 1.5m in length

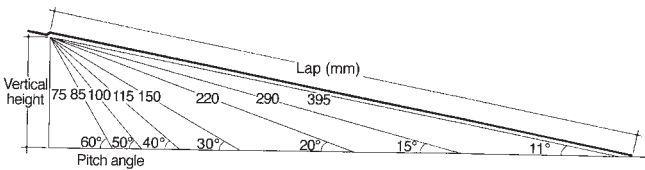
b. Apron flashings over glass



For deep glazing bars, cut and weld the capping piece.

Capping dressed to fit profile of glazing bar
Capping leadwelded

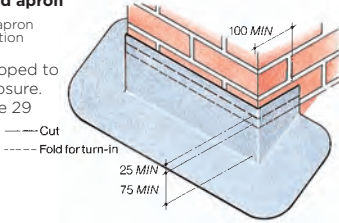
c. Lap diagram showing minimum lap for each degree of pitch



CHIMNEY FLASHINGS

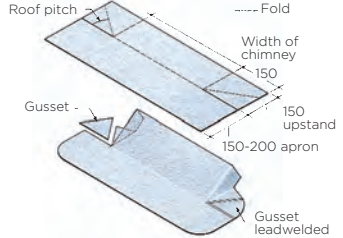
a. Bossed apron

Front apron in position
Edge clipped to suit exposure.
See page 29



Wedge flashings at 450mm centres.
See page 29

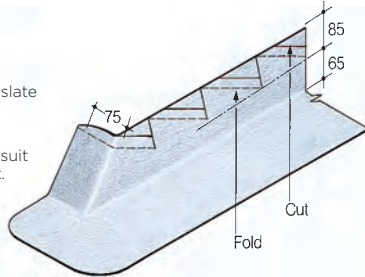
b. Welded apron



c. Side flashing

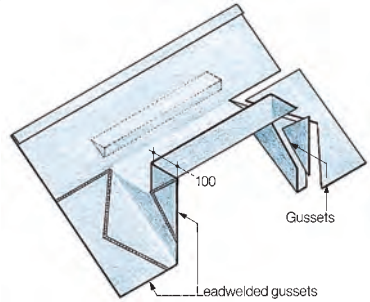
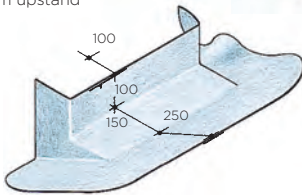
(varies to suit type of slate or tile - see page 30)

Mark the steps out to suit the joints in brickwork.
See page 30

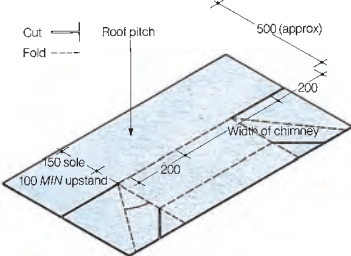


d. Bossed back gutter

*Minimum upstand



e. Welded back gutter

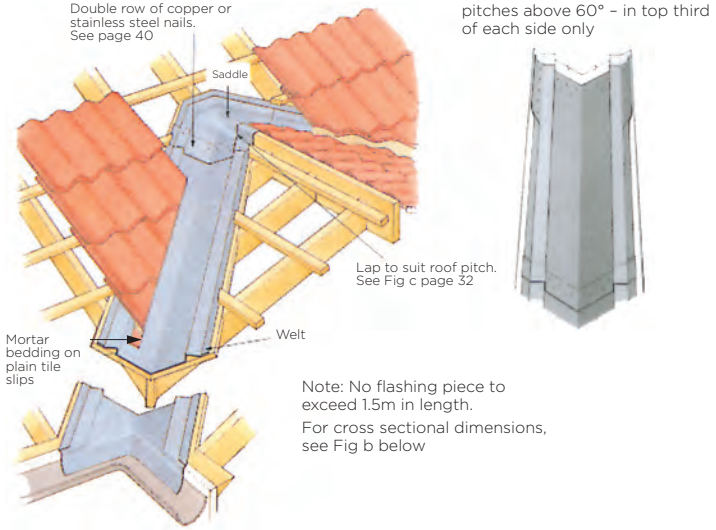


f. Back gutter fixed

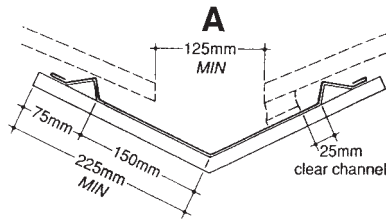


PITCHED VALLEYS

a. Details



b. Dimensions key

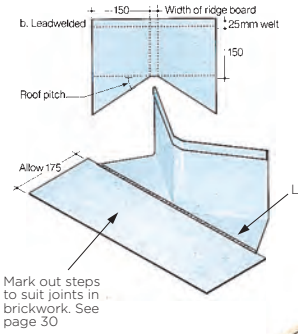


A (mm)	WITH BEDDED TILES	WITH UNBEDDED TILES OR SLATES
	Width of lead to line valley (mm approx)	Width of lead to line valley (mm approx)
100	500	400
125	525	425
150	550	450
200	600	500
250	650	550

For information on the sizes of pitched valleys in relation to catchment area, it is essential to refer to Update No. 1 published by the LSA

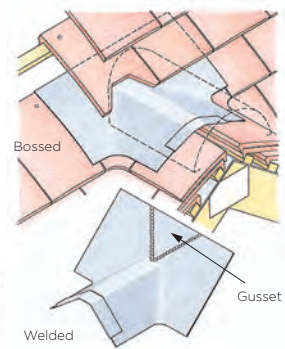
RIDGES AND HIPS

a. Ridge saddle at abutment

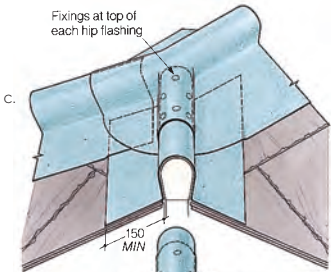


b. Ridge saddle at the top of a valley

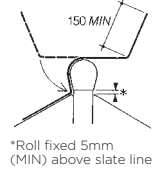
Turn into mortar joint and secure with wedges at each step. See page 29



Saddle may be bossed for shallow pitches or welded for either shallow or steeply pitched roofs.

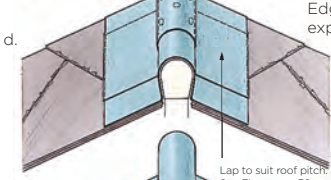


f. Cross section

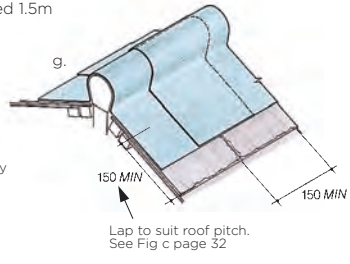
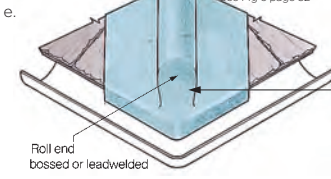


Wood cored roll 45mm diameter

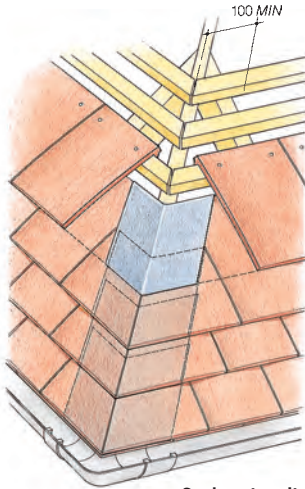
No ridge flashing to exceed 1.5m in length Code 4 and 2m length for Codes 5, 6, 7 and 8



Note: No hip flashing piece to exceed 1.5m in length.

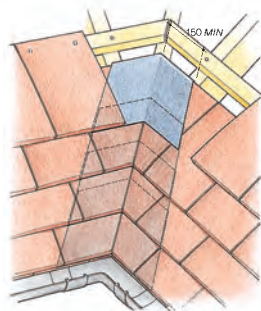


MITRED HIP AND VALLEY SOAKERS



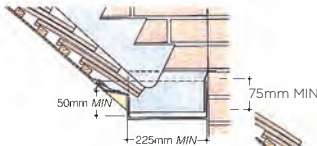
a. Soakers to mitred hips
Suitable for all roof pitches.

For pitches below 35° increase side lap to 150mm.

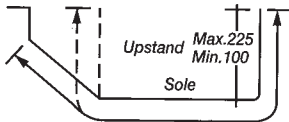


b. Soakers to mitred valleys
Suitable for plain tiles or pitches 45° or more.

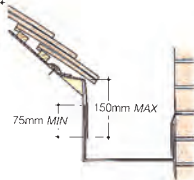
PARAPET AND TAPERED GUTTERS



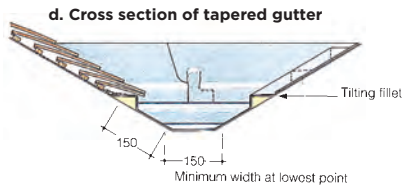
a. Cross section of parapet gutter
For details of maximum sizes see page 28.



b. Measurement of girth



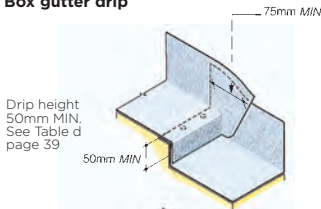
c. Cross section of box gutter



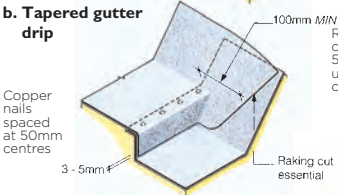
d. Cross section of tapered gutter

DRIPS AND ROLLS FOR GUTTERS

a. Box gutter drip



b. Tapered gutter drip

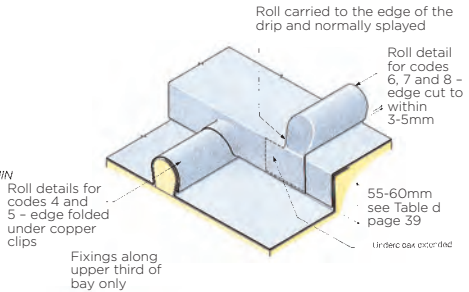


Drips in gutters may be fitted without splashlaps

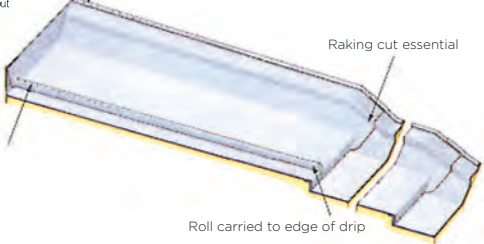
Undercloak fixed to wood roll for top third of bay only

c. Roll drip intersections for wide gutters

Normal roll detail with splashlap may be used. See Figs a and b page 38

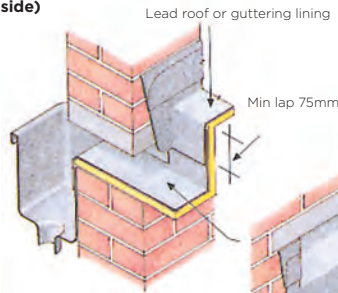


d. Tapered gutter details

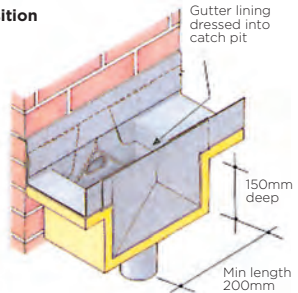


CHUTE OUTLETS FOR GUTTERS

a. Chute outlet (seen from inside)



c. Catch pit in position

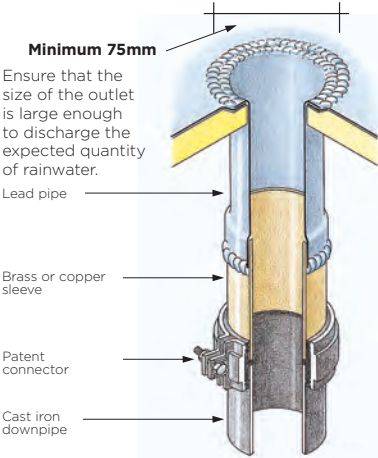


b. Chute outlet - outside

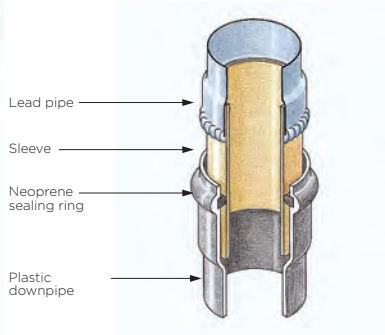


PIPE OUTLETS FOR GUTTERS

a. Connection of downpipes



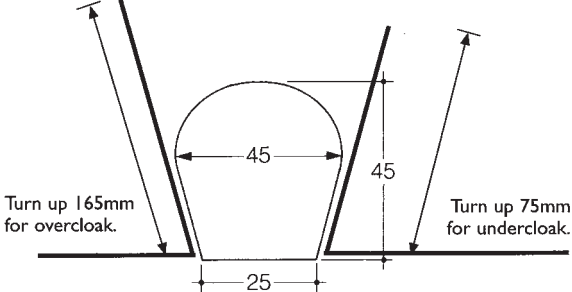
b.



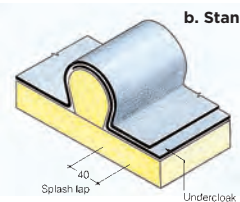
For protection against blockage from ice and snow, consider using either snow boards or heating tapes. Ensure that an overflow pipe is fitted to all catchpits. Catchpit must span width of gutter. For protection against blockages, a wire or steel grid should be fitted over the whole area of the catchpit.

ROLL JOINTS

a. Cross section of wood cored roll



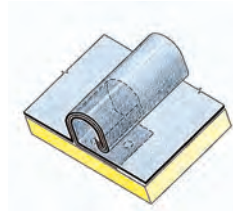
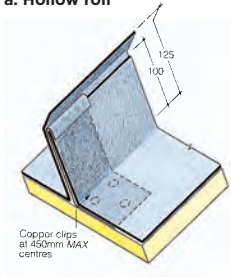
b. Standard wood cored roll with splash lap



Wood cored rolls are suitable for all roofing and cladding applications. Nail the roll undercloak at the top third of the length only using 20mm copper or stainless steel nails at 50mm centres. Rolls and welts should be used in the direction of the fall of the roof or cladding.

ROLL AND DRIP JOINTS

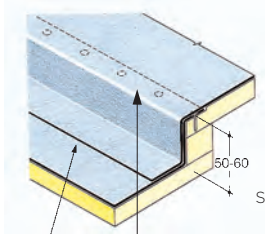
a. Hollow roll



Hollow rolls are only suitable for use in the direction of the fall on pitched roofs and vertical cladding.

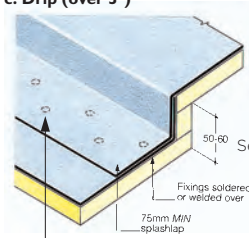
b. Drip (up to 3°)

Drips should be used across the fall of roofs below 11° pitch.



See Table d

c. Drip (over 3°)



See Table d

Copper nails in pattern shown on page 40

40mm splashlap

Copper nails spaced at 50mm centres

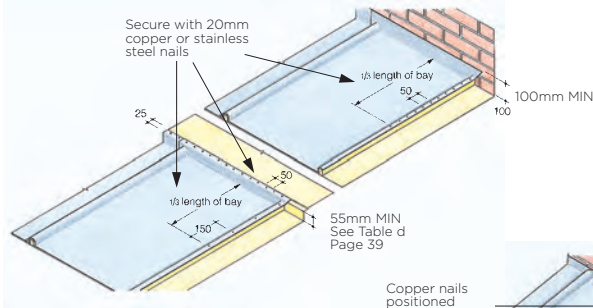
Minimum fall for gutters and flat roofs 1 in 80.

d. Minimum drip heights

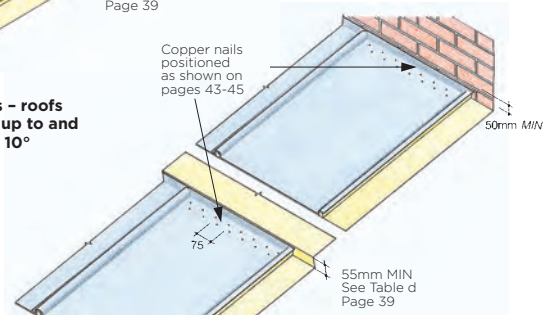
BSEN 12588 Code No.	Maximum distance between drips mm	Roofs and gutters without rolls mm	Roofs and gutters with rolls mm
4	1500	50	55
5	2000	50	55
6	2250	50	55
7	2500	60	60
8	3000	60	60

JOINTS AND FIXINGS AT ROLLS AND DRIPS

a. Fixings – roofs up to and including 3°



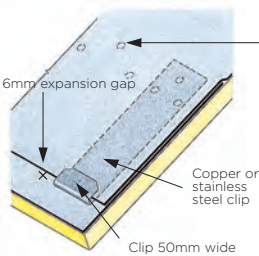
b. Fixings – roofs above 3° up to and including 10°



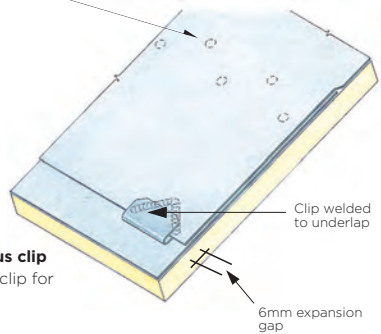
JOINTS AND FIXINGS AT LAPS

a. Clip for sheltered exposures

Lap joints should only be used across the fall of roofs not less than 11° pitch.

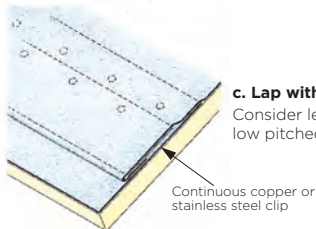


b. Leadwelded clip for moderate and severe exposure

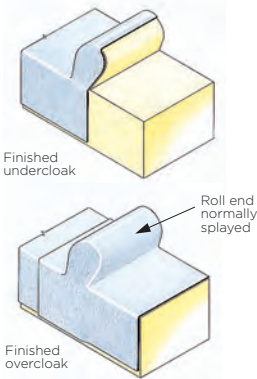


c. Lap with continuous clip

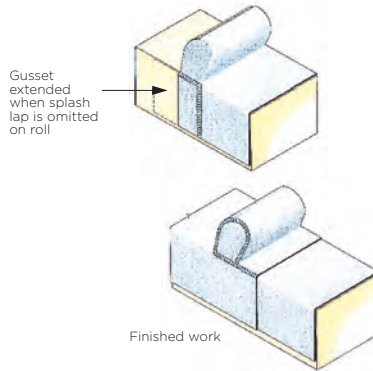
Consider leadwelded clip for low pitched roofs.



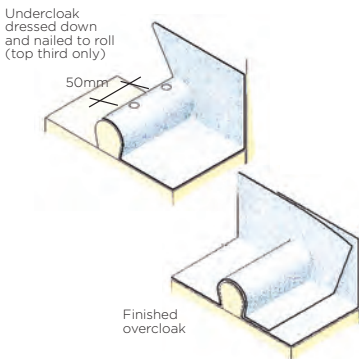
a. Bossed roll end to drip



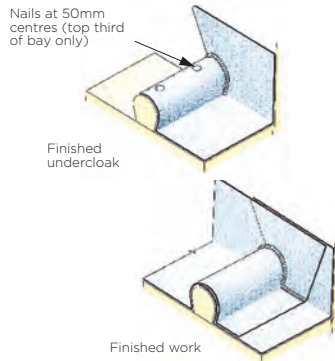
b. Welded roll end to drip



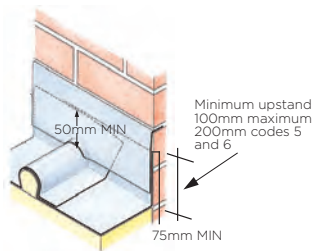
c. Bossed roll end to abutment



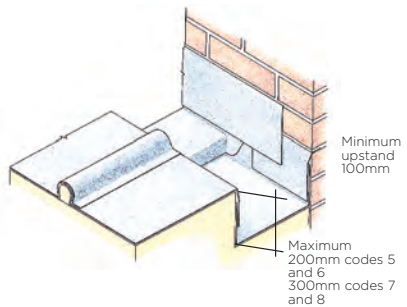
d. Welded roll end to abutment



e. Cover flashing at roll abutment

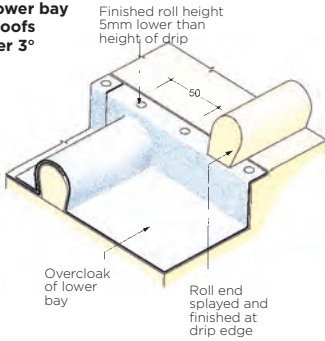


f. Gutter at abutment

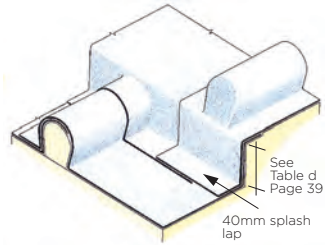


FLAT ROOF ROLL AND DRIP INTERSECTIONS

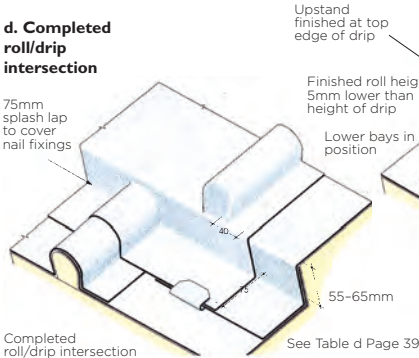
a. Lower bay for roofs under 3°



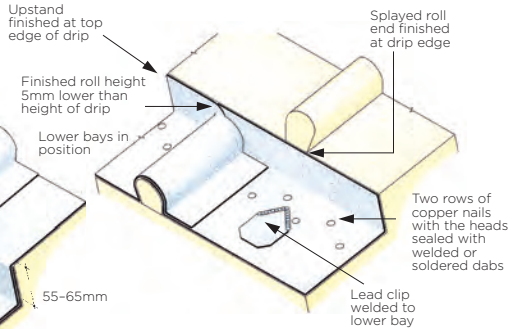
b. Roll to drip intersection complete



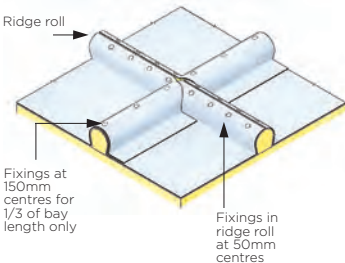
d. Completed roll/drip intersection



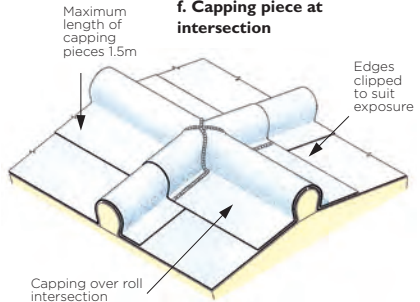
c. Staggered rolls, roof pitches 3°-10° bossed



e. Intersection of rolls at ridge - up to 3°

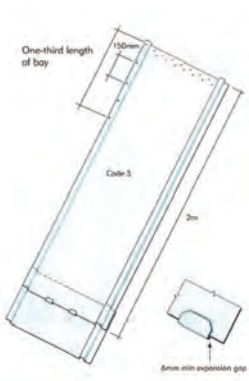


f. Capping piece at intersection

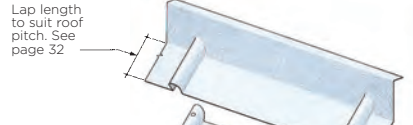


PITCHED ROOF JOINTS AND FIXINGS

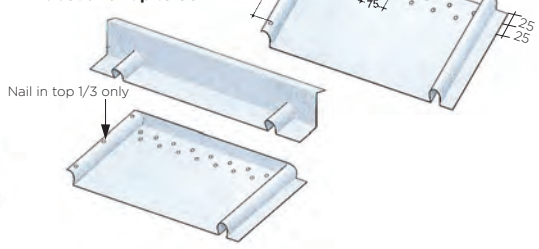
a. Head fixings



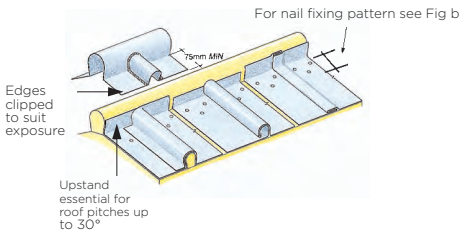
b. Fixings at abutment above 30°



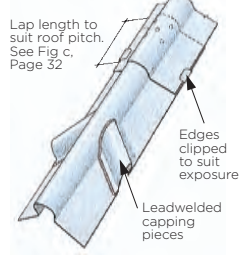
c. Fixings at abutment above 10° up to 30°



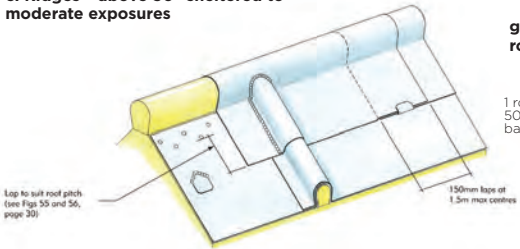
d. Ridges - over 10°



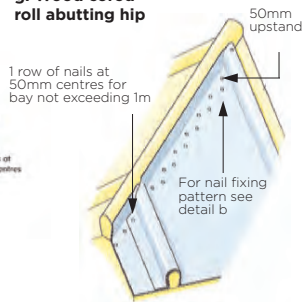
f. Hip capping



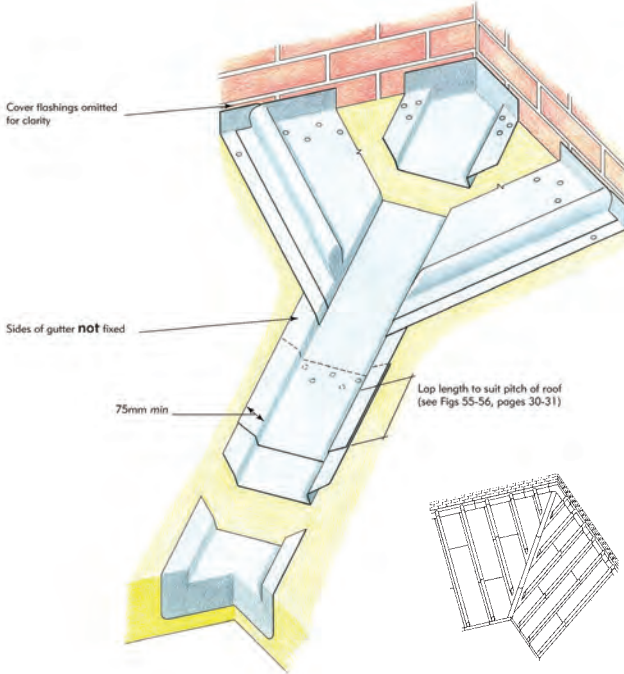
e. Ridges - above 30° sheltered to moderate exposures



g. Wood cored roll abutting hip

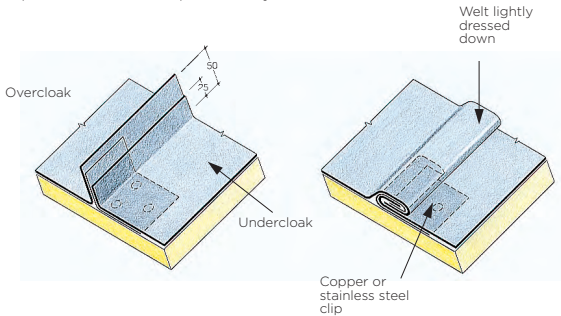


PITCHED ROOF INTERSECTION WITH VALLEY



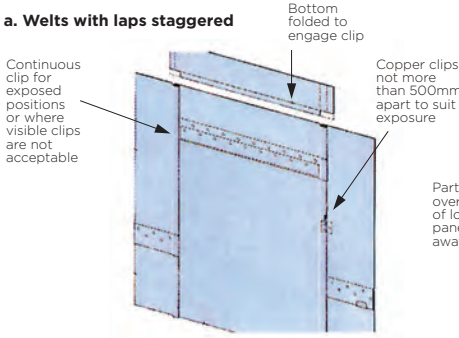
VERTICAL CLADDING - JOINTS AND FIXINGS

a. Weltd joint. Suitable for ledges, cornices, cappings to horizontal parapet walls, and small pitched bay roofs.

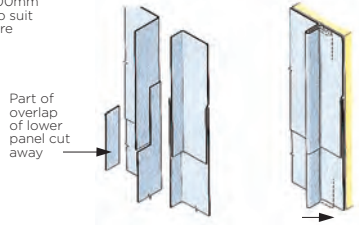


VERTICAL CLADDING - JOINTS AND FIXINGS

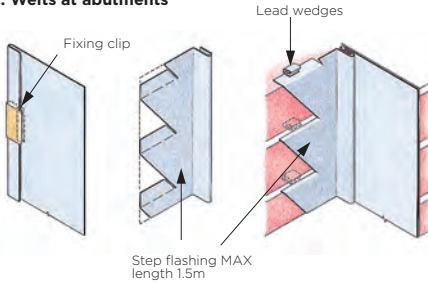
a. Welts with laps staggered



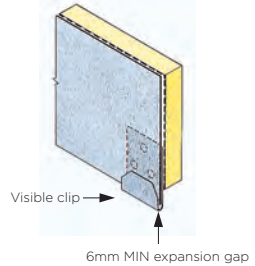
b. Welts laps in line



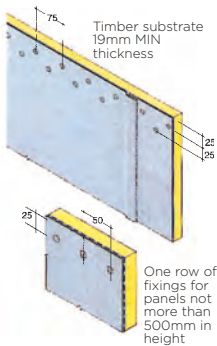
c. Welts at abutments



d. Clips on bottom edge

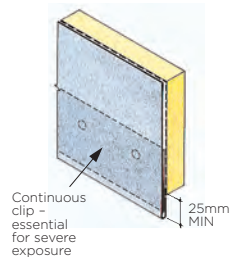
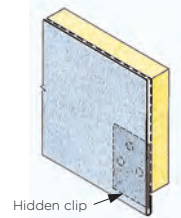
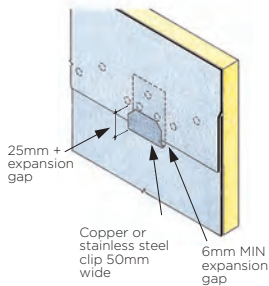


f. Head fixings



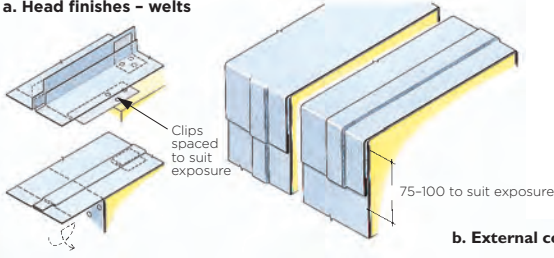
For head fixings use copper or stainless steel nails, or brass or stainless steel screws and washers, minimum length 20mm.

e. Clip for most exposures

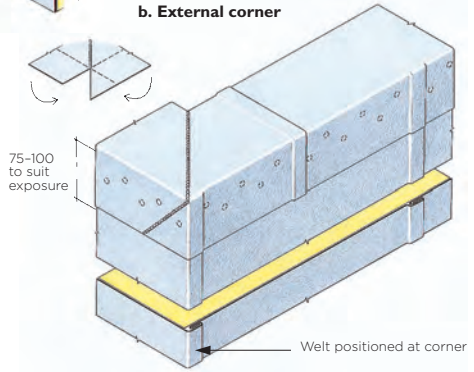


VERTICAL CLADDING - HEAD FINISHES

a. Head finishes - welts

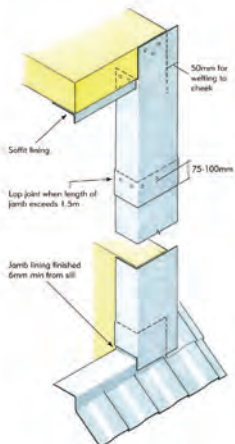


b. External corner

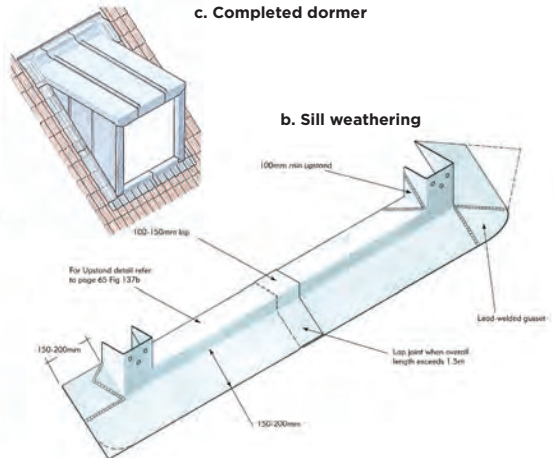


DORMER WINDOWS - JAMBS AND SILL

a. Weathering to jamb and soffit

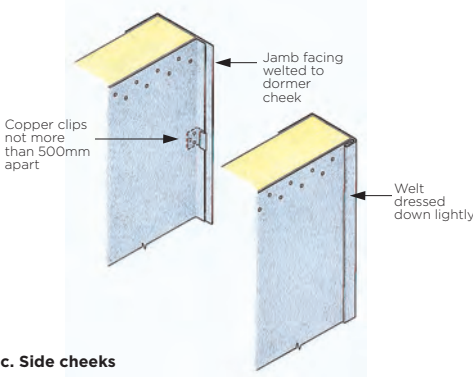


c. Completed dormer



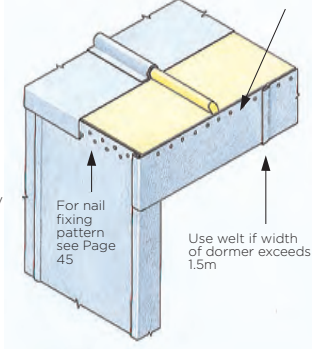
DORMER WINDOWS - TOPS, JAMBS, SOFFIT AND SIDE CHEEKS

a. Welt at cheek/jamb corner

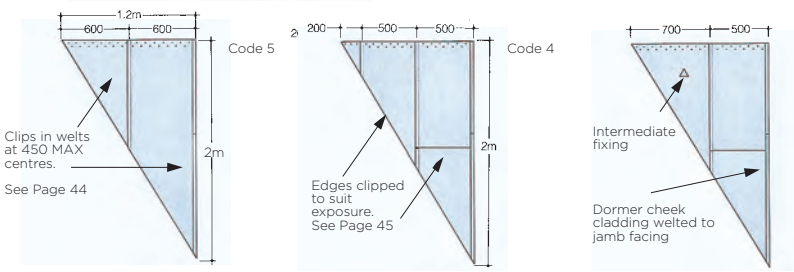


b. Deep fascia

One row of nails at 50mm centres 25mm from top edge

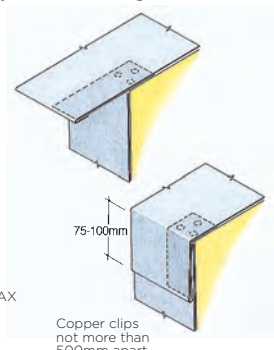
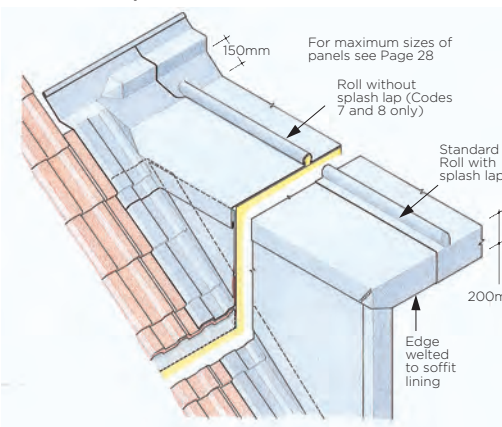


c. Side cheeks



d. Dormer top - front and back corners

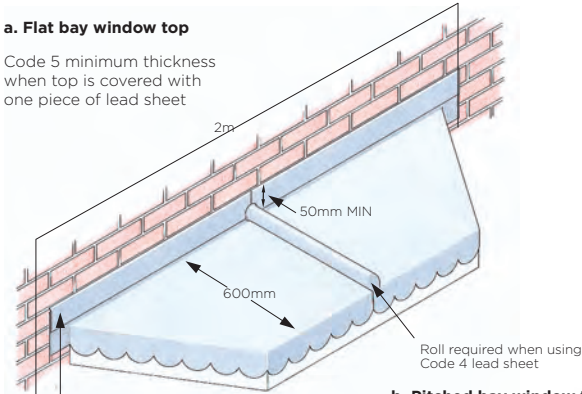
e. Fixing clips to the free edge



BAY WINDOWS AND DOOR HOODS

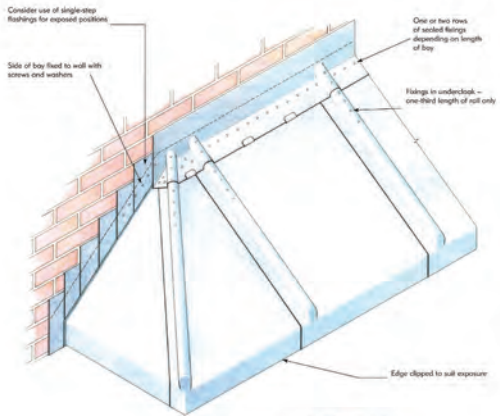
a. Flat bay window top

Code 5 minimum thickness when top is covered with one piece of lead sheet

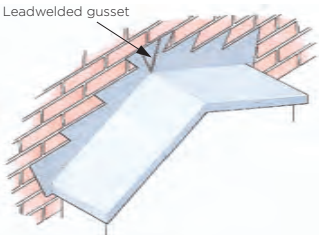


Cover flashing pieces must not exceed 1.5m in length

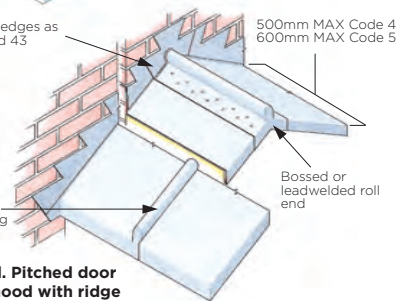
b. Pitched bay window top



c. Pitched door hood



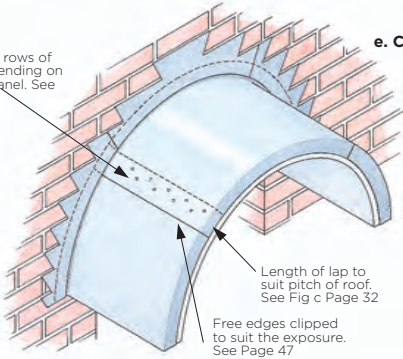
Clips to free edges as Pages 29 and 43



d. Pitched door hood with ridge

Stepped upstand welded to ridge capping

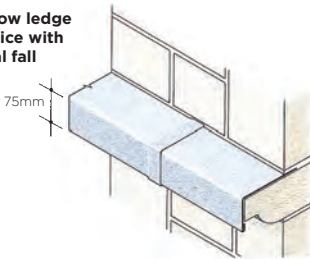
One or two rows of fixings depending on length of panel. See Page 45



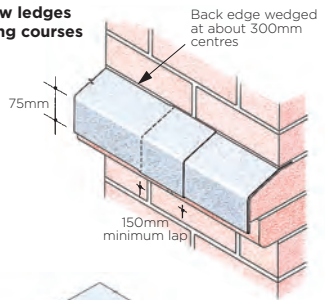
e. Curved door hood

WEATHERINGS TO PARAPETS AND CORNICES

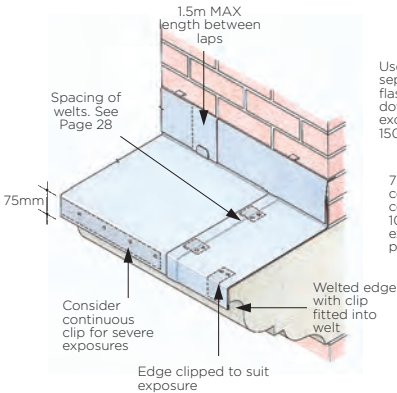
b. Narrow ledge or cornice with nominal fall



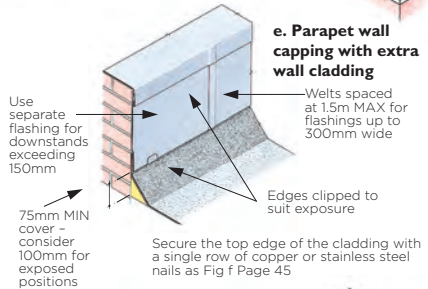
a. Narrow ledges and string courses



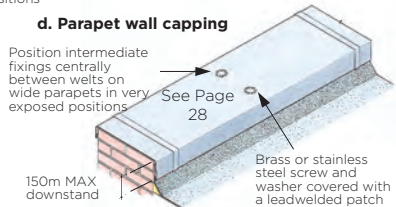
c. Projections with nominal fall



e. Parapet wall capping with extra wall cladding



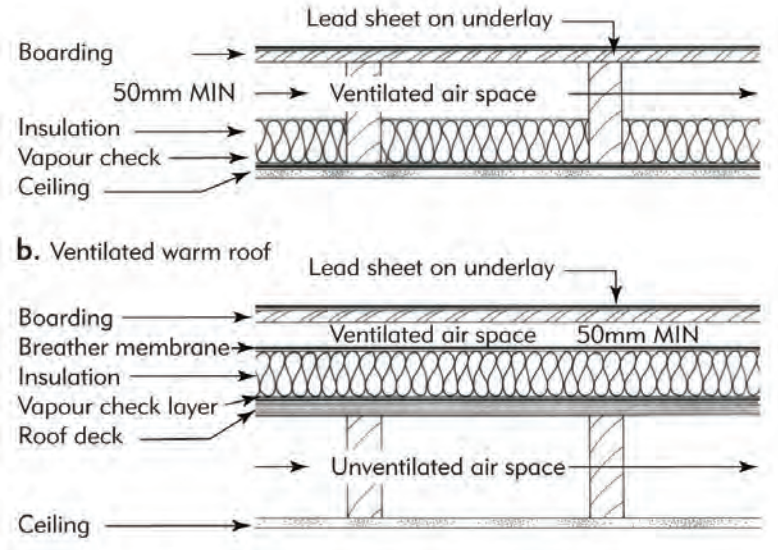
d. Parapet wall capping



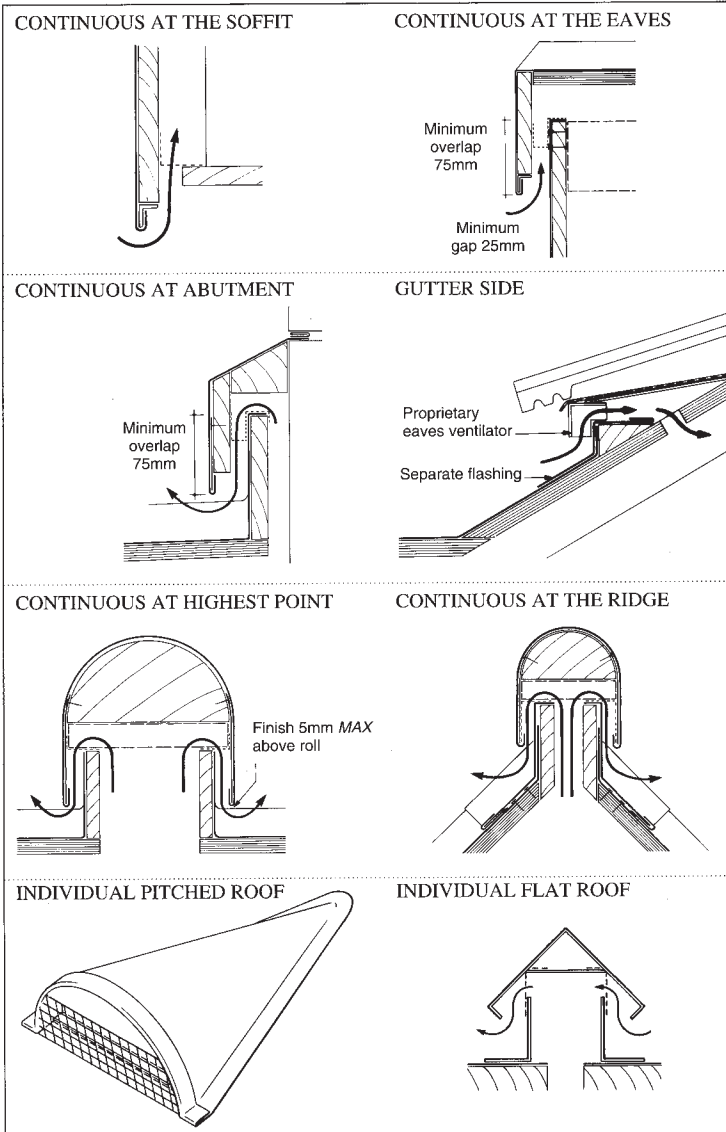
SUBSTRATES, UNDERLAYS AND VENTILATION

Points to check	Technical Details
Substrate	<p>Minimum thickness 18mm WBP plywood, marine plywood or timber boards. (Avoid oak, Douglas fir and western red cedar).</p> <p>High density fireproof boards.</p> <p>Concrete.</p> <p>Surface must be even, smooth and dry before lead is laid.</p> <p>Lead sheet should not be bonded to substrate.</p>
Underlay	<p>Building paper to BS1521 Class A for plywood and smooth concrete.</p> <p>Polyester geotextile felt 200 to 200g/m² for timber boards, and uneven surfaces.</p>
Ventilation	<p>Should be provided to reduce the risk of condensation.</p> <p>Minimum 50mm gap between the underside of the substrate and the insulation.</p> <p>Minimum continuous gap opposite sides or ends of the roof 25mm or not less than 0.002 times the plan area of the roof, whichever is the greater.</p> <p>Allow for free flow of air to all parts of the roof or cladding with no stagnant air pockets.</p>

TYPES OF ROOF AND VENTILATION



VENTILATION DETAILS (DETAILED DRAWINGS AVAILABLE)



FINISH AND QUALITY OF WORK

Points to check	Technical Details
<p>Bossing</p> 	<p>Internal and external corners, roll ends top and bottom. Bossing should be smooth without creases or thinning of the lead sheet.</p>
<p>Welding</p> 	<p>Internal and external corners, roll end top, bottom and other welded details. There should be no pinholes in the weld or undercutting of the parent metal.</p>
<p>Dressing</p>	<p>All flat surfaces should be free of undulations and tool marks.</p>
<p>Patination oil</p> 	<p>Used to reduce the initial risk of staining where rain from lead flashings and weatherings drain on to other surfaces until the natural lead patina begins to form. May also be used where a fairly uniform finish is required. Must be applied the same day before any rain, snow, dew or frost. Follow manufacturers' instructions. Avoid wet or dusty conditions during application.</p>
<p>Quality of lead sheet</p>	<p>Rolled lead sheet to BSEN 12588 provides a uniform thickness within a tolerance of plus or minus 5% of stated thickness. Free from laminations and surface marks. There may be bands or areas of rainbow colours. This is normal and does not affect the life or performance of the lead sheet. They normally disappear as the lead weathers down.</p>
<p>Protection of surfaces</p>	<p>Lead can be damaged by other work being carried out on site. Finished leadwork should be covered with a protective material, particularly where there is regular foot traffic or other work being carried out above.</p>

SALES AND DISTRIBUTION CENTRES



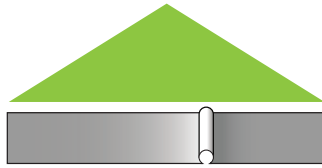
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