

# 11

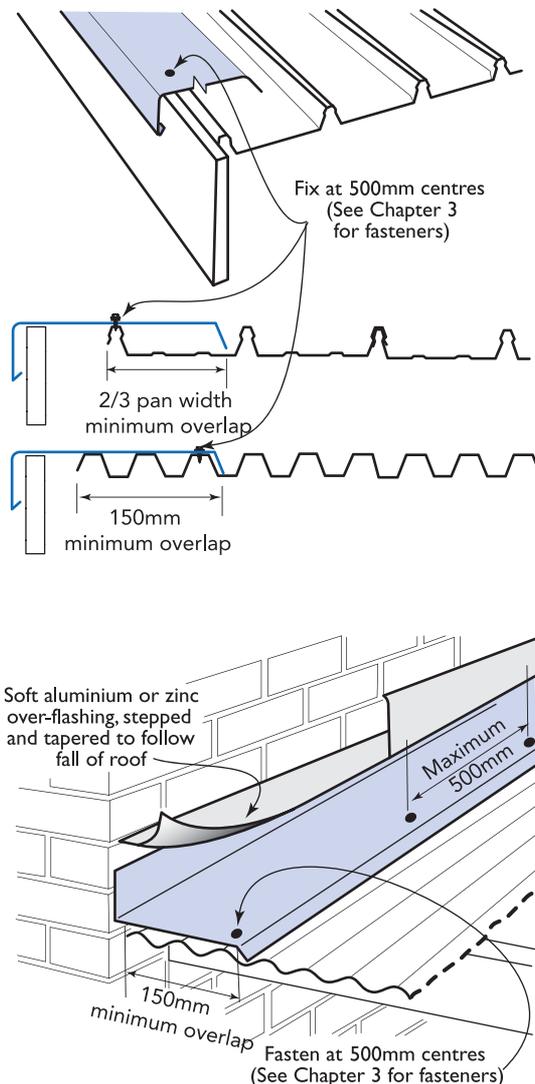
## Flashings

Flashings and cappings are strips of metal formed to weatherproof the edges of roofing and walling. For the purposes of this chapter, only the term flashing is used. The following sections should be considered as a guide only. For a comprehensive account of flashing guidelines, refer to HB39-1997.

Similar methods of flashing are used for different cladding-profiles. You can adapt the principles to suit your application. In all cases it is important to have ample cover provided by the flashing and proper turn-up of the cladding underneath.

Be careful when moving between supports. Do not walk in the pan immediately adjacent to flashings or translucent sheeting. Walk at least one pan away.

BlueScope Lysaght has a range of standard flashings. We can also supply custom flashings to your requirements – ask your local service centre for details.



**Figure 11.2.1**  
Typical longitudinal flashings

### 11.1 Materials

It is very important that flashings be made from materials that are compatible with the cladding (Section 2.10).

Lead flashing is not recommended, however it will usually be retained when re-roofing, because it is usually cemented into the structure. In these cases:

- the top surface of the lead flashing must be painted with a good quality exterior paint system (to limit contamination with lead compounds in water running off the flashing); and
- there must be a barrier between the lead flashing and the cladding: either a plastic strip (such as polythene dampcourse), or paint.

Flashings should conform to AS/NZS 2179.1:1994, and be compatible with the cladding (Section 2.10).

Materials for flashings are available in ZINCALUME® or COLORBOND® finishes.

### 11.2 Longitudinal flashings

Longitudinal flashings run parallel to the pans or valleys, and are made to suit the cladding profile (Figure 11.2.1). They should have an edge turned-down to dip into the pan or valley.

#### Flashing Cover

The minimum recommended cover of longitudinal flashings over cladding should be as follows: (as taken from HB39-1997)

Pierce fixed roof sheet	150mm min.
Concealed fixed roof sheet	Into full pan (2/3 pan covered)

### 11.3 Transverse flashings

Transverse flashings run across the pans or valleys (Figure 11.3.1). They usually have a stiffening lip, along the lower edge, which is turned-down to dip into the pan or valley. To maximise weatherproofing, the bent lip is fashioned to fit the profile.

The turn-down for transverse flashings for CUSTOM ORB and CUSTOM BLUE ORB can be fashioned to fit the profile by either notching or scribing to match the corrugations, or lightly dressed into the valleys. The type of fashioning (if any) depends upon profile shape and the type of material used to flash. Fashioning is preferred for low-slope roofs.

The turn-down for transverse flashings for wide panned cladding is always notched or scribed to fit over the ribs.

#### Flashing Cover

BlueScope Lysaght produces a range of standard flashings (hip, barge, apron). To increase weathertightness, BlueScope Lysaght recommends you maximise the overlap between flashings and claddings.

#### Fixing of Flashings

Longitudinal flashings shall be fastened at maximum 500mm centres. Transverse flashings shall be fastened in accordance with HB39-1997, as detailed below.

Profile	Recommended Fixing Spacing (min.)
CUSTOM ORB/CUSTOM BLUE ORB	Every 4th rib
INTEGRITY 820	Every rib
KLIP-LOK 406	Every rib
KLIP-LOK 700 HIGH STRENGTH	Every rib
KLIP-LOK CLASSIC 700	Every rib
LONGLINE 305	Every rib
SPANDEK	Every 3rd rib
TRIMDEK	Every rib

The above fastener spacing relates to the stitching of flashings to sheeting. It does not constitute the minimum number of fasteners required to fix the sheeting to purlins.

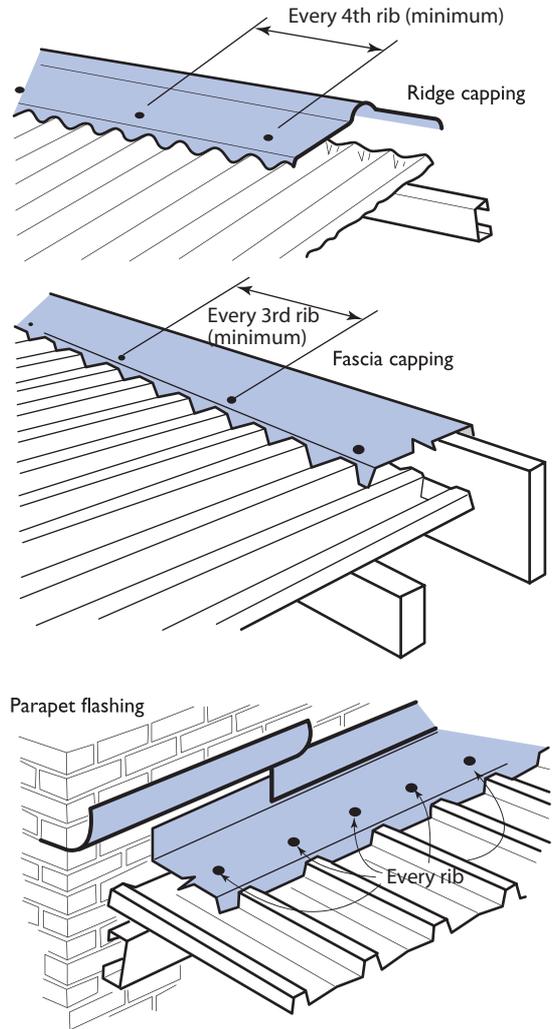
#### Notching tools

Hand-operated notching tools cut one notch at a time. Each tool matches only one cladding profile. There are two types of tool; their use depends on whether or not the edge of the flashing has first been bent down (Figure 11.3.2).

**Table 11.3.1**

Notching tools

Type of tool	Edge turned down before notching	Available for
Horizontal notching tools	No	Availability subject to inquiry KLIP-LOK 406
Vertical notching tools (also called speed notchers)	Yes	KLIP-LOK 700 HI-STRENGTH KLIP-LOK CLASSIC 700 SPANDEK, TRIMDEK Others subject to inquiry.



**Figure 11.3.1**  
Typical transverse flashings

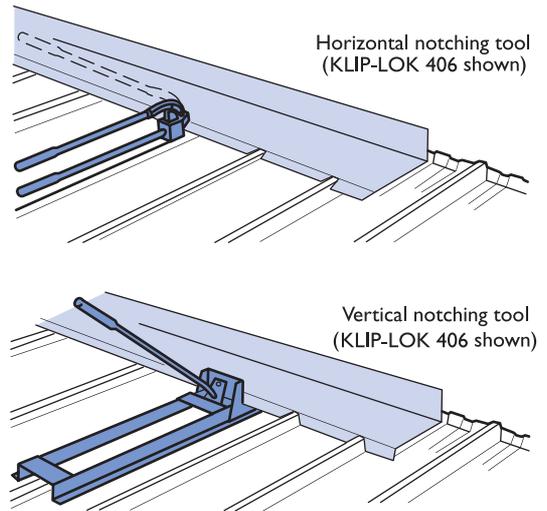


Flashings provide the essential weatherproofing at the edges, and they sharpen the image of the finished job.

**Using notching tools**

After the cladding is fixed and the turn-ups finished, proceed as follows.

- Place a flashing with the notch-edge resting on the ribs.
- Locate your notching tool over a rib with the notching head against the flashing.
  - VERTICAL TOOL: The body locates along the rib.
  - HORIZONTAL TOOL: the lugs on the underside locates on top of the rib.
- Raise the handle to open the tool and:
  - VERTICAL TOOL: lift the flashing into the mouth of the tool;
  - HORIZONTAL TOOL: slide the mouth of the tool over the edge of the flashing as far as it will go.
- Push down on the handle to perform the notching.
- Repeat for all ribs, checking in each case that the flashing is correctly positioned.
- If you are using a horizontal tool, bend down the tongues between the notches over a suitable straight edge (such as a piece of timber).



**Figure 11.3.2**  
Using notching tools

**Notching with tinsnips**

If notching tools are not available, flashings can be notched to the rib profile with tinsnips (Figure 11.3.3). The procedure is sometimes known as scribing. After the cladding is fixed and the turn-ups finished, proceed as follows.

- Place the flashing with the turned-down edge resting on the ribs.
- Mark out the notching using a template positioned over each rib.
- Cut the notches with tinsnips.

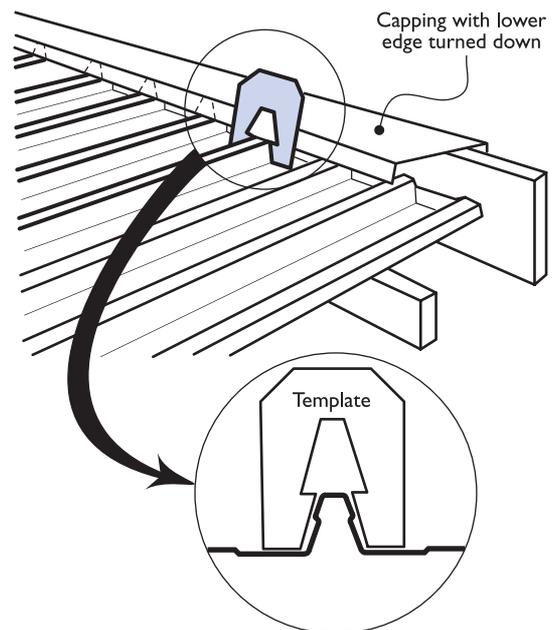
This procedure is also used for hip cappings.

**Fasteners for transverse flashings**

You must properly fix both flashings and the ends of all sheets.

Where the cladding is pierce-fixed through crests, and the position of the purlin allows it, the fasteners used to fix the sheets, may also fix the flashings.

On all other installations, pierce-fix your flashing to the ribs or crests of the sheets.

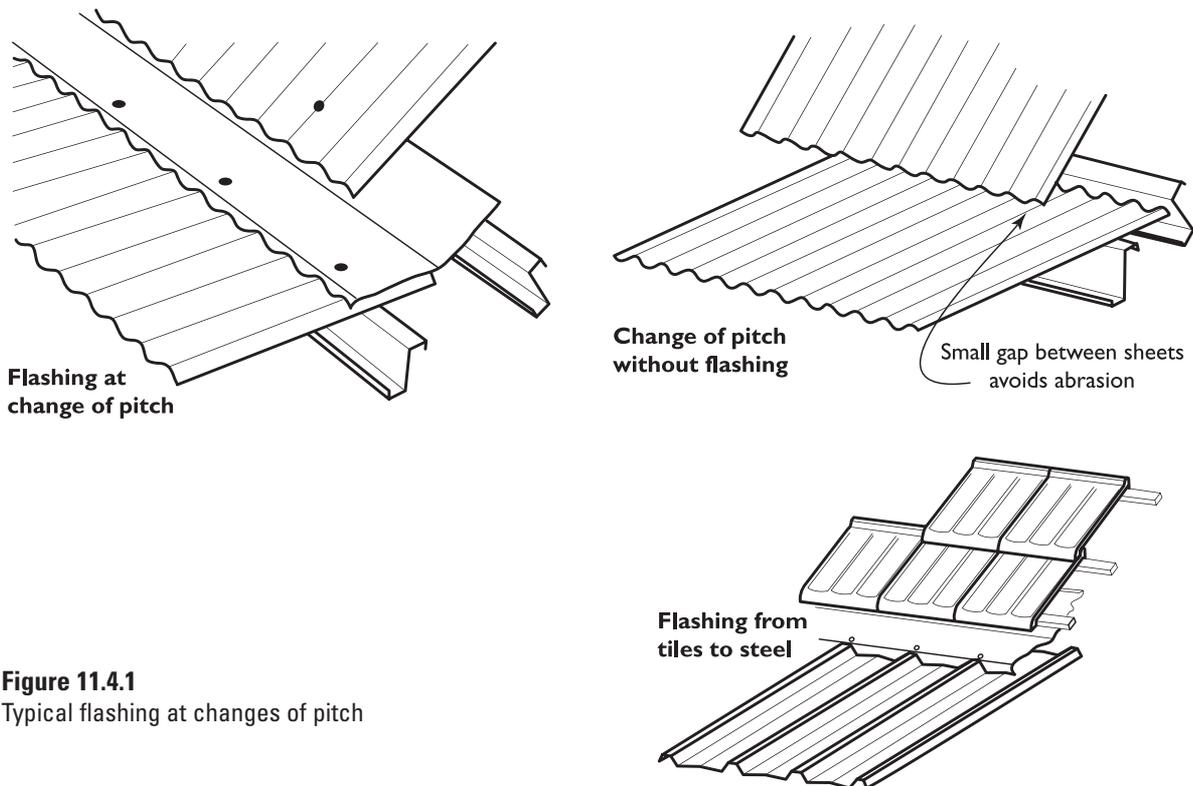


**Figure 11.3.3**  
Using a template to mark out for notching with tinsnips

**Joining flashings**

The overlaps of transverse flashings should be sealed with a recommended sealant and fastened. Before finally positioning and fixing the lap, turn over the top piece and apply a 3mm bead of sealant across the flashing, about 12mm from the end.

**11.4 Flashing at change of pitch**



**Figure 11.4.1**  
Typical flashing at changes of pitch

### 11.5 Flashing large roof penetrations

Penetrations through ribbed cladding block the valleys (or pans), and thus affect the free flow of rainwater down a roof. All flashings have to weatherproof the cladding – but on the uphill side of large penetrations, they also have to channel rainwater sideways into valleys that run unobstructed to the eaves.

Four methods are described here. In all methods the ends of cut ribs may be closed off with caps on the outside of the rib, or with plugs inside the ribs. Plugs must be used on side-laps to allow the anti-capillary cavity to drain.

**Note:** For masonry construction, Building Code Australia (BCA) requires the use of Damp Proof Course (DPC) to ensure weatherproofing. For acceptable methods see BCA section on weatherproofing masonry.

#### Support framing

Wherever one or more of the sheet ribs are cut, you must provide framing to support the cut ends of the roof cladding each side of the penetration.

#### Existing flashing

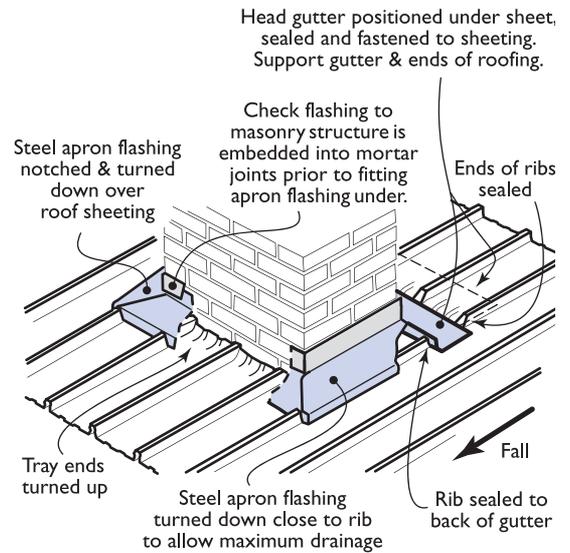
If you have to re-use lead flashings that are built into the structure, special protection is needed (Section 11.1).

#### Method 1: Head gutter and apron flashings

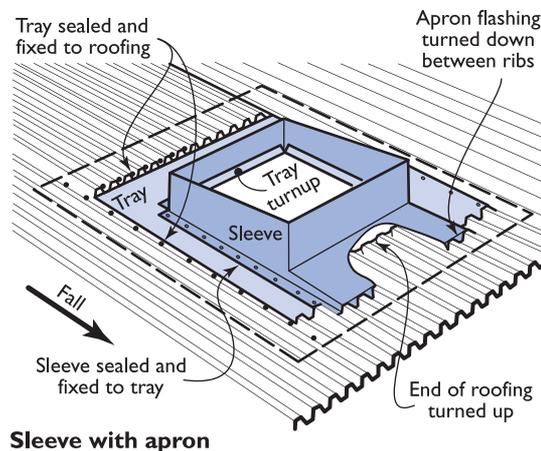
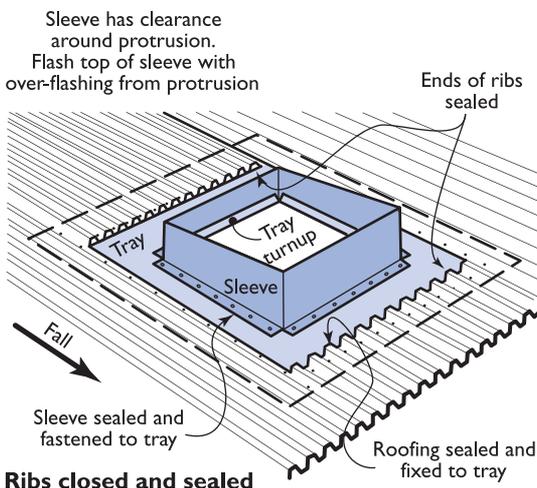
This is often the simplest method, and commonly used for existing protrusions (Figure 11.5.1).

#### Method 2: Flat tray and sleeve

To avoid fitting and sealing end caps to all the sheet ribs on the low side of the penetration, an apron flashing can be fitted to the sleeve and sealed to the tray each side.



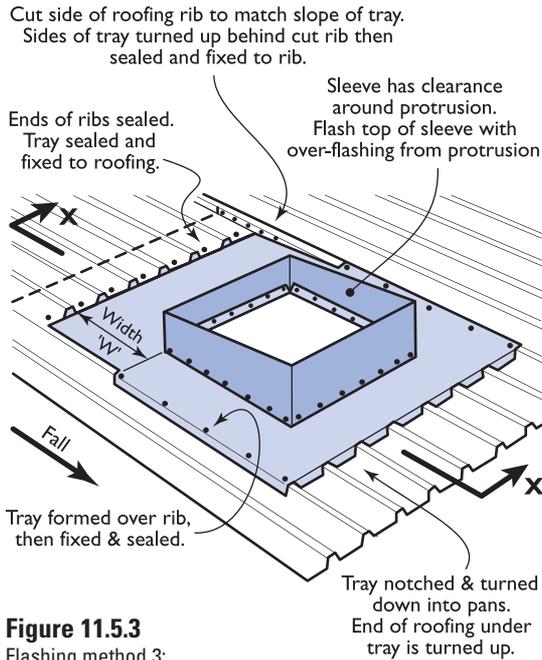
**Figure 11.5.1**  
Flashing method 1: Head gutter



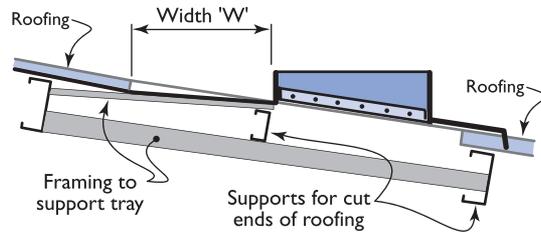
**Figure 11.5.2**  
Flashing method 2: Flat tray and sleeve

**Method 3: Tray gutter for steeper roofs**

If the roof pitch is more than, say 1 in 12 (5°), you cut the roof cladding sufficiently high above the penetration to allow a tray gutter to raise rainwater over the top of the sheet ribs and divert it around the penetration (Figure 11.5.3).



**Figure 11.5.3**  
Flashing method 3:  
Tray gutter for steeper roofs



**SECTION X-X**

The base of the tray over width 'W' slopes slightly towards the protrusion. The width 'W' varies with this slope, the roof pitch and the rib height. Thus:

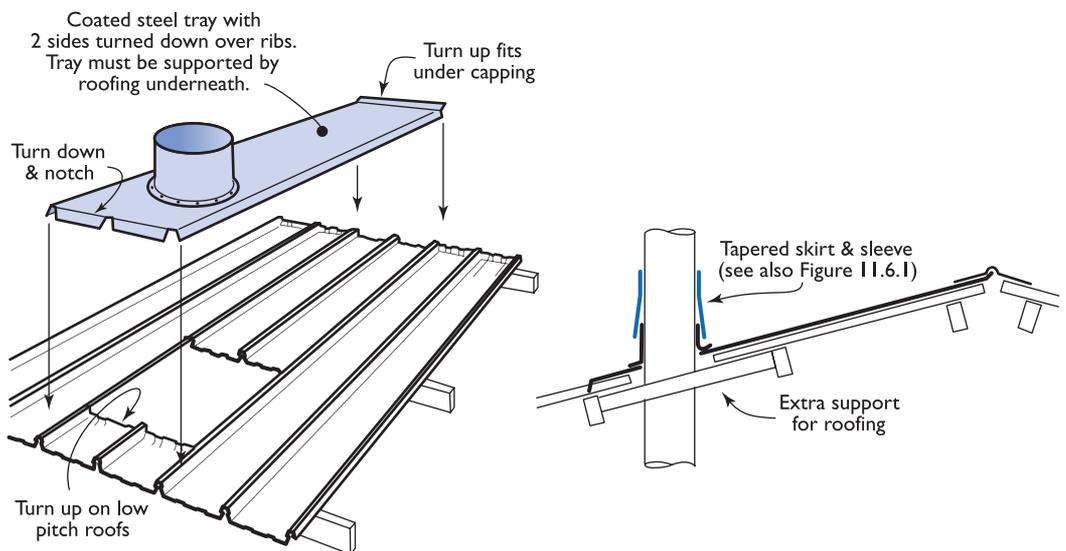
$$W = \frac{\text{Rib height}}{\sin(\text{roof pitch} - \text{slope of tray})}$$

For example: if the tray slopes 1 in 50 (1) and the roof pitch is 1 in 12 (5).

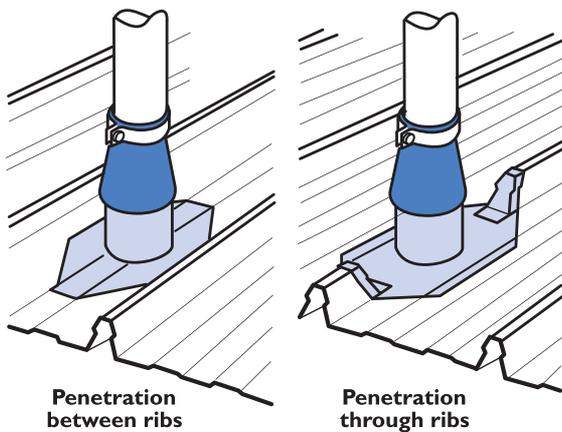
RIB DEPTH	WIDTH 'W' (minimum)
25 mm	360 mm
29 mm	420 mm
41 mm	590 mm

**Method 4: Penetration close to ridge capping**

If a roof penetration is close to a ridge capping (or flashing above the penetration), you can fit a simple flat tray, on top of the roofing, so that it extends from under the capping down to a sleeve around the penetration.



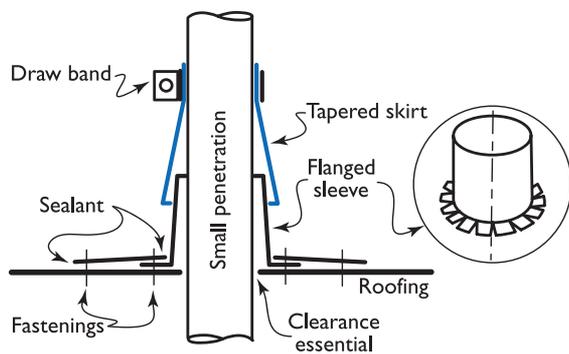
**Figure 11.5.4**  
Flashing method 4:  
Penetrations close to ridge capping



### 11.6 Flashing small roof penetrations

A flanged cylindrical sleeve is a fairly simple method of flashing around small penetrations (such as pipe penetrations) which fit between the ribs of a roof sheet, or penetrate only a single rib.

Two methods are described here. Wherever roofing is cut, you must consider providing extra support for the roofing above and below the penetration. Where one or more of the sheet ribs are cut, you must provide framing to support at the cut ends of the roof cladding each side of the penetration.



#### Method 1: Tapered metal skirt and sleeve

This method uses parts custom-fabricated from metal. There is no positive seal between inside the building and the outside atmosphere (Figure 11.6.1).

#### Method 2: Sleeve

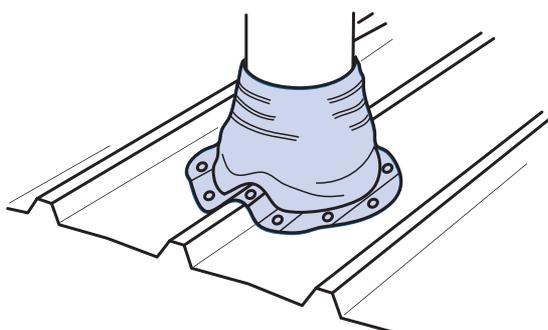
This is often the simplest method (Figure 11.6.2). Flexible flanged sleeves can be bought for flashing around penetrations of at least 350mm diameter. They overcome the problem of capping and sealing the open ends of cut ribs. A sleeve is commonly used, though silicone sealant has a wider operating temperature range and is available in a wider range of colours.

**Figure 11.6.1**  
Small penetration with metal skirt and sleeve

The flange around the base of the sleeve can be contoured by hand to match the cladding profile before it is sealed and fixed to the cladding.

Be careful not to dam any valleys or pans so that rainwater can drain freely from the high side of the roof penetration. Moisture held in such areas can cause deterioration of the sheet coating, reduced life expectancy or poor appearance.

Where damming of any valley or tray is unavoidable, due to the size of the pipe penetration, treat the installation as a large penetration (Section 11.5).



**Figure 11.6.2**  
Small penetration with sleeve  
(Dektite® sleeve illustrated)

#### Copper penetrations

All copper pipe penetrations through ZINCALUME® or COLORBOND® steel cladding must be physically and electrically isolated from the cladding. This can be done by using a sleeve of PVC polythene or similar plastic that is also ultra-violet stable.

## 11.7 Flashing walls

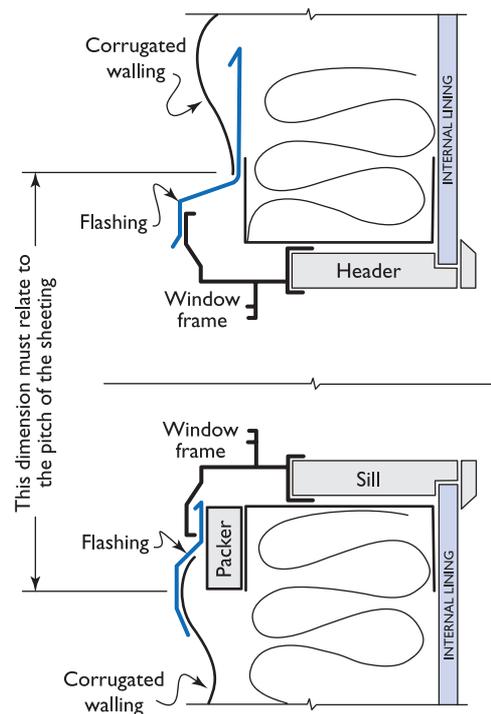
Cladding is usually installed with the profile running vertically or horizontally, though sheets have been laid diagonally—the choice is aesthetic.

Wind can drive rain hard against wall flashings, so it is important that you pay attention to the detailing of flashings around windows, doors, re-entrant and external corners, to ensure you get a watertight building. You also want a neat appearance.

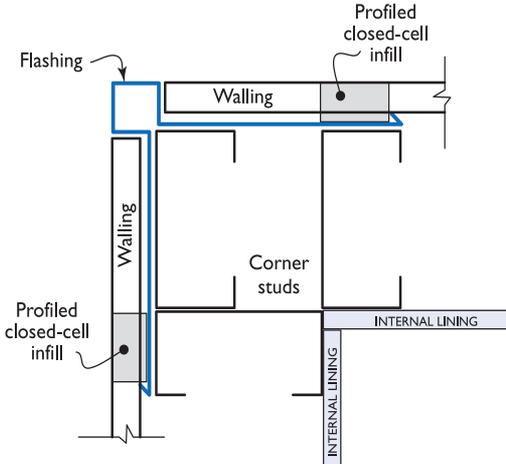
We make wall flashings for some wall claddings (like EASYCLAD and MINI ORB) which are sometimes called trims. Where these are not suitable, custom-made flashings can be easily produced following the general principles described in this section.

### Walling profile running horizontally

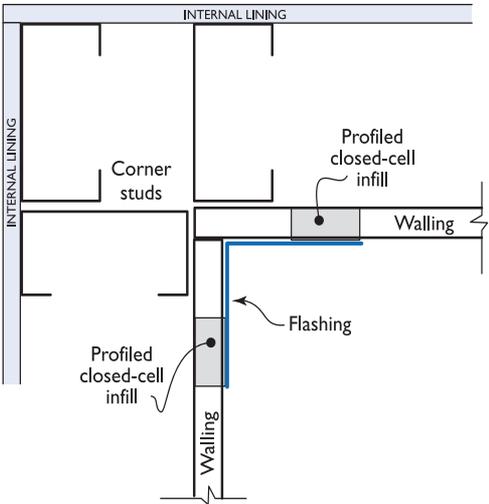
- It is usual to lay the first sheet at the bottom of a wall and work upwards towards the eaves. You want the window and door flashings to fit properly into the valleys, so you should locate the first sheet relative to the heads and sills of doors and windows. Thus, you first have to decide where the cladding will eventually be located at the heads of doorways and at the heads and sills of windows before you place the first sheet.
- Where possible, select the vertical size of windows so that the flashings at both heads and sills will coincide neatly with the pitch of your profile (Figure 11.7.1).
- Be sure that the crests of the profile align with each other on adjacent walls, either side of a corner—this ensures that horizontal flashings fit properly into all valleys.
- Where valleys create a void at flashings, use closed-cell foam plastic infill (Figure 10.3.3).
- Where wind-driven rain can be expected, turn back the edges of flashing to restrict water movement past the flashing.



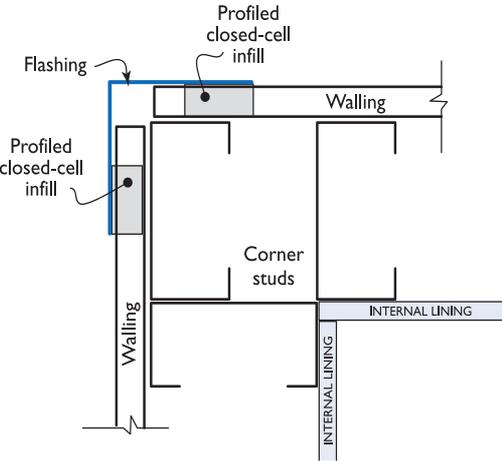
**Figure 11.7.1**  
Typical header and sill flashing: profile running horizontally (elevation)



Typical external corner flashing type 1: profile running horizontally (plan)

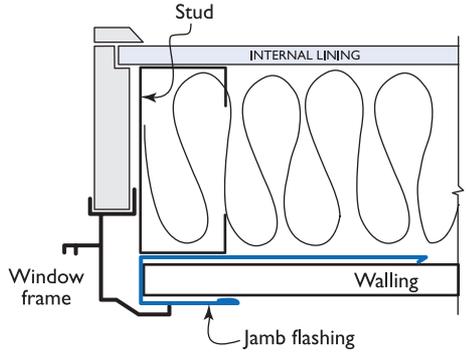


Typical re-entrant corner flashing: profile running horizontally (plan)

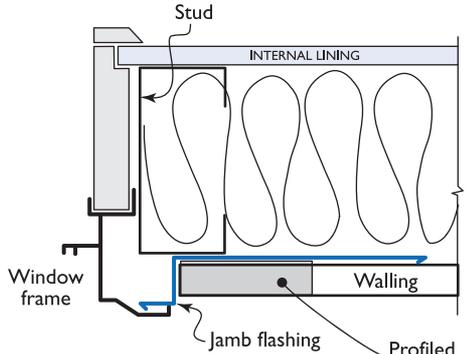


Typical external corner flashing type 2: profile running horizontally (plan)

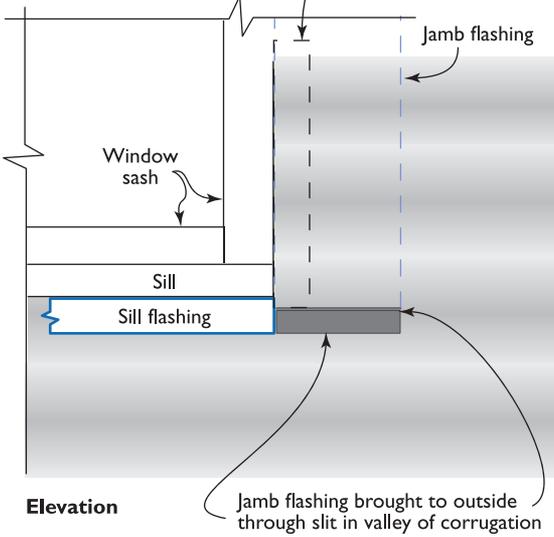
Figure 11.7.2 Typical corner flashings: profile running horizontally (plan view)



Plan view option 1



Plan view option 2

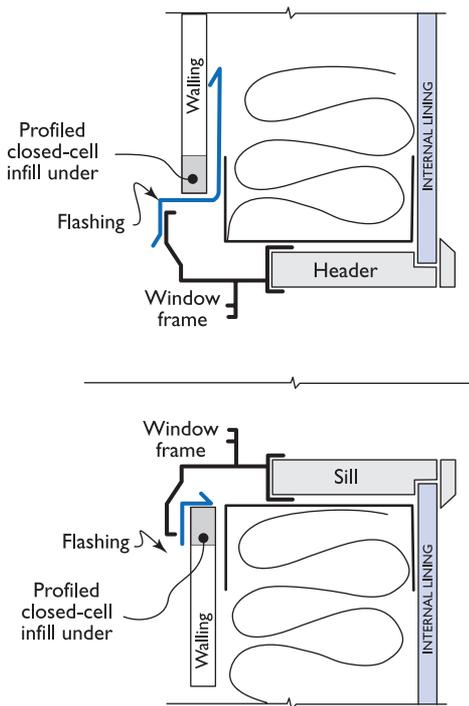


Elevation

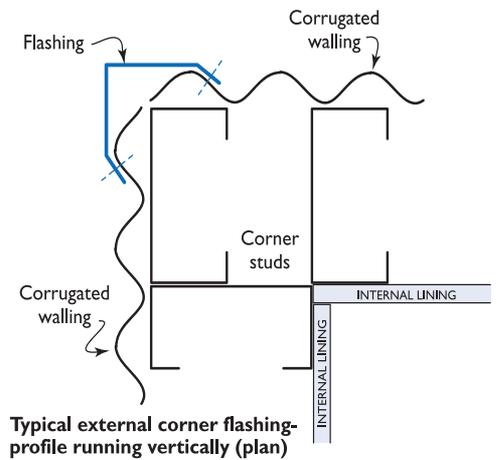
Figure 11.7.3 Typical flashing at window and door jambs: profile running horizontally

**Walling profile running vertically**

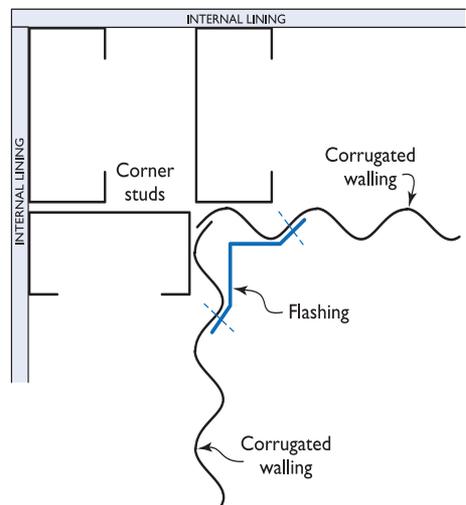
Flashings are generally easier on jobs where the profile runs vertically (Figures 11.7.4 and 11.7.5).



**Figure 11.7.4**  
Typical header and sill flashing: profile running vertically (elevation).



**Typical external corner flashing—profile running vertically (plan)**



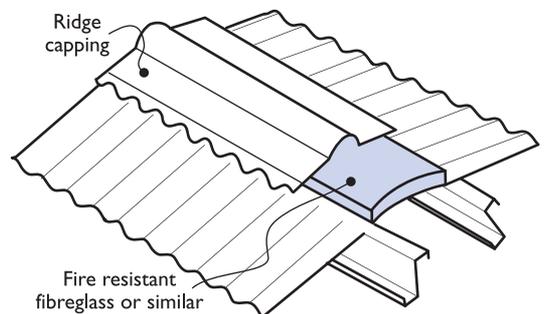
**Typical re-entrant corner flashing—profile running vertically (plan)**

**Figure 11.7.5**

Typical corner flashings: profile running vertically (plan). Jamb flashings follow same principle.

**11.8 Bushfire protection**

AS-3959:2009 sets out requirements for the design and construction of buildings in bushfire-prone areas. It calls for flashings to be bedded on fire resistant insulation material. Be sure that flashings fit closely. Transverse flashings should be notched or scribed (Figures 11.3.1 and 11.8.1)



**Figure 11.8.1**

Typical protection from sparks at ridge

## Date of Issue February, 2012

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The information in this booklet is suitable for use only in areas where a tropical cyclone is unlikely to occur as defined in AS/NZS 1170. 2:2002 Part 2: Structural Actions - Wind Actions (or if used outside Australia, to the equivalent standard).

Information on cyclonic performance may be found in our Cyclonic Area Design Manual which is available on-line at [www.lysaght.com](http://www.lysaght.com).

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Lysaght Roofing and Walling Manual

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