

## Fig 30 ... at recessed pitched valley gutter

This detail, Fig 30 (p78), together with Figs 30a and 30b, illustrates the essentials of forming a recessed pitched valley gutter in Long Strip roofing. And in Traditional roofing where either the Concave-form seam end (see Fig 4), the Chamfer-form seam end (see Fig 5) or the Square-form seam end (see Fig 6) is chosen.

Only the Turned-down seam end (see Fig 3) allows the roofing sheets to be tightly welted down, thereby achieving weathertightness on its own. This welted down allows no movement and so, of course, is only possible in Traditional roofing.

In Traditional roofing when the Turned-down seam end (see Fig 3) is being used, the tight welted around the gutter lining prevents it from moving. Therefore, sections of gutter lining should not exceed 3 metres. These are joined with a drip-step, a hand-formed double-lock cross welt or a single-lock cross welt, dependent on the gutter pitch (see Tables P and T, p13). The roofing sheets are clipped along the top edge of the gutter recess, with clips 150mm approximately above each standing seam. Because the roofing and lining are tightly welted, the depth of the gutter recess can be reduced to 32mm.

In Long Strip roofing, or in Traditional roofing where the seam ends referred to above are used, the gutter lining is free to move. However, some movement joints are still needed, so that no section of gutter exceeds 10 metres in length.

The most common way of forming a movement joint is to use a vulcanised neoprene strip such as T-Pren. These have been in use for 25 years and their record so far has been trouble-free. The neoprene strip should be protected from ultra-violet by a copper cover-piece which is welted over the gutter turn-out and held in place by the lining plate. This also improves its appearance. In hot weather the neoprene tends to distort, creating an interruption to the water flow; so to avoid the risks with debris building up, the minimum pitch of the valley gutter should be 6degrees and the depth of the gutter recess increased to 150mm.

The vulcanised neoprene strip is factory bonded between two strips of copper. On site these are soft-soldered to the gutter lining sections, sometimes with the addition of copper rivets. The working temperature of soft-soldering is 400degC. If the underlay is susceptible to damage at this temperature, it must be protected. Brazing or hard-soldering is also possible but, as the working temperature is 750degC, it might not be allowed on certain buildings if hot working is restricted.

Other movement joints are possible (see Tables P and T, p13).

Apart from movement joints, gutter linings should be laid in one piece. Individual sections are joined by brazing, or soft-soldering with the joint strengthened by copper rivets.

For roof pitches up to 20degrees, a 3mm to 5mm anti-capillarity recess is formed in the substrate to accommodate the lining plate. The lining plate should go up the roof slope 130mm minimum from the edge of the recess. The 200mm shown is a good dimension to work to and gives a measure of tolerance. Its top edge is held by welted to clips at 300mm centres.

For roof pitches at and over 20degrees, a recess is not required for the lining plate; nor is it welted to clips along its top edge. It is simply nailed to the substrate at 100mm staggered centres (see Fig 30b).

Whatever the pitch the detail at the front edge is the same. The lining plate is folded under to form a 'hook'. This engages with either the individual clips at 300mm centres retaining the gutter turn-out; or, as is often easier in practice, with a continuous fixing strip, nailed to the substrate at 100mm staggered centres.

A 10mm to 15mm weathercheck is formed in the lining plate against wind driven rain or rainwater splashing up in storm conditions.

In Long Strip roofing, a 10mm movement gap is allowed when the roofing sheets are turned under the lining plate. To achieve this the roofing sheets are cut to project 40mm beyond the finished lining plate. When folded under they engage the lining plate by 20mm, ensuring that even in expansion they remain well retained.

In Traditional roofing no movement gap is required. The roofing sheets are cut to project 20mm beyond the finished lining plate, giving an engagement of 15mm approximately.

Lengths of lining plate should not exceed 2m maximum. Joints in the run of the lining plate are either 150mm lapped or, more usually and preferably, 50mm lapped and sealed. Note that joints in lining plates must be positioned at least 150mm from standing seams, but a convenient rule is to make such joints mid-bay. Therefore, the setting out of the lining plate needs to take the roofing bays into account.

With a recessed gutter it makes no difference which way the standing seam undercloaks face, but they usually face down the gutter. This is because the gutter is laid from the bottom up.

Underlays generally are discussed in Copper for Roofing (see p3). There are two broad categories: waterproof and non-waterproof. Waterproof underlays are laid to lap over the lining plate. Non-waterproof underlays are laid to butt up to the top edge of the lining plate. Where the valley gutter discharges into a parapet gutter, waterproof underlays are laid to drain over in the normal way.

A waterproof underlay is recommended under the gutter lining. It is carried up the sides of the recess and onto the substrate, where it is held in position by the gutter clips.

A recessed gutter with batten roll is shown in Fig 52 (p118).

Temper: Roofing sheet with chamfer-form seam end; half-hard preferably. Pre-formed gutter lining and lining plate; half-hard.

Thickness: 0.6mm or 0.7mm

**Stage 2**

Hook the front edge of the continuous pre-formed lining plate around the turn-out of the gutter lining. As with the clips, the lining plate should not hold the gutter tightly. Fix the top edge of the lining plate with clips at 300mm centres. Lengths of lining plate should not exceed 2m maximum. Joints in the run of the lining plate are either 150mm lapped or 50mm lapped and sealed, preferably the latter.

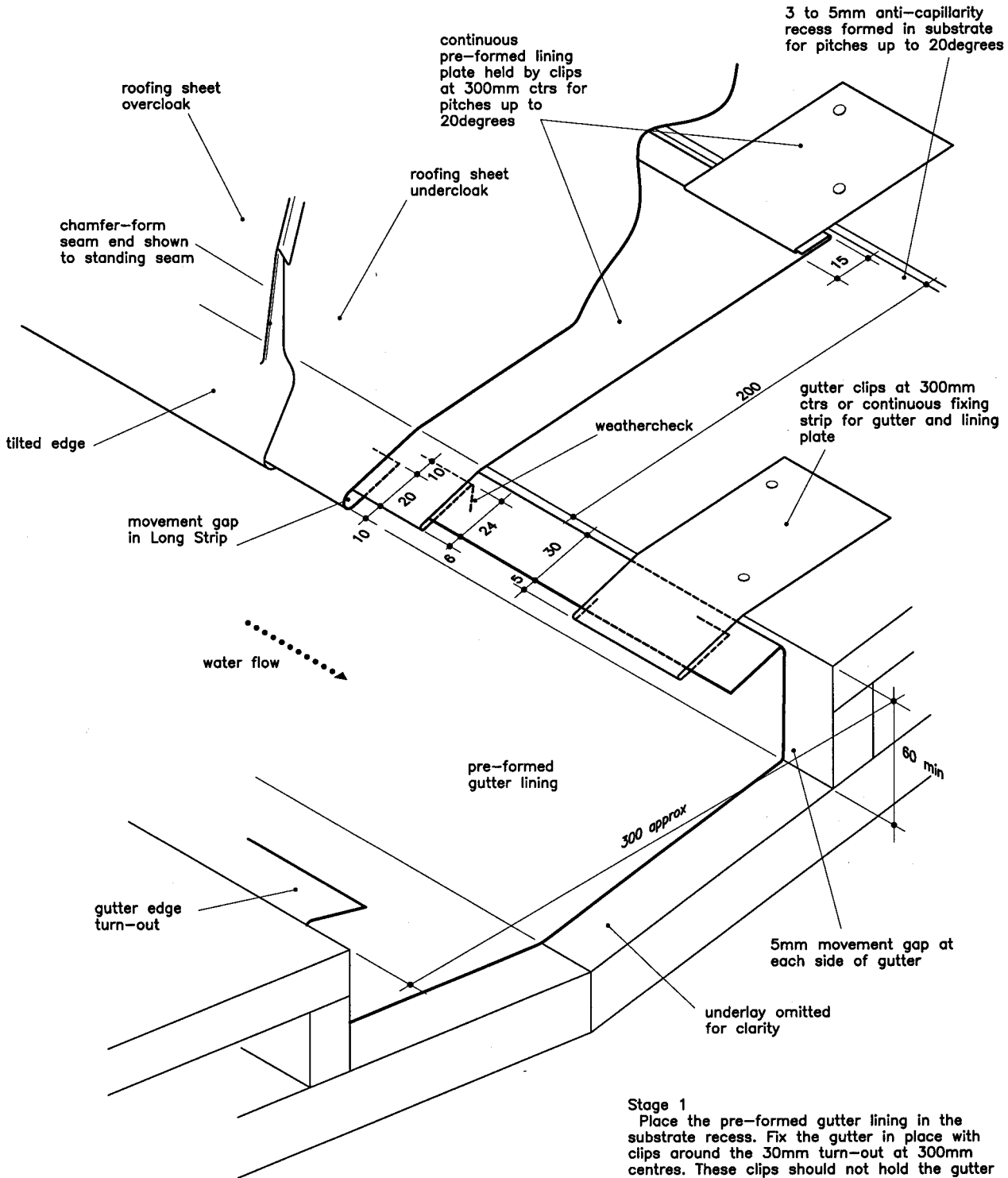
Note that joints in lining plates must be 150mm minimum away from standing seams in the roofing sheets. Therefore, the setting out of the roofing bays needs to be taken into account at this stage.

TRADITIONAL  LONG STRIP

**Stage 3**

Fix the roofing sheets in place, forming the chosen seam end as described in Figs 4 (p22), 5 (p28) and 6 (p30). Then fold the ends of the roofing sheets, now united, under the lining plate. Cranked seaming pliers should be used.

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**Stage 1**  
Place the pre-formed gutter lining in the substrate recess. Fix the gutter in place with clips around the 30mm turn-out at 300mm centres. These clips should not hold the gutter tightly, so that it can move in response to changes in temperature. Also the width of the gutter lining is made 10mm less than the width of the recess, allowing free movement.

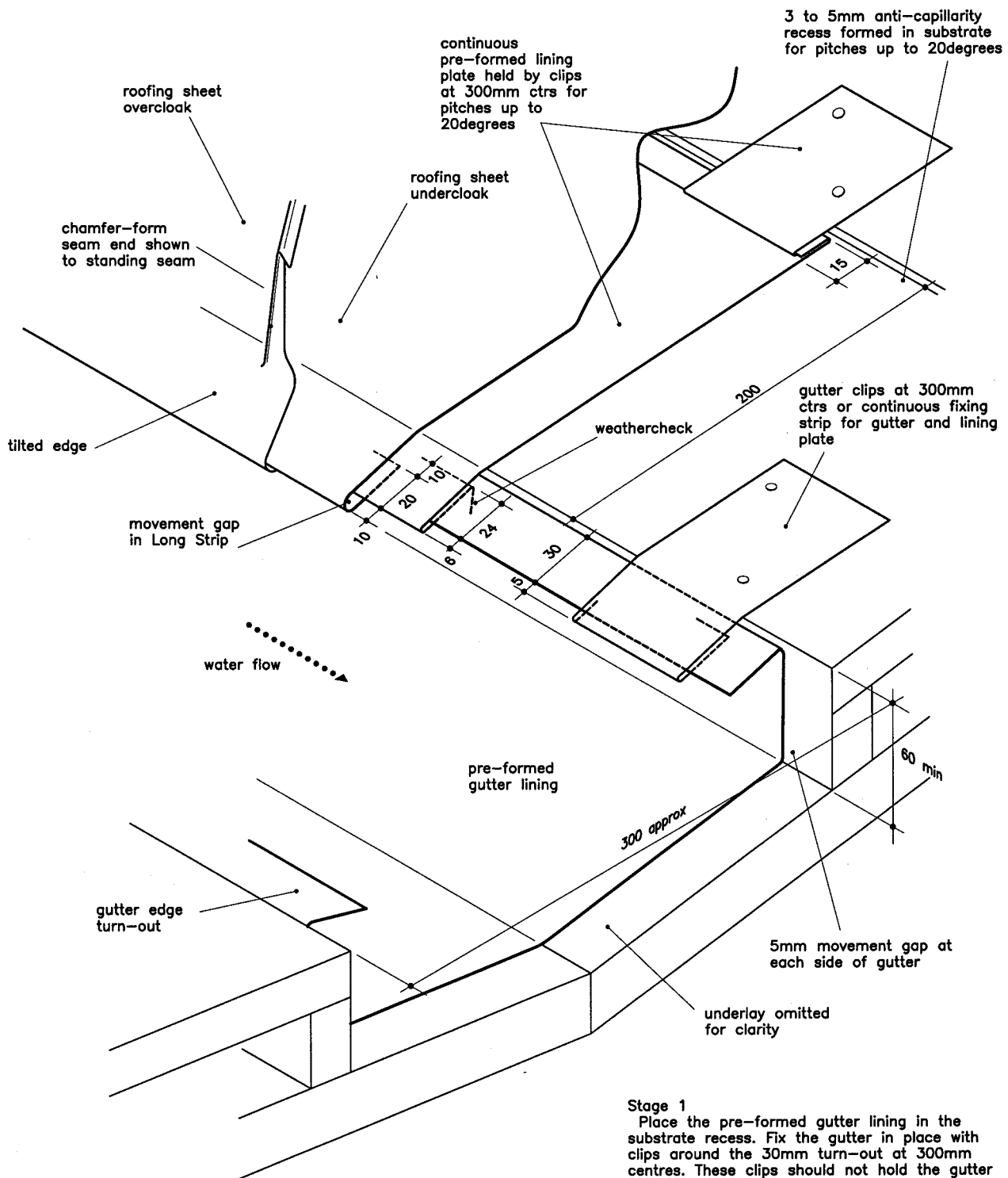
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