

Unit 209: Drainage systems

Outcome 4 (part 4)

Install and test above ground systems

Rainwater systems

Installation

Before you start work inspect the fascia boards to make sure they are straight and level. If they are not straight the gutter can end up looking wavey.

If need be, paint the fascia board before installation.

Inspect the underfelt of the roof for any rips or deterioration, as this aids the rain water to flow into the guttering and not drip behind on to the fascia board and so cause rotting.

Rainwater systems

Installation

The tools required include:

- Power drill
- Pozidrive screwdrivers
- Hacksaw
- Claw hammer
- String line
- String level
- Bradawl
- File

Rainwater systems

Installation

1. Establish the position of the outlet.
2. Establish the high position of the gutter and fix the first fascia bracket at this point
3. Measure the overall length and work out the 1:600 fall.
(Measurement A)
4. Tie the string line on the first fascia bracket
5. Holding the running outlet on the fascia board and over the drain, put the string line and weight through the outlet, so the weight hangs over the centre of the drain.

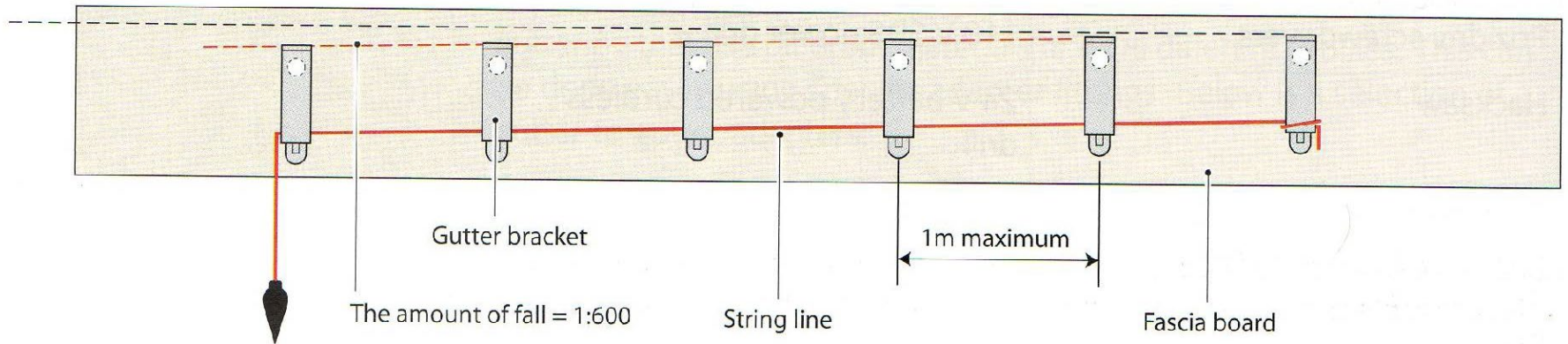
Rainwater systems

Installation

6. Place the string level on the string and level up the running outlet. Mark with a pencil.
7. Move the running outlet down the calculated measurement A distance, which will give the fall.
8. Screw the running outlet in position
9. Now tightly secure the string line around the running outlet. The string needs to be tight as this will show the fall and the position of all the fascia brackets

Rainwater systems

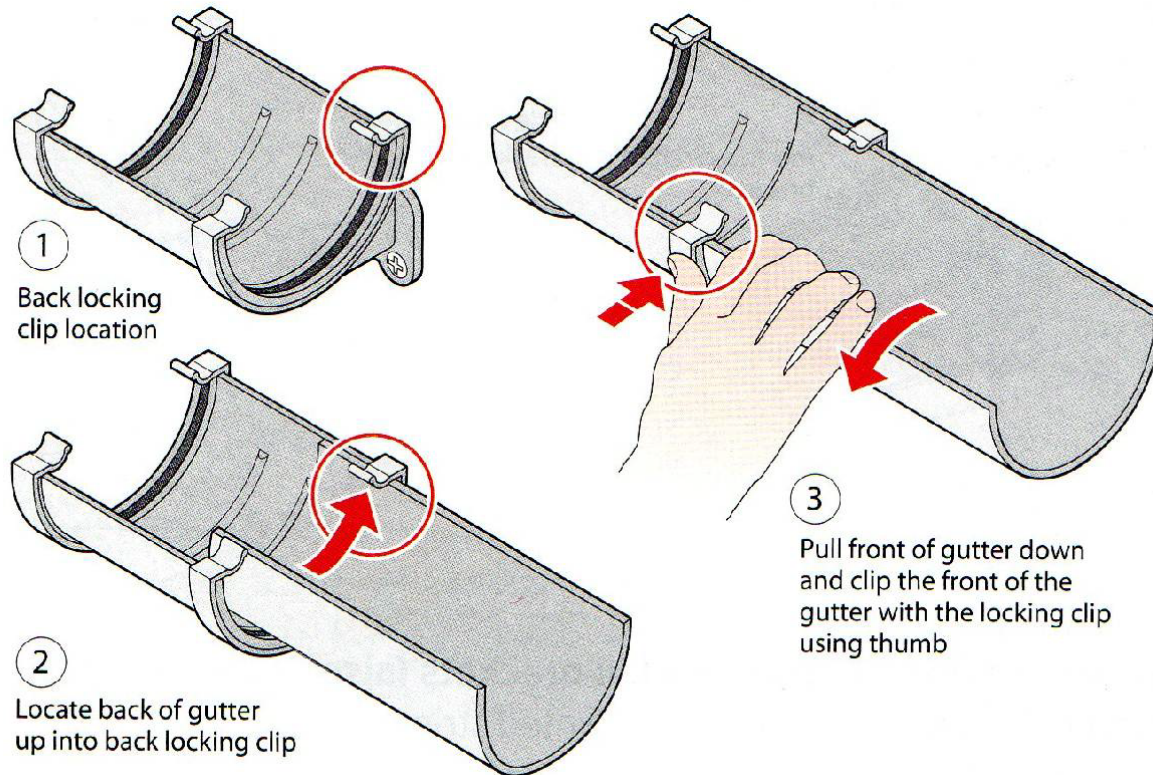
Installation



10. All fascia brackets need to be secured at a maximum of 1.0m apart (0.8m if in a windy location)

Rainwater systems

Installation



11. Clip the guttering in to location.

Rainwater systems

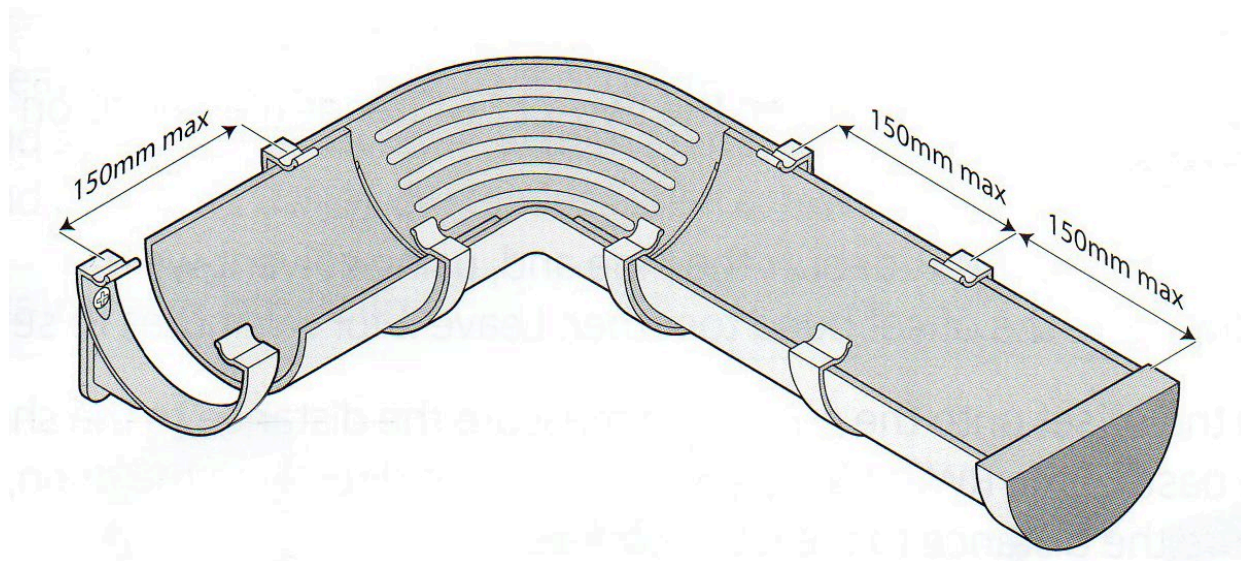
Installation

- Fall is worked out by 1:600 ratio
- Facia bracket are a maximum of 1.0m apart
- Running outlet is the lowest point of run
- Clip joints leaving allowance for expansion
- If the gutter needs cutting, use a fine tooth (24tpi) hacksaw and file off any burrs
- Use stainless steel screws as these will not corrode

Rainwater systems

Installation

When installing gutter angle fittings, stop ends and unions, fascia brackets need to be fitted within 150mm of either side of these fittings to give them additional support.

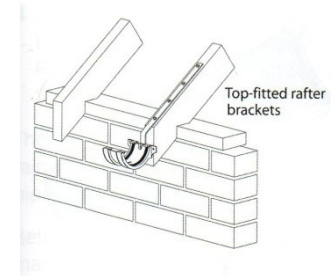


Rainwater systems

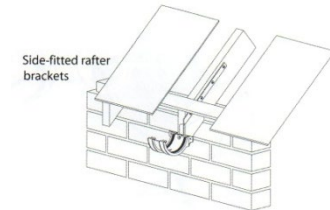
Installation

On occasions the building may not have fascia boards, so the gutter may have to be held in position using:

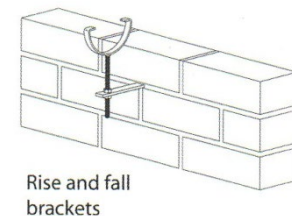
Top fitted rafted brackets



Side fitted rafter brackets



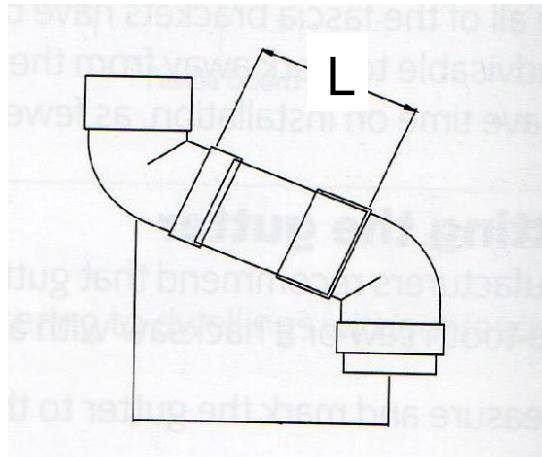
Rise and fall brackets (drive in bracket)



Rainwater systems

Installation of downpipe

1. Measure the distance between the two 112.5° bends marked L.



2. Cut a length of downpipe, de-burr and locate in position to form a swan-neck. This may need solvent welding.

Rainwater systems

Installation of downpipe

3. Measure vertical distance to shoe or drain connector
4. Cut pipe to length and de-burr. Install in position
5. Check the manufacturer's clipping distances, but generally they will be:

Pipe size	Vertical	Horizontal
68mm	2.0m	1.2m

Rainwater systems

Installation

Rainwater pipe to drain connections



Rainwater pipe clips



Rainwater systems

Installation

Once the system is installed, you test the system to make sure it is watertight and performs well.

Use a bucket of water, (or hosepipe), at the far end of each gutter run and inspect the flow of water at it discharges.

Make sure there are no leaks and there is no pooling in the gutter.

Rainwater systems

Installation

Working at heights will always have a risk involved. New installations may have fixed scaffolding in place, but replacements may mean working from a tower scaffold or ladder with stand off.

Always risk assess the job.

Never attempt the job alone or if the weather is bad.

Rainwater systems

Installation

Secure the area and put signs up to warn people that work is taking place at high level.

Always protect the customer's property, which may mean identifying any existing damage to the customer.

Rainwater systems

Installation

- Use a stand-off to avoid damaging the building fabric
- Avoid the ladder sinking into the customers lawn
- If you will be walking over the customers lawn, think about boarding it before work starts
- Ask the customer to move any nearby vehicle incase anything drops down
- If working in a public place, place barriers around to prevent people being injured

Rainwater systems

When working at heights ladder safety is essential.

- Stand on a **firm** and **even** base
- Set at the correct **angle** – 75° or 4 up: 1 out
- Watch out for overhead cables
- Beware of wet, icy or greasy rungs
- **Do not** use damaged ladders
- **Lash** the top of the ladder
- **Anchor** the base of the ladder
- The top of the ladder should extend 1.07 metres past the top of the working platform (4 to clear rungs)
- Never overload a ladder

Rainwater systems

Maintenance

This is essential to keep the system working effectively.
This may be covered by PPM on commercial premises but in domestic properties an annual check is important.

Visually: Check the overall condition
 List any specific problems

Rainwater systems

Fault	Remedy
Leaks	Carry out rectification according to type of system and material. Try to replace like for like.
Leak in cast iron joint	Remove bolt, clean our joint, replace seal, re-bolt joint
Damaged gutter	Replace section or fitting
Blockages	Remove items and flush out, maybe fit a gutter guard
Sagging gutter	Correct fascia bracket distance is Maximum of 1.0m
Overflowing gutter when raining	Inadequate guttering, additional downpipes or deep flow guttering