



INSTALLATION INSTRUCTIONS for DIAMOND DOME on a PITCHED ROOF

- 1.0 Components for the installation
- 2.0 Installation instructions
- 3.0 Assembling the pipe
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- 5.0 Fitting the dome
- 6.0 Notes on internal arrangements
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Frequently asked questions

“How long can a SunPipe be?”

A SunPipe can be almost any length that you wish, but loses 10% of light for every metre of SunPipe. For very long SunPipes, a larger diameter should be used. There is a 16% light reduction for every bend. On smaller sizes the total effective maximum length is 8m, and up to 20m on larger sizes.

“What spacing should I use for SunPipes?”

In general terms we recommend 300mm diameter SunPipes at 3 metre intervals, 450mm diameter SunPipes at 4m intervals and 530mm diameter SunPipes at 5 metre spacings.

“Do I need planning permission?”

No, normally it is not necessary to apply for planning permission for the installation of a SunPipe. However, if your property is situated in a Conservation Area then specific permission must be obtained from your Listed Building Officer.

“Are SunPipes suitable for use in a bedroom?”

Yes, but bear in mind that in summer months, due to the efficiency of the SunPipe, your bedroom will be flooded with natural day light first thing in the morning. For this reason, installations in bedrooms or hospital wards can have either a black-out diffuser or a motorised light shut off damper.

“Does the SunPipe require maintenance?”

Due to the shape of the dome, the SunPipe is self-cleaning. The ceiling diffuser fits snugly into the base of the ceiling diffuser to prevent dust or dirt entering the system and as a result the interior mirror finish surface never requires any maintenance. If however you are fitting a light kit, the bottom ceiling diffuser can be removed but care must be taken not to leave fingermarks on the internal mirror finish of the SunPipe.

“Will the top dome discolour over time?”

The top domes are UV protected and carry a twenty five year guarantee. However, after 10 years there may be a slight clouding of the external surface.

Preparation and safety information

Scaffolding

For flat roofs and single storey buildings not exceeding 10ft. (3m) in height, access to the roof can be gained by ladder, but caution should be taken to prevent any falling materials. For two-storey buildings and pitched roofs a tower scaffold or similar should be provided to gain access to the roof if it is greater than 10ft. (3m) in height from ground level and not more than 20ft. (6m) in height. For access to roofs greater than 20ft. (6m) in height a professionally installed scaffold access should be provided. All scaffolding and ladders must be properly fixed to the building and all necessary precautions must be taken to prevent falling materials and provide a safe working environment for personnel.

Electricity

Normal safety precautions should always be followed. A low voltage power supply should be used when appropriate. Care should be taken to ensure there are no wires, cables, leads, water or gas pipes near the work area. Suitable eye protection and protective gloves must be worn.

Cutting

SunPipe tubes can be sharp after their ends are cut, protective gloves must be worn.

Dust

A safety mask should be worn to ensure you don't inhale dust when carrying out the installation of a SunPipe system.

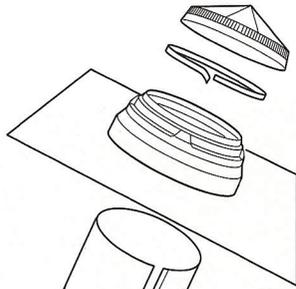
Other safety recommendations

Don't fit SunPipe when it is raining or the roof area is wet or slippery.

You will need the following equipment:

Protective eyewear, Protective gloves, Protective breathing mask, Ladders, Tin snips, Power drill, Power jig-saw, Dispensing gun to dispense the silicone sealant supplied, Miscellaneous other tools.

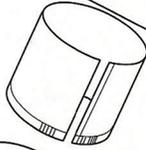
1.0 Components for the installation of a DIAMOND dome in a PITCHED ROOF



Polycarbonate roof dome

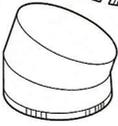
Brushed nylon condensation sealing gasket

ABS flashing plate and collar for slate roofs



SunPipe connecting piece

[cut to length on site]

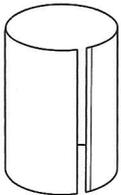


2 section 30° adjustable elbow

[required for roof slope up to 30°]

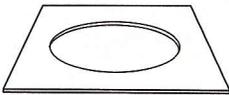
3 section 45° adjustable elbow

[required for steeper roof slopes up to 45°]



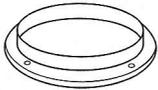
Standard SunPipe 610mm

[580mm fitted] plain ends

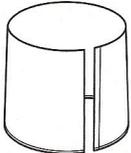


3mm plywood backing panel

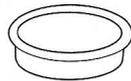
and marking out template



Ceiling trim

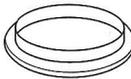


SunPipe bell end



Ceiling diffuser

clear or opal

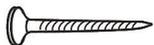


Twist lock on Diffuser trim



15 x 15mm self tapping stainless steel screws/washers

5 x for fixing the collar to the flashing plate, 4 x for fixing the pipe to the ABS collar, 5 x for fixing the dome to the ABS collar, 1 x spare



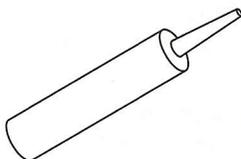
13 x 45mm screws

5 x for fixing the Ceiling diffuser, 8 x for fixing the Flashing plate to roof.



Black washers

5 x for use when fixing the Dome, 5 x for use when fixing the Dome, 5 x for use when fixing the Collar to the Flashing plate, 1 x spare.



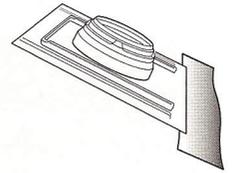
Silicone sealant



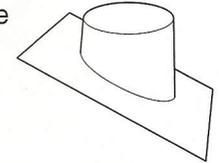
Silver aluminium tape

Alternative components

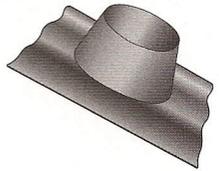
ABS flashing plate, and lead skirt for flat tiled roofs.



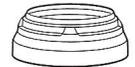
Vertical SunPipe flashing plate in galvanised steel, for slate roofs.



Lead flashing plate, for bold rolled tile roofs.

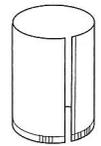


ABS collar

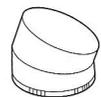


Optional additional components

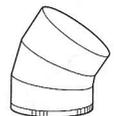
Standard SunPipe 610mm extension lengths with crimped ends.



2 section 30° adjustable elbow, used where a small offset is required.



3 section 45° adjustable elbow for large offsets.

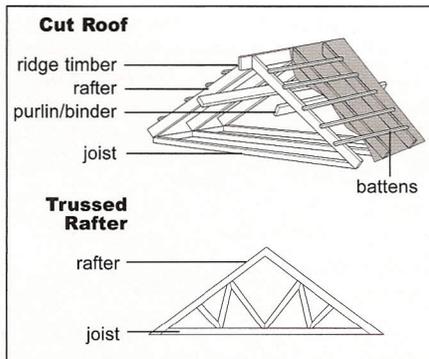


2.0 Installation instructions for a DIAMOND dome in a PITCHED ROOF

2.1 Before you start work

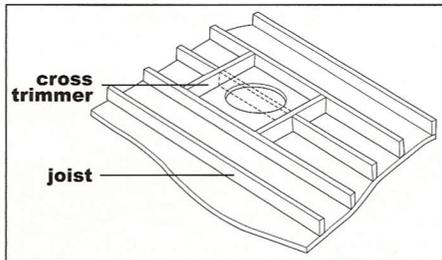
It's safer to fit the SunPipe between rafters

Most pitched roofs are constructed using the 'Cut Roof' or the 'Trussed Rafter' method. In newer buildings, trussed rafters are more common.



What if there isn't enough space to fit your SunPipe between existing rafters or joists?

In most homes SunPipes will fit between existing rafters or joists. However, if there isn't sufficient space, as a guide, on a 'cut roof', one rafter and ceiling joist may be cut to allow installation of your SunPipe but cross trimmers between adjacent rafters or ceiling joists must be installed at each side of the openings to support the 'cut' ends.



Under no circumstances should any element of a trussed rafter or, on a cut roof, a ridge timber, purlin or binder be cut without prior clearance from a structural engineer.

2.2 What's the best location for a SunPipe?

The most efficient place for your SunPipe is on a south facing roof slope. Always locate it as near to the ridge as possible. Try to avoid sheltered or concealed areas of your roof since the SunPipe will not benefit from direct sunlight.

In these circumstances the amount of light produced by the SunPipe which is in the shadow of the roof, will be similar to the amount of light obtained from a normally installed SunPipe on an overcast day.

There are a variety of views on the best position for a SunPipe on a north facing roof. Previously our advice was to fit a vertical flashing on a north facing roof. However, our experience indicates that on a north facing roof, whether the SunPipe is vertical or perpendicular to the roof surface, there is very little difference in performance and therefore we do not normally recommend the use of a vertical SunPipe. The only exception is where a SunPipe can be positioned near to the ridge, where a vertical application would enable the SunPipe to catch a certain amount of direct sunlight. Otherwise we recommend the compact flashing with an elbow used internally as for any other SunPipe application.

2.3 Preparing for your particular roof type

SunPipes are suitable for virtually any type of roof covering but these instructions are particularly written for slate or tiled roofs.

For thatched roofs or other unusual roof coverings, please call our technical department on 01494 897705.

For SunPipe installations near the ridge of steep north facing **slate** roofs it is advisable to use the vertical SunPipe **galvanised flashing plate**.

Only for installations near the ridge of steep north facing, **plain tile or bold roll tiled** roofs it is advisable to use the vertical SunPipe **lead flashing**, details of which are set out later. Otherwise, for most north facing roof slopes, it is still advisable to use the **lead flashing** in the perpendicular form.

For **metal profile** or **asbestos** roofs, a **moulded GRP** or **aluminium** flashing plate can be used, see 'Other products'.

2.4 Preparatory work outside

From a secure and stable ladder or fitted loft ladder, enter the loft. The floor areas in some lofts are not safe to walk on. Use temporary boards to span between the joists if this is the case. Look carefully at the area where you want to install your SunPipe. Make sure there are no obstructions to the installation such as water tanks, pipes, electrical cables, etc. Determine where you want the SunPipe to come into the loft from below and where you want it to exit through the roof.

Drill a small pilot hole (midway between two rafters) through the internal roofing structure, and out through the external roof covering. Place a timber dowel or similar marker through the hole, (which will make it easier to see when you are outside). You will eventually need to enlarge the hole to the size shown in the following table.

Roof opening sizes

Nominal SunPipe dia.	Actual dia.	Hole size to cut
300mm 12"	(305mm)	315 mm
450mm 18"	(458mm)	465 mm

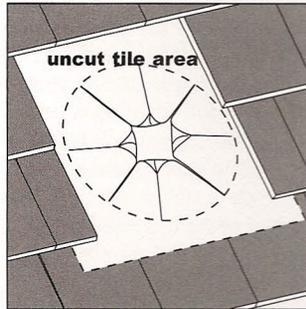
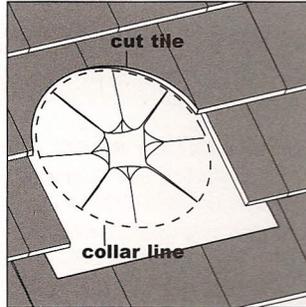
Note: 18" Diamond domes will be available from October 2002

2.5 Preparatory work inside

Establish the position in which the SunPipe is to be installed by locating the dowel inserted from inside. Remove the slates or tiles from around the area. Set the slates or tiles aside. Temporarily place the flashing plate in position so that it is centred over the pilot hole. Remove sufficient tiles to mark and cut back the battens and cut diagonals in the felt covering to allow for the installation of the pipe. Refer to section 8.4 above to determine the size of the hole to mark.

It is important to push up a length of the SunPipe from the inside of the roof, through the felt, so that the slits or cuts (as shown) secure the side of the SunPipe and trap the felt in position.

You can either cut the tiles above the ABS flashing collar or leave them uncut. This depends on whether you have the tools available for cutting roof tiles and where the collar is located in relationship to the first row of tiles above the collar. Place the tiles in position to make sure they fit.



2.6 Fitting the flashing plate on a slate roof

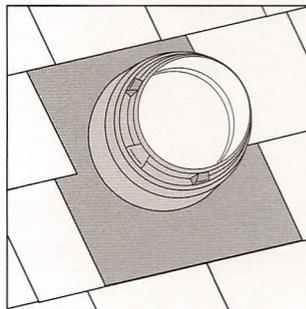
When fitting a SunPipe in a slate roof, the ABS flashing provides sufficient weatherproofing, you don't need any extra lead flashing. Therefore the ABS flashing plate should be tucked under the row of slates above, interleaved with the slates on each side and sit on top of the row of slates below. Use the 45mm long screws which are supplied, to fix the ABS flashing plate to the roof battens.

Wherever possible, align the bottom edge of the ABS flashing with the bottom edge of a row of slates. Cut the slate both sides of the bottom edge of the ABS flashing so that everything lays flush.

Then re-lay the next row of slates carrying the slate over the ABS flashing but stopping 25mm short of the SunPipe upstand collar.

The third row of slates should then be carried over so as to weather the top edge of the ABS flashing.

With some natural or man-made slates which are more than 5mm in thickness, it is advisable to use the lead skirt as set out in the following paragraphs.

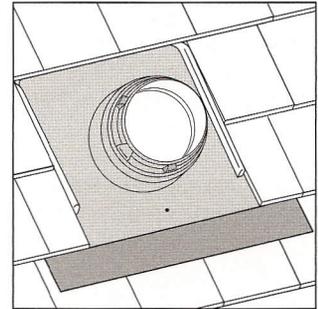


2.7 Fitting the flashing plate on a tiled roof

When fitting SunPipe in a plain tiled roof you should use the lead skirt. When fitting a vertical SunPipe, you should be using a lead flashing and ABS collar. Installation of the lead flashing unit is described later.

Temporarily remove the tiles around the area in which you are going to fit the flashing plate. The ABS flashing is supplied with a self adhesive bitumen strip on its underside, to fix the lead skirt. The adhesive is protected by a strip of paper which should only be removed when you are ready to fit the skirt.

Lay the lead on a flat surface and clean off any dirt or dust. Take the ABS flashing and carefully remove the protective paper and then place it firmly on top of the lead skirt, allowing the lead skirt to overlap by approximately 50mm to the underside of the ABS flashing. Press down firmly to ensure that the bitumen strip adheres to the lead. Secure it with three pop rivets, one in the centre and one at each end.

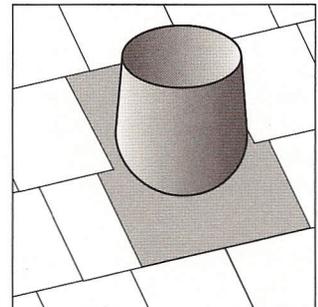


Carefully position the ABS flashing (with its lead skirt attached) taking care that it is over the centre of the hole that you have already prepared. Fix down the ABS flashing plate to the roof battens using the 45mm screws supplied. Make sure that you use two screws in line with the bottom edge of the ABS collar but to the edge of the upstand. This will pull the ABS flashing down on to the batten allowing the correct alignment of the roof tiles.

2.8 Fitting a vertical Sunpipe on a slate roof

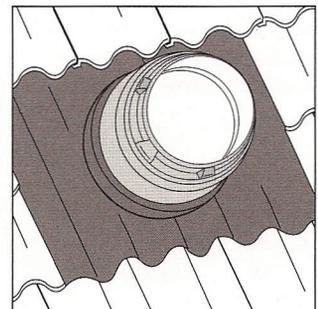
The basic principles are the same as described above. A lead skirting is not normally required, but with some natural or man-made slates which are greater than 5mm in thickness, it is advisable to use one.

Please refer to Section 2.2 regarding the use and location of vertical SunPipes



2.9 Fitting a lead flashing on bold rolled tiles

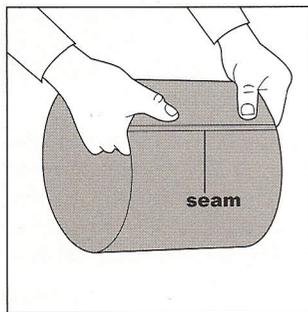
For bold rolled tiled roofs a Code 4 lead flashing plate can be supplied. It is supplied with the sides rolled for transportation. These should be un-rolled and dressed to the roof surface. It should be dressed under the row of tiles at the top edge of the lead and over the row of tiles at the bottom of the lead.



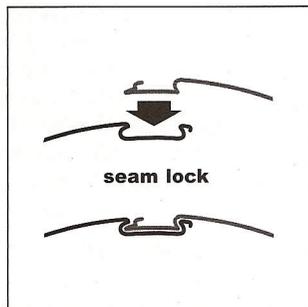
Drill five equi-spaced holes around the lowest part of the collar, then secure the collar to the flashing plate with the 15mm self tapping screws and washers supplied. Apply silicone sealant over the screw heads to form a weather-proof seal.

3.0 Assembling the pipe

Lie the pipe on its side with the seam uppermost. It is important that the protective film should be left on the inside surface of the pipe until later. This protects the pipe from dirty finger marks and also stops dust or dirt getting on the surface of the pipe. However, carefully run a Stanley knife down the joint where the protective film is attached to the inside of the pipe so as to be able to release the film later without too much difficulty.

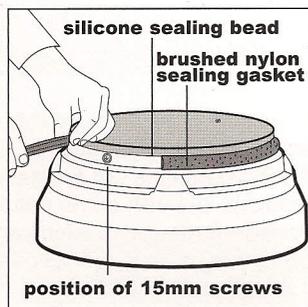


Align the ends of the pipe. The special seams clip into one another forming a locking action. Put pressure on the seam all along its length to ensure the seal is secure. Apply a length of aluminium tape over the made joint.



4.0 Fitting the first pipe

Insert the topmost pipe into the ABS flashing plate from underneath. The crimped end should be at the bottom end of the pipe. Allow the pipe to project 5mm through the top of the collar. Secure the pipe in position using four of the 15mm self tapping screws and washers supplied.

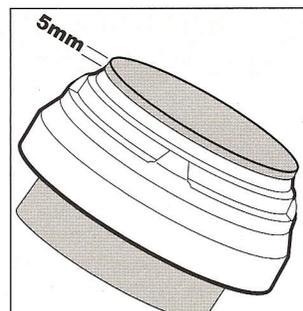


Once the pipe is fixed in position, carefully wipe the top of the outer surface of the SunPipe to remove any moisture, dirt or finger marks, etc. and apply a thick bead of silicone sealant, to seal between the SunPipe and the ABS collar, and then allow to dry.

This is the most important part of the Sun Pipe installation since this silicone sealant will prevent any rain or condensation from running down the outside of the SunPipe which may create a water stain on the ceiling.

Carefully apply the brushed nylon sealing gasket to the projecting part of the top of the collar and over the screws securing the pipe to the collar. The gasket should be level with the top of the ABS collar. This gasket seals the SunPipe against ingress of dirt or insects but still allows the SunPipe to 'breathe', thereby preventing any later problems of condensation.

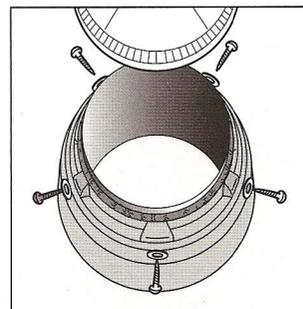
Trim the top of the pipe after passing through the flashing to leave a 5mm upstand.



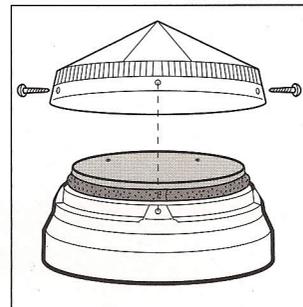
Please also refer to section 6 for assembling the pipe internally which will dictate the exact length of pipe to pass through the flashing before connecting up to the adjustable elbow in Section 6.

5.0 Fitting the dome

Before attaching the top dome to the collar/upstand, peel the protective film from the top rim of the first pipe and push it down the pipe, just enough to form a protective 'plug' in the pipe.



Align the pre-drilled holes on the dome with the lugs on the collar/upstand. Secure the roof dome to the collar/upstand using the 15mm self tapping screws and washers supplied. Take care not to scratch the dome when positioning it. All external works are now complete.



Carefully brush down the roof covering and all flashing to remove any particles of dust or dirt. Ensure that the dome is free from any finger marks, dust or dirt.

Note: When the SunPipe is initially installed, particularly in winter months, the air contained within the SunPipe tube does contain moisture and it is quite common therefore to see beads of condensation forming on the inside of the SunPipe dome immediately after installation. This is quite normal and the design of the SunPipe dome is such that this condensation will run down the inside of the dome, into the condensation gasket and will dry out naturally.

Internal installation

Refer to section 6 & 7 over the page

6.0 Notes on internal arrangements for all PITCHED ROOF installations

Push in the two or three section elbow, (2 section for 30° pitch roofs, 3 section for 45° pitch roofs), adjusting it by rotating the sections to achieve the correct angle so that the tube points vertically downwards.

Now peel off the coloured protective film down the pipe carefully, allowing it to form a descending 'plug' which prevents dust or dirt getting into the pipe whilst the installation is being completed.

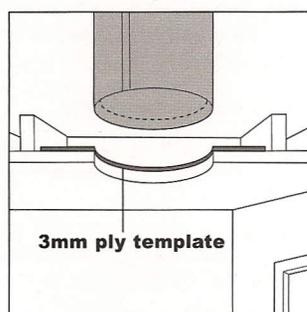
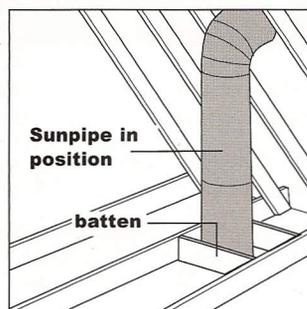
Ensure that all of the protective film is removed from the previous pipe or elbow just before attaching the next section

The second straight section of pipe should then be assembled as previously described and the two (or more) pipes connected together. Once you are satisfied that the angle and the location of the tubes are correctly aligned to pass through the loft space, continue as above with third or fourth sections and further elbow joints, depending on the distance you are spanning.

When you are satisfied that the angles and connections are all correct, drill small guide holes on each side of the SunPipe tube and screw the joints together with remaining self tapping screws. The silver aluminium tape supplied should be used to seal the joints against dust and dirt.

For best results, silicone-caulking seal should be applied to all joints before connecting, screwing and taping. On long unsupported lengths of pipe, additional fixing screws can be used to fix the SunPipe to any adjacent joist or rafter.

Having established the entry point of the SunPipe into the room below, use the 3mm ply backing panel as a template to mark out the opening. Then use a pad saw or similar to carefully cut out the opening. The 3mm ply backing plate should then be placed in the ceiling space over the hole to provide extra support to the ceiling diffuser.

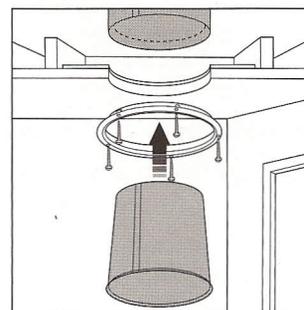


7.0 Fitting the ceiling diffuser

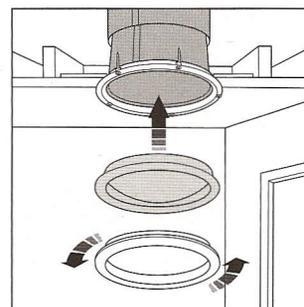
To avoid any possibility of eye damage, be careful not to look upwards through the SunPipe. The efficiency of the unit is such that even in dull light, eye damage could result.

The bottom of the SunPipe tube should be trimmed back so that it is approximately 50mm above the top of the ceiling. Insert the 3mm plywood backing panel in the ceiling space over the hole to provide extra support to the ceiling diffuser (you may have to cut it in two if you have limited access to the ceiling space).

The ceiling trim can now be screw fixed to the ceiling. Use five of the 45mm screws supplied. Don't forget to remove any residue of the pipe's protective lining. Once the ceiling trim has been fixed into place, the bell end can be inserted into the bottom of the Sunpipe.



The ceiling diffuser is designed to push fit into the bottom of the bell end pipe. Push the diffuser trim over the ceiling diffuser and twist lock it anti-clockwise to secure it in place.



When the installation is complete

Please leave these installation instructions with the owner of the SunPipe or Monovent Suncatcher. This will enable them to carry out the straightforward maintenance mentioned below.

Maintenance

The SunPipe is designed to be maintenance free and the shape of the dome and the flashing is designed to be self-cleaning. If for any reason, further cleaning is required, only warm, soapy water should be used to wash the external dome and flashing. Take great care not to scratch the dome when washing. Internal cleaning should not be required since all components are effectively 'sealed-for-life'.

SunPipe has a 25 year guarantee against any defects arising due to faulty materials.