

## Fitting a Low Level Outlet Radon Sump System kit

### Introduction

This leaflet aims to provide a guide for a skilled do-it-yourselfer or tradesman to construct a low level outlet radon sump system. Dimensions are not exact, but a guide, and advice and guidance can be given by UK Radon Ltd, to any purchaser of a low level outlet radon sump system kit supplied by UK Radon Ltd, by phoning 01209 860616 or emailing [info@ukradonltd.com](mailto:info@ukradonltd.com). Please telephone if you get stuck or don't understand the leaflet. UK Radon Ltd would welcome feedback to update this leaflet to make it easier for others in the future.

### Principles behind the kit

A radon sump system aims to lower the pressure under a building which then draws radon to the 'sump' part of the system, which in turn draws the radon outside the building using a sump pipe and a fan. The aim of the fitter is to construct a bucket-sized sump in the hard-core/subsoil under the solid floor of a building which is then sealed from the outside except for a sump pipe which takes the radon to the fan and then to the outside.

### Contents of the kit

1. 6 x concrete fan box sides:
  - 3 x 400 x 400
  - 2 x 400 x 350 (1 with off-centre 102mm hole)
  - 1 x 400 x 400 with 150mm hole in centre
2. 1 x radon fan
3. 1 x rubber connection collar
4. 5 x corner fixing angles (2 x long, 3 x short)
5. 1 x fused, switched spur & surface mounted back box
6. 1 x baffle
7. 1 x circular air vent/grille
8. 1 x tube of fixative
9. 1 x tube of silicone



### Other items you will need to supply

- 110mm pipe and joints; approximately 1 metre depending on how deep the sump is dug
- Pipe insulation
- Cement, sand, water and plasticiser to make mortar/concrete
- Power and hand tools such as hammer drill, chisel, breaker, core drill, spade shovel bar, scraper

### Pre-kit fitment work: The sump and outlet (sump) pipe to the fan box

First construct a bucket-sized cavity, known as a 'sump', in the ground below the building's floor slab. Then fit the appropriate length of 110mm pipe to the sump (the sump pipe), which you then take to where the fan box will be located. The sump pipe should not leak, and it should be sealed with cement to the sump. The aim of digging a sump is to construct a sealed cavity under the floor slab with an outlet pipe coming up from the ground (or through a wall) to the fan box. The pipe should exit the floor (or the wall) with approximately a 230mm centre from the wall (or floor) for the fan box and fan to fit on. An example of sump excavation is given in sections 1, 2, 3 and 4 below.

## 1. Create the pipe entry to the sump.

Using a core drill, or hammer drill and chisel, first create the sump by making a 117mm hole through the wall below the floor level. The aim is to get into the subsoil or hardcore below the floor level. Be careful to avoid the floor slab, pipes and cables! You can make the hole perpendicular to the wall or angle it to suit your needs. Remember you need to have a pipe coming out with a centre 220mm away from the wall, rising vertically from the ground (a bottom entry fan box), or 230mm up the wall from the ground level wall (a side entry fan box).



## 2. Excavating the sump

Then excavate a bucketful of hardcore/subsoil material.

Here are two examples of the finished sump pipe hole with sump at the bottom.



## 3. Finishing the sump pipe hole

Sometime the hole for the sump pipe needs to be opened out at the top to enable you to seal the inner leaf of a cavity wall with mortar, to form a good seal at the entrance to the sump.



## 4. Fit the sump pipe

The sump pipe should enter into the sump at one end, and extend up into the fan box at the other. Seal the sump with mortar, and or concrete to ensure a good seal, especially with the inner leaf of the cavity wall (where a cavity is present),

Notice that the sump pipe can be cut to length, and a 110mm bend (90, 67.5 or 45 degree bends) can be fitted, to enable the sump pipe to enter the fan box in the right place (through the 400 x 400 slab with the 150mm central hole). The length of pipe and bend angle may vary according to the specific site characteristics.





## 5. Fitting the box entry slab and back/base slab.

Use the fan box entry slab (150mm hole in middle) and the back/base slab (400mm square) to determine if the sump pipe outlet is in the right place for the fan box. Below are two examples of outlet pipes with the fan box the 'sump pipe entry' slab placed over them. Notice a 12mm hole needs to be drilled in one of the slabs to accommodate the electrical cable. Leave approximately 25mm between the box and the wall to allow for cable/conduit to pass behind the back of the fan box.

## 6. Placing fan collar and sides on the box

Place the collar on the sump and tighten the jubilee clip onto outlet pipe.

Then fix the fan box panels together with the plastic angle beads glued to the slabs with the fixative supplied.

## 7. Fit the fan

Fix the electrical cable to the fan terminals in the black plastic box on the side of the fan. Leave excess cable to allow you to remove the fan for future maintenance.

## 8. Fit the front/vent panel and air vent

Using silicone sealant fit the front panel and the air vent

In 'side entry' fitments the baffle is fitted before the front panel is fitted – see 9 below for baffle cutting and fitment.

## 9. Fit the baffle

The baffle should be cut to fit the top of the fan box and then pressed on to the fan to mark the circular hole, which must be cut to fit over the fan outlet.

Cut a corner off the baffle to allow air to flow from the 'fan outlet chamber' to the 'air vent chamber' below, where the radon is expelled to the atmosphere.

## 10. Fit lid

Fit lid using silicone sealant. The two examples show a front and side outlet fan box finished.



*The electrical connection on the fan.*





## 11. Fitting the electrics

The electrical power supply should be fitted via a fused spur to the fan. A qualified electrician should do this work. The fan draws a maximum of 1 amp so a 3 amp fuse should be fitted to the fused spur. The power cable should be mechanically protected. Trunking and conduit are good methods of protecting the cabling to the fan. In some cases a speed controller can be fitted with the fused spur, or in the fan box.

