

External mini sump with low-level exhaust

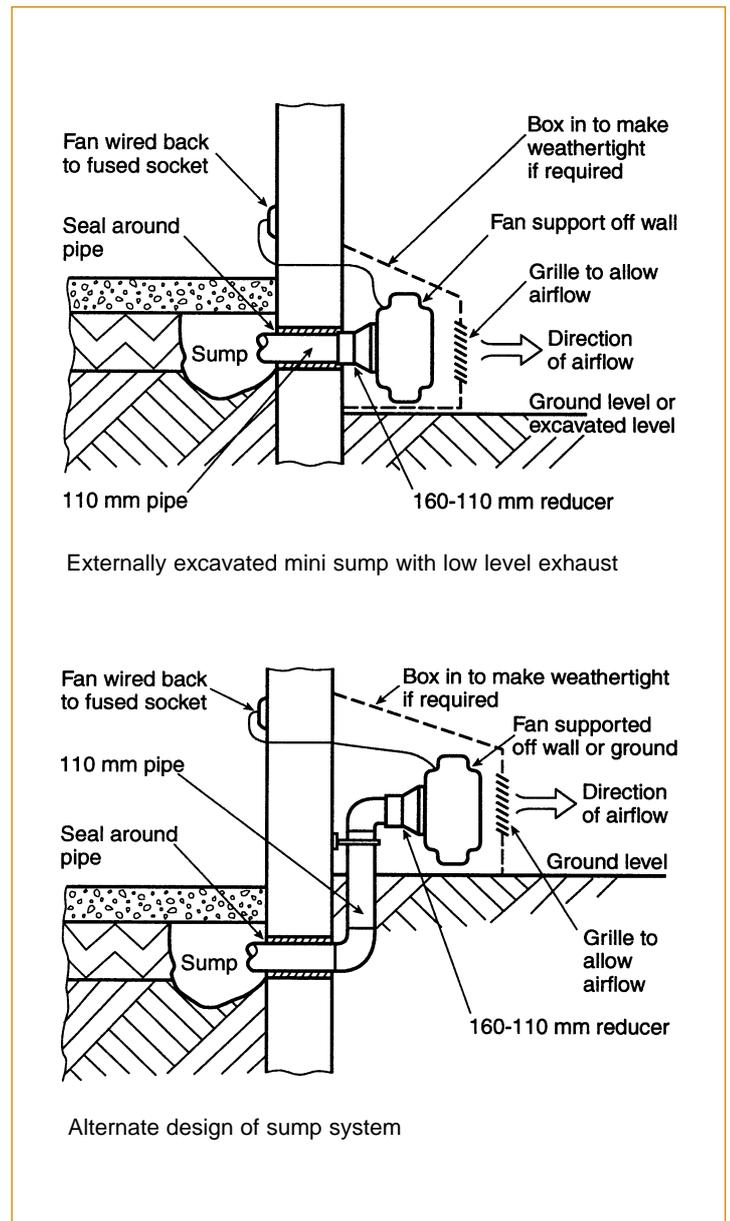
Specification

Fans: The most commonly used type of fan for a radon sump system is an in-line or other duct mounted centrifugal fan, which has an airtight casing. These are compact, quiet, and widely available and can be easily fitted. However, there is no technical reason why other types of fan with similar air-flow performance should not be used. Such fans are likely to have a flow rate of around 177m³/h at a pressure difference of 200 Pascals, and a power consumption of about 70 watts (check with your stockist as some manufacturers are introducing lower wattage fans). A list of companies known to supply suitable fans is available from BRE.

Fan wiring: Fans should be wired in accordance with BS 7671: 2001 as amended, Requirements for Electrical Installations, the IEE Wiring Regulations.

External fan: Where a fan is to be exposed to weather it should be of a type that is suitably protected. It will need to be protected to level IP54 as classified in BS 5490. The fan manufacturer or supplier should be able to confirm that the chosen fan complies with this requirement. If the fan does not meet this level of protection the fan will need to be mounted within a suitable weatherproof housing.

Where a fan is fixed to a house wall, it may be connected to an existing ring circuit through a fused connection unit with a double pole switch. Where the fan is remote from the house, it must be on its own Residual Current Device RCD-protected circuit running from the consumer unit and capable of isolation by means of a double pole switch.



radon solutions



Pipework: 110mm diameter uPVC pipe and fittings as used for domestic soil and vent pipes can be used. This is widely available from DIY stores and builders merchants. The fan connections are typically 150mm in diameter so a 150mm to 110mm reducer will be needed to join the pipe to the fan.

Sump construction: A simple mini sump can be constructed by breaking out or core drilling a 120mm diameter hole through the external wall just below the floor slab and excavating about a bucketful of material (clearing out a space of approximately 200mm in radius).

Sealing: it is important to seal around the pipe-work where it exits the floor slab to prevent air leakage. This can be achieved using a gun applied bathroom sealant or similar, which can be obtained from a DIY store or builders merchants.

General points to consider

A low level sump system can only be used where there is sufficient space around the exhaust outlet so as not to pose a risk to health. As a rule of thumb it is usually only appropriate where the exhaust is two or three metres from the nearest opening, doors, windows, or vents, there are no other buildings or regularly used spaces such as patios immediately adjacent, and the exhaust can be directed to discharge away from the building.

The advantages of this solution are that it offers the same level of effectiveness as a conventional sump system which exhausts at eaves level, but it is visually less obtrusive and requires less materials to construct. They are ideally suited for use in cases where planning restrictions do not allow changes to the external appearance of a property,

e.g. listed buildings, conservation areas, or National Parks.

For a typical dwelling a single sump is likely to have an influence over an area of approximately 250m², or for a distance of approximately 15m from the sump. However, obstructions below the floor slab may reduce effectiveness. Care should be taken to avoid locating the sump near to an open flued appliance such as an open fire or boiler drawing air from a room to prevent the risk of spillage. To minimise noise the fan should be placed as far from occupied rooms as possible.

Care should be taken when breaking out to avoid damaging steel reinforcement or concealed services such as electricity cables or water pipes.

Further information

More detailed guidance is available in BRE Report BR227 *Radon Sump Systems: a BRE guide to radon remedial measures in existing dwellings*, Good Building Guide 25 *Radon and Buildings* and Good Building Guide 26 *Minimising noise from domestic fan systems and fan-assisted radon mitigation systems* obtainable from BRE Bookshop, BRE Garston, Watford, WD25 9XX, telephone 01923 664262, e-mail bookshop@bre.co.uk, or visit www.BREbookshop.com

- for further practical advice about work to reduce radon levels
- for a list of companies known to supply suitable fans

Contact BRE Radon Hotline 01923 664707 www.bre.co.uk/radon

Disclaimer

It should be noted that BRE cannot guarantee that the measures described on this sheet will reduce the radon level in your home, however similar measures have regularly proven successful elsewhere in the UK.

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Other useful contacts

Defra 020 7082 8498
www.defra.gov.uk/environment/radioactivity/radon

NRPB 0800 614529 www.nrpb.org/radon

The Radon Council 01932 221212 www.radonhotline.org

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