Sump system beneath a timber floor

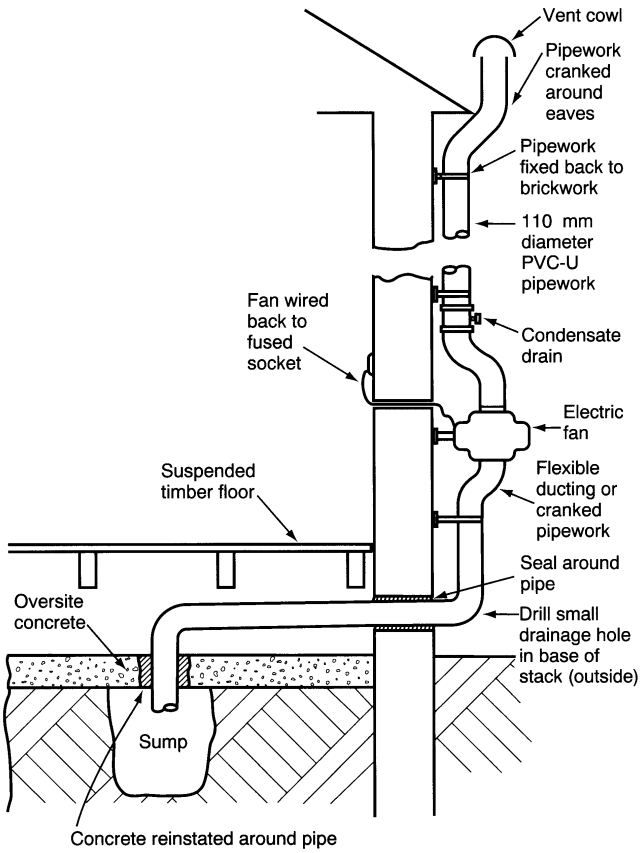
Note: only appropriate for dwellings with concrete covering the soil beneath the timber floor

Specification

Fans: The most commonly used type of extract 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, 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 177m^3/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.

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 externally to a house wall as shown here, it may be connected to an existing ring circuit through a fused connection unit with a double pole switch. If 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.



Sump installation beneath suspended timber floor

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

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.

Condensate drain: If the fan is located at low level it is important to include a condensate drain in the pipework. This is to prevent any condensation that might form in the pipe running down and damaging the fan. These are widely available from DIY stores and builders merchants.

Sump construction: A simple mini sump can be constructed by breaking out a 120mm diameter hole through the concrete oversite and excavating about a bucketful of material (clearing out a space approximately 200mm in radius).

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

General points to consider

For a typical dwelling a single sump is likely to have an influence over an area of approximately 250m^2, or for a distance approximately 15m from the sump. However, obstructions below the floor slab may reduce effectiveness.

Care should be taken when breaking out to avoid damaging concealed services, e.g. electricity cables, water mains, central heating pipes and gas and oil supply pipes.

Position the outlet well away from windows, doors and ventilation grilles.

To minimise noise keep pipework as straight as possible, and place the fan away from living rooms, bedrooms, or other quiet areas.

Further information

More detailed guidance is available in BRE Report BR227 *Radon Sump Systems: a BRE guide to radon remedial measures in existing dwellings*, BRE Report BR270 *Protecting dwellings with suspended timber floors: a BRE guide to radon remedial measures in existing dwellings* 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.

Prepared for The Department for Environment, Food and Rural Affairs.
Prepared by Building Research Establishment Ltd
Printed on recycled paper containing 80% post consumer waste and 20% Totally Chlorine Free virgin pulp.

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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