



Reducing Radon

Quick Guide 2

Fan assisted under-floor ventilation

What you need to know

Fan-assisted or forced air ventilation can be used where natural under-floor ventilation under suspended floors is inadequate.

A fan either blows air into the under-floor space or sucks air from it: both can be effective. Success depends on factors including soil permeability, floor leakiness and the number and position of airbricks. The usual approach is to try blowing air in, if this is not successful then reverse the fan to suck air out.

Installation of the fan

In most cases an existing airbrick is removed and replaced by a short length of 110 mm diameter plastic drainage pipe. The pipe should be held firmly in place to support a fan.

The fan can be located:

- outside (use a weather resistant fan or mount the fan within a weatherproof casing or box) (Figures 1 and 2)
- in the under-floor void (Figure 3)
- within the wall (Figure 4)

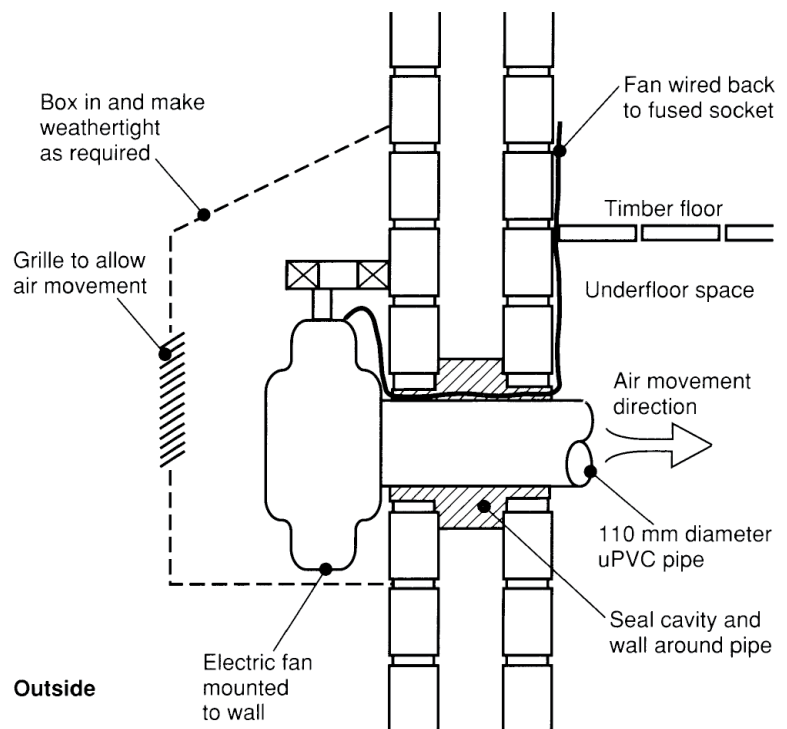


Figure 1 Mechanical supply ventilation with external fan

Tip: when extracting air do not position the fan within 1.5 m of an airbrick as it may short-circuit and draw outside air through the airbrick instead of from the under-floor space.

Fans

Wiring

Fans should be wired in accordance with BS 7671:2008 as amended and satisfy Approved Document P of the Building Regulations 2010 (England and Wales). The works required are usually limited to providing an additional fused spur to an existing ring or radial circuit.

Weather protection

Fans exposed to the weather should be suitably protected to level IP54 as classified in BS EN 60529:1992. The fan manufacturer's specification should confirm whether a fan complies with this requirement. Fans that do not meet this specification should be protected in a waterproof housing.

Insulation

Increasing under-floor ventilation with a fan may make the under-floor and living space colder, especially during winter:

- consider sealing obvious openings or gaps in the floor, or covering the floor with hardboard. Do not use a polyethylene sheet: the floor timbers must be aired to prevent timber rot
- services routed under the floor, particularly central heating or water pipes, should be insulated to avoid the risk of freezing

Noise reduction

Most under-floor fans run relatively quietly, although sometimes noise can be a problem. Noise is often due to air movement within the fan or pipes. To minimise potential noise:

- position the exhaust outlet away from doors or windows – particularly bedroom windows
- consider packing insulation material around a fan that is mounted in a weatherproof box



Figure 2 External fan in a weatherproof box

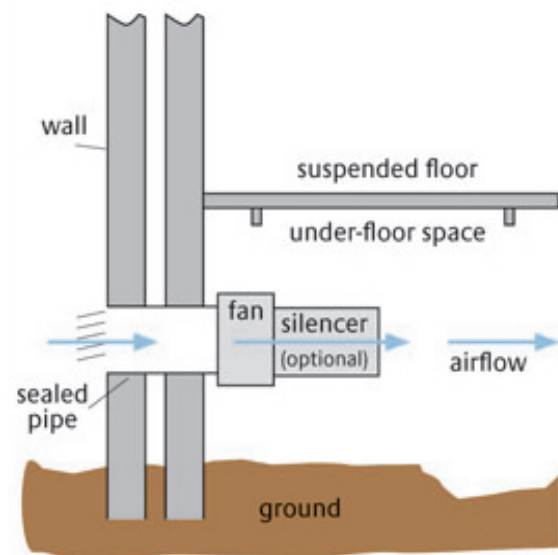


Figure 3 Fan located beneath the floor with a silencer

- ensure that fans installed beneath a timber floor are supported and not fixed to the underside of the floor
- consider fitting a silencer to a fan (Figure 3)

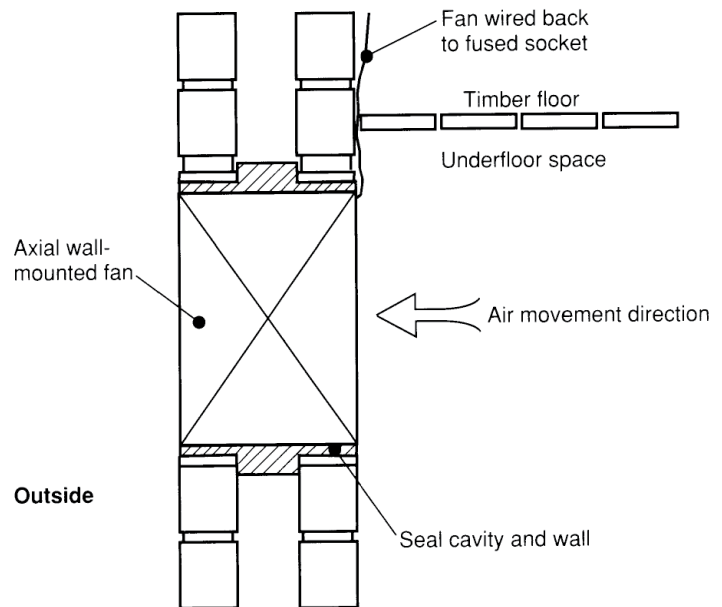


Figure 4 Mechanical extract ventilation with axial flow fan set within wall

REMEMBER

Do a follow-up RADON TEST to check radon levels are reduced sufficiently.

More detailed guidance on improving under-floor ventilation is available in

BRE Good Repair Guide GRG 37 Part 1: Radon solutions in homes: improving under-floor ventilation, which can be downloaded free at www.ukradon.org or purchased in hard copy from www.brebookshop.com.

BRE Good Building Guide GBG 26: Minimising noise from domestic fan systems and fan assisted radon mitigation systems, which can be purchased in hard copy from www.brebookshop.com.

Disclaimer

This information sheet has been produced by BRE and PHE. It should be noted that BRE and PHE 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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