



Reducing Radon

Quick Guide 3

Positive house ventilation

What you need to know

Positive ventilation systems use a fan to continuously blow fresh filtered air into a property (Figure 1) and are usually located in the roof space. Radon is reduced in two ways:

- by diluting radon in the property with fresh air
- by slightly increasing the indoor pressure which reduces radon entering the property

Positive ventilation systems are one of the least disruptive remedial systems to install.

A system is likely to work best:

- in average sized 3–4 bedroom bungalows and houses (approximate volume of about 250 m³ – larger properties may need an alternative or additional remedial system)
- where annual average radon levels are less than 500 Bq m⁻³
- with all floor types and in relatively airtight, centrally heated properties

Positive ventilation systems can be used at the same time as other remedial systems to increase the efficiency of radon reduction.

Step by step installation

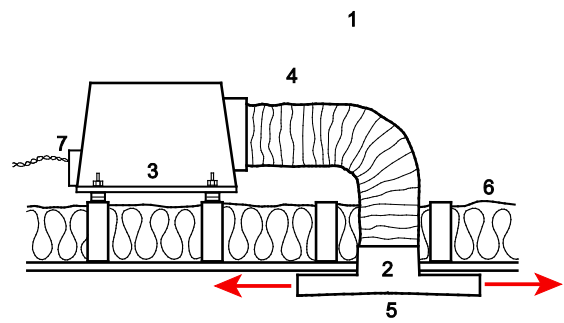
Systems are usually sold as complete units ready to install. A typical location to site the unit is in the loft above a hallway (in a bungalow) or above the stairwell (in a house). The numbered steps below refer to Figure 2 (overleaf).

- 1 Check that the roof space has adequate ventilation from outdoors; see the manufacturer's instructions
- 2 Cut a hole through the ceiling to accept the ducting

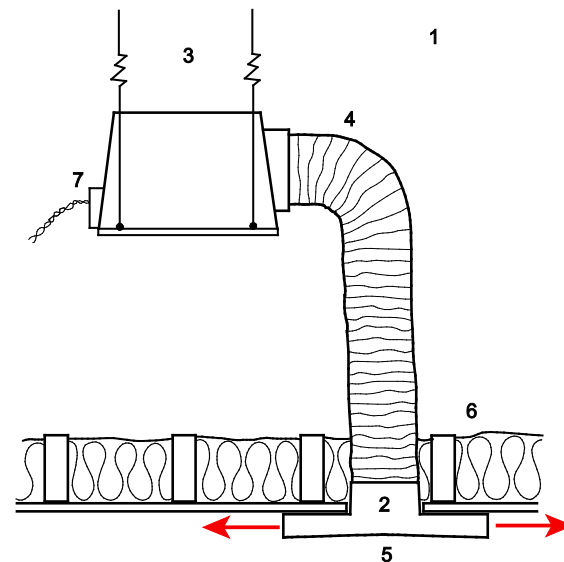


Figure 1 Roof located positive ventilation system

- 3 Mount the fan using vibration-reducing mounts fixed to ceiling joists (diagram a), or support the fan unit from the rafters (diagram b) – fixings are supplied with the unit
- 4 Connect the ducting to the fan unit
- 5 Connect the ducting to the ceiling diffuser and fix it to the ceiling
- 6 Restore the insulation
- 7 Wire the fan unit in accordance with BS 7671:2008 as amended and to satisfy Approved Document P of the Building Regulations 2010 (England and Wales) back to a fused spur or lighting circuit according to the manufacturer's instructions



(a)



(b)

Figure 2 Positive ventilation system: (a) ceiling joist mounted and (b) suspended from rafters

Properties without a roof space

For properties without a roof space, such as flats and apartments, wall mounted units are available (Figure 3).

Condensation and mould

Positive ventilation systems were originally developed to combat condensation and mould often caused by a lack of ventilation or heat. As well as reducing radon levels, these systems offer further benefits to householders, providing a fresher indoor environment.

Airtight houses

Positive ventilation is more likely to work well in buildings that are fairly airtight. It is difficult to determine the extent of air tightness: tests are relatively expensive. The following conditions often indicate that a building is relatively airtight:

- signs of condensation and mould
- the building is 'stuffy' with no cold draughts



Figure 3 Wall mounted positive ventilation system

- the occupants use a dehumidifier
- odours linger rather than disperse

Draughty houses

Positive ventilation is likely to be more effective if draught-proofing is carried out.

Unused chimneys

If possible, unused chimneys should be closed off. A small vent should be left to prevent damp within the chimney.

Heaters

Many positive ventilation systems include a small heater, or an optional heater may be available. Air is preheated to improve comfort in winter. These heaters are not intended for use as a central heating system.

REMEMBER:

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

More detailed guidance on positive house ventilation is available in

BRE Good Repair Guide GRG 37 Part 2: Radon solutions in homes: positive house ventilation, which can be downloaded free at www.ukradon.org or 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.

© Crown copyright and BRE copyright 2015, www.gov.uk/phe and www.bre.co.uk

Re-use of Crown copyright material (excluding logos) is allowed under the terms of the Open Government Licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ for terms and conditions.