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FIRE DETECTION AND FIRE ALARM SYSTEMS.

In most cases the installation of smoke detectors in dwellings can significantly increase the occupants safety by giving early warning of a fire outbreak.

Building Regulations require the installation of automatic smoke detectors to new dwellings, dwellings created by 'Material Alterations' and loft conversions.

Requirements:

- All dwellings to be fitted with a fire detection and fire alarm system in accordance with BS5839 - 6: 2004 – Grade D - category LD3 standard.
- System to be mains operated and must conform with BS EN 14604: 2005, Smoke alarm devices or BS5446-2: 2003, Fire detection and fire alarm devices for dwellinghouses, Part 2 Specification for heat alarms, respectively.

AND

Must be battery backed up (either rechargeable or non-rechargeable).

- Where there is more than one smoke detector required (see positioning requirements below), they should be interlinked together, so that all sound the warning should one of the detectors operate.

Types of detectors.

1. Ionization chamber detectors
2. Optical detectors – less affected by low levels of invisible particles, such as kitchen fumes and are not as prone to false alarming where adjacent to such areas.

Installation and power supplies.

- Smoke detectors to be mains powered to a single independent circuit on the dwellings mains consumer unit or a single regularly used local lighting circuit.
- Provide a means of isolating power to the smoke alarms without isolating the lighting.
- Electrical installations should comply with Approved Document P (Electrical Safety).
- There is no need for special fireproof wiring – traditional power cabling can be used for powering and interlinking the alarm units (except to large houses where BS5839-6: 2004 specifies fire resisting cabling should be used for Grade A and B systems).
- Any conductors used for interconnecting alarms (signalling) should be readily distinguishable from the supplying mains power, e.g. colour coding.
- Mains powered detectors may be interconnected using radio links provided they do not reduce the lifetime or standby power duration below 72 hours. In this case, the smoke alarms may be connected to separate power circuits.

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Positioning of smoke and heat detectors / alarms.

Detailed guidance is given in BS5839-6: 2004, but typical positions are as follows:

- Position in circulation areas on every floor of the dwelling - positioned between the sleeping spaces and places where a fire is likely to start e.g. living room / kitchen and yet be close enough to the bedroom doors to effectively wake sleeping occupants.
- Smoke detectors should be positioned so that there is one within 7.5m of every habitable room door and a minimum of 1 smoke detector in every storey of the dwelling.
- If your kitchen is not separated from the stairways or circulation routes by a suitable door, then you must also install a compatible heat detector in the kitchen, interlinked with the other smoke detectors positioned as above in the circulation routes.
- All heat and smoke detectors are to be interlinked so all operate an alarm if one is triggered.
- Smoke detectors should preferably be fitted to the ceiling in a central position and at least 300mm from any wall or light fitting. Check the manufacturers instructions carefully when deciding where to position them – particularly if you are going to mount them on the wall. Wall mounted detectors should generally be fixed between 150mm and 300mm below the ceiling.
- Smoke detectors should not be fixed directly above heaters, air conditioning units, ducted heat outlets, or in bathrooms, showers, cooking areas or garages, where steam, condensation or fumes could cause false alarms to occur.
- Do not fit very hot or very cold areas e.g. boiler rooms or unheated porches, where air currents may move smoke away from the detector before it activates.
- Always position your detectors so that they can easily be maintained, cleaned and tested – so don't position them over stairs etc.

Maintenance.

Always maintain, clean and test your smoke detectors regularly as directed by the manufacturers instructions.

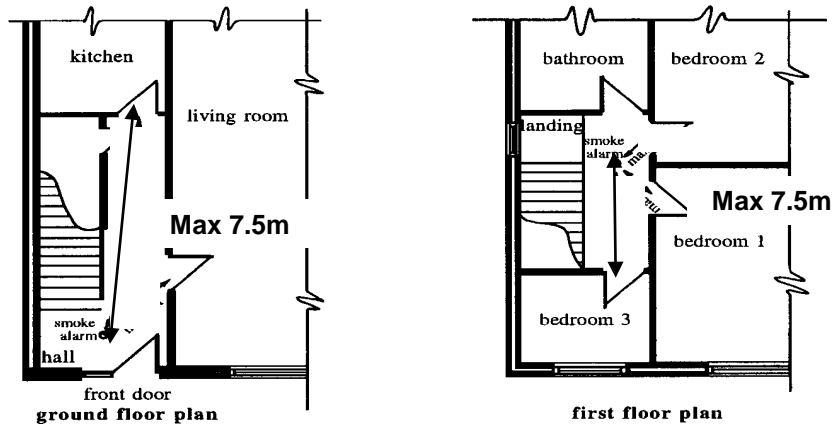
LARGE HOUSES (i.e. more than 1 storey and any storey exceeds 200m²)

- a) Large dwellings of 2 storeys (excluding basements) to have fire detection / alarm system of Grade B - Category LD3 (BS 5839-6: 2004)
- b) Large dwellings of 3 or more storeys (excluding basements) to have fire detection / alarm system of Grade A - Category LD2 (BS 5839-6: 2004)

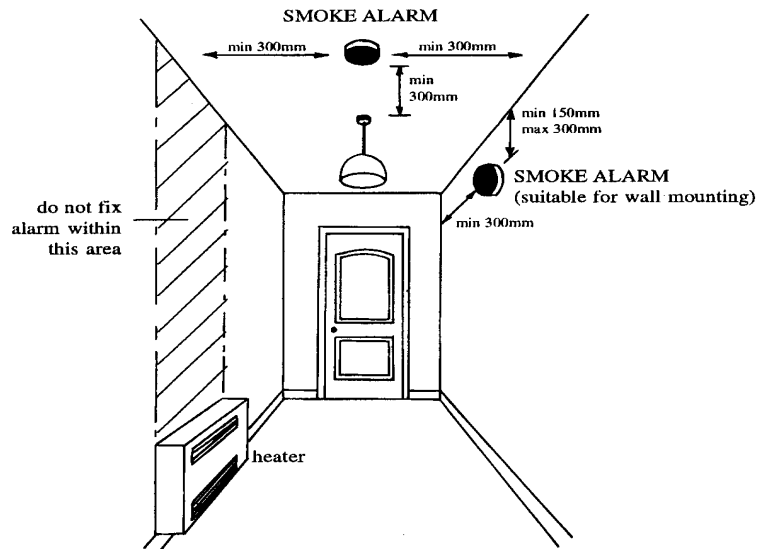
MATERIAL ALTERATIONS.

Where a material alteration provides rooms above ground floor level or where they are provided to ground floor level and there is no final exit from the new room, a fire detection / fire alarm system should be installed.

Smoke detectors are required to be provided in circulation spaces as for new dwelling houses.



Position of Smoke Alarms within a Typical House



Position of Smoke Alarms within the Circulation Area