BUILDING REGULATIONS GUIDANCE NOTE
NHBC BUILDING CONTROL

DUCTWORK PASSING THROUGH PROTECTED ENTRANCE HALLS IN DWELLINGS

This guidance aims to clarify the fire protection measures acceptable under Building Regulations in connection with the installation of typical ventilation systems in dwellings. The guidance is based on the presumption that the ventilation system does not directly serve a protected entrance hall or protected stairway within a dwelling, ie. all extract and air supply terminals are located in rooms and that air transfer grilles are not provided to protected entrance halls or stairway. The guidance also presumes that all ventilation ductwork is wholly contained within the dwelling and does not pass through compartment walls or floors. This guidance does not extend to warm air heating circulation systems, which are subject to special consideration and outside the scope of this guidance.

There are typically four types of ventilation systems used in dwellings:

- Intermittent extract
- Passive stack
- Continuous mechanical ventilation
- Continuous mechanical supply and extract with heat recovery.

For houses and flats the key considerations are:

- The fire integrity of the floor is not compromised by the installation of ventilation ductwork
- The fire integrity of a protected stairway or protected entrance hall is not compromised by the installation of ventilation ductwork

DWELLINGHOUSES - THE FIRE INTEGRITY OF THE FLOOR

Existing fire test data for timber floors confirms that installation of multiple recessed lights do not have a significant effect on the fire resistance of floors requiring up to 30 minutes fire resistance. On this basis isolated penetrations of the ceiling lining by extract ductwork may be considered acceptable in terms of the effect on the fire integrity of the floor construction. Hence:

- The penetration of the ceiling lining and installation of extract ductwork within the floor void can be accepted without additional fire protection, ie. a fire damper or intumescent collar. The extract ductwork may be of any suitable material, ie. Flexible or rigid PVC or metal.
- Where ductwork continues vertically through the dwelling as in the case of a passive vent stack, a normal standard of enclosure will be acceptable, eg. Stud walling or framing with a single layer of plasterboard.

DWELLINGHOUSES - INTEGRITY OF THE PROTECTED STAIRWAY

For dwellinghouses that are required to have a protected stairway, eg. Where a floor is more than 4.5m above ground level, further precautions will be necessary in situations where the extract ductwork penetrates the enclosing walls to a stair. Measures need to be taken to limit the risk of fire and smoke entering the extract ductwork and breaching the fire integrity of the escape route. In this situation, which is unlikely to be common in dwellinghouses, the following measures will be acceptable, either:

Ventilation ductwork passing through the enclosure to the protected stair to be constructed of rigid steel and adequately fire stopped to the surrounding structure, or

Where PVC ductwork passes through the enclosure to the protected stair, any of the following measures will be acceptable:

- An intumescent fire collar fitted at the point at which the ductwork crosses the enclosing structure to the protected stairway

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- Ductwork to be enclosed in fire resisting material, i.e. mineral fibre duct wrap or fire resisting board, suitably supported
- A fire damper to be fitted to all extract / air supply terminals (except to bathrooms opening directly off landings) that are connected to ductwork breaching the enclosure to the protected stairway

Consideration needs to be given to a fire within the ductwork breaking out not a fire breaking in to the ductwork.

FLATS - FIRE INTEGRITY OF THE FLOOR

This guidance presumes that the ductwork is either installed in the suspended ceiling void beneath a concrete floor or is in a service void beneath the main fire resisting lining in a timber floor. In this situation the ductwork penetrations are not considered to impair the fire resistance of the floor construction.

The penetration of the suspended ceiling lining and the installation of extract ductwork within the service void can be accepted without additional fire protection, ie. a fire damper or intumescent collar. The extract ductwork may be of any suitable material, ie. flexible or rigid PVC or metal.

FLATS - FIRE INTEGRITY OF THE PROTECTED ENTRANCE HALL

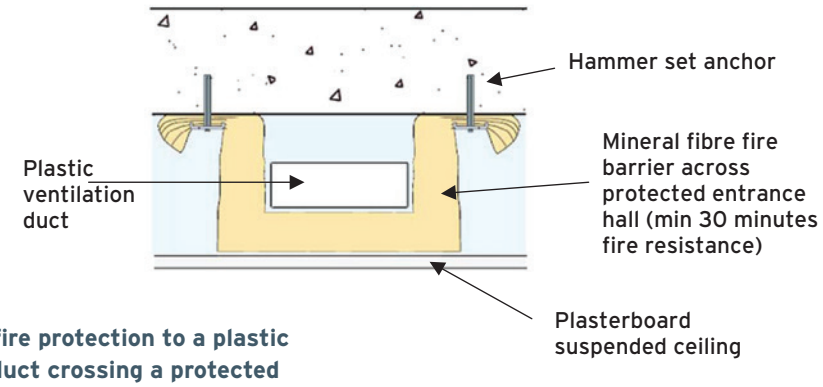
For flats that are required to have a protected entrance hall, further precautions will be necessary in situations where the ventilation ductwork penetrates the enclosing walls to the hall. Measures need to be taken to limit the risk of fire and smoke entering the extract ductwork and breaching the fire integrity of the escape route. In this situation, the following measures will be acceptable, either:

Ventilation ductwork passing through the enclosure to the protected entrance hall to be constructed of rigid steel and adequately fire stopped to the surrounding structure, or

Where PVC ductwork passes through the enclosure to the protected entrance hall, any of the following measures will be acceptable:

- An intumescent fire collar fitted at the point at which the ductwork crosses the enclosing structure to the protected entrance hall,
- Ductwork to be enclosed in fire resisting material i.e. mineral fibre duct wrap or fire resisting board suitably supported (see example for a mineral fibre enclosure),
- A fire damper to be fitted to all extract / air supply terminals (except to bathrooms opening directly off the protected entrance hall) that are connected to ductwork breaching the enclosure to the protected entrance hall.

Consideration needs to be given to a fire within the ductwork breaking out not a fire breaking in to the ductwork.



Example of fire protection to a plastic ventilation duct crossing a protected entrance hall

Refer to manufacturers details for fire resistance and fixing.

REFERENCES

Paragraph 2.16 to 2.17 of Approved Document B – Volume 1

Paragraph 2.18 of Approved Document B – Volume 2

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