



Getting it right on the night

Bill Allan looks at the installation of recessed ceiling luminaires and how to avoid the pitfalls



The NAPIT technical helpline regularly receives inquiries regarding the installation of recessed ceiling luminaires (ie downlighters) – the mains voltage (lv) and the extra-low voltage (elv) types – in domestic premises.

The concerns expressed involve how to comply with the Building Regulations Approved Document B Fire Safety and Approved Document E, Resistance to the Passage of Sound, when installing downlighters in England and Wales. There are similar documents in Scotland and Northern Ireland.

As downlighters commonly have a diameter of approximately 50 mm – sometimes greater – there is understandable concern that cutting a number of such holes in ceilings may compromise their fire resistance capability as well as their acoustic properties. In this article I will look at such areas of concern.

Fire compartments

Firstly, let's deal with the concept of fire compartments. Walls that separate semi-detached

houses or terraced houses are constructed as fire compartment walls and the houses are considered to be separate buildings. Where a domestic garage is attached to a house – or forms an integral part of it – the garage should be separated from the rest of the house. Most floors in all buildings, even two-storey private dwellings, will need fire resistance. The level of fire resistance will depend on the size of the building and its use. For example, in England and Wales, Approved Document B, Fire Safety of the Building Regulations, includes guidance that floors in two-storey dwellings achieve a fire rating of 30 minutes' fire resistance, whereas a floor in a large block of flats may require 60 minutes, 90 minutes, or even 120 minutes fire resistance, depending on its height.

Installing downlighters

When installing downlighters, the question arises as to whether or not they will adversely affect the fire resistance capability of the ceiling to the extent that it will not comply with the guidance given in Approved Document B, (England and Wales), or in equivalent



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documents in Scotland or Northern Ireland. A view commonly expressed is that additional protection is required. This may take the form of fire hoods or boxing in of the luminaires.

There appears to be some divergence of opinion regarding the acoustic properties of such means of protection and therefore some independent supporting evidence should be provided by the manufacturer that demonstrates its acoustic performance as well as its fire performance.

Alternatively, specially-designed downlighters are now available which have been independently tested and assessed as suitable for installation – without hoods or boxing in systems – in ceilings to floors for either 30 minutes, 60 minutes or 90 minutes fire resistance and which are also acoustically compliant. They incorporate an intumescent (expanding) seal which, under fire conditions, retards the spread of fire via the downlighter cut-outs.

In coming to a decision about such matters, NAPIT believes that professionals within the building industry must be vigilant against being influenced by commercially-driven advice from manufacturers of such products and that any claims should be backed by independent testing and/or assessment.

Tests

While independent research information is somewhat limited, tests on downlighters have been sponsored by a number of downlighter manufacturers, and by the manufacturers of hoods and boxing in systems, and carried out by independent test laboratories such as the Building Research Establishment. These tests have been undertaken on non-fire-rated downlighters with fire hoods and also on fire-rated downlighters.

Before selecting a particular type of downlighter, the manufacturer's literature must be checked for assurance that the downlighter has been subjected to appropriate tests to ensure that it will not compromise the fire resistance capability – as well as the acoustic capability – of the floor and ceiling. In the absence of such written assurance, downlighters should not be fitted.

Ceilings under roof spaces

A case could be made for building a plasterboard or metal box around luminaires or installing fire hoods in situations where downlighters are installed in ceilings under roof spaces, where debris or thermal insulation

may accumulate on top of the luminaire. When boxing in a luminaire, the manufacturer's recommendations should be followed to ensure it does not overheat. In the absence of any manufacturer's guidance, a gap of about 100mm around the luminaire and 75mm above is normally recommended to allow for heat dissipation.

Smoke alarms

It should also be mentioned that the Building Regulations 2000 and the Building Standards (Scotland) Regulations 1990 require all new and refurbished dwellings to be fitted with mains-operated smoke alarms. The installation of smoke alarms, which would after all be expected to operate within minutes of



Guidance concerning Smoke alarms in dwellings is contained in BS 5839, Part 6: 2004.

a smoke situation developing, are an important part of the strategy for protecting building occupants in case of fire.

Conclusion

It is important to check with the local authority building control what the required fire and acoustic performance is for the floor and ceiling and then to check with the manufacturer that the type of downlighter it is intended to install is suitable. The manufacturer must have adequate independent test and/or assessment evidence to support his claims. Downlighters must be fitted in accordance with the manufacturer's instructions.

left: Trevor Milner on the NAPIT technical hotline has received a series of inquiries about downlighters.