

# Supplying a detach

## Bill Allan responds to concerns raised on the NAPIT Helpline



The supply of electricity from a main building to detached outbuildings, such as garages or sheds, continues to concern some callers to the NAPIT technical helpline. There are several scenarios:

- the supply in the main building is TN-S or TN-C-S and there are no extraneous-conductive-parts in the detached outbuilding
- the supply in the main building is TN-S and there are extraneous-conductive-parts in the detached outbuilding
- the supply in the main building is TN-C-S and there are extraneous-conductive-parts in the detached outbuilding.

In this article, I'll consider the first situation and assume that the existing building are domestic premises with a TN-S or a TN-C-S supply. I'll further assume that the garage has no extraneous-conductive-parts (e.g. no water supply). In the next issue, we'll cover the other two scenarios.

### RCD protected socket-outlets

Whatever the detached building is used for, any socket-outlets within it must be considered as reasonably likely to be used to supply electrical

equipment for use outdoors. Therefore, in accordance with Regulation 471-16-01, such socket-outlets must be protected by a 30 mA residual current device (RCD). The question is sometimes asked about the location of the RCD. There are various ways of achieving this. The RCD protection could be provided within the house by:

- taking the garage supply from the RCD-protected side of a split-board in the house
- using an RCBO in the consumer unit in the house to protect the supply to the garage.

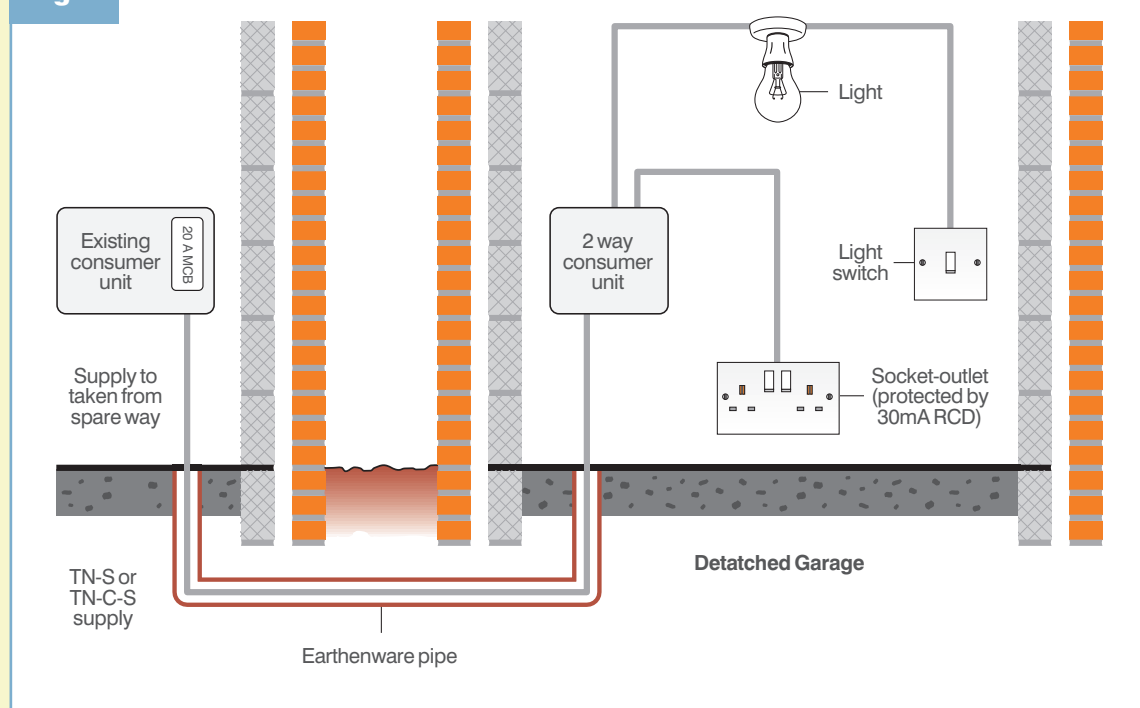
Alternatively, the RCD protection could be provided within the garage by:

- selecting a consumer unit which has RCD protection incorporated in the main switch
- using an RCBO in the consumer unit in the garage to protect the socket-outlet(s) within the garage
- installing socket-outlet(s) in the garage with RCD protection incorporated (called SRCDs).

### The supply cable

Considerable care must be given to the type of cable used to supply the outbuilding and how it is to be

Fig 1



# hed outbuilding

run. Typically, a swa (steel wire armoured) cable or another type of composite pvc insulated cable with suitable mechanical protection would be selected. For example, a flat twin and earth cable could be installed in an earthenware pipe. Otherwise, marking tape of cable tiles must be used. While BS 7671 contains no requirement for the minimum depth of underground cables, they must be buried deep enough to avoid being damaged by any groundwork which is reasonably foreseeable.

## Supplying a garage

Fig. 1 shows a composite (e.g. twin and earth) cable run from an existing consumer unit in the house to the detached garage. A spare way in the existing consumer unit has been utilised and a 20 A miniature circuit breaker (mcb) provides overcurrent protection. A two-way consumer unit has been installed in the garage to supply the lighting circuit and the RCD-protected socket-outlet. The supply to the house could be either TN-S or TN-C-S and in this case it would not matter in terms of designing the electrical supply for the garage.

## An alternative design

If a spare way was not available in the existing consumer unit, the supply could be taken from a switched fused connection unit connected to a ring final circuit within the house. An alternative to the use of the two-way consumer unit in the garage would be to terminate the supply cable in a double-pole switch in the garage for local isolation. From the double-pole switch, an SRCD socket-outlet could be supplied and the lighting could be supplied via a switched fused connection unit. Fig. 2 illustrates this arrangement.

## Conclusion

It is hoped that this article, together with the diagrams, has been helpful in providing clear guidance for the supply of electricity to a typical detached garage. Next time we'll consider how to supply a detached workshop which has extraneous-conductive-parts. We'll look first at using a TN-S supply then a TN-C-S supply.

