

# Isolating timer

*Bill Allan with words of wisdom on operation, installation and working in complete safety, in response to several questions on the NAPIT Helpline*

Extract fans, sometimes called timer fans, are commonly used in domestic premises to ventilate windowless bathrooms and toilets. For convenience, they are usually connected to the local lighting circuit. Where there is little or no natural lighting, it is necessary for the local lighting circuit to remain on in order to provide light for any maintenance or repairs to be carried out on the fan. The question is; how is the fan to be isolated so that such work can be carried out in complete safety? This article will address this issue.

## Operation and installation

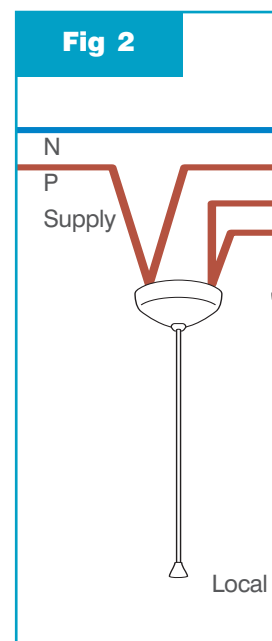
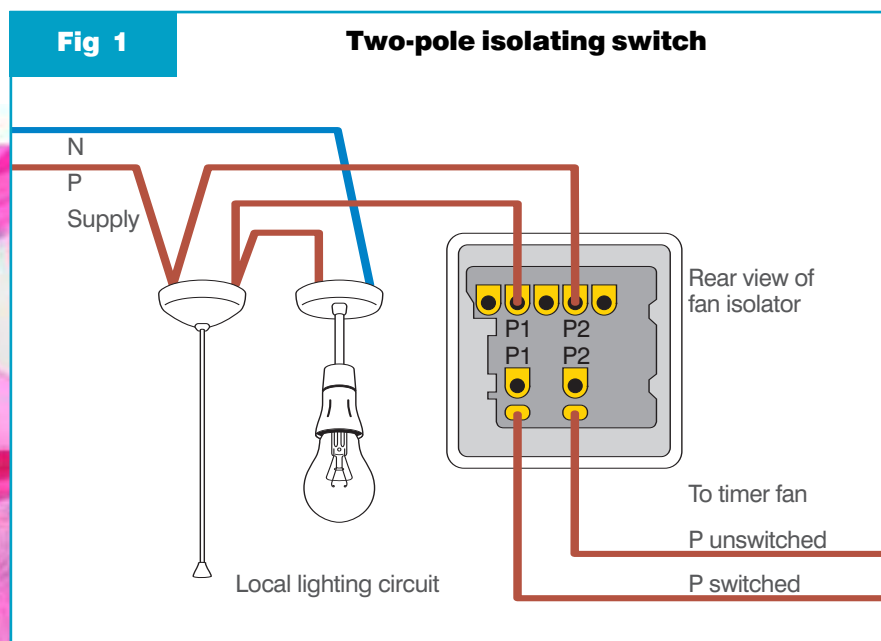
Timer fans normally start when the room lighting is switched on and, when the room lighting is switched off, they continue to run for a pre-set period. These fans require two separate phase conductors from the local lighting circuit, one being switched by the room lighting switch, the other phase conductor being unswitched. The unswitched phase conductor

enables the fan to operate for the pre-set period when the functional switch is operated to switch the light off.

Clearly then, this conductor remains live after the lighting circuit is switched off. While local isolation is not a specific requirement of BS 7671 (see the box article right), in the case of timer fans in windowless room it is recommended in the interests of safety.

## 2-pole and 3-pole isolating switches

A common practical solution to the problem of isolating timer fans is to use a 2-pole isolating switch to control both the switched and the unswitched phase conductors (see Fig. 1). If the neutral conductor is also to be switched, as, for example, where the installation forms part of a TT system, then a 3-pole isolating switch would be required (see Fig.2). Regulation 460-01-04 refers to this. Some types enable the isolator to be locked in the off position to facilitate fan maintenance.



# fans

Certain types of timer fan enable the fan to be unplugged from the control unit. This kind of arrangement provides an effective means of isolation and switching off for mechanical maintenance (see Regulations 537-02-10 and 537-03-05).

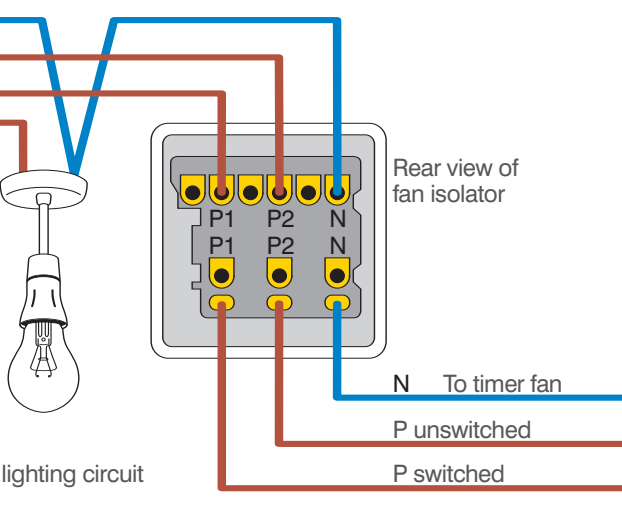
However, in such a case, the socket-outlet unit must comply with Regulation 553-01-04 – that is, it must be shuttered and, for an a.c. installation, preferably be of a type complying with BS 1363.

## Conclusion

BS 7671 contains requirements for isolation in Chapter 46, Section 476 and Section 537. In addition, IEE Guidance Note 2, Isolation and Switching provides helpful advice.

All relevant requirements of BS 7671 must be complied with. It is also important that the manufacturer's instructions are studied prior to carrying out this work.

### Three-pole isolating switch



# BS 7671 and isolation

Does BS 7671 require items of electrical equipment to be isolated locally? The answer is that there is no specific requirement for equipment to be isolated locally. However, careful consideration must be given to the positioning of isolating devices.

While it is important that all the requirements of BS 7671 regarding isolation are adhered to, the following comments regarding the isolation of single-phase electrical equipment are offered for consideration:

Regulation 461-01-01 requires that each circuit must be capable of being isolated from each of the live supply conductors, except as required by Regulation 460-01-04, which states that, for TN-S or TN-C-S systems, the neutral conductor need not be isolated. Regulation 537-02-02 permits the use of overcurrent protective devices, such as circuit-breakers to BS EN 60898 and RCBOs to BS EN 61009, to be used as isolators.

## Remote isolation

Where isolation is remote, precautions must be taken to prevent equipment from being inadvertently or unintentionally energised (Regulations 461-01-01 and 476-02-02). This effectively means that overcurrent devices must be capable of being locked in the off position. Where rewirable fuses to BS 3036 are used, the fuse controlling the circuit to be isolated could be removed and put in a safe place where it could not be replaced without the knowledge of the person working on the circuit.

This means of isolation would not be suitable for isolating a timer fan in a windowless room because, in isolating the fan, the lighting circuit which supplies it is also isolated.

The artificial light in a windowless room has been switched off when work is to be carried out on the fan. A lead light could be used to provide light but this introduces a trip hazard. The accompanying article (left) provides a practical solution.

