



TECHNICAL MANUAL

VERSION 10

17.

Electrical Services

Contents

Functional Requirements

17.1 Mains

ADDITIONAL FUNCTIONAL REQUIREMENTS

Workmanship

1. A commissioning certificate is required for any work completed by an approved installer.

Materials

No additional requirements.

Design

1. Electrical services - shall be designed, constructed and installed so that they:
 - a. Conform to Building Regulations
 - b. Do not adversely affect the structural stability of the building;
 - c. Prevent the entry of hazardous ground substances, external moisture or vermin;
 - d. Are constructed using non-hazardous materials;
 - e. Are durable and robust;
 - f. Are safe and convenient in use.

17.

Electrical Services

17.1 Mains

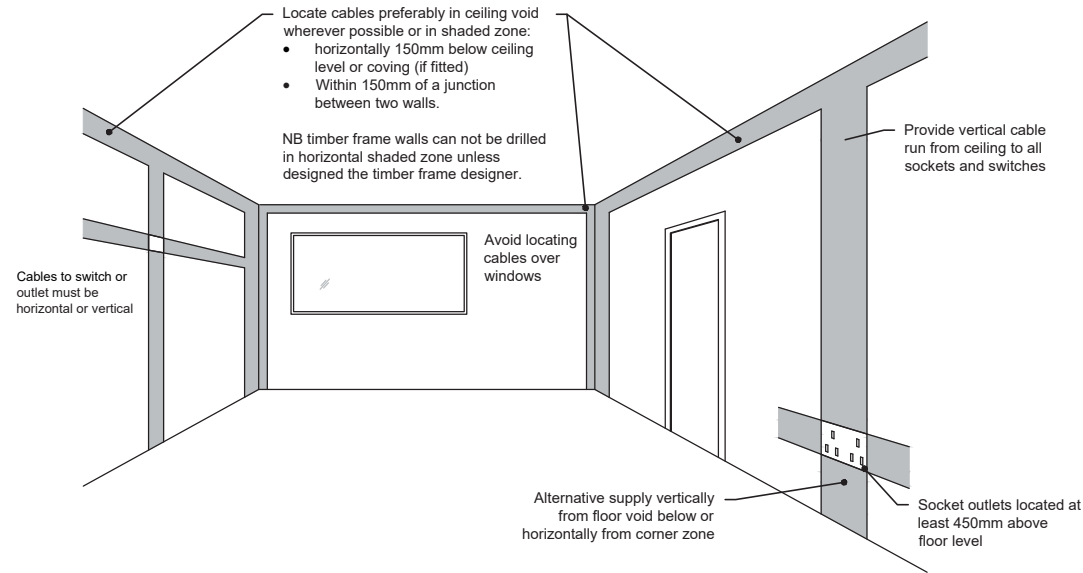
17.1.1 MAINS: Positioning and protection of cables and fittings

General

General provisions for installation:

- All electrical installations should be in accordance with the relevant regional Building Regulations and BS 7671.
- A suitable electrical service of the appropriate size for normal domestic use shall be provided.
- PVC-covered cables should not be in contact with polystyrene insulation.
- Electrical cables should not be diagonal, and their locations should be in accordance with the image below and current regional Building Regulations.
- Cables routed within the shaded zones must be in accordance with BS 7671 (see detail below).

Safety zones for electrical cables in walls



Supplementary earth bonding

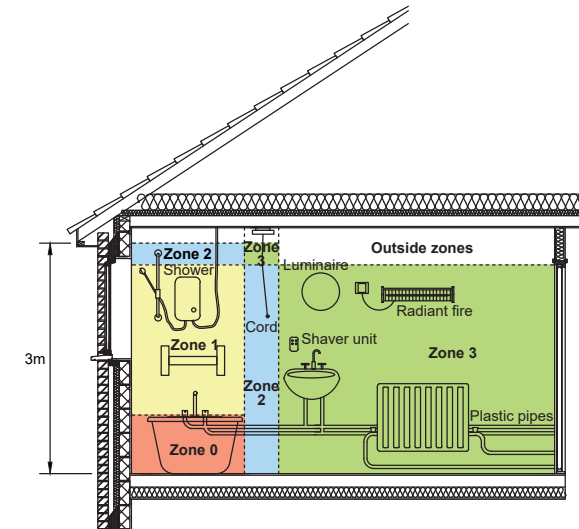
For domestic situations, supplementary bonding is required in areas of increased risk, which are rooms containing a bath or shower. It is not required within kitchens, utility rooms or washrooms.

Supplementary bonding is not required to the pipes or metal fittings attached where plastic pipes are used within a bathroom or shower room.

This also applies where short lengths of metal pipes connected to bathroom fittings are attached to plastic pipes.

Supplementary bonding is still required to electrical equipment such as electric showers or electric heaters. This type of bonding must also be connected to the protective conductor of all circuits supplying electrical equipment in the bathroom.

Supplementary bonding in a bathroom - plastic water supply pipe installation

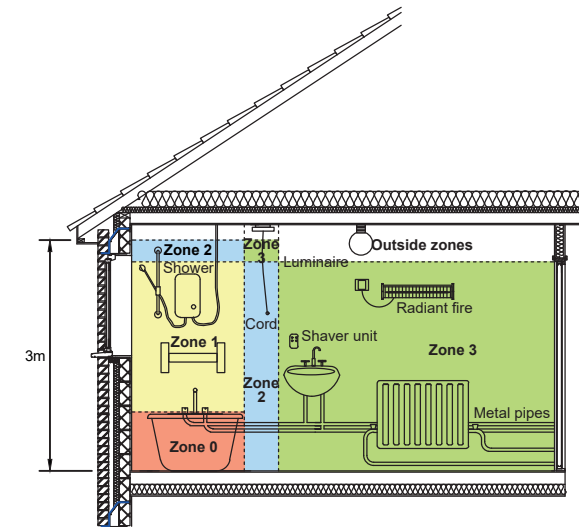


The protective conductors of all power and lighting points within the zones must be supplementary bonded. The bonding connection may be to an earth terminal of a switch or accessory supplying equipment.

Circuit protective conductors may be used as supplementary bonding conductors.

Supplementary bonding of short lengths of copper pipe installed where the pipes are visible is not necessary.

Supplementary bonding in a bathroom - metal water supply pipes



The protective conductors of all power and metal lighting points within the zones must be supplementary bonded to all conductive parts in the zones including metal waste, water and central heating pipes, metal baths, and shower basins.

Circuit protective conductors may be used as supplementary bonding conductors.

Metal baths not connected to a metal building structure do not require supplementary bonding if all metal pipes connected to them have been bonded.

Connection to pipes to be made with BS 951 clamps (complete with "Safety Electrical Connection" label).

17.1.2 MAINS: Socket and outlet requirements

Socket outlets

Socket outlets are to be conveniently positioned in close proximity to the TV aerial and telephone outlets, thus allowing for electrical equipment including TVs etc. Rooms should be provided with the following 13a outlets:

Room	Number of 13A Outlets	Comments
Kitchen/Utility	8	- Where separate kitchen and utilities are provided, each room should have at least 4 outlets. - Where appliances are provided, three outlets should be available for general use.
Dining room	4	
Living/family room	8	Two outlets should be near the TV ariel outlet.
Main bedroom	6	
Other bedrooms	4	
Landing	2	
Hall	2	

Note: the above refers to individual socket outlets e.g. a double socket would count as 2 outlets.

Cooking

Cooking appliances provided to the cooker space in a dwelling must be suitably switched and terminated with a minimum 30a electricity supply.

If a cooker panel is provided, it needs to be positioned to the side of the cooker space. A 13a socket outlet should be positioned at the cooker space where a gas supply is provided to the dwelling.

Co-axial cable

A concealed co-axial cable should be provided from the roof void to a terminal outlet within the main living room. Where the co-axial cable is not provided, a conduit and draw wire, or an alternative, should be provided. The provision of an aerial is not required.

Gas appliance

Where a gas appliance requires an electrical supply, a suitably fixed spur or socket outlet should be provided.

Light fittings

At least one fixed lighting outlet should be provided to all rooms. Areas greater than 25m² are to be provided with two fixed lighting outlets.

Halls, landings and staircases are to be provided with lighting outlets and two-way switches.

Down lighters and other flush-fitting attachments should not be installed through a ceiling if the ceiling is providing part of the required acoustic insulation or fire resistance to the property.

If down lighters are provided to ceilings below roof voids (excluding thatched roofs), precautions are to be taken to ensure that no fire risk is caused by the proximity of other materials.

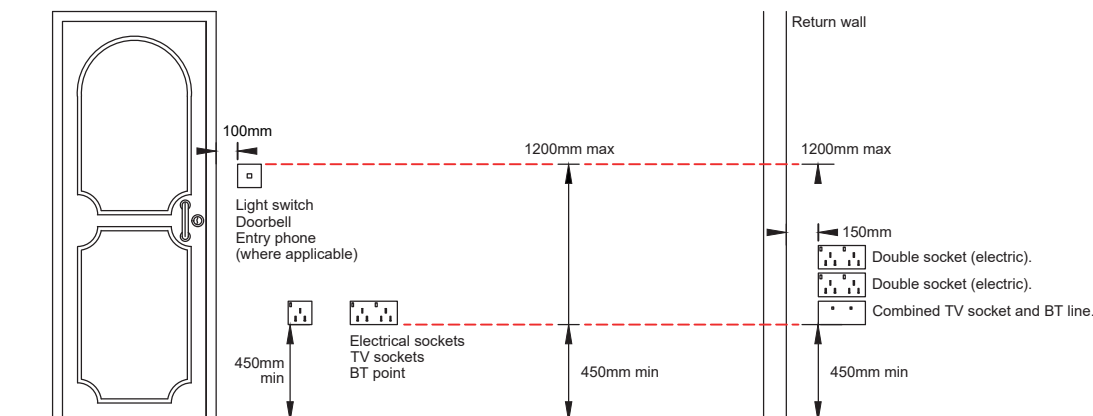
Passive infrared (PIR) sensors are to be used in common and external areas.

Positioning of sockets and switches

Sockets and switches should be positioned in accordance with the details on this sheet and the relevant regional Building Regulations.

Consumer units should be between 1350mm and 1450mm above floor level.

Heights of wiring accessories



Setting out sockets in proximity to internal walls

Notching and drilling

Floor joists should not be excessively notched or drilled. Further information can be found in the 'Upper Floors' guidance.

Concealed services

If the services are hidden in walls or floors, they need to be positioned so that any significant cracking of the surface cannot occur.

Services in framed walls

In addition to general provisions for the installation of services, the following are of particular note for timber frame construction external walls:

- The routing and termination of services should not affect the fire resistance of the structure.
- Electrical services are to be rated for their location with consideration for insulation.
- Service penetrations through the VCL should be tight fitting to reduce air leakage and the passage of moisture vapour.
- Avoid running electrical services in the external wall cavity, except for meter tails.
- Services should be protected with metal plates if they pass within 25mm from face of stud.
- Adequate allowance for differential movement to occur without causing damage should be provided for rigid services rising vertically through a building.
- Services that pass through the external wall cavity and provide an opening (such as meter boxes) should be enclosed with a cavity barrier and protected with a cavity tray.

Further guidance can be found in the 'Internal Walls' and 'Upper Floors' guidance.

Chasing of masonry cavity walls

If chases in walls are necessary, their depth should not exceed:

- One-sixth the thickness of the single leaf for horizontal chases.
- One-third the thickness for vertical chases.

Hollow blocks should not be chased unless specifically permitted by the manufacturer.

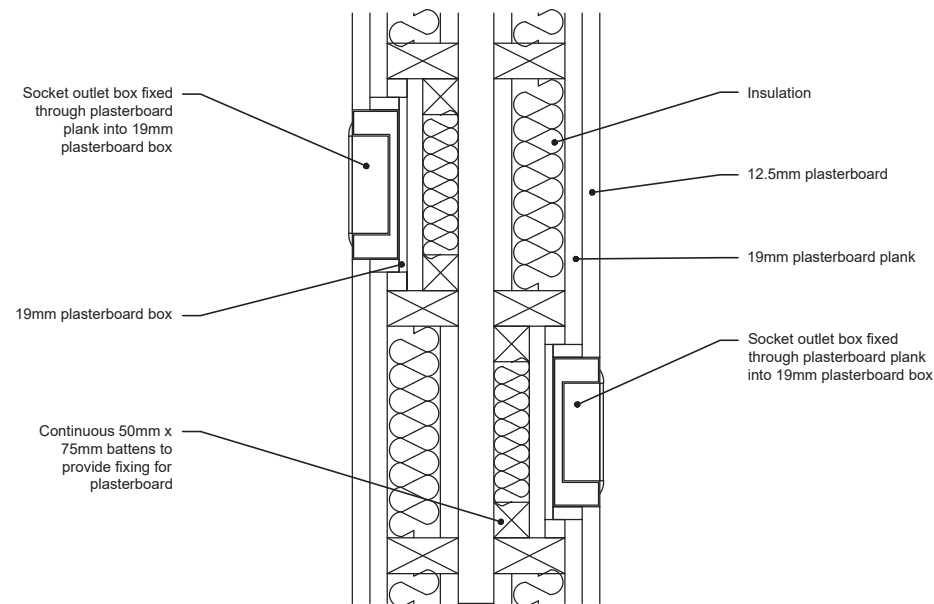
Fire stopping

Fire stopping is required around services that penetrate fire-resisting floors, walls or partitions.

If proprietary systems are used, they should be installed using the manufacturer's recommendations.

Further guidance can be found in the 'Internal Walls' and 'Upper Floors' guidance.

Staggered services on party walls (section plan view)



Please note: The installation services within a party wall should not compromise the sound or fire resistance.

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