

**GUIDANCE ON THE USE OF
APPLIANCES IN BATHROOMS
AND SHOWER ROOMS**

Version 1 September 2010

1. Introduction

This Code of Practice is intended to provide information on the installation of appliances in bathrooms or shower rooms in household and similar locations only.

The wiring practice in British bathrooms has been brought nearer to the practice used elsewhere in Europe. The vague references to switches etc. not being accessible by those using a bath have been replaced with a system of zoning where distances from the bath or shower basin define zones. The rules state what can be installed in the zones thereby making it easier for the installer to plan the provision of appliances in such rooms.

The current *IEE Wiring Regulations* (17th Edition) are BS 7671:2008. This document gives guidance and is not a substitute for knowledge of the Wiring Regulations and their proper application by a competent person. Please note that specific requirements relating to bath and shower rooms are found in Section 701. Also, there have been major changes between the 16th and 17th Editions of the Regulations including an allowance for 13A sockets for the first time and the removal of Zone 3.

NOTE: The provisions for installation of appliances stated in this Code require that the room containing a bath or shower (and this includes bedrooms with a shower cubicle) has been wired or upgraded to the standard of the 17th Edition of the Wiring Regulations. Where an installation is to an earlier edition then the limitations of that edition prevail.

2. Protection against Water

There is always some potential for equipment and wiring accessories to be splashed during the use of a bath or shower in a room containing one of these facilities. The wiring rules now take into account international standards,¹ so that equipment installed adjacent to baths and showers are required to meet recognised levels of water resistance. These levels of protection are denoted on equipment by a coding that is prefixed by the letters IP and usually followed by two numbers, or an X and a number. An X indicates that the mechanical protection is not defined.

For the purposes of bathrooms and water protection, the first numeral of the IP rating is unimportant and whether it has an X or a number can be disregarded when selecting equipment. Examples are:

- IPX4 Denotes that the product is splash-proof from all sides;
- IPX5 Denotes that the product is capable of being subjected to low pressure jets of water from a hose;
- IPX7 Denotes that the product is capable of temporary immersion down to 1 metre.

¹ BS EN 60529 gives details of the IP tests
V2010/1

If IPX4 is specified as a requirement, it is of course acceptable that an IPX5 or higher rated product can be used. The higher the number, the greater is the degree of water protection provided. The IP rating is usually marked on the rating plate or can be found in the manufacturer's installation instructions. Some appliances still use the drip symbols which are shown below:

IPX4 = 

IPX5 = 

IPX7 = 

3. Zones in Bathrooms

The bathroom is divided into zones, which are limited by the bath or shower basin and the height above the floor.

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|--------|--|
| Zone 0 | Space in the bath or shower basin that can retain water; |
| Zone 1 | Space above Zone 0 up to 2.25m above the floor, e.g. space above the bath or shower cubicle; |
| Zone 2 | Space adjacent to the bath or shower basin up to 0.6m horizontal distance and up to 2.25m above the floor; |
| Zone 3 | This zone no longer exists and is treated as outside the zones, i.e. normal rules apply. (But see about socket-outlets.) |

Beyond Zone 2, and when no zone is shown on the diagrams, there are no special requirements except that within the room no socket-outlets other than a shaver supply unit shall be located any closer than 3m from the boundary of Zone 1. All final circuits and thus all equipment have to be permanently protected by a 30 mA RCD.

The diagrams at the end of this Code of Practice (included with permission from IET) show the extent of the zones.

There are slightly different rules for zones in shower rooms that have a sealed floor with no shower basin and reference will need to be made to BS 7671.

4. Product Guidance

This Code of Practice states how appliances can be installed in a particular zone. It follows, therefore, that appliances allowed in Zone 1 can be installed in Zone 2, and appliances allowed in Zone 2 can be installed beyond the zone boundaries.

Under the revised Wiring Regulations, controls on appliances are not limited to pull-cord switches. Switches and controls are permitted on appliances installed within the zones provided that the appliance is suitable for use within the zone, including complying with the IP requirements.

Note: a pull-cord is a string or similar component that is used to activate a switch.

When installing appliances, it must be remembered that wiring accessories (e.g. wall switches, flexible cord outlets and fused connection units) do not normally have an IP rating. Thus they can only be installed beyond Zone 2. Even the traditional pull-cord wall or ceiling switch to BS 3676 has to be located beyond Zone 2 (i.e. above 2.25m), but the pull-cord itself can drop into Zone 1 or Zone 2.

Note: The situation with plugs and sockets now allows standard BS 1363 socket outlets to be installed in a bathroom but no closer than 3m from Zone 1. (This is a peculiar UK/Ireland requirement.)

Appliances fitted with a flexible cord will need to be connected to a wiring accessory beyond Zone 2 but if you want to use the fitted plug the socket must be 3m from the edge of Zone 1 or the plug removed and the flexible cord directly fitted to a fused connection unit or other cable outlet accessory.

At no time should an extension lead be used to connect an appliance in a bathroom particularly one connected to a socket-outlet outside the bathroom.

Note: a flexible cord is an insulated conductor with standard cores suitable for the electrical connection of portable appliances.

In areas likely to have water jets used for cleaning (e.g. communal shower facilities at sports centres or caravan sites) the IP rating for appliances in Zones 1 and 2 is required to be IPX5 or greater.

All appliances supplied by means of a flexible cord connected to a fixed accessory do not need to be separately connected to the local supplementary bonding for the bathroom or shower room. The fixed accessory is connected and that is sufficient. However, within the 2008 Wiring Regulations the need for supplementary bonding is optional providing that the requirements stated in 701.415.2 are met.

5. Ventilation and Heating Appliances, including Heated Towel Rails

5.1 Zone 1

In Zone 1, an SELV fan of IPX4 may be used with the SELV source being located beyond Zone 2.

It is, however, possible to install a 230 V IPX4 fan in Zone 1 if it is not possible to locate it in the adjacent Zone 2 (i.e. it can only be reasonably located in Zone 1). When they are installed in Zone 1, justification needs to be added to the installation certificate.

5.2 Zone 2

A 230 V fan or heating appliance of IPX4 construction may be used.

Note: Zone 2 includes the area of a window adjacent to the bath provided it is recessed with a sill. Thus many bathroom fans will be in Zone 2 if they are mounted in a window in Zone 1.

6. Water Heaters, Electric Showers, Shower-Pumps and Whirlpool Baths

6.1 Zone 1

230 V IPX4 appliances may be installed.

The location of a separate wiring accessory switch for water heaters is restricted by the lack of an IP rating on such products so these will usually be sited outside the zones.

When a shower-pump is fitted under a bath, and the bath has a side panel which requires a tool to remove it, the underside of the bath is outside the zones. Therefore a shower-pump without an IP rating can be fitted in this location.

7. Other Appliances

There is no longer a restriction on the use of appliances in bathrooms though they need to be suitable for the purpose and meet the IPX4 or IPX5 requirements if sited in Zone 2. Manufacturer's instructions will need to be adhered to and consideration will need to be taken of the humidity that the room might reach which may have a detrimental effect on the life of the appliance.

Note: shavers may be used in bathrooms provided they are supplied by a shaver unit, which is allowed to be installed in Zone 2 even without an IP rating.

Washing machines, tumble dryers, washer-dryers and other appliances rated IPX4 may be sited in Zone 2. However, since there is a restriction on the location of socket-outlets they may have to be supplied via a fused connection unit sited beyond Zone 2.

Do not extend the flexible cords on appliances or use any form of cable extension device such as a cable reel to supply an appliance.

8. SELV Appliances

An SELV appliance may be used in Zone 1 provided that the SELV source is installed beyond Zone 2. Plug-connected SELV products are acceptable. The SELV socket-outlet must be located in Zone 2 or beyond. The Regulations require SELV appliances to meet IP ratings for the zones in which they are installed.

For definitive statements from the regulations see BS 7671:2008.

These regulations give details for a wider range of installations than that covered by this Code.

Copies of BS 7671 are available from:

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| <p>The Institution of Engineering and Technology P.O. Box 96 Stevenage SG1 2SD UK Tel +44 (0)1438 767 328 http://www.theiet.org/publishing/wiring-regulations/</p> | <p>The British Standards Institution 389 Chiswick High Road London W4 4AL UK Tel: +44 (0)20 8996 9001 Fax: +44 (0)20 8996 7001 http://shop.bsigroup.com/</p> |
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Fig 701.1 - Examples of zone dimensions (plan)

NOT TO SCALE (See Regulation 701.32 for definitions of zones)

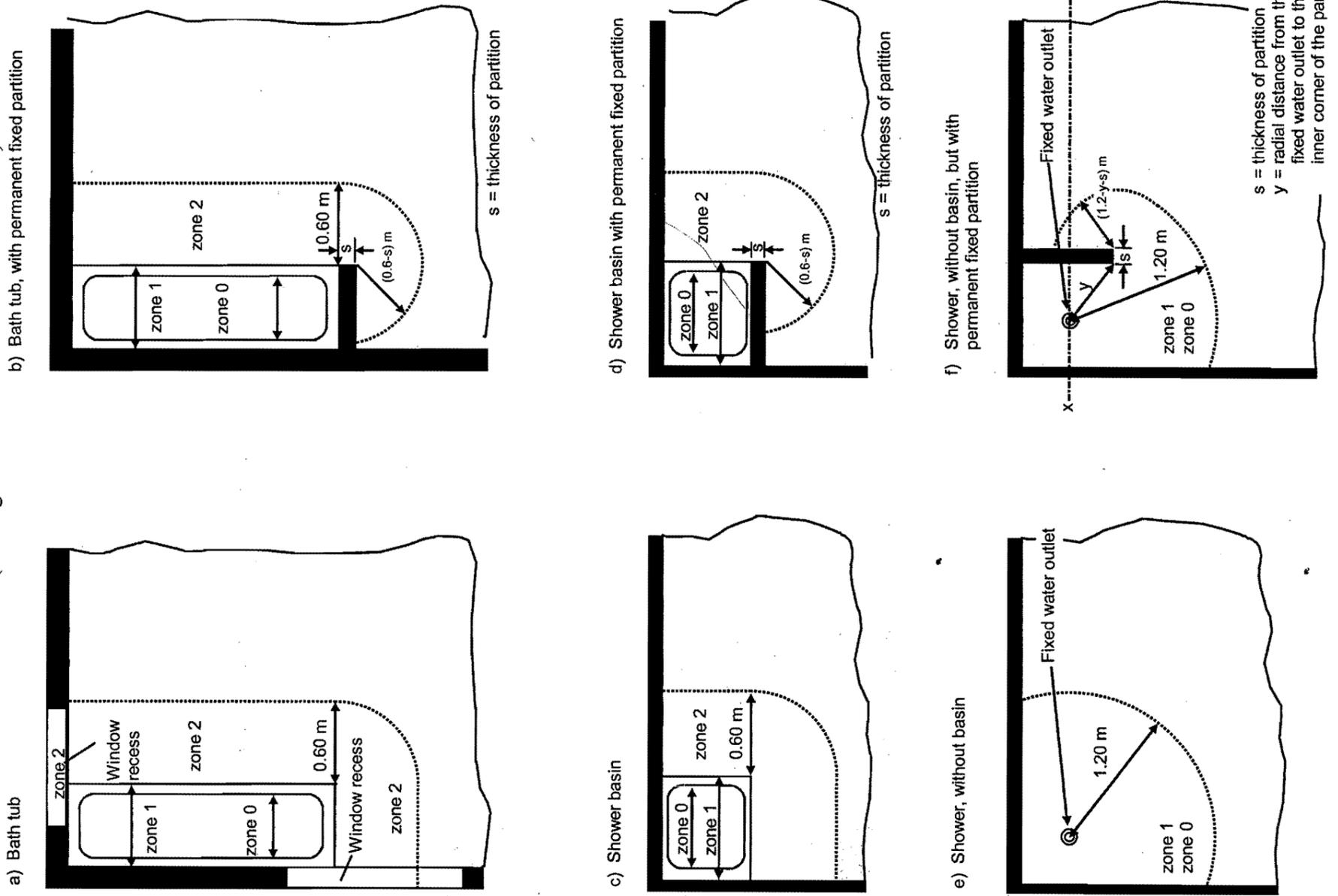
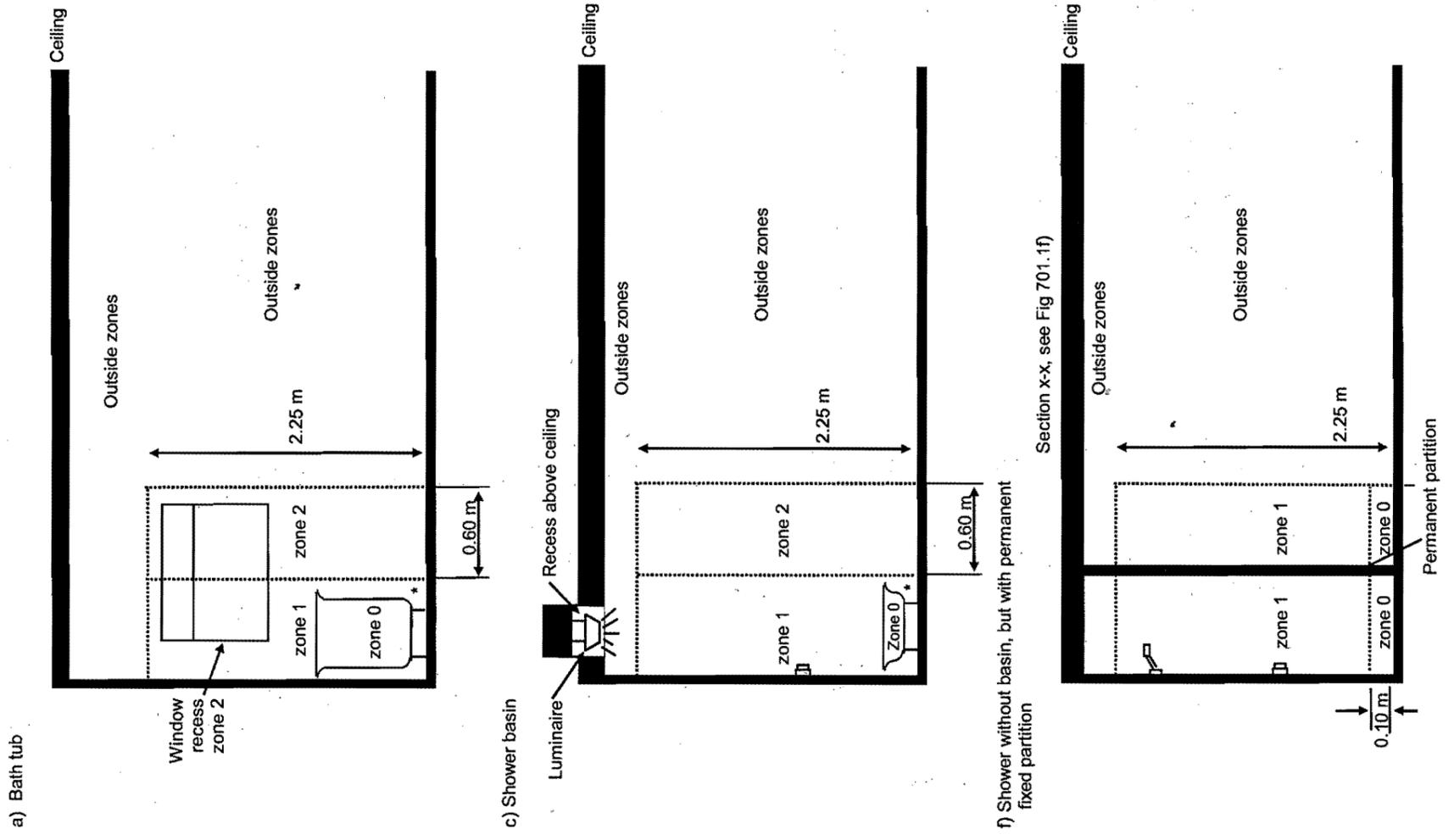


Fig 701.2 - Examples of zone dimensions (elevation)

NOT TO SCALE (See Regulation 701.32 for definitions of zones)



* Zone 1 if the space is accessible without the use of a tool.
 Spaces under the bath accessible only with the use of a tool are outside the zones.