



*The Association of Manufacturers
of Domestic Appliances*

GUIDANCE ON THE USE OF APPLIANCES IN BATH AND SHOWER ROOMS

An AMDEA Code of Good Practice.

Introduction

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

With the issue of amendment 3 to BS 7671:1992, more usually known as the Sixteenth Edition of the IEE *Wiring Regulations*, the wiring practices in British bathrooms was 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 measured 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.

Amendment 3 to the *Wiring Regulations* was introduced in April 2000. Subsequently another amendment has made further slight changes to the requirements relating to bathrooms; they became effective as BS 7671:2001 in December 2001.

This document gives guidance and is not a substitute for knowledge of the Wiring Regulations and their proper application by a competent person.

Protection Against Water

Bathrooms and rooms containing a shower have the potential for equipment and wiring accessories to be splashed during use of the 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.

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** = 

¹ BS EN 60529 gives details of the IP tests.

Zones in Bathrooms

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

Zone 0 – space in the bath or shower basin that can retain water.

Zone 1 – space above **zone 0** up to 2.25 m above the floor, e.g. space above the bath or shower cubicle.

Zone 2 – space adjacent to the bath or shower basin up to 0.6 m horizontal distance and up to 2.25 m above the floor.

Zone 3 – space adjacent to **zone 2** up to 2.4 m horizontal distance and up to 2.25 m above the floor.

When the ceiling height exceeds 2.25 m, there are zones up to 3.00 m. i.e. above **zone 1** is **zone 2** and above **zone 2** is **zone 3**.

Beyond **zone 3**, and when no zone is shown on the diagrams, there are no special requirements except that within the room no provision for portable equipment shall be provided by way of standard socket-outlets. This does not however apply to a room, such as a bedroom, which has had a shower cubicle installed. In this case, standard socket-outlets may be installed but they have to be permanently protected by a 30 mA R.C.D. that may be incorporated in the socket-outlet.

The diagrams on page 7 show the extent of the zones.

There are slightly different rules for shower rooms which have a sealed floor with no shower basin. However, these are a rare configuration in the UK and reference will need to be made to BS 7671.

Product Guidance

This guide states how appliances can be installed in a particular zone. It follows, therefore, that appliances allowed in **zone 1** can be installed in **zones 2 and 3**, appliances allowed in **zone 2** can be installed in **zone 3** and beyond.

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 in **zone 3** or beyond. Even the traditional pull-cord wall or ceiling switch to BS 3676 has to be located in **zone 3**, but the pull-cord itself can drop into **zone 1** or **zone 2**.

Appliances fitted with a flexible cord will need to be connected to a wiring accessory in **zone 3**.

Note: A flexible cord is an insulated conductor with stranded 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 sport 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 required for the bathroom or shower room. The fixed accessory is connected and that is sufficient.

Ventilation and Heating Appliances, including Heated Towel-Rails

Zone 1

In **zone 1**, an SELV fan of **IPX4** may be used with the SELV source being located in **zone 3** or beyond.

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**). However, it must be protected by 30 mA R.C.D. When they are installed in **zone 1**, justification needs to be added to the installation certificate.

Zone 2

A 230 V fan or heating appliance of **IPX4** construction may be used but it does not have to be protected by a 30 mA R.C.D.

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**.

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

Zone 1

230 V **IPX4** appliances may be installed without the need for a 30 mA R.C.D. protection.

Note: Manufacturers have recommended the installation of an R.C.D. as an additional safety measure for many years, but they are not required by BS 7671.

The location of a separate wiring accessory switch for water-heaters is restricted by the lack of an IP rating on such products.

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.

Other Appliances

Provided the appliance is not portable, i.e. it is fixed or transportable, it may be used in the bathroom as long as it is installed in **zone 3** or beyond. It must be directly wired or connected by means of a flexible cord to a fused connection unit, a switch outlet plate or a cable outlet plate, All appliances covered by this section need to be protected by a 30 mA R.C.D.

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** if they cannot be reasonably sited in **zone 3** or beyond. When they are installed in **zone 2**, it is advisable to state the justification on the installation certificate.

SELV Appliances

An SELV appliance may be used in **zone 1** provided that the SELV source is installed in **zone 3** or beyond. 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 the IP ratings for the zones in which they are installed.

For definitive statements from the regulations see BS 7671:2001. These regulations give details for a wider range of installations than that covered by this guide.

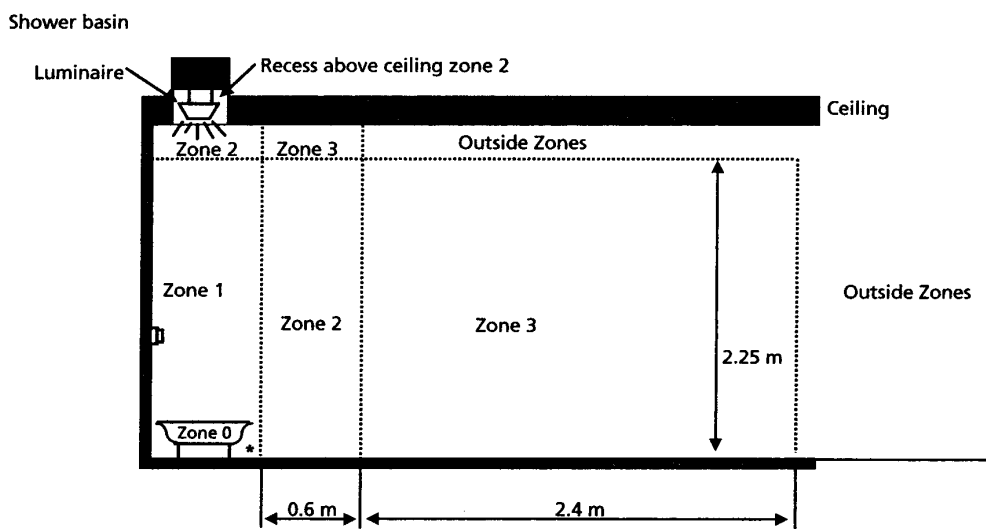
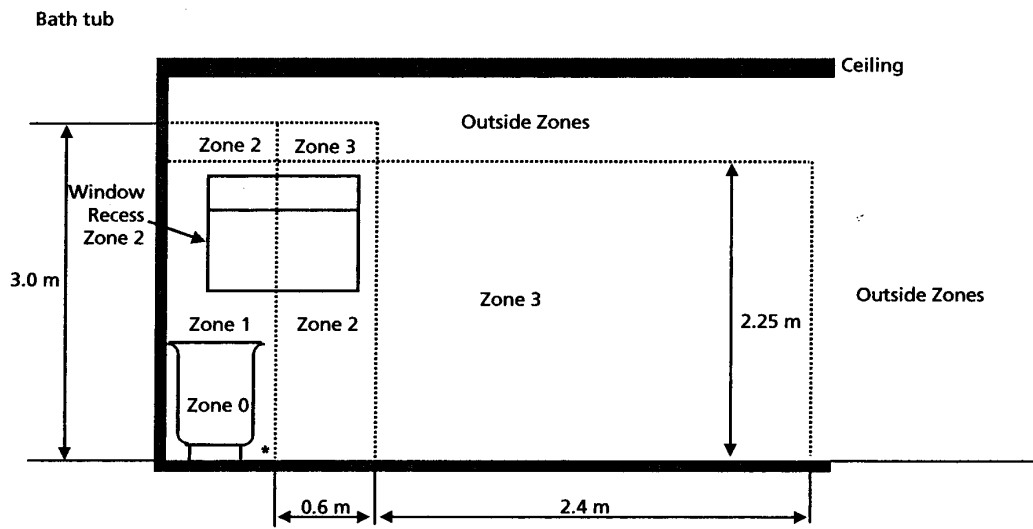
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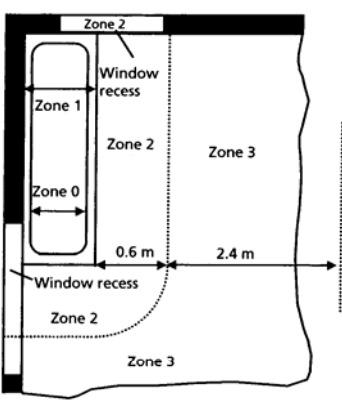
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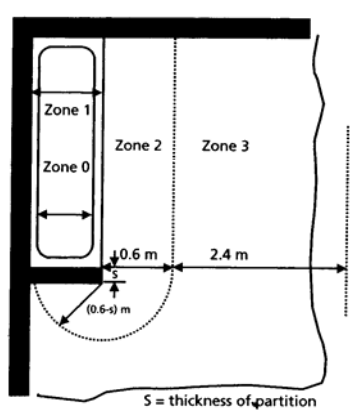


Elevation View

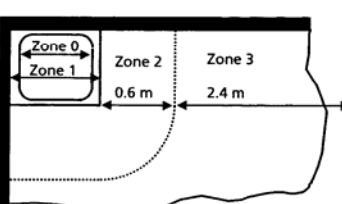
a) Bath tub



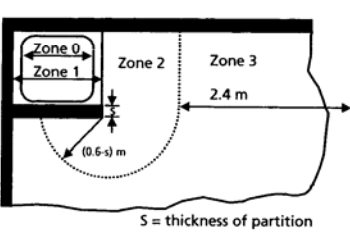
b) Bath tub, with permanently fixed partition



c) Shower basin



d) Shower basin with permanently fixed partition



Plan View



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