

BRITISH STANDARD

Sanitary installations –

Part 3: Code of practice for the selection, installation and maintenance of sanitary and associated appliances

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Summary of pages

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Foreword

Publishing information

This British Standard was published by BSI and came into effect on 31 October 2006. It was prepared by Technical Committee B/503, *Sanitary appliances*.

Supersession

Together with BS 6465-1, this part of BS 6465 supersedes BS 6465-1:1994, which is withdrawn.

Relationship with other publications

BS 6465, *Sanitary installations*, is issued in three parts:

- *Part 1: Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances;*
- *Part 2: Code of practice for space requirements for sanitary appliances;*
- *Part 3: Code of practice for the selection, installation and maintenance of sanitary and associated appliances.*

Part 1 provides recommendations on the design of sanitary facilities and scales of provision of sanitary and associated appliances in new buildings and buildings undergoing major refurbishment. It also covers the recommended scale of provision of portable toilets.

Part 2 provides recommendations on the space requirements around all sanitary appliances to ensure convenience in use and to facilitate maintenance and cleaning.

Information about this document

This part has been prepared to reflect general changes in the selection, installation and maintenance of sanitary and associated appliances.

Use of this document

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This standard does not cover all the legal requirements of sanitary installations, and attention is drawn to acts, regulations and other statutory requirements (see Annex A), which relate to sanitary and associated appliances, water supplies and drainage.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Section 1: General

1 Scope

This part of BS 6465 gives recommendations on the selection, installation and maintenance of the most commonly used sanitary and associated appliances to be provided in new and refurbished buildings.

It does not cover specialist appliances, such as those used for laundry or catering, or those found in hospitals, health spas, laboratories and similar establishments. It does not cover cultural variations/preferences.

NOTE 1 The recommendations for sanitary and associated appliances in hospitals and other healthcare buildings are covered by the general recommendations of this standard. However, information on the scale of provision, ergonomic data and the special requirements for sanitary and associated appliances in hospitals can be found in the various guidance documents produced by NHS, e.g. Health Technical Memorandum 64: Sanitary assemblies [1].

This part of BS 6465 does not deal with the detailed provisions of water supply, sanitary pipework or drainage.

NOTE 2 Information on water supply is covered in BS 6700 and BS EN 806 (all parts); sanitary pipework in BS EN 12056-2; and drainage in BS EN 752-1, BS EN 752-2, BS EN 752-3 and BS EN 752-4.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1125, *Specification for WC flushing cisterns (including dual flush cisterns and flush pipes)*

BS 1189, *Specification for baths made from porcelain enamelled cast iron*

BS 1206 *Specification for fireclay sinks – dimensions and workmanship*

BS 1212-2, *Float operated valves – Part 2: Specification for diaphragm type float operated valves (copper alloy body) (excluding floats)*

BS 1212-3, *Float operated valves – Part 3: Specification for diaphragm type float operated valves (plastics bodied) for cold water services only (excluding floats)*

BS 1212-4, *Float operated valves – Part 4: Specification for compact type float operated valves for WC flushing cisterns (including floats)*

BS 1254, *Specification for WC seats (plastics)*

BS 1329, *Specification for metal hand rinse basins*

BS 1390, *Specification for baths made from vitreous enamelled sheet steel*

- BS 1876, *Specification for automatic flushing cisterns for urinals*
- BS 4305-1, EN 198, *Baths for domestic purposes made of acrylic material – Part 1: Specification for finished baths*
- BS 4880-1, *Specification for urinals – Part 1: Stainless steel slab urinals*
- BS 5505-3, *Specification for bidets – Part 3: Vitreous china bidets over rim supply only – Quality, workmanship and functional dimensions other than connecting dimensions*
- BS 5506-3, *Specification for wash basins – Part 3: Wash basins (one or three tap holes) – Materials, quality, design and construction*
- BS 5520, *Specification for vitreous china bowl urinals (rimless type)*
- BS 5906, *Code of practice for storage and on-site treatment of solid waste from buildings*
- BS 6100-3.3, *Glossary of building and civil engineering terms – Part 3: Services – Section 3.3: Sanitation*
- BS 6340 (all parts), *Shower units*
- BS 6465-1, *Sanitary installations – Part 1: Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances*
- BS 6465-2, *Sanitary installations – Part 2: Code of practice for space requirements for sanitary appliances*
- BS 6675, *Specification for servicing valves (copper alloy) for water services*
- BS 6700, *Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages*
- BS 7357, *Specification for 7.5 L WC flushing cisterns*
- BS 7671, *Requirements for electrical installations – IEE Wiring Regulations. Sixteenth edition*
- BS 8000-13, *Workmanship on building sites – Part 13: Code of practice for above ground drainage and sanitary appliances*
- BS 8000-15, *Workmanship on building sites – Part 15: Code of practice for hot and cold water services (domestic scale)*
- BS 8300:2001, *Design of buildings and their approaches to meet the needs of disabled people – Code of practice*
- BS 8313, *Code of practice for accommodation of building services in ducts*
- BS EN 31, *Pedestal wash basins – Connecting dimensions*
- BS EN 32, *Wall-hung wash basins – Connecting dimensions*
- BS EN 33, *Pedestal W.C. pans with close-coupled flushing cistern – Connecting dimensions*
- BS EN 35, *Pedestal bidets with over-rim supply – Connecting dimensions*
- BS EN 36, *Wall-hung bidets with over-rim supply – Connecting dimensions*

BS EN 37, *Pedestal W.C. pans with independent water supply – Connecting dimensions*

BS EN 111, *Wall-hung hand rinse basins – Connecting dimensions*

BS EN 232, *Baths – Connecting dimensions*

BS EN 251, *Shower trays – Connecting dimensions*

BS EN 695, *Kitchen sinks – Connecting dimensions*

BS EN 997:2003, *WC pans and WC suites with integral trap*

BS EN 12056-4, *Gravity drainage systems inside buildings – Part 4: Wastewater lifting plants – Layout and calculation*

BS EN 12109:1999, *Vacuum drainage systems inside buildings*

BS EN 12764, *Sanitary appliances – Specification for whirlpool baths*

BS EN 13310, *Kitchen sinks – Functional requirements and test methods*

BS EN 14296, *Sanitary appliances – Communal washing troughs*

BS EN 14428, *Shower enclosures – Functional requirements and test methods*

BS EN 14528, *Bidets – Functional requirements and test methods*

BS EN 60335-2-60, *Specification for safety of household and similar electrical appliances – Part 2-60: Particular requirements for whirlpool baths*

BS EN ISO 11600, *Building construction – Jointing products – Classification and requirements for sealants*

3 Terms and definitions

For the purposes of this part of BS 6465 the terms and definitions given in BS 6100-3.3 and the following apply.

3.1 associated appliance

non-plumbed appliance used in conjunction with sanitary appliances

COMMENTARY ON 3.1

Examples of associated appliances include hand-driers and sanitary disposal units.

3.2 bathroom

room primarily used for washing, which contains a bath and/or shower, and can contain a washbasin, bidet and WC

3.3 frame

metal structure used to support an individual sanitary or associated appliance or a collection of appliances complete with their associated pipework

3.4 private dwelling

dwelling for people living as a family or single household

3.5 public toilet

toilet for use of the public in a public area, which can be on or off street, and which is usually provided and maintained by a local authority or other corporate body

COMMENTARY ON 3.6

Sanitary appliances, include for example, WCs, urinals, baths, showers, washbasins, sinks, bidets, and drinking fountains. It includes appliances that are not connected to a water supply or a drain, for example, waterless urinals.

3.6 sanitary appliance

fixed appliance normally connected to a water supply and to a drain, used for the provision of water, or for cleaning, or for wastewater disposal

3.7 sanitary disposal unit

container for disposal of sanitary protection, disposable nappies or incontinence protection products

3.8 toilet

room in which a WC or WCs are installed and which is used solely for excretory purposes and associated washing

3.9 urinal

sanitary appliance used by men for reception and disposal of urine

3.10 washbasin

basin for general washing, or small basin used for handwashing only

3.11 washing trough

washbasin, of elongated rectangular shape in plan, at which more than one person can wash at the same time

3.12 waste disposal unit

electrically operated device that reduces kitchen or other waste and discharges to drain using a flow of water

3.13 waterless closet

WC that does not require a water flush and is not normally connected to a traditional drainage system

3.14 waterless urinal

urinal that is not connected to a water supply

3.15 WC (water closet)

pan receptacle for faecal matter, urine and toilet paper, plus any associated flushing device, plumbing and fittings

3.16 wet room

shower room with waterproof walls and floor, which allows showering without crossing a threshold

COMMENTARY ON 3.15

A cistern is an example of an associated flushing device.

4 Sanitary and associated appliances

4.1 General

Sanitary and associated appliances should be selected and installed to allow subsequent disconnection for maintenance or replacement.

4.2 Appliances subjected to heavy use

Where sanitary and associated appliances will be subjected to heavy use, they should be robust in construction.

4.3 Space heating devices

Care should be taken in locating any radiators or other space heating devices. Radiators should not be located close to urinals as splashing can lead to odours and damage to the surface of the radiator. Radiators should not be located close to WCs due to the danger of contact of bare skin with hot surfaces. Although radiators can be incorporated into bath panels conventional radiators should not be installed against a bath.

4.4 Drainage

In situations where appliances are located where conventional gravity drainage would be undesirable or impossible, consideration should be given to the use of small-bore-pumped discharge units (macerators) that conform to BS EN 12056-4 or vacuum drainage systems that conform to BS EN 12109.

NOTE 1 WCs incorporating small-bore-pumped discharge units require an electrical supply and are limited in the waste products they can handle, therefore, the buildings regulations listed in Annex A require that a conventionally plumbed WC is also incorporated into the building.

NOTE 2 Vacuum drainage systems can include vacuum toilets that use minimal water and provide ventilation during operation.

4.5 Facilities for disabled people

Sanitary and associated appliances for disabled people should be selected and installed in accordance with BS 8300.

NOTE Attention is drawn to the following regulations, which have additional requirements for the provision of toilets, baths and showers for disabled people:

- *Building Regulations 2000: Approved Document M – Access and facilities [2], for England and Wales;*
- *Building (Scotland) Regulations 2004: Technical Handbook – Non-domestic (see Section 3) [3]; and*
- *Building (Scotland) Regulations 2004: Technical Handbook – Domestic (see Section 3) [4], for Scotland;*
- *Building Regulations (Northern Ireland) 2000 Technical booklet R [5], for Northern Ireland.*

Attention is also drawn to the Disability Discrimination Act 1995: Code of practice – Rights of access – Goods, facilities, services, and premises [6], which is helpful in determining requirements for disabled people in existing premises.

4.6 Marking on controls for appliances

In rooms where spectacle wearers are likely to remove their glasses or steam may obscure vision (for example bathrooms and showers), consideration should be given to the use of appliances that have controls with clear markings so that temporary visual impairment does not endanger the user.

4.7 Water supply

4.7.1 Water outlet fittings such as taps and shower heads should be appropriate to the water supply system's flow rate and pressure.

4.7.2 For cistern fed low pressure systems (<1 bar static pressure) only low pressure fittings should be used, otherwise delivery rates will be very low, which could lead to customer dissatisfaction.

NOTE 1 For cisterns with both hot and cold high pressure supplies (>1 bar static pressure) any type of fitting may be used, but restrictors may need to be fitted to low pressure fittings to prevent splashing and the overloading of an overflow system.

NOTE 2 High pressure fittings may incorporate features, such as aerated outlets, producing a soft flow of water and alternative flow patterns (especially with shower heads).

NOTE 3 If only one of the supplies is of high pressure, e.g. from the mains, pressure balancing valves, pressure reducing valves or flow limiting valves may be used on the high pressure. Alternatively a pressure boost pump could be utilized to produce balanced pressures.

4.7.3 All sinks, basins, baths, showers and bidets should be connected to hot and cold water supplies.

NOTE For information on UK legislation for water supply, see Annex A.

4.7.4 Water supply fittings used and associated with sanitary appliances should be fitted with servicing valves conforming to BS 6675.

4.8 Water fittings

4.8.1 Appliances that have fittings that have water outlets which could cause splashing should be fitted with a flow regulator and a flow straightening device.

4.8.2 Adequate space should be left around taps to enable ease of use, maintenance and cleaning.

4.9 Hygiene

4.9.1 It is particularly important that sanitary and associated appliances should be assembled and fitted to ensure easy cleaning. Where sanitary and associated appliances abut a floor and/or a wall or walls, the joint between the sanitary and associated appliances and the floor and/or wall or walls should be sealed (see **22.6**).

NOTE Overflows to sanitary appliances may be omitted where greater hygiene is a necessity.

4.9.2 Shower trays and surrounding areas should be easily cleaned to minimize the risk of cross infection of foot ailments.

NOTE This is particularly important in the case of communal showers.

4.9.3 Suitable materials to wipe or to temporarily cover the WC seats before use should be available to the public.

4.9.4 Cleaning products should be provided for hand cleansing.

NOTE 1 The best provision for hand cleansing is soap and warm water as this is the most effective way of removing bacteria from hands.

NOTE 2 In situations where a water supply is not available, germicidal gels can be used for hand cleansing. Although occasional use of germicidal gels is acceptable, it has been shown that reliance on alcohol based gels in cold conditions can lead to mould growths.

4.10 Support

4.10.1 General

4.10.1.1 Supports for sanitary and associated appliances should be fixed in accordance with the manufacturer's instructions. Where walls are used to support sanitary and associated appliances, they should be of a load-bearing construction, e.g. masonry, and be able to carry the applied loads without adverse effects.

4.10.1.2 Pipework or other plumbing should not be used for support or fixing.

4.10.1.3 All fixing screws should be of non-ferrous metal or stainless steel and any brackets or other supports should be protected against corrosion.

4.10.2 Brackets

Brackets should be securely fixed. Where brackets are fixed to thin or lightweight partitions or the inner leaves of cavity walls, special cavity fixing devices should be used.

4.10.3 Floor supports

When sanitary and associated appliances are fixed to floors, the surfaces to which they are fixed should be level. Appliances on pedestals or legs should also be fastened to walls to give added stability, except in those cases where the whole fitting is designed to be self-supporting.

4.10.4 Frames

The suitability of frames for use with particular sanitary and associated appliances should be verified with the manufacturer.

NOTE Frames can be wall mounted or secured to the floor.

Section 2: Selection

5 Baths and shower units

5.1 General

Baths and shower units should be selected in accordance with **5.2** and **5.3** respectively and should also take into account the factors as given in Table 1.

NOTE Although bathing used to have primarily an ablutionary function, it now often has a wellness function that goes beyond simple cleansing into areas of therapy and entertainment. In addition, buildings, and private dwellings in particular, are increasingly for all people's use, so consideration needs to be given to age and disabled access.

Table 1 **Factors to be considered for baths and shower units**

Factor	Facility/sanitary appliance					
	Bath	Whirlpool-bath	Shower	Recycling-shower	Sauna	Steam shower
Space (m ²)	≥ 2	≥ 2	≥ 1	≥ 1	≥ 2	≥ 1
Typical use time (min)	>15	>15	>3	>10	>20	>20
Typical resource use	100 l water at 40 °C	>100 l water at 40 °C	30 l water at 38 °C	10 l/min water at 38 °C when recycling, but pumped producing 300 l/min flows >30 l water at 38 °C at other times, pump power ~400 W	0.5 l water to raise the humidity	20 l/min water at 38 °C when in normal shower mode 0.5 l/min water heated to 100 °C when in steam mode
Hygiene risks (if not thoroughly maintained)	Bath scum can contain faecal matter. Bathing water will contain washed off dirt	As for bath, plus: biofilm in pipes and pumps can develop and enable bacteria to develop. Aerosols from bubbling water can transmit bacteria	Surfaces of cubicle and curtain can enable mould to develop that can exacerbate respiratory problems. Although dirt is washed away from body, the shower heads can develop bacteria leading to contamination of the shower water	As for shower, plus: if recycling is used too early, dirty water will be circulated. The sump and pump may develop biofilms that could encourage bacteria	The wooden surfaces could absorb sweat from users and faecal material, if personal towels are not used. Prolonged exposure to steam can be detrimental to respiratory system	The steam ought to help sterilize the cubicle as long as it is used regularly. Otherwise, as for shower