BRITISH STANDARD

BS 4751:2005

Mobile sanitary chairs

ICS 11.140

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BSI
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Committees responsible for this British Standard

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Association of Spinal Injury Research, Rehabilitation and Re-integration (ASPIRE)

British Healthcare Trades Association (BHTA)

British Polio Fellowship

Castor Manufacturers (UK) Association

Charted Society of Physiotherapy

College of Occupational Therapists

Community Transport Association UK Ltd

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National Wheelchair Managers' Forum

Posture and Mobility Group for England and Wales

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Contents

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Foreword

This British Standard has been prepared by Subcommittee CH/173/1.
It supersedes BS 4751:1984, which is withdrawn.

This new edition represents a full revision of the standard. The principal changes it introduces are to update design, performance and information requirements in line with current European and International Standards.

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

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11 and a back cover.

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1 Scope

This British Standard specifies design and performance requirements and gives test methods for mobile sanitary chairs. It also gives requirements for user information and labelling. It is applicable to mobile sanitary chairs for use by children and adults, including sanitary chairs that are intended to be used also as shower chairs, of both the type propelled by the user and the type propelled by an attendant.

This British Standard does not apply to commode chairs.

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 1254:1981, *Specification for WC seats (plastics).*

BS 5504-1 (EN 34), *Wall hung WC pan — Part 1: Wall hung WC pan with close coupled cistern — Connecting dimensions.*

BS 6937 (ISO 6440), *Glossary of wheelchair terms.*

BS EN 33, *Pedestal W.C. pans with close-coupled flushing cistern — Connecting dimensions.*

BS EN 1021-1, *Furniture — Assessment of the ignitability of upholstered furniture — Part 1: Ignition source: smouldering cigarette.*

BS EN 1021-2, *Furniture — Assessment of the ignitability of upholstered furniture — Part 2: Ignition source: match flame equivalent.*

BS EN 12182:1999, *Technical aids for disabled persons — General requirements and test methods.*

BS EN 12184, *Electrically powered wheelchairs, scooters and their chargers — Requirements and test methods.*

BS EN ISO 14971, *Medical devices — Application of risk management to medical devices.*

BS ISO 7176-1:1999, *Wheelchairs — Part 1: Determination of static stability.*

BS ISO 7176-3:2003, *Wheelchairs — Part 3: Determination of effectiveness of brakes.*

BS ISO 7176-8:1998, *Wheelchairs — Part 8: Requirements and test methods for static, impact and fatigue strengths.*

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in BS 6937 and the following apply.

3.1
sanitary chair
mobile structure, designed to fit over a conventional toilet and fitted with a WC seat

NOTE A sanitary chair may have provision to accommodate a bedpan or similar receptacle, and may be designed for use in a shower.

3.2
footboard
component of a sanitary chair that is permanently attached to the chair and is intended for the user to stand on whilst entering or leaving the chair and to provide support for the user's feet

3.3
footrest
component of a sanitary chair that is intended to provide support for the user's feet when seated, but not to act as a load-bearing component when the user enters or leaves the chair

NOTE A footrest may be detachable from the chair, and may be of either one-piece or multi-piece construction.

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4 Design requirements

4.1 General requirements

NOTE 1 The design of the sanitary chair and its component parts should be such as to facilitate cleaning. If the chair is intended for use also as a shower chair, particular attention should be paid to the prevention of ingress of water into such areas as wheel bearings, castor swivels and tubular constructions.

NOTE 2 If the design of the sanitary chair includes provision for accommodation under the seat of a bed pan or similar receptacle it should be easily removable from the rear of the chair.

The sanitary chair shall conform to the requirements specified in BS EN 12182 for:

— intended performance and technical documentation (BS EN 12182:1999, **4.2**);
— clinical evaluation (BS EN 12182:1999, **4.3**);
— aids that can be dismantled (BS EN 12182:1999, **4.4**);
— single use fasteners (BS EN 12182:1999, **4.5**);
— biocompatibility and toxicity (BS EN 12182:1999, **5.2**);
— contaminants and residues (BS EN 12182:1999, **5.3**);
— infection and microbiological contamination (BS EN 12182:1999, **5.4**);
— overflow, spillage, leakage and ingress of liquids (BS EN 12182:1999, Clause **9**);
— safety of moving parts (BS EN 12182:1999, Clause **12**);
— prevention of traps for parts of human body (BS EN 12182:1999, Clause **13**);
— folding and adjusting mechanisms (BS EN 12182:1999, Clause **14**);
— surfaces, corners and edges (BS EN 12182:1999, Clause **18**).

A risk analysis shall be carried out in accordance with BS EN ISO 14971.

4.2 Overall dimensions

The overall width of the sanitary chair shall not exceed 700 mm.

The distance between the vertical plane of the front of the seat and the vertical plane of the front edge of the backrest shall not exceed 455 mm for sanitary chairs intended for adults and 450 mm for sanitary chairs intended for children.

4.3 Parking brakes

The sanitary chair shall be fitted with a parking brake. The parking brake shall have provision for adjustment to compensate for any wear to any friction surfaces, tyres, castors etc. that have worn to the point of replacement as recommended in the manufacturer's documentation. The parking brake shall meet the performance requirements specified in **5.1**.

4.4 Seat

NOTE Attention is drawn to the requirements for WC pans given in BS 5504-1, BS 5504-2 and BS EN 997, and to the guidance for design of housing for the disabled given in BS 8300.

The seat shall conform to the requirements for BS 1254:1981, type 1 or type 2, except that the dimensions shall conform to Figure 1 and Table 1 of the present standard. The seat shall be positioned horizontally in the chair in such a way as to allow location of the seat over a WC pan of height 430 mm when the seat of the WC pan is raised.

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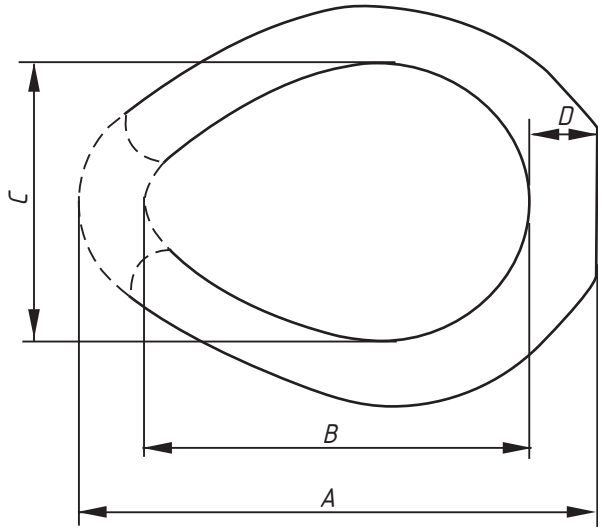

Figure 1 — Seat with optional front opening

Table 1 — Dimensions of seats

Dimensions in millimetres

Dimensions[a]	Description	Measurement	
		Min.	Max.
A	Distance from rear edge of seat to front edge of seat (or theoretical point for open front as shown on Figure 1)	432	455
B[b]	Length of opening at longest point or theoretical front as shown on Figure 1	255	285
C[b]	Width of opening at widest point	215	240
D	Distance from rear of seat to rear of opening	57	85

[a] See Figure 1.

[b] Does not apply to sanitary chairs intended for use by children.

4.5 Footboards and footrests

The sanitary chair shall be fitted with either a footboard or a footrest, which shall meet the performance requirements specified in **5.2**.

NOTE 1 The framework of the chair, or the footboard or footrest, should minimize the risk of the user's feet moving backwards behind the footboard or footrest.

NOTE 2 The footboard or footrest should have a surface designed to minimize slipping of the user's feet, especially if the chair is intended for use also as a shower chair.

If the footboard or footrest can be adjusted or moved from one position to another, provision shall be made to locate and lock it securely in any operating position.

If the height of the footboard or footrest can be adjusted, it shall have increment adjustments not exceeding 25 mm.

If the sanitary chair is fitted with a separate footrest for each foot, the gap between the footrests shall not exceed:

— 35 mm for sanitary chairs intended for adults;

— 25 mm for sanitary chairs intended for children.

NOTE 3 Means such as pivots, hinges or a sliding mechanism may be provided to enable the footboard or footrest to be retracted or moved out of the way without the need for removal, so as to facilitate entering or leaving the chair.

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4.6 Arm supports

The sanitary chair shall be fitted with an arm support on each side.

If the arm support can be adjusted or moved from one position to another, provision shall be made to locate and lock them securely in any operating position.

Detachable arm supports shall have positive location and locking.

NOTE Arm supports should be designed so as to minimize the risk of the user falling sideways from the chair.

4.7 Back support

The sanitary chair shall be fitted with a back support.

The back support shall be fitted in such a way that the chair is suitable for use with a WC pan having a close-coupled cistern which conforms to the dimensions specified in BS 5504-1 or BS EN 33 as appropriate.

NOTE This can necessitate the provision of a removable back. Removable backs should be incapable of being removed without the release of a positive locking device.

If the back support can be adjusted or moved from one position to another, provision shall be made to locate and lock it securely in any operating position.

4.8 Castors

The sanitary chair shall be fitted with castors. The tyres of all castors shall be non-marking.

4.9 Pneumatic tyres

If the sanitary chair is fitted with pneumatic tyres, they shall have identical valve connections.

4.10 Resistance to ignition

4.10.1 *Upholstered composite parts*

For upholstered parts that are composites of cover and filling, with or without a support base or interliner: when the complete composite is tested in accordance with BS EN 1021-1 and BS EN 1021-2 with the ignition source applied centrally to the face that contacts the user, progressive smouldering ignition and flaming ignition as defined in these standards shall not occur.

4.10.2 *Foam materials*

For foam materials that form all or part of a seat, back support, positioning support, arm support or leg support that consist of foam material with or without an integral skin: when the material of each part is tested in accordance with BS EN 1021-1 and BS EN 1021-2 with the ignition source applied centrally to the face that contacts the user, progressive smouldering ignition and flaming ignition as defined in these standards shall not occur.

4.10.3 *Other parts*

For seats and back supports, posture belts and harnesses, footrests, footboards and skirtguards: when the material of each item is tested in accordance with BS EN 1021-1 and BS EN 1021-2 with the ignition source applied centrally to the face that contacts or is nearest to the user, progressive smouldering ignition and flaming ignition as defined in these standards shall not occur.

5 Performance requirements

5.1 Parking brakes

5.1.1 *Performance*

When measured in accordance with Annex A:

a) the mean value of the forces required to apply hand-operated brakes shall not exceed 60 N;

b) the mean value of the forces required to apply foot push-operated brakes shall not exceed 100 N;

c) the mean value of the forces required to apply foot pull-operated brakes shall not exceed 60 N.

When tested in accordance with BS ISO 7176-3:2003, **7.1**, facing up and down a slope of 3 º from the horizontal, the sanitary chair shall not slide or raise a wheel, the wheels shall not rotate and the castor assembly shall not rotate about its mounting axis.

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5.1.2 *Fatigue strength*

When the parking brake is tested in accordance with Annex B, the brake-to-frame connections shall not have moved from their preset position following 60 000 brake operations.

5.2 Footboards and footrests

When tested in accordance with BS ISO 7176-8: 1998, **9.6** with the test loading application repeated 1 825 times, at the end of the 1 825 cycles the footboard and sanitary chair shall meet the requirements specified in BS ISO 7176-8: 1998, **4.1**.

When tested in accordance with BS ISO 7176-8:1998, **9.6**, the footrest shall meet the strength requirements specified in BS ISO 7176-8:1998, **4.1**.

5.3 Manoeuvrability

When propelled forwards by means of the hand rims or handle devices, with all buffering removed, the sanitary chair shall be capable of negotiating a turn through a door opening of 775 mm maximum width into a corridor of 900 mm maximum width and vice versa and shall be capable of being turned through 180° in a corridor of 1 400 mm maximum width.

5.4 Stability on an inclined plane

When tested in accordance with BS ISO 7176-1:1999, Clauses **9**, **10**, **11** and **12**, the static stability of the sanitary chair shall be not less than 10° in all directions.

5.5 Strength of chair

When tested in accordance with BS ISO 7176-8:1998, Clauses **8**, **9** and **10** (with the exception of **10.5**), the sanitary chair shall meet the strength requirements specified in BS ISO 7176-8:1998, **4.1**.

5.6 Electrically powered ancillary equipment

If the sanitary chair is fitted with electrically powered ancillary equipment, the equipment shall conform to the relevant requirements of BS EN 12184 when tested in accordance with the relevant test methods given in that standard.

6 Requirements for information to be supplied by the manufacturer

6.1 General

The sanitary chair shall be provided with information in three separate sections: pre-sale, user and servicing/repair information as specified in **6.2**, **6.3**, and **6.4** respectively.

NOTE These may be provided as separate printed documents or in other forms of media to meet the needs of individual users or their attendants.

6.2 Pre-sale information

The pre-sale information shall include the following:

a) a description of the intended user of the sanitary chair (functionality, mass, requirements in relation to visual ability and cognisance as a minimum);

b) the overall dimensions of the sanitary chair (width, length and height), its mass when operational, and where applicable its overall dimensions and mass when folded or dismantled;

c) the turn-around width;

d) the maximum gradient of slope on which the sanitary chair can safely be used;

e) where applicable, instruction on the method of transporting the sanitary chair when not occupied (e.g. in a car);

f) whether the sanitary chair can be folded or dismantled to assist in storage or transport, and instructions for doing so if such an option is available;

g) whether the sanitary chair has any removable parts, and if it does, the mass of the heaviest removable part and the mass of the resultant main element of the sanitary chair when all removable parts have been taken off;

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h) options of different seat depth, width, height or other additional items that are available for the sanitary chair;

i) type of tyres, wheels and castors that are fitted to the sanitary chair;

j) details of any adjustments intended to be made by the user or a carer before or during the use of the sanitary chair;

k) name and address of the manufacturer in sufficient detail to enable contact to be established;

l) description of the intended use and the intended environment.

6.3 User information

NOTE Copies of user information should be available from the manufacturer during the manufacturer's intended lifetime of the sanitary chair.

User information shall contain all pre-sale information (see **6.2**) and the following:

a) any adjustment or settings required before the sanitary chair can be used, including how adjustment or settings might affect stability;

b) service interval required and information on who is competent to carry out the service;

c) unique identification number and its location on the sanitary chair;

d) instructions on operation of all controls, including brakes;

e) where applicable, instructions on dismantling, reassembly and parts removal and refitting to the sanitary chair;

f) mass of the parts of the sanitary chair that are expected to be handled during dismantling, reassembly or carrying;

g) positions of points where the component parts can be gripped for safe moving and handling and/or a method of handling during dismantling, assembly or carrying;

h) where applicable, the sanitary chair manufacturer's recommended tyre pressures;

i) instructions for dealing with tyre punctures, where pneumatic tyres are fitted;

j) instructions on care and cleaning;

k) warning that surface temperatures might be increased by the effects of direct sunlight;

l) warning for trapping hazards (e.g. pinch points);

m) information on how to obtain the user information in a format appropriate for use by visually impaired people;

n) the level of resistance to ignition of materials and assemblies;

o) recommendation for the recycling of the sanitary chair;

p) where applicable, information on any adjustments that can be made and who is competent to carry out these adjustments, e.g. manufacturer-approved service agent.

6.4 Service information

The service information shall contain all the pre-sale information (see **6.2**), user information (see **6.3**) and instructions necessary for maintenance, adjustment and repair, the replacement of parts and who is competent to carry out each service action.

NOTE This information may be split into two sections, one for the user covering points shown in **6.3** and one with full technical details for a trained service agent.

6.5 Labelling

Permanent labelling shall be applied to the sanitary chair incorporating **6.2**k) and **6.3**c) as a minimum.

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Annex A (normative)
Test method for determination of brake lever operating forces

A.1 Apparatus

A1.1 *Force-measuring device*, with an accuracy of ±2 N, capable of measuring in increments of 1 N in the range 0 N to 200 N.

A.2 Procedure

A.2.1 Carry out this test with the parking brake mounted on the sanitary chair. Adjust the parking brake using the method specified by the manufacturer.

A.2.2 If the sanitary chair is fitted with pneumatic tyres, inflate them to the maximum pressure recommended by the manufacturer.

A.2.3 Select the part of the lever through which the force is to be applied, from one of the following options (see Figure A.1).

a) If the lever is fitted with a generally spherical knob, apply the force through the centre of the knob.

b) If the lever is tapered, apply the force through the point where the largest cross-section intersects the centre line of the lever.

c) If the lever is parallel or any shape other than those in a) and b), apply the force through a point on the centre line of the lever 15 mm below the top.

d) If the form of the lever is such that the lever is gripped by the whole hand, apply the force through the centre line of the lever 15 mm from the end.

e) If the brake is operated by pushing or pulling a bar or pad, apply the force to the centroid of the bar or pad.

A.2.4 Apply the parking brakes with the force-measuring device aligned in the direction of travel of the point of application of the force. Measure the force required to operate the brakes.

A.2.5 Repeat **A.2.4** twice more to give a total of three measurements. Calculate the arithmetic mean value of the forces measured.

A.2.6 If the sanitary chair is fitted with more than one type of parking brake, test one of each type.

NOTE If the sanitary chair is fitted with two identical brakes (e.g. left and right), only one of the brakes needs to be tested.

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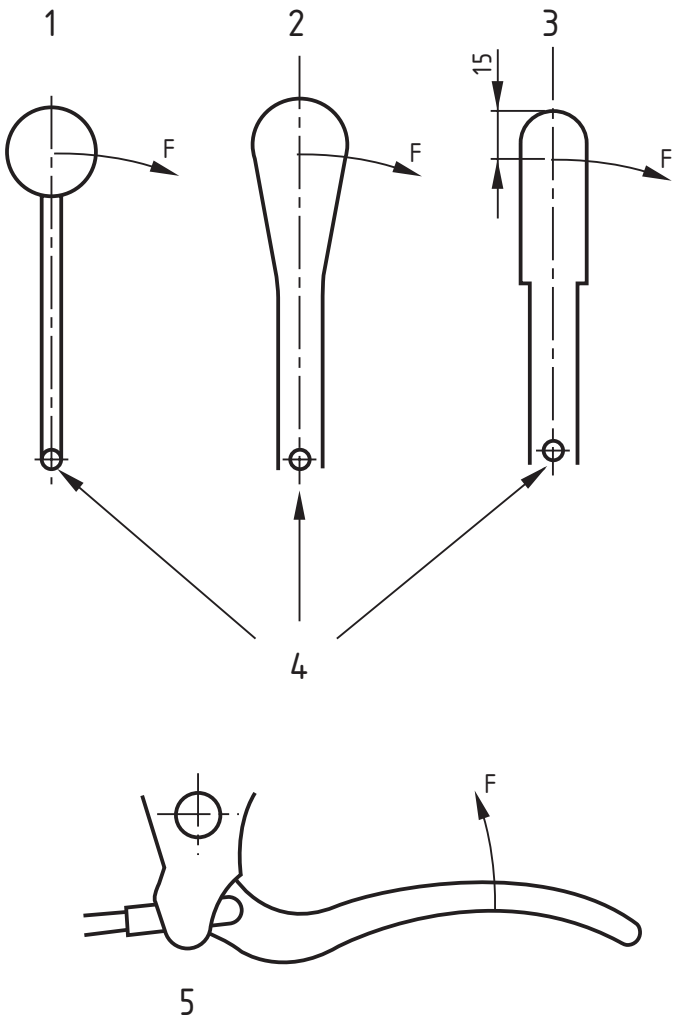
Dimension in millimetres



Key

1 Lever with spherical knob
2 Tapered lever
3 Parallel lever (e.g foot operated)
4 Fulcrum
5 Lever gripped by the whole hand
F Direction of force

Figure A.1 — Part of lever through which force is applied

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Annex B (normative)
Test method for parking brake fatigue strength

B.1 Apparatus

B.1.1 *Means for moving the brake operating device*, which shall not apply forces in excess of those specified by the manufacturer.

B.2 Procedure

B.2.1 Carry out this test with the parking brake mounted on the sanitary chair. Adjust the parking brake using the method specified by the manufacturer.

B.2.2 If the sanitary chair is fitted with pneumatic tyres, inflate them to the maximum pressure recommended by the manufacturer.

B.2.3 Move the brake operating device smoothly from the brake off position to the brake on position and return to the brake off position. Carry out this procedure 60 000 times at a frequency not exceeding 0.5 Hz.

B.2.4 If the sanitary chair is fitted with more than one type of parking brake, test one of each type.

NOTE If the sanitary chair is fitted with two identical brakes (e.g. left and right), only one of the brakes needs to be tested.

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