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Specification for

Hospital bedsteads

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- Associated Offices Technical Committee
- Association of British Paediatric Nurses
- Association of National Health Service Supplies Officers
- British Paediatric Association
- British Surgical Trades Association Incorporated
- Chartered Society of Physiotherapy
- Crown Suppliers
- Department of Health and Social Security
- Health Service Supply Council
- Independent Engineering Insurers' Committee
- King Edward's Hospital Fund for London
- Royal College of Midwives
- Royal College of Nursing and National Council for Nurses of the United Kingdom
- Stainless Steel Fabricators' Association of Great Britain

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Foreword

This revision of BS 4886 has been prepared under the direction of the Health Care Standards Committee. It supersedes both BS 4886-1:1973 and BS 4886-2:1973, which are withdrawn.

BS 4886-1:1973 "*Specification for hospital bedsteads*" — Part 1 "*Bedsteads of variable height*" was prepared following the report of an enquiry by a working party under the auspices of the King Edwards's Hospital Fund for London. This enquiry established the desirable characteristics of variable height bedsteads, including the required tilting and height adjustment facilities, for general purpose use in hospitals. (As a consequence this type of bedstead is commonly referred to as a "King's Fund bed".) Part 2 of the standard, for bedsteads of fixed height, was prepared at the same time as Part 1, to enable beds to be specified which did not require a height adjustment facility. As many of the requirements and the testing procedures are common to both these Parts, the opportunity has been taken to combine Parts 1 and 2 in this revision.

The committee responsible for this revision of BS 4886 has been particularly concerned about the difficulty of positioning patient hoists beneath bedsteads. This intrusion of the height and tilt adjustment mechanisms under the mattress support platform can often obstruct these hoists, especially if the latter are provided with castors of a diameter greater than 75 mm. As a first stage in attempting to minimize this obstruction and to allow hoist manufacturers to use 100 mm diameter castors (in order to improve hoist manoeuvrability as requested by nursing staff), this new edition of BS 4886 specifies a minimum underbed clearance of 114 mm (see 5.14) for both fixed and variable height bedsteads.

Other major changes in this revision are the introduction of requirements and corresponding test methods both for the durability and toxic constituents of the surface finish of hospital bedsteads and for the ignitability of filled panels if present. It has not proved possible to specify certain characteristics of the surface finish, but guidance on these aspects is given in Appendix A.

In preparing this revision, the committee has endeavoured to allow designers and manufacturers a degree of flexibility in the production of bedsteads of modern and aesthetically pleasing design. Guidance on features that contribute to good design is given in Appendix A.

A number of variations in design of bedsteads are provided for, and Appendix B gives information that the purchaser should supply to the manufacturer when ordering a bedstead. The dimensions of the bedstead take into account the sizes of hospital mattresses complying with BS 5223-1 and BS 5223-2.

This British Standard calls for the use of procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

In particular, attention is drawn to the procedure for testing ignitability. This procedure should be carried out by trained personnel under adequate supervision, and precautions should be taken to safeguard the health of personnel against the risk of fire or inhalation of smoke and toxic products of combustion.

Purchasers ordering to this standard are advised to check that the supplier is operating a quality control system in accordance with the principles of BS 5750-2 in order to ensure, to their satisfaction, that products claiming to comply with BS 4886 consistently achieve the required level of quality. A guide to the use of BS 5750-2 is given in BS 5750-5.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard specifies requirements for the surface finish, dimensions, construction and strength of bedsteads suitable for general purposes in hospitals and similar institutions. This standard is applicable to bedsteads of either fixed or variable height: the requirements specific to fixed height bedsteads are detailed in section two; those specific to variable height bedsteads are given in section three.

NOTE 1 This specification has been prepared on the basis that the bedsteads will be used with mattresses with a thickness of not less than 125 mm (for example, those specified in BS 5223-1 and BS 5223-2).

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this standard, the following definition applies.

NOTE Definitions of paint and related terms are given in BS 2015.

underbed clearance

the space beneath the bedstead base which is not occupied by the castors and associated immobilization assemblies, but which does not exclude the intrusion into this space of any tilt or height adjustment mechanisms

3 Surface finish

3.1 Durability

3.1.1 If an external surface of metallic components has been electroplated, the electroplated coating shall comply with service condition No. 2 of BS 1224:1970.

3.1.2 If a paint coating has been applied to an external surface of metallic components of the bedstead, the coating shall comply with the requirements specified in Table 1 when tested by the methods of test given in the table.

The test panels used in these tests shall be pretreated, coated and dried in the same manner and under the same conditions as the finish applied to the bedstead component.

NOTE Coatings that give a surface finish that tends to encourage static electrification (e.g. during bed making) should not be used. See BS 5958 for guidance on the control of undesirable static electricity. See also A.2 for additional information relating to surface finishes.

Table 1 — Test methods and requirements for the durability of paint coatings

Property	Test method	Test panel	Number of panels	Requirement
Resistance to bending	BS 3900-E1 (Type 2 apparatus, using a 12 mm mandrel)	Mild steel, 1.2 mm thick	3	No coating shall show cracks or loss of adhesion visible with normal or corrected vision
Resistance to scratch	BS 3900-E2 (3000 g load)	Mild steel, 1.2 mm thick	3	No panel shall show bare metal
Resistance to impact (falling weight)	BS 3900-E3 (Indentation of 3 mm with the coating facing upwards)	Mild steel, 1.2 mm thick	3	No coating shall show loss of adhesion
Resistance to cupping	BS 3900-E4 (Indentation of 3 mm on both the coated and on the uncoated sides)	Mild steel, 1.2 mm thick	3	No coating shall show loss of adhesion or cracks visible with normal or corrected vision
Resistance to cross-cuts	BS 3900-E6 (Single cutting tool, manually operated, producing 6 cuts in each direction at 2 mm spacing)	Mild steel, 1.2 mm thick	3	No coating shall exceed classification 2
Resistance to humidity	BS 3900-F9 (Duration of test 96 h, with no interim examination and with no recovery period)	Mild steel, 1.2 mm thick and coated on one face only	3	No panel shall show formation of rust and no coating shall show a colour change in comparison with an untested surface finish

3.2 Toxicity

The surface finish of any coating applied to the bedstead shall comply with the requirements for the maximum levels of toxic metals given in 5.2 of BS 4751:1984.

4 Dimensions

4.1 Length

The minimum length, shown as dimension A in Figure 1, of the clear space above the mattress support frame (see 5.2), between the headend and footend structures shall be 2 010 mm when unextended and, if fitted with a bed extension, 2 180 mm when extended.

The overall maximum length, shown as dimension B in Figure 1, of the bedstead *including* buffers shall be 2 235 mm when unextended and, if fitted with a bed extension, 2 415 mm when extended.

4.2 Width

Excluding the width of the buffers, both the width of the mattress support frame shall be not less than 865 mm and the overall width of the bedstead shall be not more than 965 mm.

4.3 Height

(See clauses 9, 13, 14 and 5.6.1 and 5.13.)

5 Construction

5.1 General

All bedsteads constructed from tubular steel, mild steel, stainless steel or any combinations of these materials shall be welded to comply with BS 3019-2 or BS 5135, as appropriate to the material. After welding, all joints shall be smooth.

NOTE 1 Attention is drawn to BS 4870-1, BS 4871-1 and BS 4872-1 for the assessment of welding procedures.

NOTE 2 Additional considerations for constructional features of bedstead design are given in Appendix A. In addition the adjustment or movement of all detachable parts, including safety sides (see 5.8), should cause the minimum disturbance to the patient and require the minimum effort from the attendant.

5.2 Mattress support frame and mattress support platform

5.2.1 The mattress support frame shall comprise a smooth surround to which is attached the mattress support platform. The platform shall be not less than 5 mm and not more than 25 mm below the top of the support frame.

5.2.2 The mattress support platform shall be either:

- a) of welded steel mesh constructed from wire of diameter 4 ± 1 mm and with the major dimension of the apertures of the mesh in the range 40 mm to 75 mm; or
- b) of ventilated metal (e.g. perforated or corrugated sheet).

NOTE Mattress support platforms of welded steel mesh will normally be provided. If a mattress support platform of ventilated metal is required, this should be stated on the order (see Appendix B).

5.2.3 With the headend of the bedstead a distance of 205 mm from a plane vertical wall and with the footend of the mattress support frame raised to give 6° of tilt, the headend structure (see 5.5), together with the lifting pole and its attachments as provided by the manufacturer (see 5.5.3), shall not touch the wall.

NOTE See Appendix B for information to be supplied by the purchaser.

5.3 Tilt adjustment mechanism

5.3.1 The bedstead shall be fitted with either a one-way (see also 5.5.1) or a two-way tilt adjustment mechanism.

5.3.2 It shall be possible to tilt the mattress support frame, without intermediate steps, to an angle of 12° to the horizontal, either with a foot-up or foot-down tilt. If the bedstead is fitted with a two-way tilt adjustment mechanism the alternative tilt shall be capable of an angle of at least 6° to the horizontal.

NOTE If the bedstead is fitted with interchangeable headend and footend structures (see 5.5.1 and 5.6.1), it is sufficient to comply with this requirement if the tilt adjustment mechanism can achieve a 12° tilt in one direction.

5.3.3 If the design of the tilt locking device is such that not all angles from 0° to 12° can be selected, provision shall be made for the tilt locking device to operate at at least 2° , 4° , 6° , 8° , 10° and 12° angles of tilt.

5.3.4 Changing the angle of tilt shall not change the angle of the back support (see 5.4.1) relative to the mattress support frame.

5.3.5 The tilt locking device shall be such that it may be locked and unlocked without the need for visual inspection.

5.3.6 When a load of 76 ± 2 kg is applied to the mattress support frame so that the centre of application of the load is on the centreline of the mattress support at a distance of 890 ± 5 mm from the headend, the force required to tilt the mattress platform shall not exceed 220 N (23 kgf).

5.4 Back support and rising back rest

5.4.1 The bedstead shall be fitted with either a back support (5.4.2) or a rising backrest (5.4.3).

5.4.2 The back support shall be capable of being positioned by one person at any angle between 0° and 90° relative to the plane of the top surface of a 125 mm deep mattress resting on the mattress support platform (5.2.2). The positioning of the back support shall be possible from both sides of the bed. (See also A.1.4).