

Specification for

Surgical spring trusses

Co-operating organizations

The Surgical Instruments and Medical Appliances Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and professional and industrial organizations:

- Association of Hospital Matrons
- British Dental Association
- British Medical Association*
- British Surgical Trades Association (Inc.)*
- British Rubber Manufacturers' Association Ltd.
- Institute of British Surgical Technicians
- Medical Defence Union
- Medical and Dental Defence Union of Scotland
- Medical Protection Society
- Ministry of Agriculture, Fisheries and Food
- Ministry of Defence, Air Force Department
- Ministry of Defence, Army Department
- Ministry of Defence, Navy Department
- Department of Health and Social Security*
- Queen's Institute of District Nursing
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- Royal College of Physicians of London
- Royal College of Physicians and Surgeons of Glasgow
- Royal College of Surgeons of Edinburgh
- Royal College of Surgeons of England*
- Royal College of Veterinary Surgeons
- Royal Institute of Public Health and Hygiene

The Government department and professional and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the Committee entrusted with the preparation of this British Standard:

- Aluminium Development Association
- British Investment Casters' Technical Association
- British Steel Industry
- British Orthopaedic Association
- British Plastics Federation
- Central Council for the Care of Cripples
- Institution of Production Engineers
- National Federation of Hospital Officers
- National Pharmaceutical Union
- Surgical Appliance Manufacturers' Association
- Individual firms

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Foreword

This standard makes reference to the following British Standards and BS special publication:

BS 93, *British Association (BA) screw threads with tolerances for sizes 0 BA to 16 BA*.

BS 947, *Specification for a universal system for designating linear density of textiles (Tex system)*.

BS 1133, *Packaging code — Section 11:Packaging felt*.

BS 1309, *Methods of sampling and analysis of vegetable-tanned and chrome-tanned leathers*.

BS 1449, *Steel plate, sheet and strip — Part 1:Specification for carbon and carbon-manganese plate, sheet and strip*.

BS 1554, *Specification for stainless and heat-resisting steel round wire*.

BS 2874, *Specification for copper and copper alloy rods and sections (other than forging stock)*.

BS 3144, *Methods of sampling and physical testing of leather*.

BS 4183, *Machine screws and machine screw nuts — metric series*.

The first edition of BS 2930 published in 1957 was prepared following a request made by the Ministry of Health and was authorized by the Surgical Instruments and Medical Appliances Industry Standards Committee of the British Standards Institution.

This revised edition of BS 2930 brings up to date present requirements for surgical spring trusses with respect to materials and methods of fabrication, together with such dimensions of components as are independent of individual clinical requirements.

Provision is made for the use of adhesives in the construction of the pad. In accordance with prescribed national policy the opportunity has been taken for requirements to be specified in metric units although equivalents in the customary imperial units have been included for convenience during the pending change to general use of the metric system in the United Kingdom. Likewise, provision has been made for use of screws having ISO metric threads which it is intended will ultimately take the place of the BA system of screw threads.

Surgical elastic band trusses are dealt with in BS 3271.

NOTE Metric units are to be regarded as the standard. Where equivalents are given in other units they are approximate. More accurate conversions should be based on the tables in BS 350, "Conversion factors and tables", or in BS 2856, "Precise conversion of inch and metric sizes on engineering drawings".

Imperial units have been retained, however, for certain textile requirements for which it would be currently impracticable to use metric units.

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 and ii, pages 1 to 12, 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.

1 Scope

This British Standard specifies the materials used in the manufacture of component parts of surgical spring trusses, together with such dimensions as are independent of the individual clinical requirements. Provision is made for inguinal, femoral and scrotal spring trusses.

2 Classification

Surgical trusses are classified as follows:

- 1) *By type*: a. Spring; b. Elastic band; c. Bag.
- 2) *By function*: a. Inguinal; b. Femoral; c. Scrotal; d. Ventral (including umbilical).

NOTE 1 Provision is made for rat-tail trusses in Clause 21.

NOTE 2 This classification is provided for information only. In this standard, provision is not made for either ventral or bag type trusses. BS 3271 deals with elastic band trusses.

3 Terminology

The following terms are employed in describing some of the components:

3.1

casing band, comprising:

- a) *Outer face covering*, also known as outer covering, head leather or top leather. The covering situated away from the patient's body.
- b) *Spring*, also known as the circular spring band.
- c) *Padding*, also known as blanketing. The material used between the spring band and the inner face covering.
- d) *Inner face covering*, also known as inner covering or inner lining. Material which is situated next to the patient's body.

3.2

pad

that part controlling the hernia or rupture, and comprising:

- a) *Outer face covering*, also known as outer covering, head leather or top leather. The covering situated away from the patient's body.
- b) *Felling piece*. Material stitched beneath the outer face covering to enable this to be stitched to the inner face covering.
- c) *Plate cover*. Material encasing the plate.
- d) *Plate* (including the sprag), also known as the truss head. The metal foundation for the pad.
- e) *Sprag*, also known as nail. Projection from the plate, used for securing the core to the plate.
- f) *Core of the pad*. Contoured mound situated on the inner face of the plate.
- g) *Padding*. Material buffering the core of the pad from the patient's body.
- h) *Inner face covering*, also known as pad cover, inner covering or inner lining. Material which is situated next to the patient's body.
- j) *Strap keeper*. A loop of suitable material fitted over the outer face covering of pad or casing band to retain the endstrap or cross-strap after fastening.

3.3

fastening straps

- a) *Tailstrap*. Short leather strap, being the termination of a fabric extension to the truss pad, which extension is known as the understrap.
- b) *Understrap*. Otherwise known as perineal strap, leg strap, groin strap or tail. A narrow component which passes between the patient's legs linking the lower portion of the pad to the body band at the rear of the truss. The linkage to the pad, or to the band or both, should permit for length adjustment.
- c) *End strap*. Fastening strap on a truss with a single pad (also see Clause 17).
- d) *Cross-strap*. Fastening strap on a truss with two pads (also see Clause 17).

4 General requirements for all metal components

Metal components shall be free from defects, shall be cleanly finished and all sharp edges shall be removed.

5 Spring

5.1 Material. The spring shall be made from one piece of strip steel complying with grade 70 or grade 80 of BS 1449-1¹⁾.

5.2 Thickness of spring. The thickness of the spring shall be one of the following:

- 2.0 mm (0.079 in)
- 1.8 mm (0.071 in)
- 1.6 mm (0.063 in)
- 1.4 mm (0.055 in)
- 1.2 mm (0.047 in)

and shall be selected in relation to the length and width of the spring to give a spring of strength in accordance with the clinical requirements.

Where the fitting measurement is less than 720 mm (30 in) the thickness of the spring may be in the following range:

- 1.0 mm (0.039 in)
- 0.9 mm (0.035 in)
- 0.8 mm (0.031 in)
- 0.7 mm (0.028 in)

5.3 Width of spring. The width of the spring shall be one of the following:

- 10.0 mm (0.394 in)
- 11.0 mm (0.433 in)
- 12.0 mm (0.472 in)

and shall be selected in relation to the length and thickness of the spring to give a spring strength in accordance with the clinical requirements.

5.4 Shaping. The spring shall be shaped to meet general anatomical requirements and the ends of the spring shall comply with the following:

- 1) The ends of the spring shall start and terminate on the anterior face of the body, except that the spring ends may finish short of the anterior face of the body in the case of special needs, e.g. deformity or if an artificial leg is worn.
- 2) The free end of the spring shall be shaped away from the body sufficiently to prevent pressure.
- 3) The free end of the spring may be tapered in its thickness if requested by the purchaser.

5.5 Rivet holes. Holes for rivets shall be cleanly punched when the spring is in the unhardened condition.

5.6 Slots for screws. If provided, slots for screws shall be punched when the spring is in the unhardened condition.

The slot for screwed fittings shall have a width of 4.00 ± 0.05 mm ($5/32 \pm 0.002$ in) for springs of 10.0 mm width. The slot for springs of 11.0 mm and 12.0 mm width shall be of 4.75 ± 0.05 mm ($3/16 \pm 0.002$ in) width. Slots shall be radiused at both ends and the exposed end or ends of slotted springs shall be dull polished.

5.7 Heat treatment. The spring shall be hardened by heating to about 800 °C (a temperature indicated when the material is of dull cherry red colour) and quenching in oil. The spring shall be tempered by heating to 350 °C to 450 °C and quenched.

5.8 Removal of scale. All loose scale shall be removed after heat treatment.

¹⁾ BS 1449, "Steel plate, sheet and strip", Part 1, "Specification for carbon and carbon-manganese plate, sheet and strip".