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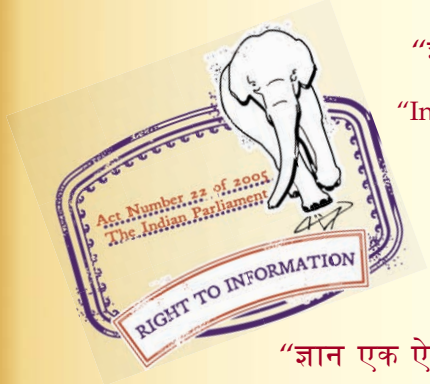
IS 5291 (1969): Tables, Operation, Hydraulic, Major [MHD 12: Hospital Equipment]



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"Knowledge is such a treasure which cannot be stolen"

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IS : 5291 - 1969
(Reaffirmed 2001)

Indian Standard

SPECIFICATION FOR TABLES, OPERATION, HYDRAULIC, MAJOR

(Third Reprint MAY 1989)

UDC 615.478.62

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *March* 1970

Indian Standard

SPECIFICATION FOR TABLES, OPERATION, HYDRAULIC, MAJOR

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SPECIFICATION FOR TABLES, OPERATION, HYDRAULIC, MAJOR

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 6 October 1969, after the draft finalized by the Hospital Equipment Sectional Committee had been approved by the Consumer Products Division Council.

0.2 The formulation of Indian Standards on hospital equipment has been taken up at the instance of the Advisory Committee for the Development of Surgical Instruments, Equipment and Appliances, Government of India.

0.3 This standard is one of a series of Indian Standards on hospital equipment.

0.4 This standard is expected to ensure the surgeons a good operation table, neither too simple nor too sophisticated, by way of uniformity and appearance and performance requirements, without precluding the use of subsidiary components or incorporation of modifications.

0.5 This standard contains clauses **5.2** and **7.1** which permit the purchaser to use his option for selection to suit his requirements.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

1. SCOPE

1.1 This standard lays down constructional and performance requirements of manually controlled, hydraulic, major operation tables.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

*Rules for rounding off numerical values (*revised*).

2.1 Major Operation Table — A surgical operation table, fitted with a hydraulic pump to raise and lower the table top, and having a head-end control for positioning of the table top during surgical operations.

3. MATERIALS

3.1 The materials used in the manufacture of operation tables shall be either corrosion-resistant or shall have a protective finish.

3.2 The raising column and the gearing system shall be made from materials which resist wear during normal manipulation.

3.3 The handles provided shall be made from well-seasoned wood free from defects or abonite or plastics (*see* Grades 1 or 2 of IS : 1300-1966*).

3.4 If stainless steel is used, it shall conform to Designation 04Cr19Ni9 or 07Cr19Ni9 of Schedule V of IS : 1570-1961†.

3.5 Antistatic rubber tread castors according to IS : 4034-1968‡ shall be used.

NOTE — When antistatic rubber tread is not available, the construction of the table shall otherwise ensure transmission of static charge to the earth.

4. DIMENSIONS

4.1 Table Top — The minimum overall length of table top shall be 180 cm with the head section drawn in and 195 cm with the head section drawn out. The overall width of the table top shall be 50 to 55 cm.

4.2 Height — In the lowest position (without mattress), the table top shall have a height of 75 ± 7·5 cm, and at the extreme lifted position (without mattress) 115 ± 5 cm subject to limitation of the hydraulic lift as specified in **5.3**.

5. CONSTRUCTION

5.0 A typical design of operation table is shown in Fig. 1.

5.1 Base — The base shall be solid and mounted on castors so situated as to give stability to the operation table. The base shall have non-skid compensating floor locks actuated by a foot pedal. The base may also have foot rails for providing comfortable foot rest for the surgical team.

5.2 Table Top — The table top shall have a minimum of four sections, namely, head, trunk (two sections) and leg sections. The head section shall be detachable. As for leg section, it is left to the manufacturer to make it detachable also if so required by the purchaser. The entire table

*Specification for phenolic moulding materials (*second revision*).
†Schedules for wrought steels for general engineering purposes.
‡Specification for castors for hospital equipment.

top shall have a jerk-free vertical movement, where, 'jerk' is defined as the sudden change in speed. In case of multiple cylinder hydraulic systems, the sudden change in speed (jerk) as a result of cylinder diameter differences shall not be in excess of '$n-1$', where 'n' is the number of cylinders. It shall also satisfy the following requirements:

a) The entire table top shall be capable of being tilted to 45° ± 3° trendelenburg and reverse trendelenburg positions.

b) It shall have arrangements for a lateral tilt of 20° ± 2° in either direction.

c) It shall allow angulation in flex (90°) and reflex (220°) positions in one or several cranking operations (*see* Fig. 2).

d) The table top may be provided with a perineal cut-out for drainage tray.

e) Where kidney position is not capable of being obtained by various sections of the table top, a separate kidney elevator shall be provided, which shall be capable of being raised to 150 mm from the table top and shall have a head-end control for manipulation.

f) When so desired by the purchaser, the entire table top shall have a sweep of 360° in the horizontal plane.

5.2.1 *Head and Leg Sections* — The head section shall be capable of being raised to 40° to 45° and in its reverse position 90° from the trunk portion. The leg section shall be capable of being lowered to at least 90° from the trunk so as to enable the table to be used as a chair and also for obtaining other positions. The head section and the table top shall have controls capable of positioning during operation and the controls shall be situated so as not to interfere with the surgical team. The controls shall be situated on the head-end side. The various controls may be independent or shall be at one single control point actuated through a gear mechanism with an indicator dial and shall be controlled by a common crank or wheel with folding handles.

5.3 Hydraulic Lift — The table shall have a hydraulic pump encased in the base for controlling the lift of the table. It shall operate by a pedal. The table lift shall be between 30 to 50 cm. All controls shall have easy access and various component parts of the controls and the table shall be easy to clean and maintain. All parts intended to be removed by the user shall be easy to replace with parts of the same make and difficult to assemble incorrectly.

6. PERFORMANCE REQUIREMENTS

6.1 Hydraulic Lift — The hydraulic lift shall give a vertical jerk-free and smooth movement to the system subject to limitations (for jerk) as in **5.2.**

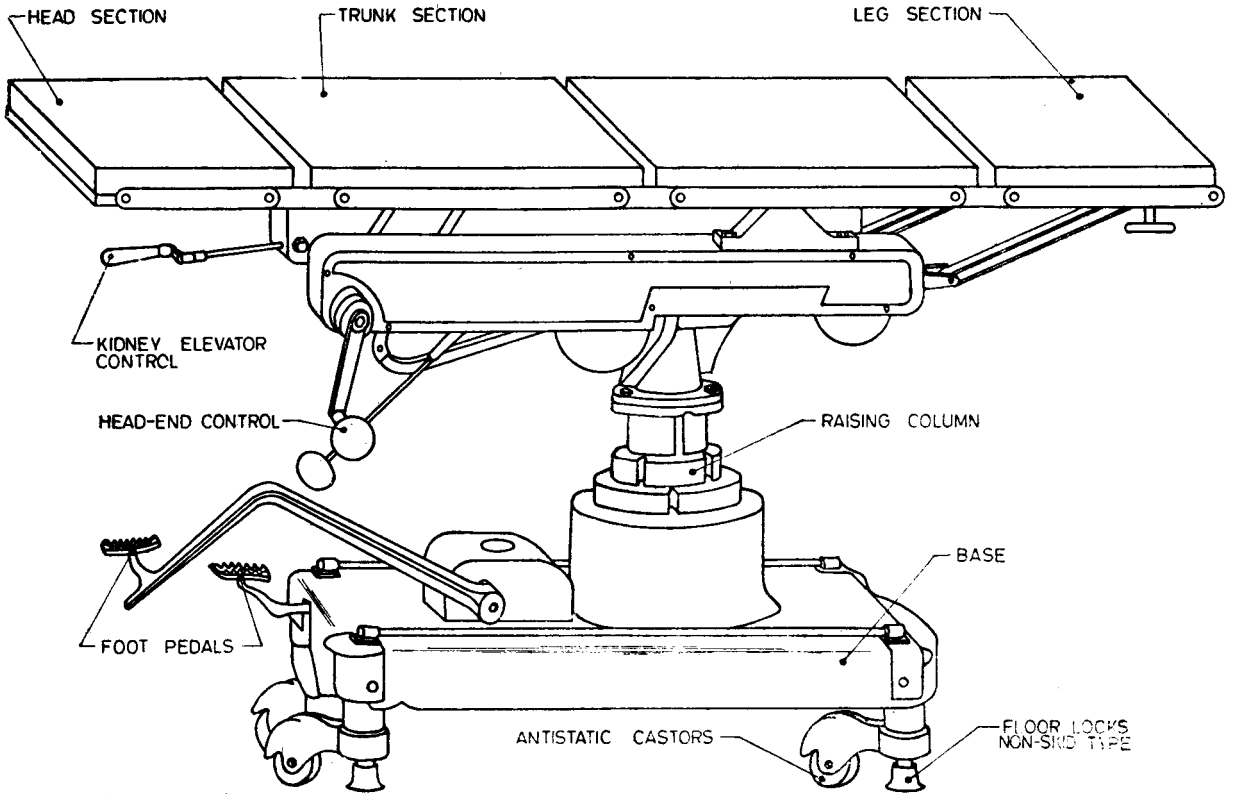

FIG. 1 OPERATION TABLE, HYDRAULIC, MAJOR, TYPICAL

When the hydraulic pressure is released, the table top shall take not less than 15 seconds and not more than 45 seconds to travel from the maximum height to the bottommost position. The downward movement shall be smooth and jerk-free subject to limitation (for jerk) as in **5.2.** When the table top is held in any position by hydraulic action alone, and loaded with 150 kg in the trunk portion, it shall not sink by more than 3 mm in a period of four hours.

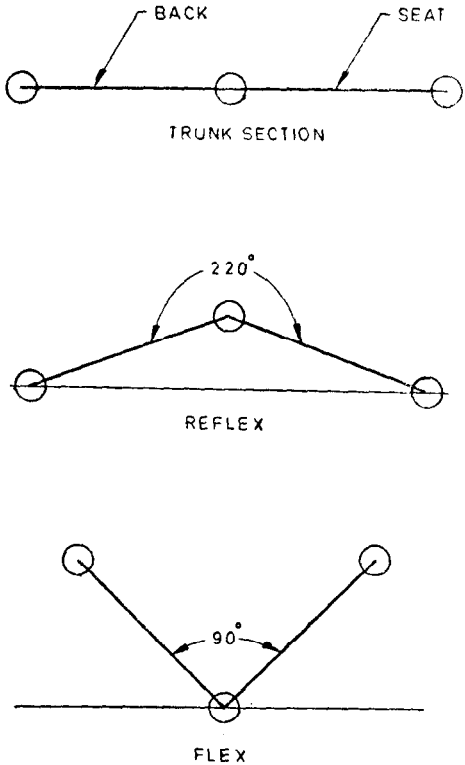

FIG. 2 REFLEX AND FLEX POSITIONS

6.2 Base—The base shall be stable on the castors and on the non-skid floor locks. On castors, the table shall be capable of moving on a smooth cemented floor, when a pull, not exceeding 12 kg is applied in its static position and capable of propulsion with a pull, not exceeding 7 kg after it is set in motion. The floor locks shall give rigidity to the table and the table shall not move in any direction when a force of 50 kg is applied to the base in any direction.

6.3 Table Top — It shall satisfy the requirements given below in any position obtainable by the hydraulic lift:

a) When a 50 kg load is applied vertically on the extreme edge of the head section drawn in completely, the leg section shall not lift by more than 10 mm.

b) When a load of 5 kg is dropped from a height of 150 mm on to the extreme end of the head section (with the head section drawn in), the head section shall not fold in.

c) When the head section is pulled out with a 25 kg pull along its plane, the head section shall not come off when locked.

d) Once the accessories are clamped, there shall be no wobble under normal working conditions.

7. WORKMANSHIP AND FINISH

7.1 The various components shall be made accurately to give smooth operation and other performance requirements laid down in **6**. All surfaces shall be well finished and shall not have surface defects, such as pinholes, blisters, blow-holes and similar other defects. All edges shall be rounded off. All the four sections comprising the table top, in their normal position, shall be in one plane approximately, when tested with a spirit level. The sweeps of the head and leg sections shall be true. All welded joints shall have welds fully penetrating and shall be well finished. All non-corrosive metal surfaces (aluminium and stainless steel) shall be matt finished. Corrosive surfaces like steel castings for base, cylinder casings, foot pedal shall be painted to shades which reflect the least, say, sea green or any other shade as agreed to between the manufacturer and the purchaser. Prior to painting, the surface shall be degreased, rust-proofed by phosphating and then suitably protected by an anti-corrosive primer, either by brushing or spraying and then finished by spraying in stove enamel or air-drying enamel of the specified shade. In every instance each coat shall be separately stoved or air-dried as the case may be. The resulting finish shall be hard and shall not readily chip or flake. Mild steel and brass parts (which are plated) shall be plated chromium over nickel according to Service Grade 2 of IS : 1068-1968* and IS : 4827-1968† respectively. The handles shall have an easy grip and shall not impart colour or stain to the hand. Wooden handles, if provided, shall be linseed oil coated or varnished.

*Specification for electroplated coatings of nickel and chromium on iron and steel (*first revision*).

†Specification for electroplated coatings of nickel and chromium on copper and copper alloys.

8. ACCESSORIES

8.1 The table shall be provided with the following standard accessories:

a) Foot extension,
b) Shoulder supports/side supports,
c) Antistatic rubber pads,
d) Anæsthetic screen,
e) Lateral supports or kidney elevator,
f) Leather wristlets,
g) Arms support,
h) Pelvic holder strap and leg strap,
j) Pair of knee crutches/lithotomy leg holders,
k) Intravenous arm board, and
m) 25 to 50 mm thick antistatic foam rubber mattress having electrical resistance between 10^4 ohms and 10^6 ohms.

NOTE — When antistatic rubber is not used, the construction of the table shall otherwise ensure transmission of static charge to the earth.

8.2 The following shall be optional:

a) Neck elevator or shoulder bridge,
b) Permeable table top for radiography with cassette tray and necessary guide,
c) Lateral cassette holder,
d) Stainless steel transurethral tray with wire mesh screen,
e) Instruments tray, and
f) Neuro-surgical attachment.

9. INSTRUCTIONS FOR USE AND MAINTENANCE

9.1 The table shall be accompanied by instructions manual giving the following information:

a) Brief instructions for installation and maintenance (including spare parts), and
b) Instructions for correct operation of the table.

10. MARKING

10.1 Each table shall have a name plate fixed to it showing the following:

a) Manufacturer's name, initials or registered trade-mark;
b) Range of hydraulic lift;
c) Any special instructions for safe handling of the table; and
d) Words 'Made in India'.

10.1.1 Each table may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuousiy checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

11. PACKING

11.1 Each operation table shall be packed in a well cushioned sturdy case to stand rough handling during transit. The case shall be waterproof inside. The hydraulic oil shall be supplied in sealed tins and hydraulic system and gear system encased in suitable dust-proof material.

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*Sales Office in Calcutta is at 5 Chowringhee Approach, P. O. Princep Street, Calcutta 700072 — 27 68 00

†Sales Office in Bombay is at Novelty Chambers, Grant Road, Bombay 400007 — 89 65 28

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Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 MARCH 1984

TO

IS : 5291-1969 SPECIFICATION FOR TABLES, OPERATION, HYDRAULIC, MAJOR

Alterations

[*Page* 5, *clause* **5.2.1**, *first and second sentences*) — Substitute the following for the existing sentences:

'The head section shall be capable of being raised to 40 to 45° and in its reverse position 120° from the trunk portion. The head section shall be so designed as to be attached on the leg section side in the sitting position. The leg section shall be capable of being raised or lowered to 90° from the trunk so as to enable the table to be used as a chair. A locking mechanism shall be provided at stages of every 15° angle in the sitting position to prevent wobbling of foot section.'

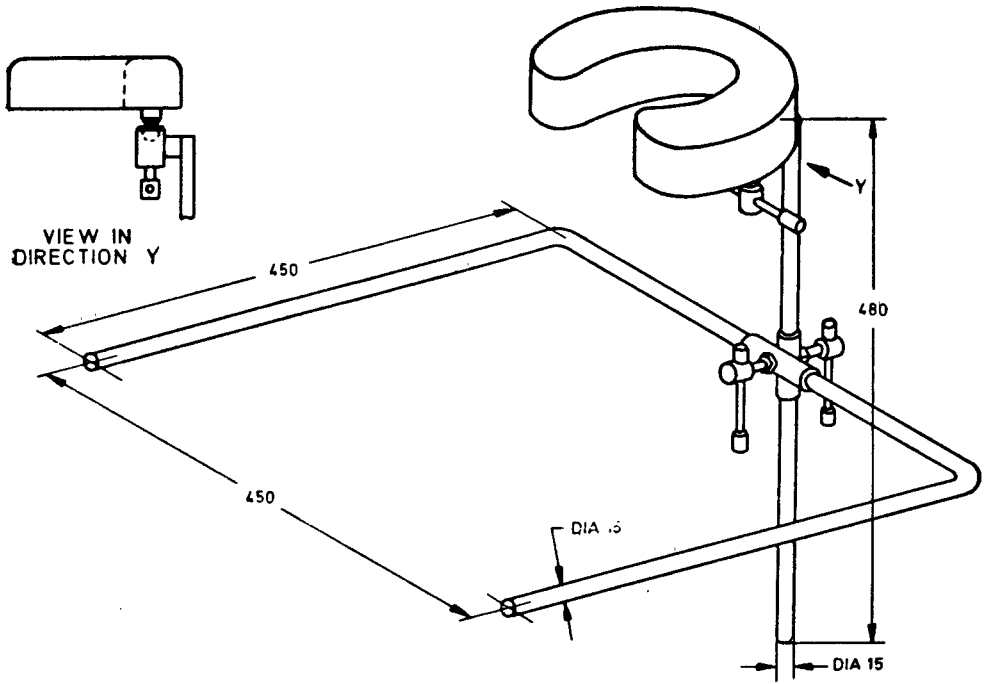
(*Page* 5, *clause* **5.3**, *second sentence*) — Substitute the following for the existing sentence:

'It shall be operated by a pedal which is so situated as not to obstruct the surgical team while operating in sitting position.'

[*Page* 9, *clause* **8.1**(k)] — Delete and renumber subsequent item accordingly.

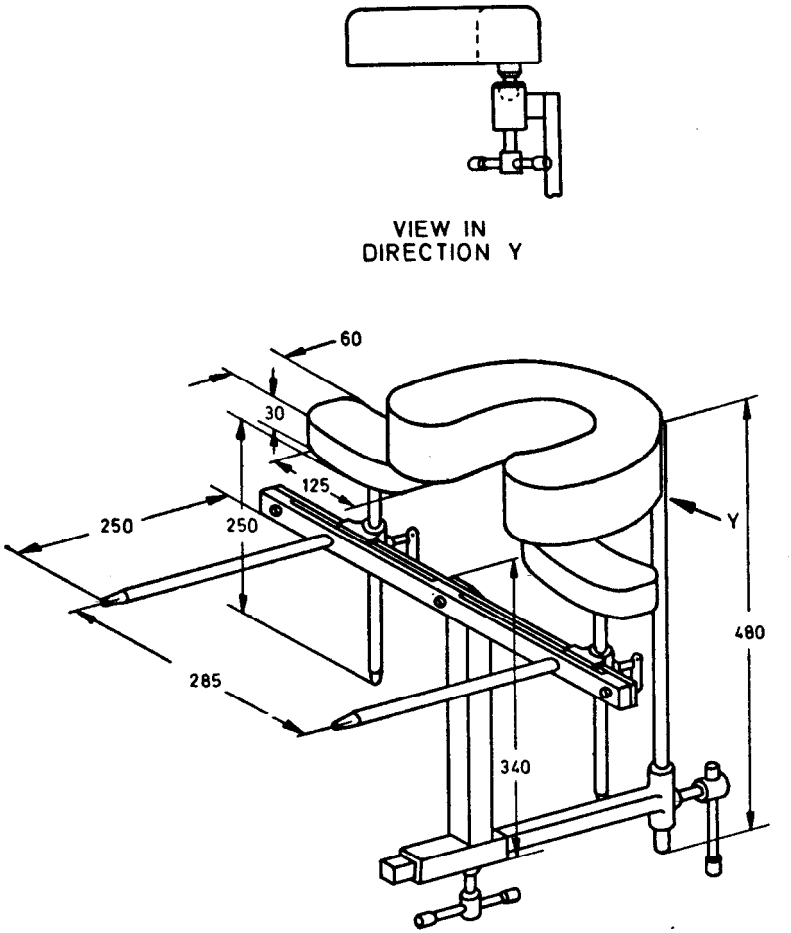
[*Page* 9, *clause* **8.2**(f)] — Substitute the following for the existing item (f):

'f) Neuro-surgical attachments as indicated in Fig. 1 to 3.'



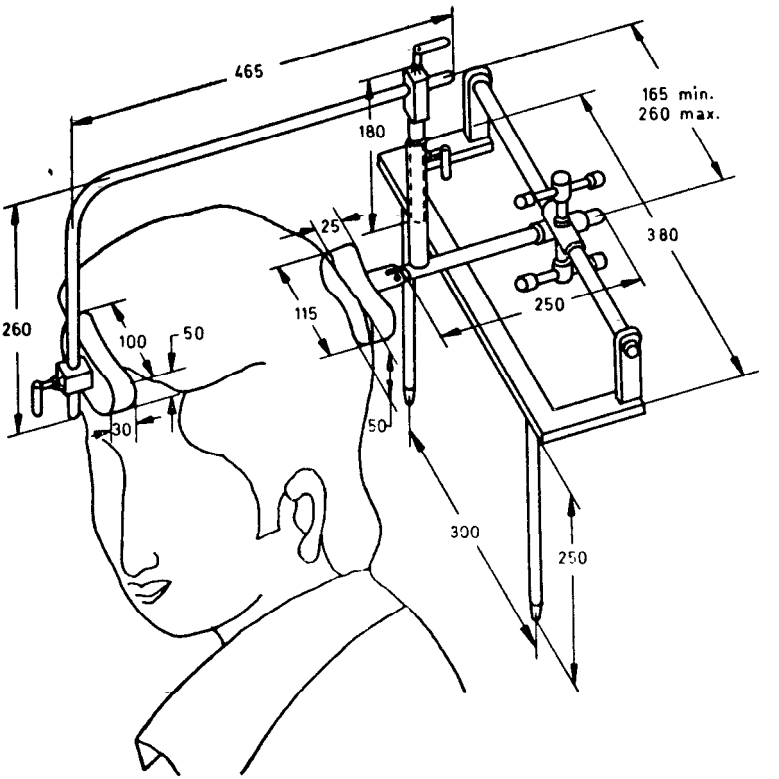
All dimensions in millimetres.

FIG. 1 NEUROSURGICAL ATTACHMENT FOR SITTING UP POSITION



All dimensions in millimetres.

FIG. 2 NEUROSURGICAL ATTACHMENT FOR PRONE POSITION HEAD-REST



All dimensions in millimetres.

FIG. 3 NEUROSURGICAL ATTACHMENT FOR TRIGEMICAL HEAD-REST

AMENDMENT NO. 2 AUGUST 1992
TO
IS 5291 : 1969 SPECIFICATION FOR TABLES, OPERATION, HYDRAULIC, MAJOR

(Page 4, clause 3.4) — ***Insert*** the following at the end of the clause:

'or else Designation 04Cr18Ni10 or 07Cr17Ni12Mo2 in accordance with IS 6911: 1972'.

(***Page 4, clause*** 3.5) — Substitute the following for the existing clause and the Note:

'35 Antistatic rubber tread castors according to IS 4034 : 1979 or cotton impregnated, bakelite wheels shall be used. The construction of the table shall however ensure transmission of the static charge to the earth.'

(Page 4, clause 4.1, ***last sentence)*** — Substitute the following for the existing sentence:

'The overall width of the table top excluding side railings shall be 50 to 55 cm.'

(Page 9, ***clause*** 8.1) — Substitute the following for the existing clause:

'8.1 The table shall be provided with the following accessories:

a) Foot extension — 1 No.

b) Shoulder supports — 2 No.

c) Lateral supports or side supports — 2 No.

d) Anaesthetic ***screen*** — 1 No.

e) Kidney elevator — 1 No.

f) Arm supports — 1 No.

g) Pelvic holder strap — 1 No.

h) Leg strap — 2 No.

j) Wristlets — 2 No.

k) Pairs of knee crutches/Lithotomy leg holders — 2 No.

m) Intravenous arm board — 1 No.

n) 25 to 50 mm thick antistatic foam rubber mattress — 1 set.

(MHD14)