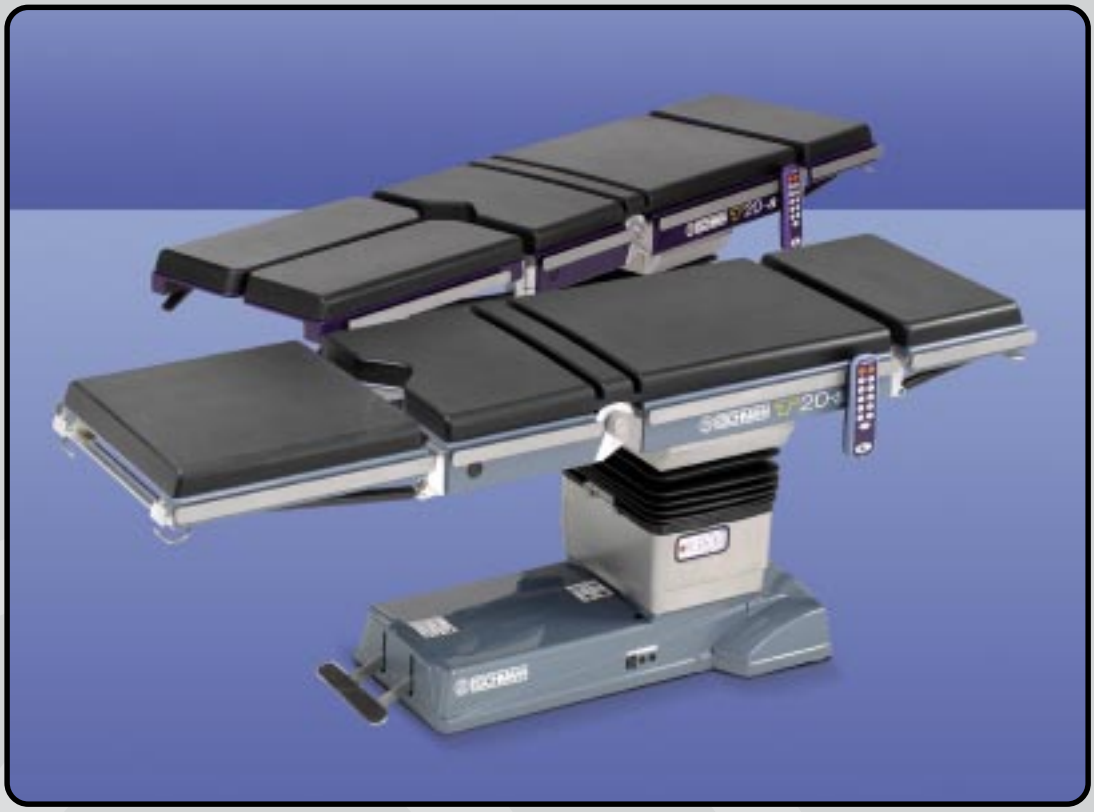
ESCHMANN

T20 Series

OPERATION TABLES



Instructions for use

113158

T-IM114b

Instructions for use

Read these Instructions before use

Keep these 'Instructions for use' in a safe convenient place for future reference.

Eschmann After Sales Service Department

The Eschmann After Sales Service Department is staffed and equipped to provide advice and assistance during normal office hours. To avoid delays when making enquiries, please quote the Model and Serial Number of your Operation Table which is shown on the Serial Number Plate located on the table base (or the trunk section for the T20-m). Please ensure you include all alpha and numeric digits of the Serial Number.

For further information visit www.eschmann.co.uk

All correspondence relating to the after sales service of Eschmann Equipment to be addressed to :

UK Customers

Eschmann Equipment, Peter Road, Lancing, West Sussex BN15 8TJ, England.
Tel: +44 (0) 1903 765040. Fax: +44 (0) 1903 875711.

Overseas Customers

Contact your local distributor. In case of doubt contact Eschmann Equipment.

Patents and Trade marks

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"T20-a", "T20-m" and "T20-s" are trade marks of Eschmann Holdings Limited.
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Patents : Worldwide Patents Pending.

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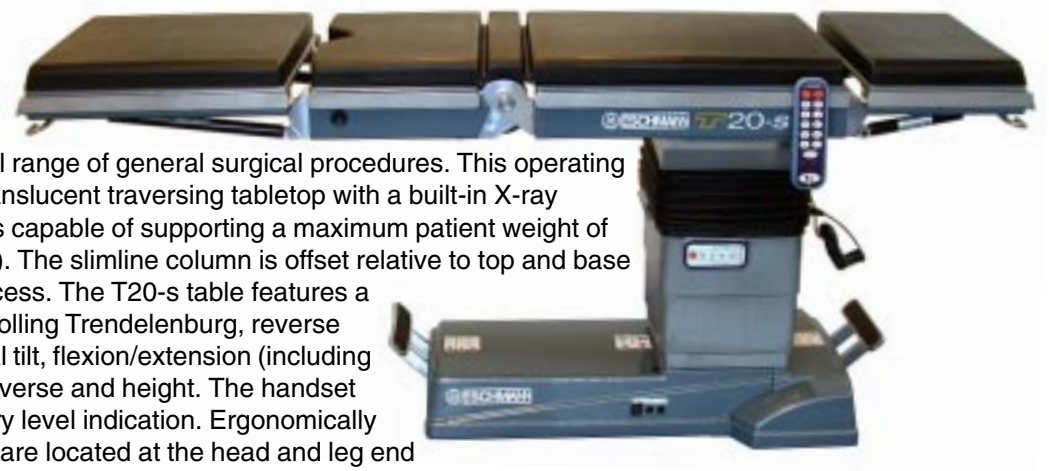
CE The CE marking affixed to the product certifies that it complies with the European Medical Devices Directive 93/42/EEC and related legislation.

The T20 Series of operation table

T20-a

The T20-a table is a powered operating table suitable for a full range of general and specialist surgical procedures. This operating table has an X-ray translucent traversing tabletop with a built-in X-ray cassette tunnel and is capable of supporting a maximum patient weight of 300kg (mobile 135kg). The slimline column is offset relative to top and base for ease of C-arm access. The T20-a table features a corded handset controlling Trendelenburg, reverse Trendelenburg, lateral tilt, flexion/extension (including 90º chair position) traverse and height. The handset also provides a battery level indication. Ergonomically designed foot pedals are located at the head and leg end of the table base to provide braked, castor and 360° mobility. The batteries in the table base are mains rechargeable with a standby battery in case of emergency. Covers to the top and base are purple and made of a special scratch resistant, hard-wearing and easy to clean seamless acrylic capped ABS. The mattress is moulded and antistatic with no seams.

T20-s



The T20-s table is a powered operating table suitable for a full range of general surgical procedures. This operating table has an X-ray translucent traversing tabletop with a built-in X-ray cassette tunnel and is capable of supporting a maximum patient weight of 300kg (mobile 135kg). The slimline column is offset relative to top and base for ease of C-arm access. The T20-s table features a corded handset controlling Trendelenburg, reverse Trendelenburg, lateral tilt, flexion/extension (including 90° chair position) traverse and height. The handset also provides a battery level indication. Ergonomically designed foot pedals are located at the head and leg end of the table to accommodate different operating theatre layouts providing braked, castor and 360° mobility. The batteries in the table base are mains rechargeable with a standby battery in case of emergency. Covers to the top and base are ocean blue and made of a special scratch resistant, hard-wearing and easy to clean seamless acrylic capped ABS. The mattress is moulded and antistatic with no seams.

T20-m

The T20-m table is a powered operating table (maximum patient weight of 300kg or 200kg mobile) featuring all the functions of the T20-a table with a mobile base that is supported by four 125mm castors to enhance manoeuvrability and usability of the operating table. The T20-m table is suitable for theatre environments that require the functionality of a trolley system whilst maintaining the performance of a table for a full range of surgical procedures. The ergonomically designed single foot pedal is located at the head end of the table and has three positions to enable the table to be static (braked), rotated 360° or moved in a straight line. Covers to the top and base are purple and made of a special scratch resistant, hard wearing and easy to clean seamless acrylic capped ABS. The mattress is moulded and antistatic with no seams.

CONTENTS

FIGURES AND APPENDICES

1.0 PRELIMINARY INFORMATION

WARNING

Read this preliminary information carefully and note ALL of the warnings, cautions and safety notes contained within these 'Instructions for use' before using this Operation Table. Keep these 'Instructions for use' close-to-hand at all times for reference.

1.1 General

1.1.1 T20 Series operation tables are classified as battery powered, mobile, general purpose, four section operation tables. Their intended function is to support and position a patient, in conjunction with their associated accessories, during general surgical operations and procedures in an operating theatre. Their intended application is for use by medically qualified personnel, trained in the use of the T20 Series powered operating tables, during surgical operations and procedures in accordance with these instructions.

1.1.2 These 'Instructions for Use' should be referred to for details of the following T20 Series Powered Operation Tables, see the table's Serial Number Plate for the actual table Serial Number and REF No.:

T20-a Catalogue (REF) number prefixed **T20**
Serial Numbers (SN) prefixed T2AC*..... or above.

T20-s Catalogue (REF) number prefixed **T20**
Serial Numbers (SN) prefixed T2SB*..... or above.

T20-m Catalogue (REF) number prefixed **T2M**
Serial Numbers (SN) prefixed T2MA*..... or above.

* The last digit of the SN prefix is the design modification state, this may increase during the build life of the tables.

NOTE: Some models have 'Denyer', 'USA', or 'Euro (Kifa)' accessory side rails, standard Eschmann accessories that locate onto these may not fit, please check with Eschmann Equipment before purchasing accessories.

1.1.3 The T20 Series operation tables and accessories must only be used as detailed within these 'Instructions for use'. Failure to do so could result in injury to patients or users, or damage to the operation table and accessories. Always ensure that all warnings and cautions detailed within these 'Instructions for use', are strictly complied with. Appendix 1 is provided for Hospitals that wish to keep a log of those people trained in the safe use of this table. Eschmann Equipment offers full training in the safe use of these tables, please contact our After Sales Service Department for details.

1.1.4 'Instructions for use' and 'Service manuals' (see section 3.3.9) as applicable should be readily accessible for reference prior to and when operating, cleaning and servicing the operation table. All manuals are available from Eschmann Equipment, see inside front cover for address.

1.1.5 Ensure the table has been correctly installed before starting to use it, see section 3.0.

1.1.6 All servicing and maintenance procedures should be carried out by engineers who have been trained by Eschmann. Training, a Service, or a Service Contract can be arranged through our After Sales Service Department (see inside front cover for contact details). Do not remove the table covers at any time (danger of accessible mains voltage), this should only be carried out during maintenance procedures. Ensure that the operation table is regularly serviced and checked for safety at least every six months.

1.2 About this manual

1.2.1 Within the text of these 'Instructions for use' the following terminology is used:

i) ***Left and right***. The terms 'left' and 'right' refer to the side of the table when viewed from the long trunk end (i.e. the head end with the table in its normal configuration, head section fitted to the long trunk as shown in Fig. 2.1). This is also the patient's 'left' and 'right' when lying on the tabletop in a supine position, with their head on the head section and with the table in its normal configuration.

ii) ***Auto-level***. The term 'auto-level' is used to describe the automatic sequence of movements to return the table to a preprogrammed position by pressing and holding a single handset button. This does not affect the head or leg sections, or any other manually operated, or powered accessory, fitted to the table.

iii) ***LEDs.*** This abbreviation is used when referring to the various indicator lights on the table or handset which are light emitting diodes (LEDs).

iv) ***Cranially and Caudally.*** The term 'cranially' (head section moves away from column) and 'caudally' (leg section moves away from column) are used to describe tabletop movement (table in the normal orientation). Normal table orientation is with the head section in the long trunk, normal patient orientation is with the patient's head on the head section.

1.2.2 These 'Instructions for use' have been split into specific sections for ease of finding information (see the main headings in 'Contents'). Where applicable and within each section, adequate cross references to other sections are made to eliminate the need to duplicate information.

1.2.3 Section 5 (Operation) details how to use the T20 Series of tables and operate their controls correctly. It is strongly recommended that the user has read and is familiar with sections 1, 2 and 4 before passing onto section 5 and starting to use this operation table.

1.2.4 Within this manual the sections in bold type headed **'WARNING'** give guidance on possible actions that could lead to injury of the patient, or theatre staff, and potential damage to the operation table. Sections headed **'CAUTION'** give guidance on possible actions that could lead to damage of this operation table which could then lead to injury of the patient, or theatre staff.

1.3 Table description

1.3.1 The T20 Series of four section operation tables have been designed to provide facilities for General Surgery, including Minimal Access procedures, Urology and Gynaecology, Thoracic, Ophthalmic and ENT, Neurosurgery, Plastic and Maxillo-Facial surgery, and non-traction Orthopaedic Surgery, they allow for intra-operative radiography using a C-arm image intensifier. They are not suitable for Orthopaedic procedures requiring traction.

1.3.2 Careful design has minimised traps for potential contamination stopping fluid entering the table during normal use, cleaning and disinfection procedures. They are stable, rigid in use and the robust construction provides protection from patient trolley or C-arm knocks whilst still providing easy access for servicing.

1.3.3 Tabletop movements (i.e. Trendelenburg, height, tilt, break and traverse) are electrically powered and incorporate 'soft start and stop' motions for patient comfort and safety. The pedestal base is foot operated and the standard head and leg sections are hand operated (see sections 5.1 and 5.2 respectively).

1.3.4 The T20 Series of table are easy to operate, theatre staff can quickly learn how to use them correctly and safely. Tabletop control is provided by a corded handset, or an optional footswitch (for Trendelenburg and height control only) or an optional infrared handset. Hand controls override footswitch control at all times and if a corded handset is plugged into the table this will take precedence over the infrared handset.

1.3.5 Power for all powered table movements is provided by internal rechargeable batteries. There are two battery sets, main batteries and standby batteries. These are recharged by an internal battery charger which requires connection to mains voltage using the mains cord supplied. **Note:** If the main table batteries fail or become critically low (i.e. warning indicators were ignored and batteries have not been recharged) the table cannot be powered directly from the mains. However by depressing and holding the standby battery switch, powered table movements can again be achieved (using power from standby batteries).

1.3.6 In emergencies (e.g. handset failure or a critically low battery) a standby control panel on the column can be used to control the table (however this MUST be limited to emergency use ONLY, certain safety features are over-ridden when this panel is used, see section 4.6.5). It may be required to press the standby battery switch if the main battery charge level is too low.

1.3.7 The bases on T20-a and T20-s tables are fitted with enclosed multidirectional castors, that can be engaged at any table height, making it easy to move on most theatre floors. They have two foot pedals providing either castor, wheel or braked orientations. The T20-m table is provided with four large castors that can be adjusted by a single foot pedal to provide wheel and castor modes and a braked position (see section 5.1).

1.3.8 Visual indicators have been restricted to essential functions and information only (e.g. table switched 'on' see section 5.3.2.2, battery level indication and battery charging state see section 5.3.1). Audible signals are only used to signal that the table has been switched 'on' for a long time without operation and that it should be switched 'off' see section 8.1, a 'beep' is also provided when switching 'on' (the audible inactivity 'beep' can be configured 'off' during a service if required).

1.3.9 Tabletops have a lightweight X-ray translucent surface (designed to reduce shadows on images) and an X-ray cassette tunnel with the facility for an X-ray cassette (430mm x 340mm) to be placed at any point beneath the full length of the patient's body, see section 6.3. The standard side rails allow placement of clamps and most standard accessories. Simple button operated catches release the head and leg sections when required.

1.3.10 The tabletop can be adjusted into the following patient positions:

- Supine with C-arm access to patient from nipple region to feet
- Supine with C-arm access to patient from groin to head
- Supine Extension with C-arm access to break area (Cholecystectomy-type procedure)
- Supine Flexion ('Lawn chair' position)
- Lateral
- Lateral Extension with C-arm access to break (Nephrectomy position)
- Supine Lithotomy with C-arm access to whole of the Urinary tract
- Supine Lithotomy with or without Trendelenburg
- Prone with or without extension at waist or hips (with C-arm access)
- 90° Chair position with patient's knees at the same level as the heart, offset to the head end.

1.3.11 For additional information see section 6.0 for patient positioning notes, section 6.2 for the obese patient, 6.3 for radiographic procedures and 6.4 for illustrations and details of safe loading.

1.3.12 Castor covers (spats) are supplied as an optional item with the T20-m table. These can be fitted by an Eschmann Engineer at any time, please contact the After Sales Service Department.

2.0 TABLE PARTS AND SYMBOLS

2.1 Part identification

2.1.1 Fig. 2.1 shows the table top in its normal configuration and identifies the major parts of the table top.

2.1.2 Fig. 2.2 identifies the various parts of the T20-a and T20-s table base and column.

2.1.3 Fig. 2.3 identifies the various parts of the T20-m base.

2.2 Symbols and graphics

To enable an easy reference to all the symbols and graphics used on the T20 Series of tables (and within these 'Instructions for use') the following grouped sections show all the symbols and graphics used.

2.2.1 Symbols general

The following symbols are shown on various parts of the table, handset or Serial Number Plate.

IPX 4 This symbol (splash proof) denotes that the equipment (the table) meets the requirements of IEC529 for protection from splashing water.

IPX 6 This symbol (protection against heavy seas) denotes that the equipment (the handset) meets the requirements of IEC529 in that water from heavy seas or water projected from powerful jets shall not enter in harmful quantities.

This symbol indicates that the equipment is for use on alternating current.


This symbol indicates that fuses adjacent to the symbol have a rating and type as detailed.


This symbol warns the user to read the accompanying documents, these 'Instructions for use'.


Symbols ○ and ⊙ near the main table 'on/off' switch, indicate 'OFF' and 'ON' respectively.


With the mains cord attached the equipment has '**Class II**' protection against electric shock.

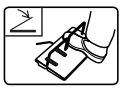

The patient leakage current, with mains voltage on the applied parts, meets the requirement for type **BF** medical electrical equipment and are defibrillator proof.


This symbol is used to indicate the table's duty cycle which is the ratio of the operating time to the sum of the operating time and the ensuing interval.

SN This symbol indicates the unit serial number is as indicated adjacent to the symbol.

REF This symbol indicates the catalogue number is as indicated adjacent to the symbol.


This symbol indicates that the date of manufacture is as indicated adjacent to the symbol.

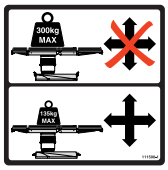

This symbol indicates the connection point for a footswitch.


This symbol indicates the connection point for the corded handset.

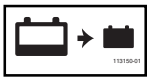

This symbol indicates that the table section to which it is applied (e.g. head section, under the mattress) should not be used as a seat.

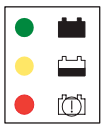
This symbol indicates the 'Safe working load' of the section to which it is applied can safely support an evenly distributed load to the value indicated, in this example 25kg.

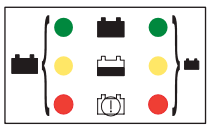
This symbol indicates the 'Minimum breaking load' of the section to which it is applied. An evenly distributed load (in this example 100kg or greater) may break the section.



This symbol on the table base indicates the table should not be loaded above 300kg, nor moved with a load above 135kg for the T20-a and T20-s tables, or 200kg for the T20-m table.


This symbol is used to identify the standby battery switch.


This graphic (T20-m table only) adjacent to the mains socket, identifies the relationship between the colour of the mains 'on' LED and the battery charge state, see section 5.3.1.

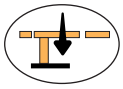

This graphic (T20-a and T20-s tables only) adjacent to the mains socket, identifies the relationship between the colour of the mains 'on' LED and the battery charge state for the main and standby batteries, see section 5.3.1.

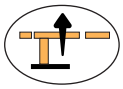
2.2.2 Handset button symbols

The following symbols are shown on the handset buttons to indicate their function. Use of the handset is fully detailed in section 5.3.3 of this manual.


Trendelenburg - Press to rotate tabletop in the Trendelenburg (head down) direction.


Reverse Trendelenburg - Press to rotate tabletop in the Reverse Trendelenburg (head up) direction.


Height down - Press to move tabletop down.


Height up - Press to move tabletop up.

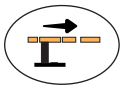

Tilt - Press to tilt tabletop down on the left (when viewed from the long trunk end)

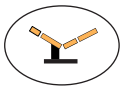

Tilt - Press to tilt tabletop down on the right (when viewed from the long trunk end)


Break down - Press to move the break down (i.e. short trunk moves down w.r.t. long trunk)

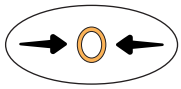

Break up - Press to move the break up (i.e. short trunk moves up w.r.t. long trunk)


Traverse Cranially (towards the head) - Press to move the tabletop Cranially (i.e. tabletop moves in the long trunk direction).


Traverse Caudally (towards the feet) - Press to move the tabletop Caudally (i.e. tabletop moves in the short trunk direction).


Flexion - Press to move tabletop into Flexion.


Extension - Press to move table into Extension.


Return to Level - Press to return tabletop to a preset level position.

2.2.3 Handset graphics


This graphic is shown on the corded handset to indicate the battery charge level for both the main and standby batteries, see section 5.3.1.

2.2.4 Standby control panel button symbols

The following symbols are shown on the standby control panel buttons, indicating the function they select. The arrows (upper or lower) indicate the direction the selected function will move, if the corresponding direction button (i.e. upper or lower) is pressed, see section 5.3.4.


Button selects Trendelenburg function.


Button selects Break function.

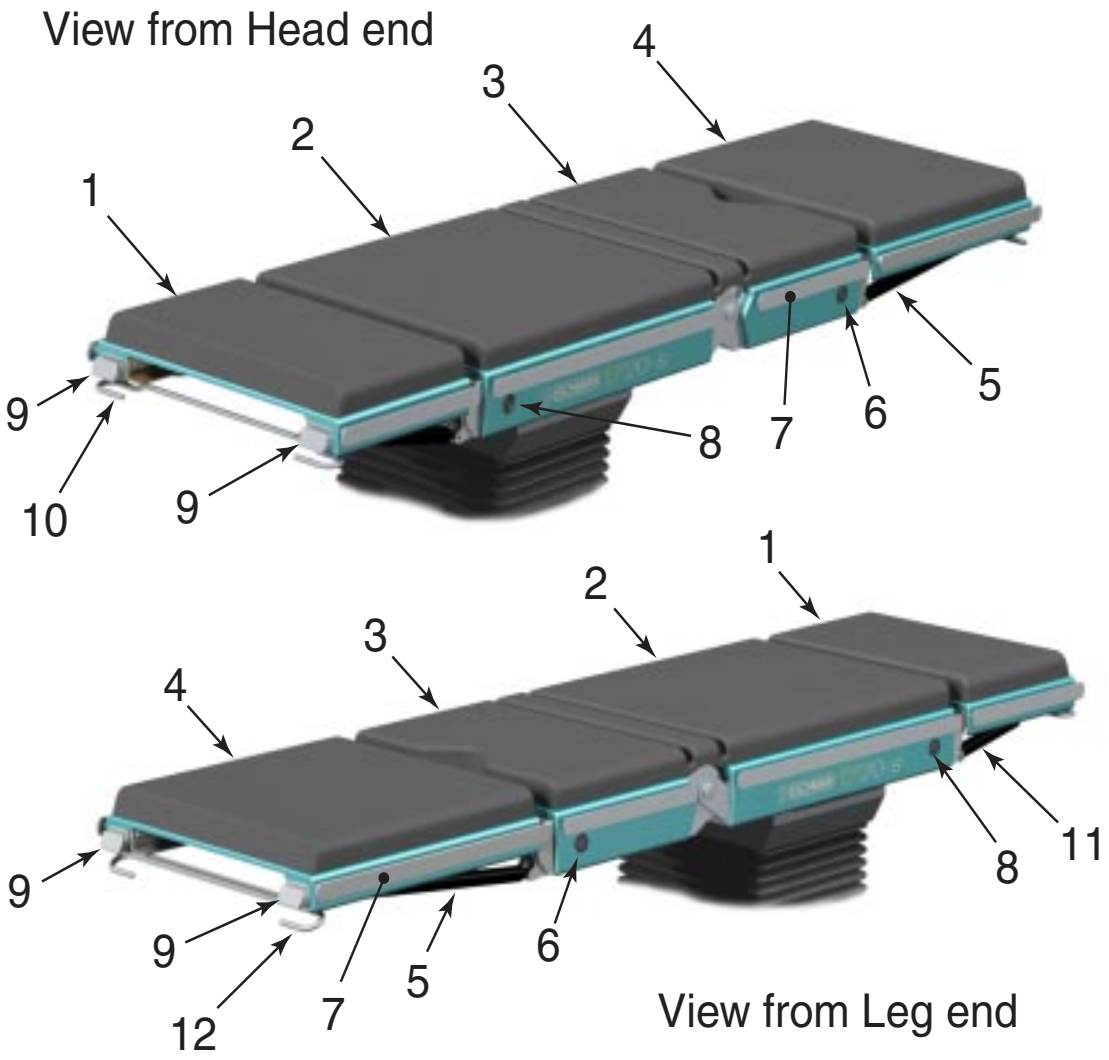

Button selects Height function.


Button selects Tilt function.


Button selects Traverse function.


Direction button - Press button to obtain movement indicated by upper arrow of function button.

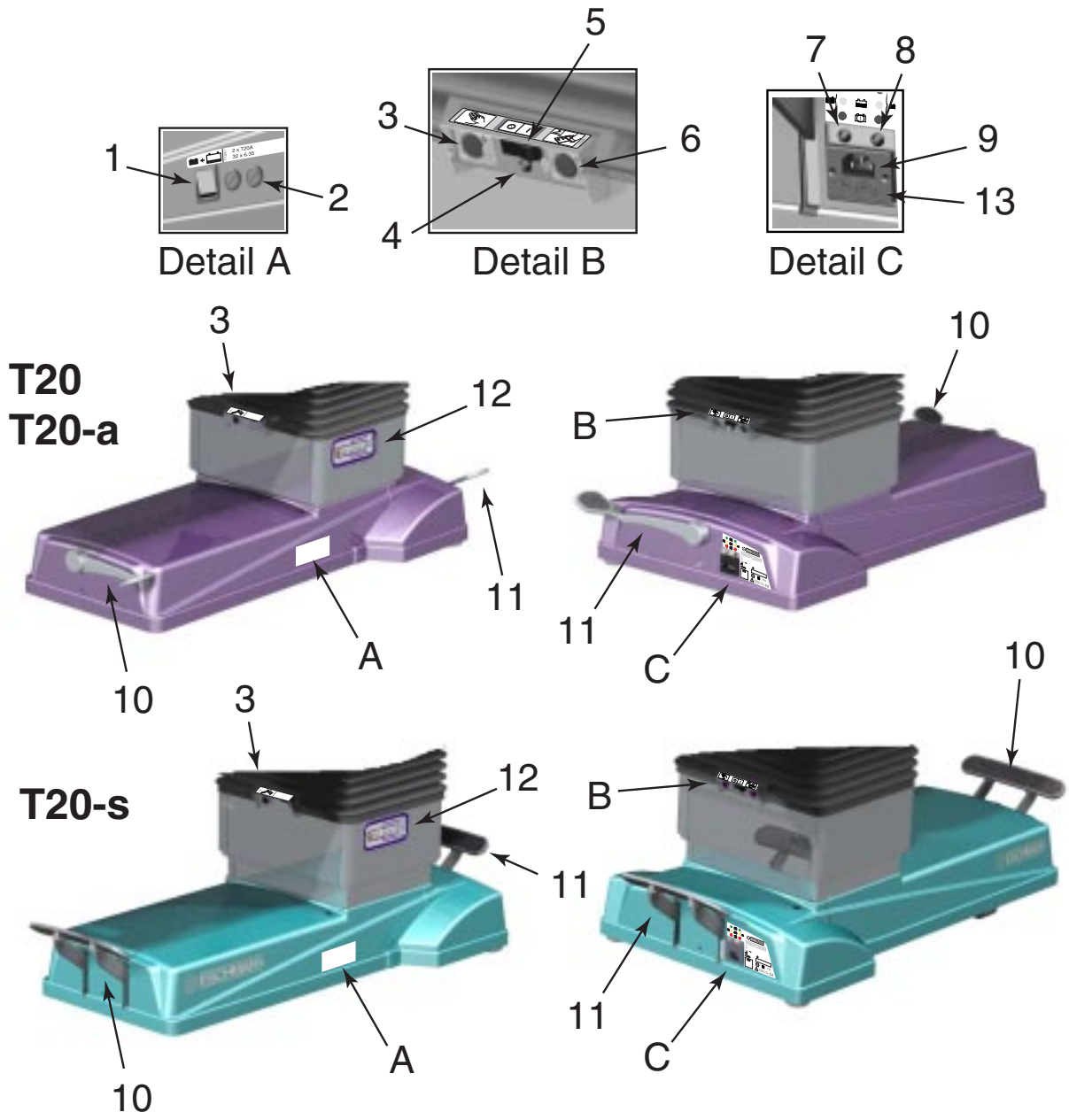

Direction button - Press button to obtain movement indicated by lower arrow of function button.



1 Head section
2 Long trunk section
3 Short trunk section
4 Leg section
5 Leg section gas spring
6 Short trunk section release button
7 Accessory side rail (can also be used to stow handset*)
8 Long trunk section release button
9 Head or leg section end block (use to stow UK/EURO handset)
10 Head section release bar
11 Head section gas spring
12 Leg section release bar

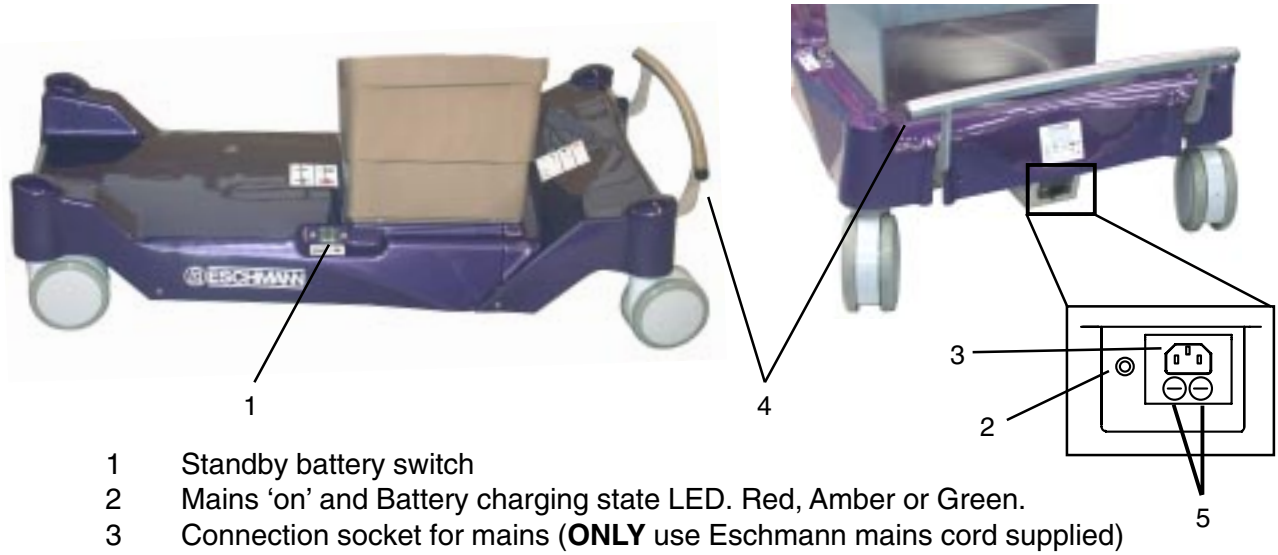
* Clip on handset must match side rail type, see accessory section 4.8

Fig. 2.1 Identification of the main parts of the T20 Series table top.



1 Standby battery switch
2 Battery fuses
3 Connection socket for Eschmann handset (**ONLY**)
4 Table 'On' LED (green). Bright or Dim see section 5.3.1)
5 Main table 'On/Off' switch (◯ = Off, ⊙ = On)
6 Connection socket for Eschmann footswitch (**ONLY**)
7 Mains 'on' and Main Battery charging state LED. Red, Amber or Green.
8 Mains 'on' and Standby Battery charging state LED. Red, Amber or Green.
9 Connection socket for mains (**ONLY** use Eschmann mains cord supplied)
10 Castor foot pedal
11 Wheel foot pedal
12 Standby control panel
13 Mains fuses

Fig. 2.2 Identification of the main parts of the T20-a and T20-s table base and column.



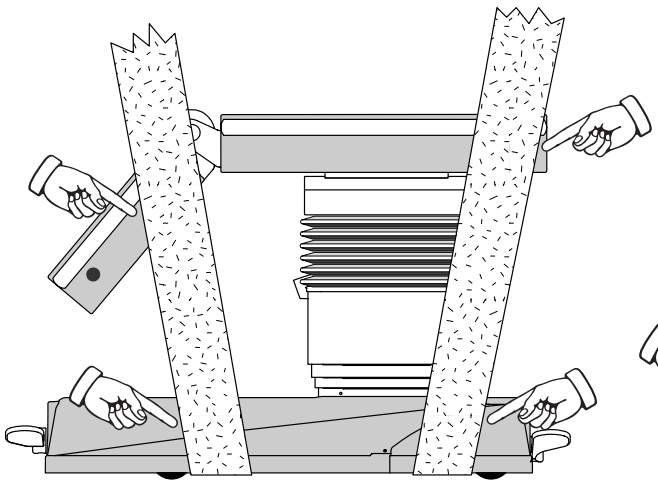
1 Standby battery switch
2 Mains ‘on’ and Battery charging state LED. Red, Amber or Green.
3 Connection socket for mains (**ONLY** use Eschmann mains cord supplied)
4 Foot pedal
5 Mains fuses

Note: Castor covers (spats) are supplied as an optional item (see section 1.3.12)

The following items on the column are identical to the T20-a table:

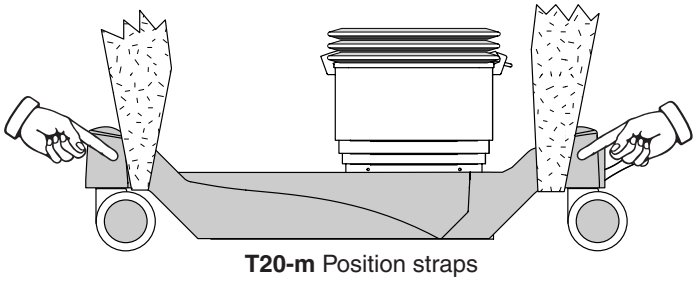
Connection socket for Eschmann handset (**ONLY**) - see item 3, Fig. 2.2
Connection socket for Eschmann footswitch (**ONLY**) - see item 6, Fig. 2.2
Standby control panel - see item 12, Fig. 2.2
Main table ‘On/Off’ switch - see item 5, Fig. 2.2
Table ‘On’ LED (green) - see item 4, Fig. 2.2

Fig. 2.3 Identification of the main parts of the T20-m table base and column.



T20-a & T20-s Position straps inside, but as close as possible to the castors.

Use webbing straps of minimum width 100mm and a minimum breaking load of 1000kg. Position adequate padding in the areas indicated (on both sides) to avoid damaging the table covers.



T20-m Position straps inside castors as indicated.

Fig. 3.1 Lifting the T20 Series operation table

3.0 INSTALLATION

3.1 General

3.1.1 In the U.K. the table is delivered un-crated with the head and leg section fitted. The mattress set is boxed individually and placed on the trunk sections. The handset, mains cord and literature are supplied loose. Any accessories ordered with the table will be packed individually. Some of the following unpacking and assembly information is not therefore applicable to U.K. customers. For overseas markets the table is usually packed in a container with the head and leg section fitted, together with a boxed mattress set a mains cord and the literature. The handset is packed within the container in an antistatic bag. Other accessories are usually packed separately, but some may be included in the main case and should be unpacked and stored separately during the table installation.

3.1.2 When delivered packaged, carefully remove the T20 operation table (having first removed any accessories and packing restraints from within the container) from the packing case as follows:-

i Remove the walls of the case leaving the table on the base still in the braked position as packed. Remove any chocks from the pallet base to enable later table movement (iv below).

ii Position the ramp provided (in the packing case) adjacent to the base of the case.

iii Follow the instruction provided in section 5.1 of this manual and place the table base into the 'Wheel' orientation or mode.

iv With at least two people to support the table's weight, push it (do not pull it) off of the pallet base and down the ramp.

v Note that the table should not be wheeled over rough ground, always use a trolley until a smooth floor area has been reached.

vi Should it be necessary to lift the operation table refer to section 3.2 where suitable lifting points and methods are detailed.

3.1.3 Unpack the mattress set and fit a mattress to each tabletop section as detailed in section 5.2.6.

3.1.4 Any packaging materials should be recycled or disposed of in accordance with current legislation.

3.1.5 The T20 Series of table are powered by internal rechargeable batteries which are connected and charged before delivery (see disposal note in section 8.6.3). The tables also have standby batteries. An internal mains powered battery charger is incorporated in the table's base, to charge both the main batteries and the standby batteries.

CAUTION

It is most important that fuses of the correct type, size and rating are installed (see Technical Data, section 9.5.4).

3.1.6 The T20 Series of table require a mains electrical supply corresponding to the voltage shown on the Serial Number Plate located on the table base. **Only** use the Eschmann mains supply cord provided with the table. If the plug supplied fitted to the cord is not suitable it should be replaced with a suitable plug wired as below. If the plug is a fused type, a 10A fuse must be fitted. The mains supply cord must always be wired as follows:

Brown internal cord to **LIVE**
Blue internal cord to **NEUTRAL**
Green internal cord to **Earth**
(Note: The T20-a, T20-s and T20-m tables are Class II, Type BF, there is no **EARTH** connection through to the table)

3.1.7 The table batteries should be recharged (see section 5.3.1) and the table operated through the cycle of movements detailed below to check and ensure correct function, **before** the tables are first used.

Full Trendelenburg / reverse Trendelenburg
Maximum to minimum height
Maximum tilt, left and right
Maximum traverse, caudally and cranially
Maximum to minimum break

CAUTION

To complete and maintain the antistatic pathway the table must be used on an electrically conductive or antistatic floor and with mattresses supplied by Eschmann Equipment.

3.1.8 The table has an antistatic pathway from the tabletop, through an internal resistor, to the castors. To complete the antistatic pathway, the table must be used on an electrically conductive, or on an antistatic floor (also see the warning in section 6.1).

3.1.9 As with all medical electrical equipment care should be taken with regard to electromagnetic compatibility (EMC) during installation. These instructions are written in line with the latest international standards (EN 60601-1-2:2001) and are designed to minimise the risk of electromagnetic compatibility issues. The T20 Series of table should be installed and put into service in accordance with the EMC information provided in the Technical Data section of these 'Instructions for Use' (Section 9.11).

3.1.10 The table should be cleaned and disinfected prior to its first use as detailed in section 8.2 and 8.3 and then commissioned in accordance with any local procedures applicable to new equipment, this should include staff training. Eschmann supply a range of wall charts with the table, additional training aids and on-site training can be arranged, contact Eschmann for more information.

3.2 Lifting the operation table

WARNING

The table is heavy and at least four strong people are required to lift it. Ensure that adequate precautions are taken (e.g. wear protective shoes, use the correct straps).

3.2.1 The T20 Series of table should only be lifted as a last resort. Ideally it should be placed on a trolley directly from the delivery vehicle, or moved on the base of the delivery packing case (overseas only) and then rolled down the ramp provided.

3.2.2 If required the T20 table should only be lifted by placing suitable webbing straps underneath the table base in the positions indicated in Fig. 3.1 (having placed the T20-a and T20-s tables into their 'castor' orientation to increase ground clearance) and observing the notes that follow. The table should only be lifted the minimum amount required and not carried. Lift the table sufficiently high to allow a fully decked pallet to be slid underneath. The table should be placed into its 'braked' orientation whilst on the pallet. Transport the table on the pallet using a forklift truck or similar equipment ensuring the table is strapped securely to the pallet.

3.2.3 Extreme care should be taken to pad the straps where they pass the base covers and the table top sections to avoid damage. Take special care not to cause damage to the lower edge of the base covers.

3.2.4 Before lifting remove all tabletop sections, accessories and mattresses, to minimise the weight to approx. 248kg (T20-a and T20-s tables) or 196kg (T20-m table). Place the table top into a level plane in both directions (i.e. tilt and Trendelenburg) and traverse the top so the long trunk is central to the column as shown in Fig. 3.1. Lower the short trunk and then the table top to their maximum limits.

3.2.5 When lowering the table after the lift take care not trap feet under the tables base. Inspect the table for any signs of damage and check all functions prior to placing the table back into service.

3.3 Technical

3.3.1 The following sections are provided for the user to note prior to using a T20 Series of operation table.

3.3.2 The T20 Series of table meets the requirements of international standards (see section 9.8) and conforms dimensionally to meet most requirements, for the full table technical specification details refer to the Technical Data, section 9.0.

3.3.3 The table should only be used on an antistatic floor and is classified as type 'BF' (i.e. the table has isolation from earth equivalent to that of type 'BF' equipment when the mains cord is attached).

3.3.4 The antistatic properties of the table depend upon the use of the recommended mattresses (i.e. Eschmann antistatic mattresses ONLY) also see section 3.1.8.

3.3.5 Only Eschmann accessories listed in this manual should be used on the table and in accordance with the 'User Handbook' supplied with the accessory. Accessories available from Eschmann are listed in section 7.0. Other accessories, especially those that could compromise table stability, must not be used. Use of other equipment with T20 tables should only be considered after evaluating the safety of the patient and personnel. For accessories that fit onto the side rail ensure that they are compatible with the side rail fitted to the table. These tables can be supplied with standard UK, Euro USA or Denyer style side rails, see section 1.1.2

3.3.6 Provision of a diagnostic port within the table enables access for reprogramming the tables software, down-loading of fault information and service functions. Use of this port MUST be limited to trained service personnel only, and should only be used in accordance with the correct Eschmann manuals (see 3.3.9 below).

3.3.7 The table has four fuses (two on the T20-m) that the user has access to in the event of failure. The position of these are shown in Fig. 2.2 and 2.3 and are replaced as detailed in section 5.3.5.

3.3.8 Eschmann can provide customers with manuals (see 3.3.9 below), for use by them in maintaining their own equipment. These manuals contain schematic diagrams, component part lists, descriptions and calibration instructions which will assist the customer's Eschmann trained personnel to service the equipment or replace parts (which should only be obtained from Eschmann).

3.3.9 The following manuals are applicable to the T20 Series of operation table and their accessories (the part number is in brackets following the manual reference) they are available to order, see inside front cover for contact details:-

T-SM52 (113175) - Service manual
T-IPL40 (113177) - Illustrated parts list
T-IM94 (111012) - Application software manual
T-IM56 (698907) - General accessory leaflet
Note: Some accessories are provided with their own 'User/Service Handbooks'.

3.3.10 Appendix 1 provides a log that can be used to record those people trained in the safe use of this operation table. It is suggested that this is used to ensure that ALL personnel using this table, are aware of all the warnings and cautions contained within these 'Instructions for use'.

3.3.11 The T20 Series of table and their accessories, as listed in these 'Instructions for use', do not contain 'Latex'.

4.0 SAFETY NOTES & CAUTIONS

4.1 Warnings

The warnings and cautions that follow must be followed, they are repeated as applicable within the text of these 'Instructions for use' to emphasise their importance. Ensure you are familiar with them before using the table.

WARNINGS

The T20 Series of table have been designed to minimise the possibility of accidental electrosurgery burns. Contact with any metal surfaces (e.g. table side rail, or other equipment etc.) can cause burns during electrosurgery and must be avoided.

The T20 tables are not rated as AP or APG and should not therefore be used in the presence of explosive gases.

The T20 tables have been designed for patients weighing up to 300kg (47 stone) with their centre of gravity (normally the umbilicus) positioned close to the column on the trunk sections. However patient positioning and additional loads from accessories can compromise table stability and strength. Ensure that loading does not compromise table stability or damage the table (see graphs in section 6.4).

To comply with BS EN 60601-1:1990 some accessories have been designed for a maximum evenly distributed load, see the 'User Handbook' supplied with each accessory.

With the table in (or during transition into) the 'castor' or 'wheel' orientation, the centre of gravity of the patient (normally the umbilicus) should lie no more than 200mm away from the centre of the column. Whenever this is not practical the table should be adequately supported (e.g. by at least two able people).

The head and leg sections are designed to support and position the corresponding part of the patient's weight only. Damage leading to failure of the section may be caused if excessive weight is applied. Take care when handling these sections to avoid strain and ensure no body parts or objects are trapped when replacing or adjusting them.

Only use Eschmann accessories and sections that are compatible with this table. When parts are replaced during maintenance procedures, ensure that ONLY parts supplied by, or from, Eschmann Equipment are used. Alternatives, although similar, may affect the safety of the table. Eschmann cannot be held responsible for service, modification or adjustments to the equipment, when performed by other than Eschmann accredited personnel.

Where given, descriptions and illustrations of patient operating positions, and positioning procedures, are for guidance only. It is the responsibility of the operating surgeon to make sure that the positions, and the positioning procedures are appropriate for the operation to be performed, and the safety of the patient. (See section 6.0).

During any table positioning procedure care should be taken to ensure the patient's safety. In particular during Trendelenburg and tilt movements the patient should be supported to ensure they remain secure on the tabletop. The patient's weight should be supported whenever the sections are adjusted or removed from the table during repositioning.

During ANY movement of the table or tabletop, ensure that no part of either patient or hospital staff, or object (e.g. drapes, infusion tubing, diathermy connections, ECG cords etc.) can become trapped between any moving and/or stationary equipment, or in a pinch point, causing injury or damage to equipment. Particular table movements that should be operated with care are reducing the height and Trendelenburg, which can cause trapping situations. Always ensure adequate slack is available in drapes and tubing for the movement required (e.g. maximum Trendelenburg).

When moving the table (e.g. in or out of theatre) with a patient (maximum weight 135kg for T20-a and T20-s, or 200kg for T20-m, see section 5.1) always ensure that the patient's limbs are secure on the tabletop to prevent crushing or trapping them against another object, always use cot sides (available as an accessory).

Always keep the patient under observation (e.g. check respiratory and circulatory system and for the possibility of pressure sores etc.) and correctly positioned whilst on the table.

Ensure that electrical equipment connected to the communication port (available during maintenance procedures only) complies with appropriate electrical safety standards. Note that standards compliance of this product may be affected if noncompliant equipment is attached to the communication port.

CAUTIONS

Do not place either heavy accessories, or, long accessories that could impose high torques, to the side rails, as this may lead to damage of the rails.

Do not exceed the duty cycle for any table motor drive as detailed in the technical data section 9.5.5.

Moving the table over soft floors (e.g. carpet or 'cushion' flooring) will increase resistance to movement compared to normal hospital 'hard' flooring and care should be taken.

4.2 Do's and Don'ts

Attention to the following points will prolong the life and efficiency of the T20 Series of table and will help to avoid the risk of accidents, or damage. Other safety notes and warnings are also given within the text of this manual and these should be noted during use of the table.

DO:

- Keep these 'Instructions for use' close-to-hand.
- Read these 'Instructions for use' carefully before adjusting, moving or using the table.
- Use the table on an antistatic floor to prevent inadvertent static buildup.
- Use only the correct Eschmann mattresses and accessories that are compatible with the T20 Series of table as detailed in these instructions.
- Check that handset cables and standby controls are not damaged before use.
- Check that the table and its accessories are not worn or damaged, or are in any way not suitable for the intended purpose, before use.
- Check that all the sections (e.g. head and leg) and accessories are secure, and put the table base in the 'braked' position before use.
- Ensure that all cables are not stretched leading to disconnection or damage during movement or readjustment of the operation table or patient.
- Remove table accessories and their clamps (in particular rotary clamps) from side rails, when they are not being used.
- Read and follow the instructions for cleaning, and for the care of the table and mattresses.
- Switch 'off' and disconnect from the mains electrical supply prior to cleaning and/or disinfecting the table and when it is not being recharged.
- Ensure that the table and accessories are serviced at regular intervals (every six months is the recommended frequency) only by Eschmann trained personnel, or by accredited agents.
- Ensure that only the Eschmann mains cord supplied with the table is used to connect the table to the mains.
- Ensure that only Eschmann supplied parts are used during part replacement.

DO NOT:

- Do not lift the table by its tabletop.
- Do not move the table with a patient without cot sides in place on either side of the tabletop.
- Do not push the table over rough surfaces, use a trolley.
- Do not drop the table (or individual sections).
- Do not put heavy weights on the table sections, observe the maximum advised loading.
- Do not put sharp objects on, or against, mattresses, pads, or the radiographic tabletop.
- Do not place any objects on the base covers
- Do not drop heavy objects onto the radiographic tabletop or base covers.
- Do not spill oil, ether, or other fluids onto the mattresses or the pads.
- Do not pull the table by any of the tabletop sections, or accessories, always push it.
- Do not service this equipment unless you have been trained by Eschmann.

4.3 Daily 'Before use' test

It is recommended that a 'Daily test' is carried out before using the table every day. First check that the batteries are charged if they are not charge them (see section 5.3.1.1 and 5.3.1.2) and ensure that a suitable practice is put in place so they are charged at the end of every shift in future. Then check the table responds to the following movements from the handset (each movement only needs to be brief, one or two seconds each):

Trendelenburg / reverse Trendelenburg
Height Up / Down
Tilt Left / Right
Traverse Caudally / Cranially
Break Up /Down

Then check at least two of the above plus Trendelenburg using the Standby control panel.

4.4 Accessories

The accessories available from Eschmann for the T20 Series of table are listed in section 7.0. Use of other equipment with the T20 tables should only be considered after evaluating the safety of the patient and personnel. Inadvertent use of incorrect accessories could damage the table and lead to injury. Always ensure that the information in the 'Instruction' or 'User Handbook' supplied with the accessory are complied with and follow all the safety notes

contained within them during use. For accessories that fit onto the side rails ensure that they are compatible with the side rails fitted to these tables. These tables can be supplied with standard UK, USA or Denyer style side rails.

4.5 Manual handling

WARNING

Ensure care is taken when moving adjusting or lifting any part of the table or patient. Note the guidelines provided.

4.5.1 During adjustment or changing the configuration of the T20 series of operation tables, there are occasions when the user should be aware of the safe practises to be employed during manual handling or adjustment of parts of the table. For information, the weights of the heaviest sections and accessories commonly used are listed in Appendix 4. Appendix 4 also contains other information on manual handling. When lifting, carrying or fitting these components it is recommended that care is taken and that two or more people are employed when required.

4.5.2 These 'Instructions for use' advise supporting the weight of the patient during adjustment of any section, obviously this requires the intervention of several personnel, some supporting the patient's limbs and others adjusting the table sections.

4.5.3 When moving the table note that extra effort is required to start the table moving, take care not to strain limbs or back. The table should not be moved when heavily loaded note the warnings and cautions provided. It is good practice to use two or more people when moving a table.

5.0 OPERATING THE TABLE

This section has been split into sections as follows:

5.1 Moving/operating the table base.

5.2 Using the removable sections.

5.3 Using the table's powered/electrical functions.

5.1 Operating the table base

WARNING

Always push the table (do not pull it) at a suitable height ensuring that it is stable at all times, take care not to collide with personnel or equipment. Maximum stability will be at minimum height. Ensure that the patient is adequately supported and restrained (especially limbs) using cot sides as appropriate (also see section 5.1.3). Ensure that all connections via cord or tube, to the patient or table, have either been disconnected, or are only attached to equipment that will move with the table to avoid inadvertent disconnection.

When changing from 'castor' or 'wheel' orientation, to 'braked', ensure that no objects (e.g. cords, tubing etc.) can become trapped beneath the table base and floor (T20-a and T20-s tables only). Do not move the table with a patient weighing more than 135kg (T20-a and T20-s tables) or 200kg (T20-m table) and ensure stability is maintained.

If table is difficult to move check for objects under castors and that castors are maintained and kept clean and free from foreign objects (also see section 1.3.12).

The table base has three formats, the T20-a and T20-s tables (basically similar, differentiated by the design of the foot pedal) see section 5.1.1 and the T20-m table which has a single foot pedal, see section 5.1.2.

5.1.1 T20-a and T20-s table base

The T20-a and T20-s tables can be moved easily on built-in castors and wheels. Normally the table rests on brake pads at the long trunk end and wheels at the short trunk end, these provide a secure and static location on the operating theatre floor. Lower the table to a suitable height to achieve a stable position before moving the table.

To move the T20-a and T20-s tables they are placed onto their wheels and castors in two ways, providing both a 'castor' orientation and a 'wheel' orientation. The latter enables easy movement of the table in a straight line (down a corridor for example). Moving the table into either of these orientations does not require battery power, they are manual operations achieved by using one or both of the foot pedals on the table base.

The table should always be left in the 'braked' orientation with both pedals in their raised positions. Do not leave the table with the wheel pedal up and the castor pedal down. When familiar with sections 5.1.1.1 - 5.1.1.2, use Fig. 5.3 as a quick reference guide for pedal operation.

5.1.1.1 'Wheel' orientation (from 'braked')

T20-a wheel pedal operation is easily achieved if the pedal is pressed down with the right foot whilst steadying yourself with hands on the tabletop. Stand on the side of the table on which the footpad is located. T20-s wheel pedal operation is easily achieved if you steady yourself with your hands on the tabletop, note that you can stand on either side of the table to operate the pedal. For either type of pedal use a steady 'press' rather than a 'rapid depression' of the pedal, this provides easier identification of the 'click' and avoids pressing the pedal passed its locking position.

To place the table into the 'Wheel' orientation from the 'braked' orientation, press the wheel pedal (item 11, Fig. 2.2) down steadily until you hear an audible 'click' (action indicated in Fig. 5.1a or 5.1b). This 'click' indicates that the pedal has locked in the down position. Do not continue to press the pedal after the 'click' as this will release the internal catch and the pedal will not lock down. If this does happen the pedal must be allowed to rise fully (this resets the internal catch) before pressing it down again.

When placed into the 'Wheel' orientation the table base is supported on two wheels at the short trunk end and two castors at the long trunk end. To move the table in 'wheel' orientation always push it (do not pull it) from the long trunk end, moving the end nearest to you, left or right, to steer the table in the required direction. The table is in 'wheel' orientation when the wheel pedal is in the lowered position and castor pedal is in the raised position.

5.1.1.2 'Castor' orientation (from 'wheel')

T20-a castor pedal operation is easily achieved if the pedal is pressed with the left foot whilst steadying yourself with hands on the tabletop. Stand on the side of the table on which the footpad is located. T20-s castor pedal operation is easily achieved if you steady yourself with your hands on the tabletop, note that you can stand on either side of the table to operate the pedal. For either type of pedal use a steady 'press' rather than a 'rapid depression' of the pedal, this provides easier identification of the 'click' and avoids pressing the pedal passed its locking position.

To place the table into the 'castor' orientation from the 'wheel' orientation, press the castor pedal (item 10, Fig. 2.2) down steadily until you hear an audible 'click' (action indicated in Fig. 5.1a and 5.1b). This 'click' indicates that the pedal has locked in the down position. Do not continue to press the pedal after the 'click' as this will release the internal catch and the pedal will not lock down. If this does happen the pedal must be allowed to rise fully (this resets the internal catch) before pressing it down again.

When placed into the 'castor' orientation the table base is supported on four castors, two at each end of the table. This orientation enables the table to be moved in any direction including sideways and swivelling within its own length. To move the table always push it in the required direction, never pull it. The table is in 'castor' orientation when both pedals are in their lowered positions.

5.1.1.3 'Castor' orientation (from 'braked')

To place the table into 'castor' orientation from the 'braked' orientation follow 5.1.1.1 to place the table into 'wheel' orientation and then follow 5.1.1.2 to complete the move into the 'castor' orientation.

Note: It is not critical that sections 5.1.1.1 and 5.1.1.2 are carried out in this sequence the reverse is equally suitable and correct.

5.1.1.4 'Braked' orientation

To place the table into the 'braked' orientation move the pedals (items 10 and 11, Fig. 2.2) into their raised position. If either pedal is in the lowered position raise them, in any sequence.

For the T20-a table stand on the standby control panel side of the table and use the foot advised in 5.1.1.1 or 5.1.1.2 as appropriate. For the T20-s table you can stand on either side of the table. Steady yourself with your hands on the tabletop and press the pedal 'firmly down' see Fig. 5.2a and 5.2b, this disengages the internal locking catch. Release pressure on the pedal and allow it to rise. The table will gently lower onto its brake pads and wheels, the motion is softened and braked by an internal damper.

The table is in 'braked' orientation when both pedals are in their raised positions.

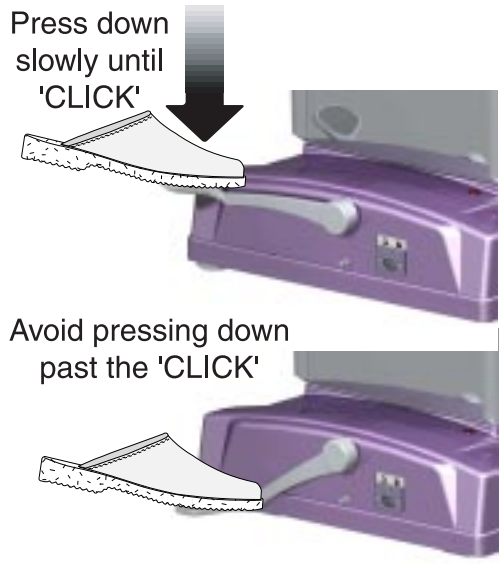


Fig. 5.1a Lowering a T20-a foot pedal
(T20-a wheel foot pedal illustrated)

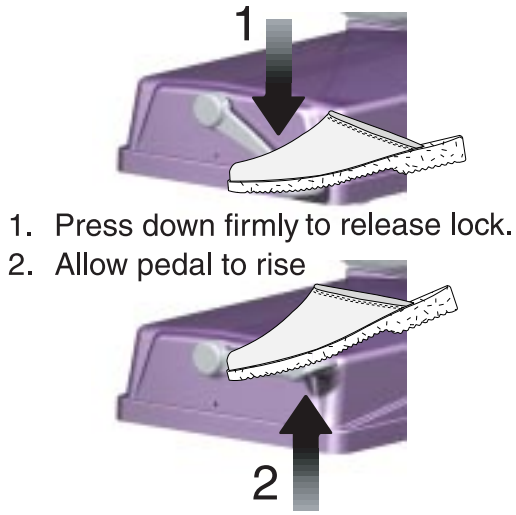


Fig. 5.2a Raising a T20-a foot pedal
(T20-a castor foot pedal illustrated)

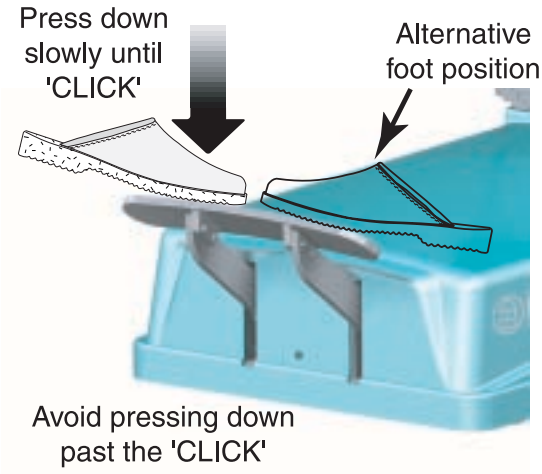


Fig. 5.1b Lowering a T20-s foot pedal
(T20-s castor foot pedal illustrated)

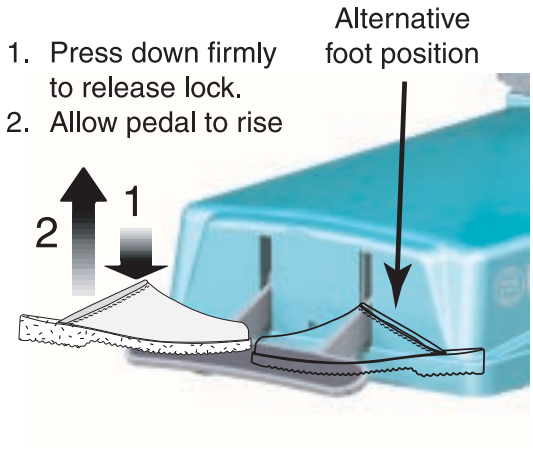


Fig. 5.2b Raising a T20-s foot pedal
(T20-s castor foot pedal illustrated)

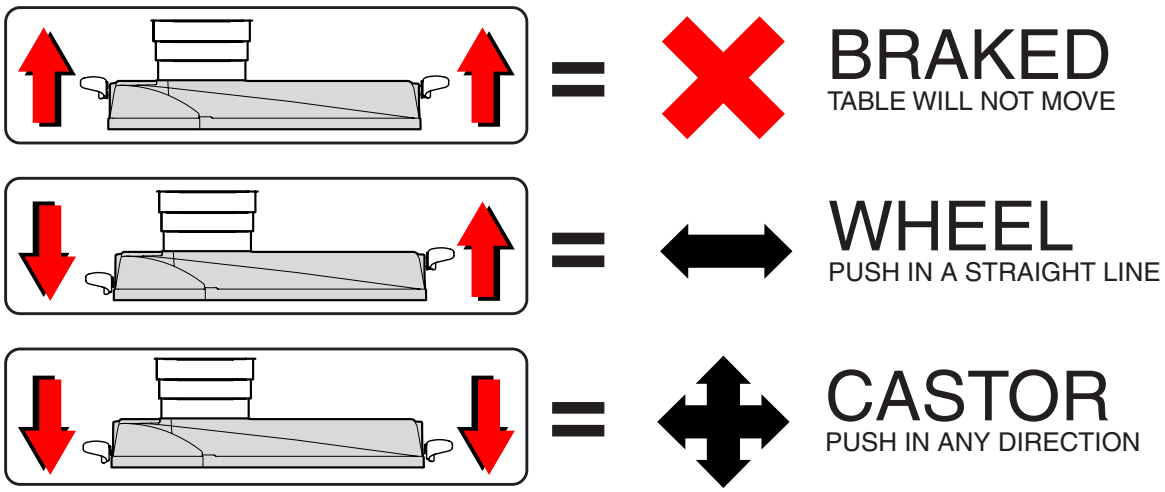


Fig. 5.3 T20-a and T20-s foot pedal quick reference guide

5.1.2 T20-m table base

WARNING
Before using the table, position the castors under the base covers to help protect them from any falling contamination.

The T20-m table base has been provided with four large castors. The table rests on these castors at all times providing either a secure and static location on the operating theatre floor ('braked'), or two modes for easy movement ('castor' and 'wheel' modes). Adjust the table to a suitable height to achieve a stable position before moving the table.

The T20-m table should always be left 'braked' with the foot pedal in its lowest position. When familiar with sections 5.1.2.1 to 5.1.2.4, refer to the label on the table base as a quick reference guide to pedal operation (label is illustrated in Fig. 5.4).

To move the table it is placed into its 'castor' mode or 'wheel' mode. The latter enables easy movement of the table in a straight line (down a corridor for example). The 'castor' mode provides full free wheeling mobility with 360° rotation and movement sideways.

Adjusting the table into either of these modes does not require battery power, they are manual operations achieved by using the single foot pedal on the table base (see item 4, Fig. 2.3).

5.1.2.1 Foot pedal operation

Foot pedal operation is easily achieved when the pedal is operated with either foot whilst steadying yourself with your hands on the tabletop. Stand on either side of the table or the pedal end, which ever is the most suitable and easy.

Do not operate the pedal from the end of the table when a long table section (e.g. a leg section) has been fitted to the long trunk end, this may require unnecessary stretching by the operator to reach the pedal. Operate the pedal from the side of the table.

Use a steady motion rather than a 'rapid' movement of the foot pedal, this provides easy identification of the 'snap' into any of its three positions.

5.1.2.2 'Braked'

To place the table into the 'braked' orientation press the foot pedal (item 4, Fig. 2.3) down to its lowest position. Operate the pedal as detailed in section 5.1.2.1. and press the foot pedal down until it snaps into its lowest position.

The pedal can be moved from its highest 'wheel' position through its central 'castor' position and into the 'braked' position in one easy movement.

The table is 'braked' when the foot pedal is in its lowest position.

5.1.2.3 'Castor' mode

To place the table into the 'castor' mode, move the foot pedal (item 4, Fig. 2.3) into its central position. Operate the pedal as detailed in section 5.1.2.1 and move the foot pedal until it snaps into its central position.

The pedal is moved up from its lowest 'braked' position by lifting the pedal up with the top of the foot, or down from its raised 'wheel' position by pressing the pedal down with the ball of the foot, until the pedal snaps into the central 'castor' position.

The table is in 'castor' mode when the foot pedal is in its central position.

Note: When the table has been moved to the required location always leave the table 'braked'.

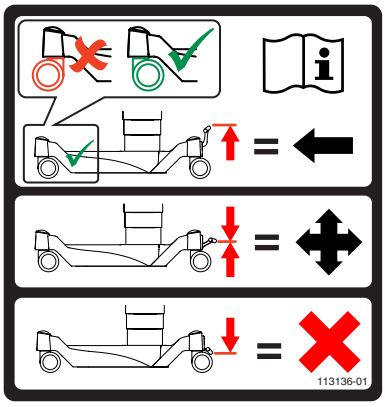
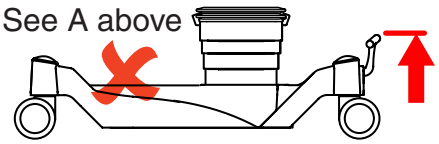


Illustration of the table's base 'quick reference guide' label. Note the booklet symbol that indicates reference to these instructions should be observed.

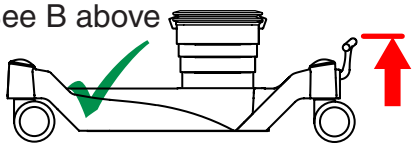
Detail of the required short trunk end castor postion, which should be obtained, before lifting the foot pedal into its top position to place the table base into the 'wheel' mode.

Note:
In position A the castor leads its mount, in position B the castor trails its mount.

See A above

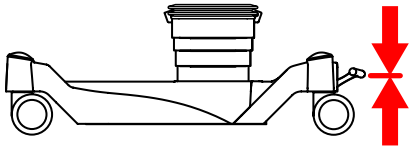


See B above



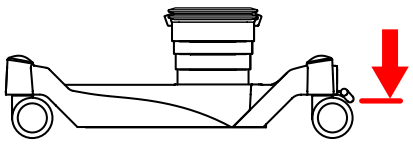
WHEEL

Select 'castor' mode' (pedal in the central position) and push the table until the short trunk end castors are correctly aligned as indicated. Lift the pedal up fully into the 'wheel' position (to stop the short trunk end castors swivelling). This will enable the table to be 'wheeled' in a straight line. Push and steer the table from the pedal (head) end.



CASTOR

Lift pedal up, or press pedal down, into the central position to enable the table to be 'castored'. All four castors will swivel allowing full table mobility.



BRAKE

Press pedal down fully with the castors in any position to brake all four castors (see WARNING in section 5.1.2).

Fig. 5.4 Operating the T20-m table base

5.1.2.4 'Wheel' mode

WARNING

Do not push the table in the 'wheel' mode until you are sure the castors have moved into their correct orientation for the 'wheel' mode, as detailed in the second stage below and Fig. 5.4. If the table is pushed with the castors locked out of position this will cause undue wear leading to failure of the short trunk end castors.

Placing the table into the 'wheel' mode is a four stage procedure which will ensure that the short trunk end castors are locked in position correctly.

First, if the table is 'braked' move the foot pedal (item 4, Fig. 2.3) into its 'castor' position as detailed in section 5.1.2.3.

Second, push the table forwards from the long trunk end until both the short trunk end castors have swivelled into the position 'B' shown in Fig. 5.4. They do not need to be exactly in line, but they should not be as shown in 'A' Fig. 5.4 (i.e. leading their mounts).

Third, lift the pedal up with the top of the foot, as detailed in section 5.1.2.1, until the pedal snaps into its highest 'wheel' position.

Fourth and finally, continue to push the table in a straight line, the short trunk end castors will lock automatically in line with the table base. This enables the table to be moved easily down a corridor, being steered from the long trunk end.

The table is in 'wheel' mode when the foot pedal is in its highest position and the short trunk end castors have locked in-line with the table base.

Note: When the table has been moved to the required location adjust the table into 'castor' mode to enable full mobility and positioning and then leave the table 'braked' (press the pedal fully down).

5.1.3 Moving table with a patient

The normal table position when moving it with a patient is level in both directions (i.e. tilt and Trendelenburg) and with the patient in the supine or lateral recovery position. Fig. 5.5 shows an alternative position that can be used, the notes in Fig. 5.5 also apply when moving the table with the patient in the supine or lateral recovery position.

Notes:
Always use cot sides.
Lower table to a suitable height.
Ensure patient limbs are secure.
Check patient weight and position complies with Fig. 6.3 and Fig. 6.4.
Always push table from the head end (do not pull).
Position also applies to T20-a and T20-s tables (T20-m table illustrated).

Fig. 5.5 Alternative table position for moving table with a patient

5.2 Using the removable sections.

WARNING

Ensure that nothing becomes trapped (e.g. fingers, tubing, cords) when attaching tabletop sections. When removing a section be prepared to support the full weight of the section when the guide pins disengage. Always carry the section holding the side rails. Never hold or pick up the section using the black gas support struts and take care not to operate the release handle accidentally. Do not operate the release handle when the section is removed from the table. For users of small stature, when handling larger sections (e.g. the leg section) two people should work together to avoid strain injuries. Also to minimise weight for all users remove mattresses before fitting or removing a section. Users of earlier Eschmann tables (e.g. MR and RX Series) should note that T20 guide pins are shorter and disengage earlier. Always ensure that the sections have been correctly and securely fitted before use and only use the correct Eschmann sections.

During long term storage of a section it should be positioned with the pins up, this ensures continued lubrication of the gas spring seals (e.g. attached to the table and fully lowered). If stored separately from the table take care not to actuate the release handle during storage since this will alter alignment of the pins. Should this happen inadvertently see section 5.2.1. For short term storage and to aid manual handling (e.g. during section reversal) use of the 'T' series Head/Leg accessory trolley (REF TA-040013) is recommended.

5.2.1 Re-aligning a section's pins

Realignment of a section's pins is only required if they have become mis-aligned whilst the section has been removed from the table (see Fig. 5.6 for illustration of aligned and mis-aligned pins).

WARNING

Take care when realigning a sections pins. Ensure that fingers are clear of the gas springs during actuation of the release handle.

To realign the pins of a table section place the section on its side (see Fig. 5.6) and support it by its upper side rail **only** keeping fingers etc. well clear of the gas springs (see 1, Fig. 5.6). Then actuate the release bar (see 2, Fig. 5.6) until the gas springs have moved both pins to the ends of their travel as shown (see 3, Fig. 5.6).

To attach the section to a table after re-aligning the pins insert the pins into the tabletop for 90% of their length, actuate the release handle and adjust the section until horizontal and then push the section fully home until the locking catches engage (also see section 5.2.2).

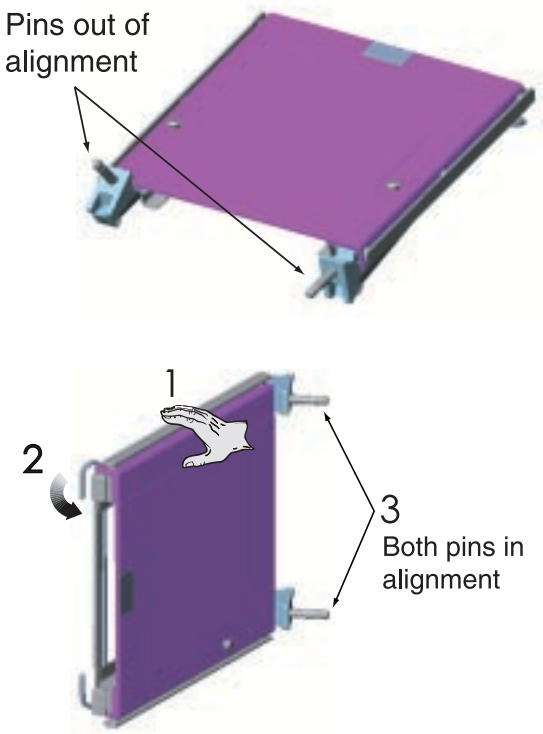


Fig. 5.6 Section pin alignment

5.2.2 Attaching a removable section

When attaching a section first check to see if the pins are aligned with each other. It is possible that during storage the release handle may have been actuated and the pins are no longer aligned as shown in Fig. 5.6. If they are aligned attach the section as detailed below, if they are not, align them and attach the section as detailed in section 5.2.1.

To attach the removable tabletop sections (i.e. head or leg) hold the section firmly with two hands aligning the pins of the section (item 1, Fig. 5.7) with the location holes (item 2, Fig. 5.7) in the fixed tabletop section as shown in Fig. 5.7.

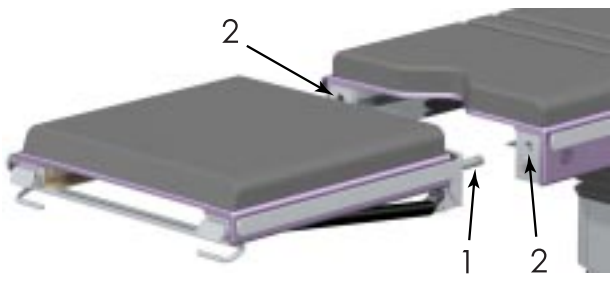


Fig. 5.7 Aligning section pre-attachment

Gently insert the section pins into the tabletop and slide the section into the tabletop evenly until the locking catches engage with an audible click. The section will slide in easily if the weight of the section is gently supported with both hands. Take care not to trap anything (especially fingers) between the section and the tabletop.

Check that the section is fully inserted and the safety catches have engaged by gently pulling on the section. Both release buttons (items 6 and 8, Fig. 2.1) should be out when the section has been correctly located and locked.

5.2.3 Removing a tabletop section

When removing a tabletop section (e.g. a head or leg section) ensure that it is horizontal before removal as this will aid later replacement (pins will be aligned with the section). If the section is not horizontal adjust it to horizontal before removal (see section 5.2.4).

Remove the section from the tabletop by supporting the section's weight and pressing in the right-hand trunk section button (viewed from end of table) as indicated by 1 in Fig. 5.8. The button will stay in when pressed correctly.

Press in **and hold in** the left-hand trunk section button (viewed from end of table) as indicated by 2 in Fig. 5.8 whilst pulling the section evenly away from the fixed section about 2 - 3cm (see 3, Fig. 5.8). When employing two people one should press the button whilst the other pulls the section out the 2 - 3cm. Gently supporting the weight of the section (i.e. slightly lifting whilst pulling) will make this action easier. Then release the left-hand trunk section button.

Now using both hands (one on each side of the section as shown in 4 of Fig. 5.8) continue to gently pull the section out evenly from the trunk section until the guide pins are free. Again gently lifting and supporting the weight of the section will make this action easier. When employing two people, one should hold the second button in whilst the other pulls the section out evenly, both can then support the weight when the pins are free.

5.2.4 Removable section adjustment

The head and leg sections are operated in the same way. The section's weight is supported during adjustment and held locked in position by two gas springs (items 5 and 11, Fig. 2.1). Lowering the section's release handle during adjustment automatically locks the section in place.

To adjust either section (having noted the warnings at the beginning of section 5.2) grasp the end of the section on both sides with thumbs up and the finger tips resting on the release handle (items 10 or 12, Fig. 2.1) underneath the section. Whilst supporting the section in place (it may move when the release handle is raised), gently lift the release handle with the finger tips until the section is free to move up or down (see 1, Fig. 5.9).

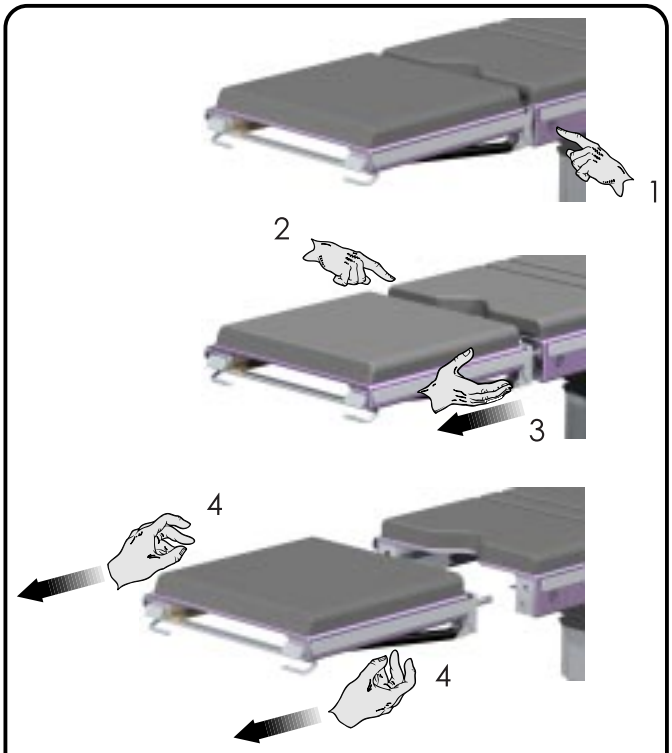


Fig. 5.8 Removing a table section

When raising the section the gas springs will assist the movement, when lowering the section gentle pressure may be required to overcome slight resistance of the gas springs. Adjust the section by rotating it up or down to the required position (see 2, Fig. 5.9). When the correct position has been obtained release the locking bar. The section is now locked in place automatically by the gas springs (see 3, Fig. 5.9).

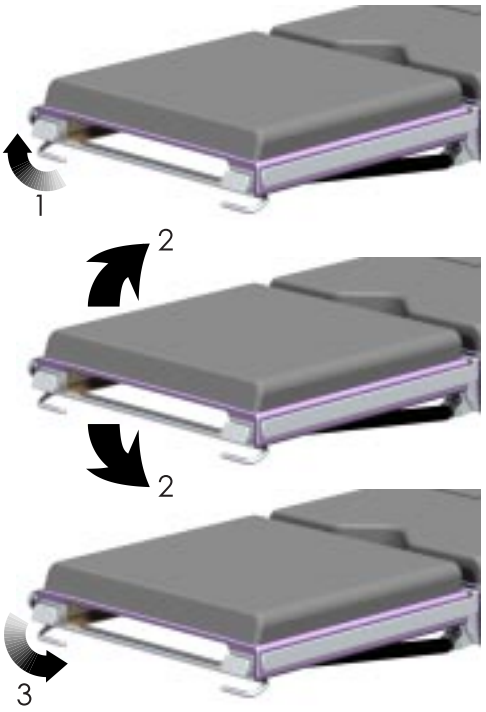


Fig. 5.9 Adjusting a head or leg section

5.2.5 Changing sections during a procedure

The table sections can be changed during a surgical procedure but extreme care must be taken to adequately support the patient throughout such adjustments to the table configuration. Also note the warning at the beginning of section 5.2.

When replacing a section during a procedure take extreme care not to trap any part of the patient, surgical drapes, surgical equipment, cords or tubing. Also note the warnings in section 4.1.

It is suggested that the mattress is located onto the section before fitting the section onto the tabletop when repositioning it during a procedure (allow for the extra weight).

5.2.6 Attaching/Removing mattresses

WARNING

Larger mattress sections can be heavier and more bulky than normally envisaged (see section 7.0 and the note in section 9.1). Take care when handling to avoid stain injuries, use two people if required.

Only use Eschmann mattresses and ensure they are free of cuts and tears, replacing as required. Do not use without a mattress fitted to the table.

Mattresses are attached to the tabletop by two mushroom shaped pins per section. These pins ensure that the mattress stays in place on the tabletop in all table configurations. To ensure that the mattress is correctly located onto the pins proceed as follows:-

i The larger mattress sections can be bulky to handle individually if of small stature, use two people to avoid strain.

ii Ensure the mattress is the correct one for the section you are fitting it to and orientate it relative to the tabletop so the mushroom pins are lined up with the mating recesses in the underside of the mattress.

iii Lower the mattress onto the tabletop and gently ease one location recess at a time onto and over the respective mushroom pin. The mattress should lie flat on the tabletop when this has been achieved without evidence that the pin is holding the mattress off the tabletop surface.

To remove mattresses reverse the above procedure gently easing the mattress off the pins, one pin at a time. Ensure minimal sideways force is applied to the mattress during this procedure to prolong mattress life.

Always ensure that mattresses are free from any cuts and abrasions, such damage can compromise patient safety by promoting cross contamination. Replace worn mattresses with new ones as soon as possible.

5.3 Powered and electrical functions.

This section is split into four sections as follows:

5.3.1 Batteries and mains

5.3.2 Powered motions

5.3.3 Using the handset

5.3.4 Using the standby control panel

5.3.5 Changing fuses

Note: Whilst it is safe to use the table when connected to the mains it is good practice to use the tables batteries to power the table, rather than connect the table to the mains.

5.3.1 Batteries and mains

5.3.1.1 Battery charging introduction

WARNING

Ensure that the mains supply used is suitable (i.e. 100-240V, 50-60Hz) before attaching the table to the mains supply. Only use the mains cord supplied with the table and charge the batteries daily.

CAUTION

Continued use of the table batteries when 'critically low' can damage the batteries. Charge batteries regularly to maintain peak performance. Do not remove the table from charge until both charging LED's are 'green' to avoid false battery level indication on the handset.

Batteries within the table base are mains rechargeable and should power the table continuously for 3 days normal use (from a full charge). However to maintain peak battery performance the table batteries should be placed on charge at the end of each day or shift. Daily charging should be encouraged as good practice, **do not wait for either 'low' battery indication before charging**. Battery charge level is indicated by LEDs on the corded handset, see Fig. 5.10. The table should be placed on charge as detailed in section 5.3.1.2. Also see battery management sheet Appendix 3. **Note:** Over the first few charge cycles (from new) battery capacity increases until they reach a stable maximum level.

Batteries should be checked for adequate charge before using the table for any surgical procedure. The corded handset has two battery level indicators, one for the main battery and one for the standby battery, see Fig. 5.10. These indicators will only operate when the corded handset is plugged into the table and the table is switched 'on'. Each indicator contains three coloured LEDs, these indicate the information shown over the page.

Main battery level indicator:

Green LED 'on' = Battery level satisfactory.

Amber LED 'on' = Low battery. An indication that the remaining battery charge is only adequate for one day's average use. Batteries **MUST** be recharged at the end of the current shift.

Red LED 'on' = Critically low battery. An indication that the remaining battery charge is critically low. Batteries **MUST** be recharged as soon as possible and before the next procedure. Charging during the current procedure is not recommended.

Standby battery level indicator:

Green LED 'on' = Battery level satisfactory.

Amber LED 'on' = Low battery. Battery level is low and only adequate for two or three Trendelenburg movements, they **MUST** be recharged at the end of the current shift.

Red LED 'on' = Critically low battery. Battery level is critically low and only adequate for one Trendelenburg movement. They **MUST** be recharged as soon as possible and before the next procedure. Charging during the current procedure is not recommended.

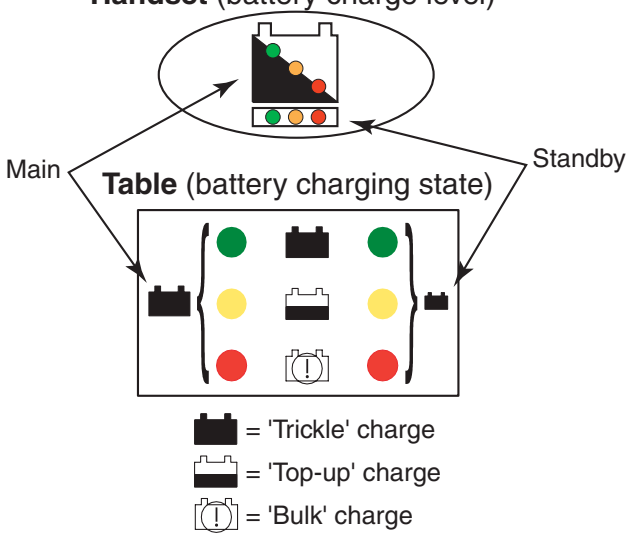


Fig. 5.10 Handset and charging indicators

Note T10-m has only one charging LED indicating the level for both batteries.

When the main battery 'critically low' warning is indicated the table cannot be operated by either handset or the footswitch. To continue to operate the table either connect it to a suitable mains supply and recharge the batteries (see 5.3.1.2) or use the standby batteries (see 5.3.1.4).
Note: The standby control panel can be used even when the 'critically low battery' indication is given but note the warning in section 5.3.4.

5.3.1.2 Battery charging

To recharge the table batteries (normal and standby) connect the mains cord supplied with the table (**do not use any other mains cord**) into the mains inlet (item 18, Fig. 2.2 for T20-a and T20-s tables, or item 3 of 2.3 for the T20-m table).

Connect the mains cord to a suitable mains supply (check mains voltage is 100-240V, 50-60Hz) and switch the supply 'on' if controlled by a switch.

The battery charging LEDs (items 7 and 8 of Fig. 2.2 for T20-a and T20-s tables, or item 2.3 for the T20-m table) will illuminate 'red' to indicate 'bulk' recharge, 'amber' to indicate that the batteries are in a 2 hour 'top-up' charge and will illuminate 'green' to indicate a fully charged battery on 'trickle' charge (Note. The T20-m table only has one LED indicating both main and standby charging state).

The batteries should be fully charged within six hours (if the table is not in use) but it is safe to leave the mains supply 'on' when the batteries are fully recharged and both LEDs are 'green' (or in the case of the T20-m table the single LED is 'green'). See CAUTION in section 5.3.1.1.

Note: Always ensure the table is switched 'off' to minimise the battery charging time.

It is recommended that the mains cord is stored on the 'T' Series accessory trolley (an accessory) to avoid loss and inadvertent use of an incorrect mains cord. It should be wrapped around the cable cleats.

5.3.1.3 Battery changing

Batteries in the table base should only be changed by service personnel. They should last for many years if recharged regularly and should not require user intervention (also see section 8.6.3 for the caution concerning disposal).

5.3.1.4 Standby batteries

WARNING

The standby batteries are for emergency use only and will only provide power for a few movements.

The table is provided with standby batteries to cover the unlikely event of a main battery failure or fault. To use the standby batteries, the standby battery switch (see item 1, Fig. 2.2 for T20-a and T20-s tables, or item 1 Fig. 2.3 fot T20-m table) must be pressed and held depressed whilst the required motions are conducted using the normal hand and foot controls.

The standby batteries are only used when the standby battery switch is depressed and they are automatically recharged during the normal battery charging process.

5.3.2 Powered motions

WARNING

Always ensure that the patient is secure or adequately supported during all tabletop adjustments and that such adjustments do not compromise table stability.

If a patient is on the table and the handset is clipped onto the tabletop, take care that the handset buttons are not inadvertently activated (e.g. by a patient Transporter or person) causing unwanted table movements.

Similarly take care at all times to ensure that the handset is not inadvertently activated.

During all tabletop adjustments be aware of pinch points between the moving and static parts (e.g. the break hinge and head and leg hinges).

Ensure that all theatre drapes, electrical cords and any medical tubing etc. are clear from entrapment in pinch points and that adequate excess drape, cord, or tube, are available to cater for the adjustment required.

Ensure that any motion and adjustment selected will not cause any part of the table to hit or collide with any person or object. Examples being:-

i) Leg section hitting floor when table is low and reverse Trendelenburg selected.

ii) A fully lowered leg section hitting table base when tabletop is lowered.

iii) Head section hitting anaesthetist's seat when Trendelenburg selected.

CAUTION

Do not exceed the duty cycle for any motor drive as detailed in section 9.5.5.

5.3.2.1 General

The major tabletop adjustments and motions are powered. These powered motions are controlled by a corded handset supplied with the table (see 5.3.3) and the standby control panel (item 12, Fig. 2.2 see section 5.3.4). An optional infrared handset or an optional footswitch (see accessory list section 7.0) can also be used to control the tabletop. The use of these accessories is explained in the leaflet provided with them.

Powered tabletop motions are, Trendelenburg, height, tilt, brake, traverse, flexion and return to level. Each motion in either direction is controlled by pressing and holding the appropriate handset, footswitch or standby control panel button. The table must be switched 'on' for powered motions to operate. Section 5.3.3.2 details handset button functions, section 5.3.4 provides standby control panel information.

All signals from controllers will be treated in a strict priority order to avoid multiple activation errors from different controllers. Inputs will be responded to in the sequence below:

1 Standby control panel
2 Corded handset
3 Infrared handset
4 Footswitch control.

Button presses from a controller lower on this list will be ignored if any button is pressed on a controller higher on the list and the input from the higher controller will be actioned.

The table cannot be powered by footswitch, or either handset, when the main battery 'critically low' indication is displayed (see Fig. 10, main battery LED is 'red') unless the standby battery switch (item 1, Fig. 2.2 for T20-a and T20-s tables, or item 1, Fig. 2.3 for the T20-m table) is held depressed. However the tabletop can be controlled by the standby control panel (item 12, Fig. 2.2) situated on the side of the column. This standby control panel has limited functionality in comparison to either handset and should ONLY be used in an emergency (e.g. handset or footswitch failure, control system failure, or 'critically low' battery).

Use of this standby control panel in any situation other than an emergency SHOULD be avoided as certain safety devices are overridden. The controls and buttons of the standby control panel are detailed in section 5.3.4. In the unlikely event of insufficient battery power when using the standby control panel, press and hold the standby battery switch (item 1, Fig. 2.2 for T20-a and T20-s tables, or item 1, Fig. 2.3 for the T20-m table) whilst conducting powered motions.

In the unlikely event of failure of the main table batteries, 'press and hold' the standby battery switch (item 1, Fig. 2.2 or 2.3) in the 'on' position and use the corded or infrared handset or the standby control panel to control the table. This enables the standby batteries to power the table, however the main battery fault should be rectified as soon as possible.

5.3.2.2 Tabletop motions

WARNING
Ensure you have read and understood the safety warnings listed in section 4.1 and 5.3.2 before using any of the powered motions.

All powered tabletop movements are programmed to provide a gentle transition from stationary into the required motion and back again to stationary (i.e. initially the motion starts slowly and then speeds up to maximum speed and then slows again before coming to a stop). This also enables accurate positioning at slow speed by using repeated short button presses. Alternatively long duration button presses allow large changes in tabletop position at maximum speed.

To operate the tabletop powered motions the table must be switched 'on' (⊙) at the table on/off switch (item 5, Fig. 2.2). The table will emit a single 'beep' and the green LED (item 4, Fig. 2.2) will illuminate to show the table is 'on'. The LED will be bright during use but only dim if the operating system has gone into 'sleep' mode (saving battery power). The table will instantly respond to any control input even when in 'sleep' mode. Also see section 8.1.

If two buttons are pressed on a handset or footswitch at the same time neither will have any effect. The function of the second button pressed is ignored and automatically cancels the function of the first button pressed and any table motion stops. Releasing either of the buttons will enable the function of the remaining button (if still pressed) to be actioned. This is to eliminate multiple button activation errors.

Most powered tabletop motions will pause briefly when they pass through the level position (Note: not applicable to height and traverse). This is to enable each motion to be returned to a level position individually.

Be aware that a lowered leg section could hit the table base when the top is lowered, or the head section could collide with an anaesthetist's chair during a Trendelenburg movement.

Always ensure that there is adequate space around the table for the movement selected and that the movement required will not cause injury to patient or medical personnel. Look for possible trap and or pinch points between parts of the table and stationary objects.

5.3.3 Using the handset

5.3.3.1 General

WARNING
Do not plug two handsets into the table at the same time. When two handsets are connected, neither handset will operate the table.

The corded handset will operate any T20 operation table (note that the infrared handset is configured to match a specific table). Input from the corded handset will override any signals from an infrared handset. The corded handset simply plugs into either of the table handset sockets (item 3 of Fig. 2.2 and item 2, Fig. 5.11). Never plug handsets into both sockets at the same time. See section 5.3.3.2 for details of button function and section 5.3.1.1 for an explanation of the battery state LEDs.

When using the corded handset always ensure that the cord is well clear of any moving parts, pinch points and possible entrapment from table movements. Also ensure that the cord will cater for any table movement and that such table movements do not stretch the cord excessively.

When not in use it is suggested the handset is clipped onto the accessory side rail (item 7, Fig. 2.1). Note that when clipped onto the table in this way it can be operated with one finger, without the need to hold it in the other hand. The handset must be compatible with the side rail fitted to the table, see sections 1.1.2. The UK handset will also clip onto head/leg end blocks (item 9, Fig. 2.1).

To remove the handset plug from its socket the release button (item 1, Fig. 5.11) must be pressed and held in during removal. When removing the corded handset plug from its socket always grip and pull the plug, do not pull the cord only as this may damage the cord or internal connections.

Handset buttons provide a tactile feedback to enable the user to detect when a button has been pressed or released, this is in the form of a 'pop' or 'click'. Also, all buttons are 'de-bounced' to ensure that only deliberate button presses are responded to (i.e. an accidental quick activation is ignored).

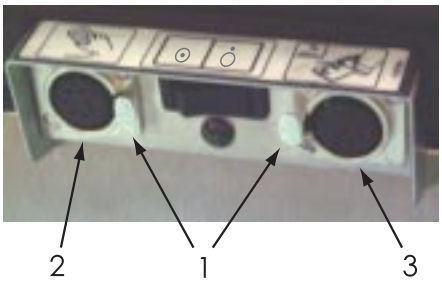


Fig. 5.11 Controller sockets and release buttons

5.3.3.2 Handset button functions

Handset buttons have their function indicated by graphics printed on the handset, see Fig. 5.12.

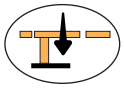
To activate the required tabletop motion **press and hold** the appropriate button until the required amount of change in tabletop position has been achieved, then release the button. The actual motion for each button is fully detailed below, refer to Fig. 5.12 for button reference.

Note: Buttons **B1** and **B2** provide the described movement for a table top in the normal orientation (head section in long trunk) with the patient's head on the head section. If the patient orientation is reversed button functions **B1** and **B2** are also reversed.

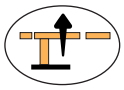
B1 Trendelenburg (orange button). Press to rotate the tabletop in the Trendelenburg (head down) direction.

B2 Reverse Trendelenburg (orange button). Press to rotate the tabletop in the Reverse Trendelenburg (head up) direction.

B3 Height down. Press to lower the whole tabletop.



B4 Height up. Press to raise the whole tabletop.



B5 Tilt left - Press to tilt the whole tabletop down on the left-hand side when viewed from the long trunk end.

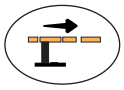
B6 Tilt right - Press to tilt the whole tabletop down on the right-hand side when viewed from long trunk end.

B7 Break down - Press to move the tabletop in the break down (Extension) direction.

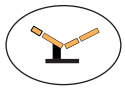
B8 Break up - Press to move the tabletop in the break up (Flexion) direction.

B9 Traverse Cranially - Press to move the tabletop Cranially (i.e. the tabletop will traverse and increase the distance between the end of the long trunk section and the column).

B10 Traverse Caudally - Press to move the tabletop Caudally (i.e. the tabletop will traverse and decrease the distance between the end of the long trunk section and the column).

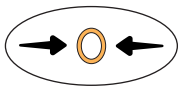


B11 Extension - Press to move table into Extension.

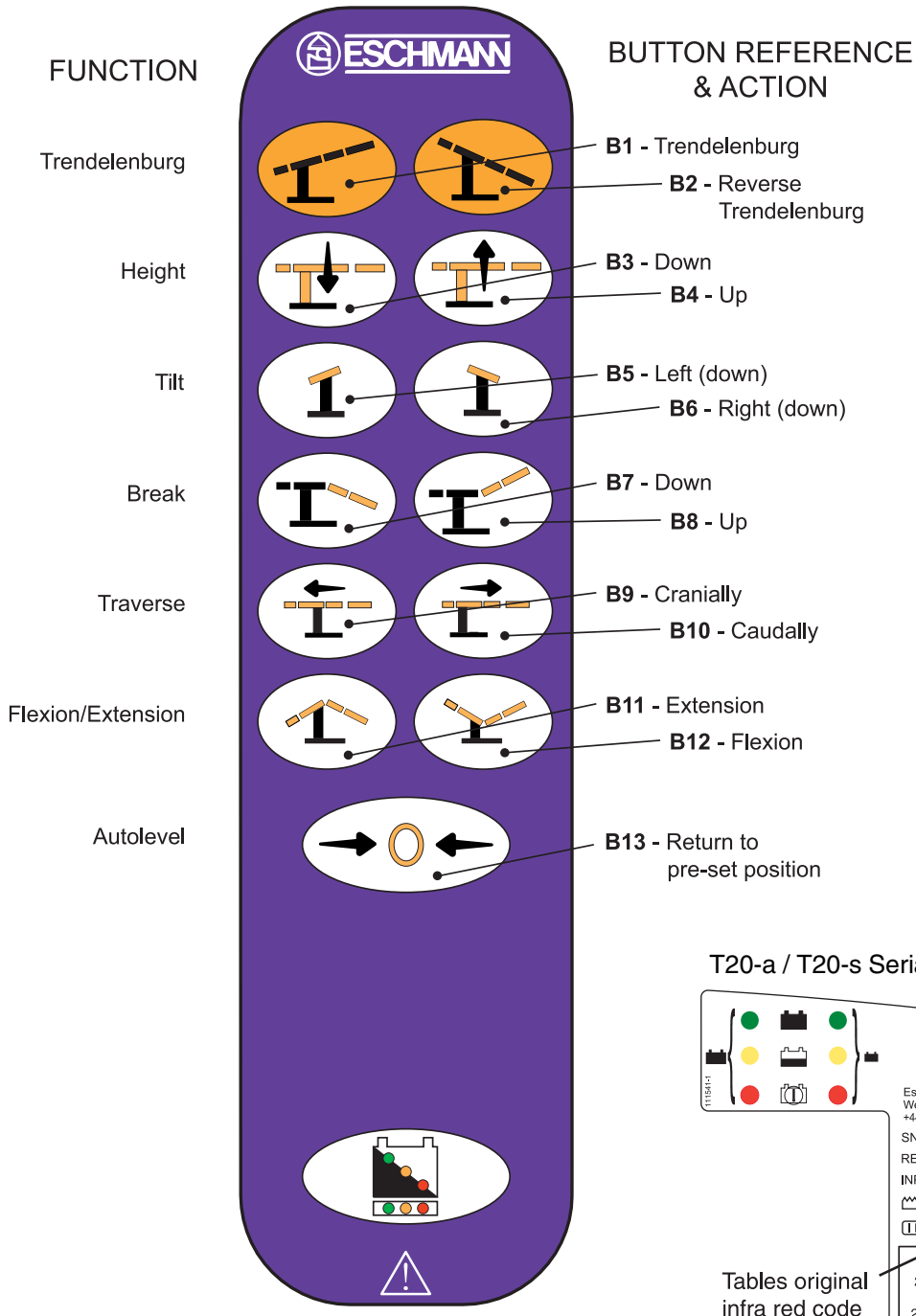


B12 Flexion - Press to move table into Flexion.

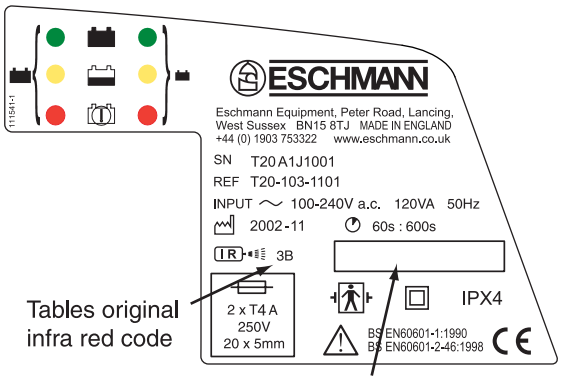
B13 Return to Level - Press to return the tabletop to a 'preset' level position. This may invoke all powered movements to achieve the 'preset' level position. The sequence of movements is tilt, Trendelenburg and Break together, a short pause and then maximum traverse cranially. (Note: Height is not affected).



Tilt, Trendelenburg and Break motions will pause momentarily when passing through a 'level' position.
Note that 'Break' is level when the trunk sections are in-line with each other, they will not be horizontal unless Trendelenburg is horizontal.



T20-a / T20-s Serial label (end of table base)



Tables original infra red code

Space to write new table infra red code

Hand controls original infra red code

T20-m Serial label (on trunk section)

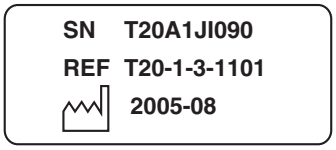


Fig. 5.12 Handset button functions and serial labels

(labels are examples only and text on actual table will be different to that shown above)

5.3.4 Using the standby control panel

WARNING

The standby control panel MUST be used with extreme care for Trendelenburg movements. All programmed safety features are overridden in this mode (e.g. should the tabletop hit an object, motor protection is inhibited and damage to them could occur). Also do not exceed 30° of Trendelenburg (or reverse) from the standby panel.

The standby control panel is located on the side of the column (item 12, Fig. 2.2). The panel has five function buttons (OB1 to OB5, see Fig. 5.13) and two direction buttons (OB6 and OB7, see Fig. 5.13). The motion of the function button is described by its graphical symbol (symbols are shown and detailed in section 2.2.4).

When controlling the tabletop from this standby control panel certain inbuilt safety features are overridden. Also there is no 'soft start' to the powered Trendelenburg movements and the tabletop will not pause as it passes through the level (Trendelenburg) position. Only five functions can be controlled from this panel Trendelenburg, Height, Tilt, Break and Traverse.

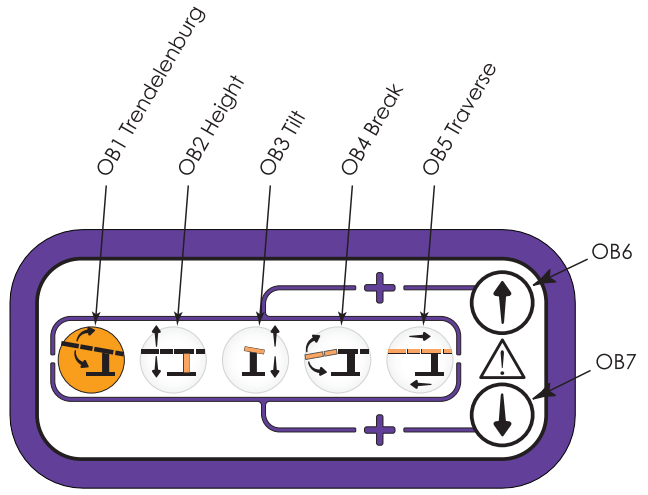


Fig. 5.13 Standby control panel

To operate the tabletop from this panel select a required function by 'pressing and holding' a function button (i.e. OB1 to OB5, Fig. 5.13) and then select a direction for this function by 'pressing and holding' a direction button (i.e. OB6 or OB7, Fig. 5.13).

Pressing the upper or lower direction button will select the direction indicated by the corresponding arrow on the function button. The table will move whilst both the function button and the direction button are pressed, releasing either will stop the motion. Motions for each button are fully detailed in the following sections.

OB1 Trendelenburg - Press and hold this button, then press required direction button to rotate the tabletop in the Trendelenburg (button OB6, Fig. 5.13) or reverse Trendelenburg direction (button OB7, Fig. 5.13)

OB2 Height - Press and hold this button, then press required direction button to change the height of the tabletop (button OB6, Fig. 5.13 is for Height up; button OB7, Fig. 5.13 is for Height down).

OB3 Tilt - Press and hold this button, then press the required direction button to tilt the tabletop (button OB6, Fig. 5.13 is for Tilt down on the left; button OB7, Fig. 5.13 is for Tilt down on the right, when viewed from the long trunk end of the table).

OB4 Break - Press and hold this button, then press required direction button to move the tabletop in the Break up or Flexion direction (button OB6, Fig. 5.13) or Break down or Extension direction (button OB7, Fig. 5.13).

OB5 Traverse - Press and hold this button, then press required direction button to traverse the tabletop (button OB6, Fig. 5.13 is for cranially; button OB7, Fig. 5.13 is for caudally).

5.3.5 Fuse replacement

The fuses are located as shown in Fig. 2.2 items 2 and 13 for T20-a and T20-s tables and Fig. 2.3 item 5 for the T20-m table. Fuses adjacent to the mains inlet socket are only applicable to the mains supply for the battery charger. Fuses in the side of the table base adjacent to standby battery switch (T20-a and T20-s tables ONLY) are applicable to the main batteries and standby batteries.

These fuses are replaced as follows:-

i Remove the mains cord from the table before replacing any of the fuses and switch the table 'off' with switch item 5, Fig. 2.2.

ii Turn the fuse cover cap anticlockwise to remove the cap with the fuse inside.

iii Ensure you have the correct fuse (consult the markings adjacent to the fuse or the Technical Data, section 9.0).

iv Place the new fuse into the cap and replace the cap by screwing it in clockwise.

6.0 PATIENT POSITIONING

6.1 General

WARNING

Do not use any table sections or accessories without the correct Eschmann mattress or pad in place (except for accessories such as the lightweight leg section which can be used for short periods of use, without a mattress, during patient positioning). Mattresses are an important part of the antistatic pathway and help prevent pressure sores developing.

Ensure the patient's weight is evenly distributed and that the mattress or pad is correctly positioned on each section of the table. Check at frequent intervals during long procedures to ensure that pressure sores are not being promoted. See section 5.2.6 for details on attaching and removing mattresses.

Note the graphics in section 6.4 which provide maximum loading details for various table positions. The normal maximum loading, for the patient's centre of gravity (C of G) in various positions is shown in Figs. 6.3 and 6.4. For guidance on the treatment of the obese patient, see section 6.2.

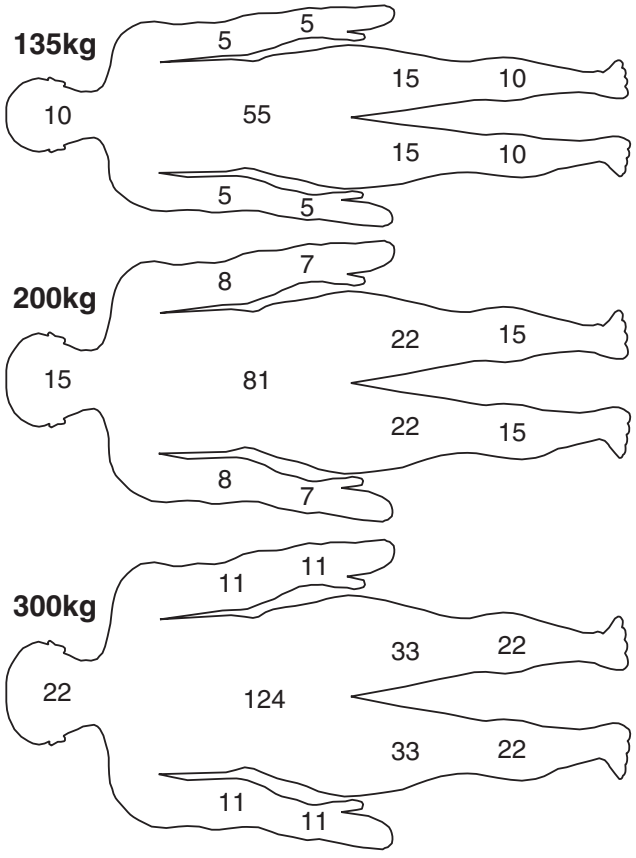


Fig. 6.1 Approximate patient weight distributions

The Figures in section 6.4 provide details of various patient positions that can be arranged with the T20 Series of table. Note that these illustrations are examples only and care should be taken to ensure patient safety and table stability. The terms caudally and cranially are explained in section 1.2.1 (iv).

6.2 Treatment of the obese patient

Always ensure that the table is correctly loaded to maintain stability within the guidelines shown in the graphs of section 6.4 noting the maximum patient weight of 300kg. Note that the centre of gravity for the maximum patient weight of 300kg must not be outside of the top plateaux section of the graphs.

Several width extenders can be placed on either side of the table to help support the patient but note the maximum load for this accessory and that width extenders should not be attached to each other (also see Warnings and Cautions in the width extenders 'User Handbook').

The table should not be moved across the floor with a patient weight over 135kg (T20-a and T20-s tables) or 200kg (T20-m table). Although it is possible to place the T20-a and T20-s table into 'castor' or 'wheel' with a patient over 135kg and up to 300kg this is not advised.

6.3 Radiographic procedures

All 'C-arm' image intensifiers are suitable for use with this table.

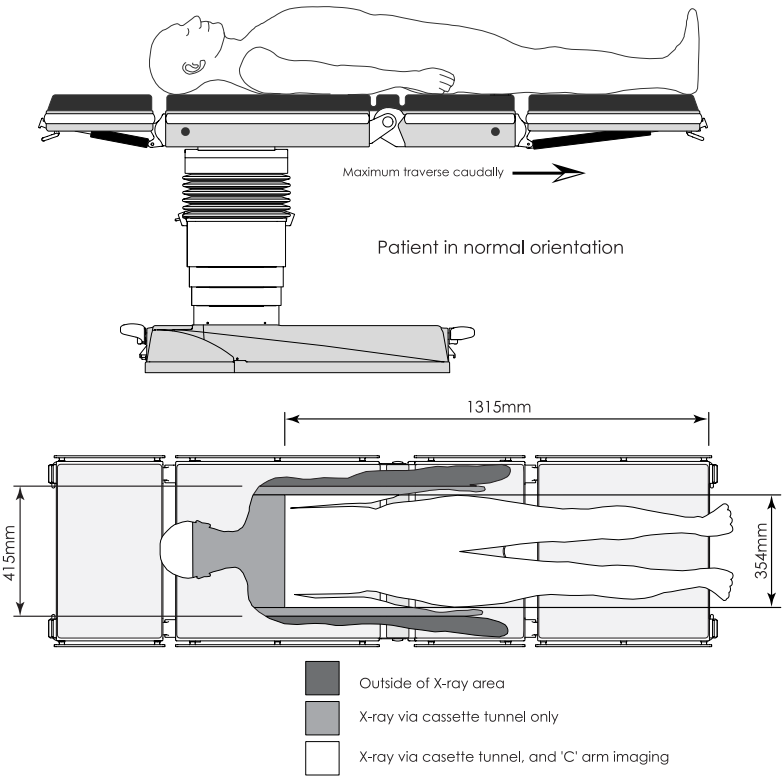
Fig. 6.2 shows typical patient positions for imaging the upper and lower torso with the patient in the Supine position. The graphics would equally apply to patients in the Prone position.

6.4 Table positions and safe loading

In Figures 6.5 to 6.10, common table and patient positions and safe loading graphs are provided, to give guidance on patient positioning and table loading. Because it would not be possible to cover every situation these should be considered as examples only. Refer to Figs. 6.5 to 6.10 and then use Figs. 6.3 and 6.4 to establish the maximum patient weight allowed for that configuration. The weight of additional accessories fitted to the table should be included in any estimation of correctly applied loads.

Figs. 6.3 and 6.4 show graphs of the position of the maximum patient weights (centre of gravity) that can be positioned on the table in four table configurations. Because all variations can not be covered, a degree of interpolation is required by the user, to ensure that table stability is maintained. Fig. 6.1 provides an approximate patient weight distribution for guidance.

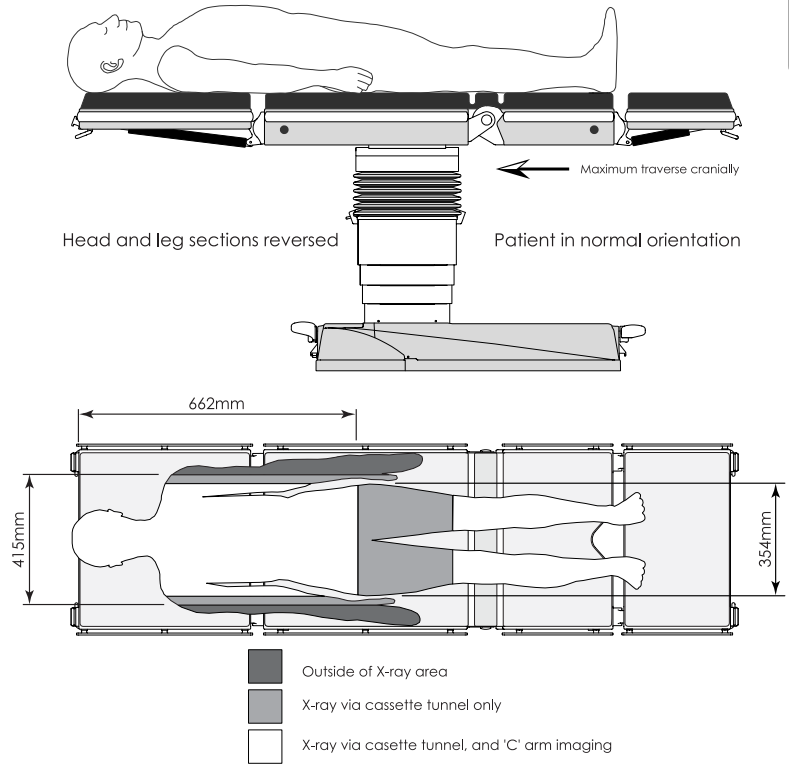
Patient positioning for maximum 'C' arm imaging of the required area.
Additionally there is an X-ray cassette tunnel, accessible from either end.



Lower torso imaging

Patient in normal orientation with table head and leg sections in the normal position. Patient positioned down the table to maximize the amount of lower torso in the imaging area.

NOTE: All illustrations are examples only. Care should be taken in patient positioning to ensure stability, see section 6.3. For the obese patient see section 6.1.



Upper torso imaging

Patient in normal orientation with table head and leg sections reversed from their normal position (i.e. leg section in the long trunk). Patient positioned up the table to maximize the amount of upper torso in the imaging area.

Fig. 6.2 Patient positioning for radiographic procedures

The graph indicates the maximum patient weight that can be placed on the table (when adjusted as shown) with their centre of gravity (normally the umbilicas) positioned relative to the table as indicated.
In these examples the maximum patient weight is approximately 300kg (for position A) and 215kg (for position B).

When moving the table with a patient, ensure their centre of gravity lies within the bold vertical lines in all cases.

In both graphs the shaded area of the chart indicates the safe working zone.

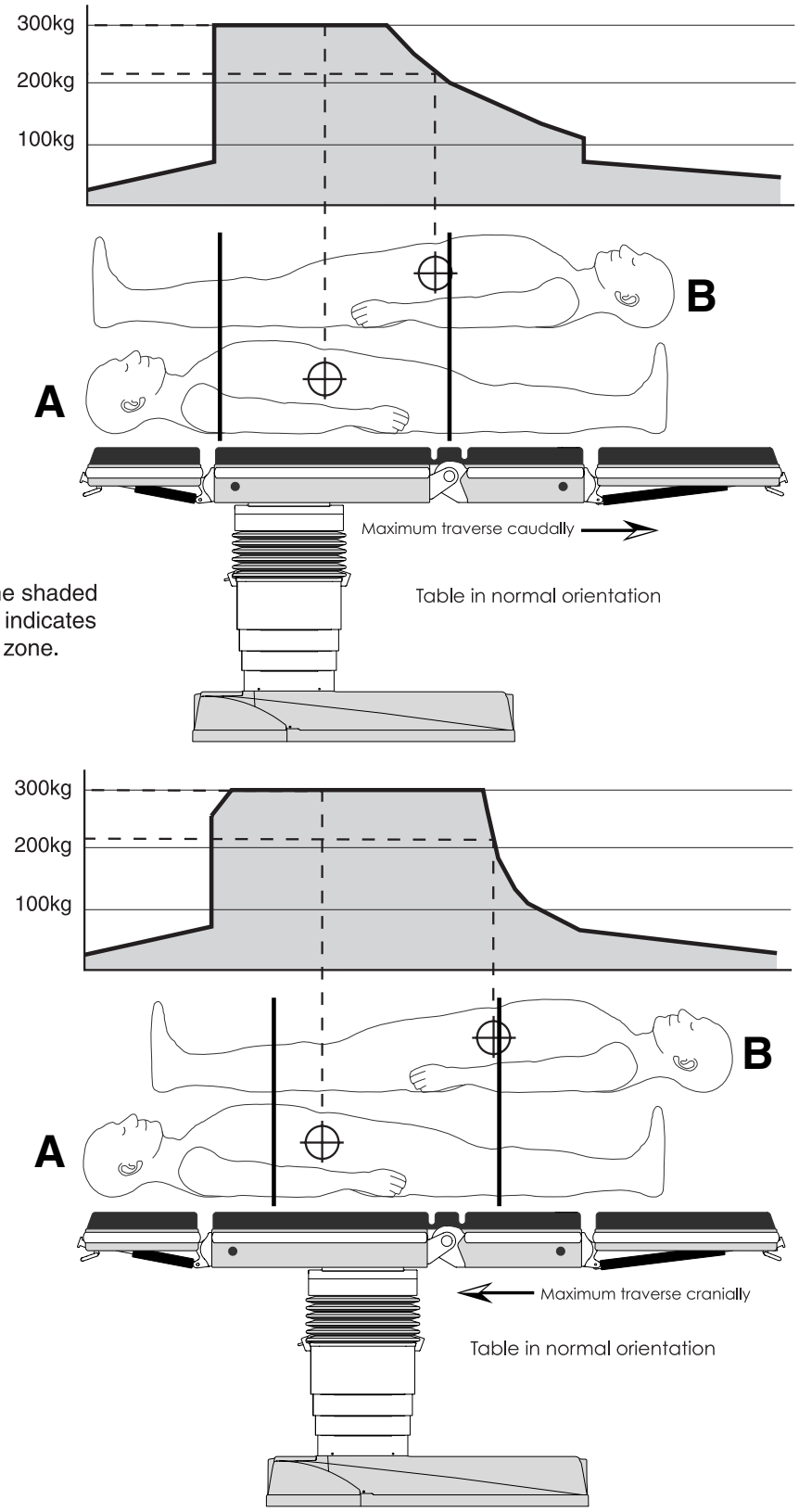


Fig. 6.3 Maximum patient weight v table position graphs (head and leg section in normal positions).

The graph indicates the maximum patient weight that can be placed on the table (when adjusted as shown) with their centre of gravity (normally the umbilicas) positioned relative to the table as indicated.
In these examples the maximum patient weight is approximately 300kg (for position A) and 215kg (for position B).

When moving the table with a patient, ensure their centre of gravity lies within the bold vertical lines in all cases.

In both graphs the shaded area of the chart indicates the safe working zone.

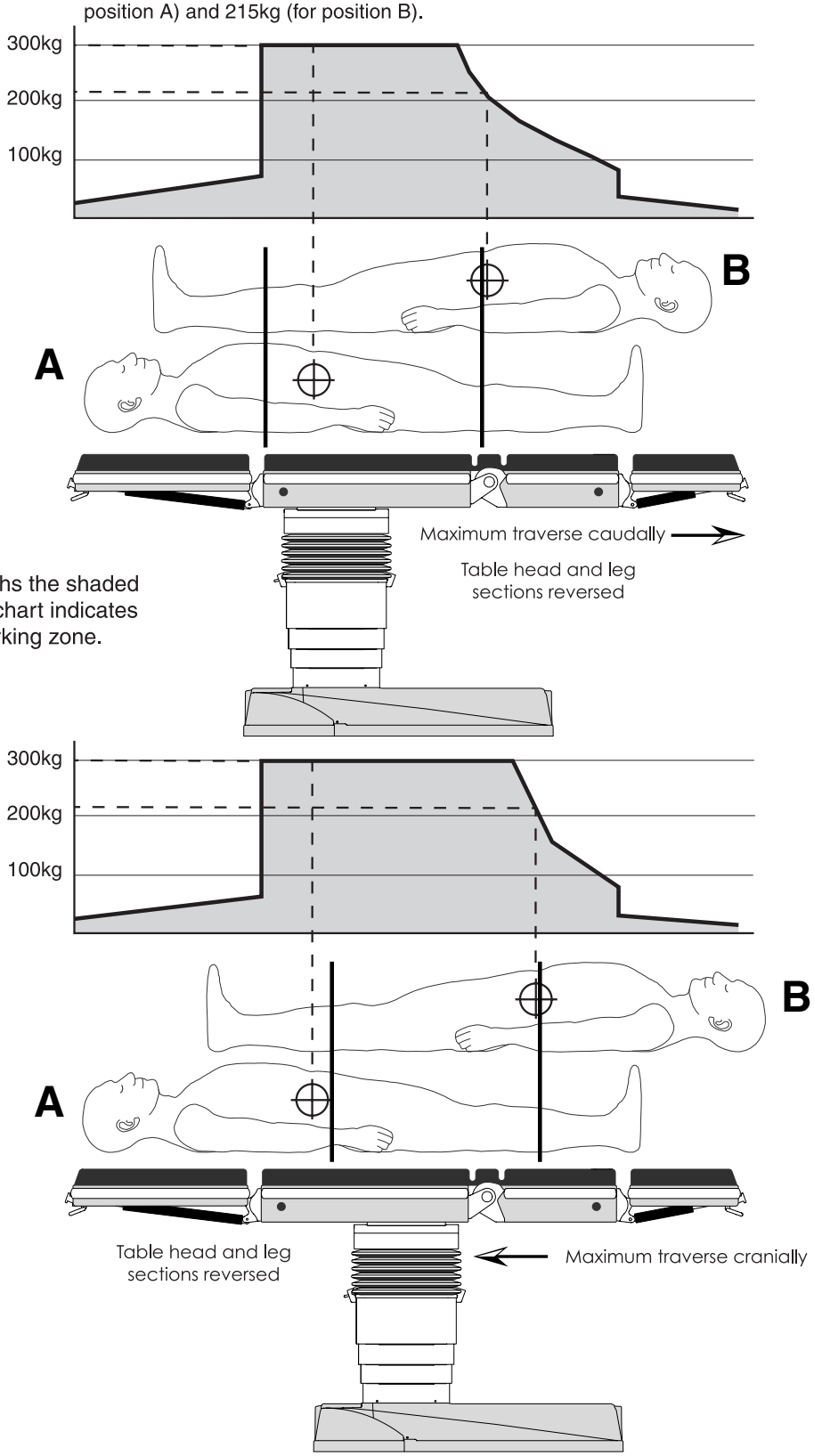


Fig. 6.4 Maximum patient weight v table position graphs (head and leg section reversed).

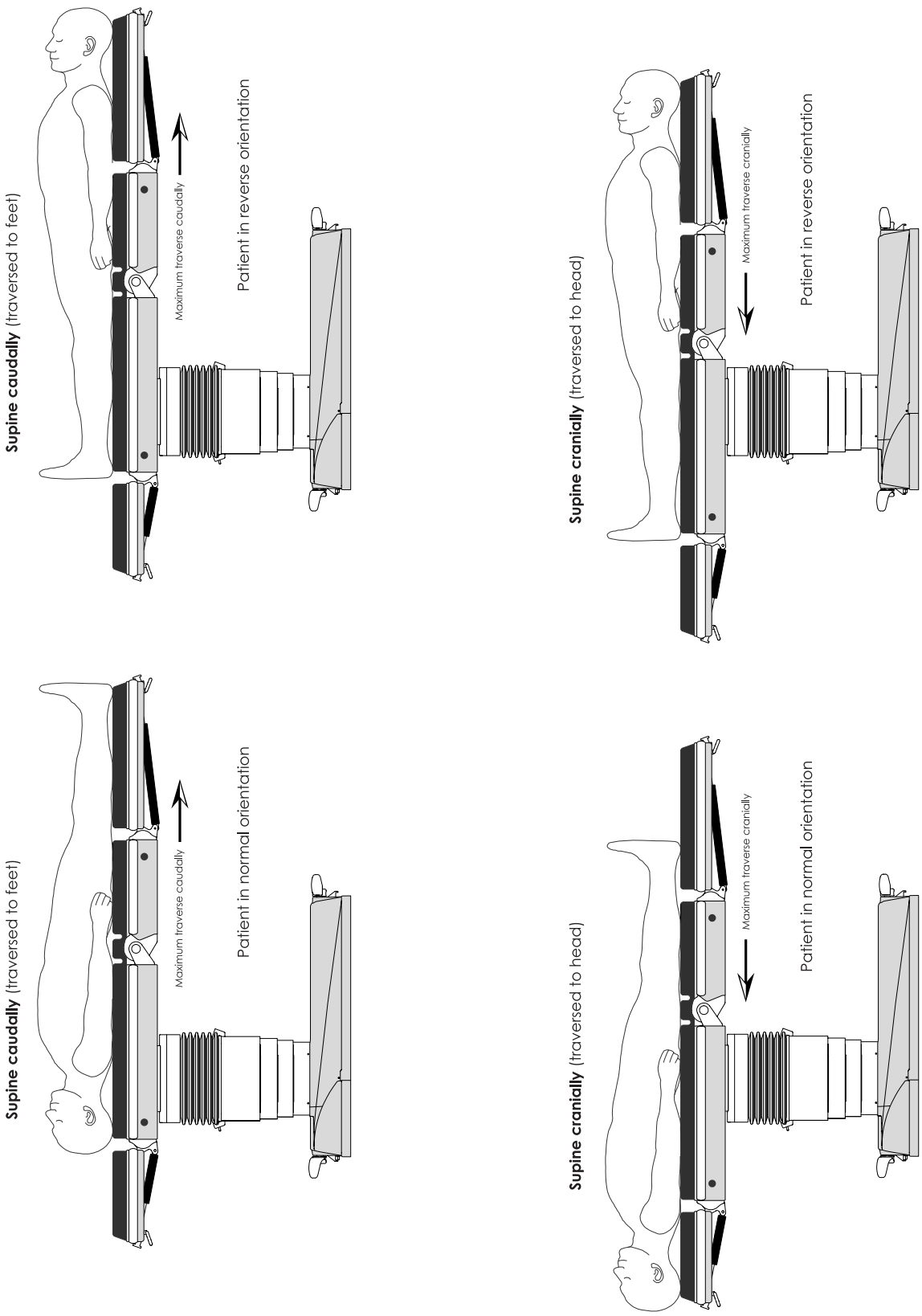


Fig. 6.5 Patient in various 'Supine' positions

(Note: For maximum patient weights see Fig. 6.3 and 6.4)

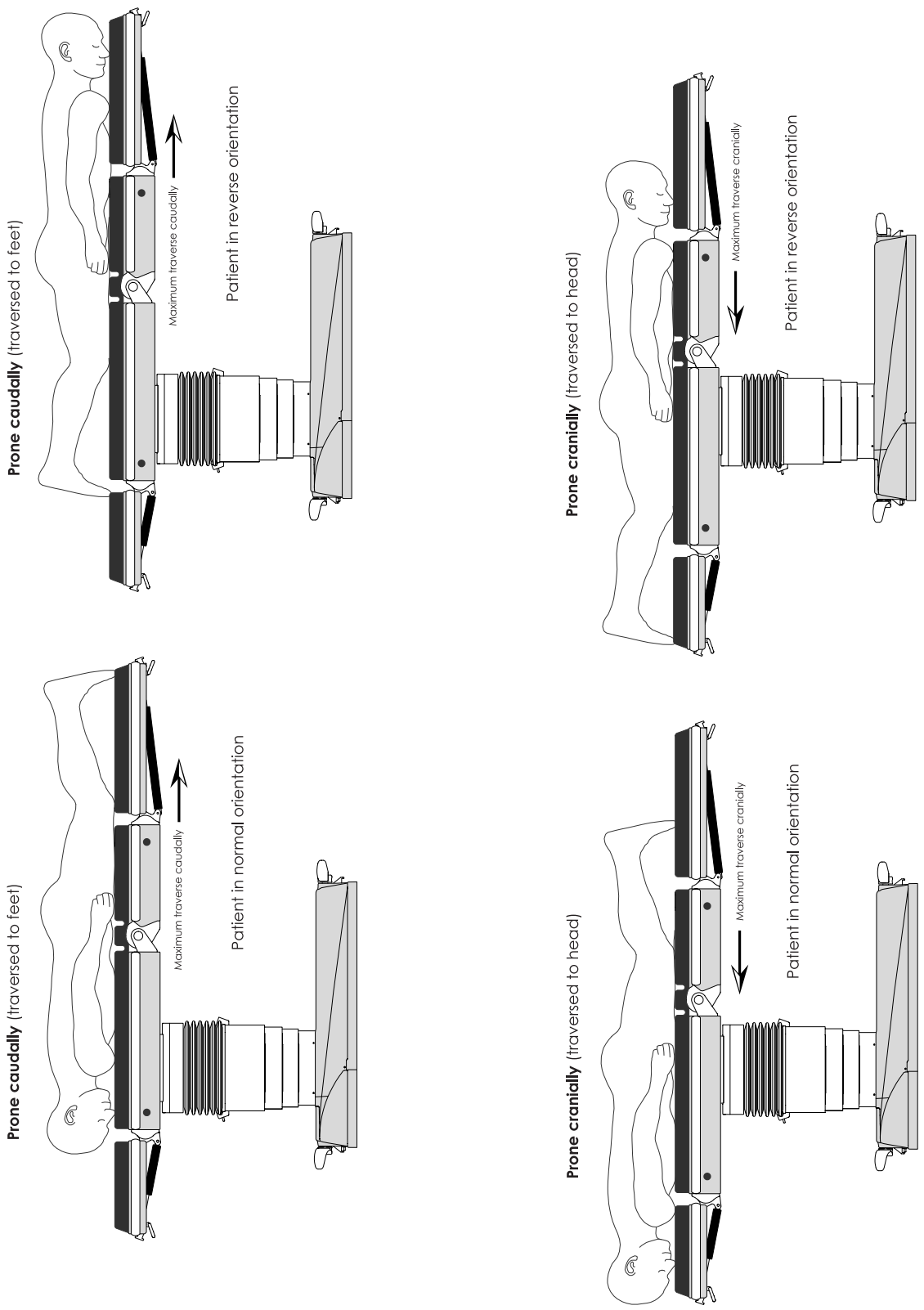


Fig. 6.6 Patient in various 'Prone' positions

(Note: For maximum patient weights see Fig. 6.3 and 6.4)

Note warnings in section 2.1 regarding patient support.

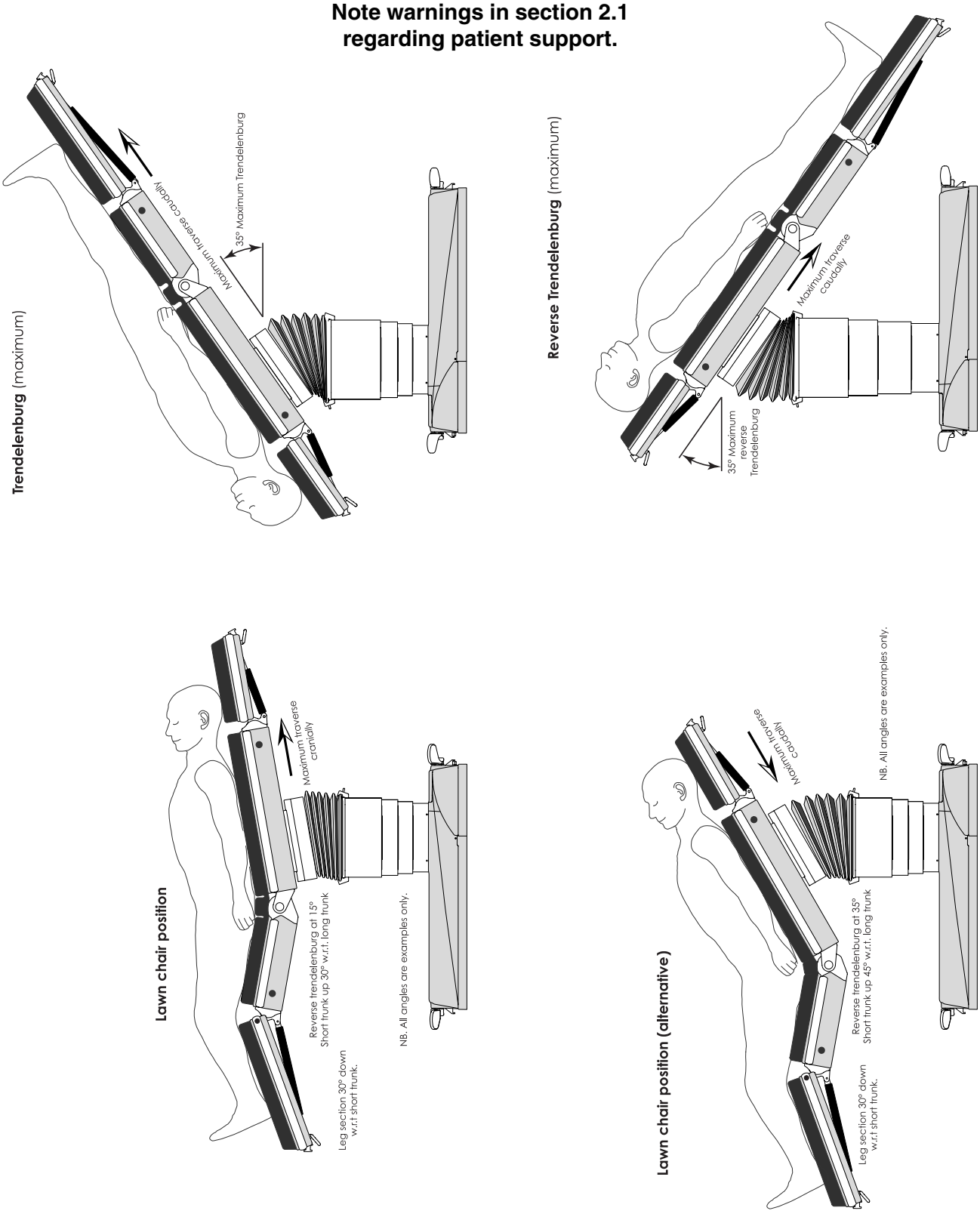


Fig. 6.7 Patient in various 'Lawn chair' & 'Trendelenburg' positions

(Note: For maximum patient weights see Fig. 6.3 and 6.4)

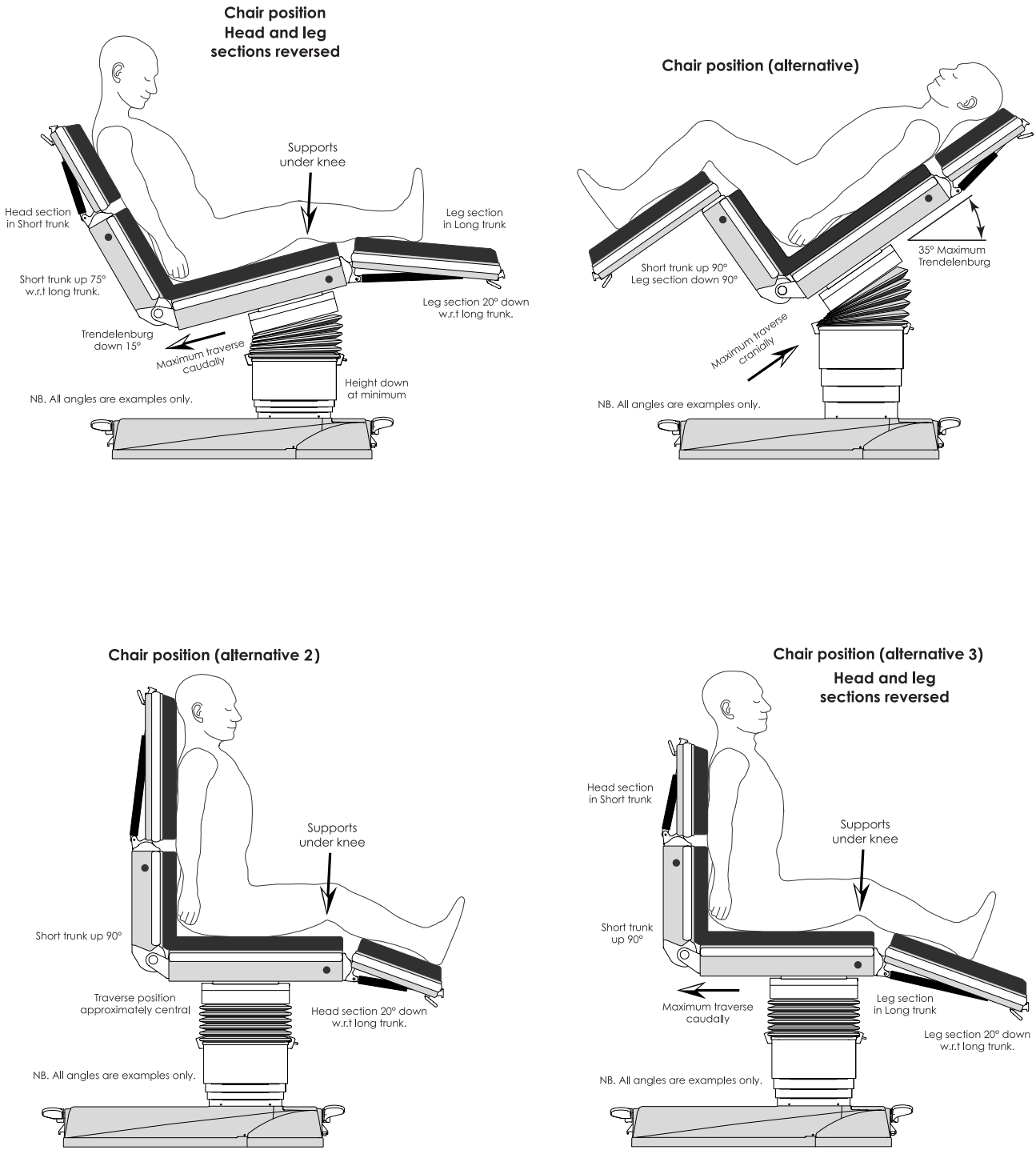
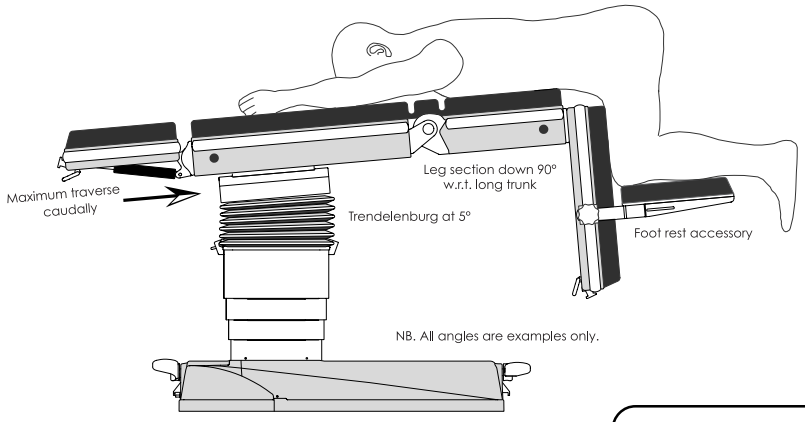


Fig. 6.8 Patient in various 'Chair' positions

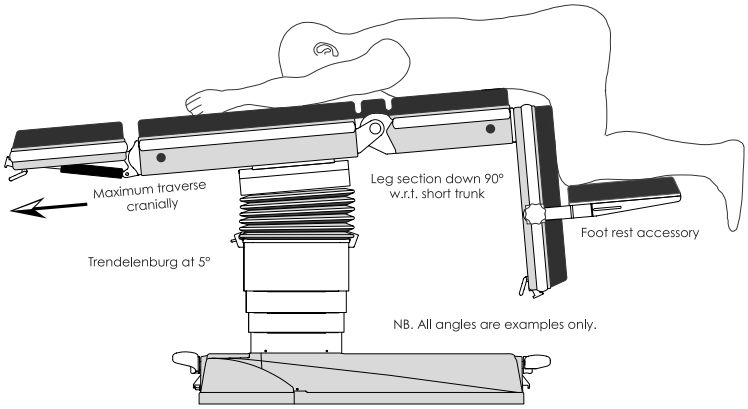
(Note: For maximum patient weights see Fig. 6.3 and 6.4), but note that with the table and patient positioned as above these are basically stable positions)

Proctology caudally (traversed to feet)



Note: Maximum patient weight for these two positions is 85kg.

Proctology cranially (traversed to head)



Note: Iliac crest support may be useful to reduce knee damage for all three positions.

Proctology caudally (traversed to feet)
with leg section in long trunk for maximum stability

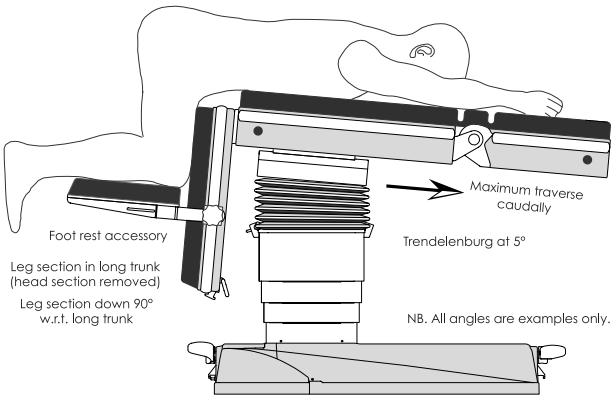


Fig. 6.9 Patient in various 'Proctology' positions

(Note: For maximum patient weights see above and Fig. 6.3 and 6.4), note that table stability in the top two graphics is the lowest and can only be used for the lighter patient)

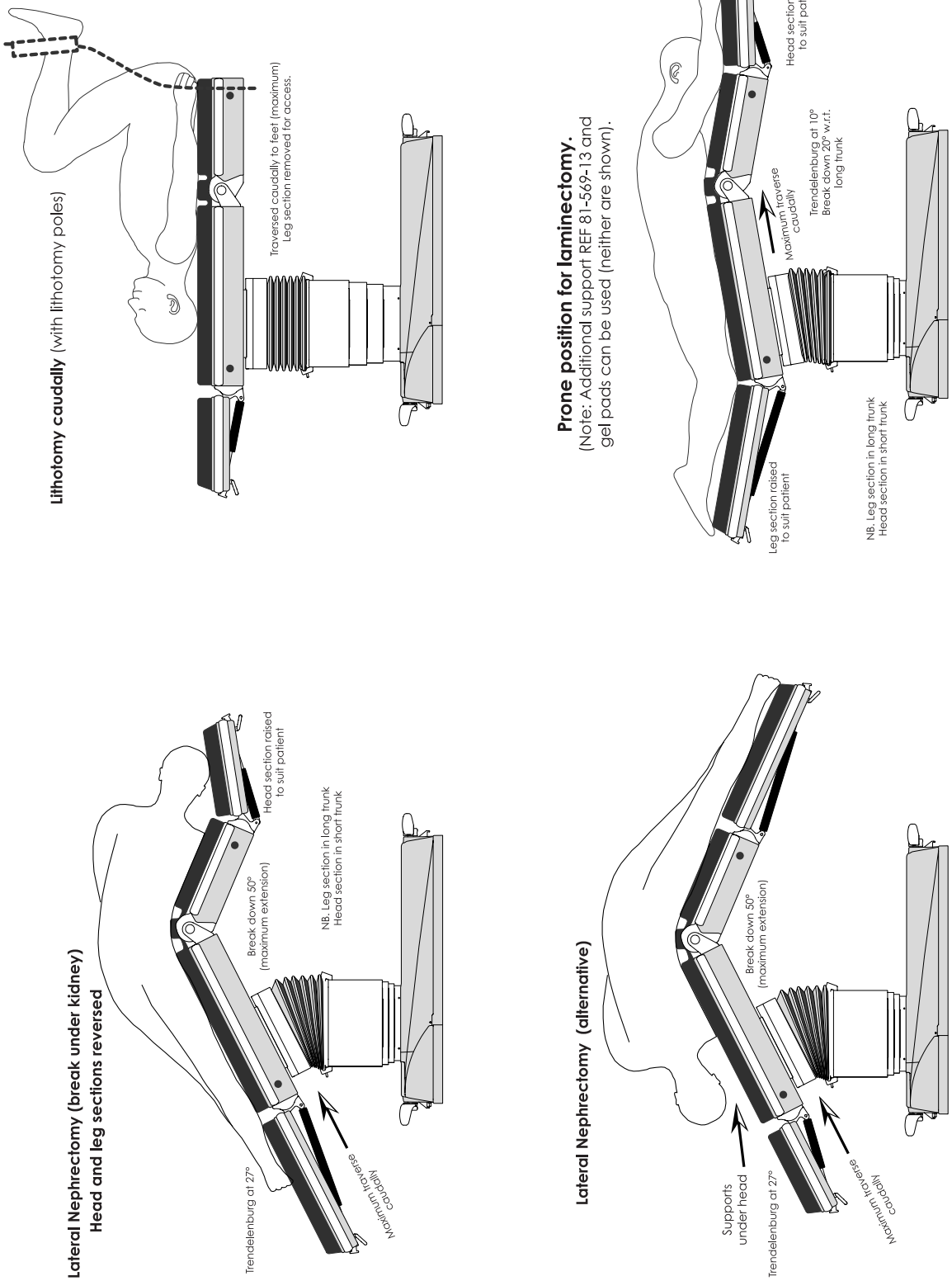


Fig. 6.10 Patient in 'Lithotomy', 'Prone Laminectomy' and 'Lateral Nephrectomy'

(Note: For maximum patient weights see Fig. 6.3 and 6.4)

7.0 ACCESSORIES

WARNING

When fitting any accessory ensure that it has been securely attached and the maximum loading has been noted before using it to support part of the patient's weight. Also see guidance notes in section 4.4.

The catalogue (REF) numbers for the standard T20 Series accessories are shown in the following list, where applicable these are supplied with a 'User/Service Handbook'. This list may not be exhaustive as new accessories are added to the range . Please check with Eschmann Equipment for the latest additions.

Some of the accessories listed below are also available with alternative side rails, please contact Eschmann for more information.

IMPORTANT NOTE: Please check with Eschmann Equipment or their local agent before using accessories that fit onto the side rail of tables supplied with non-standard (e.g. US, Denyer or Euro) side rails.

REF	Description
T00-3110001	Head section✧, purple, UK side rail
T00-3310001	Head section✧, blue, UK side rail
T00-3210001	Leg section✧, purple, UK side rail
T00-3410001	Leg section✧, blue, UK side rail
T00-5300001	Corded handset, blue, (UK side rail)
T00-5400001	Corded handset, purple, (UK side rail)
TA-0303026	Divided leg✧, pair, purple, UK side rail
TA-0303028	Divided leg✧, pair, blue, UK side rail
TA-0202001	Width extender✧, long, UK side rail
TA-0202007	Width extender✧, short, UK side rail
TA-0203001	Foot rest/extension✧, UK side rail
TA-0204089	Back elevator
TA-0301001	Lightweight leg✧
TA-0302001	Ophthalmic head section
TA-0303004	Accessory attachment bar
TA-0401013	Accessory trolley
TA-0601011	Leg abduction support
TA-0801090	X-ray cassette tray
81-342-00	Perineal instrument tray
81-367-85	Douche tray

Mattresses (original)

T20-411-0001	Mattress, 50mm, complete set
T20-412-0001	Mattress, 75mm, complete set
T20-421-0001	Mattress, 50mm, trunk section
T20-422-0001	Mattress, 75mm, trunk section
T20-431-0001	Mattress, 50mm, head/footrest
T20-432-0001	Mattress, 75mm, head/footrest
T20-441-0001	Mattress, 50mm, leg section
T20-442-0001	Mattress, 75mm, leg section
TA-0501002	Mattress, 50mm, long width extender
TA-0501008	Mattress, 50mm, short width extender
TA-0501009	Mattress, 75mm, long width extender
TA-0501010	Mattress, 75mm, short width extender
TA-0502025	Mattress, 50mm, divided leg, pair
TA-0503025	Mattress, 75mm, divided leg, pair
TA-0501006	Mattress, Ophthalmic head section
TA-0501015	Mattress, 25mm, lightweight leg
TA-0501016	Mattress, 50mm, lightweight leg

Mattresses (new Mk.II*)

T20-414-0000	Mattress, 50mm, complete set
T20-421-2093	Mattress, 50mm, trunk section
T20-431-2094	Mattress, 50mm, head/footrest
T20-441-2095	Mattress, 50mm, leg section
TA-0501096	Mattress, 50mm, long width extender
TA-0501097	Mattress, 50mm, short width extender
TA-0502118	Mattress, 50mm, divided leg, pair
TA-0501100	Mattress, 25mm, lightweight leg

* Introduced in November 2005. Weights for these new mattreses are approximately one third of the original mattresses and can can be identified by white breather ports on their base.

Side rail clamps

TA-020-1082	Anti drift rotary clamp (for UK side rail)
TA-020-1086	Anti drift rotary clamp (for Euro side rail)
TA-020-1087	Anti drift rotary clamp (for US side rail)
TA-020-1084	Drop handle direct on clamp (UK/Euro)
TA-020-1085	Drop handle direct on clamp (UK/US)

✧ These accessories come without a mattress which should be ordered separately, see list above.

Eschmann Equipment also supply:

A 'Modular Patient Positioning System (M.P.P.S.)' which utilises a range of modular components that can be easily configured to suit both the surgical requirement and the patient's anatomy and a range of support and Gel pads, suitable for use on the T20 Series of tables.

Direct Placement Leg Holders (DPLH) which can be used as an alternative to knee crutches and Lloyd Davies supports for positioning patients into the lithotomy position. In addition they have been cited in orthopaedics for assisting both positioning of the patient and facilitating C-arm access in orthopaedic trauma.

A range of support and Gel pads, suitable for use on these tables.

For information on any of the above please contact Eschmann Equipment, at the address on the back cover, to request advice or product information leaflets. Alternatively visit the Eschmann website at 'www.eschmann.co.uk'

The following accessories can be used with the T20 Series of tables. Their use is self explanatory but always ensure all clamps are fully tightened before using to support the applicable part of the patient's weight. Some of these require additional clamps to secure them to the table this is indicated in the following list. Again this list may not be exhaustive as new accessories are added to the range. Please check with Eschmann Equipment for the latest additions.

REF	Description
81-250-15	Lithotomy supports **
81-264-10	Shoulder rests
81-286-18	Anaesthetic screen, single *
81-290-10	Arm support, Carter Braine #
81-300-19	Narrow arm table with pad #
81-314-14	Arm table, square without support ##
81-344-13	Instrument table *
81-368-23	Perspex arm support, right-angle
81-378-38	Foot stocks
81-404-13	Pelvis support #
81-412-15	Buttock support #
81-420-17	Lloyd Davies lithotomy supports
81-428-15	Knee crutches
81-436-17	Pelvis / chest support #
81-446-13	Wristlet #
81-462-17	Patient restraint strap
81-462-33	Cot side, tall
81-463-06	Infusion pole
81-466-40	Ophthalmic head flap
81-490-03	Kidney position supports ##
81-492-16	Lateral support, adult
81-504-19	Lateral support, child
81-569-13	Laminectomy support pad
81-569-80	Laminectomy support **
81-812-17	X-ray cassette holder, lateral
81-820-19	Arm table, square with support
81-827-52	X-ray cassette tray, end loading
81-828-41	X-ray cassette tray, side loading
81-931-44	Orthopaedic knee crutch

* Requires one, Anti drift rotary clamp †
** Requires two, Anti drift rotary clamps †
\# Requires one, Drop handle direct on clamp †
Requires two, Drop handle direct on clamps †

† Ensure these clamps match the tables side rail (e.g. UK, Euro or US) see 'Side rail clamps' on the previous page.

Spare mains leads can be ordered under the following Spare Part Numbers:

391177 - T20-a/T20-m, Australian mains lead, not fused.
714188 - T20-a/T20-m, U.K. mains lead (10A fuse).
715254 - T20-a/T20-m, Euro mains lead, not fused.
111589 - T20-a/T20-m, U.S.A. mains lead, not fused.
111466 - T20-s, U.K. angled mains lead (10A fuse).

8.0 AFTER USE, CLEANING & CARE

8.1 After use procedures

After each procedure the table should be cleaned and disinfected in accordance with local procedures which take into account the guidelines provided in section 8.2 and 8.3 of this manual.

Accessories should be removed from the table and after cleaning and disinfection the head and leg section should be fully lowered as good practise.

The table battery LEDs should be checked to see if the batteries require recharging, recharge if applicable. If the preceding procedure was the last one for the day or shift, then the batteries should be placed on charge as a routine procedure (see section 5.3.1.2)

The table must be switched 'off' (⏻) at the table on/off switch (item 5 of Fig. 2.2) when the table is not in use. The green LED item 4 Fig. 2.2 will not be illuminated to show the table is 'off'.

If the table has been left switched 'on' and no movement command has been given via any controller (hand, foot or standby) for a period of six hours, an audible warning sounds (a slow repeating double 'beep'). This is provided to warn the user to switch the table 'off' (⏻) at the table on/off switch (item 5 of Fig. 2.2). If the table is still in use when this alarm sounds (e.g. table being used for a long procedure) and the user does not want the table switched 'off' (e.g. Trendelenburg may be required urgently) the alarm can be stopped by pressing any control input briefly, or, switching the table 'off', waiting 10 seconds and then switching the table back 'on'. The alarm will sound again in six hours if no movement command has been given and the table has not been switched 'off'. This feature can be disabled or the time period of six hours can be altered, contact Eschmann Equipment for more information.

8.2 Cleaning

NOTE

Eschmann Equipment cannot accept liability for the efficiency or the effects of any cleaning or disinfection techniques. Only use the materials detailed in the following sections.

WARNING

Disconnect from the mains electrical supply before cleaning or disinfecting the operation table, mattresses, or accessories. When cleaning with a brush wear suitable eye protection (brushes are prone to 'flick' particles) and at all times wear suitable personal protection (e.g. gloves and overalls).

CAUTION

Do not immerse the handsets or footswitch in liquids when cleaning or disinfecting.

If you have any particular cleaning problems, contact the Eschmann Equipment After Sales Service Department at the address given inside the front cover of this Manual.

8.2.1 Operation table and accessories

Fully raise the tabletop, remove all accessories and all the mattresses, then wash the table with hot (55°C) neutral (pH7) detergent solution (diluted in accordance with the manufacturers instructions) and rinse with clean water. Use a small brush to clean areas of difficult access.

Clean non-electrical accessories as detailed above for the table but only use a damp cloth to clean the handsets and footswitch.

8.2.2 Mattresses and pads

WARNING

Mattresses and pads should be checked for any cuts or tears in the outer covering. If any of these defects are found, the mattress must be replaced to eliminate possible biological hazards.

CAUTION

Remove spilt ether and anaesthetic liquid from mattresses and pads immediately.

When cleaning mattresses and pads:

- ❖ DO NOT use phenolic disinfectants.
- ❖ DO NOT use abrasive cleaning agents.
- ❖ DO NOT use organic solvents (e.g. petroleum spirit, carbon tetrachloride, or tetra-chloromethane).
- ❖ DO NOT allow petroleum-based oil, vegetable oil, wax, or grease to remain on the mattress.
- ❖ DO NOT dry mattresses with direct heat (e.g. radiators, electric fires, or hot-air blowers) allow them to dry at normal room temperatures.

Wash mattresses and pads thoroughly, with hot (55°C) neutral (pH7) detergent solution (diluted in accordance with the manufacturers instructions) and then rinse with clean water. Use a small brush to clean areas of limited access. Remove stubborn stains and deposits with good quality vinyl cleaner using a soft-bristle brush. Dry all surfaces with absorbent paper, to avoid damage do not leave them wet in contact with another surface (e.g. the table top).

8.3 Disinfection

NOTE

All equipment and accessories returned to Eschmann Equipment must be accompanied by a Decontamination Certificate, signed by an authorized person of managerial status. Appendix 2 shows an example of a suitable Decontamination Certificate that can be photocopied for use.

CAUTION

Hypochlorite solutions can damage metal parts, after disinfection, ensure it is rinsed of thoroughly with water. Prolonged exposure to hypochlorite solutions may degrade mattress material. Avoid hypochlorite solutions and other liquids coming into contact with any internal parts of the table.

8.3.1 Disinfection procedure

A well ventilated area should be designated and used as the disinfection area. Access to the area should be restricted to those people involved in the disinfection process.

The following disinfection procedure is used by Eschmann Equipment, and its use is recommended if no other local approved procedures are available.

8.3.2 Table, accessories mattresses and pads

Disinfect the operation table, accessories, mattresses and pads as follows:

i Disassemble the table and/or accessories as far as possible without the use of tools, remove mattresses and pads.

ii Scrub all surfaces and crevices with hot (55°C) neutral (pH7) detergent solution (diluted in accordance with the manufacturers instructions) to remove all visible contamination. Use a small brush to clean areas of limited access repositioning the table as required to gain access to all surfaces. For stubborn mattress stains see section 8.2.2.

iii Wash down with hot (55°C) water.

iv Dry all surfaces with absorbent paper.

v Wash down all surfaces and crevices with one of the solutions below:

- ❖ a 70% solution of industrial methylated spirit in water.
- ❖ a 1000 to 5000mg/litre solution of hypochlorite in water (see Caution note above).

vi Wash down thoroughly with clean water.

vi Dry all surfaces with absorbent paper, to avoid damage do not leave mattresses wet in contact with another surface.

vii Dispose of all cleaning material and solutions in accordance with authorized disposal procedures.

8.4 Care

WARNING

The head and leg section gas-springs are filled with gas at high pressure, do not try to open them. The gas-springs should be replaced immediately any signs of leaking or deterioration in performance are noted (e.g. movement of section when locked).

CAUTION

Do not lubricate the head or the leg section, gas-springs.

Once a week:

i Remove fluff and debris from the head and leg section guide pin location sockets and if required spray the pins and into the sockets with a suitable light lubricant such as WD40.

ii Remove all mattresses and check them for any cuts, scuffs or other damage and replace as required.

iii Check that the table covers are not cracked, chipped, or otherwise damaged and arrange replacement as required.

iv Check the table for any signs of wear or damage that requires attention and arrange remedial action if required.

v Ensure batteries have been regularly charged and charge them if required.

vi On the T20-m table clean the castors and remove any debris caught between them.

Once every six months the table should receive a safety check and service as detailed in the service manual (which provides full details of part replacement, safety checks and routine maintenance). During this service the tables calibration should be checked and if required it should be recalibrated. Also at least once every year the electrical conductivity of the table should be checked. To arrange these contact the Eschmann After Sales Service Department, see inside front cover for contact details.

8.5 Storing the operation table (long term)

The Operation table should be covered, and stored in a clean environment, with no extremes of temperature, see the Technical Data section for details.

The table should be stored:

- With the base in the braked position.
- With the head and leg sections fully lowered.
- With the tabletop level in both planes.
- With 'on/off' switch (item 5, Fig. 2.2) 'off'.

Every two weeks:

- Charge the table batteries (see section 5.3.1.2) until both charging LEDs are green.

The storage maintenance inspection must be conducted by a trained engineer. When the inspection is finished, the 'Storage Maintenance Record' (see page 47) should be completed and signed.

CAUTION

Do not store mattresses and pads with objects (especially objects having sharp edges and protrusions) resting on their padded surface as this could damage them. Always store them flat.

Mattresses and pads should not be left in direct or excessive heat and they must be stored flat. Do not leave them with other accessories resting on them or leaning against another object.

8.6 Maintenance

8.6.1 General

The Service Manual, which can be ordered from the Eschmann After Sales Service Department, contains the routine service schedule and details of how to replace parts when required. Some parts of the table are not user serviceable and this is detailed in the Service Manual, also refer to section 1.1.6, 3.3.9 and 8.4.

8.6.2 Fault diagnosis

Table 1 lists possible causes for faults and conditions that may arise. Some of these may require further investigation by trained engineers in conjunction with the Service Manual and circuit diagrams. Where the remedy will require an engineer to rectify the fault or condition this is indicated by the phrase "Engineer to..." in the remedy column. If any fault persists (e.g. blown fuse) this should be investigated by an engineer.

8.6.3 Environmental considerations

WARNING

Gas springs contain nitrogen gas and a small quantity of hydraulic oil at very high pressure, these must be vented before disposal, consult the Service Manual for the safe procedure.

DISPOSAL NOTE

This equipment contains environmentally hazardous lead-acid batteries. If the batteries fail, or if the equipment is to be disposed of, it is recommended that the batteries are taken to a disposal site designated for the disposal of lead-acid batteries, or that the batteries are collected by an agent who specialises in the collection of lead-acid batteries.

During normal use there are no environmental considerations that need to be considered. During the design stage several materials were considered to be unacceptable and materials such as Cadmium, CFC filled capacitors and devices containing mercury, have not been used within this equipment.

During cleaning and disinfection procedures, the potentially contaminated waste materials produced during these actions, should be handled in accordance with local procedures and National legislation for the disposal of potentially contaminated waste.

At the end of the working life of the table it should be dismantled and recycled as much as possible in line with the recommended procedure available from Eschmann Equipment and in accordance with local procedures and National legislation.

8.6.4 Technical Lifetime

This product has a technical lifetime, which by Eschmann Holdings Limited is considered to be 10 years. At the time of delivery the product fulfils the existing regulations and standards but as with all other electro-mechanical products, the Eschmann T20 Series of tables is subject to ageing and wear, and even though the product may have undergone regular service in accordance with the recommended service schedule, Eschmann Holdings Limited can not guarantee the product's safety after the expiry of the technical lifetime.

Eschmann Holdings Limited recommends that a T20 Series table is taken out of service 10 years after the date of manufacture as shown on the serial label fixed on the table's base. Provision of spare parts and service by Eschmann Holdings Limited after the expiry of the specified technical lifetime does not mean an extension of Eschmann Holdings Limited liabilities.

STORAGE MAINTENANCE RECORD (for Table Serial No : .....)			
Date of Battery Charge	**Date of Inspection**	**Signature**	**Comment**

TABLE 1 - FAULT DIAGNOSIS

FAULT	POSSIBLE CAUSE	REMEDY
Table will not move in response to handset or footswitch.	Table not switched 'on'.	Switch table 'on', switch 5, Fig. 2.2.
	Main batteries critically low, see 5.3.1.1 and Fig. 5.9.	Recharge batteries see section 5.3.1.2 OR, in an emergency **only** control the table using the standby control panel as detailed in section 5.3.4, OR, switch in the standby batteries as detailed in section 5.3.1.4.
	Corded handset or footswitch not connected to table.	Connect handset (see 5.3.3) or footswitch to table.
	Handset or footswitch faulty, or possible flat battery in infrared handset.	Replace handset or footswitch with one known to work, or engineer to arrange replacement of infrared hand control batteries.
	Infrared handset has a different identifier code to the table.	Use a compatible handset, see infrared handset 'User Handbook'..
	Infrared handset has infrared windows blocked by labels/fingers.	Remove labels/fingers from window.
	Table not configured for infrared handset.	Arrange to have table configured for an infrared handset by a Service Engineer.
	Battery fuse blown.	Replace fuse as detailed in section 5.3.5, for T20-a and T20-s only, or, switch to standby battery as detailed in section 5.3.1.4.
	Table has reached the limit for that button function.	Press alternative button.
	Two buttons on one controller being pressed at the same time.	Release both buttons and press only one button at a time.
	An internal error has been detected in the control system.	Release button, wait 2 seconds for error to clear, press button again.
	Signal from infrared handset blocked by object or personnel.	Move handset around table or closer to the pedestal.
	Signal from one controller being overridden by another controller (see section 4.6.1.2).	Only use one type of handset with a table at any time.
	Main table batteries have failed.	Switch in the standby batteries as detailed in section 5.3.1.4.
	Maximum load of function selected has been exceeded.	Assist table motion or reposition patient to reduce the offset load.
	Table motion physically blocked (e.g. leg section hitting floor)	Move object or reposition table.
	Two handsets connected to table	Disconnect one (either) handset.

TABLE 1 - FAULT DIAGNOSIS (continued)

FAULT	POSSIBLE CAUSE	REMEDY
Table will not move when pushed.	Table base in 'braked' position.	Place table into the 'castor' or 'wheel' orientation as detailed in section 5.1.
	Foreign object trapped under a wheel or castor.	Check for foreign object and remove it if found.
Table difficult to manoeuvre.	Table in 'wheel' orientation.	Place table into 'castor' orientation.
Table difficult to move in a straight line.	Table in 'castor' orientation.	Place table in 'wheel' orientation.
Table not stable on floor and moves when pushed	Table is not in 'braked' position.	Place table into the 'braked' orientation as detailed in section 5.1.
Table not stable on floor and wobbles when 'braked'.	Floor uneven or object under a wheel or castor.	Move table to a flatter area or remove object.
No charge LED(s) 'on' when table connected to mains.	Mains supply faulty or not switched 'on'.	Check mains supply, or switch 'on' at mains supply.
	Mains cable not connected correctly at both ends.	Reconnect mains cable correctly at each end.
	Mains cable faulty.	Replace mains cable.
	Mains fuse in supply cable blown.	Replace fuse in mains plug (10A).
	Mains supply fuse in table blown.	Replace fuse as detailed in section 5.3.5.
Charge LED colour does not change to green (even after twelve hours).	Table batteries at fault.	Engineer to change batteries.
Table section does not attach or release easily from table.	Weight of section not supported during attaching or removal.	Support section weight when attaching and removing section (i.e. gently lift end furthest from table).
Unexpected table movement.	Another infrared controller being used locally.	Check for another infrared controller and discontinue its use, or engineer to change table infrared code.
Excessive motor noise.	Faulty drive.	Engineer to remedy fault.
Table audible alarm sounding ('beeping')	Table left switched 'on' and no command input given for 6 hours.	See section 8.1 and either stop the alarm (if table still in use) or switch the table 'off' (if table not in use). If the table is not in use, place it on charge.

9.0 TECHNICAL DATA

9.1 Weights

The nominal weights of the standard table components are listed below (50mm mattress*):

Leg section (without mattress)	11.50kg
Leg section mattress	1.00kg
Head section (without mattress)	7.75kg
Head section mattress	0.75kg
T20-a and T20-s (base and column only)	192kg
T20-m (base and column only)	140kg
Long and short trunk assembly	55.75kg
Long and short trunk mattress	2.50kg
Total weight T20-a and T20-s	271kg
Total weight T20-m	219kg
Lightweight leg section	4.50kg
Footrest (incl. mattress)	7.00kg
Width extender (incl. mattress)	6.00kg
Perineal instrument tray	3.00kg

*** NOTE:** 50mm mattress weights above are for the new style of 50mm mattress introduced in November 2005. Original mattress weights are approximately three times those shown above. New mattresses can be identified by white breather ports on their base (see section 7.0).

9.2 Dimensions

The following are the nominal major dimensions of the standard table (with head and leg sections fitted) and include the standard 50mm mattress and side rail if applicable (see Fig. 9.1 for illustration, the number in brackets after the item details which part):

Overall length (2)	2102mm
Maximum height (4)	1120mm*
Minimum height (5)	720mm*
Maximum top traverse (2)	250mm
Overall width T20-a and T20-s (6)	600mm
Overall width T20-m (6)	725mm
Side rail (UK)	31.5 x 6.2mm

* 5mm less for tables built prior to June 2005

9.3 Movements

The following table movements are maximums and cannot be assumed to be available in all combinations of table positioning (see Fig. 9.1 for illustration, the number in brackets after the item details which part). For example, with the table in its normal configuration and at minimum height the maximum Trendelenburg and leg section movements cannot be achieved due to the proximity of the floor. Similarly with a large amount of tilt set, maximum Trendelenburg cannot be achieved.

Max. Trendelenburg (1)	35°
Max. reverse Trendelenburg (1)	35°
Max. extension (4)	230°
Max. flexion (4)	90°
Head section (5)	±45°
Leg section (3)	-100° +55°
Max. lateral tilt (7)	±18°

9.4 Table loading

See graphs in section 6.0 for maximum patient weight distribution charts for various table positions and orientations.

Maximum section loading is stated on each item and is detailed below for reference:

Leg section	44kg
Head section	22kg

For accessories the maximum loading is stated on each item and detailed in the User Handbook supplied with them.

For specific notes on the obese patient see section 6.2.

9.5 Electrical

9.5.1 Antistatic requirements

The table has an antistatic pathway from the table top, through an internal resistor, to a castor.

CAUTION

To complete and maintain the antistatic pathway the table must be used on an electrically conductive or antistatic floor and with mattresses supplied by Eschmann Equipment.

9.5.2 Batteries

Table base:

Main batteries:
Two, 12V 10Ah, sealed lead acid

Standby batteries:
Two, 12V 1.2Ah, sealed lead acid
(see battery disposal caution in section 8.6.3)

Infrared handset:
Two, 1.5V size AA Alkaline (Note: Must only be changed in accordance with the notes in the 'Service Manual' to ensure the IP rating is not compromised).

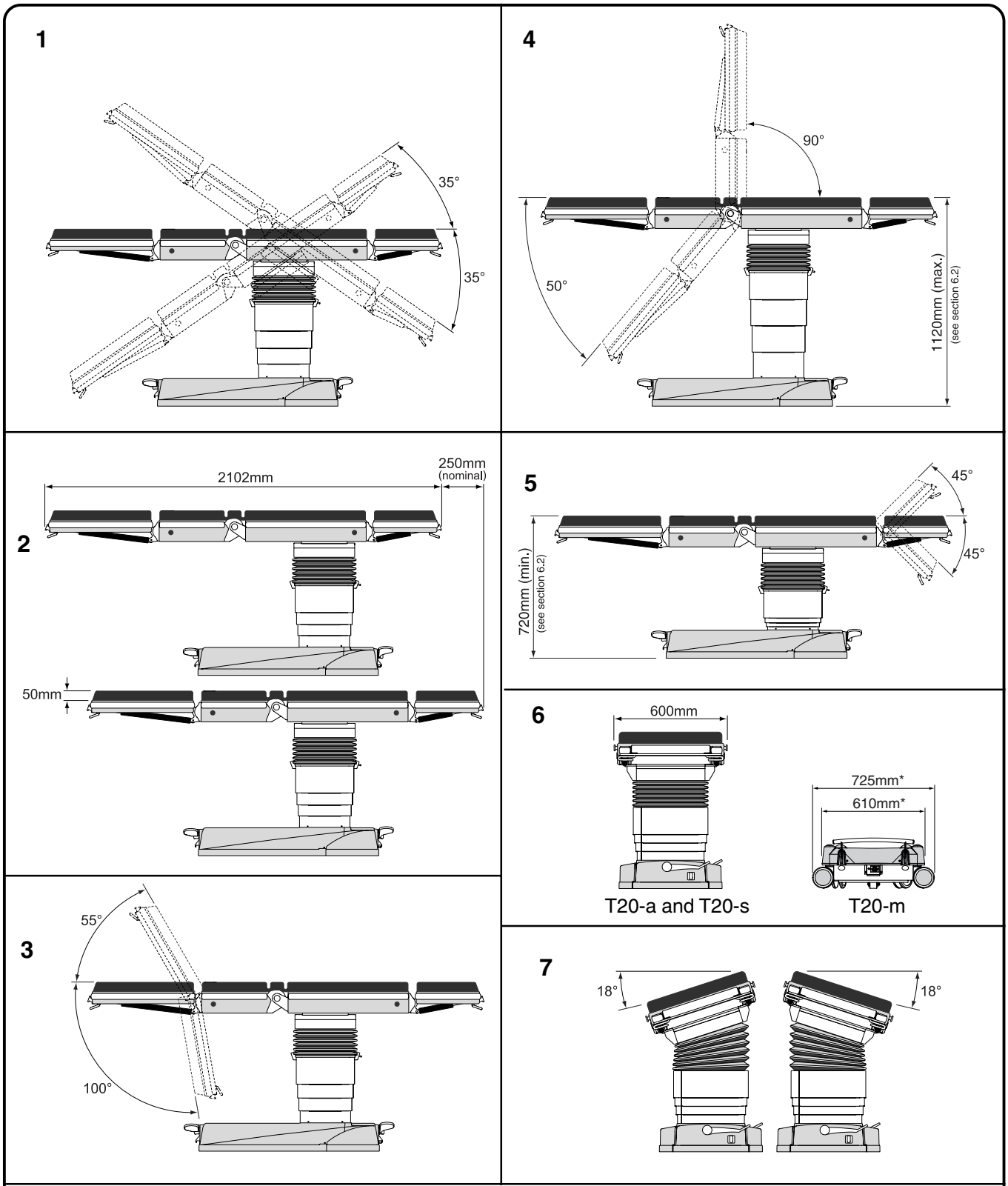
9.5.3 Internal battery charger

Input

100-240V a.c. 50-60Hz 2.5A max

Output

29.2V d.c. 2A (max.) when charge state LED red or orange, 27.6V d.c. when charge state LED green



These are maximum movements for each aspect, they may not be available in certain combinations (e.g. maximum tilt and maximum Trendelenburg). Movements that could cause damage cannot be catered for (e.g. position of the leg section). Also see sections 9.2 and 9.3.

* The maximum width of the T20-m table is across the base at the foot pedal end, this is 610mm with the castors in line with the base and 725mm with both castors at 90° to the base as indicated.

Fig. 9.1 Major dimensions and movements

9.5.4 Fuses

External fuses

Mains input fuses (item 13, Fig. 2.2 or item 5, Fig. 2.3)
2 x T4A (5 x 20mm) 250V

Battery fuses (item 2, Fig. 2.2). **Note:** On the T20-m these fuses are fitted internally.
2 x T20A (6.35 x 32mm) 500V

Mains plug fuse (if fitted) 10A.

Internal fuses *(only accessible by engineer)*

Battery fuses (joining each battery pair)
2 x 30A blade type (1 per battery pair)
2 x T20A (6.35 x 32mm) 500V (these fuses are fitted externally on the T20-a and T20-s)

9.5.5 Duty cycle

This symbol is used to indicate the table's duty cycle which, in the worst case, is '60s : 600s', the ratio of the operating time to the sum of the operating time and the ensuing interval (see note below). Each motor drive has its own duty cycle and this is dependent on loading and table position as detailed below.

Trendelenburg 1 : 4 (60s : 240s) at a maximum torque of 417Nm (e.g. 135kg load offset 31cm from the fulcrum, or a 300kg load offset 14cm from the fulcrum. Where this load is the patient and accessories weight and the offset is how far the loads centre of gravity is, from the centre of the column).

Traverse 1 : 4 (60s : 240s) when the table is horizontal and at the maximum load of 300kg, or at 17.5° with a patient weight of 225kg, or at 35° with a patient weight of 150kg.

Break 1 : 10 (60s : 600s) at maximum patient weight of 300kg.

Height 1 : 4 (60s : 240s) at maximum patient weight of 300kg (not offset).

Tilt 1 : 4 (60s : 240s) at maximum patient weight of 300kg.

Note: The duty cycles above are all for the worst case (i.e. maximum loads). For reduced loading the above duty cycles can be increased.

9.6 Classification and symbology

All the symbols used on this table are shown and explained in section 2.2. These detail the safety category and class of this table as marked on the table or section by the use of these symbols.

9.7 Use with other equipment

9.7.1 Electrosurgical equipment (h.f.)

The T20 Series of operation table have been designed to minimise the possibility of accidental electrosurgery burns and can be used in conjunction with electrosurgical equipment. However contact with any metal surfaces (e.g. table side rail, or other equipment etc.) can cause burns during electrosurgery and must be avoided.

9.7.2 Defibrillation equipment

With the mains cord attached the equipment has a defibrillator proof applied part with type **BF** protection against electric shock.

9.7.3 RF communications equipment

See section 9.11 'Electromagnetic compatibility'.

9.8 Standards compliance

The table has been designed and built to comply with the following international standards:

BS EN 60601-1: 1990 and all amendments to date
BS EN 60601-1-2: 2001
BS EN 60601-2-46: 1998
BS EN 60601-1-4: 1997

9.9 Environmental conditions

9.9.1 Operating environment

The table has been designed to operate in the following environment:

Temperature range	10°C to +40°C
Pressure range	69KPa to 106KPa.
Humidity range	30% to 75% RH non-condensing.

9.9.2 Transport & storage environment

The table can be transported and stored safely, in the following environment:

Temperature range	-30°C to +50°C
Pressure range	69KPa to 106KPa
Humidity range	30% to 90% RH non-condensing.

9.10 Alarms

9.10.1 Visual

Visual alarm functions of this table are LED indicators for mains 'on' and battery charge state (see Figs. 2.3 and 2.3) situated on the table base and battery charge level indication (see Fig. 5.9) provided on the corded handset. Ensure you are familiar with these before using this operation table (see sections 5.3.1). There is also an LED indicator to show that the table is switched 'on' (see item 4, Fig. 2.2 and 2.3).

9.10.2 Audible

Audible alarm indication is provided (a double 'beep' repeating every eight seconds) to warn that the table has been left 'on' for an extended period and should be switched 'off' (see section 8.1 for more information). A single 'beep' also sounds when the table is switched 'on'.

9.11 Electromagnetic compatibility (EMC)

9.11.1 Interference considerations

The Eschmann T20 Series of tables have been designed and manufactured in such a way as to remove, or minimise as far as possible, risks connected with reasonably foreseeable environmental conditions such as magnetic fields and external electrical influences (i.e. electrical interference). The risks of electrical interference from or to other devices normally used with these tables have been taken into account. The steps taken to achieve this are to ensure compliance with relevant international electromedical standards {i.e. EN 60601-1-2:2001) regarding electromagnetic compatibility. This compliance has been confirmed by independent testing. However it is not possible to simulate all the conditions that may be encountered, the compliance testing therefore provides only a very good indication as to the susceptibility or suppression of emissions to or from a device.
It is highly unlikely that any electrical interference problems will be encountered with these tables. However, should such interference be suspected, the following the following guidance is provided.

9.11.2 Interference from other equipment

The Eschmann T20 Series of tables have been designed to ensure that when using them in close proximity with 'other correctly designed' electrical equipment, interference with the tables control systems does not occur. Eschmann cannot guarantee that other equipment used in an operating theatre is properly constructed so as to avoid electrical interference with them. This could be a problem particularly with very old equipment (i.e. it does not conform to the latest standards). In the unlikely event that electromagnetic interference is caused by 'other' noncompliant equipment, such 'other' equipment should not be activated at the same time these tables are switched 'on' and their control systems are active.

9.11.3 Interference with other equipment

The Eschmann T20 Series of tables have been designed to ensure that when used in close proximity with other correctly designed equipment they do not cause interference with such other correctly designed equipment. Eschmann cannot guarantee that other equipment used in an operating theatre is properly constructed to withstand electrical interference with adjacent equipment. This could be a problem particularly with very old equipment (i.e. it does not conform to the latest standards). In the unlikely event that electromagnetic interference is experienced with these tables, the other equipment should not be activated at the same time as the tables are switched 'on' and their control systems are active.

9.11.4 RF communications equipment

As with all medical electrical equipment the user should be aware that portable and mobile RF communications equipment can affect medical electrical equipment such as these tables.

9.11.5 Accessories

As with all medical electrical equipment, and in line with the latest European standard (EN 60606-1-2:2001) the user should be warned that the use of accessories, transducers and cables other than those specified below (with the exception of those sold by Eschmann Equipment as replacement parts for internal components) may result in increased emissions or decreased immunity of the these tables and their associated accessories.

The following Eschmann Equipment accessories can be used with these tables without affecting the table's electromagnetic compatibility with subclauses 36.201 and 36.202 of EN60601-1-2:2001. Other similar accessories or equivalents that could affect compliance with the requirements of subclauses 36.201 and 36.202 of EN60601-1-2:2001 should not be used.

Mains cord (for part number see section 7.0).
T00-5300001 Handset, blue, (UK side rail)
T00-5400001 Handset, purple, (UK side rail)
(also, other handsets for non UK side rail)

All the other accessories listed in section 7.0 are designed for use with the Eschmann T20 Series of tables and have no EMC implications.

9.11.6 Installation

WARNING

The T20 Series tables should not be stacked with other equipment. If used adjacent to other equipment these tables should be observed to verify normal operation in the configuration in which it will be used.

The Eschmann T20 Series of tables have been tested for use in close proximity with other equipment and should be installed in accordance with the EMC tables that follow in section 9.11.7.

9.11.7 EMC tables

The following guidance (in table format) is provided in line with EN60601-1-2:2001. The table references (i.e. 201, 202, etc.) are those used within the standard. All other tables referenced within the standard do not apply to the T20 Series of table.

Table 201 - Guidance and manufacturer's declaration - electromagnetic emissions
Guidance and manufacturer's declaration - electromagnetic emissions

The T20 Series of operation table are intended for use in the electromagnetic environment specified below. The customer or the user of these operation tables should assure that they are used in such an environment

Emission test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The T20 Series of operation table use RF energy only for its internal function. Therefore, RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The T20 Series of operation table are suitable for use in all establishments other than domestic premises or those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 202 - Guidance and manufacturer's declaration - electromagnetic immunity

Guidance and manufacturer's declaration - electromagnetic immunity			
The T20 Series of operation table are intended for use in the electromagnetic environment specified below. The customer or the user of these operation tables should assure that it is used in such an environment			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/ output lines	±2 kV for power supply lines ±1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (>60% dip in U_T) for 5 cycles 70% U_T (>30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (>60% dip in U_T) for 5 cycles 70% U_T (>30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. The T20 Series of operation table have dual classification (Class 2 and Internally powered).
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.			

Table 204 - Guidance and manufacturer's declaration - electromagnetic immunity - for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING.

Guidance and manufacturer's declaration - electromagnetic immunity

The T20 Series of operation table are intended for use in the electromagnetic environment specified below. The customer or the user of these operation tables should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the T20 Series of operation table, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distances**
Conducted RF IEC 61000-4-6	3Vrms 150 kHz to 80 MHz	3V	$d = 1.2 \sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2,5 GHz	3V/m	$d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2,5 GHz where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the T20 Series of operation table are used exceeds the applicable RF compliance level above, the T20 table should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the T20 table.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m

Table 206 - Recommended separation distances between portable and mobile RF communications equipment and the T20 Series of operation table - for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING.

Recommended separation distances between portable and mobile RF communications equipment and the T20 Series of operation table

The T20 Series of operation table are intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the T20 operation table can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the T20 operation table as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter **W**	**Separation distance according to frequency of transmitter m**		
	150 kHz to 80 Mhz $d = [\frac{3,5}{V_1}]\sqrt{P}$	**80 MHz to 800 MHz** $d = [\frac{3,5}{E_1}]\sqrt{P}$	**800 MHz to 2.5 Ghz** $d = [\frac{7}{E_1}]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.2	1.2	2.3
10	3.7	3.7	7.4
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

APPENDIX 1

TRAINING LOG FOR THE ESCHMANN T20 SERIES OPERATION TABLE

NAME	POSITION	DATE	INSTRUCTOR	AUTHORIZED BY	REVIEW DATE

Ensure that ALL the personnel listed above have been fully trained in the safe use of this T20 Operation table. This should include a thorough understanding of all the safety notes and cautions contained within this 'Instructions for use' manual.
Photocopy this page as required and ensure that ALL personnel have not passed the review date without a refresher course. Append additional documents applicable to your unit/hospital (e.g. cross contamination procedures) and list them below in the space provided, if they should be included in the training.

ADDITIONAL DOCUMENTS

APPENDIX 2

DECONTAMINATION CERTIFICATE

Make and description of equipment/item:

Catalogue number (REF)*:

Serial Number (SN)*:

This is to certify that the above equipment/item has been decontaminated in accordance with the attached procedure and that this certificate has been issued by the authorized person detailed below. The equipment/item has also been suitably marked to show it has been decontaminated in accordance with the attached procedure and that this certificate has been issued.

Certificate issued by:

Title:

Position:

Hospital/unit address:

Date:

Additional information (optional)

Reason for return:

For the attention of:

* If applicable and known

APPENDIX 3

BATTERY MANAGEMENT SHEET FOR THE ESCHMANN T20 OPERATION TABLE

CAUTION

Continued use of the table batteries in the 'critically low' state can damage the batteries.

Batteries within the table base are mains rechargeable, to maintain peak battery performance the table batteries should be placed 'on charge' at the end of each day or shift, **do not wait a 'low' battery indication**, it is good practice to charge daily. Batteries **must** be charged at the end of the shift when a 'low' indication is given and as soon as possible when a 'critically low' indication is given.

Batteries should be checked for adequate charge before using the table for any surgical procedure. The orange battery LEDs on the corded handset indicate a 'low' battery and the red LEDs indicate a 'critically low battery'. When the 'critically low' battery warning is indicated the table cannot be operated by either of the handsets or the footswitch. To continue to operate the table either connect it to a suitable mains supply and recharge the batteries, or use the standby batteries or control panel. To use the standby batteries the standby battery switch must be pressed and held depressed whilst the required motions are conducted using the normal controls.

To recharge the table batteries (normal and standby) connect the mains cord supplied **(do not use any other cord)** into the mains inlet. Connect the mains cord to a suitable mains supply (check voltage) and switch the supply 'on' if controlled by a switch. The battery charging LEDs will illuminate 'red' to indicate 'bulk' recharge, 'amber' to indicate 'top-up' charge and 'green' to indicate a fully charged battery on 'trickle' charge. **Note**: The standby control panel can be used even when the 'critically low' battery indication is given but note the warning given in section 4.6.5 of the 'Instructions for Use'.

DATE	TIME 'ON'	TIME 'OFF'	BAT'Y IND'N*		DATE	TIME 'ON'	TIME 'OFF'	BAT'Y IND'N*	
			MAIN	STANDBY				MAIN	STANDBY

*** BAT'Y IND'N** - Indicate battery state after charge. 'G = Green or OK', 'A = Amber or Low', or 'R = Red or Critically Low' as indicated on the corded handset. Please photocopy this page and use to record battery charging data.

APPENDIX 4

MANUAL HANDLING SAFETY NOTES AND ADVICE

1 Manual handling

1.1 During configuration or adjustment of the T20 series of table there are occasions where the user should be aware of the safe practises to be employed during manual handling or adjustment of parts of the table. For information the weights of the heaviest accessories commonly used are listed below. When lifting, carrying or fitting these accessories it is recommended that care is taken and two people are employed when required.

Leg section, without mattress, 11.50kg (25.3lb)
Leg section, with 50mm mattress, 14.25kg (31.4lb)
Leg section, with 75mm mattress, 15.63kg (34.4lb)
Head section, without mattress, 7.75kg (17.1lb)
Head section, with 50mm mattress, 9.75kg (21.5lb)
Head section, with 75mm mattress, 10.75kg (23.7lb)
Long and short trunk 50mm mattress, 7.25kg (16.0lb)
Long and short trunk 75mm mattress 10.88kg (23.9lb)
Footrest, without mattress, 5.00kg (11.0lb)
Footrest, including 50mm mattress, 7.00kg (15.4lb)
A divided leg section, 7.70kg (16.9lb)
A divided leg section, with 50mm mattress, 9.90kg (21.8lb)
A divided leg section, with 75mm mattress, 11.0kg (24.2lb)
Long width extender, with 75mm mattress, 6.00kg (13.2lb)

*** NOTE:** 50mm mattress weights included in the values above are for the original style of 50mm mattress. The latest 50mm mattress weights are approximately one third of those indicated above. New mattresses can be identified by the white breather ports on their base (see section 7.0).

1.2 When adjusting a section such as the head and leg section the weight is partially supported* by the gas springs, but together with the weight of the patient's limbs, the total weight required to be lifted could be much greater than the weight of the section and mattress*. It is not possible to quantify this weight exactly as each situation will vary, but Fig. 4.9 should assist in an approximation, taking into account the patient's actual total weight.

These 'Instructions for use' advise supporting the weight of the patient during adjustment of any section, obviously this requires the intervention of several personnel, some supporting the patient's limbs and others adjusting the table sections.

* Because of the complexities involved in both the way the patient loading acts on a section, and the assisting force provided by the gas spring varies, as the section is raised or lowered about its hinge, the load at a particular point cannot be exactly stated.

1.3 Manual handling is covered by legislation and the Manual Handling Operations Regulations 1992 require employers to avoid the need for employees to carry out manual handling work that could cause injury by mechanising processes, or reorganising work, so far as is reasonably practicable. It states that it is the Duty of Employees while at work to make full and proper use of any system of work provided for his use by his employer to comply with these regulations. To this end the following publication could be used to create such a system of working, "Manual Handling in the health services", Health and Safety Commission, 1998.

1.4 There are no recommended maximum weights specified in the "Manual Handling Operations Regulations 1992" or the "Health and Safety (miscellaneous amendment) Regulations 2002" but the notes following may be considered useful in compiling a safe working practice. The reason no specific maximum weights are stipulated is that factors such as an individuals capabilities (height, gender, strength, etc.) the load (size, availability of hand-holds, weight, etc.) the task (motion required, duration, distance, etc.) the environment and other factors all need to be assessed when considering the task.

2 How to lift safely

Where the 'load' is a patient the person or team must communicate with the patient throughout the lifting procedure if they are conscious. Here are some important points, using a basic lifting operation as an example, these points can be remembered as the four 'Ps'.

i **PLAN - Plan the lift.**

Where is the load to be placed? Use appropriate handling aids if possible. Do you need help with the load? Remove obstructions such as discarded wrapping materials. For a long lift, such as floor-to-shoulder height, consider resting the load midway on a table or bench in order to change grip.

ii **PREPARE - Prepare load and position feet.**

Make the load secure, easy to hold, safe and compact. Clear obstructions and any floor hazards giving good visibility and space. Position the feet apart, giving a balanced and stable base for lifting with the leading leg as far forward as is comfortable.

iii **POSTURE - Adopt a good posture.**

When lifting from a low level, bend the knees. But do not kneel or overflex the knees. Keep the back straight (tucking in the chin helps). Lean forward a little over the load if necessary to get a good grip. Get as close to the load as possible. Keep the shoulders level and facing in the same direction as the hips. Try to keep the arms within the boundary formed by the legs, elbows tucked in. The best

position and type of grip depends on the circumstances and individual preference; but it must be secure. A hook grip is less tiring than keeping the fingers straight. If you need to vary the grip as the lift progresses, do it as smoothly as possible.

iv **PERFORM - Keep close to the load.**

Keep the load close to your trunk for as long as possible. Keep the heaviest side of the load next to your trunk. If a close approach to the load is not possible, slide it towards you before trying to lift. Lift smoothly, keeping control of the load. Don't twist the trunk when turning to the side.

3 Team lifting

Never be pushed into lifting with others if you are unsure about their knowledge or ability. Say NO. The key factors involved in team lifting are the three 'Cs':

i **Communication**

There must be a team leader to direct the procedure. The leader should give a command to lift or move, first making sure that every member of the team understands the command to be used. The leader must be in control of the procedure from start to finish.

ii **Cooperation**

The team must lift together. It helps if the team members are similar in height and build (but this is not essential). The team needs to have trust and confidence in each other. If one member of a team fails to lift or move properly it is probable that someone will be injured.

iii **Coordination**

The team members must communicate, if only by a nod of the head. They must indicate when they are ready. If they are tiring or need a break, telling other members in sufficient time to allow the load to be lowered safely, before they drop it, is important.

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