

# Equipment Packet: Operating Tables

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**Creator:** Compiled by Cassandra Stanco for [Engineering World Health \(EWH\)](#)

## **Equipment Packet Contents:**

This packet contains information about the operation, maintenance, and repair of operating room tables.

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1. **An Introduction to Operating Tables:** PowerPoint

### **Part II: Included in this Packet:**

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# 1. Operation and Use of Operating Tables

## Featured in this Section:

Burnett, Joanne, Clift, Laurence, Clift, Maxine. "Buyers' Guide: Operating Tables. CEP09016." *NHS: Centre for Evidence-Based Medicine*, August 2009. Retrieved from:

<https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/7390/1/AR2614%20Buyers%20Guide%20Operating%20Tables.pdf>

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Strengthening Specialised Clinical Services in the Pacific. *User Care of Medical Equipment: A first line maintenance guide for end users*. (2015).

Wikipedia. "Operating Table." *Wikipedia*. Retrieved from:  
[https://en.wikipedia.org/wiki/Operating\\_table](https://en.wikipedia.org/wiki/Operating_table)

# Brief Overview of Operating Tables

User Care of Medical Equipment – First line maintenance for end users

## Chapter 4.20 Tables – (Operating Theatre and Delivery)

### ***Function***

Tables are required to hold the patient in a position comfortable both for themselves and for medical staff during procedures. They can include dedicated supports for head, arms and legs and often have movable sections to position the patient appropriately. They are made both with wheels and on static platforms and can have movements powered by electric motors, hydraulics or simply manual effort. They can be found in emergency departments, operating theatres and delivery suites.

### ***How it works***

Where the table has movement, this will be enabled by unlocking a catch or brake to allow positioning. Wheels have brakes on the rim or axle of the wheel, while locks for moving sections will normally be levers on the main table frame. Care should be taken that the user knows which lever applies to the movement required, as injury to the patient or user may otherwise result. The table will be set at the correct height for patient transfer from a trolley then adjusted for best access for the procedure.



# Introduction to Operating Tables

## Operating table



*A 19th-century operating table.*

An **operating table**, sometimes called **operating room table**, is the table on which the patient lies during a surgical operation.<sup>[1]</sup> This surgical equipment is usually found inside the surgery room of a hospital.<sup>[2]</sup>

## 1 Definition

### 1.1 Two main classifications: system and mobile

An operating table system is basically made up of three components: an operating table column, the table top and the transporter. Modern operating table systems are available as both stationary and mobile units. There are a wide range of table tops that can be used for both general surgery and for specialist disciplines. Mobile operating tables, however, tend to be equipped with a specific discipline in mind. The base, column and table top form a unit.



*Operating table system with a stationary unit*

Since the table column for a stationary operating table system is firmly anchored to the floor, the additional necessary medical devices can easily be brought to the operating area and positioned. These devices include, for example, x-ray equipment, which can easily be slid under the table top. For personnel, the system offers improved leg space since disruptive foot geometry is no longer present.

Additional elements can be adapted to the operating table. This flexibility is very important since it enables the table to be adapted to suit the relevant patient or the surgical discipline.

The advantage of the mobile operating table, on the other hand, is that the position of the table can be changed within the operating room. However, the foot of the table limits the leg space available to the surgical team. The individual segments of the table top can be easily removed and replaced. They also permit x-rays and conduct electricity.

Another special feature of the operating table system is the ability to use appropriate interface modules to establish communication with diagnostics systems, for example, angiography, MR and CT. This is only possible with stationary columns since the systems require a fixed point.

## 2 Properties and requirements made of an operating table

There are a number of basic functions that every operating table must fulfill in order to meet the requirements made of it. For example, the *height* of an operating table must be *adjustable*. This is the only way a surgeon can adapt it to their height and thus work ergonomically. In

addition it must be possible to *tilt* the table to the left and to the right to ensure a better overview into body cavities or to use gravity to move organs (e.g. laparoscopy). In addition, the individual *operating table segments* must also be *adjustable*. This is the only way to ensure the necessary anatomical bends of the body and enable extremities to be positioned suitable for operating. A further property of the operating table top is *radiolucency*. The radiolucent surface should be as large as possible to ensure the largest possible image without disruption. The padding of the table is also important, this must be both soft and radiolucent. Soft because it must distribute the pressure optimally otherwise the patient may suffer pressure ulcers which staff may be liable for.

### 3 Comparison: Operating table system and mobile operating table

The operating table system has a number of advantages. Transportation is easier since this unit is generally firmly secured to the floor and thus the foot and column of the unit no longer need to be transported. In addition, the transporter has light and large casters which are gentle not just to the floor. The entire operating area is more hygienic since the casters are not attached to the system, like on a mobile operating table. These are hard to clean and more unhygienic as a result. The operating table column can be rotated by 360° and offers ideal space for the feet of the team. The table top is, thanks to the use of x-ray-capable materials, almost completely radiolucent. The universal operating table is available as both stationary, mobile and moveable units. A mobile operating table is, however, used as a special table. The table top cannot be removed or replaced. Operation may, according to version, be manual, pedal or motorised.

### 4 Operating table positions

Patients may suffer pressure ulcers as a result of lying incorrectly on an operating table or lying on an operating table for too long. Nursing staff and doctors try to prevent this from happening. Typical standard positions are, for example, back, stomach, side, **Trendelenburg** and a seated/half-seated position. The patient should always be positioned or optimally positioned in cooperation with the anaesthetist, surgeon and operating room staff. Prior to the operation, the decision must be made as to exactly how the patient is to be positioned. This decision not only takes account of the type of operation, it also considers the age, weight and health of the patient with regard to the heart, lungs, circulation, metabolism, blood circulation problems etc.

### 5 Advantages of an operating table system

Unlike a mobile operating table which is usually employed in hospitals with small operating departments, for example, in ambulant operating rooms, modern operating table systems are characterised by their great mobility. They also have special table tops designed for a variety of surgical disciplines and, thanks to the ability to change these tops, they enable versatile use of an operating room. An operating table system with a stationary column is more stable and more hygienic. The better transport options improve the patient flow from the patient transfer unit and the operating room considerably. Finally, operating table systems with stationary columns enables control elements to be integrated into image procedures, for example, angiography, MR and CT.

### 6 Literature

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2. Schindler, Herbert: Arbeitsgebiet Operationssaal. Lagerungen, Hygiene, Gefahren. Stuttgart 1985, P. 26
3. Aschemann, Dirk: OP-Lagerungen für Fachpersonal. Heidelberg 2009, Figure P. 53-56

### 7 References

- [1] [Operating table](https://en.wikipedia.org/wiki/Operating_table), thefreedictionary.com
- [2] [Operating table](https://en.wikipedia.org/wiki/Operating_table), dictionary.reverso.net

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- **Operating table** *Source:* [https://en.wikipedia.org/wiki/Operating\\_table?oldid=656940587](https://en.wikipedia.org/wiki/Operating_table?oldid=656940587) *Contributors:* Smalljim, Microchip08, CommonsDelinker, Addbot, Luckas-bot, AnakngAraw, Bgpaulus, ZéroBot, Snotbot, MrBill3, TheJJJunk, Jehona2308 and Anonymous: 3

### 8.2 Images

- **File:BLW\_19th\_Century\_Operating\_Table.jpg** *Source:* [https://upload.wikimedia.org/wikipedia/commons/a/a6/BLW\\_19th\\_Century\\_Operating\\_Table.jpg](https://upload.wikimedia.org/wikipedia/commons/a/a6/BLW_19th_Century_Operating_Table.jpg) *License:* CC BY-SA 2.0 uk *Contributors:* Originally uploaded at <http://www.britainloveswikipedia.org/> *Original artist:* Jenny O'Donnell
- **File:Operating\_table\_system\_with\_a\_stationary\_unit.JPG** *Source:* [https://upload.wikimedia.org/wikipedia/commons/f/f0/Operating\\_table\\_system\\_with\\_a\\_stationary\\_unit.JPG](https://upload.wikimedia.org/wikipedia/commons/f/f0/Operating_table_system_with_a_stationary_unit.JPG) *License:* CC BY-SA 3.0 *Contributors:* Own work *Original artist:* Jehona2308

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## 9. THEATRE EQUIPMENT

### a. OPERATING TABLES

#### 1. Purpose of Equipment

To support the patient undergoing surgery in an appropriate position for the particular operation being carried out.

#### 2. How the Equipment Works

An operating table has several features which allow the surgical team to position the patient as required (Figure 35).

As there are many models, the following information is presented as a general guide only.

#### i. Height (P and D)

The table is raised by slowly pumping the pump pedal (P) and lowered by using the release pedal (D) until the required height is reached.

#### ii. Brake (B)

The table runs on small wheels or castors. They must be securely locked while the operation is being carried out.

##### To lock the wheels or castors:

- turn the small brake lever (B) through 90° (a right-angle)
- check that the table does not move when pushed

##### To unlock the wheels or castors:

- reverse the action, turning the brake lever (B) back to its original position

#### iii. Lateral rotation (L and R)

To rotate the table:

- release the locking lever (L) by turning it anticlockwise
- turn the rotation arm (R) clockwise
- return the locking lever to original position

To return the table to the normal position:

- release the locking lever (L)
- turn the rotation arm (R) anticlockwise
- return the locking lever to original position

#### iv. Back rest (E)

To put up the back rest:

- slowly turn the elevation arm (E) clockwise until it reaches the required position

To lower the back rest:

- slowly turn the elevation arm (E) anticlockwise

#### **v. Leg rest (H)**

To lower the leg rest:

- release the retention catch and the hinged leg rest position of the table will drop

To raise the leg rest:

- lift hinged portion of table back to normal position. It should lock automatically

#### **vi. Accessories**

Other accessories such as arm rests, leg and chest supports either screw or clip into position, according to the manufacturer's design.

### **3. Routines and safety**

Looked after carefully, an operating table may be used for many years without any maintenance problem.

**IT MUST BE CAREFULLY CLEANED AND WELL DRIED AFTER USE.**

If it is not dried properly, the facilities described above in Section 2 will corrode and it will not be possible to position the patient correctly. It may even mean that some operations cannot be performed.

#### **a. After each operation:**

- thoroughly clean the table with a mixture of water, detergent and disinfectant, removing all traces of blood and debris to prevent cross infection
- dry quickly and thoroughly

#### **b. Daily:**

- clean and dry the whole table
- inspect mattress for tears or other damage (repairs may be done locally but only antistatic, waterproof material should be used)
- check that all facilities are working easily and safely
- check that the wheel brake works well and that the table moves easily when the brake is released
- check that accessories (arm rest and leg supports) fit correctly and are undamaged

#### **c. Weekly:**

- check the hydraulic fluid level (Figure 35) and fill if necessary. The filler point is usually beneath the base cover. Remove the four corner screws, lift the table support column, unscrew the filler cap and check that the oil level is near the top. If not, fill up with the specified hydraulic oil or (if not available) car brake fluid.  
DO NOT use any other oil. Other oils will destroy the pump seals and the height facility
- with a colleague acting as the 'patient', check that the hydraulic lift and other facilities are functioning. Wear theatre dress for this



- extend worm gears and main support shaft (Figure 35)
- apply a light smear of grease to the worm gears and also to the main support shaft
- check wheels and castors for signs of damage or wear
- check all accessories for damage or wear

**d. Safety:**

The following safety points are of vital importance:

- check that the table functions well daily, weekly and BEFORE EACH OPERATION
- check daily that all accessories are available and in good working order
- clean and dry table thoroughly AFTER EACH OPERATION

**4. How to use the equipment**

Correct use of the equipment is described above. Always refer to the manufacturer's instructions for specific advice on the equipment you are using. The guidelines given here are general only.

## 5. Simple fault finding and maintenance

### *Example a:*

Table cannot be raised:

- check hydraulic oil level

if oil level is satisfactory:

- call a qualified technician

### *Example b:*

Table will not rotate:

- check worm gears are greased

if table still does not rotate:

- call a qualified technician

### *Example c:*

Back rest cannot be raised:

- check worm gears are greased

if back rest still cannot be raised:

- call a qualified technician

All other poor functioning or faults will need the skills of a qualified technician.

## 6. Spares

Always have a second table available for emergency use.

Hydraulic oil

Lubricating grease or vaseline

Set of pump seals

### Device selection / features

The operating table chosen should be matched to the users' needs. Table 7 provides a detailed explanation of the product characteristics which would be useful for clinicians to consider when choosing a particular device.

**Table 7. Operational characteristics of operating tables**

<b>Model range / Operation type</b>	Manufacturers usually provide a range of models to cover all aspects of surgery. Accessories are also available to further adapt the tables to specific needs. Trauma surgery in particular requires a large number of different accessories – different modules fixed on and taken off depending on the operation.
<b>Tabletop design</b>	Most tables are now modular in design; usually three or four segments per tabletop – head, leg and one or two body/back sections. On some tables the segments can be manoeuvred independently of the base to allow better positioning and these sections can be attachable to or detachable from the tabletop. The different sections can be heavy and sometimes difficult to attach or position correctly. Some tables have powered or hydraulic mechanisms to manoeuvre the sections into position. The more sections that are available the more adaptable the table is. Some tabletops are just one piece – these are usually the imaging tables.
<b>Base</b>	The tables are available with fixed (operating table systems) or movable (mobile operating tables) bases. The base should be as small as possible so that it does not obstruct the surgeon. The bases are usually attached with either an end or centre pedestal to the table top. In many cases end pedestals are preferred by staff as these ensure maximum c-arm coverage. Some tables have the facility to move off centre if there is a longitudinal slide facility on the table.
<b>Tabletop dimensions</b>	Patients have now, on average, increased in breadth and stature since the standard width and length operating tables were designed [36]. The regular size tables may not fit some patients. Patients' heels can now rub against the edge of the bed which can cause pressure ulcers. Accessories (extenders) to broaden either/both the length and width may be required. However, the table must still permit surgeons to operate safely. The extenders are very unpopular with surgeons as they press into their abdomen when they reach over.
<b>Weight</b>	<b>Patient:</b> A higher percentage of bariatric patients are now treated [36]. The tables should have a maximum patient weight clearly stated to ensure safety standards are met and there is no possibility of table failure. The maximum patient weight on a table is different when the table is flat (level) than when it is placed in to different positions. For example, one particular table can operate safely with a patient weighing up to 500kg when level but this reduces to a maximum of 260kg when the table is in the Trendelenburg position. <b>Table:</b> A heavy table can be difficult to manoeuvre, particularly with a patient in situ. Powered tables may be easier to move.

<b>Table adjustments / positions</b>	<p>The different table positions have been demonstrated in figure 1.</p> <p>The height adjustability is very important due to potential medical problems arising for the surgeons if tables are positioned incorrectly, as discussed in the <i>Introduction</i>. This has become more relevant with the growth of laparoscopic type surgery due to the increased length of the surgical instruments that are used.</p> <p>Longitudinal slide is very important for two reasons: it allows the imaging field to be extended (sometimes patients are turned round in the operation to get the required access to the C-arm equipment) and pressure ulcer formation can be prevented if the table can be moved rather than the patient having to be re-positioned.</p> <p>Tables are often available with a normal (one piece) leg section and a split leg section to enable surgical procedure flexibility.</p> <p>Tabletop rotation allows the surgeon closer access to the patient.</p>
<b>Manoeuvrability</b>	<p>During stakeholder consultation with NHS theatre staff, the brakes and manoeuvrability of operating tables were mentioned as being two of the most important considerations when choosing a table model. This has become a particular issue due to the increase of bariatric patients and associated manual handling problems. All staff agreed that electrical adjustment was very important and is much preferred than manual adjustment. Manual overdrive systems are available if the electrical system should fail.</p> <p>Brakes need to be secure and not allow movement of the tables.</p> <p>The wheel designs on some tables make them very difficult to manoeuvre, particularly if the table is heavy and unwieldy. Large wheels or castors ensure easier manoeuvrability.</p> <p>Some tables have powered drive units, which allow the table to be moved using a control system, rather than manually by staff. Integral track stabilisation enables the table to follow a straight line when it is being moved.</p>
<b>Mattress</b>	<p>The evidence presented in the <i>Introduction</i> suggests that patients would benefit from a pressure-redistributing mattress on an operating table.</p> <p>The width and length of the mattress are relevant to ensure the products will fit operating tables. The weight of the mattress and accessories should be considered in addressing manual handling issues for the clinicians who use them.</p> <p>The mattress should be x-ray translucent to allow imaging of the patient to be performed.</p>
<b>Preset positions</b>	<p>Preset positions include flex, urology (extension), chair and return to level (not available on all tables). A button on a control panel manoeuvres the table into these positions. It is a quick method of adjusting the tables, very useful for staff that may have had to position the table manually otherwise; making manual handling of the table easier as a result.</p>
<b>Imaging capabilities</b>	<p>The tabletop construction is important as it has to be an X-ray translucent material to allow imaging to take place. The joints of a table may not be X-ray translucent so this will limit the coverage. It is important to know the exact imaging coverage a table is capable of since the patient may have to be repositioned during surgery if the table is not able to provide the required coverage.</p> <p>X-ray cassettes were previously an essential requirement for operating tables but digital imaging has now replaced this method so cassette channels are no longer required.</p>
<b>Hand controls / power</b>	<p>According to staff, images used on the controls can be confusing and not always obvious what feature the image is intended for. The table can be adjusted / operated either manually by staff, or using electrically operated controls. The controls can either be a hand control that is attached to the table or a wall mounted unit. Other control features include back up column control (if the hand control fails) and a serial interface port.</p>
<b>Purchasing</b>	<p>A product can be bought, rented or provided as part of a contracted service. See <i>Purchasing</i> for details.</p> <p>Suppliers will usually provide demonstrations of their products for training purposes. This should include the accessories that have been bought as part of the system.</p>

## 2. Diagrams and Schematics of Operating Tables

### Featured in this Section:

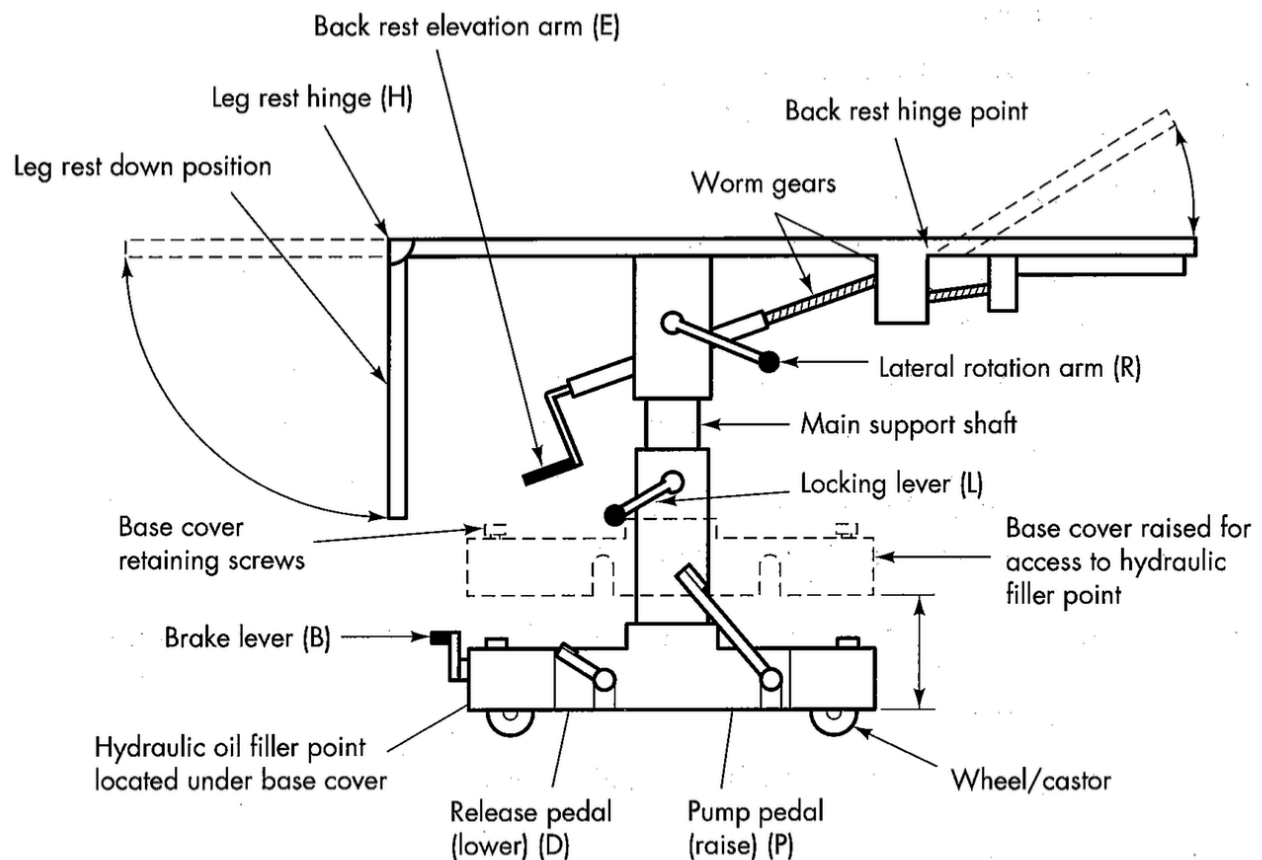
Burnett, Joanne, Clift, Laurence, Clift, Maxine. "Buyers' Guide: Operating Tables. CEP09016." *NHS: Centre for Evidence-Based Medicine*, August 2009. Retrieved from:  
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[http://www.who.int/medical\\_devices/management\\_use/mde\\_tech\\_spec/en/](http://www.who.int/medical_devices/management_use/mde_tech_spec/en/)

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[http://www.who.int/medical\\_devices/management\\_use/mde\\_tech\\_spec/en/](http://www.who.int/medical_devices/management_use/mde_tech_spec/en/)

## Figure 1: Diagram of a Hydraulic Operating Table



**Figure 35:** Hydraulic operating table

# Figure 2: Positioning Operating Tables

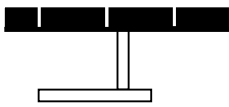
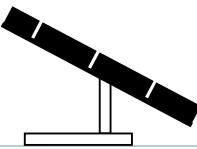
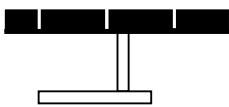
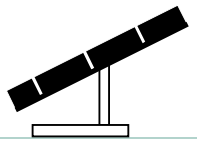
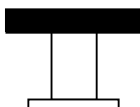
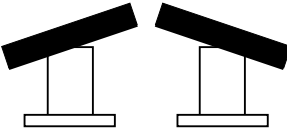
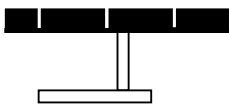
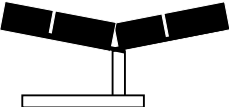
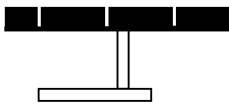
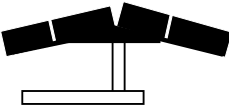
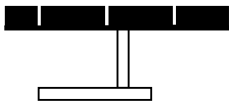
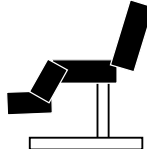

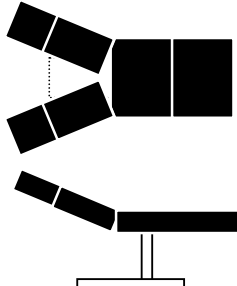
## Operational considerations

15

### Operating table positions

An operating table can be adjusted to different positions; the most common are listed in figure 1. The starting position is usually when the tabletop is level. Patients would be lying in a supine (on back) or prone (on front) position and the table is positioned horizontal to the ground. The pedestal is centred, but end pedestals are available.

Figure 1. Different operating table positions

Starting position (supine/prone)	Name of position	Diagram of position	Position use examples
	<b>Trendelenburg</b> (head lowered, feet elevated)		<ul style="list-style-type: none"> <li>Used to reduce risk of shock.</li> <li>Improves access to pelvis as bowel moves proximally.</li> </ul>
	<b>Reverse Trendelenburg</b> (head elevated, feet lowered)		<ul style="list-style-type: none"> <li>Can be used to prevent or relieve patient choking.</li> <li>Reduces venous oozing during head and neck surgery.</li> </ul>
	<b>Lateral tilt</b>		<ul style="list-style-type: none"> <li>Allows surgeons better access to anatomy.</li> <li>Used in obstetrics to prevent the baby from pressing on the mother's abdomen, causing her to faint.</li> </ul>
	<b>Flexion</b>		<ul style="list-style-type: none"> <li>Flexion and extension can be of individual segments.</li> <li>Back surgery.</li> <li>Kidney surgery.</li> <li>Gall bladder surgery.</li> <li>Abdominal surgery.</li> </ul>
	<b>Extension</b>		
	<b>Chair</b>		<ul style="list-style-type: none"> <li>Ophthalmic surgery.</li> <li>Neurosurgery.</li> <li>Shoulder surgery.</li> </ul>
	<b>Lithotomy</b> (split leg)		<ul style="list-style-type: none"> <li>Obstetrics.</li> <li>Gynaecological surgery.</li> <li>Perineal surgery.</li> <li>Urology.</li> </ul>

CEP09016: August 2009

# Figure 3: WHO Specification for Hydraulic Operating Tables

MEDICAL DEVICE SPECIFICATION		
<i>(Including information on the following where relevant/appropriate, but not limited to)</i>		
i	Version No.	1
ii	Date of initial version	8/13/12
iii	Date of last modification	6/18/14
iv	Date of publication	
v	Completed / submitted by	WHO working group
NAME, CATEGORY AND CODING		
1	WHO Category / Code	(under development)
2	Generic name	Operating table
3	Specific type or variation (optional)	hydraulic
4	GMDN name	Universal operating table, hydraulic
5	GMDN code	58034
6	GMDN category	04 Electro mechanical medical devices
7	UMDNS name	Tables, Operating
8	UMDNS code	13961
9	UNSPS code (optional)	
10	Alternative name/s (optional)	Table, operation mobile
11	Alternative code/s (optional)	MS 31333
12	Keywords (optional)	Operating theater, theatre, theater, Operating room
13	GMDN/UMDNS definition (optional)	As in GMDN ( <a href="http://www.gmdnagency.com">http://www.gmdnagency.com</a> ) A mobile, manually-operated hydraulic table designed to be adjusted to support a patient during many types of surgical interventions. The table surface consists of many articulated sections that can be elevated or lowered for contouring to accommodate numerous anatomical positions (e.g., the whole table top may be adjusted to form a curved surface) to satisfy the requirements of many clinical specialties. It is typically operated via an integral foot-pedal(s) that adjust the table top position.
PURPOSE OF USE		
14	Clinical or other purpose	be adjusted to support a patient during many types of surgical interventions.
15	Level of use (if relevant)	health centre, district hospital, provincial hospital, specialized hospital
16	Clinical department/ward(if relevant)	operating theater, emergencies
17	Overview of functional requirements	<p>All movements must be controlled individually and together for the following movements</p> <p>Vertical height movement range to include 0.75 to 1.1 m from floor level</p> <p>Controllable global movements to include up/down, forward/back, left/right and Trendelenburg at least <math>\pm 30</math> deg</p> <p>Individual movements to allow at least head +20 deg, leg raise/lower +20 / -90 deg</p> <p>All movements must be motorized and controlled individually and together for the following movements</p> <p>Vertical height movement range to include 0.75 to 1.1 m from floor level</p> <p>Controllable global movements to include up/down, forward/back, left/right and Trendelenburg at least <math>\pm 30</math> deg</p> <p>Individual movements to allow at least head +20 deg, leg raise/lower +20 / -90 deg</p> <p>Must accommodate patients up to at least 150 kg</p>
TECHNICAL CHARACTERISTICS		
18	Detailed requirements	<p>All movements must be hydraulically operated and controls clearly labelled to allow the following movements:</p> <p>a) Vertical height movement range to include 0.75 to 1.1 m from floor level</p> <p>b) Global movements to include up/down, forward/back, left/right and Trendelenburg and reverse trendelenburg range from at least +25° to -10°.</p> <p>c) Individual movements to allow at least head +20 deg, leg raise/lower +20 / -90 deg</p> <p>d) Longitudinal displacement regulation range of at least of 200 mm.</p> <p>Minimum overall table dimensions: 1.8m long x 0.6m wide</p> <p>Base to be fitted with castors, minimum diameter 12cm, with braking / stationary facility</p> <p>At least 4 articulated sections: back, pelvis and 2 separate legs sections</p>



19	Displayed parameters	
20	User adjustable settings	
<b>PHYSICAL/CHEMICAL CHARACTERISTICS</b>		
21	Components(if relevant)	<p>Base to be solid and stable when braked and must not obstruct operator access to patient</p> <p>Supplied with two armrests at least 0.4m long, that fit adjustable positions on each side of table</p> <p>Supplied with removable or foldable side restraints on each side of table</p> <p>Supplied with two leg slings and two vertical supports for leg slings</p> <p>Leg section of table to be removable to allow lithotomy position</p> <p>Supplied with padded mattress, in sections that match layout of table sections</p> <p>All exposed metal parts to be constructed of stainless steel</p> <p>All non-metal parts to be constructed of durable, waterproof, washable and antistatic material</p> <p>No sharp edges or points to be present</p> <p>Easy access to filters and oil sumps required for on-site maintenance</p> <p>Mattresses covering in fire extinguish material, resistant to corrosion, water, detergent soap, 70% ethylic alcohol solution with or without nitrite and to the hypochlorite of sodium.</p>
22	Mobility, portability(if relevant)	Mobile, on castors with brakes
23	Raw Materials(if relevant)	N/A
<b>UTILITY REQUIREMENTS</b>		
24	Electrical, water and/or gas supply (if relevant)	None
<b>ACCESSORIES, CONSUMABLES, SPARE PARTS, OTHER COMPONENTS</b>		
25	Accessories (if relevant)	<p>Two each of armrests, side restraints and leg slings / supports</p> <p>Supplier to provide details of all other available fittings with specifications and costs</p> <p>*The following basic accessories will be provided together with the equipment:</p> <p>a) 2 stainless steel foot support;</p> <p>b) 2 stainless steel hands support;</p> <p>c) 2 stainless steel feet supports separable with cushion;</p> <p>d) 1 stainless steel head support;</p> <p>e) 1 stainless steel shoulder support;</p> <p>f) 2 stainless steel wrist support o support for extended arm;</p> <p>g) 2 feet belts;</p> <p>h) 1 stainless steel support for hand operation;</p> <p>i) 1 autoclave sterilizable basin;</p> <p>j) 1 cushion for back support;</p> <p>k) 1 telescopic stainless steel dismountable intravenous support system.</p>
26	Sterilization process for accessories (if relevant)	
27	Consumables / reagents (if relevant)	Oil and replacement filters sufficient for two years' daily use
28	Spare parts (if relevant)	
29	Other components (if relevant)	
<b>PACKAGING</b>		
30	Sterility status on delivery (if relevant)	N/A
31	Shelf life (if relevant)	N/A
32	Transportation and storage (if relevant)	N/A
33	Labelling (if relevant)	N/A
<b>ENVIRONMENTAL REQUIREMENTS</b>		
34	Context-dependent requirements	<p>Capable of being stored continuously in ambient temperature of 0 to 50 deg C and relative humidity of 15 to 90%.</p> <p>Capable of operating continuously in ambient temperature of 10 to 40 deg C and relative humidity of 15 to 90%.</p>
<b>TRAINING, INSTALLATION AND UTILISATION</b>		
35	Pre-installation requirements(if relevant)	Supplier to provide details of all other available fittings with specifications and costs.Supplier to perform installation, safety and operation checks before handover
36	Requirements for commissioning (if relevant)	Local clinical staff to affirm completion of installation
37	Training of user/s (if relevant)	Training of users in operation and basic maintenance shall be provided

38	User care(if relevant)	Table layout to enable easy cleaning and sterilization of all surfaces, with no fluid traps
<b>WARRANTY AND MAINTENANCE</b>		
39	Warranty	
40	Maintenance tasks	
41	Type of service contract	
42	Spare parts availability post-warranty	
43	Software / Hardware upgrade availability	
<b>DOCUMENTATION</b>		
44	Documentation requirements	User, technical and maintenance manuals to be supplied in ***** language. Certificate of inspection to be provided. List to be provided of equipment and procedures required for local calibration and routine maintenance List to be provided of important spares and accessories, with their part numbers and cost.
<b>DECOMMISSIONING</b>		
45	Estimated Life Span	15 years
<b>SAFETY AND STANDARDS</b>		
46	Risk Classification	Class I (GHTF Rule 1);Class I (USA); Class I (EU, Japan, Canada and Australia)
47	Regulatory Approval / Certification	Must be FDA, CE or UL approved product.
48	International standards	ISO 13485:2003 Medical devices -- Quality management systems -- Requirements for regulatory purposes (Australia, Canada and EU) ISO 14971:2007 Medical devices -- Application of risk management to medical devices
49	Reginal / Local Standards	
50	Regulations	<b>US regulations</b> 21 CFR part 820 21 CFR section 878.4950 table and attachments, operating-room 21 CFR section 878.4950 table, operating-room, non-electrical 21 CFR section 878.4960 table, examination, medical, powered 21 CFR section 890.3760 table, powered <b>JP regulations</b> MHLW Ordinance No.169 36867010 General-purpose manually-operated operation table

### 3. Preventative Maintenance of Operating Tables

#### Featured in this Section:

Engineering World Health. "Preventative Maintenance Schedule for Operating Tables. *EWH*. 2012.

Strengthening Specialised Clinical Services in the Pacific. *User Care of Medical Equipment: A first line maintenance guide for end users*. (2015).

# Operating Table Preventative Maintenance Schedule

## Preventative Maintenance Schedule for Operating Tables

### Table, Operating Room

- ◆ Inspect exterior of equipment for damage or missing hardware.
- ◆ Inspect the power cord, strain relief and plug/s for any signs of damage.
- ◆ Turn unit off, open user accessible covers and inspect unit for damage.
- ◆ Clean unit interior components and exterior with vacuum or compressed air.
- ◆ Inspect interior for signs of corrosion or missing hardware. Repair as required.
- ◆ Inspect electrical components for signs of excessive heat or deterioration.
- ◆ Verify mechanical integrity including all controls.
- ◆ Inspect condition of mattress and replace as necessary.
- ◆ Lubricate motor and gear assemblies as needed.
- ◆ Run bed to all heights and positions verifying smooth operation.
- ◆ Verify correct operation of alarms and remote signaling systems if present.
- ◆ Verify correct operation of all buttons, controls, displays and/or indicators.
- ◆ Verify correct operation of unit in all functional modalities.

### Bed, Hydraulic

- ◆ Inspect exterior of equipment for damage or missing hardware.
- ◆ Inspect interior for signs of fluid leaking. Clean interior.
- ◆ Clean unit interior components and exterior with vacuum or compressed air.
- ◆ Inspect interior for signs of corrosion or missing hardware. Repair as required.

- ◆ Inspect unit for mechanical integrity noting any evidence of abuse.
- ◆ Inspect condition of mattress and replace as necessary.
- ◆ Inspect all hydraulic assemblies for leaks and verify correct reservoir levels.
- ◆ Run bed to all heights and positions verifying smooth operation.
- ◆ Inspect condition of maximum and minimum stops.
- ◆ Verify correct operation of all buttons, controls, displays and/or indicators.
- ◆ Verify correct operation of unit in all functional modalities.

# Operating Table Preventative Maintenance Table

User Care of Medical Equipment – First line maintenance for end users

## User Care Checklist – Operating Theatre and Delivery Tables

<b>Daily</b>	
Cleaning	<ul style="list-style-type: none"> <li>✓ Clean, dry and disinfect all parts</li> <li>✓ Remove all paper, tape and foreign matter</li> </ul>
Visual checks	<ul style="list-style-type: none"> <li>✓ Check all parts are present and tightly fitted</li> <li>✓ Replace mattress if worn or damaged</li> <li>✓ Check no oil is leaking from hydraulics</li> </ul>
Function checks	<ul style="list-style-type: none"> <li>✓ Check essential movements before use</li> </ul>

<b>Weekly</b>	
Cleaning	<ul style="list-style-type: none"> <li>✓ Clean and dry table, base and underneath table and base</li> <li>✓ Wipe off any escaped oil or grease from joints</li> </ul>
Visual checks	<ul style="list-style-type: none"> <li>✓ Fully inspect mattress and table for signs of wear</li> <li>✓ Replace any worn items and send for repair</li> </ul>
Function checks	<ul style="list-style-type: none"> <li>✓ Check wheel brakes function and wheels rotate</li> <li>✓ Ensure all moving parts can move, applying grease if needed</li> </ul>

<b>Every six months</b>	
Technician check required	

## 4. Troubleshooting and Repair of Operating Tables

### Featured in this Section:

Skeet, Muriel and David Fear. "Theatre Equipment: Operating Table." *Care and Safe Use of Medical Equipment*. VSO Books, 1995, p. 118-125.

Strengthening Specialised Clinical Services in the Pacific. *User Care of Medical Equipment: A first line maintenance guide for end users*. (2015).

# Operating Table Troubleshooting Table

User Care of Medical Equipment – First line maintenance for end users

## Troubleshooting – Operating Theatre and Delivery Tables

Fault	Possible Cause	Solution
1. Table cannot be relocated	Wheels jammed	Clean wheels, remove obstruction
	Electric motor not operational (electrically driven table)	Check power to table Replace fuse if blown If problem persists, refer to technician
2. Table section or body cannot be moved	Lock or lever is jammed	Clean jammed part, remove rust and dirt, lightly oil and replace
	No power to electric table	Check correct switch is used Check power and fuses
	No oil in hydraulic table	Refill hydraulic oil if needed Check no leakage occurs
3. Oil leakage from hydraulic table	Oil leakage	Locate leak and block it. Clear spillage. Refer to technician.
4. Electric shocks	Wiring fault	Refer to technician immediately



# Operating Table User Checklist

## 7. User Checklist (to be displayed near the equipment)

Always refer to the manufacturer's instructions

To keep this equipment in good working order for as long as possible:

### Before using the table check:

- it has been thoroughly cleaned and dried since the last operation
- height control pedals
- brake and mobility of the table
- lateral rotation function
- back raising function
- leg rest is free and can be locked in position
- all accessories, such as arm rests, and leg and chest supports, are available and in good working order

### Report to the Maintenance Officer:

- any visible damage to table or mattress
- any fault in the functioning of the table

Follow these SAFETY points:

Do check that all functions are working well – weekly, daily and immediately before use.

Do check that all accessories are available in good condition and fit securely.

Do clean and dry the table after each operation.

Do ensure that the pumping mechanism is regularly exercised if the table is not going to be used daily.

## 5. Resources for More Information about Operating Tables and Operating Theatres

### Featured in this Section:

Stanco, Cassandra ed. for EWH. "Operating Room Lights Packet." *Engineering World Health*, 2015.

WHO. "Operating Table: Basic Principles." *From the Publication: Maintenance and Repair of Laboratory, Diagnostic Imaging, and Hospital Equipment*. WHO: 1996.

## **Resources for More Information:**

**Internal Resources at [library.ewh.org](http://library.ewh.org): For More Information about Infusion pumps, please see this resource in the BMET Library!**

1. Malkin, Robert. "Microscopes: Use and Operation." *Medical Instrumentation in the Developing World*. Engineering World Health, 2006.
2. Stanco, Cassandra ed. for EWH. "Operating Room Lights Packet." *Engineering World Health*, 2015.

## Operating Tables Bibliography:

Burnett, Joanne, Clift, Laurence, Clift, Maxine. "National Health Service Buyers' Guide: Operating Tables. CEP09016." *NHS: Centre for Evidence-Based Medicine*, August 2009. Retrieved from: <https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/7390/1/AR2614%20Buyers%20Guide%20Operating%20Tables.pdf>

Engineering World Health. "Preventative Maintenance Schedule for Operating Tables. *EWH*. 2012.

Skeet, Muriel and David Fear. "Theatre Equipment: Operating Table." *Care and Safe Use of Medical Equipment*. VSO Books, 1995, p. 118-125.

Stanco, Cassandra ed. for EWH. "Operating Room Lights Packet." *Engineering World Health*, 2015.

Strengthening Specialised Clinical Services in the Pacific. *User Care of Medical Equipment: A first line maintenance guide for end users*. (2015).

WHO. "Operating Table: Basic Principles." *From the Publication: Maintenance and Repair of Laboratory, Diagnostic Imaging, and Hospital Equipment*. WHO: 1996.

WHO. "Operating Table (hydraulic) From the publication: "WHO Technical Specifications for 61 Medical Devices. *WHO*. Retrieved from: [http://www.who.int/medical\\_devices/management\\_use/mde\\_tech\\_spec/en/](http://www.who.int/medical_devices/management_use/mde_tech_spec/en/)

Wikipedia. "Operating Table." *Wikipedia*. Retrieved from: [https://en.wikipedia.org/wiki/Operating\\_table](https://en.wikipedia.org/wiki/Operating_table)