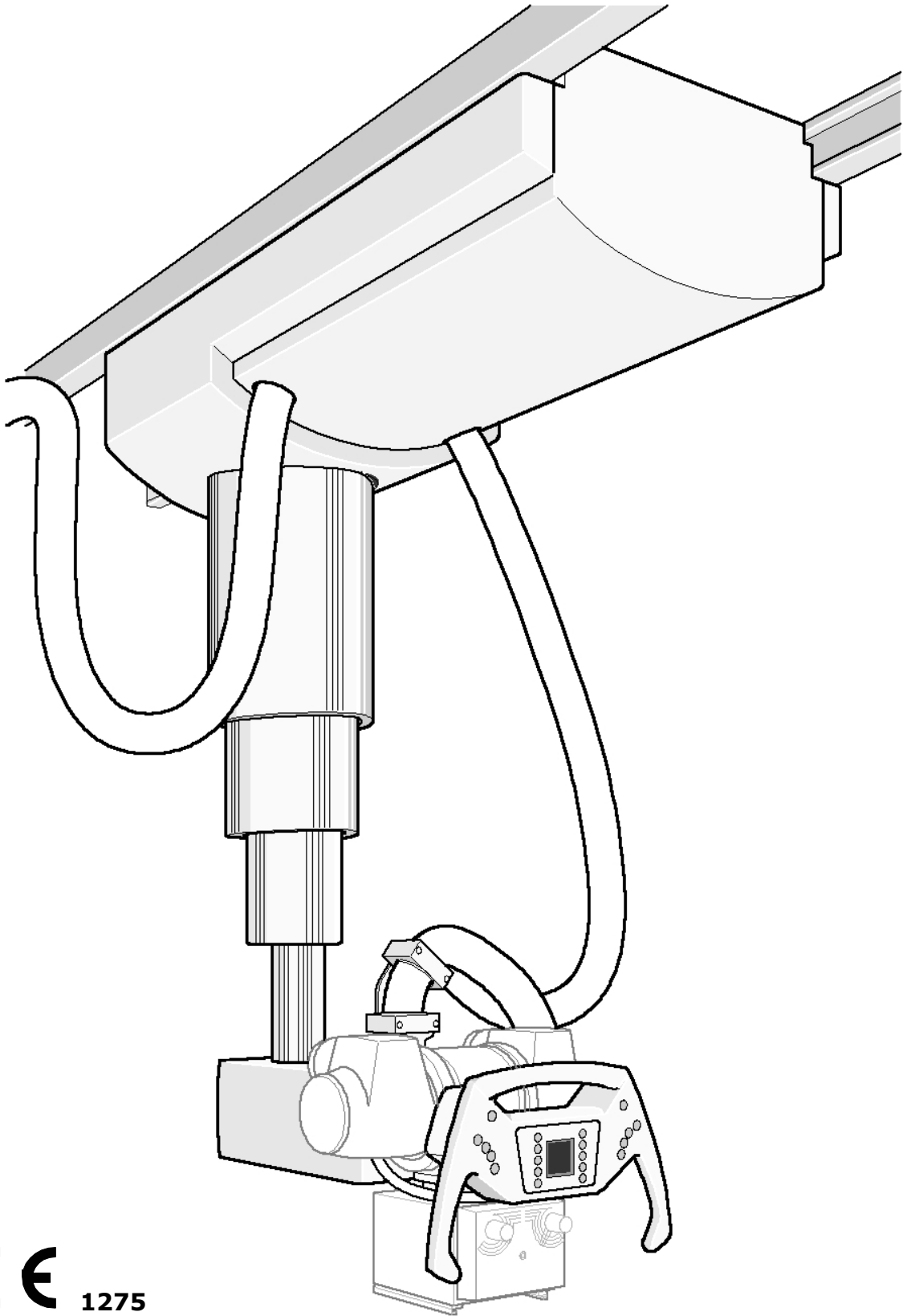


# Operating Instructions Toplift



Toplift

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### 1 General Safety notes

#### 1.1 Warning Statements and Symbols

The following safety precautions in this Operating Instruction call attention to potentially dangerous conditions. These symbols for especially important tasks are used:



**NOTE!**

Specific information concerning the economical use of the TOPLIFT.



**Attention!** Particular statements regarding commandment or interdiction for damage protection

**Danger!**

Specific information concerning commandment or interdiction to avoid bodily injury or substantial property damage.



**Danger!**

Radiation



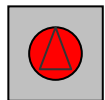
**Danger!**

If you use a disinfectant that can form an explosive gaseous mixture, they must have evaporated before the system is switched on again!!



**Danger!**

Pinch Points



Red Emergency Stop



ESD – Electrostatic Discharge of Components.

PC-Boards, pins and plugs which are marked with this label should not be touched with bare hands that means there should be no connection between these plugs without appropriate ESD-protection.



The equipment is classified and marked according to the type of protection against electric shock as CLASS I Equipment and according to the degree of protection against electric shock as TYPE B Equipment.



**Attention!**

For power connection it is important, that the notes in the Mounting Instructions are followed.

#### 1.2 Abbreviations

SID source image distance = FFA

## Toplift

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### 1.3 Principle of proper use

The TOPLIFT ceiling suspension is only build for stationary use. Other or over that exceeding use is considered as improper use. For hereby resulting damage the manufacturer will not take any responsibility. It will be the owner's risk only.

The motorized Z-Axis used to increase the user comforts of the ceiling suspension "TOP-LIFT". With the Motorization three user functions are realized.

1. Together with the wallstand now it is possible for the user when positioning the Bucky/Detector of the wallstand, that the tube of the TOPLIFT automatically will be centered.
2. When using a tilt able wallstand (like the BS-2000 VK) with the Bucky/Detector rotated to horizontal position now the tube automatically will track to the exact SID distance and will stay there.
3. Together with the Elevator table now it is possible for the TOPLIFT when exposures are taken on a recumbently patient that the tube automatically will track to the proper SID and stay in position.
4. Film-Tracking: If the TOPLIFT is used in the table mode and the tube is set vertically to the table and is also within the travel range of the Bucky/Detector, the Bucky/Detector will automatically track to the tube.

The tracking functions are only possible with the Elevator-2-Table re. with the BS-2000 manufactured by Pausch.

The assembly group motorized Z-Axis, is an optional feature and is not for the function of the ceiling suspension necessary.

The TOPLIFT as well as the Wallstand and the Elevator table my only be operated by persons who have the required technical understanding of radiation safety and who have been instructed in the use of the radiographic unit.



#### **Attention!**

The TOPLIFT should not be installed and/or operated in direct or close to other electronically units.

If anyhow it is necessary please check the TOPLIFT for its intended operation.

#### 1.3.1 Patient surrounding and Exposure positions

In the Wallstand mode with vertical Wallstand the patient will stand in front of the Wallstand. In the SID-Position B exposures can be taken from knee, Thorax and head. In the SID-Position A exposures can only be taken of bodily parts above table height that means Thorax and head.

With a vertical tilted Wallstand the patient will sit either on a chair alongside the Wallstand and put his hand or arm on top of the Bucky/Detector or the patient is laying on a bed or stretcher and is positioned over the Bucky/Detector of the Wallstand.

In the table mode the patient will placed on the table. With the movables ceiling suspension in lateral direction and the floating table top exposures can be taken from the head, Thorax and knee.

## Toplift

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### 1.3.2 Live time expectation

The live time expectation is calculated for 10 years. After that time the user can send the unit to the manufacturer for a general inspection and service and then the Toplift can be operated and used for another 5 year period.

Proper use means also to pay attention to the operating manual as well as to follow up on inspections- and maintenance schedules.

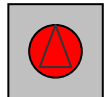
The user is always responsible for maintaining regulations that apply for operation of the radiographic unit.

Always keep the Operating Manual for the TOPLIFT handy for a quick reference.



**Safety Note!**

Use only the TOPLIFT ceiling suspension in safe condition.



If there is any danger for patient or operator in an emergency situation and in connection with malfunctioning of the TOPLIFT you must immediately press the red emergency off button.



**Note!**

The emergency off button on the table stops only the motorized motion of the TOPLIFT.

### 1.4 Warranty and Liability

Basically our „general sales and terms of delivery“ are valid. The user when signing the contract knows these. Warranty and liability claims by person- and material damage are excluded when one or more of the following causes can be conducted:

- Improper use of the TOPLIFT and its components
- Improper mounting, take in operation, operation and service of the TOPLIFT and its X-ray equipment
- Operating the TOPLIFT under unsafe condition or improper installed safety guards or protection device
- Not observing the notes in the operating instructions regarding transportation, storage, assembly, initial start up, operating, maintenance and preparation time of the TOPLIFT
- Unauthorized constructional changes of the TOPLIFT
- Unauthorized changes to the e.g. drive controls: power, pressure and rpm
- Inadequate observation of machine parts, which are subject to wear improper performed repair
- Disaster cases through foreign bodies and higher authority.

Warranty: 12 Month

Life time: 10 Years

## Toplift

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## 2 Product Safety

### 2.1 Electrical Safety

Only trained service personal may remove covers and enclosures of the TOPLIFT.

### 2.2 Examinations at and around the heart

Prior to examinations at and around the heart in connection with any other machines a ground connection between the equipment and the main ground stud must be made. E.g. Bucky wall stand and ceiling guide rails.

**Only if this connection is made you are allowed to make any connection between patient and equipment.**

### 2.3 Mains connection

For this product the line power must be established via regulated power supply (e.g. SBA Elektrogreätebau Type EGS 074-316 with a capacitor 4700µF/40V) or must come from a CE approved generator who is able to supply a medical low voltage of 24 V.

For this product power input must be made via 6,3 A ground fault circuit breaker that is installed on site. The room installation must correspond to VDE 0107.

In all countries outside the Federal Republic of Germany, the legal specified country regulations must be observed

### 2.4 Cleaning the Equipment



Always switch off unit before cleaning.

Water or any other liquid may not get into the inside of the unit because this can cause short-circuits in the electrical installation and to avoid corrosion of parts.

### 2.5 EC Conformance

This radiological unit meets the general requirements according to the specifications of the EC Guideline 93/42 of the Council for Medical Products per Article 11, Section 3 and to the procedure listed in Appendix II.

**The CE - Mark applies only for the product without X-ray components.**

## Toplift

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### 2.6 TOPLIFT movements

To avoid knocks and hard shocks the ceiling suspension should at normal hand made movements not to hard be driven in the end Stops.



#### **Attention!**

Should you observe uncontrolled motor movements, press the next emergency Stop in the room immediately and contact the service.

### 2.7 Hotline

Additional information can be obtained by request from:

Pausch  
technologies  
Hotline  
Postfach 28 60  
D-91056 Erlangen  
Fax: +49 9131 9992-69  
E-mail: [service@pausch.de](mailto:service@pausch.de)

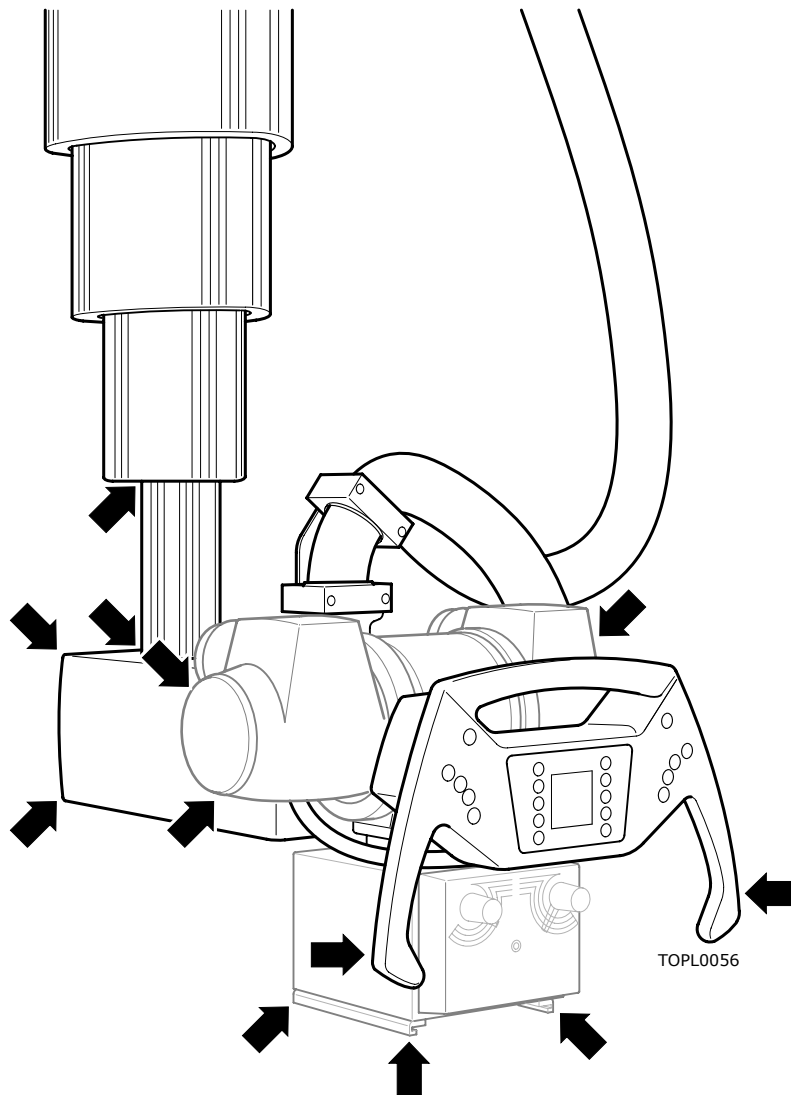
Toplift

### 3 Pinch Points and danger of Collision



**Danger!**

The following sketch indicates dangerous locations where patient or operator can be injured or pinched. Please pay attention that neither the patient nor yourself get pinched or hurt in this area.



III. 1



**Caution!**

Please take care, that on products which can be moved in different reactions, raised, lowered or tilted neither the patient nor yourself are in the movement area of the product. Always watch where you standing. Remove all objects from the collision area.

Toplift

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## 4 Radiation Protection



### **Danger! X-Ray!**

In all countries outside the Federal Republic of Germany the corresponding national regulations must be met.

We recommend to maintain safety to operator, patient and third parties to follow up this rules in addition to the local and national regulations.

### 4.1 Regulations in Germany:

Constant test § 16

Before start- up:

- Acceptance test
- Expert inspection
- Constant test (according the time intervals specified)

### 4.2 The following notes should be observed:

- Limit radiation field as small as possible
- Make sure to protect patient against radiation during examinations in the gonadal and / or crotch area.
- In the restricted area wear protective clothing during examinations.
- Keep maximal possible distance to the radiation source.
- No other persons are to be allowed in the restricted area.

## 5 Environmental Conditions for Operation

Ambient temperature range:	10° C to 40° C
Relative humidity:	20% to 80%
Atmospheric pressure:	700 hPa to 1060 hPa

Toplift

## 6 Technical Data

### 6.1 Electrical Data

Input power Tolerance $\pm 10\%$	24V
Possible transformer type	SBA-Elektrogerätebau GmbH Typ Nr. EGS 074-316 with capacitor 4700 $\mu\text{F}$ / 40V

### 6.2 Component weights and temperatures

	Weight	Temperature
Top Lift with longitudinal rails	approx. 288 kg	200 Watt
2 longitudinal rails 4 m Standard (6 m Option)	48 Kg (68 kg)	
Telescope carriage compl.	approx. 240 kg	
Lateral rails	approx. 43 kg	
Extension weight max.	48 kg	

### 6.3 Environmental conditions

	Operation	Transport	Storage
Ambient Temperature range	+10 °C to +40 °C	- 20 °C to +60 °C	- 20 °C to +60 °C
Relative humidity	20 % to 80 %	10 % to 90 %	10 % to 90 %
Atmospheric pressure	700 hPa to 1060 hPa	500 hPa to 1060 hPa	500 hPa to 1060 hPa

### 6.4 Packing weights and itinerary

Crate 1	Length 1,20 m	Width 0,75 m	Height 1,25 m	Weight 330 kg
Crate 2	Length 4,69 m	Width 0,68 m	Height 0,40 m	Weight 225 kg
Heaviest single component	240 Kg			
Minimum door size for transport	0,90 m			

Toplift

**6.5 Explosion protection**



**Danger!**

This unit is not intended for operation in areas where there is a risk of explosion.  
**Only such skin-cleaning agents whose gas-air mixture is not flammable may be used.**

**6.6 Operation Cycles**



**Note!**

To avoid overstressing of the lift motor, please take care, that after 30 seconds of operation the table will have a rest period of min. 2 min.

**7 Electromagnetic Compatibility (EMC) acc. IEC 60 601-1-2: 2002**

The unit meets the Collateral Standards of Electromagnetic compatibility – Requirements and tests EN 60601-1-2 (IEC 601-1-2) the limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical radio frequency equipment EN 55011 Group 1, Class B and the requirements for interference resistance acc. EN 50082-1 incisiveness 2 and 5 are in compliance.

Medical electrical equipment is subject in regard to the electromagnetic compatibility (EMC) and its special precautionary measure.

The unit must in reference to the mentioned EMC-hints in the accompanying documents be installed and operated.

Portable and mobile RF – communicating systems (such as cell phones) can have influence to medical electrical equipment.

**7.1 General Regulation for safety acc. IEC 60601-1-2**

Guidance and Manufacturer's Declaration - Electromagnetic Emissions		
The TOPLIFT is intended for use in the electromagnetic environment specified below. The customer or the user of the TOPLIFT should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF-emissions Acc. CISPR 11	Group 1	The TOPLIFT uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.  The TOPLIFT is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF-emission Acc. CISPR 11	Class B	
Harmonic emissions Acc. IEC 61000-3-2	Class A	
Voltage fluctuations/ Flicker emissions Acc. IEC 61000-3-3	Voltage fluctuations complies Flicker not applicable	

Table 201

Toplift

<b>Guidance and Manufacturer's Declaration - Electromagnetic Emissions</b>			
The TOPLIFT is intended for use in the electromagnetic environment specified below. The customer or the user of the TOPLIFT should assure that it is used in such an environment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment – guidance
Electrostatic Discharge (ESD) acc. 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/ bursts acc. IEC 61000-4-4	± 2 kV for Power supply lines  ± 1 kV for I/O lines (input/output)	± 2 kV for Power supply lines  ± 1 kV for I/O lines	Mains power quality should be that of a typical commercial or hospital environment.
Surges acc. 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 acc. 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 s	< 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 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the TOPLIFT requires continued operation during power mains interruption, it is recommended that the TOPLIFT be powered from an interruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field acc. IEC 61000-4-8	3 A/m	Not applicable	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 AC mains voltage prior to application of the test level.			

Table 202

Toplift


<b>Guidance and Manufacturer's Declaration - Electromagnetic Emissions</b>			
The TOPLIFT is intended for use in the electromagnetic environment specified below. The customer or the user of the TOPLIFT 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 TOPLIFT, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.  <b>Recommended separation distance</b>
Conducted RF acc. IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	$d = 1,2\sqrt{P}$
Radiated RF acc. IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/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 <sup>a</sup> , should be less than the compliance level in each frequency range <sup>b</sup> . 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.			
NPTE 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 access 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 TOPLIFT is used exceeds the applicable RF compliance level above, the TOPLIFT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocation the TOPLIFT.			
b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than $[V_1]$ V/m.			

Table 204

Toplift

<b>Recommended separation distance between Portable and mobile RF communications equipment and the TOPLIFT</b>			
The TOPLIFT is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the TOPLIFT can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitter) and the TOPLIFT as recommended below, according to the maximum output power of the communication equipment.			
Rated maximum output power of transmitter  W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz  $d = 1,2\sqrt{P}$	80 MHz to 800 MHz  $d = 1,2\sqrt{P}$	800 MHz to 2,5 GHz  $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance $d$ in meters (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 To calculate the recommended separation distance of transmitters in the frequency range at 80 MHz to 2,5 GHz an additional factor of $10/3$ was used, to limit the possibility for the patient area that unintentional brought in mobile or portable communication equipment can cause any disturbance.			
Note 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Table 206

## 8 Classification acc. IEC 601-1: 1995



The equipment is classified and marked according to the type of protection against electric shock as CLASS I Equipment and according to the degree of protection against electric shock as TYPE B Equipment.

## 9 Conformance per IEC 601-2-32: 1994

The associated equipment TOPLIFT meets the requirements of IEC 601-2-32.



Toplift

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## **11 Risk analysis**

According to the conducted risk analysis of the directive 93/42 EC this product is classified to be safe whereby it can not be excluded, that a hitherto unknown remaining risk anymore can exist.!

## **12 Disposal**

Gather information from the authorities before placing the system in operation about all applicable disposal regulations.  
Care about proper environmental utilization!

## **13 Council Directive 93/42 EEC concerning medical devices, Article 12**

Particular Procedure for Systems and Procedure Packs.

- 1) By way of derogation from Article 11 this Article shall apply to systems and procedure packs.
- 2) Any natural or legal person who puts devices bearing the CE marking together within their intended purpose and within limits of use specified by their manufacturers, in order to place them on the market as a system or procedure pack, shall draw up a declaration by which he states that:
  - he has verified the mutual compatibility of the devices in accordance with the manufacturers instructions and has carried out operations in accordance with these instructions: and
  - he has packaged the system or procedure pack supplied relevant information to users incorporating relevant instructions from the manufacturers and
  - the whole activity is subjected to appropriate methods of internal control and inspection.

Where the conditions above are not met, as in cases where the system or procedure pack incorporate devices which do not bear a CE marking or where the chosen combination of devices is not compatible in view of their original intended use, the system or procedure pack shall be treated as a device in its own right and such be subjected to the relevant procedure pursuant to Article 11.

The user is responsible for observance and enforcement of the national deviations in the European Economic Community.

## Toplift

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### 14 Product Description

The ceiling support TOPLIFT is a radiological exposure system with a high technical specification level for hospitals and practice.

In addition, free exposure technique on table or bed exposures as well as emergency exposures are possible.

The modular structure of the TOPLIFT ceiling suspension enabled the individual arrangement almost every function. This means an optimizing work flow.

#### Tube- and Film tracking

A significant escalation of the work flow is throughout the tube- and film tracking possible. This is saving time for positioning tube and film/detector.

#### 14.1 Economic balanced Ergonomics

During construction special observance to the ergonomic was done with the purpose of a simple operation of the exposure system.

#### 14.2 A digest at one glance

- Easy movement of the ceiling suspension TOPLIFT.
- Ergonomically working throughout easy handling
- Highest precision during positioning as well as individual adoption of all common X-Ray/Collimator combinations.
- Self aligning digital display.
- It is possible with a adjustable weight compensation to adapted staples X-Ray tube combinations from 28 kg to 48 kg.
- With means of the optional tracking system the vertical axis can automatically set the SID to the proper distance. Also a automatically tracking pf the Bucky/Detector in the Elevator table and a automatic tracking between tube and wallstand BS 2000 is possible.
- Additional upgrade of the unit enabled by modular combination re. Buildup of the x-ray system is possible. Systems combinations as descript in chapter 14.2.1 *Optional System combination* on page 19 are possible.

##### 14.2.1 Optional System combination

1. Toplift and Wallstand BS 2000
2. Toplift and Wallstand BS 2000 and table (with motorized Bucky/Detector carriage)
3. Toplift and Wallstand BS 2000 and table (without motorized Bucky/Detector carriage)
4. Toplift and table (without motorized Bucky/Detector carriage)
5. Toplift and table (with motorized Bucky/Detector carriage)



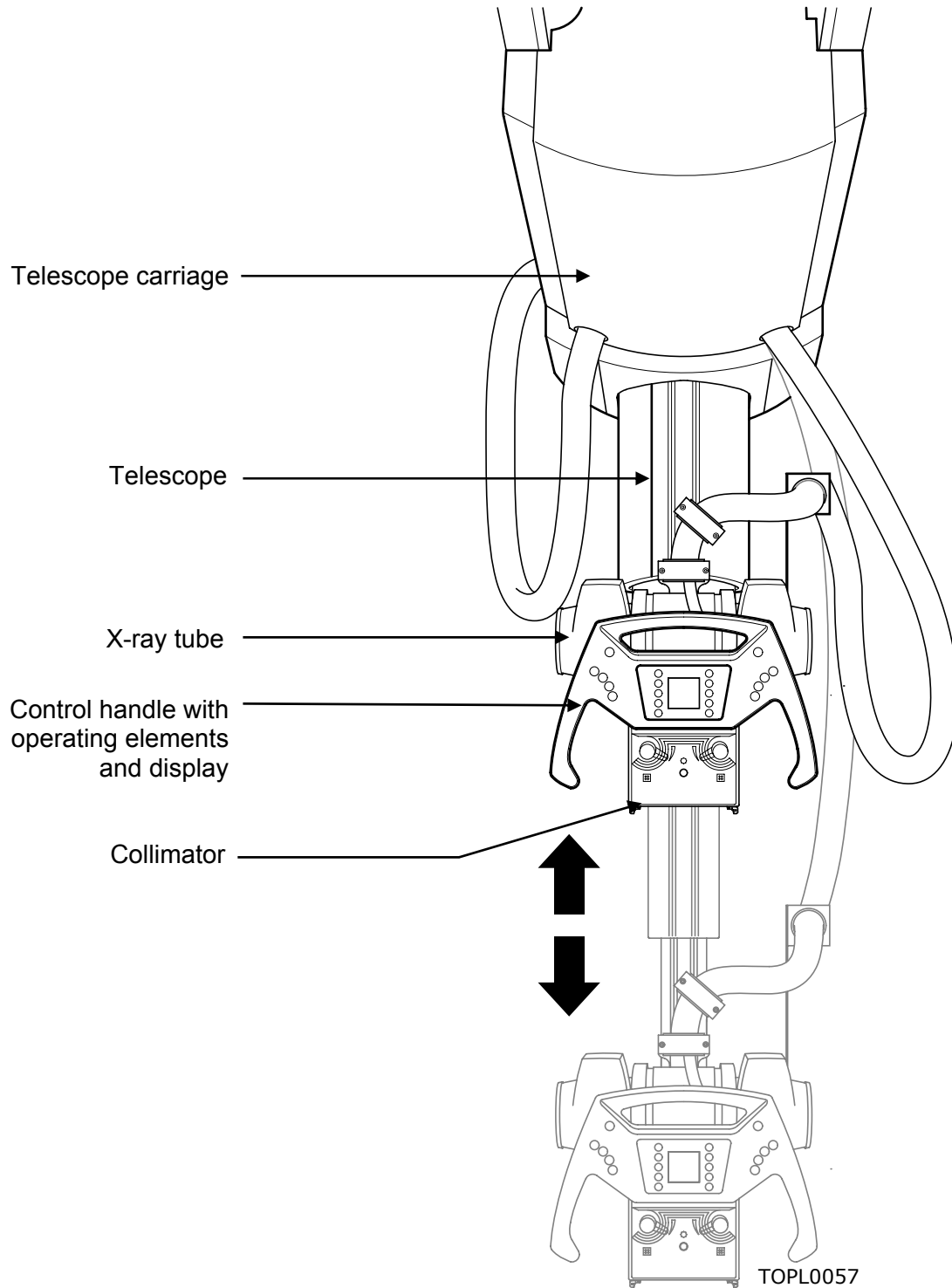
#### Warning!

No other units as listed above should be electrically connected to the table or TOPLIFT transformer without permission from Pausch technologies.

Toplift

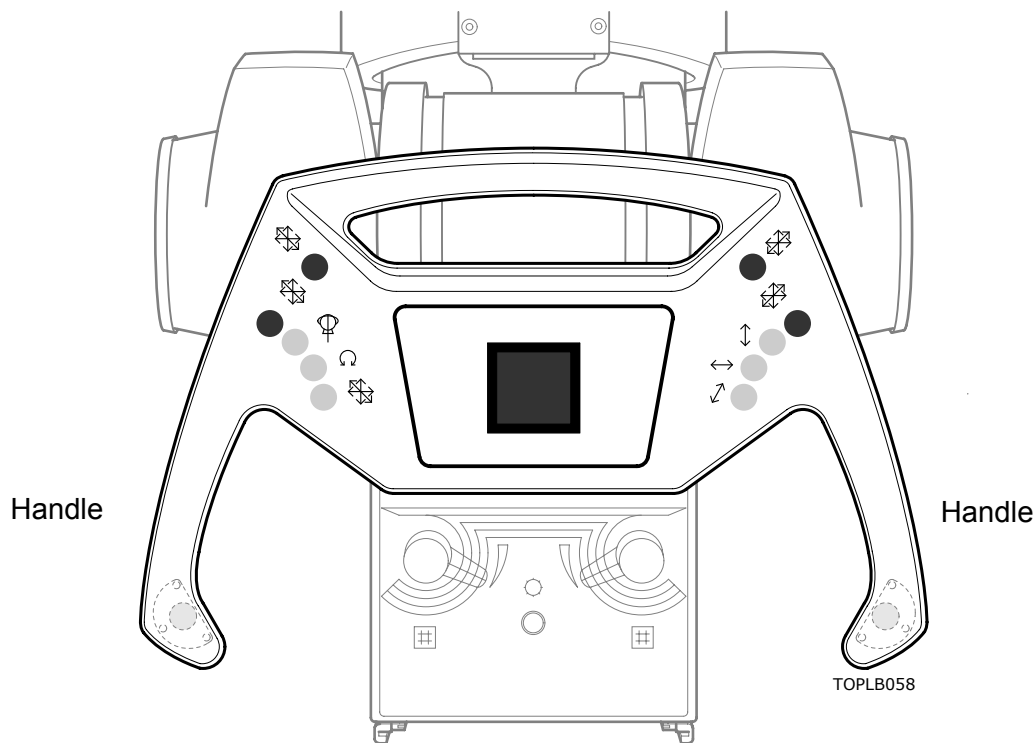
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**15 General view**



III. 2

## 16 Operating Elements for the Ceiling Support BASIC



III. 3

All movements of the TOPLIFT are done direct and manually.

To rotate the tube assembly around the telescope vertical axis ( $+180^\circ$  to  $-160^\circ$ ) or to rotate the tube around the horizontal axis ( $\pm 135^\circ$ ) the handles (III. 3) are to be used to move into the desired position.

Detent in vertical axis: every  $45^\circ$   
Detent in horizontal axis: at  $0^\circ$  and  $\pm 90^\circ$

The longitudinal (380 cm), lateral (max.300 cm) and vertical (lift) movement (up to 152 cm) of the TOPLIFT are also be operated via the handles to move the tube assembly in desired direction.



### Warning!

In case of a blocking in longitudinal, lateral or vertical direction up or down or turning the tube please do not use any force!

Please contact your service immediately in case of a defect on the wire ropes. You will notice this if the mechanical movement is blocked. Also on the display a broken wire will be shown (see III. 11 / III. 12 on page 26) and an acoustical signal will alert you.

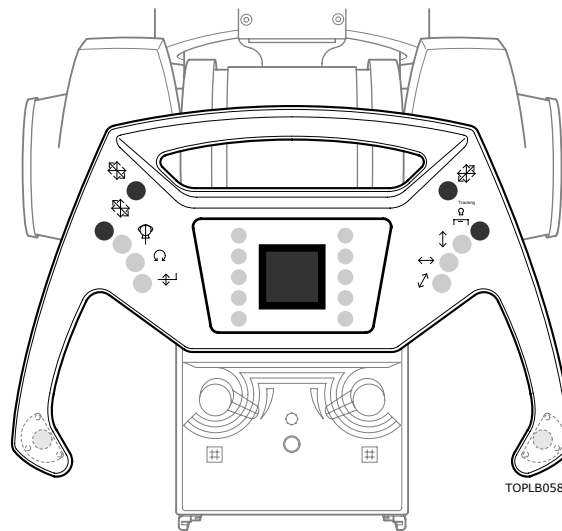
Toplift

**16.1 Operating elements on the control panel**



Attention: The display does not indicate a true measurement. It is only for your information.

By pressing one of the buttons the following movements can be done:



III. 4



Move TOPLIFT in lateral and longitudinal direction and tube up and down.



Move TOPLIFT sideways, back and ahead and tube up and down (the button is on the back of the control handle).



Move TOPLIFT only back and ahead.



Move TOPLIFT only sideways.



Move tube only up or down.



Rotate tube around horizontal axis (angulations).



Rotate the tube around the vertical axis.



Lift or lower the Elevator table by pressing simultaneously the proper footswitch on the table.



Offline SID tracking of the tube to the table (only in connection with the optional tracking system).



**Note!**

If the SID is not changing while moving up or down there might be a error in the display or potentiometer.

Toplift

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## 17 Set up exposure position

### 17.1 Manual Positioning



**Note!**

Basically the operator must place the patient in all exposure positions correctly and must control the field light as close as possible.

### 17.2 Exposure with Elevator table

Tube: vertical position

Table and Bucky/Detector horizontal



Move TOPLIFT in lateral and longitudinal direction and tube up and down.



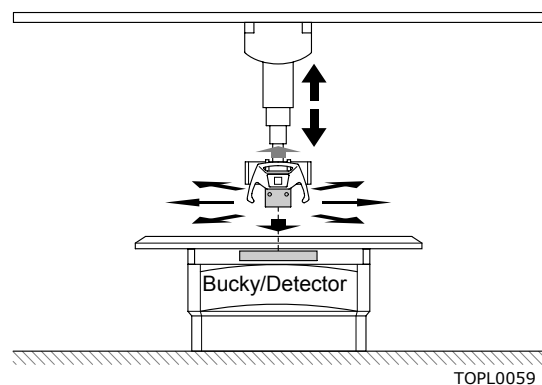
Move TOPLIFT only sideways.



Move tube only up or down



Move TOPLIFT only back and ahead.



III. 5

Move the ceiling support in the preset detents so it will be centrally over the Bucky/Detector at the table. If the collimator is optional equipped with a laser light, this set up is very convenient.

You avoid x-ray picture image by grid scattering if the selected SID is within the focus of the grid.



**Note!**

Please check the SID with means of the tape measure in the collimator to the cassette in the Bucky/Detector.

Toplift

**17.3 Exposures to the Bucky wall stand**

Tube: horizontal position

Bucky: vertical



Move ceiling support back and forth and tube up or down.



Move ceiling support only in lateral direction.



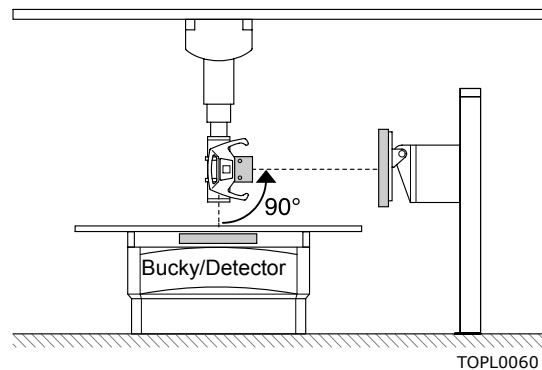
Move tube up or down.



Rotate tube around the horizontal axis to  $-/+ 90^\circ$



Move ceiling support lateral.



TOPL0060

III. 6

Move the TOPLIFT into preselected exposure position A or B.

(Standard: 115 cm re. 180 cm to wall stand)

To avoid quality image thru grid shadows or lines always set proper SID.



**Note!**

Always check SID distance with means of the tape measure to the cassette in the cassette tray..

**17.4 Oblique exposures with „cassette on table“**

Tube: vertical position  $\pm 135^\circ$



Move ceiling support back and forth and tube up or down.



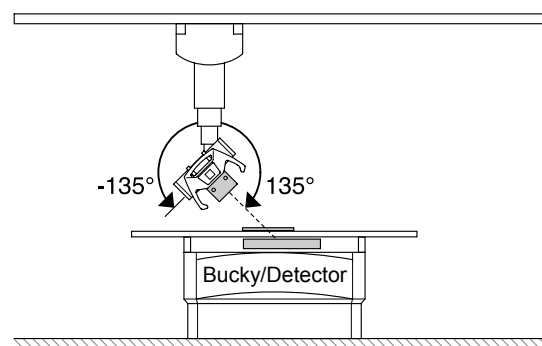
Move ceiling support only in lateral direction.



Move tube up or down.



Rotate tube around the horizontal axis to  $-/+ 90^\circ$



TOPL0061

III. 7



**Note!**

When doing oblique exposures the SID in the display is not active. Check SID distance with tape measure.

Toplift

**17.5 „Over-Table-Exposures“ wit tube rotated around the vertical axis**

Tube:vertical position

Detent: every 45°



Move ceiling suspension back and forth and tube up or down.



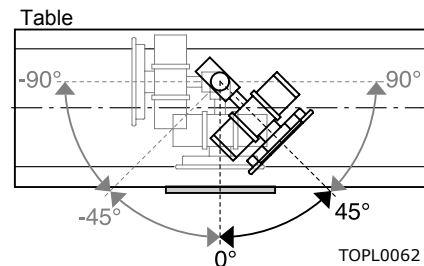
Move ceiling support only in lateral direction.



Move tube up or down.



Rotate tube around the vertical axis in the desired position.



III. 8

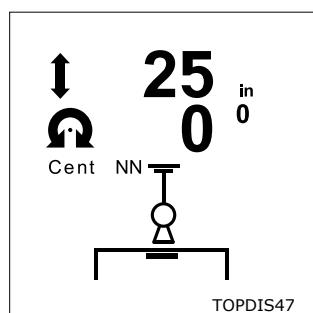
Move the ceiling support in the pre selected detent position so it will be in the center over the Bucky/Detector of the table. If the collimator is equipped with a laser, this set up is very convenient.



**Note!**

Always double-check the SID distance with the tape measure in the collimator from the collimator to the cassette.

**18 Display functions on the control panel BASIC**



III. 9

← Source-Image-Distance (SID) 25 inch to table

← Angle indication / tube rotation

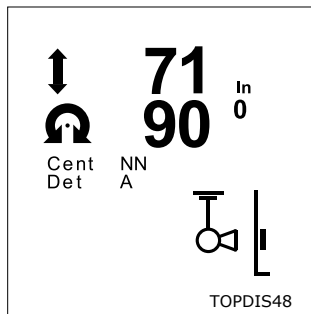
← Patient – table



**Note!**

The ceiling support TOPLIFT is centered to the table lateral direction.

Toplift



III. 10

← Source to image distance (SID) 71 inch to wallstand.



III. 11

← Switch off unit immediately and make sure the unit can not be operated any longer!  
Inform customer service and have the broken wire rope repaired immediately!  
Take unit into service only after the failure has repaired.



III. 12

← Switch off unit immediately and make sure the unit can not be operated any longer!  
Inform customer service and have the broken wire rope repaired immediately!  
Take unit into service only after the failure has repaired.



**Attention!**

If the SID is not working please measure the distance with a tape measure and contact field service.

In case of malfunction of the display call field service immediately.

## Toplift

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### 19 Tracking System (optional)

#### 19.1 General

With the optional tracking system as described under chapter 14.2.1 *Optional System combination* on page 19, the user comfort of the ceiling support TOPLIFT with the following described functions will be remarkable enhanced re. updated:

1. In combination with the wallstand BS 2000 it is possible for the user when positioning manually the Bucky/Detector of the wallstand, that the tub of the TOPLIFT will automatically center itself to the wallstand (Online-Tube-Tracking).
2. If a tilt table wallstand is used (BS-2000 VK) and the Bucky/Detector is rotated to horizontal position the tube can be set automatically to the proper SID (Online-SID-Tracking).
3. In combination with the Elevator table the ceiling support TOPLIFT can automatically be set to the proper SID for exposures on recumbent patient (Online-SID-Tracking).
4. If the ceiling support TOPLIFT is operated in the table modus and the tube is vertically to the table and within the travel range of the Bucky/Detector, the tube will automatically center itself to the Bucky/Detector (Film-Tracking), whereat simultaneously Online-SID-Tracking is possible (if installed) C.f. chapter 14.2.1 *Optional System combination* on page 19.

#### Note!



- Online Tracking:  
The movement of the trailing unit (Slave) is synchronal and centered to the master unit.
- Offline Tracking:  
The movement of the trailing unit (Slave) is started by the user after positioning the master unit e.g. by pushing the button and will be centered to the Bucky/Detector.

#### 19.1.1 Accuracy, Velocity and travel distance

- The maximum deviation from the SID between tube and Bucky/detector is  $\pm 5$  mm.
- The maximum deviation of the TOPLIFT tube central beam to the center of Bucky/Detector is  $\pm 5$  mm.
- The velocity of the tracking system is 100 mm/s (+/-25 mm/s).
- The vertical travel distance of the ceiling support TOPLIFT is 1520 mm (-20 mm/+0 mm). This dimension is the maximum mechanical travel of the TOPLIFT.
- The travel of the Bucky/Detector wallstand BS 2000 is 1520 mm (-20 mm/+0 mm). This declaration is the maximum mechanical travel distance.

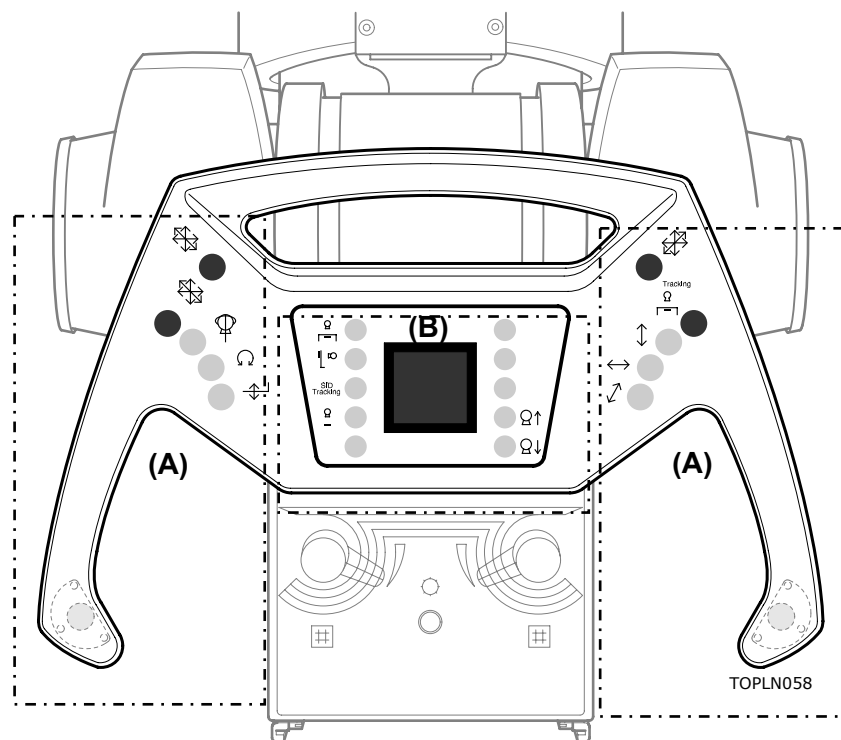
#### Note!



Because of the different travel distance of the wallstand BS 2000 and the vertical travel distance of the ceiling support TOPLIFT is the positioning in the upper and lower border area of the travel distance of the BS 2000 not possible. Only with a ceiling height of 2830 mm the entire travel distance of the wallstand BS 2000 can be used.







Toplift

**19.2 Operating elements for the ceiling support with tracking system**



III. 13

All operating elements **(A)** at the control panel, as described in chapter 16 *Operating Elements for the Ceiling Support BASIC* on page 21 and also in chapter 16.1 *Operating elements on the control panel* on page 22 are also valid for the version “with tracking system”. The explanation for the additional control elements **(B)** are described below:

- 
Switch on table mode.
- 
Activate wallstand mode.
- 
On and OFF switching of the Online-Auto-SID-Tracking
- 
Selection free positioning.
- 
As long as this button is pressed the x-ray tube will travel upwards by motor in vertical direction.
- 
As long as this button is pressed the x-ray tube will travel downwards by motor in vertical direction.

Toplift

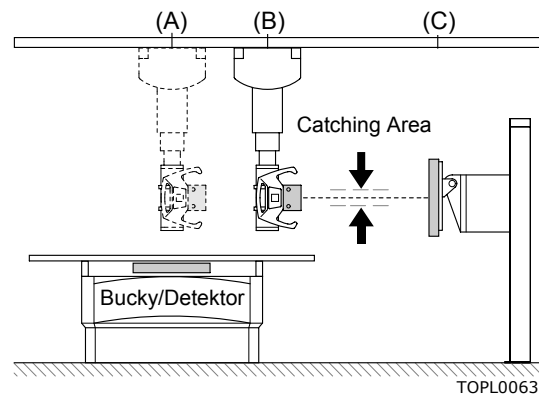
**19.3 Functional description for tube tracking to the wallstand**

**19.3.1 Preparation and Conditions**

The tracking system is only activated if the following conditions are set.



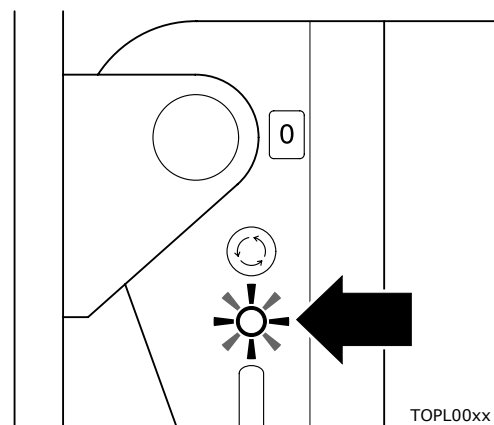
- 1st Select wallstand modus via key pad.
- 2nd Center (Detent position) ceiling support to center wallstand in y direction.
- 3rd Ceiling support is in a defined SID detented position to the wallstand, Evaluation of both wall distance A 180 cm or B 115 cm. On customer request a third free defined SID detent position is possible. In case this detent is not used for a tilt table wallstand to center the x-ray beam to the center of the tilted Bucky/detector.



III. 14

- 4th If a wallstand with a tilt table Bucky/Detektor is used in this case also the 0°- position (vertical) of the Bucky/Detektor must be set in order to make the tracking working.
- 5th A-Axis: The tube is rotated to the wallstand direction and is in a detent position of 90° or -90° (depending on floor plan), Display 2 digits (detent position)

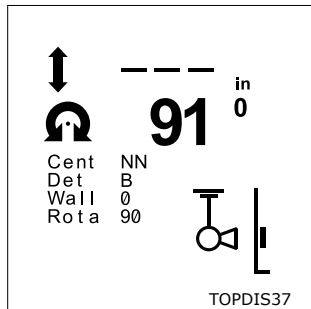
The completion of the conditions is signaled by the flashing lamp -H1 in the push button of the wallstand (The illustration 16 shows the right hand version).



Toplift

**19.3.2 Operator's guidance**

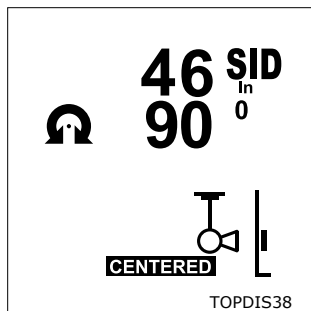
The Operator guidance should help the user, by showing the still open conditions to get in a status of the unit where the tube tracking can be started. If one of the condition is not met the display will show the following:



III. 16

- **Pos Y** -- Centering of the ceiling support is not in the center to the wallstand (detent position)
  - If the condition is fulfilled > **Y „ok“** (detent position).
- **Rast** -- Ceiling support is not in a defined SID detent position to the wallstand.
  - If the condition is fulfilled > **Rast „A“** or **Rast „B“**, Evaluation of both wall distance A, is at 180 cm or B, is at 115 cm.
- **Wall** -- Wallstand not in 0-degree-position. If a wallstand with a tiltable Bucky/Detector is used also the 0°-position (vertical) is part of the condition for tracking.
  - If the condition is fulfilled > **Wall „0“**
- **Angu** -- A-Axis: Tube is rotated to wallstand position but not in a 90° or -90° detent position.(depending on floor plan).
  - If the condition is fulfilled > **Angu „90“** re „-90“

By pushing the right buttons at the control panel and moving the ceiling support or rotating the tube all the conditions can be fulfilled.



III. 17

- If the conditions are fulfilled, the previous display will go out.
- The display will change now and the angle of **90°** re **-90°**, the detent distance A, refers **180** cm or B, refers to **115** cm, next to it the **SID**, at a indication, that the SID is set and the word centered as a indication that tube tracking can now be started..



**Note!**

The vertical axis cannot be moved by hand.

## Toplift

### 19.3.3 Function – tube-tracking vertical axis to the wallstand

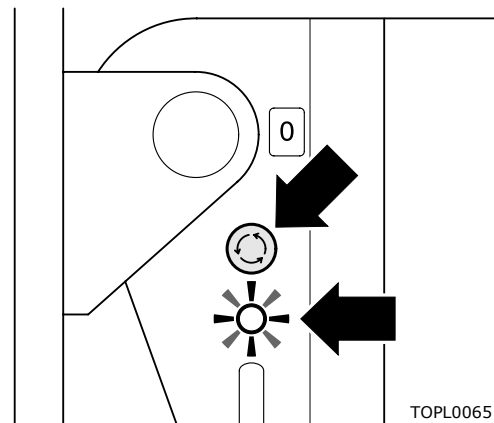
If the above-mentioned conditions are fulfilled, moving the Bucky/Detector of the wallstand up or down will start tracking.

The ceiling support will follow online the Bucky/Detector. For the situation that tube and Bucky/Detector are positioned in different heights the wallstand must be moved manually in the trapping area of the tube.

The size of the trapping area is between 50 mm to 150 mm and can be set or adjusted by the field service engineer.

If the tube has reached the centering position to the wallstand the flashing LED –H1 will go into a solid light and in addition to that on the display of the ceiling support will be the word “centered” indicated.

By pressing the emergency off switch on the wallstand the tracking of the tube will stop immediately e.g. at disturbance.



TOPL0065  
III. 18

The tracking system will be deactivated as soon as the position of the ceiling support is abandon and the conditions according point 19.3.1 are no longer fulfilled. The light of the tracking system will go out.

If the centering position is reached again a solid light of the lamp –H1 will indicate that the centering is fulfilled.

### 19.3.4 Collisions prevention and User responsibility

Collision with the table will be avoided at SID`s for Thorax exposures and a wall distance A of 180 cm avoided by limiting the travel distance of the ceiling support via software. (Minimum distance lower edge of tube to the maximum upper edge of table = 20 cm  $\pm$ 10 %).



#### **Attention!**

Risk of collisions with a small SID for the tube tracking of the ceiling support (Wall distance B equals 115 cm).

Do to the area circumstances collisions with the table top are possible.

Please take care when driving the ceiling support that there are no obstacles in the way. Thereby watch for the overall dimensions of tube, collimator and control handle in each angulated position.

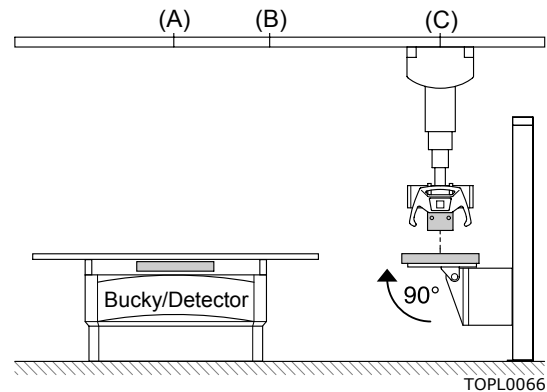
Toplift

**19.4 Function – SID-tracking to the wallstand with tiltable Bucky/Detector**

**19.4.1 Preparation and Condition**

The tracking system is only active when the following conditions are fulfilled:

- 1st Select via keypad „wallstand mo-  
dus“.
- 2nd Wallstand is tilted as shown to 90 de-  
grees.
- 3rd The tube is positioned in x- and y-  
direction centered to the wallstand  
Bucky/Detector (detent. positions)
- 4th The tube is facing the Bucky/Detector  
vertical as shown and is in a detent  
position, A-Axis - Angulation = 0°.
- 5th The pivot angle of the tube around its  
B-Axis can be either way.

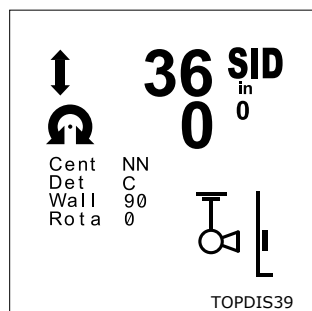


III. 19

Only if all the steps described are fulfilled the Online-Auto-SID-tracking can be started by pushing the button „SID-Tracking“.

**19.4.2 Operator’s guidance**

The operator guidance should help the user, by showing the still open conditions to get in a status of the unit where the SID tracking can be started. If one of the conditions is not met the display will show the following:







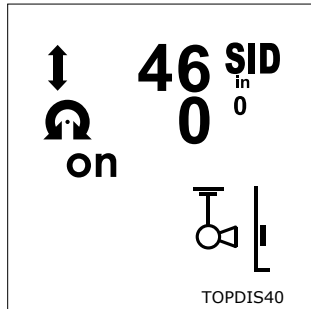
III. 20

- Pos **Y** -- The ceiling support is not centered to the center of the wallstand (detent position)
  - If condition is fulfilled > **Y „ok“** (detent position).
- **Rast** -- The ceiling support is not centered to the center of the wallstand Bucky/Detector
  - If condition is fulfilled > **Rast „C“**, Deckenstativ ist mittig zentriert zur Rasterlade des Wandstativs
- **Wall** -- wallstand is not in 90-degree-position – horizontal - (only by wallstands with tiltable Bucky/Detector)
  - If condition is fulfilled > **Wall „90“**
- **Angu** -- A-Axis: Tube is not facing vertical down and not in its detent at 0°.
  - If condition is fulfilled > **Angu „0“**

Pressing the right buttons at the control panel or moving the ceiling support or rotating the tube can fulfill the conditions.

## Toplift

 **Note!**  
The vertical axis can not be moved manually with the  button  
or motorized driven with   the buttons.



Ill. 21

- If the conditions are fulfilled, the previous display will go out.
- The display will change now and the angle of  $0^\circ$  the SID distance as set in the service menu (mm, cm, inch) next to the SID, as indication that the SID is set and on and the online-auto-tracking is activated will be displayed.


### 19.4.3 To start SID-tracking to the wallstand (online)


By moving the Bucky/Detector of the wallstand (online tracking) the SID tracking can be started, that means the vertical axis (tube) of the ceiling support will drive to a fixed defined SID distance.

If the Bucky/Detector is further moved up or down the vertical axis of the ceiling support (tube) will follow the Bucky/Detector within this SID.

The SID distance will be set during installation by the service tec.

### 19.4.4 Finishing the Online-tracking

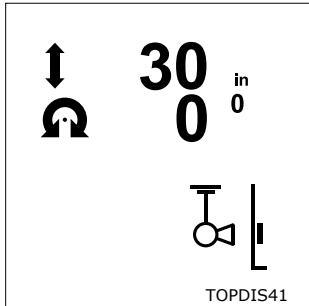
 Enter the button „move tube up or down“ will quit online-tracking.

 To leave the online-auto-SID-tracking press again the button „SID-Tracking“.

Toplift

**19.4.5 Start SID-tracking to the wallstand (offline)**

Please do not change the conditions according chapter 19.4.1 on page 32.

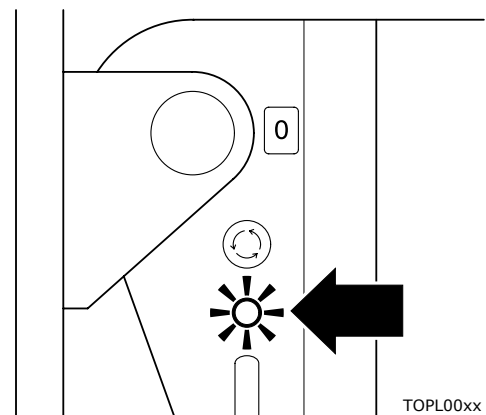


III. 22

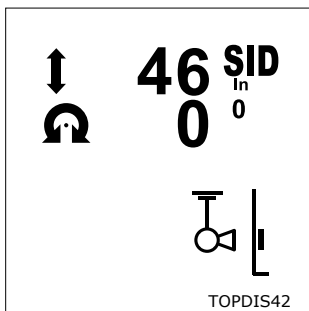
- If you have quit the online-tracking according chapter 19.4.4 on page 33 the display will change and the angulations symbol  $0^\circ$  as well as the actual SID in the service menu selected dimension (mm, cm, inch), will be displayed.

After pushing the integrated illuminating button H1 the wallstand will drive the ceiling support in the „offline mode“ onetime to the Source to Image Distance.

If the SID is reached the movement of the ceiling support will stop and the light of the button –H1 will be steady on.



TOPL00xx  
III. 23



III. 24


- After reaching the proper set SID the SID will be displayed on the panel in the pre selected dimension (mm, cm, inch), right next to the **SID**.

Toplift

**19.5 Function - SID-Tracking to the Elevator table**

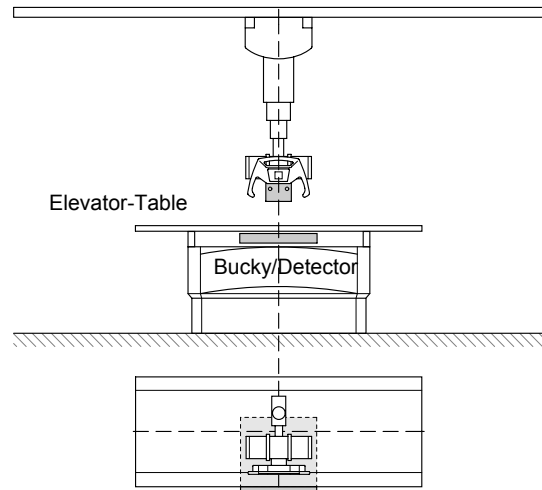
**19.5.1 Preparation and Condition**

The tracking system is only activated if the following conditions are fulfilled:

 1st Select via keypad „table“ modus.

2nd The ceiling support is in lateral table direction centered over the table.


3rd The tube is pointing vertical down as shown and is in the detent position A-Axis - angulation = 0°.



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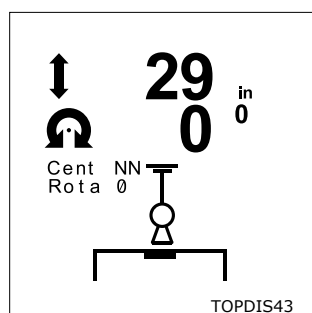
By pressing the corresponding buttons on the control panel and moving the ceiling support as well as rotating the tube all of these conditions can be met.

III. 25

 Only if all the described conditions are fulfilled the Online-Auto-SID-tracking can be started by pushing the button „SID-Tracking“.

**19.5.2 Operator's guidance**

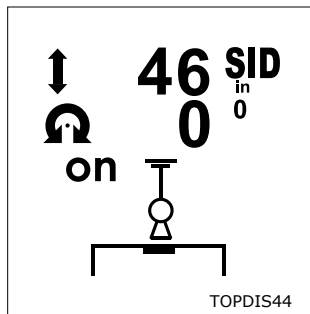
The operator guidance should help the user, by showing the still open conditions to get in a condition of the unit where the SID tracking can be started. If one of the conditions are not met the display will show the following:



III. 26

- Pos **Y** -- The ceiling support is not centered to the center of the table (detent position)
  - If condition is fulfilled > **Y „ok“** (detent position).
- **Angu** -- A-Axis: Tube is not pointing down vertically and is not in the detent position at 0°.
  - If condition is fulfilled > **Angu „0“**.

## Toplift



III. 27

- If the conditions are fulfilled, the previous display will go out.
- After reaching the proper Source-to-Image-Distance the SID will be displayed in the service menu selected dimension (mm, cm, inch), next to the SID to show that the SID is set and **on** and the online-auto-SID-tracking is activated.

### 19.5.3 Starting SID-tracking to the Elevator table (online)




SID tracking will be started as soon as the Elevator table is raised or lowered by pressing the appropriated footswitch and simultaneously pressing the button up or down at the control panel of the TOPLIFT.

The ceiling support is driving to the fixed defined SID (online tracking) and is following the table synchronal in this distance.



**Note!**

The vertical axis can not manually be moved  with the button

or motorized driven with   the button.

### 19.5.4 Finishing Online tracking



Entering the button „move tube up or down“ will quit the Online tracking.



To leave the Online-Auto-SID-tracking press the button „SID-Tracking“ again.

### 19.5.5 Starting SID-tracking to the Elevator table (offline)

The conditions according chapter 19.5.1 on page 35 may not be changed.




After pressing the corresponding button at the control panel the ceiling support will drive on time in the offline mode into the SID position.

Toplift

**19.6 Function – Film tracking on the Elevator table**

**19.6.1 Preparation and condition**

The tracking system is only active if the following conditions are fulfilled.

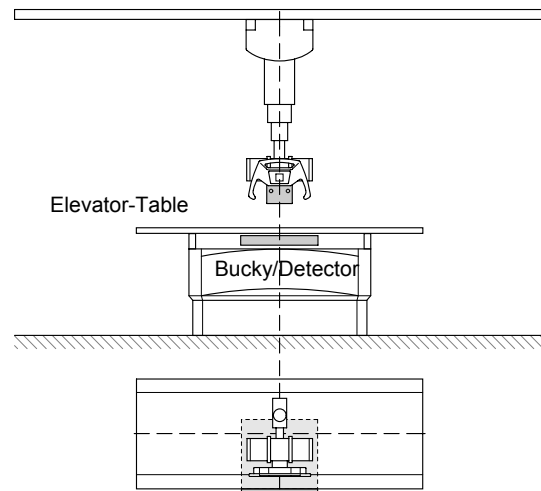
 1st Select via key pad „table“ modus.

2nd The ceiling support is centered lateral to the table (detent position).

3rd The ceiling support is centered in longitudinal direction over the table

4th The tube is vertically pointing down and therefore in the detent position A-Axis - angulations = 0°.

5th The SID distance is set (optional, depending on the set up in the service mode).




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III. 28

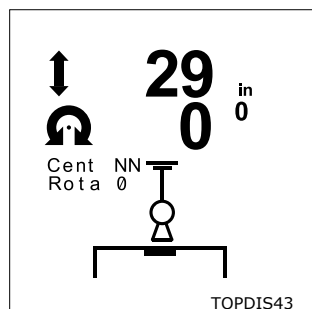
By pressing the corresponding buttons on the control panel and moving the ceiling support as well as rotating the tube all of these conditions can be met.

By pressing the emergency off switch at the Elevator table the tracking system will Stop immediately e.g. by any danger.

 **Note!**  
The emergency off switch at the table will only interrupt the motorized movement of the TOPLIFT.

**19.6.2 Operator's guidance**

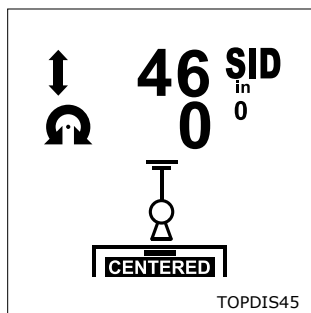
The operator guidance should help the user, by showing the still open conditions to get in a condition of the unit where the SID tracking can be started. If one of the conditions are not met the display will show the following:



III. 29

- Pos **Y** -- The centering of the TOPLIFT is not in center to the table lateral direction (detent position)
  - If condition is fulfilled > **Y „ok“** (detent position).
- **Angu** -- A-Axis: Tube is not vertical pointing down and not in detent position at 0°.
  - If condition is fulfilled > **Angu „0“**

## Toplift



III. 30

- If the conditions are fulfilled, the previous display will go out.
- After reaching the proper Source-to-Image-Distance the SID will be displayed in the service menu selected dimension (mm, cm, inch), next to the SID and showing that the tube is centered to the Bucky/Detector the centered sign will be displayed.

The film tracking is a online-tracking. If the conditions according chapter 19.6.1 are fulfilled, the Bucky/Detector will automatically center itself to the tube.

The Online-Film-tracking will start right away if all the conditions are met according to chapter 19.6.1 and is moving online to the system.

If the tube is moved out of its vertical position and will be rotated and moved and again centered over the table the tracking will be activated again and the Bucky/Detector will track automatically again without pushing any buttons.

### 19.7 Finishing the tracking function

As soon as another modus is selected the main modus "wallstand", "table" and "free positioning" will stop.

The mode "Auto-SID" (can only be selected in connection with the mode "wallstand" and "table") and can be finished by the operator by pressing thee „SID-Tracking“ button on the control panel again. Furthermore changing between the three main modus will also finish the Auto-SID modus.



With the button „loosen vertical -brake“ only the two SID tracking`s will end.

## Toplift

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### 19.8 Free positioning

At initial start up and turning on the unit each morning the system always will be in the mode „free positioning“.



III. 31

In this mode the following information will be displayed

- The actual tube distance to the Bucky/Detector in the table is displayed in the selected dimension (mm, cm, inch),
- Below the angulations value of the tube,
- and to show that the system is in the mode „Free Positioning“ the word **free** is displayed.

In this operation mode all tracking functions are enabled.

The operator must align manually the tube to the Bucky/Detector in the table and to the wall-stand.



The operating mode "Free Positioning" can be selected by pressing the button "selecting free positioning" on the control panel.

The mode will be canceled as soon another mode like „wallstand“ or „table“ is selected.



**Note!**

See also chapter 17.1 *Manual Positioning* on page 23.

## 20 Original Accessories

For safety reasons please use only accessories manufactured by Pausch or accessories from other manufacturer which is officially released by Pausch. See also chapter 14.2.1 *Optional System combination* on page 19.

**It is the owner's risk when using accessories which are not released by Pausch technologies or intended for this unit.**

## 21 Maintenance

Like any other technical equipment, this radiographic unit and its accessories requires a regular maintenance and care to ensure the operating reliability of the unit.

The user must check the radiographic unit and accessories for deficiencies as described: Check all brakes and the display for proper function. In case of defects or other problems do not operate the TOPLIFT and call field service. Use the TOPLIFT only after all the problems are corrected and the unit is safe again.

## Toplift

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### 21.1 Maintenance Intervals

To maintain trouble-free operation of the unit as well as to ensure safety for patients and operating personal, technical maintenance should be performed by customer service in 12-month intervals. The ropes must be replaced every 5 years.



**Note!**

The live time expectation is calculated for 10 years. After that time the user can send the unit to the manufacturer for a general inspection and service and than the Toplift can be operated and used for another 5-year period.

## 22 Desinfektion der Anlage



**Note!**

Only those disinfections methods that correspond to applicable regulations and guidelines as well as to explosion protection measures may be used.



**Caution!**

No caustic, solvent or volatile disinfectants may be used!



**Danger!**

If you use a disinfectant that can form an explosive gaseous mixture, they must have evaporated before the system is switched on again!!

- All parts of the X-ray equipment, including the accessories and connecting cables may be disinfected by wiping only.
- Spray-disinfections is not recommended because the disinfectant may enter the equipment.
- If you perform room disinfections with an atomizer, you must switch off the X-ray equipment first. When the X-ray equipment has cooled down, cover it carefully with a plastic sheet. When the mist of disinfectant has subsided you can remove the plastic sheets and disinfect the X-ray equipment by wiping.

The following disinfectants can be used:

- Mild soapy solution
- Misty Multi-Purpose Disinfectant Cleaner - Amrep Inc.
- Misty Multi-Purpose Disinfectant Cleaner II - Amrep Inc.
- Misty Disinfectant and Deodorant RTU - Amrep Inc.
- Virex II 256 - Johnson Professional
- Tego 1103
- Kosolin

Toplift

**23 Name plate location**

**PAUSCH LLC**  
808 Shrewsbury Avenue  
Tinton Falls, NJ 07724-3002

Model No.

Serial No.

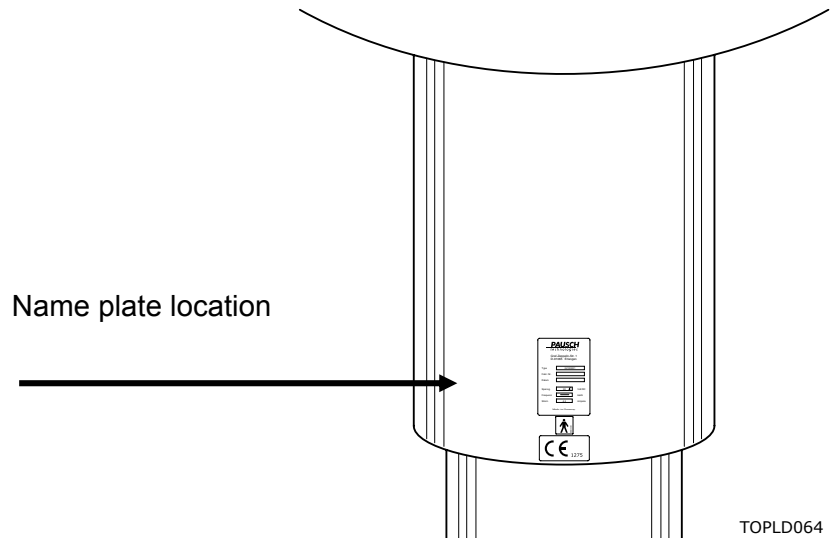
Input  Voltage  
 Phases  Hertz  
 Ampères

Date Mfg.

This product complies  
with applicable standards  
under "21 CFR Sub-Chapter J"

Made by PAUSCH technologies  
Graf-Zeppelin-Str. 1 91056 Erlangen  
Germany

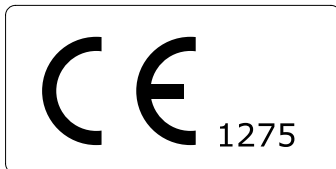
TYPE0001



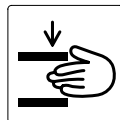
TYPD0003

**Type B**

**Attention! Pinch points**



TYPD0002



TYPD0004



TYPE0002

Specifications are subject to change without notice.