
SIEMENS

MULTIX TOP

Operator Manual

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Rückenschild für Schuber A4 (50 hoch)
Schneiden auf: 205x50 (mm)

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Operator Manual

MULTIX TOP



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Order No.: AXB1-150.620.01.01.02
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Please observe the

Safety Instructions

Order No.: RX0-000.621.01

These must be studied exactly before system start-up.

Important information from the manufacturer



This product is provided with a CE marking in accordance with the regulations stated in Appendix II of the Directive 93/42/EC of June 14, 1993 concerning medical products.

In accordance with Appendix IX of the Directive 93/42/EWG, this product is assigned to class II b.

The CE marking applies only to medical products which have been put on the market according to the above-mentioned EC Directive.

The product complies with the requirements of EMC classes B + 12dB.

Unauthorized changes to this product invalidate this declaration.

The original version of this manual was written in the German language.

Operator Manual

Product description

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Product description

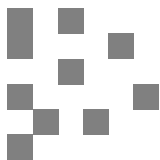
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General information

This Operator Manual describes all system features of all system variants. The complete system is described with all options and components that have been released. Possible options have not been marked specially. Particular options or components may not be available for specific systems. The quotation text of your order is the sole reference for the functional scope of your system.

Applications

With your MULTIX TOP you have a Bucky table radiographic system with a 3D ceiling support at a high technical level for hospital and medical practice. The X-ray unit is a universal workstation with a motor driven table height adjustment device for all projection X-ray exposures or DLR cassettes for digital luminescence radiography. There are removable, changeable scattered radiation grids for examinations on children with special requirements with regard to radiation protection and additional filtration.

Balanced ergonomics

Special attention has been paid in design to ergonomics with the objective of simple operation of the radiographic system.

Motor driven table height adjustment

The table height is adjustable by motor drive in the range from 59 cm to 89 cm.

Planigraphy

☐ Tomographic exposure technique

ACSS

☐ Automatic cassette size sensing to control the diaphragm leaves in the multi-leaf collimator for automatic precollimation to the current cassette format.

Variants

MULTIX TOP

☐ Basic version, manual

MULTIX TOP ACSS

☐ with automatic format collimation

MULTIX TOP ACSS-N

☐ with automatic format collimation and follow-up control

MULTIX TOP P

☐ Manual, with planigraphy (tomographic exposure technique)

MULTIX TOP P ACSS

☐ with automatic format collimation and planigraphy

MULTIX TOP P ACSS-N

☐ with automatic format collimation, planigraphy and follow-up control

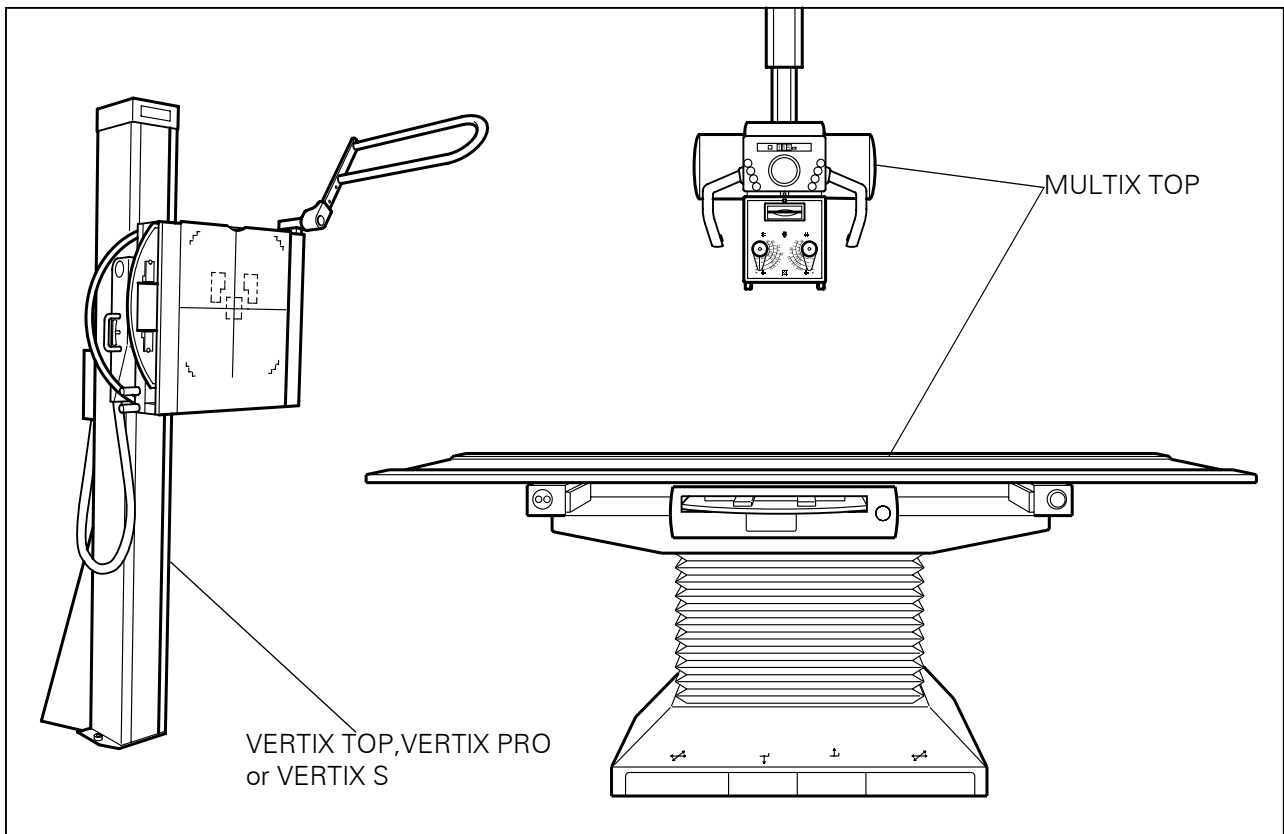
Product Description

Description

VERTIX PRO or VERTIX TOP or VERTIX S

- ☐ Bucky wall unit with catapult Bucky adjustable in height or catapult Bucky adjustable in height and capable of swivelling.

System configuration

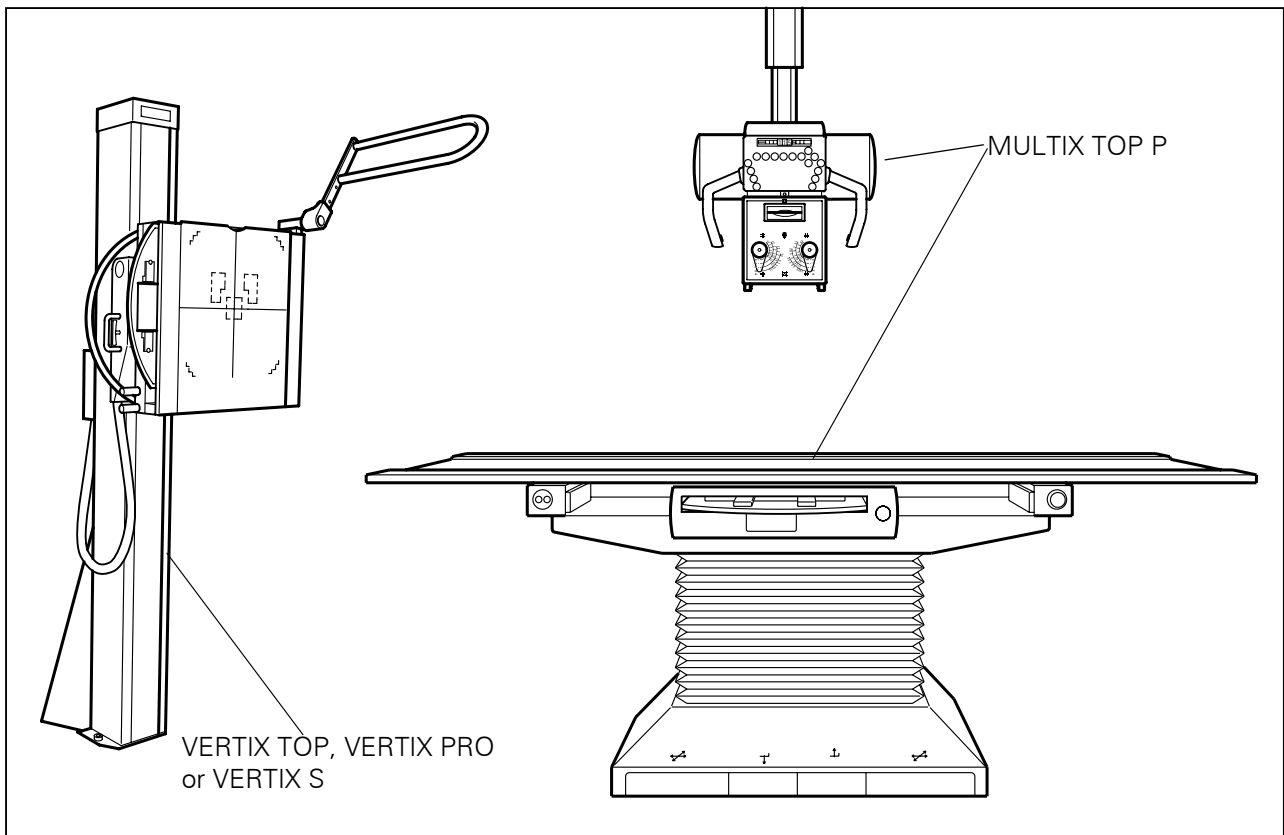


1. "Manual" system version

consists of:

MULTIX TOP patient table and 3D ceiling support with

- Motor driven table height adjustment
- "Manual" format collimation
- "Manual" catapult Bucky
- VERTIX TOP, VERTIX PRO or VERTIX S

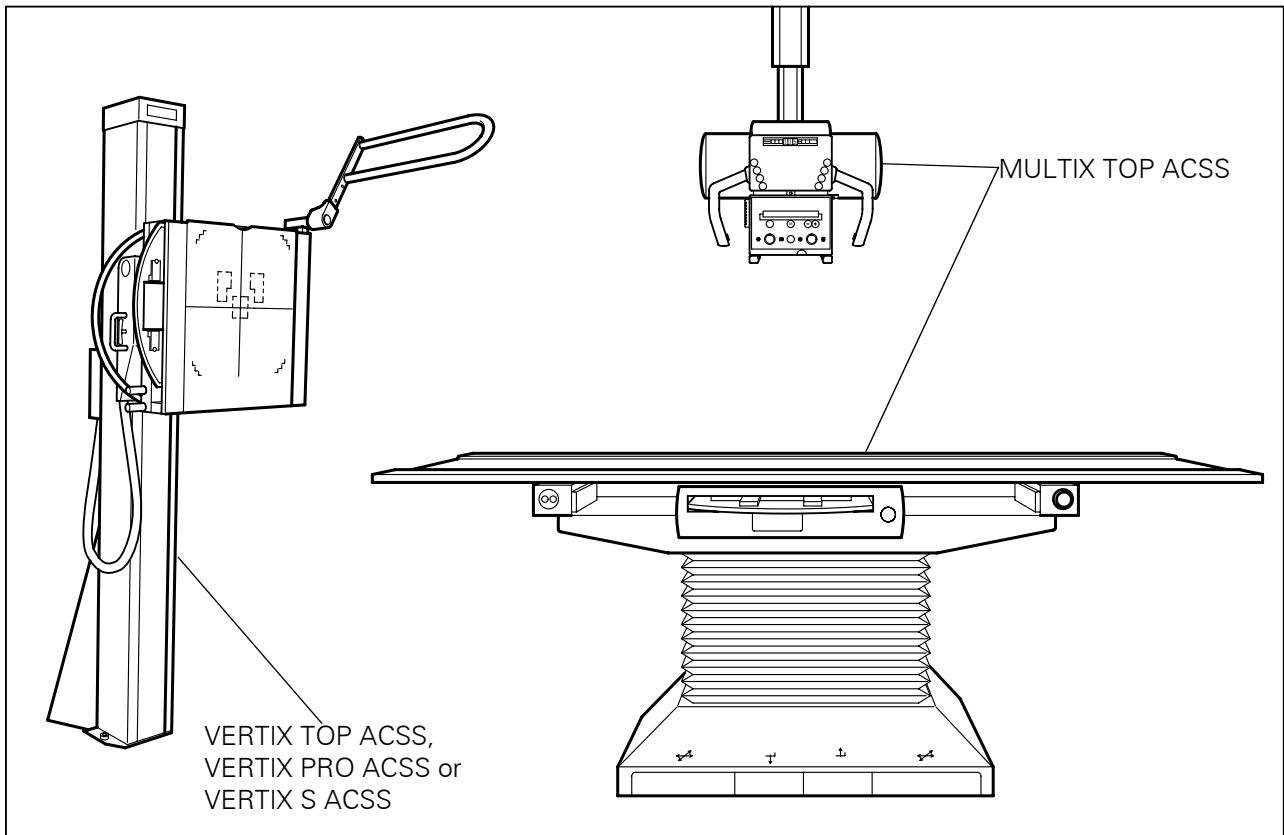


2. "Manual" system version with planigraphy

consists of.

MULTIX TOP patient table and 3D ceiling support with:

- Motor driven table height adjustment
- "Manual" format collimation
- "Manual" catapult Bucky
- Tomographic attachment for planigraphy
- Tomographic height light localizer
- VERTIX TOP, VERTIX PRO or VERTIX S

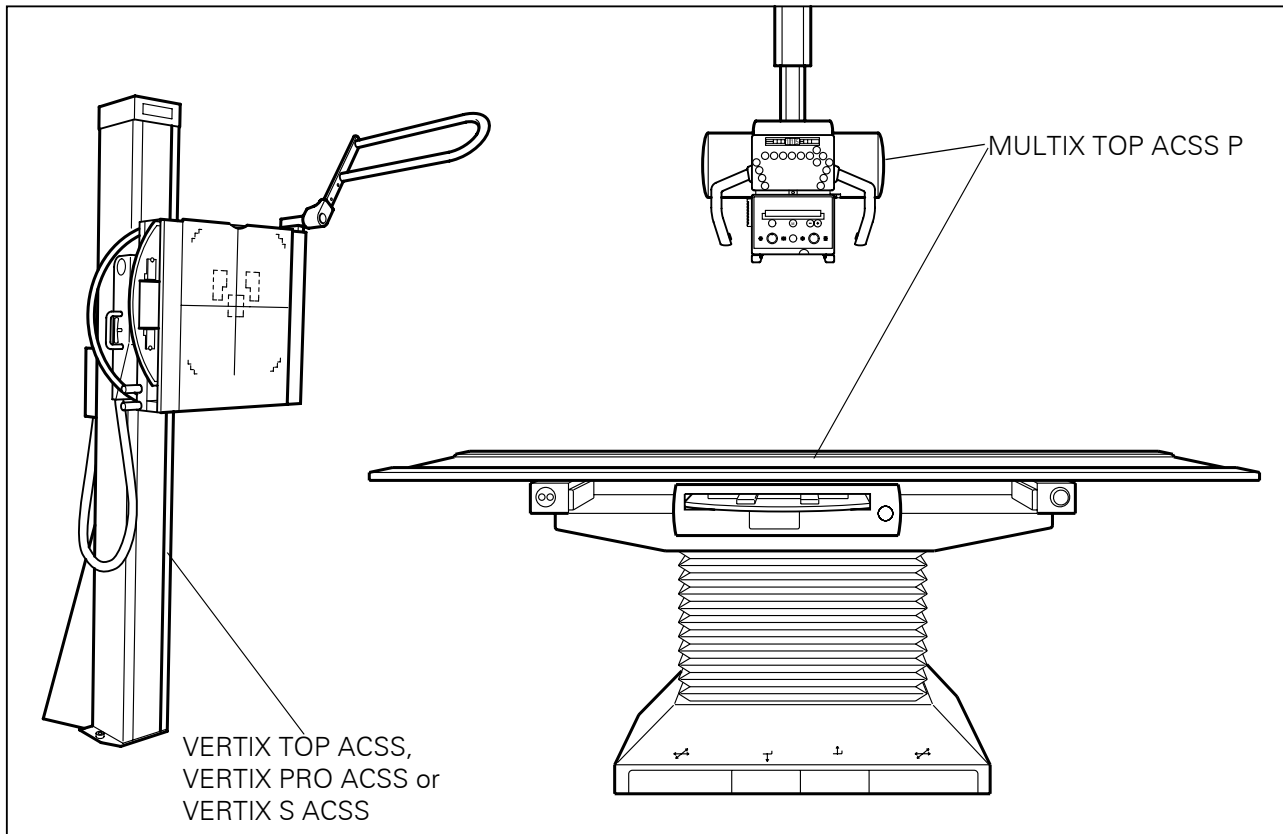


3. "ACSS" system version

consists of:

MULTIX TOP patient table and 3D ceiling support with:

- Motor driven table height adjustment
- ACSS format collimation
- Catapult Bucky with ACSS
- VERTIX TOP ACSS, VERTIX PRO ACSS or VERTIX S ACSS



4. "ACSS" system version with planigraphy

consists of:

MULTIX TOP patient table and 3D ceiling support with:

- Motor driven table height adjustment
- ACSS format collimation
- Catapult Bucky with ACSS
- Tomographic attachment for planigraphy
- Tomographic height light localizer
- VERTIX TOP ACSS, VERTIX PRO ACSS or VERTIX S ACSS

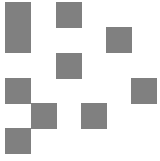
Possibilities of use

Patients up to 190 cm tall can be examined from head to toe without repositioning by shifting the tabletop and moving the 3D ceiling support and the catapult Bucky.

X-ray exposures in the region of the skull, the spinal column (skeleton), the thorax, lungs and abdomen as well as of the extremities can be taken from the lying and sitting patient on a Bucky table with the MULTIX TOP radiographic system.

In addition, free onto-table exposures or bedside exposures as well as emergency station trolley exposures can be taken.

Exposures of the standing or sitting patient can be taken on the VERTIX PRO/TOP or VERTIX S Bucky wall stand.



Product Description

Overview

Standard Configuration

MULTIX TOP

- ☐ MULTIX TOP
 - with manual collimator
- ☐ Generator POLYDOROS IT
- ☐ X-ray tube unit with double-focus X-ray tube
- ☐ Standard accessories

MULTIX TOP P

- ☐ MULTIX TOP P
 - "Planigraphy " version
 - with manual collimator
- ☐ Generator POLYDOROS IT
- ☐ X-ray tube unit with double-focus X-ray tube
- ☐ Standard accessories

MULTIX TOP ACSS

- ☐ MULTIX TOP ACSS
 - with ACSS automatic cassette size sensing collimator
- ☐ Generator POLYDOROS IT
- ☐ X-ray tube unit with double-focus X-ray tube
- ☐ Standard accessories

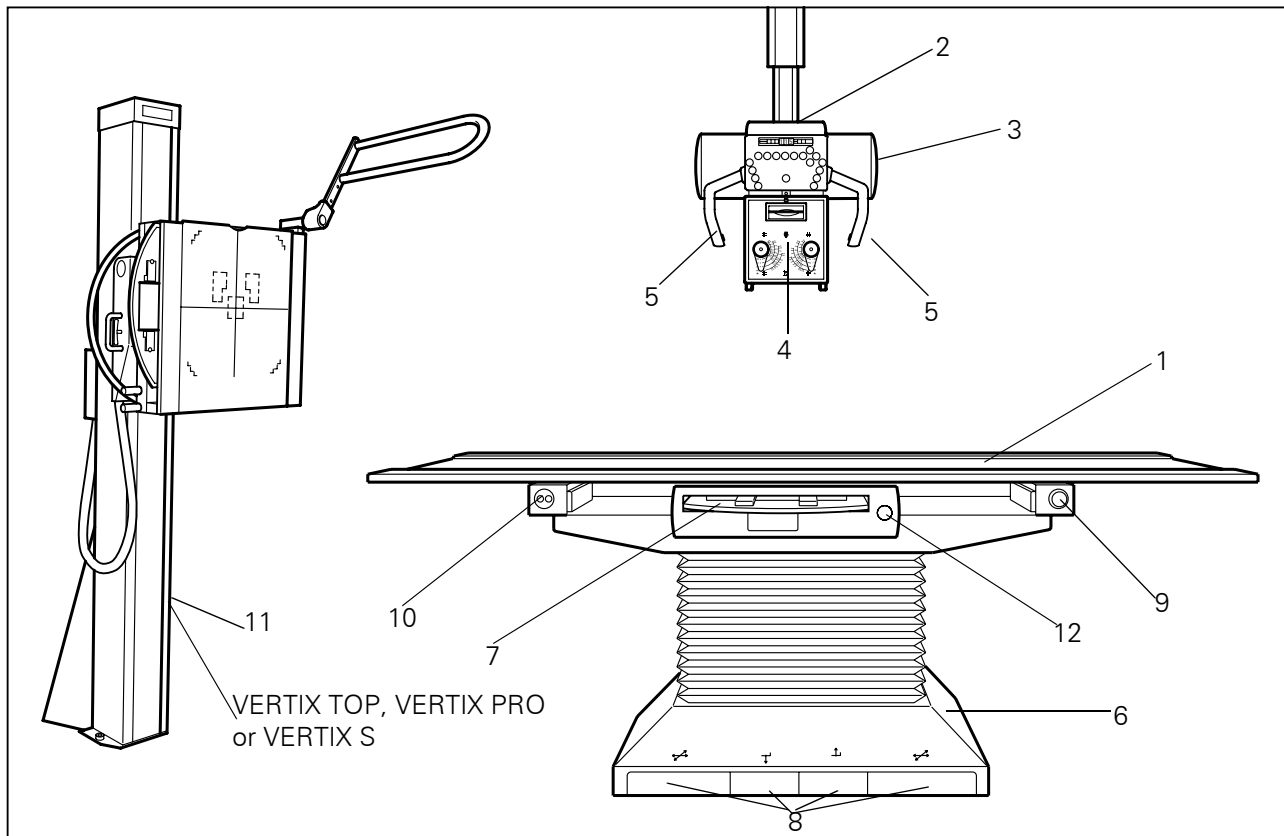
MULTIX TOP ACSS P

- ☐ MULTIX TOP ACSS P
 - "Planigraphy " version
 - with ACSS automatic cassette size sensing collimator
- ☐ Generator POLYDOROS IT
- ☐ X-ray tube unit with double-focus X-ray tube
- ☐ Standard accessories

Extensions

- ☐ VERTIX PRO, VERTIX TOP or VERTIX S Bucky wall stand
- ☐ Generator POLYDOROS LX
- ☐ Generator POLYDOROS SX
- ☐ CAREMAX
- ☐ Collision protection
- ☐ Optional accessories

Overall view

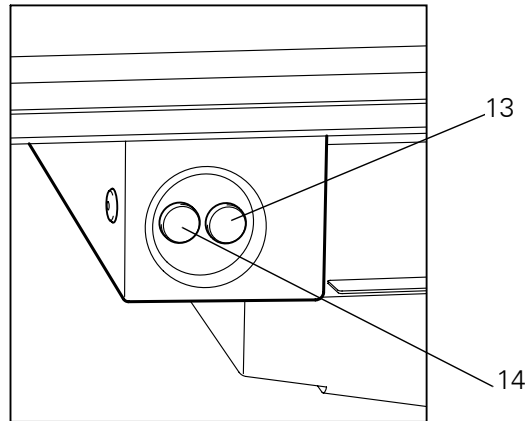


Components of the system

- (1) Bucky table with positioning tabletop and catapult Bucky
- (2) 3D ceiling support with control panel, X-ray tube unit and collimator
- (3) X-ray tube unit
- (4) Collimator with control panel and displays
- (5) Handles for 3D ceiling support/tube unit movement
- (6) Table base
- (7) Catapult Bucky with cassette tray
- (8) Foot switch for tabletop movements and table vertical movement
- (9) EMERGENCY STOP button
- (10) Signal lamps
- (11) VERTIX TOP, VERTIX PRO or VERTIX S Bucky wall unit
- (12) Brake handle

(13) White light: EMERGENCY STOP button activated or security end switch has responded: 3D ceiling support longitudinal movement or tube rotation or catapult Bucky movement.

(14) Green light: power supply ON, system operational



Testing the signal lamps

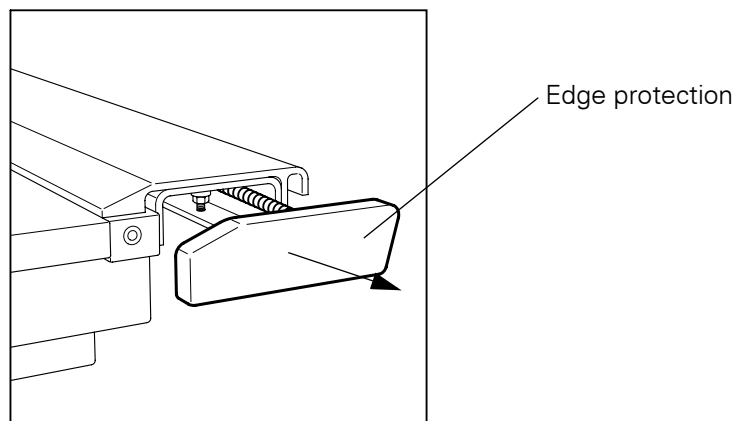
During the initialization phase the **white** lamp EMERGENCY STOP will temporarily light up for testing purposes without the EMERGENCY STOP button or security end switch being activated.

Signal lamps (10) at the left side of the patient table

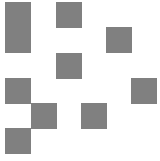
Edge protection on the patient table

- ❑ The edge protection at the four corners of the patient table securely closes off the profile rails.

You can pull the edge protection forwards for attaching or removing accessories such as handles, hand switches or other accessories in order to insert the parts and remove them again.



- ◆ Pull the edge protection forwards against the spring tension to insert or remove accessories.
- ◆ Subsequently insert again.



Product Description

Safety Information

General safety

Medical electrical equipment needs special precautions regarding Electromagnetic Compliance (EMC). EMC information provided in the accompanying documents must be followed where appropriate.

Portable and mobile RF communications equipment can affect medical electrical equipment.

Collision and crushing zones

Warning

There is a risk of collision / crushing for patients, operating staff, unit and objects
- caused by unit movements which could be released by **inadmissible**
actuation of operating elements by patients.

— possible collision and crushing zones for patient and operating staff, especially with respect to extremities, in case of **operation errors**:

- ☐ between patient table and patient tabletop
- ☐ between patient table and catapult Bucky
- ☐ between patient tabletop and handle of the Bucky
- ☐ between patient tabletop and base frame in tabletop movement
- ☐ between tube unit and object/floor when moving the tube unit down
- ☐ between tabletop and 3D ceiling support when raising or lowering the tabletop
- ☐ between bottom edge of the tabletop and object in table downwards movement
- ☐ between persons, MULTIX unit, VERTIX Bucky wall stand, wall or objects and 3D ceiling support during longitudinal or transverse movement or tube unit rotation about the vertical or horizontal axis.
- ☐ when moving the 3D ceiling support outside the specified parking range
- ☐ between persons and the 3D ceiling support during motor-operated movement of the patient table
- ☐ risk of collision with the handle of the catapult Bucky for the patient when getting on or off the table.

- ❑ between handles of the 3D ceiling support and the collimator when rotating the collimator
- ❑ at collimator accessory rails



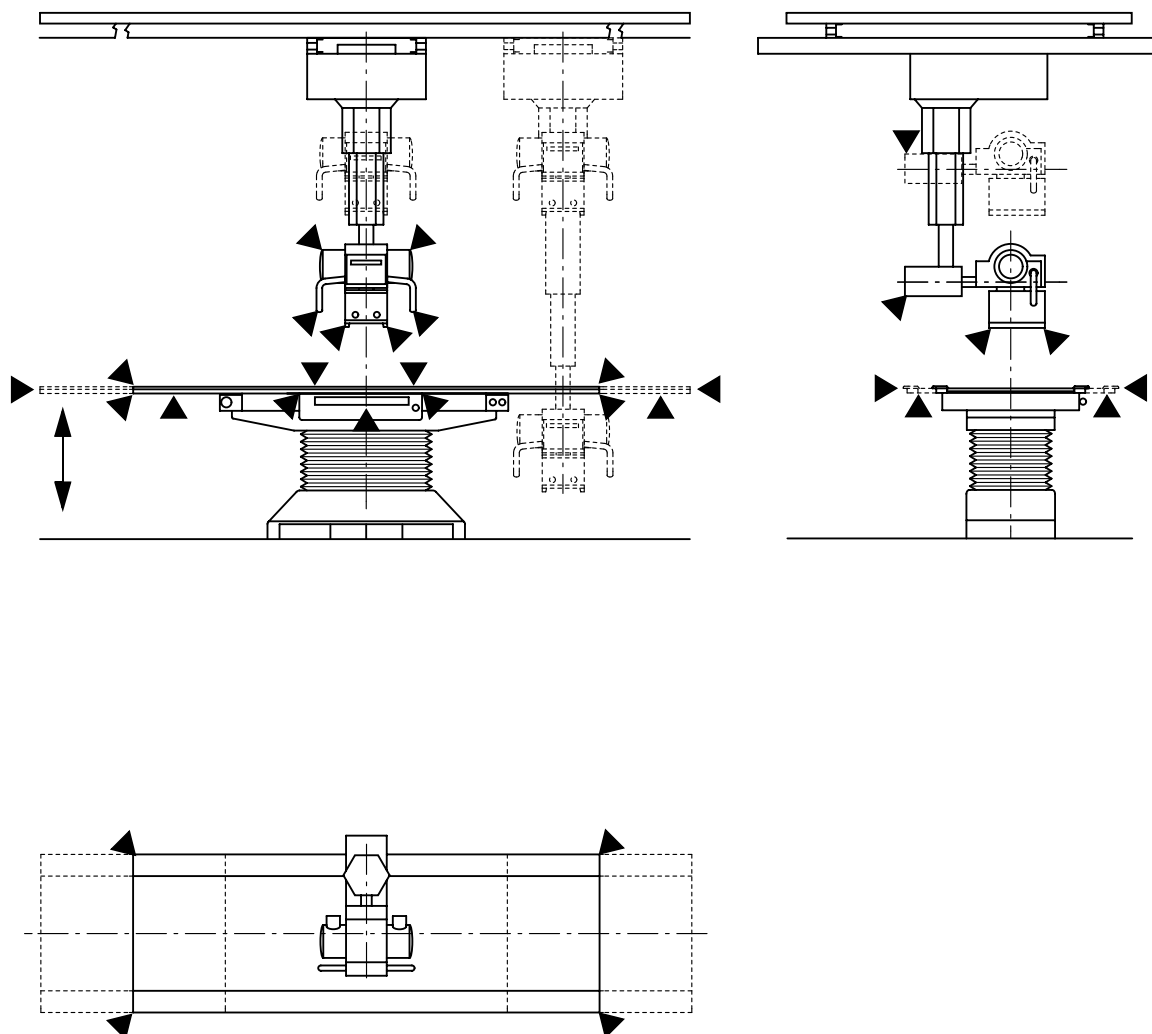
Please take special care when the patient is getting onto or leaving the patient table that no unintentional activation of the operating elements occurs.

If the patient slips, for instance, it is possible that the table brake may be activated unintentionally, or the active brakes are overridden and thus a system movement occurs.

Warning

The patient and operating personnel may grip **only** the **handles** which are intended for this purpose. If this is not possible, please pay attention to possible risks of injury by crushing between moving parts and their guide openings.

The operator is obliged to ensure that system movements are released only if it is assured that neither the patient nor third parties can be endangered by these movements.



▲ Risk of injury by crushing for operating staff and patients

Switching on the system on the generator

Warning

Make sure **before** switching on that all covers and panels are attached to your system.

In this way you avoid foreign parts penetrating into the system.

- ◆ You switch your system on and later off again on the **generator**.

|

switch on

○

switch off

- Refer to the **Generator** register for further information

Please perform the functional and safety check.

- Refer to the **Functional and safety check** chapter in the **Current information / Safety** register

"Manual" system without ACSS automatic format collimation

- ◆ Select the MULTIX TOP or VERTIX PRO/TOP/S or free exposure workstation at the generator console.
 - The tube unit symbol in the control panel lights up

Only if ACSS automatic format collimation is installed

- ◆ Select the MULTIX TOP or VERTIX PRO/TOP/S or free exposure workstation at the generator console.
 - The "Selected" display¹ lights up on the collimator to confirm that the correct ACSS receptor (VERTIX tray or table) has been selected.
 - The "X-ray tube unit selected" symbol lights up on the control panel to confirm that the correct X-ray tube unit has been selected.

¹ Not active when "Free exposure" is selected

Warning

Pay attention to the **correct** selection of the tube unit for the intended workstation as well as the alignment of the tube unit with the cassette in the cassette tray, to avoid unintended radiation at the wrong place.

Red EMERGENCY STOP button

If an emergency situation arises implying danger for the patient, for the operator or for the system



- ◆ then press the red EMERGENCY STOP button on your system
 - This stops **all** motor driven system movements.

Restarting

- ◆ Take the patient off from the tabletop.
- ◆ Eliminate the dangerous situation.
- ◆ If the dangerous situation cannot be eliminated, then please call the Siemens Uptime Service.
- ◆ To unlock the red EMERGENCY STOP button, simply turn it CCW.

⇒ You will find further information in the
Current information / Safety register

Red EMERGENCY SHUTDOWN button

The EMERGENCY SHUTDOWN button should be installed by the customer on the wall of the examination room at a well accessible place. It switches off the power for the entire system and disconnects it from the voltage.

Press this button if the dangerous situation cannot be eliminated by pressing the EMERGENCY STOP button.

In this case you must **not** start up the system again.
Please notify the Siemens Uptime Service without delay.

You will find further information in the **Current information / Safety** register of this Operator Manual.

Blockage and fault indicators

If fault messages light up at the generator console, then

- ◆ Reset the error on the generator pressing the precontact.
- ◆ Switch the system off and back on again or

If the indicator does not go out because of this, please notify the Siemens Uptime Service.

Only for the MULTIX TOP P, TOP ACSS and TOP ACSS P system versions:

If numbers **other** than **010 (EMERGENCY STOP)** light up in the function display of the control panel with the EMERGENCY STOP button pressed and if the system does not work as usual then:

- ◆ Switch the system off and back on.

If the indicator does not go out because of this, please notify the Siemens Uptime Service.

- You will find further information in the **Generator** register

Daily Checks

Before examinations

- ◆ Clean the patient tabletop.
- ◆ Check all operating elements, system movements, displays and signal lamps.
- ◆ In particular, test the function of the system EMERGENCY SHUTDOWN button and the red EMERGENCY STOP button.
- ◆ Attach the required devices for patient restraint and immobilization correctly to the unit (e.g. hand grips).
- ◆ Use the radiation protection accessories required for examining close to the patient.
- ◆ Perform a functional check of the movement of the patient tabletop.

⇒ For further information refer to the
Current information/Safety register.

During examinations

Warning

The radiation ON indicator may light up **briefly** only during the duration of the X-ray exposure.

- ◆ Check the patient immobilization, e.g. use of handgrips.
- ◆ System movements may be released only if there is no danger for the patient or third parties and if there are no objects which may obstruct system movements.

Monthly Checks

- ◆ Perform a functional check of the system EMERGENCY SHUTDOWN button and of the red EMERGENCY STOP button.
 - You will find additional information on this in the **Current Information/Safety** register
- ◆ Perform a functional check of the ACSS automatic format collimation.



*The three-digit digital display source image distance "SID" may be checked for conformity with the tape measure in the collimator.
(Working with an ACSS system in the ACSS mode or with a manual collimator, measure with the tape measure up to the table top and add 5 cm for the table top - cassette distance.)*

We recommend to perform this check on a regular - e.g. monthly - basis.

*If the SID values are incorrect, overexposures might occur.
Please notify our Uptime Service if this is the case.*

SID checks which are performed on a regular basis will prevent unintentional overexposures.

Legally required checks

- ◆ Legally required checks, such as the constancy test in accordance with the X-Ray Code §16 RöV in the Federal Republic of Germany shall be performed at the stated time intervals.

Safety-relevant parts subject to wear

For safety reasons, steel cables (e.g. in the VERTIX Bucky wall stand) must be inspected and, if required, changed at a time interval of three years at the most.

Maintenance intervals

To maintain the safety and function of the system, maintenance must be performed regularly, at least every 12 months.

(e.g.: periodic relubrication of the lifting spindle of the table lifting column)

- ◆ If you have not concluded a maintenance contract, please notify Siemens Uptime Service.

Behavior in the case of functional disturbances

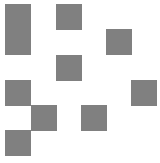
- ◆ Please switch the system off and proceed according to the instructions in the **Current information / Safety** register.

Cleaning the system

- ◆ **Shut down** the system properly before cleaning.
- ❑ No moisture may penetrate into the system.
- ❑ Plastic surfaces may be cleaned only with a damp cloth with soap solution since other agents (e.g. with high alcohol contents) can cause the surface to become dull and liable to crack.
 - You will find further information on this in the **Current information / Safety** register.

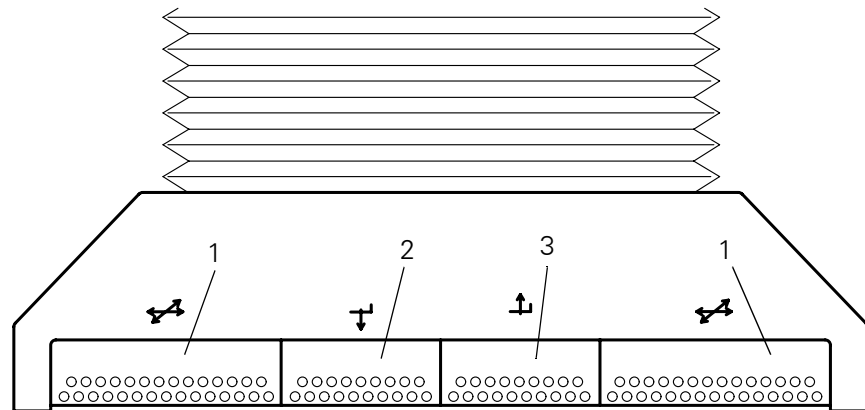
Disinfection of the system

- ◆ **Shut down** the system before cleaning.
- ❑ Only those disinfection methods which satisfy the applicable regulations and directives as well as explosion protection may be used.
- ❑ No corrosive, dissolving or gaseous disinfectants may be used.
- ❑ Spray disinfection is therefore not recommended since disinfectants can penetrate into the system in this case.
 - You will find further information on this in the **Current information / Safety** register



Operating elements for table movements

Foot kick switch in the table base



(1) Actuate the left or right (1) foot kick switch in the tablebase to release the table brakes. This enables the tabletop to be moved in the longitudinal and transverse direction.

The function of the switch can be programmed by the Siemens Uptime Service:

- ☐ Foot kick switch in "Push-button mode" ("Deadman switch")
The table brakes are released only as long as the switch is actuated.
- ☐ Foot kick switch in "Switch mode" ("Sensor switch")
 - If the foot kick switch is actuated only one time, the table brakes will be released. The second time it is actuated, the brakes will be locked again. If the table brakes are not actuated this second time within a certain time (time-out time), then the brakes will be locked automatically.

The following possibilities can be configured:

- Switching on the full field **and** LASER line light localizer upon the first switch actuation
- Automatically switching¹ the full field **and** LASER line light localizer off after a preset time, which can be programmed in steps between 20 and 90 seconds. The automatic switch-off can be overridden by pressing the button (5) on the collimator (see page 35).
- The duration of the time-out period² (1 to 254 s)
- Switching on an acoustic alarm² the first time the foot switch is actuated.

(2) Operation of the inside foot kick switch / left: for lowering the table

(3) Operation of the inside foot kick switch / right: for raising the table

If desired, the foot kick switches (2) and (3) can be programmed as follows:

- ☐ selectable automatic table height intermediate stop
(height between 60 cm and 88 cm continuously adjustable)

Upon reaching the programmed standard table working height, the table is stopped.

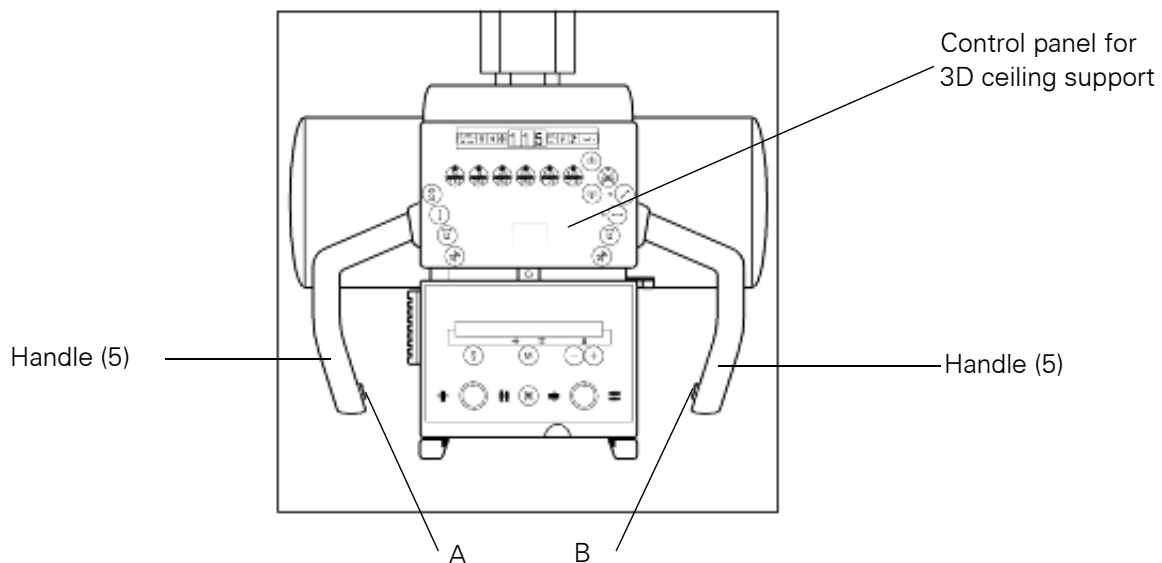
The table will start moving in the desired direction again if the foot kick switches (2) or (3) are actuated again..

The table brakes cannot be released while the exposure release switch (precontact) is being actuated..

¹ Programmable both for push-button mode and for switch mode

² Programmable for switch mode only

Operating Elements for 3D Ceiling Support



Momentary-contact switches

Example: MULTIX TOP ACSS-P (the different control panels and collimators are described in the following)

The 3D ceiling support and X-ray tube unit are positioned by the user directly and manually.

- ◆ Use the handles (5) to rotate the X-ray tube unit about the vertical telescopic axis ($+154^\circ$ to -182°) or about its own horizontal axis ($\pm 120^\circ$), thus ensuring that the X-ray tube is moved in the desired direction.
 - Click stops in the vertical axis: every 90°
 - Click stops in the horizontal axis: at 0° and $\pm 90^\circ$
- ◆ The longitudinal (354 cm), transverse (222 cm) and vertical (150 cm) travels of the 3D ceiling support with X-ray tube unit are also performed manually using the handles (5) to ensure that the X-ray tube unit is moved in the desired direction.
- ◆ Like "brake release" push button (4) on the control panel, momentary-contact switches "A" or "B" on the left or right handle release the vertical movement of the X-ray tube unit on the telescopic column.
 - The momentary-contact switches are programmable, i.e. can be set only for "**SID brake**" actuation or for "**floating**" travels as well.

The "**floating**" travel can in addition be programmed by the SIEMENS Uptime Service (except for the configuration TOP manual without planigraphy):

- During slow movement over click stops, either to stop or not to stop, as well as
- "with" or "without" alarm.

Warning

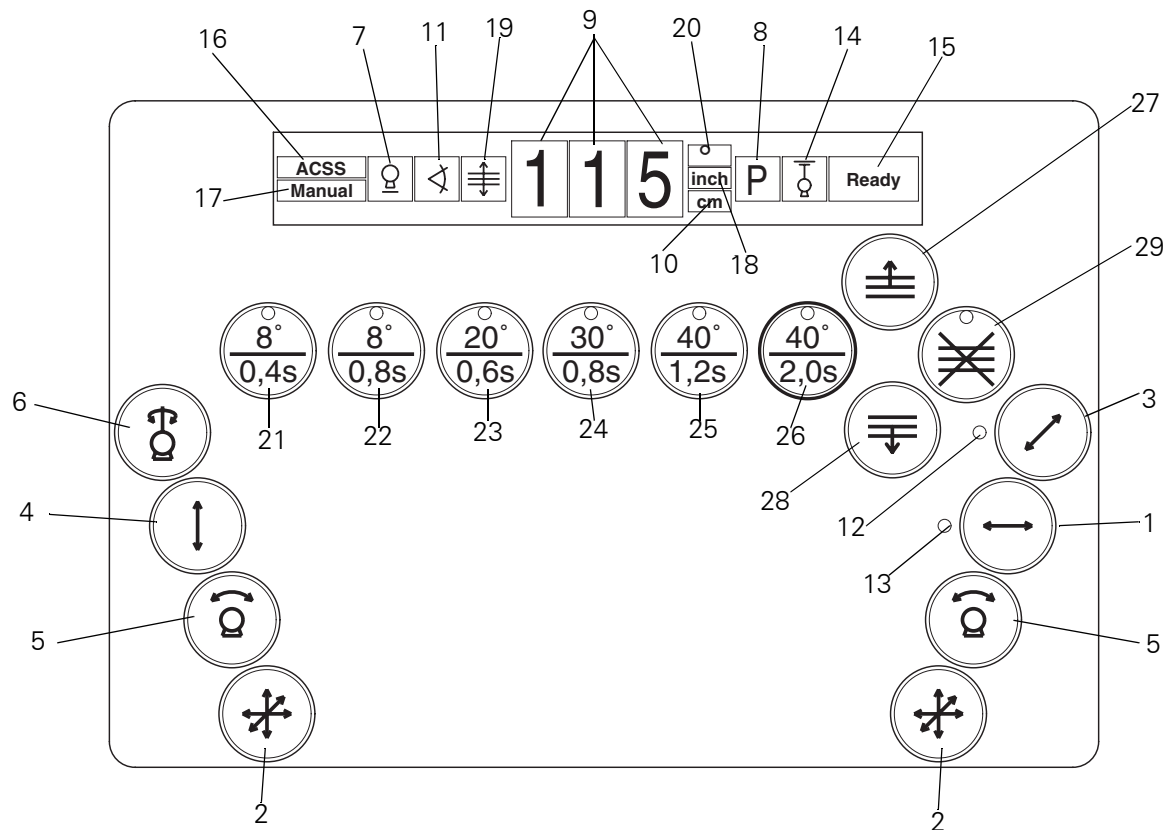
Do **not** exert downward force on the 3D ceiling support if its vertical movement is blocked! If necessary, it may, however, be moved upward if a continuous clicking noise can be heard.

Please contact your Siemens Service representative immediately. This is important, since the main cables may be defective or a spring might be broken. Such a defect would then mechanically block the downward travel.

Warning

In order to prevent collisions, all longitudinal, transverse or vertical travels and rotations of the 3D ceiling support must be executed **concurrent** to manual guidance of the 3D ceiling support by the operator. Especially important in this regard is the residual braking distance of the 3D ceiling support following actuation of the brake switch. This point must be taken into consideration in order to prevent collisions with persons or objects.

Operating elements and function displays on the control panel



Operating elements

Operating elements for 3D support and tube unit

Moving the 3D support longitudinally only

(1) Actuate the push button for releasing the longitudinal brake.

Moving the 3D support longitudinally and the tube unit up or down

(2) To release the 3-axis brakes press the two identically functioning push buttons on the control panel or, if programmed accordingly, one of the two identically functioning momentary-contact switches on the handles.

Moving 3D support transversely only

(3) Press push button for releasing the transverse brake.

Operating elements for moving the X-ray tube unit

Moving the X-ray tube unit up or down only

- (4) Press push button (on the control panel) or, if programmed accordingly, one of the momentary-contact switches on the handles: release vertical brake.

Rotating the X-ray tube unit about the horizontal axis

- (5) Press one of the two push buttons (same function) for releasing the brake to rotate the X-ray tube unit about the horizontal axis.

Rotating the X-ray tube unit about the vertical axis

- (6) Press push button for releasing the brake for vertical tube unit rotation.

Function displays

- (7) Signal lamp to indicate vertical or horizontal SID on the numeric display (9)

- (8) The luminous "P" symbol is **not** used!

- (9) Multifunctional, numeric display (three digit) for:

- SID display (in **cm** or **inches**) or
 - Angle display in **degrees** for rotation of the tube unit about the horizontal axis or
 - Tomographic display in **cm** (only with MULTIX TOP P und TOP ACSS P)
- or:

– **Error messages:**

If the dimension display "cm" or "inches" or "°" (degree) has gone out, the three-digit numeric display is used for displaying internal error messages. These error messages are relevant for our Uptime Service.
For example, the error message "**010**" in the display field means:
"EMERGENCY STOP actuated"

- (10) cm = Unit of measurement display for SID

- (11) Signal lamp for angle display of the tube unit rotation about the horizontal axis

- The signal lamp lights up when the tube unit is rotated (oblique exposure).
- The signal lamp goes out when the tube unit is in the vertical beam path (within a tolerance of $\pm 3^\circ$).
- If the 3D ceiling support is located in a preassigned lock-in position to the Vertex, the signal lamp of the angle display also goes out.

- (12) LED lights up "green" if the 3D ceiling support is located in a lock-in position on the transverse track.

- (13) LED lights up "green" if the 3D ceiling support is located in a lock-in position on the longitudinal track.
 - Once the tomographic conditions have been set, the LED for the 3D ceiling support longitudinal center position switches back off (only with MULTIX TOP P and TOP ACSS P).
- (14) Luminous symbol: "Tube unit on 3D ceiling support selected"
- (15) Ready = Unit ready for exposure
- (16) ACSS = Auto format (**A**uto **C**assette **S**ize **S**ensing) mode
- (17) Manual = Manual mode, free settings, **manual** collimation
- (18) inch = Unit of measurement display for SID
- (19) Signal lamp for display of tomographic plane (only with MULTIX TOP P and TOP ACSS P)
- (20) "°" (degree) = Unit of measurement for angle display



The three-digit digital display source image distance "SID" (9) may be checked for conformity with the tape measure in the collimator.

We recommend to perform this check on a regular - e.g. monthly - basis.

If the SID values are incorrect, overexposures might occur.

Please notify our Uptime Service if this is the case.

SID checks which are performed on a regular base will prevent unintentional overexposures.

For ACSS systems with or without planigraphy the following applies:

The system can be programmed for "metric" SID and "metric" cassette formats by service. If inch-format cassettes are inserted **no** ACSS mode, and hence, **no** automatic format limitation will be activated..

This also applies to the reverse case, i.e. if the system is programmed for the "inch" format and cassettes with a "metric" format are inserted.

In this case, mixed operation using both "metric" and "inch" cassette formats is **not** permissible!

Is the system programmed for **mixed operation**, mixed operation using both "metric" and "inch" cassette formats is permissible.

Operating elements for planigraphy (only with TOP P and TOP ACSS P)

Selecting the tomographic exposure (tomographic angle and time)

Six functional buttons with green LED:

The LEDs lighten constantly after the corresponding tomographic combination is selected and if all local mode conditions for planigraphy are fulfilled. During the adjustment phase the corresponding LED flashes.

(21) 8° / 0,4 s

(22) 8° / 0,8 s

(23) 20° / 0,6 s

(24) 30° / 0,8 s

(25) 40° / 1,2 s

(26) 40° / 2,0 s

Positioning the tomographic plane

Two functional push buttons:

(27) Upward positioning of tomographic plane

(28) Downward positioning of tomographic plane

Disconnecting planigraphy

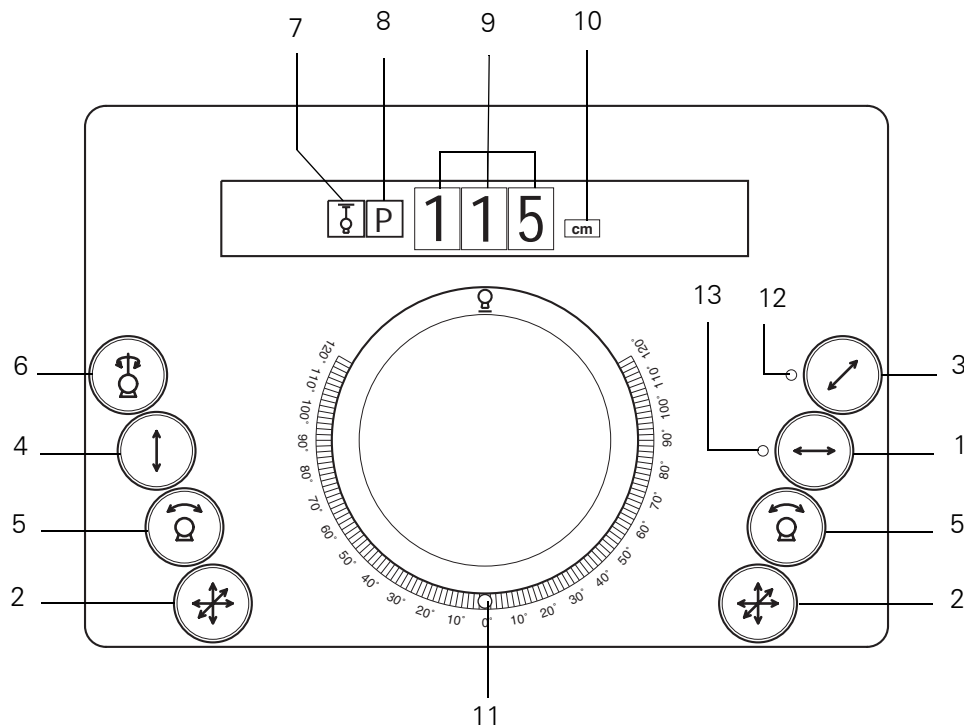
(29) Symbol: functional push button with green LED

– The LED lightens if the planigraphy is disconnected.



If an operating error occurs during planigraphy, planigraphy is automatically disconnected.

*Operating elements and function displays on
the control panel with analog angle display
(only with MULTIX TOP)*



Operating elements

Operating elements for 3D support and tube unit

Moving the 3D support longitudinally only

(1) Actuate the push button for releasing the longitudinal brake.

Moving the 3D support longitudinally and the tube unit up or down

(2) To release the 3-axis brakes press the two identically functioning push buttons on the control panel or, if programmed accordingly, one of the two identically functioning momentary-contact switches on the handles.

Moving 3D support transversely only

(3) Press push button for releasing the transverse brake.

Operating elements for moving the X-ray tube unit

Moving the X-ray tube unit up or down only

- (4) Press push button (on the control panel) or, if programmed accordingly, one of the momentary-contact switches on the handles: release vertical brake.

Rotating the X-ray tube unit about the horizontal axis

- (5) Press one of the two push buttons (same function) for releasing the brake to rotate the X-ray tube unit about the horizontal axis.

Rotating the X-ray tube unit about the vertical axis

- (6) Press push button for releasing the brake for vertical tube unit rotation.

Function displays

- (7) Luminous symbol "tube unit selected"
- (8) The luminous symbol "P" is **not** used!
- (9) Three-digit digital display "SID":
–"SID" display (in **cm** or **inches**)
- (10) Unit measurement display for SID in cm or inch (set by service))
- (11) Angle display for turning the tube unit about the horizontal axis
- (12) LED lights up "green" if the 3D ceiling support is located in a lock-in position on the transverse track.
- (13) LED lights up "green" if the 3D ceiling support is located in a lock-in position on the longitudinal track.



The three-digit digital display source image distance "SID" (9) may be checked for conformity with the tape measure in the collimator.

(Working with an ACSS system in the ACSS mode or with a manual collimator, measure with the tape measure up to the table top and add 5 cm for the table top - cassette distance.)

We recommend to perform this check on a regular - e.g. monthly - basis.

If the SID values are incorrect, overexposures might occur.

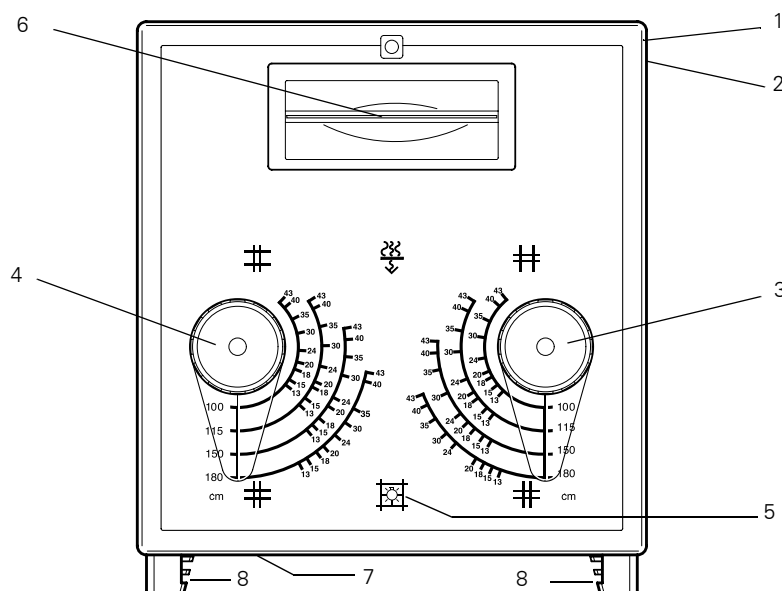
Please notify our Uptime Service if this is the case.

SID checks which are performed on a regular base will prevent unintentional overexposures.

Manual collimator

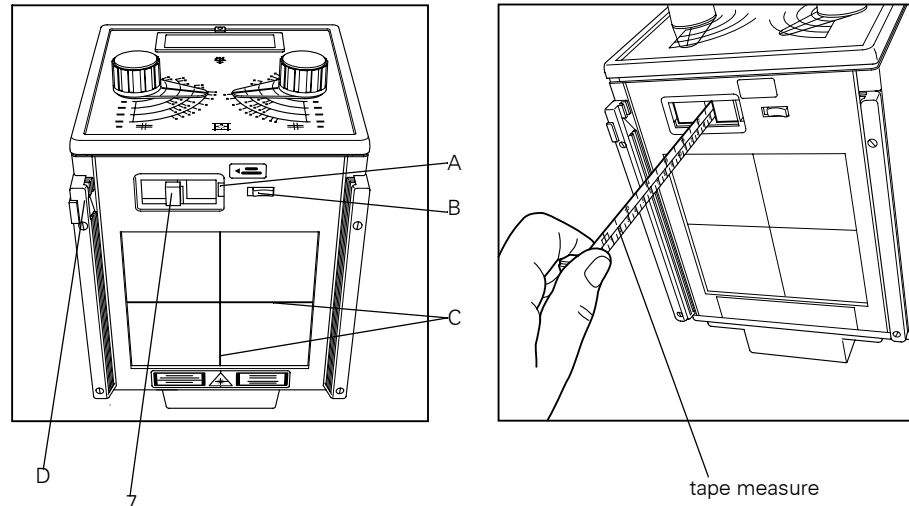
Operating elements and displays

Front



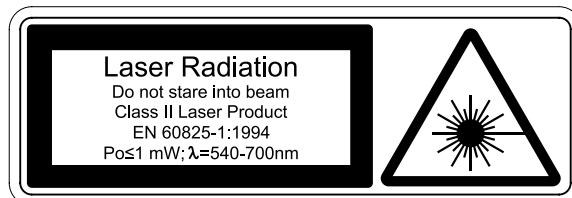
- (1) Locking lever for rotating the collimator about the central-beam axis by $\pm 50^\circ$ with a stop position at 0° (see view of *the back of the collimator*)
- (2) Marking for 0° position of collimator rotation
(0° position if the lever is flush with the edge of the collimator rear panel)
- (3) Knob for setting the height format collimation (turn knob to the right to open the collimator, turn it to the left to close the collimator)
- (4) Knob for setting the width format collimation (turn knob to the left to open the collimator, turn it to the right to close the collimator)
- (5) For switching on the radiation field illumination and the **LASER** line light localizer.
The devices are switched off automatically by a time switch. The operating time can be configured (default: 45 seconds); 30 or 60 seconds can be set by the service engineer. The operating time of the lamp is designed for a patient load of 150 patients per day. We recommend a total operating time of the light localizer lamp of 4 minutes within an interval of 10 minutes. If the lamp is switched on more frequently, the surface of the collimator housing may become hot, thus reducing the operating life of the light localizer lamp.
- (6) Prefilter disk with four stop positions:
0; 0.1 mm Cu; 0.2 mm Cu; 0.3 mm Cu
- (7) Tape measure tab for SID measurement – pull the tape measure out downwards. The measurement is read off the bottom edge of the collimator.
- (8) Two accessory rails (left and right) are available for each of the two tray levels.

Bottom side



A) **LASER line light localizer (exit window)**

- The LASER line light localizer projects the axis mark required for longitudinal centering. This mark is aligned with the centering mark on the handle of the Bucky.
- ◆ The LASER line light localizer and full-field light localizer are both switched on with the pushbutton (5) on the control panel. They are switched off automatically by an internal time switch.



Warning

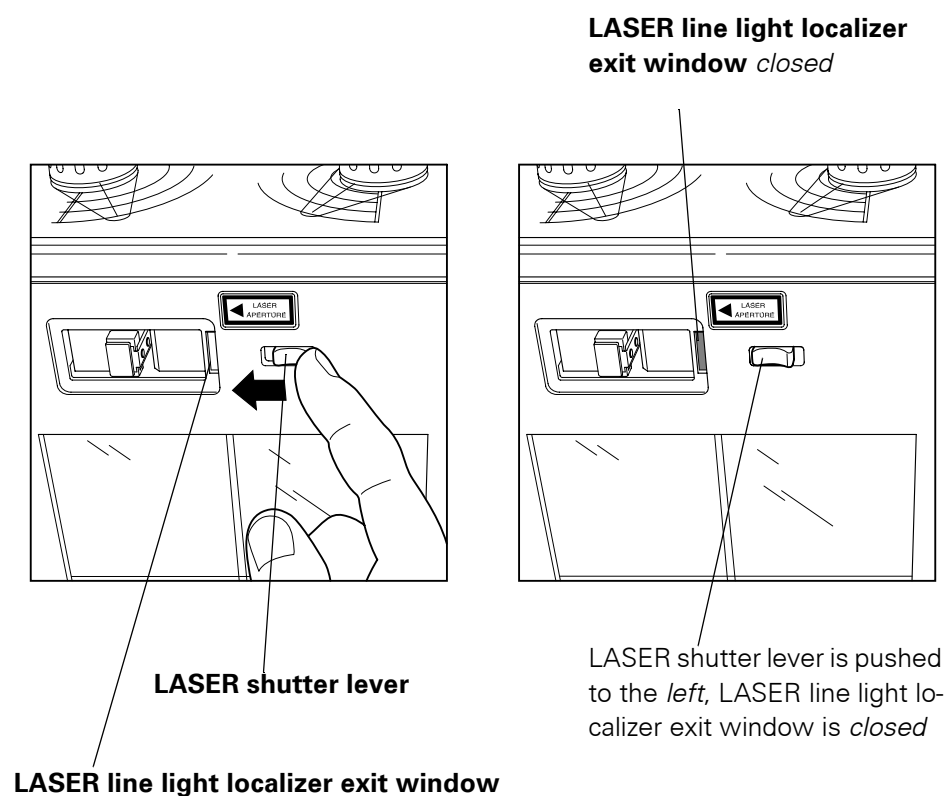
LASER radiation

Power ≤ 1mW (EN 60825-1) / wave length 540 - 700 nm
Class 2 LASER product

When the LASER line light localizer is switched on, make sure that nobody stares directly into the LASER beam to avoid eye injuries or visual disturbances. Caution – Applications or settings of the knobs or procedures other than those specified in this document can lead to dangerous radiation exposure.

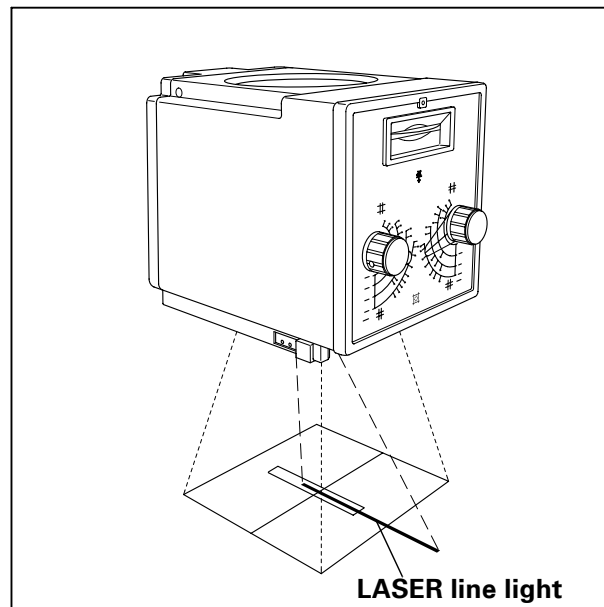
(B) **LASER shutter lever cover**

- ◆ To *cover* the exit window of the LASER line light localizer push the LASER shutter lever to the *left*.
- ◆ To *open* the exit window of the LASER line light localizer push the LASER shutter lever to the *right*.



(C) **Crosshairs**

- ❑ The crosshairs are used to indicate the longitudinal and transverse axis of the irradiated field on the cassette or directly on the patient.
- ◆ The full-field light localizer for projecting the crosshairs is switched on with the pushbutton (5) on the control panel. It is automatically switched off by an internal time switch.
- ❑ The **LASER** line light localizer and full-field light localizer cannot be controlled individually.



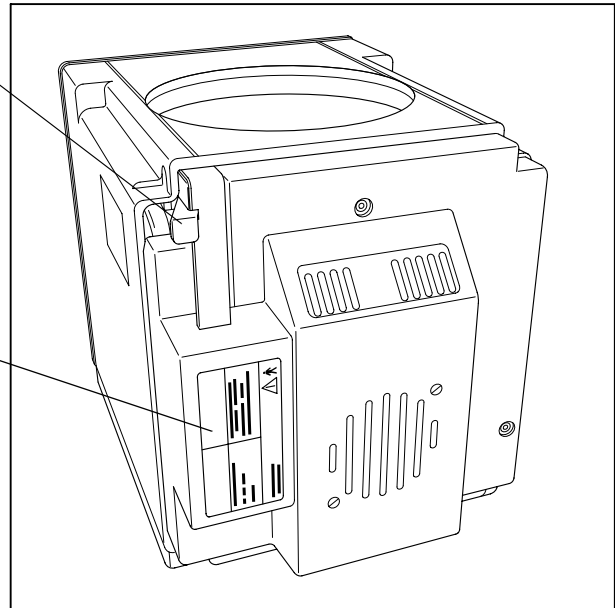
(D) **Safety lever**

- ❑ The safety lever is used to lock the compensating filters, templates, etc. which are inserted into the accessory rails of the collimator, thus preventing them from dropping out.
- ⇒ See **Accessories** register (collimator accessories).
- ◆ To remove accessories, press the safety lever to the left until you can remove the compensating filters, templates, etc. from the collimator rails.
- ⇒ See **Accessories** register (collimator accessories).

Backside

(1) Locking lever for
 $\pm 50^\circ$ rotation of the
collimator

Identification labels



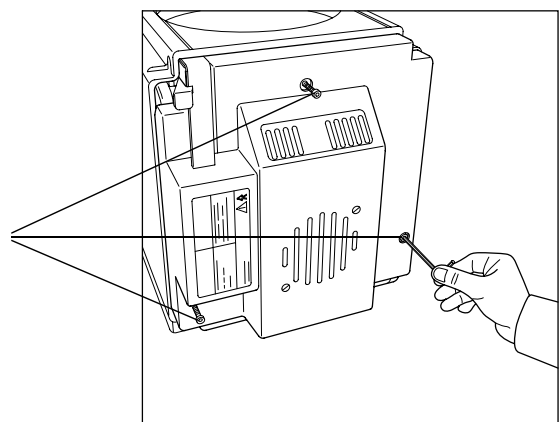
Changing the lamp on the collimator

Warning

Switch off the system before replacing the lamp.

- ❑ The lamp may also be replaced by the user, if necessary.
(Use only original Siemens spare part with part number 8375545)

Mounting screws for
lamp cover
(captive screws are used)

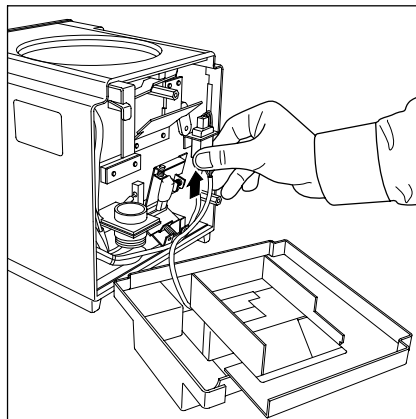


Back of collimator

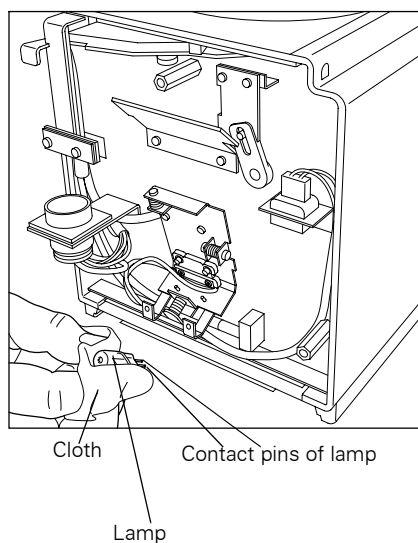
Product Description

Operating Elements

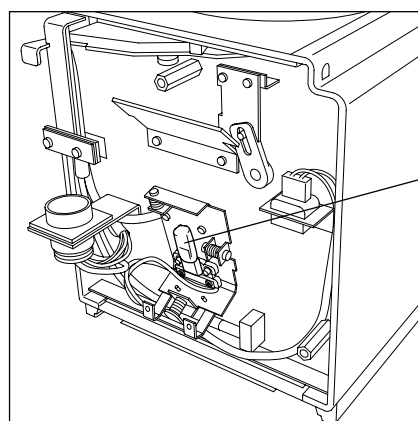
- ◆ Switch the system off.
- ◆ Turn the collimator until the screws are sufficiently accessible.
- ◆ Loosen the three screws on the back using a 2.5 mm Allen key.
- ◆ Remove the rear panel and let it hang down.
- ◆ Replace the defective plug-in lamp. Do **not** touch the lamp with bare hands. Danger of burns!
- Do **not** touch the new lamp with bare hands (otherwise the lamp may be damaged).
- ◆ Insert the new lamp. Make sure that the lamp is properly seated in the plug-in socket.
- ◆ Remount the rear panel and retighten the three screws.
- ◆ Switch on the system.
- ◆ Perform a constancy test to check for compliance with the permissible limit values for the light field and radiation field.
If the permissible tolerance values are not complied with, contact Siemens Customer Service.



- ◆ Rear panel removed



- ◆ Do *not* insert the lamp with bare hands (use a cloth)



- ◆ Insert the lamp into the socket until both contact pins rest against the base.

Warning

If the halogen lamp of the light localizer is lit for a long time (repeated switching on), the housing may become hot. Avoid any contact with the rear of the lamp cover to rule out the risk of burns.

Warning

Use only original replacement lamps for the light localizer.
Halogen lamps which are not suitable for switching on and off at short intervals
may burst, thus leading to injuries caused by splintering glass.
Part No.: 8375545

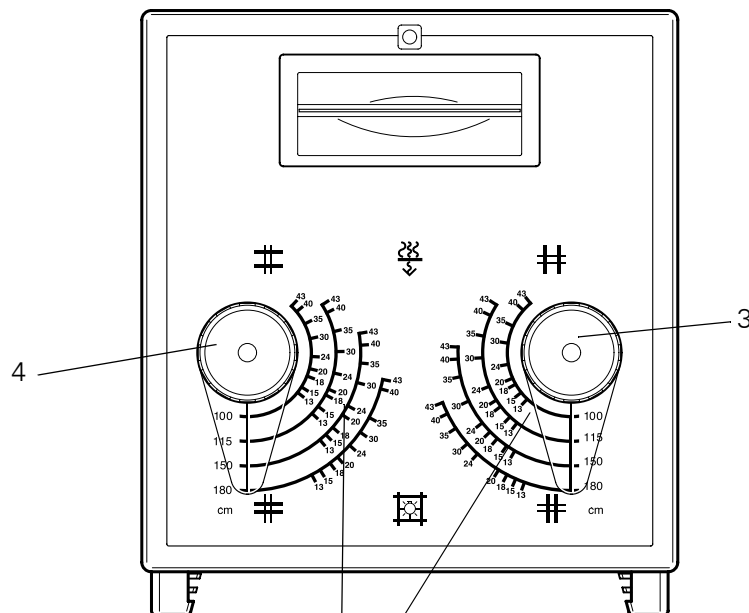
Operation

Setting the format collimation

- ❑ Use the knobs (3) and (4) for setting the height (3) and width (4) collimation.
- ❑ Both knobs are provided with a line mark

SID metric Four SID ranges are indicated on the front

- SID of 100cm
- SID of 115cm
- SID of 150cm
- SID of 180cm



Scales for cassette formats
with selected SID value

Formats For each SID value, scales with the cassette sizes are printed on the device.

- ◆ To collimate to a cassette size, set the knobs to a position in which they correspond to the markings and numerical values of the selected SID and the desired cassette size.

Product Description

Operating Elements

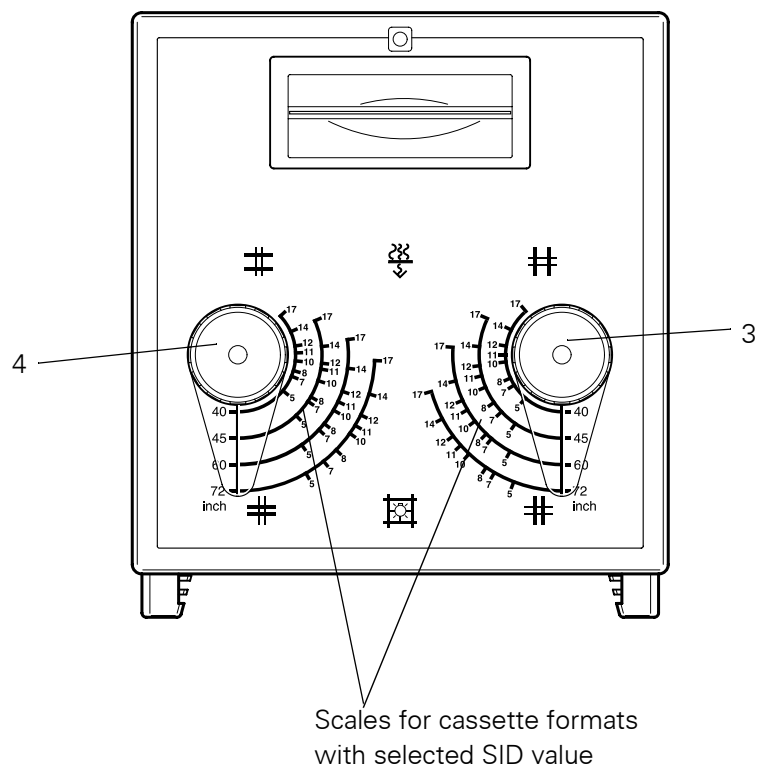
or for *non-metric* designs:

SID inch Four SID ranges are indicated on the front

- SID 40 inches
- SID 45 inches
- SID 60 inches
- SID 72 inches

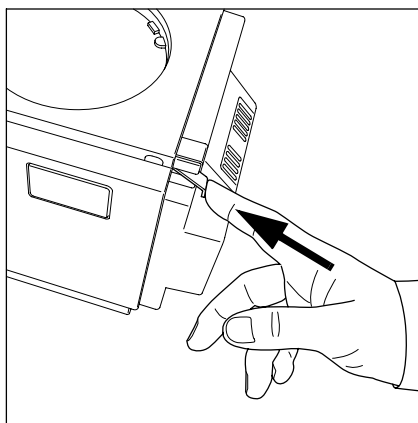
Formats For each SID value, scales with the cassette sizes are printed on the device.

- ◆ To collimate to a cassette size, set the knobs to a position in which they correspond to the markings and numerical values of the selected SID and the desired cassette size.

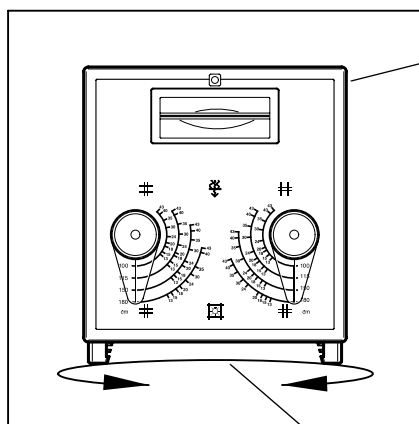


Rotating the collimator about the central beam axis (up to $\pm 50^\circ$)

- ◆ Move the locking lever on the back of the collimator in the direction of the arrow to rotate the collimator about the central beam axis. This unlocks the 0° stop position.



- ◆ Move the locking lever on the back of the collimator in the direction of the arrow.



Locking lever on the back of the collimator

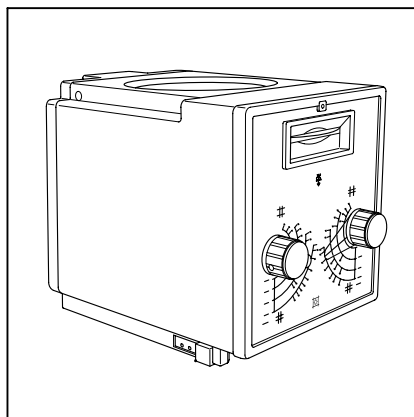
Rotate the collimator by up to $\pm 50^\circ$ to the left or right end stop

Collimator in 0° stop position

Product Description

Operating Elements

Collimator turned to the right



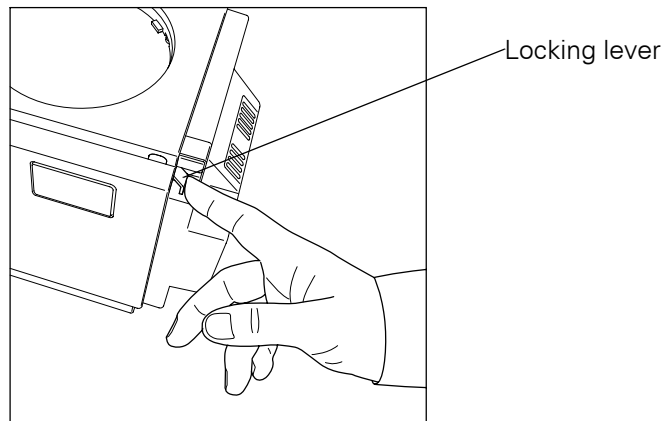
- ◆ With the locking lever actuated, grasp the accessory rails and turn the collimator in the intended direction until you reach the desired angle.

Warning

When turning the collimator, make sure that your hands do not get caught or crushed between control handles, support arm, X-ray tube unit, collimator, etc.

Rotating the collimator to the 0° stop position

- ◆ Grasp the collimator accessory rails and turn the collimator to the centered 0° stop position.
- ❑ The locking lever engages in the 0° position.



- ❑ If the collimator is in its locked position, it is in the 0° position.

Warning

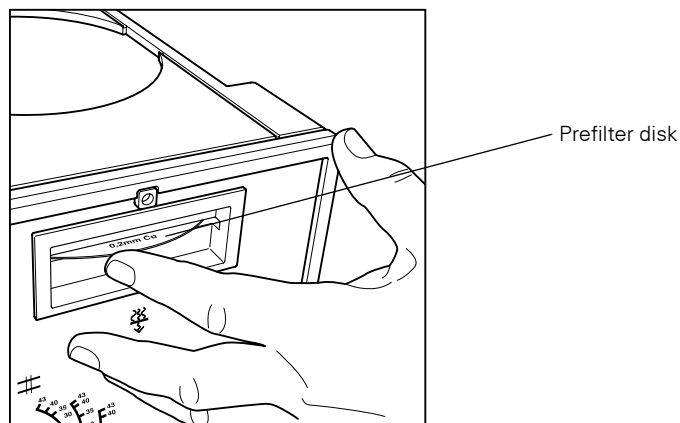
When turning the collimator, make sure that your hands do not get caught or crushed between control handles, support arm, X-ray tube unit, collimator, etc.

Setting the prefiltration

Warning

Before taking **any** exposures, make sure that **the prefilter disk is set to the correct position!** A wrong filter setting may result in an **increased** radiation dose for the patient.

- ☐ Swiveling prefilter disk: can be accessed on the front of the collimator.
- ☐ It can be set to four locking positions.
- ☐ For this reason, a total of four combinations are available for prefiltering.



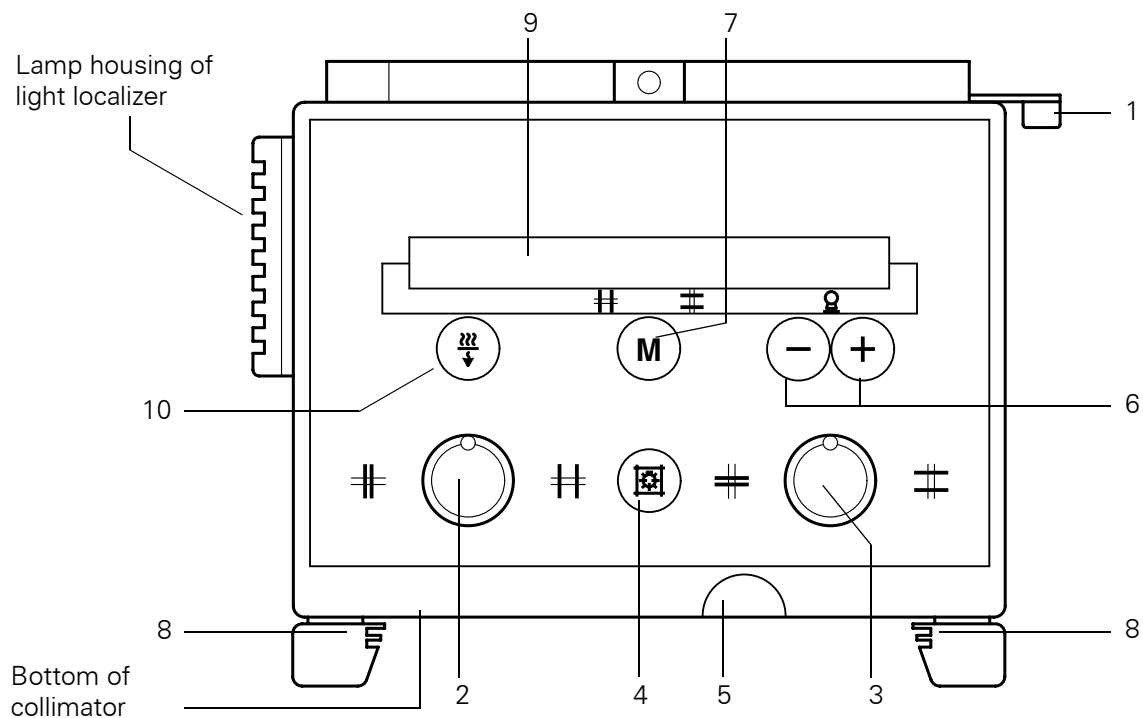
Four positions of the prefilter disk

- ☐ 0.0 mm (**no**) prefiltration
- ☐ 0.1 mm Cu prefiltration
- ☐ 0.2 mm Cu prefiltration
- ☐ 0.3 mm Cu prefiltration

ACSS Collimator

Operating elements and displays

Front

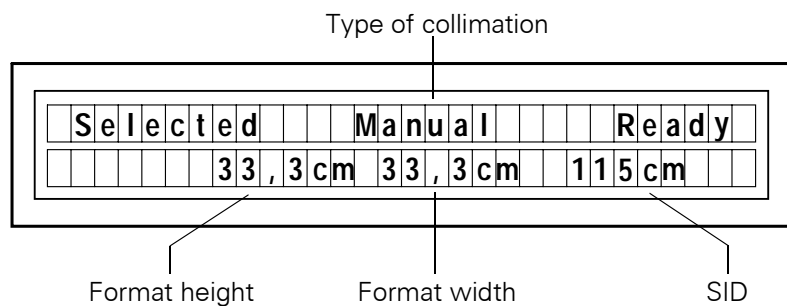
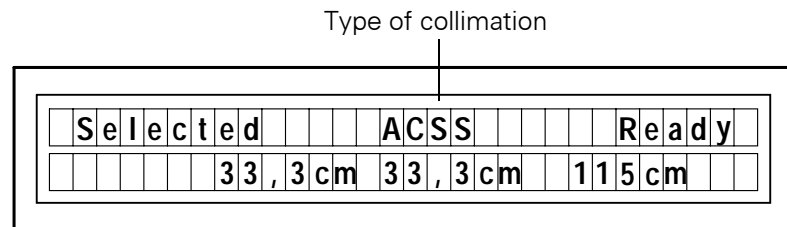


- (1) Locking lever for $\pm 45^\circ$ rotation of collimator about the vertical axis
- (2) Adjusting knob for format height collimation
(turn CCW to close and CW to open collimator)
- (3) Adjusting knob for format width collimation
(turn CCW to close and CW to open collimator)
- (4) X-ray field illumination and LASER line light localizer on/off.
Switch off can also be automatically by a time switch.
On-time can be configured (20, 30, 60 or 90 s).
- (5) Tape measure grip for SID measurement
– Take reading at bottom edge of collimator.
- (6) Plus/minus buttons for manual SID input according to tape measure
(in "Manual" mode only)
- (7) MEMORY button for resetting last exposure format used
(effective only if the last exposure format is smaller than the actual cassette format)
- (8) Two accessory rails

(9) Function display

(10) Button for selecting collimator-internal **Cu prefiltration**

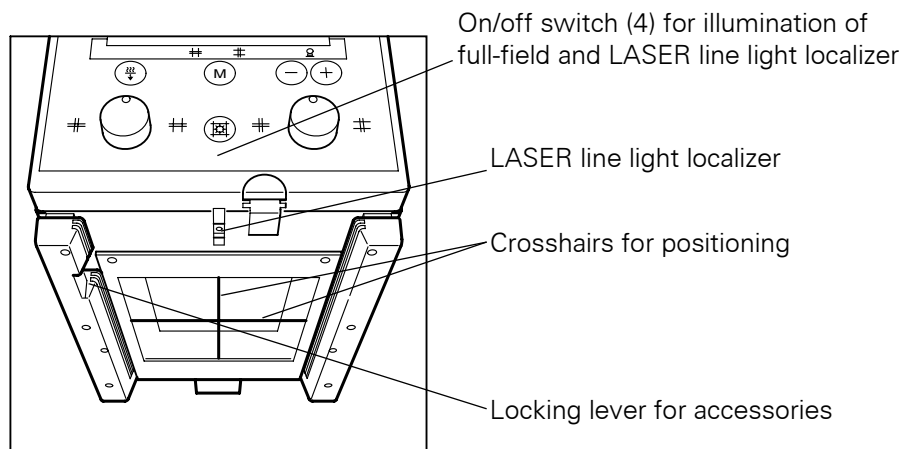
Display on the ACSS Collimator



☐ **Selected** = Bucky workstation on MULTIX table or VERTIX wall stand selected

If "**Free exposure**" or "**Bed**" is selected on the generator control console, the "Selected" display will **switch off**.

- ☐ **Ready** = Exposure readiness
- ☐ **ACSS** = Auto cassette size sensing mode or:
- ☐ **Manual** = Manual mode, **manual** collimation
- ☐ Format height in cm **or** in inches
- ☐ Format width in cm **or** in inches
- ☐ SID in cm **or** in inches

Bottom**LASER line light localizer**

The LASER line light localizer projects the axis mark for longitudinal centering, which is aligned with the centering mark on the cassette tray handles.

Warning**Laser radiation**

Power <1mW (EN 60825-1) / wave length 650 nm \pm 10 nm /
LASER product class II

When switching on the LASER line light localizer, ensure that nobody looks directly into the LASER to prevent eye injuries and visual impairment.
Caution - Applications or settings of the knobs or procedures other than those specified in this document can lead to dangerous radiation exposure.

⇒ Refer to the chapter "**Centering** the X-ray tube unit in relation to the Bucky wall unit" in register 4.

If necessary, the LASER radiation exit of the LASER line light localizer can be closed with the **sliding cover**.



- ◆ To switch the LASER line light localizer on, actuate the push button (4) on the collimator control panel.
- ◆ To switch the LASER line light localizer off, actuate the push button (4) again.
 - The LASER line light localizer can also be switched off automatically by an internal time switch.

Crosshairs



- ❑ The crosshairs project the longitudinal and transverse axis of the radiation field onto the cassette or directly onto the patient.
- ◆ The full field light localizer for projecting the crosshairs is switched on with the push button (4) on the control panel.
- ◆ To switch it off press the push button (4) again.
 - The full field light localizer can also be switched off automatically by an internal time switch.
- ❑ The LASER line light localizer and the full field light localizer **cannot** be switched independently of one another.

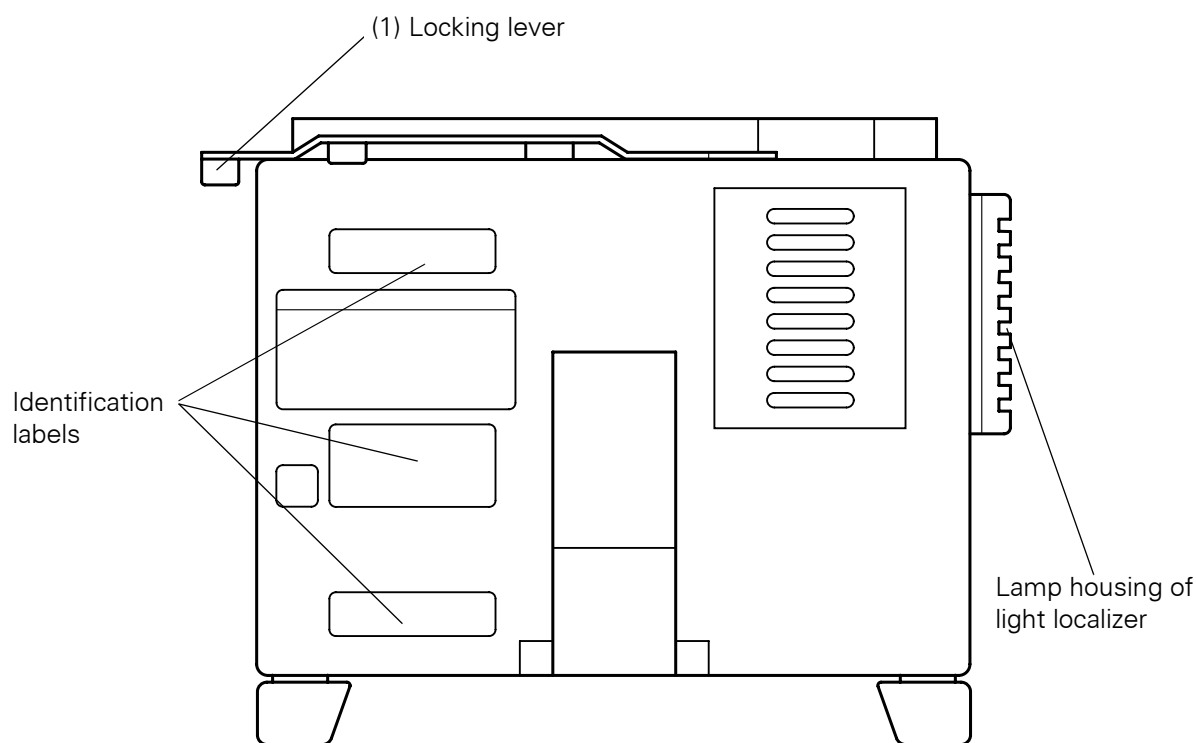
Locking lever

The locking lever is located on the left guide rail at the bottom of the collimator.

The locking lever locks the compensating filters, templates etc. inserted in the accessory rails of the collimator, thus securing them against falling out.

- ◆ To remove the accessories, push the locking lever down until the compensating filter, template etc. can be removed from the collimator.
- ⇒ Refer to the **Accessories** register (accessories for the collimator)

Backside



(1) Locking lever for rotating the collimator about the central beam axis
(up to max. $\pm 45^\circ$)

Warning

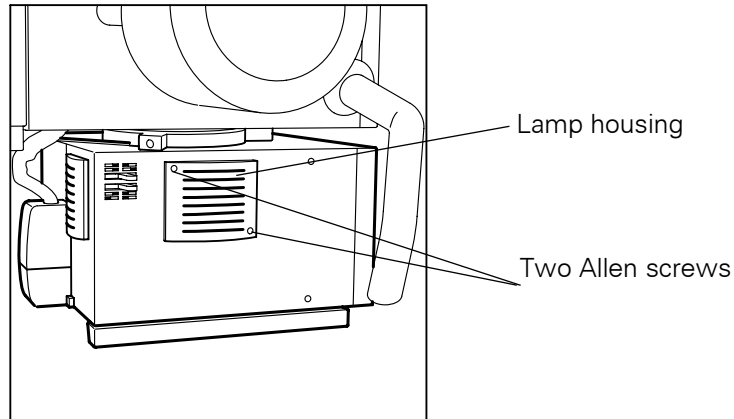
The housing can become hot if the halogen lamp of the light localizer burns for a long period.
Please avoid contact with the lamp housing to avoid burns.

Warning

Always use original replacement lamps for the light localizer.
Other halogen lamps may not be suitable for switching on and off at short intervals (they may break and cause injuries due to broken glass).

Changing the collimator lamp

If required, the lamp of the collimator can also be changed by the user.

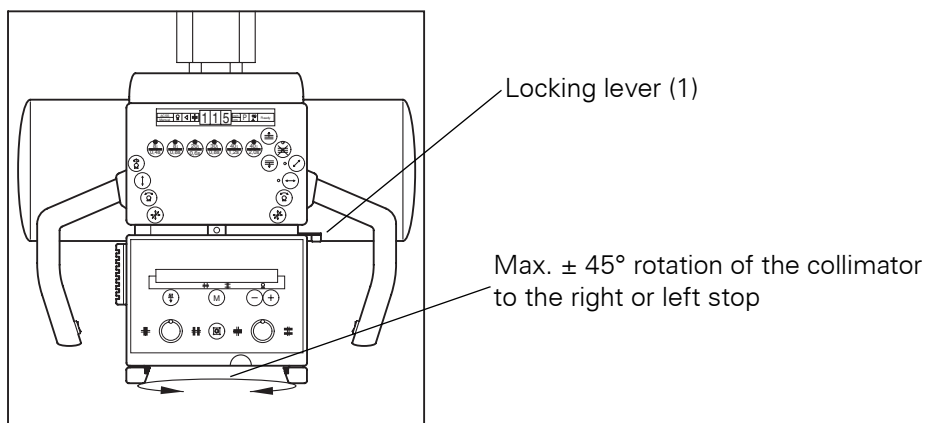


Left side of the collimator

- ◆ Switch the system off at the generator control console.
- ◆ Remove both Allen screws on the lamp housing.
- ◆ Remove the lamp housing.
- ◆ Remove the two Allen contact screws on the lamp.
- ◆ Replace the defective lamp.
 - **Do not** touch it with bare fingers, since the lamp can be very hot!
- ◆ Open the protective cover of the new lamp at the head end.
- ◆ Insert the new lamp with protective cover into the lamp socket until both pins rest against the base.
 - **Do not** touch the new lamp with bare fingers!
- ◆ Align the lamp horizontally.
- ◆ Tighten both Allen contact screws on the lamp.
- ◆ Remove the protective cover.
- ◆ Refit the lamp housing and tighten both screws on the lamp housing again.

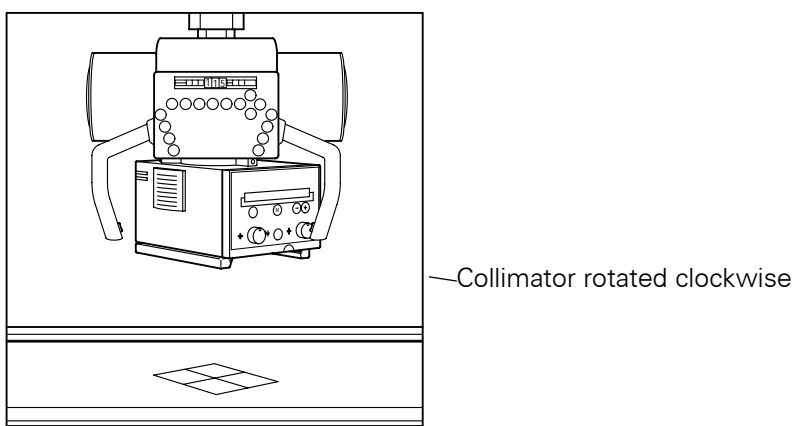
Operation

*Rotating the collimator about the central beam axis
(max. up to $\pm 45^\circ$)*



Collimator in the 0° stop position

- ◆ Move the locking lever (1) on the collimator towards the front plate to the operator.
 - the 0° stop is released



- ◆ Grip the collimator and turn it by the desired angle in the desired direction.

Rotating the collimator into the 0° stop position

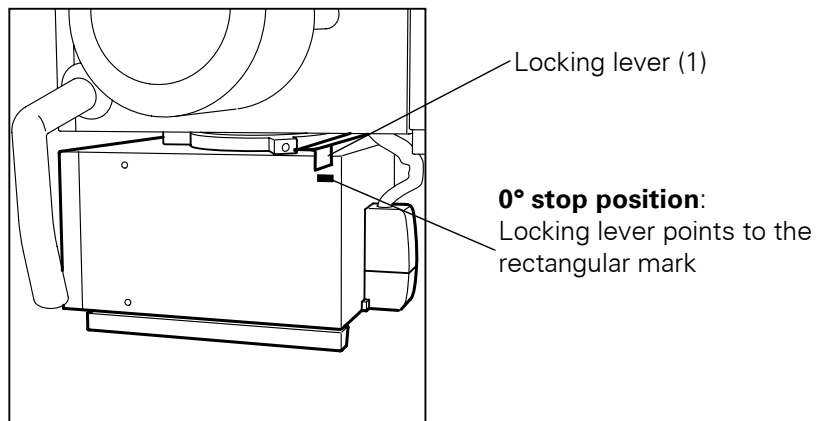
- ◆ Grip the collimator and turn it to the centered 0° stop position.

Warning

When gripping the collimator to rotate it, make sure there is no danger of crushing your hands between the handles and the collimator.

Indication of the collimator 0° stop position

The 0° stop position of the collimator is indicated with the locking lever (1) on the right side of the collimator.



*Setting the prefiltration***Internal motor-driven Cu prefilter**

There are **four** possibilities of selecting *internal* Cu prefilters:

- ☐ **0,0 mm (no)** prefiltration
- ☐ **0,1 mm Cu** prefiltration
- ☐ **0,2 mm Cu** prefiltration
- ☐ **0,3 mm Cu** prefiltration

Selecting Cu prefilters

You can change the setting of Cu prefilters by selecting the button (2) on the collimator:



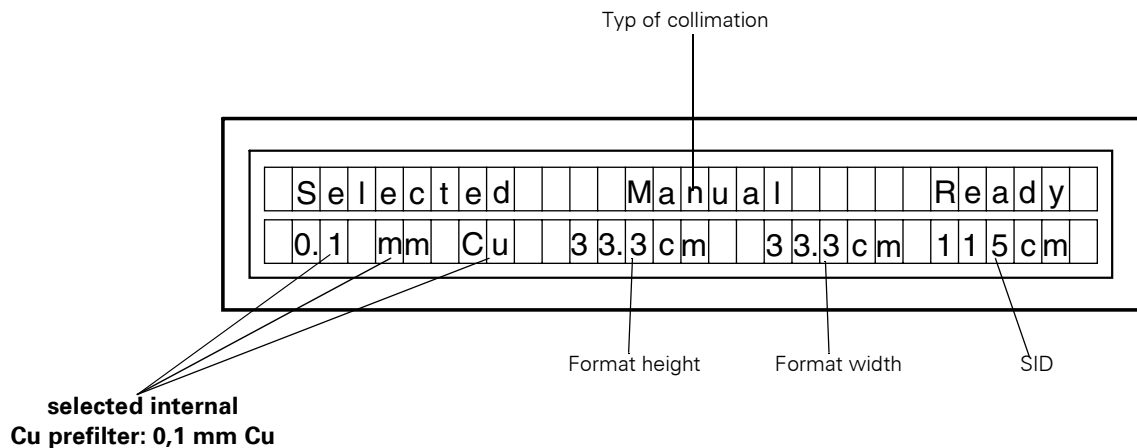
- ☐ The display (1) always indicates the existing Cu prefilter value.
- ◆ Press the button (2) on the collimator once.
- ☐ The display (1) indicates the updated Cu prefilter value.
- ◆ By repeatedly pressing the button (2) you switch in each case to the next Cu prefilter value.
 - You switch through the Cu prefilters *one after the other*.
 - The selected Cu prefilter is indicated in each case on the *display* (1) of the collimator.

Warning

A wrong filter setting may result in an **increased** radiation dose for the patient.

- ◆ Please make sure on the display that the required Cu prefilter is selected.

Display field on the ACSS collimator



Display of the selected Cu prefilter

- ❑ On the display (1) of the collimator apart from other data the *current* selection of the **internal Cu prefilter** in **mm** is indicated:

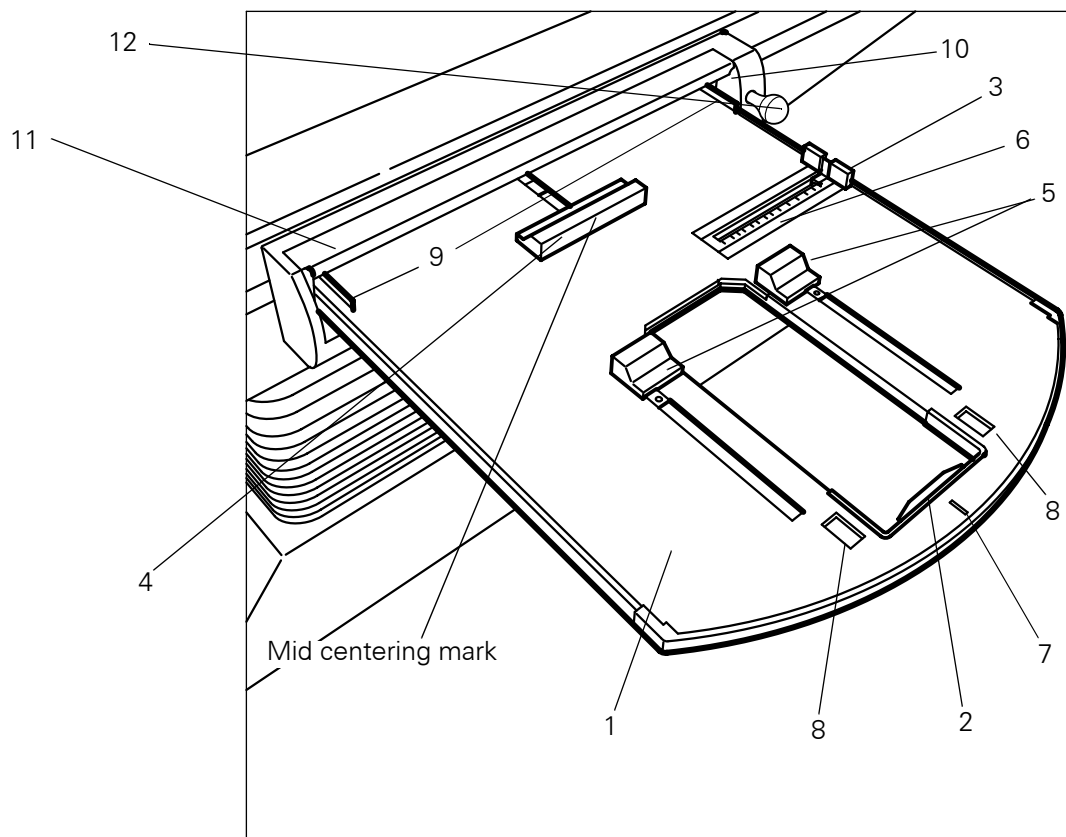
The following further data are also indicated on the display:

- ❑ **Selected** = workstation is selected at the radiographic table *or* at the radiographic stand
- ❑ **ACSS** = operation with automatic cassette sensing
 - A**utomatic
 - C**assette
 - S**ize
 - S**ensing
- ❑ **Manual** = manual operation, manual collimation
- ❑ **Ready** = ready for exposure

The Ready display is out, only if, for exposures with horizontal beam path on a Vertex in ACSS systems with or without planigraphy, the 3D ceiling support is not positioned in a programmed stop in relation to the Vertex, but otherwise fulfills ACSS requirements. This indicates that manual Bucky mode on the Vertex with horizontal beam path is not possible..

- ❑ Format height in cm **or** in inch
- ❑ Format width in cm **or** in inch
- ❑ SID in cm **or** in inch

Operating elements on the manual or ACSS cassette tray



- (1) Cassette tray
- (2) Handle with slide-in unlocking button
- (3) Cassette stop (format limit/format stop) adjustable
- (4) Rear clamping jaw with mid centering mark
- (5) Front clamping jaws
- (6) Format scales (cm and inch)
- (7) Axial mark for mid centering with LASER line light localizer of the collimator
- (8) Lead letter holder
- (9) Two spring stop levers (release catch for removing the cassette tray)
- (10) Unlocking lever for grid changing (beneath the grid cover)
- (11) Grid cover
- (12) Brake handle

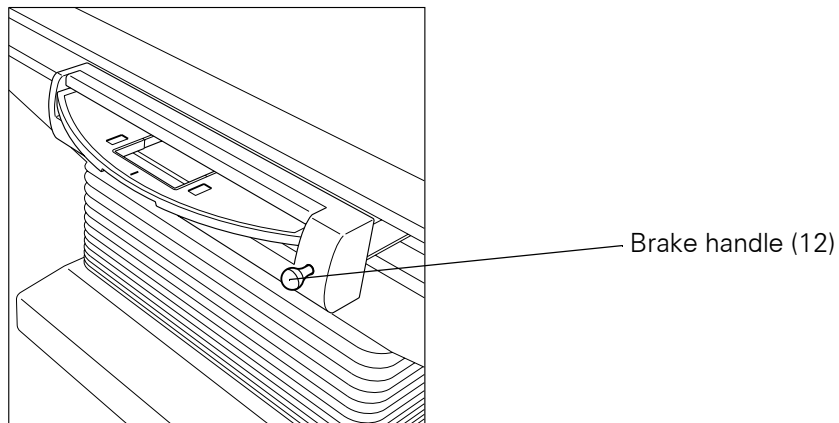
Brake handle

Position of the brake handle

The brake handle is located on the right side of the catapult Bucky.

Function of the brake handle

The brake handle is used to guide the catapult Bucky in the table longitudinal direction during manual movements and to stop it in **each** position.



Operating the brake handle

- ◆ To move the catapult Bucky in the longitudinal direction, release the brake by pulling the handle (12).
(Exception: During the active planigraphic mode the brake cannot be released anymore.)

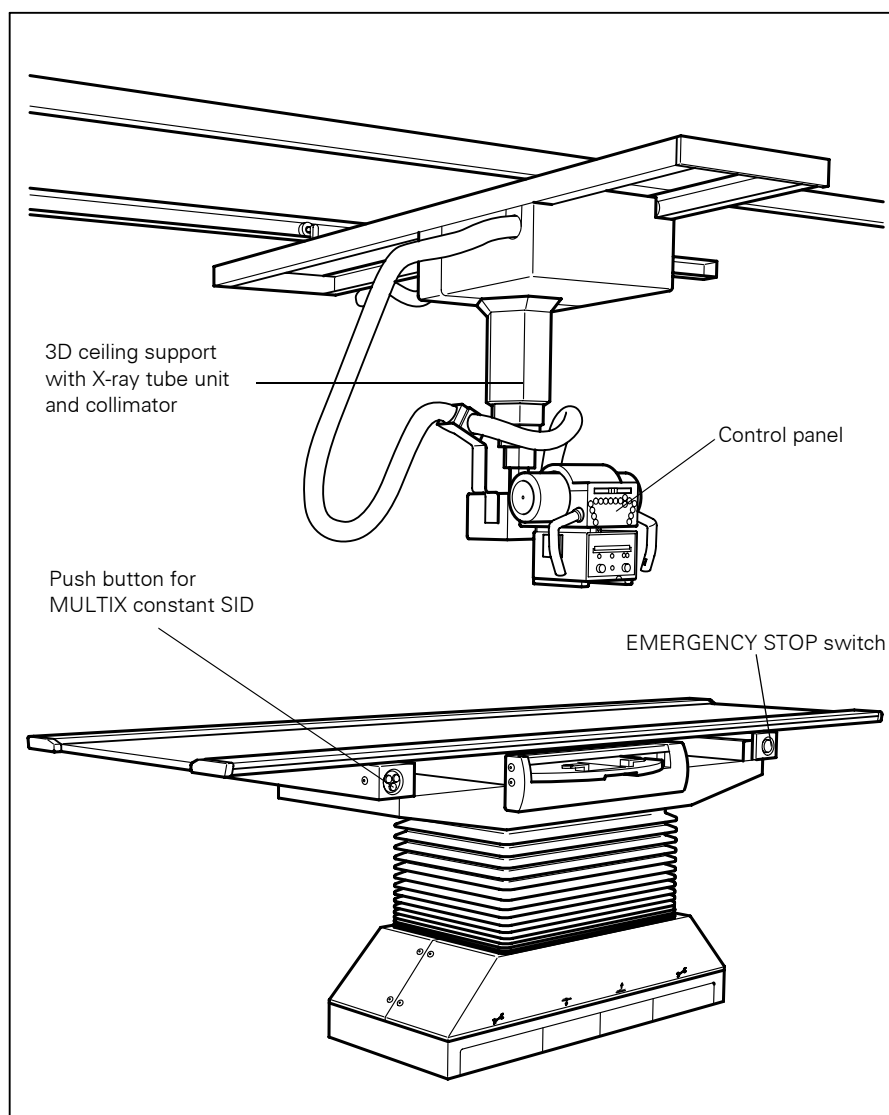
The catapult Bucky can be moved longitudinally and positioned **only** with the handle (12).

- ◆ To stop the movement of the catapult Bucky in the longitudinal direction, let go of the handle (12) when the Bucky has been positioned.

When inserting the cassettes into the cassette tray, ensure that the cassettes are **centered correctly** in the tray.

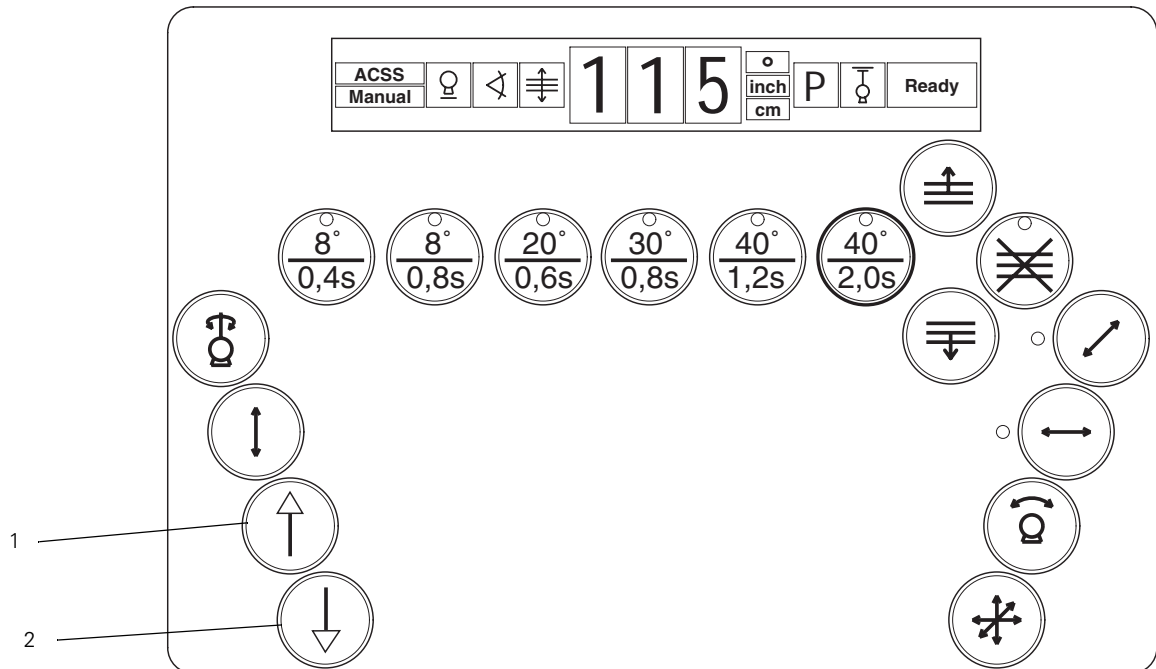
Operating and display elements of the follow-up control (only with ACSS and ACSS P)

Overall view



Control panel and displays for ceiling support settings

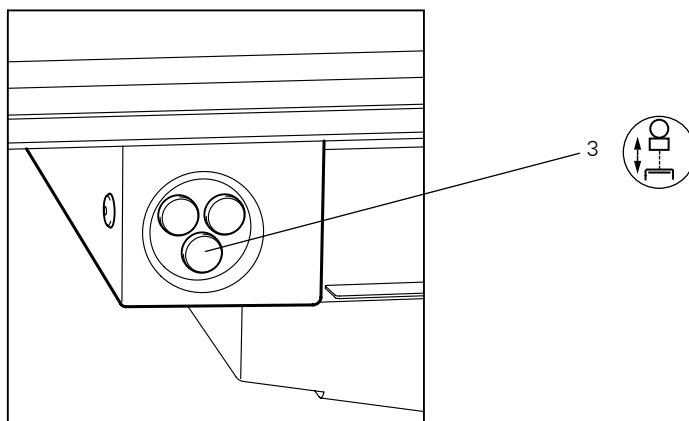
Operating elements for motor-driven height adjustment (vertical)



1. Push button for motor-driven tube unit upwards movement
2. Push button for motor-driven tube unit downwards movement

Operating elements on the patient table

Operating elements for MULTIX constant SID



3. Push button for MULTIX constant SID

Operator Manual

System operation and radiography

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System operation and radiography

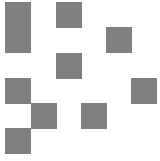
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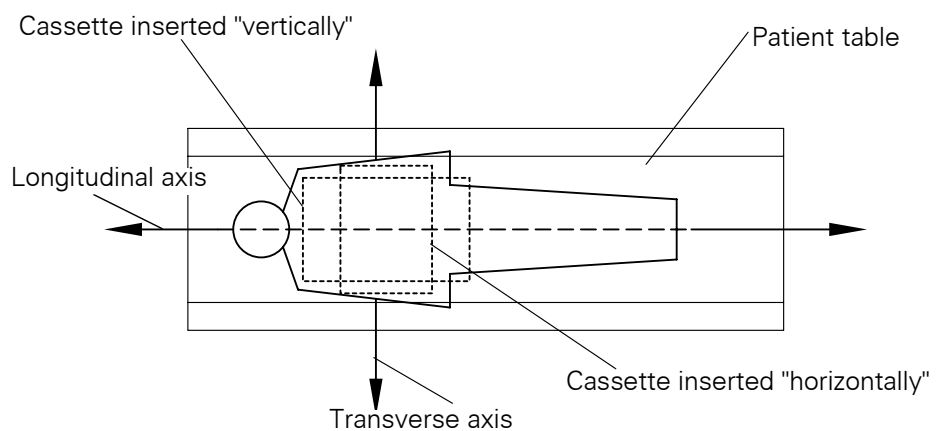


Inserting and removing a cassette

Inserting a cassette

All cassettes with formats of 13 cm x 18 cm to 35 cm x 43 cm or 5" x 7" to 14" x 17" can be inserted "vertically" or "horizontally" for exposures.

The cassette tray does **not** provide for format segmentations.



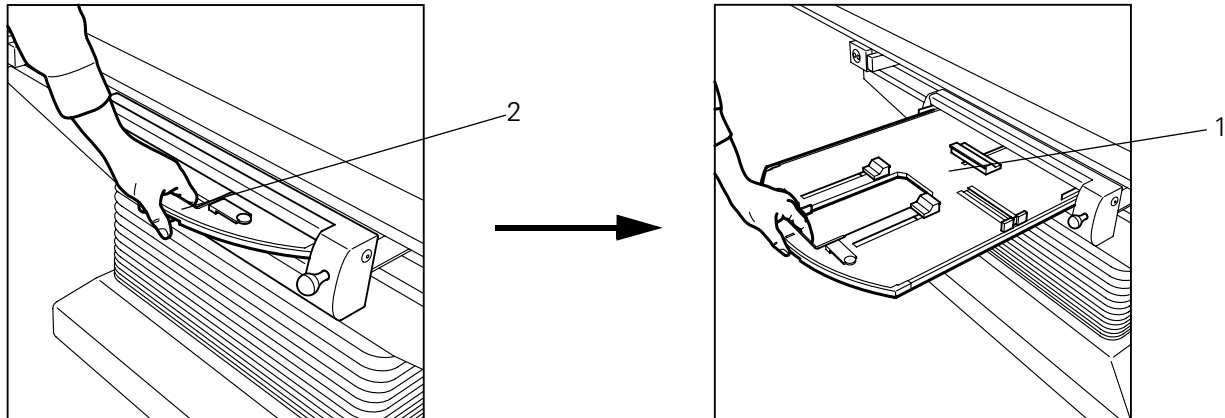
Warning

Incorrect cassette insertion may result in the fingers being crushed between the cassette and the clamping jaws of the cassette tray.
Be careful not to drop the cassette when inserting and removing it, since this may cause foot injuries.

Caution

The withdrawn cassette tray may be loaded **only** with the weight of a cassette.
All other mechanical loads must be excluded.

Do not insert or remove the cassette tray from the catapult Bucky by force.
Improper handling can lead to damage and failure of the Bucky.



- ◆ Release the cassette tray (1) with the handle (2) and pull it out until it engages.
 - Mechanical stops prevent the cassette tray from falling out of the catapult Bucky.

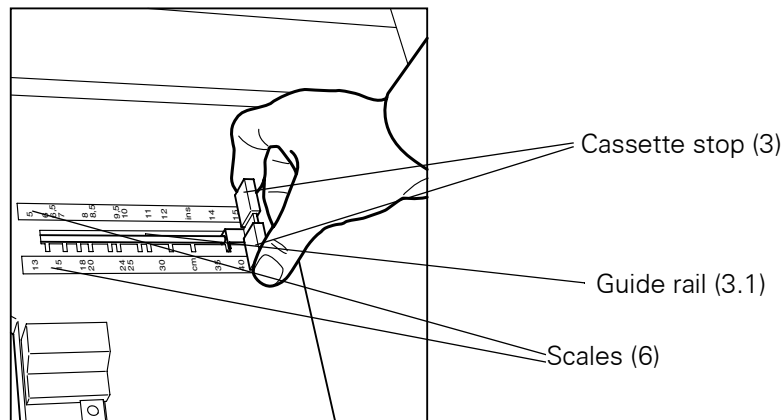
For ACSS systems with or without planigraphy the following applies:

The system can be programmed for "metric" SID and "metric" cassette formats by service. If inch-format cassettes are inserted **no** ACSS mode, and hence, **no** automatic format limitation will be activated

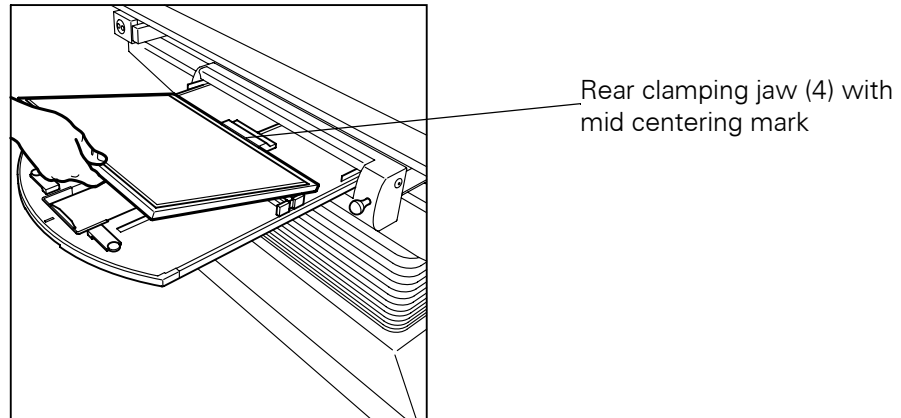
This also applies to the reverse case, i.e. if the system is programmed for the "inch" format and cassettes with a "metric" format are inserted.

In this case, mixed operation using both "metric" and "inch" cassette formats is **not** permissible!

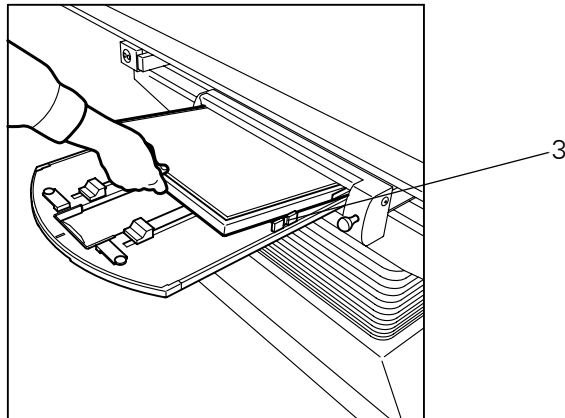
Is the system programmed for **mixed operation**, mixed operation using both "metric" and "inch" cassette formats is permissible.



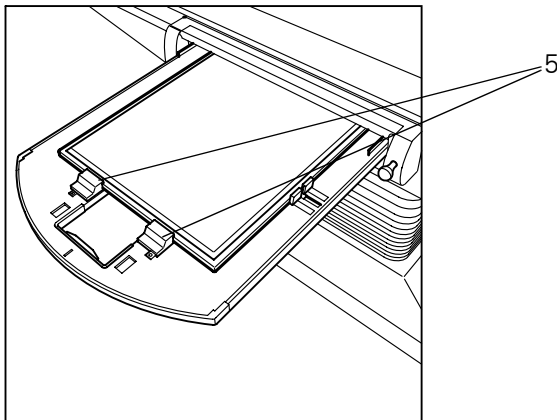
- ◆ Compress the cassette stop on the right (3) a little until the stop can be moved on the guide rail (3.1).
- ◆ Move the cassette stop (3) to the wanted cassette format and let it snap into position.
 - You can read off the format directly above the stop.
 - The cassette stop serves for more convenient centering and with respect to the vertical Bucky wall stand also for fixing the cassette you insert
- The two scales (6) on the cassette tray indicate the possible cassette format limits of the cassette height for cm and inch formats.



- ◆ Grip the cassette at the front.
- ◆ Push the cassette against the rear clamping jaw (4) and while doing so make the mid centering mark of the cassette coincide with the mid centering mark of the rear clamping jaw. (Centering aid)



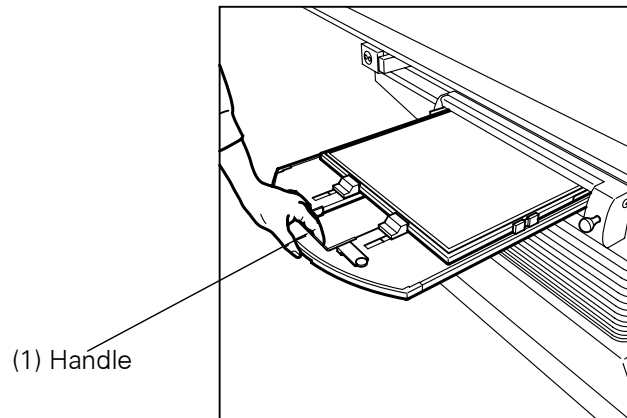
- ◆ Push the cassette against the right format stop (3) while doing this.



- ◆ Keeping the cassette held at the front, let it lower and spring back when pushed in further until the two front clamping jaws (5) grip the cassette.

When inserting the cassette special attention needs to be paid to the **correct longitudinal** centering of the cassette in the cassette tray.

Cassettes which are inserted out of the center may cause recognition errors.
(only with ACSS automatic format collimation)



- ◆ Grip the cassette tray handle (2) so that the tray lock is unlocked.
- ◆ Using the handle (2) push the cassette tray with the inserted cassette in up to the stop.
 - The cassette is correctly centered in the cassette tray if it was inserted as described.

Warning

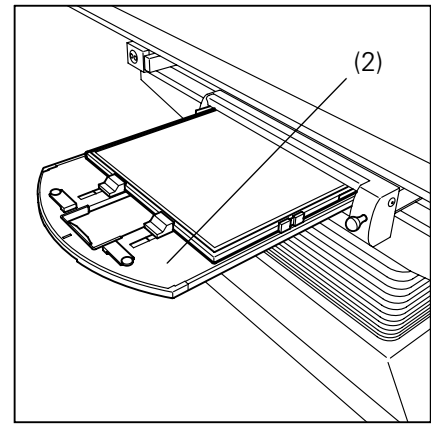
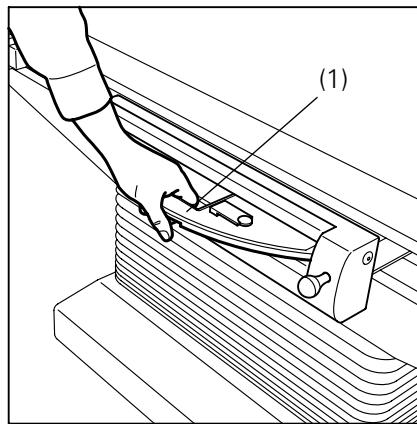
Observe the following adjustment
to avoid radiation which does not contribute to the image:

Make sure that you center the cassette **exactly** in the cassette tray with the aid of the cassette stop and the centering mark of the clamping part in the longitudinal direction.

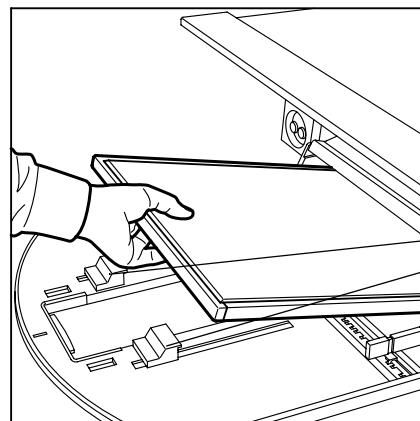
In this way you avoid overframing and thus reduce the radiation exposure of the patient.

The centering in the transverse direction is automatically performed by the self-centering clamping jaw.

Removing the cassette



- ◆ Grip the cassette tray handle (1) and withdraw the cassette tray (2) until it latches into position.
 - Mechanical stops prevent the cassette tray with the cassette falling out from the catapult Bucky.

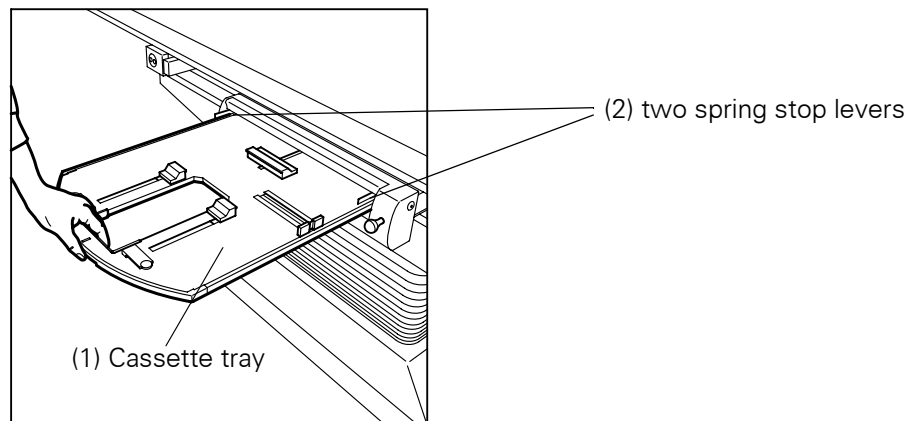


Front clamping jaws (1)

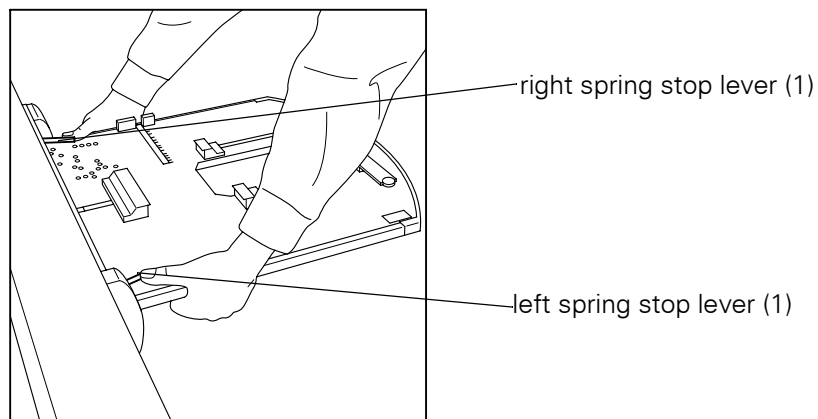
- ◆ Grip the cassette at the front and push it away from you until the front clamping jaws (1) release the cassette.
- ◆ Then lift the cassette and remove it from the cassette tray.

Removing the cassette tray

With respect to normal operation the cassette tray does **not** need to be removed. However, it may be necessary in order to be able to pick up objects (e.g. lead letters) which fell down from the cassette tray after the cassette tray is removed.

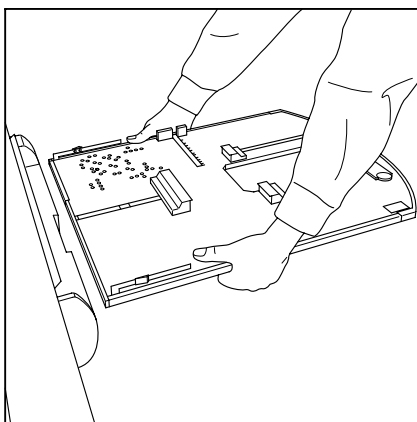


- ◆ Pull on the handle of the cassette tray (1) until it latches into position.

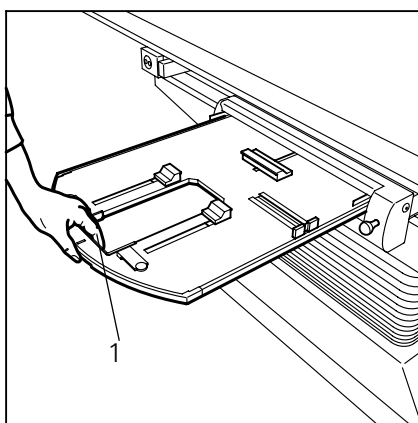


- ◆ Hold the cassette tray horizontal with both hands.
- ◆ Press the left and right spring stop lever (1) inwards with your thumbs in order to release the withdrawal lock and pull the cassette tray out completely horizontally.

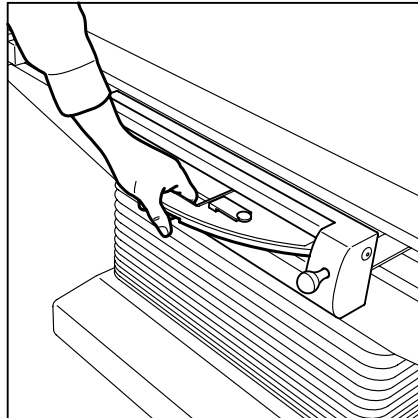
Inserting cassette tray



- ◆ Hold the cassette tray horizontally with both hands and bring it up to the catapult Bucky guideway.

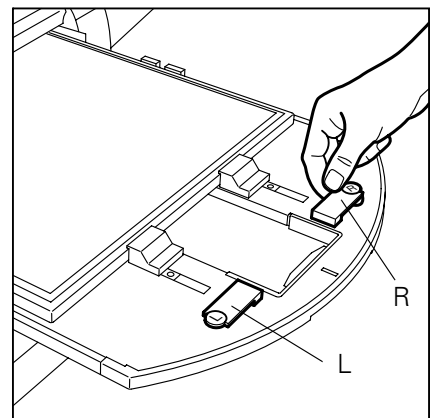
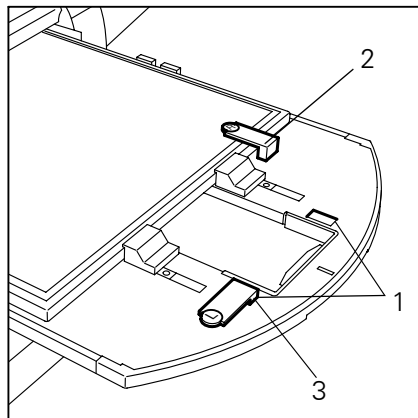


- ◆ Push the cassette tray horizontally up to the first stop.
- ◆ Release the further movement of the cassette tray by pressing the catch in the handle (1).



- ◆ Push the cassette tray in up to the end stop.

Using the lead letters



The lead letters "R" and "L" are located in the holders (1). The letters have a magnetic holder and are set on the cassette as required for right or left marking of the next exposure object. (2)

You should re-insert the lead letters in the holders for safe keeping. (3)

It is up to the operator to exercise due care to make sure that the **R/L** marks are inserted **correctly**, in order to exclude a wrong diagnosis.

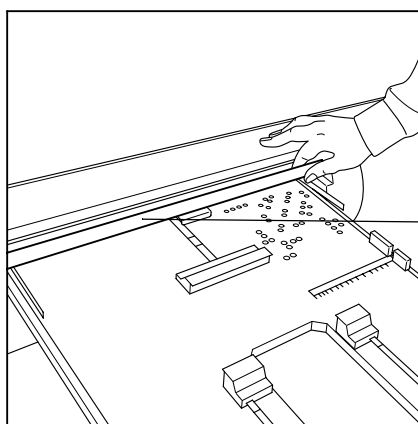
Grid changing



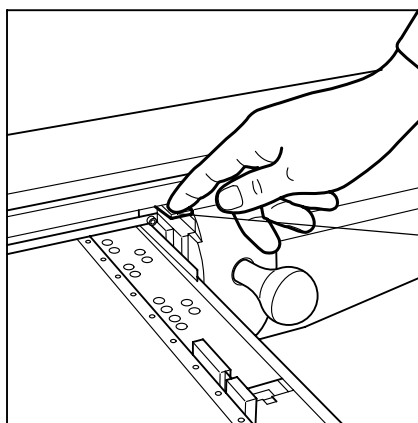
The user is basically responsible for the use and the corresponding selection of the scattered radiation grid used in each case.

Removing the grid

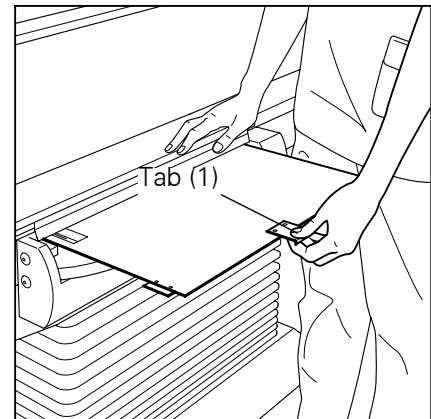
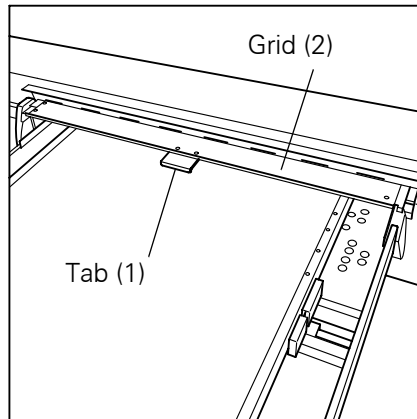
- ◆ Push the tabletop away from you.



- ◆ Lift the spring-loaded grid cover (1) and hold it.



- ◆ Push the unlocking lever (1) down.
 - The grid (2) moves towards the operator.



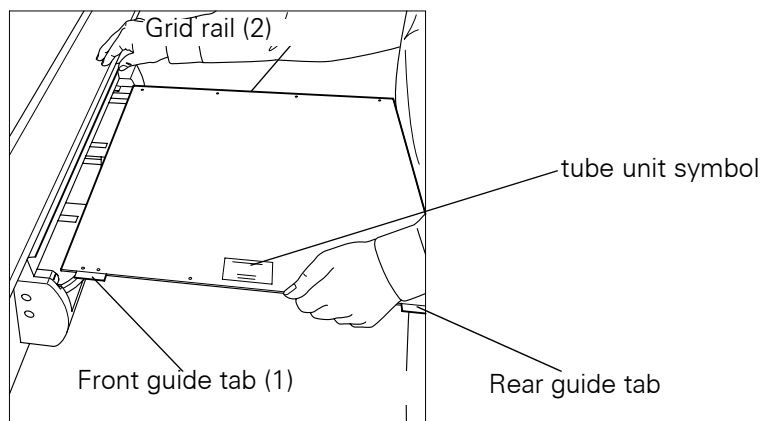
An angled **tab** (1) is provided in the center of the grid.
The **grid type** is indicated on this tab.

- ◆ Use the tab (1) to pull the grid out horizontally and take it out with both hands.
- ◆ Carefully close the grid cover.

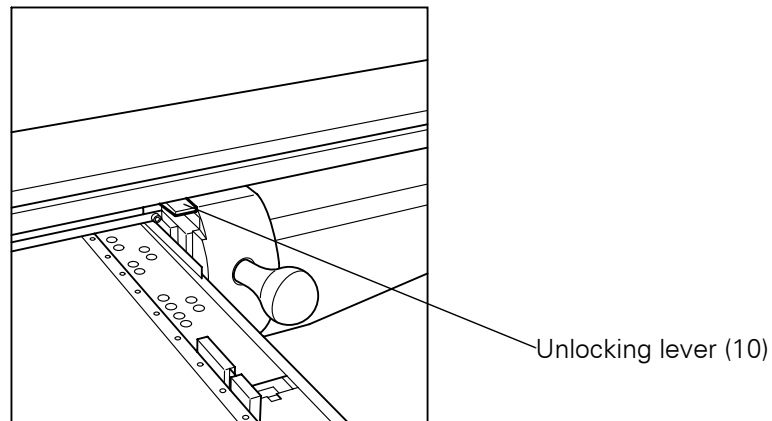
Inserting a grid

- ◆ Hold the grid horizontally.

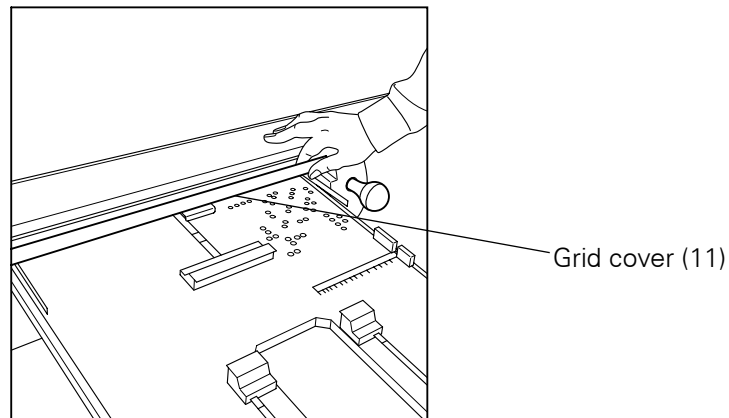
The tube unit symbol on the grid must point **to** the tube unit.



- ◆ Hold the grid with both hands.
- ◆ Lift the spring-loaded grid cover with one forefinger and hold it.
- ◆ Place the front guide tab (1) of the grid into the left guide rail of the catapult Bucky.



- ◆ Slightly press down the unlocking lever (10) on the right side with the grid rail on the right.
- ◆ Push the grid in horizontally without bending.
- ◆ In doing so, ensure that both guide tabs on the left and the grid rail on the right are **accurately** inserted into the respective guiding groove of the catapult Bucky profile.
- ◆ Hold the grid by the tab with one hand while lifting the spring-loaded grid cover with the other hand.
- ◆ Slowly insert the grid all the way to the stop, then push it to the right until the unlocking lever (10) on the right-hand side moves up again and engages.



- ◆ Carefully close the grid cover (11).

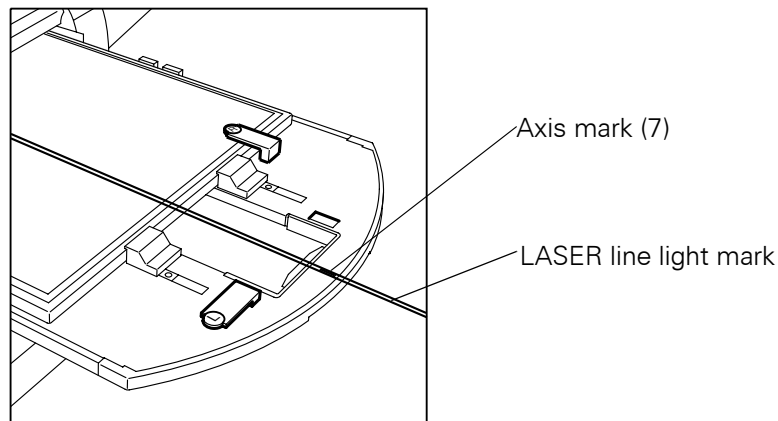
When inserting the scattered radiation grids, it is essential that the **grid** corresponds to the intended **source-image-distance** (SID) to which the grid is focussed.

Because of the focussing of the grids, the tube unit must be **centered** onto the Bucky.

Centering the tube unit in relation to the Bucky table

Vertical projection

Centering in the longitudinal direction



The central ray should strike the center of the cassette.

- ◆ To do this, align the axis mark (7) on the cassette tray handle with the LASER line light mark of the light localizer.

or:

- ◆ Move the catapult Bucky until it reaches the center stop.
- ◆ Move the 3D ceiling support until it reaches the center stop.
 - The central ray is then centered to the respective cassette center.

Centering in the transverse direction

- ◆ Move the 3D ceiling support transversely until it reaches the center stop.

With the cassette tray pushed in the cassette, if inserted as described, is already centered in the transverse direction.

It therefore only needs to be centered in the longitudinal direction.

Setting the SID

- ◆ Always set the SID so that it corresponds to the focussing of the grid used.

Centering the tube unit in relation to the Bucky wall unit

Horizontal projection with four fixed SIDs

Centering in the transverse direction

With the cassette tray pushed in, the cassette - if inserted as described - is already centered in the transverse direction if the telescope carriage of the 3D ceiling support in the transverse carriage is in the mid-center position in relation to the Bucky wall unit.

It therefore only needs to be centered in height.

Height centering

Center the tube unit in height in relation to the cassette center.

- ◆ To do this, align the axis mark (7) on the cassette tray handle with the line light mark of the LASER line light localizer.

Setting the SID

The 3D ceiling support can be set by service personnel to a maximum of four fixed SID stop positions.

Always set the SID so that it corresponds to the focussing of the grid used.



We recommend that you center accurately.

Uncentered grid exposures can result in grid shadows on the radiographs.

Accurate centering improves image quality.

Moving the tabletop

in the longitudinal and transverse directions:

- ☐ manually after releasing the brakes

Table height:

- ☐ Raising the tabletop: by motor
- ☐ Lowering the tabletop: by motor

Moving the catapult Bucky

in the longitudinal direction:

- ☐ manually

in the transverse direction:

- ☐ no movement

Moving the tube unit (with 3D ceiling support)

in the vertical direction:

- ☐ manually (e.g. setting the vertical SID) after releasing the brakes

in the longitudinal direction:

- ☐ manually (e.g. setting the horizontal SID) after releasing the brakes

in the transverse direction:

- ☐ manually (e.g. centering) after releasing the brakes

Follow-up control

(only for ACSS and ACSS P)

Operating modes of the follow-up control

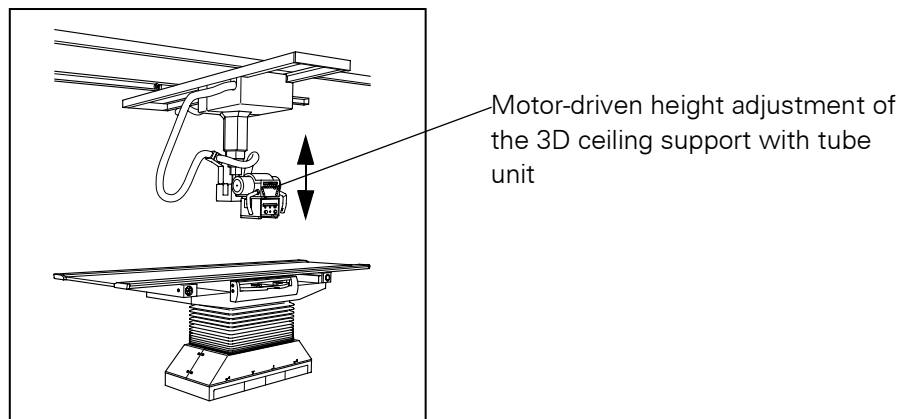
There are four different operating modes of the follow-up control:

- ❑ Manually controlled motor-driven height adjustment of the tube unit
- ❑ Automatic height follow-up of the tube unit to the VERTIX TOP (horizontal projection)
 - ⇒ Refer to the VERTIX TOP Operator Manual.
- ❑ Automatic control for constant SID on the MULTIX table (vertical projection)
- ❑ Automatic control for constant SID on the VERTIX TOP (vertical projection)
 - ⇒ Refer to the VERTIX TOP Operator Manual.
- ❑ On selection of the tomographic mode (planigraphy), the 3D overhead support is moved automatically (if programmed that way by the Technical Service) into the "Planigraphy" starting position that can be programmed by the Technical Service. The associated table height must be actuated by operating the foot kick switch. The automatic "Table height stop" then takes place at the table height determined for planigraphy and thus corresponds to the intended SID for planigraphy.

Manually controlled motor-driven height adjustment of the tube unit

Function

- ❑ Manual operation of the push button in the control panel of the 3D ceiling support for tube unit upwards or downwards movement releases the brakes of the vertical movement of the tube unit and moves the tube unit on the 3D ceiling support by **motor drive** in the required direction.
- ❑ The set radiation direction has no influence on the control of the motor-driven height adjustment of the tube unit. The radiation direction can thus be freely selected.
- ❑ Motor-driven total vertical movement 1480 mm (± 10 mm)
(unless limited by the Technical Service on customer preference)



Operation

- ❑ The operating elements are located on the control panel for the 3D ceiling support
- ❑ Manual choice of motor-driven height adjustment with normal speed:



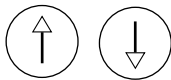
- ◆ Push button operation for motor-driven tube unit upwards movement



- ◆ Push button operation for motor-driven tube unit downwards movement

- The motor-driven movement of the tube unit occurs only for the duration in which a push button is pressed.

- It is possible to release automatic switch-on of the light localizer with LASER line light localizer on the collimator when operating the push button for motor-driven tube unit upwards or downwards movement, if so required. In this case the Technical Service can activate this programmable function.
- Automatic end shutdown protects the tube unit upwards or downwards movement if the tube unit on the 3D ceiling support has reached the upper or the lower end position.
- During the installation of the system it is possible to determine a selectable stop position for a SID value of 102 cm or 115 cm.
If the tube unit reaches the predetermined SID value when moving, then the motor-driven movement is ended.



- The tube unit moves on in the required direction only after pressing a push button for tube unit upwards or downwards movement once again.

❑ **Prerequisites** for the motor-driven height adjustment of the tube unit:

- Push button for motor-driven tube unit upwards or downwards movement pressed
- No overhead support end position reached
- No collision protection has responded
- No EMERGENCY STOP switch operated

Warning

Please pay attention to collision-free movements of the 3D ceiling support with tube unit and collimator, to protect patients and objects against damage.

- ❑ The **automatic collision protection** is a safety device for protecting the patient.

Function:

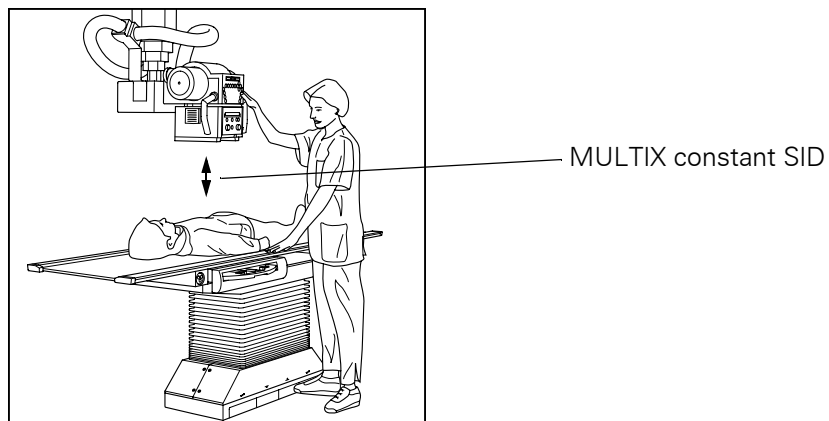
- If during motor-driven movement of the 3D ceiling support with tube unit and collimator a collision occurs in the downwards direction, a force of not more than 200 N becomes effective to protect the patient and objects.
 - On response of the automatic collision protection, a brief acoustic signal sounds as alarm to the operator.
 - The motor-driven movement is then immediately ended.
 - After pressing the push button for the motor-driven upwards movement or manually, after releasing the vertical brakes, the tube unit on the 3D ceiling support can be moved again out from the collision zone, also by motor-driven lowering of the patient tabletop.

 - For the protection of the patient and objects, the automatic collision protection is also effective in the upwards direction, if for instance the 3D ceiling support with tube unit and collimator is moved under the patient table of the MULTIX table or other objects such as a sickbed etc. A force of not more than 200 N becomes effective in the collision.
 - On response of the automatic collision protection, a brief acoustic signal sounds as alarm to the operator.
 - After pressing the push button for the motor-driven downwards movement or manually, after releasing the vertical brakes, the tube unit on the 3D ceiling support can be moved again out from the collision zone.
- ❑ To assure patient rescue in the case of a power failure with braked 3D ceiling support, the tube unit on the 3D ceiling support can be pushed **manually** with a force of 200 N out from its braked position.
-
- ❑ The motor-driven movement of the tube unit is **not** possible if:
 - The EMERGENCY STOP switch is actuated or
 - “Planigraphy” is selected
 - On double operation of the upwards/downwards movement
 - With released vertical movement
-
- ❑ The EMERGENCY STOP switch on the MULTIX table switches **all** motor-driven movements off when it is operated.

Automatic control for constant SID on the MULTIX table (vertical projection)

Function

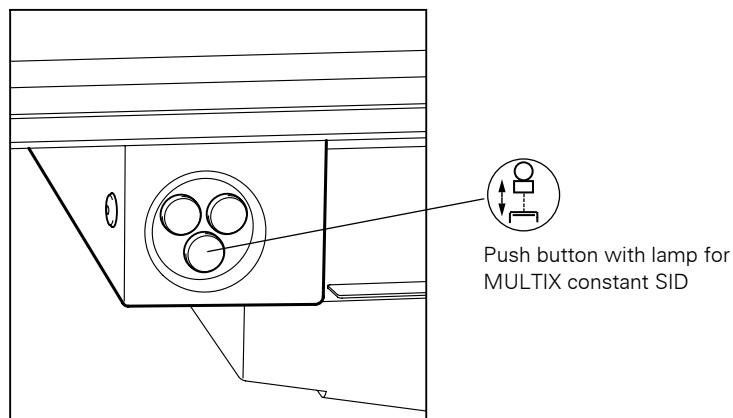
- According to adjustment of the MULTIX table height, the SID (source-image distance) is kept constant **automatically**, in that the tube unit on the 3D ceiling support tracks correspondingly.



Operation



- The operating element (push button) is located on the left of the MULTIX table beneath the two control lamps for the operational status



- ❑ **Selection** of the automatic control for constant SID on the MULTIX table:

Operation of the push button (MULTIX constant SID) beneath the two control lamps for the operational status on the left on the MULTIX table



- ◆ Press the push button once: MULTIX constant SID control selected
- ◆ Press the push button once again: MULTIX constant SID control deselected

- ❑ **Prerequisites** for the automatic MULTIX constant SID control:

- ◆ Bucky mode at the table selected
- ◆ MULTIX table can be positioned in arbitrary table height

- ❑ It is possible at the start of the motor-driven height adjustment of the patient tabletop of the MULTIX table to release the automatic switch-on of the light localizer with LASER line light localizer on the collimator. (Can be programmed by our Technical Service)



- ❑ As long as the criteria are not yet fulfilled, the lamp of the push button (MULTIX constant SID) beneath the two control lamps for the operational status in the MULTIX table flashes.
- ⇒ Criteria see e.g. paragraphs "Automatic end shutdown of the MULTIX constant SID control ..." and "If the SID is less than 50 cm ..." on page 27.



- ❑ The lamp of the push button (MULTIX constant SID) beneath the two control lamps for the operational status in the MULTIX table lights up constantly only when the criteria are fulfilled.

- ❑ The SID set on selection becomes effective and is kept constant when the table height changes, in that the 3D ceiling support with tube unit automatically tracks correspondingly.



- ❑ During the motor-driven movement of the table lift, the lamp of the push button (MULTIX constant SID) beneath the two control lamps for the operational status in the MULTIX table flashes.

❑ Automatic end shutdown of the MULTIX constant SID control

If the range of height adjustment of the patient table (due to the room height) lies outside the motor-driven adjustment range of the 3D ceiling support, then the following occur:

- Automatic end shutdown of the motor-driven ceiling support movement
- Flashing lamp “MULTIX constant SID not fulfilled”
- Indication of the actual SID on the display
- The “MULTIX constant SID” selection continues to remain active

❑ If the SID is less than 50 cm, the table lift function is blocked.
The function of table lowering is freely available.

❑ Exposure disable only during dynamic height adjustment

❑ **Deselection** of the “MULTIX constant SID control”

Any one of the following conditions switches the selection of the automatic “MULTIX constant SID control” off again:



◆ Renewed operation of the push button (MULTIX constant SID) beneath the two control lamps for the operational status in the MULTIX table on the left or

- Push button operation for motor-driven tube unit upwards movement
- Push button operation for motor-driven tube unit downwards movement
- Push button operation on the control panel “Release vertical brake”
- Operation of one of the two buttons in the handles:
“Release vertical brake”
- tube unit central ray axis $>3^\circ$ out from the vertical
- Selection of a planigraphic program
- Activation of the collision protection in ceiling support upwards or downwards movements with active MULTIX constant SID control

❑ The EMERGENCY STOP switch in the MULTIX table switches **all** motor-driven movements off when operated.

Rotating the tube unit

about the vertical axis:

- ☐ manual rotation of the tube unit after releasing the brakes

about the horizontal axis:

- ☐ manual rotation of the tube unit after releasing the brakes

Rotating the collimator

about the central beam axis:

- ☐ manual rotation of the collimator

Centering onto the catapult Bucky in the MULTIX patient table

in the longitudinal direction:

- ☐ manual movement of the 3D ceiling support with tube unit to the table **"longitudinal"** center stop.

in the transverse direction:

- ☐ Manual movement of the 3D ceiling support to the tabel **"transverse"** center stop.
- ☐ In this case, manually move the catapult Bucky in the longitudinal direction into the mid-center position.
- ☐ Insert the cassette tray with cassette all the way to the stop.
- ☐ In all other exposure positions, the catapult Bucky and tube unit must be centered to one another by means of the LASER line light localizer.

Centering onto the catapult Bucky in the VERTIX Bucky wall unit

in the transverse direction:

- ☐ Insert the cassette tray with cassette all the way to the stop.
- ☐ Manual movement of the 3D ceiling support to the "**transverse**" center stop position in relation to the Bucky wall unit.

in the vertical direction (horizontal projection):

- ☐ manual movement of the tube unit or
- ☐ activating the follow-up control (if available)



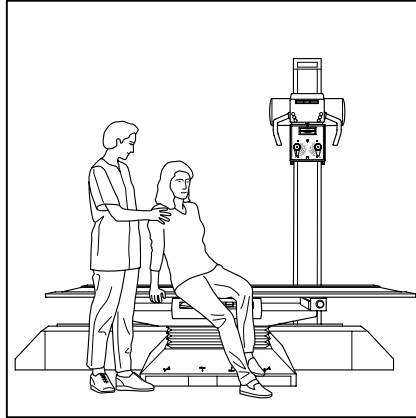
We recommend that you center accurately.

Uncentered grid exposures can result in grid shadows on the radiographs.

Accurate centering improves image quality.

Positioning the patient on the patient table

When positioning the patient on the patient table, observe the following:



Getting on and off the patient table

Caution

Have the patient get on or off the table **in the center** of the table.

In case of very heavy patients (>150 kg) the table top has to be positioned in center before the patient getting on. The table top must remain in center also during examination. Maximum patient weight: 227 kg.

Warning

All safety devices must be in place and operative, in particular the handgrips.

The patient's arms and legs must not protrude over the tabletop.

All accessories available for the unit are listed in the **ACCESSORIES** chapter.

For special examinations, use the patient immobilization devices provided.

To install the accessories, refer to the **ACCESSORIES** chapter.

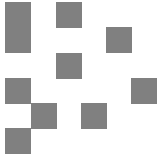
Positioning the patient

When positioning the patient, observe the following:

Caution

If the tabletop is extended to the maximum length at the head or foot end, the patient must **not** sit on the end of the tabletop, since the weight load can lead to table deformations and damage to the product.

- ☐ The patient is positioned by shifting the "floating" tabletop.
- ☐ Examination range: 190 cm from head to toe and hip to hip, without repositioning.



Catapult Bucky with ACSS automatic format collimation

Components of the ACSS automatic format collimation

- ☐ Automatic collimator for motorized X-ray field limitation
- ☐ Cassette tray with cassette format sensing
- ☐ Electronic control

Conditions for the ACSS automatic format collimation

The ACSS automatic format collimation is automatically active if the following conditions are fulfilled:

- ☐ A cassette of valid format ("**cm**" or "**inch**" depending on the system configuration; **no** mixed operation is permissible!) must be inserted in the cassette tray and properly centered¹.
 - **Vertical** beam path: in MULTIX or VERTIX catapult Bucky
 - **Horizontal** beam path: in VERTIX catapult Bucky

and

- ☐ The X-ray tube unit must not deviate from the vertical axis by $> \pm 3^\circ$
 - (with the MULTIX and VERTIX in the vertical beam path)
- ☐ Or be rotated more than $\pm 3^\circ$ out of the horizontal plane
 - (with the VERTIX in the horizontal beam path)

and

- ☐ The catapult Bucky must not be rotated more than $\pm 3^\circ$ out of the horizontal plane
 - (with the VERTIX in the vertical beam path)

or

- ☐ The catapult Bucky must not be rotated more than $\pm 3^\circ$ out of the vertical plane
 - (with the VERTIX in the horizontal beam path)

¹ Only valid if mixed operation is not programmed; with mixed operation programmed "metric" and "inch" formats may be mixed.

and

- ❑ The SID must be within the range of 85 cm to 150 cm
 - (with the MULTIX and VERTIX in the vertical beam path, with Vertex in the stop position programmed for this)
- ❑ Or the SID must be set to one of the max. four programmed lock-in (click-stop) positions between 85 cm and 400 cm
 - (with the VERTIX in the horizontal beam path)

and

- ❑ The 3D ceiling support must be located in the programmed VERTIX lock-in position
 - (with the VERTIX TOP in the vertical beam path)

Function of ACSS automatic format collimation

Purpose of ACSS automatic format collimation

The ACSS automatic format collimation enables automatic sensing of the format size of the cassette inserted **in** the cassette tray. The diaphragm leaves in the collimator can thus be automatically controlled for variable SIDs to achieve **constant** collimation to the current cassette format.

ACSS stand for "**A**utomatic **C**assette **S**ize **S**ensing".

Functional Description of the ACSS System

- ❑ The ACSS automatic format collimation automatically limits the X-ray field to the **full** format size of the cassette **inserted in** the cassette tray.
- ❑ For exposures on the Bucky exposure table
- ❑ For exposures on the Bucky wall stand

The ACSS automatic format collimation is effective **only** with a vertical or horizontal beam projection.

Oblique projections must therefore be performed with **manual** adjustment and **without** the ACSS automatic format collimation.

The ACSS automatic format collimation is effective **only** for exposures on cassettes located **inside of** the cassette tray.

The ACSS collimator can function in two different operating modes:

- ☐ Manual mode: "**Manual**" indicator on display
- ☐ ACSS mode: "**ACSS**" indicator on display

Preconditions for the ACSS Mode

The automatic format collimation operates in the "**ACSS mode**" if:

- ☐ The "ACSS" display lights up on the collimator and on the control panel of the 3D ceiling support
- ☐ The source-image distances for table and Bucky wall stand exposures with a **vertical** beam path equal between 85 cm and 150 cm
- ☐ The **horizontal** source-image distance equals 85 cm to 400 cm.
 - For Bucky wall stand exposures with a horizontal beam path, the 3D ceiling support must set to one of the max. four lock-in positions.
- ☐ A cassette is inserted and the cassette tray is pushed in all the way
- ☐ The axis of the radiation runs within $\pm 3^\circ$ of the vertical or horizontal axis

If the deviation from the **vertical** radiation axis is **more than $\pm 3^\circ$** , the automatic format collimation will switch to "**Manual**" and the digital **angle display** will be **activated**.

If the X-ray tube unit is aimed at the Bucky wall stand in the **horizontal** beam path, the signal lamp on the angle display will **switch off** when the 3D ceiling support is located in a lock-in position.

If the catapult Bucky is set to the ACSS mode, the internal cassette format sensing will **automatically** recognize the size of the inserted cassette and set the collimator accordingly.

The ACSS automatic format collimation then automatically restricts the X-ray field to the **full** format size of the inserted cassette.

Within the format of the inserted cassette, the field can be randomly collimated **down close to the object** using the format knobs on the collimator.



Inside of the USA and Canada only:

*If the format collimation controlled by the ACSS automatic format collimation is further set to a smaller format via an additional **manual collimation** and the **SID** is then **altered**, the ACSS automatic format collimation will automatically jump back to the original **full** collimation of the cassette format inserted in the cassette tray.*



Outside of the USA and Canada:

*If the format collimation controlled by the ACSS automatic format collimation is further set to a smaller format via an additional **manual collimation** and the **SID** is then **altered**, the ACSS automatic format collimation will **constantly** remain collimated to the **reduced** cassette format size.*

ACSS Mode

For Table or BWS Radiography in the Vertical Beam Path

Exposures are performed in the ACSS mode **only** with the cassette inserted centrally **in** the cassette tray of the exposure table or the Bucky wall stand. Oblique projections and bedside exposures are **not** possible in the ACSS mode.

- ❑ Please note that ACSS exposures are possible **only** within an SID range of 85 cm to 150 cm.
 - The **SID** value here applies up to the cassette **tray plane**.
 - On **leaving** the ACSS SID range, the reference plane for the SID display is the **tabletop plane**. The operation mode is automatically switched to "Manual".
- ❑ Make sure that the catapult Bucky is in a **center** position for the exposure.
 - The ACSS automatic format collimation then enables automatic sensing of the size of the cassette format inserted **in** the cassette tray. The diaphragm leaves in the collimator can then be automatically controlled for **constant** collimation of **variable** source-image distances to the format of the inserted cassette.

If you wish, you can use the format collimation adjusting knobs for fine collimation with the light localizer following full-field illumination before taking the exposure.
 - During radiography using a MULTIX exposure table with a cassette inserted in the table cassette tray, the unit **automatically** switches over between the ACSS and the manual mode depending on the current SID setting.

- For SID values equaling less than 85 cm and more than 150 cm, the SID display reading indicates the given SID value up to the **tabletop plane**, whereby the film-tabletop distance of 53 cm is also taken into account. The "**Manual**" indicator also lights up. Operation is then possible only in the manual mode.

For Bucky Wall Stand Radiography in the Horizontal Beam Path

- ❑ The 3D ceiling support must be located in one of its max. four lock-in positions
 - The corresponding SID value is indicated on the control panel and collimator displays.

Operation in the "ACSS" Mode

Exposures on the MULTIX Patient Table

- ◆ Insert cassette so that it is centered **in** the cassette tray
 - ◆ Slide in cassette tray
 - ◆ Set beam path to **vertical** position
 - ◆ Set the SID to the desired value (from **min. 85 cm** to max. 150 cm) on the display
 - The ACSS automatic format collimation then automatically collimates to the **full** format of the cassette inserted in the tray.
 - ◆ If necessary, use the adjusting knobs on the collimator to **manually** reduce the collimated format size
-
- ❑ If the patient table is then moved up or down with an SID of 85 cm to 150 cm, the ACSS automatic format collimation will constantly adjust the collimated format to match the collimated format of the inserted cassette even after the SID has been altered.
 - ❑ Furthermore, if the X-ray tube unit mounted on the 3D ceiling support is moved up or down within this SID range, the ACSS automatic format collimation will also constantly and automatically adjust to the collimated format following any alteration of the SID.
 - ❑ The patient table and X-ray tube unit on the 3D ceiling support may also be moved vertically at the same time. The ACSS automatic format collimation also constantly maintains the illuminated field on the collimated format if the SID setting is altered within a range of 85 cm to 150 cm.
 - ❑ If the SID is less than 85 cm or more than 150 cm, the operation mode switches to "**Manual**". The ACSS function then also switches over to "Manual" and the SID display reading is in reference to the tabletop plane.

For ACSS systems with or without planigraphy the following applies.

The system can be programmed for "metric" SID and "metric" cassette formats by service. If inch-format cassettes are inserted **no** ACSS mode, and hence, **no** automatic format limitation will be activated.

This also applies to the reverse case, i.e. if the system is programmed for the "inch" format and cassettes with a "metric" format are inserted.

In this case, mixed operation using both "metric" and "inch" cassette formats is **not** permissible!

Is the system programmed for **mixed operation**, mixed operation using both "metric" and "inch" cassette formats is permissible.

Exposures on the VERTIX PRO or VERTIX TOP Bucky Wall Stand

Horizontal beam path:

- ◆ Set the 3D ceiling support to one of its max. 4 programmed longitudinal lock-in positions (click stops) for the horizontal beam path on the Vertix (ACSS mode: min. SID 85 cm / max. SID 400 cm)
- ◆ Swivel the X-ray tube unit 90° to pos. facing Bucky wall stand (**horizontal** beam path, max. $\pm 3^\circ$ deviation)
- ◆ **Insert a cassette** in the cassette tray
- ◆ **Close** the cassette tray

Vertical beam path:

- ◆ Set 3D ceiling support to lock-in position for vertical operation on BWS (ACSS mode: min. SID 85 cm / max. SID 150 cm)
- ◆ Set X-ray tube to 0° setting for **vertical** beam path, max. $\pm 3^\circ$ deviation
- ◆ **Insert a cassette** in the cassette tray
- ◆ **Close** the cassette tray

Preconditions for Manual Operation without the automatic format collimation

The ACSS automatic format collimation functions in the "**Manual Mode**"

- ❑ If the cassette tray is closed and **without** inserting a cassette,
- ❑ If the SID is **less than** 85 cm or **more than** 150 cm (in the vertical beam path) **or**
- ❑ The 3D ceiling support is located outside of the up to 4 programmed stop positions for the horizontal beam path on the Vertex, **or**
- ❑ If the X-ray axis is set to an angle which deviates **more than** $\pm 3^\circ$ from the vertical plane in which case
 - The "**Manual**" indicator lights up on the collimator
 - And the SID must be measured with the tape measure. The collimation value can then be read off from the format display on the collimator and entered using the +/- correction keys.

In such exceptional cases, you should **always** collimate to the desired field size by **manually** adjusting the format rotary knobs on the collimator.

Manual Mode

All oblique projections and exposures for which **no** cassette is inserted in the cassette tray of the exposure table or Bucky wall stand (e.g. on-table and bedside radiography) must be performed in the manual mode.

The "**Manual**" indicator lights up.

- The SID setting is reached via vertical travel of the table or X-ray tube unit. Please note that the SID must be measured with the **tape measure**. For collimation via the format display on the collimator, the measured SID must first be entered using the +/- correction buttons.

Bucky exposures with a vertical beam path in which the SID is **not** located within the ACSS range of 85 cm to 150 cm may also be performed only in the **manual** mode.

- ❑ Changeover to the **manual mode** occurs **automatically** if the **SID** is **less than 85 cm or more than 150 cm**.
 - The reference plane for the SID display in the manual mode is the tabletop plane. It can be set to another desired exposure plane with the +/- SID correction keys.
- ❑ In the manual mode, the SID display is always referred to the tabletop plane - unless this setting has been altered manually.

Operation in the "Manual" Mode

Exposures on the MULTIX Patient Table

- ◆ Set cassette to exposure position.
 - Oblique projections as well as on-table, lateral and Bucky exposures outside of the ACSS SID range of 85 cm to 150 cm are possible.
- ◆ Measure SID with tape measure (with oblique beam path only)
- ◆ Use the "**plus**" / "**minus** key" on the control panel of the collimator to **set** the SID value on the display (with oblique beam path only)
- ◆ Switch on light localizer and project it onto the object / cassette
- ◆ Use the format knobs on the collimator control panel to **set** the width and height of the **cassette format**
- ◆ Check (**full and even**) **illumination** of collimated field
- ◆ If necessary, use the adjusting knobs on the collimator to perform fine collimation **manually**

In the **vertical** beam path only:

- ❑ If the patient table is moved up or down, the collimated format is also automatically and constantly maintained even following changes in the SID.
- ❑ If the X-ray tube unit on the 3D ceiling support is moved up or down, the automatic control again constantly maintains the collimated format even for the format illumination of altered SIDs.
- ❑ The patient table and X-ray tube unit on the 3D ceiling support may also be moved up and down simultaneously. The automatic control will nevertheless maintain the constancy of the collimated field.
- ❑ If the SID value is too **small**, full illumination of the cassette format will probably no longer be possible for reasons of geometry. In this case, the control will automatically collimate the field to the smallest possible format which can still be controlled with the light localizer.

*Exposures on the VERTIX PRO or VERTIX TOP Bucky Wall Stand***Horizontal** beam path (**Bucky** exposure):

- ☐ **No** manual Bucky operation is possible
- ☐ ACSS operation is possible only in one of the max. four lock-in positions.

Horizontal beam path ("**Free** exposure"):

- ☐ A "free exposure" (no cassette inserted in cassette tray) may be performed in any setting.
- ◆ Select "Free exposure" ("Bed") on the generator control console

Vertical beam path:

- ◆ Set X-ray tube unit on 3D ceiling support to BWS exposure position
- ◆ Set 3D ceiling support to special lock-in position above BWS
- ◆ Set X-ray tube unit to 0° setting with vertical beam path
- ◆ Set SID
 - For the "manual" mode, the SID criteria for values lying outside of the ACSS SID range (i.e. < 85 cm or > 150 cm) apply, where changeover to "**Manual**" occurs automatically.

Following a changeover between the "Manual" and the "ACSS" mode, the SID reading on the display shows a difference of 4.2 cm for the film-front panel distance.

In the **manual** mode the last SID is frozen and has to be actualized with the +/- buttons according to the reading of the tape measure.

Exception: Multix TOP Manual.

Extended Operating messages

The "ACSS" and "Manual" displays on the control panel for the stand settings and on the control panel of the collimator are flashing alternately in the following situations:

❑ Wrong cassettes or wrongly inserted cassettes

In the ACSS mode (SID = 85 cm to 150 cm) **non**-standard cassettes are inserted or standard cassettes are inserted **off-center** or **tilted**.

- Exposure release is disabled.

Remedy: Use only standard cassettes and insert them centered and untilted.

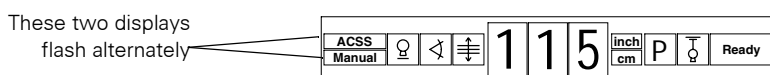
❑ Cassette tray is pushed in too slowly

If the cassette tray with the inserted cassette is pushed in unusually slowly.

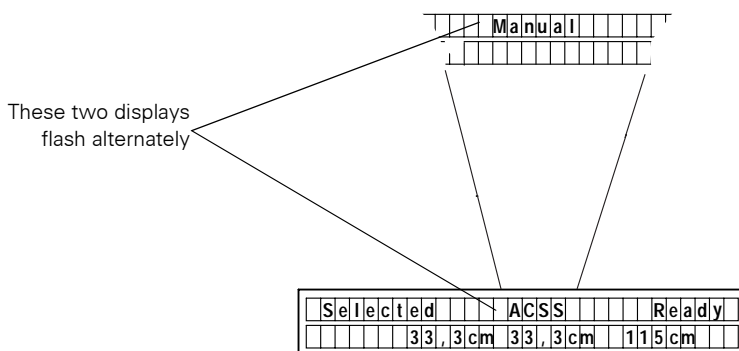
- the ACSS automatic format collimation does not sense the size of the cassette.
- exposure release is disabled.

Remedy: Insert the cassette tray again faster.

- The "Ready" display continues to light up.
- After exposure release the "Ready" display continues to light up, even if a repeated exposure release is again disabled until the next change of cassette in order to prevent a double exposure.



Display elements for stand settings

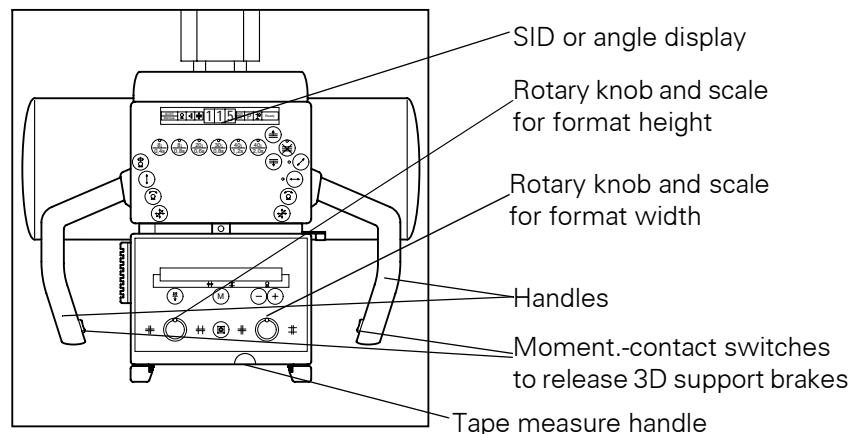


Display on the ACSS collimator

Exposure Possibilities with ACSS Collimator

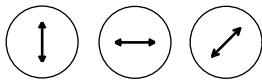
Centered Bucky Exposure with Vertical Beam Path

"ACSS Mode"

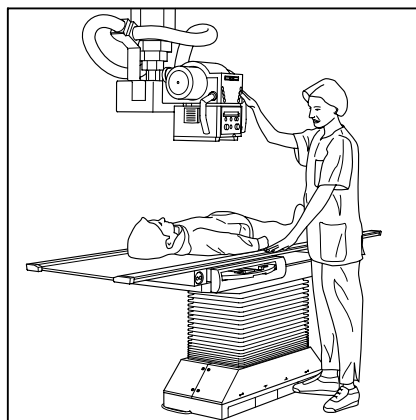
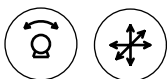


Collimator and control panel

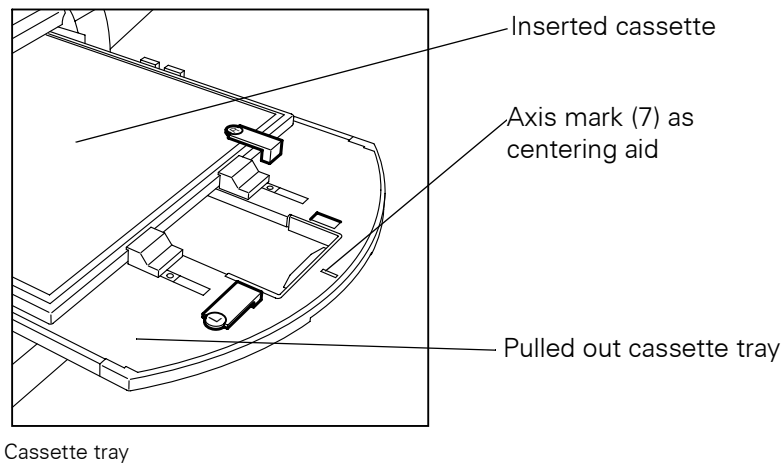
- ◆ Insert cassette in cassette tray.
- ◆ Use handles to move X-ray tube unit to center lock-in position and set it to the vertical (0°) beam path position.



- ◆ Prior to the preceding step, first release the brakes with the push buttons on the control panel or the momentary-contact switches on the handles.



Centering



- ◆ Switch on light localizer / LASER line light localizer on collimator.
- ◆ Use LASER line light localizer of collimator to set axis mark (7) on handle of cassette tray to centered middle position.



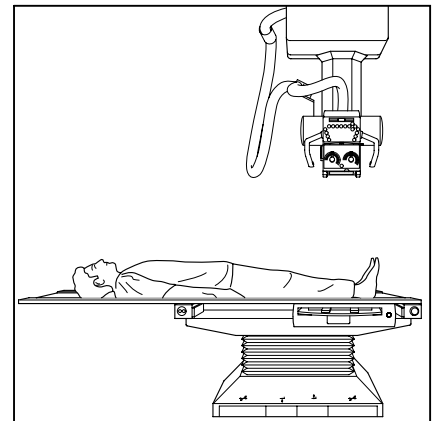
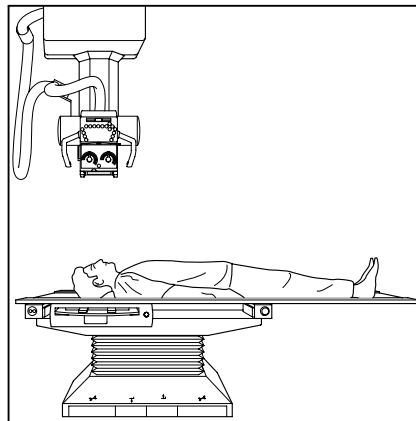
- ◆ Set the SID via the reading on the digital function display by moving the X-ray tube unit vertically with the handles or by using the foot switches for vertical table travel located on the base of the table.
- ◆ Precede by pressing the push button or the momentary-contact switches in the handles to release the vertical brake; then move the X-ray tube unit in a vertical direction.

- The ACSS automatic format collimation automatically detects the dimensions of the cassette inserted in the tray and controls collimation by the collimator so that the **full** format of the cassette is **constantly** collimated for SID settings varying within the ACSS SID range of 85 cm to 150 cm.
- Using the format collimation adjusting knobs on the collimator, additional collimation close to the object can be performed.



Collimation close to the object reduces leakage radiation, thus improving the resulting image quality.

In addition, it also reduces patient exposure to radiation.

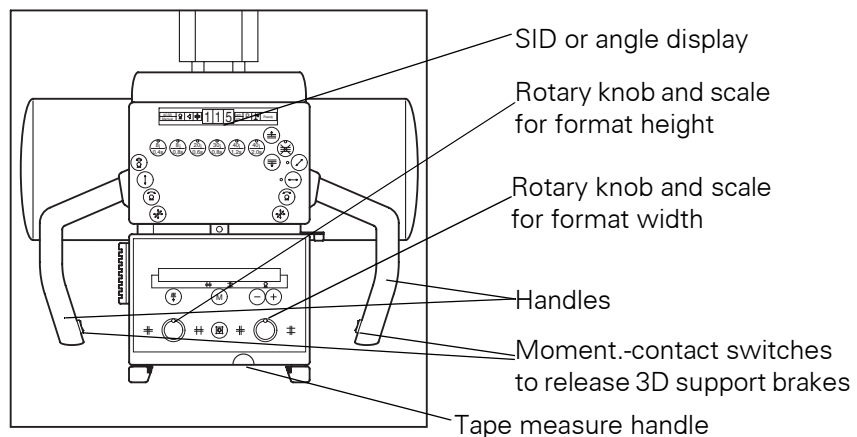


Head-to-foot examination without repositioning the patient

Exposures with a Vertical Beam Path:

"Free On-table" or "Bucky" Exposures

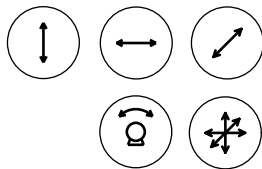
"Manual Mode"



*On-table exposures can be performed with the ACSS collimator **only** in the "Manual mode", since the ACSS automatic format collimation does not permit format sensing outside of the catapult Bucky.*

"**Free on-table exposures**" can be performed in the "Manual mode" if **no** cassette is inserted in the cassette tray. **Bucky exposures** are also possible provided that the SID is < 85 cm or > 150 cm.

To keep the patient skin dose to a **minimum**, always maintain as **large** a focus-skin distance as possible.



- ◆ For "**free exposures**" select "Free exposure" or "Bed" on the generator control console.
 - "Selected" **switches off** on the function display.
- ◆ For a "**Bucky exposure**" select the Bucky table on the generator control console.
 - "Selected" then **appears** on the function display.
- ◆ Use both handles to move 3D ceiling support with X-ray unit to desired exposure position and set it to vertical (0°) beam path.
- ◆ Release the corresponding brakes before moving the support.
- ◆ **Measure SID** with tape measure.
 - For "**free on-table exposure**", measure up to cassette
 - For "**Bucky exposure**", measure up to cassette in **cassette tray**

With vertical beam path, the SID display is continually updated, also in "Manual mode", and even when "Bed" is selected. This can, however, be changed in "Manual mode" via the +/- buttons. As long as ACSS mode is not activated, relative changes in height are added to or subtracted from the changed SID that is entered.

The table lift is taken into account here, also for the "Bed" selection.

For the "Bed" selection, the Lontomat is not taken into account and no grid movement is initialized.

For the "Bed" selection, no cassette should be in the tray (otherwise ACSS display and the corresponding SID correction to the source-tray distance is possible).

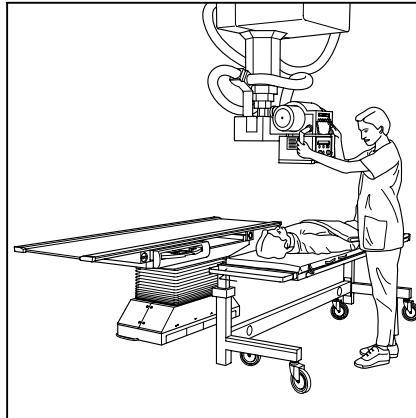


- The SID display in the "Manual mode" is referred to the film plane in the table-top plane. For this reason, the SID display reading must be corrected by 5 cm for **Bucky** exposures using the "+" button.
- ◆ Use the corresponding rotary knobs on the collimator to adjust the format until the desired format height and width values appear on the display.

- The format resulting from the prescribed SID **in** the exposure plane appears on the X-ray field size display located on the ACSS collimator function display.



- ◆ Switch on the light localizer and the LASER line light localizer on the collimator.
- ◆ **Check** for full format illumination and collimate as close to the object as possible.

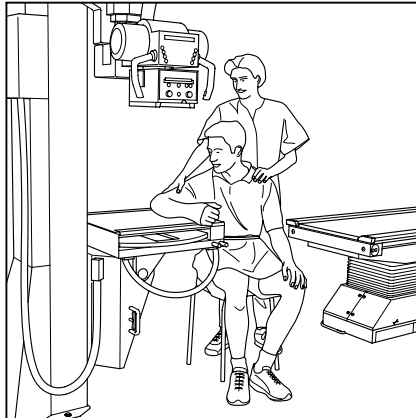


Emergency exposure on patient gurney

In addition to on-table radiography, bedside or free emergency radiography of the patient on a patient gurney is also possible.

- The correct settings for these exposures are the same as for "free on-table radiography" with a vertical beam path.

During "free" exposures, e.g. bedside radiography or an exposure taken on a patient gurney, the table height of the MULTIX patient table must **not** be altered once the SID value has been set. Reason: This would change the system SID value, thus resulting in an incorrectly dimensioned format collimation.



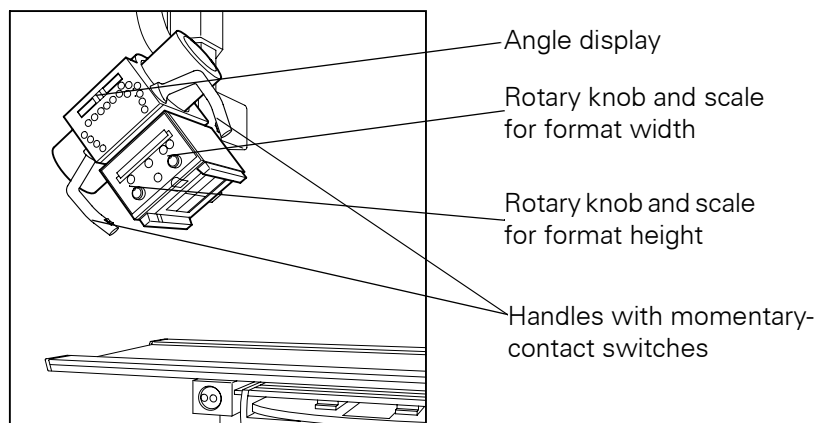
Free exposure on the VERTIX TOP

During "free" exposures at the VERTIX TOP, the height of the VERTIX tray must **not** be altered once the SID value has been set. Reason: This would change the system SID value, thus resulting in an incorrectly dimensioned format collimation.

Oblique Projections:

"Free On-table" or "Bucky Exposures"

"Manual Mode"



Free oblique exposure

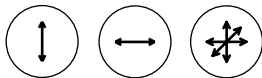
- ❑ The SID display on the control panel is **not** active due to the oblique position of the X-ray tube unit.
 - The oblique **angle** of projection is displayed instead.
 - For this reason, the SID must be **measured** with the tape measure and **set** accordingly.
 - The SID value thus measured can be input using the +/- SID correction

buttons on the collimator to refer the format reading to the exposure plane.

"Free on-table exposures" can be performed in the "Manual mode" if **no** cassette is inserted in the cassette tray. **Bucky exposures** are also possible provided that the SID is < 85 cm or > 150 cm.

To keep the patient skin dose to a **minimum**, always maintain as **large** a focus-skin distance as possible.

- ◆ For **"free exposures"**, select "Free exposure" or "Bed" on the generator control console.
 - "Selected" **switches off** on the function display.
- ◆ For a **"Bucky exposure"** select the Bucky table on the generator control console.
 - "Selected" then **appears** on the function display.
- ◆ Use both handles to move 3D ceiling support with X-ray tube unit CCW or CW to the desired position.



- ◆ Release the corresponding brakes before moving the support.

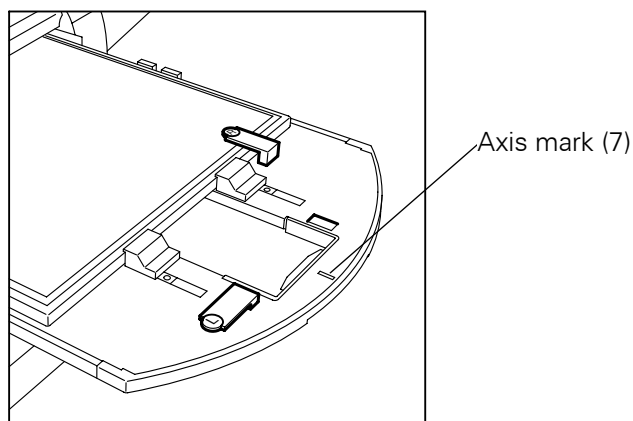


- ◆ Press button for "rotation of X-ray tube about horizontal axis" and use both handles to rotate X-ray tube unit by the desired angle (see digital **angle display**).

- ◆ **Measure SID** with tape measure.
 - For a **"free on-table exposure"** up to the cassette
 - For a **"Bucky exposure"** up to the cassette in the **cassette tray**

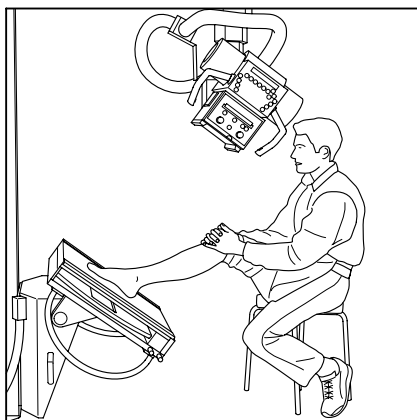


- ◆ Switch on light localizer / LASER line light localizer on collimator.
- ◆ For a **"free on-table exposure"**, center on cassette and object with the light localizer and LASER line light localizer.

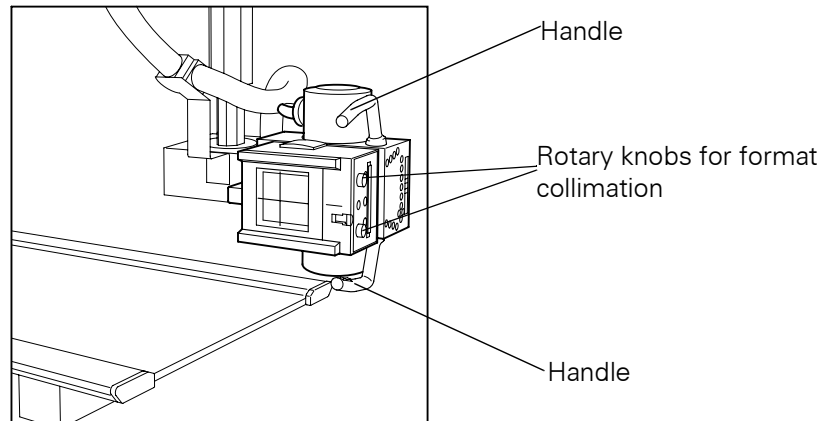


Cassette tray

- ◆ For a "**Bucky exposure**", use the LASER line light localizer of the collimator to **center** on the axis mark (7) on the handle of the cassette tray.
- ◆ Following illumination with the light localizer, set the format with the corresponding adjusting knobs on the collimator and collimate **close to the object**.



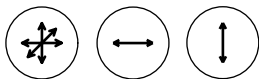
Bucky oblique projection on the VERTIX TOP

*Free Lateral Exposures**"Manual Mode"*

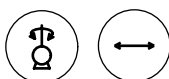
Lateral beam projection

No cassette may be inserted in the cassette tray of the MULTIX table or VERTIX Bucky wall stand!

The patient is exposed to the **lowest** skin dose if as **large** a focus-skin distance as possible is maintained.



- ◆ Press the "3D ceiling support longitudinal brake" and "3D ceiling support vertical brake" or "floating movement" buttons.
- ◆ Use both handles to move the X-ray tube unit down and to the side.



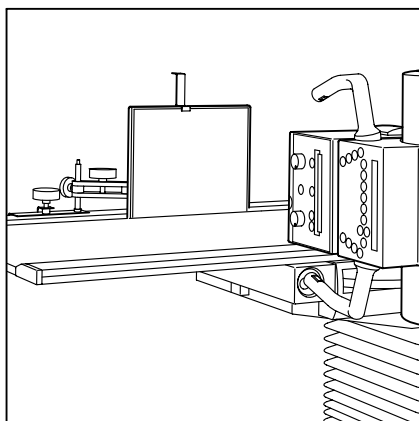
- ◆ Press the "X-ray tube unit vertical rotation brake".
- ◆ Use both handles to rotate the 3D ceiling support CCW or CW to the desired position; then release the "longitudinal brake" and move support lengthwise.



- ◆ Press button for "rotation of X-ray tube unit about horizontal axis".
- ◆ Use handles to rotate X-ray tube unit 90° until it perceptibly snaps into the exposure position.



- ◆ Press button to release "transverse brakes".
- ◆ Use handles to set X-ray tube unit to SID.
- ◆ Measure with tape measure if necessary.



Preparation for lateral exposure

- ◆ Insert cassette in cassette holder for lateral exposures.

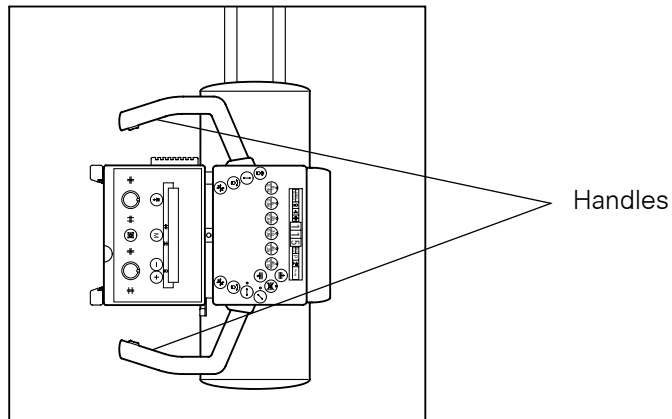
⇒ see Register **Accessories**



- ◆ Switch light localizer button "on".
- ◆ Center X-ray tube unit on object / cassette using LASER line light localizer and illumination of collimator X-ray field.
- ◆ Use rotary knobs for format collimation **close to the object**.
- ◆ Select "Free exposure" or "Bed" on generator console.
 - "Selected" then **switches off** on the collimator display.

Bucky Exposure Centered on Bucky Wall Stand: Horizontal Beam Path

"ACSS Mode"



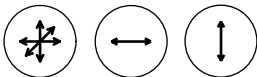
- ◆ Release X-ray tube unit rotation brake with push button on control panel.

- ◆ Use handles to rotate X-ray tube unit about the horizontal axis.

- ◆ Use handles to set X-ray tube unit to center lock-in position and horizontal (90°) beam path aimed at the Bucky wall stand.

- ◆ Release the corresponding brakes of the 3D ceiling support with the push buttons on the control panel.

- ◆ Use the handles to move the 3D ceiling support with X-ray tube unit to one of the SID lock-in positions programmed for the horizontal beam path.

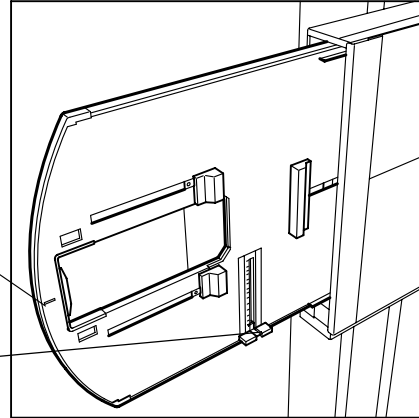


*Especially when taking Bucky exposures on the VERTIX PRO or VERTIX TOP or Vertex S Bucky wall stand: Please make sure that the 3D ceiling support is exactly secured in **one** of the max. four described **SID lock-in positions** within the 85 cm to 400 cm SID range.*

You avoid image quality defects due to grid shadows if the SID is maintained exactly appropriate to the associated grid .

Axis mark (7)
for centering

Format stop (F)



- ◆ Insert cassette in cassette tray of Bucky wall stand.

- ◆ Slide format stop (F) to correct format size.

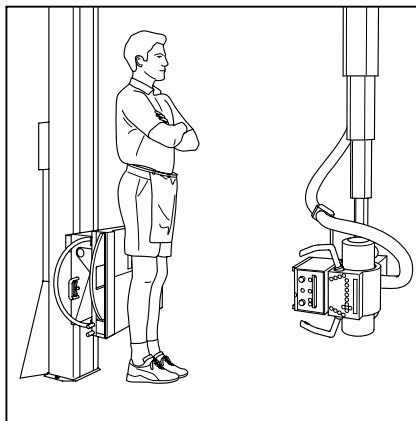


- ◆ Switch on light localizer / LASER line light localizer on collimator.

- ◆ Using LASER line light localizer of collimator, set axis mark on handle of cassette tray to the centered middle position.

- The ACSS automatic format collimation automatically inputs the dimensions of the cassette inserted in the cassette tray and controls collimation by the collimator.

- Using the format collimation adjusting knobs on the collimator, you can collimate close to the object.



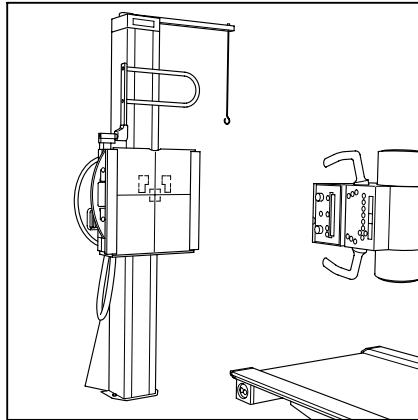
Extremity exposure

- Example of an extremity exposure of a standing patient taken with the MULTIX TOP on the VERTIX TOP or on the VERTIX PRO.

- ◆ Select "VERTIX" Bucky wall stand on generator console.
 - "Selected" **appears** on the collimator display.

Exposures with Horizontal Beam Path: "Free BWS or Bucky Exposure"

"Manual Mode"



- ❑ Insert **no** cassette in cassette tray, free on-table exposure
- ❑ Random positioning
 - The SID can be set as required
- ◆ Select "Free exposure" or "Bed" on generator control console.
 - "Selected" then **switches off** on the function display.



No manual exposure is possible on the **Bucky Wall Stand** with a horizontal beam path. Only operation in the ACSS mode and one of the max. four **lock-in positions** is then possible.

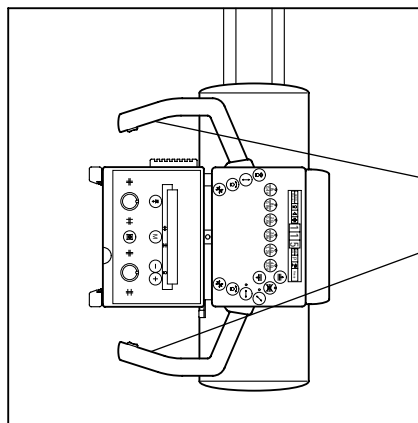
All other exposure positions can be performed in the "Manual mode".

The Ready display is out, only if, for exposures with horizontal beam path on a Vertex in ACSS systems with or without planigraphy, the 3D ceiling support is not positioned in a programmed stop in relation to the Vertex, but otherwise fulfills ACSS requirements. This indicates that manual Bucky mode on the Vertex with horizontal beam path is not possible.

To keep the patient skin dose to a **minimum**, always maintain as **large** a focus-skin distance as possible.



- ◆ Press push button on control panel to release X-ray tube unit rotation brake.
- ◆ Use handles to rotate X-ray tube unit about horizontal axis.
- ◆ Use handles to rotate X-ray tube unit to the lock-in center position and a horizontal (90°) beam path aimed at the Bucky wall stand.



Handles



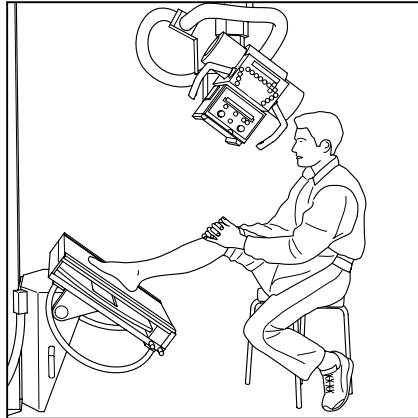
- ◆ Use handles to set 3D ceiling support with X-ray tube unit to correct SID and verify with tape measure.
- ◆ Release the corresponding brakes by pressing the push buttons on the control panel.
- ◆ **Measure SID** with tape measure.
 - For “**Free exposure**” up to cassette on BWS **tabletop**
 - The SID thus measured can then be entered via the +/- SID correction buttons. The format reading on the collimator display is now referred to the exposure plane.



- ◆ Switch on light localizer and LASER line light localizer on collimator.
- ◆ **Check** format illumination and collimate as close to object as possible.
- ◆ Select “**Free exposure**” or “**Bed**” on generator console.
 - “Selected” **switches off** on the function display.

Oblique Projections: "Free BWS" or "Bucky Exposure" (with VERTIX TOP and VERTIX S only)

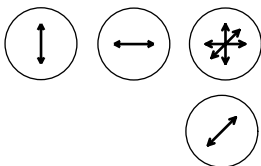
"Manual Mode"



- ❑ The SID display on the control panel is **not** active due to the oblique position of the X-ray tube unit.
 - The oblique **angle** of projection is displayed instead.
 - For this reason, the SID must be **measured** with the tape measure and **set** accordingly.

To keep the patient skin dose to a **minimum**, always maintain as **large** a focus-skin distance as possible.

- ◆ For "**free exposures**", select "Free exposure" or "Bed" on the generator control console.
 - "Selected" **switches off** on the function display.
- ◆ For a "**Bucky exposure**" select the Bucky table on the generator control console.
 - "Selected" then **appears** on the function display.
- ◆ Use both handles to move 3D ceiling support with X-ray tube unit to the desired position.
- ◆ Release the corresponding brakes.





- ◆ Press button for "rotation of X-ray tube about horizontal axis" and use both handles to rotate X-ray tube unit by the desired angle.

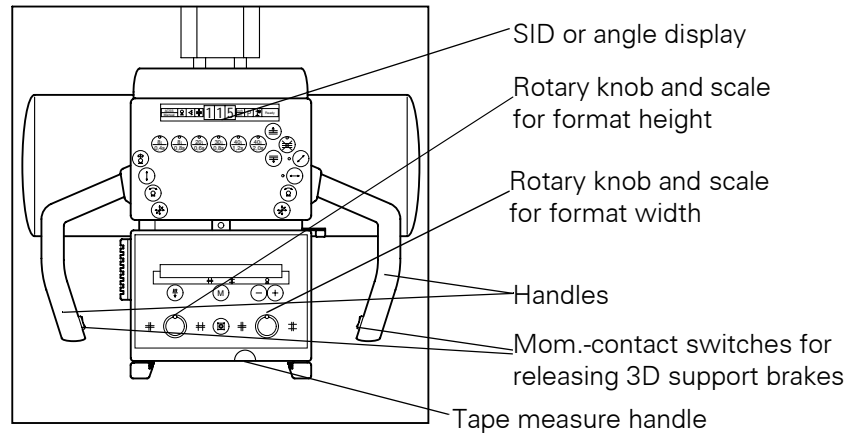
- ◆ **Measure SID** with tape measure.
 - For a "**Free on-table exposure**" up to cassette on BWS **tabletop**.
 - For a "**Bucky exposure**" up to cassette on **cassette tray**
 - The measured SID can be entered via the +/- SID correction buttons.
The format reading on the collimator display is then referred to the exposure plane.



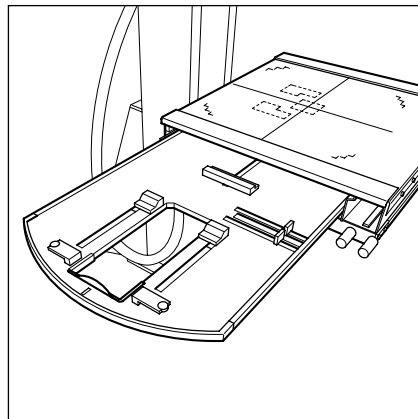
- ◆ Switch on light localizer / LASER line light localizer on collimator.
- ◆ For a "**free on-table exposure**", center on cassette and object with the light localizer and LASER line light localizer.
- ◆ For a "**Bucky exposure**", use the LASER line light localizer of the collimator to **center** on the axis mark (7) on the handle of the cassette tray.
- ◆ Following illumination with the light localizer, set the format with the corresponding adjusting knobs on the collimator and collimate **close to the object**.

Centered Bucky Exposure with Vertical Beam Path on VERTIX TOP Bucky Wall Stand

"ACSS-Mode"

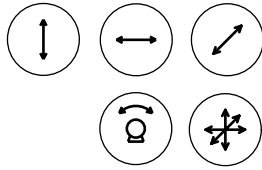


Collimator and control panel

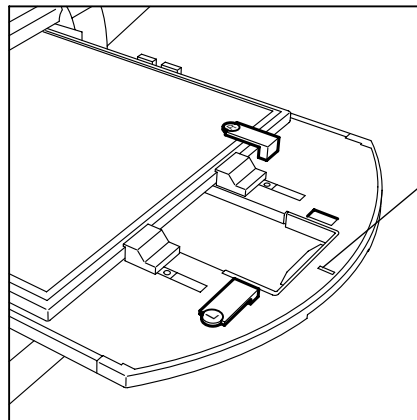


VERTIX TOP Bucky cabinet in +90° position

- ◆ Insert cassette in cassette tray
 - See Register 8, wall stand VERTIX PRO / VERTIX TOP



- ◆ Use handles to move X-ray tube unit to center lock-in position and set to vertical (0°) beam path.
- ◆ First release the corresponding brakes by pressing the push buttons on the control panel or the momentary-contact switches on the handles.
- ◆ Then move the 3D ceiling support to the special lock-in position above the horizontal Bucky cabinet of the VERTIX TOP.
 - The axis mark thus lines up with the LASER line light localizer of the collimator.



Cassette tray

Axis mark (7)



- ◆ Switch on light localizer / LASER line light localizer.
- ◆ Set SID via reading on digital function display, setting the X-ray tube unit accordingly to vertical direction with handles.
- ◆ Press vertical brake push buttons to release vertical brake and set X-ray unit to vertical direction.

- ❑ The ACSS automatic format collimation inputs the dimensions of the cassette inserted in the cassette tray and automatically controls collimation by the collimator. This ensures **constant** collimation to the **full** cassette format for varying SID settings throughout the ACSS SID range of 85 cm to 150 cm.
- ❑ Further collimation close to the object can be performed using the format collimation adjusting knobs on the collimator.



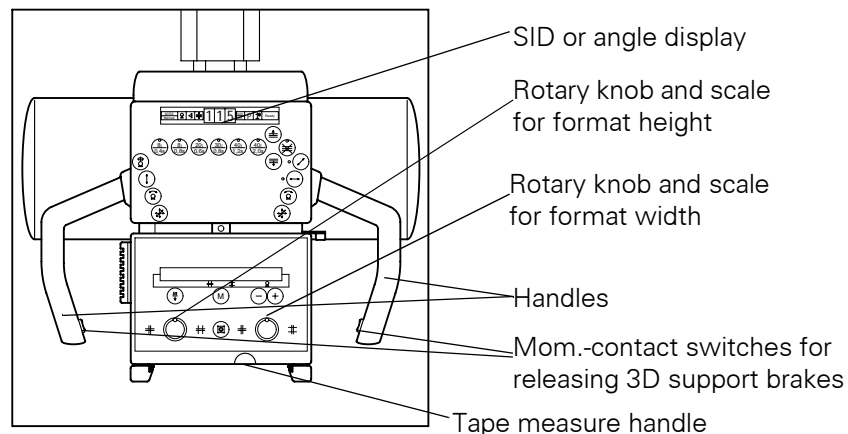
Collimation close to the object reduced leakage radiation, thus improving the image quality.

In addition, this also decreases patient radiation exposure.

Exposures with a Vertical Beam Path:

"Free BWS" or "Bucky Exposure"

"Manual Mode"



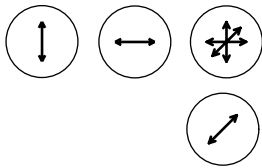
Collimator and control panel



On-table radiography can be performed with the ACSS multileaf collimator only in the "Manual mode", since the ACSS automatic format collimation does not permit format sensing outside of the catapult Bucky cabinet.

"**Free on-table exposures**" can be performed in the "Manual mode" if **no** cassette is inserted in the cassette tray. **Bucky exposures** are also possible provided that the SID is < 85 cm or > 150 cm.

To keep the patient skin dose to a **minimum**, always maintain as **large** a focus-skin distance as possible.



- ◆ Use both handles to move the 3D ceiling support to the special lock-in exposure position above the VERTIX TOP.
- ◆ Release the corresponding brakes by pressing the push buttons on the control panel or the momentary-contact switches on the handles.
- ◆ **Measure SID** with tape measure.
 - For a "**Free on-table exposure**" up to the cassette on the BWS **tabletop**.
 - For a "**Bucky exposure**" up to the cassette on the **cassette tray** of the Bucky wall stand.

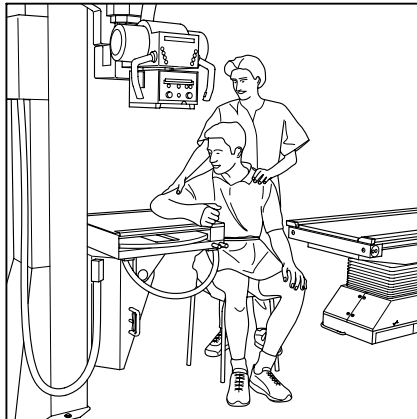
With vertical beam path:

With centered stop position for the tilted Vertex, the SID in relation to the support surface of the Vertex is displayed; outside of the centered stop position, the SID in relation to the tabletop of the lift table is displayed..

In "Manual mode", the SID can be changed via the +/- buttons.



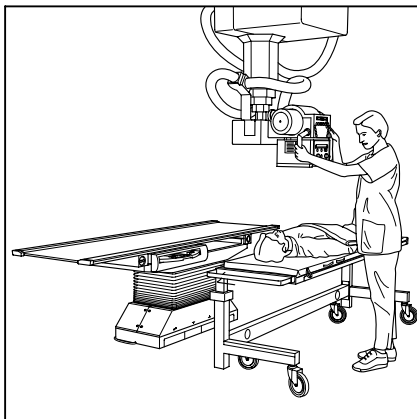
- ◆ Switch on light localizer / LASER line light localizer on collimator.
- ◆ With the collimator and cassette in the exposure position, **check** the format illumination and collimate as close to the object as possible.
- ◆ For "**Free exposures**" select either "Free exposure" or "Bed" on the generator control console
 - "Selected" then **switches off** on the function display.
- ◆ For "**Bucky exposure**" select the VERTIX Bucky wall stand on the generator control console
 - "Selected" then **appears** on the function display.



Free exposure on the VERTIX TOP

In addition to on-table radiography, bedside or free emergency radiography of the patient on a patient gurney is also possible.

- The correct settings for these exposures are the same as for "free on-table radiography" with a vertical beam path.



Emergency exposure on patient gurney

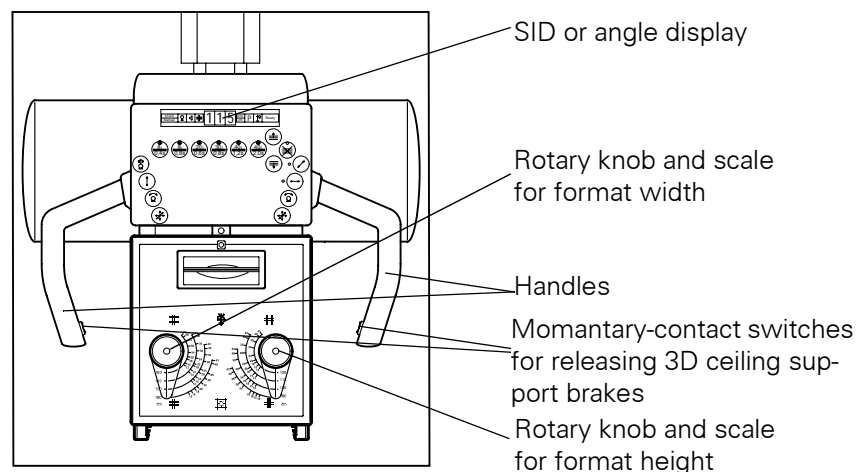
Radiographic possibilities with Manual Collimator

Important general information:

With the system configuration *MULTIX TOP (manual without tomo)*, the SID in relation to the cassette in the tray is displayed for *Bucky exposures*, but only with the working height requested by the customer. An SID in relation to the Vertex is not possible in this case.

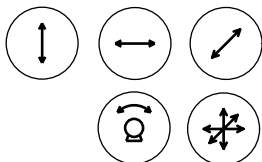
With the system configuration *MULTIX TOP P (manual with tomo)*, the SID in relation to the cassette in the tray is displayed for Bucky exposures for every table height - also with Vertex (in relation to the cassette in the Vertex tray).

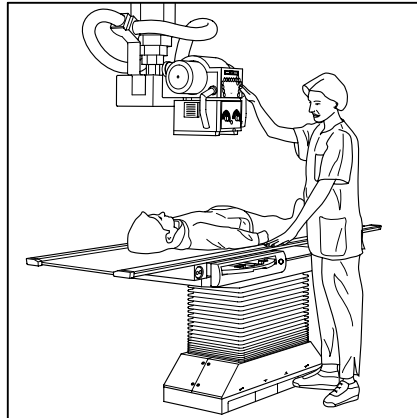
Centered Bucky exposure with vertical projection



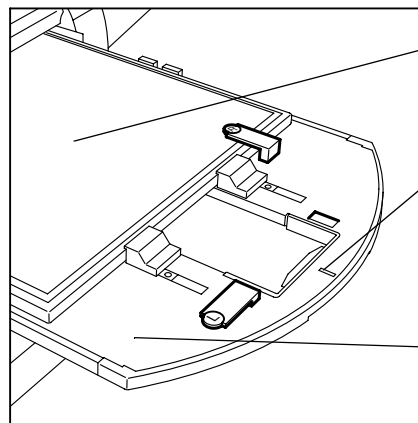
Collimator and control panel

- ◆ Insert a cassette into the cassette tray.
- ◆ Using the handles, turn the tube unit until it reaches the center stop and move it into the vertical (0°) beam path.
- ◆ To do so, release the corresponding brakes by operating the push buttons on the control panel or the momentary contact switches on the handles.





Centering



Cassette tray

Cassette inserted

Axis mark (7)
as centering aid

Cassette tray pulled out



- ◆ Switch on the light localizer and LASER line light localizer on the collimator.
- ◆ Center the cassette tray by aligning the axis mark (7) on the handle of the cassette tray with the collimator LASER line light localizer.

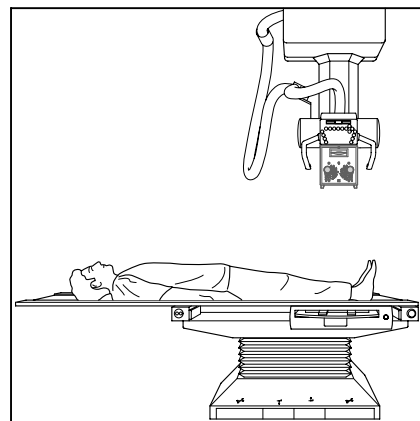
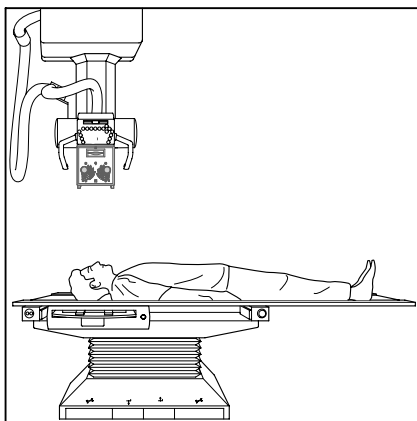


- ◆ Using the digital function display, set the SID by moving the tube unit in the vertical direction with the handles or by operating the foot kick switches for vertical table movement in the table base,
- ◆ To do so, actuate the corresponding push button to release the vertical brake and to adjust the tube unit in the vertical direction.
- ◆ **Measure SID** with the tape measure.
 - for "**free onto-table exposure**" up to the cassette
 - for "**Bucky exposure**" up to the cassette on the **cassette tray**.
- ◆ Using the format scales on the collimator, collimate as close as possible to the object.



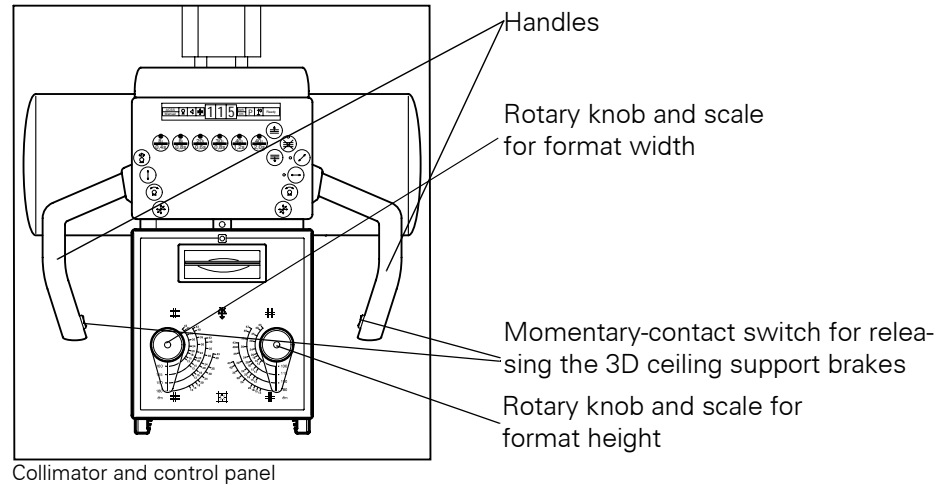
Collimation close to the object reduces scattered radiation and thus improves image quality.

It also reduces the radiation exposure of the patient.



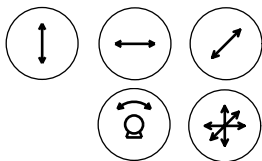
Patient examination from head to toe without repositioning

Free onto-table or "Bucky" exposure with vertical projection



"**Free on-table exposures**" can be performed if **no** cassette is inserted in the cassette tray.

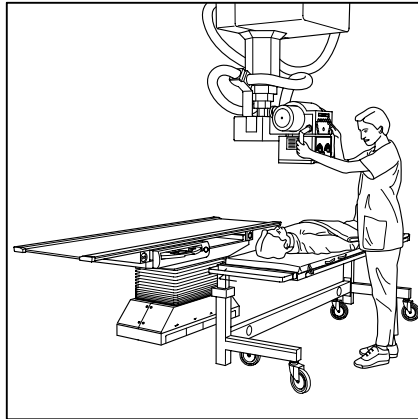
The patient receives the **lowest** skin dose, if the source skin distance is kept as **big** as possible.



- ◆ For "**free exposures**" select "free exposure" or "bed" on the generator control console.
- ◆ For a "**Bucky exposure**" select the Bucky table on the generator control console.
- ◆ Using the two handles, move the 3D ceiling support with X-ray tube unit to the desired exposure position and into the vertical (0°) beam path.
- ◆ Release the corresponding brakes for this purpose.

- ◆ **Measure SID** with the tape measure.
 - For "**free onto-table exposure**" up to the cassette
 - For "**Bucky exposures**" up to the cassette on the **cassette tray**.
- ◆ Using the knobs for format setting on the collimator set the format until the indicator in the display reaches the desired values for format height and width.
- ◆ Switch on light localizer / LASER line light localizer on the collimator.
- ◆ With the collimator and cassette in the exposure position, **check** the format illumination and collimate as close as possible to the object.



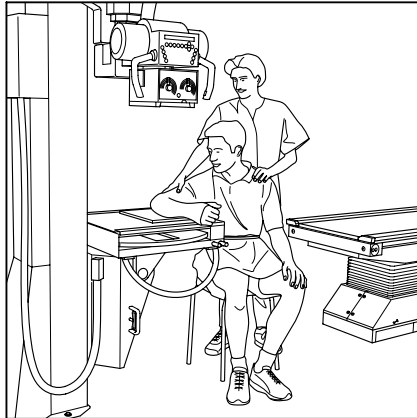


Emergency exposure onto a patient gurney

Instead of the onto-table exposure you may also perform a bed-side exposure or free emergency exposure on a patient gurney.

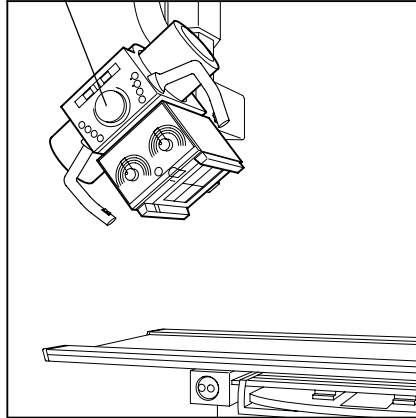
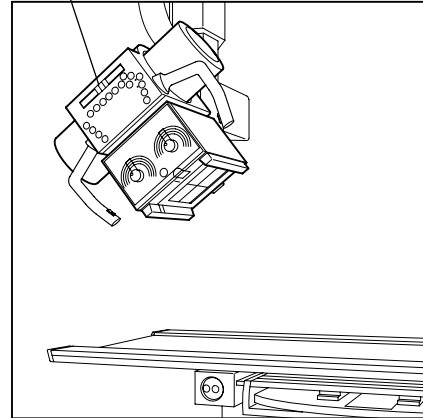
- Adjustments are made the same way as it is the case with "free onto-table exposures" with vertical projection.

When making "free" exposures such as bed-side exposures or exposures onto a patient gurney, the height of the MULTIX patient table must **not** be changed after the SID has been set, since this would change the SID value of the system.



Free exposure on the VERTIX TOP

When making "free" exposures at the VERTIX TOP, the height of the VERTIX tray must **not** be changed after the SID has been set, since this would change the SID value of the system.

*Oblique oblique exposure or oblique Bucky exposure*Analog
angle displayDigital
angle display

Free oblique exposure

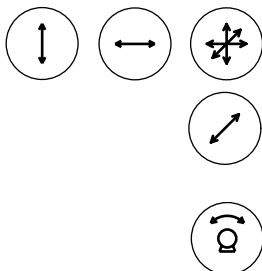
Due to the oblique position of the tube unit, the SID display is **not** active.

- Instead, the oblique projection **angle** is displayed.
- The SID must therefore be **measured** with the tape measure and **set** correspondingly.

"**Free on-table exposures**" can be performed if **no** cassette is inserted in the cassette tray.

The patient receives the **lowest** skin dose, if the source skin distance is kept as **big** as possible.

- ◆ For "**free exposures**" select "free exposure" or "bed" on the generator control console.
- ◆ Using the two handles, move the 3D ceiling support with the X-ray tube unit to the left or right into the desired position.



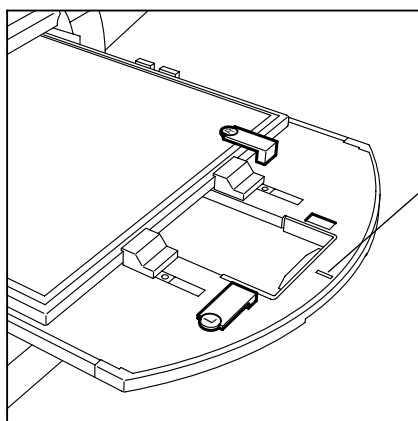
- ◆ To do this, release the corresponding brakes.

- ◆ Press the button for "tube unit rotation about the horizontal axis" and, using the two handles, rotate the tube unit by the desired angle (see digital or analog **angle display**).
- ◆ **Measure SID** with the tape measure.
 - For "**free onto-table exposure**" up to the cassette
 - For "**Bucky exposure**" up to the cassette on the **cassette tray**



- ◆ Switch on the light localizer / LASER line light localizer on the collimator.

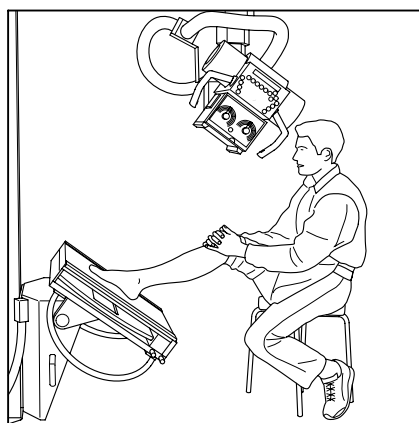
- ◆ For "**free onto-table exposure**" center onto the cassette and object, using light localizer and LASER line light localizer.



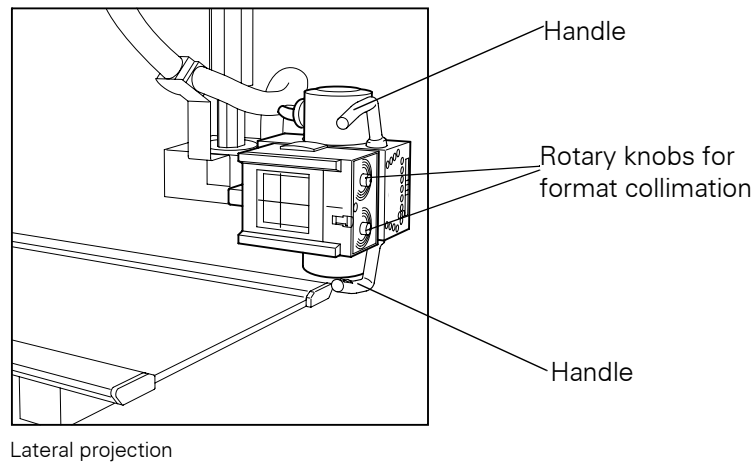
Axis mark (7)

Cassette tray

- ◆ For "**Bucky exposure**" center the cassette tray by aligning the axis mark(7) on the handle of the cassette tray with the collimator LASER line light localizer.
- ◆ Use the collimator knobs to set the format with the light localizer and collimate **as close as possible to the object**.

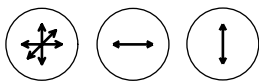


Oblique Bucky exposure with the VERTIX TOP

Free lateral exposure

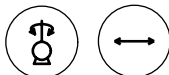
Make sure **no** cassette is inserted in the cassette tray of the MULTIX table or the VERTIX Bucky wall unit!

The **larger** the focus-skin distance, the **lower** the skin dose for the patient.



- ◆ Press the buttons for "3D ceiling support longitudinal brake" and "3D tube support vertical brake" or "floating movement".

- ◆ Move the X-ray tube unit sideways and downwards by the handles.



- ◆ Press the button for the "tube unit vertical rotation brake" and, using the handles, rotate the 3D ceiling support about the vertical axis to the left or right into the desired position.

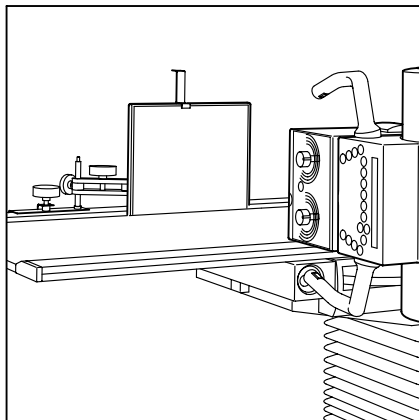
- ◆ Move it longitudinally after releasing the "longitudinal brake".



- ◆ Press the button for "tube rotation about the horizontal axis".
- ◆ Using the handles, rotate the tube unit by 90° until you feel it latch into position.



- ◆ Press the button for releasing the "transverse brakes" and, using the handles, set the tube unit to the SID.
- ◆ If necessary, measure the SID with the tape measure.



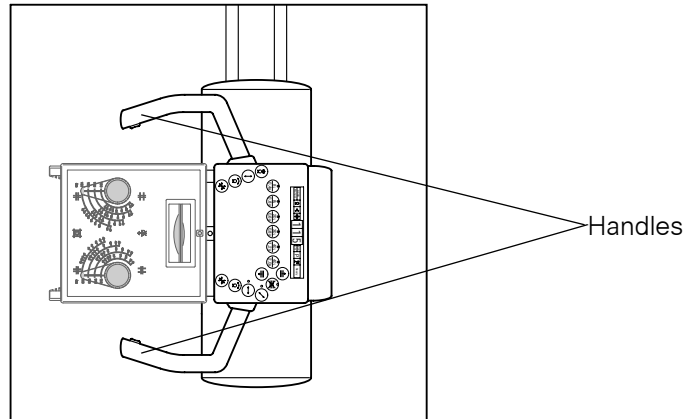
Preparation for lateral exposure

- ◆ Insert the cassette into the cassette holder for lateral exposures.
 - Refer to the **Accessories** register

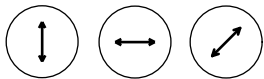


- ◆ Press the light localizer "ON" button and center the tube unit onto the object / cassette with the aid of the LASER line light localizer and the light field of the collimator.
- ◆ Collimate **as close as possible to the object** with the rotary knobs for format collimation.
- ◆ Select "free exposure" or "bed" at the generator control console.

*Centered Bucky exposure onto Bucky wall unit,
horizontal projection*



- ◆ Actuate the push button on the control panel to release the tube rotation brake.
- ◆ Using the handles, rotate the tube unit about the horizontal axis.
- ◆ Using the handles, move the tube unit until it reaches the center stop and bring it with horizontal (90°) projection in the direction of the Bucky wall unit.
- ◆ To do this, release the corresponding brakes of the 3D ceiling support by pressing the push buttons on the control panel and, using the handles, move the 3D ceiling support with tube unit into one of the SID stop positions.

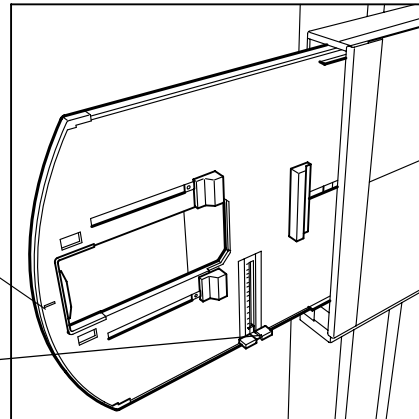


*When making Bucky exposures on the VERTIX PRO or VERTIX TOP Bucky wall unit, ensure that the 3D ceiling support is set accurately to **one** of the fixed **SID stop positions** within an SID range of 85 cm to 400 cm.*

You avoid image quality defects due to grid shadows if the set SID is in accordance with the fixation of the grid.

Axis mark (7)
for centering

Format stop (F)



- ◆ Insert a cassette into the cassette tray of the Bucky wall unit.

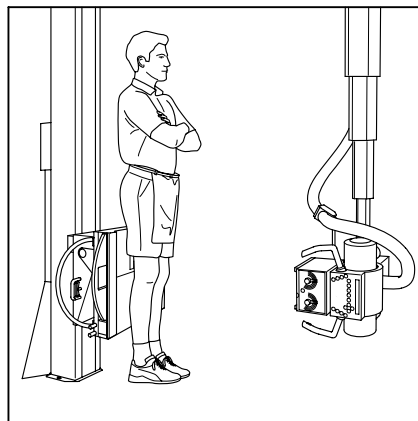
- ◆ Move the format stop (F) to the format size.



- ◆ Switch on the light localizer / LASER line light localizer on the collimator.

- ◆ Center the cassette tray by aligning the axis mark (7) on the handle of the cassette tray with the collimator LASER line light localizer.

- ◆ Collimate as close as possible to the object using the collimator knobs for setting the format collimation.

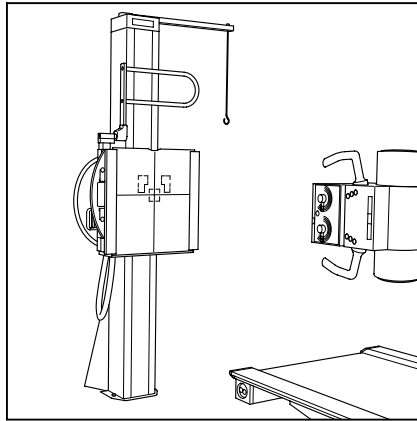


Extremities exposure

- Example of an exposure of the extremities with standing patient with MULTIX TOP P onto the VERTIX TOP or VERTIX PRO.

- ◆ At the generator control console, select the "VERTIX" Bucky wall unit.

*Exposure with horizontal projection as
"Free BWS exposure"*

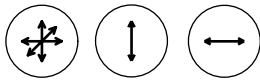
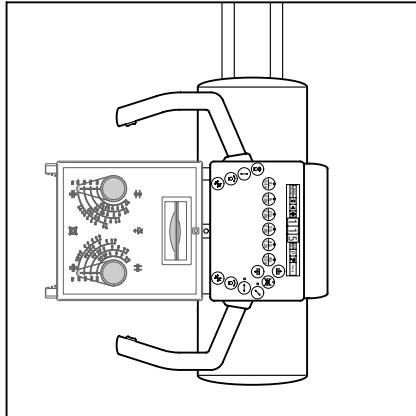


- ❑ Do **not** insert any cassette in the cassette tray, free onto-table exposure
- ❑ Positioning as desired
 - Any SID can be set
- ◆ Select "**free exposure**" or "**bed**" at the generator control console.

The patient receives the **lowest** skin dose, if the source skin distance is kept as **big** as possible.



- ◆ Release the tube rotation brake with the push button on the control panel.
- ◆ Using the handles, rotate the X-ray tube unit about the horizontal axis
- ◆ Using the handles, move the tube unit until it latches in the mid position and bring it with horizontal (90°) projection in the direction of the Bucky wall stand.



- ◆ Using the handles, set the 3D ceiling support with the tube unit to the SID with the aid of the tape measure.

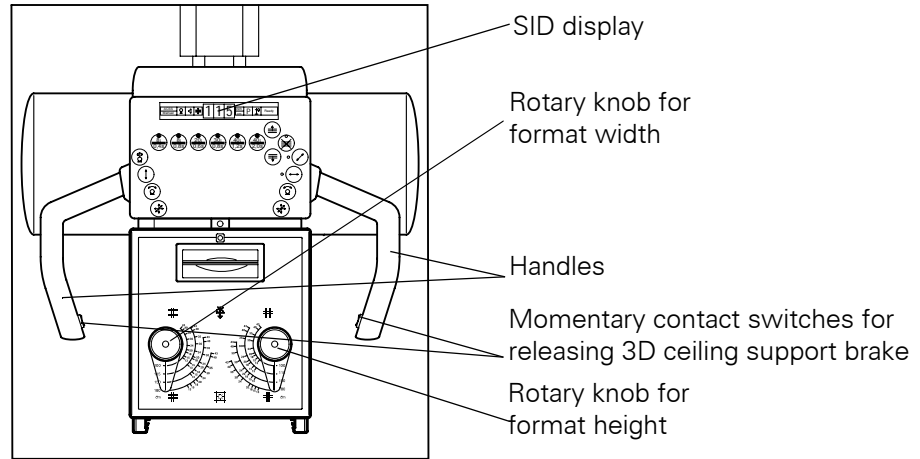
- ◆ To do so, release the corresponding brakes with the push buttons on the control panel.

- ◆ **Measure** the **SID** with the tape measure.
 - In case of "**free exposure**" up to the cassette on the BWS-**tabletop**

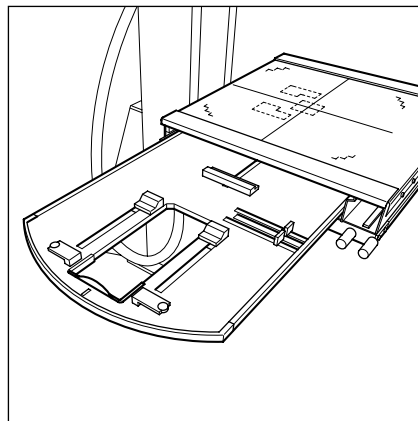


- ◆ Switch on light localizer / LASER line light localizer on the collimator.
- ◆ **Check** the illumination of the format and collimate close to the object.
- ◆ Select "**free exposure**" or "**bed**" on the generator panel.

*Centered Bucky exposure with vertical projection onto the
VERTIX TOP Bucky wall unit*

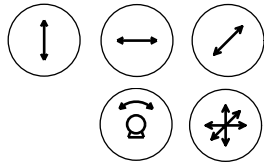


Collimator and control panel (Example: Multix TOP P)

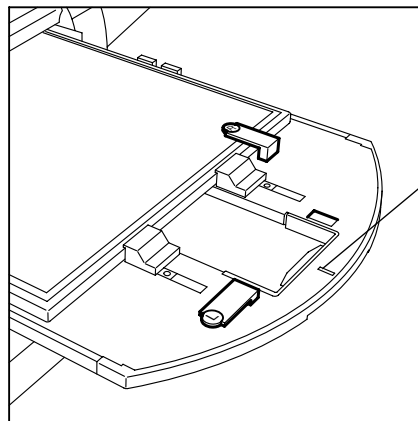


VERTIX TOP Bucky in the +90° position

- ◆ Insert a cassette into the cassette tray
 - See Register 8: Wall stands VERTIX PRO / VERTIX TOP



- ◆ Using the handles, move the tube unit until it reaches the center stop and position it in the vertical (0°) beam path.
- ◆ To do so, release the corresponding brakes by operating the push buttons on the control panel or the momentary contact switches on the handles.
- ◆ Move the 3D ceiling support to the special stop position above the horizontal Bucky tray of the VERTIX TOP.
 - The axis mark should then be aligned with the line mark of the collimator LASER line light localizer.



Cassette tray

- ◆ **Measure SID** with the tape measure.
 - For “**free onto-table exposure**” up to the cassette on the Bucky wall unit tabletop
 - For “**Bucky exposure**” up to the cassette on the **cassette tray** of the Bucky wall unit



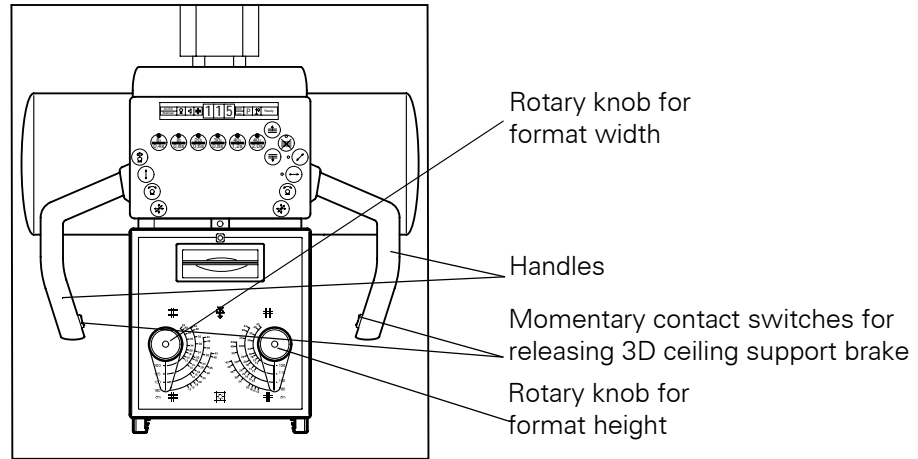
- ◆ Switch on light localizer / LASER line light localizer on the collimator.
- ◆ **Check** the illumination of the format with the collimator and cassette in exposure position and collimate as close as possible to the object.
- ◆ For "**free exposures**" select "free exposure" or "bed" on the generator control console.
- ◆ For "**Bucky exposures**" select the VERTIX Bucky wall unit at the generator control console.
- ◆ Collimate as close as possible to the object using the collimator knobs for setting the format collimation.



Collimation close to the object reduces scattered radiation and thus improves image quality.

It also reduces the radiation exposure of the patient.

"Free exposure" with vertical projection onto the VERTIX TOP Bucky wall unit

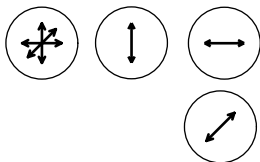


Collimator and control panel

"Free onto-table exposures" can be made **without** a cassette in the cassette tray.

The **larger** the source-skin distance, the **lower** the skin dose for the patient.

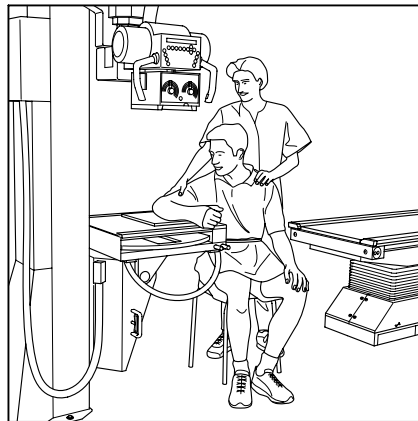
- ◆ Using the two handles, move the 3D ceiling support with tube unit to the exposure position by setting it to the special stop position above the VERTIX TOP.



- ◆ To do so, release the corresponding brakes by operating the push buttons on the control panel or the momentary contact switches in the handles.
- ◆ **Measure** the **SID** with the tape measure.
 - For **"free onto-table exposure"** up to the cassette on the Bucky wall unit tabletop
 - For **"Bucky exposure"** up to the cassette on the **cassette tray** of the Bucky wall unit



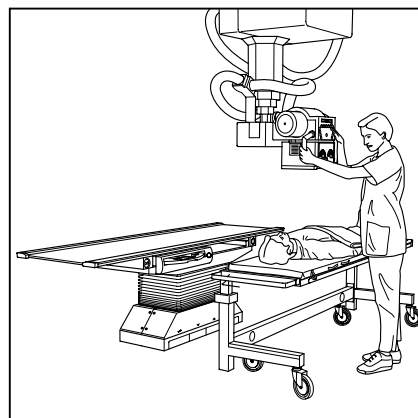
- ◆ Switch on light localizer / LASER line light localizer on the collimator.
- ◆ **Check** the illumination of the format with the collimator and cassette in exposure position and collimate as close as possible to the object.
- ◆ For "**free exposures**" select "free exposure" or "bed" on the generator control console.
- ◆ For "**Bucky exposures**" select the VERTIX Bucky wall unit at the generator control console.



Free exposure onto the VERTIX TOP

Instead of the onto-table exposure, a bedside exposure or a free emergency exposure onto a patient gurney can be made.

- Settings as for "free onto-table exposure" with vertical projection.



Emergency exposure onto a patient gurney

Planigraphy exposure







MULTIX TOP P, P with follow-up control, ACSS P and ACSS P with follow-up control are equipped with a tomographic device for linear planigraphy.

Planigraphy is an exposure technique for generating an image of a plane inside an examination object. The plane can be selected by changing the tomographic height. To perform planigraphy it is necessary to move the ceiling support in longitudinal direction, to rotate the tube unit and to move the cassette tray in longitudinal direction opposite to the movement of the ceiling support (= electronic planigraphy).

The automatic exposure control is *not available* for planigraphic exposures. You therefore have to use the 3-point technique for the exposure.

Possible planigraphy programs

Six planigraphy programs can be selected:

	Planigraphy program					
Button/display on the control panel						
Planigraphic angle	8°	8°	20°	30°	40°	40°
Time (seconds)	0.4 s	0.8 s	0.6 s	0.8 s	1.2 s	2.0 s

Prerequisites for planigraphic exposures

Planigraphy is possible only if the following conditions are fulfilled:

- ☐ The X-ray table workstation is selected.
- ☐ The ceiling support is in the longitudinal direction in the table mid stop (x direction).
- ☐ The cassette is located in the table (stop position).
- ☐ The cassette center (cassette tray) is aligned in longitudinal direction on the central ray (x direction).
The tray must not be near the end positions (catch movement)
- ☐ The central ray is centered in transverse direction (y direction) on the cassette center (ceiling support in the table mid stop position).
- ☐ The central ray is perpendicular to the cassette.
 - Tube unit Rotation Horizontal Axis (RHA) = 0° and
 - Tube unit Rotation Vertical Axis (RVA) = 0°

- ❑ The planigraphy SID must be set as SID¹: 115 cm (45 inch) or 102 cm (40 inch)
- ❑ The table must be in the height for planigraphic exposures¹.

Caution

Rotation of the tube unit about the vertical (support) axis (RVA) is not detected by the system.

Risk of bad image quality

- ◆ Make sure that the tube unit is in the 0° position.



After the planigraphic program is selected the relevant green LED flashes until the conditions for "planigraphic mode" of the selected planigraphy program are fulfilled. The LED then shines constantly.



If the emergency STOP button is pressed *during* a planigraphic exposure, you must bring the ceiling support back *manually* into its starting position to restart planigraphy.

- ◆ Remove the source of danger or interference.
- ◆ Bring the ceiling support manually into the starting position for planigraphy.

Taking planigraphic exposures

Caution

Motor-driven movements

Risk of injury

e.g. with hand on the edge of the table in the vicinity of the cassette tray

- ◆ Pay attention to the table.
- ◆ Make sure the patient only holds on to the handgrips.

¹ configurable

Caution

Abrupt braking in planigraphy in danger situation or in the case of error

Unintentional swiveling of the support can injure the patient or user.

- ◆ Pay attention to danger zones in the planigraphic sequence.

Caution

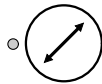
Planigraphic sequence not correct

Danger of radiation without diagnostic value

- ◆ Make sure the sequence is free of errors *before starting* the exposure.







Preparations

- ◆ Attach the handles to the patient table and position these approximately in the middle of the table.
 - See Register **Accessories**, „Handgrips“
- ◆ Place the cassette in the cassette tray on the patient table and position the cassette tray approximately in table center.
- ◆ Bring the 3D ceiling support with tube unit into the centered mid position (longitudinally and transversely), beam projection vertical (0°) downwards.
 - The LED on the key lights up.



The tube unit may in no way be swiveled about the telescopic axis, since the planigraphic movements runs even in swiveled position.

- ◆ In this case collisions with persons or objects and unintentional radiation exposure could occur.
- ◆ Make sure that the tube unit on the 3D ceiling support is standing in centered mid position (vertical beam path) for planigraphy.

	Planigraphy program					
Button/display on the control panel						
Planigraphic angle	8°	8°	20°	30°	40°	40°
Time (seconds)	0.4 s	0.8 s	0.6 s	0.8 s	1.2 s	2.0 s

- ◆ Select the planigraphy program at the unit.



- ◆ Now position the 3D ceiling support in height to the programmed planigraphic SID.



For a system with automatic tracking, the ceiling support positions itself in height if Siemens service personnel has programmed it to do this. If not, it is better to position the table first and then the ceiling support, because then the programmed planigraphic SID can also be read (this is related to the table).

- ◆ Position the patient table at the "planigraphic table height stop".
 - The table stops automatically at 75 cm table height.
 - The programmed planigraphic SID is shown in the display, if automatic height positioning of the 3D ceiling support is programmed.

The height is correct if the table height can no longer be changed even by repeated operation of the foot kick switch. (The patient table is located in the automatically stopped table height.)

- ☐ If the corresponding LED for the planigraphic angle/time combination lightly up **constantly** the system is set to "planigraphy".
- ☐ After the longitudinal, transverse and SID setting has been made, the cassette tray moves automatically into the centered mid position.

Light localizer

Switch the light localizer or tomographic height light localizer on if necessary:

- Register **Accessories**, „Tomographic height light localizer (optional)“



- ◆ Press the button for the light localizer on the collimator, if required.

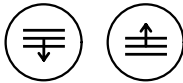
Positioning the patient

Push the patient on the floating tabletop into the required position:



- ◆ Actuate the foot switch (table base) or the button on the hand¹ or foot switch¹.

Setting the tomographic height



- ◆ Press a key.
 - Short actuation: Single step
 - Long actuation: The tomographic height changes at first slowly, then faster and faster up to the maximum tomographic height adjusting speed.
 - The indication in the display of the support control panel lights up.
 - The tomographic height can be read off on the display on the three-digit digital display if a planigraphy program has been selected **and** the conditions for planigraphy are fulfilled.
 - It may also be possible to see the set tomographic height as light mark on the patient from the tomographic height light localizer¹.
 - Register **Accessories**, „Tomographic height light localizer (optional)“

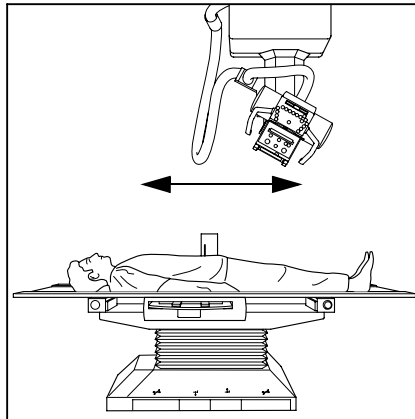
Collimation

- ◆ Set the collimator.
 - Kapitel **Collimation - Grid - Exposure**

¹ option

Exposure

- ◆ Operate the radiation release up to the first pressure point.
 - The 3D ceiling support moves into the start position.
- ◆ Press the radiation release down fully and keep it pressed down for the duration of the planigraphic sequence.
 - After the end of the planigraphic movement the 3D ceiling support moves back automatically into the mid position.



Planigraphic movement



You can interrupt planigraphy at any time by letting go the radiation release.

After the movements have been stopped by cancellation, the system moves automatically into the starting position for planigraphy.

You restart the planigraphic movement by pressing the radiation release once again.

Deselecting planigraphy

- ◆ You can switch back again from planigraphy to the other exposure modes with this button.
 - The green LED in the push button lights up after deselection.

IONTOMAT automatic exposure control

The catapult Bucky is equipped with an IONTOMAT ionization chamber for automatic exposure measurement. All exposures which are performed with a cassette **in** the catapult Bucky can be taken with the IONTOMAT automatic exposure control. In this case the released exposure is switched off automatically by the IONTOMAT automatic exposure control.

For planigraphic exposures available only in connection with the POLYDOROS SX generator (Plani-Iontomat).

When selecting an IONTOMAT measuring field, take care that the patient is positioned anatomically correctly in relation to the IONTOMAT measuring field to avoid faulty exposures.

- ☐ Three-field templates, which can be inserted in the accessory rails of the collimator for projecting the IONTOMAT measuring fields onto the object are available for this purpose.
(Refer to the **Accessories** register, three-field templates)
- ◆ Select the IONTOMAT measuring field corresponding to the object to be exposed.
- ☐ The most important part of the object for imaging must lie **exactly** over the measuring field.
- ☐ No direct radiation may occur next to the measuring field because the premature switch-off caused by this would lead to an underexposure.
(Good collimation or lead covering prevent this)

Please pay absolute attention to the correct change of the IONTOMAT measuring fields. The currently selected measuring fields are displayed at the generator control panel.

Exposure release

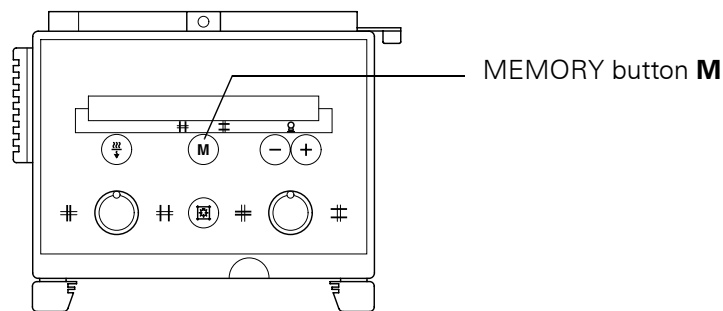
- ◆ Select the desired exposure system on the generator
- ◆ Set all exposure data on the generator
- ⇒ Refer to the **Exposure Tables** register for further information
- ⇒ Refer to the **Generator** register for further information
- ◆ Release exposure at the generator control console
- ⇒ Refer to the **Generator** register for further information
- ◆ Observe radiation protection
- ◆ Change the cassette to avoid double exposure!

After switching on the system the cassette tray must be withdrawn, loaded with a cassette and slid in again before the operation starts. This is the only way to **trigger** the **radiation release** for the Bucky exposures. After a Bucky exposure, pull out the cassette tray and change the cassette to enable the next exposure.

Memory Function

(only with MULTIX ACSS collimator)

The MEMORY button (**M**) on the collimator is used to retrieve the format setting last used from the memory. Pressing this button thus recalls the collimation setting use for the last exposure.



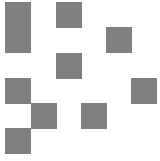
Please note that the last setting can be retrieved with the MEMORY button only if the previous exposure was actually triggered and the exposed cassette was then removed from the cassette tray and replaced by a new one. The new cassette must also be at least as large as the previously stored cassette format.

If the stored format exceeds the size of the inserted cassette, the format will remain limited to the size of the newly inserted cassette.

Operator Manual

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Accessories

General Information

The following text describes the accessories as well as their attachment and use.

The two handgrips are part of the standard equipment supplied with the unit.
Further accessories can be purchased from our representatives.

Caution

To ensure safe operation, only original Siemens accessories approved for use with this product, such as the accessories described in this document, or third-party accessories approved by Siemens may be used.

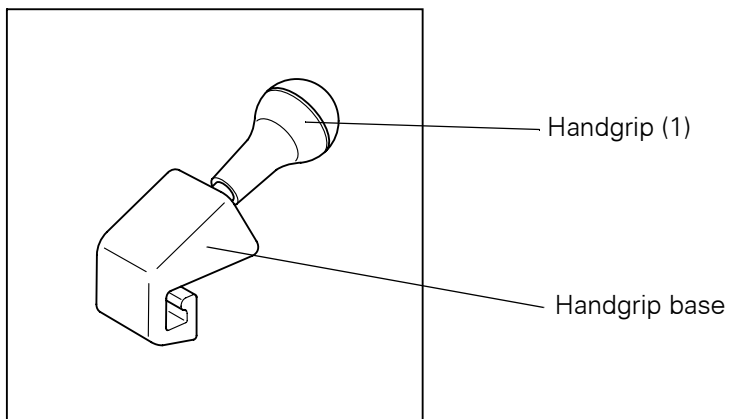
The user is liable for any risks associated with the use of non-approved accessories.

Warning

For special examinations, use the patient immobilization devices provided.

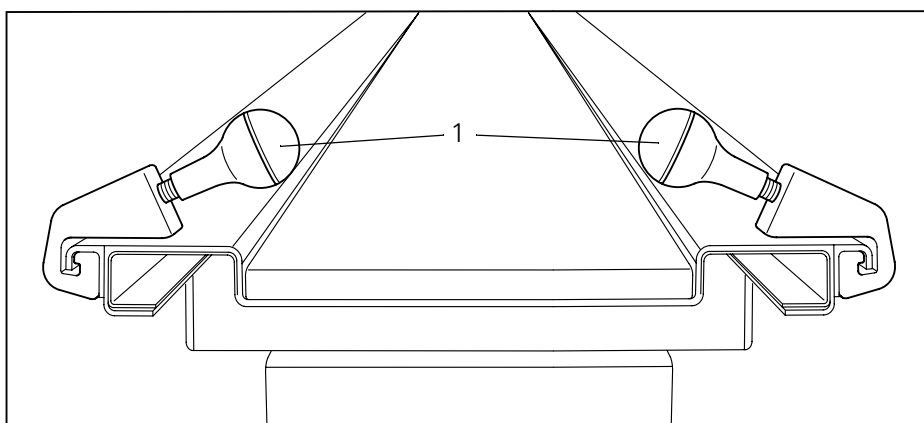
Two handgrips, inclined

- ❑ The two handgrips are part of the **standard equipment supplied**.



Use Left- and right-side handgrips for the patient to hold on to. The handgrips can be fitted in the front and/or rear accessory rail for stable and safe positioning of the patient.

- Attachment**
- ◆ While holding the handgrip base, loosen the handgrips (1) by turning them.
 - ◆ Pull out the protector at the end of the accessory rail (diagram: see hand switch), so that the handgrips can be inserted into the rail.
 - ◆ Insert the handgrips into the profiles of the accessory rails and slide them into position.
 - ◆ Fasten the handgrips by turning them.



- ◆ Check that the handgrips are locked in position by pushing and pulling them.

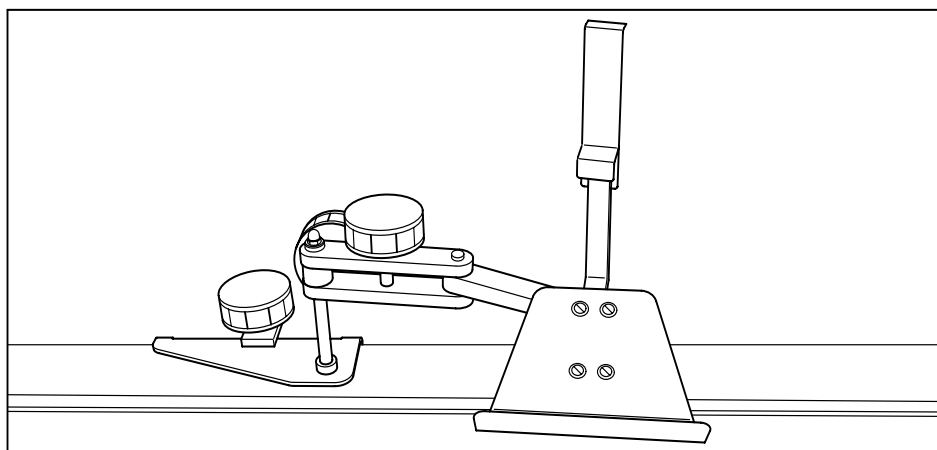
Warning

The handgrips are provided for the safety of the patients. To avoid injuries to the hands when moving the tabletop, please ensure that the patient uses the grips and does **not** hold on to the tabletop ends or sides.

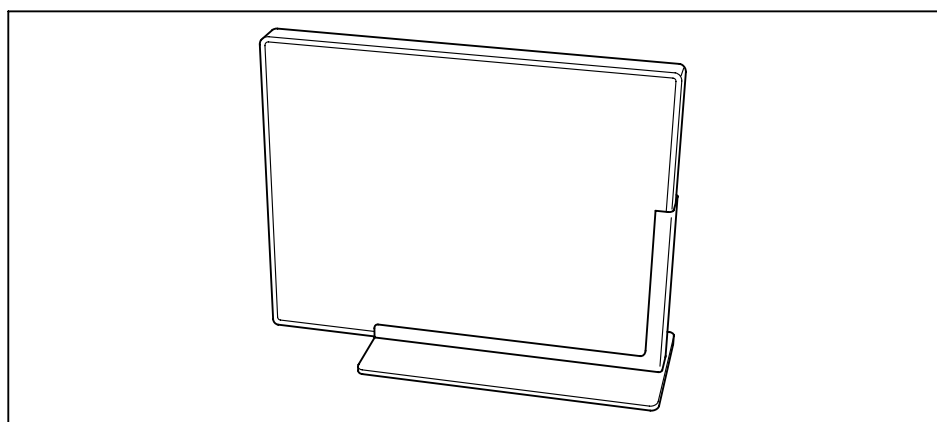
Additional accessories for MULTIX PRO and MULTIX TOP

Cassette holder for lateral exposures

Use For lateral exposures with the tube unit and a standing cassette
The cassette holder is available in two versions:



1. With clamping device

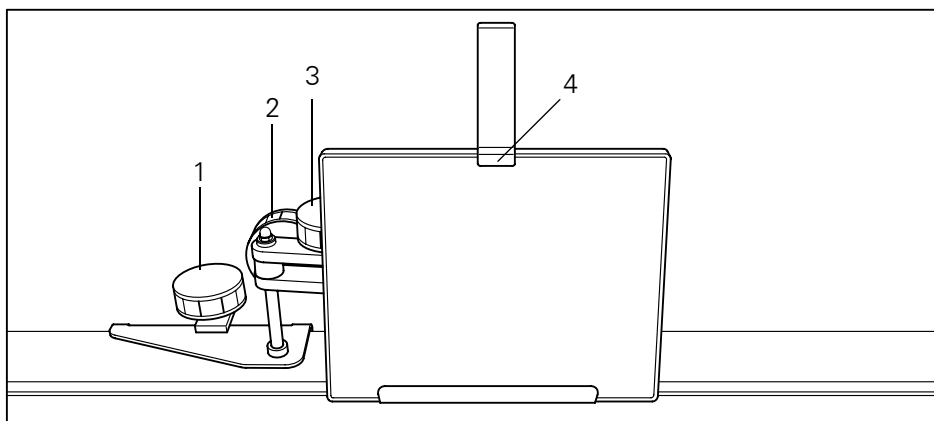


2. Without clamping device

Cassette holder with clamping device

Use For lateral exposures with the tube unit and a standing cassette for the cassette formats 35 cm x 43 cm horizontal and 35 cm x 35 cm.

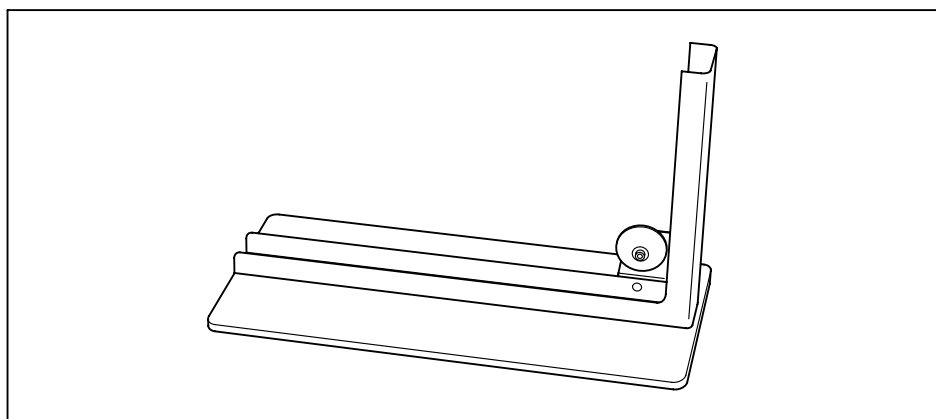
- Attachment**
- ◆ Position the patient.
 - ◆ Loosen the hand screw (1).
 - ◆ Push the cassette holder into the accessory rail and slide it into the exposure position.
 - ◆ Tighten the hand screw (1).
 - ◆ Make sure the cassette holder is attached firmly by pushing and pulling it.



- ◆ Pull up the clamping jaw (4).
- ◆ Place the cassette on the lower holder.
- ◆ Push the clamping jaw down.
- ◆ Make sure the cassette sits firmly in the holder.
- ◆ Loosen the hand screw (2) for height adjustment and the hand screw (3) for lateral adjustment.
- ◆ Make sure the patient is stable and positioned comfortably.
- ◆ Adjust the height and lateral swivel of the cassette to the positioned patient.
- ◆ Tighten the hand screws (2) and (3).

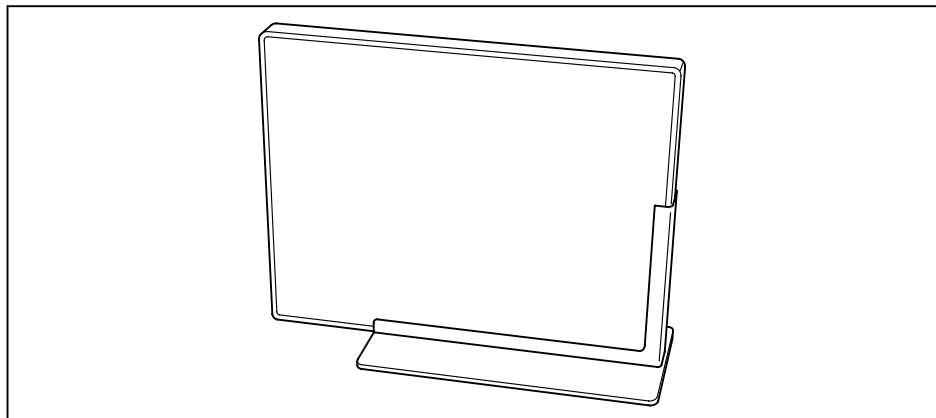
- Detachment**
- ◆ Assist the patient off the tabletop.
 - ◆ Pull the clamping jaw (4) of the cassette holder upwards.
 - ◆ Lift the cassette out of the holder.
 - ◆ Push the clamping jaw into the end position.
 - ◆ Hold on to the rail for height adjustment.
 - ◆ Loosen the hand screws (2) and (3).
 - ◆ Place the rail for height adjustment on the cassette holder base.
 - ◆ Swivel the rail for lateral adjustment parallel to the accessory rail.
 - ◆ Tighten the hand screws (2) and (3).
 - ◆ Loosen the hand screw (1).
 - ◆ Remove the cassette holder from the accessory rail.

Cassette holder without clamping device



- Use**
- For lateral exposures with the tube unit and a standing cassette for all cassette formats, vertical and horizontal

- Attachment**
- ◆ Position the patient.
 - ◆ Make sure the patient is stable and positioned comfortably.

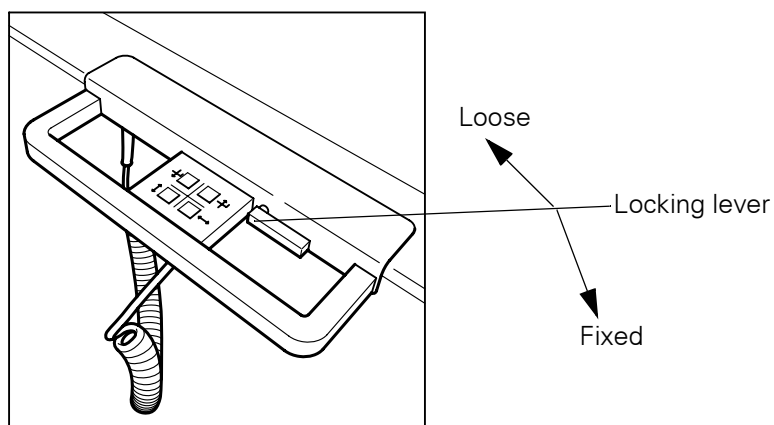


- ◆ Push the cassette into the clamp of the cassette holder.
- ◆ Check that the cassette sits firmly in the holder.
- ◆ Place the cassette holder directly against the patient for the exposure.
- ◆ Check the stability of the cassette holder.
 - The rubberized base plate of the cassette holder is no substitute for the clamping device.

Detachment

- ◆ Assist the patient off the tabletop.
- ◆ Pull the cassette out of the clamp of the cassette holder.
- ◆ Remove the cassette holder from the tabletop.

Hand switch

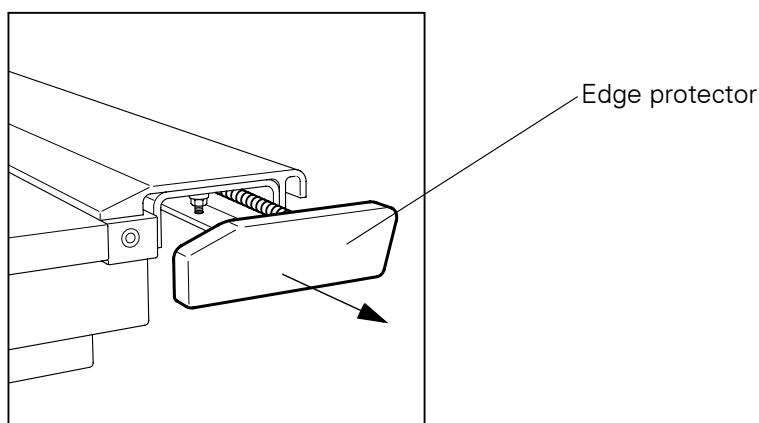


Mounted hand switch

Use The hand switch for the three coordinate movements provides for additional manual control of the table. The hand switch is connected to the unit with a cable and plug to the sockets on the left or right underside of the inclined table cover. It is fastened to the rear or front accessory rail on the patient table.

Connection The plug can be connected to either one of the round sockets on the left or right front underside of the table.

- ◆ Twist the plug slightly while inserting until its guide engages in the socket.
- ◆ Then screw the collar onto the socket so that the cable is strain relieved.



Attachment / Detachment

- ◆ Slightly pull out the protector at the end of the table accessory rail against the spring so that the hand switch can be inserted. The hand switch can then be fixed with the locking lever.
- ◆ To fix the hand switch with the locking lever
 - turn the locking lever to the right to fix the handswitch
 - turn the locking lever to the left to loosen the handswitch.

Operation

Table upward or downward movement



- ◆ Button at top left/ table downward movement: tabletop is lowered



- ◆ Button at top right / table upward movement: tabletop is raised

Operation

Tabletop transverse or longitudinal movement



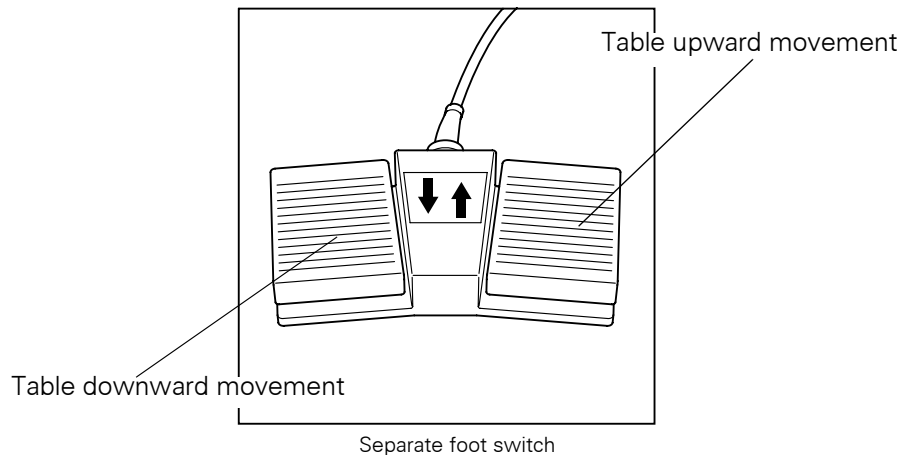
- ◆ Button at bottom left / table transverse movement: transverse brakes are released



- ◆ Button at bottom right/ table longitudinal movement: longitudinal brakes are released

The foot switch in the table base remains fully functional even when the hand switch is connected.

Foot switch for table height adjustment



Use The foot switch, in addition to the foot rail kick switch on the unit, can be used for controlling the motor-driven table height adjustment from an independent operating position. The foot switch is connected to the unit with a cable and plug to the sockets on the left or right underside of the inclined table cover.

The foot switch in the table base remains fully functional even when the separate foot switch is connected.

Connection The plug can be connected to either one of the round sockets on the left or right front underside of the table.

- ◆ Twist the plug slightly while inserting until its guide engages in the socket.
- ◆ Then screw the collar onto the socket so that the cable is strain relieved.

Operation The table will move **as long as** the switch is actuated.

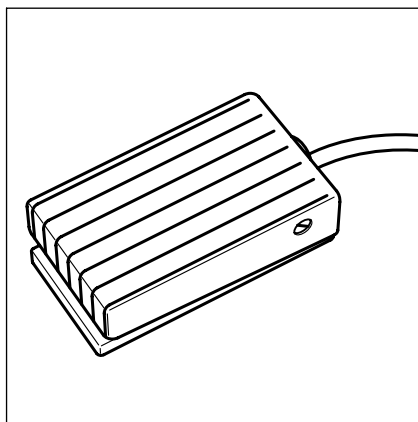
- ◆ To move the table **down**, actuate the **left** foot switch.
- ◆ To move the table **up**, actuate the **right** foot switch.

Warning label The foot switch may not be used in rooms with a magnetic field > 0.5 mT.



Caution

Please observe that accidental activation of the drive may lead to crushing because of vertical table movements!

Foot switch for tabletop movement

Use The foot switch, in addition to the foot rail kick switch on the unit, is used to release the table longitudinal and transverse brakes. Tabletop longitudinal and transverse movement is released as long as the switch is actuated from an independent operating position. The switch is connected to the unit with a cable and plug to the sockets on the left or right underside of the inclined table cover.

The foot switch in the table base remains fully functional even when the separate foot switch is connected.

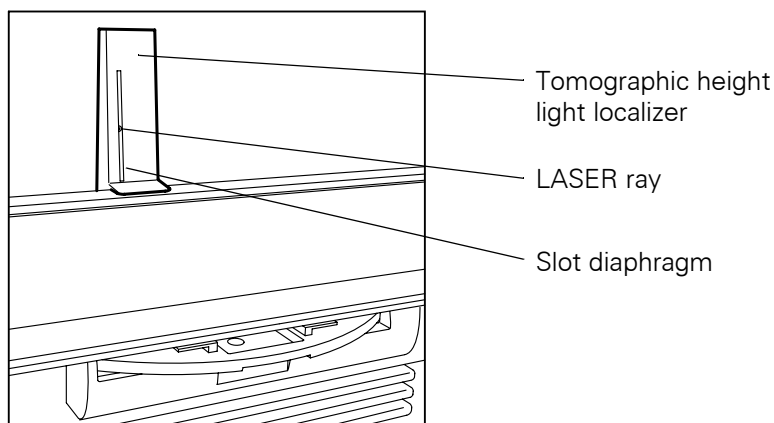
Connection The plug can be connected to either one of the round sockets on the left or right front table underside.

- ◆ Slightly twist the plug while inserting until its guide engages in the socket.
- ◆ Then screw the collar onto the socket so that the cable is strain-relieved.

Operation Upon actuation of the foot switch, the brakes are released and the tabletop longitudinal and transverse movement is released as long as the switch is actuated.

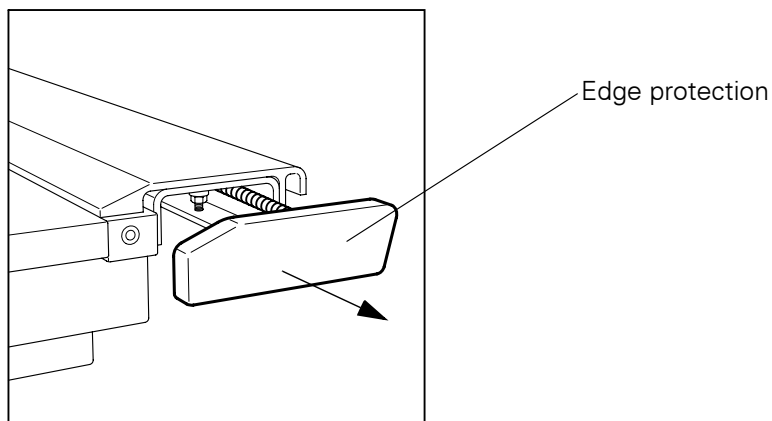
Tomographic height light localizer (MULTIX TOP P and ACSS P only)

Use The tomographic height light localizer serves for the optical projection of the tomographic height plane onto the body of the patient. In this way the setting of the tomographic height can be checked directly on the patient.



Attached tomographic height light localizer

Attaching The tomographic height light localizer is fastened in the rear accessory rail of the MULTIX table.



- ◆ Pull the edge protection at the end of the accessory rail forwards so that you can insert the tomographic height light localizer.

Connection Connect the connection cable with the plug on the right, **rear** base on the underside of the table.

- After a search run the light localizer stops at a tomographic height of 11.5 cm and is then ready for operation.

Operation

The indication appears when tomographic height positioning is switched on. It goes out automatically after approx. 20 seconds.

- ◆ To check the adjusted tomographic height, actuate the tomography button once again. The tomographic height light localizer lights up for approx. 20 s. If the button is actuated again within this time, the tomographic height LASER light localizer is switched off prematurely.

The indication is synchronous to the digital display on the control panel.

- ◆ The tomographic plane is adjusted with the function keys on the control panel.
- ⇒ (see register 3: Operating elements and displays on the control panel) for “positioning the tomographic plane upwards” or “positioning the tomographic plane downwards” in 1 mm increments.
If the key is pressed for a longer period of time, the adjustment speed is increased.

Detaching

Loosen the electrical plug connection and the fastening knob and remove from the accessory rail.

Warning

LASER radiation

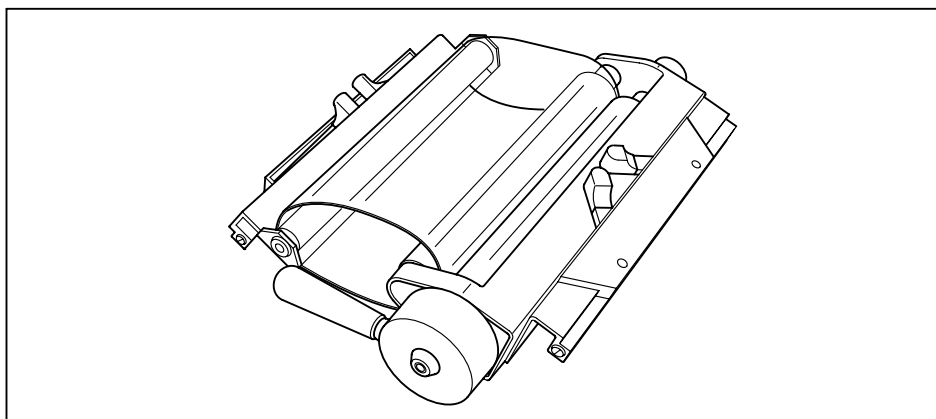
Power <1mW (EN 60825-1) / wave length 650 nm ± 10 nm /
LASER product class II

When switching on the LASER line light localizer, ensure that nobody looks directly into the LASER to prevent eye injuries and visual impairment.

Caution - Applications or settings of the knobs or procedures other than those specified in this document can lead to dangerous radiation exposure.

Accessories for MULTIX PRO / TOP and VERTIX PRO / TOP

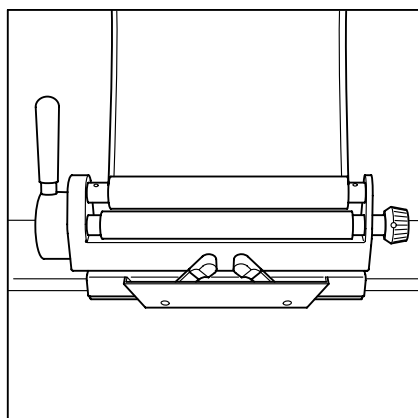
Continuous belt compression device



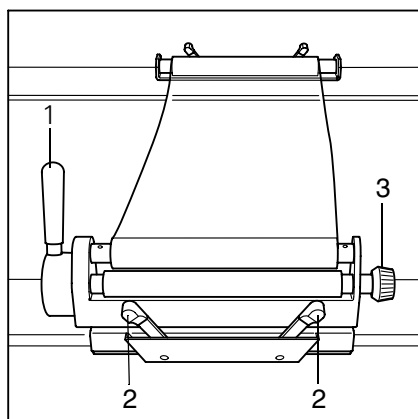
Use To compress the patient volume for examinations of the thorax or abdomen and to immobilize restless patients and secure frail patients

It is important that there are no traces of contrast medium on the belt, since this will lead to shadows on the X-ray exposure.
The belt consists of transparent plastic. It can be cleaned by wiping it with a damp cloth.

Attachment ♦ Position the patient on the tabletop.



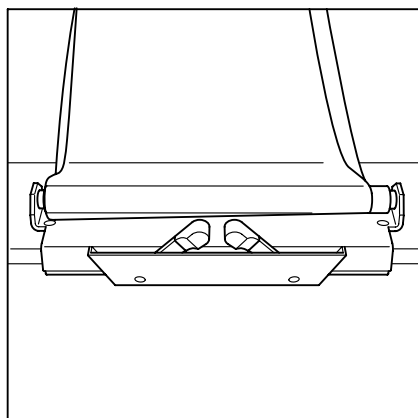
♦ Push the clamping part of the compression device into the required position over the front accessory rail.



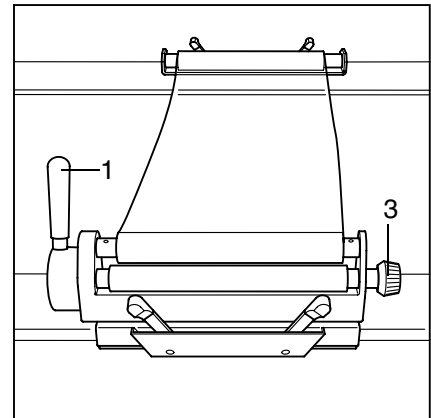
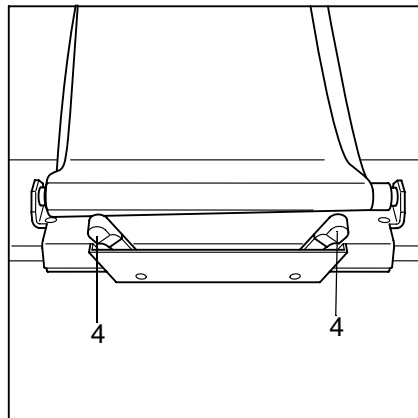
- ◆ Push both clamping levers (2) outwards.
- ◆ Check that the clamping part is locked in position by pulling and pushing it.
- ◆ Push the ratchet lever (1) to the back.
 - The belt is loosened.

The holding part can be fastened more easily, especially with very obese patients, if you stand at the back of the tabletop. In this case and with very restless or weak patients, we recommend that two people fasten the belt compression device.

- ◆ Lift the holding part with belt over the patient.



- ◆ Push the holding part over the rear accessory rail. Take care that the belt runs at right angles to the tabletop and is not applied obliquely.



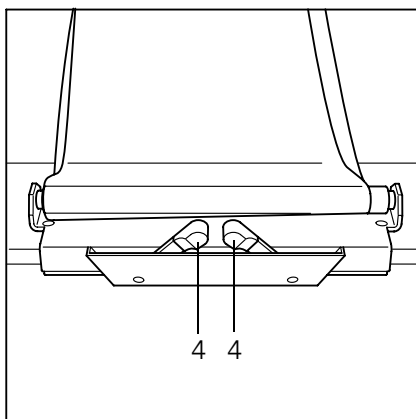
- ◆ Push the clamping levers (4) outwards.
- ◆ Check that the holding part is locked in position by pushing and pulling it.
- ◆ Turn the hand screw (3) on the clamping part to the left.
 - The belt is tensioned.
- ◆ Push the ratchet handle (1) backwards and forwards until the belt has the required tension.
- ◆ Check the belt tension around the patient again.

Relieving

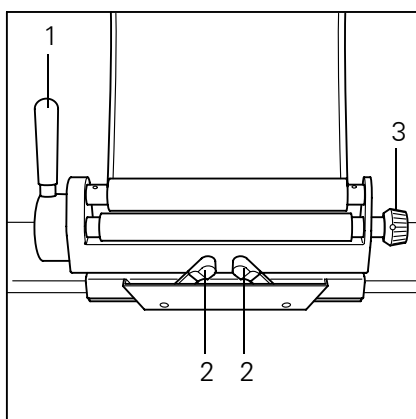
- ◆ Push the ratchet lever (1) to the rear.
- ◆ Turn the hand screw (3) on the clamping part to the left.
 - The belt is relaxed.
- ◆ Set a reduced belt tension again with the ratchet lever.

Detachment

- ◆ Set the tabletop horizontal.
- ◆ Push the ratchet lever (1) to the rear.
- ◆ Turn the hand screw (3) on the clamping part to the left.
 - The belt is relaxed.



- ◆ Push both clamping levers (4) on the holding part of the belt compression device inwards.
- ◆ Pull the holding part off the accessory rail to the rear.
- ◆ Lift the holding part over the patient.
- ◆ In doing so, roll up the belt halfway with the hand screw.
- ◆ Place the holding part next to the clamping part.

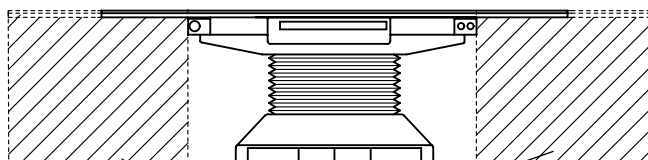


- ◆ Push both levers (2) on the clamping part inwards.
- ◆ Pull the clamping part off the front accessory rail.
- ◆ Assist the patient off the tabletop.
- ◆ Roll up the belt completely with the hand screw (3) on the clamping part.

Unit collision protection for tabletop downward travel

Warning

Please make sure that during motorized downward movement of the tabletop there are **no** objects under the tabletop with which the tabletop can collide.



Operating range of the automatic unit collision protection

Unit collision protection

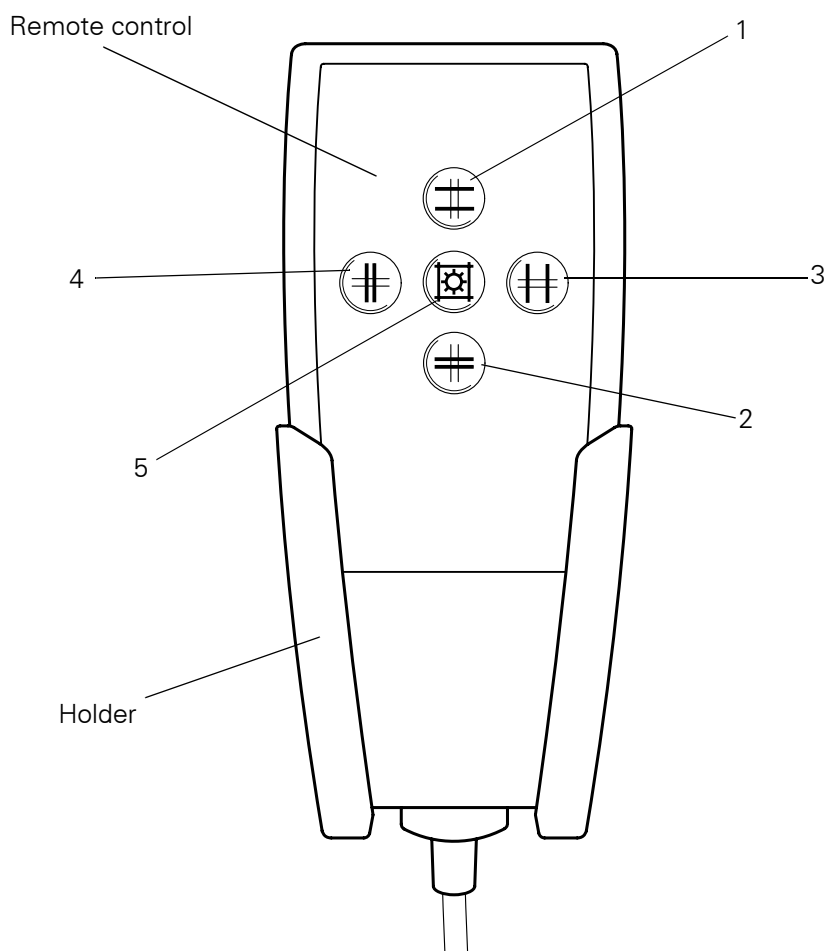
- ☐ When the tabletop moves towards an object in the areas shown *hatched* in the illustration, the automatic unit collision protection of the lift drive is activated.
- ☐ Once the system collision protection has been activated, *only "tabletop upward movement"* will be possible.
- ◆ Remove the obstacle and test the function of the table and system.
- ◆ After the collision protection was activated, the system will need to be checked by Siemens Service.

Remote control of the collimator (only for MULTIX TOP ACSS and ACSS P)

- ❑ The remote control of the collimator permits to operate the **ACSS collimator** from the wall stand. It is permanently connected to the wall stand with a cable.
- ❑ The remote control of the collimator is located in the a holder at the wall stand.
- ❑ It can either be operated when inserted in the holder or manually, when taken from the holder.

Functions of the remote control

1. **For opening** the *vertical collimator leaves* (light localizer is also switched on)
2. **For closing** the *vertical collimator leaves* (light localizer is also switched on)
3. **For opening** the *horizontal collimator leaves* (light localizer is also switched on)
4. **For closing** the *horizontal collimator leaves* (light localizer is also switched on)
5. For switching the light localizer on or off



Accessories for VERTIX PRO and VERTIX TOP

The following VERTIX accessories are described in the VERTIX PRO / VERTIX TOP **Wall Stand** register.

BABIX holder

BABIX harness (U-shape 700 mm)

BABIX cradle (U-shape 700 mm)

Set of patient handles (lateral)

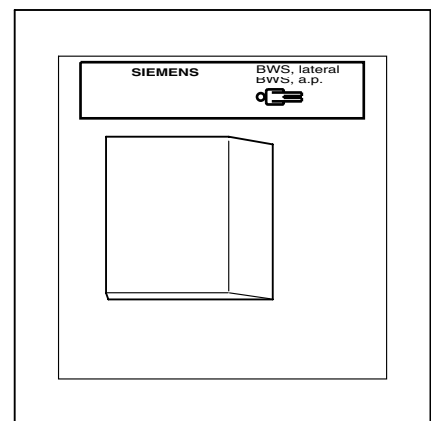
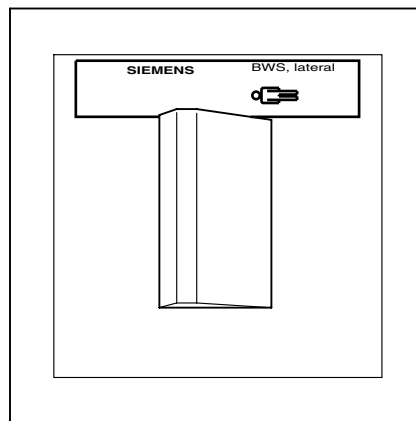
Patient extension handle

Accessories for the collimator

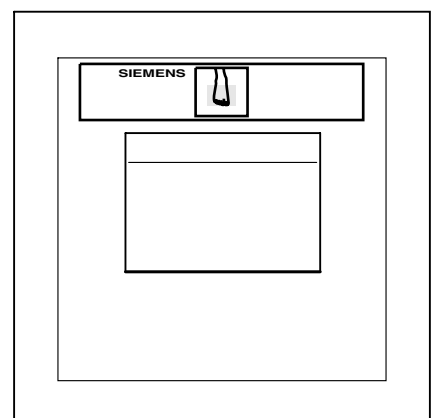
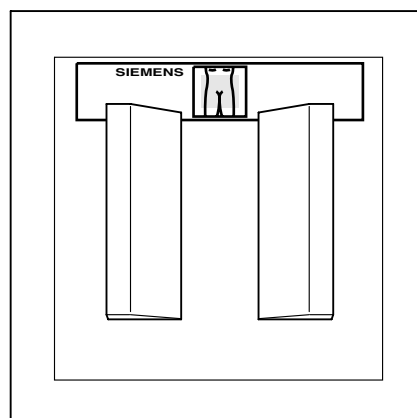
Compensating filters

Use For absorption compensation in exposures of

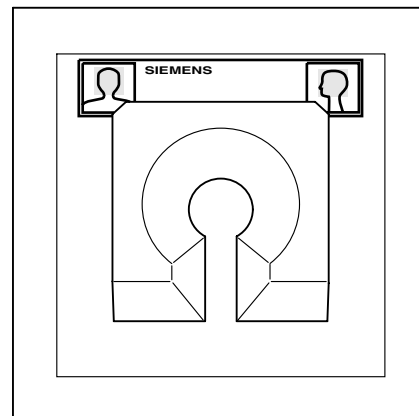
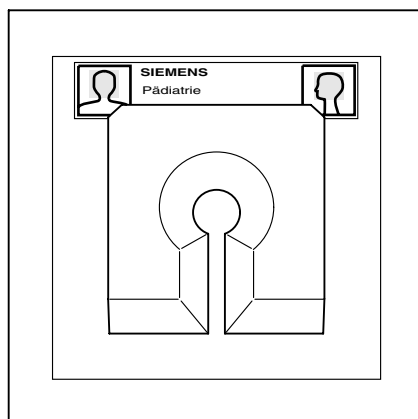
- ☐ Thoracic spine and lumbar spine
- ☐ Pelvis
- ☐ Foot
- ☐ Infant skull
- ☐ Skull
- ☐ Shoulder



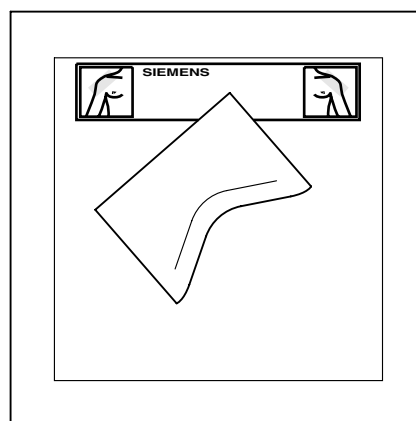
Left: thoracic spine, lat. and right: thoracic/lumbar spine, lat.



Left: pelvis and right: foot



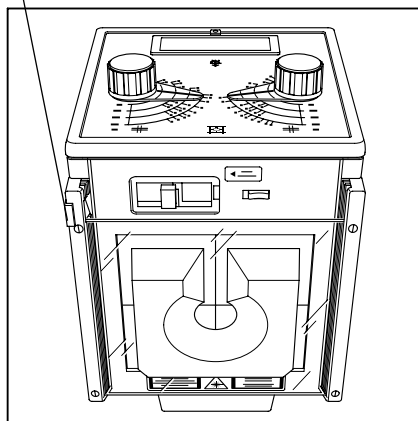
Left: infant skull and right: skull



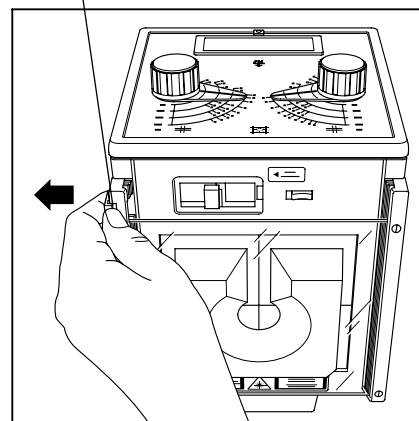
Shoulder

Attaching

Safety lever



Push the safety lever *outwards*



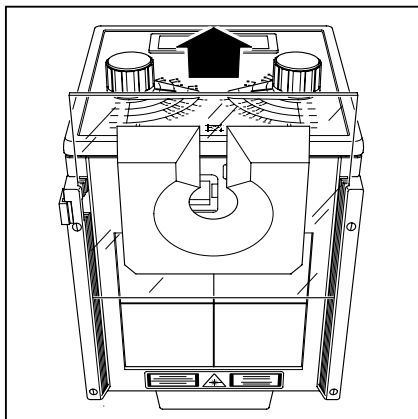
- ◆ Push safety lever outwards.
- ◆ Insert the filters in the two collimator accessory rails and slide them up to the stop.
 - The safety lever in the left rail will then spring to the right.
- ◆ Check that the filters are held firmly in place by pushing and pulling them.

Warning

If you use accessories from non-Siemens manufacturers, please observe the following: The permissible total weight of the accessories must not exceed 70 N (7 kp).

Do not exert a torque on the collimator or its rails when inserting the accessories. Excessive pressure can damage the rails, in which case they would no longer ensure safe attachment of the accessories.

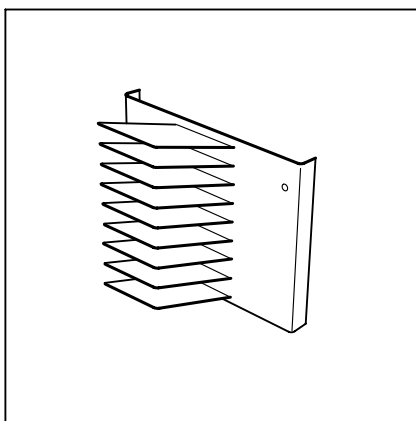
- Detachment** ♦ Push the safety lever on the left accessory rail outwards.



- ♦ Pull the filter out of the collimator accessory rails.
 - The safety lever in the left rail will then spring to the right.
- ♦ Store the filter in the holding device.

Please be very careful with the compensating filters and three-field templates. They are thin, sensitive to scratching and can become useless if handled carelessly.

Holding device for eight filters

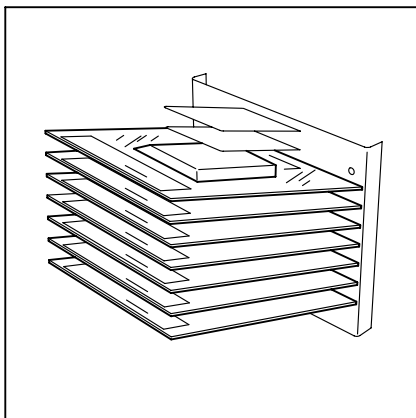


- Use** For storing a maximum of eight compensating filters

- Attaching the wall holder** ♦ Fasten the holder to the wall at working height in a suitable place with the enclosed wall plugs and screws.

Equipping the wall holder with compensating filters

- ◆ Remove the compensating filters from the packaging.
- ◆ Turn the filters so that the designation on the filters can normally be read from above.



- ◆ Place the filters in the upward-inclined compartments.

Using the compensating filters

- ◆ Remove the required compensating filter from the wall holder.
- ◆ Push the locking lever on the left collimator accessory rail to the left.
- ◆ Slide the filter into the collimator accessory rails in the correct direction for the examination.
 - The locking lever on the accessory rail springs back to the right.
- ◆ Check that the compensating filter sits firmly in the collimator.

Storing the compensating filter in the wall holder

- ◆ Push the locking lever on the left accessory rail to the left.
 - The locking lever on the accessory rail springs back to the right.
- ◆ Place the filter in a free compartment of the wall holder, turning the filter so that the designation can normally be read from above.

Three-field templates

Use For exposing the IONTOMAT ionization chambers on the object to be exposed.

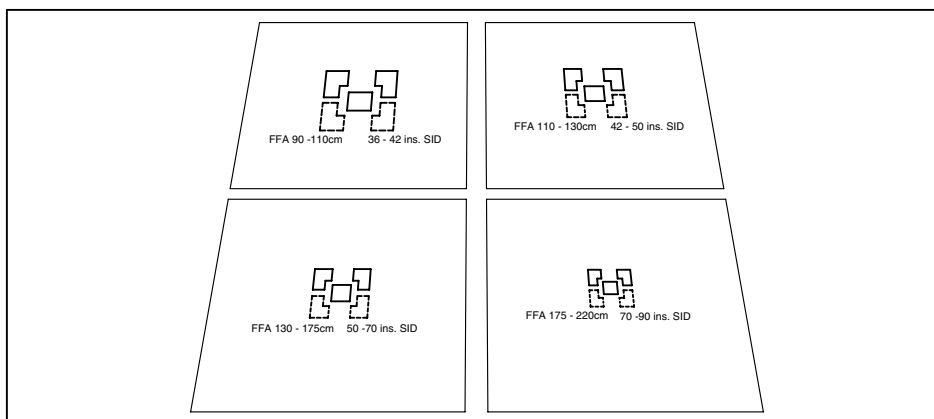
The three-field templates are available as a complete set or individually for the following SIDs:

SID: 90 cm - 110 cm

SID: 110cm - 130cm

SID: 130cm - 175cm

SID: 175cm - 220cm



Using the three-field templates

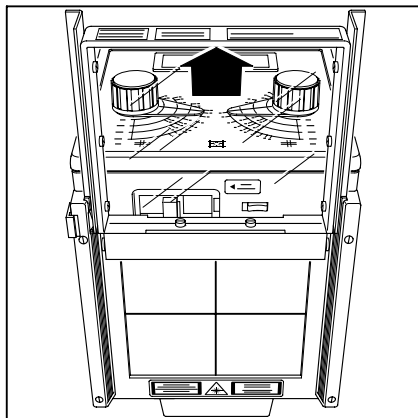
- ◆ Push the locking lever on the left accessory rail to the left.
- ◆ Slide the template into the collimator accessory rail in the correct direction for exposing the ionization chamber.
 - The locking lever on the accessory rail springs to the right.
- ◆ Check that the template sits firmly in the collimator.
- ◆ Expose the ionization chambers. To do so, switch on the light of the collimator.

Storing the three-field templates

- ◆ Push the locking lever on the left accessory rail to the left.
- ◆ Pull the template out of the accessory rails.
 - The locking lever on the accessory rail springs to the right.
- ◆ Store the three-field templates in a suitable location.

Measuring chamber

Attaching and detaching see „Compensating filters“



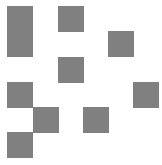
There is a measuring chamber for inserting in the accessory rails.

For the ACSS collimator the measuring chamber can be purchased and will be attached by Siemens Service.

Operator Manual

Technical Description

Identification labels	3
Location of labels	3
Technical data	4

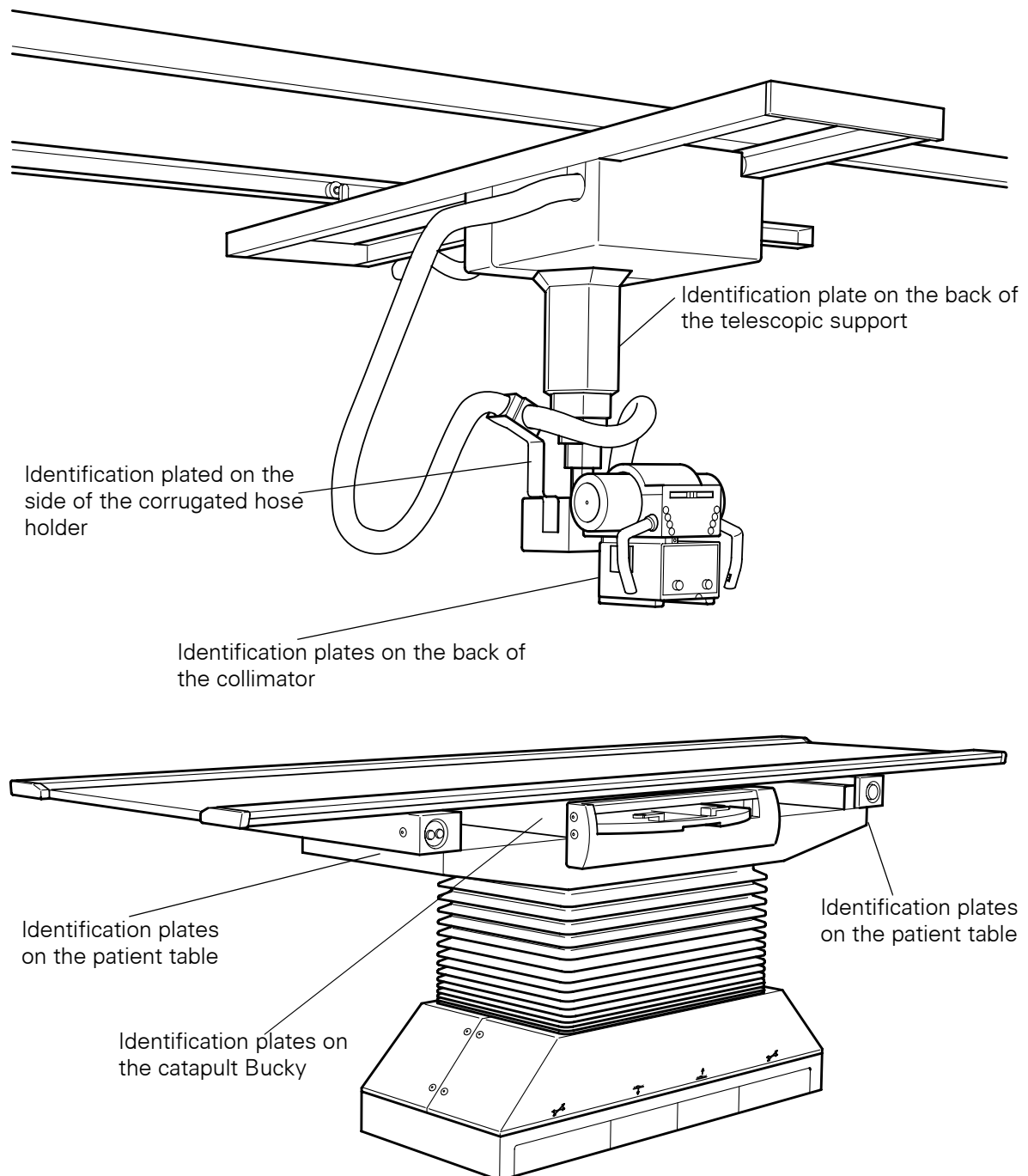


Technical Description

Identification labels

Location of labels

The labels for this unit can be found in the marked locations:



Technical data

Electrical values

Line voltage at the unit	IEC 038 2-phase 400, 440, 480 V, 50/60 Hz
Line voltage at the generator	IEC 038 3-phase 400, 440, 480 V, 50/60 Hz (440, 480 V through regulating transformer) permissible tolerance of the line voltage $\pm 10\%$
Heat development	approx. 220 W
Average power consumption	2.0 kW

Type of protection

Against electric shock:
Protective class I according to IEC 601-1

Protection



Typ B according to IEC 601-1
IP 20 according to EN 60 529

Ambient conditions (operation)

Climate class N

Relative humidity	30% to 75% not condensing
Temperature range	+10°C to +40°C
Atmospheric pressure	70 kPa to 106 kPa

Weight

MULTIX TOP (Tisch): 360 kg

Patient table

Table dimensions	80 cm x 240 cm
Table material	Multiplex tabletop
Radiation absorption	< 0,6 mm Al according to FDA < 0,7 mm Al according to DIN
Table-film distance	55 mm \pm 2 mm
Load capacity	Max. patient weight 150 kg, positioned in the middle, with unrestricted table movement Max. patient weight 227 kg, positioned in the middle, tabletop centered, no table movement
Table movement:	
Longitudinal excursion	Head end +48 cm Foot end-48 cm
Transverse excursion	\pm 14 cm
Table height (variable/ motorized)	from 59 cm to 89 cm motor driven height adjustment adjustment speed approx. 25 mm/s
Table base dimensions	approx. 105 cm x 46 cm

3D ceiling support

Weight	min. 310 kg, max 345 kg
Excursion	longitudinally 345 cm \pm 1 cm transversely 222 cm \pm 1 cm
Vertical movement	150 cm \pm 1 cm
Source-ceiling distance	87 cm \pm 0,5 cm
Tube unit rotation	about the vertical axis +154°, -182°, stop every 90° about the horizontal axis \pm 120°, stop every 0° and \pm 90°

Technical Description

Movement of the radiographic System

	catapult Bucky
In table longitudinal direction	left 33 cm right 28 cm
in transverse direction	0 cm

Automatic exposure control

IONTOMAT

Scattered radiation grid

catapult Bucky with Pb 12/40 $F_o = 115$ cm grid
catapult Bucky with Pb 8/40 $F_o = 115$ cm grid

X-ray tube unit

OPTILIX 150/30/50HC-100, focal spot 0.6/1.0

- Anode heat storage capacity 450,000 J
- Anode angle 12°
- Field coverage depends on the source-image distance (SID) and anode angle.
- At 100 cm SID a field coverage of 40 cm x 40 cm can be achieved.
- Concerning an SID of less than 100cm (40 inches) see the tube unit datasheet

OPTITOP 150/40/80HC, focal spot 0.6/1.0

Anode heat storage capacity 580,000 J

VERTIX PRO / TOP

If a **Bucky wall unit** is provided, refer to **register 8** VERTIX PRO / TOP Wall Stand, Chapter **Technical Description**, for the relevant specifications.

Manual collimator	manual version without automatic format collimation <ul style="list-style-type: none"> – for rectangular collimation – with light localizer and LASER line light localizer – with rails for additional filters
Max. field size	35 cm x 35 cm bei 0.7 m SID 43 cm x 43 cm bei 1.0 m SID
Min. field size	0.0 cm x 0.0 cm bei 1.0 m SID
Angle of rotation	$\pm 50^\circ$ about the central beam axis
Halogen lamp	Only original Siemens replacement lamps may be used! 24 V / 150 W / part no.: 8375545 G2107
Inherent filtration	1.0 mm Al at 70 kV
Additional filters	0.1 mm / 0.2 mm / 0.3 mm Cu (manual filter selection)
Radiation protection	depending on regulations, up to max. tube voltage of 150 kV
Brightness of full-field light localizer	≥ 160 lux (measured at a distance of 1m) (if original Siemens three-field templates and dose measurement chambers are used)
Dimensions (height x width x depth)	max. 206.5 mm x 195.5 mm x 237 mm
Max. weight (without accessories)	10kg \pm 500g
Max. weight of the accessories	≤ 7 kg
Connected load	24 V AC ; 50/60 Hz; 6.5 A
Aperture angle	28° / 28°

Technical Description

ACSS collimator	Automatic format collimation (Automatic Cassette Size Sensing) <ul style="list-style-type: none">– Rectangular collimation with light localizer– LASER line light localizer– Rails for additional filters
Maximum field size	35 cm x 35 cm for 0.7 m FFA 43 cm x 43 cm for 1.0 m FFA
Smallest field size	2.5 cm x 2.5 cm for 1.0 m FFA
Angle of rotation	$\pm 45^\circ$ about the central beam axis
Halogen lamp	Only original Siemens replacement lamps may be used! 24 V / 150 W / part no.: 8375545 G2107
Inherent filtration	1.0 mm Al at 75 kV and 2.5 mm Al total filtration
Additional filters	0.1 mm / 0.2 mm / 0.3 mm Cu (motorized filter selection)
Radiation protection	depending on regulations, up to max. tube voltage of 150 kV
Aperture angle	28° / 28°
CAREMAX chamber	Measuring chamber for measuring the dose area product

Catapult Bucky	loaded from the left catapult Bucky with ACSS automatic format collimation
Automatic exposure control	with 3-field IONTOMAT ionization chamber
Cassette formats	All cassettes complying with IEC, DIN or ANSI standards of the following cm or inch sizes in vertical or horizontal format 13 cm x 18 cm // 5 inches x 7 inches 18 cm x 24 cm // 6.5 inches x 8.5 inches 18 cm x 43 cm // 7 inches x 17 inches 20 cm x 40 cm // 8 inches x 10 inches 24 cm x 24 cm // 9.5 inches x 9.5 inches 24 cm x 30 cm // 10 inches x 12 inches 30 cm x 30 cm // 11 inches x 14 inches 30 cm x 40 cm // 14 inches x 14 inches 35 cm x 35 cm // 14 inches x 17 inches 35 cm x 43 cm // — 40 cm x 40 cm // —
Source-image distance	70 cm to 115 cm
Table-image distance	55 mm ± 2 mm
Accessories	⇒ see Accessories register

Technical Description

Tomographic device	Only for MULTIX TOP P, -ACSS P: Exposures according to the planigraphy principle. All settings made using the central control panel.
SID	115 cm or 102 cm
Tomographic parameters	Angle 40° with 1.2 s oder 2.0 s Angle 30° with 0.8 s Angle 20° with 0.6 s Angle 8° with 0.4 s or 0.8 s
Tomographic height	adjustable from 3mm to 250 mm
Tomographic height light localizer	Indication by line light localizer on the patient's body with control by mirror as well as on a scale (30 mm bis 250 mm)