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AXIOM Iconos R200 with fixed table height

Operator Manual

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Operator Manual

Rückenschild für Ordner A4 (50 mm Rückenbreite); Zuschneiden auf 205 mm x 50 mm

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Operator Manual

Rückenschild für Ordner A4 (30 mm Rückenbreite); Zuschneiden auf 205 mm x 23 mm

AXD3-340.620.13.01.02 **AXD3-340.620.13.01.02** **AXD3-340.620.13.01.02** **AXD3-340.620.13.01.02**

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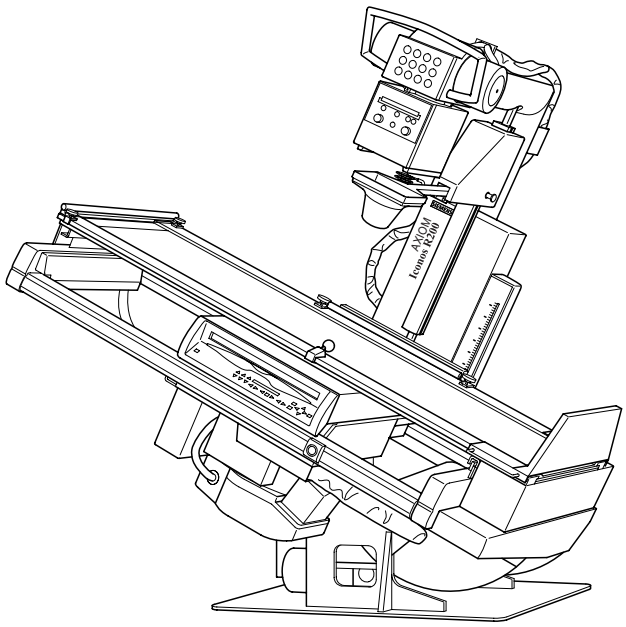

Operating Manual

AXIOM Iconos R200

with fixed table height

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Important information from the manufacturer

CE
0123

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

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

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

Unauthorized changes to this product invalidate this declaration.

Please observe the **Safety Operator Manual**.
Important information is given there.

The original version of this manual was written in English.

Operator Manual
Overall Table of Contents

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Part: System Overview

Part: System Operation

Part: Examination

Operator Manual
System Overview

Chapter: System Description

Chapter: Protective Measures

Chapter: Operating and Display Elements

Application

The ICONOS R200 is an X-ray system for universal use and is suitable both as intensively used universal workstation and as a highly loaded special workstation.

You can perform examinations with the following techniques:

- ❏ Fluoroscopy through image intensifier and television system
- ❏ Cassette exposures with spotfilm device (optional)
  - – Spotfilms
  - – Bucky exposures
  - – Tomography (optional)
- ❏ Digital radiography DR
  - – Spotfilms
  - – Tomography (optional)
  - – Periscanning
  - – Peristepping (optional)
  - – DR scanning (optional)
  - – Digital subtraction angiography (optional)
- ❏ Tabletop cassette exposures
- ❏ Bed-side exposures
- ❏ Exposures onto the wall stand (optional)

Product description

ICONOS R200 universal X-ray diagnostic unit with swivelling overtable X-ray tube assembly, oblique projection and tomography in all table positions and gently starting and braking system movements.

Two-stage setting of the source-image distance.

Table tilt + 90° to - 17° with soft start and braking.

Motor-driven longitudinally and transversely moving tabletop.

Fully automatic spotfilm device with extensive subdivision program and 33 cm or 40 cm image intensifier or I.I. image receptor with 40 cm image intensifier, each with a large axial travel range.

Fluoroscopy and imaging system with ergonomic remote control.

Integrated system movement control on the spotfilm device.

System configuration

The label with MODEL NO.: 59 02 767 bears the CE 0123 marking for the entire ICONOS R200 system and is attached to the back of the table frame.

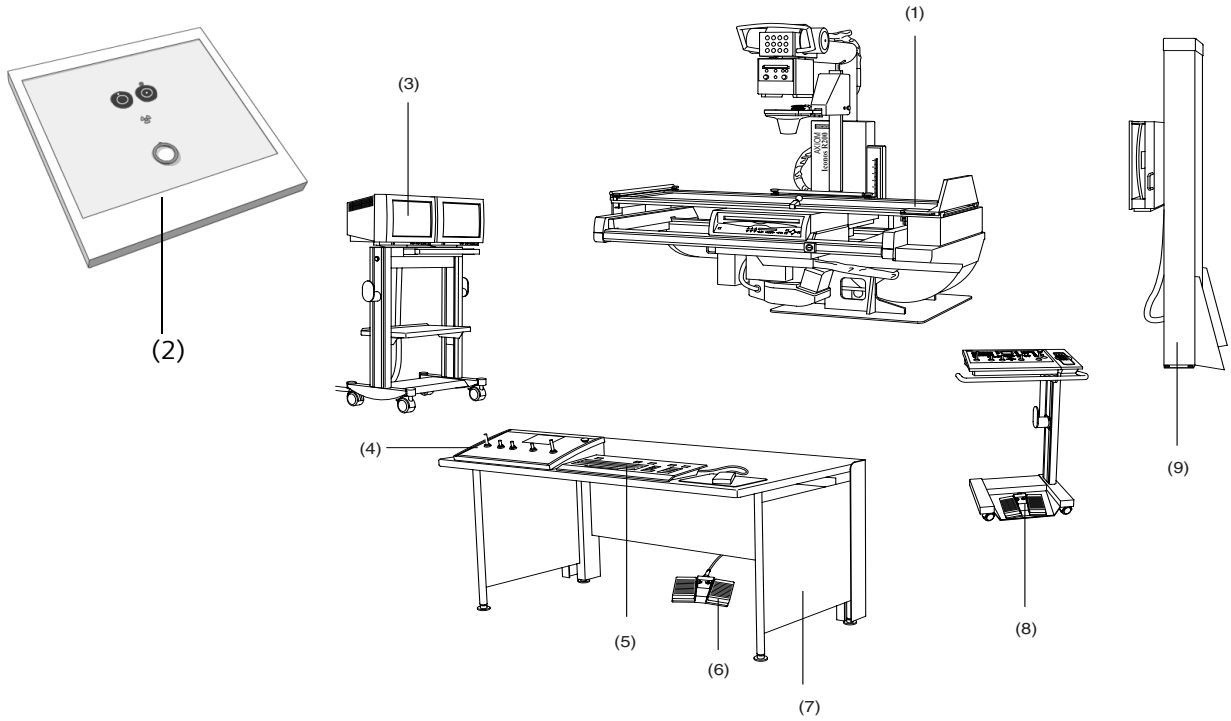
Standard version

- ❏ ICONOS R200 system
- ❏ Cassette spotfilm device with image intensifier with SIRECON 33 cm or 40 cm image intensifier or I.I. image receptor with SIRECON 40 cm image intensifier
- ❏ VIDEOMED DH TV system (with DSA) or DHC (without DSA)
- ❏ OPTITOP X-ray tube assembly
- ❏ POLYDOROS SX X-ray generator
- ❏ Primary collimator
- ❏ Monitor trolley or ceiling suspension system
- ❏ 44 cm or 54 cm monitor(s)
- ❏ FLUOROSPOT Compact with DICOM Send and Storage Commitment
- ❏ Footswitch for fluoroscopy and radiography

Options

- ❏ DICOM functions:
  – Get Worklist and MPPS
  – Query/Retrieve
  – Print
- ❏ Reference image monitor(s)
- ❏ VERTIX PRO/TOP Bucky wall unit
- ❏ 2nd X-ray tube assembly on the 3D-TOP ceiling-mounted support
- ❏ PACS/SIENET connection
- ❏ High-pressure contrast medium injector
- ❏ Measuring device for area dose product
- ❏ Mobile tableside console

System overview



(1) ICONOS R200 examination unit

(2) Generator ON/OFF console

(3) Monitor trolley (optional)

(4) System remote control console

(5) FLUOROSPOT Compact keyboard

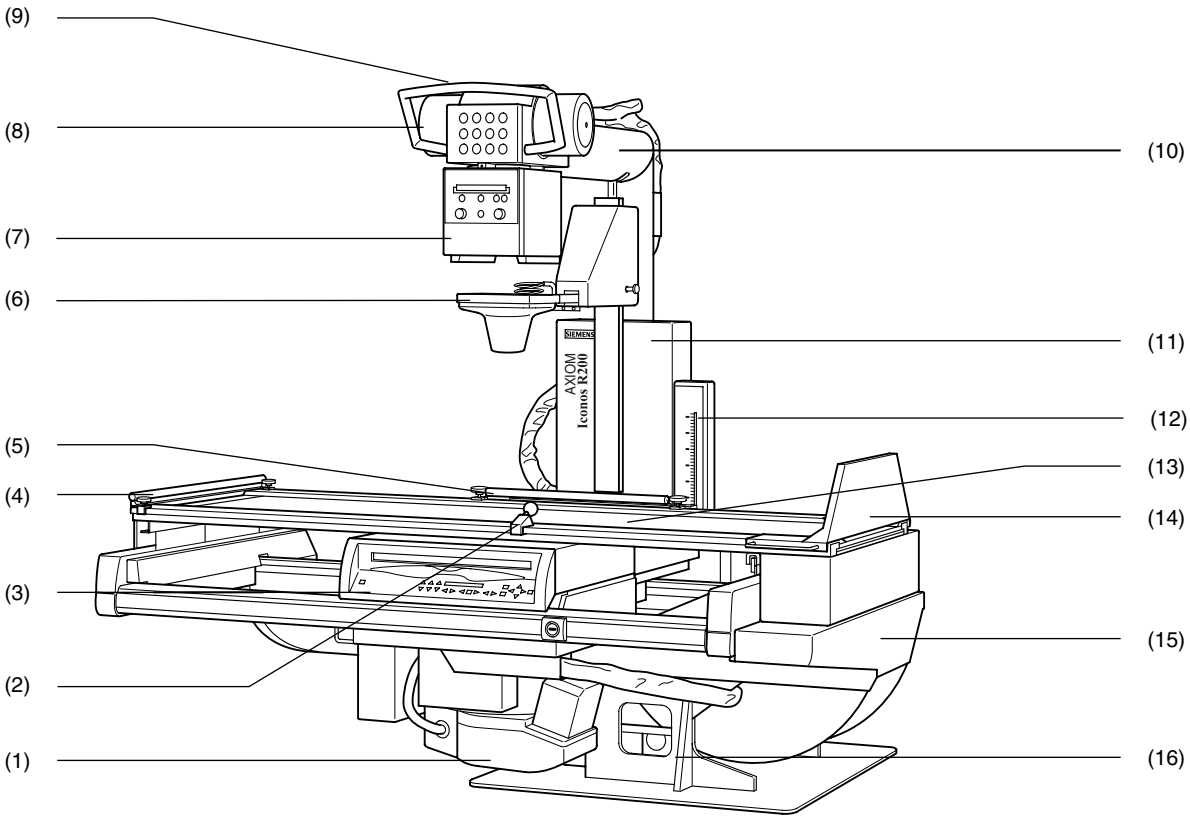
(6) Foot switch for fluoroscopy and radiography

(7) Desk (optional) for operating consoles

(8) Tableside control console with foot switch for fluoroscopy and radiography (optional)

(9) Bucky wall unit (optional)

Unit overview



(1) Image intensifier TV system with safety shut-off device

(2) Handgrip (at the front), adjustable

(3) Cassette spotfilm device or I.I. receptor unit with tableside control panel and removable scattered radiation grid

(4) Grip protection strip (head end), detachable

(5) Handgrip strip (located on back), adjustable, secure in all patient positions

(6) Compression device (optional)
for inserting a compression cone, continuously adjustable compression force

(7) Collimator with automatic format collimation and numerical format indication, with integrated motor-driven additional Cu filters, motor-driven adjustable semi-transparent filters (optional)

(8) X-ray tube assembly
air-cooled, partly enclosed, can be swivelled

(9) Handle for swivelling the tube assembly

(10) Tube assembly stand on the longitudinal carriage
coupled with the spotfilm device by centering rod, axially swivelling, telescopic (SID 115cm and 150cm)

(11) Longitudinal carriage with attached tube assembly stand
motorized longitudinal travel, precisely controllable speed

(12) Tomographic height display (option) with laser line light localizer

(13) Tabletop with flat accessory rails
motor-driven longitudinal and transverse travel

(14) Footboard
adjustable for use as seat,
with attachment points for foot restraints,
can be changed over from foot end to head end.

(15) Table frame
motor-driven adjustable in height, can be tilted + 90°/-17°

(16) Unit base with tilting drive on installation plate

Emergency Procedures

Warning

Due to the complexity of the system, the loss of X-ray imaging or other system functions during an examination or procedure can not be completely excluded.

Risk of failure during interventions

- Consider therefore the need to establish emergency procedures in such cases.

Cleaning and disinfection

Caution

Use of harsh cleaning agents, liquids or sprays.

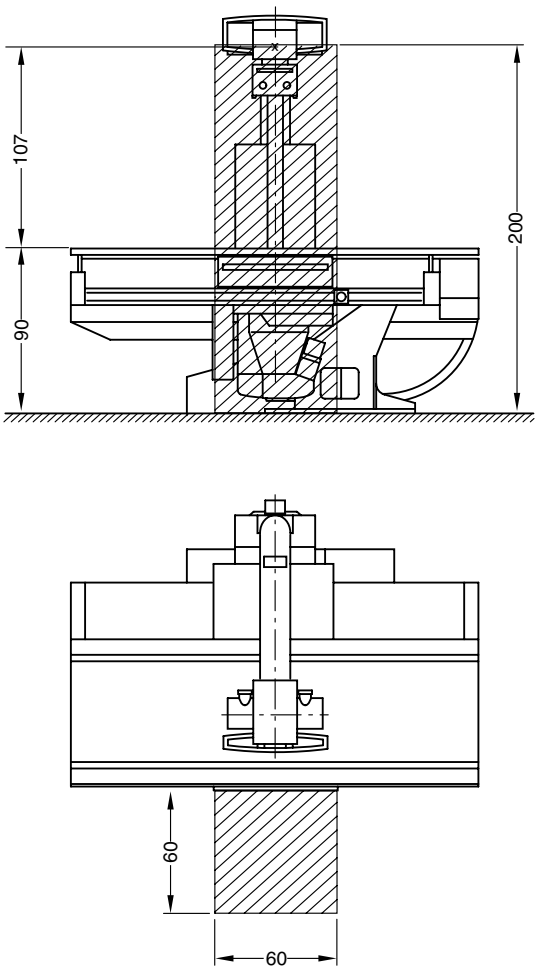
Risk of electrical hazard or damage to the system

- Use only substances for cleaning and disinfection, which are recommended.
- Do not let cleaning liquids seep into the openings of the system (e.g. air openings, gaps between covers).
- Observe the following cleaning and disinfection instructions.

Radiation protection zones

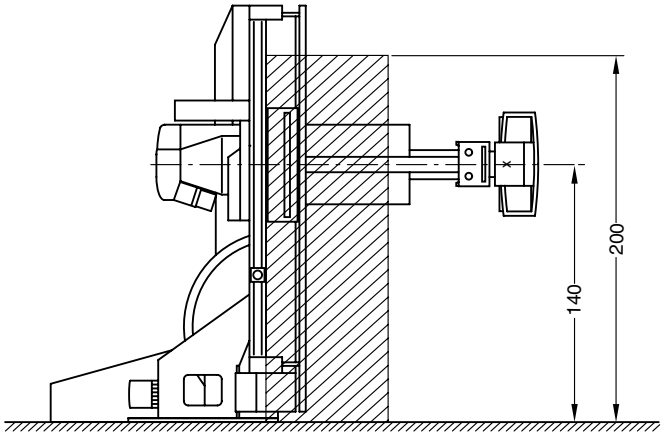
Position and size of the main operating area

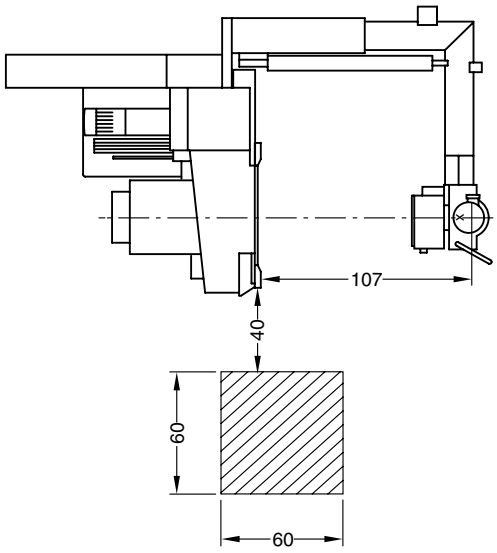
Horizontal patient table:



Main operating area
Dimensions in cm

Vertical patient table:





Main operating area
Dimensions in cm

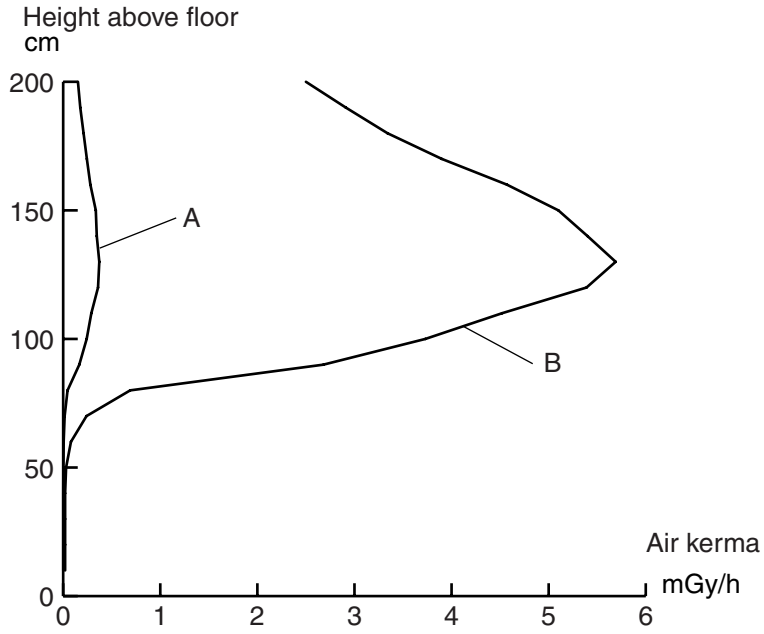
Stray radiation in the main operating area according to DIN EN 60601-1-3

Tolerance of the air kerma measurements ± 5%

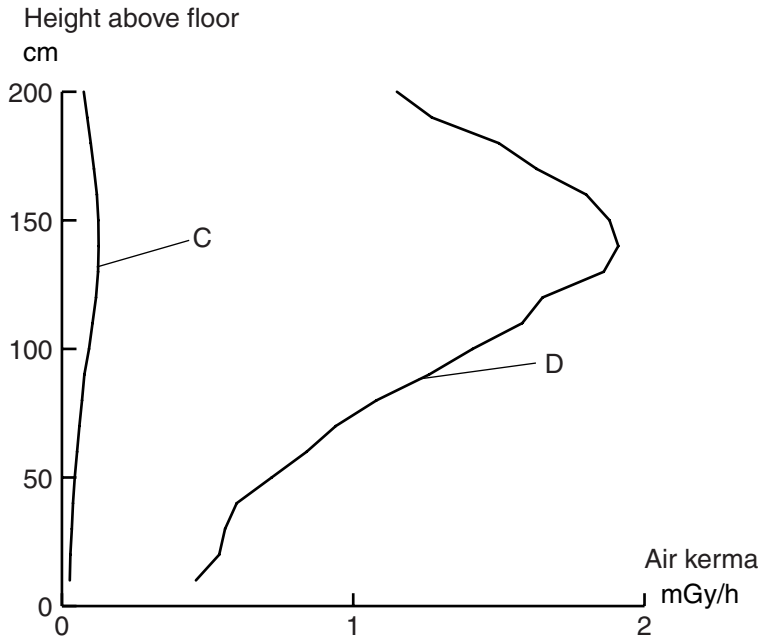
Characteristic A and C: continuous fluoroscopy 63kV, 0.8mA (antiisowatt)

Characteristic B and D: continuous fluoroscopy 110kV, 3mA

Patient table horizontal



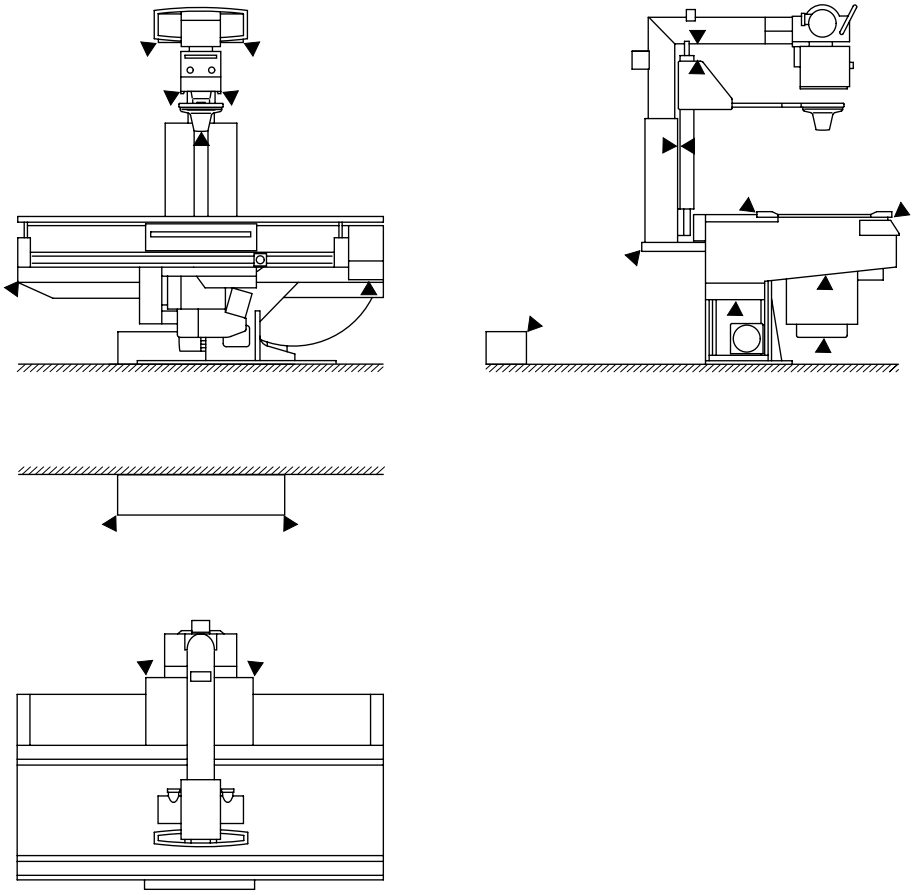
Patient table vertical



Mechanical safety

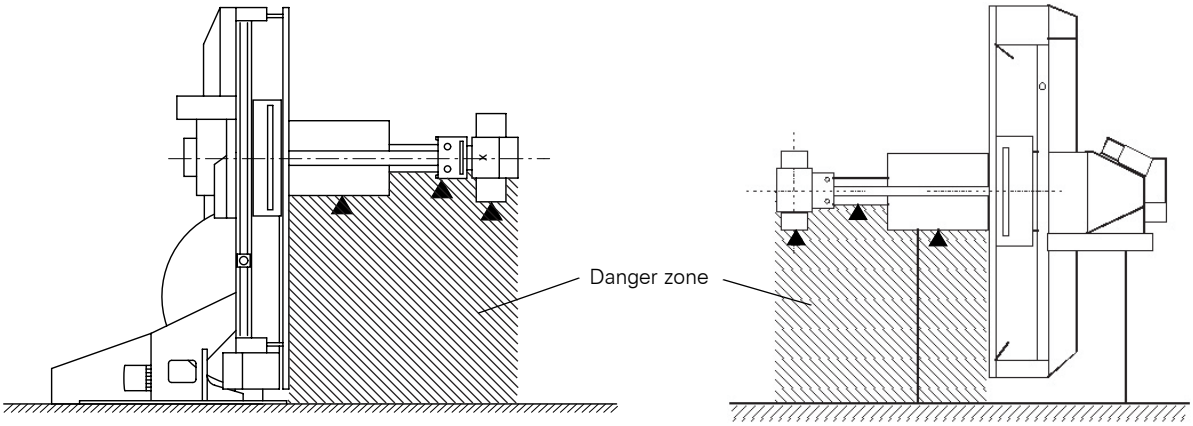
Danger zones with unit in horizontal position

▶ The places marked in the illustrations show possible danger zones at which the patient or operator can be injured.



Danger zones with unit in vertical position[1]

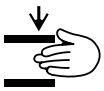
The places marked in the illustration indicate possible danger points where the patient or operating personnel can be injured.



If the patient is located in the danger zone, it must always be ensured that the operating personnel are in the room and within reach of an emergency stop. If the operating personnel leaves the room and/or moves out of reach of an emergency stop, then the patient has to be moved out of the danger zone.

Warning signs

Special danger zones are marked on the unit with a warning sign.



This warning sign is a reference to a possible risk of injury by crushing for the patient and/or examiner.

This warning sign shows the position of the patient table in cardiopulmonary reanimation (CPR) with pressure compression up to 500N (50kg).

[1] Between -90° and +90°, depending on the system version

Grip locations

Warning

When handling the system correctly as well as when positioning the patient, operators and patients should use only the grip locations provided for this purpose.

The following grip locations are provided:

- ❏ 1 handgrip (front)
- ❏ Grip protection strip (head end)
- ❏ Handgrip strip (back)
- ◆ Ensure that the handgrip strip, the grip protection strip and the handgrip are always attached.

If these grip locations cannot be used:

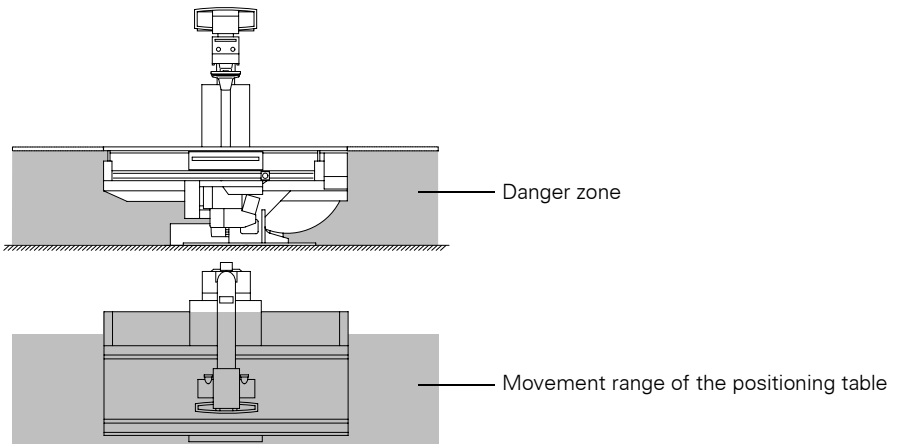
- ◆ Pay special attention to the stated possibilities of crushing between moving parts and their guide openings.
- ◆ Ensure during the examination that the patient under no circumstances holds on to the edges of the patient table.

Not intended as gripping point:

The handle for turning the tube assembly must not be used as grip location or hold for the patient.

Danger zones

The dotted areas mark the danger zone, where no objects must be located during tilting.



- ◆ Prior to activating any movements of the unit, especially tilting of the unit, make sure that there are no objects such as stairs, steps, stands, waste containers, instrument tables, beds, gurneys, monitor support systems, operating consoles or the like in its movement range.

These objects are not detected by the collision monitoring of the unit. Avoiding collisions of the unit with these objects is subject to the operator's duty to take care.

If a collision of the unit with a rigid obstacle (e.g. step) has occurred,

- ◆ press one of the red emergency stop buttons,
- ◆ rescue the patient,

Warning

Under no circumstances must the unit be tilted down further or tilted up, since externally invisible, but safety-relevant damage to the tilting drive may occur. Severe consequential damage including personal damage cannot be excluded in this case.

- ◆ immediately notify the SIEMENS Uptime Service.

- ❏ Avoid standing or sitting immediately adjacent to the system and especially do not sit next to the system with your legs or knees under the cross-beam at the head or foot end of the table.
- ❏ Take care that during system movements no one is in the area between the unit base and table.
- ❏ Take care that with the footboard attached there is a risk of collision with the extended cone (optional) when the tabletop and / or the longitudinal carriage are moving.
- ❏ Do not grasp in the loading shaft of the spotfilm device because of the risk of crushing.

Patient positioning

- ❏ All safety-related equipment must be installed and operable. In particular the handgrip strips (head end and lateral), handgrip, footboard, foot restraints, compression belt and shoulder supports.
- ❏ The patient's hands, arms, legs, head and hair must not extend unsecured beyond the edge of the tabletop.
- ❏ Observe the patient while moving the tabletop and in system movements and take care that any catheter is correctly located.
- ❏ In examinations with the table tilted up vertically, the footboard serves as an adjustable step or seat.
  - – Ensure that the footboard is locked together with the tabletop on both sides.
  - – Check the firm location of the footboard.

Patient positioning with unit in vertical position

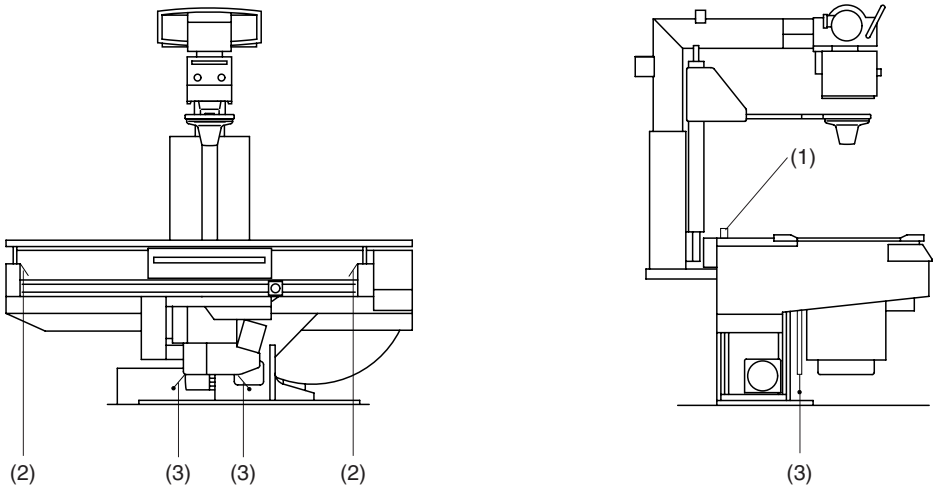
During examinations with the unit in the upright position there is a risk of crush injuries to the patient if the X-ray system (stand with tube unit/receptor unit with image intensifier) is moved in the longitudinal direction.

- ◆ Position the X-ray system approximately in the acquisition position.
- ◆ Move the patient into the acquisition position.
- ◆ Set the X-ray system to object height. Always watch the patient when initiating this movement.

Remote compression (optional)

- ❑ The motor-driven compression device requires special care on the part of the examiner for the applied compression forces, especially in the case of frail (e.g. infants), sick and elderly patients.
- ❑ Observe especially that both an increased risk of crushing for the patient with consequential injury and considerable mechanical shearing forces with risk of damage can occur between the compression cone and attached accessories, e.g. shoulder supports, lateral support (optional) or motor-driven infant cradle holder (optional) by collision during the motor-driven tabletop movement.
- ❑ When moving the compression carriage into the lowest position, the carriage may collide with the patient's hand on the grip protection strip.
  – Use extreme caution when actuating the cone movement.

Safety devices



(1) Switch rail between tabletop and stand

(2) Switch rails in each case at the end of the travel of the spotfilm unit

(3) Safety switching sensors on the image intensifier TV device (2 sensors))

On activation of one of the safety devices (shutdown devices) all system movements stop and are blocked.

This means that one cannot move out from the blockage oneself.

If it is not possible to remove the obstruction causing the problem, call in the Siemens Uptime Services.

Movements are possible again only after one of the safety devices has be deactivated.

Possible collisions of the system with a ceiling-mounted support[1]

❏ System movements are possible only if the ceiling-mounted support is in its park position or if the bypass switch is activated if necessary.

❏ Prior to actuating system movements with the bypass switch activated, verify that no collision can take place with the ceiling-mounted support, the X-ray tube assembly or the collimator. (No collision monitoring.)

Warning

If system movements are possible even though the ceiling-mounted support is not in the park position and the bypass switch is not activated, immediately press the emergency shutdown button and notify the SIEMENS Uptime Service.

Measures for avoiding equipment damage

◆ Before activating system movements, especially tilting the table, make sure that the movement range is free of obstructions.

◆ Move especially monitor support systems, operating consoles, gurneys, beds and instrument tables out from the tilting range of the table and remove chairs, steps, stands, waste containers and similar objects from the movement area. (No collision monitoring.)

◆ Do not place any objects or consumable material on the cover of the table support, on the spotfilm device and on the longitudinal guides of the stand carriage.
– Considerable forces which can damage these objects in the area of movement of the systems arise during movements of the spotfilm device or of the tabletop.

◆ Do not place any loose objects anywhere on the table.
– These objects could fall down when the table is tilted, causing injury or damage.

[1] optional

- Do not stand at any place on the spotfilm device or on the covers of the table support outside the marked areas provided for this.
  – The covers can be deformed.
  Components located underneath them are damaged and thus lead to operating disturbances.
- Place no objects on the operating areas of the control consoles and the tableside control.

Caution

Unintentional activation of control elements for movements

Collision with patient, operator or equipment

- Do not load the remote console with any objects, accessories, folders or documents.

To avoid unintentional activation of control elements for movements concerning bed exposure, please adhere to the following workflow:

- Select aquisition mode **Bed exposure** at the generator control console.
- Tilt the system and move it to the correct SID.
- Rotate the tube assembly accordingly.
- Position the patient.
- Control patient and system.
- Don't let patient stay in system area during absence of operator.

- In vertical table positions do not use the stand column, the tube assembly support arm, the tube assembly cover or the primary collimator as seat or support.
  – This unallowed loading can lead to material breakage and damage to bearings.
- Never put contrast medium cups or open containers with liquid or pasty contents on the unit, on the remote console or on the control cabinets.
  – Contrast medium can spill, leak or overflow into system parts and lead to operational disturbances of the unit or to misinterpretation of exposures.
- When storing contrast medium in the cup holder on the compression carriage, use only cups with a maximum volume of 0.25 liter made of unbreakable materials, i.e. under no circumstances glass or porcelain.
  – Remove contrast medium traces immediately!

Measures for avoiding unwanted radiation

- Before starting system movements make sure that the foot switch for fluoroscopy and radiography (optional) in the examination room is not in the travel range of the image intensifier light distribution system.

Safety-relevant parts subject to wear

This system contains no safety-relevant parts subject to wear.

Maintenance intervals

Maintenance must be performed annually in order to ensure the safety and functioning ability of the system.
If you have not concluded a maintenance contract, please notify the Siemens Uptime Service on time.

CAREWATCH

Display data

At the start of fluoroscopy/acquisition the following system parameters are displayed in the lower right area of the live monitor:

1st line
- Display of the prefilter in fluoroscopy

2nd line
- Display of the prefilter in radiography

With the area dose product meter (optional)[1]

3rd line
- Area dose product in cGycm²

4th line

During fluoroscopy
- Display of the patient entrance dose[2] in mGy/min

In the radiation pauses
- the percentage of the patient entrance dose reached related to a configurable limit[1] of 0.5 to 5 Gy or
- the accumulated patient entrance dose in mGy is displayed.

The measuring device must be calibrated at regular intervals. This is done within the scope of a maintenance contract. If no maintenance contract have been concluded, the measuring device can be calibrated by the Siemens Uptime Service of the manufacturer.

[1] can be configured by the SIEMENS Uptime Service
[2] standardized to 30 cm above the tabletop

Resetting the area dose product

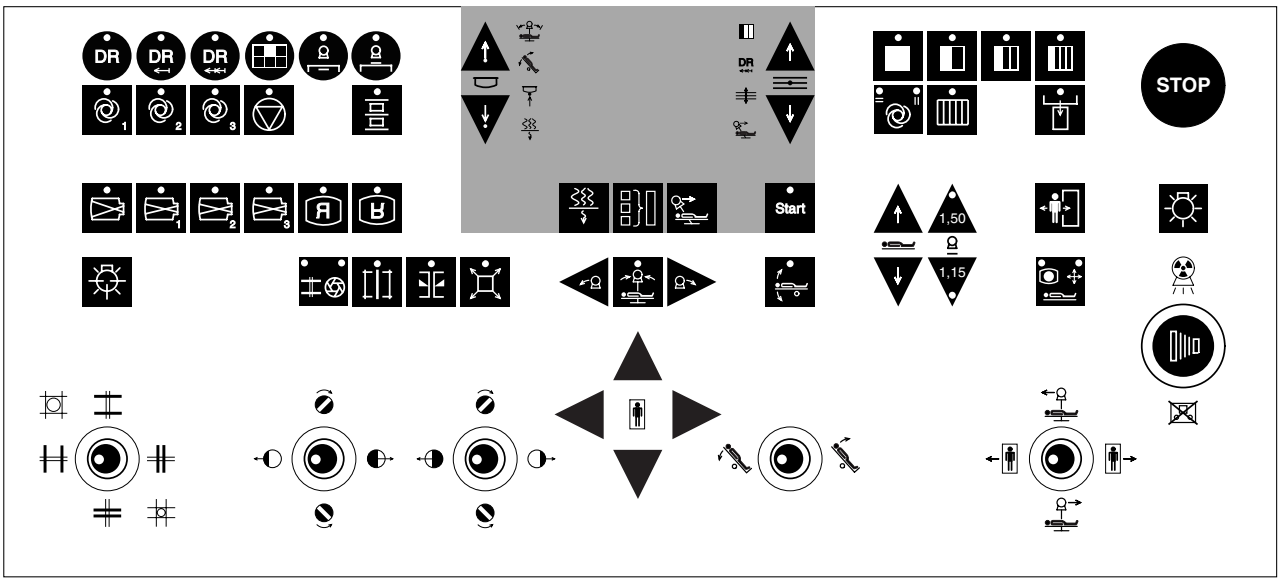
Once the examination is finished,

- actuate the reset button at the integrated generator control console
  – The displays for the area dose product and the patient entrance dose are reset to zero.

⇨ Refer to the Operator Manual of **Fluorospot Compact**.

Operating and Display Elements

System remote control console[1]

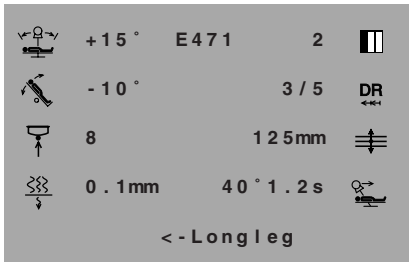


Displays general

❑ "Radiation ON" indicator
– Symbol lights up orange

❑ "Generator is busy" indicator
– Symbol lights up orange

Indicators in the display[2]



❑ Oblique projection angle

❑ Table tilt angle

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[1] User interface is identical for the optional mobile tableside control console
[2] depending on the operating mode

❏ Display of the set compression level, only in connection with the compression device (optional)

❏ Additional Cu filter swivelled in

❏ Cassette exposures available in film segmentation
– only with cassette spotfilm device

❏ Current position and maximum possible exposure positions in Peristepping (optional)

❏ Fulcrum height (axial oblique projection = isocenter) or tomographic height (optional)

❏ Selected tomographic program (angle, time)

E474 ❏ Error message

< - Longleg ❏ Scanning technique (DR scanning) selected

or

30 cm * 24 cm ❏ Display of the cassette size

System settings

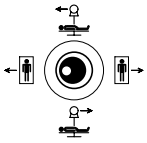
❏ Compression device (optional)
– decompress
– compress

❏ without function

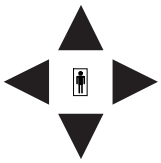
❏ Joystick for table tilt down/tilt up

❏ Oblique projection (cranio-caudal/caudo-cranial)

❏ Oblique projection +/- 0° (orthogonal projection)



❏ Joystick for
– X-ray system longitudinal movement
– Tabletop transverse movement



❏ Coordinate switch for moving tabletop longitudinally/transversely

❏ Fulcrum height for oblique projection (= isocenter)

❏ Tomographic height setting above tabletop (optional)

❏ Move cassette into unloading position
– only with cassette spotfilm device

❏ Source-image distance with cassette spotfilm device (115 cm, 150 cm)

❏ Source-I.I. distance with I.I. image receptor unit (115 cm, 150 cm)

❏ Automatic stop for tilt (0°) on/off

❏ Move to automatic position of all system movements for patient transfer

❏ Start position for various system settings in the operating modes
– Tomography (optional)
– Periscanning
– Scanning technique (optional)
– Peristepping (optional)

Image intensifier formats

❏ Image intensifier full format

❏ Image intensifier zoom formats (zoom stages 1, 2, 3)

Automatic fluoroscopy control

❏ Automatic fluoroscopy program 1

❏ Automatic fluoroscopy program 2

❏ Automatic fluoroscopy program 3

❏ Automatic fluoroscopy stop

Image reversal

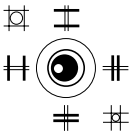
❏ Right/left image reversal (vertically mirrored)

❏ Top/bottom image reversal (horizontally mirrored)

Additional filter

❏ Select additional Cu filter (0.1 mm, 0.2 mm, 0.3 mm)

Collimator settings



❏ Coordinate switch for adjusting the primary collimator by motor drive (open/close)
– Rectangular collimation
– Iris (octagonal) collimation in fluoroscopy and DR

❏ Select rectangular or iris (octagonal) primary collimator for manual collimation

❏ Switch light localizer of the primary collimator on/off

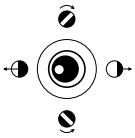
❏ Display of graphics for CAREPROFILE (option)

Semitransparent filters[1]

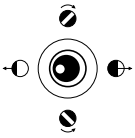
❏ Semitransparent wedge filter

❏ Semitransparent double wedge filter

❏ Move semitransparent wedge filter and double wedge filter out from the beam path
– LED lights up: no filter in the beam path



❏ Coordinate switch for right wedge filter (patient-related, a.p. projection) and double wedge filter
– Move in/out
– Turn to the right/left



❏ Coordinate switch for left wedge filter (patient-related, a.p. projection) and double wedge filter
– Move in/out
– Turn to the right/left

Radiation release

❏ Exposure release button with pre- and main contact

Stop button

❏ Red emergency stop button

General operating elements

❏ Room light on/off (on-site installation required)

[1] only in operation with "DSA filter diaphragm" option

Preselection functions

- ❏ Automatic format collimation for cassette exposures (only with cassette spotfilm device)
  - – Height and width: both LEDs light up
  - – Height: left LED lights up
  - – Width: right LED lights up
  - – Without automatic format collimation: no LED lights up

- ❏ Object setting
  - – Oriented to the monitor: left LED lights up
  - – Oriented to the table: right LED lights up

- ❏ Switching over single image / series for digital radiography with seriolography
  - – LED lights up: series
- ❏ Selection of fast series for exposure technique with cassette and cassette segmentation (only with cassette spotfilm device)
  - – LED lights up: fast series

Operating modes

- ❏ Bucky mode[1] (with temporary automatic format collimation)

- ❏ DR exposure technique (= digital fluororadiography) with image intensifier

- ❏ Periscanning exposure technique (native angiographic bolus tracking)

- ❏ Peristepping exposure technique (optional), (native pelvis-leg angiography)

- ❏ Exposure technique of spotfilm device with cassette[1]

- ❏ Exposure technique of tabletop cassette exposure/free exposure

- ❏ Scanning technique with DR for displaying long objects (optional)

[1] only with cassette spotfilm device

❏ Selection of tomographic program for DR or cassette[1] (optional)

❏ Exposure technique with/without scattered radiation grid
– LED lights up: grid in the beam path

Segmentation program[1]

❏ Full format

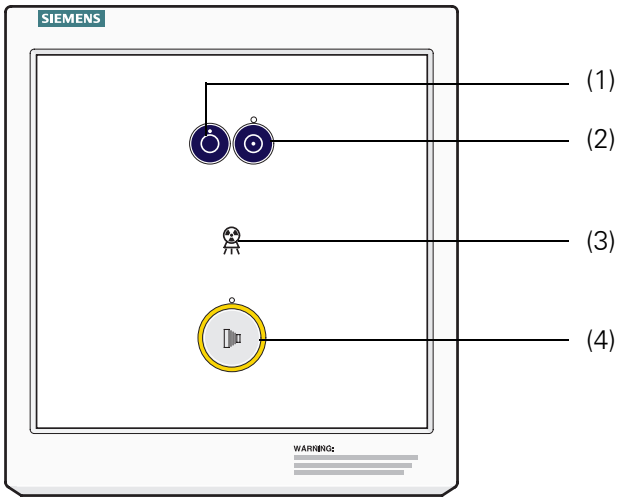
❏ Format segmented 2 on 1

❏ Format segmented 3 on 1

❏ Format segmented 4 on 1

[1] only with cassette spotfilm device

Generator on/off console



(1) System OFF button

(2) System ON button

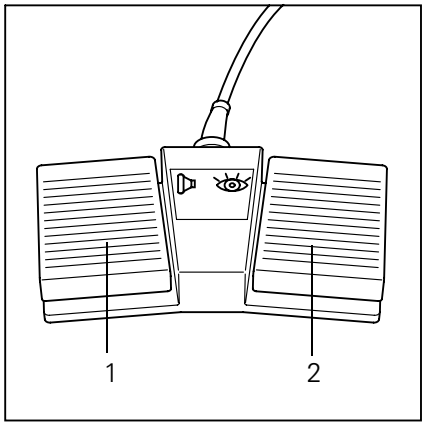
(3) Radiation indicator

(4) Radiation release in **Vertix** (bucky wall stand) and **Iconos Bed** (free exposure) mode

All other generator control functions are integrated in the FLUOROSPOT Compact imaging system.

⇨ For more information refer to the FLUOROSPOT Compact Operator Manual.

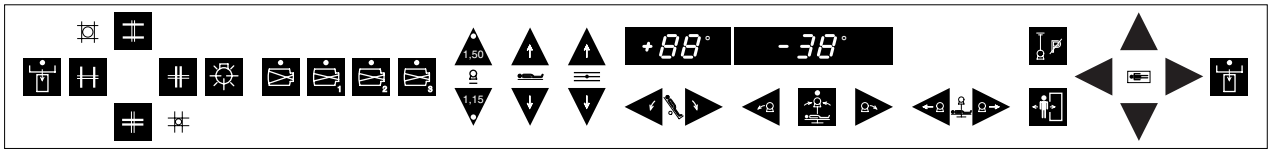
Foot switch for fluoroscopy and radiography in the control room[1]



(1) Switch for radiography in **Iconos DFR** and **Iconos Cassette** mode (without precontact)

(2) Switch for fluoroscopy only with cassette spotfilm device

Tableside control panel



Displays

❏ Table tilt angle

or

❏ Display of a flashing "E" for an error message

❏ Oblique projection angle (max. +/- 40°)

or

❏ Display of a flashing "E" for an error message

[1] optional in the examination room without mobile tableside control panel

System settings

❏ Oblique projection (cranio-caudal/caudo-cranial)

❏ Oblique projection +/- 0° (orthogonal projection)

❏ Source-image distance with cassette spotfilm device (115 cm, 150 cm)

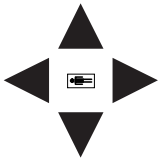
❏ Source-I.I. distance with I.I. image receptor unit (115 cm, 150 cm)

❏ Fulcrum height for oblique projection (= isocenter)

❏ Tomographic height setting above tabletop (optional)

❏ without function

❏ Tilt table up/down



❏ Coordinate switch for moving tabletop longitudinally/transversely

❏ Move X-ray system longitudinally

❏ Move cassette into the unloading position
– only with cassette spotfilm device

❏ Move to automatic position of all system movements for patient transfer

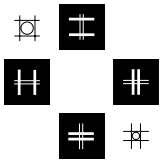
❏ Bypass key for actuating system movements if the ceiling-mounted support (optional) is not in park position.

Image intensifier formats

❏ Image intensifier full format

❏ Image intensifier zoom formats (zoom stages 1, 2, 3)

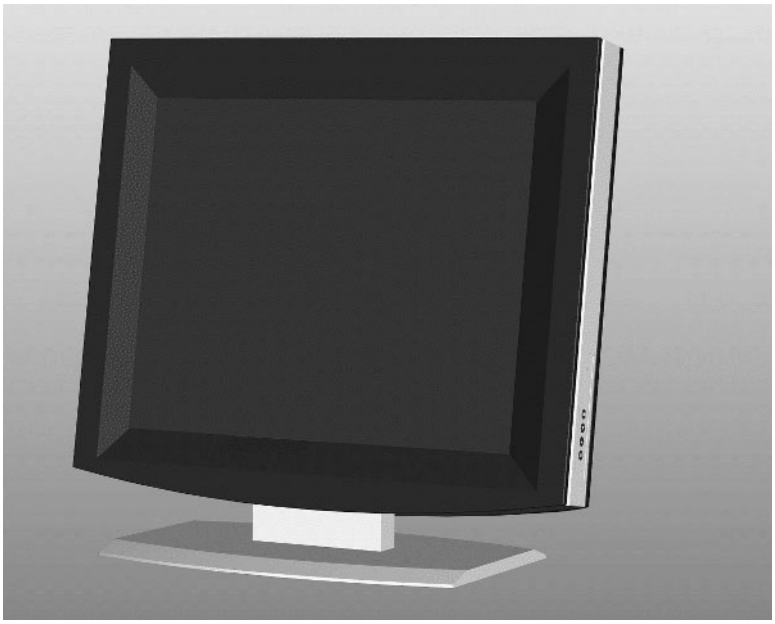
Collimator settings



❏ Coordinate switch for open/close
  – Rectangular primary collimator
  – Iris primary collimator

❏ Switch light localizer of the primary collimator on/off

LCD Monitor



Operating elements The buttons for adjusting the LCD monitor are located in the housing.

The necessary settings are made at start-up. No operation is required during operation.

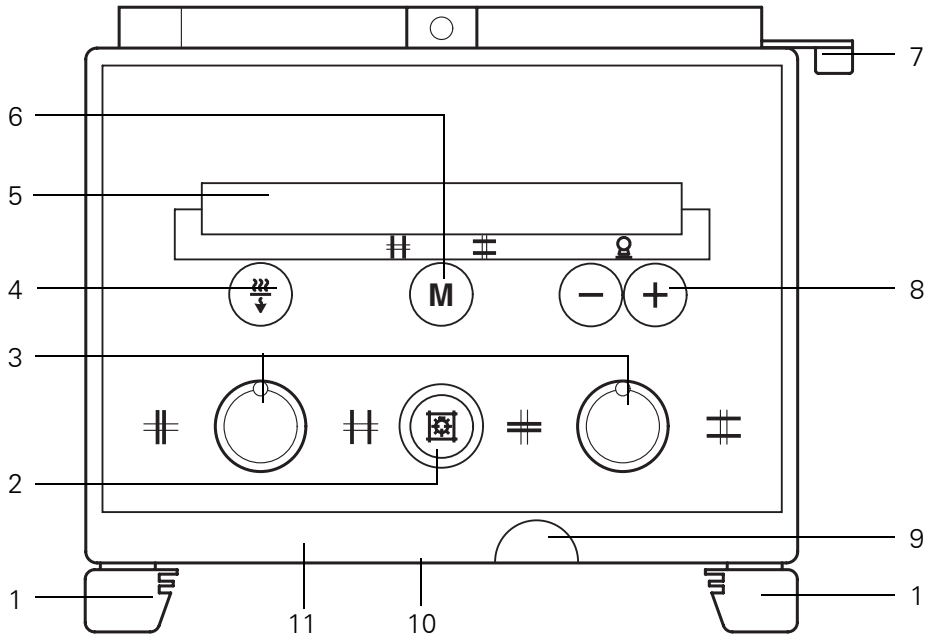
Power on/off The unit has a power switch on the bottom which you must operate only if the LCD monitor is not switched through a system.

Operating indicator The unit has a green LED operating indicator on the right side above the adjusting elements.

Errors
- ❏ If the LCD monitor displays no image or a blurred image, vertical lines or other defects, please contact the SIEMENS Service.
- ❏ If no input signal is present, the 'No Signal' message appears.

Primary collimator

Control elements and displays at the front



(1) Accessory rails

(2) Button for full-field light localizer and laser light localizer, switches off automatically after 10 - 90 s (configurable)

(3) Manual setting of width and height of the radiation field
- Turning to the right opens the collimator
- Turning to the left closes the collimator

(4) Motorized prefilter selection button

(5) Display field

(6) Selection of the collimated radiation field of the last exposure

(7) Stop lever for +/-45° rotation of the collimator about the vertical axis[1], stop position 0°

[1] configurable by SIEMENS Uptime Service

(8) Buttons for entering the SID for free setting

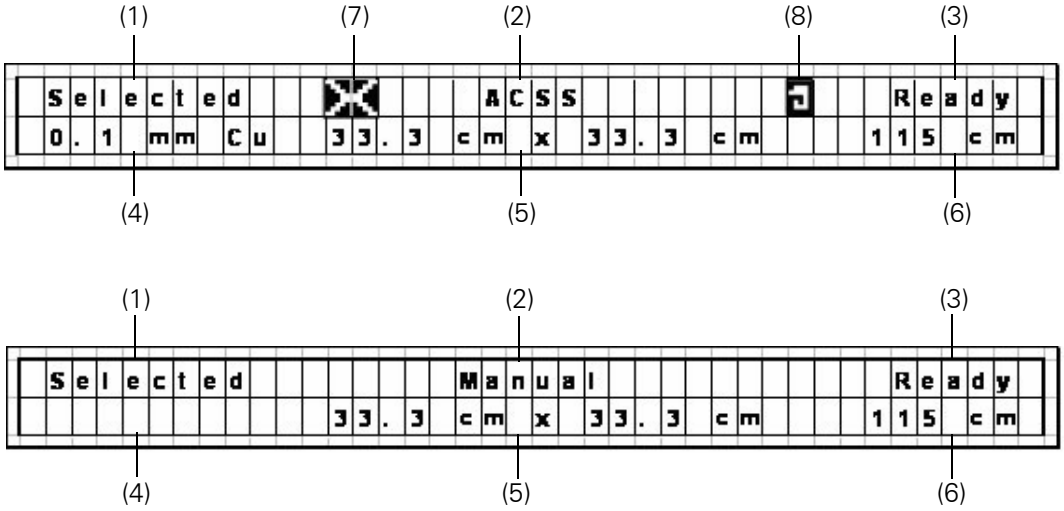
(9) Tape measure for SID setting (cm and inch)

(10) Slide for covering the laser line light localizer

(11) Integrated measuring chamber for dose area product (optional)

(12) Manual prefilter levers at the left side (not shown)

Display field



(1) Selected = tube assembly selected

(2) Operating mode:
ACSS/PBL = with automatic format collimation,
Manual = without automatic format collimation

(3) Ready = system ready for exposure

(4) Display of the selected prefilter in mmCu if prefilter is selected using a button or via remote control.
– Nothing is displayed in this field if the collimator is equipped with a manual filter unit.

(5) Format display (height x width in cm or inches)[1]

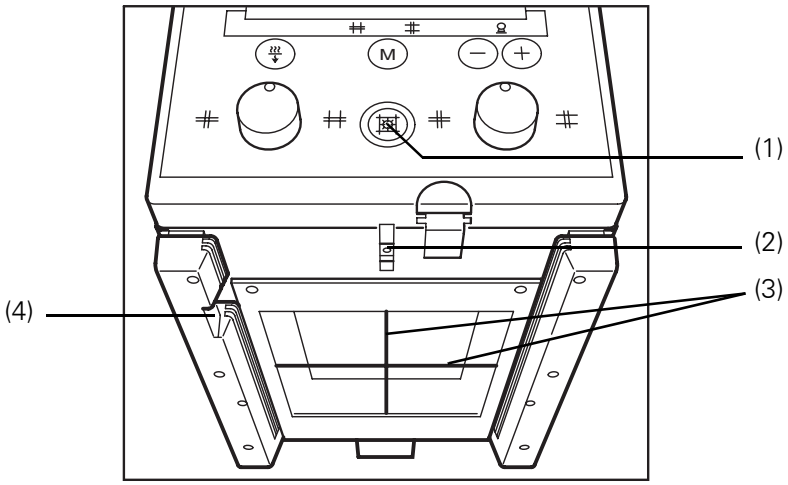
(6) Display of SID (in cm or inches)[1]

(7) Display: Collimator centered on image receptor[2]

(8) Display: Collimator rotated[2]

[1] can be configured in cm or inch by Siemens Uptime Service
[2] Display function not available with all systems

Control elements at the underside



(1) Button for full-field light localizer and laser line light localizer, switches off automatically after 10 - 90 s (configurable)

(2) Laser line light localizer with slider to cover the outlet opening

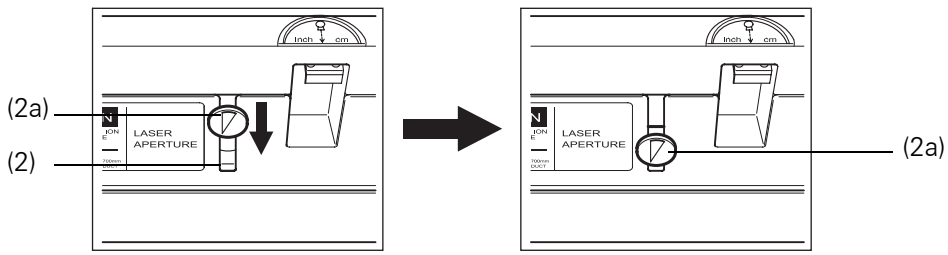
(3) Crosshairs in the light localizer window

(4) Locking spring for accessories

Laser line light localizer (2)

The laser line light localizer projects the axis mark for longitudinal centering, which is aligned with the centering mark on the receptor.

If necessary, the laser radiation exit of the laser line light localizer can be closed with the **slider (2a)**.



Caution

Beam of laser light localizer strikes patient's or user's eye

Risk of visual disturbance
Eye injury

- Do not look into laser beam.
- Take care that neither you nor any other person look directly into the light beam.
- Close the laser radiation exit of the Laser light localizer with the sliding cover to protect the eyes of the patient or any other person.

Caution

Long operating time of light localizer lamp

Overheating of housing and danger of burns

- Take care when touching the collimator housing

- To switch the laser line light localizer on, press the button at the front of the collimator.
- To switch the laser line light localizer off, press the button 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 button at the front of the collimator.
- To switch it off press the button 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 spring

The locking spring is located on the left guide rail at the underside of the collimator.

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

- To remove the accessories, press the locking spring to the left until the compensating filter, template etc. can be removed from the collimator.

Prefilter selection

Caution

Malfunctioning of prefilter

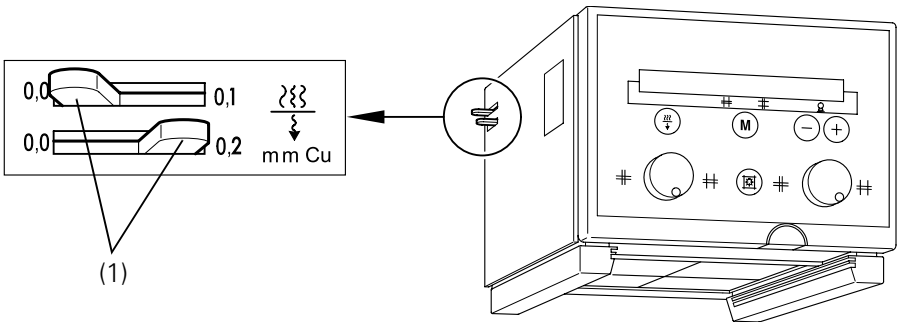
Incorrect radiation dose

◆ Take care of correct filter setting on manual prefilter

Motorized prefilter selection[1]

◆ To select a prefilter press the prefilter selection button.
– The Cu prefilter changes to the next value each time the button is pressed
– Possible settings are:
0.0 mm Cu (no) prefilter
0.1 mm Cu prefilter
0.2 mm Cu prefilter
0.3 mm Cu prefilter
– The currently selected prefilter is shown in the display.

Manual prefilter selection[2]



Manual prefilter selection is performed using two levers (1) on the left side of the multileaf collimator.

Four combinations of lever positions are possible:

❏ 0.0 mm Cu (no) prefilter: Set both levers to the left

❏ 0.1 mm Cu prefilter: Set the upper lever to the right and the lower lever to the left

❏ 0.2 mm Cu prefilter: Set the upper lever to the left and the lower lever to the right

❏ 0.3 mm Cu prefilter: Set both levers to the right

[1] Not with variant PBL II
[2] Only with variant PBL II

Changing the bulb of the laser light localizer

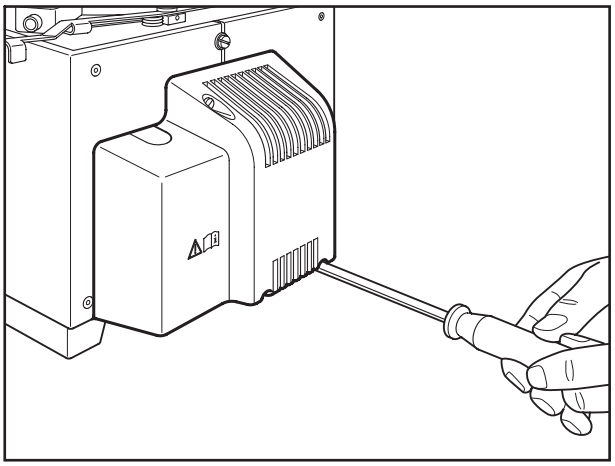
As soon as the lamp brightness decreases, this symbol is shown in the collimator display. It recommends to change the bulb.

Although you can continue working with less brightness, we recommend to change the bulb as soon as possible.

To change the bulb proceed as follows:

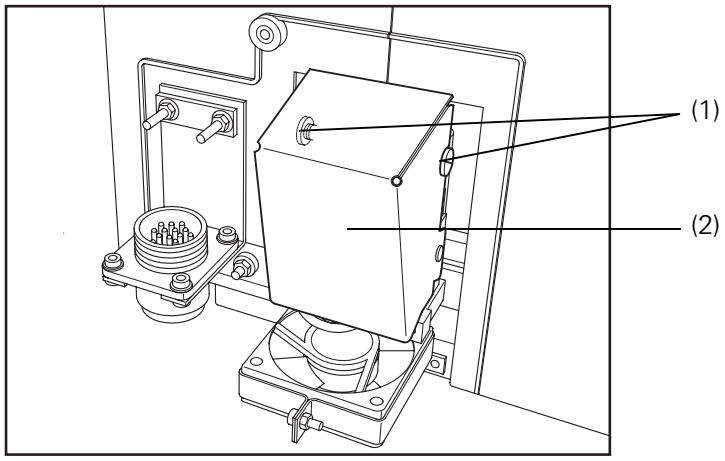
- Switch the system off at the generator ON/OFF console.
- If necessary, turn the collimator to get better access.

⇨ Refer to the description in the according system Operator Manual.



Lamp cover at the backside of the collimator

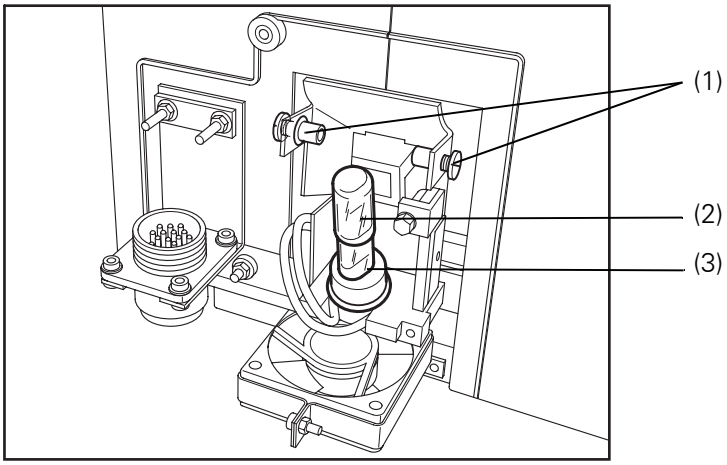
- Loosen the 3 screws on the lamp cover using a conventional slotted screwdriver.
- Remove the lamp cover.



Heat shield

Heat shield might be very hot! Please let it cool down before removing it.

- Loosen (single turn) the two heat shield screws (1) on the lamp.
- Remove the heat shield (2).



- Remove the defective bulb (2).
  Do not touch the bulb with your bare fingers - it can be very hot!
- Insert the new bulb using a cloth and make sure both contacts (3) are touching the frame stop position.
  Do not touch the bulb with your bare fingers!
- Insert the heat shield to the stop position and tighten the screws (1).
- Attach the lamp cover.

Caution

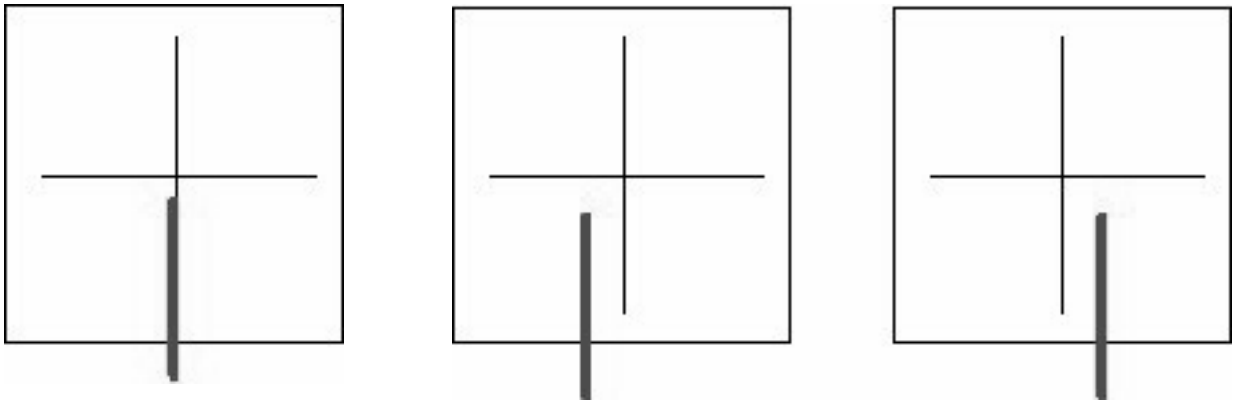
Lamp breaks

Patient and/or user injured by glass splinters

- Use only OEM Siemens spare parts

Testing the fit of the new bulb

An incorrect position of the new bulb is visible by a mismatch of crosshairs and laser line.



Correct position

Incorrect position

Accessories and auxiliary devices

The maximum permissible weight of accessories and auxiliary devices attached to the collimator must not exceed 7 kg.

Operator Manual
System Operation

Chapter: On-Off/Emergency Stop

Chapter: Functional and Safety Check

Chapter: System Settings

Chapter: Setting the Image Geometry

Switching the system on

◆ Press the button on the generator ON/OFF console[1].
  – The entire system and all further connected devices are switched on.
  – A safety test program runs automatically from this time.
  – The welcome menu appears on the monitor.

The system is ready after initialization and the end of the safety test program if

at the integrated generator control console

❏ no error message appears in the message line of the data menu,

❏ none of the kV, mAs or ms displays flashes,

❏ a system selection is active,

on the live monitor

❏ the patient menu appears,

on the system remote control console

❏ no displays flash,

❏ no error message appears,

on the tableside control panel

❏ no displays flash,

Emergency stop

❏ no red emergency stop button is activated.

In the case of a fault of the safety test program switch the system off and back on within 10s. The system again starts with the automatic safety test program. As a rule the fault is rectified by this.

If this is not the case, switch the system off. After the image system has automatically switched off (monitor dark), wait 30 s and then switch it on again. In this case the image system is run down and restarted. A possible error will be displayed on the monitor.

Please notify the SIEMENS Uptime Service if this is the case.

⇨ Refer to the FLUOROSPOT Compact Operator Manual for further information.

Perform a functional and safety check according to the **Functional and Safety Check** chapter.

[1] If a local hardcopy camera connection is present, the associated camera and network components should be switched on first.

Switching the system off

- Press the button on the generator ON/OFF console.
  - The entire system and all further connected devices are immediately switched off.
  - All started operating sequences will be interrupted and the selected programs will be deselected.

⇨ Refer to the FLUOROSPOT Compact Operator Manual for further information.

Emergency SHUTDOWN button (installed on-site)

Use this shutdown method *only in an extreme emergency* because it is an *uncontrolled* process!

Data could be lost, e.g. unsaved images, exporting and filming jobs, etc. The tube cooling system is also disconnected from the power supply, and the tube can overheat.

Standby power supply

Only continuous fluoroscopy is possible in standby operation.

Pulsed fluoroscopy and all radiography modes are not possible.

"Standby power supply active" appears on the integrated generator control console in the message line.

Standby power supply inside the hospital

A standby power supply (inside the hospital) switches on if the line voltage fails. However, this is not as a rule without interruption and can take some time.

The system is switched off and must be switched on anew.

Battery-supported standby power supply (optional)

UPS = Uninterrupted Power Supply

An uninterrupted power supply is a battery-supported system for the standby power supply in the case of mains power supply failures.

If an UPS is installed for your system, then this UPS switches automatically to standby operation if the mains voltage fails or is too low. To prevent loss of data/ images, the imaging system remains switched on. The generator and table are switched off.

In the case of a power failure

The imaging system remains switched on. The generator and table are switched off. The green lamp on the control unit of the UPS goes out.

The red lamp on the control unit lights up after approx. 4 s.

◆ Now switch the system on within the next 6 s.

If the system is not switched back on within this time, then the imaging system is shut down in a controlled manner and subsequently restarted.

After restoration of the power supply

The green and red lamps on the control unit of the UPS light up.

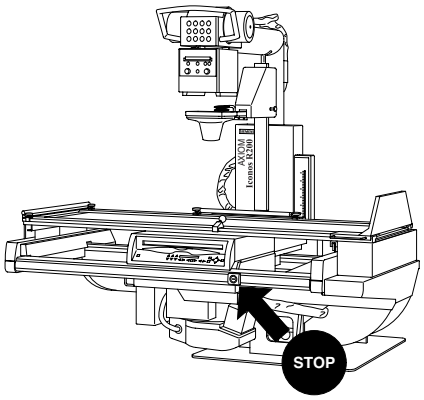
◆ Switch the system off.
  – The imaging system remains switched on.
  – The generator and table are switched off.

◆ Press the red button on the control unit (Press To toggle Power Supply).
  – The red lamp on the control unit goes out.

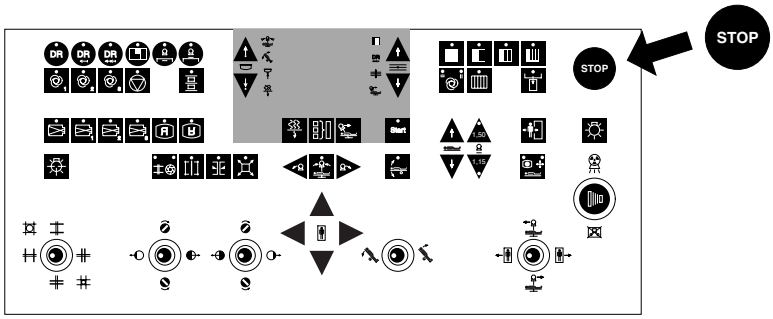
◆ Switch the system on within the next 6 s.

If the system is not switched back on within this time, then the imaging system is shut down in a controlled manner and subsequently restarted.

Red Emergency STOP button



STOP button on the unit



STOP button on the system remote control console

If there is an emergency situation that is potentially hazardous to the patient, the operator or the system,

STOP

◆ Press one of the red stop buttons on your system.
  – All system movements are stopped;
  – The generator and the imaging system still remain switched on and ready;
  – Radiation is interrupted;
    fluoroscopy can be switched on again consciously after letting the foot-switch go and actuating it again;
  – Injection with the synchronized injector is interrupted.

Switching back on

- Remove the hazardous situation.
- Unlock the red emergency stop button
  – The system is immediately ready for use
- If the hazardous situation cannot be removed, please notify the Siemens Customer Service.

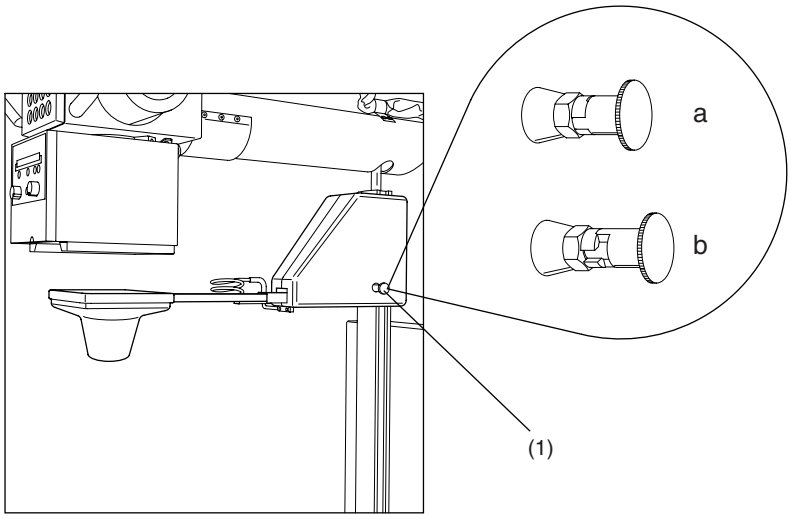
Patient rescue

If the patient has to be rescued in an emergency situation (e.g. power failure), proceed as follows:

- Bring accessories into a position which makes rescue possible.

If the patient is compressed with the cone (optional)

- Pull out the knob (1) from the engaged position b and turn it by 90° until it engages in the deep notch (notch position a).
- Lift the cone arm off from the patient until it locks in a position of approx. 10°.



Warning

If shoulder supports or foot restraints are loosened in Trendelenburg position, then take care that the operating personnel secure the patient sufficiently. Obtain the assistance of sufficient personnel for the rescue of the patient.

Daily tests

After switching the system on

- Perform a visual inspection of all displays and signal lamps on the operating units.

No errors should be indicated.

Neither the radiation ON indicator on the operating units nor the radiation warning lamp in the room should light up.

Warning

If the radiation ON indicator or a radiation warning lamp lights up, or a live fluoroscopic image (not LIH) appears on the monitor without actuating a switch

- immediately switch the X-ray system off using the emergency shutdown button and
- notify the SIEMENS Uptime Service.

Use exclusively foot switches from SIEMENS (original parts with approval) for radiation release.

Prior to the examination

- Remove unnecessary objects and equipment from the area of action of the system.
- Remove unnecessary accessories from the system accessory rails and the primary collimator.
- Attach the devices required for patient positioning and immobilization securely to the system.
- Attach all safety-related accessory parts correctly (e.g. footboard, grip protection strip, handgrip, handgrip strip) and make sure they are properly secured.
- Clean any contrast agent residues from the patient table, protective plate and spotfilm device cover.

Recommendation:

As a test, take a full-format exposure using the largest possible format.

- Run a functional test of the STOP buttons by
  – performing an arbitrary system movement and
  – pressing the STOP button during the movement.
  The movement concerned must stop immediately.
  Then unlock the button (turn it clockwise).
- Run a functional test of the proximity switches (collision protection) by
  – performing an arbitrary system movement and
  – pressing a proximity switch during the movement.
  The movement concerned must stop immediately.
  After releasing the proximity switch, all system movements are possible again.

During the examination

- Check the radiation ON indicator. It should light up only
  – if one of the fluoroscopy switches has been pressed or
  – for the duration of an X-ray exposure.

Warning

If radiation (fluoroscopy, digital radiography) is released and the radiation ON indicator lights up but no fluoroscopic image appears on the monitor (error in the television chain)

- immediately switch the system off using the emergency shutdown button and
- notify the SIEMENS Uptime Service.

- Check the patient positioning devices, e.g. use of the grip protection strip and handgrip.
- Switch system movements on only if,
  – there is no danger of injury to the patient or third parties,
  – there are no objects blocking the path of system movements.

Monthly tests

- Run a functional test of the automatic dose rate control and automatic format collimation as described in the "Safety" operating instructions.

Legally required tests

⇨ Inform yourself in the "Safety" operating instructions.

General notes

Collision protection / Safety areas

❏ All system movements stop when a collision protection device is activated.

❏ The movement is stopped when a collision zone is reached.

3D support

❏ If the 3D support (optional) is not in its park position, then the system movements are disabled.

This system movement is enabled by simultaneously actuating the bypass key and an operating element.

◆ Press and hold this key

◆ Start the system movement after 2s.

Operating elements for system positions

Warning

Immediately press the nearest STOP button in the case of danger to the patient.

All system movements are stopped.

◆ After removing the cause of the danger, unlock the STOP button by turning it to the right.

❏ Operating elements with deadman functions

All operating elements for the system settings are designed as deadman function, i.e. system settings are active only as long as the operating element is actuated.

❏ Operating elements with LEDs

LED lights up: function is selected

LED does not light up: function is deselected

LED flashes: selected function is not yet concluded or message about a particular status (see relevant chapter for description).

Object-dependent system settings

The agreement of the actuation direction of the operating element with the movement of the X-ray system (stand with tube assembly and primary collimator, image receptor unit with image intensifier and spotfilm device) depends upon the selected object setting.

❏ Left LED lights up: "Object setting oriented to the monitor" is selected

❏ Right LED lights up: "Object setting oriented to the system" is selected

Only possible from the system remote control console for the following movements:

– Moving the X-ray system longitudinally
– Moving the tabletop longitudinally/transversely

Start positions

Automatically determined system settings are performed with the Start button depending upon the selected operating mode (tomography, Periscanning, Peristepping, scanning technique).

LED flashes: the approved system settings are not yet concluded.

LED does not light up: the approved system settings are concluded.

General notes on error messages

The system is constantly monitored internally during operation.

When a fault is detected, the system is blocked and the fault is displayed as error in the message line of the integrated generator control console and stored.

Cancelling blocking:

◆ Briefly press the exposure release button on the generator ON/OFF console up to the 1st pressure point and let go again. Don't press more!
– The fault message is cancelled as a rule

Further operation of the system may be only under increased attention of the user.

However, if an error message is still displayed, there is an error.

◆ Call the Siemens Uptime Service

Behavior of the system settings in the case of a fault

If there is a fault while actuating one of the following movements
- tilting the table down/up
- moving the tabletop longitudinally
- moving the X-ray system transversely

then these movements are stopped and the fault is displayed as an error in the message line of the integrated generator control console and stored.

Cancelling the fault:

◆ Briefly press the exposure release button on the generator ON/OFF console up to the 1st pressure point and let go again. Don't press more!.
– The fault is cancelled as a rule

Actuating the same movement again

If a fault occurs again when the same movement is actuated, then these movements are once again stopped and the fault is displayed as an error in the message line of the integrated generator control console and stored.

Cancelling the fault:

◆ Briefly press the exposure release button on the generator ON/OFF console up to the 1st pressure point and let go again. Don't press more!.
– The fault is cancelled as a rule by this

Actuating the same movement again

If the same movement is actuated again and there is a fault once again, then a warning signal (whistle) sounds and this movement is blocked. The following error message is displayed in the message line of the integrated generator control console:

"Severe error, please call service"

Warning

Collision monitoring is inoperable.

The operator is responsible for avoiding collisions of the system with objects and the floor.

◆ Actuate system movements only with direct visual control.

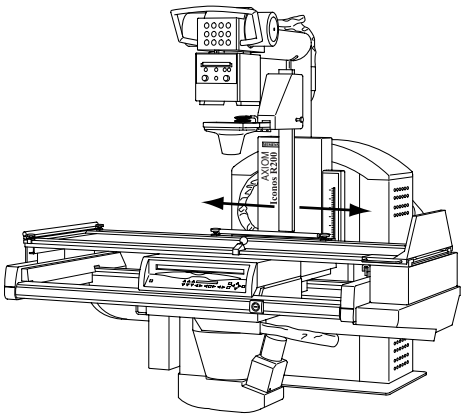
All other movements are possible only step by step. A warning signal (whistle) sounds on actuating and during the movement.

◆ Rescue the patient.

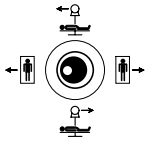
◆ Call the Siemens Uptime Service

Moving the X-ray system longitudinally

The X-ray system consists of:
- Stand with tube assembly and primary collimator
- Image receptor unit with image intensifier and spotfilm device



System remote control console

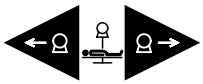


◆ Actuate the joystick.
– Deflect up/down: X-ray system moves headwards/footwards

Use this operating element primarily during fluoroscopy.

The speed of the movement increases the further you deflect the joystick.

Tableside control panel

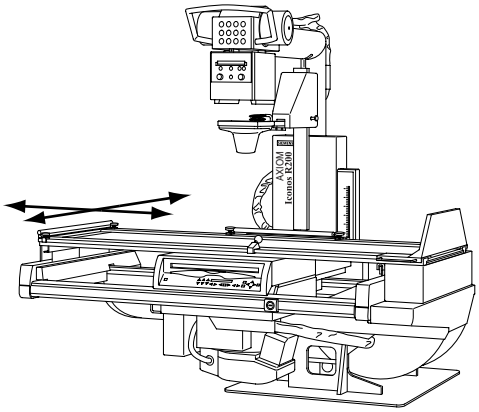


◆ Press a key.
– The X-ray system moves headwards/footwards

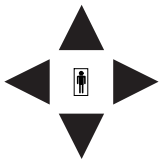
The movement takes place at constant speed.

Tabletop

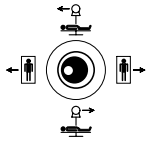
Moving the tabletop longitudinally/transversely



System remote control console

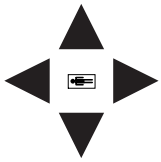


- Actuate the coordinate switch
  – key on the left/right: the tabletop moves transversely
  – key above/below: the tabletop moves longitudinally



- Actuate the joystick
  – Deflect to the left/right: the tabletop moves transversely

Tableside control panel



- Actuate the coordinate switch[1]
  – key on the left/right: the tabletop moves longitudinally
  – key above/below: the tabletop moves transversely

Travel range

❑ In order to avoid collisions with the floor, the system will retract the tabletop automatically as needed if you tilt the table up or down.
The X-ray system follows this movement synchronously if the available travel range is sufficient.
The object always remains centered in this case.

❑ If you have tilted the table more than -30° down or more than +30° up, the system continuously calculates the maximum possible travel range of the tabletop, depending upon the room height and the system position. You can move the tabletop only within this range.

[1] Display in horizontal table position

Lowering the tabletop completely with the table vertical

Warning

If the tabletop is lowered to less than 12 cm above the floor with the table vertical, it is possible for feet to be crushed.

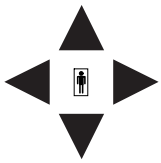
- Make sure before remote operation that no one is in the direct vicinity of the system.
- Avoid a location directly at the table end in the case of tableside operation.

You will hear a warning tone, if the tabletop is lowered to less than 120 mm above the floor.

- Then control the movement with increased caution.

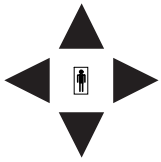
- Move the table into a vertical position (+ 90°).

System remote control console



- Press the down button until the tabletop stops automatically at 120 mm from the floor.
- Release the button and press it once again
  – The tabletop moves maximum to 40 mm from the floor
  – an acoustic signal sounds during the tabletop movement

Tableside control panel



- Press the right[1] button until the tabletop stops automatically at 120 mm from the floor.
- Release the button and press it once again
  – The tabletop moves maximum to 40 mm from the floor
  – an acoustic signal sounds during the tabletop movement

[1] Display in horizontal table position

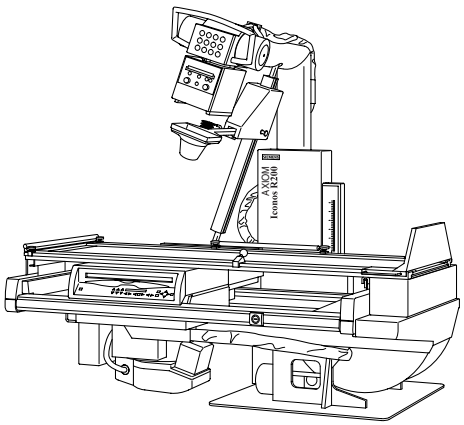
Tube assembly stand

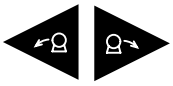
Setting the projection angle (oblique projection)

The setting range of the projection angle is maximally ± 40°.

The center of rotation of the swivel can be adjusted in height by motor drive from 10 mm to 300 mm above the tabletop to adjust it to the position of the object. This allows isocentric viewing on the monitor.

The additional mechanical centering device ensures that the central beam is centered onto the image receptor for each projection angle.





- Press a key
  - – cranio-caudal projection (right key)
  - – caudo-cranial projection (left key)

If the tube assembly stand or the image receptor unit reach the end of their respective travel range, the movement will stop.

To perform further oblique projections:

- Press the key for oblique projection again
  - – The tube assembly stand or receptor unit moves to a position for additional projections
  - – The object centering is lost.
- Reposition the object by moving the tabletop longitudinally provided the range of travel allows this.

For fluoroscopy, position the isocenter for oblique projection at the object height. The object centering on the monitor will remain the same without shift if you select oblique projection.

Setting orthogonal projection (oblique projection +/- 0°)

- Press this key
  – If the central beam is orthogonal to the receptor unit, the LED lights up;
  – The display for oblique projection indicates ”0°”.

Reading off the projection angle

System remote control console

- Read the angle in degrees (“°“) on the display.

Tableside control panel

- Read the display in degrees (“°”).

Tabletop

Warning

Avoid a seated working position directly at the system with your legs/knees under the head/foot-end crossbeam.

The system monitors the safety distance only with regard to the floor. Collisions can occur with other room equipment and mobile objects such as foot switches, steps, refuse bins, etc.

- Make sure before you actuate movements that no obstructions are present.
- Then control the system with increased caution.
  If you have set the footboard in an exceptional case on the head end of the tabletop, the safety distances which your system maintains automatically are impaired.
- Actuate movements then only with direct visual control.

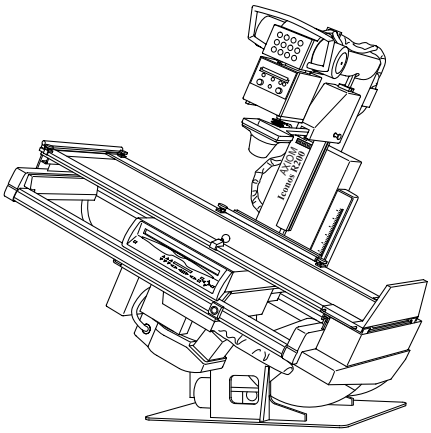
0° position of the table

You switch the automatic stop position of the table in the 0° position on or off with this key.

- LED lights up: the table moves through the 0° position when tilting up/down.
- LED does not light up: the table stops in the 0° position when tilting up/down

With the "Stop in 0° position" function switched on, the movement stops even if the tilting down/tilting up operating elements are operated in the 0° position. You can continue the movement beyond the 0° position by letting go the operating element and activating it again.

Tilting the table up/down



System remote control console

◆ Deflect the joystick to the left/right.
– The tabletop tilts down/up.

Tableside control panel

◆ Press one of the keys.
– The tabletop tilts down/up.

Limitations when tilting in Trendelenburg position:

Tabletop tilting stops when the distance table (Image Intensifier) to floor is less than 40 mm.

To further tilt the table,

- Release the joystick/button and press it once again.
  - Spotfilm device and tabletop move footwards until table tilting is possible again;
  - an acoustic signal sounds during tilting.

The movement always stop automatically in the 0° position of the tabletop if the "Stop in 0° position" function is switched on.

When tilting the table down to a Trendelenburg position >15°, the shoulder supports supplied or the foot restraints available as optional accessory must be used to secure the patient. The weight of the patient must not exceed 180 kg.
In the case of a Trendelenburg position >45°, the foot restraints available as optional accessory must be used in addition to the shoulder supports. The weight of the patient must not exceed 180 kg.
In the case of a Trendelenburg position >45°, the weight of the patient must not exceed 150 kg.

Reading the table tilt

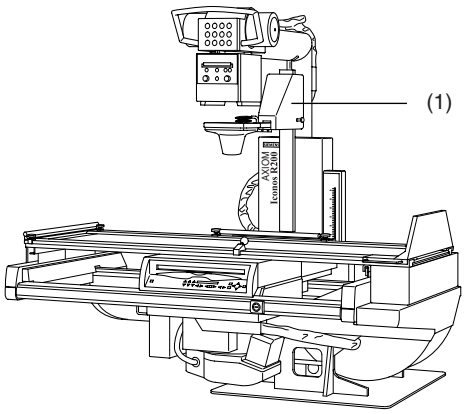
System remote control console

- Read the tilt in degrees ("°") on the display.

Tableside control panel

- Read the display in degrees ("°").

Compression device (optional)



(1) Compression device with cone

Using the compression device

- Insert the cone arm.

⇨ Refer to the "Accessories" chapter.

- Set an oblique projection angle of less than 30°.

- Press a key.
  – key above: decompression
  – key below: compression.

The motor-driven compression device is subject to the examiner's special duty to take due care regarding the applied compression forces, especially in the case of frail, sick and elderly patients.

⇨ For further information refer to "Patient positioning" im Register System Overview/Protective Measures chapter.

⇨ For information about patient rescue in case of a power failure see the chapter On-Off/Emergency Stop

❑ You can apply a maximum compression force of 155 N or 80 N[1], adjustable in 15 or 8[1] steps.

❑ Movements are no longer possible at a compression force of 50 N and higher.

❑ The cone carriage moves automatically into the park position (topmost decompression position)
  – in tomography
  – in Peristepping, Periscanning, scanning technique
  – when setting a swivel angle greater than 30°.

[1] configuration for Japan only

Cone arm in park position

Under the following conditions no shadowing of the collimated format will result from the cone arm in the park position:

- ❏ Max. 40 cm high, on the horizontal unit with orthogonal collimation and 150 cm SID.
- ❏ Max. 35 cm high, on the vertical unit with orthogonal collimation or oblique projection in all unit positions from115 cm SID.

Reading the compression level

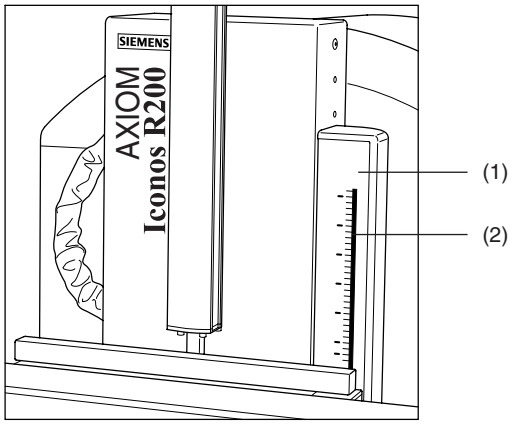
System remote control console

- ◆ Read the indication on the display.

Monitor

- ◆ Read the indication at the bottom right on the monitor.

Tomographic equipment (optional)



(1) Mirror

(2) Scale

Setting the fulcrum height

The average fulcrum height (120 mm) is set automatically when the system is switched on. Fulcrum heights of 10 mm - approx. 300 mm above the tabletop can be set for cassette tomography and digital tomography.

- ◆ Press one of the keys:

Adjustment upwards;

Adjustment downwards.

Press briefly and the fulcrum height changes by 1 mm.

Press longer, the fulcrum height changes continuously in steps of 1 mm.

Switching on the fulcrum height light localizer

- Press one of the keys briefly.
  – The light localizer goes out automatically after approx. 20s.

Reading the fulcrum height

The fulcrum height display on the system remote control console is decisive for all examinations.

System remote control console

- Read the display (display in "mm").

on the system

Switch the fulcrum height light localizer on.
You have 2 possibilities of reading the fulcrum height:

Direct method (light line on the object):

- Look from the right side in the mirror on the system.
  – You will see the projection of a red laser light line directly on the patient.
  – This light line indicates the set fulcrum height directly on the patient.

Indirect method (on scale):

- Look at the scale next to the mirror on the system.
  – You will see a red light mark there.
- Read the scale value indicated by the light mark.
  – One division corresponds to 0.5 cm.

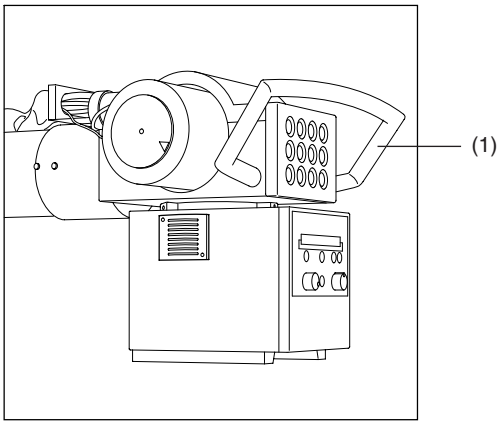
Manual tube assembly rotation

❏ During the rotational movement radiation release is not blocked.

❏ Outside the 0° rotation position, the automatic format collimation system switches over to the "Manual" mode (free radiation field setting).

❏ Tube assembly rotation is possible from +90° to -90° with stop positions every 10° and from -90° to -180° with stop positions every 30°.

◆ Remove the compression cone if present.



◆ Pull the handle (1) to the front and hold it firmly.

◆ Turn the X-ray tube assembly to the required position and hold it firmly at rest.

◆ Press the handle towards the rear and allow it to engage.

◆ Check for lock-in by turning the tube assembly slightly to the left and right.

Moving the grid into / out of the beam path

Moving the grid into the beam path

◆ Press this key.
– LED lights up: the grid is in the beam path.

Moving the grid out of the beam path

◆ Press this key again.
– LED dark: the grid is moved out of the beam path.

Setting the source-image distance

If a SID is set between the two SID positions of 115 cm and 150 cm, then only free exposure technique is possible.

- Press a key.
  - Once the selected SID is reached, the LED in the key lights up.
  - If you release the key before the end position, the LEDs in both keys flash.

SID = 115 cm, 150 cm

Limiting the radiation field (collimation)

Rectangular and /or iris collimation

Fluoroscopy and Digital Radiography (DR) (optional)

You can view the collimation on the monitor under fluoroscopy. The default is iris collimation.

The maximum possible collimator aperture is never greater than the selected image intensifier format.

The edge of the diaphragm must be visible in the fluoroscopic image.

The collimator is opened or closed synchronously and symmetrically to the image receptor center.

Within the selected image intensifier format, the radiation field can be collimated basically as desired and you can switch over from iris to rectangular collimation.

On selection of a lower ZOOM level (larger field) or image intensifier full format, the rectangular and iris collimation are retained, or the larger field is collimated (can be configured).

On selection of a higher ZOOM level (smaller field), the collimator always switches to the smaller field (iris collimation).

Cassette exposure

The system switches over automatically to rectangular collimation on selection of the spotfilm device or tabletop cassette exposure technique.
It is not possible to select iris collimation.

Selection / deselection

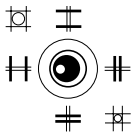
Use the key on the system remote control console for selection / deselection.

- Press this key
  - Rectangular collimation is selected: left LED lights up.
  - Iris collimation is selected: right LED lights up.

Setting

System remote control console

Rectangular collimation



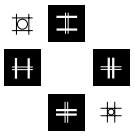
- Actuate the coordinate switch
  - Push up / to the left: height/width collimator blade pair opens
  - Push down / to the right: height/width collimator blade pair closes
  - Push diagonally: both collimator blade pairs open / close simultaneously.

Iris collimation

- Actuate the coordinate switch
  - Push diagonally to the left above: collimator opens
  - Push diagonally to the right below: collimator closes

Tableside control panel

Rectangular collimation



- Press the keys
  - Key above / on the left: width/height collimator blade pair opens
  - Key below / on the right: width/height collimator blade pair closes

Iris collimation

- Press the keys
  - Key on the left or above: collimator opens
  - Key below or on the right: collimator closes

Semitransparent wedge filters (optional)

Operation is exclusively at the system remote control console or the optional mobile tableside console.

Selection / deselection

- You select / deselect the wedge filters with one of the keys
  - LED lights up: the wedge filter is selected and can now be moved with the coordinate switch.
  - LED does not light up: the wedge filter is deselected and remains standing in the current position.

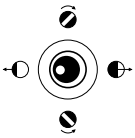
Left / right wedge filter

Double wedge filter

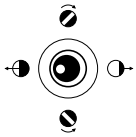
◆ By pressing this key you move all semitransparent wedge filters out of the beam path (e.g. for resetting the wedge filters).
– LED lights up: no wedge filter in the beam path

Moving the semitransparent wedge filters

The movements refer to the display on the monitor and always behave the same even with image reversal.



❑ Coordinate switch for
– moving / turning left[1] wedge filter
– moving / turning double wedge filter



❑ Coordinate switch for
– moving / turning right[1] wedge filter
– moving / turning double wedge filter

CAREPROFILE, collimation without radiation (optional)

The collimation of the rectangular/iris collimators and of the semitransparent filters (option) can be displayed on the LIH image without radiation.

The collimator position is displayed by a contour line as soon as the position of the collimator is changed.

⇨ Refer to the FLUOROSPOT Compact operating instructions for further details.

CAREPOSITION (optional)

The CAREPOSITION function enables you to position the patient anew without further fluoroscopy with the aid of the last fluoroscopic image (LIH).

⇨ Refer to the FLUOROSPOT Compact operating instructions for further details.

[1] in relation to monitor image edge

Additional Cu filter

The organ programs determine which additional Cu filter is moved into the beam path on selection of the program.

A temporary change of the automatic additional Cu filter selection with organ program is possible by manual switchover. The manually selected additional Cu filter is maintained until renewed switchover or selection of an organ program with configured additional Cu filter.

The currently selected additional Cu filter is displayed on the control units and primary collimator.

Image reversal

Warning

It is part of the user's duty to pay attention to the correct orientation of the display on the monitor. Use suitable aids for this, e.g. Pb letters.

Electronically displayed right/left markings are not mirrored when the image is reversed.

A faulty diagnosis is possible due to incorrect position information, e.g. confusion between right and left, with legal consequences and under certain circumstances with severe consequences for the patient.

You can mirror the images on the image monitor horizontally or vertically with these 2 keys. If none of the keys is pressed, then the image is displayed in the normal position.

Image mirrored horizontally / vertically

Switching over the image intensifier format

You can switch over the format even during a current examination.

◆ Press one of the keys.
– LED lights up: the function is selected.

Image intensifier full format

Zoom level 1, 2, 3

Regularly control the function of the format switch over!

⇨ Refer to the maintenance plan.

Operator Manual
Examination

Chapter: Transferring and Positioning the Patient

Chapter: Fluoroscopy

Chapter: Cassette Exposures in the Spotfilm Device (optional)

Chapter: Digital Radiography

General information

- ❏ Attach all safety accessories, especially the grip protection strip, handgrip strip, handgrip, footboard and shoulder supports.
- ❏ Use only positioning aids expressly approved by Siemens. Contact your local Siemens representative if you have any questions.
- ❏ Refer to the "Accessories" Register for all accessories available for positioning. Attaching the accessories is also described there.
- ❏ Ensure that these devices and positioning aids are secured correctly and are functioning properly.
- ❏ Make sure that the body parts of the patient, especially arms and legs, do not extend over the edge of the tabletop.
- ❏ Ensure that the patient uses the grip locations provided.

Positioning the patient

So that you can position the patient comfortably,

- ◆ Press this key, the system moves into a position favorable for patient transfer.
- ◆ Now transfer the patient.
- ◆ Immobilize the patient with the corresponding accessory parts.
- ◆ Move the radiographic system into the required position.

Warning

The collision protection system does not recognize accessory parts which project beyond the system contours.
The system and the accessories can be damaged and possibly the patient can also be injured.

Fluoroscopy operating modes

- ❏ Standard fluoroscopy (continuous fluoroscopy)
  - – In continuous fluoroscopy 30 (25)[1] frames per second are generated by the television central control unit.
- ❏ Fluoroscopy with pulsed television scanning (Supervision option)
  - – In SUPERVISION only 15 (12.5)[1] frames per second are generated. In this case fluoroscopy is applied at half the radiation dose with half the temporal resolution.

or

- ❏ Primary pulsed fluoroscopy (CAREVISION option)
  - – In pulsed fluoroscopy, the radiation is pulsed at 15 (12.5)[1] or 7.5 (8.3)[1] or 3 (3)[1] pulses per second. In this way a corresponding dose saving with a lower temporal resolution is possible.
- ❏ Roadmap (only with DSA option) with standard fluoroscopy, with Supervision (optional) or pulsed fluoroscopy (optional)
  - – Roadmap is a special fluoroscopic mode with subtraction display

Selecting the fluoroscopy operating mode

All parameters necessary for fluoroscopy are stored in organ programs.

- ◆ Select a corresponding organ program on the integrated generator control console.

Changing the selection of the fluoroscopy operating mode

It is possible to change the selection of the operating modes in connection with the Supervision or CAREVISION options.

The current operating mode is displayed in the operating menu of the live monitor.

Use the FLUOROSPOT Compact infrared control for operation.

If your system is equipped only with standard fluoroscopy, the Fluoro+ and Fluoro- keys have no function.

[1] Values in brackets apply to VIDEOMED DHC

Fluoroscopy with Supervision (optional)

◆ By pressing one of the keys you select

Fluoro + | Fluoro - Standard fluoroscopy (Fluoro +) or Supervision (Fluoro -)

You can also switch from one operating mode to another during a fluoroscopic examination.

Pulsed fluoroscopy (optional)

◆ Press one of the keys briefly to selected
- Pulsed fluoroscopy with a pulse rate of 3 (3)[1] p/s, 7.5 (8.3)[1] p/s or 15 (12.5)[1]p/s or
- Standard fluoroscopy.

Fluoro + | Fluoro - Increase (Fluoro+) / decrease (Fluoro-) the pulse rate

A pulse rate of 3 p/s is the lowest setting and standard fluoroscopy is the highest setting.

You can also switch over from one operating mode to another during fluoroscopy.

Roadmap[2]

Roadmap can be combined with all fluoroscopic modes. There is a corresponding Roadmap Fluoro program for every combination.

Road-map

◆ Press this key to select/deselect Roadmap.

You can select/deselect this function only when radiation is not being released. Roadmap is automatically deselected when you change to the "Pat. List" menu, on changing the exposure system (Peri, bed-side exposure) or the organ program selection.

⇨ Refer to the FLUOROSPOT Compact Operator Manual for information on the operating sequence.

[1] Values in brackets apply to VIDEOMED DHC
[2] only with DSA option

Releasing fluoroscopy

❏ Use the foot switch to release fluoroscopy.

❏ Radiation is released as long as you continue to press the footswitch for fluoroscopy. After you let the switch go, the last image is retained and displayed on the monitor (LIH).

❏ With the red emergency STOP button actuated, fluoroscopy can be switched back on consciously after letting the fluoroscopy switch go and pressing it again.

❏ A patient folder must be created and selected in the FLUOROSPOT Compact.

❏ No processing functions apart from storing the image are possible during fluoroscopy.

❏ The radiation ON indicators must light up.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

◆ Switch the system off immediately!

◆ Notify the SIEMENS Uptime Service.

◆ Discontinue use of the system.

Fluoroscopic data

The fluoroscopic data of kV, mA, time and area dose product (optional) are displayed on the integrated generator control console.

Display of the kV and mA values

❏ During fluoroscopy:
– Running display of the momentary kV and mA values

❏ After the end of fluoroscopy:
– kV and mA mean value of the examination

Display of the fluoroscopic time

Continuous display of the time accumulating in the examination in minutes.

Display of the area dose product (optional)

Continuous display of the area dose product accumulating in the examination.

Resetting the fluoroscopic data

Once the examination is ended, then please note the displayed fluoroscopic data and

- Press the reset key.
  – The displays for the fluoroscopic data and the area dose product are reset to zero.

Automatic fluoroscopic control

Selecting automatic fluoroscopic control

The fluoroscopic curves and dose levels preset in the organ program can be changed with the automatic program keys on the system remote control console.

You can select different fluoroscopic curves with the automatic programs.

- You select automatic programs 1, 2 or 3 with one of the keys.

Stop function

If the fluoroscopic values (kV, mA) set by the system should remain constant

- Press the stop key during fluoroscopy.

If you want to cancel the stop function

- Select one of the 3 automatic programs by a key or an organ program.

Fluoroscopic curves

Depending upon the system configuration, the following fluoroscopic curves are assigned to the automatic programs:

Automatic program	**Configured with standard Fluoro**	**Configured with standard Fluoro and SUPERVI-SION**	**Configured with standard Fluoro and CAREVISION**
1	Dose-reduced curve		Antiisowatt curve
2	Antiisowatt curve		
3	Contrast curve (60 to 80 kV)		

Fluoroscopy time limit

Fluoroscopy is switched off automatically and can no longer be switched on after a fluoroscopy time of 10 minutes[1].

To continue working

◆ let the fluoroscopy switch go and press it once again.

Fluoroscopy warning signal

An acoustic signal sounds after a fluoroscopy time of maximum 5 minutes[2].

◆ The signal disappears when you press the key on the Fluorospot Compact.

The time for the acoustic signal can be reset to zero at any time.

Automatic format collimation in fluoroscopy

Automatic format collimation is also switched on automatically when fluoroscopy is released.

I.e. the fluoroscopic field is never larger than the selected image intensifier format.

You can limit the fluoroscopic field to the required size with the corresponding operating elements within this area.

Fluoroscopy programs

All parameters necessary for fluoroscopy are stored in programs.

The following programs can be stored:
- Standard fluoroscopy
- Supervision
- Pulsed fluoroscopy (Carevision)
- Roadmap standard fluoroscopy
- Roadmap Supervision
- Roadmap pulsed fluoroscopy

⇨ Refer to the Fluorospot Compact Operator Manual.

[1] Can be changed on request by SIEMENS Uptime Service, under compliance with the national regulations.
[2] Can be configured from 1 to 5 minutes by the SIEMENS Uptime Service

Dose reduction[1]

In fluoroscopy with CAREVISION (pulsed fluoroscopy) or SUPERVISION the following dose reductions configured in the factory result related to standard fluoroscopy:

Automatik-programm	**CAREVISION 15 P/s**	**CAREVISION 7,5 P/s**	**CAREVISION 3 P/s**	**SUPER-VISION**
1	- 50%	- 75%	- 90%	- 50%
2	- 33%*	- 55%*	- 75%*	- 50%
3	- 30%	- 50%	- 65%	- 50%

* Deviating factory setting for USA

[1] for image receptor input dose rate

Cassette Exposures in the Spotfilm Device (optional)

Automatic format collimation in radiography

Bucky mode

In the Bucky mode, the rectangular diaphragms move to the format of the inserted cassette or to the selected segmentation format. The light localizer is switched on automatically on selection. The radiation field can then be collimated smaller as desired. The collimation is retained during the exposure.

Bucky mode is active: LED lights up

Semiautomatic mode

In the semiautomatic mode, the rectangular diaphragms are limited automatically to the cassette or segmentation format. It is possible to collimate arbitrarily within the cassette or segmentation format. The collimation is retained during the exposure.

Semiautomatic mode is active: no LED lights up.

Fully automatic mode

In the fully automatic mode, the rectangular diaphragms are limited automatically to the cassette or segmentation format. It is possible to collimate arbitrarily within the cassette or segmentation format.
If the rectangular diaphragms are opened less than the cassette or segmentation format, then they are opened up to the selected cassette or segmentation format during the preparation.

Automatic format collimation can also be selected separately for height and width diaphragms. The diaphragms not selected then behave in the same way as with semiautomatic mode.

Fully automatic mode width and height is active: both LEDs light up.

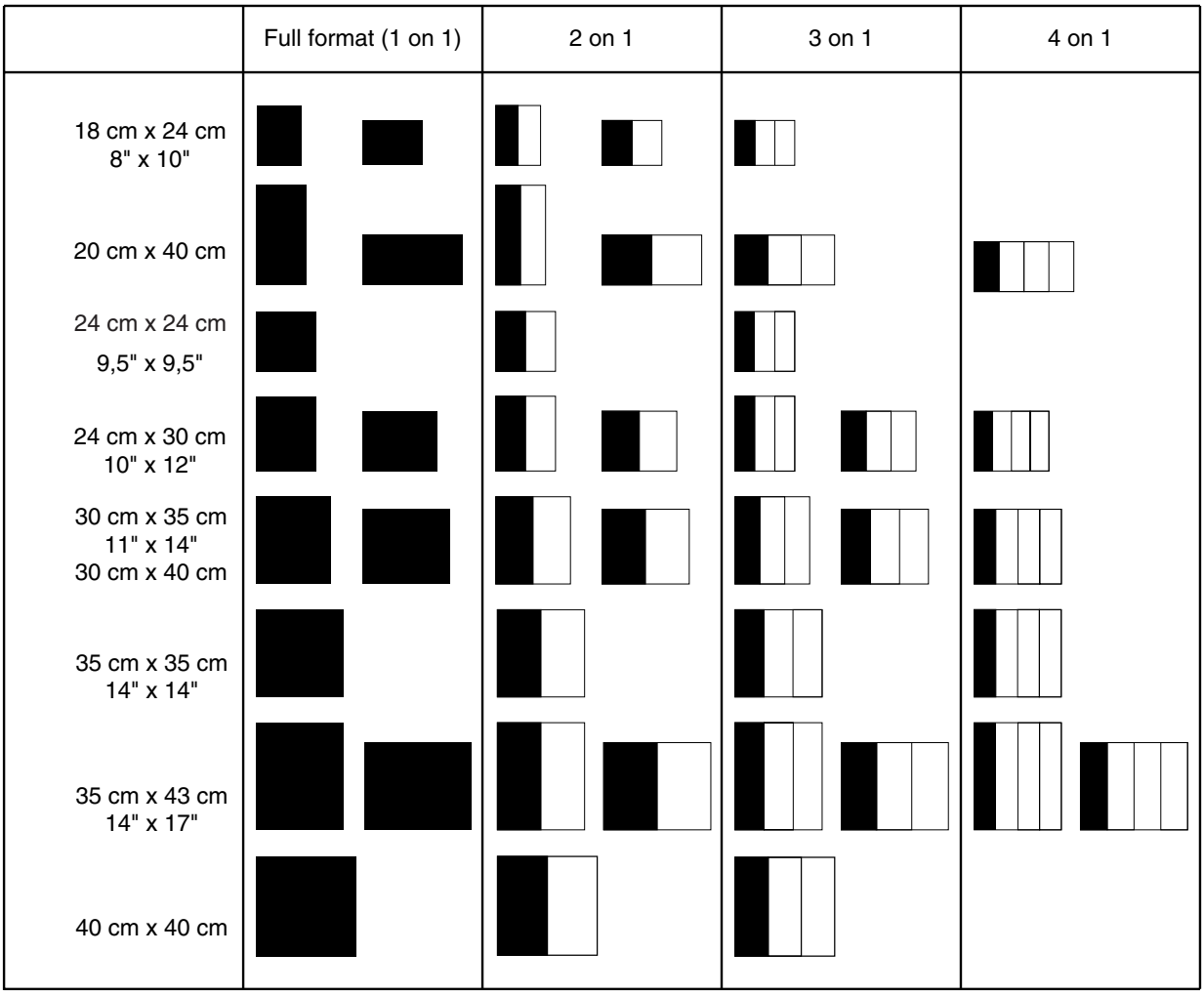
Fully automatic mode width is active: right LED lights up; left LED is dark..

Fully automatic mode height is active: right LED is dark; left LED lights up..

Cassette program

Cassette formats and segmentation program

The following cassettes standardized according to IEC, ANSI or DIN are permitted:



Selecting the segmentation program

- Select the spotfilm device exposure technique at the system remote control console.
- Insert an approved cassette in the spotfilm device.
- Select the required segmentation program by pressing one of the keys.
  – The LED in the pressed key lights up.
  – The number of free exposures is displayed in the display.

Full format (no segmentation)

Segmentation 2 on 1

Segmentation 3 on 1

Segmentation 4 on 1

If you have selected a segmentation program which cannot be obtained with the inserted type of cassette, then the LEDs in the keys for the selected segmentation program flash.

If "0" is displayed in the display after the exposure, the selected program has been completed.
Further exposures are then blocked.

Format segmentation

Skipping a segmentation segment

- Press the selected segmentation key once again, if you wish to skip a segment during exposure.

Mixed mode

It is possible to change the segmentation within a cassette as long as the unexposed part of the cassette permits the newly selected segmentation.

Loading / unloading the spotfilm device

Warning

Risk of injury during automatic cassette size sensing!

- Do not reach into the loading shaft of the spotfilm device.

Loading

LED lights up: Cassette in unloading position.

- Insert the cassette with the smooth side upwards and insert at least 2/3 of the cassette width into the loading shaft.
  - The cassette is drawn in automatically and parked in the spotfilm device.
  - At the same time the cassette format is measured and the LED in the corresponding segmentation key lights up.
  - The cassette size is shown in the display of the system remote control console.

If a cassette format which is not approved is used, the cassette moves automatically back into the loading position.

The cassette does not appear in the loading slot:

- Tilt the tabletop into the +45° position.
- Press the unloading key briefly a number of times until the cassette appears in the loading slot.

In a table position of approx. 45° to 90° it can happen that if the cassette is not inserted far enough it drops out from the loading shaft again on automatic centering depending on its make/type. The formats 20 x 40 cm, 18 x 24 cm and 24 x 30 cm inserted in upright format are especially affected by this.

In this case,

- insert the cassette with its smooth side upwards and with at least 3/4 of the cassette width in the loading slot
- hold the ball of your thumb against the cassette until it is securely grasped by the cassette jaws.

Caution

Under no circumstances may you poke your fingers into the loading slot as this would interrupt the sensing light barrier. Otherwise the cassette is rejected.

Unloading

- Press the key on the spotfilm device or system remote control console.
  – The cassette appears in the loading slot of the spotfilm device.
  – The LED lights up.
  – Fluoroscopy and radiography are blocked.
- Remove the cassette.

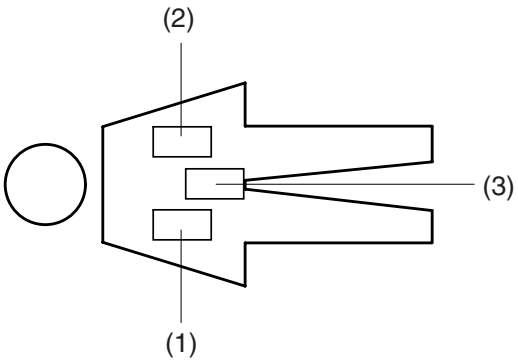
Possible configurations [1] for cassette unloading:

Once the selected program has been completed, i.e. "0" is displayed in the display, the cassette will either automatically appear in the loading slot for removal or will be moved to the parking position (can be configured).

Exposure measurement for cassette exposures

Arrangement of the dominants

The following sketch shows the arrangement of the dominants in the spotfilm device related to the anterior-posterior patient position (head end at the left, looking onto the patient with the table horizontal).



(1) Left dominant

(2) Right dominant

(3) Middle dominant

[1] by the SIEMENS Uptime Service

Selection of the dominants

The dominants are filed in the organ programs or they can be set on the integrated generator control console.
Multiple selection of the dominants is possible.

Warning

Please make sure when changing the selection of the dominants that the correct dominant is always selected.

◆ Press one of the keys.

Left dominant

Middle dominant

Right dominant

If a selected left or right dominant becomes invalid temporarily, e.g. due to collimation, then the middle dominant is selected and displayed automatically. The deselected dominant is displayed crossed through.

The originally selected dominant is active and displayed again only at the 1st pressure point of the exposure release button (precontact) or when the collimator is opened again.

The position of the measuring field/of the measuring field in relation to the object can be checked on the LIH image by means of brief fluoroscopy. A diagram with the position and size of the relevant measuring field is displayed briefly on the monitor.

Releasing the exposure

❏ Release the exposure with the exposure release button in the system remote control console or via the foot switch in the control room, or table-side (option). The foot switch has no precontact.

❏ The signal lamps for radiation must light up briefly.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot temporarily be seen on the monitor:

◆ Switch the system off immediately!

◆ Notify the SIEMENS Uptime Service.

◆ Discontinue operation of the system.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ Refer to the **POLYDOROS SX** register for further details on the organ programs and their programming.

Single exposures / serialography

Single exposure

Single exposure selected: the LED does not light up

◆ Select a suitable segmentation program. Possible selection:
– Full format
– Segmentation 2 on 1 / 3 on 1 / 4 on 1

If you now release the exposure, you receive one single exposure per exposure release.

Serialography

Serialography selected: the LED lights up

- Select a segmentation program.
  – Segmentation 2 on 1 / 3 on 1 / 4 on 1

If you now release the series and keep the exposure release button pressed, you obtain an exposure series.

Serialography in combination with tomography is not possible!

Bucky mode

Use only the light localizer and the operating elements of the primary collimator for collimation.

Do not release fluoroscopy, otherwise Bucky mode is deselected.

- Press this key.
  – Spotfilm device exposure technique is selected: the LED lights up

- Press this key.
  – Bucky mode is selected: the LED lights up
- Insert a cassette and select a segmentation program.

Spotfilming without tomography

- Press this key.
  – Spotfilm device exposure technique is selected: the LED lights up

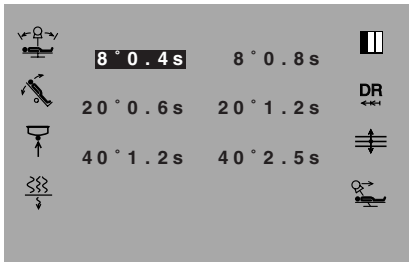
- Select semi or fully automatic mode.
- Insert a cassette and select a segmentation program.
- Select single exposure or serialography.

Tomography (optional)

The tomographic exposures are taken as linear planigraphy with 3 different blurring angles.

- Press this key.
  – Spotfilm device exposure technique is selected: the LED lights up

- Press this key.
  – The LED in the start key flashes if the conditions for tomography are not fulfilled.
  – The possible combinations for tomographic angle/tomographic time appear in the display.
  – The selected combination is emphasized.



Press the key again and the next possible combination becomes active.

- Select Bucky or semiautomatic mode.

- Insert a cassette and select the cassette program.

If the LED in the start key flashes,

- press this key.
  – The compression device moves into its park position, if present.
  – The tube assembly stand moves into the 0° position.
  – A source-image distance of 115 cm is set.
  – The image receptor unit moves into the tomographic area.

Once the positions are reached, the flashing LED goes out.

Tomographic area

If you have positioned the image receptor unit outside the tomographic area, it is moved automatically when you press the start key so that tomography can be performed with the required tomographic sequence. In this case the tabletop is moved automatically synchronously to the image receptor unit so that the initial object centering is reset.

Tomographic sequence

- Press the exposure release button up to the first pressure point.
  – The tube assembly stand moves to the head-end tomography starting position (at the left with the unit horizontal).
- Give the breathing command to the patient.
- Press the exposure release down fully and keep it pressed until the tube assembly stand stops in the foot-end position.
  – During the exposure the tube assembly stand moves towards the foot end and automatically remains there following the exposure.

With the exposure release button pressed, the tube assembly stand moves back into the starting position.

Prepare the next tomographic exposure:

- Set a new tomographic height.
- Press the exposure release button up to the first pressure point.
  – The tube assembly stand moves from the foot-end position towards the head-end tomography starting position (at the left with the unit horizontal).

Automatic format collimation in digital radiography

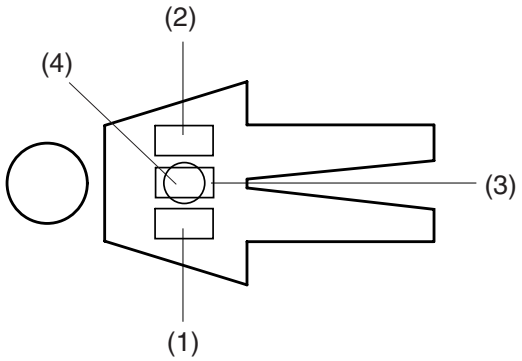
The exposure field is never larger than the selected image intensifier format.

Within this area you can limit the exposure field to the required size with the corresponding operating elements.

Exposure measurement in digital radiography

Arrangement of the dominants

The following sketch shows the arrangement of the dominants in the monitor in relation to the a-p patient position (head end at the left, looking onto the patient with the table horizontal).



(1) Left dominant

(2) Right dominant

(3) Middle dominant

(4) Central circular dominant

Selecting the dominants

The dominants are filed in the organ programs or can be set on the integrated generator control console.
Multiple selection of the dominants is possible.

Exception: central circular dominant.

Warning

Please make sure when changing the selection of the dominants that the correct dominant is always selected.

◆ Press one of the keys:

Left dominant

Middle dominant

Right dominant

Central circular dominant

If a selected left and/or right dominant becomes invalid temporarily, e.g. due to collimation, then the central circular dominant is selected and displayed automatically.

The originally selected dominant(s) will be active and displayed again when the collimator is opened again.

When collimating under fluoroscopy, take care that the selected left or right dominant lies completely in the radiation field.
Otherwise there will be overexposure because of the inappropriate acquisition of the measured exposure values.

The position of the measuring field/of the measuring field in relation to the object can be checked on the LIH image by means of brief fluoroscopy. A diagram with the position and size of the relevant measuring field is displayed briefly on the monitor.

Spotfilming without tomography

Selection

- Press this key.
  – Digital radiography is selected: the LED lights up
- At the integrated generator control console, select an organ program for
  – Single image or
  – Serialography or
  – DSA

Single image - serialography

Not possible in DSA.

The display is in the operating area of the live image monitor.

The image intensifier format cannot be changed during an exposure series. Only the collimation is corrected on changing over to a larger zoom level.

Changing selection

- If you press this key
  – the system switches over to single image in the "Serialography organ program"
  – single image remains selected in the "Single image organ program"

A changed organ program for serialography remains retained only until you select another / same organ program or switch the system off.

Frame rate

Operation is on the infrared control of the FLUOROSPOT Compact.

- During a native series the programmed frrame rate can be rduced in a maximum of 2 stages by pressing the button, if the corresponding ruductions have been programmed in the relevant organ program (see FLUOROSPOT Compact).

Releasing the exposure

❏ Release the exposure with the exposure release button in the system remote control console or via the foot switch in the control room, or table-side (option).

❏ The radiation ON indicators must light up briefly during the exposure.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

- Switch the generator off immediately!
- Notify the SIEMENS Uptime Service.
- Discontinue operation of the system.

Radiation interruption

If you let go of the exposure release button during radiation, the exposure is interrupted immediately in single exposure, in serialography the last exposure is still exposed correctly.

If a DSA series is interrupted before exposing the mask, then the first image is used as mask. The series is then displayed native.

Exposure end

In single exposure only one image is exposed, even if the exposure release button continues to be pressed.

In serialography, letting the exposure release button go, a full image memory or reaching the programmed maximum scene time ends the exposure series.

The DSA series is ended and the DSA image from the middle of the series is displayed if you let the exposure release button go.

You start a new DSA exposure series by pressing the exposure release button again.

In DSA exposures

The system switches automatically to subtraction after a predetermined number of images (e.g. 2).

The point in time at which the contrast medium should be injected must be selected depending on the examination.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ Refer to the FLUOROSPOT Compact and POLYDOROS SX operating instructions for further details on the organ programs and their programming.

Programs

The following programs can be stored:
- Single image organ program
- Serialography organ program
- DSA organ program (optional)

Creation of programs

⇨ Refer to the FLUOROSPOT Compact Operator Manual.

Temporary changes of programs

For the following parameters stored in the organ program, it is possible to change them temporarily with the corresponding operating elements:
- Film density
- Switching over from single image/serialography
- Dominants
- Cu prefilter
- Automatic level 1, 2, 3

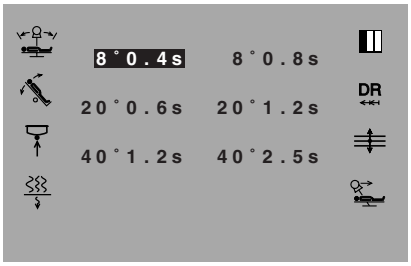
The changed parameters apply only until you select another / same organ program or switch the system off.

Tomography (optional)

Selection

◆ Press this key.
- Digital radiography is selected: the LED lights up

◆ Press this key.
- The LED in the start key flashes if the conditions for tomography are not fulfilled.
- The possible combinations of tomographic angle / tomographic time appear in the display.
- The selected combination is emphasized.



Press the key again to activate the next possible combination.

If the LED in the start key flashes,

- press the key.
  – The compression device moves into park position, if present.
  – The tube assembly stand moves into the 0° position.
  – A source-image intensifier distance of 115 cm is set.
  – The image receptor unit moves into the tomographic area.

Once the positions are reached, the flashing LED goes out.

Tomographic area

If you have positioned the image receptor unit outside the tomographic area, it is moved automatically when you press the start key so that tomography can be performed with the required tomographic sequence. In this case the tabletop is moved automatically synchronously to the image receptor unit.

Tomographic sequence

In the case of low-absorption objects with a water value below 10 cm (e.g. pediatrics, upper/lower extremities) either fluoroscopy must be performed before tomography or a Cu additional filter of at least 0,1 mm must be moved into the beam path. Otherwise exposures may be overexposed or interrupted and therefore useless.

- Press the exposure release button up to the first pressure point.
  – The tube assembly stand moves to the head-end tomography starting position (at the left with the unit horizontal).
- Give the breathing command to the patient.
- Press the exposure release button all the way down and hold pressed until the tube assembly stand stops.
  – During the exposure the tube assembly stand moves towards the foot end and automatically remains there following the exposure.

With the exposure release button pressed, the tube assembly stand moves back into the starting position.

Prepare the next tomographic exposure:

- Set a new tomographic height.
- Press the exposure release button up to the first pressure point.
  – The tube assembly stand moves from the foot-end position towards the head-end tomography starting position (at the left with the unit horizontal).

Releasing the exposure

❏ To release the exposure, actuate the exposure release button in the unit remote control console.

❏ The radiation ON indicators must light up during the exposure.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

◆ Switch the generator off immediately!

◆ Notify the SIEMENS Uptime Service.

◆ Discontinue operation of the system.

Radiation interruption

If you let go of the exposure release button during radiation, the exposure is interrupted immediately and the tomographic movement is stopped.

Exposure end

Letting go of the exposure release button or elapsing of the tomographic time ends the exposure.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ Refer to the FLUOROSPOT Compact and POLYDOROS SX operating instructions for further details on the organ programs and their programming.

Programs

The following programs can be stored:
– Tomography organ programs

Creation of programs

⇨ Refer to the FLUOROSPOT Compact operating instructions.

Temporary changes of programs

For the following parameters stored in the organ program, it is possible to change them temporarily with the corresponding operating elements:
– Film density
– Cu prefilter

The changed parameters apply only until you select another / same organ program or switch the system off.

Periscanning

Serial exposures of the contrast bolus during aortoarteriography with the patient at rest.

General

Periscanning is selected after the patient has been positioned, the catheter has been placed and the system settings for aorto-arteriography have been performed.
Proceeding from the abdomen (starting position), the entire peripheral examination area is scanned. The scan movement takes place with increasing movement speed of the X-ray system longitudinal displacement with finely graduated controllable adaptation of the speed to the contrast medium flow. The max. travel speed of the X-ray system is increased to 16 cm/s.

You generate an organ program with image series for Periscanning in the Digital Radiography menu.

Selection

- Press this key.
  – Periscanning is selected: the LED lights up.

The LEDs in the buttons for Periscanning and DR flash if the prerequisites for Periscanning are not met.

- Select an organ program for Periscanning.

Deselection

- Press this key or select another exposure system.
  – Periscanning is deselected.

Releasing the exposure

❏ Release the exposure with the exposure release button on the system remote control console or via the foot switch in the control room, or table-side (option).

❏ Radiation is released long as long as you continue to press the exposure release button.

❏ The radiation ON indicators must light up.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

◆ Switch the system off immediately!

◆ Notify the SIEMENS Uptime Service.

◆ Discontinue operation of the system.

Radiation interruption — If you let go of the exposure release button during radiation, the exposure is interrupted immediately.

Exposure end — Letting go of the exposure release button , a full image memory or reaching the programmed maximum scene time ends the exposure series.

Examination procedure

Preparation

◆ Prepare the digital imaging system

◆ Move the tube assembly into the 0° position

◆ Position the patient

◆ Set a nominal source-image intensifier distance of 115 cm or 150 cm

◆ Bring the X-ray system and tabletop into the intended starting position.

You must ensure that the travel range for the X-ray system is sufficient.

◆ Press this key.
– The LED lights up: Periscanning is selected.
– Serialography is selected.

The LEDs in the Periscanning and start keys flash if the conditions for exposure are not fulfilled.

If the LED in the start key flashes,

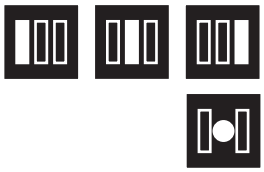
- press the key.
  – The compression device moves into park position, if present
  – Oblique setting moves into the 0° position

Once these positions are reached, the flashing LED goes out.

- Select an organ program for Periscanning
- Position the patient and set the following parameters with the corresponding operating elements:
  – Primary collimation (rectangular diaphragm)
  – Semitransparent wedge filters (if option is available)
  – Cu prefilter (preferably filed in the organ program)

Position the patient so that the region the vascular filling of which should be imaged first is located in the central ray.

Adapting the dominant



- Press one/several keys,
  – The dominant preset in the organ program is overwritten.

If a left / right dominant or both dominants are selected, the system switches over automatically to the central circular dominant if the preselected dominant is covered by the filters, since this would inevitably result in a faulty exposure.

Prepare the injector

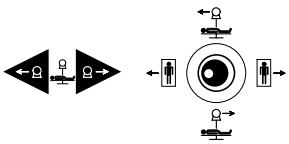
- Connect the injector plug to the electronics cabinet (only with radiation-synchronous injector release (option)).
- Set the injection data and switch to ready for injections.

Test run

The X-ray system stands in the starting position for the scanning process.

Start a test run without radiation.

- Switch the light localizer of the collimator on.

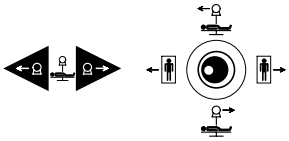


- Deflect the joystick up / down or the key to the left / right until the required examination area has been scanned.
- If necessary correct the starting position.

Scanning process

The X-ray system stands in the starting position for the scanning process.

- Press an exposure release button and keep it pressed up to the end of the examination, i.e. until the scanning process is ended.
- Trigger the injection, automatically or manually



- Deflect the joystick up / down or press the key to the left / right until the entire examination area has been scanned.
- If necessary reduce the frame rate in a maximum of 2 steps, as filed in the organ program (saving dose and storage capacity).

Follow the contrast medium flow on the monitor.
Adapt the movement speed of the X-ray system to the contrast medium flow.

End of the scene

- Let the exposure release button go.

The exposure series is also ended if the image memory is full and the maximum scene time has been reached, independently of the position in which the system is located.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ Refer to the FLUOROSPOT Compact Operator Manual and the POLYDOROS SX register for further details on the organ programs and their programming.

Creation of programs

⇨ Refer to the FLUOROSPOT Compact Operator Manual.

Temporary changes of programs

For the following parameters stored in the organ program, it is possible to change them temporarily with the corresponding operating elements:

- Film density
- Dominants
- Cu prefilter
- Automatic level 1, 2, 3

The changed parameters apply only until you select another / same organ program or switch the system off.

Peristepping (optional)

General

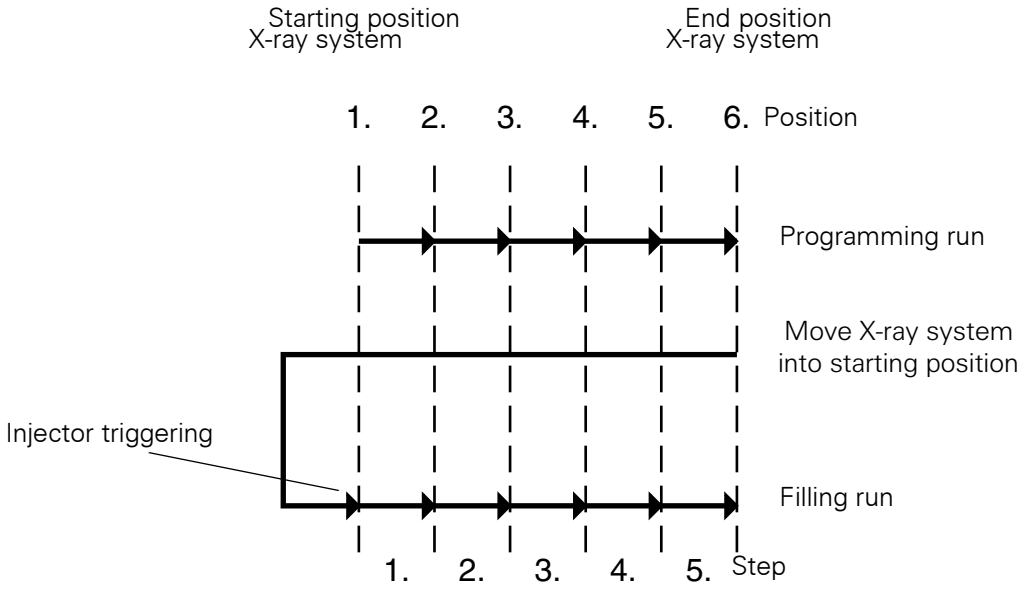
Peristepping comprises the following phases:

- ❏ Programming run
- ❏ Filling run (native)

Peristepping is selected after the patient has been positioned, the catheter has been placed and the system settings for aorto-arteriography have been performed.
With this selection the X-ray system can be moved only longitudinally in steps and the transverse movement is automatically blocked.

Peristepping is possible in all unit positions and in the axial direction, both towards the head end and towards the foot end.

The step length per step is 18 cm with I.I.40.



Programming run

Proceeding from the abdomen (starting position), the primary collimators, semi-transparent wedge filters and dominant, if required, are set step by step (up to the last position).
You must deflect the joystick or press the key for "X-ray system longitudinal movement" in the movement direction for each step as long as the next step position is reached. Once the next step position is reached, the X-ray system stops automatically and the corresponding position number appears on the remote control console.
The last set collimator positions, filter positions and dominants are stored automatically assigned to each step position.
A maximum of 6 positions (5 steps) is possible.
After the programming run is completed, the X-ray system must be moved back to the starting position (abdomen) (automatic stop).

Filling run

Initiate the individual steps of the X-ray system using the joystick or the key for "X-ray system longitudinal movement" corresponding to the contrast medium flow with monitoring on the live image monitor.

Selection

- Press this key.
  – Peristepping is selected: the LED lights up.

Deselection

There is no automatic deselection of Peristepping after the end of the scene.

- Press this key or select another exposure system.
  – Peristepping is deselected.

Releasing an exposure

❏ Release the exposure with the exposure release button on the system remote control console or via the foot switch in the control room, or table-side (option).

❏ Radiation is released as long as you continue to press the exposure release button.

❏ The radiation ON indicators must light up.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

◆ Switch the system off immediately!

◆ Notify the SIEMENS Uptime Service.

◆ Discontinue operation of the system.

Radiation interruption

If you let go of the exposure release button during radiation, the exposureis interrupted immediately.

Exposure end

Letting the exposure release button go, a full image memory or reaching the maximum scene time ends the exposure series including contrast medium injection.

The scene time refers to the set maximum frame rate. A reduction of the frame rate leads to a corresponding lengthening of the scene time.

Examination procedure

Preparation

◆ Prepare the digital imaging system

◆ Move the tube assembly into the 0° position

◆ Transfer and position the patient

◆ Move the X-ray system and tabletop into the intended starting position

◆ Press this key.
– Peristepping is selected: the LED lights up.
– The starting position is now defined
– The display of the current position and the maximum exposure positions, e.g. 1/4 appears on the display in the remote control console.
– I.I. full format is selected
– Transverse table travel is blocked

The LEDs in the Peristepping and start keys flash if the conditions for exposure are not fulfilled.

If the LED in the start key flashes,

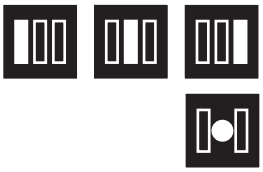
- press the key.
  – The compression device moves into park position, if present
  – Oblique setting moves into 0° position
  – A source-image intensifier distance of 115 cm is set

Once these positions are reached, the flashing LED goes out.

- Select an organ program for Peristepping.
- Set the following parameters with the corresponding operating elements:
  – Primary rectangular collimators
  – Cu prefilter
  – Semitransparent wedge filters

Zoom formats cannot be selected. The I.I. full format of 40 cm is always selected.
The primary collimation is not set automatically to the full format, but must be adapted according to the object.

Adapting the dominant



- Press one/several keys
  – The dominant preset in the organ program is overwritten.

If a left / right dominant or both dominants are selected, the system switches over automatically to the central circular dominant if the preselected dominant is covered by the filters, since this would inevitably result in a faulty exposure.

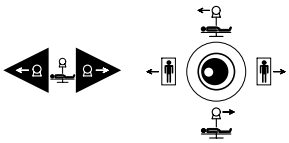
Prepare the injector

- Connect the injector plug to the electronics cabinet (only with radiation-synchronous injector release (option)).
- Set the injection data and switch to ready for injections.

Programming run

The X-ray system stands in the starting position (position 1) for the programming run (abdomen)

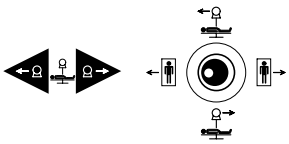
Release 1st step



- Deflect the joystick above / below or press the key to the left / right
  - The X-ray system moves into the next position
  - The position is displayed on the display in the remote control console, e.g. "2/4"
  - The settings of the starting position are stored.

- Adapt the following parameters with the corresponding operating elements:
  - Primary rectangular collimator
  - Cu prefilter
  - Dominant
  - Semitransparent wedge filters (if option present)

Release 2nd step and further steps

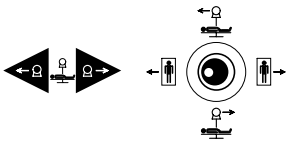


- Deflect the joystick above / below or press the key to the left / right
  - The X-ray system moves into the next position
  - The position is displayed on the display in the remote control console, e.g. "3/4" up to max. "4/4"
  - The settings of the positions are stored.

- Move to each position one after the other and adapt the radiation field and dominant as far as required.

A maximum of 5 steps and thus 6 positions are possible.

Move the X-ray system into the starting position



- Deflect the joystick up / down or press the key to the left / right until the X-ray system has reached the starting position again.
  - The position is displayed on the display in the remote control console, e.g. "1/4"
  - The stored parameters are set automatically.

Filling run

The X-ray system stands in the starting position for the filling run (abdomen).

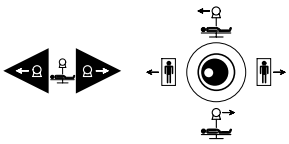
"1/4" for instance is displayed on the display in the remote control console.

Check the correct programming of the injector to avoid unnecessary contrast medium injections.

- Press the fluoroscopy release switch briefly (for at least 2 s)
  – The exposure parameters are calculated and taken over from the fluoroscopic values (0 point technique).
- Press the exposure release button and keep it pressed up to the end of the examination, i.e. until the filling run is ended.
- Trigger the injection, automatically or manually.
- Observe the contrast medium filling on the live image monitor.

If the injector is not connected, the first exposure series is started immediately. With the injector connected, firstly the injection is triggered or the exposure series released depending upon the set triggering.

Release 1st step and further steps



- Deflect the joystick briefly up / down or press the key to the left / right, once the optimum contrast medium filling is reached.
  – The X-ray system moves in each case into the next position
  – The position is displayed on the display in the remote control console, e.g. "2/4" up to max. "4/4"

End of scene

- Let the exposure release button go once the required contrast medium filling is reached in the last exposure position.

The exposure series is also ended if the image memory is full and the maximum scene time has been reached, independently of the position in which the system is located.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ Refer to the FLUOROSPOT Compact Operator Manual and the POLYDOROS SX register for further details on the organ programs and their programming.

Creation of programs

⇨ Refer to the FLUOROSPOT Compact Operator Manual.

Temporary changes of programs

For the following parameters stored in the organ program, it is possible to change them temporarily with the corresponding operating elements:

– Dominants

The changed parameters apply only until you select another / same organ program or switch the system off.

DR-Scanning (optional)

General

To display large objects, a series of displayed images is combined to give a large-format image in the image processor of the workstation.

The entire exposure area is moved over continuously with the image receptor proceeding from the starting position (not in Peristepping).

After the acquisition the images are sent from the imaging system to the LEONARDO workstation for processing (e.g. image reconstruction).

Depending on the examination, there are 2 types of acquisition:

❏ DR scanning for
  – images of the spine
  – orthopedic longleg images
  – abdominal survey images

❏ Peristepping for survey images of the peripheral vessels

Generate an organ program for the scanning technique in the series image menu.

Selection

- Press this key.

- Press this key.
  – DR scanning is selected.
  – The display shows 3 scanning programs with 2 directions each.
- Select an organ program for DR scanning at the integrated generator console.

Deselection

- Press this key or select a different exposure system.
  – DR scanning is deselected.

Image transfer

- Send the images from the imaging system to the LEONARDO workstation using the "DICOM Send" function.

Releasing an exposure

❑ Release the exposure with the exposure release button in the system remote control console or via the footswitch in the control room, or table-side (option).

❑ Radiation is released as long as you continue to press the exposure release button.

❑ The signal lamps for radiation must light up.

Warning

If these radiation ON indicators light up although no switch has been actuated and the current fluoroscopic image cannot be seen on the monitor:

- Switch the system off immediately!
- Notify SIEMENS Uptime Service.
- Discontinue operation of the system.

Radiation interruption	If you let go of the exposure release button during radiation, the exposure is interrupted immediately.
Exposure end	Letting go of the exposure release button, a full image memory or reaching the maximum scene time ends the exposure series.

Examination procedure for abdominal survey images

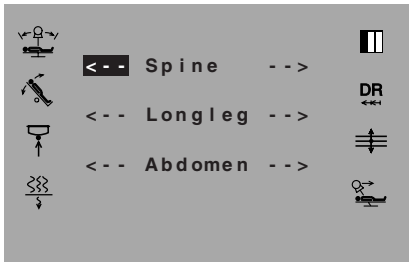
Preparation

- Prepare the digital imaging system.
- Select the DR system at the unit remote control console.
- Move the patient table into the 0° position (horizontal).
- Position the patient, head on the left.

For reasons relating to the exposure technology, the scanning direction for DR scanning should be from the pelvis headwards.

- Set vertical projection.
- Set the largest possible SID.
- Perform the examination, e.g. colon - double contrast, as usual.

- Press this key.
  - The LED in the start key lights up if the conditions for scanning are not fulfilled.
  - DR scanning is selected.
  - I.I. full format is selected.
  - The rectangular height diaphragm moves automatically to the configured value (approx.10 - 12 cm)
  - The display shows 3 scanning programs with 2 directions each.
  - The selected scanning program is highlighted.



By pressing the key again the next possible scanning program with direction becomes active.

- Select the scanning program for abdomen
  - left arrow: scanning from right to left
  - right arrow: scanning from left to right

If the LED in the start key flashes,

- press the key
  – The compression device moves into park position, if present.
  – Oblique setting moves into the 0° position.

Once these positions are reached, the flashing LED goes out.

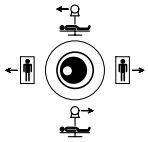
- Select an organ program with serialography according the type of examination.

Moving the system and tabletop into the starting position

- Position the patient.
- Bring the X-ray system and tabletop into the intended starting position.

The exposure series is generally started in the pelvic region for better exposure control.

The entire examination area must be scanned without interruption. If necessary, perform a test run without fluoroscopy and correct the starting position.



- Deflect the joystick for "X-ray system longitudinal movement" in the direction of the head until the entire examination area has been scanned.
- Return to the starting position.
- Check the starting position with fluoroscopy switched on.

Scanning process

The X-ray system is in the starting position for the scanning process.

During the exposure series the patient should take only shallow breaths or not breathe at all.

- Press the exposure release button until the entire examination area has been scanned.
  – The X-ray system starts moving automatically when the exposure is released.

End of the scene

- Let go of the exposure release button.
  – The X-ray system movement stops automatically

The scene is also ended if the image memory is full and the maximum scene time has been reached, independently of the position in which the system is located.

Examination procedure for images of the spine and orthopedic longleg images

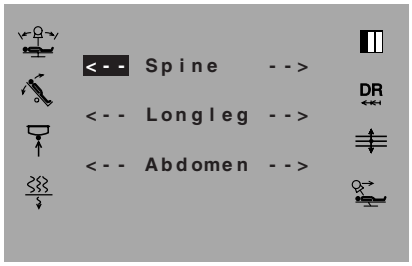
Preparation

- Prepare the digital imaging system.
- Select the DR system at the unit remote control console.
- Position the patient table vertically (+ 90°).
- Have the patient stand in the unit (with/without footrest) and immobilize the patient with the compression belt.

For reasons relating to the exposure technology, the scanning direction for DR scanning is
  – from bottom to top (towards the head end) for spinal acquisitions
  – from top to bottom (towards the foot end) for orthopedic whole leg acquisitions

- Set horizontal projection.
- Set the largest possible SID.

- Press this key.
  – The LED in the key lights up if the conditions for scanning are not fulfilled.
  – DR scanning is selected.
  – I.I. full format is selected.
  – The rectangular height diaphragm moves automatically to the configured value (approx.10 - 12 cm)
  – The display shows 3 scanning programs with 2 directions each.
  – The selected scanning program is highlighted.



By pressing the key again the next possible scanning program with direction becomes active.

- Select a scanning program for spine or orthopedic longleg images
  – left arrow: scanning direction from bottom to top
  – right arrow: scanning direction from top to bottom

If the LED in the start key flashes,

- press the key.
  – The compression device moves into park position, if present.
  – Oblique setting moves into the 0° position.

Once these positions are reached, the flashing LED goes out.

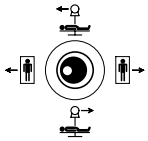
- Select an organ program with serialography according to the type of examination.
- Select the measuring fields (dominants):
  – center dominant for images of the spine
  – lateral dominants for orthopedic longleg images

Moving the system and tabletop into the starting position

- Position the patient.
- Bring the X-ray system and tabletop into the intended starting position.

The exposure series is generally started in the pelvic region for better exposure control.

The entire examination area must be scanned without interruptions. If necessary, perform a test run without fluoroscopy and correct the starting position.



- Deflect the joystick for "X-ray system longitudinal movement" up/down until the entire examination area has been scanned.
- Return to the start position.
- Check the starting position during fluoroscopy.

Scanning process

The X-ray system is in the starting position for the scanning process.

During the exposure series the patient should take only shallow breaths or not breathe at all.

- Actuate the exposure release button until the entire examination area has been scanned.
  – The X-ray system moves automatically when the exposure is released.

End of the scene

- Let go of the exposure release button.
  – The X-ray system movement stops automatically

The scene is also ended if the image memory is full and the maximum scene time has been reached, independently of the position in which the system is located.

Organ programs

All parameters necessary for the exposure are stored in organ programs.

⇨ For further details on the organ programs and their programming refer to the FLUOROSPOT Compact Operator Manual and the POLYDOROS SX register.

The programs are intended for the following examinations:

- ❏ Program A: Survey images of the urinary tract (kidney and bladder) with scanning program "Abdomen" and direction of scanning "headwards" (8 cm/sec scanning speed)
- ❏ Program B: Orthopedic longleg images with scanning program "Longleg" and direction of scanning "footwards" (4 cm/sec scanning speed)
- ❏ Program C: a.p. and lateral images of the spine with scanning program "Spine" and direction of scanning "headwards" (4 cm/sec scanning speed)
- ❏ Program D: Survey image of the colon with scanning program "Abdomen" and direction of scanning "headwards" (8 cm/sec scanning speed)

Program suggestions for FLUOROSPOT Compact

Organ program	**A**	**B**	**C**	**D**
Program name	Kidneys	Legs	Spine ap/lat	Colon
Fluoroscopic mode	Fluoro 1	Fluoro 1	Fluoro 1	Fluoro 1
Supervision// Carevision	SV // 3 P/s	SV // 3 P/s	SV // 3 P/s	SV // 3 P/s
SDM dominant	l, r	l, r	c	c
Dose level	100	100	100	100
Acquisition data from fluoro	Yes	Yes	Yes	Yes
kV	auto	auto	auto	auto
Characteristic curve (C)	C 16	C 16	C 18	C 21
kV dose reduction [kV]	133	133	133	133
Focus	Large	Large	Large	Large
Regulation stop	Yes	No	No	Yes
Max. pulse width [ms]	30	30	30	30
Film density correction	0.0	0.0	0.0	0.0
Grid	In	In[1]	No	In
Acquisition filter: auto	No	No	No	No

Organ program	**A**		**B**		**C**		**D**	
Filter type Cu[mm]	0.0		0.2[2]		0.2[2]		0.0	
Acquisition mode	Native series		Native series		Native series		Native series	
Mark image	Yes		Yes		Yes		Yes	
Auto collimator	Yes		Yes		Yes		Yes	
Bones	White	Black	White[3]	Black	White[4]	Black	White	Black
Contrast (C)	700	700	700	700	700	700	700	700
Brightness (B)	306	450	276	480	276	480	316	440
Scene length[s]	10		30		30		10	
Frame rate 1	3		2		2		3	
Frame rate 2	3		2		2		3	
Frame rate 3	3		2		2		3	
Edge filter [%]	15		15		15		15	
Kernel size	5		5		5		5	
Harmonization [%]	30		60		60		30	
Harmonization kernel	127		127		127		127	

[1] Drive grid out for slender patients

[2] Use 0.0 mm copper filter for obese patients

[3] When a white display is required for the survey images on the LEONARDO workstation, acquire the images with black display in the imaging system. Compose these on the workstation and then invert them from black to white at the workstation. This also applies for one-sided leg displays

[4] When a white display is required for the survey images on the LEONARDO workstation, acquire the images with black display in the imaging system. Compose these on the workstation and then invert them from black to white at the workstation

Peristepping examination sequence for survey images

❏ Take Peristepping exposures as described under Peristepping.

❏ Select an exposure for each exposure position (e.g. a "max. opac image") of this series and send it from the imaging system to the LEONARDO workstation using the "DICOM Send" function.

Collimation on exposure

❑ The automatic format collimation of the system is not effective if you have selected "tabletop cassette exposure or free mode", or if you have turned the tube assembly into a position outside 0°.
  – You can set the exposure format freely.
  – The limits of the maximum radiation field are determined by the mechanism of the primary collimator.
  – The collimator does not react to a change of the SID.
  – The digital display field of the primary collimator shows "Manual".

Selecting the exposure technique

Tabletop cassette exposure or free mode

◆ Press this key
  – The LED lights up

With tabletop cassette exposure or the tube assembly swivelled out, the system automatically switches over to "Free mode / tabletop exposure". The automatic format collimation system is disabled.

Releasing an exposure

❏ To release the exposure, actuate the exposure release button on the generator ON/OFF console.

For safety reasons, radiation cannot be released from the system control console or the footswitch in this mode.

❏ Before every exposure release check:
- the format limitation with the aid of the light localizer on the collimator
- the set SID with the tape measure on the collimator
- the central ray on cassette center with the aid of the laser line light localizer on the collimator.

❏ The radiation ON indicators must light up.

Warning

If these radiation indicators light up although no switch has been actuated :

- Switch the system off immediately!
- Notify the SIEMENS Uptime Service.
- Discontinue operation of the system.

Collimation during exposure

With the table vertical and 180° rotation of the tube assembly, the automatic format collimation of the system switches over automatically

- ❏ to the "ACSS Mode" (with automatic format collimation) if using a wall stand with automatic format collimation (option)
- ❏ to the "Manual Mode" (without automatic format collimation) if using a wall stand without automatic format collimation

Selecting the exposure technique

- ◆ Select the "wall stand" system at the integrated generator control console
- ◆ Set the table to a vertical position
- ◆ Set the tube assembly to a source-image distance of 115 cm or 150 cm.
- ◆ Turn the tube assembly horizontally onto the wall stand
- ◆ Place the cassette in the Bucky
- ◆ Position the patient in front of the wall stand
- ◆ Set the wall stand to the object height
- ◆ Adjust the tube assembly to the object using the full-field light localizer and positioning laser
- ◆ Collimate in relation to the object

with automatic format collimation(option)

The radiation field is automatically set to the cassette format and can then be collimated as small as required in relation to the object.

without automatic format collimation

There is no limitation of the radiation field and collimation must be performed in relation to the object using the full-field light localizer.

- ◆ Select measuring field

Releasing the exposure

❏ To release the exposure, actuate the exposure release button on the generator ON/OFF console.

For safety reasons, radiation cannot be released from the system control console or the footswitch in this mode.

❏ Before each exposure release check:
- the collimation with the aid of the light localizer on the multileaf collimator
- the set SID with the tape measure on the multileaf collimator
- that if the dominants are changed the correct dominant is always selected
- the central ray onto the cassette center with the aid of the laser line light localizer on the multileaf collimator

❏ The signal lamps for radiation ON must light up.

Warning

If these radiation indicators light up although no switch has been actuated:

◆ Switch the system off immediately!

◆ Notify SIEMENS Uptime Service.

◆ Do not start the system up again.

Operator Manual
POLYDOROS SX 65/80

Chapter: Integrated Control Console

Application

POLYDOROS SX 65/80 is a high-frequency X-ray generator for all procedures in general diagnostic radiology.

The combination of microprocessor control and high-frequency converter technology ensures good X-ray images due to the high accuracy of the exposure data.

Configuration

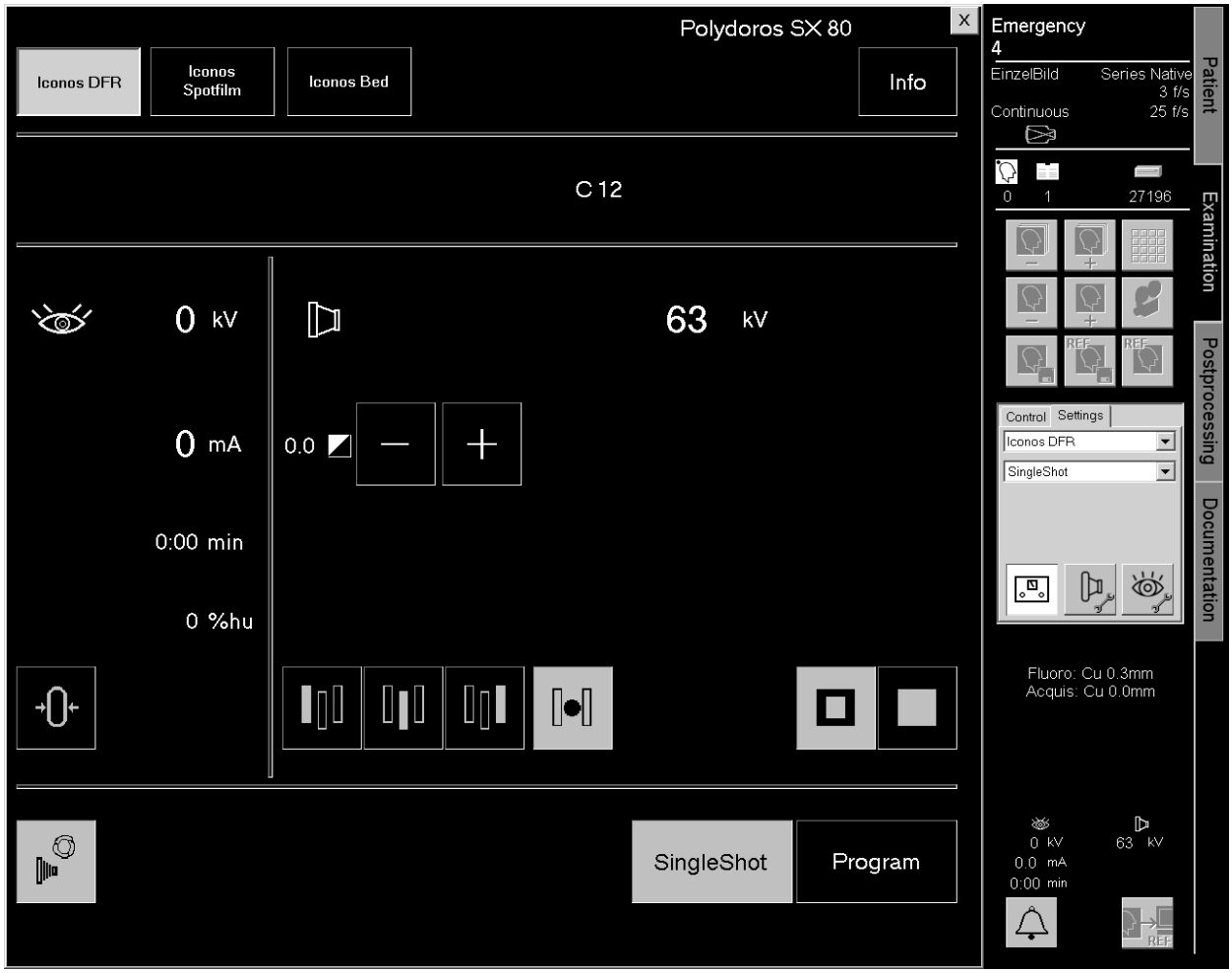
Basic version

- ❏ IONTOMAT PN automatic exposure control
- ❏ IONTOMAT PN automatic exposure control for tomography
- ❏ Tomographic device connection
- ❏ Polymatic incl. 0-point technique
- ❏ Programming unit for organ programs
- ❏ RS 232 printer connection
- ❏ Tube load computer

Options

- ❏ Connection for 3rd tube assembly

Overview of the controls and displays



Integrated generator control console on the FLUOROSPOT Compact screen

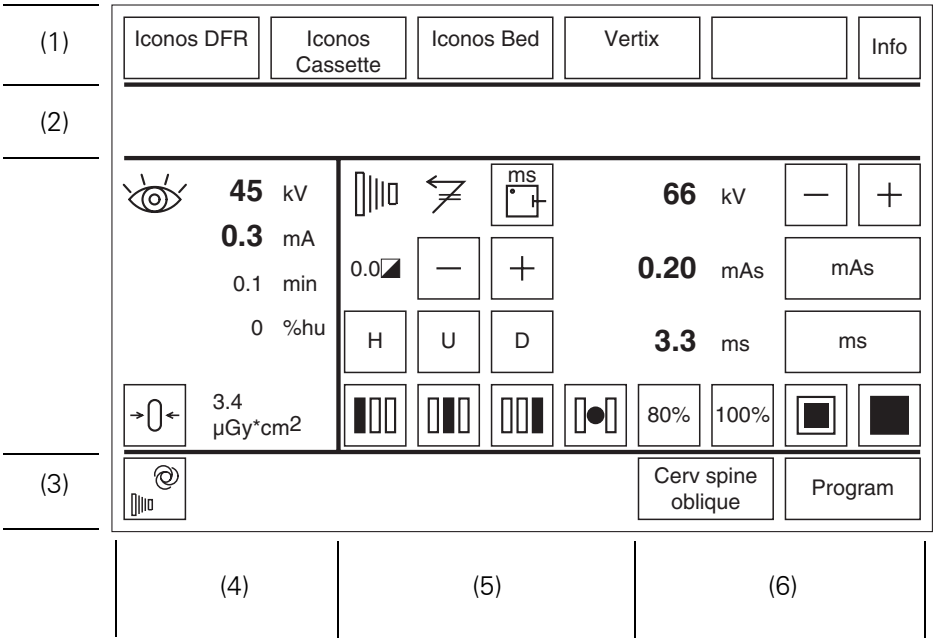
Menu

On the basis of the selected program or operating mode the permissible operating functions and operating data are indicated in menus on the integrated generator control console.

Various menus are available depending on the program or operating mode:

- ❏ Data menu
  – Displays and controls for radiographic parameters
- ❏ Program menu
  – Display of organ programs

Data menu



(1) System selection bar

(2) message line

(3) Selection field for organ programming

(4) Fluoroscopic data field

(5) Operating mode and IONTOMAT data field

System selection bar

❏ System selection

Info ❏ Button for displaying the load data of the selected X-ray tube

Message line ❏ Displays messages, warnings and buttons with specific functions

Selection field for organ programming

❏ Indicates 0-point technique selected/deselected

Cerv spine oblique ❏ Indicates the selected organ program

Program ❏ Switches over to the program menu

Fluoroscopic data field

❏ Fluoroscopic data field symbol

45 kV ❏ Indicates the fluoroscopic kV values

0.3 mA ❏ Indicates the fluoroscopic mA values

0.1 min ❏ Indicates the fluoroscopic time

0%hu ❏ Indicates the tube load

µGy*cm² ❏ Indicates the dose area product

❏ Resets the fluoroscopic data (time, kV, mA) and the dose area product (cGy*cm²)

Operating mode and IONTOMAT data field

❏ Symbols indicate that:

direct radiographic mode is active

or

indirect radiography is active

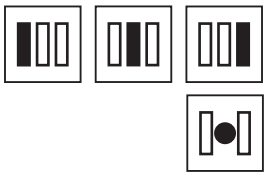
❏ Indicates that tomographic mode is active

❏ Selects the IONTOMAT (with 3-point technique)

+2 ◪ ❏ Indicates the density compensation

❏ Adjusts the density compensation (+/- 4 exposure points)

❏ Selects the film-screen combination
- H = high sensitivity
- U = medium sensitivity
- D = low sensitivity, high detail resolution



❏ Selects the measuring field (dominant) (left, center, right, circular)

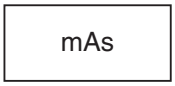
Radiographic data field

81 kV ❏ Indicates the tube voltage

❏ Adjusts the kV value

50 mAs ❏ Indicates/post-indicates the mAs value

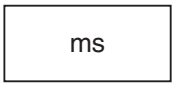
❏ Adjusts the mAs value



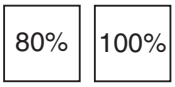
❏ Changes the exposure technique

280 ms ❏ Indicates/post-indicates the ms value

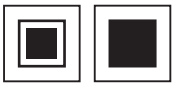
❏ Adjusts the ms value



❏ Changes the exposure technique

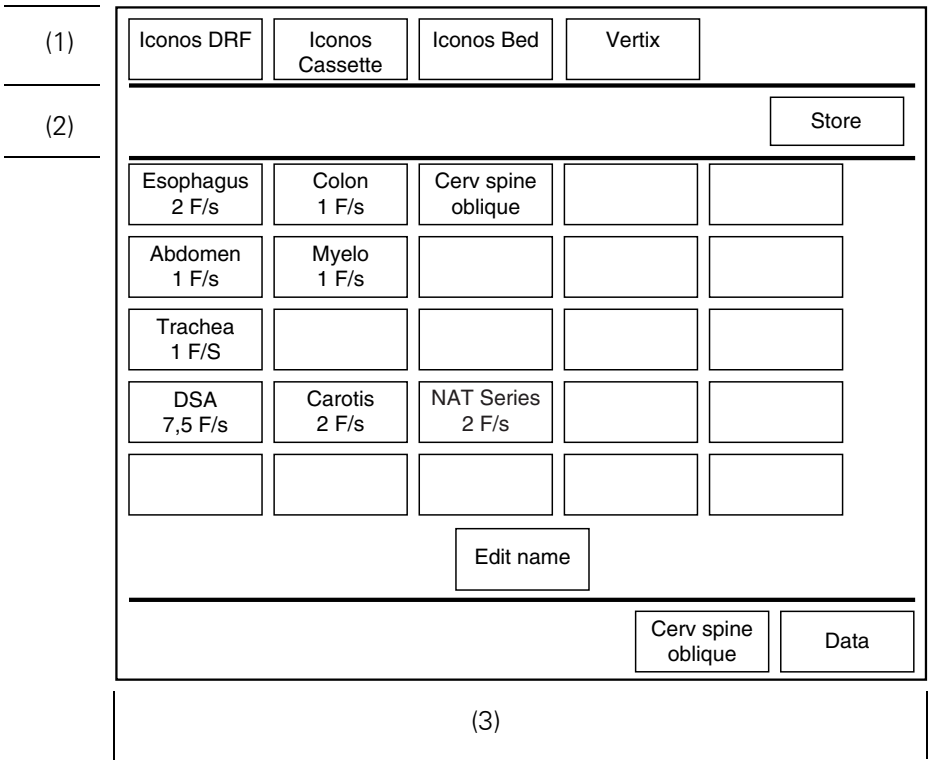


❏ Selects 80%/100% tube load



❏ Selects small/large focal spot

Program menu



(1) System selection bar

(2) Message line

(3) Program field

System selection bar ❏ System selection

Message line ❏ Displays information on operation.

Program field

Cerv spine oblique ❏ Selects the organ program

Edit name ❏ Changes the organ program name

Data ❏ Switches over to the data menu

Explanation of displays and controls

Selection of the controls

The controls are selected with the PC mouse on the FLUOROSPOT Compact.

Normal/inverted display of the controls

❏ Normal display
– Function deactivated

❏ Inverted display
– Function activated

Functions of the +/- controls

◆ Brief button actuation
– Value increases by one step

◆ Prolonged button actuation
– Value increases until the button is released

◆ Brief button actuation
– Value decreases by one step

◆ Prolonged button actuation
– Value decreases until the button is released

Changing the focal spot and tube load

If the maximum acceptable load of the selected X-ray tube is exceeded when switching over

❏ from the large to the small focal spot or

❏ from 100% to 80% tube load

the generator automatically reduces the mAs setting.

Selecting the measuring field (dominant)

The selection of more than one measuring field (dominant) is possible.

◆ Actuate the button
– Function activated/deactivated

Measuring field (dominant) display

If either the left or the right dominant selected becomes invalid, e.g. due to collimation, the measuring field selected is then shown crossed out.

When the diaphragm is opened again, the previously selected dominants are shown normal again.

Display of the exposure data

After the exposure is completed the actual values of kV, ms and mAs are displayed.

Messages

General error messages

Each time the system is switched on, an automatic check of all important functions is made (test routine).

When a fault is detected the generator is blocked and the fault is displayed as error in the message line and a window with the error message appears on the right side of the monitor screen.

You can cancel the disable status as follows
- Acknowledge error message.

If the error message is still displayed, then there is an error in the system. Please call the SIEMENS Uptime Service.

Tube load computer

General

The tube load computer protects the connected X-ray tube assembly from overloading in radiographic mode.

From the selected exposure factors and from the physical and geometrical properties of the tube assembly it computes the length of the cooldown time that may be necessary.

Furthermore, the tube load computer stores all important operating data of the respective X-ray tube assembly.

The current load (%hu) is constantly displayed.

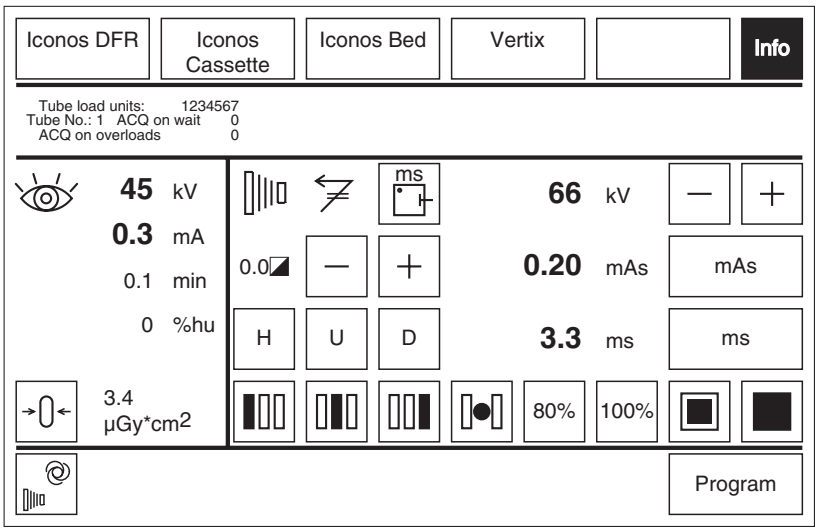
Pause time indication

The cooldown time indicated in the message line must be observed to prevent overloading the tube assembly. The next exposure must not be released before this time has elapsed.

- ❏ X-ray tube assembly with no load
  - – No cooldown time required:
    You may release the preset exposure up to 100% tube load.
- ❏ X-ray tube assembly with little load
  - – No cooldown time required and automatic switching to 80% tube load.
    You may release the preset exposure with 80% tube load.
- ❏ X-ray tube assembly with heavy load
  - – Cooldown time is indicated[1]
    You may release the preset exposure with 80% tube load only after the indicated cooldown time has elapsed.

Load data indication

The load unit counter stores the load data of the connected X-ray tube assemblies.



INFO

With the INFO button actuated the load data of the selected X-ray tube assembly is indicated in the message line.

- ❏ Tube load units (BE)
  - – 1 load unit corresponds to 1 exposure or 1s series.
- ❏ ACQ on wait
  - – Number of exposures released during the indicated cooldown time.
- ❏ ACQ on overloads
  - – Number of overloads.

[1] If a warning buzzer is to come on at a certain pause time threshold please have it programmed by your customer service.

INFO button is not active if an information is already present on the message line.

1%hu Indication of the current value of the tube load in relation to the maximum heat storage capacity in per cent.

Functional and safety checks

Daily checks

After switching on

- Please make a visual inspection of the displays and signals on the integrated generator control console.

No error message may appear.

The radiation warning lights in the room must not light up.

If a radiation warning light lights up without actuating a switch

- immediately switch off the X-ray system through emergency off and
- notify the SIEMENS Uptime Service.

During the examination

- Check the radiation indicator. It may light up only during the duration of the X-ray exposure.

Monthly checks

- Perform a functional check of the automatic exposure control, as described in Register "Safety".

Legally required checks

Obtain information in Register "Safety".

Maintenance intervals

Maintenance must be performed annually to maintain the safety and functioning of the generator.
If you have not concluded a maintenance contract, please notify the SIEMENS Uptime Service in good time.

Fluoroscopy

⇨ For further information refer the FLUOROSOT Compact Operator Manual

Releasing fluoroscopy

Fluoroscopy is released via the fluoroscopy foot switch.

Selecting the fluoroscopic mode[1]

Fluoroscopy with automatic control

With the automatic stage buttons on the unit, select the required characteristic curve for the automatic dose rate control.

High-contrast fluoroscopy[1]

Is a special case of fluoroscopy with automatic control. It is selected with the 2nd pressure point of a two-stage foot switch. The mode is indicated acoustically.

Fluoroscopic data

The fluoroscopic data of kV, mA, time and dose area product are displayed on the integrated generator control console.

Display of the kV and mA values

❑ During fluoroscopy:
– the current kV and mA values are indicated continuously

❑ After the end of fluoroscopy:
– the mean value of kV and mA for the examination

Display of the fluoroscopic time

Continuous display of cumulative time in minutes during the examination

Display of the dose area product

Continuous display of the dose area product accumulated in the examination.

Resetting the fluoroscopic data[1]

When the examination is finished, record the fluoroscopic data displayed and

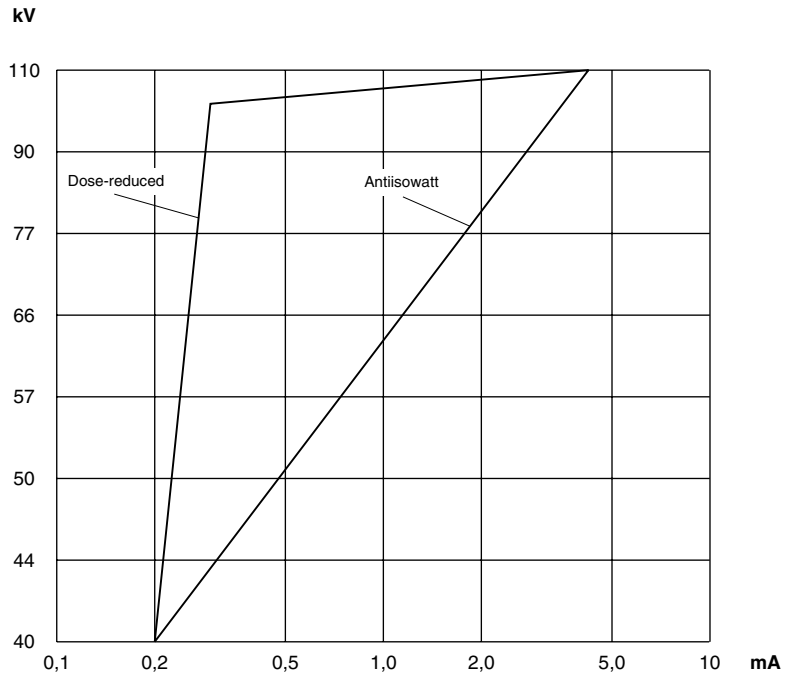
◆ actuate the Reset button.
– The displays for the fluoroscopic data and for the dose area product are reset to zero.

[1] depending on the system configuration

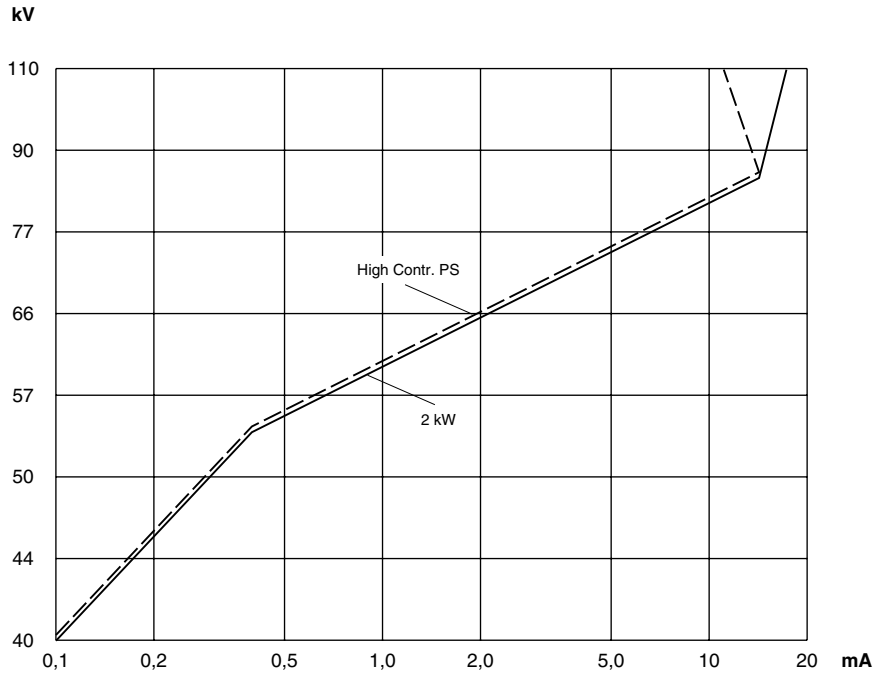
Fluoroscopic characteristic curves

For fluoroscopy you can choose between several fluoroscopic curves, which you can program depending on the system configuration.

Characteristic curve examples for normal fluoroscopy



Characteristic curve examples for high-contrast fluoroscopy



Fluoroscopic time limit

After a fluoroscopic time of 10 minutes[1], fluoroscopy switches off automatically and cannot be switched on again.

To continue working,

◆ let go of the fluoroscopy switch and actuate it again.

Exposure

Exposure release

You can release an exposure either with the release button on the generator ON/OFF console[2], on the system control console[3] or with the exposure release foot switch in controlroom.

Check the selected exposure data on the integrated generator control console before every radiation release.

You can release an exposure if

❏ no error message appears, and

❏ none of the displays (kV, mAs, ms) flashes

The radiation indicator lights up and a signal sounds during the exposure release.

❏ Observe the following to increase the life of the tube assembly:
- If possible always select 80% tube load at the generator.
- It is essential that you program 80% tube load in the programs with small focal spot and a tube voltage less than 70 kV.
- Work with the large focal spot below 70 kV tube voltage, if possible.
- Keep the prep time short and possibly "push through" to keep this time short.
- Let go of the exposure release button immediately after the exposure.

The above instructions should be observed especially at workstations with high patient throughput (accident stations) to counteract premature wear of the X-ray tube assembly.

[1] At the wish of the customer, this parameter can be changed by SIEMENS Uptime Service, in accordance with country-specific regulations.
[2] Not possible in **DFR** and **Cassette** mode;
in **Vertix** mode with ACSS only when tube unit is rotated 180°
[3] Not possible in **Bed** mode and **Vertix** mode

Automatic exposure system "0-point technique"

General

❏ 0-point technique presupposes fluoroscopy; it is therefore expedient only for spotfilming.

❏ The following exposure parameters are determined and set automatically for direct and indirect technique:

Direct technique:	Indirect technique:
Exposure kV Exposure mA	Exposure kV Exposure mA Focal spot

Programmed characteristic curves

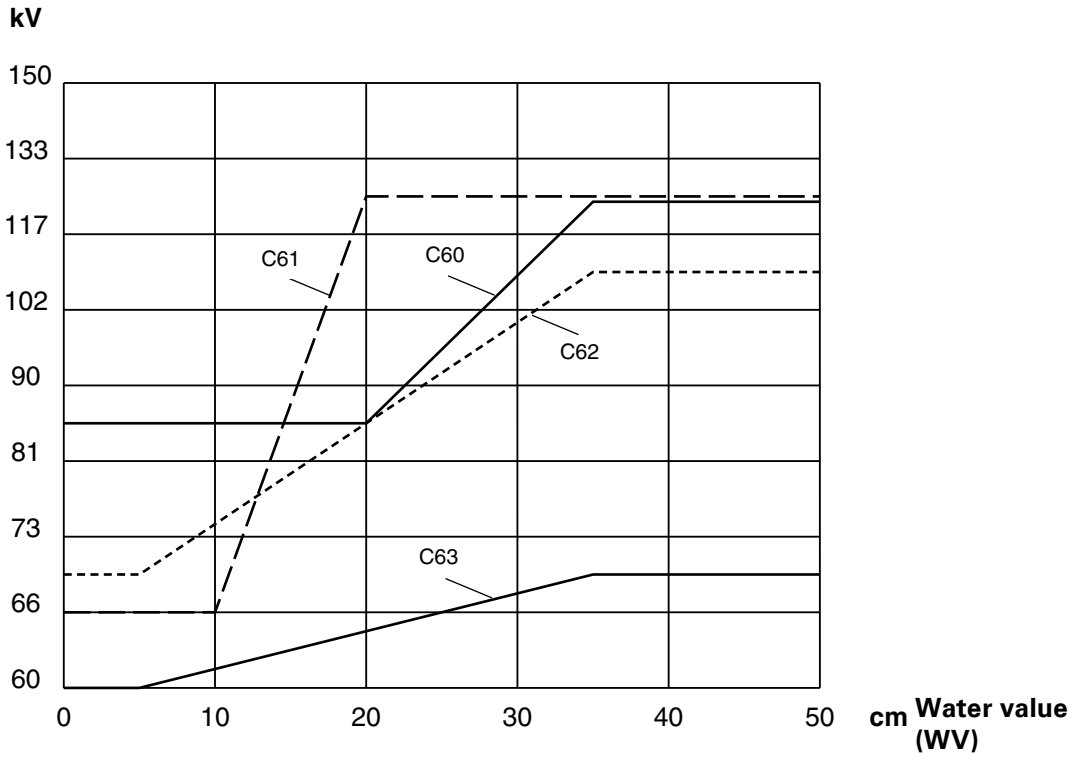
❏ Several characteristic curves, which you can program depending on the system configuration, are available to you for the exposure.

❏ Programmed characteristic curves in the curve stock

No.	Type of curve	Voltage
C1	Plateau whole EP	40.0 kV
C2	Plateau whole EP	41.0 kV
C3	Plateau whole EP	42.0 kV
C4	Plateau whole EP	44.0 kV
C5	Plateau whole EP	46.0 kV
C6	Plateau whole EP	48.0 kV
C7	Plateau whole EP	50.0 kV
C8	Plateau whole EP	52.0 kV
C9	Plateau whole EP	55.0 kV
C10	Plateau whole EP	57.0 kV
C11	Plateau whole EP	60.0 kV
C12	Plateau whole EP	63.0 kV
C13	Plateau whole EP	66.0 kV
C14	Plateau whole EP	70.0 kV
C15	Plateau whole EP	73.0 kV
C16	Plateau whole EP	77.0 kV
C17	Plateau whole EP	81.0 kV
C18	Plateau whole EP	85.0 kV
C19	Plateau whole EP	90.0 kV
C20	Plateau whole EP	96.0 kV
C21	Plateau whole EP	102.0 kV
C22	Plateau whole EP	109.0 kV
C23	Plateau whole EP	117.0 kV
C24	Plateau whole EP	125.0 kV
C25	Plateau whole EP	133.0 kV

No.	Type of curve	Voltage
C26	Plateau whole EP	141.0 kV
C27	Plateau whole EP	150.0 kV
C28	Plateau	68.0 kV
C29	Calibration curve	
C30	Plateau	68.0 kV
C31	Plateau half EP	40.5 kV
C32	Plateau half EP	51.5 kV
C33	Plateau half EP	43.0 kV
C34	Plateau half EP	45.0 kV
C35	Plateau half EP	47.0 kV
C36	Plateau half EP	49.0 kV
C37	Plateau half EP	51.0 kV
C38	Plateau half EP	53.5 kV
C39	Plateau half EP	56.0 kV
C40	Plateau half EP	58.5 kV
C41	Plateau half EP	61.5 kV
C42	Plateau half EP	64.5 kV
C43	Plateau half EP	68.0 kV
C44	Plateau half EP	71.5 kV
C45	Plateau half EP	75.0 kV
C46	Plateau half EP	79.0 kV
C47	Plateau half EP	83.0 kV
C48	Plateau half EP	87.5 kV
C49	Plateau half EP	93.0 kV
C50	Plateau half EP	99.0 kV
C51	Plateau half EP	105.0 kV
C52	Plateau half EP	113.0 kV
C53	Plateau half EP	121.0 kV
C54	Plateau half EP	129.0 kV
C55	Plateau half EP	137.0 kV
C56	Plateau half EP	145.0 kV
C57	Plateau	68.0 kV
C58	Plateau	68.0 kV
C59	Plateau	68.0 kV
C60	See graph	
C61	See graph	
C62	See graph	
C63	See graph	
C64	Plateau	68.0 kV
C65	Plateau	68.0 kV
C66	Plateau	68.0 kV
C67	Plateau	68.0 kV
C68	Plateau	68.0 kV
C69	Plateau	68.0 kV
C70	See graph	

No.	Type of curve	Voltage
C71	Reserve	
C72	Plateau	87.5 kV
C73	Reserve	
C74	Reserve	
C75	Reserve	
C76	Reserve	
C77	Plateau	68.0 kV
C78	Plateau	68.0 kV
C79	Plateau	68.0 kV
C80	Plateau	68.0 kV
C81	Plateau	68.0 kV
C82	Plateau	68.0 kV
C83	Plateau	68.0 kV
C84	Plateau	68.0 kV
C85	Plateau	68.0 kV
C86	Plateau	68.0 kV
C87	Plateau	68.0 kV
C88	Plateau	68.0 kV
C89	Plateau	68.0 kV
C90	Plateau	68.0 kV
C91	Plateau	68.0 kV
C92	Plateau	68.0 kV
C93	Plateau	68.0 kV
C94	Plateau	68.0 kV
C95	Plateau	68.0 kV
C96	Plateau	68.0 kV
C97	Plateau	68.0 kV
C98	Plateau	68.0 kV
C99	Plateau	68.0 kV
C100	Plateau	77.0 kV



❏ Recommended characteristic curves for organ programs in 0-point technique
– These suggestions correspond to the SIEMENS basic exposure table, whereby only the part relevant for the 0-point technique has been listed.

Organ	kV	Characteristic curve
Cranium:		
Survey of cranium p.-a., a.-p	70	C 14
Cranium lateral	66	C 13
Cranium axial	85	C 18
Petrosal bones sagittal	70	C 15
Petrosal bones Stenvers	70	C 14
Paranasal sinuses p.-a.	70	C 14
Optical nerve cavity Rhese	66	C 13

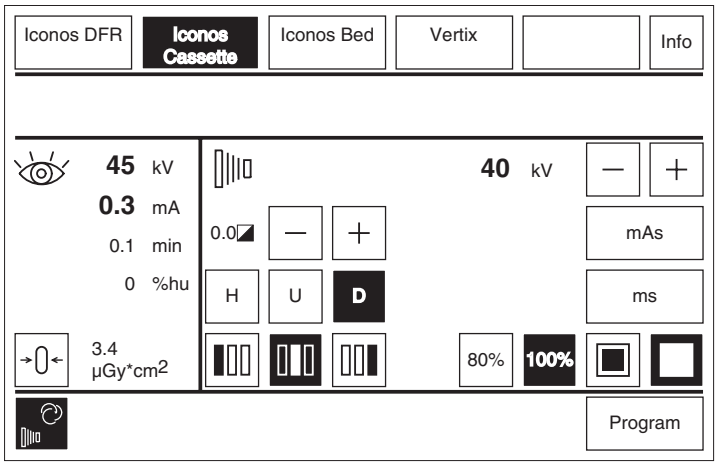
Organ	kV	Characteristic curve
Thorax:		
1st-7th rib p.-a., a.-p.	66	C 13
8th-12th rib p.-a., a.-p.	70	C 14
Sternum p.-a.	63	C 12
Sternum lateral	66	C 13
Clavicle p.-a.	60	C 11
Scapula a.-p.	63	C 12
Scapula lateral	63	C 12
Thorax		C 61
Lungs, heart lateral	125	C 24 or C 61
Esophagus oblique	90	C 19 or C 60
Esophagus/deglutition		C 62
Abdomen:		
Kidneys, gallbladder a.-p.	66	C 13 or C 63
Kidneys, gallbladder lateral	81	C 17 or C 63
Bladder a.-p.	66	C 13
Bladder axial	70	C 14
Stomach, duodenal bulb, GI tract survey	102	C 21 or C60 or C62
Gastrointestinal tract		C 60
Colon contrast study		C 60, C 62
Spinal column:		
1st to 3rd cervical vertebrae oral	70	C 14
4th to 7th cervical vertebrae a.-p.	70	C 14
1st to 7th cervical vertebrae lateral	70	C 14
1st to 7th cervical vertebrae oblique	70	C 14
Thoracic vertebrae oblique	81	C 17
Thoracic vertebrae a.-p.	73	C 15
Thoracic vertebrae lateral	81	C 17
1st to 4th lumbar vertebrae a.-p.	77	C 16
1st to 4th lumbar vertebrae lateral	90	C 19
1st to 4th lumbar vertebrae oblique	81	C 17
5th lumbar vertebra a.-p.	77	C 16
5th lumbar vertebra lateral	90	C 19
Pelvis, hip	73	C 15
Sacrum, coccyx a.-p.	73	C 15
Sacrum, coccyx lateral	90	C 19
Arms:		
Shoulder joint a.-p.	63	C 12
Shoulder joint axial	60	C 11
Legs:		
Femur upper	70	C 14
Femur lower	60	C 11
Knee a.-p.	60	C 11
Knee lateral	60	C 11

Selecting direct exposure technique

Select 0-point technique

❏ Setting the kV value from fluoroscopy

❏ Exposure cut-off by the automatic exposure control.



Selection

◆ Select an organ program with 0-point technique

Deselection

◆ Actuate
- the mAs button: 2-point technique is selected or
- the ms button: 3-point technique is selected

With organ program:

◆ Select an organ program without 0-point technique

Exposure data to be set

❏ The following exposure data can be set:
- Focal spot
- Tube load
- Measuring fields (dominants)
- Film-screen combination
- Density compensation

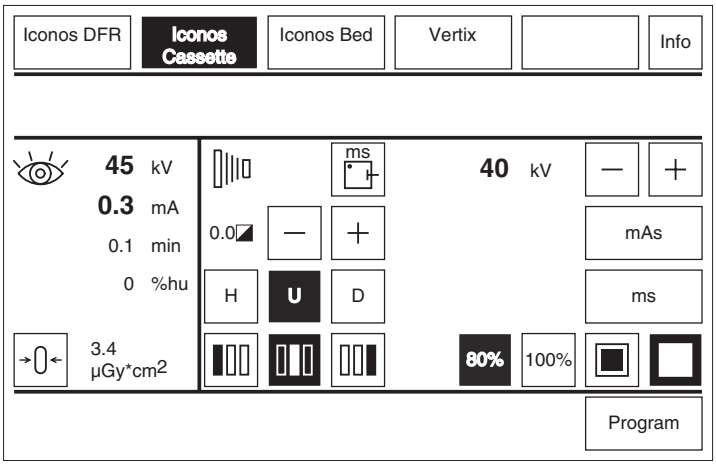
Display of the exposure data

❏ After the end of the exposure, the mAs and ms values in the display are flashing.

Select 1-point technique

❏ Setting the kV value

❏ Exposure cut-off by automatic exposure control.



Selection

◆ Actuate
- a button for film-screen combination or
- a measuring field (dominant) button

With organ program:

◆ Select an organ program with 1-point technique

Deselection

◆ Actuate
- the mAs button: 2-point technique is selected or
- the ms button: 3-point technique is selected or
- the IONTOMAT button: 3-point technique with IONTOMAT is selected

With organ program:

◆ Select an organ program without 1-point technique

Exposure data to be set

❏ The following exposure data can be set:
- kV value
- Focal spot
- Tube load
- Measuring fields (dominants)
- Film-screen combination
- Film density compensation

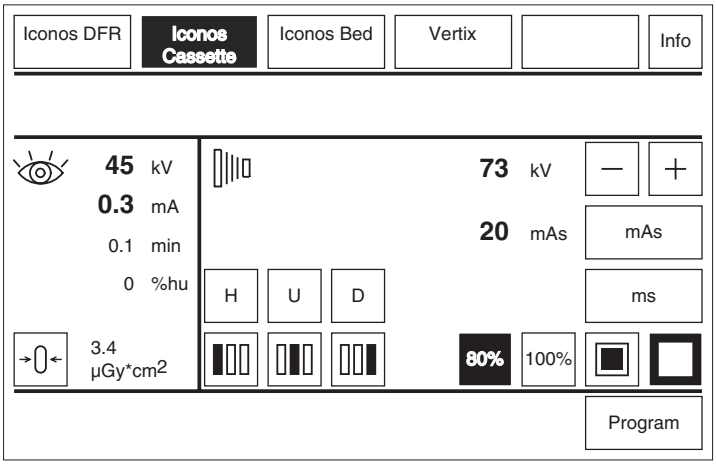
Display of exposure data

❏ After the end of the exposure, the mAs and ms values in the display are flashing.

Select 2-point technique

❑ Setting the kV and mAs value

❑ Exposure cut-off by the mAs counter.



Selection

◆ Actuate the mAs button

With organ program:

◆ Select an organ program with 2-point technique

Deselection

◆ Actuate
- a button for film-screen combination: 1-point technique is selected or
- a measuring field (dominant) button: 1-point technique is selected or
- the ms button: 3-point technique is selected

With organ program:

◆ Select an organ program without 2-point technique

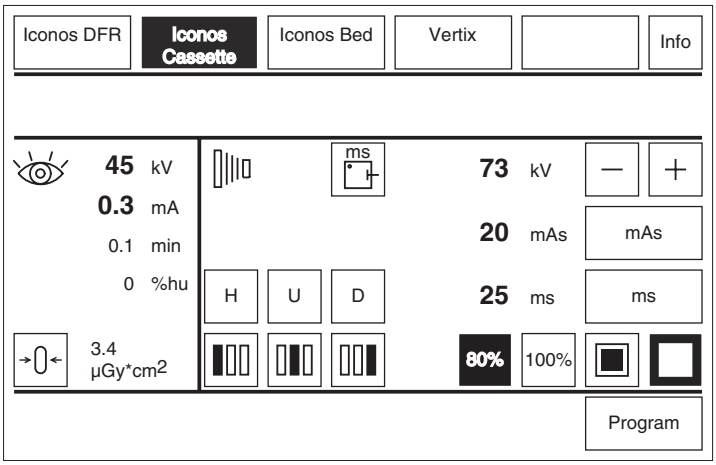
Exposure data to be set

❑ The following exposure data can be set:
- kV value
- mAs value
- Focal spot
- Tube load

Select 3-point technique

❏ Setting the kV, mAs and ms value

❏ Exposure cut-off by the mAs counter.



Selection

◆ Actuate the ms button

With organ program:

◆ Select an organ program with 3-point technique

Deselection

◆ Actuate
- a button for film-screen combination: 1-point technique is selected or
- a measuring field (dominant) button: 1-point technique is selected or
- a button for mAs setting: 2-point technique is selected or
- the IONTOMAT button: 3-point technique with IONTOMAT is selected

With organ program:

◆ Select an organ program without 3-point technique

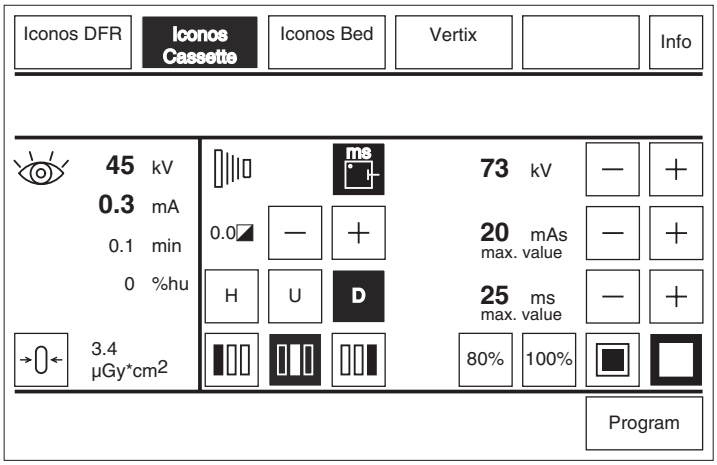
Exposure data to be set

❏ The following exposure data can be set:
- kV value
- mAs value
- ms value
- Focal spot
- Tube load

Select 3-point technique with IONTOMAT

❏ Setting the kV value and the maximum mAs and ms values

❏ Exposure cut-off by the automatic exposure control.



Selection

◆ Actuate the IONTOMAT button

With organ program:

◆ Select an organ program for 3-point technique with IONTOMAT

Deselection

◆ Actuate
- the IONTOMAT button: 1-point technique is selected

With organ program:

◆ Select an organ program without 3-point technique with IONTOMAT

Exposure data to be set

❏ The following exposure data can be set:
- kV value
- mAs value
- ms value
- Focal spot
- Tube load
- Measuring fields (dominants)
- Film-screen combination
- Film density compensation

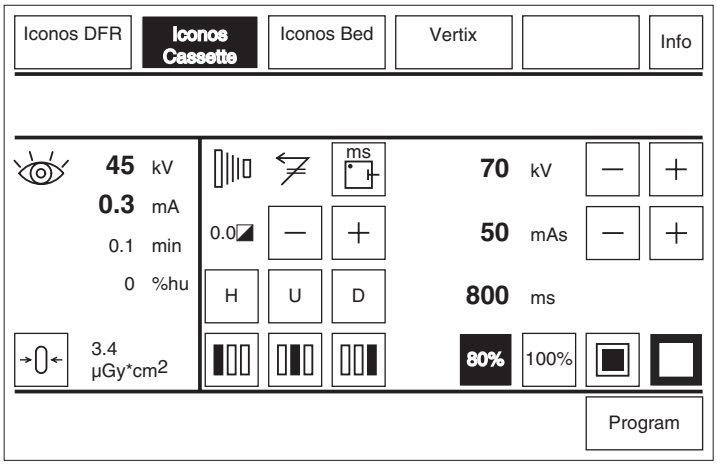
Display of exposure data

❏ After the end of the exposure, the mAs and ms values in the display are flashing.

Select mAs tomography

❏ Setting the kV, mAs values and the tomographic time

❏ Exposure cut-off by the mAs counter.



Selection

◆ Select a tomographic program on the unit

Deselection

◆ Deselect the tomographic program on the unit or

◆ Actuate
- a button for film-screen combination: Plani-IONTOMAT is selected or
- a measuring field (dominant) button: Plani-IONTOMAT is selected or
- the IONTOMAT button: Plani-IONTOMAT with mAs preselection is selected

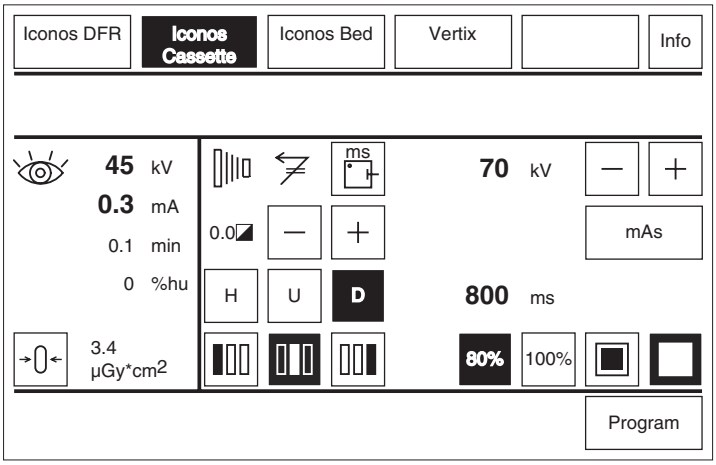
Exposure data to be set

❏ The following exposure data can be set:
- kV value
- mAs value
- Focal spot
- Tube load

Select tomography with Plani-IONTOMAT

❏ Setting the kV value and the tomographic time

❏ Exposure cut-off by the timer.



Selection

◆ Select
- a tomographic program on the unit and an organ program with Plani-IONTOMAT or
- a tomographic program on the unit and actuate a button for film-screen combination or a measuring field (dominant) button

Deselection

◆ Deselect the tomographic program on the unit or

◆ actuate
- the mAs button: mAs tomography is selected or
- the IONTOMAT button: Plani-IONTOMAT with mAs preselection is selected

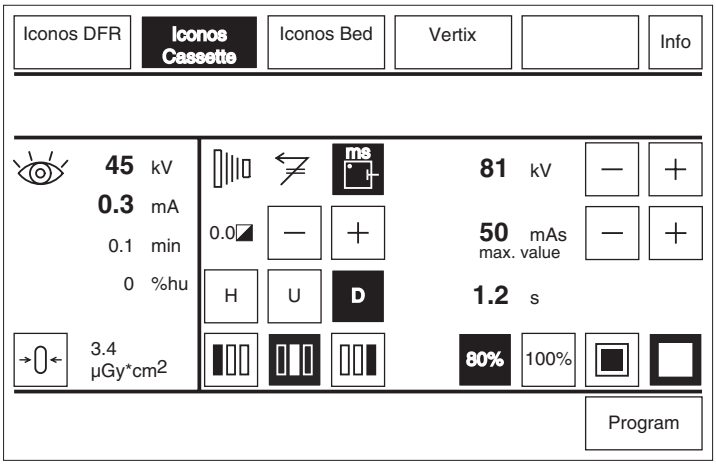
Exposure data to be set

❏ The following exposure data can be set:
- kV value
- Focal spot
- Tube load
- Measuring fields (dominants)
- Film-screen combination
- Density compensation

Select tomography with Plani-IONTOMAT and mAs preselection

❏ Setting the kV and mAs value and the tomographic time

❏ Exposure cut-off by the timer.



Selection

◆ Select
- a tomographic program on the unit and an organ program with Plani-IONTOMAT and mAs preselection or
- a tomographic program on the unit and actuate the IONTOMAT button

Deselection

◆ Deselect the tomographic program on the unit or

◆ actuate
- the IONTOMAT button: Plani-IONTOMAT is selected

Exposure data to be set

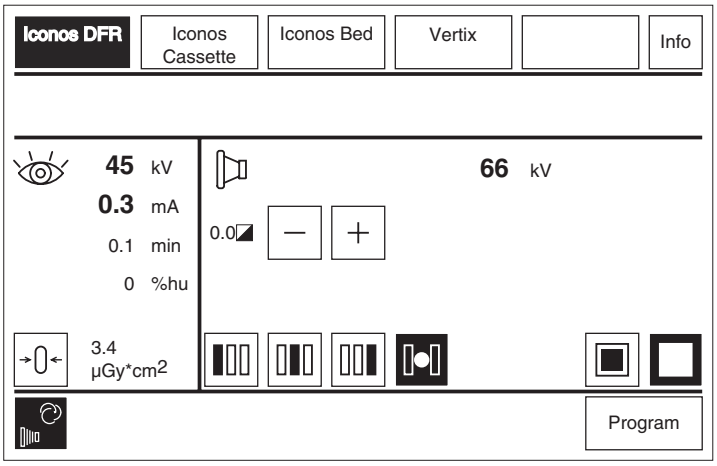
❏ The following exposure data can be set:
- kV value
- Focal spot
- Tube load
- Measuring fields (dominants)
- Film-screen combination
- Density compensation

Select indirect exposure technique

Select DR 0-point technique

❏ Setting the kV value from fluoroscopy

❏ Exposure cut-off by the automatic exposure control.



Selection

◆ Select DR technique on the unit and an organ program with DR 0-point technique

Deselection

◆ Select an organ program without DR 0-point technique

Exposure data to be set

❏ Density compensation

❏ Measuring fields (dominants)

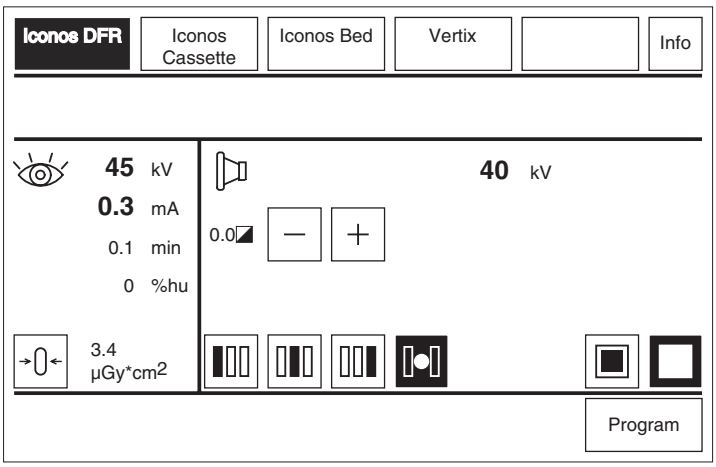
Display of exposure data

❏ After the end of the exposure, the mAs and ms values in the display are flashing.

Select DR 1-point technique

❏ Setting the kV value

❏ Exposure cut-off by the automatic exposure control.



Selection

◆ Select DR technique on the unit and an organ program with DR 1-point technique

Deselection

◆ Select an organ program without DR 1-point technique

Exposure data to be set

❏ Density compensation

❏ Measuring fields (dominants)

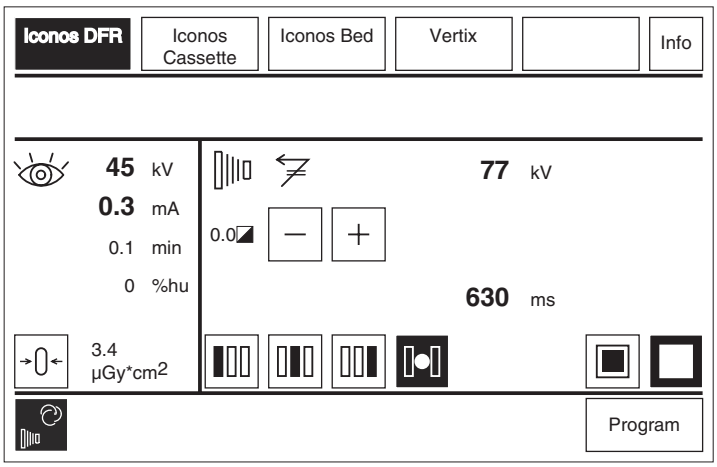
Display of exposure data

❏ After the end of the exposure, the mAs and ms values in the display are flashing.

Select DR tomography with Plani-IONTOMAT

❏ Setting the kV value and the tomographic time

❏ Exposure cut-off by the timer.



Selection

◆ Select DR technique and a tomographic program on the unit

Deselection

◆ Deselect the tomographic program on the unit

Exposure data to be set

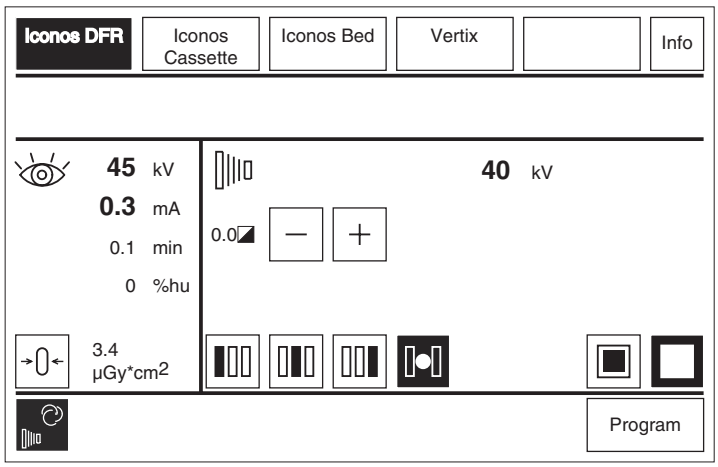
❏ Density compensation

❏ Measuring fields (dominants)

Select DSA constant time

❏ Setting a constant exposure time

❏ Exposure cut-off by the timer.



Selection

◆ Select DR technique on the unit and an organ program with DSA constant time technique

Deselection

◆ Select an organ program without DSA constant time technique

Exposure data to be set

❏ Density compensation

❏ Measuring fields (dominants)

Organ programs

❏ A certain number of organ programs has been stored during the initial start-up of your system.

❏ As a maximum 50 organ programs can be generated and stored.

❏ For DR tomography, tomography and Peristepping/Perivision, 25 organ programs can additionally be generated and stored in each case.

❏ At any time you can tailor these organ programs to your personal needs or generate and store new organ program.
If desired, this can also be done by the SIEMENS Uptime Service.

Selecting an organ program

Program

◆ Actuate the program button in the data menu
  – the program menu appears

Cerv spine oblique

◆ Select an organ program
  – after the selection the system returns to the data menu
  – the selected organ program appears inverted

Organ program data indication

❑ All data stored for the selected organ program are indicated in the data menu.

Editing organ program data

❑ The exposure data of any organ program can be edited. However, you have to distinguish between the temporary change and the permanent storage of a program.

Temporary change

◆ Select the organ program

◆ Depending on the activated exposure technique the following exposure data can be edited:
  – kV value
  – mAs value
  – ms value
  – Focal spot
  – Tube load
  – Measuring fields (dominants)
  – Film-screen combination
  – Density compensation

In the data menu the selected organ program is displayed non-inverted.

The edited parameters are in effect only until you select another organ program or switch the system off.

Permanent storage

⇨ For further information refer the FLUOROSPOT Compact operating instructions

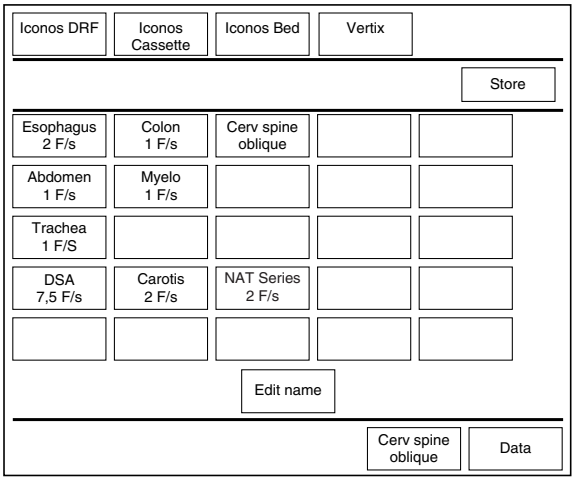
Editing new organ program names

Iconos DFR

◆ Actuate the desired system selection button

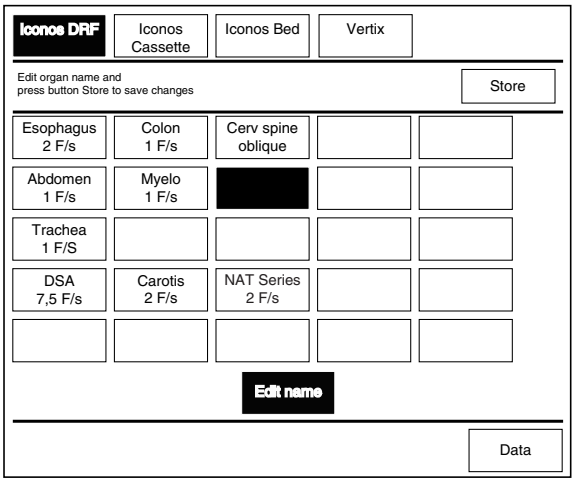
Program

◆ Actuate the program button in the data menu
– The program menu appears



Edit name

◆ Actuate the Edit Name button
– The button appears inverted
– The program menu for the programming mode appears



◆ Select a blank field for a new organ program
– The field appears inverted

◆ Type the name of the organ as it is to appear on the button
– Allowed is a maximum of two lines of 10 characters each

Store

◆ Actuate the Store button

Actuating the data or the Edit name button takes you back to the program menu without storing the name of the organ program.

Now you can edit additional organ programs.

Edit name

◆ Following completion of the changes, actuate the Edit name button in the program menu for the programming mode.
– Programming is now terminated and the edited program names are stored.

Operator Manual
Accessories

Chapter: Preliminary Remarks

Chapter: Standard Accessories

Chapter: Optional Accessories

Preliminary Remarks

Proper use of the product

This Operator Manual describes all the accessories provided by Siemens for the ICONOS R200 system.
Proper use of the accessories presupposes that the user has read and understood this Operator Manual in detail.
In addition, the user must be thoroughly familiar with the Operator Manual for the basic system.
Finally, detailed knowledge of the applicable safety regulations for the medical equipment being used is indispensable. These regulations are listed in the "Safety" Register of the respective system Operator Manual.

Explanation of "proper use" consists of illustrated descriptions of attaching, using and removing the accessory component.
Important information will be emphasized and enclosed in a text box.
Situations involving the use of accessories which could endanger the patient, the operator or the equipment will be emphasized with a **WARNING**.

Safety

For reasons of safety for patients, operators and the equipment, only original accessories manufactured and sold by Siemens or Siemens-approved accessories from another manufacturer may be used.

Siemens cannot assume any responsibility for accessories not approved by us.

Orientation

When using the accessories and to simplify the description, the following directional indications shall apply in this Operator Manual with regard to the working position of the user:

- **In front** of the patient table looking in the direction of the X-ray tube
- **left** is the head end of the patient table
- **right** is the foot end of the patient table
- **frontal** means the longitudinal side of the patient table close to the operating panel
- **in back** means the longitudinal side of the patient table away from the operating panel

❏ **turn toward the right** means tighten accessory with knurled screws or levers (clockwise)

❏ **turn toward the left** means remove accessory with knurled screws or levers or other fastening devices (counterclockwise)

Example:

◆ Turn both knurled screws toward the left

◆ Push the grip protection strip on the head end into both accessory rails

◆ Turn both knurled screws toward the right

◆ Check that the grip protection strip is seated securely

Use of several accessory components

This document describes the use of a single accessory component in each chapter text.

If you need to work with several components during an examination, e.g. compression belt and shoulder supports, these components must be attached and removed in the correct sequence because most[1] accessory components are attached to the patient table using the accessory rails.

Example:

❏ Grip protection strip and footboard are already attached to the patient table.

❏ You need the shoulder supports in addition because they will be helpful for the examination.

◆ First, you must remove the grip protection strip as described in these instructions.

◆ Then position the patient on the table.

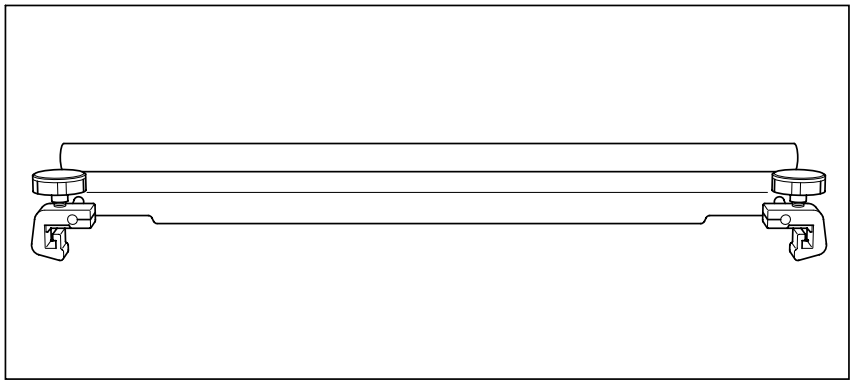
◆ Next attach the shoulder supports.

◆ Next push the grip protection strip back into the accessory rails and secure it.

◆ Check that all accessory components are securely attached.

[1] Exceptions: compression belt, lateral cassette holder, arm rest

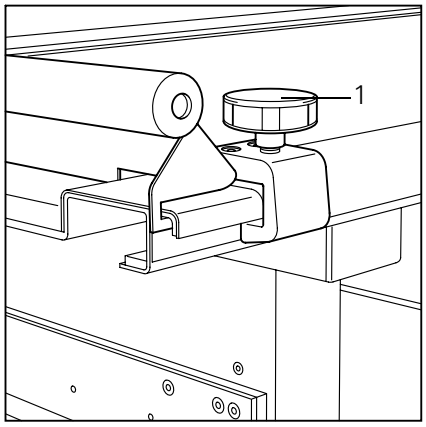
Grip protection strip



Application Handgrip and finger protection for patients during examinations in the lateral or prone position.

Attachment

- Move the tabletop to the horizontal position;
- Loosen the cap screws (1) on the grip protection strip;



- Insert the grip protection strip up to the stop into the accessory rails at the head end of the patient;
- Tighten (1) the cap screws;
- Check that the grip protection strip is securely attached by pulling and pressing on it.

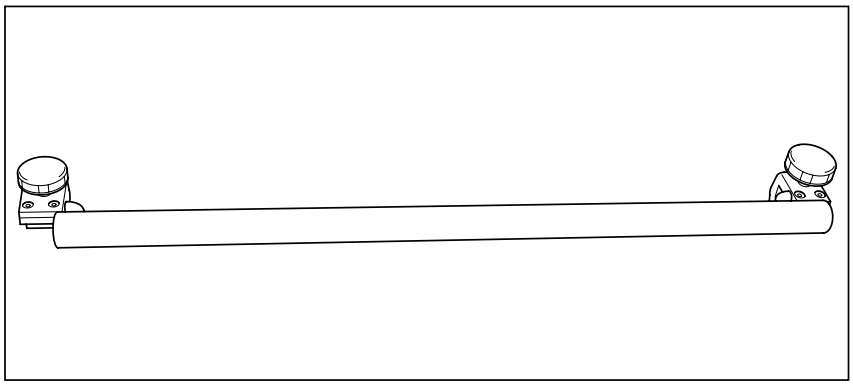
Warning

The grip protection strip is intended for the safety of the patient in the prone position. To prevent injury to the hands when moving the tabletop, make sure that the patient uses the grip protection strip and not the head end or the side edge of the tabletop.

Removal

- Move the patient table to the horizontal position;
- Loosen the cap screws;
- Remove the grip protection strip from the accessory rail.

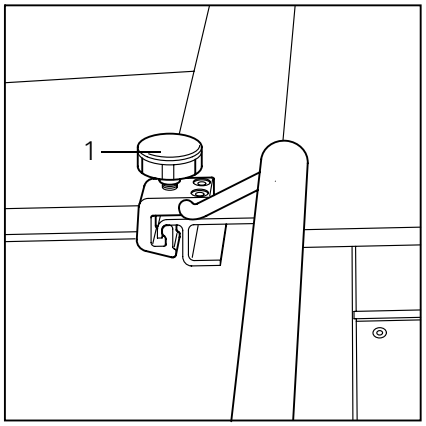
Handgrip strip



Application Handgrip strip for mounting on the front or back accessory rail to assist in positioning the patient

Attachment

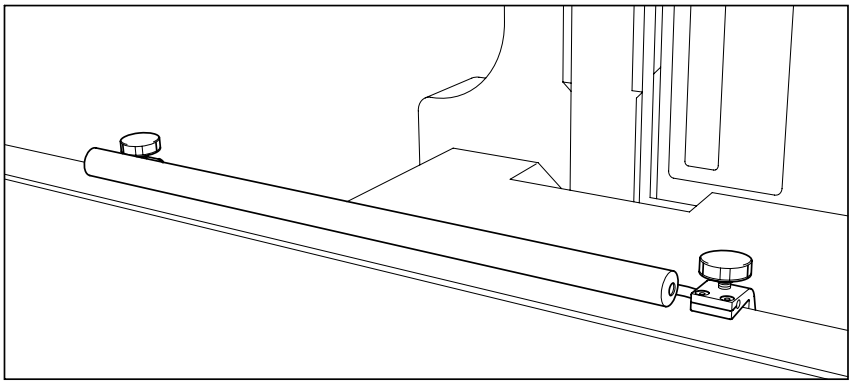
- Move the patient table to the horizontal position;
- Loosen the right and left cap screws (1) on the handgrip strip;



- Insert the handgrip strip in the accessory rail and push it into position;

We recommend placing the handgrip strip on the far side of the user.

- Tighten both cap screws;



- Make sure that the handgrip strip is secure by pulling and pressing on it.

Warning

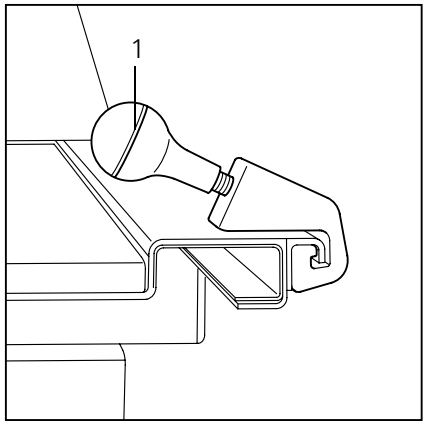
The handgrip strip provides additional safety for the patient. To prevent injury to the patient's hands when moving the tabletop, make sure that the patient uses the handgrip strip (not the cap screw) and does not hold onto the head end or the side edge of the patient table.

Removal

- Move the patient table to the horizontal position;
- Loosen both cap screws on the handgrip strip;
- Pull the handgrip strip out of the accessory rail.

If required, an additional handgrip strip for the front accessory rail can be ordered via the Siemens Uptime Service (against payment).

Handgrip



Application The handgrip can be mounted in the front or back accessory rail for stable and secure patient positioning

Attachment

- Move the patient table to the horizontal position;
- Holding the base of the handgrip, loosen the handgrip (1);
- Slide the handgrip onto the edge of the accessory rail and move it into position;
- Tighten the handgrip;
- Check that the handgrip is secure by pulling on it.

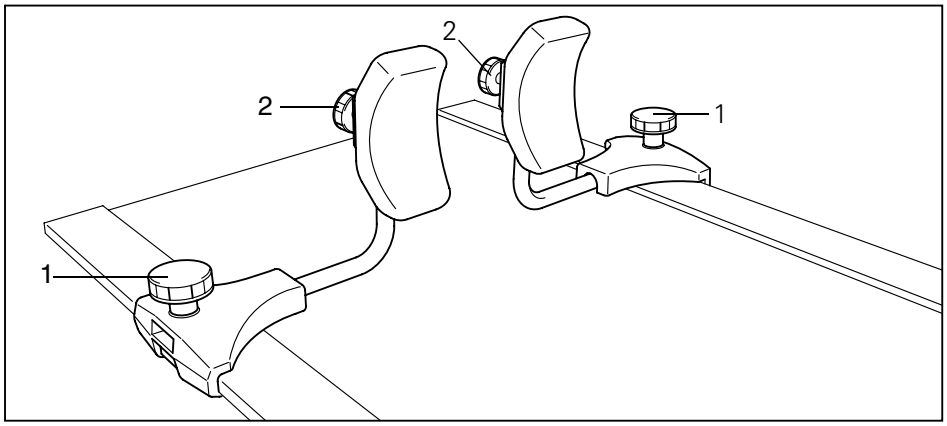
Warning

The handgrip provides additional safety for the patient. To prevent injury to the patient's hands when moving the tabletop, make sure that the patient is using the handgrip and not the head end or the side edge of the patient table.

Removal

- Move the patient table into the horizontal position;
- Loosen the handgrip;
- Pull the handgrip out of the accessory rail.

Shoulder supports



Application

To support the patient during examinations in Trendelenburg position, e.g. myelography

At a Trendelenburg position >15°, the shoulder supports must be used . The maximum weight of the patient must not exceed 180 kg to 45° Trendelenburg position.

In Trendelenburg position >45°, the max. patient weight of 150 kg must not be exceeded.

Attachment

- Move the patient table to the horizontal position;
- Position the patient;
- Loosen the cap screws (1) on both supports;
- Move the supports into position on both accessory rails;
- Pull the shoulder pads out up to the middle of the patient's shoulders;
- Tighten the cap screws (1);
- Check the shoulder supports;
- Loosen the cap screws (2) for the shoulder pads;
- Adjust the height of the shoulder pads for secure and comfortable positioning;
- Tighten both cap screws (2).

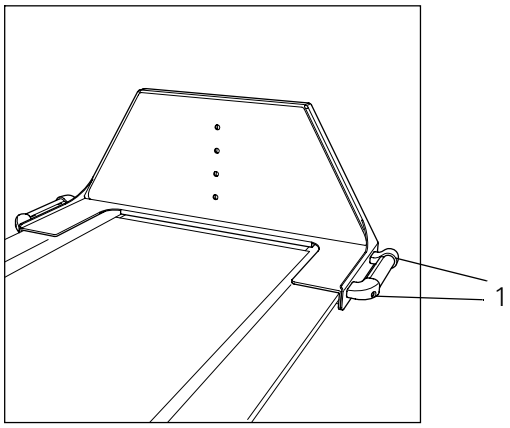
Warning

When in Trendelenburg position, the patient is protected against slipping only by the shoulder supports. Pull on the shoulder supports to be sure that they are securely attached before moving the patient into the Trendelenburg position.

Removal

- Move the patient table into the horizontal position;
- Loosen the cap screws (1) on both sides;
- Pull the shoulder supports out of the accessory rails.

Footboard



Attachment

Positioning aid for examinations of patients when standing or sitting and for additional use with the foot restraints for recumbent patients in Trendelenburg position.

The maximum permissible patient weight on the footboard is 180 kg.

The footboard can also be attached to the head end of the patient table, if the patient has to be turned for positioning (right head end).
3 lock-in positions each at the head end and foot end at a distance of 20 cm each are available.

Attachment

- Move the patient table to the horizontal position;
- Hold footboard laterally on the handgrips and press the spring-loaded handgrip strips in the handgrips;
  – the two red buttons (1) must be visible;
- Insert the footboard anywhere in the acccessory rail at any place of the tabletop in the head/foot range, first on one side and then on the other;
- Move the footboard to the desired position (lock-in position);
- Release the handgrip strips and shift the footboard slightly back and forth until it locks in;
  – the two red buttons must be flush with the handgrip;
- Check that the footboard is locked by pulling on it;
- Position the patient.

Warning

Be sure to check that the footboard has locked into position before allowing patients to sit or stand on it. If you want to tilt the patient table from the horizontal position to the Trendelenburg position, you must secure the patient with the shoulder supports or the foot restraints at 15°. In case of a Trendelenburg position >40°, the foot restraints must be used in addition to the shoulder supports. Make sure that patients standing on the footboard hold onto the handgrip and the handgrip strip. For additional safety, use the compression belt for frail or very unsteady patients.

Adjustment

- Press the spring-loaded handgrip strips in the handgrips;
  – the two red buttons must be visible;
- Move the footboard to the desired position (lock-in position);
- Release the handgrip strips and shift the footboard slightly back and forth until it locks in;
  – the two red buttons must be flush with the handgrip;

Warning

The footboard may only be unlocked, adjusted or removed when the table is in the horizontal position. In all other system positions, the footboard could fall off and present a high risk of accidents.

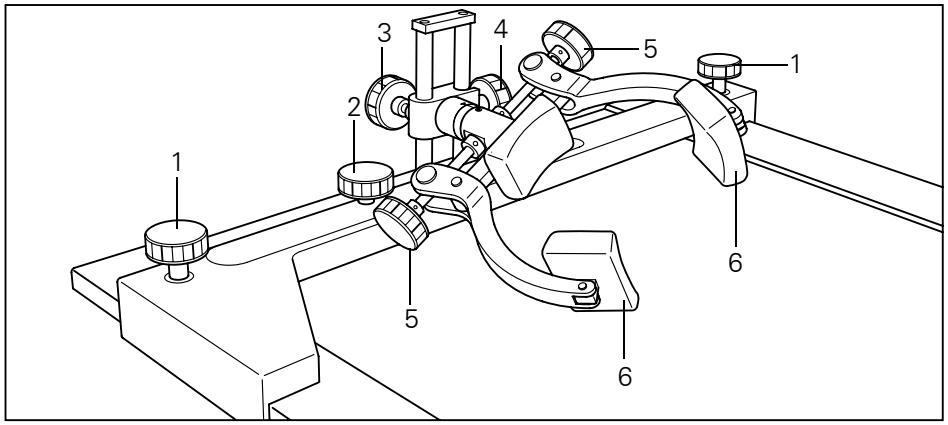
Removal

- Move the patient table to the horizontal position;
- Press the spring-loaded handgrip strips in the handgrips;
  – the two red buttons must be visibible;
- Lift the footboard first on one side and remove from the accessory rail;
- Remove other side of the footboard from the accessory rail.

Maintenance note

In order to prevent influx of contrast medium into the sockets, the pedal must be covered with absorbent fleece material.

Head support



Application Holder for cranial examinations. Can be adjusted in height, width, and lateral tilt

Attachment

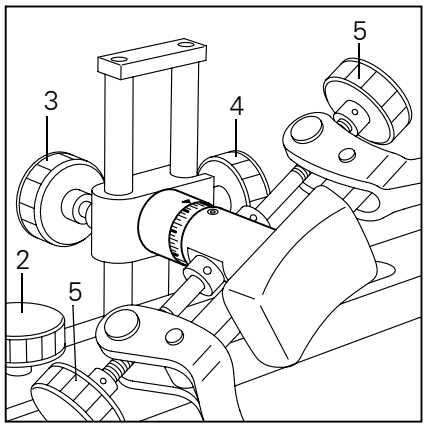
- ◆ Move the table to the horizontal position.
- ◆ Loosen both cap screws (1) for attaching the head support to the accessory rails.
- ◆ Insert the head support into the accessory rails at the head end or foot end of the table and move it to the appropriate position.
- ◆ Tighten the cap screws (1).
- ◆ Pull the head support to ensure that it is secured properly.
- ◆ Turn the following cap screws as indicated to permit adjustment of the:
  – (2) position from side to side.
  – (3) height.
  – (4) lateral tilt from 0° to ± 90° (depending on the height setting).
  – (5) pads (6) to the width of the patient's head; turn to the left.
- ◆ Set the position from side to side.
- ◆ Tighten the cap screw (2).
- ◆ Push and pull the head support to ensure that it is seated properly.
- ◆ Assist the patient in positioning his/her head in the head support.
- ❑ The patient's head should make contact with the top pad.
- ◆ Raise the stabilizing arms to the height required.
- ◆ Tighten the cap screw (3).
- ◆ Push and pull on the stabilizing arms to ensure they are seated properly.
- ◆ Turn the cap screws (5) carefully to the right.
- ❑ Both padded stabilizing arms will move toward the patient's head.

◆ Ensure the patient's head is safely stabilized.

Warning

To avoid injury to the patient's head, ensure that the stabilizing arms are opened sufficiently and that the cap screws (5) are not tightened too much prior to positioning the patient's head in the support.

◆ Turn the patient's head to the right or left as required for the examination.



❑ The scale indicates the angle in degrees "°".

◆ Tighten the cap screw (4).

◆ Ensure that the patient is comfortable and properly stabilized.

Removal

◆ Move the patient table to the horizontal position.

◆ Loosen the cap screw (4).

◆ Turn the patient's head to the 0 ° position.

◆ Open the stabilizing arms using the cap screws (5).

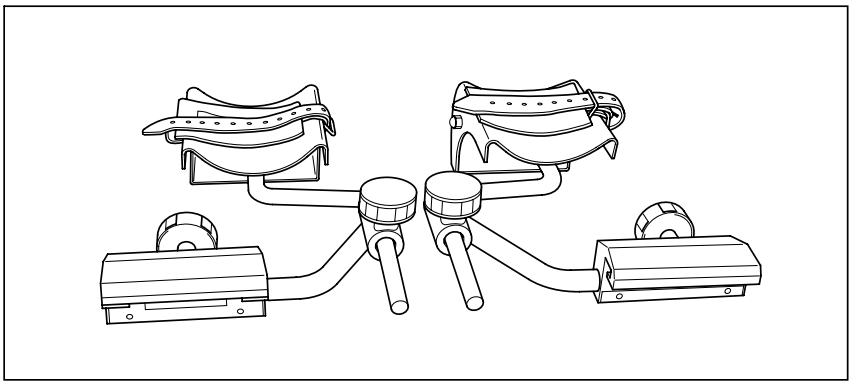
◆ Assist the patient in removing his/her head from the support.

◆ Assist the patient in stepping down from the patient table.

◆ Loosen the cap screws (1).

◆ Remove the head support from the accessory rails.

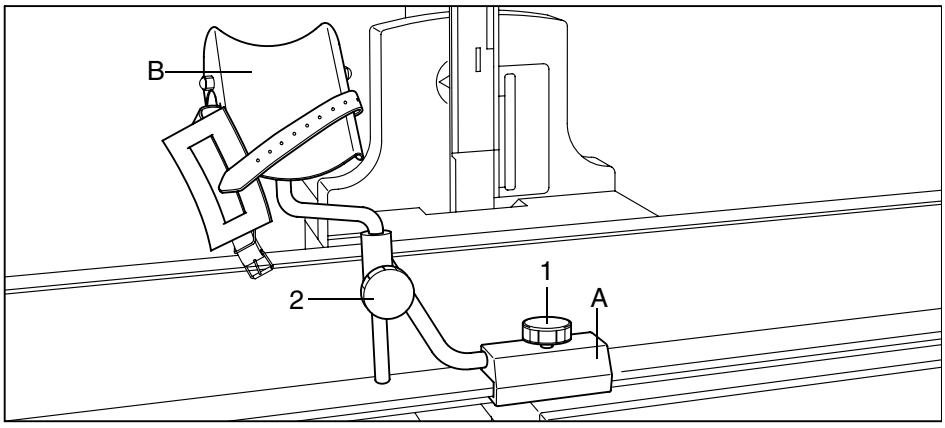
Knee crutches



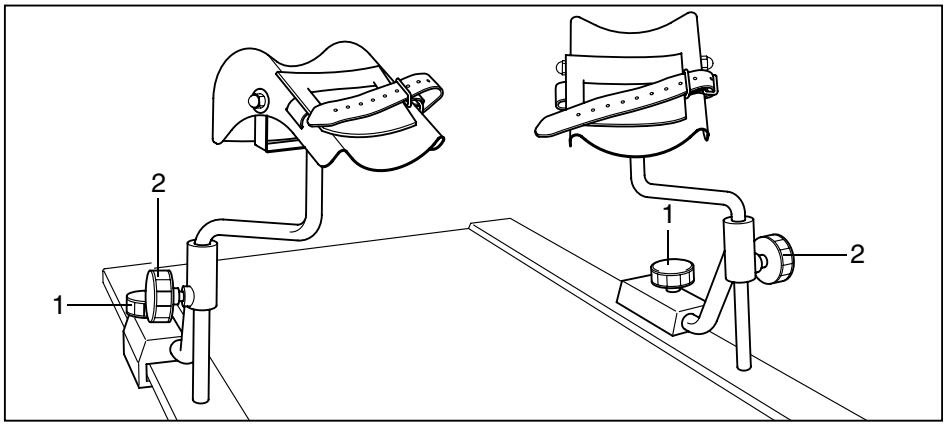
Application For facilitating positioning for gynecological and urological examinations

Attachment

- Move the patient table to the horizontal position.



- Loosen both cap screws (1).
- Slide flanges (A) onto the accessory rails.
- Insert both molded leg supports (B) into the holders at the cap screws (2).
- Position the patient on the patient table.
- Slide the knee crutches along the accessory rails to the examination position.
- Tighten the cap screws (1).
- Open the securing straps on the molded leg supports.
- Position the patient's lower legs on the molded leg supports.



- Raise the leg supports to the examination position and adjust the position of the legs inward or outward as needed.
- Tighten the cap screws (2).
- Pull and push on the leg supports and the flanges to ensure they are seated properly.
- Place the leather pads over the center of the patient's lower legs.
- Position the straps around the patient's lower legs.
- Tighten the straps appropriately.

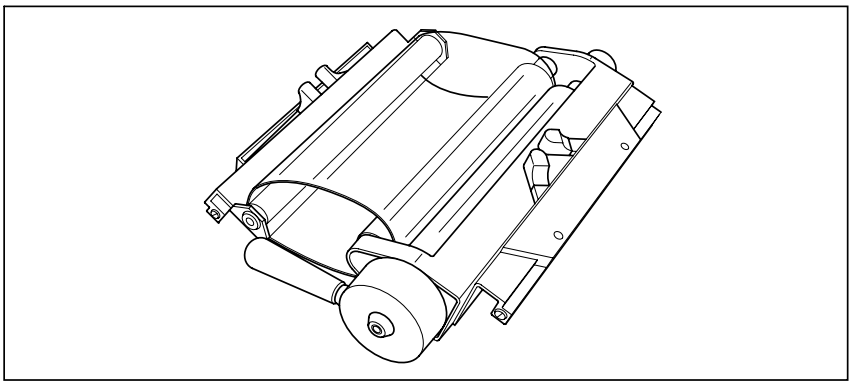
Removal

- Move the patient table to the horizontal position.
- Release the straps.
- Lift the patient's legs from the leg supports.
- Wrap the straps around the leg supports.
- If necessary, remove the leg supports by loosening the cap screws (2).
- Loosen the cap screws (1).
- Remove the flanges from the accessory rails.

Note on biological compatibility

Please place towels between the patient's legs and the knee crutches to avoid direct skin contact with the knee crutches.

Compression belt



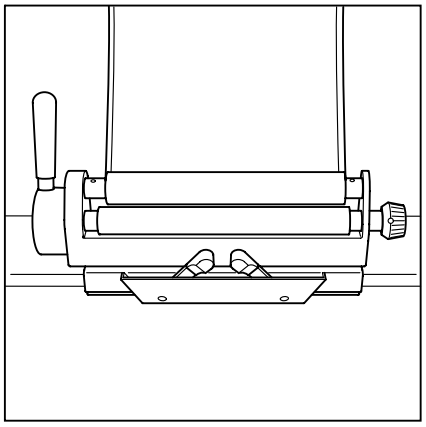
Application

Used for patient compression during thoracic or abdominal examinations as well as for immobilizing restless or very frail patients.

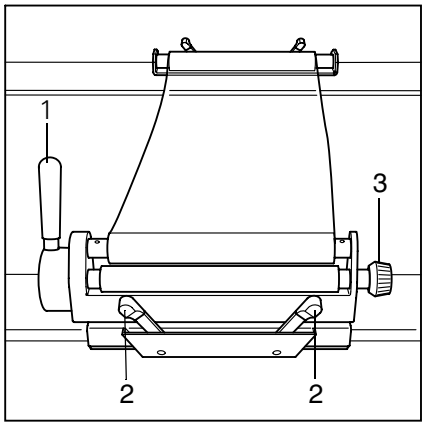
Make sure that all traces of contrast medium have been removed from the compression belt. Otherwise, the X-ray image will show artifacts.
The compression belt is made of transparent plastic and can be cleaned with a damp cloth.

Attachment

- Move the patient table to the horizontal position.
- Position the patient on the table.



- Push the tensioning part of the compression belt into the required position over the front accessory rail.

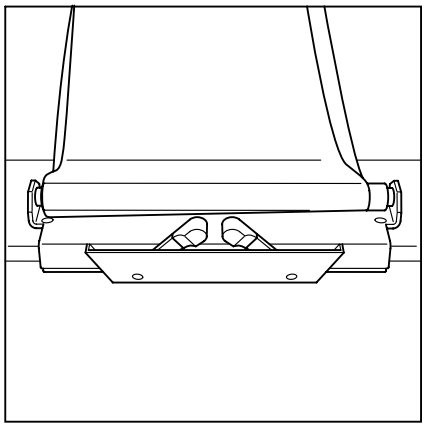


- Press both tension levers (2) outward.
- Check that the tensioning roller is firmly seated by pulling on it.
- Press the ratchet handle (1) downward.

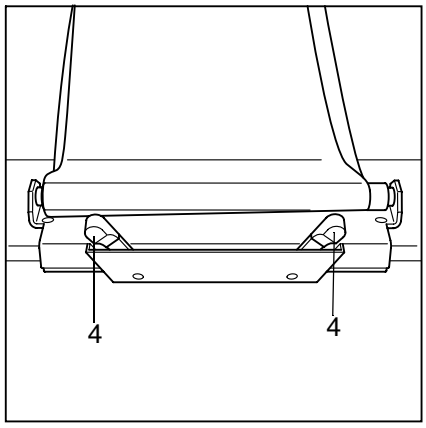
❏ The belt is released.

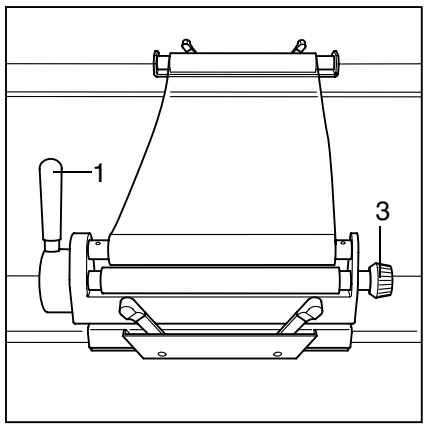
For very obese patients, the belt holder is easier to secure if you are standing at the back of the patient table. In this case, and for very restless or frail patients, we recommend that someone assist you in attaching the compression belt.

- Lift the holder with the belt across the patient.



- Push the holder over the back accessory rail. Make sure that the compression belt attaches straight across the tabletop and not at an angle.





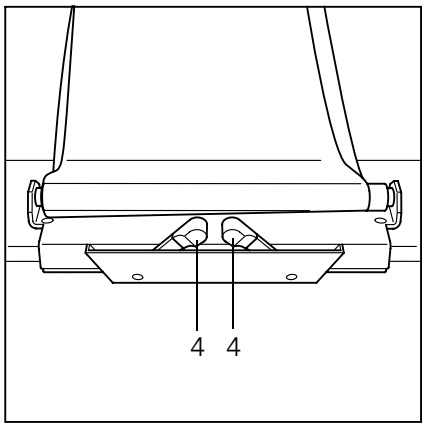
- ◆ Press the tension lever (4) outward.
- ◆ Check that the holder is seated firmly by pulling on it.
- ◆ Turn the cap screws (3) on the tensioning roller toward the right.
- ❑ The belt will tighten.
- ◆ Push and pull back on the ratchet handle (1), until the belt tension is optimal.
- ◆ Check the belt tension on the patient once again.

Loosening the compression belt

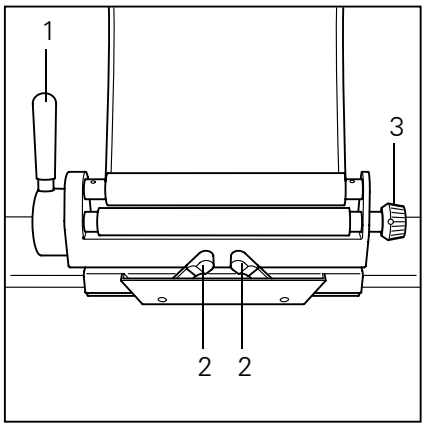
- ◆ Move the patient table to the horizontal position.
- ◆ Press the ratchet handle (1) back.
- ◆ Turn the cap screw (3) on the tensioning roller toward the left.
- ❑ The compression belt will loosen.
- ◆ Using the ratchet handle, set a lower belt tension.

Removal

- ◆ Move the patient table to the horizontal position.
- ◆ Press the ratchet handle (1) back.
- ◆ Turn the cap screw (3) on the tensioning roller toward the left.
- ❑ The compression belt will loosen.



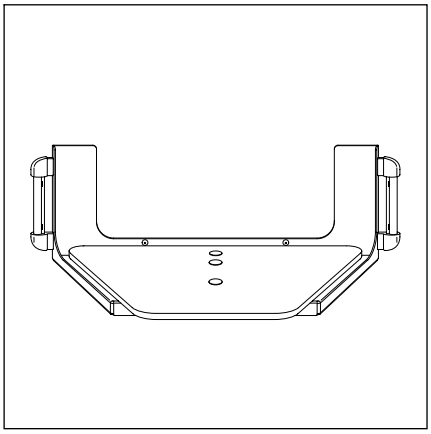
- Press both tension levers (4) on the belt holder inward.
- Pull the belt holder backward off the accessory rail.
- Lift the belt holder over the patient.
- Roll up the compression belt halfway using the cap screw.
- Place the belt holder next to the tensioning roller.



- Press both levers (2) inward on the tensioning roller.
- Pull the tensioning roller from the front accessory rail.
- Assist the patient in stepping down from the patient table.
- Using the cap screw (3), roll up the belt on the tensioning roller.

Radiation protection value: The attenuation equivalent of the compression belt is ≤0.8 mm Al.

Footboard Extension



Use

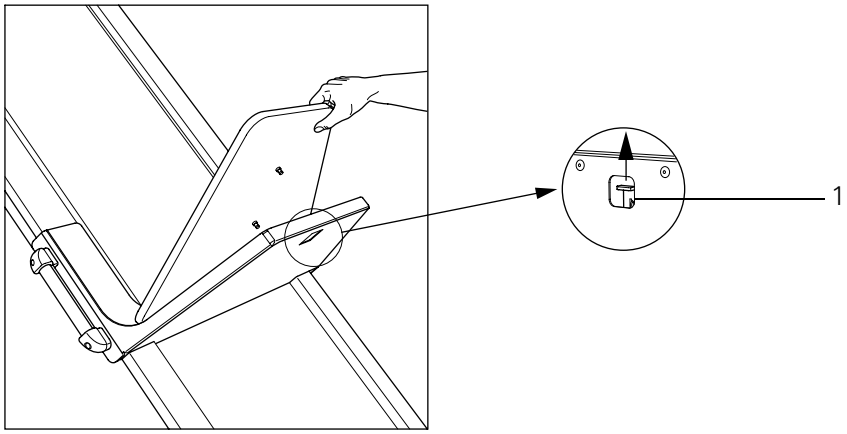
Extension board for enlarging the surface of the footboard, especially for lateral patient positions.

The maximum permissible patient weight on the footboard extension is 180 kg.

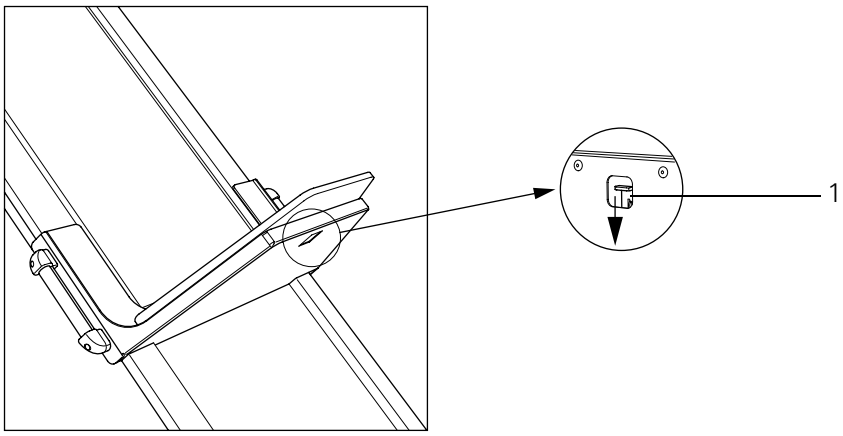
The footboard extension is not monitored by the collision computer. Therefore proceed with care when tilting the tabletop with the footboard and extension attached towards the ceiling.
With the footboard extension the foot restraints cannot be used.

Attachment

- Move the tabletop with the footboard attached to approximately the 80° position.
- Move the tabletop headwards.



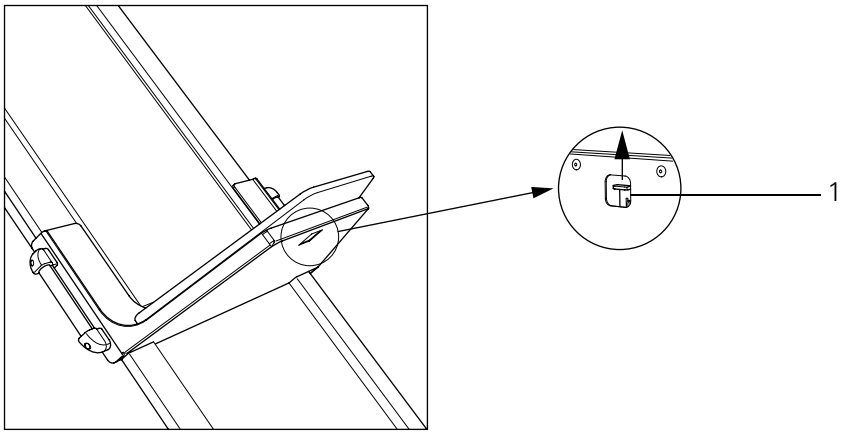
- Place the footboard extension on the rear end of the footboard.
- Push the locking lever (1) on the rear of the footboard in the direction of the arrow.
- While exerting pressure on the extension board, fit the metal pegs of the extension into the holes of the footboard.



- Push the locking lever (1) on the rear of the footboard all the way to the stop in the direction of the arrow.
- Make sure the footboard is attached firmly by pushing and pulling it.

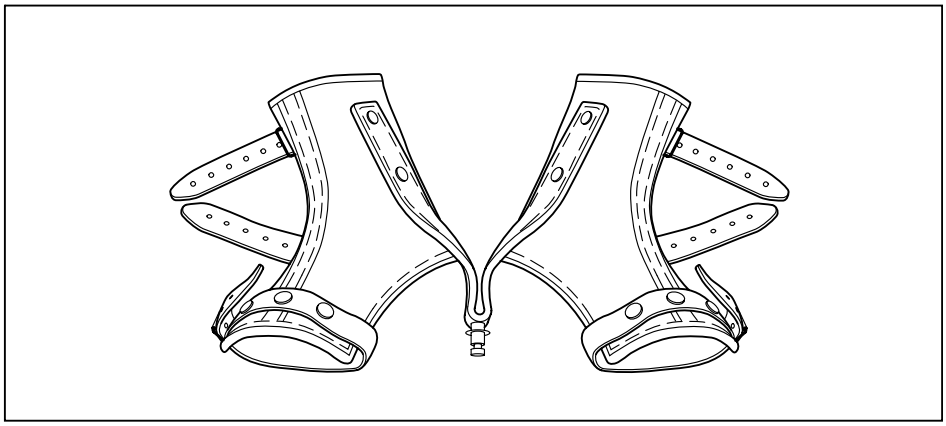
Removal

- Move the tabletop to approximately the 80° position .
- Move the tabletop headwards.



- Push the locking lever (1) on the rear of the footboard in the direction of the arrow and hold it.
- Remove the footboard extension.
- Release the locking lever.

Foot restraint



Application

Safety device for patients in Trendelenburg examinations to relieve the pressure on the spinal column

At a Trendelenburg position >40°, the foot restraints must be used in addition to the shoulder supports. The maximum patient weight must not exceed 180 kg.

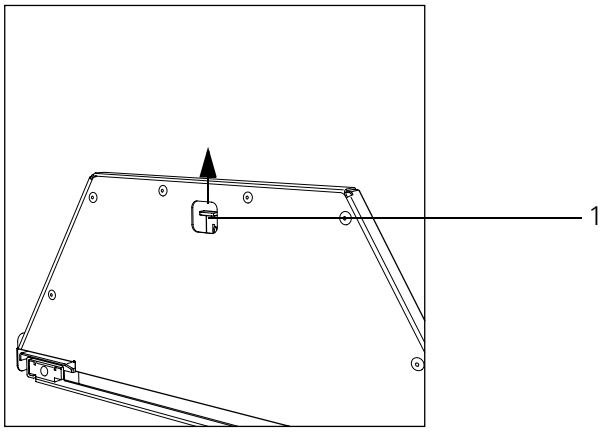
The maximum patient weight must not exceed 150 kg at a Trendelenburg position >45°.

Attachment

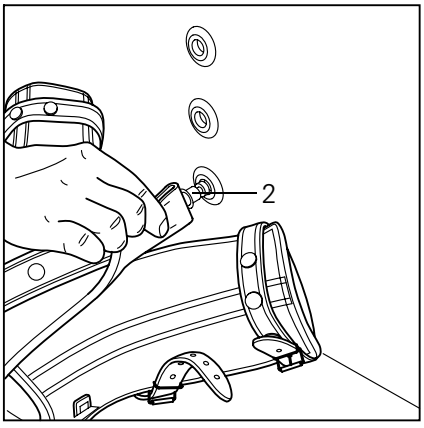
- Move the patient table to the horizontal position.
- Push the footboard into the working position.
- Check that the footboard is locked by pulling on it.
- Position the patient in the prone or supine position with his/her feet on the footboard.
- Attach the foot restraint snugly around the ankles.
- Tighten the straps.

Warning

If you are using only the foot restraint to secure the patient on the patient table, the locking metal clip is the only device preventing the patient from slipping or falling. For this reason, you must check that the metal clip of the foot restraint is securely locked into the footboard. Have the patient hold onto the handgrips during this examination procedure.



- Move locking handle (1) on the rear of the footboard in arrow direction and hold fast.



- Insert the metal clip of the foot restraint (2) into the hole on the footboard provided for this purpose.
- ❏ When positioned correctly, the patient's heels or toes should touch the patient table slightly.
- Release the locking handle.
- Check that the device is locked by pulling on the foot restraint.

Warning

To avoid spinal compression or in cases where the patient must be turned, the shoulder supports cannot be used. The patient is held secure by the foot restraint only.

Removal

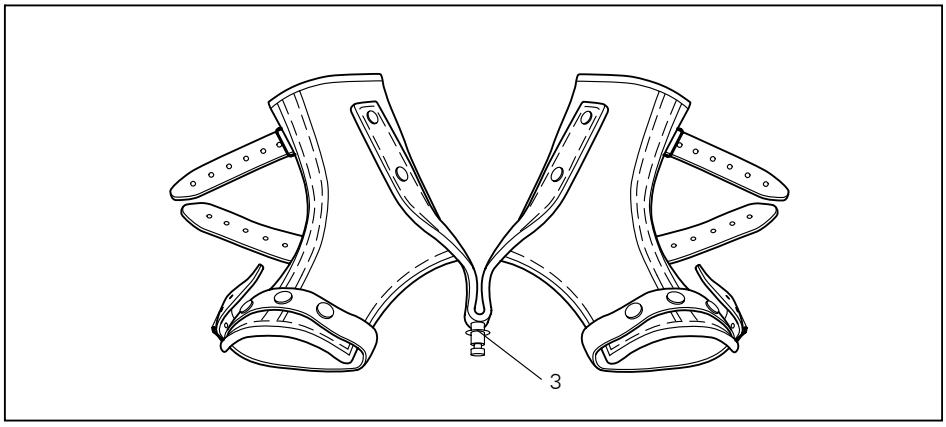
- Move the patient table to the horizontal position.
- Move locking handle on the rear of the footboard in arrow direction and hold fast.
- Pull the metal clip of the foot restraint out of the hole in the footboard.
- Loosen the straps.
- Lift the patient's feet out of the foot restraint.

Control/care note

Check the foot restraints for correct condition at regular intervals of approx. 2 months.

Check especially the firm seating of the fastening rivets, of supporting belts and closing belts, as well as the completeness of their seams and the condition of the leather for cracks and porous places.

Before using the foot restraint, always check that the safety device (3) is present. If this safety device is not present, then the foot restraint must not be used any more.

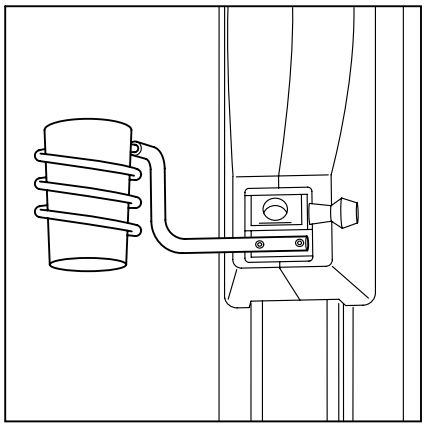


In case of defects to the foot restraint take this out of service and obtain a replacement through the Siemens Uptime Service.

We recommend using a commercially available impregnating pump spray for cleaning and care.

Cup holder

Available only with the "Compression" option



Application

Radiographic examinations of the gastro-intestinal tract, for patients drinking contrast medium fluids

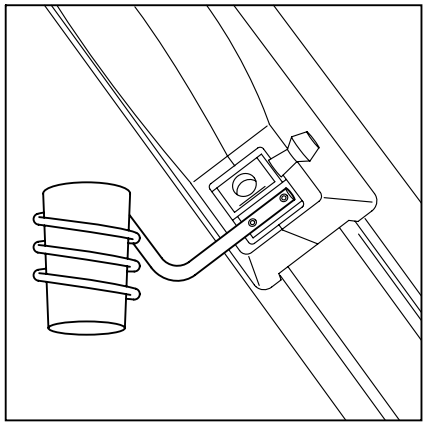
The following requirements apply to the cup and contents:
- Diameter: 5.5 cm to 7.0 cm
- Maximum fill quantity: 250 ccm (0.25 liter)
- Maximum fill height: 8.5 cm
- Material: Rigid plastic or similar material; no porcelain or glass.

Inserting the cup

❑ The cup holder is permanently mounted on the left side of the compression carriage. It can swing in and out.

◆ Fill the cup with contrast medium fluid;

◆ Insert the cup in the holder.

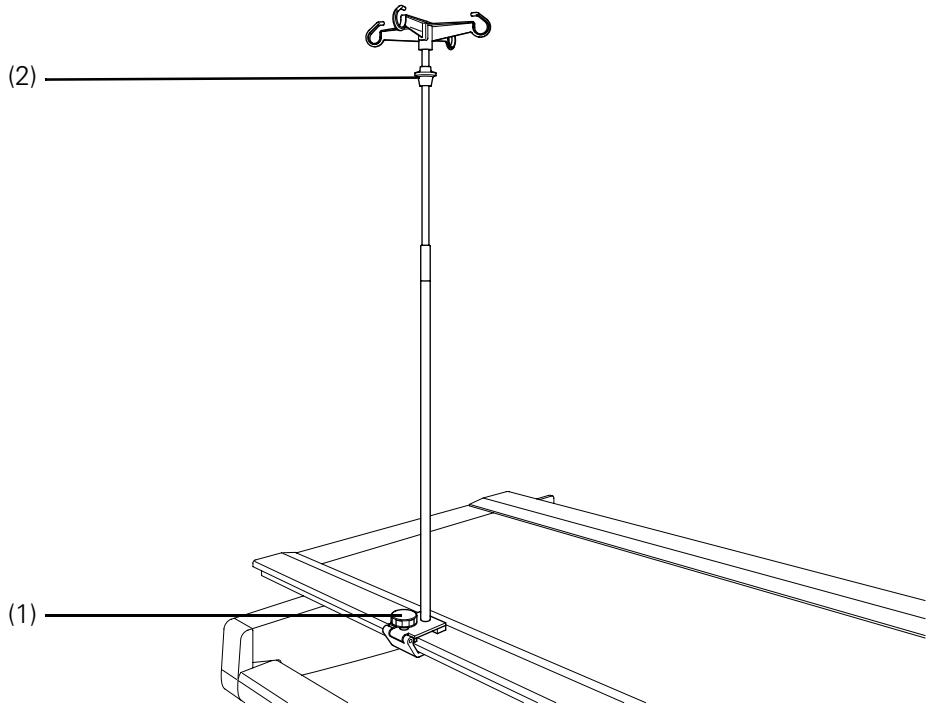


Removing the cup

◆ Remove the cup from the cup holder;

◆ Dispose of the contrast medium fluid and the cup according to the manufacturer's instructions.

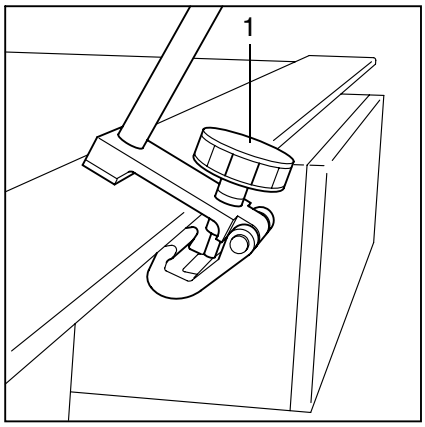
IV holder



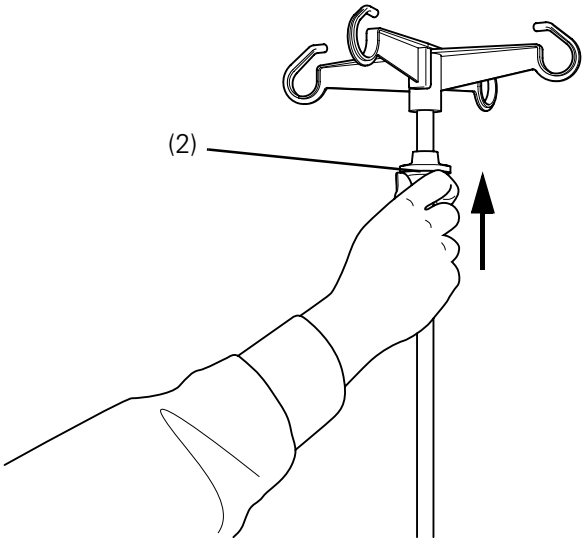
Application For intravenous therapy or administration of a contrast agent during the radiological examinations

Attachment

- Move the patient table to the horizontal position.



- Loosen the cap screw (1).
- Position the IV holder at the treatment position and clip it onto the accessory rail or slide it onto the accessory rail.
- Tighten the cap screw.
- Push and pull on the IV holder to ensure it is seated properly.



- To set the height of the IV holder push the fixing ring (2) at the removable upper section of the IV holder upward (as shown above) and move the upper section to the desired height.
- To fix the height just release the fixing ring (2).
- Ensure that the height-adjustable rod is seated properly and secure.
- Hang one or more IV's on the loops.

The IV holder can be used in system positions up to ± 20°.

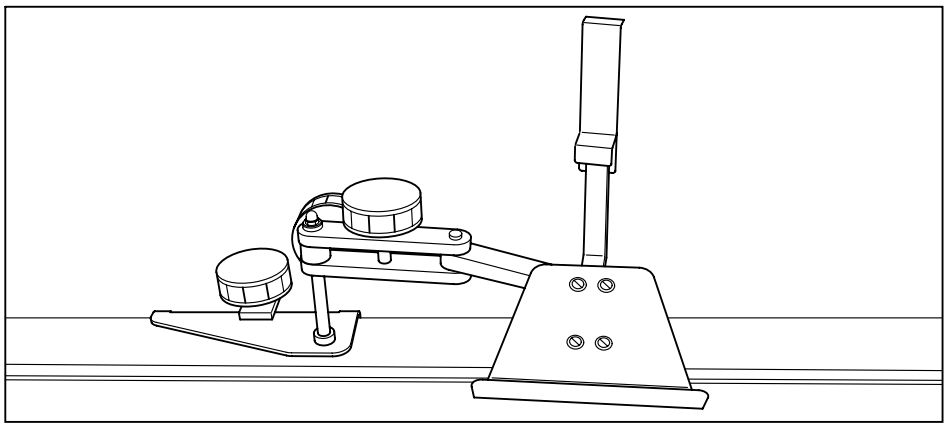
Removal

- Move the patient table to the horizontal position.
- Remove the IV's.
- Push the fixing ring (2) at the removable upper section of the IV holder upward and move the upper section downward.
- Release the fixing ring (2).
- Ensure that the upper section and extension rod are secured.
- Loosen the cap screw (1).
- Lift the base of the IV holder from the accessory rail or slide it off the accessory rail.

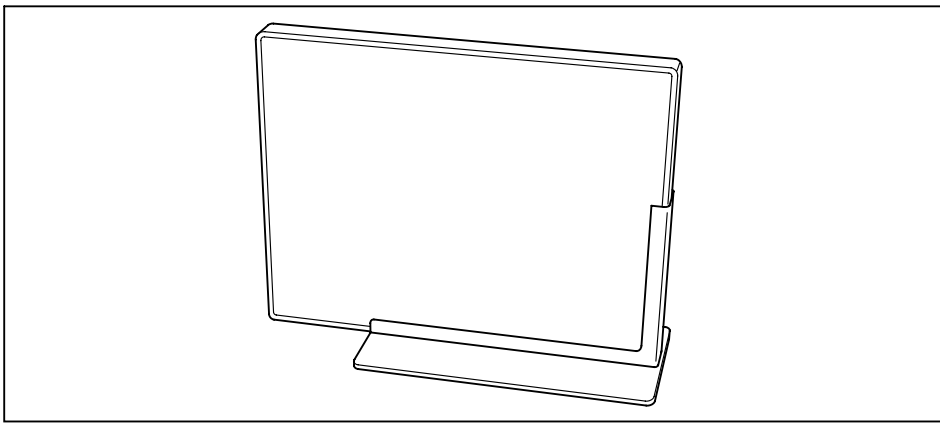
Lateral cassette holder

Application For lateral exposures using a second X-ray tube; to hold the cassette upright

There are two different versions of the cassette holder:



1. with variable positioning



2. without variable positioning

Cassette holder with variable positioning

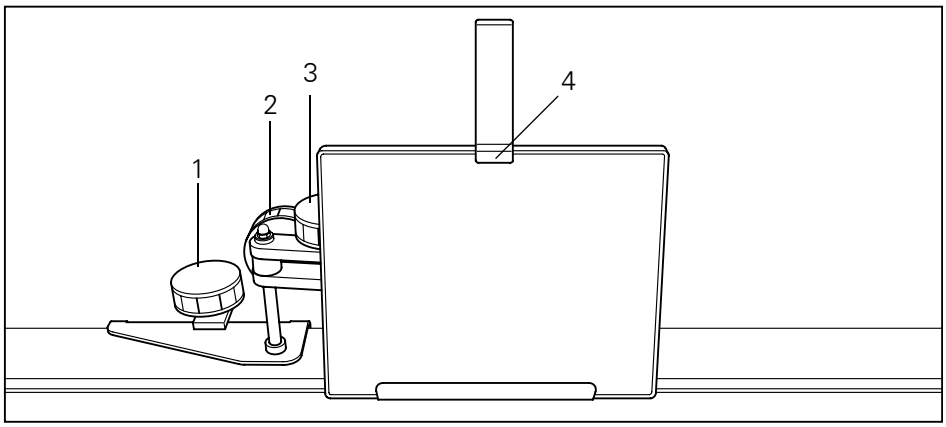
Application For lateral exposures with a second X-ray tube; to hold the cassette upright in all table positions, including Trendelenburg.

Maximum cassette format: 35 cm in height, width is unrestricted,
e.g. 35 cm x 43 cm horizontal is possible.

Minimum cassette formats: 13 x 18 cm vertical or 18 cm x 24 cm horizontal.

Attachment

- Move the patient table to the horizontal position.
- Position the patient.
- Loosen the cap screw (1).
- Place the cassette holder on the accessory rail and move it to the exposure position.
- Tighten the cap screw (1).
- Push and pull the cassette holder to ensure that it is seated properly.



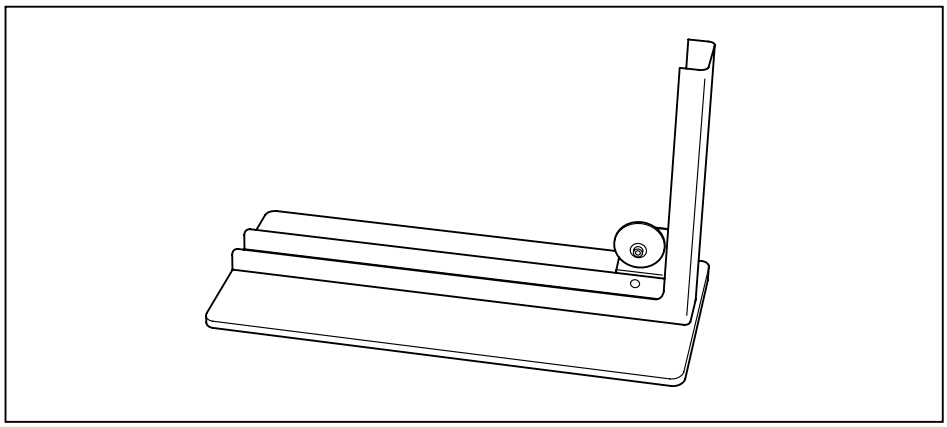
- Lift the tensioning device (4).
- Place the cassette on the lower holder.
- Slide the tensioning device downward.
- Ensure that the cassette is seated properly in the holder.
- Loosen the cap screw (2) to permit adjustment of the height and the cap screw (3) to permit lateral adjustment.
- With the patient positioned for the examination, adjust the height and lateral tilt of the cassette.
- Tighten the cap screws (2) and (3).
- Ensure that the patient is stabilized and comfortable.

Have the patient place his/her hands on the grip protection strip, the grip strip, or the handgrip, depending on the examination procedure. This will increase the patient's feeling of security during the examination.

Removal

- Move the patient table to the horizontal position.
- Assist the patient in stepping down from the patient table.
- Hold the rail for height adjustment.
- Loosen the cap screw (2).
- Lift the rail for height adjustment.
- Tighten the cap screw (2).
- Loosen the cap screw (1).
- Remove the cassette holder from the accessory rail.

Cassette holder without variable positioning



Application

For lateral exposures with a second X-ray tube; to hold the cassette upright with the tabletop in the horizontal position

For all cassette formats, horizontal and vertical.

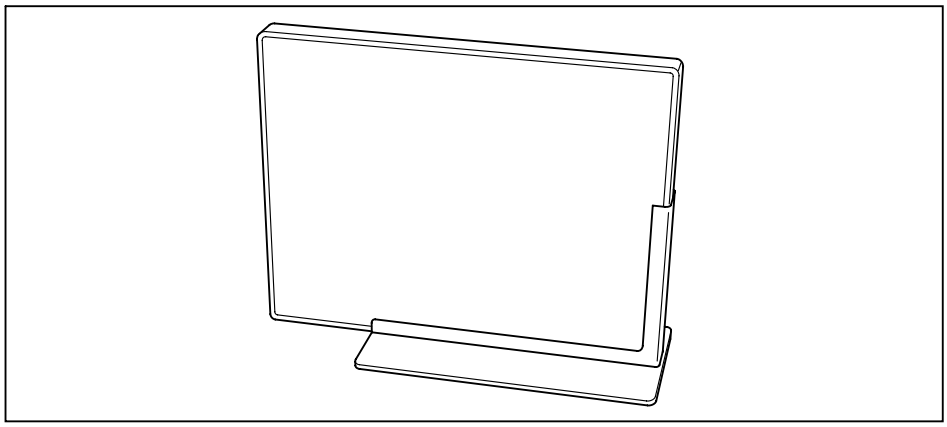
Attachment

- Move the patient table to the horizontal position.

Warning

Use this cassette holder only if the patient table will remain in the horizontal position throughout the entire examination procedure. The cassette holder will fall if the patient table is tilted. Observance of this recommendation will prevent potential injury to the patient or personnel as well as equipment damage.

- Position the patient.
- Ensure that the patient is comfortable and stabilized.



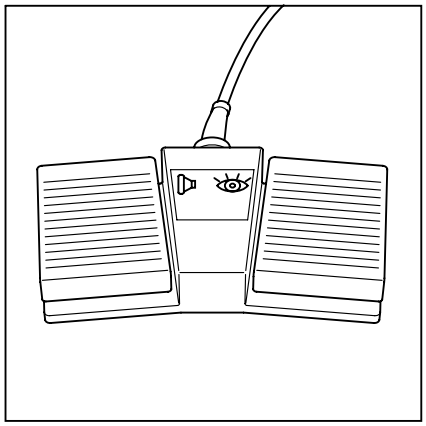
- Slide the cassette into the bracket of the cassette holder.
- Ensure that the cassette is seated properly in the holder.
- Position the cassette holder on the tabletop at the patient in the location appropriate for the examination.
- Ensure that the cassette holder is stable

Have the patient place his/her hands on the grip protection strip, the grip strip, or the handgrip, depending on the examination procedure. This will increase the patient's feeling of security during the examination.

Removal

- Remove the cassette from the bracket of the cassette holder.
- Remove the cassette holder from the tabletop.
- Assist the patient in stepping down from the tabletop.

Foot switch assemblies for fluoroscopy and radiography



Application

For releasing radiographic or fluoroscopic exposures during tableside examinations.

Attachment

- Insert the foot switch plug into the receptacle in the electronics cabinet.
- Turn the locking ring of the plug to the right until the connector is seated properly.
- Route the cable along the floor appropriately.
- Position the patient.

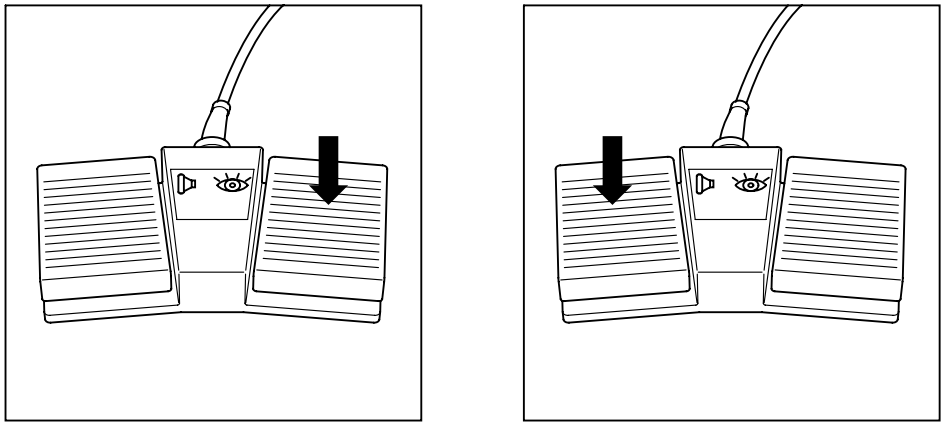
Caution

Route the cable carefully to avoid safety hazards (e.g. tripping).

Do not permit the wheels of transport devices such as carts and wheelchairs to run over the pedals of the foot switch assembly,
since this could cause inadvertent radiation release.

The following steps require radiation release.

Ensure proper radiation protection.



Left: Releasing fluoroscopy Right: Releasing radiography

Releasing fluoroscopy

- ◆ Step on the right pedal (foot switch for fluoroscopy). Continue pressing down on the pedal as long as fluoroscopy should remain active.
- ◆ Let go of the pedal.
- ❑ Fluoroscopy then ends.

Releasing radiography

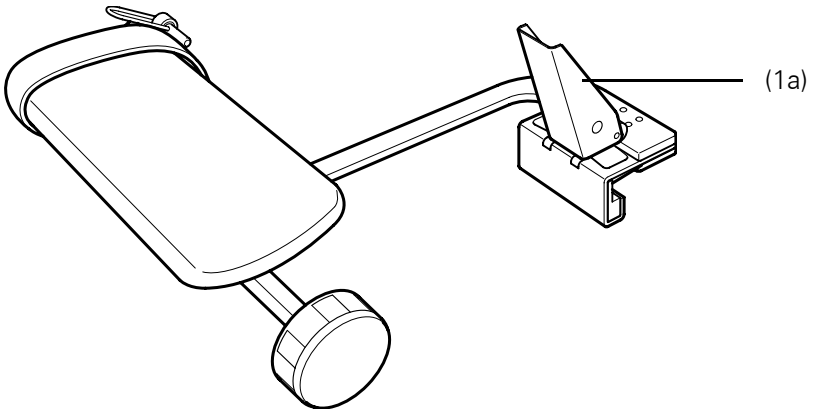
- ◆ Step on the left pedal (foot switch for radiography). Continue to press down on the pedal until the exposure has ended.
- ❑ The exposure has ended when the radiation ON indicator on the remote control console goes out.
- ◆ Let go of the pedal.

Removal

Depending on the frequency of use, you can leave the foot switch attached or disconnect it after the examination.

- ◆ Turn the locking ring on the cable plug to the left.
- ◆ Remove the plug from the receptacle.
- ◆ Roll up the foot switch cable.
- ◆ Store the foot switch and cable in an appropriate location.

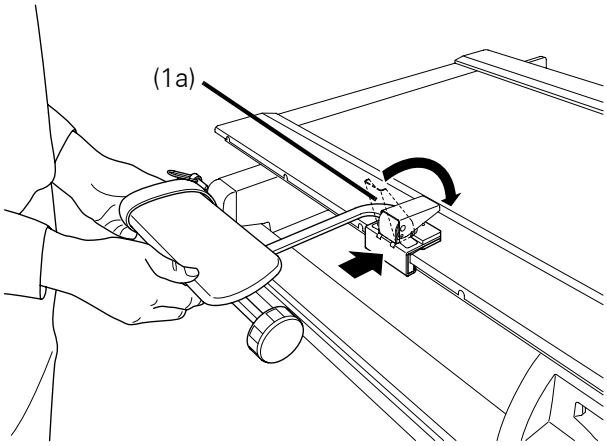
Armrest

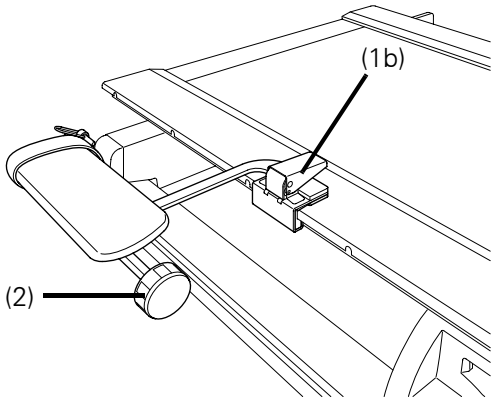


Application For securing the patient's arm for injections, IV's, or insertion of a catheter.

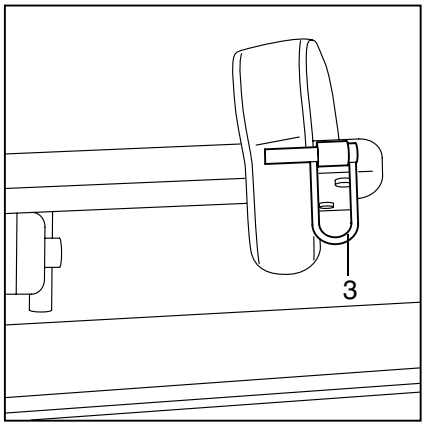
Attachment

- Move the patient table to the horizontal position.
- Position the patient.
- Open the clamping lever (1a).





- Place the armrest onto the front or rear accessory rail and slide it into position.
- Close the clamping lever (1b).
- Push and pull on the armrest to ensure it is seated properly.
- Loosen the cap screw (2).
- Move the padded armrest to a comfortable position.
- Tighten the cap screw (2).
- Ensure that the armrest is seated properly.
- Place the patient's arm on the armrest.

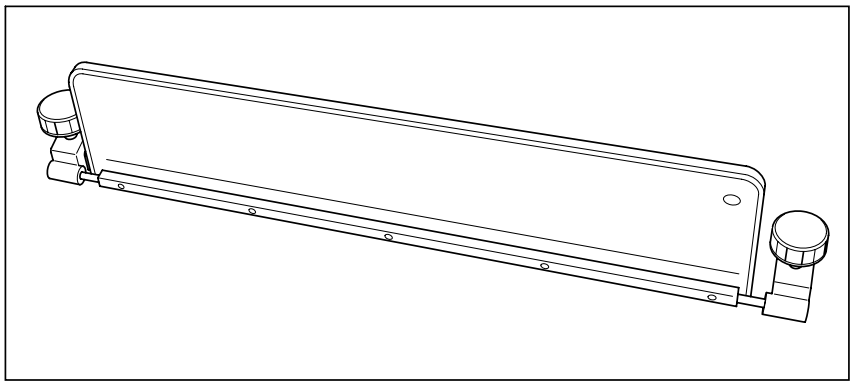


- Place the strap over the patient's arm and under the pin.
- Press down on the clamp (3).
- Ensure that the patient's arm is stabilized and comfortable.

Removal

- Move the patient table to the horizontal position.
- Pull the clamp upward and loosen the strap.
- Raise the patient's arm from the armrest.
- Open the clamping lever (1a).
- Remove the armrest from the accessory rail.

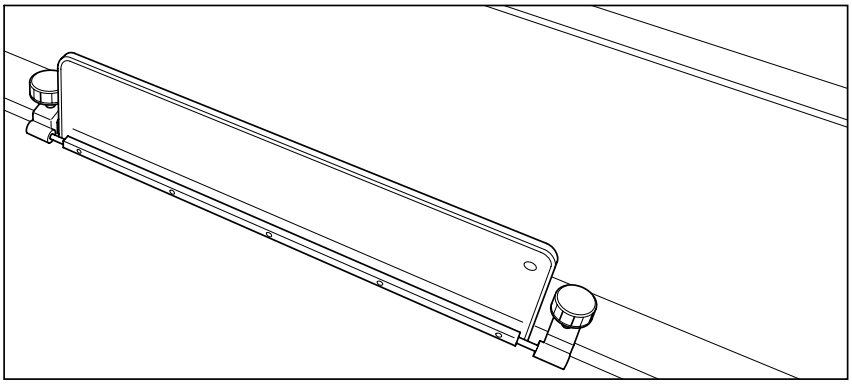
Lateral radiation shield



Application For additional radiation protection during tableside operation of exposures

Attachment

- Move the patient table to the horizontal position.
- Position the patient.
- Loosen the right and left cap screws on the lateral radiation shield.

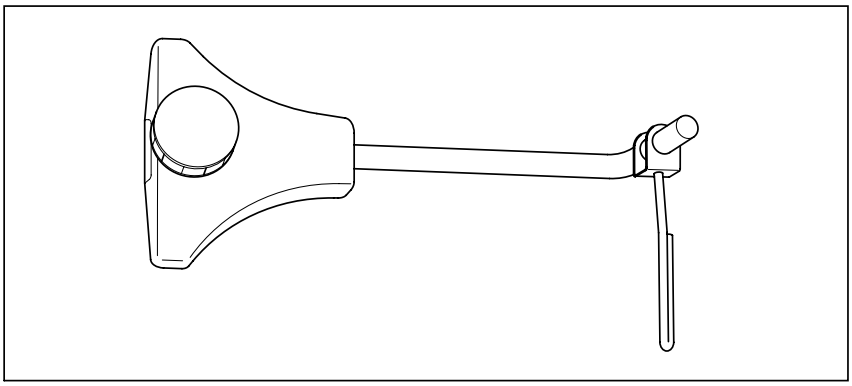


- ◆ Insert the radiation shield in the front accessory rail and slide it to the appropriate work position.
- ◆ Tighten both cap screws.
- ◆ Push and pull on the radiation shield to ensure that it is seated properly.
- ◆ Tilt the radiation shield into a protective position.
- ❑ The radiation shield can be tilted inward on the accessory rail as well as outward and all the way down.

Removal

- ◆ Move the patient table to the horizontal position.
- ◆ Tilt the radiation shield to the vertical position.
- ◆ Loosen both cap screws.
- ◆ Remove the lateral radiation shield from the front accessory rail.

Holder for BABIX cradles



Application

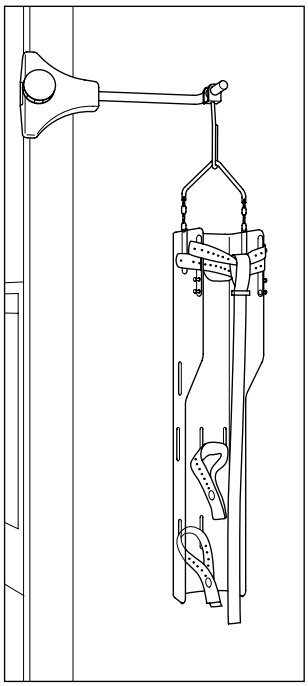
For pediatric examinations using BABIX cradles with the patient table tilted or in the vertical position

Attachment

- Move the patient table to the horizontal position;
- Slide the BABIX holder with the hook along the front or rear accessory rail to the center of the patient table and move it to the exposure position;
- Tighten the cap screw;
- Pull and push the holder to ensure that it is seated properly;

Warning

Tighten the cap screw and ensure that it is secure. Remember that the BABIX holder is the sole means of support for the hanging BABIX cradle. Securing the cap screw properly ensures that the BABIX holder will not slide down the accessory rail, thereby avoiding injury to the patient and equipment damage.



◆ Place the hanger of the BABIX cradle on the hook of the BABIX holder.

The maximum permissible load of the BABIX holder is 15 kg.

Removal

◆ Remove the BABIX cradle from the BABIX holder;

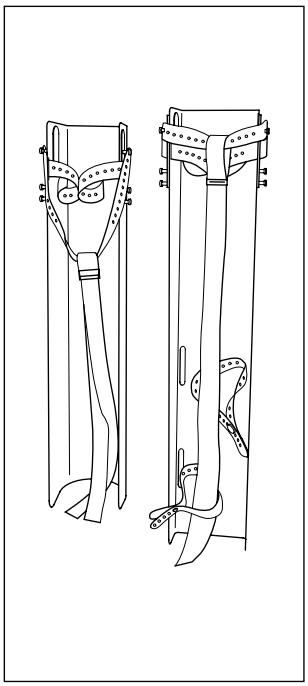
◆ Take the BABIX cradle with the infant out of the examination room and attend to the infant;

◆ Loosen the cap screw;

◆ Remove the BABIX holder from the accessory rail.

BABIX cradles

Application For pediatric examinations with the patient table in the vertical or horizontal position.



The BABIX cradles are made of transparent, radiolucent plastic.
They are available in 2 shapes:

BABIX-U:
Is suitable for examinations on the tilted to vertical tabletop in which the body of the infant must be firmly enclosed in a straight posture.
Only in connection with the holder for BABIX cradles.

Warning

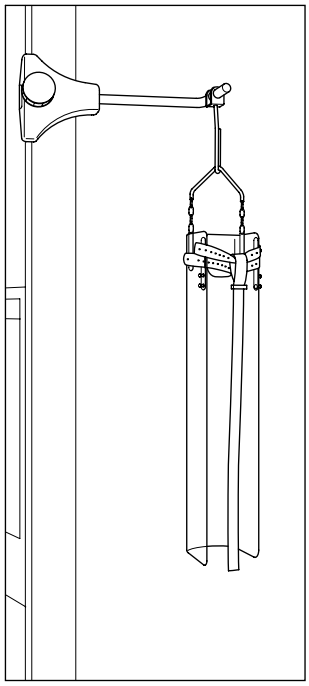
There is a danger of rolling away when placed down on the horizontal table.

BABIX-Flat:
This shape is suitable for pelvic and spinal examinations. The flat cradle can be placed safely on the table in the horizontal position.
The infant can be secured above and below the knees through the slit in the back of the cradle.
The infant can be secured in the abdominal region through slits at the sides.

Use the rubber or Velcro tapes provided for immobilizing infants.

Attachment

- Move the patient table to the horizontal or vertical position as needed;
- If the table is not in the horizontal position, insert the BABIX holder into the accessory rail, position it and secure it;
- Push and pull on the BABIX holder to ensure that it is seated properly;
- Bring the BABIX cradle with the secured infant into the examination room;



- Hang the BABIX-U cradle on the hook of the holder and position it for the examination.
- Place the BABIX-Flat cradle on the horizontal patient table in the examination position.

Removal

- Remove the BABIX-U from the holder;
- Take the BABIX cradle with the infant out of the examination room and attend to the infant;
- Hang the BABIX cradle on the corresponding BABIX rack and store appropriately.

Radiation protection value: The attenuation equivalent of the BABIX cradle is ≤1.6 mm Al.

Permissible load of the BABIX cradle:
Size 600 mm: 6 kg
Size 700/800 mm: 10 kg
Size 1000 mm: 15 kg

Information on the possibility of wear

In addition to "**Accessories**", please note the following information concerning the possibility of wear on **BABIX cradles** and their **immobilizing straps**.

- ❏ After prolonged use, cracks may form in the PVC plastic material.
- ❏ The immobilizing straps may show wear.
- ◆ Following a visual check, the defective parts have to be replaced, if necessary, or the entire BABIX cradle has to be disposed of.
- ❏ The tensile/shear strength of the welded chains, brackets and fittings has been designed so as to ensure a safety factor of 20.
- ◆ If any external damage can be seen on these parts, they must be replaced.

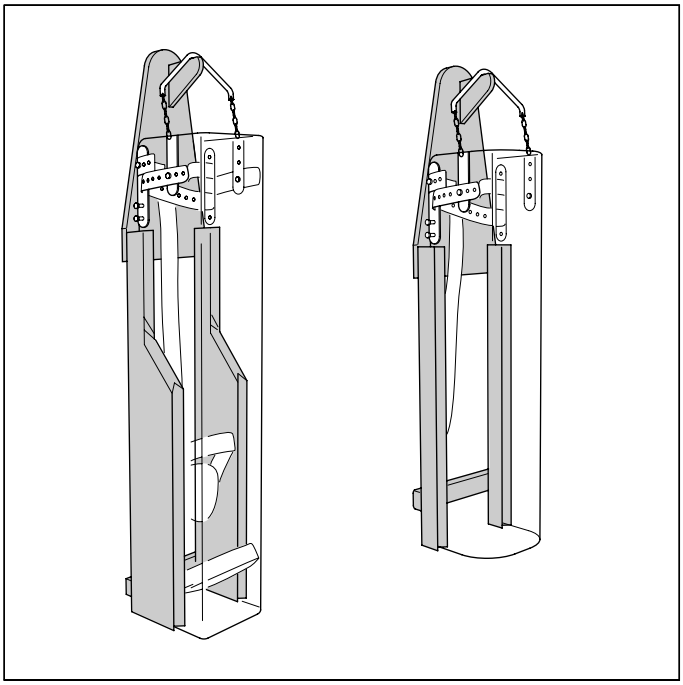
Cleaning

- ❏ The BABIX cradles can be cleaned using commercially available detergents and disinfectants.

Caution

Do not use chemical-based solvents!

BABIX hanger



Use

Storing and tensioning the BABIX cradle

There are BABIX hangers for every BABIX cradle shape and every cradle length

Mounting the BABIX hanger

- Have the wooden holder fastened to the wall with the enclosed wall plugs and screws at a suitable place in working height.

Removing the BABIX cradles

- Pull the BABIX cradle carefully out from the slot of the BABIX hanger
- Hold the cradle tight
- Lift the cradle off from the wooden hook of the hanger
- Place the BABIX cradle on a secure base
- Position the infant carefully and comfortably in the BABIX cradle
- Immobilize the infant securely in the cradle
- Check for the safe position of the infant in the BABIX cradle
- Bring the infant into the already prepared X-ray room for the examination.

Keeping BABIX cradles

- Remove the infant from the cradle and attend to the infant
- Carry the cradle to the BABIX hanger of suitable shape and length
- Hook the cradle on the wooden hook with the opening towards the hanger
- Press the cradle at the two longitudinal sides into the slot of the hanger
- Check for firm seating of the BABIX cradle in the BABIX hanger.

Holder for pediatric cradle, manual

⇨ See separate Operator Manual

This holder is now also available for Iconos R200.

Patient positioning mattress

Application

Mattress for attachment to the grip protection strip for comfortable patient positioning.

Attachment

- Attach grip protection strip to head end.
- Place the mattress on the tabletop and pull loops over the cap screws of the grip protection strip.

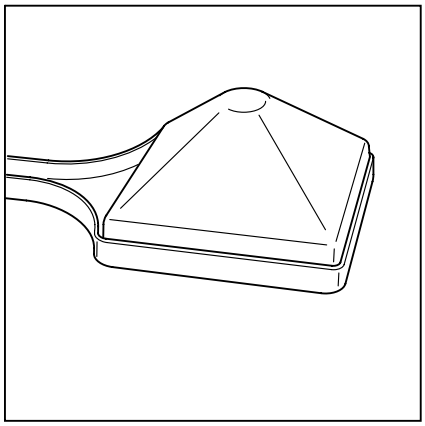
Radiation protection value:

The attenuation equivalent is $\leq$ 0.5 mm Al.

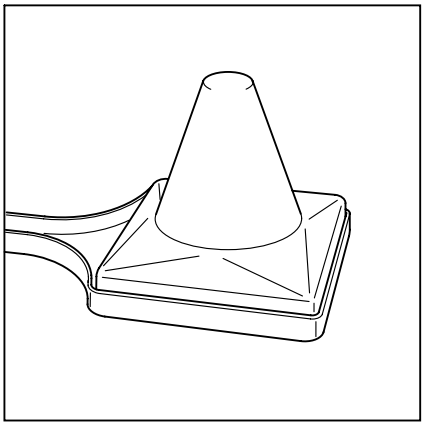
Compression cones

Application Examinations of the gastro-intestinal tract

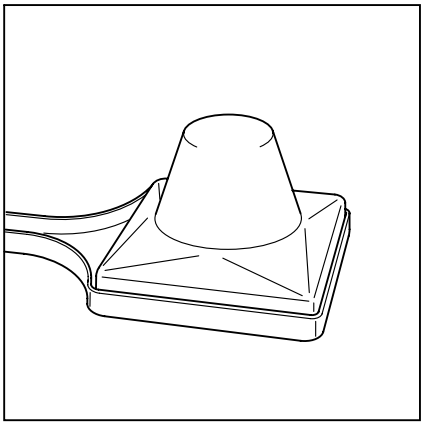
Three cone shapes are available:



pyramid (optional)



pointed cone (optional)



flattened cone (standard)

The cones are highly radiotransparent.

The cone is made of stable aluminum die-casting.

In the uppermost position of the compression carriage, the compression cones permit a shadow-free field coverage even of the largest cassette formats or I.I. diameters.

Radiation protection value: The attenuation equivalent is ≤0,25 mm AL.

Changing the cone shape

Removing

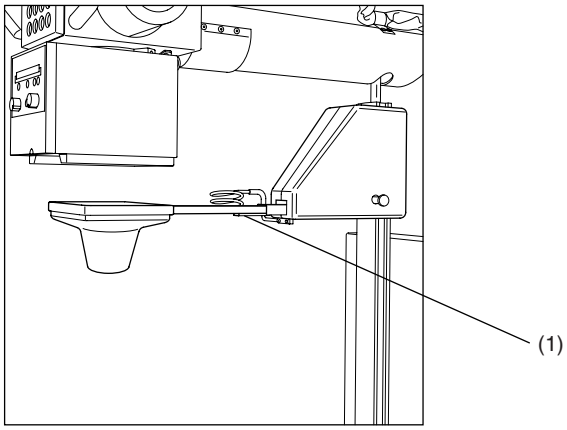
- Hold the cone arm with one hand.
- Grasp the cone with your other hand and push it out to the side from the holder.

Inserting

- Place the cone arm with the opening upwards on a firm surface.
- Insert the cone laterally and press it in until it snaps into place.

Attachment

- Move the patient table to the horizontal position.
  – The compression carriage should be in the uppermost position.
- Hold the compression cone so that it is horizontal.



- Insert the pins of the cone arm into the opening in the compression carriage up to the stop.
  – The locking lever (1) locks into place.
- Pull on the cone arm and check for firm seating of the cone arm.
- Position the patient.
- Move the cone into the compression position.

For safety reasons, the maximum compression cannot be exceeded. The compression drive is automatically shut off when it reaches the maximum compression force.

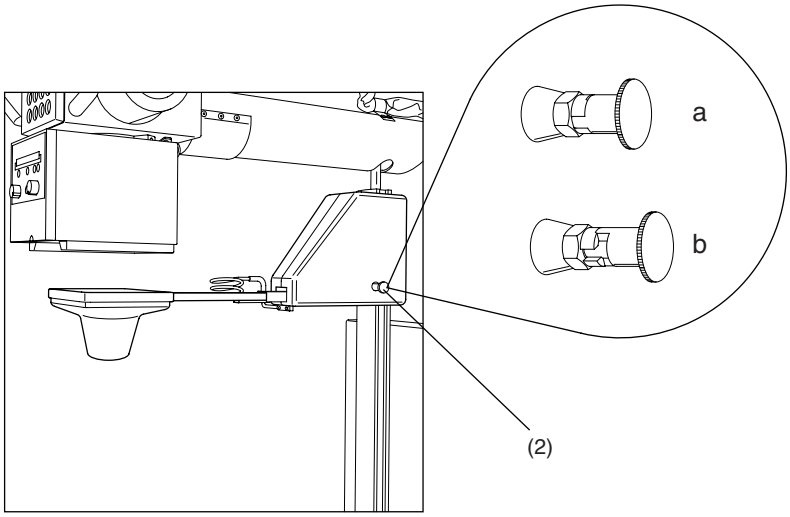
Removal

- Move the patient table to the horizontal position.
- Move the compression carriage one notch upward.
  – The cone must no longer touch the patient.
- Press the locking lever (1) and hold it until the lock is released.
- Pull the cone arm out completely.
- Move the compression carriage into the upper end position.

Patient assistance in an emergency

If decompression cannot be controlled, e. g. during power failures or system malfunctions, proceed as follows:

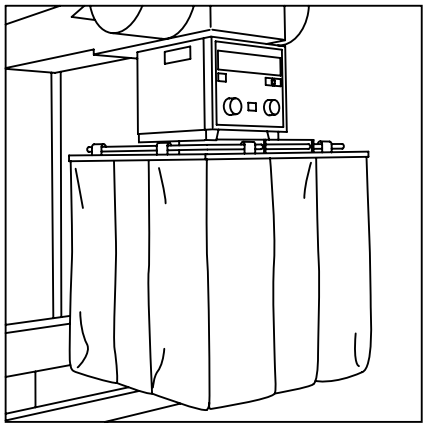
- Pull out the knob (2) and turn it by 90° until it locks into the deep locking notch (lock-in position a).
- Lift the cone arm off from the patient until it locks in position at approx. 10°.



Release the cone arm lock again:

- Press the cone arm slightly upwards and hold it.
- Pull out the knob (2) and turn it by 90° until it locks into the flat locking notch (lock-in position b).
- Let the cone arm move down slowly.

Radiation protection for tableside examinations



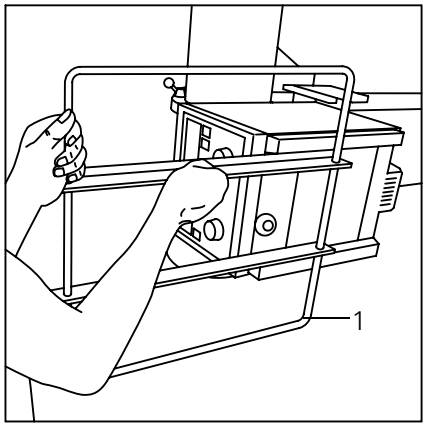
Use Additional radiation protection in tableside examinations, e.g. interventional radiography.

Warning

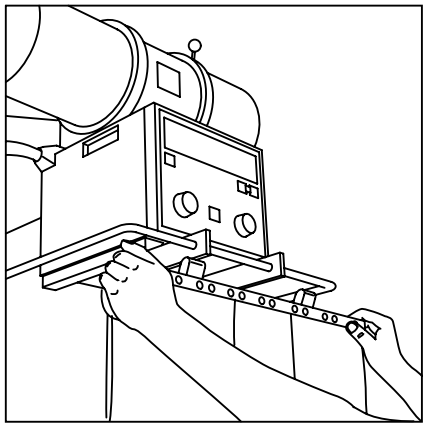
Use this radiation protection only with the tabletop practically horizontal up to max. +/- 10°. At a greater tilt there is a danger that the lead-rubber aprons will slip off and drop on the sterile covered patient.

Fastening

- Recommendation: Set the examination unit horizontal and lower the table to minimum height.



- Push the bar (1) into the upper groove of the accessory rails up to the stop.
  – When in position in the stop, a spring lever in the left profile rail engages in a notch of the bar.
- Check for the firm seating of the bar on the collimator.



- Be sure to set the examination unit horizontal (± 10°)!
- As required hook a lead-rubber apron on the front bar of the holder.
- Hook the second lead-rubber apron according to the position of the examiner on the left or right bar.

Do not exceed the maximum permissible additional weight of 70N or 7kg. This means that at the most 2 lead-rubber aprons may be hooked onto the bar.

Removal

- Unhook the lead-rubber aprons from the bars after one another and carefully place them on the side (do not kink them).
- Pull the bars out from the accessory rails of the collimator.
- Store the accessory in a suitable place.

The lead-rubber elements of this accessory are inserted in welded plastic pockets. These pockets are riveted with the rails.
The plastic pockets can be cleaned easily with mild dish-washing liquid solutions.

Radiation protection value:

The lead equivalent of the double-layer lead-rubber apron is 0.5 mm Pb at 80 kV.

Radiation protection for the upper body

General

The radiation protection window is used to reduce exposure of the examiner's upper body to scattered radiation. It is especially intended to decrease the exposure of their eyes and thyroid to radiation.

The radiation protection window is **not** designed to support additional loads! This means it is not suitable to carry any additional weight.

The radiation protection window can be moved in any direction.

Components

The radiation protection for the upper body comprises the following parts:

- ❏ Ceiling rail
- ❏ Carriage with stand
- ❏ Support arm with window pane
- ❏ Brake handle with brake shoe

Lead equivalent

The lead equivalent value is 0.5 mm (according to DIN 6813).

Handling

- ◆ The radiation protection window should be positioned so that it protects the examiner's eyes and thyroid.

Warning

Danger of collision!

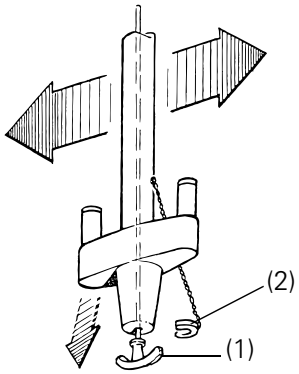
There is a risk of collision or damage due to breaking off or falling down especially during swivel movements.

- ◆ Avoid possible collisions during system movements!

Positioning

If the radiation protection window is mounted on the ceiling rail and can be moved, it is positioned using the brake handle on the stand of the carriage.

Releasing the brakes



- ◆ Pull brake handle (1).
  – The carriage can now be moved freely in the ceiling rail.
- ◆ Set it to the required position.

Engaging the brakes

- Release the brake handle.

Releasing the brakes permanently

- Pull the brake handle.
- Insert the brake shoe (2) so that the brake handle remains in the "pulled position".
  – You can now move the carriage freely in the ceiling rail.

Engaging the brakes

- Pull the brake handle.
- Remove the brake shoe.
- Release the brake handle.

While positioning the patient position the upper body radiation protection outside of the system's swivel range if you do not intend to use it.

Cleaning and disinfection

You can clean a slightly soiled lead glass pane with a lukewarm detergent solution and a soft cloth.

Heavy dirt and grime should be wiped off with a linen cloth moistened with alcohol and then rinsed with clear water.

Bloodstains are best treated with cold water, contrast medium residue with warm water.

Use disinfectants commercially available for medical use to disinfect the radiation protection device.
Then wipe it off with clear water.

Sterile cover

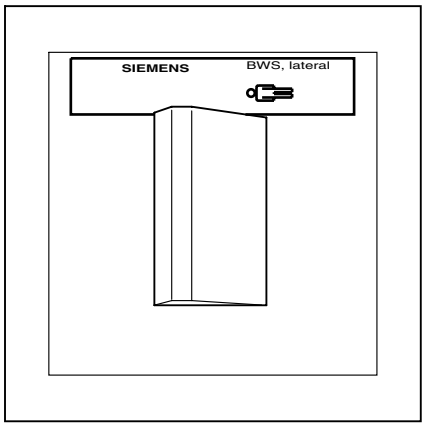
Both window designs can be provided with sterile covers[1]; contact your Siemens sales representative.

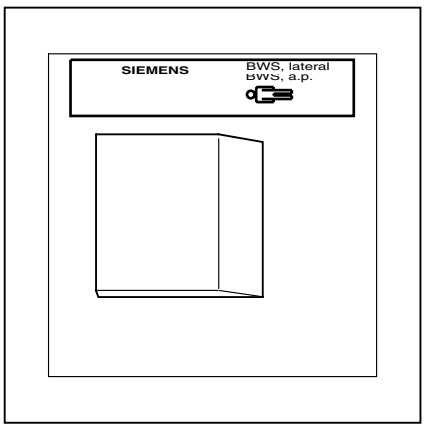
[1] optional

Compensating filters

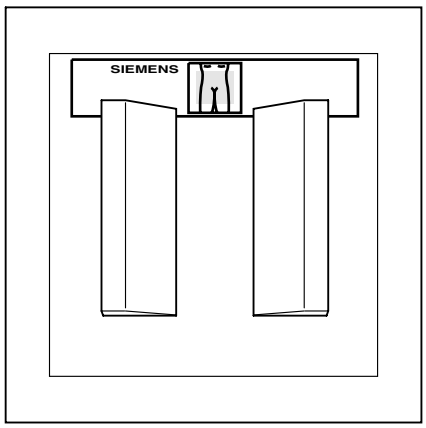
Use For absorption compensation in exposures of

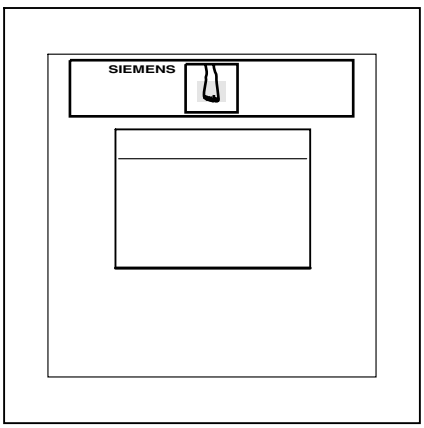
- ❏ Thoracic spine and lumbar spine
- ❏ Pelvis
- ❏ Foot
- ❏ Infant skull
- ❏ Skull
- ❏ Shoulder



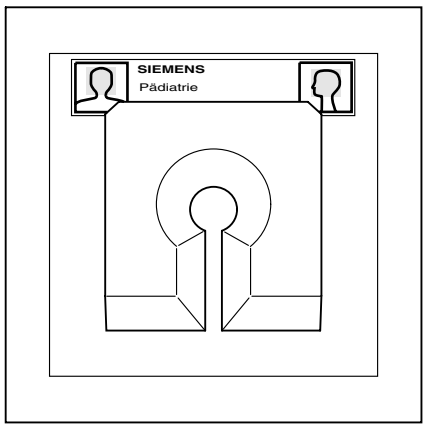


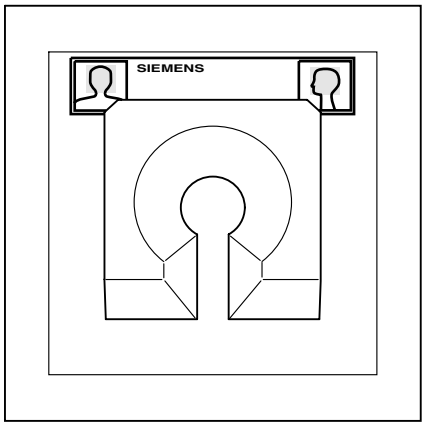
Left: thoracic spine, lat. and right: thoracic/lumbar spine, lat.



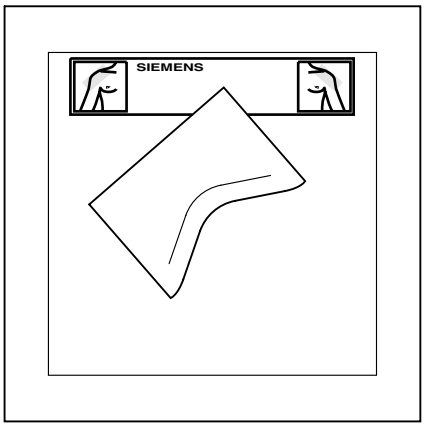


Left: pelvis and right: foot





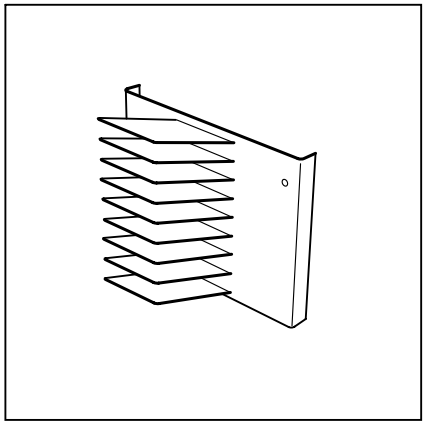
Left: infant skull and right: skull



Shoulder

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

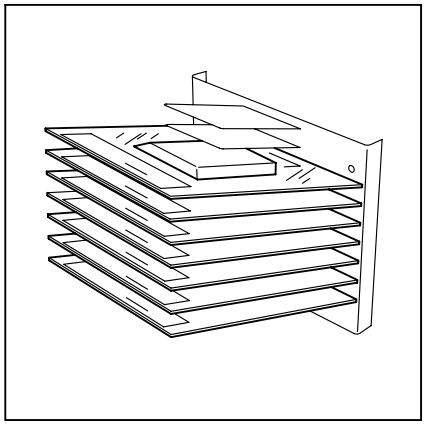
For storing a maximum of eight compensating filters

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 accesssory 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.

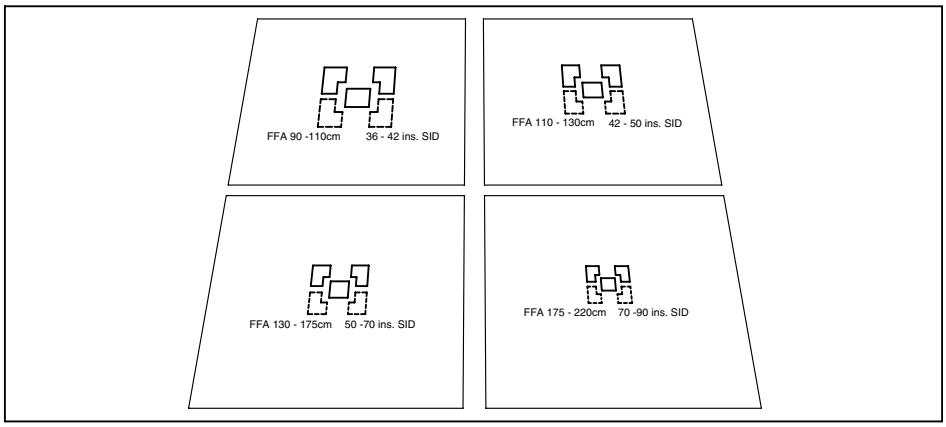
The three-field templates are available as a complete set or individually for the following SIDs:

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.

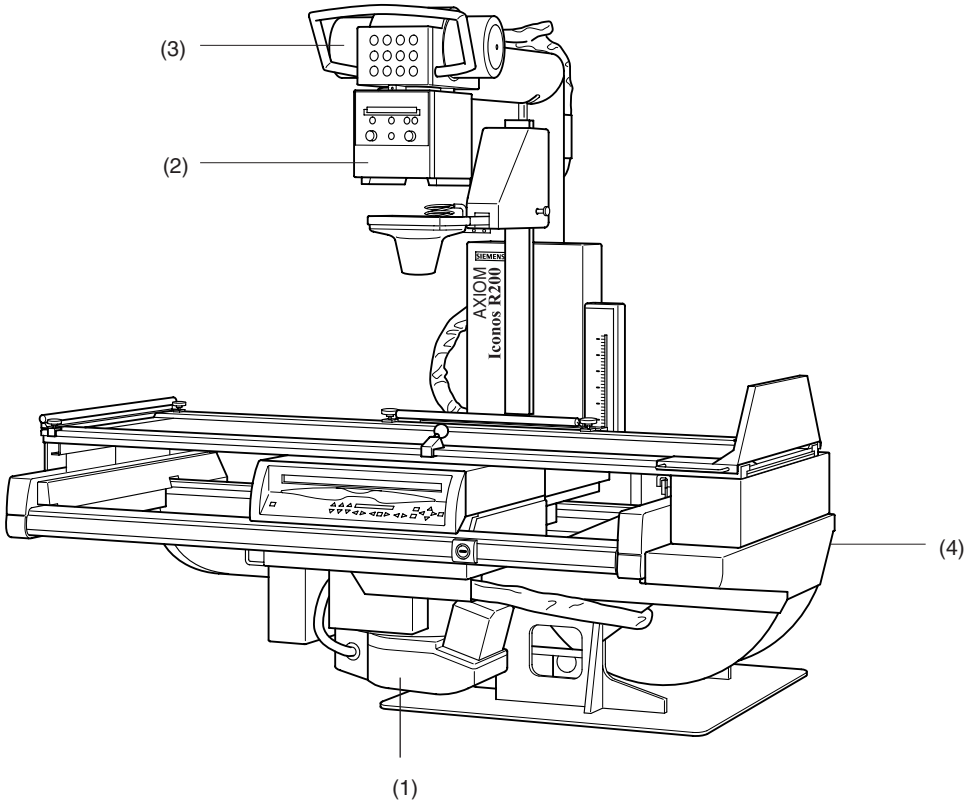
Store the three-field templates in a suitable location.

Operator Manual
Technical Description

Chapter: Identifying Labels

Chapter: Technical Data

Position of the labels



(1) Image intensifier

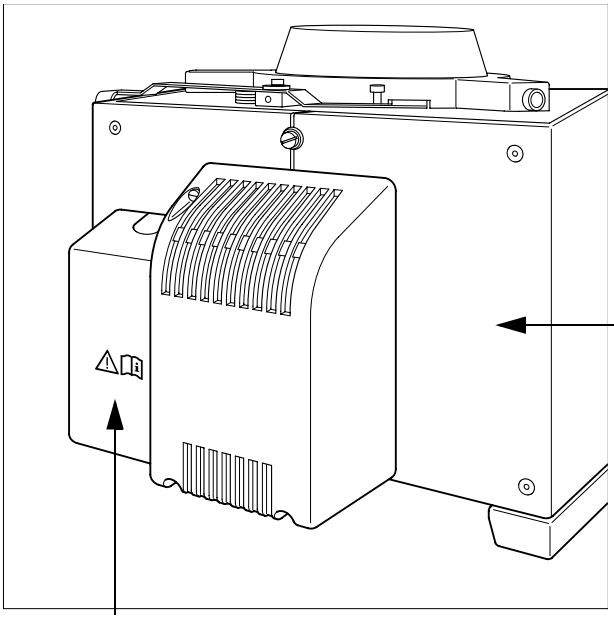
(2) Primary collimator

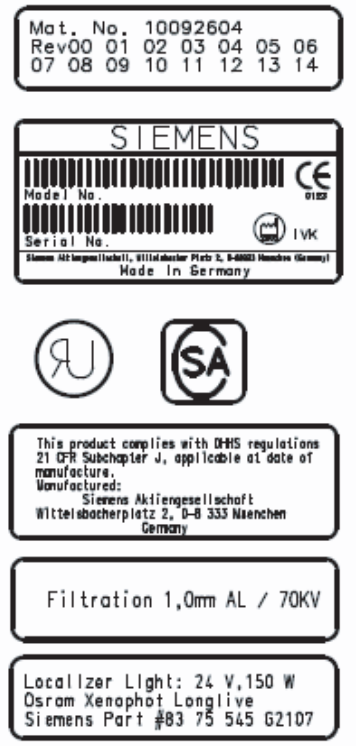
(3) X-ray tube assembly

(4) Table

Primary collimator

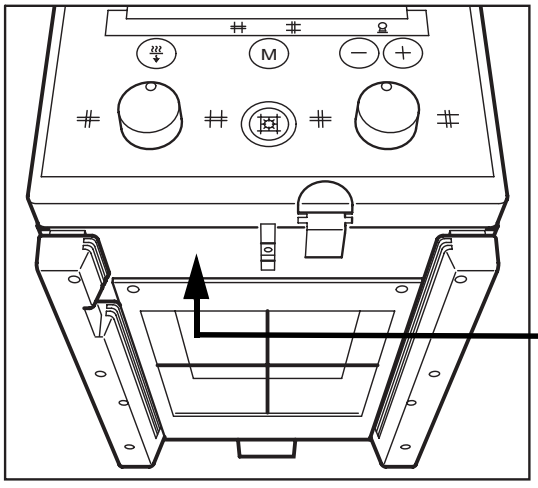
Backside

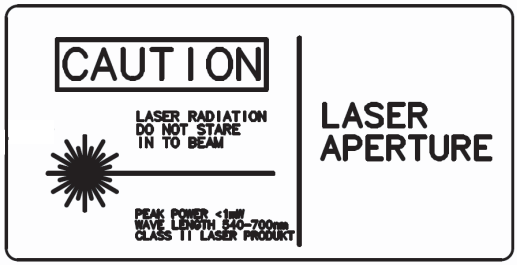




Caution: read Operator Manual

Bottom





All technical data represent typical values unless specific tolerances are stated.

System

Power connection	The entire system is connected to the power supply via the generator
Nominal voltage:	3/N/PE, 400 V[1] ± 10%
Nominal frequency:	50/60 Hz ± 1 Hz
Nominal rating:	Internal fuse 3 x 50 A slow-blow
Ambient conditions	
Operation:	+10°C to +35°C 20% to 75%, relative humidity, non-condensing 700 hPa to 1060 hPa
Storage and transport:	-20°C to +70°C 10% to 95%, relative humidity, non-condensing 500 hPa to 1060 hPa
Radio interference suppression/EMC	EN 60 601-1-2
Protection type	Protection class I, according to IEC 601 - 1
Degree of protection 	Type B
Floor space required	max. 3.80 m x 2.32 m without restrictions to movement, traffic area and safety distances min. 2.80 m x 2.32 m with restrictions to movement (max. SID 1.15 m at + 90°), without traffic area and safety distances.
Weight	Unit approx. 1300 kg; system remote control console approx. 12 kg; generator cabinet approx. 290 kg; FLUOROSPOT Compact approx. 80 kg; mobile tableside control console approx. 40 kg;
Room height	Without ceiling-mounted support at least 3.20 m; with ceiling-mounted support: 3.30 m (without restrictions of the system movement), from 2.50 m to 3.20 m with automatic movement restrictions by collision computer

[1] Pretransformer required for 440/480 V

Unit

Table and patient tabletop

Table tilt:	Motor driven, + 90° to - 17°; Tilting speed approx. 4.5°/s; min. tilting time 90° to 0°: 21 s (incl. soft start and braking); automatic stop in horizontal position (0°) can be switched on/off
Table height:	In horizontal position 89 cm with I.I. 33 or I.I. 40
Tabletop:	Dimensions: outside 210 cm x 80 cm, radiotransparent 193 cm x 55 cm attenuation equivalent: ≤0.6 mm Al at 100kV 2.7mm Al HVL ≤0.65 mm Al at 100kV 3.7mm Al HVL
Patient weight:	Maximum of 200 kg with the following restrictions: – 181 kg to 200 kg: patient lying centrally on the horizontal, not projecting tabletop; no table longitudinal and transverse movements permitted; – 151 kg to 180 kg: patient lying centrally on the tabletop, restriction of the movement speeds max. 20% and of the table longitudinal movement +/-40 cm and transverse movement to the front 7.5 cm; Trendelenburg position max. 45° with patient secured with shoulder supports and foot restraints. – 0 kg to 150 kg: no restrictions of the table longitudinal and transverse movement. In addition 50 kg for cardiac massage (CPR) in the table mid-position. The permitted nominal patient weights were defined with 4 times the test load according to IEC 601.
Longitudinal travel:	160 cm motor-driven, 80 cm each to the head and foot end; speed 6 cm/s (50 Hz) or 7.2 cm/s (60 Hz)
Transverse travel:	35 cm motor-driven, 17.5 cm each to the left and right; speed 5 cm/s

Tube assembly stand:

SID:	115 cm, 150 cm, can be set by motor drive; adjustment at approx. 5 cm/s
Oblique projection:	Max. ± 40° (SID 115 cm) or ± 35° (SID 150 cm), at max. 8°/s; fulcrum height adjustable by motor drive 10 to 300 mm above tabletop (= parallax correction of the object); automatic parallax compensation between cassette and image intensifier input screen in the central ray (only with cassette spotfilm device)
Tube assembly swivel:	Manually in the range of + 90° to - 90° with stops every 10° and -90° to -180° with stops every 30°

Cassette spotfilm device (optional)

Cassettes:	Front loading for cassettes standardized according to IEC, ANSI and DIN (metal or plastic) of the formats 18 cm x 24 cm (8" x 10") up to 35 cm x 43 cm (14" x 17"). For permissible sizes and segmentations refer to cassette program; automatic loading, centering and format sensing
Automatic format collimation:	Can be selected separately according to format height/width for cassette spotfilming; automatic formatting for Bucky exposures, object-related collimation possible after 1 to 2 seconds
Film segmentation:	Max. 4 on 1; secondary width diaphragms
Inward movement time:	Park to exposure position max. 1s (24 cm x 30 cm cassette, without lead inlay)
Transition time:	Fluoroscopy - radiographt 1s ± 15% (without filter positioning/grid movement); 1.35 s ± 15% with oscillating grid
Series technique:	With multiple segmentation and DFR
Tabletop-film distance:	7.8 cm (minimum)
Tabletop-I.I. distance:	11.8 cm (minimum)

I.I. image receptor/cassette spotfilm device (optional)

Scattered radiation grid:	Stationary 17:1, 70 lines/cm, f_0= 125 cm; Oscillation for CR cassettes configurable by Uptime Service; Motorized grid movement in or out of beam path in 4 s
Spotfilm device travel:	Max. 105 cm (remote-controlled), fine-adjustable up to max. 8 cm/s (routine) or 16 cm/s (Periscanning); PERISTEPPING option: stepping with max. 5 steps of 18 cm each (I.I. 40)
Central ray height above the floor:	77 cm to 182 cm with table tilted up (+ 90°);
Tabletop-image intensifier screen distance:	7.8 cm (minimum, I.I. image receptor only)
Distance from central beam to end of table:	minimum 42 cm (head end)
Attenuation of the useful radiation	Attenuation factor without cone m = 2,48 Attenuation factor with cone m = 2,50

Compression device (optional)	Can be remotely controlled, cone radiotransparent, detachable and replaceable (3 shapes)
Compression force:	5 to max. 155 N or 80 N[1], movement blockage starting from 50 N compression force
Speed:	Compression/decompression approx. 7.5 cm/s
Force indication:	Digital (LCD) in steps of 1 through 15 or 8[1] at the system remote control console
Cone/tabletop distance:	2 cm to 50 cm (standard cone)
Park position:	Cone in max. decompression position
Projection angle:	+ 30° to - 30°
Tomographic device (optional)	Linear tomography in all table positions with cassette (only with cassette spotfilm device) and digital (I.I.); automatic positioning of object and image receptor in the working area.
Tomographic angle/ tomographic time combinations:	8° with 0.4 s/ 0.8 s (working area 57.5 cm); 20° with 0.6 s/ 1.2 s (working area 42.5 cm); 40° with 1.2 s/ 2.5 s (working area 11.0 cm) Tomographic angle at 300 mm fulcrum height
SID:	115 cm
Fulcrum height:	10 to 300 mm above tabletop, adjustable millimeter by millimeter at 0.5 cm/s; Laser line light localizer (optional) for fulcrum height on the patient; Operation on the system remote control console and table-side

Components

Image intensifier	SIRECON 33-4HDR 4 image fields: ∅ 33 cm; ∅ 22 cm; ∅ 17 cm; ∅ 13 cm SIRECON 40-4HDR 4 image fields: ∅ 40 cm; ∅ 30 cm; ∅ 22 cm; ∅ 17 cm
TV system	VIDEOMED DHC High-resolution TV camera with maintenance-free 1K CCD sensor for digital fluoroscopy and fluororadiography
Dynamic response	max. 66 dB signal-to-noise ratio
TV matrix	Matrix 1024²

[1] configuration for Japan only

TV frame rate	max. 25 f/s; with CAREVISION 12,5; 8; 3 pulses/s
Brightness control	Constant image brightness through automatic gain control
TV standard	72 Hz progressive scan, independent of frequency VIDEOMED DH High-resolution TV camera with maintenance-free 1K CCD sensor for digital fluoroscopy, fluororadiography and DSA
Dynamic response	max. 69 dB, optimized for DSA
TV matrix	Matrix 1024^2
TV frame rate	max. 30 f/s; with CAREVISION 15; 7,5; 3 pulses/s
Brightness control	Constant image brightness through automatic gain control
TV standard	72 Hz progressive scanning, independent of frequency
Monitor	SIMOMED HM; high-line with flicker-free display 72 Hz; 44 cm or.. 54 cm screen diagonal; SIMOMED HC; 1024 lines, flicker-free display 72 Hz; 44 cm screen diagonal; LCD monitor 18"; 46 cm screen diagonal;
Tube assembly	OPTITOP 150/40/80HC-100, cover with fan.
Focal spot nominal value (ICE 60336):	0.6/1.0
Nominal power (IEC 60613):	40 kW/80 kW
Cold power:	52 kW/103 kW
Nominal voltage (IEC 60613):	150 kV
Anode angle:	12°
Anode heat storage capacity:	580 000 J (783 000 HU)
Anode rotation frequency:	Radiography: 150 Hz/ 180 Hz Fluoroscopy: 20 to 30 Hz
Mean continuous power:	max. 450 W
Total filtration (IEC 60601-1-3):	2.5 mm Al at 80 kV

Inherent filtration:	1.5 mm Al at 80 kV
Leakage radiation (IEC 60601-1-3):	<0.8 mSv/h at 150 kV/450 W in 1 m distance
Load curves:	Refer to the X-ray tube assembly operating instructions

Primary collimator

Max. field size	35 cm x 35 cm at 0.7 m SID 43 cm x 43 cm at 1.0 m SID 42.5 cm x 42.5 cm at 1.0 m SID (for collimator with DSA module)
Min. field size	< 3.0 cm x 3.0 cm at 1.0 m SID
Angle of rotation	± 50° 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)	183 mm x 232 mm x 352 mm (without DSA module) 262 mm x 233 mm x 380 mm (with DSA module)
Max. weight (without accessories)	10.5 kg to 15.5 kg (with DSA module)
Max. weight of the accessories	≤7kg
Connected load	30 - 40 V AC ; 50/60 Hz; 8A
Aperture angle	28° / 28°

X-ray generator

Line connection

Nominal voltage/ line frequency	400 V +/- 10%, 50/60 Hz three-phase (440/480 V +/- 10%,50/60 Hz three-phase via internal line-matching transformer, expansion)
Internal line resistance	POLYDOROS SX 65: 0.15 ohms (400 V) 0.18 ohms (440 V) 0.22 ohms (480 V) POLYDOROS SX 80: 0.10 ohms (400 V) 0.14 ohms (440 V) 0.16 ohms (480 V)
Nominal load	at 400 V: 34.6 kVA at 440 V: 38.0 kVA at 480 V: 41.5 kVA
Radio interference suppression/EMC:	EN 60 601-1-2
Type of protection:	Protective class I, according to IEC 601 - 1
Degree of protection:	IP 20 according to IEC 529
Ambient conditions (operation)	
Temperature range	+ 10°C to + 40°C
Relative humidity	20% to 75%, not condensing
Atmospheric pressure	70 kPa to 106 kPa
Weight	Maximum expansion: 290 kg
High-voltage wave-form	Multipulse
Output	POLYDOROS SX 65: 800 mA at 81 kV 650 mA at 100 kV (according to IEC 601) 430 mA at 150 kV POLYDOROS SX 80: 980 mA at 81 kV 800 mA at 100 kV (according to IEC 601) 530 mA at 150 kV

Fluoroscopy	Working range: Normal fluoroscopy: from 40kV/0.2mA to 110kV/4.1mA High-contrast fluoroscopy: from 40kV/0.2mA to 110kV/18mA maximum of 4 FLUO curves can be configured
Tube voltage	53 values from 40 to 150 kV In steps of half Siemens exposure points (EP) or 1 EP (configurable)
Automatic system	0-,1- point technique with continuously falling load 2-, 3- point technique with constant load 3- point technique (with IONTOMAT PL) with constant load
mAs integrator	65 values from 0.5 mAs to 800 mAs In steps of half Siemens exposure points (EP) or 1 EP (configurable)
Switching time	1- point technique: 1 ms to 5 s with mAs and time postindication 2- point technique: 2 ms to 5 s depending upon kW, mAs and kV 3- point technique: 20 ms to 5 s depending upon kW, mAs and kV in 49 steps In steps of half Siemens exposure points
Tube assembly connection	2 Siemens double-focus tube assemblies
Number of workstations	max. 5
Automatic exposure control	IONTOMAT PN with 6 measuring inputs for measuring chambers as well as multiplier connection (option) or photodiode array (PDA)
Tolerances	kV accuracy +/- 5% mAs accuracy +/- 5% or +/- 0.5 mAs, depending on which value is higher. mA accuracy +/- 5% or +/- 0.1 mA in fluoroscopy, depending on which value is higher mA accuracy +/- 10% in radiography