OMNERA® 400T

Manual-Positioning Digital Radiographic System

Operator´s Manual

Technical Publication: 0180-095-418-EN Rev. 7.1

Canon

CANON MEDICAL SYSTEMS USA, INC.

Disclaimer

The standard warranty is void if the product has been intentionally modified, or damaged by accident, abuse or misuse. Additionally, this warranty is void if untrained personnel service the OMNERA® 400T equipment.

Lost profits, downtime, goodwill, damage to or replacement of property, and any costs of repairing the OMNERA® 400T resulting from a breach of warranty are not the responsibility of Canon Medical Systems

Specifications are subject to change without notice. Not responsible for typographical errors.

Notices

Note: Photos and drawings used in this guide may be slightly different from the actual product.

Dispose of electronic equipment in accordance with local, state, and federal regulations.

Trademarks

	Rev	Date
New release	6.1	2020-09
Updated 6 Cleaning Updated 2.15 Electromagnetic compatibility (EMC) Updated 2.11 Safety Functions	7.1	2021–04

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1 Introduction

1.1 Document information

It is important to keep this document for the life of the equipment, and pass the document on to any subsequent holder or user of the equipment.

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

Training is provided by Arcoma AB. Training material is the Operation manual and the Installation and service manual.

1.1.1 System documentation

The following documentation is available for the system:

- OMNERA™ 400T Planning guide
- OMNERA™ 400T Installation and service manual
- OMNERA™ 400T Operator´s manual

1.1.2 Stylistic conventions

All warning label texts are shown in *italic* style in this manual.

All references are shown in *italic* style in this manual.

1.1.3 Document producer

This document has been produced by:

Arcoma AB
Annavägen 1
S–352 46 VÄXJÖ,
Sweden

www.arcoma.se

1.1.4 Text emphasis

WARNING!

All texts labelled with "WARNING" call attention to potential risk to health or life.

CAUTION!

All texts labelled with "CAUTION" contain information about dangerous situations and measures to avoid risk.

Note!

All texts labelled with "NOTE" contain additional information regarding the work step, and is provided for a better understanding or as a warning about unnecessary and avoidable difficulties.

1.2 Identification Labels

The figure shows the location of the identification labels on the equipment.

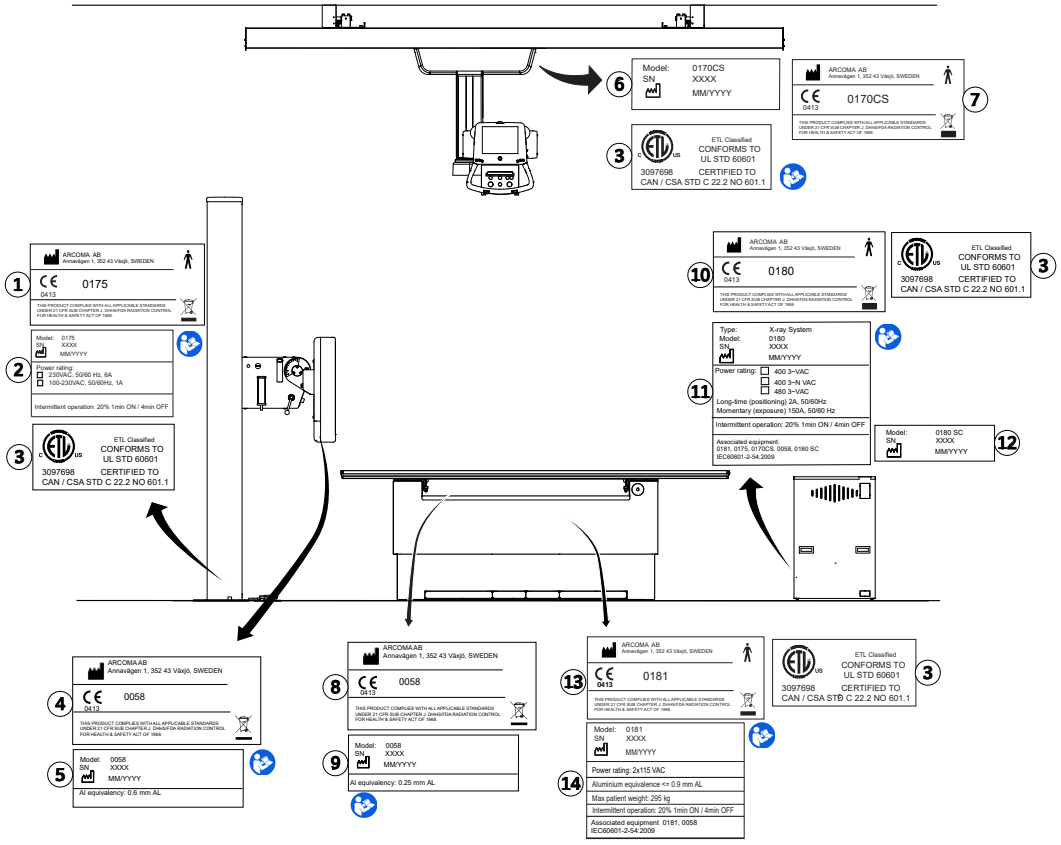


Fig. 1-1

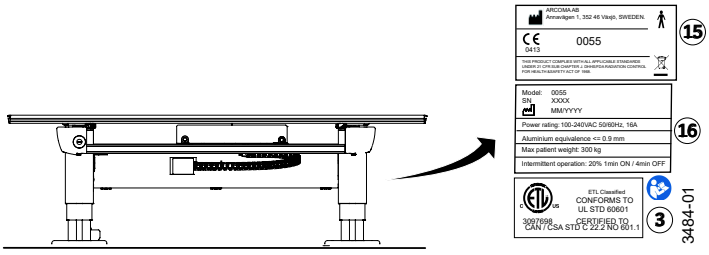
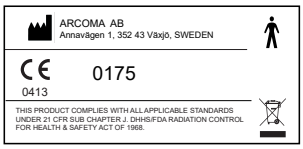


Fig. 1-2

Table 1-1 . Identification Labels

1



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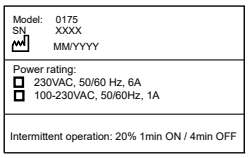

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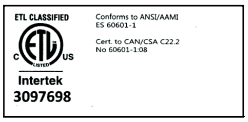

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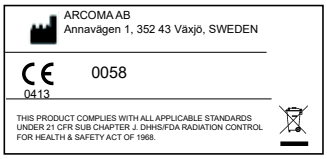

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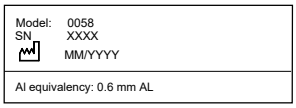

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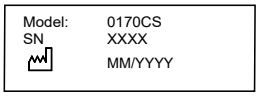

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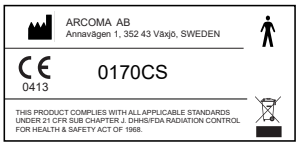

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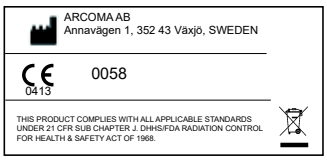

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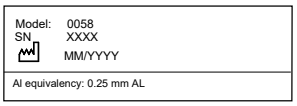

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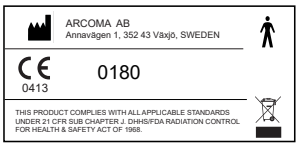

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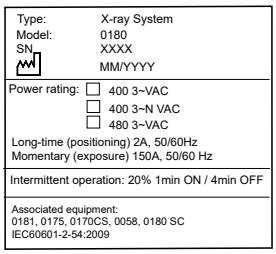

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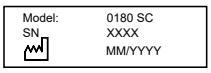

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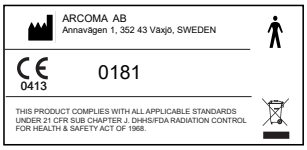

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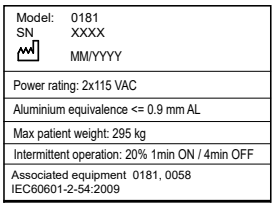

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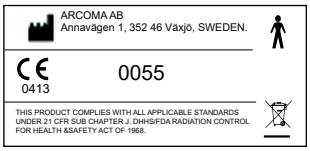

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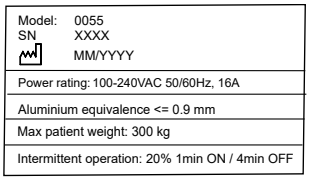


1.3 System description

1.3.1 Intended use

The system is a stationary X-ray system, intended for obtaining radiographic images of various portions of the human body in a clinical environment.

The system is not intended for mammography.

1.3.2 System Overview

The System may be configured in several different versions with a base consisting of an Image system, a cabinet and a ceiling system.

Starting with the base System, there is an option to include a Wallstand and/or a Table. There are two different Table options. The figure **Fig. 1-3** shows the main parts of a System.

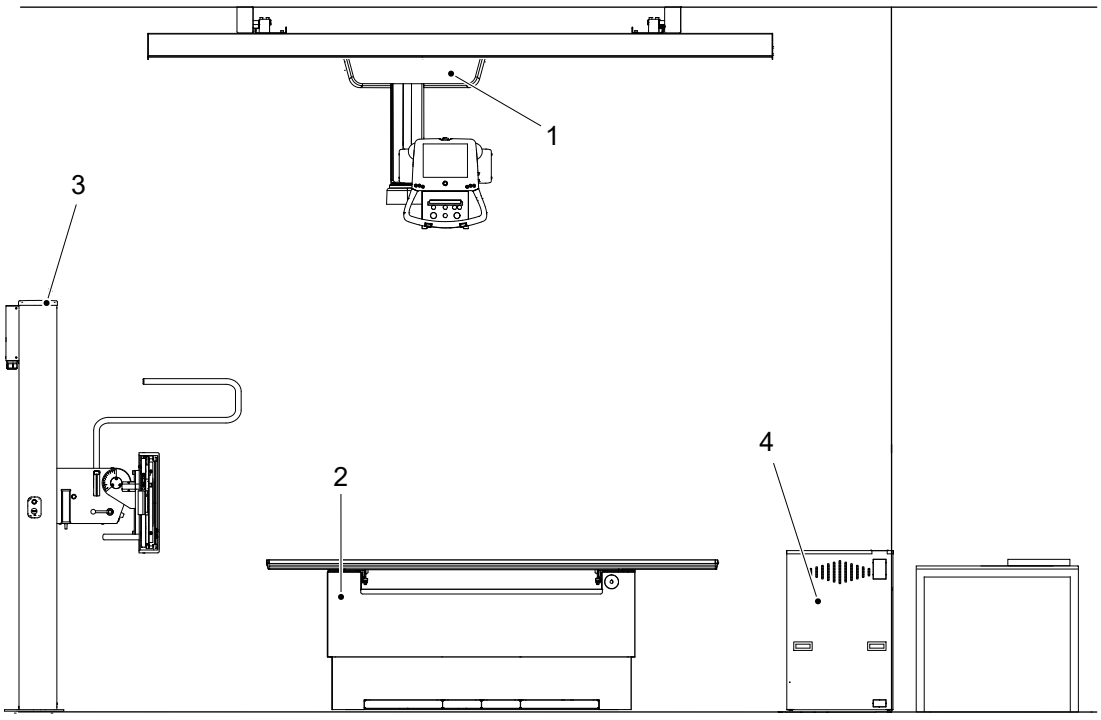


Fig. 1-3 System Overview

1. *Overhead Tube Crane (OTC)*
2. *Table (Closed table 0181 Standard or Two column table 0055 option)*
3. *Wall stand*
4. *Cabinet*

1.3.3 Overhead Tube Crane Overview

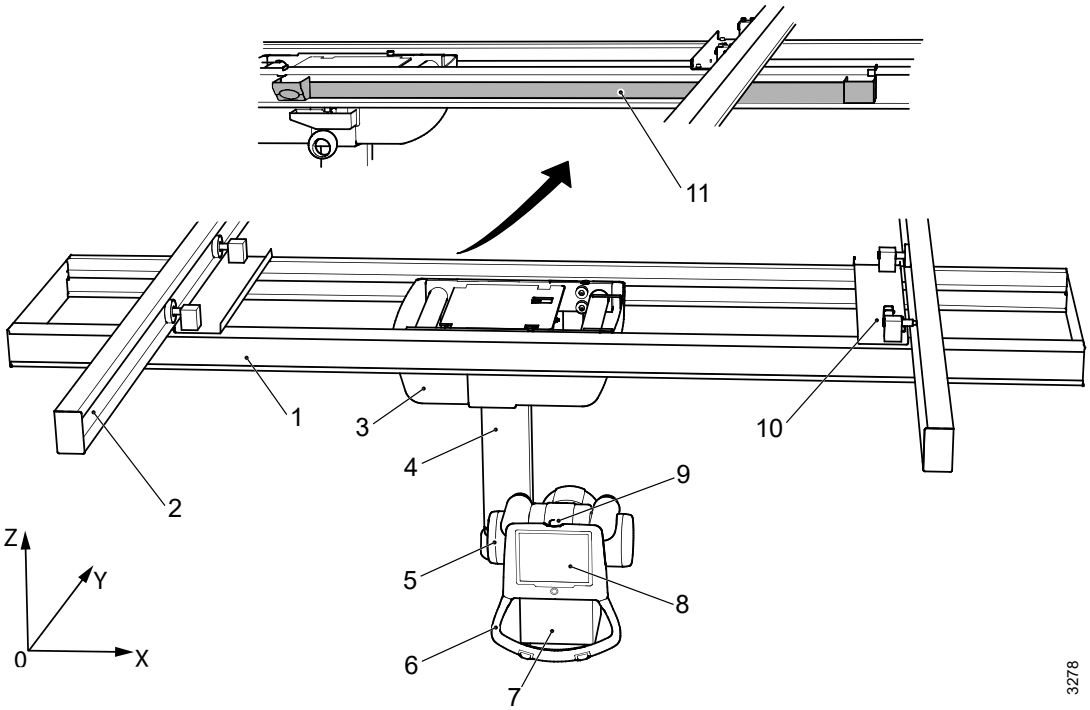


Fig. 1-4 Overview

1. *Traverse rail (X)*
2. *Ceiling rail (Y)*
3. *Ceiling wagon*
4. *Column (Z)*
5. *X-ray tube*
6. *Manoeuvre handle*
7. *Collimator*
8. *Display*
9. *Emergency stop*
10. *Distance plate and brake*
11. *Cable channel*

1.3.4 0181 Closed Table 0181 Overview

The figure shows the main parts of the closed table.

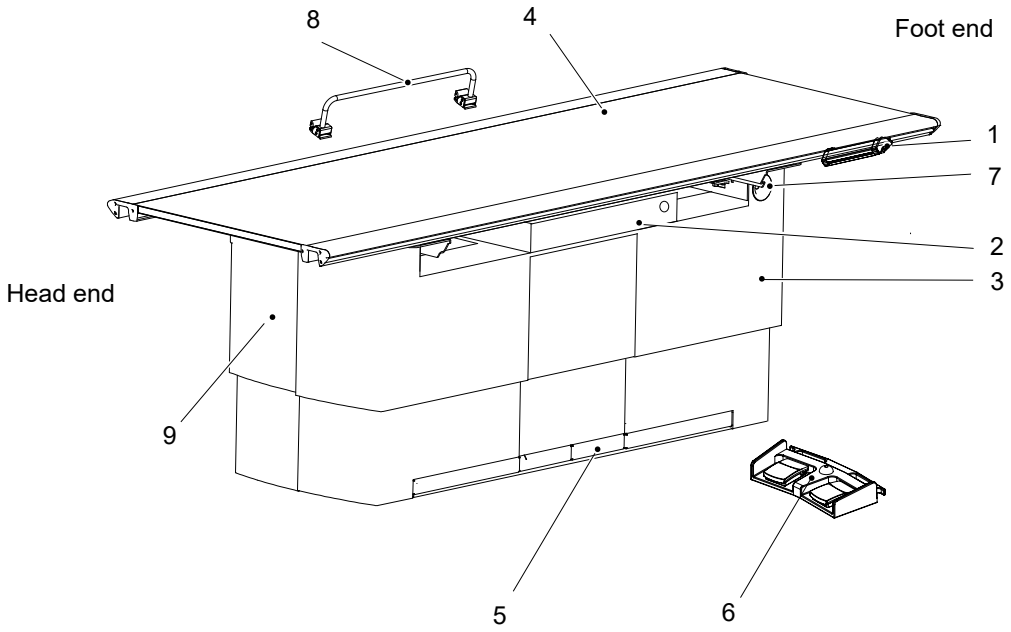


Fig. 1-5 Main parts closed table

1. *Maneuver hand control (optional)*
2. *Image receptor holder*
3. *Vertical lift*
4. *Table top*
5. *Kick box control*
6. *Foot control (optional)*
7. *Emergency stop*
8. *Patient hand grip (optional)*
9. *Cover segments for the vertical lift*

1.3.4.1 Intended Use, Closed Table 0181

The Table is intended for use in a hospital environment during radiographic diagnostic examinations, together with an X-ray tube support and an image receptor holder.

The Table is only intended to be used by trained radiographers, service technicians and product specialists

The main purpose of the Table is to supply the patient with a positioning support during a diagnostic examination and to make it possible to position the detector.

Other use of the closed table may result in potentially hazardous conditions to the operator and/or patient.

1.3.5 0055 Two Column Table 0055 Overview

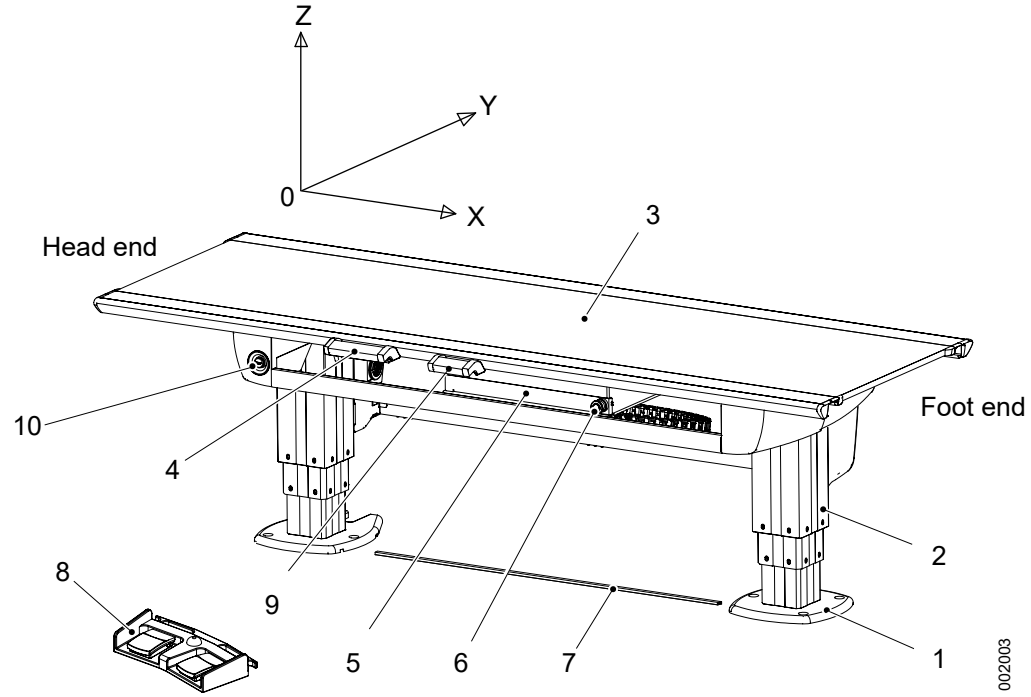


Fig. 1-6 Table overview

1. *Foot plate*
2. *Column*
3. *Table top (X/Y/Z)*
4. *Table hand control (X/Y/Z) Ceiling tube pendulum movement)*
5. *Detector holder*
6. *Brake release button for detector holder*
7. *XY foot control strip type (option)*
8. *Foot control table (X/Y/Z) (option)*
9. *Collimator hand control (option)*
10. *Emergency stop*

1.3.5.1 Intended use, two column table 0055

The two column table is only intended to be used by trained radiographers, service technicians and product specialists.

The two column table is a flexible high performance patient support system that is intended to be used in X-ray systems for radiographic examinations.

The table is intended for use in a hospital environment during radiographic diagnostic examinations together with an X-ray tube support and a detector holder.

The main purpose of the table is to supply the patient with a positioning support during a diagnostic examination and to make it possible to position the detector.

Other use of the two column table may result in potentially hazardous conditions to the operator and/or patient.

The two column table can also be supplemented with external products, such as detectors, detector holders, grids, ion chambers and accessories supplied by Arcoma AB and intended for use with the Table 0055.

The design of the two column table allows a wide range of detectors, of various types and models, to be adapted to the system. The flexibility of the two column table also ensures extensive possibilities for customizing of functions and design.

1.3.6 Wall Stand Overview

The figure shows the main parts of the wall stand.

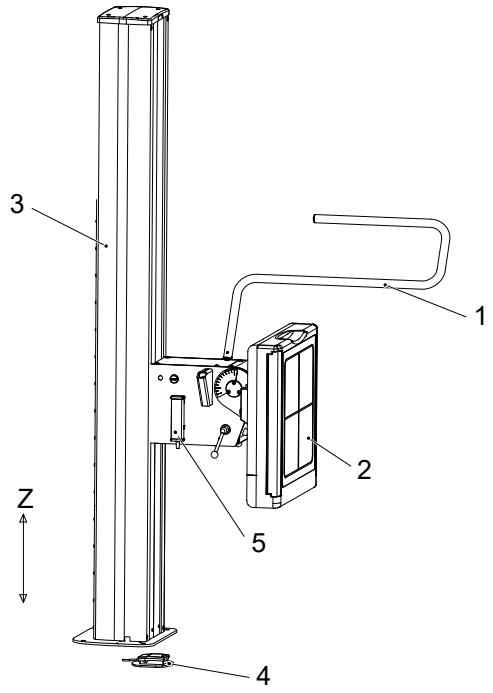


Fig. 1-7 Wall Stand Overview

1. *Lateral armrest (Accessory)*
2. *Imaging unit*
3. *Column*
4. *Standard Foot control (Brake release for manually moving the detector holder up/down) Optional Foot control (Motorized movement; Z-movement up and down and brake release)*
5. *Hand control for collimator control (Option)*

1.3.6.1 Models and Designs

The Wall stand has different options:

- Tiltable detector holder wagon.
- Motorized Z movement.
- Prepared for different types of detectors; fixed or portable in different sizes.
- The detector/receptor holder for the portable detector is available for either left-hand or right-hand loading.

1.3.6.2 Intended Use, Wall stand

The Wall stand is intended for use in a hospital environment during radiographic diagnostic examinations together with an X-ray tube support and a detector. The main purpose of the Wall stand is to hold and position the detector.

2 Safety

2.1 Compliance

External equipment intended for connection to signal input, signal output or other connectors shall comply with the relevant product standard e.g. IEC 60950–1 for IT equipment and the IEC 60601–series for medical electrical equipment.

In addition, all such combinations – systems – shall comply with the safety requirements stated in the collateral standard IEC 60601–1–1 or the general standard IEC 60601–1, edition 3.1, clause 16. Any equipment not complying with the leakage current requirements in IEC 60601–1 shall be kept outside the patient environment i.e. at least 1.5 m from the patient support.

Any person who connects external equipment to signal input, signal output or other connectors has formed a system and is therefore responsible for the system to comply with the requirements.

If in doubt, contact qualified medical technician or your local representative.

If external equipment is connected, an isolation device is needed to isolate the equipment located outside the patient environment from the equipment located inside the patient environment. In particular such a separation device is required when a network connection is made. The requirements on the separation device is defined in IEC 60601–1–1 and in IEC 60601–1, edition 3.1, clause 16.

This product conforms to DHHS radiation Standards of 21 CFR subpart J as of the date of manufacture.

2.2 Precautions, Safety

WARNING!

Do not use this device if you see smoke or notice unusual odors or noises.

If smoke, unusual odors or noise are being generated, continued use of this product may result in fire. Turn OFF the power source breaker immediately, unplug the device, and contact your nearest service representative. Do not attempt to repair it.

WARNING!

Although the precautions indicated on this device or in this document or device Manuals are provided based on various considerations, unpredictable events may still occur.

While operating this product, pay constant attention to possible hazards in addition to observing the instructions.

WARNING!

The equipment is intended for use in radiographic examinations and under the guidance of trained health care professionals. Operating personnel must be familiar with the equipment and the instructions given in this Manual before using the equipment.

WARNING!

Safety devices must not be removed or modified. Any modification or removal will immediately impair the safety.

WARNING!

All motorized movements shall be supervised by trained personnel.

WARNING!

Risk of electrical hazard or damage to the system

- ***Before cleaning or disinfection, switch off the system to prevent electric shocks, for exceptions see 6.1.1 Cleaning and Disinfection Permitted with System Switched ON***
- ***Do not spray or pour cleaning liquid on any part of the system.***

  Use a lint-free cloth moistened with a moderate amount of liquid to avoid that cleaning liquids seep into the openings of the system, e.g., air openings, gaps between covers.
- ***Do not restart the system if cleaning liquids have leaked in.***

Risk of electrical hazard or damage to the system

CAUTION!

After using the device, return the switches and dials to the original positions using the specified procedures, and turn the power OFF.

CAUTION!

Do not use any flammable or explosive gases near the device.

CAUTION!

Before using this device, read the Manuals supplied with the devices in order to understand functions, operation, and performance. Follow the Manuals for correct procedures.

CAUTION!

Before using the device again after a prolonged discontinuance, check that the equipment operates correctly and safely.

CAUTION!

Be sure to observe the precautions indicated on this device or in this document or device Manuals. Failure to observe them can cause personal injury or damage to this device.

CAUTION!

While using the device, always keep an eye on all devices and patients in order to detect unfavorable conditions.

CAUTION!

The System is provided with air intakes and outlets to prevent the equipment from overheating. Do not block these air intakes and outlets.

CAUTION!

When operating this device, be sure to follow the instructions and procedures described in this document and the device Manuals.

CAUTION!

Always be careful, when handling loose objects so they will not fall down on patient or at the surrounding articles. This may cause injury to the patient or damage at the System.

CAUTION!

When using this device, be sure to observe the installation environment requirements (temperature, humidity, and power rating conditions, or restriction of use near a device generating strong magnetic or electromagnetic waves).

CAUTION!

The installation environment and location, device configuration, network, power supply, and other conditions are optimized for this device. If you want to change any condition, contact your nearest service representative. Otherwise, the functions and performance of this device may be impaired.

CAUTION!

Preferably, no objects shall be positioned within the working area. If this is necessary, they must be removable.

CAUTION!

Do not put liquids, or foreign objects such as pins and clips into the equipment. Otherwise, fires, electric shocks, or malfunctions may result. If any foreign objects have fallen into the equipment, turn OFF the power source breaker immediately and unplug the equipment. Contact your nearest service representative.

Never disassemble the device.

CAUTION!

The display must not be used for diagnostic purposes.

CAUTION!

If cracking or breakage occurs on the display, immediately stop using it. Never use it when the display is damaged.

CAUTION!

If the touch panel is broken, and the liquid inside it is leaked, do not put it into your mouth. If the liquid is put on the part of your body or clothes, immediately wash it off in soapy water.

Note!

The following radio interference standards apply to this equipment: Voluntary Control Council for Information Technology Equipment (VCCI) Class B.

Note!

The following radio interference standards apply to this equipment: Federal Communications Commission (FCC) Part 15 Class B.

2.3 Qualifications of personnel

WARNING!

The equipment is intended for use in radiographic examinations under the guidance of trained health care professionals. Operating personnel must be familiar with the equipment and the instructions given in this manual before using the equipment.

CAUTION!

Federal law restricts this device to be sold by or on the order of a physician.

2.3.1 Operating personnel

Before using the product it is required that the operating personnel is thoroughly familiar with the product and its operating instructions, in particular:

- Safety
- Function and safety check list

Note!

It is the responsibility of the owner to ensure that the product is operated only by trained radiologist, service technicians or product specialists.

2.3.2 Service personnel

The equipment shall be serviced only by qualified personnel who:

- is completely familiar with the system
- has read and understood *Operation Manual* and *Installation and Service Manual*.
- knows how to remove power to the unit in case of an emergency
- is trained in the use of equipment and procedures of this type.

Failure to follow the instructions given in this Manual could result in serious injury to the service person, patient and operator.

Note!

It is the responsibility of the owner to ensure that the technicians have the correct training and knowledge to perform service and maintenance.

2.4 Service and Maintenance

WARNING!

Always turn off the power and lock the main switch before service or maintenance.

WARNING!

No service is allowed while the system is in use with a patient.

Note!

When service or maintenance will be performed, the technician shall lock the equipment from all energy sources.

The equipment must be checked according to the *Function and Safety Checks Instructions* to maintain reliability and serviceability, and to ensure the safety of the patients, the operator and third parties.

If national rules or regulations specify more frequent checks and/or maintenance, such regulations must be observed.

2.5 Installation and repair

WARNING!

To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING!

No modification of this equipment is allowed.

CAUTION!

Only service technicians are allowed to open the covers.

CAUTION!

Do not remove, disassemble, change, modify, repair, or add any part.

CAUTION!

When installing this equipment in a different location, contact the manufacturer or the designated dealer.

Modifications of, or additions to, the product must be made in accordance with the legal regulations and generally accepted engineering standards.

The manufacturer cannot assume responsibility for the safety features and for the reliability and performance of the equipment, if:

- installation of equipment expansions or modification are not approved by the manufacturer.
- installation of equipment expansions or modification are not carried out by persons authorized by the manufacturer.
- components are not replaced by original spare parts in case of a malfunction.
- the electrical installation of the room concerned does not meet the requirements or the corresponding national regulations.
- the product is not used in accordance with the operating instructions.

2.6 Safety and Warning Symbols

The following symbols are used for the product.

	Attention consult accompanying documents.
	To signify a general warning. This symbol is used in various places throughout the Manual where special precaution shall be observed.
	Type B applied part.
	Protective earth terminal.
	Earth terminal.
N	Connection point for the neutral conductor on permanently installed equipment.
	Squeezing hazard.
	This symbol indicates compliance of the equipment with Directive 93/42/EEC.
	Separate collection for electrical and electronic equipment.
	Manufacturer
	Manufacture date producer
	To indicate the emission or the imminent emission of X-radiation.
	Marking on the emergency stop button. Activation of the actuator interrupts all mechanical movements and prohibits exposures.

2.7 Safety and Warning Labels on the Equipment

WARNING!

Table;

Squeezing hazard can occur between the:

- ***Table top and the top of the detector holder***
- ***Detector holder rail and the detector holder***
- ***Vertical lift segments when moving in Z-direction down***

The figures shows the location of the safety and warning labels.

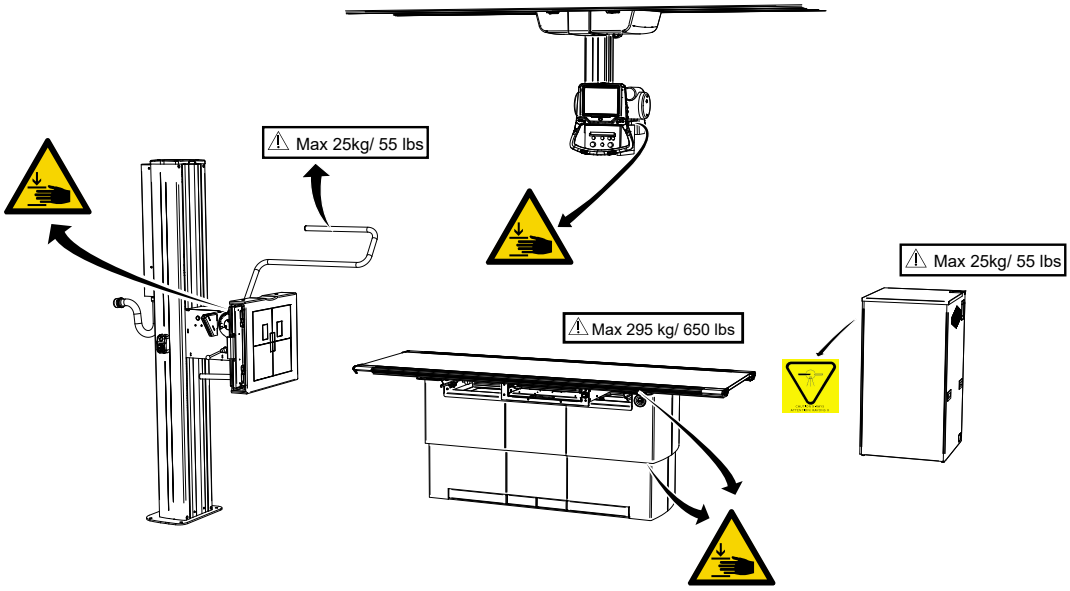


Fig. 2-1 Location of the Safety and Warning labels, with table 0181

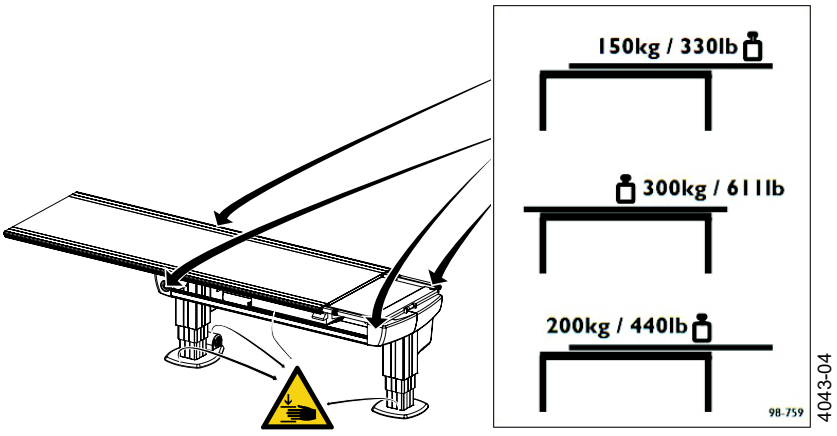


Fig. 2-2 Location of the weight restriction labels and warning labels, table 0055

Possible squeeze hazard areas are indicated in the figures above.

2.8 Emergency Stop

Note!

It is recommended to train the operator regularly in the use of the emergency stop function so the operator feels confident in using it.

The System has five emergency stops; one on the Ceiling suspended X-ray tube support, two on each side of the Table (at the head end), and two on the wall stand.

Pressing one of the emergency stop buttons, immediately cuts the power to all motorized movements. The emergency stop is also connected to the generator. The emergency stop will prevent a new exposure and terminate an ongoing exposure.

To reset the emergency stop position, turn the emergency stop button clockwise. The button is released and the system is ready for use again.

There are additional external emergency stops as option.

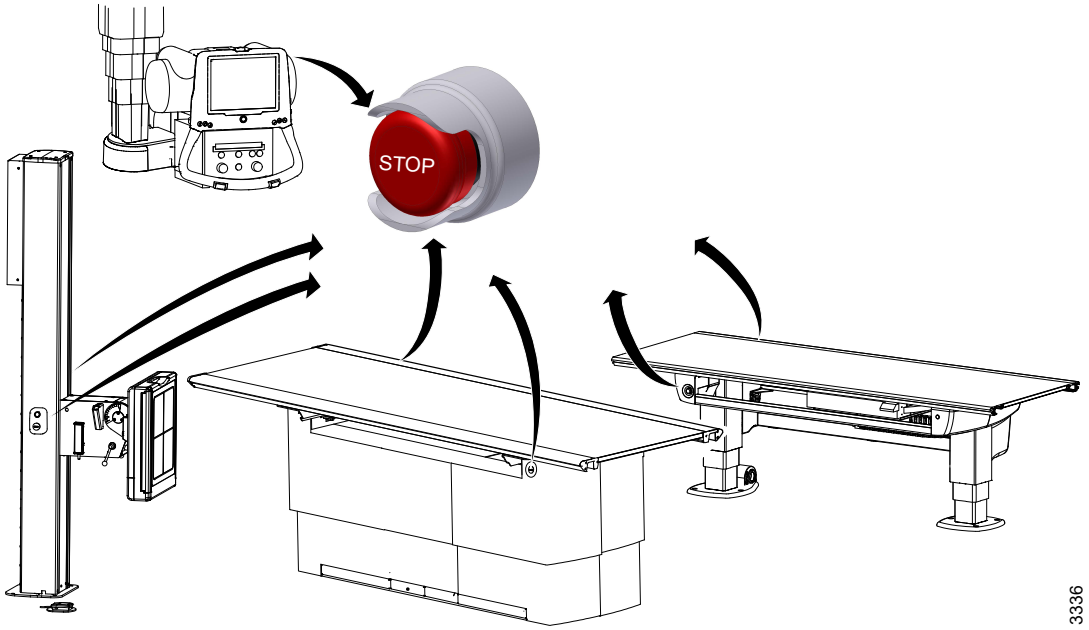


Fig. 2-3 Emergency Stop Positions

2.9 Radiation and X-ray Tube

WARNING!

Make sure that the patients, the operators and third parties are protected against unnecessary X-ray radiation according to the local regulations.

WARNING!

The surfaces on the Collimator and the X-ray tube can be warm. The collimator temperature will not reach 60 degrees Celsius, but the X-ray tube may be up to 85 degrees Celsius.

WARNING!

Verify that correct filter is used during exposure.

WARNING!

Make sure that the SID shown in the display corresponds to that shown on the collimator.

Note!

Audio and visual communication must be possible between the operator and the patient when exposure is performed.

Note!

The X-ray beam must never be outside the boundaries of the detector holder.

2.10 Mechanical Safety

WARNING!

Tracking is only allowed under supervision of personnel.

WARNING!

Squeezing hazard can occur between column segments and beta rotational assembly interface.

WARNING!

Squeezing hazard can occur between the column and the plastic corner around the alpha movement.

WARNING!

Squeezing hazard can occur between support arm and high tension cable inlet to the tube.

WARNING!

All obstacles placed within the working area, must be moveable for easy patient release. This is necessary due to the squeezing hazard.

Note!

Surrounding equipment are not subject of the collision warning.

2.10.1 General

It is the operator's duty to ensure that any danger to the patient and/or third person is prevented, before movements are released.

2.10.2 OTC, Mechanical Safety

WARNING!

Make sure that the personnel who are trained in the use of the equipment are beside the patient for support, to avoid any potential risk of injury when handling the OTC, for example squeezing between the Wallstand/Table.

WARNING!

All motorized movements shall be supervised by trained personnel.

CAUTION!

The IR sensor underneath the Ceiling stand is exclusively intended for Table protection. It is not intended for patient protection.

Possible squeezing hazard areas are indicated in **Fig. 2-4**.

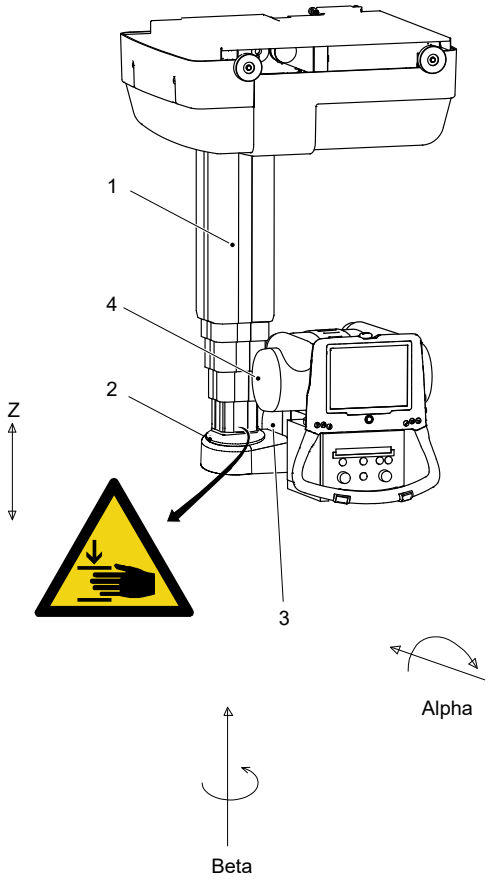


Fig. 2-4 Mechanical Safety

1. *Column (Z)*
2. *Column bottom plate*
3. *Cover*
4. *X-ray tube*

Squeezing hazard can occur between the:

- column (1) and the column bottom plate (2) when the column is moving upward (Z-direction).
- cover (3) and the column (1) when the X-ray tube (4) is moving in beta direction.

2.10.3 Mechanical Safety, Table

2.10.3.1 Safety Issues when Placing the Patient, Table

WARNING!

The hospital bed shall be placed in direct contact and in the same height as the Table, to avoid any potential risk of injury during transfer of the patient.

WARNING!

Due to squeezing hazards, the patient shall always have their extremities placed over the table top.

WARNING!

Be aware of unwanted motion when releasing the brakes.

WARNING!

To avoid any potential risk of injury when handling the product. Make sure that personnel trained in the use of the equipment, is at the side of the patient for support.

WARNING!

If a fully extended table top is subject to extreme forces laterally, there is a risk for damage to the floor attachment. Contact the Manufacturer for further information about the attachments.

Note!

Do not lean against the table top when the table top is floating.

WARNING!

Squeezing hazard can occur between the:

- ***table top and the top of the detector holder***
- ***table top and the detector holder rail***
- ***detector holder rail and the detector holder***
- ***detector holder and the cover***
- ***vertical lift segments when moving down in Z-direction (closed table)***
- ***columns and the footplate (two column table)***
- ***cover and the column foot cover***
- ***detector holder and vertical lift segment***

Possible squeezing hazard areas and placement of warning labels:

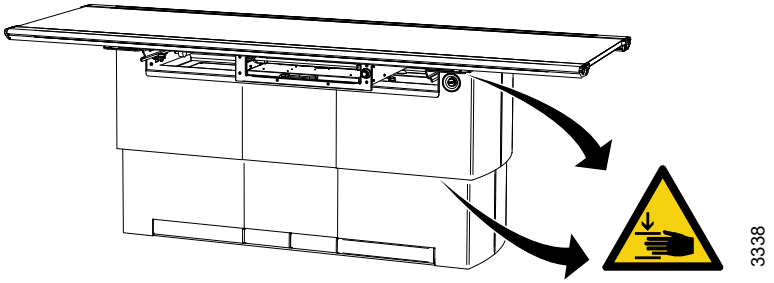


Fig. 2-5 Closed table 0181

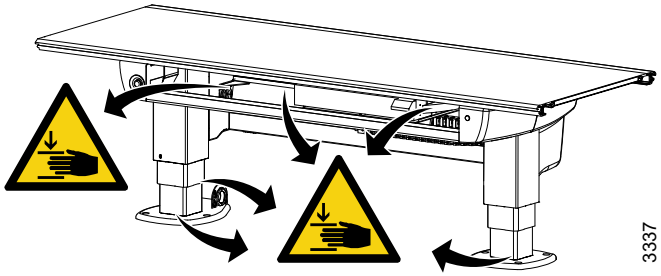


Fig. 2-6 Two column table 0055

When transferring the patient from the hospital bed to the X-ray Table, the table top has to be locked and centered over the Table. To avoid any potential risk of injury during transfer of the patient the hospital bed shall always be placed in direct contact and in the same height as the X-ray Table.

To reduce the lateral forces on the Table the operator shall be placed on the opposite longitudinal side of the patient and the hospital bed. The operator shall then drag the mattress with the patient from the hospital bed to the x-ray Table.

Note!

Wheelchair patients shall always be placed outside the working area, when operating any motorized movement.

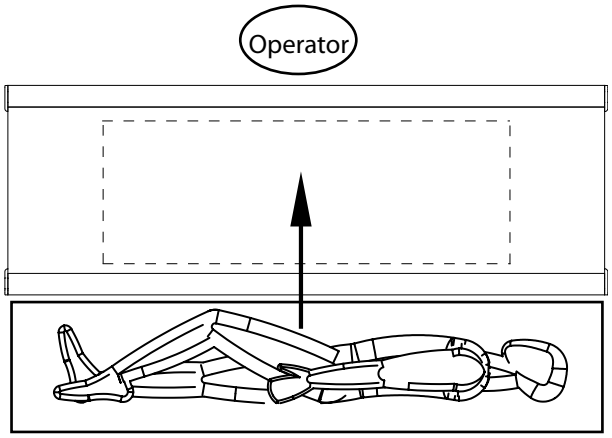


Fig. 2-7 Transferring patient to Table

The figure shows the placement of the table top, the operator and the patient when transferring the patient to the X-ray Table.

When transferring the patient back to the hospital bed, the operator shall be placed in the opposite place near the hospital bed.

2.10.3.2 Weight Restrictions Table 0181

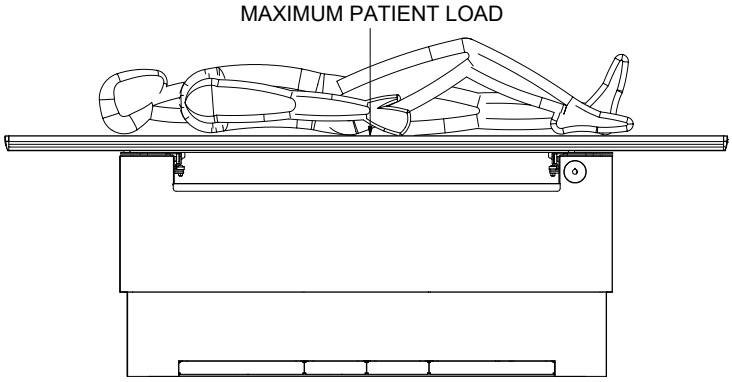


Fig. 2-8 Maximum patient load, patient centered

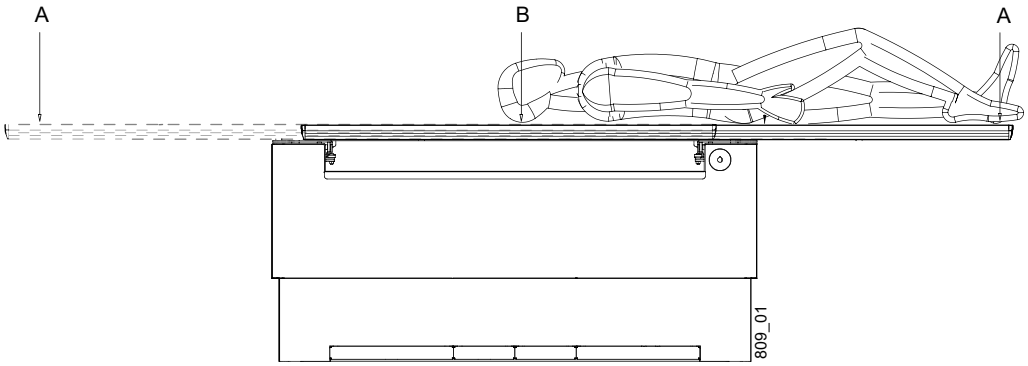


Fig. 2-9 Maximum patient load, position A – B

Table 2-1

Pos.	**Model 0181–1**
A	200 kg / 440 lb
B	295 kg / 650 lb

2.10.3.3 Weight Restrictions Table 0055

The following figures show the maximum load at different positions of the table.

When the table top is centered over the table frame, the maximum load of a patient either lying or sitting is 300 kg/, 611 lb, see **Fig. 2-10**

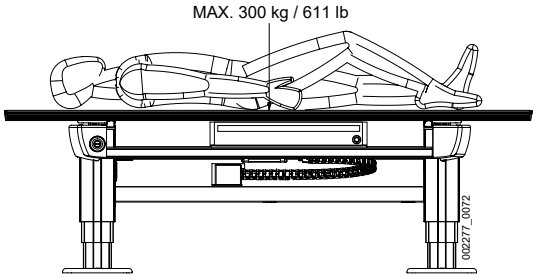


Fig. 2-10 Maximum patient load, patient centered

When the table top is positioned outside the table frame, the maximum load of at patient lying on the table top is 200 kg/ 440 lb and the maximum load of at patient sitting on the table top is 150 kg / 330 lb.

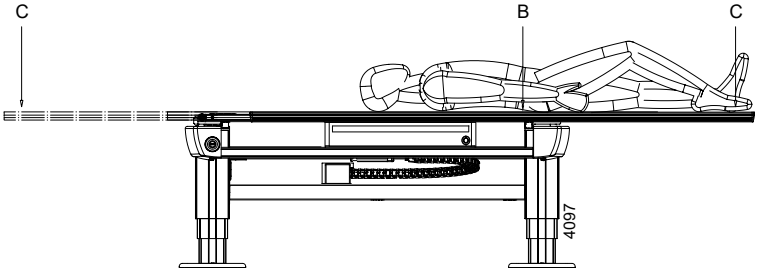


Fig. 2-11 Maximum patient load position B – C

Table 2-2

Pos.	**Model 0055**
B	200 kg / 440 lb
C	150 kg / 330 lb

The table frame is marked on the upper side with the maximum weight when positioning in outer positions, see **Fig. 2-12**

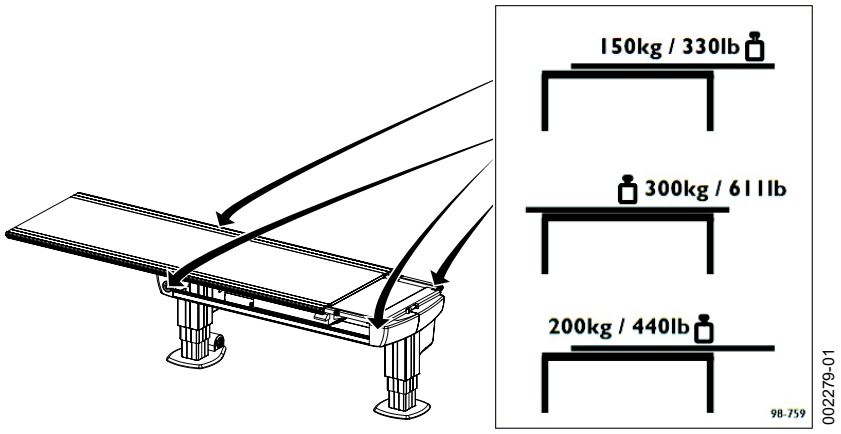


Fig. 2-12

2.10.3.4 Working Area, Table 0181

WARNING!

Due to squeezing hazard, when operating any motorized movement — when not placed on the Table — patients shall always be outside the working area.

WARNING!

All obstacles placed within the working area, must be moveable for easy patient release. This is necessary due to the squeezing hazard.

CAUTION!

To avoid any injuries to patient, user or System, peripherals should always be placed outside the working area.

The working area is the size of the table top including the stroke length of the table top in the X- and Y-direction. The measurements in the figure show the length of stroke in the X- and Y-direction. The dimensions have some tolerances and can differ from the Manufacturer.

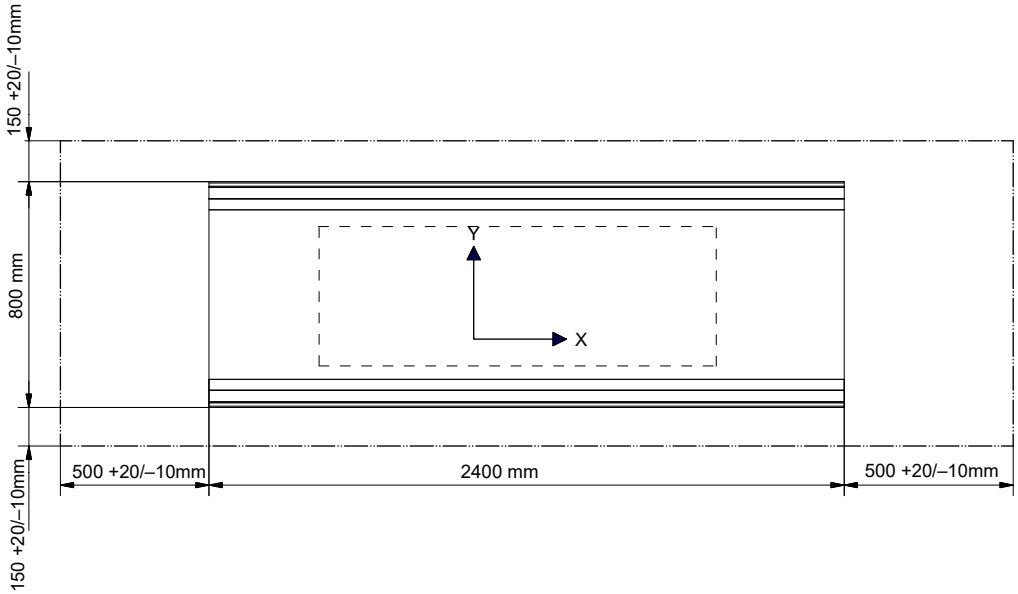


Fig. 2-13 Stroke length

The figure below shows the dimension underneath the Table

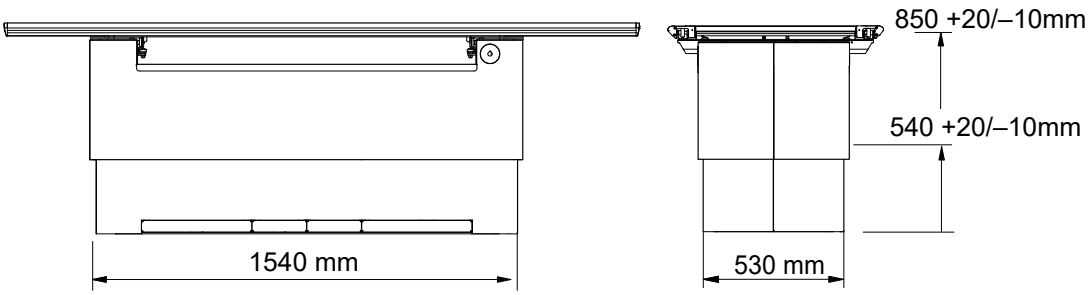


Fig. 2-14 Dimensions underneath the Table

Area for the Detector holder

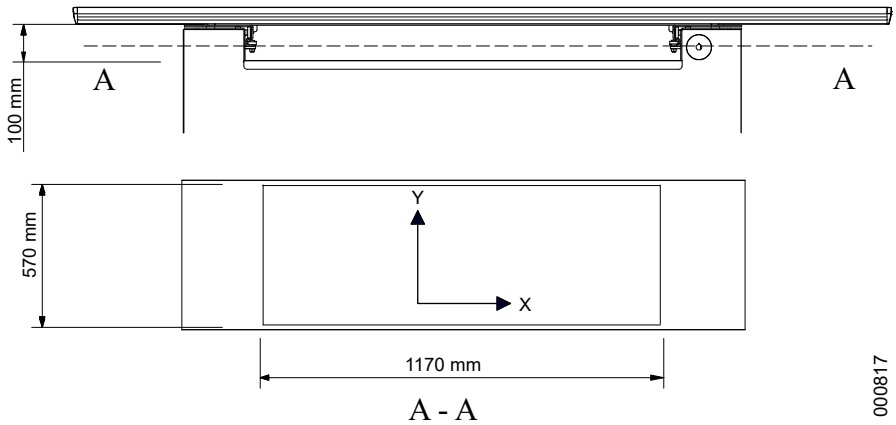


Fig. 2-15 Dimensions

2.10.4 Working area, Table 0055

WARNING!

Due to squeezing hazard, when operating any motorized movement — when not placed on the table — patients shall always be outside the working area.

The working area is the size of the table top, including the length of stroke of the table top in the X- and Y-direction.

The measurements in **Fig. 2-16** show the length of the stroke in the X- and Y-direction.

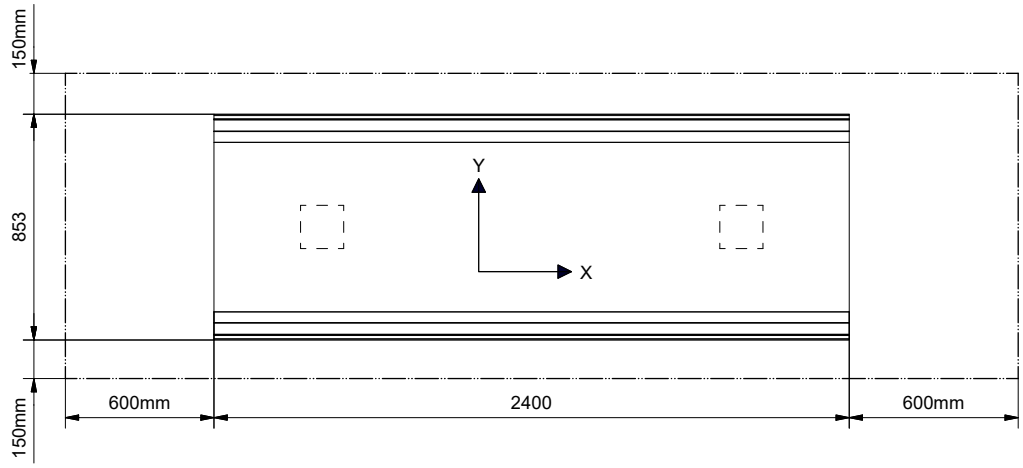


Fig. 2-16

The **Fig. 2-17**shows the dimensions underneath the table

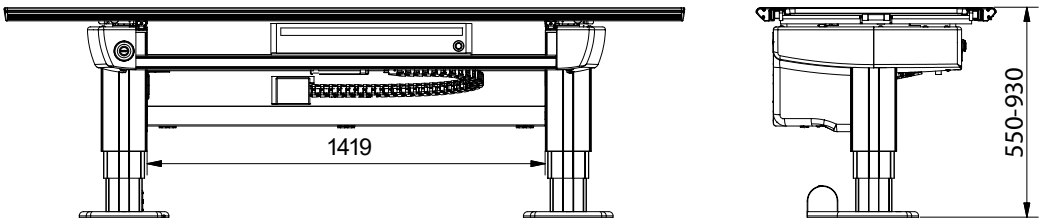


Fig. 2-17

2.10.5 Mechanical Safety, Wall Stand

Note!

*The patient or operator is allowed to lean against the Wallstand patient handle or armrest, but **not** to put any weight on it.*

2.10.5.1 General

It is the operator's duty to ensure that any danger to the patient and/or third person is prevented, before movements are released.

2.10.5.2 Standard Version

Possible squeeze hazard areas are indicated in figure. Getting stuck in the imaging unit slide opening (1) causes squeezing hazard if the imaging unit is moving downward (Z-direction).

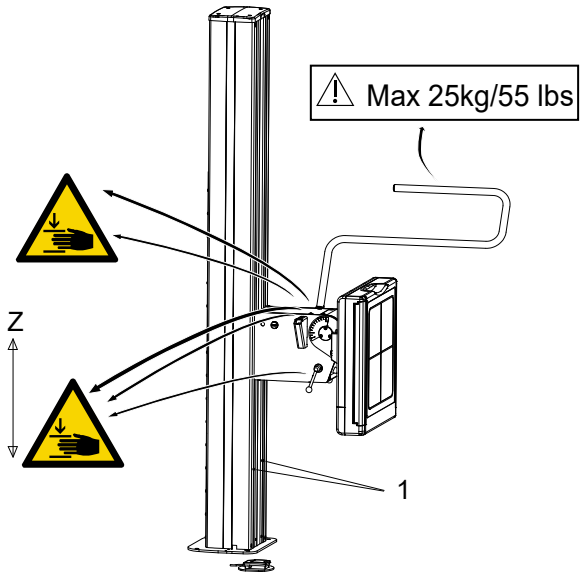


Fig. 2-18 Possible squeeze hazards

1. *Slide opening of the imaging unit*

2.10.5.3 Motorized Wall stand

CAUTION!

It is not allowed to have the patient sitting or standing in the wall stand surroundings, when the motorized movement is operated.

2.11 Safety Functions

2.11.1 System

2.11.1.1 Opposite Buttons Pressed

If, at any time, two from each other opposite buttons are pressed, for example movements up and down, the movement is stopped. Both buttons must be released before any movement is allowed.

2.11.1.2 Dead Man’s Grip

All movements require constant activation of the chosen button.

If the operator releases one of the buttons/controls, the system will immediately stop or engage the brakes (manual movements). The exposure operator console has the same functionality.

2.11.1.3 Watchdog

One important issue for the safety in the system is the node error handling e.g. transmission error, software error or irregular behaviour of a node. The system is built to prevent an uncontrolled movement.

2.11.1.4 Two column table (option)

Table Top Guard (option)

The table has a collision detection system that protects the table. It activates if a collision is detected and all movement is stopped.

2.11.1.5 Closed table

Vertical travel (Z-movement) safety

The table has a vertical travel safety system to protect the table top. When the table top collide with something, the Z-movement will stop. You will have to push a button (kick box control/manoeuvre hand control/foot control) in either direction to be able to move the table again.

When a collision in Z-direction is detected, the stand has to be moved in the opposite direction before it can be moved in the original direction again.

Indication of power to the table

The device is powered when the green indicator light (A) on the table frame is lit.

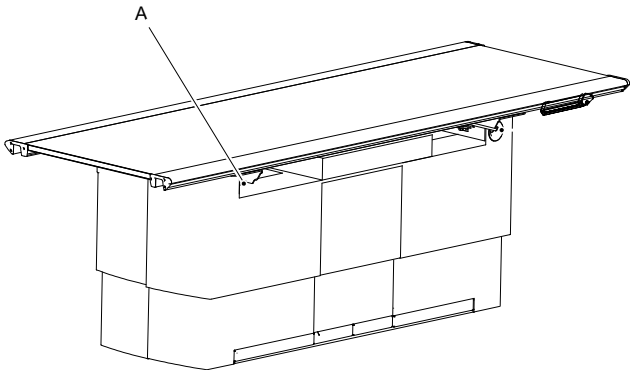


Fig. 2-19

2.11.1.6 Wallstand

The product is balanced with counterweights and whenever any item is removed from the wall stand it will become unbalanced. If the brake is released when the wall stand is unbalanced, the detector holder moves and can cause injury.

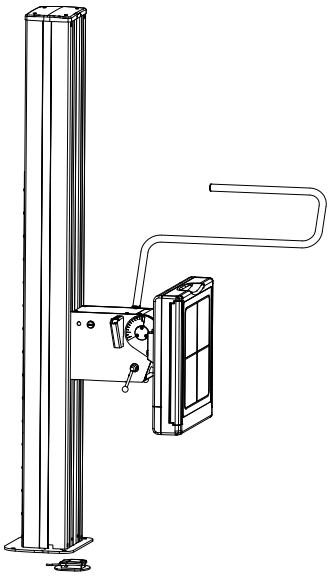


Fig. 2-20 Wallstand

WARNING!

Be aware of unwanted motion when releasing the brakes.

Manual wall stand

The wallstand is strictly manually controlled. All movements are balanced which means that very little force needs to be applied. To move the system up or down, the brake has to be released, by pressing constantly and pushing the detector holder manually up or down.

Motorized Wall stand

Collision Detection

Every motorized movement has a collision detection. All movements are stopped when the collision detection activates and the display shows an error message.

2.12 Safety Zone, Definition

At installation, a safety zone is defined.

The intention of the safety zone is to prevent collision with the patient, during automatic movements (tracking) downward. When the lowest part of the OTC is above the safety zone automatic movements is allowed. When it is inside the safety zone, automatic movements is not allowed.

The safety zone (1) does not affect the function of the manual movement (no tracking) or the automatic movement (tracking) upward.

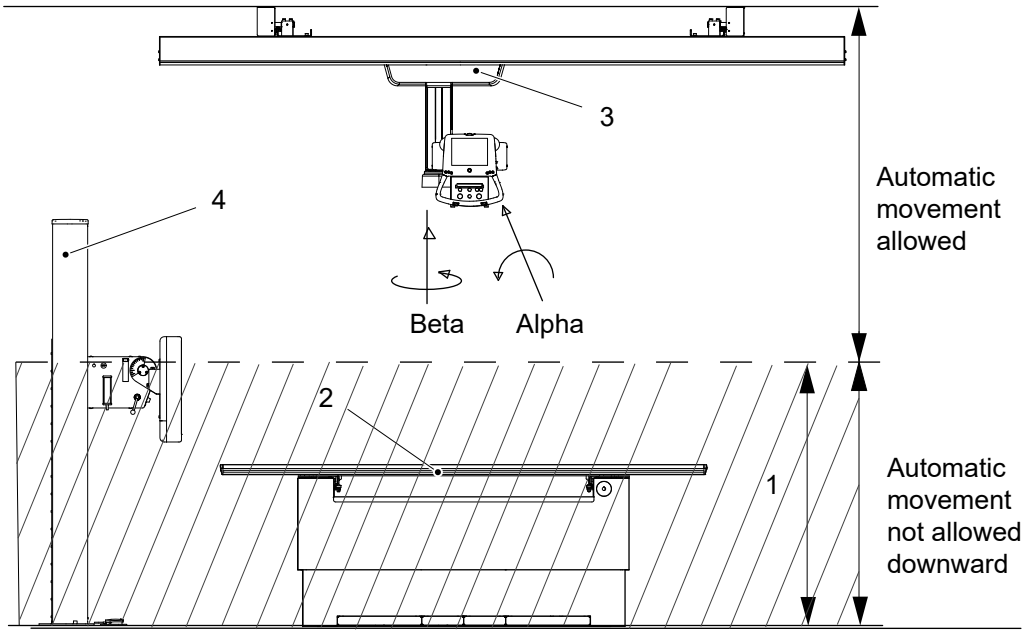


Fig. 2-21 Safety zone

1. *Safety zone*
2. *Table*
3. *Ceiling stand*
4. *Wallstand*

2.12.1 Safety Zone, Table

2.12.1.1 Table 0181

The automatic movement downward (tracking) is not possible in safety zone (1)

The safety zone (1) does not affect the function of the automatic movement upward (tracking).

2.12.1.2 Table 0055 (option)

There is a squeezing risk when driving the table to a low position.

Within the safety zone the table moves at a low speed, to increase the possibility for the user to react in case of a collision (squeezing). The safety zone appear 120 mm above the floor, according to IEC 60601-1. The safety zone automatically stops the two column table, 120 mm above the floor. The user must then activate the foot control again to make the table move further down.

2.12.2 Safety Zone, Wall stand

When the alpha angle is outside the range of +45 degrees to –45 degrees, the automatic movement downward (tracking) is possible in safety zone (1).

The safety zone (1) does not affect the function of the automatic movement upward (tracking).

2.13 Electromagnetic compatibility (EMC)

The system complies with the requirements of IEC 60601-1-2:2014 regarding electromagnetic compatibility. Surrounding equipment shall follow the standard IEC 60601-1-2:2014.

WARNING!

Do not use this equipment adjacent to or stacked with other equipment.

Such use could lead to improper operation.

Verify that the equipment is operating normally, if such use is necessary.

WARNING!

Do not use other accessories, transducers and cables than those specified or provided by the manufacturer.

Such use could lead to increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

WARNING!

Do not use portable RF communications equipment (including peripherals such as antenna cables and external antennas) closer than 30 cm (12 inches) to any part of the system, including cables specified by the manufacturer.

Such use could lead to degradation of the performance of this equipment.

CAUTION!

Do not place the system near MRI equipment or other equipment that generates a strong magnetic field.

CAUTION!

Mobile telephones and other radiating equipment can interfere with the function of the system and can therefore cause safety hazards.

The system is intended for use in the electromagnetic environment specified below. The customer or the user of the system should assure that it is used in such an environment.

Guidance and manufacturer's declaration - electromagnetic emissions		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The system uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The system is suitable for use in all establishments, other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purpose. For information purpose the system complies with IEC61000-3-11 and is suitable for connection to public mains network if the impedance is 0.32 Ohm or lower
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ Flicker emissions IEC 61000-3-3	Not applicable	

Guidance and manufacturer's declaration - electromagnetic emissions.

See 0180-095-408 Installation and Service Manual for tables including IEC 60601 test and compliance levels, and recommended separation distances between portable and mobile RF communications equipment and system.

3 User Interfaces

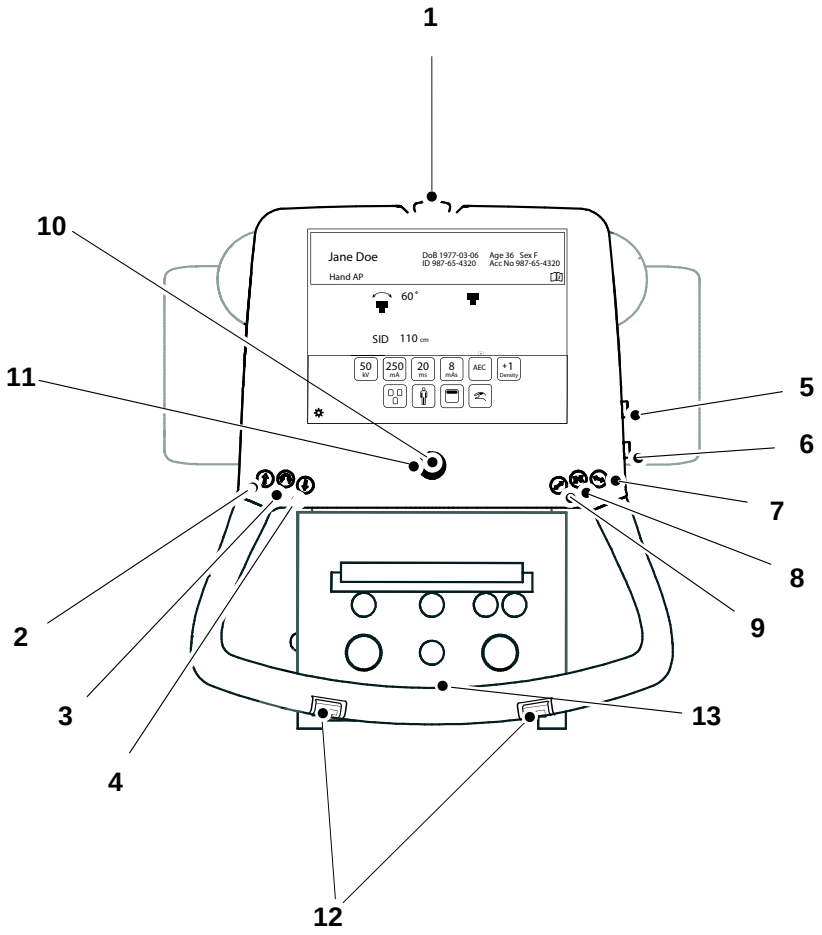
3.1 Description

The system is operated from interfaces inside the examination room and from the operating room.

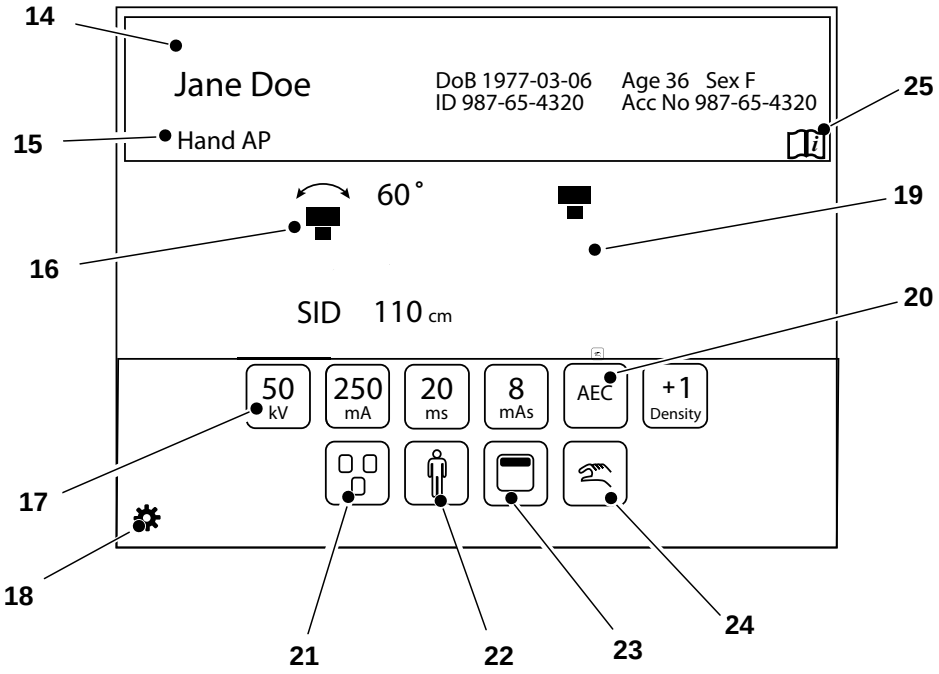
The exposure controls are placed in the operating room, whereas the positioning controls are placed in the examination room (lab).

The basic idea is that the functions shall be operated from the position where they are needed, which will enhance the workflow and increase the efficiency.

3.2 Overhead tube crane



1. Emergency brake
2. Z movement up
3. Alpha Beta rotation
4. Z movement down
5. Z movement up
6. Z movement down
7. Unlock X brake
8. Unlock X and Y brake
9. Unlock Y brake
10. Indication light, tracking
11. Synchronization button, tracking
12. Z-movement, up/down
13. Handle frame (option): X-/Y-brake release button



14. Patient information
15. Active protocol
16. Position information
17. Adjustment of generator parameters: kV, mA, ms, mAs, Density
18. Settings and service menu
19. Active mode, see chapter
20. Selection of Technique mode
21. Selection of active AEC field (AEC mode only)
22. Patient size
23. Collimator centering
24. Activation of wallstand or Table tracking
25. Hospital manual

3.3 Patient information

Note!

All display patient information must be confirmed at the image system.

In this field the *Patient Name*, *Patient ID*, *Date of Birth*, *Age* and *Sex* can be shown.

The information shown is defined in the *Setting menu*. In the *Setting menu* it is also possible to decide if the *Patient information* shall be shown always (Picture 1), or on demand (Picture 2).

When the button is shown on demand, the *Patient information* can be obtained by pushing the arrow on the black bar.

The patient information closes automatically, or when the bar is pushed once again.

Picture 1 Picture 2

Fig. 3-1 Patient Information Display

3.4 Position information

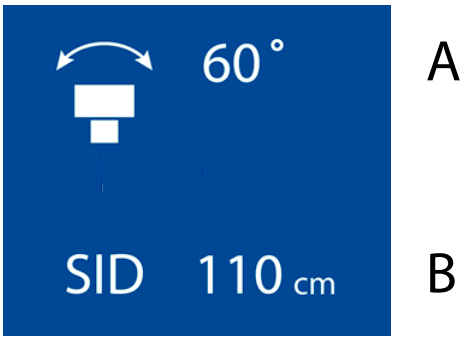


Fig. 3-2 Position information

- A) Alpha angle (°).
- B) Source Image Distance (SID), or Height to floor (H) (cm/inch).

A value for SID is shown for tracking table and tracking wallstand toward a horizontally placed detector (tube alpha between -45 degrees and + 45 degrees). The height, focus point to the floor, is shown when tracking is not active.

3.5 Workstation modes

The *Workstation* is selected at the Canon image system

Depending on selected *Workstation*, one of the following symbols will show on the display:

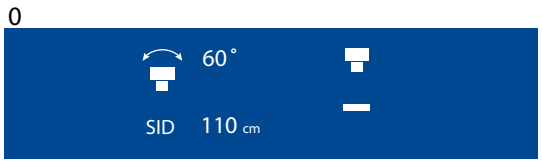


Fig. 3-3 Portable

Portable workstation is selected. Free technique examinations with wireless DR detector.

Only wireless DR detector can be used.

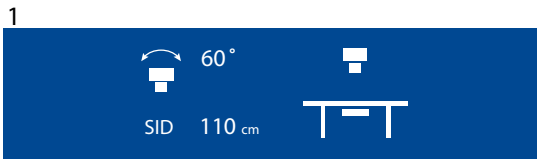


Fig. 3-4 Table

Only table imaging unit/detector holder can be used.

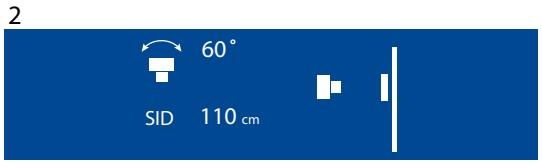


Fig. 3-5 Wall stand

Only wall stand imaging unit can be used.

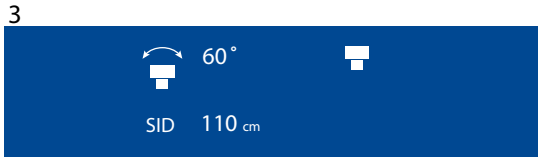


Fig. 3-6 Detector

Detector. Free technique examination.

3.5.1 Automatic tracking activation

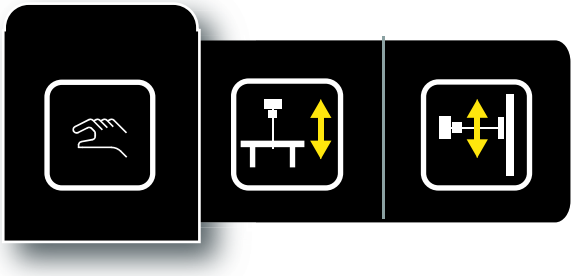


Fig. 3-7 Tracking activation

a. *No Tracking activated*: Workstation mode is shown (portable, table, wallstand, detector)
b. *Auto Tracking, Table*
c. *Auto Tracking, Wallstand*

3.5.1.1 Auto tracking, wallstand

1. User presses *Auto Tracking button* and selects *Wallstand* (c).
2. *Auto Tracking, Wallstand* symbol is shown on the OTC display.
3. LED in *synchronization button* on OTC and Wallstand starts flashing.
4. Fixed light when correct position is reached.

Fig. 3-8 Auto tracking wallstand

3.5.1.2 Auto tracking table

1. User presses *Auto tracking button* and selects *Table* (b).
2. *Auto tracking, table* symbol is shown on the OTC display.
3. LED in *synchronization button* a starts flashing.
4. Fixed light when correct position is reached.

Fig. 3-9 Auto tracking table

3.6 Adjustment of generator parameters (kV, mA, ms, mAs, density)

In order to change the exposure values, the button with the parameter that shall be changed, is pushed.

Then the user may select to increase or decrease the value.

When the correct value is reached, the value can either be pushed or the *Increase/decrease buttons* will automatically close.

Fig. 3-10 Adjustment of generator parameters

Note!

The Operator/User is always responsible for validation of the exposure parameters in the Image system before performing exposure.

3.7 Selection of technique mode

Selecting the *Technique selection* button, means that there are three different technique modes available.

The selected mode is highlighted and the pop-up window closes automatically.

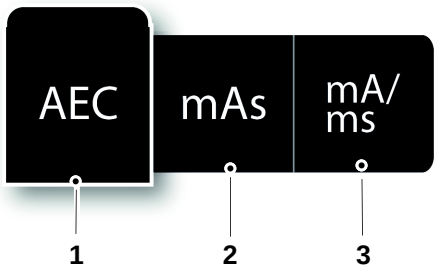


Fig. 3-11 Technique mode selection

1. AEC mode
2. mAs mode
3. mA/ms mode

Depending on what mode is active, different parameters will be available.

Parameters that are not available for selection will be grayed out.

In *AEC mode* the value that will be used as back-up value, is indicated with the text *AEC Backup*.

For more detailed information about the different technique modes, please see *Operator's Manual for Canon single console CXDI NE*.

3.7.1 Selection of active AEC Field (AEC mode only)

The AEC field selection button is available in *AEC mode*.

When selecting the *AEC field button*, a pop-up-window with the different AEC fields will appear, according to **Fig. 3-12**.

The AEC fields are activated by selecting them in the pop-up window to the right (2).

All activated AEC fields will be shown in the left picture (1).

AEC fields are deactivated by selecting them again in the pop-up window (2).

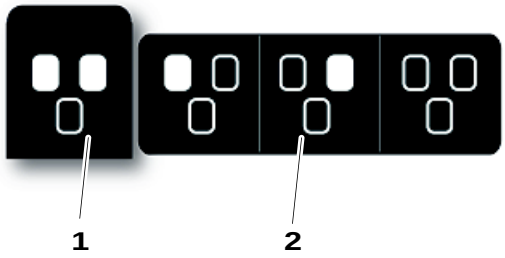


Fig. 3-12 AEC field selection

3.8 Patient size

The *Patient size setting* is used for a quick setting of the generator parameters to suit the physique of the patient.

Patient Size is adjusted by pressing the *Patient size selection button*. A pop-up window according to **Fig. 3-13** will open and show available patient sizes.

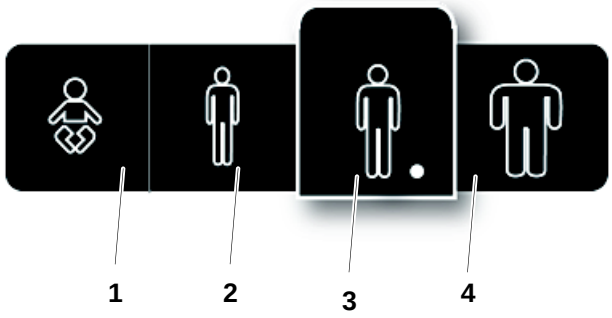


Fig. 3-13 Patient size selection

Patient size selection *1) Paediatric, 2) Small, 3) Medium, 4) Large*

Select the desired patient.

The pop-up window will automatically close shortly after the selection. Generator parameters and collimator settings (field size and filter) will change to the defined values for the new patient size. If no values are defined the current values will be kept.

3.9 Collimator centering

The collimator centering is adjusted by pressing the *Collimator centering button*.

A pop-up window according to **Fig. 3-14** will appear with the alternatives; *Top*, *Center* and *Bottom centering*.

Select the desired collimator centering. The pop-up window will automatically close shortly after the selection, and the light field will adjust accordingly.

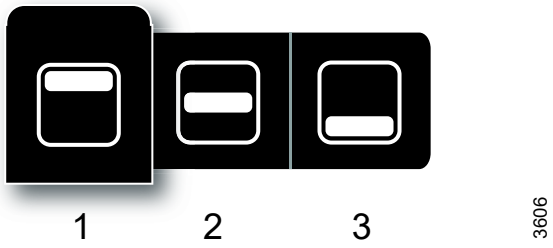


Fig. 3-14 Collimator centering selection

1. Top
2. Centre
3. Bottom

3.10 Hospital manual

The hospital manual is reached by activating the *Hospital method book* button for 1 second.

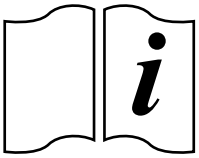


Fig. 3-15 Hospital manual

3.11 Settings

The setting menu is reached by a long activating of the *Setting button*, see **Fig. 3-16**

Fig. 3-16 Setting button

The *Setting menu* has the following tabs; *User Settings* and *Service*.

User settings has the following tabs: *Display*, *Settings* and *Themes*.

Service has the following tabs: *Log*, *Settings* and *Display*.

3.11.1 User settings

3.11.1.1 Display

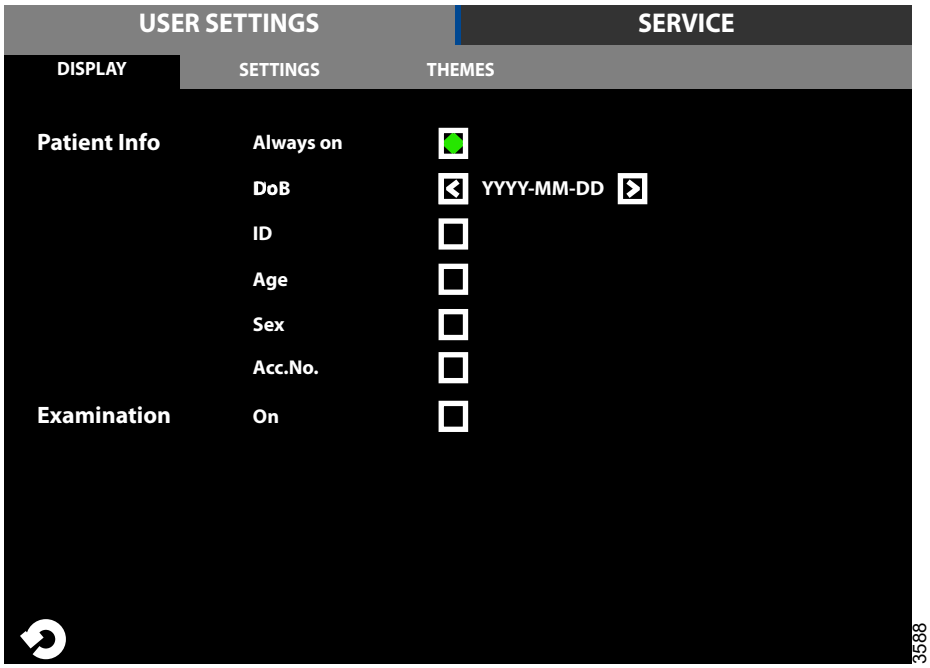


Fig. 3-17 User settings, display

Patient Info

CAUTION!

The user shall always assure that the Patient info and the type of examination is corresponding to the one in HIS and RIS.

When the *Always on* is marked, the *Patient information* will be shown as soon as the information is selected in the imaging display.

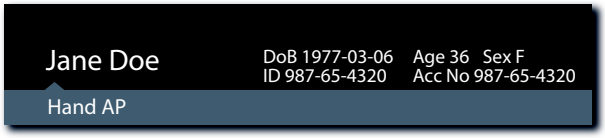


Fig. 3-18 Patient information displayed — "Always On" selected

When the *Always on* is **not** marked, the *Patient information* will be shown by pushing the black field where the *'i'* is.

The *Patient information* will close automatically.

Fig. 3-19 Patient information displayed — "Always On" not selected.

It is also possible to select what patient information to show on the display. The following parameters can be selected:

- *Date of Birth (DoB)*, different formats selectable
  - YYYY-MM-DD
  - DD-MM-YYYY
  - MM-DD-YYYY
- ID
- Age
- Sex
- Accession number
- Examination/Active Protocol

Examination on

Not in use in this system.

3.11.1.2 Settings

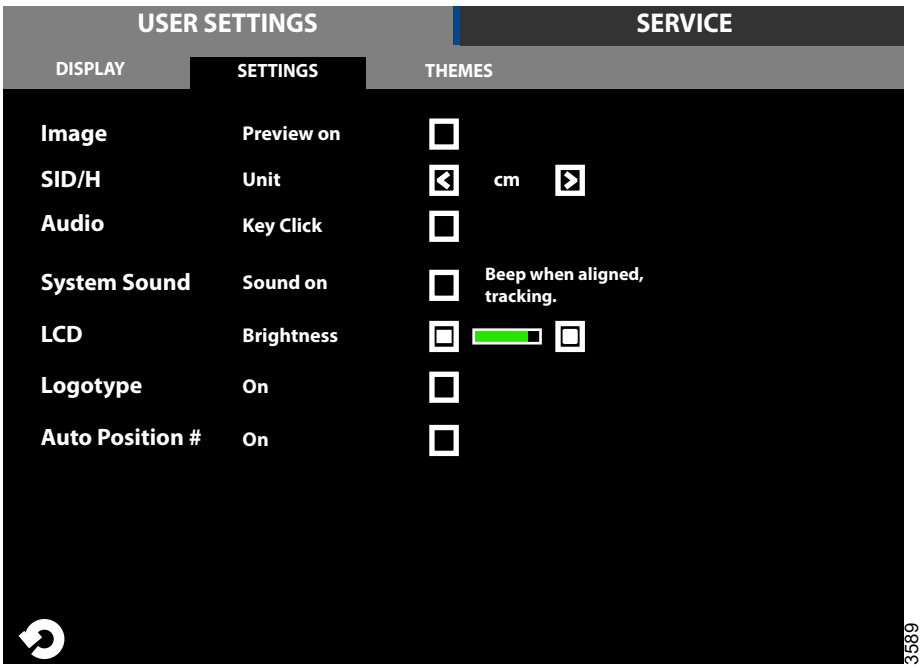


Fig. 3-20 Settings

In the *Settings* tab, it is possible to adjust the following:

- Preview Image (not applicable for CR systems)
- SID/H unit selection
- Audio key click, On/Off
- System sound, On/Off
- LCD brightness, Plus/Minus
- Arcoma logotype in display, On/Off

– Image preview on	The preview image will be shown next to the active protocol name, see **Fig. 3-21**.
– SID/H Unit	Changes between cm and inch. (Changes unit on both display and collimator.)
– Audio Key Click	By selecting this, a key click will be heard when touching the System display.
– Sound on	By selecting this, a beep will be heard when OTC is aligned with the detector, at tracking.

Preview Image (not applicable for CR systems)

WARNING!

The preview image must not be used for diagnostics or positioning

It is possible to select if a *Preview image* is to be shown on the touchscreen display or not.

If preview is selected, a small preview image, see **Fig. 3-21**, is shown on the touchscreen display when an exposure is performed.

Fig. 3-21 Preview image displayed

Touch the small image on the display, and the image will be shown as a large image.

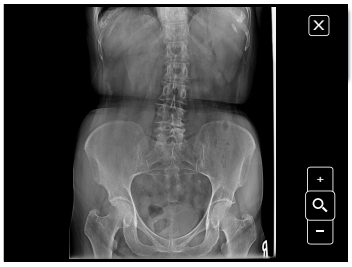


Fig. 3-22 Preview image enlarged

By touching the zoom button +/-, it is possible to zoom in and out, in the image.

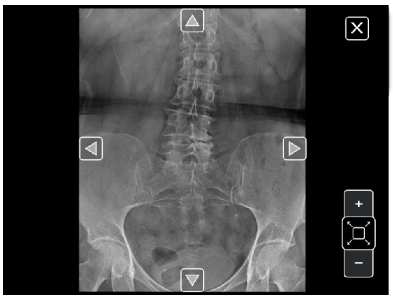


Fig. 3-23 Zooming In/Out

The arrows appearing in the image are used to pan in the image.

3.11.1.3 Themes

Select a pre-set theme.

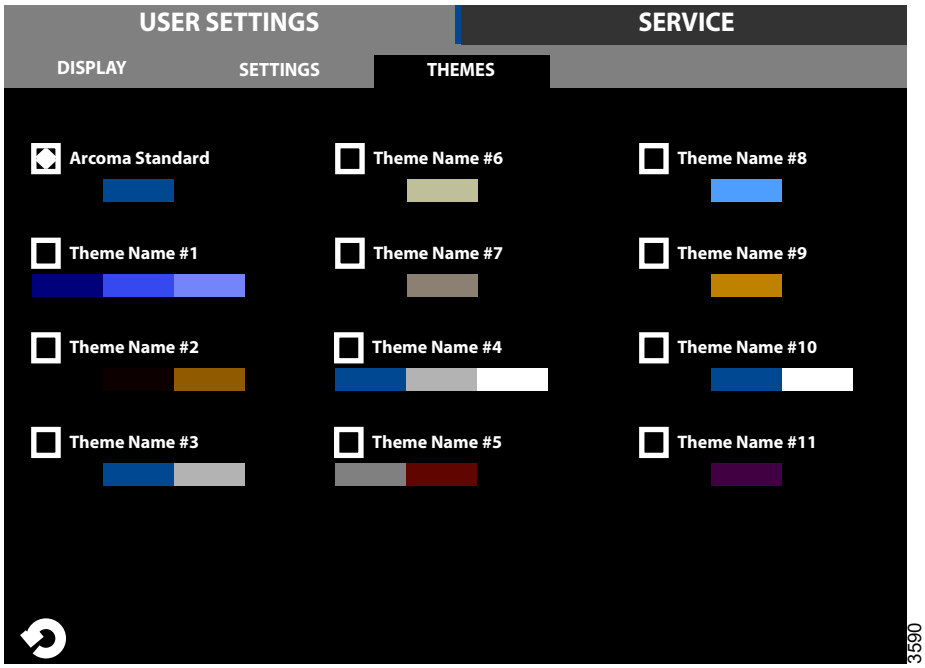


Fig. 3-24 Themes

3.11.2 Service

The Service tab is meant to be used by the service technician.

3.11.2.1 Log

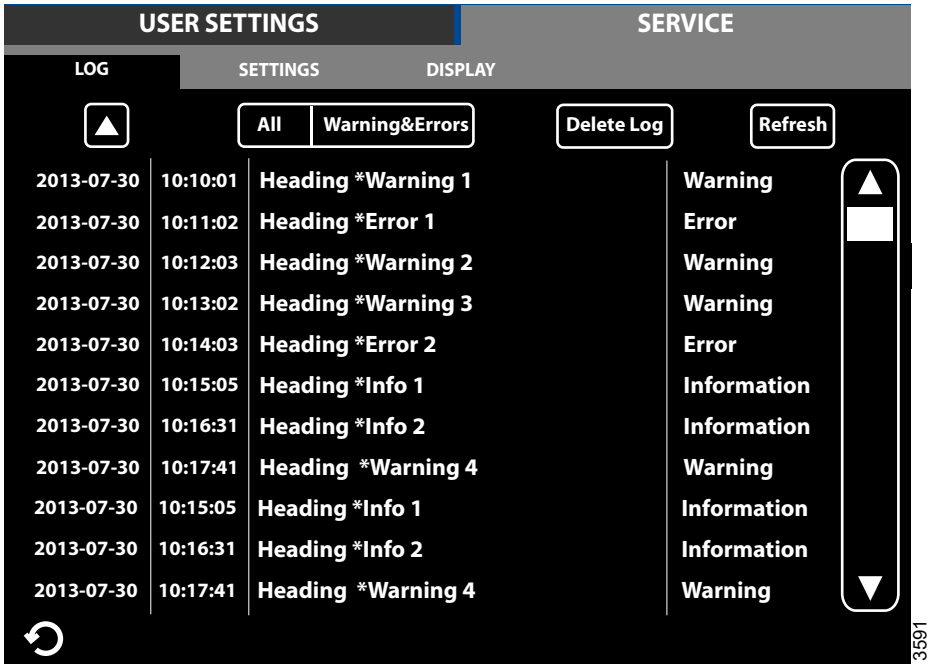


Fig. 3-25 Log

The log file shows warnings, errors and events that have occurred in the system. The log file can be filtered to show all information, or just warnings and errors. By selecting *Information*, *Warning* or *Error*, more information concerning the current issue will be shown.

The log file may be used for troubleshooting.

It is possible for service personnel to delete the log file which can be helpful when fault tracing. The refresh button retrieves the latest events.

Delete log file

Note!

This procedure shall only be performed by service personnel.

When selecting *Delete Log* a four digit access code is required before the log is deleted.

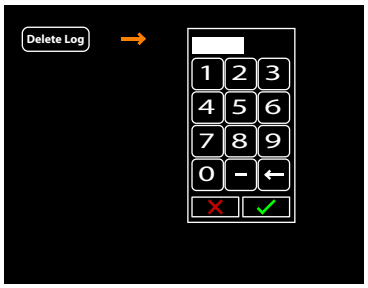


Fig. 3-26 Delete log file

3.11.2.2 Settings

The Service menu shows system set up and system software versions. A more detailed description can be found in the Service and installation manual.

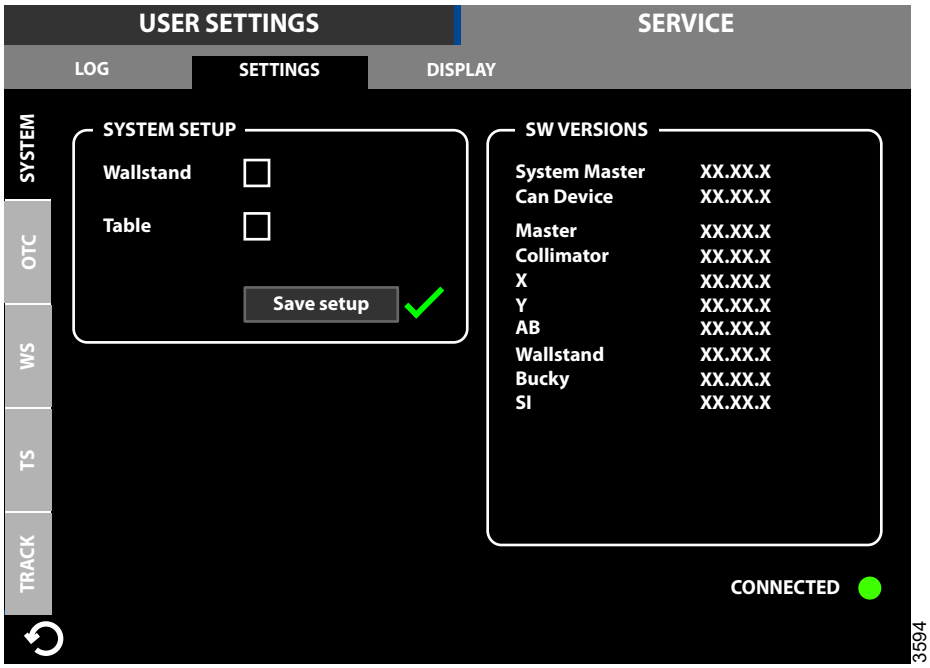


Fig. 3-27

3.11.2.3 Display

Information of the display software versions.

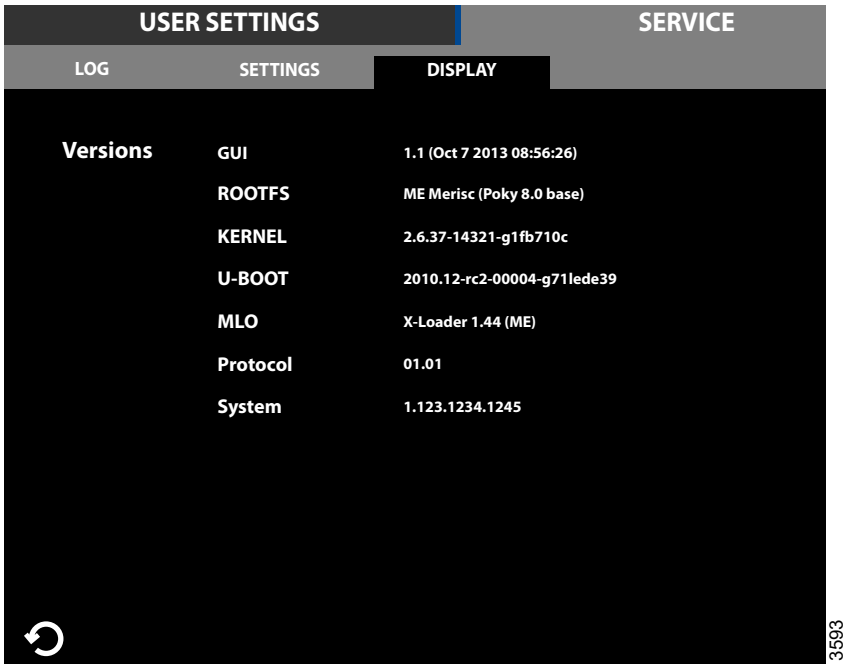


Fig. 3-28 Display

3.12 Wall Stand Control Elements

3.12.1 Tiltable imaging unit holder (option)

Remove the lateral patient support grip (1), see picture A.

Turn the lock handle (2) up to release the imaging unit holder and push the holder in position according to picture B.

Then turn the lock handle down to secure the imaging unit holder in position, see picture C.

A tilting function enables the receptor holder to be set in any angle within a range of –20 to 90 degrees.

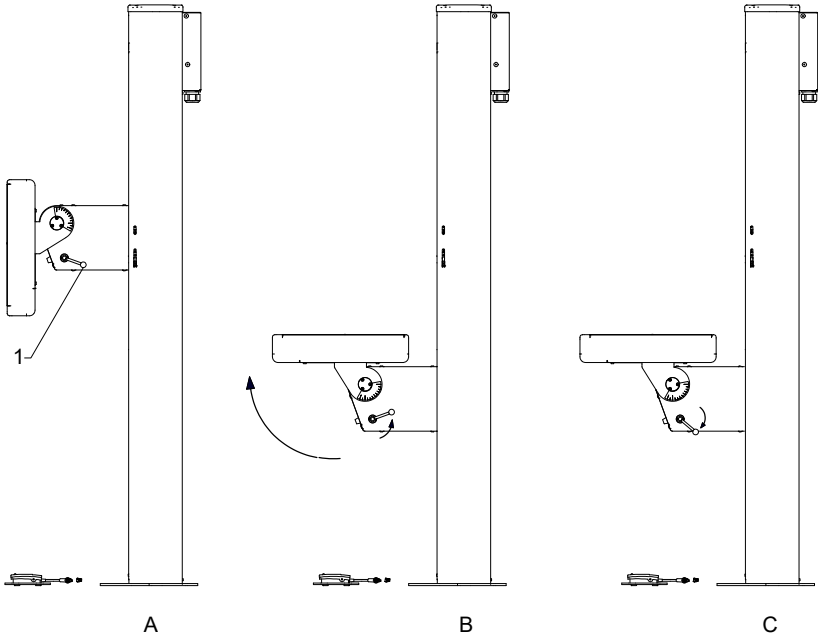


Fig. 3-29 Tiltable imaging unit holder

3.12.2 Wall stand controls

The controls concerning the wall stand are placed on the image unit holder bracket and at the foot of the column.

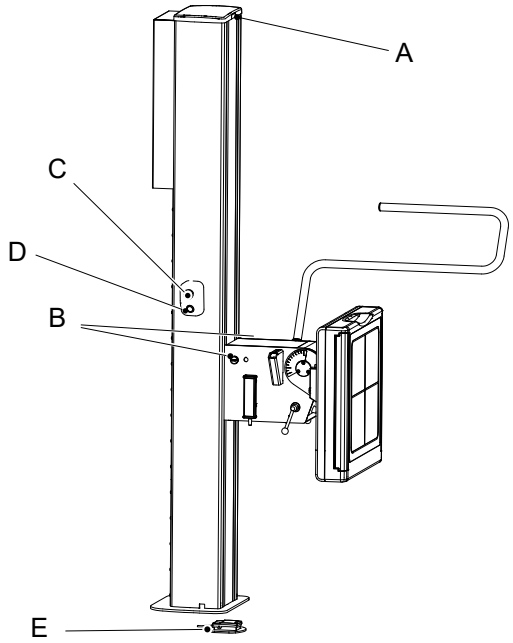


Fig. 3-30 Wall stand controls

A Light indication
B Release/Engage image unit brake (Z-direction)
C Sync button
D Emergency stop
E Foot control for vertical movement (option)
F Foot control, motorized vertical movement and break release (option)

3.12.2.1 Light Indication (A)

The selected Workstation is indicated with a green light on the corresponding unit.

3.12.2.2 Image Unit Brake (B)

Press and hold the image unit brake (B) to release the brake for manual movement in Z-direction. The synchronization button has the same function.

3.12.2.3 Foot Control for Vertical Movement (E), Wallstand

The Wallstand with motorized vertical movement is maneuvered from the foot control. The foot control is an optional control unit for Wallstand with motorized vertical movement.

Consider the working area when the Wallstand detector is maneuvered.

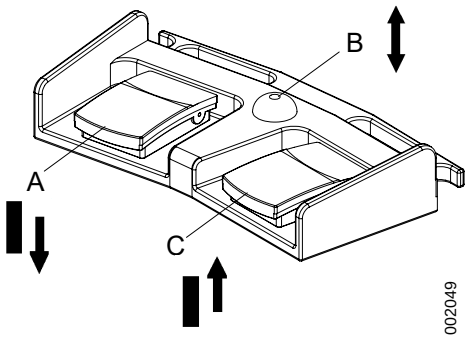


Fig. 3-31 Wallstand foot control maneuvering.

A Z movement down.
B Brake release manual movement
C Z movement up

How to Maneuver

A. Press pedal to move the detector downward.
B. Press the pedal to release the brakes. When activated, the detector can be moved manually.
C. Press pedal to move the detector upward.

The speed up/down of the detector can be adjusted in the service menu.

3.13 Ceiling stand control elements

3.13.1 Direction of movement

The figure shows the directions of movement of the ceiling suspended X-ray tube support.

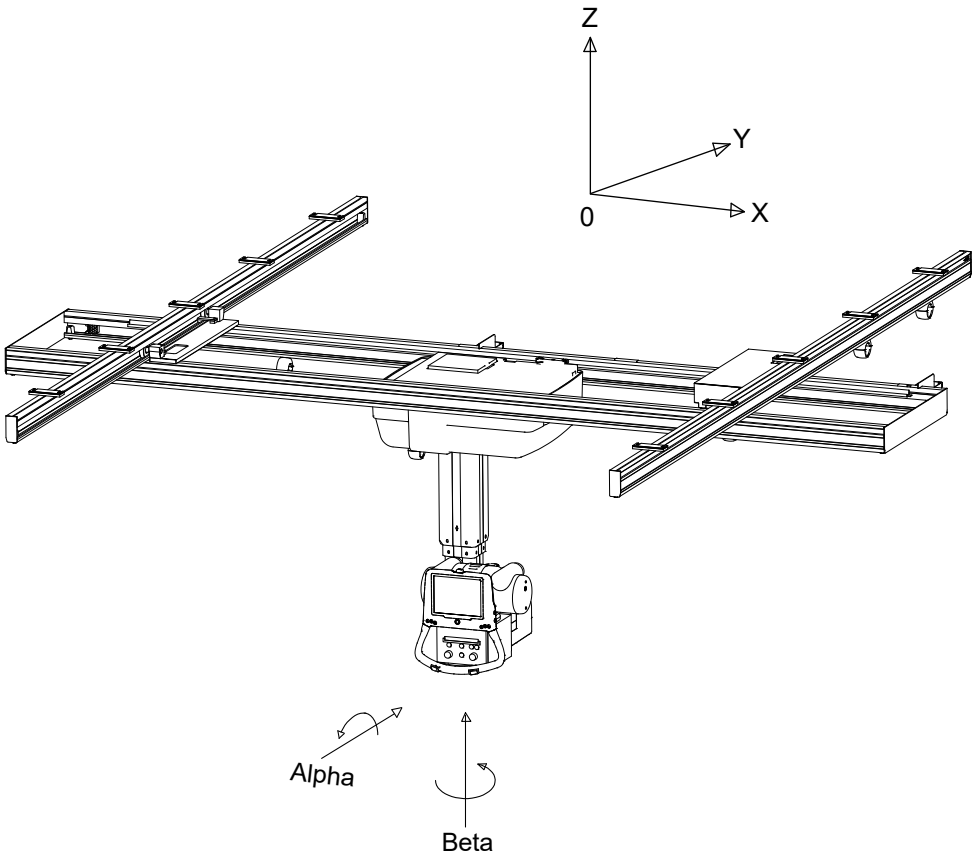


Fig. 3-32 Direction of movement

Z	*Vertical movement*	*motorized*
X	*Lateral movement*	*Manual*
Y	*Longitudinal movement*	*Manual*

3.14 Manual collimator

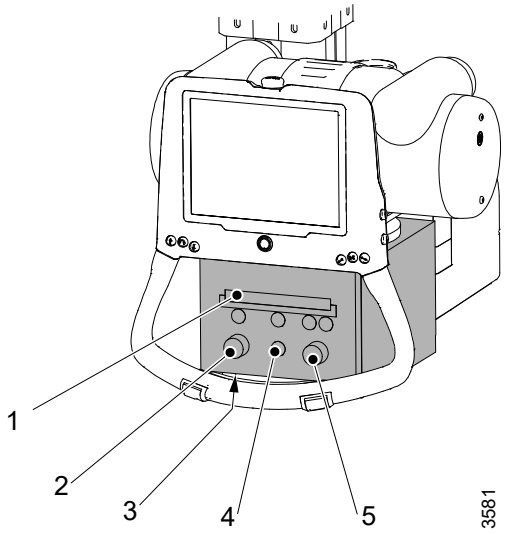


Fig. 3-33 Manual collimator

1. *Filter*
2. *Light field height*
3. *Measure tape*
4. *Light on/off*
5. *Light field width*

The collimator has the following functions:

– Turn on/off the light, push the button (4).

– Change the size of the light field, turn the button (2) to adjust the height and the button (5) to adjust the width.

– Change filter (1), rotate the filter (1) clockwise or counterclockwise.

  Four different filters can be chosen:

  • 0 mm Al

  • 2 mm Al

  • 1 mm Al + 0.1 mm Cu

  • 1 mm Al + 0.2 mm Cu

– FFD/SID measure tape (2).

– Laser (Option)

For further instructions on handling the collimator, see the *Collimator Manual*.

3.15 Automatic collimator (option)

3.15.1 General

The automatic collimator has the following basic functions:

– Turn on/off the light.
– Change the size of the light field / X-ray field.
– Change pre-filtration.

  Four different filters can be selected:

  • 0 mm Cu
  • 0.1 mm Cu
  • 0.2 mm Cu
  • 0.3 mm Cu

– Measure FFD/SID with measure tape.
– The automatic light is switched on when tracking of the wall stand or the table is active or when the table top is released. This makes positioning easier.

The automatic collimator also has additional features in order to support the operator and make the examination procedure easier.

- Optional collimator control handles available for remote control of light field, light on/off, collimator mode and centering.
- Function for fast adjustment of light field to the detector size.
- Function for top and bottom alignment available for examinations at the wall stand. See **3.15.3.5 Operating the automatic collimator, wall stand, Page 72** for further information.

The size of the light field is calculated based on the programmed SID value. The pre-programmed SID-value is shown in the display of the automatic collimator.

See **3.15.3.3 Operating the automatic collimator, table, Page 70** for instructions how to adjust the SID value.

3.15.2 Basic flow of operation

Select an examination program from the Image system.

When the collimator is in *Automatic mode* (shown as ACSS on the collimator):

- The collimator changes filter to the programmed filter for the chosen examination program.
- The collimator changes field size (width, height) to the programmed field size.
- The preferred SID is shown in the collimator display.

3.15.3 Display and control elements

3.15.3.1 Display automatic collimator

The figure shows the functions of the automatic collimator.

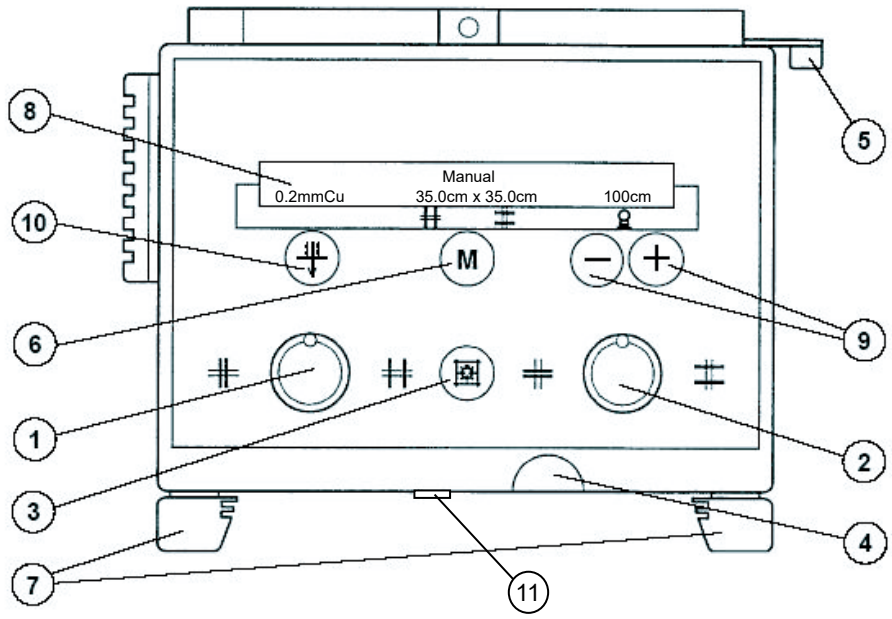


Fig. 3-34 Display and control elements

1. Adjusting knob for format height collimation (turning to the left closes the collimator, turning to the right opens the collimator).
2. Adjusting knob for format width collimation (turning to the left closes the collimator, turning to the right opens the collimator).
3. Button for switching the light and the laser line on/off. The light and the laser line is automatically switched off via a time switch.
4. Measuring-tape grip for SID measurement. The measuring tape has both a cm and an inch graduation.
5. Detent lever for ±45° rotation of the collimator around the central beam axis. The collimator stops in the 0° position.
6. Button for changing between automatic and manual mode. A long activation of the M button will set the light field to the detector size if tracking WS or Table is active. If no tracking is active, a long activation will set the light field to maximum size and automatic mode.
7. Two accessory rails.
8. Function display will indicate manual or automatic mode (ACSS) of the collimator. The display will also show the select pre-filtration, the size of the light field and the pre-programmed SID value.
9. Button for manually changing the SID. The new SID value will then be used for calculating the field size instead of the pre-programmed value, steps: 100, 115, 150, 180, 200.
10. Button for selecting collimator pre-filtration.
11. Control for covering the laser line.

3.15.3.2 Collimator control handle, table (option)

The figure shows the functions of the collimator control handle.

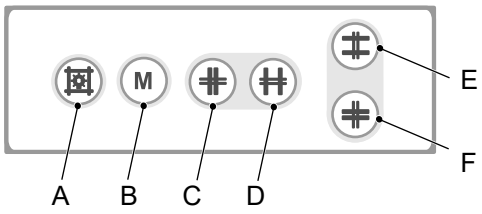


Fig. 3-35 Collimator control handle, table

A. Button turns the X-ray field illumination and linear light localizer on/off. Cutout is also performed automatically via a time switch.
B. Button for changing between automatic and manual mode. A long activation of the M button will set the light field to the detector size if tracking WS or Table is active. If no tracking is active a long activation will set the light field to maximum size and automatic mode.
C. Button for closing the format height collimation.
D. Button for opening the format height collimation.
E. Button for closing the format width collimation.
F. Button for opening the format width collimation.

3.15.3.3 Operating the automatic collimator, table

Startup Mode

At startup of the system, the collimator is defined to *Automatic mode*, light field to *Maximum*, SID to *110 cm* and filter to the first defined.

Finding the right position

The programmed SID value used for calculating the size of the light field is shown in the display of the automatic collimator. The correct position of the X-ray tube support is reached when the true SID value corresponds with the programmed SID value shown on the automatic collimator display.

The SID value is shown when wallstand or table tracking is activated, the detector/detector holder is in a horizontal position and the tube alpha angle is between –45 and +45 degrees. When tracking is not activated and the detector holder is not horizontal, a measuring tape may be used to determine the SID.

When performing examinations at the wallstand with the detector holder in a vertical position the positioning indexes at the ceiling rails can be used in order to fast find the correct position.

Automatic collimator light

When the tube stand is tracking against the wallstand or when the table top is released, the collimator light will automatically be turned on.

Changing working mode

The collimator can be operated in either *Automatic* or *Manual mode*. The purpose of the *Manual mode* is to be able to adjust the collimator light field outside the detector.

The mode can easily be changed on the collimator (button 6) or at the collimator control handle (button H).

Automatic mode

The maximum light field size is restricted to the detector size.

Detector size

When tracking Table/WS is activated;

Adjust the collimator light field to the detector size by pushing and holding the *M-button* on the collimator control handle (button H) or on the collimator (button 6) for approximately 2 seconds.

SID

Changing SID

The SID used for calculating the size of the light field can be changed manually with button 9 on the collimator.

The new SID value will then be used for calculating the field size instead of the pre-programmed SID value.

Note!

The System steps between pre-set values: 100, 115, 150, 180, 200.

Pre-programmed SID values

If the SID values for each APR are pre-programmed at the Canon NE user interface, this will override the *collimator default value*.

3.15.3.4 Collimator control handle, wall stand (option)

Note!

This function is only possible when connected to an X-ray system .

The figure shows the functions of the collimator control handle.

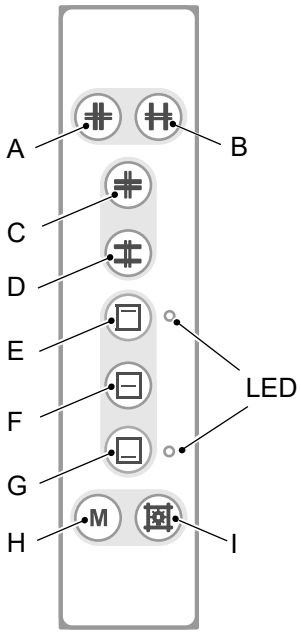


Fig. 3-36 Collimator control handle, wall stand

A. Button for closing the format width collimation.
B. Button for opening the format width collimation.
C. Button for closing the format height collimation.
D. Button for opening the format height collimation.
E. Button for top centering of the collimator light field. LED indicating the selected position.
F. Button for middle centering of the collimator light field.
G. Button for bottom centering of the collimator light field. LED indicating the selected position
H. Button for changing between automatic and manual mode. A long activation of the M button will set the light field to the detector size if tracking WS or Table is active. If no tracking is active a long activation will set the light field to maximum size and automatic mode.
I. Button for switching the light, the laser line and automatic mode on/off. The light and laser line is automatically switched off via a time switch.

3.15.3.5 Operating the automatic collimator, wall stand

For further information of how to operate the wallstand automatic collimator, see **3.15.3.3 Operating the automatic collimator, table, Page 70**.

Top and bottom centering

The collimator light field can be top or bottom aligned instead of centered against the detector.

For top centering this means that the upper border of the collimator light field is aligned with the top of the detector.

For bottom centering the collimator light field is aligned with the bottom of the detector. The stand will automatically request synchronization to keep the alignment of the top or bottom of the detector when the collimator light field is increased or decreased. The functionality of top and bottom centering is available on a vertical receptor on the wallstand.

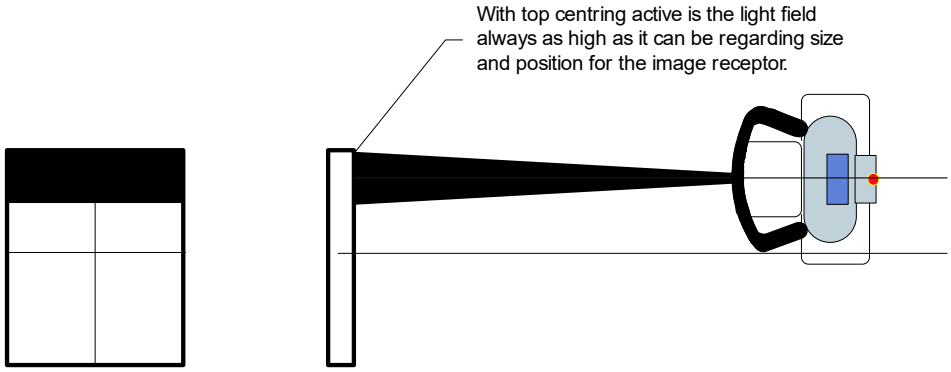


Fig. 3-37 Top and bottom centering

With the top centering active, the light field always is as high as it can be regarding size and position for the image receptor

3.16 Table control elements

3.16.1 Directions of movement

The figure shows the directions of movement of the table.

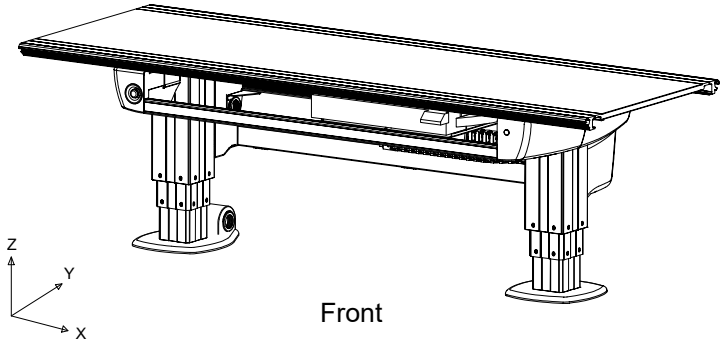


Fig. 3-38 Directions of movement

Z	Vertical movement
Y	Lateral movement
X	Longitudinal movement

3.16.2 Power indication

At the back of the electric box, a green indication light is located. The green light indicates that the system is live.

Note!

When no power, the usability of the table is highly limited.

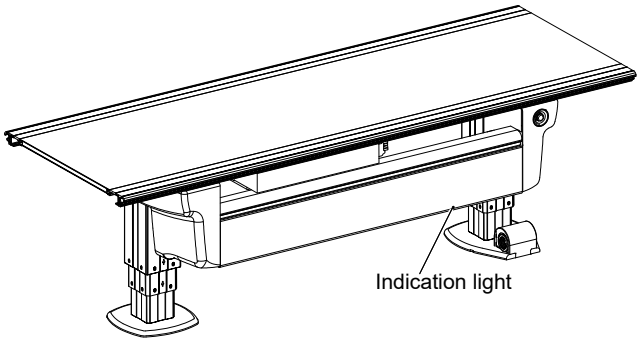


Fig. 3-39 Power indication

3.16.3 Foot control, table X/Y/Z (option)

The table with motorized vertical movement is maneuvered from the foot control. The foot control X/Y/Z is a standard control unit for table with motorized vertical movement.

Consider the working area when the table top is manoeuvred.

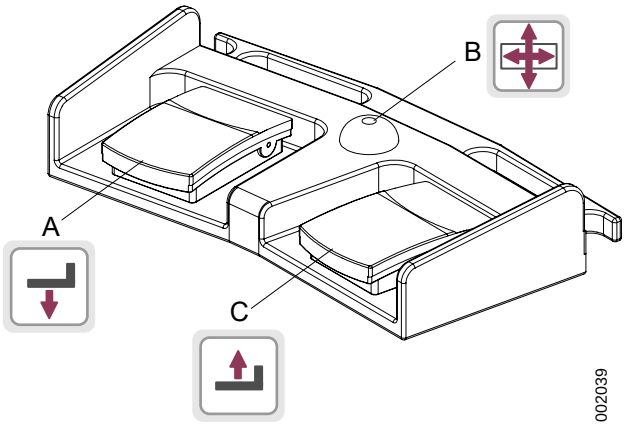


Fig. 3-40 Foot control

A. Z movement down
B. Unlock table top brakes (X/Y)
C. Z movement up

3.16.3.1 How to manoeuvre

A. Press button to move the table top downward.
B. Press the button to release the brakes on the Table top, Y and X. When activated, the Table top can be moved manually.
C. Press button to move the table top upward.

3.16.4 XY foot control, strip type (option)

Press and hold the foot control strip type (1) to release the brakes (X, Y) on the Table top (2). When activated, the table top can be moved manually (floating Table top).

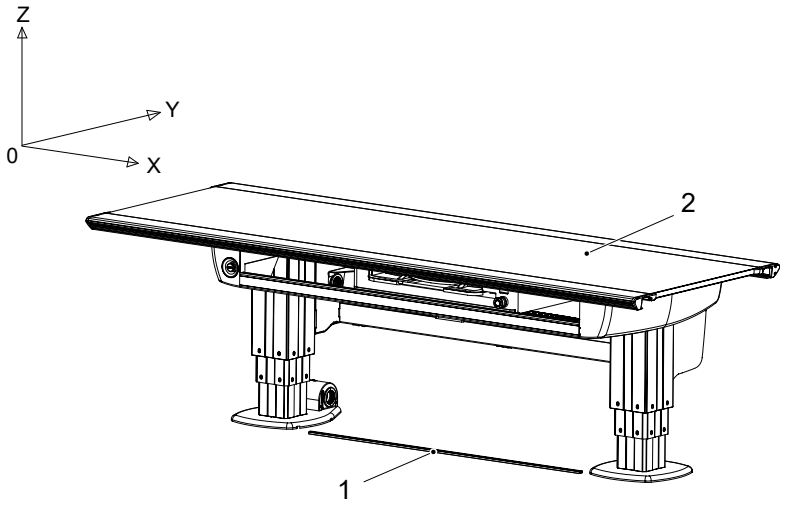


Fig. 3-41 XY Foot control, strip type

1. XY foot control strip type (option) *2. Table top (X/Y)*

3.16.5 Table hand control

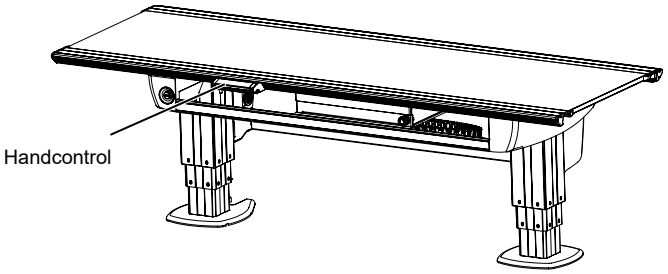


Fig. 3-42 Placing of the table hand control

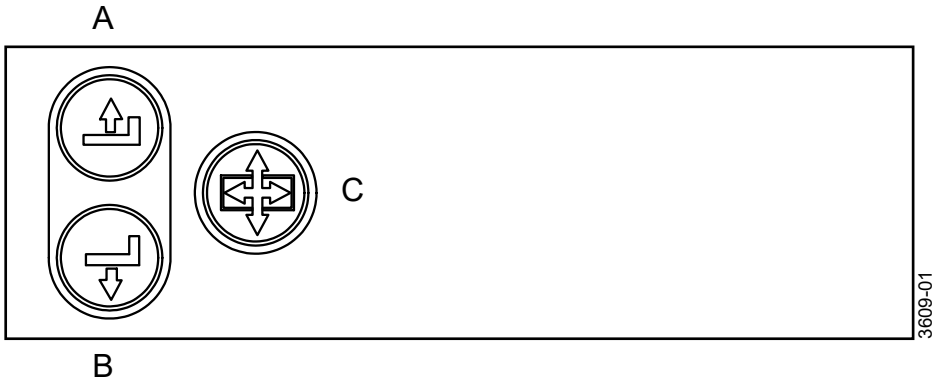


Fig. 3-43 Table hand control

3.16.5.1 How to manoeuvre

A. Press button to move the table top upward.
B. Press button to move the table top downward.
C. Press the button to release the brakes on the table top, Y and X. When activated, the table top can be moved manually.

3.16.6 Moving table top

To manually move the table top, release the brakes and use the hand grip rails located at the long sides of the table top.

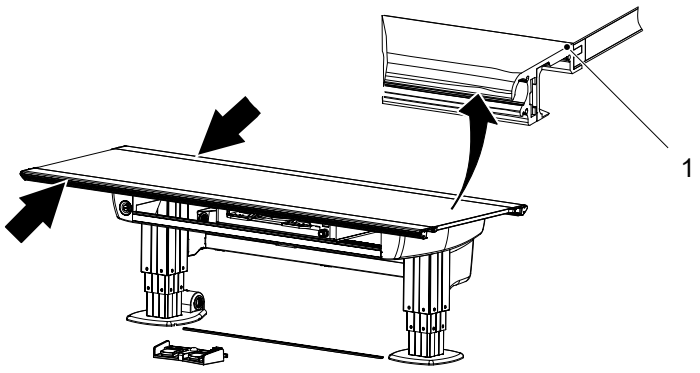


Fig. 3-44

1. Hand grip rail

4 Operating the system

4.1 General

WARNING!

If any item is removed from the wall stand, e.g. the detector or lateral armrest, the wall stand will become unbalanced.

When the brake is released, part of the wall stand will move upward and can cause injury.

The operation should be performed by trained personnel.

WARNING!

Because of squeezing hazards, motorized movements are only allowed if patient and system are observed by personnel.

WARNING!

During activation of motorized movements, the area under the table shall be free from obstacles, because of squeezing hazards.

WARNING!

Detector, FPD (Flat Panel Detector) or grid:

- ***Check that they are installed properly.***
- ***To avoid any potential risk of injury, handle them carefully.***

CAUTION!

The control devices shall always be kept out of reach for the patient. When the operator is not using the devices, they must be moved away from the patient.

CAUTION!

When the system is switched off, always wait at least 15 seconds before switching it on again.

Note!

The system shall only be operated by trained radiographers, service technicians and product specialists.

The system is a manually moved system, except for the up and down movements of the ceiling suspended X-ray tube support and the table, which always are motorized.

For the wall stand detector there is a motorized option.

The standard equipment includes a graphic display showing X-ray tube rotation (Alpha), Source Image Distance (SID), height, patient information, selected workstation and exposure parameters.

The table has a floating table top with a large moving range. The vertical movement of the table is motorized and the table has features such as a low load position and fast positioning.

There are two applications of the wallstand: one application with a holder for a fixed detector and one application with a detector holder for a portable detector.

An Automatic Exposure Control (AEC), is part of the standard equipment for the system.

4.2 Applied parts

Applied parts are intended contact surfaces for patients.

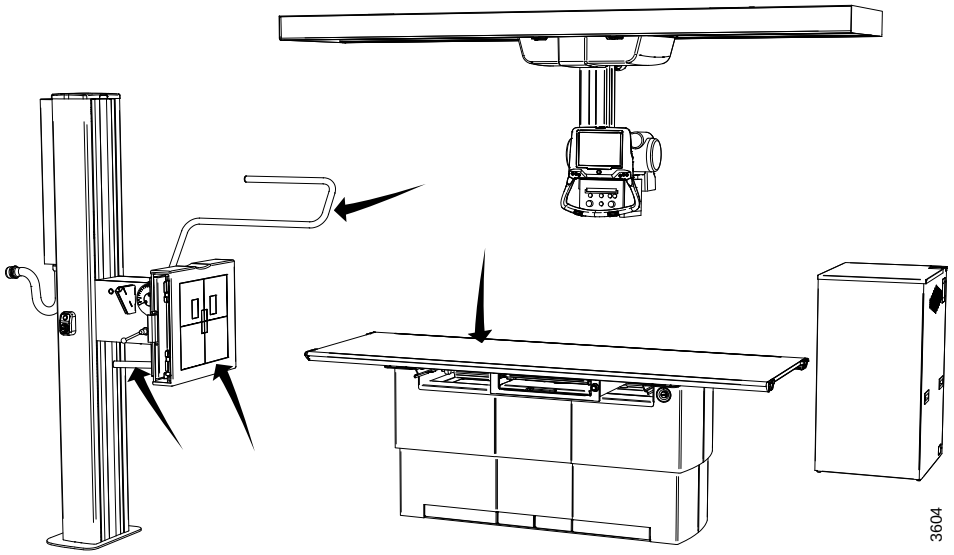


Fig. 4-1 Applied parts

4.3 Turning on/off the system

4.3.1 General

The system is ready for examination within two minutes after the system has been turned on.

Before starting the system, check that the emergency stop is not activated. When the system starts up, light indications and displays are lit.

4.3.2 Turn on the system

Perform the following procedure when starting up the X-ray system.

Note!

Before turning ON, check the connection between the image system and the X-ray system. In addition, check that the other connected devices are correctly connected. If there is any failure, connect them correctly.

1. Press the power [ON] button on the generator control console.

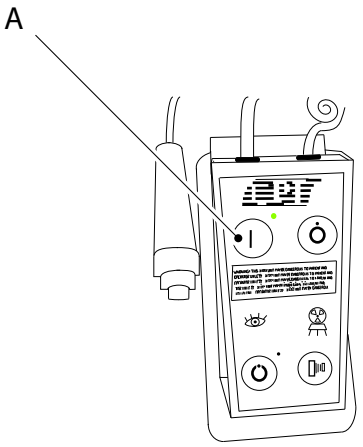


Fig. 4-2 Power on button — generator control console

2. Press the power button of the image control unit.

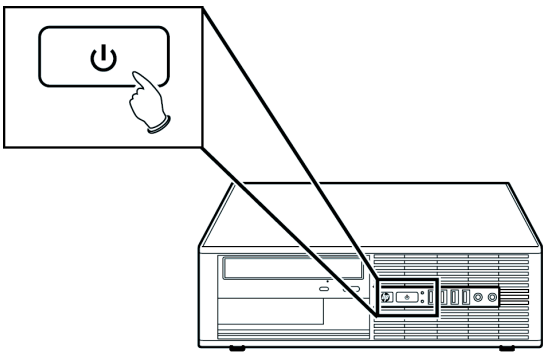


Fig. 4-3 Power button — image control unit

3. The image system will be started. See the *Image System Manual* for further information.
4. Confirm that the image system has started normally by checking the status icons.

4.3.3 Turn off the system

Note!

Wait for two minutes or longer after the examination is completed before turning OFF the power

5. Start with turning off the image system, see the image system operation manual for further information
6. Press the button [Off] button on the generator control console.
   It is possible to turn OFF the power to the X-ray system while the power to the Image system is still ON.

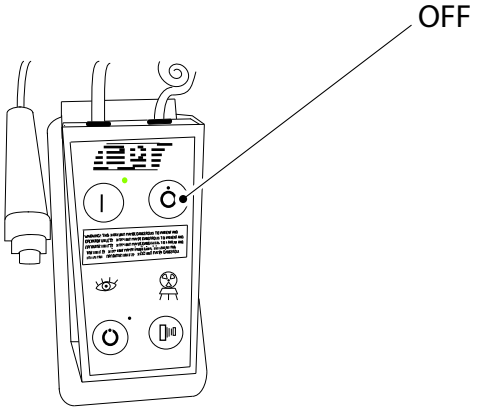


Fig. 4-4 Power button off — generator control console

4.3.4 Workstation indication light

The indication light on the wall stand/table will be lit when the corresponding workstation is selected from the Image system.

4.3.4.1 Wall stand

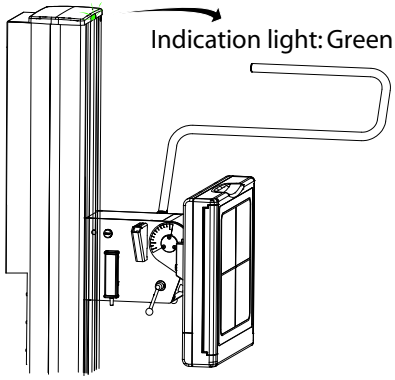


Fig. 4-5 Wall stand Indication light

4.3.4.2 Table

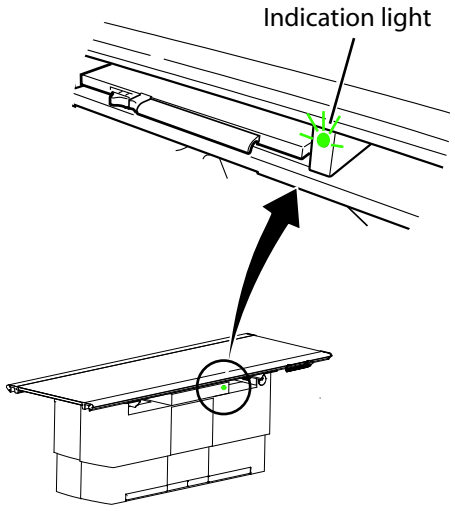


Fig. 4-6 Table indication light

4.3.5 System techniques

The system has three different techniques which are described in this chapter. The functionality and features of the techniques is also described in this chapter.

Note!

The available techniques are depending on the actual configuration of the system.

The techniques in the system are:

- *Free Technique*
- *Table Tracking*
- *Wallstand Tracking*

Table and wall stand tracking are both possible against a vertically and horizontally placed detector.

4.3.5.1 General user interface

The alpha angle is always shown on the display.

In *Free technique* the height (H) is always shown. In *Table* and *Wallstand Tracking Techniques*, the SID is shown toward a horizontally placed detector.

Against a vertically placed detector no height indication or SID is shown.

4.3.5.2 Free technique

General description

The *Free Technique* is the most basic mode in the system. The mode holds no special features or functionality. It is intended as a manual mode with a high level of freedom in positioning and exposure, e.g. for emergency examinations or examinations with the patient sitting in a wheel chair or lying in a bed. The *distance H*, shown in the display, is the distance to the floor.

Exposure validation

Exposure is allowed (the interlock relay is closed) if the ceiling stand is standing still and is operating properly (not in an error state).

4.3.5.3 Tracking

There are four different default tracking distances in the system, two for each tracking technique, i.e. *Wall stand* and *Table Tracking Technique*.

The two types for both tracking techniques are against vertically and horizontally placed detectors.

These default distances are set during installation of the system. Which default tracking distance that is used depends on which tracking technique that is chosen on the tube holder and the angle of the X-ray tube. *Wall stand* or *Table Tracking* is selected from the display and an image at the display shows if the wallstand or the table is selected.

The synchronization button below the display, indicates the status.

CAUTION!

The user shall control if the tracking is activated, or not. This is done by checking if the synchronization button, at the wallstand or the OTC, is lit.

The light indication can be flashing or constant. The light indication will be constant if the system is in the correct position for tracking (normally default tracking distance) and flashing if it is not. If the light indication is flashing, there are two ways to get the system to its correct tracking distance.

1. Move wall stand or table (depending on which tracking is activated).
2. Push and hold the synchronization button at the wall stand or at the OTC.

Tracking movement is performed as long as the movement is activated on the tracked stand, i.e. wall stand or table, the ceiling stand will move to find the correct distance and then continue to track at that distance.

If the tracked stand is already in the desired position, the synchronization button at the wallstand or at the OTC can be pushed and held to get the system to move to the correct position.

When the system has reached the correct distance for tracking, any manual movement on the tube holder (Z-direction) will change the tracking distance to the distance it is placed on when stopping the tube holder movement.

Moving the tube angle will affect the correct distance for tracking if it is moved across the -45 or 45 degree angle.

The correct distance for tracking is then set to the default tracking distance, since it has changed between horizontally and vertically placed detector.

Except for tracking against a vertically placed detector on the wallstand, tracking is always prohibited downward below the safety zone.

Synchronization control/tracking

The automatic tracking is activated at the display.

Activation of the synchronization button will drive the OTC to the position for tracking.

The activation will lead to a synchronization and tracking between the tube holder and the detector.

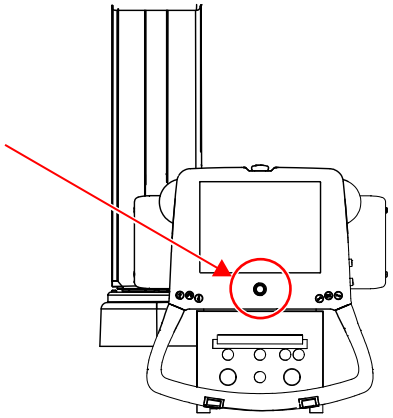


Fig. 4-7 Synchronization button with indication light – display

The synchronization button at the display, also comprises a yellow indication light. This light indicates if there is an alignment.

- Permanent yellow light — indicates; *Alignment*.
- Flashing yellow light — indicates; *No alignment*.

Table tracking technique

General description

The *Table tracking* technique is intended for examinations against a table.

In this technique the tube holder will track the movements of the table to assist the operator to always keep the distance to the detector.

Table tracking

The tube holder can track the table detector in two different positions depending on if the detector is placed vertically or horizontally.

The system decides which way, depending on the angle of the X-ray tube.

If the angle is between -45 and +45 degrees, the detector is assumed to be horizontally placed and thereby the default tracking distance for a horizontally placed detector is chosen.

The SID is shown on the display.

If the angle is outside -45 to +45 degrees, the system assumes that the detector is placed vertically and thereby the vertical default tracking distance is chosen.

No SID or height is shown on the display.

The default tracking distances are set during installation of the system.

Note!

In table tracking technique, the exposure is blocked whenever a wall stand workstation is chosen.

Table synchronization

At table synchronization, a predetermined collimator height is set. When tracking, the OTC will seek the determined height.

If the distance between collimator — table, differs from the predetermined, the yellow indication light at the OTC, will flash.

Activate the synchronization button at the OTC to move to the determined SID.

When synchronized, the indication light will stop flashing and shine with a permanent yellow light.

Wall stand tracking technique

General description

The *Wall stand tracking* technique is intended for examinations against a wall stand.

In this technique the tube holder will track the movements of the wall stand to assist the operator to always keep the correct position to the detector.

Wall stand tracking

The tube holder can track the wall stand in two different positions depending if the detector is placed vertically or horizontally.

The system decides which way depending on the angle of the X-ray tube.

If the angle is between -45 and +45 degrees the detector is assumed to be horizontally placed and the default tracking distance for a horizontally placed detector is chosen.

The SID is shown on the display.

If the angle is outside -45 to +45 degrees the system assumes that the detector is placed vertically and the vertical default tracking distance is chosen.

No SID or height is shown on the display. The default tracking distances are set during installation of the system.

Note!

In Wall stand tracking technique, the exposure is blocked whenever a table workstation is chosen.

Wall stand synchronization

WARNING!

Before performing any wall stand tracking, assure that the wall stand indication light is lit and thereby, that the wall stand is activated.

At wall stand synchronization, the collimator reticle shall be aligned with the detector cross.

When performing fast or long movements of the wall stand detector, it may occur that the collimator does not synchronize with the wall stand detector. The automatic wall stand tracking may not make it all the way and the indication light will start flashing.

In this case, activate the synchronization button at the wall stand, see **Fig. 4-8**.

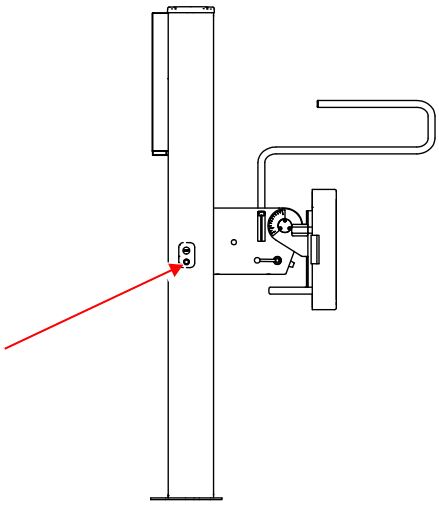


Fig. 4-8 Wall stand synchronization button

Then the tracking will carry out the full movement and synchronize. The indication light will shine permanently.

Tracking (horizontal/vertical)

Tracking operation when horizontal

- For the detector holder of the table when the *Table icon* button is active:
- When the *Wall stand icon* button is active and the detector holder of the wall stand tilt model is positioned at 90 degrees:

  Tracking operation is only performed when the alpha angle of the display is between +45 and –45 degrees. When performing horizontal tracking of each device, check that the alpha angle display is within the above range.

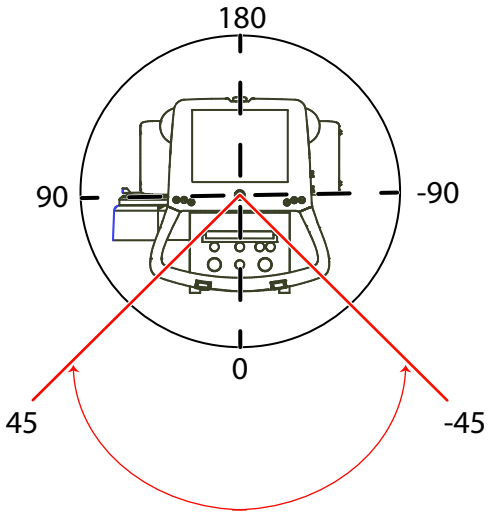


Fig. 4-9 Tracking operation when horizontal

Tracking operation when vertical

- For the holder of the wall stand when the *Wall stand icon* button is active:
- When the *Table icon* button is active and when using the vertical on the table:

  Tracking operation is only performed when the alpha angle of the display is between +46 and +134 degrees and between 46 and 134 degrees. When performing vertical tracking of each device, check that the alpha angle display is within the above range.

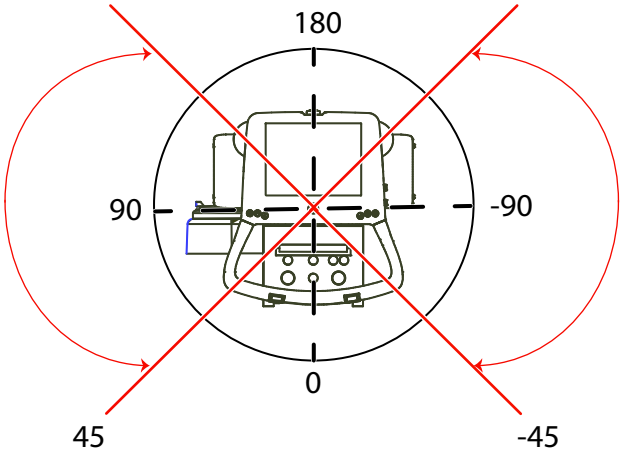


Fig. 4-10 Tracking operation when vertical

4.4 Operating the Table

The two column table 0055 is described in **3.16 Table control elements**

4.4.1 General

CAUTION!

Do not place the device where dust may cause malfunction to the power source.

Note!

The Table shall only be operated by trained radiographers, service technicians or product specialists.

4.4.2 Functional description, closed table 0181

The control of the table is positioned on the lower part of the vertical lift as a kick box or on the floor as a foot control, there is an optional hand control. The controls are used for enabling and disabling of functions of the table. These functions are described below.

4.4.2.1 Movements

The table can be moved in Z-direction for up and down movements and in X- and Y-direction for longitudinal and lateral movements. See figure below for different controllers.

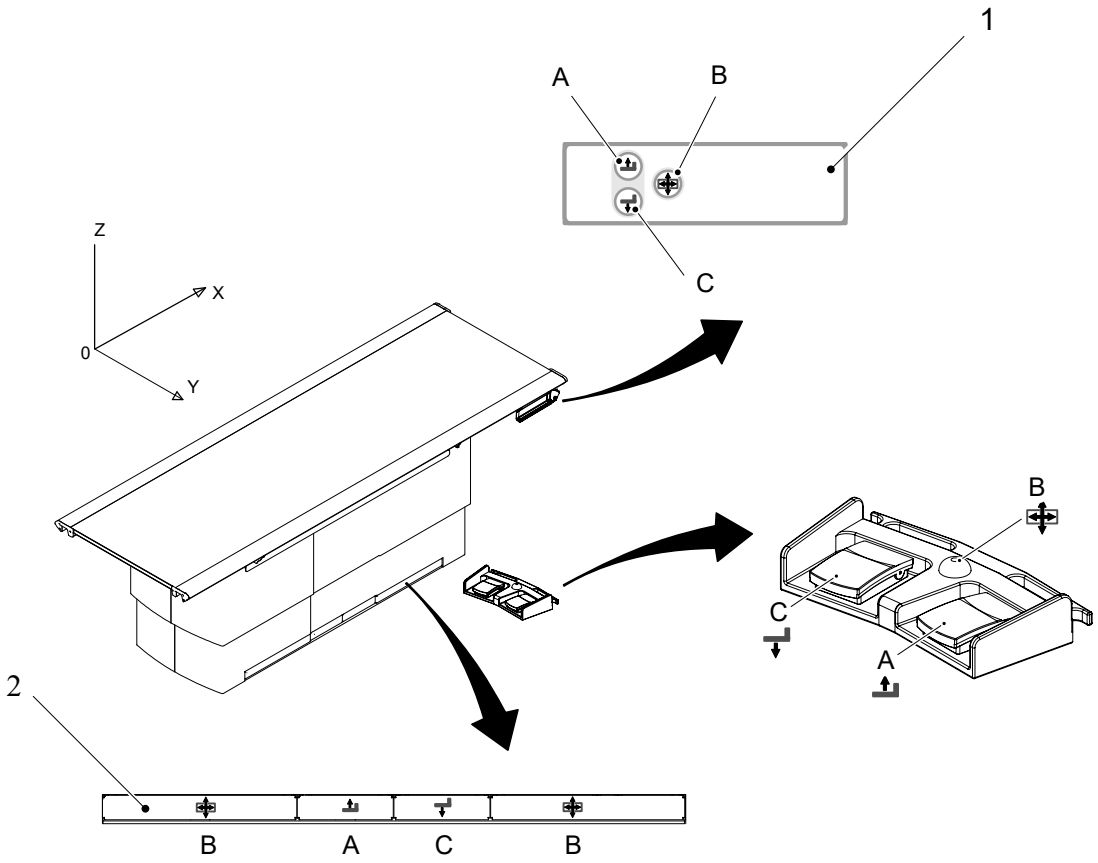


Fig. 4-11 Table controls

1. *Maneuver hand control (optional)*
2. *Kick box control*

Table 4-1

Pos.	Direction	Movement	Activation
A	Z up	motorized	Press and hold the button to activate the movement. Release the button to stop the movement.
C	Z down		
B	X and Y lateral and longitudinal	Manual	Press and hold the button to release the break and to be able to move the table top. Release the button to activate the brake and the table top will be locked.

CAUTION!

- ***When moving the table with the patient or devices nearby, be careful so the table does not come in contact with the patient and devices.***
- ***When lowering the table, be careful so the patient does not carelessly come in contact with the table.***
- ***When moving the table or the table top, be careful not to get your arms and fingers caught in the device.***
- ***When moving the table by foot control or maneuver handle, be careful not to get your arms and fingers caught between the table and surrounding objects.***

CAUTION!

Make sure no foot control, maneuver handle or kick box control is pressed during power up.

An activated control during power up will set the table in an error state and disable its use

Moving the table top

To manually move the table top, release the brakes and use the hand grip rails located at the long sides of the table top.

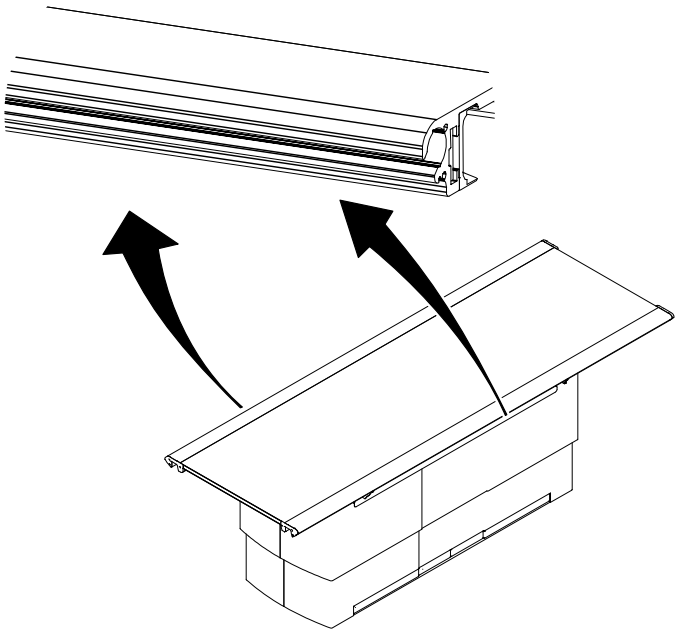


Fig. 4-12 Manually movement of table top

4.4.3 Detector - Canon CXDI-401 (Standard)

The detector is a stationary mounted digital detector.

The unit is powered supplied from the Canon Power Supply box, mounted under the detector wagon.

4.4.4 14x17 Detector, table

4.4.4.1 Method to Load the 14x17 Detector

CAUTION!

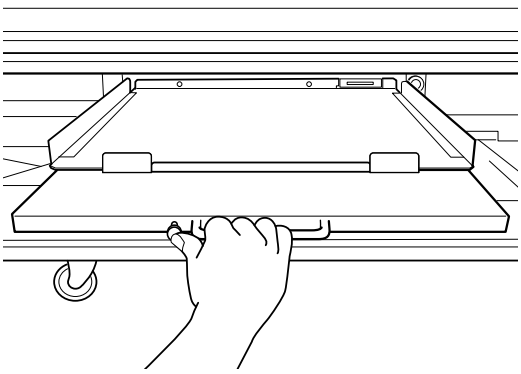
Do not put any load on the detector tray. It might be damaged.

CAUTION!

Always supervise movements of the detector to avoid collision with peripherals.

Note!

This instruction only applies to the portable detector.



1. Pull out the detector tray.

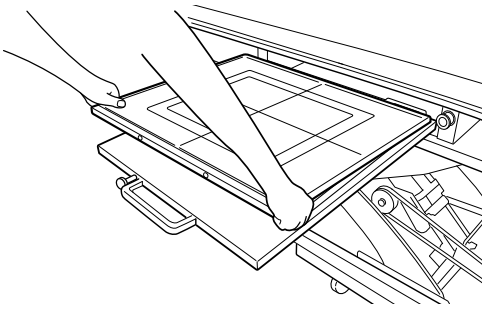
   Note!

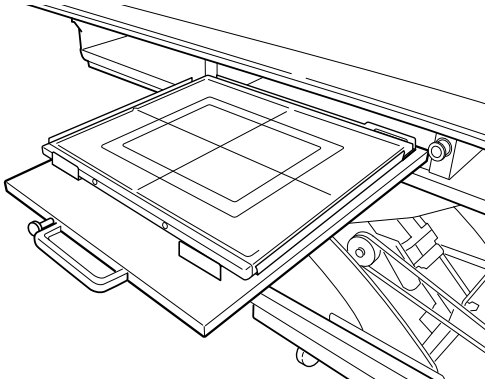
   The detector tray should be in locked position.

2. Insert the detector into the tray.

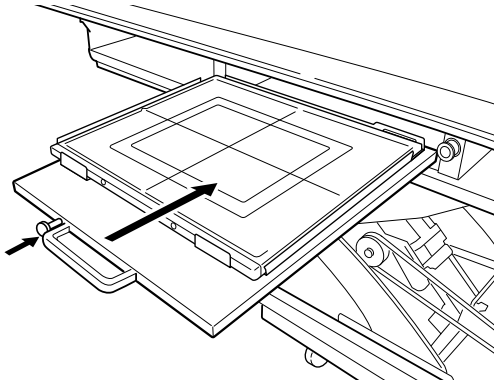
   Note!

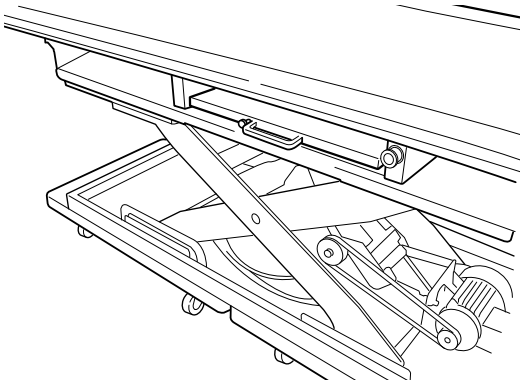
   It is important to check that the detector is correctly inserted into the detector tray. An incorrect positioning will result in incomplete images.



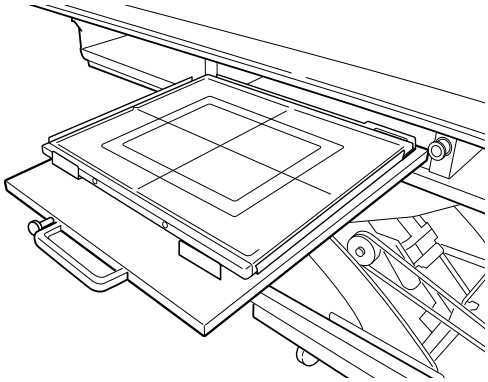


3. Press and hold the button of the tray and push it in.

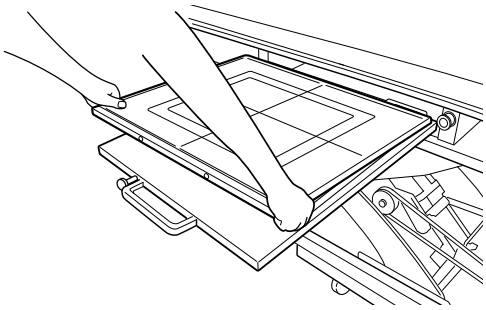




4.4.4.2 Remove 14x17 Detector

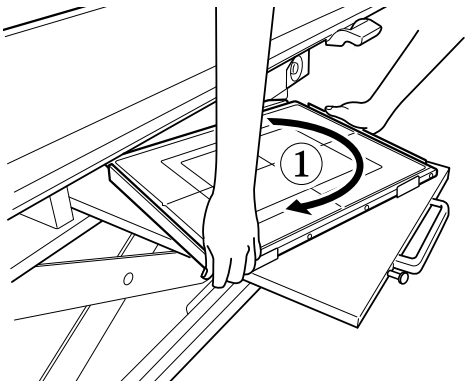


1. Push the button and pull out the detector tray.

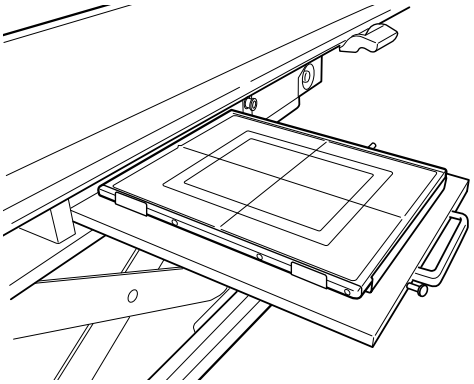


2. Hold and remove the detector toward you as shown below.

4.4.4.3 Change between Portrait and Landscape (14x17 Detector)



1. Rotate the detector 90°.

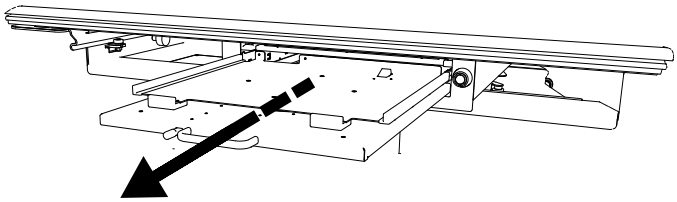


2. Hold as shown below, and turn the detector toward you in the arrow direction.

4.4.5 17x17 Detector, Table

4.4.5.1 Method to Load the 17x17 detector, table

1. Pull the detector tray toward you, until it is completely brought out and locked in its position.



Note!

- When pulling the detector tray, the button on the side of the tray will first recede before snapping back into its original position when it locks.

2. Insert the detector into the detector tray as shown below.

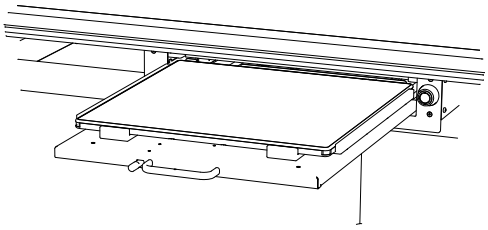
   Set the detector by pushing it into the tray. Make sure there is a clicking sound at insertion, proving the detector is placed in the correct position.

   Note!

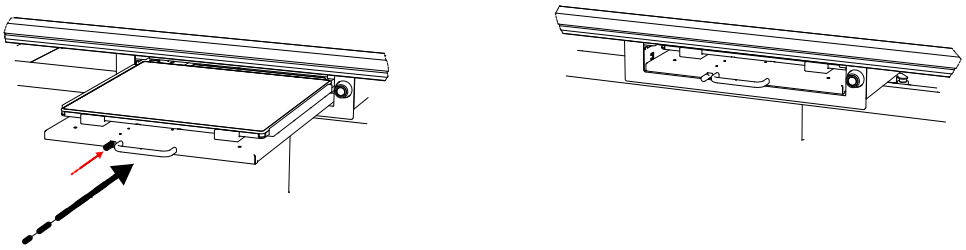
   It is important to align the detector with the X-ray, by positioning the detector correctly into the detector tray.

   An incorrect detector insertion will lead to incomplete images.

   If the detector is chargeable, make sure that the detector contact is connected to the detector holder contact.



3. While pressing and holding the black button of the detector tray, return the tray back into the inside of the detector holder.



CAUTION!

- ***Handle the tray carefully when returning it into the detector holder.***
- ***Confirm that the tray is not leaning to one side.***

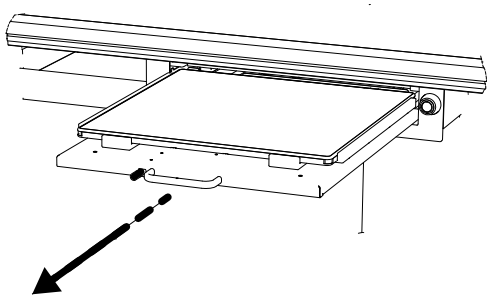
Note!

Assure that the detector tray is pushed in completely to the end position.

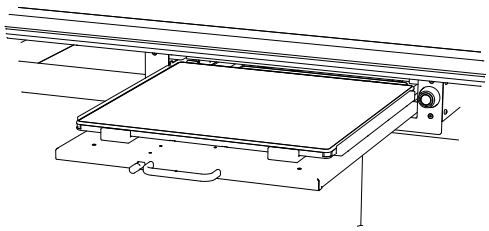
4.4.5.2 Method to Remove the 17x17 Detector, Table

The method of removing the detector from the detector holder, is as follows.

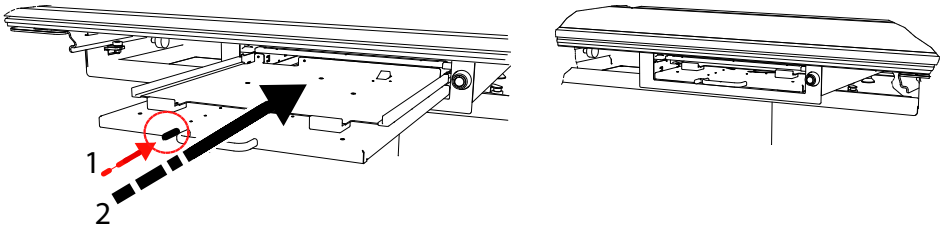
1. Pull out the detector tray.



2. Grip the detector and lift it at the same time as you pull it toward you.



3. Reload the tray inside the detector holder by pressing the black button and pushing the tray inside the detector holder until it is in position.



4.4.6 Grid

4.4.6.1 Installing the Grid

The following procedures are used for installing the grid or when you need to replace the grid.

CAUTION!

- ***Use the grid that is appropriate for exposure conditions (focus distance, etc.)***

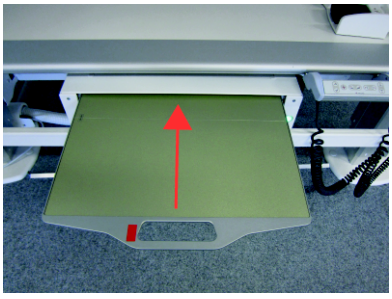
Hold the grid in both hands holding the metal on the sides of the grid, and insert the grid along the grid holder rail on the top of the detector tray.

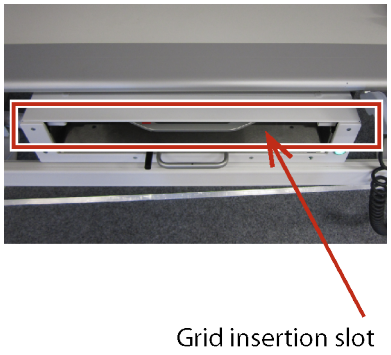
CAUTION!

- ***Properly insert the grid along with the rail. The device may be damaged if not mounted properly.***

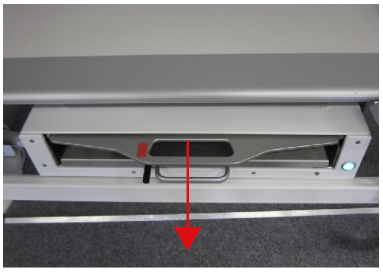
Note!

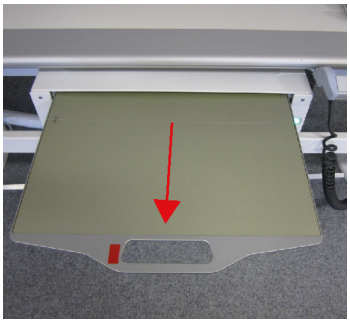
- When mounting the grid, after confirming that right side is up, check to make sure that it is mounted correctly with the top surface toward you, as shown below.
  The top surface is the one with the sticker affixed to the metal handle of the grid surface.





When you need to replace the grid, or when you remove the grid to perform calibration, pull the grid in the direction of the arrow while holding the metallic handle on the side of the grid. (See the Installation and Service Manual for *“Gain calibration”*).





4.4.6.2 Exchange Grid

WARNING!

Failure to insert the grid in the correct orientation, with the tube side facing towards the X-ray source, can result in unsuccessful patient imaging.

Additional corrective patient imaging and additional ionising radiation exposure for the patient may be needed.

Ensure the grid is inserted in the correct way.

1. Push in and pull out the grid.

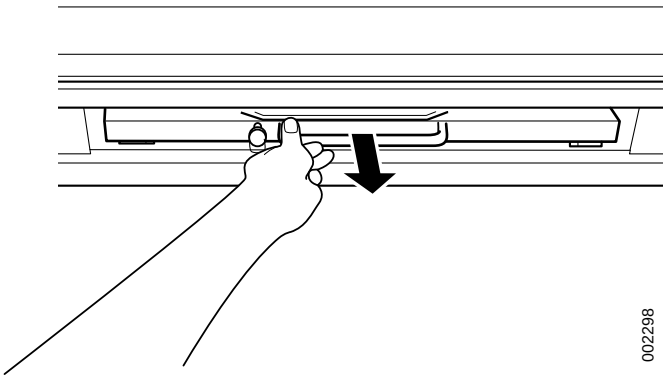


Fig. 4-13

1. Exchange the grid.
   Insert the grid with the tube side facing upwards, towards the X-ray source. The tube side of the grid has the specification label and the grid centre line identification.
2. Push in the grid, until it clicks.

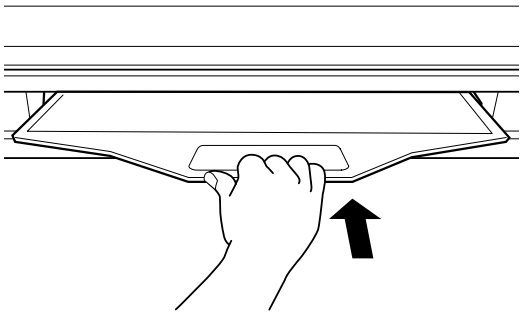


Fig. 4-14

4.4.7 Attach and remove table accessories

Accessories are attached and removed as shown in the figures below. This instruction is valid for all accessories that are attached to the table top.

The figure shows how to attach accessories to the table top.

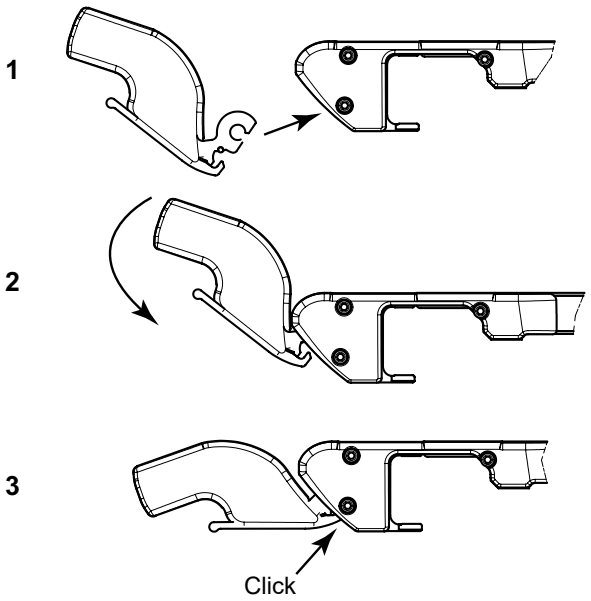


Fig. 4-15 Attach accessories

The figure shows how to remove accessories from the table top.

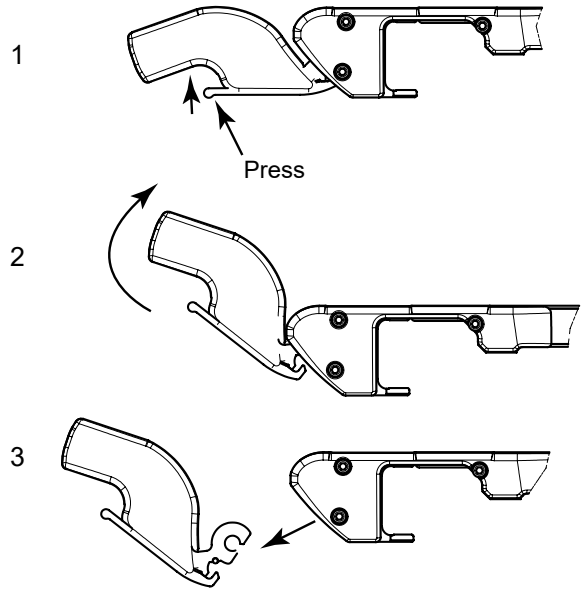


Fig. 4-16 Remove accessories

4.5 Operating the Wall Stand

4.5.1 General

WARNING!

If any item is removed from the wall stand, e.g. the detector or lateral armrest, the wall stand will become unbalanced.

When the brake is released, part of the wall stand will move upward and can cause injury.

The operation should be performed by trained personnel.

Note!

The patient or operator is not allowed to hang or put any weight on the wallstand or patient lateral armrest, they are only allowed to use it for support .

CAUTION!

If the voltage is not within the specified range, exposure problems may occur.

If the voltage is too low, the exposure may need to be repeated.

If the voltage is too high, the exposure may be impossible.

CAUTION!

Do not place the device where dust may cause malfunction to the power source.

CAUTION!

To avoid any injuries to patient, user or system, peripherals should always be placed outside the working area.

CAUTION!

- ***Be careful not to load more than 25 kg on the lateral armrest.***
- ***Patient must be supported by trained radiologist in using the lateral armrest.***
- ***Do not use the lateral armrest when it is unlocked.***

4.5.1.1 Applied parts

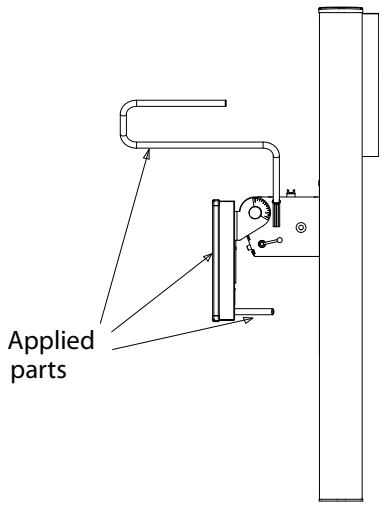


Fig. 4-17 The arrows show parts intended for patient touching

4.5.2 Functional description

The control of the wall stand is placed on the detector holder wagon, there is an optional foot control. The controls are used for enabling and disabling functions concerning the wall stand. These functions are described below.

4.5.2.1 Movements

The wall stand can be moved manually in Z-direction for movements upward and downward. A button (B) for brake release is placed on the left and right sides of the image receptor holder wagon. An optional button for brake release is placed on the foot control.

Press and hold the button (A or B) to release the brake and push the wagon up or down.

Release the button (A or B) when the image receptor holder is in position and the brake will be activated and locked.

WARNING!

Hazardous situations when moving the tilted image receptor holder in Z-direction to the floor:

- ***Image receptor collision with the floor***
- ***Squeezing hazard for patient***

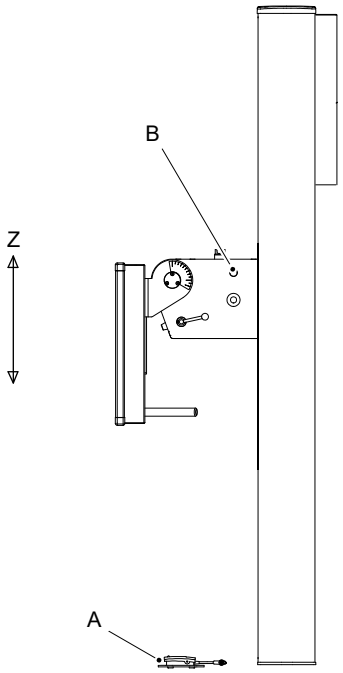


Fig. 4-18

WARNING!

Whenever any item is removed from the wallstand, e.g. image receptor holder, it will become highly unbalanced. Whenever the brake is released it will move upward and can cause injury. Make sure that the operation will be done by personnel who are trained in the use of the equipment.

CAUTION!

- ***Before raising or lowering the image receptor holder, be sure to check the position of the patient.***
- ***When raising or lowering the device with the patient nearby, be careful so the device does not come in contact with other devices or the patient.***
- ***When raising or lowering the patient support grip, be sure the patient is not hanging down from the grip.***

4.5.2.2 Motorized Z Movement

The controls concerning the motorized wall stand are placed on the imaging unit holder bracket and at the foot of the column.

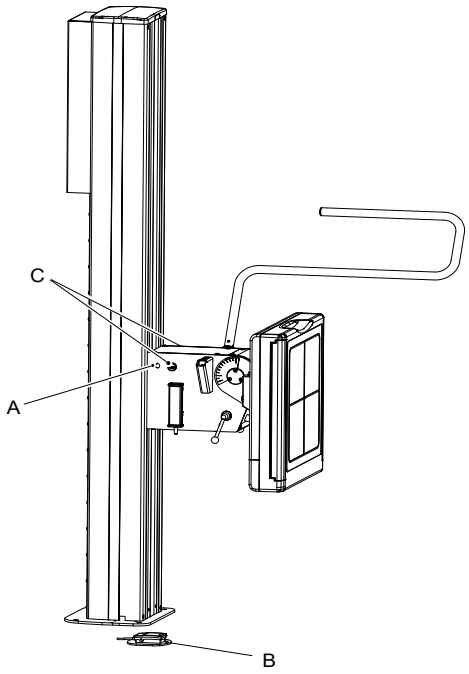


Fig. 4-19 Motorized Z-movement controls

These functions are;

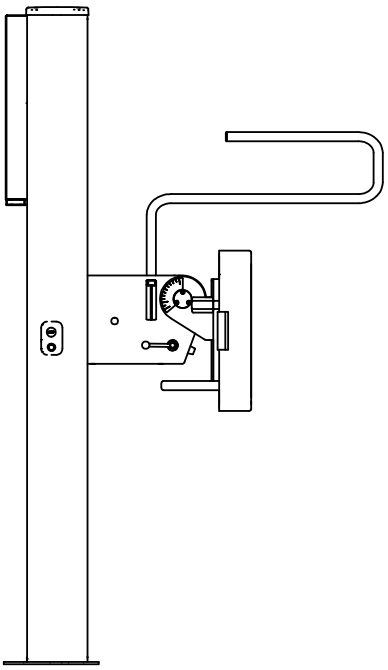
- A. Release/Engage imaging unit brake (Z-direction)
- B. Release/Engage imaging unit brake (Z-direction)
- C. Emergency STOP

The imaging unit brake key (B) automatically lights the collimator lamp on activation, if wall tracking is selected and detector is moved. The collimator is automatically switched off after a pre-defined time when the imaging unit brake key has been deactivated (released).

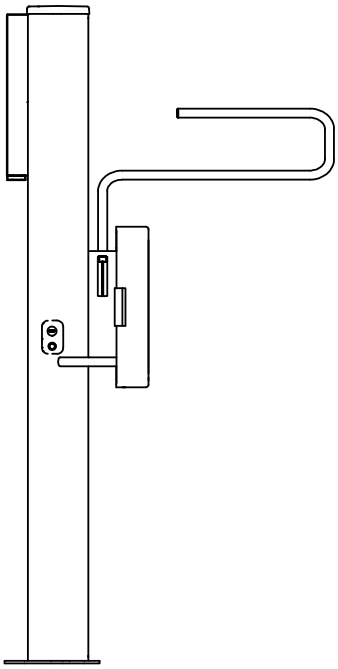
The imaging unit brake key (B), generally named movement key, is also used for enabling movement of the OTC (Z-direction).

On activation of the imaging unit brake key, an automatic movement of OTC is allowed. The automatic movement is used for tracking the movement of the image receptor and to synchronize (align) the x-ray tube and the imaging unit.

4.5.2.3 Patient support grip, standard, tilt



4.5.2.4 Patient support grip, standard, non-tilt



4.5.2.5 Detector, detector holder and grid

Tiltable detector holder (option)

The wallstand has an optional tiltable detector holder wagon. The wagon can make it possible to tilt the detector holder from -20° +90°. See index positions in the figure below

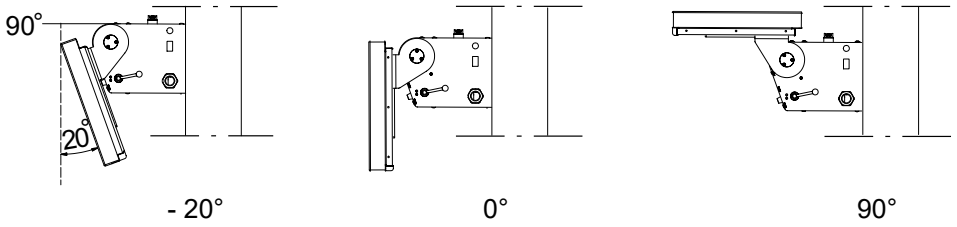


Fig. 4-20 Index positions

Tilt the detector holder

Turn the handle (1) up to unlock the tiltable detector holder according to picture B in figure below. Push the detector holder up in right position and then turn the handle down to lock the holder, see picture C in the figure below.

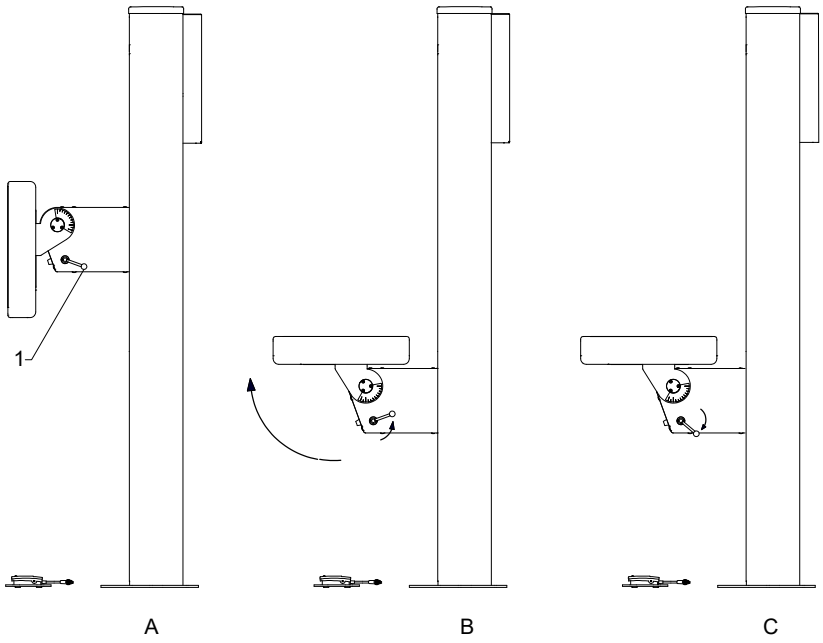


Fig. 4-21 Tilting detector holder

Start position of the handle

CAUTION!

Squeezing hazards:

between the detector holder and other parts or devices when adjusting the angle of the detector holder.

for fingers when operating the detector.

for arm and fingers when operating the detector holder

To position the handle (See pos.1 in **Fig. 4-21**, in its start position);

1. Drag the handle out from the wagon
2. Turn the handle to the right position
3. Push the handle back toward the wagon

14x17 Detector, wallstand

Method to load the 14x17 detector, removable grid

The method of setting the detector to the detector holder is as follows. Following instruction describes the detector operated from the right side.

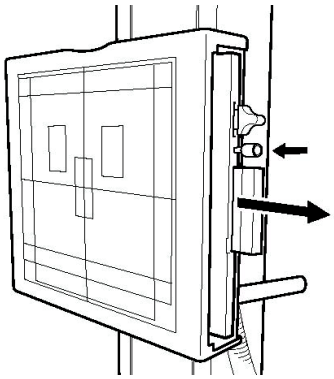
WARNING!

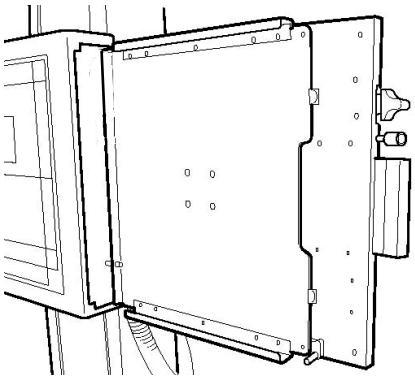
- ***Before setting or adjusting of detector and other equipment, complete the setting of the counterweights.***
- ***Whenever any item is removed from the wall stand, e.g. detector, it will become highly unbalanced, Whenever the brake is released, it will move upward and can cause injury. Make sure that the operation will be carried out by personnel who are trained in the use of the equipment.***
- ***Shut down the power when changing of the detector. Confirm that it is not possible to elevate. If the detector holder elevates accidentally while work is being carried out, it may fall against the operator and result in serious injury.***

Note!

- Depending on left or right operated wall stand, the location of the detector tray and position of button and latches is different.

1. Pull the detector tray toward you until it locks.

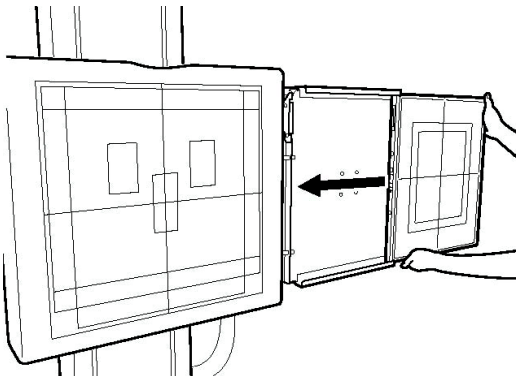


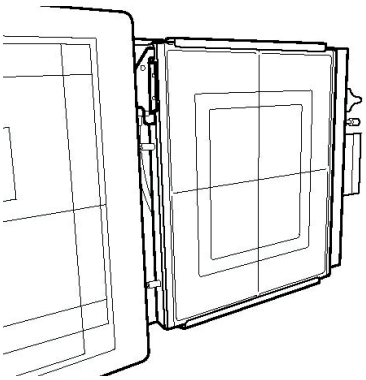


Note!

- Install the detector with the detector tray pulled into the locked position. When pulling the detector tray, first the button on the side of the tray will recede before snapping back into its original position when it locks.

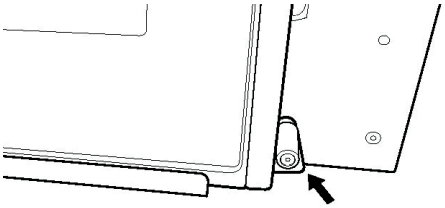
2. Insert the detector into the detector tray as shown below and set it by pushing it in until it clicks.



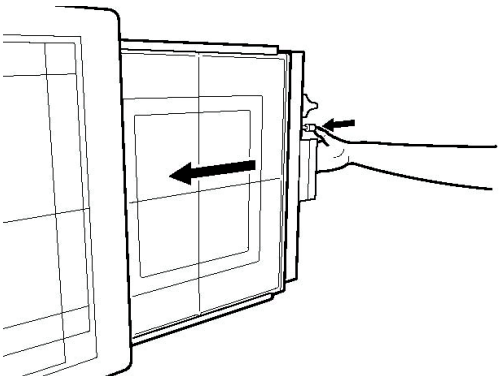


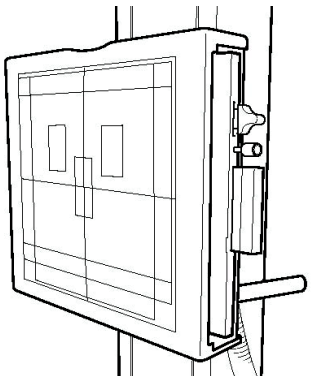
CAUTION!

- ***Confirm that the latch is going up firmly, as shown below.***



3. While pressing and holding the button of the detector tray, return it back to the inside of the detector holder.

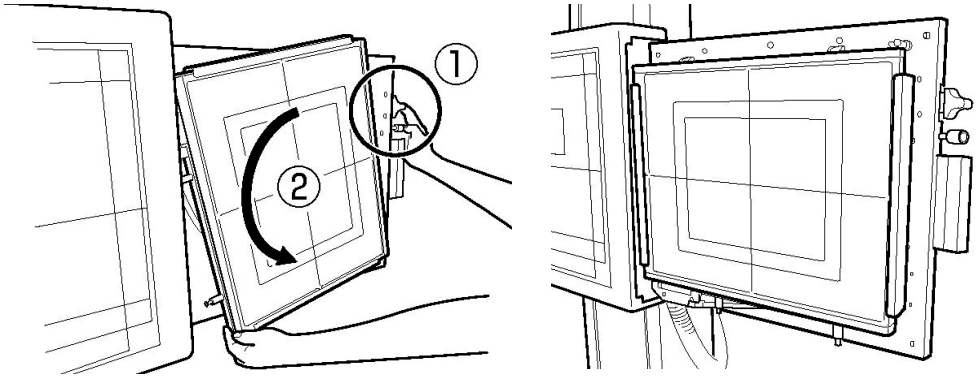




Method to rotate the 14x17 detector, removable grid

The method of rotating the detector in the detector holder, is as follows.

1. To rotate the detector by 90°, , in the step 2 of “Method to set the detector”, hold the lower side of the detector and turn it from the below, toward you (2) while pulling the latch upward or downward of the detector tray (1) in the direction of the arrow.



Note!

- To set the detector, pull the latch
  - upward at upper position of the tray.
  - downward at the center of the tray.
- Depending on left or right operated wallstand, the location of the detector tray and position of button and latches is different.

Method to remove the 14x17 detector, removable grid

The method of removing the detector from the detector tray is as follows.

1. To remove the detector, in the step 2 of “Method to set the detector”, unlock the connector by pulling the latch of the detector tray in the direction of the arrow.

Note!

- Depending on left or right operated wallstand, the location of the detector tray and position of button and latches is different.

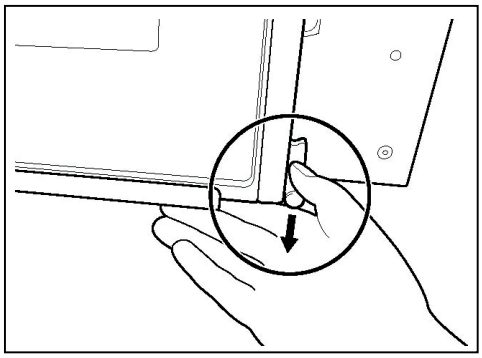


Fig. 4-22

17x17 Detector, wallstand

Method to load the 17x17 detector

WARNING!

- ***Before setting or adjusting the detector and other equipment, complete the setting of the counterweights.***
- ***Whenever any item is removed from the wallstand, e.g. detector, it will become highly unbalanced.***
- ***Whenever the brake is released, it will move upward and can cause injury. Make sure that the operation will be done by personnel who are trained in the use of the equipment.***
- ***Shut down the power when changing the detector. Confirm that the detector holder is not possible to elevate. If the detector holder elevates accidentally while work is being carried out, it may fall against the worker and result in serious injury.***

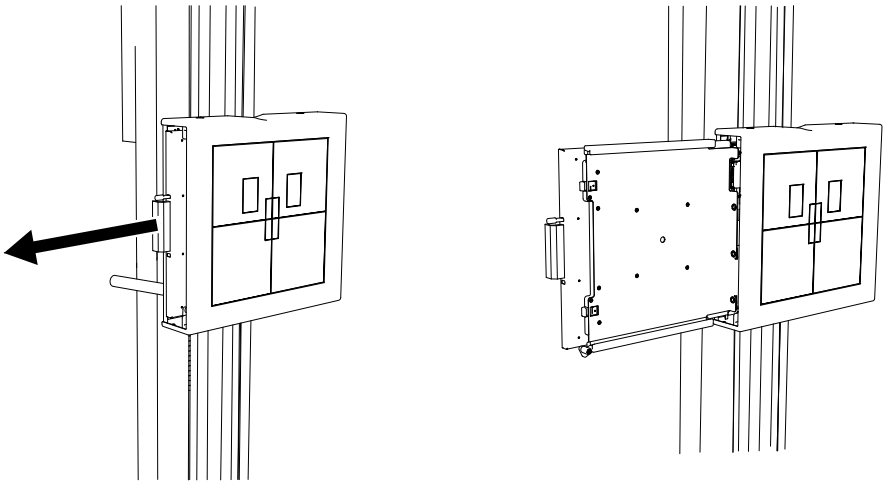
Note!

- Depending on left- or right-operated wallstand, the location of the detector tray and position of button and latches is different.

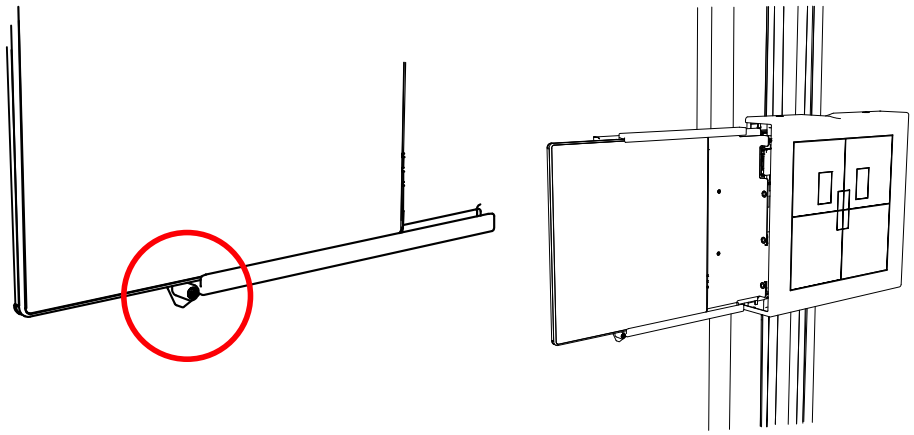
The method of setting the detector to the detector holder is as follows;

The following instruction describes the detector operated from the left side.

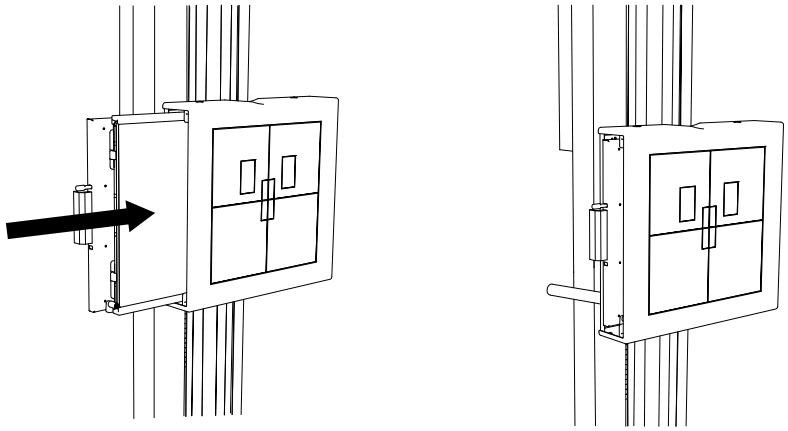
1. Pull the detector tray toward you. Make sure the detector tray is completely brought out.



2. Insert the detector into the detector tray as shown below and set it by pushing the detector, holding down the latch.



3. While pressing and holding the button of the detector tray, return it back to the inside of the detector holder.



4. Push the detector until the hold-backs are set. Then the detector is in the correct position. Chargeable detectors will start charging when set in this position.

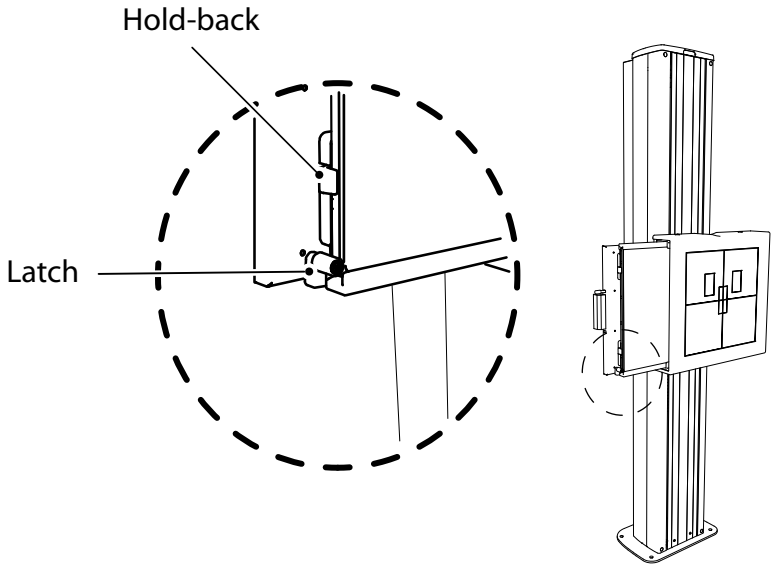


Fig. 4-23

CAUTION!

It is important that the hold-backs lock outside the detector end. Failure to position the detector in the proper position, will lead to incorrect images.

Note!

If the detector or the detector holder is not properly inserted, a warning symbol will be shown at the display.

Method to remove the 17x17 detector, wallstand

1. Pull the detector tray toward you. Make sure the detector tray is completely brought out.

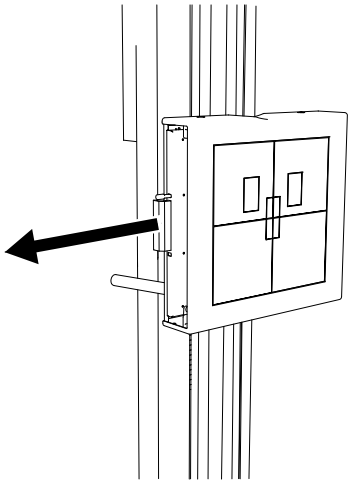


Fig. 4-24

2. Hold down the latch, removing the detector from the detector tray as shown below.

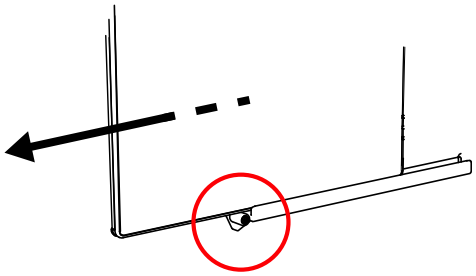


Fig. 4-25

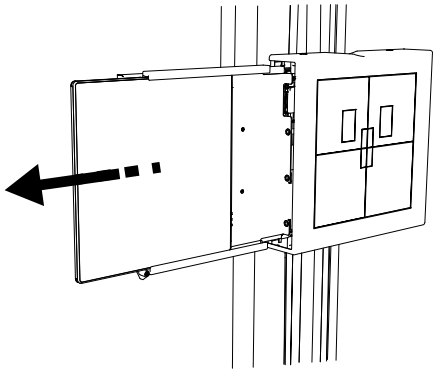


Fig. 4-26

4.6 Synchronization control/tracking

The automatic tracking is activated at the display.

Activation of the synchronization button will drive the OTC to the position for tracking.

The activation will lead to a synchronization and tracking between the tube holder and the detector.

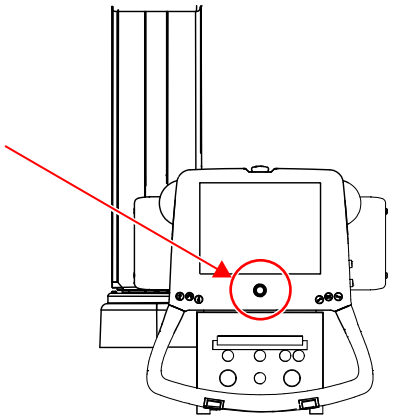


Fig. 4-27 Synchronization button with indication light — display

The synchronization button at the display, also comprises a yellow indication light. This light indicates if there is an alignment.

- Permanent yellow light — indicates; *Alignment*.
- Flashing yellow light — indicates; *No alignment*.

4.7 Exposure

Exposures are done using either the prep. and X-ray buttons on the operator console or by using the optional hand control.

4.7.1 Exposure Hand Control (option)

A. Exposure control in normal position.
B. Exposure control in preparation position.
C. Exposure control in exposure position.

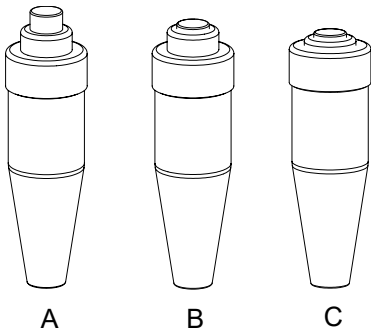


Fig. 4-28

5 Error Handling

5.1 Fault handling

There are three types of NOTIFICATIONS - Shows the present occurrence. For example; collision. They are listed below in ranking order.

1. ERROR — The error information appears as a red bar in the lower part of the display. Sound; two beeps.
2. WARNING - Appears as a grey bar in the lower part of the display. Sound; one beep.
3. INFO - Not shown to the user. Only registered in the setting menu.

5.1.1 Notifications

5.1.1.1 - 1) Error

When an error occurs, an Error pop-up window will appear in the display.

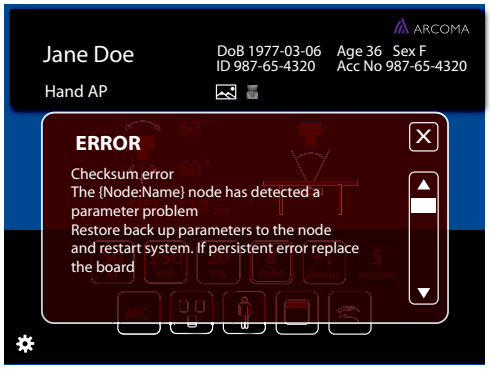


Fig. 5-1 Error pop-up window

The Error pop-up window will disappear when the user pushes the close button.

Fig. 5-2 Close button

When closing the Error pop-up window (**Fig. 5-1**), a red information bar will appear (see **Fig. 5-3** and **Fig. 5-4**).

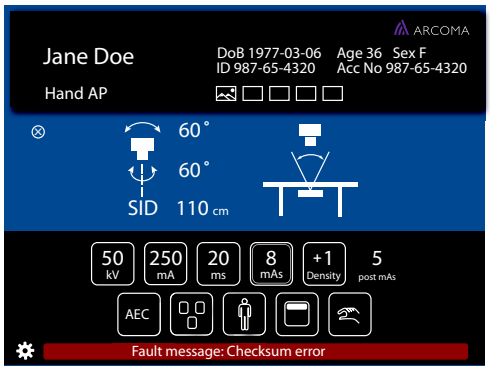


Fig. 5-3 Error information bar, Table

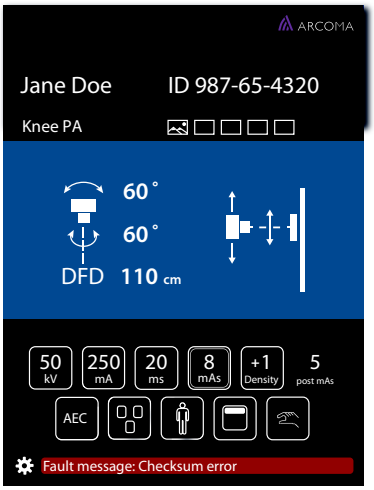


Fig. 5-4 Error information bar, Wall stand

When the user pushes the red information bar, the Error pop-up window will appear again.

The Error information bar (lower part of the window) is present until the error is fixed or the System is restarted.

5.1.1.2 2) Warning

A warning message will appear in a Warning information bar (lower part of the display), when the handling of the System justifies that.

The Warning information bar will be cleared if/when a new warning is displayed, or after time.

The latest sent warning is shown.

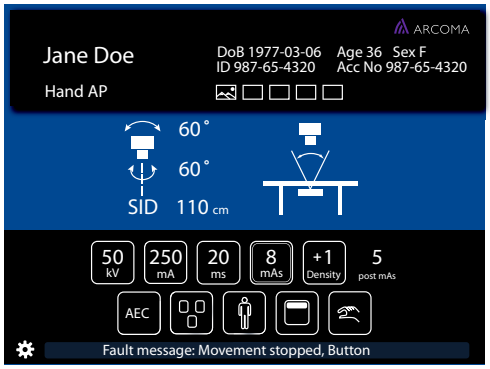


Fig. 5-5 Warning information bar, Table

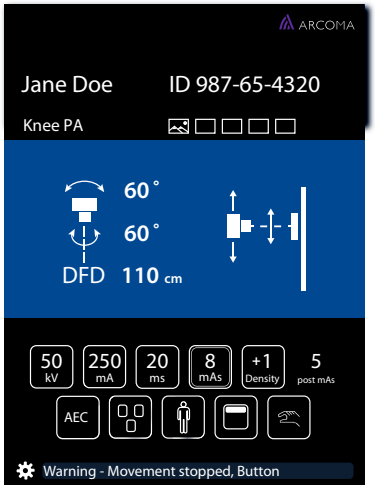


Fig. 5-6 Warning information bar, Wall stand

When pushing the Warning information bar, (see **Fig. 5-5** and **Fig. 5-6**), a pop-up window will appear (see **Fig. 5-7** and **Fig. 5-8**).

Fig. 5-7 Pop-up window — Warning information bar

When the user closes the pop-up window, the Warning Information bar will appear again.

The Warning pop-up window will also appear again, when the user pushes the information bar.

Fig. 5-8 Pop-up window — Information bar

The *Warning pop-up window* disappears when the user pushes the close button.

Fig. 5-9 Close button

5.1.1.3 Log

The *Log file* is part of the *Setting menu* and reached by pressing the gear or the *Error/ Warning messenger* bars.

6 Cleaning and Disinfection

Cleaning is used for removal, usually with detergent and water or enzyme cleaner and water, of adherent visible soil, blood, protein substances, microorganisms and other debris from the surfaces, crevices, serrations, joints, devices, and equipment by a manual or mechanical process that prepares the items for safe handling and/or further decontamination.

Disinfection is used for chemical destruction of pathogenic and other types of microorganisms.

6.1 General

General guidelines for cleaning and disinfection of the system are given below.

WARNING!

Risk of electrical hazard or damage to the system

- ***Before cleaning or disinfection, switch off the system to prevent electric shocks, for exceptions see 6.1.1 Cleaning and Disinfection Permitted with System Switched ON***
- ***Do not spray or pour cleaning liquid on any part of the system.***
  Use a lint-free cloth moistened with a moderate amount of liquid to avoid that cleaning liquids seep into the openings of the system, e.g., air openings, gaps between covers.
- ***Do not restart the system if cleaning liquids have leaked in.***

CAUTION!

Risk of damage

Use non-abrasive cleaning products to avoid scratches or damage to surfaces.

6.1.1 Cleaning and Disinfection Permitted with System Switched ON

For cleaning and disinfection of the following parts, the system can stay switched on:

- Lateral armrest
- Patient grips
- Chin rest
- Front cover of Bucky unit
- Tabletop

6.2 Cleaning

- Wipe the system’s parts with a lint-free cloth moistened with a moderate amount of mild soap or detergent solution until all visible signs of surface contaminants are removed.
- Remove all remaining cleaning residues and dry with a soft cloth.
- Keep the ventilation slots of all components unobstructed.
- Regularly clean the dust off all rails and joints etc.

See also separate instruction for **6.4 Maneuver Handle and Display**.

6.3 Disinfection

- Clean the surfaces/parts before disinfection according to **6.2 Cleaning**.
- Wipe the surface with a lint-free cloth moistened with a disinfectant.
- Do not spray any disinfectants directly on the surface.
- Obey the instructions of the manufacturer of the disinfectant.

See also separate instruction for **6.4 Maneuver Handle and Display**.

6.4 Maneuver Handle and Display

- Wipe the maneuver handle and display using a moderately moist cloth with water or alcohol-only cleaning agents only.
- Do not spray directly on the maneuver handle or the display.

7 Function and Safety Checks

7.1 Safety checks

7.1.1 General

Note!

Before performing any maintenance please read the safety chapter.

Note!

For exchange of the collimator light field lamp, see the Collimator manual.

If any malfunction is detected, the entire equipment must be taken out of use until the malfunction is eliminated by a service engineer from the supplier or by the local technical staff trained by the supplier.

Daily and monthly checks are normally performed by the user/operator.

Annual checks shall be performed either by local technical staff trained by the supplied or authorized service representatives.

The Manufacturer recommends use of the checklist, Appendix B.

7.1.2 Maintenance

To ensure the safety of the patients, the operators, and third parties, and to maintain reliability, the equipment must be checked according to Function and Safety Check list. If national rules or regulations specify more frequent checks and/or maintenance, such regulations must be observed.

7.1.3 Scheduled checks for the user

Item	Inspection period
Cleaning of parts in contact with the patient	Every day
Cleaning of main body of the equipment	Every 1 month

Other maintenance and items as follows should only be performed by trained service personnel.

Item
Checking for abnormal sounds
Checking for fallen foreign matter
Checking for oil leaks, etc
Checking the emergency stop buttons

7.2 Monthly checks

7.2.1 Checklist

7.2.1.1 Ceiling suspended X-ray tube support

- ☐ 1. Move the ceiling suspended X-ray tube support manually to all positions in X, Y and Z direction and make sure it runs smoothly and sounds OK.
- ☐ 2. Check the emergency stop. By activating the emergency stop all motorized movements are inhibited.
- ☐ 3. Choose table position and make sure tracking is activated.

  Measure between the X-ray tube focal spot and the active image receptor surface of the detector holder.

  The measured SID shall correspond with the displayed SID.

  Move the ceiling suspended X-ray tube support in X or Y direction and measure between the X-ray tube focal spot and the active detector surface of the detector holder again.

  The SID is allowed to differ ±1%.
- ☐ 4. Check that the SID, shown on the display of both the Image system and the collimator, correspond with the measured SID/FFD.
- ☐ 5. Check the hoses for damage.
- ☐ 6. Check all outer cabling for damage.
- ☐ 7. Clean all outer surfaces, except for the lubricated column segments. See Instruction for use for cleaning instructions.
- ☐ 8. Power up the ceiling stand and check all functions.
- ☐ 9. Move the ceiling stand around and observe any irregularities.

7.2.1.2 Table

- ☐ 10. Power up the Table and move the Table up and down and observe any irregularities.
- ☐ 11. Check all outer cabling for damage
- ☐ 12. Clean all outer surfaces, except for the columns because the segments are lubricated.
- ☐ 13. Move the Table top longitudinal to check that the end stops are correctly mounted.
- ☐ 14. Make sure that the instruction for use is available and correct.

7.2.1.3 Wall stand

- ☐ 15. Move the wallstand up and down in Z direction and make sure it runs smoothly and sounds OK.

7.3 Annual checks

Refer to *Service and Installation Manual, Chapter 5*.

8 Technical Specifications

8.1 400T System

8.1.1 Electrical characteristics

Mains voltage for the system	400 V 3N, 50/60 Hz 400 V 3~ 480 V 3~ 150 A (Short term peak value), (required fuse 63 A thermal breaker, B-curve).
Heat dissipation	689 BTU/hr

For further information, see the Tube technical data sheet, at the accompanying documents.

8.1.1.1 Classification

Classification according to IEC/EN 60601-1.

Class	Class I equipment. All dead metal parts of the equipment are electrical connected to protective earth.
Applied part	Type B
Protection against ingress of water	IPX0
Mode of operation	Intermittent operation: 20% 1 min ON / 4 min OFF
Use of anesthetic mixtures	The equipment is not suitable for use in the presence of flammable anesthetics mixtures with air, oxygen or nitrous oxide.

Classification according to IEC/EN 60601-1–2

Class	Class A

8.1.1.2 Output parameters

OUTPUT PARAMETER	MODE	GENERATOR SERIES	LOADING FACTOR
Maximum X-ray tube voltage and highest X-ray tube current at that voltage.	Radiographic (Intermittent)	80 kW	150 kV, 500 mA
		65 kW	150 kV, 400 mA
		50 kW	150 kV, 320 mA
Maximum X-ray tube current and highest X-ray tube voltage at that current.	Radiographic (Intermittent)	80 kW	1000 mA, 80 kV
		65 kW	800 mA, 81 kV
		50 kW	630 mA, 80 kV
Combination of X-ray tube current and X-ray tube voltage resulting in highest output power.	Radiographic (Intermittent)	80 kW	800 mA, 100 kV
		65 kW	630 mA, 103 kV
		50 kW	500 mA, 100 kV
Highest constant output power at 100 kV, 0.1 sec.	Radiographic (Intermittent)	80 kW	80 kW (800 mA, 100 kV, 0.1 s)
		65 kW	63 kW (630 mA, 100 kV, 0.1 s)
		50 kW	50 kW (500 mA, 100 kV, 0.1 s)
Nominal shortest irradiation time (AEC exposure).	AEC	All models (AEC control is available over the full kV and mA range)	15 ms. AEC control is achieved by varying the ms of the exposure. The AEC ms range is 15 ms to an installer-programmable maximum not to exceed 600 mAs.

8.1.2 Environmental requirements

Ambient transport and storage temperature	-40 °C - +70 °C
Ambient operating temperature	+10 °C - +40 °C
Transport and storage humidity (relative)	10-90%, non-condensing
Operating humidity (relative)	30-75%, non-condensing
Maximum transport and storage altitude	500-1060 hPa
Maximum operating altitude	700-1060 hPa

8.1.3 OTC

8.1.3.1 General

Rotation range ceiling (beta)	- 193°(±5°) ~ +155°(±10°)
Rotation range tube arm (alpha)	+193°(±5°) ~ -155°(±10°)
Column (Z stroke)	1700 mm, 1450 mm

8.1.3.2 Weight

OTC	127 kg
Tube and collimator	40 kg maximum allowed weight
Traverse rail X	60 kg
Ceiling rail Y (4 m standard)	16 kg

8.1.3.3 Speed

	Low speed	**Maximum speed**
Z movement	40 mm/s	150 mm/s

8.1.4 Cabinet

8.1.4.1 General

Dimensions (L x W x H) mm	750 x 610 x 1130

8.1.5 Wall stand

Column, Z stroke	1470 +40/-10 mm (non-tilt)

Rotation range detector holder wagon (Only the tiltable detector holder wagon).	-20° - 90°

8.1.5.1 Attenuation Equivalent

Detector holder	<=0.6 mm

8.1.5.2 Weight

Wall stand	Maximum 180 kg (160 +20/ -20 kg)
Detector	Maximum 40 kg

8.1.6 Closed table 0181

8.1.6.1 Maximum patient load

Maximum patient load	295 kg

8.1.6.2 Weight of parts

Table (with table top and vertical lift)	241 kg
Table top	47 kg
Vertical lift	14 kg

8.1.6.3 Vertical lift

Lowest table top position (from the floor to the table top surface)	540 +20/–10 mm
Z stroke	310 +40/–20 mm
Maximum travel speed	25 mm/s (MRS ≥30 mm/s)

8.1.6.4 Table top

Dimensions	2400 mm X 800 mm
X-ray transparent area	2350 mm X 580 mm
Thickness	21 mm
Length of stroke X-direction from center position (Longitudinal)	±500 +20/–10 mm
Length of stroke Y-direction from center position (Lateral)	±150 +20/–10 mm
Aluminium equivalence	≤0.9 mm
Aluminium equivalence cover detector holder	< 0.6 mm

8.1.6.5 Detector holder

Weight	Maximum 40 kg
Size (maximum)	D600 mm x W620 mm x H95 mm

8.1.7 Two column table 0055 (option)

8.1.7.1 Column

Two column table, with motorized vertical movement

Lowest table top position (from the floor to the table top surface)	550 mm
Column (Z stroke)	380 mm

8.1.7.2 Table top

Two column table with manual or motorized detector movement

Dimensions	2400 mm X 853 mm
X-ray transparent area	2400 mm X 601 mm
Thickness	21.5 mm
Length of stroke, X-direction	+/- 600 mm
Length of stroke Y-direction	+/- 150 mm
Movement range of the detector	up to 850 mm
Aluminum equivalence	0.9 mm
Aluminum equivalence cover detector holder	< 0.6 mm

8.1.7.3 Weight

Two column table, compl.	Maximum 147 kg
Table top	Maximum 47 kg
Maximum patient load	300 kg

9 Waste disposal

The manufacturing company is responsible for disposal of the product. To avoid environment pollution and human injury, we therefore request that you contact the Manufacturer or your dealer if you wish to cease operation of your product with the intention of disposal.

For disposal of other components, refer to corresponding documentation.

Please follow the rules and regulations of your relevant authorities in the disposal of this product, accessories, options, consumables, media and their packing materials.

Waste disposal

10 Accessories and options

10.1 General

WARNING!

Risk of squeezing during motorized movements.

Only accessories approved by the manufacturer are allowed for the system.

This chapter describes accessories that can be ordered for the system.

10.2 Options for the system, with Canon image system

10.2.1 Ceiling Suspended X-ray Tube Support, Canon US

Part no.	Ceiling height	Vertical column stroke	Description
0170-925-029	2.5 to 2.7 m	1450 mm	3x5m, low ceiling version
0170-925-032	2.7 to 2.85 m	1450 mm	3x5m
0170-925-033			4x5m
0170-925-034			Special order: X(<4m)0 Y(<4m)= 0
0170-925-040	Over 2.85 m	1700 mm	3x5m
0170-925-030			4x5m
0170-925-031			Special order: X(<4m)0 Y(<4m)= 0
0170-925-003	>2.5 — 2.8 m	1450 mm	Installation cube low ceiling 3x4m
0170-925-016	>2.8 m	1700 mm	Installation cube low ceiling 3x4m
0170-925-039	16 m High voltage cables		
0170-925-005	24 m High voltage cables		
0170-925-006	Extra mechanical index in ceiling rails for positioning (2 pieces)		
0540-925-010	400 kHU X-ray tube, 40/100kW, 150 kV		
0540-925-011	600 kHU X-ray tube, 40/100kW, 150 kV		
0540-925-014	Automatic collimator and collimator handle for WS		
0540-925-022	Automatic collimator with LED and collimator handle for WS		

10.2.2 Options for Table

10.2.2.1 Closed Table 0181

Part no.	Description
0180-925-116	Mechanical index for manual detector movement

10.2.2.2 Optional Table

Part no.	Description
0180-925-117	Two column table Specification • Motorized elevation (555 - 930 mm) • Patient load 250 kg • Floating table top • Manoeuvre handle (Up/Down, Table top release)

10.2.2.3 Two column table

Part no.	Description
0170-925-101	Vertical collision protection, option
0170-925-103	Mechanical index for manual bucky movement

10.2.3 Options for Wall Stand

Code	Description
0180–925–201	No Wall stand tilt
0180–925–202	Wall stand tilt
0180-925-225	Manual movements of detector
0180-925-224	Motorized movement of detector
0072-925-006	WS: Foot control Release of brake for manual vertical movement

10.2.4 Detectors

The following detector options are available for the System

Prepared for:

- CXDI 401C compact
- CXDI-701C, 710C, 702C Wireless - detector rotation
- CXDI-401C, 410C, 402C Wireless
- CXDI-701C, 710C, 702C - Automatic battery charging when loading the detector.
- CXDI-401C, 410C, 402C - Automatic battery charging when loading the detector.

10.2.5 System cabinet

Code	Description
0072–925–302	50 kW, 100 kHz — 200 kHz High frequency generator
0072–925–300	65 kW, 100 kHz — 200 kHz High frequency generator
0072–925–301	80 kW, 100 kHz — 200 kHz High frequency generator

10.2.6 Other options

Code	Description
0170-925-014	Integrated DAP for automatic collimator
0170-925-041	DAP for manual collimator
0170-925-007	Electrical and mechanical index for positioning (2 pcs)
0170-925-307	External emergency stop

10.2.7 Canon integration

Code	Description
0072–925–149	*2 detectors:* Wall stand CXDI-701C Wireless Table CXDI-701C Wireless
0072-925-157	*2 detectors:* Wall stand CXDI-701C Wireless Table CXDI-401CW Wireless
0072-925-158	*2 detectors:* Wall stand CXDI-701C Wireless Table CXDI-401CW Wireless
0072-925-159	*2 detectors:* Wall stand CXDI-401CW Wireless Table CXDI-401CW Wireless
0072-925-160	*2 detectors:* Wall stand CXDI-401CW Wireless Table CXDI-701C Wireless

Code	Description
0072-925-161	*2 detectors:* Wall stand CXDI-401CW Wireless Table CXDI-401C Compact
0072-925-162	*2 detectors:* Wall stand CXDI-401C Compact Table CXDI-401C Compact
0072-925-163	*2 detectors:* Wall stand CXDI-401C Compact Table CXDI-701C Wireless
0072-925-164	*2 detectors:* Wall stand CXDI-401C Compact Table CXDI-401CW Wireless
0072-925-007	*2 detectors:* Wall stand CXDI-710C Wireless Table CXDI-410C Wireless
0072-925-008	*2 detectors:* Wall stand CXDI-710C Wireless Table CXDI-410CW Wireless
0072-925-009	*2 detectors:* Wall stand CXDI-710C Wireless Table CXDI-401C Compact
0072-925-016	*2 detectors:* Wall stand CXDI-410CW Wireless Table CXDI-410CW Wireless
0072-925-017	*2 detectors:* Wall stand CXDI-410CW Wireless Table CXDI-710C Wireless
0072-925-018	*2 detectors:* Wall stand CXDI-410CW Wireless Table CXDI-401C Compact
0072-925-019	*2 detectors:* Wall stand CXDI-401C Compact Table CXDI-710C Wireless

Code	Description
0072-925-020	*2 detectors:* Wall stand CXDI-401C Compact Table CXDI-410CW Wireless
Charging in detector holder	
0072-925-170	Charging in detector holder in wall stand (CXDI 401CW/410CW wireless or CXDI 701C/ 710C wireless must be selected for wall stand)
0072-925-171	Charging in detector holder in table (CXDI 401CW/410CW wireless or CXDI 701C/ 710C wireless must be selected for table)
Wall stand loading	
0180–925–203	Left-hand loading
0180–925–204	Right-hand loading

10.3 Accessories

Code	Description
General	
0512-099-001	Unistruts Rails 4x4
0512-099-002	Unistruts Rails 4x5
0512-099-003	Mounting Kit Unistruts Rails 4x4
0512-099-004	Mounting Kit Unistruts Rails 4x5
0072-099-309	Mobile Stitching Screen
0170-099-002	Cable Outlet for 0170-CS
Wall stand	
0072-099-306	Patient lateral armrest
0540-151-010	Foot pedal, Z-movement (maximum 2 pieces)
0180-099-050	Grid 40 lp/cm, R10:1, F115
0180-099-051	Grid 40 lp/cm, R10:1, F150
0180-099-052	Grid 40lp/cm, 10:1 Ratio, SID 180, Alu type
0180-099-076	Grid 52 lp/cm, R10:1, F140, Alu type
0180-099-061	Grid 51 lp/cm, R10:1, F180, Alu type
0182-099-320	Wall bracket
0175-099-002	Cable Outlet for WS
Table	
0055-099-170	Patient Kit: Compression belt Cost effective, Patient handgrip (2 pieces) and Mattress
0055-099-014	Patient Handgrip (1 piece)
0055-099-028	Compression belt Cost effective
0055-099-029	Compression Belt High-end
0080-099-051	Form pad Small — Rectangle
0080-099-050	Form pad Medium — Wedge
0080-099-052	Form pad Large — Head
0055-099-011	Lateral Cassette/Detector holder
0180-099-051	Grid 40 lp/cm, 10:1 Ratio, SID 150 Alu type
0180-099-060	Grid 52lp/cm, 10:1 Ratio, SID 110 Alu type

Accessories and options
Accessories

0180-099-076	Grid 52lp/cm, 10:1 Ratio, SID 140 Alu type
0181-099-008	X/Y/Z manoeuvre handle
0181-099-009	Hand control for Automatic Collimator (1 piece)
0181-099-005	Additional Foot pedal
0055-099-007	Mattress 2200 mm
	Two column table
0072-099-004	Foot control (Up/Down, Table top release)
0055-099-025	Foot control strip type (Table top release)
0055-099-009	Hand control for automatic collimator (1 pc)
Components	
0180-099-301	Complete System Cabinet with 65kW Generator
0180-099-302	Complete System Cabinet with 80kW Generator
0180-099-310	Complete Transverse with Bridge and Y-rails 4x5 m.

11 Appendix A

11.1 Glossary

A

Accessories	Extra facilities to the product which easily can be mounted by the user.
AEC	Automatic Exposure Control
Alpha	A direction for a rotation movement.

B

Beta	A direction for a rotation movement. The tube turns around the Z-axis.
Btu/hr	British thermal unit/hour
BU/Back-up	A precautionary measure that shuts off the exposure, if the AEC chamber does not.
Bucky	See Detector holder.

C

CE	A CE-marked product verifies that the Manufacturer guarantees that the product fulfils the EU fundamental health, environment and security requirements.
Centering	The field of image is centered over the detector.
Collision	Either a physical collision with an obstacle or the node cannot reach its end position.
CR	Image plates.

D

DAP meter	Dose Area Product meter. The DAP-meter is placed next to the collimator and measures the amount of X-ray radiation that leaves the collimator.
Diode	Electrical component that leads voltage and current in one direction.
Dealer	See “Supplier”.
Detector	Image receptor for X-ray that does not require a cassette. The reception and transfer of an image is digital.

E

Appendix A
Glossary

EMC	Electromagnetic Compatibility.
End stop	See mechanical end stop and software end stop.
Exposure	An image is taken against an image receptor.

F

G

Guard function	Collision detection of the Z-movement (option).
Guard sensor	A sensor in the top of the Z-column that registers variations of force.

H

I

IEC	International Electrotechnical Commission.
Image receptor	Receptor for images; Film, CR, DR or Cassette.
Image receptor holder	Holder for the image receptor (Film, CR, DR or Cassette).
Index	Mechanical position markings, for instance alpha 0°, +90° and -90°.
Intermittence	The number of repetitions / unit of time. Recurrent cycles.
ISO	International Organization for Standardization.

J

K

L

M

Mechanical end stop	A physical device that stops an automatic or manual movement if the software end stop is out of order.
Motorized movement	A motor assisted movement.

N

Node	A control and supervision unit, consists of printed circuit board and node specific software.

O

O.D.	Optic Density.
Options	Extra facilities that demand updating of the System software and hardware before use. Options demand installation of an authorized service technician.

P

Position	A location in the room (X, Y and Z).

Q

R

S

SID	Source to image distance. The distance between the focus spot in the X-ray tube and the active image receptor surface. FFD is also used.
Software end stop	A non-physical device that stops an automatic or manual movement. The software end stop is placed before the mechanical end stop.
SSW	Service software.
Supplier	The company that sells the System to the user (hospital).

T

Table frame	The metallic frame that carries the Table top. The frame is attached to the bottom of the Table top.

U

V

W

Working area	The size of the Table top including X- and Y-stroke.

X

X-movement	The System moves in the X-direction.

Y

Y-movement	The System moves in the Y-direction.

Z

Appendix A
Glossary

Z-node	The Z-node controls the Z-movement.
Z-movement	The System moves in the Z-direction.

12 Appendix B

12.1 Monthly Checklist

Make a copy of this form before filling in.

If there is any discrepancy please use the table to make a note.

Hospital:.....

ID No:.....

Sign:.....

12.1.1 General

Checks for all units Ceiling suspended x-ray tube support, Table and Wallstand.

- ❑ 1. Check the hoses for damage.
- ❑ 2. Check all outer cabling for damage.
- ❑ 3. Clean all outer surfaces, except for the lubricated column segments. See Instruction for use for cleaning instructions.
- ❑ 4. Make sure that the Instruction for use is available and up to date
- ❑ 5. Check the emergency stop. By activating the emergency stop all motorized movements are inhibited. See *Chapter Safety* for information on how the Emergency stop should react on command

12.1.2 Ceiling Suspended X-ray Tube Support

- ❑ 1. Move the ceiling suspended X-ray tube support manually to all positions in X, Y and Z direction and make sure it runs smoothly and sounds OK.
- ❑ 2. Check the emergency stop. By activating the emergency stop all motorized movements are inhibited.

- ☐ 3. Choose Table position and make sure tracking is activated.

  Measure between the X-ray tube focal spot and the active detector surface of the detector holder.

  The measured SID shall correspond with the displayed SID. Move the ceiling suspended X-ray tube support in X or Y direction and measure between the X-ray tube focal spot and the active detector surface of the detector holder again.

  The SID is allowed to differ ±1%.
- ☐ 4. Check that the SID, shown on the display of both the Image system and the collimator, correspond with the measured SID/FFD.
- ☐ 5. Check the hoses for damage.
- ☐ 6. Check all outer cabling for damage.
- ☐ 7. Clean all outer surfaces, except for the lubricated column segments. See Instruction for use for cleaning instructions.
- ☐ 8. Power up the Ceiling stand and check all functions.
- ☐ 9. Move the Ceiling stand around and observe any irregularities.
- ☐ 10. Move the Table in X, Y and Z direction an make sure it runs smoothly and without any dissonance.
- ☐ 11. Move the table top in longitudinal direction and check that the mechanical end stops are not loose.

12.1.3 Table

- ☐ 12. Power up the Table and move the Table up and down and observe any irregularities.
- ☐ 13. Check all outer cabling for damage
- ☐ 14. Clean all outer surfaces, except for the columns because the segments are lubricated.
- ☐ 15. Move the Table top longitudinal to check that the end stops are correctly mounted.
- ☐ 16. Make sure that the instruction for use is available and correct.

12.1.4 Wall stand

- ☐ 17. Move the Wall stand up and down in Z direction and make sure it runs smoothly and sounds OK.

12.1.5 Remark

No.	Remark	Action	Int note
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

12.2 Annual Checks

Refer to Service and Installation Manual.

Appendix B
Annual Checks