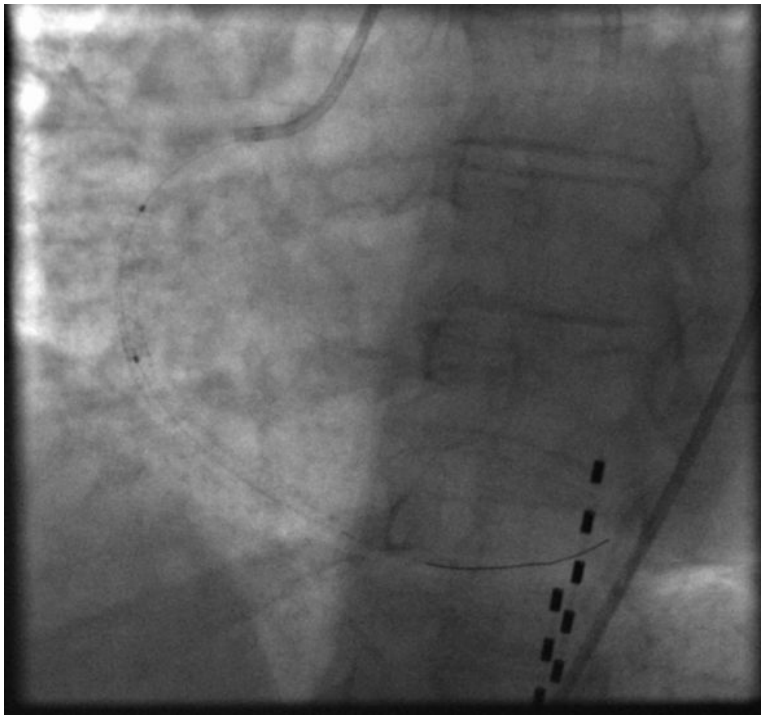
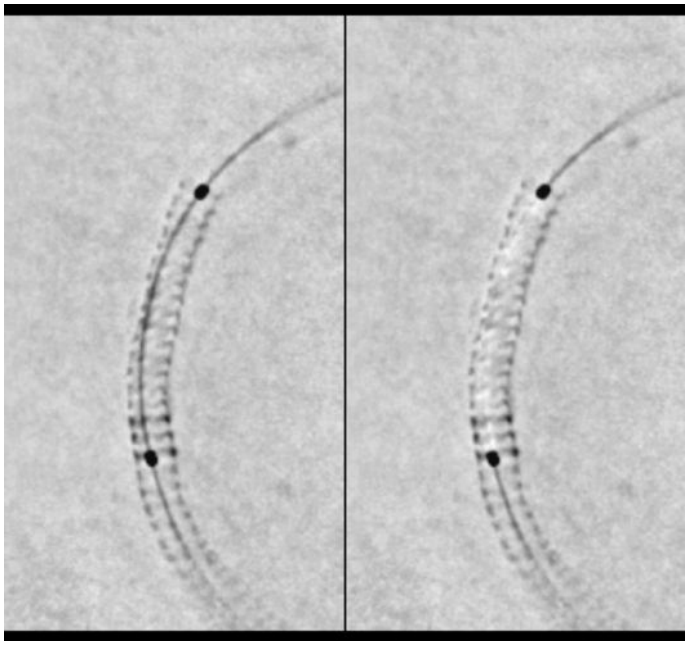
Figure 11-15 "Pre-StentVesselViz" sequence displayed on Live monitor



4. At the end of acquisition, StentVesselViz processing is automatically launched. The message `STENT VESSEL VIZ IN PROGRESS` is displayed at the bottom left of the Live monitor in the Status area. Because image processing is performed in the background, fluoro, record, review and image processing are always available.
5. After an estimated typical processing time less than 10 seconds, the StentViz resulting image is automatically displayed on the Reference monitor as a Photo showing the stent with enhanced image quality and contrast. As for other photos, this photo is stored in the DL photo browser with a specific default **StentViz** label.

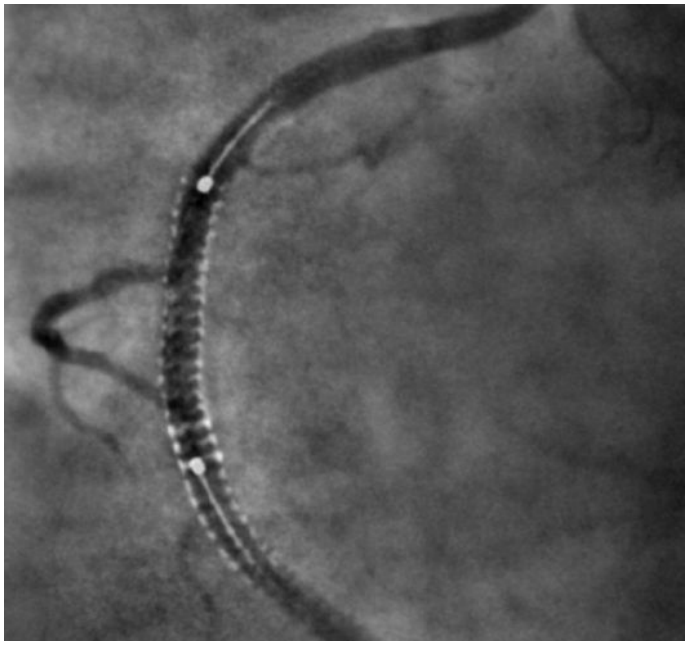
NOTE
In case of fluoro or record acquisition, or image review in progress at the completion of the StentViz processing, the resulting photo is displayed only at the end of the fluoro or when the review switches to Pause mode.

Figure 11-16 StentViz photo displayed on Reference monitor



6. At the end of StentVesselViz processing time, the message `STENT VESSEL VIZ IN PROGRESS` is replaced by `STENT VESSEL VIZ READY` at the bottom left of the Live monitor. The typical processing time is less than 30 seconds. The resulting sequence is automatically displayed on the Live monitor as a sequence showing the stent with enhanced image quality and contrast and the vessel filled with contrast media.

Figure 11-17 "Post-StentVesselViz" sequence displayed on Live monitor



The sequence will be stored in the DL sequence browser with a specific default **Post-StentVesselViz** label.

NOTE
If the “Pre-StentVesselViz” sequence (or native sequence) is not in review or paused at the end of the StentVesselViz processing, the review of the StentVesselViz post-sequence is to be launched manually. Launch "Post-StentVesselViz" review through the **Play/Pause** or **Next/Prev** button from the DL remote control or from the DL keypad, or through the **Recall sequence** button on the Touch Panel.

NOTE
The next Dynamic acquisition will be performed without StentVesselViz processing. In case a new StentVesselViz acquisition is required, reselect **StentVesselViz** button on the DL screen or Touch Panel.

11.4.3 Manual StentVesselViz Workflow

There are situations where the StentVesselViz process can be manually launched:

- if the automatic StentVesselViz processing is not successful,

1. Select the StentVesselViz native sequence (labeled **Pre-StentVesselViz**) and launch the review. Zoom on the sequence and center it on the stent. It will increase the success rate and decrease the processing time.
2. Launch StentVesselViz through the **StentRefine** button from the DL sequence browser **[1]** on the DL screen, the DL remote control using the Menu key, or from the Touch Panel.

NOTE
StentRefine is used indifferently for StentViz or StentVesselViz post-processing. The correct post-processing is automatically selected based on the sequence settings.

Figure 11-18 DL sequence browser

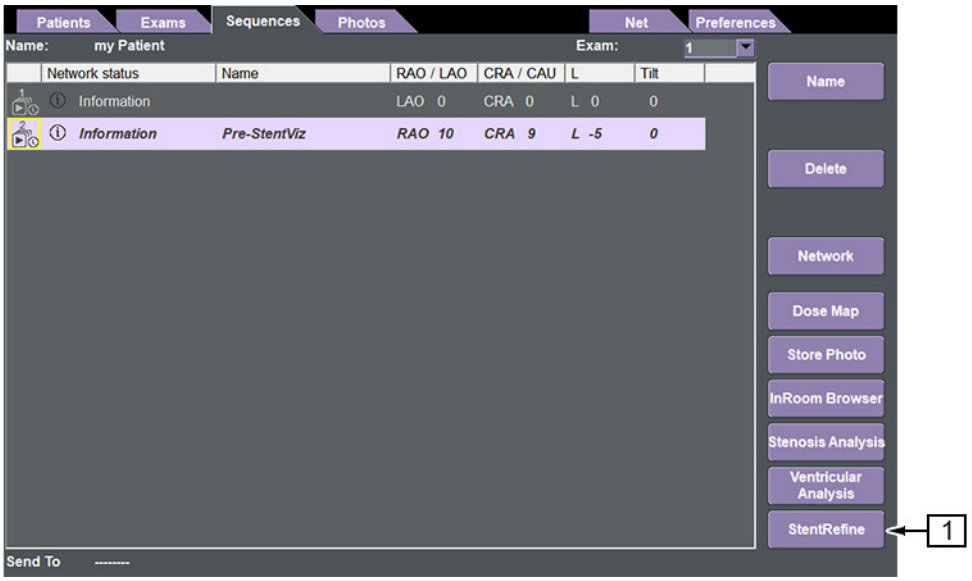
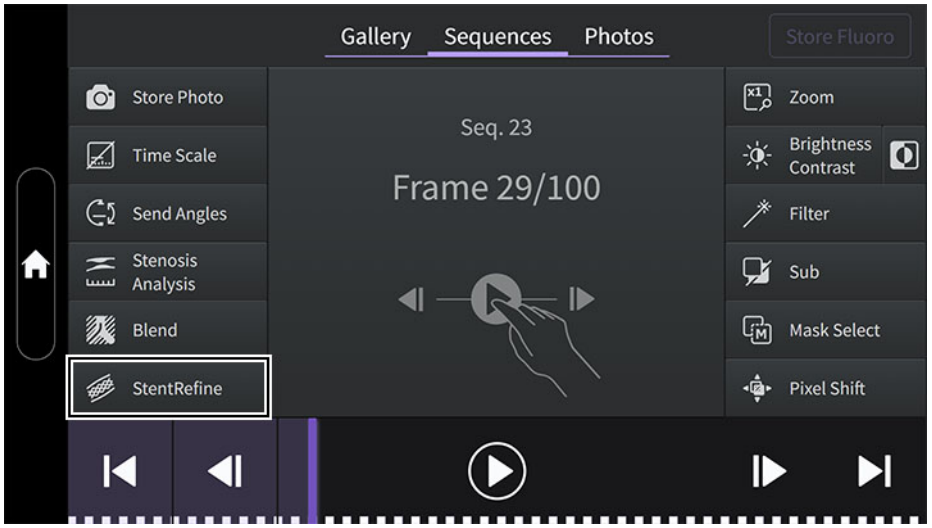


Figure 11-19 Touch Panel in sequence page



3. Refer to steps 3 to 6 of Automatic StentVesselViz Workflow.

11.4.4 StentVesselViz Best Practice

- Before performing the StentVesselViz record acquisition, perform fluoroscopy to:
  - Verify that the balloon has only 2 marker-balls. StentVesselViz will fail if the balloon shows 1 or 3 markers.
  - Verify that there is only one pair of markers in the image. StentVesselViz will fail if 2 balloons are in the same image.
  - Management of stent positioning to insure overlap: if 2 adjacent stents are required and the first one is already deployed, position the balloon with the second non-deployed stent next to the first one.
  - Verify that the pair of markers and the stent are in the same vessel and/or as close as possible to each other. The closer the stent is from the markers, the sharper the stent will be displayed on the StentVesselViz resulting image and sequence.
  - Verify that the markers are not super-imposed to highly radio opaque objects (like metallic staples, guidewire tip or injected catheter).
  - Verify that the stent is radio opaque. The more radio opaque the stent is the higher the StentVesselViz success will be.
- During the StentVesselViz record acquisition:
  - Make sure that the markers are visible in every non-injected frame and in most injected frames.
  - Do not move the balloon during the StentVesselViz acquisition. The only allowable motion is from anatomy.
  - Do not move the table or gantry during the StentVesselViz acquisition.
  - Avoid superimposition of other coronary arteries onto the stent as much as possible.
  - Avoid large breathing motion during the injected phase of the sequence as much as possible.

11.4.5 StentVesselViz User Messages

Location	Message	Description
Live and Reference monitor	`StentVesselViz already running. Restart it manually later`	The previous StentRefine or StentVesselViz post-processing is still running
	`This is not an eligible sequence for StentRefine`	The sequence selected for the StentRefine post-processing has not been acquired using a StentVesselViz workflow
	`Not enough frames. Reselect StentVesselViz to proceed`	The acquired sequence or selected sequence does not have enough frames for StentVesselViz post-processing. Redo StentVesselViz acquisition and wait until "Inject" is displayed before injecting.
	`StentVesselViz failure, apply zoom and launch StentRefine`	StentVesselViz processing has failed. Select the StentVesselViz native sequence (labeled **Pre- StentVesselViz**) and launch the review. Zoom on the sequence and center it on the stent. Launch StentVesselViz through the **StentRefine** button.

11.5 Dose Map (Option for system with Omega or Innova^{IQ} Table)

WARNING

THE CUMULATED AIR KERMA (CAK) REMAINS THE REFERENCE FOR DOSE MANAGEMENT.

11.5.1 Dose Map integrated workflow

Dose Map is a feature used to calculate, display and record the estimated local cumulated dose during the procedures done on the IGS system. It is designed to provide to the user a visualization of the distribution of the local cumulated dose all along the exam as well as the current projection of the beam.

The local dose is calculated depending on the estimated air kerma, the gantry position, the table position, the table estimated attenuation, the estimated backscatter correction and the system settings.

Calculation and cumulated local dose is updated for each acquisition and displayed upon user request or upon configured threshold.

The Dose Map display is only available during an active exam. It uses the following patient data to calculate the dose:

- Patient height
- Patient weight
- Patient date of birth
- Head to end distance when the exam is performed in the head area (see dual patient model below). It is the distance between the top of the patient's head and the end of the table top.

NOTE
Head to end distance is not a parameter that can be set using Worklist. It has to be entered on the Patient information screen prior to the start of the exam.

Depending on the protocol selected, a patient model is set:

- Dual model, where the head and neck are defined and used for the following protocols:
  - Cardiology: **Cardiac and Vascular**
  - Interv Neuro: **Neuro Protocols**
  - Pediatrics: **Pediatric Cerebral**
- Single model is used for all protocols except the ones previously described.

Figure 11-20 Single model

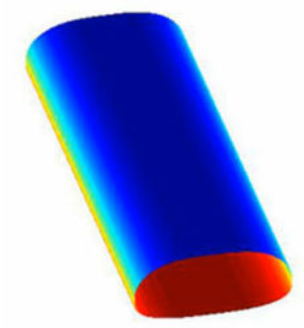


Figure 11-21 Dual model

Figure 11-22 Deployed single model

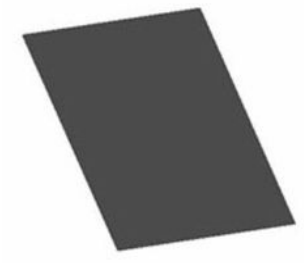


Figure 11-23 Deployed dual model

Figure 11-24 Single model icon

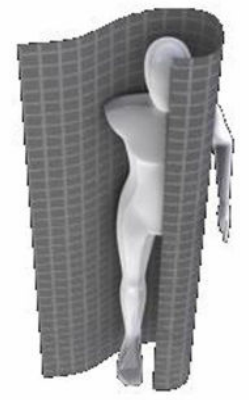


Figure 11-25 Dual model icon

During the exam, the Dose Map will be displayed on the Reference display:

- Automatically, if the amount of dose received locally has exceeded a pre-defined threshold.
- On request, using one of the following ways:
  - **Dose Map** button on the DL Sequence Browser
  - **Dose Map** button in the top right corner of the X-Ray settings page on the Touch Panel
  - **Dose Map** function selection from the DL remote control using the Menu key

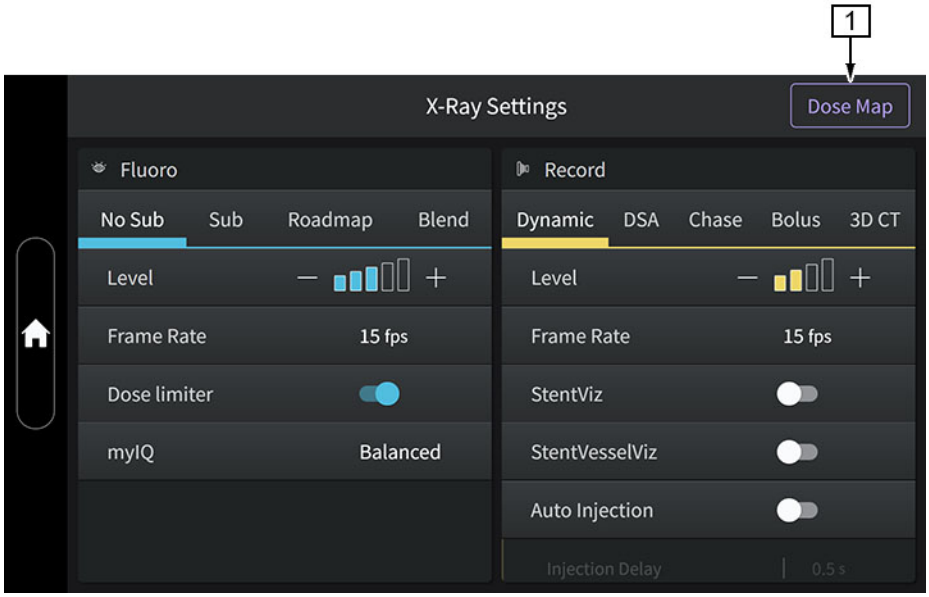
NOTE
The same buttons can be used to close the Dose Map on Touch Panel and Browser. Additionally, the next pedal press for fluoroscopy or record will automatically close the Dose Map. Any photo that was hidden by the Dose map will be redisplayed on the Reference display.

NOTE
Dose Map cannot be displayed during an acquisition.

The **Dose Map** button **[1]** will automatically be displayed on the Touch Panel when the system determines that a threshold of local dose is reached and lower dose settings would be beneficial. If predefined, the final Dose Map will be automatically saved as a photo at the end of the exam.

NOTE
Dose Map cannot be saved using the **Store Photo** command.

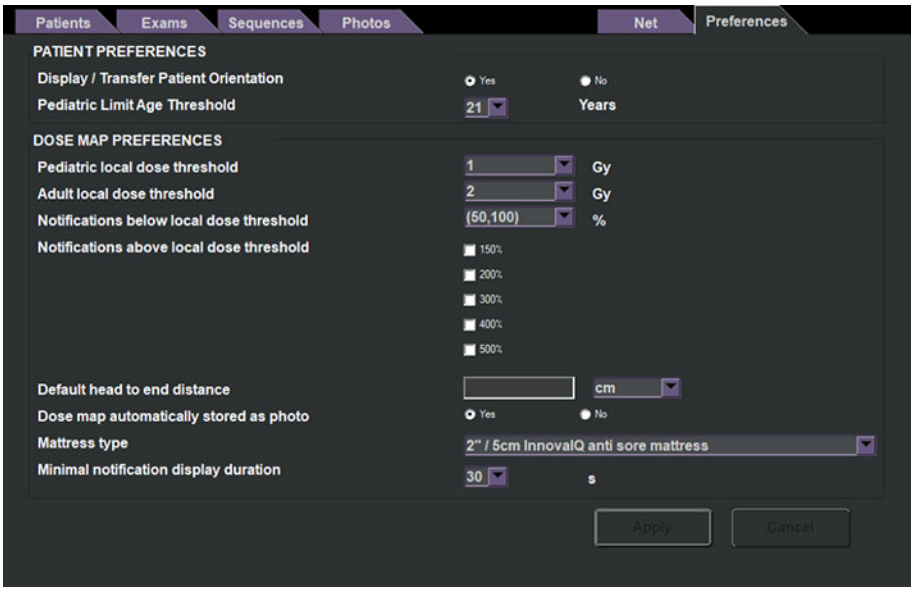
Figure 11-26 X-Ray settings page - Dose Map



11.5.2 How to set Dose Map?

Dose Map preferences

Dose Map predefined preferences must be set before the start of an exam in the **Preferences** tab on the DL screen.



The **Preferences** tab contains the following patient information:

- **Pediatrics limit age threshold**: used to set the maximum patient age defined for pediatrics. The range is from 0-21 years of age.
- **Pediatrics local dose threshold**: local dose threshold applied to a patient younger or equal to the age defined in the Pediatrics limit age threshold. It can be a selection of 0.5 Gy, 1 Gy, 2 Gy or 2.5 Gy.
- **Adult local dose threshold**: local dose threshold applied to a patient older than the age defined in the Pediatrics limit age threshold. Can be a selection of 1 Gy, 2 Gy, 3 Gy, 4 Gy or 5 Gy. For example, if the Pediatrics limit age threshold is defined as 15 years of age, the Pediatrics local dose threshold will be applied to a patient younger or equal to 15 years of age. The Adult local dose threshold will be applied for a patient age at starting 16 years of age. The patient's age is calculated from his date of birth or his age if it has been modified in the Patient exam information screen.

  NOTE
  In the case where no difference is selected between pediatrics and adults, the Pediatrics limit age threshold will be set to 0 and the local dose threshold will be set by the Adult local dose threshold.

- **Notification below local dose threshold**: defines the local dose level from which the Dose Map will be automatically displayed when the local dose has been exceeded. It can be:
  - (50%, 100%)
  - (50%, 75%, 100%)
  - (33%, 66%, 100%)

  For example, if the predefined local dose threshold is 2 Gy and (50%, 100%) is selected, the Dose Map will be displayed when the maximum local dose threshold exceeds 1 Gy and then again when the maximum local dose threshold exceeds 2 Gy.
- **Notification above local dose threshold**: the local dose threshold (pediatric or adult) has been fixed and should not be exceeded in normal conditions. If for any reason the exam needs to be continued, an additional Dose Map display can be set to:
  One or more of 150%, 200%, 300%, 400%, or 500%
- **Default head to end distance**: head to end distance is the distance between the top of the patient's head and the nearest end of the table top. In the case where the norm is to place the head of the patient always at the same distance from the end of the table top, perform the

measurement and enter the value in the Default head to end distance field; which allows the system to use this automatically for each patient.

NOTE
Head to end distance or Default head to end distance are used by the system to set dual model used for exams done in the head area. There is no need to enter a value for Head to end distance or Default head to end distance if the exam is done outside the head area (thorax, pelvis, etc…).

- **Dose Map automatically stored as photo**:
  - If [Yes] is selected, Dose Map will be automatically saved as photo at the end of the exam. It will then be managed as any other exam photo taken during the same exam.
  - If [No] is selected, no Dose Map will be saved and no photo will be accessible at a later time.
- **Mattress type**: Dose Map internal computation uses the mattress type to have a better precision. The selectable values are
  - 1" / 2.5 cm Omega standard mattress with slicker
  - 1" / 2.5 cm Omega anti sore mattress
  - 2" / 5 cm Omega anti sore mattress
  - 2" / 5 cm Innova^{IQ} anti sore mattress.

    NOTE
    In case you don't find the used mattress in the previous list, you have two possibilities:
    - Select the 1" / 2.5 cm Omega anti sore mattress.
    - If the Al equivalent filtration of the mattress is known at 100 kV, select the GE HealthCare mattress with the closest lower equivalency of Al filtration.
- **Minimal notification display duration**: defines the minimal continuous display time of the map. In case an acquisition is made before the end of this duration, the updated map will automatically reopen after the end of the acquisition. The range is from 1 to 60 seconds.

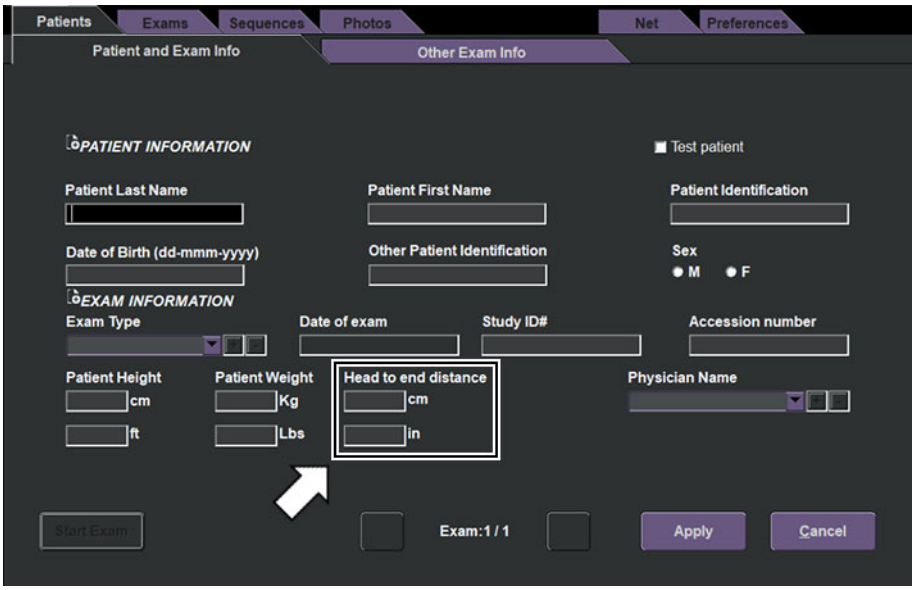
When preferences are set:

- Click on **Apply** to accept the changes.
- Click on **Cancel** to exit with no changes.

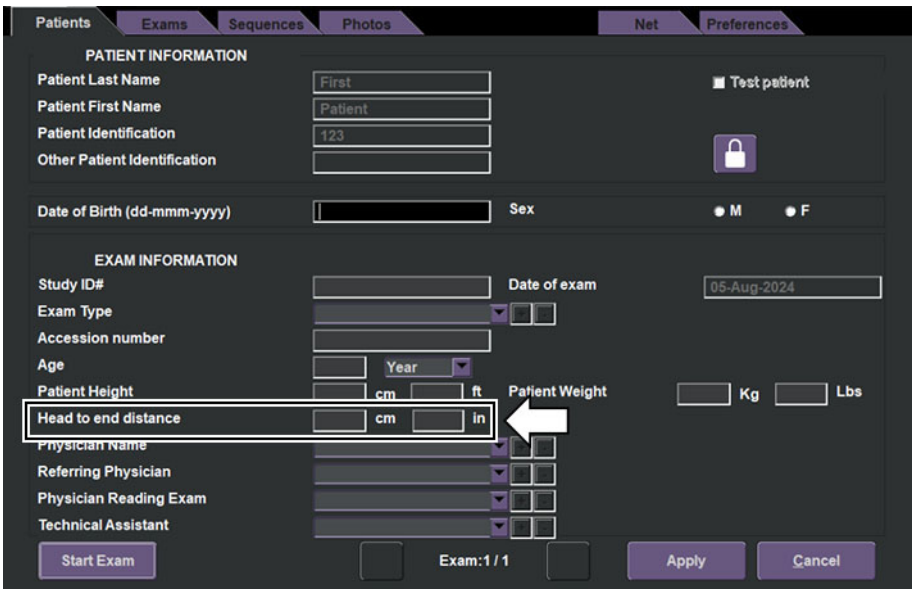
Dose Map dedicated entries in Patient info tabs

The current exam's Head to end distance can be entered in three different ways:

- **Patients / Patient and Exam Info**: Head to end distance



- **Patient/Exam Info window**: Head to end distance



- **Preferences** tab: Default head to end distance (refer to Dose Map preferences on page 380 above)

11.5.3 Dose Map limitations and recommendations

Dose Map models (single or dual) are only based on thorax estimation, not including the arms. No Dose Map is provided when the lateral decubitus patient position is used.

Each time the following parameters are changed during an exam, the current Dose Map is closed and a new map is set:

- Patient data change: birth date, age, weight, height, head to end distance
- Protocol change driven by an anatomical change: from all except head area to head area
- Patient position change
- **End exam** followed by a Start Exam

The following are recommendations:

- Enter patient data before starting the exam, including head to end distance. Avoid changing data during the exam.
- Place patients at the same Head to end distance which allows the use of the Default head to end distance to be set on the system. If not, then the Head to end distance will have to be measured prior to each exam.
- If it is anticipated to perform an exam on the head or neck region, select a dedicated protocol at the beginning of the exam.
- Avoid changing patient position during an exam.
- If there is an interruption in the exam, it is recommended to activate X-Ray lock versus **End Exam** then **Start Exam**. This will avoid the system from creating a new dose map.

Additional recommendations:

- When using the Large Display Monitor, the Reference display must be included in the selected layout.
- In case of multiple dose maps created during the same exam, the total estimated local dose amount is the sum of the estimated local dose in each map.

11.5.4 Information provided by Dose Map

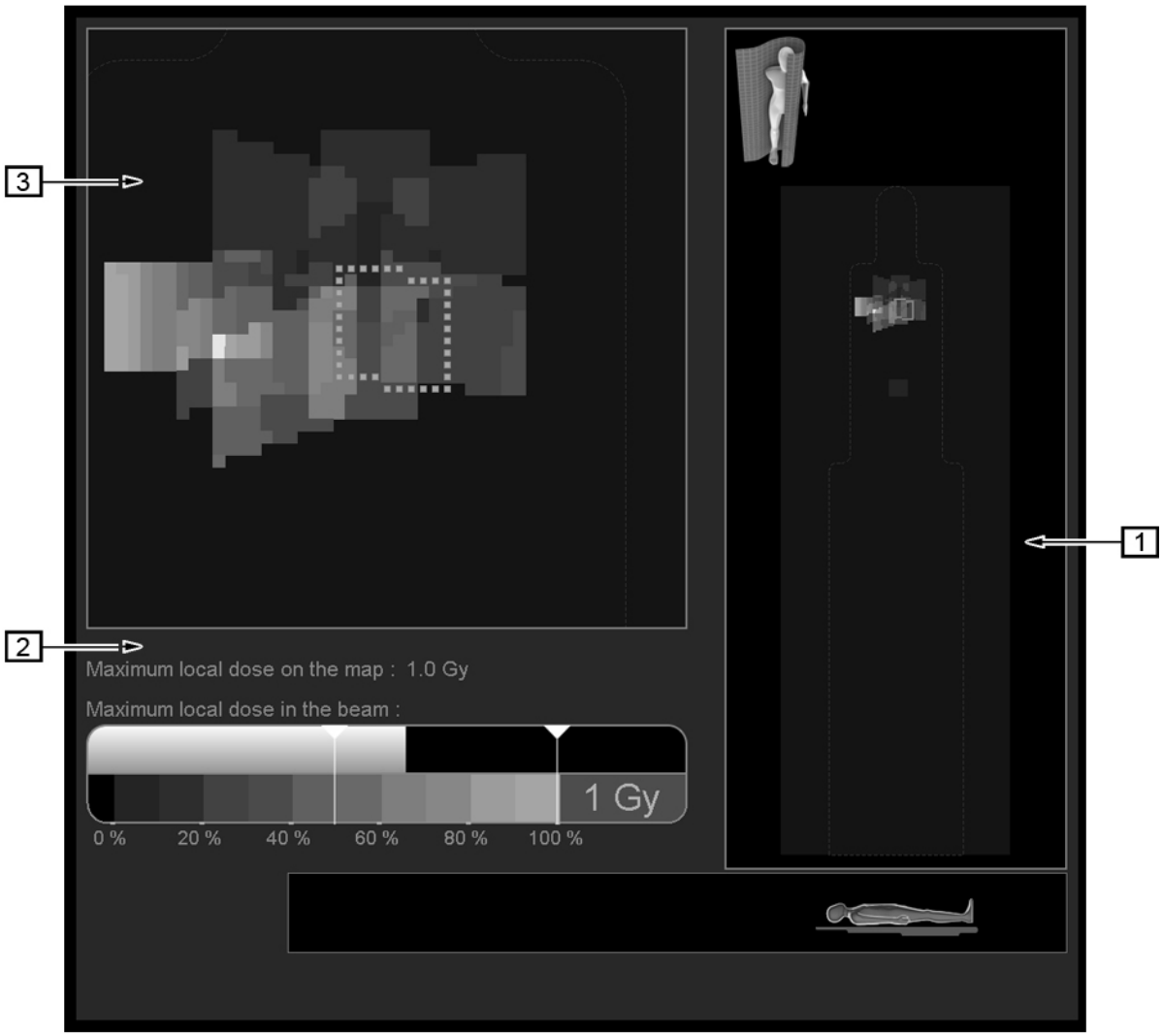
11.5.4.1 Dose Map representation - On Reference Display

Local cumulated dose is represented as a 2D view of a 3D model.

The length of the model is the length of the table, with a pixel resolution of 1 cm^2. Cumulated local dose levels are represented using a grey scale. The grey scale is directly linked to the local dose threshold chosen in the Preferences tab. The least amount of radiation is represented from black to white, the highest amount of radiation.

The Dose Map is displayed on the Reference display's image area. The Dose Map is composed of three areas:

- Full view of the cumulated local dose on the model **[1]**.
- Information area **[2]**.
- Zoomed view of the cumulated local dose on the model **[3]**.



Full view of the cumulated local dose on the model

The following information can be found in full view area:

- Cumulated local doses on the deployed model.
- Table silhouette to localize the cumulated local dose versus patient lying on the table.
- Active radiated area is projected on the model as a dotted box.

Zoomed view of the cumulated local dose on the model

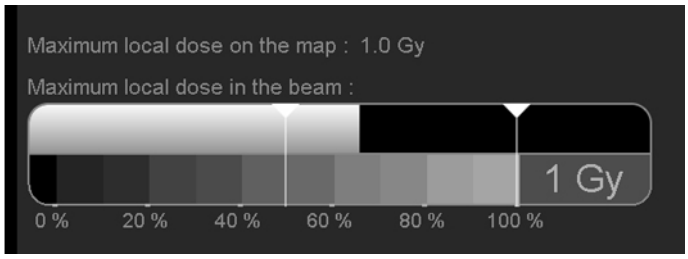
The following information can be found in the zoomed view area:

- x6 zoom of the cumulated local doses centered on the projected radiated area.
- Table silhouette displayed to localize the cumulated local dose versus patient lying on the table.
- Active radiated area is projected on the model as a dotted box.

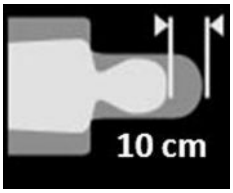
Information area

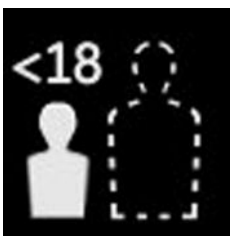
The following information can be found in the information area:

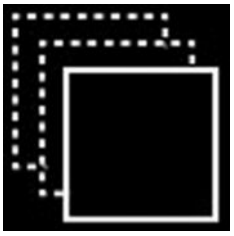
- The maximal value, in Gy, of the cumulated local dose on the complete map.
- Gauge to indicate the maximum value of the cumulated local dose in the beam:



  - Dose indication is given from 0% to 100% of the local dose threshold.
  - Local dose threshold is indicated. Example: 1 Gy.
  - Vertical bars indicate the notification levels below the local dose threshold defined in the **Preferences** tab.
- Icon bar to display icons giving indications on the Dose Map. The following icons can be displayed depending of context:

Icons related to a normal behavior	
Icons	**Meaning**
	Patient position to indicate how the patient is lying on the table. This icon is similar to the one selectable on the DL screen.
	Head to end distance with value indicated in centimeters. Only displayed in the case dual model is selected: • Cardiology: **Cardiac and Vascular** • Interv Neuro: ◦ **Cerebral** ◦ **Carotids** ◦ **Neuro Custom** • Pediatrics: **Pediatric Cerebral**

Icons indicating a less accurate Dose Map	
Icons	**Reason for inaccuracy**
	Displayed when the following patient information has not been filled in: age, height, weight, or head to end distance. In this case, the system uses default parameters that can be over or under estimated compared to the patient laying on the table. A change of patient data during the exam will cause the current map to store as a photo and the creation of a new blank map.
	Estimation done on patient younger than 18 years old. Accuracy for patients younger than 18 years old is lower than for other patients.

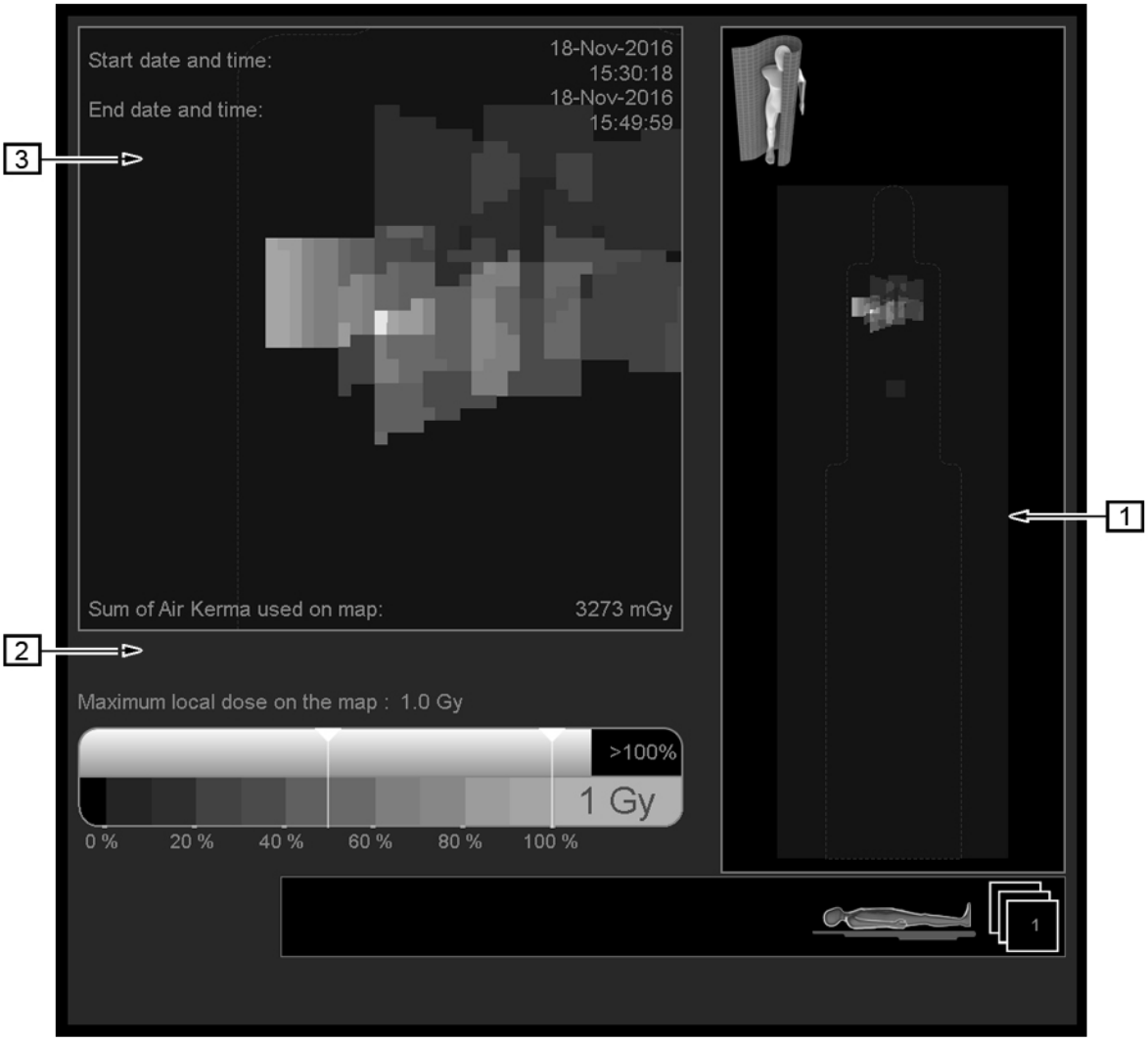
Icons indicating a less accurate Dose Map	
Icons	**Reason for inaccuracy**
	Indicates the usage of multiple Dose Map after a second map was created during the same procedure. Estimation of local cumulated dose has to be done adding the local value on the two maps.
	Displayed when more than 1 Gy of the sum of Air Kerma on the map is missing dose data during the Dose Map calculation.

11.5.4.2 Dose Map representation - Store on photo

If predefined, the final Dose Map is automatically saved as a photo at the end of the exam.

Dose Map stored as photo is composed of three areas:

- Full view of cumulated local dose on the model **[1]**.
- Information area **[2]**.
- Data area (instead of Zoomed view) **[3]**.



Full view of the cumulated local dose on the model

The following information can be found in full view area:

- Cumulated local doses on deployed model.
- Table silhouette to help localize the cumulated local dose versus patient lying on the table.
- Non deployed model contouring to help understand if cumulated local dose is on model sides or on model back.

Data area

The following information can be found in data area:

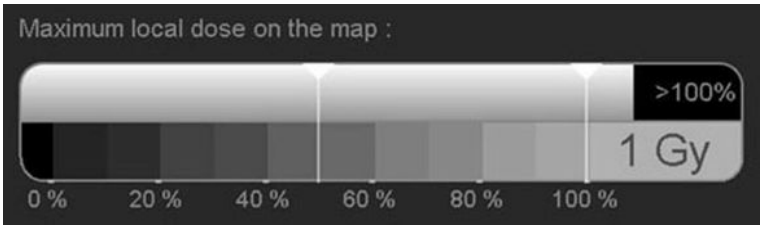
- x6 zoom of the cumulated local doses centered on the localization of the maximum local dose on the full map.
- Table silhouette displayed to localize the cumulated local dose versus patient lying on the table.
- Dose Map creation date and time (time of map creation).
- Dose Map end date and time (time of map end: end exam, or following a map reset).

- CAK dose dispatched on Dose Map.

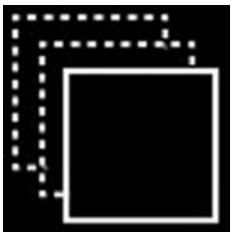
Information area

The following information can be found in the information area:

- Maximal value, in Gy, of the cumulated local dose on the full map.
- Gauge to indicate the maximum value of the cumulated local dose on the full map:



  - Dose indication is given from 0% to 100% of the local dose threshold.
  - Local dose threshold is indicated. Example: 1 Gy.
  - Vertical bars indicate the notification levels defined in the **Preferences** tab.
- Icon bar to display icons giving indications on the Dose Map. The icons are identical to the icons on Reference display, except:

Icons related to a normal behavior	
Icons	**Meaning**
	In case of multiple Dose Maps created during the same procedure, this icon will be included on all photos except the last one.
	In case of multiple Dose Maps created during the same procedure, this icon will be included on the last photo. In this case, two maps have been created and stored during the procedure.

11.5.4.3 Dose Map user messages

Location	Message	Description
Patients / Patient and Exam Info Exams / Patient info	`BMI out of range. Verify patient height and weight.`	In case patient's BMI is outside [16,45]
Live display	`(Notification value)`	When Dose Map is automatically displayed
Live and Reference display	`Dose Map reinitialized due to a change to the model`	In case of map reset
	`Dose map unavailable for lateral decubitus patient position`	In case lateral decubitus patient position is selected, to advise Dose Map is not available for this patient position

Location	Message	Description
	`Dose map unavailable until system reset is performed`	In case Dose Map is not working
	`Dose Map is not available until after the first X-Ray is performed`	In case Dose Map display is requested before first X-Ray has been performed

11.5.5 Dose Map accuracy

NOTE
If the mattress used has no GE HealthCare part number or the GE HealthCare part number doesn't figure in the mattress list defined in " Dose Map preferences on page 380", or in case of accessory usage in the beam: Dose Map accuracy is not guaranteed.

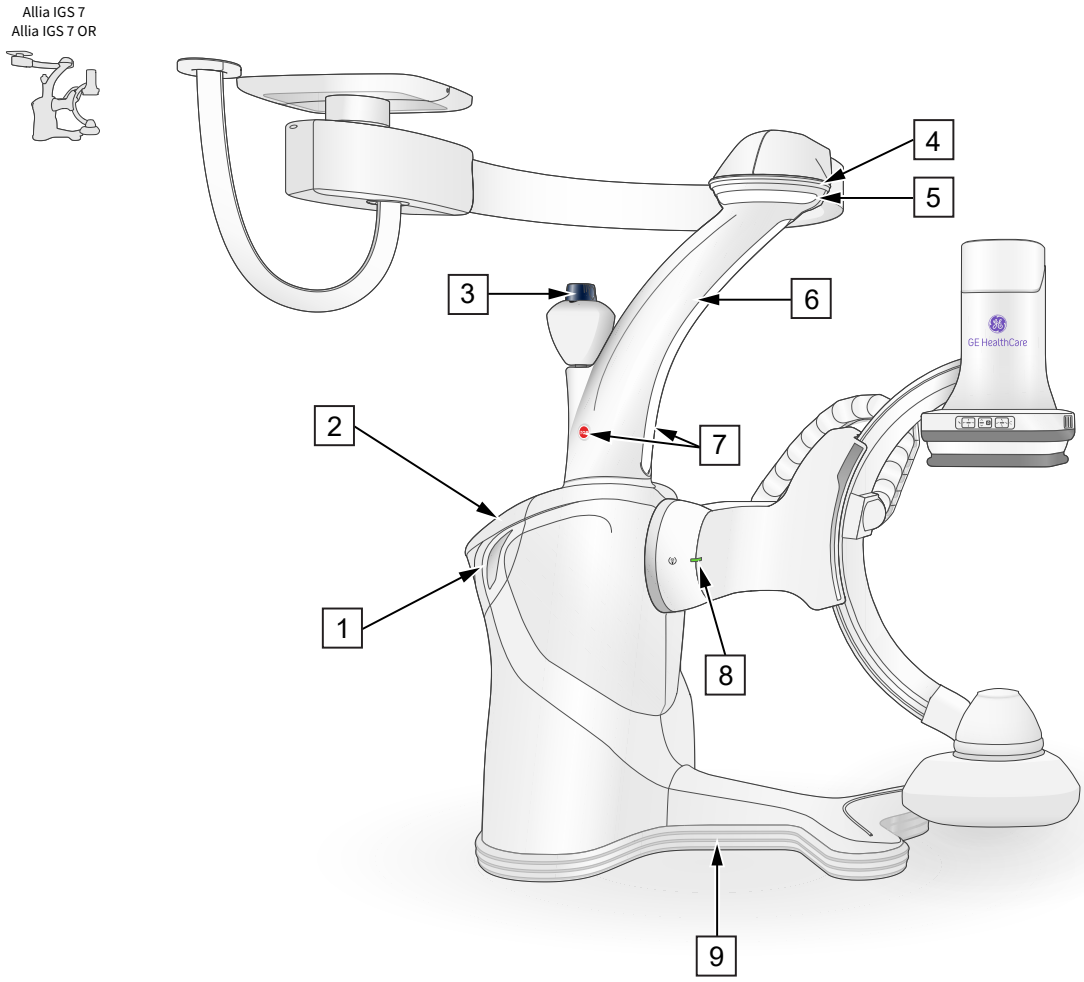
Refer to Appendix - Dose Map accuracy procedure on page 553.

12 System Positioning (Gantry and Table)

12.1 How to move the Table/Gantry

12.1.1 AGV on Allia IGS 7 and Allia IGS 7 OR systems

The Allia IGS system incorporates a mobile floor gantry for single-plane X-Ray imaging. The Gantry C-arm is positioned at predefined positions around the table by an Advanced Guided Vehicle (AGV). The vehicle allows the gantry to be parked away from the patient when X-ray imaging is not needed and to be positioned around the patient with flexibility. Vehicle motions can be controlled with the tableside user interfaces or with the gantry touch screen and AGV handle at the rear of the AGV.



Item	Description
[1]	AGV handle
[2]	Gantry touch screen
[3]	Laser
[4] / **[9]**	Anticollision sensors

Item	Description
[5]	Saucer light
[6]	Mast light
[7]	Emergency stops (one on each side)
[8]	Ready for X-Ray led (indicates when X-Rays are available)

When controlling the gantry from the rear of the AGV with the AGV handle, the operator should be well positioned to identify any risk of collision around the AGV and to have a clear view of the alarm indicator.

12.1.1.1 AGV Circuit

Circuit Description

The AGV movements will be based on pre-programmed trajectories inside the exam room. The preferred operating and parking positions are pre-defined and configured during installation.

The AGV circuit is displayed on the gantry touch screen at the rear of the AGV and on the live display.

Figure 12-1 Gantry touch screen

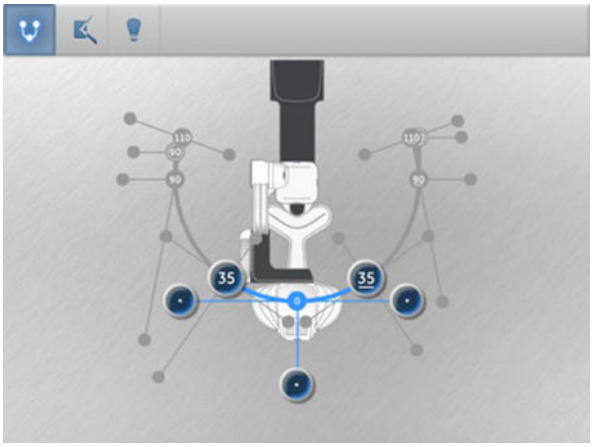
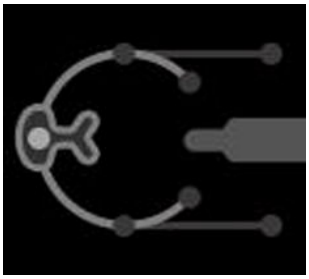
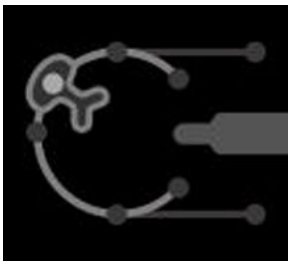


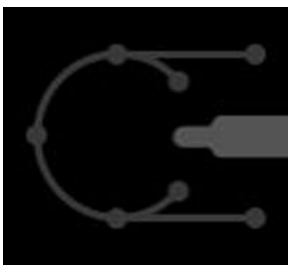
Figure 12-2 Live Display



On the AGV circuit, a working position is a pre-programmed position around the table for patient imaging. Each working position has an imaging zone.

The imaging zone is an area comprising about 80 cm in every movement direction around a working position, allowing imaging of the patient extremities. Outside this area, the gantry pivot and C angles are set automatically to 0° to reduce the equipment footprint while moving away from the patient.

Trajectory types	Description	Motion controls	Figure
Swivel	Swivel is a circular motion of the gantry around the table.	Control Panel swivel buttons AGV handle	

Trajectory types	Description	Motion controls	Figure
Panning	Panning is a linear motion available along the table sides.	Control Panel gantry joy-stick AGV handle	
Back-in Back-out	Back-in and Back-out are linear motions to drive the gantry towards the table or away from the table. Back-out positions allow to quickly free space around the table	Control Panel gantry joy-stick AGV handle	 Back-in:  Back-out: 
Parking	Parking is a pre-defined position in exam room that completely frees access to the table. Angulation and imaging are not possible in parking position.	AGV handle only	

Circuit Customization

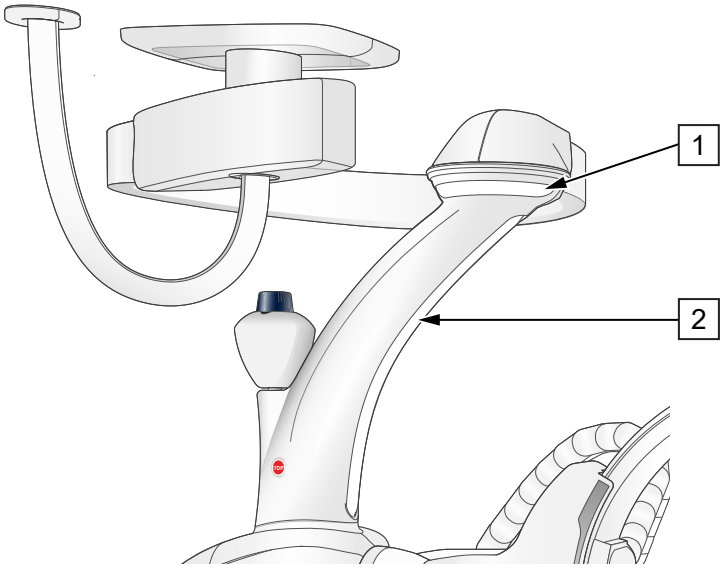
The back-out and parking positions of the AGV are configured during the system installation according to circuit trajectories option, room size and users preferences.

Configurable trajectory	Number of customizable trajectories	Description
Back-out	up to 13	The distance from a working position to back-out or parking positions can be customized.
Parking	2 out of 7 available	

12.1.1.2 AGV Lighting

The AGV has two lights; one on the saucer light **[1]** and one on the mast light **[2]**.

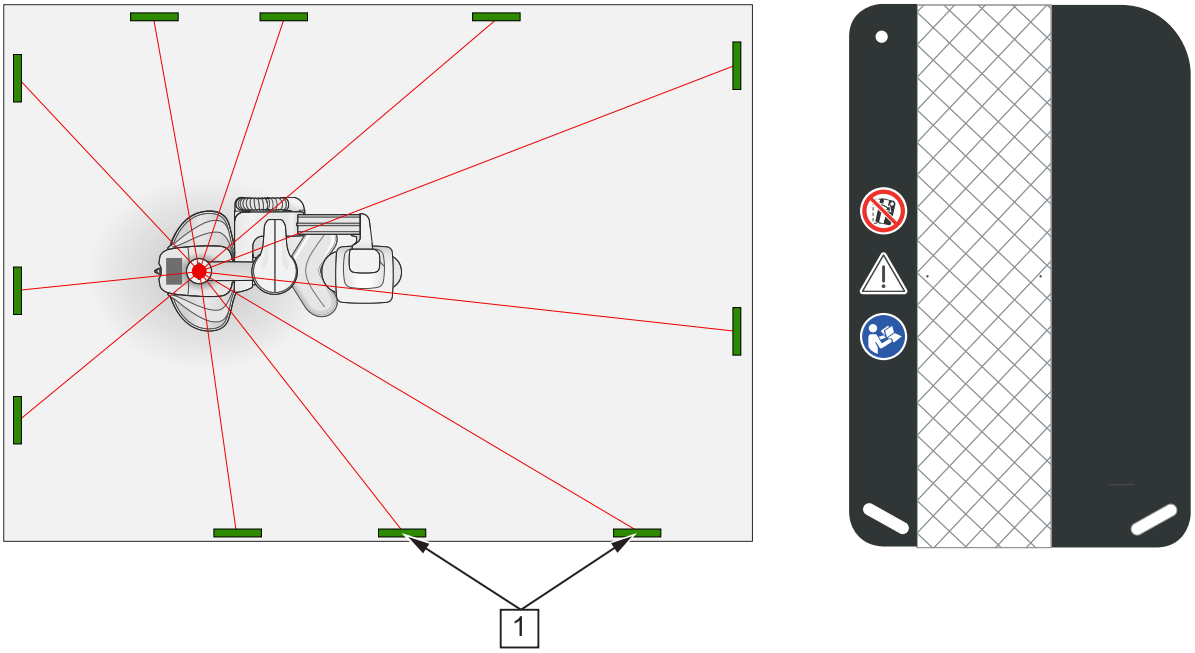
Allia IGS 7
Allia IGS 7 OR



If the gantry reaches a parking position both the mast and saucer lights will smoothly turn off indicating that the system will be in a sleep mode.

12.1.1.3 Localization

The AGV uses optical-based localization to determine its position in the exam room. A rotating laser invisible to the human eye provides an all-round view and detects fixed reflectors positioned in the room. The system continuously scans its environment and determines its current position by measuring the reflection angles and the distances to the reflectors.



Item	Description
[1]	Reflectors

Reflectors are arranged in a specific geometrical scheme to ensure proper vehicle navigation. At positions where positioning accuracy is required, the laser-based localization system requires to detect five or more visible reflectors.

The visibility of some reflectors may be temporarily blocked by other medical equipment obscuring the laser's view. Also, highly reflective objects can create interference with the reflectors. Examples of such reflective objects are windows, metallic tubes or contrasted surfaces. The system is designed to manage typical situations however too many obscured reflectors or interference reflections can both lead to creating localization issues. For more information about localization accuracy go to 3.8.14 Localization failure and recovery modes for Allia IGS 7 and Allia IGS 7 OR on page 93.

12.1.1.4 Table Standalone Mode (only for IGS 7 OR)

NOTE
If imaging is needed, make sure the table is equipped with an imaging compatible table top (Flat table top or Universal table top).

If using a non-integrated table top, the system will be in Table Standalone Mode. It is important to position the gantry base away from the table so that a distance of at least 50 cm is maintained throughout the procedure between the gantry and the table (according to the indications described in the Magnus Maquet OR Table manufacturer User Manual).

NOTE
When table is in Standalone mode, be aware that there will be functional limitations and move the system with care:

- Fluoroscopic imaging will not be available.
- Table and Table top movements cannot be controlled from the IGS Control Center.
- Gantry base and C-arm speed will be reduced.
- There will be no software anti-collision mode, movements should be performed under the operator's discretion.

12.1.1.5 Gantry touch screen and handle

A three-tab menu is available on the top of the gantry touch screen:

Circuit tab

Reflector visibility tab

Light controls tab

Circuit tab

The **circuit** tab is the default display on the gantry touch screen. It displays a top view schematic diagram of the exam room with the gantry positions around the table.

Examples of position display on the **circuit** tab:

Available working position at swivel angle +90°

Available working position at swivel angle +90° after panning

Available working position at swivel angle -135°

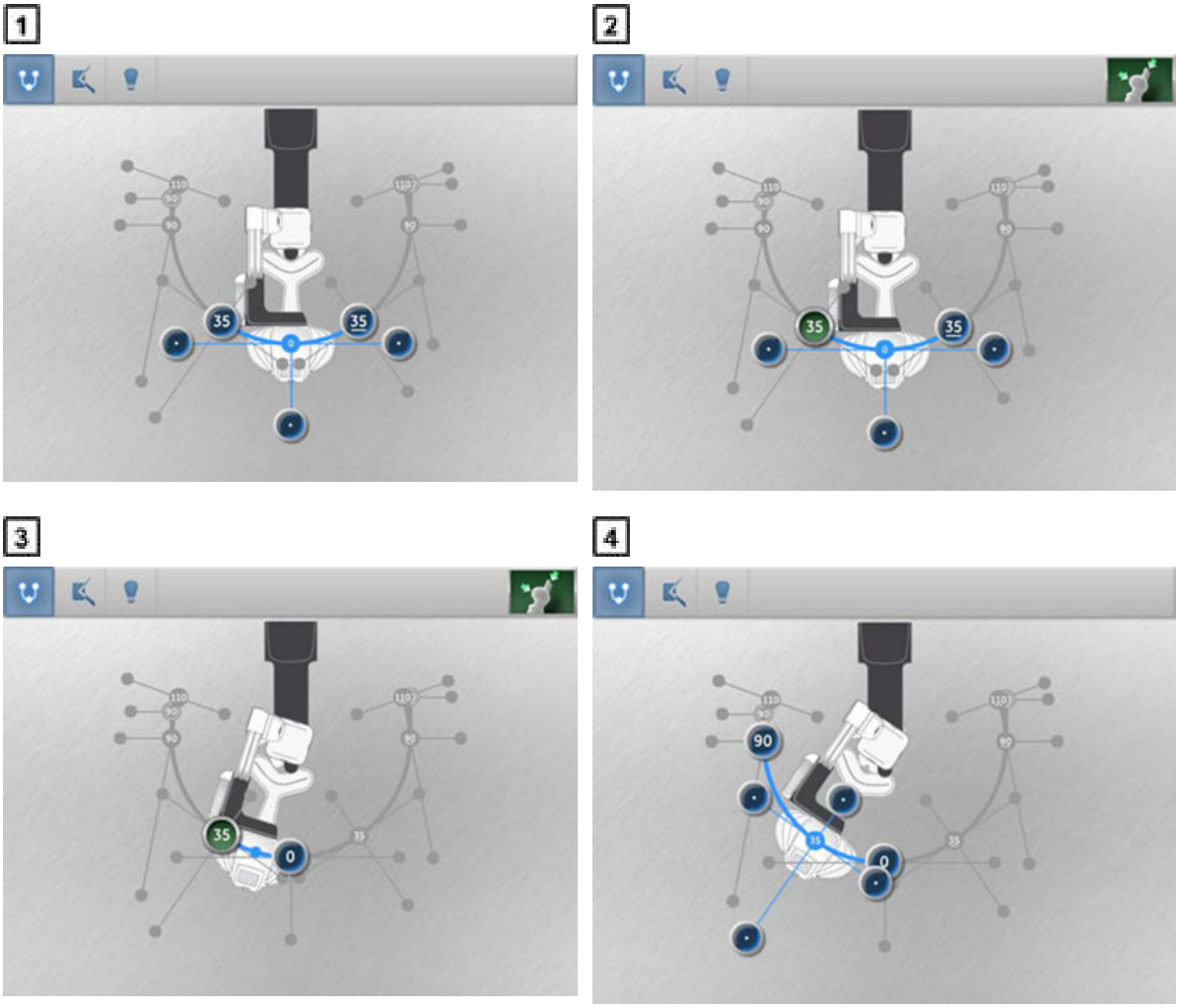
Available translation position

Available parking position (the orientation of the gantry symbol depends on its real orientation in the exam room)

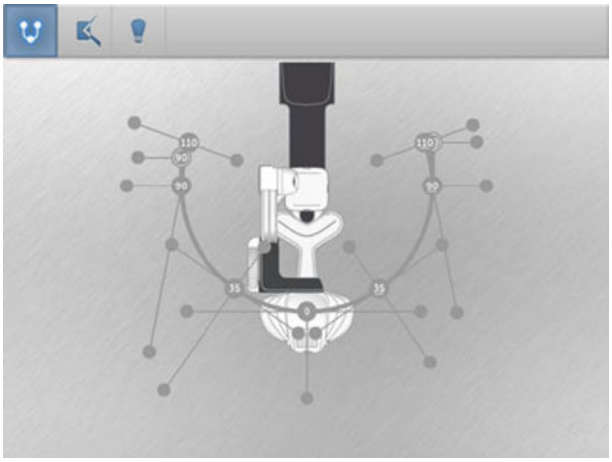
Selected working position at swivel angle +35°

When the gantry is not moving, the current gantry position and the achievable pre-programmed destinations are highlighted on the touch screen **[1]**. Finger-tap on a blue circle destination **[2]**. An AGV handle symbol with green arrows appears on the top right of the touch screen. You can then press both buttons of the AGV handle simultaneously to move towards the desired position. During the movement, the speed is adjusted by the system, the touchscreen shows the current position and the destination is highlighted **[3]**. Release any button on the handle to stop the motion or wait for the gantry to reach its final position and stop **[4]**.

Example of a circuit displayed on the gantry touch screen:



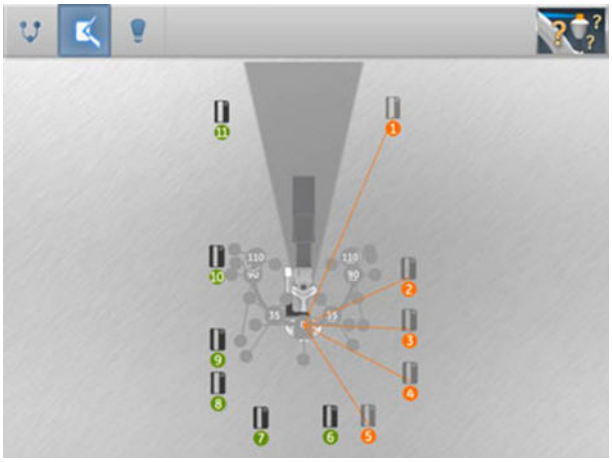
NOTE
In certain conditions (e.g.: lock function activated, system boot …), the AGV touch screen is disabled and no selection is possible as illustrated below.



Reflector Visibility tab

The localization system can fail if too many reflectors are blocked by other medical equipment obscuring the laser's view. In this situation, on the right top of the AGV circuit screen the following icon appears:

Finger-tap on the **reflector visibility** tab of the gantry touch screen to display the state of all the reflectors located in the room. This diagnostic can also be done at any time even when there is no laser signal failure.



On the touch screen display, the obstructed reflectors and their corresponding rays are highlighted. Equipment hiding the reflectors can then be moved away. In case an obstructed reflector is in the cone-shaped shadow of the system itself, moving the equipment will not help.

While in the reflector visibility tab, the gantry motions are disabled. The **reflector visibility** tab is disabled when the gantry is moving.

To exit the reflector visibility display, select any other tab. The **reflector visibility** tab automatically exits after 5 minutes. Any previously selected position will be lost when exiting the **reflector visibility** tab.

Light Controls tab

When selecting the **light controls** tab on the top of the gantry touch screen, two light menus are displayed in order to set the mast and saucer light intensity. On each menu, there are 4 levels of light intensity: off, low, medium and high.

The left side menu is the default light intensity control. In particular cases such as X-Ray generation or In-room Light Switch activation on the Touch Panel (in the lighting application), the right side menu is used to set light intensity.

NOTE
Depending on the system installation, the In-room Light Switch on the Touch Panel may not be active, if you would like to modify this setting, contacts your GE HealthCare representative.

If the system is in motion, the **light controls** tab is disabled on the gantry touch screen.

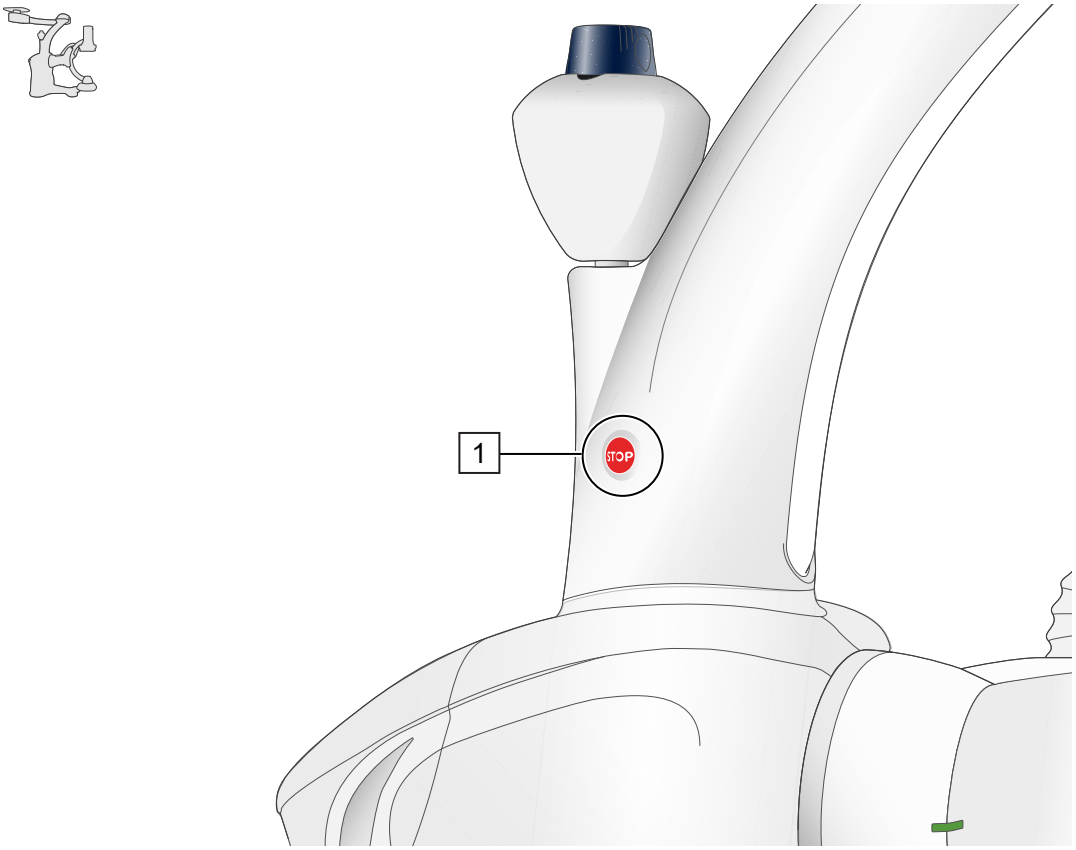
To exit the light controls, select any other tab. The **circuit** tab will automatically exit after 5 minutes.

12.1.1.6 AGV stop buttons

Two **Stop** buttons **[1]** are located on the right and left side of the rear of the gantry. In case of emergency, press a **Stop** button. All gantry and table motions will stop.

To recover motion, press the tableside Stop Release button.

Allia IGS 7
Allia IGS 7 OR



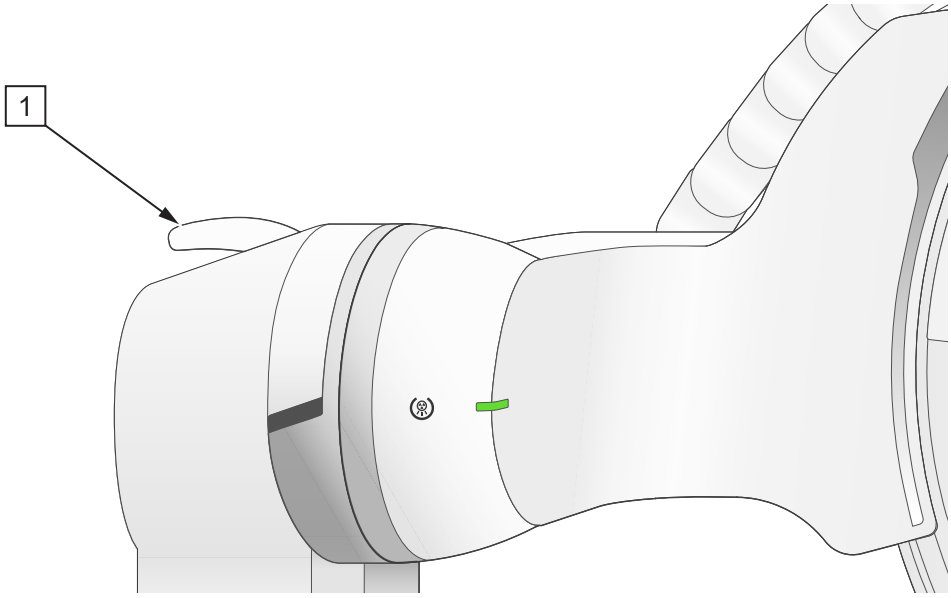
12.1.2 Manual L-Arm Positioning on Allia IGS 5 systems

Use the L-arm rotational brake release **[1]** to manually position the L-arm. The brake release is located on a handle at the upper end of the L-arm. Press one or both side buttons on the handle to release the brakes and manually position the L-arm.

You can freely move the L-arm to its limits in either direction. A built-in hard stop limits travel.

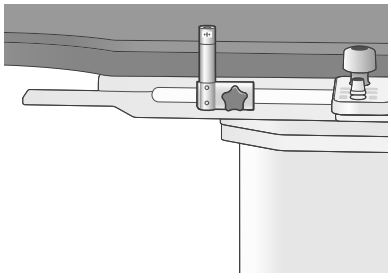
NOTE
The brake release allows manual positioning of the L-arm only. In case of failure of the L-arm brake, it is still possible to overcome the L-arm brake by pushing manually on the L-arm with sufficient strength so as to clear the patient as needed in case of emergency situation.

NOTE
In normal situation avoid pushing the L-arm without using the brake button, as it can create a small drift of the "zero" position of the L-arm, which can impact the Innova Vision applications.



12.1.3 Additional Table Panning Handle (on Omega and Innova^{IQ} Table)

Press the switch located at the top of the handle to release the longitudinal and lateral table top brakes; the table top can be moved manually.



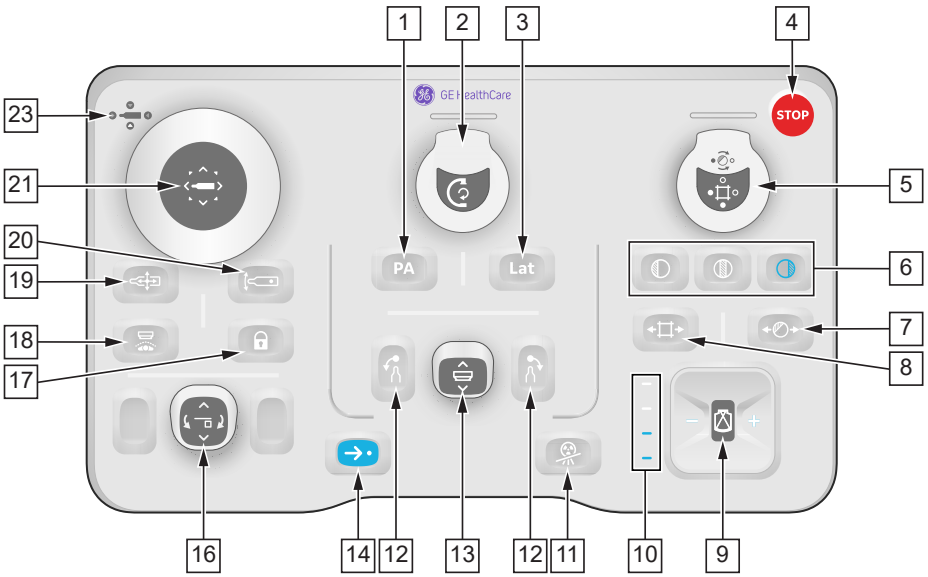
NOTE
The activation of the switch will only release the lateral table top brake when the table is tilted.

12.1.4 Control Panel

The Control Panel provides controls for the motion of the table and gantry axis, the collimation, and additional functions.

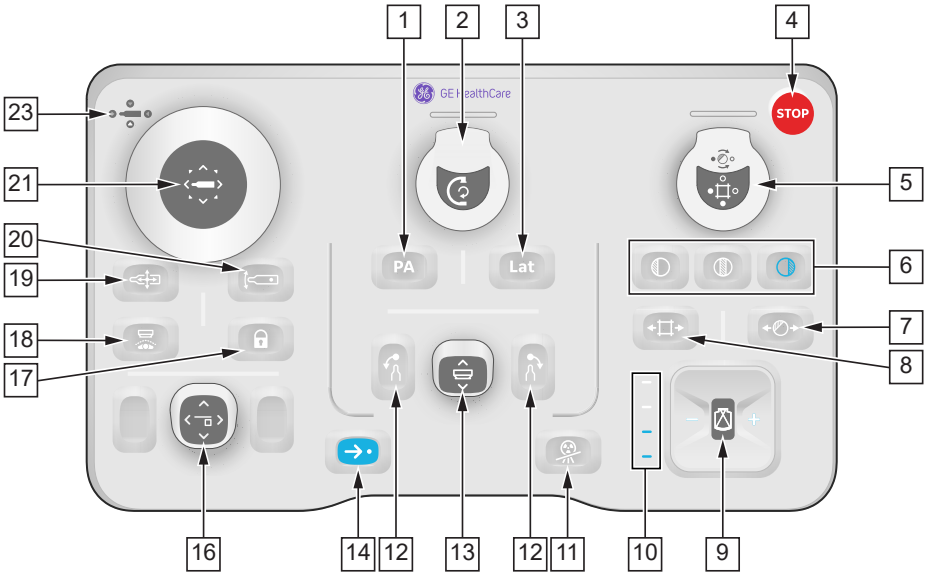
Allia IGS 5

Figure 12-3 Control Panel-Servo for IGS 5 with Innova^{IQ} table (top view)



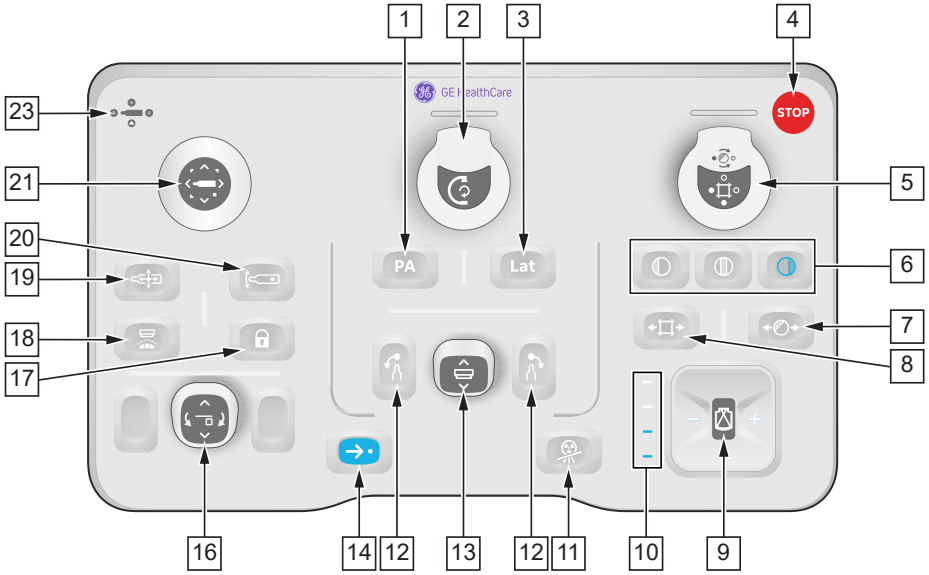
Allia IGS 5

Figure 12-4 Control Panel-Servo for IGS 5 with Omega table (top view)



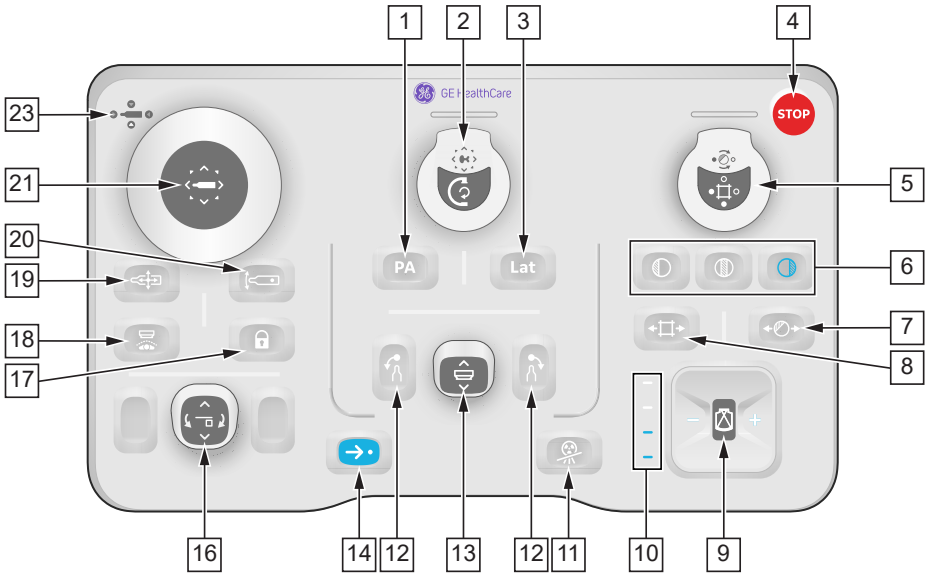
Allia IGS 5

Figure 12-5 Control Panel-Joystick for IGS 5 with Innova^{IQ} table (top view)



Allia IGS 7
Allia IGS 7 OR

Figure 12-6 Control Panel-Servo for IGS 7 and IGS 7 OR (top view)



Allia IGS 7
Allia IGS 7 OR

Figure 12-7 Control Panel-Joystick for IGS 7 and IGS 7 OR (top view)

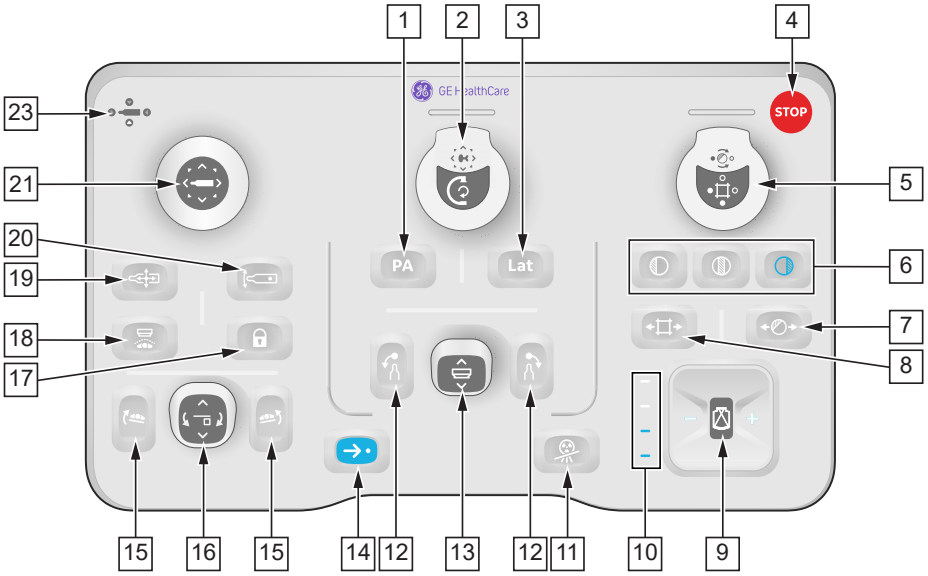


Figure 12-8 Control Panel bottom view

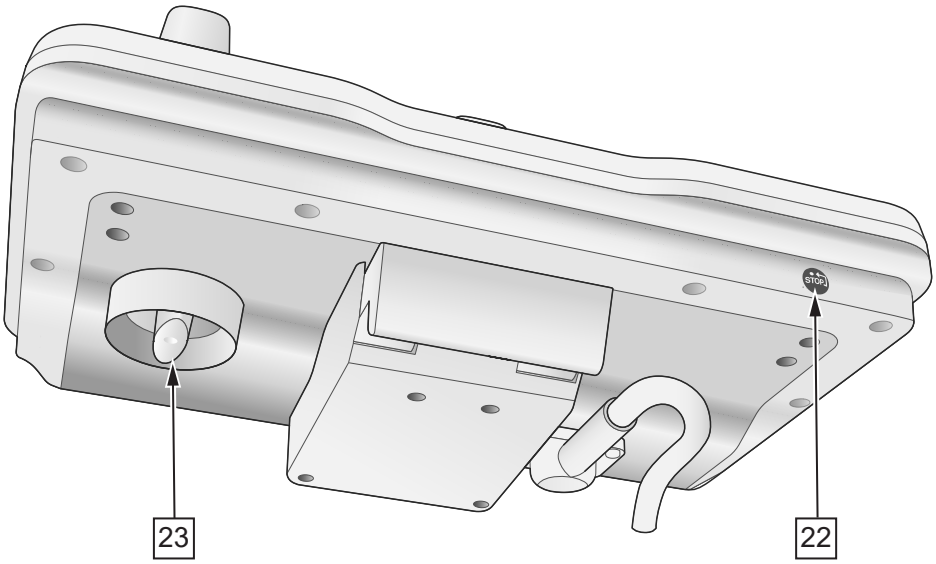
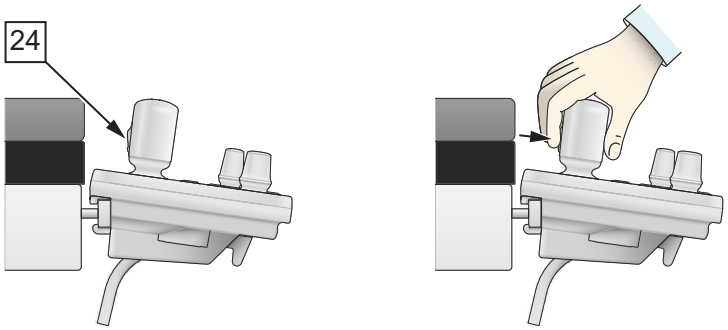


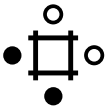
Figure 12-9 Bi-function joystick

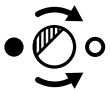


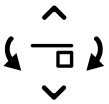
NOTE

The table controls of the Control Panel are disabled when using the Magnus Maquet OR Universal Table Top: use the Magnus Maquet OR user interfaces.

Item	Symbol	Function
[1]	PA	**PA** Press and hold the button to move the gantry to Postero-Anterior position. In the Anatomical mode, the system positions the X-ray beam perpendicular to the table top. In the Mechanical mode, the system moves the Swivel, C-arm and Pivot to zero.
[2]		**Gantry Angulation** Use the joystick to rotate the gantry around the patient.
[2]		**(For Allia IGS 7 and Allia IGS 7 OR) Gantry Translation** Simultaneously press the button **[24]** and use the joystick to translate the AGV on the Back-in, Back-out and panning trajectories. The blue LED indicates that the joystick controls gantry translation. Put the joystick in neutral position and release the button to switch to gantry angulation control (LED switched off). Refer to 12.1.1 AGV on Allia IGS 7 and Allia IGS 7 OR systems on page 391 for details regarding AGV trajectories.
[3]	Lat	**LAT** Press the **LAT** button on the Control Panel to move the X-Ray beam parallel to the table top (lateral). **In anatomical mode** / **In mechanical mode**

Item	Symbol	Function	
		(For Allia IGS 5) If a lateral angulation is reachable without moving the gantry base, only the Pivot and the C-arm move so that the X-Ray beam is set parallel to the table top surface. Otherwise, the gantry base moves to the nearest position where a lateral angulation is reachable and the Pivot and the C-arm will move so that the X-Ray beam is set parallel to the table top surface. **(For Allia IGS 7 and Allia IGS 7 OR)** **On the swiveling trajectory:** If a lateral angulation is reachable without moving the gantry base, only the Pivot and the C-arm move so that the X-Ray beam is set parallel to the table top surface. Otherwise, the gantry base moves to the nearest position where a lateral angulation is reachable and the Pivot and the C-arm will move so that the X-Ray beam is set parallel to the table top surface. **On other trajectories:** The function is not available.	**(For Allia IGS 5)** The gantry base moves to the Head position, C-arm moves to 0° and Pivot moves to 90°. **(For Allia IGS 7 and Allia IGS 7 OR)** **On the swiveling and in the imaging zone of panning trajectories:** The gantry base moves to the Head position, C-arm moves to 0° and Pivot moves to 90°. **On parking trajectories or out of the imaging zone:** The function is not available.
[4]		**Stop** In case of emergency, press the **STOP** button. All the table and gantry motions will stop, and the table and gantry motorized commands will be disabled. The button backlight stops fluctuating and will stay lit. Press the **STOP RELEASE [22]** to recover the motion controls. The **STOP** button backlight resumes fluctuating. **WARNING**  THE STOP BUTTON LIGHT PERMANENTLY OFF INDICATES A FAILURE IN THE STOP BUTTON MECHANISM. HANDLE THE SYSTEM WITH CARE AND CONTACT YOUR GE HEALTHCARE SERVICE REPRESENTATIVE AS SOON AS POSSIBLE.	
[5]		**Collimation Blades Positioning** Move the joystick without pressing the button at the backside to open or close the collimation blades. Collimation blades cannot be moved during a Bolus or 3D CT or 3DStent acquisition. For details, see 12.2 Collimator Control on page 411.	

Item	Symbol	Function
		**Contour Filter Blades Positioning** Simultaneously press the button **[24]** and move the joystick right or left to move the blades in or out of the image; move it up or down to rotate. The blue LED indicates that the joystick controls the contour filter blades. The command applies to all selected blades. Put the joystick in neutral position and release the button to switch back to collimation blades control (LED switched off). Contour filters cannot be moved during a Record acquisition.
[6]		**Contour Filter Blade Selection** Press the button to select the blade (blue backlight) for positioning control. The white backlight indicates that the blade is not selected.
[7]		**Contour Filter Blades Reset** Press the button to quickly park all of the Contour Filter blades.
[8]		**Collimation Blades Reset** Press the button to open the collimation blades to maximum opening for the selected FOV.
[9]		**Field of View (FOV) Selection** Press the +/- buttons to increase/decrease image magnification.
[10]		**Field of View (FOV) level indicator**
[11]		**X-ray Disable** Press the button to disable (blue backlight) or enable (white backlight) X-ray.
[12]	 	**Gantry Swivel** Press either button to move the gantry along the swiveling trajectory. The motion briefly stops when the gantry is at a working position.

Item	Symbol	Function
[13]		**Detector Lift** Move the rocker up or down to raise or lower the detector.
[14]		**Move** The button blinks when a motion has been requested from the Touch Panel to reach a preselected position or allow a spin test. Press and hold this button until the position is reached.
[15]	 	**(For Magnus Maquet OR flat table top) Table Lateral Tilt (Cradle)** Press either button to tilt laterally (cradle) the table. The cradle motion automatically stops for 1 second when the cradle angle is 0°. Isocenter tracking and incidence keeping are not available during cradle motion.
[16]		**(For InnovaIQ Table)** **(For Magnus Maquet OR Table)** **Table height and Trendelenburg Tilt** Move the control up or down to raise or lower the table; move it right or left to tilt the patient's head up or down. The Trendelenburg tilt motion automatically stops for 1 second when the tilt angle is 0°. **WARNING**  ALWAYS SECURE THE PATIENT WITH APPROPRIATE RESTRAINTS BEFORE TILTING THE TABLE IN ANY DIRECTION. In the Anatomical mode, the system keeps the image centered (isocenter tracking) and the beam incidence on patient (incidence keeping) during Trendelenburg tilt motion. In the Mechanical mode, isocenter tracking and incidence keeping are disabled. Isocenter tracking and incidence keeping are not available from the Magnus Maquet OR table user interfaces.
[16]		**(For Omega Table) Table height and longitudinal move** Move the control up or down to raise or lower the table. **(For Omega V Table)** , move the joystick left or right for longitudinal motorized movement.

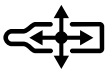
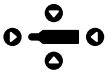
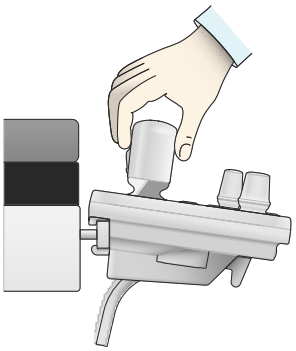
Item	Symbol	Function
[17]		**Motion Lock** By default, all the table and gantry motions are allowed (white backlight). Press the button to lock all motions (blue backlight). This is mandatory during patient transfer. Press the button again to unlock motions. This function does not lock the rotation on the Magnus Maquet OR table. Refer to the manufacturer's operating instructions.
[18]		**Patient Contouring** Press the button to activate or de-activate the InnovaSense Patient Contouring. When the button is illuminated in white, it is disabled. When the button is illuminated in blue, it is enabled: the system automatically adapts the height of the detector upon any motion of the table or gantry. Upon non-motorized motion of the table, the detector height is unchanged. Refer to 12.3 InnovaTrace / InnovaSense patient contouring on page 412.
[19]		**(For InnovaIQ Table)** **(For Omega Table)** **Table Top Free Floating** By default, Free-Floating is disabled (white backlight). Press the button to activate it (blue backlight): the table top can be panned manually. When the table top is tilted, Free-Floating only applies to lateral panning. Press the button again to de-activate Free-Floating. Otherwise, the Free Floating automatically de-activates after 3 min without motion. This button is disabled in control room.
[20]		**(For InnovaIQ Table)** **(For Omega Table)** **Table Top Rotation** By default, Rotation is disabled (white backlight). Press the button to activate it (blue backlight): the table top can be rotated manually. Press the button again to de-activate Rotation. The Rotation also de-activates automatically when the table top is centered (0°) or after 3 min without motion. This button is disabled in control room.
[21]		**Table Panning** • Panning Assist Control: apply pressure in a given direction to adjust table top speed and direction. • Panning Joystick: apply angle in a given direction to adjust table top speed and direction.
[22]		**Stop Release** Press the **STOP RELEASE** button to recover the motion controls when the **STOP** button **[4]** has been depressed. This button is disabled on the optional Control Panel in control room.
[23]		**Position Selection** Turn the switch to select the appropriate Control Panel orientation compared to the table on the indicator. This allows the table and gantry controls to remain consistent with the commanded motions.
[24]		**Bi-function button**

Figure 12-10 Capacitive hand detection



To avoid unintentional motions, the table and gantry controls require a double activation (enable and command). To activate these controls, position at least two fingers on opposite sides of the control (enable) and move the control (command).

12.1.5 Remote Stand (Option)

The Remote Stand is installed in the control room by your GE HealthCare service field engineer. It is used to mount the Control Panel in the control room allowing movement of the gantry and the table remotely. The Remote Stand and the Control Panel are positioned so that the patient and equipment are always clearly visible and the operator's view is not obstructed. Keep the surrounding area free of objects that could fall on the controls and cause an unintended motion.

The Remote Stand is equipped with a knob to lock or unlock the rotation of the arm:

- Turning the knob counter clockwise will unlock the arms and allow rotation around the axis of the stand. Adjust the position of the arms as needed.
- Turning the knob clockwise will lock the rotation of the arms and hold them in the desired position.

Use the position selection switch underneath the Control Panel to select the appropriate motion orientation compared to the table on the indicator (see 12.1.4 Control Panel on page 401).

12.1.6 Direct Access Panel

Three out of the four sides of the detector housing include a User Interface panel.

Table 12-1 (For System with 30 cm detector)

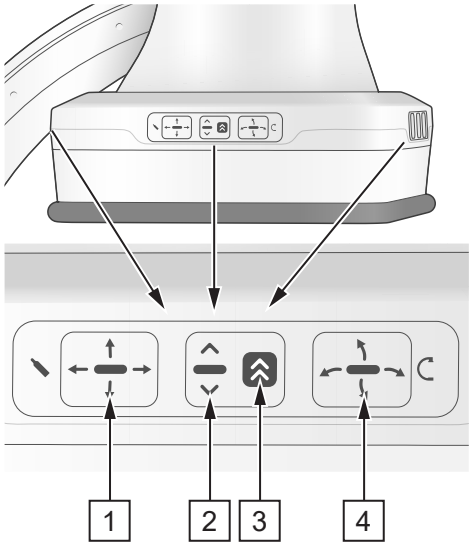
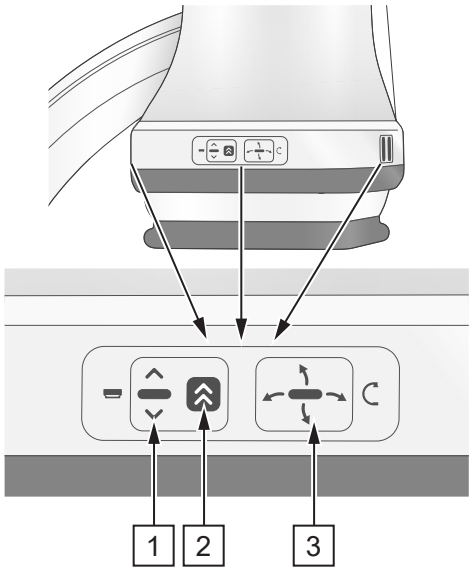
	Item	Description
	[1]	**Table panning** Press either button to move the table in the longitudinal direction (patient head/feet) or lateral direction (patient left/right) **(For InnovaIQ Table)** : longitudinal and lateral available. **(For Omega V Table)** : only longitudinal available.
	[2]	**Detector lift** Press either button to raise or lower the detector.
	[3]	**Emergency back-out**
	[4]	**Gantry angulation** Press either button to rotate the gantry around the patient (LAO/RAO, CRA/CAU).

Table 12-2 (For System with 20 cm detector)

	Item	Description
	[1]	**Detector lift** Press either button to raise or lower the detector.
	[2]	**Emergency back-out**
	[3]	**Gantry angulation** Press either button to rotate the gantry around the patient (LAO/RAO, CRA/CAU).

Emergency Back-Out

If needed, raise the detector using the Emergency back-out button.

NOTE
This control must be used only:

1. To clear a collision (see 12.5 Collision management on page 437) by allowing a 2.5 cm additional SID course.
2. To move the Digital Detector away from the patient in case of gantry failure.
3. In case of SID failure. Use this button to bring the Digital Detector to its highest position to recover X-Ray.

12.2 Collimator Control

Collimator blades

The collimator is controlled automatically when the operator selects a Field of View on the Control Panel. The collimator may also be operated manually at the Control Panel (refer to 12.1.4 Control Panel on page 401).

There is a permanent safety mechanism which automatically ensures that the X-Ray beam will never expose patient body areas which are not displayed on the monitor (SID, FOV and image rotation tracking).

There are two ways to visualize the location of the collimator blades:

- While performing Fluoro:

  Move the collimator joystick to visualize and position in real time the collimator blades over the selected anatomy.

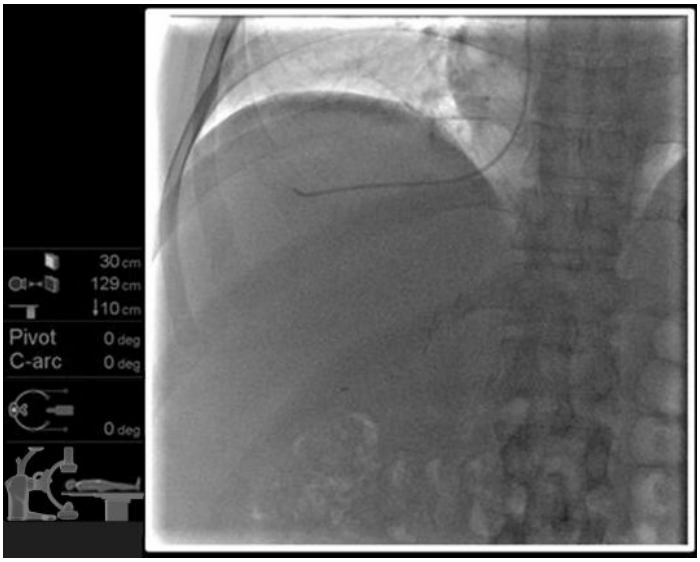
- Out of Fluoro: 4.3

  Move the collimator joystick to visualize and position virtual lines displayed over the Last Image Hold (LIH) or over any image in review on the live display.

  NOTE
  Virtual lines displayed represent the current location of the collimator blades and may not match, in case of gantry or table motion, with the anatomy of an image previously acquired.

  These virtual lines are displayed for just a few seconds over the image each time the collimator blades are moved either manually, using the collimator joystick or automatically, when changing the gantry or table angles, SID or FOV.

Examples of virtual collimator displays on the live display



System positioned at 0°, rectangular blades are displayed in solid white lines.

Gantry information linked to the acquired image and displayed in the bottom right corner of the live display is not displayed during the few seconds where the virtual collimator lines are visible.

Contour Filter

The system is equipped with contour filter blades. For details regarding how to use this feature, refer to 12.1.4 Control Panel on page 401.

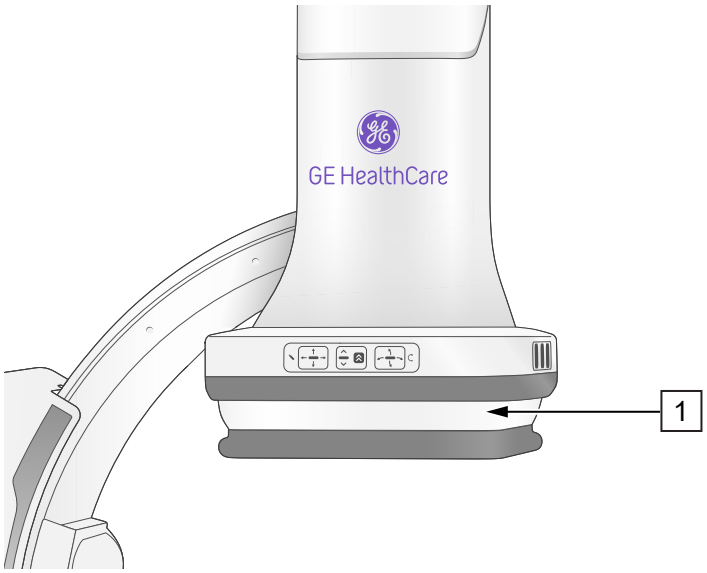
12.3 InnovaTrace / InnovaSense patient contouring

The frontal detector housing is surrounded by a capacitive sensor ring **[1]** to prevent, as much as possible, collision with the patient. With these sensors, the gantry can rotate up to 20°/s.

These sensors are active as soon as a gantry or table joystick is depressed.

NOTE
Even if the detector position is adjusted automatically with the sensors, manual control of the detector remains available.

NOTE
Narrow and small human objects (i.e. nose) are more difficult to detect by the sensors. So it is recommended to turn the patient's head to the left or right and to reduce gantry speed when in the vicinity of the patient's head.



InnovaTrace™

Depending on the gantry and table location around the patient, as soon as the distance between patient and detector becomes too close, InnovaTrace™ sends the order to automatically raise the detector to prevent it from touching the patient.

WARNING

OBJECTS MADE OF NON-CONDUCTIVE MATERIALS (PLASTIC E.G. OXYGEN MASK) OR SMALL INVASIVE OBJECTS/DEVICES (E.G. NEEDLES, SURGICAL TOOLS) WHICH PROJECT OUT FROM THE PATIENT SKIN SURFACE ARE NOT DETECTED BY THE SENSORS. SO IT IS RECOMMENDED TO PAY PARTICULAR ATTENTION AND TO REDUCE GANTRY SPEED DURING PROCEDURES THAT INVOLVE THE USE OF SUCH DEVICES OR SMALL NON-CONDUCTIVE OBJECTS (E.G. BIOPSIES, SPINE PROCEDURES, SURGERY).

InnovaSense patient contouring

InnovaSense patient contouring incorporates implementation of advanced capacitive sensor technology.

The system in this mode is aware of location of the patient and can dynamically adapt the receptor distance to position receptor safely in proximity to the patient.

When InnovaSense patient contouring is activated, the detector always stays at a constant safe distance from the patient while the gantry is moved in any direction. At the end of the motion, keeping the gantry enable activated will move the detector down for even closer positioning (stops at few centimeters from patient).

The detector will also move Up/Down in response to the table movement providing a smart system response.

With InnovaSense patient contouring activated, bringing the detector at its highest position will prevent it from automatically moving down during a table Up/Down motion and/or longitudinal table top motorization.

When using the Auto Positioner, the detector will automatically move Up/Down during gantry motion to stay at safe distance from the Patient. There is a button provided to activate or disable this function.