CS 9300C

User Guide

Notice

Congratulations on your purchase of the CS 9300C. Thank you for your confidence in our products and we will do all in our power to ensure your complete satisfaction.

The User Guide for the CS 9300C includes information on the cephalometric features. For the panoramic or the 3D features, see the CS 9300 (SM748) User Guide. We recommend that you thoroughly familiarize yourself with this Guide in order to make the most effective use of your system.
The CS 9300C is intended to produce two-dimensional and three-dimensional digital x-ray images of the dento-maxillo-facial and ENT (Ear, Nose and Throat) areas to be used at the direction of healthcare professionals as diagnostic support for pediatric and adult patients. In addition, the CS 9300C is a system that is also intended to produce cephalometric images. This includes imaging the hand and wrist to obtain the carpus image for growth and maturity assessment.

WARNING: We recommend that you consult the "Safety, Regulatory and the Technical Specification User Guide" before using the CS 9300C.

WARNING: Do not use cone beam imaging for routine or screening examinations. Consider using other diagnostic tools. You must justify that the imaging method that you use to examine each patient demonstrates that the benefit outweighs the risks.

The information contained in this Guide may be subject to modification without notice, justification or notification to the persons concerned.

The US Federal law restricts this device to sale by or on the order of a physician.

This document is originally written in English.

Manual Name: *CS 9300C User Guide*
Part Number: SM750
Revision Number: 01
Print Date: 2011-09

The CS 9300C, complies with Directive 93/42/EEC relating to medical equipment.

CE
0086

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Contents

Chapter 1
About This Guide

Conventions in this Guide

The following special messages emphasize information or indicate potential risk to personnel or equipment:

WARNING
Warns you to avoid injury to yourself or others by following the safety instructions precisely.

CAUTION
Alerts you to a condition that might cause serious damage.

IMPORTANT
Alerts you to a condition that might cause problems.

NOTE
Emphasizes important information.

TIP
Provides extra information and hints.

Chapter 2
CS 9300C OVERVIEW

General Overview

The CS 9300C is composed of the following functional components:

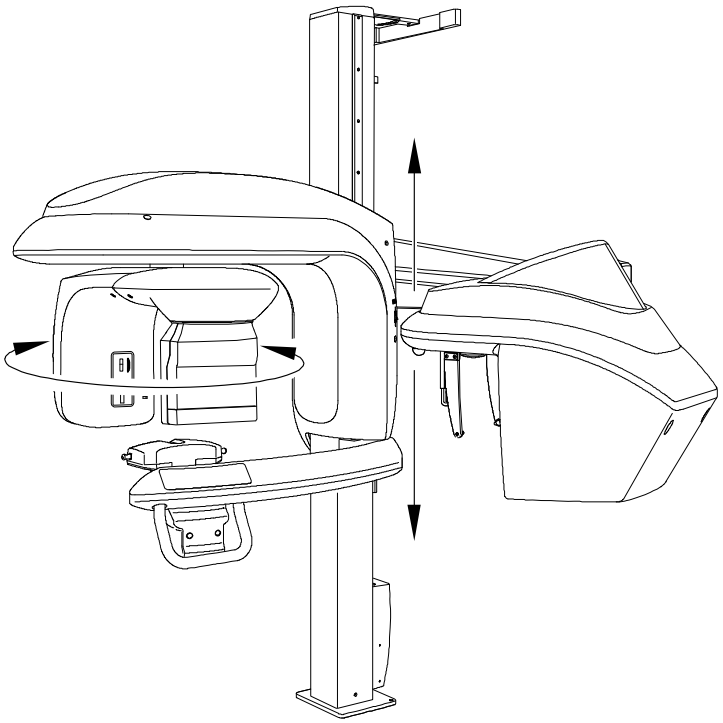
- The unit head that contains all the electronic control
- The rotative arm
- The fixed arm with a control panel
- The panoramic and 3D digital sensor
- The X-ray source assembly
- The X-ray remote control
- The chin rest base
- The panoramic chin rest and bite block
- The 3D bite block and support
- The 3D head rest
- The temple supports
- The hand grips
- The cephalostat arm
- The cephalostat head
- The head clamps and ear cones
- The nasion support
- The acquisition software (see "**Imaging Software Overview**")

The following figures illustrate the general overview of the CS 9300C system.

Mobile Components

Figure 2-1 illustrates the up and down movement of the CS 9300C mobile component and the 360° rotation of the rotative arm.

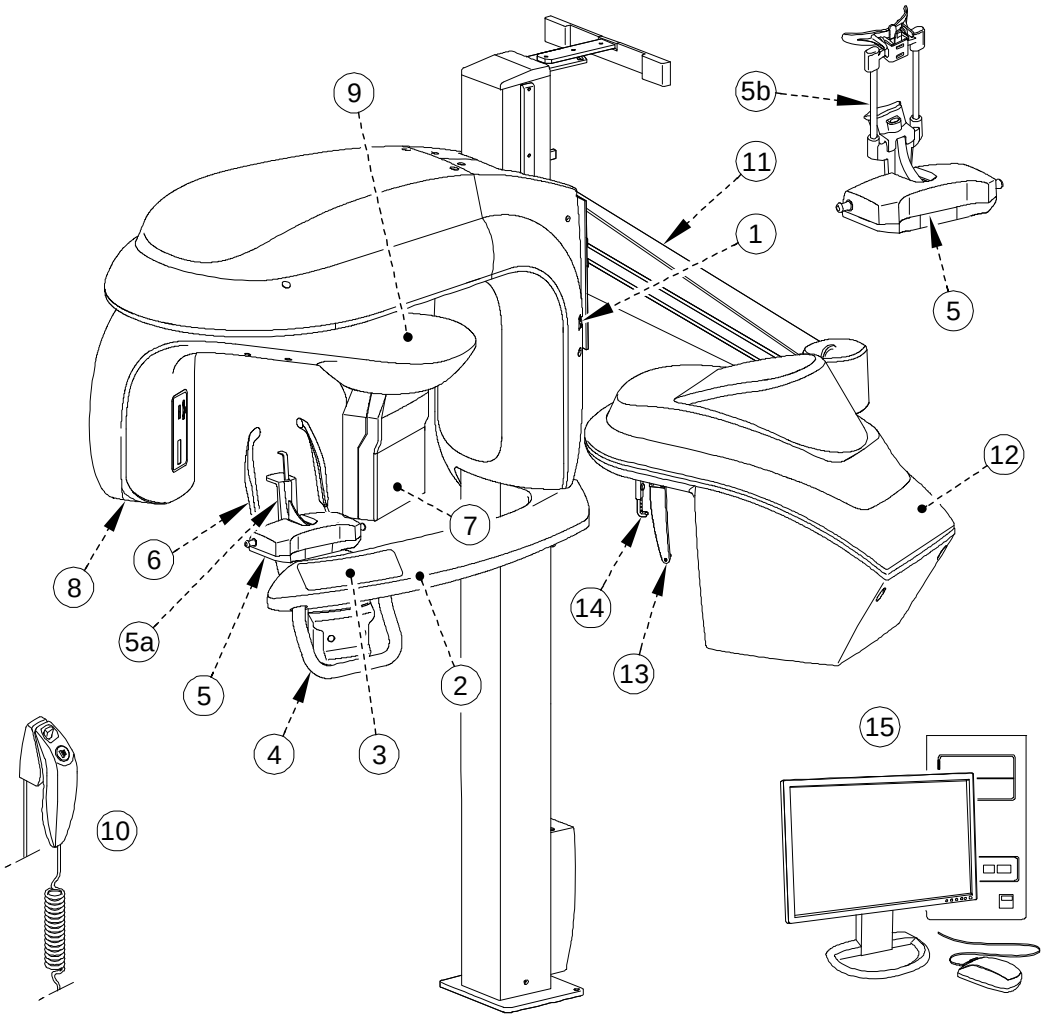
Figure 2–1 CS 9300C Mobile Components



General Functional Components

Figure 2-2 illustrates the general functional components of the CS 9300C.

Figure 2–2 CS 9300C Functional Components



1	ON/OFF button	**7**	Sensor
2	Unit fixed arm	**8**	X-ray source assembly
3	Control panel	**9**	Unit rotative arm
4	Hand Grips	**10**	X-Ray remote control
5	Chin rest base	**11**	Cephalostat arm
5 a	Panoramic chin rest	**12**	Cephalostat head
5 b	3D chin rest and bite block	**13**	Head clamps and ear cones
6	Temple supports	**14**	Nasion support
		15	PC hosting the imaging and the acquisition software

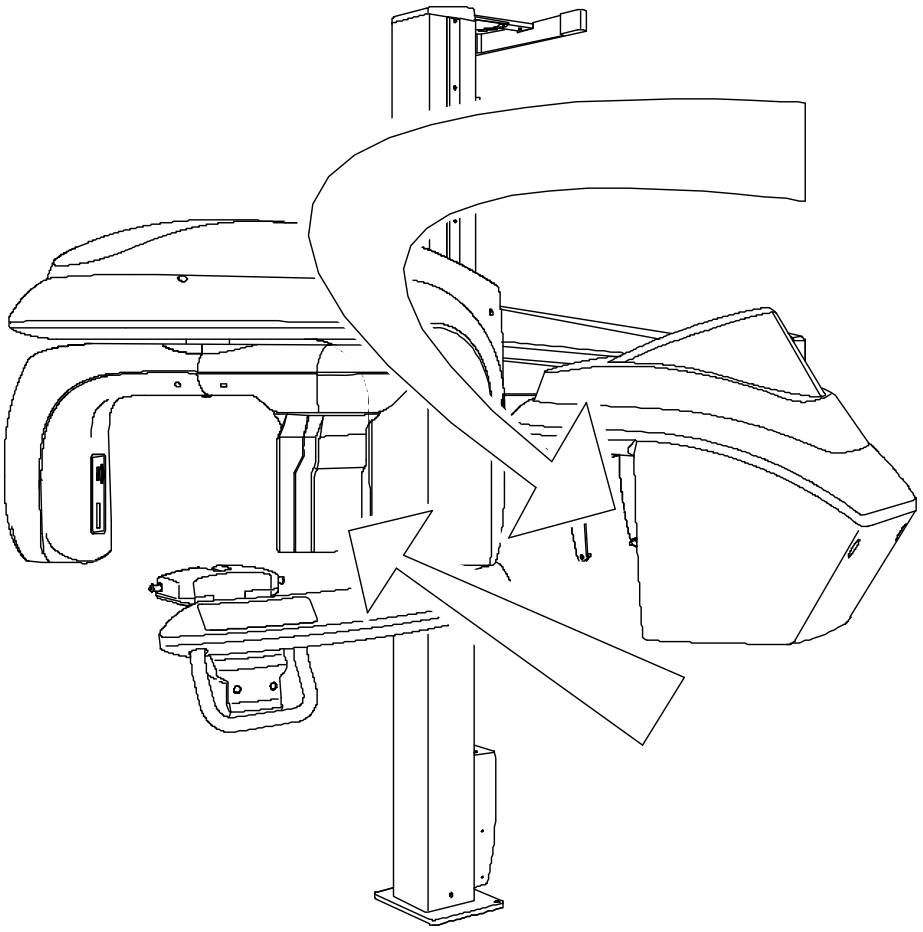
Digital Sensor Locations

Figure 2-3 illustrates the locations of the following digital sensors:

- *Panoramic and 3D digital sensor
- Cephalometric digital sensor

panoramic, 3D and cephalometric digital sensors of the CS 9300C.

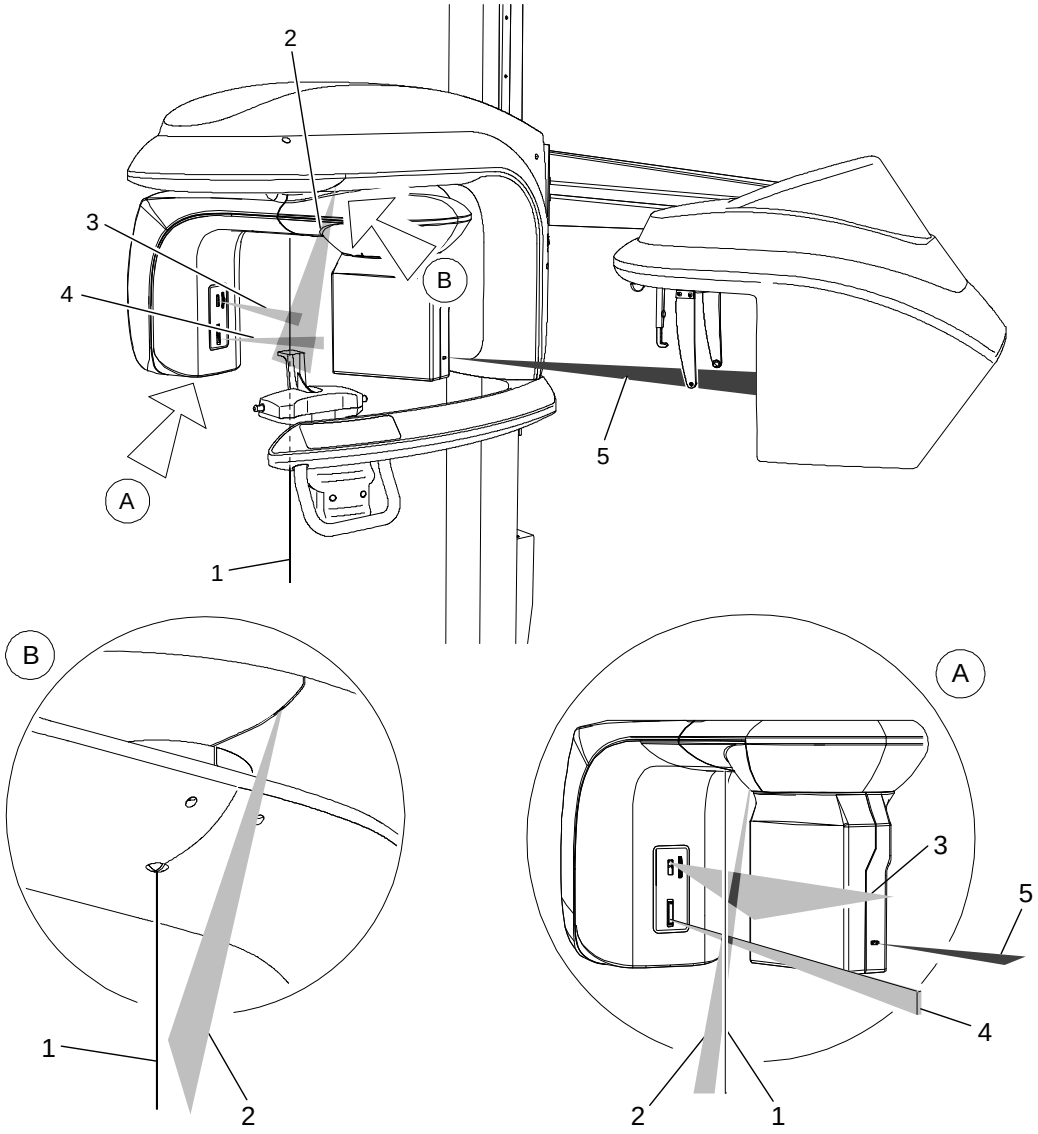
Figure 2–3 CS 9300C System Digital Sensor Locations



Laser Locations

Figure 2-4 illustrates the location of the lasers of the CS 9300C.

Figure 2–4 CS 9300C System Laser Positions



1 3D central positioning laser beam

2 Mid-sagittal positioning laser beam

3 Horizontal positioning laser beam

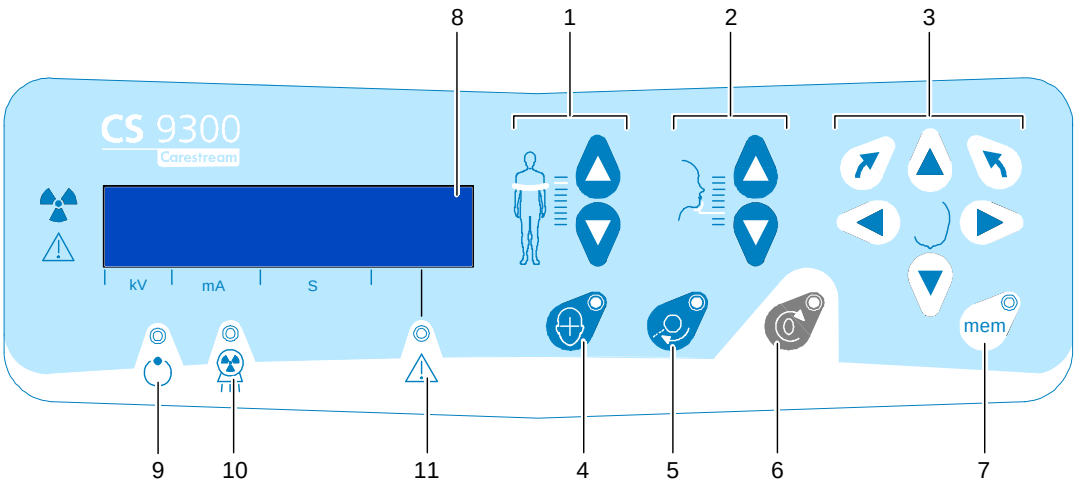
4 3D Field of View (FoV) positioning laser beam

5 Cephalometric Frankfurt positioning laser beam

Control Panel Overview

The control panel is an alphanumeric, digital soft touch console. It allows the operator to control certain unit functions. It also displays the operating parameters and error messages.

Figure 2–5 Unit Control Panel



1 **Height Adjustment button:** Adjusts the height of the unit to the height of the patient.

2 **3D Head Adjustment button:** Adjusts the patient head to the X-ray beams.

3 **3D Adjustment button (active in Technical Mode only):** Adjusts the unit rotative arm movements.

4 **Laser Beam button:** Activates the beams to correctly position the patient.

5 **3D Position Verification button:** Positions the unit rotative arm at the selected or memorized 3D position.

6 **Reset button:** Resets the unit arm to the initial position to enable the patient to enter and exit the Unit.

7 **3D Memorization button (active in Technical Mode only):** Memorizes the 3D current positioning parameter settings that override the default parameters.

8 **Display Screen:** Displays the current acquisition parameters and the error messages.

9 **Ready Indicator LED:** Green, indicates the unit is ready for acquisition.

10 **X-Ray Emission LED:** Yellow, indicates the X-rays are being emitted.

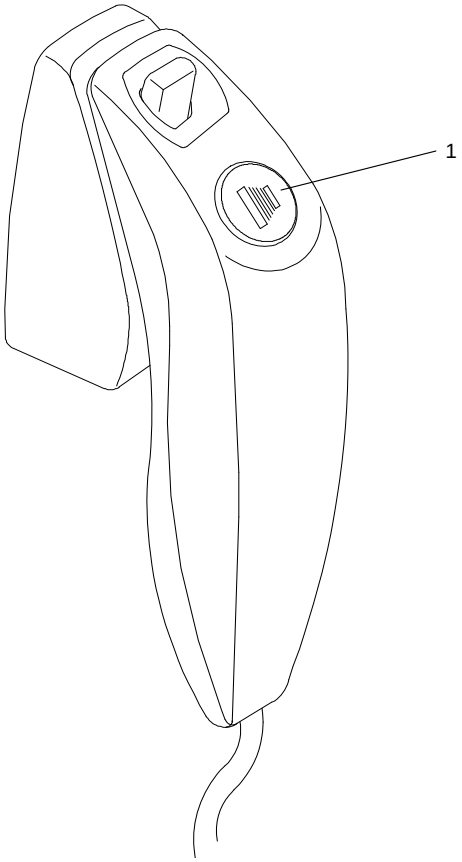
11 **System Status LED:** Red, indicates the error alerts.

X-Ray Remote Control Overview

The x- ray remote control enables you to launch a radiological image acquisition via the exposure button from outside the X-ray room. You must press and hold the exposure button until the end of acquisition.

WARNING
Premature release of the exposure button will interrupt the acquisition.

Figure 2–6 X-Ray Remote Control



1 Exposure button: launches image acquisition.

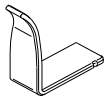
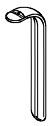
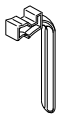
Positioning Accessories and Replacement Parts

The following accessories are used when positioning a patient. They are delivered with the CS 9300.

Panoramic Positioning Accessories

Table 2-1 lists the panoramic positioning accessories.

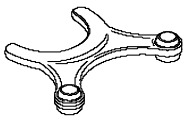
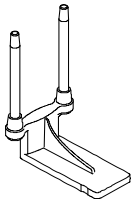
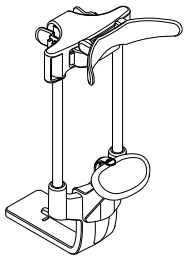
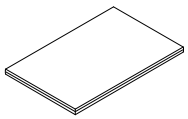
Table 2–1 Panoramic Positioning Accessories and Replacement Parts

Accessory	Description
	• Panoramic chin rest • TMJ x2 • Sinus
	TMJ x4 nose rest
	Panoramic standard bite block
	Bite block for edentulous patients
	Single use sheaths for bite blocks (500 pcs box)

3D Positioning Accessories

Table 2-2 lists the 3D positioning accessories.

Table 2–2 3D Positioning Accessories and Replacement Parts

Accessory	Description
	3D bite block
	3D bite block support
	3D head rest
	Single use hygienic sleeves for 3D bite block (100 pcs box)

Chapter 3
IMAGING SOFTWARE OVERVIEW

Computer System Requirements

For information on the minimum computer system requirements and the configuration for Imaging Software, see the ***CS 9300 and CS 9300C Safety, Regulatory and Technical Specifications User Guide.***

IMPORTANT

It is MANDATORY to check that the computer system configuration is compatible with the computer system requirements for the CS 9300C software. If necessary you MUST update your computer system configuration. The CS 9300C MUST be connected to the computer via a point-to-point Ethernet link and not via a LAN.

General Software Overview

The CS 9300C operates with the following software:

- Imaging software
- Acquisition interface

Imaging Software

The imaging software is a user-friendly working interface that was designed and developed specifically for radiological diagnosis. It is the common imaging platform for all our digital systems for dentistry.

The imaging software has the following features:

- Patient management
- Extraoral and intraoral image management
- 3D image management

Cephalometric Acquisition Interface

The cephalometric acquisition interface is a user-friendly working interface that was designed and developed specifically for the CS 9300C system.

Cephalometric Acquisition Interface

Cephalometric Acquisition Interface Overview

The **Cephalometric Acquisition** interface is the main cephalometric interface with the CS 9300C system that provides you with imaging acquisition functions.

Figure 3–1 Cephalometric Acquisition Interface

1 **Information button:**
- **About:** Identifies the Software and the Firmware versions.
- **Reset of the Values**: Resets to the manufacturing parameter settings.
- **Memorize settings**: Memorizes the user preference settings for each patient type (kV, mA and seconds).
- **Save current mode as default:** Sets the current selected program to be available by default each time you access the Acquisition interface.

2 **Preview Screen:** Displays the acquired image in real time.

3 **Selected Parameter Display:** Displays the current acquisition parameter settings.

4 **System Status Screen:** Displays various alert or warning messages originating from the unit.

5 **Generator Cooling indicator:** Indicates the automatic cooling time (mm:ss) required for the generator to reach 0 for a new acquisition.

6 **Stop button:** Stops the unit rotative arm movement

7 **Ready Indicator LED**

- Green indicates the unit is ready to start acquisition.
- Black indicates the unit is not ready to start acquisition.

8 **X-Ray Emission indicator:** Yellow, indicates the X-ray emission status.

9 **Exit button:** Closes the Acquisition interface.

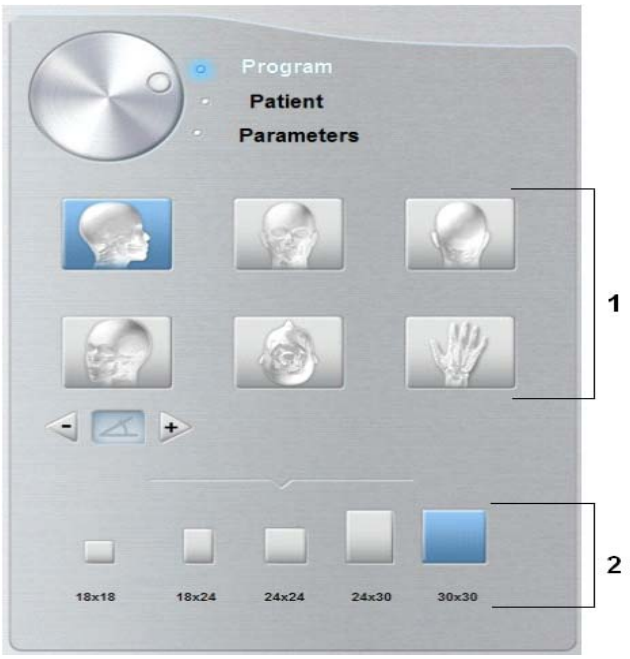
10 **Selector Button:** Selects different acquisition setting options.

- Click **Program** to select examination type options.
- Click **Patient** to select patient type parameters.
- Click **Parameters** to select exposure parameter options.

Cephalometric Program Pane

The cephalometric **Program pane** enables you to choose different radiological exams as well as different acquisition formats.

Figure 3–2 Cephalometric Program Pane



1 Radiological exam options:

Click  for a lateral exam.

Click  for a submento-vertex exam.

Click  or  for a frontal exam (AP and PA).

Click  for a carpus exam.

Click  for an oblique exam.

2 Acquisition format options:

Select  for a 18 x 18 format.

Select  for a 24 x 24 format.

Select  for a 30 x 30 format.

Select  for a 18 x 24 format.

Select  for a 24 x 30 format.

NOTE

The above list of exam types are only a sample of exam options of the **Program pane**.

Cephalometric Patient Pane

The cephalometric **Patient pane** enables you to choose different patient parameters. The selection of the patient parameters influences the quality of the image. The selected parameters must be based on the patient age and morphology.

Figure 3–3 Cephalometric Patient Pane

Patient type parameters:

Click  if the patient is a child.

Click  if the patient is small.

Click  if the patient is medium.

Click  if the patient is large.

Cephalometric Parameter Pane

The cephalometric **Parameter pane** enables you to choose exposure parameters for the radiological image acquisition. If the default parameter setting is not adapted to your patient type, you can manually adapt the parameter settings to the patient type and save this setting as the default setting.

Figure 3–4 Cephalometric Parameter Pane

1 Radiation dose options:

kV: Kilovolt

mA: Milliampere

S: Second

2 Fine-tuning buttons:

Click  to fine-tune the kV, mA and the second.

Chapter 4
GETTING STARTED

Switching On the Unit

Before switching on the unit, check that:

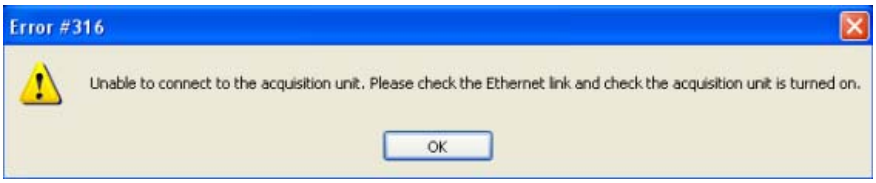
- The installation of the unit is complete.
- The PC is switched ON.

IMPORTANT

You must switch On the PC and wait for it to be ready for connection before switching ON the unit.

To switch on the unit, follow these steps:

1. On the unit column, press the **ON** button.
2. Switch on the unit and wait for a minute for the connection between the unit and the computer to be established. In the status bar,  (red) must become  (green).
3. If you start the imaging software before the connection is established an error message is displayed. Click **OK,** close the imaging software and wait for the connection to be established.



4. You can now proceed to start the imaging software.

IMPORTANT

To increase the operating life of the X-ray tube, if the unit has not been used for a month, you must follow the following procedures before use.

1. In the **Panoramic Acquisition** interface, select the **Parameter pane.**

2. Select the following series of parameter settings:
   - 70 kV - 6.3 mA
   - 80 kV - 10 mA
   - 85 kV - 10 mA
3. Leave the X-ray room and close the door. For each parameter setting, from the X-ray remote control, press and hold the button to launch the X-ray.

   The unit is now ready to be used for acquisition.

Starting the Imaging Software

Depending on your particular configuration you may have either Kodak Dental Imaging Software or CS Imaging Software installed.

- For **KODAK Dental Imaging Software** see “Starting the KODAK Dental Imaging Software”.
- For **CS Imaging Software** see “Starting the CS Imaging Software”.

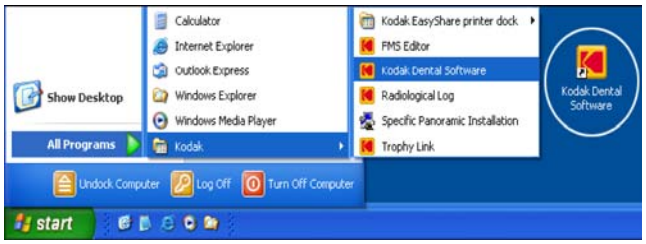
Starting the KODAK Dental Imaging Software

To start the imaging software, follow these steps:

1. On your desktop, double-click  .

   OR

   From your computer, click **Start > All Programs > Kodak > Kodak Dental Imaging Software.**

   A blank **Patient window** is displayed.
2. Create or open an existing patient record.

Creating a Patient Record

To create a patient record, follow these steps:

1. In the **Patient window,** from the toolbar, click 

   OR

   From the menu bar, select **Patient > New**.

2. Enter the required patient information. The **Last name**, the **First name** and the **Date of birth** fields are required.

3. From the menu bar, select **Picture > Insert Picture** to add a ***.tif** or ***.bmp** picture of the patient to the record. Select the picture from your directory and click **Open**.

4. Click **OK** to save. The patient record is automatically assigned a 7-digit number starting with a letter (for example, M0000001).

5. Click  to access the **Imaging window**.

6. Select an image acquisition.

Accessing the Cephalometric Acquisition Interface

To access the **Acquisition** interface, follow these steps:

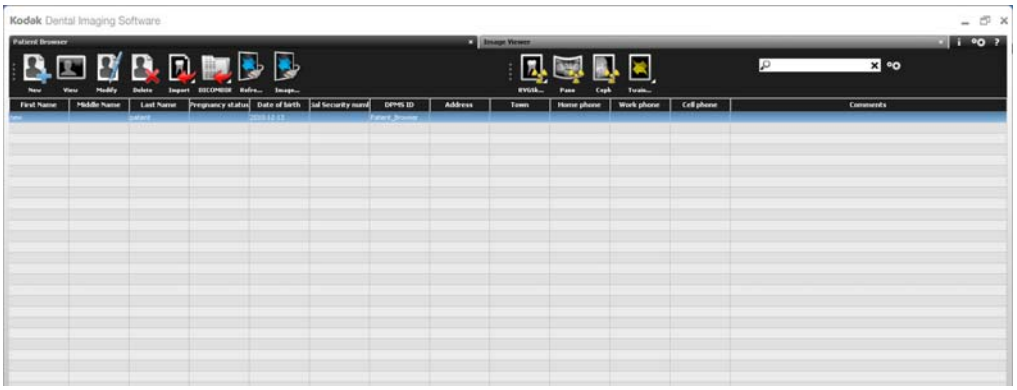
1. In the **Imaging window,** from the toolbar, click  to access the **Cephalometric Acquisition** interface.

2. Prepare the acquisition parameters and launch an acquisition.

Starting the CS Imaging Software

To start the CS Imaging Software, follow these steps:

1 On your desktop, double-click . The **Patient Browser** tab is displayed.



2 You must now create a patient card.

Creating a Patient Card

To create a patient card, follow these steps:

1 Click in the **Patient Browser** tab. The **Patient Card** window is displayed.

2 Enter the patient information in the **Patient Card** window.

Note: The First Name and Last Name fields are mandatory. All other fields are optional. Shaded fields are filled automatically and are not editable.

3 When you have finished entering data, click **OK**.

The **Patient Card** window closes, and the patient now appears in the patient list.

4 You can now access the acquisition interface.

Accessing the Acquisition Interface

To access the **Acquisition** interface, follow these steps:

1 Select and double-click the patient card in the patient list. The **Image Viewer** tab is displayed.

2. In the **Image Viewer** tab, click  to access the **Cephalometric Acquisition** interface.

   The acquisition interface is displayed.

See the chapter "**Acquiring an Image"** to launch an acquisition.

Chapter 5
ACQUIRING CEPHALOMETRIC IMAGES

Acquiring a Lateral Image

Before acquiring a lateral image, check that you have:

- Reset the unit rotative arm to the start position for patient to enter the unit.
- Selected the patient record.
- Accessed the **Imaging window**.
- Accessed the **Cephalometric Acquisition** interface.

Preparing the Unit and Setting the Acquisition Parameters for the Adult Patient

To set the acquisition parameters, follow these steps:

1. Position the head clamps manually for the lateral exam.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for a lateral exam is active.
   - Select the appropriate acquisition format option.

3. Click the **Patient** button to access the **Patient pane**. Select the adult patient type.

4. If the default parameter setting is not adapted to your adult patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing the Unit and Setting the Acquisition Parameters for the Pediatric Patient

To set the acquisition parameters, follow these steps:

1. Position the head clamps manually for the lateral exam.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for a lateral exam is active.
   - Select the appropriate acquisition format option.

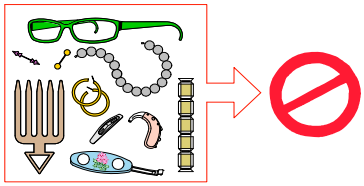
3. Click the **Patient** button to access the **Patient pane**. Select the pediatric patient type.

4. If the default parameter setting is not adapted to your pediatric patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

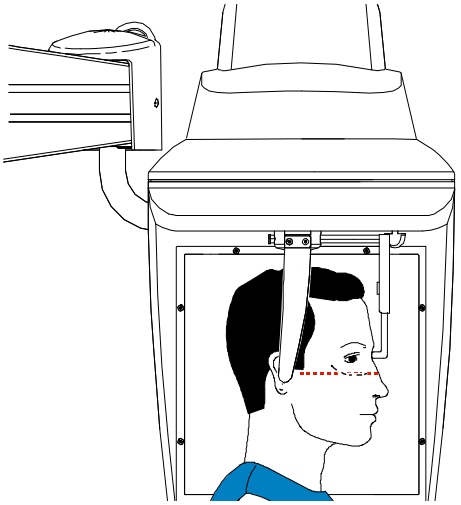
Preparing and Positioning the Adult Patient

To prepare and position the patient, follow these steps:

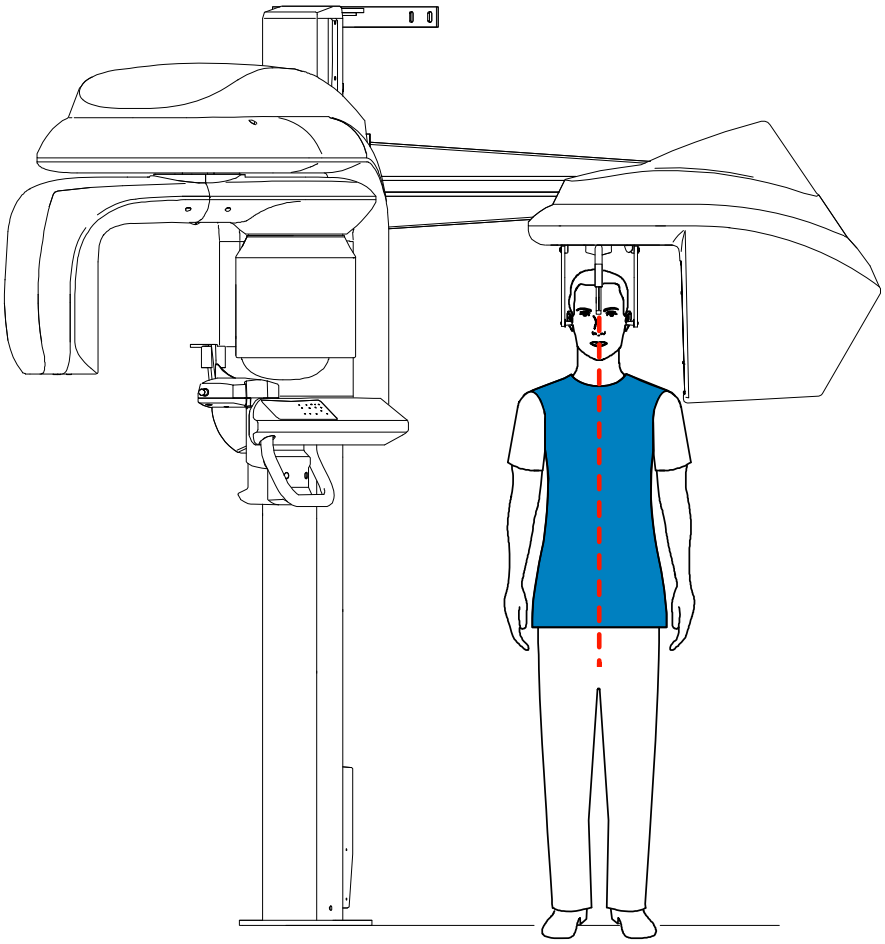
1. Ask the patient to remove all metal objects.



2. Ask the patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the patient's shoulders.
3. Open the head clamps and ask the patient to stand up straight, in front of the cephalometric unit, in the appropriate position.
4. On the control panel, press and hold  to level the ear cones to the patient's auditory canals.
5. Insert gently one cone in the auditory canal of the patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the patient.
6. On the control panel, click  to turn ON the Frankfort laser positioning beam. Align the patient with the Frankfort laser beam.



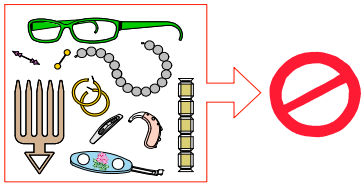
7. Lower the nasion support to a vertical position.



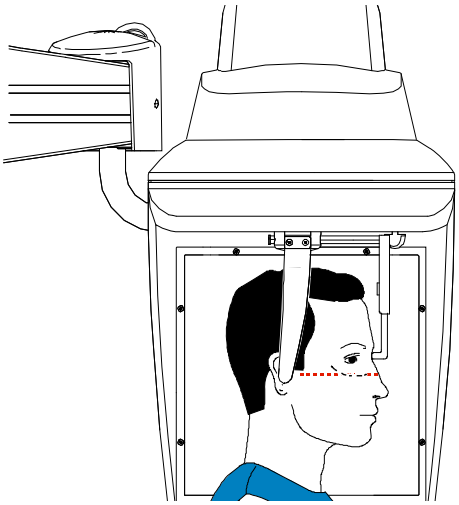
Preparing and Positioning the Pediatric Patient

To prepare and position the pediatric patient, follow these steps:

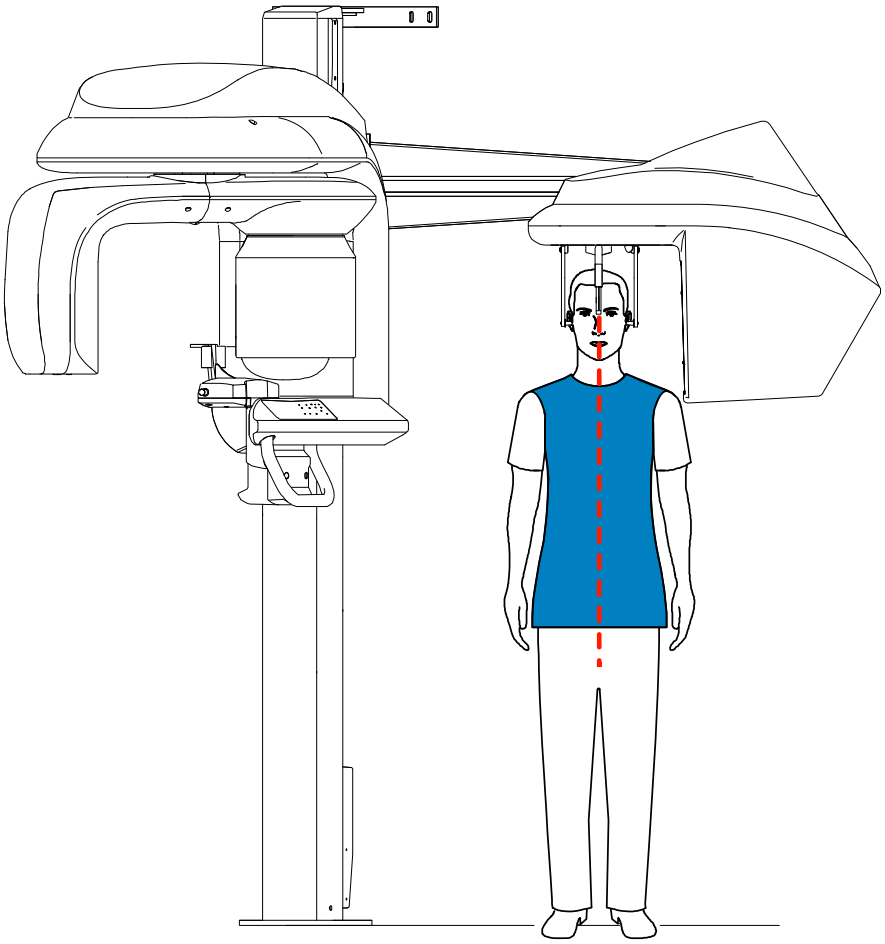
1. Ask the pediatric patient to remove all metal objects.



2. Ask the pediatric patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the patient's shoulders.
3. Open the head clamps and ask the pediatric patient to stand up straight, in front of the cephalometric unit, in the appropriate position.
4. On the control panel, press and hold  to level the ear cones to the pediatric patient's auditory canals.
5. Insert gently one cone in the auditory canal of the pediatric patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the pediatric patient.
6. On the control panel, click  to turn ON the Frankfort laser positioning beam. Align the pediatric patient with the Frankfort laser beam.



7. Lower the nasion support to a vertical position.

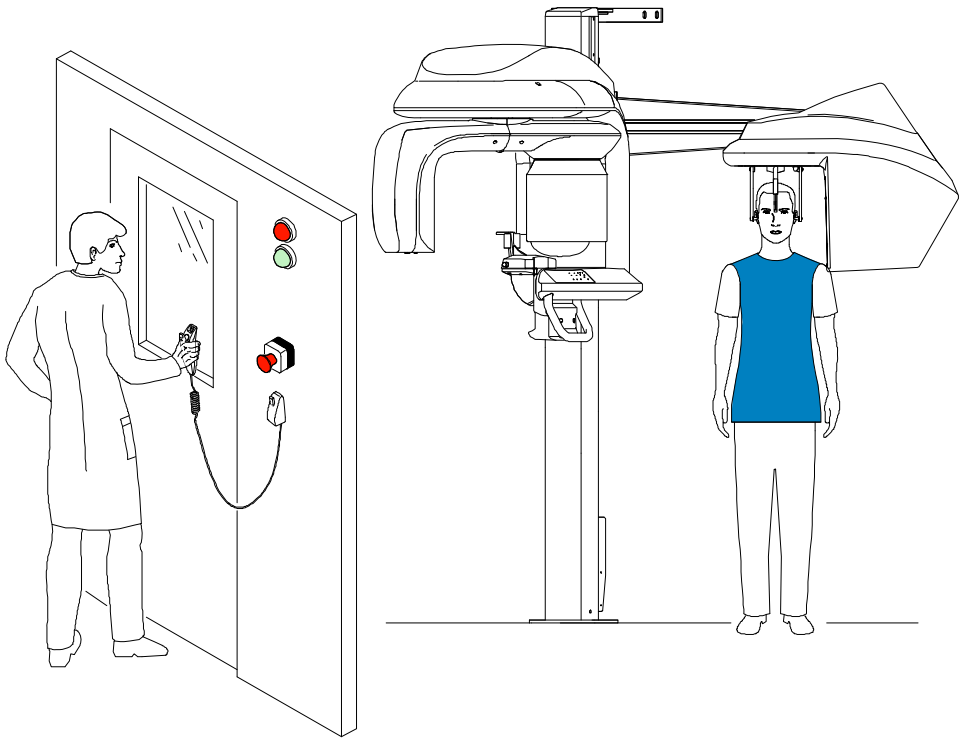


Launching the X-ray

To launch the X-ray, follow these steps:

1. Leave the X-ray room and close the door. You must keep visual contact with the patient during acquisition.

IMPORTANT
To stop the acquisition, if any problem, release the exposure button of the remote control or press the red emergency stop button.



2. Launch the X-ray with the remote control**.** Press and hold the exposure button until the end of acquisition. The  turns yellow, indicating X-ray emission. The image appears on the **Preview Screen** of the **Cephalometric Acquisition** interface. When the acquisition ends, the **Cephalometric Acquisition** interface disappears and the acquired image is transferred automatically to the **Imaging window**.

3. Check the image quality, if satisfactory, remove the ear cones and the nasion support and release the patient.

Acquiring a Frontal AP or PA Image

Before acquiring a frontal AP or PA image, check that you have:

- Reset the unit rotative arm to the start position for patient to enter the unit.
- Selected the patient record.
- Accessed the **Imaging window**.
- Accessed the **Cephalometric Acquisition** interface.

Preparing the Unit and Setting the Acquisition Parameters for the Adult Patient

To acquire a frontal AP or PA image, follow these steps:

1. Position the head clamps manually for the frontal AP or PA exam.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for a frontal AP exam is active.
   - Click  for a frontal PA exam.
   - Select the appropriate acquisition format option.

3. Click the **Patient** button to access the **Patient pane**. Select the adult patient type.

4. If the default parameter setting is not adapted to your adult patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing the Unit and Setting the Acquisition Parameters for the Pediatric Patient

To acquire a frontal AP or PA image, follow these steps:

1. Position the head clamps manually for the frontal AP or PA exam.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for a frontal AP exam is active.
   - Click  for a frontal PA exam.
   - Select the appropriate acquisition format option.

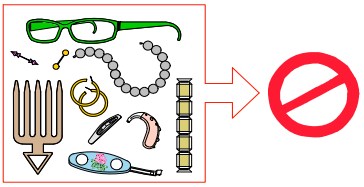
3. Click the **Patient** button to access the **Patient pane**. Select the pediatric patient type.

4. If the default parameter setting is not adapted to your pediatric patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing and Positioning the Adult Patient

To prepare and position the patient, follow these steps:

1. Ask the patient to remove all metal objects.



2. Ask the patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the patient's shoulders.
3. Open and position the head clamps parallel to the cephalometric sensor. Ask the patient to stand up straight in front of the cephalometric unit in the following positions:
   - For a frontal AP, facing the generator
   - For a frontal PA, facing the cephalometric sensor
4. On the control panel, press and hold  to level the ear cones to the patient's auditory canals.
5. Insert gently one cone in the auditory canal of the patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the patient.
6. On the control panel, click  to turn ON the Frankfort laser positioning beam. Align the patient with the Frankfort laser beam for the frontal AP only.

Figure 5–1 Frontal AP

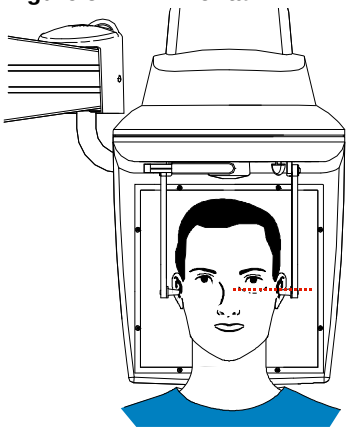


Figure 5–2 Frontal PA

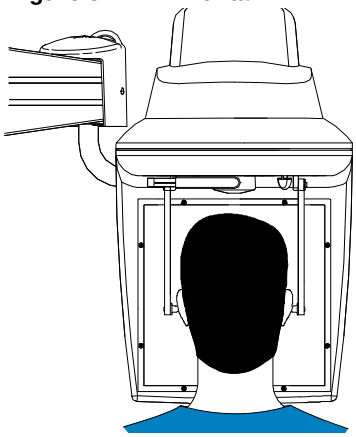


Figure 5–3 Frontal AP

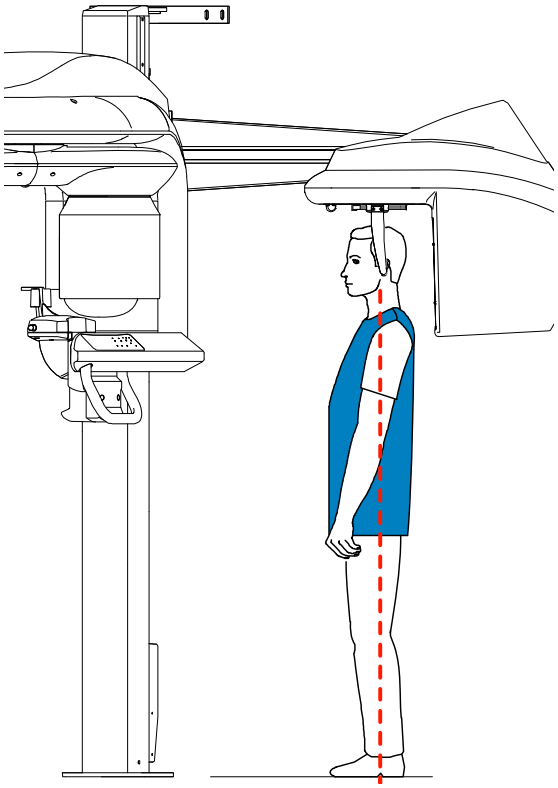
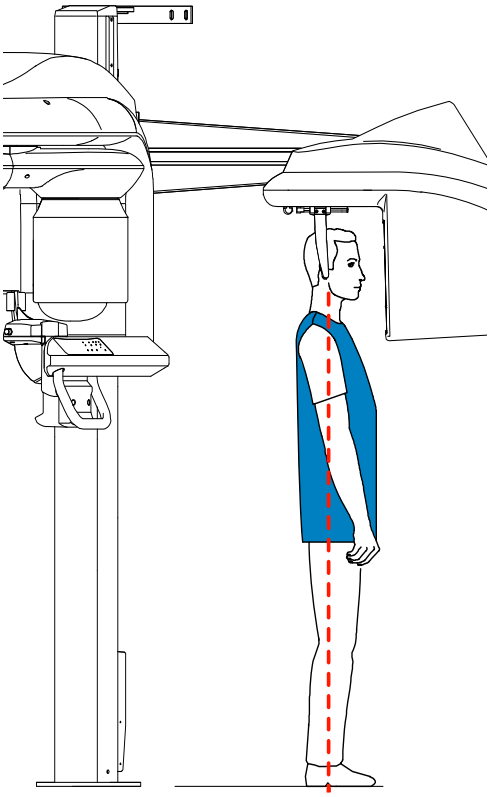


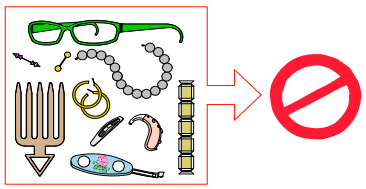
Figure 5–4 Frontal PA



Preparing and Positioning the Pediatric Patient

To prepare and position the pediatric patient, follow these steps:

1. Ask the pediatric patient to remove all metal objects.



2. Ask the pediatric patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the pediatric patient's shoulders.
3. Open and position the head clamps parallel to the cephalometric sensor. Ask the pediatric patient to stand up straight in front of the cephalometric unit in the following positions:
   - For a frontal AP, facing the generator
   - For a frontal PA, facing the cephalometric sensor
4. On the control panel, press and hold  to level the ear cones to the pediatric patient's auditory canals.
5. Insert gently one cone in the auditory canal of the pediatric patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the pediatric patient.
6. On the control panel, click  to turn ON the Frankfort laser positioning beam. Align the pediatric patient with the Frankfort laser beam for the frontal AP only.

Figure 5–5 Frontal AP

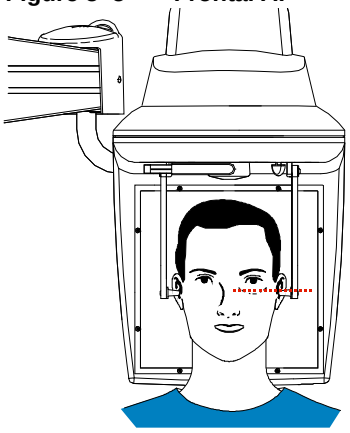


Figure 5–6 Frontal PA

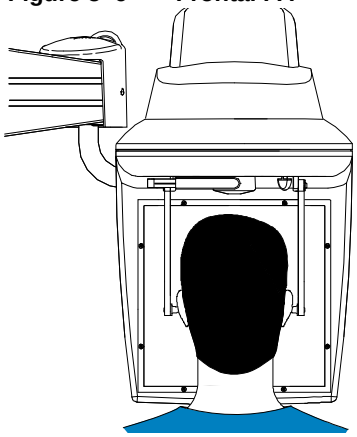


Figure 5–7 Frontal AP

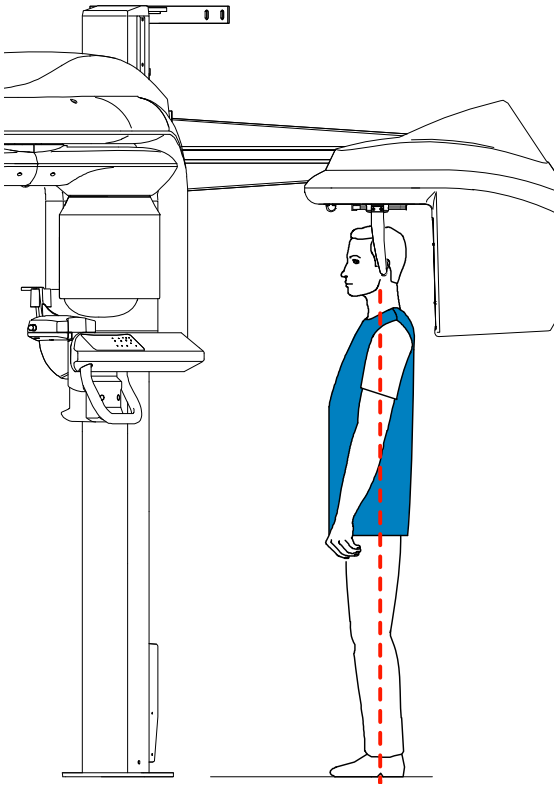
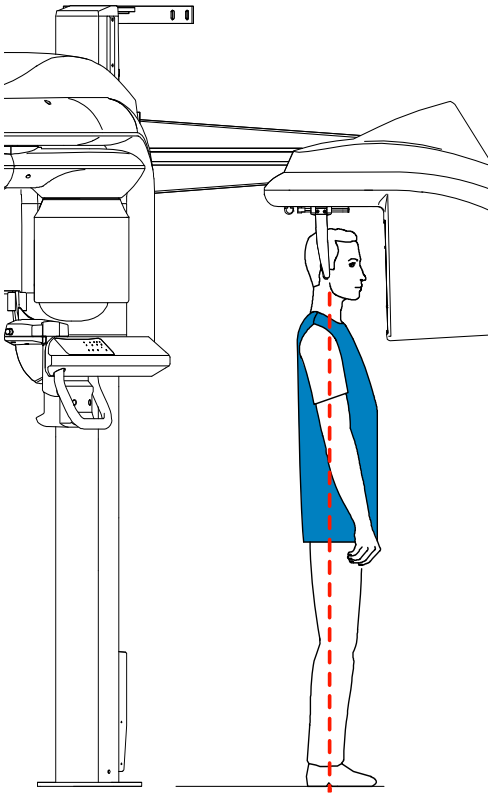


Figure 5–8 Frontal PA



Launching the X-ray

To launch the X-ray, follow these steps:

1. Leave the X-ray room and close the door. You must keep visual contact with the patient during acquisition.

IMPORTANT

To stop the acquisition, if any problem, release the exposure button of the remote control or press the red emergency stop button.

Figure 5–9 Frontal AP

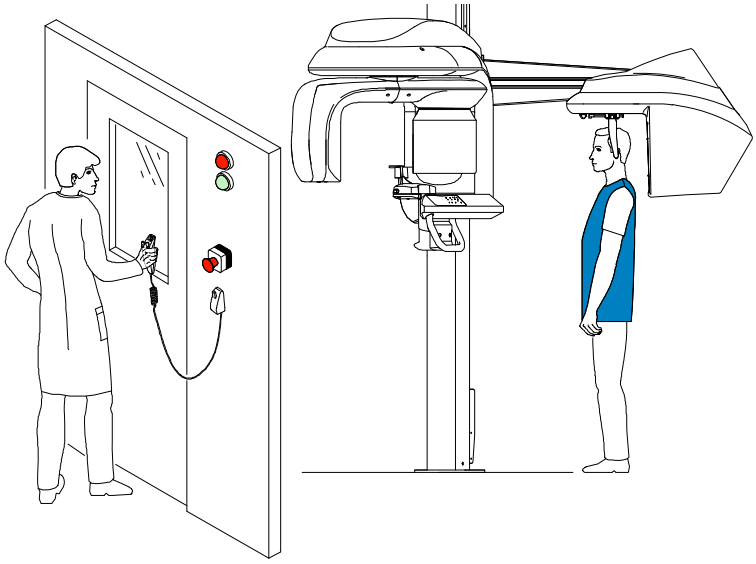
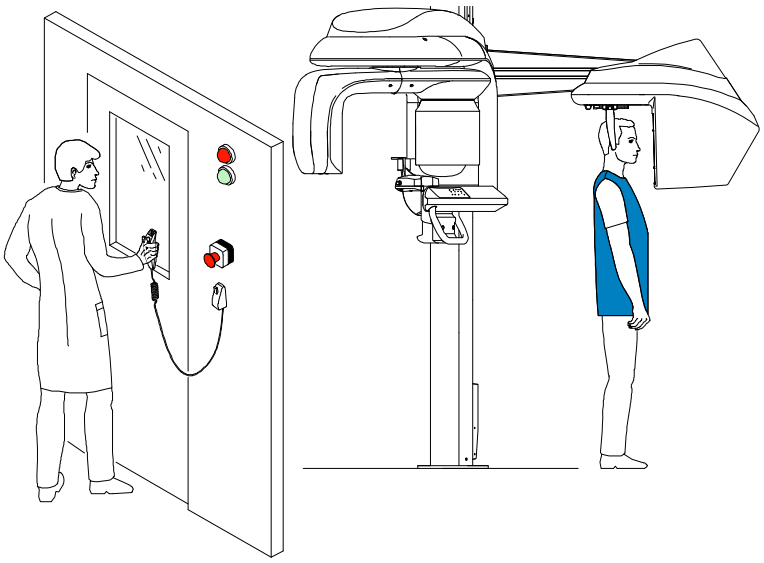


Figure 5–10 Frontal PA



2. Launch the X-ray with the remote control**.** Press and hold the exposure button until the end of acquisition. The  turns yellow indicating X-ray emission. The image appears on the **Preview Screen** of the **Cephalometric Acquisition** interface. When the acquisition ends, the **Cephalometric Acquisition** interface disappears and the acquired image is automatically transferred to the **Imaging window**.

3. Check the image quality. If satisfactory, remove the ear cones and release the patient.

Acquiring an Oblique Image

Before acquiring an oblique image, check that you have:

- Reset the unit rotative arm to the start position for patient to enter the unit.
- Selected the patient record.
- Accessed the **Imaging window**.
- Accessed the **Cephalometric Acquisition** interface.

Preparing the Unit and Setting the Acquisition Parameters for the Adult Patient

To acquire an oblique image, follow these steps:

1. Position the head clamps manually for the oblique exam with the desired angle.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for an oblique exam is active.
   - Click  to select the desired angle.
   - Select the appropriate acquisition format option.

3. Click the **Patient** button to access the **Patient pane**. Select the adult patient type.

4. If the default parameter setting is not adapted to your adult patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing the Unit and Setting the Acquisition Parameters for the Pediatric Patient

To acquire an oblique image, follow these steps:

1. Position the head clamps manually for the oblique exam with the desired angle.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for an oblique exam is active.
   - Click  to select the desired angle.
   - Select the appropriate acquisition format option.

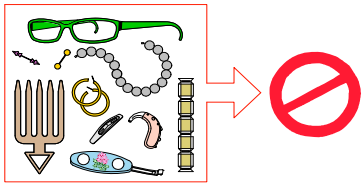
3. Click the **Patient** button to access the **Patient pane**. Select the pediatric patient type.

4. If the default parameter setting is not adapted to your pediatric patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

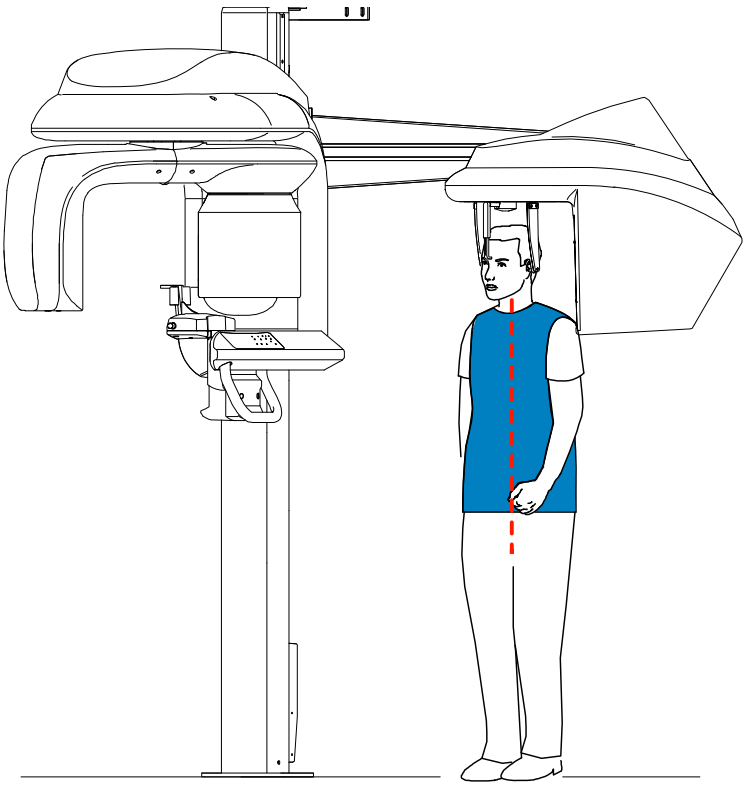
Preparing and Positioning the Adult Patient

To prepare and position the patient, follow these steps:

1. Ask the patient to remove all metal objects.



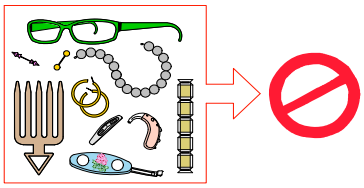
2. Ask the patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the patient's shoulders.
3. Open the head clamps and ask the patient to stand up straight in front of the cephalometric unit, in the appropriate position.
4. On the control panel, press and hold  to level the ear cones to the patient's auditory canals.
5. Insert gently one cone in the auditory canal of the patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the patient.
6. Lower the nasion support to a vertical position.



Preparing and Positioning the Pediatric Patient

To prepare and position the pediatric patient, follow these steps:

1. Ask the pediatric patient to remove all metal objects.



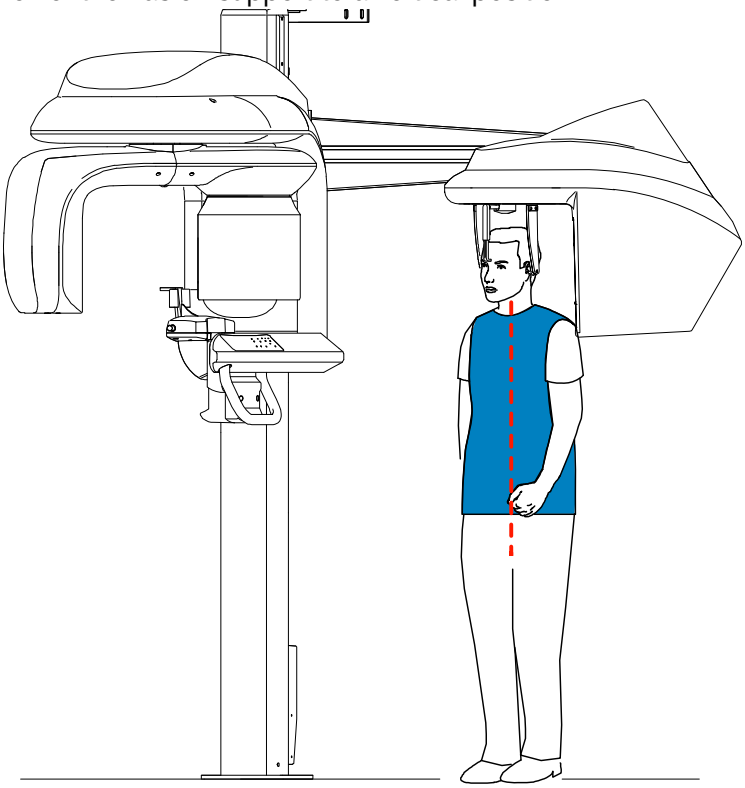
2. Ask the pediatric patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the pediatric patient's shoulders.

3. Open the head clamps and ask the pediatric patient to stand up straight in front of the cephalometric unit, in the appropriate position.

4. On the control panel, press and hold  to level the ear cones to the pediatric patient's auditory canals.

5. Insert gently one cone in the auditory canal of the pediatric patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the pediatric patient.

6. Lower the nasion support to a vertical position.



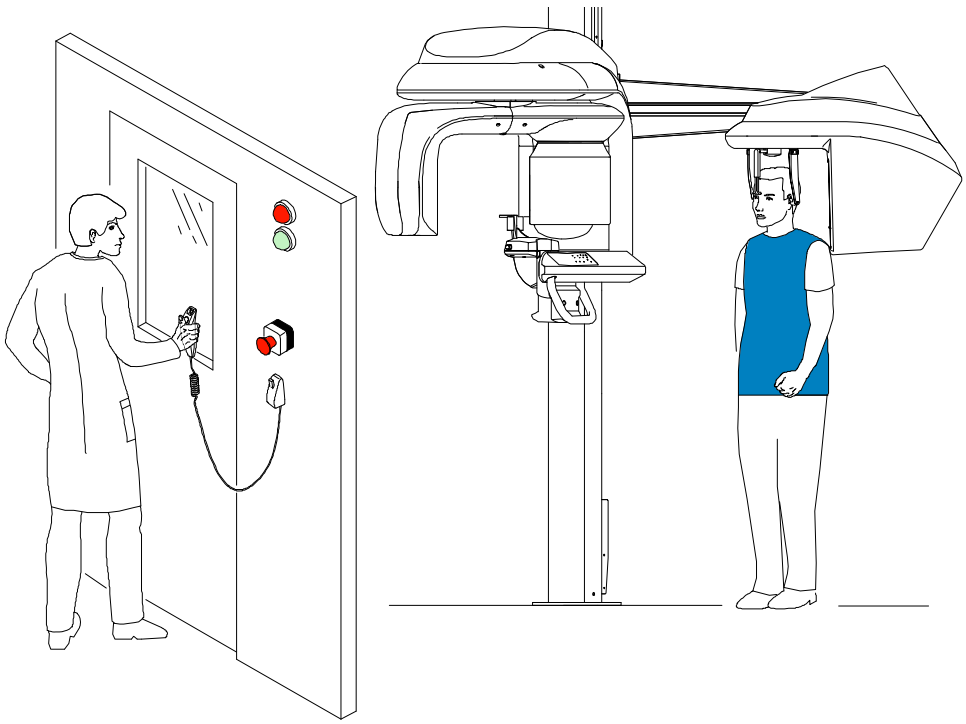
Launching the X-ray

To launch the X-ray, follow these steps:

1. Leave the X-ray room and close the door. You must keep visual contact with the patient during acquisition.

IMPORTANT

To stop the acquisition, if any problem, release the exposure button of the remote control or press the red emergency stop button.



2. Launch the X-ray with the remote control**.** Press and hold the exposure button until the end of acquisition. The  turns yellow indicating X-ray emission. The image appears on the **Preview Screen** of the **Cephalometric Acquisition window**. When the acquisition ends, the **Cephalometric Acquisition** interface disappears and the acquired image is automatically transferred to the **Imaging window**.

3. Check the image quality. If satisfactory, remove the ear cones and the nasion support. Release the patient.

Acquiring a Submento-Vertex Image

Before acquiring a submento-vertex image, check that you have:

- Reset the unit rotative arm to the start position for patient to enter the unit.
- Selected the patient record.
- Accessed the **Imaging window**.
- Accessed the **Cephalometric Acquisition** interface.

Preparing the Unit and Setting the Acquisition Parameters for the Adult Patient

To acquire a submento-vertex image, follow these steps:

1. Position the head clamps manually for a frontal AP exam.

IMPORTANT
You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

1. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:
   - The  for a frontal AP exam is active.
   - Click  for a submento-vertex exam.
   - Select the appropriate acquisition format option.
2. Click the **Patient** button to access the **Patient pane**. Select the adult patient type.
3. If the default parameter setting is not adapted to your adult patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing the Unit and Setting the Acquisition Parameters for the Pediatric Patient

To acquire a submento-vertex image, follow these steps:

1. Position the head clamps manually for a frontal AP exam.

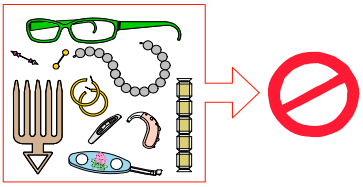
IMPORTANT
You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

1. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:
   - The  for a frontal AP exam is active.
   - Click  for a submento-vertex exam.
   - Select the appropriate acquisition format option.
2. Click the **Patient** button to access the **Patient pane**. Select the pediatric patient type.
3. If the default parameter setting is not adapted to your pediatric patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

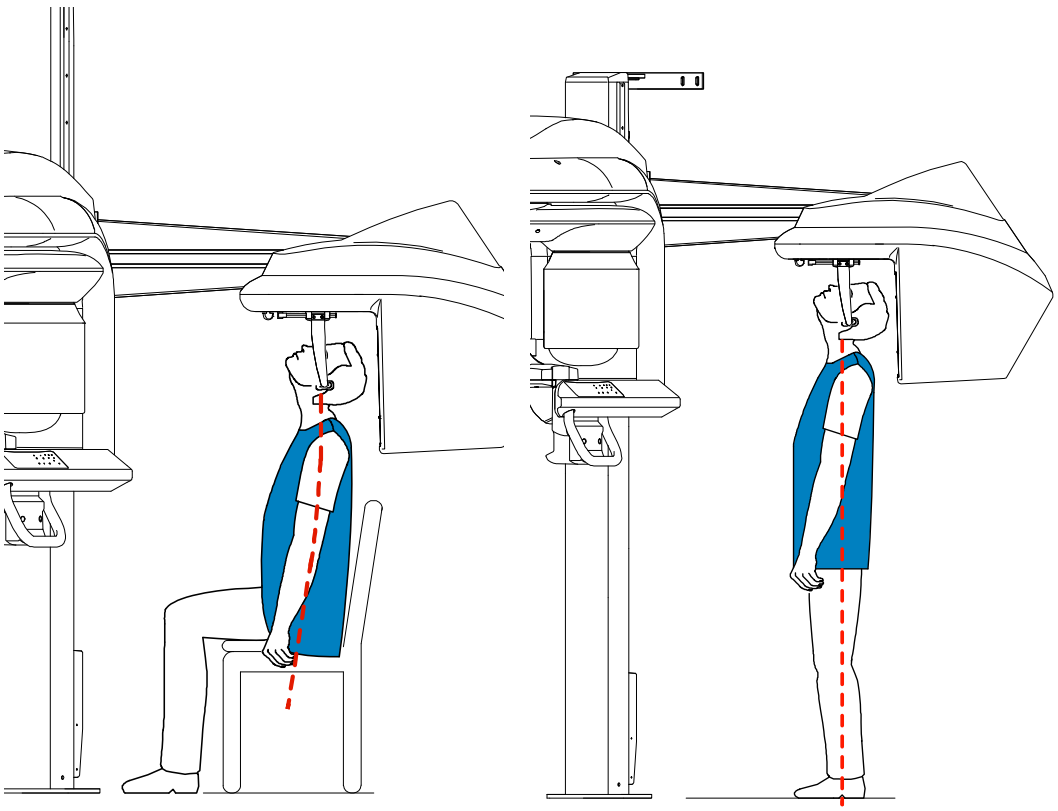
Preparing and Positioning the Adult Patient

To prepare and position the patient, follow these steps:

1. Ask the patient to remove all metal objects.



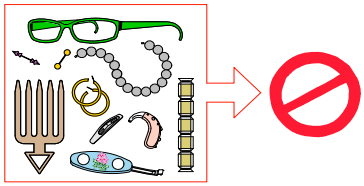
2. Ask the patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the patient's shoulders.
3. Open the head clamps and ask the patient to sit, for a more comfortable position, or stand up straight in front of the cephalometric unit, in the appropriate position.
4. On the control panel, press and hold  to level the ear cones to the patient's auditory canals.
5. Insert gently one cone in the auditory canal of the patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the patient.



Preparing and Positioning the Pediatric Patient

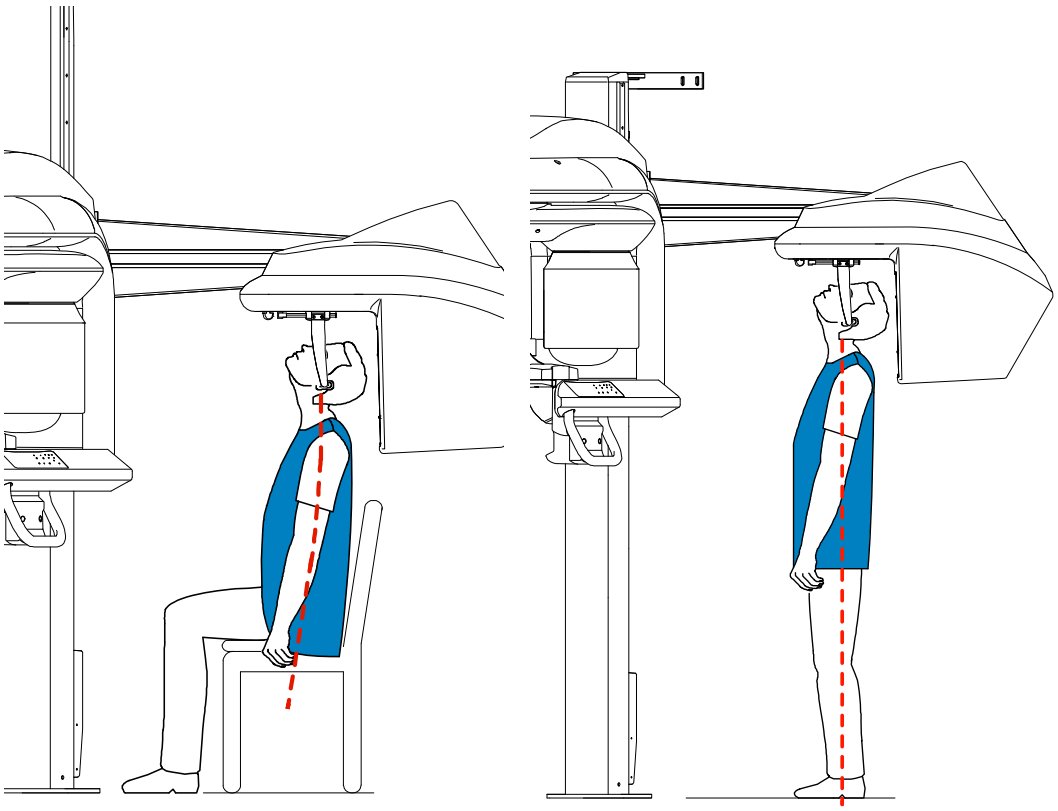
To prepare and position the pediatric patient, follow these steps:

1. Ask the pediatric patient to remove all metal objects.



2. Ask the pediatric patient to wear a lead apron with a thyroid collar. Ensure that the apron lays flat across the pediatric patient's shoulders.
3. Open the head clamps and ask the pediatric patient to sit, for a more comfortable position, or stand up straight in front of the cephalometric unit, in the appropriate position.
4. On the control panel, press and hold  to level the ear cones to the pediatric patient's auditory canals.

5. Insert gently one cone in the auditory canal of the pediatric patient. Turn gently the button to close the arms. Insert gently the second cone in the auditory canal of the pediatric patient.



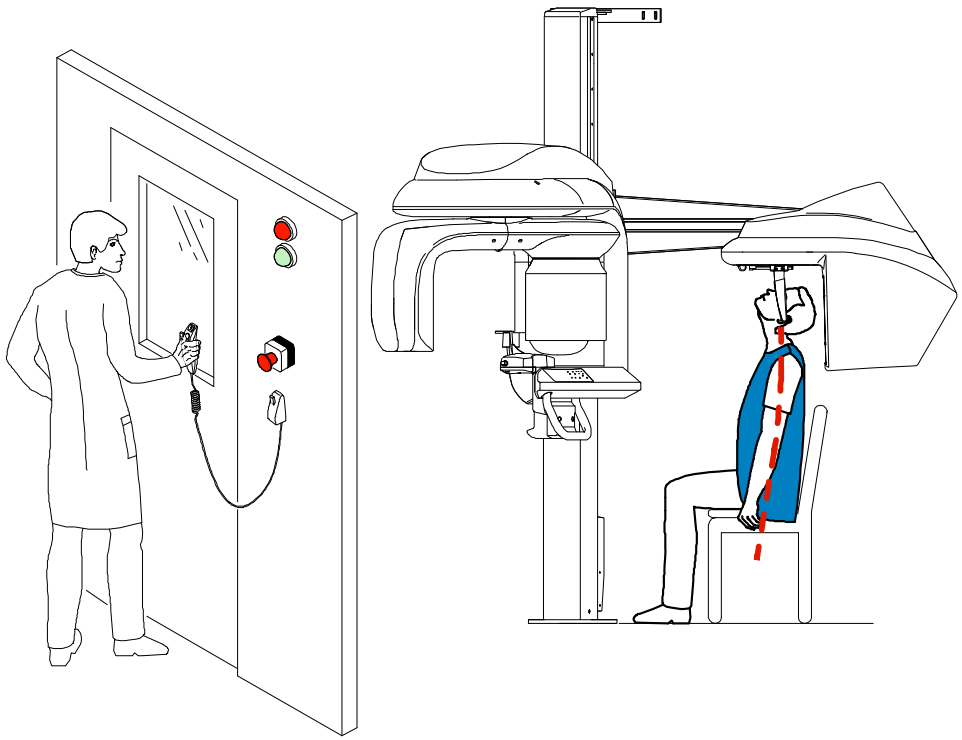
Launching the X-ray

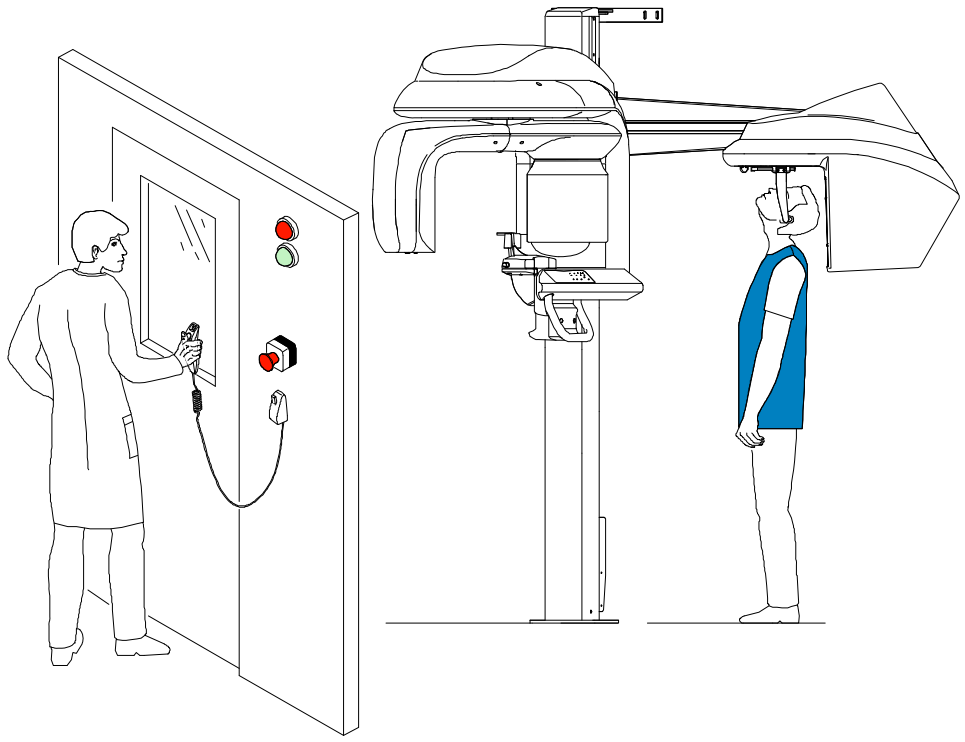
To launch the X-ray, follow these steps:

1. Leave the X-ray room and close the door. You must keep visual contact with the patient during acquisition.

IMPORTANT

To stop the acquisition, if any problem, release the exposure button of the remote control or press the red emergency stop button.





2. Launch the X-ray with the remote control. Press and hold the exposure button until the end of acquisition. The  turns yellow indicating X-ray emission. The image appears on the **Preview Screen** of the **Cephalometric Acquisition** interface. When the acquisition ends, the **Cephalometric Acquisition** interface disappears and the acquired image is automatically transferred to the **Imaging window**.

3. Check the image quality. If satisfactory, remove the ear cones and release the patient.

Acquiring a Carpus Image

Through radiological analysis of ossification to the carpal bone, you can assess the growth or maturity rate of a pediatric patient.

Before acquiring a carpus image, check that you have:

- Reset the unit rotative arm to the start position for patient to enter the unit.
- Selected the patient record.
- Accessed the **Imaging window**.
- Accessed the **Cephalometric Acquisition** interface.

Preparing the Unit and Setting the Acquisition Parameters for the Pediatric Patient

To acquire a carpus image, follow these steps:

1. Position the head clamps manually for a frontal AP exam.

   IMPORTANT
   You must position the head clamps manually because they are not positioned automatically from the Program pane exam type selection. In this case, the relevant exam type selection icon becomes active.

2. In the **Cephalometric Acquisition** interface, click the **Program** button to access the **Program pane**. In the **Program pane**:

   - The  for a frontal AP exam is active.
   - Click  for a carpus exam.
   - Select the 30 x 30 acquisition format.

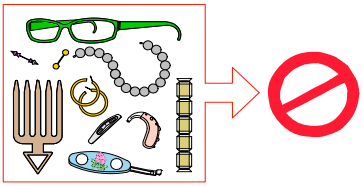
3. Click the **Patient** button to access the **Patient pane**. Select the pediatric patient type.

4. If the default parameter setting is not adapted to your pediatric patient type, click the **Parameter** button and select the appropriate parameters. To save the new parameter settings as the default settings, click  and select **Memorize settings**.

Preparing and Positioning the Pediatric Patient

To prepare and position the pediatric patient, follow these steps:

1. Ask the pediatric patient to remove all metal objects.



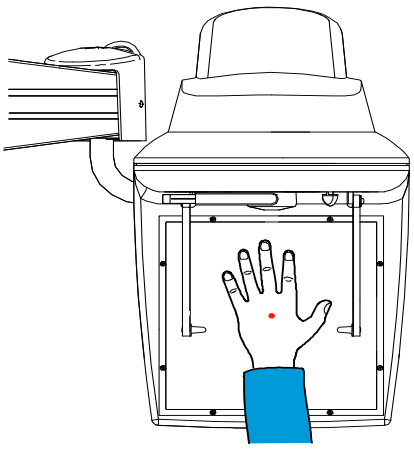
2. Ask the pediatric patient to wear a lead apron with a thyroid collar. Ensure that the lead apron covers the patient's thyroid area and lays flat across the patient's shoulders.

3. Ask the pediatric patient to:

   - Stand to the side and as far as possible from the cephalometric unit.
   - Open the hand fully and place it flat on the sensor.

WARNING

To avoid exposure to other parts of the body, make sure that the pediatric patient stands as far away as possible from the X-ray emission range and extends the hand to the sensor.



IMPORTANT

Make sure that the:

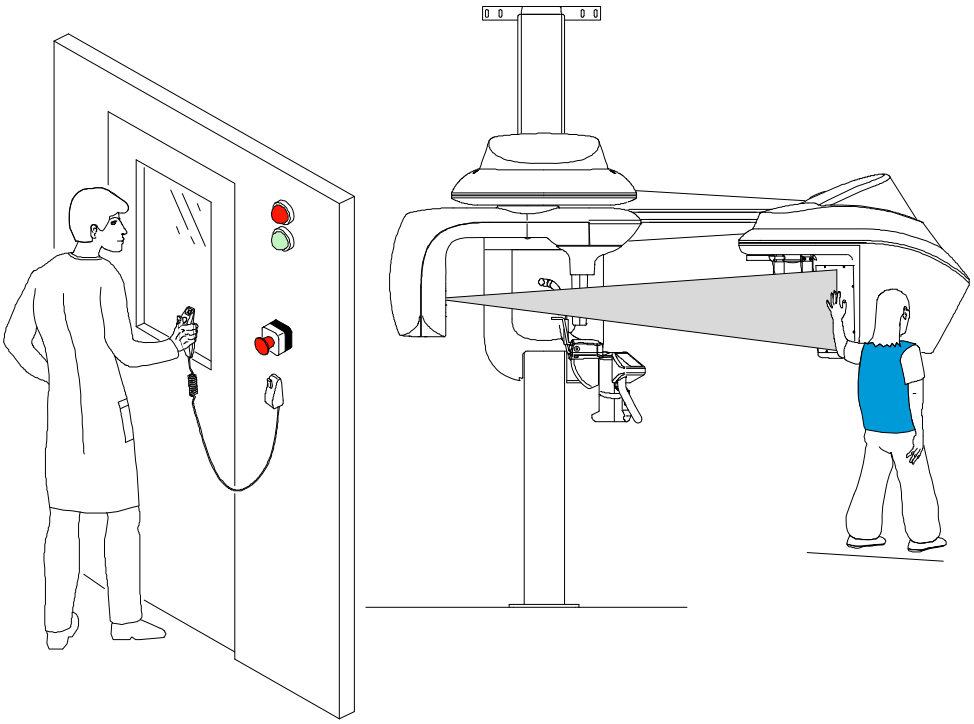
- **hand, wrist, and forearm are in a completely vertical position.**
- **hand is approximately in the middle of the sensor.**

Launching the X-ray

WARNING
To avoid exposure to other parts of the body, make sure that the pediatric patient stands as far away as possible from the X-ray emission range and extends the hand to the sensor.

To launch the X-ray, follow these steps:

1. Leave the X-ray room and close the door. You must keep visual contact with the patient during acquisition.



2. Launch the X-ray with the remote control**.** Press and hold the exposure button until the end of acquisition. The turns yellow indicating X-ray emission. The image appears on the **Preview Screen** of the **Cephalometric Acquisition** interface. When the acquisition ends, the **Cephalometric Acquisition** interface disappears and the acquired image is automatically transferred to the **Imaging window**.

IMPORTANT
If you have a problem and need to stop the acquisition, release the exposure button of the remote control or press the red emergency stop button.

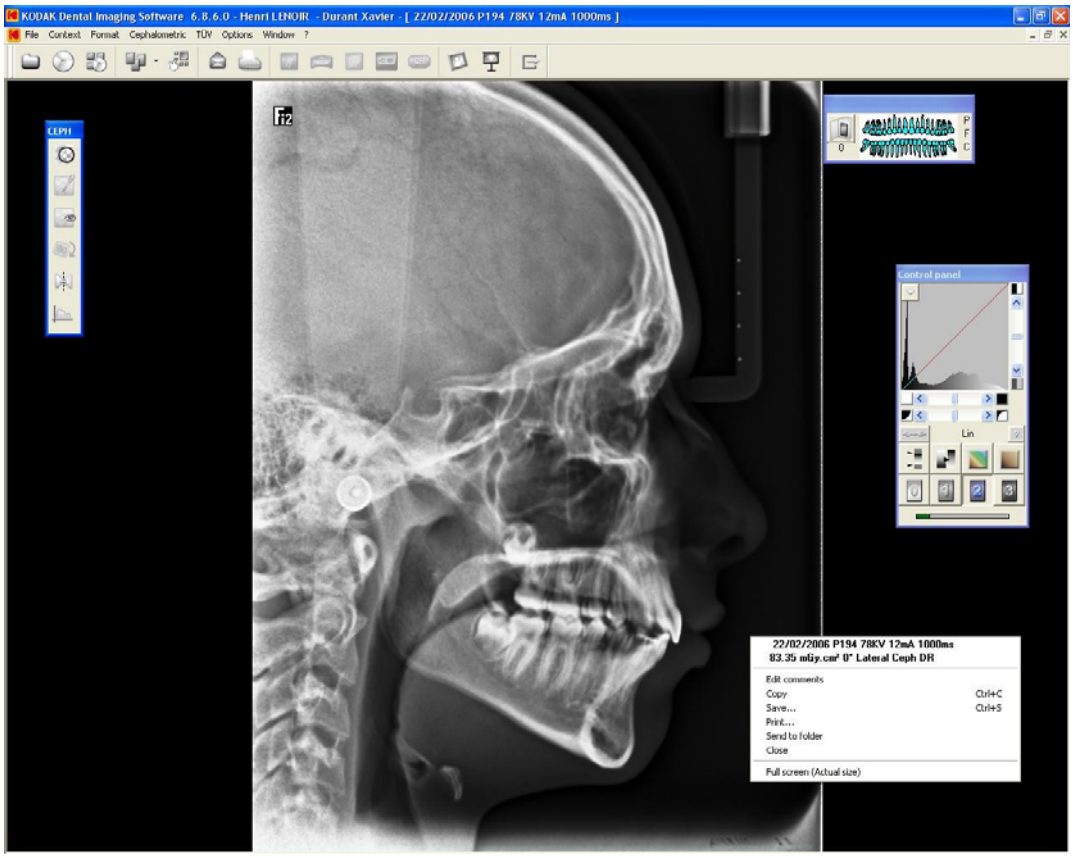
3. Check the image quality, if satisfactory, then release the patient.

X-Ray Dose Emission Information

Compliance with EURATOM 97/43 Directive

You can right-click on each image to display the estimated emitted dose received by the patient. You can use this information to calculate the effective dose received by the patient for the image.

The radiation emission dose is expressed in mGy.cm2. This dose is measured at the primary collimator outlet. The dose is accurate to +/-30%. The primary slot is 17.6 mm wide and 17.6 mm high.



Chapter 6
MAINTENANCE

Perform the following maintenance activities on your CS 9300C unit.

Daily

Cleaning the CS 9300C unit

1. Switch off the unit.
2. Clean all accessible parts of the unit using low-level disinfectants that are U.S. Environmental Protection Agency (EPA)-registered or low-level disinfectants that are recognized by your Local Authority. An EPA-registered hospital disinfectant or any other low-level disinfectant must have clear label claims for intended use. You must follow the manufacturer instructions for use.

CAUTION
Avoid applying any cleaning liquid to the inside parts of the unit.

Cleaning and disinfecting the Accessories

CAUTION
We recommend that you cover the accessories with FDA-cleared protective sheaths that are available from distributors. After you remove and discard the protective sheath, each accessory must be cleaned and disinfected between each patient use.

Cleaning and disinfecting the accessories that have contact with the mucous membranes

The accessories are delivered unsterilized. To ensure maximum hygienic safety for the patient, follow the following instructions carefully to prepare them for use:

The following accessories must be heat-sterilized or disinfected with high-level disinfectant between each patient use:

- TMJx4 nose rest
- Panoramic standard bite block
- Bite block for edentulous patient
- 3D bite block

To clean and disinfect the accessories:

1. Remove all visible soil by scrubbing with a surfactant, detergent, and water.

2. Rinse with water to remove chemical or detergent residue.
3. Sterilize by steaming under pressure (autoclaving) for 18 mn at 134 °C, or use a high-level disinfectant (for example, Glutaraldehyde, glutaraldehyde with phenol, hydrogen peroxide, hydrogen peroxide with peracetic acid, ortho-phthalaldehyde).

WARNING
To sterilize with heat, you must use a medical sterilization equipment cleared by the FDA in the USA. You must always follow the sterilization operating parameters recommended by the manufacturer of the equipment. You must always follow the manufacturer instructions for use of high-level disinfectants.

4. Use immediately or within a short period of time.

Cleaning and disinfecting the ear cones

CAUTION
Ear cones must be covered with a FDA-cleared protective sheath which is available from distributors.
After use, remove and discard the protective sheath. You must clean and disinfect the ear cones between each patient use with an EPA-registered, intermediate-level hospital disinfectant with label claims of tuberculocidal activity (for example: a chlorine containing product, a quaternary ammonium compound with alcohol, a phenolics, an iodophors, an EPA-registered chlorine-base product).

To clean and disinfect the ear cones:

1. Remove the protective sheath.
2. Clean and remove all visible soil by scrubbing with a surfactant, detergent, and water.
3. Use an intermediate-level disinfectant with tuberculocidal activity as identified above and as recommended by the manufacturer of the disinfectant.

WARNING
Do not rinse the ear cones.

4. Allow to dry in open air.

Cleaning and disinfecting the components that have skin contact

You must disinfect all components and the following accessories with a low-level disinfectant between each patient use:

- Panoramic/ TMJx2/ Sinus chin rest
- 3D bite block support

- 3D head rest
- Nasion support

To clean and disinfect the components:

1. Clean and remove all visible soil by scrubbing with a surfactant, detergent, and water.
2. Rinse with water to remove chemical or detergent residue.
3. Disinfect with an EPA-registered, hospital disinfectant for low-level activity (for example, quaternary ammonium compounds, some phenolics, and some iodophors). You must use the disinfectant according to the manufacturer instructions.

CAUTION

If there is a visible contamination with blood, you must clean the components and accessories with an EPA-registered intermediate-level hospital disinfectant that has a tuberculocidal claim. You must use the disinfectant according to the manufacturer instructions.

Monthly

Wipe the outer covers of the unit with a soft, dry cloth.

Annually

We recommend a general inspection of the unit carried out by an authorized service technician.

Chapter 7
TROUBLESHOOTING

Quick Troubleshooting

Occasionally, malfunctions can occur during use in the event of an incorrect action. An information **(I)** error code is displayed on the **Display Screen** of the unit **Control Panel** and the message is displayed on the popup on the **Acquisition** interface **System Status Screen**. In some cases, an audible warning is also issued.

The following table lists the information messages, their description and the action to take:

IMPORTANT
If an "E" message is displayed, the malfunction persists or more serious conditions occur, contact a qualified technician. When you call the qualified technician have the following information ready:

- **Model Number: CS 9300C**
- **Error Code Number: E xx**
- **Message displayed on the popup on the Acquisition** interface.

Table 7–1 Quick Troubleshooting

Information Error Code	Information Message	Description	Action
I 1	X-ray tube cooling	Cooling in progress.	Wait until the **Generator Cooling Indicator** on the **Acquisition** interface reaches zero.
I 2	Thermal security	Cooling in progress.	Wait until the **Generator Cooling Indicator** on the **Acquisition** interface reaches zero.
I 3	Release handswitch	The acquisition has ended.	Release the exposure button of the X-ray remote control.
I 5	Head clamps position	The head clamps position does not match the selected exam program.	Position manually the head clamps for the selected exam.
I 9	Cooling Ceph sensor	The Cephalometric sensor is in the cooling process.	Wait until the **Ready Indicator LED** is green.
I 15	Interface inactive	The **Acquisition** interface cannot be accessed.	• Check that the unit is switched ON. • Wait for the connection between the unit and the PC. • Check that the **Acquisition** interface is not masked by another application, in this case close the masking application.
I 17	Sensor in movement	The sensor is in the positioning process for either panoramic, 3D or Ceph mode.	Wait for the end of the positioning process.