



Planmeca ProMax[®]
Cephalostat with ProTouch

user's manual

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The manufacturer, assembler, and importer are responsible for the safety, reliability and performance of the unit only if:

- installation, calibration, modification and repairs are carried out by qualified authorized personnel
- electrical installations are carried out according to the appropriate requirements such as IEC 60364
- equipment is used according to the operating instructions

Planmeca pursues a policy of continual product development. Although every effort is made to produce up-to-date product documentation this publication should not be regarded as an infallible guide to current specifications. We reserve the right to make changes without prior notice.

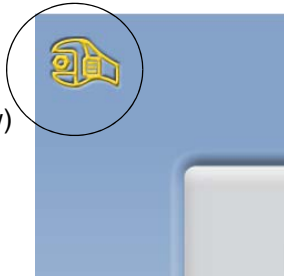
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1 INTRODUCTION

Settings
(Top left
corner of
main view)

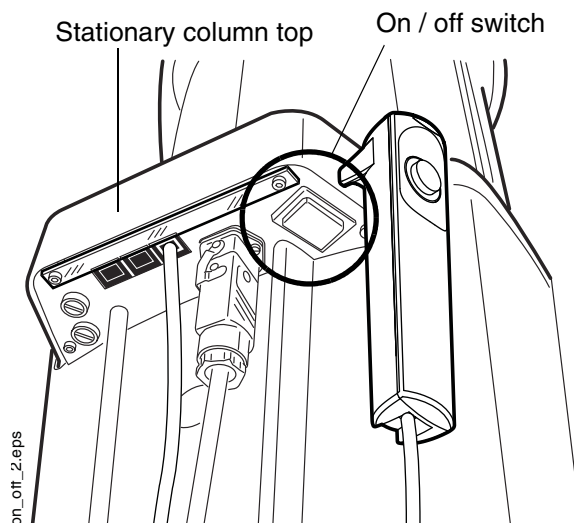


NOTE This manual is valid for software version 3.3.1.0.r or later. This software version is compatible with Planmeca Romexis software version 3.4.0.r or later. To check the software version of your X-ray unit, select Settings > About > 4100 Component Information > ProMax SW version.

Make sure that you are fully acquainted with the appropriate radiation protection measures and these instructions before you use the X-ray unit.

NOTE The X-ray unit may be used by health care professionals only.

2 SWITCHING X-RAY UNIT ON

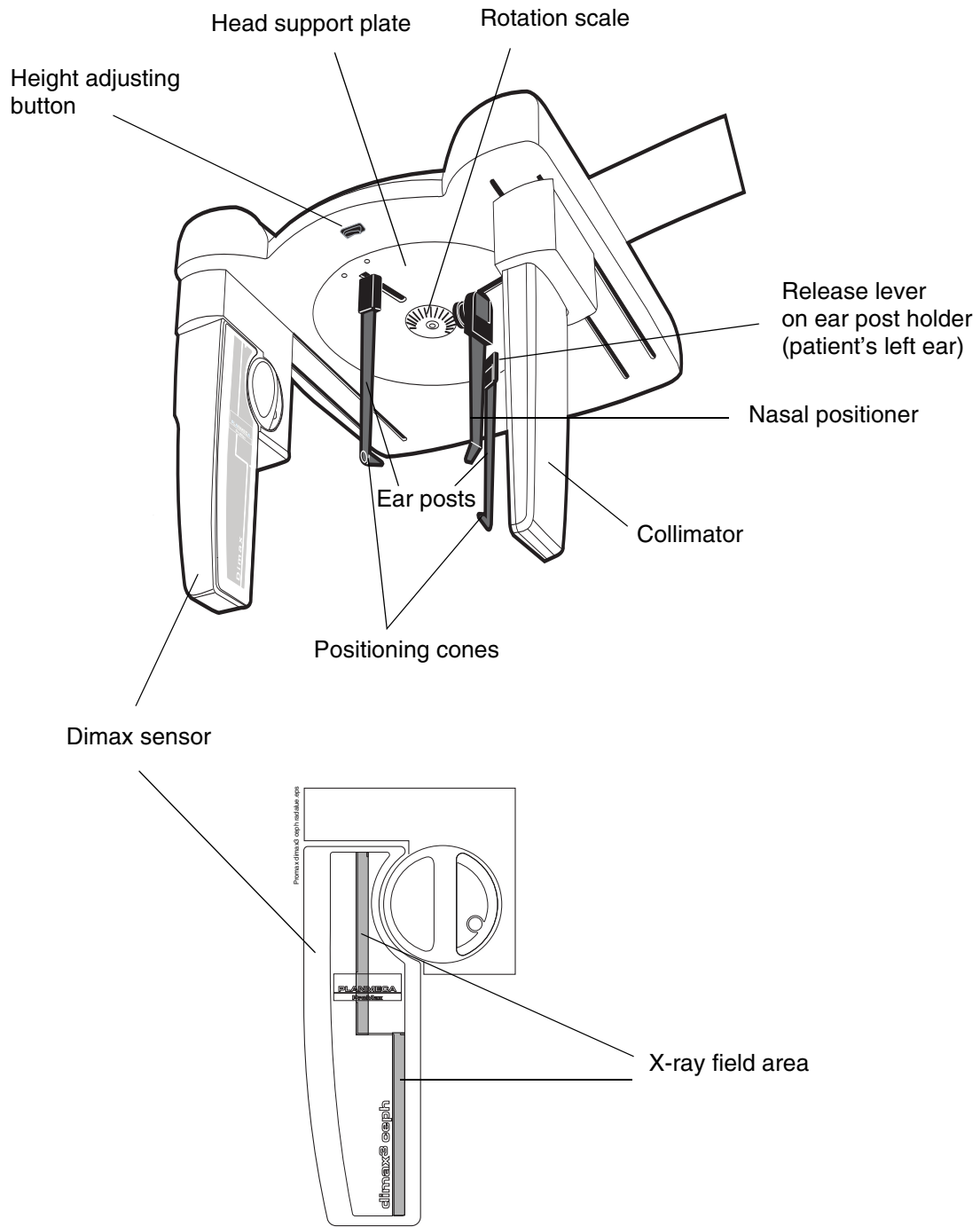


The on / off switch is located on the underside of the stationary column top.

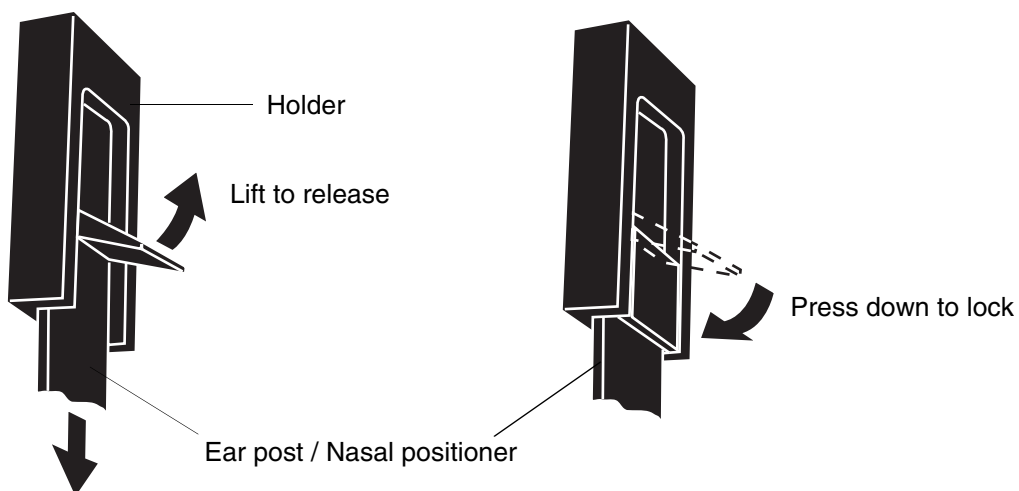
NOTE To prolong the lifetime of the X-ray unit, always switch the X-ray unit off when it is not in active use.

3 MAIN PARTS

3.1 General view of cephalostat



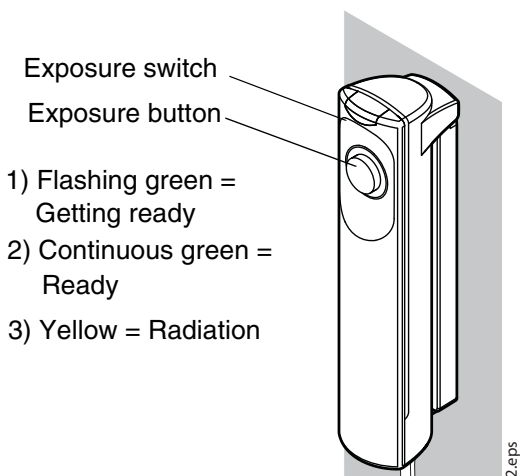
3.2 Removing and attaching ear posts / nasal positioner



NOTE Slide the ear posts and nasal positioner as far up as they will go.

3.3 Exposure switch

The exposure switch can be mounted on the wall, or it can be hung from the hook provided on the stationary column top if a protected area is within reach.



Green lights flash on the exposure button and on the touch screen when the X-ray system is getting ready for an exposure. The green lights stop flashing and stay on continuously when the X-ray system is ready for an exposure.

During exposure yellow radiation warning lights illuminate on the exposure switch unit and on the touch screen. They indicate that the X-ray unit is generating radiation.

3.4 Emergency stop button



The emergency stop button is located on the top of the stationary column. Press the button to stop the X-ray unit operating in an emergency. When the emergency stop button is pressed down, all movements of the X-ray unit are blocked and the unit will not generate radiation. The up / down movement will stop within a distance of 10 mm (0.4 in.).

A help message will appear on the touch screen. Guide the patient away from the cephalostat. Then release the emergency stop button. The X-ray unit will automatically restart.

3.5 Touch screen

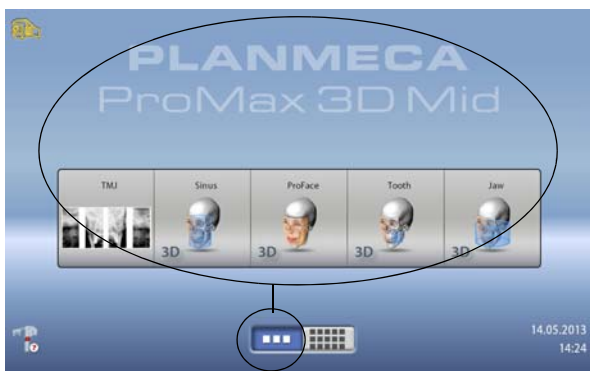
NOTE The options shown on the touch screen depend on the unit configuration. The X-ray unit can be upgraded with new programs and features, contact your dealer for further information. The views and values shown in this manual are only examples.

NOTE The illustrations shown on the touch screen are based on approximate patient anatomy. The actual exposure area depends on the individual anatomy of the patient.

NOTE Touching the screen during exposure will stop the imaging process.

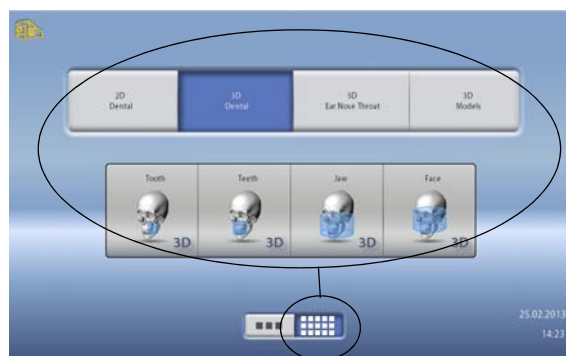
You can use the buttons at the bottom of the main screen to change the appearance of the main view.

Show ProMax model and up to five most recently used programs (with most recent first)



Left button (default view)

Show both program bars

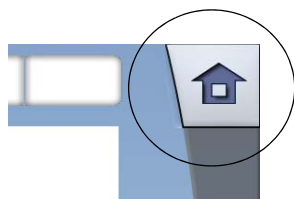


Right button

Fast forward

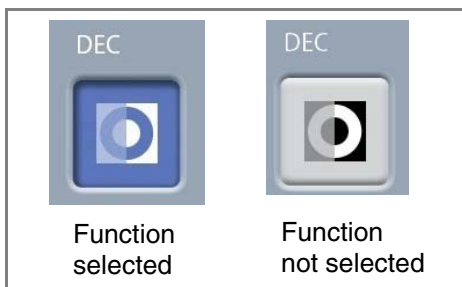


NOTE If you wish to use fast forward buttons on the default view (left button), select Settings > Program > 2200 Program Features > Fast Forward ON. Using a fast forward button takes you directly to the last screen.



Home button =
Back to main view

- To return to the main view from another screen, select the home button at the top right corner of the screen.



NOTE Do not use sharp objects to operate the touch screen.

- To make a selection on the touch screen, simply touch a button or a field with your finger or a soft stylus. The selected option is highlighted. To deselect an option, touch the button or field again (or select an other option if available).



- To accept a selection and to go to the next screen, touch the forward button.



- To accept a selection and to skip the next screen, touch the fast forward button.



- To accept a selection, touch the green check mark button.



- To cancel a selection, touch the red cross button.



- To pause a function (instead of cancelling it), touch the pause button.

- To scroll a list down or up, slide your finger on the screen.

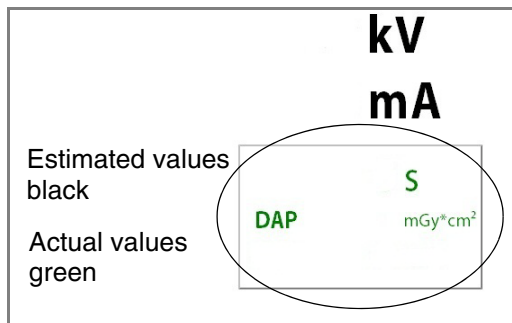
MAIN PARTS

Settings



- To change a setting, select the settings icon at the top left corner of the main view. This takes you to the settings menu where you can adjust the settings of the X-ray unit.

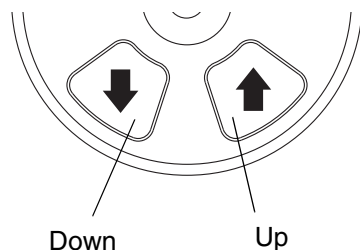
The screen will automatically switch to stand-by mode if you do not touch the screen or the exposure button for more than thirty minutes. In stand-by mode the green light on the exposure button indicates that the X-ray unit is switched on even though the screen is dark. The screen will switch on as soon as you touch it again.



The estimated values for exposure time and DAP (Dose Area Product) are shown with black text on the touch screen before you take an exposure. The actual values are shown with green text after the exposure.

NOTE You can switch demo mode on if you wish to practice or demonstrate the functions of the X-ray unit without radiation (Settings > User > 1300 Operational settings > 1310 User Mode > 1311 Set Demo Mode).

3.6 Patient positioning controls



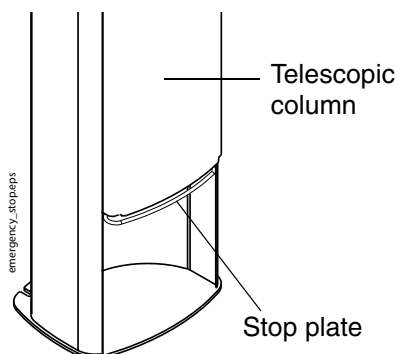
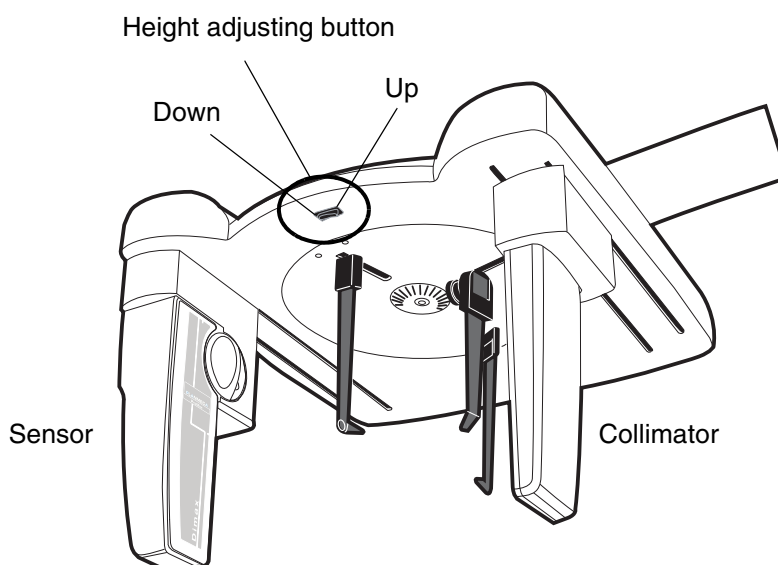
The patient positioning controls are located above the touch screen.

The up and down buttons are used to adjust the cephalostat to suit the height of the patient.

The cephalostat moves slowly at first, then faster.

NOTE If for some reason either of the buttons gets stuck during operation, you can stop the up / down movement by pressing any of the other control buttons or the positioning joystick. This is a safety measure that guarantees that the up / down movement can be stopped in an emergency.

There is an additional height adjusting button on the underside of the cephalostat. The cephalostat will move up or down depending on which side the button is pressed.



NOTE Be careful that the X-ray unit does not hit the ceiling when you press the up button. The maximum height can be adjusted to suit offices with low ceiling, contact your service technician for help.

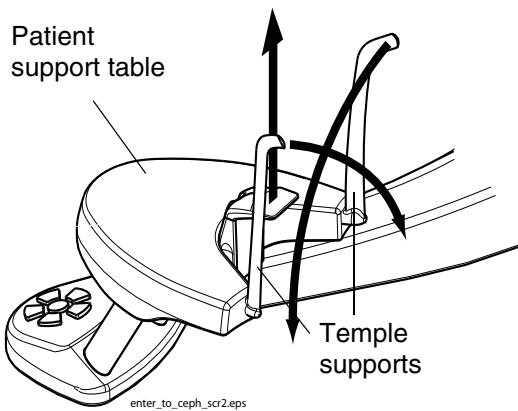
NOTE Make sure that there is no object under the telescopic column when you press the down button. If something is in danger of becoming trapped, release the button immediately to stop the movement.

NOTE The column movement stops automatically if the emergency stop plate at the bottom is pressed upwards. Clear any obstruction before moving the column again.

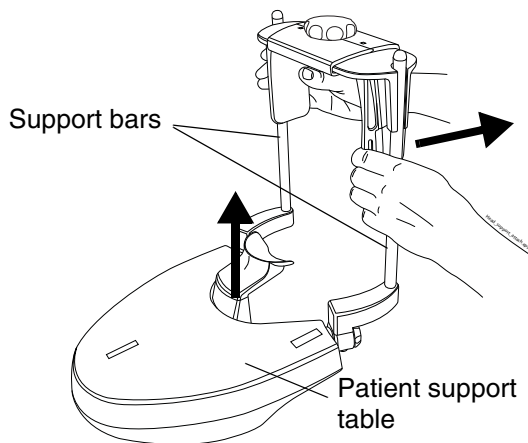
NOTE When positioning wheelchair patients always first move the cephalostat down before you position the patient.

4 PREPARATIONS FOR EXPOSURE

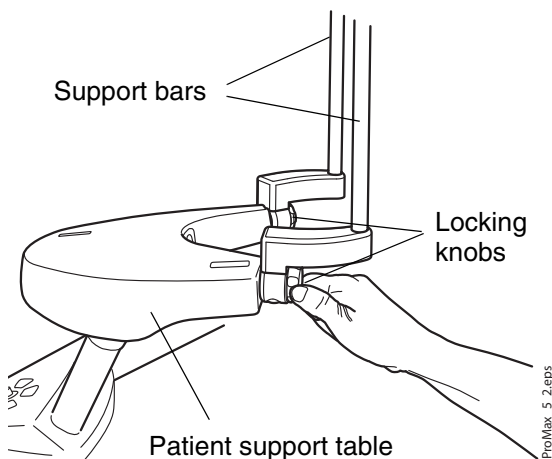
4.1 Preparations on all X-ray units



If the temple supports are in place, turn them down and remove all patient supports from the patient support table.



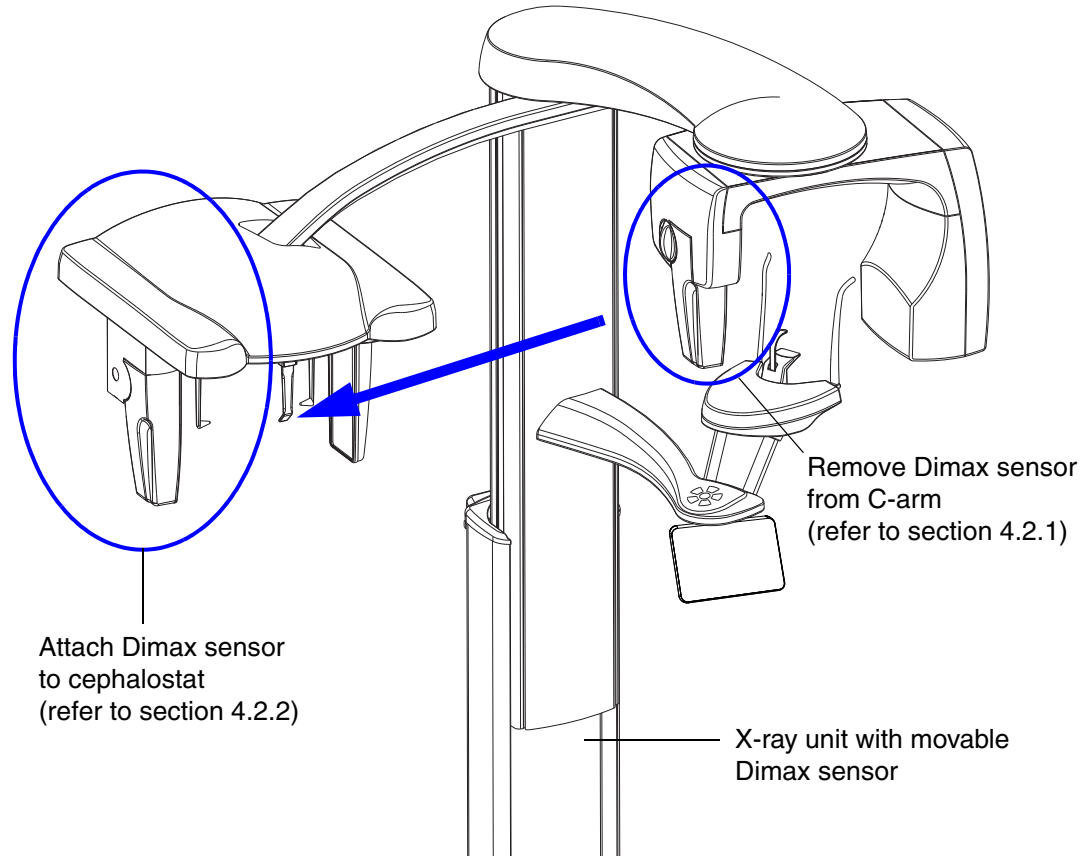
If the support bars are in place, remove all patient supports from the patient support table, including support bars, chin cup and adapter.



- To remove the support bars, first loosen the locking knobs and then pull the support bars out.

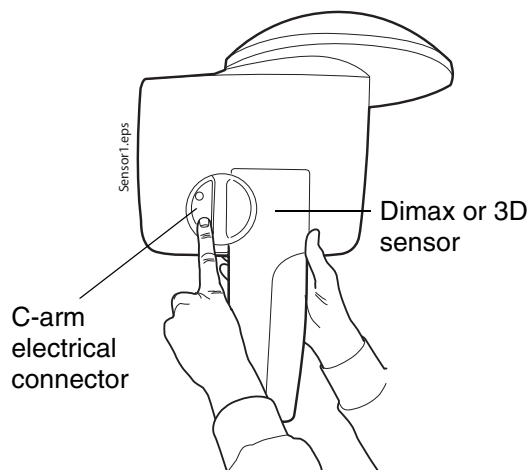
4.2 Additional preparations on X-ray units with movable Dimax sensor

If a movable Dimax sensor is attached to the C-arm, the sensor must be moved to the cephalostat before you can take cephalometric exposures.



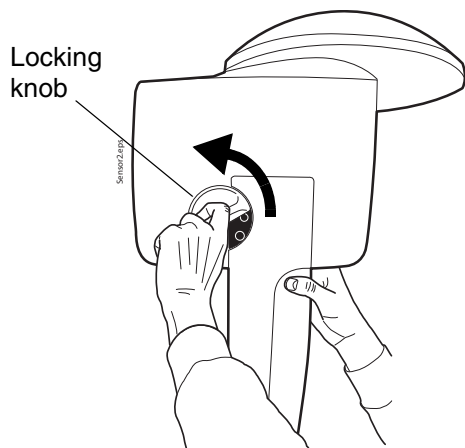
4.2.1 Removing sensor from C-arm

NOTE Do not remove the sensor during imaging process.

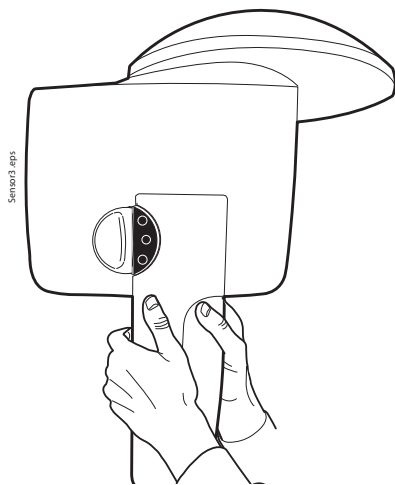


1. Push in the C-arm electrical connector. This will disconnect the electrical connection between the sensor and C-arm.

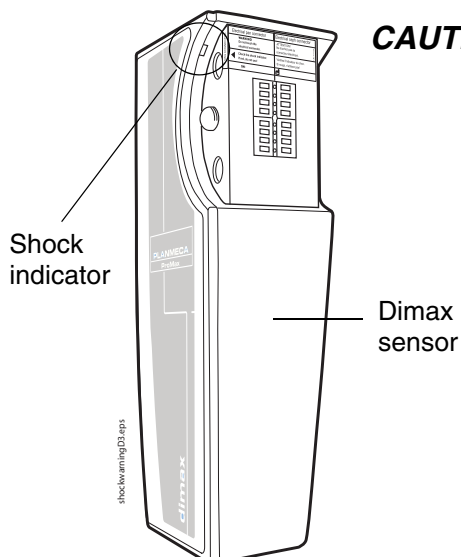
PREPARATIONS FOR EXPOSURE



2. Turn the locking knob 180 degrees. This will release the locking mechanism.



3. Carefully pull the sensor out.

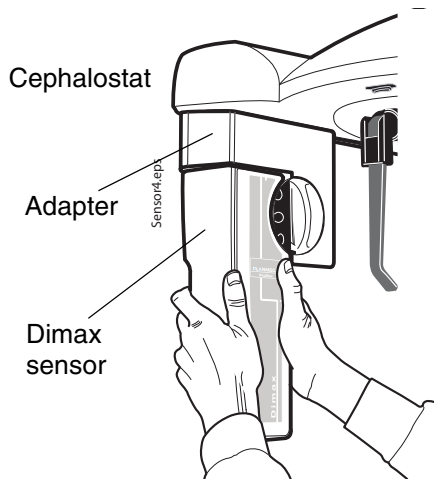


CAUTION *Do not drop the sensor. Planmeca limited warranty does not cover damage which is due to misuse, e.g. dropping the sensor, neglect, or any cause other than ordinary use.*

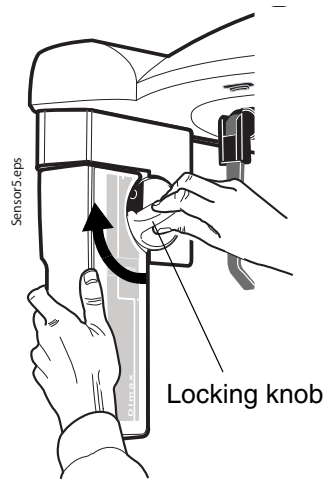
Do not use the sensor if the shock indicator is red - contact your service technician for help.

If you have any reason to believe that the sensor might be faulty, take a test exposure before taking a patient exposure.

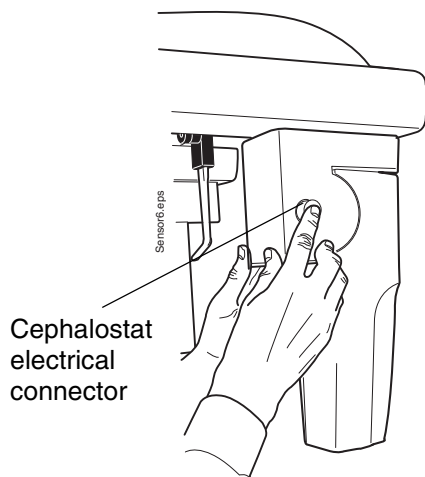
4.2.2 Attaching Dimax sensor to cephalostat



1. Push the sensor onto the adapter on the cephalostat.



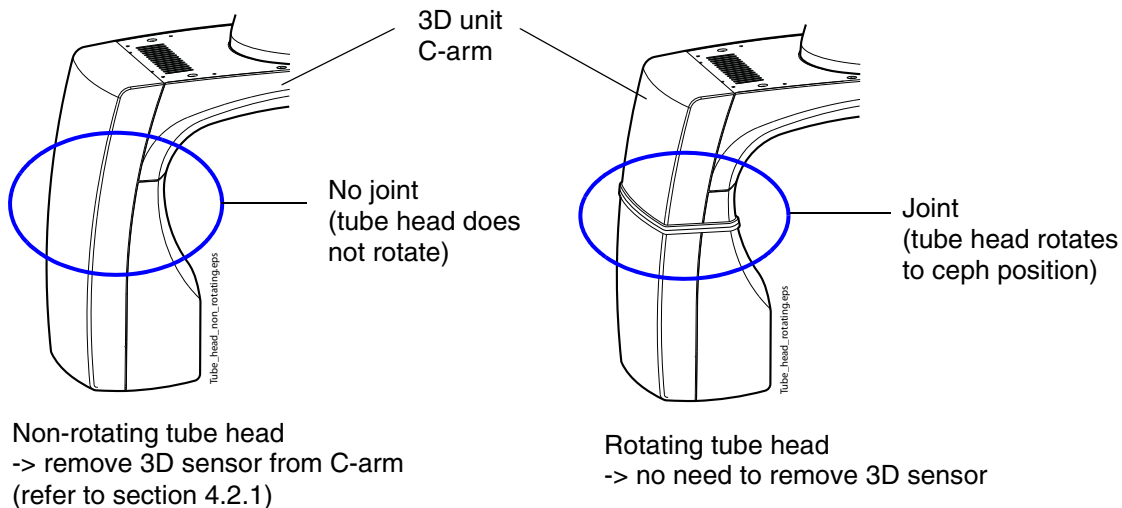
2. Turn the locking knob 180 degrees in order to complete the mechanical connection.



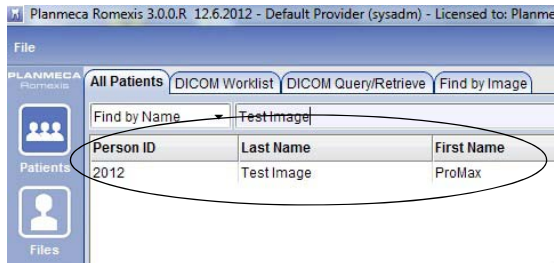
3. Push in the cephalostat electrical connector button on the other side. This will make the electrical connection between the sensor and cephalostat.

4.3 Additional preparations on X-ray units with 3D sensor

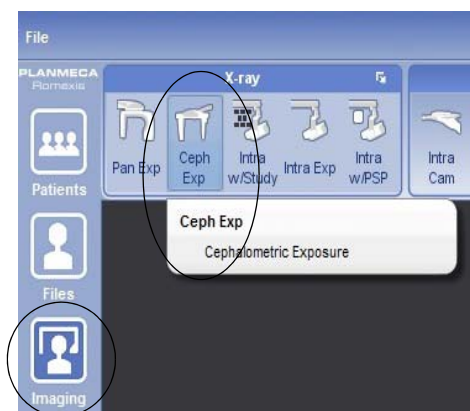
If the X-ray unit has a non-rotating tube head you must remove the 3D sensor from the C-arm before you can take cephalometric exposures.



4.4 Preparing Planmeca Romexis



First select the patient.



Then click the cephalometric exposure button.

Refer to the Planmeca Romexis User's Manual for details on Romexis functions.

4.5 Preparing patient

Ask the patient to remove any spectacles, hearing aids, dentures, hairpins, and personal jewellery such as earrings, necklaces and piercings as these can produce shadows or reflections in the image. The patient should also remove any loose items of clothing (e.g. scarf, tie) that might get caught in the arm structures of the X-ray unit.

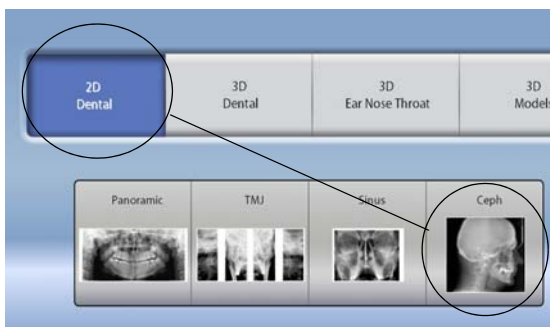
Place a protective lead apron over the patient's back if required.

5 CEPHALOMETRIC EXPOSURE

5.1 Selecting exposure settings

Refer to section 3.5 “Touch screen” on page 4 for general information on how to make or cancel selections on the touch screen.

5.1.1 Selecting program



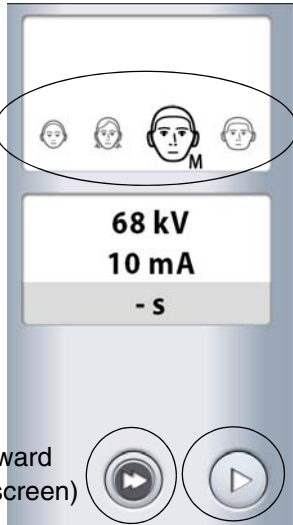
Select the cephalometric program.

5.1.2 Selecting patient size

Select the patient size according to the build of the patient.

Select patient size:

- XS = Child
- S = Small adult
- M = Medium-sized adult
- L = Large adult



The screenshot shows a patient size selection screen with four icons representing different sizes: XS, S, M (selected and circled), and L. Below the icons, the exposure parameters are displayed: 68 kV, 10 mA, and -S. At the bottom, there are two circular buttons: 'Fast forward (skip next screen)' and 'Forward'.

NOTE The exposure values will automatically change according to the selected patient size and program type.

5.1.3 Adjusting exposure values for current exposure

The exposure values have been preset at the factory for each patient size and program type. The preset exposure values are average values and they are only meant to guide the user.

NOTE Always try to minimize the radiation dose to the patient.

The preset exposure values are shown in the following tables.

Factory presets for program types Lateral and Oblique

PATIENT SIZE	kV VALUE	mA VALUE
Child (XS)	64	10
Small adult (S)	66	10
Medium-sized adult (M)	68	10
Large adult (L)	70	10

Factory presets for program type Posteroanterior

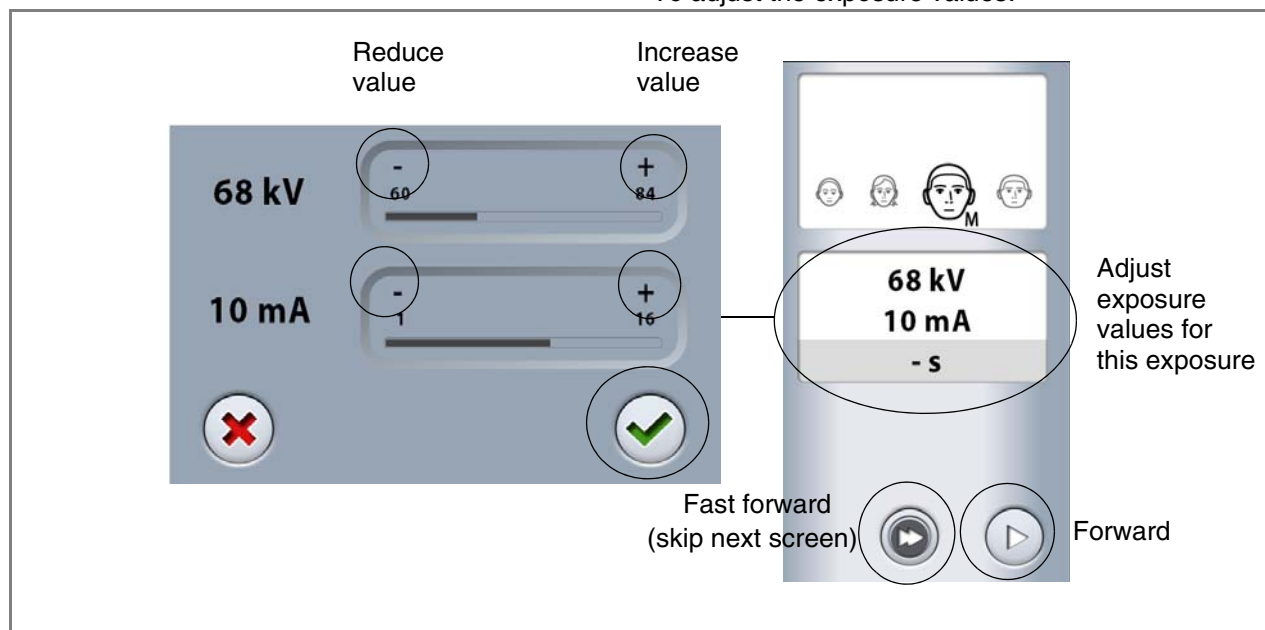
PATIENT SIZE	kV VALUE	mA VALUE
Child (XS)	72	12.5
Small adult (S)	75	12.5
Medium-sized adult (M)	78	12.5
Large adult (L)	80	12.5

Factory presets for program type Hand

PATIENT SIZE	kV VALUE	mA VALUE
Child (XS)	60	4
Small adult (S)	60	4
Medium-sized adult (M)	60	4
Large adult (L)	60	4

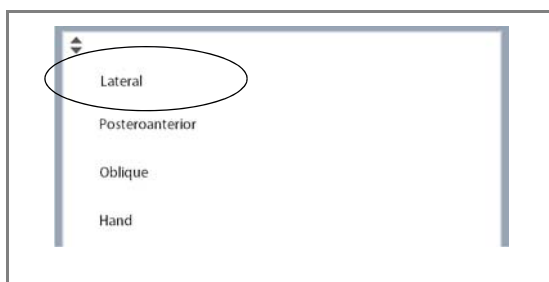
You can adjust the preset exposure values (kV and mA). To improve the image contrast, reduce the kV value. To reduce the radiation dose, reduce the mA value.

- To adjust the exposure values:



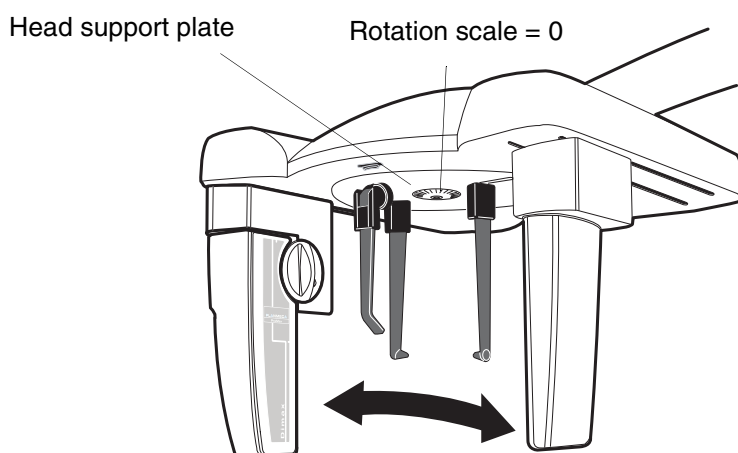
NOTE Make sure that you have selected the correct program type and head support position.

5.2 Patient positioning in lateral projection

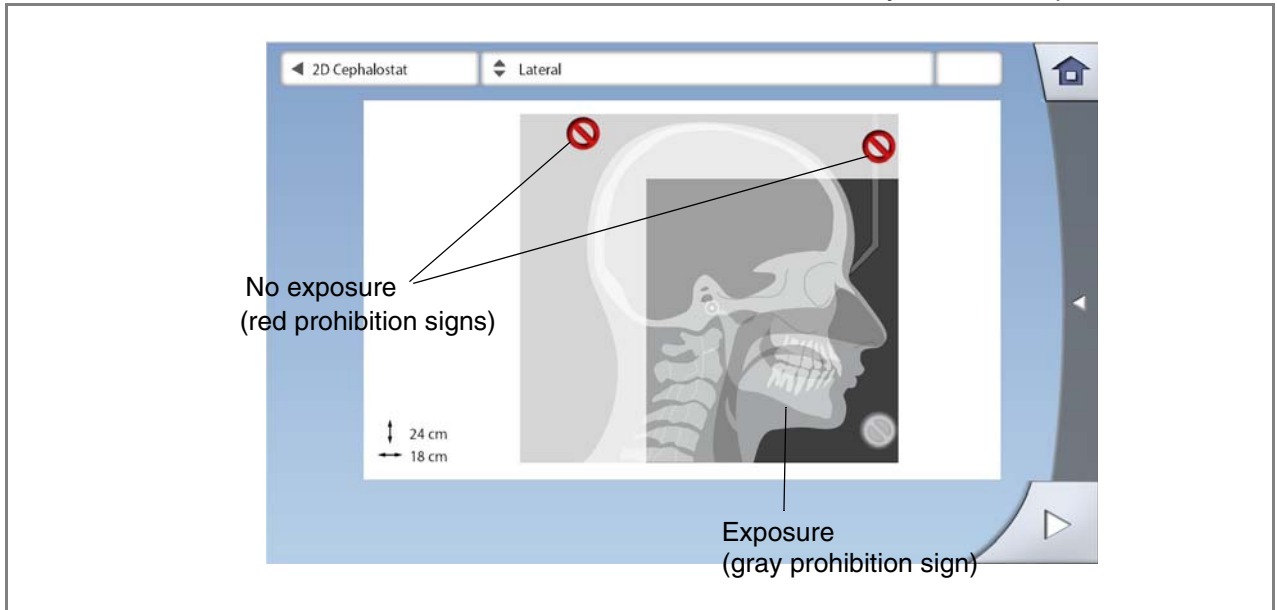


1. Select the lateral program from the drop-down menu at the top of the screen.

2. Rotate the head support plate to the 0° position.

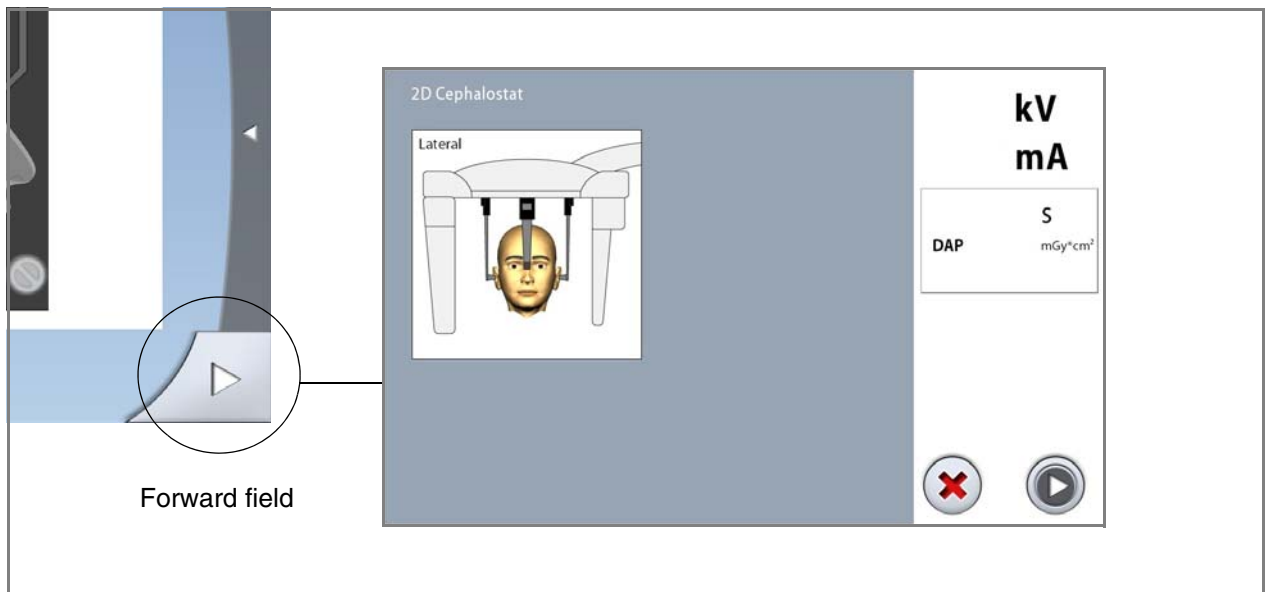


3. Select the area that you wish to expose.

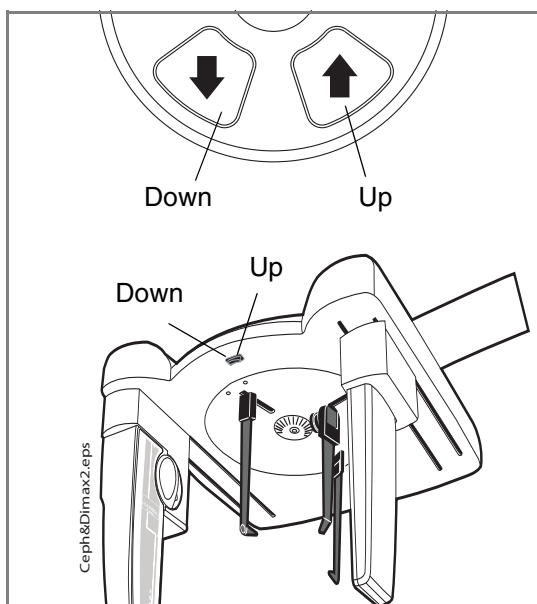
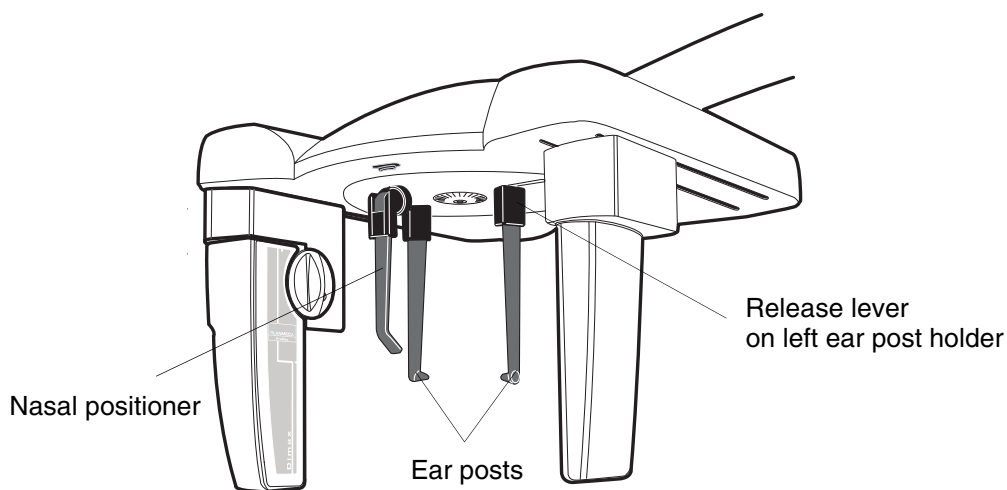


NOTE The illustration on the screen is only an example. The actual size of the exposed area depends on the patient's individual anatomy.

4. Use the forward field at the bottom right corner to enter the next screen.

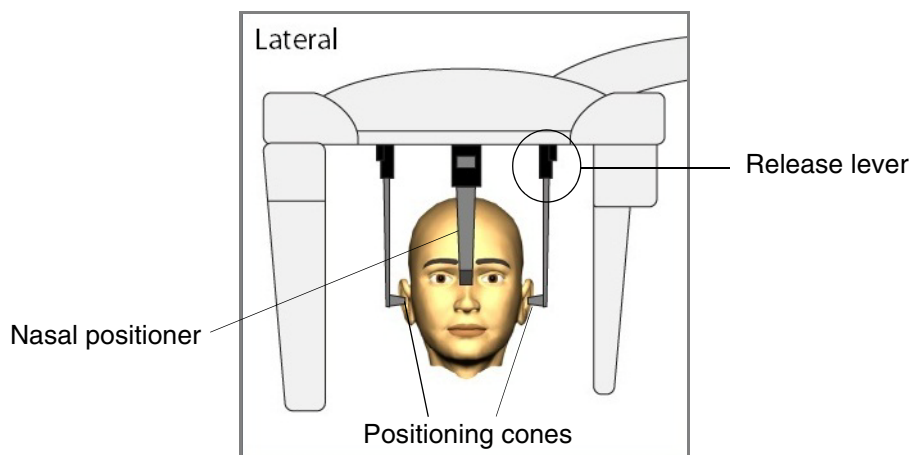


5. Press the release lever on the left ear post holder and slide the ear posts and nasal positioner out as far as they will go.

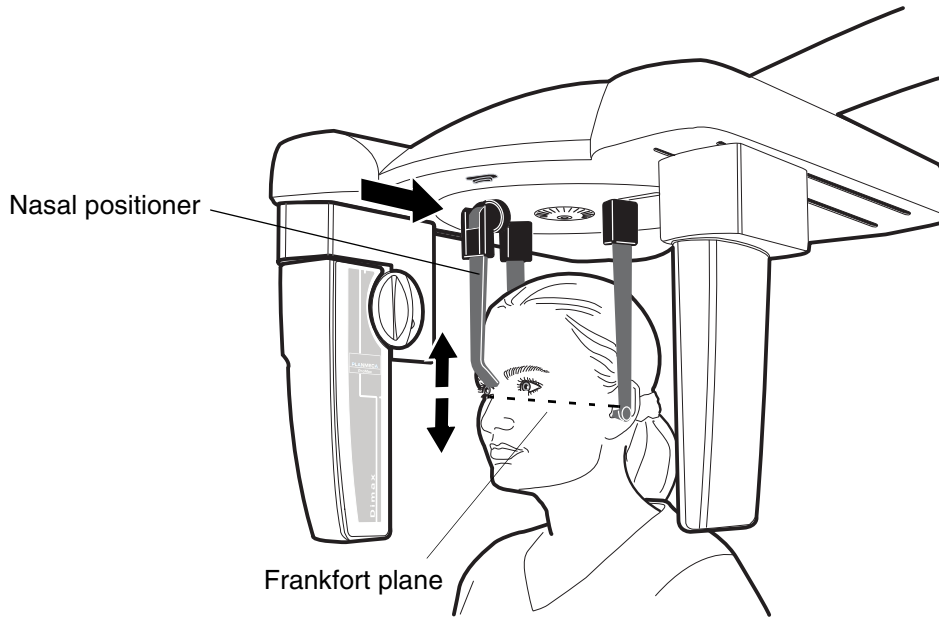


6. Adjust the height of the cephalostat by pressing a height adjusting button until the positioning cones at the ends of the ear posts are level with the patient's ears.

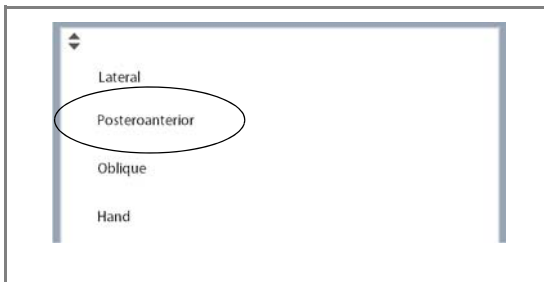
7. Position the patient between the ear posts so that the patient faces the nasal positioner.
8. Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.
9. Slide the nasal positioner until it touches the patient's nasion.



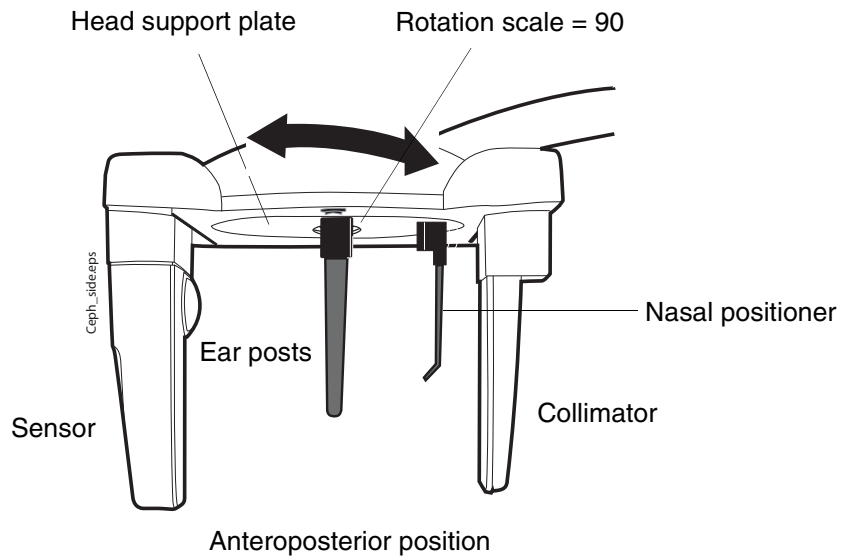
10. Adjust the angle of the patient's head by sliding the nasal positioner up or down until the Frankfort plane is horizontal.



5.3 Patient positioning in posteroanterior or anteroposterior projection

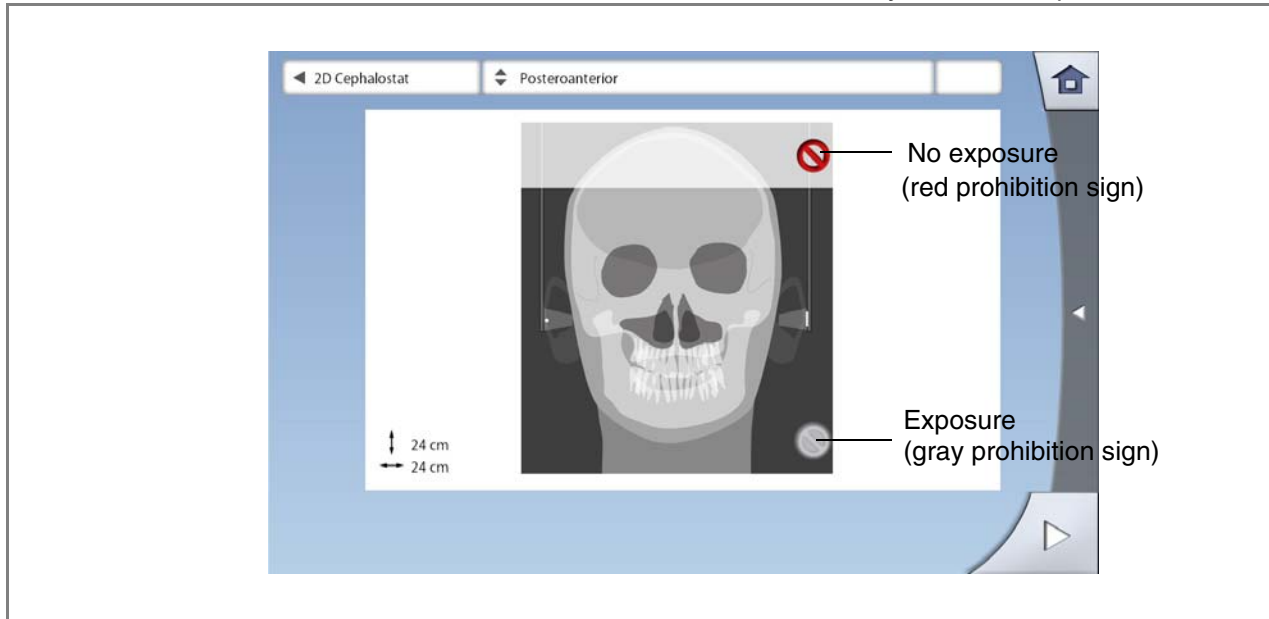


1. Select the posteroanterior program from the drop-down menu at the top of the screen.
2. Rotate the head support plate to either of the 90° positions. To take an anteroposterior exposure, place the nasal positioner next to the collimator. To take a posteroanterior exposure, place the nasal positioner next to the sensor.



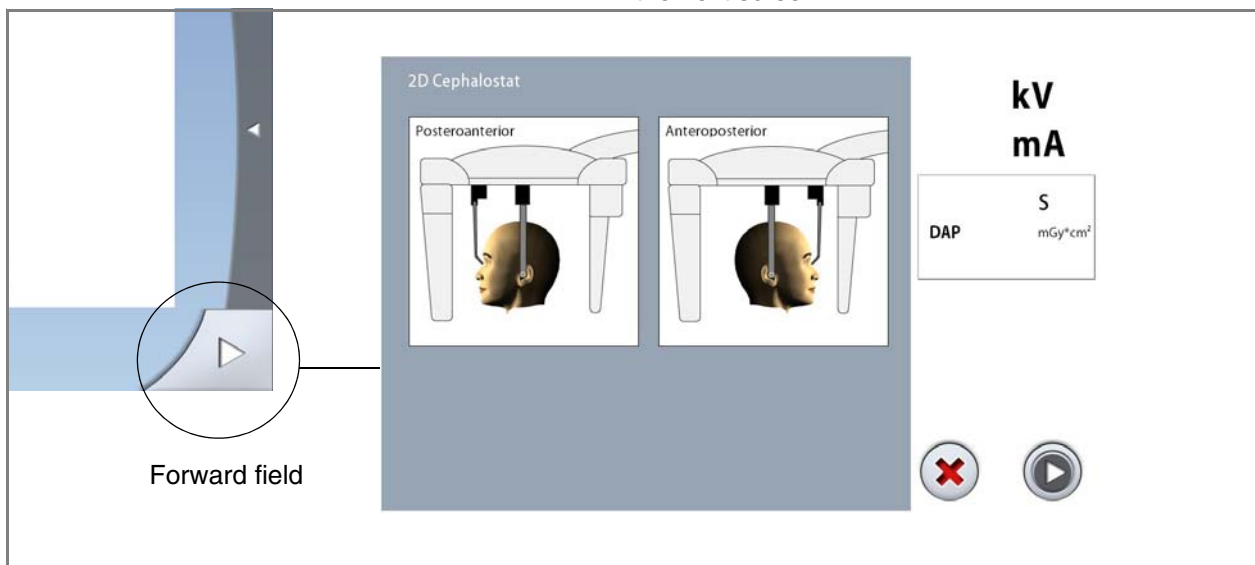
CEPHALOMETRIC EXPOSURE

3. Select the area that you wish to expose.

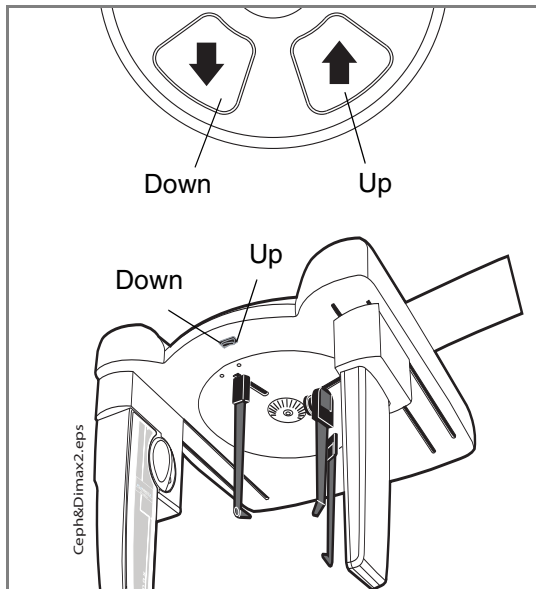
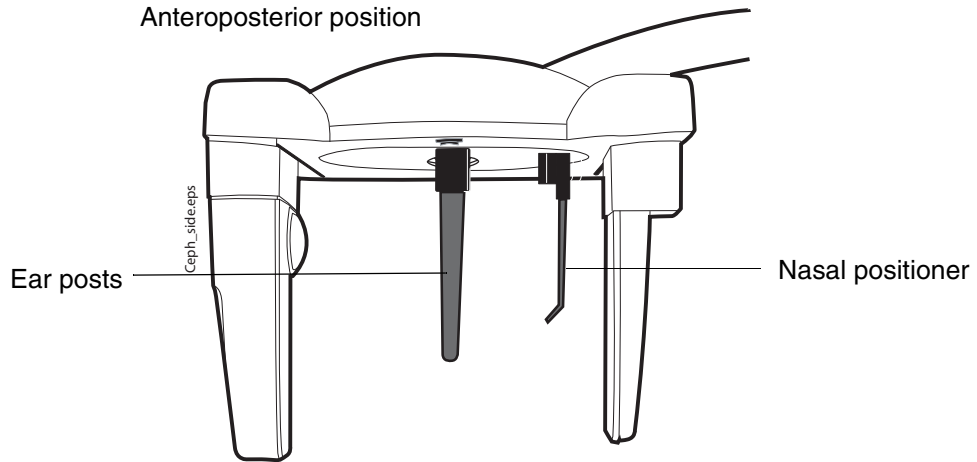


NOTE The illustration on the screen is only an example. The actual size of the exposed area depends on the patient's individual anatomy.

4. Use the forward field at the bottom right corner to enter the next screen.



5. Press the release lever on the left ear post holder and slide the ear posts and nasal positioner out as far as they will go.

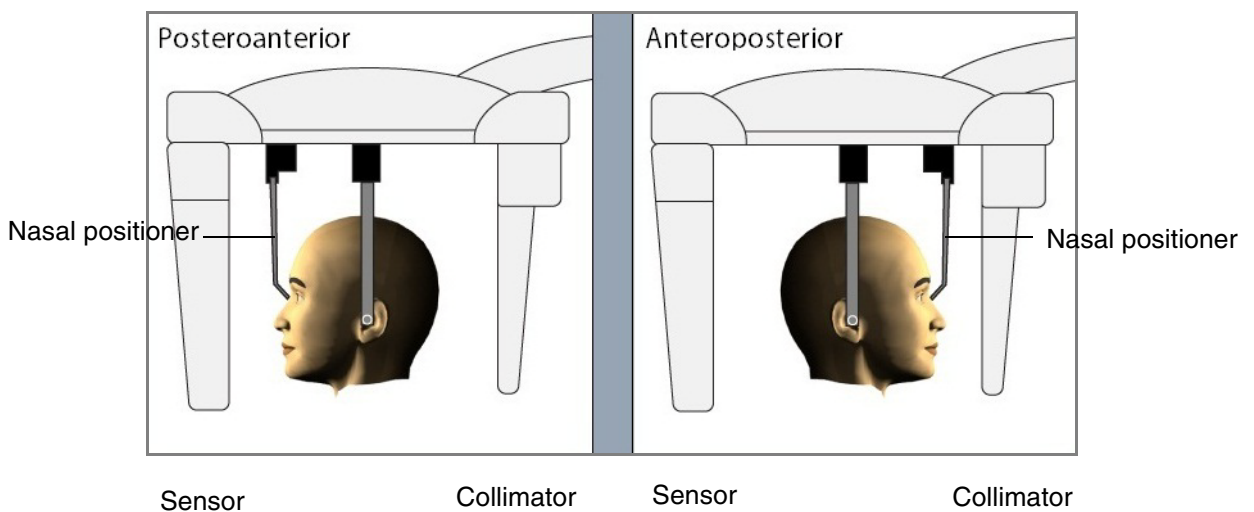


6. Adjust the height of the cephalostat by pressing a height adjusting button until the positioning cones at the ends of the ear posts are level with the patient's ears.

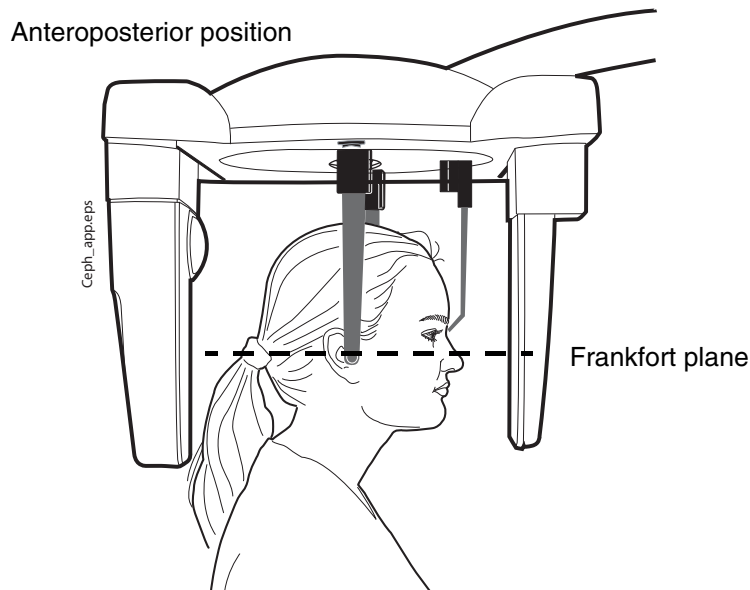
7. Position the patient between the ear posts. If you take a posteroanterior exposure position the patient so that they look at the sensor. If you take an anteroposterior exposure position the patient so that they look at the collimator.

8. Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.

9. Slide the nasal positioner until it touches the patient's nasion.

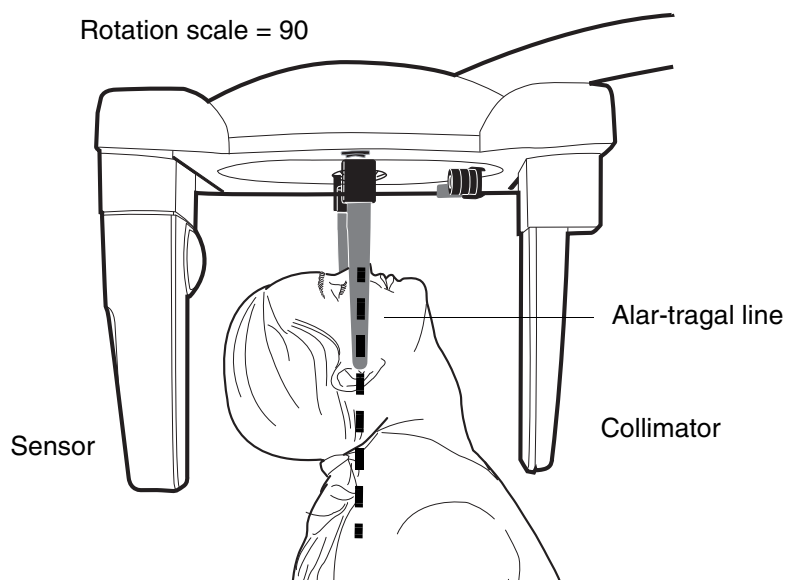


10. Adjust the tilt of the patient's head so that the Frankfort plane is horizontal.



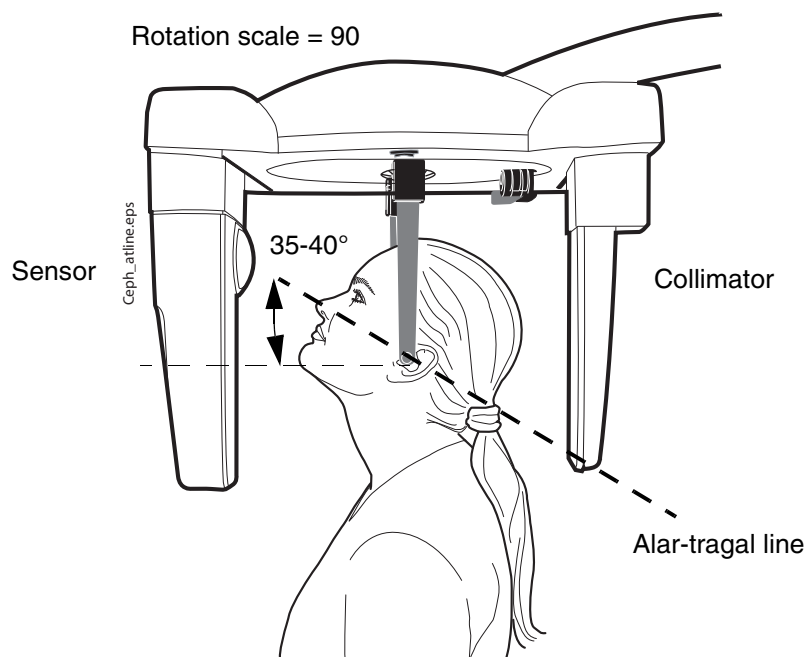
5.4 Patient positioning in submental-vertex projection

1. Perform steps one to six as described in section 5.3 "Patient positioning in posteroanterior or anteroposterior projection" on page 19. Rotate the head support plate to the 90° position so that the nasal positioner is placed next to the collimator.
2. Turn the nasal positioner up.
3. Position the patient between the ear posts and adjust the tilt of the patient's head until the alar-tragal line is perpendicular to the floor.
4. Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.



5.5 Patient positioning in Waters' view

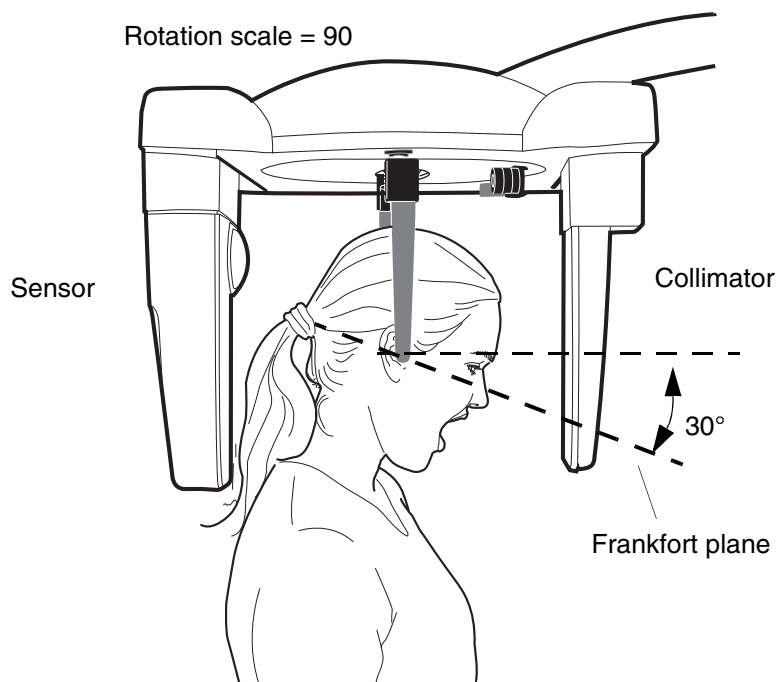
1. Perform steps one to six as described in section 5.3 "Patient positioning in posteroanterior or anteroposterior projection" on page 19. Rotate the head support plate to the 90° position so that the nasal positioner is placed next to the collimator.
2. Turn the nasal positioner up.
3. Position the patient between the ear posts so that they face the sensor.
4. Position the patient's head so that the alar-tragal line is tilted up about 35 to 40 degrees.
5. Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.



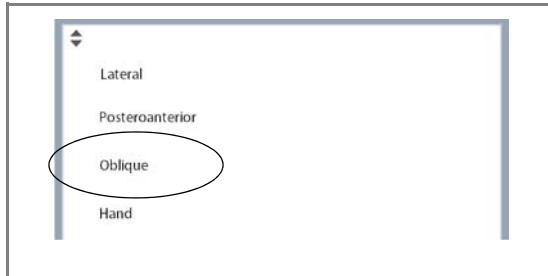
5.6 Patient positioning in AP Towne projection

1. Perform steps one to six as described in section 5.3 "Patient positioning in posteroanterior or anteroposterior projection" on page 19. Rotate the head support plate to the 90° position so that the nasal positioner is placed next to the collimator.
2. Turn the nasal positioner up.
3. Position the patient between the ear posts so that they face the collimator.
4. Position the patient's head so that the Frankfort plane is tilted down about 30 degrees.
5. Ask the patient to open their mouth as wide as possible.

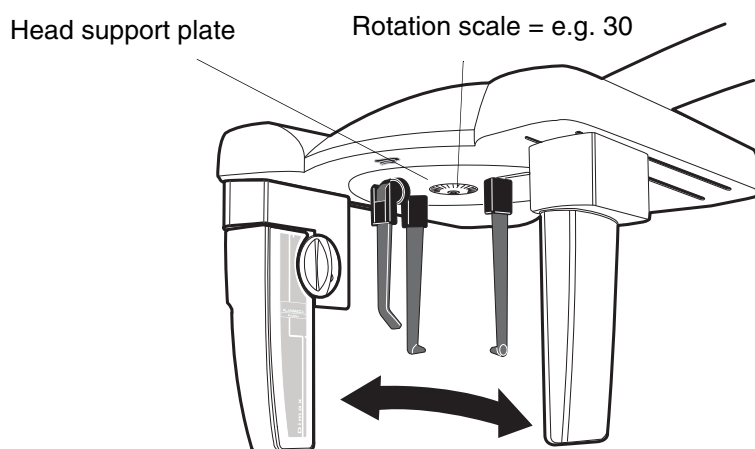
6. Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.



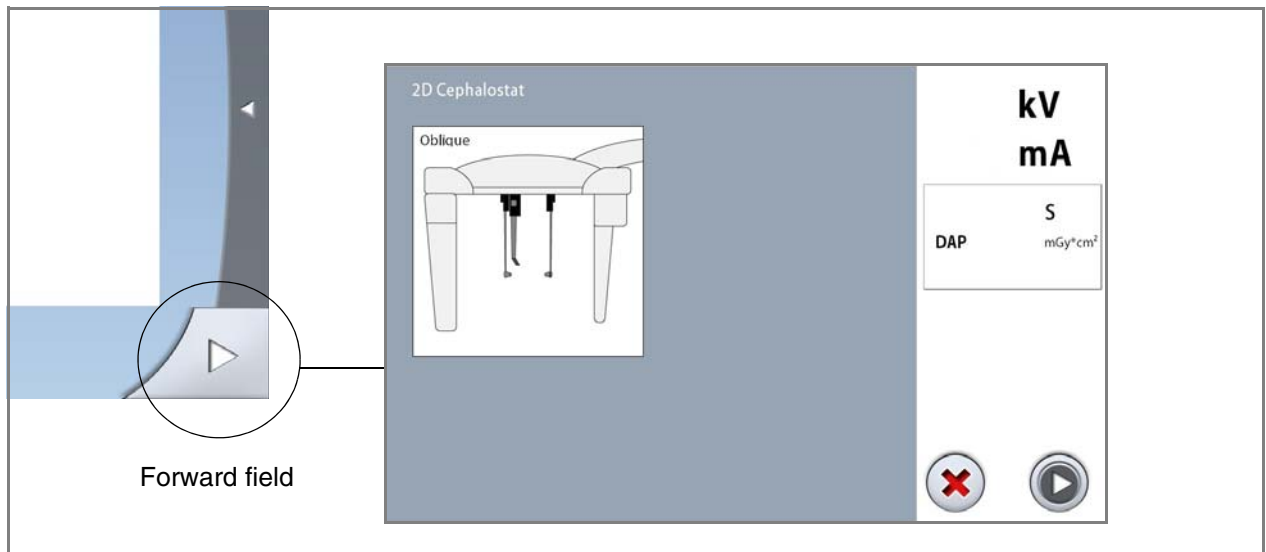
5.7 Patient positioning in oblique projection



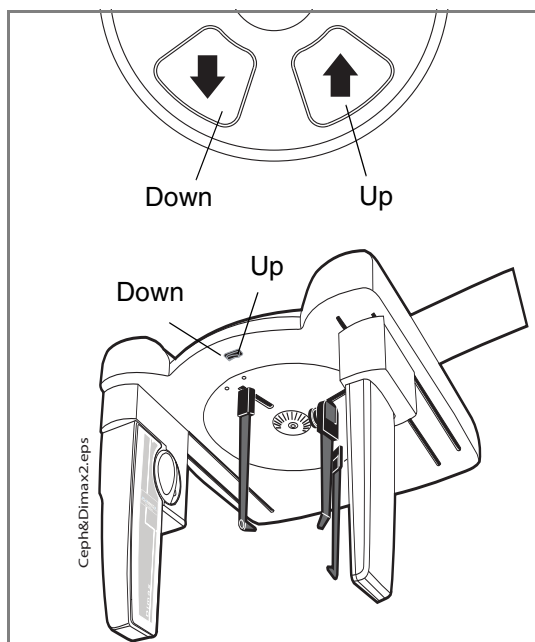
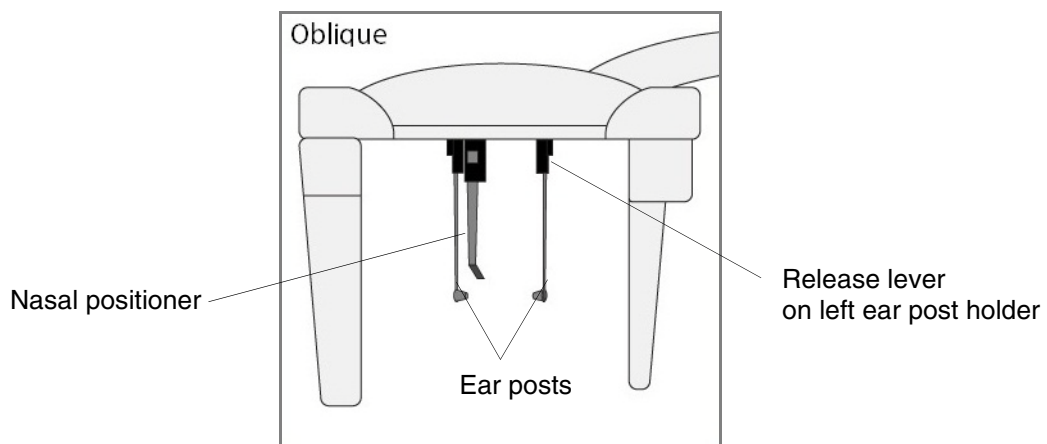
1. Select the oblique program from the drop-down menu at the top of the screen.
2. Rotate the head support plate to an oblique position (other than 0, 90 or 180 degrees).



- Use the forward field at the bottom right corner to enter the next screen.

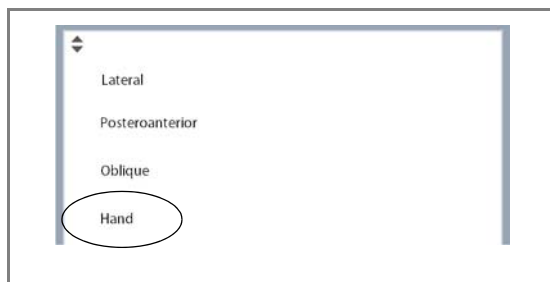


- Press the release lever on the left ear post holder and slide the ear posts and nasal positioner out as far as they will go.

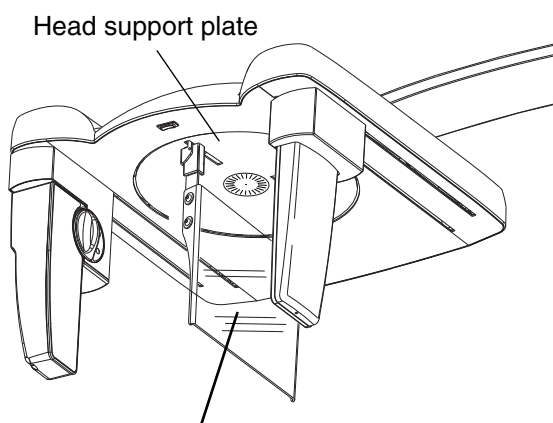


- Adjust the height of the cephalostat by pressing a height adjusting button until the positioning cones at the ends of the ear posts are level with the patient's ears.
- Position the patient between the ear posts so that the patient faces the nasal positioner.
- Press the release lever on the left ear post holder and very carefully slide the positioning cones into the patient's ears.
- Slide the nasal positioner until it touches the patient's nasion.
- Adjust the angle of the patient's head by sliding the nasal positioner up or down until the Frankfort plane is horizontal.

5.8 Positioning in hand exposure



1. Select the hand program from the drop-down menu at the top of the screen.
2. Rotate the head support plate to either of the 90° positions as described in section 5.3 “Patient positioning in posteroanterior or anteroposterior projection” on page 19.

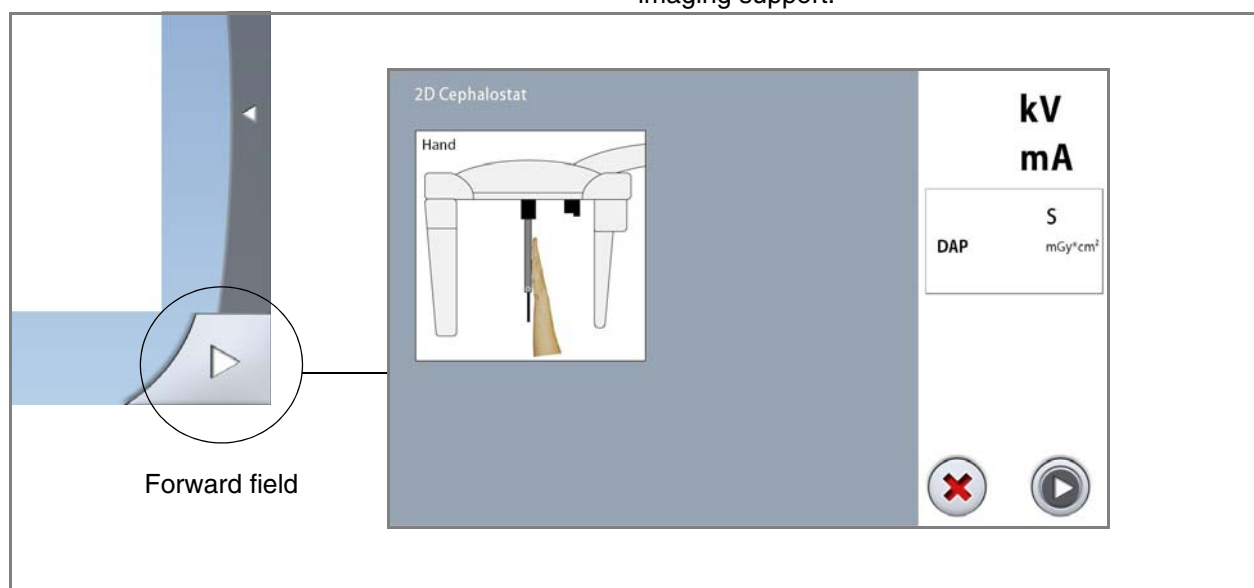


Hand imaging support
(part number 10004413)

3. Remove the ear posts as described in section 3.2 “Removing and attaching ear posts / nasal positioner” on page 3.
4. Attach the hand imaging support to the ear post holders.
5. Turn the nasal positioner up.

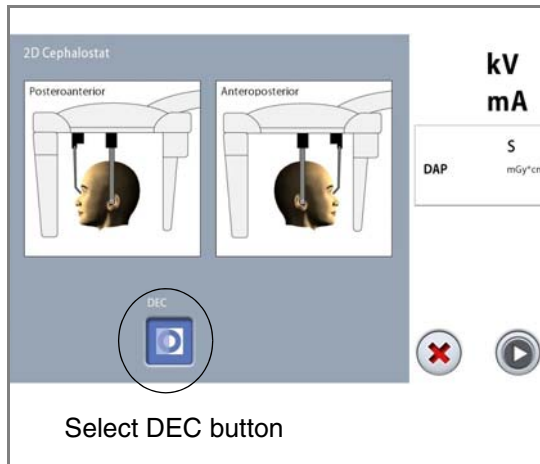
6. Use the forward field at the bottom right corner to enter the next screen.

7. Ask the patient to place their hand against the hand imaging support.



5.9 Selecting Dynamic Exposure Control (DEC)

NOTE Dynamic Exposure Control (DEC) is an optional feature.



Select the DEC button on the touch screen.

Dynamic Exposure Control (DEC) automatically provides optimal exposure values for each patient during exposure. The function adjusts the exposure values individually for each patient based on their anatomic structure and bone density. Switching DEC on improves the image quality as the function produces images of more consistent brightness and contrast.

When DEC is switched on the exposure values are automatically adjusted during exposure. The kV value is adjusted by max ± 4 kV and the mA value is adjusted by max $+4 / -3$ mA within the available scale.

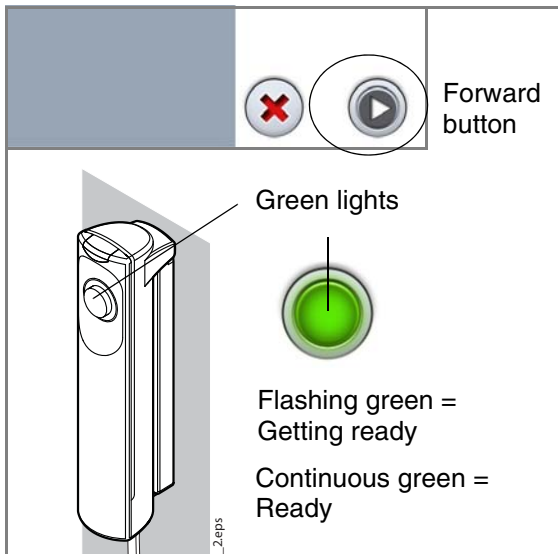
5.9.1 Adjusting DEC density

If the images appear to be too bright or too dark, DEC density can be adjusted. Select Settings > Program > 2200 Program Features > Ceph DEC Density Lat or Ceph DEC Density PA / AP. Then use the minus or plus sign to adjust the setting.

The setting can be adjusted between 20% (lower exposure values -> brighter image) and 200% (higher exposure values -> darker image). The recommended setting is 100% (default setting).

5.10 Taking an exposure

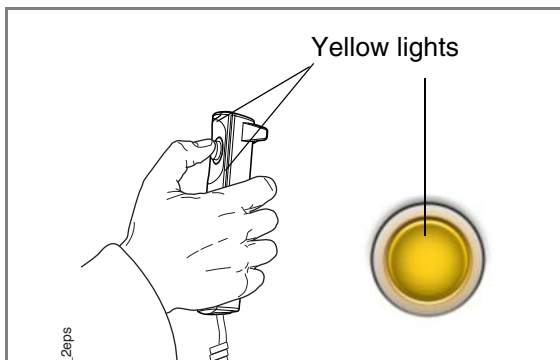
NOTE Make sure that you have selected the correct patient and exposure mode in the Planmeca Romexis program.



1. Select the forward button on the touch screen.
Green lights flash on the touch screen and exposure button when the X-ray system is getting ready for an exposure. The green lights stop flashing and stay on continuously when the X-ray system is ready for an exposure.

2. Ask the patient to stay as still as possible.

3. Move to a protected area.



4. Press and hold down the exposure button for the duration of the exposure.

During exposure yellow radiation warning lights illuminate on the exposure switch and on the touch screen, and you hear a radiation warning tone. Additionally, a radiation warning symbol is shown on the touch screen.

NOTE If the optional DEC (Dynamic Exposure Control) function is switched on, the exposure is taken in two stages. The exposure values are adjusted during the first (short) exposure and the second exposure produces the actual image. Press and hold down the exposure button for the duration of both exposures.

NOTE Maintain audio and visual contact with the patient and X-ray unit during exposure. If the sensor and / or collimator stop moving during exposure, release the exposure button immediately.



5. The image is shown on the computer screen.
 - Note that you must accept the image in the Planmeca Romexis program. Refer to the Romexis User's Manual.

6. Press the release lever on the left ear post holder and very carefully slide the positioning cones out of the patient's ears.

7. Guide the patient away from the cephalostat.

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