RAYSCAN

RCT800-L(Ceph)

Installation manual

RIG-721-EN

Rev. 1.2

This installation manual contains information for appropriate install of Ceph modality, which is optionally installed in the RAYSCAN Studio (RCT800-L) model.
The installer must read this manual and RCT800-L(Pano, CBCT) installation manual carefully before installing the product.
The installer must follow instructions and safety regulations described in the installation manual to prevent any injury to the operator and the patient or damage to the product.

Caution (US only): This product must only be sold to dentists or oral health professionals as stated by the federal law.

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This manual is subject to change without prior notice.

For further inquiries, contact your sales representative or customer service of manufacturer.

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CE 0120

Contents

Chapter — 1

Pre installation check

1 Pre-installation check

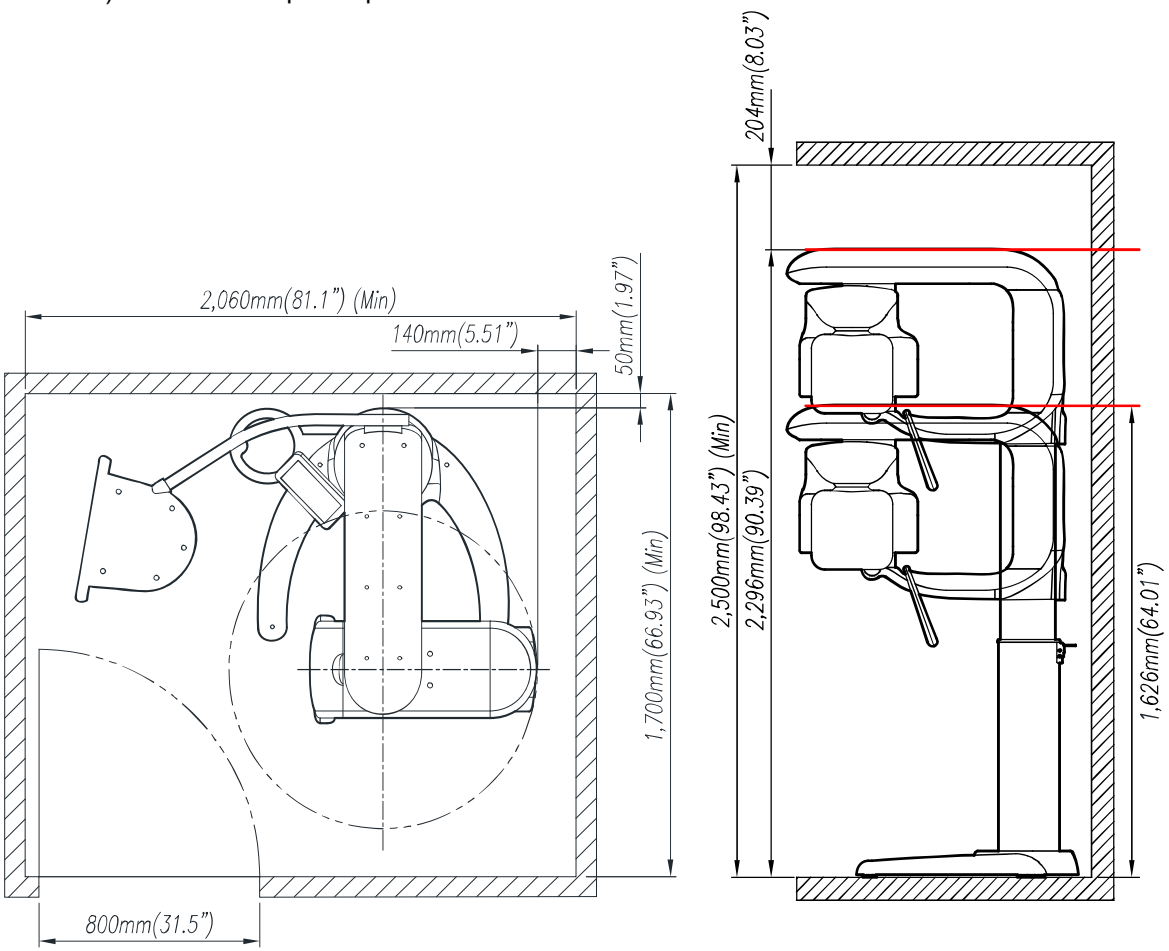
1.1 X-ray shielded room requirements

1.1.1 General requirements

1) Install the product in an X-ray shielded room that complies with all official regulations applicable to radiation protection.
2) The installation place of the product should be able to see the patient and should be located close to the patient.
3) Do not place the equipment on a thick carpet.
4) The PC monitor, Emergency switch, X-ray exposure switch should be installed near the user so that the user can take immediate action in case of emergency.

1.1.2 Checking installation space

1) One shot Ceph L Option

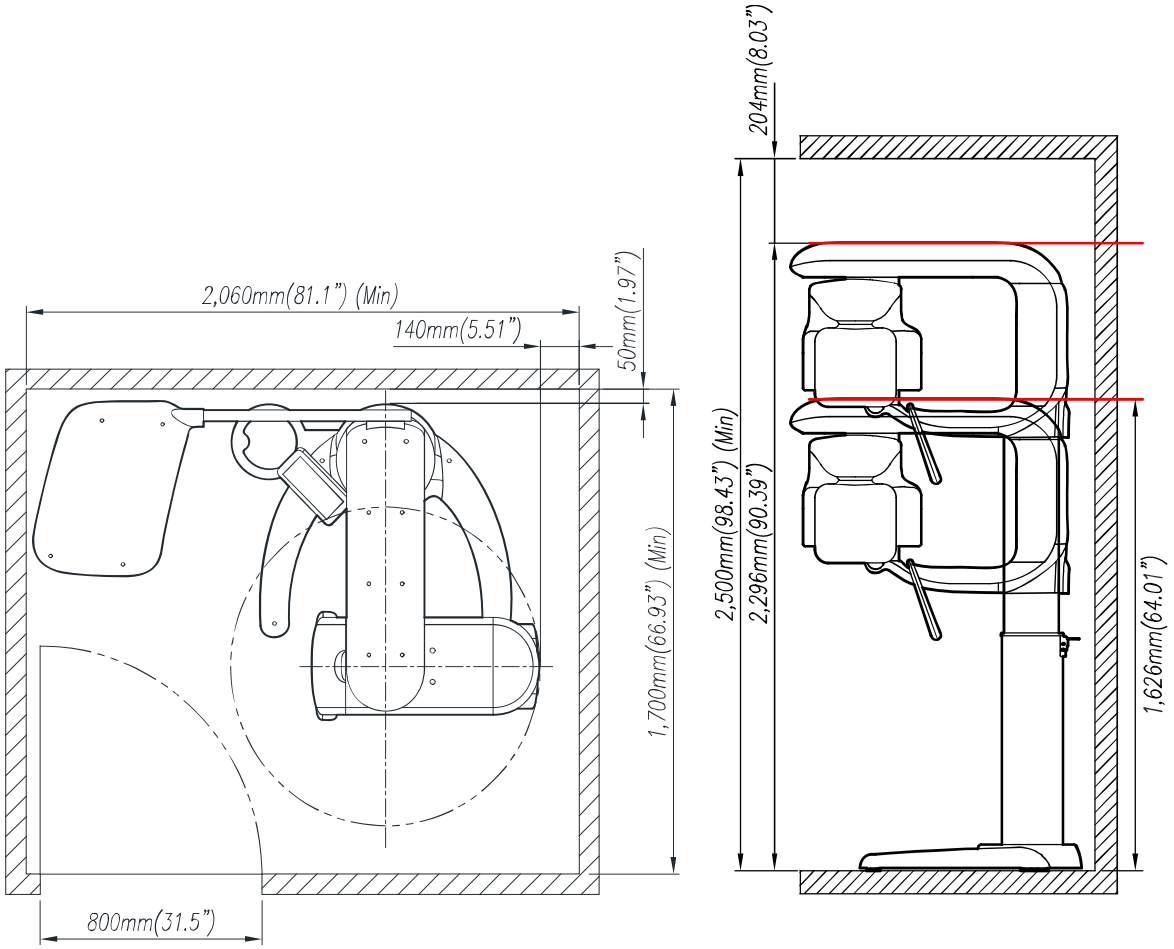


X-ray shielded room recommended space: 2,060mm(81.1")x1,700mm(66.93")x2,500mm(98.43")

We recommend a door width of 800mm(31.5") or more for X-ray shielded rooms.

Ensure that there is enough room for the patient or engineer to access them easily.

2) Scan Ceph and one shot Ceph S option

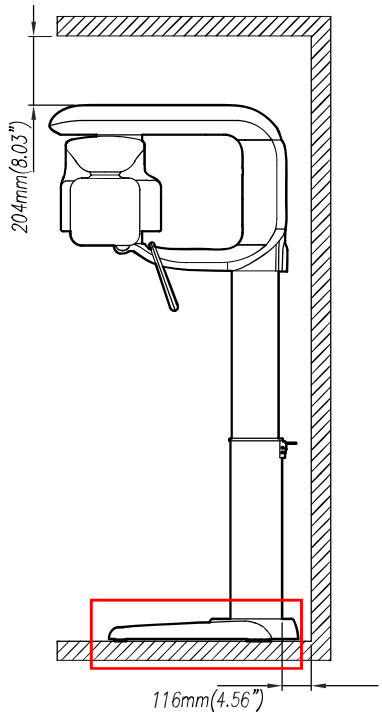
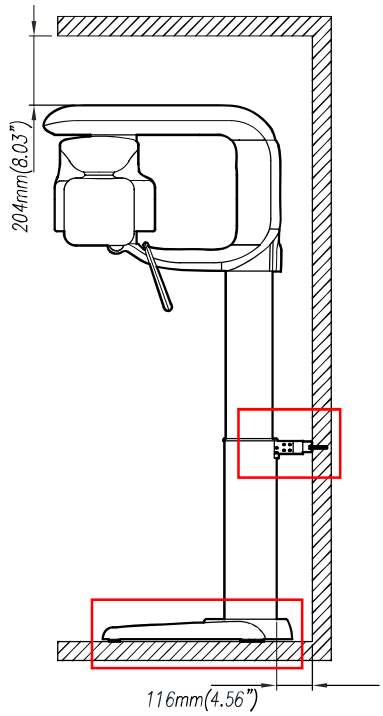
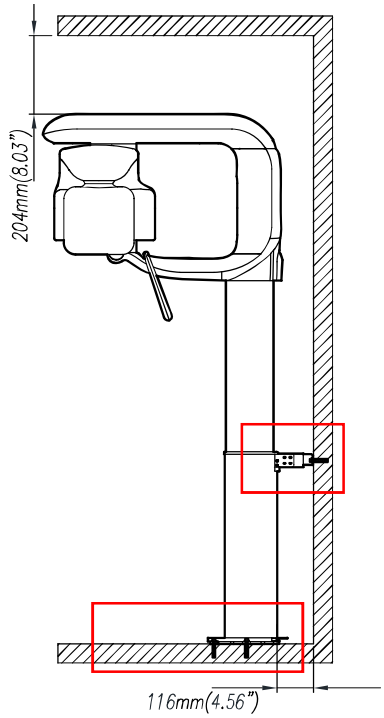


X-ray shielded room recommended space: 2,060mm(81.1")x1,700mm(66.93")x2,500mm(98.43")

We recommend a door width of 800mm(31.5") or more for X-ray shielded rooms.

Ensure that there is enough room for the patient or engineer to access them easily.

1.2 Installation option

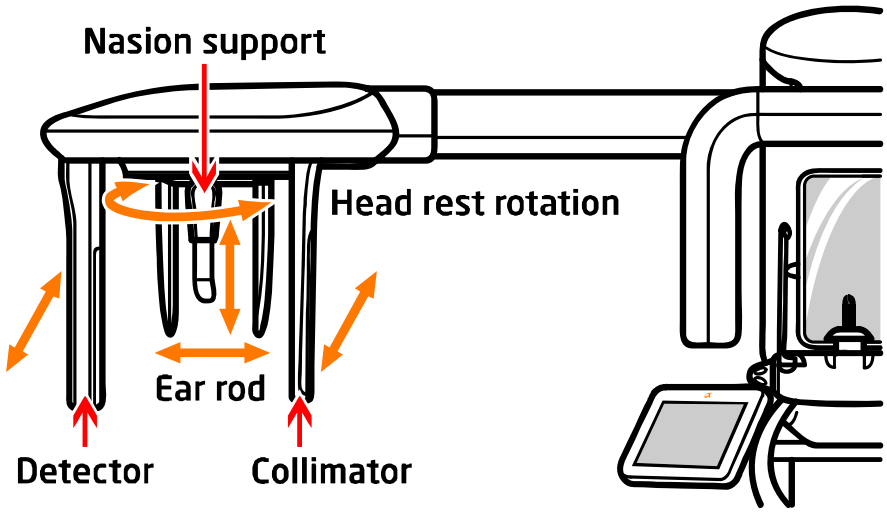
Floor Stand	Floor Stand + Wall Mount	Floor Mount + Wall Mount
		
After move to a place preferred, adjust horizontality without ground holding.	After move to a place preferred, adjust Main base horizontality and hold on a wall with anchor bolts (2ea).	After move to a place preferred, hold floor mount base with anchor bolts (3ea) and fix on a wall with anchor bolts (2ea).

Chapter — 2

System configuration

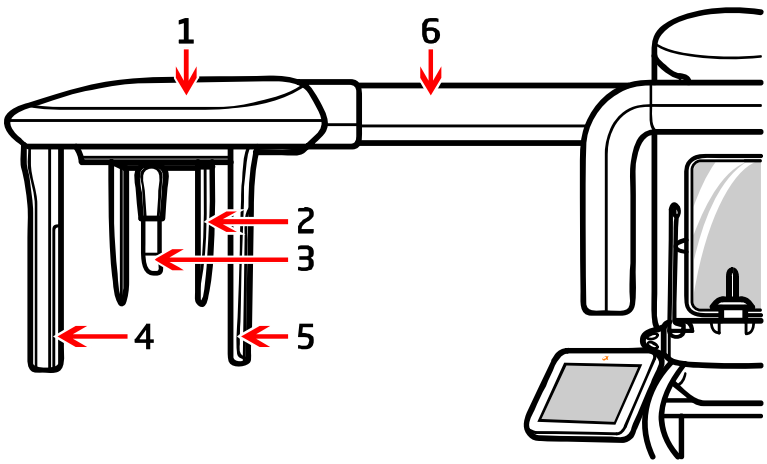
2 System configuration

2.1 Scan Ceph operating section



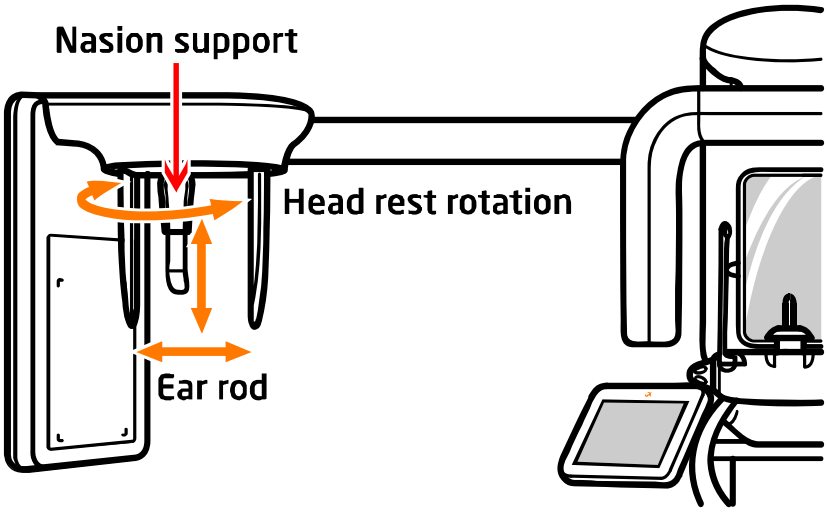
- The detector and the secondary collimator move and scan.
- Adjust the Ear rod and Nasion support to fit the patient's head.
- The head fixture with Ear rod and Nasion support can be rotated to match the protocol.

2.2 Scan Ceph functional components



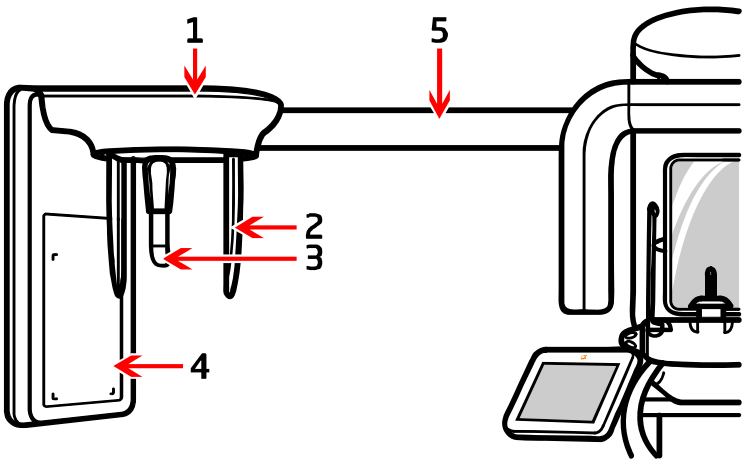
No	Description
1	Ceph head cover
2	Ear rod(L, R)
3	Nasion support
4	Ceph detector
5	Secondary collimator
6	Ceph arm

2.3 One shot Ceph(L) operating section



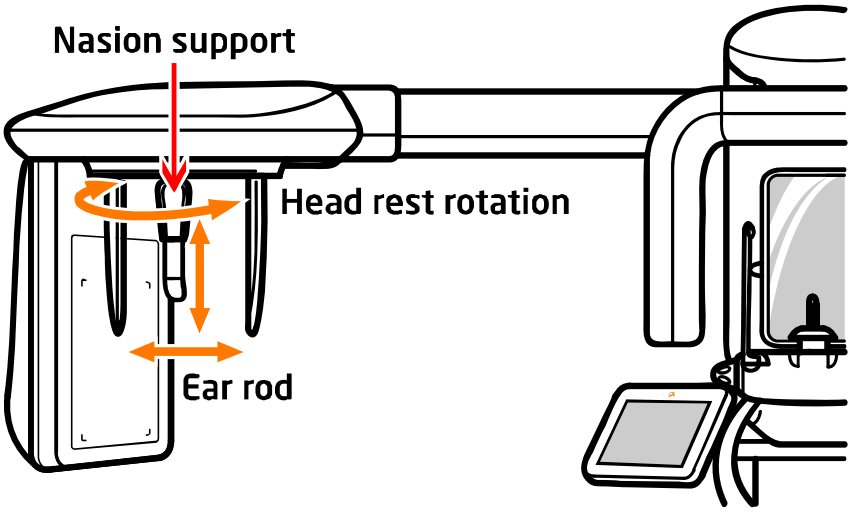
- Adjust the Ear rod and Nasion support to fit the patient's head.
- The head fixture with Ear rod and Nasion support can be rotated to match the protocol.

2.4 One shot Ceph(L) functional components



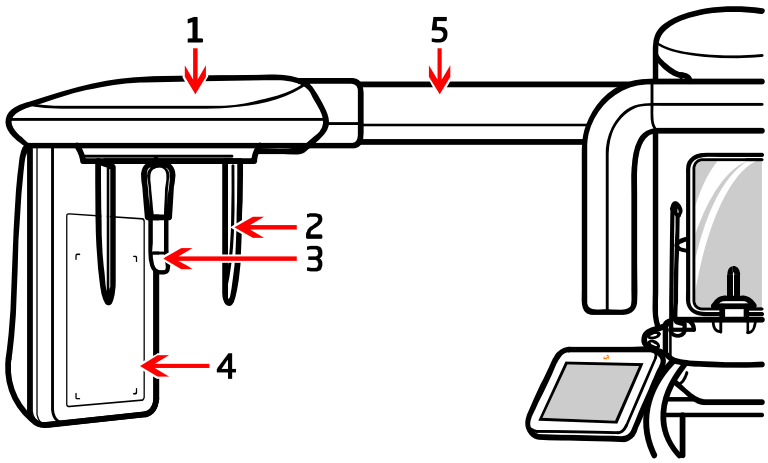
No	Description
1	Case head cover
2	Ear rod(L, R)
3	Nasion support
4	Ceph detector(L)
5	Ceph arm

2.5 One shot Ceph(S) operating section



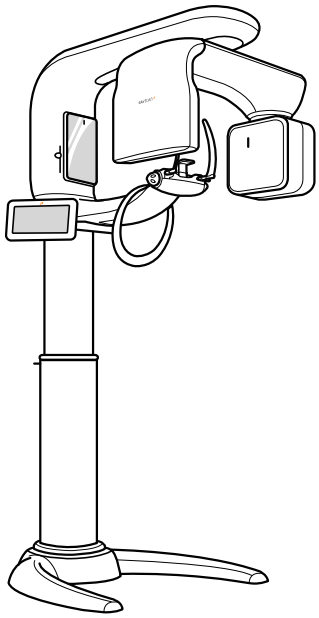
- Adjust the Ear rod and Nasion support to fit the patient's head.
- The head fixture with Ear rod and Nasion support can be rotated to match the protocol.

2.6 One shot Ceph(L) functional components

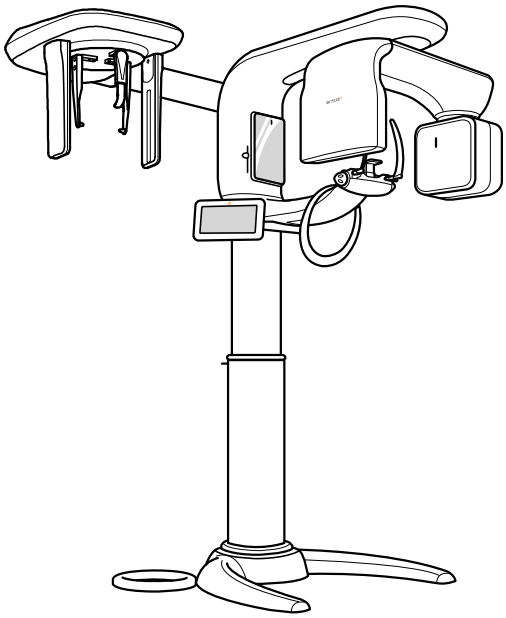


No	Description
1	Case head cover
2	Ear rod(L, R)
3	Nasion support
4	Ceph detector(S)
5	Ceph arm

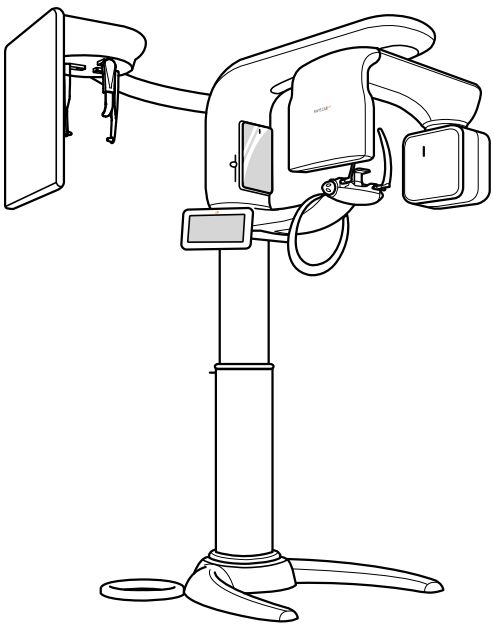
2.7 Final product image



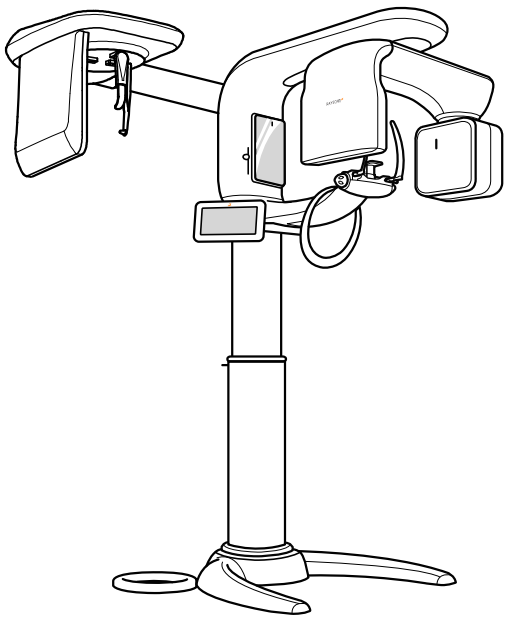
CT+Pano



CT+Pano+Scan ceph



CT+Pano+One shot ceph(L)



CT+Pano+One shot ceph(S)

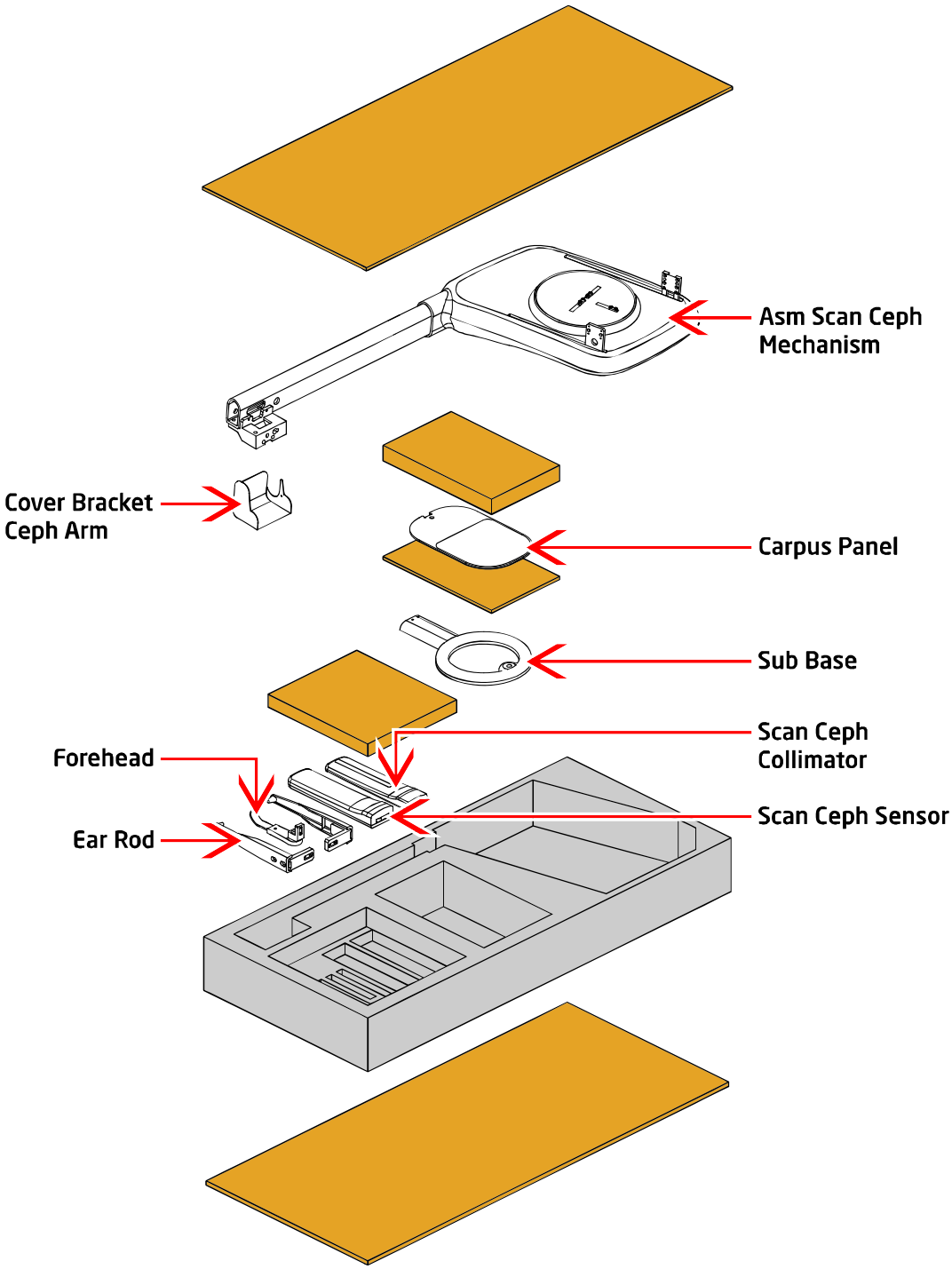
Chapter — 3

Unpacking

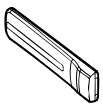
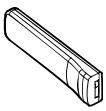
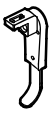
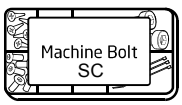
3 Unpacking

3.1 Packing composition

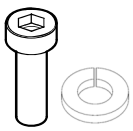
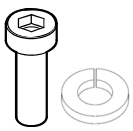
3.1.1 Scan Ceph Module



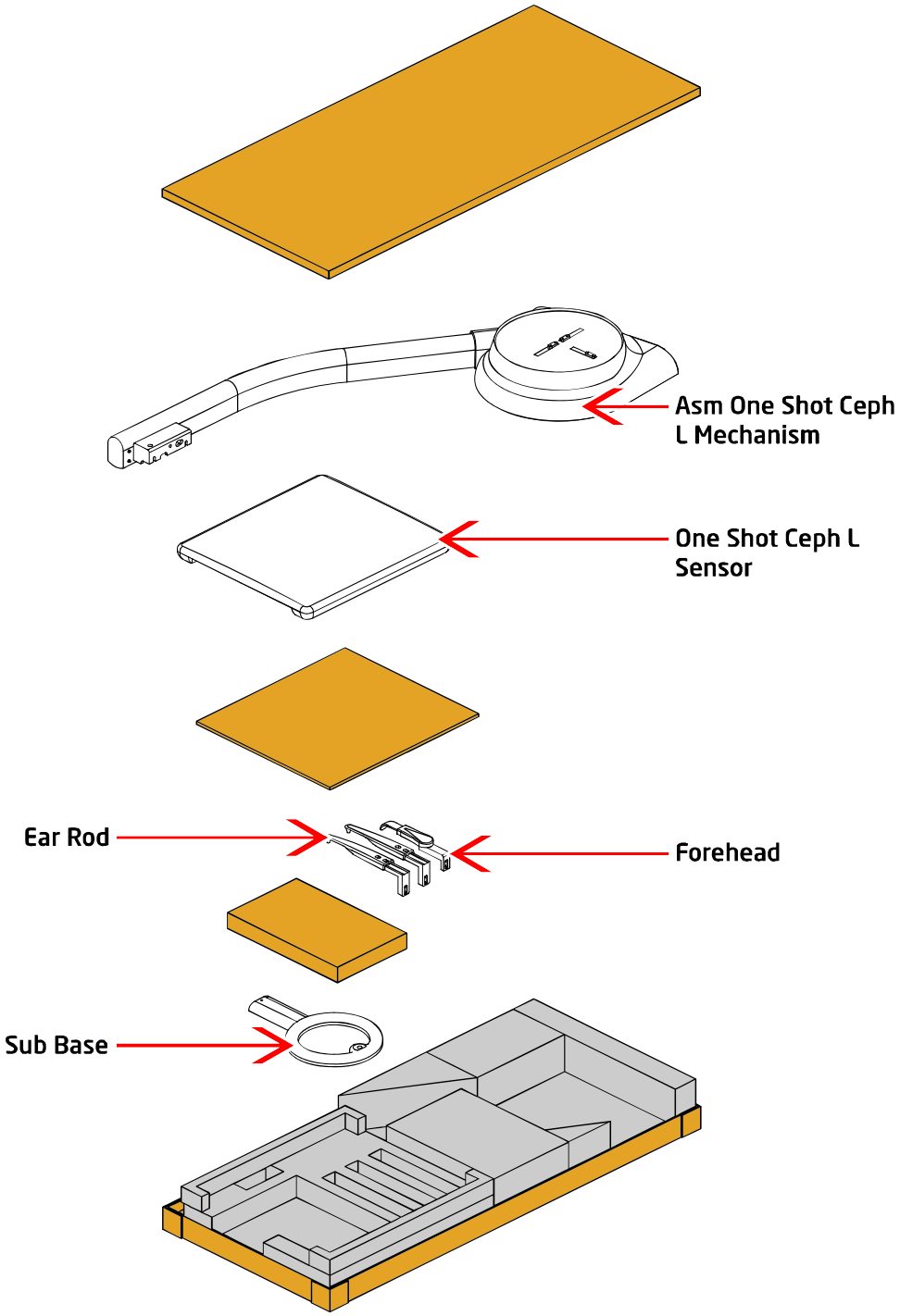
3.1.2 Scan Ceph Module Accessory

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	FRAME SUB BASE		1	2	COVER BRACKET CEPH ARM		1
3	ASM SCAN CEPH COLLIMATOR		1	4	ASM SCAN CEPH SENSOR		1
5	ASM EARLOD L		1	6	ASM EARLOD R		1
7	ASM FORHEAD		1	8	ASM CARPUS MODULE		1
9	Machine Bolt (SC)		1				

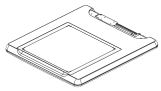
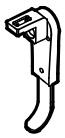
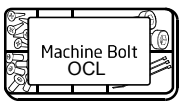
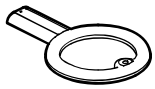
3.1.3 Machine Bolt (SC) Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	SEMS WRENCH BOLT [M4x12]		7	2	WRENCH BOLT+ SPRING WASHER [M6x30]		2
3	STICKER CEPH CASE_OD20		4	4	WRENCH BOLT+ SPRING WASHER [M8x30]		6
5	PAN HEAD WASHER BOLT [M3x6]		3	6	PAN HEAD WASHER BOLT [M4x8]		15
7	FLAT HEAD BOLT [M3x5]		10	8	FLAT HEAD BOLT [M3x8]		9

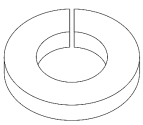
3.1.4 One shot Ceph(L) module



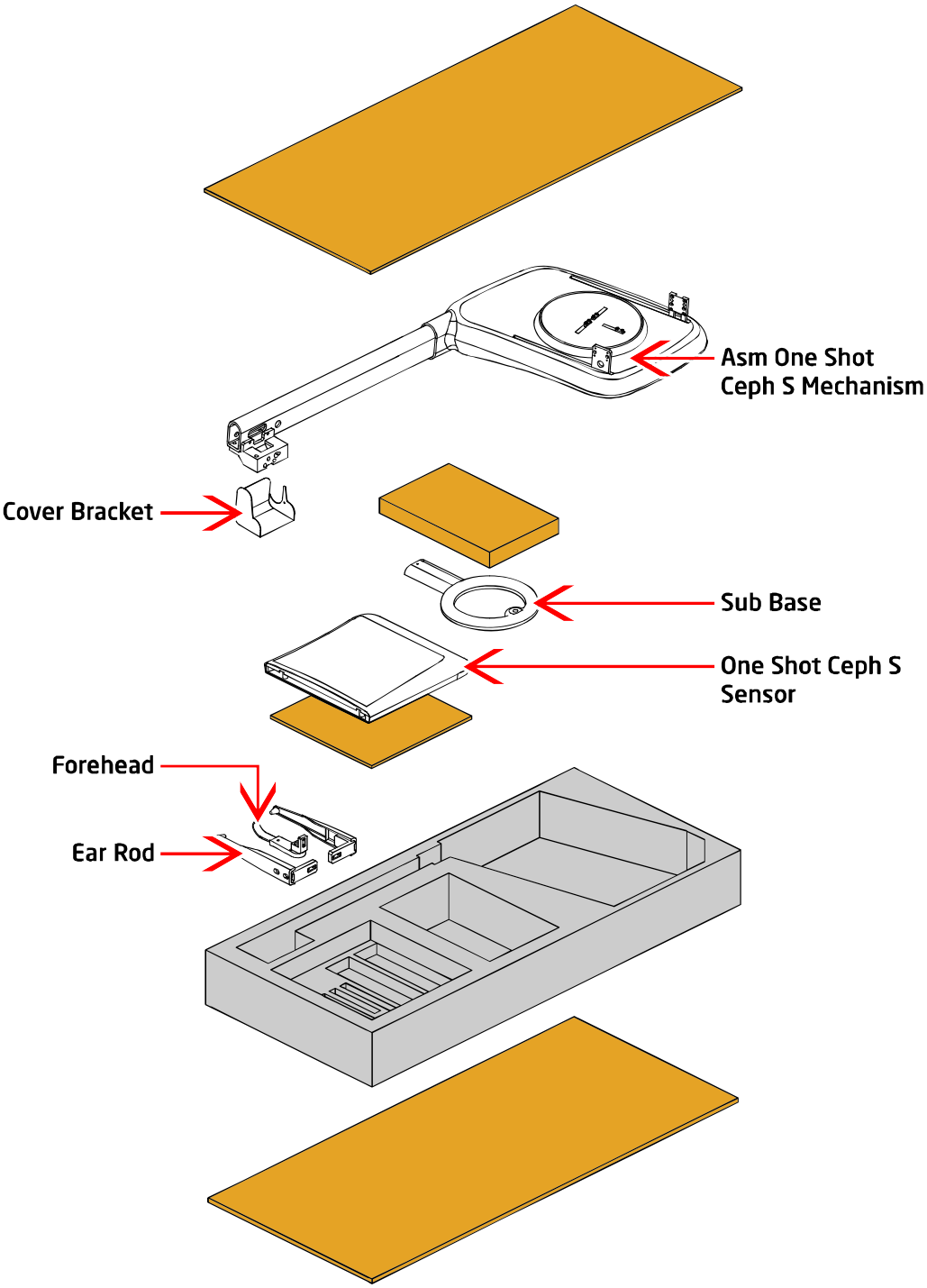
3.1.5 One shot ceph(L) module accessory

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	ASM ONE SHOT L DETECTOR		1	2	DECO CEPH ARM		1
3	ASM EARLOD L		1	4	ASM EARLOD R		1
5	Carpus panel		1	6	ASM FORHEAD		1
7	Machine Bolt (OCL)		1	8	FRAME SUB BASE		1

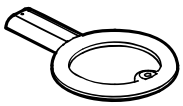
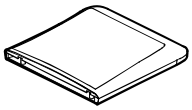
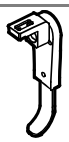
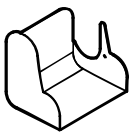
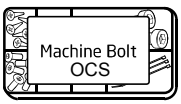
3.1.6 Machine Bolt (OCL)Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	SEMS WRENCH BOLT [M4x12]		9	2	WRENCH BOLT+ SPRING WASHER [M6x30]		2
3	SEMS WRENCH BOLT [M5x15]		9	4	WRENCH BOLT [M8x30]		2
5	PAN HEAD WASHER BOLT [M3x6]		3	6	PAN HEAD WASHER BOLT [M4x8]		7
7	SPRING WASHER [M6]		2				

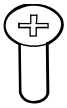
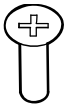
3.1.7 One shot ceph(S) module



3.1.8 One shot ceph(S) module accessory

No	Name	Image	Q'ty	No	Name	Image	Q'ty
1	FRAME SUB BASE		1	2	ASM ONE SHOT S DETECTOR		1
3	ASM EARLOD L		1	4	ASM EARLOD R		1
5	ASM FORHEAD		1	6	ASM CARPUS MODULE		1
7	COVER BRACKET CEPH ARM		1	8	Machine Bolt (OCS)		1

3.1.9 Machine Bolt (OCS)Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	SEMS WRENCH BOLT [M4x12]		7	2	WRENCH BOLT+ SPRING WASHER [M6x30]		2
3	SEMS WRENCH BOLT [M5x20]		2	4	WRENCH BOLT+ SPRING WASHER [M8x30]		6
5	PAN HEAD WASHER BOLT [M3x6]		3	6	PAN HEAD WASHER BOLT [M4x8]		15
7	FLAT HEAD BOLT [M4x16]		3	8	FLAT HEAD BOLT [M3x8]		9
9	CEPH FRONT COVER		2	10	STICKER CEPH CASE_OD20		4

Chapter — 4

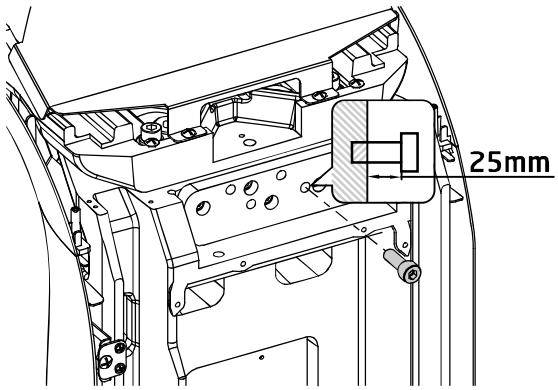
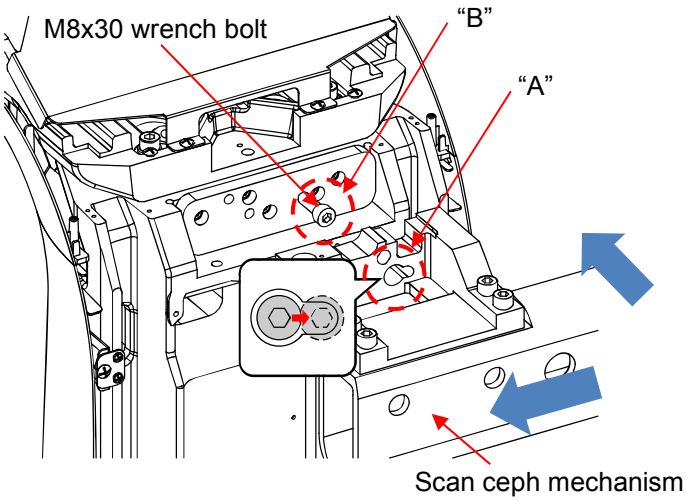
Scan Ceph installation

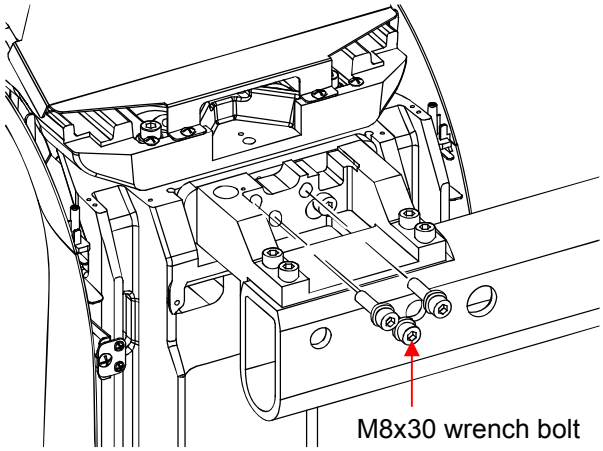
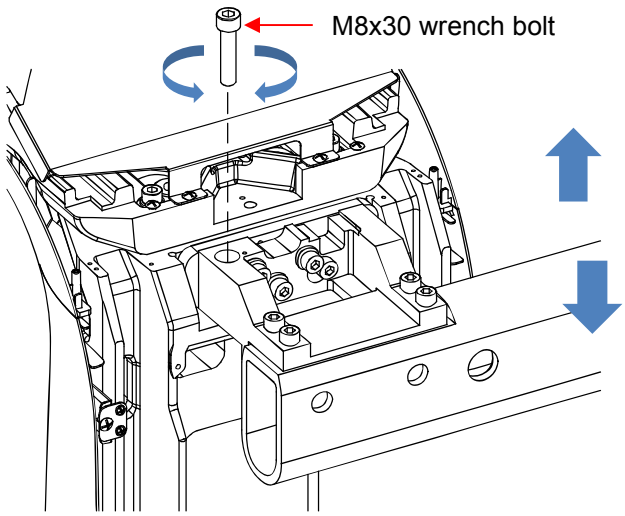
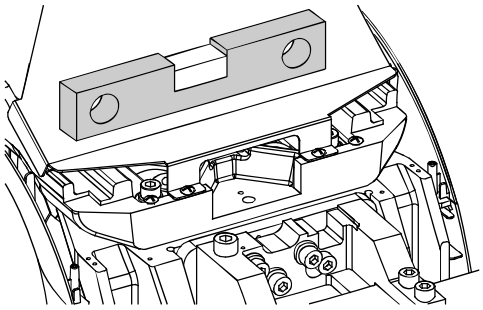
4 Scan Ceph installation

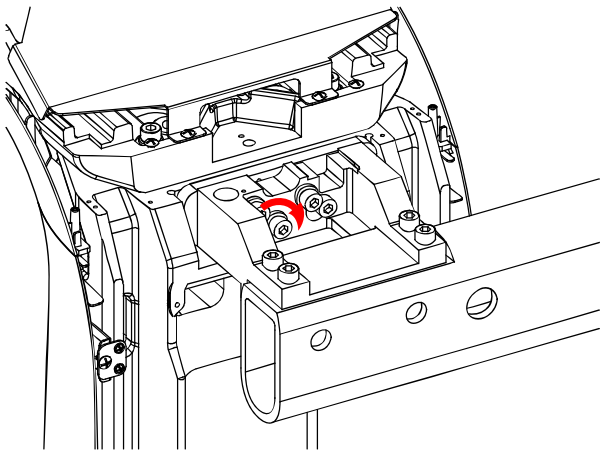
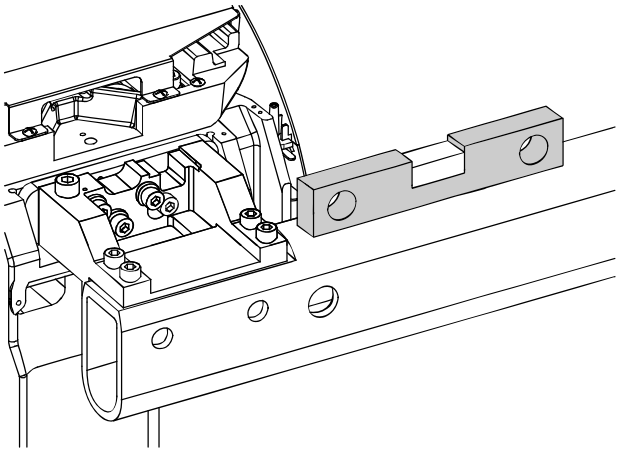
Composition applicable only in models inclusive of the Scan Ceph option.

4.1 Installation of Ceph arms

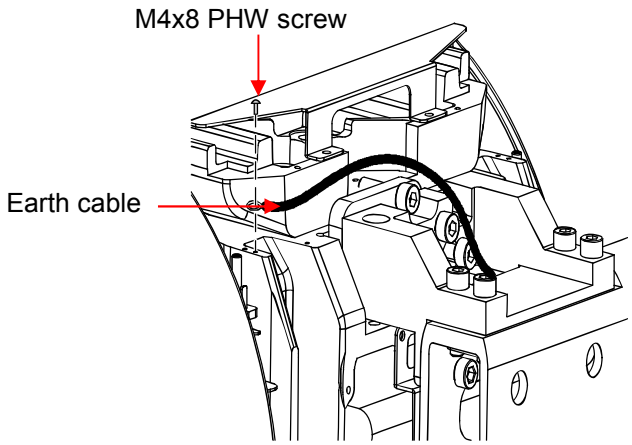
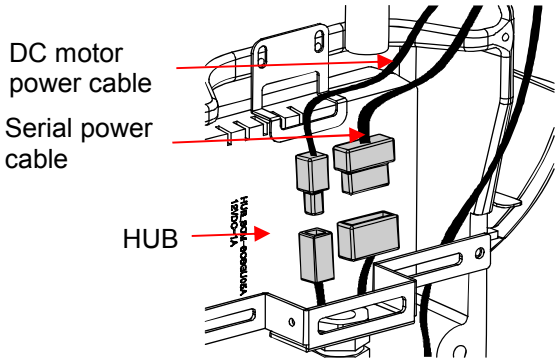
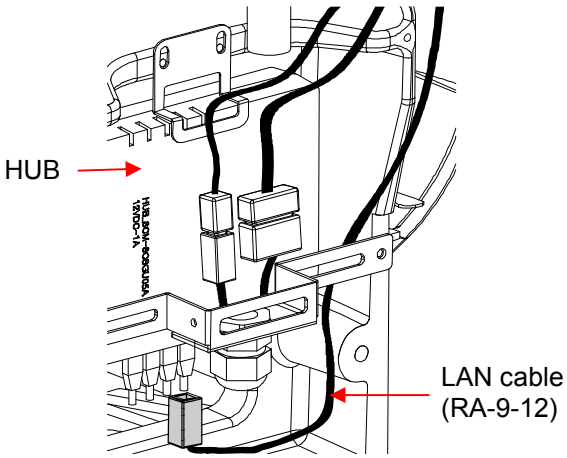
4.1.1 Scan Ceph Mechanism assembly

	Assemble the M8x30 Wrench bolt to protrude about 25mm.
	After you contact through the "B" portion of the M8x30 wrench bolt fixed to the arm fix sub plate part "A" hole of Scan Ceph mechanism, and install the scan ceph mechanism slide to the left.

	In order to fix the Scan Ceph mechanism attached to the body, be concluded loosen the M8 spring washer 3ea and M8x30 wrench bolt 3ea.
	Assemble the M8x30 wrench bolt 1ea for level adjustment of the scan ceph mechanism. Turn the screw to the right to raise the Scan Ceph mechanism, and turn it to the left to lower it.
	Use the level meter to check the level.

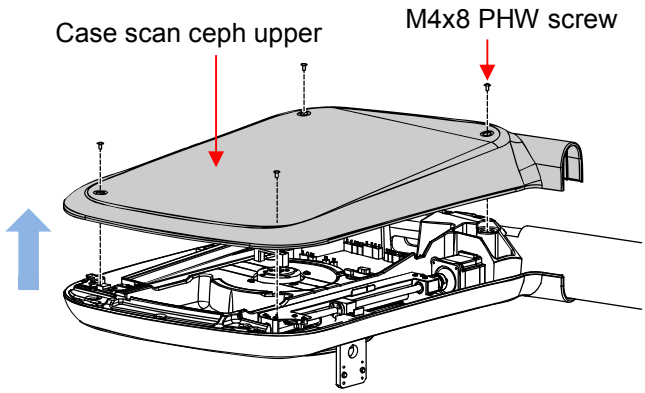
	After the height adjustment of the Scan Ceph mechanism is complete, secure the M8x30 Wrench Bolt 4EA firmly.
	Check the final level.

4.1.2 Scan Ceph cable connection

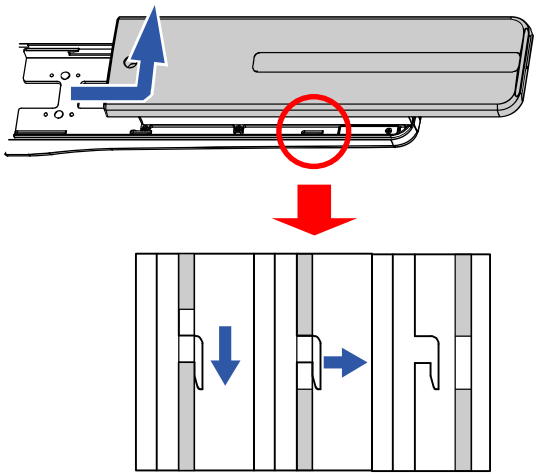
	Secure Earth cable inserted into scan ceph mechanism onto the top of the Main body using M4x8 PHW screw.
	Connect serial power cable of scan ceph sub MCU board inserted in scan ceph mechanism and connector of scan ceph DC motor to connector of the body.
	Connect LAN cable(RA-9-12) of sub MCU board inserted in scan ceph mechanism to HUB.

4.2 Scan Ceph detector and Secondary collimator assembly

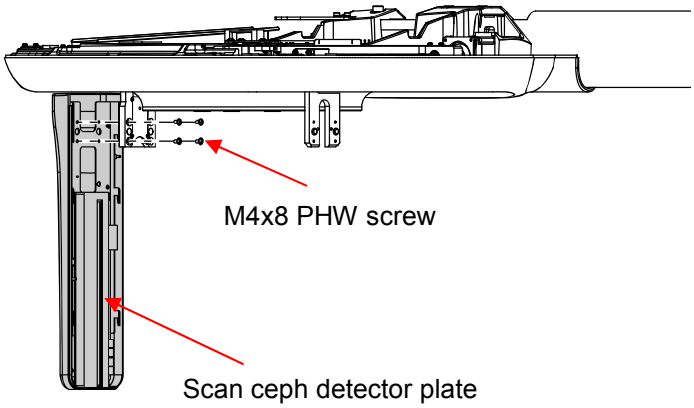
4.2.1 Scan Ceph Detector assembly



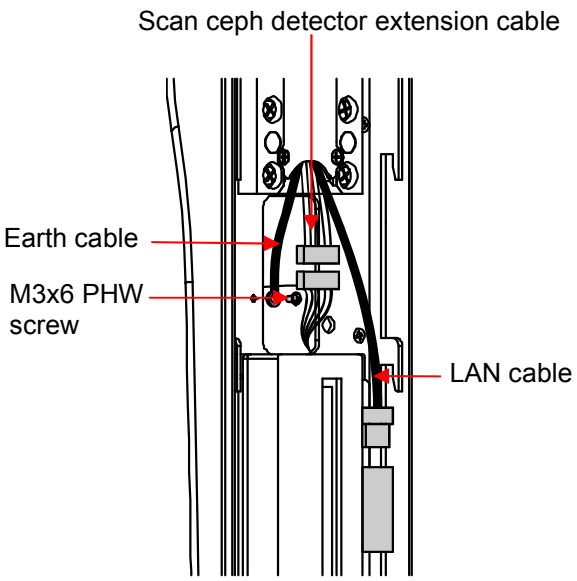
Unscrew M4x8 PHW screw 4ea and disassemble Case Scan Ceph Upper.



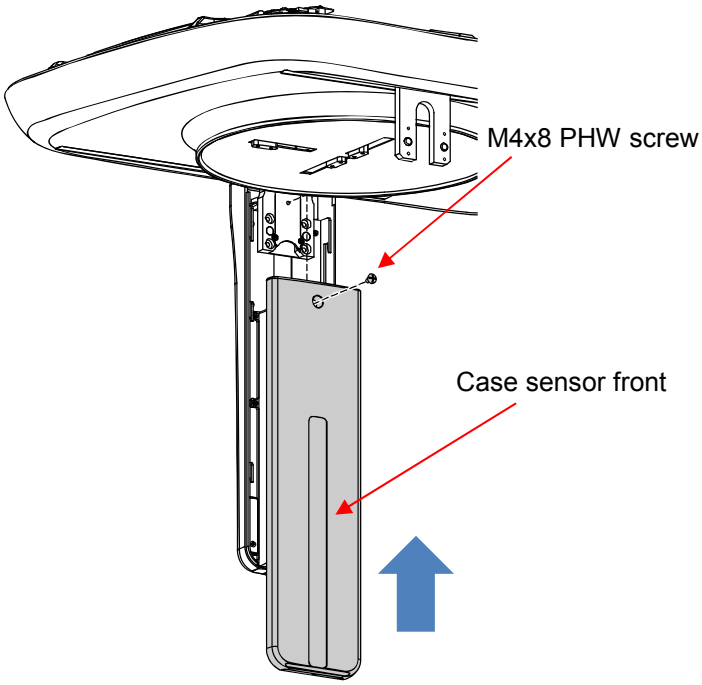
Disassemble the Case Sensor Front of Scan ceph sensor ass'y.



Assemble Scan Ceph Detector rear ass'y with the M4x8 PHW Screw 4EA.

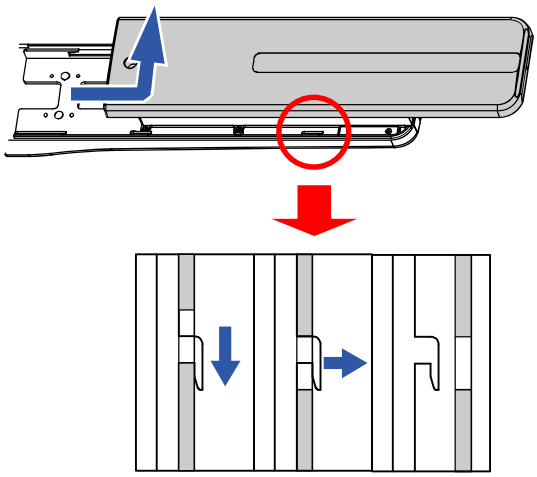
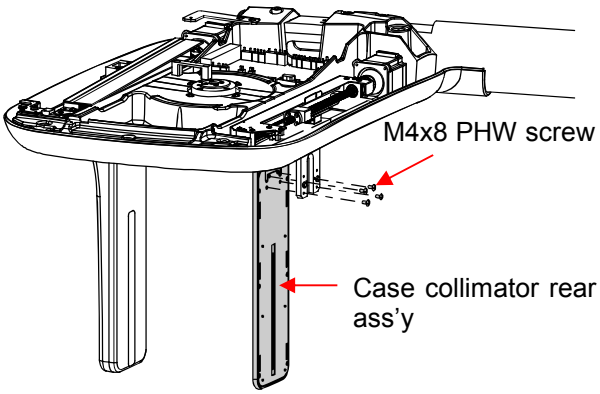
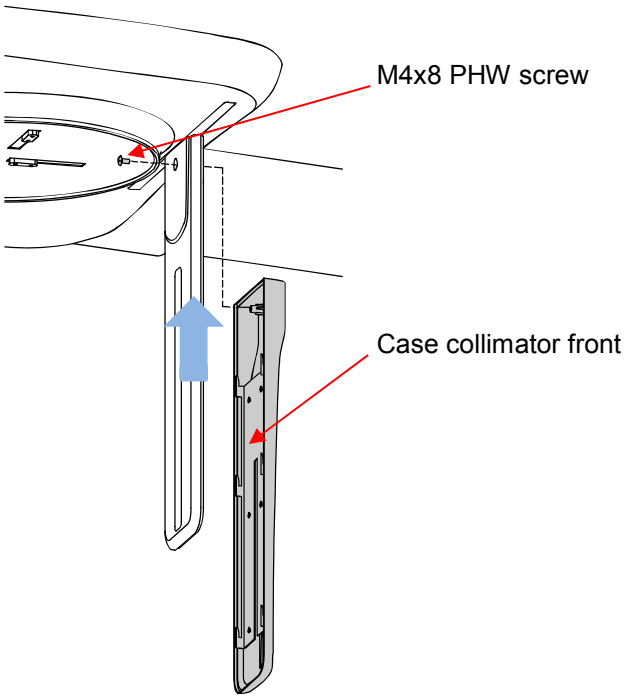


Connect the Scan Ceph Detector extension cable to the LAN cable and assemble the Earth cable with M4x8 PHW Screw.



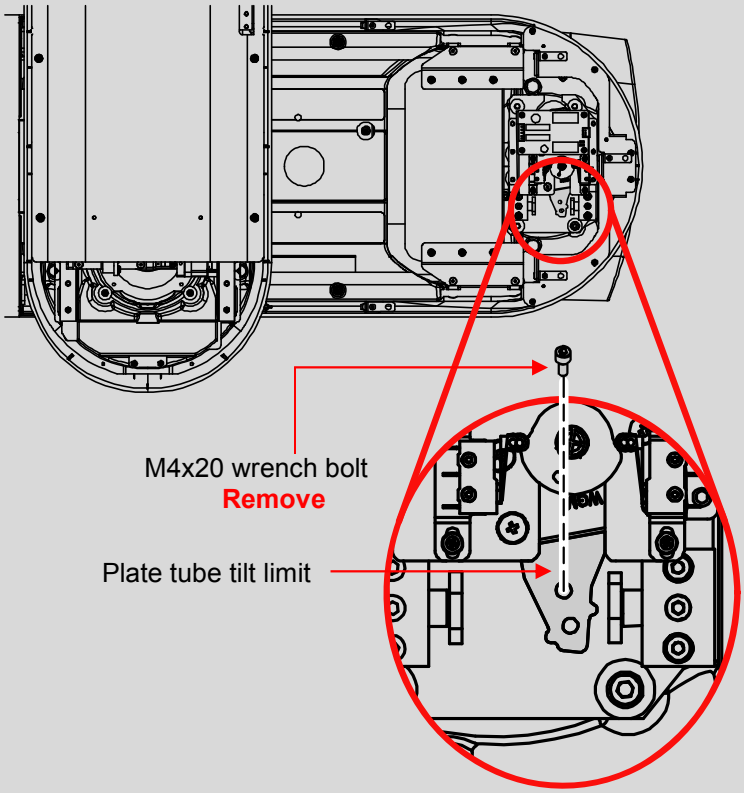
Push up the Case Sensor Front from the bottom to the top so that the hook is caught and assemble with M4x8 PHW Screw 1EA.

4.2.2 Secondary collimator assembly

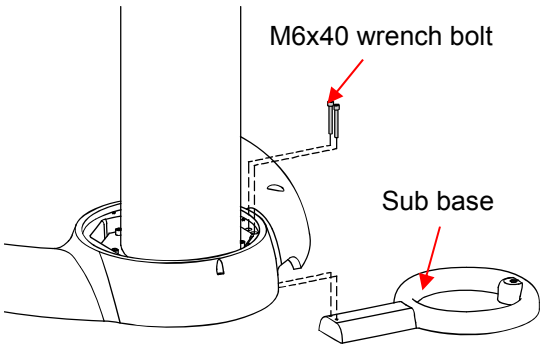
	Disassemble the Case Collimator rear of Secondary collimator ass'y.
	Assemble Case Collimator Rear ass'y with the M4x8 PHW Screw 4EA.
	Push up the Case Collimator Front from the bottom to the top so that the hook is caught and assemble with M4x8 PHW Screw 1EA.

Warning

When installing Ceph, make sure that the tube tilting secure part is disassembled. For disassembly instructions, refer to the main unit(RCT800) installation manual “Disassembling tube tilting”.

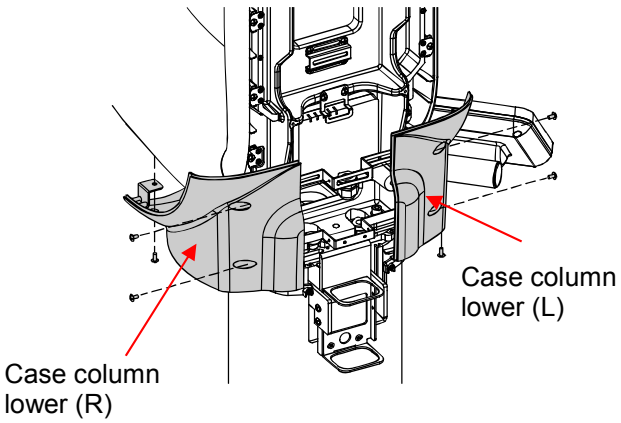


4.3 Sub base assembly

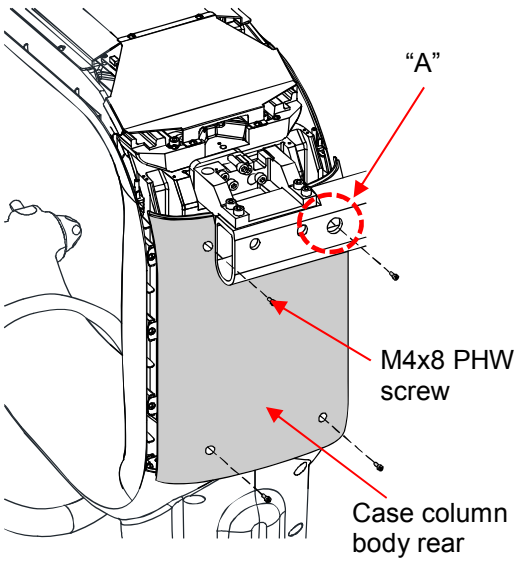


Insert the Sub base into the Main base and assemble with M6x40 wrench bolts 2ea + M6 spring washer 2ea.

4.4 Case assembly

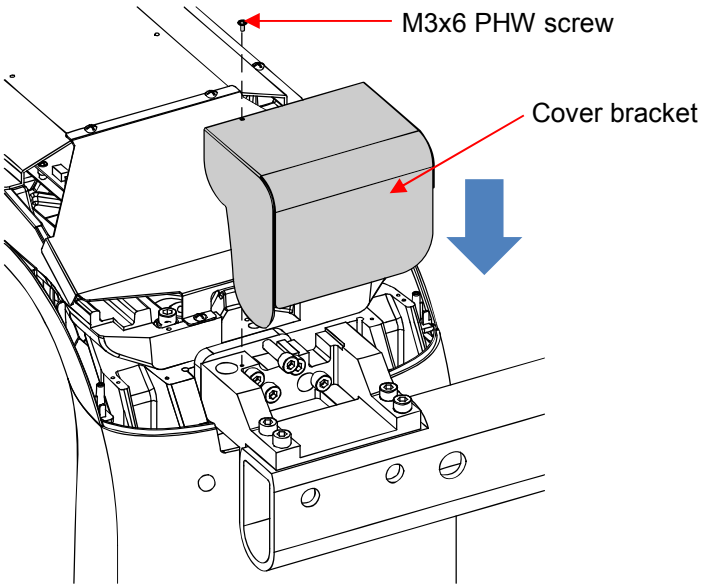
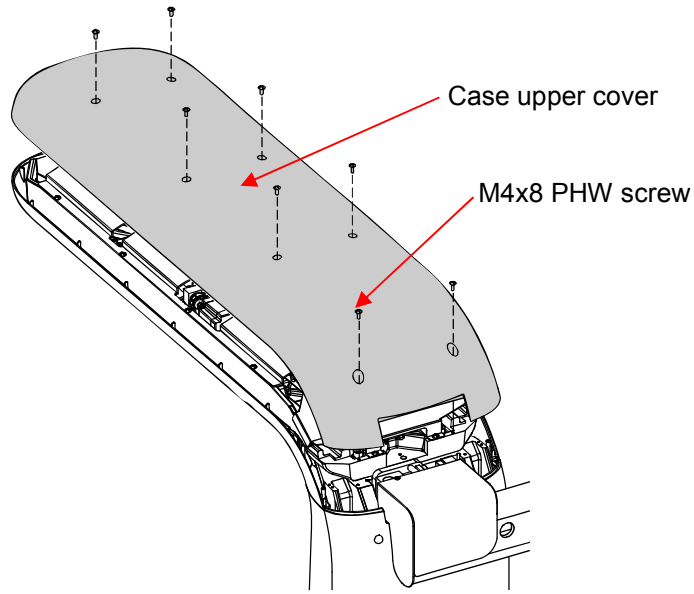


Assemble the Case Column Lower (R) and Case Column Lower (L) with M4x8 PHW Screw 6EA.

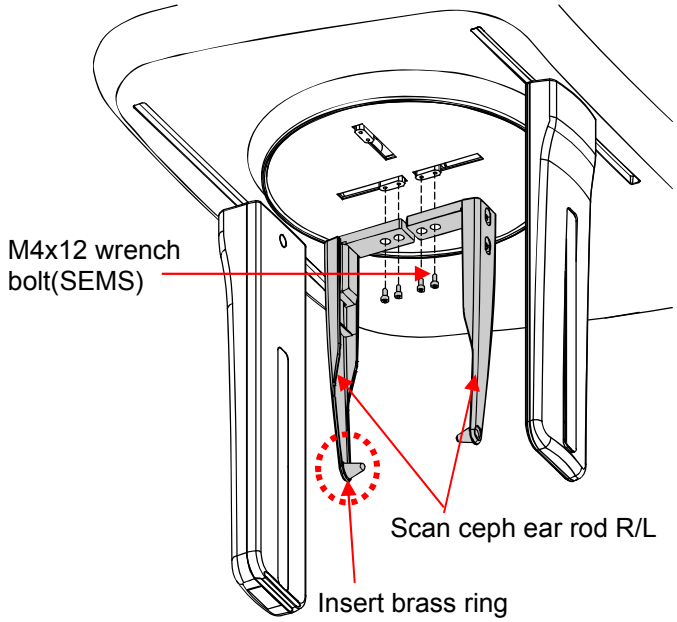


In case of Floor Stand, assemble the Case Column Body Rear with M4x8 PHW screw 6ea.

Note: In case of Wall Mount, do not fix screw “A” part.

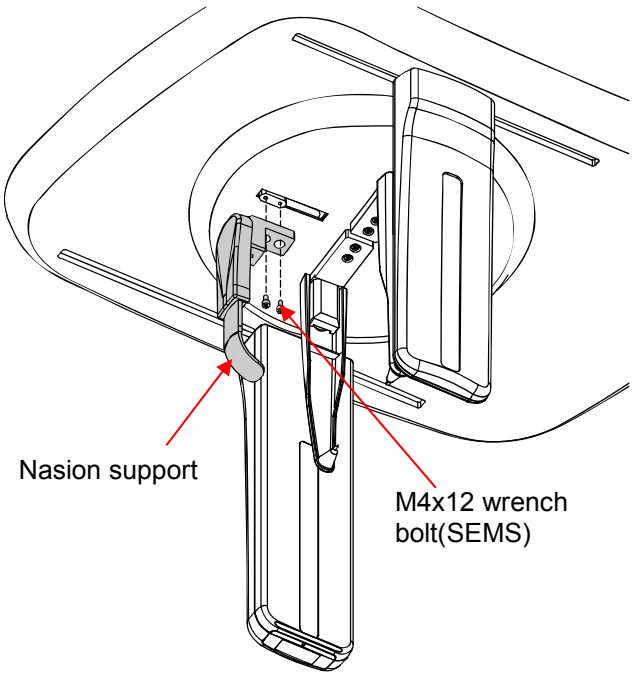
	Insert the Cover Bracket into the connection between the main body and Scan Ceph Mechanism and assemble with M3x6 PHW screw 1EA.
	Assemble the Case Upper Cover with M4x8 PHW screw 8EA.

4.5 Ear rod & Nasion support assembly

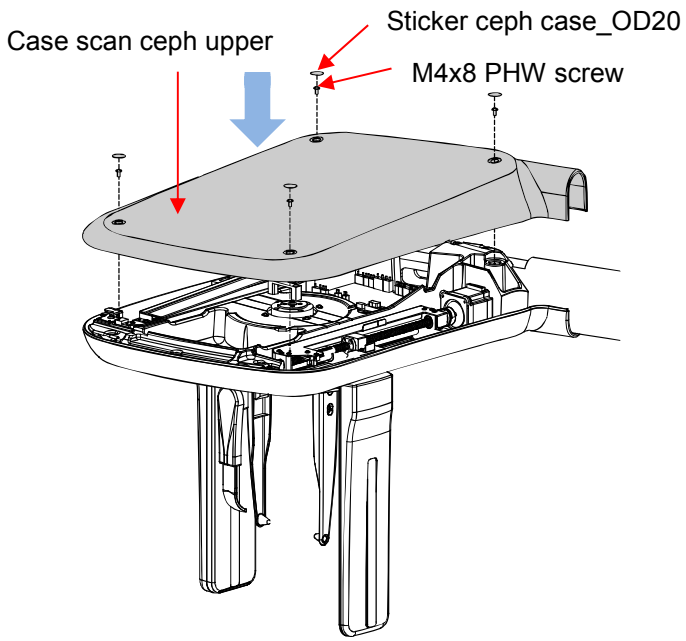


Assemble the Scan Ceph Ear Rod R/L with M4x12 Wrench Bolt(SEMS) 4EA.

Note: Brass ring inserted Ceph Ear Rod must be attached to the left side from a frontal point of view as shown in the figure (Close proximity of the detector).



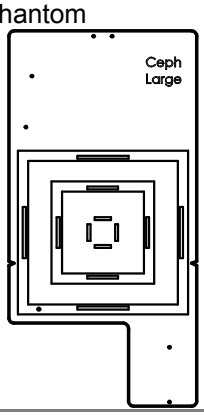
Assemble the Nasion Support with M4x12 Wrench Bolt(SEMS) 2EA.



Assembly the Case Scan Ceph Upper with the M4x8 PHW screw 4ea and finish with Ceph Case_OD20 sticker 4ea.

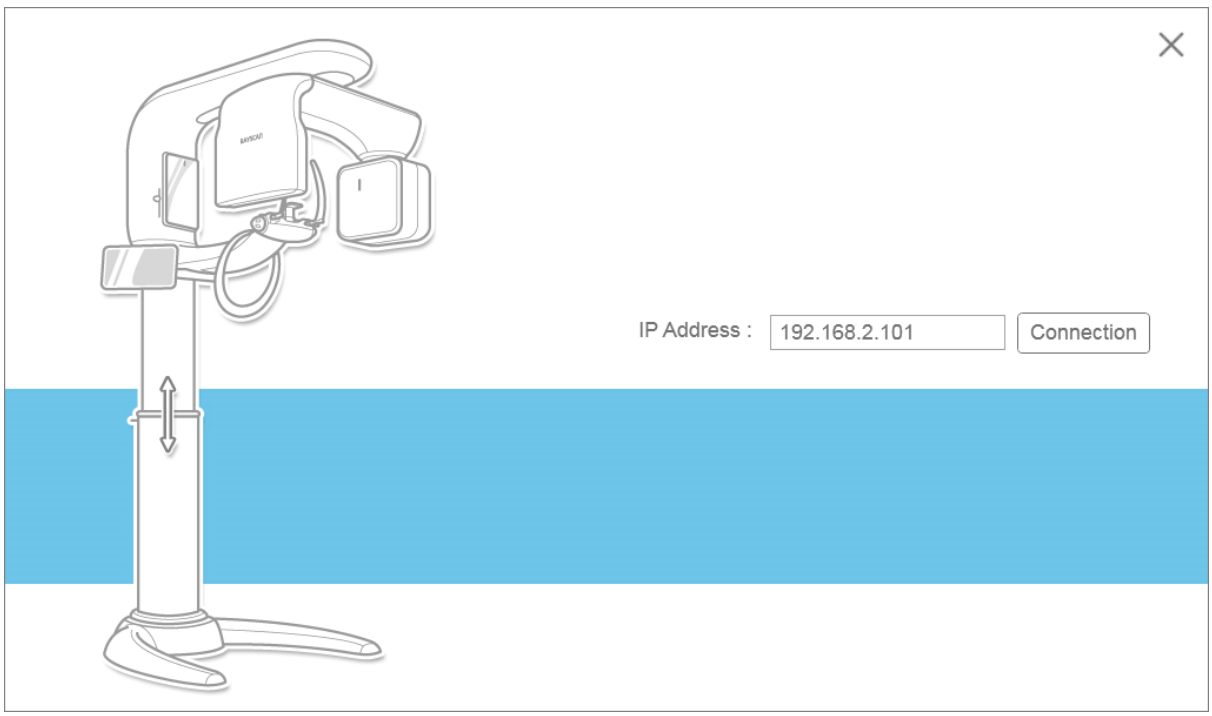
4.6 Setting Wizard

4.6.1 Required tools

No	Contents / Image	Description
1	Light Collimation Phantom 	-. It is used to align which matches the light irradiation area with real X-ray area. -. The phantom is included in the accessory box of the product.

4.6.2 Setting Wizard connection

This is the initial screen of the Setting Wizard on the monitor.

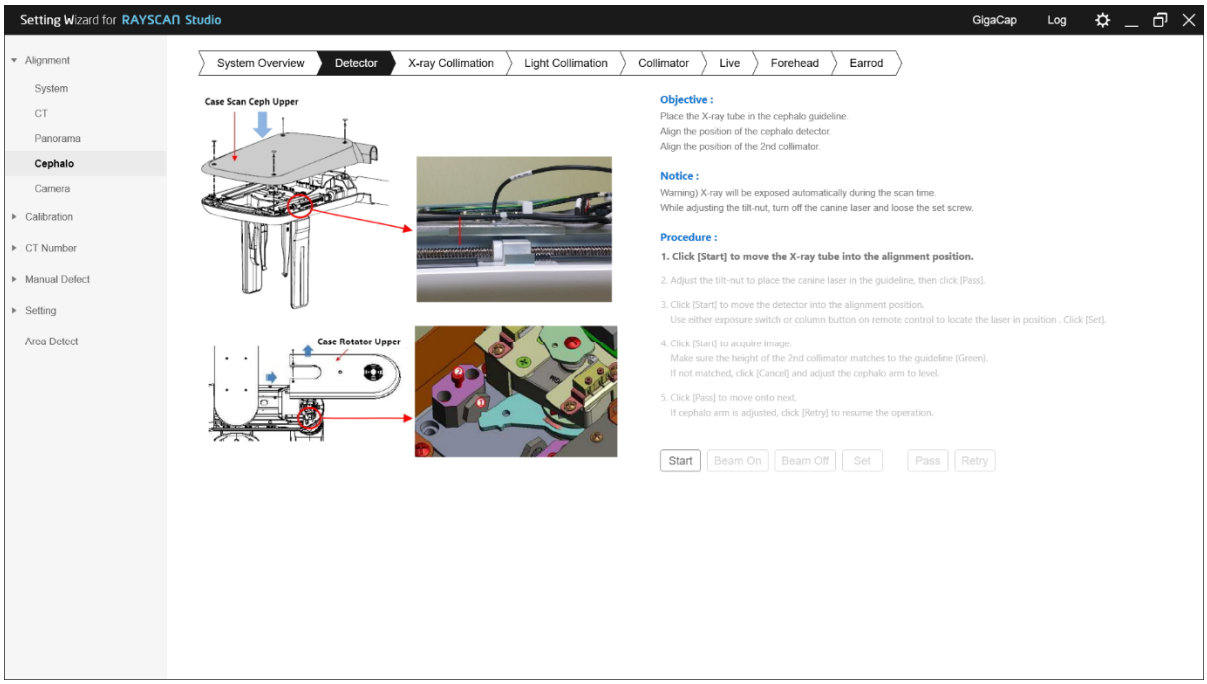


No	Description
1	The default IP address of the device is 192.168.2.101.
2	When you press the [Connect] button, it tries to connect with THU and check the connection status with the information written in IP address.
3	If the connection is successful, the screen is switched to Main screen.

4.6.3 Alignment

4.6.3.1 Detector

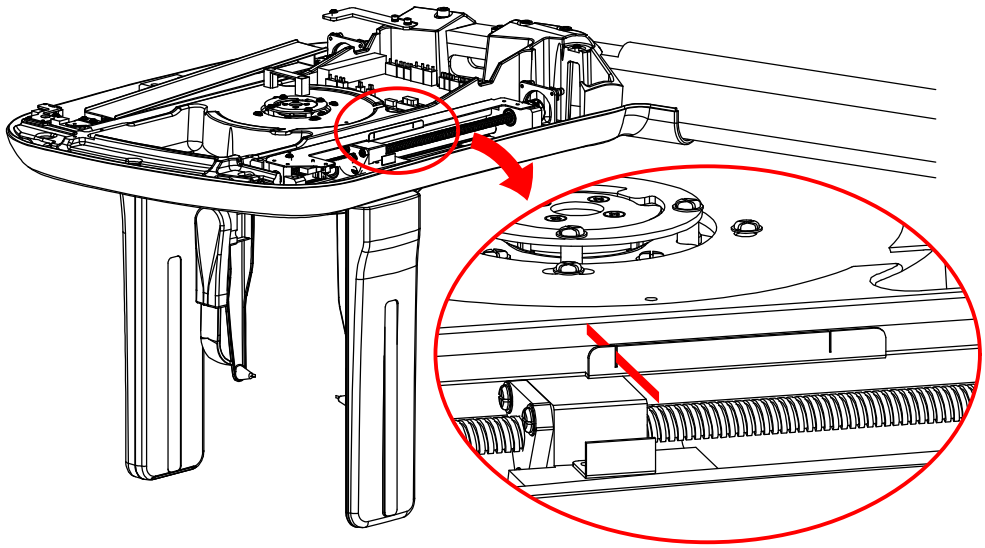
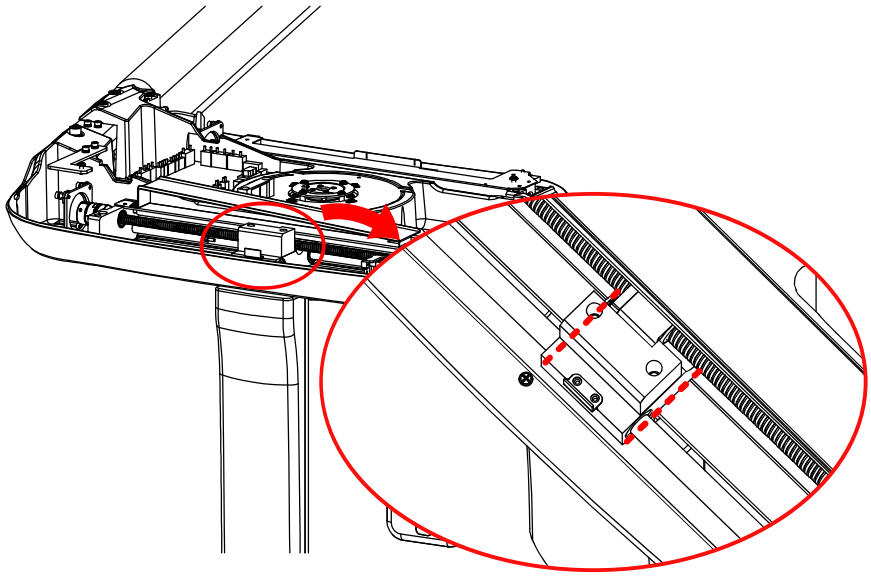
This step guides how to align the Scan Ceph Detector position and tilt of Tube Tank of Ceph. This procedure is performed by removing the Case Scan Ceph Upper. And lower the height of the Lift column using the remote control or touch screen.



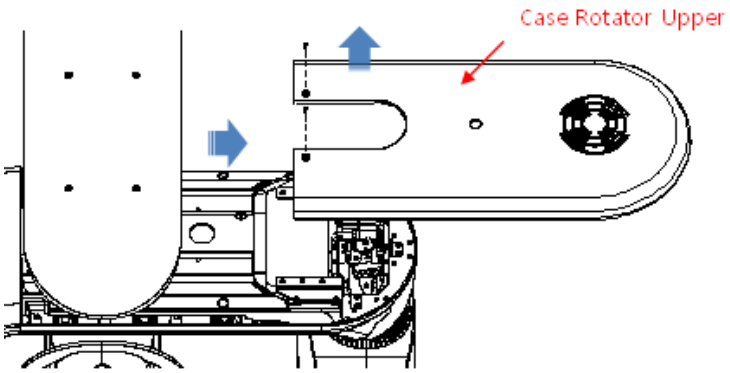
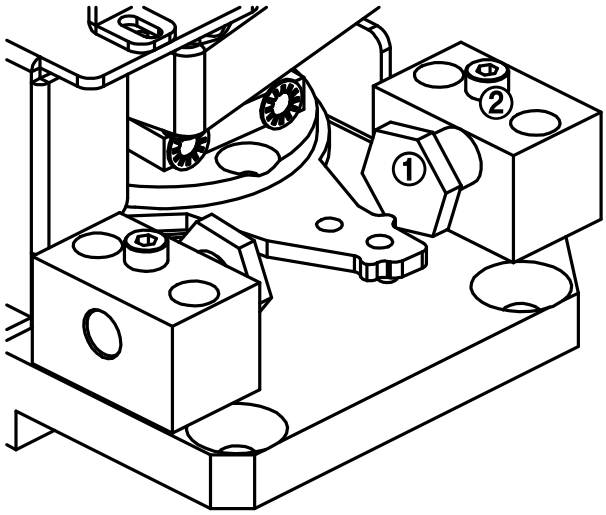
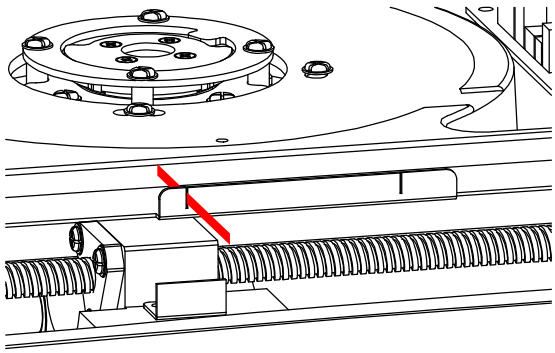
Procedure

No	Description
1	Press the [Start] button to check the position of the canice beam.
2	If the canine beam is positioned differently from the figure, position proceed to align using [Beam On] and [Beam Off] buttons. Refer to [Correct position of canine beam and detector].
3	Click the [Start] button and check the detector position.
4	Adjust the position of the detector as shown in the figure.
5	When alignment is completed, click the [Pass] button.

Correct position of canine beam and detector

No	Description
1	Canine laser beam must pass through the notch as guided. 
2	Scan Ceph detector must be in the middle of 2 lines. 

How to adjust the Tube Tilt

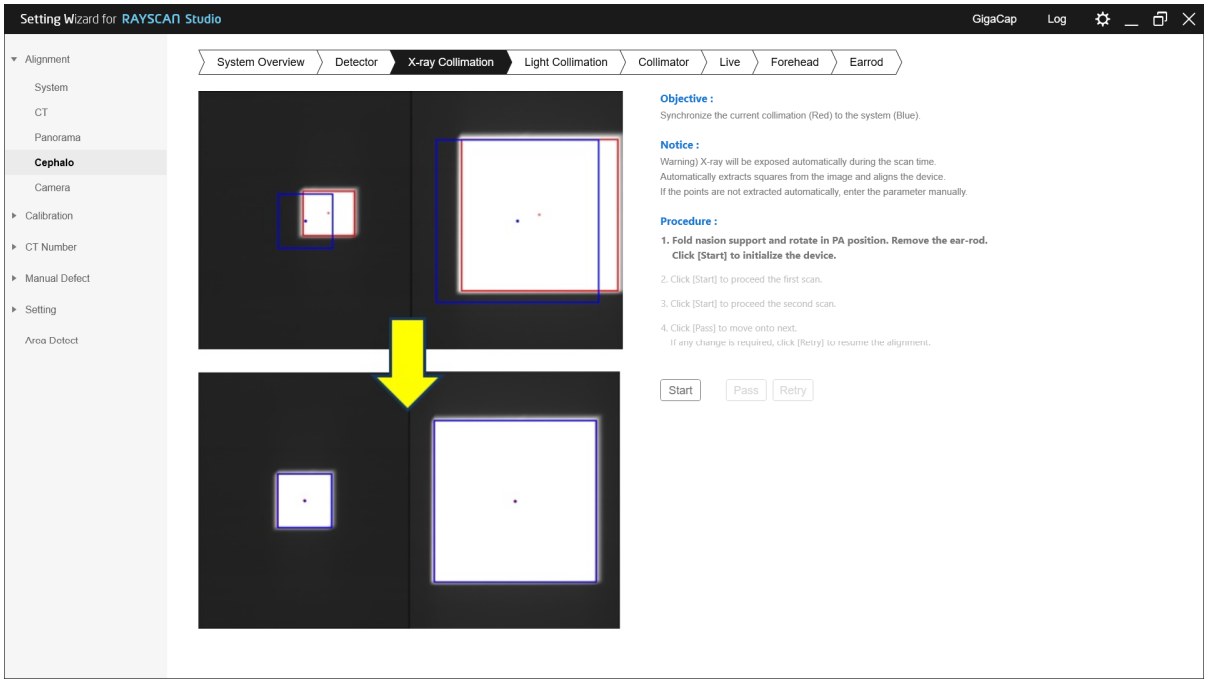
No	Image	Description
1		Loose M4x8 Truss Head Screw (2ea) with Philips and then slide out Case Rotator Upper as the figure below.
2		Turn off the canine beam, loose the Set screw(②) and adjust the Tilt nut(①) to touch the Tube Tilt Plate. Use the remote controller to turn on and off during the adjustment.
3		The laser must pass through the notch as guided.

How to adjust the detector position

No	Description
1	Use the exposure switch or up/down buttons on the remote controller.
2	Click [Set] button to finish the step.

4.6.3.2 X-ray Collimation

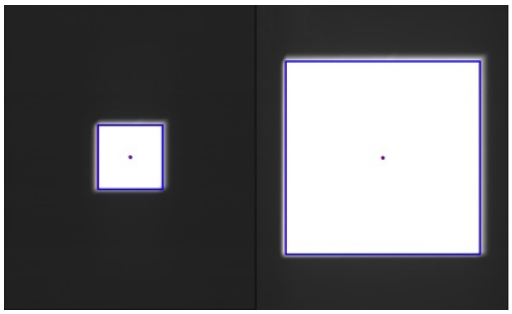
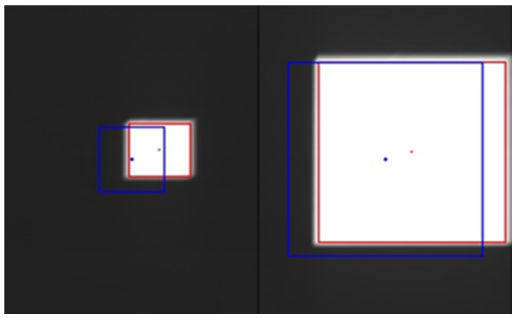
This step guides how to align the collimators. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

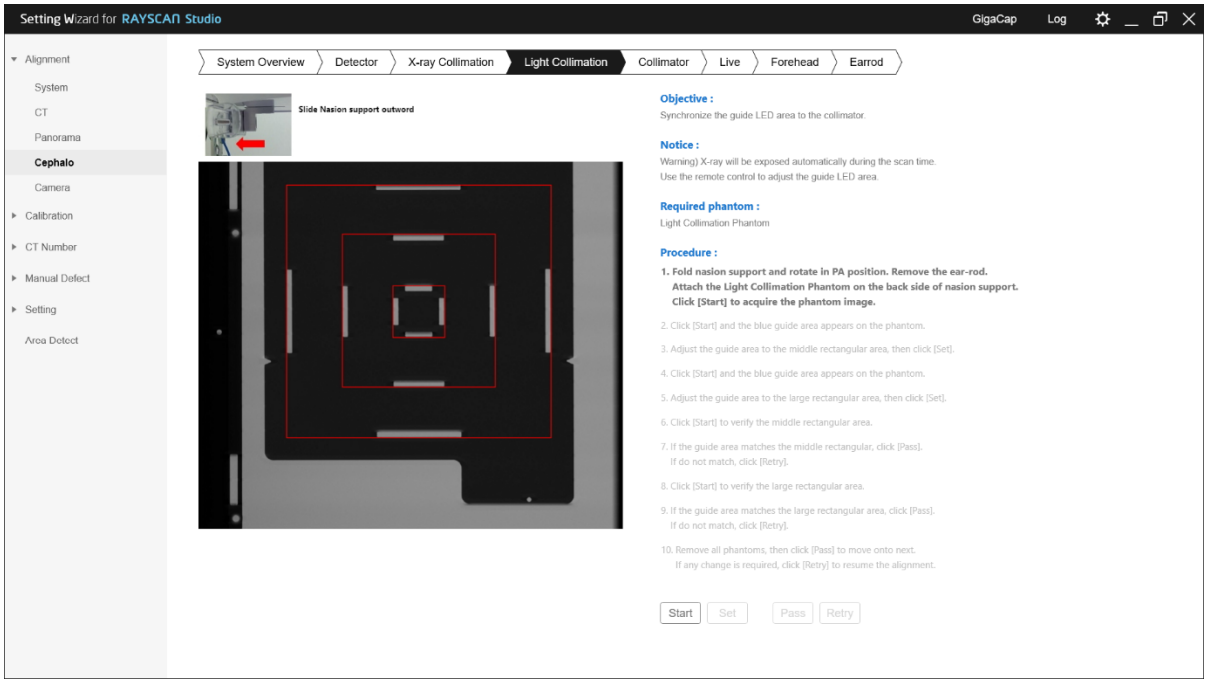
No	Description
1	Remove any object between Tube head and the Detector.
2	Click the [Start] button to scan the first image. ***Note*** Be aware that actual X-ray exposes.
3	Click the [Start] button again to scan the second image. ***Note*** Be aware that actual X-ray exposes.
4	If the rectangular area extracted from the captured image matches the guideline, click the [Pass] button to complete the step.
5	If the rectangle area extracted from the captured image does not match the guideline, click the [Retry] button to go through the step again.
6	Repeat until the rectangular area matches the guideline.

Check actual exposure area

No	Image	Description
1		This image is acceptable. (Pass)
2		This image is not acceptable. Repeat the step to resolve. (Fail)

4.6.3.3 Light Collimation

This step guides how to align the active LED areas. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



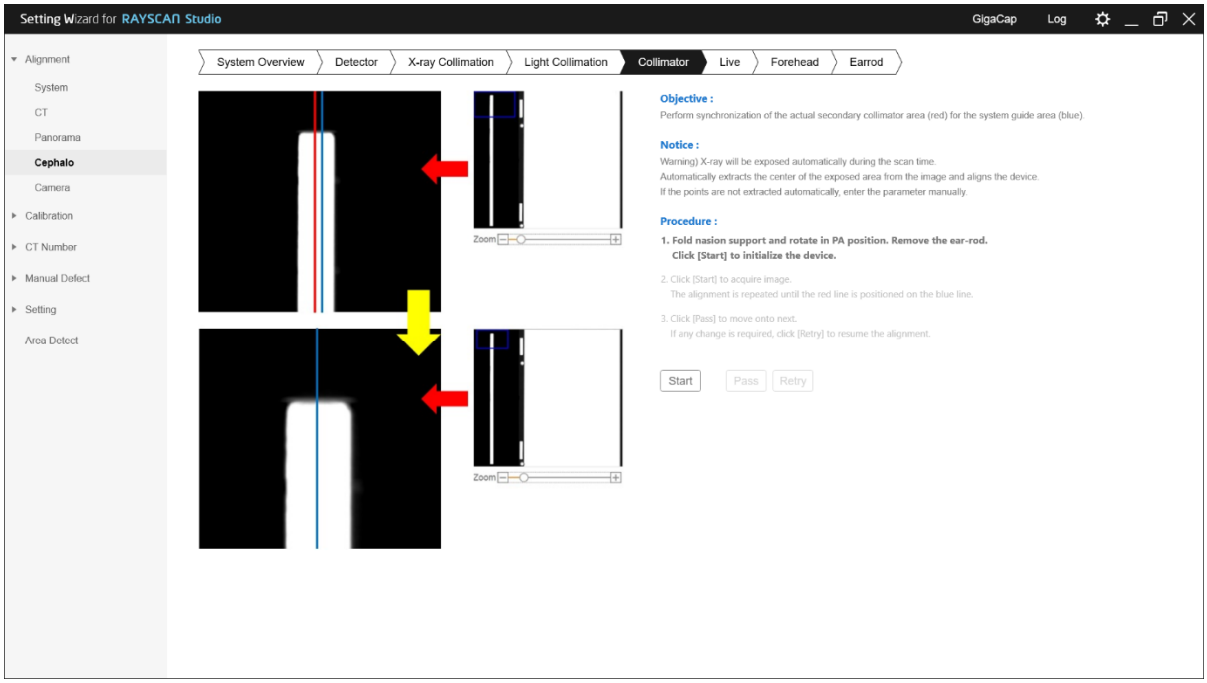
Procedure

No	Description
1	Attach the Light Collimation Phantom onto the Forehead bar (“Ceph” mark must face tube tank.).
2	Click [Start] button and wait for collecting the phantom image. ***Note*** Be aware that actual X-ray exposes.
3	Click [Start] button to set up the small FOV.
4	On remote controller, press light button to turn the LED lights on and move the collimator into the small rectangular.
5	Press [Set] button to move onto the next step.
6	Click [Start] button to set up the middle FOV.
7	The LED lights are automatically turned on and move the collimator into the middle rectangular.
8	Press [Set] button to move onto the next step.

9	Click [Start] button to verify that the Light Collimation are aligned in the position of the small rectangle.
10	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.
11	Click [Start] button to verify that the Light Collimation are aligned in the position of the middle rectangle.
12	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.

4.6.3.4 Collimator

This step guides how to align the 2nd collimator. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

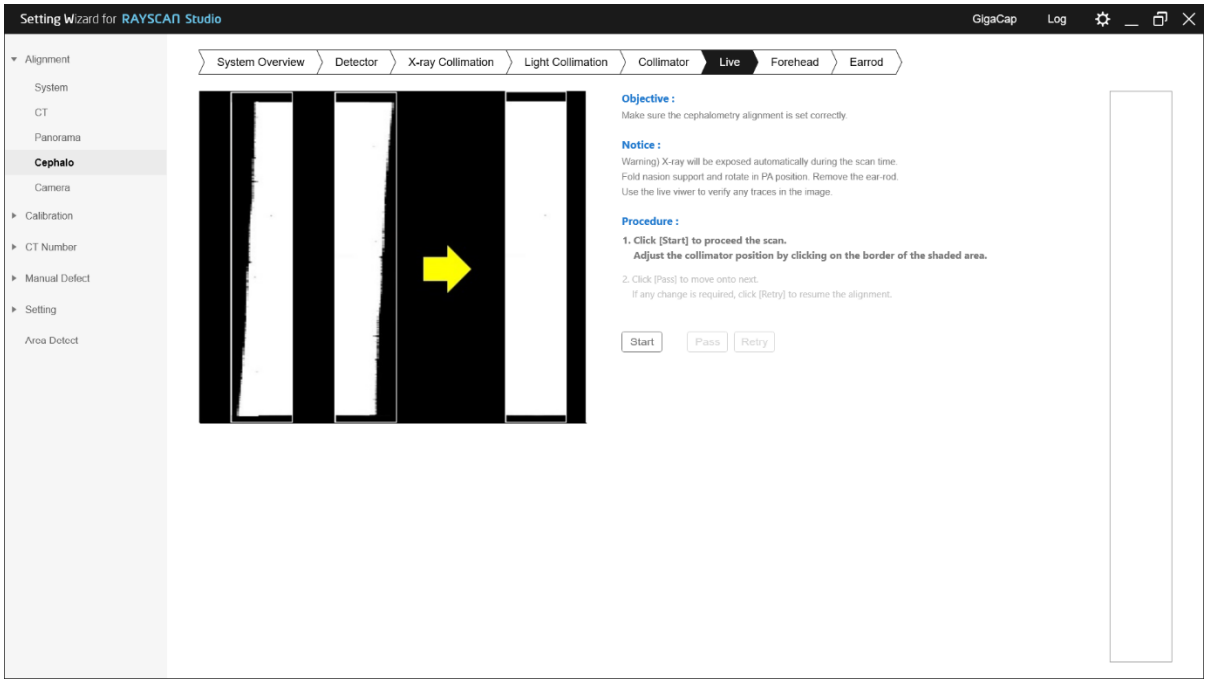


Procedure

No	Description
1	Please fold Forehead bar, rotate to PA position, and remove the ear-rods.
2	Click [Start] button and the system finds the center of the 2nd collimator (blue) as the first trial. ***Note*** Be aware that actual X-ray exposes. If the result is wrong, move the line (red) and click at the center.
3	Click [Start] button and the system finds the center of the 2nd collimator (blue) as the second trial. ***Note*** Be aware that actual X-ray exposes. If the result is wrong, move the line (red) and click at the center.
4	Repeat the steps in case of failure. Otherwise, click [Pass] button to go on the next stage.

4.6.3.5 Live

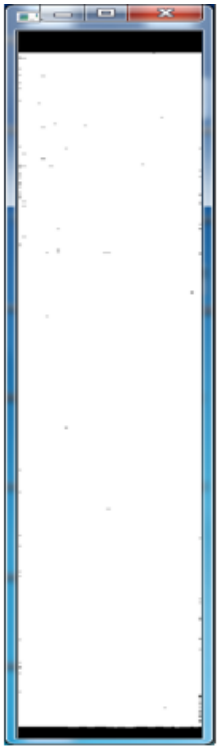
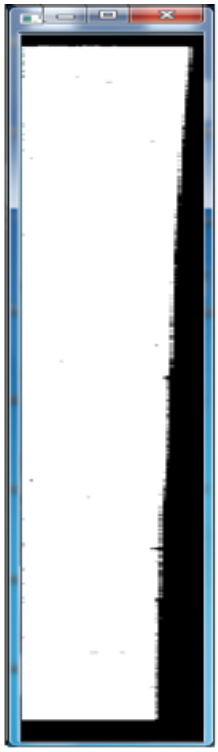
This step guides how to verify that the collimation is accurate. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

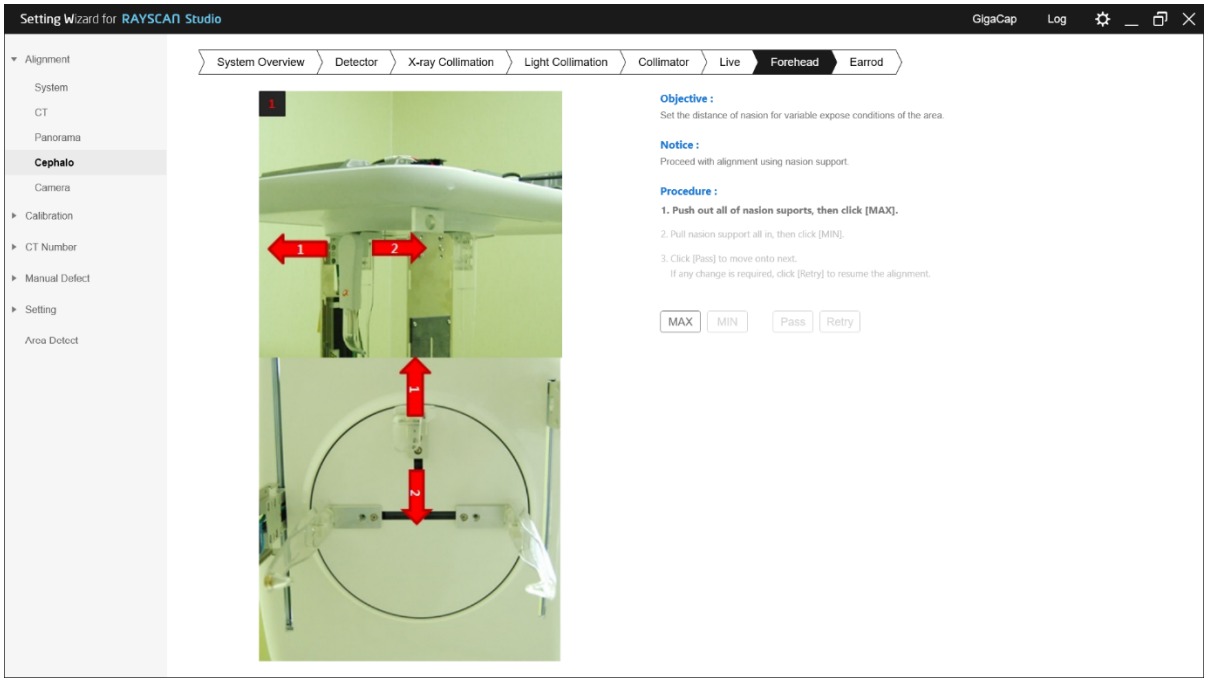
No	Description
1	Please fold Forehead bar, rotate to PA position, and remove the ear-rods.
2	Click [Start] button to proceed the scan.
3	Check any shaded areas in the live view as the figure.
4	If the left/right images are not uniformly obscured in the Viewer, click and align the boundaries of the heavily obscured area.
5	If there is no area to hide, click the [OK] button.
6	Click [Pass] button to go on the next stage.
7	To check again, click the [Retry] button.

Check

No	Description / Image
1	Live viewer  Normal Collimator position  Abnormal Collimator position on left side  Abnormal Collimator position on right

4.6.3.6 Forehead

This step guides how to verify the location of the Forehead bar.

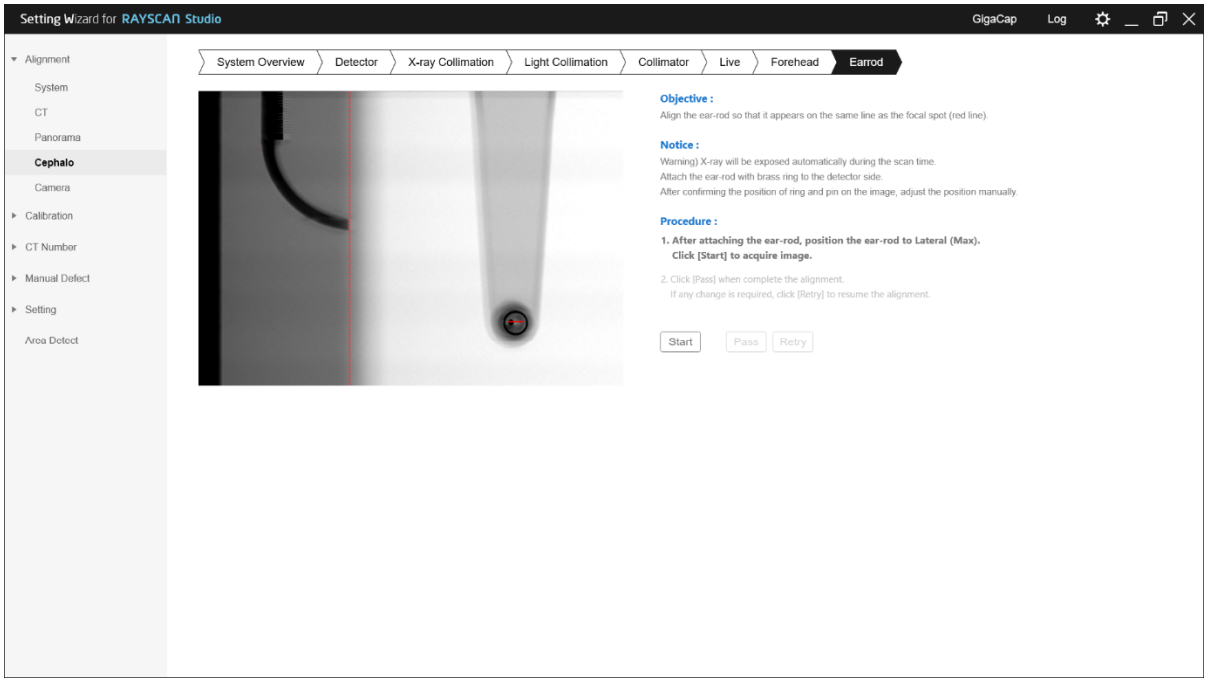


Procedure

No	Description
1	Attach the ear-rods.
2	Pull the forehead all the way out and click on [MAX] button.
3	Push the forehead all the way in and click on [MIN] button.
4	As finish, click [Pass] button to finish the step.
5	Click the [Retry] button to proceed again.

4.6.3.7 Ear rod

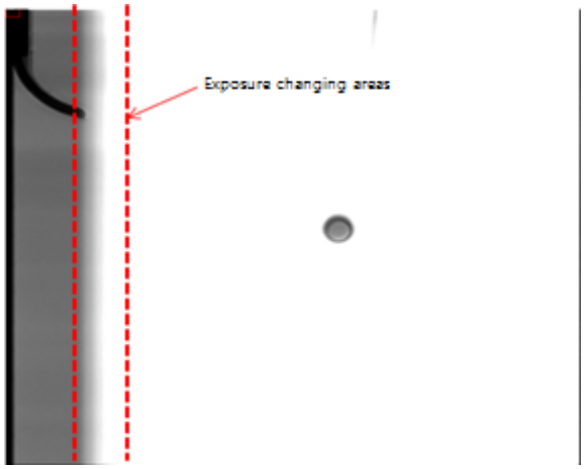
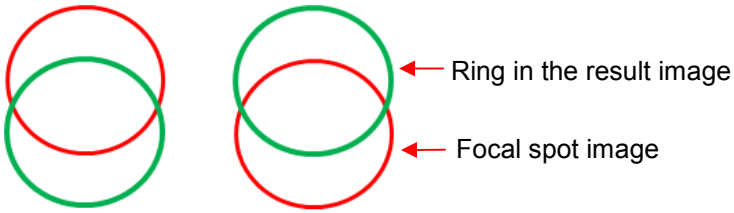
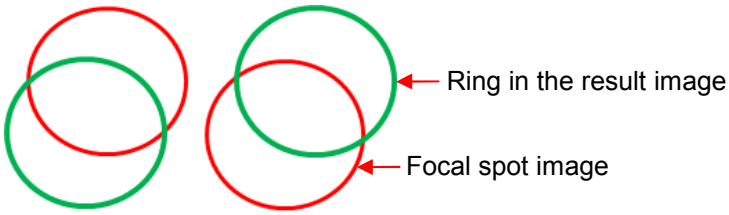
This step guides how to align the ear rods.



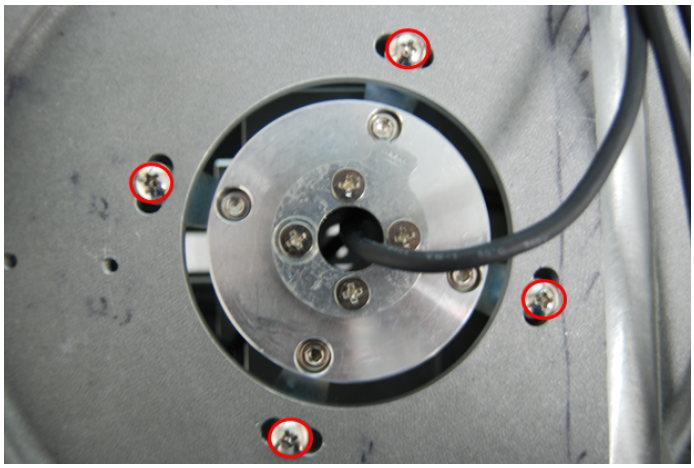
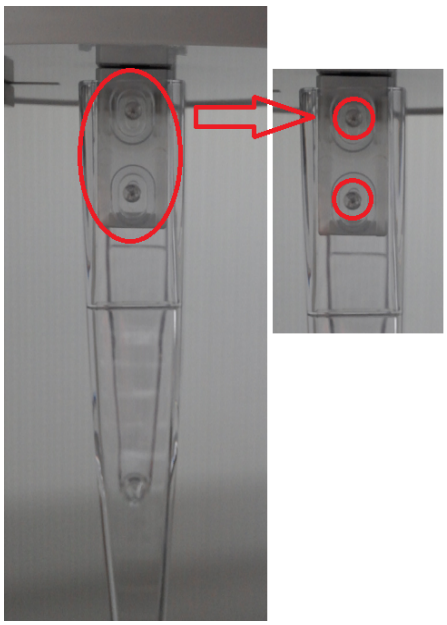
Procedure

No	Description
1	Attach the ear-rods.
2	Click the [Start] button to scan the first image. ***Note*** Be aware that actual X-ray exposes.
3	Check that the ear-rod pin is displayed on the red line in the scanned image.
4	When align is completed, click [Pass] button to complete the step.
5	If the alignment is not correct, adjust the ear-rod so that the position of the right crosshair of the ear-rod and the position of the left ring are within the displayed area of the image, and then click the [Retry] button.

Check the image near Nasion support area

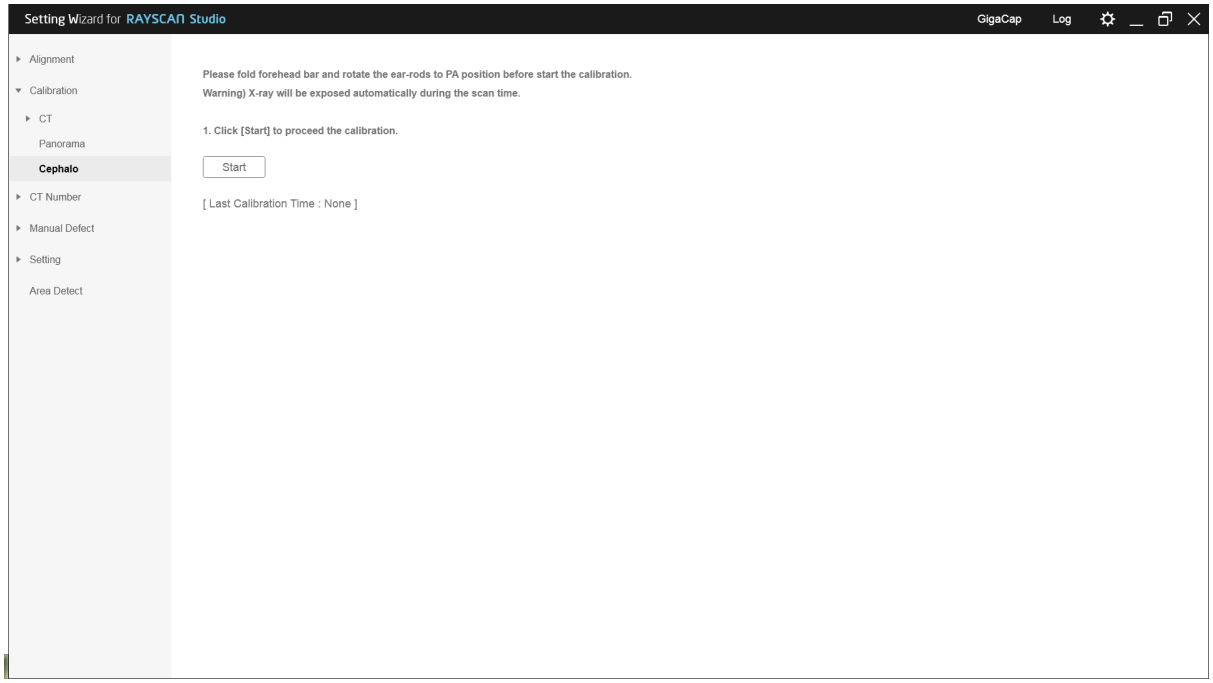
No	Image	Description
1	 Ball and ring alignment	Check the image is more grainy near Nasion support.
2	 Failed on height alignment	If the result image is shown as figure, adjust the heigth of the ball and ring.
3	 Failed on tilt alignment	If the result image is shown as figure, adjust the rotation of the assembly.

Adjusting the Ear rod

No	Image	Description
1	 Ball and ring alignment	Loose the bolts (4ea) and move the module back and forth for shift adjustment.
2		Loose the bolts (2ea) and move up and down for height adjustment.

4.6.4 Calibration

Cephalometric calibration progress step. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

No	Description
1	Please fold Forehead bar and rotate the ear-rods to PA position.
2	Click the [Start] button and proceed calibration. ***Note*** Be aware that actual X-ray exposes.
3	The device runs the calibration automatically and the result comes up.

4.6.5 Test image acquisition

No	Description
1	Execute RAYSCANS to acquire test image.
2	Refer to the user manual to acquire the test image.

Note	If the product is not leveled, noise occurs at the bottom of the Ceph image. At this time, please check the level again.

Chapter – 5

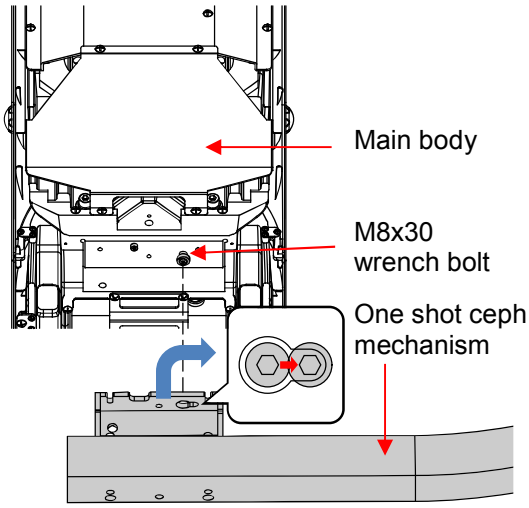
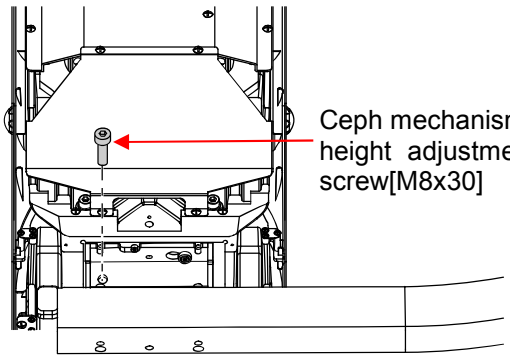
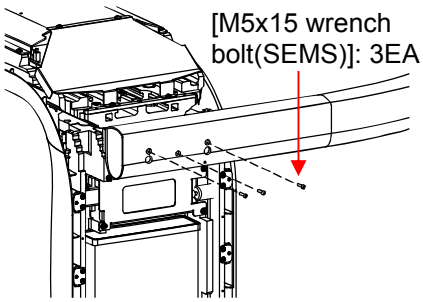
One shot Ceph(L) installation

5 One shot ceph(L) installation

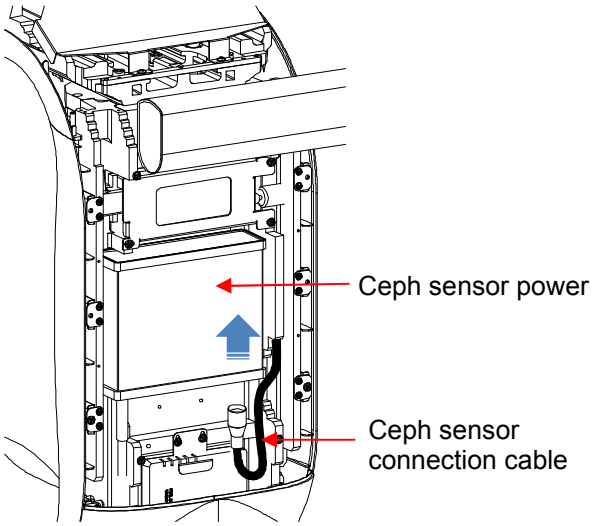
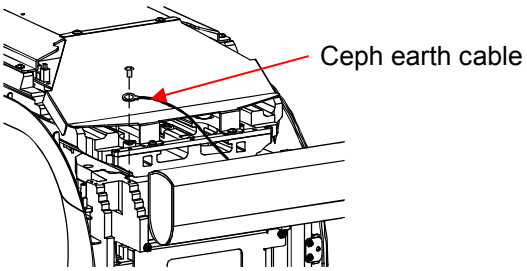
Composition applicable only in models inclusive of the One shot Ceph(L) option.

5.1 Installation of Ceph arms

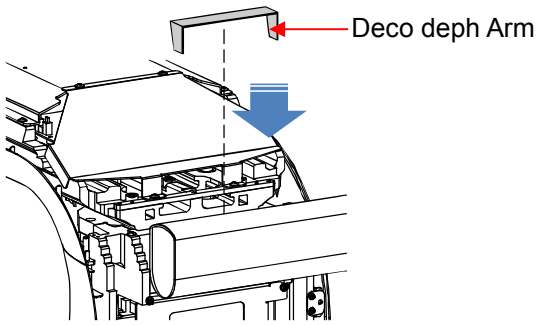
5.1.1 One Shot Ceph(L) Mechanism assembly

	Place the M8x30 wrench bolt on back of the main body into the Ceph Mechanism groove then push sideways while pressing in to hang.
	After hanging the Ceph Mechanism onto the main body, adjust the height with 1 M8x30 wrench bolt 1ea using hexagon wrench driver.
	One shot ceph mechanism height setting is completed, use the hexagon wrench driver on 3 M5x15 wrench bolt(sems) to secure.

5.1.2 One Shot Ceph(L) cable connection

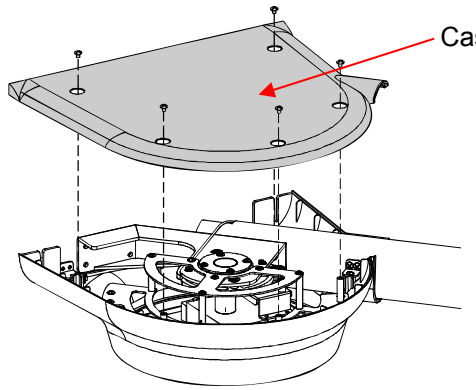
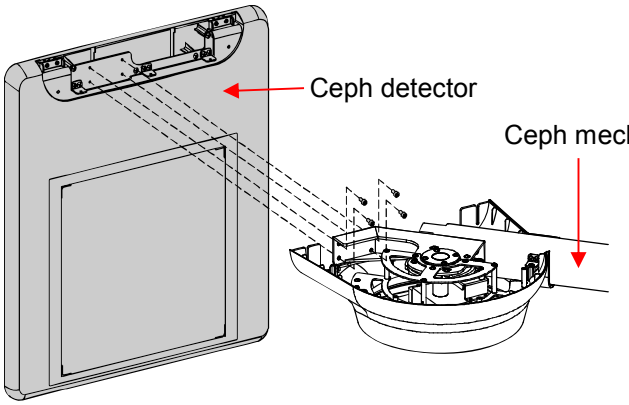
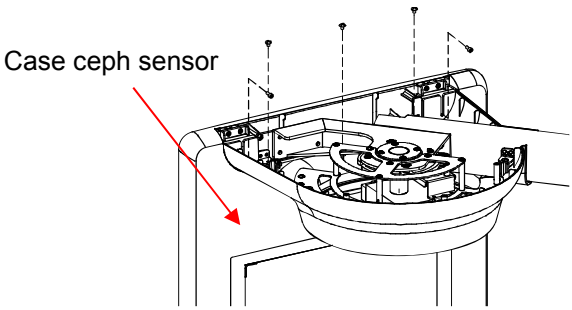
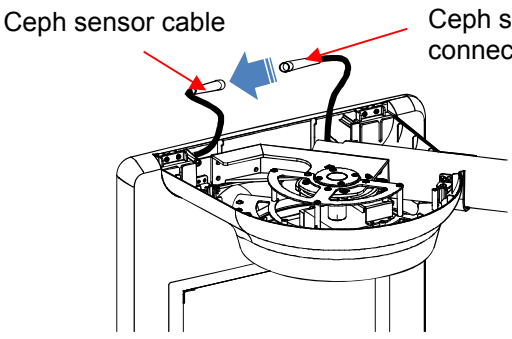
	Insert the Ceph sensor connector cable inserted in the ceph mechanism into the ceph sensor power for connection. At this time, cable must pass through inside of the Power cover.
	Use M4x8 PHW screw and M4 washer to fasten the ceph earth cable inserted in ceph mechanism to top of the main body.

5.1.3 Deco Ceph Arm assembly

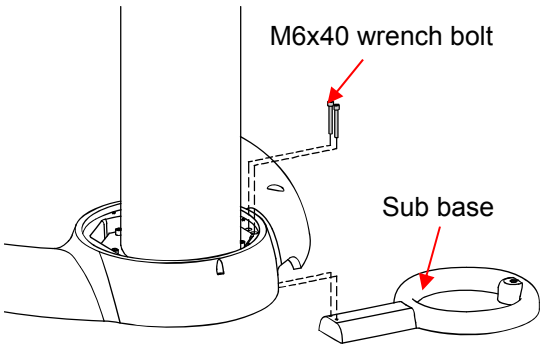
	After Main body attachment of the Ceph Mechanism is completed, insert the Deco Ceph Arm.

5.2 One shot ceph(L) detector assembly

5.2.1 Attach the detector

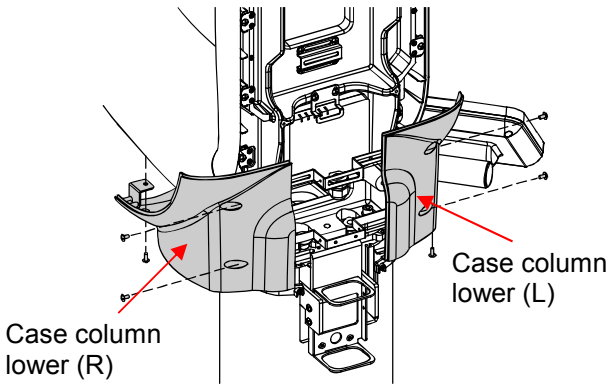
	Unscrew M4x8 PHW screw 5ea and disassemble Case Ceph Upper.
	Place ceph detector close to the ceph mechanism and fixed with M5x15 wrench bolts(SEMS) 4EA.
	Fixed the case ceph sensor with the M4x8 PHW screw 4EA and M4x8 PHW screw 2EA.
	Insert ceph detector cable attached to the ceph detector and ceph detector connection cable inserted into the ceph mechanism for connection.

5.3 Sub base assembly

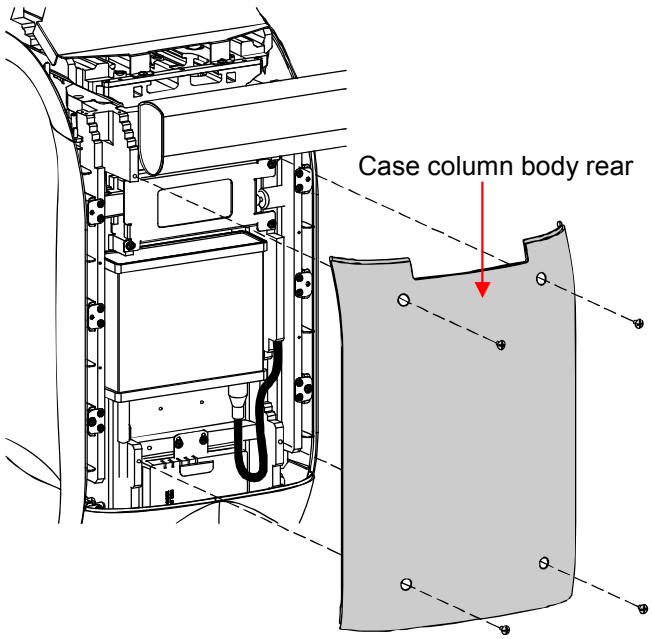


Insert the sub base into the main base and assemble with M6x40 wrench bolts 2ea + M6 spring washer 2ea.

5.4 Case assembly

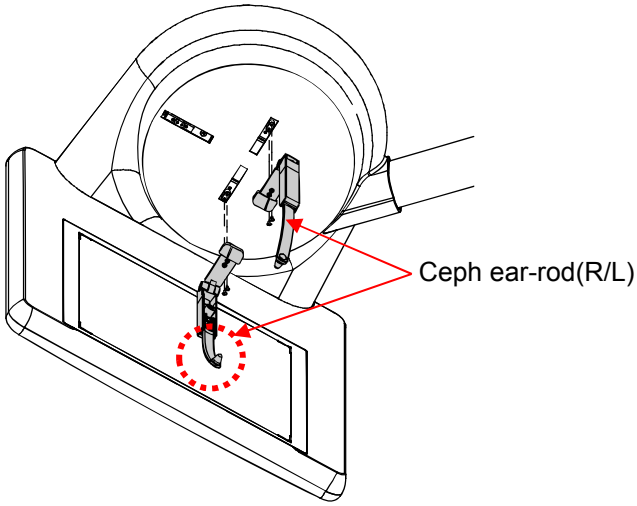


Assemble the case column lower (R) and case column lower (L) with M4x8 PHW screw 6EA.



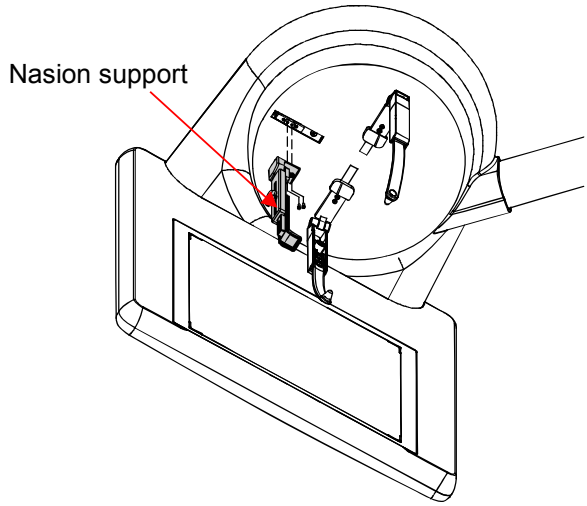
Assemble the case column body rear on the main body and fix it with M4x8 PHW screw 4EA.

5.5 Ear-rod & Nasion support assembly

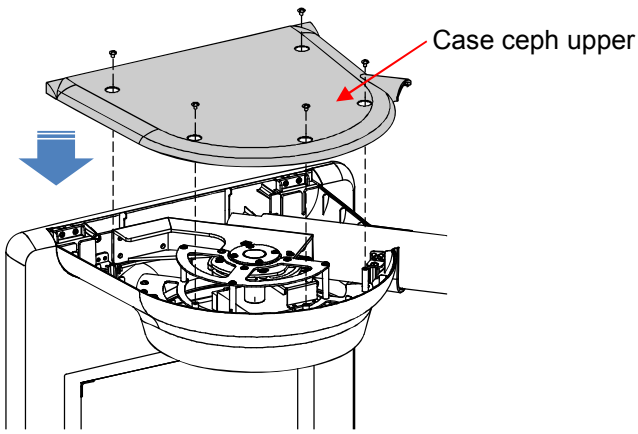


Assemble the ceph ear rod R/L with M4x12 wrench bolt(SEMS) 4EA.

Note: Brass ring inserted Ceph ear rod must be attached to the left side from a frontal point of view as shown in the figure (Close proximity of the detector).



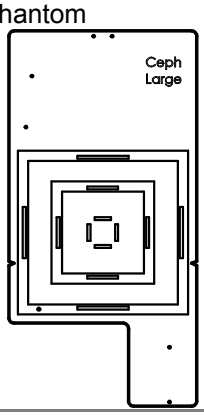
Assemble the nasion support with M4x12 wrench bolt(SEMS) 2EA.



Assembly the case ceph upper with the M4x8 PHW screw 5EA.

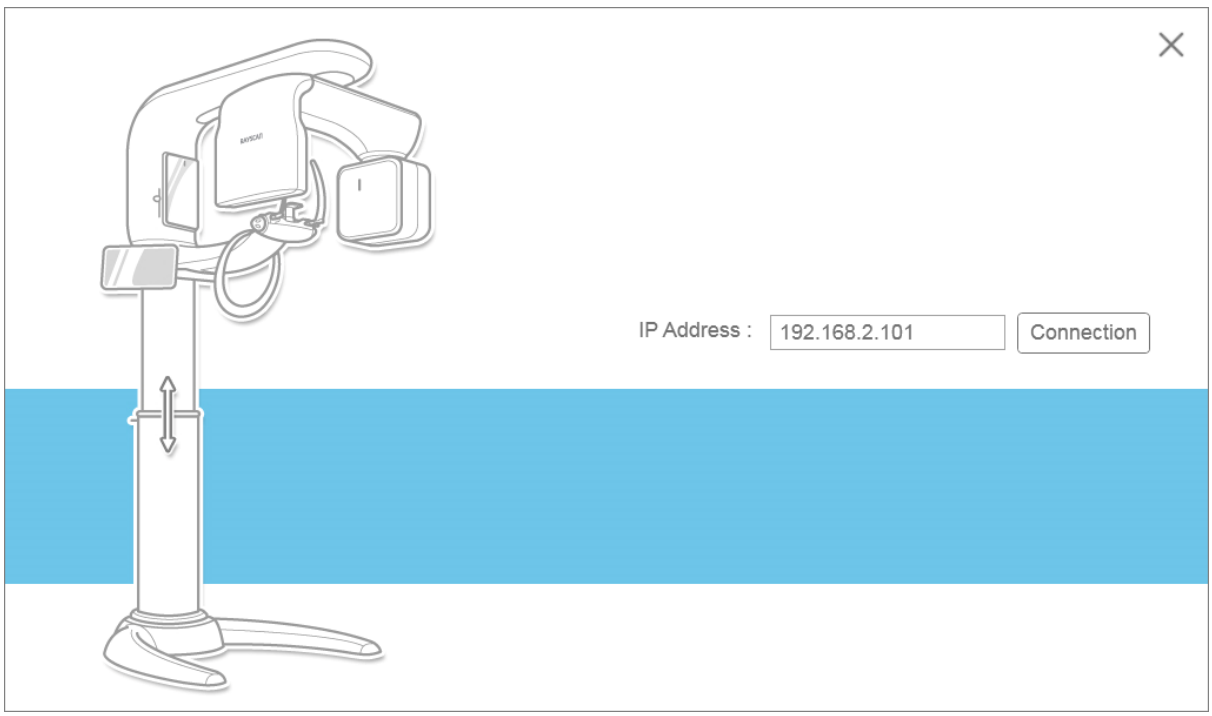
5.6 Setting Wizard

5.6.1 Required tools

No	Contents / Image	Description
1	Light Collimation Phantom 	-. It is used to align which matches the light irradiation area with real X-ray area. -. The phantom is included in the accessory box of the product.

5.6.2 Setting Wizard connection

This is the initial screen of the Setting Wizard on the monitor.

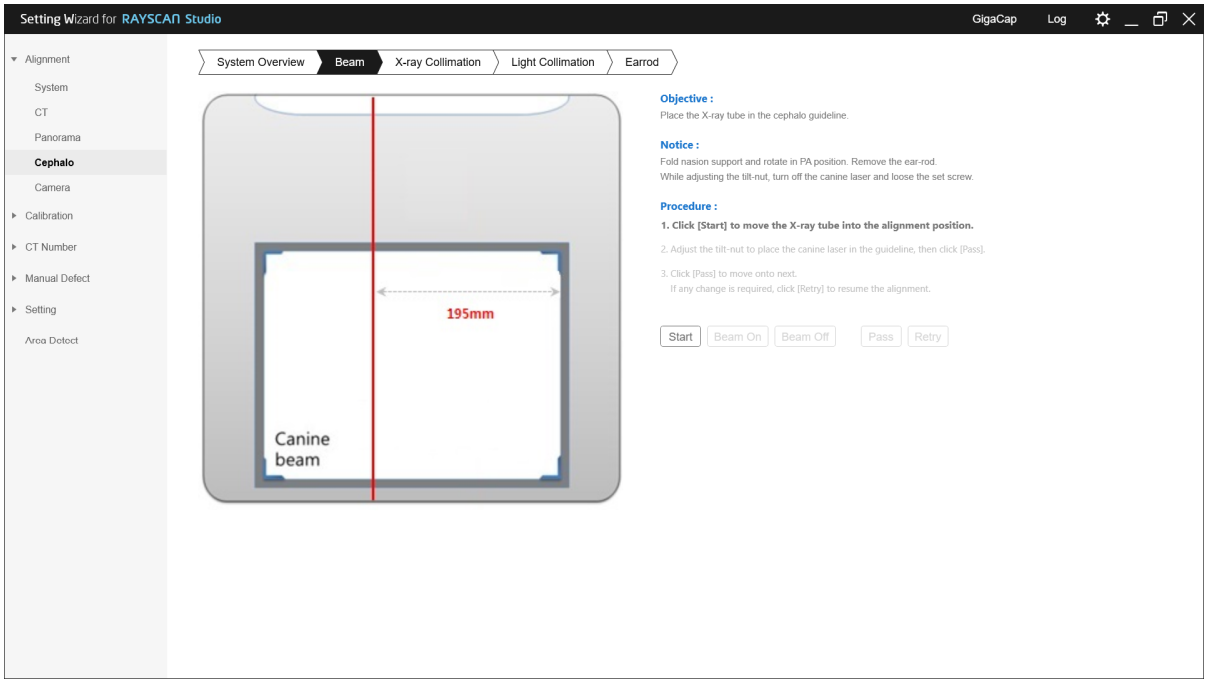


No	Description
1	The default IP address of the device is 192.168.2.101.
2	When you press the [Connect] button, it tries to connect with THU and check the connection status with the information written in IP address.
3	If the connection is successful, the screen is switched to Main screen.

5.6.3 Alignment

5.6.3.1 Beam

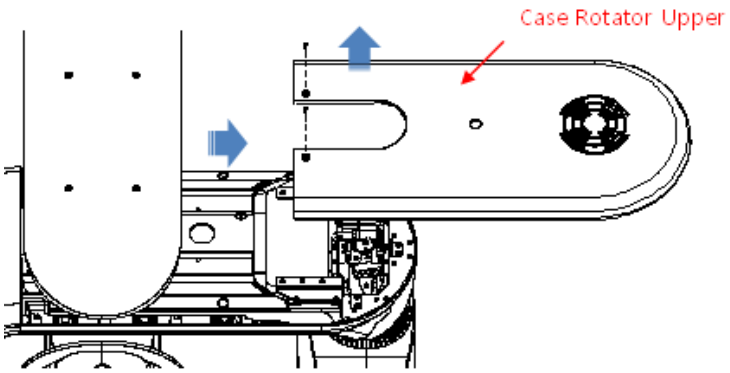
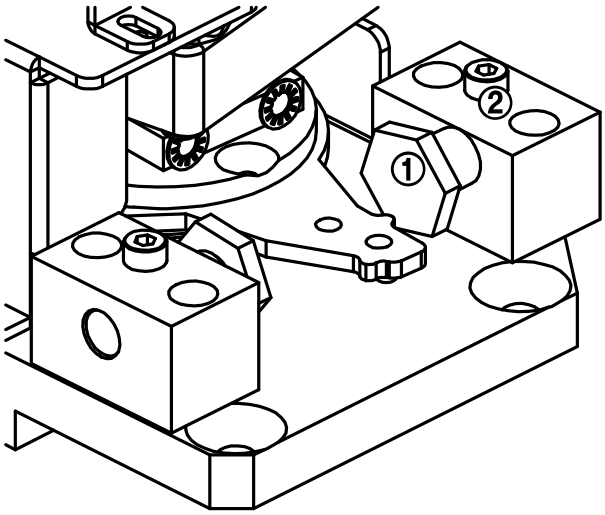
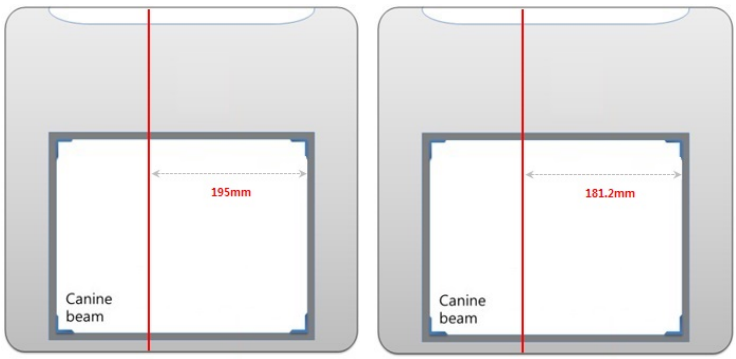
This step guides how to align the Tube Tilt and Detector of Cephalometric. Lower the column and take the Caste Rotator Upper out before begin the steps.



Procedure

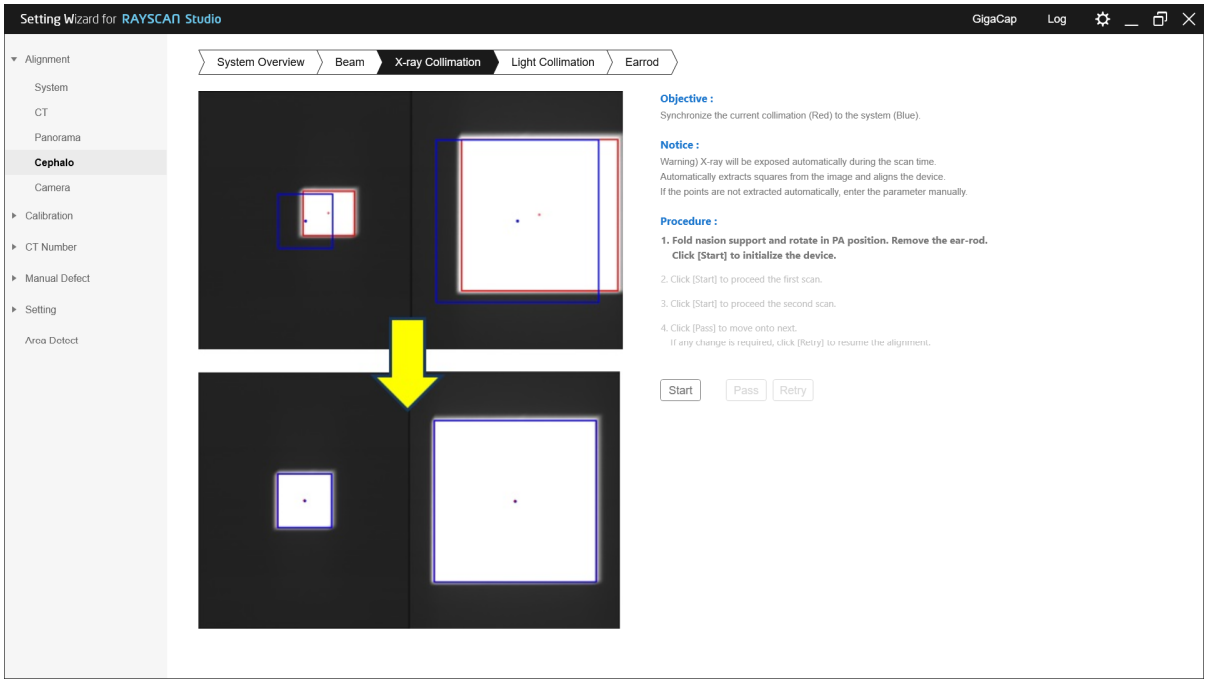
No	Description
1	Click [Start] button to reset the device.
2	Use [Beam On] and [Beam Off] buttons to set the tube rotation angle to be positioned as shown in the figure.
3	Click [Pass] to finish the step.

How to adjust the Tube Tilt

No	Image	Description
1		Loose M4x8 Truss Head Screw (2ea) with Philips and then slide out Case Rotator Upper as the figure below.
2		Turn off the canine beam, loose the Set screw(②) and adjust the Tilt nut(①) to touch the Tube Tilt Plate. Use the remote controller to turn on and off during the adjustment.
3	 OCL OCS	Turn off the beam and adjust the laser to the point at 195mm for OCL and 181.2mm for OCS from the active area.

5.6.3.2 X-ray collimation

This step guides how to align the collimators. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

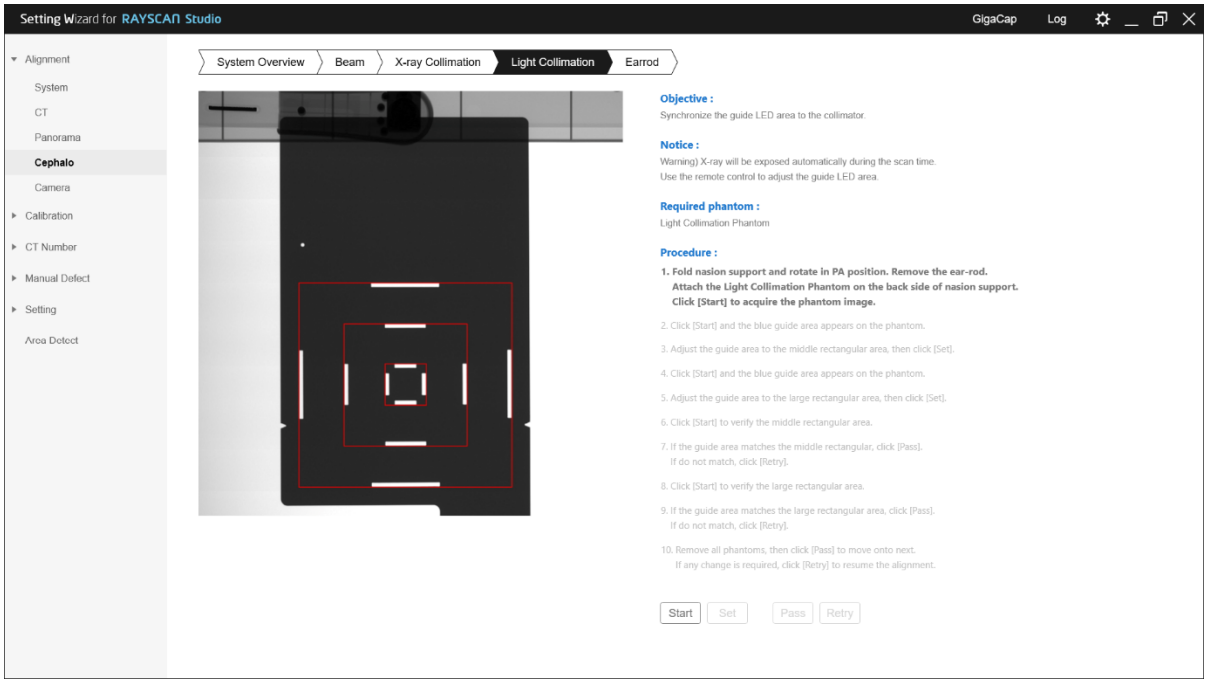


Procedure

No	Description
1	Remove any object between Tube head and the Detector.
2	Click the [Start] button to scan the first image. ***Note*** Be aware that actual X-ray exposes.
3	Click the [Start] button again to scan the second image. ***Note*** Be aware that actual X-ray exposes
4	If the rectangular area extracted from the captured image matches the guideline, click the [Pass] button to complete the step.
5	If the rectangle area extracted from the captured image does not match the guideline, click the [Retry] button to go through the step again.
6	Repeat until the rectangular area matches the guideline.

5.6.3.3 Light collimation

This step guides how to align the active LED areas. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



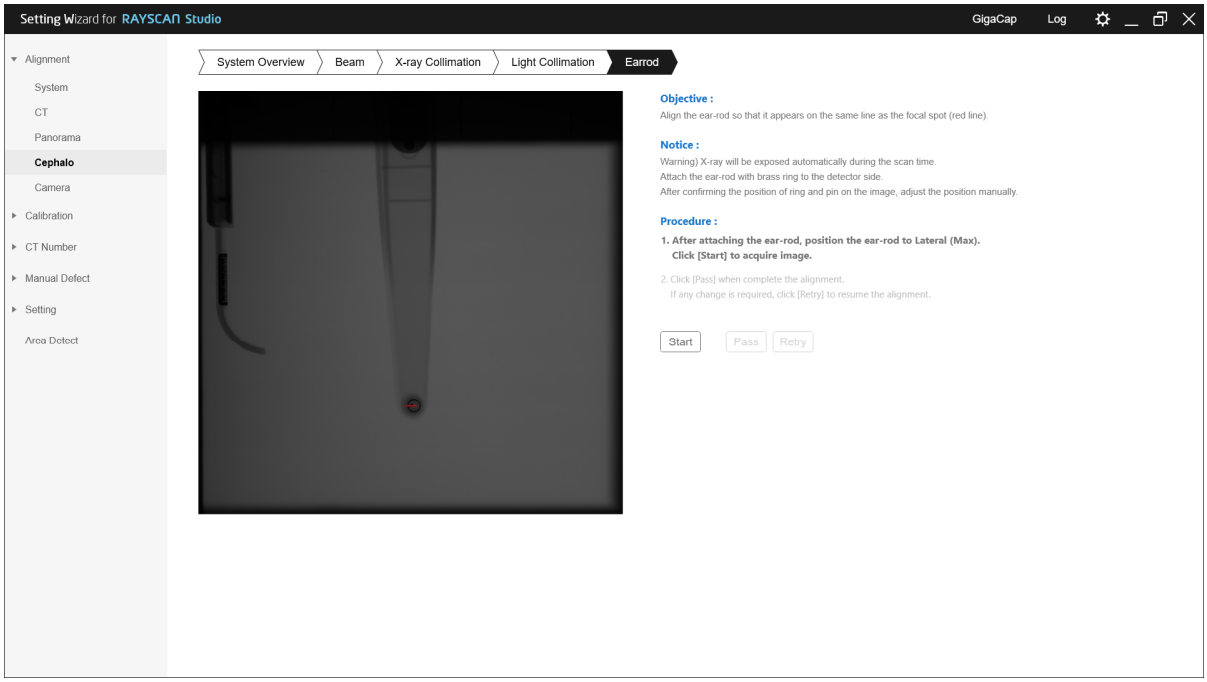
Procedure

No	Description
1	Attach the Light Collimation Phantom onto the Forehead bar (“Ceph” mark must face the tube tank).
2	Click [Start] button and wait for collecting the phantom image. ***Note*** Be aware that actual X-ray exposes.
3	Click [Start] button to set up the small FOV.
4	On remote controller, press light button to turn the LED lights on and move the collimator into the small rectangular.
5	Press [Set] button to move onto the next step.
6	Click [Start] button to set up the middle FOV.
7	On remote controller, press light button to turn the LED lights on and move the collimator into the small rectangular.
8	Press [Set] button to move onto the next step.
9	Click [Start] button to verify that the Light Collimation are aligned in the position of the small rectangle.

10	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.
11	Click [Start] button to verify that the Light Collimation are aligned in the position of the middle rectangle.
12	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.

5.6.3.4 Ear-rod

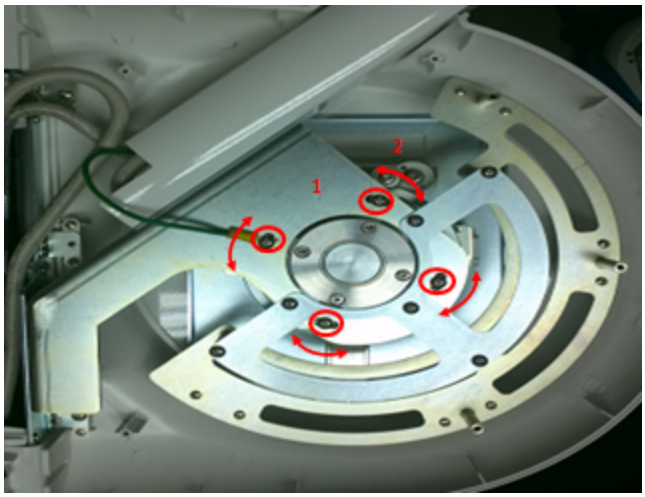
This step guides how to verify the Ear rods.



Procedure

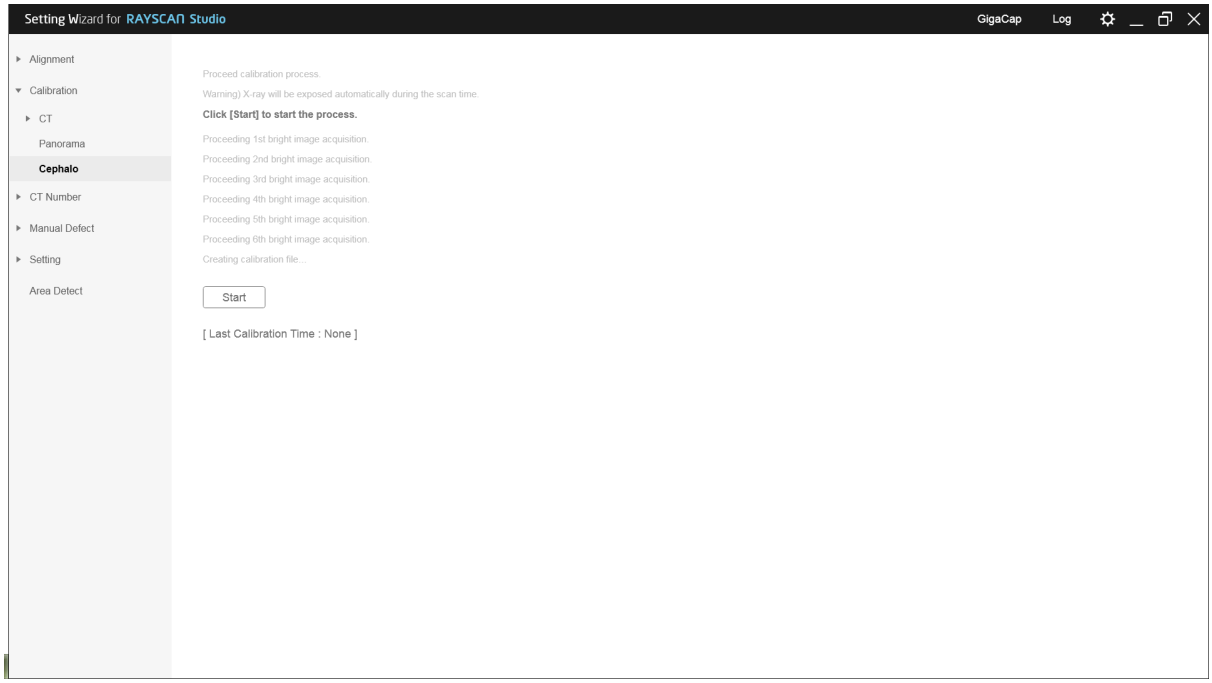
No	Description
1	Attach the ear-rods.
2	Click the [Start] button to scan the first image. ***Note*** Be aware that actual X-ray exposes.
3	Check that the ear-rod pin is displayed on the red line in the scanned image.
4	When align is completed, click [Pass] button to complete the step.
5	If the alignment is not correct, adjust the ear-rod so that the position of the right crosshair of the ear-rod and the position of the left ring are within the displayed area of the image, and then click the [Retry] button.

How to align the Ear-rod

No	Image	Description
1		Loose the bolts (4ea) and move the module back and forth for shift adjustment.
2		Loose the bolts (2ea) and move up and down for height adjustment.

5.6.4 Calibration

Cephalometric calibration progress step. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

No	Description
1	Fold Forehead to upside and rotate Ear rod to PA position.
2	Click the [Start] button. ***Note*** Be aware that actual X-ray exposes.
3	The device runs the calibration automatically and the result comes up.

5.6.5 Test image acquisition

No	Description
1	Execute RAYSCANS to acquire test image.
2	Refer to the user manual to acquire the test image.

Note	If the product is not leveled, noise occurs at the bottom of the Ceph image. At this time, please check the level again.

Chapter — 6

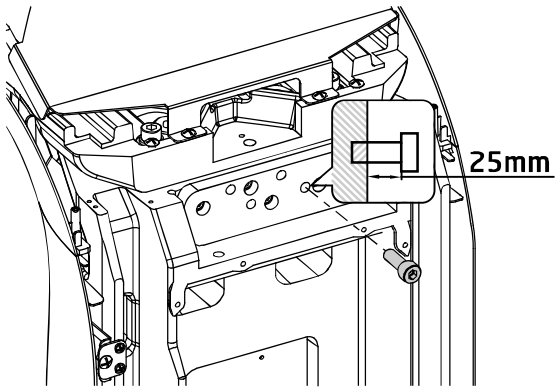
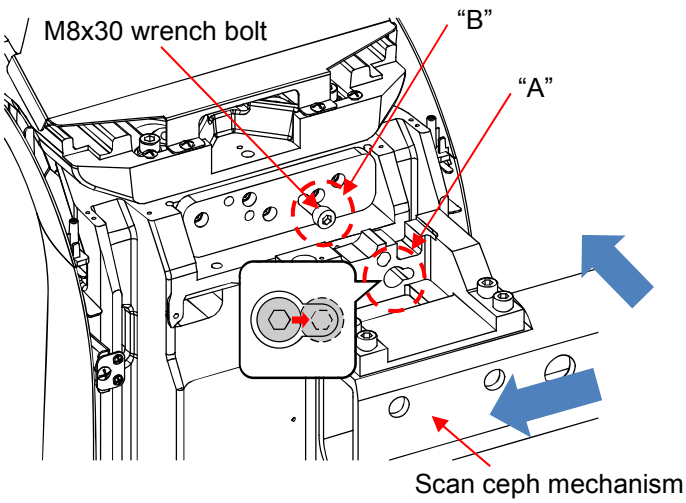
One shot ceph(S) installation

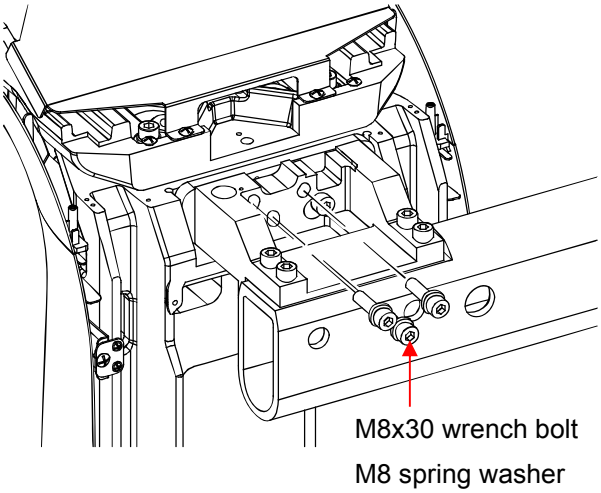
6 One shot ceph(S) installation

Composition applicable only in models inclusive of the One shot Ceph(S) option.

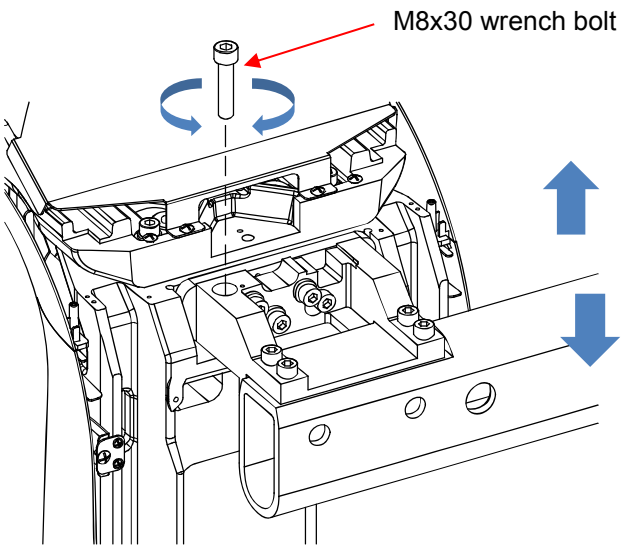
6.1 Installation of Ceph arms

6.1.1 One Shot Ceph(L) Mechanism assembly

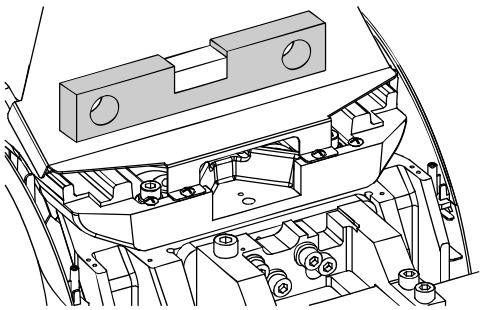
	Assemble the M8x30 wrench bolt to protrude about 25mm.
	After you contact through the "B" portion of the M8x30 wrench bolt fixed to the arm fix sub plate part "A" hole of One shot Ceph(S), and install the One shot Ceph(S) mechanism slide to the left.



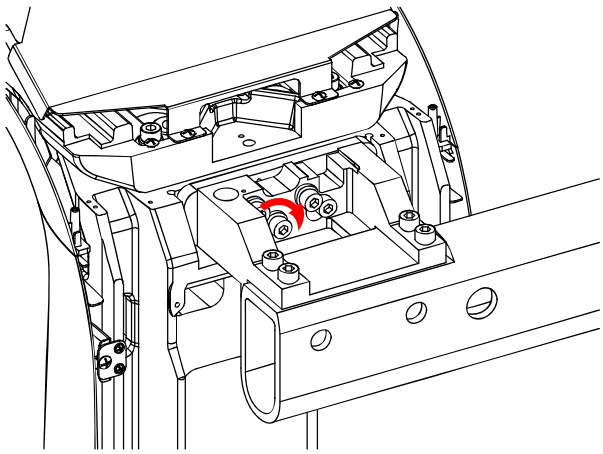
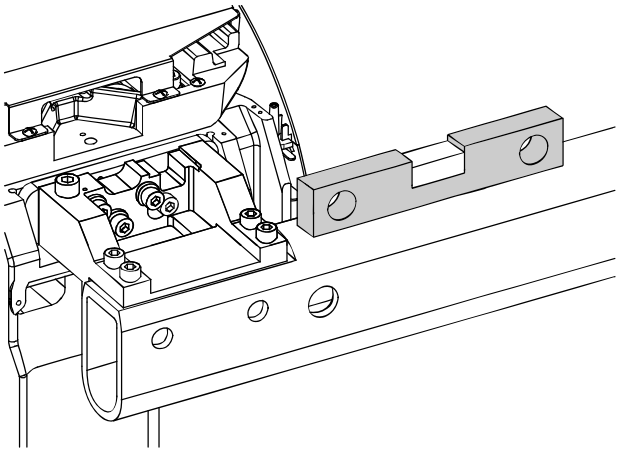
In order to fix the One shot ceph (S) mechanism attached to the body , be concluded loosen the M8 spring washer 3ea and M8x30 wrench bolt 3ea.



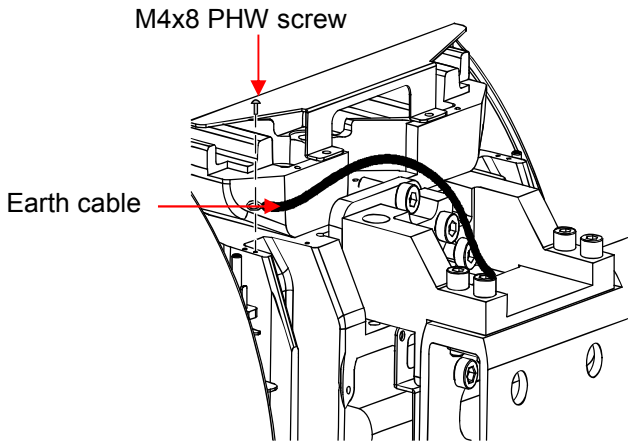
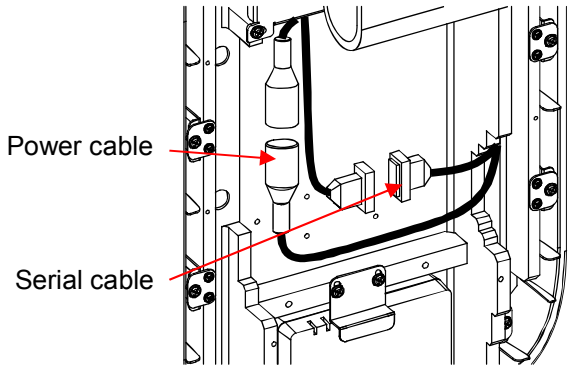
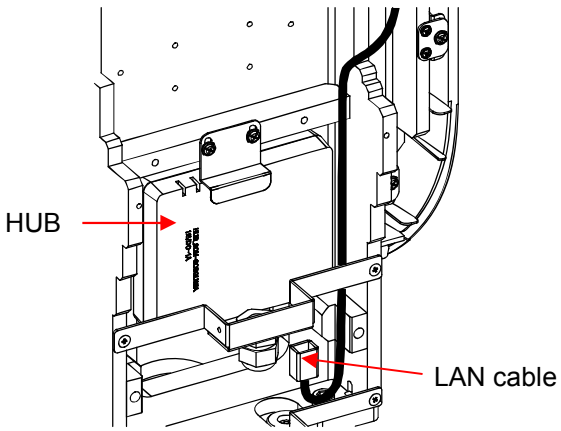
Assemble the M8x30 wrench bolt 1ea for level adjustment of the One shot ceph (S) mechanism.
Turn the screw to the right to raise the One shot ceph (S), and turn it to the left to lower it.



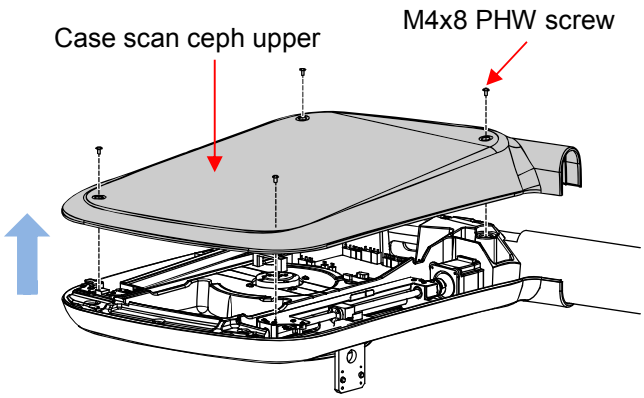
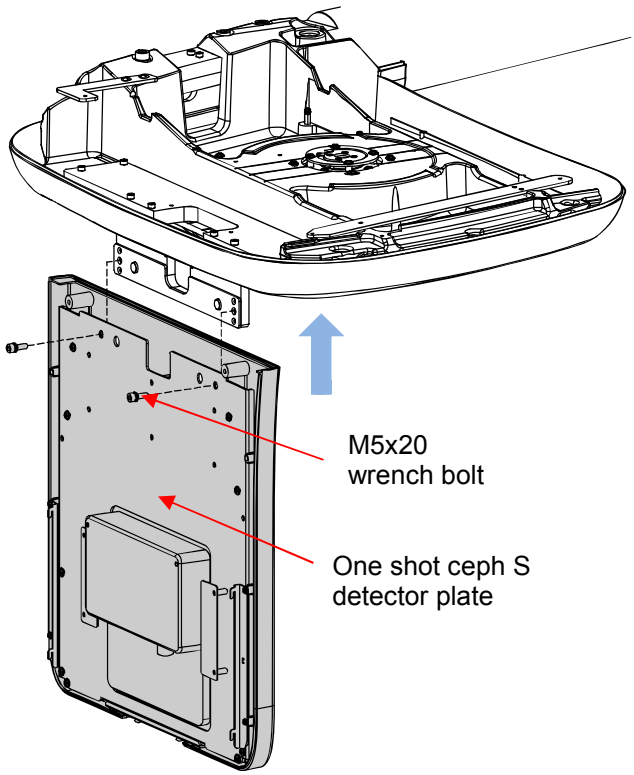
Use the level meter to check the level.

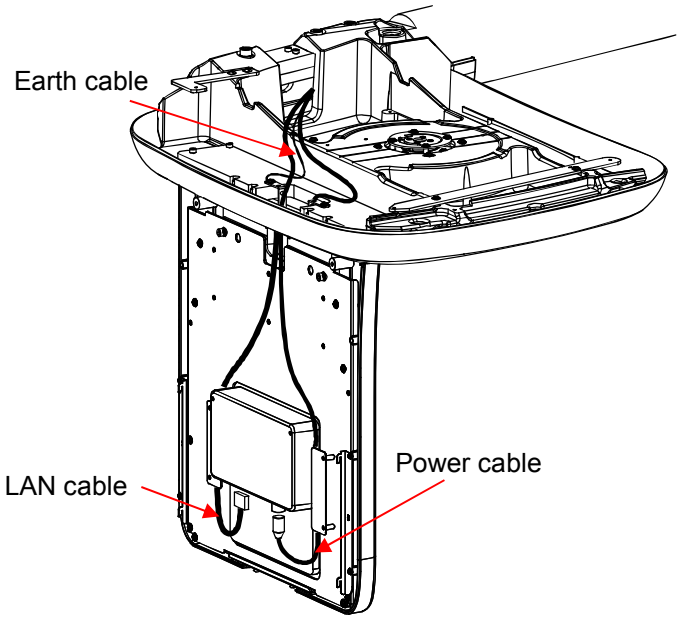
	After the height adjustment of the One shot ceph (S) mechanism is complete, secure the M8x30 wrench bolt 4EA firmly.
	Check the final level.

6.1.2 One Shot Ceph(S) cable connection

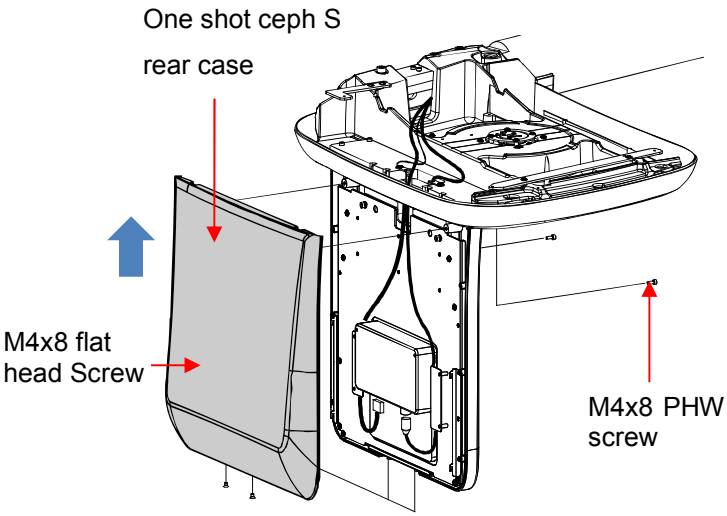
	Secure earth cable inserted into One shot ceph(S) mechanism onto the top of the Main body using M4x8 PHW screw.
	Connect serial power cable and power cable inserted in one shot ceph(S) mechanism.
	Connect LAN cable of HUB inserted in one shot ceph(S) mechanism.

6.2 One Shot Ceph(S) detector assembly

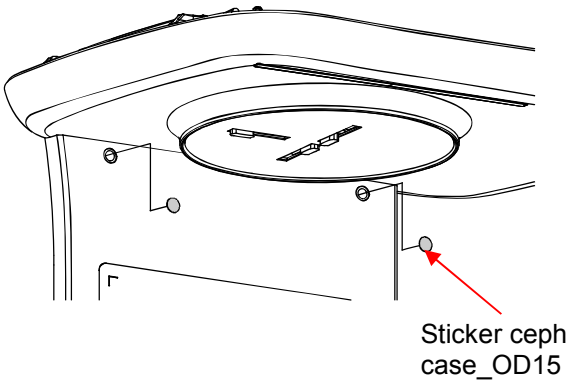
	Unscrew M4x8 PHW screw 4ea and disassemble case scan ceph upper.
	Assemble the one shot ceph(S) detector plate with the M5x20 wrench bolt 2ea.



Connect cable of one shot ceph(S) detector as shown on the left.

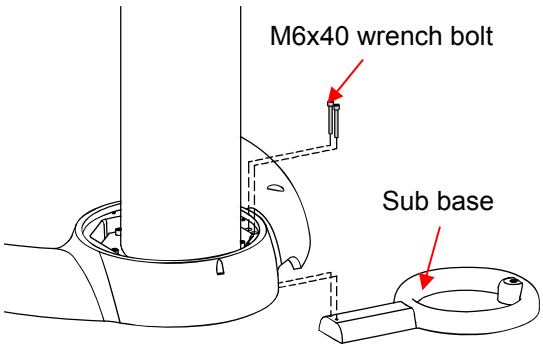


Assemble in M4x8 PHW screw 2ea and M4x8 flat head screw 2ea by assembling and slide hook so take upward from below one shot ceph(S) rear case.



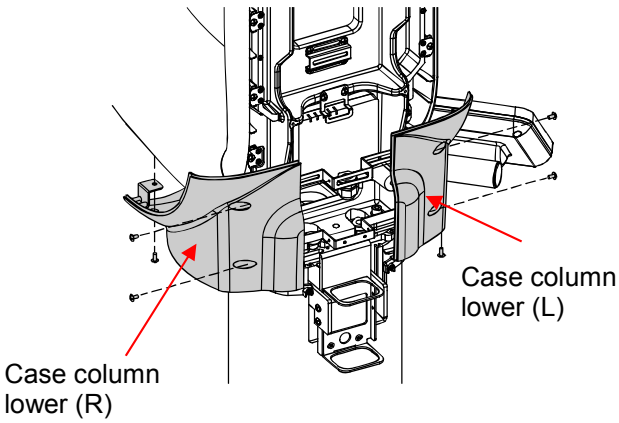
Attach the sticker ceph case_ OD15 2EA to the front case.

6.3 Sub base assembly

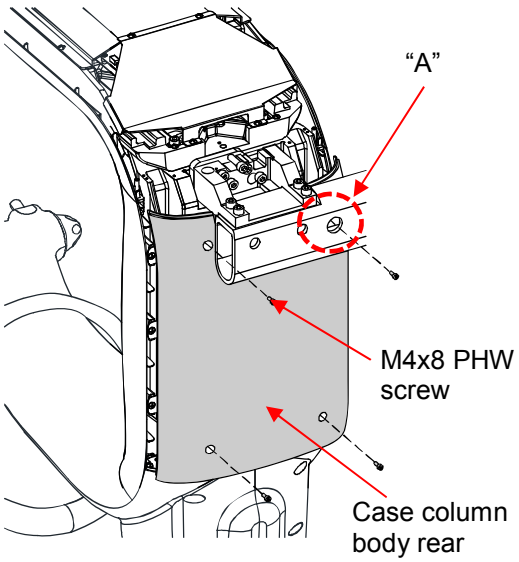


Insert the Sub base into the Main base and assemble with M6x40 wrench bolts 2ea + M6 spring washer 2ea.

6.4 Case assembly

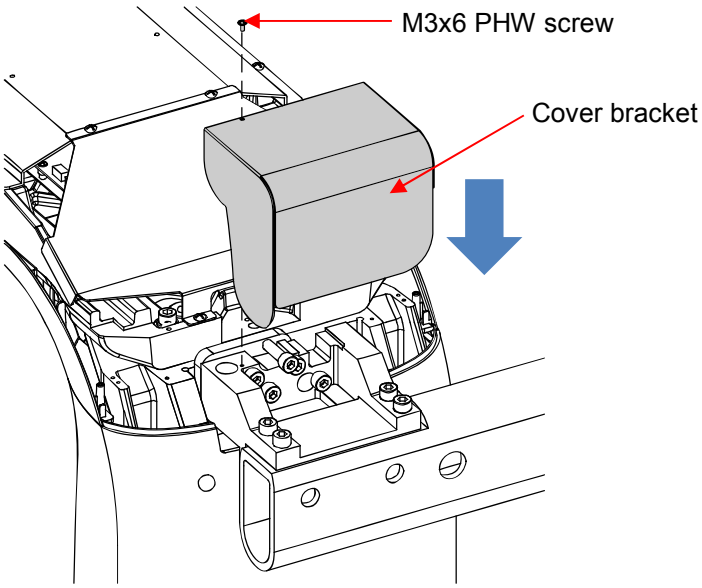
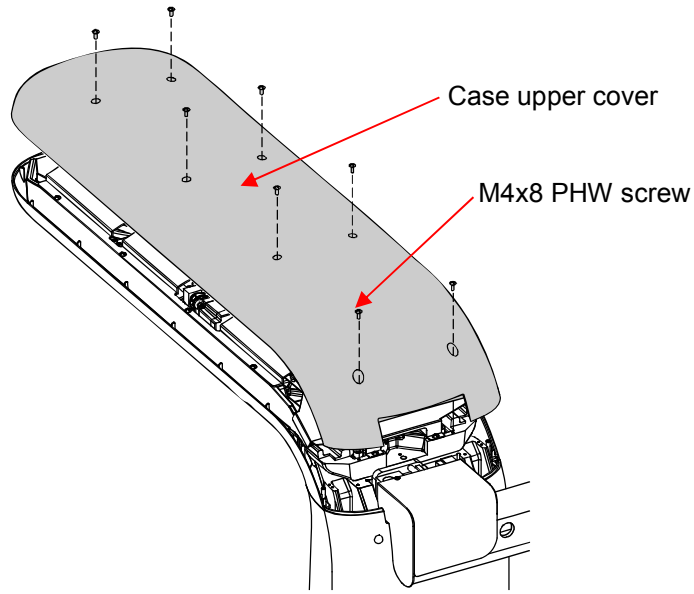


Assemble the case column lower (R) and case column lower (L) with M4x8 PHW screw 6EA.

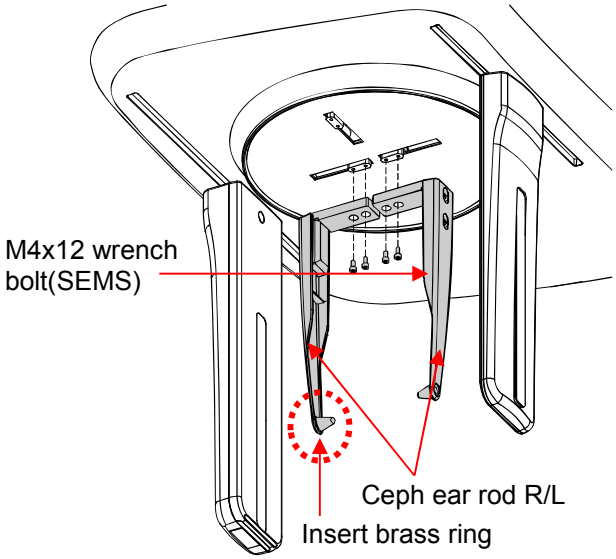


In case of floor stand, assemble the case column body rear with M4x8 PHW screw 6ea.

Note: In case of wall mount, do not fix screw “A” part.

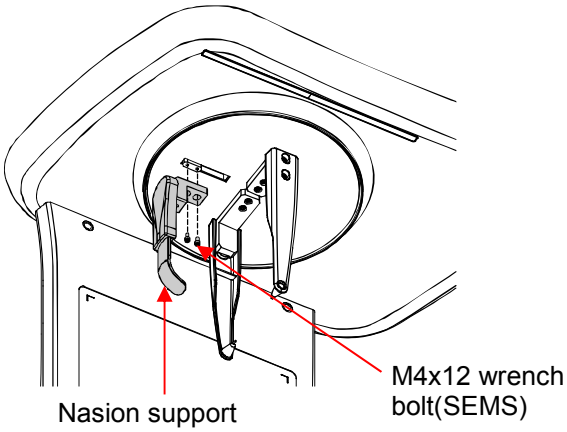
	Insert the cover bracket into the connection between the Main body and one shot ceph(S) mechanism and assemble with M3x6 PHW screw 1EA.
	Assemble the case upper cover with M4x8 PHW screw 8EA.

6.5 Ear rod & Nasion support assembly

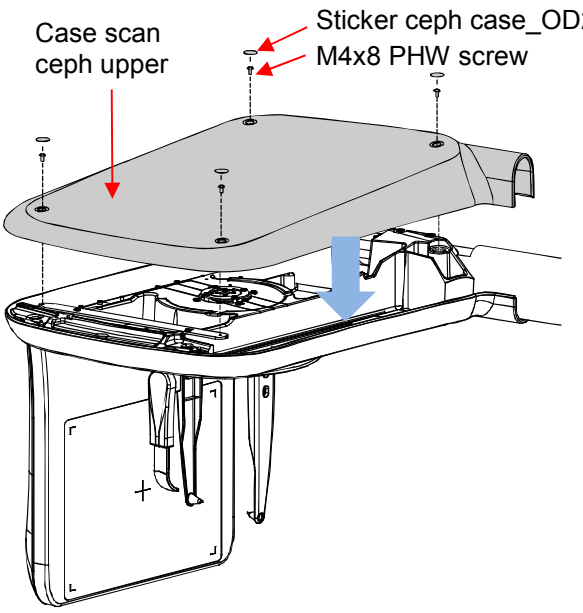


Assemble the ceph ear rod R/L with M4x12 wrench bolt(SEMS) 4EA.

Note: Brass ring inserted ceph ear rod must be attached to the left side from a frontal point of view as shown in the figure (Close proximity of the detector).



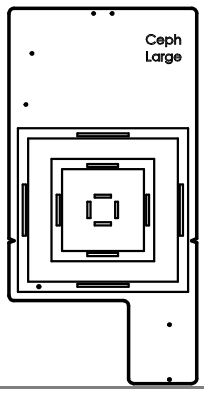
Assemble the nasion support with M4x12 wrench bolt(SEMS) 2EA.



Assembly the case scan ceph upper with the M4x8 PHW screw 4ea and finish with ceph case_OD20 sticker 4ea.

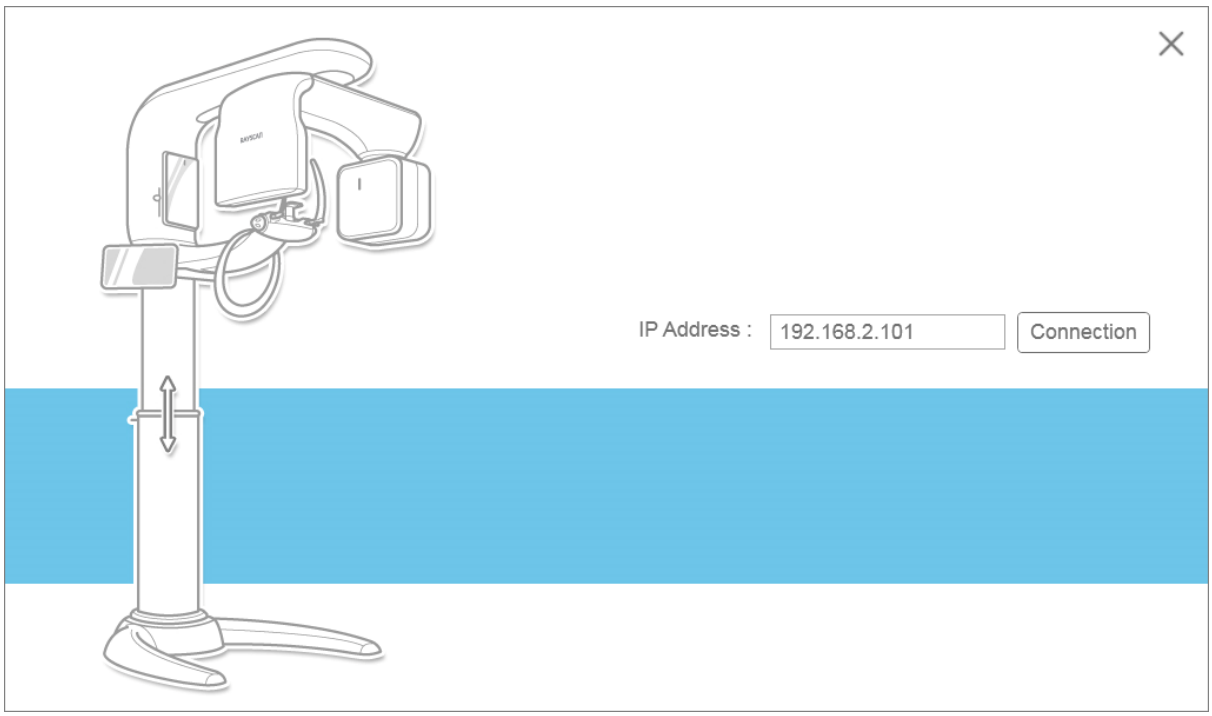
6.6 Setting Wizard

6.6.1 Required tools

No	Contents / Image	Description
1	Light Collimation Phantom 	-. It is used to align which matches the light irradiation area with real X-ray area. -. The phantom is included in the accessory box of the product.

6.6.2 Setting Wizard connection

This is the initial screen of the Setting Wizard on the monitor.

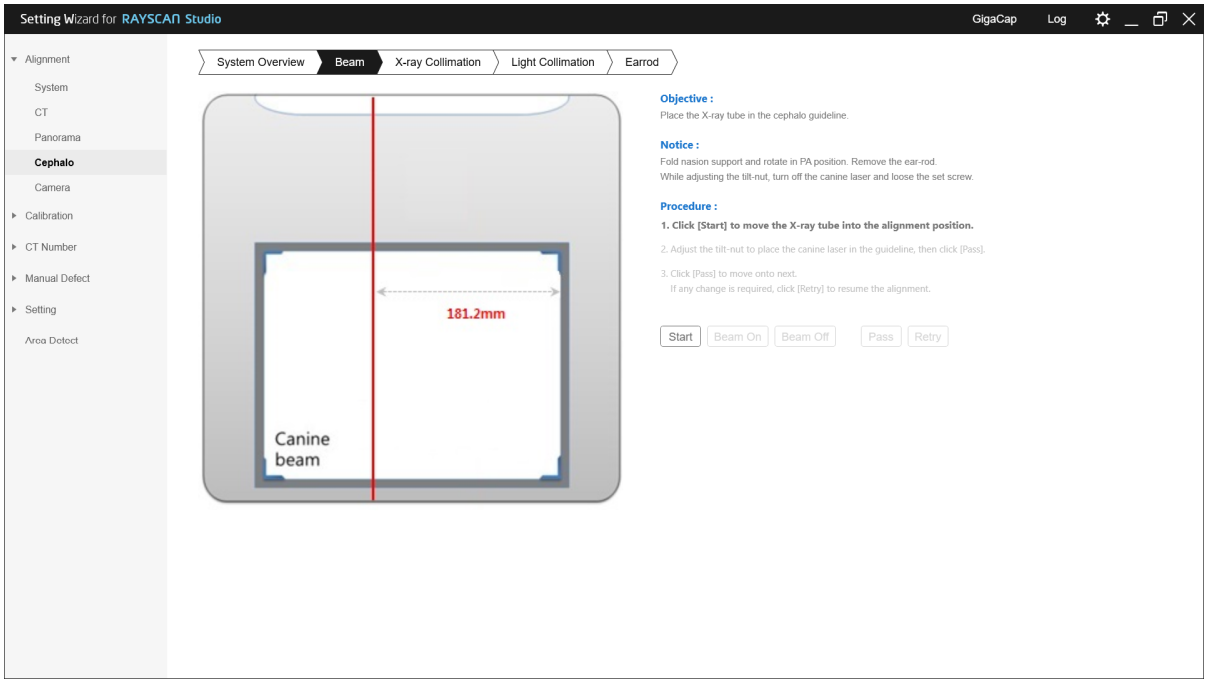


No	Description
1	The default IP address of the device is 192.168.2.101.
2	When you press the [Connect] button, it tries to connect with THU and check the connection status with the information written in IP address.
3	If the connection is successful, the screen is switched to Main screen.

6.6.3 Alignment

6.6.3.1 Beam

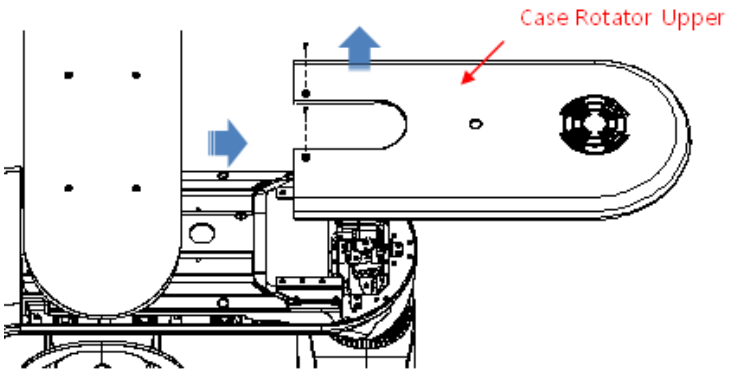
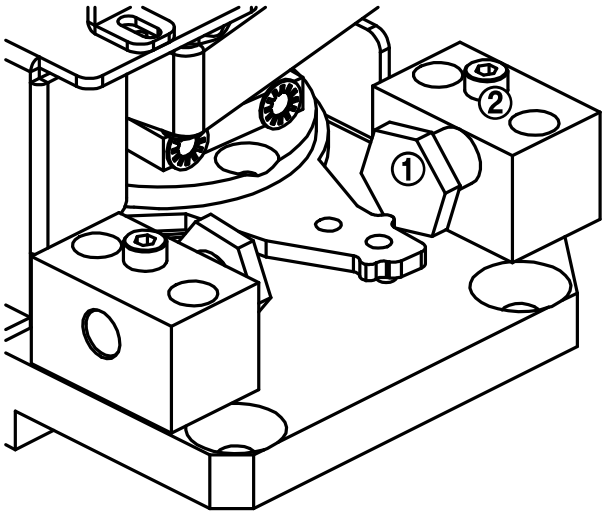
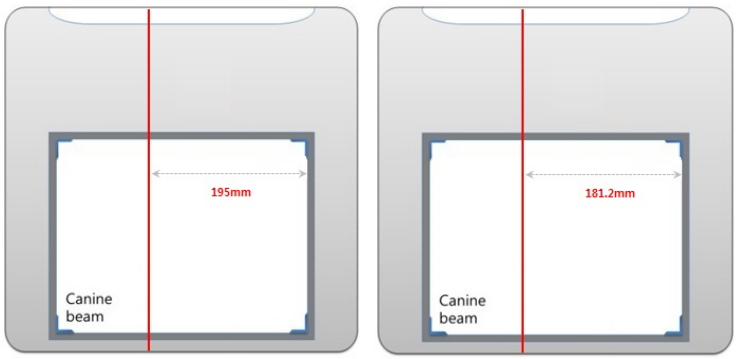
This step guides how to align the Tube Tilt and Detector of Cephalometric. Lower the column and take the Caste Rotator Upper out before begin the steps.



Procedure

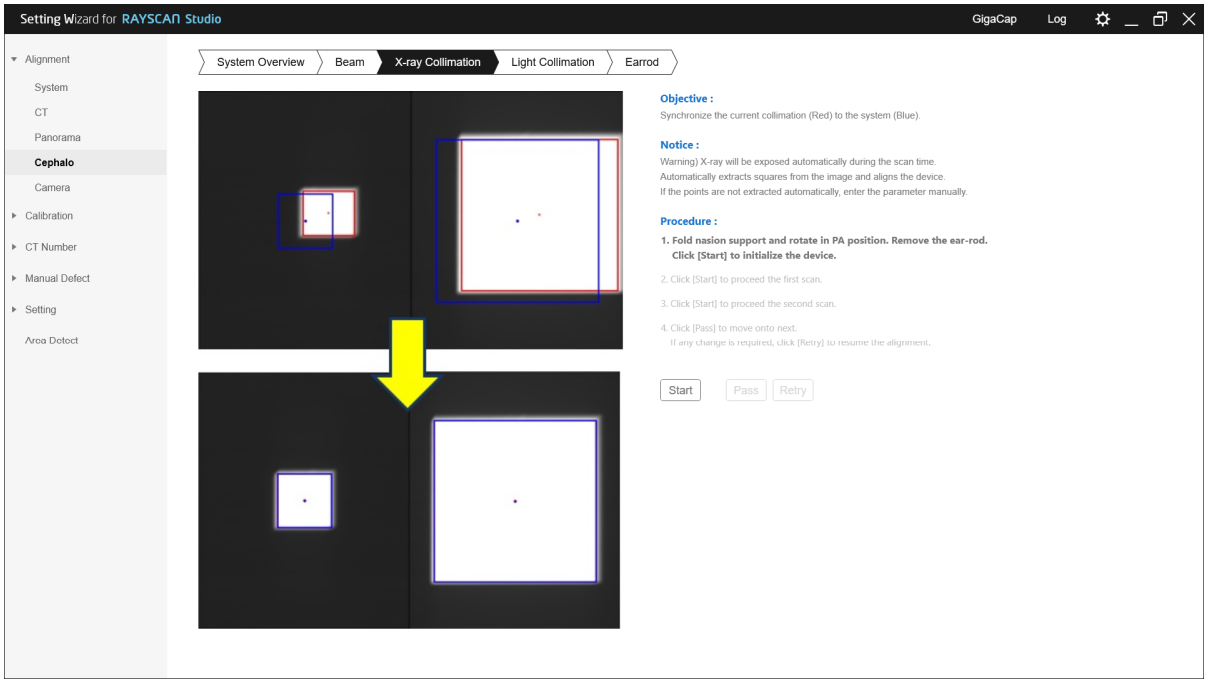
No	Description
1	Click [Start] button to reset the device.
2	Use [Beam On] and [Beam Off] buttons to set the tube rotation angle to be positioned as shown in the figure.
3	Click [Pass] to finish the step.

How to adjust the Tube Tilt

No	Image	Description
1		Loose M4x8 Truss Head Screw (2ea) with Philips and then slide out Case Rotator Upper as the figure below.
2		Turn off the canine beam, loose the Set screw(②) and adjust the Tilt nut(①) to touch the Tube Tilt Plate. Use the remote controller to turn on and off during the adjustment.
3	 OCL OCS	Turn off the beam and adjust the laser to the point at 195mm for OCL and 181.2mm for OCS from the active area.

6.6.3.2 X-ray collimation

This step guides how to align the collimators. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

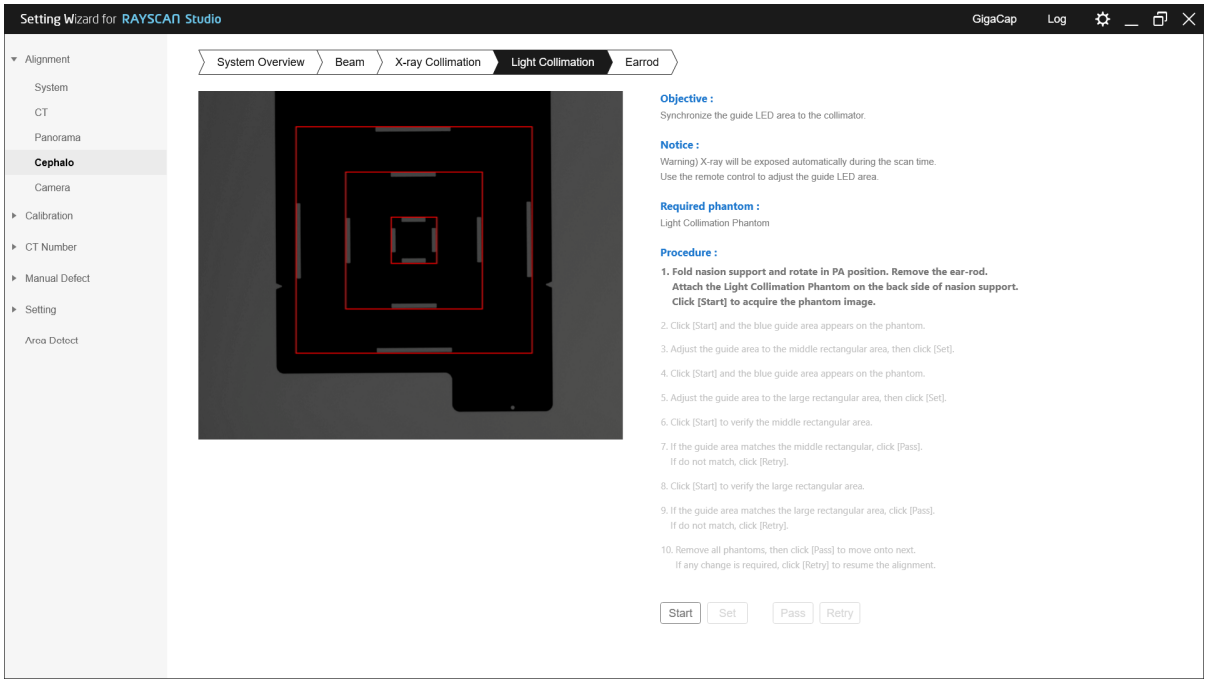


Procedure

No	Description
1	Remove any object between Tube head and the Detector.
2	Click the [Start] button to scan the first image. ***Note*** Be aware that actual X-ray exposes.
3	Click the [Start] button again to scan the second image. ***Note*** Be aware that actual X-ray exposes.
4	Click the [Start] button to proceed with the scan.
5	If the rectangular area extracted from the captured image matches the guideline, click the [Pass] button to complete the step.
6	If the rectangle area extracted from the captured image does not match the guideline, click the [Retry] button to go through the step again.
7	Repeat until the rectangular area matches the guideline.

6.6.3.1 Light collimation

This step guides how to align the active LED areas. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



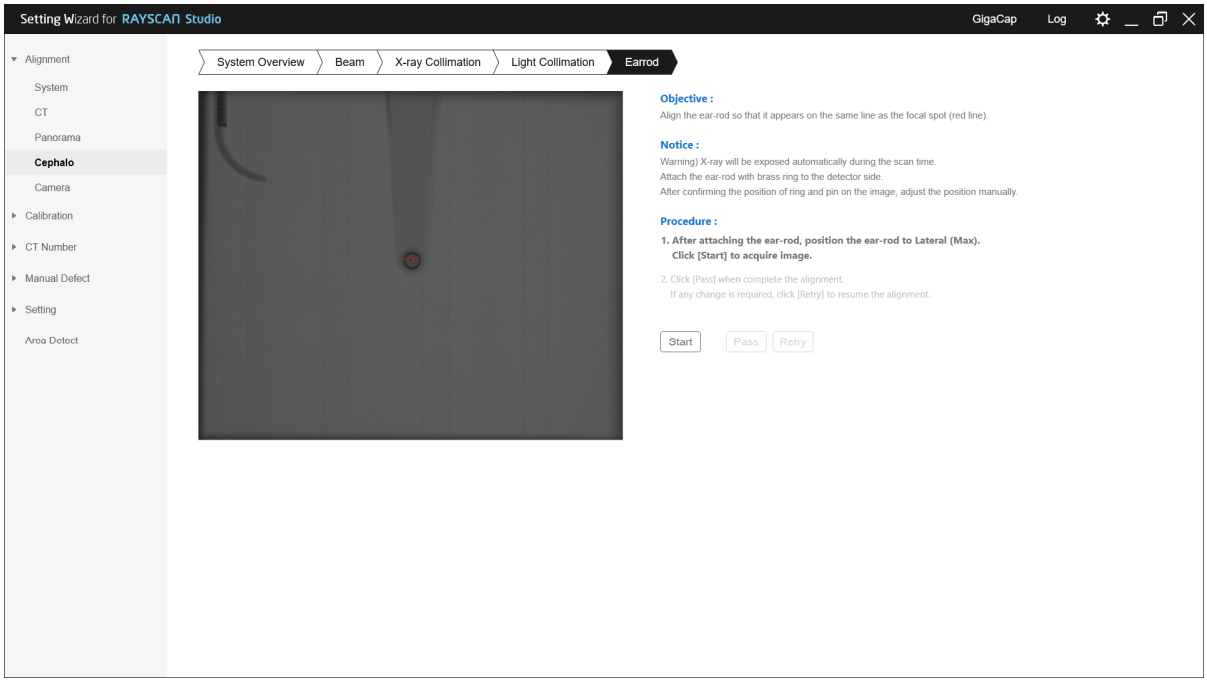
Procedure

No	Description
1	Attach the Light Collimation Phantom onto the Forehead bar (“Ceph” mark must face the tube tank).
2	Click [Start] button and wait for collecting the phantom image. ***Note*** Be aware that actual X-ray exposes.
3	Click [Start] button to set up the small FOV.
4	On remote controller, press light button to turn the LED lights on and move the collimator into the small rectangular.
5	Press [Set] button to move onto the next step.
6	Click [Start] button to set up the middle FOV.
7	On remote controller, press light button to turn the LED lights on and move the collimator into the small rectangular.
8	Press [Set] button to move onto the next step.
9	Click [Start] button to verify that the Light Collimation are aligned in the position of the small rectangle.

10	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.
11	Click [Start] button to verify that the Light Collimation are aligned in the position of the middle rectangle.
12	If the result is correct, click [Pass] button. If the result is not correct, click the [Retry] button to repeat the step.

6.6.3.2 Ear-rod

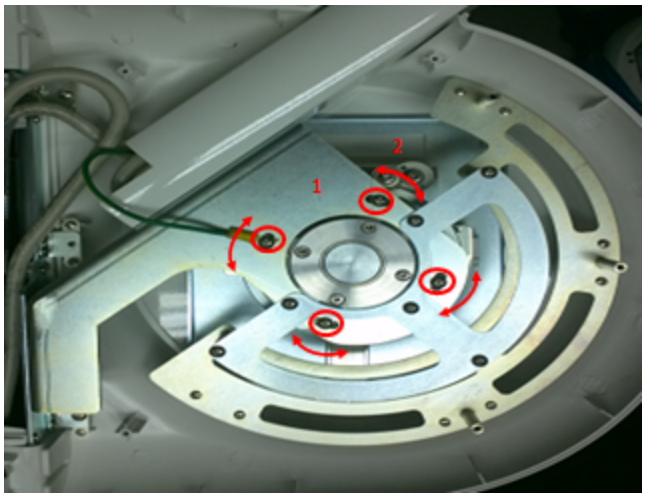
This step guides how to verify the Ear rods.



Procedure

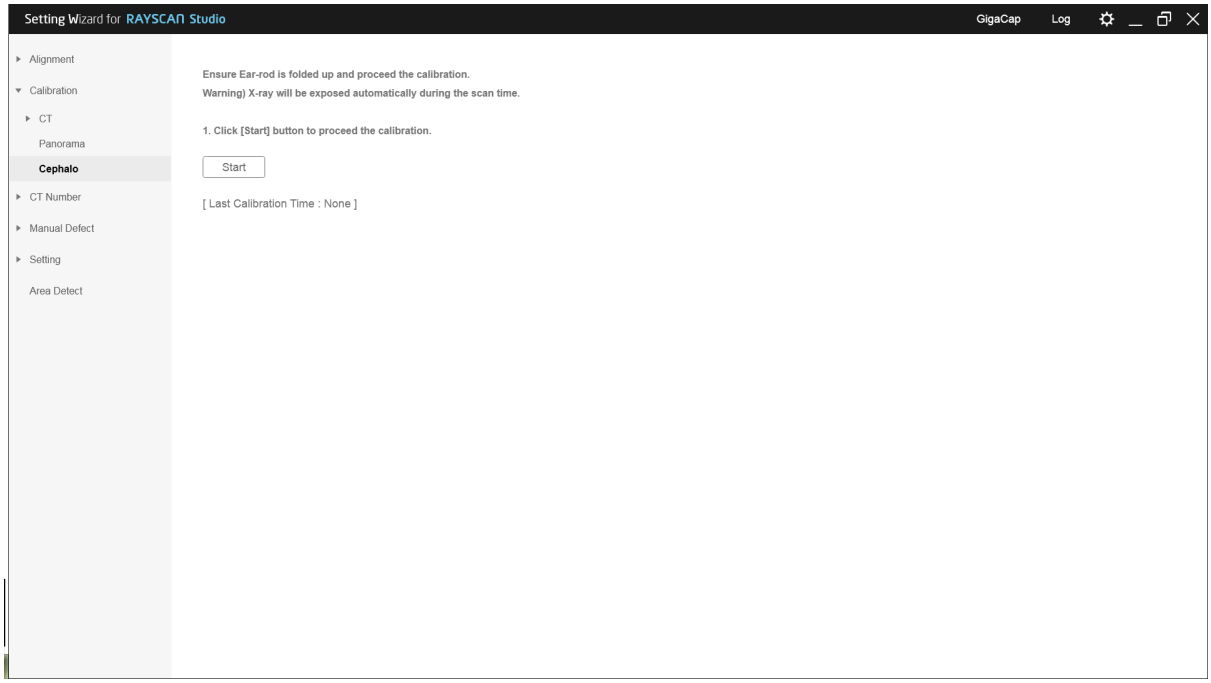
No	Description
1	Attach the ear-rods.
2	Click [Start] button to scan the image. ***Note*** Be aware that actual X-ray exposes.
3	When align is completed, click [Pass] button to complete the step.
4	If the alignment is not correct, adjust the ear-rod so that the position of the right crosshair of the ear-rod and the position of the left ring are within the displayed area of the image, and then click the [Retry] button.

How to align the Ear-rod

No	Image	Description
1		Loose the bolts (4ea) and move the module back and forth for shift adjustment.
2		Loose the bolts (2ea) and move up and down for height adjustment.

6.6.4 Calibration

Cephalometric calibration progress step. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

No	Description
1	Fold Forehead to upside and rotate Ear rod to PA position.
2	Click the [Start] button. ***Note*** Be aware that actual X-ray exposes.
3	The device runs the calibration automatically and the result comes up.

6.6.5 Test image acquisition

No	Description
1	Execute RAYSCANS to acquire test image.
2	Refer to the user manual to acquire the test image.

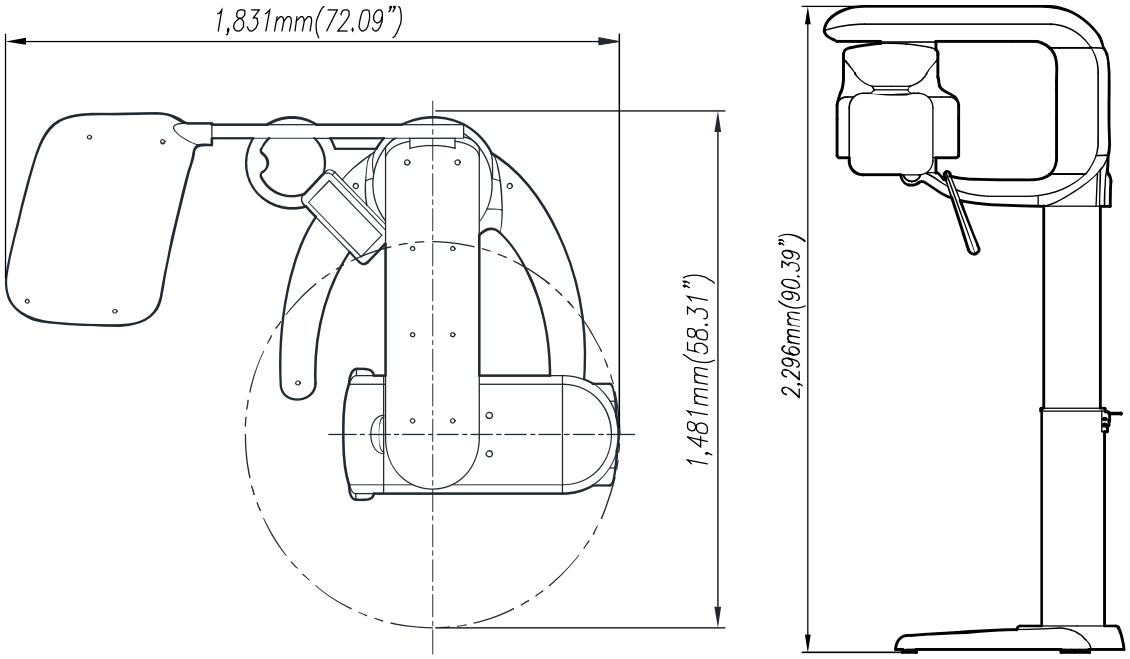
Note	If the product is not leveled, noise occurs at the bottom of the Ceph image. At this time, please check the level again.

Chapter — 7

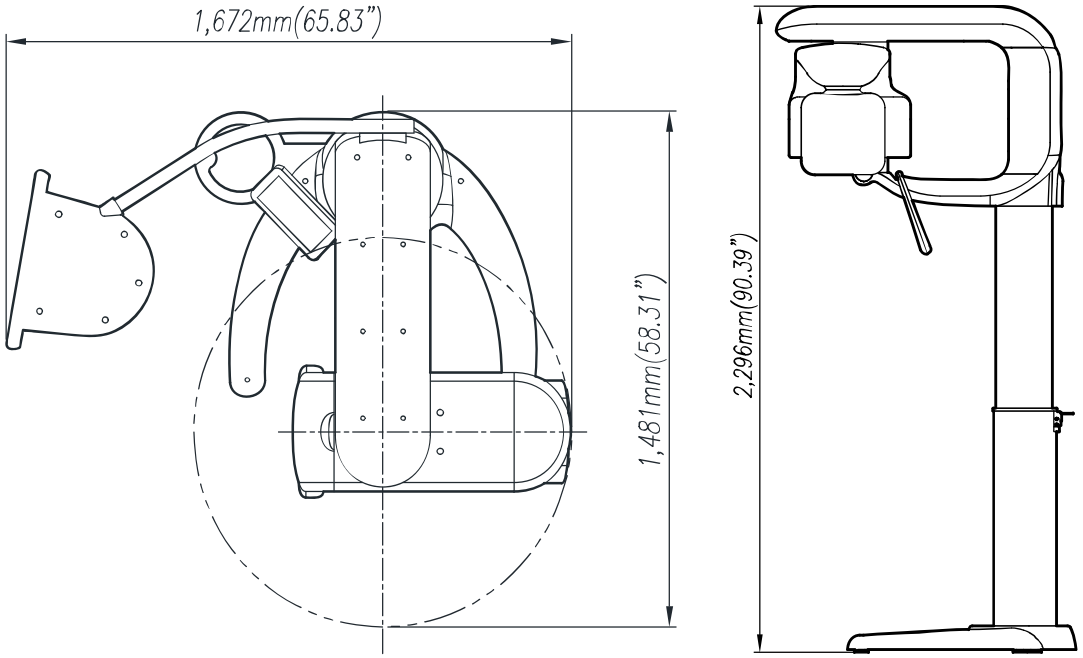
Dimension

7 Dimension

7.1 Scan ceph and One shot ceph(S) dimension



7.2 One shot ceph(L) dimension



RAYSCAN