

RAYSCAN

RCT800-L(CBCT, Pano)

Installation manual

RIG-720-EN

Rev. 1.2

This installation manual contains information to properly install of RCT800-L. The installer must read this manual carefully before install and using the product. For the optional Scan ceph and One Shot Ceph modality, refer to the separate installation manual.

The installer must follow instructions and safety regulations described in the installation manual to prevent any injury 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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For further inquiries, contact your sales representative or customer service of manufacturer.



Ray Co., Ltd.

332-7, Samsung 1-ro, Hwaseong-si, Gyeonggi-do, 18380, Korea

Phone: +82-31-605-1000 Fax: +82-2-6280-5534

www.raymedical.com



DONGBANG ACUPRIME

1 Forrest Units, Hennock Road East,

Marsh Barton, Exeter EX2 8RU, U.K

Phone: +44-1392-829500 Fax: +44-1392-823232



Contents

1	Introduction.....	9
1.1	Installaton manual referenced symbols.....	9
1.2	Standards and regulations.....	12
1.2.1	Standards and regulations.....	12
1.2.2	Classification of medical equipment(IEC60601-1 6.1)	12
1.3	Installer requirements	12
1.4	Safety management and regulations.....	13
1.4.1	General safety	13
1.4.2	Electrical safety.....	14
1.4.3	Mechanical safety	15
1.4.4	Fire safety	15
1.4.5	Explosion safety.....	15
1.4.6	Electromagnetic compatibility	15
1.4.7	Radiation protection.....	16
2	Pre-installation check.....	18
2.1	X-ray shielding room requirements.....	18
2.1.1	General requirements	18
2.1.2	Checking the installation space	18
2.2	Electrical safety	19
2.3	Environmental requirements.....	19
2.4	Installation option.....	20
3	System overview.....	22
3.1	System moving parts	22
3.2	System composition	23
3.3	Rotator and Chinrest	24
3.4	Touch Monitor(THU)	24
4	Packaging	26
4.1	Packaging dimention	26
4.2	Packaging composition.....	26
4.2.1	Main Accessory Box	27
4.2.2	Machine Bolt Box.....	28
4.2.3	Sub Accessory Box.....	28
4.2.4	Wall Mount Accessory Box	29
4.2.5	Floor Mount Accessory Box.....	29
4.2.6	Workstation and monitor.....	30

4.2.7	ASM CT Headrest Box	30
4.3	Unpacking	31
4.3.1	Upper/left box dismantlement	31
4.3.2	Main base separation	32
4.3.3	Dismantlement of Rear/right/inner box	33
4.3.4	Dismantlement of PC and monitor box	33
5	Product installation(Floor stand + Wall mount)	35
5.1	Tool requirements	35
5.2	Lift column installation	36
5.2.1	Tool assembly	36
5.2.2	Dismantlement of Lift column Protective foam	36
5.2.3	Dismantlement of Lift column	37
5.2.4	Main body and lift column assembly	38
5.2.5	Lift column and base assembly	39
5.2.6	Dismantlement of the main body fixed part and stand by causing the body	40
5.3	Remove the Fixing pallet bracket	41
5.4	Wall mount bracket installation	42
5.4.1	Preparation for fixing - floor stand + wall mount	42
5.4.2	Example of fixing wall mount bracket	43
5.4.3	Wall mount bracket assembly	44
5.5	Shipping lock bracket removal	45
5.5.1	Rotator fixed bracket removal	45
5.6	Tube tilting secure part disassembly	47
5.7	Leveling the product	48
5.8	Fix the bolt	49
5.9	Finishing Main base	49
5.10	Foot position sticker	50
5.11	THU(Touch monitor) installation	51
5.12	Remove the plastic sticker	52
6	Product installation(Floor mount + Wall mount)	54
6.1	Tool requirements	54
6.2	Lift column installation	55
6.2.1	Tool assembly	55
6.2.2	Lift column protective foam dismantlement	55
6.2.3	Lift column dismantlement	56
6.2.4	Floor mount base assembly	56
6.2.5	Main body and lift column assembly	57
6.2.6	Lift column and base jig	58

6.2.7	Dismantlement of the main body fixed part and stand by causing the body	59
6.3	Remove the transport handle	60
6.4	Wall mount bracket installation	61
6.4.1	Preparation for fixing - floor mount + wall mount	61
6.4.2	Example of fixing wall mount bracket	62
6.5	Fixing wall and floor	63
6.5.1	Fixing wall mount bracket	63
6.5.2	Floor mount base assembly	64
6.6	Shipping lock bracket removal	66
6.6.1	Rotator fixed bracket removal	66
6.7	Tube tilting secure part disassembly	68
6.8	Foot position sticker	69
6.9	THU(Touch monitor) installation	70
6.10	Remove the plastic sticker	71
7	Other installation	73
7.1	Cable connection	73
7.1.1	Lift column cable connection	73
7.1.2	Micro switch cable connection	73
7.1.3	Exposure switch connection	74
7.1.4	LAN cable connection	74
7.1.5	Cable securing	75
7.1.6	Earth cable connection	76
7.2	Cover assembly	77
7.3	Temple supports and chinrest installation	78
7.3.1	Headrest assembly	78
7.3.2	Bite block and chinrest assembly	78
7.4	Exposure switch stand assembly	79
7.5	Remote control stand assembly	80
7.6	Peripheral connection	81
8	Setting Wizard	83
8.1	Required tools	83
8.2	Setting Wizard connection	84
8.3	Alignment - System	85
8.3.1	Camera Tilt	85
8.3.2	X-ray Area	88
8.3.3	Calibration	90
8.3.4	Detector Shift	91
8.3.5	S/W Correction	93

8.3.6	Geometry	94
8.3.7	Beam.....	95
8.3.8	Canine.....	100
8.3.9	Remote	102
8.4	Alignment - CT	103
8.4.1	X-ray Collimation	103
8.4.2	Light Collimation	105
8.5	Alignment - Panorama.....	107
8.5.1	Arch.....	107
8.5.2	X-ray Collimation	108
8.5.3	Beam Field.....	110
8.6	Camera	111
8.6.1	Position	111
8.7	Calibration.....	112
8.8	Calibration – CT.....	113
8.8.1	Auto.....	113
8.8.2	Manual	114
8.9	Calibration - Panorama.....	115
8.10	Acquisition of test image.....	115
8.11	CT Number - Auto.....	116
8.11.1	Initialize	116
8.11.2	SET	117
8.11.3	Auto.....	119
8.12	CT Number - Manual	120
8.12.1	Initialize	120
8.12.2	Step 1.....	121
8.13	CT Number - Manual load	122
8.13.1	Step 1.....	122
8.14	Align Inspection	123
8.15	Manual Defect – H/W Defect.....	125
8.16	Manual Defect - CT	126
8.17	Manual Defect - Panorama.....	127
8.18	Setting – Backup	128
8.18.1	MCU Parameter Backup and Restore	128
8.18.2	All Backup.....	128
8.19	Setting - Update.....	129
8.19.1	Firmware Update	130
8.19.2	Change codes.....	131
8.19.3	Detector and Camera Update.....	132

9 Technical specifications 134

 9.1 Technical specifications 134

 9.2 Dimension 137

10 Appendix 139

 10.1 Setting of the maximum height of the product..... 139

 10.2 Installation Report..... 142



Chapter — 1

Introduction







1 Introduction






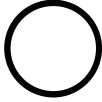







1.1 Installaton manual referenced symbols





Following symbols are introduced in the Installation manual for the purpose of relaying safety cautionary measures for operating the RCT800.

Symbol	Name	Description
 Warning	Warning	Non-observance of contents described herein may result in dangerous situations such as casualties or severe injuries to persons.
 Caution	Caution	Non-observance of contents described herein may result in physical injuries to persons or loss of properties.
Note	Note	Provision of additional information for assisting users.

Among all symbols used in this system, the symbols in below table are indicative of symbols closely related to patient and user safety.

Symbol	Description
	Date of manufacture
	Manufacturer
	Authorized Representative in the European Community
	To indicate hazards arising from dangerous voltages.
	To indicate dangers such as hands getting caught or jammed.
	To indicate the absolute requirement for referencing the operating guidelines to warrant safe operations.

	To indicate compliance of guidelines appearing in the manual for safe operation of the equipment.
	To indicate the exposure or the imminent exposure of X-ray.
	To identify a type B applied part complying with IEC 60601-1
	To indicate the rating plate that the equipment is suitable for alternating current only; to identify relevant terminal.
	To indicate the “ON” condition for a part of the equipment
	To indicate the “OFF” condition for a part of the equipment
	To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode
	General warning sign
	General mandatory action sign
	General prohibition sign
	To identify the operation switch which suspends operation of the equipment in an emergency situation.
	To indicate caution for the LASER beam emitting from the equipment.
	Caution sign

	To warn of a hazard from ionizing radiation
	Do not open when box is broken or damaged.
 -10°C 50°C	Using or storage temperature sign
 10% 90%	Using or storage humidity sign

1.2 Standards and regulations

1.2.1 Standards and regulations

- This equipment has been manufactured in accordance with the following standards and regulations.
 - IEC/EN 60601-1, IEC/EN 60601-1-2, IEC/EN 60601-1-3, IEC/EN 60601-1-6, IEC/EN 60601-2-28, IEC/EN 60601-2-63
- Supplemental equipment provided by anyone other than RAY Co., Ltd. must comply with the standards of IEC 60950-1 or IEC 60601-1.

1.2.2 Classification of medical equipment(IEC60601-1 6.1)

- Type of protection against electric shock: Class I Equipment
- Degree of protection against electric shock: Type B Applied Part
- Degree of protection against the ingress of water: IPX0
- Class 1 laser equipment: IEC 60825-1



- Equipment not suitable for use in the presence of a flammable anesthetic mixture using air, oxygen or nitrous oxide.

1.3 Installer requirements



Caution

- The installer has to fulfill our requirements to set up this device.
 - RAY C/S engineers
 - Dealers or 3rd party engineers who has a certificate to pass training program held by RAY.
- Installers must understand all the information, directions, and procedures ahead from installation manual to set up a device.

1.4 Safety management and regulations

1.4.1 General safety



Warning

- The system described herein emits X-ray therefore installation and operation of the equipment must be in compliance with the international regulations.
- This system is considered dangerous to patients and users if safety exposure elements, operating guidelines and maintenance schedule are not properly studied. Additionally, the X-ray equipment described herein should be operated by only those permitted.
- This system should not touch another part except patient handle. (Authorized users only those permitted)
- Operation must be concluded immediately if and any electrical and mechanical failure occurs in this system. Failures can be verified through the display or a warning alarm.
- When requiring connecting parts from an alternate machine to this system, consult with the manufacturing specialists. Use only the connectable accessories certified in compliance with IEC standards (IEC 60950-1 or IEC 60601-1). Also, comply with the articles in IEC 60601-1 when connecting additional devices to the signal input/output parts.
- The system described herein requires a regularly scheduled maintenance. For further details, refer to maintenance, cleaning and disposal.
- The equipment may not be operable if an error message appears during operation of this system. Inquire with the service representative if an error message appears.
- RAY Co., Ltd. is not liable in the following circumstances.
 - Defects or physical injuries resulting from an incorrect undertakings during maintenance of the equipment by the user.
 - Physical injuries as a result of user carelessness.
 - Defects, damages or physical injuries initiated by a supplemental equipment provided by someone other than RAY Co., Ltd.

1.4.2 Electrical safety

- The medical equipment described herein complies with Safety class I, type B in accordance with IEC 60601-1.
- The system must be operated in an environment fulfilling the IEC safety regulation requirements.



Warning

- Do not remove the cover of this system without permission. If cover is removed, the high voltage current of the inner product parts could cause an electrocution.
- Take caution as to not permit liquids to flow into the system.
- When danger to patients or users are evident due to an unintended system operation, the equipment power may be forced to turn OFF by pressing the Emergency Stop Switch.



Caution

- Unstable power supply may cause irregular system operation or suspension resulting in physical injuries to patients and users. Hence, stable power supply must be taken into consideration when installed.

Emergency Stop Switch

When system is capable of causing physical injuries to either patients or users then the system operation can be stopped by pressing the Emergency Stop Switch. Emergency Stop Switch is located on the front side of the handle and the pressing motion will stop the system operation.



Caution



- Be aware that if Emergency Stop Switch is pressed while X-ray is being emitted to the patient then the X-ray emission is suspended immediately.
- Use only in case of an emergency, since turning power OFF using the Emergency Stop Switch can result in loss of information of the patient currently undergoing the procedure.
- Emergency Stop Switch release
To release the Emergency Stop Switch, turn the pressed button to the right.

1.4.3 Mechanical safety



Warning

- Do not remove cover and cable of the system unless directed by a professionally trained specialist.
- Audible and visual contact between patients and operator of the equipment must be maintained at all times during an examination performed using this system.
- Take caution to prevent body parts or clothing from getting caught when operating this system. The warning sign shown below is attached to sections which can result in patient or operator jamming and/or collision during equipment use.

Jamming(Pinning) Caution	Collision Caution
	

1.4.4 Fire safety



Warning

- Do not operate this system in locations exposed to fire hazards.
- In the event of a fire, conclude operation of the entire equipment immediately then shutdown power of the power supply device. Then follow by extinguishing the fire using a CO2 fire extinguisher. Do not use water or other liquids.

1.4.5 Explosion safety



Warning

- Do not operate this system in locations with the possibility of an explosion. This system is not designed for use in locations with explosion hazards and does not comply with AP/AGP standards.

1.4.6 Electromagnetic compatibility



Warning

- Use of wireless mobile phones and similar wireless devices in the vicinity of this system is prohibited. Use of devices compliant with EMC standards in close proximity can lead to unintended activities due to electromagnetic interference.

- If system is intended for use on patients having an “Implantable Cardiac Pacemaker” or “Implantable Defibrillator”, the user is obligated to notify patients having such devices of the possibility of dysfunctions incurred by the machine contributed to continuous pulse shaped X-ray exposure on to the transplanted part of the “Implantable Cardiac Pacemaker” or the “Implantable Defibrillator”. When using this machine, avoid direct X-ray exposure to the “Implantable Cardiac Pacemaker” or “Implantable Defibrillator” and emit X-ray only for short duration if possible.

1.4.7 Radiation protection



Warning

- The X-ray equipment described herein is in compliance with the radiation protection standard IEC 60601-1-3.
- Use available protective gears on patients during X-ray exposure to protect critical parts. (Neck area, especially around the thyroid gland, reproductive organs and etc.)
- Excessive X-ray exposure must be avoided by acquiring accurate scanning and reducing the number of rescan.
- X-ray scanning should be conducted in an examination room when possible.
- In the event that a need to emit X-ray in the X-ray room arises, then protective gears as well as a film badge or the TLD badge must be worn by the operator to check radiation exposure dose of oneself.

Chapter — 2

Pre-installation check

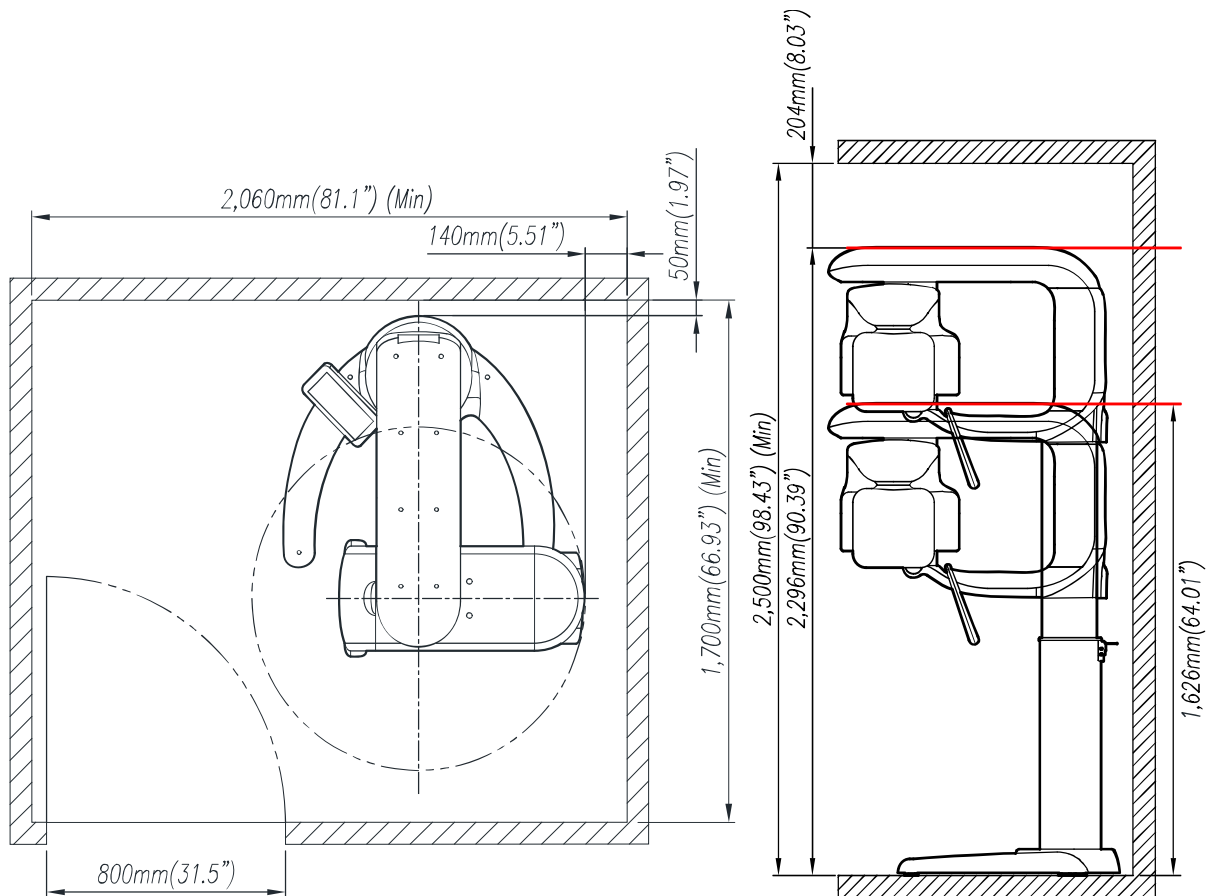
2 Pre-installation check

2.1 X-ray shielding room requirements

2.1.1 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.

2.1.2 Checking the installation space



2.2 Electrical safety



Warning

- This product operates in single phase 100-240V~, 50/60 Hz.
- The power supply cable must be permanently connected. You must protect the equipment from any accidental disconnection of the power supply cable.
- If this product is installed on the same power line as another system, it may operate abnormally. Use a separate power supply for this product.
- There is a danger of electric shock. This product should only be connected to mains power supply with protective earth.
- It is recommended to install AVR(Automatic Voltage Regulator) in mains power of this product to prevent voltage fluctuation.

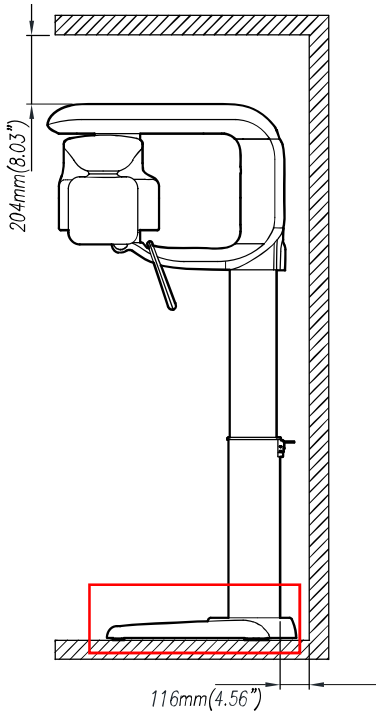
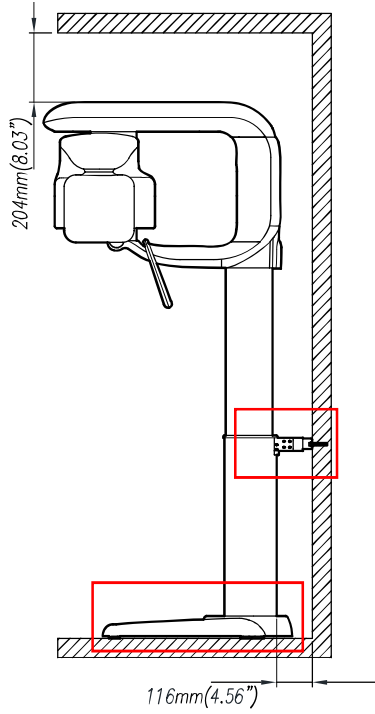
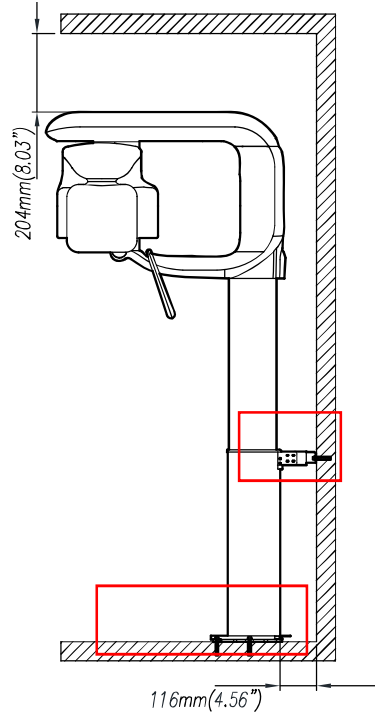
2.3 Environmental requirements

Check the following ambient operating condition requirements of the X-ray room before installing the system.

Items		Specification
Operating environment	Temperature	15℃ ~ 25℃
	Relative humidity	20% ~ 60%
	Atmospheric pressure	700hPa ~ 1060hPa
Transport & Storage environment	Temperature	-10℃ ~ 50℃
	Relative humidity	10% ~ 90%
	Atmospheric pressure	700hPa ~ 1060hPa

2.4 Installation option

There are three types of installation depending on the environment of the installation site. We recommend Floor stand + Wall mount type.

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

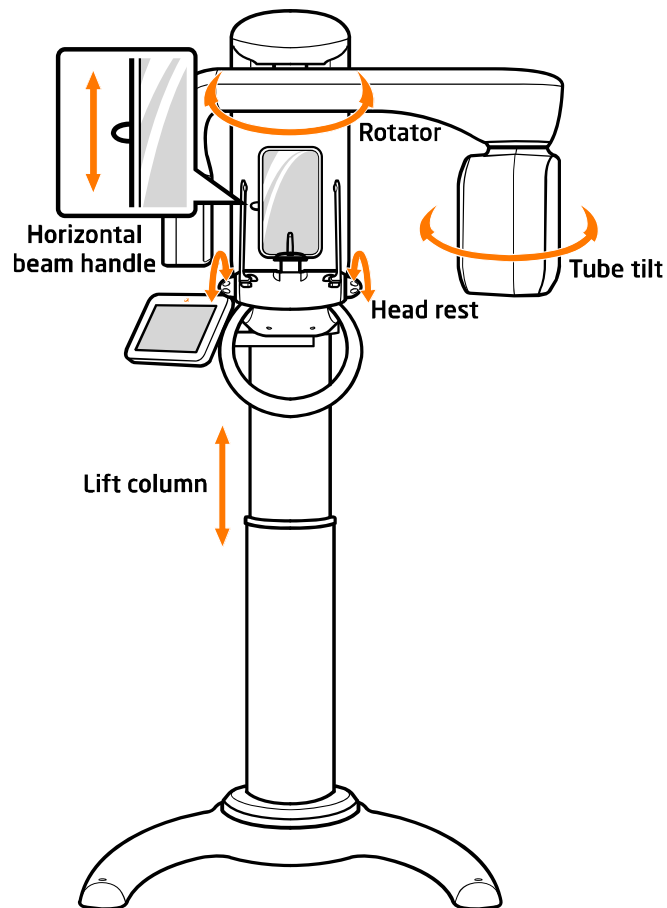
Chapter — 3

System overview

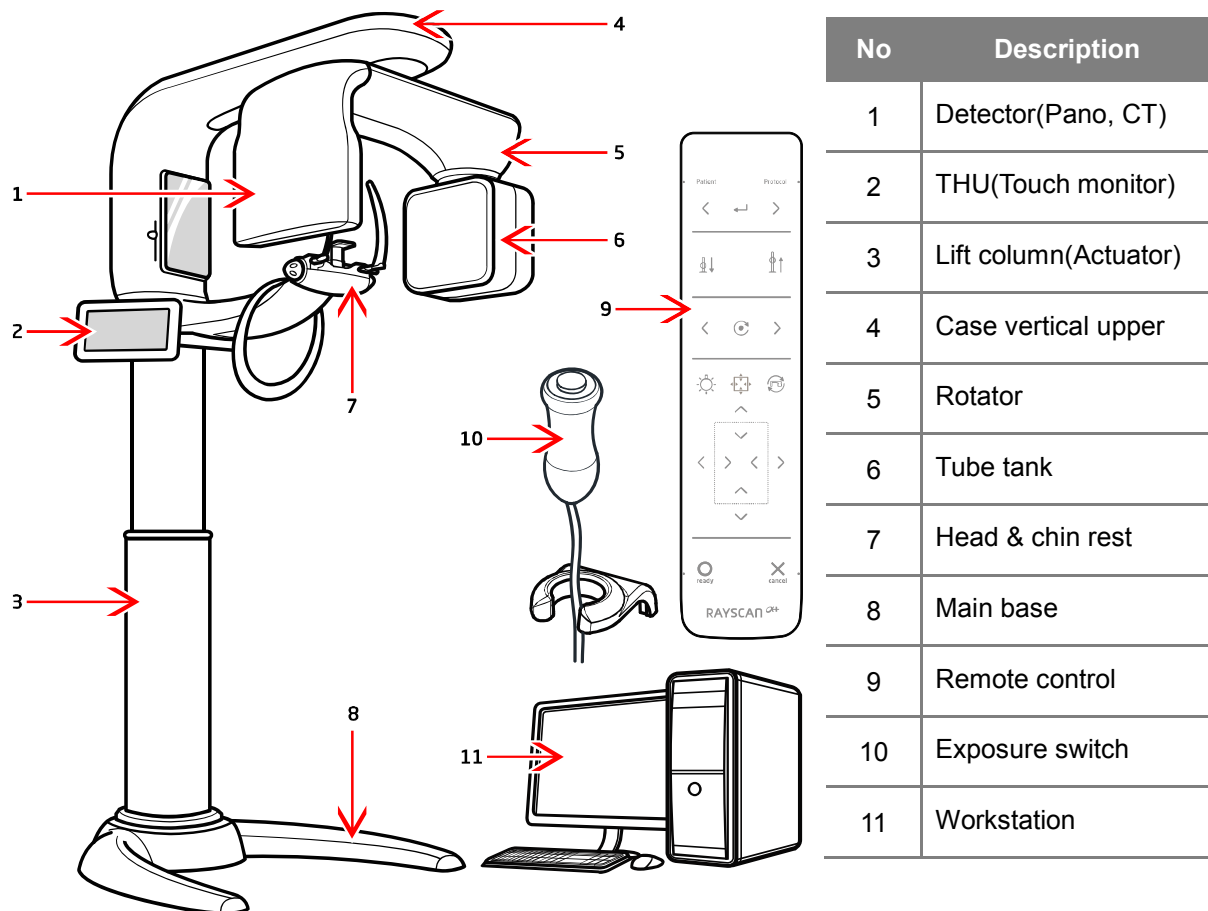
3 System overview

3.1 System moving parts

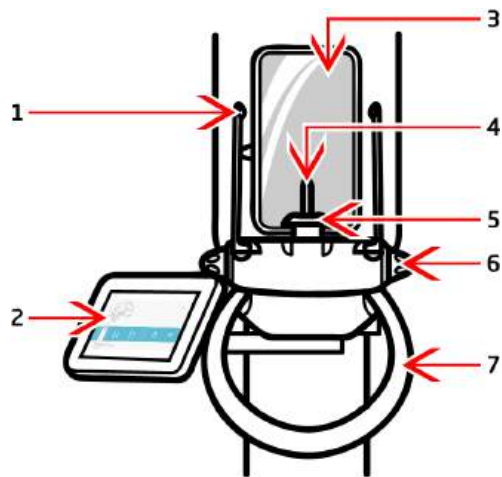
- The Rotator is equipped with detector and X-ray generator for CT or panoramic scan. Rotates during X-ray examination.
- The Lift Column can be adjusted up/down by remote control or touch monitor.
- Use the Head rest to secure the patient's head to the correct position.



3.2 System composition

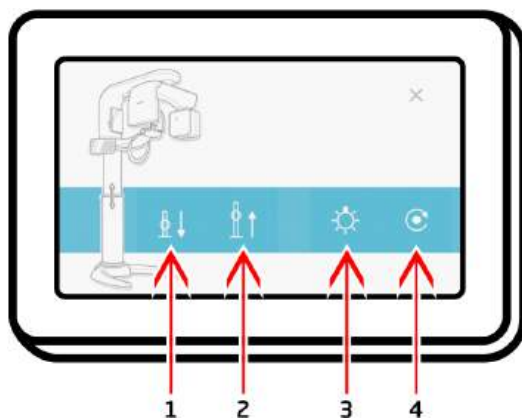


3.3 Rotator and Chinrest



No	Description
1	Head rest
2	THU(Touch monitor)
3	Positioning mirror
4	Bite block
5	Chin rest
6	Head control
7	Handle

3.4 Touch Monitor(THU)



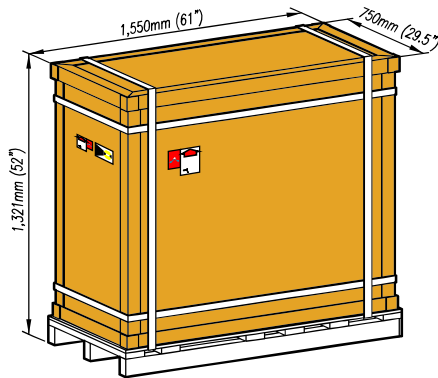
No	Description
1	Column down
2	Column up
3	Lamp On/Off
4	Equipment initialization

Chapter — 4

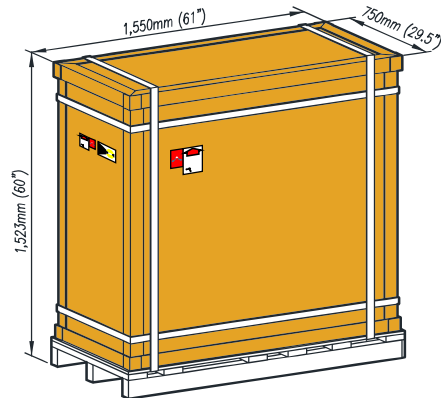
Packaging

4 Packaging

4.1 Packaging dimension



Standard packaging

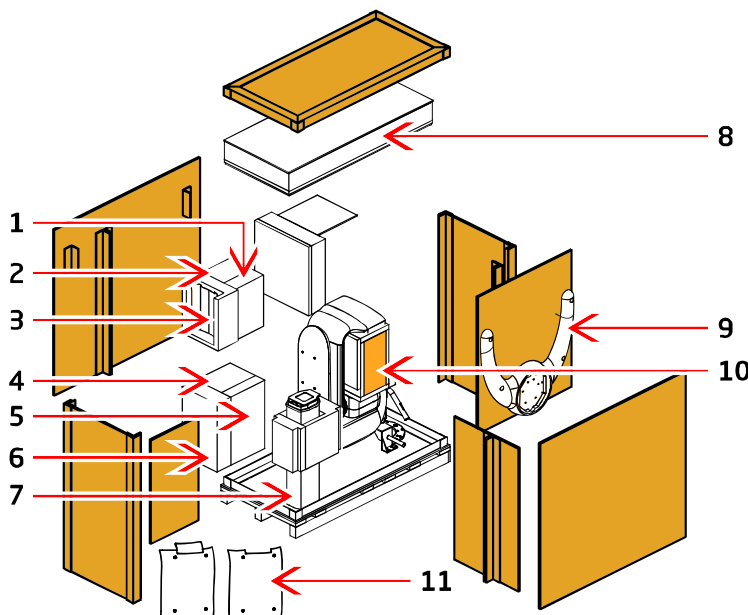


Ceph option packaging

Basic box size(WxDxH) 1,550mm(61")x750mm(29.5")x1,321mm(52")


Ceph option box size(WxDxH) 1,550mm(61")x750mm(29.5")x1,523mm(60")

4.2 Packaging composition




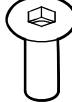
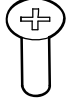



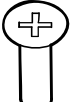



No	Description
1	Head rest box
2	Accessory sub box
3	Case column body rear
4	Workstation box
5	Monitor box
6	Accessory Wall/Floor mount box
7	Column
8	Ceph Module(Optional)
9	Main base
10	Accessory main box
11	Case column body rear(Ceph option)









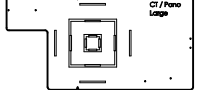

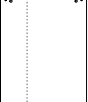

4.2.1 Main Accessory Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	ASM MONITOR TOTAL		1	2	POWER CORD		1
3	ASM CASE COLUMN LOWER (L)		1	4	ASM CASE COLUMN LOWER (R)		1
5	BRACKET BASE COVER A		1	6	BRACKET BASE COVER B		1
7	STICKER FOOT		2	8	FOOT STICKER JIG		1
9	HOLDER CASE COLUMN BODY LOWER 1		1	10	HOLDER CASE COLUMN BODY LOWER 2		1
11	KNOB-CEPH ADJUST		2	12	CABLE EARTH (EARTH SHAFT TO WALL/EARTH SHAFT TO PC)		2
13	STICKER CASE S/W HOLDER		1	14	ASM-EXPOSURE SWITCH SET (exposure cable)		1
15	Battery		2	16	LAN PC		1
17	ASM-REMOTE CONTROL		1	18	Machine Bolt		1
19	PLATE REMOTE CONTROL		1	20	STICKER LEVELING		5
21	HOLDER-EXPOSURE SWITCH		1	22	3D Viewer		1

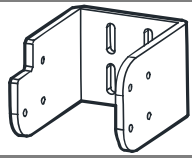



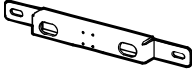
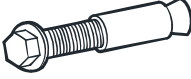
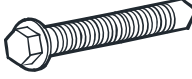
4.2.2 Machine Bolt Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	SHAFT EARTH		1	2	WRENCH BOLT+ SPRING WASHER [M8x40]		9
3	FLAT HEAD TAPPING BOLT [Φ4x20]		6	4	FLAT HEAD WRENCH BOLT [M6x15]		2
5	FLAT HEAD BOLT [M4x8]		16	6	CABLE TIE (MIDDLE)		3
7	PAN HEAD WASHER BOLT [M4x8]		13	8	PAN HEAD WASHER BOLT [M4x10]		4
9	FLAT HEAD BOLT [M3x8]		3	10	SPRING WASHER [MS]		9


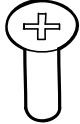

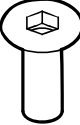
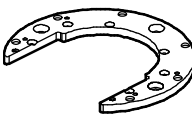
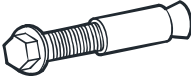
4.2.3 Sub Accessory Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	BAR TMJ HEADREST (L)		1	2	BAR TMJ HEADREST (R)		1
3	BAR PANO CT HEADREST (L)		1	4	BAR PANO CT HEADREST (R)		1
5	ASM CASE CHINTRST		1	6	CASE EDENTULOUS GUIDE		1
7	BLOCK BITE			8	Remote control		1
9	Light Collimation Phantom		1	10	Quick manual CD		1
11	Canine Laser Beam Alignment Plate			12	User Manual		1



4.2.4 Wall Mount Accessory Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	BRACKET WALL MOUNT B		1	2	Hex Through Bolt Set (M8x150mm)		2
3	BRACKET WALL MOUNT C-JIG		1	4	SEMS WRENCH BOLT (M5x20mm)		11
5	BRACKET WALL MOUNT C		1	6	Anchor Bolt (M8x80mm)		2
7	Hex Wood Bolt (Φ8x80mm)		2				

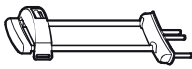

4.2.5 Floor Mount Accessory Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	BRACKET WALL BASE COVER A		1	2	FLAT HEAD (M3x8mm)		2
3	BRACKET WALL BASE COVER B		1	4	FLAT HEAD WRENCH BOLT [6X20mm]		6
5	PLATE WALL MOUNT LIFT BOTTOM		1	6	Anchor Bolt (M8x80mm)		3

4.2.6 Workstation and monitor

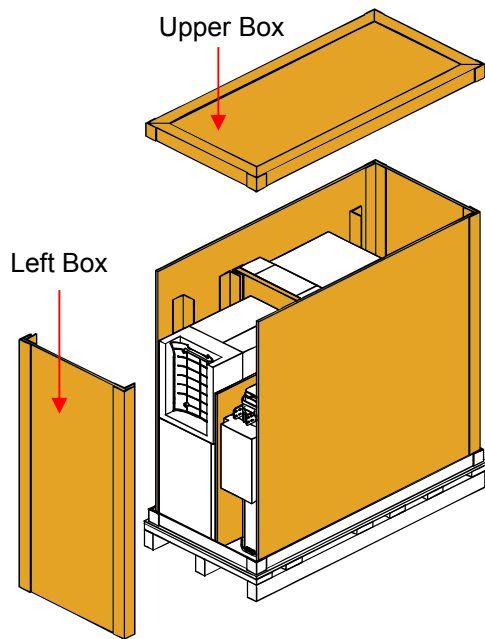
No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	WORK STATION		1	2	MONITOR		1

4.2.7 ASM CT Headrest Box

No	Contents	Image	Q'ty	No	Contents	Image	Q'ty
1	ASM CT HEADREST		1	2	CASE CT HEADREST		2

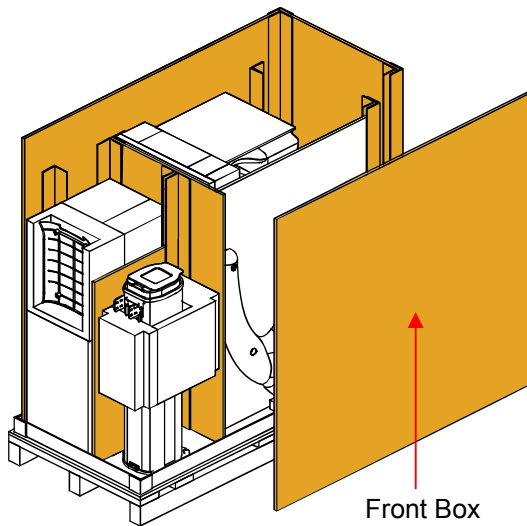
4.3 Unpacking

4.3.1 Upper/left box dismantlement



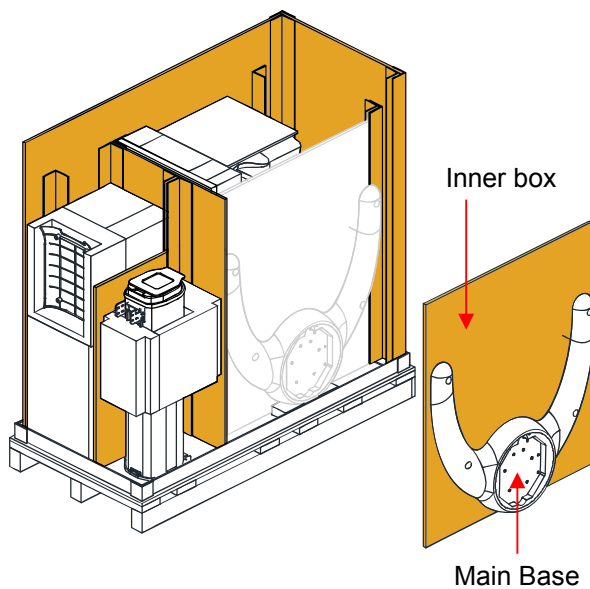
Proceed to cutting the outer band of the main Box.

Remove the upper box and left box.

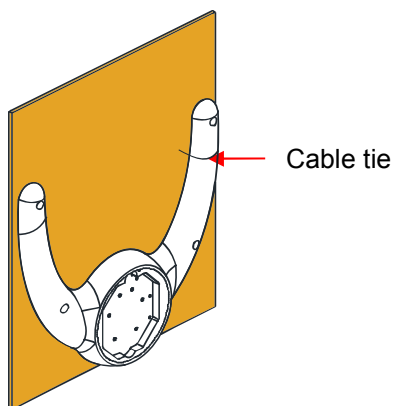


Remove the front box.

4.3.2 Main base separation

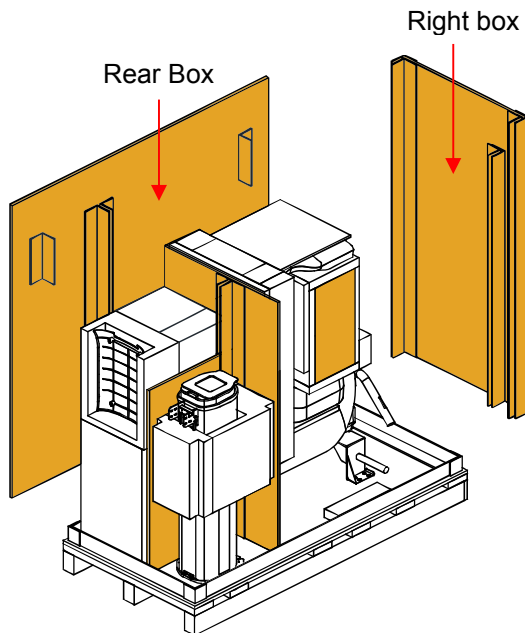


Remove the Main base.



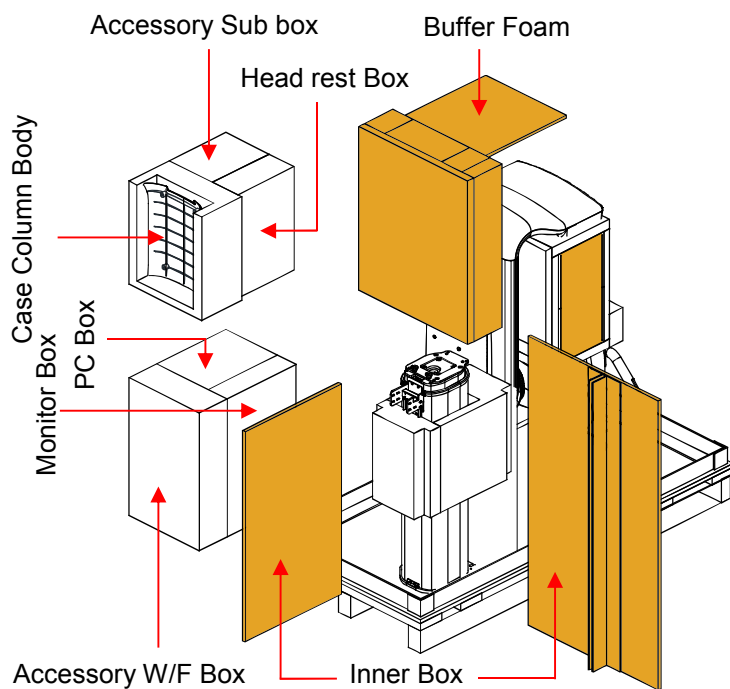
Cut the fastening Cable tie of the Main base.

4.3.3 Dismantlement of Rear/right/inner box



Remove the rear/right/inner box.

4.3.4 Dismantlement of PC and monitor box



Remove butter foam and inner box of the PC box.

Separate accessory sub box, monitor box and the PC box.

In the case of floor stand + wall mount, contains the accessory w/f box(option).

Chapter — 5

Product installation (Floor stand + Wall mount)

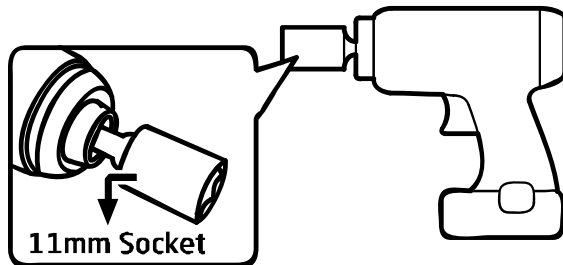
5 Product installation(Floor stand + Wall mount)

5.1 Tool requirements

Tool	Floor stand	Floor stand + Wall mount(Optional)	Floor mount + Wall mount(Optional)
Electric driver	O	O	O
Torque hexagon wrench driver set (M type)	O	O	O
Phillips screw driver	O	O	O
Spirit level	O	O	O
Column lift jig	O	O	O
Hex socket set	X	O	O
Hammer drill	X	O	O
Drill bit (Φ12, Φ4.8, Φ9)	X	O	O
Hammer	X	O	O
Base jig	X	X	O

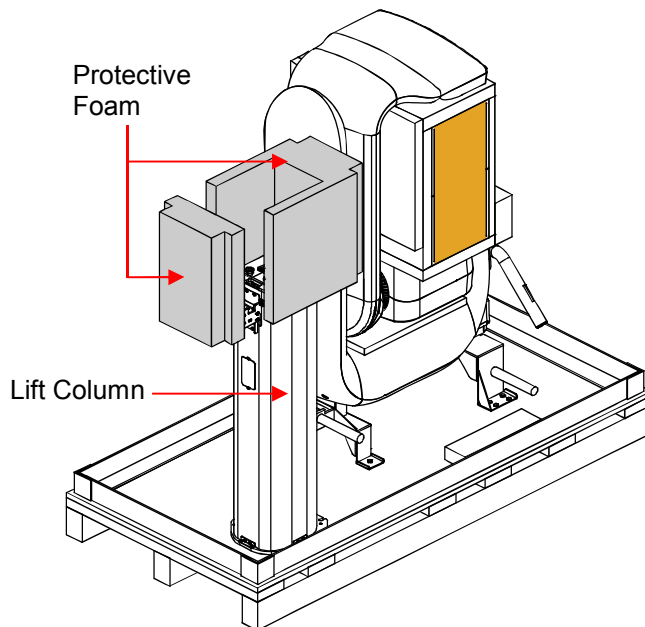
5.2 Lift column installation

5.2.1 Tool assembly



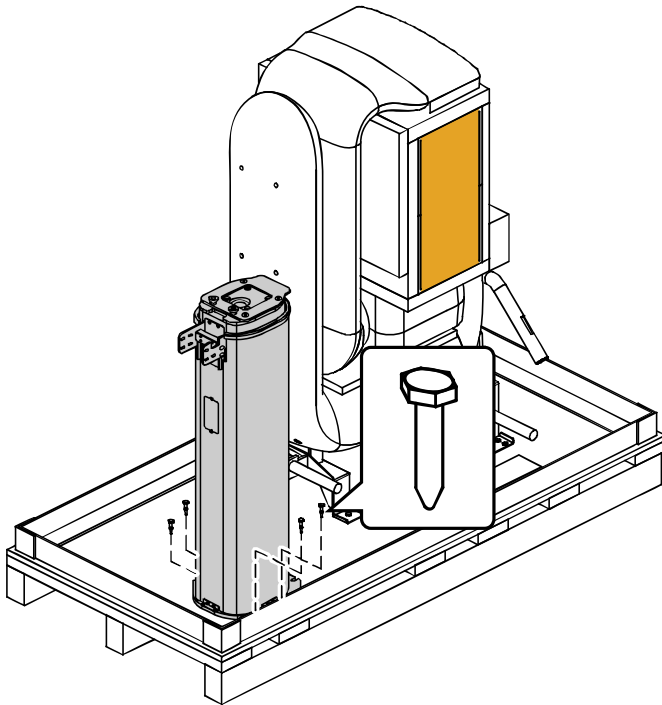
Prepare the electric driver with the 11 mm socket to loosen the bolt assembled onto the pallet.

5.2.2 Dismantlement of Lift column Protective foam



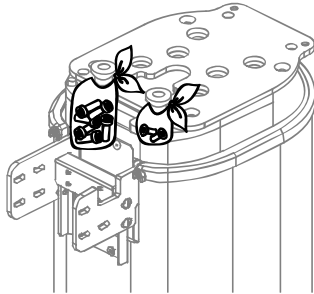
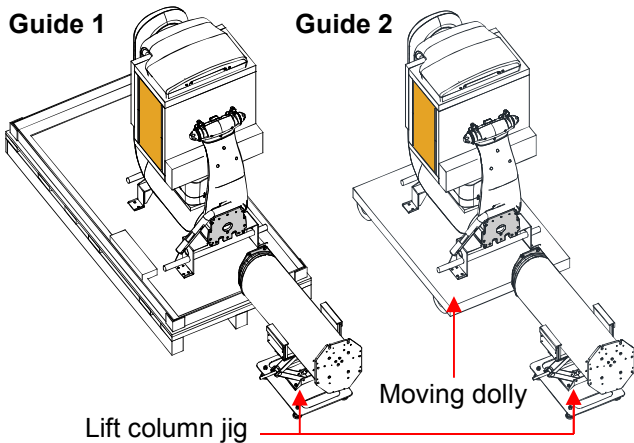
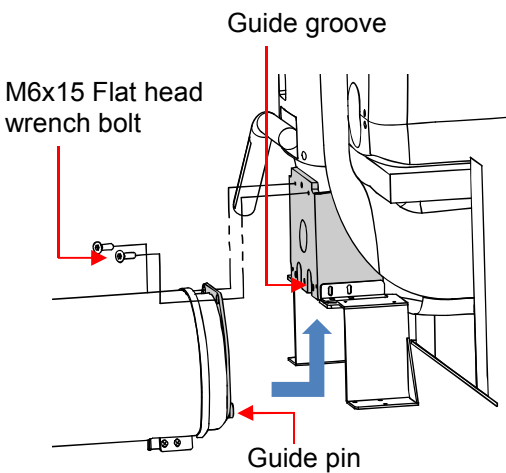
Remove the Lift column protective foam.

5.2.3 Dismantlement of Lift column

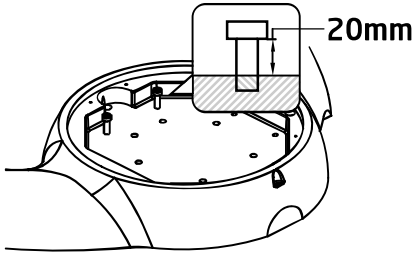
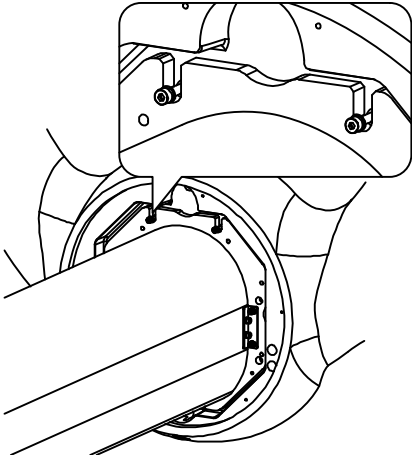
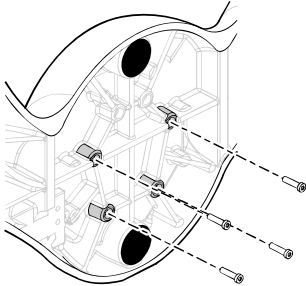
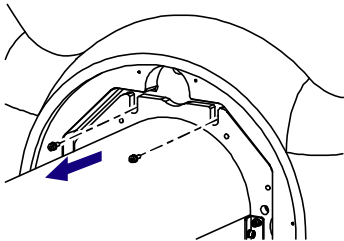
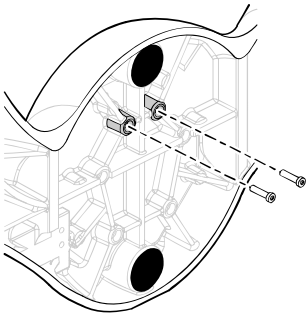


Use the readied tool to loosen bolts securing the lift column and pallet on 4 locations then remove the bolts.

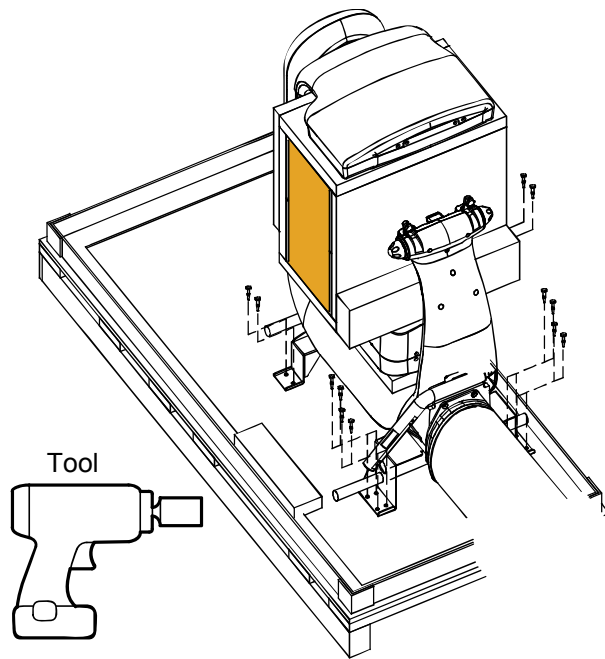
5.2.4 Main body and lift column assembly

	<p>Remove the M8X40 Wrench bolt & spring washer 6ea and M6X15 Flat head Wrench bolt 2ea from Lift column and keep it well.</p>
 <p>Guide 1</p> <p>Guide 2</p> <p>Lift column jig</p> <p>Moving dolly</p>	<p>Please put the lift column jig under the lift column.</p> <p>You can also move the product to Moving dolly as Guide 2 and assemble the Lift column. Refer to “5.2.6 Dismantlement of the Main body fixed part” to remove the Main body and move it.</p>
 <p>Guide groove</p> <p>M6x15 Flat head wrench bolt</p> <p>Guide pin</p>	<p>Adhere the guide pin of the lift column upward into the guide groove on main body's floor section then using the hexagon wrench driver to tighten the M6x15 flat head wrench bolt on 2 locations.</p>

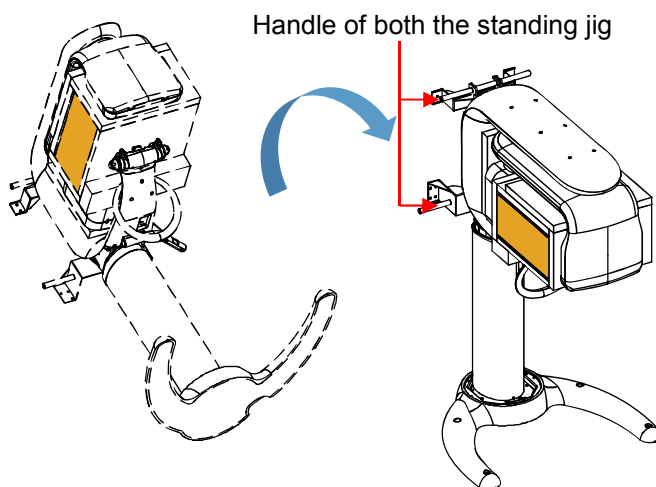
5.2.5 Lift column and base assembly

	<p>Temporary assembly the M8x40 wrench bolt on the Main base as shown on the left.</p>
	<p>Insert the bolts of the Main base into the Lift column as shown on the left.</p>
	<p>Adhere base to the lift column then assemble the M8x40 wrench bolt + M8 spring washer using the hexagon wrench driver in 4 locations.</p>
	<p>Remove the two wrench bolts from above.</p>
	<p>Assemble the two wrench bolts removed from above to the Main base.</p>

5.2.6 Dismantlement of the main body fixed part and stand by causing the body

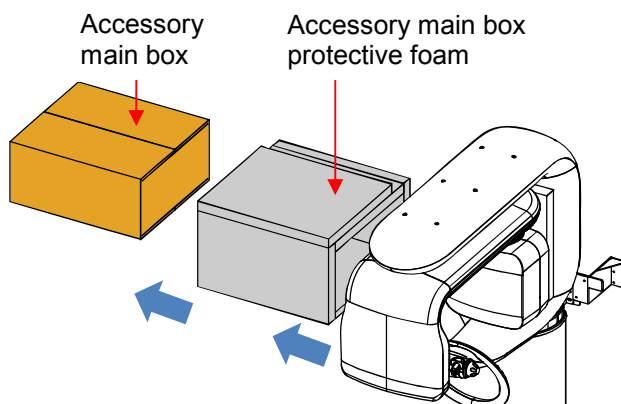


Use the Electric Driver with the 11mm socket assembled tool to loosen the bolt on main body fixed to the Pallet in order to separate main body from the Pallet.



Grasp the handle of both the standing jig, pick up and by causing the body.

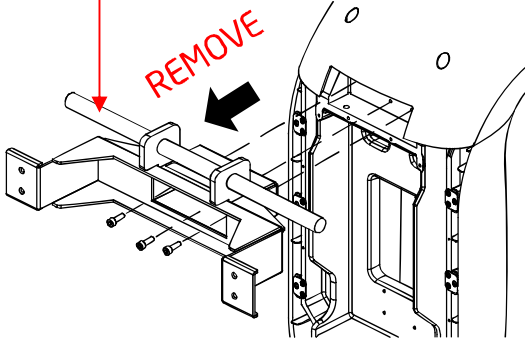
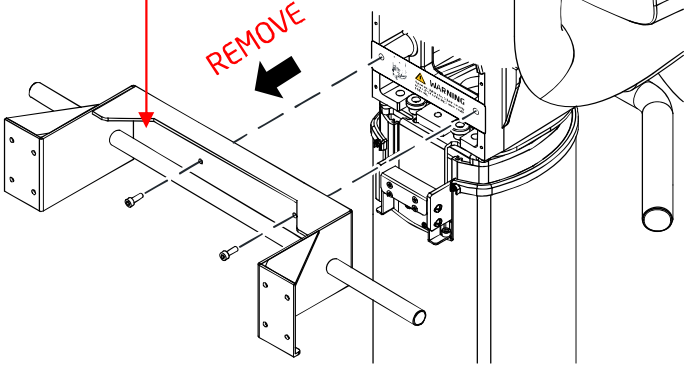

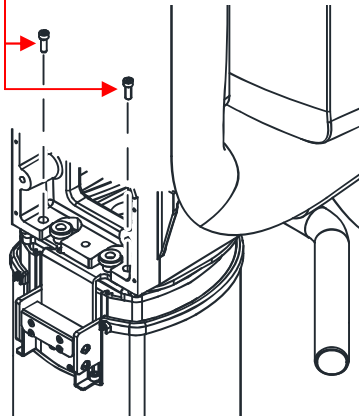
Caution: When you stand by causing the body, you need to work at least two persons.



Take out the accessory main box protective foam sideways from the product.

Separate the accessory main box protective foam and the accessory main box.

5.3 Remove the Fixing pallet bracket

<p>Pallet fixing upper bracket</p> 	<p>Remove release Pallet fixing Upper Bracket fixing screws 3ea.</p>
<p>Pallet fixing lower bracket</p> 	<p>Remove release Pallet fixing lower Bracket fixing screws 2ea.</p>
<div data-bbox="253 1290 927 1458">  <p>WARNING</p> <p>Screw and tighten the Column securely to the Lift Column using 2 wrench bolts (M8 x 40).</p> </div>	<p>Check the caution sticker and remove it.</p>
<p>M8x40 Wrench Bolt, M8 Spring Washer</p> 	<p>Fixed with 2ea M8x40 wrench bolt + M8 spring washer the main body and lift column.</p>

5.4 Wall mount bracket installation

5.4.1 Preparation for fixing - floor stand + wall mount



Caution

In case of floor stand and wall mount, all the parts are in wall mount accessory box.

Wall mount is for holding a device on a wall with bracket. Please understand the procedures and follow all the directions to fix a device totally.



Caution

Wall mount must be operated after the main base assembly to prevent damages such as conduction in use.

Wooden wall



Caution

- 1) The minimum thickness must be greater than 40mm(1.57") to hold a device.
- 2) To prevent conduction, each holding bolt must have tensile force which is greater than 1,000N (100Kg).



Caution

Concrete wall

- 1) To prevent conduction, each holding bolt must have tensile force which is greater than 1,000N (100Kg).



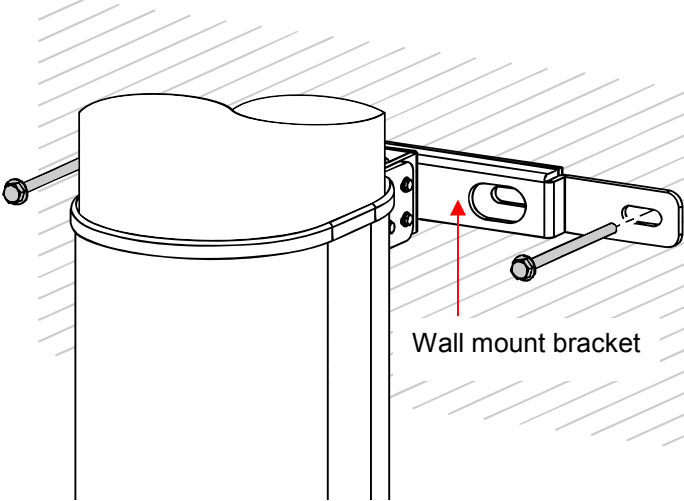
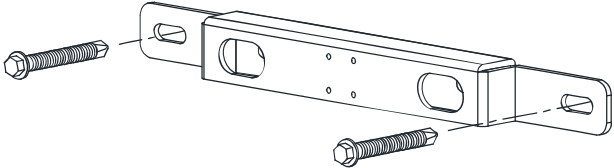
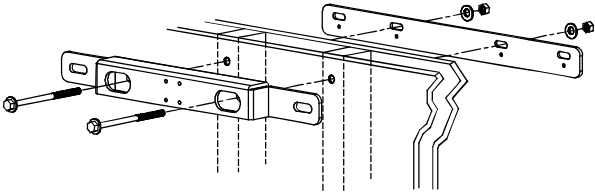
Caution

Steel-beam wall

- 1) Hold wall mount bracket and support together through a wall.

5.4.2 Example of fixing wall mount bracket

Move the Wall mount bracket installed on the product so that it is close to the wall, and assemble using the two bolts supplied by the manufacturer.

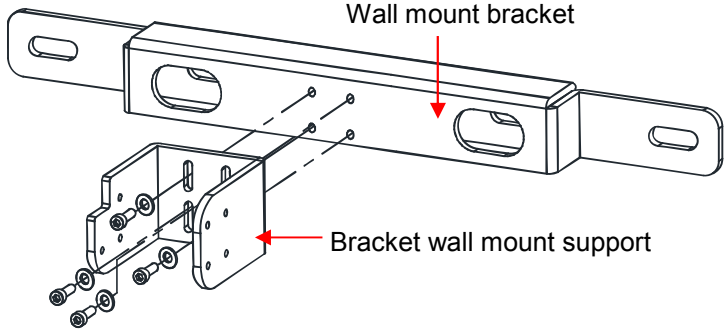
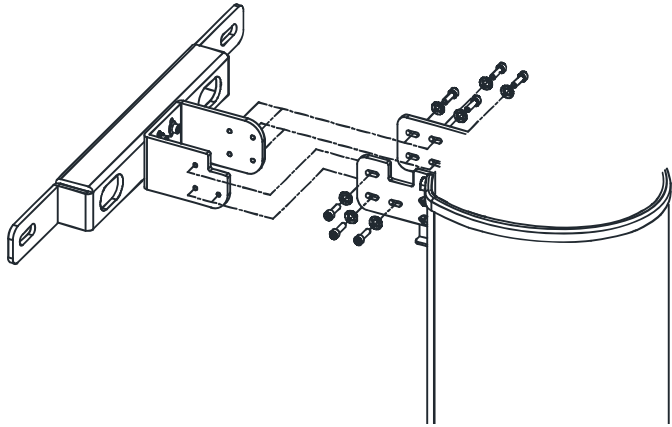
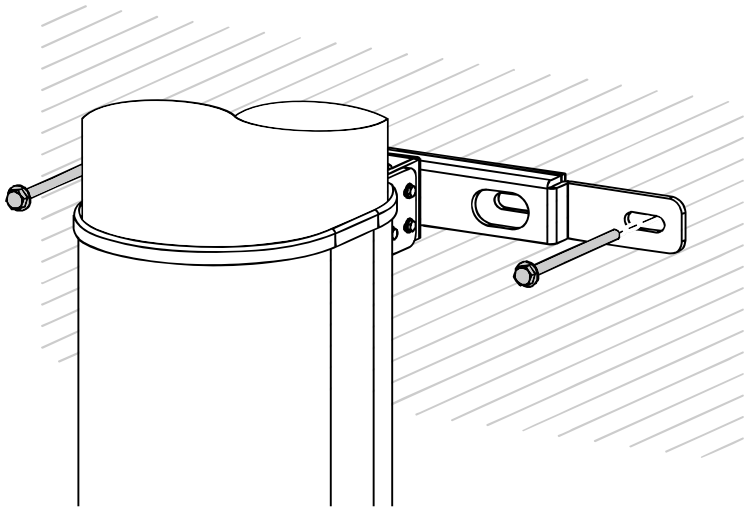
 <p>Wall mount bracket</p>	<p>In case of concrete wall, use a socket set 2EA M8x80 anchor bolts into hammer drill to fix wall mount bracket.</p> <p>Warning: Please use the standard Anchor Bolt(SZ-S 12-10 anchor bolts only from MKT) provided by RAY.</p>
	<p>In case of wooden wall, use a socket set to insert 2ea $\Phi 8 \times 80$ hex wood bolts for fixing wall mount bracket.</p>
	<p>For steel beam wall, insert 2EA Φ M8x150 hex through bolts through wall mount bracket and wall mount support. Then, fix with washers and nuts.</p>



Caution

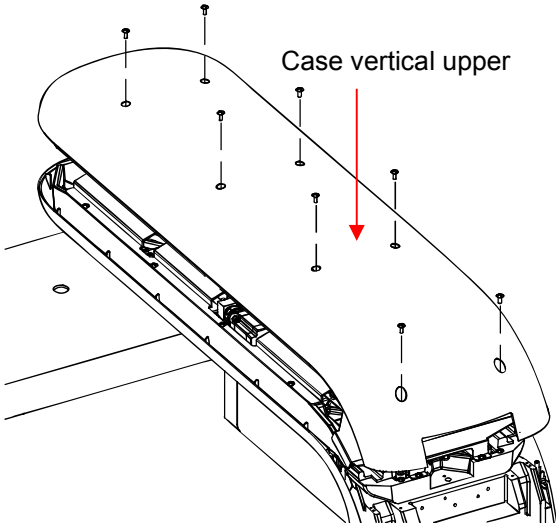
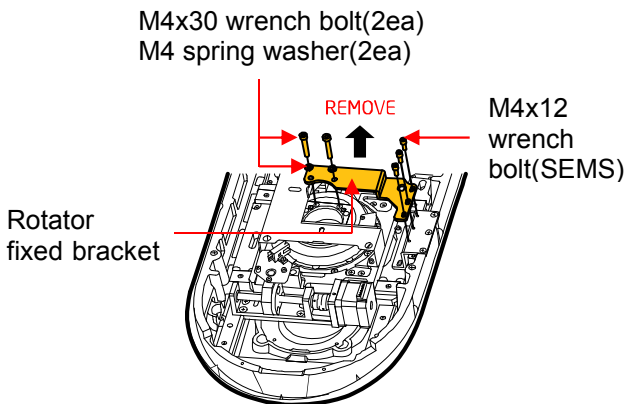
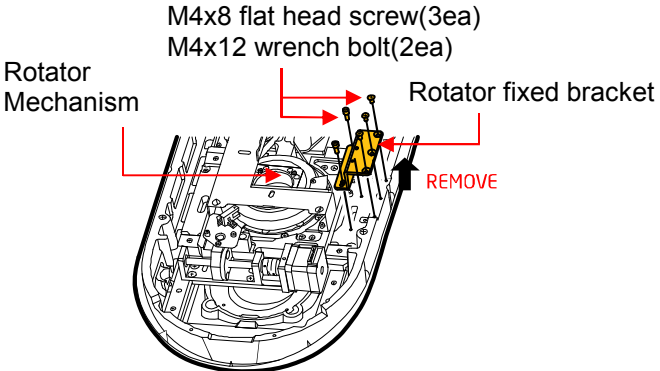
Make sure there is no dust or any kinds of obstacles inside the whole before fixing.

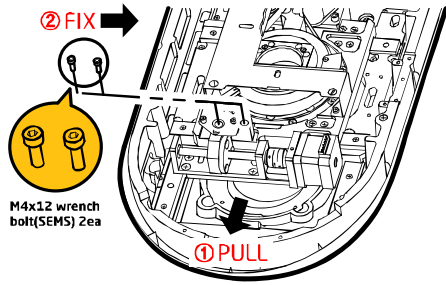
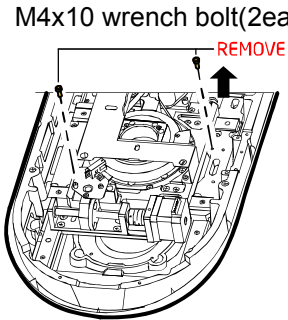
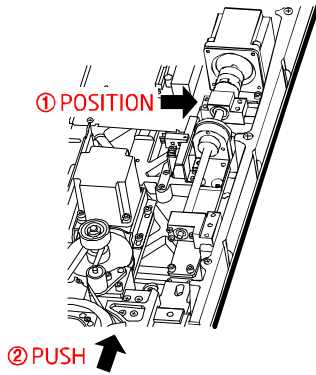
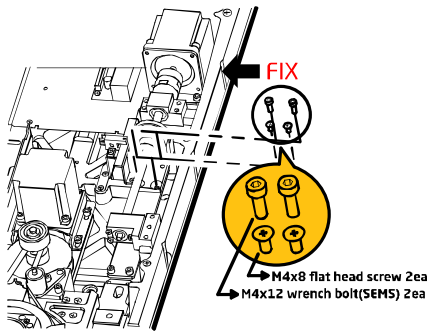
5.4.3 Wall mount bracket assembly

 <p>The diagram shows a long, L-shaped 'Wall mount bracket' and a smaller 'Bracket wall mount support'. The support has four pre-drilled holes for screws. Red arrows point from the labels to the respective parts.</p>	<p>Place bracket wall mount support at wall mount bracket. Then, fix with 4EA M5x20 wrench bolt(s).</p>
 <p>The diagram shows a cylindrical device being attached to the bracket assembly. Multiple screws are shown passing through the device and the bracket into a wall, indicating temporary fixation.</p>	<p>After connect a device with bracket wall mount support, temporary fix them with 7EA M5x20 wrench bolt(s).</p> <p>Caution: Adjust the bracket's screws up/down, left/right, front/rear and secure the Wall mount bracket to the wall and fix it firmly.</p>
 <p>The diagram shows the final installation where the device is mounted on a wall. The wall mount bracket is visible, secured with screws into the wall structure.</p>	<p>Adhere the product to the wall to be fixed and tighten the bolts that fit the wall structure.</p> <p>Caution: Do not fix wall mount bracket totally to adjust the position of a device at the end of installation.</p>

5.5 Shipping lock bracket removal

5.5.1 Rotator fixed bracket removal

 <p>Case vertical upper</p>	<p>Loosen the 8ea M4x8 flat head screw securing the case vertical upper and lift up.</p>
 <p>M4x30 wrench bolt(2ea) M4 spring washer(2ea)</p> <p>REMOVE</p> <p>M4x12 wrench bolt(SEMS)</p> <p>Rotator fixed bracket</p>	<p>Loosen and remove the rotator fixed bracket intended to secure the rotator during packaging.</p> <p>Note: Cover Vertical Upper does not need to be removed.</p>
 <p>M4x8 flat head screw(3ea) M4x12 wrench bolt(2ea)</p> <p>Rotator Mechanism</p> <p>Rotator fixed bracket</p> <p>REMOVE</p>	<p>It will remove the rotator fixed bracket used to secure the front and back of rotator mechanism at the time of packing. (M4x12 wrench bolt(sems) 4ea)</p>

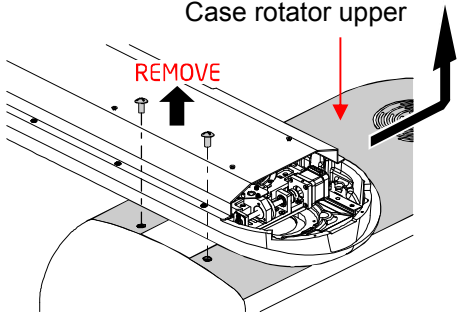
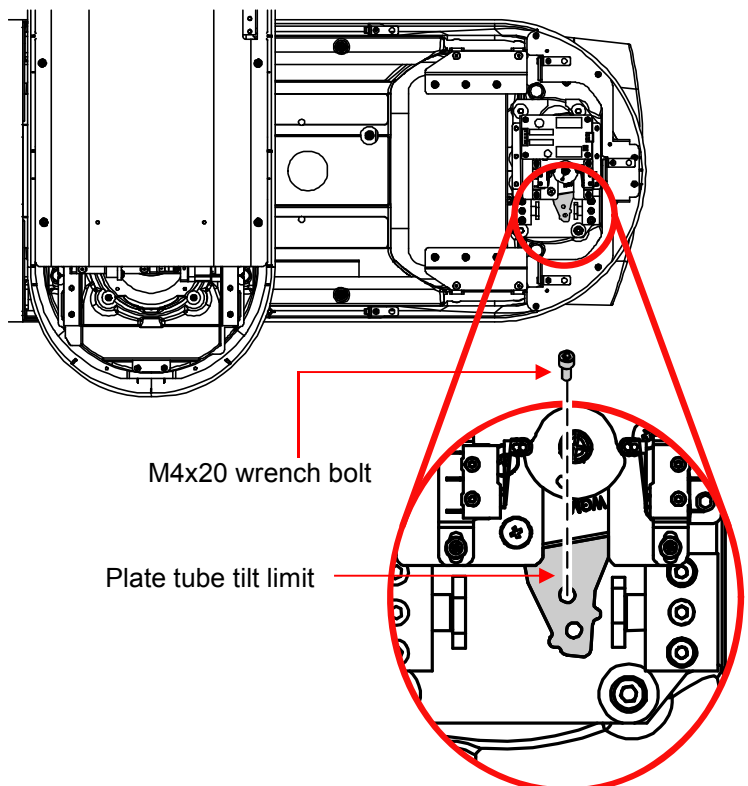
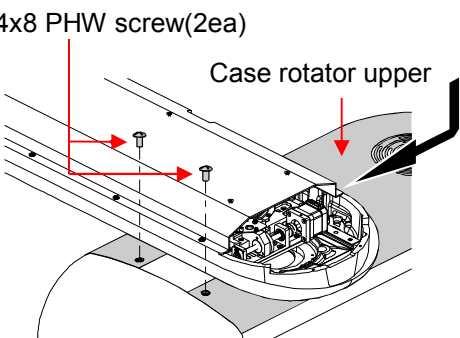
	<p>Pull the X-axis module forward outside.</p> <p>Re-assembling the M4x12 wrench bolt (sems) 2ea was removed above to connect the x-axis of rotator mechanism.</p>
	<p>It will remove the rotator fixed bracket used to secure the left and right of rotator mechanism at the time of packing. (M4x10 wrench bolt 2ea)</p>
	<p>Position the Y-axis coupler block properly.</p> <p>Push the X-axis module back into initial location.</p>
	<p>Re-assembling the M4x12 wrench bolt (sems) 2ea and the M4x8 Flat Head Screw 2ea removed above to connect the y-axis of rotator mechanism.</p>



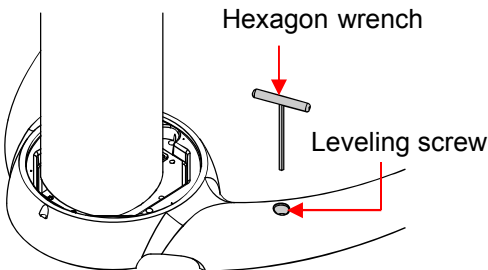
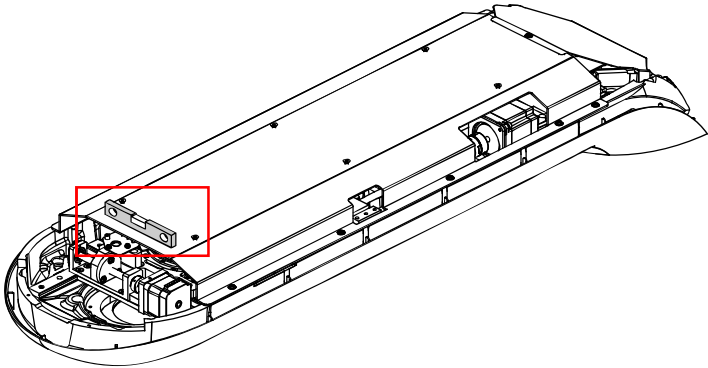
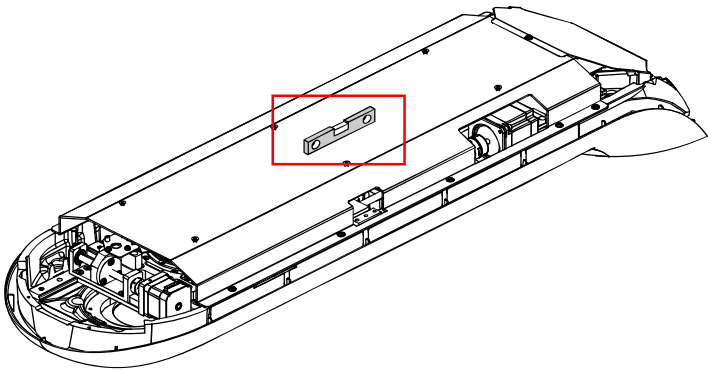
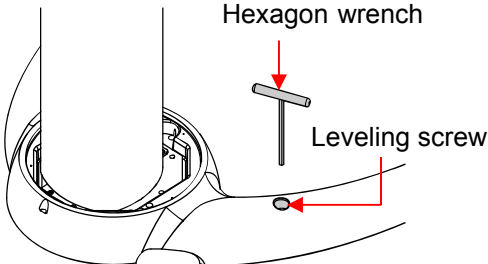
Caution

Be aware of screw dropping while perform. Use magnetized tool.

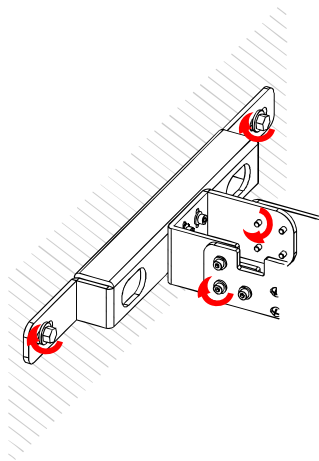
5.6 Tube tilting secure part disassembly

 <p>Case rotator upper</p> <p>REMOVE</p>	<p>Loosen the 2ea M4x8 PHW screws on the upper case rotator then push sideways and pull.</p>
 <p>M4x20 wrench bolt</p> <p>Plate tube tilt limit</p>	<p>Remove the M4x20 wrench bolt securing the tube tank from rotation during shipment from the plate tube tilt limit using a hexagon wrench driver.</p>
 <p>M4x8 PHW screw(2ea)</p> <p>Case rotator upper</p>	<p>Couple the case rotator upper and tighten the M4x8 PHW screws into 2ea.</p>

5.7 Leveling the product

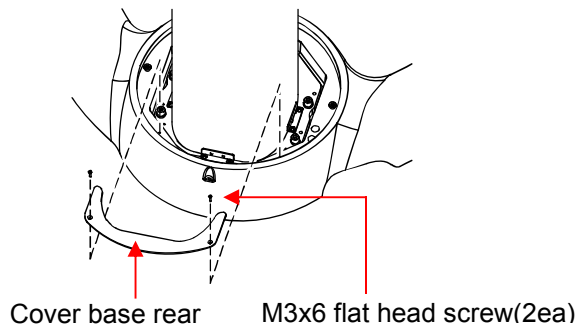
 <p>Hexagon wrench</p> <p>Leveling screw</p>	<p>Turn the leveling screw inserted on the base with a hexagon wrench driver to obtain distance between bottom surface of the Main base and the ground. Turn the leveling screw using a hexagon wrench driver while manually rotating the rotator of the product and confirm adhesion of each to the floor.</p>
	<p>Shown on the left, use a spirit level to ensure that the left/right level of the product is correct.</p>
	<p>Shown on the left, use a spirit level to ensure that the front/rear level of the product is correct.</p>
 <p>Hexagon wrench</p> <p>Leveling screw</p>	<p>If the level is not correct, adjust the level with the Leveling screw.</p>

5.8 Fix the bolt

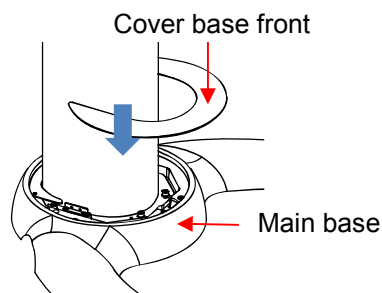


Tighten the temporary fixed Bracket Wall Mount Support with 7EA M5x20 wrench bolts (SEMS) and tighten the wall fixing bolts.

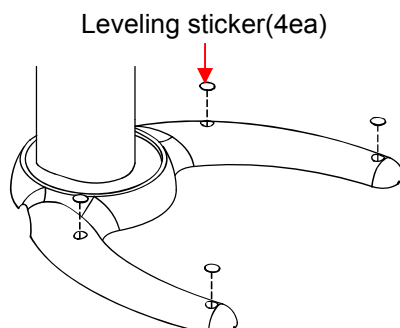
5.9 Finishing Main base



Assembly the cover base rear by using the M3x6 flat head screw 2ea.

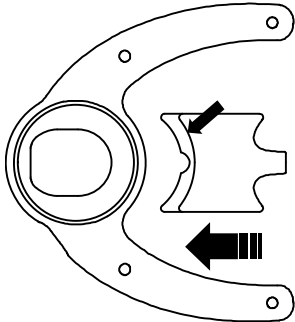
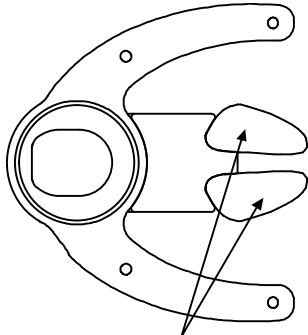
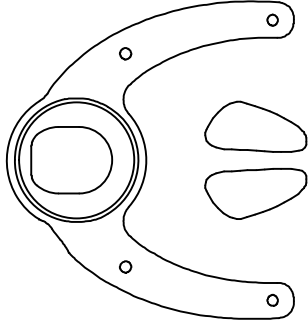


Put floor mount cover front on the top side of main base.

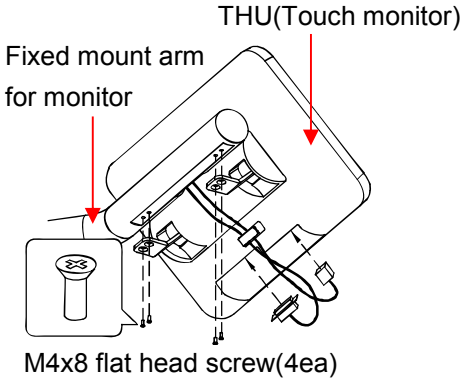
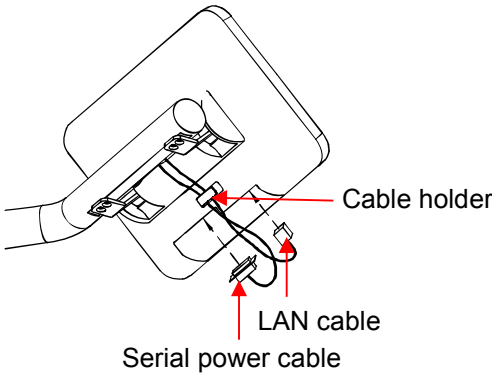
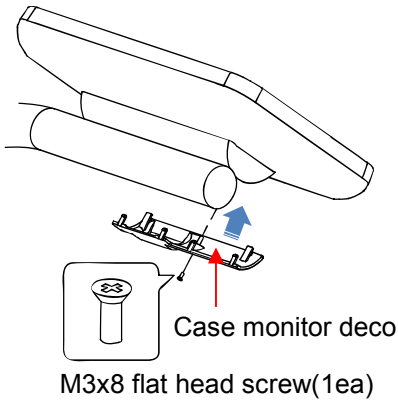


Installed four leveling sticker to leveling hole.

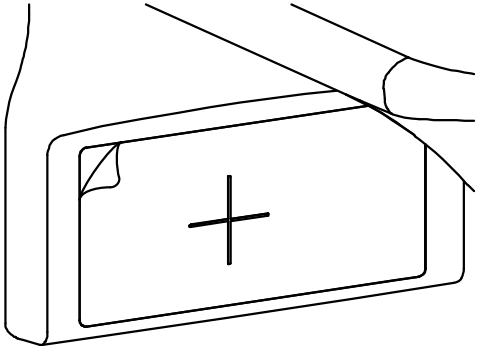
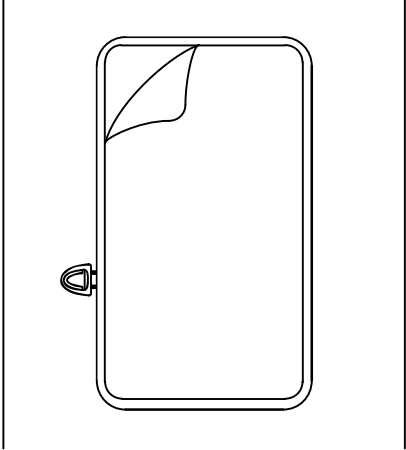
5.10 Foot position sticker

	<p>Place the Foot sticker jig on the Floor stand line.</p>
 <p>Foot Sticker</p>	<p>Attach the Foot sticker to the Foot sticker jig shape.</p>
	<p>Remove the Foot sticker jig.</p>

5.11 THU(Touch monitor) installation

 <p>THU(Touch monitor)</p> <p>Fixed mount arm for monitor</p> <p>M4x8 flat head screw(4ea)</p>	<p>Position monitor on to the THU securing arm fixed to the main body then secure by tightening 4ea M4x8 flat head screws.</p>
 <p>Cable holder</p> <p>LAN cable</p> <p>Serial power cable</p>	<p>Pull the serial power cable extending out through groove of the THU securing arm and LAN cable through the cable holder then insert into the monitor for connection.</p>
 <p>Case monitor deco</p> <p>M3x8 flat head screw(1ea)</p>	<p>After cable insertion is completed, lock in the case monitor deco to lower backside of the monitor then secure by tightening 1ea M3x8 flat head screws.</p>

5.12 Remove the plastic sticker

	<p>Remove the plastic sticker attached to protect the pano detector.</p>
	<p>Remove the plastic sticker attached to protect the mirror.</p>

Chapter — 6

Product installation (Floor mount + Wall mount)

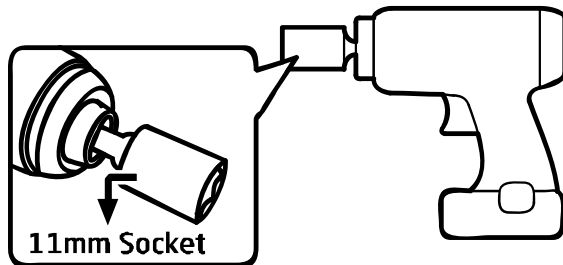
6 Product installation(Floor mount + Wall mount)

6.1 Tool requirements

Tool	Floor stand	Floor stand + Wall mount	Floor mount + Wall mount
Electric driver	O	O	O
Torque hexagon wrench driver set (M type)	O	O	O
Phillips screw driver	O	O	O
Spirit level	O	O	O
Column lift jig	O	O	O
Hex socket set	X	O	O
Hammer drill	X	O	O
Drill bit (Φ12, Φ4.8, Φ9)	X	O	O
Hammer	X	O	O
Base jig	X	X	O

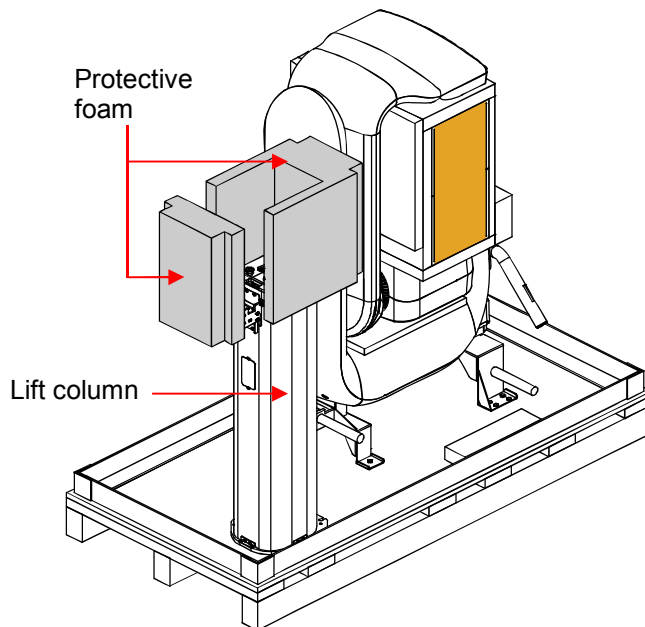
6.2 Lift column installation

6.2.1 Tool assembly



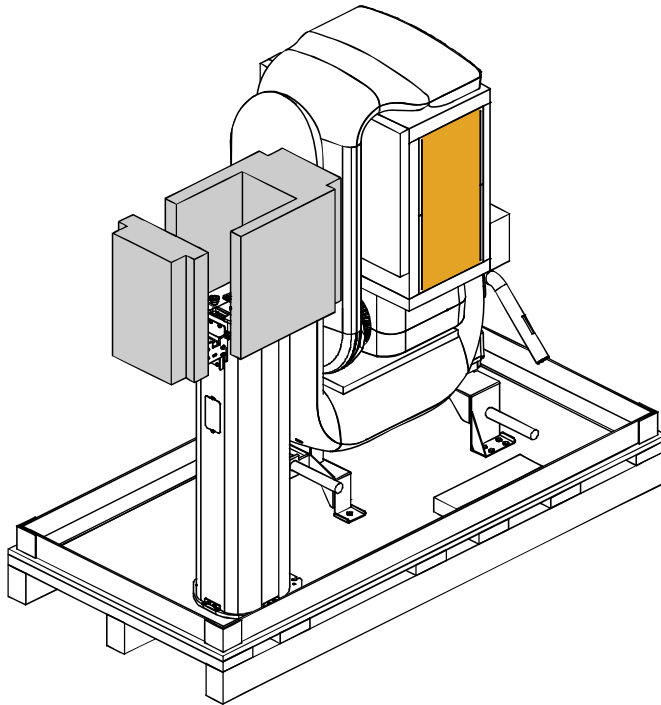
Prepare the electric driver with the 11 mm socket to loosen the bolt assembled onto the pallet.

6.2.2 Lift column protective foam dismantlement



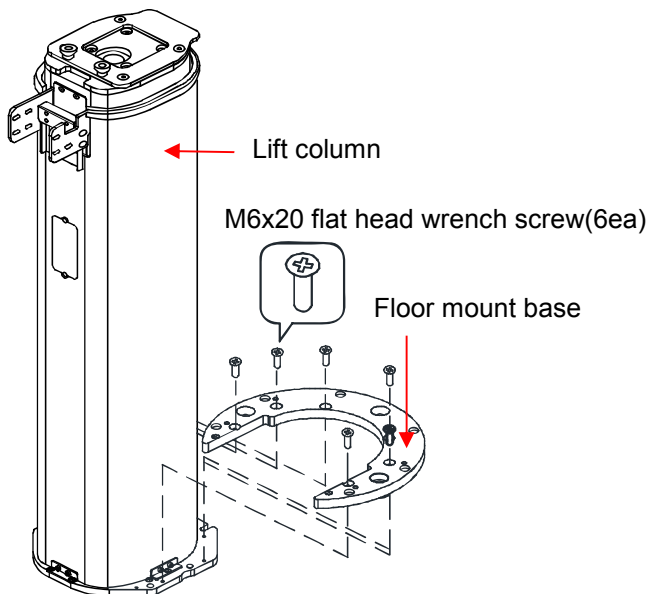
Remove the lift column protective foam.

6.2.3 Lift column dismantlement



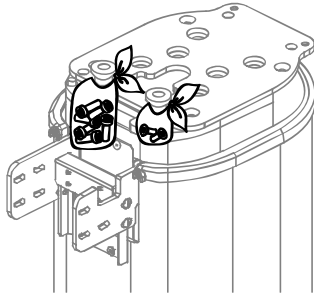
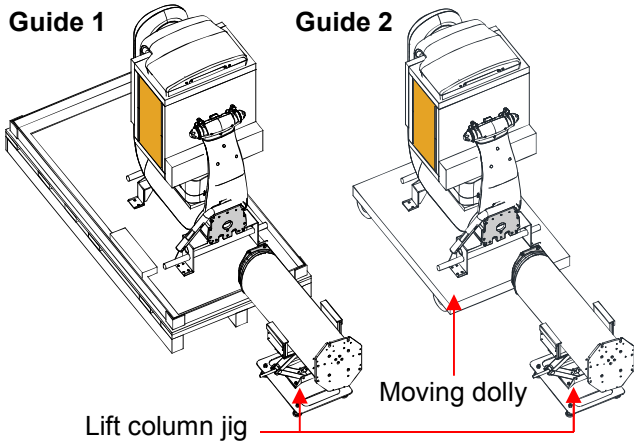
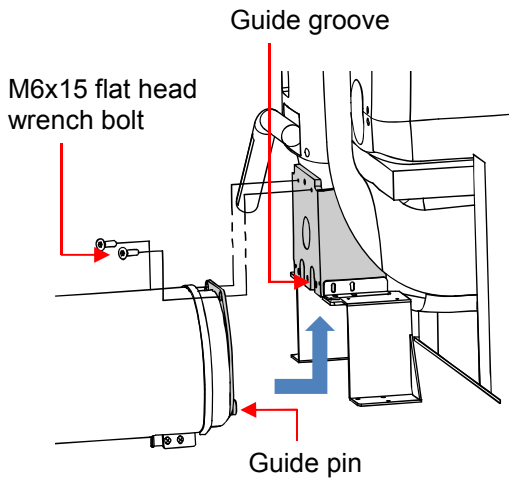
Use the readied tool to loosen bolts securing the lift column and pallet on 4 locations then remove the bolts.

6.2.4 Floor mount base assembly

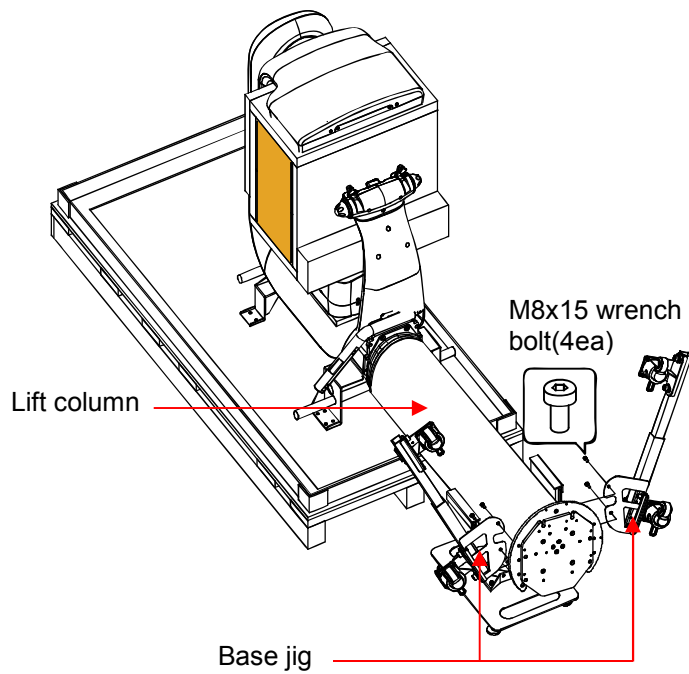


The assembled M6x20 flat head wrench screw 6ea wrench driver in the floor mount base and lift column.

6.2.5 Main body and lift column assembly

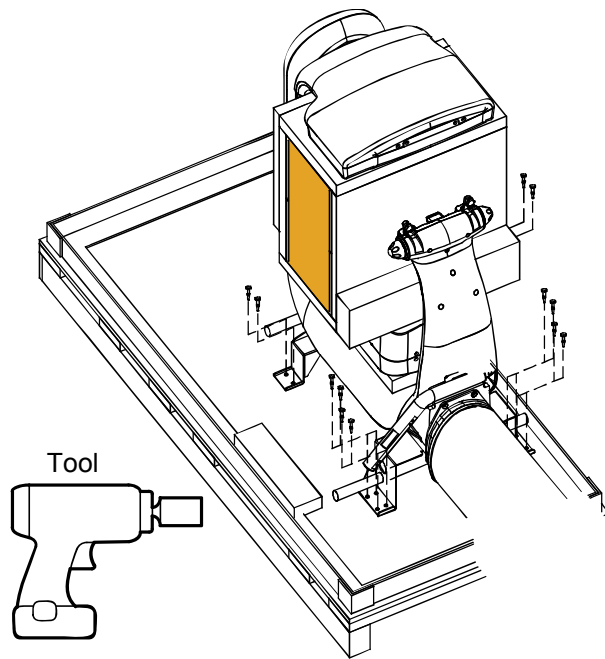
	<p>Remove the M8X40 Wrench bolt & spring washer 6ea and M6X15 Flat head Wrench bolt 2ea from Lift column and keep it well.</p>
	<p>Please put the lift column jig under the lift column.</p> <p>You can also move the product to Moving dolly as Guide 2 and assemble the Lift column. Refer to “6.2.7 Dismantlement of the Main body fixed part” to remove the Main body and move it.</p>
	<p>Adhere the guide pin of the lift column upward into the guide groove on main body's floor section then using the hexagon wrench driver to tighten the M6x15 flat head wrench bolt on 2 locations.</p>

6.2.6 Lift column and base jig

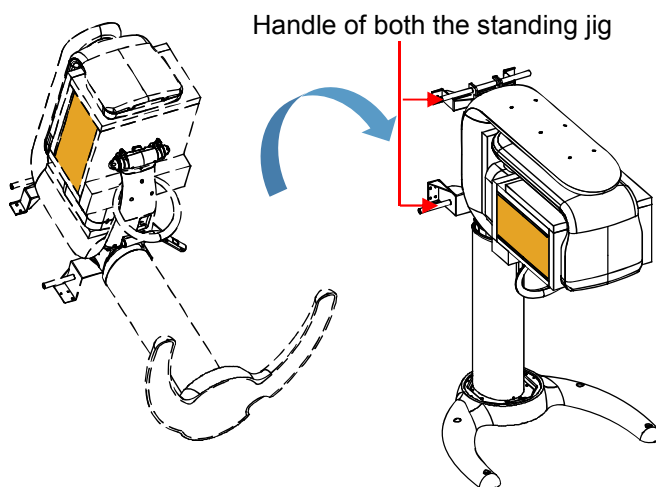


Adhere base jig to the lift column then assemble the M8x15 wrench bolt using the hexagon wrench driver in 4 locations.

6.2.7 Dismantlement of the main body fixed part and stand by causing the body

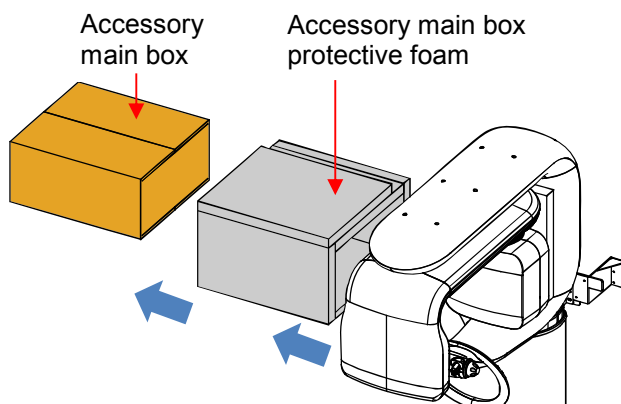


Use the Electric Driver with the 11mm socket assembled tool to loosen the bolt on main body fixed to the Pallet in order to separate main body from the Pallet.



Grasp the handle of both the standing jig, pick up and by causing the body.

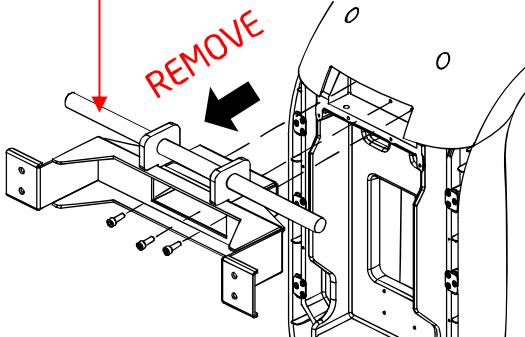
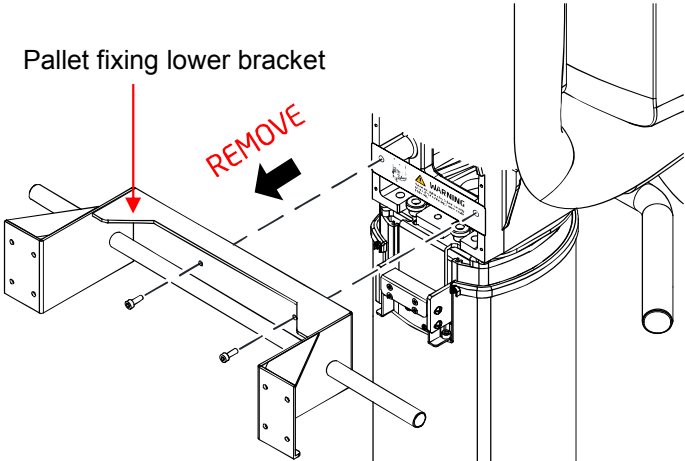

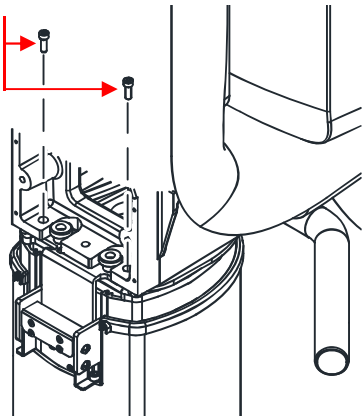
Caution: When you stand by causing the body, you need to work at least two persons.



Take out the accessory main box protective foam sideways from the product.

Separate the accessory main box protective foam and the accessory main box.

6.3 Remove the transport handle

<p>Pallet fixing upper bracket</p> 	<p>Remove release Pallet fixing Upper Bracket fixing screws 3ea.</p>
<p>Pallet fixing lower bracket</p> 	<p>Remove release Pallet fixing lower Bracket fixing screws 2ea.</p>
<div data-bbox="253 1288 928 1458">  <p>WARNING</p> <p>Screw and tighten the Column securely to the Lift Column using 2 wrench bolts (M8 x 40).</p> </div>	<p>Check the caution sticker and remove it.</p>
<p>M8x40 wrench bolt, M8 spring washer</p> 	<p>Fixed with 2ea M8x40 wrench bolt + M8 spring washer the main body and lift column.</p>

6.4 Wall mount bracket installation

6.4.1 Preparation for fixing - floor mount + wall mount



Caution

In case of floor mount and wall mount, all the parts are in floor mount accessory box.

Wall mount is for holding a device on a wall with bracket. Please understand the procedures and follow all the directions to fix a device totally.



Caution

Wall mount and floor mount must be operated together to prevent damages such as conduction in use.

Wooden wall



Caution

- 1) The minimum thickness must be greater than 40mm(1.57") to hold a device.
- 2) To prevent conduction, each holding bolt must have tensile force which is greater than 1,000N (100Kg).



Caution

Concrete wall

- 1) To prevent conduction, each holding bolt must have tensile force which is greater than 1,000N (100Kg).



Caution

Steel-beam wall

- 1) Hold wall mount bracket and support together through a wall.

Floor mount is a method for fixing floor mount base on a floor. Please follow all directions below.



Caution

Fixing the floor

If the floor is in the carpet, you will need to install it must be uninstalled.

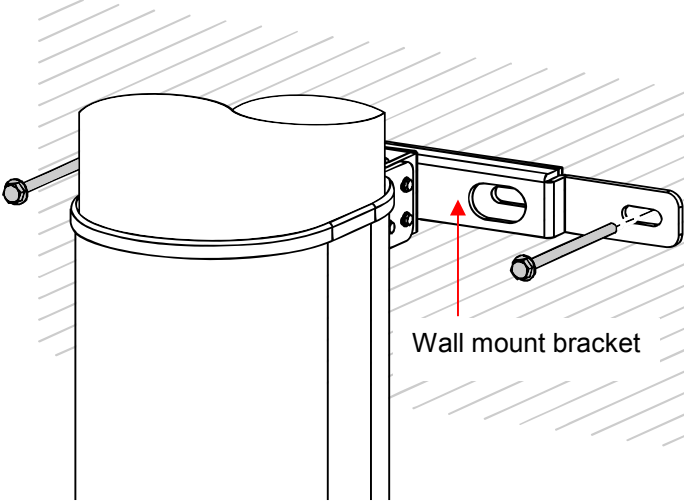
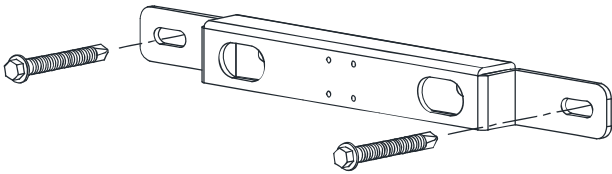
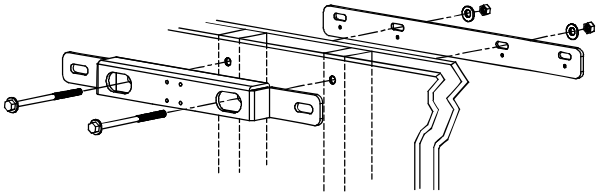


Caution

The floor has to sustain min 500kg/m². We recommend use floor stand base in case of wooden material floors.

6.4.2 Example of fixing wall mount bracket

Move the Wall mount bracket installed on the product so that it is close to the wall, and assemble using the two bolts supplied by the manufacturer.

 <p>Wall mount bracket</p>	<p>In case of concrete wall, use a socket set 2EA M8x80 anchor bolts into hammer drill to fix wall mount bracket.</p> <p>Warning: Please use the standard Anchor Bolt(SZ-S 12-10 anchor bolts only from MKT) provided by RAY.</p>
	<p>In case of wooden wall, use a socket set to insert 2ea $\Phi 8 \times 80$ hex wood bolts for fixing wall mount bracket.</p>
	<p>For steel beam wall, insert 2EA Φ M8x150 hex through bolts through wall mount bracket and wall mount support. Then, fix with washers and nuts.</p>

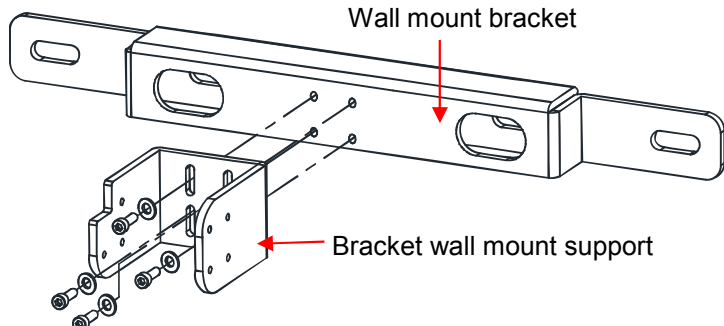
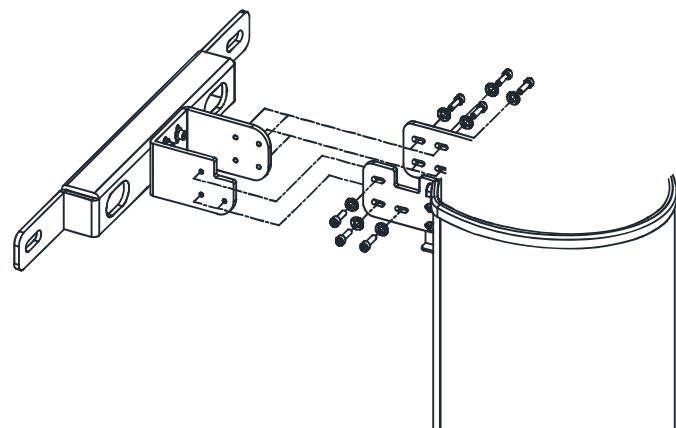


Caution

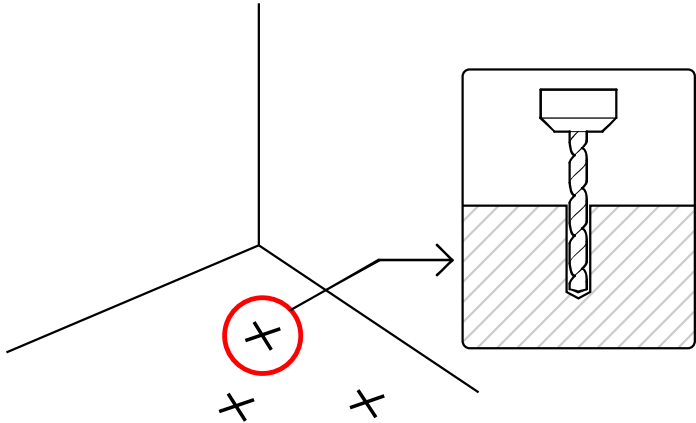
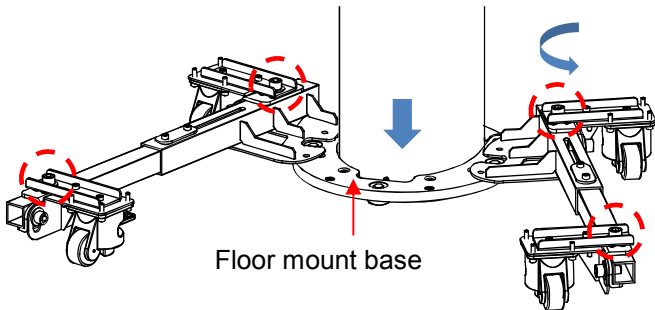
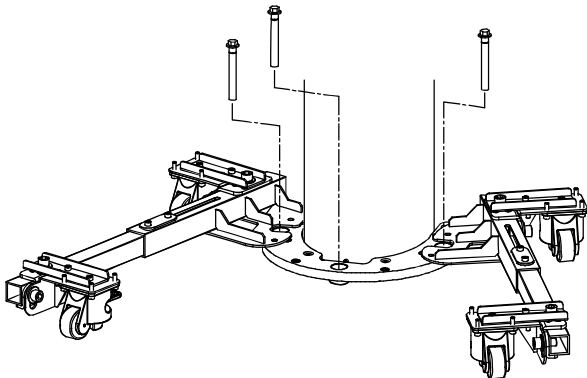
Make sure there is no dust or any kinds of obstacles inside the whole before fixing.

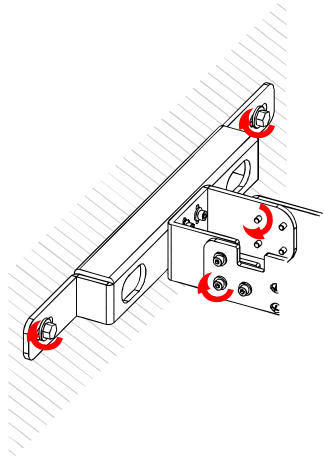
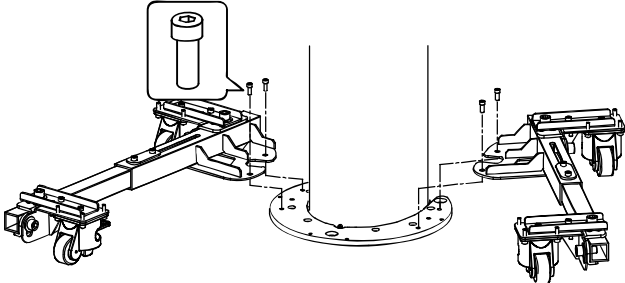
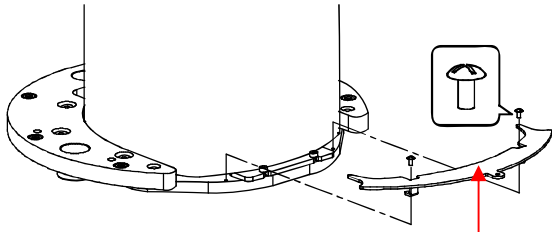
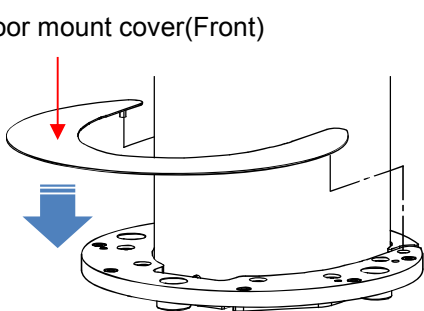
6.5 Fixing wall and floor

6.5.1 Fixing wall mount bracket

 <p>Wall mount bracket</p> <p>Bracket wall mount support</p>	<p>Place bracket wall mount support at wall mount bracket. Then, fix with 4EA M5x20 wrench bolt(s).</p>
	<p>After connect a device with bracket wall mount support, temporary fix them with 7EA M5x20 wrench bolt(s).</p> <p>Caution: Adjust the bracket's screws up/down, left/right, front/rear and secure the Wall mount bracket to the wall and fix it firmly.</p>

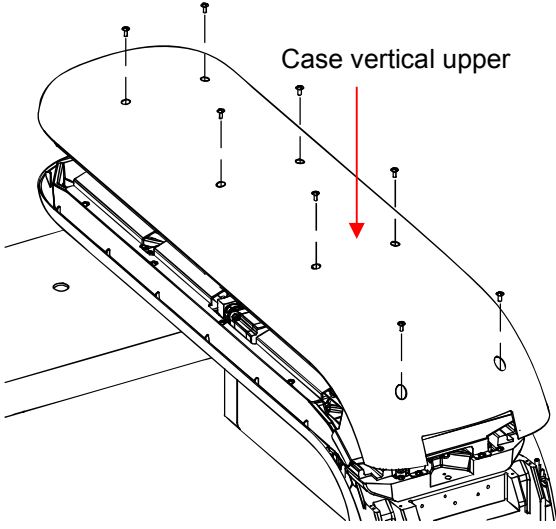
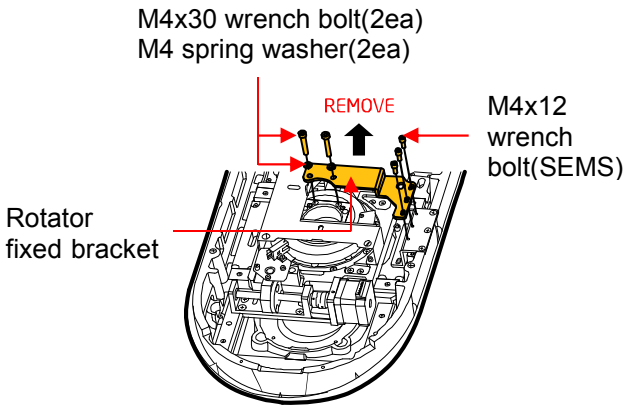
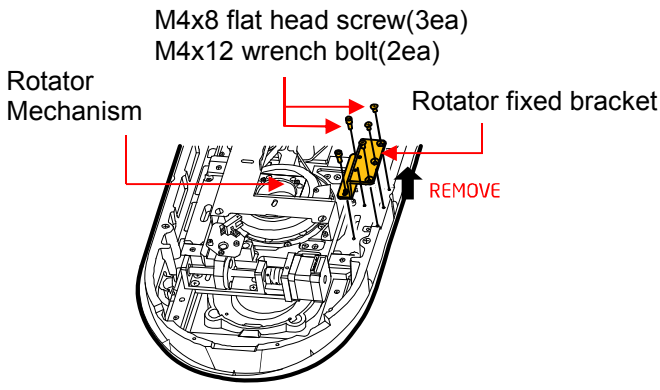
6.5.2 Floor mount base assembly

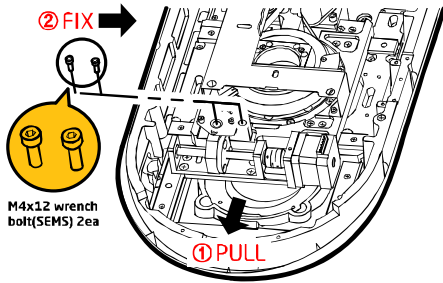
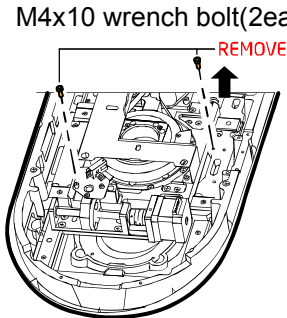
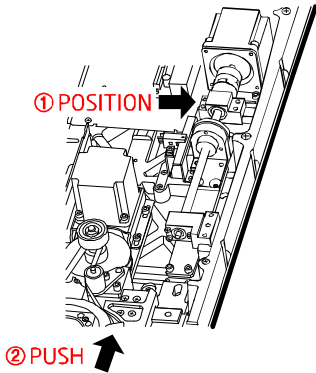
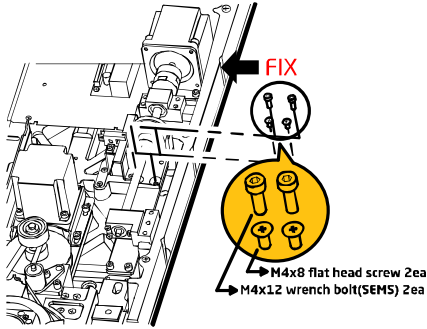
	<p>Move the product to the installation location and mark the drill hole for the floor mount. Use a 12mm Hammer Drill bit to make three holes with a depth of 85mm and make sure that the hole in the bottom hole matches the hole in the Floor mount.</p> <p>Caution: Make sure there is no dust or any kinds of obstacles inside the hole.</p>
 <p>Floor mount base</p>	<p>Put down a device by turning 4 bolts to count-clock wise on the surface of base jig.</p> <p>Caution: Turn 4 bolts to clock wise, a device might be lifted up. Turn 4 bolts to count-clock wise, a device might be lifted down.</p>
	<p>Fix Floor mount base with M8x80 anchor bolts(3ea) through floor mount base holes.</p>

	<p>Tighten the temporary fixed Bracket Wall Mount Support with 7EA M5x20 wrench bolts (SEMS) and tighten the wall fixing bolts.</p>
	<p>Remove base jig release from the floor mount base M8x15 wrench bolt 4ea.</p>
 <p>Floor mount cover(Rear)</p>	<p>Fixed with 2ea M3x8 Flat head screw floor mount cover(rear) on the back of the floor mount base.</p>
 <p>Floor mount cover(Front)</p>	<p>Put floor mount cover (Front) on the front side of floor mount base. For this procedure, you do not need any screws to hold.</p>

6.6 Shipping lock bracket removal

6.6.1 Rotator fixed bracket removal

 <p>Case vertical upper</p>	<p>Loosen the 8ea M4x8 flat head screw securing the case vertical upper and lift up.</p>
 <p>M4x30 wrench bolt(2ea) M4 spring washer(2ea)</p> <p>REMOVE</p> <p>M4x12 wrench bolt(SEMS)</p> <p>Rotator fixed bracket</p>	<p>Loosen and remove the rotator fixed bracket intended to secure the rotator during packaging.</p> <p>Note: Cover Vertical Upper does not need to be removed.</p>
 <p>M4x8 flat head screw(3ea) M4x12 wrench bolt(2ea)</p> <p>Rotator Mechanism</p> <p>Rotator fixed bracket</p> <p>REMOVE</p>	<p>It will remove the rotator fixed bracket used to secure the front and back of rotator mechanism at the time of packing. (M4x12 wrench bolt(seys) 4ea)</p>

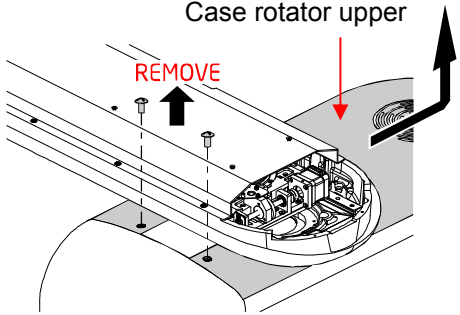
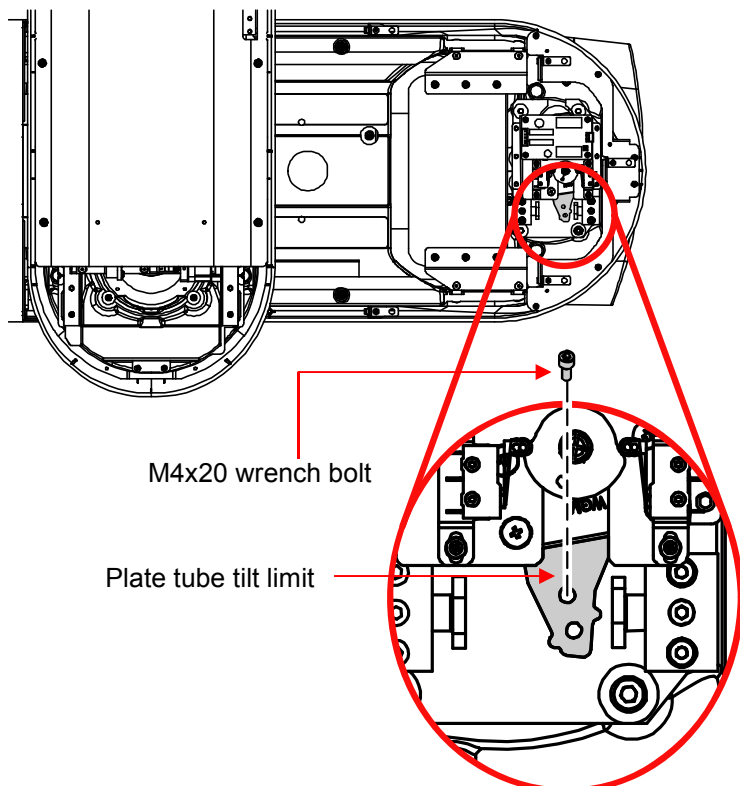
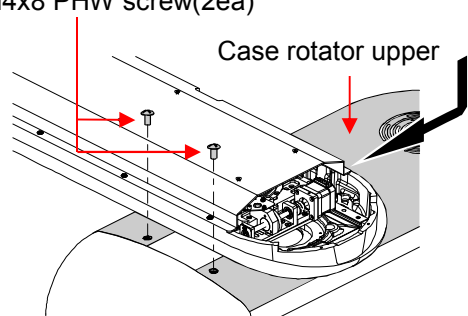
 <p>② FIX</p> <p>M4x12 wrench bolt(SEMS) 2ea</p> <p>① PULL</p>	<p>Pull the X-axis module forward outside.</p> <p>Re-assembling the M4x12 wrench bolt (sems) 2ea was removed above to connect the x-axis of rotator mechanism.</p>
 <p>M4x10 wrench bolt(2ea)</p> <p>REMOVE</p>	<p>It will remove the rotator fixed bracket used to secure the left and right of rotator mechanism at the time of packing. (M4x10 wrench bolt 2ea)</p>
 <p>① POSITION</p> <p>② PUSH</p>	<p>Position the Y-axis coupler block properly.</p> <p>Push the X-axis module back into initial location.</p>
 <p>FIX</p> <p>M4x8 flat head screw 2ea</p> <p>M4x12 wrench bolt(SEMS) 2ea</p>	<p>Re-assembling the M4x12 wrench bolt (sems) 2ea and the M4x8 Flat Head Screw 2ea removed above to connect the y-axis of rotator mechanism.</p>



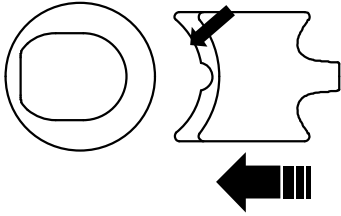
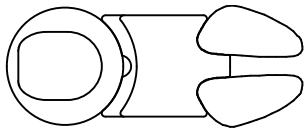
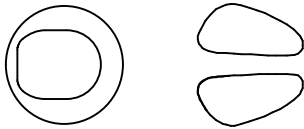
Caution

Be aware of screw dropping while perform.
Use magnetized tool.

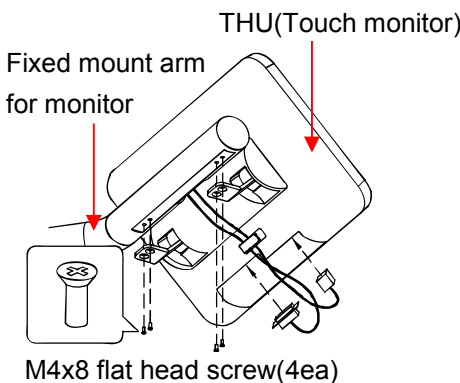
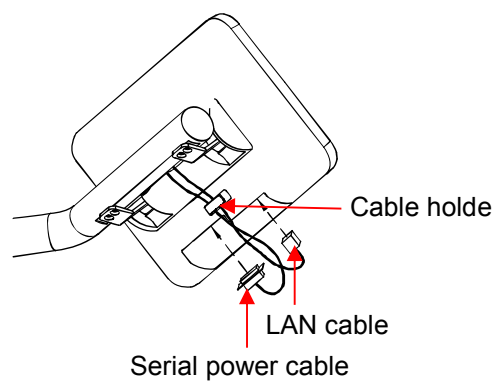
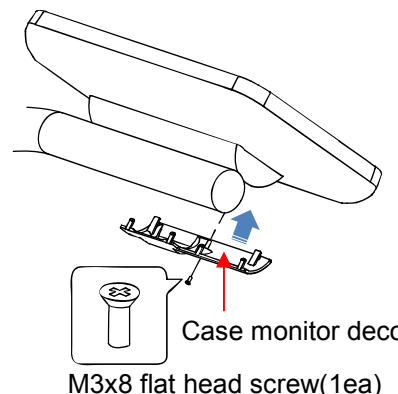
6.7 Tube tilting secure part disassembly

 <p>Case rotator upper</p> <p>REMOVE</p>	<p>Loosen the 2ea M4x8 PHW screws on the upper case rotator then push sideways and pull.</p>
 <p>M4x20 wrench bolt</p> <p>Plate tube tilt limit</p>	<p>Remove the M4x20 wrench bolt securing the tube tank from rotation during shipment from the plate tube tilt limit using a hexagon wrench driver.</p>
 <p>M4x8 PHW screw(2ea)</p> <p>Case rotator upper</p>	<p>Couple the case rotator upper and tighten the M4x8 PHW screws into 2ea.</p>

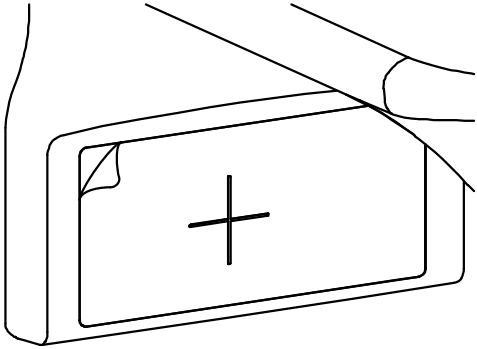
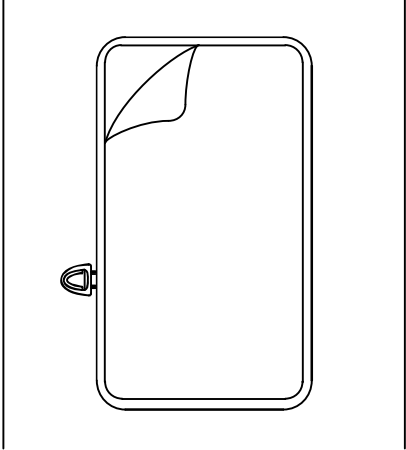
6.8 Foot position sticker

	<p>Place the Foot sticker jig on the Floor mount line.</p>
	<p>Attach the Foot sticker to the Foot sticker jig shape.</p>
	<p>Remove the Foot sticker jig.</p>

6.9 THU(Touch monitor) installation

 <p>THU(Touch monitor)</p> <p>Fixed mount arm for monitor</p> <p>M4x8 flat head screw(4ea)</p>	<p>Position monitor on to the THU securing arm fixed to the main body then secure by tightening 4ea M4x8 flat head screws.</p>
 <p>Cable holder</p> <p>LAN cable</p> <p>Serial power cable</p>	<p>Pull the serial power cable extending out through groove of the THU securing arm and LAN cable through the cable holder then insert into the monitor for connection.</p>
 <p>Case monitor deco</p> <p>M3x8 flat head screw(1ea)</p>	<p>After cable insertion is completed, lock in the case monitor deco to lower backside of the monitor then secure by tightening 1ea M3x8 flat head screws.</p>

6.10 Remove the plastic sticker

	<p>Remove the plastic sticker attached to protect the pano detector.</p>
	<p>Remove the plastic sticker attached to protect the mirror.</p>

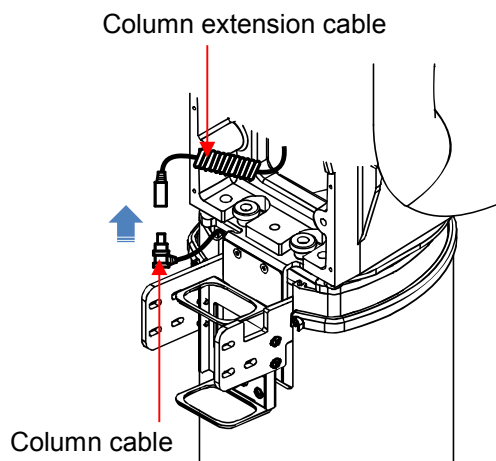
Chapter — 7

Other installation

7 Other installation

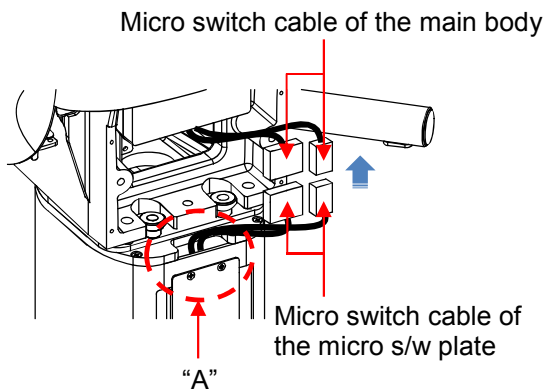
7.1 Cable connection

7.1.1 Lift column cable connection



Insert connector of the lift column cable extending out from the main body to the connector attached to upper side of the lift column connector for connection.

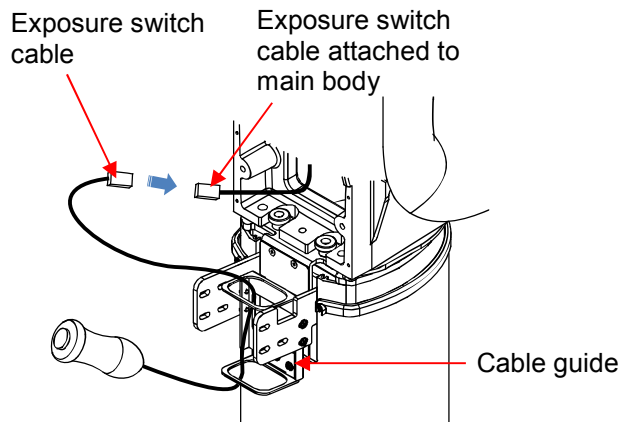
7.1.2 Micro switch cable connection



Connect the Micro switch cable connector attached to the main body with the micro switch cable connector extending out from the lift column.

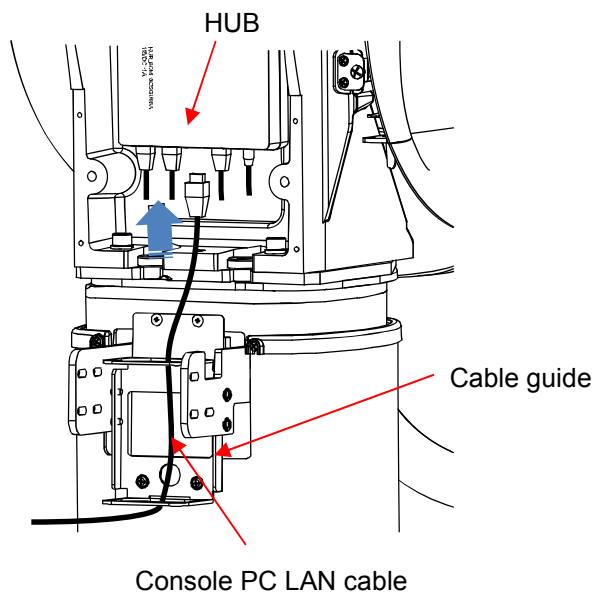
Caution: The micro switch cable of micro switch plate, please install it by inserting in the gap "A" of lift column.

7.1.3 Exposure switch connection



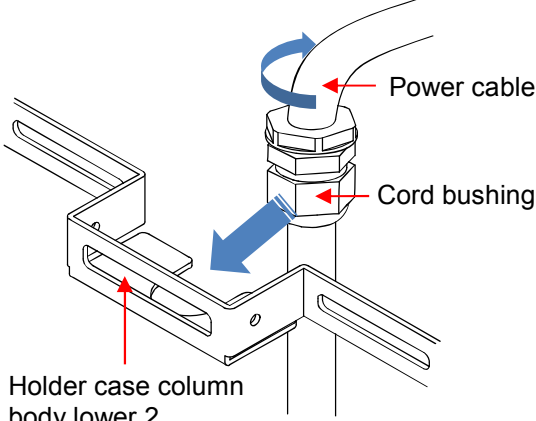
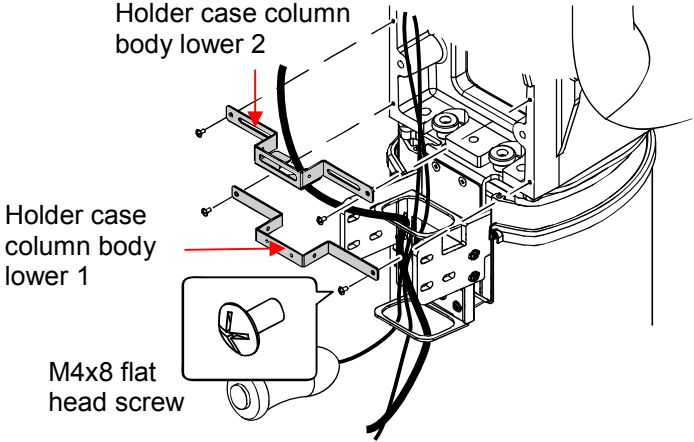
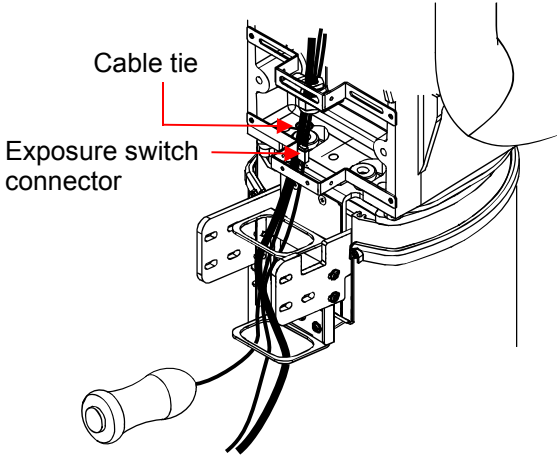
Connect the exposure cable connector attached to the main body with the exposure switch cable connector then insert into the cable guide.

7.1.4 LAN cable connection



Connect the external LAN cable extending out from the console PC by passing through the cable guide to the HUB.

7.1.5 Cable securing

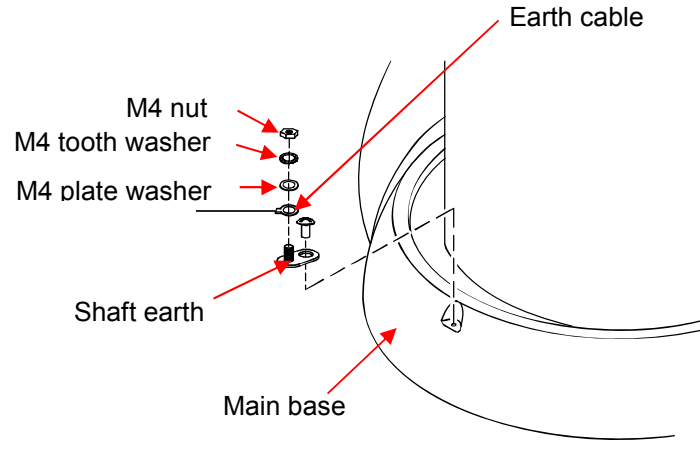
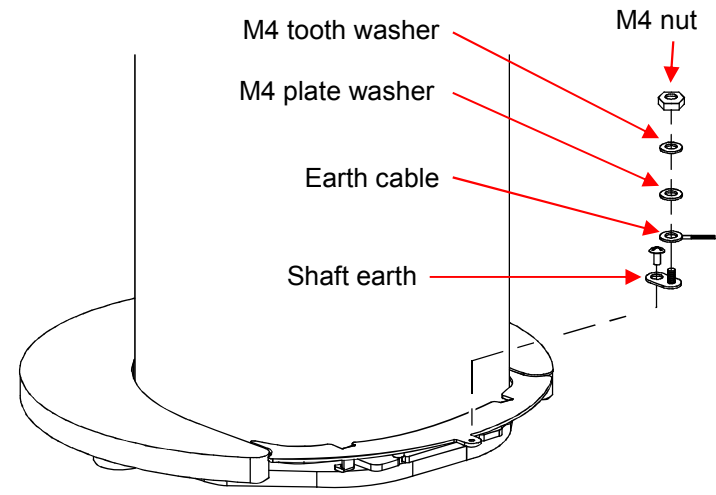
 <p>Power cable</p> <p>Cord bushing</p> <p>Holder case column body lower 2</p>	<p>Push in the Cord bushing connected to the Power cable through groove of the Holder case column body lower 2 secured on backside of the main body and fasten by turning the Cord bushing hexagon nut.</p> <p>Insert the power cable connected to main body into the cable guide ring.</p>
 <p>Holder case column body lower 2</p> <p>Holder case column body lower 1</p> <p>M4x8 flat head screw</p>	<p>Secure the case by aligning Holder case column body lower 2 with the Holder case column body lower 1 and tightening 4EA M4x8 flat head screws.</p>
 <p>Cable tie</p> <p>Exposure switch connector</p>	<p>Tie a Cable tie around the exposure switch cable and LAN cable to the Holder case column body lower 1 affixed to the main body to secure.</p> <p>Test secureness by pulling on the cable with a hand.</p>



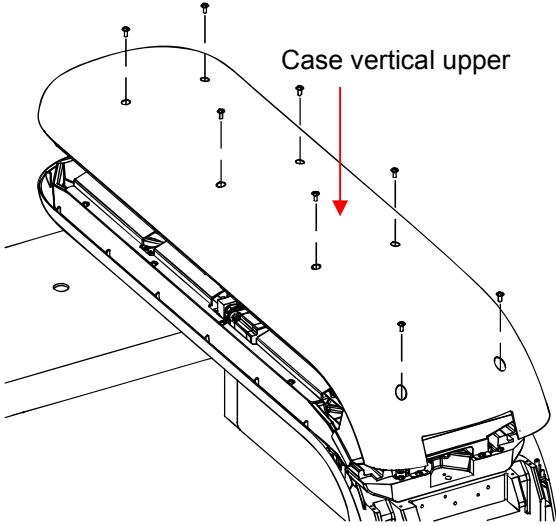
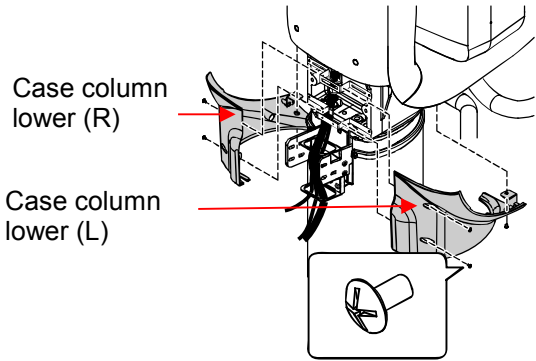
Caution

Exposure switch connector must be located above the tie bundle as shown in the figure. Do not tie with a cable tie or other cable organizing tools when organizing cables in the back. May cause noise when interference develops in the cable guide or a short in the cable.

7.1.6 Earth cable connection

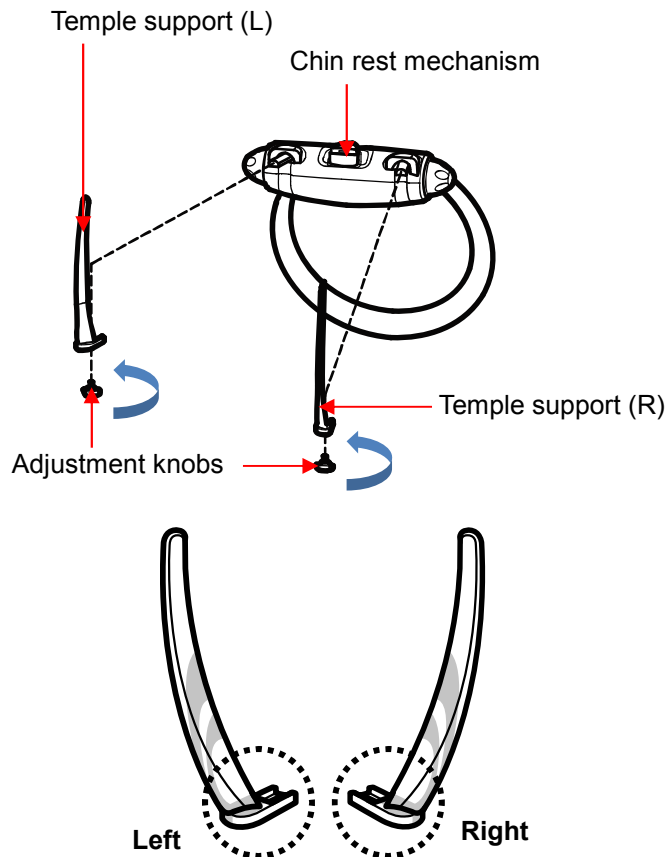
 <p>The diagram shows a side view of a floor stand. A vertical shaft is labeled 'Shaft earth'. A cable labeled 'Earth cable' is being inserted into a hole on the back of the 'Main base'. The assembly is secured with an 'M4 nut', 'M4 tooth washer', and 'M4 plate washer'.</p> <p><Floor stand type></p>	<p>Fasten the shaft earth in M4 tap position located on backside of the base then secure.</p> <p>Insert earth cable, washer and earth cable in order on to the secured shaft earth and tighten with a M4 nut.</p>
 <p>The diagram shows a wall/floor mount. A vertical shaft is labeled 'Shaft earth'. A cable labeled 'Earth cable' is being inserted into a hole on the back of the mount. The assembly is secured with an 'M4 nut', 'M4 tooth washer', and 'M4 plate washer'.</p> <p><Wall/floor mount type></p>	<p>Secure the case by aligning holder case column body lower 2 with the holder case column body lower 1 and tightening 4EA M4x8 flat head screws.</p>

7.2 Cover assembly

 <p>Case vertical upper</p>	<p>Fix the 8ea M4x8 flat head screw securing the case vertical upper.</p>
 <p>Case column lower (R)</p> <p>Case column lower (L)</p>	<p>Fix case column lower(R) and case column lower(L) secure by tightening 6 M4x8 PHW screw using driver(+) on the base of the body.</p>

7.3 Temple supports and chinrest installation

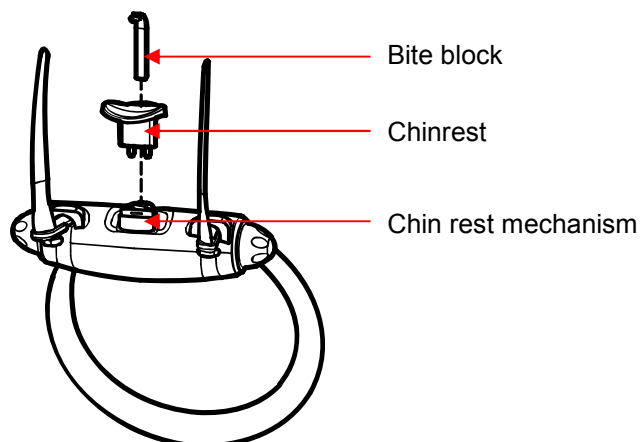
7.3.1 Headrest assembly



Piece together Temple supports (L) and Temple supports (R) into the Chin rest mechanism then screw in 2 adjust nobs to secure.

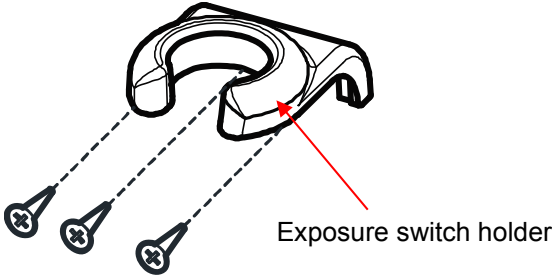
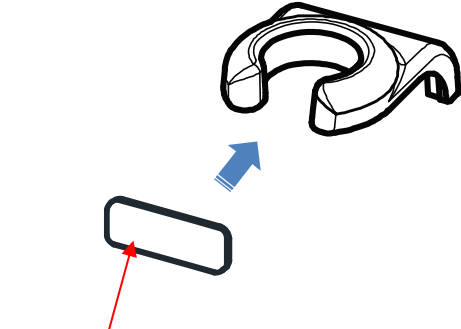
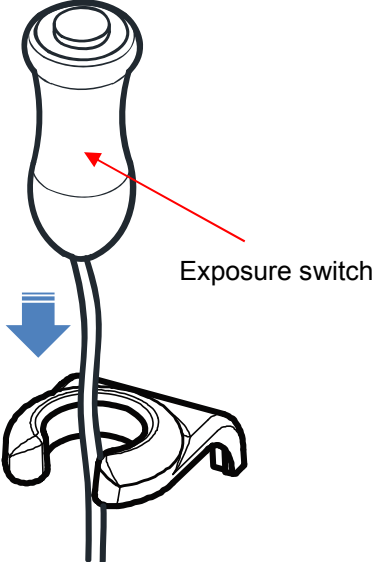
Caution: The rounded part underneath the head stationing section must be mounted on the inner-side.

7.3.2 Bite block and chinrest assembly

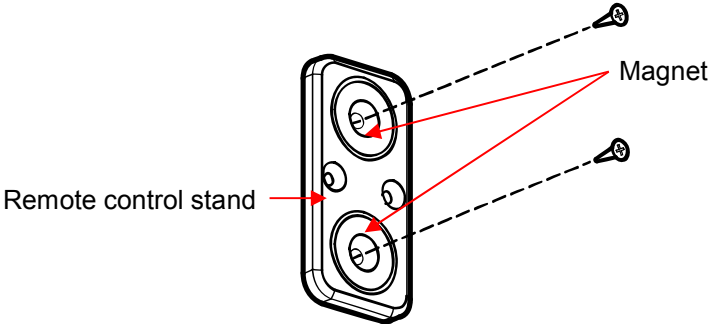
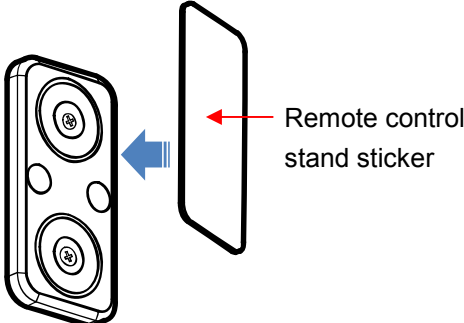
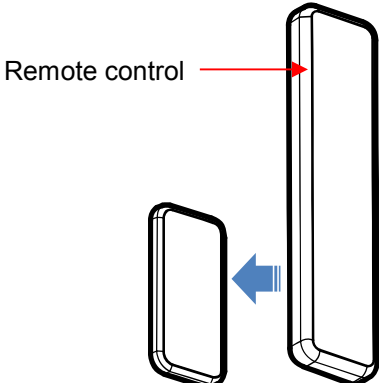


Assemble Chin rest on to upper part of the chinrest mechanism then insert the block bite.

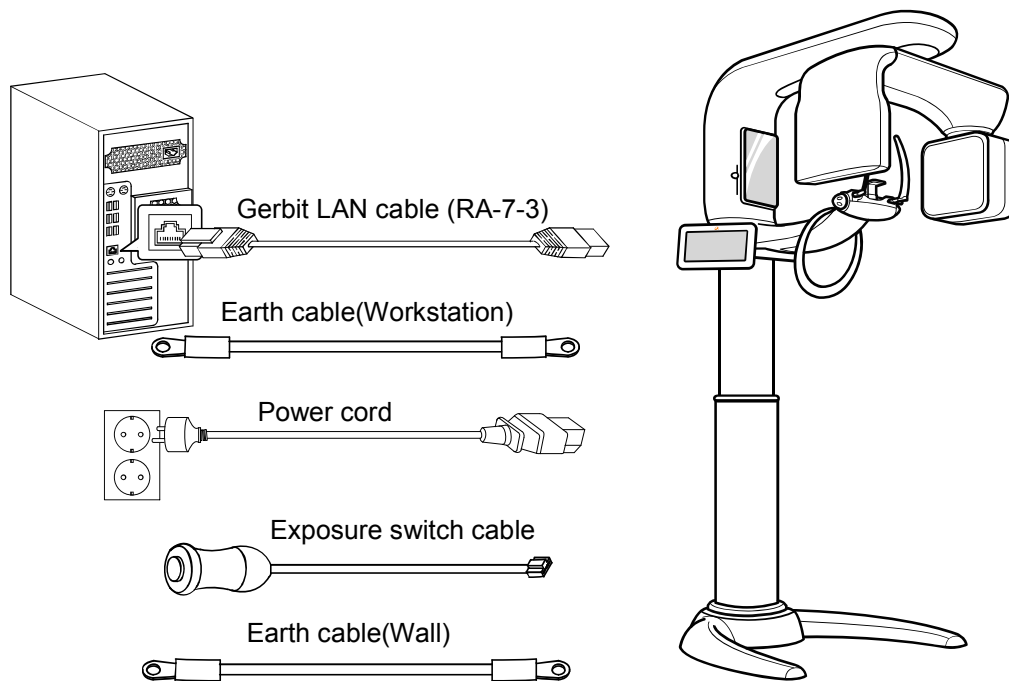
7.4 Exposure switch stand assembly

 <p>Exposure switch holder</p>	<p>Use a Philips screw driver to secure 3 $\Phi 4 \times 20$ flat head tapping screws in the wall chosen for the exposure switch holder.</p>
 <p>Exposure switch holder sticker</p>	<p>Mount the exposure switch holder to the wall, then attach an exposure switch holder sticker to the surface of the exposure switch holder.</p>
 <p>Exposure switch</p>	<p>Place the exposure switch on the exposure switch holder.</p>

7.5 Remote control stand assembly

 <p>Remote control stand</p> <p>Magnet</p>	<p>Use a Philips screw driver to secure 2 $\Phi 4 \times 20$ flat head tapping screws on the wall intended to fix the remote control stand.</p>
 <p>Remote control stand sticker</p>	<p>Fix the remote control stand and attach a remote control sticker on the surface.</p>
 <p>Remote control</p>	<p>Attach the remote control to the remote control stand.</p>

7.6 Peripheral connection



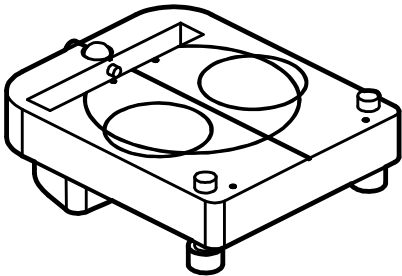
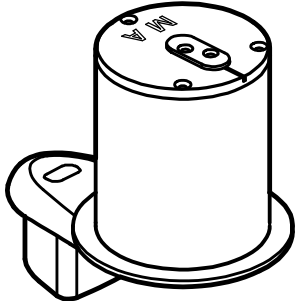
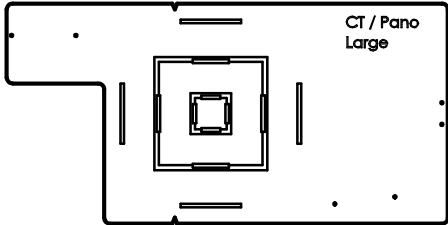
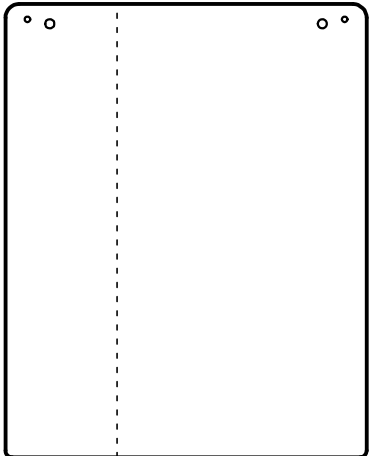
- 1) Earth cable fastened internal part of the equipment have to be connected to earth pin of power supply device (AVR ,UPS) or distributing panel of the building. (The length of the earth cable has to be adjusted according to installation circumstance.)
- 2) Connect earth cable(wall) of the distribution panel or power supply device(AVR, UPS) with earth shaft on the base. (The length of the earth cable has to be adjusted according to installation circumstance.)

Chapter — 8

Setting Wizard

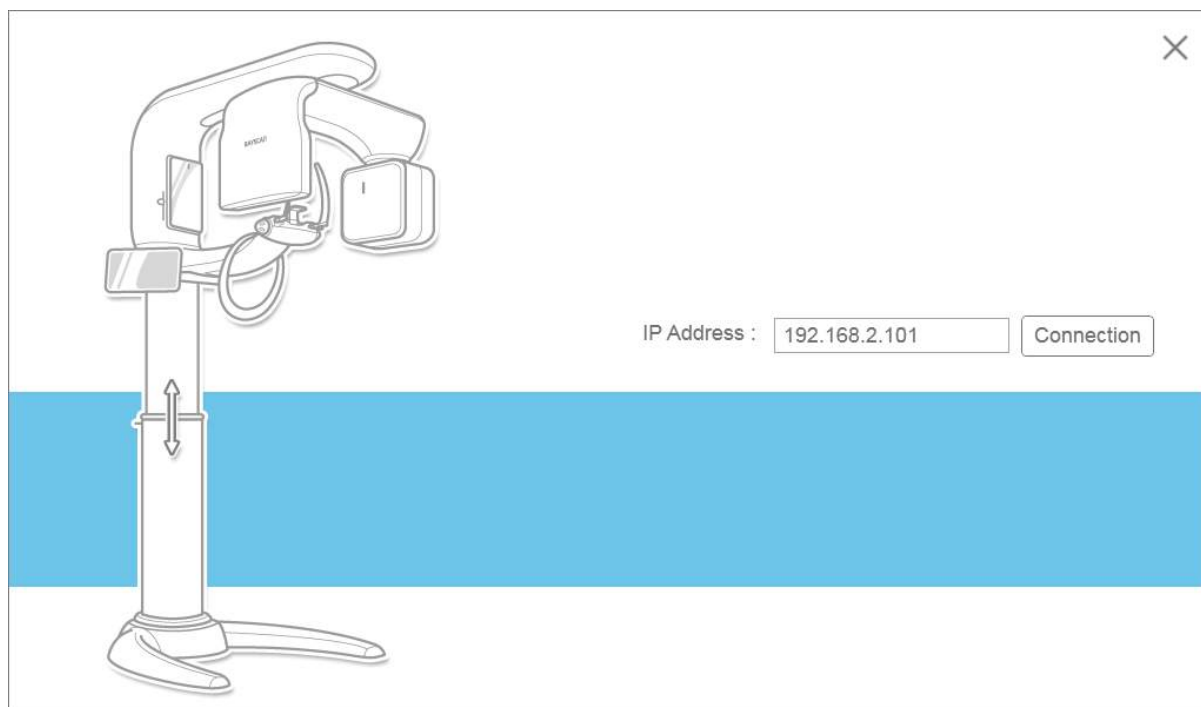
8 Setting Wizard

8.1 Required tools

No	Contents / Image	Description
1	<p>Pano Arch Phantom</p> 	<ul style="list-style-type: none"> - Setup the alignment for Panoramic. -The essential tool over the installation.
2	<p>CT Alignment Phantom</p> 	<ul style="list-style-type: none"> - Setup the alignment for CT.
3	<p>Light Collimation Phantom</p> 	<ul style="list-style-type: none"> - Synchronize the actual X-ray exposure area with the guided LED. -. The phantom is included in the accessory box of each product.
4	<p>Canine Laser Beam Alignment Plate</p> 	<ul style="list-style-type: none"> -. Set up the alignment for Tilt and Canine.

8.2 Setting Wizard connection

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

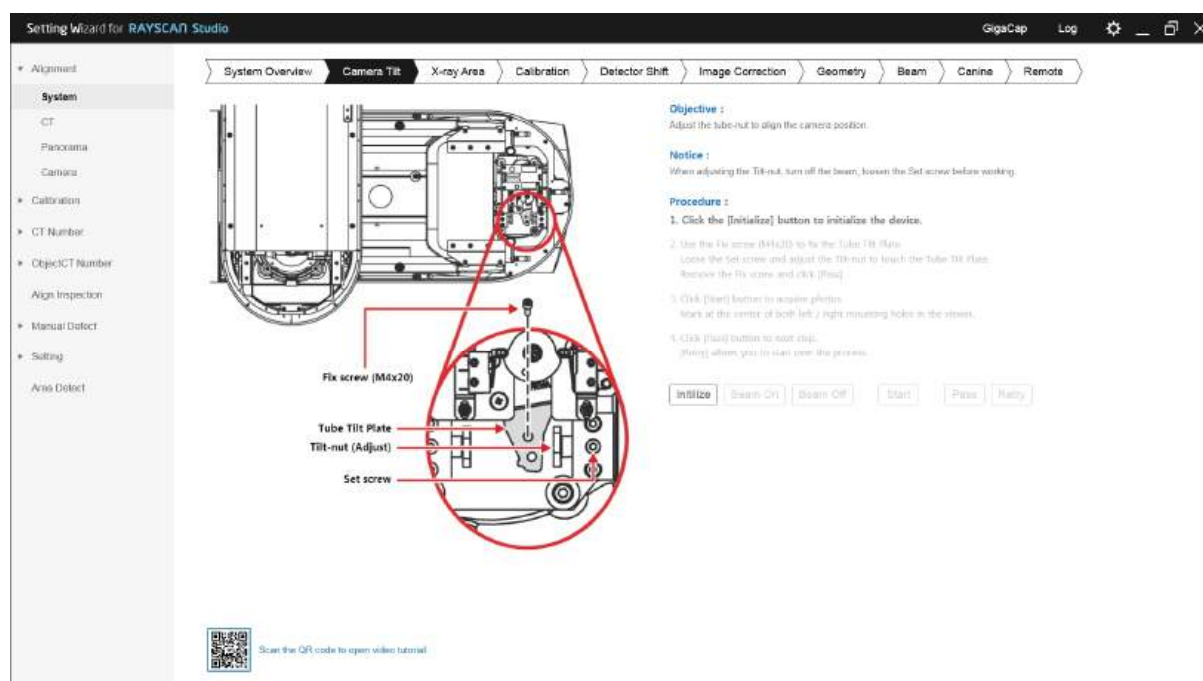


No	Description
1	The default IP address of the device is 192.168.2.101.
2	When you press the [Connect] button, it tries to connect with THU and check the connection status with the information.
3	If the connection is successful, the screen is switched to Main screen.

8.3 Alignment - System

8.3.1 Camera Tilt

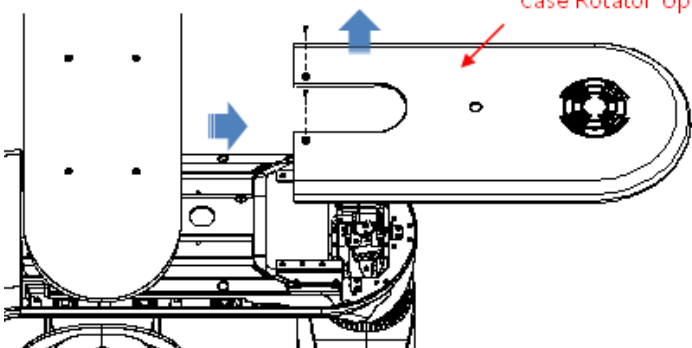
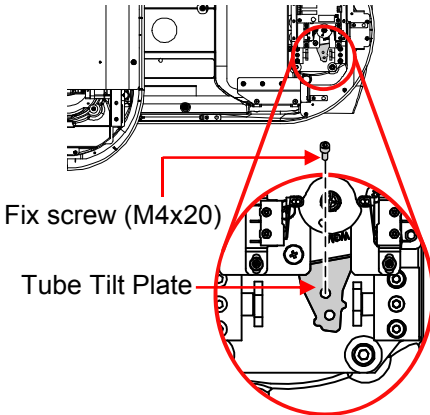
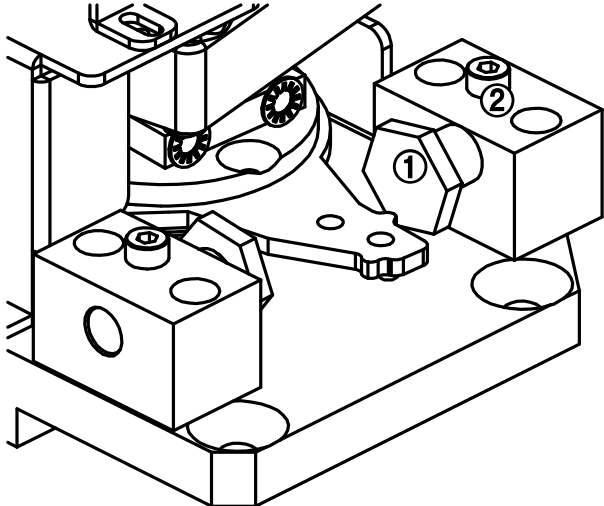
Adjust the tube-nut to align the camera position.

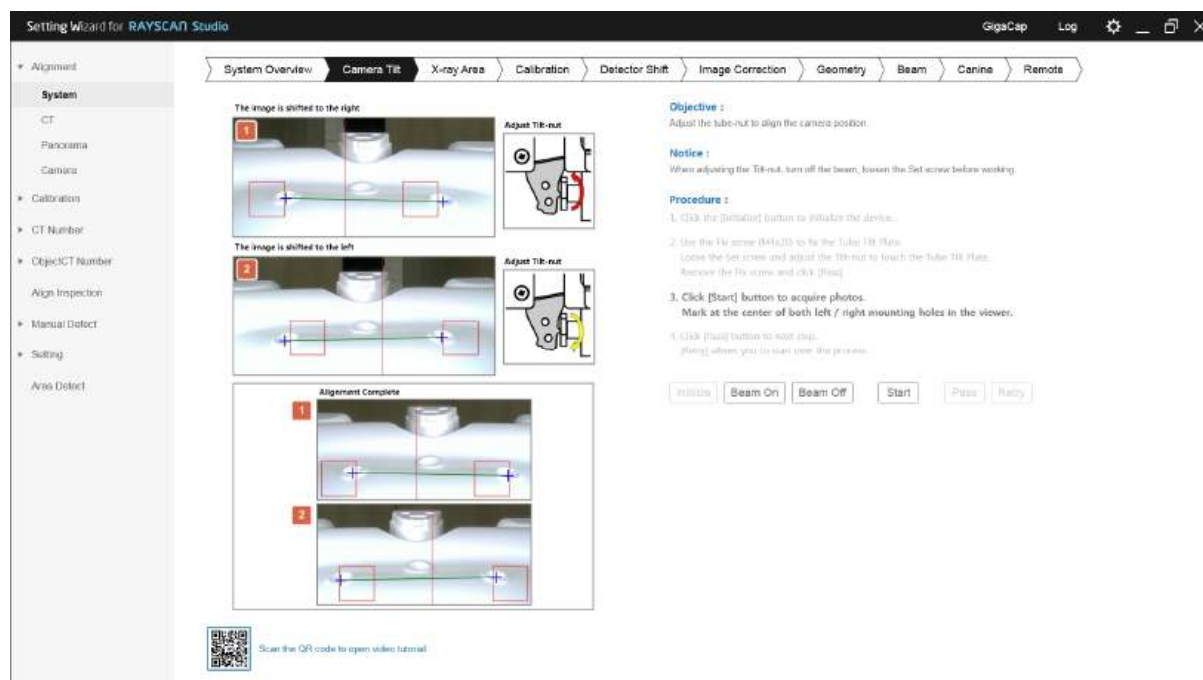


Procedure

No	Description
1	Click [Start] button to set the filter alignment automatically.
2	Click [Initialize] button to reset the device.
3	Use the Fix screw (M4x20) to fix the Tube Tilt Plate.
4	Turn off the canine beam, loose the Set screw and adjust the Tilt nut to touch the Tube Tilt Plate. (see “How to adjust the Tube tilt”)
5	Remove the Fix screw and click [Pass] button.

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		Use the Fix screw (M4x20) to fix the Tube Tilt Plate.
3		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.

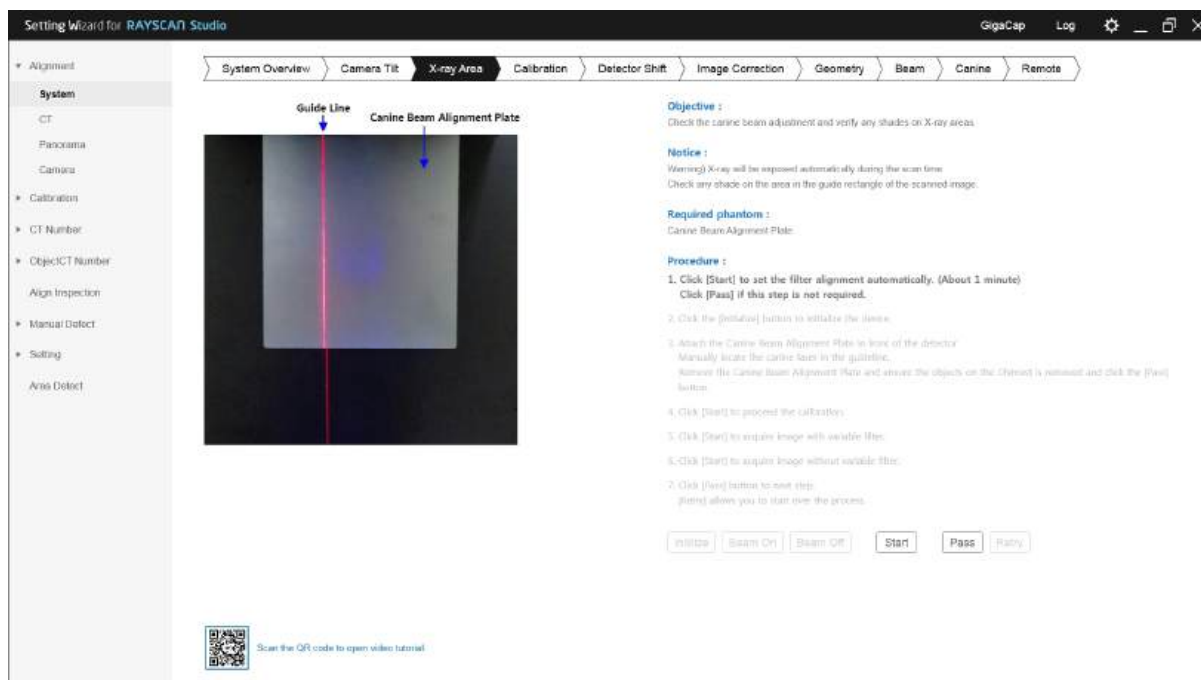


Procedure

No	Description
6	Click [Start] button to acquire image with Camera.
7	Mark at the center of both left/right mounting holes in the viewer, and click the [Ok]. If the pop-up for tube-nut adjustment appears, refer to the guide and adjust the tube-nut as instructed and repeat this process.
8	If the alignment process is complete, click [Pass] button to complete the step.
9	[Retry] allows you to start over the process.

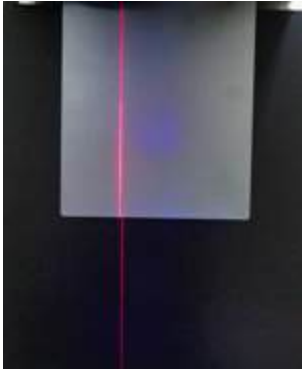
8.3.2 X-ray Area

This step guides how to adjust the Tube Tilt and checking the shades of the X-ray areas. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



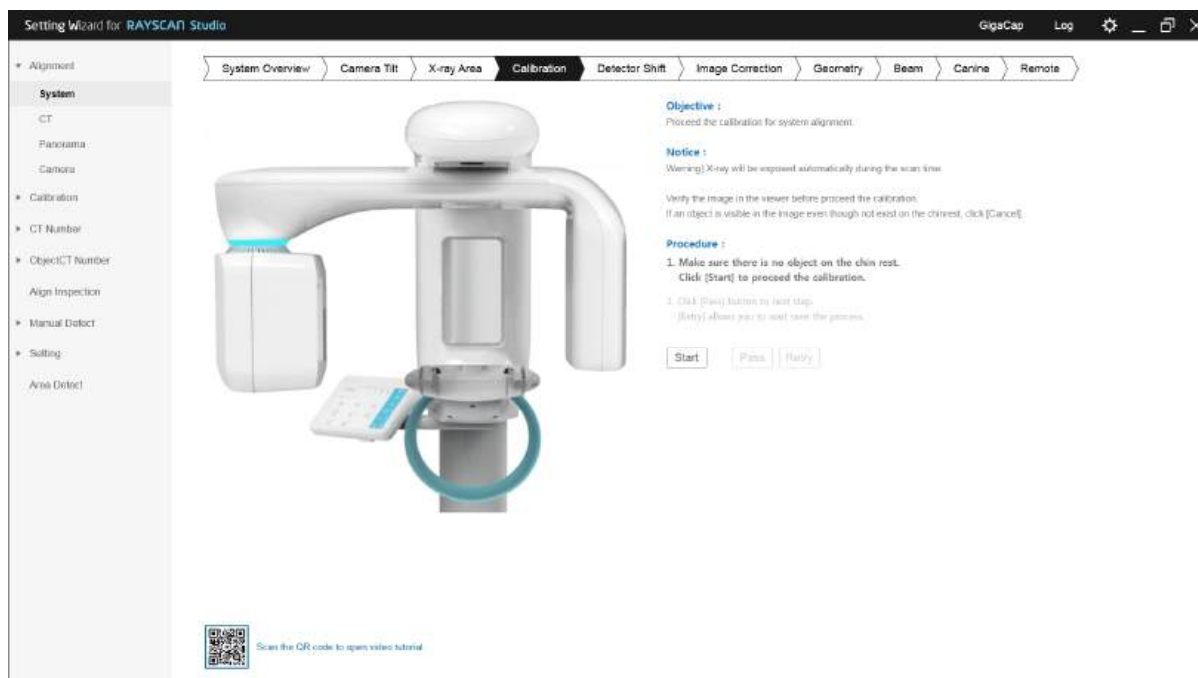
No	Description
1	Attach the Canine Beam Alignment Plate in front of the detector.
2	Manually locate the canine laser beam in the guideline and click [Pass] button.
3	Remove the Canine Beam Alignment Plate and ensure the object on the Chinrest is removed and click [Pass] button.
4	Click [Start] button to proceed the calibration.
5	Click [Start] button to acquire image with variable filter. Note Remove any object between Tube head and the Detector. Be aware that actual X-ray exposes.
6	Click [Start] button to acquire image without variable filter.
7	If the X-ray areas are not shaded, click [Pass] button to complete the step.
8	If the X-ray areas are shaded, adjust the tube tilt and click [Retry] button to retry the step.

How to manually adjust the canine beam

No	Image	Description
1		Attach the canine beam alignment plate in front of the detector and manually adjust so that the canine beam is positioned on the alignment line of the plate.

8.3.3 Calibration

This step guides how to proceed CT calibration for the setting process. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

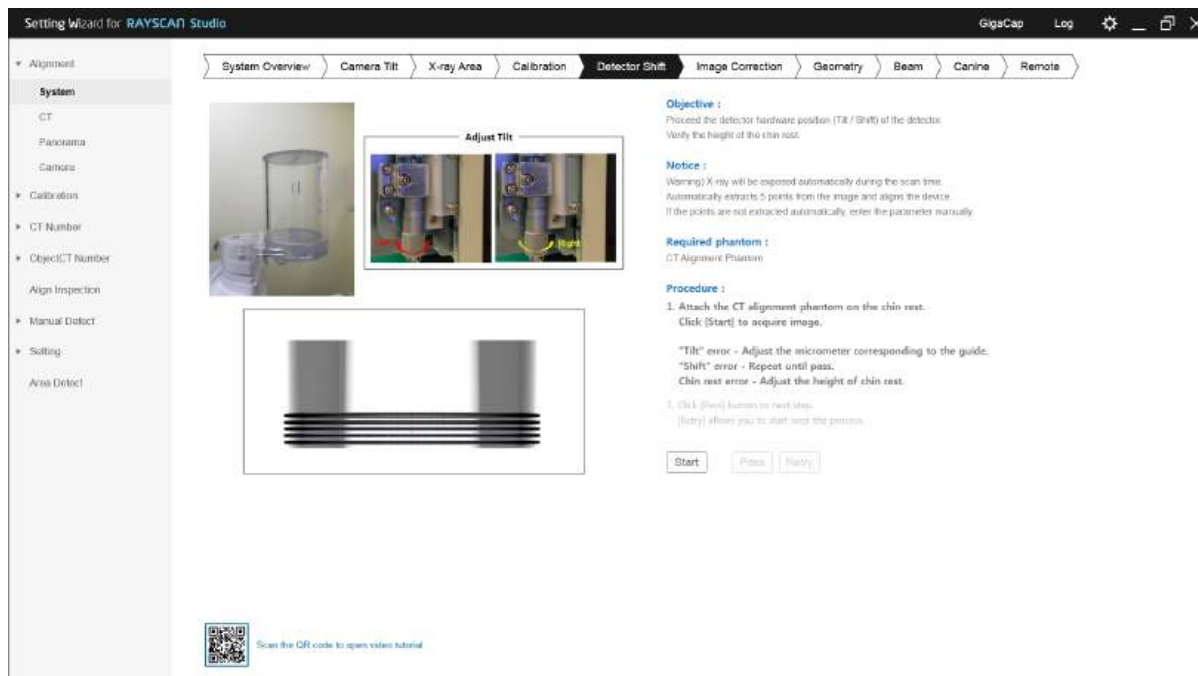


Procedure

No	Description
1	<p>Click [Start] button to proceed the scan.</p> <p>Note Remove any object between Tube head and the Detector. Be aware that actual X-ray exposes.</p>
2	Make sure there is no object on the chin rest. If there is an object on the chin rest, remove the object and click [Ok]. If there is no object on the chin rest but it is visible in the viewer, click [Cancel] to initialize the calibration. If you have initialized the calibration, retry the step.
3	Click [Pass] button when the calibration is completed.
4	[Retry] allows you to start over the process

8.3.4 Detector Shift

This step guides how to proceed the detector hardware position(Tilt/Shift) of the dectector. Check any shades on X-ray areas. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



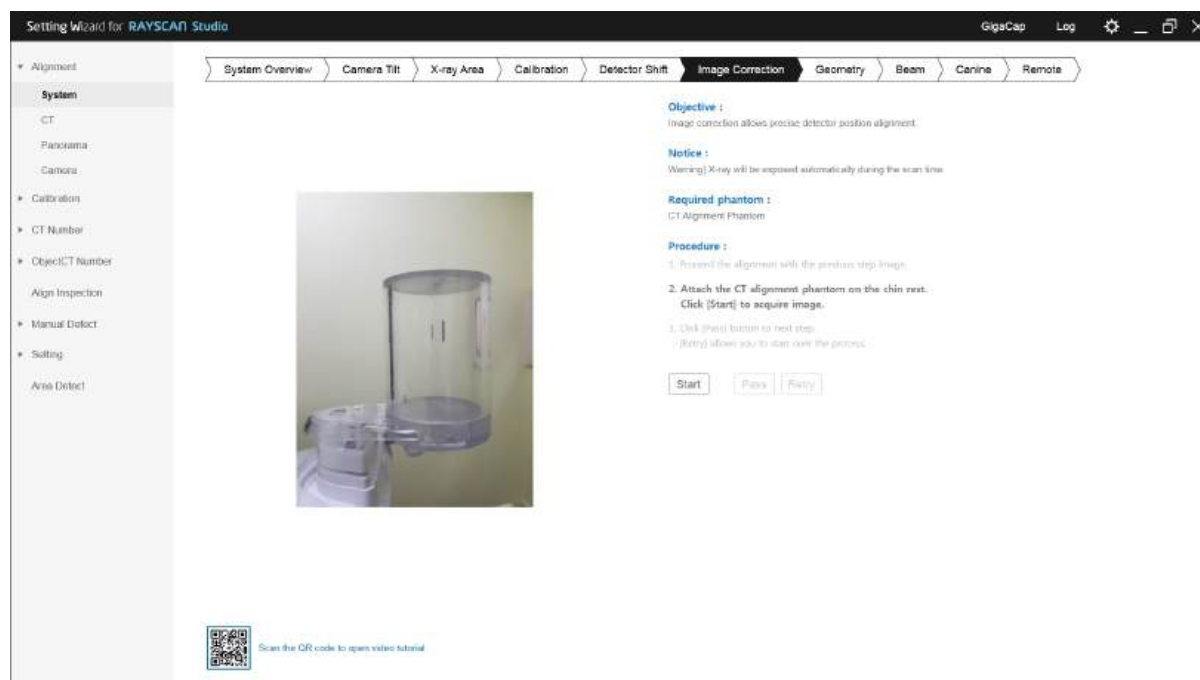
Procedure

No	Description	
1	Place CBCT Alignment ball phantom on the Chinrest.	
2	Click [Start] to acquire image.	
	Note	Be aware that actual X-ray exposes.
3	How to check 5 points manually	1) Click on the center of the ball at the left and right ends of the thin and dark line. (Left / right 2 points) 2) Select the center of the selected line in 1), and click on the center of the next thinner and darker line near the selected line. (Middle 2 points) 3) Click on the center of the third line from the top. (One point in the center)
4	The system automatically realign the step. Alignment results appear as shown below. - Show complete message when the alignment is completed. - Check the Detector tilt by comparing the Y-axis on the left and right. If the tilt is incorrect, refer to the prompt to rearrange and return the step.	

	<ul style="list-style-type: none">- Check the Detector position by comparing the X-axis on the left and right. If the shift is incorrect, the corrected values are applied automatically and return the step.- Check the height of the chinrest with reference to the 5th point. If the height of the chinrest is not correct, adjust the chinrest manually according to the instructions and retry the step.
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8.3.5 S/W Correction

It is the step to precisely set the Detector position. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

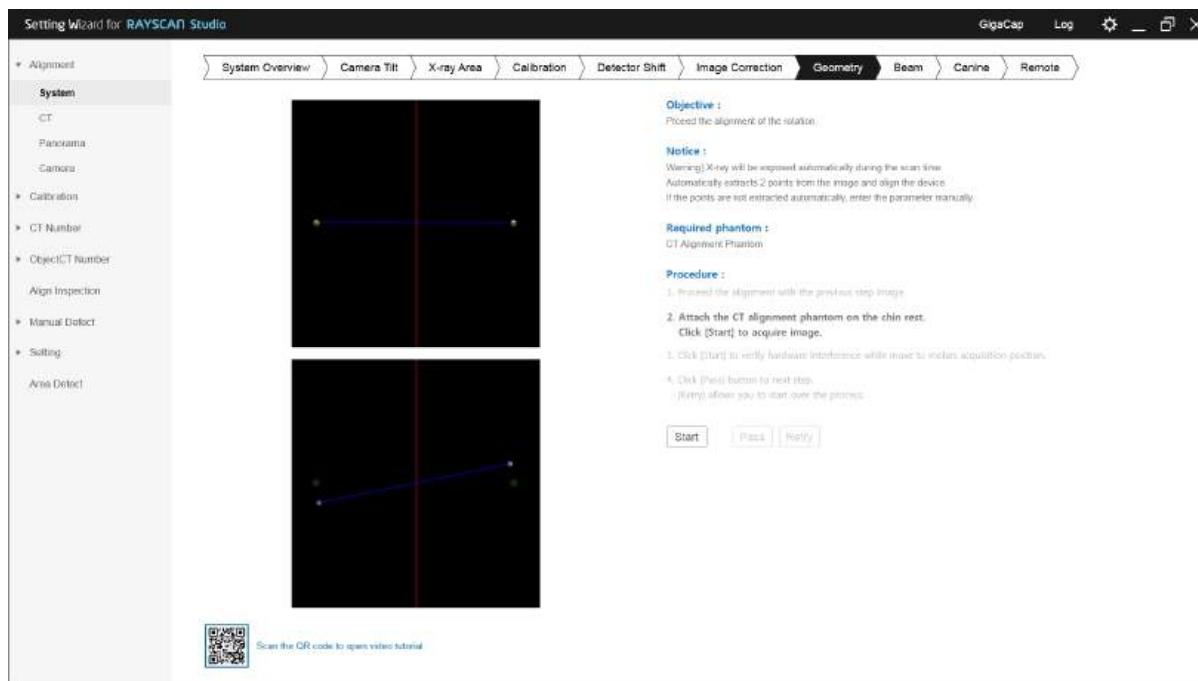


Procedure

No	Description
1	Place the CT alignment phantom on the chinrest and click [Start] button to proceed with the scan. <div> Note Be aware that actual X-ray exposes. </div>
2	Automatically calculates the Detector position from the captured image to match the alignment.
3	This step will automatically proceed with alignment and repeat until it matches.

8.3.6 Geometry

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

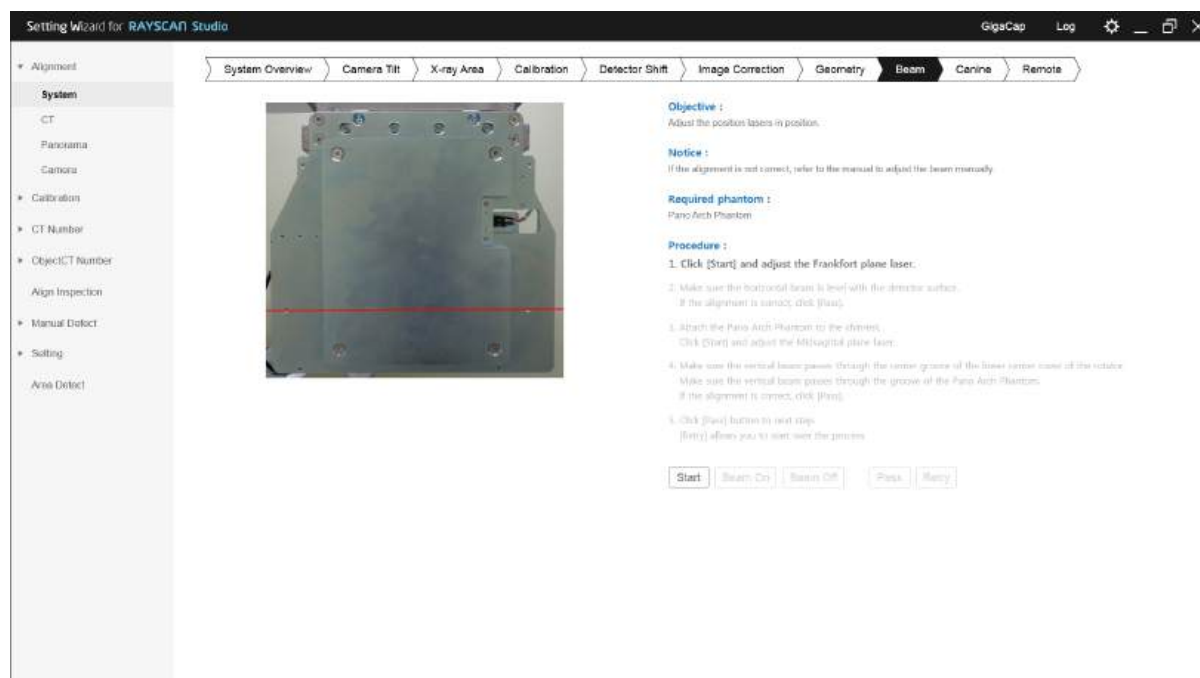


Procedure

No	Description
1	<p>Attach the CT Alignment Phantom on the Chinrest and click [Start] button to acquire image.</p> <p>Note Be aware that actual X-ray exposes.</p>
2	Make sure 2 points are automatically extracted in the result window.
3	<p>In the step, the reference pin and guide circle are checked for match.</p> <ul style="list-style-type: none"> - Alignment is complete if it match. - If it does not, the alignment is automatically proceed and repeat the process until it matches.

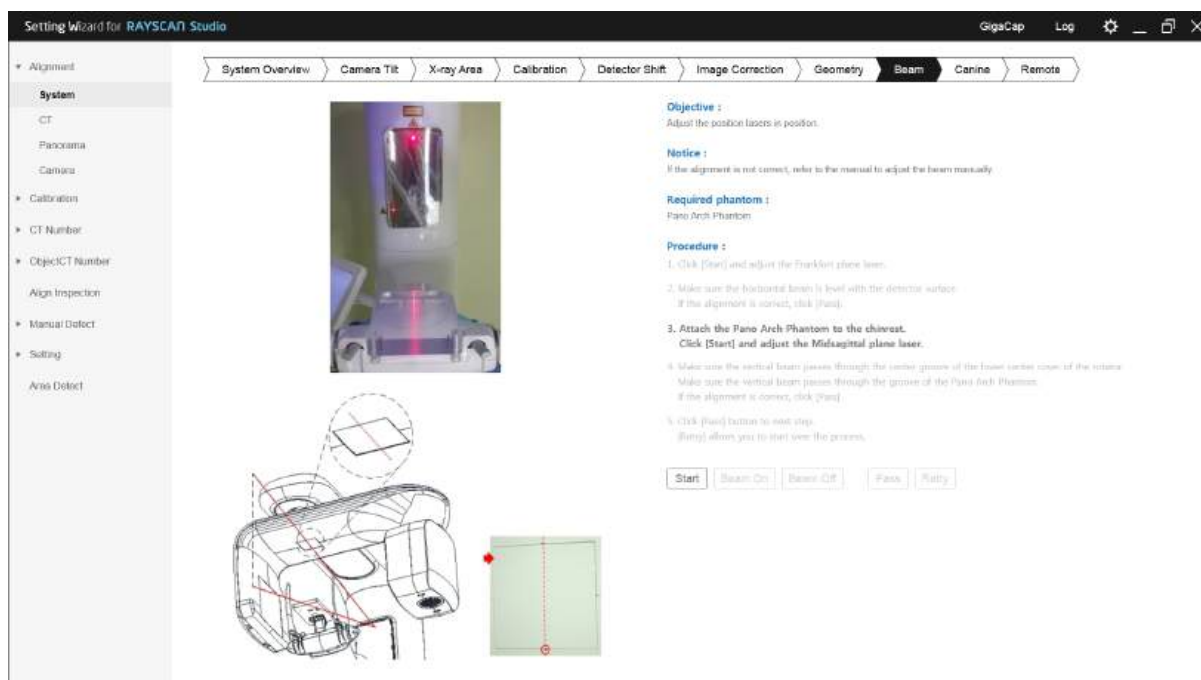
8.3.7 Beam

This step guides how to align the vertical and horizontal laser beams.



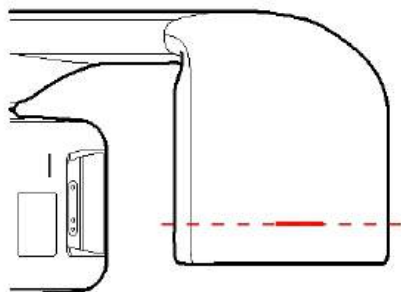
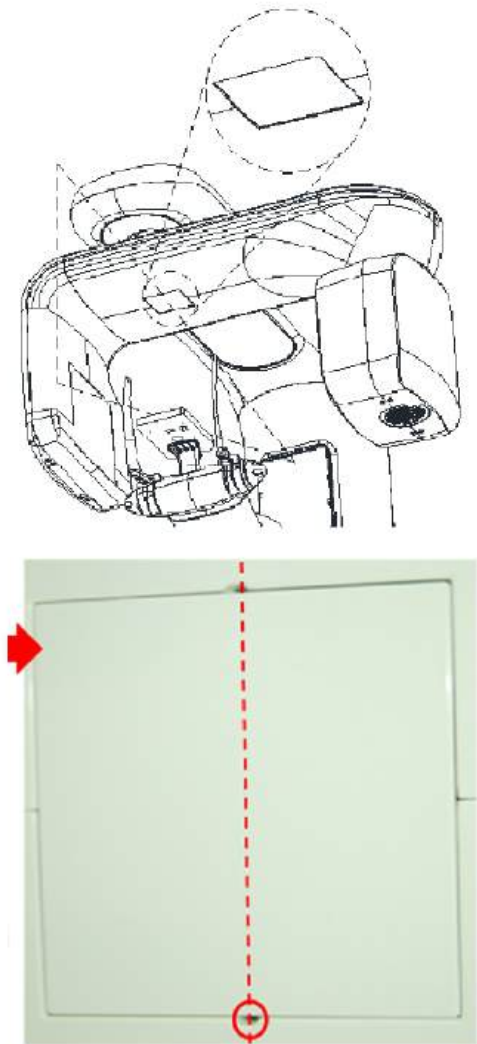
Procedure

No	Description
1	Click [Start] button to move the rotator to horizontal laser beam check position.
2	If there is a case, click the [Pass] button and refer to “ How to check the laser beam in case” below to check the laser beam.
3	Use [Beam On] / [Beam Off] buttons to set the horizontal laser beam position.
4	Set the horizontal laser beam to level with the detector face. See “How to align the horizontal and vertical laser beams.”below.
5	When the alignment is complete, click the [pass] button to complete the step.



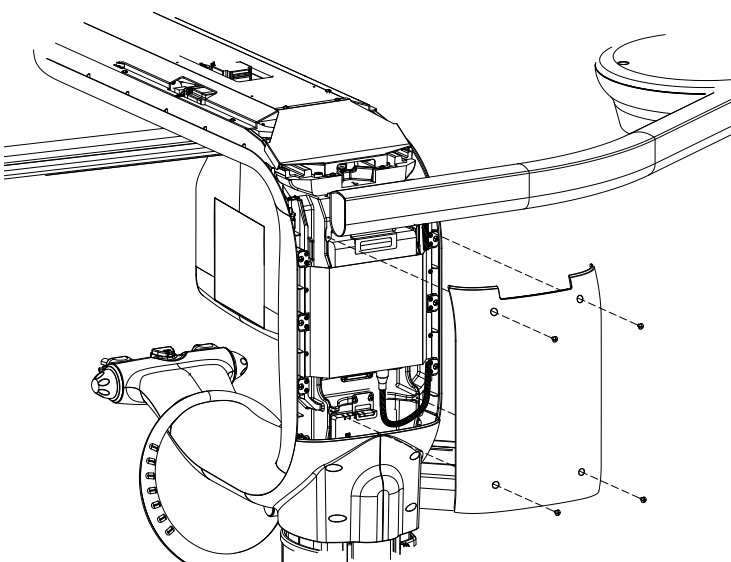
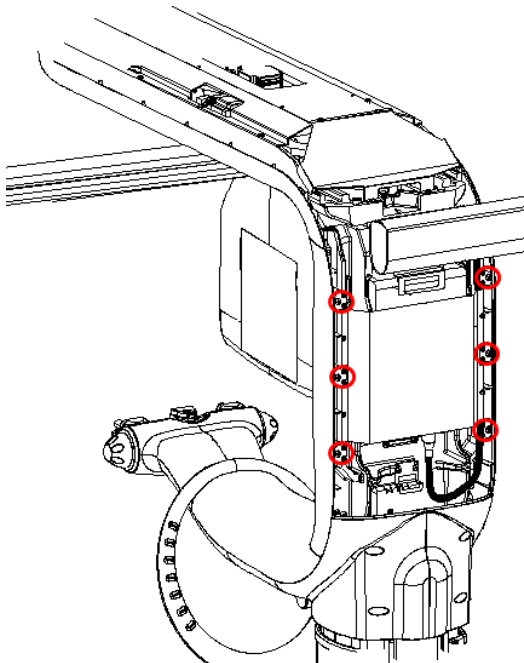
No	Description
6	Click [Start] button to move the rotator to vertical laser beam check position.
7	Use [Beam On] / [Beam Off] buttons to set the vertical laser beam position.
8	After mounting the Panorama Arch Phantom, set the vertical laser beam below the central groove of the Panorama Arch Phantom, and set the vertical beam above the center groove of the bottom center cover of the Rotator. Refer to “How to align the horizontal and vertical laser beams.”below.
9	When the alignment is complete, click the [pass] button to complete the step.

How to check the laser beam in case

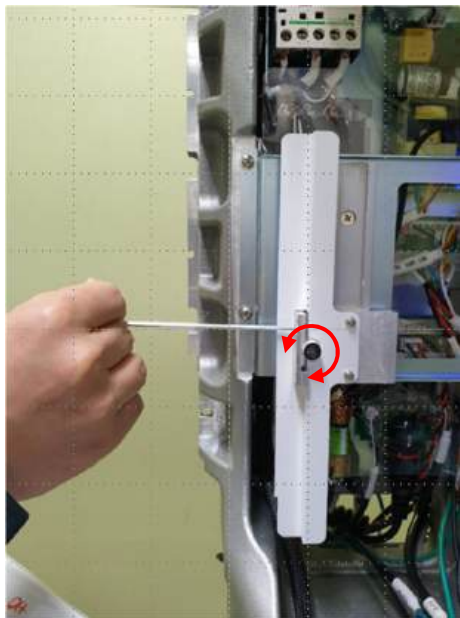
No	Image	Description
1		Make sure that the horizontal laser beam is level with the red sticker line attached to the Detector back case as shown.
2		Make sure that the vertical beam passes through the center groove of the Rotator cover as shown.

How to align the horizontal and vertical laser beams.

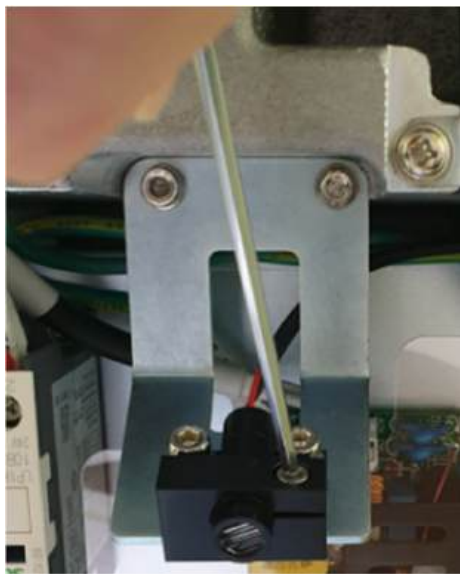
- Remove the mirror case.

No	Image	Description
1		Loose the bolts on the back of the column case.
2		Loose bolts (8ea) on the back and remove the mirror case.

- How to adjust the horizontal laser beam.

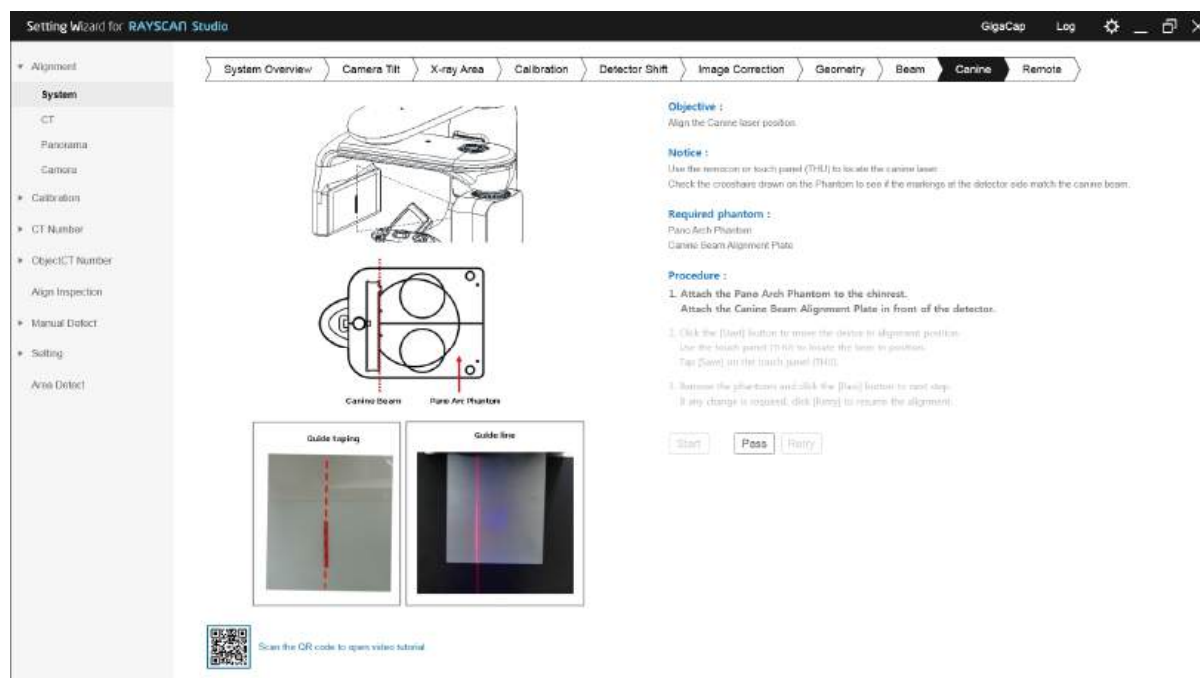
No	Image	Description
1		Loose the bolt on the part and adjust manually as the figure below.

- How to adjust the vertical laser beam.

No	Image	Description
1		Loose the bolts as highlighted and adjust to pass 2 notches on the Rotator Case lower and the middle groove on Pano Arch Phantom.

8.3.8 Canine

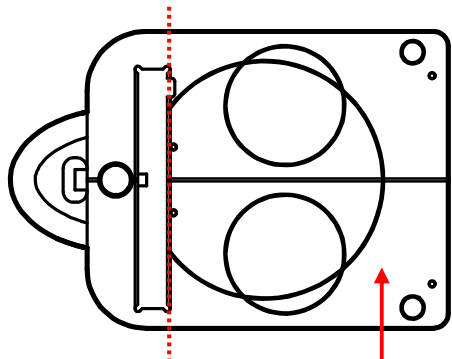
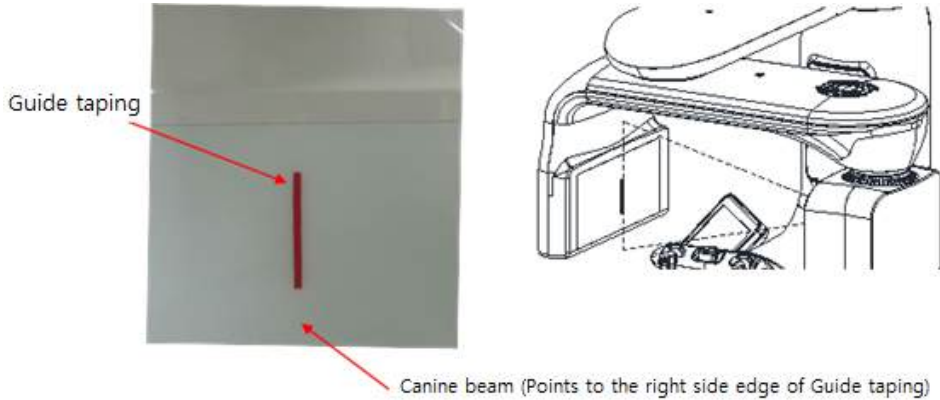
This step guides how to align the canine laser beam.



Procedure

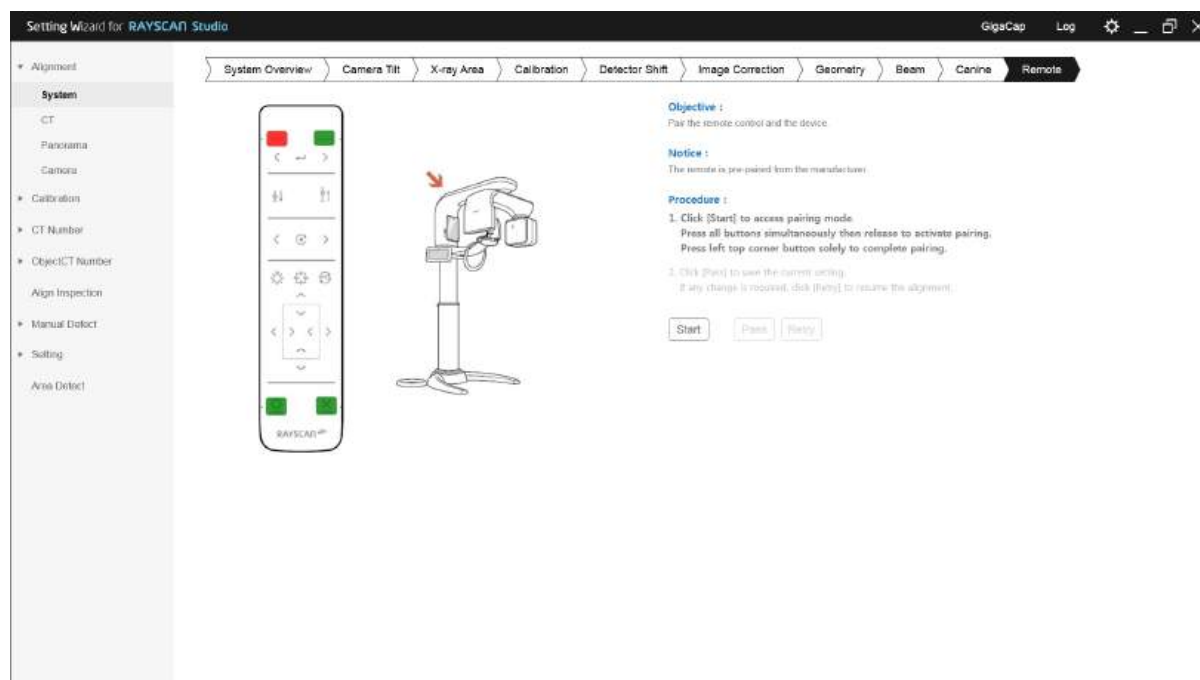
No	Description
1	Place Pano Arch Phantom on the Chinrest and click [Start] button.
2	The horizontal groove on Pano Arch Phantom and the red tape on the detector cover are the references. (The above figure is an alignment without a cover. When there is no cover, align it with the mark on the top of the Detector.)
3	Adjust the beam on THU. As finish, click either [Save] button on THU or [Pass] button on the PC.

Check and action

No	Description / Image
1	<p data-bbox="300 338 1385 416">The canine laser beam must pass the groove as the figure below and points to the tape on the detector cover.</p> <div data-bbox="564 443 1098 835">  <p data-bbox="651 801 1098 835">Canine beam Pano Arch Phantom</p> </div> <div data-bbox="367 981 1311 1379">  <p data-bbox="367 1070 507 1104">Guide taping</p> <p data-bbox="766 1350 1305 1379">Canine beam (Points to the right side edge of Guide taping)</p> </div>

8.3.9 Remote

This step guides how to pair the remote controller with the device. This step must be done in case of the part replacement.



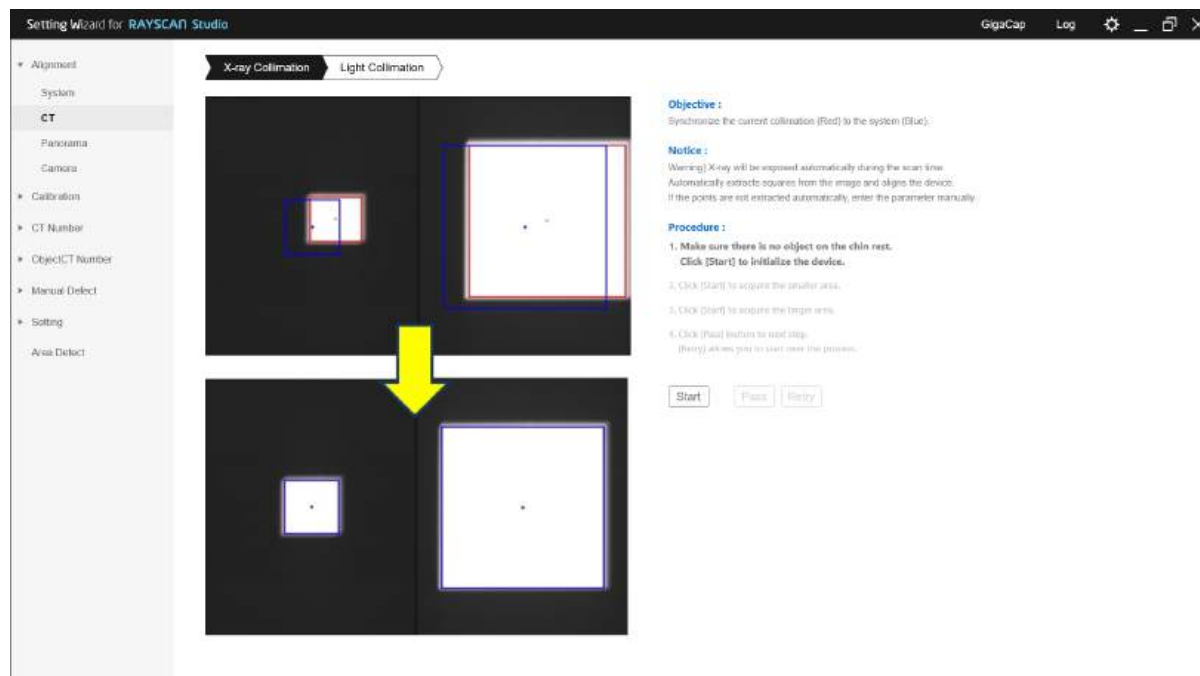
Procedure

No	Description
1	Power on the system and verify that it is standby.
2	Prepare the remote control and click [Start] button.
3	Use the 4 hidden buttons as the figure.
4	Press 4 buttons to activate pairing mode and then press red hidden button solely to finish the pairing.
5	The timeout is 15 seconds and must redo step 1 to get into the mode.
6	As finish, click [Pass] button to finish the step.

8.4 Alignment - CT

8.4.1 X-ray Collimation

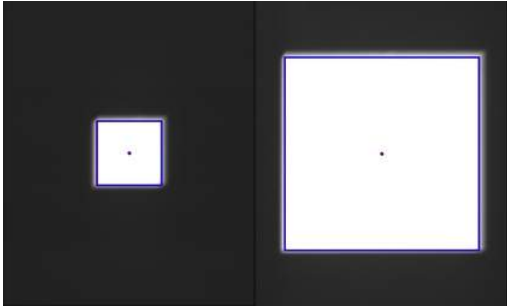
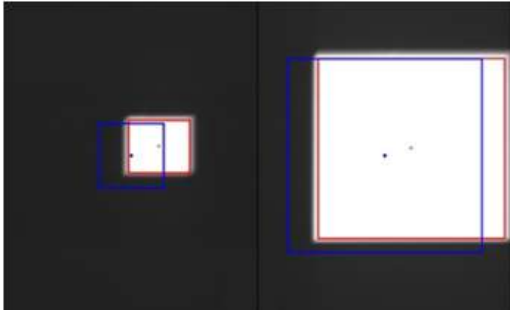
This step guides how to align the collimators. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

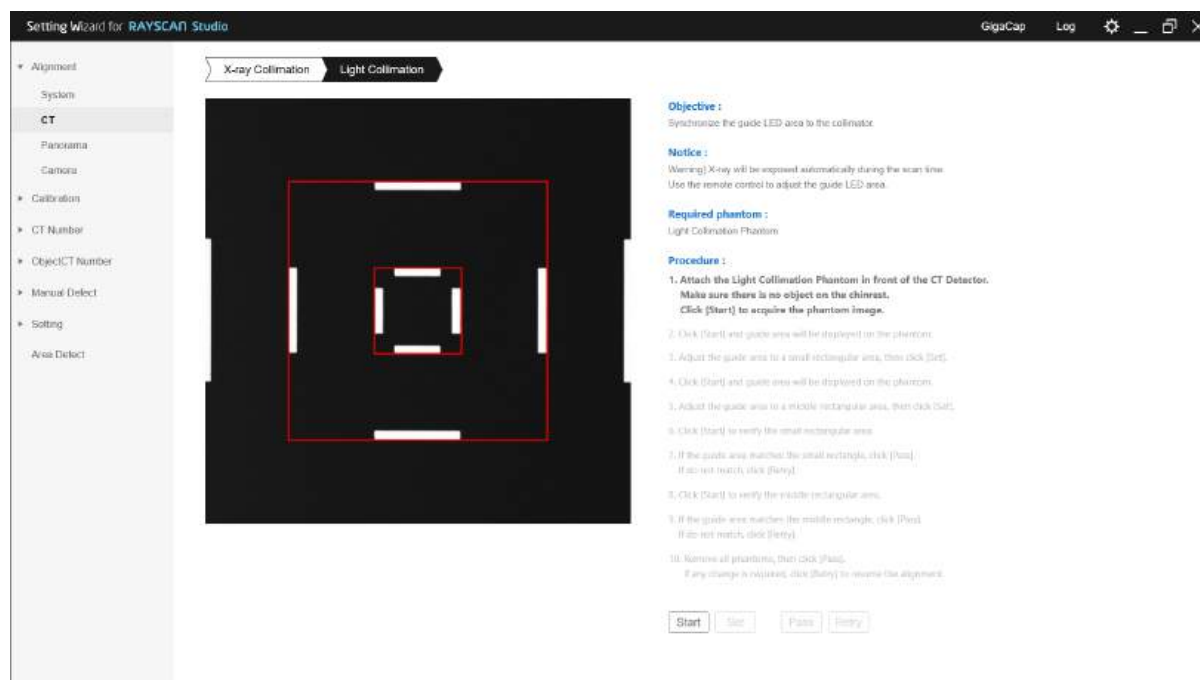
No	Description
1	Remove any object between Tube head and the Detector.
2	Click [Start] button to collect the image of small FOV. Note Be aware that actual X-ray exposes.
3	Click [Start] button to collect the image of large FOV. Note Be aware that actual X-ray exposes.
4	The adjustment is done automatically. Check the result after each scan only.
5	If the rectangle areas extracted from the images match the guidelines, click the [Pass] button to complete the process.
6	If the rectangle areas extracted from the images does not match the guidelines, click the [Retry] button to proceed with the step again.
7	The final result is dependable on step 2 and 3. Repeat the steps in 1 set till the result comes up "Complete".

Check and action

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

8.4.2 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

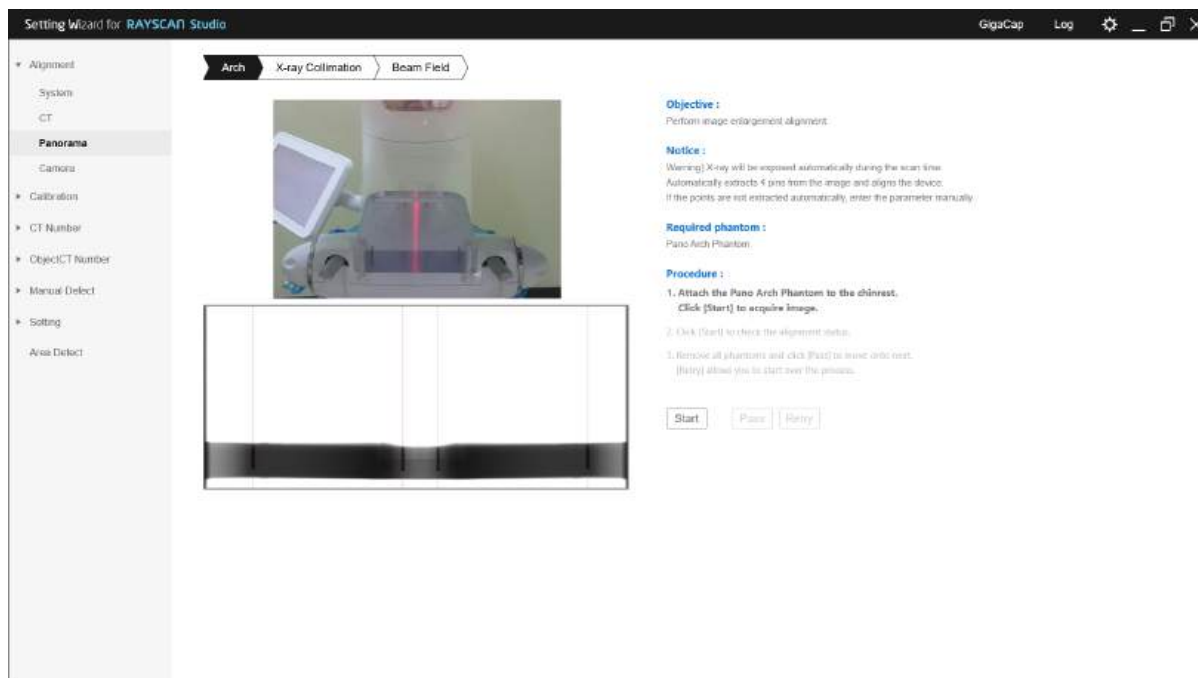
No	Description
1	Attach the Light Collimation Phantom onto the Detector ("CT" mark must face the tube tank).
2	Click [Start] button and wait for collecting the phantom image. Note Be aware that actual X-ray exposes.
3	Click [Start] button to set up the small rectangular of light collimator. Note The adjustment is done automatically.
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 rectangular of light collimator. Note The adjustment is done automatically.
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.

8.5 Alignment - Panorama

8.5.1 Arch

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

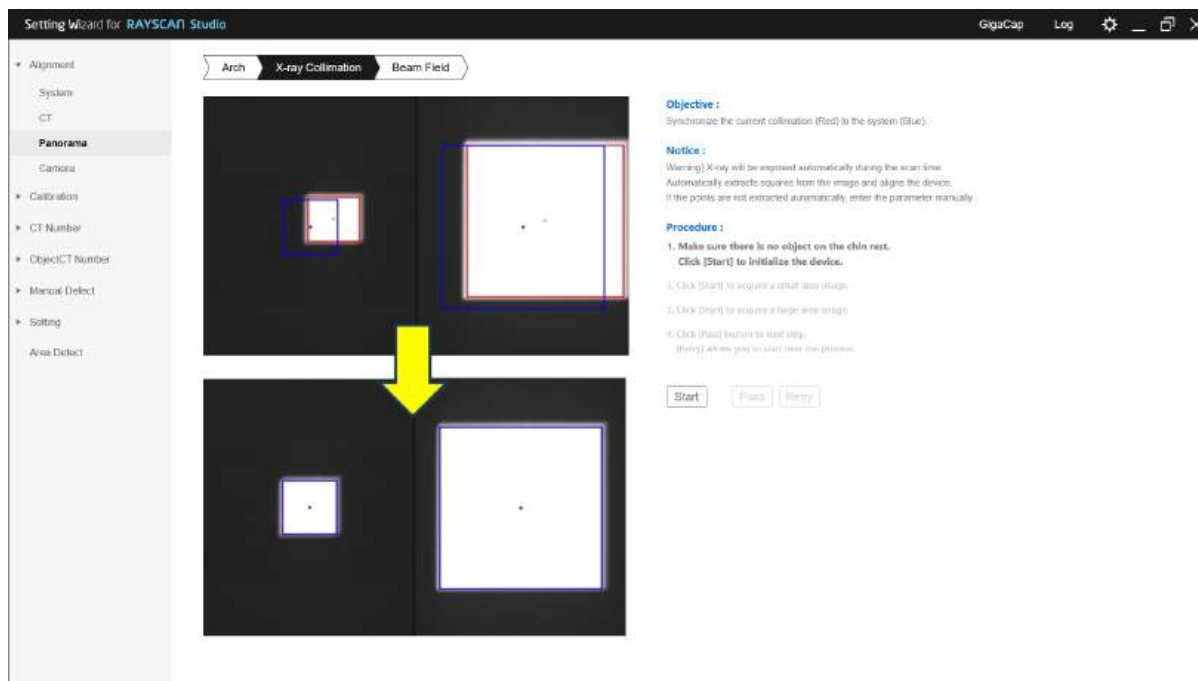


Procedure

No	Description
1	Place Pano Arch Phantom on the Chinrest and click [Start] button to proceed the scan. Note Be aware that actual X-ray exposes.
2	Make sure 4 points are automatically extracted in the result window. Then, click [OK] button. If 4 points are not extracted automatically, proceed the step manually.
3	The system automatically realign the step. Alignment results appear as shown below. <ul style="list-style-type: none"> - If the Phantom position and the beam are not checked properly, take steps to align them again. - If the Geometry is incorrect, proceed from the Geometry step of the System tab. - If alignment is correct, completion message is shown, and if alignment is not correct, rescan message is shown.
4	Rescan to check the alignment. Click [Start] button to proceed the scan.
5	Click [Pass] button when the scan is finished. [Retry] button allows the step to be repeated.

8.5.2 X-ray Collimation

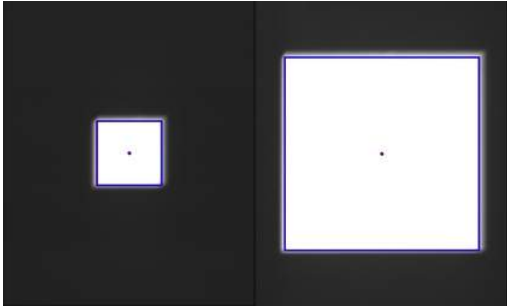
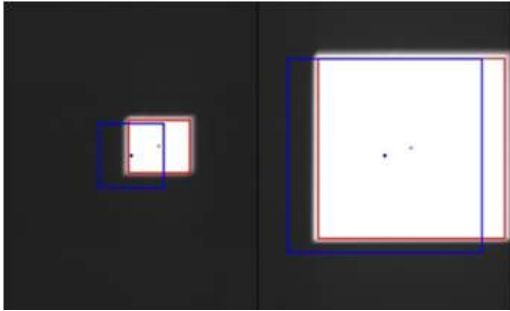
This step guides how to align the collimators. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

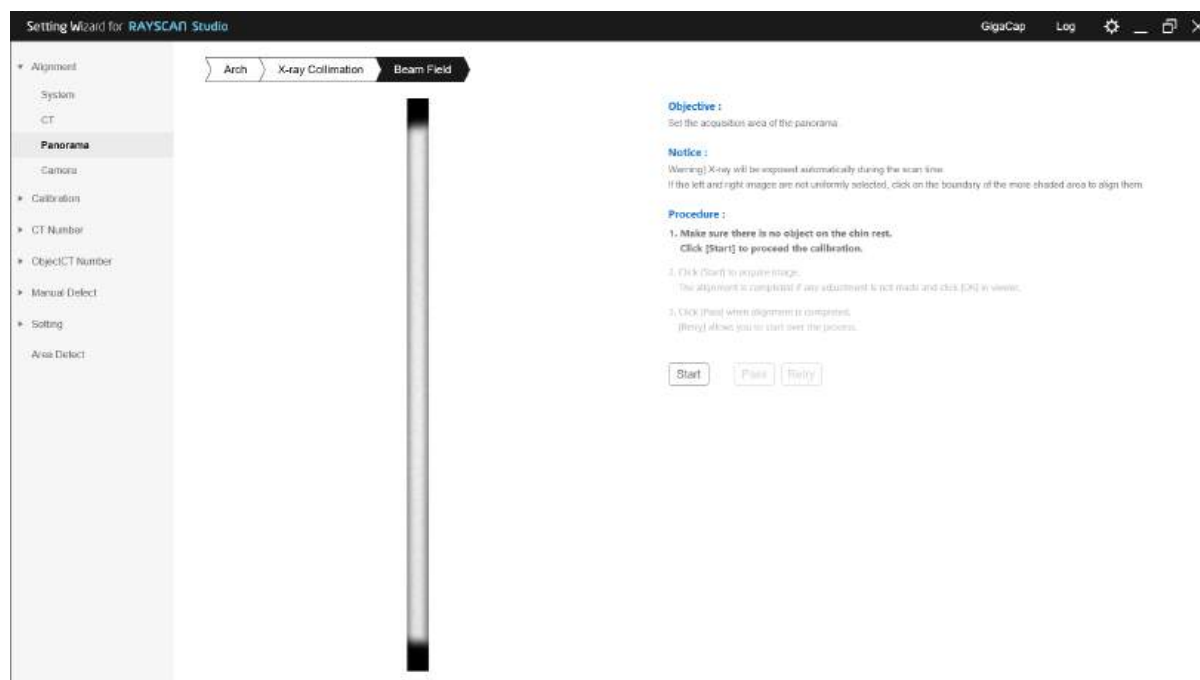
No	Description
1	Remove any object between Tube head and the Detector.
2	Click [Start] button to collect the image of small FOV. Note Be aware that actual X-ray exposes.
3	Click [Start] button to collect the image of large FOV. Note Be aware that actual X-ray exposes.
4	The adjustment is done automatically. Check the result after each scan only.
5	If the rectangle areas extracted from the images match the guidelines, click the [Pass] button to complete the process.
6	If the rectangle areas extracted from the images does not match the guidelines, click the [Retry] button to proceed with the step again.
7	The final result is dependable on step 2 and 3. Repeat the steps in 1 set till the result comes up "Complete".

Check and action

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

8.5.3 Beam Field

This step guides how to setup the Panoramic beam field. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



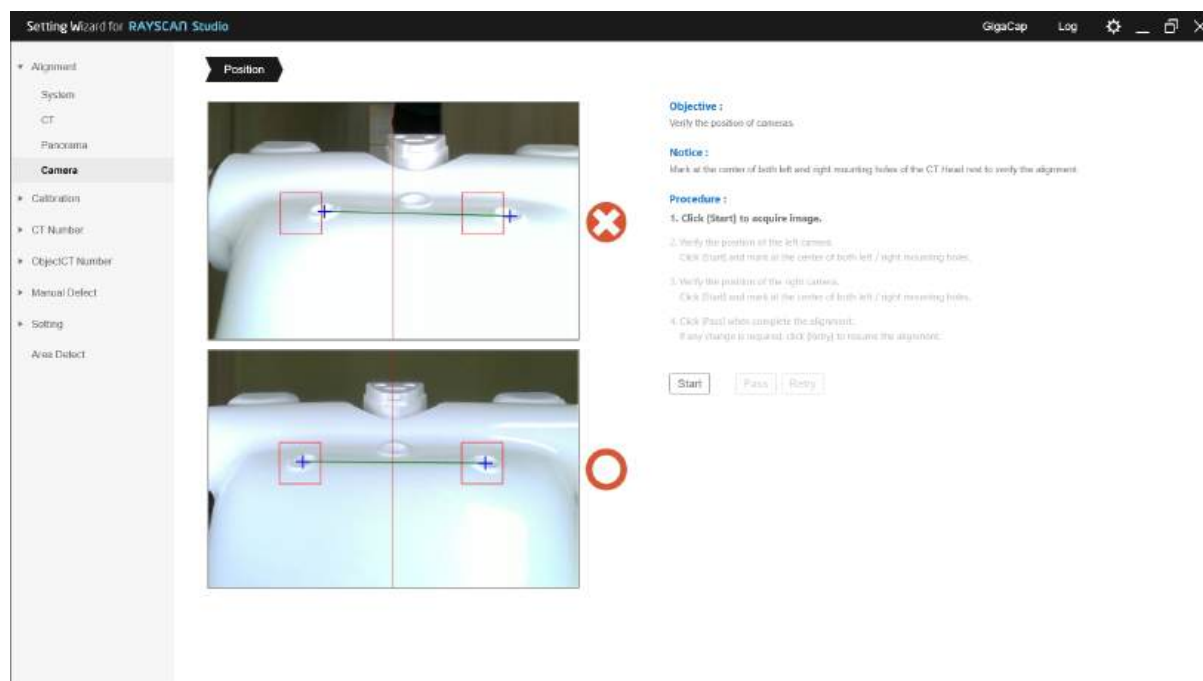
Procedure

No	Description
1	Remove the Light Collimation Phantom from the Detector.
2	Click [Start] button to begin the step.
3	Click [Start] button to proceed the scan.
4	Check the image. <ul style="list-style-type: none"> - If aligned, click [OK] button. - If not aligned, click the area that is shaded darker to re-align in the viewer and then click [OK] button. This step must be repeated till "Confirm" message comes up.
5	As finish, click [Pass] button to finish the step.
6	Click [Retry] button to proceed with the step again.

8.6 Camera

8.6.1 Position

This step guides how to verify the position of camera.



Procedure

No	Description
1	Click [Start] button to acquire image. At this time, take pictures from the left and right cameras. .
2	Click [Start] button and mark at the center of both left / right mounting holes in Viewer and click the [Ok] button, verify the position of the left camera.
3	Check the alignment of the right camera in the same way as 2 nd step.
4	Click [Pass] button when complete the alignment. If any change is required, click [Retry] button to resume the alignment.

8.7 Calibration

This step guides to do Calibration on each Modality and setup Defect Map Calibration.



Warning

The device is pre-calibrated from the manufacturer and does not need to redo calibration during the installation. In case of replacing the Detector, follow the instruction as below.

- The Tube Head cases must be covered on before proceed the calibration.
(Missing the cases might result in failure)
- Check Pass or Fail after the step.

Note

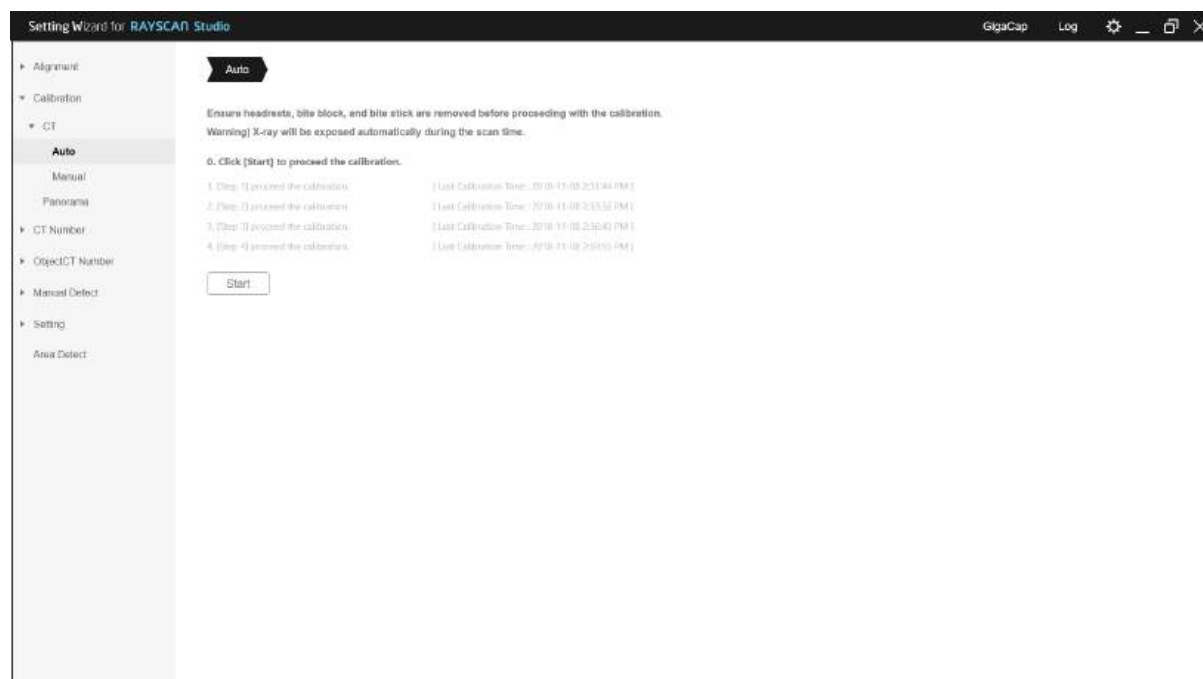
Contact RAY CS team in case of failure on the image quality.

8.8 Calibration – CT

8.8.1 Auto

It is the step to perform all step of CT calibration automatically.

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

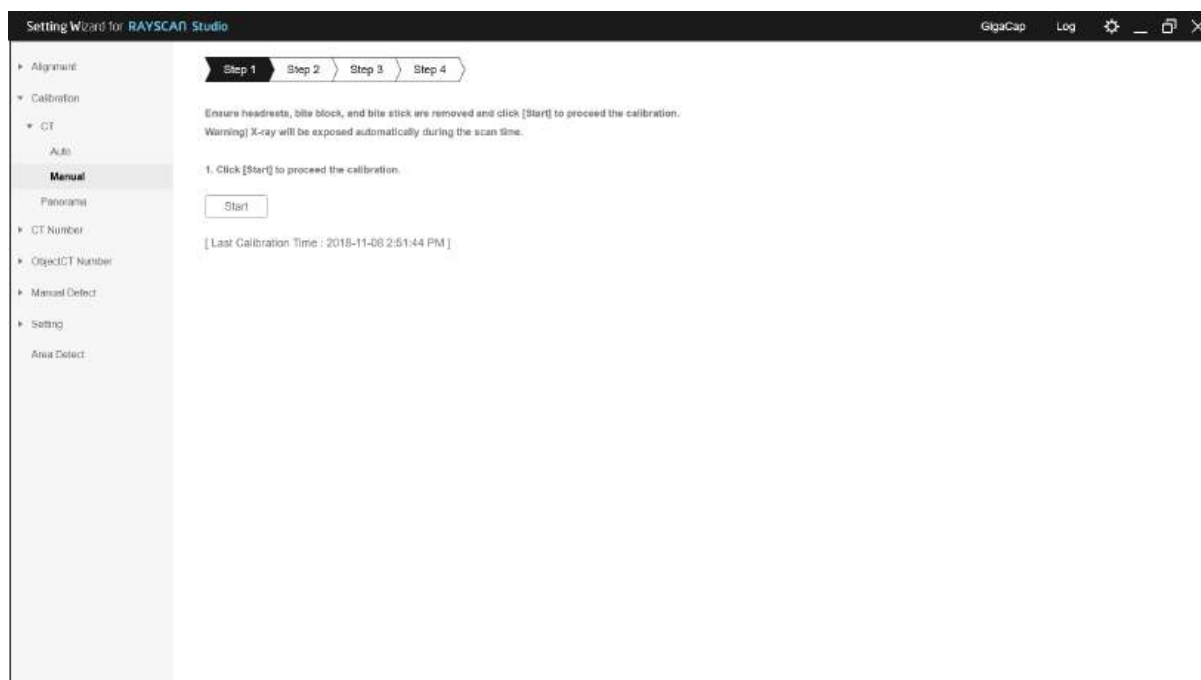


Procedure

No	Description
1	Remove any object between Tube head and the Detector. Click [Start] button.
2	This device runs the calibration automatically and the result comes up.
3	In case of failure, proceed to the failed step in manual.

8.8.2 Manual

It is the step to perform each step of CT calibration manually. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.

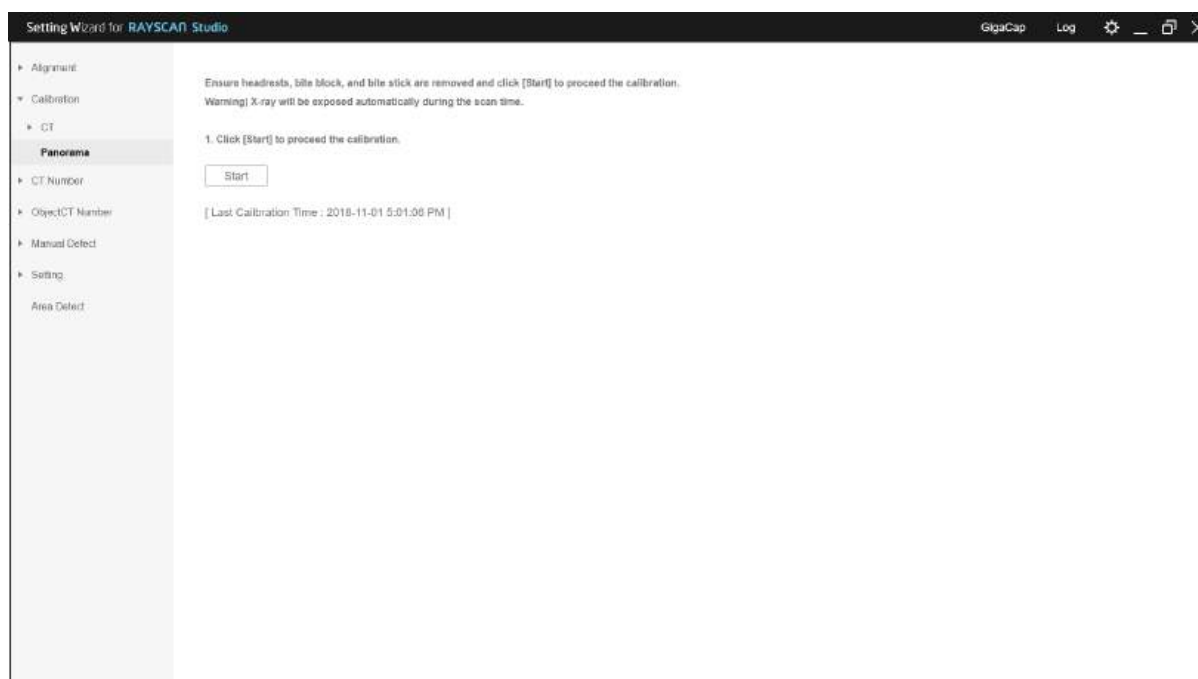


Procedure

No	Description
1	Remove any object between Tube head and the Detector. Click [Start] button.
2	This device runs the calibration manually and the result comes up.

8.9 Calibration - Panorama

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. Click [Start] button.
2	This device runs the calibration automatically and the result comes up.

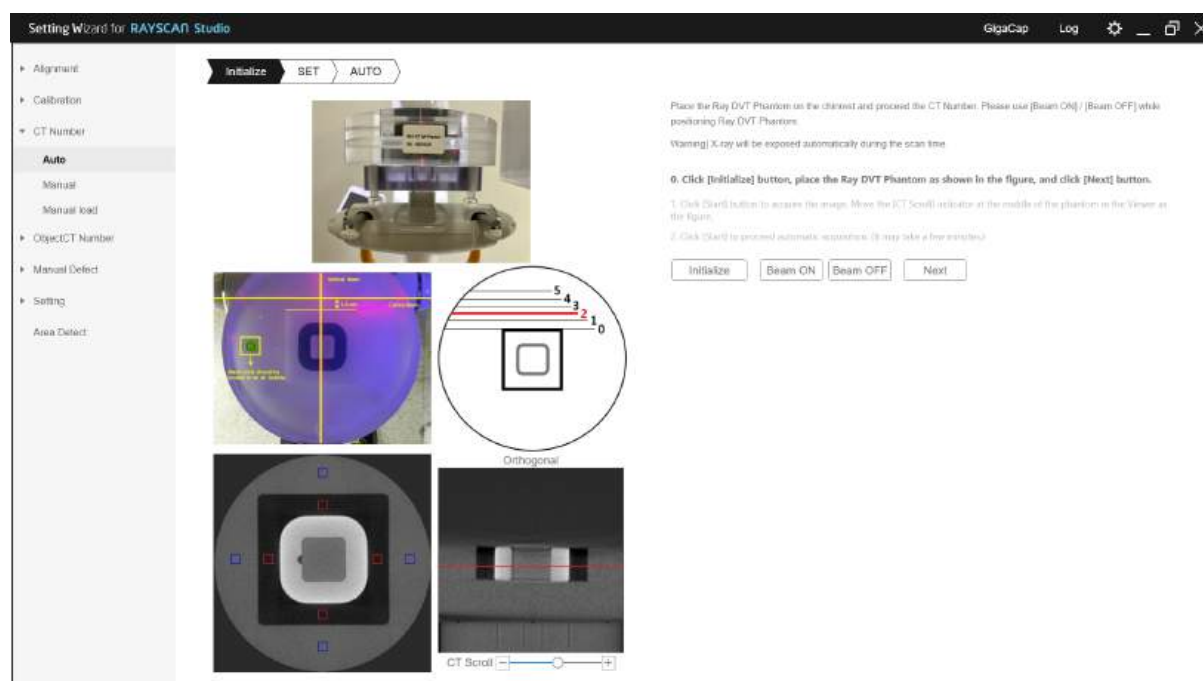
8.10 Acquisition of test image

No	Description
1	Run the RAYSCANS to acquire a test image.
2	Refer to the User manual of the product to acquire images.

8.11 CT Number - Auto

8.11.1 Initialize

This is the step to set the position of Ray DVT Phantom.

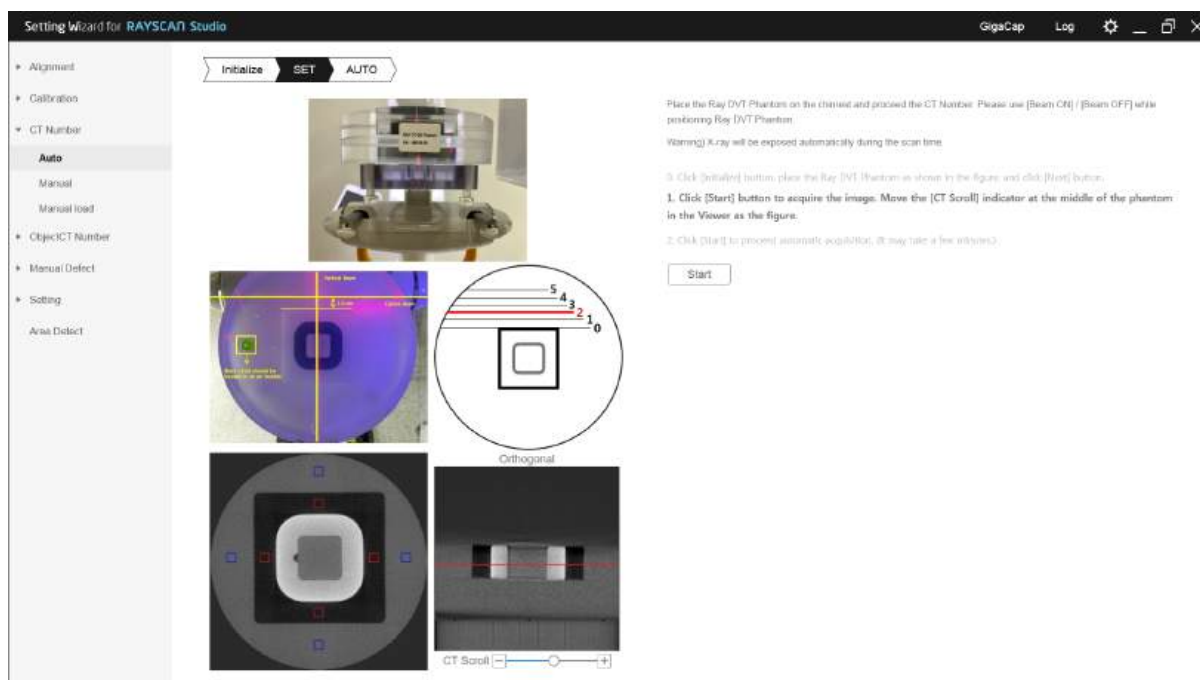


Procedure

No	Description
1	Click the [Initialize] button and then align the Ray DVT Phantom.
2	<p>How to align the Ray DVT Phantom.</p> <ul style="list-style-type: none"> - Attach the Panorama Arch Phantom to the chinrest. - Place the Ray DVT Phantom on top of the Panorama Arch Phantom and click [Beam On] button to turn on the beam, then adjust the beam's horizontal and vertical to match as shown. - Make sure that the Ray DVT Phantom is leveled and if the level is not correct, adjust it with the adjustment screws of the Panorama Arch Phantom.
3	When you are finished align the Ray DVT Phantom, click the [Next] button.

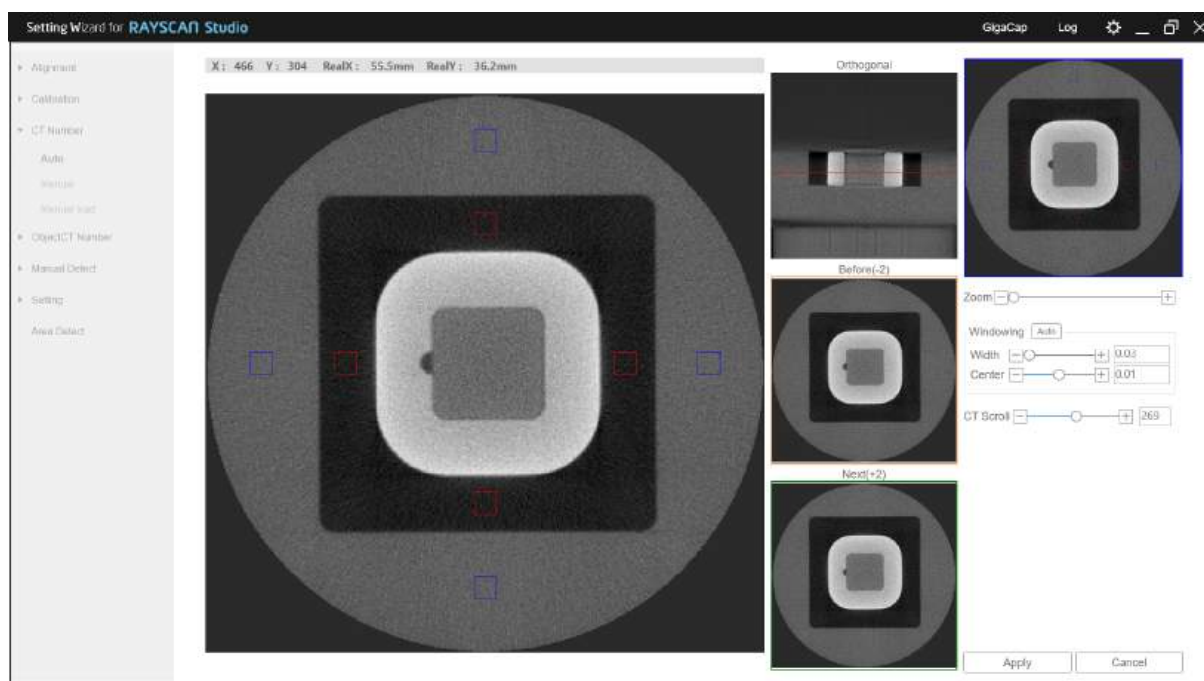
8.11.2 SET

This is the step to specify the reference position to set the CT number. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

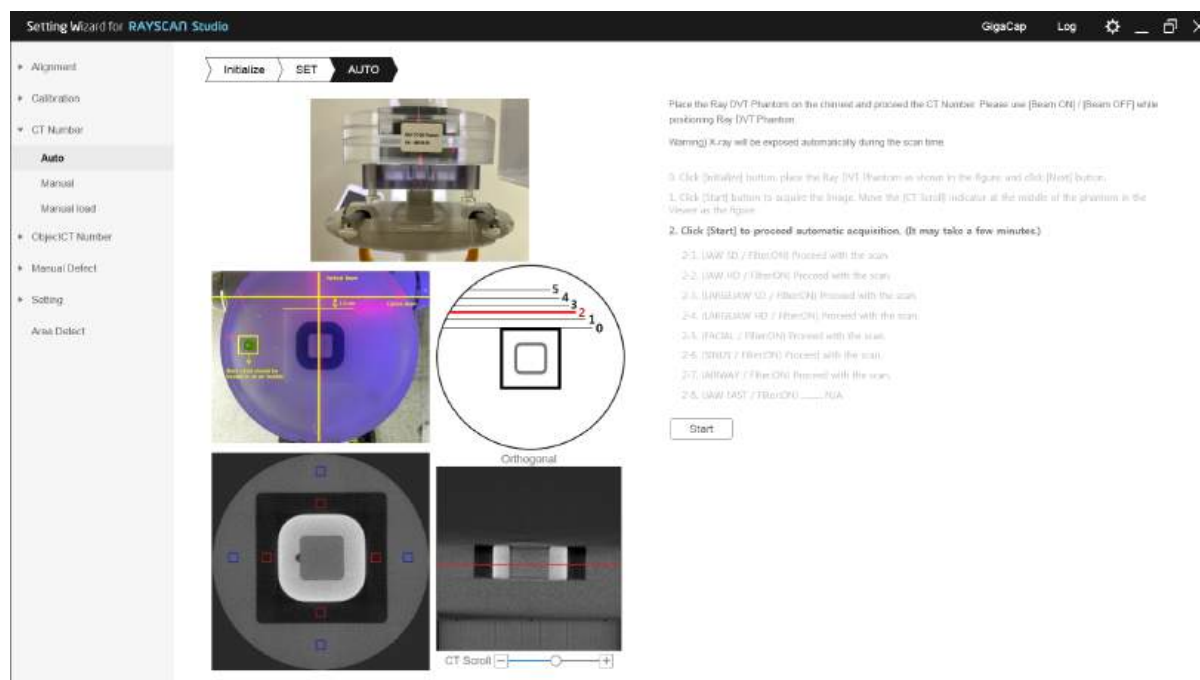
No	Description
1	Click the [Start] button to continue scanning.
2	When scanning is finished, set the CT number in the Viewer.



No	Description
3	<p>How to set CT number in Viewer.</p> <ul style="list-style-type: none"> - Use Orthogonal CT Scroll to move the Phantom to the center position. - In the image, drag the mouse so that the red rectangle is in the black area and the blue rectangle is in the gray area. At this point, set the rectangle to be uniformly positioned. - When the setting is finished, click the [Apply] button.

8.11.3 Auto

This is the step to set the CT number automatically. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility.



Procedure

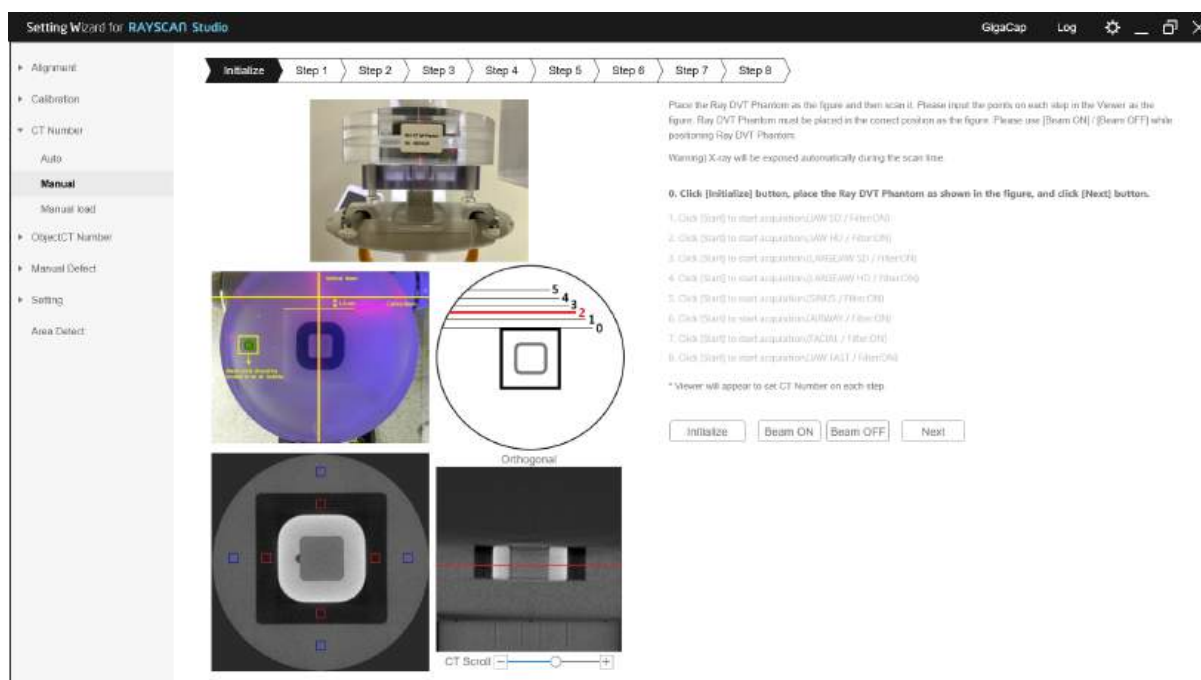
No	Description
1	Click the [Start] button to continue scanning.
2	The below items will be processed automatically. Items marked with "N/A" are excluded. If you want to proceed with the item marked "N/A", proceed from Manual.
3	Completed items will be marked "Complete" or "Failed".
4	After all tasks are completed, the failed item is processed manually.

8.12 CT Number - Manual

This is the step of manually setting the CT Number for the items that failed in Auto or those that do not automatically proceed.

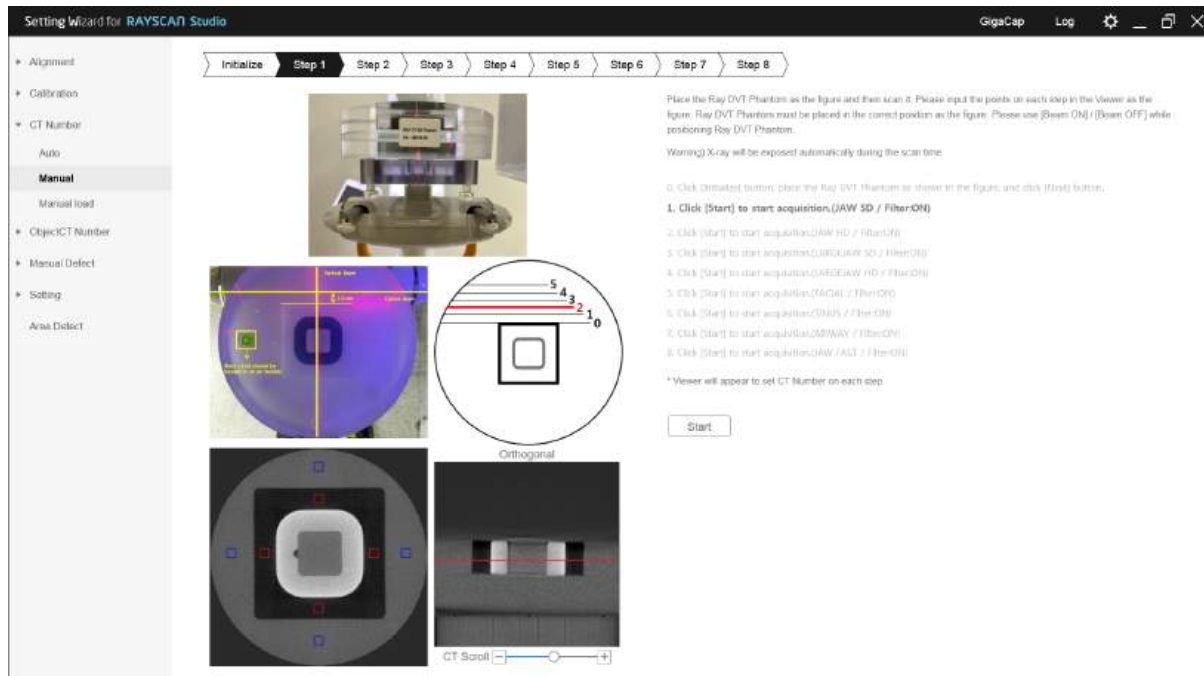
8.12.1 Initialize

Proceed in the same way as Auto Initialize.



8.12.2 Step 1

Manually set the CT number for each protocol. The device generates actual X-ray during the step. This setting must be proceeded in the shielding facility. The Viewer for setting the CT number is displayed in each step.



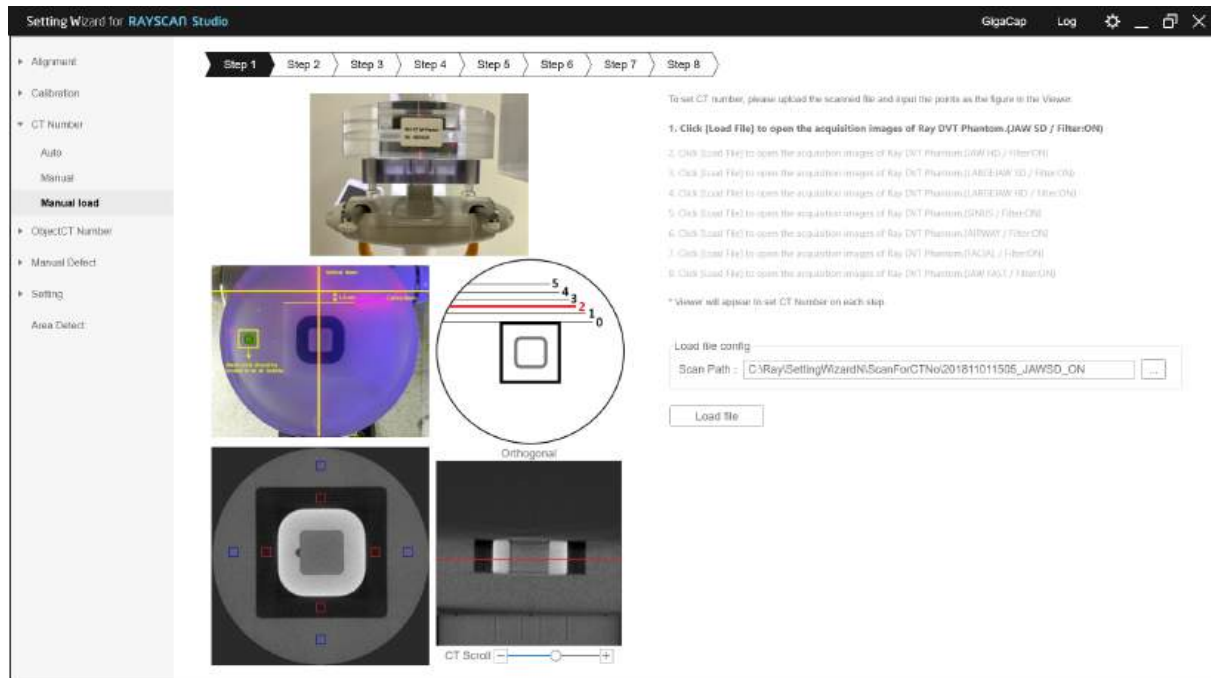
Set the reference position of CT number as same as Auto setting.

If the CT Number is incorrect, adjust the Ray DVT Phantom position and proceed again.

8.13 CT Number - Manual load

8.13.1 Step 1

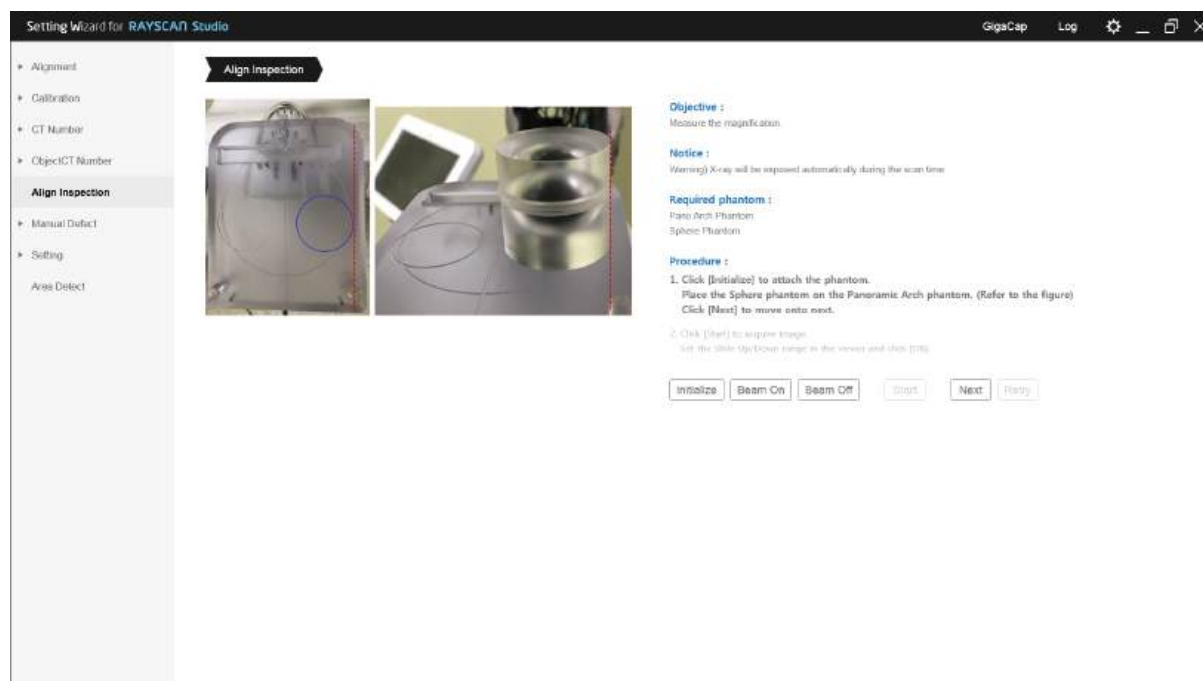
This is the step to call the scanned image and set the CT number.



8.14 Align Inspection

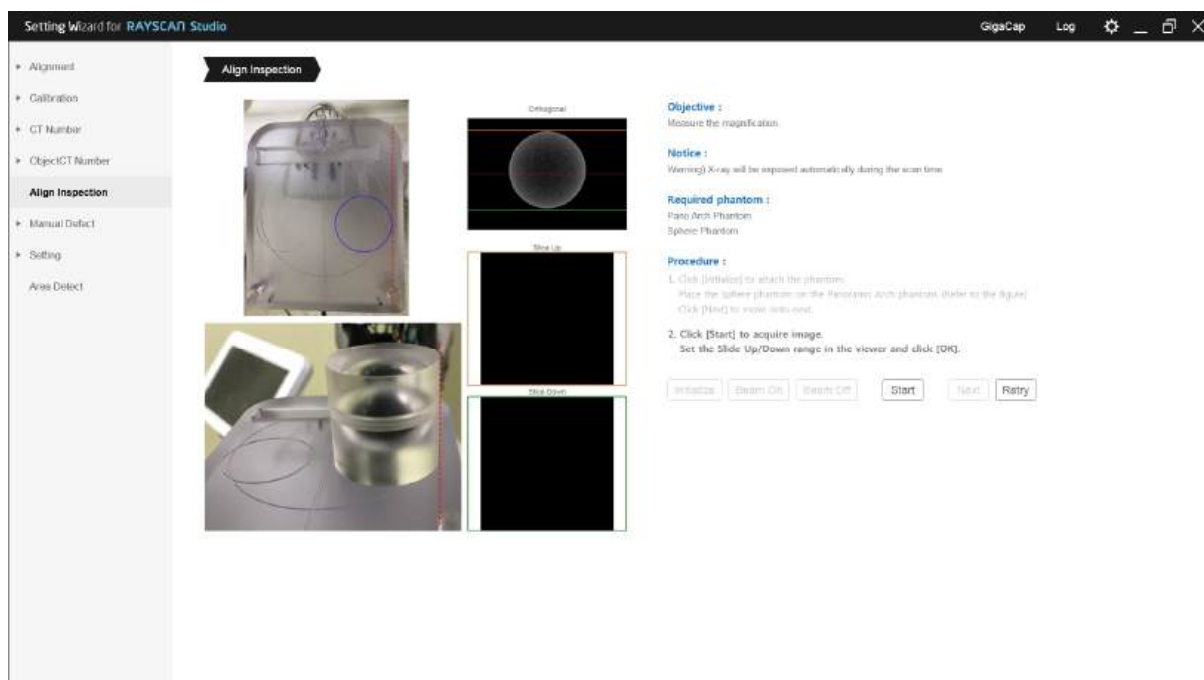
The process of verifying the alignment by measuring the magnification on the CT image.

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

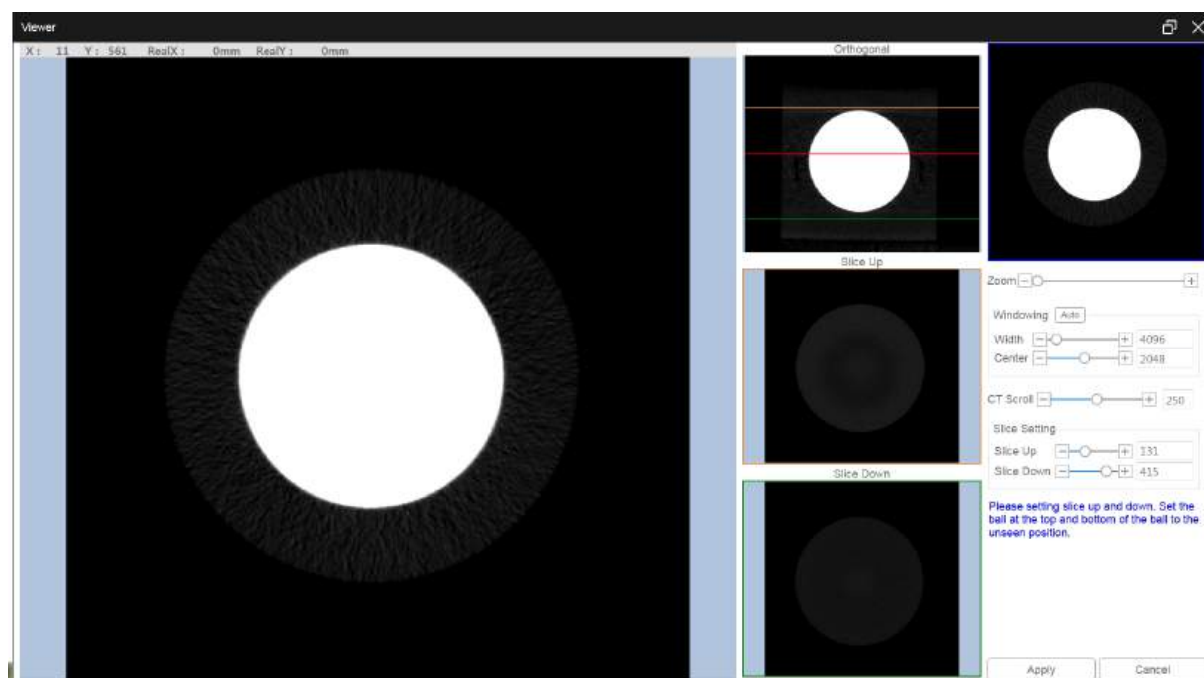


Procedure

No	Description
1	Click [Initialize] button to attach the Phantom.
2	Place the Sphere Phantom on the Panorama Arch Phantom (Refer to the figure).
3	Click [Pass] button.

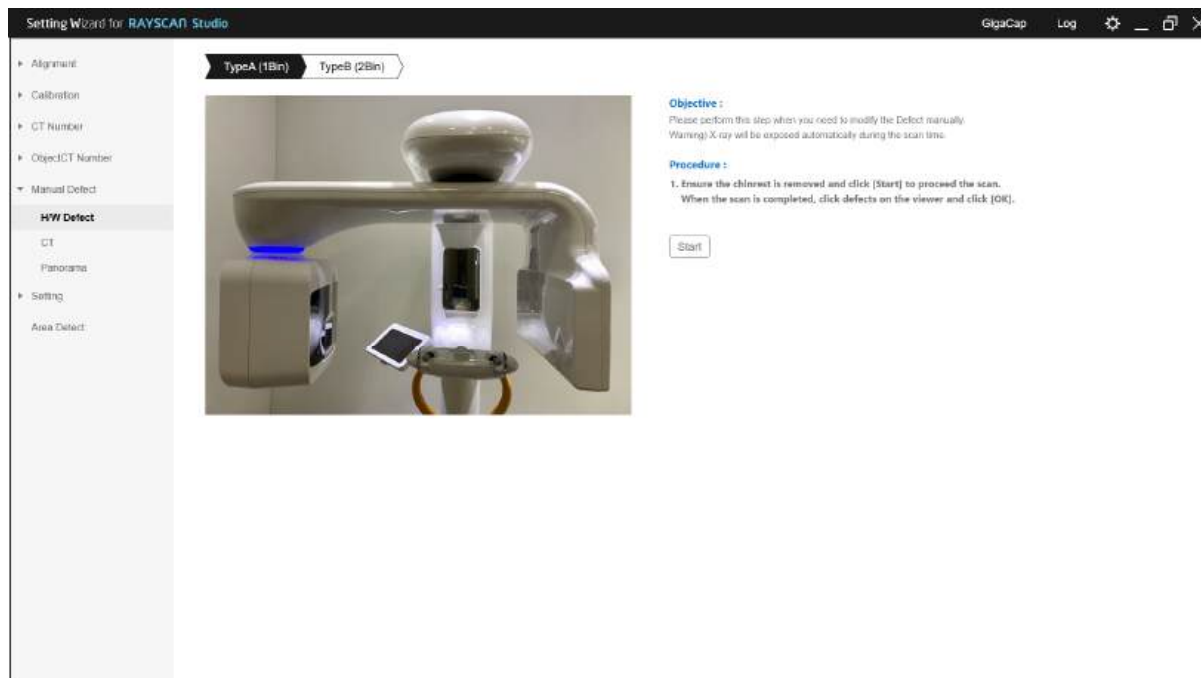


No	Description
4	Click [Start] button to acquire image.
5	Set the Slice Up/Down range in the viewer and click [Ok] button. Slice Up/Down position is automatically detected and displayed in the image. If it comes in a white circle, set it manually.
6	[Complete] button will be displayed if the alignment is correct.



8.15 Manual Defect – H/W Defect

This is the step of setting the bad pixels of the detector. Do not proceed if there is no bad pixel.



Procedure

No	Description
1	Specifies the Binning with bad pixel.
2	Remove all object from Chinrest.
3	Click [Start] button to proceed the scan.
4	Set the location of the bad pixel in the Viewer and click the [Save] button.

Note

If you check the Detector's defect validity, you can check it by clicking "Save" button without setting bad pixel.

If the user has set a bad pixel, inspection is performed using the set bad pixel and the default defect information of detector.

8.16 Manual Defect - CT

This is the step of software correction of bad pixel in CT image processing.

The screenshot shows the 'Setting Wizard for RAYSCAN Studio' window. The left sidebar has a tree view with the following items: Alignment, Calibration, CT Number, ObjectCT Number, Manual Defect (expanded), HW Defect, CT (selected), Panorama, Setting, and Area Defect. The main panel displays instructions for manual defect correction:

Please perform this step when you need to modify the Defect manually.
 1. Select a Raw image from the "Scan" folder which is acquired by RayScan.
 2. Click [Load] to bring up the viewer. Click defects on the viewer and click [OK].

The configuration fields are as follows:

- Type: ☒ TypeA (1Bin) ☐ TypeB (2Bin)
- Width: 2636 Height: 2024
- Bits Allocated: 16 Bits Stored: 16
- Sample Per Pixel: 1
- PixelSpacing: 0.124
- Pixel Representation: ☐ Signed ☒ Unsigned
- FILE PATH: [Text Field] [Browse Button]
- [Load Button]

Procedure

No	Description
1	Specifies the Binning with bad pixel.
2	In the file path, select the image with bad pixel in the Scan folder of RayScan. At this time, select the same image as the Detector's image information. If the wrong image is selected, the correction may not be possible.
3	Enter the image information and click the [Load] button.
4	Set the location of the bad pixel in the Viewer and click the [Save] button.

8.17 Manual Defect - Panorama

This is the step of software correction of bad pixel in Panorama image processing.

The screenshot shows the 'Setting Wizard for RAYSCAN Studio' window. The left sidebar contains a tree view with the following items: Alignment, Calibration, GT Number, ObjectCT Number, Align Inspection, Manual Defect (expanded), HW Defect, CT, Panorama (selected), Setting, and Area Defect. The main panel displays instructions for manual defect correction:

Please perform this step when you need to modify the Defect manually.
1. Select a Raw image from the "Scan" folder which is acquired by RayScan.
2. Click [Load] to bring up the viewer. Click defects on the viewer and click [OK].

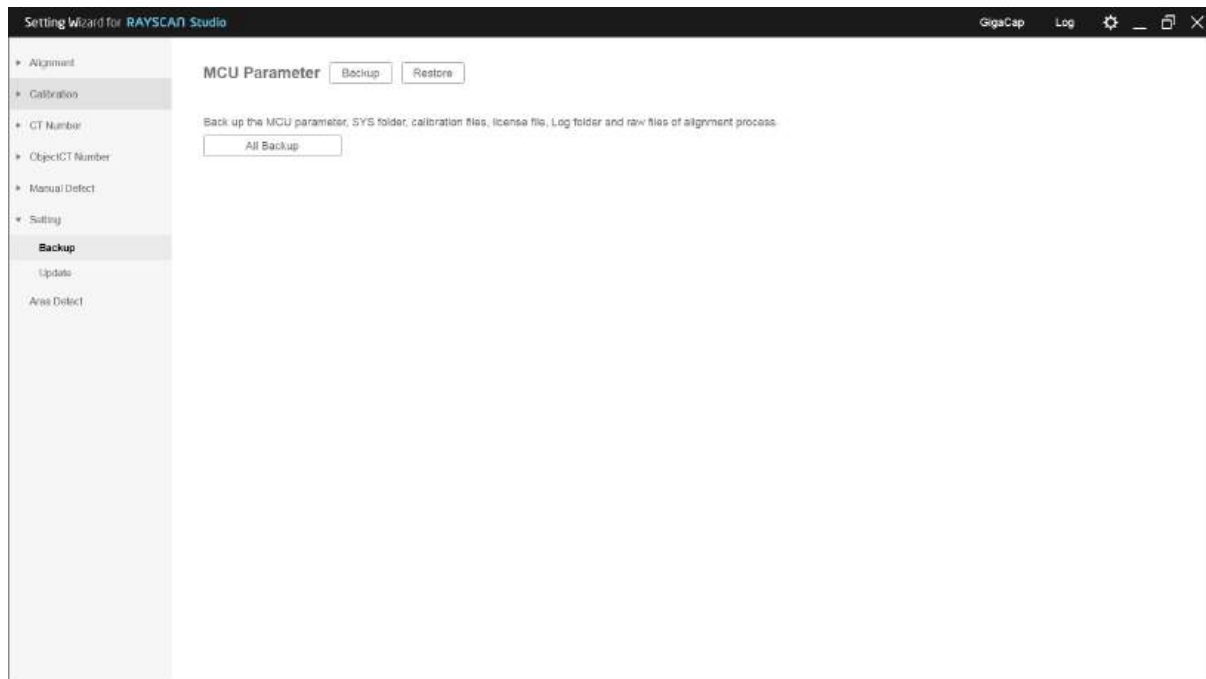
Below the instructions are input fields for image parameters:

Width	3040	Height	1256
Bits Allocated	32	Bits Stored	32
Sample Per Pixel	1		
PixelSpacing	0.124		

Below these fields is a 'Pixel Representation' section with two radio buttons: 'Signed' and 'Unsigned'. The 'Unsigned' button is selected.

At the bottom, there is a 'FILE PATH' field with a browse button (three dots) and a 'Load' button.

8.18 Setting – Backup



8.18.1 MCU Parameter Backup and Restore

Perform backup and recovery of saved parameter of MCU.

8.18.2 All Backup

Back up your MCU Parameter, Sys folder, Calibration file, License file, Log folder, and align –related raw image.

8.19 Setting - Update

This step is to update the Firmware and Detector, and set the model.

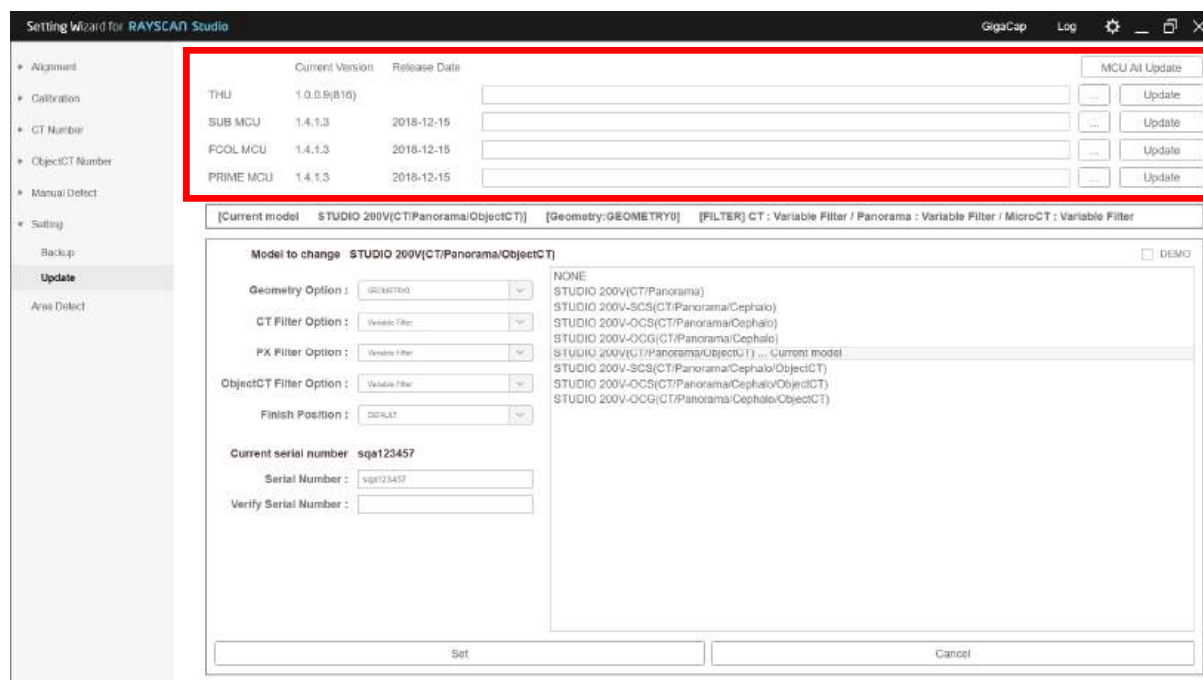
The screenshot shows the 'Setting Wizard for RAYSCAN Studio' window, specifically the 'Update' step. The left sidebar contains a list of settings: Alignment, Calibration, CT Number, ObjectCT Number, Manual Detect, Setting (selected), Backup, Update (highlighted), and Area Detect. The main area displays a table of components with their current versions and release dates, along with buttons to update each. Below the table, there are fields for the current model, geometry, and filter settings, and buttons to change codes and update the detector/camera.

	Current Version	Release Date	
THU	1.0.0.9(816)		<input type="text"/> <input type="button" value="Update"/>
SUB MCU	1.4.1.3	2018-12-15	<input type="text"/> <input type="button" value="Update"/>
FCOL MCU	1.4.1.3	2018-12-15	<input type="text"/> <input type="button" value="Update"/>
PRIME MCU	1.4.1.3	2018-12-15	<input type="text"/> <input type="button" value="Update"/>

[Current model] STUDIO 200V(CT/Panorama/ObjectCT) [Geometry:GEOMETRY0] [FILTER] CT : Variable Filter / Panorama : Variable Filter / MicroCT : Variable Filter

8.19.1 Firmware Update

This is the step to update the firmware. When you update the Scanner, make sure to update it.



Procedure

No	Description
1	Proceed sequentially in the order shown.
2	[MCU all Update] tab will update all MCU except THU.
3	If you are updating the Prime MCU, quit the program and run it again.

8.19.2 Change codes

This step is to set the model code, options and geometry options.

Setting Wizard for RAYSCAN Studio

Current Version: THU 1.0.0.8(B16) Release Date: 2018-12-15

MCU All Update

Update

Update

Update

Update

[Current model: STUDIO 200V(CT/Panorama/ObjectCT)] [Geometry: GEOMETRY0] [FILTER] CT: Variable Filter / Panorama: Variable Filter / MicroCT: Variable Filter

Model to change: STUDIO 200V(CT/Panorama/ObjectCT) ☐ DEMO

Geometry Option:

CT Filter Option:

PX Filter Option:

ObjectCT Filter Option:

Finish Position:

Current serial number: sq#123457

Serial Number:

Verify Serial Number:

Set Cancel

Model List:

- NONE
- STUDIO 200V(CT/Panorama)
- STUDIO 200V-SCS(CT/Panorama/Cephale)
- STUDIO 200V-OCG(CT/Panorama/Cephale)
- STUDIO 200V-OCG(CT/Panorama/Cephale)
- STUDIO 200V(CT/Panorama/ObjectCT) ... Current model
- STUDIO 200V-SCS(CT/Panorama/Cephale/ObjectCT)
- STUDIO 200V-OCG(CT/Panorama/Cephale/ObjectCT)
- STUDIO 200V-OCG(CT/Panorama/Cephale/ObjectCT)

8.19.3 Detector and Camera Update

This step is to update the detector and camera.

Be sure to check the update version and proceed only if absolutely necessary.

The screenshot shows the 'Setting Wizard for RAYSCAN Studio' window. The left sidebar contains a tree view with the following items: Alignment, Calibration, CT Number, ObjectCT Number, Align Inspection, Manual Detect, Setting, Backup, Update (highlighted), and Area Detect. The main window displays a table of current versions and release dates for various components, with buttons to update each. Below this, the 'Update Detector' section is highlighted with a red box. It contains a 'Check Version' button and three rows for updating the Update Package, Import TO Mode, and Import Drive Mode. The 'Update Camera' section follows, with 'Camera Status' and 'Check Version' buttons, and two rows for updating the Left Camera and Right Camera. A 'Cancel' button is located at the bottom right of the red box.

	Current Version	Release Date		
THU	2.4.2.3.610			MCU All Update
SUB MCU	0.6.0.0	2017-11-21		Update
FCOL MCU	1.3.7.0	2017-01-31		Update
PRIME MCU	0.6.0.0	2016-01-04		Update

[Current model] STUDIO 200V (CT/Panorama/ObjectCT) [Geometry:GEOMETRY0] [FILTER] CT : Variable Filter / Panorama : Variable Filter / MicroCT : Variable Filter

[Update Detector]

Please update in the following order.

Update Package [] [] Update

Import TO Mode [] [] Update

Import Drive Mode [] [] Update

[Update Camera]

Camera Status [] Check Version

Left Camera [] [] Update

Right Camera [] [] Update

Cancel

Chapter — 9

Technical specifications

9 Technical specifications

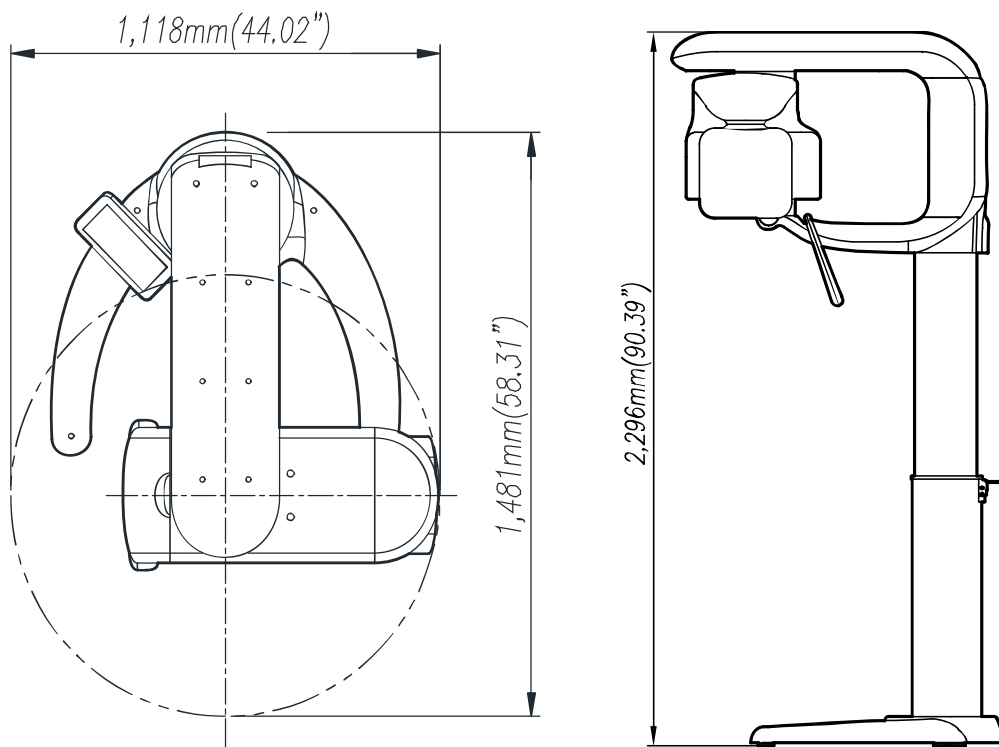
9.1 Technical specifications

Classification		Specification	Remark
Rated Voltage		100-240V~, 50/60Hz	
Power Consumption		2.5kVA Max	
Operation Mode		Continuous operation with intermittent loading.	
Form and Degree of Electric Shock		Class 1, Type B	
Total Filtration		2.8mmAl/90IEC60522	
X-ray	X-ray Tube	Tube Voltage: 50~110kV Tube Current: Max 22mA Focal Point Size: 0.5mm Target Angle: 5° Heat Capacity: 35kJ	
	High-Voltage Generator	Tube Voltage: 60~90kV($\pm 10\%$) Tube Current: 4~17mA($\pm 20\%$) Power Input: 2.185kW Power Output: 1.530kW (less than 3s exposure) Inherent Filtration: 1.8mmAl (Tube+insulating oil+case) Added Filtration: 1.0mmAl	
	Cooling Time	Temperature is monitored and displayed on the screen with a color code. Green indicates that another scan can be performed immediately. Yellow or Red indicates that the user must wait either 3 or 5 minutes respectively.	

X-ray Detector	For CT Use	Pixel Size: 124um Pixel Matrix: 2560 x 2048 Pixel Area: 316mm(W)x253mm(H)	
	For Pano Use	Pixel Size: 124um Pixel Matrix: 2560 x 2048 Pixel Area: 316mm(W)x253mm(H)	
	For CEPH Use (One Shot S Type)	Pixel Size: 139um Pixel Matrix: 2176x1792 Pixel Area: 302mm(W)x249mm(H)	Option
	For CEPH Use (One Shot L Type)	Pixel Size: 127um Pixel Matrix: 3328x3328 Pixel Area: 422.7mm(W)x422.7mm(H)	Option
	For CEPH Use (Scan Type)	Pixel Size: 100um Pixel Matrix: 48x2250 Pixel Area: 4.8mm(W)x225mm(H)	Option
Alignment Beam	IEC60825-1 Safety Ratings	Class I	
	Wavelength	650nm±20nm	
	Output power	<1mW	
Apparatus Specifications	Size	1,118mm(W)×1,481mm(D)×2,296mm(H)	
	Weight	189kg±10%	
Quantity per pack		1 SET	
Lift Column Height Control	Stroke	670mm	
Software		RayScan ver. 1.0 or higher	
Workstation	OS	Windows 10, 64Bit	Use products with certificate from National or Accredited Organization.
	CPU	Intel Dual Core or higher	
	RAM	8GB or higher	
	HDD	1TB or higher	
	Network	Gigabit Ethernet	
Operating Environment	Ambient Temperature Range	15°C ~ 25°C	

	Relative Humidity	20%~ 60%	
	Atmospheric Pressure Range	700hPa ~1060hPa	
Transport & Storage Environment	Temperature Range	-10°C ~ 50°C	
	Relative Humidity	10%~ 90%	
	Atmospheric Pressure Range	700hPa ~1060hPa	

9.2 Dimension



Chapter — 10

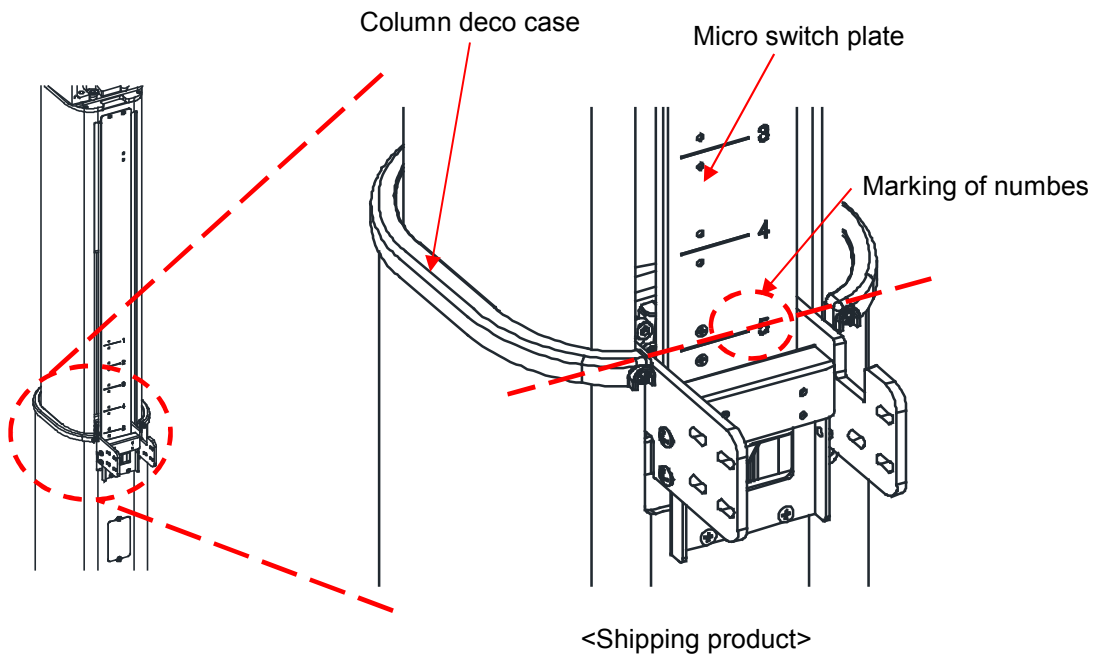
Appendix

10 Appendix

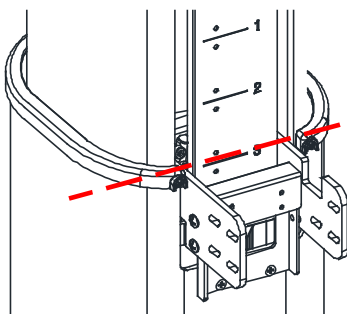
10.1 Setting of the maximum height of the product

- 1) It is a "5" number of case marking micro switch plate was raised to maximize the products shipped.

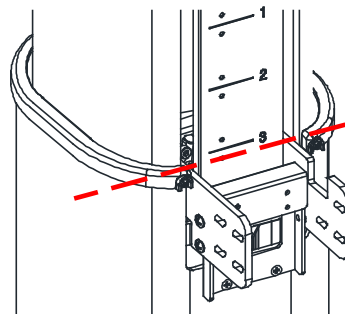
After raising the most out of the product , it was confirmed number marking of micro switch plate that matches the column deco upper surface.



- 2) If you are in between and "4", "3" or if the number of displayed micro switch plate is "3", the number of marking will be "3" from the height of the product you want to install.

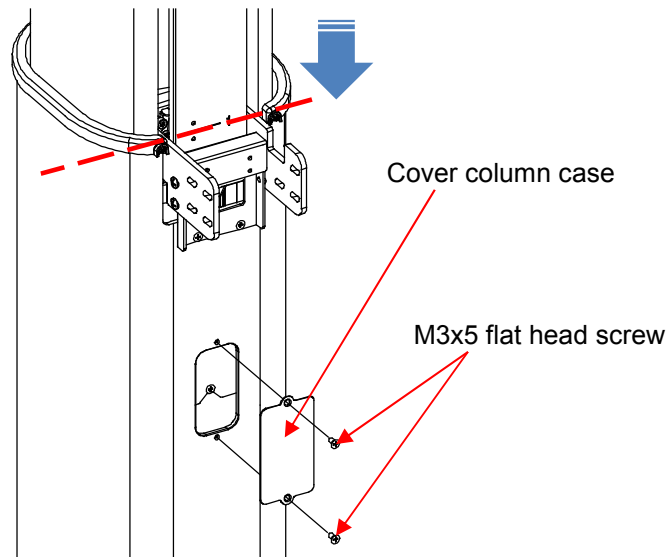


<Marking number "3">

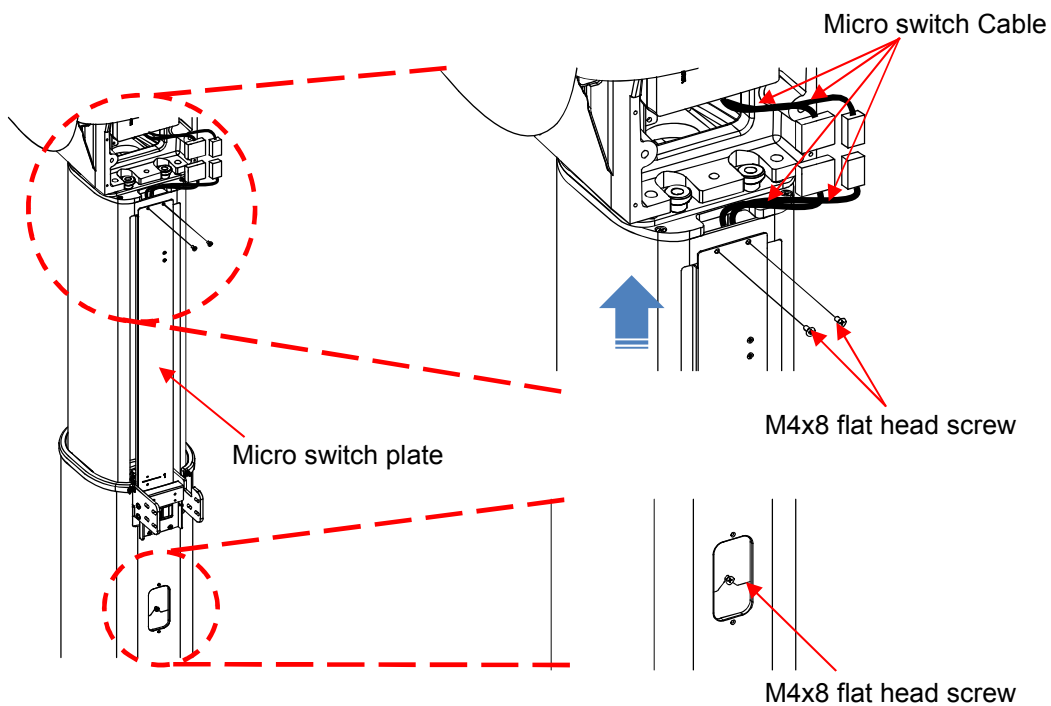


<Between the "4" numbers and marking "3">

- 3) The lower the product at a height be set to "1" number marking of micro switch plate, remove the release cover column case the M3x5 flat head screw 2ea.



- 4) Disconnected micro s/w cable connector. M4x8 flat head screw 2ea of micro s/w plate top is removed completely, please loosely 1ea the lower. Then, lift up the micro s/w plate.

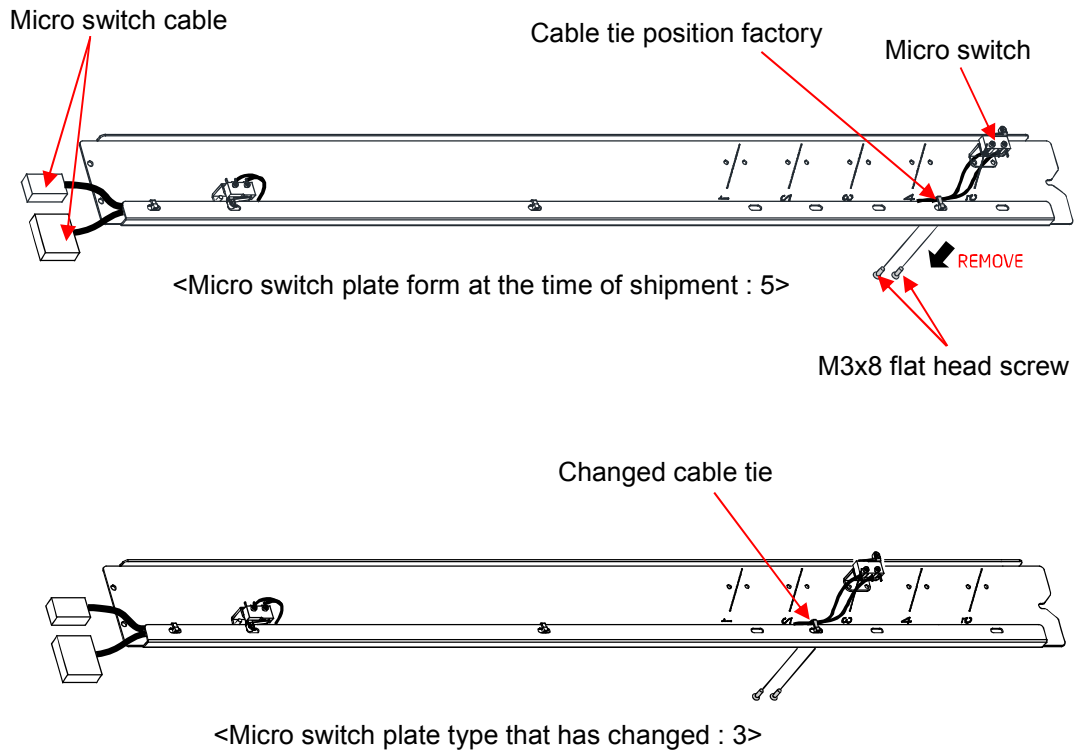


Caution

To remove the lower fixing screw of micro switch plate, please be careful not to fall in the lower screw is completely melted.

- 5) Remove the cable tie 1ea that secured the micro switch cable to micro switch plate separated. And, Assemble by moving the micro switch in the number marking "3" and it was confirmed two places free the M3x8 flat head screw.

At this time, to secure it back in cable tie to the changed position of the micro switch cable.



- 6) Assemble in the reverse order of 4) the micro switch cable plate that has changed.
- 7) Assemble in the reverse order of 3) the cover column case that has changed.
- 8) Make sure that there is a set height raised to the above product.
- 9) Go repeated several times up and down the product , to make sure there is no abnormal sound or the like.

10.2 Installation Report

Installation Report

Company Information	Country		Installing Tech	
	Company		Tech Phone	
Clinic Information	Clinic Name			
	Address			
	Phone Number			
Product Information				
Model	S/N	Option	Remarks	
Symphony		<input type="checkbox"/> M <input type="checkbox"/> C <input type="checkbox"/> P <input type="checkbox"/> BM <input type="checkbox"/> BP <input type="checkbox"/> V		
RAYSCAN α		<input type="checkbox"/> P <input type="checkbox"/> OC <input type="checkbox"/> SC <input type="checkbox"/> 3D <input type="checkbox"/> SM3D <input type="checkbox"/> Multi3D		
RAYSCAN α-Plus		FOV: <input type="checkbox"/> 130 ∅ <input type="checkbox"/> 160 ∅ Ceph: <input type="checkbox"/> SC <input type="checkbox"/> OCS <input type="checkbox"/> OCL		
RAYSCAN m+		Ceph: <input type="checkbox"/> SC <input type="checkbox"/> DR		
RAYSCAN Studio		Ceph: <input type="checkbox"/> SC <input type="checkbox"/> OCS <input type="checkbox"/> OCL		
RIOsensor				
Installation Date		Expired date of warranty		

Parts for Installation			
Parts	Remarks	Parks	Remarks
<input type="checkbox"/> Main body		<input type="checkbox"/> Accessory Box 1	
<input type="checkbox"/> Lift column		<input type="checkbox"/> Accessory Box 2	
<input type="checkbox"/> Main base		<input type="checkbox"/> One-shot Ceph Box	
<input type="checkbox"/> Acquisition PC		<input type="checkbox"/> Scan Ceph Box	
<input type="checkbox"/> Acquisition Monitor			

Check Packaging		
Check List	Results	Remarks
Shock Indicator is correct?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
Tilt Indicator is correct?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
Packaging Box is correct?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	

Installation Check List					
Model					
No	Item	List	Check the reference	Result	Remarks
1	Outer	Scratch	Visual Inspection: None	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
		Label and Print	Correct	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
2	Power	Input	AVR Installation	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
			AC 100~240V	[]V	
		Grounded	Connection	<input type="checkbox"/> Y <input type="checkbox"/> N	
			L1 ~ G Voltage Check	[]V	
			L2 ~ G Voltage Check	[]V	
3	Workstation Setting	Ext. Network Setting	Workstation Static IP address	[. . .]	
		Window Update	Window Update Disabled	<input type="checkbox"/> Y <input type="checkbox"/> N	
		Etc.	None of program installed provided by RAY	<input type="checkbox"/> Y <input type="checkbox"/> N []	
4	Client PC	Anti-Virus Program	Reg. for exception if installed	<input type="checkbox"/> Y <input type="checkbox"/> N	
		Window Firewall	Firewall Disabled	<input type="checkbox"/> Y <input type="checkbox"/> N	
		Windows Update	Update Disabled	<input type="checkbox"/> Y <input type="checkbox"/> N	
		Language	Check language encoding (Int'l)	[]	
5	Ver.	Software Version	Software Version?	[]	
6	Operation	Power	- Switch on/off	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
		LED lights on status	- Stand By: Blue - Ready: Green - Exposure: Yellow - Emergency: Red	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
		Exposure Switch	- Switch On: X-ray On - Switch Off: X-ray Off	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
		Emergency Switch	- Check the stoppage of the machine for emergency and Status LED(Red) under On/Off	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
		Mechanic	- Noise in motion	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
7	Other linkages	PACS	MWL AE Title		
			MWL IP Address		
			MWL Port number		
			DICOM Print AE Title		

			DICOM Print IP Address		
			DICOM Print Port number		
		Insurance Program	Program for usage		
			Server IP address		
		Etc.	Connect IO with SMARTDent?	<input type="checkbox"/> Y <input type="checkbox"/> N	
			Method	<input type="checkbox"/> Twain <input type="checkbox"/> Direct	
			Sort of X-ray	<input type="checkbox"/> Portable <input type="checkbox"/> Standard	
8	Image	CBCT Number	CBCT Number	[Air :] [Water :]	
		Image Processing Level	Panoramic	[]	
			Cephalometric	[]	
		Setting Wizard	Panoramic alignment pass?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
			CBCT alignment pass?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	
			Cephalometric alignment pass?	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	

User Training

<input type="checkbox"/> Operation method of unit	<input type="checkbox"/> Positioning of patients on each mode	<input type="checkbox"/> How to use RAYSCAN & SMARTDent
<input type="checkbox"/> How to use Xelis dental (CBCT)	<input type="checkbox"/> Caution for the usage of unit	

Confirmation

<p>■ I certify that the item of installed equipment was received and installed in a good condition.</p> <p>■ I certify that the user training was carried out on the check list of user's manual.</p>	
For RAY Co.,Ltd.	For RAY Co.,Ltd.
Title : _____	Title : _____
Signed : _____	Signed : _____
Date : _____	Date : _____

Image Quality	
Panoramic	
CBCT	
Cephalometric	

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