

PaX-i3D GreenTM

Installation Manual

Model : PHT-60CFO
Version : 1.82

- English



vatech

Notice

This manual covers the installation procedures for the **PaX-i3D Green™** dental X-Ray unit. An installation manual and user manual are shipped with each hardware unit.

Brand name: PaX-i3D Green™ (Model: PHT-60CFO)

Manufactured by : VATECH Co., Ltd.

In this manual, Equipment refers to the **PaX-i3D Green™**.

In abbreviated forms, **CT**, **CEPH** and **PANO** denote **Computed Tomography**, **Cephalometric** and **Panoramic**, respectively. They are interchangeably used.

The “**Optional**” in this manual means that the function or features are left to customer’s or user’s choice

Thorough review of this manual is recommended before installation to ensure proper installation of this equipment. The **PaX-i3D Green™** is in steady improvement. The information contained in this manual may be subject to change without notice, justification or notification of the persons concerned.

All brand names and logos used in this manual are copyrighted.

For further information not covered in this manual or in the accompanying documentation, please contact us with any method listed below:

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Important Notes

Moisture could be built up on the equipment from a sudden temperature change inside and outside the installation room. Allow at least an hour before turning ON the equipment to avoid condensation.

⚠ CAUTION

1. In order to avoid improperly balanced equipment, install the device on a flat surface to maintain stability.
2. If the equipment is not stable, property damage and/or personal injury may occur.
3. Do not push or pull the equipment.
4. Equipment should only be installed by an authorized technician, complying with proper installation procedures.

IMPORTANT

Failure to read and understand the information provided in this manual may result in physical injury, damage to the equipment or equipment failure. Please read each CHAPTER in its entirety and understand the information therein before attempting any of the installation procedures.

Conventions Used in this Guide

The following symbols are used throughout this manual to emphasize information or indicate a potential risk to the equipment or user. Make sure that you fully understand each symbol and obey the instructions which appear to the right of the symbol.



Warnings indicate information that should be followed with the utmost precision. Failure to comply with warnings may result in severe damage to the equipment and/or physical injuries to the patient or operator.



Cautions indicate a situation that demands prompt but careful action, remedy or emergency attention.



Notes help you optimize system performance. Carefully read each note to ensure that the equipment is used to its full potential.



Important symbols indicate a compulsory action or instruction.



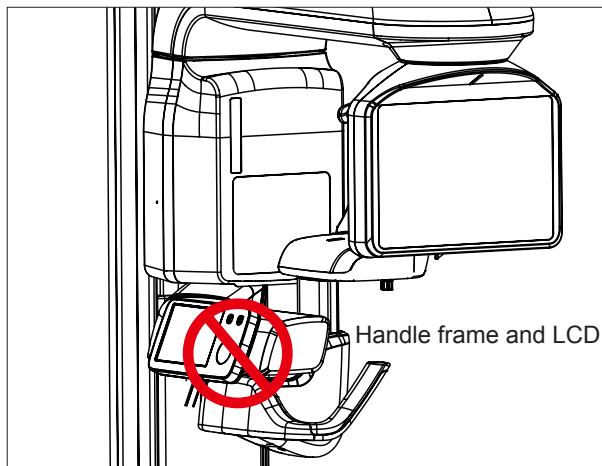
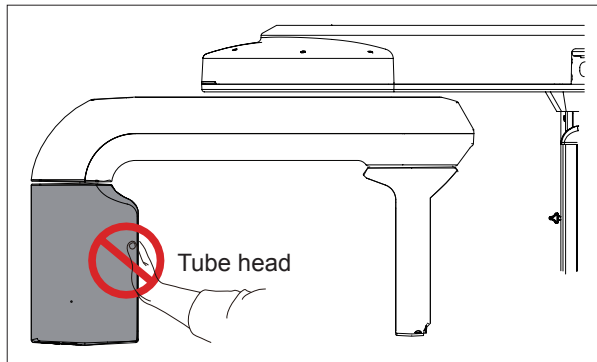
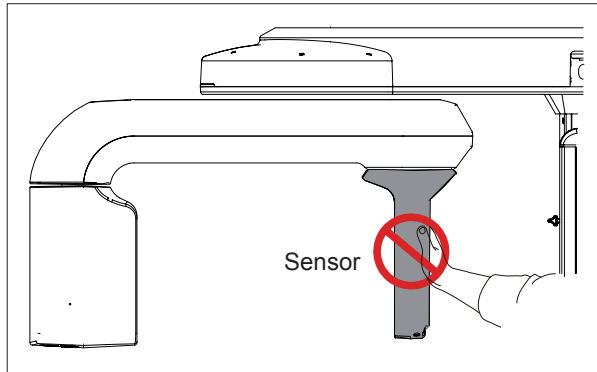
Radiation symbols indicate a possible danger from exposure to radiation.



ESD susceptibility symbols indicate that an item is susceptible to damage from electrostatic discharges.

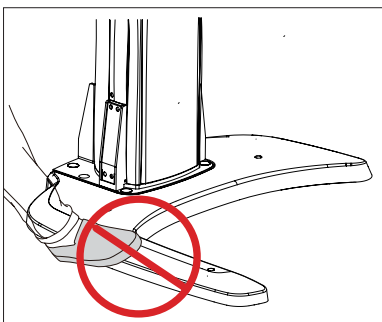
Never touch or hold the sensor or tube head areas while moving, installing or operating the equipment.

⚠ WARNING



Do not step on the base unit while installing or operating the equipment.

⚠ WARNING

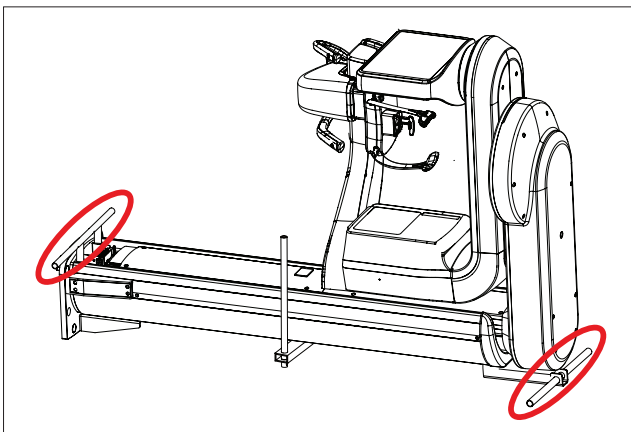


Use the electrical power drill only when drilling a hole into the wall. Using it in other purposes can damage the drill.



Recommended holding area during transportation(OK)

IMPORTANT

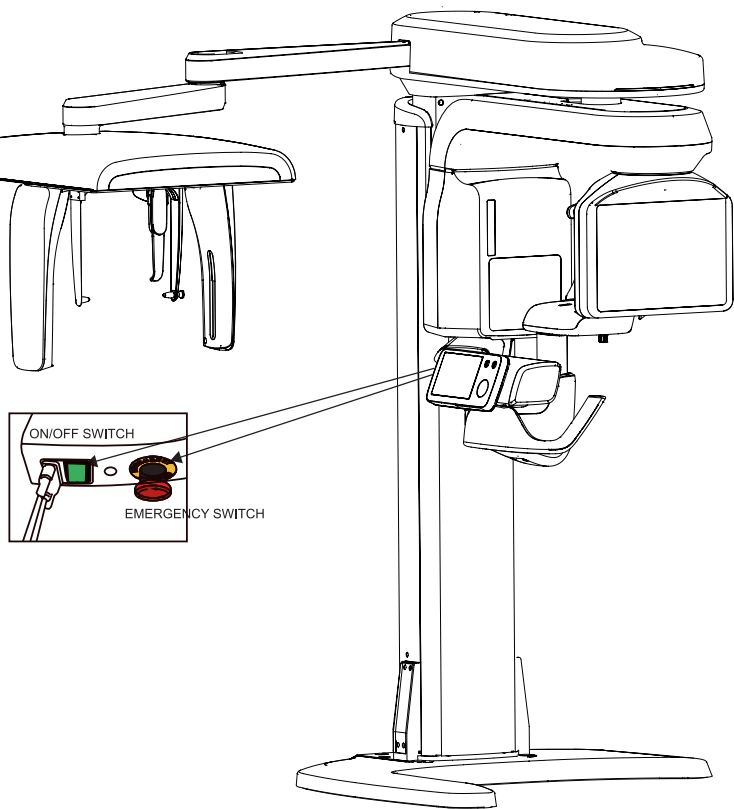


NOTICE

Three installers are required to install the equipment safely.

Locations of the Power and Emergency Switches

NOTICE



Cautions



1. It is critical that installers read and understand the installation instructions fully before installation.
2. The installer must confirm that the system is installed according to the instructions provided by this manual and perform the appropriate procedures therein.
3. If the equipment has been stored at temperatures of below 10°C (50°F) for more than a couple of hours, allow the equipment to reach room temperature before applying mains voltage.
4. Installation and related work must only be performed by people authorized by VATECH.
5. Do not connect any items or equipment to this system which are not part of the system: **IEC60601-1-1** (3rd edition: 2005).
6. Any equipment not approved by VATECH must comply with the applicable standards: **IEC 60950-1** (2nd edition: 2005) for IT equipment (Ex: PC) and **IEC 60601-1** (3rd edition: 2005) for medical electrical equipment.
7. All operators of this equipment are responsible for ensuring that the requirements outlined in **IEC 60601-1-1** (3rd edition: 2005): Safety Requirements for Medical Electrical Equipment are fully met to ensure the safety of patients, operators and the environment.
8. Never touch sensitive areas such as sensors during installation. These areas are indicated at the applicable stages during the installation procedures.
9. Use of wireless phones may interfere with the operation of this equipment.
10. Use an ESD (electrostatic sensitive device) wrist band during installation and connect it to a ground wire.
11. Touch a ground point to discharge static electricity before handling PCB boards.

IMPORTANT

Installation Site

1. The PC monitor, emergency cut off switch and X-Ray exposure switch should be installed in the vicinity of the operator so that he or she can manage them simultaneously in an emergency.
2. Proper shielding of the room is essential: Since these requirements vary depending on the country, it is the installer's responsibilities to verify that all applicable radiation safety requirements are met.
3. This equipment should not be installed in the immediate vicinity of other devices.
4. Do not install the equipment in an area that is exposed to strong electromagnetic fields.
5. Do not install this system in an area where there is the risk of an explosion.
6. The electrical installation of this system shall comply with all local code requirements for electro-medical systems: **IEC 60364-7-710:2002**.
7. It is strongly recommended that a UPS be installed at the same time as the equipment.
8. The equipment, PC, and all peripheral devices must be well grounded

WARNING

Warnings Regarding X-Ray Radiation

1. Failure to install this equipment in an approved location may be dangerous to the patient and operator.
2. Stationary radiation shielding must be installed to protect the operator from radiation.
3. The X-Ray system may cause injury to the patient if improperly used. Obey all federal and municipal standards regarding radiation safety.
4. When exposing the patient to the X-Ray, the operator must be behind a protective wall or take other protective actions. The operator should remain at least 2 m (7 feet) away from the X-Ray when pressing the exposure switch and observe the patient and capture-progression.
5. Operators must provide protective clothing to the patient before X-Ray capturing. Pregnant women must consult with a doctor prior to being exposed to an X-Ray.

IMPORTANT

This equipment complies with the following standards:

IEC60601-1-1:2005 Standard Safety Requirements for Medical Electrical Equipment

IEC 60601-1-2:2005 Electromagnetic Interference

IEC 60601-1-3:2005 Radiation Protection

IEC 60601-1:2005 Standards for Medical Electrical Equipment

IEC 60950-1: 2nd edition:2005 Standards for Information Technology Equipment

IEC60601-2-7 and IEC60601-2-28: X-Ray Tube Heads

IEC60364-7-710: 2002: Local Code Requirements for Electro-medical System Installation

1. **IEC 60601-1-1:2005 regulation shall be met to their full extent for the safety of the patients, operators and the environment—when any person assemble or modify a medical electrical system by combing it with other equipmentt.**
2. Any equipment not provided by VATECH can be connected when the following standards are complied with: IEC 60950-1 and IEC 60601-1
3. The electrical installation shall comply with local code requirements for electro-medical systems: IEC 60364-7-710: 2002.

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Introduction

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1.1 Manufacturer's Liability

As the manufacturer, VATECH assumes liability for the safe and reliable installation and operation of this equipment only when:








- Equipment installation, including software installation, was carried out by an authorized agent in accordance with this installation manual.
- Electrical installation was carried out in accordance with the appropriate requirements specified in **IEC-60363**.
- Genuine original or approved replacement parts are used.
- Maintenance/repair service has been performed by a qualified technician(s) from one of our authorized agents.
- The equipment has been used under normal condition in accordance with the user's manual.
- PC Software has been properly used in accordance with the manufacturer's installation instructions and user manuals.

1.2 Customer's Responsibility

Site planning and preparation are the responsibility of the customer. The following points should be considered fundamentally important to all customers of this product:

- Install all required materials prior to delivery of the system.
- Complete the floor, ceiling and walls of the room before installing the equipment.
- Install proper sized junction boxes, with covers, at the necessary locations.
- Install a mains power with the proper voltage output and an adequate kVA rating.
- Install the circuit breaker specified by this manual.
- Provide the installer(s) with the current dimensions of the room including the hall way and entry door sizes.
- The customer must have an electrician install more than two power outlets in the room.

1.3 Marks & Symbols

Symbols	Description	Location
	Alternate current	
	Dangerous voltage	Power board
	Protective earth (Ground)	Power board
	Off (power: disconnect from the main switch)	Main switch
	On (power: connect to the main switch)	Main switch
	EC representative	Manual
	This symbol warns the user to take precautions when dealing with electronic components which are sensitive to static charges	MCU board packaging

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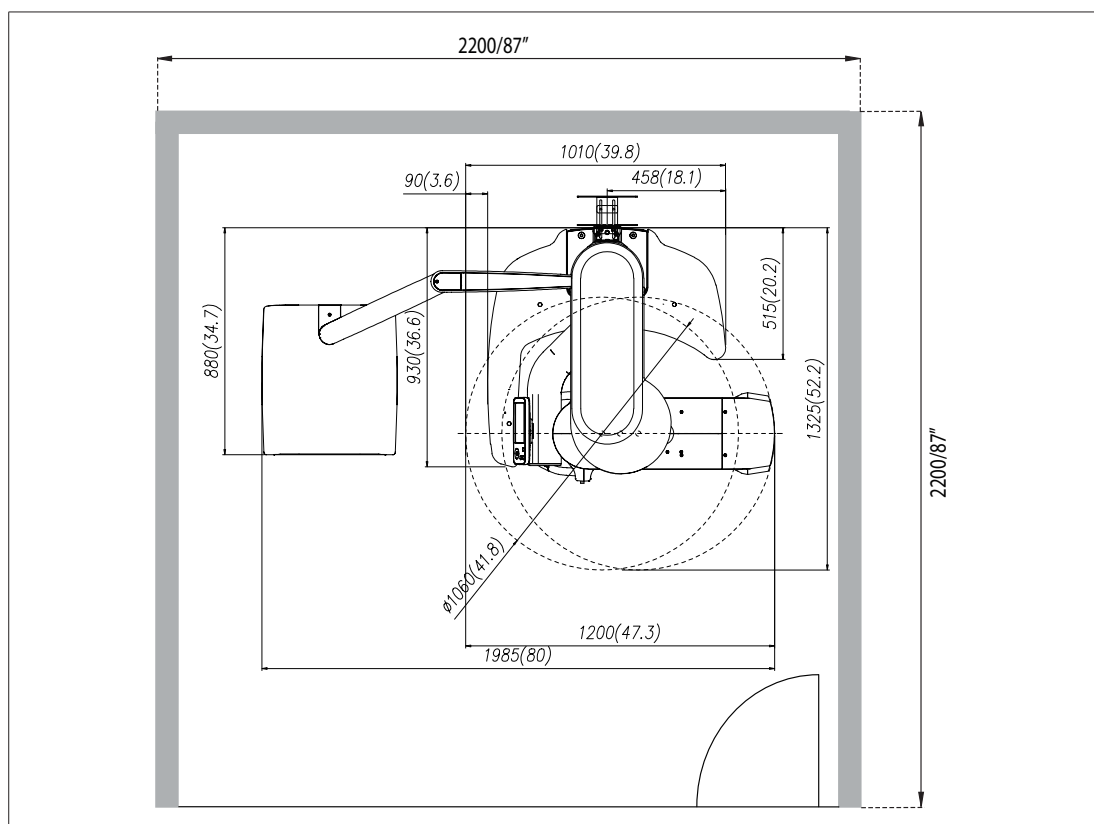
Choosing an Installation Site

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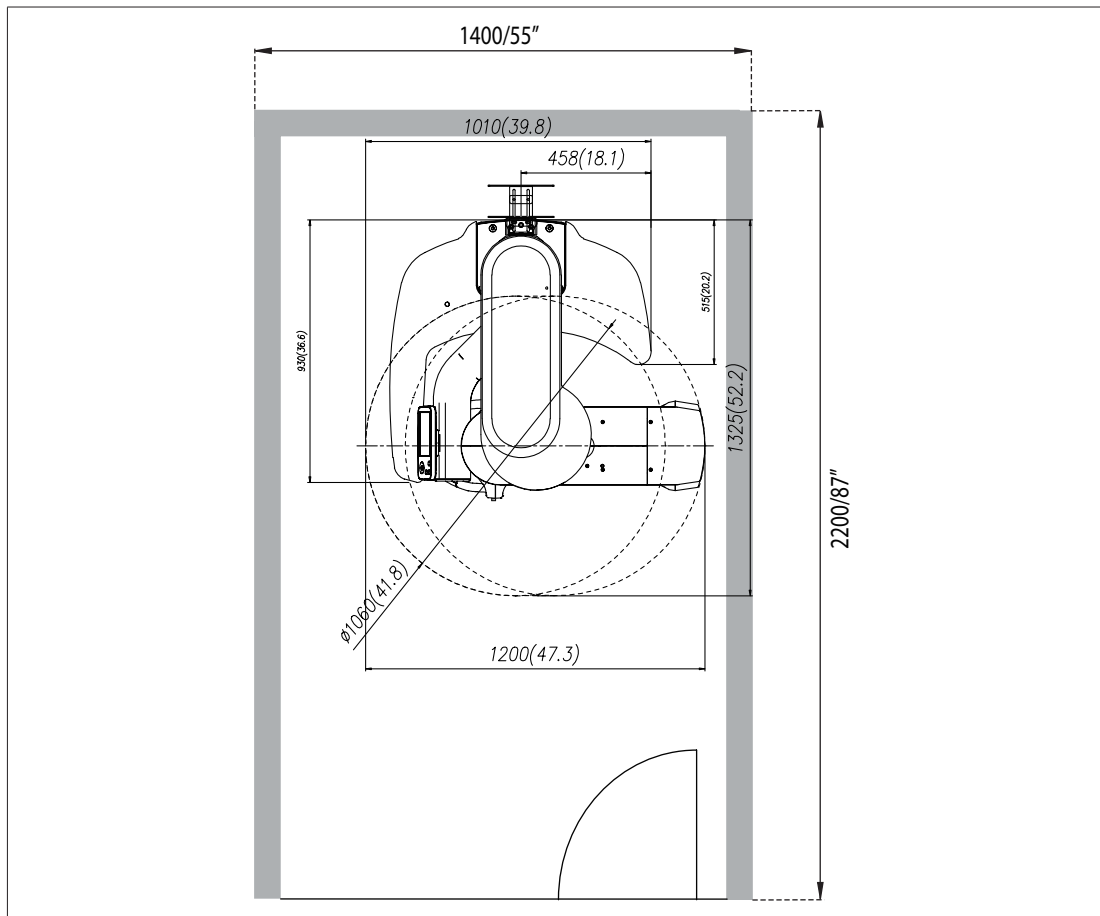
2.1 Room Requirements

IMPORTANT

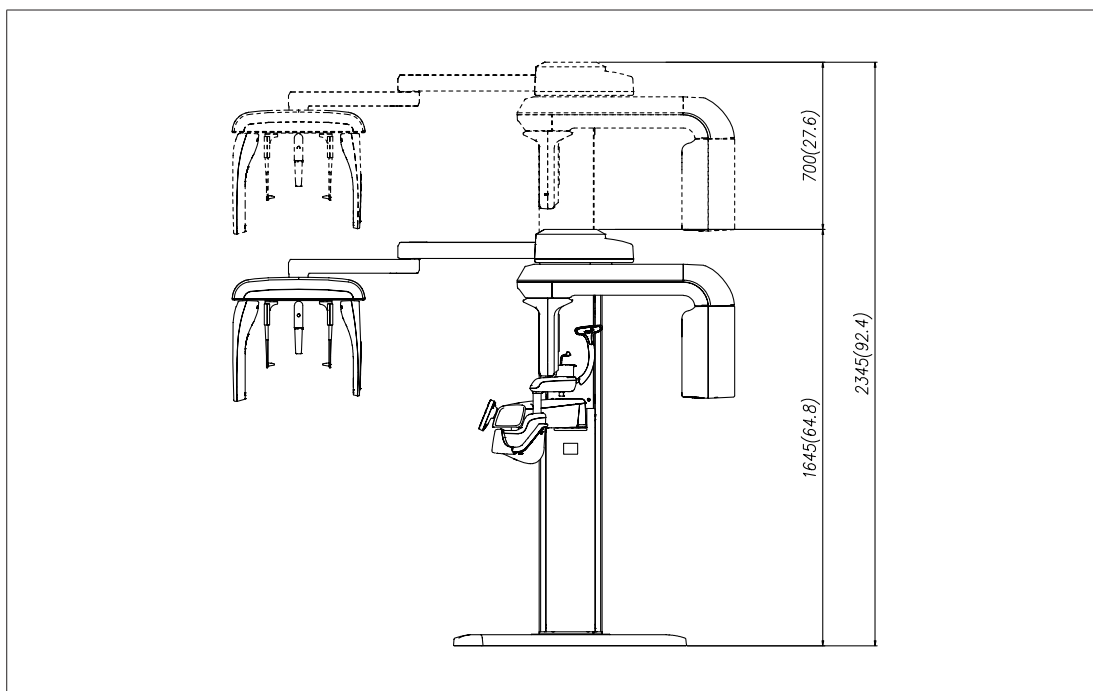
1. The location of this equipment should allow for high visibility of the patient by the operator and the operator should be as near to the patient as possible.
2. This equipment should not be installed on thick carpets for stability reasons.
3. Anti-static floor materials should be used around the equipment.
4. The PC monitor, emergency cut off switch and X-Ray exposure switch should be installed in the vicinity of the operator so that he or she can manage them simultaneously in case of emergency.



With Cephalometric unit (optional): 2,200 mm x 2,200 mm/87" x 87" or wider



Without Cephalometric unit: 2,200 mm x 1,400 mm/87" x 55" or wider

Ceiling Height: $\geq 2,600\text{mm}/103''$ **Minimum space required:**

- **With Cephalometric unit:** 2,200 mm(L) x 2,200 mm(W) x 2,600 mm(H) / 87"(L) x 87"(W) x 103"(H)
- **Without Cephalometric unit:** 2,200 mm(L) x 1,400 mm(W) x 2,600 mm(H) / 87"(L) x 55"(W) x 103"(H)

The system is normally installed beside a wall, and the operator uses the system on the left.

Lead thickness: ≥ 1 mm**Width of the entrance:**

The door of the X-Ray room should have a clearance of more than 800 mm (31.5") wide.

Floor area:

The floor of the X-Ray room must be stable and level for system balance.

The floor must be able to support a minimum weight of 500 kg/m^2 (110 lbs/feet²).

Protection against radiation

- To protect against radiation hazards, follow all federal and municipal requirements.
- During exposure, the operator should follow applicable radiation shielding requirements and remain at least 2m (7 feet) from the source of the radiation.
- Maintain visible contact with the patient and a clear view of indicators such as the warning lamp and imaging status on the PC.

2.2 Specifications for Electrical Installation

These specifications are based on the **MEIGaN** (Medical electrical installation guidance notes).

Consult the companion manual for further information. : **Volume 3: Specification for Electrical Installation.**

2.3 Electrical Requirements



This equipment must be connected to a grounded outlet to fulfill the safety provisions specified in IEC 60364: the 2nd edition (2006).



It is mandatory that both PC and equipment use the same power line if connected to an MPSO.

Whenever possible, use different power outlets for each device. If a multiple portable socket outlet (MPSO) must be used, ensure that the PC and equipment are connected to the same MPSO.

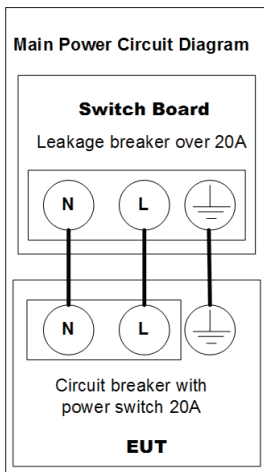
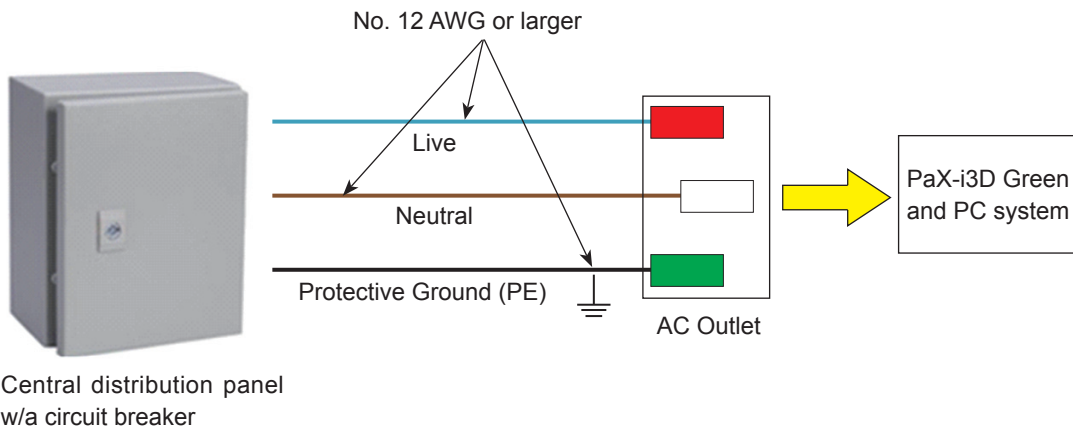


Use a dedicated power outlet for the power cord. Failure to do so may result in unstable system operation caused by power fluctuations.



For countries where a stable power supply is not guaranteed, installing an AVR (Automatic Voltage Regulator) that is single-phase and with a capacity of 3kVA or more is recommended to ensure a steady operation. Please consult a local electrician if you are located in an unstable area.

Power supply voltage	AC100-240 V
<ul style="list-style-type: none"> • The input line voltage depends on the local electrical distribution system. • Allowable input voltage fluctuation requirement: $\pm 10\%$. 	
Frequency	50/60 Hz
Phase	single
Power rating (maximum power consumption)	Max.2.2 kVA (during exposure)



1. To assure line voltage quality, a separate 3-core grounded power cable connected directly to central distribution panel with over-current circuit breaker rated for 20/15A must be used.
2. The mains resistance should not exceed 0.5 Ω .
3. This equipment should be connected to the earthed outlet.



2.4 Temperature and Humidity

Operation:

Ambient temperature	10 ~ 35 °C (50 ~ 95 °F)
Relative humidity	30 ~ 75 %
Atmospheric pressure	860 ~ 1060 hPa

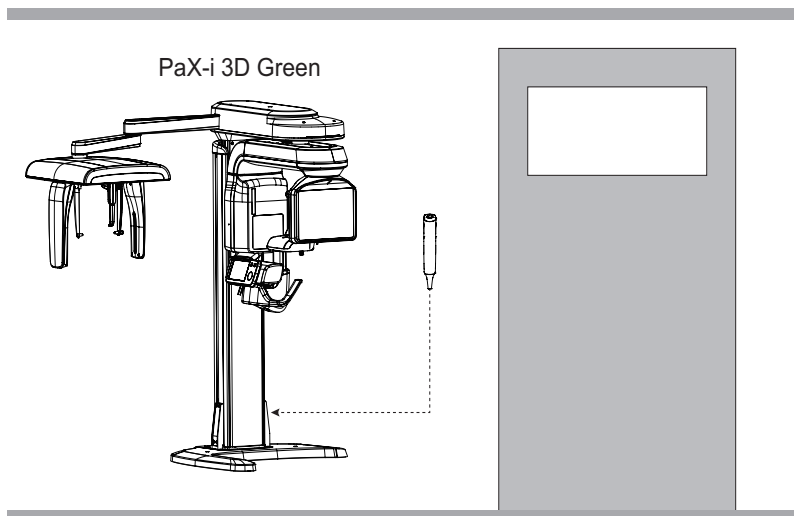
Transportation and storage:

Temperature	-10 ~ 60 °C (14 ~ 140 °F)
Relative humidity	10 ~ 75 % non-condensing
Atmospheric pressure	860 ~ 1060 hPa

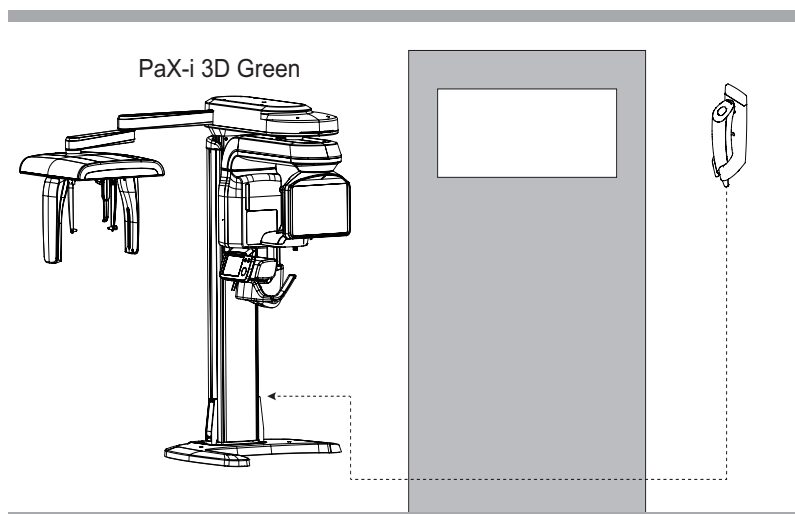
2.5 Exposure Switch Installation Options

There are three options for installation, depending on the configuration of the site. Nevertheless, the 2nd option is preferred.

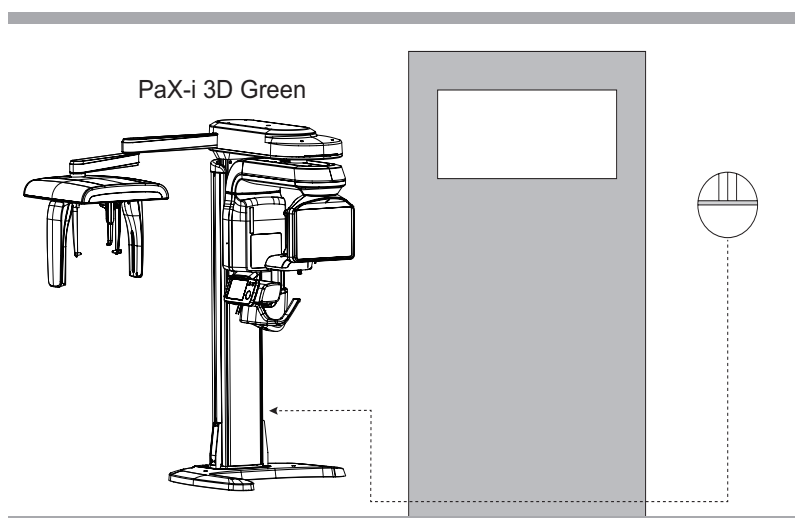
Option No. 1: The user operates the exposure switch from inside the X-Ray room.



Option No. 2: The user operates the exposure switch from outside the X-Ray room. The exposure switch holder is mounted on the wall.

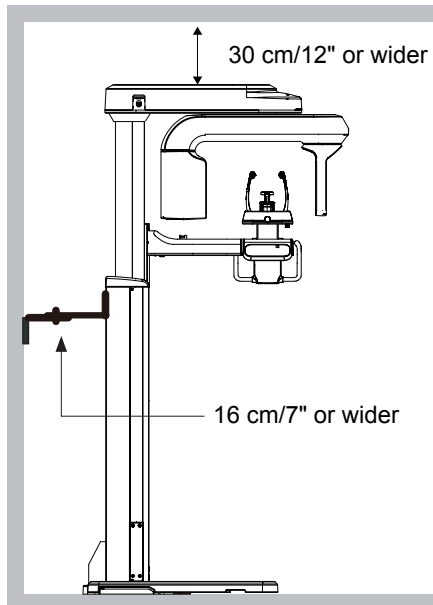


Option No. 3: The 3rd party exposure switch (not VATECH's) is used on demand of the customers. For this scenario, see the Appendix D "Connecting the 3rd party exposure switch" for details.

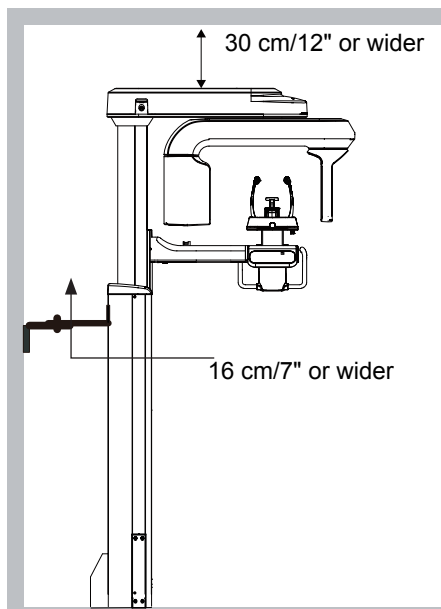


2.6 Installation Versions

Base-mount type



Wall mount type



2.7 Installing the Warning Lamp and Door Interlock Switch

Refer to Appendix **A** for a complete installation guide.

- This system can be equipped with a warning lamp and the door interlock switch which are activated when the X-Ray is energized.
- The warning lamp and the door interlock switch are not included with the equipment.
- The warning lamp and the door interlock switch must be installed by a qualified technician.

2.8 Installing the Emergency Stop Switch

Refer to Appendix **B** for a complete installation guide.

- Install the emergency stop switch along the main power cable in the central distribution panel.
- Install this switch so that it is within easy reach of the operator but cannot be accidentally pressed.
- The switch must be a fool-proof model.


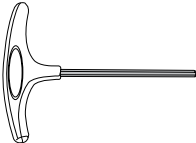
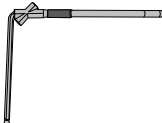
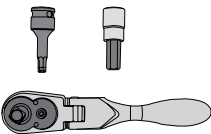
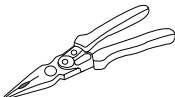
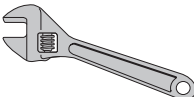
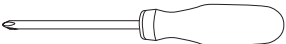

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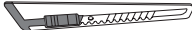


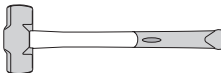
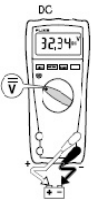

Before Installing the System

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3.1 Required Tools

The following tools are necessary to install the **PaX-i3D Green**.

Item	Figure	Size
Wrench set	 Allen wrench set 1.5mm-10mm (0.05"-0.4")	1.5 mm-10 mm/0.06"-0.4"
T-shaped hex wrench		6 mm-10 mm/0.24"-0.4"
Hex wrench w/ handle		6 mm-10 mm/0.24"-0.4"
Ratchet wrench	 Tips: 3 mm-8 mm/0.12"-0.3"	Tips: 3 mm-8 mm/0.12"-0.3"
Needle-nose pliers		regular
Monkey wrench		
Cross head screw driver w/ magnetic tip		L=200 mm(7.9")
Spirit level		

Item	Figure	Size
Anti-static glove		
Knife		
Tape ruler		5 m: for wall mounted type
Marker pen(thick tip)		For wall mounted type
Hammer		For wall mounted type
Multi-meter		
Hammer drill		For wall mounted type

3.2 Checking the ShockWatch and TiltWatch Indicators

This equipment is carefully inspected and packed prior to shipment. Nevertheless, the recipient of this equipment should carry out a visual inspection of all packages before opening them in order to ensure that the equipment was not damaged during shipping.

IMPORTANT

The installers and/or supervisor should check the status indicators on each package before opening the package.

NOTICE

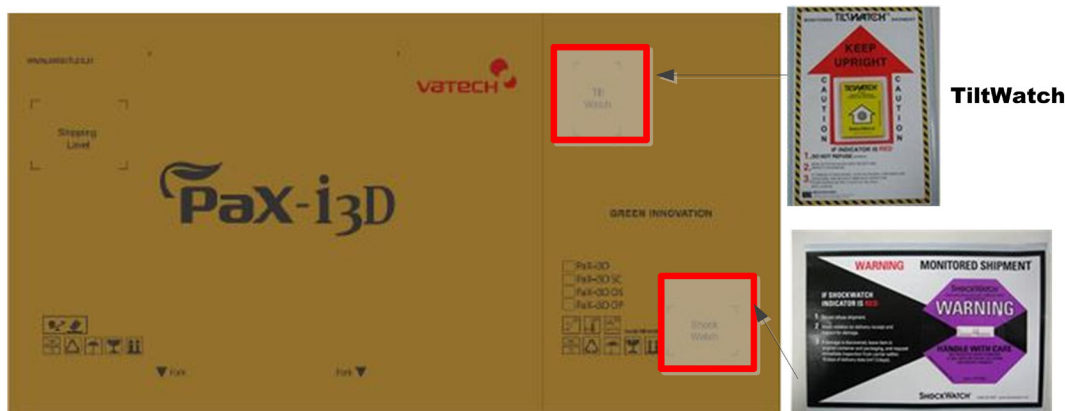
The ShockWatch and TiltWatch indicators become red if the package has suffered any physical impacts during transportation. However, a red indicator does not necessarily mean that the unit has been damaged.

These indicators are affixed only on the main box, which contains the equipment very sensitive to external impacts

Check the followings before opening each package:

1. These indicators are affixed only on the main box, which contains the equipment very sensitive to external impacts
2. Check the packaging for signs of damage visually.
3. Locate the ShockWatch and TiltWatch indicators and check if they have been activated.

If either the packaging is damaged or the **ShockWatch** or **TiltWatch** indicators have been activated, please do not open the package and immediately contact the shipping company, agent or **VATECH**.



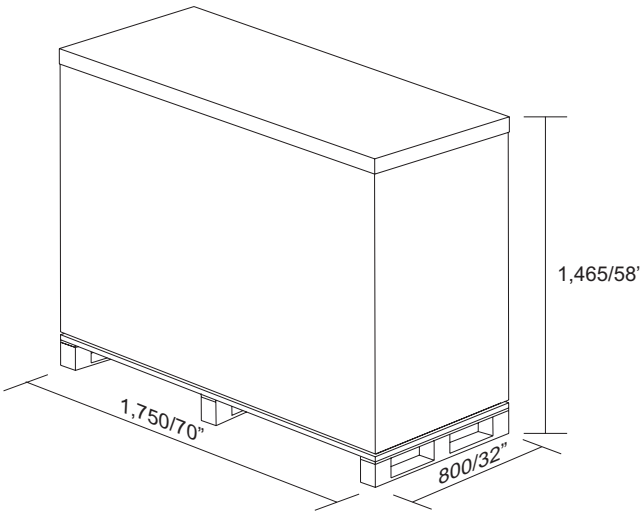
3.3 Unpacking the Boxes

IMPORTANT

All packaging and Styrofoam used to ship this equipment is recyclable. Return the packaging to VATECH representatives or dispose of it in compliance with the legal regulations of your country.

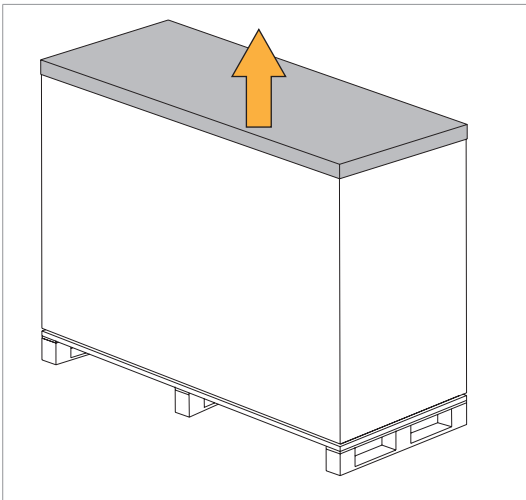
Box No.1: Main box

Components	• Column and Rotating unit assembly
	• Accessories and parts
	• PC system(optional)
Size(mm/inch)	1,750 (L) x 800 (W) x 1,465 (H)/70"(L) x 32"(W)x 58"(H)
Weight(kg/lbs)	145/320

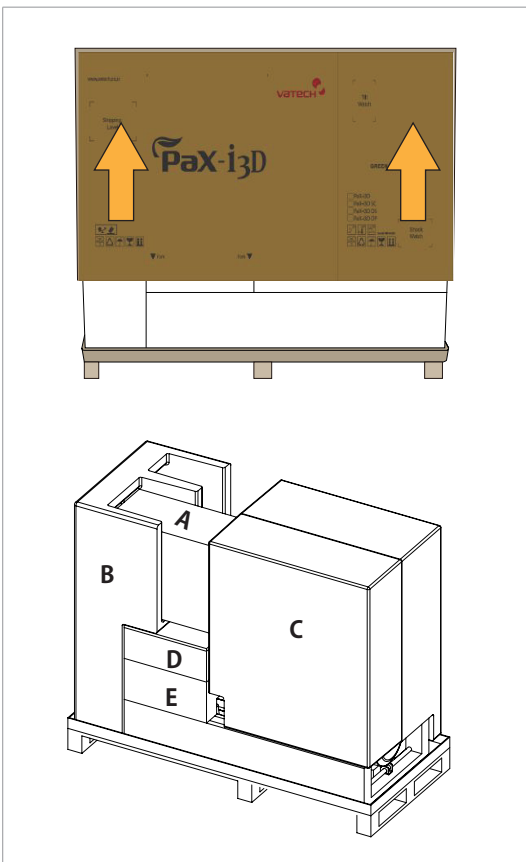


Main box

1. Move the main box to a convenient place as close as possible to the installation location



2. Separate the top cover after removing the strapping bands.



3. Lift up and remove a single side cover.

NOTICE

In case of unable to lift the side cover up fully, due to ceiling height limitation, cut the box in half using the utility knife.

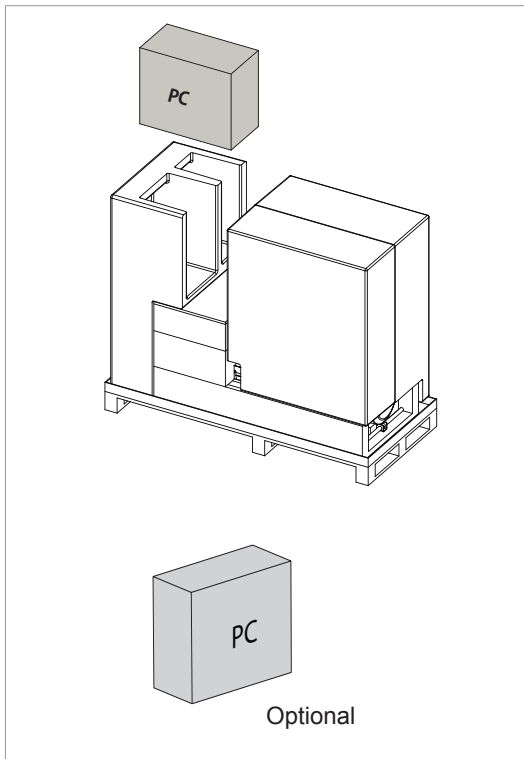
A: PC system (Optional)

B: EPS

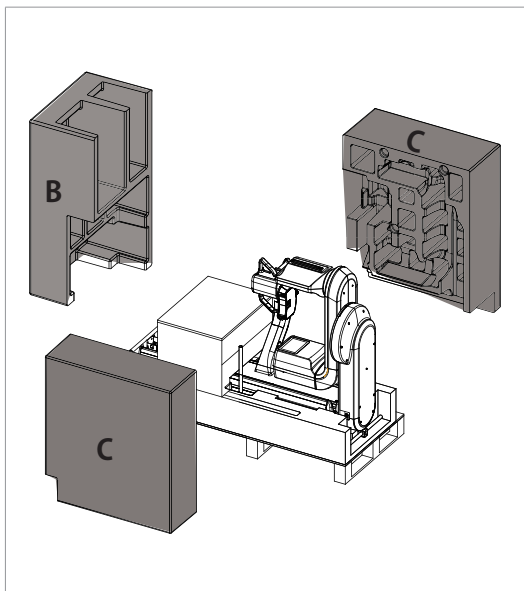
C: EPS

D: Accessory and part box1

E: Accessory and part box2

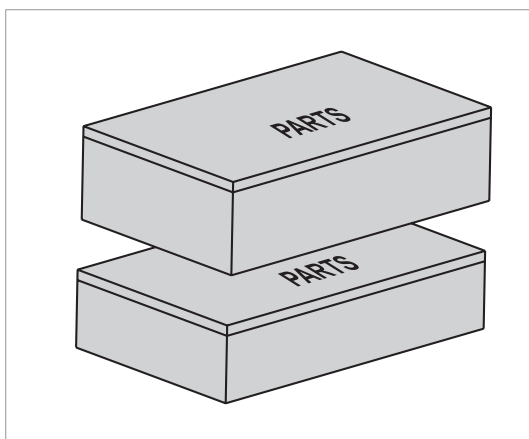


4. Put the PC system down on the floor.

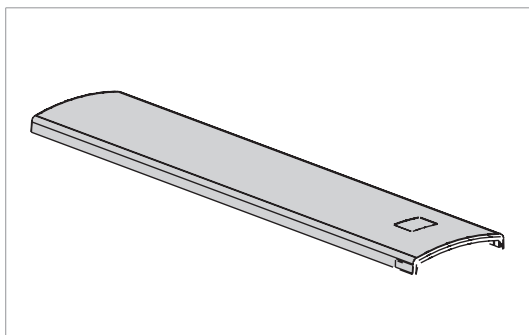


5. Separate 3 side EPS(B, C) in the following order.

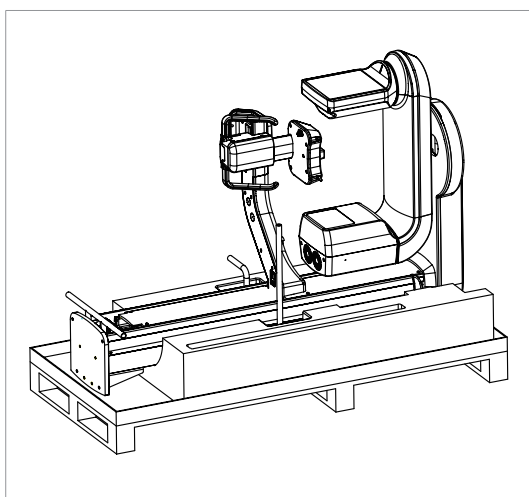
B→C



6. Remove two parts boxes(D, E).



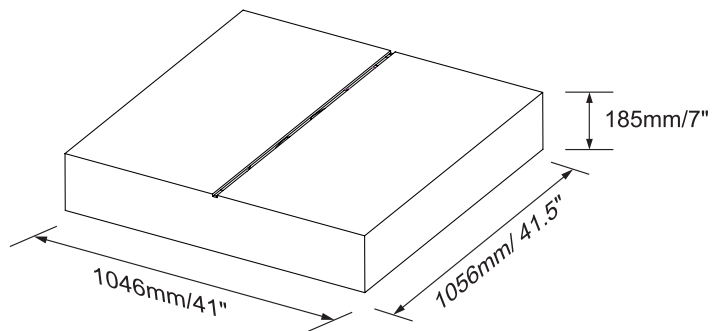
7. Remove the case column front cover.



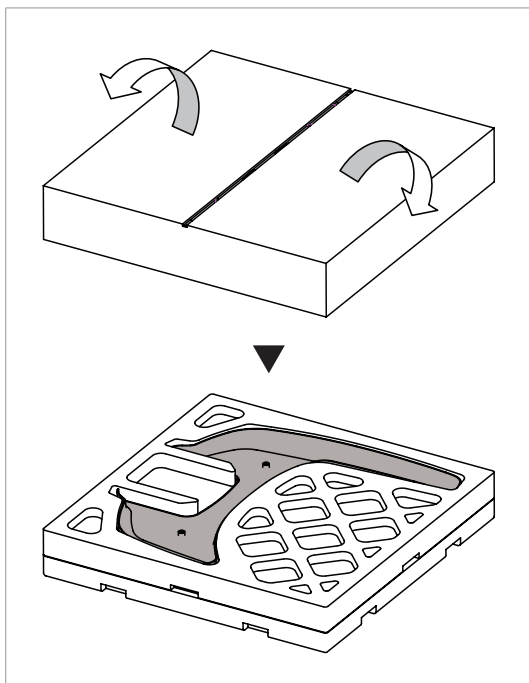
View after the removal of the EPS foams

Box No. 2: Base unit

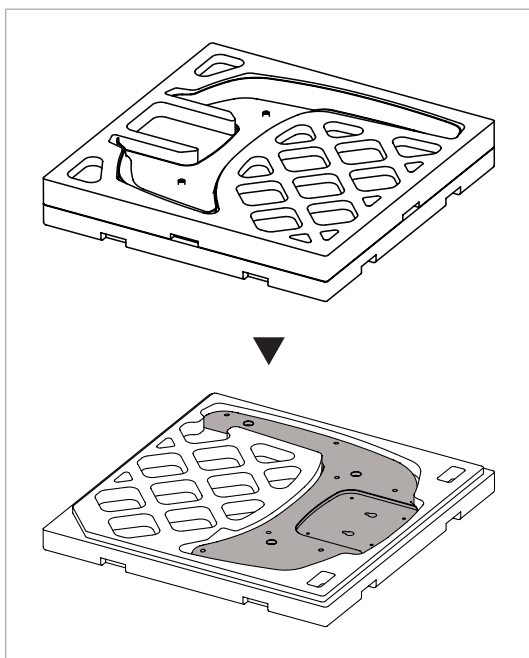
Component	Size(mm/inch)	Weight(kg/lbs)
Base	1046(l) x 1056(w) x 185(h) / 41"(l) x 41.5"(w) x 7"(h)	47/103



Removing the cover



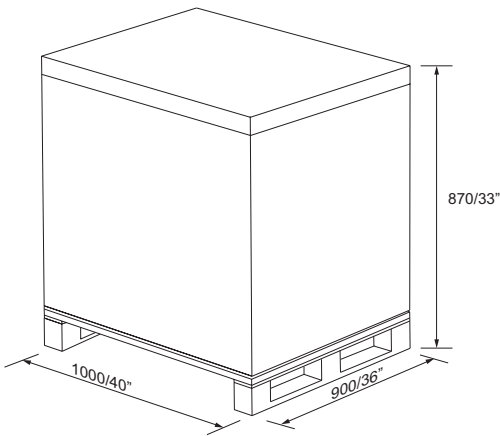
1. Open the box cover, the base cover appears.



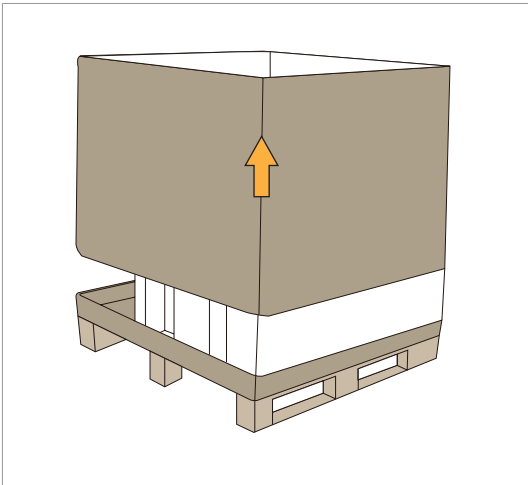
2. Remove the base cover.

Box No. 3: Cephalometric unit (Optional)

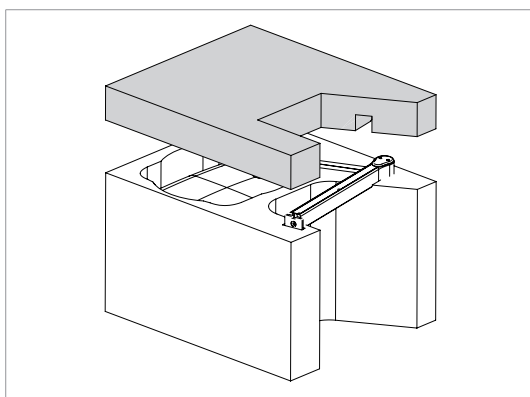
Component	Size(mm/inch)	Weight(kg/lbs)
Cephalometric unit	1000 x 900 x 870 / 40" x 33" x 32"	45/100



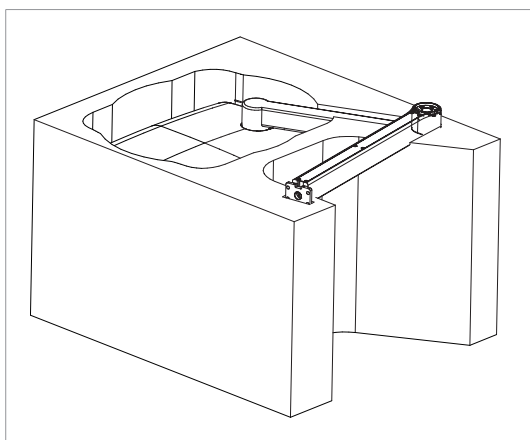
Removing the cover



1. Open the box cover, starting with the top cover.



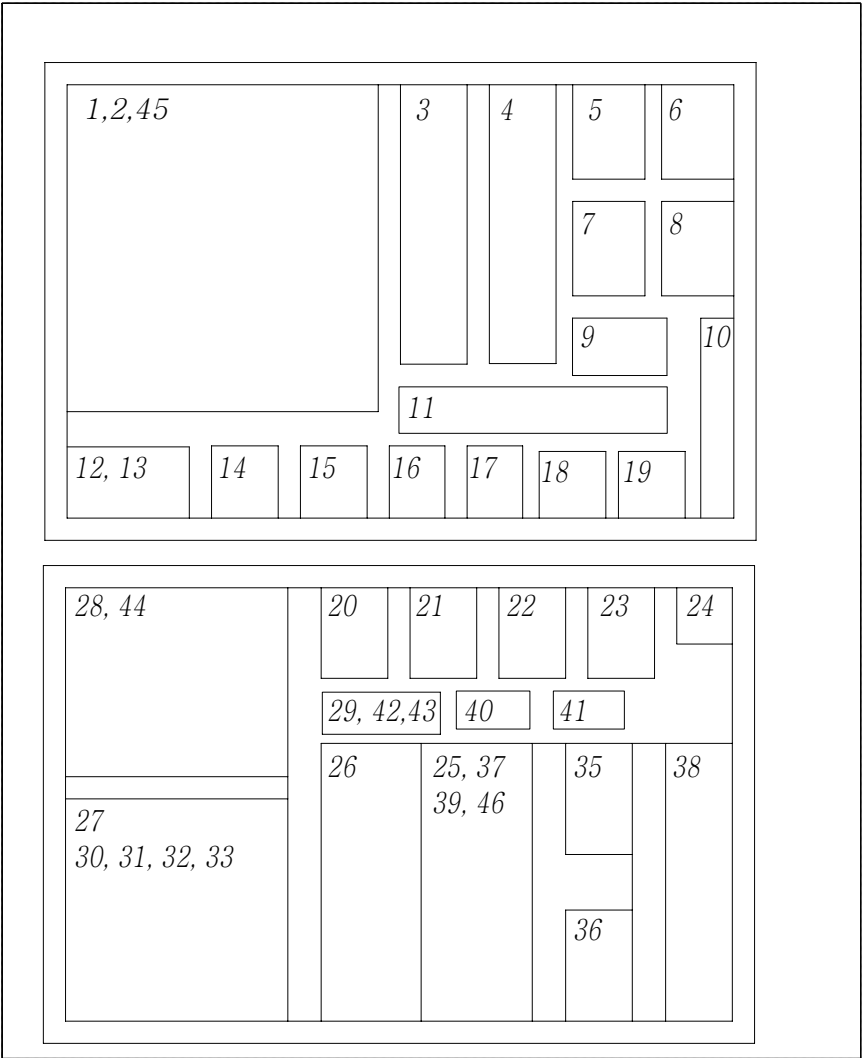
2. Remove the top Styrofoam cover.




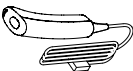
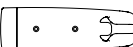


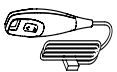
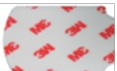

The view after removal of the Styrofoam.









3.4 Checking the Parts

Location layout of the parts and accessories




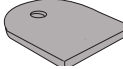

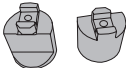




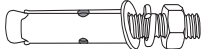
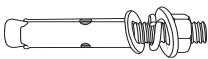



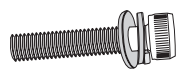
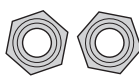
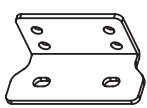
Parts list: In the accessory box

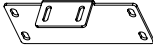
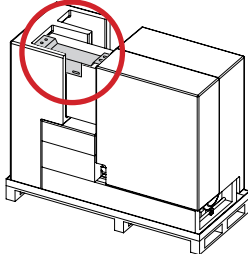
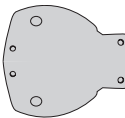

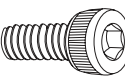

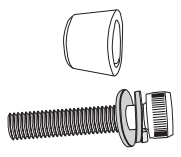

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
1	MANUALS	User		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Installation		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		EzDent-i		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Ez3D-i		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Installation CD or USB			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
2	EXPOSURE SWITCH			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	EXPOSURE SWITCH HOLDER			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	DOUBLE SIDED STICKER			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	SCREWS	M3X12		2		Yes <input type="checkbox"/>	No <input type="checkbox"/>
3	TEMPLE SUPPORT	Right and Left		1 set		Yes <input type="checkbox"/>	No <input type="checkbox"/>
4	UP/DOWN SWITCH			1	Optional	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	UP/DOWN SWITCH HOLDER			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	DOUBLE SIDED STICKER			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	SCREWS	M3X8		2		Yes <input type="checkbox"/>	No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)		
5, 6 7, 8	Left blank intentionally							
9	PANO BITE COVER			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
10	CABLE TIE			10		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
11	BITE BLOCK	Normal		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	BITE BLOCK CAP			2		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
12	Left blank intentionally							
13	CHIN SUPPORT	TMJ/SINUS		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	CHIN SUPPORT CAP			2		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
14	CAP: EAR ROD			2 (2)	CEPH 2: on the equipment	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	SILICON COVER: NASAL POSITIONER			2	CEPH: extra	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
15	Left blank intentionally							
16	SILICONE CAP A	White		15		Yes <input type="checkbox"/>	No <input type="checkbox"/>	
17 18	Left blank intentionally							

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
19	BASE CAP1			3	Base	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	BASE CAP2			6	Base	Yes <input type="checkbox"/>	No <input type="checkbox"/>
20	WRENCH BOLTS	M10 x 20 w/ spring and flat washers		6	Assembling Column To Base	Yes <input type="checkbox"/>	No <input type="checkbox"/>
21		M10 x 30		2	Assembling Column To Base	Yes <input type="checkbox"/>	No <input type="checkbox"/>
22		M8 x 25		4	CEPH	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		M6 x 20 w/ spring and flat washers		2			
23	TRUSS BOLTS	M5 x 8		3		Yes <input type="checkbox"/>	No <input type="checkbox"/>
24	TRUSS BOLTS	M4 x 8		11		Yes <input type="checkbox"/>	No <input type="checkbox"/>
25	SERIAL CABLE	10m/32.8'		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
26	LAN CABLE	10 m/32.8'		1	If one shot CEPH installed	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
27	FRAME GRABBER SYSTEM	Optic cable (10m/32.8')		1 (2)	If SC type is installed, one additional fiber optic cable is required.	Yes <input type="checkbox"/> No <input type="checkbox"/>
		AG4 (or) IFG Card (or) FTG Card		1	If PC is supplied, card is already installed	Yes <input type="checkbox"/> No <input type="checkbox"/>
28	WARNING SYSTEM			1 set	Optional	Yes <input type="checkbox"/> No <input type="checkbox"/>
29	CAP:CEPH ARM			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
30	PLATE HAND REST CEPH			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
	BLOCK ACRYL FIX BOLT			2	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
	KNOBS			2	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
	HANDREST STICKER			1	CEPH	Yes <input type="checkbox"/> No <input type="checkbox"/>
31, 32 33, 34	Left blank intentionally					

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
35	ANCHOR BOLTS	M8 w/1 flat and spring washers		6	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		M8 w/2 flat and spring washers		2	Wall mount / Floor	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	NUTS	M8		4		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	FLAT WASHERS	M8		4		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	WOOD SCREWS	8 X 60 w/flat and spring washer		4	Wall mount (wood)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
36	BOLTS	M8 x 20 w/ flat and spring washer		8	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	NUTS	M8 size		2			
37	COLUMN BRACKET			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
38	WALL BRACKET			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
			<p>Part No. 38 WALL BRACKET for USA is located on the PC system box as shown in the illustration.</p> <p>NOTICE</p> 				
39	ALIGNMENT PLATE	Template		1	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
40	Left blank intentionally						
41	WRENCH BOLT	M8 x 45		2	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		M12 x 15		1	Align to wall type		
42	WRENCH BOLT	M6 x 15		3	ARM fixed Bolt	Yes <input type="checkbox"/>	No <input type="checkbox"/>
43	ARM FIXING WRENCH BOLT	WRENCH BOLT and housing M4x 15 w/ flat and spring washer		1	CEPH	Yes <input type="checkbox"/>	No <input type="checkbox"/>
44	PROTRACTOR			1	CEPH	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
45	Ez3D plus key or Ez3D- i			1		Yes <input type="checkbox"/> No <input type="checkbox"/>
	EasyDent4 or EzDent- i			1		Yes <input type="checkbox"/> No <input type="checkbox"/>
46	ANTI-STATIC GLOVE			1 pair		Yes <input type="checkbox"/> No <input type="checkbox"/>

4

Installing the Equipment: Floor Standing (Optional)

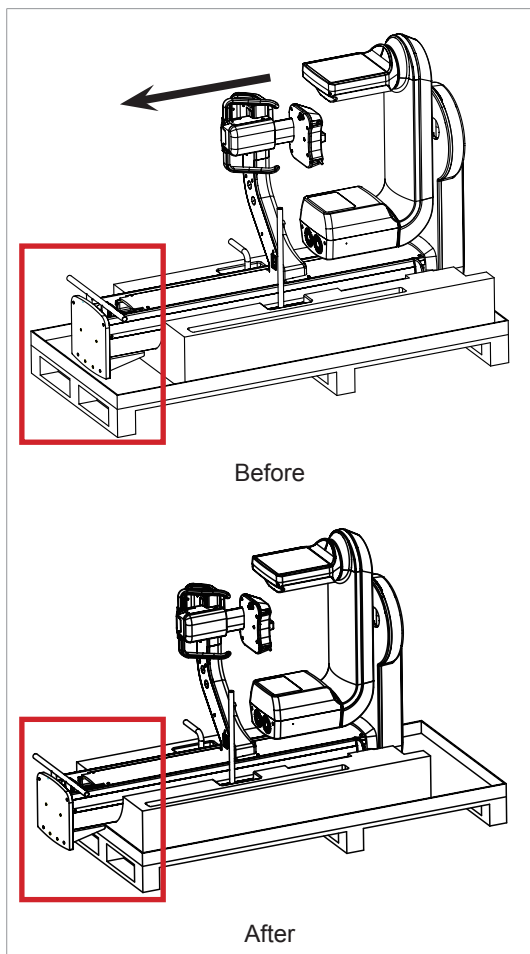
4.1	Assembling the Base and Main Units	52
4.2	Installing the Wall and Column Brackets.....	57
4.3	Fixing the Base (Optional)	61
4.4	Removing the Transportation Safety Bolts.....	66
4.5	Installing the CEPH Unit (Optional).....	67
4.6	Removing the Protective Plastic Film	73
4.7	Leveling the Equipment	74

4.1 Assembling the Base and Main Units

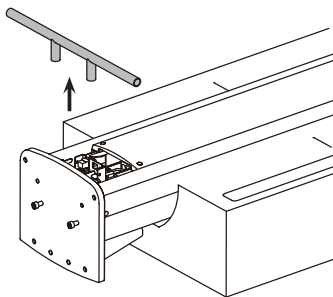
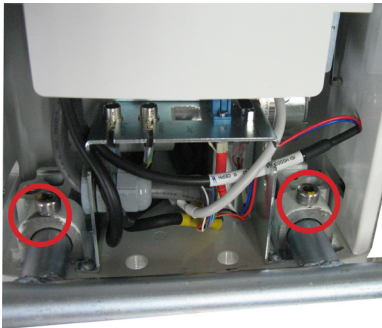
NOTICE

If the installation site is a concrete floor, go to the section 4.3 Fixing the base (Optional) and do number 1 first, after that turn back 4.1 Assembling the Base and Main Units.

Before start working



1. Pull the main unit and EPS package together forward the front edge



2. Remove the carrying handle at the bottom of the column unit.

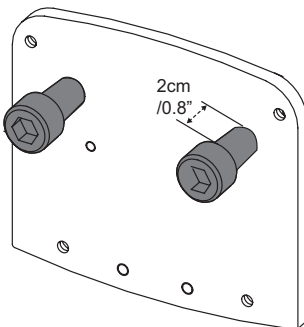
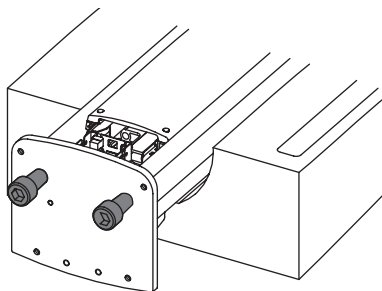
ⓘ CAUTION

Be careful not to damage the cables. Especially, the fiber optic cable is very sensitive to the external impact.

Allen wrench



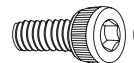
6 mm/0.24"



3. Insert two wrench bolts into the holes loosely, as shown in the figure.

Wrench Bolts

M10 x 30
Part No : 21
2 PCS



Allen wrench

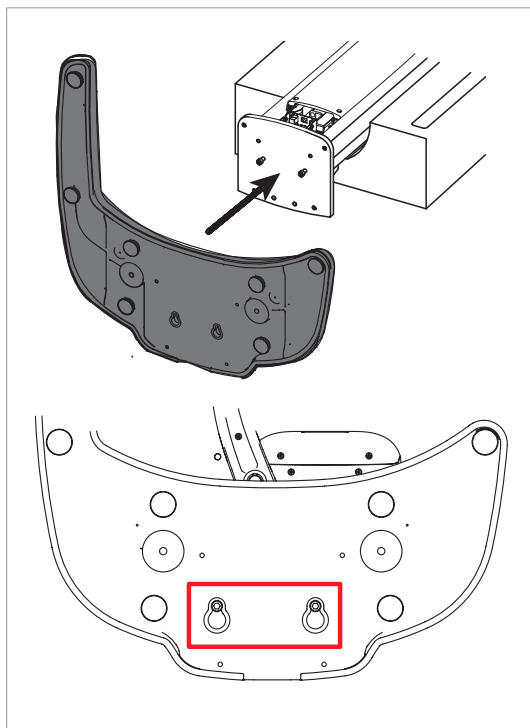
8 mm/0.23"



IMPORTANT

Insert the bolts into the holes until about 20 mm are left outside.

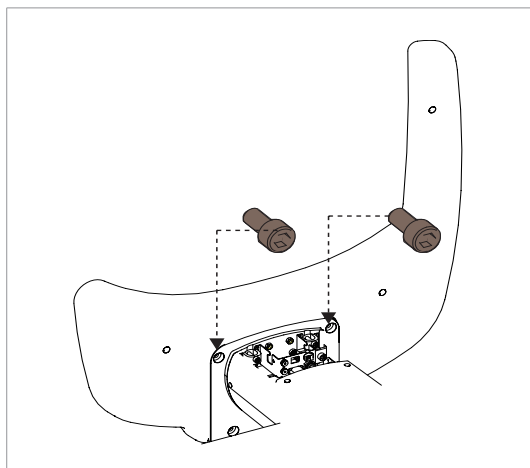
Assembling the base with column units





1. Attach the base unit onto two protruded bolts inserted at step 3.

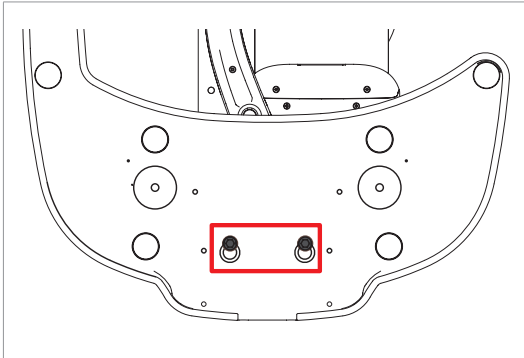
⚠ CAUTION

An installer should hold the base unit to keep it from falling down.

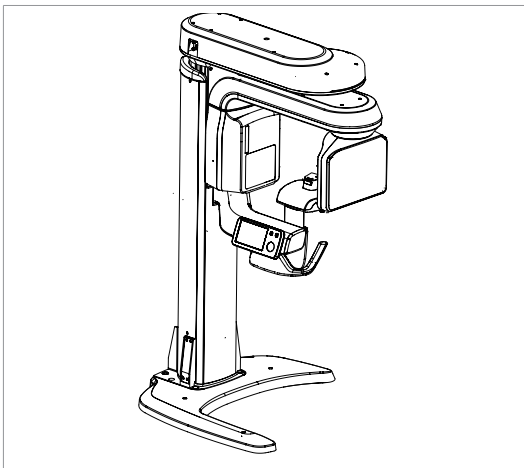


2. Fasten the base unit with two wrench bolts.

Allen wrench	8 mm/0.31"	
WRENCH BOLT	M10 x 20 w/ spring and flat washers Part No.: 20 2 PCS	



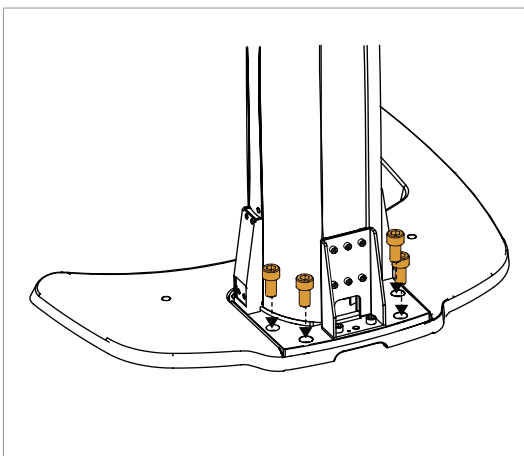
3. Tighten two wrench bolts firmly as shown in the illustration.





4. Erect the equipment in an upright position.

⚠ CAUTION

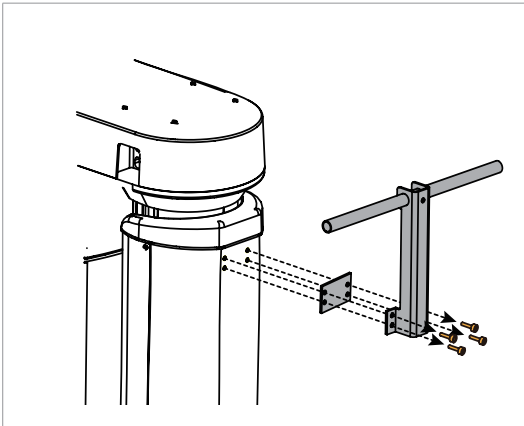
Be careful not to damage the cables. Before erecting the equipment, keep them clear of the equipment



5. Fix the column unit to the base unit.

Allen wrench	8 mm/0.31"	
WRENCH BOLT	M10 x 20 w/spring and flat washers Part No.: 20 4 PCS	

Removing the Transportation Handle (Without the CEPH unit)



1. Move the equipment to installation location as close as possible.

2. Remove the upper carrying handle.

Allen wrench

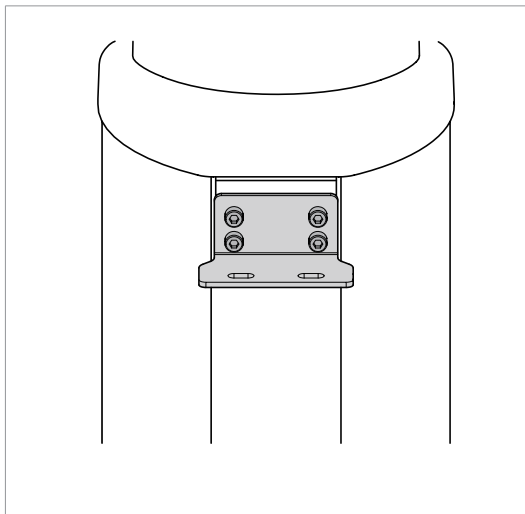
6 mm/0.24"



⚠ CAUTION

One installer should hold the handle, while the other is removing the bolts.

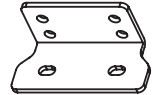
4.2 Installing the Wall and Column Brackets



1. Prepare the column bracket.

COLUMN
BRACKET

Part No.: 37



2. Attach the above bracket to the back of the column with the 4 bolts.

WRENCH
BOLTS

M8 x 20
w/spring and
flat washers
Part No.: 36
4 PCS

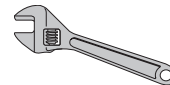


Allen wrench

6 mm/0.24"



Monkey
wrench

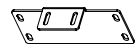


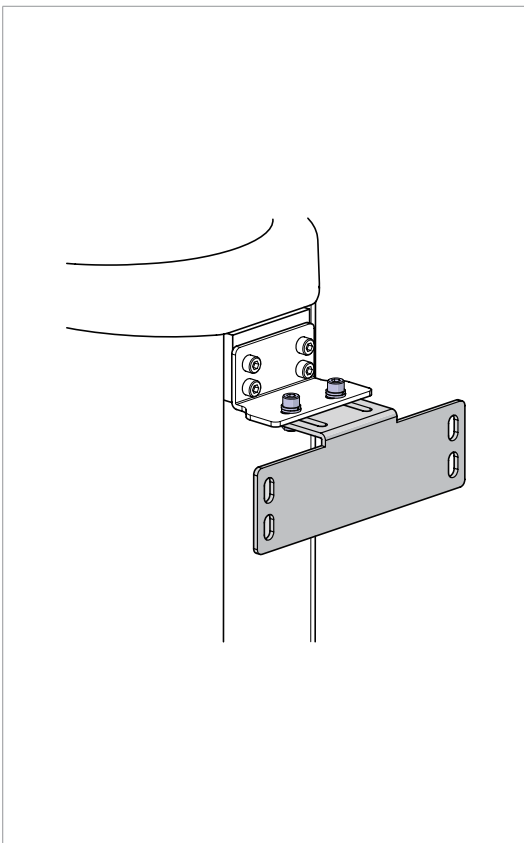
Combining column and wall brackets

1. Prepare the wall bracket.

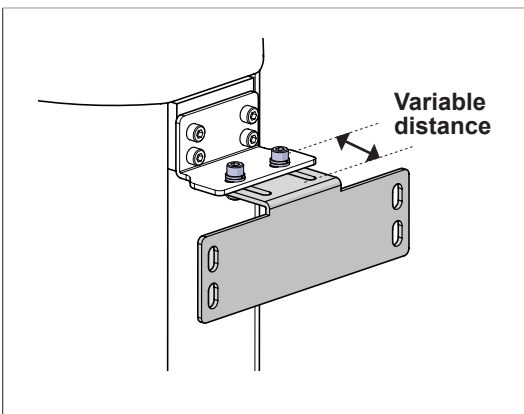
WALL
BRACKET

Part No.: 38









Marking 4 points on the wall



2. Combine the column and wall brackets in the following manner with the 2 wrench bolts.

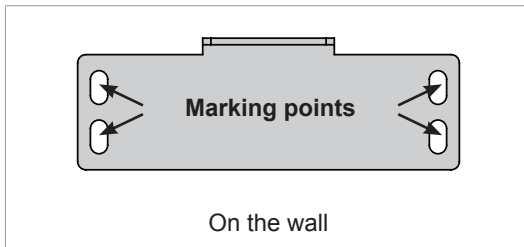
Allen wrench	6 mm/0.24"	
Monkey wrench		
WRENCH BOLTS	M8 x 20 w/ spring and flat washers Part No.: 36 2 PCS	
NUTS	Part No.: 36 2 PCS	

⚠ CAUTION

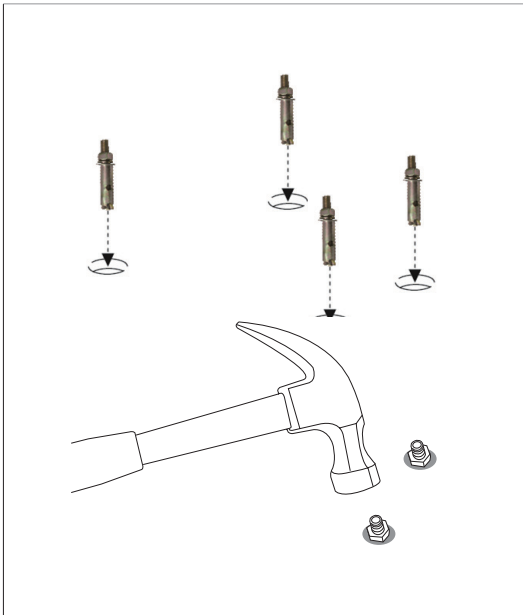
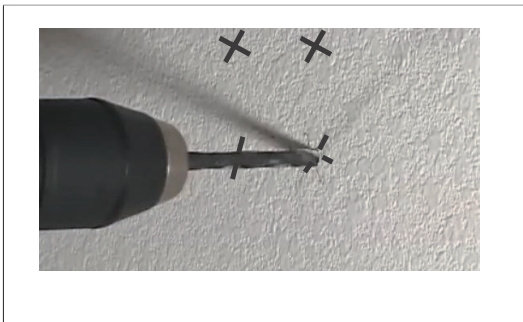
Do not tighten the bolts fully yet.

1. Move the equipment to the installation site as close as possible

2. Adjust the distance between the wall and equipment by moving it slightly, so that the wall bracket touches the wall.



Drilling on the wall



3. Mark 4 anchor bolts locations on the wall.

Marker



1. Put the alignment plate (Part No.: 39) aside.
2. Drill the ground and wall holes of size 10 mm x 30 mm (depth) using the concrete hammer drill.

3. Remove the debris and clean the holes using the dust pump.

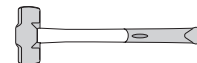
4. Using the hammer, insert a Ficher strong anchor into the hole.

Ficher
strong
anchor

M8 x 30



Hammer



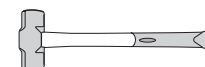
5. Using the hammer, insert a EHS tool into the inner bolt.

EHS tool

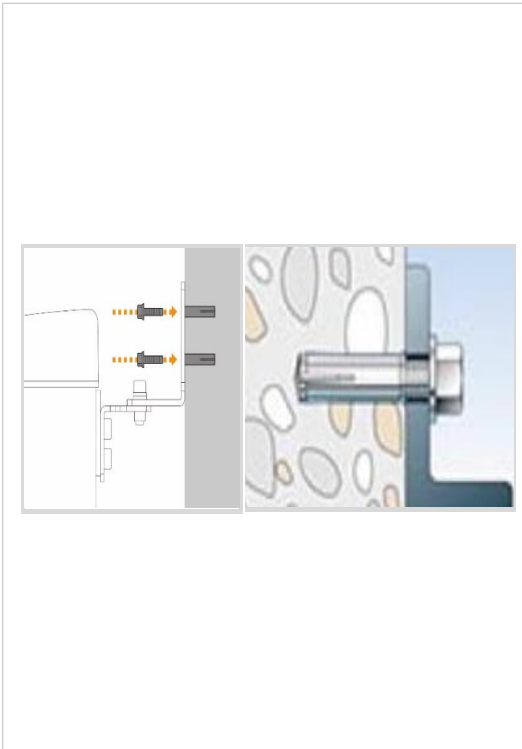
EAW H
8x30



Hammer



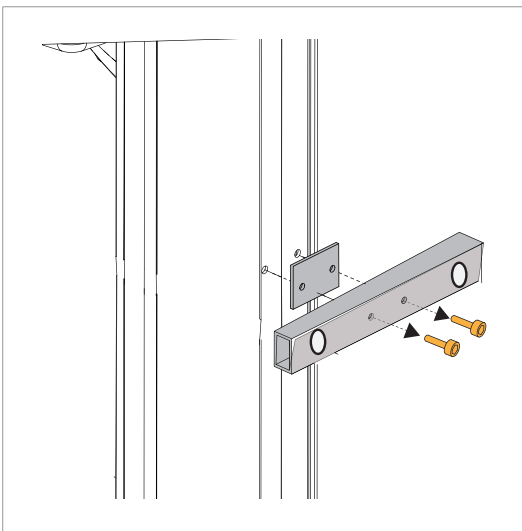
Combining the equipment with the anchor bolts



1. Place the equipment onto the alignment plate, while observing 4 anchor bolts are being inserted properly through each hole.

Installers required	3
---------------------	---

Hex Bolt	M8 x 15	
Spring washer	M8	
Flat washer	M8	
Torque wrench	Spanner type	



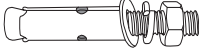

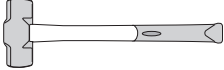
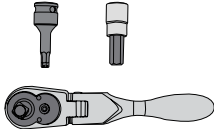
2. Remove the handle in the middle.

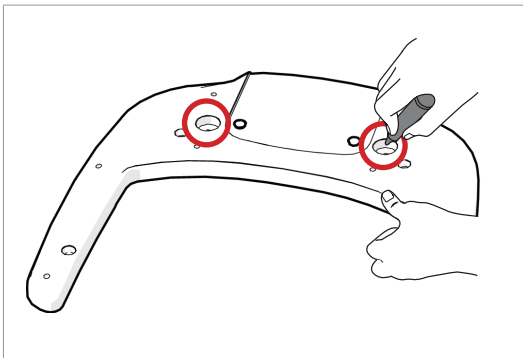
IMPORTANT

If the CEPH unit is to be installed, this is used as the carrying handle. Do not detach it until indicated later after the equipment is moved to the installation site

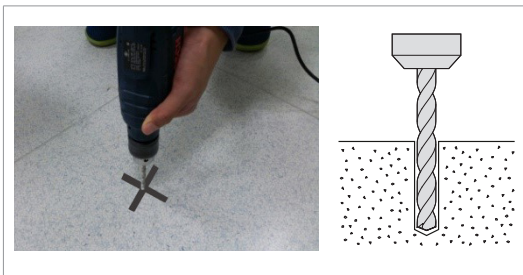
4.3 Fixing the Base (Optional)

Concrete floor

Anchor bolts	M8 Size Part No. : 35 2PCS	
Hammer drill	L=200mm7.9	
Hammer		
Ratchet wrench		

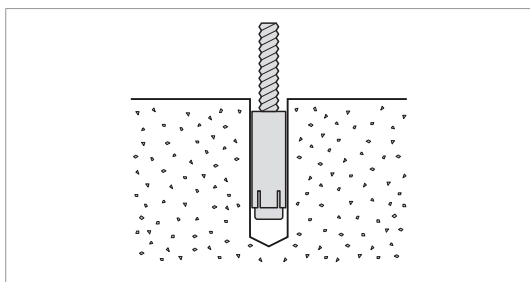


1. Before installing the equipment, put the base unit on the installation site and mark 2 locations on the floor.

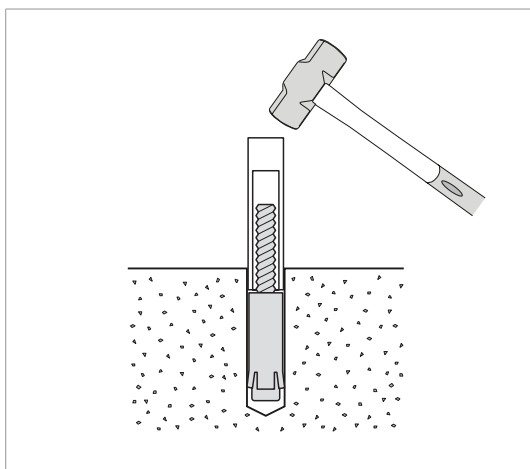


2. Drill the floor holes of size 12mm x 30mm (depth) using the concrete hammer drill.

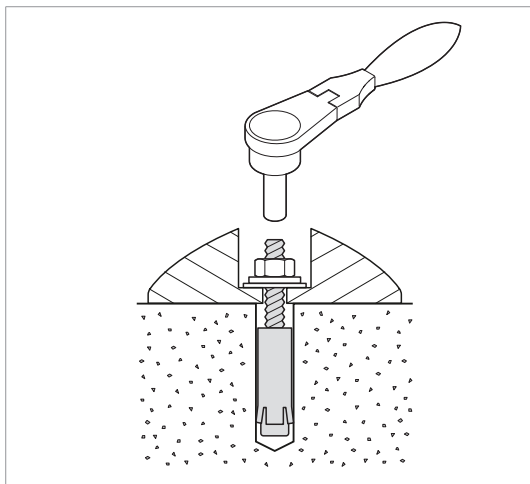
3. Remove the debris and clean the holes using the dust pump.



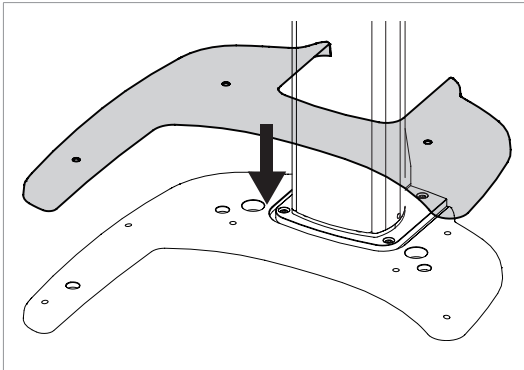
4. Remove nuts and washers, put the anchor bolts into the holes.



5. Secure the anchor bolts with the hammer.

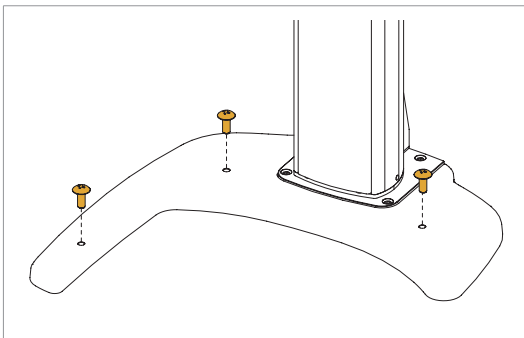


6. Place the base unit combined equipment on the proper position, lock the nuts and washers using ratchet wrench.



7. Assemble the base cover.

Base cover



8. Fix the base cover with 3 truss bolts.

Truss bolts

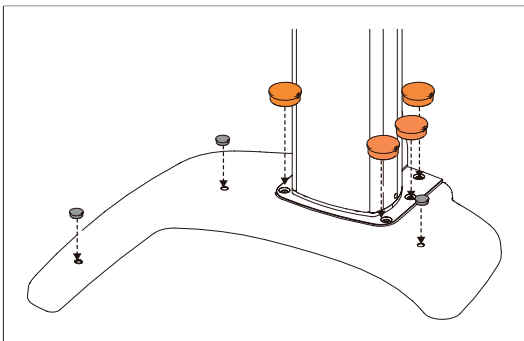
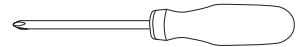
M5 x 8

Part No. :23

3PCS



Cross head
screw driver with
magnetic tip



9. Cover the holes. (Cap1: 3, Cap2: 6)

Base Caps
1, 2

Part No. :19



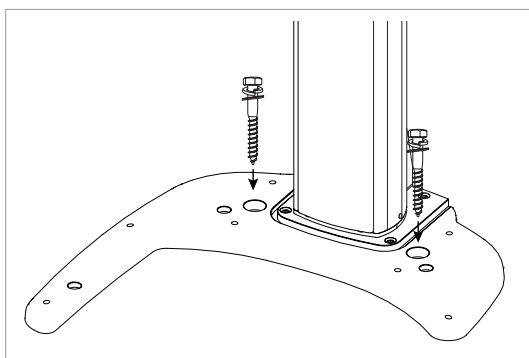
Silicon Caps
(White)

Part No. :16

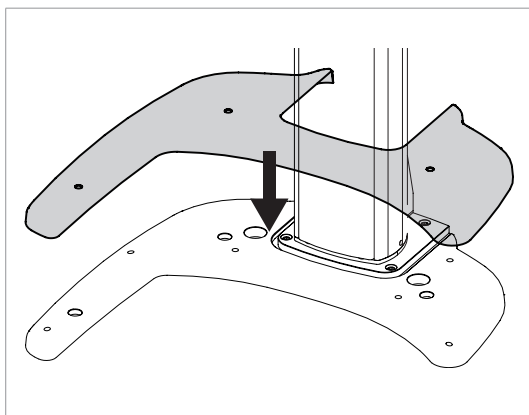


Wooden floor

Wood screws	M12 x 70 2PCS	
Hammer drill	L=200mm7.9	

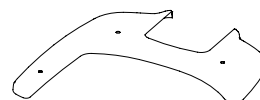


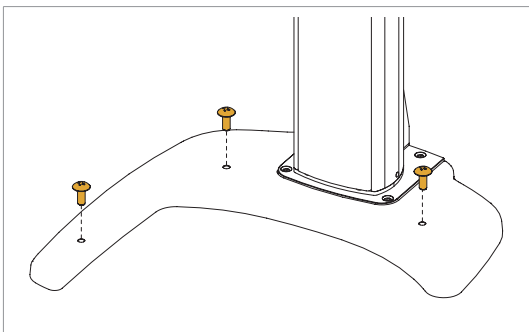
1. Secure the base unit using the wood screws.





2. Assemble the base cover.

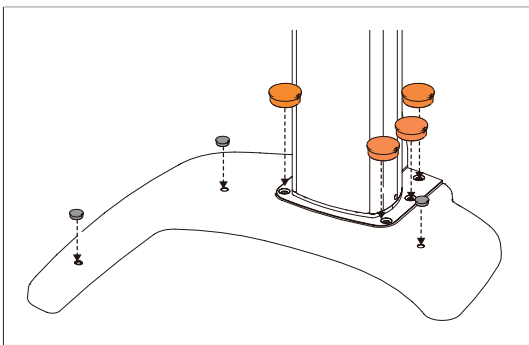
Base cover





3. Fix the base cover with 3 truss bolts.

Truss bolts	M5 x 8	
	Part No. :23 3PCS	
Cross head screw driver with magnetic tip		



4. Cover the holes. (Cap1: 3, Cap2: 6)

Base Caps 1, 2	Part No. :19	
Silicon Caps (White)	Part No. :16	

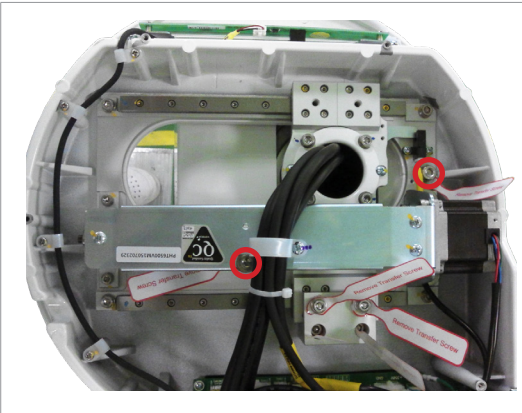
4.4 Removing the Transportation Safety Bolts



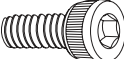

1. Remove the semi-clear tape on the both sides

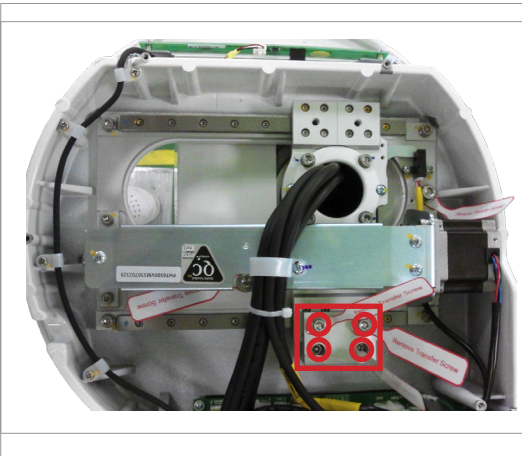
NOTICE

Be careful not to scratch the cover.




2. Remove the two safety bolts and the tags as shown in the figure.

Wrench bolts	M 8	
Allen wrench	6 mm/0.24"	



3. Separate the fixing block for the rotating unit after removing the four bolts and the tags.

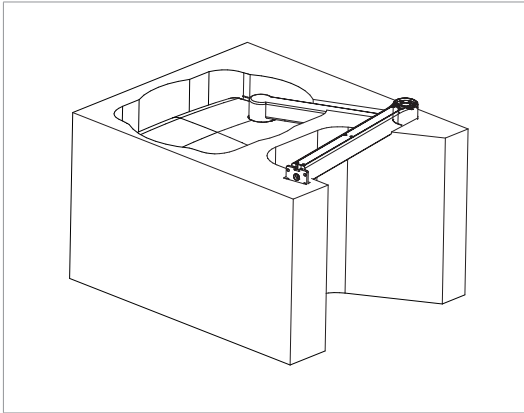
Allen wrench	5 mm/0.2"	
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4.5 Installing the CEPH Unit (Optional)

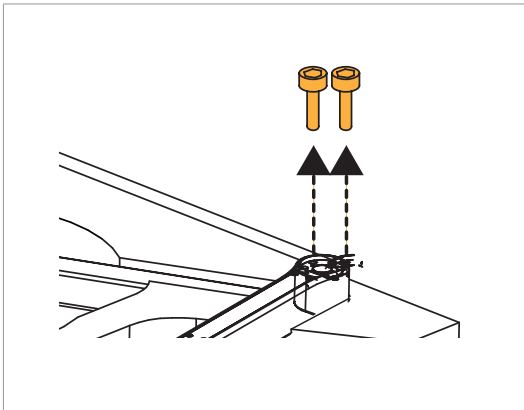


Never hold the areas of the collimator, sensor and tube head.

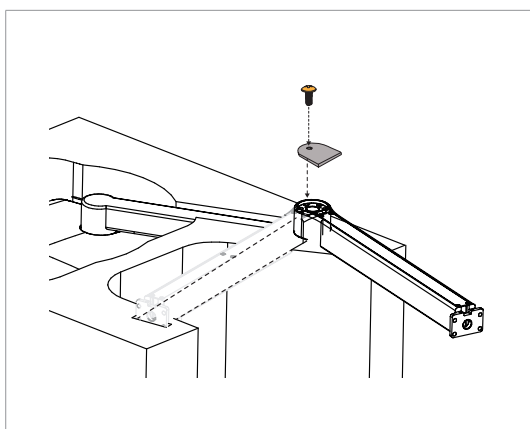
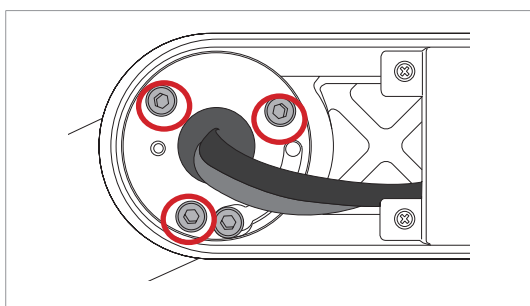
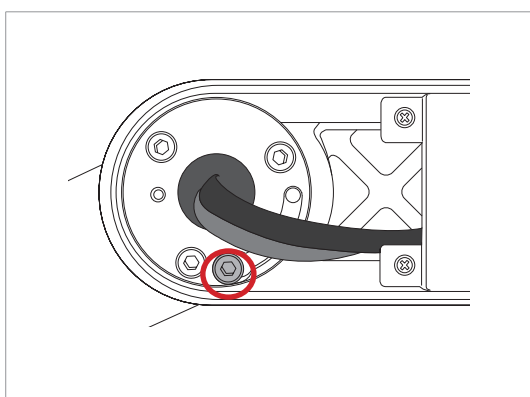
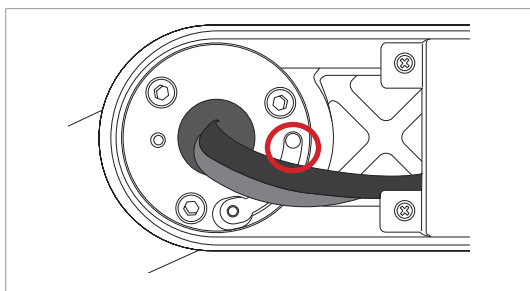
Preparing for the CEPH unit



1. Now it is assumed that the CEPH box has already been opened.


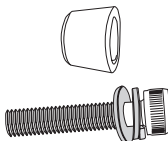


2. Remove 2 bolts from the Cephalometric arm's joint.


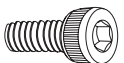


3. Stretch the arm fully until the moving arm stops by the stopper:


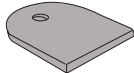
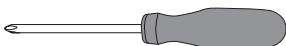
4. Tighten the bolt firmly in a manner, as illustrated in the figure.er:

Allen wrench	3 mm/0.12"	
ARM FIXING WRENCH BOLT	Part No.: 34	

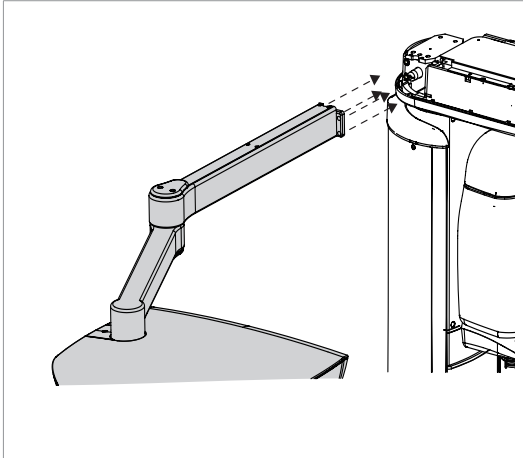
5. Fix the arm again with the three bolts (red circle).

Allen wrench	5 mm/0.2"	
WRENCH BOLT	Part No.: 42 3 PCS	

6. Slide the one end of the cover and fix the other end with the truss bolt.

TRUSS BOLT	M4 x 8 Part No.: 24 1 PCS	
CEPH ARM COVER	Part No.: 29	
Cross head screw driver w/ magnetic tip		

Mounting the CEPH unit



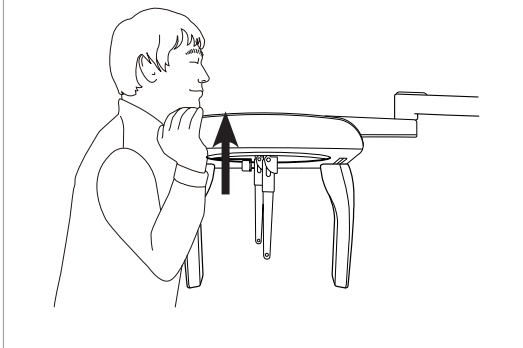
1. **Move and** mount the CEPH unit on the main unit carefully, while observing the insertion state of 4 studs.

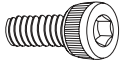



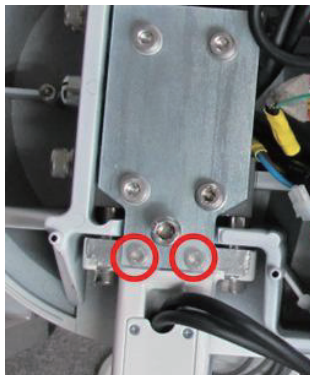
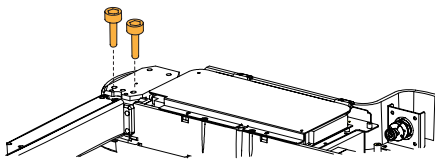
2. Secure them using 4 wrench bolts in the numbered order. ***One installer should push the end of the CEPH unit up as hard as possible.***

ⓘ CAUTION



Be careful not to scratch the surface while tightening the bolts.



Wrench bolts	M8 x 25 Part No.: 22 4 PCS	
Allen wrench	6 mm/0.24"	

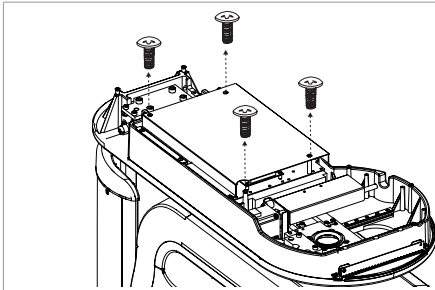
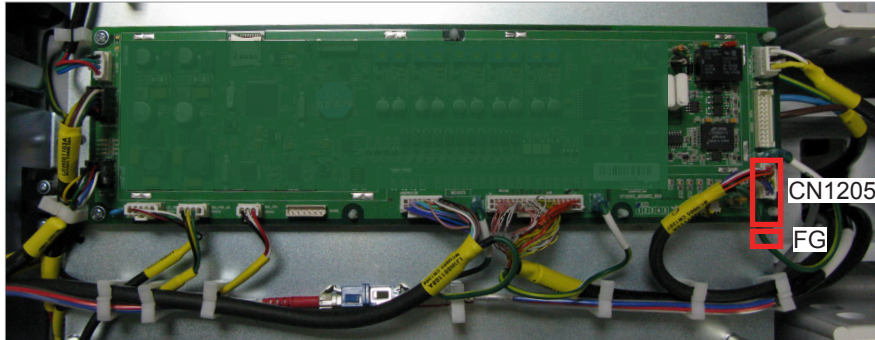


3. Tighten 2 wrench bolts firmly at the following locations. One installer should keep on lifting the CEPH unit up slightly.

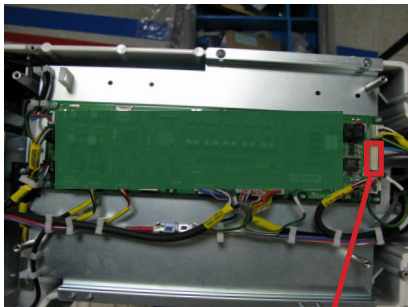
WRENCH BOLT	M6 x 20 w/spring and flat washers Part No.: 22 2 PCS	
Allen wrench	5mm/0.2"	

Cabling between the CEPH and main units

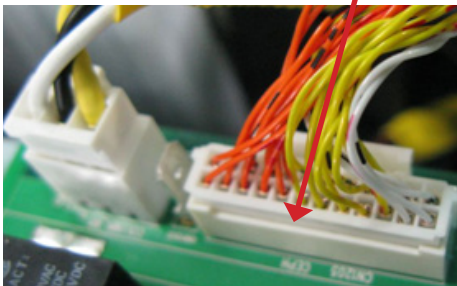
Connectors' layout



1. Remove the 4 truss bolts to separate the top cover.

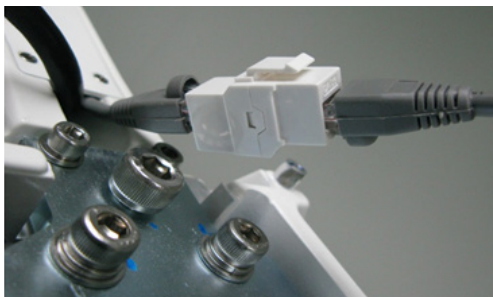


2. Connect the cable **H001110A(CN1205)** from the CEPH unit with the connector **CN1205** on the main CPU board.





3. Connect the FG ground cable.

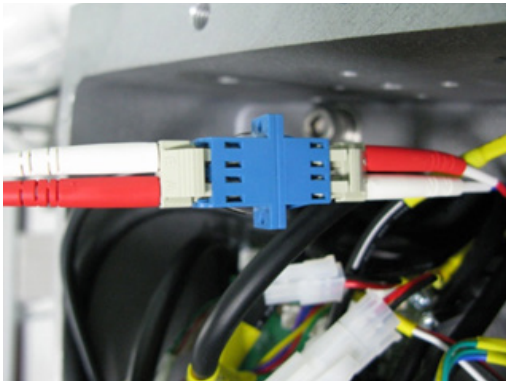


OS/OP Type

4. For OS/OP type, connect the LAN cables from the CEPH unit with the connector from the column unit.

OP : H000031A ↔ H000032A

OS : H000033A ↔ H000032A



SC Type

For SC type, connect the fiber optic cables from the CEPH unit and the main unit.

SC : H000017A ↔ H000016A

5. After arranging and tying the cables, put the top cover back.

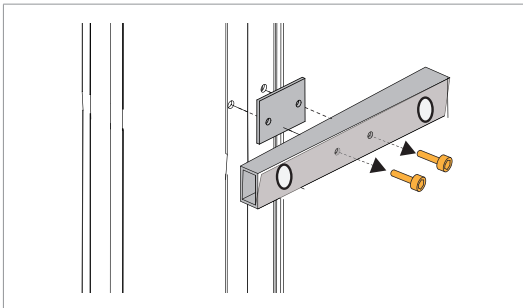
Removing the carrying handle (When the CEPH unit is installed)



1. Move the equipment to installation site near the wall.

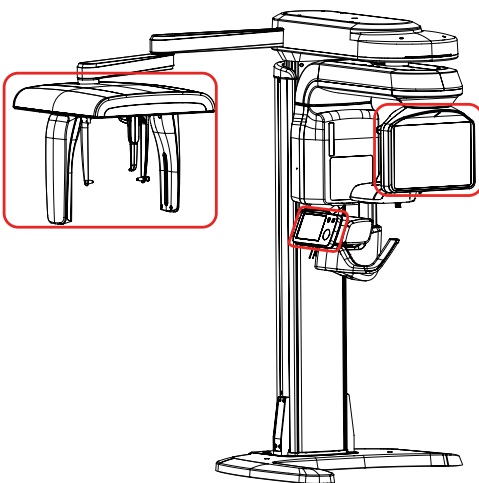
⚠ CAUTION

Two installers should hold the carrying handle firmly while moving the equipment.



2. Remove the carrying handle in the middle.

4.6 Removing the Protective Plastic Film



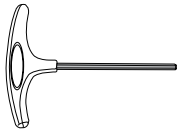
1. Remove the plastic film from the three locations

CEPH unit

Sensor part on the rotating unit

LCD on the handle frame

4.7 Leveling the Equipment



8mm / 0.3"

T-shaped hex wrench

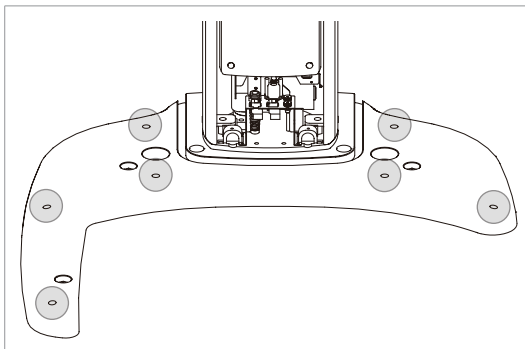
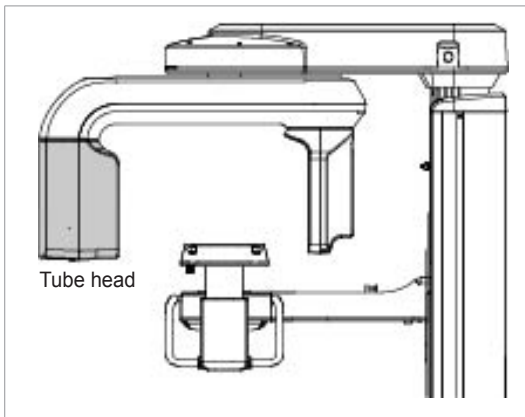


Spirit level

IMPORTANT

Ensure that the spirit level should rest only on the locations indicated in the following figures to obtain the accurate center.

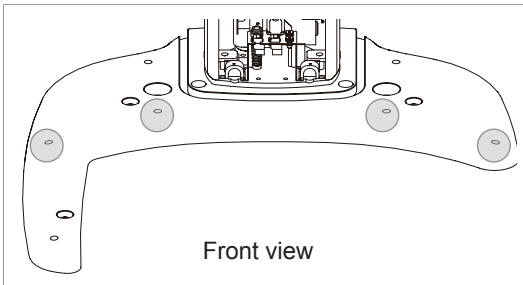
1. Prepare the spirit level.
2. Position the rotating unit so that the X-Ray tube head faces the front.
3. Turn all seven screws on the base plate unit clockwise until they touch the ground.



Leveling right and left



Side view



Front view

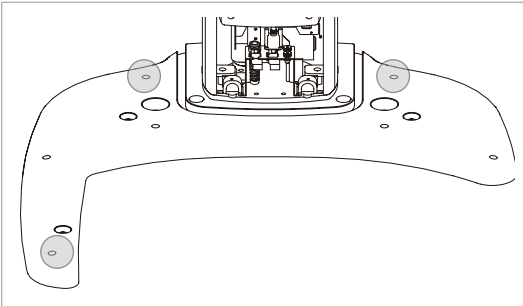
4. Place the spirit level, as follows.

5. Adjust the base until the bubble on the spirit level centers in the middle, by turning left and right screws clockwise or vice versa.

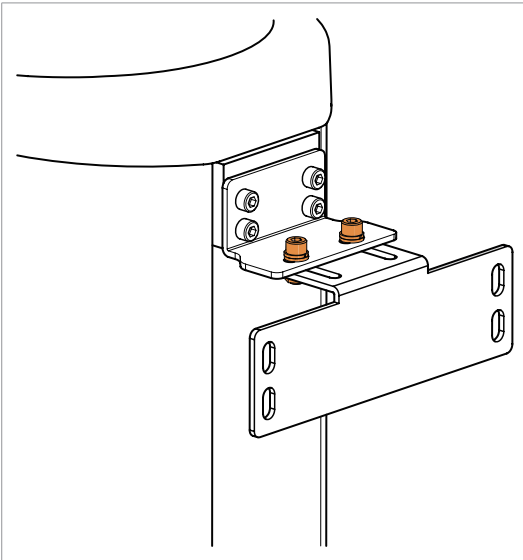
Leveling the front and back



6. Place the spirit level on the vertical frame, as shown in the following figure.



7. Adjust the screws until bubble of spirit level centers (level), by turning the front and/or back screws clockwise or vice versa.



8. When the leveling is completed, tighten the two nuts at the joint of two brackets.

5

Installing the Equipment: Wall Mount

5.1	Installing the Equipment.....	78
5.2	Installing the Bracket and Combining the Equipment .	82
5.3	Removing the Security Bolt from Rotating Unit.....	88
5.4	Installing the Cephalometric Unit (Optional)	89
5.5	Leveling the Equipment	89
5.6	Tightening the Bolts Firmly	91
5.7	Removing the Protective Plastic Film	92

5.1 Installing the Equipment

Note: Before drilling on the floor or wall, ensure to measure the installation site to mark the correct location for the template (also known as the alignment plate)

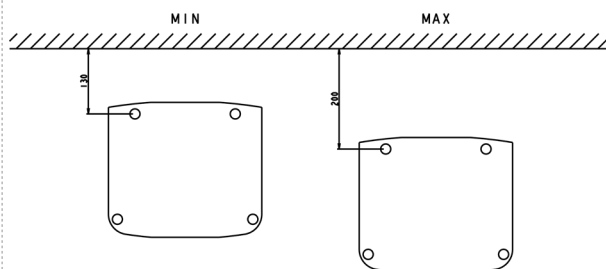
The optimized distance between the wall and the template is provided below. However, customizing the distance may be necessary according to your installation site and its surrounding environment.

For more questions about finding the template (alignment plate) placement, contact VATECH's CS team or your nearest VATECH representative.

Distance between the wall and the template (for the United States):

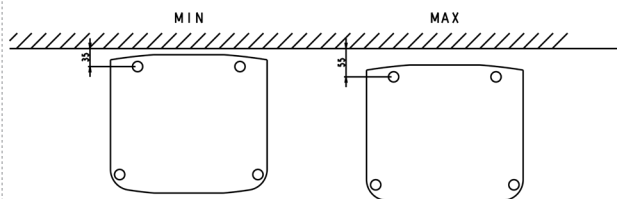
Min. 130 mm (5.12 in) / Max. 200mm (7.87 in)

IMPORTANT

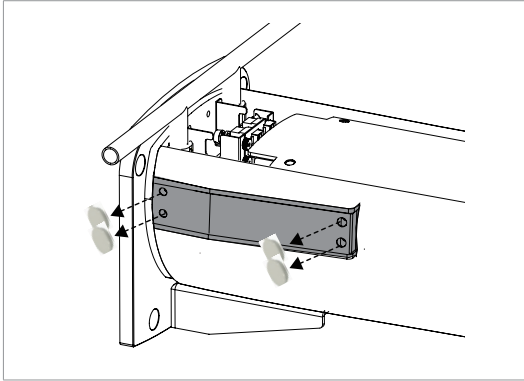


Distance between the wall and the template (for Other Countries):

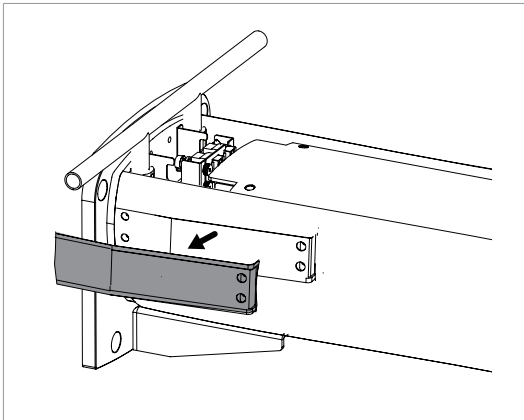
Min. 35 mm (1.38 in) / Max. 55 mm (2.17 in)



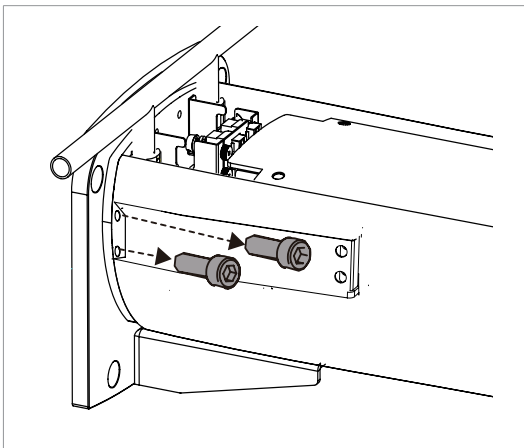
Replacing the carrying handle with system supports



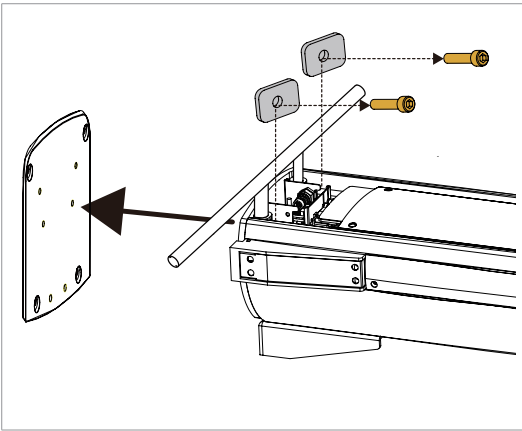
1. Remove eight hole covers on both sides.



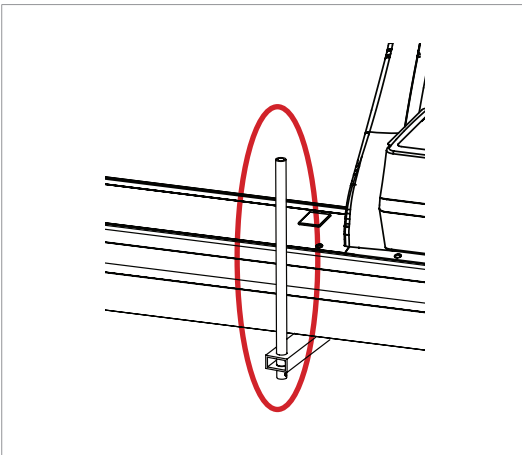
2. Separate the outer covers after removing 8 bolts on both sides.



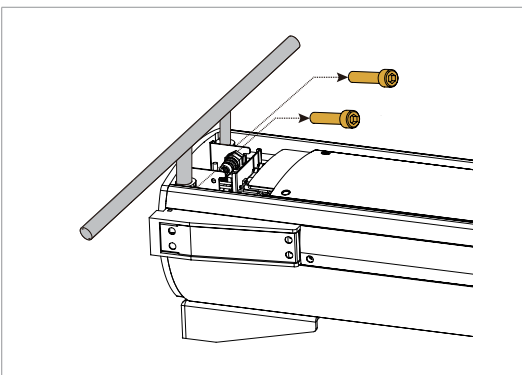
3. Remove two bolts on each side to separate the base plate.



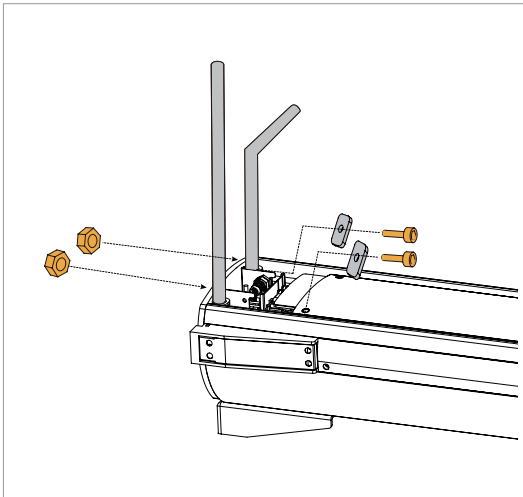
4. Separate the base plate. Do not discard the column support blocks. They are reused later.



5. Separate the handle in the middle of the column.



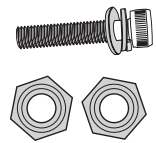
6. Separate the handle from the bottom of the column



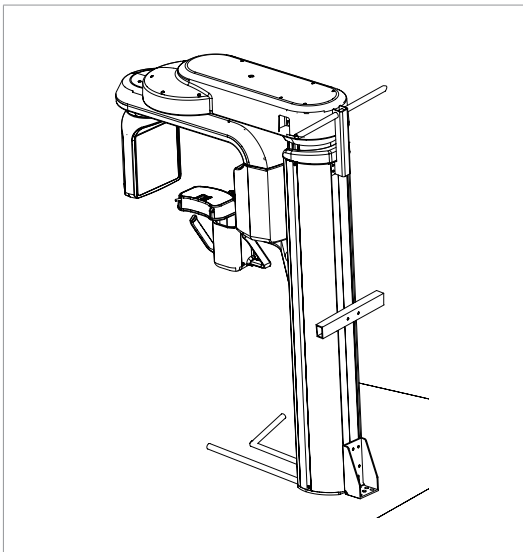
7. Attach two system supports to the bottom of column in the manner, as illustrated in the figure.

WRENCH BOLTS

M8 x 20
w/spring and
flat washers
Two Nuts
Part No.: 36



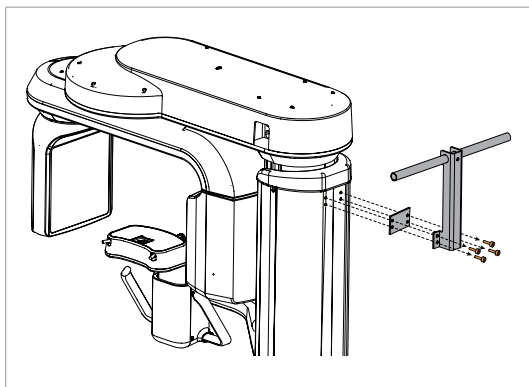
Allen wrench Monkey wrench



8. Erect the equipment in an upright position.

5.2 Installing the Bracket and Combining the Equipment

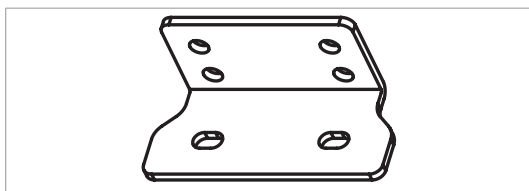
Installing the Column Bracket on the Back of the Equipment



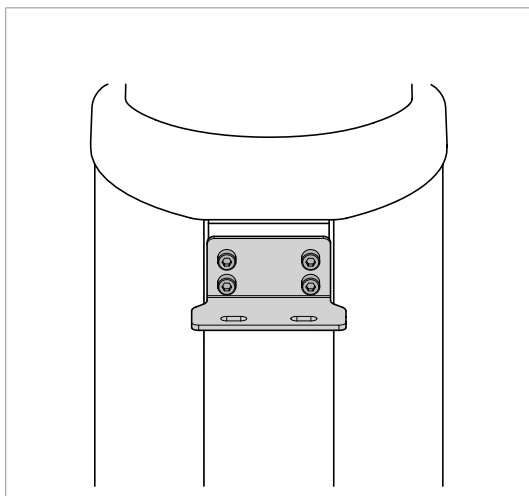
1. Separate the carrying handle on the top.

⚠ CAUTION

One installer should hold the front, while the other is separating the handle.



2. Prepare the column bracket(part No.: 37).



3. Attach the above bracket to the back of the column unit with the 4 bolts(part No.: 36).

WRENCH
BOLTS

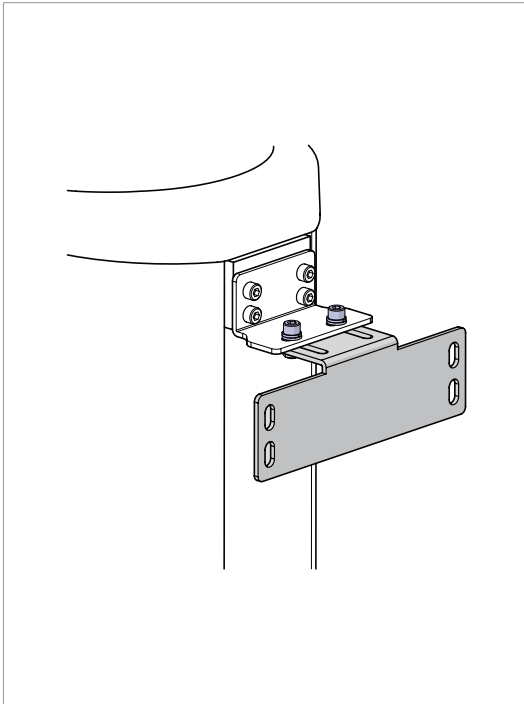
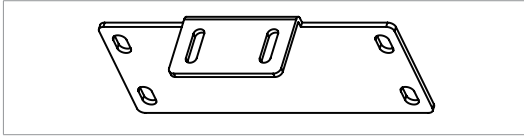
M8 x 20
w/spring and
flat washers.
Part No.: 36
4 PCS



Allen wrench



Combining column and wall brackets

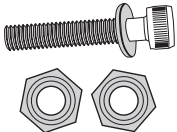
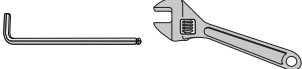


1. Prepare the wall bracket(**Part No.: 38**).

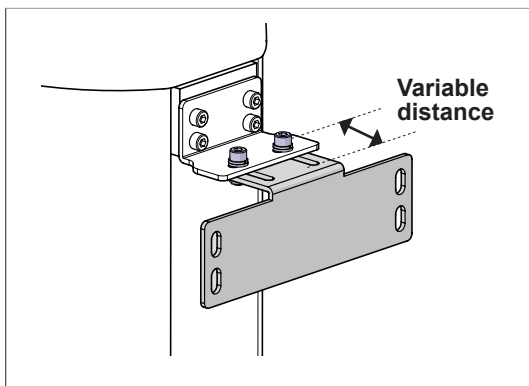
2. Combine the column and wall brackets in the following manner with the 2 wrench bolts(part No.: 36)

IMPORTANT

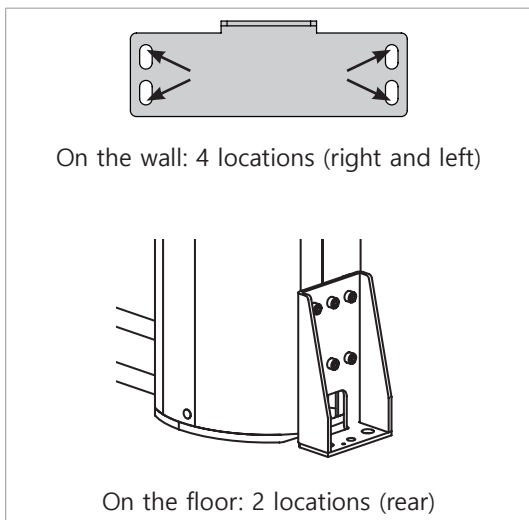
Do not tighten the bolts yet.

Wrench bolts	M8 x 20 w/spring and flat washers Two Nuts Part No.: 36	
Allen wrench Monkey wrench		

Marking 4 locations on the floor and 4 on the wall

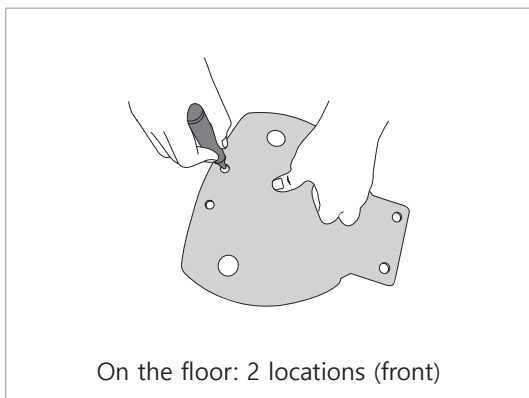


1. Move the equipment to the installation site as close as possible.
2. Adjust the distance between the wall and equipment by moving it slightly, so that the wall bracket touches the wall.



3. Mark 4 anchor bolts locations on the wall and 2 (rear only) on the concrete floor.

Marker

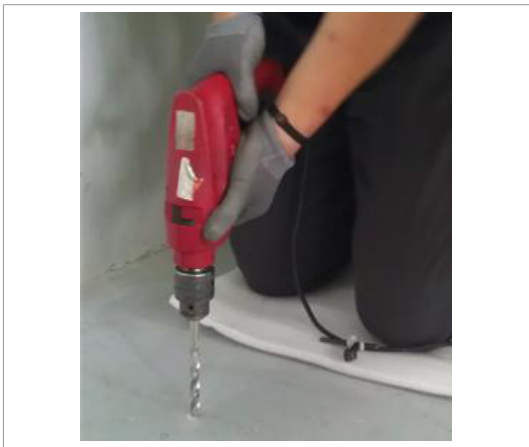


4. Move the equipment aside so as to mark the other 2 locations on the floor (front).

⚠ CAUTION

Move the equipment aside a little farther from the installer to make enough space to drill the floor.


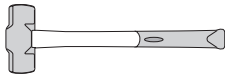
Drilling 8 locations on the floor and wall




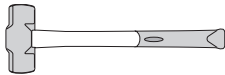
1. Put the alignment plate aside.
2. Drill the ground and wall holes of size 10 mm x 30 mm (depth) using the concrete hammer drill.

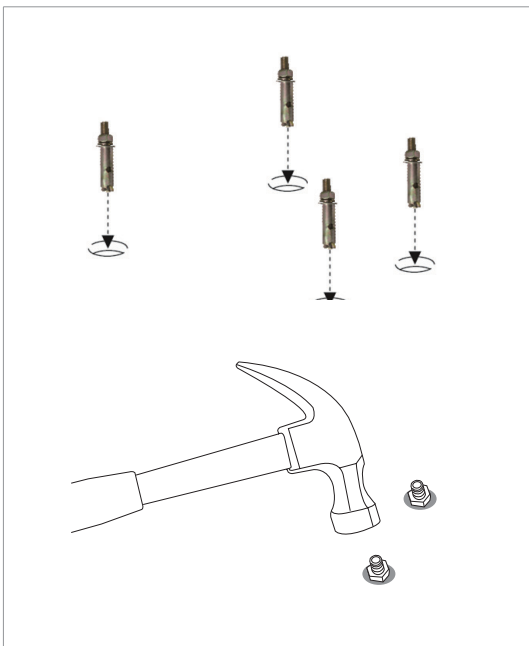
3. Remove the debris and clean the holes using the dust pump.

4. Using the hammer, insert a Fischer strong anchor into the hole.

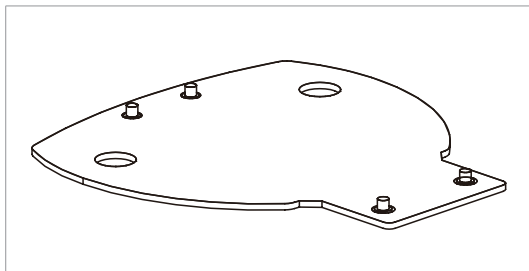
Fischer strong anchor	M8 x 30	
Hammer		

5. Using the hammer, insert a EHS tool into the inner bolt.

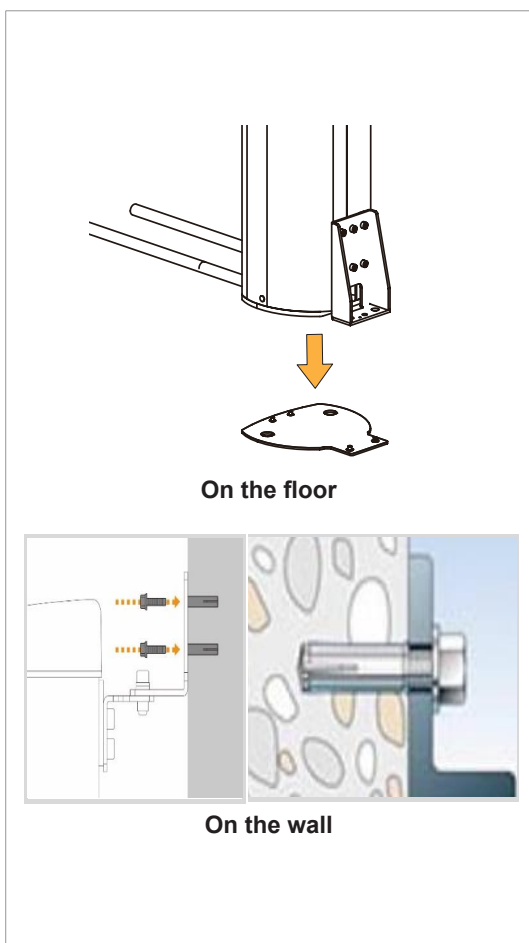
EHS tool	EAW H 8x30	
Hammer		



Combining the equipment with the anchor bolts




1. Place the alignment plate through 4 anchor bolts.



2. Place the equipment on the alignment plate, while observing 4 Hex bolts are being inserted properly through each hole.

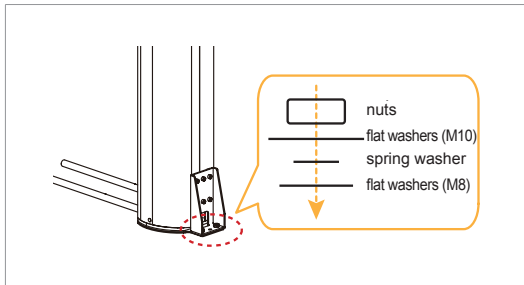
Installers required	3
---------------------	---

Hex Bolt	M8 x 15	
Spring washer	M8	
Flat washer	M8	
Torque wrench	Spanner type	

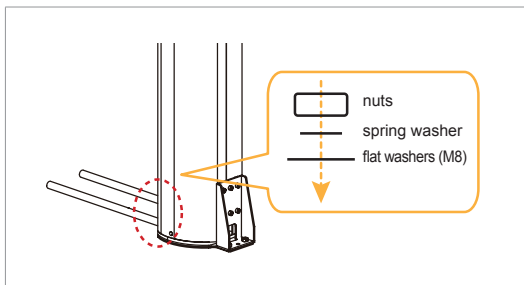
Securing the equipment (8 locations)

IMPORTANT

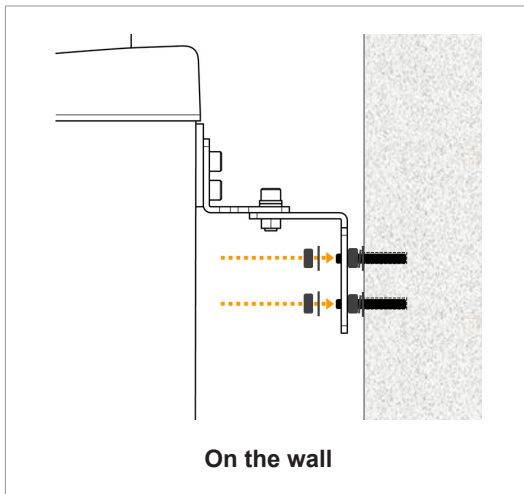
For the following procedures (1-3), do not tighten the nuts until after leveling is completed.



1. Insert four pieces through anchor bolts at two locations of rear of the column bottom and tighten nuts loosely. Ensure that the four pieces are stacked exactly in proper order, as shown in the figure.

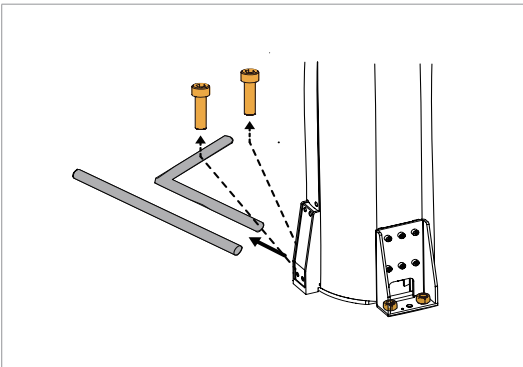


2. Insert three pieces through anchor bolts at two locations of front of the column bottom and tighten nuts loosely. Ensure that the three pieces are stacked exactly in proper order, as shown in the figure.

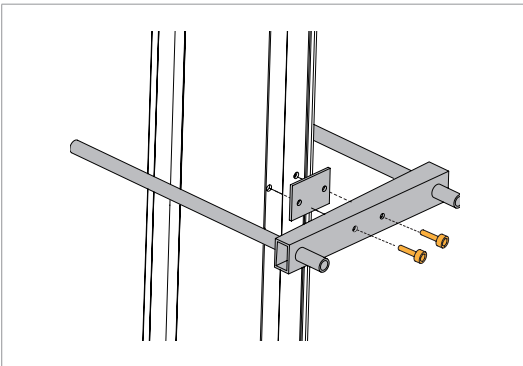


3. Place the equipment properly in its position and fix the wall bracket to the wall with four nuts and four flat washers (Part No. 35)

On the wall: 4 locations



4. Separate the system supports from the column.



5. Remove the handle in the middle

5.3 Removing the Security Bolt from Rotating Unit

Refer to the section **4.4 Removing the Transportation Safety Bolts.**

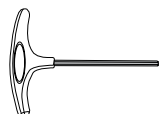
5.4 Installing the Cephalometric Unit (Optional)

Refer to the section 4.5 Installing the CEPH Unit (Optional).

5.5 Leveling the Equipment



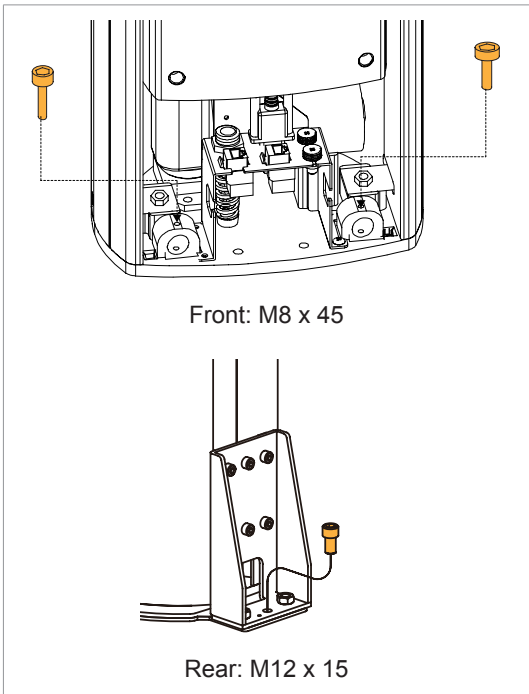
Spirit level



T-shaped hex wrench

IMPORTANT

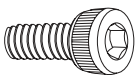
Ensure that the spirit level should rest only on the locations indicated in the following figures to obtain the accurate center.

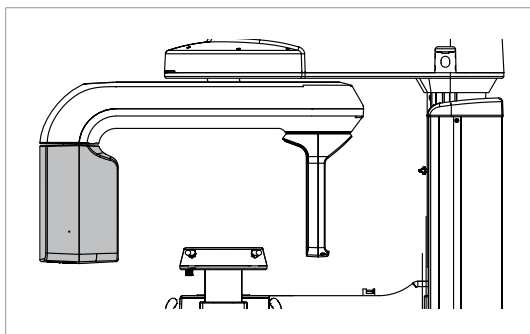


1. Prepare the spirit level.
2. Screw 3 wrench bolts (**Part No.:41**) loosely.

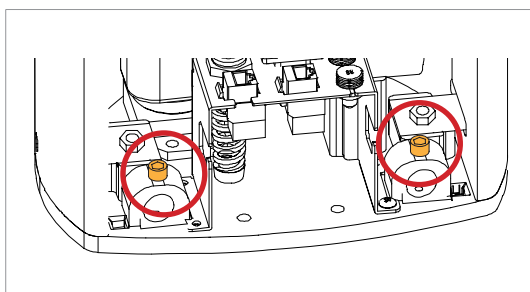
Wrench bolts

M8 x 45(2)
M12 x15(1)
Part No.: 41
3 PCS



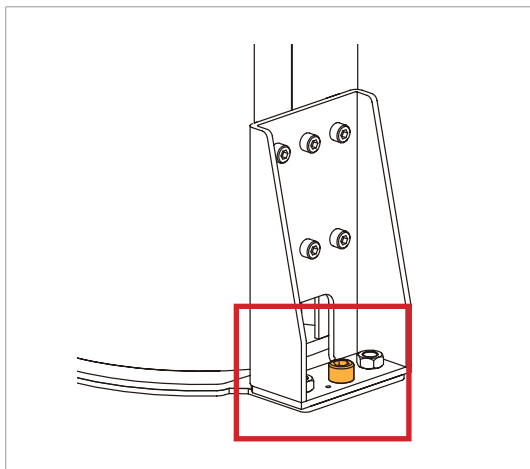


3. Position the rotating unit so that the X-Ray tube head faces the front.



Left and Right

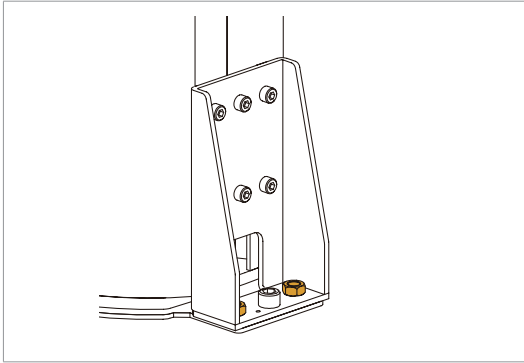
4. Positions of the spirit level are the same as those in the case of the base standing type. Refer to that chapter for the details.
5. Adjust two bolts until the bubble on the spirit level centers on the middle, by turning the above screws clockwise or vice versa



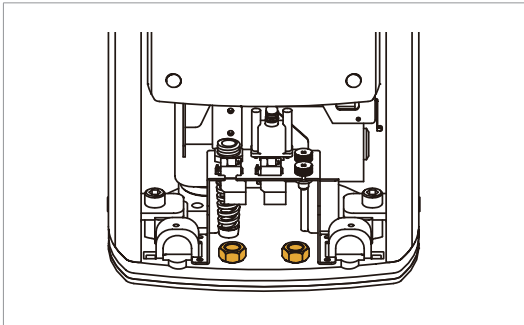
Front and Rear

6. Positions of the spirit level are the same as those in the case of the base standing type. Refer to that chapter for the details.
7. Adjust a bolt (orange color) until the bubble on the spirit level centers on the middle, by turning the following screw clockwise or vice versa

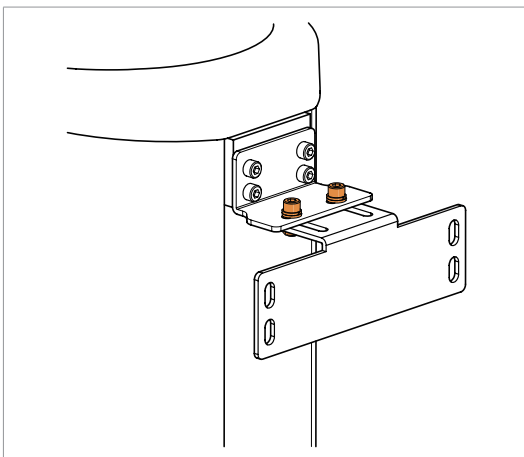
5.6 Tightening the Bolts Firmly



1. Tighten the 2 bolts at the bottom of the column unit.

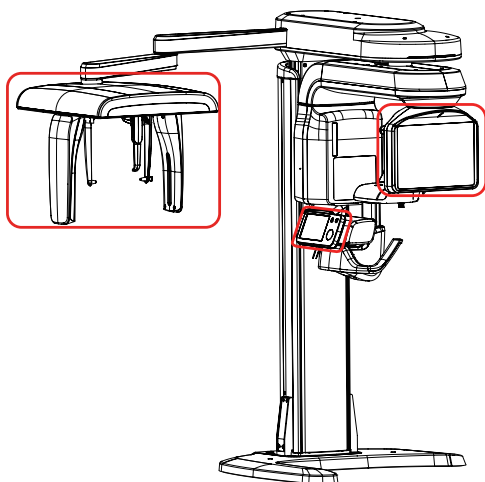


2. Tighten the 2 nuts at the front bottom.



3. Tighten the joint bracket bolts.

5.7 Removing the Protective Plastic Film



1. Remove the plastic film from the three locations

CEPH unit

Sensor part on the rotating unit

LCD on the handle frame

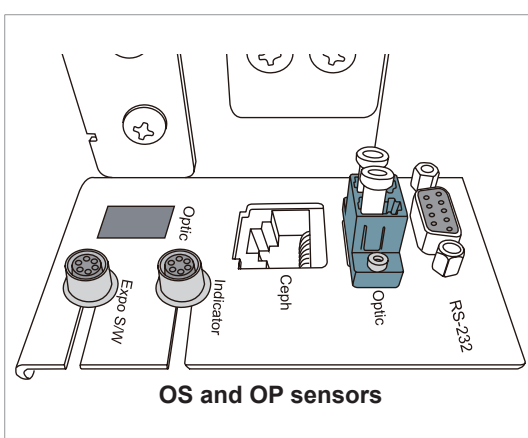
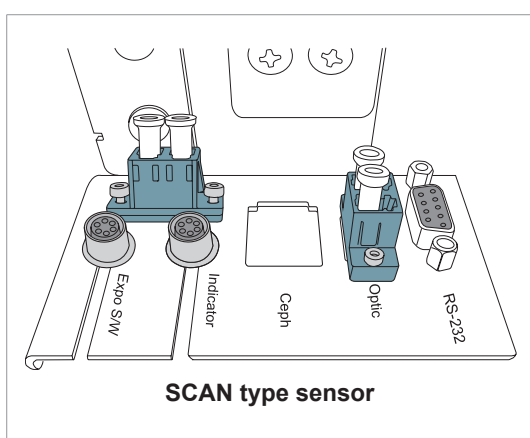
6

Completing Miscellaneous Works

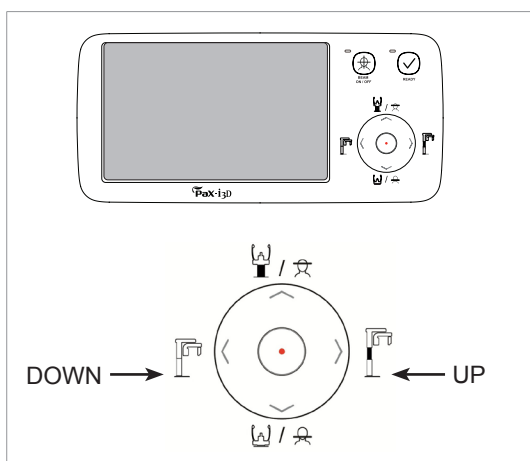
6.1	Connecting the Cables to the Equipment	94
6.2	Assembling Various Covers	97
6.3	Assembling Temple and Chin Supports	98
6.4	Covering the Holes	99
6.5	Installing the Switch Holders	100
6.6	The Leftover Components	101

6.1 Connecting the Cables to the Equipment

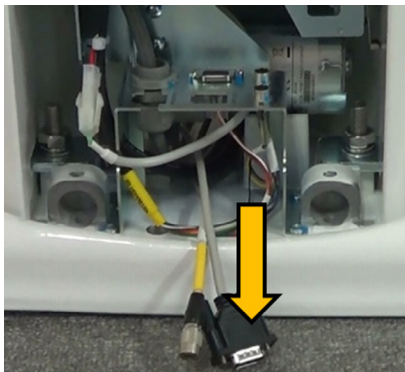
Connectors' layout



Raising the Column unit up

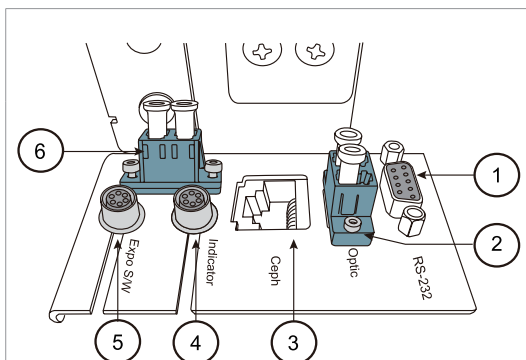


1. Plug the power cord to the power outlet.
2. Raise the column unit up about by 20 cm/8".
3. Turn off power to the equipment.



1. Insert all the cables into the opening from back to front.

Connecting the cables



Connectots:

1. RS-232
2. Optic (CT/PANO)
3. RJ-45(CEPH: OS and OP), empty for scan type sensor
4. Indicator: warning system
5. Exposure switch
6. Optic(CEPH: scan type sensor, empty for OP and OS type sensor)

1. Connect the serial cable (RS-232): Part No.: 25.

2. Connect fiber optic cable: Part No.: 27.



Do not bend, pull and/or crushing it when handling.

Ensure that the caps of the fiber optic cable be removed.

Do not touch the tip of the fiber optic cable to prevent it from being dirty.

Insert the fiber optic cable fully until the click sound is heard.

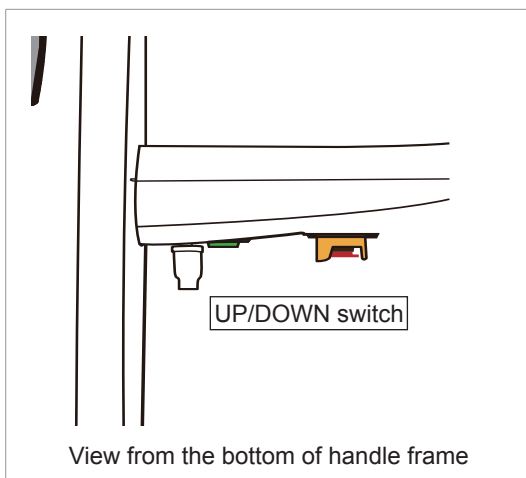
3. Connect the LAN cable if ONE SHOT type sensor is installed: Part No.: 26

4. Connect the indicator cable: Part No.: 28

5. Connect the .exposure switch: Part No.: 2.

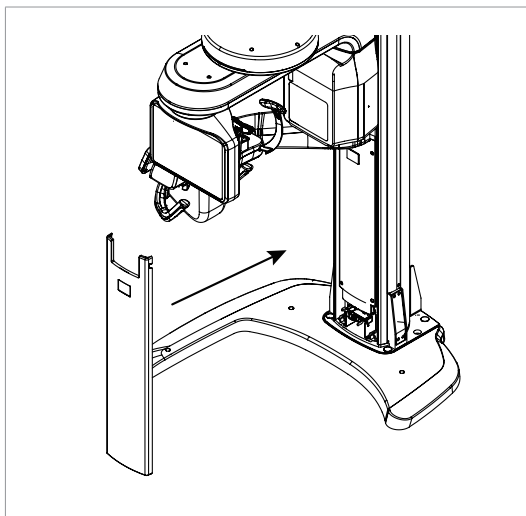
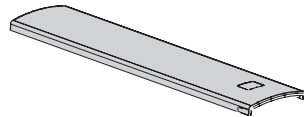
6. (Optional) Connect fiber optic cable if the scan type sensor is installed: Part No.: 27.

7. Connect the UP/DOWN switch (**Optional: Part No.: 4**)



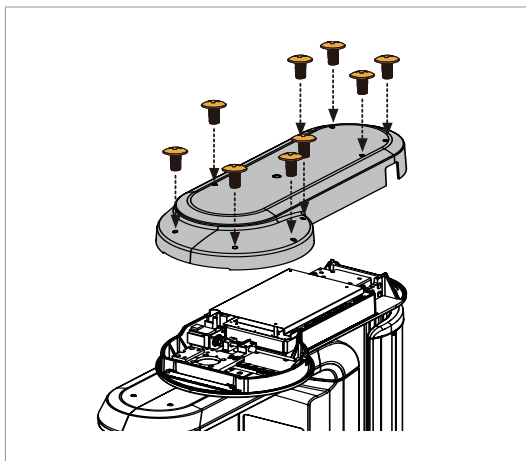
6.2 Assembling Various Covers

Case column Front



Front column cover

1. Assemble the front column cover.
Step1. Apply power to the equipment.
Step2. Raise the column unit up by 20 cm/ 8".
Step3. Insert the cover
Step4. Turn OFF power.

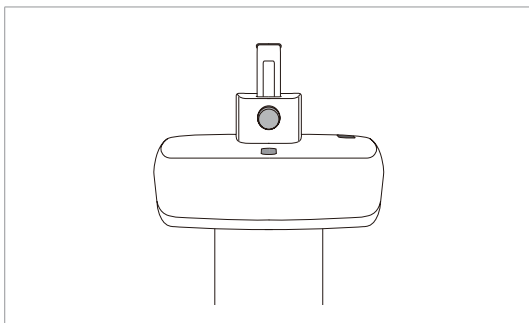


Vertical frame cover

1. Assemble the vertical frame cover and fix it with 9 truss bolts (Part No.: 24).

Truss Bolts	M4 x 8 Part NO . : 24 9 PCS	
	Cross head screw driver w/ magnetic tip	
	L=200 mm/7.9	

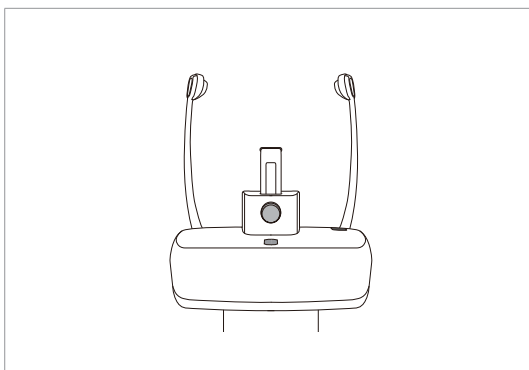
6.3 Assembling Temple and Chin Supports



1. Insert the normal chin support

CHIN
SUPPORT

Part No.: 13
1 PCS



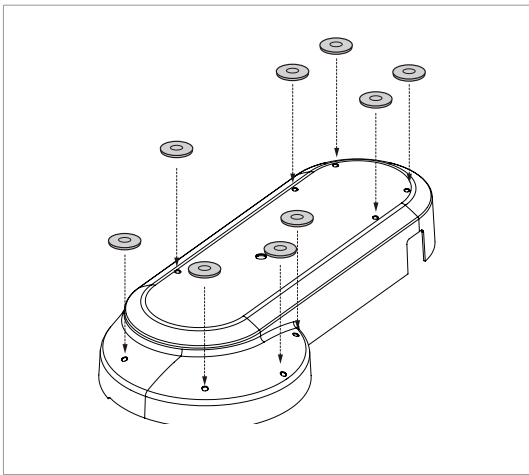
2. Insert the temple supports and ear rod caps.

TEMPLE
SUPPORT

Part No.: 3
2 PCS(R, L)



6.4 Covering the Holes





1. Cover the nine holes on the vertical frame with hole caps.

Silicon
caps(white)

Part No.: 16

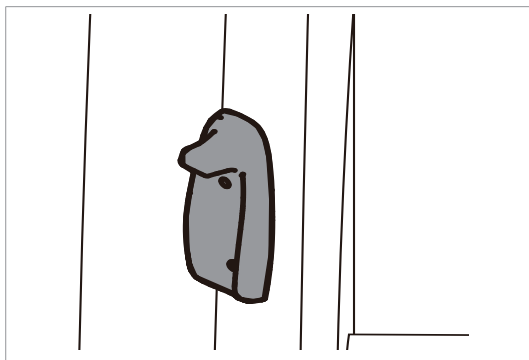


6.5 Installing the Switch Holders

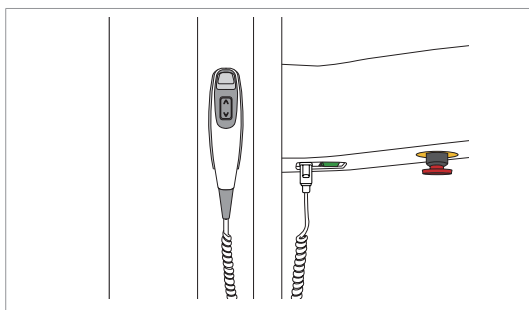
UP/DOWN SWITCH HOLDER	Part No.:4 1 PCS	
EXPOSURE SWITCH HOLDER	Part No.:2 1 PCS	

UP/DOWN switch holder

1. Peel off the paper from both sides.



2. Attach the UP/DOWN switch holder on the left side of the column at the appropriate position.



3. Connect the UP/DOWN switch (Optional: Part No.: 4)


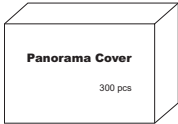
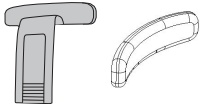



Exposure switch holder

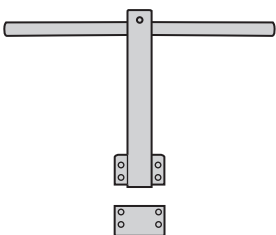
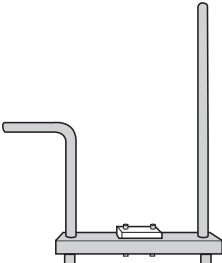

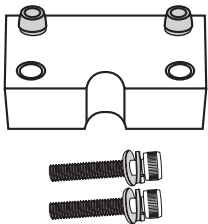
1. Locate the exposure switch holder (Part No.: 2) with a sticker and three screws.
2. Install the switch holder on the wall at the appropriate height using three screws.

6.6 The Leftover Components

The following list summarizes the leftover components after the hardware installation has been completed.

The components for the user

Item	Figure	Comments
Handrest set		For CEPH unit
Bite cover		
CHIN SUPPORT: TMJ, SINUS, EDENTULOUS		
CAP EAR ROD		CEPH
PROTRACTOR: CEPH		CEPH
Installation CD or USB		
Manuals		

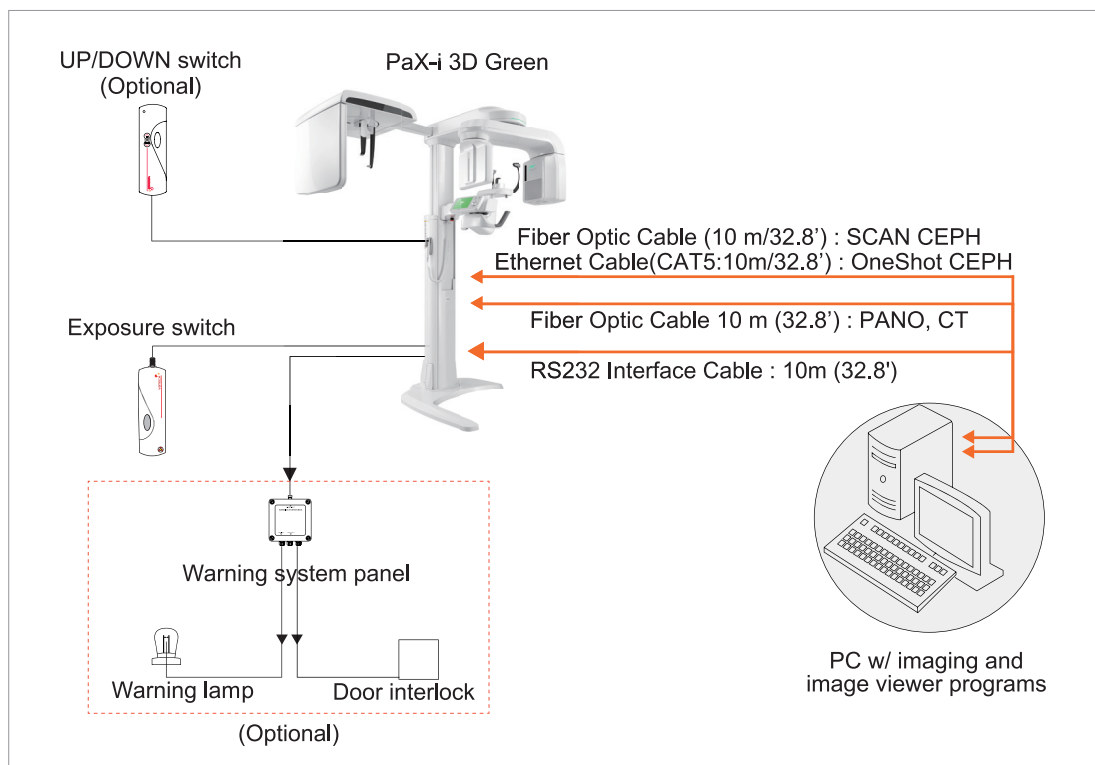
Item	Figure	Comments
Carrying handle & Block		Column Top
Carrying handle & Block		Column Middle
Carrying handle & Block		Column Bottom
Fixing Block		Rotator

7

Setting up PC

7.1	Direct Connection Diagram.....	104
7.2	The Recommended PC Requirements	105
7.3	Installing the Internal Peripherals.....	108
7.4	Connecting the Cables to PC.....	112

7.1 Direct Connection Diagram



RS232 cable: Used to command the unit and sometimes display the current status of the unit like parameter settings on the HyperTerminal program.

Fiber Optic Cable & Ethernet cable: Used to transfer image data to the PC.

Warning system panel: Used to provide a visible indicator: light when the equipment is irradiating X-Ray

7.2 The Recommended PC Requirements

IMPORTANT

1. It is mandatory to ensure that the PC system configuration is compatible with the PC system requirements for the imaging and image viewer software.
2. Since image quality may be deteriorated from lack of resources, observe the requirement guideline specified the following tables.
3. The PC components shall be approved by UL/CSA
4. The PC shall be grounded well protectively
5. The multiple portable socket-outlets shall not be placed on the floor
6. In case the equipment is to be installed in area with an unstable electric power supply, use of the AVR (automatic voltage regulator) is strongly recommended to keep the line voltage stable

The PC system provided with the PaX-i3D Green undergoes the rigorous test for software compatibility before shipping. Therefore any later changes to the hardware and/or software may cause malfunction

Item	PC Specification
CPU	Intel Xeon W-2223 3.6 GHz 4 Core Processor
Chipset	Intel® C612
RAM	2x8GB DDR4-2400 Registered RAM
Hard disk drive	1TB SATA 7200 rpm
Graphic board	NVIDIA Quadro K2200 4GB
Ethernet interface	Integrated Intel I218LM PCIe GbE Controller Intel Ethernet I210-T1 PCIe NIC (Option)
Serial Port (RS232)	Serial Port Adapter Kit (Option)
Power supply	≥ 700 Watts (90 % Efficiency)
Slots	1 PCI Express Gen2 x 1 Slot 1 PCI Express Gen2 x 4 Slots 1 PCI Express Gen3 x 8 Slots 2 PCI Express Gen3 x 16 Slots
	1 PCI 32bit/33MHz
CD/DVD drive	DVD Writer
Monitor	19"1280 x 1024 screen resolution
Operating system	Windows 10
Recommended system	Z4

IMPORTANT

An insufficient memory could cause the image reconstruction failure in the UHD (ultra-high definition) mode.

It is mandatory to meet the PC system requirements specified in the table above.

7.3 Installing the Internal Peripherals

⚠ CAUTION

Allow enough time to dissipate remnant energy after unplugging the power cord from the main outlet or PC.

IMPORTANT

If the PC system is supplied with the equipment, the peripherals are already installed inside the PC. Disregard this section

Whenever handling the fiber optic frame grabber board:

1. Wear the ant-static glove.



2. Do not wear the likes of a thick jacket.

NOTICE

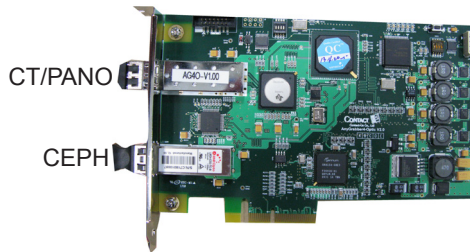
The following figures and descriptions are based on the PC model Z420 from HP.

Installing the fiber optic frame grabber board

1. Unplug the power cable from the back of PC and wait for a while.
2. Open the PC cover.
3. Insert the fiber grabber board (Part No.:27) carefully into that PCIe x 16 slot and lock it.

⚠ CAUTION

Double check the locking status between the board and its holder after the board installed. A bad insertion of the board into the PC slot could cause failure for Dark calibration data acquisition or noisy image acquisition.



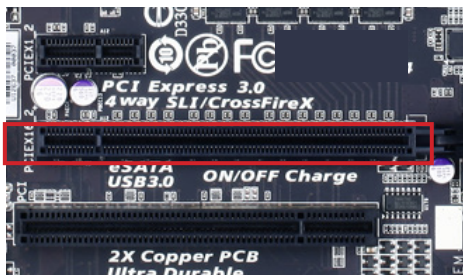
AG4 Board



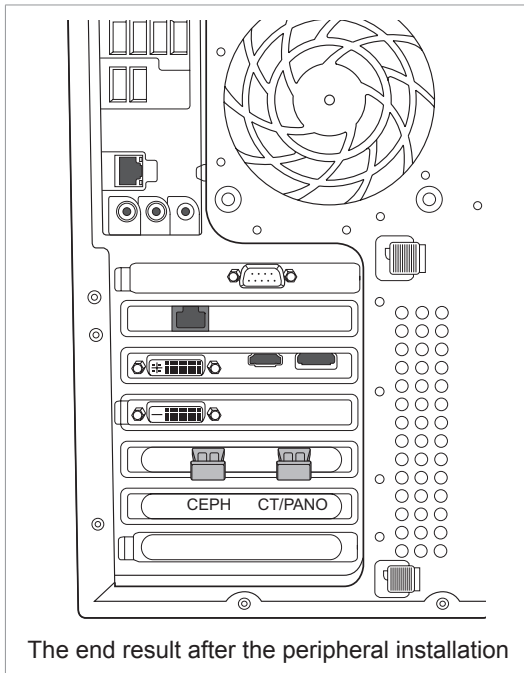
IFG Board



FTG Board



The board (AG4, IFG, or FTG board) must be inserted in the position marked as a red box.



4. Tighten the card holder firmly with the screw.
The end result after the peripheral installation

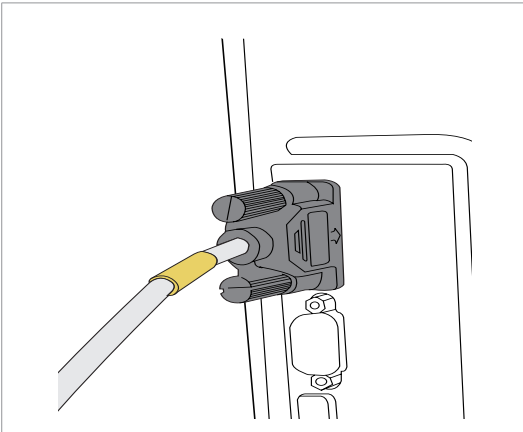
7.4 Connecting the Cables to PC

Always check the cable condition visually. Surprisingly, unexpected errors affecting image acquisition arise from the bad cable or its bad contact condition.

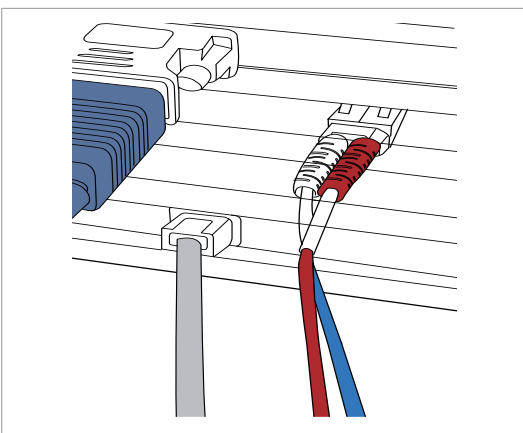
NOTICE

Connect the regular cables for PC: keyboard, mouse, and video in advance.

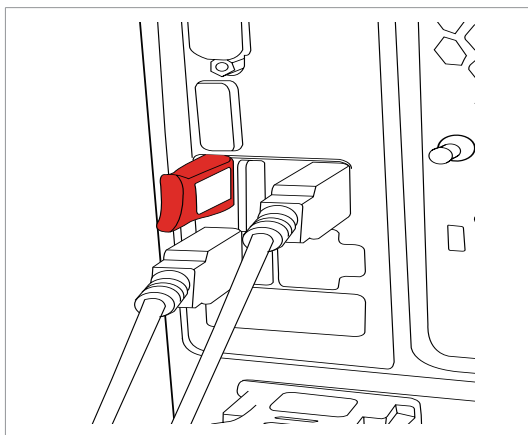
The following figures and descriptions are based on the PC model Z420 from HP.



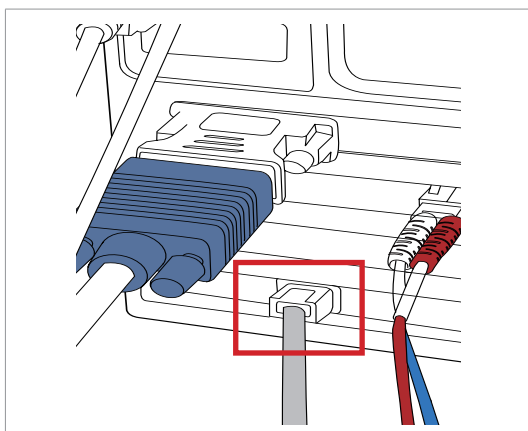
1. Connect the RS-232 cable.



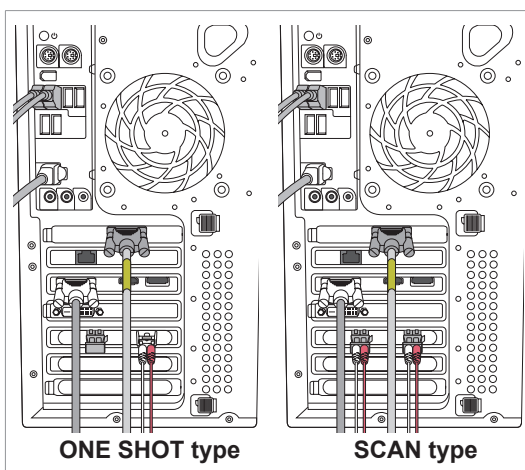
2. Connect the fiber optic cable (Part No.: 27)



3. Insert the USB type Ez3D plus key (Part No.: 45) into the USB port.



4. Connect the Ethernet cable (Part No.: 26)



The end result after connections are finished

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Setting up PC's Environment Variables

8.1	Before Beginning	116
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8.6	Setting Folder Exclusions with Anti-virus Software ..	123

NOTICE

If the PC system is supplied with the equipment, the PC's Environment Variables are already set on the PC. Disregard this section

8.1 Before Beginning

The PC system supplied with the equipment is intended to be used as an image acquisition only. For the purpose of the PC server for image management, use of a different PC is strongly recommended.

The programs related to acquisition, viewing and manipulation of images should be installed on the formatted PC, where no other program(s) except the operating system (OS) is present.

IMPORTANT

DO NOT install the programs irrelevant to image acquisition and view on the same PC. There may be subtle conflicts between them, leading to the malfunction.

Ensure that the emergency stop switch is in OFF position prior to starting with the installShield installation

Before InstallShield installation, ensure that the video card driver installed on PC is the most up-to-date version. To check this, go to the website of the graphic card manufacturer.

8.2 Checking PC BIOS Settings

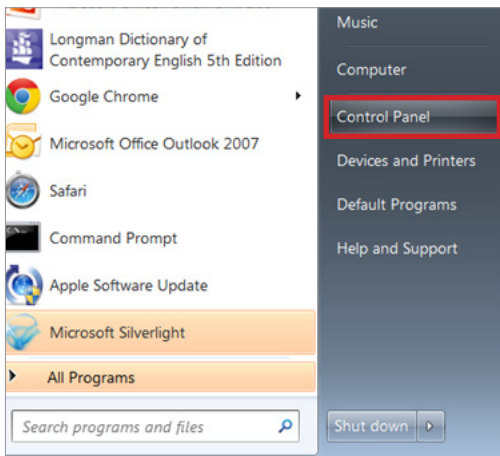
1. The PC is shipped, with its BIOS settings, as specified in the Appendix **E: Checking PC BIOS Settings**.

Before proceeding to the next sections, check the BIOS status.

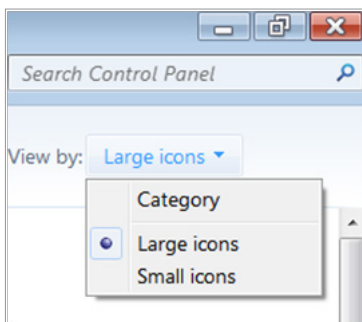
8.3 Turning the Firewall off

The LAN port and/or local IP may be blocked by the Windows firewall property, leading to interruptions in imaging acquisition and data transmission. For this reason, it is required that you disable the Windows Firewall by using the following procedure

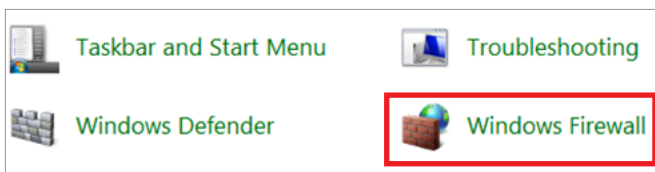
1. From the desktop, click **Start** → **Control Panel**



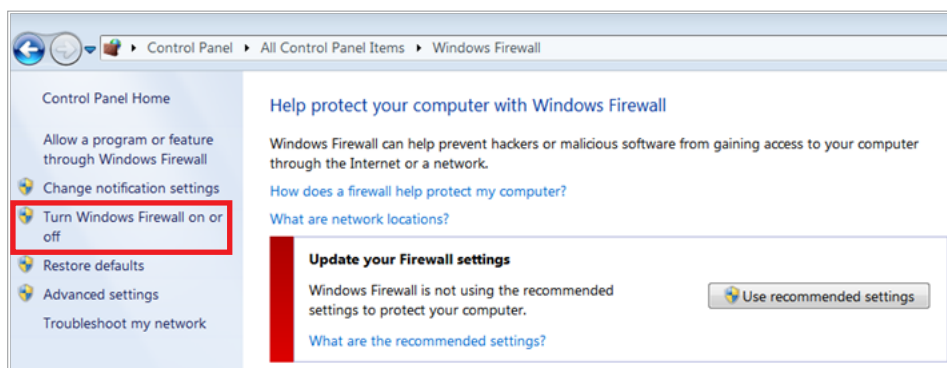
2. Click the **View by** field on the upper right corner and select **Large icons**.



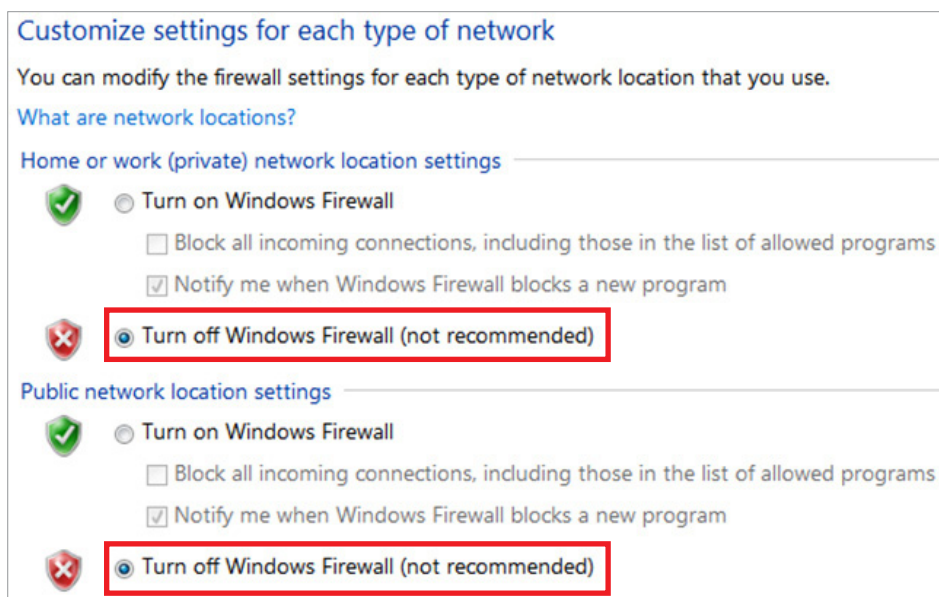
3. Double click on the Windows Firewall.



4. Select the **Turn Windows Firewall on or off**.



5. Select the **Turn off Windows Firewall** for both settings: Work and Public networks.



6. Click **OK** to apply the settings.

8.4 Setting up the Power Mangement Options

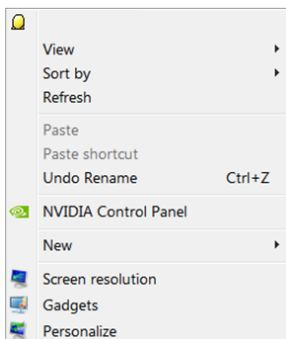
The following statements are based on the windows 7 environment. Depending on the operating system employed, the figures on your system may appear different slightly.

To avoid disruptive and abnormal operation while acquiring image, it is required to reconfigure some parameters on the Windows operating system.

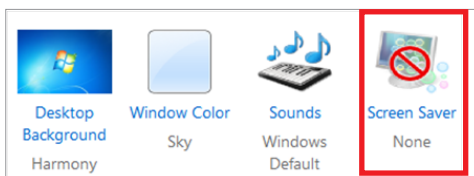
Disabling the screen saver

From the desktop,

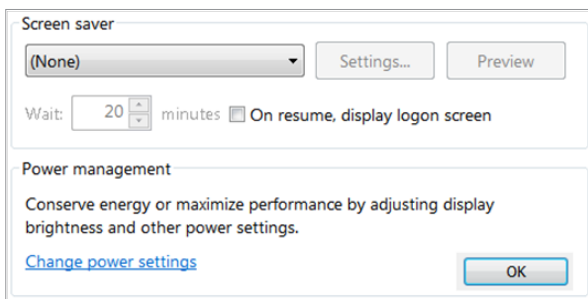
1. Click the right mouse button and select **Personalize**.



2. Locate and click the screen saver.



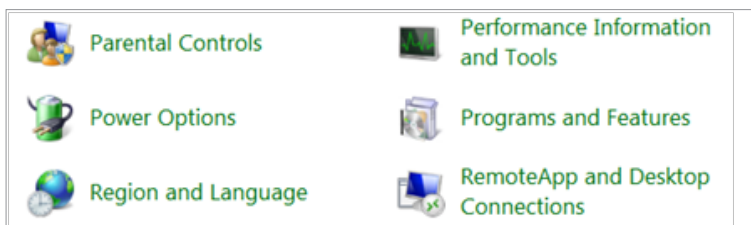
3. Select **None** in the pull-down menu.



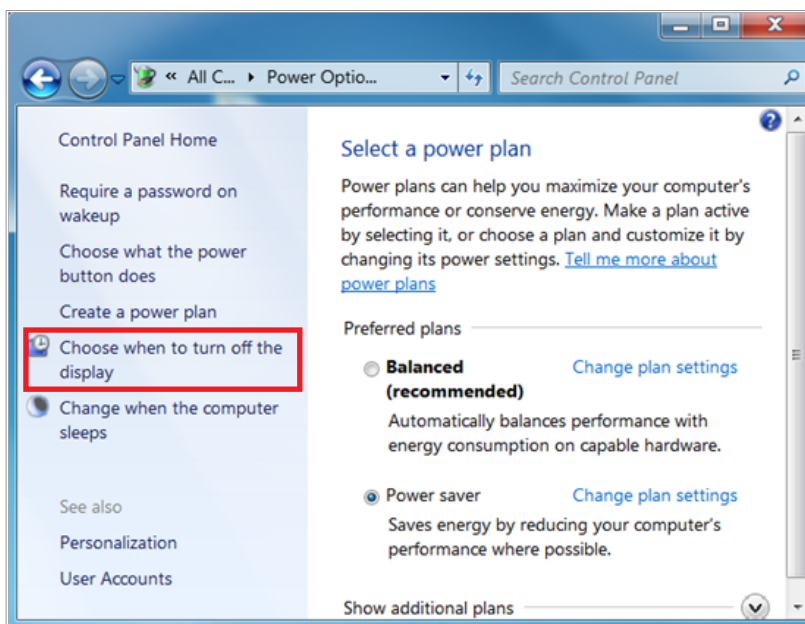
4. Click **OK**.

Selecting the power options: monitor and system

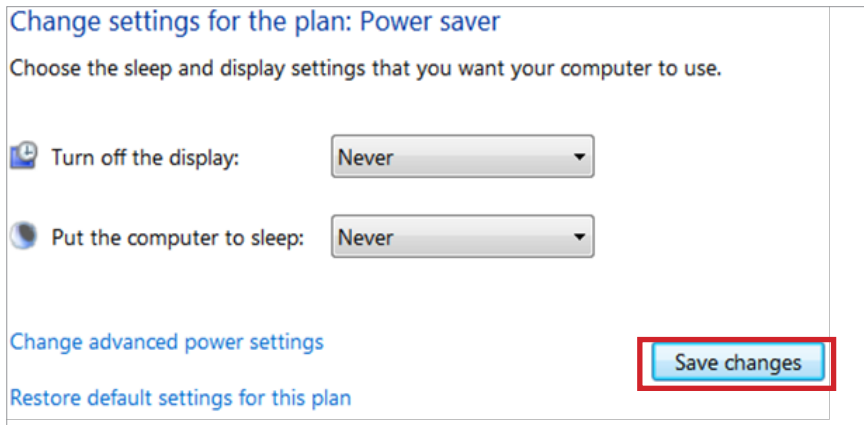
1. Go to the **Control Panel**.
2. Double click on the **Power Options** icon.



3. Select **"Choose when to turn off the display"**.



4. Select "**Never**" for both fields.



5. Click "**Save changes**".

8.5 Turning off the User Account Control

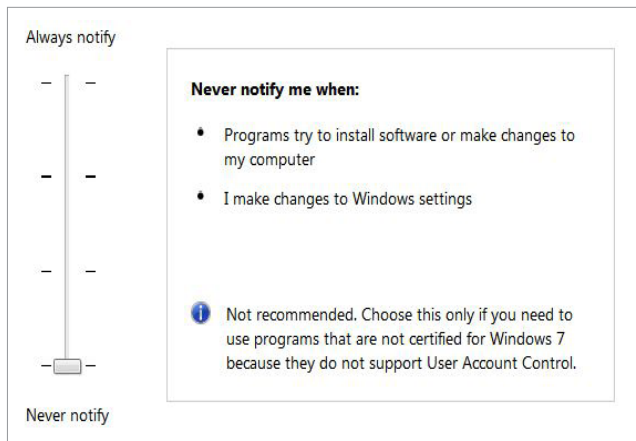
1. Open the control panel of Windows.
2. Click the **User Account** icon.



3. Click on the '**Change User Account Control settings**'.



4. Disable the UAC by moving the slider bar down to the bottom, **Never notify**.



5. Click 'OK' and restart the PC.

8.6 Setting Folder Exclusions with Anti-virus Software

IMPORTANT

1. Set the virus scan exception for the files and folder related to this equipment.
2. Do not run the memory-resident background programs unrelated to the equipment.
3. Running the virus scan is recommended to be performed only when equipment is idle.
4. Turn the firewall off.
5. Always use the blank USB drive, whenever possible.

Some files used by the PaX-i3D Green are incorrectly recognized as virus(es)/trojan(s) by anti-virus software. If you are using anti-virus software on your PC, you must exclude those files from all scans performed by the anti-virus software.

For the PaX-i3D Green, the following folder and files should be excluded with the virus scan.

Files	Path
C:\Program Files\Vatech	C:\VCaptureSW

For example: Suppose the Anti-virus program from McAfee is running in the background.

Note: The procedure to set folder exclusions is similar for most anti-virus programs.

1. Open the McAfee Anti-Virus program, and select the "VirusScan".
2. Right-click on the "On-Access Scan" menu option, and left-click on the "Properties" tab.
3. Select the "**All Processes** → **Detection** → **Exclusions**" menu option, and choose the "**Add**" menu button.
4. Navigate to the folder or the files you want to designate an exclusion path for, and select the check box to "Also Exclude Subfolders". Click "OK" when complete, and exit McAfee for the path exclusion to be complete.

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Installing Software

9.1	Before Beginning	126
9.2	Software Installation Flow	127
9.3	Installing Image Viewer Program	127
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9.5.3	Configuring the Parameters	153
9.6	Setting Up the IP Address for the OS CEPH Sensor (Optional)	159

NOTICE

If the PC system is supplied with the equipment, the software is already installed. Disregard this section.

9.1 Before Beginning

Ensure that the emergency stop switch is in OFF position prior to starting installShield installation.

The image viewer program such as EasyDent or the one from the 3rd party should be installed in advance of the InstallShield installation. For the information on their installation procedures, refer to their respective manuals.

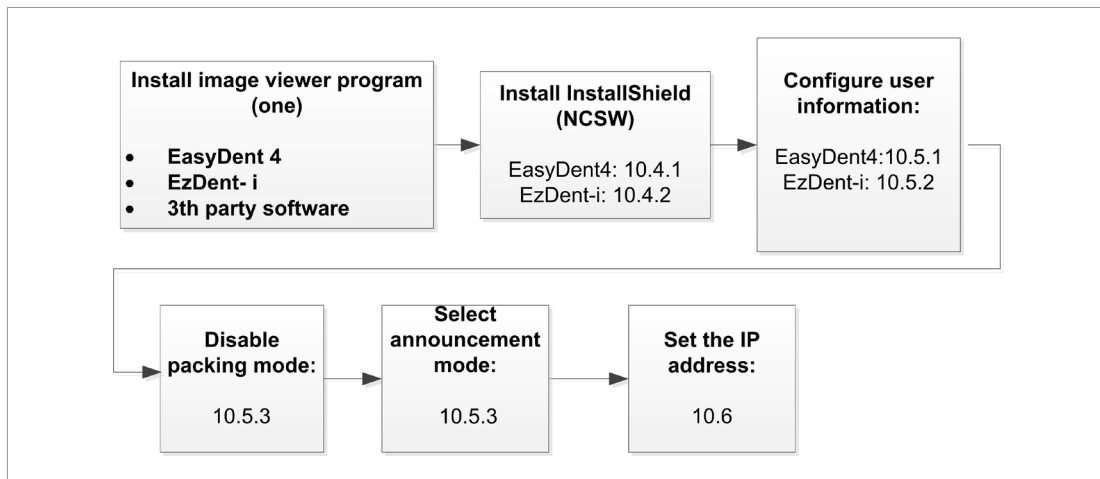
IMPORTANT

Before InstallShield installation, ensure that the video card driver installed on PC is the most up-to-date version. To check this, go to the Website: www.nvidia.com

Perform virus scan for the PC and InstallShield program with the anti-virus program prior to proceeding with its installation.

DO NOT install the programs irrelevant to image acquisition and view together with imaging program on the same PC. There may be subtle conflicts between them.

9.2 Software Installation Flow



9.3 Installing Image Viewer Program

IMPORTANT

One of the image viewer programs among :EasyDent4, EzDent- i, or 3th party program must be installed at this time. For the details on the installation procedures, refer to the corresponding manual.

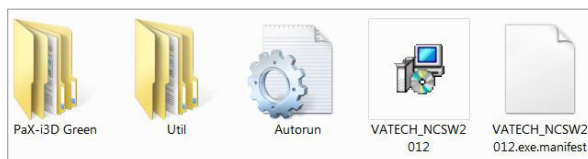
9.4 Installing the InstallShield

The InstallShield installation information is included in the USB drive provided as an accessory. Please check the serial number.txt(eg 047-011752.txt) file.

NOTICE

047-011752 - 제품명	
모델명	서버(인)
부가인	도움말(인)
ESD Plus Site	None
ESD Plus Plat	None
ESD Plus Pre	None
ESD I	None
Model	PdX-i
Modality	PdM
CT Sensor Type	None
Pano Sensor Type	AnyPano-IC(MQ)
Dash Sensor Type	None
Frame Grabber Type	Ethernet
Additional Options 1	None
Additional Options 2	DirectX

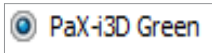
1. Turn On the PC and Equipment if they are not yet.
2. Insert the CD into CD-ROM drive or connect the USB Drive into USB connector, and **perform virus scan for PC and Install USB(CD)**
3. Go to the folder: InstallShield. Then click on the VATECH_NCSW2012 icon. (The name of “Pax-i3D Green” folder may differ depending on the series.)



4. The following screen will appear and click **Next**.



5. Check that the equipment name is selected. (The name may differ depending on the equipment.)



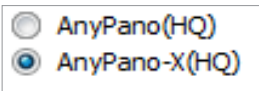
6. Select the modality and click **Next**. Note that if the CEPH feature comes with the equipment, also check the **CEPH**.



7. Select the CT sensor type: Concord1 Master Plus or Concord2 Master Plus. The sensor type is written in the serial number.txt (eg 047-011752.txt) file in the USB drive.



8. Select the Panorama Sensor type.



9. (Optional) select the CEPH sensor, if it is installed, based on the following information.

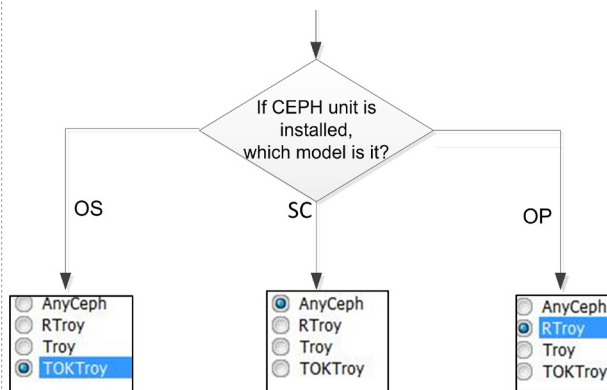
NOTICE

Model:

OS: TOKTroy (910 SGA)

OP: RTroy(1210 SGA)

SP: PANO and CT

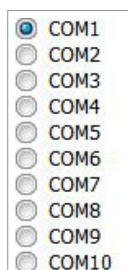


10. Select the default port number: **COM1**.

IMPORTANT

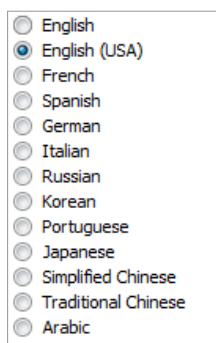
Select the port No.: **COM1**

The same **COM** port No. should be used between the equipment and PC.



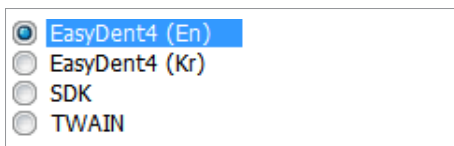
And click **Next**.

11. Select the language and click **Next**.



12. Select the third-party software in use and click **Next**.

When EasyDent4 is installed, select EasyDent4, when EzDent-i is installed, select **SDK**.



EasyDent4

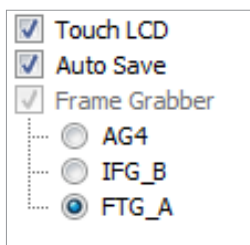


EzDent-i

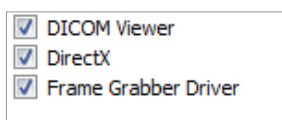
Click **Next** to continue.

13. Check the Touch LCD and Auto Save are selected. Then, select the type of the Frame Grabber.

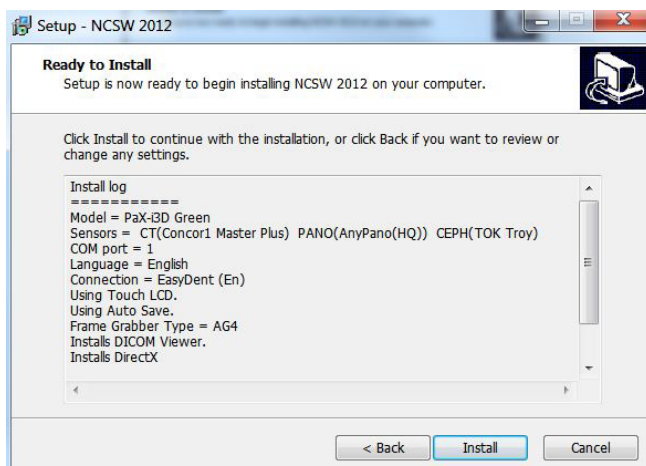
Note that, when the Auto Save is checked, the image data acquired saved automatically



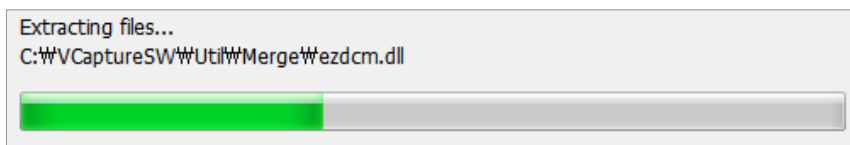
14. Select the drivers to be installed. For the first time installation, select all.



15. The following figure displays the information entered so far. If necessary, you can modify it by clicking **Back** button.

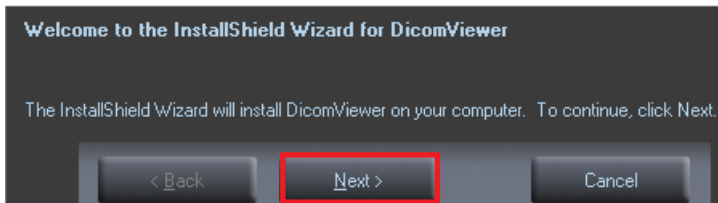


Click Install to continue.

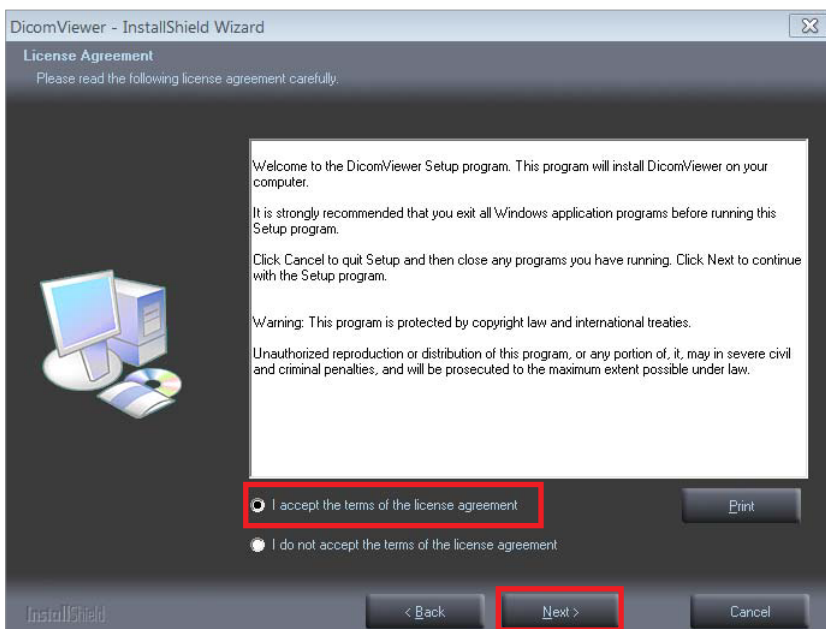


Installing the DICOM Viewer

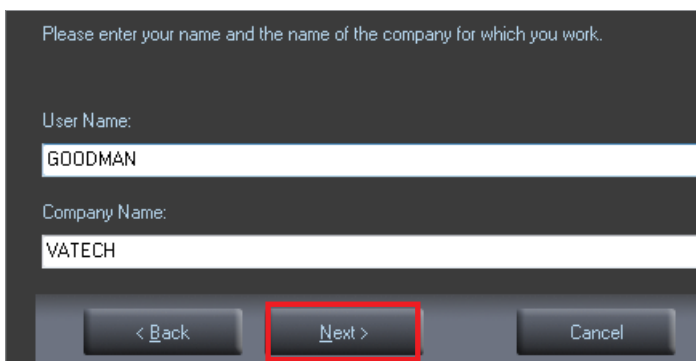
1. Click **Next** to install DICOM viewer.



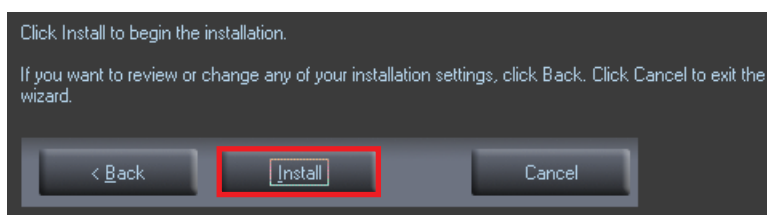
2. Select "I accept the terms of the license agreement" and click **Next**.



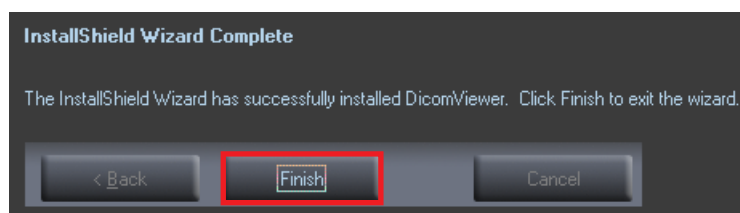
3. Enter the names of user and clinic and click **Next**.



4. From the following screen, click **Install**.



5. Click **Finish** to finish.

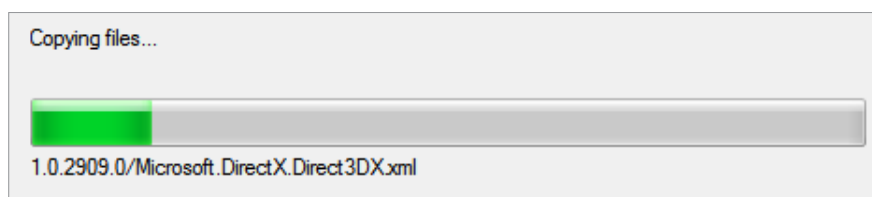


Installing the DirectX

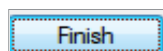
1. Now installing the **DirectX**: select "I accept the agreement".



2. Click **Next** to continue. Now installing...

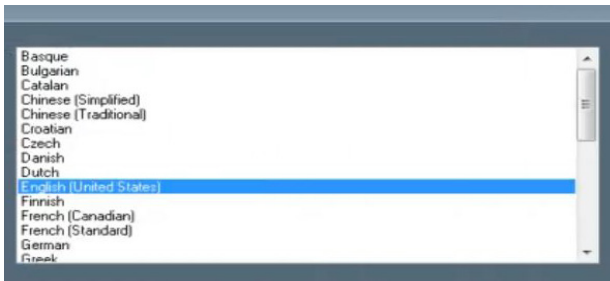


3. Click **Finish**.

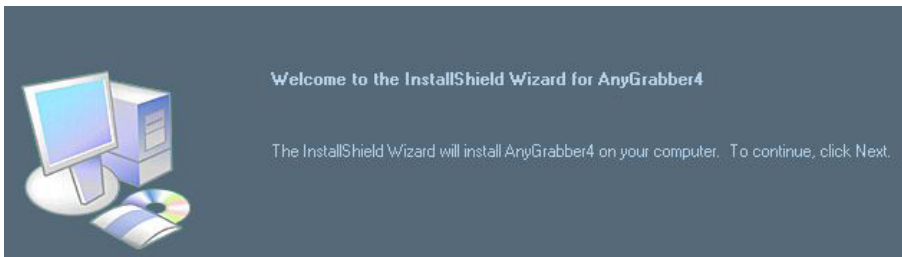


Installing fiber optic frame grabber driver (AG4)

1. Select the language.



2. Click Next from the welcome screen.



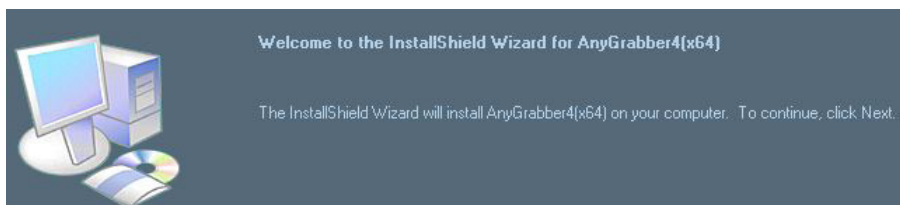
3. Select the '**AnyGrabber (x64)**' for 64-bit driver and click **Next**.

NOTICE

For the 64-bit driver installation, the 64-bit CPU is required.



4. From the following message, click **Next**.



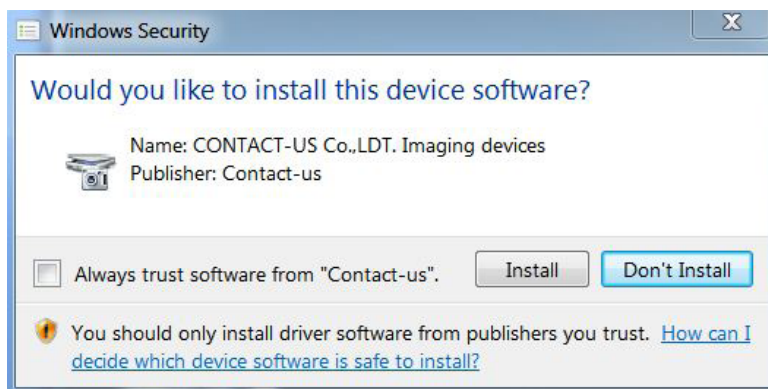
5. Select the language and then click **OK**.

NOTICE

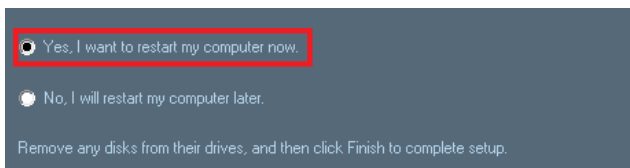
The default folder can be changed by clicking 'Browse' button



6. From the following screen, select **'Install'**

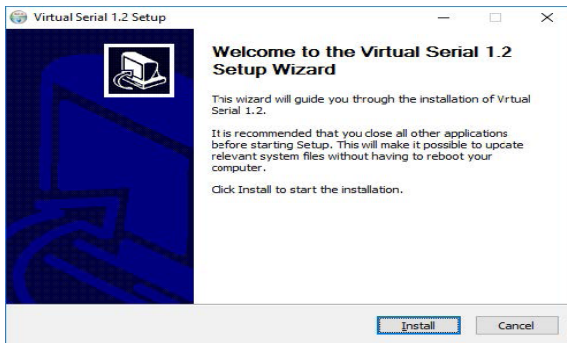


7. From the next message, click **'Finish'** to restart PC.



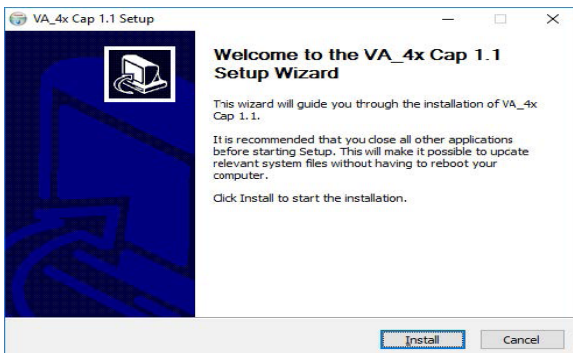
Installing fiber optic frame grabber driver (Inform Grabber)

1. After completing Direct X® installation, Virtual Serial installation will be started. Click Install in the Welcome window.

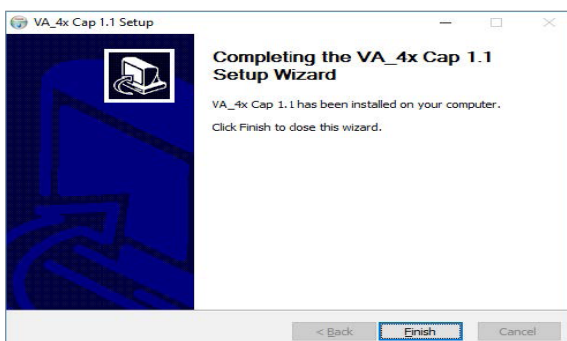


Extract: VA4xDriverSetup.exe... 100%

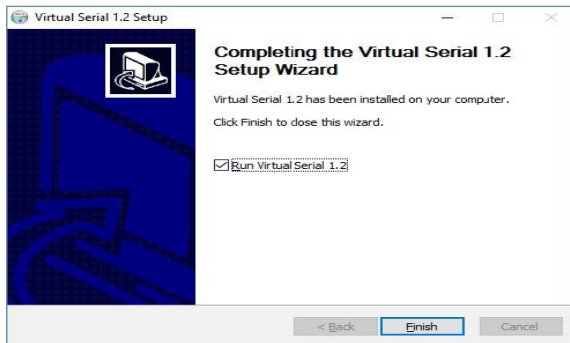
2. During installation, VA_4x Cap 1.1 installation wizard will appear. Click Install to start the installation.



3. If Windows Security pop-up window appears, click Install.
4. Click Finish to exit the wizard.

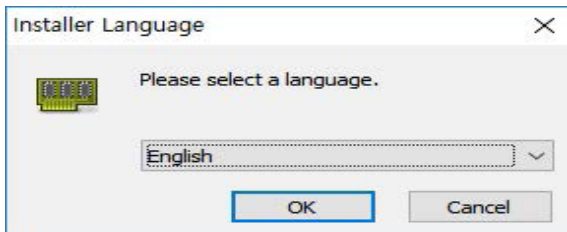


5. Microsoft Visual C++ 2010 x64 Redistributable installation or maintenance window will appear.
Select one of the options and click Next to continue the process.
6. Click Finish to exit the Visual C++ 2010 x64 Redistributable installation or maintenance wizard.
7. When the Virtual Serial installation is completed, click Finish to exit the wizard.

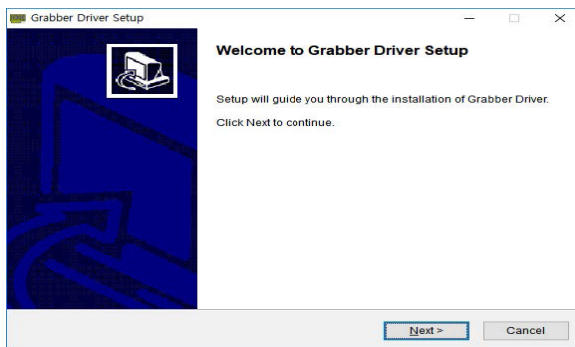


Installing fiber optic frame grabber driver (Electron Grabber)

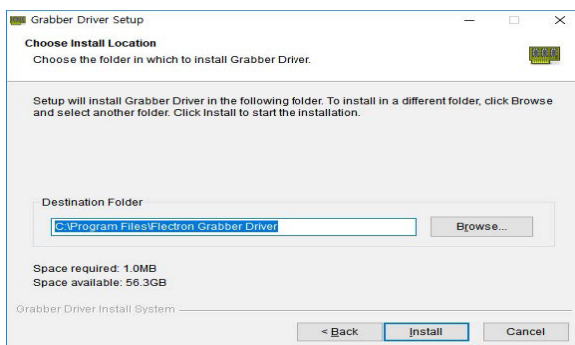
1. After completing Direct X® installation, Grabber Driver Setup will be started. Select the language in the installer language window and press the OK button.



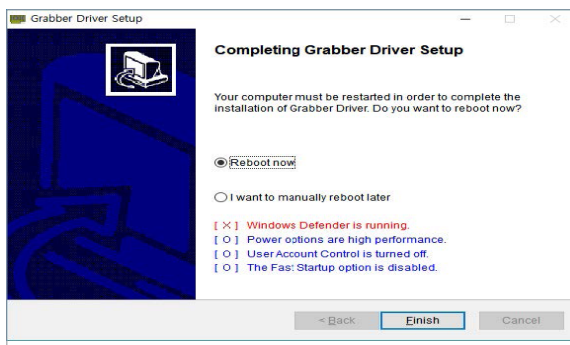
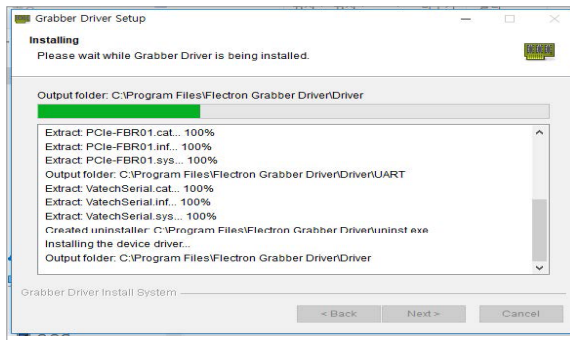
2. When the Grabber Driver Setup window appears, click the Next button.



3. Enter the installation location and click the Install button.



4. The "Installing" window will appear and disappear, and the Completing Grabber Driver Setup window will appear. Choose the Reboot now or I want to reboot later and click the button manually.



If an error occurs during installation, it will be displayed in red font color below. If no abnormality is found, it is displayed in blue font color.

NOTICE

[X] Windows Defender is running.
 [O] Power options are high performance
 [O] User Account Control is turned off.
 [O] The Fast Startup option is disabled.

Installing the HASP Key driver software

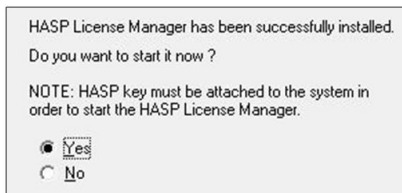
1. From the welcome message, click **Next**.



2. Click 'Yes' to restart the program.

IMPORTANT

Ensure that the program should be restarted, with the HASP key being inserted into the USB port on PC.



Finalizing Installation

1. The installation has just been completed. Click 'Finish' and restart PC.

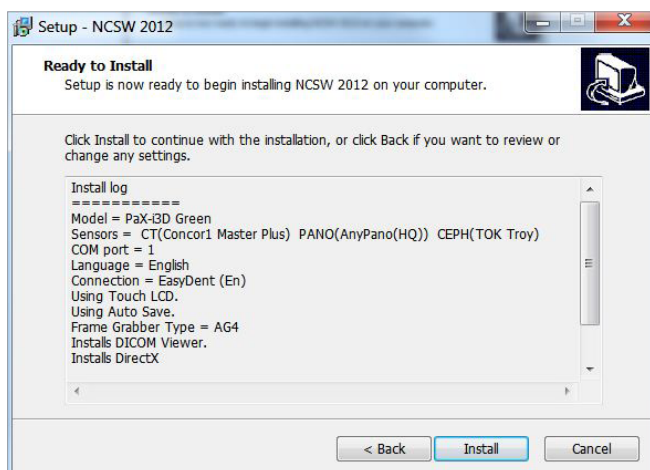


Verifying that all Components are Properly Installed

1. Locate the file: **NCSW 2012_Install_Log.txt** on the desktop.



2. Open it to check the file. You can find out that all components are installed.



3. Go to the section **9.5 Setting up the User-specific Information**.

9.5 Setting up the User-specific Information

NOTICE

Go to the corresponding section for set-up instructions, based on the viewer program (EasyDent4 or EzDent -i (SDK)) installed on PC.

EasyDent4: section 9.5.1 When EasyDent4 is installed

EzDent -i : section 9.5.2 When EzDent -i is installed

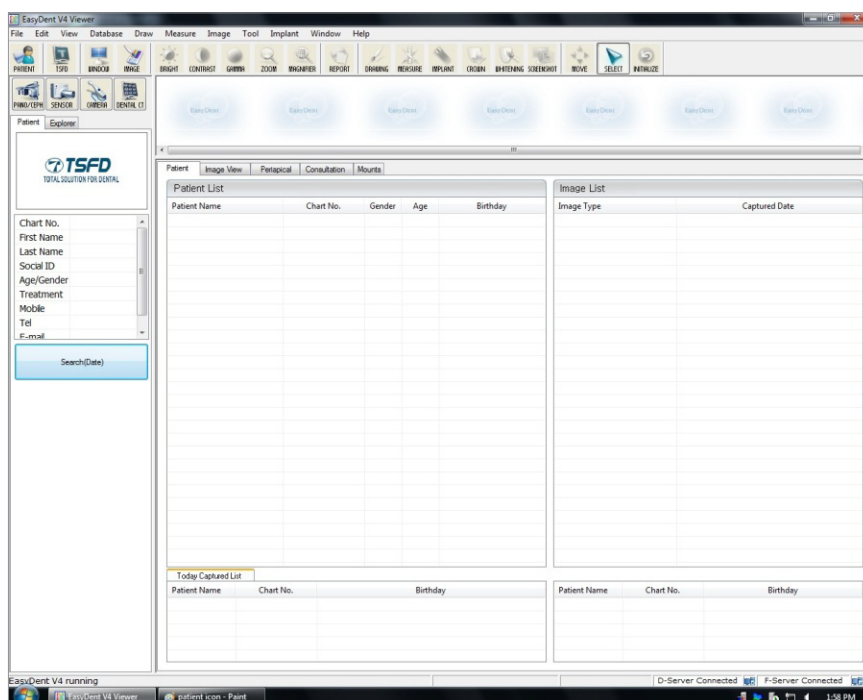
NOTICE

Only when using Console program with automatic interworking function and EzDent-i program, the automatic interworking function is activated. If it is not able to use the automatic interworking function, or if it needs to set it manually after the automatic interworking, follow the procedure below.

9.5.1 When EasyDent4 is Installed

Running the image viewer

1. Run the image viewer. On your desktop, double-click **EasyDent** or click **Start** → **All Programs** → **EasyDent**. The **EasyDent** main window will be displayed.

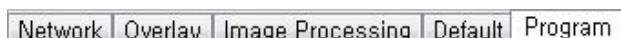


Interfacing EasyDent with imaging program(one-time linking)

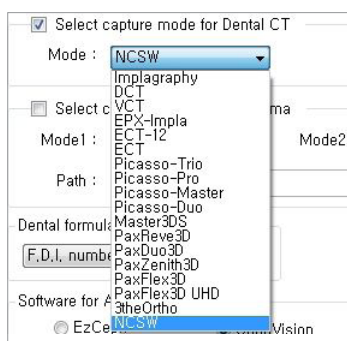
1. From the main screen of EasyDent, click the **Help** menu and select **Configuration**.



2. Click the **Program** tab.



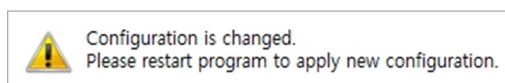
3. Check 'Select capture mode for Dental CT' select the **NCSW**.



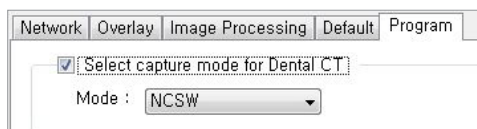
4. Click **Apply**



5. When the following message appears, click **OK** to restart the program.



6. Re-run the EasyDent program and check the change has been reflected.



Creating a new patient record

NOTICE

For the further details on this subject, refer to the accompanying EasyDent manual.

1. Click the **Patient icon** () on the upper left corner of the EasyDent's main GUI window.



The following dialog box will open.

Add Patient

* Chart No. :

* First Name :

* Last Name :

Social ID :

Birthday :

Gender : Treatment:

Address1 :

Address2 :

E-mail : @

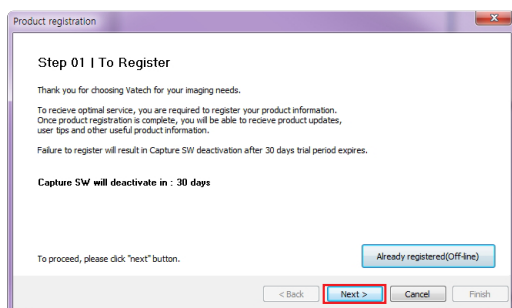
Tel : Mobile :

2. Enter the required patient information. **Chart Number**, **First Name**, and **Last Name** are required fields which must be filled in. All other fields are optional, but it is recommended that they be filled in.
3. Click **Add** to save the patient record.

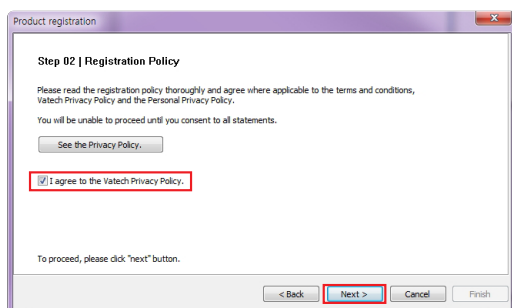
Product Registration

Registration window will be displayed in case of executing the imaging program initially.

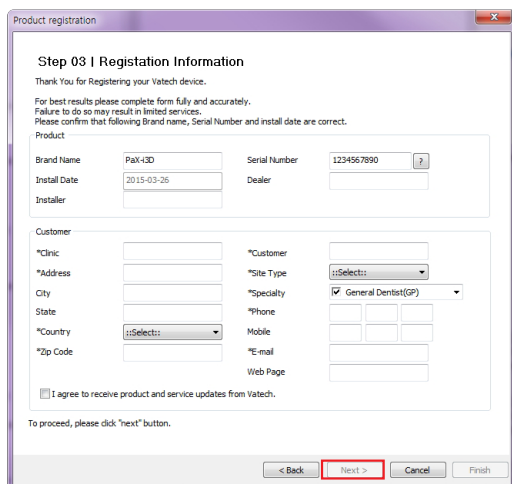
1. Click **Next** to proceed.



2. Select **I agree to the Vatech Privacy Policy** and click **Next**.



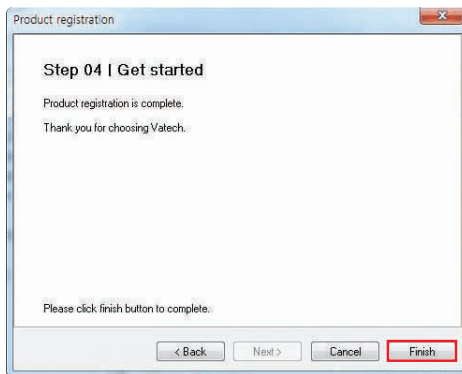
3. Enter the required information and click **Next**.



For the console PC connected to the internet, go to no. 4. And for the console PC not connected to the internet, go to no. 5.

For the console PC connected to the internet

4. Click **Finish**.



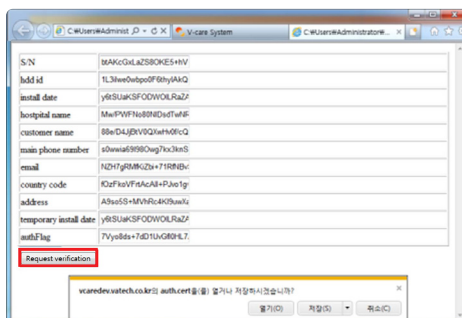
For the console PC not connected to the internet

5. Click **Download file** to download and save the file (html type) into a memory device.



6. Execute the file which is in the memory device from the internet connected PC.

7. Click **Request verification**.



8. Download **auth.cert** file.

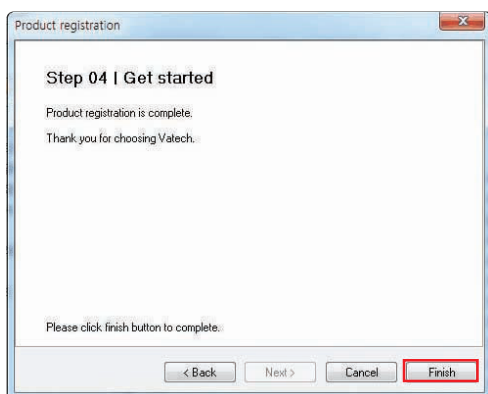


9. Copy the downloaded **auth.cert** file to the console PC.
10. Click Upload Verification file to upload **auth.cert** file.




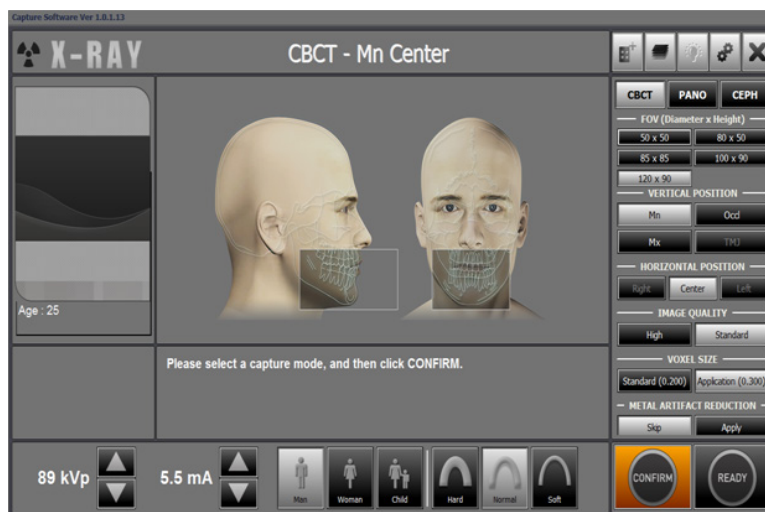
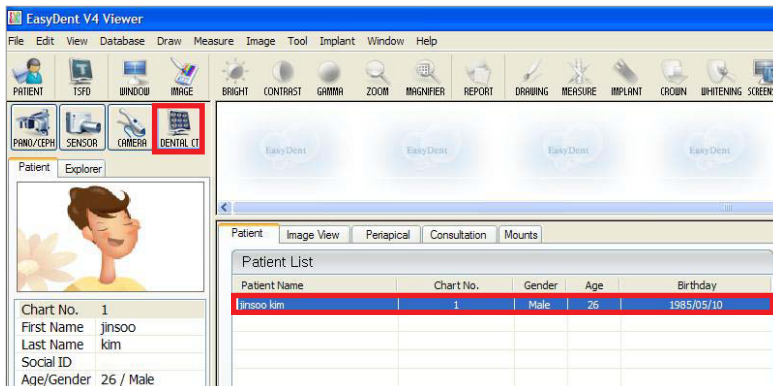
11. Click **Next**.

12. Click **Finish**.



Initiating the Imaging Program

1. First, click the patient information in the patient list, and click the **Dental CT** icon () in the upper left corner of the EasyDent's main window to open the imaging program.



NOTICE

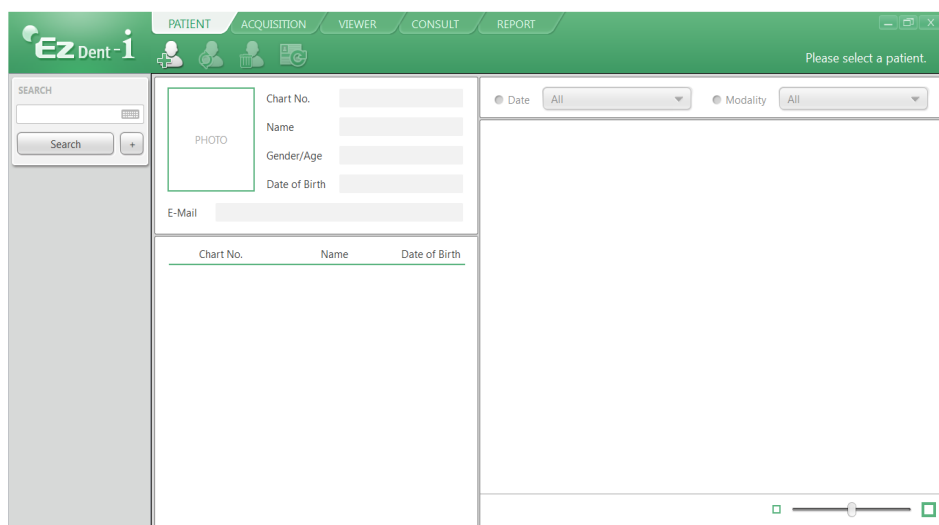
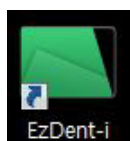
The error code E033 (red box in the figure above), indicating that the equipment is still in the packing mode, should disappear when the command to exit the packing mode is executed. See the section 'Disabling the packing mode' to disable packing mode.

2. Proceed to the section **9.5.3 Configuring the parameters**.

9.5.2 When EzDent -i is Installed

Running the image viewer

1. Run the image viewer. On your desktop, double-click **EzDent-i icon**. Its main window will be displayed.

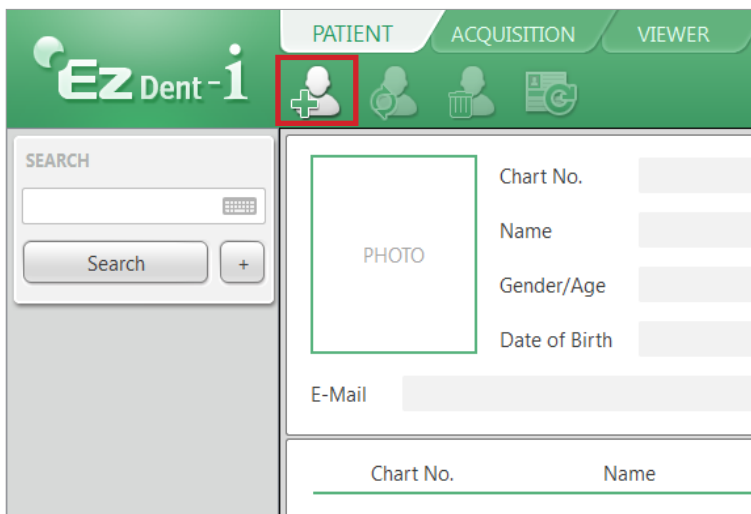


Creating a new patient record

NOTICE

For the further details on this subject, refer to the accompanying EzDent -i manual.

1. Click the **[Add Patient]** button from the **PATIENT** tab.

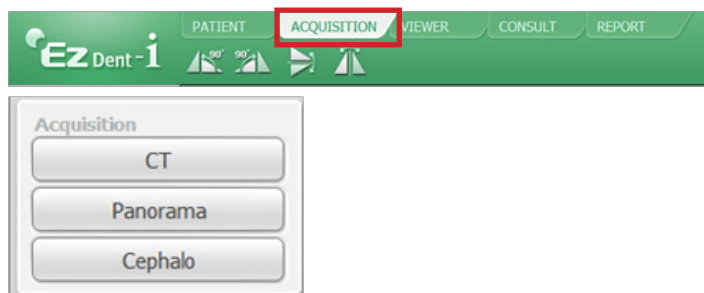


2. Enter the required patient information. Chart Number, the patient's name and E-mail address are required fields which must be filled in. All other fields are optional, but it is recommended that they be filled in.

3. Click **Add** to save the patient record.

Initiating the Imaging Program

1. Click the **ACQUISITION** tab. The imaging mode selection buttons appear



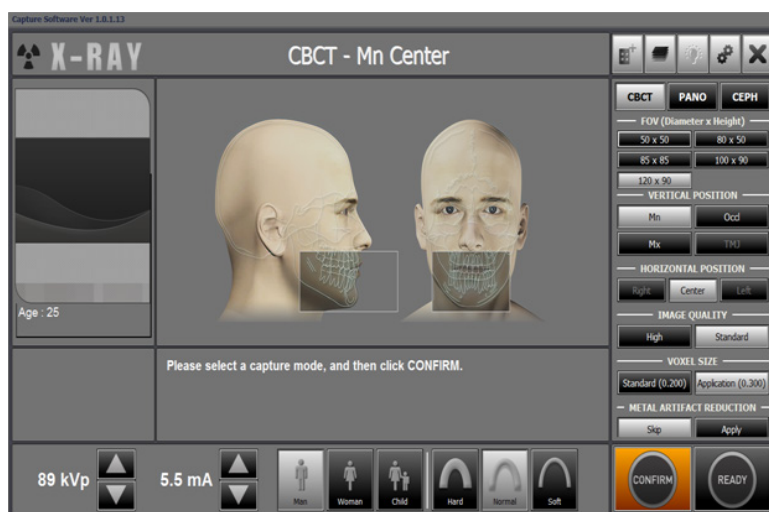
NOTICE

The imaging mode selection buttons in the left pane may appear different, depending on the equipment's capacity to acquire image.

2. Select the imaging mode. Then the main GUI in the selected imaging mode appears.

Here CT imaging mode is selected.

Main GUI: imaging software when CT mode is selected



NOTICE

The error code E033 (red box in the figure above), indicating that the equipment is still in the packing mode, should disappear when the command to exit the packing mode is executed. See the section 'Disabling the packing mode' to disable packing mode.

3. Proceed to the section **9.5.3 Configuring the parameters.**

9.5.3 Configuring the Parameters

IMPORTANT

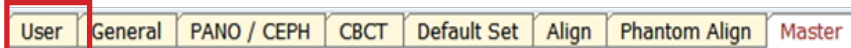
The following information should be entered, in accordance with the user requirements

1. From the main GUI window, click the icon highlighted by the red box.



2. When the following screen appears, select Engineer level. Then enter password: vatech.

3. Click **User** tab.



4. Set the Use License String option in the License field. When checked, the character string in the **License String** field is displayed on the left of the image. By default, the equipment name is displayed.

5. Set the unit for the **DAP** (Dose Area Product) value which is displayed on the screen.

You can expand the menu to see more units.

6. From the **User** tab, go to **Language** field and select your language, followed by **Send to Machine**.



7. Click '**General**' tab and enter the serial number of the equipment.

8. Go to the **Database & Linking** segment. Configure Link type and file extension, as follows.

Field to be modified	EasyDent 4 is used	EzDent -i is used
Link Type	Default	SDK Link
CR Save File Name	Default	.DCM

9. Click **Save** button.



10. Click **Default Set** tab and configure the user-defined parameters.

NOTICE

The default feature can be modified, according to the user's requirement.

The screenshot shows the 'Default Set' tab in a configuration window. It contains three sections of settings:

- Pano Default Setting:**
 - Type: ☒ Normal
 - Image Quality: ☐ UHD, ☒ HD, ☐ Normal
 - ☐ Fast
- Ceph Default Setting:**
 - Form: ☒ Lateral, ☐ PA, ☐ SMV, ☐ Waters View, ☐ Carpus
 - Multi FOV: ☐ Large, ☒ Medium, ☐ Small
- CBCT Default Setting:**
 - SCAN Time: ☐ High, ☒ Standard
 - Voxel: ☐ Standard, ☒ Application
 - Metal: ☒ Skip, ☐ Apply

11. Click **Save** button if changes occurred.

The screenshot shows two buttons side-by-side: 'Save' and 'Close'.

12. Click **General tab** → **Connect**

Serial Port: Checked

Port : COM1

Baud rate: 19,200

The screenshot shows the 'Networking & LCD' configuration window with the following settings:

- Protocol Type: ☒ Serial Port, ☐ Ethernet Port
- Machine IP: 0 . 0 . 0 . 0
- LCD IP: 192 . 168 . 33 . 100
- Serial Port No.: COM 1
- Baud Rate: 19200
- Connect button

Disabling the packing mode

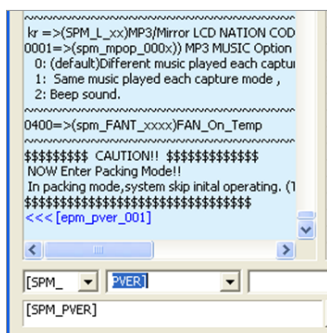
IMPORTANT

PaX-i3D Green has a unique feature— packing mode— built in the system to prevent the unit from being damaged while shipping and transporting. Thus it is in the packing mode by factory default. The unit is required to exit the packing mode at this step for successful installation.

CAUTION

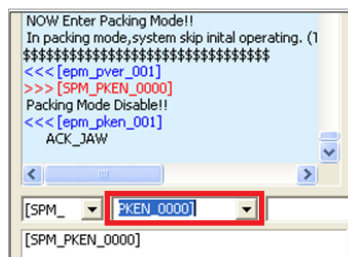
Unless the packing mode disabled, no operation will happen even after the equipment is turned on.

1. Enter the command **PVER]** to verify the current mode. Note that the equipment is now in packing mode.



2. Enter the command **PKEN_0000]** to exit the packing mode. Now note that the equipment is out of the packing mode.

Note: to re-enter the packing mode, use the command: **PKEN_0001]**.



3. Click **Exit** button and terminate the control panel.
4. **Exit the imaging program (main GUI): important!**
5. **Reset the equipment to take the changes into effect**

Selecting an Announcement Mode: Music or Beep (Optional)

When the need to select an announcement between music and beep arises, take following procedures.

Commands specifications:

Command format: [SPM_MPOP_XXXX]			
XXXX	Imaging Modes	Announcement mode	Division
0000	CT/PANO	Music	Different for each mode
0001	CT/PANO	Music	The same for each mode
0002 (Default)	CT/PANO	Beep	The same for each mode

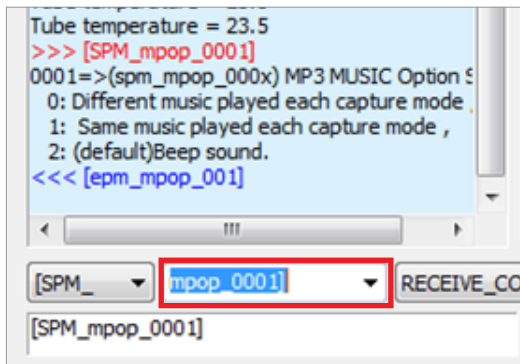
1. Send the command in accordance with the command specification, as specified in the table above.

Here are some examples.

Default mode: 0002(beep) for each imaging mode.

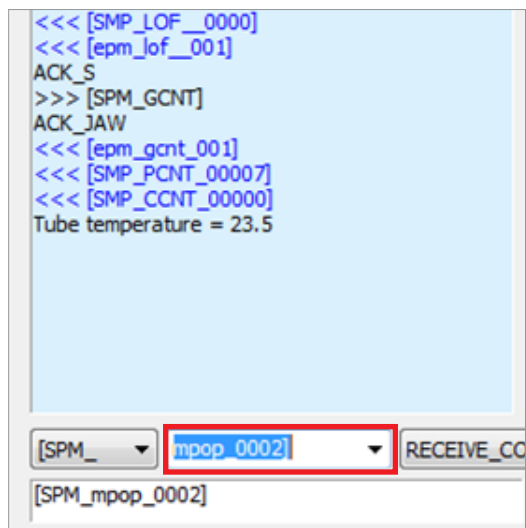
When the same music announcement is desired for CT and PANO imaging modality.

Enter the command [SPM_MPOP_0001] in the command field, followed by **Send**.



When the same beep announcement is desired for CT and PANO imaging modality.

Enter the command **[SPM_MPOP_0002]** in the command field, followed by **Send**.



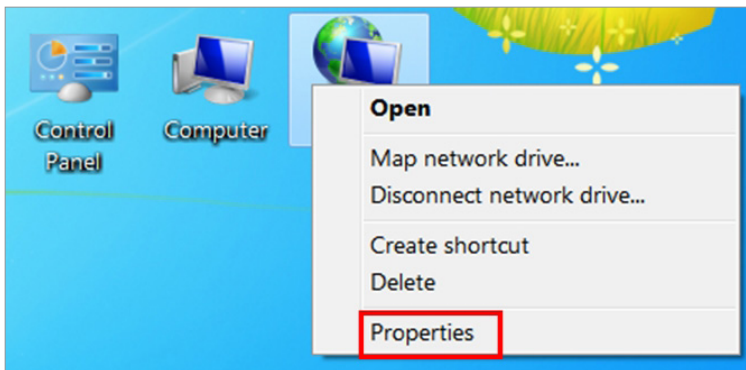
Finalizing the Parameters Settings

1. Click **Exit** → **Close** button and terminate the control panel.
2. **Exit the imaging program (main GUI): important!**
3. Reset the equipment to take the changes into effect

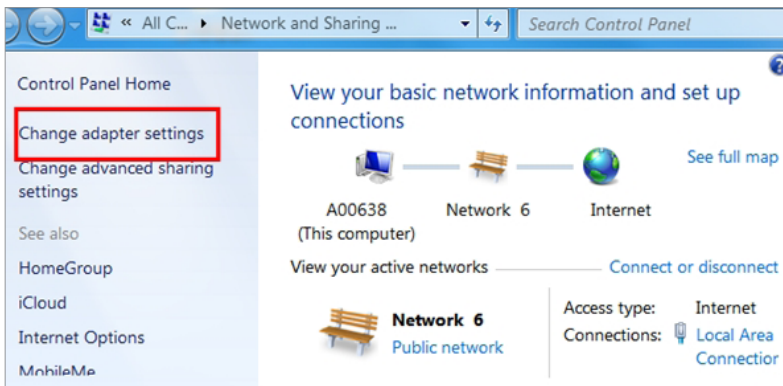
9.6 Setting Up the IP Address for the OS CEPH Sensor (Optional)

In order for the OS CEPH sensor to communicate with the PC, the proper IP address should be set on the PC. The following screenshots are taken in the Windows 7.

1. From the desktop, click the right button of the mouse on the Network icon.



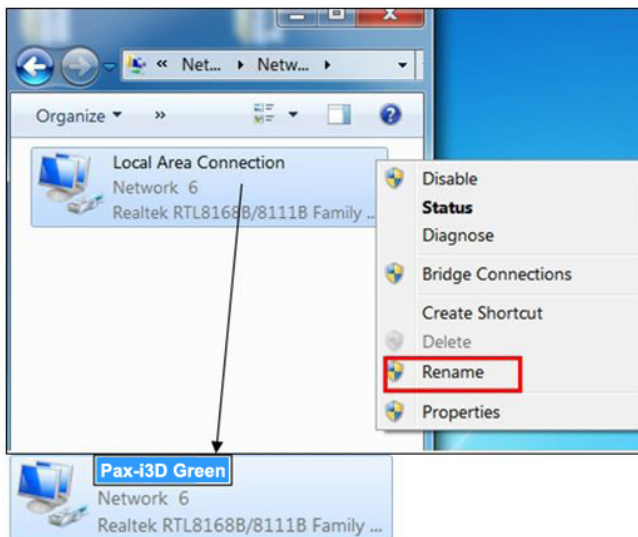
2. Double click the Properties.
3. Select the "Change adapter settings".



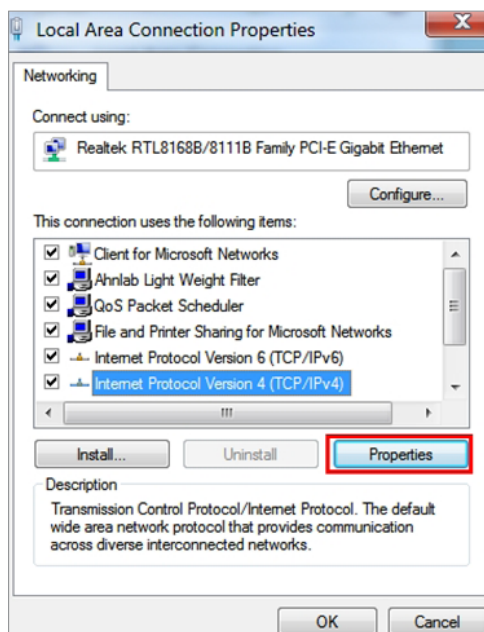
4. Click the right mouse button on the **Local Area Connection** and select the **Rename** to change its network name to **PaX-i3D Green**.

NOTICE

Connection name can be arbitrary. But a meaningful one is preferred.
For example, the equipment name or the hospital name.



5. From the following figure, select the **Internet Protocol Version 4** and click **Properties**.

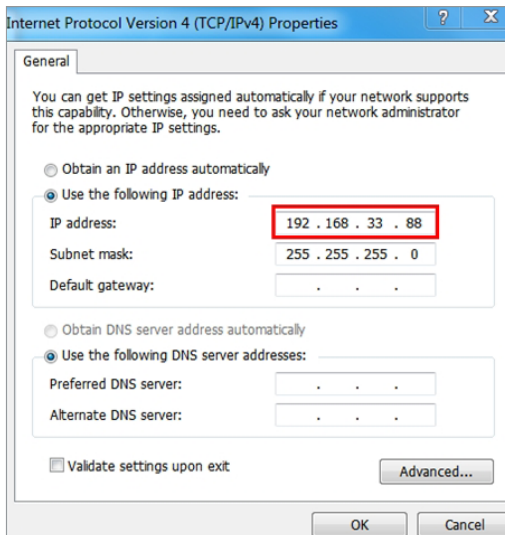


6. To set the new IP address.

6-1. Move to Use the following IP address.

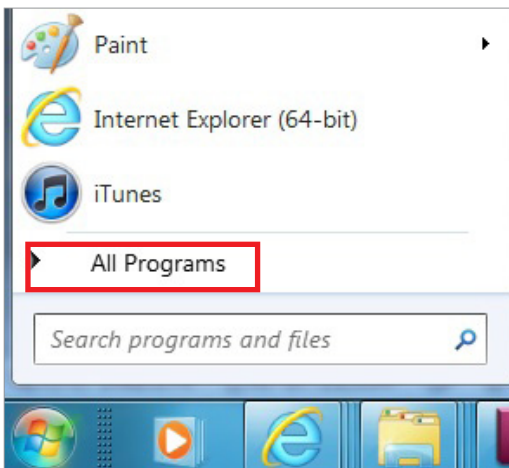
6-2. Enter the IP address: 192.168.33.88 and leave the other fields at the default.

6-3. Click OK.

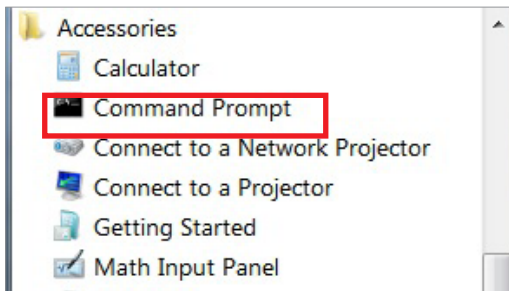


7. Reset the PC and equipment.

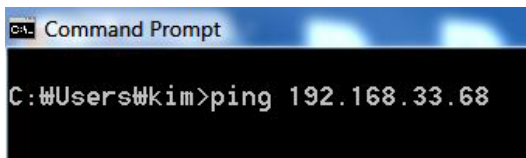
8. Open the "Start" menu and then click "All Programs" bar.



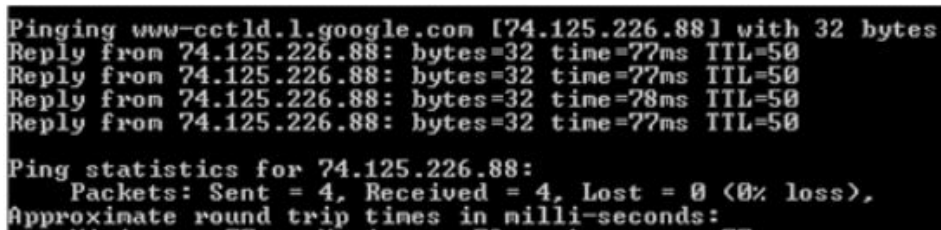
9. Click **"Accessories"** and then **"Command Prompt"**.



10. From the console, type "PING 192.168.33.88" and press **"Enter"** key.



11. Ensure that "Reply from <IP address>" is displayed, then the ping test was successful and the connection is properly functioning.



10

Acquiring a Test Image

Acquiring the test image

1. Perform the test image acquisition after the software is installed.
2. Acquire a test image using the phantom jig. For the further details about the image acquisition, refer to the accompanying user manual.
3. Ensure that collimator is well aligned.

When collimator is misaligned, the correct test image can't be obtained, in which case the alignment correction must be performed first, according to the technical manual.

IMPORTANT

For the equipment with CEPH unit, if the noise appears on the lower part of image, this is caused by the improper leveling between the CEPH and the column units. Level the CEPH unit again

For other issues related to the image, refer to the section(s) regarding to X-Ray alignment in the accompanying technical manual

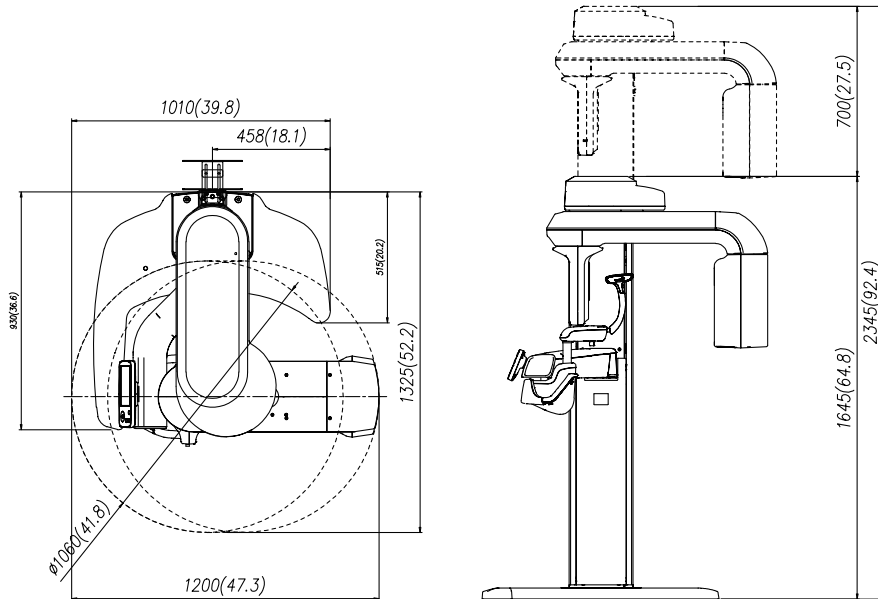
Technical Specifications

Mechanical Specifications

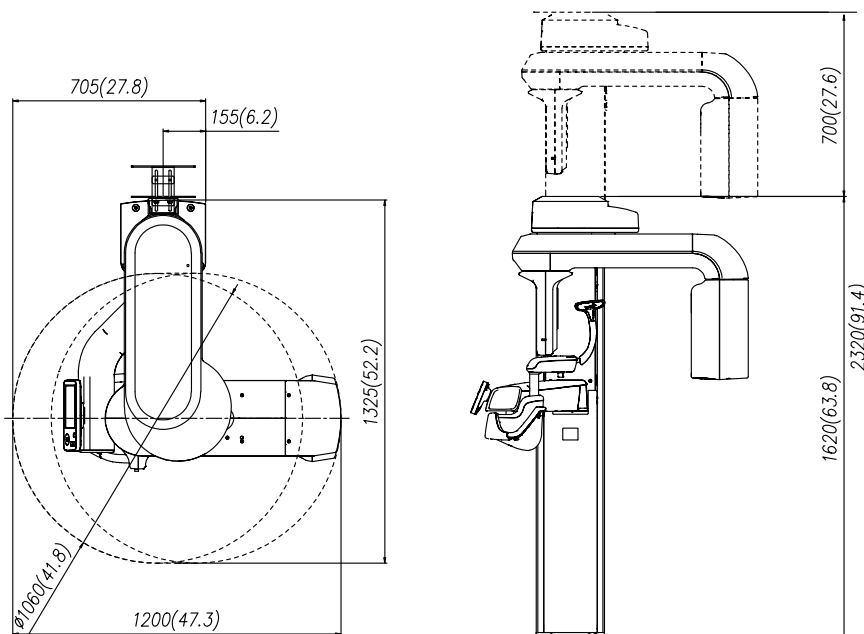
Item		Description
Weight (kg)	Without CEPH unit	Without base: 127 (280.0 lbs)
		With base: 182 (401.2 lbs)
	With CEPH unit (Scan Type)	Without base: 157 (346.1 lbs)
		With base: 212 (467.4 lbs)
	With CEPH unit (Oneshot Type)	Without base: 167 (368.2 lbs)
Total Height (mm)		Without Base: Max. 2,320 (91.34 inch.)
		With Base: Max. 2,345 (92.32 inch.)
Vertical column movement (mm)		Max. 700 (Max. 27.56 inch.)
Length x Width x Height (mm)	Without	1,200 (L) x 1,325(W) x 2,340 (H) mm
	CEPH unit	47.24 (L) x 52.17 (W) x 92.13(H) inch
	With CEPH unit (Scan Type)	1,985 (L) x 1,325 (W) x 2,340 (H) mm
		78.15 (L) x 52.17 (W) x 92.13(H) inch.
	With CEPH unit (One shot Type)	1,985 (L) x 1,325 (W) x 2,340 (H) mm
Type of installation		Base Stand / Wall Mount

Dimension of equipment

Without Cephalometric Unit & Base type

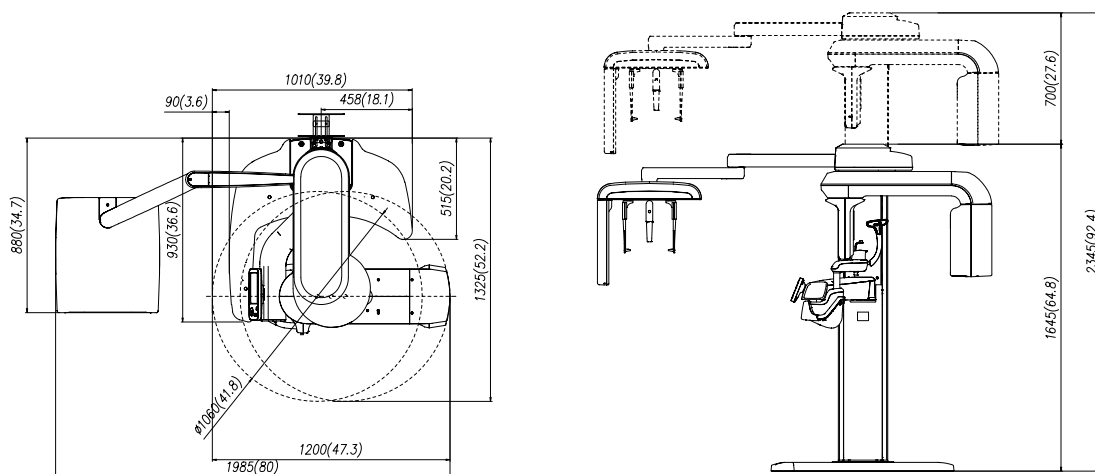


Without Cephalometric Unit & Non-Base type

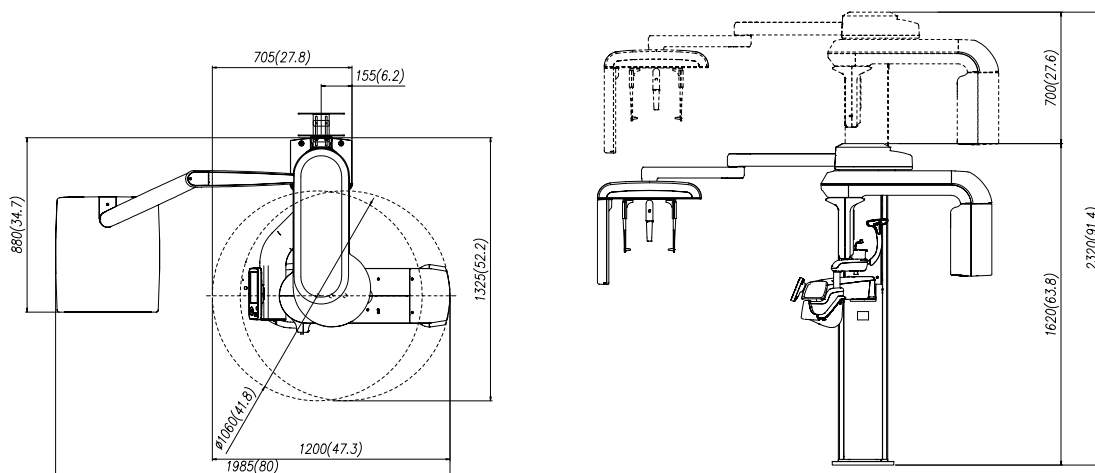


[Unit: mm(inches)]

With Cephalometric(Oneshot type) Unit & Base type

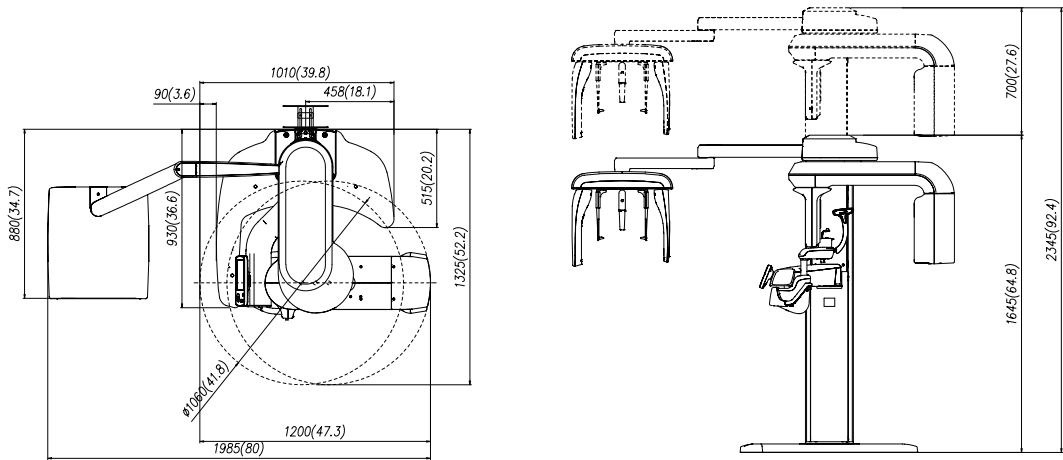


With Cephalometric(Oneshot type) Unit & Non-Base type

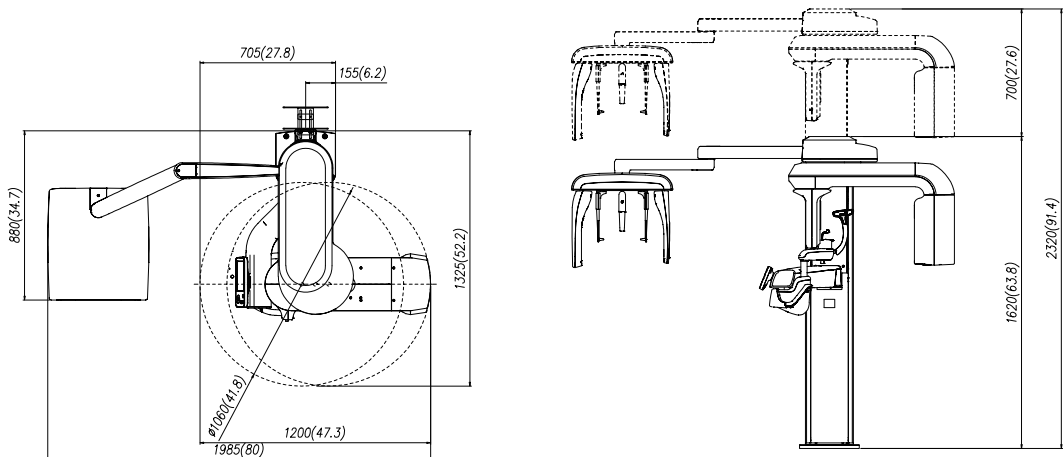


[Unit: mm(inches)]

With Cephalometric(Scan type) Unit & Base type

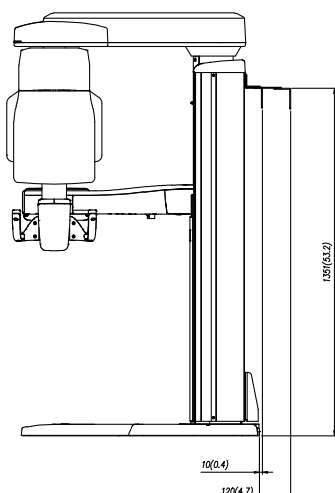


With Cephalometric(Scan type) Unit & Non-Base type

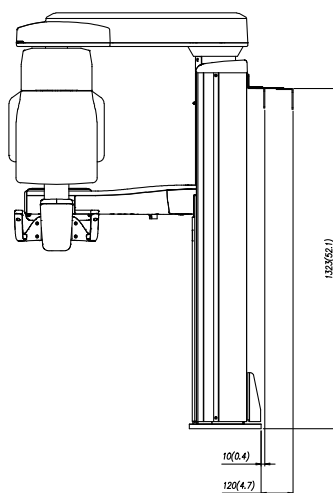


[Unit: mm(inches)]

Common Dimension(Base type)



Common Dimension(Non-Base type)



[Unit: mm(inches)]

Electrical Specifications

Item	Description
Power supply voltage	AC100-240 V \pm 10 %. (Free voltage)
Frequency	50/ 60 Hz (Single phase)
Power rating	Max.2.2 kVA \pm 10 %.

- The input line voltage depends on the local electrical distribution system.
- Allowable input voltage fluctuation requirement: \pm 10 %.

Environmental Specifications

Item	Description
During operating	Temperature
	10 ~ 35 °C (50 ~ 95 °F)
	Relative humidity
Transport and storage	30 ~75 %
	Atmospheric pressure
	860 ~ 1060 hPa
Transport and storage	Temperature
	-10 ~ +60 °C(14~ 140 °F)
	Relative humidity
	10 ~ 75% non-condensing
	Atmospheric pressure
	860 ~ 1060 hPa

Appendix

A. Installing the Warning Lamp and Door Interlock Switch ..	172
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D. Connecting the Third-party Exposure Switch(Optional) ..	181
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A. Installing the Warning Lamp and Door Interlock Switch

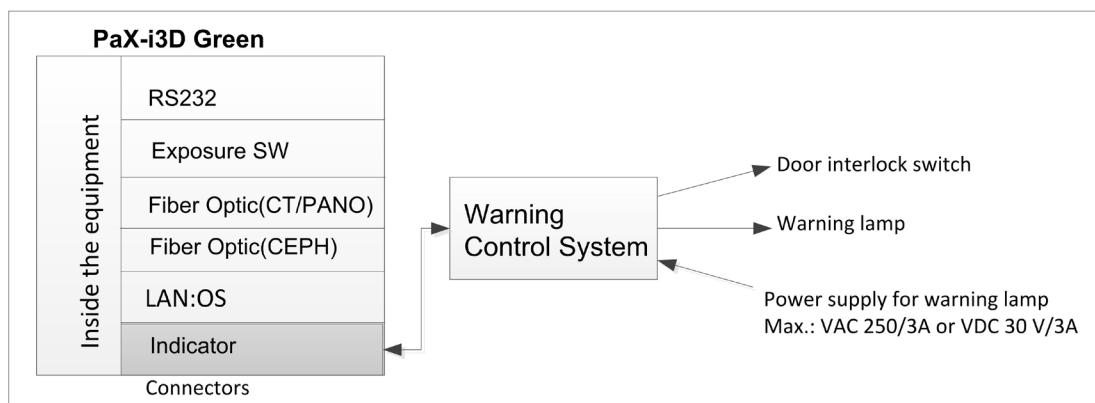
Requirements:

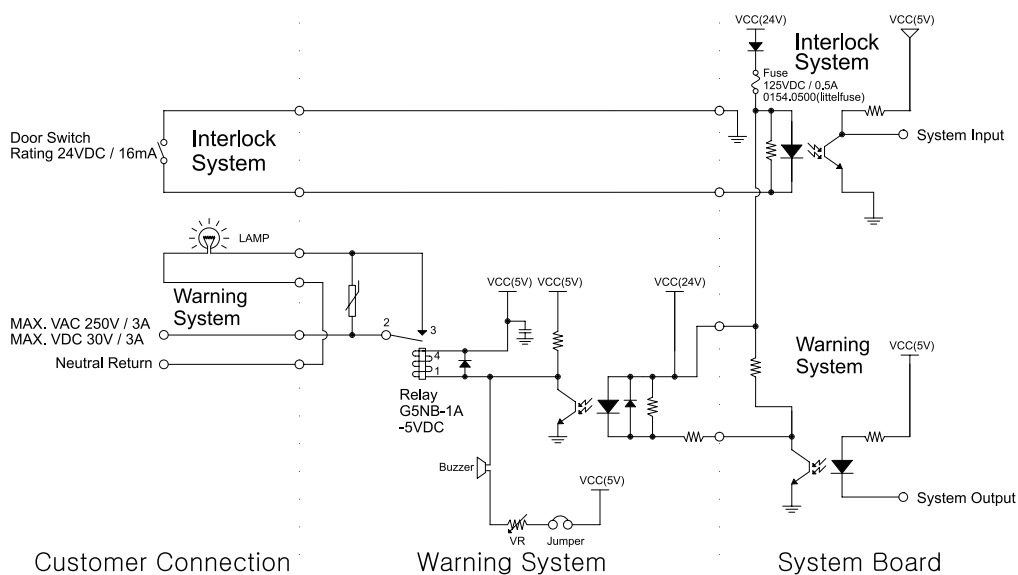
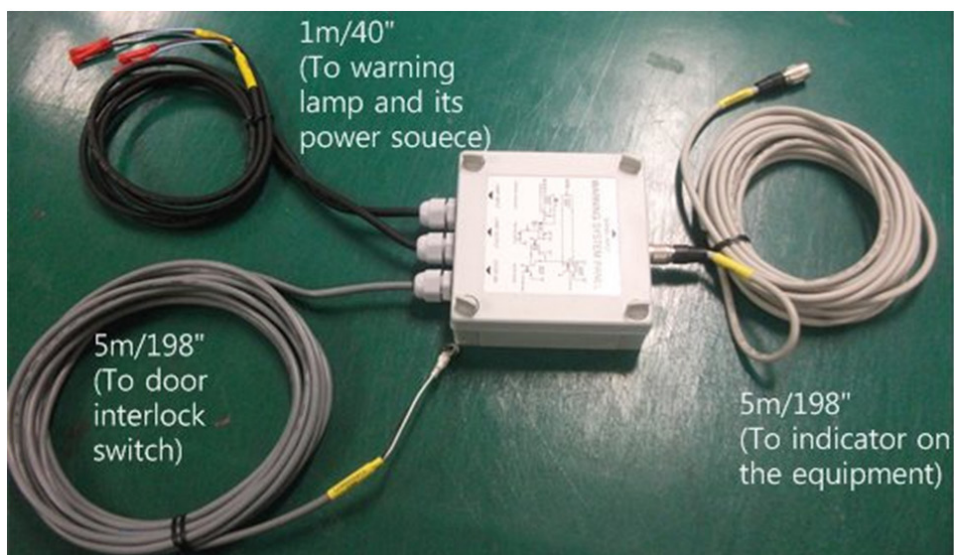
1. The warning control system shall be connected to the ERB (earth reference bar) of the room that it is associated with.
2. The switching arrangements, location, height, and number of illuminated warning signs shall be agreed with the local radiation protection advisor (RPA).(customer)
3. A fluorescent lamp shall not be used in the 'X-rays on' sign.
4. The customer shall be responsible for the proper installations for the warning control system, including the lamp and door interlock switch, based on the MEIGaN guideline.

MEIGaN: Medical Electrical Installation Guidance Notes

5. Pre-installation planning is crucial to a successful installation for these devices.
6. For the further details, refer to the accompanying volume: Specification for Electrical Installation

Block diagram:

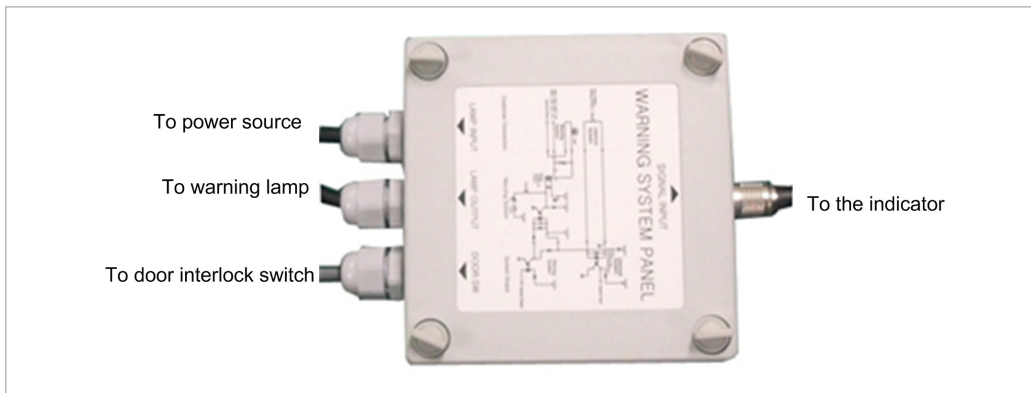


Schematic diagram:**Components supplied:**

Procedures:

The individual cable length:

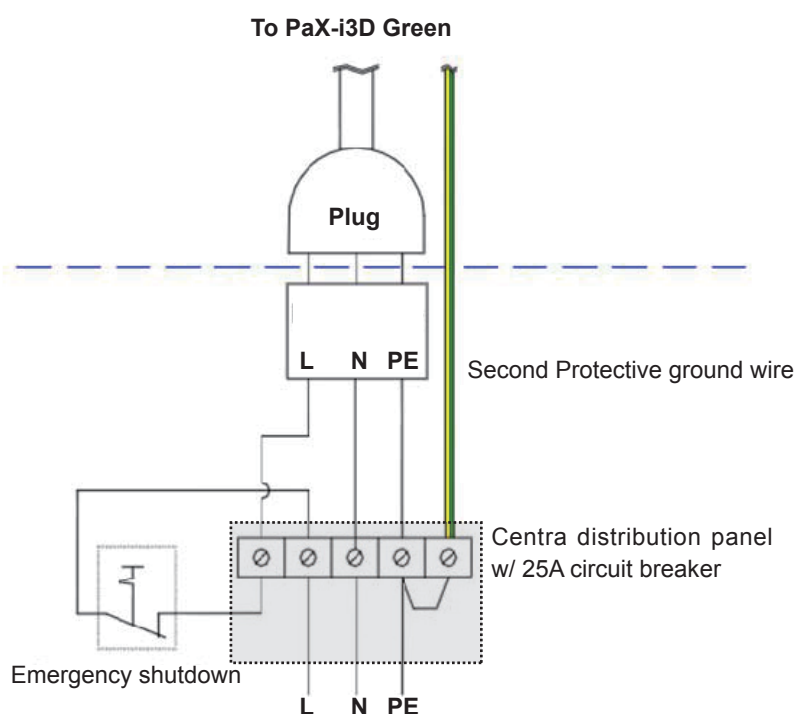
- Signal cable: 5m/198"
- Door interlock cable: 5m/198"
- Warning lamp: 1m/40"
- Power source cable: 1m/40"



1. Prepare the Warning System Panel (Part No.: 28).
2. Install the Warning System Panel at the proper height after taking each cable length into account.
3. Connect the warning lamp(not provided)
4. Connect the door interlock switch (not provided).
5. Connect the power source for the warning lamp.

B. Installing the Emergency Switch

- Install the emergency switch stop switch in the power cable line.
- Install this switch so that it is easy to reach in the emergency case but can't be pushed by mistake.
- The switch shall be a type of mistake-proof.
- The switch is not supplied.
- The switch shall be installed at a height of 1.2 to 1.5 meters(47 to 60").



1. The cable sizes: N, L and PE ≥ 12 AWG(3 x 4 mm²).
2. The cable to emergency switch shall be the same size as the power cable itself.
3. Install the socket connector terminal for the 2nd protective ground wire.

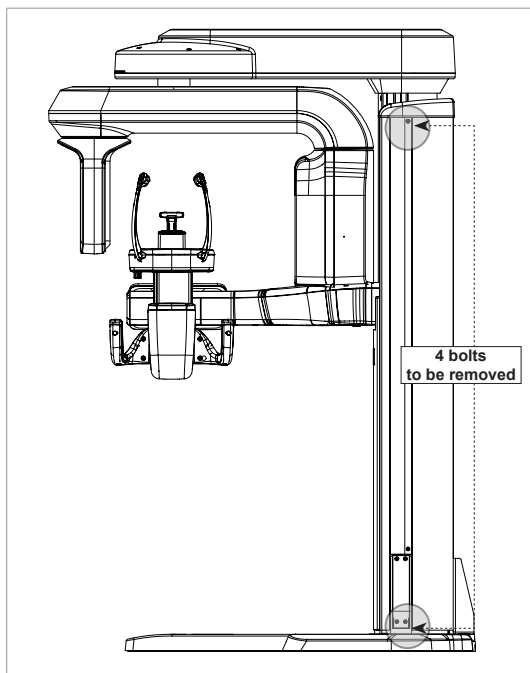
C. Limiting the Column Height

This section explains how to limit the column height within permissible range.

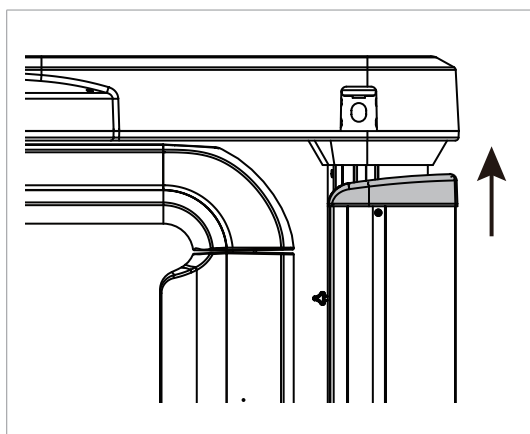
1. Measure the ceiling height in the X-Ray shield room : H_{ceiling}

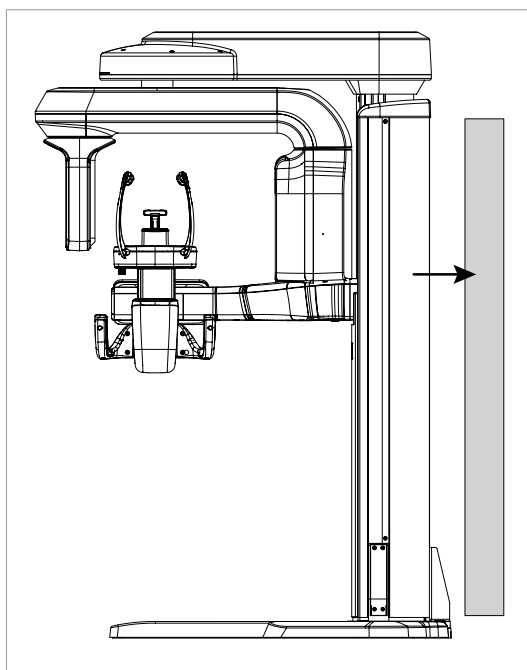
Removing the side cover

2. Remove 3 bolts at the following locations.



3. Lift the cover up and remove.





4. Separate the side cover.

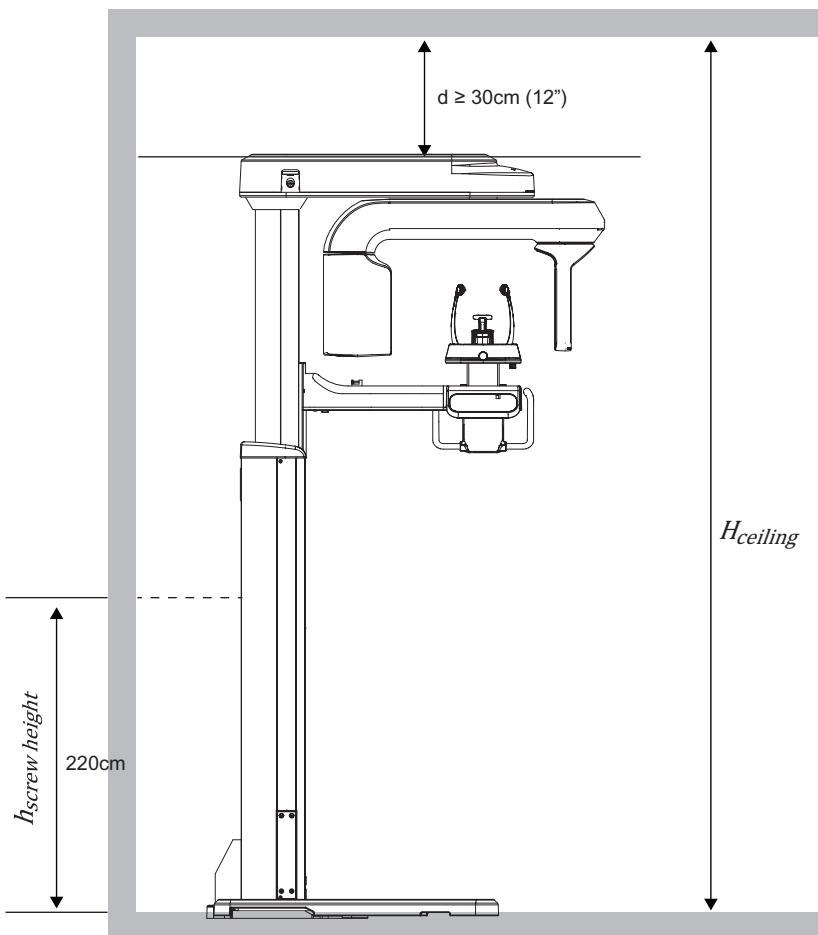
Determining the height

1. Determine the screw height using the following formula.

$$h_{\text{screw height}} = H_{\text{ceiling}} - d$$

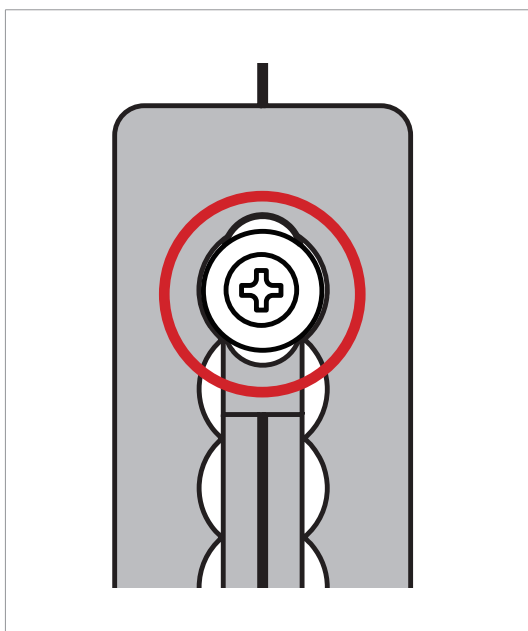
, where d is the distance between ceiling and the top of the equipment when the column is fully extended (at least 30 cm (12") is desired).

Ex): Let $d=30$ cm, $H_{\text{ceiling}}=250$ cm (99"), then $h_{\text{screw height}}=H_{\text{ceiling}}-d=250-30=220$ cm, which means that the screw should be installed at this height.



Adjusting the screw height

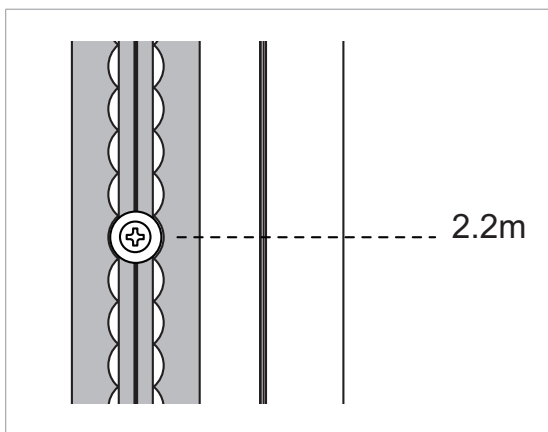
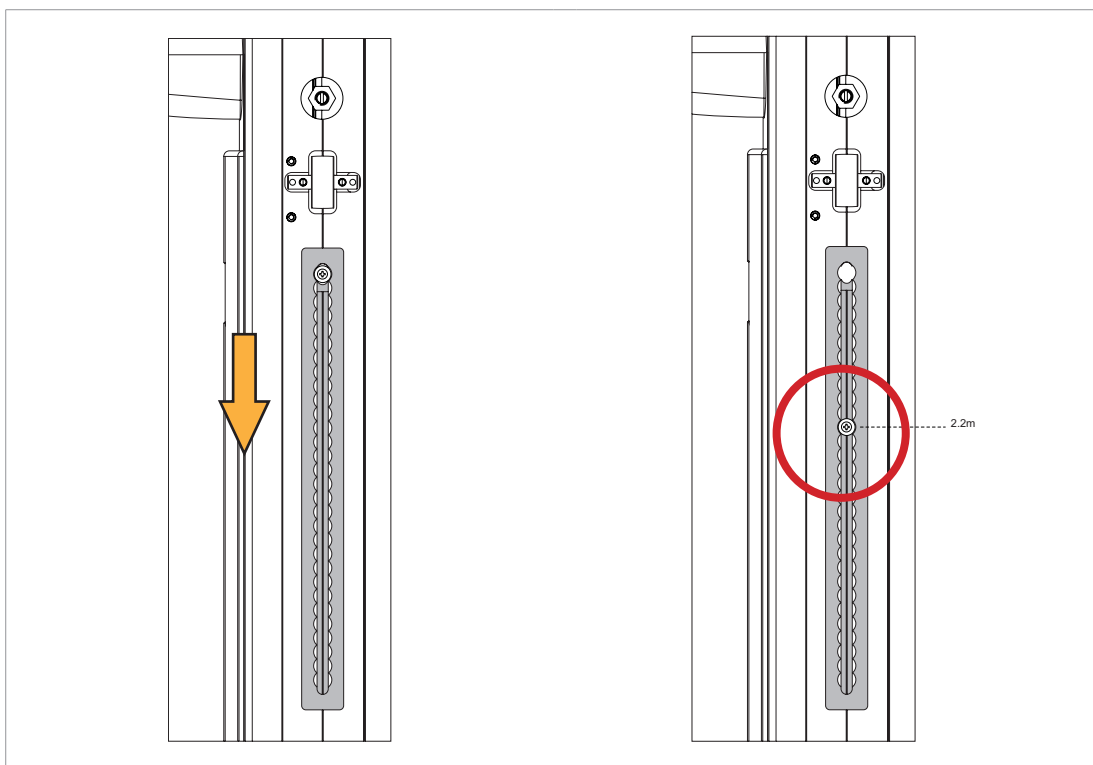
We know the screw height is 220 cm from the previous example. So we will move the screw from the default (current) position to new one.



1. Loosen the bolt halfway (**important!**).

IMPORTANT

Do not unscrew completely the bolt or it could drop into the column, causing a big trouble to retrieve it out.



2. Looking up the scale (shaded area), slide the screw down to new location (220 cm) and fix it back.

Putting the cover back

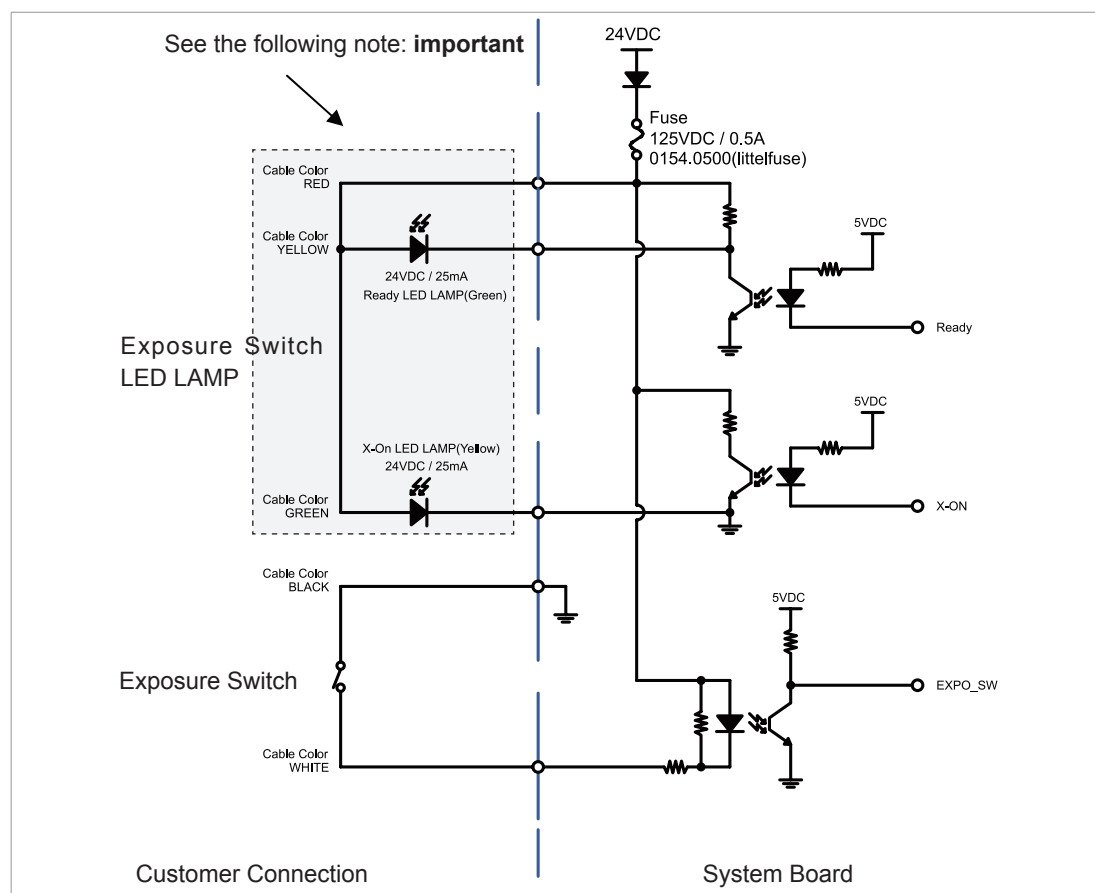
3. Put the covers back in reverse order.
4. Fix them with 3 bolts.

D. Connecting the Third-party Exposure Switch(Optional)

This section explains on how to connect the third-party exposure switch with the equipment from VATECH.

How-to:

1. Cut the exposure switch cable provided with the equipment.
2. According to the following schematic diagram, rewire the cables.
3. Double-check the wiring before use.



Note: tape the end of each unused wire to prevent the wires from causing an inadvertent short circuit

E. Checking PC BIOS Settings

Lenovo PC BIOS Setup

PC Model : Lenovo S30

PC BIOS default			
Main Menu	Sub1 Menu	Sub2 Menu	Setup Value
Devices	Network Setup	Boot Agent	[Disable]
Power	Enable Power Saving		[Disable]
Power	Automatic Power On	Wake on LAN	[Disable]
Advanced	CPU Setup	Hyper Threading Technology	[Disable]

HP PC BIOS Setup

PC Model : HP Z420

PC BIOS default			
Main Menu	Sub1 Menu	Sub2 Menu	Setup Value
Security	Network Service Boot		Disable
Power	OS Power Management	Run Time Power anagement	Disable
Power	Automatic Power On	Idle Power Saving	Normal
Power	Automatic Power On	USB Wake on Device	Disable
Advanced	Device Option	S5 Wake on LAN	Disable

F. Installation Checklist

1. General information:

Customer

Information about the equipment purchaser	
Name of Clinic or Hospital	
Address	
Phone	
E-Mail	
Web site	

Dealer

Information about the equipment seller	
Name of dealer	
Address	
Phone	
E-Mail	
Web site	

2. Installation information:

Address of Installation site	
Names of installers	
Scheduled date of installation	
Date of installation	
Model	
Serial No.	

3. System delivery to site:

	Yes	No
Did you review and identify the delivery route and method for equipment in advance?	<input type="checkbox"/>	<input type="checkbox"/>
Is the freight elevator available?	<input type="checkbox"/>	<input type="checkbox"/>
Is the security guard, if any, notified of the installation in advance?	<input type="checkbox"/>	<input type="checkbox"/>
Are two installers, including the helpers, available to move and unload the equipment?	<input type="checkbox"/>	<input type="checkbox"/>

4. Before installation:

Site check list

	Yes	No
Is the room large enough?. At minimum, with CEPH unit 2,200 mm x 2200 mm x 2,600 mm/ 87" x 87" x 103. Without CEPH unit, 2,200 mm x 1,400 mm x 2,600 mm/ 87" x 55" x 103"	<input type="checkbox"/>	<input type="checkbox"/>
Is the door entrance wider than 800mm (32")?	<input type="checkbox"/>	<input type="checkbox"/>
Is a radiation protection plan in place?	<input type="checkbox"/>	<input type="checkbox"/>
Does equipment and PC use same dedicated circuit?	<input type="checkbox"/>	<input type="checkbox"/>
Does the electrical input conditions to installation site meet the MEIGaN requirements?	<input type="checkbox"/>	<input type="checkbox"/>
Is the local Network IP address of clinic 192.168.33.xx?	<input type="checkbox"/>	<input type="checkbox"/>
Is compressor or air conditioner suction located right next to X-ray Room?	<input type="checkbox"/>	<input type="checkbox"/>
Is the floor flat and level?	<input type="checkbox"/>	<input type="checkbox"/>
Is the carpet on the floor? If so, remove it	<input type="checkbox"/>	<input type="checkbox"/>

Before opening Boxes

	Yes	No
Did delivery company carry and handle with caution?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers take pictures of boxes before opening?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure there are not any suspicious holes or scratches on the box?	<input type="checkbox"/>	<input type="checkbox"/>
Is the ShockWatch indicator red?	<input type="checkbox"/>	<input type="checkbox"/>
Is the TiltWatch indicator red?	<input type="checkbox"/>	<input type="checkbox"/>

After opening Boxes

	Yes	No
Did installers make sure there are not any scratches or broken surface on equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Are all accessories and cases included in the box?	<input type="checkbox"/>	<input type="checkbox"/>
Have you read the installation manual out in its entirety Before starting installation?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer take pictures after opening the boxes?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure there are not any suspicious holes or scratches on the box after opening?	<input type="checkbox"/>	<input type="checkbox"/>

5. While installing equipment

	Yes	No
Are installers careful with any sensitive parts while carrying equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers make sure that various cables, especially optic cable, are not coiled too much?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers perform installations, according to manual?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers not touch or place pressure on sensors while installing?	<input type="checkbox"/>	<input type="checkbox"/>
Did installer make sure harness and equipment are well connected and not damaged?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers check if the emergency button (switch) is working properly?	<input type="checkbox"/>	<input type="checkbox"/>
Did the equipment be well balanced?	<input type="checkbox"/>	<input type="checkbox"/>

6. After installation

	Yes	No
Does the chin support successfully initialize after turning on the system?	<input type="checkbox"/>	<input type="checkbox"/>
Are cables organized well?	<input type="checkbox"/>	<input type="checkbox"/>
Is it OK after checking visually the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Is the normal voice message audible during system initialization after turning on the system?	<input type="checkbox"/>	<input type="checkbox"/>
Does the LED on the front of the equipment turn green?	<input type="checkbox"/>	<input type="checkbox"/>
Do the equipment's Up/Down switch works properly?	<input type="checkbox"/>	<input type="checkbox"/>

7. Software compatibility

	Yes	No
Anti-virus software installed?	<input type="checkbox"/>	<input type="checkbox"/>
A firewall installed? If yes, indicate software or hardware	<input type="checkbox"/>	<input type="checkbox"/>
	Type :	
Are the third-party software installed? If yes, indicate name(s) and versions	<input type="checkbox"/>	<input type="checkbox"/>
Are they compatible with software from VATECH? If No, indicate name(s) and versions	Version :	

8. Eletrical requirements:

	Yes	No
Is the circuit breaker installed and tested in distribution panel for over-current protection w/ 20A?	<input type="checkbox"/>	<input type="checkbox"/>
Is internal line impedance checked? $Z_{input} \leq 0.5\Omega$	<input type="checkbox"/>	<input type="checkbox"/>
Does equipment and PC use same dedicated circuit?	<input type="checkbox"/>	<input type="checkbox"/>

9. Network Configuration:

	Yes	No
Is network configured with 1 Gbit/s of CAT5?	<input type="checkbox"/>	<input type="checkbox"/>
Is the equipment connected with network?	<input type="checkbox"/>	<input type="checkbox"/>
Is the network installation company identified?	<input type="checkbox"/>	<input type="checkbox"/>
What is the TCP/IP address assigned?	Address :	
What is the subnet masking address?	Address :	
Is there DHCP server?	<input type="checkbox"/>	<input type="checkbox"/>

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The CE symbol grants this product compliance to the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class II b device.



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