



# **Pax-i3D** (PHT-60CF0)

Installation Manual | Version 1.0.0

**HARDWARE and SOFTWARE**

English





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## **i**nnovation **i**nside

"i" stands for 'innovation', one of the core values of VATECH, which aims to expand accessibility of medical solutions to more people.

## 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.

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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.

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.



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.



NOTE

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



CAUTION

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



WARNING

**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.



X-ray

**Radiation symbols** indicate a possible danger from exposure to radiation.



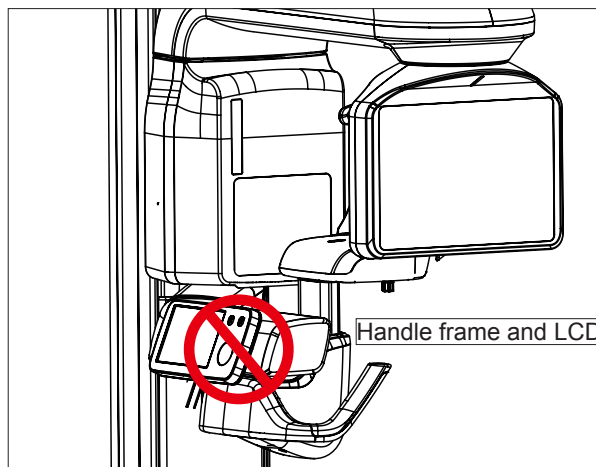
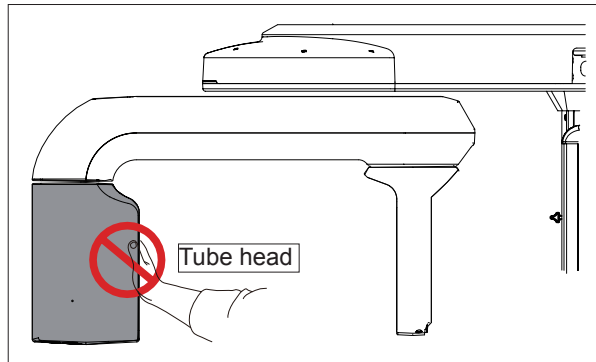
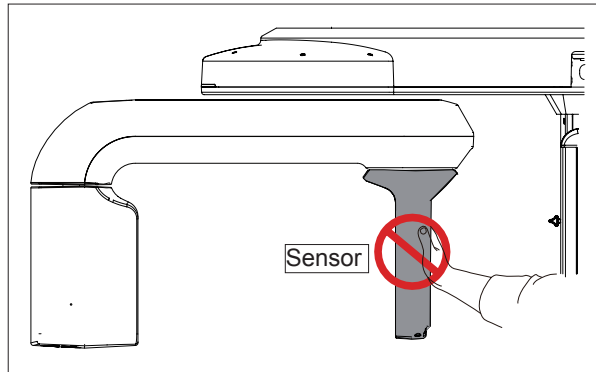
IMPORTANT

**Important symbols** indicate a compulsory action or instruction.



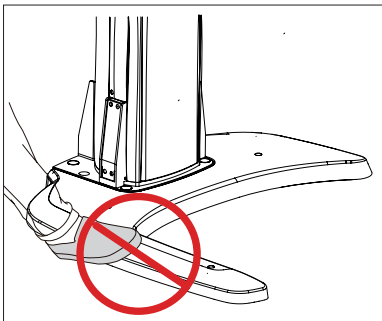
**ESD susceptibility symbols** indicate that an item is susceptible to damage from electrostatic discharges.

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





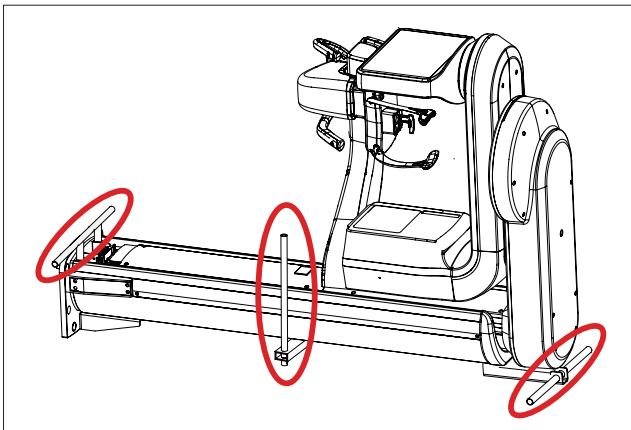
**Do not step on the base unit while installing or operating the equipment.**



**Do not use the electrical power drill during installation unless it is allowed to do so.**

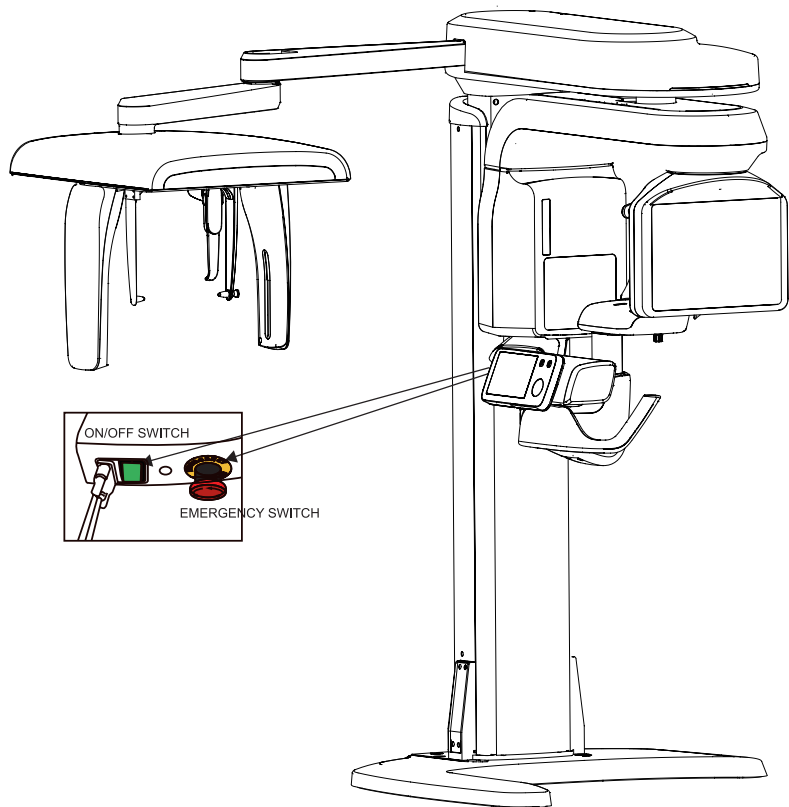


**Recommended holding area during transportation(OK)**



**Three installers are required to install the equipment safely.**

## Locations of the Power and Emergency Switches





## 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** (3<sup>rd</sup> edition: 2005).
6. Any equipment not approved by VATECH must comply with the applicable standards: **IEC 60950-1** (2<sup>nd</sup> edition: 2005) for IT equipment (Ex: PC) and **IEC 60601-1** (3<sup>rd</sup> 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** (3<sup>rd</sup> 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.





## 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



## 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.



**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: 2<sup>nd</sup> 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 combining it with other equipment.
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.

## TABLE OF CONTENTS

<b>1</b>	<b>Introduction</b>	<b>17</b>
1.1	Manufacturer's Liability	18
1.2	Customer's Responsibility	18
1.3	Marks & Symbols	19
1.4	Standards and Regulations	20
<b>2</b>	<b>Choosing an Installation Site</b>	<b>21</b>
2.1	Room Requirements	22
2.2	Specifications for Electrical Installation	25
2.3	Electrical Requirements	25
2.4	Temperature and Humidity	27
2.5	Exposure Switch Installation Options	27
2.6	Installation Versions	29
2.7	Installing the Warning Lamp and Door Interlock Switch	30
2.8	Installing the Emergency Stop Switch	30
<b>3</b>	<b>Before Installing the System</b>	<b>31</b>
3.1	Required Tools	32
3.2	Checking the ShockWatch and TiltWatch Indicators	34
3.3	Unpacking the Boxes	35
3.4	Checking the Parts	43
<b>4</b>	<b>Installing the Equipment: Floor Standing (Optional)</b>	<b>51</b>
4.1	Assembling the Base and Main Units	52
4.2	Removing the Transportation Handle	56
4.3	Installing the Wall and Column Brackets	57
4.4	Removing the Transportation Safety Bolts	61
4.5	Installing the CEPH Unit (Optional)	62
4.6	Removing the Protective Plastic Film	70
<b>5</b>	<b>Leveling the Equipment</b>	<b>71</b>
<b>6</b>	<b>Completing Miscellaneous Works</b>	<b>75</b>
6.1	Connecting the Cables to the Equipment	76
6.2	Assembling Various Covers	79
6.3	Assembling Temple and Chin Supports	80
6.4	Covering the Holes	81
6.5	Installing the Switch Holders	82
6.6	The Leftover Components	86

<b>7</b>	<b>Installing the Equipment: Wall Mount</b>	<b>89</b>
7.1	Installing the Equipment	90
7.2	Installing the Cephalometric Unit (Optional)	101
7.3	Leveling the Equipment	101
7.4	Tightening the Bolts firmly	103
7.5	The Rest of Works	103
<b>8</b>	<b>Setting up PC</b>	<b>105</b>
8.1	Direct Connection Diagram	106
8.2	The Recommended PC Requirements	107
8.3	Installing the Internal Peripherals	109
8.4	Connecting the Cables to PC	111
<b>9</b>	<b>Setting up PC's Environment Variables</b>	<b>113</b>
9.1	Before Beginning	114
9.2	Checking PC BIOS Settings	114
9.3	Turning the firewall off	115
9.4	Setting up the Power Mangement Options	117
9.5	Turning off the User Account Control	119
9.6	Setting Folder exclusions with Anti-virus Software	121
<b>10</b>	<b>Installing Software</b>	<b>123</b>
10.1	Before Beginning	124
10.2	Software Installation Flow	125
10.3	Installing Image Viewer Program	125
10.4	Installing the installShield	126
10.4.1	When EasyDent4 is installed	126
10.4.2	When EzDent- i is installed	139
10.5	Setting up the User-specific Information	149
10.5.1	When EasyDent4 is installed	149
10.5.2	When EzDent -i is installed	153
10.5.3	Configuring the parameters	156
10.6	Setting Up the IP Address for the OS CEPH Sensor(Optional)	162
<b>11</b>	<b>Acquiring a Test Image</b>	<b>167</b>
<b>12</b>	<b>Technical Specifications</b>	<b>169</b>

<b>Appendix .....</b>	<b>175</b>
A. Installing the Warning Lamp and Door Interlock Switch .....	176
B. Installing the Emergency Switch .....	179
C. Limiting the Column Height .....	180
D. Connecting the Third-party Exposure Switch(Optional) .....	185
E. Checking PC BIOS Settings .....	186
F. Installation checklist .....	187

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# Introduction

<b>1.1</b>	Manufacturer's Liability.....	18
<b>1.2</b>	Customer's Responsibility .....	18
<b>1.3</b>	Marks & Symbols .....	19
<b>1.4</b>	Standards and Regulations .....	20

## 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	
	Attention: consult accompanying documents	<b>Label</b>
	Dangerous voltage	<b>Power board</b>
	Protective earth (Ground)	<b>Power board</b>
	Off (power: disconnect from the main switch)	<b>Main switch</b>
	On (power: connect to the main switch)	<b>Main switch</b>
	TYPE B Equipment	<b>Label</b>
	Radiation hazard	<b>Label</b>
	EC representative	<b>Manual</b>
	The CE symbol indicates that this product complies with the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class IIb device.	<b>Label</b>
	This equipment is UL-marked according to UL60601-1 and CAN/CSA C22.2 No. 601.1	<b>Label</b>
	Address where the equipment was manufactured	<b>Label</b>
	This symbol indicates that electrical and electronic equipment must not be disposed of as unsorted municipal waste and must be collected separately.	<b>Label</b>
	This symbol warns the user to take precautions when dealing with electronic components which are sensitive to static charges	<b>MCU board packaging</b>
	This symbol indicates that this equipment is classified as a CLASS 1 LASER PRODUCT in accordance with IEC 60825-1 ED.1 regulations.	<b>Label</b>

## 1.4 Standards and Regulations

### A. Standards

This X-Ray equipment complies with the following standards:

IEC/EN/UL 60601-1, IEC/EN 60601-1-1, IEC/EN 60601-1-2, IEC/EN 60601-1-3, IEC/EN 60601-2-7, IEC/EN 60601-2-28, IEC/EN 60601-2-32, IEC/EN 60601-2-44, ISO 9001, ISO 13485



The CE symbol indicates that this product complies with the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class IIb device.

### B. Classification: (IEC60601-1 6.1)

**Protection against the ingress of water: IEC60529 edition 2.1**

Ordinary Equipment: IPX0

**Protection against electric shock:**

Class I equipment, Type B Applied Parts



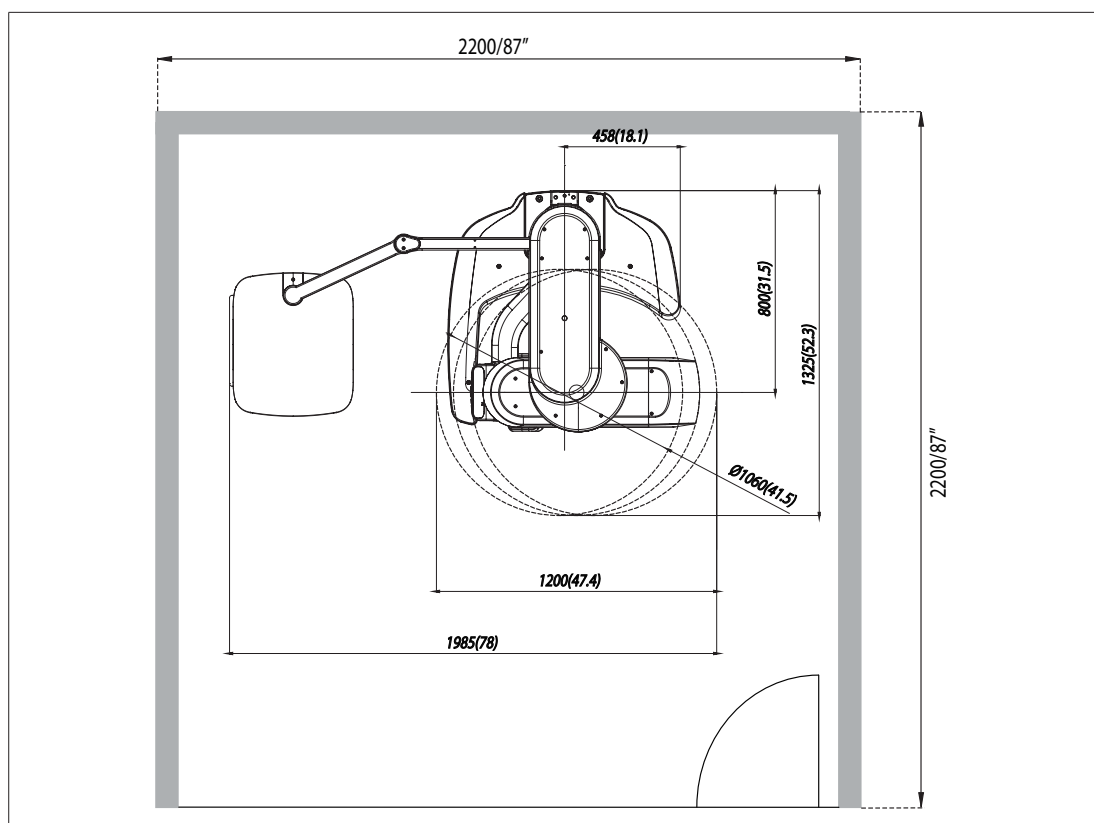
## Choosing an Installation Site

2.1	Room Requirements .....	22
2.2	Specifications for Electrical Installation .....	25
2.3	Electrical Requirements .....	25
2.4	Temperature and Humidity .....	27
2.5	Exposure Switch Installation Options .....	27
2.6	Installation Versions .....	29
2.7	Installing the Warning Lamp and Door Interlock Switch .....	30
2.8	Installing the Emergency Stop Switch .....	30

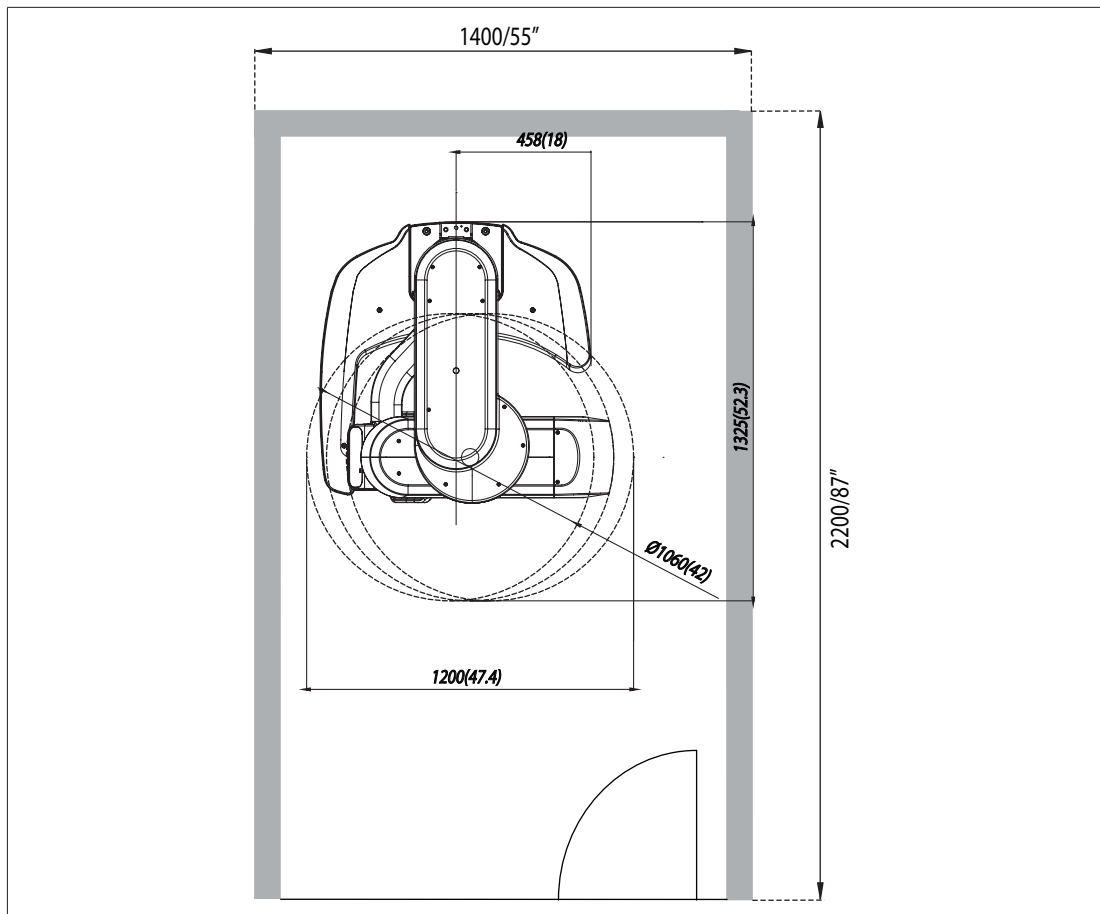
## 2.1 Room Requirements



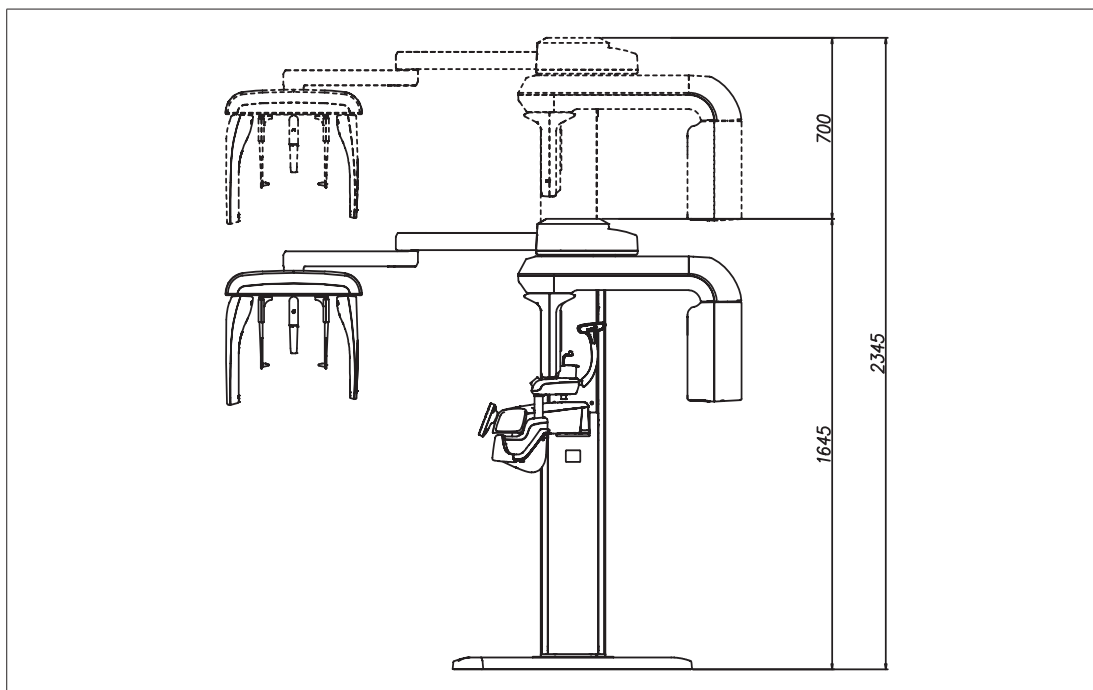
1. The location of this equipment should allow for high visibility of the patient by the operator and the operator should be as near to the patient as possible.
2. This equipment should not be installed on thick carpets for stability reasons.
3. Anti-static floor materials should be used around the equipment.
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:  $\geq 1$  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  $500\text{ kg/m}^2$  (110 lbs/feet<sup>2</sup>).

**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') 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 2<sup>nd</sup> 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.**

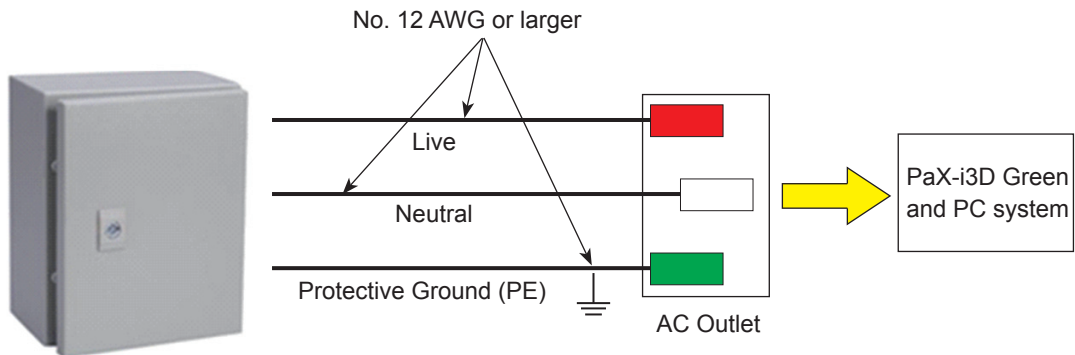


**Use a dedicated power outlet for the power cord. Failure to do so may result in unstable system operation caused by power fluctuations.**

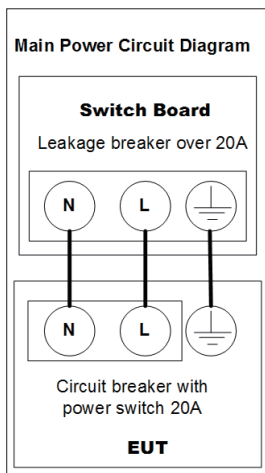


**It is strongly recommended that you install an AVR. An AVR (automatic voltage regulator) maintains a constant voltage and allows for continuous operation in the event of a power fluctuation.**

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



Central distribution panel  
w/a circuit breaker



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  $0.5 \Omega$ .
3. This equipment should be connected to the earthed outlet.





## 2.4 Temperature and Humidity

### Operation:

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

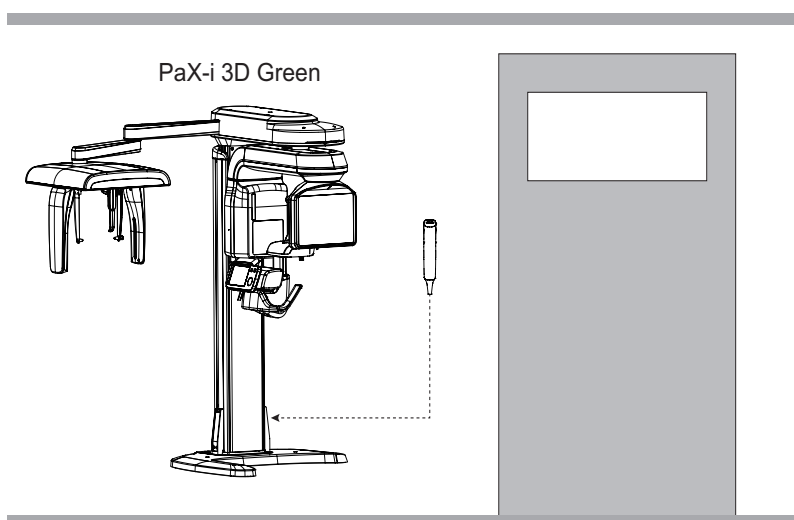
### Transportation and storage:

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

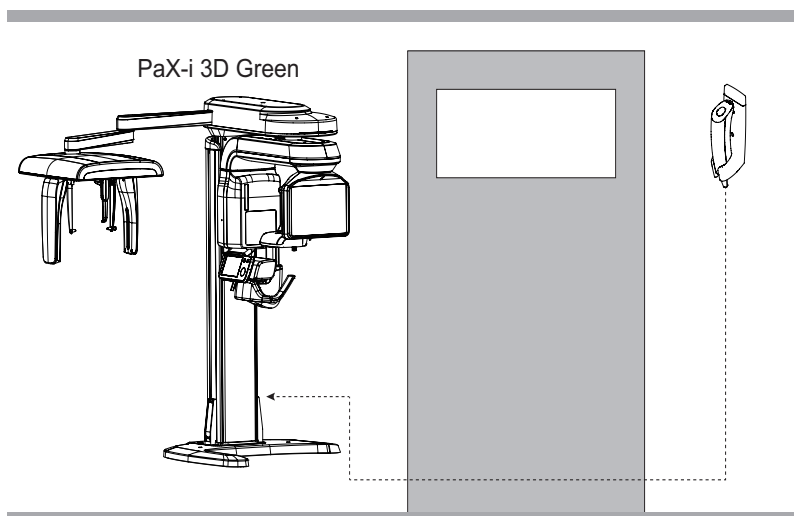
## 2.5 Exposure Switch Installation Options

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

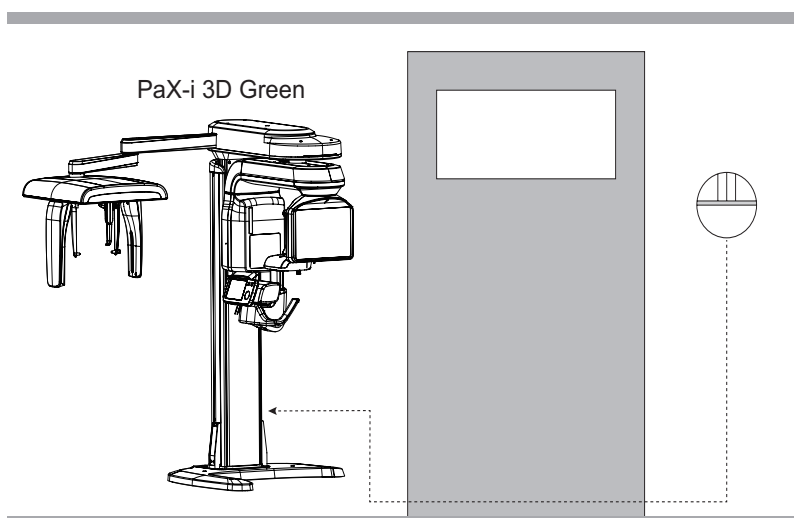
**Option No. 1:** The user operates the exposure switch from inside the X-Ray room.



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

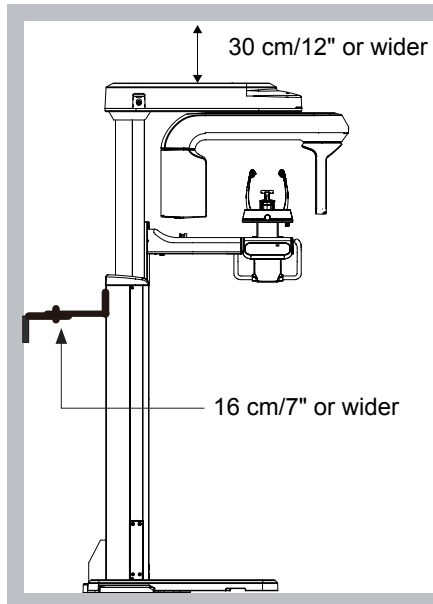


**Option No. 3:** The 3rd party exposure switch (not VATECH's) is used on demand of the customers. For this scenario, see the Appendix D “**Connecting the 3<sup>rd</sup> party exposure switch**” for details.

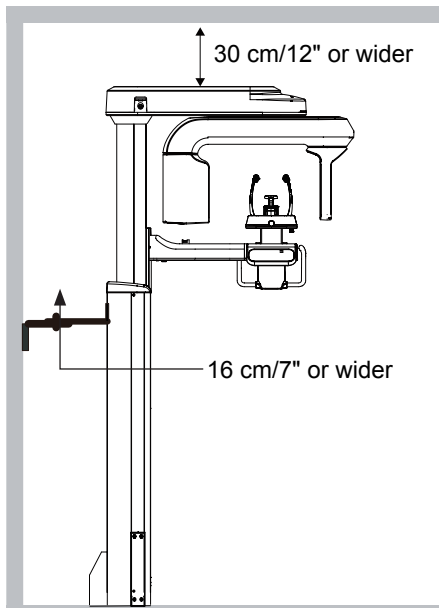


## 2.6 Installation Versions

### 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..


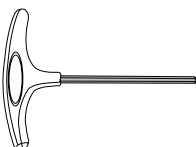
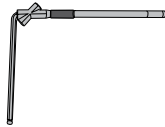
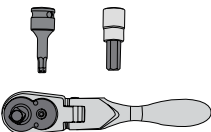
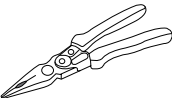
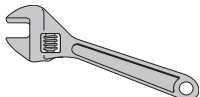
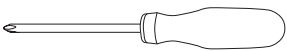

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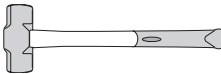
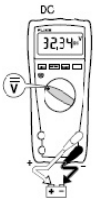

## Before Installing the System

<b>3.1</b>	Required Tools .....	32
<b>3.2</b>	Checking the ShockWatch and TiltWatch Indicators .....	34
<b>3.3</b>	Unpacking the Boxes .....	35
<b>3.4</b>	Checking the Parts .....	43

## 3.1 Required Tools

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

Item	Figure	Size
Wrench set	 <p>Allen wrench set 1.5 mm - 10 mm (0.05"-0.4")</p>	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"
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.



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



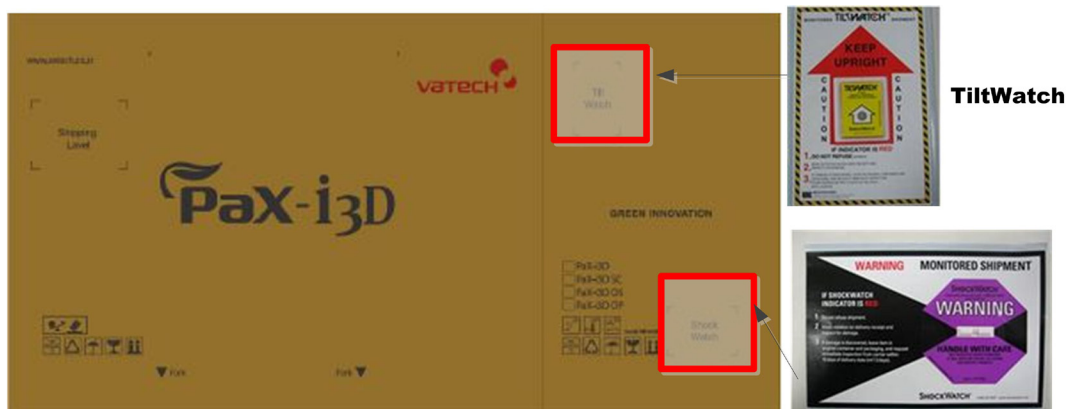
The ShockWatch and TiltWatch indicators become red if the package has suffered any physical impacts during transportation. However, a red indicator does not necessarily mean that the unit has been damaged.

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**.





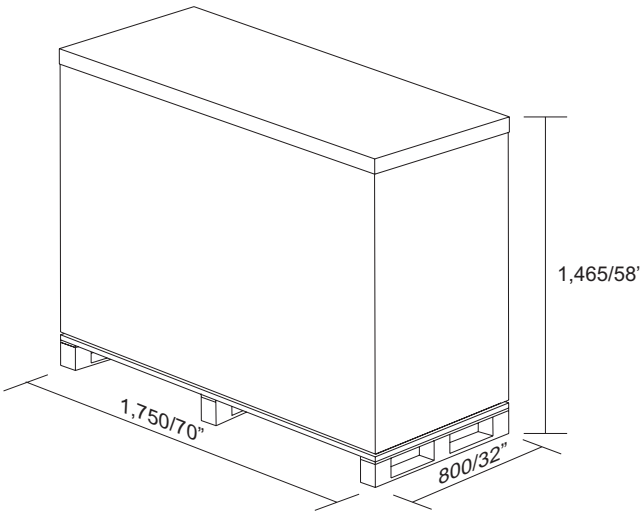
### 3.3 Unpacking the Boxes



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.

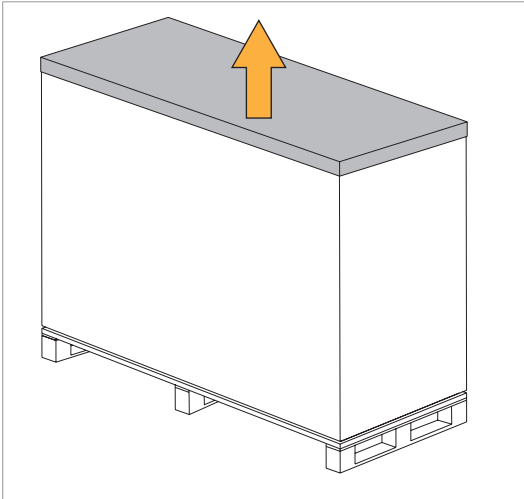
**Box No.1: Main box**

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

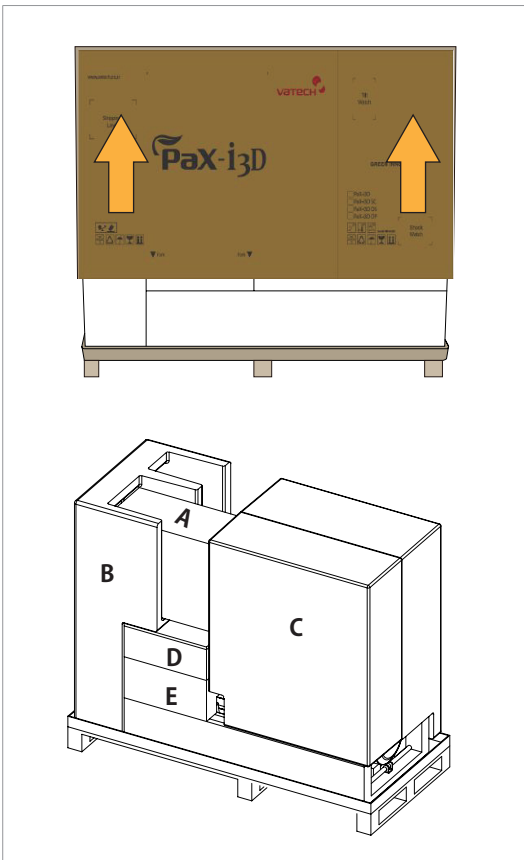


Main box

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.



**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.**

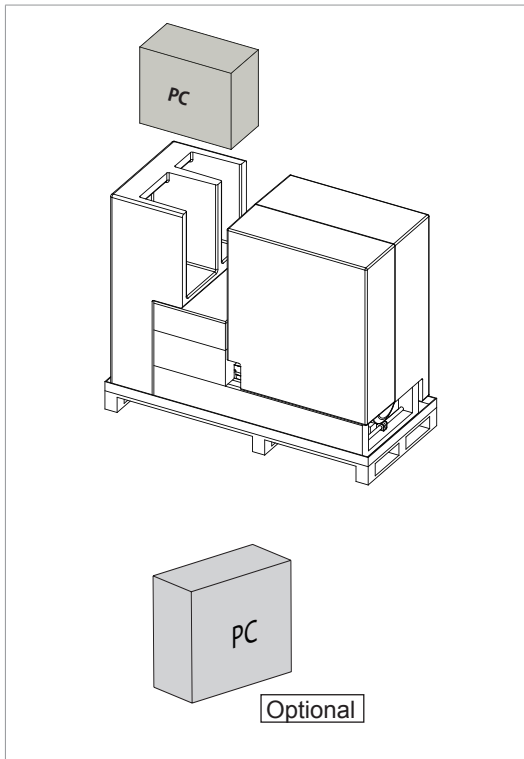
A: PC system (Optional)

B: EPS

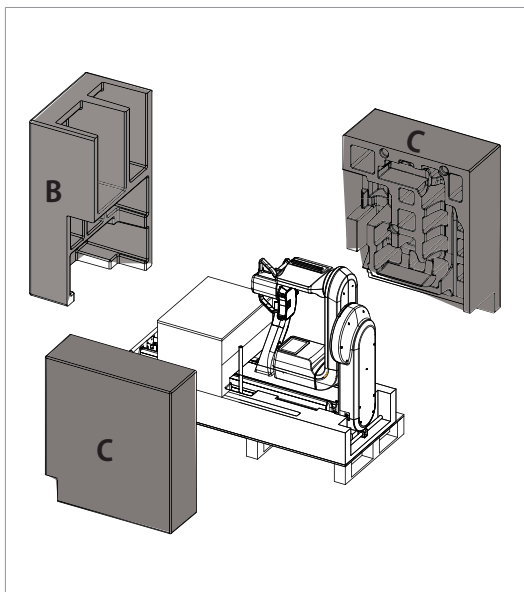
C: EPS

D: Accessory and part box1

E: Accessory and part box2

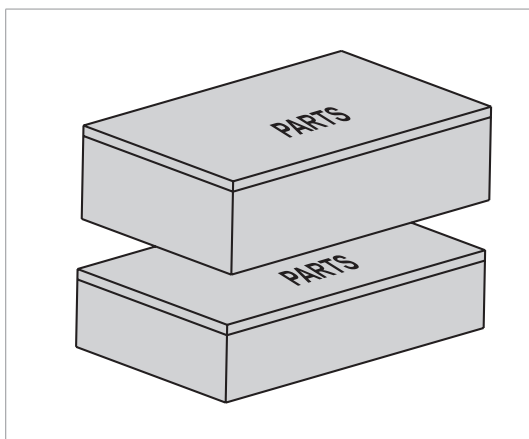


4. Put the PC system down on the floor.

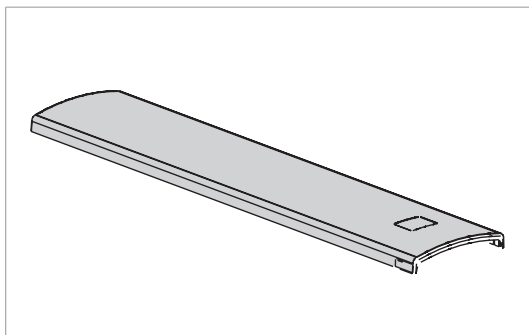


5. Separate 3 side EPS(B, C) in the following order.

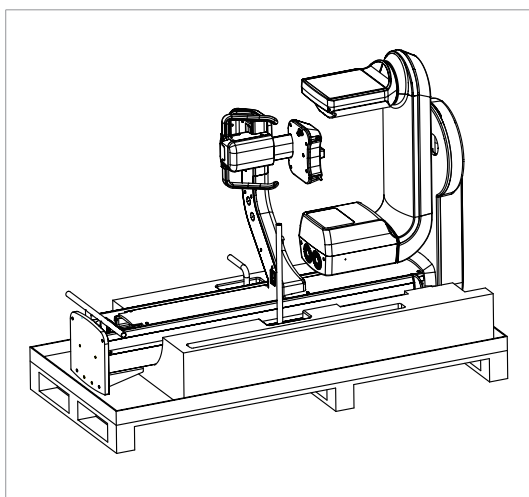
**B→C**



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



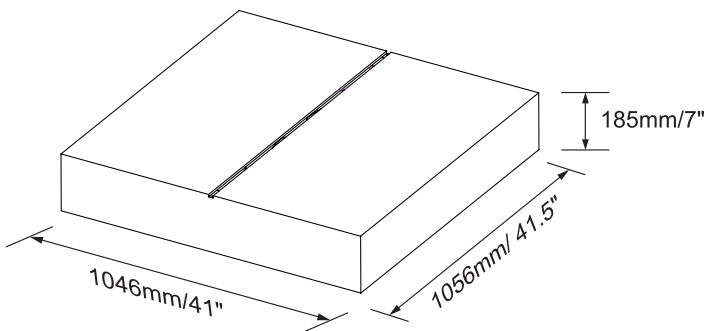
7. Remove the case column front cover.



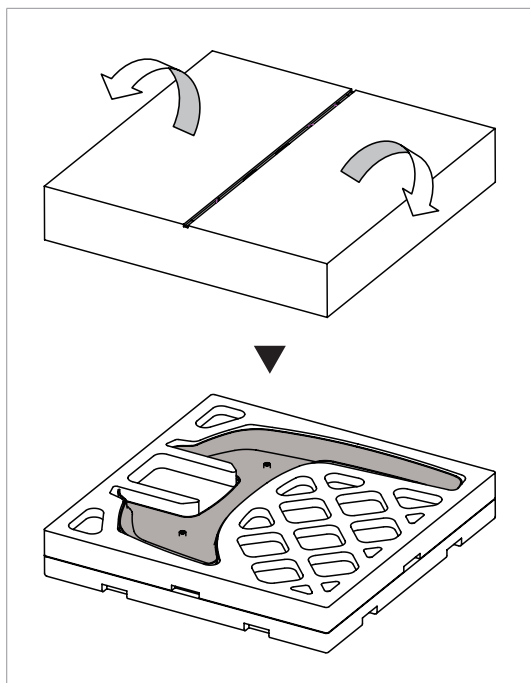
View after the removal of the EPS foams

Box No. 2: Base unit

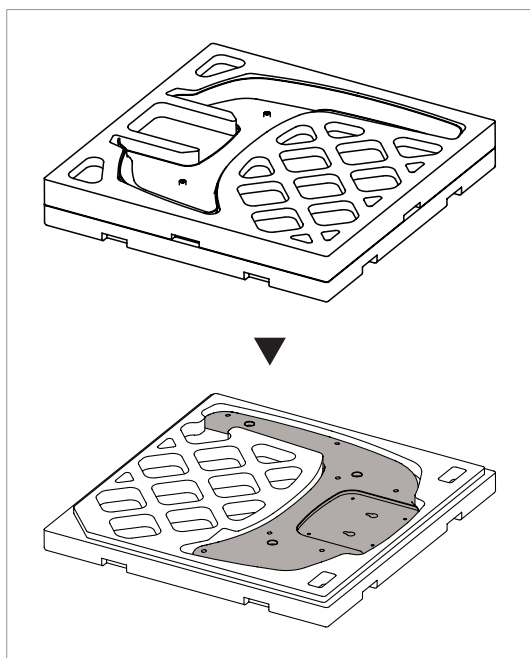
Component	Size(mm/inch)	Weight(kg/lbs)
Base	1046(l) x 1056(w) x 185(h) / 41"(l) x 41.5"(w) x 7"(h)	47/103



## Removing the cover



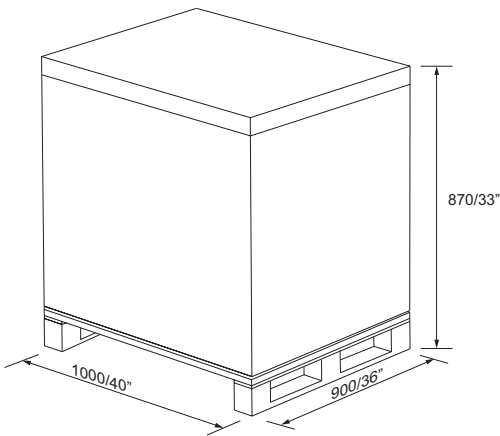
1. Open the box cover, the base cover appears.



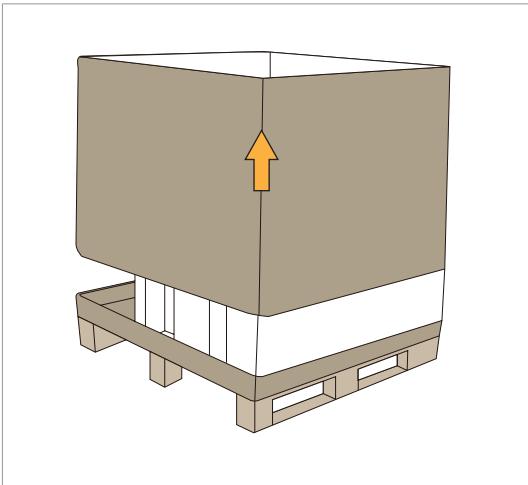
2. Remove the base cover.

Box No. 3: Cephalometric unit (Optional)

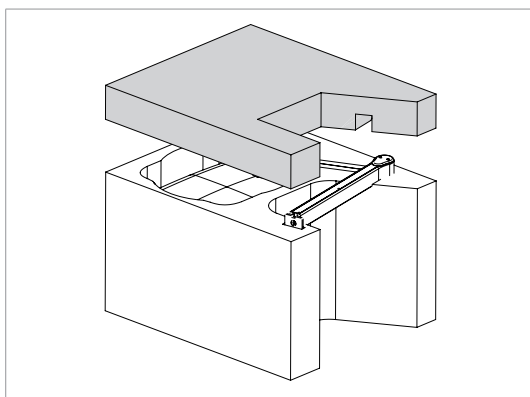
Component	Size(mm/inch)	Weight(kg/lbs)
Cephalometric unit	1000 x 900 x 870 / 40" x 33" x 32"	45/100



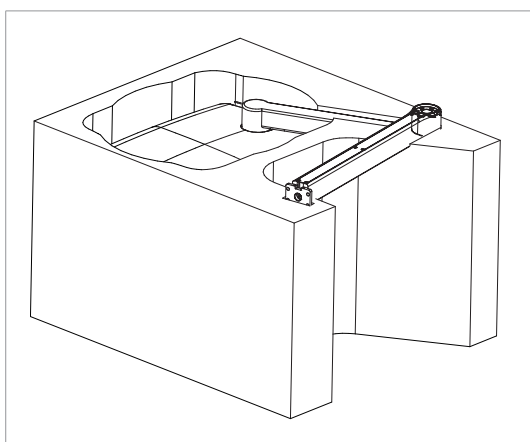
Removing the cover



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



2. Remove the top Styrofoam cover.

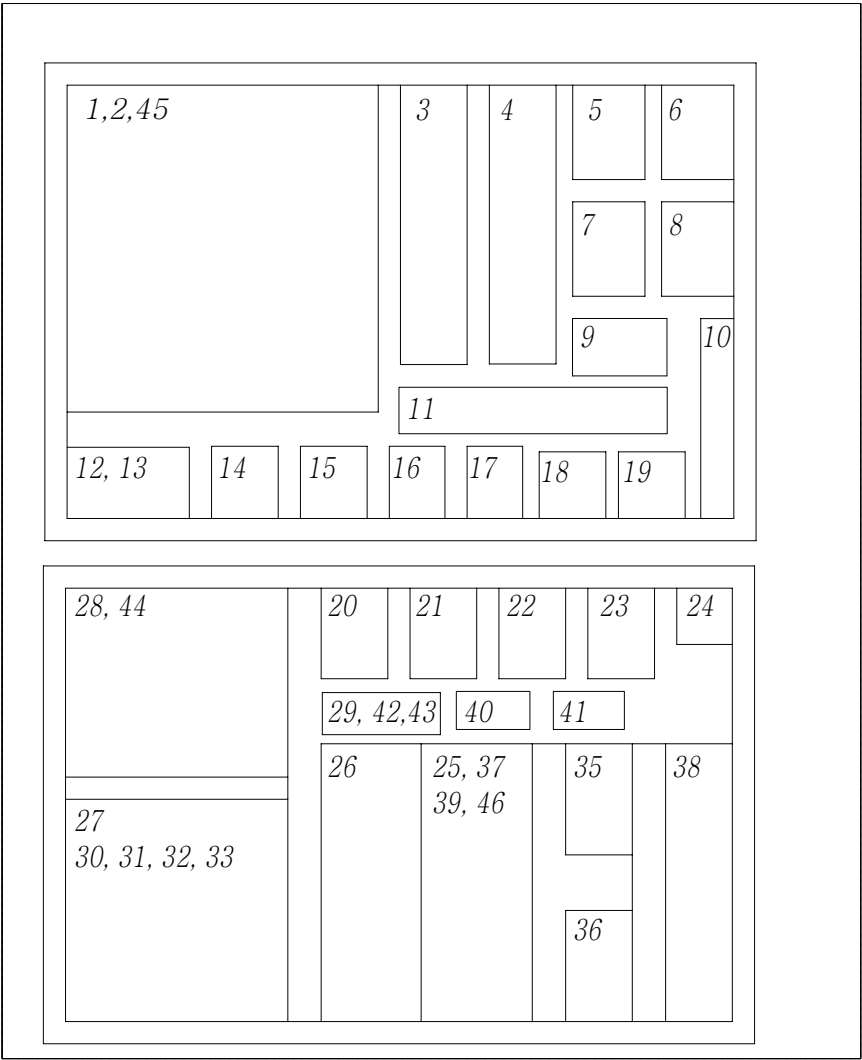


The view after removal of the Styrofoam.


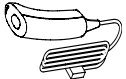

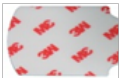


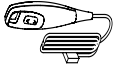















### 3.4 Checking the Parts

Location layout of the parts and accessories



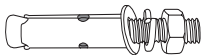
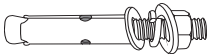





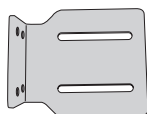
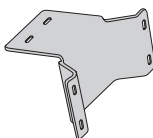
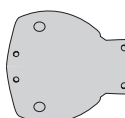
## Parts list: In the accessory box

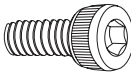
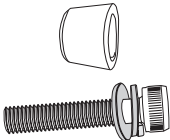
Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)	
1	MANUALS	User		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Installation		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		EasyDent or EzDent-i		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
		Ez3D plus or Ez3D-i		1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	INSTALLATION CD			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	Left blank intentionally					
12	BITE BLOCK	Normal		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
	BITE BLOCK CAP			2		Yes <input type="checkbox"/> No <input type="checkbox"/>
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	SILICONE COVER	CHINREST		2	CT/PANO	Yes <input type="checkbox"/> No <input type="checkbox"/>
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		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 flat washer		6	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
		M8 w/ 2 flat flat washers		2	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	NUTS	M8		4		Yes <input type="checkbox"/>	No <input type="checkbox"/>
	FLAT WASHER	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"/>
38	WALL BRACKET			1		Yes <input type="checkbox"/>	No <input type="checkbox"/>
39	ALIGNMENT PLATE	Template		1	Wall mount	Yes <input type="checkbox"/>	No <input type="checkbox"/>
40	Left blank intentionally						

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed (OK?)
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"/>
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"/>

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blank.***



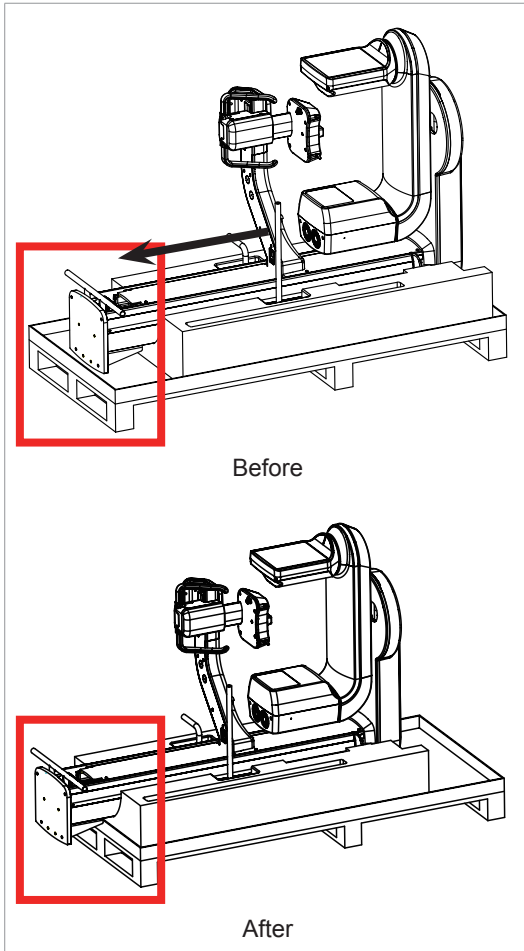
# 4

## Installing the Equipment: Floor Standing

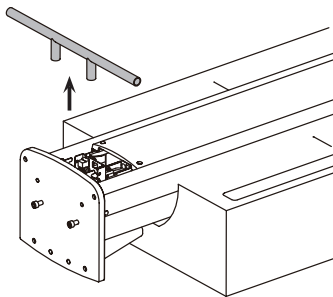
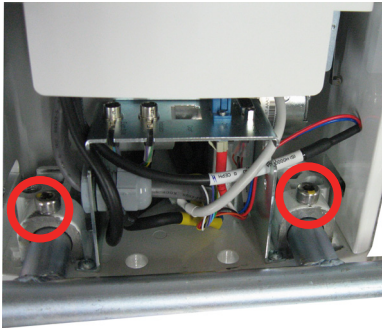
4.1	Assembling the Base and Main Units.....	52
4.2	Removing the Transportation Handle.....	56
4.3	Installing the Wall and Column Brackets.....	57
4.4	Removing the Transportation Safety Bolts.....	61
4.5	Installing the CEPH Unit (Optional).....	62
4.6	Removing the Protective Plastic Film.....	70

## 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.

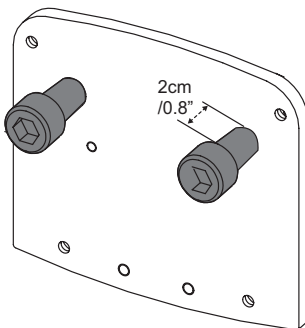
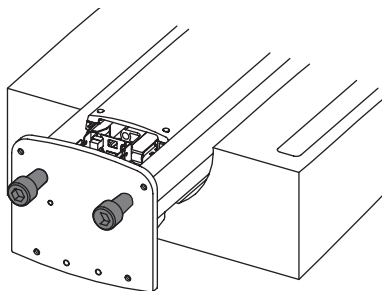


**Be careful not to damage the cables. Especially, the fiber optic cable is very sensitive to the external impact.**

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

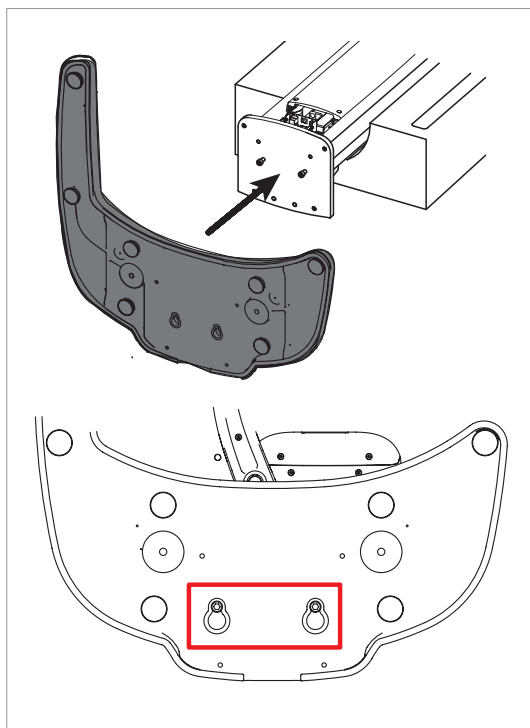
8 mm/0.23"



IMPORTANT

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

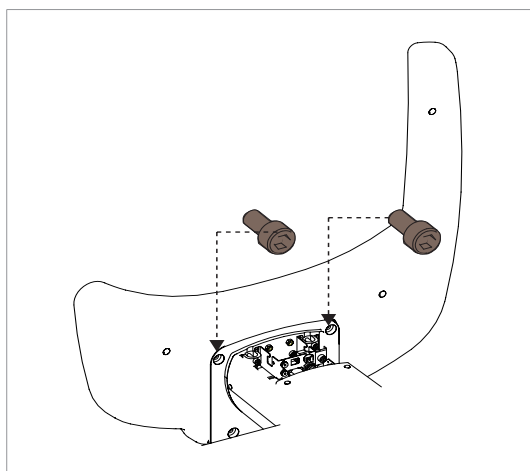
## Assembling the base with column units





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

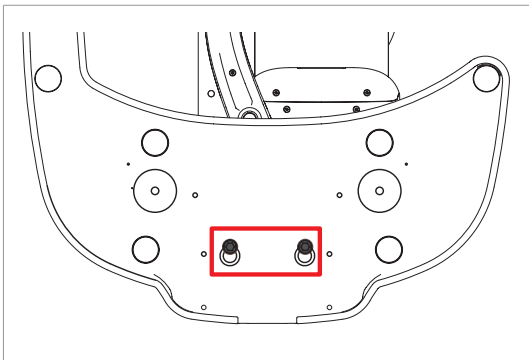


An installer should hold the base unit to keep it from falling down.

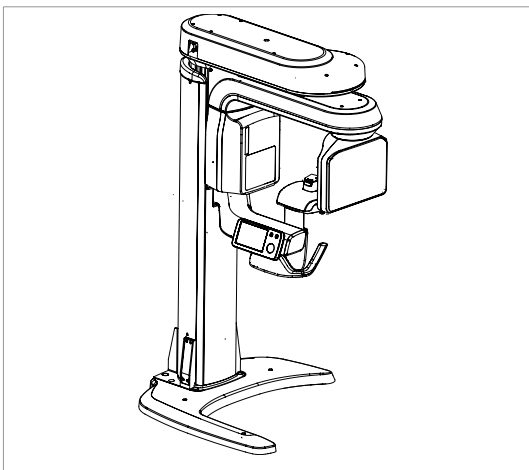


2. Fasten the base unit with two wrench bolts.

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.

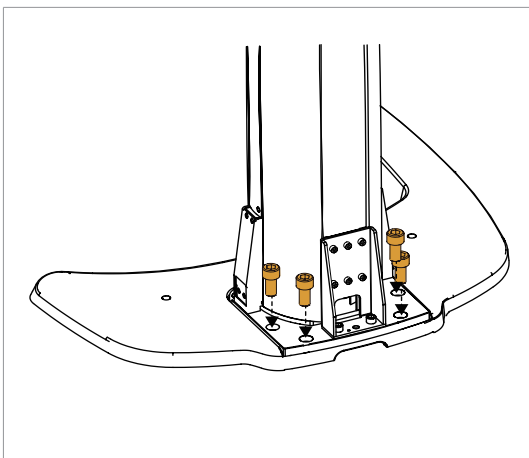


4. Erect the equipment in an upright position.





CAUTION

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

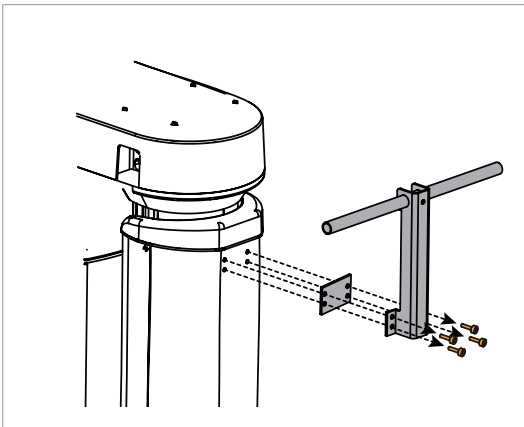


5. Fix the column unit to the base unit.

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

## 4.2 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

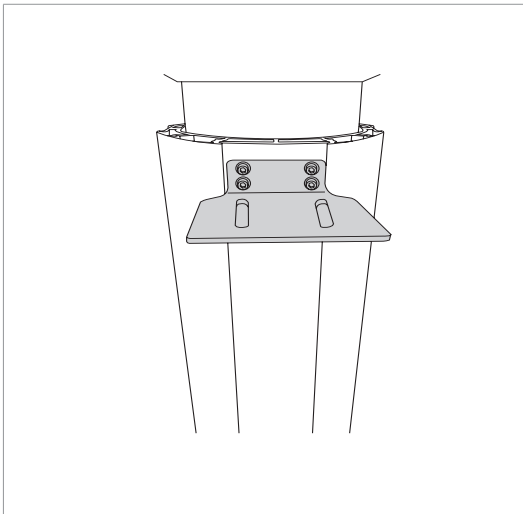
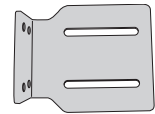
One installer should hold the handle, while the other is removing the bolts.

## 4.3 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

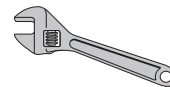


Allen wrench

6 mm/0.24"



Monkey  
wrench

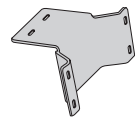


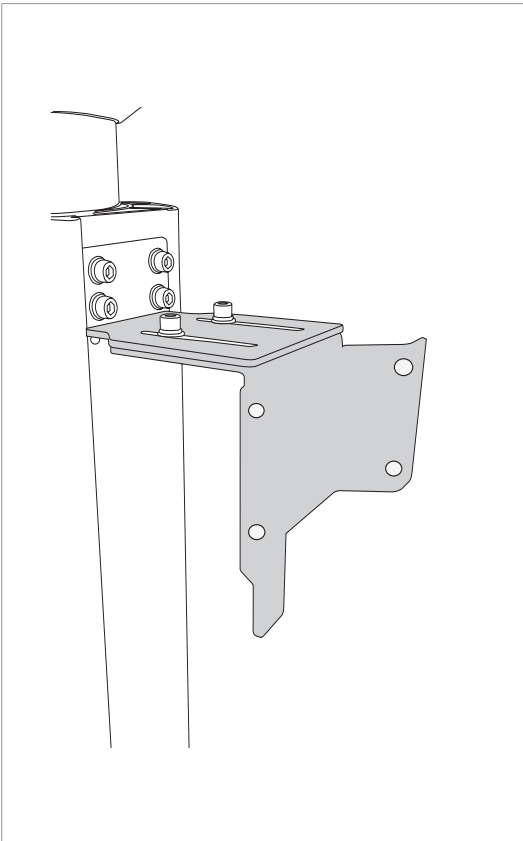
### Combining column and wall brackets

1. Prepare the wall bracket.

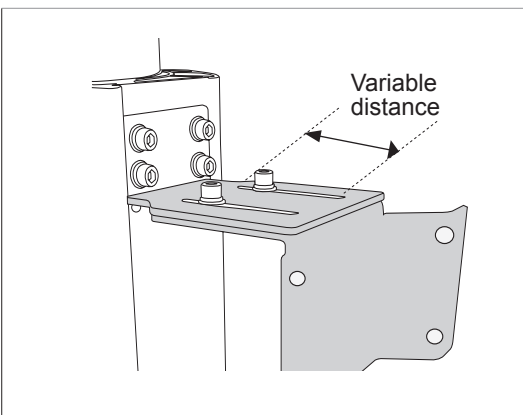
WALL  
BRACKET

Part No.: 38


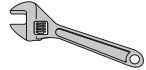






**Marking 4 points on the wall**



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	

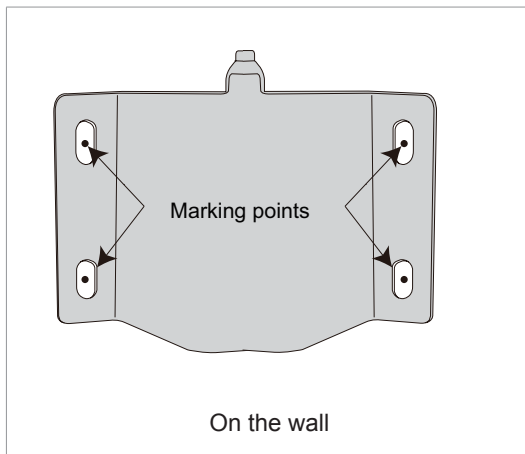


**Do not tighten the bolts fully yet.**

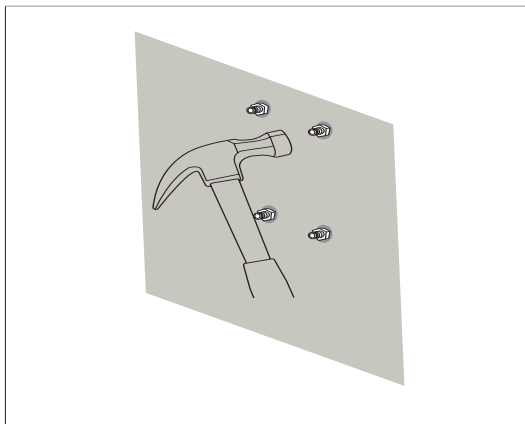
1. Move the equipment to the installation site as close as possible

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



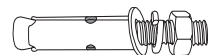
### 1. Drill the wall holes of size 10.5 mm x 30 mm (depth) using the concrete hammer drill.

### 2. Remove the debris and clean the holes using the dust pump.

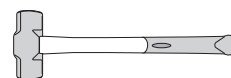
### 3. Anchor the bolts with the hammer. Verify that the anchors are secured

WRENCH  
BOLTS

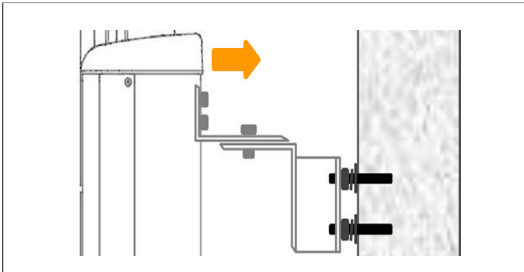
M8 size  
Part No.: 35  
Wall: 4 PCS



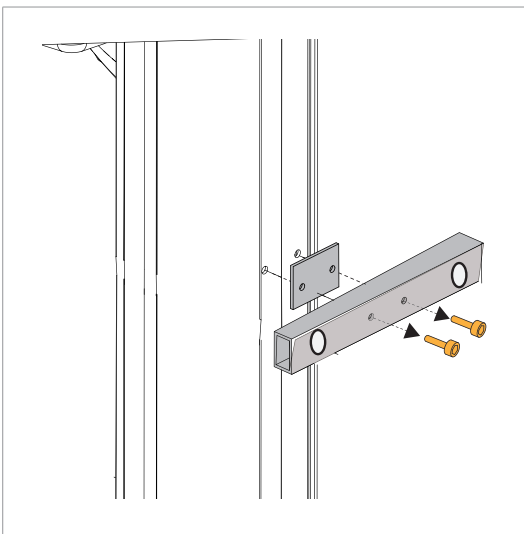
Hammer  
drill



### Combining the equipment with the anchor bolts



1. Place the equipment properly in its position and secure it with the nuts.



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

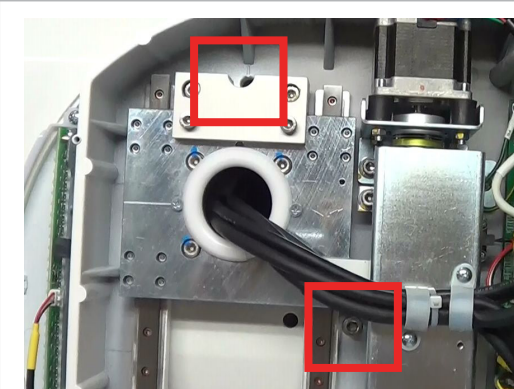
## 4.4 Removing the Transportation Safety Bolts



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



**Be careful not to scratch the cover.**



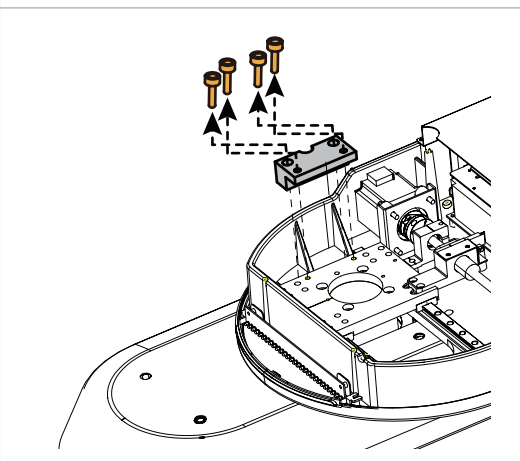
2. Remove two safety bolts.

Wrench bolts	M 8	
Allen wrench	6 mm/0.24"	



3. Separate the fixing block for the rotating unit after removing 4 bolts.

Allen wrench	5 mm/0.2"	

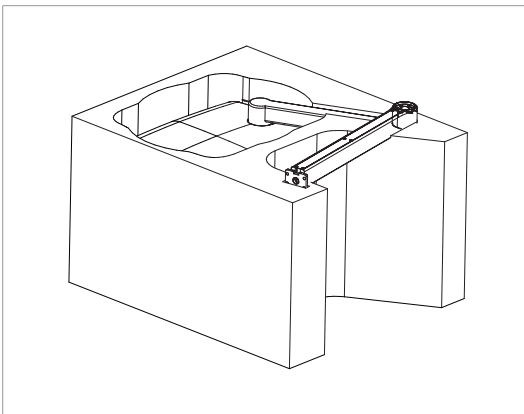


## 4.5 Installing the CEPH Unit (Optional)

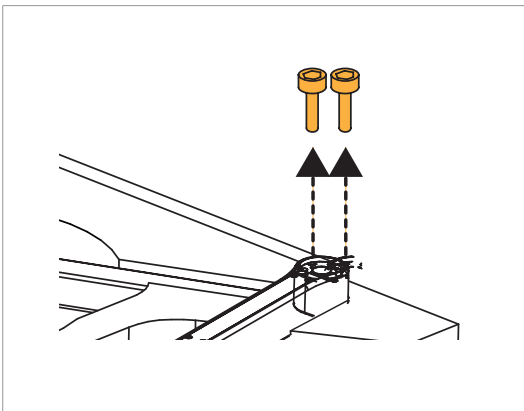


**Never hold the areas of the collimator, sensor and tube head.**

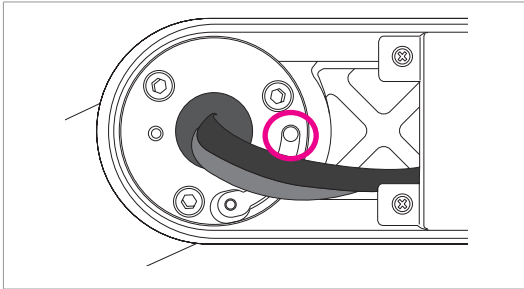
### Preparing for the CEPH unit



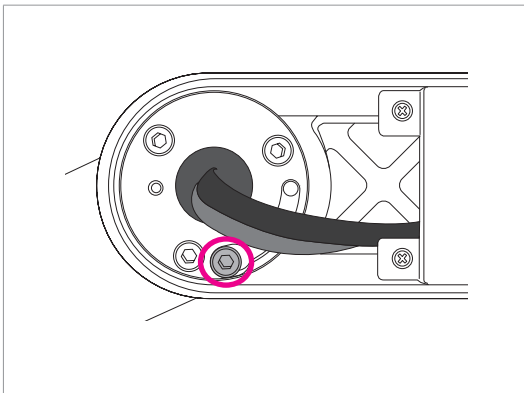
1. Now it is assumed that the CEPH box has already been opened.




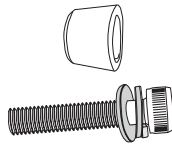
2. Remove 2 bolts from the Cephalometric arm's joint.

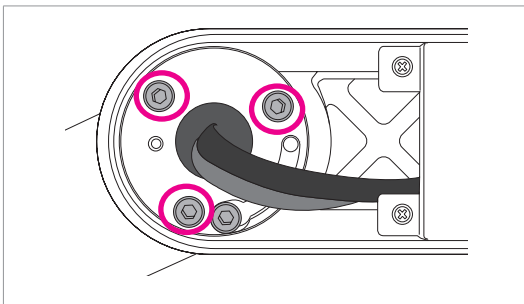


3. Stretch the arm fully until the moving arm stops by the stopper:


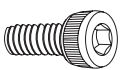


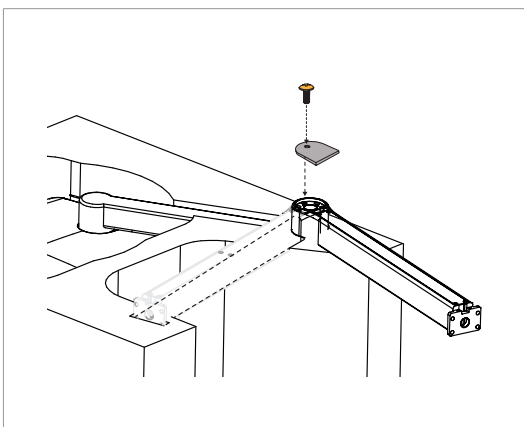
4. Tighten the bolt firmly in a manner, as illustrated in the figure.er:

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


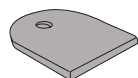



5. Fix the arm again with the three bolts (red circle).

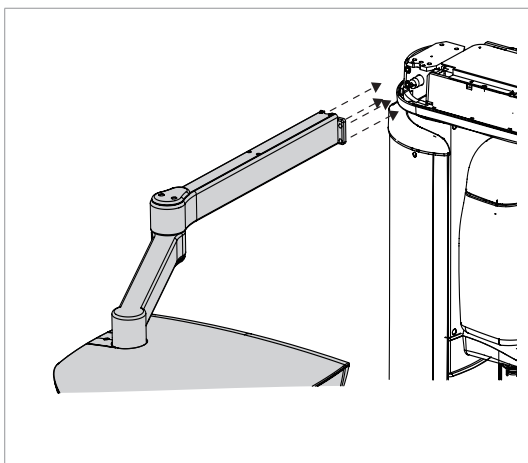
Allen wrench	5 mm/0.2"	
WRENCH BOLT	Part No.: 42 3 PCS	



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.

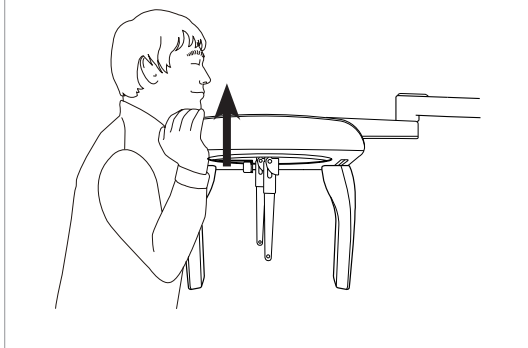


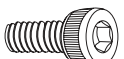

2. Secure them using 4 wrench bolts in the numbered order. **One installer should push the end of the CEPH unit up as hard as possible.**

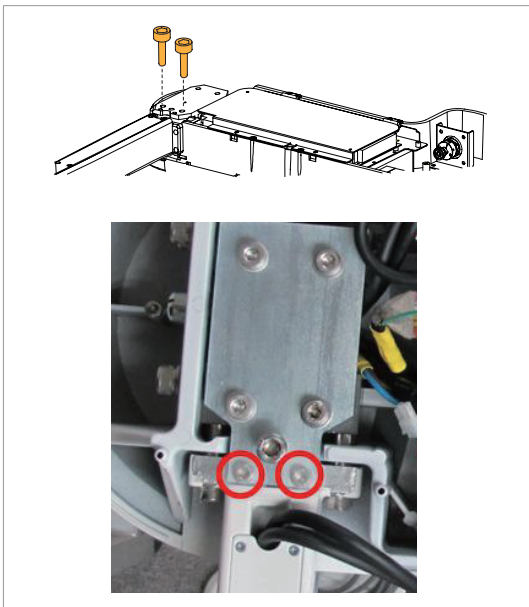


CAUTION



**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"	



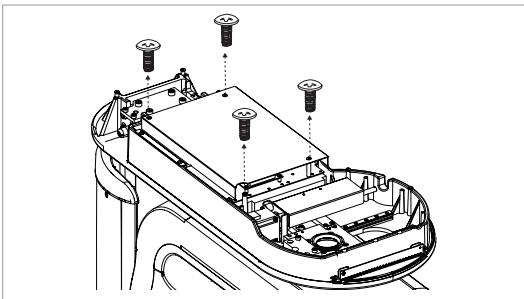
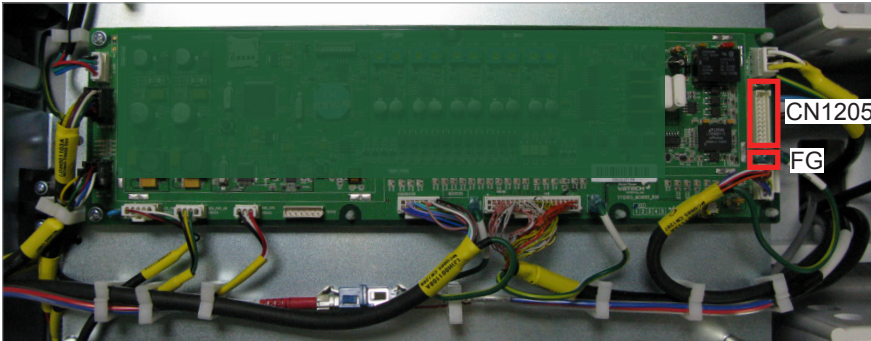
3. Tighten 2 wrench bolts firmly at the following locations. One installer should keep on lifting the CEPH unit up slightly.

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

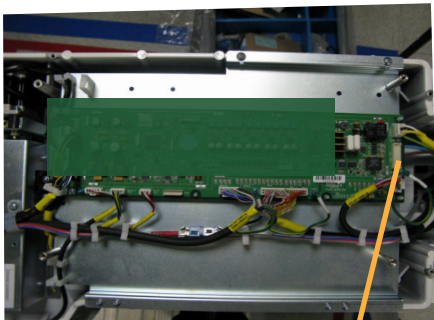
## Cabling between the CEPH and main units

### OS and OP: LAN cable

#### Connectors' layout



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



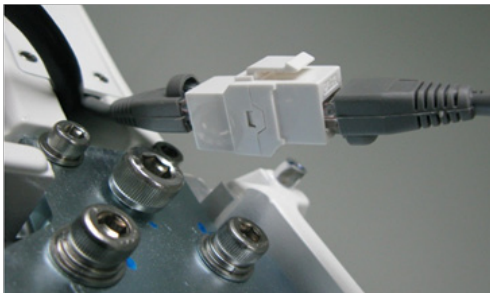
2. Connect the cable **H001110A(CN1205)** from the CEPH unit with the connector **CN1205** on the main CPU board.







3. Connect the FG ground cable.



4. Connect the LAN cables from the CEPH unit with the connector from the column unit.

**OP : H000031A ↔ H000032A**

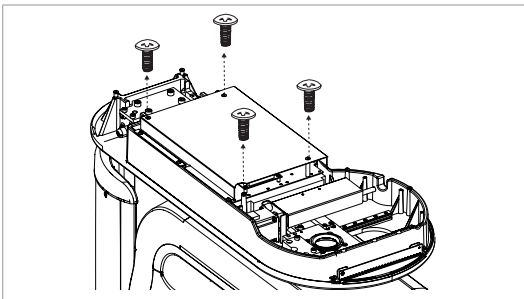
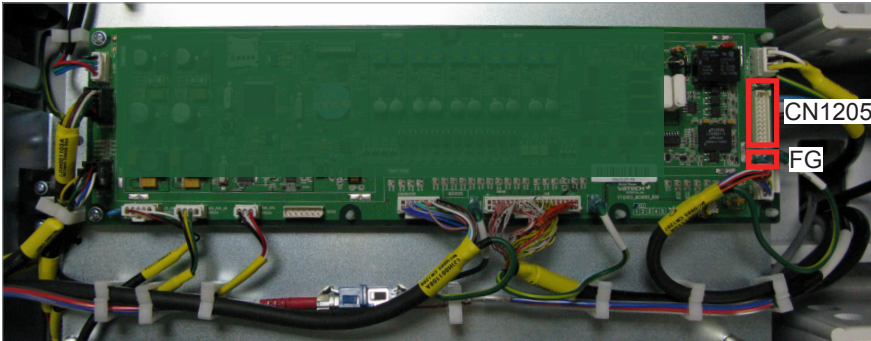
**OS : H000033A ↔ H000032A**

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

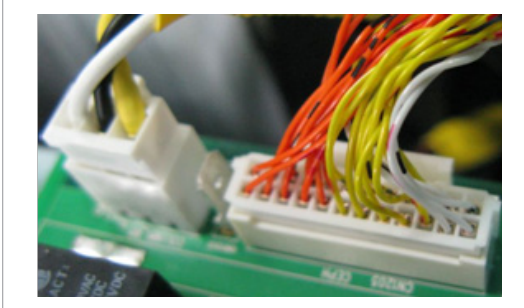
## Cabling between the CEPH and main units

### SCAN type: Fiber optic cable

#### Connectors' layout



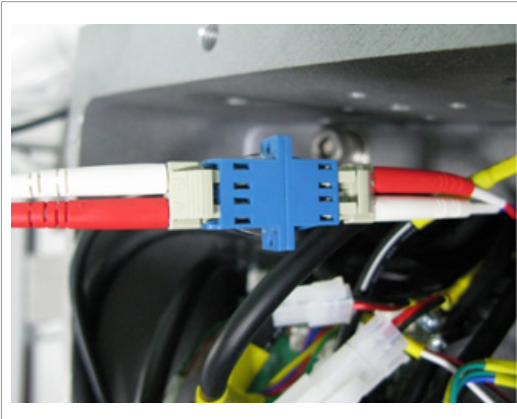
1. Remove the 4 truss bolts to separate the top cover.



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.



4. 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.

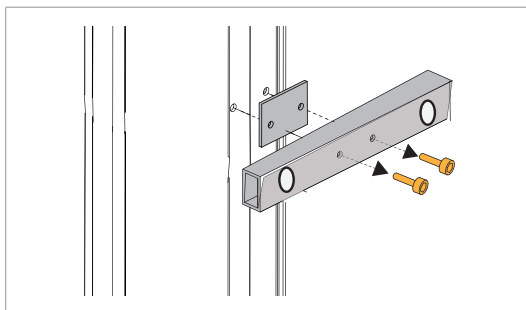
## Removing the carrying handle (When the CEPH unit is installed)



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

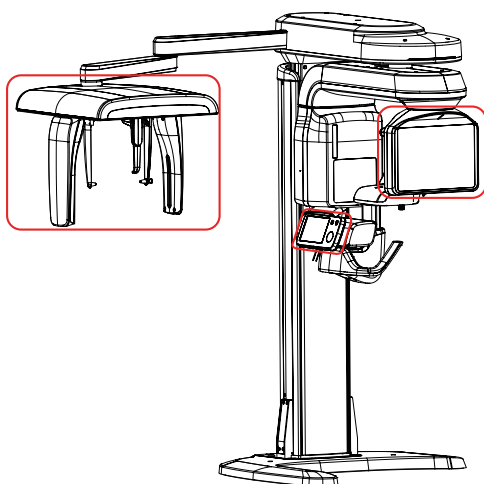


**Two installers should hold the carrying handle firmly while moving the equipment.**



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**

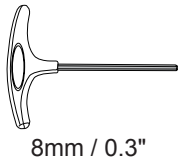
**Sensor part on the rotating unit**

**LCD on the handle frame**

# 5

---

## Leveling the Equipment



T-shaped hex wrench

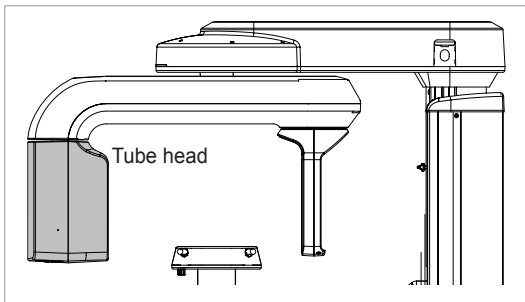


Spirit level

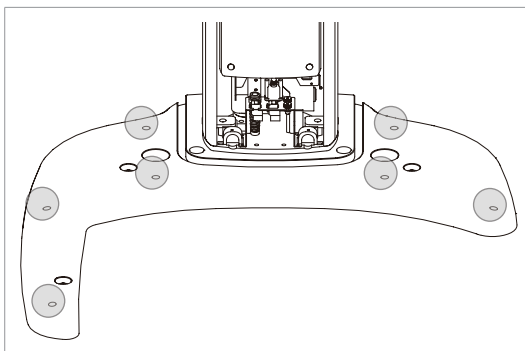


**Ensure that the spirit level should rest only on the locations indicated in the following figures to obtain the accurate center.**

1. Prepare the spirit level.



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

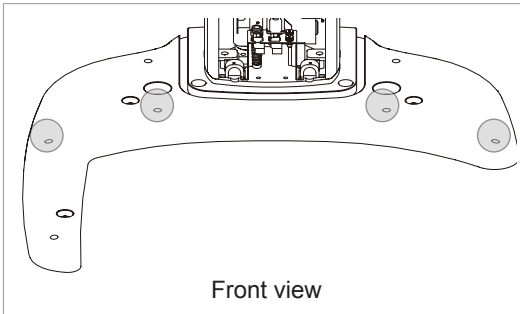


3. Turn all seven screws on the base plate unit clockwise until they touch the ground.

## Leveling right and left



Side view

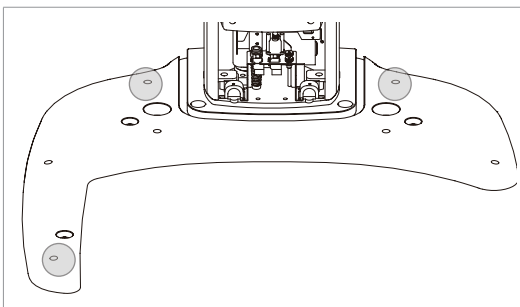


Front view

1. Place the spirit level, as follows.

2. 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



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

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

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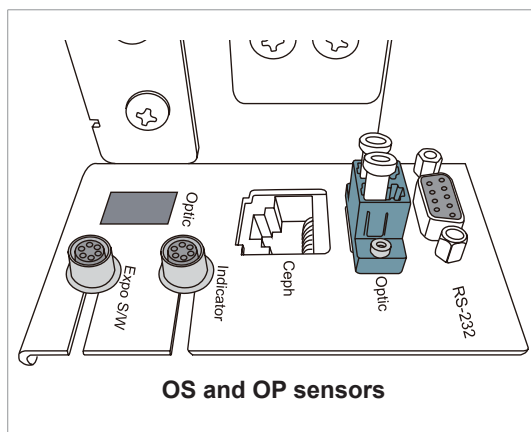
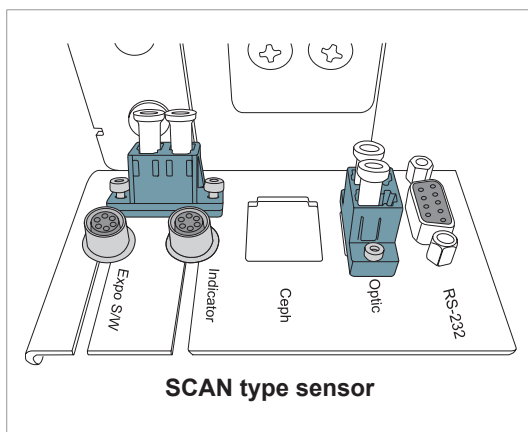
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## Completing Miscellaneous Works

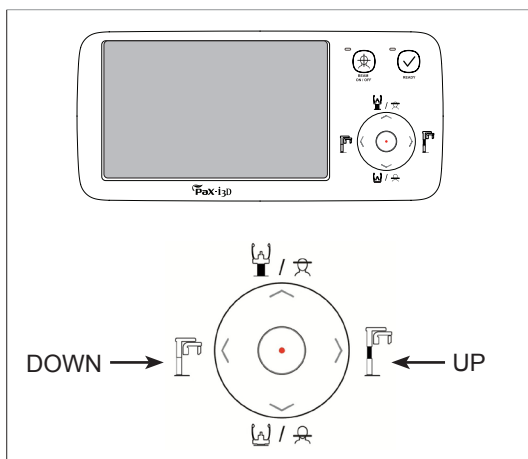
<b>6.1</b>	Connecting the Cables to the Equipment.....	76
<b>6.2</b>	Assembling Various Covers .....	79
<b>6.3</b>	Assembling Temple and Chin Supports .....	80
<b>6.4</b>	Covering the Holes.....	81
<b>6.5</b>	Installing the Switch Holders .....	82
<b>6.6</b>	The Leftover Components.....	86

## 6.1 Connecting the Cables to the Equipment

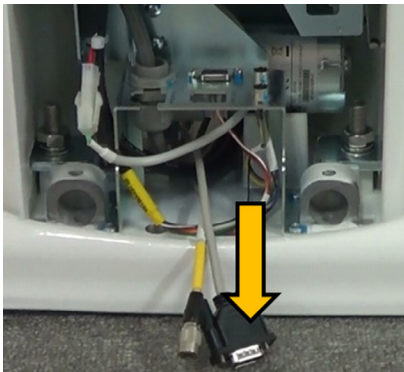
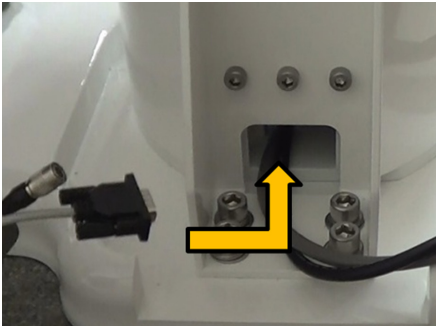
### Connectors' layout



### Raising the Column unit up

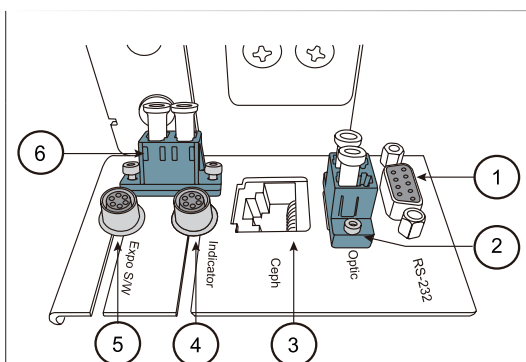


1. Plug the power cord to the power outlet.
2. Raise the column unit up about by 20 cm/8".
3. Turn off power to the equipment.



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.**

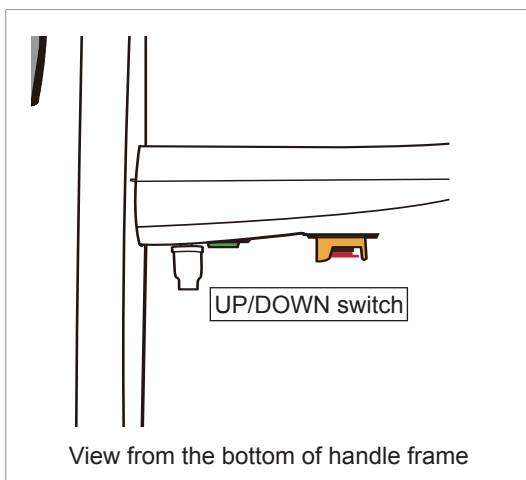
3. Connect the LAN cable if ONE SHOT type sensor is installed: Part No.: 26

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

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

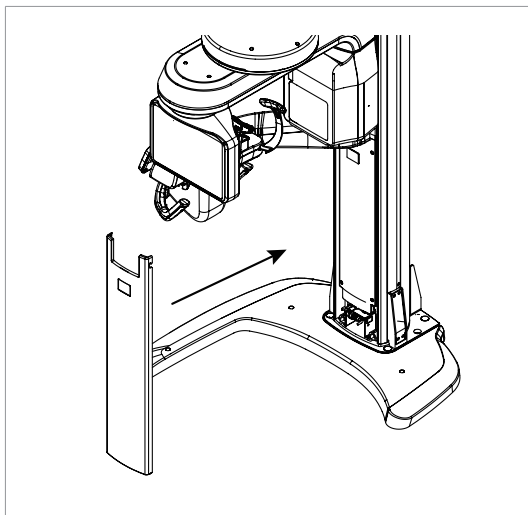
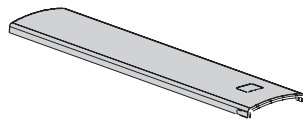
6. (Optional) Connect fiber optic cable if the scan type sensor is installed: Part No.: 27.

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



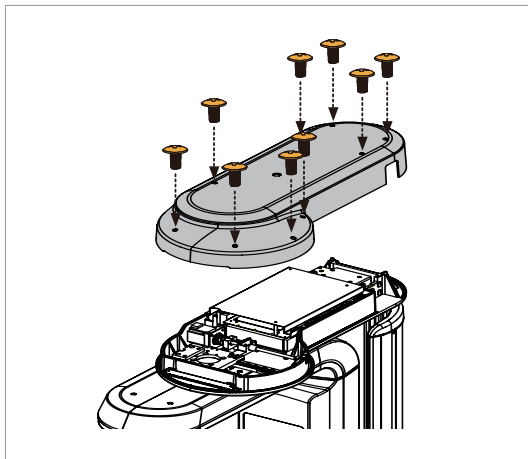
## 6.2 Assembling Various Covers

Case column Front




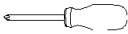
### Front column cover

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.

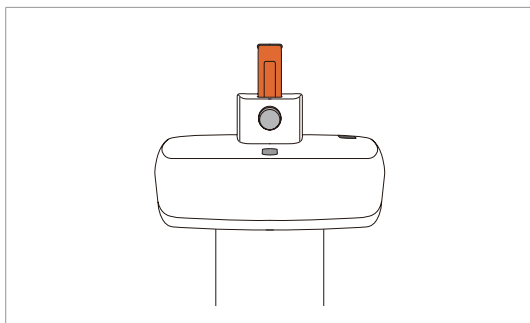


### Vertical frame cover

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	

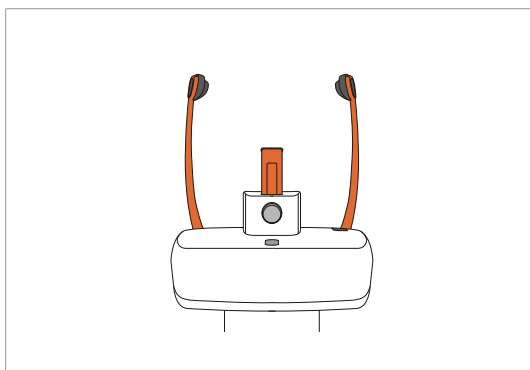
## 6.3 Assembling Temple and Chin Supports



1. Insert the normal chin support

BITE BLOCK:  
NORMAL

Part No.: 12  
1 PCS



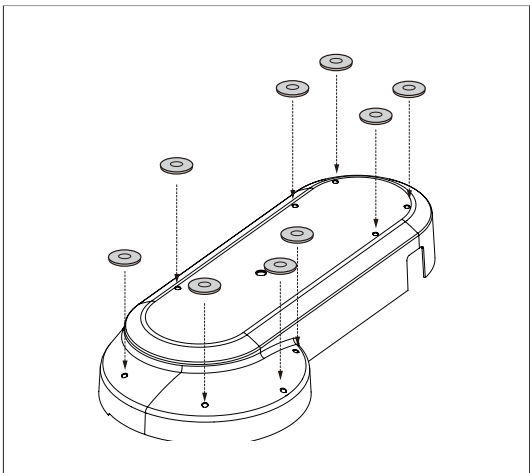
2. Insert the temple supports and ear rod caps.

TEMPLE  
SUPPORT

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



# 6.4 Covering the Holes



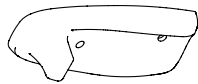

1. Cover the nine holes on the vertical frame with hole caps.

Silicon  
caps(white)

Part No.: 16

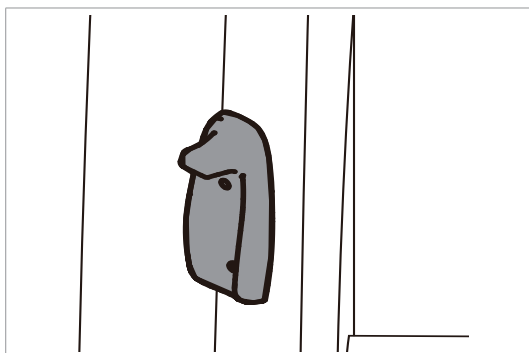


## 6.5 Installing the Switch Holders

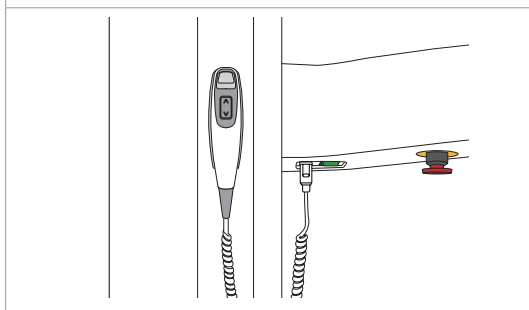
UP/DOWN SWITCH HOLDER	Part No.:4 1 PCS	
EXPOSURE SWITCH HOLDER	Part No.:2 1 PCS	

### 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.





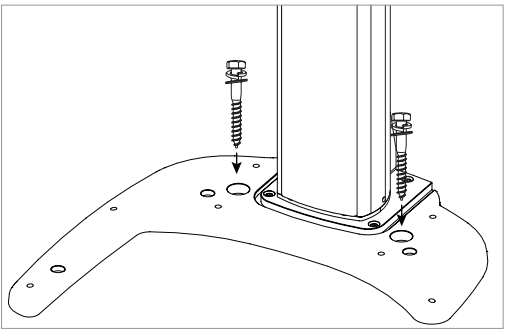
3. Connect the UP/DOWN switch (Optional: Part No.: 4)



**The following is applied only to Japanese market.**

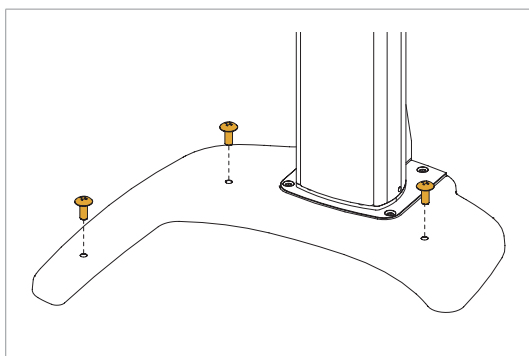
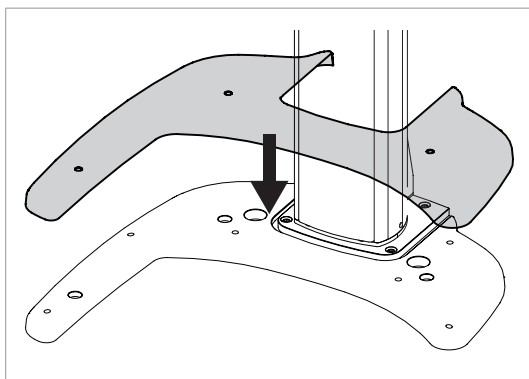
- 1. Detach the base unit cover.
- 2. Secure the base unit to the ground using the wood screws.

WOOD SCRWES	M8 x 60	
	Part No.: 35	
	2 PCS	
Hammer drill	L=200 mm/7.9	



- 3. Assemble the base unit cover again

## Base unit cover



### 1. Assemble the base cover.

Base Cover



### 2. Fix the base unit cover.

Truss Bolts

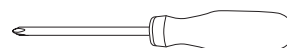
M5 x 8

Part NO : 23



Qty : 3

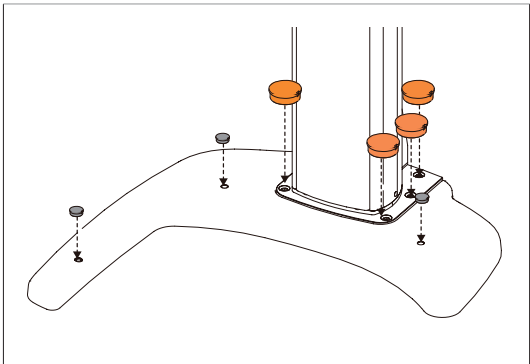


Cross head  
screw driver  
w/ magnetic  
tip



## Covering the Holes

Item	Part No.	Figure
BASE CAP1, 2	19	
Silicon caps(white)	16	



1. Cover the base unit holes (Cap1: 3 and Cap2: 6).


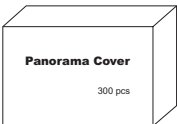
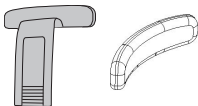



## Exposure switch holder

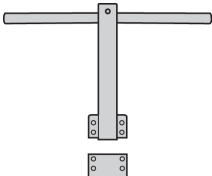
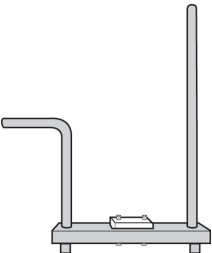

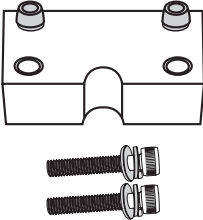
1. Locate the exposure switch holder (Part No.: 2) with a sticker and three screws.
2. Install the switch holder on the wall at the appropriate height using three screws.

## 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		
Manuals		

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

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## Installing the Equipment: Wall Mount

7.1	Installing the Equipment.....	90
7.2	Installing the Cephalometric Unit (Optional).....	101
7.3	Leveling the Equipment.....	101
7.4	Tightening the Bolts firmly .....	103
7.5	The Rest of Works.....	103

## 7.1 Installing the Equipment

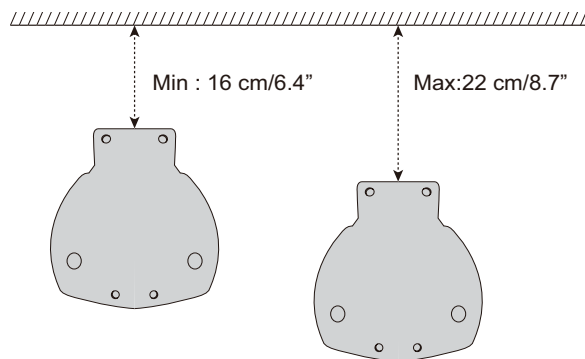
You are advised to plan and study the installation environment carefully in advance before proceeding, since the installation involves drilling the wall and floor. Pre-installation planning is crucial to a successful installation.

An accurate marking is of critical importance for a successful installation.

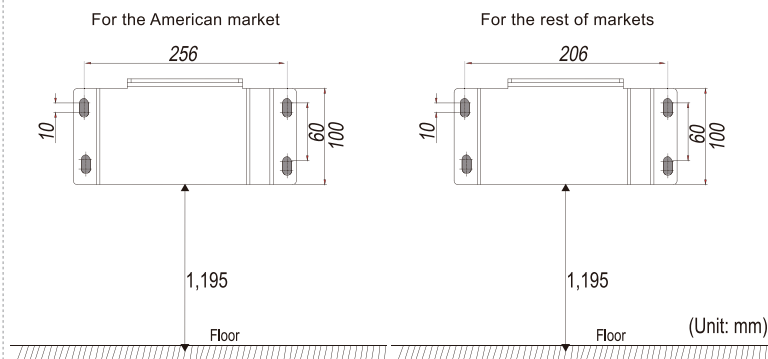
Two methods are available. Which one is preferred over the other depends on the situation of the installation site.

### 1. Marking in advance using the template provided

#### Distance between the wall and the template:



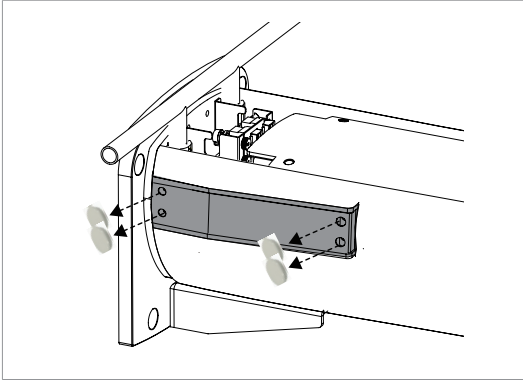
#### Height from the ground:



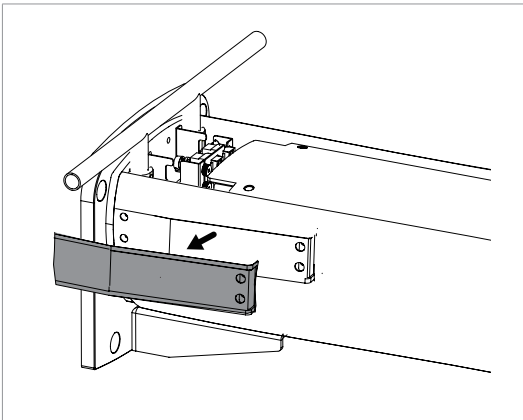
### 2. Marking after the equipment is moved to the wall, with two brackets combined (this method is explained in the manual).



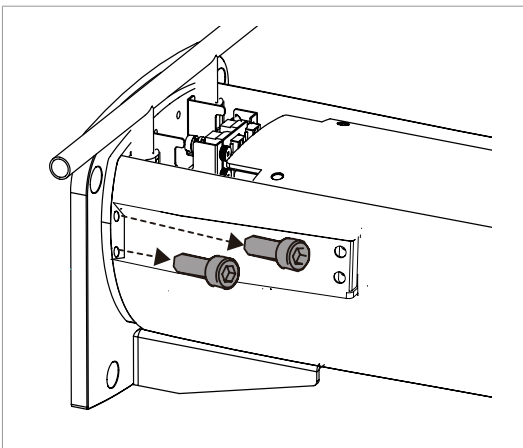
## Replacing the carrying handle with system supports



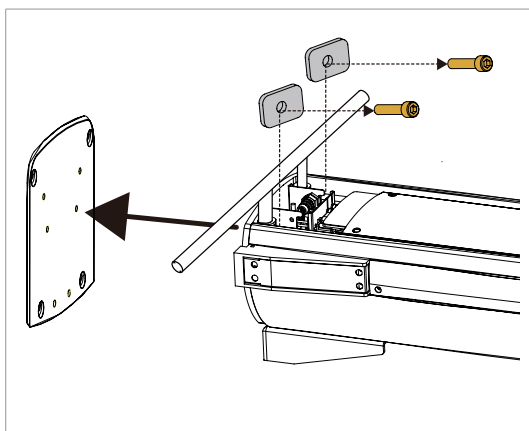
1. Remove eight hole covers on both sides.



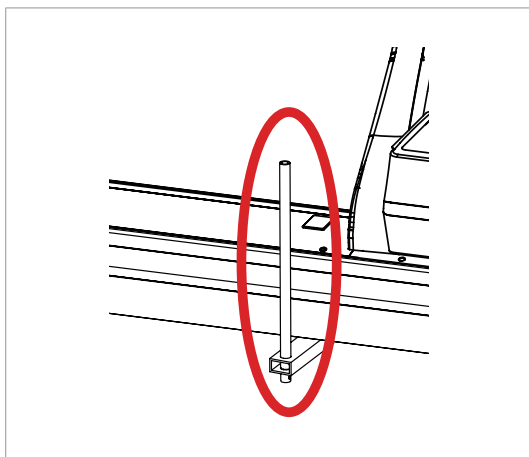
2. Separate the outer covers after removing 8 bolts on both sides.



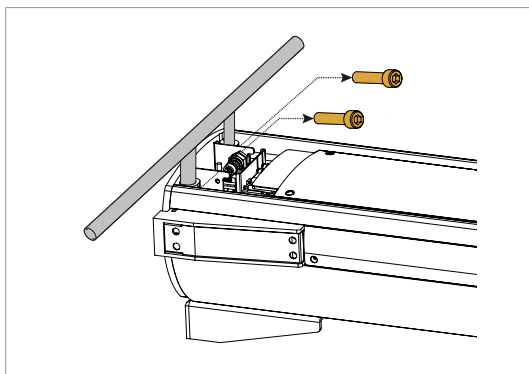
3. Remove two bolts on each side to separate the base plate.



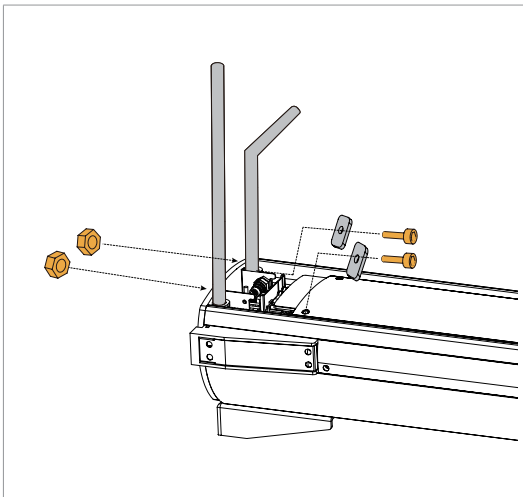
4. Separate the base plate. Do not discard the column support blocks. They are reused later.



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



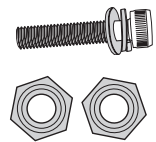
6. Separate the handle from the bottom of the column



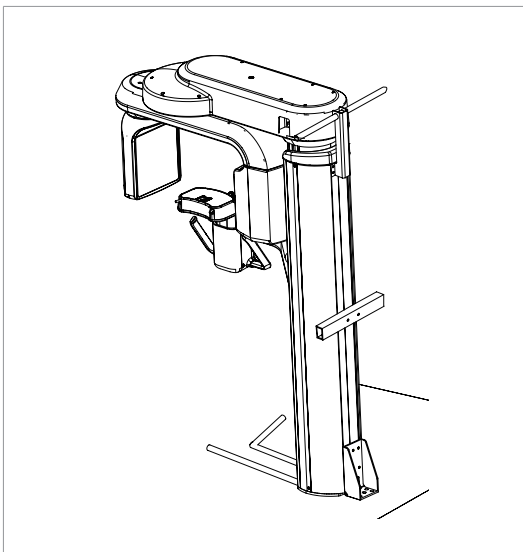
7. Attach two system supports to the bottom of column in the manner, as illustrated in the figure.

WRENCH  
BOLTS

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

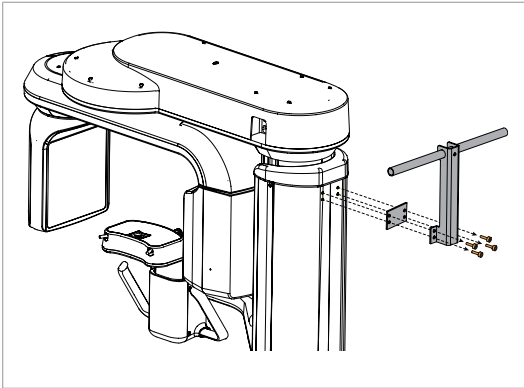


Allen wrench  
Monkey  
wrench



8. Erect the equipment in an upright position.

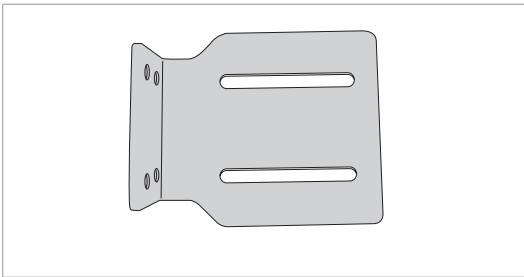
## Installing the Column Bracket on the Back of the Equipment



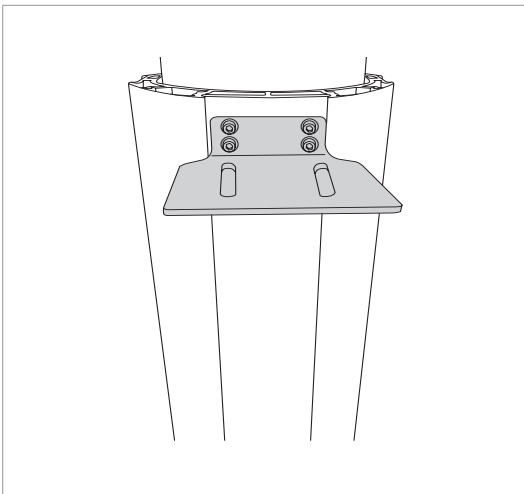
1. Separate the carrying handle on the top.



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



2. Prepare the wall 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

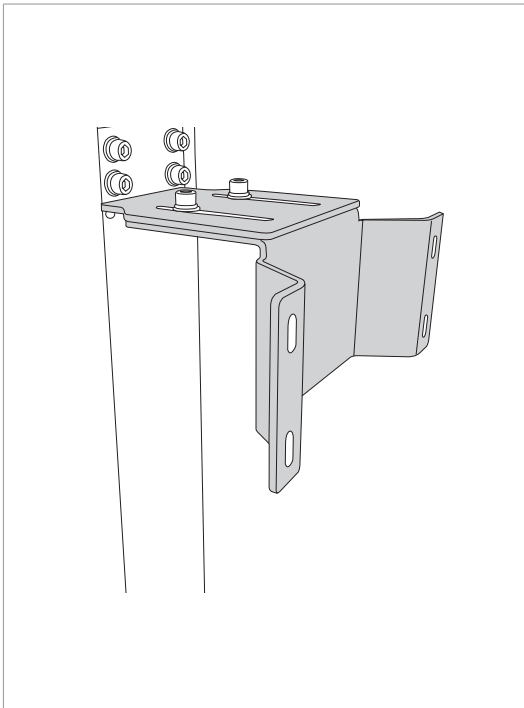
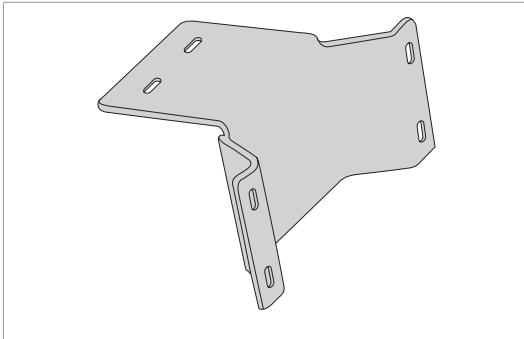
M8 x 20  
w/spring and  
flat washers.  
Part No.: 36  
4 PCS



Allen wrench



## Combining column and wall brackets



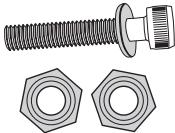

1. Prepare the wall bracket(Part No.: 38).

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

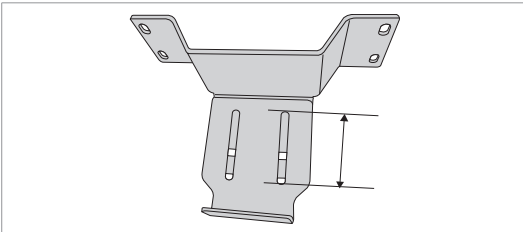


**IMPORTANT**

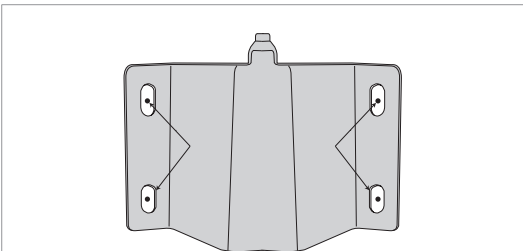
**Do not tighten the bolts yet.**

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

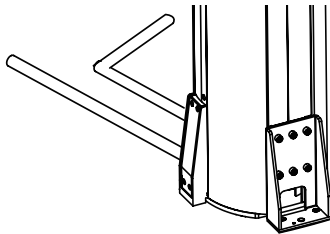
## Marking 6 locations on the floor and 4 on the wall



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.



On the wall: 4 locations (right and left)



On the floor: 2 locations (rear)

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

Marker



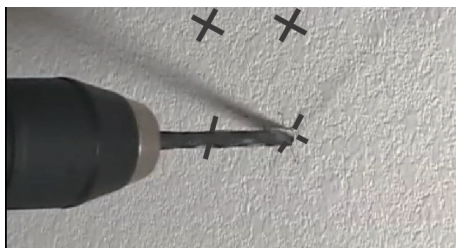
4. Move the equipment aside so as to mark the other 2 locations (front).



**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.

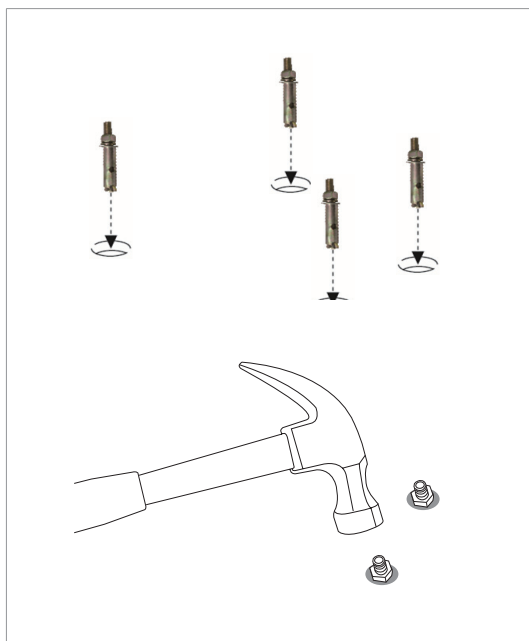


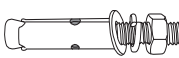
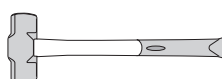
2. Drill the ground and wall holes of size 10.5 mm x 30 mm (depth) using the concrete hammer drill.

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

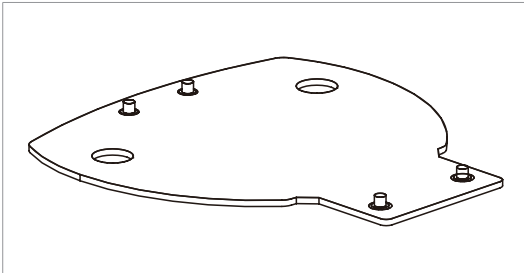
4. Anchor the bolts (M8 x 30, Part No. 35) with the hammer (ground and wall).

Verify that the anchors are secured

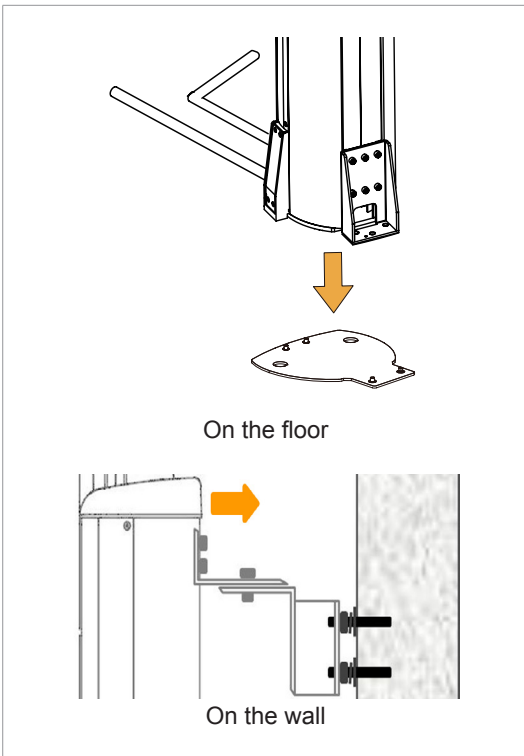


ANCHOR BOLTS	M8 size Part No.: 35 Wall: 4 PCS Floor: 4 PCS	
Hammer		

## Combining the equipment with the anchor bolts



1. Place the alignment plate through 4 anchor bolts.



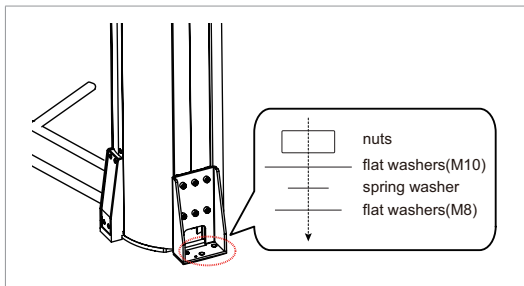
2. Place the equipment onto the alignment plate, while observing 8 anchor bolts are being inserted properly through each hole.



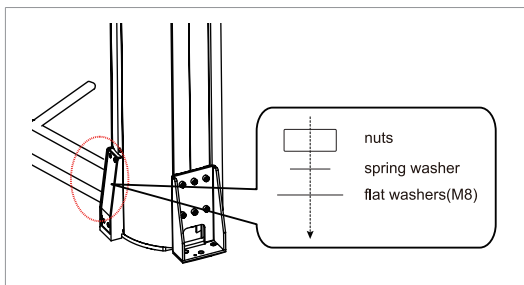
## Securing the equipment (8 locations)



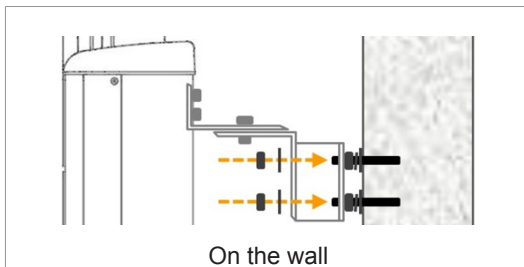
For the following procedures (1-3), do not tighten the nuts until after leveling is completed.



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.

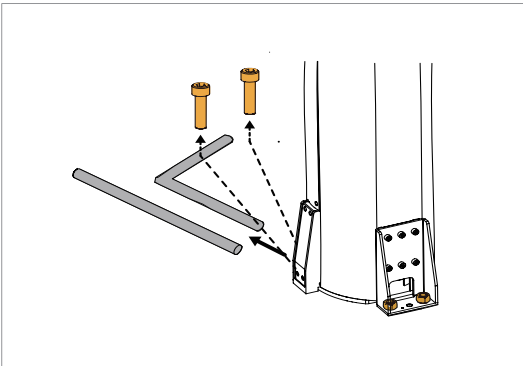


2. Insert three pieces through anchor bolts at two locations of front of the column bottom and tighten nuts loosely. Ensure that the three pieces are stacked exactly in proper order, as shown in the figure.

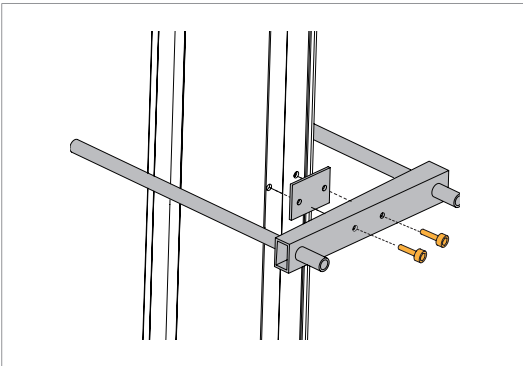


3. Insert the nuts and tighten nuts loosely..

**On the wall: 4 locations**



4. Separate the system supports from the column.



5. Remove the handle in the middle

## Removing the Security Bolt from Rotating Unit

1. Open the vertical frame cover, if not opened yet.
2. To do this works, refer to the section: **4.3 Removing the transportation safety bolt.**

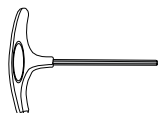
## 7.2 Installing the Cephalometric Unit (Optional)

For the Cephalometric unit installation, including the cabling between units, refer to the **section 4.4**.

## 7.3 Leveling the Equipment



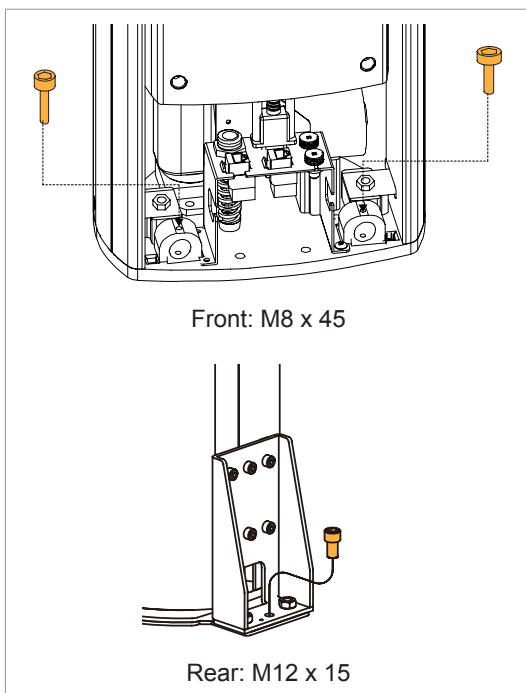
Spirit level



T-shaped hex wrench



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

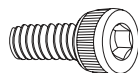


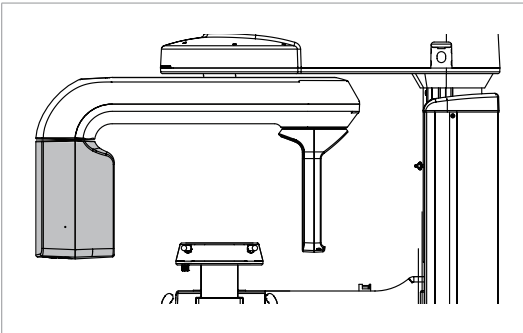
1. Prepare the spirit level.

2. Screw 3 wrench bolts (**Part No.:41**) loosely.

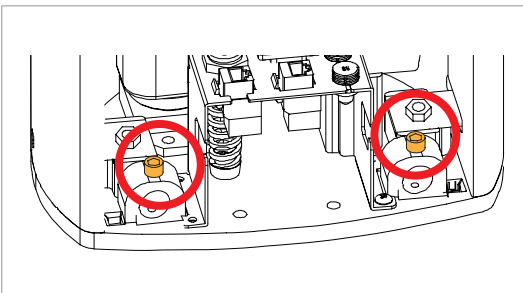
Wrench bolts

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



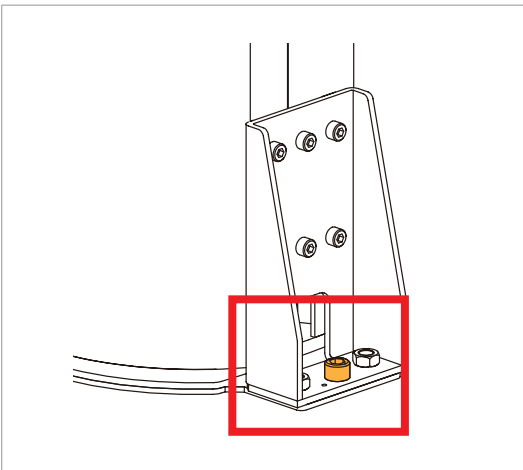


3. Position the rotating unit so that the X-Ray tube head faces the front.



### 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



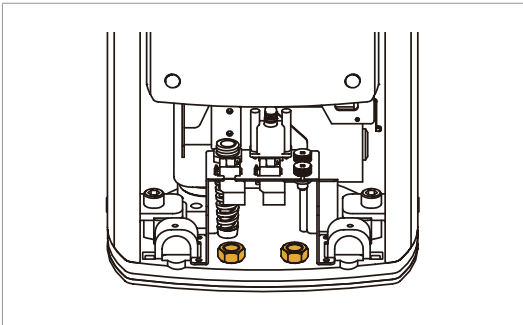
### Front and Rear

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

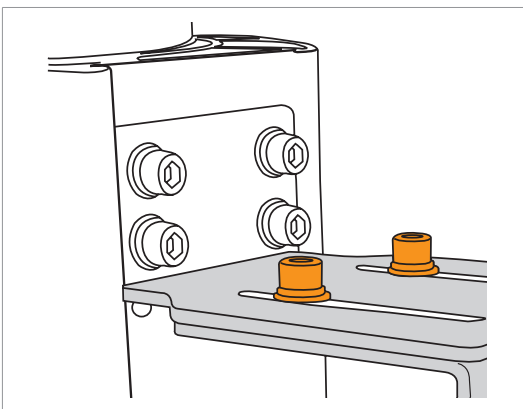
## 7.4 Tightening the Bolts firmly



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.

## 7.5 The Rest of Works

They are the same as those for the base mounted installation.

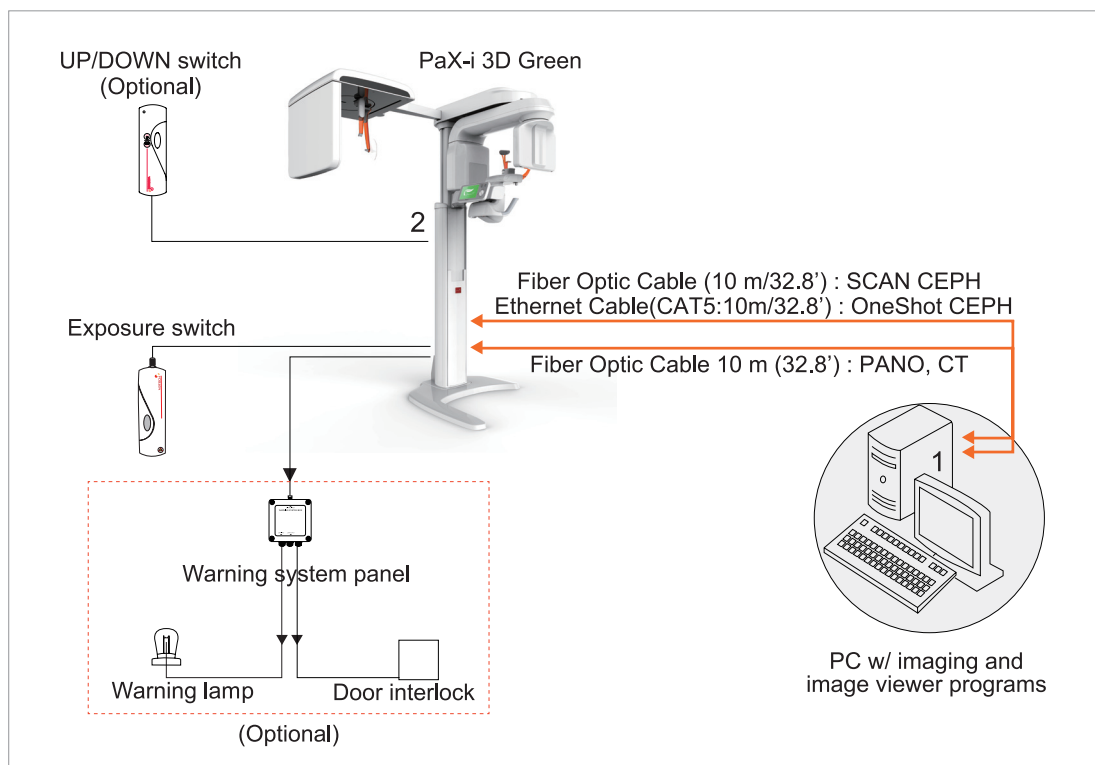
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# 8

## Setting up PC

<b>8.1</b>	Direct Connection Diagram .....	106
<b>8.2</b>	The Recommended PC Requirements .....	107
<b>8.3</b>	Installing the Internal Peripherals .....	109
<b>8.4</b>	Connecting the Cables to PC .....	111

## 8.1 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



## 8.2 The Recommended PC Requirements



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	HP	LENOVO
<b>CPU</b>	Intel Xeon E5-1607 3GHz 1600 4C or Faster	Intel XeonE5-1620 3.60GHz 4C or Faster
<b>RAM</b>	8GB DDR3-1600 ECC RAM	8GB DDR3 1600MHz UDIMM-Non ECC
<b>Hard disk drive</b>	1 TB SATA 1st HDD	1 TB SATA 1st HDD
<b>Graphic board</b>	NVIDIA GEFORCE GTX660 TI 2.0GB Graphics	NVIDIA GEFORCE GTX660 TI 2.0GB Graphics
<b>Ethernet interface</b>	Broadcom 5761 Gigabit	Intel 82579 Gigabit
<b>Serial Port (RS232)</b>	HP Serial Port Adapter Kit	1 (On board)
<b>Power supply</b>	≥ 600 Watts (90 % Efficiency)	≥ 610 Watts (85 % Efficiency)
<b>Slots</b>	1 PCI Express Gen3 x 8 Slot	2 PCI Express Gen3 x 16 Slot
	2 PCI Express Gen3 x 16 slot	1 PCI Express Gen3 x 16 Slot
	1 PCI Express Gen2 x 8 Slot	(x4 Electrical)
	1 PCI Express Gen2 x 4 Slot	1 PCI Express Gen2 x 4 Slot
	1 PCI Slot	1 PCI Slot
<b>CD/DVD drive</b>	16XSuperMulti DVD Drive	SATA DVD-ROM/DVD Recordable
<b>Monitor</b>	19"1280 x 1024 screen resolution	19"1280 x 1024 screen resolution
<b>Operating system</b>	Windows 7 Professional 64-Bit	Windows 7 Professional 64-Bit
<b>Recommended system</b>	Z420	S30



**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.**

## 8.3 Installing the Internal Peripherals



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



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.



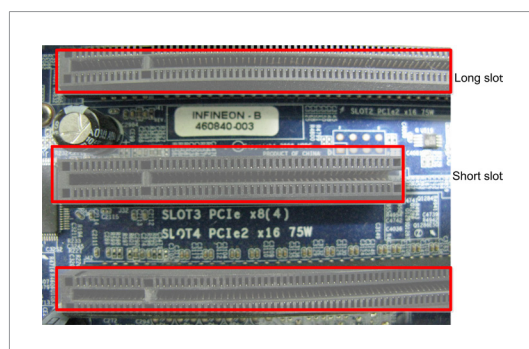
2. Do not wear the likes of a thick jacket.



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. Locate the **PCIe x 8(16)** slot for the **AG4** board. Any length of slot can be used: short or long.

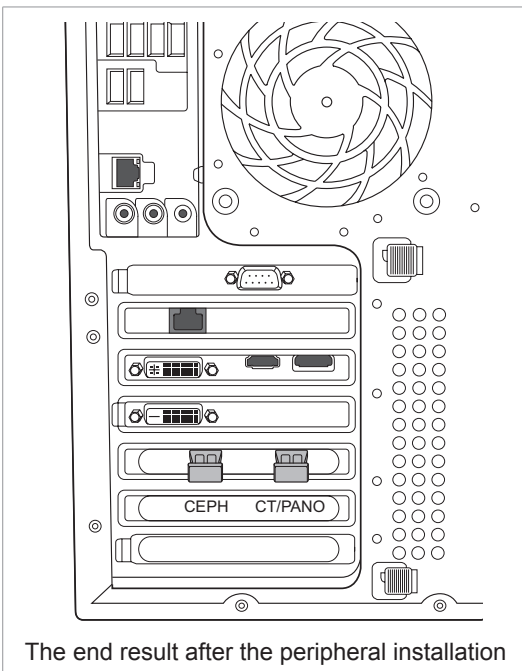
For the SCAN type sensor to be installed, the slot should be the 8 times PCIe or higher



4. Insert the fiber frame grabber board (Part No.: 27) carefully into that slot and lock it.



**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.**



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

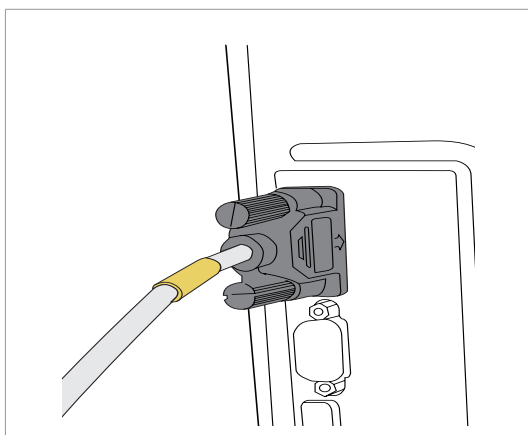
## 8.4 Connecting the Cables to PC



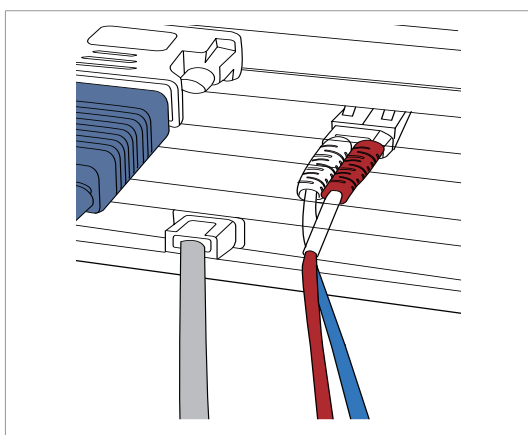
**Always check the cable condition visually. Surprisingly, unexpected errors affecting image acquisition arise from the bad cable or its bad contact condition.**

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

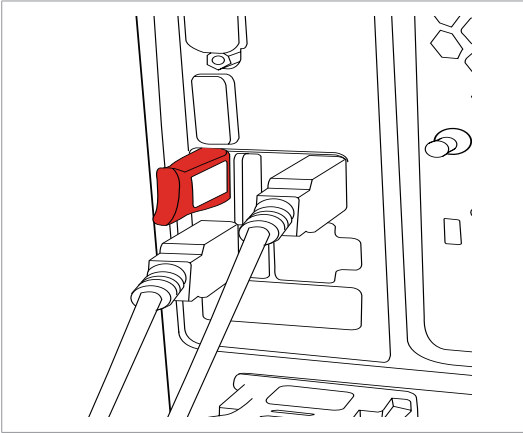
**The following figures and descriptions are based on the PC model Z420 from HP.**



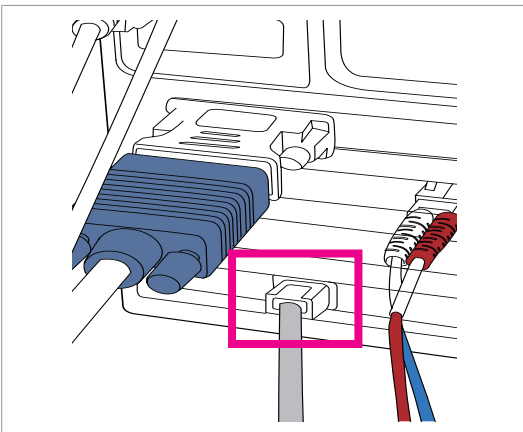
**1. Connect the RS-232 cable.**



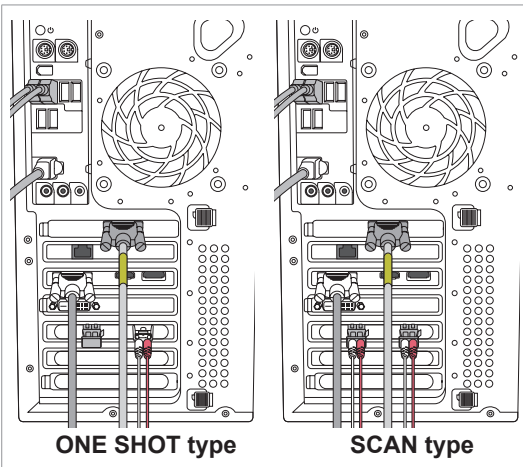
**2. Connect the fiber optic cable (Part No.: 27)**



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

# 9

## Setting up PC's Environment Variables

<b>9.1</b>	Before Beginning .....	114
<b>9.2</b>	Checking PC BIOS Settings .....	114
<b>9.3</b>	Turning the firewall off .....	115
<b>9.4</b>	Setting up the Power Mangement Options .....	117
<b>9.5</b>	Turning off the User Account Control .....	119
<b>9.6</b>	Setting Folder exclusions with Anti-virus Software .....	121



NOTE

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

## 9.1 Before Beginning



IMPORTANT

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.

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.

## 9.2 Checking PC BIOS Settings

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

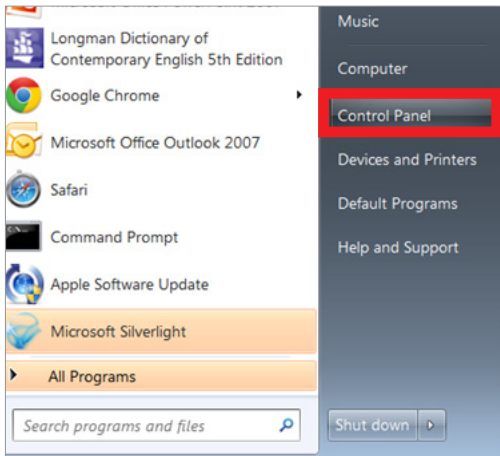
Before proceeding to the next sections, check the BIOS status.



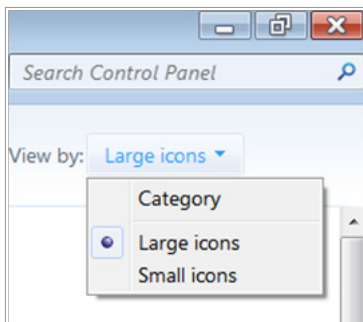
## 9.3 Turning the firewall off

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

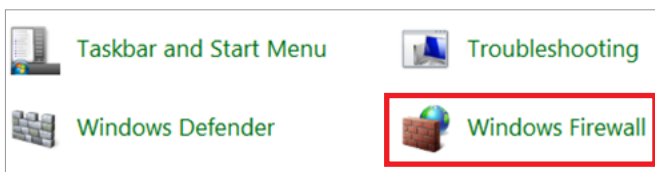
1. From the desktop, click **Start** → **Control Panel**



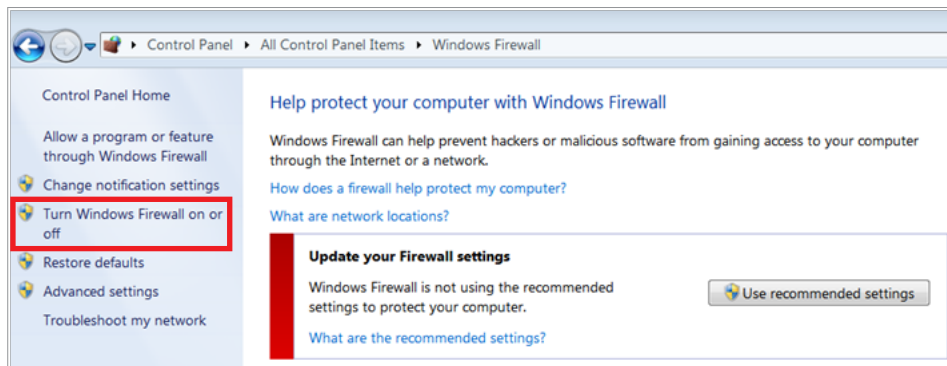
2. Click the **View by** field on the upper right corner and select **Large icons**.



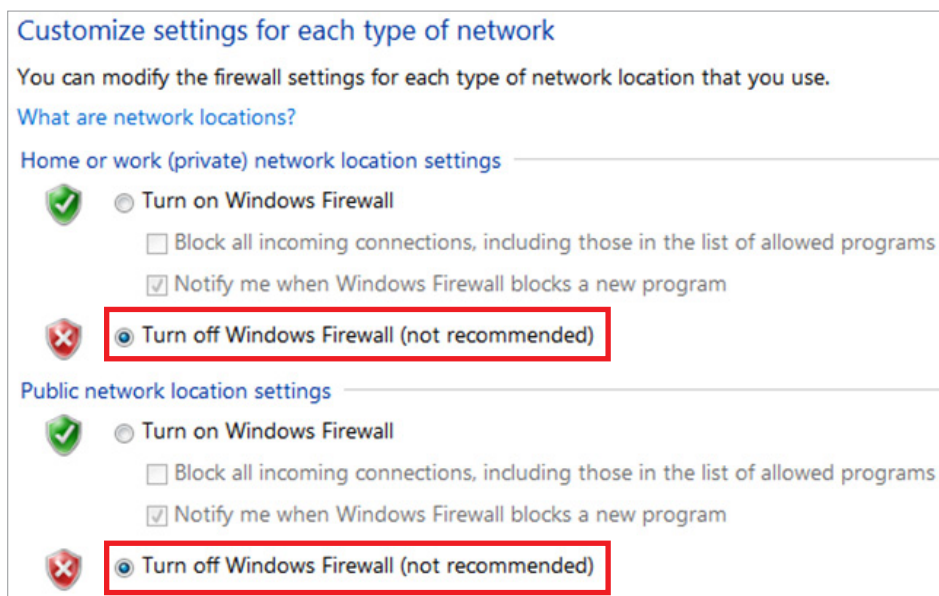
3. Double click on the Windows Firewall.



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.

## 9.4 Setting up the Power Management Options

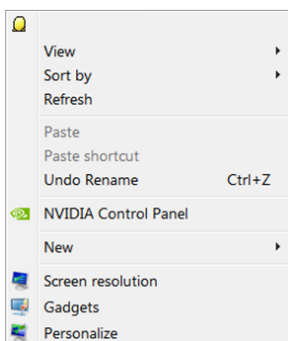
The following statements are based on the windows 7 environment. Depending on the operating system employed, the figures on your system may appear different slightly.

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

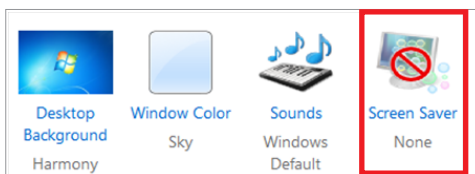
### Disabling the screen saver

From the desktop,

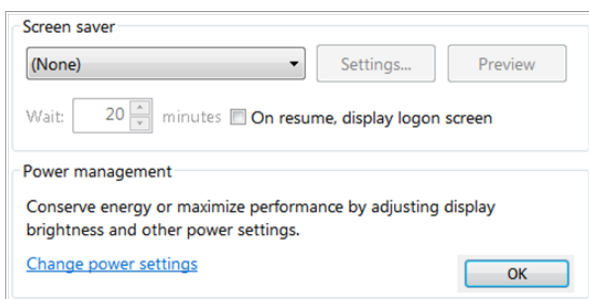
1. Click the right mouse button and select **Personalize**.



2. Locate and click the screen saver.



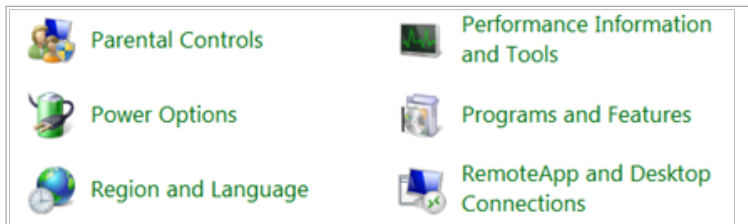
3. Select **None** in the pull-down menu.



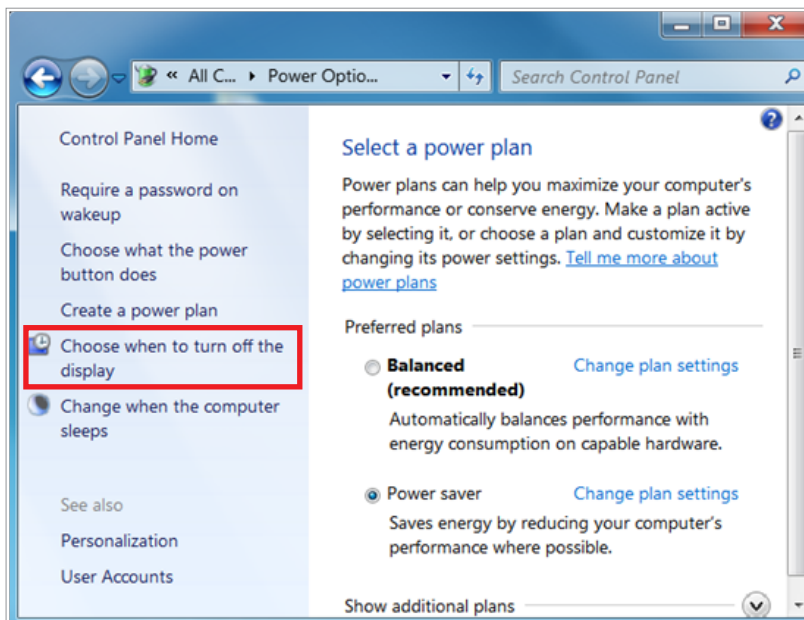
4. Click **OK**.

## Selecting the power options: monitor and system

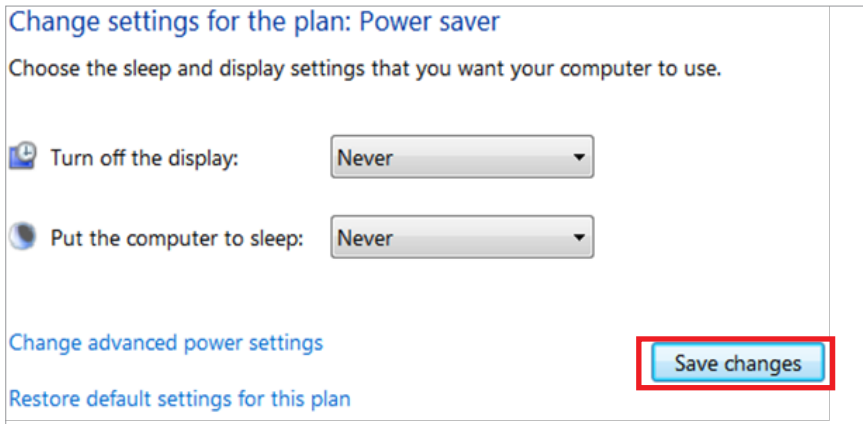
1. Go to the **Control Panel**.
2. Double click on the **Power Options** icon.



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



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



5. Click **Save changes**.

## 9.5 Turning off the User Account Control

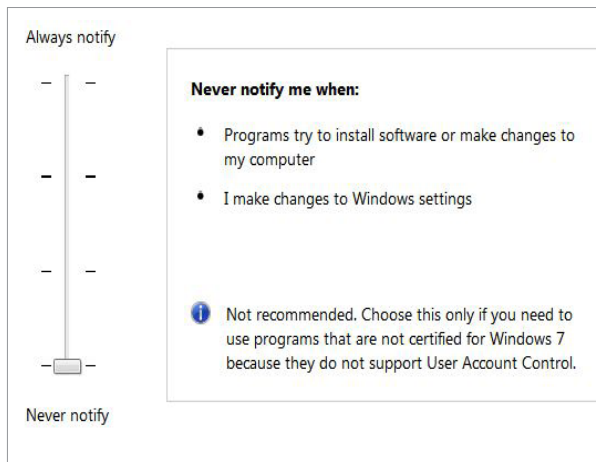
1. Open the control panel of Windows.
2. Click the User Account icon.



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.

## 9.6 Setting Folder exclusions with Anti-virus Software



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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blank.***



# 10

## Installing Software

<b>10.1</b>	Before Beginning .....	124
<b>10.2</b>	Software Installation Flow .....	125
<b>10.3</b>	Installing Image Viewer Program .....	125
<b>10.4</b>	Installing the installShield .....	126
<b>10.4.1</b>	When EasyDent4 is installed.....	126
<b>10.4.2</b>	When EzDent- i is installed.....	139
<b>10.5</b>	Setting up the User-specific Information .....	149
<b>10.5.1</b>	When EasyDent4 is installed.....	149
<b>10.5.2</b>	When EzDent -i is installed.....	153
<b>10.5.3</b>	Configuring the parameters .....	156
<b>10.6</b>	Setting Up the IP Address for the OS CEPH Sensor(Optional) ..	162



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

## 10.1 Before Beginning



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

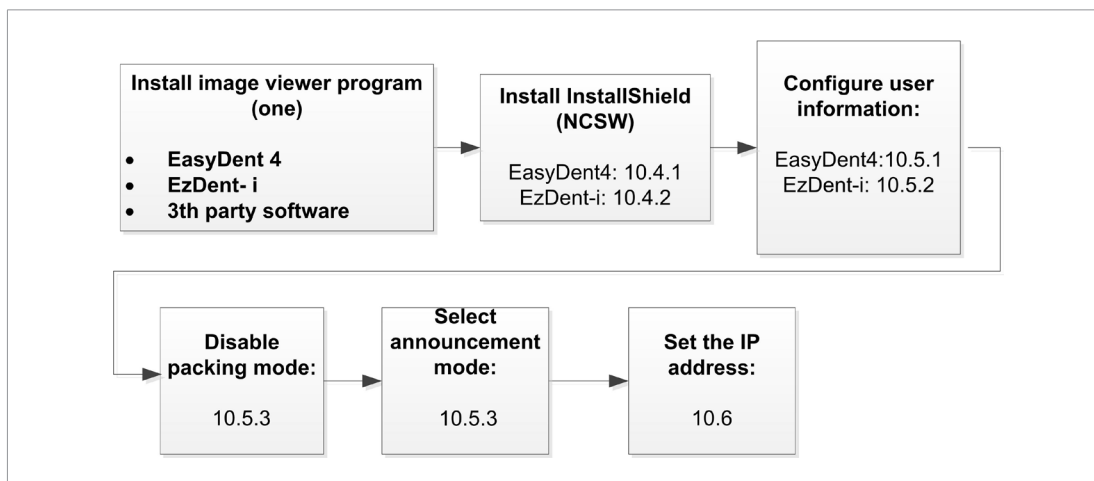
The image viewer program such as EasyDent or the one from the 3rd party should be installed in advance of the InstallShield installation. For the information on their installation procedures, refer to their respective manuals.

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](http://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.

## 10.2 Software Installation Flow



## 10.3 Installing Image Viewer Program



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.

## 10.4 Installing the installShield

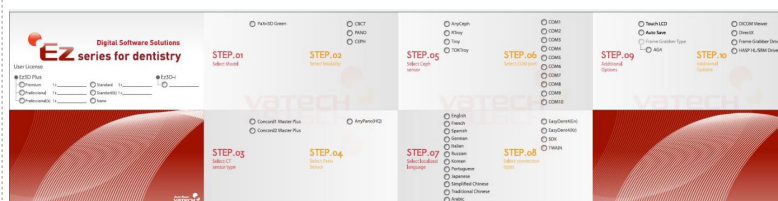
Go to the corresponding section for installation instructions, based on the viewer program (EasyDent4 or EzDent- i (SDK)) installed on PC.

**EasyDent4: section 10.4.1**

**EzDent- i : section 10.4.2**

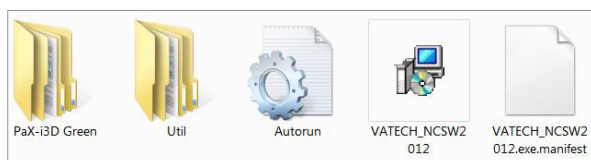
A brief leaflet on the InstallShield installation is included in the CD case.

The sensor type (CT and CEPH:if installed) of the equipment is checked in the this manual.



### 10.4.1 When EasyDent4 is installed

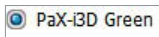
1. Turn On the PC and Equipment if they are not yet.
2. Insert the CD into CD-ROM drive. and then **perform virus scan for PC and Install CD**
3. Go to the folder: InstallShield.Then click on the **VATECH\_NCSW2012** icon.



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



5. Select the equipment model: PaX-i3D Green and then click **Next**.



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 brief leaflet inside the CD case.



8. Select the AnyPano(HQ) for panorama and click Next.



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



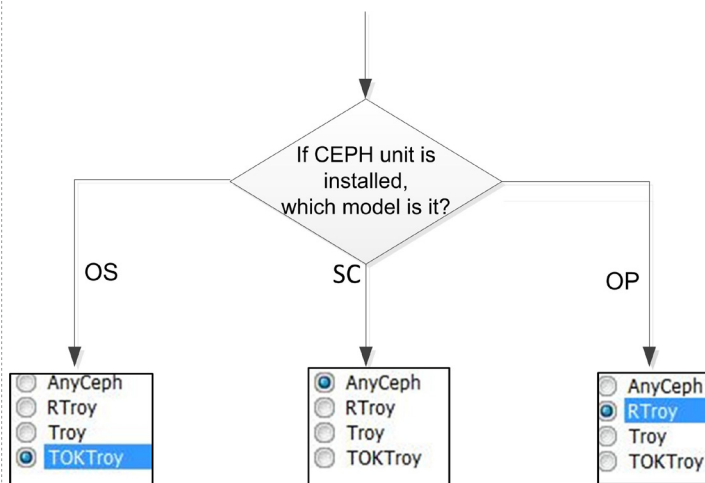
**Model:**

**OS: TOKTroy (910 SGA)**

**OP: RTroy(1210 SGA)**

**SP: PANO and CT**

**SC: SCAN**



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



Select the port No.: **COM1**

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

And click **Next**.

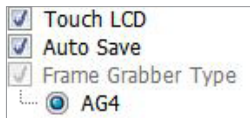
11. Select the language and click **Next**.

12. Select the image viewer program If the third-party software is to be used, select the **SDK**.

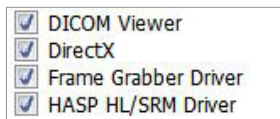
Click **Next** to continue.

13. Check the boxes of Touch LCD, Auto Save and AG4.

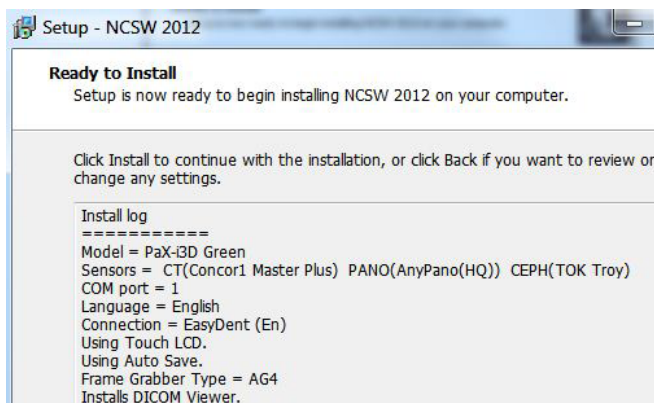
Note that, when the Auto Save is checked, the image data acquired saved automatically



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

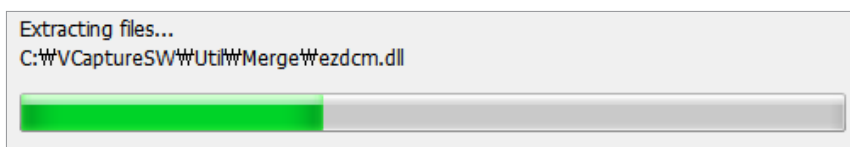


15. The following figure displays the information entered so far. If necessary, you can modify it by clicking **Back** button.



Click **Install** to continue.

Now extracting the files in the folder **C:\VCaptureSW\**.

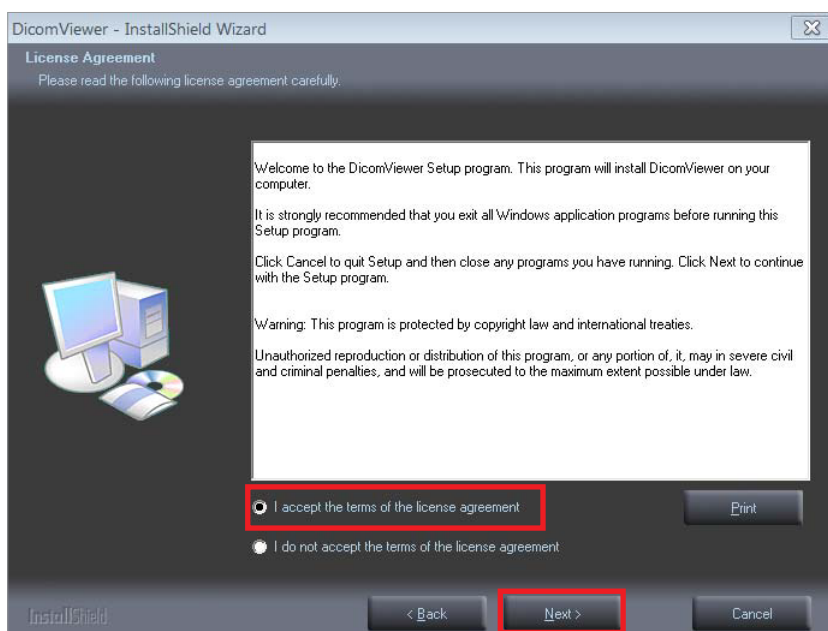


## Installing the DICOM viewer

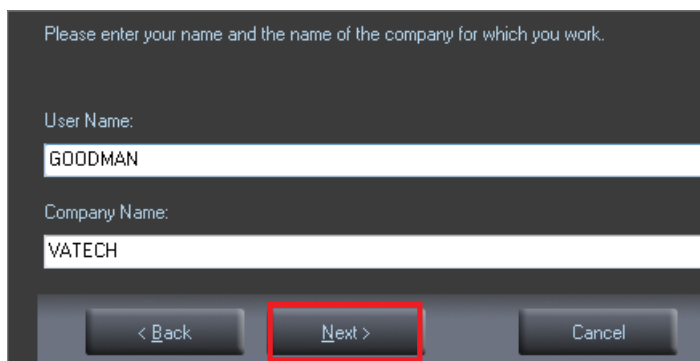
1. Click **Next** to install DICOM viewer.



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

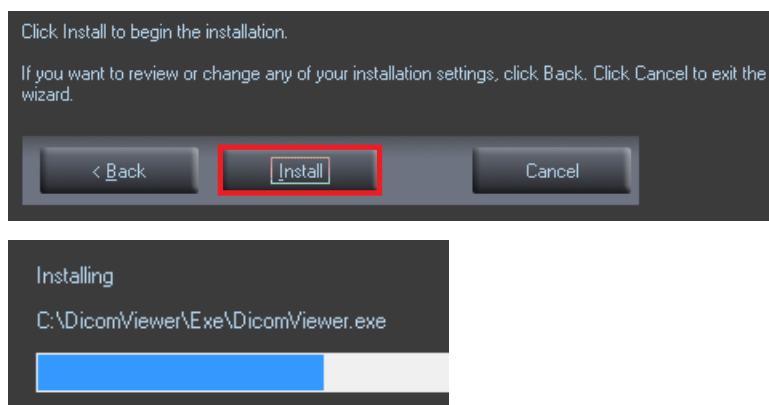


3. Enter the names of user and clinic and click **Next**.

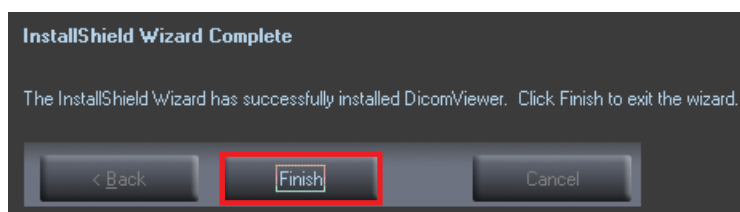




4. From the following screen, click **Install**.



5. Click **Finish** to finish.

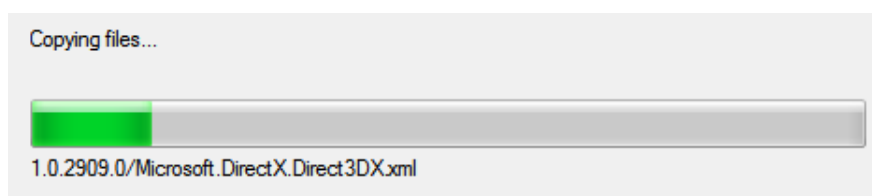


## Installing the DirectX

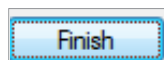
1. Now installing the **DirectX**: select "I accept the agreement".



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

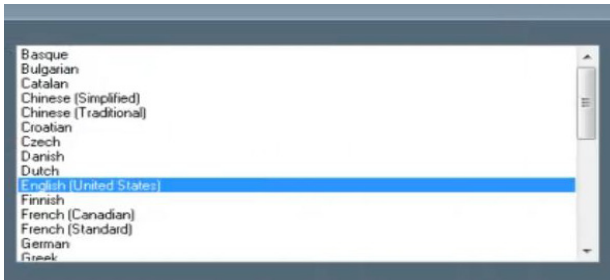


3. Click **Finish**.

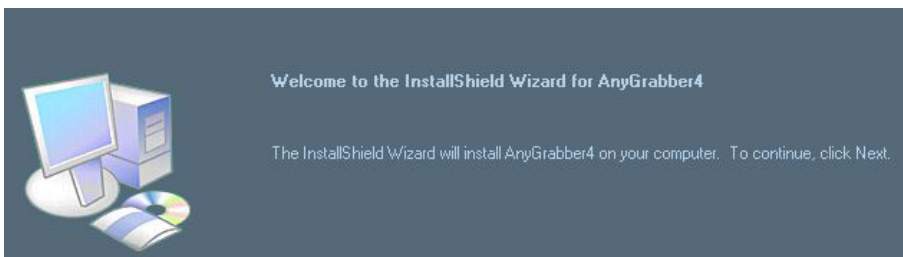


## Installing fiber optic frame grabber driver( AG4)

1. Select the language.



2. Click **Next** from the welcome screen.



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

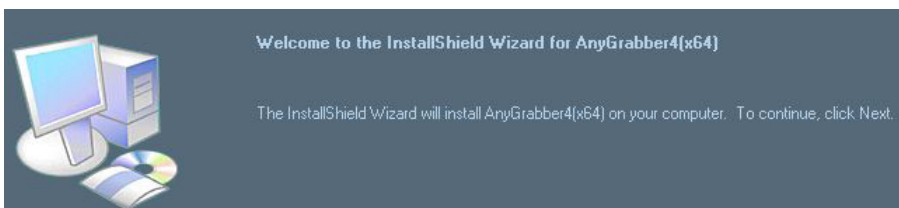


For the 64-bit driver installation, the 64-bit CPU is required.

☐ AnyGrabber(x86)

☒ AnyGrabber(x64)

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



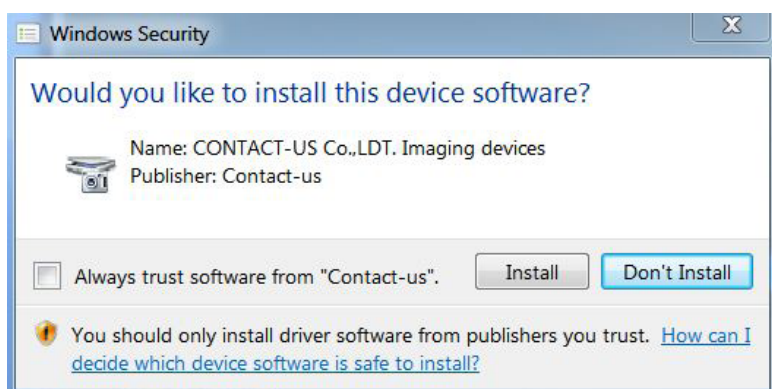
5. Select the language and then click 'OK'.



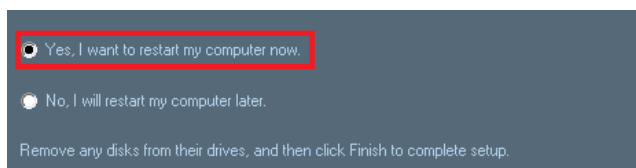
The default folder can be changed by clicking 'Browse' button



6. From the following screen, select 'Install'

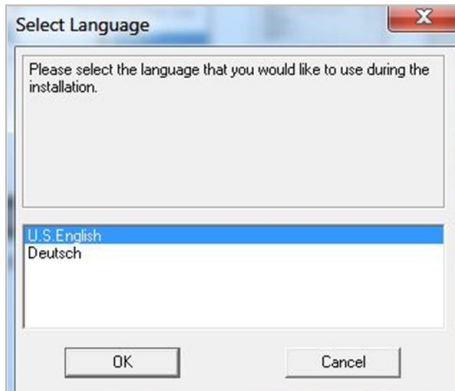


7. From the next message, click 'Finish' to restart PC.

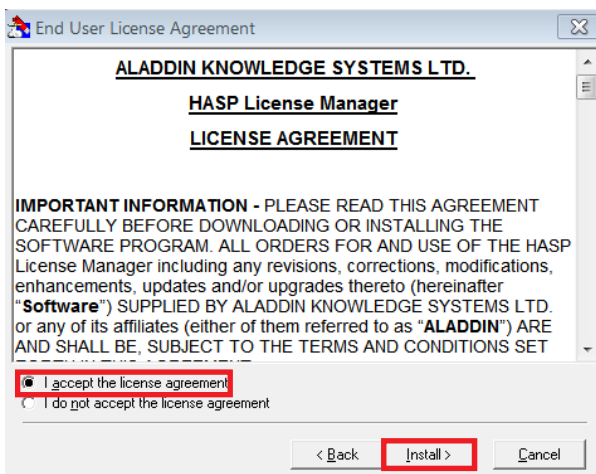


## Installing the HASP Key License

1. Select the language.



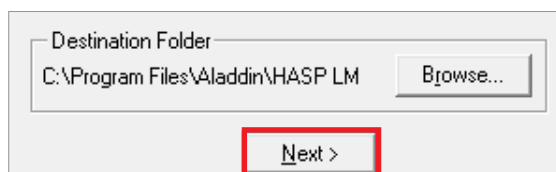
2. Select "I accept license agreement", followed by **Install**.



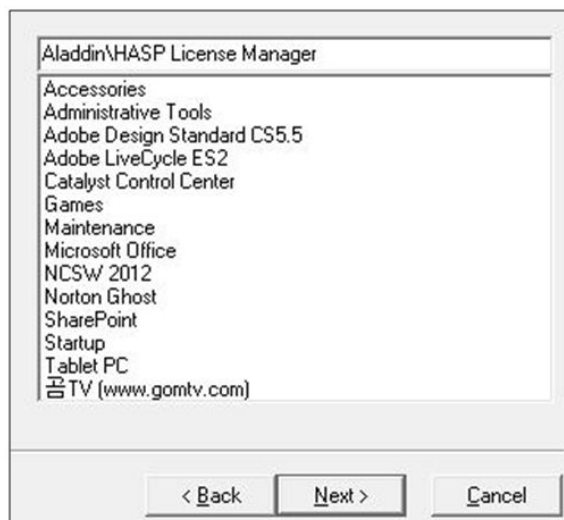
3. Leave as default from the following message.



4. Select the folder where the files are copied to and click **Next**.



5. Select the program group. Leave it at default and click **Next**.



## Installing the HASP Key driver software

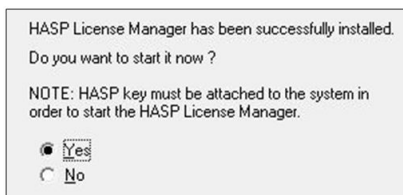
1. From the welcome message, click **Next**.



2. Click 'Yes' to restart the program.



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.

### Completing the NCSW 2012 Setup Wizard

Setup has finished installing NCSW 2012 on your computer.  
The application may be launched by selecting the installed icons.

Click Finish to exit Setup.

## 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.

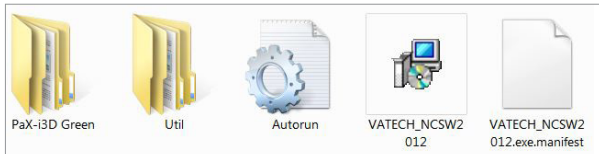


3. Go to the section 10.5: **.Setting up the User-specific Information**



## 10.4.2 When EzDent- i is installed

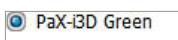
1. Turn On the PC and Equipment if they are not yet.
2. Insert the CD into CD-ROM drive. and then **perform virus scan for PC and Install CD**
3. Go to the folder: InstallShield.Then click on the **VATECH\_NCSW2012** icon.



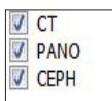
4. The following screen will appear and click **Next**.



5. Select the equipment model: PaX-i3D Green and then click **Next**.



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 brief leaflet inside the CD case.



8. Select the AnyPano(HQ) for panorama and click Next.



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



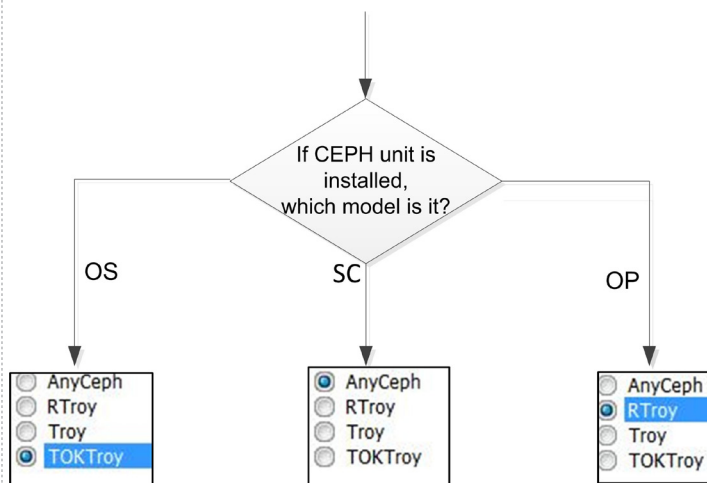
**Model:**

**OS: TOKTroy (910 SGA)**

**OP: RTroy(1210 SGA)**

**SP: PANO and CT**

**SC: SCAN**



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



Select the port No.: **COM1**

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

☒ COM1  
☐ COM2  
☐ COM3  
☐ COM4  
☐ COM5  
☐ COM6  
☐ COM7  
☐ COM8  
☐ COM9  
☐ COM10

And click **Next**.

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

☒ English  
☐ French  
☐ Spanish  
☐ German  
☐ Italian  
☐ Russian  
☐ Korean  
☐ Portuguese  
☐ Japanese  
☐ Simplified Chinese  
☐ Traditional Chinese  
☐ Arabic

Next >

12. Select **SDK**

☐ EasyDent4 (En)  
☐ EasyDent4 (Kr)  
☒ SDK  
☐ TWAIN

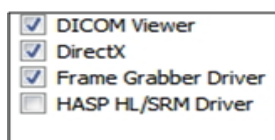
Click **Next** to continue.

**13.** Check the boxes of Touch LCD, Auto Save and AG4.

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.

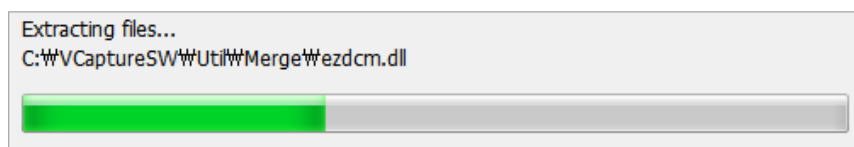


**15.** The following figure displays the information entered so far. If necessary, you can modify it by clicking **Back** button.



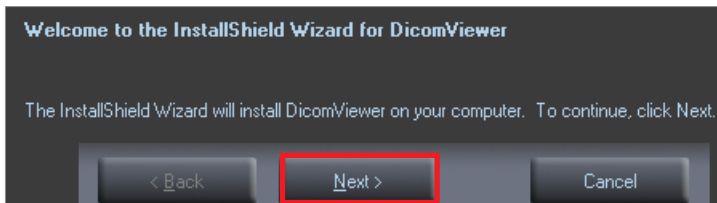
Click **Install** to continue.

Now extracting the files in the folder **C:/VCaptureSW/**.

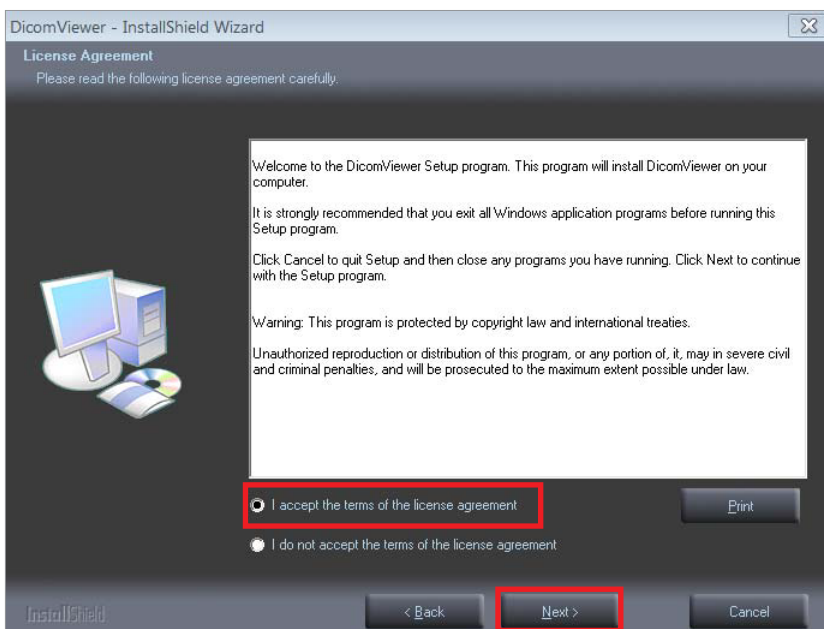


## Installing the DICOM viewer

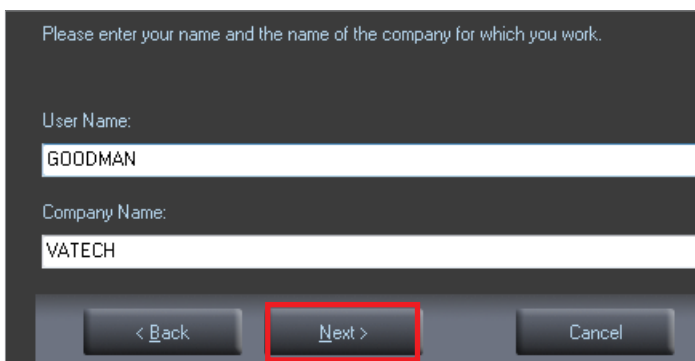
1. Click **Next** to install DICOM viewer.



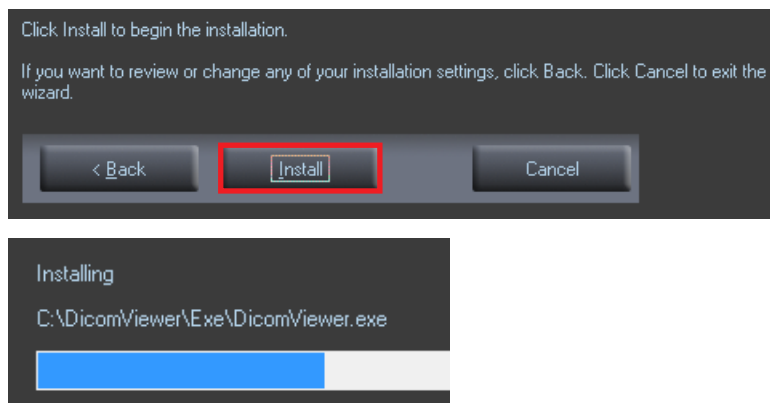
2. Select "I accept the terms of the license agreement" and click **Next**.



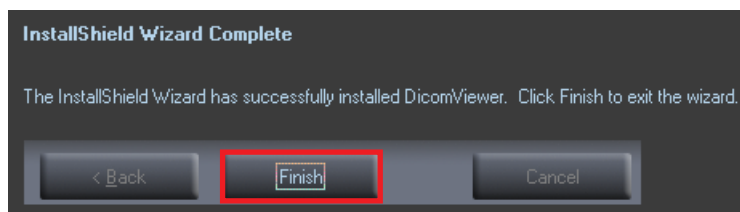
3. Enter the names of user and clinic and click **Next**.



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

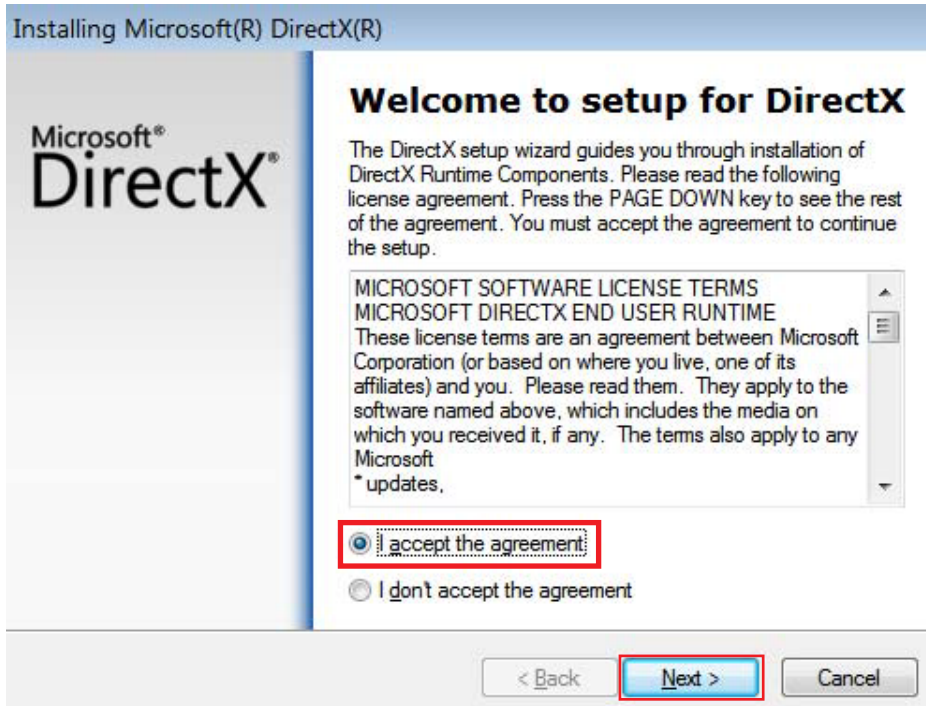


5. Click **Finish** to finish.

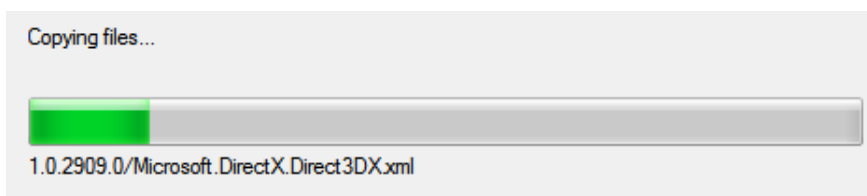


## Installing the DirectX

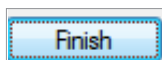
1. Now installing the **DirectX**: select "I accept the agreement".



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

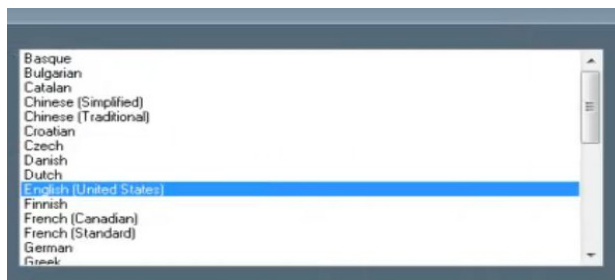


3. Click **Finish**.



## Installing fiber optic frame grabber driver( AG4)

1. Select the language.



2. Click **Next** from the welcome screen.



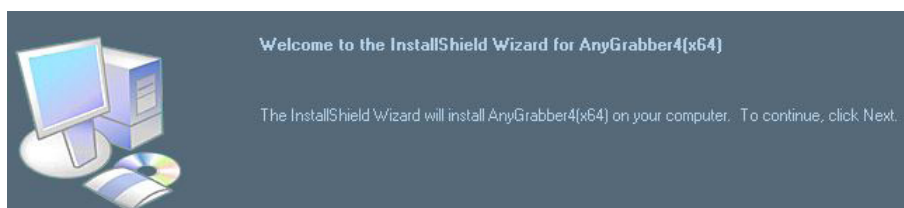
3. Select the '**AnyGrabber (x64)**' for 64-bit driver and click 'Next'.



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



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





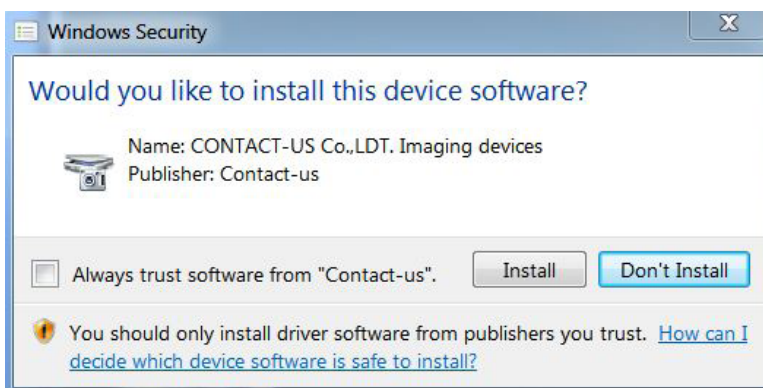
5. Select the language and then click 'OK'.



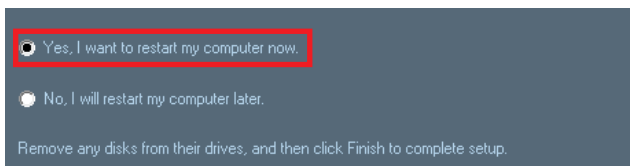
The default folder can be changed by clicking 'Browse' button



6. From the following screen, select 'Install'



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



## Finalizing Installation

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

### Completing the NCSW 2012 Setup Wizard

Setup has finished installing NCSW 2012 on your computer. The application may be launched by selecting the installed icons.

Click Finish to exit Setup.

## 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 10.5: **.Setting up the User-specific Information**

## 10.5 Setting up the User-specific Information



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

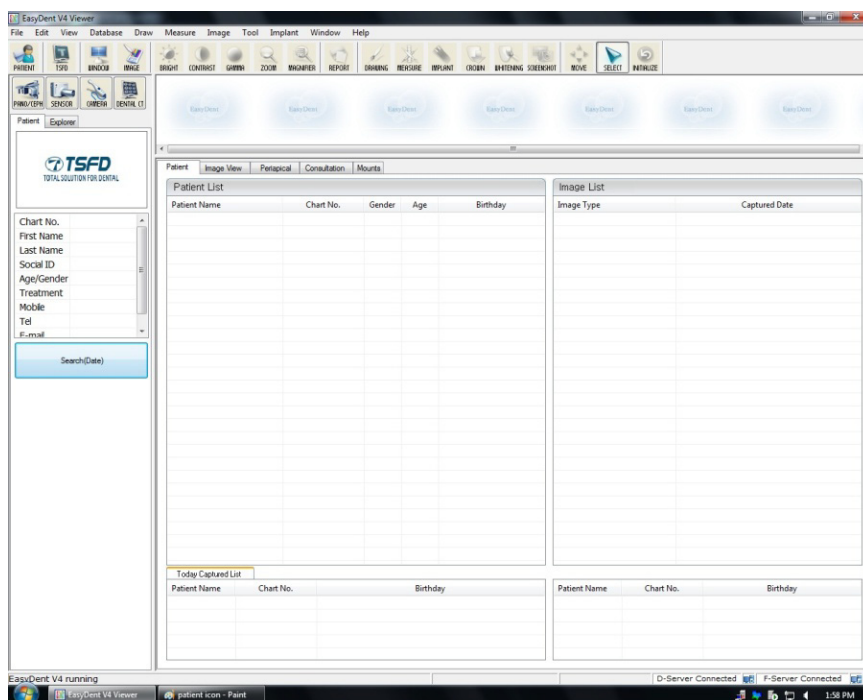
**EasyDent4:** section 10.5.1

**EzDent- i :** section 10.5.2

### 10.5.1 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.

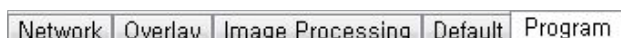


## Interfacing EasyDent with imaging program(one-time linking)

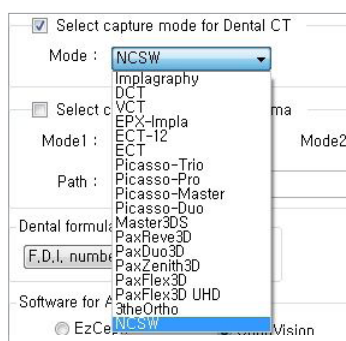
1. From the main screen of EasyDent, click the **Help** menu and select **Configuration**.



2. Click the Program tab.



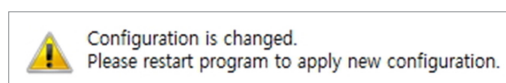
3. Check 'Select capture mode for Dental CT' select the **NCSW**.



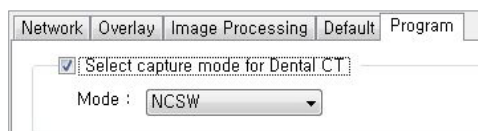
4. Click **Apply**



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



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. : 1 Recently

\* First Name : Vatech

\* Last Name : Vatech

Social ID :

Birthday : 1 / 1 / 1979

Gender : Male Treatment:

Address1 :

Address2 :


E-mail : @

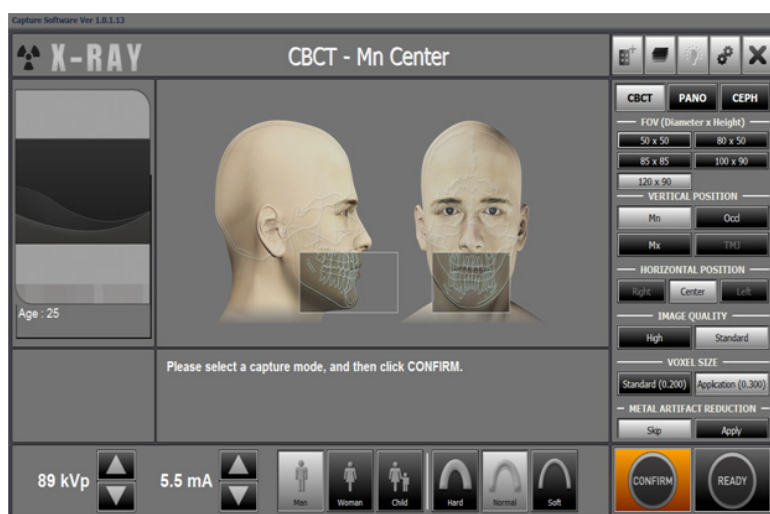
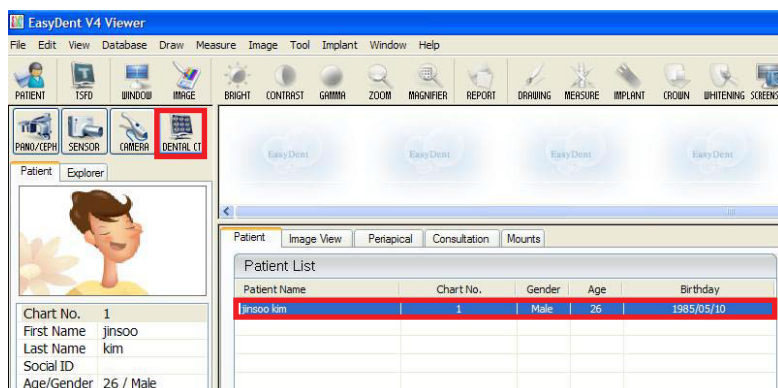
Tel : Mobile :

**Add** Cancel

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.

## 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.



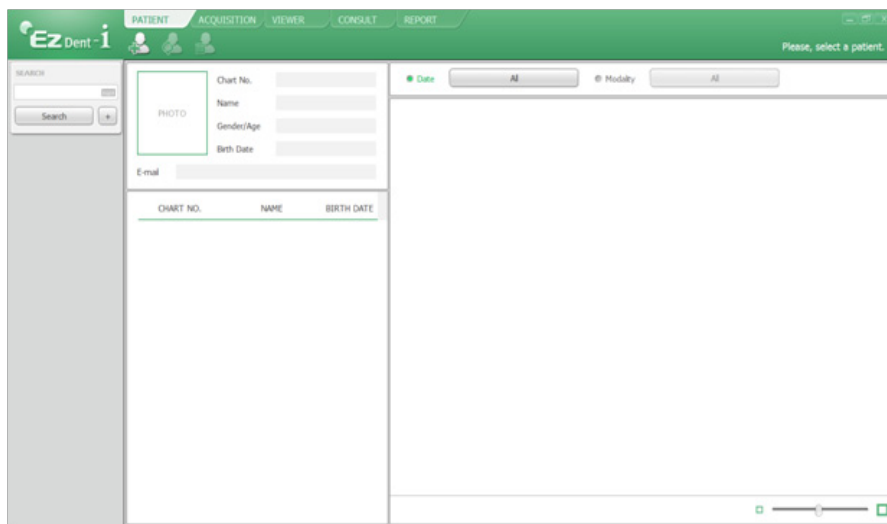
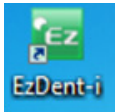
The error code E033 (red box in the figure above), indicating that the equipment is still in the packing mode, should disappear when the command to exit the packing mode is executed. See the section 'Disabling the packing mode' to disable packing mode.

3. Proceed to the section 10.5.3 'Configuring the Parameters'

## 10.5.2 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



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

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

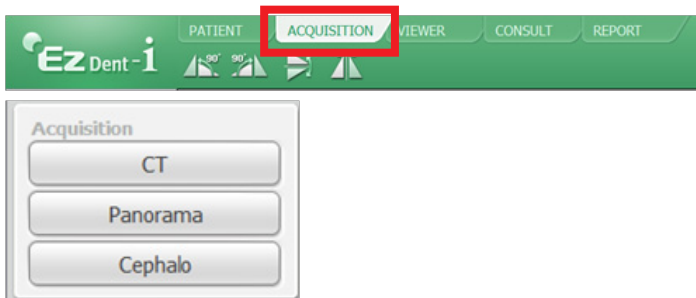
2. Enter the required patient information. Chart Number, the patient's name and E-mail address are required fields which must be filled in. All other fields are optional, but it is recommended that they be filled in.

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



## Initiating the Imaging Program

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

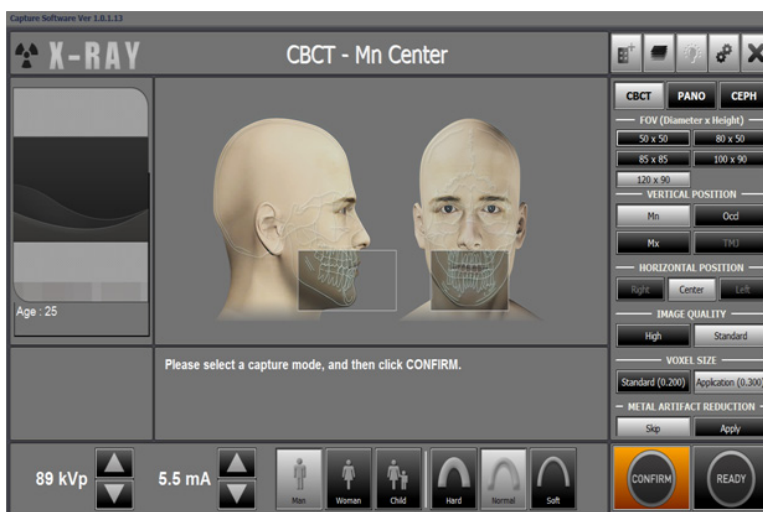


The imaging mode selection buttons in the left pane may appear different, depending on the equipment's capacity to acquire image.

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



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 10.5.3 'Configuring the Parameters'

## 10.5.3 Configuring the parameters



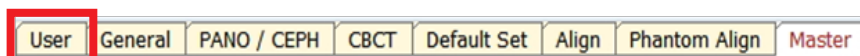
The following information should be entered, in accordance with the user requirements

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.



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

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

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

Serial Port: Checked

Port : COM1

Baud rate: 19,200

## Disabling the packing mode

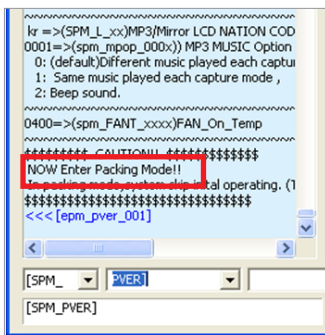


PaX-i3D Green has a unique feature— packing mode— built in the system to prevent the unit from being damaged while shipping and transporting. Thus it is in the packing mode by factory default. The unit is required to exit the packing mode at this step for successful installation.



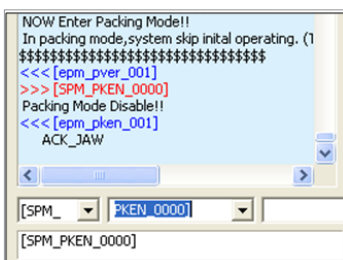
Unless the packing mode disabled, no operation will happen even after the equipment is turned on.

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
<b>0002 (Default)</b>	CT/PANO	Beep	The same for each mode

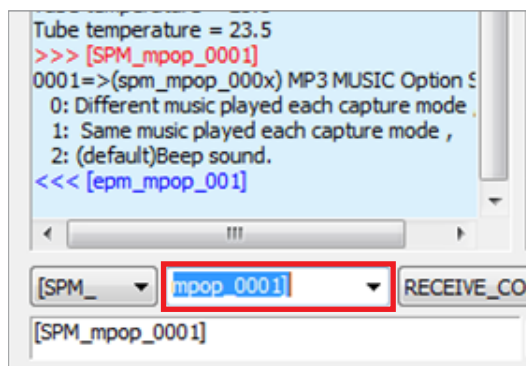
1. Send the command in accordance with the command specification, as specified in the table above.

Here are some examples.

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

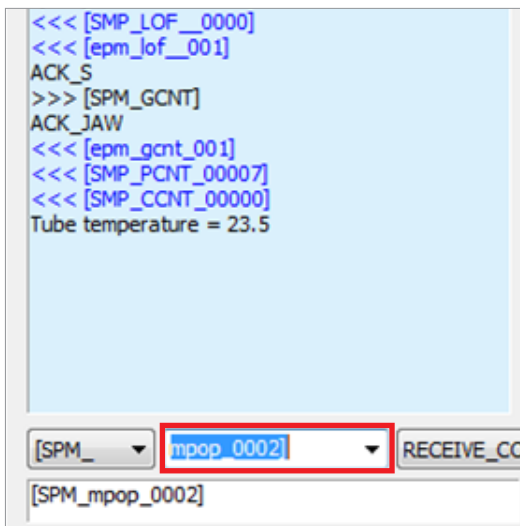
### When the same music announcement is desired for CT and PANO imaging modality.

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**.

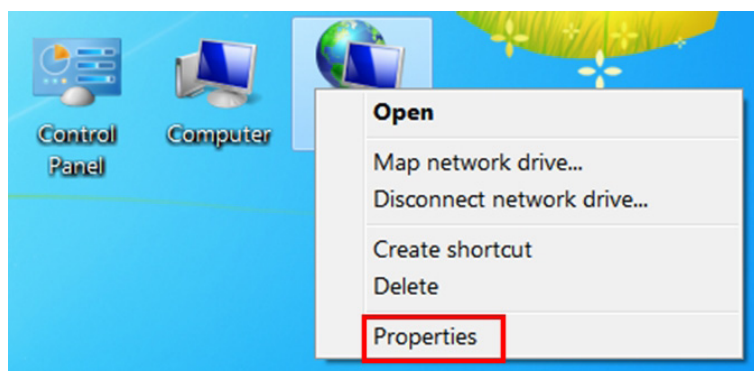
**Finalizing the Parameters Settings**

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

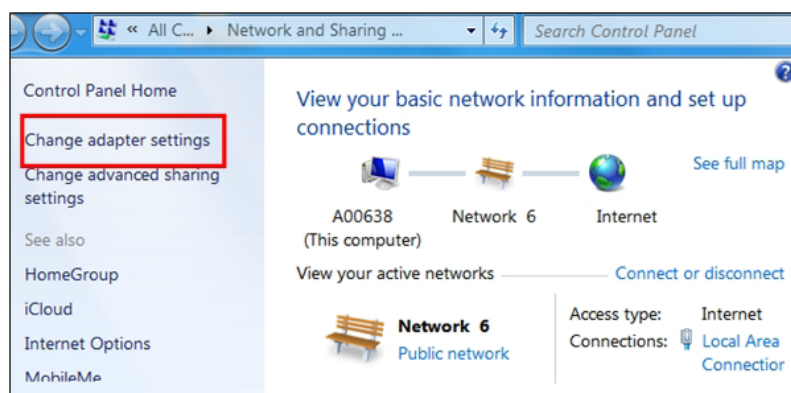
## 10.6 Setting Up the IP Address for the OS CEPH Sensor(Optional)

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**”.

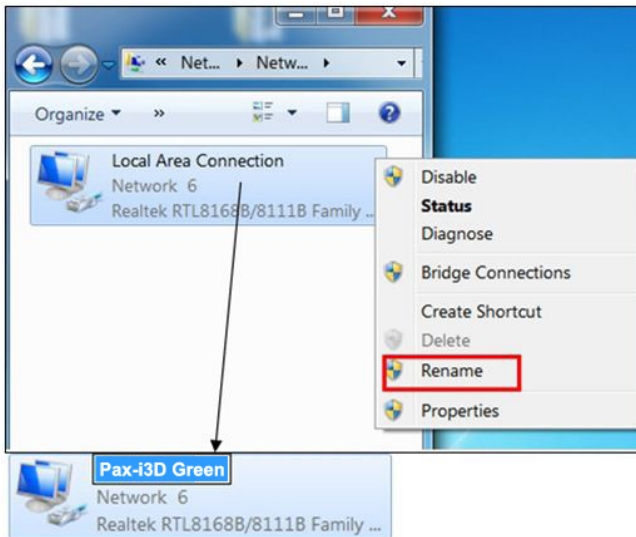




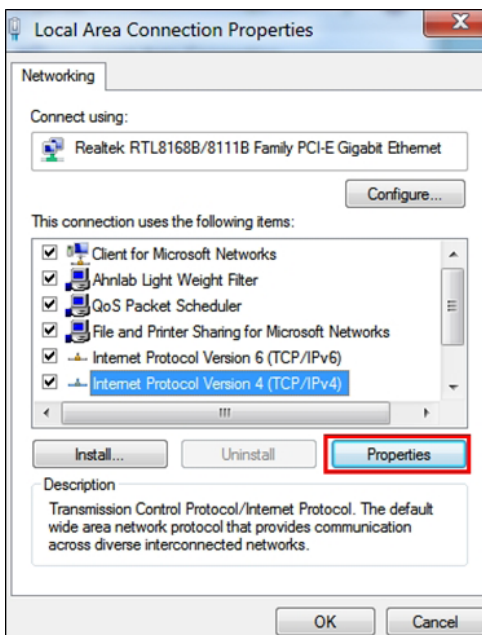
- Click the right mouse button on the **Local Area Connection** and select the **Rename** to change its network name to **PaX-i3D Green**.



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



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

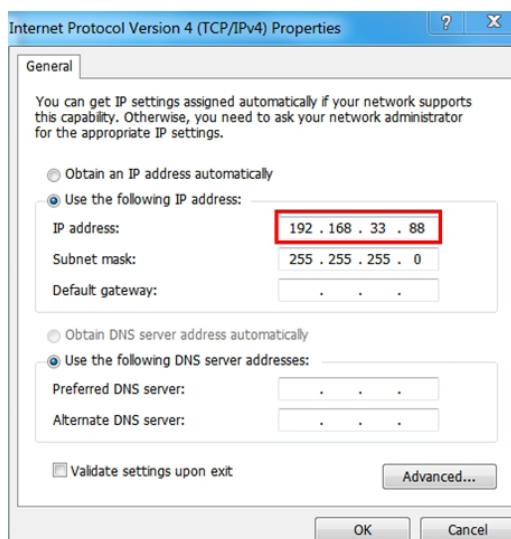


6. To set the new IP address.

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**.

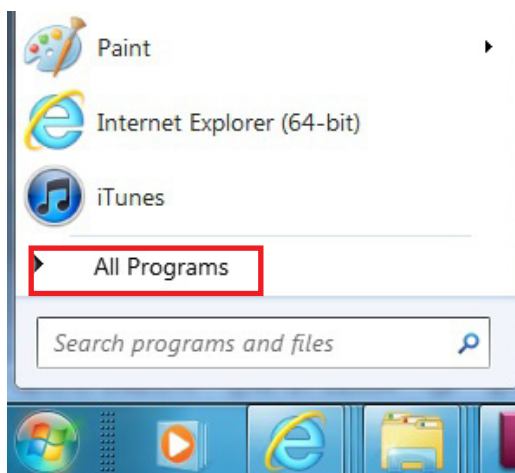


7. Reset the PC and equipment.

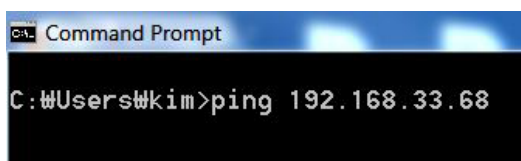
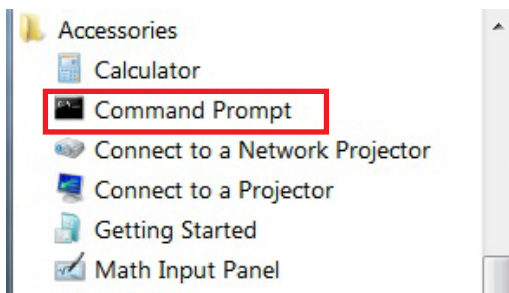
## Checking connection status

8. Check the connection status between PC and the touchpad screen in the following manner.

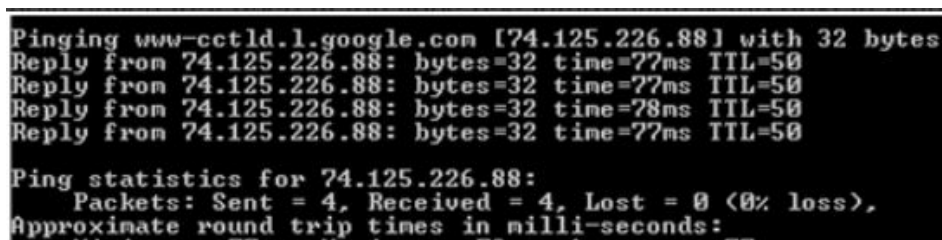
8-1. Open the "Start" menu and then click "All Programs" bar.



8-2. Click "Accessories" and then "Command Prompt.."



8-3. From the console, type "PING 192.168.33.88" and press "Enter" key.



8-4. Ensure that "Reply from <IP address>" is displayed, then the ping test was successful and the connection is properly functioning.

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blank.***

# 11

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## 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.**

**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

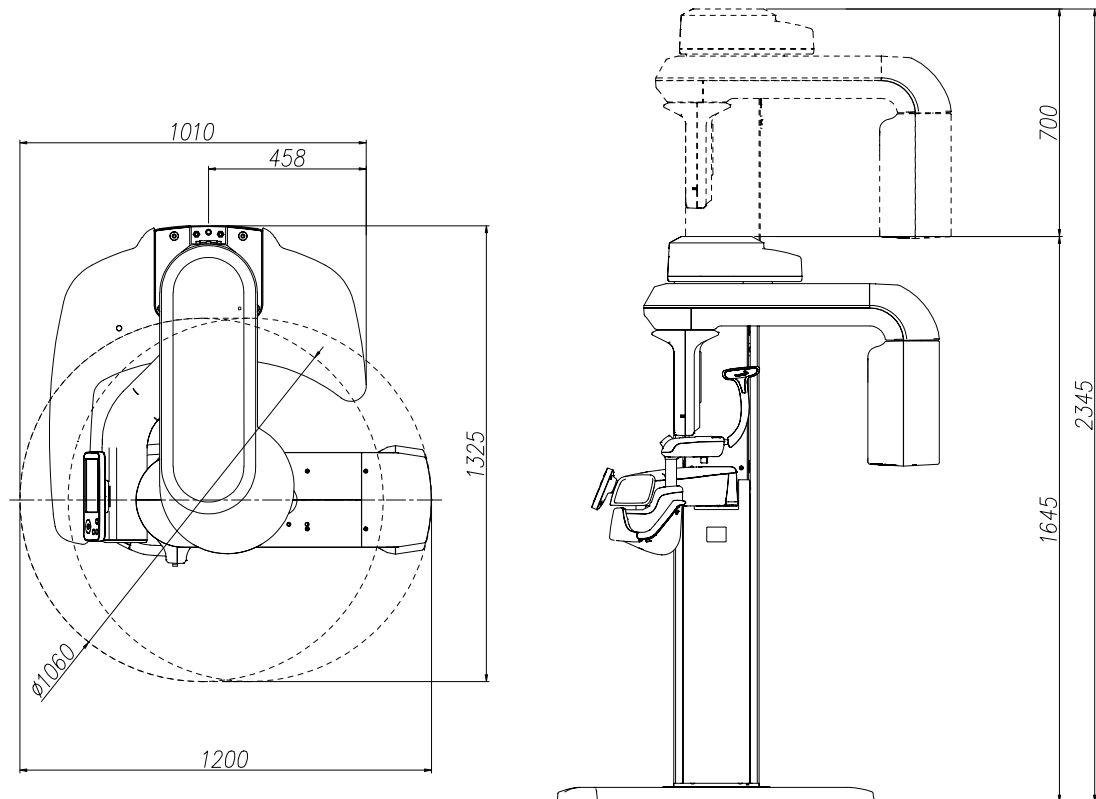
## **Mechanical Specifications**

Item		Description
Weight (kg)	Without CEPH unit	Without base: 105 (231.5 ibs)
		With base: 160 (352.7 ibs)
	With CEPH unit (Scan Type)	Without base: 135 (297.6 ibs)
		With base: 190 (418.9 ibs)
	With CEPH unit (Oneshot Type)	Without base: 145 (319.7 ibs)
		With base: 200 (440.9 ibs)
Total Height (mm)		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	1,985 (L) x 1,325 (W) x 2,340 (H) mm
	(Scan Type)	78.15 (L) x 52.17 (W) x 92.13(H) inch.
	With CEPH unit	1,985 (L) x 1,325 (W) x 2,340 (H) mm
	(One shot Type)	78.15 (L) x 52.17 (W) x 92.13(H) inch.
Type of installation		Base Stand / Wall Mount

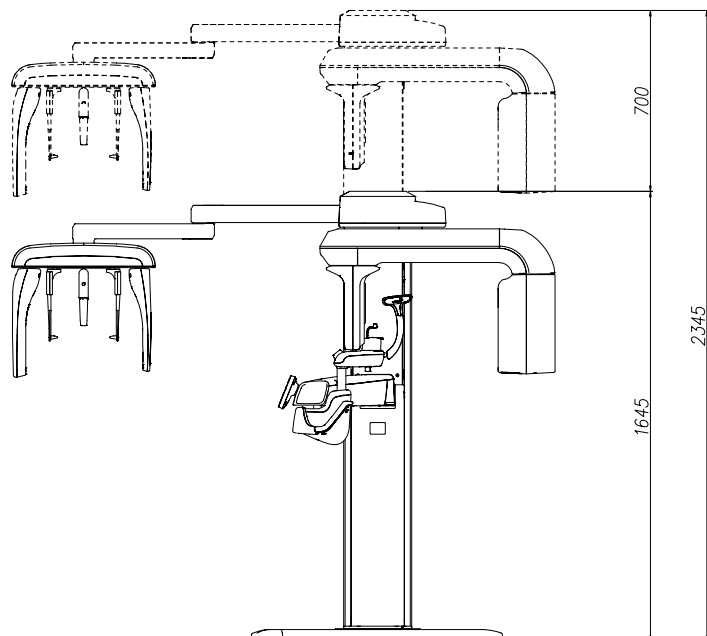
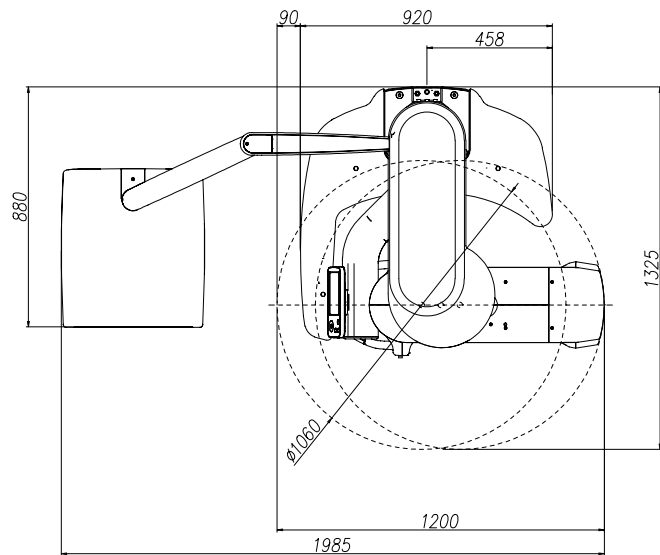


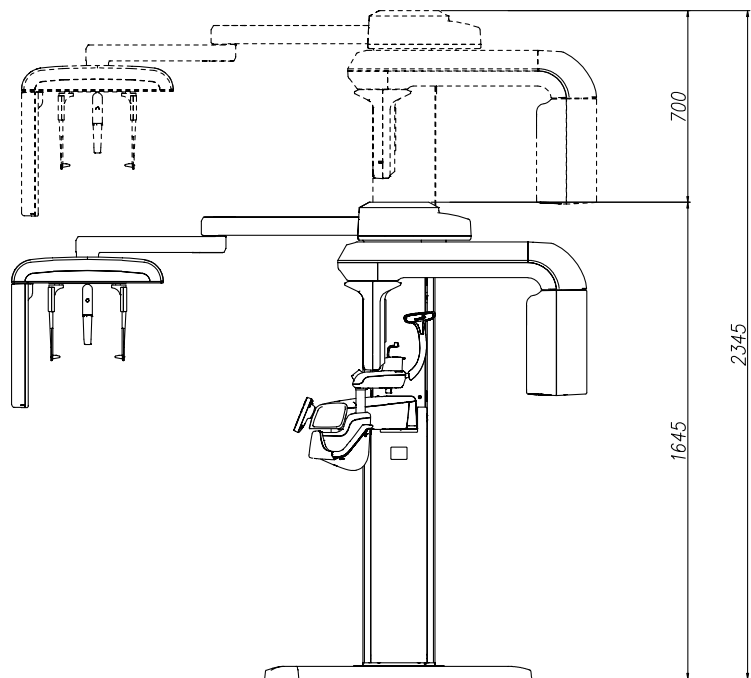
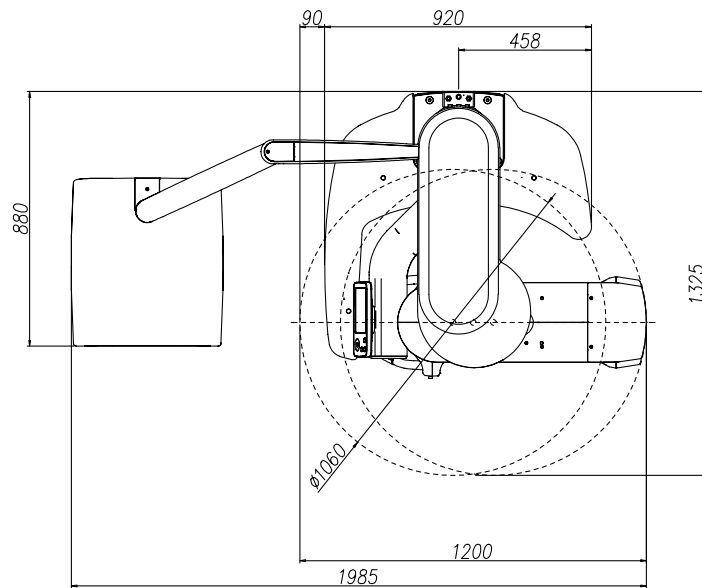
## **Dimension of equipment**

**SP model:**



**SC Model:**



**OS (OP) Models:**

## **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	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

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# Appendix

<b>A.</b>	Installing the Warning Lamp and Door Interlock Switch .....	176
<b>B.</b>	Installing the Emergency Switch .....	179
<b>C.</b>	Limiting the Column Height .....	180
<b>D.</b>	Connecting the Third-party Exposure Switch(Optional) .....	185
<b>E.</b>	Checking PC BIOS Settings.....	186
<b>F.</b>	Installation checklist .....	187

## A. Installing the Warning Lamp and Door Interlock Switch

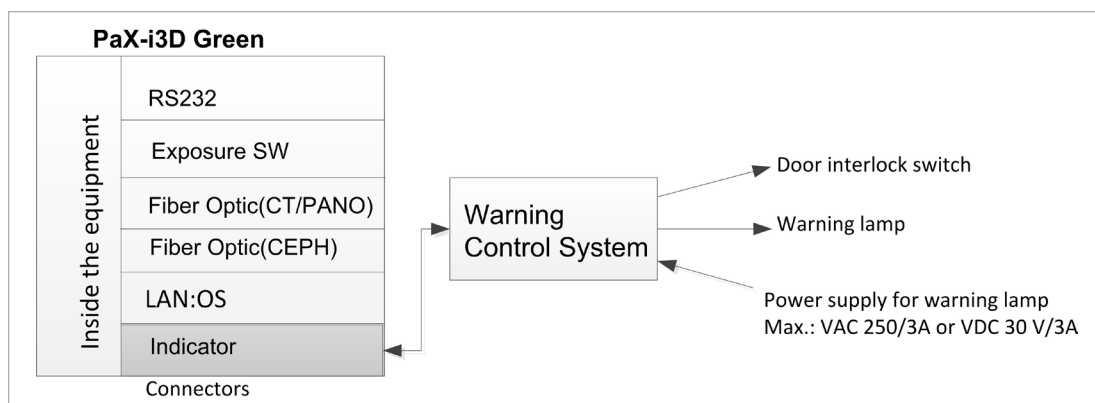
### Requirements:

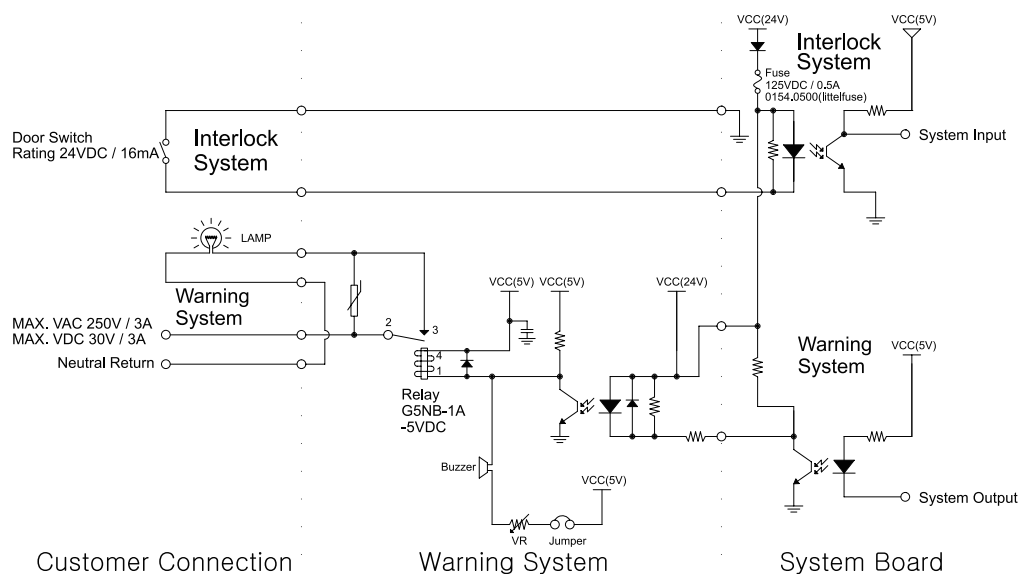
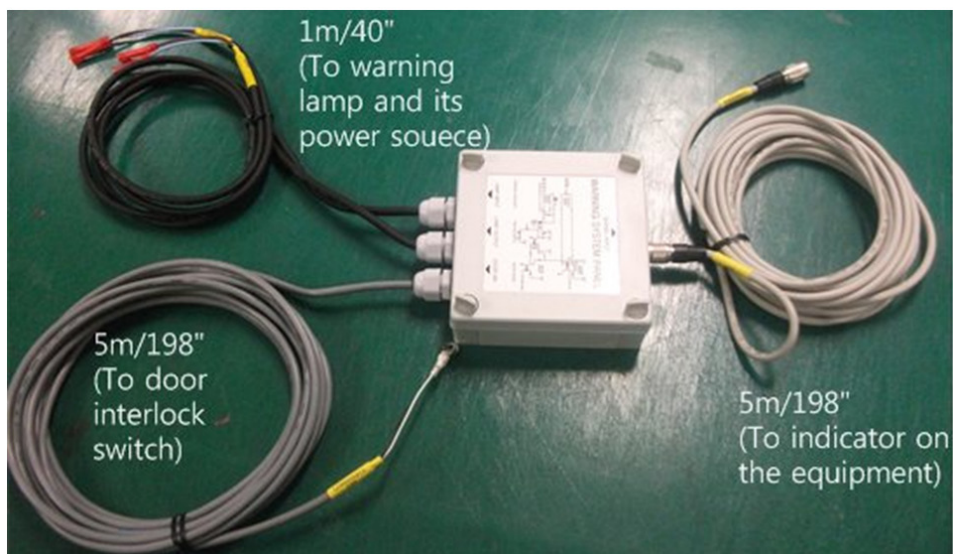
1. The warning control system shall be connected to the ERB (earth reference bar) of the room that it is associated with.
2. The switching arrangements, location, height, and number of illuminated warning signs shall be agreed with the local radiation protection advisor (RPA).(customer)
3. A fluorescent 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:

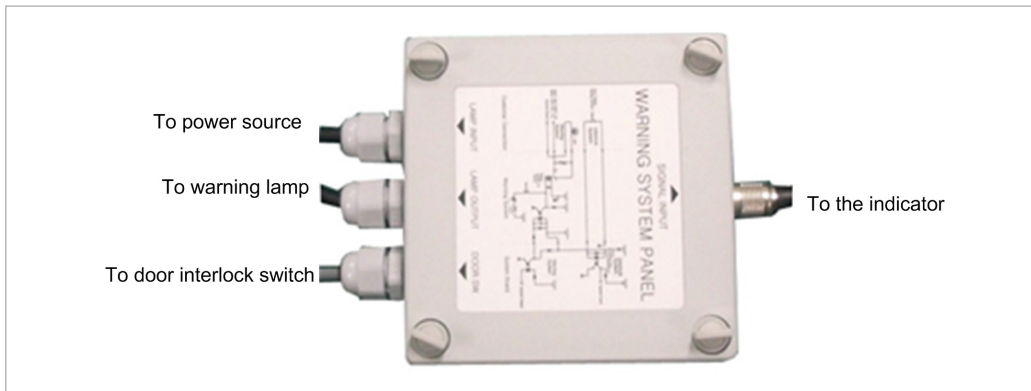


**Schematic diagram:****Components supplied:**

**Procedures:**

The individual cable length:

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

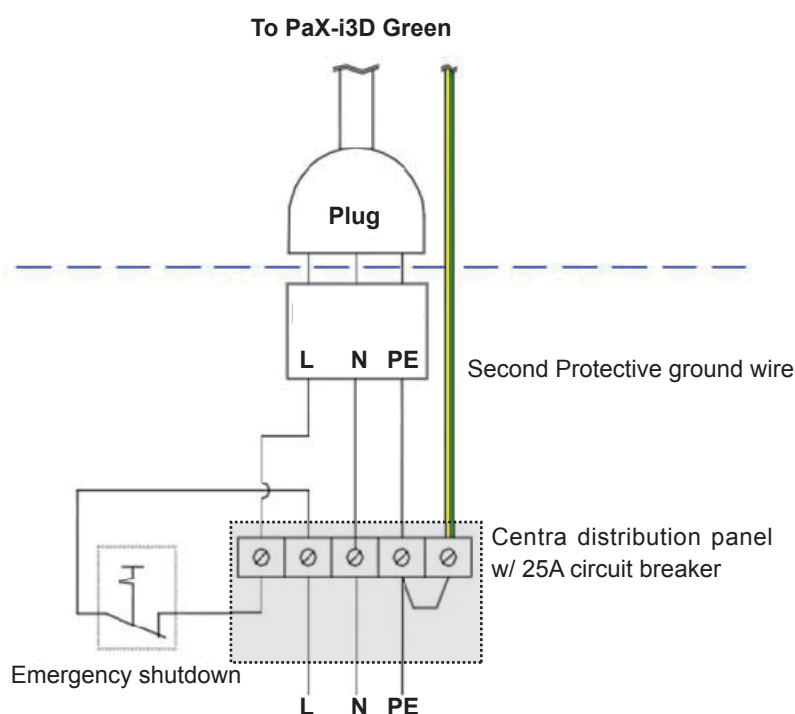


1. Prepare the Warning System Panel (Part No.: 28).
2. Install the Warning System Panel at the proper height after taking each cable length into account.
3. Connect the warning lamp(not provided)
4. Connect the door interlock switch (not provided).
5. Connect the power source for the warning lamp.



## 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  $\geq 12$  AWG( $3 \times 4 \text{ mm}^2$ ).
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.

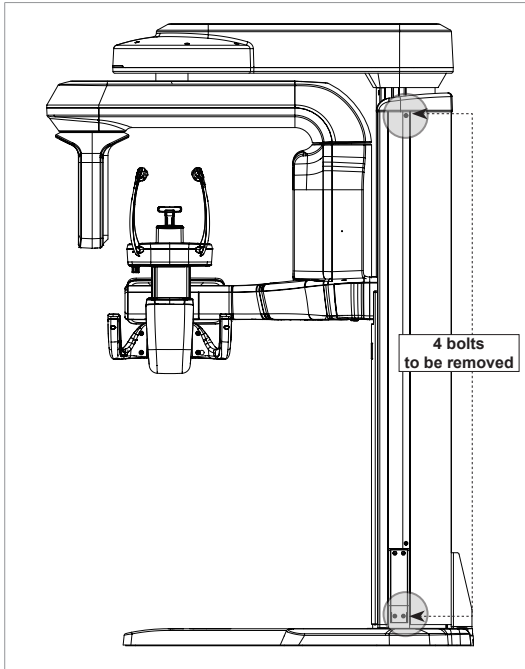
## C. Limiting the Column Height

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

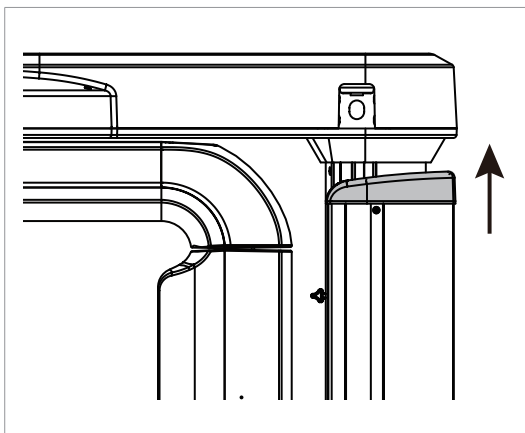
1. Measure the ceiling height in the X-Ray shield room :  $H_{\text{ceiling}}$

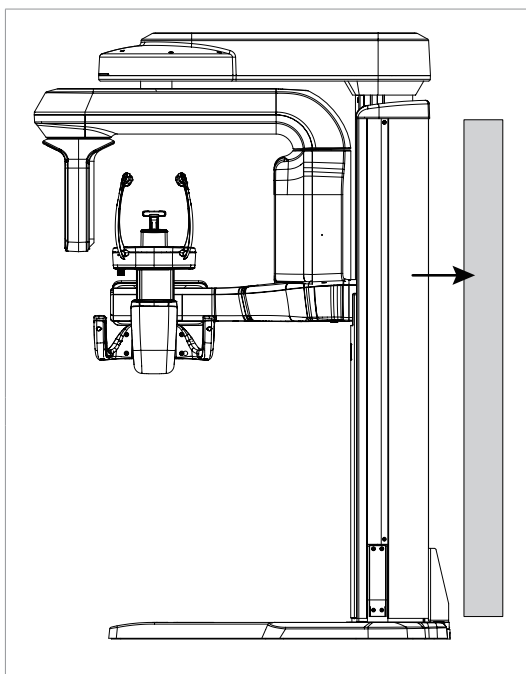
### Removing the side cover

2. Remove 3 bolts at the following locations.



3. Lift the cover up and remove.





4. Separate the side cover.

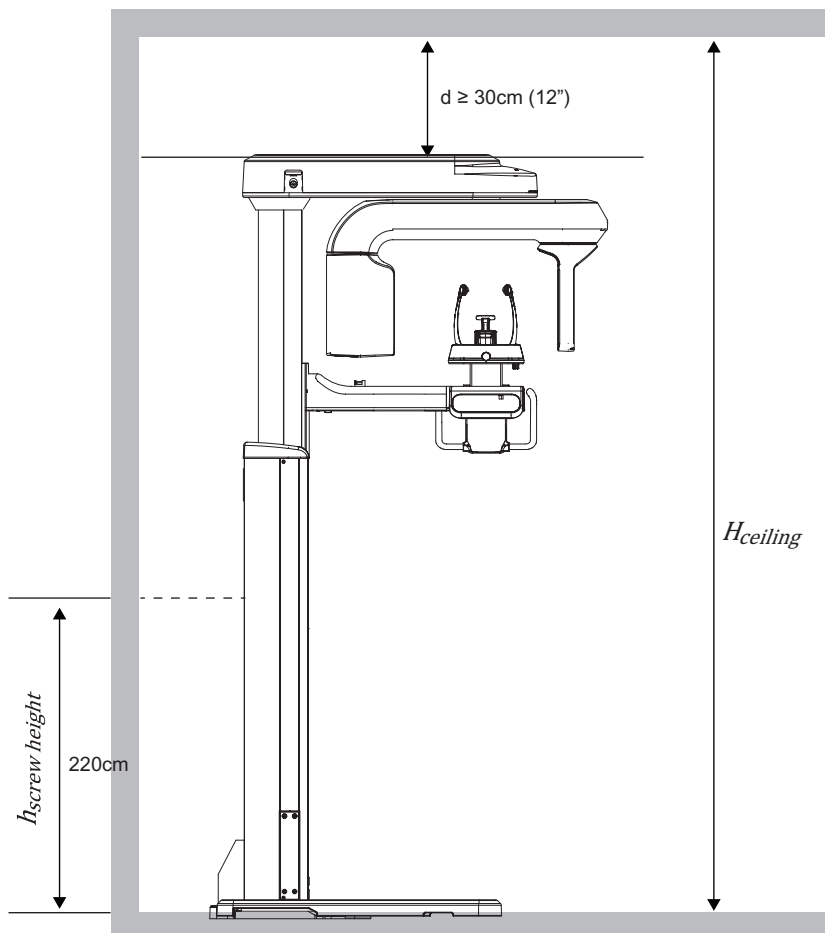
## Determining the height

1. Determine the screw height using the following formula.

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

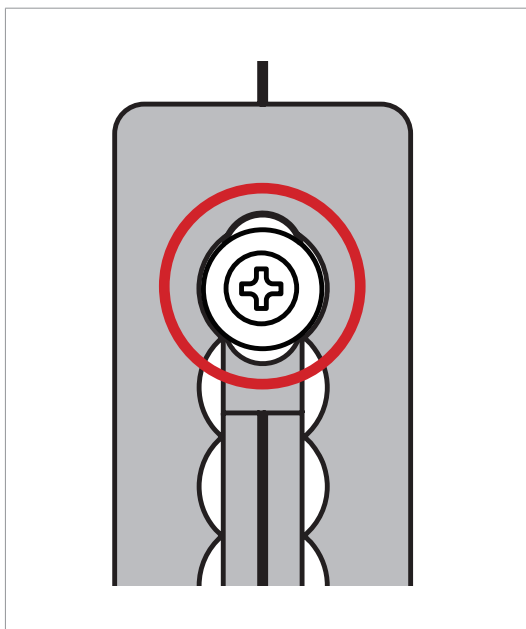
, where  $d$  is the distance between ceiling and the top of the equipment when the column is fully extended (at least 30 cm (12") is desired).

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.

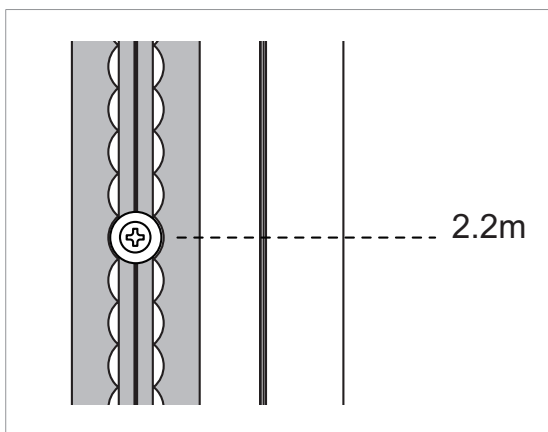
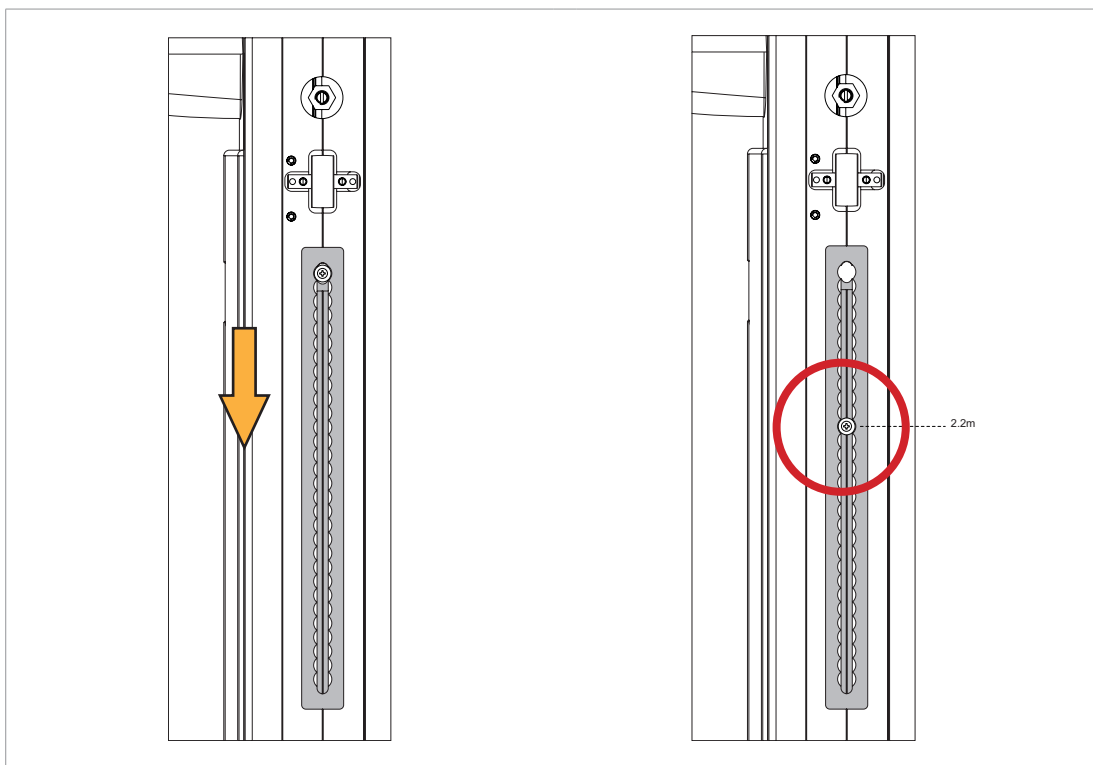


1. Loosen the bolt halfway (**important!**).



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

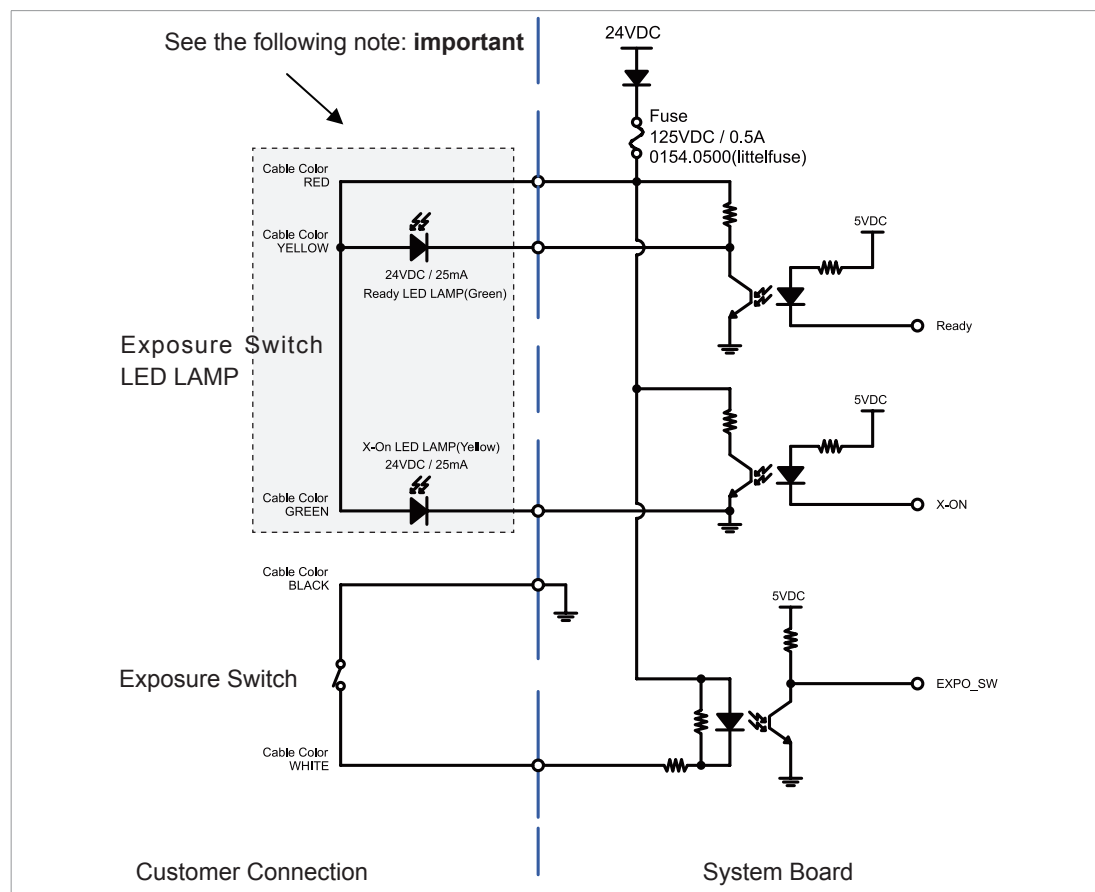
3. Put the covers back in reverse order.
4. Fix them with 3 bolts.

## 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 rest 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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We reserve the right to make any alterations which may be required due to technical improvement. For the most current information, contact your VATECH representative.

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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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