

Green X 12TM

Installation Manual

Model : PHT-75CHS

Version : 1.02



vatech

Notice

This manual covers the installation procedures for the **Green X12 (Model: PHT-75CHS) digital X-ray imaging system**. The installation manual is shipped with each hardware unit.

Brand name: Green X12 (Model: PHT-75CHS)

Manufactured by: VATECH Co., Ltd.

In this manual, "equipment" refers to **Green X12**.

In abbreviated forms, CBCT, CEPH, and PANO denote Cone Beam Computed Tomography, Cephalo, and Panorama, respectively. They are interchangeably used.

The "Optional" in this manual means that the function or features are left to the customer's or user's choice.

A thorough review of this manual is recommended to ensure the proper installation of this equipment. The information in this manual may be subject to change without notice, justification, or notification of the persons concerned since the **Green X12** is in steady improvement.

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Manual Name: Green X12 (Model: PHT-75CHS) Installation Manual

Document Number: VDH-IM-085(C)

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Important Notes




 CAUTION	Leave the equipment at room temperature for at least an hour before turning on the device to avoid moisture build-up inside the equipment.
 CAUTION	<p>When installing or handling the equipment:</p> <ul style="list-style-type: none">▪ An authorized technician must install the equipment according to the installation manual.▪ Install the equipment on a flat surface to avoid injury and property damage.▪ Do not push or pull the equipment.
 CAUTION	Failure to read and understand this manual may result in physical injuries, equipment malfunctions, or damage to the equipment. Please read the information in each chapter before starting the installation.

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1. Introduction

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 conducted by an authorized agent by this installation manual.
- The electrical installation was conducted to the appropriate requirements specified in IEC-60601-1.
- 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 conditions according to the user manual.
- PC software is properly used according to the manufacturer's installation and user manual.






1.2 Customer's Responsibility

Site planning and preparation are the responsibility of the customer. All customers of this product should consider and follow the points below:

- Install all required materials at the installation site before delivering the system.
- Complete the room's floor, ceiling, and walls 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 hallway and entry door sizes.
- The customer must have an electrician install more than two power outlets in the room.

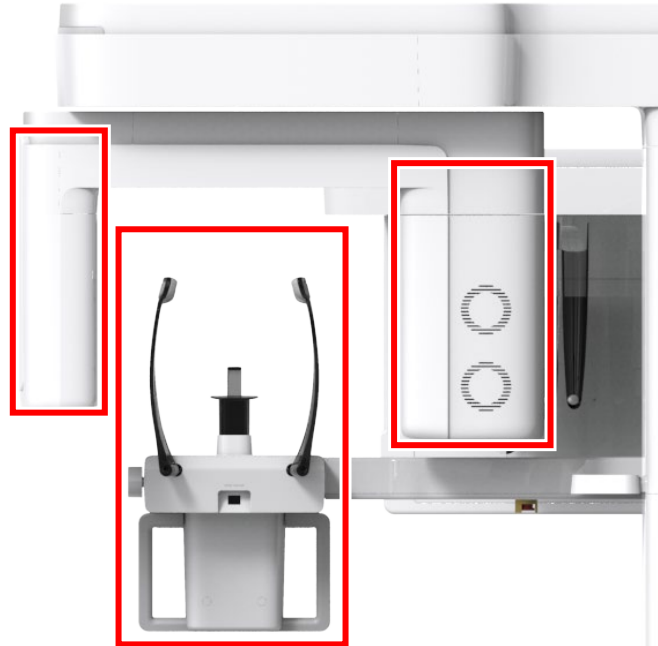
1.3 Conventions in This Manual

The following conventions are used in this manual to inform users. Ensure to understand the meaning of each convention and follow accompanying instructions.

 WARNING	WARNING	Failure to comply with the given information may result in severe injuries to the people or damage to the equipment.
 CAUTION	CAUTION	Requires the user's immediate attention or action due to the possibility of safety issues.
IMPORTANT	IMPORTANT	Requires the user's attention because the stated action and environment may cause trouble.
NOTICE	NOTE	Indicates useful information for users.
	RADIATION	Indicates a possible danger from radiation exposure.
	SINGLE USE	Indicates a component that must be replaced for each new patient.
	ESD susceptibility	Indicates that an item is susceptible to damage from electrostatic discharges.



Do not touch or hold the **sensor** or **tube head areas** when moving, installing, or operating the equipment.



Do not step on the base when installing or operating the equipment.

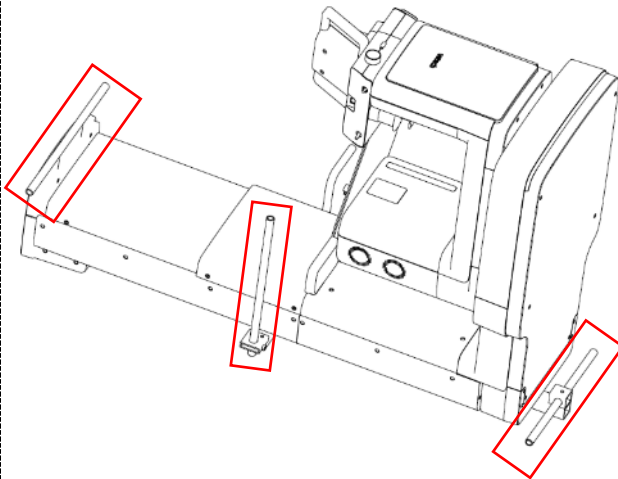


Do not use the electric drill to tighten bolts because this can damage the bolts. Ensure to use the drill for drilling the wall only.



IMPORTANT

When transporting the equipment, hold the handles in marked locations.



NOTICE

Three installers are required for safe installation.

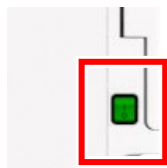
NOTICE

Check the location of the **emergency stop switch** as indicated below:








NOTICE

Check the location of the **main power switch** as indicated below:



1.4 Marks and Symbols

Symbols	Description	Location
	Dangerous voltage	Power board / Inverter board / Monoblock
	Protective earth (Ground)	Column
	Off (power: disconnected to the Main Power Switch)	Main Power Switch
	On (power: connected to the Main Power Switch)	Main Power Switch
	Warns ESD hazard.	MCU board / Board package

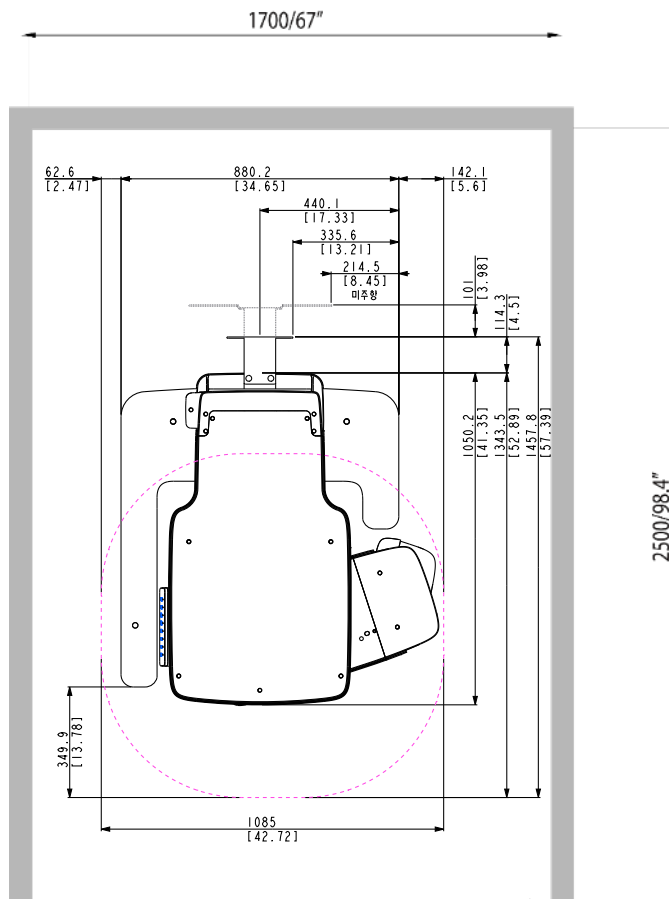
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2. Pre-Installation Requirement

2.1 Room Requirements

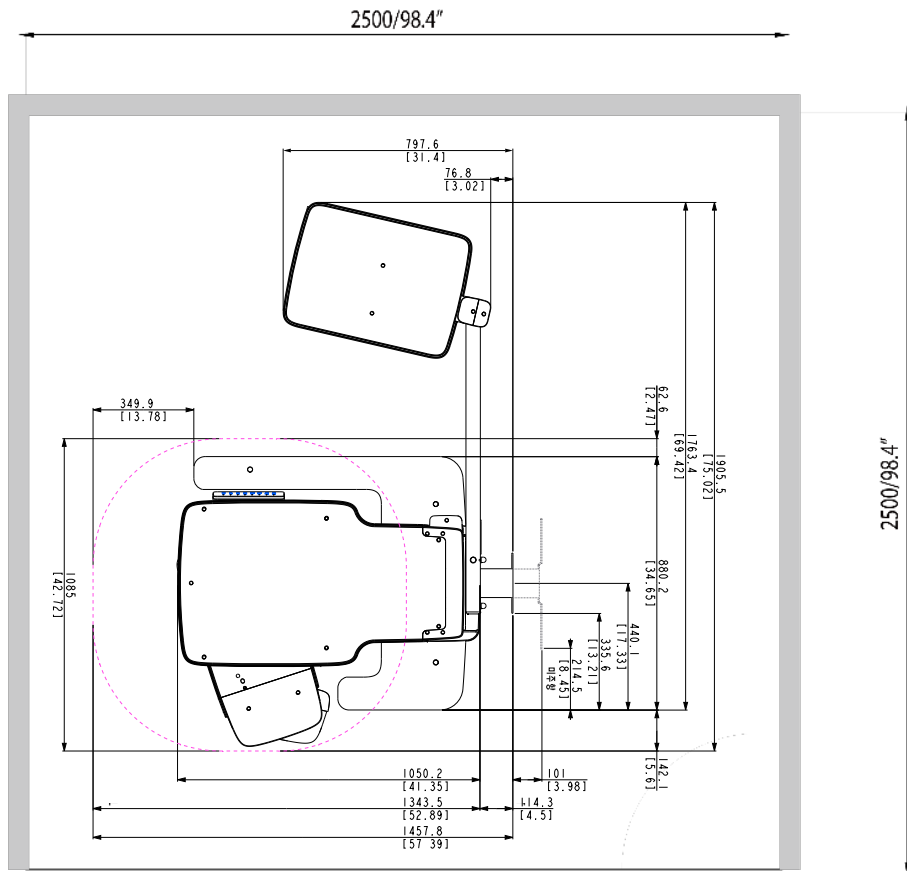
IMPORTANT

- Install this equipment at a proper location where the operator and patient can clearly have visual contact with each other.
- Do not install this equipment on thick carpets due to stability.
- Use anti-static floor materials around the equipment.
- Install the PC monitor, emergency stop switch, and X-ray exposure switch near the operator. Operators must manage them simultaneously in an emergency.

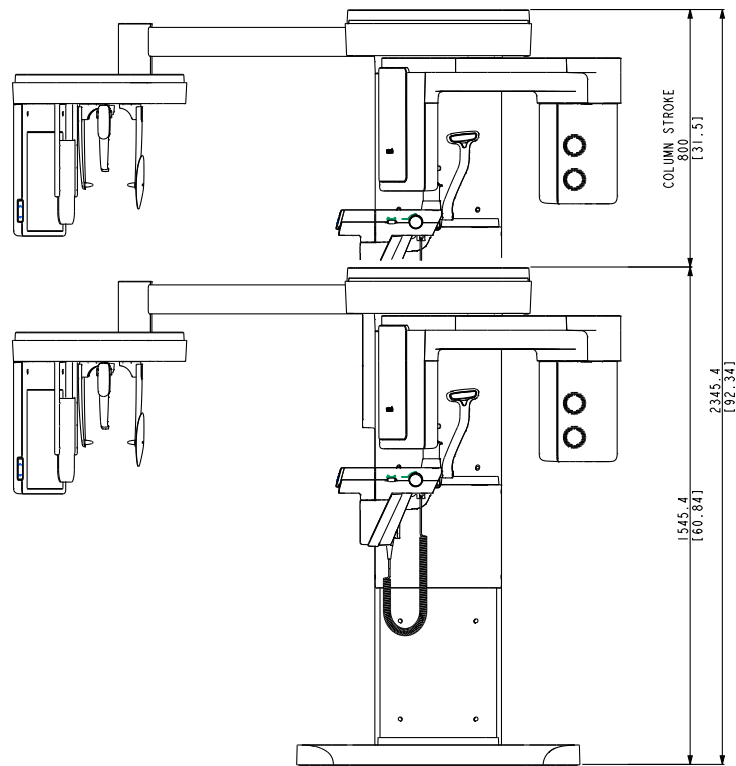


<Without CEPH Unit (optional): 2,500 mm (L) x 1,700 mm (W) or wider >

2. Pre-Installation Requirement



<With CEPH Unit (optional): 2,500 (L) x 2,500 mm (W) or wider >



<Ceiling Height: 2,700 mm (H) or higher >

2. Pre-Installation Requirement

Minimum Space Required

Without CEPH unit	2,500 mm (L) x 1,700 mm (W) x 2,700 mm (H)
With CEPH unit	2,500 mm (L) x 2,500 mm (W) x 2,700 mm (H)

IMPORTANT

If the ceiling height is less than 2318 mm (without Base) / 2346 mm (with Base) (= max. height of the column + 100 mm), refer to **Appendix C. Limiting the Column Height** to lower the max. The height of the column.

Lead Thickness

≥ 1 mm

The width of the Entrance

The X-ray room door must have a clearance of more than 800 mm (31.5") wide.

Floor Area

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

The floor must be able to support a minimum weight of 500 kg/m² (110 lbs. / feet²)

Protection against Radiation

- To protect against radiation hazards, follow all federal and municipal requirements.
- During exposure, the operator should follow applicable radiation shielding requirements and remain at least 2,000 mm (78.7") 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 Electrical Installation Requirement

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 Requirement



- Both PC and equipment must use the same power line if connected to an MPSO (Multiple Portable Socket Outlet).
- If it is unable to use the same power line, use different power outlets for each device. If 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 operations caused by power fluctuations.



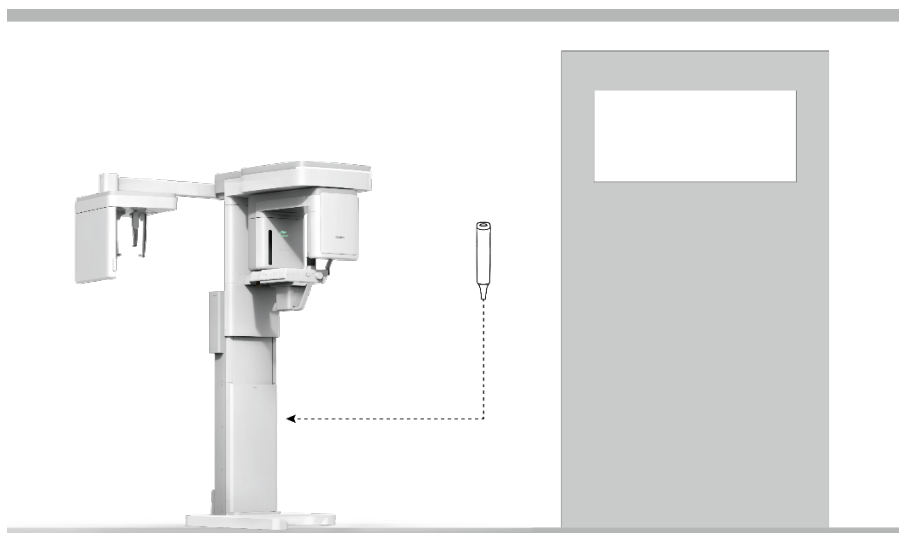
For countries where a stable power supply is not guaranteed, installing an AVR (Automatic Voltage Regulator) that is single-phase and with a capacity of 3kVA or more is recommended to ensure a steady operation. Please consult a local electrician if you are located in an unstable area.

2.4 Installing Exposure Switch

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

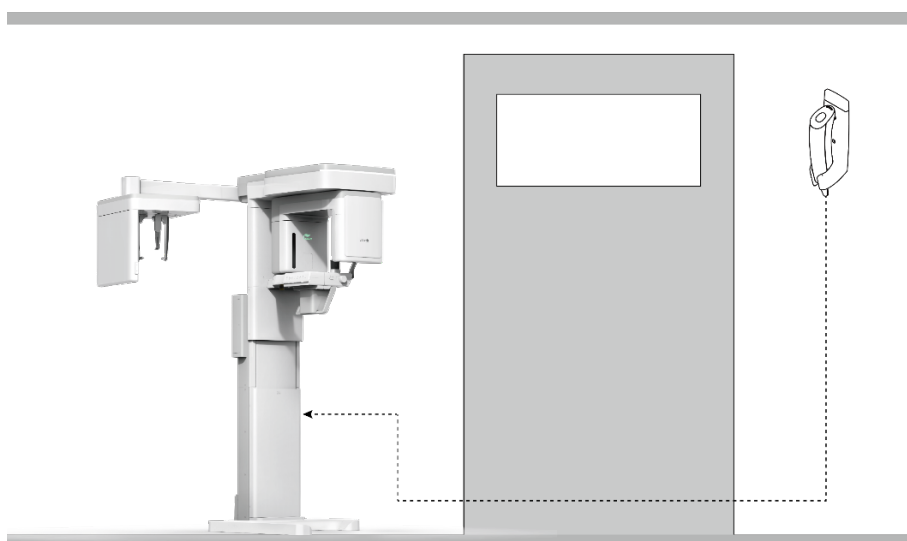
Option No. 1:

The user operates the **Exposure Switch** inside the X-ray room.



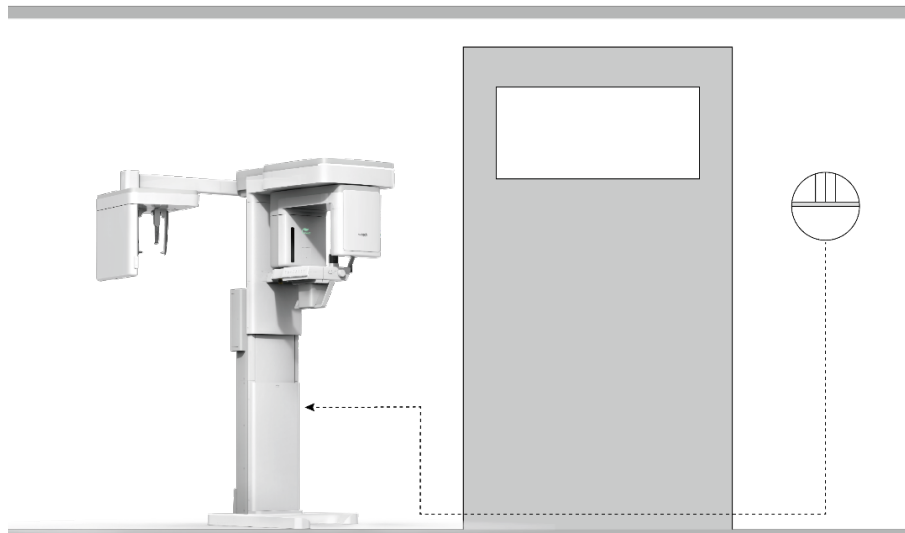
Option No. 2:

The user operates the **Exposure Switch** outside the X-ray room. The **Exposure Switch** holder is mounted on the wall.



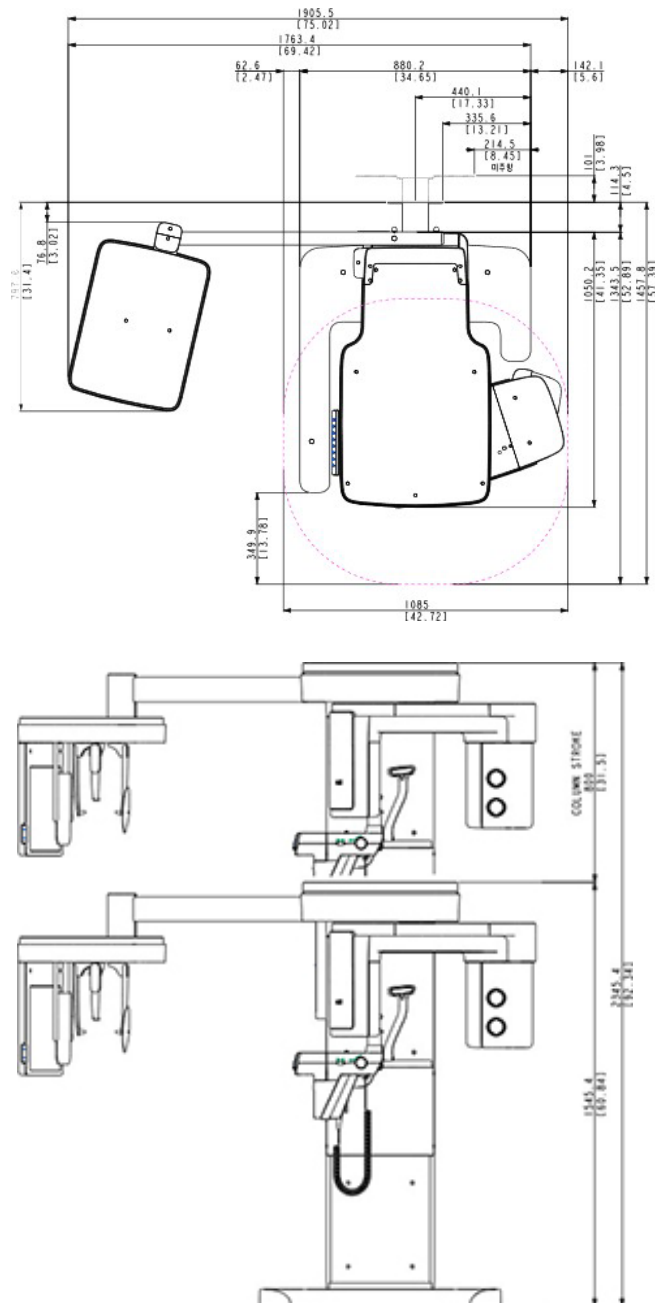
Option No. 3:

The 3rd party **Exposure Switch** (not VATECH's) is used on the customers' demand. Refer to **Appendix D. Connecting the 3rd Party Exposure Switch (Optional)** for detailed information.



2.5 Installation Versions

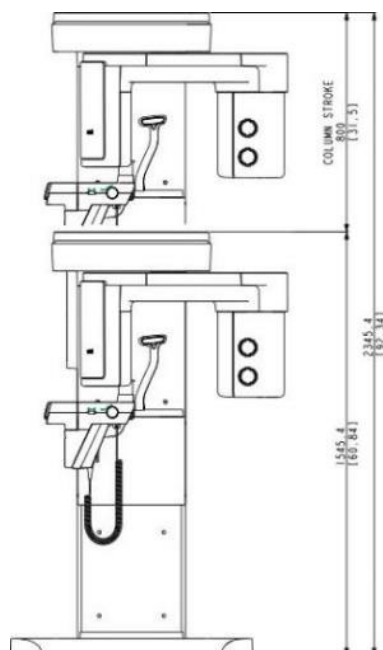
Base-Stand Type (With CEPH unit)



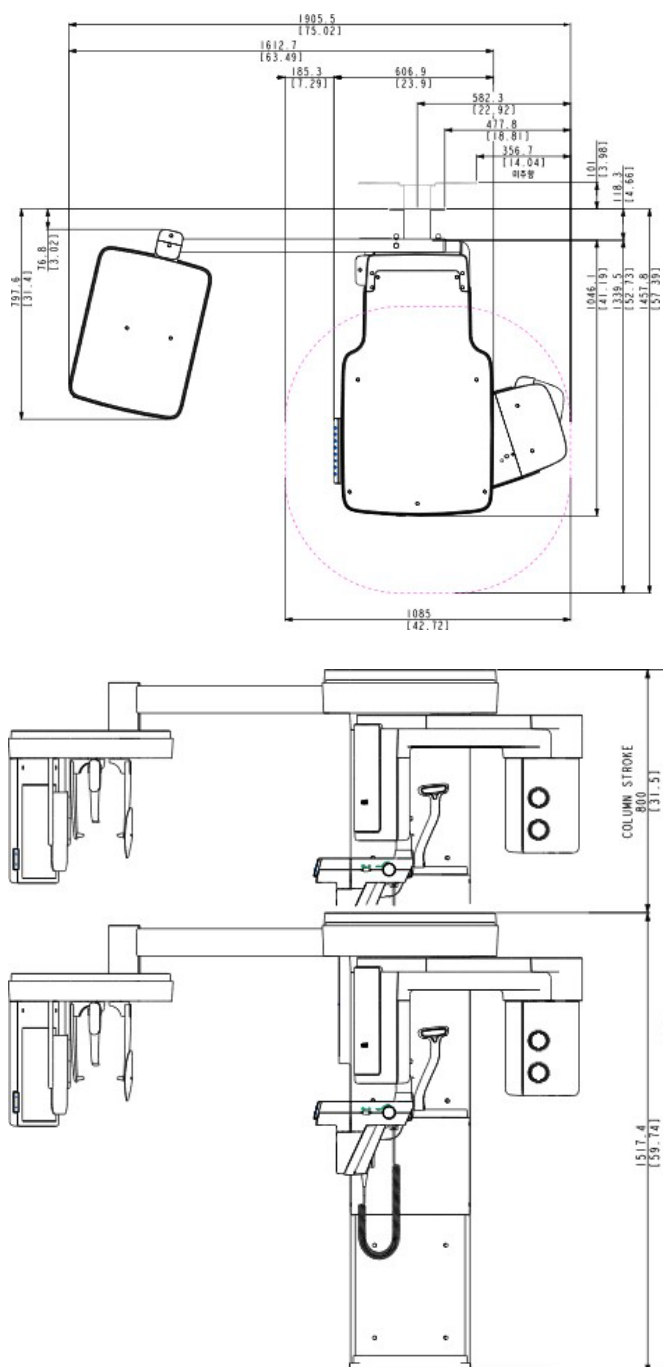
Technical drawing of the rear view of a vehicle, showing dimensions in millimeters (mm) and inches (in). The drawing includes a dashed circle indicating a specific area of interest.

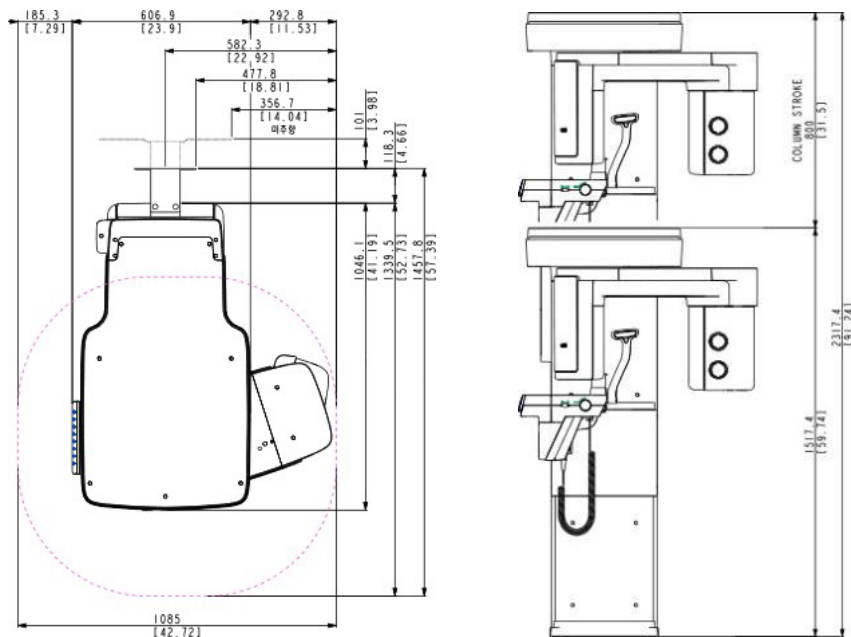
Dimensions (mm / in):

- Overall width: 880.2 (34.65)
- Overall height: 1421 (56)
- Distance from top edge to center of wheel: 440.1 (17.33)
- Distance from center of wheel to rear edge: 335.6 (13.21)
- Distance from center of wheel to rear edge (lower): 214.5 (8.45)
- Distance from center of wheel to rear edge (lower): 181 (7.13)
- Distance from center of wheel to rear edge (lower): 114.3 (4.5)
- Distance from center of wheel to rear edge (lower): 1050.2 (41.35)
- Distance from center of wheel to rear edge (lower): 1343.5 (52.89)
- Distance from center of wheel to rear edge (lower): 1457.8 (57.39)
- Distance from center of wheel to rear edge (lower): 1085 (42.72)
- Distance from center of wheel to rear edge (lower): 349.4 (13.75)



Green X12 (Model: PHT-75CHS) Installation Manual



Wall-Mount Type (Without CEPH unit)**2.6 Installing the Warning Lamp and Door Interlock Switch**

Refer to **Appendix A. Installing the Warning Lamp and Door Interlock Switch** for a complete installation guide.

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

2.7 Installing the Emergency Stop Switch

Refer to **Appendix B. Installing the Emergency Stop Switch** for a complete installation guide.


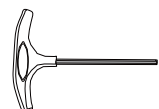
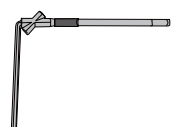
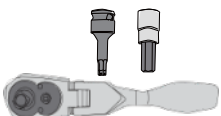
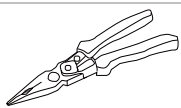
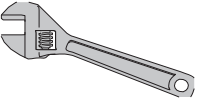
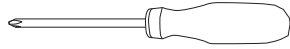




- Install the **emergency stop switch** along with the main power cable in the central distribution panel.
- Install this switch within easy reach of the operator but cannot be accidentally pressed.
- The switch must be a fool-proof model.

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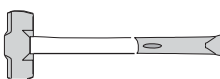


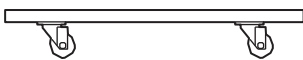
3. Before the Installation

3.1 Required Tool List

Prepare the required tools from the list below before installing the equipment.

Item	Figure	Size
Wrench Set		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		N/A
Cross Head Screwdriver w/ Magnetic Tip		L = 200 mm (7.9")
Spirit Level		N/A
Anti-Static Glove		N/A
Knife		N/A
Tape Ruler	 (for Wall Mount type)	5 m

3. Before the Installation

Item	Figure	Size
Marker Pen (thick tip)	 (for Wall Mount type)	N/A
Hammer	 (For Wall Mount type)	N/A
Multimeter		N/A
Hammer Drill	 (for Wall Mount type)	L = 200 mm (7.9")
Transport Dolly		N/A

IMPORTANT

Go to **checklist no.3** through **no.4** in **Appendix F. Installation Checklist** to check if all pre-installation conditions are met before installing the equipment.

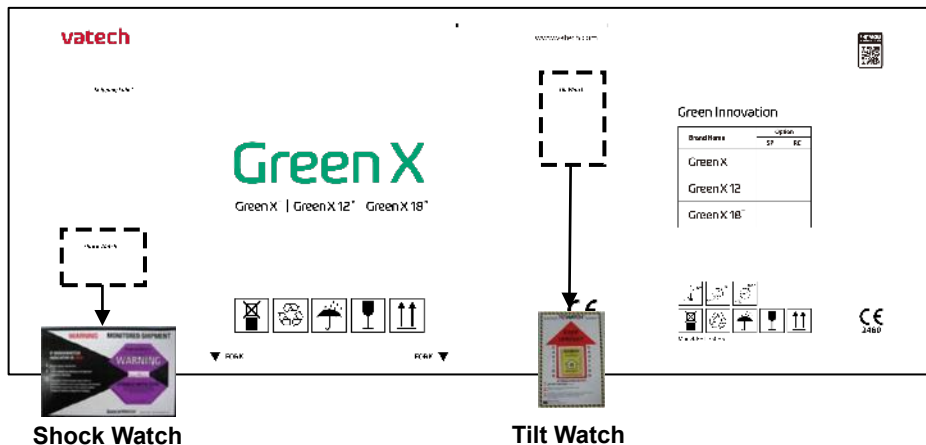
3.2 Checking the Conditions of the Shock and Tilt Watches

The shock and tilt watches are the color-changing stickers attached to the main box (Box no.1). Before opening the main box, check the color of the watches. When the main box receives damage during transportation, the watches turn red.

If the shock or tilt watch has turned red, do not open the box, and contact the nearest VATECH representative in your area.

To check the conditions of shock and tilt watches:

1. Locate the shock and tilt watch stickers on the box as illustrated below:



2. Check if the stickers are turned red. And examine the main box for other damages such as a rip or scratch.

3.3 Unpacking the X-ray Unit

The X-ray unit, PC, and accessories are delivered in the main box. The main box and foams within the box can be recycled. Unpack the main box by following the instructions in **3.3.1 Main Box**.

NOTICE

After unpacking the X-ray unit, return the main box to your **VATECH** service representative or dispose of the box following the recycling guide in your country.

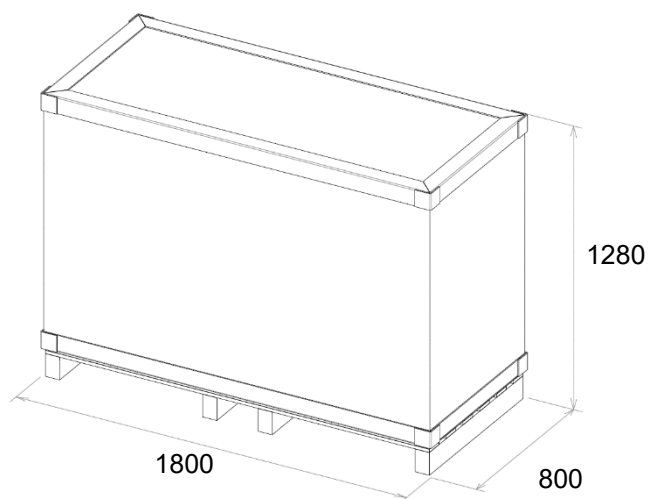
3.3.1 Main Box (Box no.1)

NOTICE

Wear gloves when opening the box. The edges of the main box may be sharp.

IMPORTANT

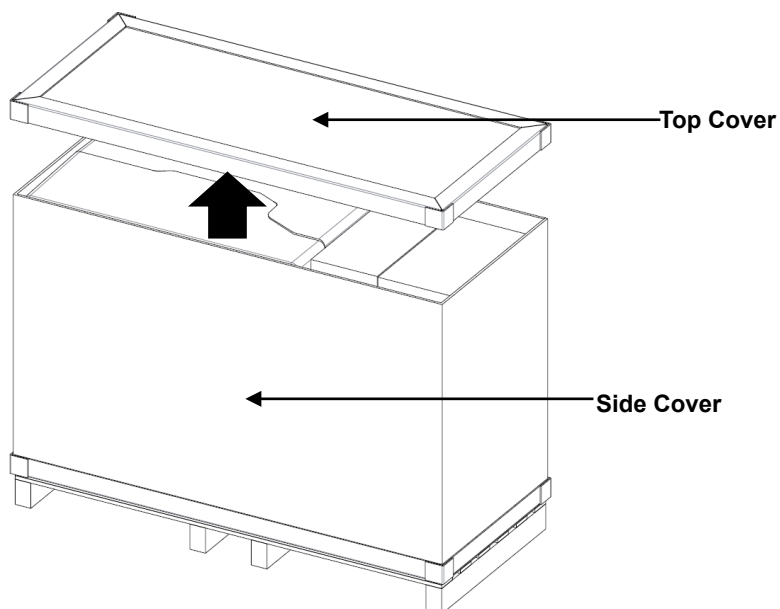
Two installers are recommended when handling the main box.



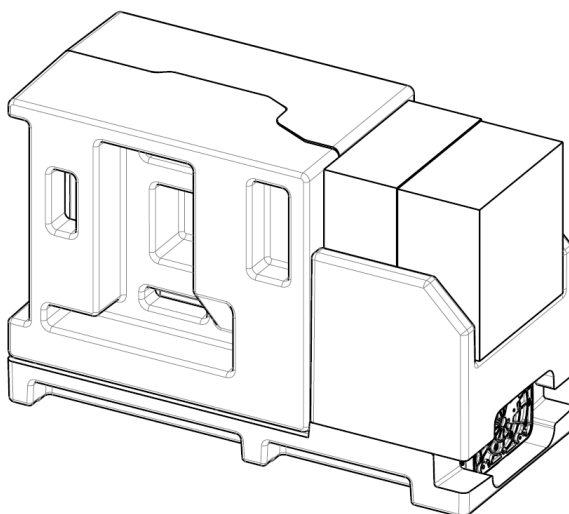
Component	Size (mm / inch)	Weight (kg/lbs.)
<ul style="list-style-type: none"> Column and Rotating unit Assembly Accessories and Parts PC System (Optional) Monitor (Optional) 	1800 (L) x 800 (W) x 1280 (H) / 70.9" (L) x 31.5" (W) x 50.4" (H)	221 / 487

To open the main box:

1. Move the main box close to the installation site.
2. Remove the strapping bands around the box and lift the top cover.



3. Remove the side cover.



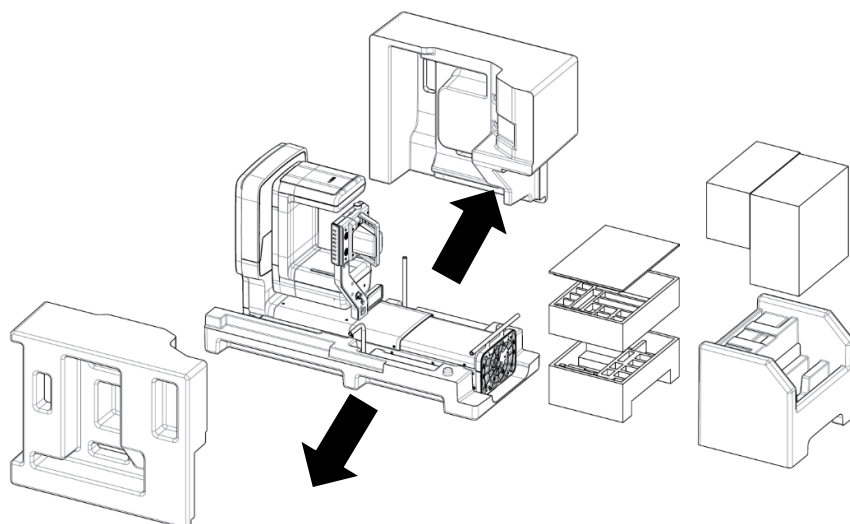
3. Before the Installation

4. Remove the plastic cover with a cutter.



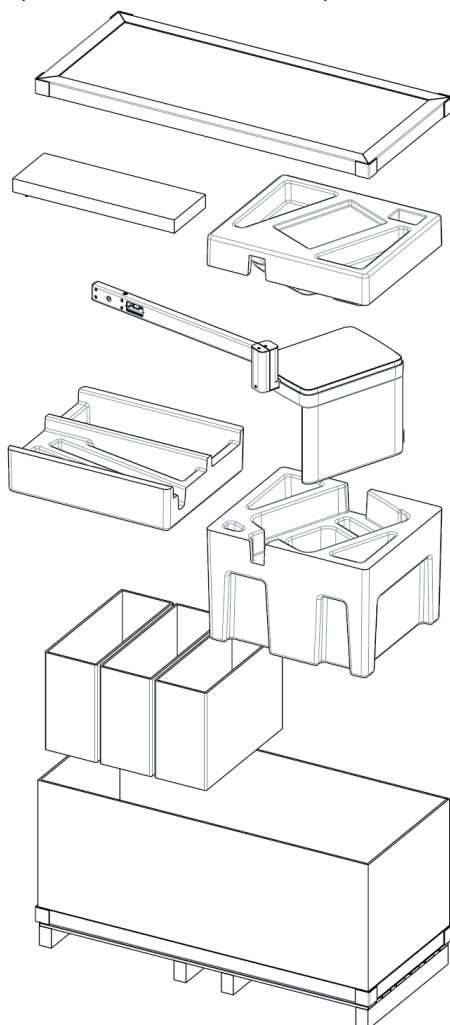
When one installer removes the side cover, another must hold the box to prevent falling.

5. Remove foams and take out each component as illustrated:



3.3.2 CEPH Box (Optional)

The CEPH box is provided for customers who purchased the CEPH option.



3.4 Transporting the X-ray Unit

To transport the X-ray Unit:

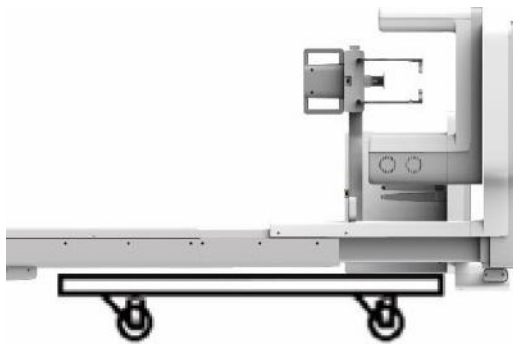
IMPORTANT

At least 3 installers are required to lift and carry the X-ray unit.

1. Tape around the column to attach it to the foam.
2. Hold the handles and lift the X-ray unit (main unit) from the pallet.

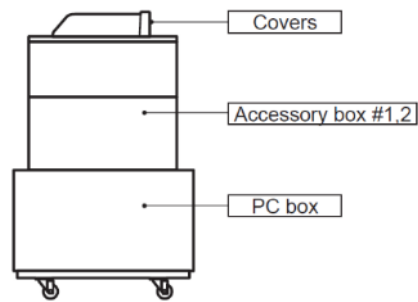


3. Place the X-ray unit with EPS (**Main Base**) on a transport dolly and move the unit to the installation site.



IMPORTANT

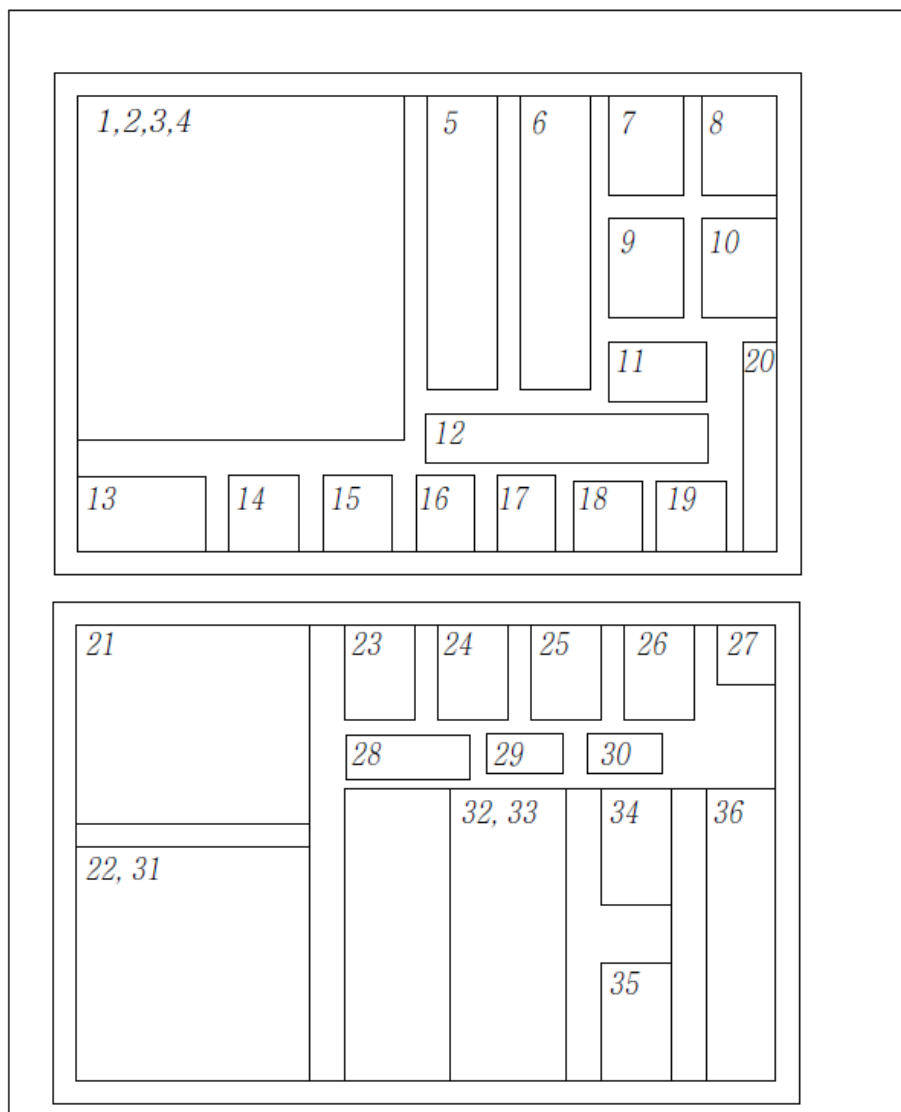
- When placing the Main Unit on the dolly, ensure that the center of the mass indicator is aligned with the center of the dolly.
- If you move the unit manually, ensure that the person holding the upper handle takes the lead.



<Transportation Example>

3.5 Checking the Parts and Accessories

3.5.1 Accessories Box 1 & 2 Overview














3.5.2 Parts List


3.5.2.1 Accessory Box 1 & 2

Part No.1 to 36 are stored in accessory box 1 and 2.

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
1	Manuals	User Manual		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
		Installation Manual		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
		2D Viewer Manual		1	For EzDent-i	Yes <input type="checkbox"/> No <input type="checkbox"/>
		3D Viewer Manual		1	For Ez3D-i	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Installation USB	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	3D Viewer License Key	n/a		1	For Ez3D-i	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Remote Exposure Switch (Doorbell type)	n/a		1	Available in U.S. only	Yes <input type="checkbox"/> No <input type="checkbox"/>
2	Remote Exposure Switch Cable (Doorbell type)	n/a		1	Available in U.S. only	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Exposure Switch	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Exposure Switch Holder	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Double-Sided Sticker	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
3	Screws	M3x16		2	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Carpus Plate	n/a		1	CEPH Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Hand rest Sticker	n/a		1		Yes <input type="checkbox"/> No <input type="checkbox"/>










3. Before the Installation

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
4	Alignment Plate	n/a		1	Floor Mount Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
5	Temple Supports	right & left		1 set	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
6	Anti-Static Gloves	n/a		1 pair	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
7	Left Blank Intentionally					
8	Left Blank Intentionally					
9	Chinrest	Normal		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
10	Left Blank Intentionally					
11	Sanitary Vinyl Cover	For Normal Bite		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
12	Bite	Normal		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
		Deep*		1	*Deep Bite is provided for Asian countries only	Yes <input type="checkbox"/> No <input type="checkbox"/>
		Special A		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
		Special B		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
13	Left Blank Intentionally					
14	Cap	For Ear Rods		2 + 2	CEPH Option (2: on the equipment)	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Silicone Cover	For Nasal Positioner		1	CEPH Option: extra	Yes <input type="checkbox"/> No <input type="checkbox"/>
15	Left Blank Intentionally					

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
16	Silicone Cap	White		16	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
17	Flat Base Cap	White Silicone		2	Base Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Round Base Cap	White Silicone		1	Base Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
18	Left Blank Intentionally					
19	Flat Head Screw	M4 x 16		4	For Rear Cover Vertical Rear	Yes <input type="checkbox"/> No <input type="checkbox"/>
20	Cable Tie	n/a		10	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
21	Frame Grabber System	Optic Cable		1	One additional fiber optic cable is required when SC type is installed	Yes <input type="checkbox"/> No <input type="checkbox"/>
		FTG Card (or) LEG Card	 	1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
22	Column Bracket	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Model Scan Jig	n/a		1	For the 3D MODEL Scan model	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Protractor	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
23	Wrench Bolt	M10 x 25 w/ Spring and Flat Washers		6	Base Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
24	Wrench Bolt	M8 x 35		2	Base Option	Yes <input type="checkbox"/> No <input type="checkbox"/>

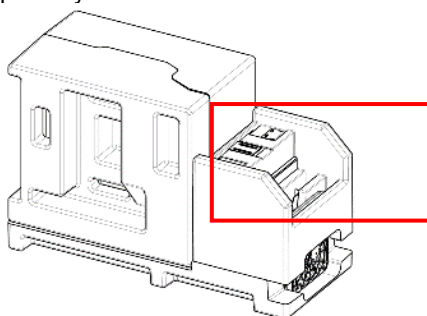
3. Before the Installation



Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
25	Wrench Bolt	M8 x 20		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	C E Washer 1 Sems	n/a		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
26	Truss Bolt	M4 x16		3	Base Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
27	Truss Bolt	M4 x10		13	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
28	Flat Head Screw	M3 x 6		2	CEPH Option	Yes <input type="checkbox"/> No <input type="checkbox"/>
	CEPH Arm Cover	n/a		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
29	Wrench Bolt (2 Sems)	M8 x 15		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
30	Set Screw	M10 x 20		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
31	Wall Plate	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Terminal Block 3 Pole	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
32	Wall mount cap	Silicone		12	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
33	UP / DOWN Switch	n/a		1	Optional	Yes <input type="checkbox"/> No <input type="checkbox"/>
	UP / DOWN Switch Holder	n/a		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
	Double-Sided Sticker	n/a		1		Yes <input type="checkbox"/> No <input type="checkbox"/>
	Truss Bolt	M4 x 10		2		Yes <input type="checkbox"/> No <input type="checkbox"/>
34	Wood bolt	M8 x 60		4	For Wood Wall	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Spring Washer	M8		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Flat Washer	M8		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>

Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
	Flat Anchor Bolt	M8 x 30		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Hex Bolt	M8 x 15		4	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Wood Screw	M12 x 70		2	For Wood Wall	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Anchor Bolt	5/16 x 60 w/ Spring and Flat Washers		6	For Concrete	Yes <input type="checkbox"/> No <input type="checkbox"/>
35	Wrench Bolt	M8 x 25		2	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Nut	M8		2	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
36	Wall Bracket Rear	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Wood Wall Bracket	n/a			For the U.S, only	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Vertical Cap	n/a		1	For PANO only	Yes <input type="checkbox"/> No <input type="checkbox"/>

3.5.2.2 Additional Parts

Part No.37 and 38 are separately stored from other accessories as illustrated below:



Part No.	Items	Specification	Figure	QTY	Comments	Confirmed
37	Lower Column Cover	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>
38	Back Column Cover	n/a		1	n/a	Yes <input type="checkbox"/> No <input type="checkbox"/>

4. Installing the X-ray Unit: Base Stand Type


4.1 Attaching the Base to the X-ray Unit

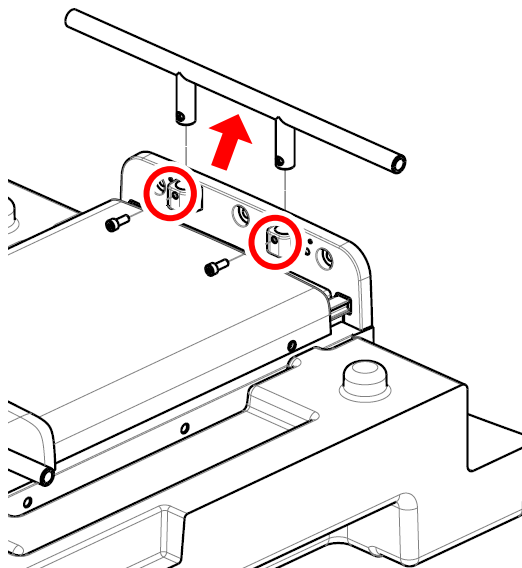
NOTICE

If you are installing the X-ray unit on a concrete floor, complete the steps in **4.4.1 Concrete Floor** first.

To attach the base to the X-ray unit:



1. Remove the lower carrying handle.

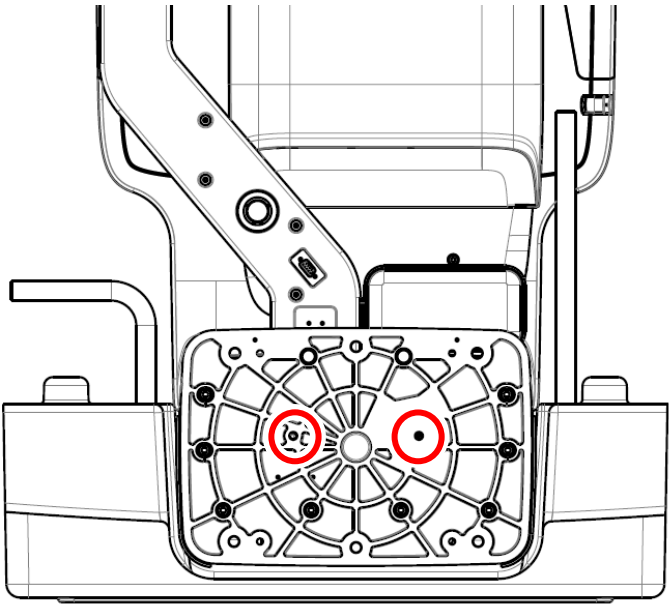
Required Tool	Allen Wrench	6 mm / 0.24"	
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4. Installing the X-ray Unit: Base Stand Type

2. Put two wrench bolts into the holes on the bottom of the column unit.

Required Tool	Allen Wrench	6 mm / 0.24"	
Parts and Accessory	Wrench Bolt	M8 x 35 - 2 pcs (Part No. 24)	

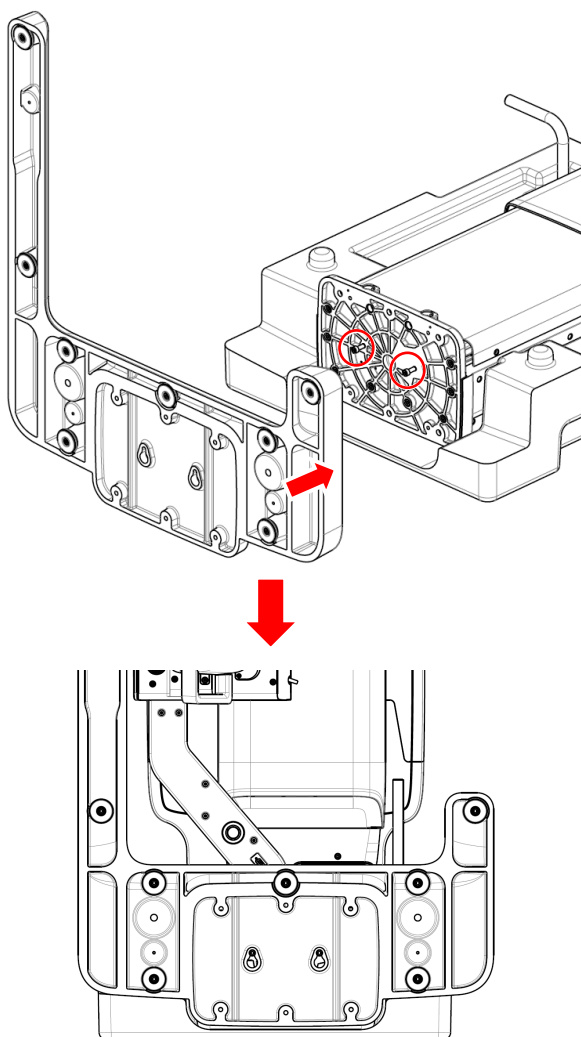


IMPORTANT

Leave the bolts 30mm outside of the hole.



3. Install the base to the two-bolt mount of the column.





The Base after installation to the two-bolt mount

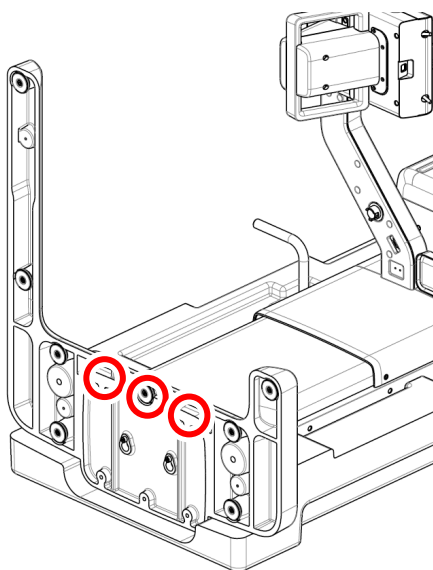


Hold the base unit to keep it from falling.

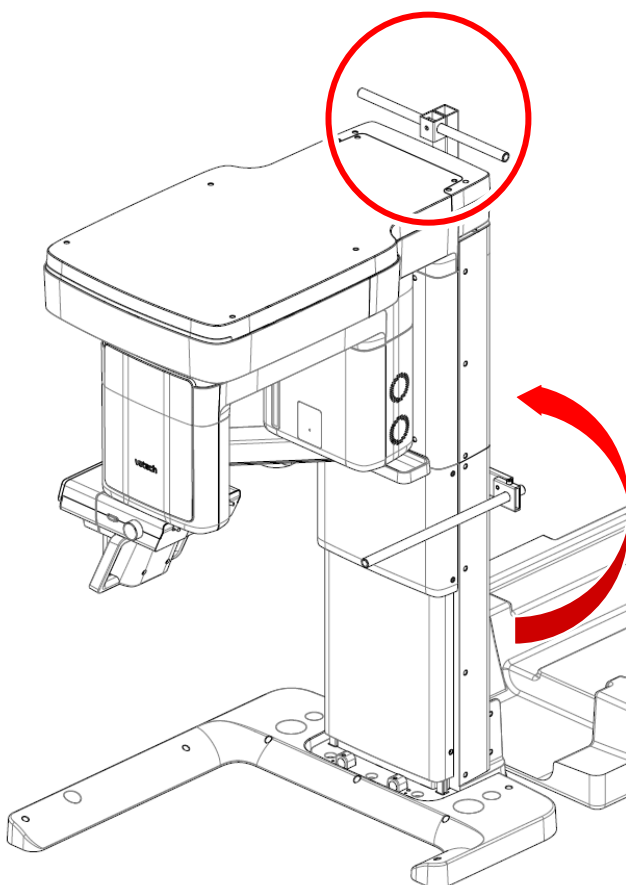
4. Installing the X-ray Unit: Base Stand Type

4. Tighten three wrench bolts on the underside of the base.

Required Tool	Allen Wrench	6 mm / 0.24"	
Parts and Accessory	Wrench Bolt	M10 x 25 w / Spring and Flat Washers - 3 pcs (Part No. 23)	





5. Hold the upper carrying handle and lift the equipment slowly.

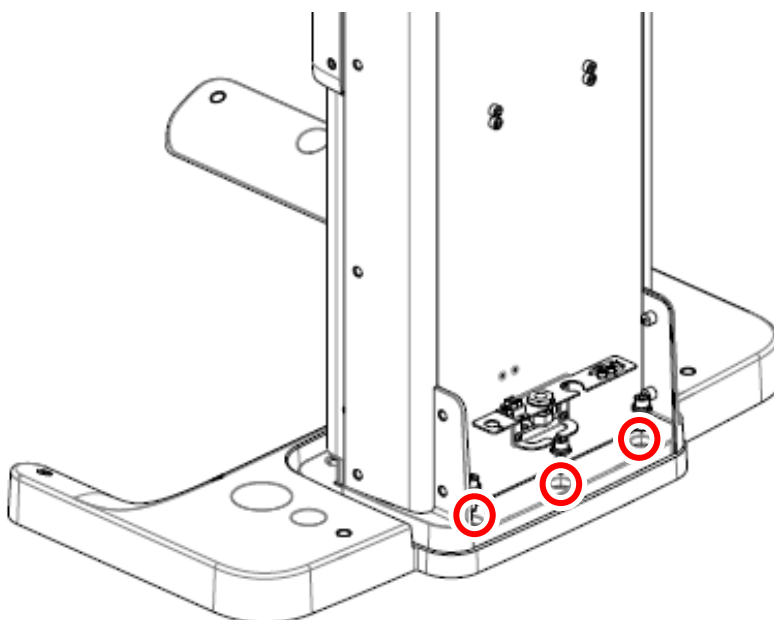


Clear the cables from the installation site before lifting the equipment to prevent cable damage and electrical accidents.

4. Installing the X-ray Unit: Base Stand Type


6. Tighten three wrench bolts in the column's backside to attach the base.

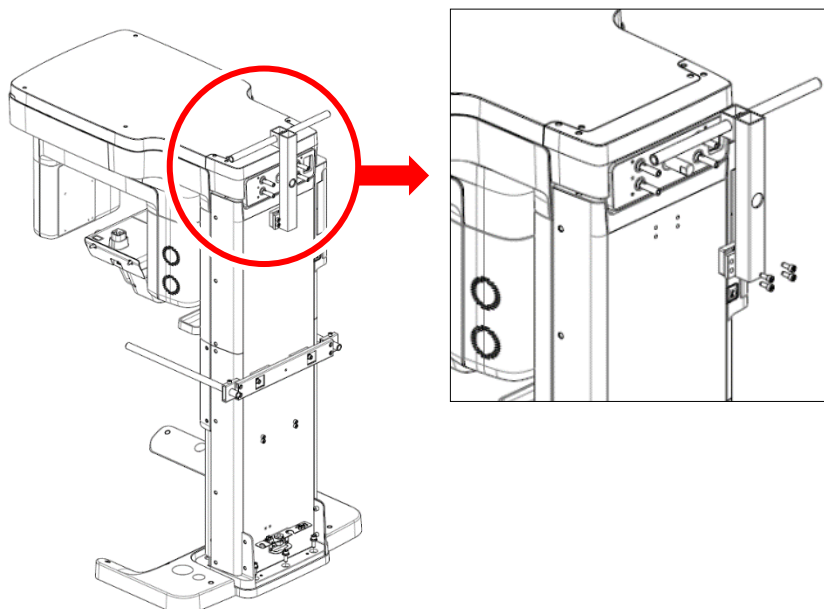
Required Tool	Allen Wrench	6 mm / 0.24"	
Parts and Accessory	Wrench Bolt	M10 x 25 w/ Spring and Flat Washers - 3 pcs (Part No. 23)	



Fully tighten all wrench bolts inserted in steps 4 and 6 before moving on to the next step.

7. Remove the top carrying handle.

Required Tool	Allen Wrench	6 mm / 0.24"	
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One person should hold the handle while another installer is removing the bolts to prevent handle from falling.

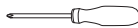


4. Installing the X-ray Unit: Base Stand Type

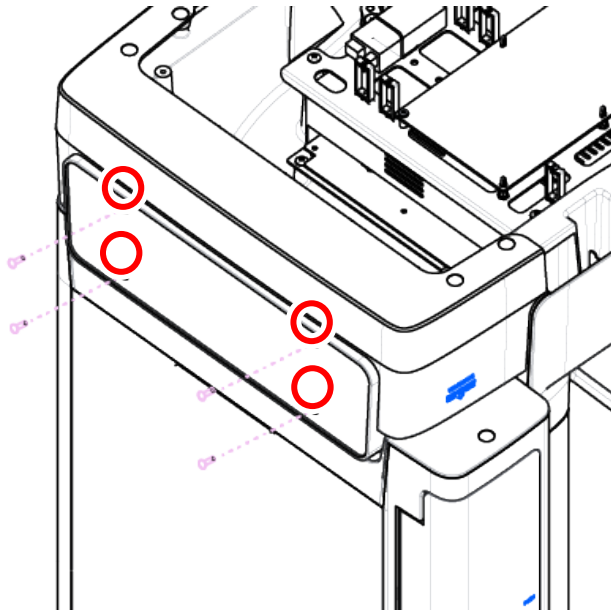
IMPORTANT

If CEPH Unit needs to be installed, skip step 8 and move on to **4.2 Installing the CEPH Unit (Optional)**.

If there is no CEPH Unit option, perform step 8 and skip **4.2 Installing the CEPH Unit (Optional)**.

8. Attach Vertical Cap with flat head screws(M4 x 16).

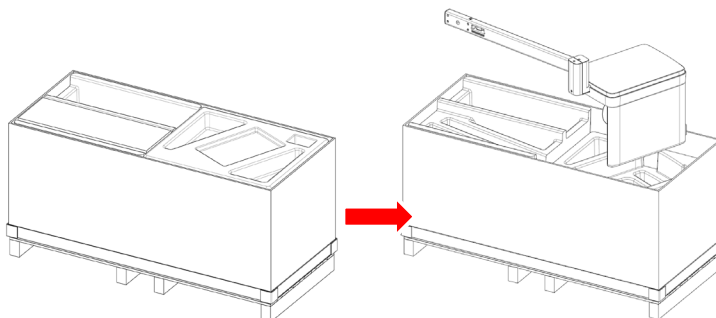
Required Tool	Cross Head Screwdriver w/ Magnetic Tip	6 mm / 0.24"	
	Vertical Cap	(Part No. 36)	
Parts and Accessory	Flat Head Screw	M4 x 16 - 4 pcs (Part No. 19)	



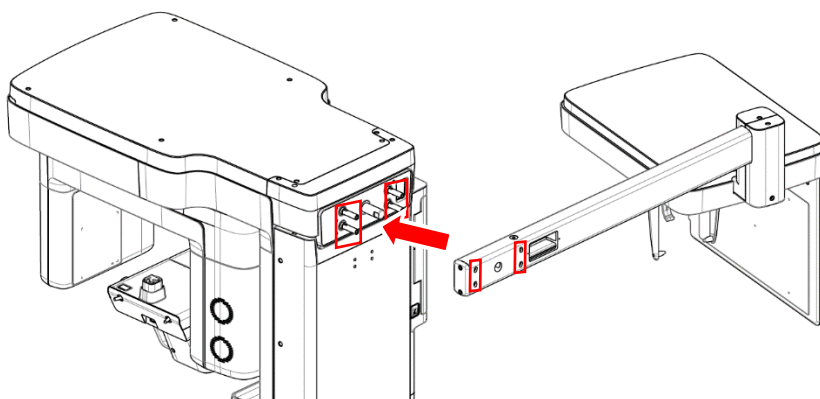
4.2 Installing the CEPH Unit (Optional)

To Install the CEPH unit:

1. Take out the CEPH unit from the CEPH box.

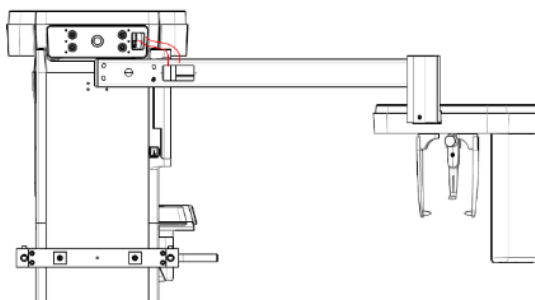


2. Remove the plastic wrap covering the unit and CEPH cables with a cutter.
3. Attach the CEPH unit to the main unit by sliding four studs into arm holes.







Ensure that the CEPH cables come out of the CEPH armhole as below.

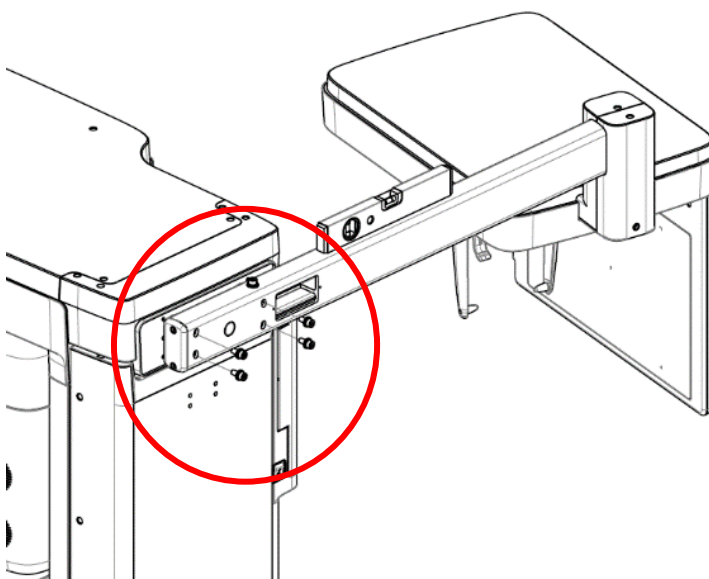
IMPORTANT



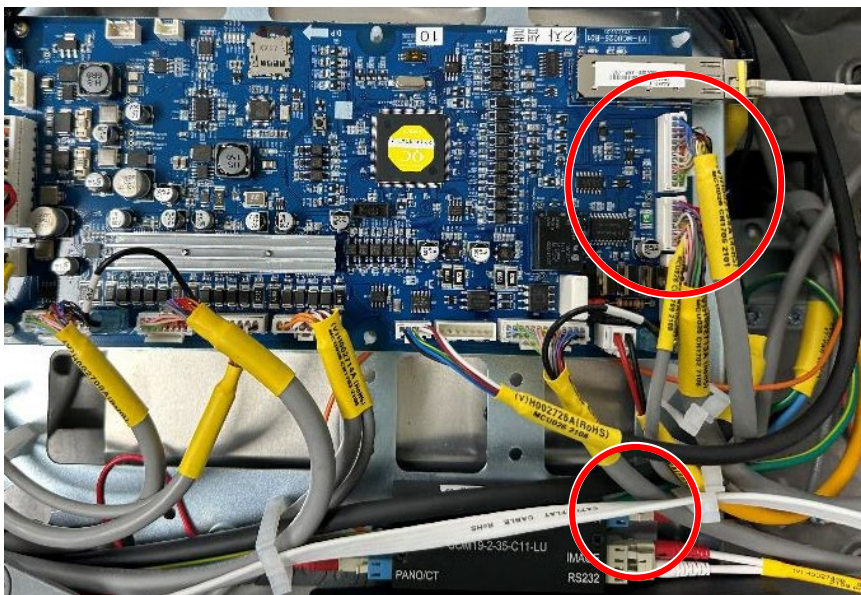
4. Installing the X-ray Unit: Base Stand Type

4. Fix the CEPH unit to the main unit with M8X20 wrench bolts and washers. When tightening the bolt, place a spirit level on the CEPH unit.

Required Tool	Allen Wrench	6 mm / 0.24"	
	Allen Wrench	8 mm / 0.31"	
Parts and Accessory	Wrench Bolt	M8 x 20 - 4 pcs (Part No. 25)	
	C E Washer	4 pcs (Part No. 25)	



5. Connect the cables as shown in the figure.

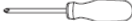




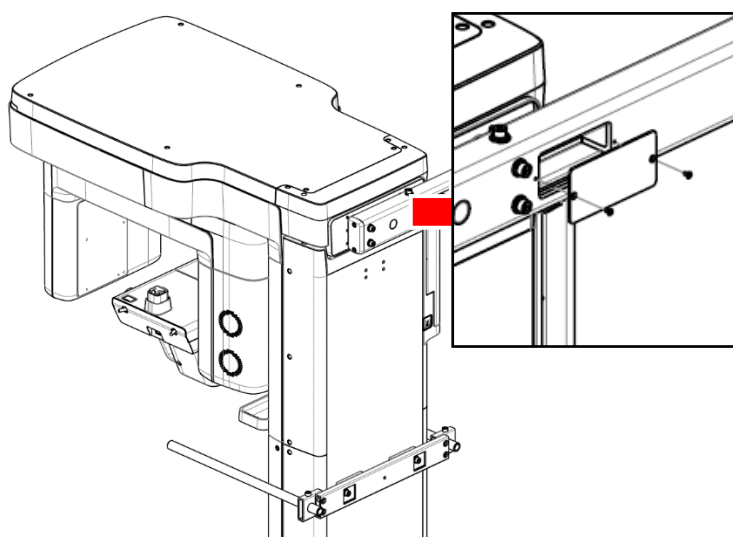
When you are connecting optic cables,

- Do not bend, pull, or crush it.
- Ensure that the caps of the fiber optic cable have been removed.
- Do not touch the tip of the fiber optic cable to prevent it from getting dirty.
- Insert the fiber optic cable fully until the click sound is heard.

4. Installing the X-ray Unit: Base Stand Type

6. Place the cables inside the CEPH Arm and attach the CEPH arm cover with M3x6 flat head screws.

Required Tool	Cross Head Screwdriver w/ Magnetic Tip	6 mm / 0.24"	
Parts and Accessory	Flat Head Screw	M3 x 6 - 2 pcs (Part No. 28)	
	CEPH Arm Cover	(Part No. 28)	



4.3 Installing the Wall and Column Brackets

Brackets must be installed in the right place to secure the equipment during the operation. Check the wall type (wood or concrete) in your installation site and your equipment option (wall mount or base stand) before installing wall brackets.


IMPORTANT

Install the wall bracket first before connecting it with the column bracket.

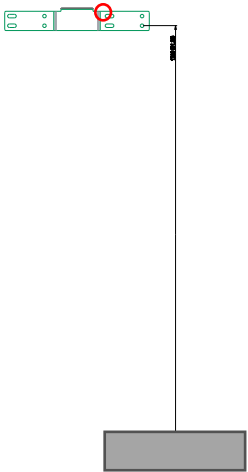
4.3.1 For the Concrete Wall

To install a wall bracket on the concrete wall:

- Prepare a wall bracket for the concrete wall.

Parts and Accessory	Wall Bracket	(Part No. 36)	
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- Choose one of four bracket's bottom holes as your starting point. Measure the distance between the point and the floor.

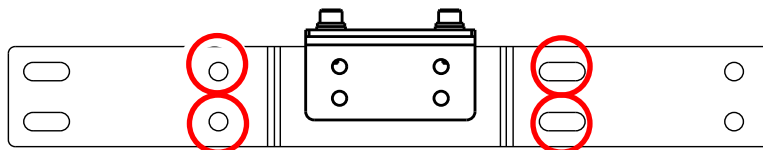


Based on your equipment option, the distance between the bracket and floor must be different:




Option	Height (mm /ft)
Base Stand	1,315 mm (4.31ft)
Wall Mount	1,287 mm (4.22ft)

4. Installing the X-ray Unit: Base Stand Type





3. If the measured distance meets the requirement, mark the installation location for the wall bracket with a marker.
4. Place the wall bracket at the marked location. Mark a drilling point for anchor bolts following the bracket holes.



5. Drill the holes following the marks. Each hole must be the size of 10.5mm x 30 mm (0.41" x 1.18").
6. Remove the debris and clean the holes using the dust pump.
7. Insert Fischer strong anchors into drilled holes using the hammer. Then, Insert an EHS tool into the inner bolt.

Required Tool	Hammer	N/A	
Parts and Accessory	Fischer strong anchor	M8 x 30	
	EHS tool	EAW H 8x30	

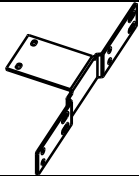
8. Slide hex bolts into the mounted anchor with washers. Tighten the bolts until they no longer move.

Required Tool	Torque wrench	Spanner type	
Parts and Accessory	Hex Bolt	M8 x 15	
	Spring washer	M8	
	Flat washer	M8	

4.3.2 For the Wood Wall

To install a wall bracket on the wood wall:

1. Prepare a wall bracket for the wood wall.

Parts and Accessory	Wood Wall Bracket	Optional (Part No. 36)	
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2. Follow the steps from 1 to 4 in 4.3.1 Concrete Wall. For wood wall, the distance between the wall bracket and floor must be:

Option	Height (mm /ft)
Base Stand	1,300 mm (4.30ft)
Wall Mount	1,272 mm (4.17ft)

3. Mark the installation location for the wall bracket and drill the hole for wood screws.
4. Insert wood screws into drilled holes and tighten them with a screwdriver.


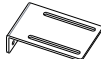

4.3.3 Installing Column Bracket and Connecting to the Wall Bracket

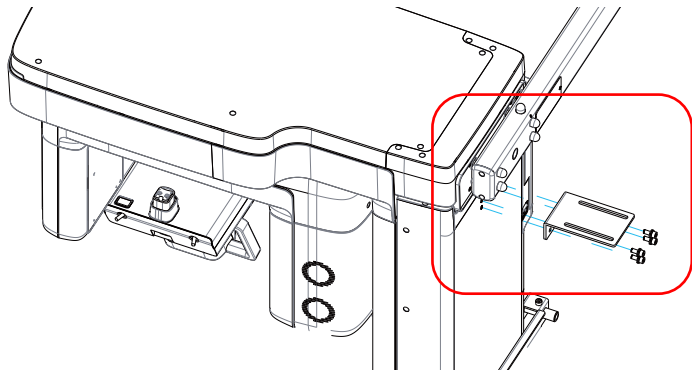
To connect the column and wall brackets:

IMPORTANT

Before connecting the wall and column brackets, check if your equipment is fully leveled. If necessary, follow the procedure in **4.7 Leveling the Equipment** to level the equipment.


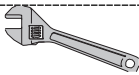


1. Attach the column bracket with M8 x 15 wrench bolts. At this point, do not fully tighten the bolts to make the bracket's height adjustable.

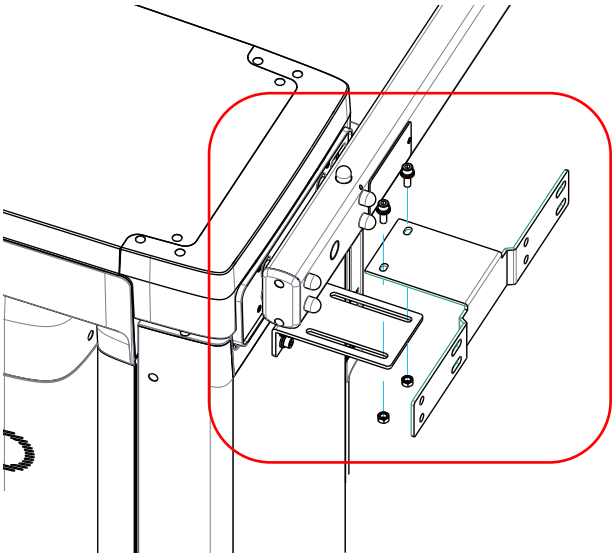
Parts and Accessory	Wrench Bolts (2 Sems)	M8 x 15 - 4pcs (Part No.29)	
	Column Bracket	(Part. No. 22)	
	Allen Wrench	6 mm / 0.24"	



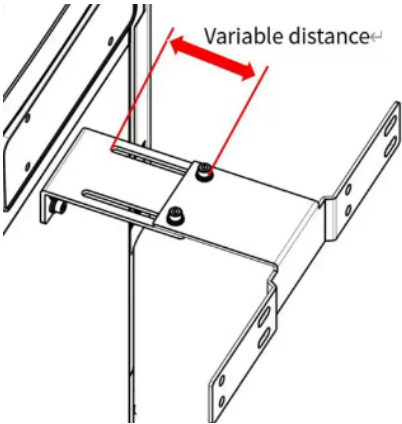
2. Push the equipment to the wall where the wall bracket is installed.

3. Connect the wall and column bracket with M8 x 25 wrench bolts. Place nuts underneath the bolts and slightly tighten them with a monkey wrench.

Required Tool	Allen Wrench	6 mm / 0.24"	
	Monkey Wrench	N/A	
Parts and Accessory	Wrench Bolt	M8 x 25 – 2 pcs (Part No. 35)	
	Nut	M8 - 2 pcs (Part. No. 35)	

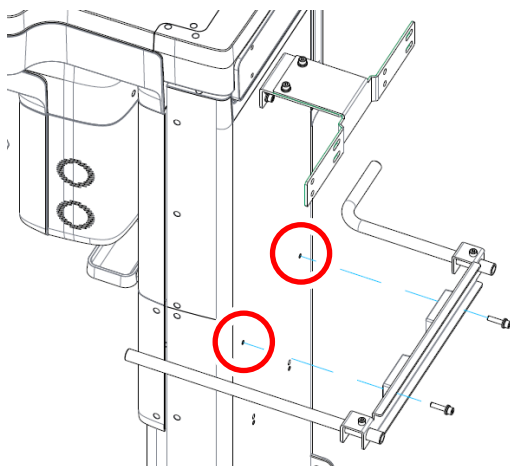


4. Slightly move and adjust the distance between the wall and equipment.



4. Installing the X-ray Unit: Base Stand Type


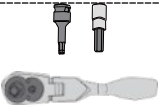



5. After adjusting the distance, fully tighten the wrench bolts.
6. Remove the middle carrying handle.



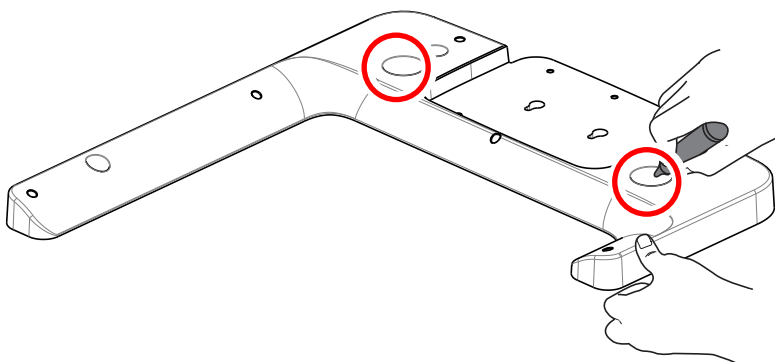
4.4 Fixing the Base

4.4.1 Concrete Floor

To fix the base on the concrete floor:

Required Tool	Hammer Drill	L = 200 mm (7+- .9")	
	Ratchet Wrench	Tips: 3 mm - 8 mm (0.12" - 0.3")	
	Hammer	N/A	
Parts and Accessory	Anchor Bolt	5/16 x 60 w/ Spring and Flat Washers - 2 pcs (Part No. 34)	
	Spring washer	M8 - 2 pcs	

1. Mark the base location on the floor.

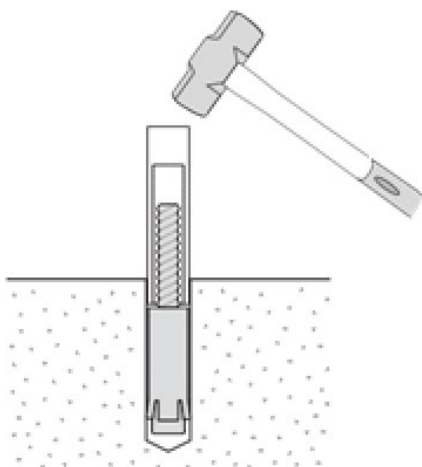


4. Installing the X-ray Unit: Base Stand Type

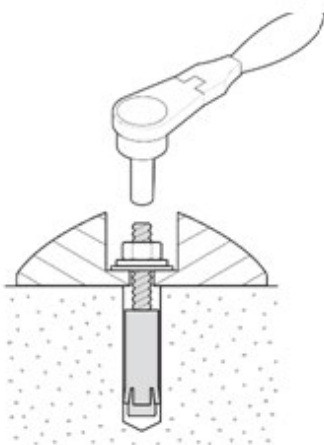
2. Drill holes on the floor. Each hole must be 12 mm x 13 mm (0.47 in. x 0.51 in.) in depth.



3. Remove the debris and clean the holes using the dust pump.
4. Secure the anchor bolts with the hammer.





5. Place the base. Put nuts and washers on the anchor bolts and tighten them with a ratchet wrench to secure the base.

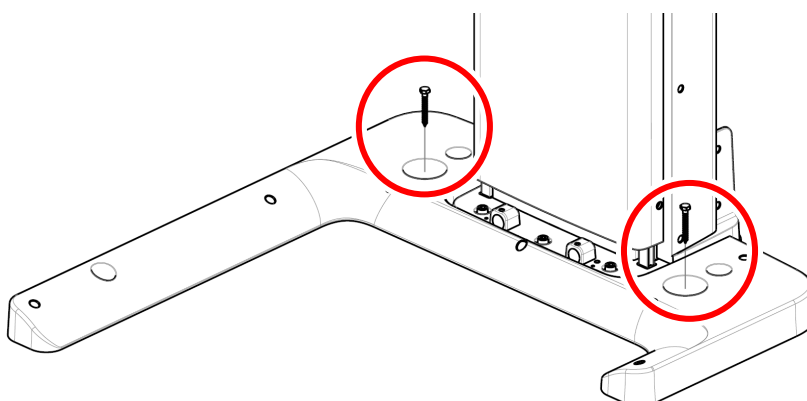


4.4.2 Wooden Floor

To fix the base unit on the wood floor,

Required Tool	Hammer Drill	L = 200 mm (7.9")	
Parts and Accessory	Wood Screws	M12 x 70 – 2 pcs (Part No. 34)	




1. Put M12x70 wood screws into holes.
2. Tighten the screws with a hammer drill.

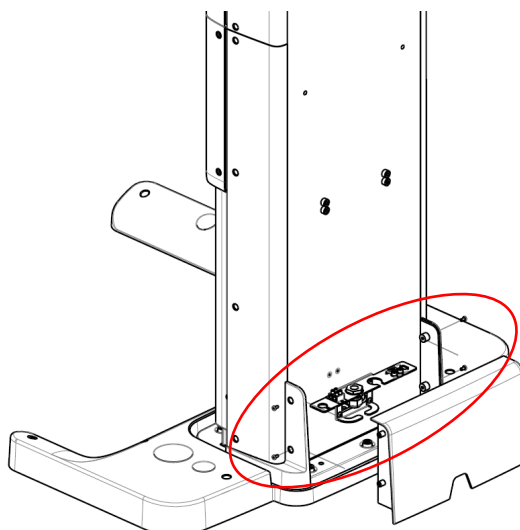


4.5 Connecting the Cables to the Equipment

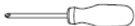

To connect the cables to the equipment:

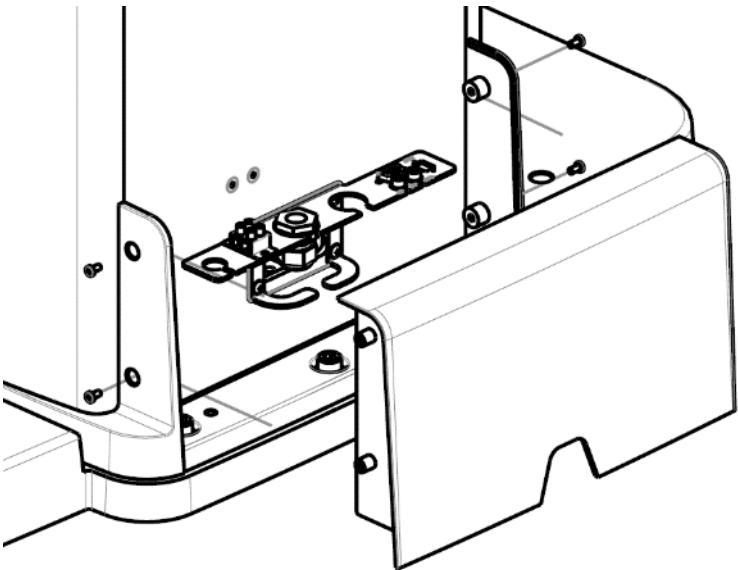
1. Connect the cables in the back of the column as shown in the figure.

Parts and Accessory	Optic Cable	Cable No. H000014A (Part No. 21)	
	Cable Tie	(Part No. 20)	
	Exposure Switch	(Part No. 2)	



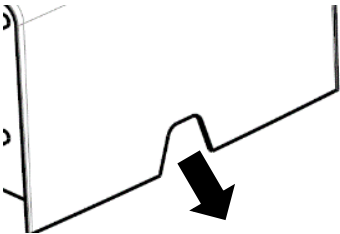
2. Attach the back column cover to the column with M4X10 truss bolts.

Required Tool	Cross Head Screwdriver w/ Magnetic Tip	6 mm / 0.24"	
Parts and Accessory	Truss Bolt	M4 x 10 – 4 pcs (Part No. 27)	



When you are attaching the cover, ensure that all optic cables come out through the cover's hole, as illustrated below:

IMPORTANT

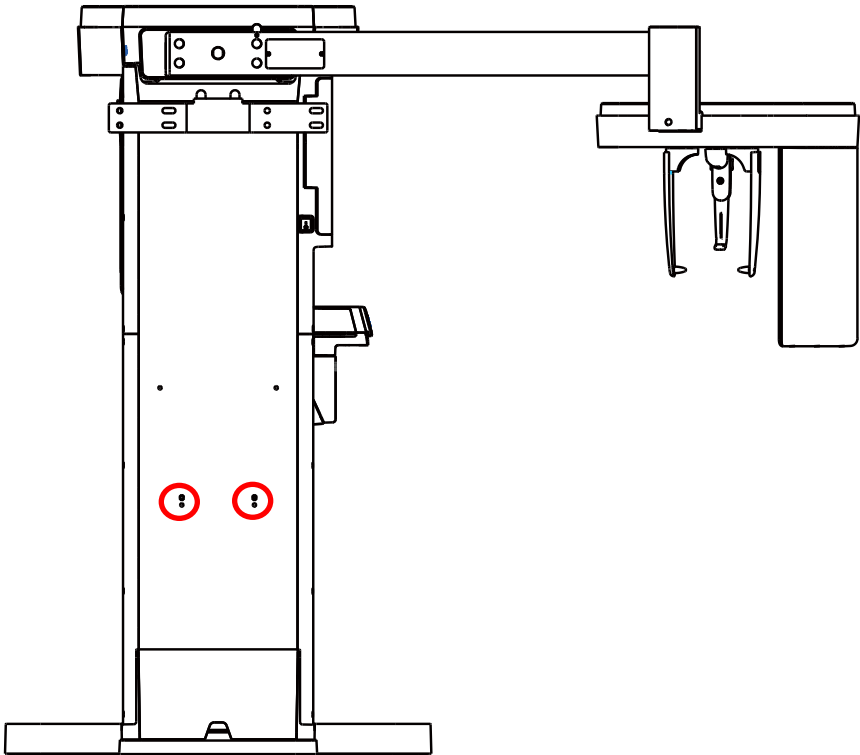


4.6 Removing the Transportation Safety Bolts

To remove the transportation safety bolts:

- 1. Remove the transportation safety bolts with an Allen wrench.

Required Tool	Allen Wrench	6 mm / 0.24"	
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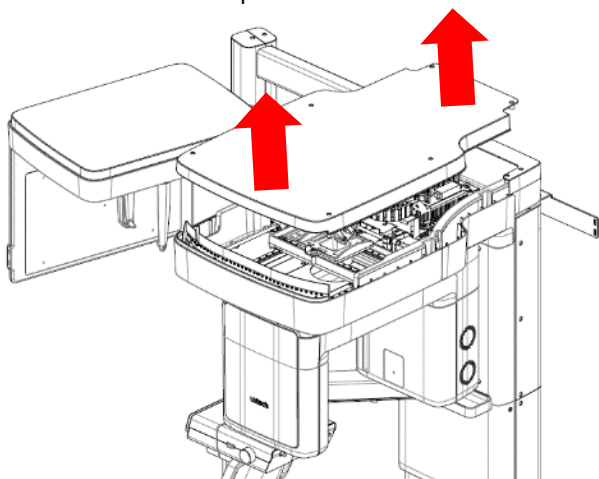


- 2. Remove the semi-clear tapes on the vertical frame cover.




Ensure not to scratch the vertical frame cover when removing tapes.

3. Remove the vertical top cover.



4. Remove four safety bolts and two safety brackets with the tags.

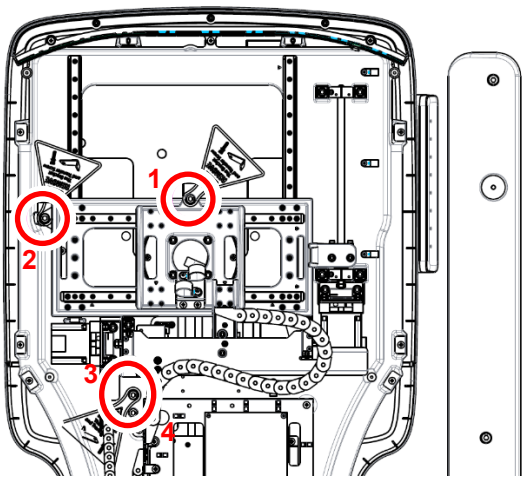
Required Tool	Allen Wrench	6 mm / 0.24"	
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Be sure not to damage the cables when removing the bolts.

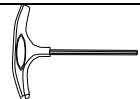



The safety bolts must be removed before removing the safety bracket.

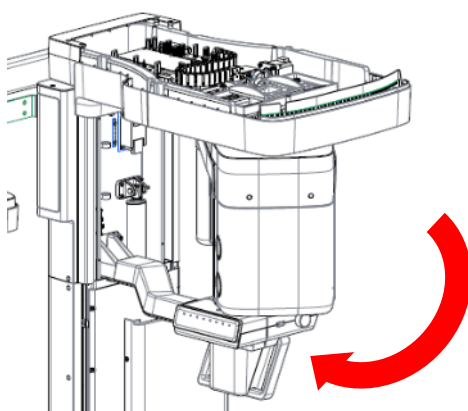


4.7 Leveling the X-ray Unit

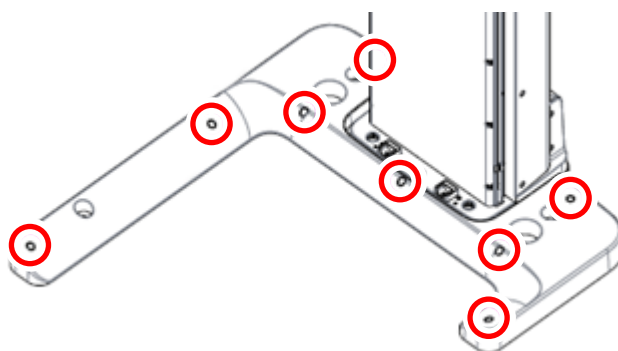
To level the equipment using a spirit level:

Required Tool	T-shaped Hex Wrench	8 mm / 0.3"	
	Spirit Level	N/A	

1. Prepare a spirit level.
2. Turn the **rotating unit** clockwise so that the X-ray tube head faces the front.



3. Loosen eight screws with a T-shaped hex wrench.



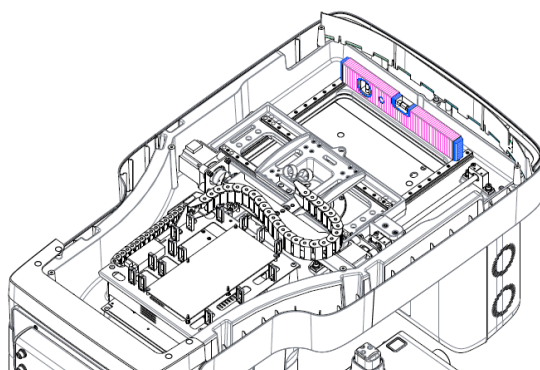
4.7.1 Leveling Right and Left

To level the equipment right and left:

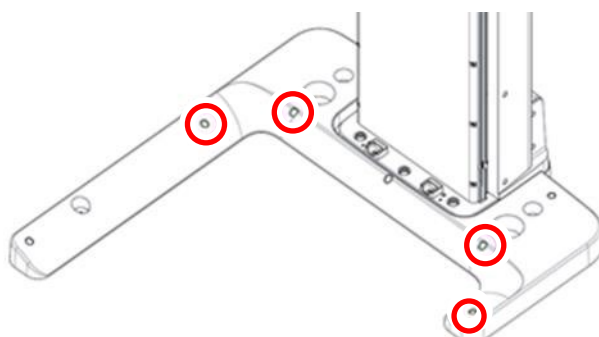
IMPORTANT

To obtain the accurate level, place the spirit level as illustrated.

1. Place the spirit level inside the vertical unit, as shown in the illustration below.



2. Use a T-shaped hex wrench to adjust the screws in circled locations until the bubble inside spirit level comes to the middle.



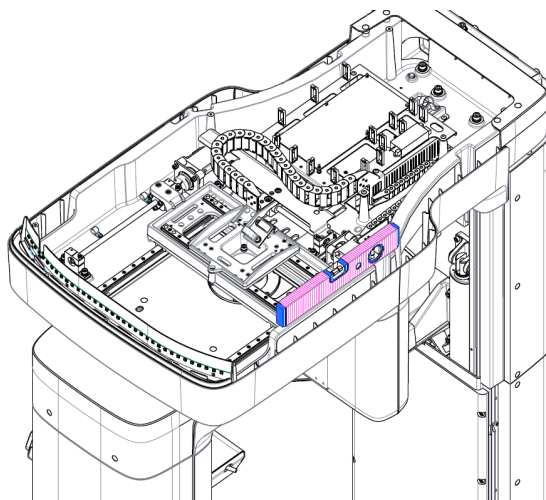
4.7.2 Leveling Front and Back

To level the equipment front and back:

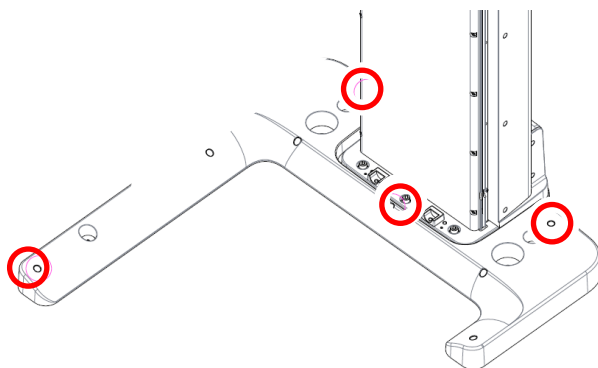
IMPORTANT

To obtain the accurate level, place the spirit level as illustrated.

1. Place the spirit level inside the vertical frame, as shown in the illustration below.




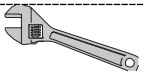
2. Use a T-shaped hex wrench to adjust screws in circled locations until the bubble inside the spirit level comes to the middle.

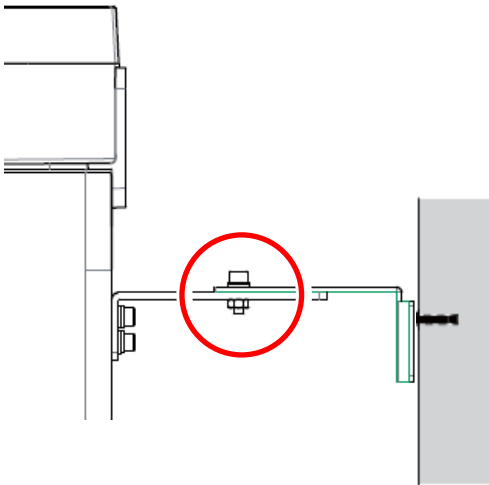


3. After leveling the equipment on all four sides, tighten eight screws until they no longer move.

4.8 Connecting the Wall and Column Brackets

Tighten bracket bolts with a monkey wrench, as illustrated below.

Required Tool	Allen Wrench	6 mm / 0.24"	
	Monkey Wrench	N/A	



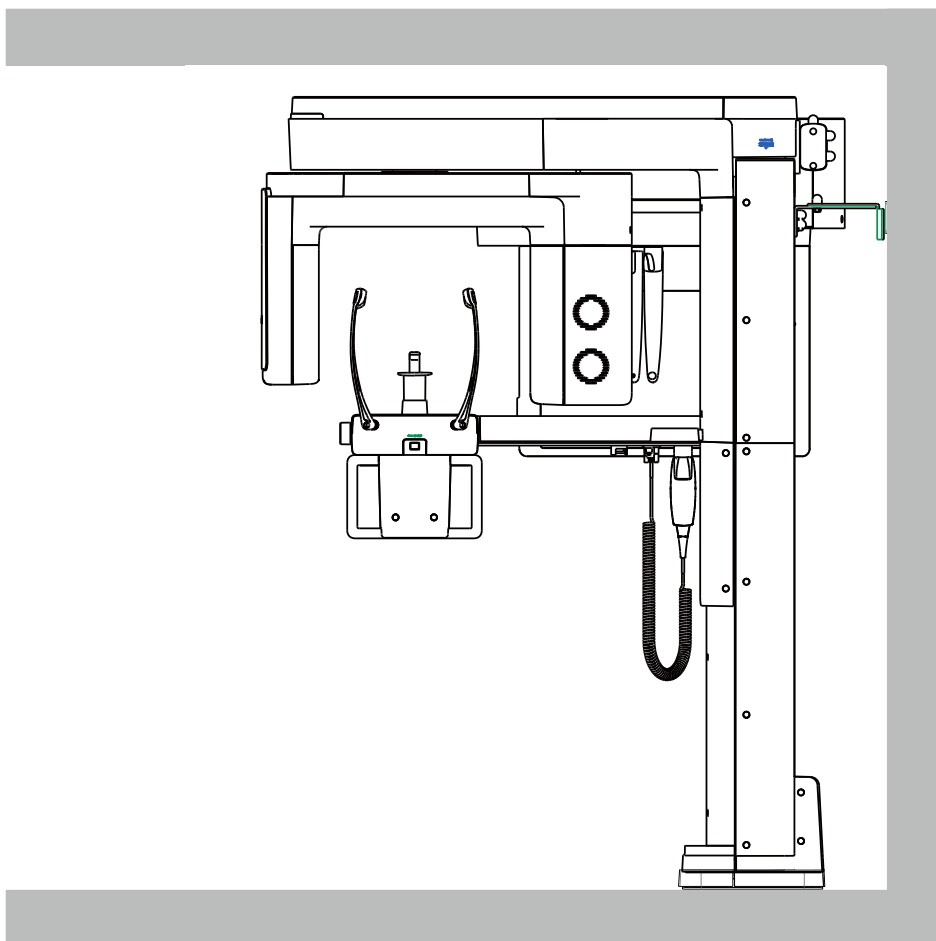
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5. Installing the X-ray Unit: Wall Mount Type

5.1 Installing the X-ray Unit

IMPORTANT

Before the installation, clear the site and check if the X-ray unit location is properly marked.

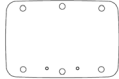



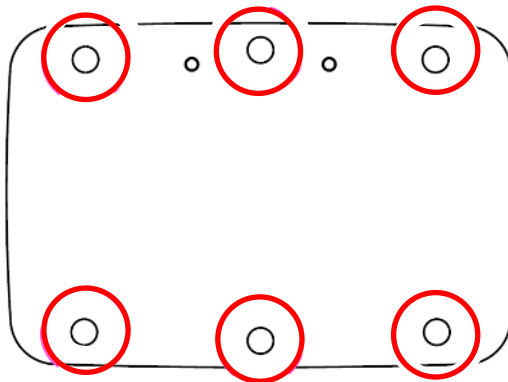
Installation Overview

5. Installing the X-ray Unit: Wall Mount Type


To install a wall-mount X-ray unit:

1. Install a wall bracket according to **4.3 Installing the Wall and Column Brackets**.
2. Draw six drilling marks on the floor along the plate holes.

Parts and Accessory	Alignment Plate	(Part No. 4)	
	Marker	N/A	




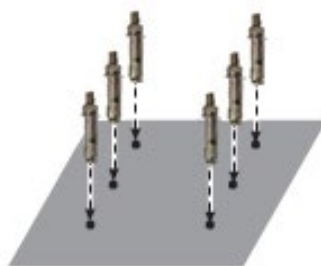
3. Drill holes following the mark made in step 2. Each hole must be 10.5 mm x 30 mm (0.41" x 1.18") in size.

Required Tool	Hammer Drill	L = 200 mm (7.9")	
----------------------	--------------	-------------------	---------------------------------------------------------------------------------------

4. Clean the drilled holes with a dust pump.

5. Put anchor bolts into the holes and hammer them down. Check if all bolts are secured.

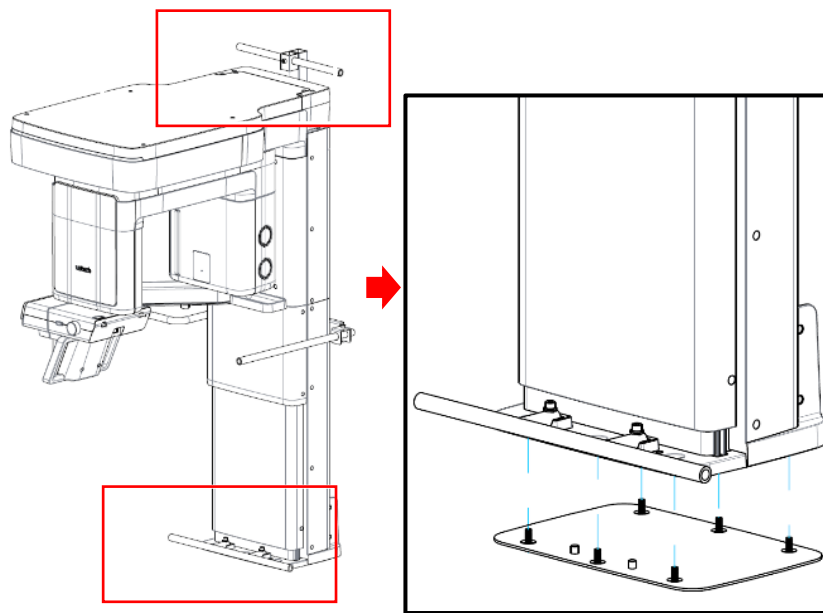
Parts and Accessory	Anchor Bolt	5/16 x 60 w/ Spring and Flat Washers 6 pcs (Part No. 34)	
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6. Place the alignment plate on the floor, ensuring plate holes are aligned with the secured bolts.

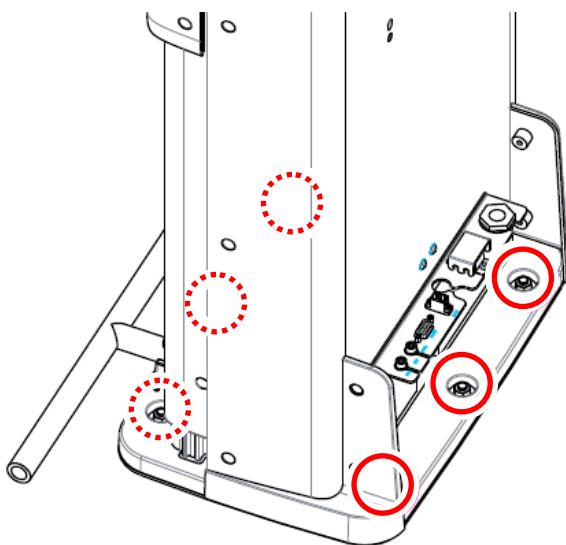
5. Installing the X-ray Unit: Wall Mount Type

7. Hold the upper carrying handle and place the equipment on the alignment plate. When placing the equipment, ensure that the holes on the bottom of the column are engaged in anchor bolts.

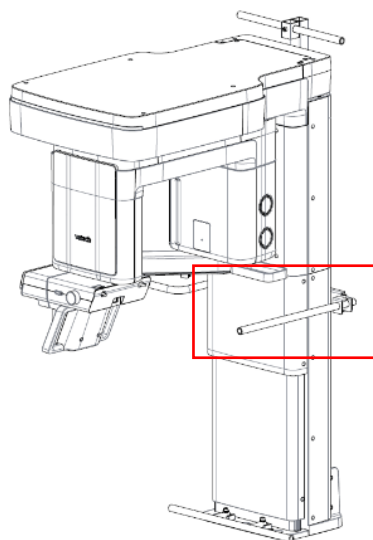


Before placing the equipment on the alignment plate, clear the cables out of the installation site for safety.

8. Place a nut and washer on the head of each bolt. Fasten each nut to secure the column. However, do not fully fasten the nut before finishing the leveling.



Two people are required for step 8. When one person is fastening, another person must hold the middle carrying handle to prevent the equipment from falling.



5.2 Installing the CEPH Unit (Optional)

Please refer to section 4.2 Installing the CEPH Unit (Optional).

5.3 Installing the Wall and Column Brackets

Please refer to section 4.3 Installing the Wall and Column Brackets.

5.4 Connecting the Cables to the Equipment

Please refer to section 4.5 Connecting the Cables to the Equipment.


5.5 Removing the Transportation Safety Bolts

Please refer to section 4.6 Removing the Transportation Safety Bolts.

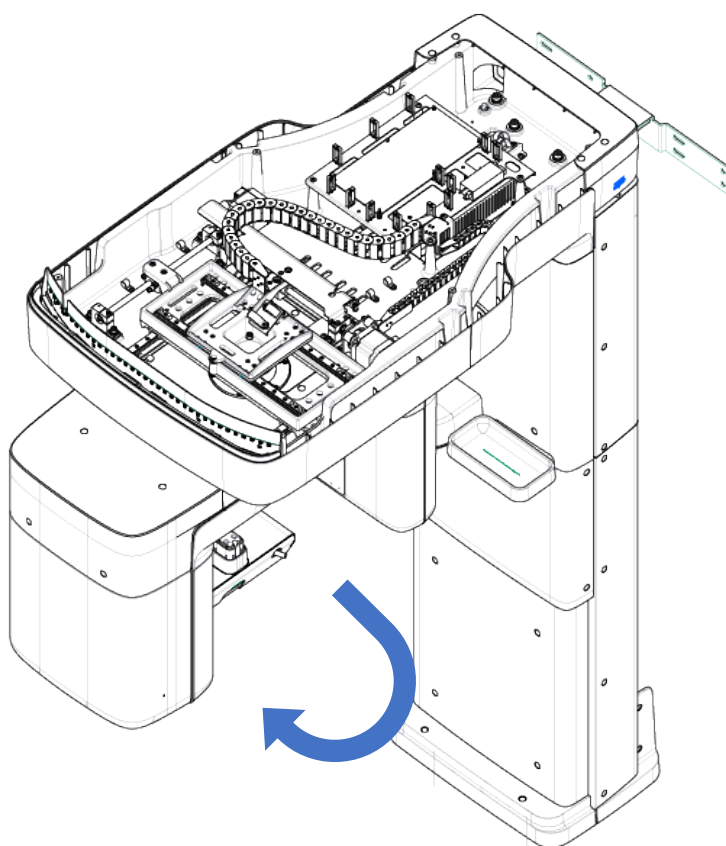
5.6 Leveling the Equipment

To level the equipment:

1. Prepare a spirit level.

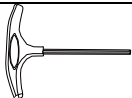

Parts and Accessory	Spirit Level	N/A	
----------------------------	--------------	-----	-------------------------------------------------------------------------------------

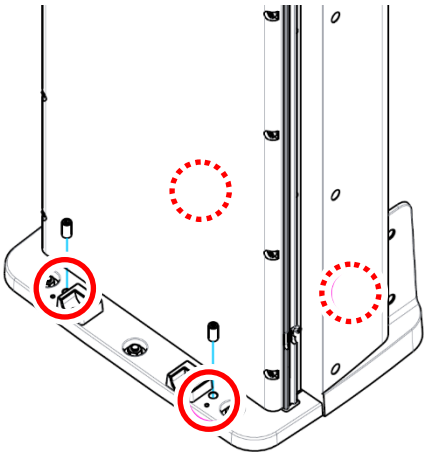
2. Turn the Rotating Unit clockwise so that the X-ray tube head faces the front, as shown in the figure.



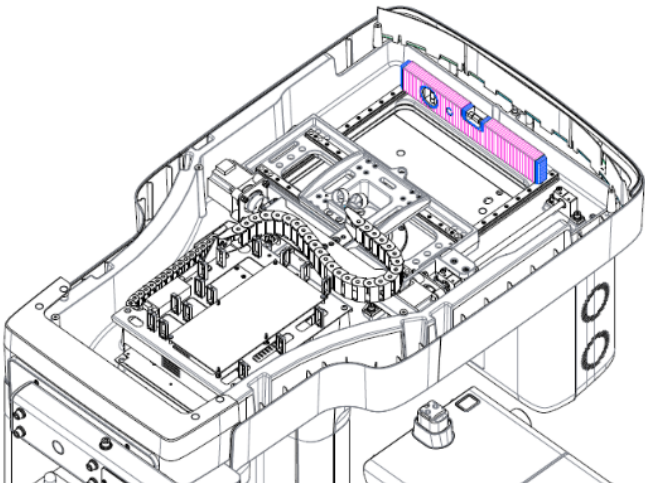
5. Installing the X-ray Unit: Wall Mount Type

3. Slid an M10x20 set screw into each hole. Tighten the screws with a T-shaped hex wrench. At this point, do not fully fasten the screw.

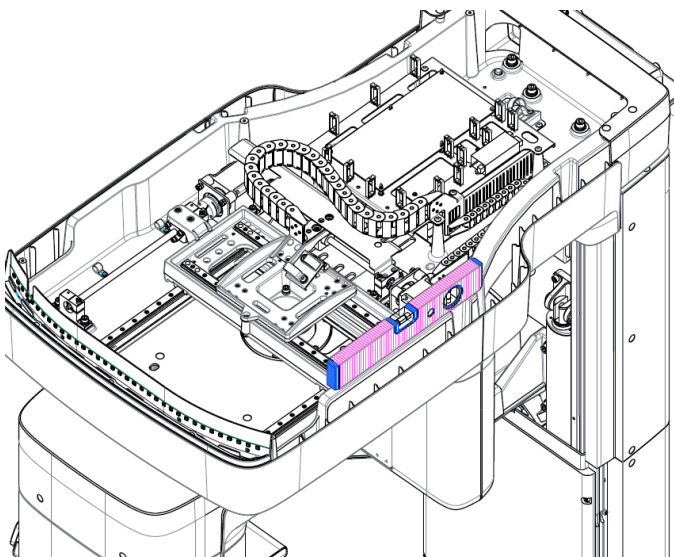
Required Tool	T-shaped Hex Wrench	8 mm / 0.3"	
Parts and Accessory	Set Screw	M10 x 20 – 4 pcs (Part No. 30)	



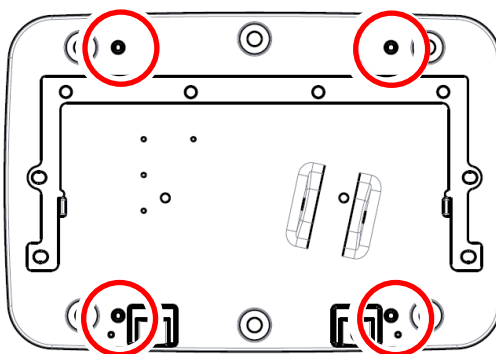
4. Place the spirit level as indicated below. Adjust each screw until the bubble inside the level comes to the middle.



- Place the spirit level inside the Vertical Frame as indicated below.




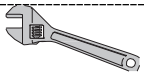
- Fasten each screw as indicated below to secure the column.

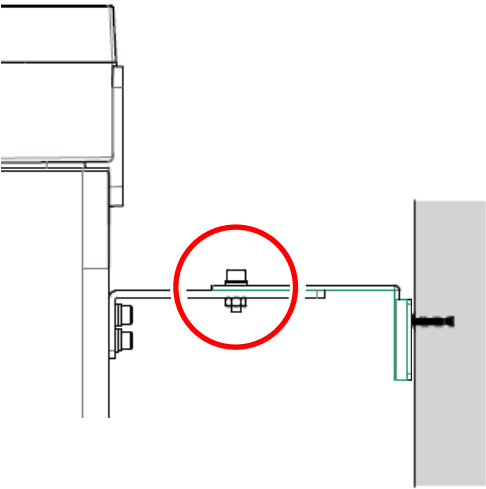


5.7 Attaching the X-ray Unit to the Wall

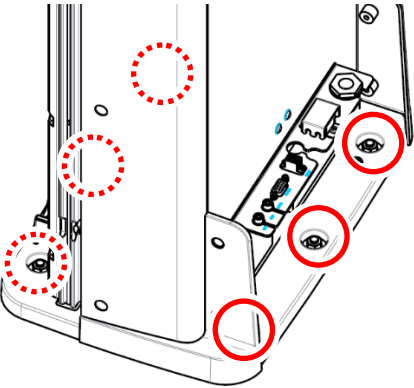
To attach the X-ray unit to the wall:

1. Attach the X-ray unit to the wall by connecting the wall and column brackets. Ensure to tighten the bolts until they no longer move.

Required Tool	Allen Wrench	6 mm / 0.24"	
	Monkey Wrench	N/A	



2. Fix the column on the floor by tightening bolts and nuts.



6. Finalizing the X-ray Unit Installation



6.1 Attaching Lower Column and Base Cover

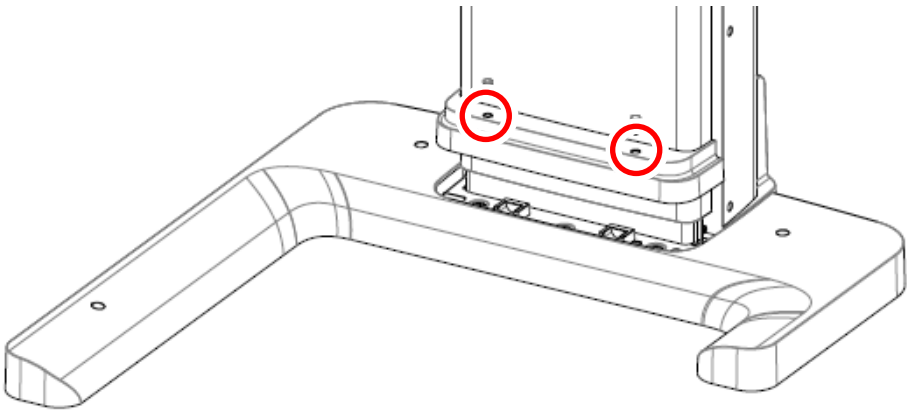
IMPORTANT

If your equipment is a wall-mount type, you may skip this section(6.1 Attaching Lower Column and Base Cover).

Follow the procedure below to attach the lower column cover to the column and the base cover to the base.




1. Attach the lower column cover to the column with M 4x10 truss bolts. Cover the boltheads with silicone caps after fixing the cover.

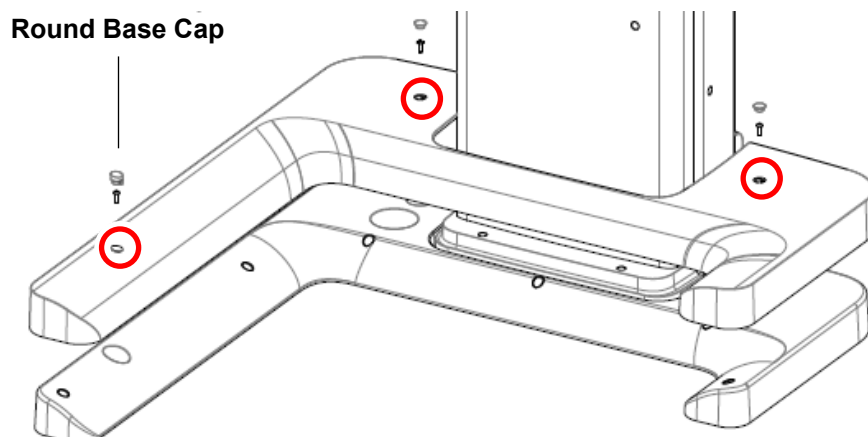
Parts and Accessory	Truss Bolt	M4 x 10– 2 pcs (Part No. 27)	
	Silicone Cap	2 pcs (Part No. 16)	



6. Finalizing the X-ray Unit Installation

2. Attach the base cover to the base with M4x16 truss bolts. Cover the bolthead with the flat and round base caps after fixing the cover.

Parts and Accessory	Truss Bolt	M4 x 16 – 3 pcs (Part No. 26)	
	Flat Base Cap	2 pcs (Part No. 17)	
	Round Base Cap	1 pc (Part No. 17)	



6.2 Mounting the Chinrest and the Temple Supports

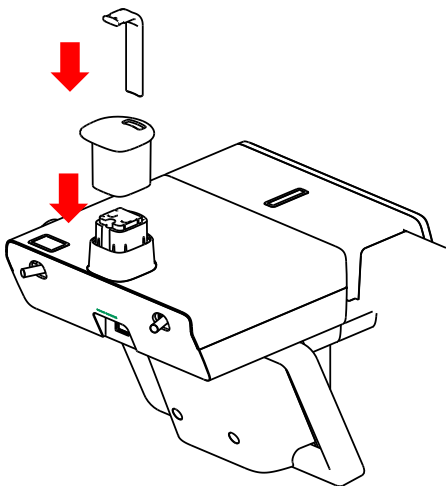
IMPORTANT

Mount the chinrest and temple supports after capturing a test image.


To mount the chinrest and the temple supports:

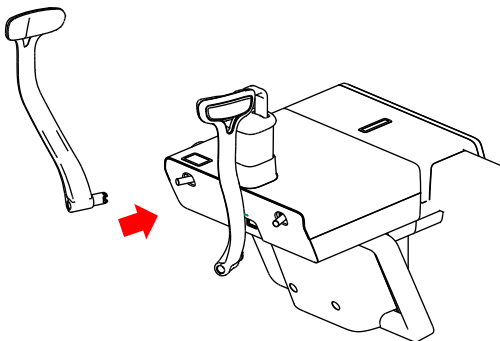
1. Mount the normal chinrest and the normal bite.

Parts and Accessory	Normal Chinrest	1 pc (Part No. 9)	
	Normal Bite	1 pc (Part No. 12)	



2. Mount the temple supports.




Parts and Accessory	Temple Supports	1 set (Part No. 5)	
------------------------	-----------------	-----------------------	---------------------------------------------------------------------------------------



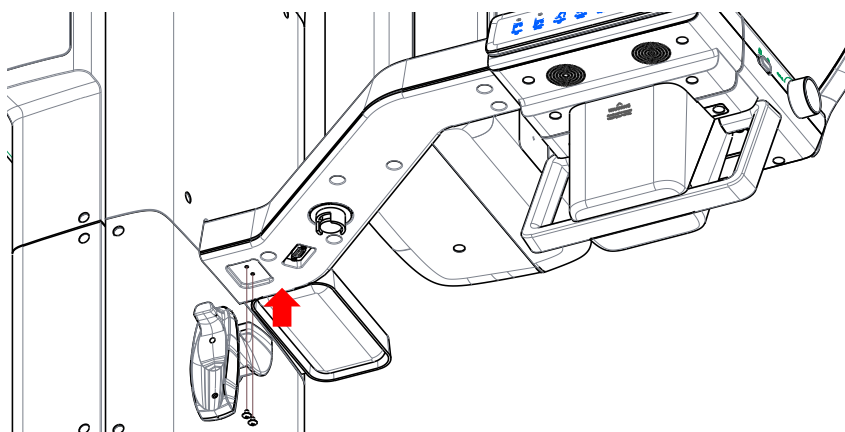
6.3 Attaching the Switch Holders

6.3.1 Attaching UP / DOWN Switch Holder

To attach the up/down switch holder:

Parts and Accessory	UP / DOWN Switch Holder	1 pc (Part No. 33)	
	UP / DOWN Switch	Optional - 1 pc (Part No. 33)	
	Truss Bolt	M4 x 10 – 2 pcs (Part No. 33)	





1. Attach the Up/Down switch holder to the handle frame with M4x10 truss bolts.



2. Connect the Up/Down switch to the X-ray unit and hang it on the switch holder.

6.3.2 Attaching Exposure Switch Holder

To attach the exposure switch holder:


Parts and Accessory	Exposure Switch	1 pc (Part No. 2)	
	Exposure Switch Holder	1 pc (Part No. 2)	
	Double-Sided Sticker	1pc (Part No. 2)	
	Screws	M3X16 – 2 pcs (Part No.2)	

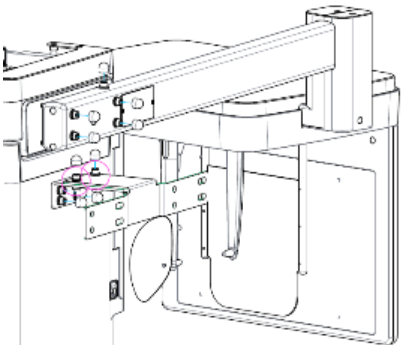
1. Locate the Exposure Switch Holder with a sticker and two screws.
2. Install the Exposure Switch Holder on the wall at the appropriate height using two screws.

6.4 Covering Bolts with Caps



To cover bolts around the equipment:

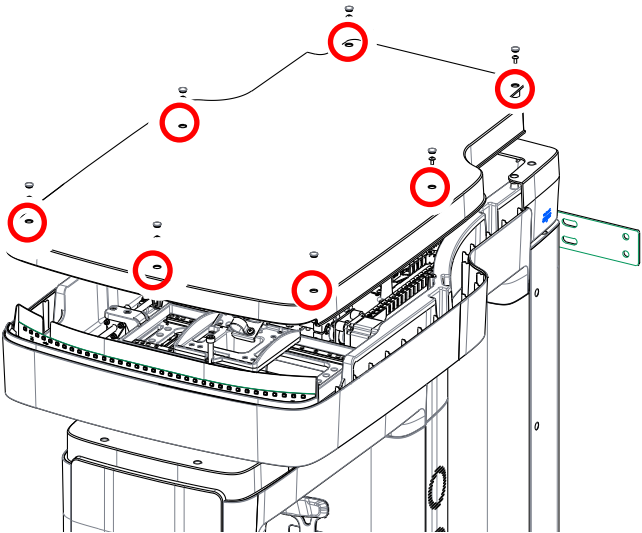
1. Cover bolts on the wall bracket and the CEPH arm (optional) with wall mount caps.

Parts and Accessory	Wall mount cap	12 pcs (Part No. 32)	



2. Attach the **vertical top cover** with M4x10 truss bolts and cover each bolthead with a silicone cap.

Parts and Accessory	Truss Bolt	M4x10 – 7 pcs (Part No. 33)	
	Silicone cap	7 pcs (Part No. 16)	

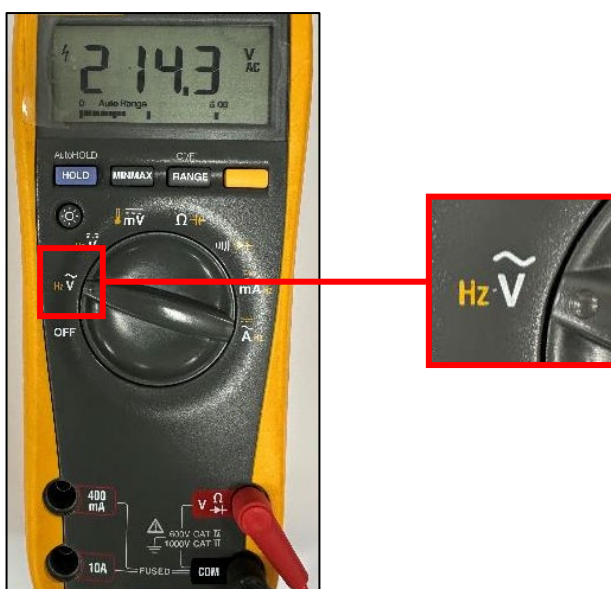


6.5 Checking an Outlet for Proper Earth Ground

IMPORTANT

Before connecting the X-ray system to the PC with console software, check if the earthing is provided by using a multimeter.

1. Turn on the multimeter and set up to measure AC voltage.



2. Insert the leads to the live and earthing ports of an outlet and check the voltage.

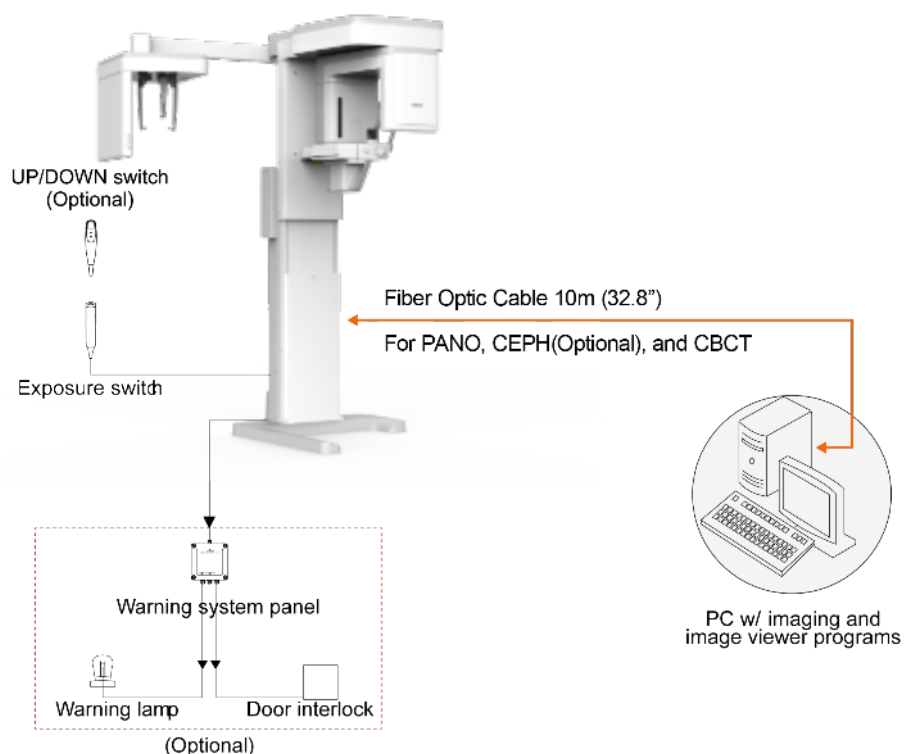


Permission range : **Measured value** \leq 1V

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7. Setting up PC

7.1 Direct Connection Diagram



Fiber Optic Cable - Used to transfer image data to the PC.

Warning System Panel - Used to provide a visible indicator: Light on when the equipment is irradiating X-ray.

7.2 The Recommended PC Requirements

IMPORTANT

- Ensure that the PC system configuration satisfies the recommended PC requirements to run the imaging viewer and guarantee the image quality.
- The PC must be grounded well.
- Do not place the multiple portable socket outlets (MPSO) on the floor.
- The PC system provided with the **Green X12** undergoes rigorous tests for software compatibility before shipping. Do not make the changes to its hardware and software settings. This can lead to system malfunction.

CAUTION

Prior to using the PC, ensure that Windows Defender Firewall is enabled to protect your PC and data from network security threats.

Item	Specifications
CPU	Intel Xeon W-2223 3.6 GHz 4 Core Processor
RAM	32 GB (4 x 8GB) DDR4-2666 ECC REG APJ or larger
HDD	1 TB SATA 7200 rpm *2ea
Graphics board	RTX 3050 D6 8GB
Ethernet Interface	Broadcom 5761 Gigabit PCIe NIC
Serial Port (RS232)	HP Serial Port Adapter Kit
Power Supply	750 W internal power module, up to 90% efficiency, active PFC
Slots	2 ports PCIe 3 x4 2 ports M.2 PCIe 3 x4 1 ports PCIe x8 2 ports PCIe x16 1 PCI Slot
CD/DVD drive	DVD-ROM, DVD+/-RW, Blu-Ray
Monitor	19" 1280x1024 screen resolution
Operating System	Windows 10 or Higher
Recommended System	HP Z4

7.3 Installing the Internal Peripherals



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

IMPORTANT

- Disregard this section in case the PC system is supplied with the equipment. (The peripherals have already been installed inside the PC.)
- Whenever managing the fiber optic frame grabber board:



1. Wear the anti-static glove.



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

NOTICE

The following figures and descriptions are based on the PC model Z4 from HP.

7.3.1 Installing selectable Frame Grabber Board

Follow the steps below to install a frame grabber board:

1. Unplug the power cable from the back of the PC and wait for a while.
2. Open the PC cover.
3. Insert the frame grabber (Part No. 21) into the **PCIe2 x 4 slot or higher** and lock it.



<F-Grabber>

or



<V. Grabber>





Check the locking status between the board and its holder after installing it. Poor installation can cause a failure for dark calibration data acquisition or noisy image acquisition.

4. Put the slot holder back to its initial position.

7.4 Connecting the Cables to PC

NOTICE

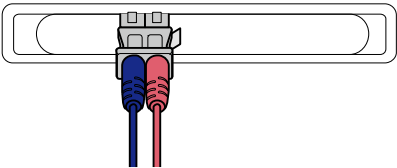
- Always check the cable condition. Image acquisition errors can occur from a bad cable connection or damage to the cables.
- Connect the regular cables for the PC: keyboard, mouse, and video in advance.
- The following figures and descriptions are based on the PC model Z4 from HP.

Parts and Accessory	Fiber Optic Cable	1 pc (Part No. 21)	
	License Key	1 pc (Part No. 1)	

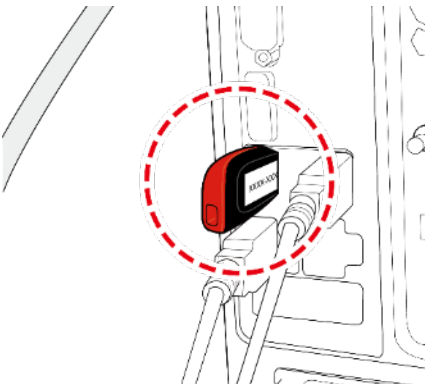
1. Remove the caps of the fiber optic cable.



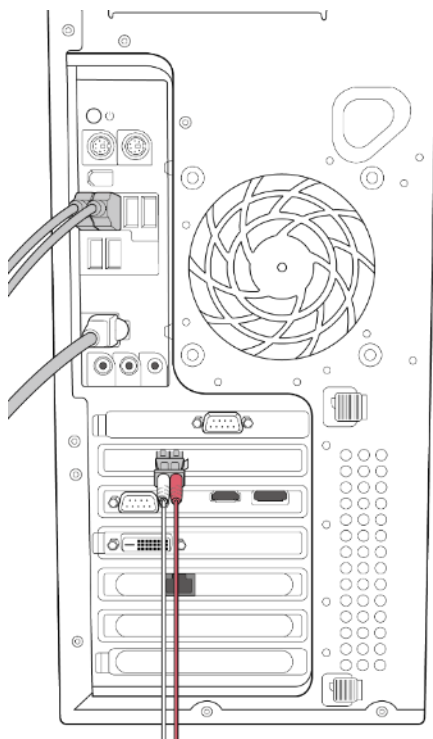
2. Connect the fiber optic cable.



3. Insert the 3D viewer license key into a USB port.



4. Confirm that the cable is connected as indicated below.



NOTICE

The illustrations may differ from the actual product.

8. Setting Environment Variables

8.1 Before Beginning

NOTICE

Disregard this section if your PC system comes with the equipment. In this case, all environment variables are set up before shipping.

Before setting environmental variables in Windows:

- Format your PC before installing the image acquisition program and viewer.
- Do not install programs other than the imaging acquisition program and viewer to avoid system errors.
- Use the PC system for image acquisition only. It is recommended to use a separate PC for image management.
- Check PC BIOS settings.

To check your PC BIOS settings:

1. Reboot the PC and go to the BIOS settings.
2. Set environment variables as indicated in **Appendix E. Checking PC BIOS Settings**.

NOTICE

Before shipping, the PC is set as specified in Appendix E: Checking PC BIOS settings. If the setting is different, set up the environment variable according to Appendix E.


NOTICE

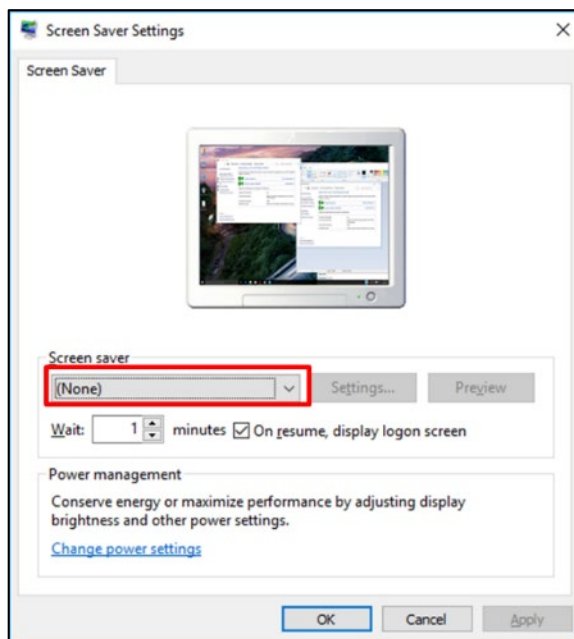
When you update the BIOS settings, the “Enhanced Halt State (C1E)” option will be displayed.

8.2 Setting up the Power Management Options

To avoid unintended interruptions while acquiring an image, it is required to reconfigure some of the Windows operating system parameters.

8.2.1 Turning off the Screen Saver


1. Press the **Windows** icon  and type "Change screen saver."
2. Click **Screen Saver Settings**.
3. Select "**None**" in the dropdown menu.

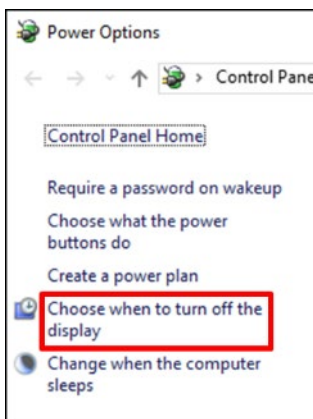


4. Click **OK** to apply the settings.

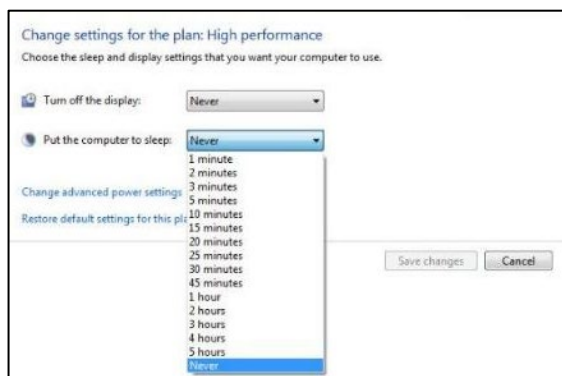
8.2.2 Changing the Power Options: Monitor and System

Follow the steps below to change the power options for the monitor and system:

1. Press the **Windows** icon  and type "Power Options."
2. Click the **Power Options** icon.
3. Click Choose when to turn off the display.




4. Select Never for both Turn off the display and Put the computer to sleep fields.

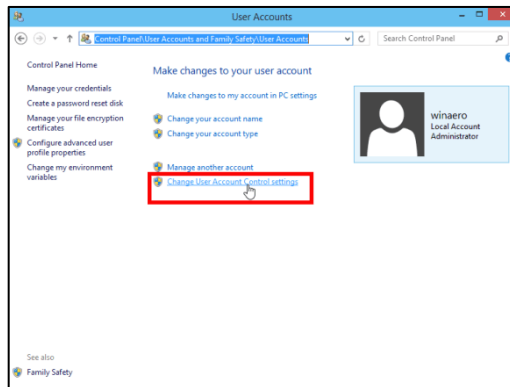


5. Click **Save changes** to apply the settings.

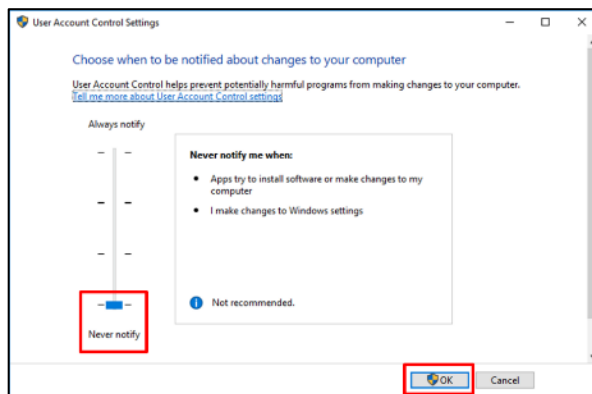
8.3 Turning off the User Account Control

Follow the steps below to turn off the user account control.

1. Press the Windows icon  and type "User account control " or "UAC."
2. Click Change User Account Control Settings.



3. Move the slider to **"Never Notify"** and click **OK** to apply new settings.



NOTICE

You may be asked to confirm your selection or enter an administrator password.

4. Reboot your computer for the change to take effect.

8.4 Configuring Default Behavior for Windows Defender Firewall

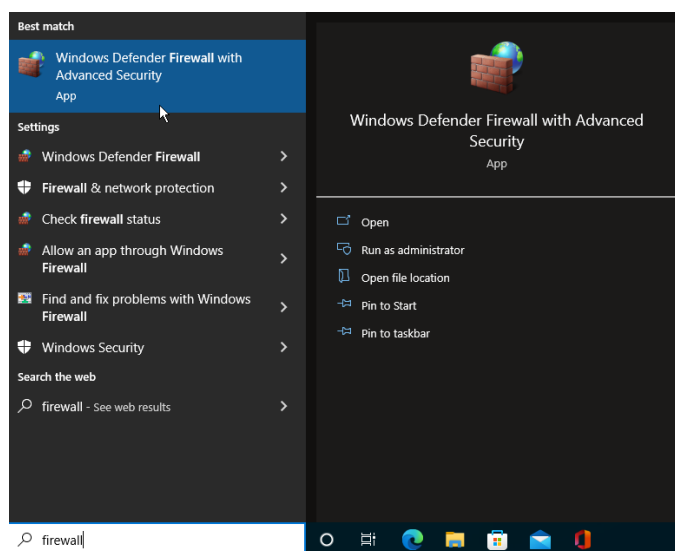
To enable Windows Defender Firewall with Advanced Security and configure its default behavior, follow the steps below:

IMPORTANT

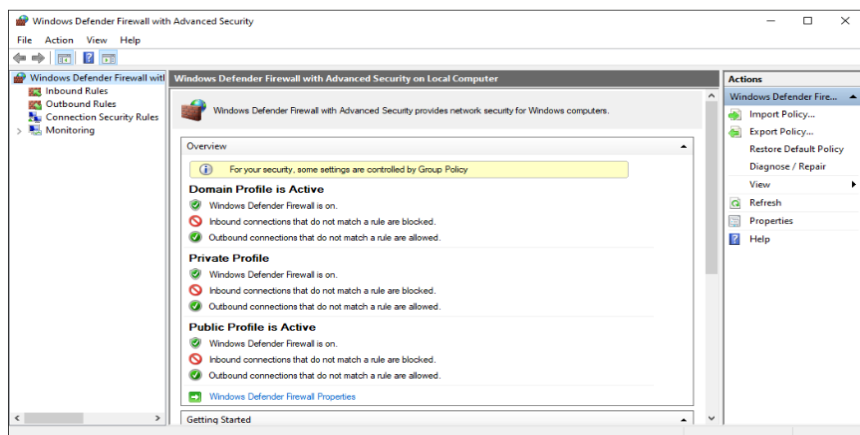
Administrative Credentials

Before enabling Windows Defender Firewall, you must be a member of the **Domain Administrative Group** or have a permission to modify the GPO(Group Policy Objects).

1. Enter 'Firewall' in the search window and select **Windows Defender Firewall with Advanced Security** to open the console.

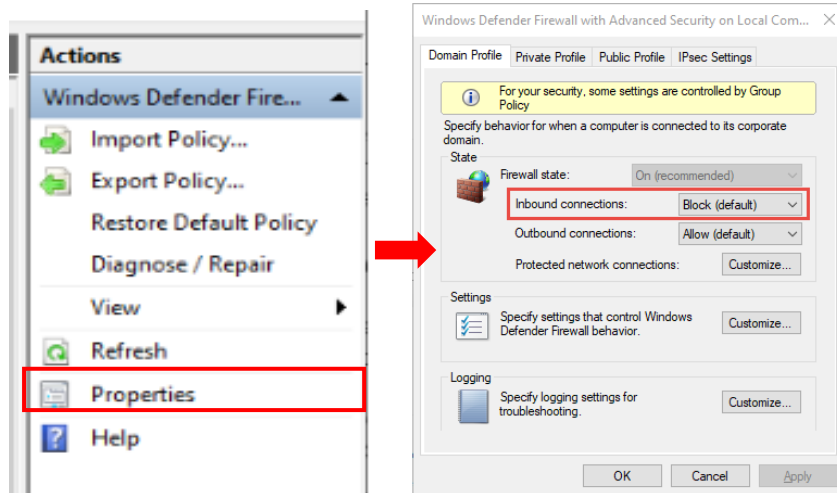


2. Check if each location network is set as below.



8. Setting Environment Variables

3. If the settings are different, click **Properties** to open a pop-up window and follow the steps below to configure each network location type (Domain, Private, Public).



- 1) Click the tab that corresponds to the network location type.
- 2) Change **Firewall State** to **On**.
- 3) Change **Inbound connections** to **Block**.
- 4) Change **Outbound connections** to **Allow**.



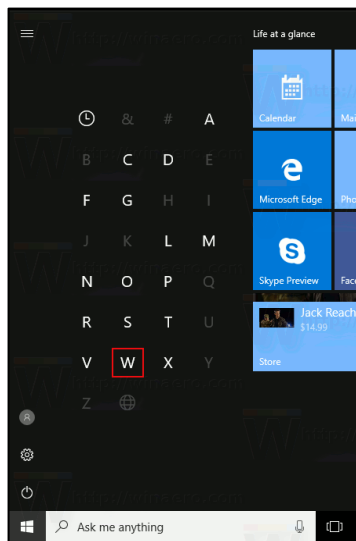
To ensure maximum security, do not change the default setting ('block') for Inbound connections.

8.5 Setting Folder Exclusions

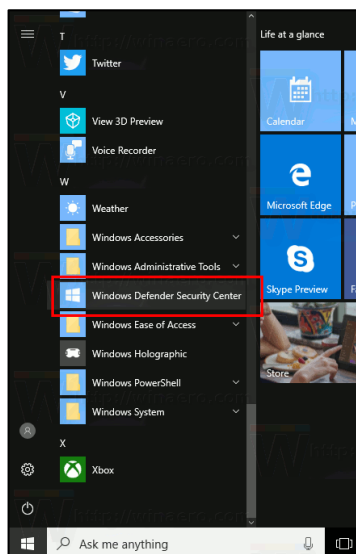
8.5.1 Adding an Exclusion to Windows Security

Follow the steps below to add exclusions to Windows security:

1. Open the Start menu and type **W** in the search box.

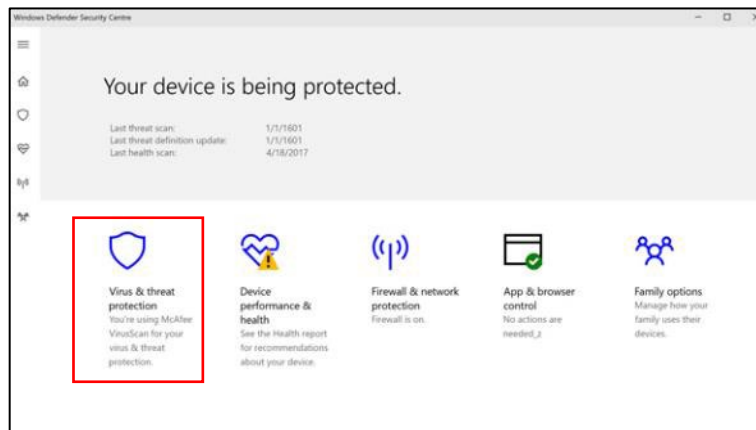


2. Click the Windows Defender Security Center to start.

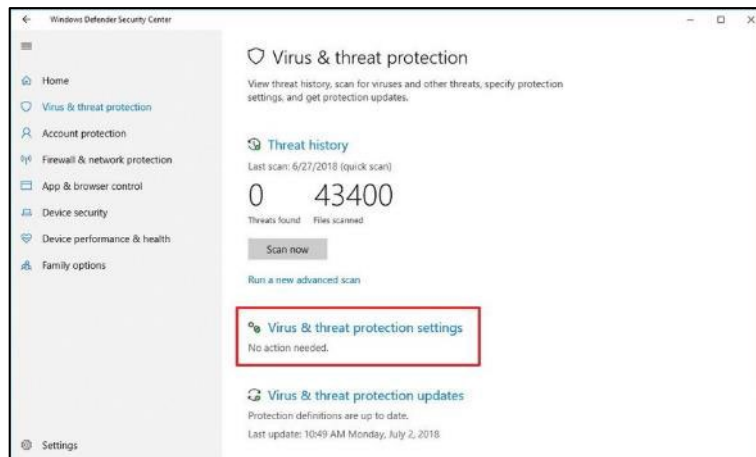


8. Setting Environment Variables

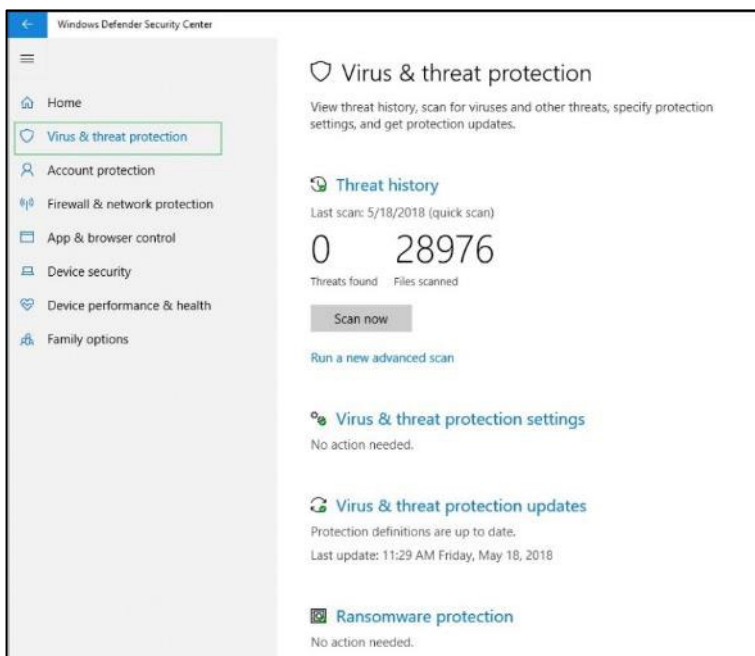
3. Click the Virus & threat protection.



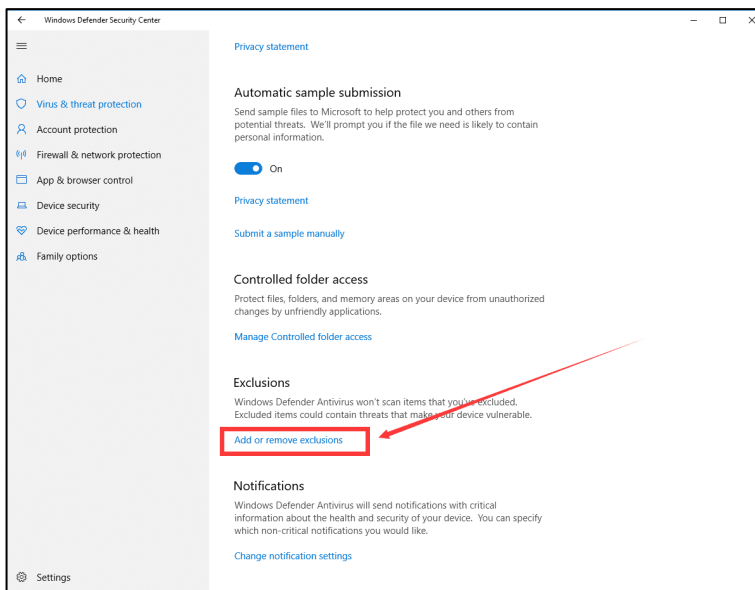
4. Click the Virus & threat protection settings.



5. Scroll down to **Exclusions**.

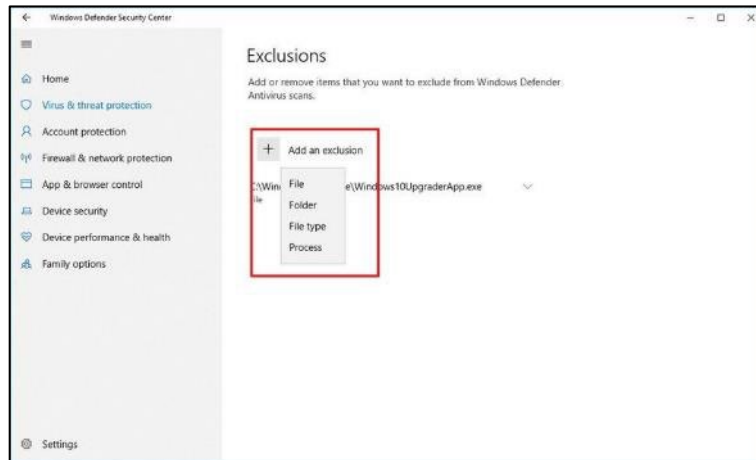


6. Click on the link Add or remove exclusions.

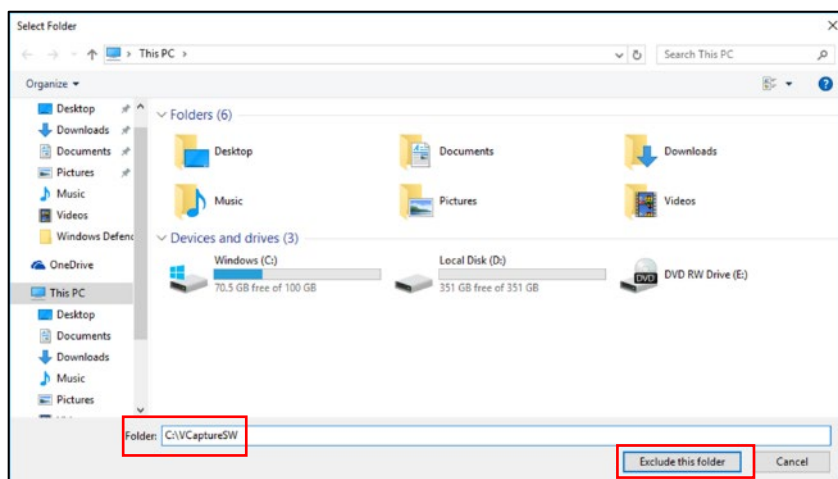


8. Setting Environment Variables

- On the Exclusions page, click the **Add an exclusion** button.



- On the Select Folder dialog, type **C:\VCaptureSW** in the folder field and click **Exclude this folder**.



8.5.2 Adding an Exclusion to Anti-virus Software

Some files the imaging system uses can be recognized as viruses by anti-virus software. For this reason, you must set a folder exclusion before starting the PC system.

For **Green X 12**, exclude the following paths and software from the virus scan:

Path	Software
C:\Program Files\Vatech	Ez3D-i / EzDent-i
C:\VCaptureSW	Console Software

To set folder exclusions:

1. Open the McAfee anti-virus program and select the **VirusScan**.
2. Right-click the On-Access Scan menu option and left-click the Properties tab.
3. Select the **All Processes** → **Detection** → **Exclusions** menu option and click **Add**.
4. Search for all folders and files you want to exclude from the virus scan. When adding them to the exclusion, click the checkbox "**Also Exclude Subfolders**."
5. Click **OK** and exit McAfee.

IMPORTANT

When running a virus scan:

- Do not run the memory-resident background programs unrelated to the equipment.
- Run the scan when the equipment is not active.
- Ensure to use a blank USB drive.

9. Installing Software

9.1 Before Beginning

NOTICE

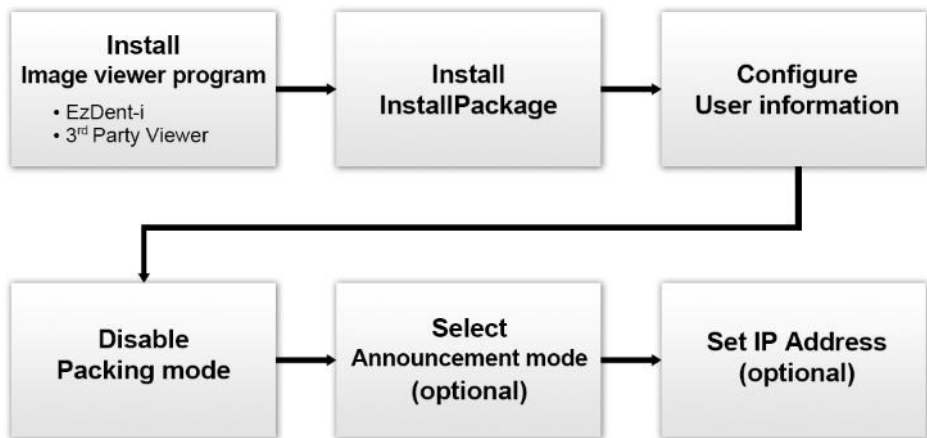
Disregard this section if the PC system is supplied with the equipment. In this case, the PC environment is set before shipping.

IMPORTANT

Before the InstallShield installation:

- Ensure that the emergency stop switch is off.
- Check whether the video card driver in your PC is the latest version. To check this information, go to the graphic card manufacturer's website.
- Before proceeding with its installation, perform a virus scan for the PC and InstallShield program with the anti-virus program.
- 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.
- The image viewer program such as **EzDent-i** or the one from the 3rd party should be installed before the InstallShield installation. For information on their installation procedures, refer to the corresponding manuals.

9.2 Software Installation Flow



9.3 Installing Image Viewer Programs

IMPORTANT

Before image acquisition, either EzDent-i or the 3rd party image viewer must be installed. Please go to the EzDent-i manual or the installation manual provided by the 3rd party.

9.4 Installing the InstallShield

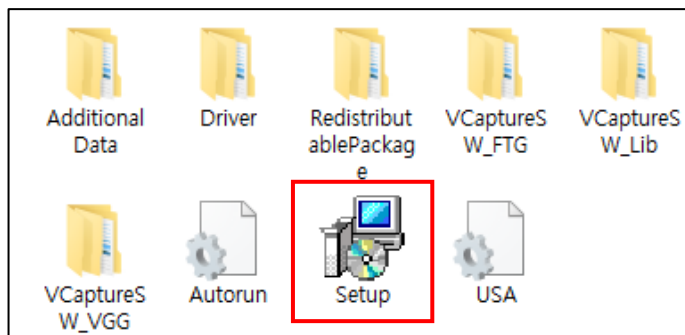
Follow the steps below to install the InstallShield:

1. Turn on the PC and the equipment.
2. Insert the USB drive into the USB connector. Before inserting the USB drive, conduct a virus scan on your PC.

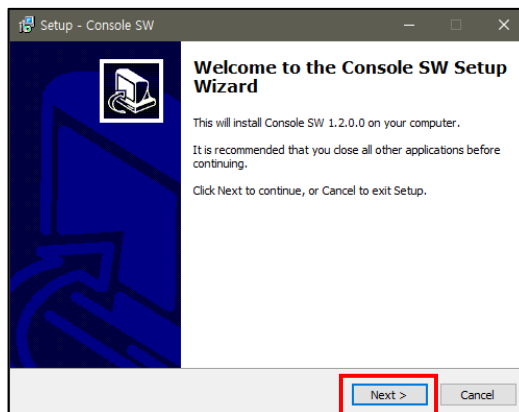
NOTICE

The USB drive provided contains the InstallShield installation information. Before starting the installation, please check if the serial number file (e.g., 047-011752.txt) is correct.

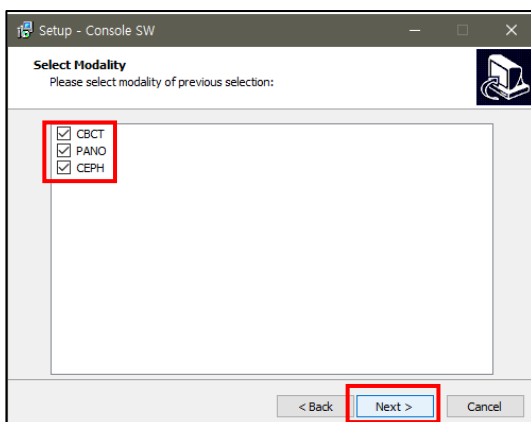
3. Go to the InstallShield folder and click **Setup.exe**.



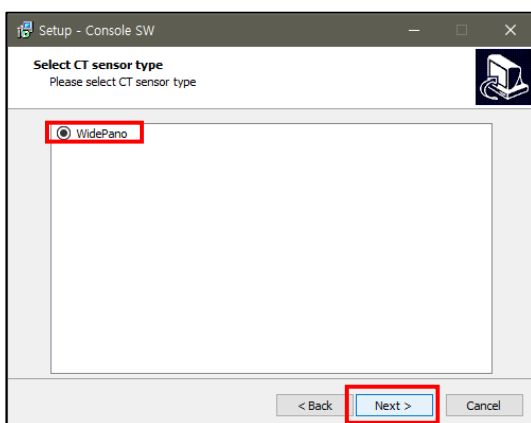
4. When the Setup dialog appears, click **Next**.



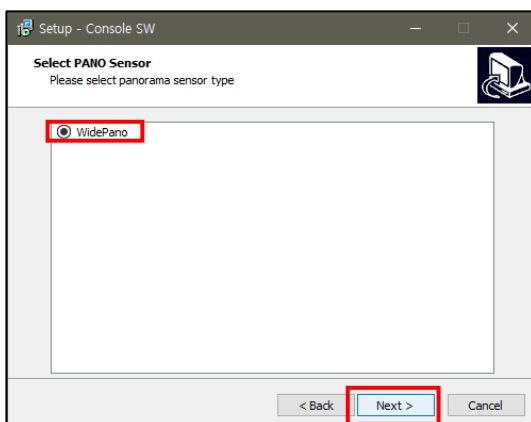
5. Check if all modality options are selected. If your equipment does not include the CEPH feature, uncheck CEPH, and click **Next**.



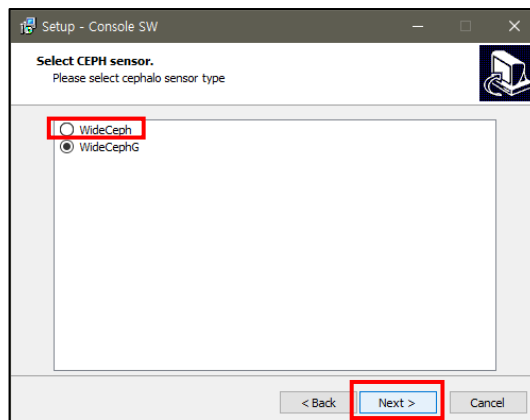
6. Check if **"WidePano"** is selected for the CBCT sensor type and click **Next**.



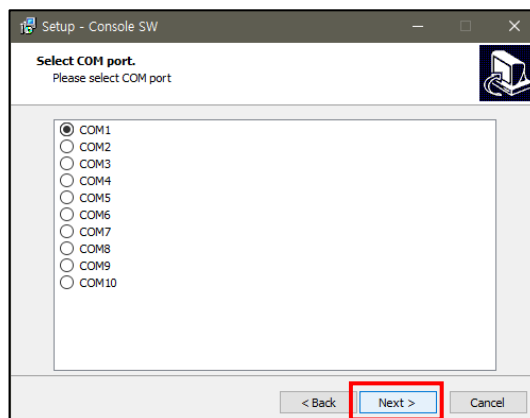
7. Check if the **"WidePano"** is selected for the PANO sensor type and click **Next**.



8. (Optional) Check if the “**WideCEPH**” is selected for the CEPH sensor type and click **Next**.



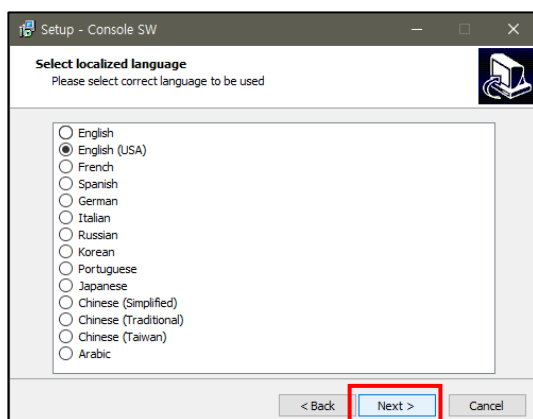
9. Select a COM port to link your PC to equipment. The same COM port must be used for both PC and equipment.



IMPORTANT

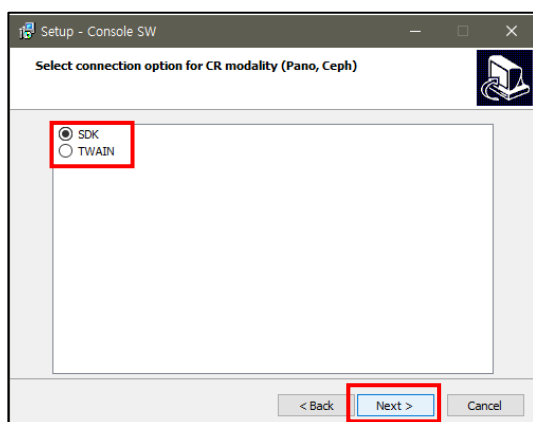
COM port selection varies by equipment. Ensure that both PC and equipment share the same COM port.

10. Select a language and click **Next**.

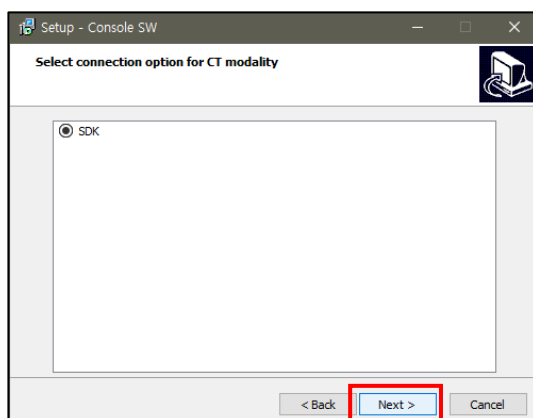


11. Select a connection option for CR modality (Pano, CEPH) and click **Next**.

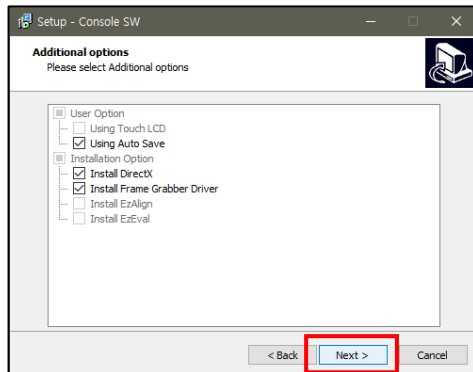
If EzDent-i is installed, select **SDK**.



12. Select a connection option for CT modality and click **Next**.

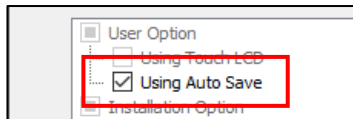


13. Check if the selected options are correct, then click **Next**.



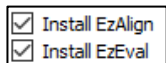
NOTICE

Check **Using Auto Save** under **User Option** to automatically save the acquired image data.

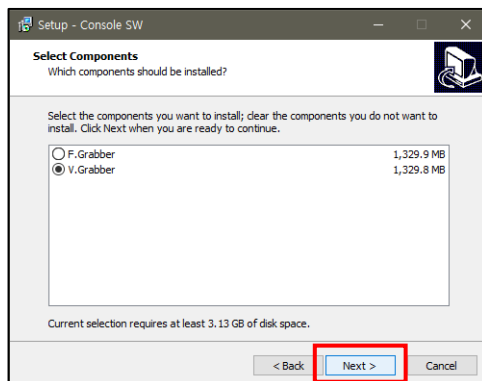


NOTICE

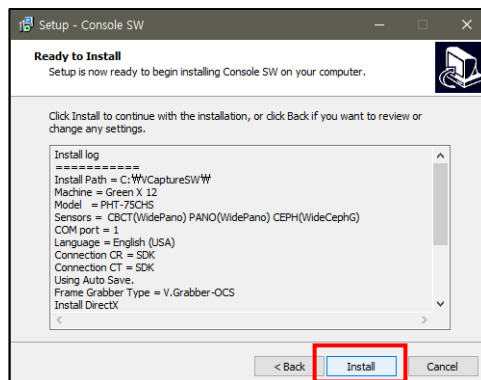
Check **EzAlign** and **EzEval**(Only if there is User Phantom) under **Installation Option** to install them.



14. Select the Grabber component you want to install on your PC.



15. Confirm all information displayed in the Ready to Install window. If necessary, click Back to return to and change the previous selection.

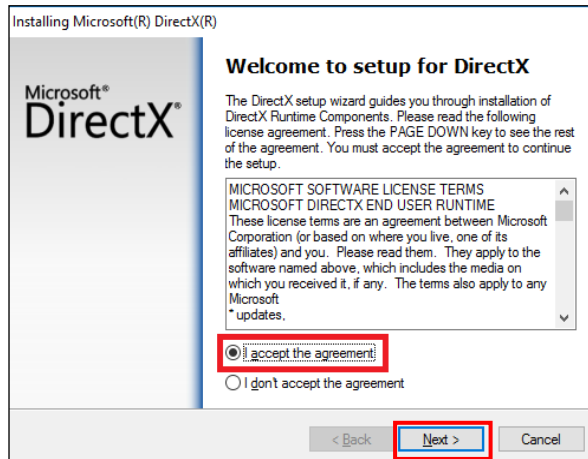


When all information is confirmed, click **Install**.

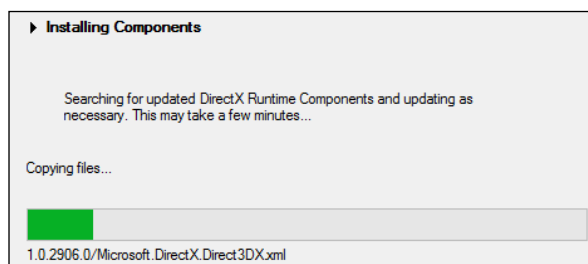
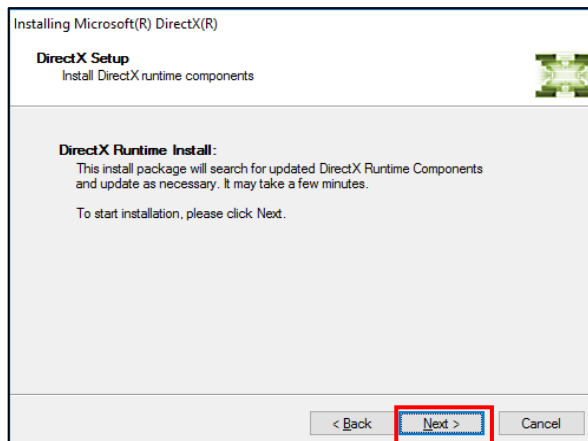
9.4.1 Installing the DirectX

Follow the steps below to install the Direct X®:

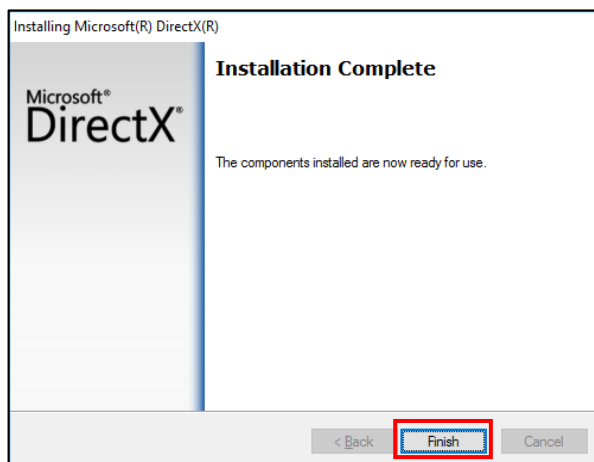
1. Select **"I accept the agreement"** and click **Next**.



2. Click **Next** to download Direct X® components.



3. Click **Finish** to complete the installation.



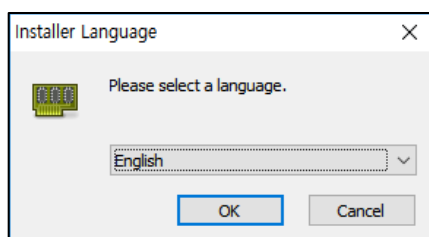
9.4.2 Installing the Frame Grabber (Virtual Serial)

the grabber driver installation starts after the direct X setup. The following sections explain how to set up Electron and Leon Grabber.

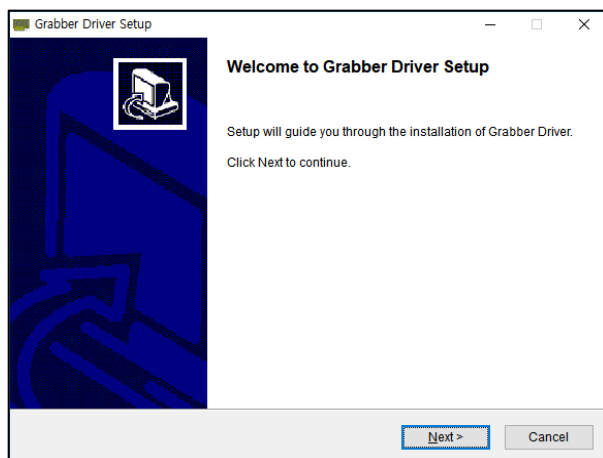
9.4.2.1 Electron Grabber

To Install the Electron grabber:

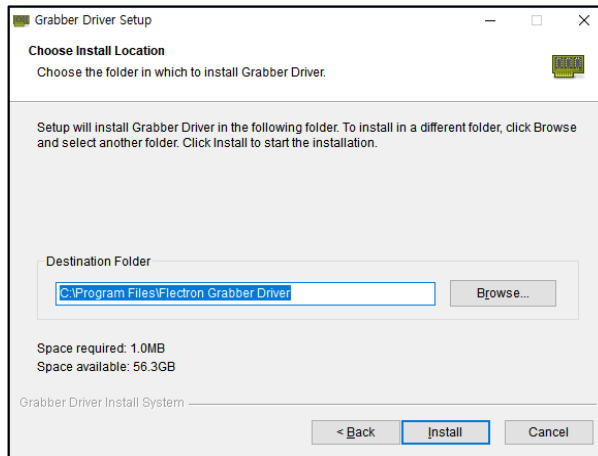
1. Select a language and click **OK**.



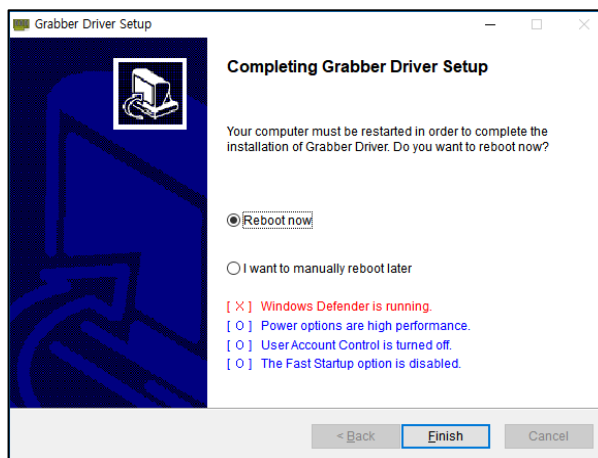
2. In the setup dialog box, click **Next**.



3. Click the **Install**. If necessary, click **Browse** to set a different destination folder.



4. When the dialog box below appears, check **“Reboot Now”** and click **Finish**. If you cannot reboot your PC now, check **“I want to reboot later manually,”** then click **Finish**.



NOTICE

If an error occurs during installation, the message is displayed in red. If no error is found, the text is displayed in blue.

[X] Windows Defender is running.

[O] Power options are high performance.

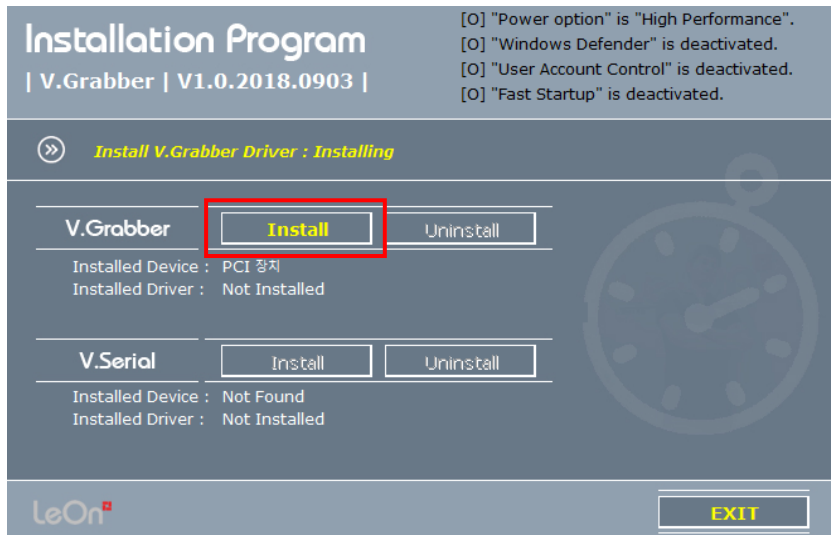
[O] User Account Control is turned off.

[O] The Fast Startup option is disabled.

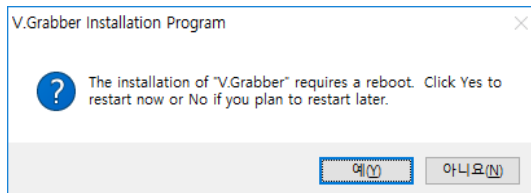
9.4.2.2 V. Grabber

To install the V. Grabber:

1. Select a language and Click **OK**.
2. Click the V.Grabber's **Install** button.



3. After installation, the V.Grabber Installation Program dialog box appears. Click the **Yes** to restart the computer now or **No** to restart later.



9.4.3 Finishing Installation

To finish installing the InstallShield, click **Finish** and restart the PC.

9.4.4 Verifying All Installed Component

To verify installed component

1. Locate the file: **Green X 12_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 section **9.5 Setting Imaging Programs (EzDent-i / Console Software)**.

9.4.5 Uninstalling Software

To uninstall the software:

1. Open the Start menu and type **“Uninstall a Program”** in the search box.
2. Find the programs you want to uninstall and double-click the program to uninstall.
3. When you are asked if you want to continue, click **Yes** or **OK** and follow the prompts to finish the uninstallation.

9.5 Setting Imaging Programs (EzDent-i / Console Software)

Read the following sections to configure EzDent-i and console software.

NOTICE

If your image viewer is not EzDent-i, you may skip the sections from **9.5.1** to **9.5.3**.

NOTICE

Start EzDent-i as an administrator to configure the program.

9.5.1 Linking EzDent-i to the Console Software (One-time Linking)

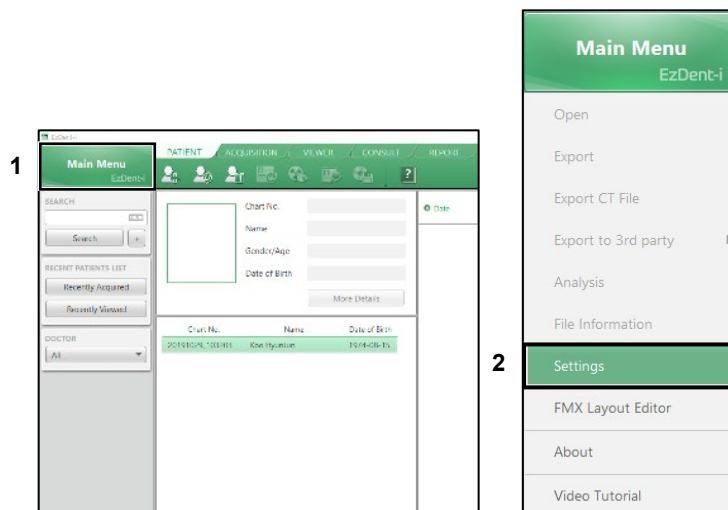
If EzDent-i is installed as your image viewer, you need to link the EzDent-i to the console software. Once these programs are linked, you don't need to repeat the step.

To link EzDent-i to the console software:

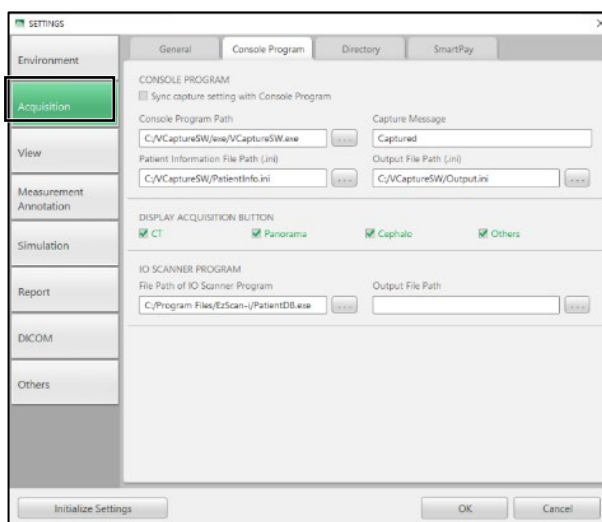
1. Click the EzDent-i icon on your PC.



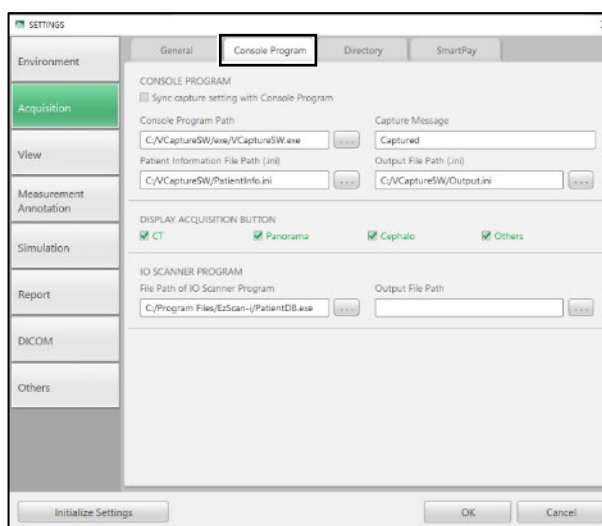
2. Click **Main Menu**, then select Settings.



3. Select **Acquisition** from the setting options.



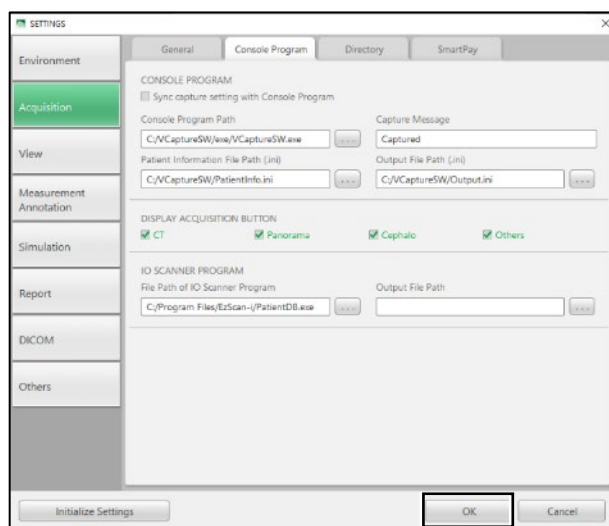
4. Select **Console Program**.



In the console program tab, check:

- **Console Program Path:** C:/V/CaptureSW/exe/V/CaptureSW.exe
- **Capture Message:** Green X 12 Captured
- **Patient Information File Path:** C:/V/CaptureSW/PatientInfo.ini

- Click **OK** and restart your PC to apply the new setting.




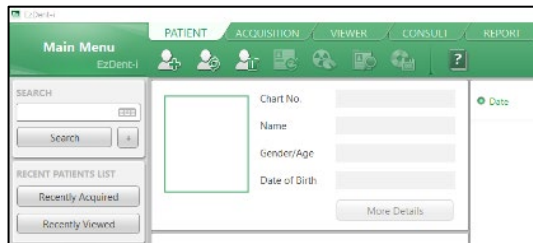
9.5.2 Creating a New Patient Record


To create a new patient record with **EzDent-i**:

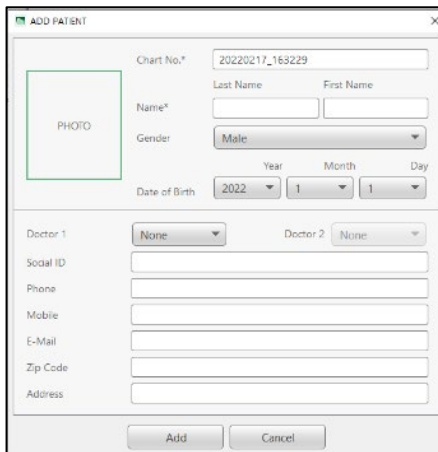
NOTICE

For the features not explained in this section, refer to the **EzDent-i** user manual.

1. On the main menu page, select **PATIENT**, then click .



2. After clicking , a dialog box pops up. Fill out the required field (*) in the dialog box: **chart number** and **name**. The rest of the fields are optional.

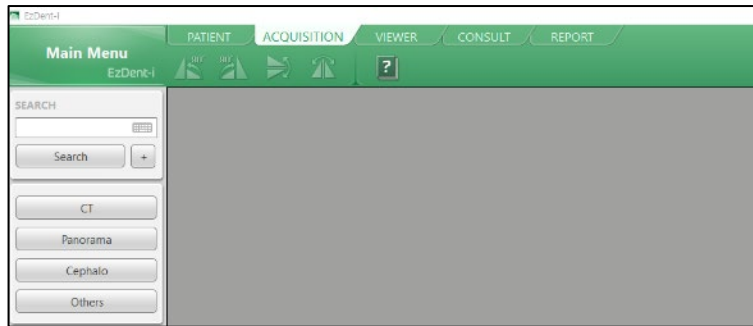


3. Click **Add** to save the new patient record.

9.5.3 Initiating the Imaging Program

To initiate the imaging program in EzDent-i:

1. Click the **ACQUISITION** tab. The imaging mode selection menu appears in the left pane (see below).



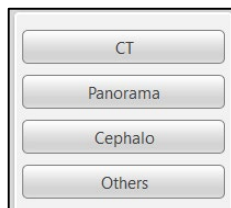
NOTICE

The imaging mode selection menu may differ due to your equipment's option (CEPH or non-CEPH) or the Display option you selected in the setting menu.

DISPLAY ACQUISITION BUTTON

☒ CT ☒ Panorama ☒ Cephalo ☒ Others

2. Select an imaging mode from the menu. The product registration window appears automatically.



9.6 Registering the Product

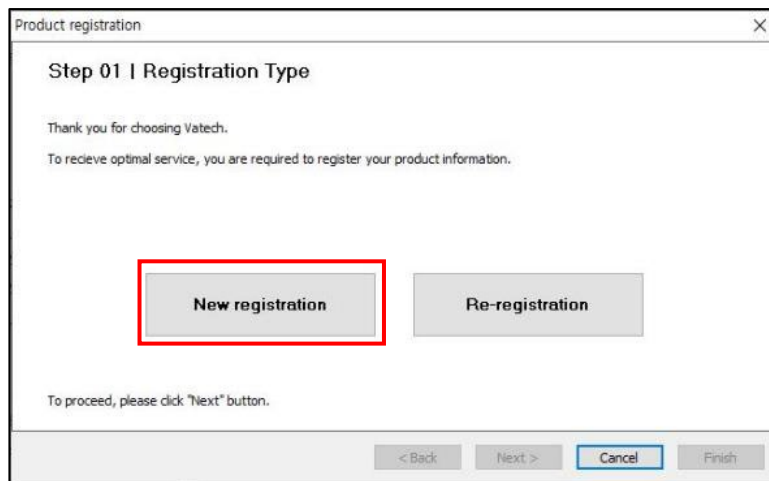
After installing the software, it is required to register the product.

9.6.1 New Registration

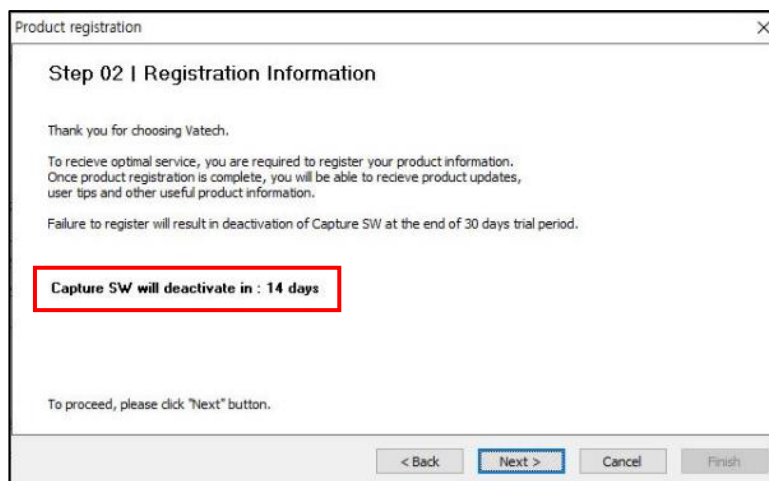
NOTICE

If the computer is not connected to the internet, follow the same steps below and move on to **Registering Offline** at page 127.

1. Select **New registration** from Registration Type window.



2. Ensure the trial period has been applied properly as below, and click **Next**.



3. To check the latest policy online, click **See the Privacy Policy** button. In case of offline environment, check the contents included within the program window.

After checking all information, click **Next**.

The screenshot shows a 'Product registration' window with a close button (X) in the top right corner. The title bar reads 'Product registration'. The main content area is titled 'Step 03 | Customer Personal Data'. Below this, there is a 'Privacy Policy' section with a scrollable text area containing the text: 'Privacy Policy Product Registration March 16, 2020' and 'This privacy policy tells you about the information we collect from you when you register product manufactured by us. In collecting this information, we are...'. Below the text is a button labeled 'See the Privacy Policy.'. Below the privacy policy section is a 'Consent Request' section with a scrollable text area containing the text: 'VATECH' (in red), 'This form asks for your consent to allow us to use your personal data for the reasons stated below. You should only sign it if you want to give us your consent.', 'Who are we?', 'The name of the organization asking you for consent to use your information is:', 'VATECH Co., Ltd. ("VATECH")', and 'To proceed, please click "Next" button.'. At the bottom of the window, there are four buttons: '< Back', 'Next >' (highlighted with a red box), 'Cancel', and 'Finish'.

IMPORTANT

The installer should not store, use, transmit or disclose customer's personal information (name, e-mail, specialty) that may be collected at this stage without the written permission of the company.

4. Enter the customer's personal information (Name, e-mail, Major field (Specialty)) and signature.

NOTICE

In accordance with the GDPR law, it is available to skip this step without entering data.

If data is entered, the entered data is temporarily saved and will be sent to the customer through an e-mail for verification.

Product registration

Step 04 | Customer Personal Data

☐ I consent to provide my personal data, i.e., my name, email address and specialty to Vatech Co., Ltd. located in Republic of Korea and local distributor so that they may collect, store and use for the reasons stated above.

Please provide the following information

If you consent to the information requested, please provide them below. (* Mandatory)

Name* (F.Name, L.Name)

Email* (Ex. Sample@vatech.co.kr)

Specialty* (Multiple choice option)

Please complete this section to show your consent

Name

Date 2020-07-15

Signature*

Please check if you consent us to use your information for marketing purpose when you want to receive any promotion or advertisement from us.

☐ I agree Vatech Co., Ltd. and local distributor use my information for marketing and Service improvement.

Once completed, this form will be sent to Vatech Co., Ltd., in Republic of Korea, automatically or by the installer, depending on the internet connection at the time of finishing all the production registration process.

To proceed, please click "Next" button.

< Back Next > Cancel Finish

Sign

☒ I consent to provide my personal data, i.e., my name, email address and specialty to Vatech Co., Ltd. located in Republic of Korea and local distributor so that they may collect, store and use for the reasons stated above.

Please sign here

Pen color: ☒ Black ☐ Blue ☐ Red

Pen thickness: ☐ Thin ☒ Middle ☐ Hard

Clear Confirm

Once completed, this form will be sent to Vatech Co., Ltd., in Republic of Korea, automatically or by the installer, depending on the internet connection at the time of finishing all the production registration process.

After entering all information, click **Next**.

5. Enter the product and hospital/clinic information.

The manufacturing date is automatically entered in online environment.

In case of offline environment, the manufacturing date must be manually entered by pressing “E” button next to Serial Number. The manufacturing date of the product can be found on the product label.

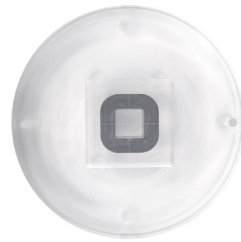
After entering all information, click **Next**. The **EzAlign** window will automatically appear.

6. Performing Image optimization and evaluation through **EzAlign** is required to proceed to the next step.



NOTICE

EzEval is an option and is only available with User Phantom.

**NOTICE**

For detailed instruction, refer to the **EzAlign / EzEval** User Manual.

7. Success or Failure is displayed according to the image optimization results. The results are recorded in the installation report and are uploaded to VCSM. To proceed to the next step, click **Next**.

Product registration

Step 06 | Image Optimization Check

Thank You for Registering your Vatech device.

For best results please complete the form accurately.
Failure to complete may result in limited services.
Please confirm that following Brand name, Serial Number and install date are correct

Image Optimizing

In order to optimize the Image Quality, please conduct EzAlign SW, which is necessary process for completing installation.

	L	T	R	B	
CBCT	0-0	0-0	0-0	0-0	
CEPH	76-4	1296-34	76-3	1296-32	
InsightPAN	0-0	0-0	0-0	0-0	
PANO	30-2	686-13	30-3	686-10	

EzAlign Confirm

	Success	Failure
	<input type="radio"/>	<input checked="" type="radio"/>
	<input checked="" type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input checked="" type="radio"/>
	<input checked="" type="radio"/>	<input type="radio"/>

EzEval(Optional) Confirm

Path: C:\VCaptureSW\Util\EzEval\report\

File: Constancy_test_report_20200715.pdf

To proceed, please click "Next" button.

< Back Next > Cancel Finish

8. Check all the contents of the checklist and enter the result.

All items need to be entered to proceed to the next step.

Product registration

Step 07 | Installation Check

GENERAL INSTALLATION CHECK LIST

CATEGORY	CONFIRMATION MATTER	YES	NO
1 Before unpacking	The equipment packing box condition is fine without any damage.	<input type="radio"/>	<input type="radio"/>
2 Before unpacking	"Shutdown", "Flawless Indicator" on the box is standard color. (Unusual - RED if damaged)	<input type="radio"/>	<input type="radio"/>
3 Visual inspection	There is no visual damage on the surface of the equipment.	<input type="radio"/>	<input type="radio"/>
4 Visual inspection	There are no missing parts & accessories.	<input type="radio"/>	<input type="radio"/>
5 Installation	The equipment is properly leveled horizontally and vertically as instructed in the Installation Manual.	<input type="radio"/>	<input type="radio"/>
6 Installation	The equipment is mounted on the wall with manufacturer's wall bracket.	<input type="radio"/>	<input type="radio"/>
7 Console PC	Console PC is installed completely without an error.	<input type="radio"/>	<input type="radio"/>
8 Console PC	3rd party PMS software is installed.	<input type="radio"/>	<input type="radio"/>
9 Electrical Environment	Main power of the equipment is grounded properly.	<input type="radio"/>	<input type="radio"/>
10 Electrical Environment	The equipment and the Console PC are connected to the same power circuit line.	<input type="radio"/>	<input type="radio"/>
11 Electrical Environment	The equipment is connected to the dedicated power line.	<input type="radio"/>	<input type="radio"/>
12 Electrical Environment	Power conditioner (High frequency noise filter) is installed.	<input type="radio"/>	<input type="radio"/>
13 Electrical Environment	AVR (Automatic Voltage Regulator) is installed.	<input type="radio"/>	<input type="radio"/>
14 Electrical Environment	UPS (Uninterruptible Power Supply) is installed.	<input type="radio"/>	<input type="radio"/>
15 Functional Verification	Each mode of image acquisition in the Console Software are successfully verified and functioning. (PANO, C3P (optional), CT (optional)).	<input type="radio"/>	<input type="radio"/>
16 Functional Verification	Column Up/Down, Rotator Movement, Chirvest Movement (optional), LUD Light and Voice Guide are properly operating as intended by Manufacturer.	<input type="radio"/>	<input type="radio"/>
17 Functional Verification	Installer completed Calibrator alignment task. (BxAlign)	<input type="radio"/>	<input type="radio"/>

To proceed, please click "Next" button.

< Back Next > Cancel Finish

9. After checking all the contents, enter the installer's information(Installer's name, Company name) and signature.

All items need to be entered to proceed to the next step.

Product registration

Step 08 | Installer Personal Data

Privacy Policy

Privacy Policy
Product Registration
March 16, 2020

See the Privacy Policy.

Installer Information

Installer Name(F,Name L,Name)*
Installer Company(Full Name)*

☐ I understand the manufacture collects my personal data for the purpose of managing the history of this product and consent to transfer my personal data to Republic of Korea.

Installer Confirmation

I authorized person to install this product, confirm the followings:

- I've assembled this product in accordance with the instructions provided by the manufacturer.
- I did not modify or omit any parts of this product.
- I've adjusted and tested this product in accordance with the instructions provided by the manufacturer.
- I've fully explained the safety guide to end users.
- Customer fully check the privacy policy and consent request before he or she provides the personal data and write his(her) signature.
- I will not keep, use or disclose customer's personal data known to me during the installation.

☐ I Agree to the above terms

Signature*

To proceed, please click "Next" button.

< Back Next > Cancel Finish

Sign

Thin Middle Hard

Black Blue Red

Clear Confirm

☐ I Agree to the above terms

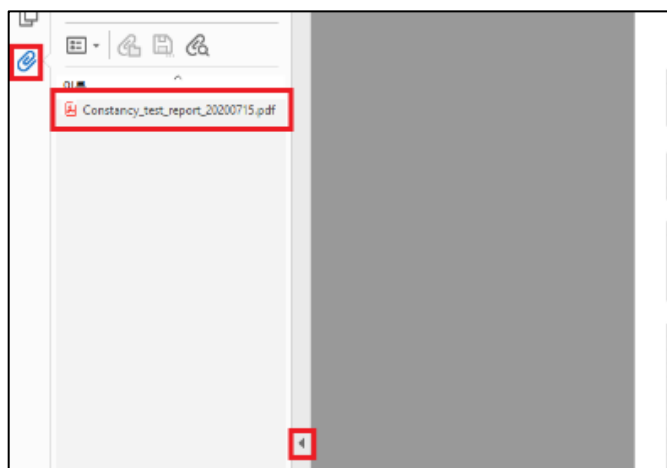
Signature*

9. Installing Software

10. An installation report is sent to VSCM after completing the installation. The generated report can be found in the **C:\VCaptureSW\Utility\Varegistr** folder.

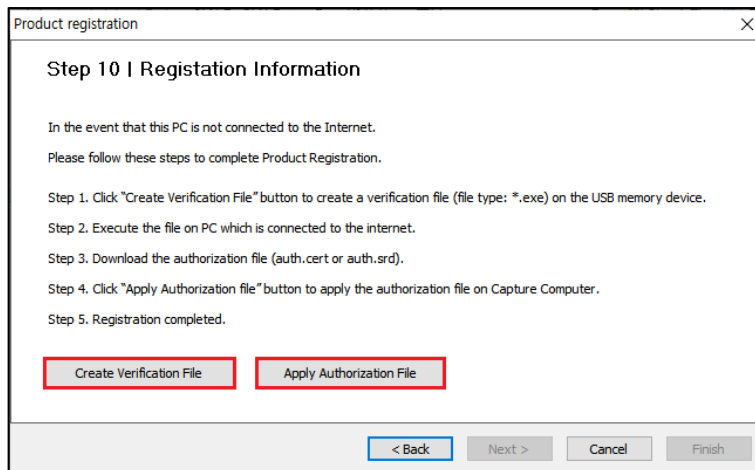
EzEval Report can be checked by clicking the arrow on the left in the installation report pdf file - **Attachment** button(clip icon).

FOR VENDOR USE ONLY		INSTALLATION REPORT OF A DIAGNOSTIC X-RAY SYSTEM					
1. INSTITUTION & INSTALLER INFORMATION							
Installation Name	Test Clinic	Diagnostic Phone	855-111-2222				
Installation Address	Test Addr	Phone(ZPN) Code	Test Zip Code				
State / City	Test State / Test City	Country	UNITED ARAB EMIRATES				
Installer Name	Test Installer Name	Installer Company	Valeport DCS Team				
2. PRODUCT INSTALLATION INFORMATION							
<input checked="" type="checkbox"/> The system is: <input checked="" type="checkbox"/> New system installation <input type="checkbox"/> Used system installation	Manufacturer Valeport Company Limited System Brand Name Green12	Product's Serial Number 065-00001 System Model Name PHT-45L10	Manufacture Date 2015-12-12 Installation Date 2020-07-15				
3. GENERAL INSTALLATION CHECK LIST							
Category	Confirmation Matter	Yes	No				
1	Before unpacking	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
2	"Shockwatch, "Touch Indicator" on the face to normal color (Shockwatch - RED if damaged)	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
3	Visual Inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
4	There are no missing parts & accessories.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
5	Installation	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
6	The equipment is properly sealed externally and internally as instructed in the Installation Manual.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
7	The equipment is mounted on the wall with manufacturer's wall bracket.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
8	Console SW is installed completely without an error.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
9	Console PC	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
10	3rd party PMS software is installed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
11	Main power of the equipment is grounded properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
12	The equipment and the Console PC are connected to the same power circuit info.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
13	Electrical Environment	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
14	The equipment is connected to the dedicated power line.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
15	Power condition (high frequency noise filter) is installed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
16	AVR(Automatic Voltage Regulation) is installed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
17	UPS(Uninterruptible Power Supply) is installed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
18	Functional Verification	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
19	All specified image acquisition functions in the Console Software have been successfully verified. (FANUC/Philips/GE/Topcon/etc).	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
20	Column option: Reader Unit, Lighting Unit, LED, Observation (shaded) movement, and vision guide system are operating properly.	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
21	Monitor component calibration alignment test (Strategy)	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
C/Age Test	CBCT	Left	Top	Right	Bottom	Pass	Fail
		D42	D-0	D-0	D-0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	CDTH	Left	Top	Right	Bottom	Pass	Fail
		75-4	1395-04	75-3	1395-02	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	ImagePAK	Left	Top	Right	Bottom	Pass	Fail
		D42	D-0	D-0	D-0	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		Left	Top	Right	Bottom	Pass	Fail
		30-2	886-13	30-3	886-10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. ASSEMBLER CERTIFICATION							
I affirm that all certified components assembled or installed by me, for which this report is being made, were adjusted and tested by me according to the instructions provided by the manufacturer(s), were of the type required by the manufacturer(s), were not modified or otherwise altered performance.							
* Name of Installer : Test Installer Name <i>Insulating</i>							
Signature Date: 2020-07-15							

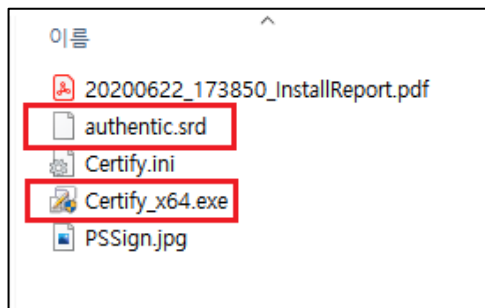


Registering Offline

Proceed step 1 to 10 of **New Registration** process. After completing all previous steps, the following window will appear.



1. Click **Create Verification File** button to save the verification file to the storage device (e.g. USB). Leave the registration window opened.
2. Move the device with verification file to the PC connected to the online environment, and launch '**Certify_x64.exe**' to register the product and create an authenticate file(authentic.srd).



3. Move the authenticate file to the PC where software is installed, and click **Apply Authorization File** button from the registration window.

9.6.2 Re-registration

Re-registration is available by downloading an existing registered authentication file(auth.cert) from VCSM without a separate product registration process.

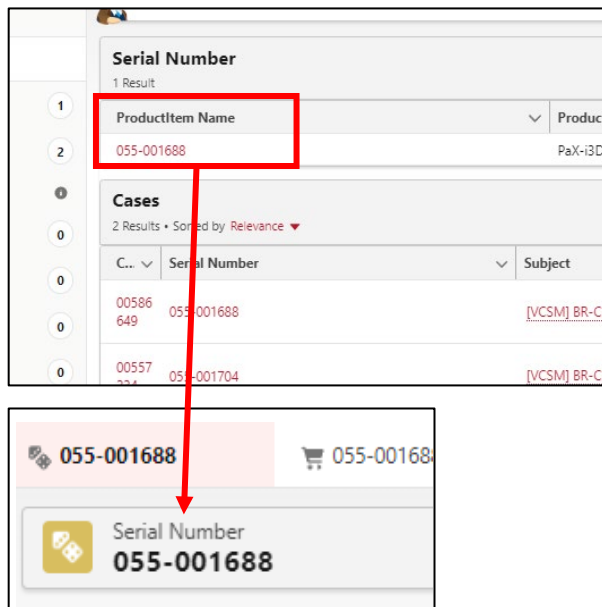
NOTICE

The authentication file of **Product Registration Solution v1.0** is compatible with **Product Registration Solution v2.0**, and vice versa.

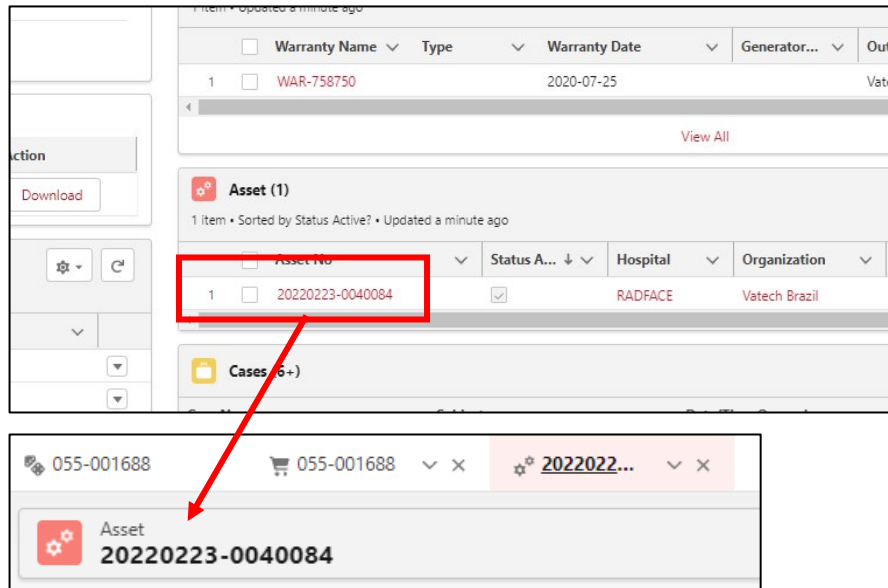
1. Enter Serial No. at the search bar on top center of the webpage.



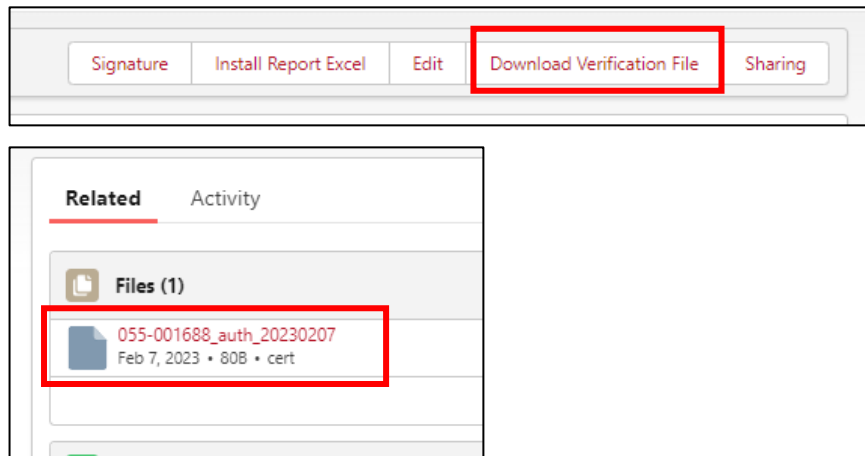
2. Select the item from **ProductItem Name** to enter the serial no. tab.



3. Select the corresponding Asset No. from **Asset** to enter the asset tab.



4. Select **Download Verification File** to generate and download an .auth file.



9. Installing Software

5. Select **Apply Authorization File** in Product registration window to apply the downloaded file.

Product registration

Step 10 | Registration Information

In the event that this PC is not connected to the Internet.
Please follow these steps to complete Product Registration.

Step 1. Download the authorization file (auth.cert or auth.srd) from VCSM website.
Step 2. Click "Apply Authorization file" button to apply the authorization file on Capture Computer.
Step 3. Registration completed.

Create Verification File **Apply Authorization File**

< Back Next > Cancel Finish

9.6.3 Reconfirmation of Product and Clinic Information After 2 Weeks

This procedure is for reconfirming the clinic information after 2 weeks to ensure that the clinic information has been correctly filled out.

When the user edits the contents of the pop-up window and proceeds with registration, the information on VCSM is updated.

Product registration

Step 05 | Product Registration

Thank You for Registering your Vatech device.

For best results please complete the form accurately.
Failure to complete may result in limited services.
Please confirm that following Brand name, Serial Number and install date are correct

* Mandatory

Supplier and Product

Manufacturer	Vatech Company Limited	Serial Number*	068-000843	E ?
Manufacture Date*	2018-12-12	Installation Date	2020-07-15	
System Brand Name	Green16	Installation Type	New system installation	
System Model Name	PHT-65LHS			

Clinic Information

Clinic Name*	Test Clinic	Zip Code*	Test Zip Code
Clinic Address*	Test Addr	Site Type*	Private Dental Office
City*	Test City	Office Phone*	000 1234 1234
State	Test State	Web Page	Webpage@test.com
Country*	UNITED ARAB EMIRATE		

To proceed, please click "Next" button.

< Back Next > Cancel Finish

9.6.4 Customer Identification e-mail

The following e-mail will be sent once per day for 3 days to the customer's email address entered during product registration, asking for consent to the collection of personal information.

Please do not reply directly to this email. This was sent from an address that cannot accept responses. For questions or assistance, send email to privacy.gcs@vatech.co.kr.

Dear Vatech GCS

First, thank you for your purchasing [REDACTED] ("Product"), manufactured by us, VATECH Co., Ltd., located at 13, Samsung 1-ro 2-gil, Hwaseong-si, Gyeonggi-do, 18449, Republic of Korea ("VATECH").

This email is being sent you in order to verify your consent to our collecting, storing and using your information, i.e., **your personal name, email address and specialty**, provided upon our [Consent Request](#) during the product registration process of the Product on 2020-07-29

Please click "CONTINUE" button below if you agree VATECH's storing and using your information.

[CONTINUE](#)

Your information above will be deleted if you do not click the "CONTINUE" button above within 72 hours from the time we send this email.

Please contact us whenever you want to provide your information, to withdraw your consent, to correct or update your information by sending an email to privacy.gcs@vatech.co.kr.

Thank you again for your purchasing our products.

VATECH Co., Ltd.

[About us](#) | [Privacy Policy](#)

This email is intended solely to an intended recipient and contains information to be protected. If you are not the intended recipient, (a) please delete this email and inform privacy.gcs@vatech.co.kr as soon as possible, and (b) any copying distribution in whole or in a part, forwarding this email or other action taken or omitted to be taken in reliance upon it is prohibited and may be unlawful.

Clicking the **CONTINUE** button from the authentication e-mail will lead to the authentication webpage. Customers can confirm and submit the agreement by clicking the **Submit** button.

NOTICE

Customer can edit the entered information from the webpage, if necessary.

Dear Customer,

Consent Veritification

Your information provided to VATECH in Republic of Korea (South Korea) is as follows.

Name: Vatech GCS
 Email Address: gcs@vatech.co.kr
 Specialty: ☐ General Dentist(GP) ☒ Periodontology
☐ Pediatric Dentistry ☒ Endodontics
☐ Prosthodontics ☐ Implantology
☐ Oral&Maxillofacial surgeons ☒ Orthodontic
☐ Radiology ☐ Unknown

☒ I consent to VATECH'S sharing and using my information above as stated on the [Consent Request](#)

Sharing Your Information with Third Parties

Your information may be disclosed to the following local distributor and/or service provider(collectively or individually "Local Distributor") so that the Local Distributor may send emails to inform you of our products, to ask your satisfaction level or your opinion on our products or service or to promote our products or services on behalf of us.

Vatech Cooperation Address	Vatech Distributor Address
-------------------------------	-------------------------------

☐ I consent to VATECH's sharing my information with the Local Distributor.

Receiving Marketing Emails

☐ I'd like to receive marketing emails.

Submit

Please contact us whenever you need to withdraw your consent, to correct or update your information by sending an email to privacy.gcs@vatech.co.kr.

Thank you again for your purchasing our products.

VATECH Co., Ltd.

[About us](#) | [Privacy Policy](#)

After 3 days without the submitted consent form, the temporarily stored personal information will be deleted. In that case, customers need to enter their personal information again for authentication.

Dear Customer,

Please be informed that we deleted your information because you have clicked the CONTINUE button on the email 72 hours after we sent it.

Please provide the following information.

If you consent to provide information requested, please give it below after checking again [Consent Request](#).

Your Information

Name: V*****
 Email Address: g*****
 Specialty: ☐ General Dentist(GP) ☐ Periodontology
☐ Pediatric Dentistry ☐ Endodontics
☐ Prosthodontics ☐ Implantology
☐ Oral&Maxillofacial surgeons ☐ Orthodontic
☐ Radiology ☐ Unknown

☒ I acknowledge my information is collected by VATECH Co. Ltd. in **Republic of Korea (South Korea)** and I consent to VATECH's storing and using my information above as stated on the Consent Request linked hereto.

Sharing Your Information with Third Parties

Your information may be disclosed to the following local distributor and/or service provider (collectively or individually "Local Distributor") so that the Local Distributor may send emails to inform you of our products, to ask your satisfaction level or your opinion on our products or service or to promote our products or services on behalf of us.

<u>Vatech Cooperation</u> Address	<u>Vatech Distributor</u> Address
--------------------------------------	--------------------------------------

☐ I consent to VATECH's sharing my information with the Local Distributor.

Receiving Marketing Emails

☐ I'd like to receive marketing emails.

Submit

Please contact us whenever you need to withdraw your consent, to correct or update your information by sending an email to privacy.gcs@vatech.co.kr.

Thank you again for your purchasing our products.

VATECH Co., Ltd.


[About us](#) | [Privacy Policy](#)

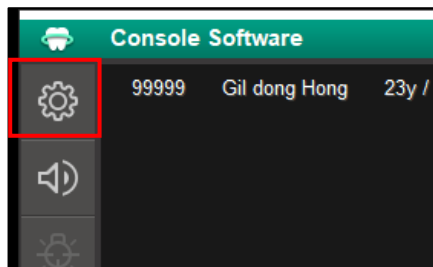
9.7 Setting the Console Software Parameters

To configure parameters for the console software:

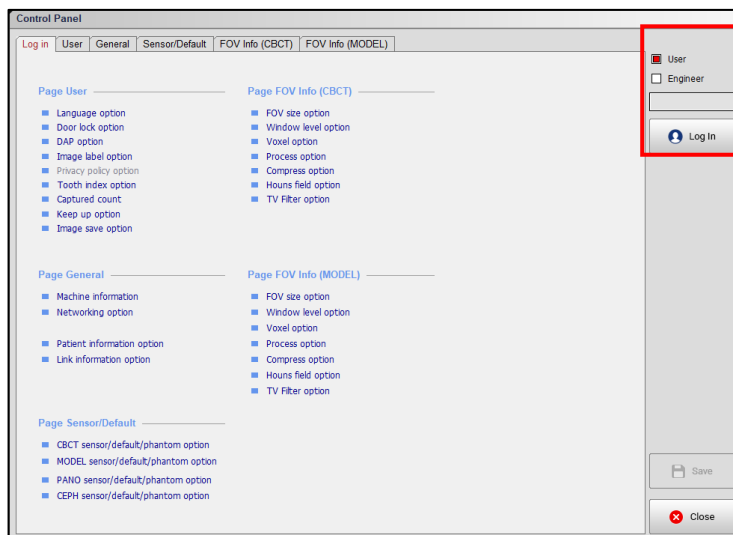
IMPORTANT

The following information should be entered by the user requirements.

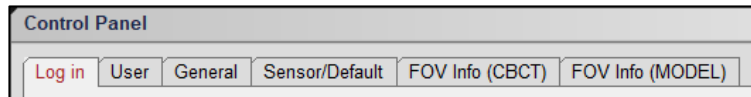
1. Click  from the sidebar of the console software.



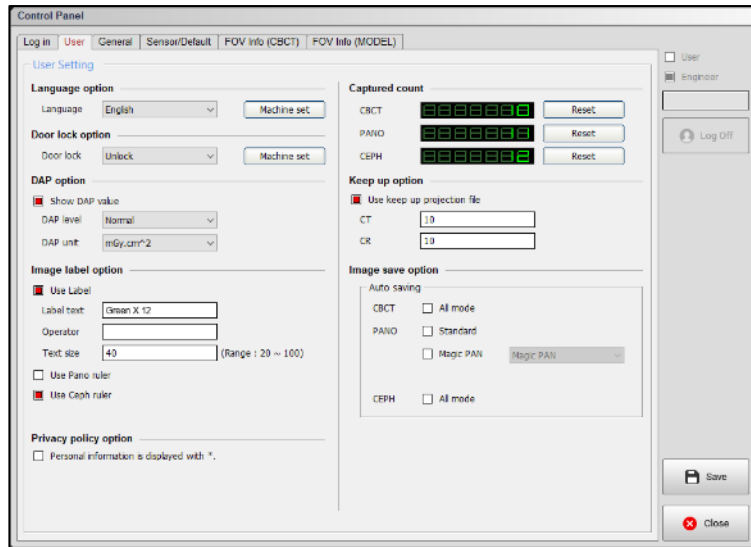
2. Check 'Engineer' and type the password (**vatech**). Then click **Log in**.




- Click the **User** tab.

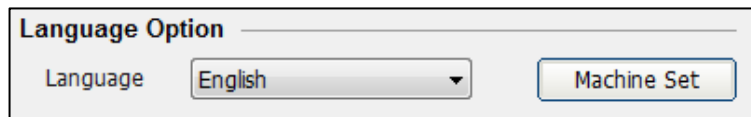


The User Setting window is displayed as the figure below.

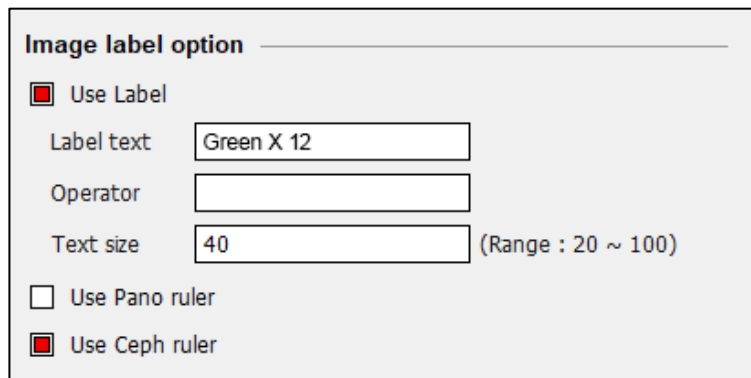


- Select a language from **Language Option**.

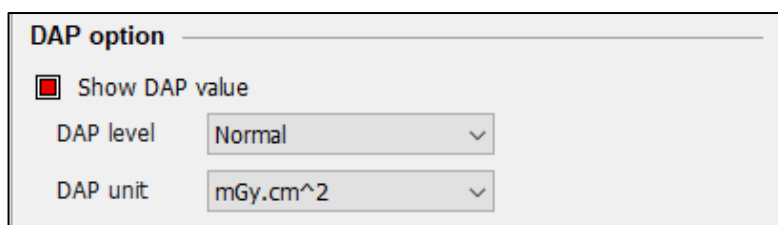
English is set as default. If you want to change the setting, click  and select a new language from a dropdown list. Then, click **Machine Set**.



- In the **Image Label Option**, check that the default equipment's brand name and text size are displayed, as shown in the following figure.



6. In the **DAP**, check that the default DAP Level and DAP Unit are displayed, as shown in the following figure.



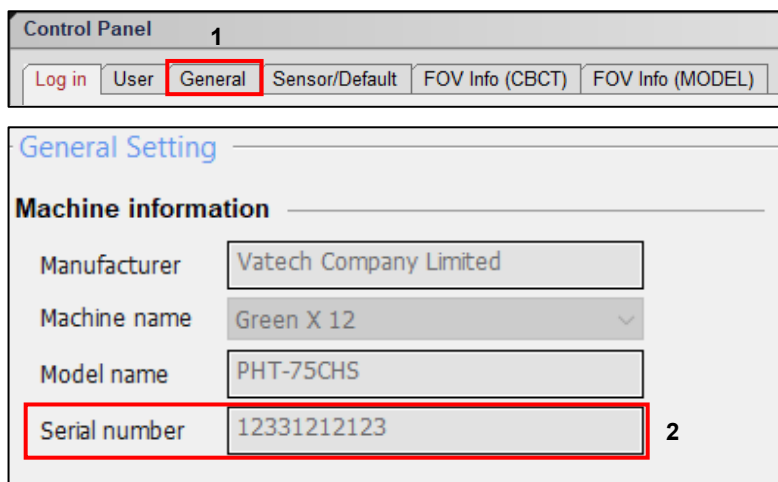
DAP option

☒ Show DAP value

DAP level: Normal

DAP unit: mGy.cm²

7. Click on the **General** tab and type the equipment's serial number in the **Machine information**.



Control Panel 1

Log in User **General** Sensor/Default FOV Info (CBCT) FOV Info (MODEL)

General Setting

Machine information

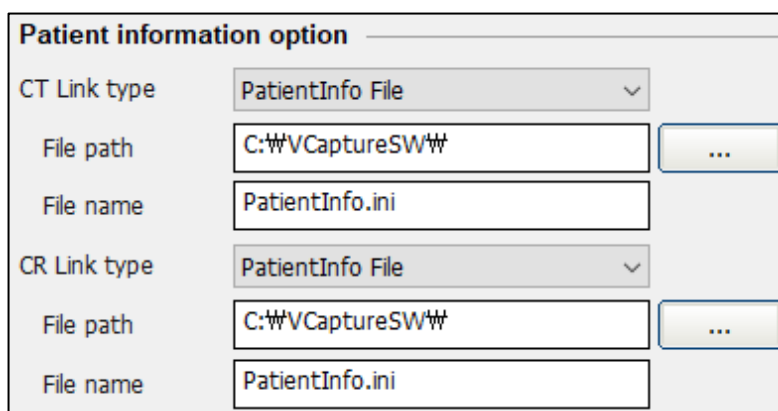
Manufacturer: Vatech Company Limited

Machine name: Green X 12

Model name: PHT-75CHS

Serial number: 12331212123 2

8. In the **Patient Information Setting**, configure the Link Type, File Path, and File Name as shown the below:



Patient information option

CT Link type: PatientInfo File

File path: C:\V\CaptureSW\ ...

File name: PatientInfo.ini

CR Link type: PatientInfo File

File path: C:\V\CaptureSW\ ...

File name: PatientInfo.ini

9. In the **Link Information Setting**, configure the Link Type and File Extension as below.

Fields	When EzDent-i is used
CT / CR Link Type	SDK Link
CR Save Name	.DCM

Link information option

CT Link type	SDK Link	
CT Save path	C:\VCaptureSW\ImageOutput\CT	...
CR Link type	SDK Link	
CR Save path	C:\VCaptureSW\ImageOutput\CR	...
CR Save name	Image	.DCM
Capture message	Smart X Captured	
Output file path	C:\VCaptureSW\	...
Output file name	Output.ini	

10. Click on the **Sensor / Default** tab and configure the user-defined parameters.



NOTICE

The default features can be modified according to the user's requirements.

Control Panel

Log in	User	General	Sensor/Default	FOV Info (CBCT)	FOV Info (MODEL)
--------	------	---------	-----------------------	-----------------	------------------

11. Click **Save** if changes occur.

 Save
 Close

9.7.1 Disabling the Packing Mode

Packing mode is a feature designed to protect the system from damage during shipping. Before using the system, you need to turn off the packing mode on the control panel page.



If you don't turn off the packing mode, the system cannot operate properly even after the power is on.

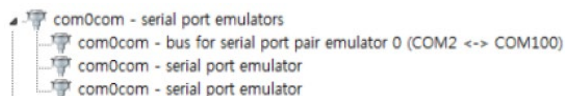
To disable the packing mode:

1. Go to the **General** tab on the control panel page.
2. Check **Serial** and set **serial port** and **baud rate** as below.
3. In the **Networking option**, enable the **Serial** checkbox, set serial port and baud rate as illustrated below, and click **Manager**.

NOTICE

If an error has occurred during connection, check if the COM port setting is correct as follows:

1. Run the Device Manager.
2. Check the COM port assigned to "com0com," as shown in the following figure.

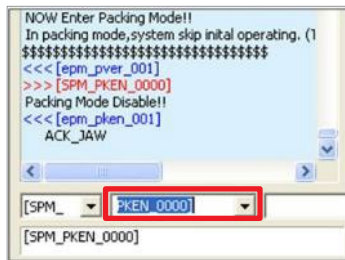


3. If it is not assigned correctly, change the COM port in the **Networking option** and click **Save**.

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



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



NOTICE

Use the command **PKEN_0001**] to re-enter the packing mode.

6. Click **Exit** and terminate the Control Panel.
7. (Important!) Exit the imaging program (main GUI).
8. Reboot the system for the changes to take effect.

9.7.2 Selecting an Announcement Mode: Music or Beep (Optional)

The equipment supports both music and beep announcement. If necessary, follow the steps below to switch between two announcement modes.

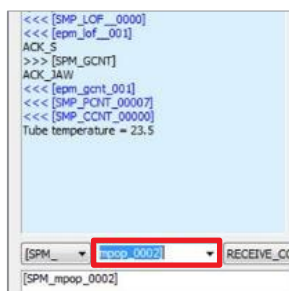
Format: [SPM_MPOP_XXXX]			
XXXX	Imaging Modes	Announcement Mode	Division
0000	CT/PANO	Music	Different for each mode
0001	CT/PANO	Music	Same for each mode
0002 (Default)	CT/PANO	Beep	Same for each mode

[Command Specification]

1. Send the command according to the command specification in the table above.
Default mode is **0002(beep)** for each imaging mode.
2. To set **Music announcement** for both CT and PANO imaging modality, enter the command **[SPM_MPOP_0001]** in the command field.



3. To set **Beep announcement** for both CT and PANO imaging modality, enter the command **[SPM_MPOP_0002]** in the command field.



9.7.3 Finalizing the Parameter Settings

To finalize the parameter settings:

1. Click **Exit** and close the control panel page.
2. Exit the imaging program(main GUI).

10. Technical Specifications

10.1 Mechanical Specifications

Weight (unit: kg / lb.)

Item	Description
Without CEPH	162.9 kg (359.13 lbs. - without Base)
	217.9 kg (480.38 lbs. – with Base)
With CEPH	187.9 kg (414.25 lbs. - without Base)
	242.9 kg (535.50 lbs. - with Base)

Dimensions

Item		Description (Unit = mm("))
Total Height	Without Base	Min. 1517.4 mm (59.74") Max. 2317.4 mm (91.24")
	With Base	Min. 1545.4 mm (60.84") Max. 2345.4 mm (92.34")
Dimensions during operation (Length x Width x height)	Without CEPH	Without Base: 1085.0 (L) x 1457.8 (W) x 2317.4 (H) (mm) 42.72 (L) x 57.39 (W) x 91.24 (H) (")
		With Base: 1085.0 (L) x 1457.8 (W) x 2345.4 (H) (mm) 42.72 (L) x 57.39 (W) x 92.34 (H) (")
	With CEPH	Without Base: 1905.5 (L) x 1457.8 (W) x 2317.4 (H) (mm) 75.02 (L) x 57.39 (W) x 91.24 (H) (")
		With Base: 1905.5 (L) x 1457.8 (W) x 2345.4 (H) (mm) 75.02 (L) x 57.39 (W) x 92.34 (H) (")
Rotating Unit Vertical Movement		Max. 800 mm (31.50")
Installation type		Base Stand / Wall Mount (Default: Wall Mount type)
Packing Box Organization		Main Box, CEPH Box (Optional), Base Box (Optional)

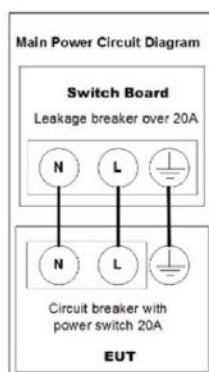
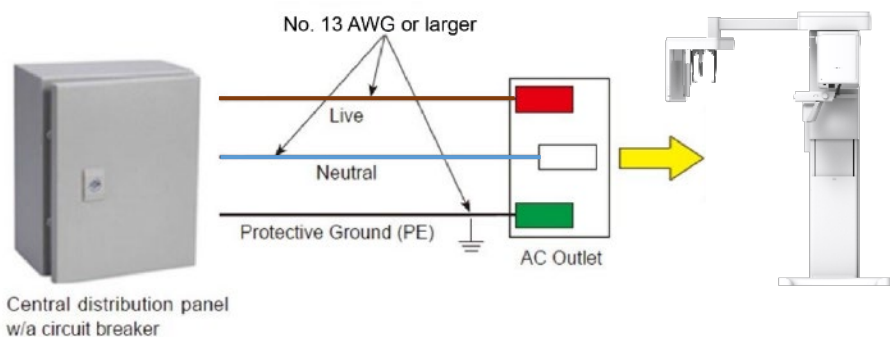
*Unit = mm (")

[illegible]

10.3 Electrical Specifications

Item	Description
Power supply voltage	100 - 240 V ~
Frequency	50 / 60 Hz
Power rating	2.2 kVA
Accuracy	Tube Voltage (kVp) ± 10 %, Tube Current (mA) ± 20 % Exposure Time (s) $\pm (5 \% + 50 \text{ ms})$

- The input line voltage depends on the local electrical distribution system.
- **Allowable input voltage fluctuation requirement:** ± 10 %.
- **Mode of operation:** non-continuous operation (NFPA 70: long time operation) - needs waiting time (at least 60 times the exposure time) before the next exposure.
- **Column operation time:** Max. 2 min. On / 18 min. Off (Ratio 1:9)



10.4 Environmental Specifications

Item		Description
During Operation	Temperature	10 ~ 35 °C
	Relative humidity	30 ~ 75 %
	Atmospheric pressure	860 ~ 1060 hPa
Transport and Storage	Temperature	-10 ~ 60 °C
	Relative humidity	10 ~ 75 %
	Atmospheric pressure	860 ~ 1060 hPa

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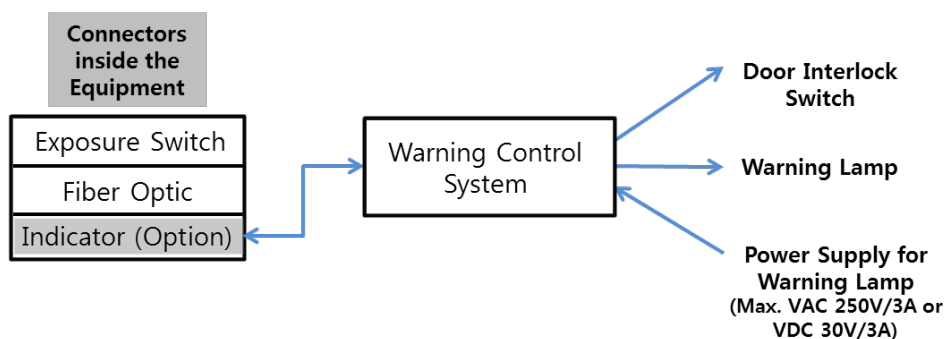
Appendix

A. Installing the Warning Lamp and Door Interlock Switch

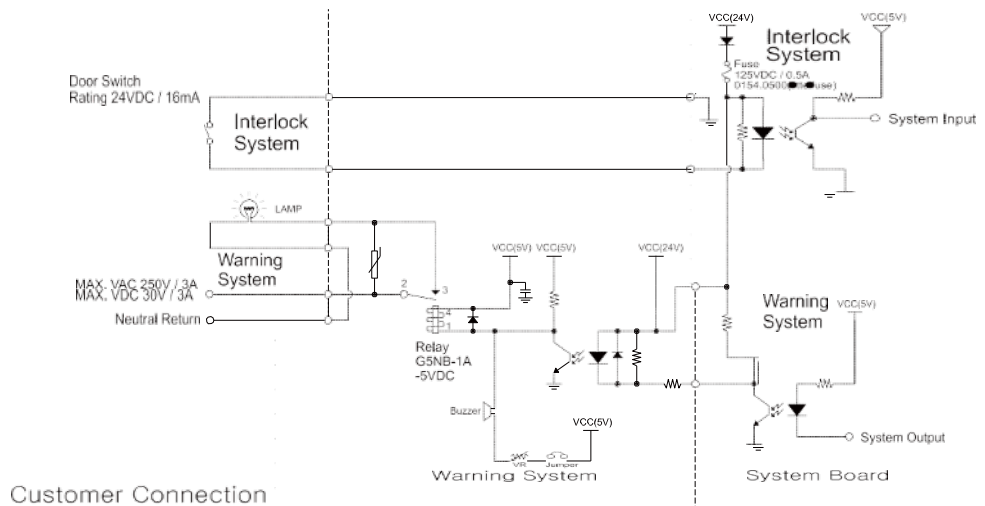
Requirement

- The warning control system shall be connected to the ERB (earth reference bar) of the room that it is associated with.
- The switching arrangements, location, height, and the number of illuminated warning signs shall be agreed upon with the local radiation protection advisor (RPA). (customer)
- A fluorescent lamp shall not be used in the 'X-rays on' sign.
- The customer shall be responsible for the proper installation of the warning controlsystem, including the lamp and door interlock switch, based on the MEIGaN guideline. (MEIGaN: Medical Electrical Installation Guidance Notes)
- Pre-installation planning is crucial to the successful installation of these devices.
- For further details, refer to the accompanying volume: Specification for Electrical Installation.

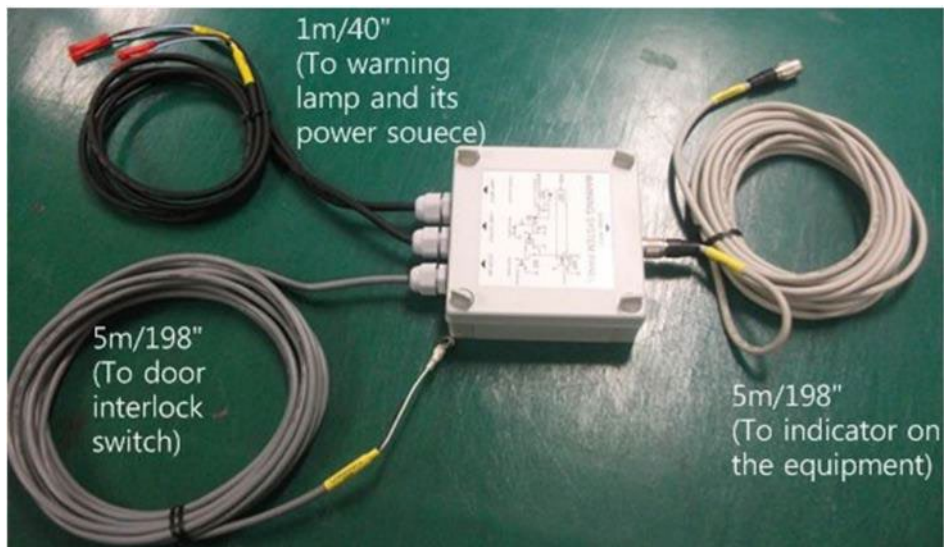
Block Diagram



Schematic Diagram



Components Supplied



Procedures

Before installation, check the cable lengths:

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



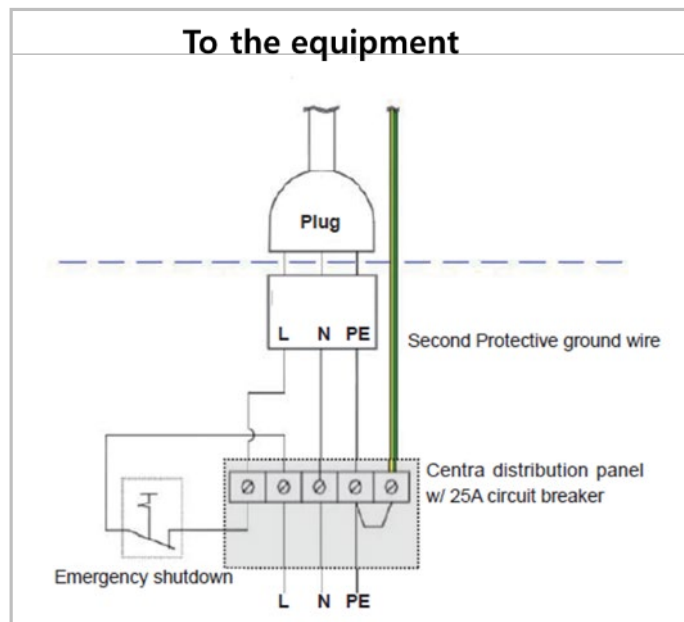
To install the warning lamp and door interlock switch:

1. Prepare a warning system panel.
2. Install the panel at a proper height according to each cable's length.
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 Stop Switch

When installing the emergency stop switch, please check the following:

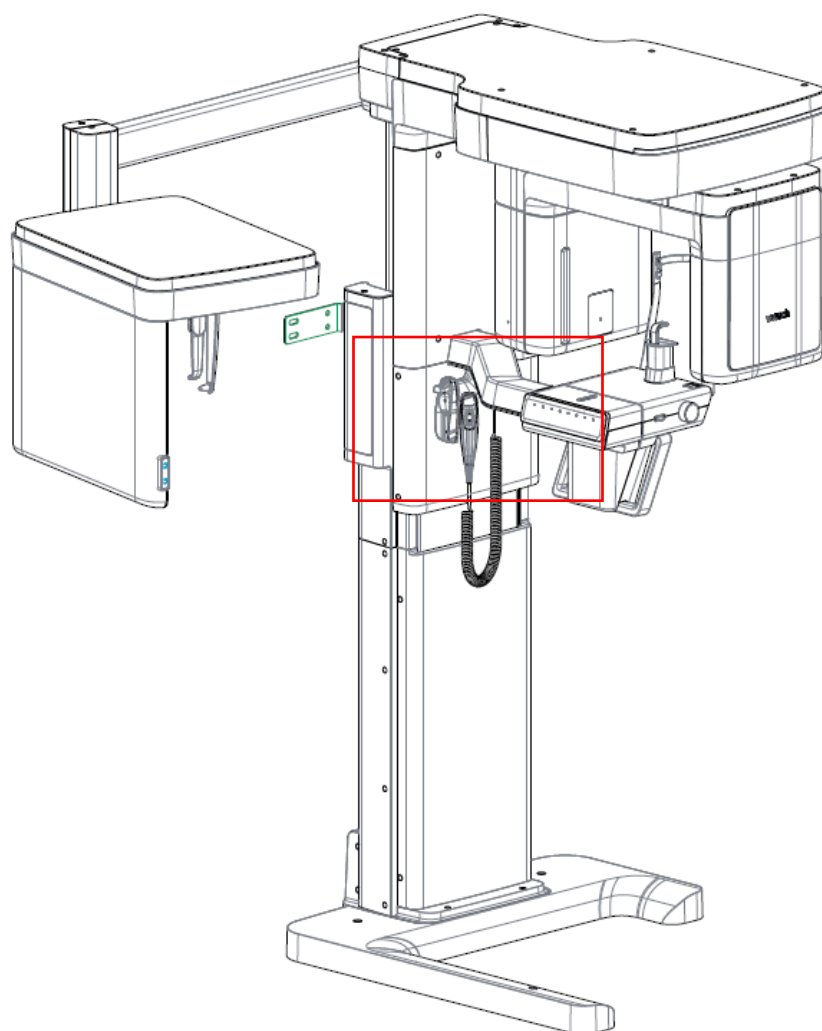
- Install the emergency stop switch on the power cable line.
- Install the switch in a location where the user can easily access in an emergency but cannot push it by mistake.
- The switch must be mistake-proof type.
- The switch is not supplied.
- The switch must be installed at the height of 1.2 to 1.5 M(47 to 60").
- The cable sizes must be: N, L, and PE ≥ 12 AWG (3 x 4 mm²).
- The switch's cable must be the same size as the power cable.
- Install the socket connector terminal for the 2nd protective ground wire.



C. Limiting the Column Height

To limit the column height:

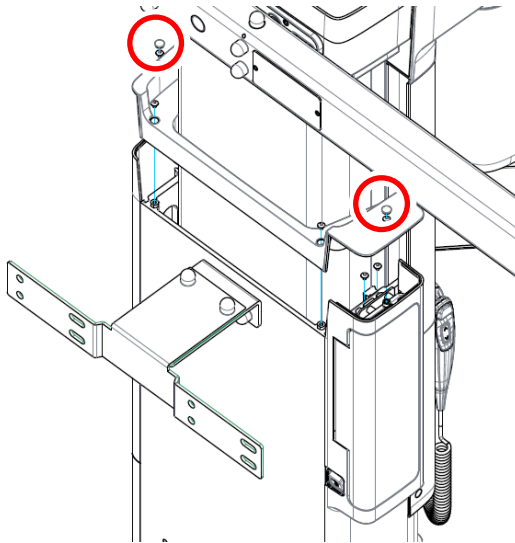
1. Measure your ceiling height: H_{ceiling} .
2. Use the up/down switch to set the equipment to a suitable height.



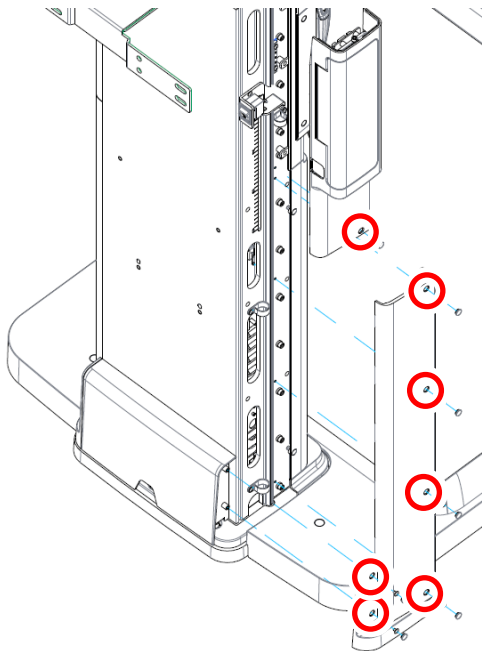
Removing the Column Cover

To remove the column cover:

1. Remove fixing bolts as in the image below.



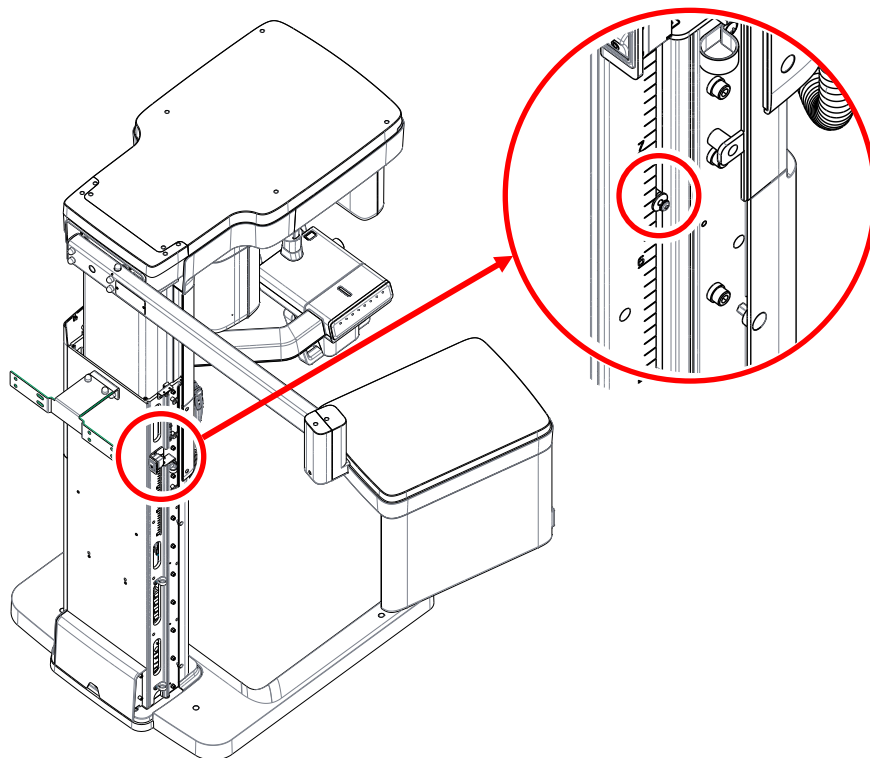
2. Disassemble the side cover. If necessary, also disassemble the bottom cover.



3. Loosen the screw to adjust the height.



Do not completely remove the screws at this stage.



4. Tighten the screws again.
5. Assemble the cover in reverse order of disassembly.

Determining the Height

Determine the screw height using the following formula:

$$H_{\text{screw height}} = 100 \text{ mm} - d$$

- 100 mm: the minimum desired distance between the ceiling and the top of the equipment when the column is fully extended.
- $d = H_{\text{ceiling}} - H_{\text{Max}} = H_{\text{ceiling}} - 2336 \text{ mm}$
(Example height: The height of the equipment without Base)

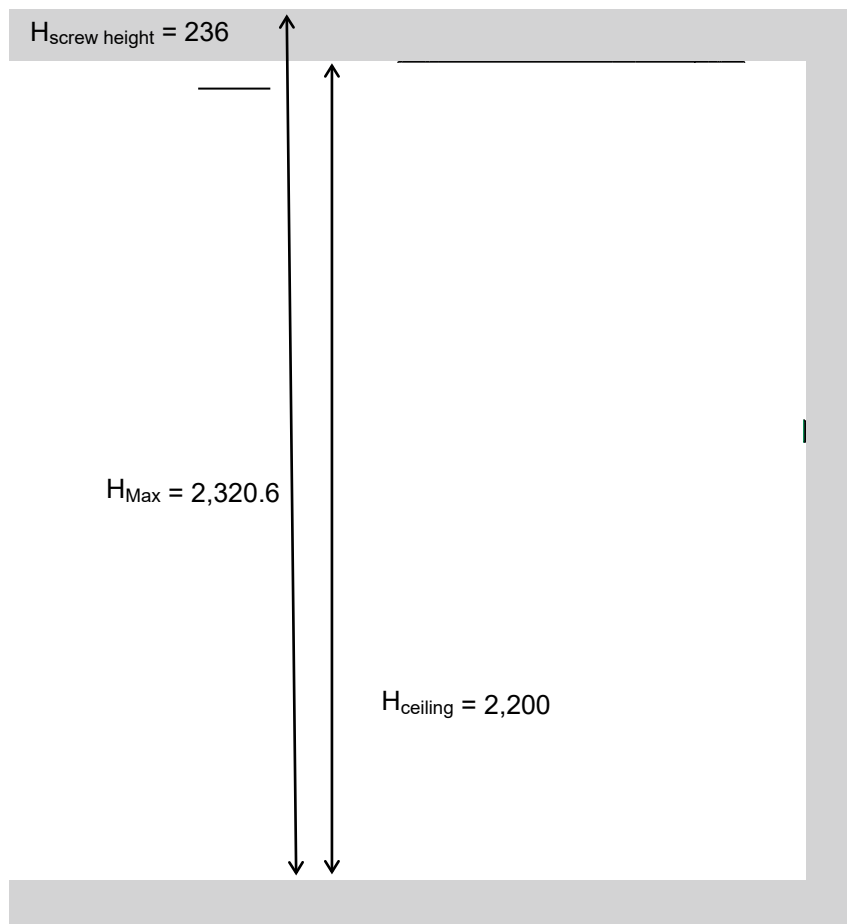
Ex) If H_{ceiling} is 2200 mm, the $H_{\text{screw height}}$ value is calculated as follows:

$$d = H_{\text{ceiling}} - H_{\text{Max}} = 2200 \text{ mm} - 2336 \text{ mm} = -136 \text{ mm}$$

$$H_{\text{screw height}} = 100 \text{ mm} - d = 100 \text{ mm} + 136 \text{ mm} = 236 \text{ mm}$$

(If d is more than 100 mm, the column height limit is not necessary.)

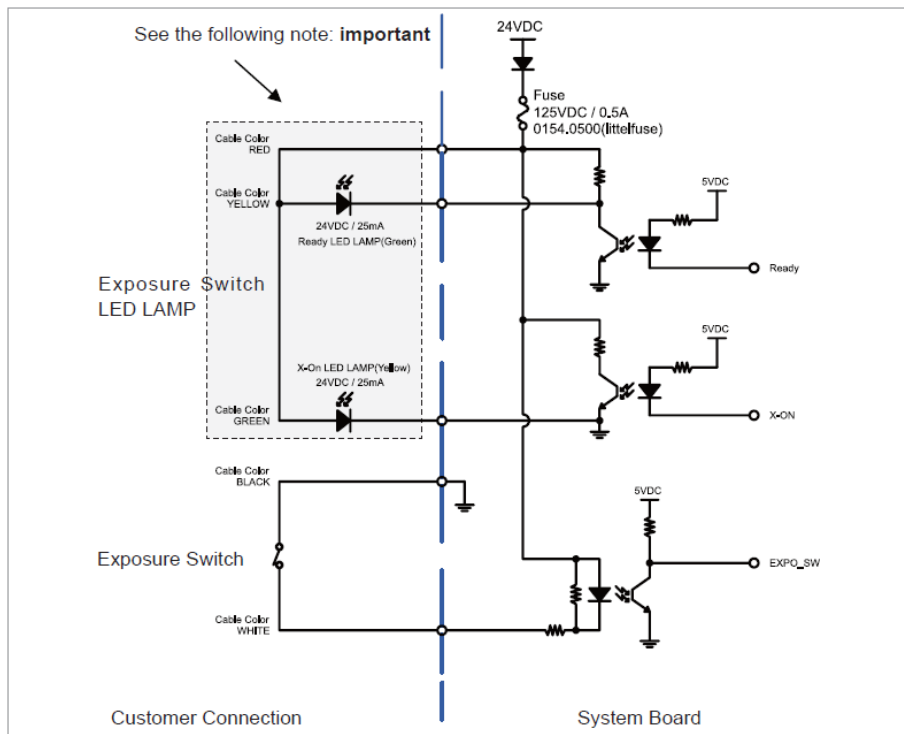
$$H_{\text{screw height}} = 100 \text{ mm} - d$$



D. Connecting the 3rd Party Exposure Switch (Optional)

To connect the third-party exposure, switch to VATECH equipment:

1. Cut the exposure switch cable provided with the equipment.
2. Rewire the cable according to the schematic diagram below.
3. Check the wiring status before the use.



NOTICE

Tape the end of each unused wire to prevent the wires from causing an inadvertent short circuit

E. Checking PC BIOS Settings

< HP PC BIOS Setup >

PC Model: HP Z4

PC BIOS default			
Main Menu	Sub1 Menu	Sub2 Menu	Setup Value
Advanced	Power Options	Runtime Power Management	[Disable]
Advanced	Power Options	Idle Power Savings	[Normal]
Advanced	Power Options	Enhanced Halt State (C1E)	[Disable]

F. Installation Checklist

1. General Information

Customer

Information about the Equipment Purchaser	
Name of Clinic or Hospital	
Address	
Phone	
E-Mail	
Website	

Dealer

Information about the Equipment Seller	
Name of Dealer	
Address	
Phone	
E-Mail	
Website	

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 Checklist

	Yes	No
Is the room large enough? At minimum, with CEPH unit: 2,500 mm (W) x 2,500 mm (D) x 2,700 mm (H) / 98.4" (W) x 98.4" (D) x 106.3" (H) Without CEPH unit: 2,500 mm (W) x 1,700 mm (D) x 2,700 mm (H) / 98.4" (W) x 66.9" (D) x 106.3" (H)	<input type="checkbox"/>	<input type="checkbox"/>
Is the door entrance wider than 800 mm (31.5")?	<input type="checkbox"/>	<input type="checkbox"/>
Is a radiation protection plan in place?	<input type="checkbox"/>	<input type="checkbox"/>
Do equipment and PC use the same dedicated circuit?	<input type="checkbox"/>	<input type="checkbox"/>
Does the electrical input condition to the installation site meet the MEIGaN requirements?	<input type="checkbox"/>	<input type="checkbox"/>
Is the local Network IP address of the clinic 192.168.33.xx?	<input type="checkbox"/>	<input type="checkbox"/>
Is a compressor or air conditioner suction located right next to X-ray Room?	<input type="checkbox"/>	<input type="checkbox"/>
Is the floor flat and leveled?	<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 the delivery company carry and handle with caution?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers take pictures of boxes before opening them?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installer ensure there were no 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 the installers ensure there were no scratches or broken surface equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Were 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 the installation?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installer take pictures after opening the boxes?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installer make sure there were no suspicious holes or scratches on the box after opening it?	<input type="checkbox"/>	<input type="checkbox"/>

5. When Installing the Equipment

	Yes	No
Were installers careful with sensitive parts when carrying the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers ensure that various cables, especially optic cables, are not coiled too much?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers follow the manual while installing the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers make sure not to touch or compress sensors while installing?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installer ensure the harness and equipment are well connected and not damaged?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers check if the emergency button (switch) is working properly?	<input type="checkbox"/>	<input type="checkbox"/>
Did the installers balance the equipment well while installing?	<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 the cables organized well?	<input type="checkbox"/>	<input type="checkbox"/>
Is it OK after visually checking 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"/>
Does the Up/Down switch work properly?	<input type="checkbox"/>	<input type="checkbox"/>

7. Software Compatibility

	Yes	No
Is Anti-virus software installed?	<input type="checkbox"/>	<input type="checkbox"/>
Is a firewall installed? If yes, indicate software or hardware.	<input type="checkbox"/>	<input type="checkbox"/>
	Type:	
Is the 3 rd party software installed? If yes, indicate the name(s) and versions.	<input type="checkbox"/>	<input type="checkbox"/>
Is it compatible with software from Vatech® ? If No, indicate the name(s) and versions.	Version:	

8. Electrical Requirements

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

9. Network Requirements

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

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The CE symbol indicates that this product complies with the European Regulation for Medical Devices Regulation 2017/745 as a class IIb device.

Green X 12TM

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