

vatech A9TM

Installation Manual

Model : PHT-30CSS

Version : 1.09



vatech

Notice

This manual covers the installation procedures for the **vatech A9 (Model: PHT-30CSS) digital X-ray imaging system**. The Installation Manual and the User Manual are shipped with each hardware unit.

Brand name: vatech A9 (Model: PHT-30CSS)

Manufactured by: VATECH Co., Ltd.

In this manual, "equipment" refers to **vatech A9**.

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.

Review this manual thoroughly to ensure the proper installation. The **vatech A9** is in steady improvement. The information contained in this manual may be subject to change without notice, justification, or notification of the persons concerned.

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Version: 1.09

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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-60363.
- Genuine original or approved replacement parts are used.
- Maintenance/repair service has been performed by a qualified technician(s) from one of our authorized agents.
- The equipment has been used under normal conditions by the user's manual.
- PC Software has been properly used by the manufacturer's installation instructions and user manuals.

1.2 Customer's Responsibility







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

- Install all required materials before the delivery of the system.
- Complete the floor, ceiling, and walls of the room before installing the equipment.
- Install proper-sized junction boxes, with covers, at the necessary locations.
- Install a mains power with the proper voltage output and an adequate kVA rating.
- Install the circuit breaker specified by this manual.
- Provide the installer(s) with the room's current dimensions, 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 symbols are used in this manual to emphasize information or potential risks to the equipment or user. Ensure that you fully understand each symbol and follow the accompanying instructions.

Please observe all warnings and safety information included in this document to prevent physical injury and damage to the equipment.

| | | |
|---|---------------------------|---|
|  | WARNING | <p>Indicates that a specific hazard is known to exist which, through inappropriate conditions or actions, may cause:</p> <ul style="list-style-type: none"> • Severe personal injury (to the operator and patient) • Substantial property damage. |
|  | CAUTION | <p>Indicates that a potential hazard may exist that through inappropriate conditions or actions will or can cause:</p> <ul style="list-style-type: none"> • Minor injury • Property damage. |
|  | IMPORTANT | <p>Indicates that a potential problem may exist that inappropriate conditions or actions can cause:</p> <ul style="list-style-type: none"> • Property damage. |
|  | NOTE | <p>Indicates precautions or recommendations that should be used in the operation of the system, specifically:</p> <ul style="list-style-type: none"> • Using this Manual • Notes to emphasize or clarify a point. |
|  | RADIATION | <p>Indicates a possible danger from radiation exposure.</p> |
|  | ESD susceptibility | <p>Indicates that an item is susceptible to damage from electrostatic discharges.</p> |

⚠ WARNING

DO NOT touch or hold the sensor or tube head areas while moving, installing, or operating the equipment.

**⚠ WARNING**

DO NOT step on the base unit while installing or operating the equipment.

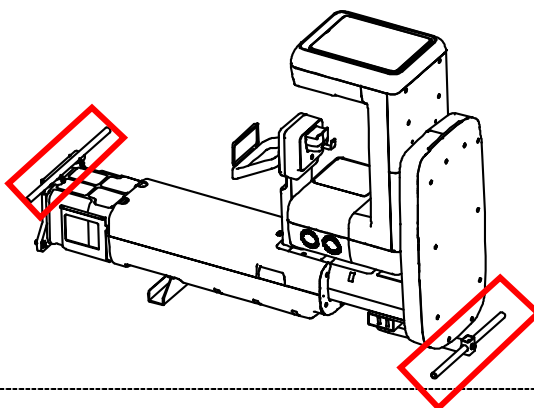
**⚠ WARNING**

DO NOT use an electric drill to fix or remove bolts.
(Use the drill only for drilling wall and floor)



IMPORTANT

vatech A9 has two carrying handles, each located at the top and bottom of the equipment (**see below**). Always hold the handles when moving or lifting the equipment.

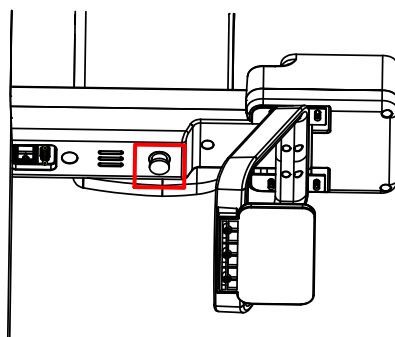


NOTICE

Three installers are required to install the equipment safely.

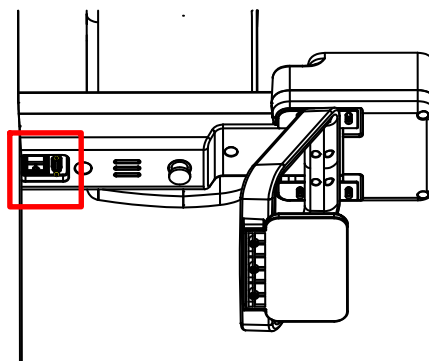
NOTICE

Refer to the image below for the Emergency Stop Switch's location.



NOTICE

Refer to the image below for the Main Power Switch's location.





Warnings Regarding X-ray Radiation

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








- Make sure to read and fully understand the installation instructions before installation. The installer must confirm that the system is installed according to the instructions provided by this manual and perform the appropriate procedures therein.
- If the equipment has been stored at temperatures below 10°C(50°F) for more than a couple of hours, allow the equipment to reach room temperature before applying the mains voltage.
- Installation and related work must only be performed by people authorized by VATECH.
- DO NOT connect any items or equipment to this system that are not part of the system: IEC60601-1-1 (3rd edition: 2005).
- Any equipment not approved by VATECH must comply with the applicable standards: IEC 60950-1 (2nd edition: 2005) for IT equipment (Ex: PC) and IEC 60601-1 (3rd edition: 2005) for medical electrical equipment.
- All operators of this equipment are responsible for ensuring that the requirements outlined in IEC 60601-1-1 (3rd edition: 2005): Safety Requirements for Medical Electrical Equipment are fully met to ensure the safety of patients, operators, and the environment.
- DO NOT touch-sensitive areas such as sensors during installation. These areas are indicated at the appropriate stages during the installation procedures.
- The use of wireless phones may interfere with the operation of this equipment.
- Use an ESD (electrostatic sensitive device) wristband during installation and connect it to a ground wire.
- Touch a ground point to discharge static electricity before handling PCB boards.

IMPORTANT

Installation Site

- The PC Monitor, Emergency Stop Switch, and X-ray Exposure Switch should be installed near the operator so that he or she can manage them simultaneously in an emergency.
- Proper shielding of the room is essential. The installers are responsible for verifying that all applicable radiation safety requirements are met since they vary depending on the country. It is the installer's responsibility to verify that all applicable radiation safety requirements are met.
- DO NOT install the equipment near other devices.
- DO NOT install the equipment in an area that is exposed to strong electromagnetic fields.
- DO NOT install the equipment in an area where there is the risk of an explosion.
- This system's electrical installation shall comply with all local code requirements for electro-medical systems: IEC 60364-7-710:2002.
- It is strongly recommended that a UPS be installed at the same time as the equipment.
- The equipment, PC, and all peripheral devices must be well-grounded.

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 |

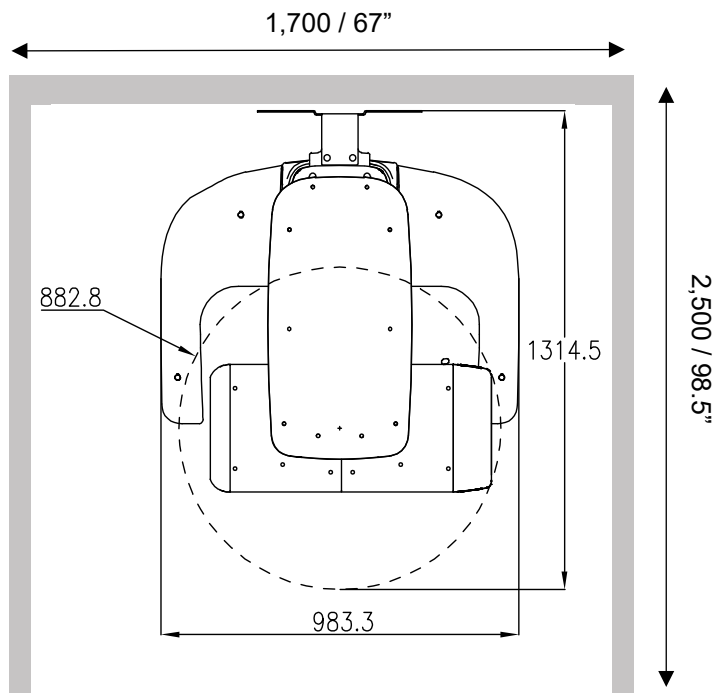
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2. Choosing an Installation Site

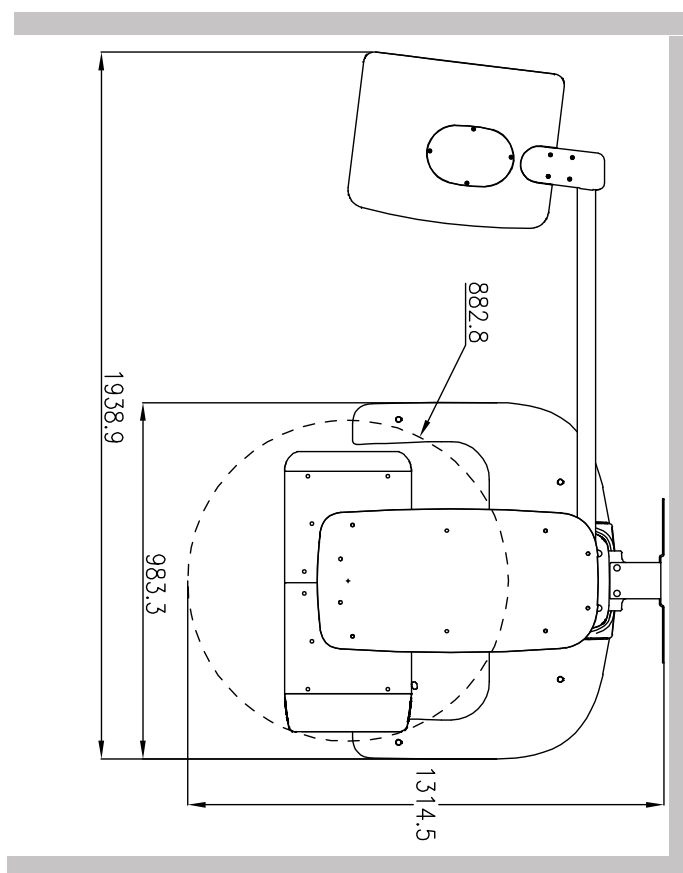
2.1 Room Requirements

IMPORTANT

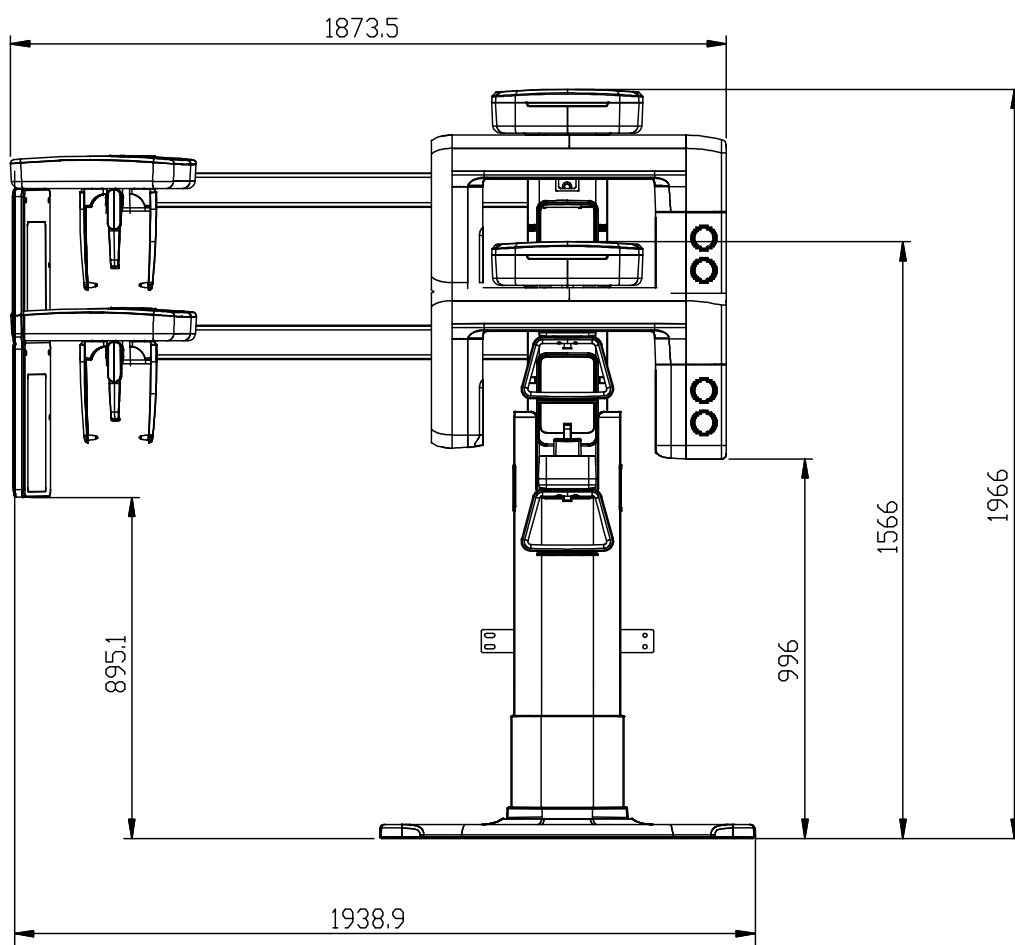
- The equipment's location must allow the operator to observe the patient clearly during the imaging.
- The operator must stay close to the patient during the imaging.
- DO NOT install the equipment on a thick carpet.
- Install the equipment on the anti-static floor.
- Install the PC monitor, Emergency Stop Switch, and X-ray Exposure Switch close to the operator so that he/she can use them simultaneously in an emergency.



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



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



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

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) |

Lead Thickness

≥ 1 mm

The width of the Entrance

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

Floor Area

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

The floor must be able to support a minimum weight of 500 kg/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 2m (7') from the source of the radiation.
- Maintain visible contact with the patient and a clear view of indicators such as the PC's warning lamp and imaging status.

2.2 Specifications for Electrical Installation

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

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

2.3 Electrical Requirement

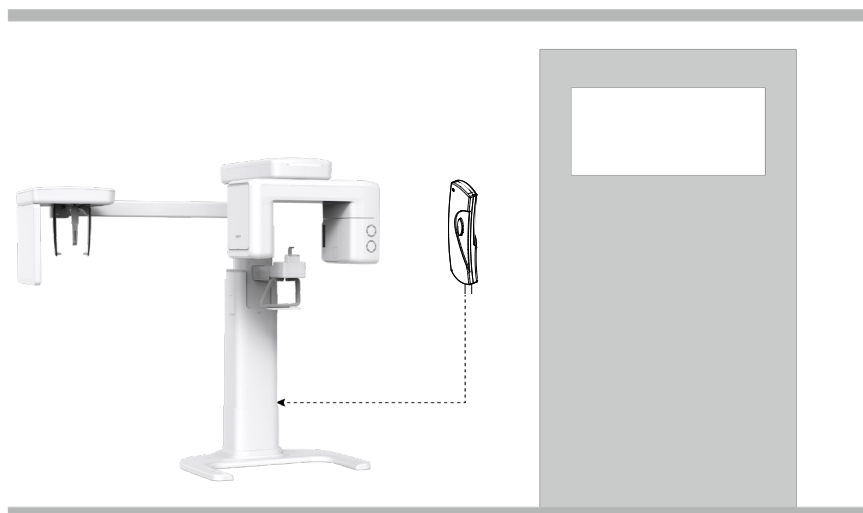
| | |
|--|--|
|  WARNING | <ul style="list-style-type: none"> Both PC and equipment must use the same power line if connected to an MPSO (Multiple Portable Socket Outlet). If it is unable to use the same power line, use different power outlets for each device. If MPSO must be used, ensure that the PC and equipment are connected to the same MPSO. |
|  WARNING | <p>Use a dedicated power outlet for the power cord. Failure to do so may result in unstable system operations caused by power fluctuations.</p> |
|  NOTICE | <p>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.</p> |

2.4 Exposure Switch Installation Options

Depending on how the user decides to operate the equipment, exposure installation method can be different. For the operator's safety and the equipment's best performance, VATECH recommends our installers to follow the **option no.2** for the exposure switch installation.

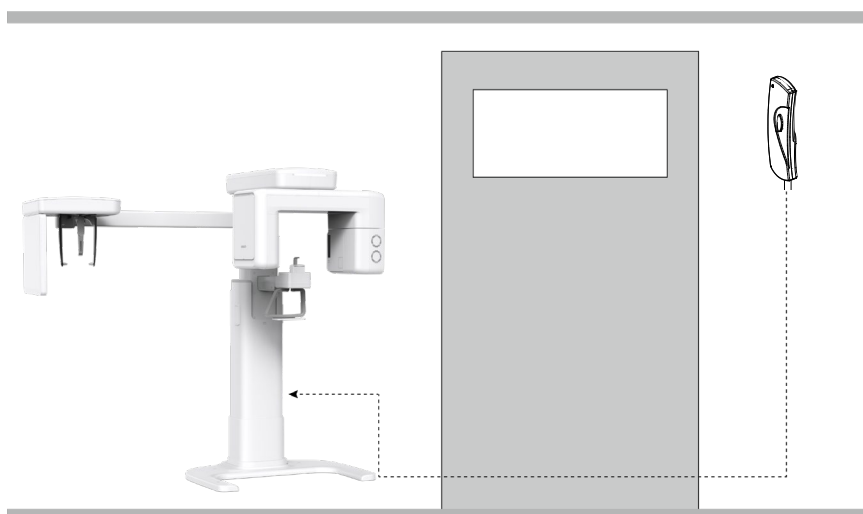
Option No. 1:

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



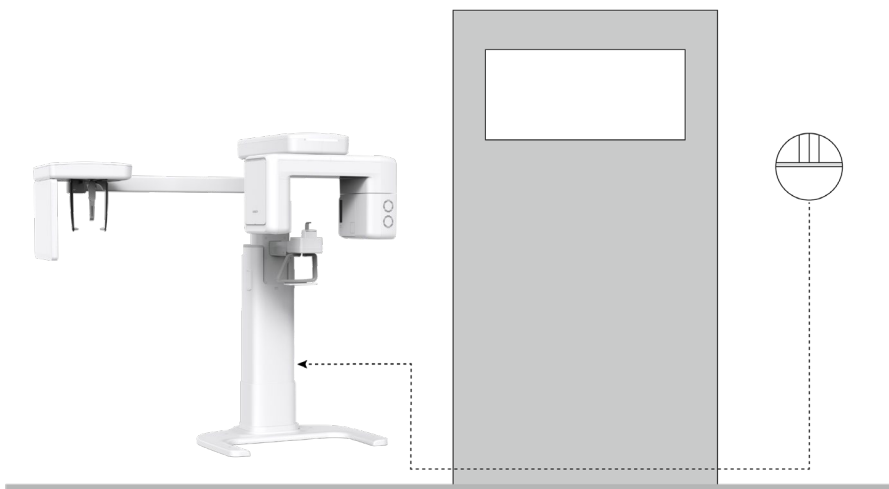
Option No. 2:

The user operates the **Exposure Switch** from outside of the X-ray room. The switch holder is mounted outside the room as well.



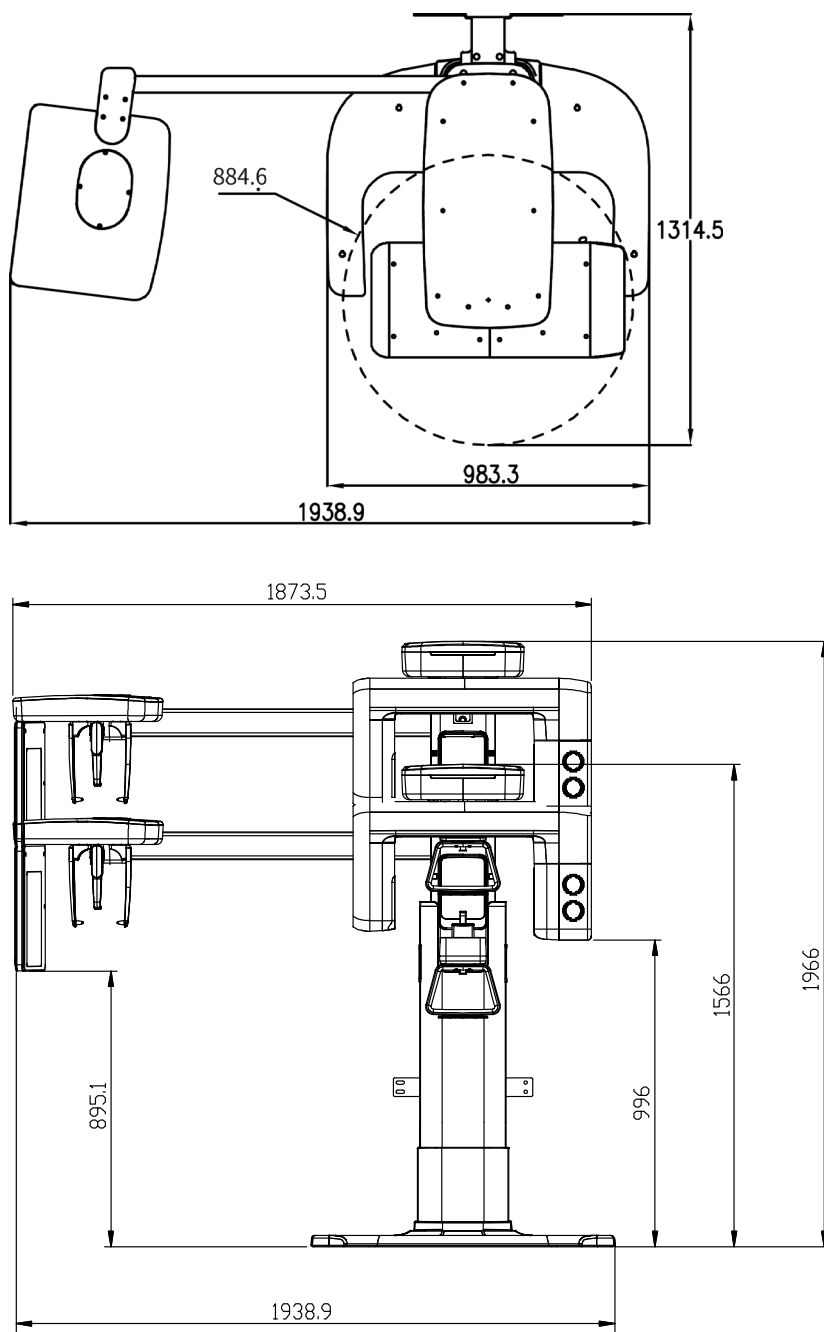
Option No. 3:

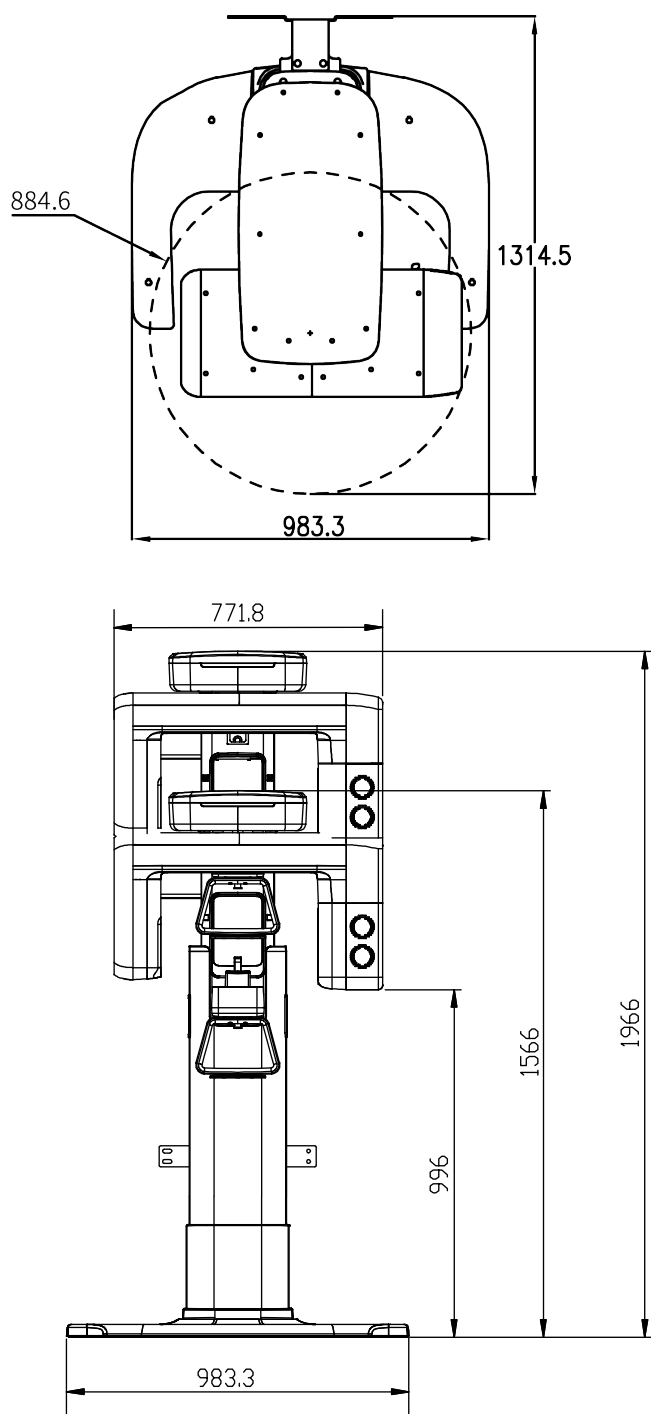
The user operates the 3rd party Exposure Switch (not provided by VATECH). In this case, go to **Appendix C Connecting the 3rd party, The Exposure Switch**, for more information.



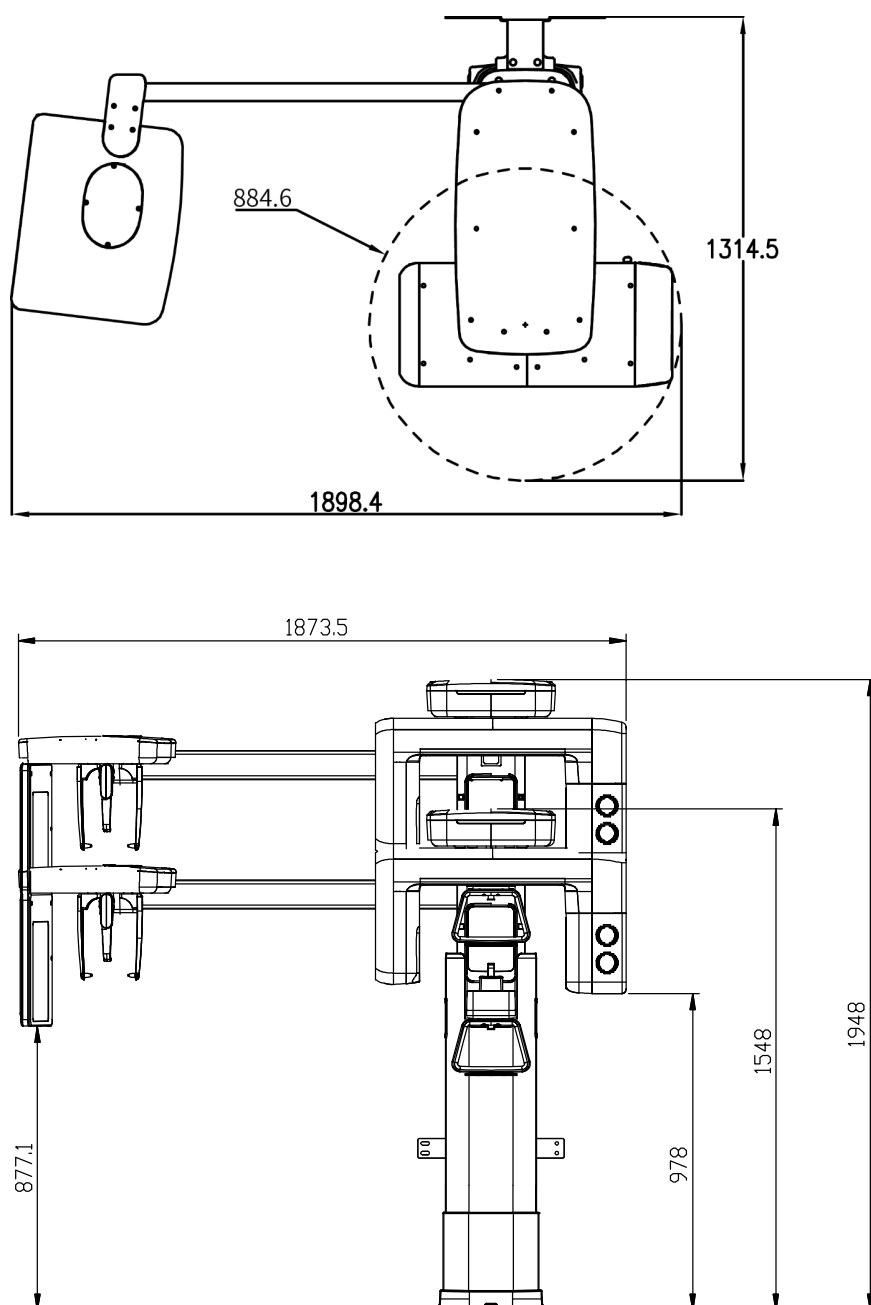
2.5 Installation Versions

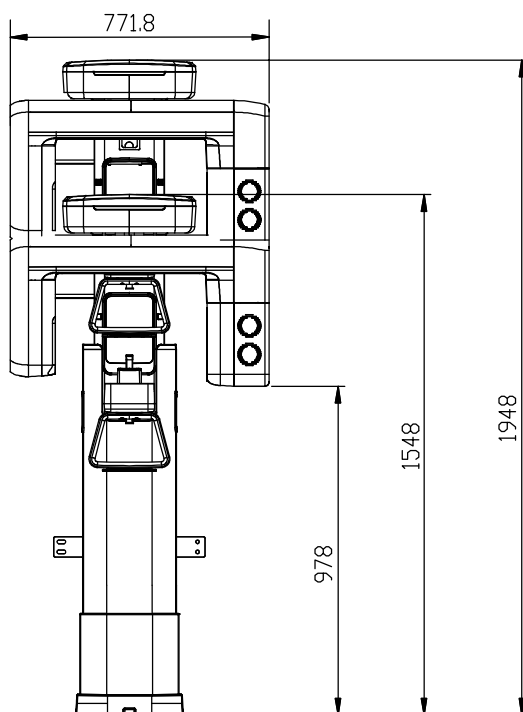
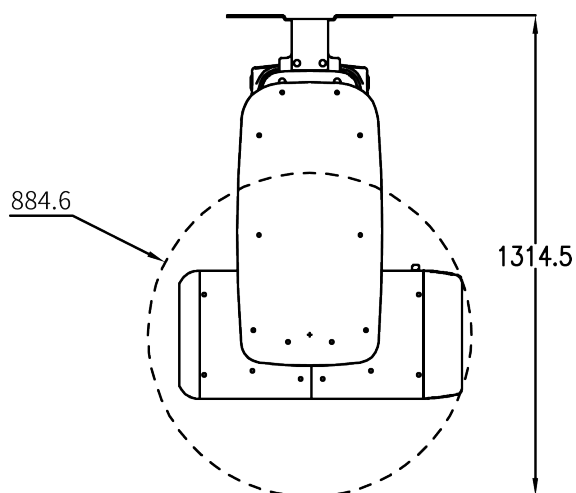
Base Stand Type (with CEPH unit)



Base stand Type (without CEPH unit)

Non-Base stand Type (with CEPH unit)



Non-Base stand Type (without CEPH unit)

2.6 Installing the Warning Lamp and Door Interlock Switch

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

- This system can be equipped with a warning lamp and the Door Interlock Switch, 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** for a complete installation guide.

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


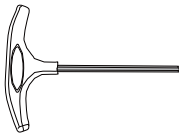
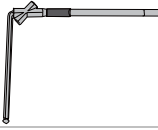
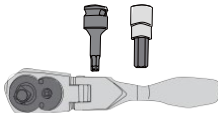
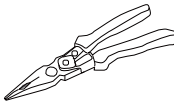
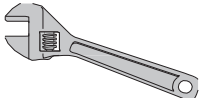
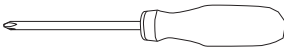

3. Before Installing the System

IMPORTANT


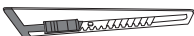


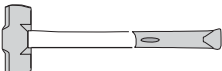
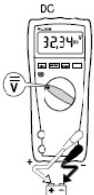

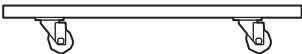
Before or during the installation, ensure to go over checklists from No.3 to No.6 in **Appendix E. Installation Checklist**.

3.1 Required Tools

The following tools are required to install the **vatech A9**.

| 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 |

3. Before Installing the System

| Item | Figure | Size |
|------------------------|--|-------------------|
| Anti-Static Glove |  | N/A |
| Knife |  | N/A |
| Tape Ruler |  (for Wall Mount type) | 5 m |
| 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 |

3.2 Checking the ShockWatch and TiltWatch

VATECH carefully inspects all equipment before shipping. But installers are strongly recommended to check the conditions of the ShockWatch and TiltWatch before opening the package, as well as the package's overall condition.

IMPORTANT

The installers and supervisors must check the conditions of indicators on each package before opening it.

NOTICE

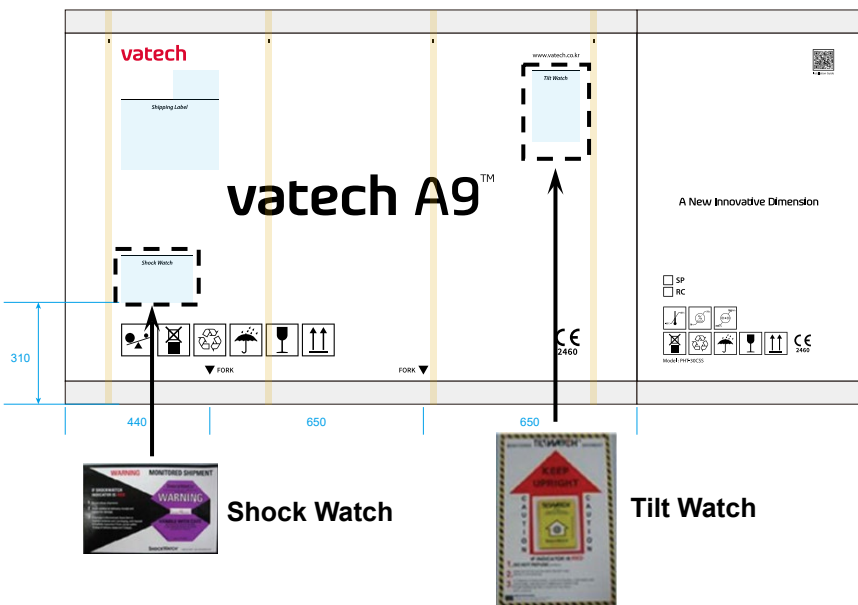
- The **ShockWatch** and **TiltWatch** are affixed only to the main box, which contains the equipment.
- The **ShockWatch** and **TiltWatch** turn red as the package receives a shock during transportation. However, the color change does not necessarily mean that the equipment has been damaged.

Check the following before opening each package:

1. Inspect all packages for external damages.
2. Find the **ShockWatch** and **TiltWatch** (see the image below), which are affixed to the main box that contains the equipment, and check if their color has changed.

IMPORTANT

If you see that the **ShockWatch** and **TiltWatch** have been activated or find damage on the package, do not open it, and contact your VATECH service representative.



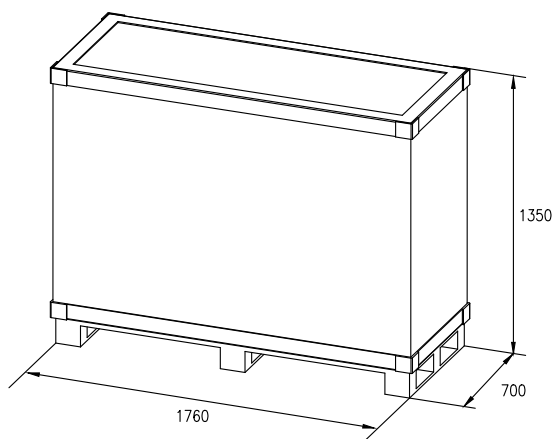
3.3 Unpacking Boxes

NOTICE

- All packages and Styrofoam used to ship this equipment are recyclable.
- Return the package to your **VATECH** Service Representative or dispose of it following the legal regulations of your country.

3.3.1 Box No. 1 - Main Box

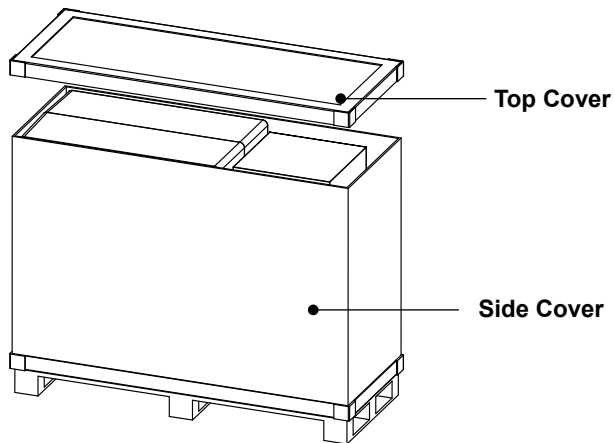
| Component | Size (mm / inch) | Weight (kg/lbs.) |
|--|--|------------------|
| <ul style="list-style-type: none"> ▪ Column and Rotating Unit Assembly ▪ Accessories and Parts ▪ PC System (Optional) ▪ Monitor (Optional) | 1760 (L) x 700 (W) x 1350 (H) / 69.29 (L) x 27.56 (W) x 53.15 (H) | 221 / 487 |



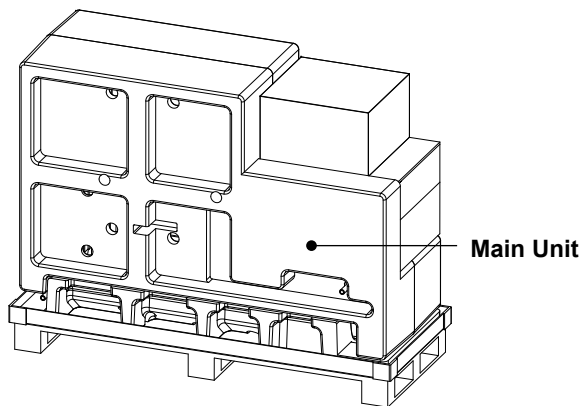
Removing the Cover

To remove the main box cover:

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



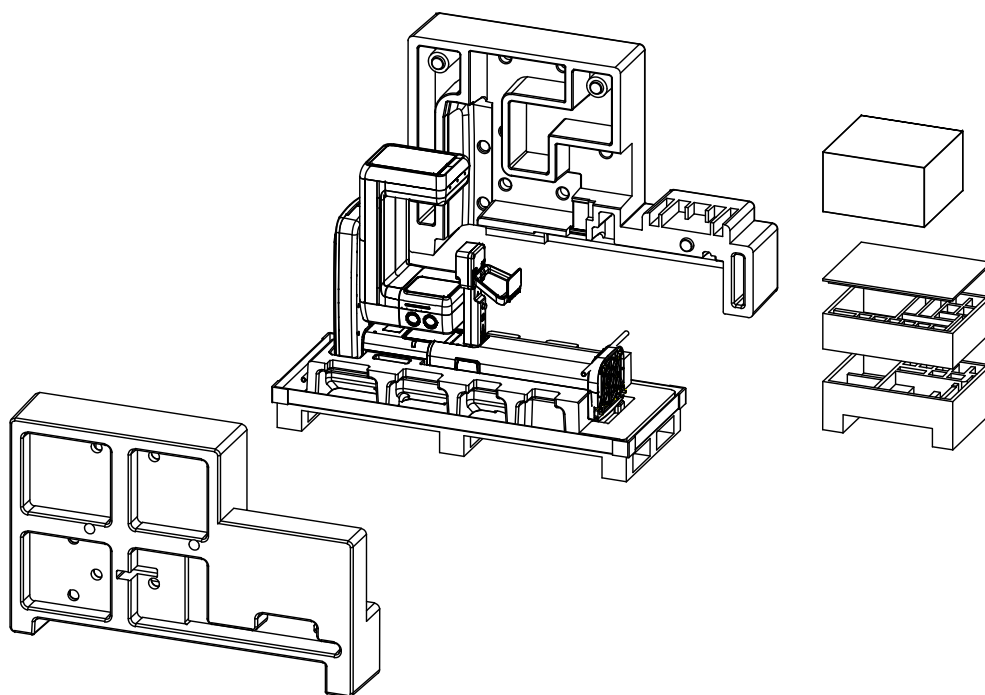
3. After removing the side cover, the main box shall look like the image below.



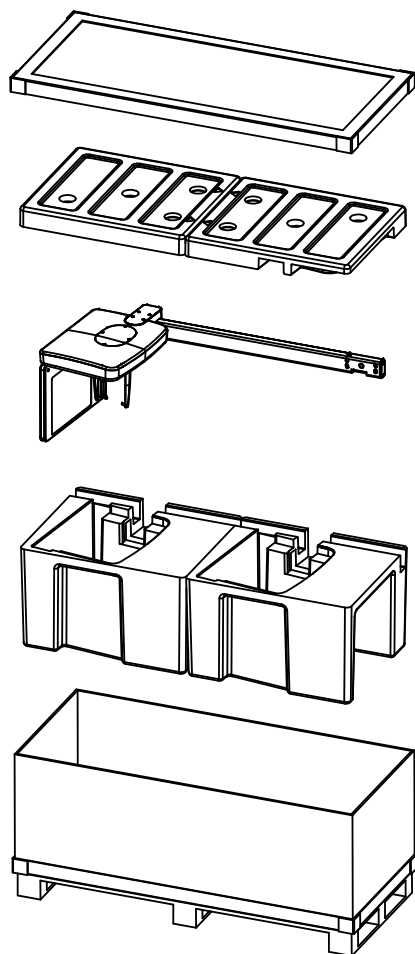
While one installer is removing the side cover, another installer must hold the box to prevent the main unit from falling.

3. Before Installing the System

4. Remove the plastic wrap covering the box with a cutter
5. Remove foams covering the Main Unit and open the accessory box, as shown in the image below.

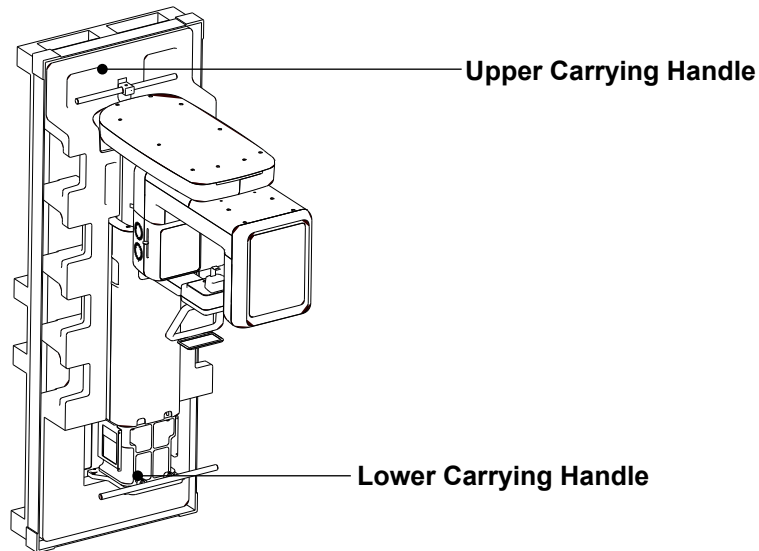


CEPH Box Configuration

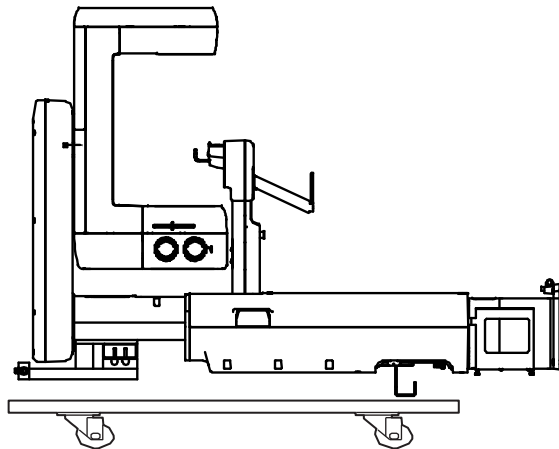


Transportation

1. Pull out the Main Unit from the pallet using the carrying handles as in the image below. (There are two handles attached to the top and bottom of the unit)

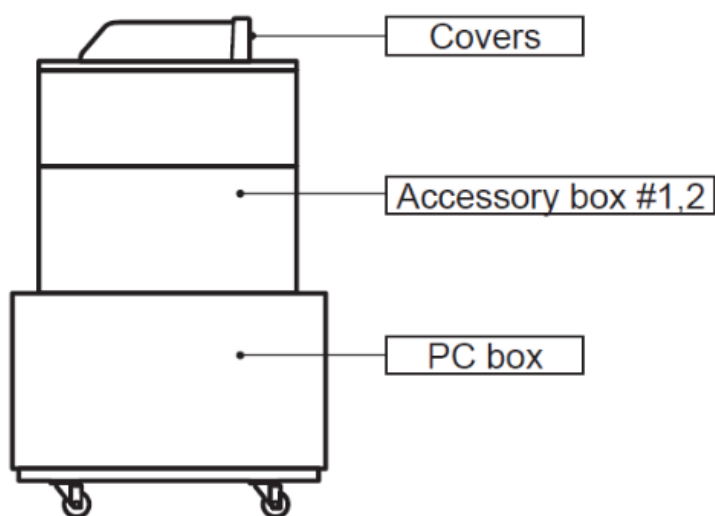


2. Put the main unit with the EPS (Main Base) on a Transport Dolly and move it to the installation site.



IMPORTANT

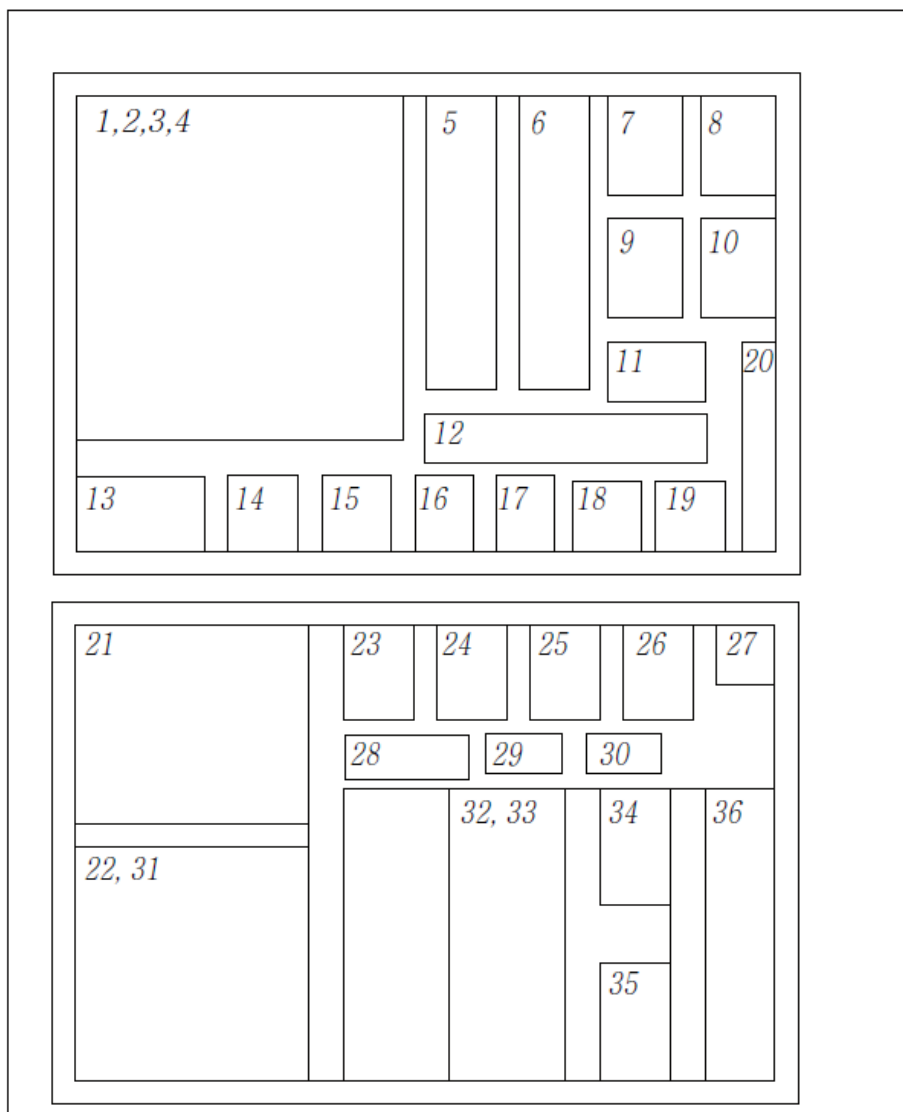
- When placing the Main Unit on the dolly, make sure that the center of the mass indicator is aligned with the center of the dolly.
- If you move the unit manually, make sure that the person holding the upper handle takes the lead.



<Transportation Example>










3.4 Checking Parts

3.4.1 Location Layout of the Parts and Accessories

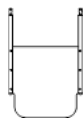

































3.4.2 Parts List

In the Accessory Box 1 & 2

| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|--|---------------------|---|-----|------------------------|--|
| 1 | Manuals | User Manual | | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | | Installation Manual | | 1 | | 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 | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | 3D / 2D Viewer License Key | |  | 1 | EzDent-i & Ez3D-i | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | SP Sticker | |  | 1 | For Pano Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Remote Exposure Switch (Doorbell type) | |  | 1 | Available in U.S. only | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 2 | Remote Exposure Switch Cable (Doorbell type) | |  | 1 | Available in U.S. only | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Exposure Switch | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Holder | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Double-Sided Sticker | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Screws | M3 x 8 |  | 3 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |











3. Before Installing the System

| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|--------------------------|----------------------|---|-----|---|--|
| 3 | Carpus Plate | |  | 1 | CEPH Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Handrest Sticker | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 4 | Alignment Plate | |  | 1 | Floor Mount Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 5 | Chinrest | TMJ |  | 1 | *Not available in U.S. and RU. | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 6 | Anti-Static Gloves | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 7 | Chinrest | Special(Low) |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 8 | Bite Block | Normal |  | 1 | For dentate patients | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | | Edentulous |  | 1 | For edentulous patients | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 9 | Chinrest | Normal |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 10 | Bite Block | Deep |  | 1 | Available only in certain regions of Asia | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 11 | Bite Cover | Sanitary Vinyl Cover |  | 1 | For Normal Bite | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 12 | Bite Block | Special A |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | | Special B |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 13 | Left Blank Intentionally | | | | | |
| 14 | Cap | For Ear Rods |  | 2 | CEPH Option (2: on the equipment) | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Silicon Cover | For Nasal Positioner |  | 1 | CEPH Option: extra | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 15 | Left Blank Intentionally | | | | | |

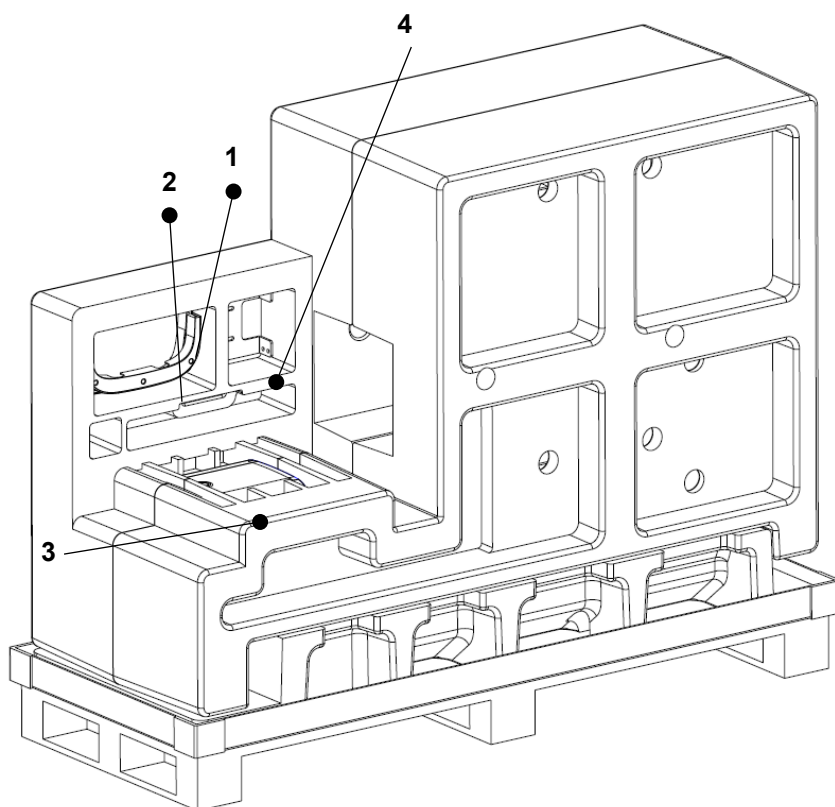
| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|--------------------------|--|---|-----|--------------------|--|
| 16 | Silicon Cap | White |  | 14 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 17 | Base Cap | White Silicon |  | 4 | Base Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 18 | Terminal Cap | White Silicon |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 19 | Left Blank Intentionally | | | | | |
| 20 | Cable Tie | |  | 10 | - | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 21 | Cable | Ethernet Cable |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Ethernet Card | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 22 | Protractor | |  | 1 | - | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 23 | Wrench Bolt | M10 x 25 w/ Spring and Flat Washer |  | 4 | Base Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 24 | Wrench Bolt | M8 x 20 |  | 2 | Base Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 25 | Wrench Bolt | M8 x 20 |  | 4 | Ceph Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | C_E_Washer | |  | 4 | Ceph Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 26 | Truss Bolt | M4 x 6 |  | 13 | Base Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 27 | Pan Head Screw | M4 x 6 |  | 11 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 28 | Ceph Cover | - |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Washer Head Screw | M3 x 6 |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 29 | Flat Head Screw | M4 x 8 |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 30 | Socket Set Screw | M10 x 15 |  | 4 | Floor Mount Option | Yes <input type="checkbox"/> No <input type="checkbox"/> |

3. Before Installing the System





| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|--------------------------|--------------------------------------|---|-----|------------------------|--|
| 31 | Wall Plate | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Terminal Block 3 Pole | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 32 | Wall Mount Cap | Silicon |  | 12 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Wall Mount Cap | Silicon |  | 5 | Available in U.S. only | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | UP / DOWN Switch Sheet | |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 33 | UP / DOWN Switch | |  | 1 | Optional | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | UP / DOWN Switch Holder | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | UP / DOWN Switch Sticker | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Flat Head Screw | M3 x 8 |  | 3 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Middle Wall Bracket | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Wrench Bolt | M8 x 25 (2 Sems) |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Nut | M8 |  | 2 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Wall Mount Cap | Silicon |  | 4 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 34 | Wood Screw | M12 x 70 |  | 2 | For Wood | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Anchor Bolt | 5/16 x 60 w/ Spring and Flat Washers |  | 4 | For Concrete | Yes <input type="checkbox"/> No <input type="checkbox"/> |

| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|------------------|--|---|-----|-----------------------------|--|
| | Wood Screw | M8 x 60 |  | 4 | For Wood U.S. Qty: 8 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Spring Washer | M8 |  | 4 | For Concrete U.S. Qty: 8 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Flat Washer | M8 |  | 4 | For Concrete U.S. Qty: 8 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Flat Anchor Bolt | M8 x 30 |  | 4 | For Concrete U.S. Qty: 8 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Hex Bolt | M8 x 15 |  | 4 | For Concrete U.S. Qty: 8 | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 35 | Wrench Bolt | M8 x 20 w/ Spring and Flat Washers |  | 2 | For Wall Bracket | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Nut | M8 |  | 2 | For Wall Bracket | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Wrench Bolt | M8 x 15 w/ Spring and Flat Washers |  | 4 | For Wall Bracket | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 36 | Wall Bracket | - |  | 1 | Available in U.S. only | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| | Wall Bracket | - |  | 1 | Not available in U.S. | Yes <input type="checkbox"/> No <input type="checkbox"/> |

3. Before Installing the System



Other Locations


| Part No. | Items | Specification | Figure | QTY | Comments | Confirmed (OK?) |
|----------|----------------------|---------------|---|-----|----------|--|
| 1 | Base Top Cover Rear | - |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 2 | Base Top Cover Front | - |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 3 | Column Rear Cover | |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| 4 | Column Bracket | - |  | 1 | | Yes <input type="checkbox"/> No <input type="checkbox"/> |

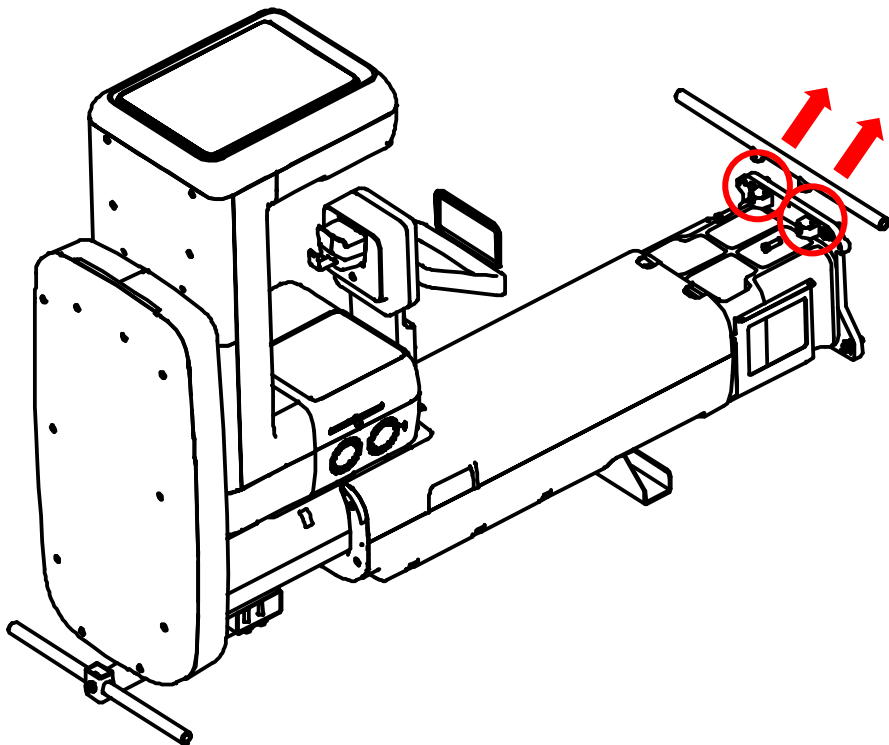
4. Installing the Equipment: Base Stand (Optional)

4.1 Assembling the Base and the Main Unit

Follow the steps below to assemble the base and the main unit:

1. Remove bolts on the lower carrying handle with an Allen Wrench.

| Tool | Allen Wrench | 6 mm / 0.24" |  |
|------|--------------|--------------|---|
|------|--------------|--------------|---|

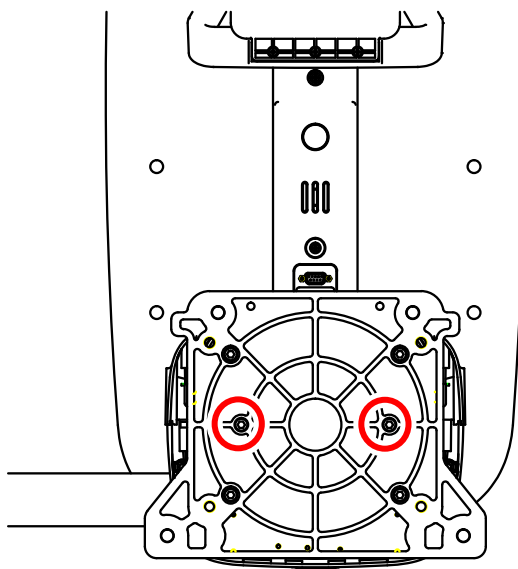




NOTICE

If you are installing the equipment on a concrete floor, go to **4.4 Fixing the base (Optional)** and completing step 1 first. Then return to the **4.1 Assembling the Base and Main Unit**.

4. Installing the Equipment: Base Stand (Optional)

- Put two wrench bolts into the holes (**see below**) and loosely tighten them with an Allen Wrench to connect the Base Unit to the Column Unit.

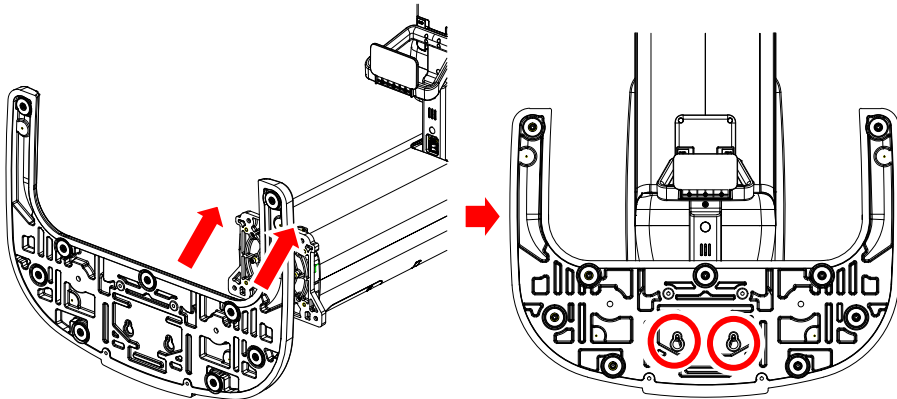


| | | | |
|---------------------|--------------|----------------------------------|---|
| Tool | Allen Wrench | 6 mm / 0.24" |  |
| Parts and Accessory | Wrench Bolt | M8 x 20 - 2 pcs (Part No. 24) |  |

IMPORTANT

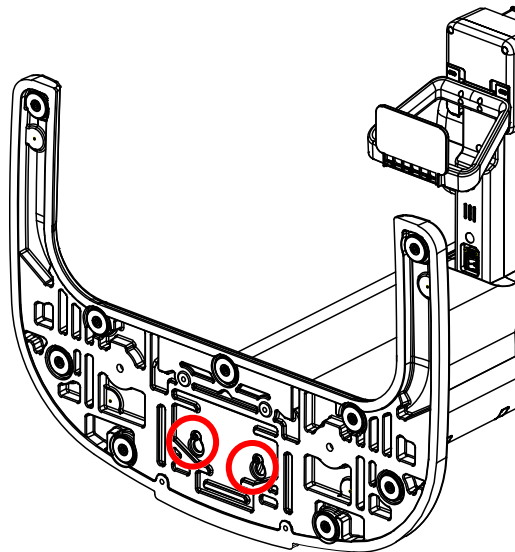
Put the bolts into the holes until about 15 mm are left outside.


3. Connect the Base Unit to the Column Unit using the two bolts provided. Insert the bolts into the locations indicated in the image below.



Hold the base unit to keep it from falling.

4. Tighten them with an Allen Wrench to connect the Base Unit to the Column Unit.



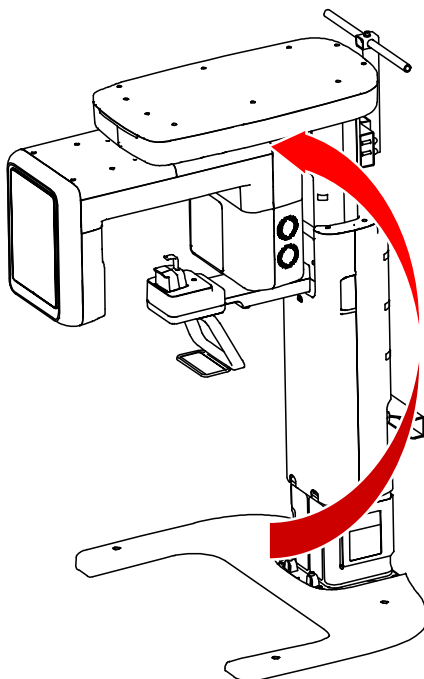
| | | | |
|-------------|--------------|--------------|---|
| Tool | Allen Wrench | 6 mm / 0.24" |  |
|-------------|--------------|--------------|---|





Keep the cables away when erecting the equipment.

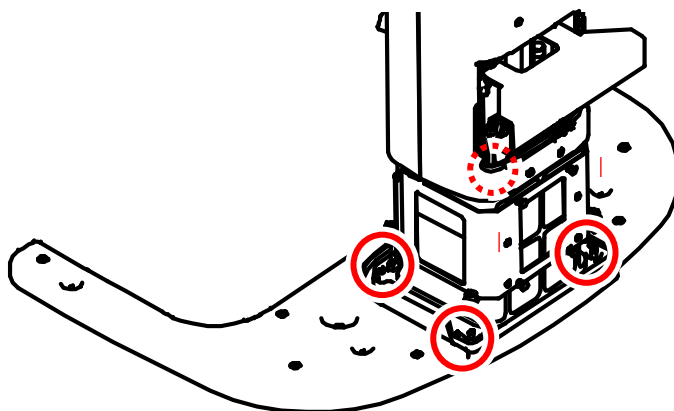
4. Installing the Equipment: Base Stand (Optional)

5. Lift the equipment slowly using the upper carrying handle.




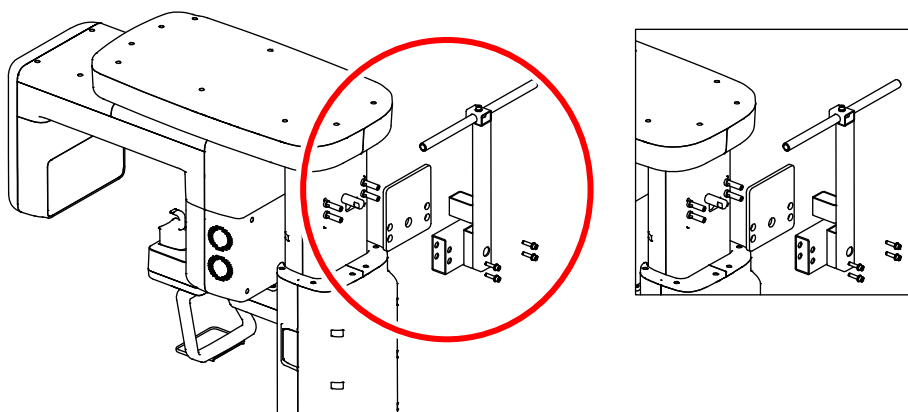
6. Insert a Wrench Bolt into each hole at four corners of the Column Unit. Tighten them with an Allen Wrench to fix the Column Unit on the Base.

| | | | |
|----------------------------|--------------|---|--|
| Tool | Allen Wrench | 6 mm / 0.24" |  |
| Parts and Accessory | Wrench Bolt | M10 x 25 w/ Spring and Flat Washers – 4 pcs (Part No. 23) |  |



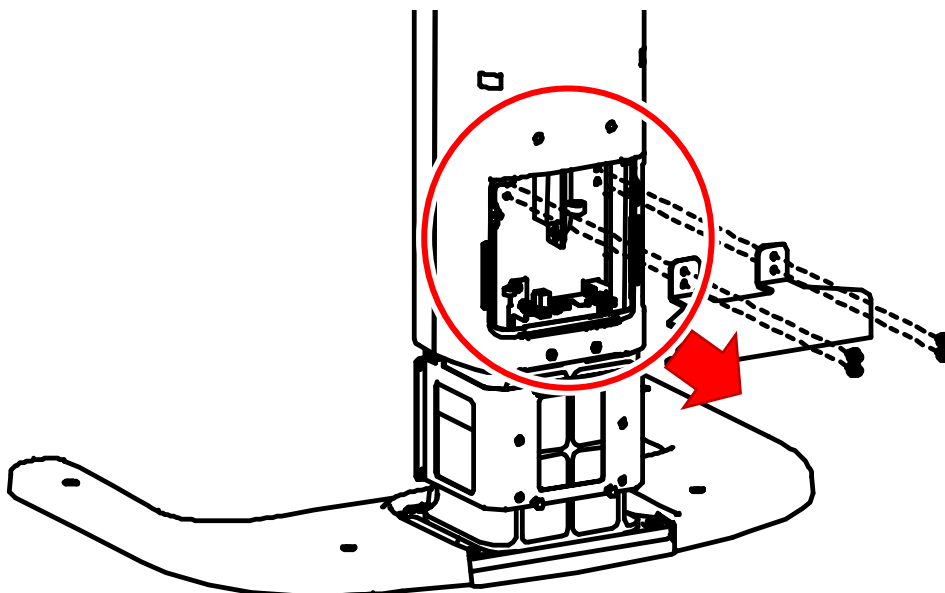
7. Remove the top carrying handle using an Allen Wrench.

| Tool | Allen Wrench | 6 mm / 0.24" |  |
|------|--------------|--------------|---|
|------|--------------|--------------|---|



All four Wrench bolts, loosely tightened in steps 4 and 6, must be tightened at this step.

8. Loosen the four bolts with an Allen Wrench and remove the part attached to the Column.

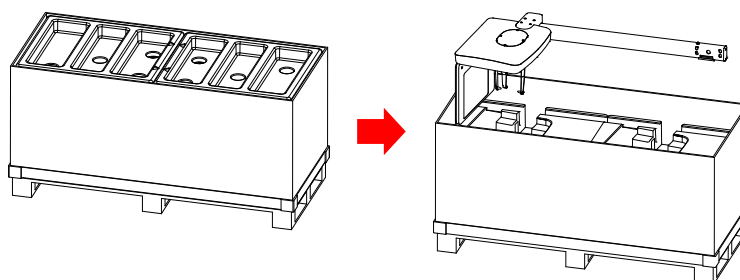


4.2 Installing the CEPH Unit (Optional)

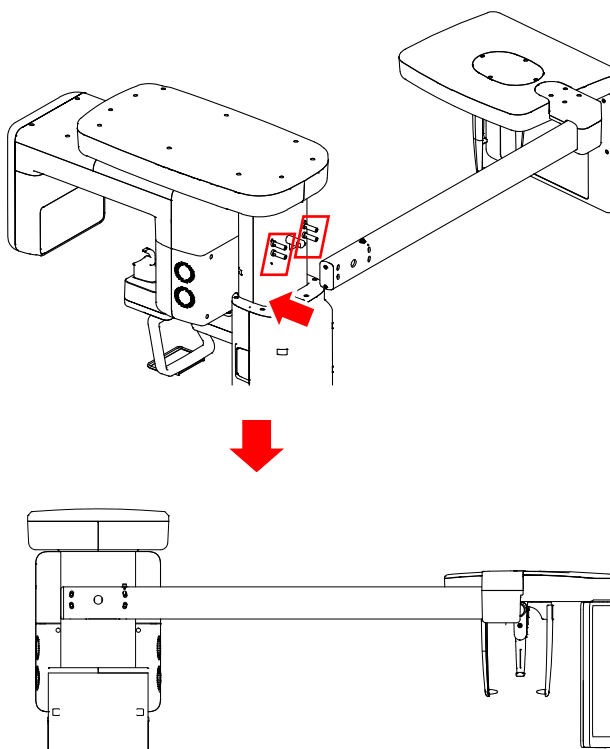


DO NOT hold the areas of the collimator, sensor, and tube head.





1. Open the CEPH box and take out the components.

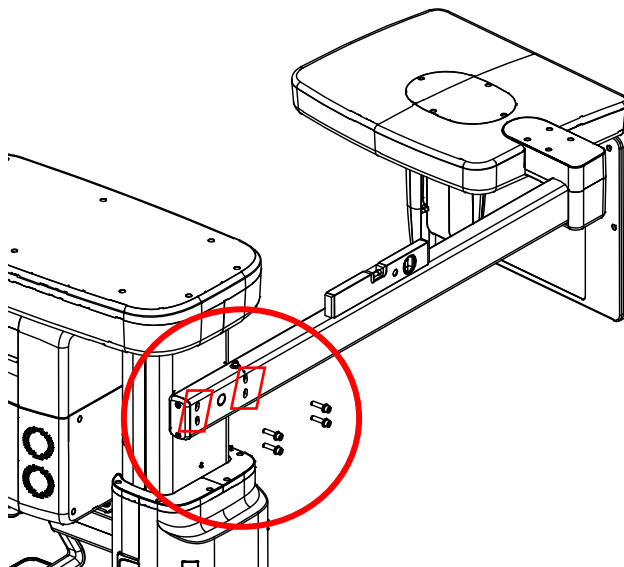


2. Remove the plastic wrap covering the Column Unit and the CEPH cable.
3. Push the CEPH arm in the direction indicated below. Ensure that all four studs come through holes.



4. Put the four wrench bolts into each hole and tighten with an Allen Wrench to fix the CEPH arms on the Main Unit.

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

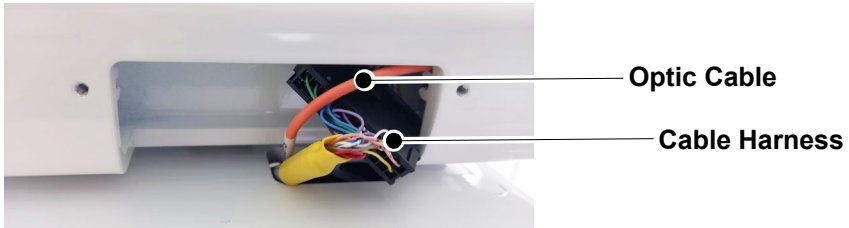


IMPORTANT

(If necessary) Place the Spirit level on the CEPH arm and adjust the M8 x 20 bolts.

4. Installing the Equipment: Base Stand (Optional)

5. Connect the Fiber Optic Cable and the Cable Harness.




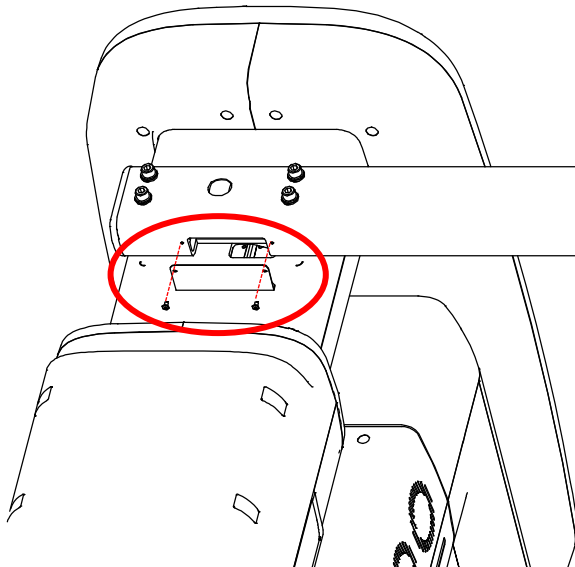
⚠ CAUTION

When managing the fiber optic cable,

- DO NOT bend, pull, or crush it.
- Ensure to remove the fiber optic cable before connecting it.
- DO NOT touch the cable's tip.
- Insert the fiber optic cable until you hear a 'click' sound.

6. Assemble the Cable Cover using the two bolts provided.

| Parts and Accessory | Washer Head Screw | M3 x 6 - 2 pcs (Part No. 28) |  |
|---------------------|-------------------|---------------------------------|---|
|---------------------|-------------------|---------------------------------|---|



4.3 Installing the Wall and Column Brackets

Assembling the Column Bracket



WARNING

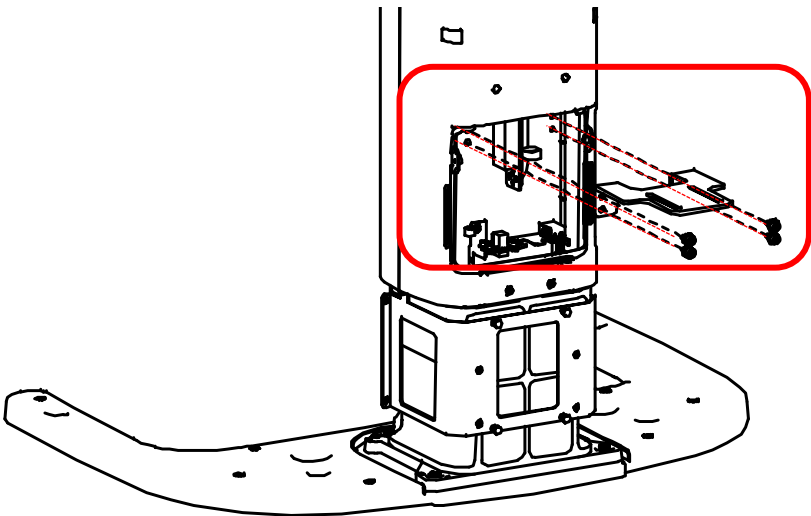
The column bracket must be installed. Otherwise, the equipment may vibrate during scanning.

1. Move the equipment close to the wall selected for the installation.
2. Remove the plastic wrap covering the Column Unit with a cutter.
3. Prepare the Column Bracket.

| | | | |
|----------------------------|----------------|---|--|
| Parts and Accessory | Column Bracket | - | |
|----------------------------|----------------|---|--|

4. Assemble the column bracket on the back of the Column Unit using the four Wrench Bolt provided.

| | | | |
|----------------------------|--------------|---|--|
| Required Tool | Allen Wrench | 6 mm / 0.24" | |
| Parts and Accessory | Wrench Bolt | M8 x 15 w/ Spring and Flat Washers - 4 pcs (Part No. 35) | |




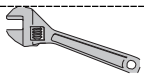


4. Installing the Equipment: Base Stand (Optional)

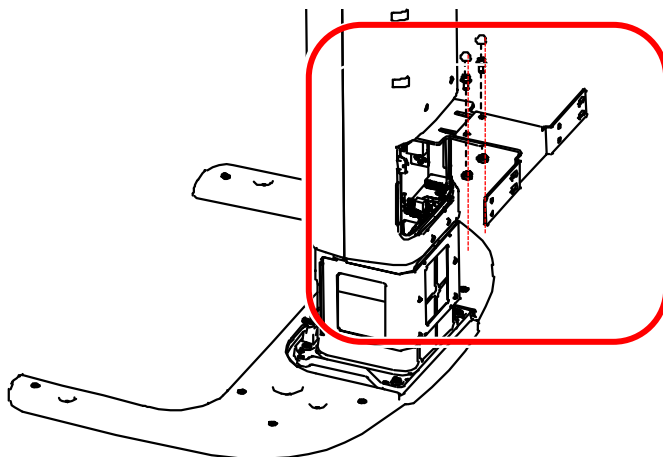
Combining Column and Wall Brackets

1. Prepare the Wall Bracket.

| | | | |
|----------------------------|--------------|---|---|
| Parts and Accessory | Wall Bracket | - |  |
|----------------------------|--------------|---|---|

2. Connect the Wall Bracket to the Column Bracket previously assembled in the Column Unit's back, using two bolts and nuts provided.

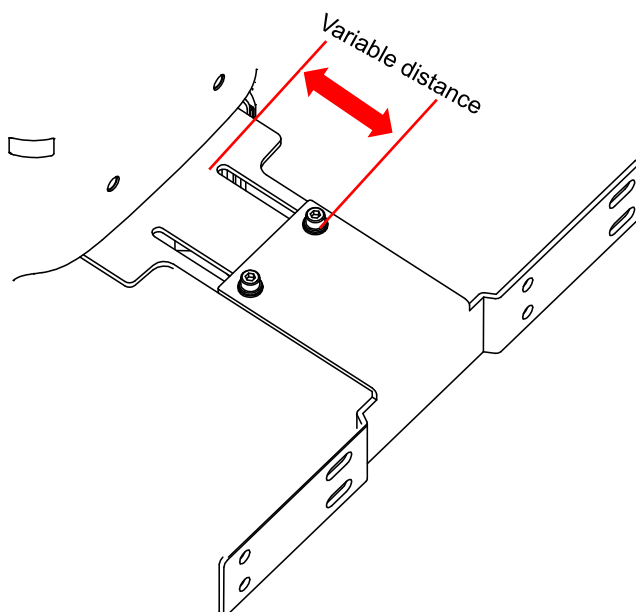
| | | | |
|----------------------------|---------------|--|---|
| Required Tool | Allen Wrench | 6 mm / 0.24" |  |
| | Monkey Wrench | - |  |
| Parts and Accessory | Wrench Bolt | M8 x 20 w/ Spring and Flat Washers (Part No. 35) - 2 pcs |  |
| | Nut | M8 - 2 pcs (Part. No. 35) |  |



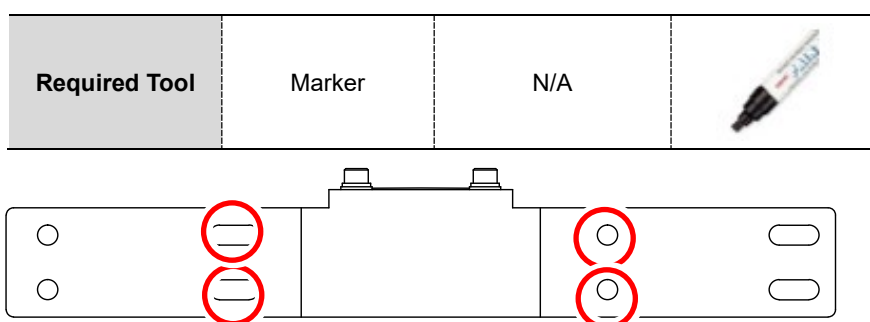
DO NOT tighten the bolts fully yet.

Marking Points on the Wall

1. Move the equipment close to the installation site.
2. Move the wall bracket until it touches the wall.



3. Mark the anchor bolt locations on the wall.





4. Installing the Equipment: Base Stand (Optional)

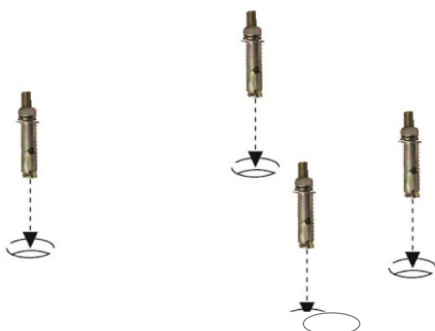
Drilling on the Wall

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





2. Remove the debris and clean the holes using the dust pump.
3. Using the hammer, insert a Fischer strong anchor into the hole.

| | | | |
|----------------------------|------------------|-----------------------------------|---|
| Required Tool | Hammer | N/A |  |
| Parts and Accessory | Flat Anchor Bolt | M8 x 30 (Part. No. 34) - 4 pcs |  |







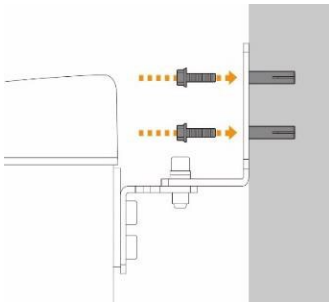
4. Using the hammer, insert an EHS tool into the inner bolt.

| | | | |
|----------------------------|----------|-----------------|--|
| Required Tool | Hammer | N/A |  |
| Parts and Accessory | EHS tool | EAW H 8 x 30 |  |

Combining the Equipment with the Anchor Bolts

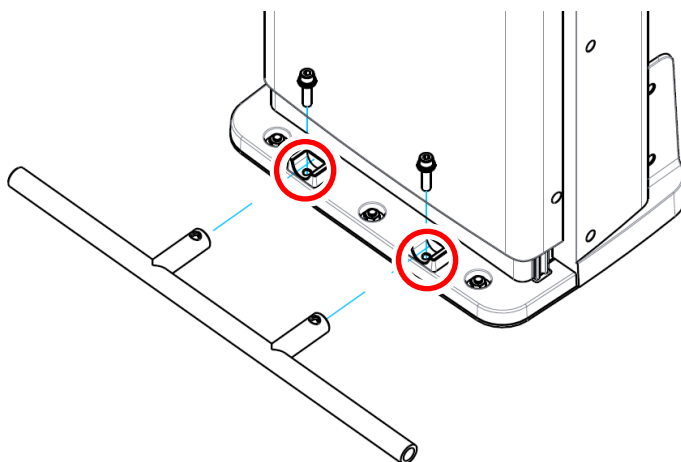
1. Place the equipment on the alignment plate while observing four Hex bolts appropriately inserted through each hole.

| | | | |
|----------------------------|---------------|---------------------------|---|
| Required Tool | Torque wrench | Spanner type |  |
| | Hex Bolt | M8 x 15 (Part. No. 34) |  |
| Parts and Accessory | Spring washer | M8 (Part. No. 34) |  |
| | Flat washer | M8 (Part. No. 34) |  |




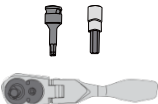



4. Installing the Equipment: Base Stand (Optional)

2. Remove the Lower carrying handle.

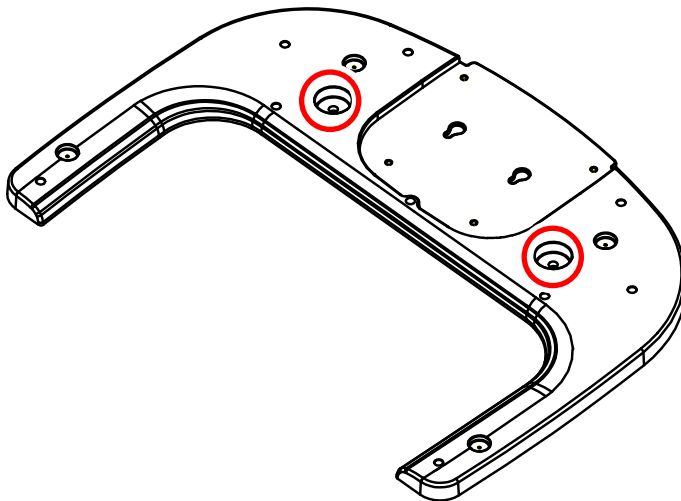


4.4 Fixing the Base (Optional)

Concrete Floor

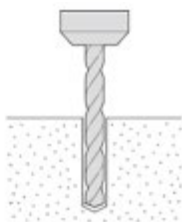
| | | | |
|---------------------|----------------|---|---|
| Required Tool | Hammer Drill | L = 200 mm (7+-.9") |  |
| | Ratchet Wrench | Tips: 3 mm - 8 mm (0.12" - 0.3") |  |
| | Hammer | N/A |  |
| Parts and Accessory | Anchor Bolt | 5/16 x 60 w/ Spring and Flat Washers - 2 pcs (Part No. 34) |  |
|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

1. Place the Base Unit on the floor where you plan to install the equipment. And mark two locations to insert anchor bolts. (**see below**)

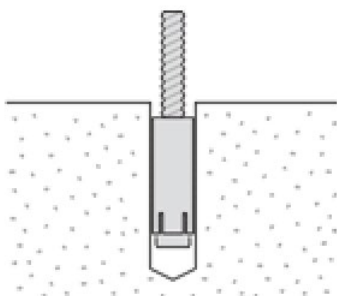


4. Installing the Equipment: Base Stand (Optional)

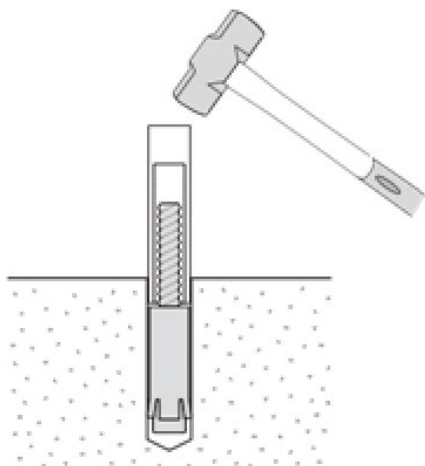
2. Drill the floor holes of size 12 mm x 30 mm (depth) using the concrete hammer drill.



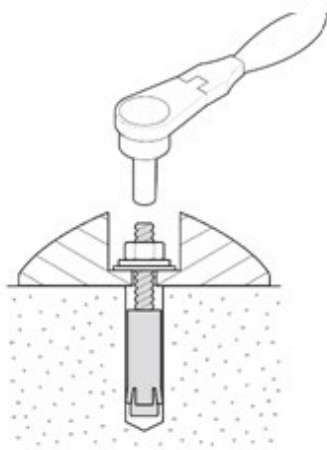
3. Remove the debris and clean the holes using the dust pump.
4. Remove nuts and washers, and put the anchor bolts into the holes.



5. Secure the anchor bolts with the hammer.





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

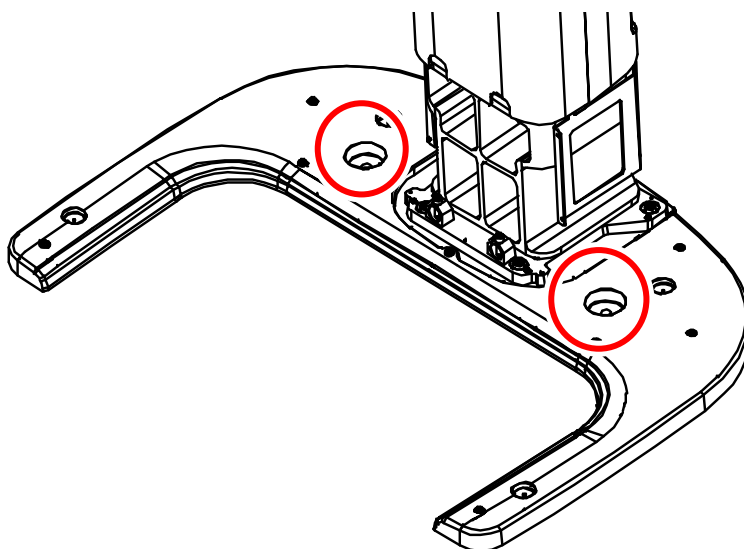


4. Installing the Equipment: Base Stand (Optional)

Wooden Floor




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

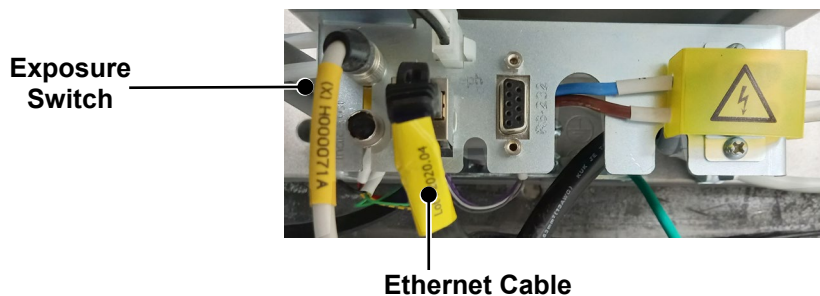
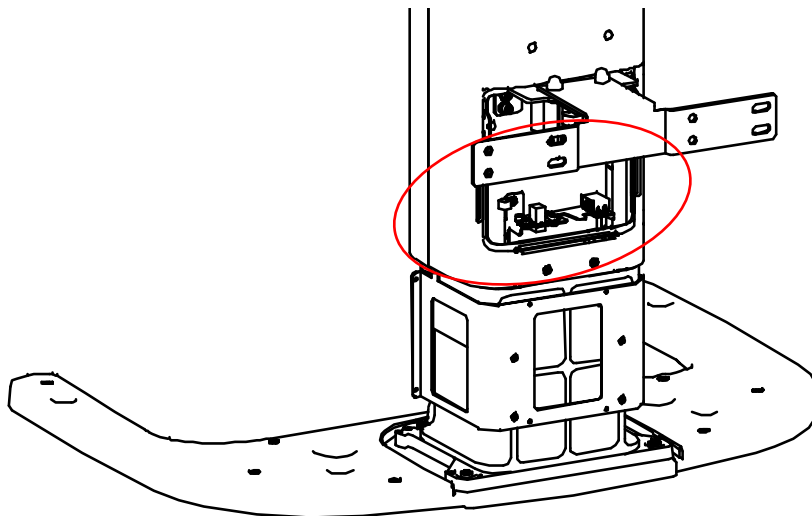
1. Secure the base unit using the wood screws provided.



4.5 Connecting the Cables to the Equipment.

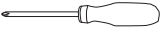
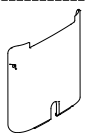

1. Connect the Ethernet and other cables in the back of the Column Unit, as shown in the figure.

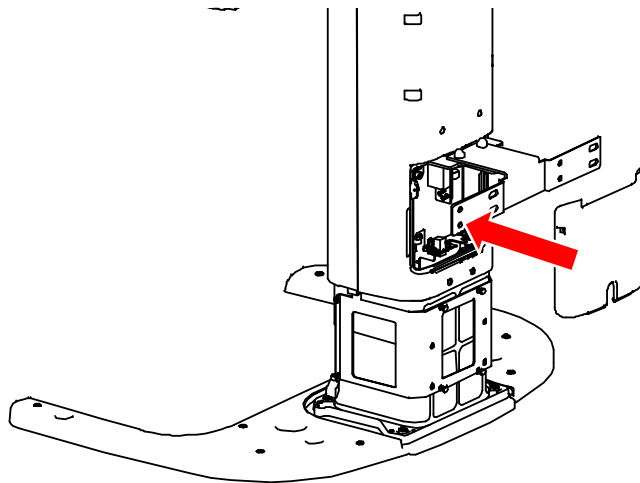
| | | | |
|----------------------------|-----------------|---------------|---|
| Parts and Accessory | Ethernet Cable | (Part No. 21) |  |
| | Cable Tie | (Part No. 20) |  |
| | Exposure Switch | (Part No. 2) |  |



4. Installing the Equipment: Base Stand (Optional)

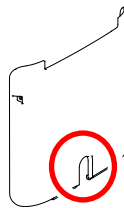
2. Assemble the Column Rear Cover with two truss bolts and a screwdriver. (see below)

| | | | |
|---------------------|--|------------------------------|---|
| Required Tool | Cross Head Screwdriver w/ Magnetic Tip | L = 200 mm (7.9") |  |
| | Column Rear Cover | - |  |
| Parts and Accessory | Truss Bolt | M4 x 6 – 2 pcs (Part No. 27) |  |



Ensure that all cables (connected in step 1) come out of the hole located at the Column Rear Cover's center.

NOTICE



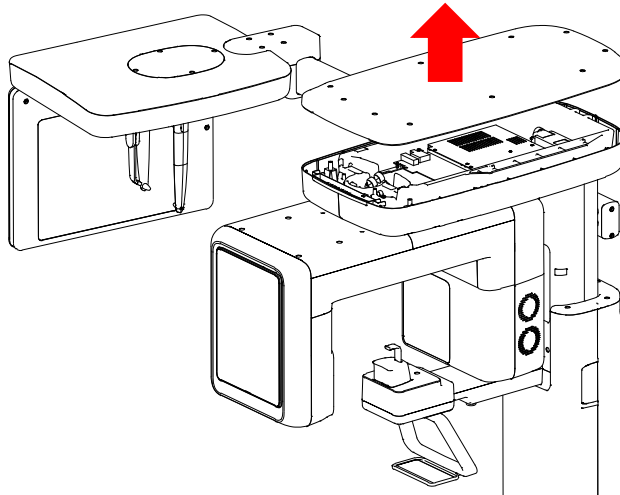
Use the Cable Tie (Part No. 20) to tie the cables before putting the Column Rear Cover.

NOTICE




4.6 Removing the Transportation Safety Bolts

1. Lift the Vertical Frame Unit Cover, as shown in the figure.



2. Remove two Safety Bolts (**see important**) along with their tags.

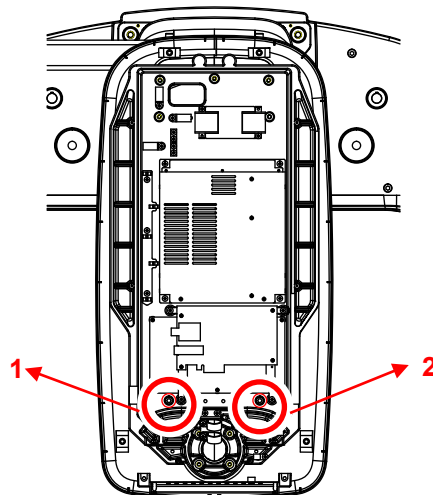
| | | | |
|----------------------|--------------|--------------|---|
| Required Tool | Allen Wrench | 6 mm / 0.24" |  |
|----------------------|--------------|--------------|---|



Avoid damaging the cables when you are removing the safety bolts.

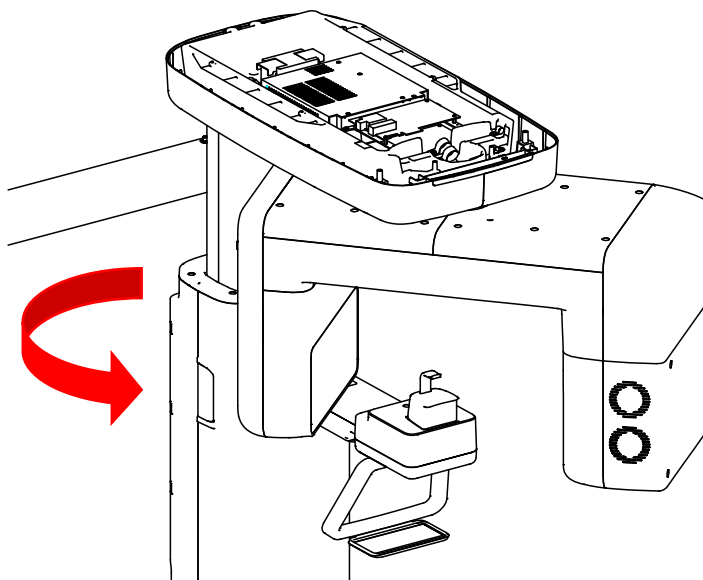


The Safety Bolts are located inside the Vertical Frame Unite, as indicated in the image below.

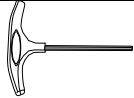



4. Installing the Equipment: Base Stand (Optional)

3. Turn the Rotator Unit clockwise (DO NOT place back the Vertical Frame Cover yet.)



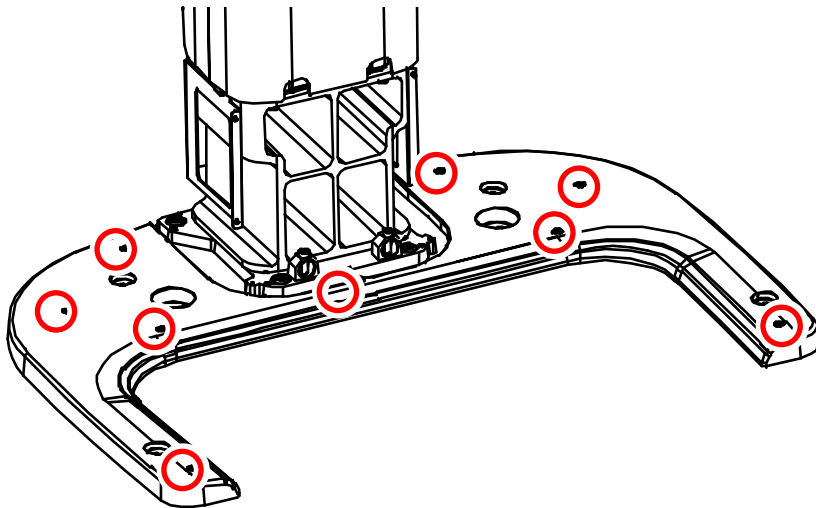
4.7 Leveling the Equipment

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

IMPORTANT

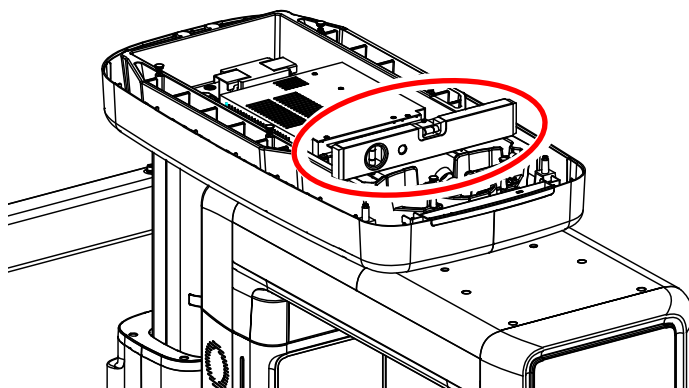
Ensure to place the Spirit Level on the indicated locations in this manual for an accurate reading.

1. Prepare a Spirit Level.
2. Turn the Rotating Unit clockwise so that the X-ray tube head faces the front.
3. Turn all nine screws in marked locations clockwise.

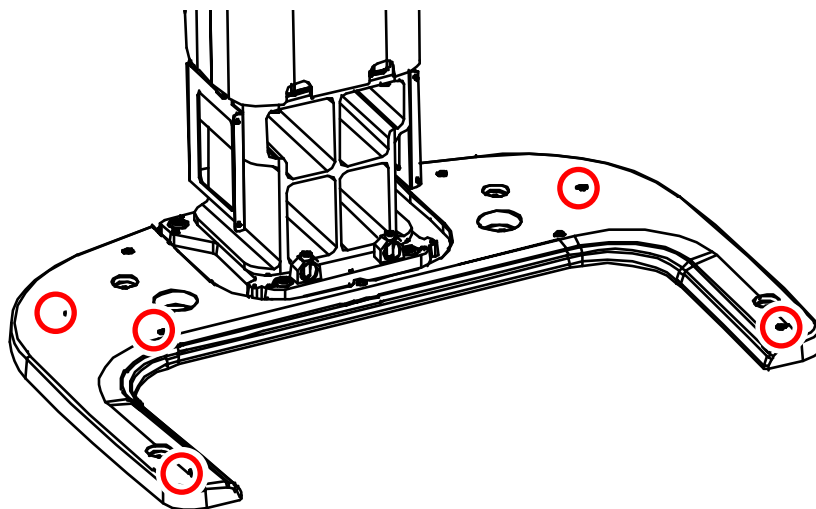


Leveling Right and Left

1. Place the Spirit Level horizontally, as shown in the image.

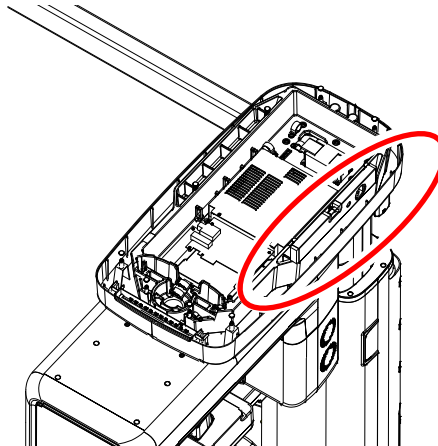


2. Turn Screws in marked locations left and right until the Sprit Level bubble comes to the center.

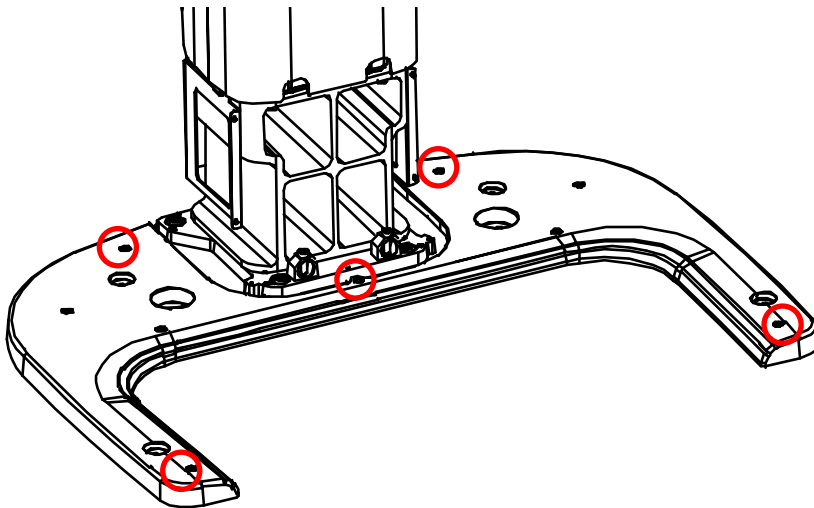


Leveling the Front and Back

1. Place the Spirit Level vertically, as shown in the image.




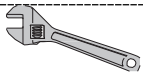
2. Turn Screws in marked locations left and right until the Sprit Level bubble comes to the center.

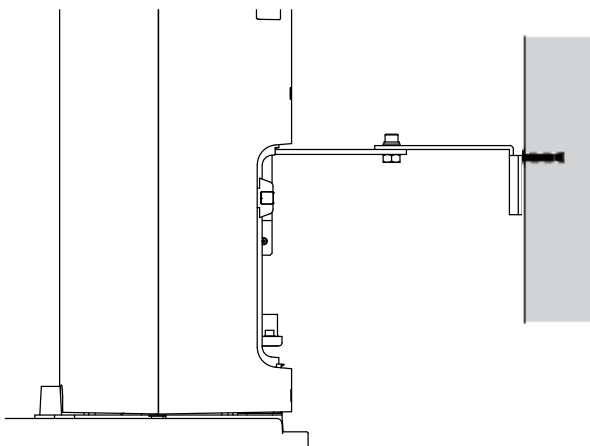


3. When leveling the equipment is completed, ensure to tighten all eight Screws until they no longer move.

4.8 Tightening the Bolts

1. Tighten two bolts conjoining the column and wall brackets.

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

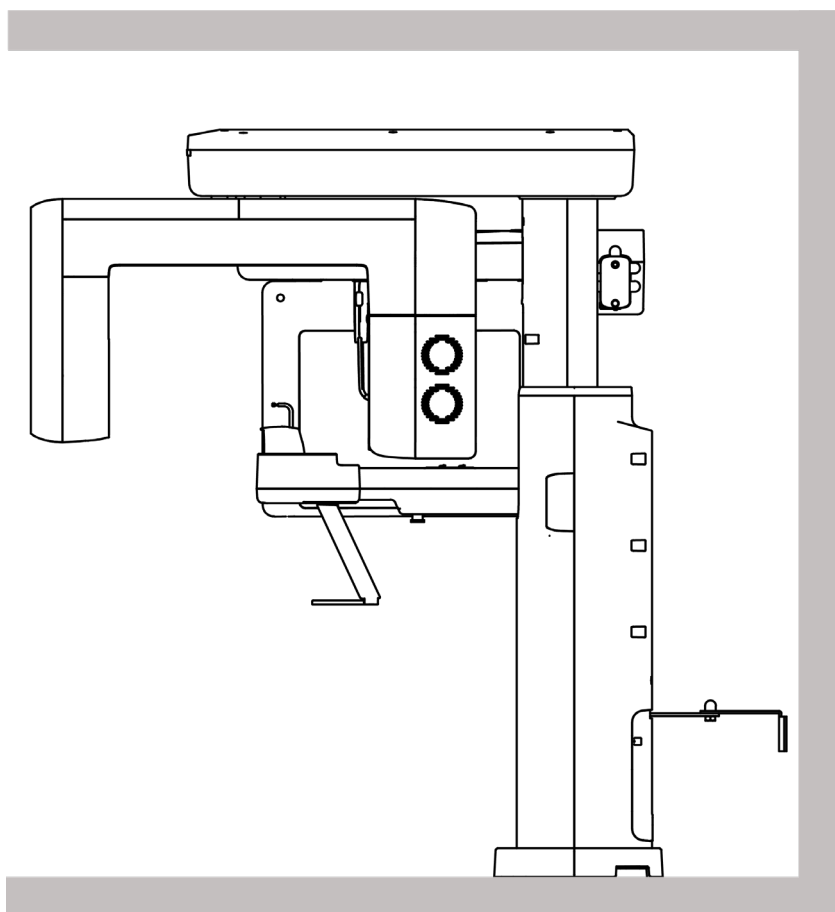


5. Installing the Equipment: Wall Mount

5.1 Installing the Equipment

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

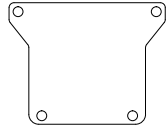
Accurate marking is of critical importance for a successful installation.

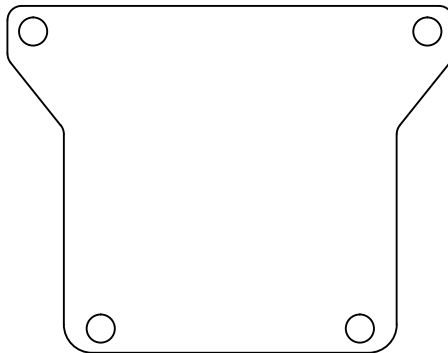


Installation Overview


Marking Points on the Floor

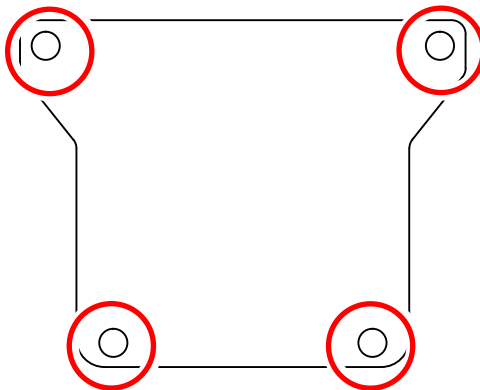
1. Put the aligning plate on the floor near the wall where you plan to install the equipment, as shown in the figure.

| | | | |
|----------------------------|-----------------|--------------|--|
| Parts and Accessory | Alignment Plate | (Part No. 4) |  |
|----------------------------|-----------------|--------------|--|





2. Mark 4 anchor bolt holes on the floor.

| | | | |
|----------------------|--------|-----|---|
| Required Tool | Marker | N/A |  |
|----------------------|--------|-----|---|



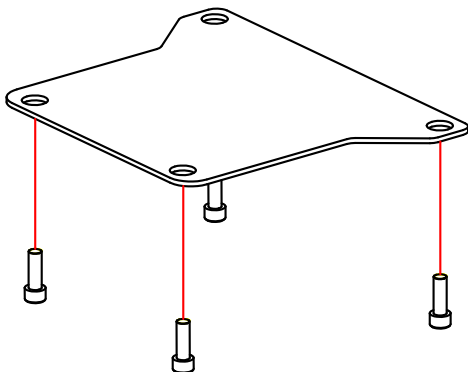
Drilling the Floor

1. Remove the aligning plate.
2. Drill the floor holes (size: 10.5 x 30 mm) by using the concrete hammer drill.
3. Remove the debris and clean the holes with the dust pump.
4. Put the anchor bolts into the holes and attach them with the hammer. Verify that the anchors are secured.

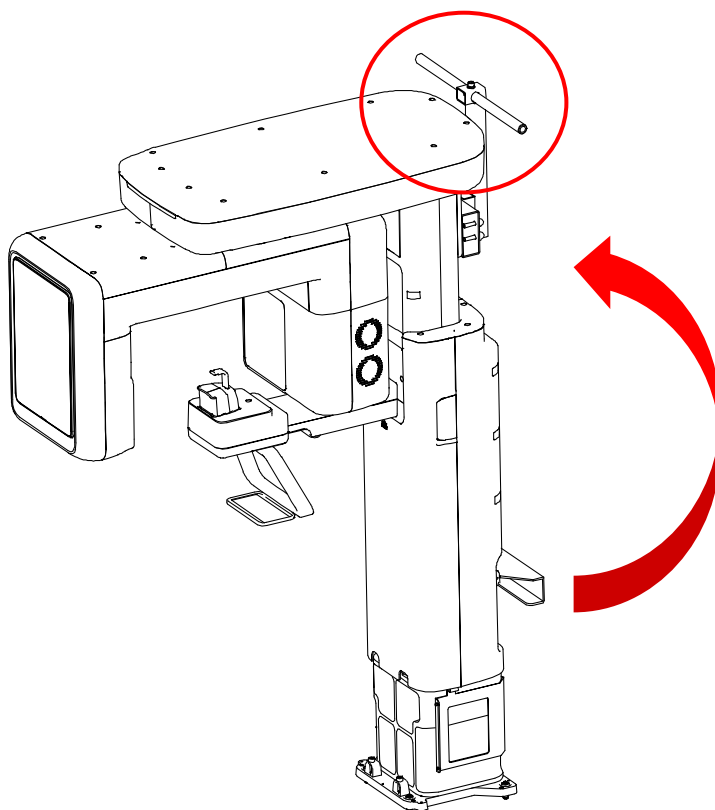
| | | | |
|----------------------------|--------------|---|---|
| Required Tool | Hammer Drill | L = 200 mm (7.9") |  |
| Parts and Accessory | Anchor Bolt | 5/16 x 60 w/ Spring and Flat Washers - 4 pcs (Part No. 34) |  |

Combining the Equipment with the Anchor Bolts

1. Insert an Anchor Bolt into each hole on the Alignment Plate.

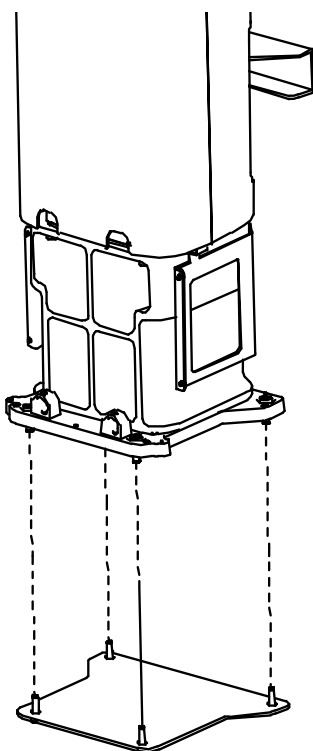


2. Grab the upper carrying handle and lift the equipment slowly until it stands on the floor, as shown in the image below.

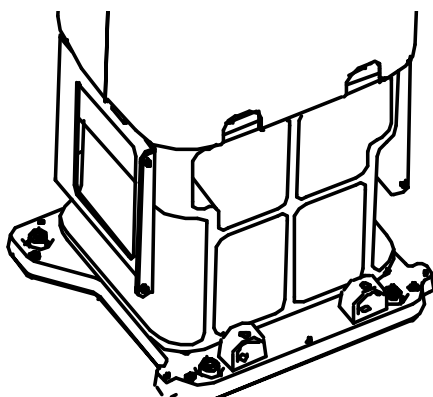


Be careful not to damage the cables before erecting the equipment. Keep them clear of the equipment.

3. Place the equipment over the Alignment Plate to insert each Anchor Bolt into a corresponding hole on the Column Bottom.



4. Place the washers and nuts on Anchor Bolts. Tighten each nut loosely with a fastener.

**IMPORTANT**

- DO NOT tighten the nuts until the leveling is completed.
- While one installer tightens the nuts, the other installers should hold the middle 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**.

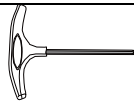

5.4 Connecting the Cables to the Equipment

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**.

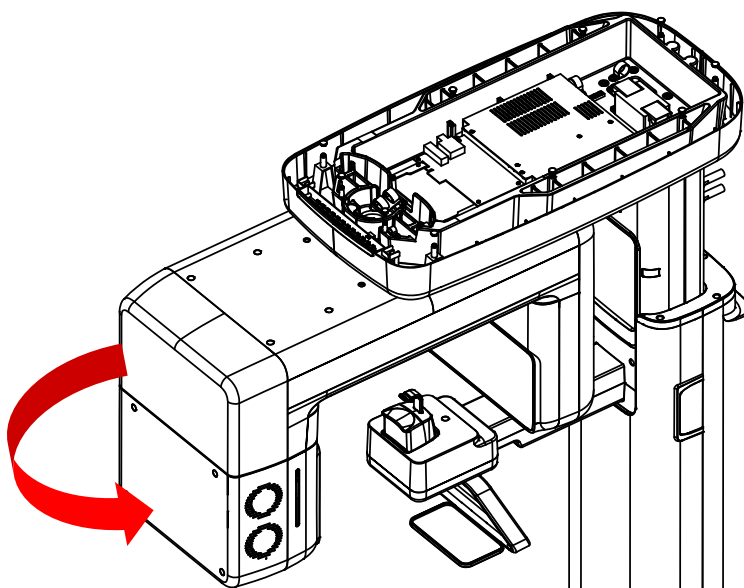
5.6 Leveling the Equipment

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

IMPORTANT

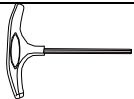

Ensure to place the Spirit Levels only on the following figures' locations for an accurate reading.

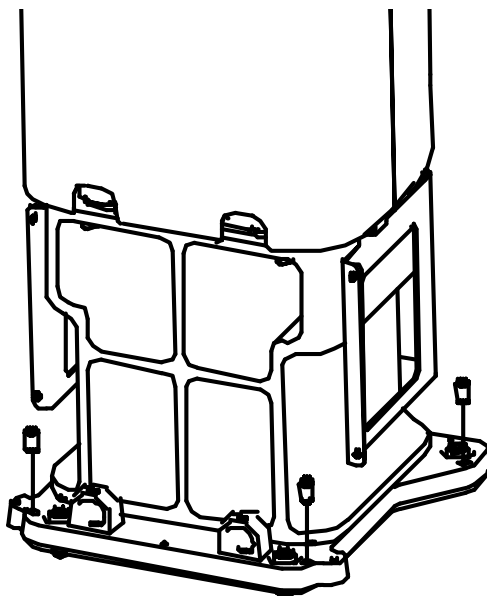
1. Prepare the Spirit Level.
2. Turn the Rotating Unit clockwise so that the X-ray tube head faces the front, as shown in the figure.



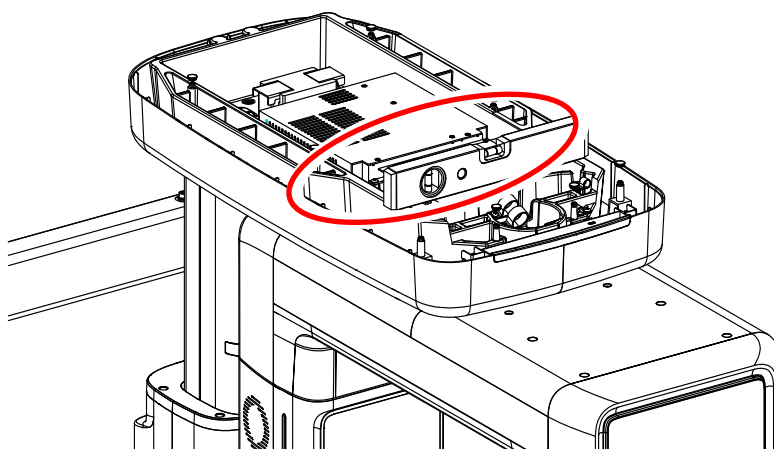
5. Installing the Equipment: Wall Mount

- Put the set screws into the four holes and turn them clockwise with the hex wrench until they touch the aligning plate.

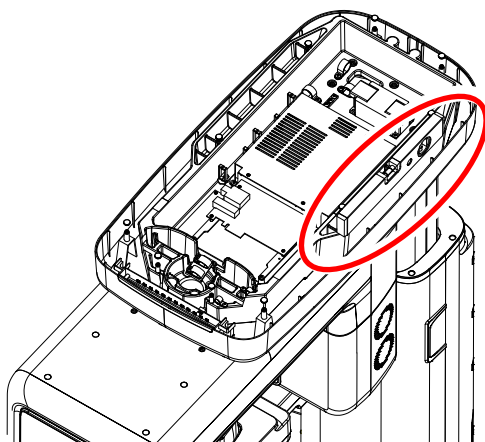
| | | | |
|----------------------------|---------------------|-----------------------------------|---|
| Required Tool | T-shaped Hex Wrench | 8 mm / 0.3" |  |
| Parts and Accessory | Set Screw | M10 x 15 – 4 pcs (Part No. 30) |  |



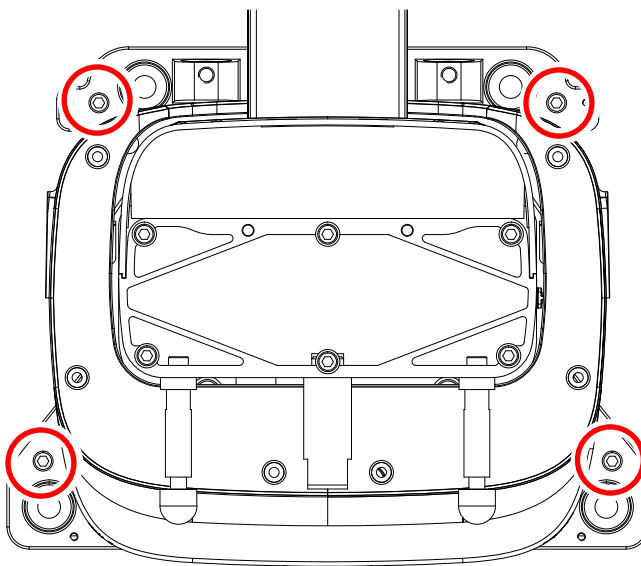
- Place the Spirit Level, as shown in the figure.



5. Place the Spirit Level on the Vertical Frame, as shown in the following figure.


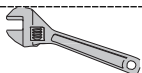


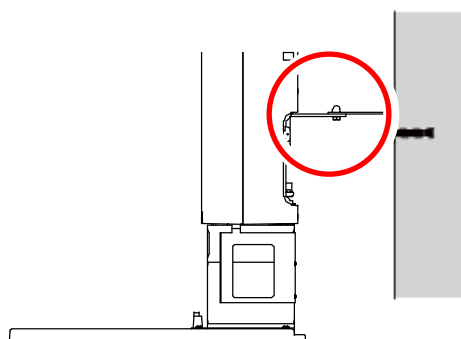
6. Tighten the nuts in the anchored bolts on the floor.



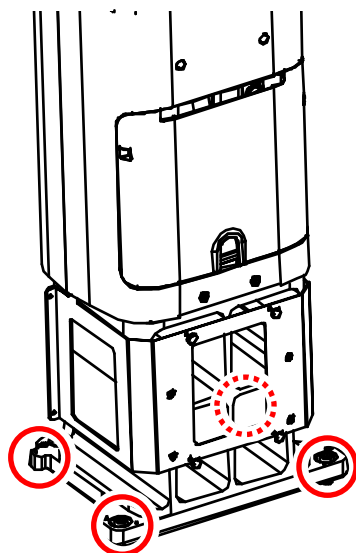
5.7 Tightening the Bolts

1. Tighten two bolts conjoining the Column and wall bracket.

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



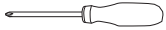

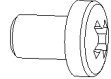

2. Tighten the nuts in the anchored bolts.



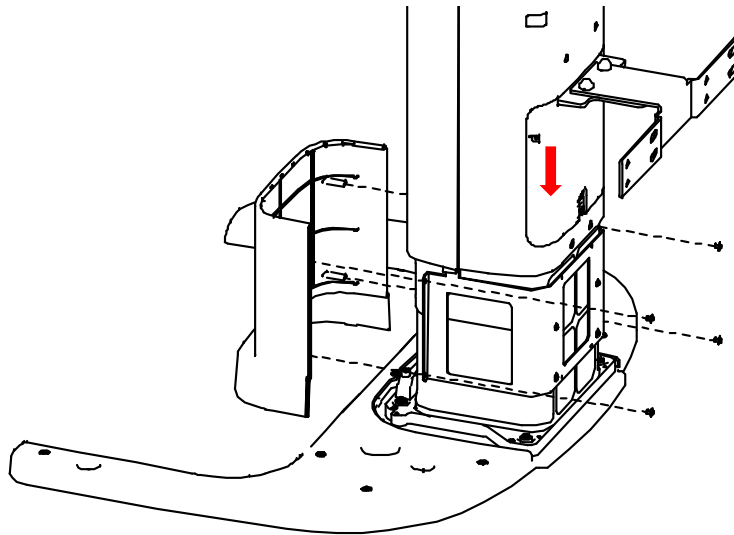
6. Completing Miscellaneous Works

6.1 Assembling Various Covers

Base Top Cover Front

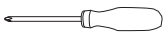



| | | | |
|----------------------------|--|---------------------------------|---|
| Required Tool | Cross Head Screwdriver w/ Magnetic Tip | L = 200 mm (7.9") |  |
| Parts and Accessory | Base Top Cover Front | - |  |
| | Pan Head Screw | M4 x 6 – 4 pcs (Part No. 27) |  |
| | Silicon Cap (White) | 4 pcs (Part No. 16) |  |

1. Assemble the Base Top Cover Front in front of the Column Unit with 4 truss bolts and a screwdriver. (see below)

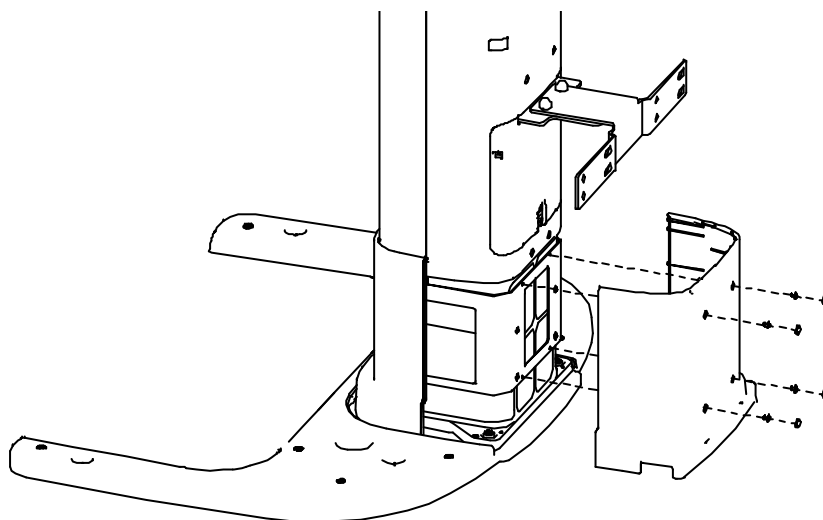


2. Put a silicon cap (white) into each hole to complete the step.

Base Top Cover Rear

| | | | |
|----------------------------|--|---------------------------------|--|
| Required Tool | Cross Head Screwdriver w/ Magnetic Tip | L = 200 mm (7.9") |  |
| Parts and Accessory | Base Top Cover Rear | - |  |
| | Pan Head Screw | M4 x 6 – 4 pcs (Part No. 27) |  |
| | Silicon Cap (White) | 4 pcs (Part No. 16) |  |


1. Assemble the Base Top Cover Rear in the Column Unit's back with two truss bolts and a screwdriver. (**see below**)

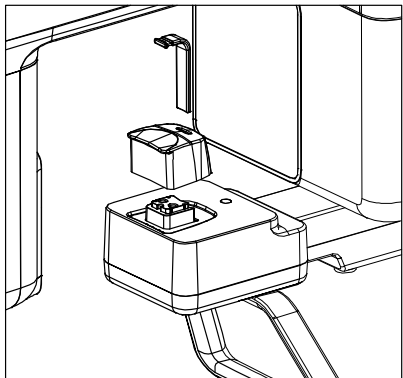
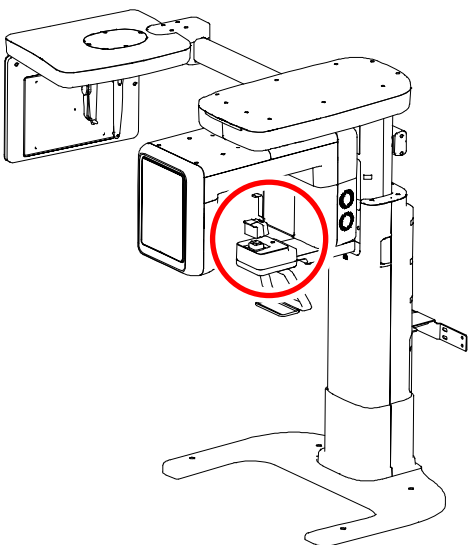


2. Put a silicon cap (white) into each hole to complete the step.

6.2 Assembling the Chinrest and Bite

1. Insert the normal Chinrest and the normal Bite Block into the unit. (see below)





| | | | |
|---------------------|-----------------|----------------------|---|
| Parts and Accessory | Normal Chinrest | 1 pc (Part No. 9) |  |
| | Normal Bite | 1 pc (Part No. 8) |  |



IMPORTANT

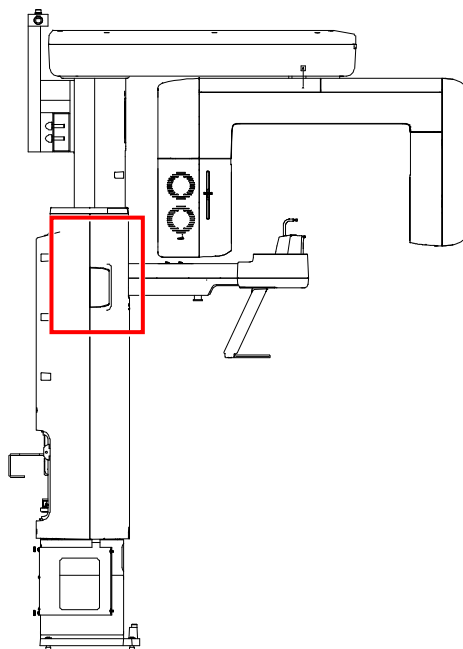
For accurate image acquisition, assemble the bite block after taking a test image.

6.3 Installing the Switch Holders

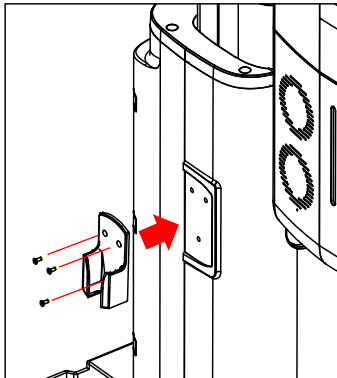
| | | | |
|----------------------------|-------------------------|----------------------------------|---|
| Parts and Accessory | UP / DOWN Switch Holder | 1 pc (Part No. 33) |  |
| | UP / DOWN Switch | Optional - 1 pc (Part No. 33) |  |
| | Flat Head Screw | M3 x 8 – 3 pcs (Part No. 33) |  |
| | Sticker | (Part No. 33) |  |

UP / DOWN Switch / Switch Holder

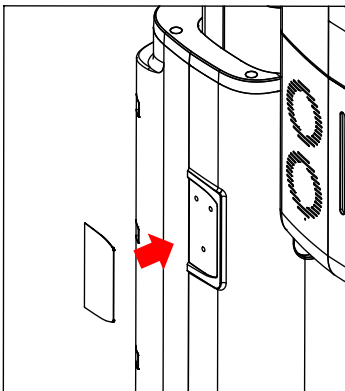
1. Choose a place where you want to install a UP/DOWN Switch Holder (You can install the holder on either the left or right side of the equipment).



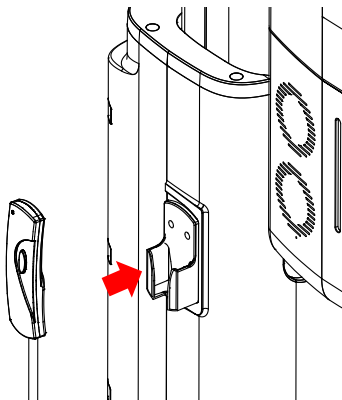
2. Assemble the UP/DOWN Switch Holder: Insert three Truss Bolts into holes on the holder (see below) and tighten them with a crosshead screwdriver until they no longer move.



3. Attach a sticker on the other side of the equipment where you did not install the UP/DOWN Switch Holder

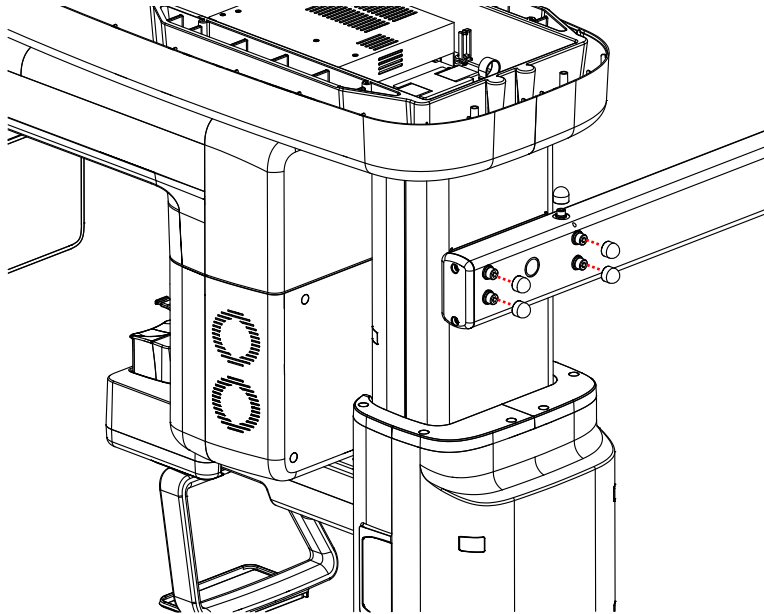


4. Hang the UP/DOWN Switch on the holder.





6.4 Finalizing the Installation Process

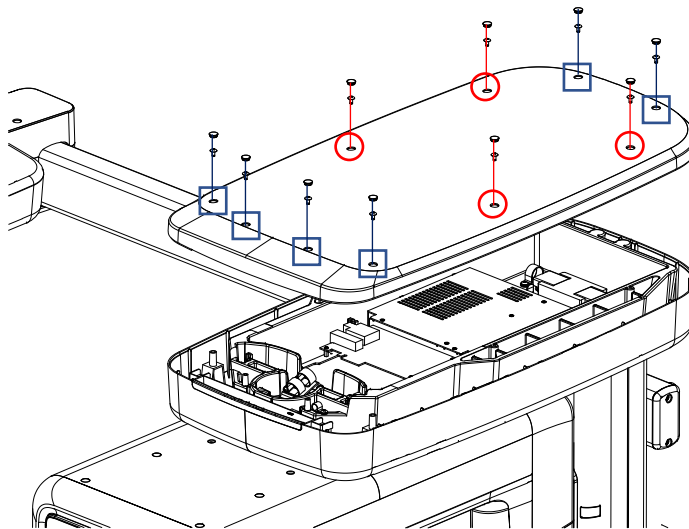
1. Tighten the Wrench Bolts connecting the CEPH Arm (**see below**) until they no longer move.
2. Put a Silicon Cap on each bolt's top.



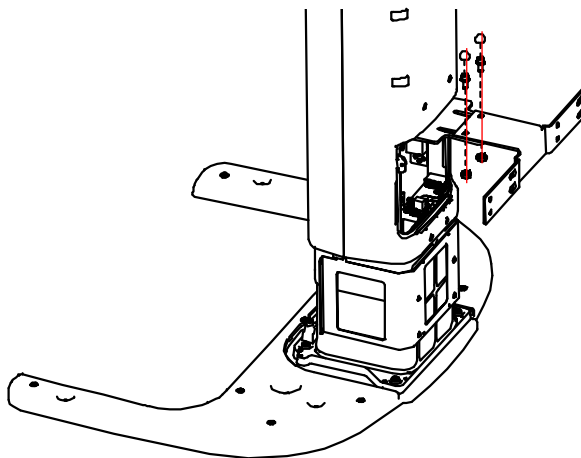
3. Assemble the Vertical Top Cover with six Pan Head Screws and four Truss Bolts; once all bolts are tightened, put a Silicon Cap into each hole where a bolt is inserted.

(Pan Head Screws are marked with a square, and Truss Bolts are marked with a circle.)

| | | | |
|----------------------------|----------------|-------------------------|---|
| Parts and Accessory | Pan Head Screw | M4 x 6 (Part No. 27) |  |
| | Truss Bolt | M4 x 6 (Part No. 27) |  |




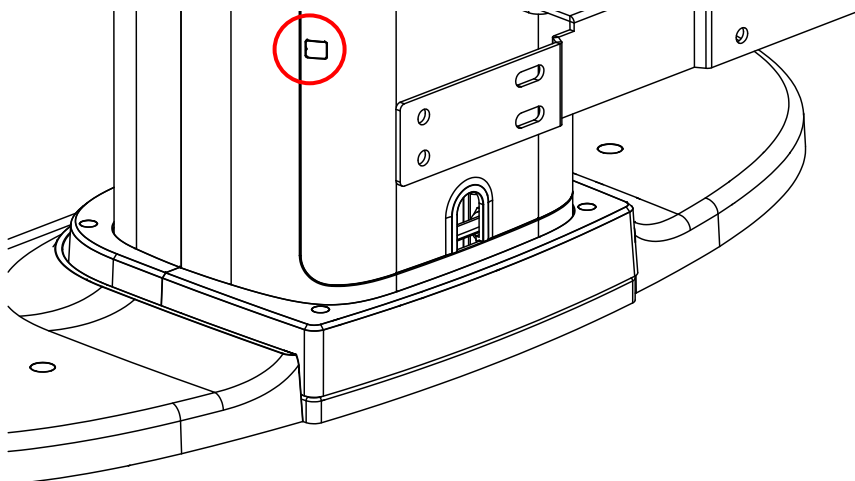
4. Put two Silicon caps on the bolt's top connecting the Joint Bracket.



6. Completing Miscellaneous Works

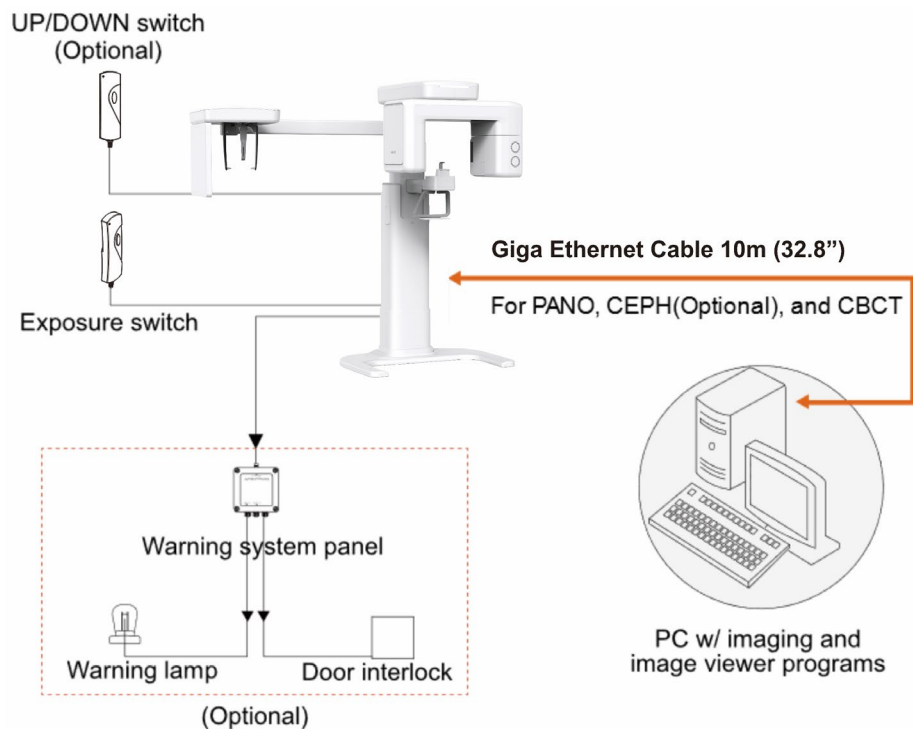
5. Insert two terminal caps on the Column Rear Cover.

| | | | |
|--------------------------------|--------------|-----------------------|--|
| Parts and Accessory | Terminal Cap | 2 pc (Part No. 18) |  |
|--------------------------------|--------------|-----------------------|--|



7. Setting PC

7.1 Direct Connection Diagram



Giga Ethernet Cable - transfers image data to the PC.

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

7.2 The Recommended PC Requirements

IMPORTANT

- It is mandatory to ensure that the PC system configuration is compatible with the imaging and image viewer software's PC system requirements.
- Since image quality may deteriorate from lack of resources, observe the requirement guideline specified in the following tables.
- The PC components shall be approved by UL/CSA.
- The PC shall be grounded well protectively.
- The multiple portable socket outlets shall not be placed on the floor.
- The PC system provided with the **vatech A9** undergoes a rigorous test for software compatibility before shipping. Therefore, any later changes to the hardware and software may cause 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® Core i3-9100 3.6 4C |
| RAM | 16 GB (2 x 8 GB) DDR4-2666 UDIMM NECC Memory APJ |
| HDD | 1 TB SATA 7200 rpm 3.5 in WKS |
| Graphics board | GEFORCE GTX1050 Ti DUAL D5 4G |
| Ethernet Interface | Intel Ethernet I210-T1 PCIe x1 Gb NIC or LS-PCIE-EX210AT |
| Serial Port (RS232) | HP Serial Port Adapter Kit |
| Power Supply | 500 W internal power module, up to 90% efficiency, active PFC |
| Slots | M.2 PCIe x1 2230 (for WLAN) M.2 PCIe x4 2280/2230 Combo (for storage) PCI Express v3.0 x1 PCI Express v3.0 x16 (wired as x4) PCI Express v3.0 x16 |
| CD/DVD drive | DVD-ROM, DVD+/-RW, Blu-Ray |
| Monitor | 19" 1280x1024 screen resolution |
| Operating System | Windows 10 Professional 64-Bit OS |
| Recommended System | HP Z1G5 |

*. If an ethernet card is not installed on your PC, purchase an Ethernet card separately.

7.3 Connecting the Cables to PC

IMPORTANT



Ensure to prepare a PCIe Ethernet Card (1 Gbps ≤) before connecting the Giga ethernet cable to the PC.

IMPORTANT

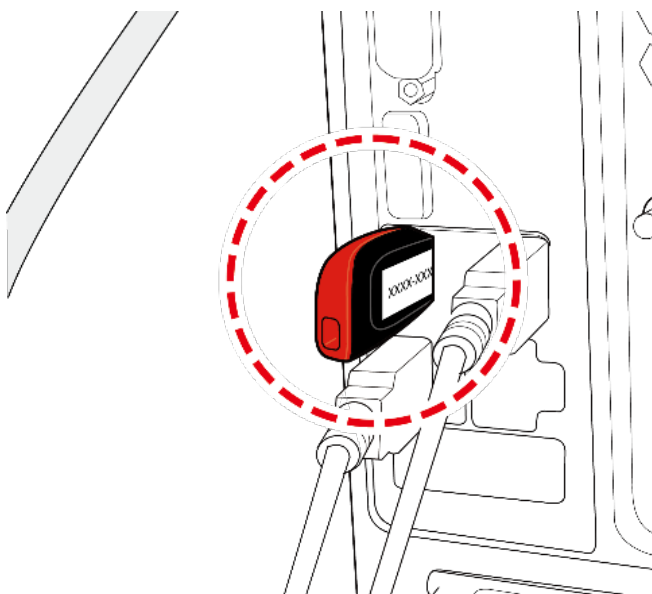
Ensure to connect the Giga ethernet cable to PCIe Ethernet Card only. If you connect the cable to a place other than the designated card, it shall cause a system problem.

NOTICE

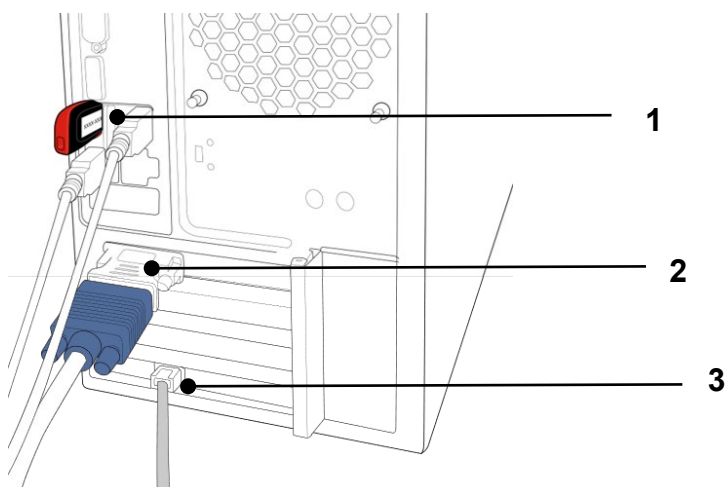
- Always check the cable condition visually. The bad cable or bad connection environment may lead to unprecedented errors.
- Connect the regular cables for the PC: keyboard, mouse, and video in advance.

| | | | |
|---------------------|---------------------|-----------------------|--|
| Parts and Accessory | Giga Ethernet Cable | 1 pc (Part No. 21) |  |
| | License Key | 1 pc (Part No. 1) |  |

1. Insert the 3D viewer License Key into a USB port.



2. Check if the License Key, Video Output, and Giga Ethernet Cable are connected, as shown in the image below.



| No. | Item |
|-----|--|
| 1 | 3D viewer License Key |
| 2 | Video output |
| 3 | Giga Ethernet Cable (Inserted into PCIe Ethernet Card) |

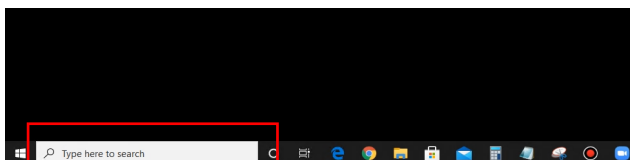
NOTICE

The illustrations may differ from the actual product.

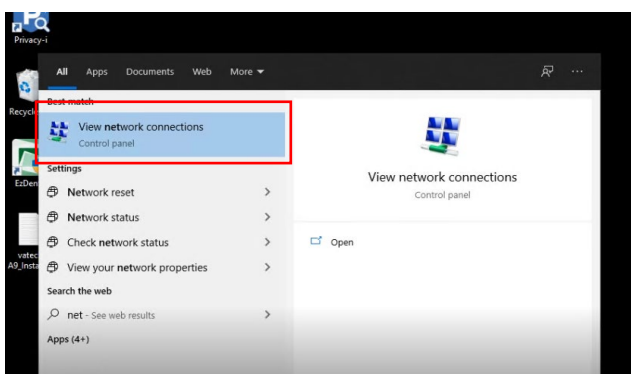
7.4 Setting up the G-Ethernet Grabber

Entering the IP Address

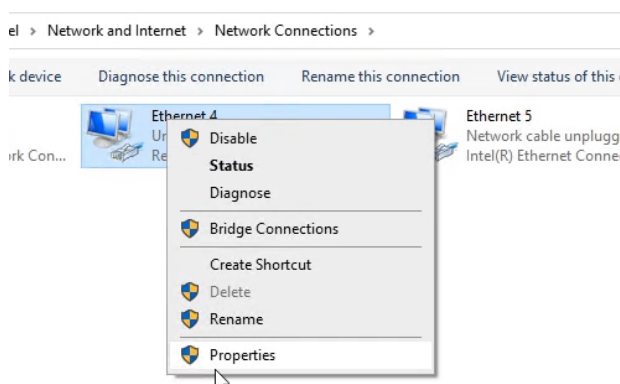
1. Enter “**network**” in the search box.



2. Click “**View network connections**”



3. Rename the network (e.g., **vatech A9**).
And right-click the ethernet driver and select “**properties.**”

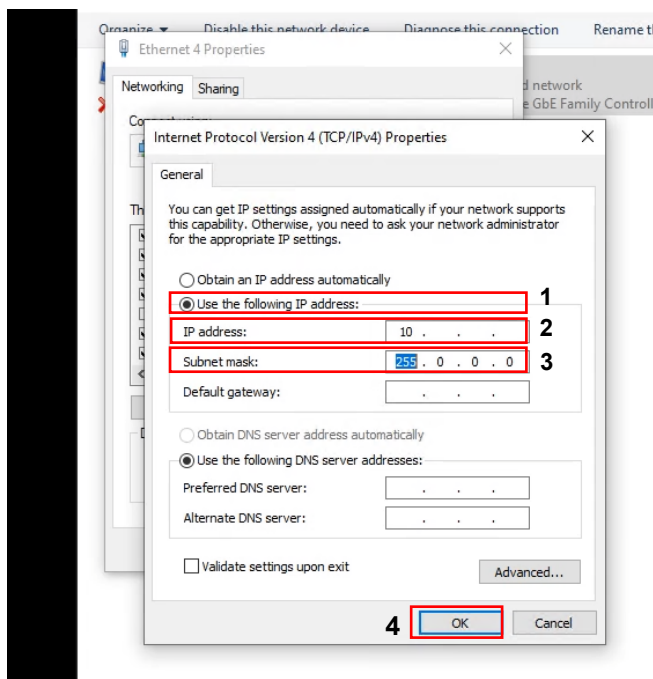


4. Select **Internet Protocol Version 4**. Then click “**Properties.**”
5. **[Important]** Select “**Use the Following IP Address.**” Then enter the given IP Address and Subnet Mask. (see the note below).

IMPORTANT

Enter the following numbers for the IP and subnet mask.

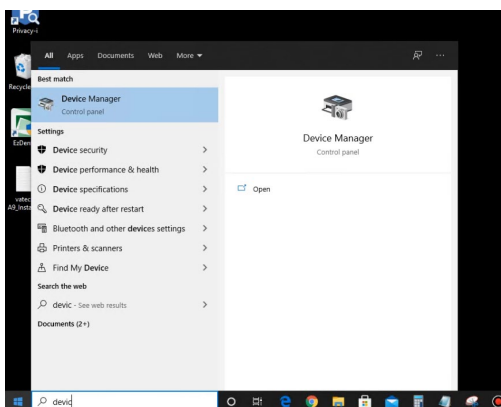
- **IP Address:** 10.100.200.100
- **Subnet Mask:** 255.255.255.0



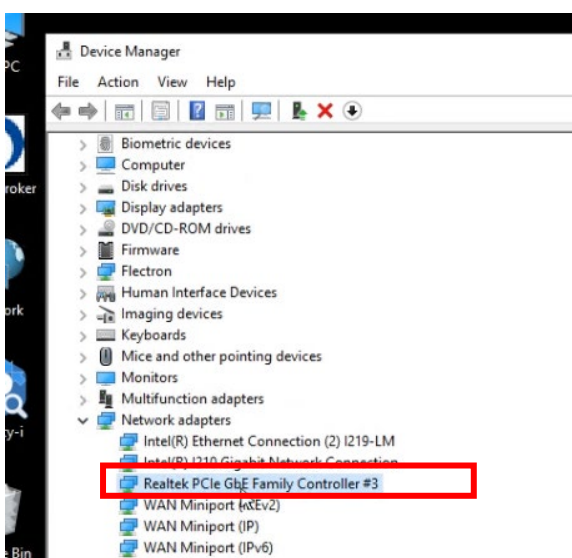
6. Click “**OK**” for the next step.

Setting Up the Device

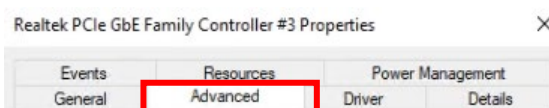
1. Return to the search box and enter the **device manager**.



2. Select the **Network adapter** and right-click the ethernet driver, and click the **Properties**.

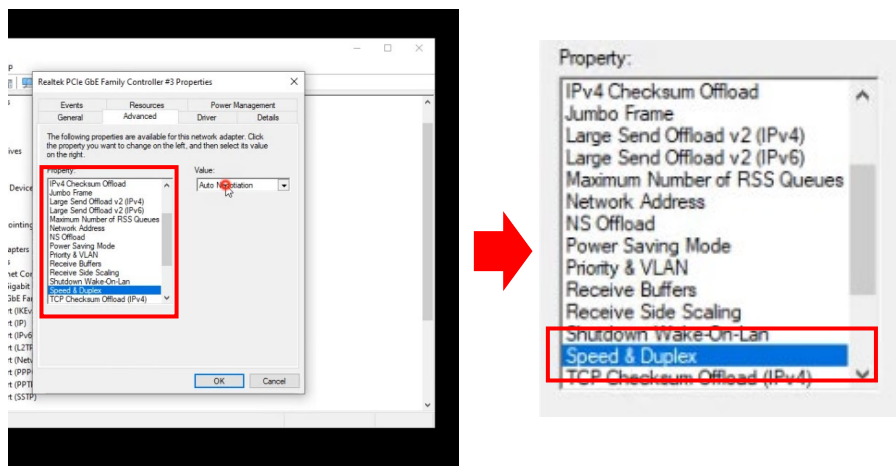


3. Select the **"Advanced"** tab.

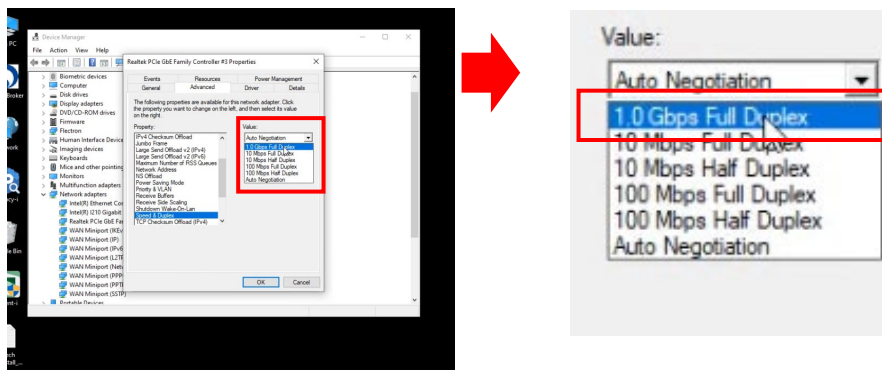


7. Setting PC

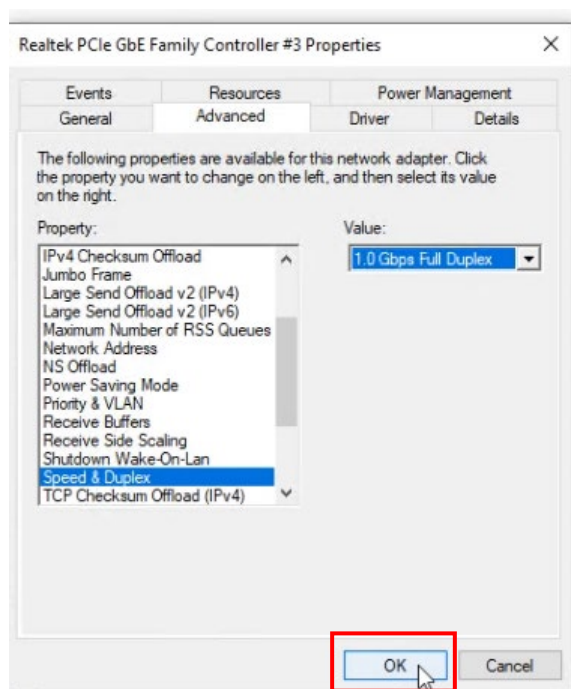
- On the tab, scroll down until you find the “**Speed & Duplex**,” then click it.



- Click the arrow icon on the Value and select “**1.0 Gbps Full Duplex**.”



6. **[Important]** Before clicking “OK,” ensure that the pop-up looks as the below



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8. Setting PC's Environment Variables

NOTICE

Disregard this section in case the PC system is supplied with the equipment. (The environment variables of the PC have already been set on the PC.)

8.1 Before Beginning

IMPORTANT

- Ensure that the Emergency Stop Switch is in the OFF position before starting with the InstallShield installation.
- 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 PC system supplied with the equipment is intended to be used for image acquisition only. For the PC server for image management, it is strongly recommended to use a different PC.
- The programs related to the acquisition, viewing, and control of images should be installed on the formatted PC, where no other program(s) except the operating system (OS) is present.
- Before InstallShield installation, ensure that the video card driver installed on the PC is the most up-to-date version. To check this, go to the website of the graphics card manufacturer.

Checking PC BIOS Settings

The PC is shipped, with its BIOS settings, as specified in **Appendix D. Checking PC BIOS Settings**. Before proceeding to the next sections, check the BIOS status. In case the BIOS settings have not been configured in advance or the settings are different, perform the following steps.

1. Reboot the PC and go to BIOS setting mode.
2. Set the variables as shown in the following table.

| 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] |

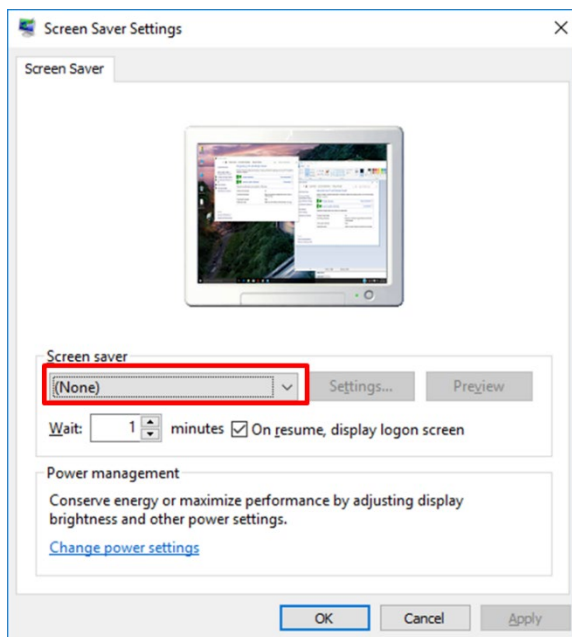
- When you update the BIOS settings, the "EnhancedHalt State (C1E)" option will be displayed.

8.2 Setting up the Power Management Options

To avoid disruptive and abnormal operations while acquiring an image, you must reconfigure some Windows operating system parameters.

Disable the Screen Saver

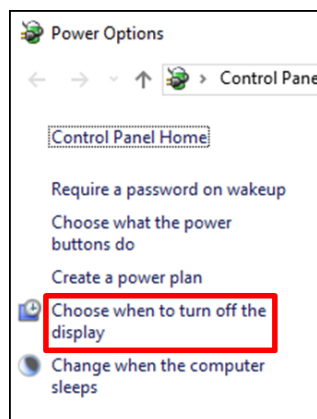
1. Open the Start screen, and type **Change screen saver** in the search box.
2. Click the **Change screen saver** icon to start the **Screen Saver Settings** on the search result.
3. On-Screen, on the Saver Settings screen, select **(None)** in the pull-down menu.



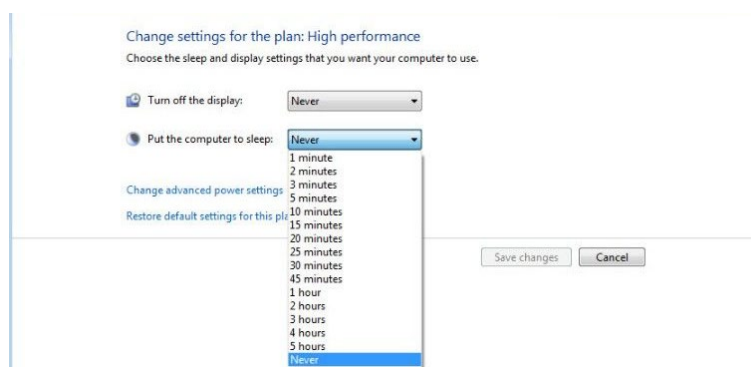
4. Click **OK** to apply the settings.

Selecting the Power Options: Monitor and System

1. Open the Start screen, and type **Power Options** in the search box.
2. Click the **Power Options** icon to start the **Power Options** on the search result.
3. Click **Choose when to turn off the display**.



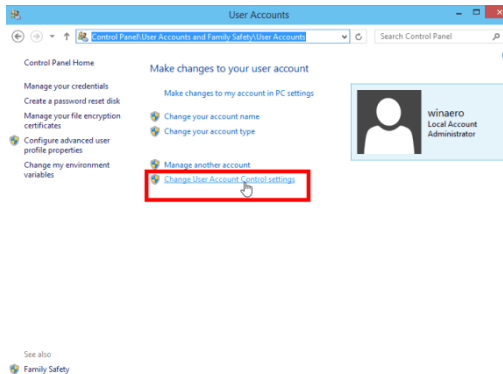
4. Select **Never** for both **Turn off the display** and **Put the computer to sleep** fields.



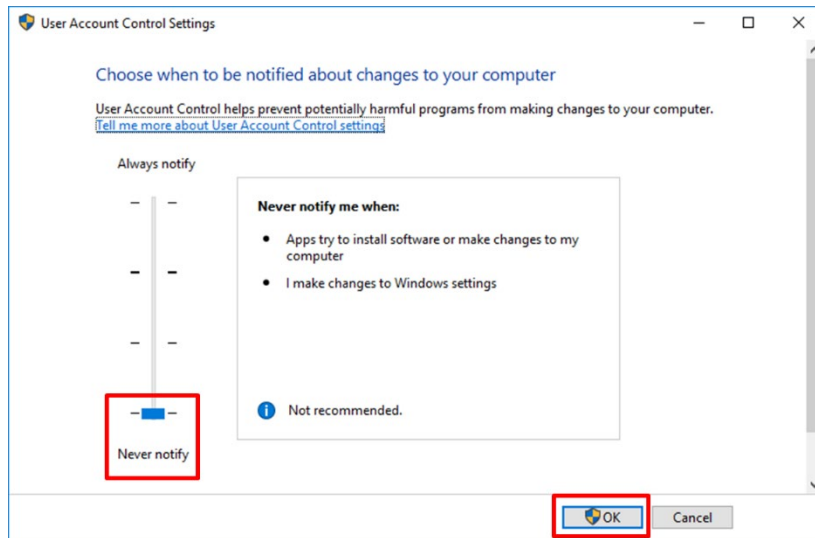
5. Click **Save changes** to apply the settings.

8.3 Turning off the User Account Control

1. Open the Start screen, and type **User Account Control** or **UAC** in the search box.
2. Click **Change User Account Control Settings** in the search results.



3. Disable the UAC by moving the slider bar down to '**Never notify.**' Then click **OK** to apply change 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

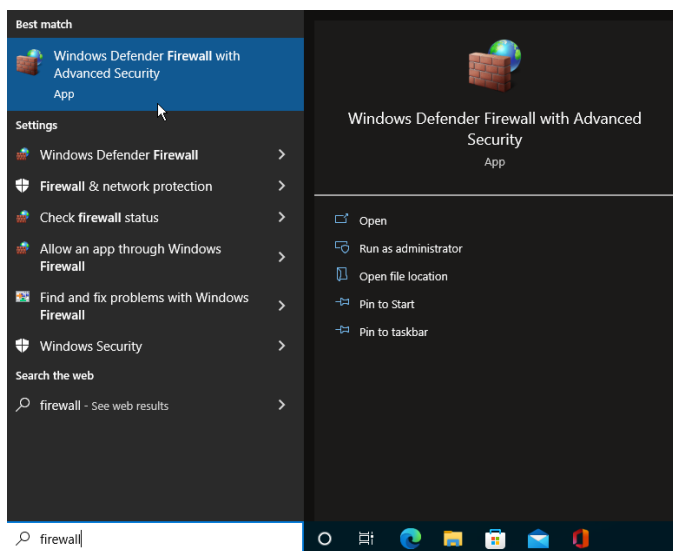
To enable Windows Defender Firewall with Advanced Security and configure its default behavior, follow the steps below:

IMPORTANT

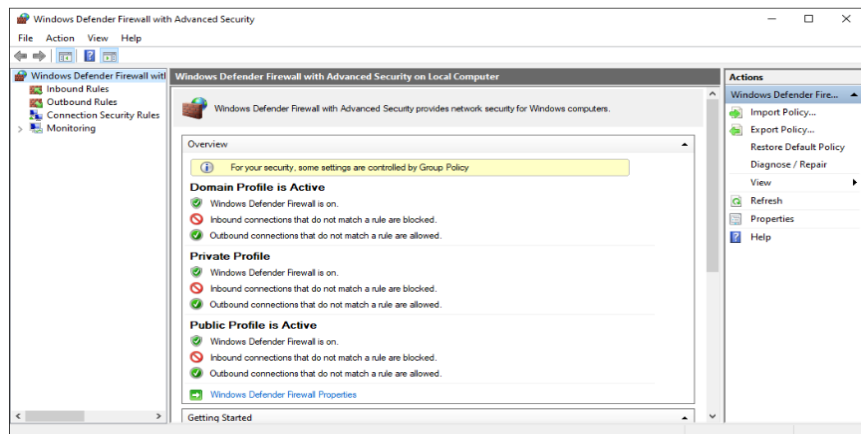
Administrative Credentials

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.

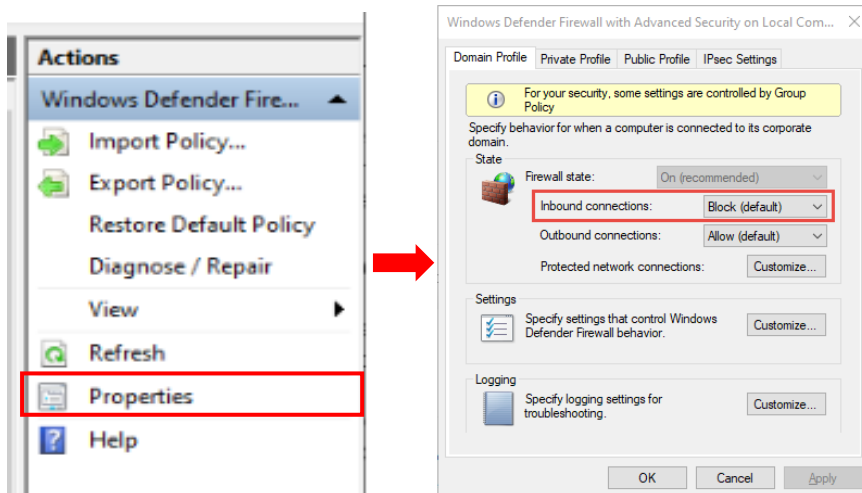


2. Check if each location network is set as below.



8. Setting PC's 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**.

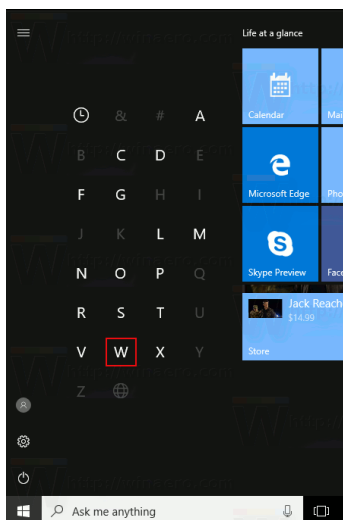


To ensure maximum security, do not change the default setting ('block') for Inbound connections.

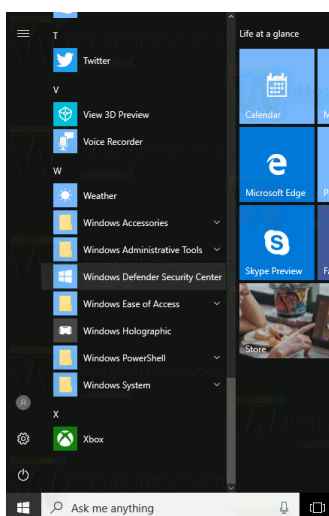
8.5 Setting Folder Exclusions

8.5.1 Adding an Exclusion to Windows Security

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

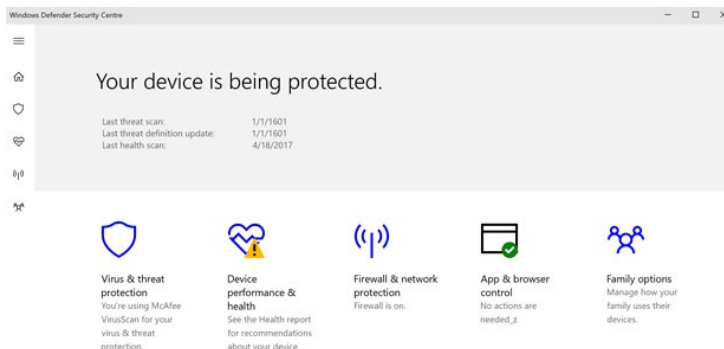


2. Click the **Windows Defender Security Center** icon to start Windows Defender Security Center on the search result.

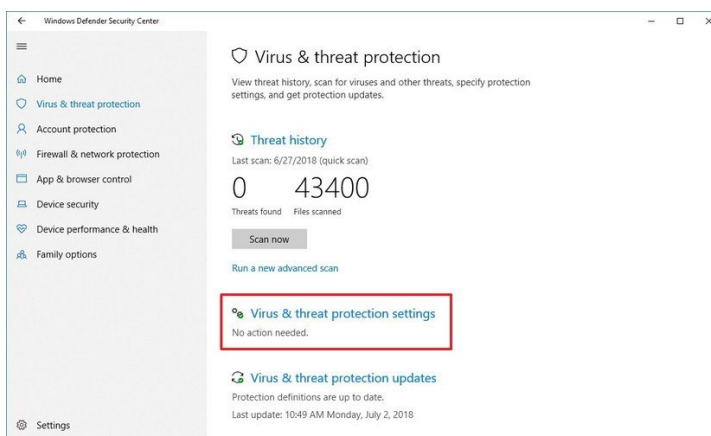


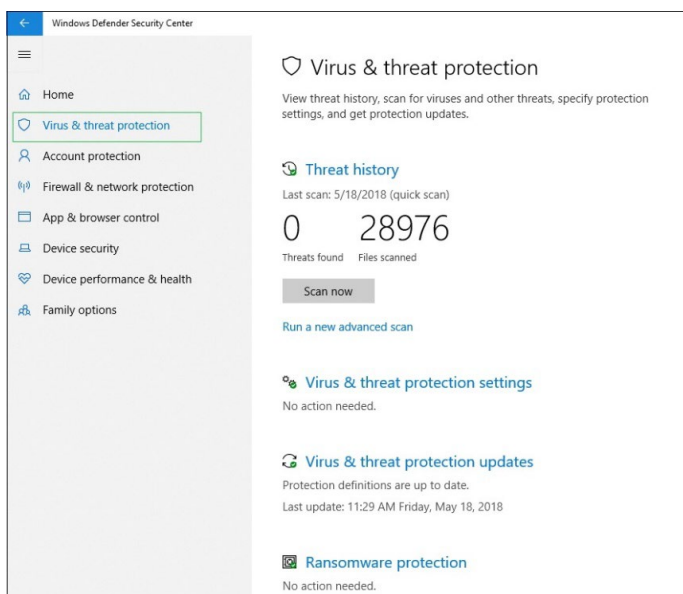
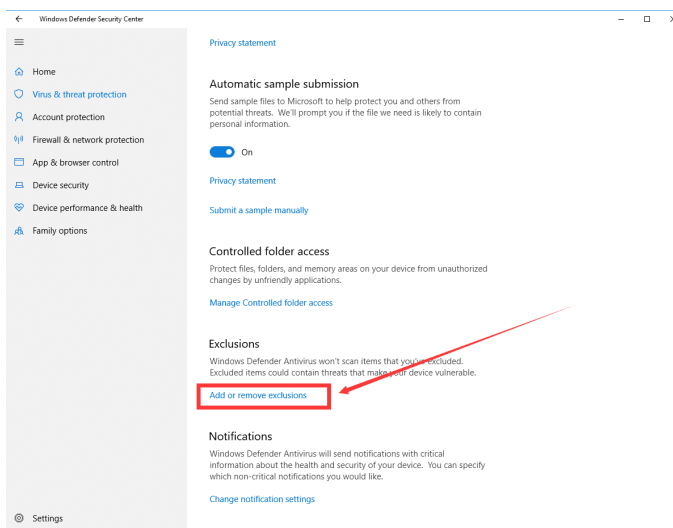
3. The start page comes with the following sections: Virus & threat protection, Device performance & health, Firewall & Network protection, and Family options.

4. Click on the Virus & threat protection icon.



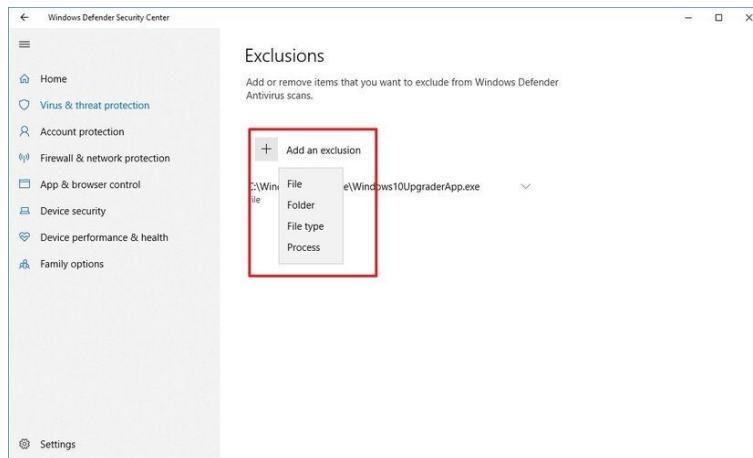
5. Click on the link **Virus & threat protection settings**.



6. Scroll down to **Exclusions**.7. Click on the link **Add or remove exclusions**.

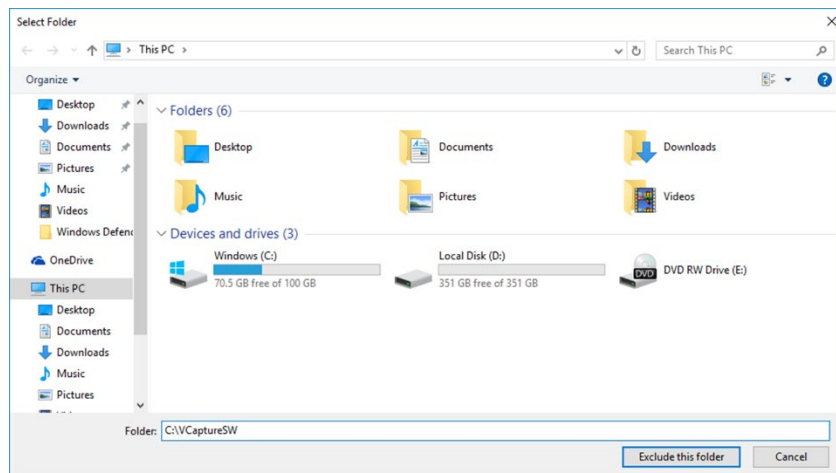
8. Setting PC's Environment Variables

8. The following page will open.



9. Click on the **Add an exclusion** button.

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



8.5.2 Adding an Exclusion to Antivirus Software

IMPORTANT

- Set the virus scan exception for the files and folders related to this equipment.
- DO NOT run the memory-resident background programs unrelated to the equipment.
- It is recommended to run the virus scan only when the equipment is idle.
- Always use a blank USB drive if possible.

Some files used by the **vatech A9** are incorrectly recognized as viruses/trojans by anti-virus software. If you are using anti-virus software on your PC, you must exclude those files from all scans performed by the anti-virus software.

For **vatech A9**, the following folders and files inside for relevant software should be excluded from the virus scan.

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

NOTICE

- Suppose the anti-virus program from McAfee is running in the background.
- The procedure to set folder exclusions is similar to most anti-virus programs.

1. Open the McAfee anti-virus program and select **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 choose the Add menu button.
4. Navigate to the folders or the files you want to designate an exclusion path for, and select the checkbox to Exclude Subfolders.
5. Click **OK** when completed and exit McAfee for the path exclusion to be completed.

9. Installing Software

NOTICE

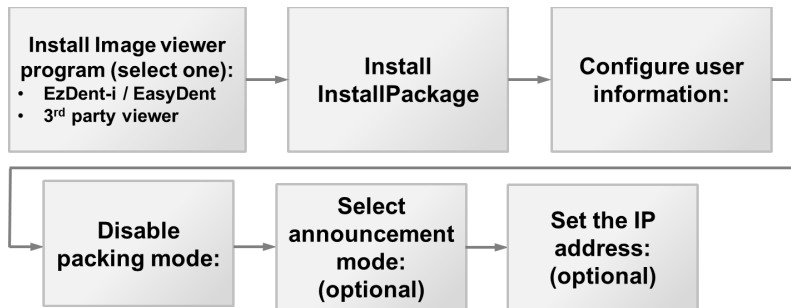
Skip this section if the PC system is shipped with your equipment. (In this case, the software has already been installed.)

9.1 Before Beginning

IMPORTANT

- Ensure that the Emergency Stop Switch is off before starting with the InstallShield installation.
- DO NOT install the programs irrelevant to image acquisition and view on the same PC. There may be conflicts between them, leading to system malfunction.
- The image viewer program such as **EzDent-i** or the one from the 3rd party should be installed in advance before the InstallShield installation.
- Before InstallShield installation, ensure that the video card driver installed on the PC is the most up-to-date version. To check this, go to the website: www.nvidia.com.
- Perform a virus scan for the PC and InstallShield program before proceeding with its installation.

9.2 Software Installation Flow



9.3 Installing the Image Viewer Program

IMPORTANT

One of the image viewer programs among the **EzDent-i** or 3rd party program must be installed. For the details on the installation procedures, refer to the corresponding manuals.

9.4 Installing the InstallShield

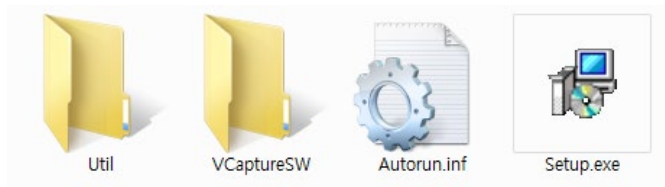
NOTICE

The InstallShield installation information is included in the USB drive provided as an accessory.

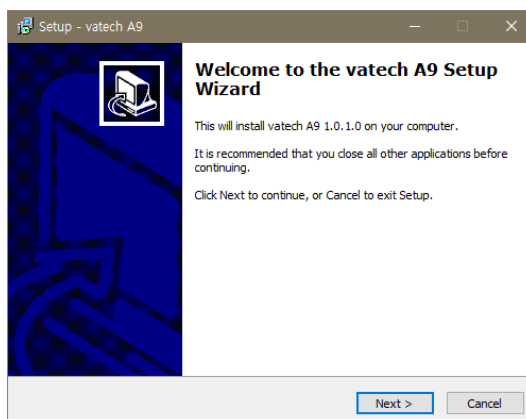
Please check the serial number.txt (e.g., 047-011752.txt) file.

| | |
|----------------------|--------------------|
| 047-011752 - 제품명 | |
| 모델명 | 서식(N) 보기(V) 도움말(H) |
| ExID Plus Sta | None |
| ExID Plus Prot | None |
| ExID Plus Pre | None |
| ExID I | None |
| Model | Pat-I |
| Modality | PANO |
| CT Sensor Type | None |
| Pano Sensor Type | AnyPano-CT(K) |
| Cath Sensor Type | None |
| Frame Grabber Type | Ethernet |
| Additional Options 1 | None |
| Additional Options 2 | DirectX |

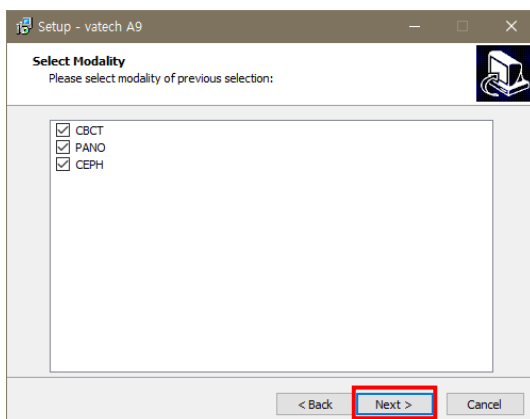
1. Ensure that both the PC and the equipment are turned on.
2. Insert the USB drive into the USB connector and **perform a virus scan for the PC before installing the InstallShield.**
3. Go to the InstallShield folder and run **Setup.exe**.



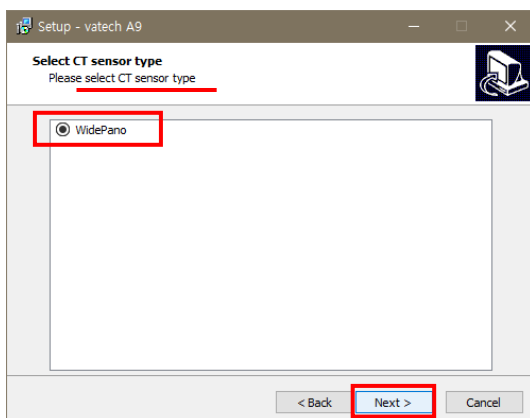
4. When the pop-up for setup appears, click **Next**.



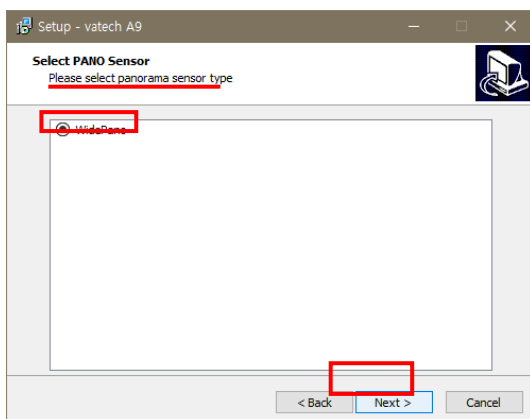
5. Confirm that all modalities are checked as below. If the CEPH feature is not included in your equipment, uncheck the CEPH option. Then click **Next**.



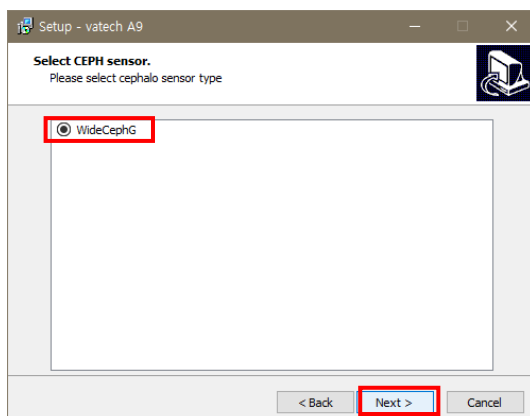
6. Confirm that the **WidePano** is selected for the CBCT sensor and click **Next**.



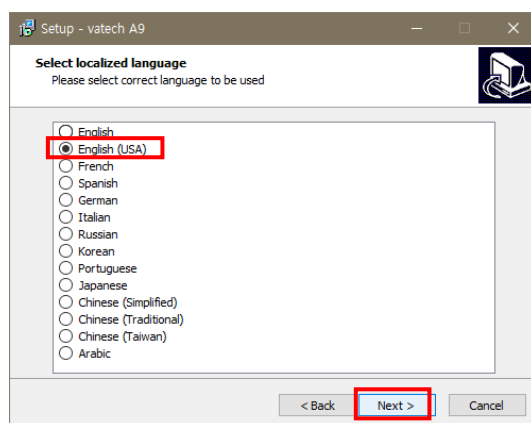
7. Confirm that the **WidePano** is selected in the PANO sensor and click **Next**.



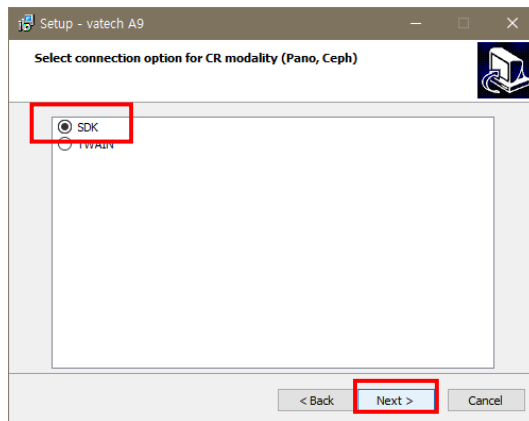
8. (Optional) Select “**WideCeph G**” for the CEPH sensor type and click **Next**.



9. Select the language for the equipment and click **Next**.

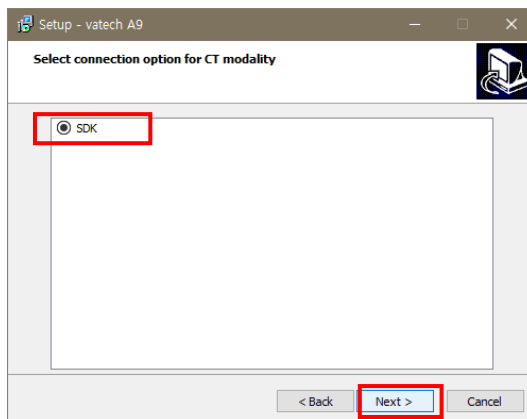


10. Select the connection for CR modality (Pano, Ceph) and click **Next** to continue.

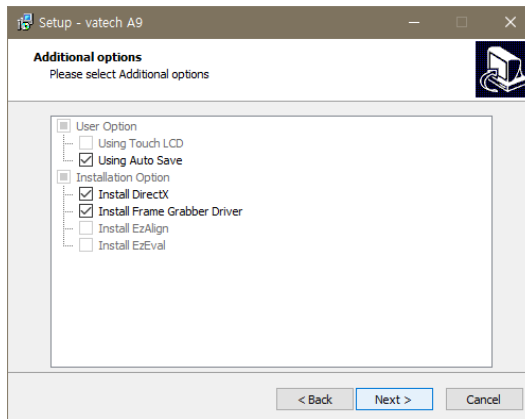
**NOTICE**

Select the SDK if **EzDent-i** has been installed.

11. Select the connection option for CBCT modality and click **Next** to continue.



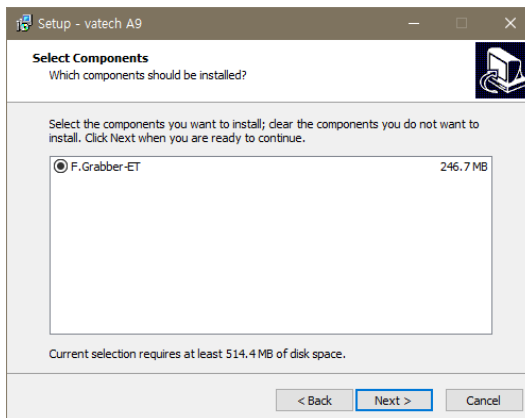
12. Confirm that your **User Option** and **Installation Option** are selected as per the image below. For the first-time installation, check all installation options provided.



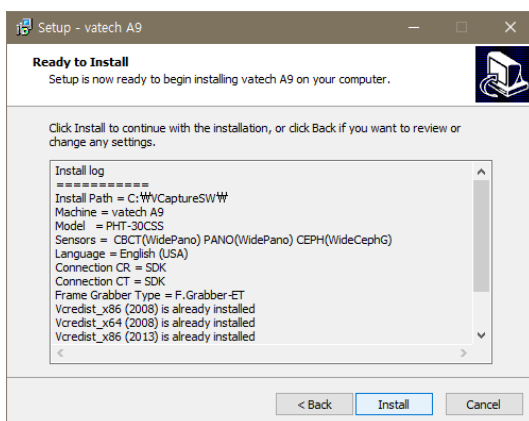
NOTICE

When AutoSave is checked, the system saves the image data automatically.

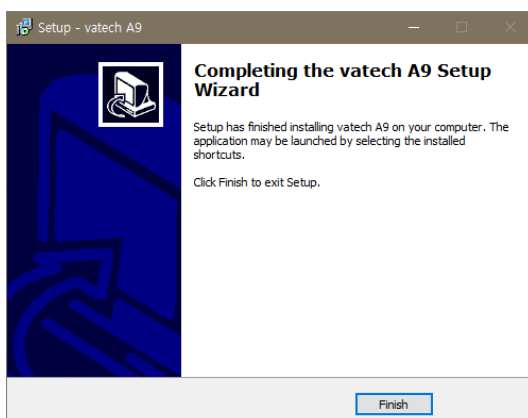
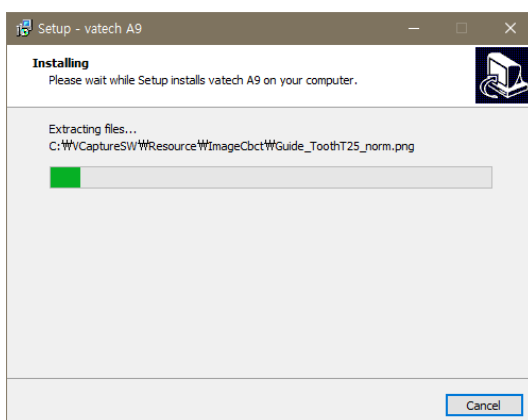
13. Check **F.Grabber-ET** on the window and click **NEXT**.



14. On the **Ready to Install** window, confirm that the information you have entered is correct. If you need to make a change, click **Back** to return to the previous window.

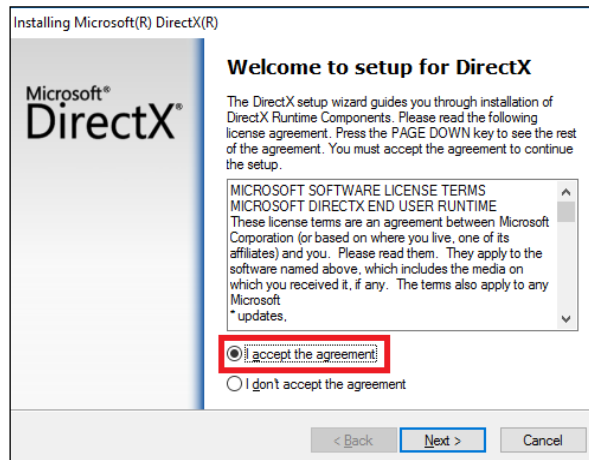


15. Click **Install** to complete the installation when all information is confirmed.

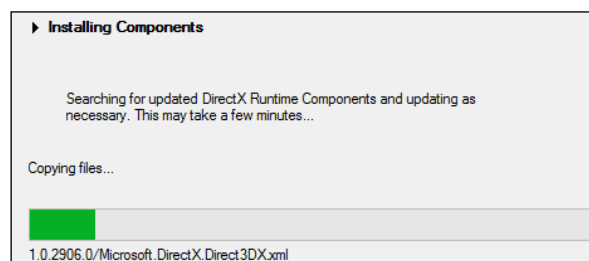
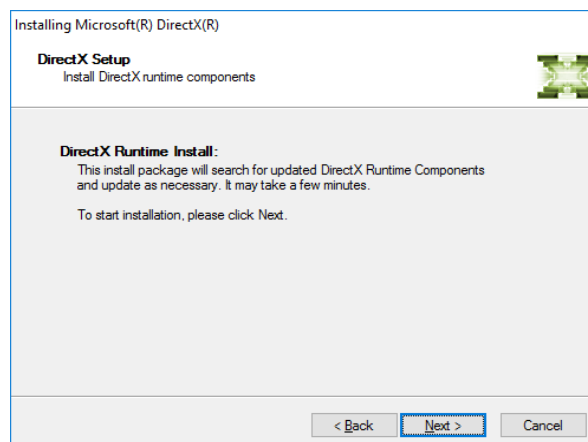


Installing the DirectX

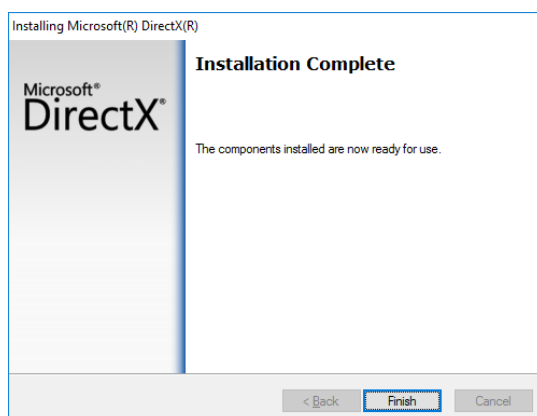
1. After completing the DICOM viewer installation, the DirectX® installation will be started. Select **"I accept the agreement"** in the Welcome window.



2. Click **Next** to start the installation.

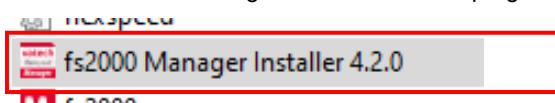


- Click **Finish** to exit the wizard.

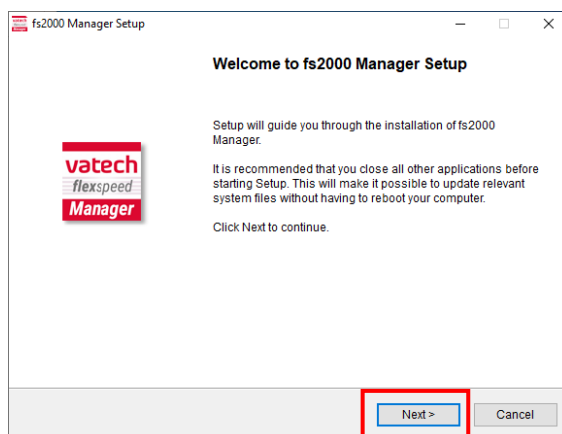


Installing fs2000 Manager

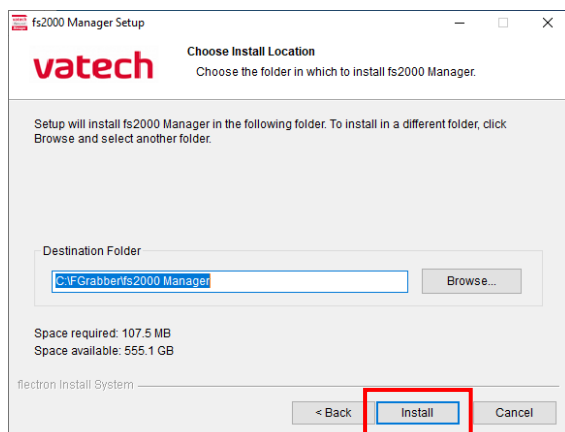
- Select the fs2000 manager installer from the program list.



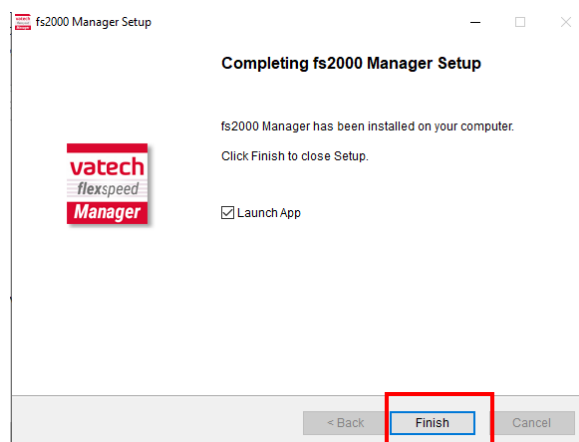
- Click **Next** to proceed with the installation.



3. Select the Destination Folder and click **Install**.



4. Click Finish to finalize the program installation.



9.5 Setting up the User-specific Information

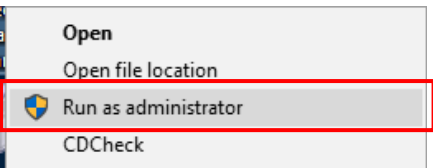
NOTICE

See the corresponding section for setup instructions based on the viewer program (EzDent-i (SDK)) installed on the PC.

- EzDent- i: Refer to Section 9.5.2 when the EzDent-i is installed.

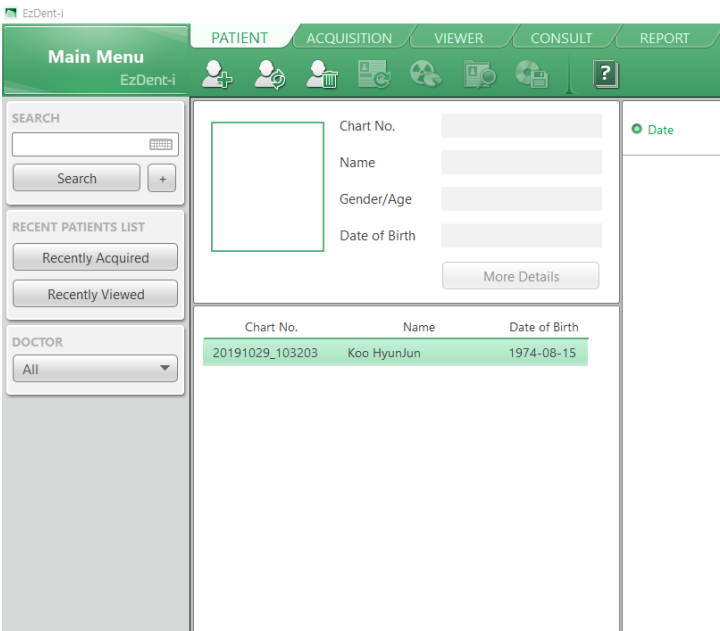
NOTICE

This program must be run in administrator mode.



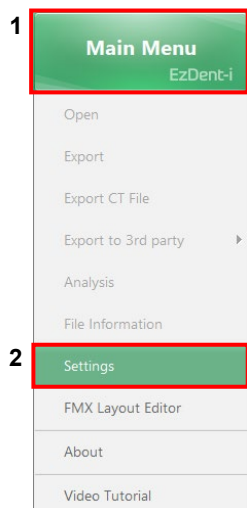
9.5.1 Running the Image Viewer

1. Run the image viewer. On your desktop, double-click the **EzDent-i** icon. The **EzDent-i**'s main window is displayed as follows.

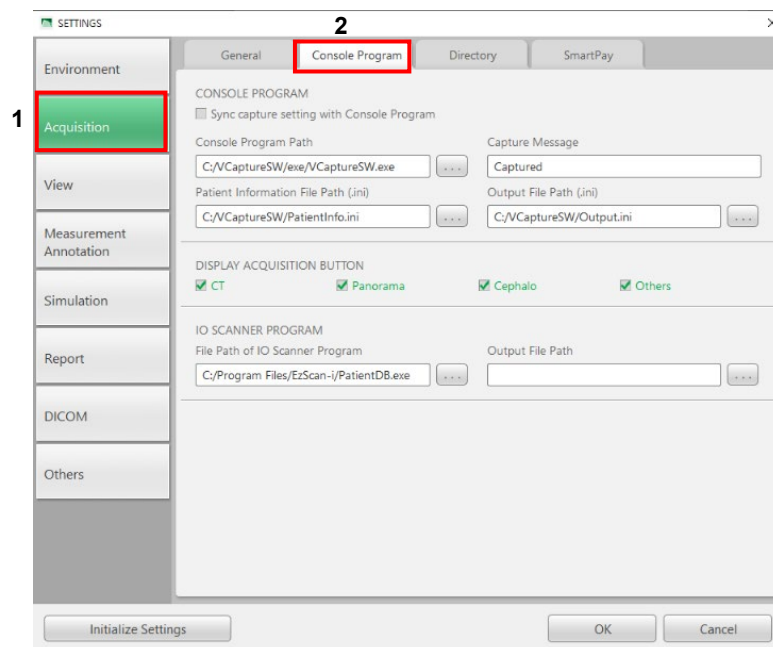


9.5.2 Interfacing the EzDent-i with Imaging Program (One-time Linking)

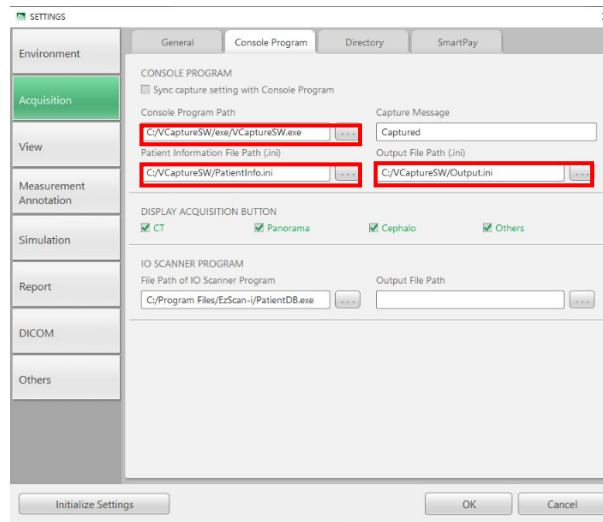
1. On the main screen of the **Main Menu**, click **EzDent-i** → **Setting**.



2. Click **Acquisition** → **Console Program**.



3. Make sure that the console program settings are as follows:
- Console Program Path: C:/VCaptureSW/exe/VCaptureSW.exe
 - Capture Message: **vatech A9** Captured
 - Patient Information File Path: C:/VCaptureSW/PatientInfo.ini



4. Click **OK** and restart the program to apply the settings.



9.5.3 Creating a New Patient Record

NOTICE

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

1. Click on the **Add Patient** button from the **PATIENT** tab.

The screenshot shows the EzDent-i software interface. The top navigation bar has tabs for PATIENT, ACQUISITION, VIEWER, and CONSULT. The PATIENT tab is active. On the left, there is a 'Main Menu' with a search bar and a list of recent patients. The 'Add Patient' button is highlighted with a red box. The main area shows a form for adding a new patient with fields for Chart No., Name, Gender/Age, and Date of Birth. A table below the form lists recent patients.

| Chart No. | Name | Date of Birth |
|-----------------|-------------|---------------|
| 20191029_103203 | Koo HyunJun | 1974-08-15 |

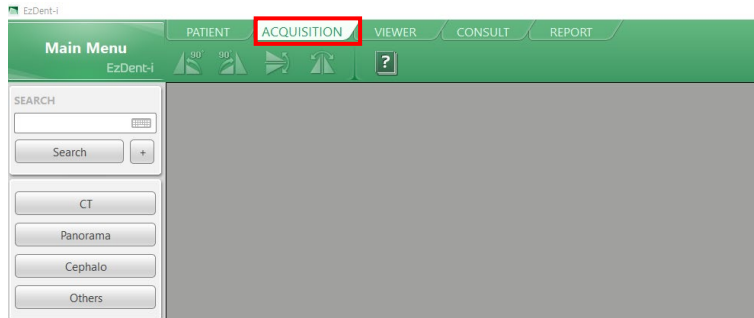
2. Enter the required patient information. **Chart Number**, **First Name**, and **Last Name** are required fields that must be filled in. All other fields are optional, but it is recommended that they be filled in.

The screenshot shows the 'ADD PATIENT' dialog box. It contains fields for Chart No. (highlighted with a red box), Name (Last Name and First Name, also highlighted with a red box), Gender, Date of Birth, Doctor 1, Doctor 2, Social ID, Phone, Mobile, E-Mail, Zip Code, and Address. There are 'Add' and 'Cancel' buttons at the bottom.

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

9.5.4 Initiating the Imaging Program

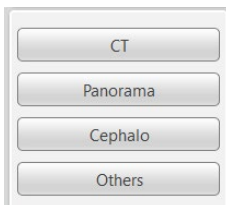
1. Click the **ACQUISITION** tab. The imaging mode selection buttons appear.



NOTICE

The imaging mode selection buttons in the left menu may appear differently, depending on the equipment's capacity for acquiring images.

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



NOTICE


The error code **E033** indicates that the equipment is still in packing mode. It should disappear after the command for disabling the packing mode has been executed. For details, refer to '**Disabling the Packing Mode**' on page 136.

3. Proceed to section **9.5.5 Configuring the Parameters**.

9.5.5 Configuring the Parameters

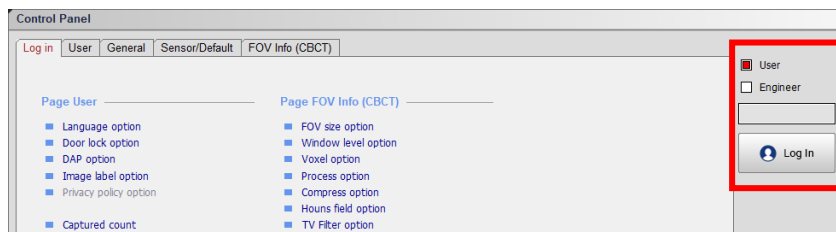
IMPORTANT

The following information should be entered by the user requirements.

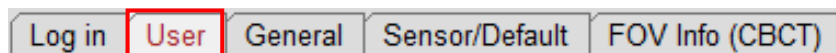
1. From the main GUI window, click the settings icon() in the upper left corner.



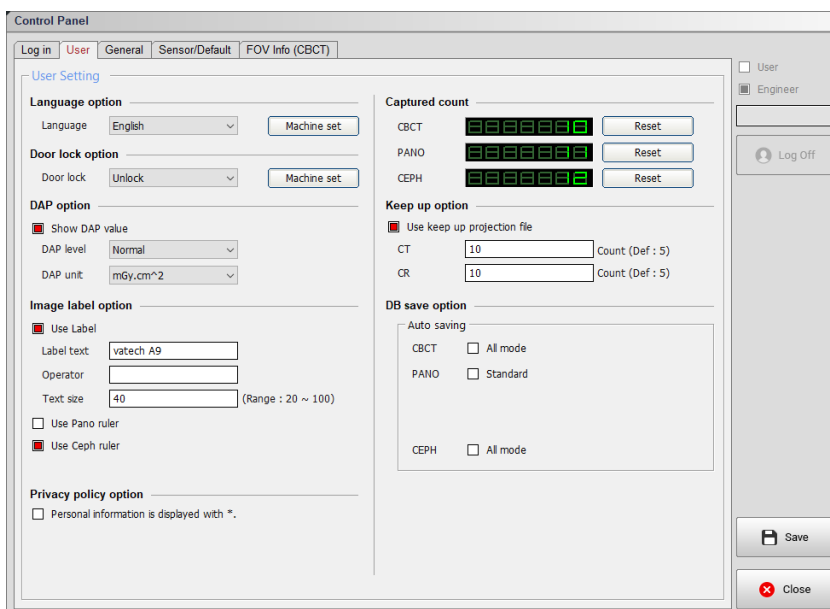
2. **Log in** tap will be open by default. On the right side of the screen, select **Engineer** and type the password ('vatech') and then click **Log In**.



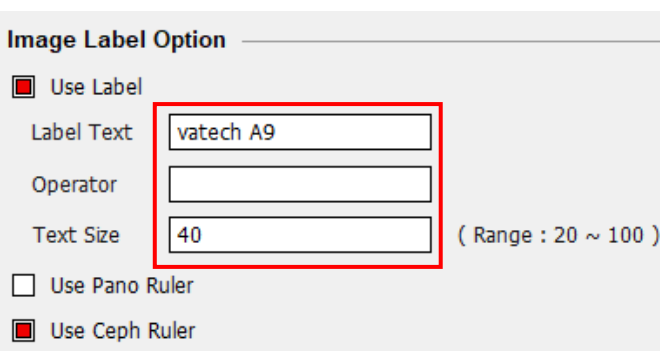
3. Click on the **User** tab.



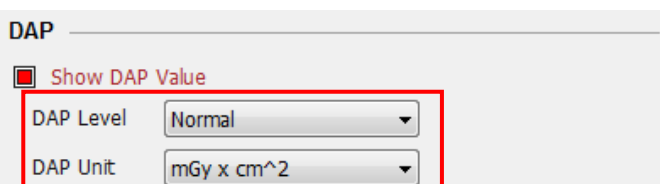
4. The User Settings are displayed as shown in the following figure.



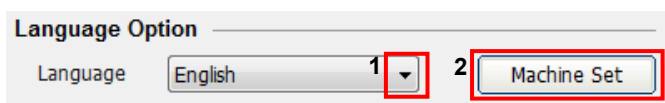
5. In the **Image Label Option**, check that the **Label Text** and Text Size are displayed the same as below.



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



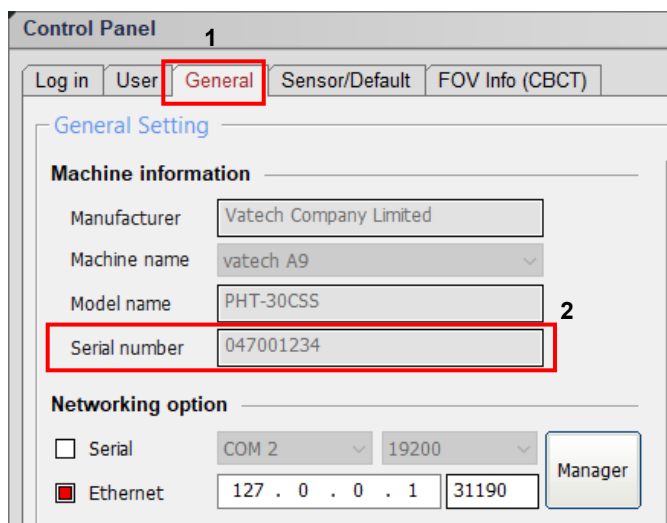
- In the **Language Option**, the default language setting is English. If necessary, change the language setting from the drop-down list and click **Machine Set**.



Language Option

Language: English ▼ Machine Set

- 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)

General Setting

Machine information

Manufacturer: Vatech Company Limited

Machine name: vatech A9

Model name: PHT-30CSS

Serial number 047001234 2

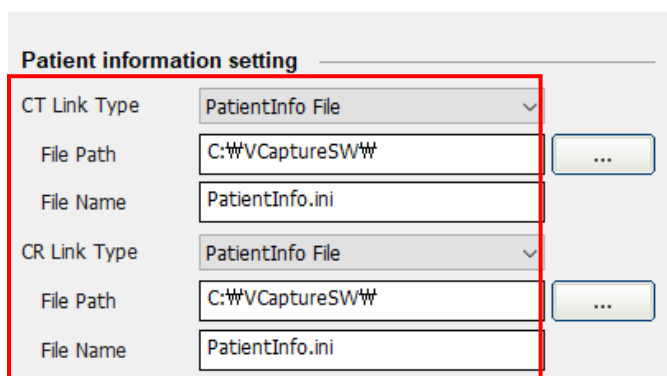
Networking option

☐ Serial: COM 2 | 19200

☒ Ethernet: 127 . 0 . 0 . 1 | 31190

Manager

- In the **Patient Information Setting**, configure the Link Type, File Path, and File Name, as shown in the following figure.



Patient information setting

CT Link Type: PatientInfo File

File Path: C:\VCaptureSW\

File Name: PatientInfo.ini

CR Link Type: PatientInfo File

File Path: C:\VCaptureSW\

File Name: PatientInfo.ini

10. 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 setting

| | | |
|------------------|-------------------------------|------|
| CT Link Type | SDK Link | |
| CT Save Path | C:\V\CaptureSW\ImageOutput\CT | ... |
| CR Link Type | SDK Link | |
| CR Save Path | C:\V\CaptureSW\ImageOutput\CR | ... |
| CR Save Name | Image | .DCM |
| Capture Message | vatech A9 Captured | |
| Output File Path | C:\V\CaptureSW\ | ... |
| Output File Name | Output.ini | |

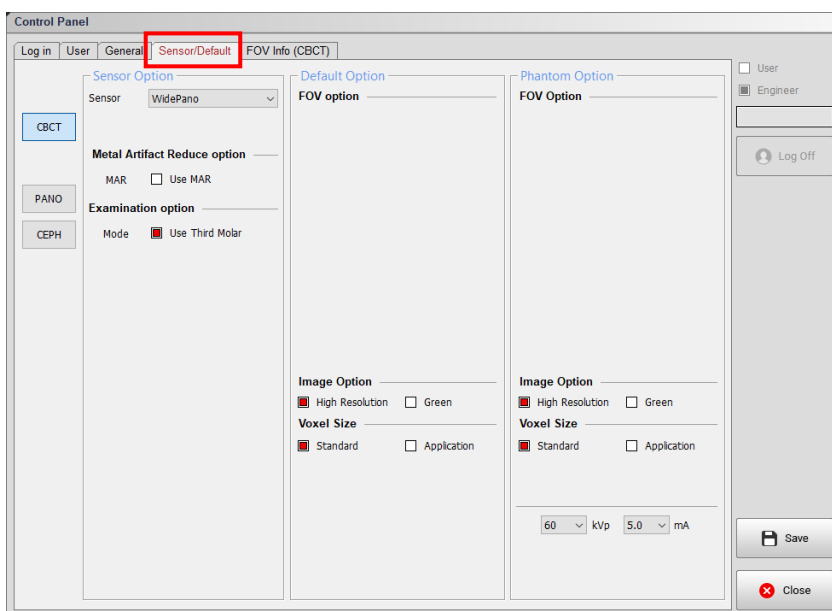
Save

Close

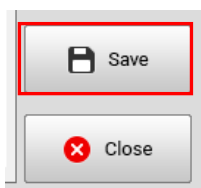
- Click on the **Sensor / Default tab** and configure the user-defined parameters.

NOTICE

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



- Click **Save** if changes occurred.



Disabling the Packing Mode**IMPORTANT**

vatech A9 has the Packing Mode built into the system to prevent the unit from being damaged while shipping and transporting. Since the mode is automatically turned on upon shipping, the installer must disable the Packing Mode before turning on the equipment.

CAUTION

The equipment does not operate even after the power is turned on if the packing mode is not properly disabled.

1. Click on the **General** Tab on the Control Panel.
2. The Networking option enables the Ethernet checkbox and sets **Ethernet IP** and **Port** as below, and then clicks **Manager**.

Networking option

☐ Serial COM 2 19200

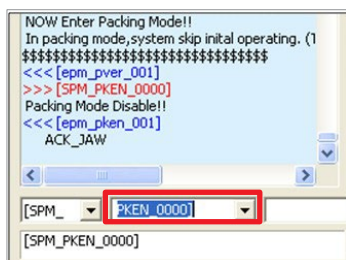
☒ Ethernet 127 . 0 . 0 . 1 31190

Manager

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



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



NOTICE

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

- Click **Exit** and terminate the Control Panel.
- [Important] Exit the imaging program (main GUI).**
- Reboot the system for the changes to take effect.

Selecting an Announcement Mode: Music or Beep (Optional)

If selecting an announcement between music and beep is necessary, perform the following procedures.

Command specifications:

| Command 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 |

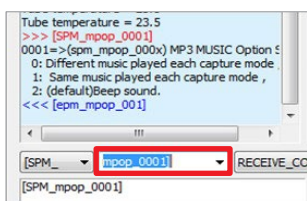
1. Send the command by the command specification, as specified in the table above.

Here are some examples.

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

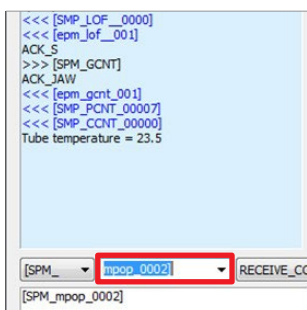
< When the same Music Announcement is desired for CT and PANO imaging modality >

Enter the command [SPM_MPOP_0001] in the command field.



< When the same Beep Announcement is desired for CT and PANO imaging modality >

Enter the command [SPM_MPOP_0002] in the command field.



Finalizing the Parameter Settings

1. Click **Exit** → **Close** and terminate the Control Panel.
2. **[Important]** Exit the imaging program (main GUI).

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10. Technical Specifications

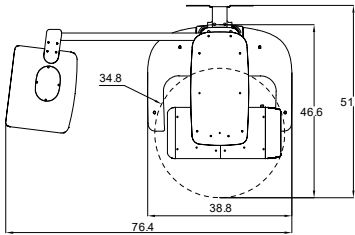
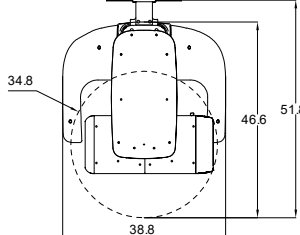
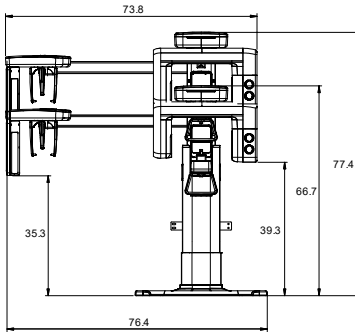
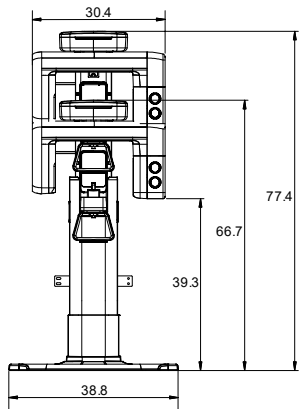
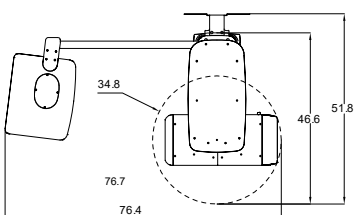
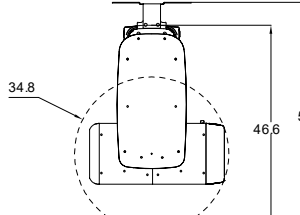
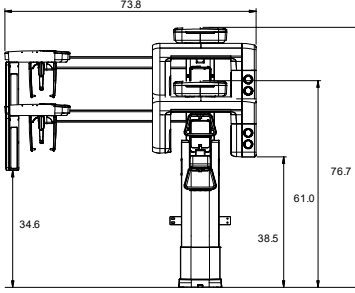
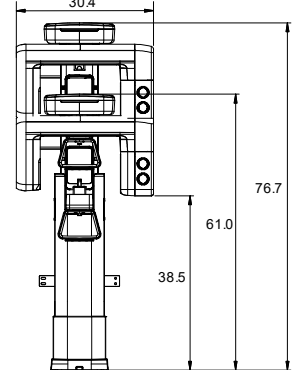
10.1 Mechanical Specifications

Dimensions (unit = mm)

| Item | | Description |
|--|-------------------|---|
| Weight | Without CEPH unit | 108.3 kg (238.8 lbs. - without Base) |
| | | 160.5 kg (353.8 lbs. – with Base) |
| | With CEPH unit | 134.3 kg (296.1 lbs. - without Base) |
| | | 186.5 kg (411.2 lbs. - with Base) |
| Total Height | Without Base | Max. 1948 mm (76.7 in) |
| | With Base | Max. 1966 mm (77.4 in) |
| Dimensions during operation (Length x Width x Height) | Without CEPH unit | without Base: 884.6 (L) x 1314.5 (W) x 1948.0 (H) (mm) 34.8 (L) x 51.8 (W) x 76.7 (H) (in) |
| | | with Base: 983.3 (L) x 1314.5 (W) x 1966.0 (H) (mm) 38.8 (L) x 51.8 (W) x 77.4 (H) (in) |
| | With CEPH unit | without Base: 1898.4 (L) x 1314.5 (W) x 1948.0 (H) (mm) 76.4 (L) x 51.8 (W) x 76.7 (H) (in) |
| | | with Base: 1948.4 (L) x 1314.5 (W) x 1966.0 (H) (mm) 76.7 (L) x 51.8 (W) x 77.4 (H) (in) |
| Installation type | | Base Stand / Wall Mount (Default: Wall Mount type) |
| Packing Box Organization | | Main Box, CEPH Box (Optional), Base Box (Optional) |

10.2 Drawing Dimensions

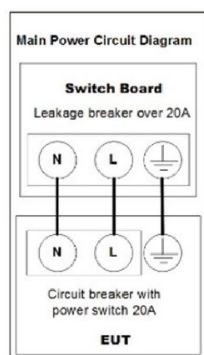
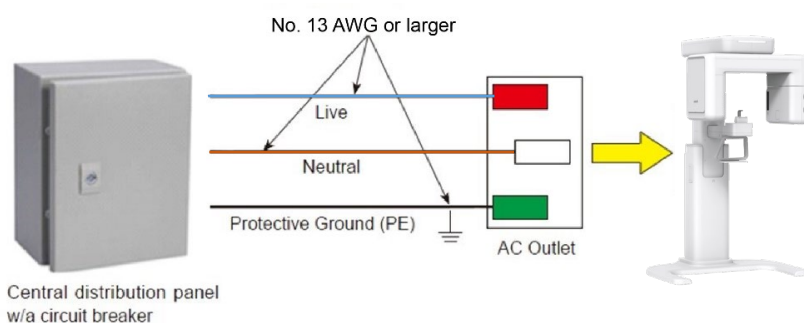
| unit = mm | With CEPH | Without CEPH |
|------------------------------|-----------|--------------|
| Top view (With Base) | | |
| Front View (With Base) | | |
| Top view (Without Base) | | |
| Front View (Without Base) | | |

| unit = inch | With CEPH | Without CEPH |
|------------------------------|---|--|
| Top view (With Base) |  |  |
| Front View (With Base) |  |  |
| Top view (Without Base) |  |  |
| Front View (Without Base) |  |  |

10.3 Electrical Specifications

| Item | Description |
|----------------------|---|
| Power supply voltage | 100 - 240 V ~ |
| Frequency | 50 / 60 Hz |
| Power rating | 1.7 kVA |
| Accuracy | Tube Voltage (kVp) $\pm 10\%$ Tube Current (mA) $\pm 20\%$ Exposure Time (s) $\pm (5\% + 50\text{ ms})$ |

- The input line voltage depends on the local electrical distribution system.
- Allowable input voltage fluctuation requirement: $\pm 10\%$.
- Mode of operation: non-continuous operation (NFPA:70 long time operations) – needs waiting time (at least 60 times the exposure time) before the next exposure begins.



NOTICE

- To assure line voltage quality, a separate 3-core grounded power cable connected directly to the central distribution panel with an over-current circuit breaker rated for 20A must be used.
- Maximally allowed deviation of the tube voltage/tube current/exposure time:
Tube Voltage (kVp) $\pm 10\%$ / Tube Current (mA) $\pm 20\%$ / Exposure Time (s) $\pm (5\% + 50\text{ ms})$ according to IEC 60601-2-63.
- The mains resistance should not exceed 0.045 ohm at 100 V and 0.19 ohm at 240 V.
- This equipment should be connected to the earthed outlet.

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 |

Appendix

A. Installing the Warning Lamp and Door Interlock Switch

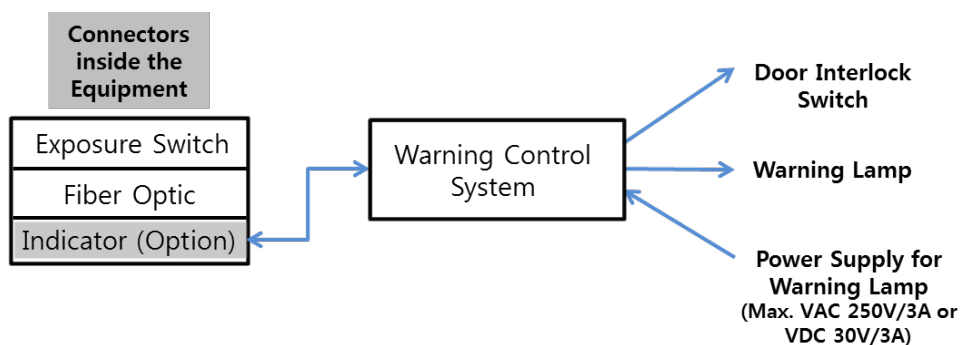
Requirement

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

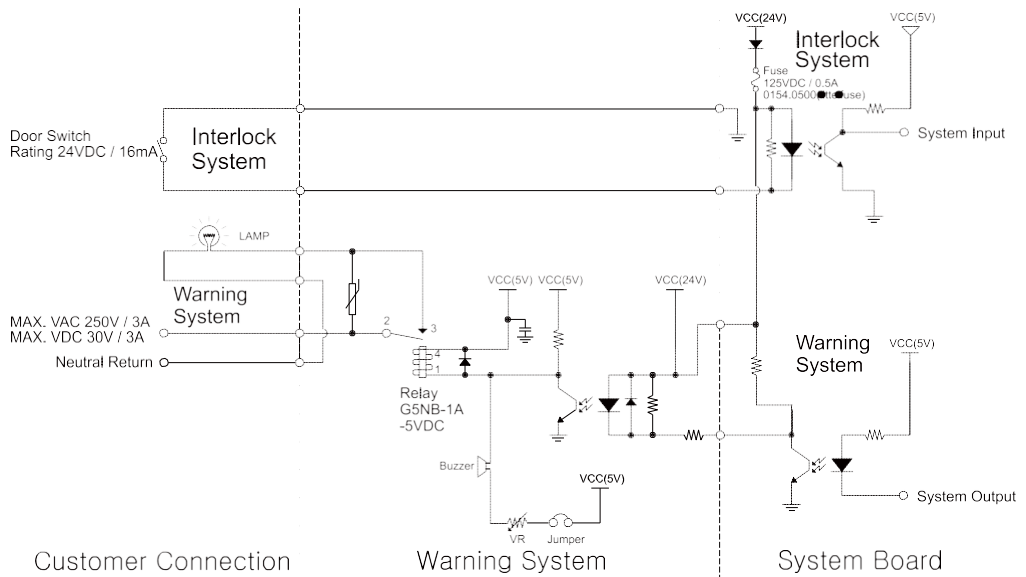
* MEIGaN: Medical Electrical Installation Guidance Notes

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

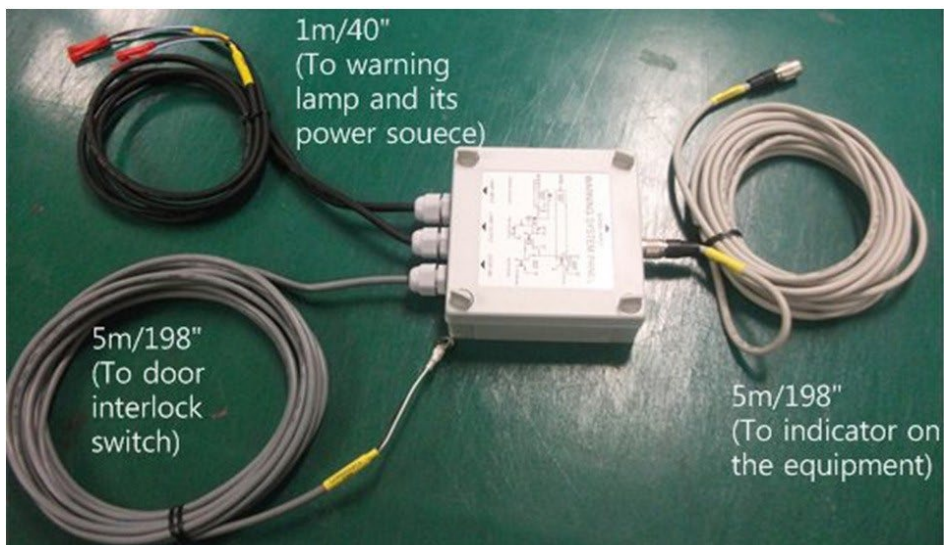
Block Diagram



Schematic Diagram



Components Supplied



Procedures

<The individual cable length>

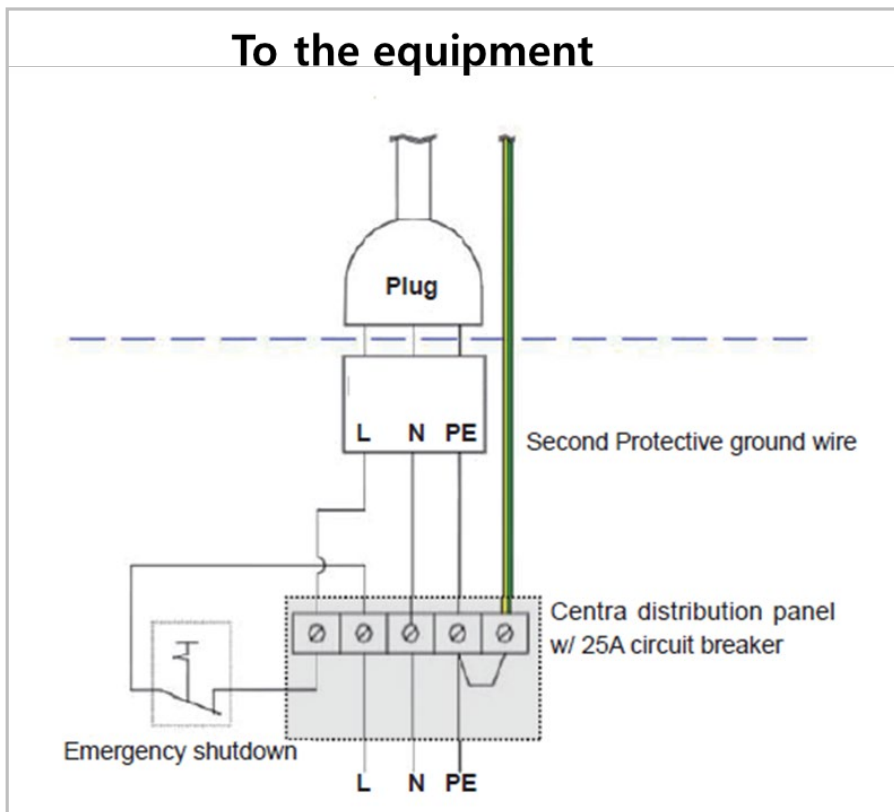
- Signal Cable: 5 m / 198"
- Door interlock cable: 5 m / 198"
- Warning lamp: 1 m / 40"
- Power source cable: 1 m / 40"



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

B. Installing the Emergency Stop Switch

- Install the **Emergency Stop Switch** on the power cable line.
- Install this switch so that it is easy to reach in an emergency but cannot be pushed by mistake.
- The switch shall be a type of mistake-proof.
- The switch is not supplied.
- The switch shall be installed at a height of 1.2 to 1.5 meters (47 to 60").



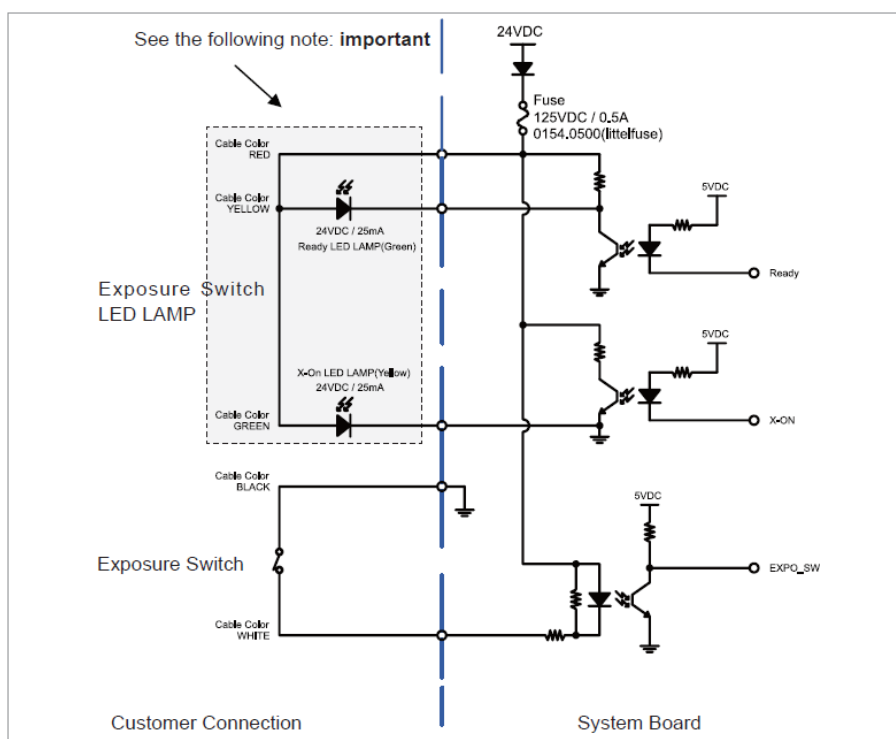
1. The cable sizes are N, L, and PE ≥ 12 AWG ($3 \times 4 \text{ mm}^2$).
2. The cable to **Emergency Stop Switch** shall be the same size as the power cable itself.
3. Install the socket connector terminal for the 2nd protective ground wire.

C. Connecting the 3rd party Exposure Switch (Optional)

This section explains how to connect the third-party **Exposure Switch** with the equipment from **VATECH**.

< How to >

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



NOTICE

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

D. Checking PC BIOS Settings

< HP PC BIOS Setup >

PC Model: HP Z1

| 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] |

E. 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 Check List

| | Yes | No |
|---|--------------------------|--------------------------|
| Is the room large enough? At minimum, Without CEPH unit : 2,500 mm (L) x 1,700 mm (W) x 2,700 mm (H) With the CEPH unit : 2,500 mm (L) x 2,500 mm (W) x 2,700 mm (H) | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the door entrance wider than 800 mm (32")? | <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 level? | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the carpet on the floor? If so, remove it. | <input type="checkbox"/> | <input type="checkbox"/> |

Before Opening Boxes

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

After Opening Boxes

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

5. While Installing Equipment

| | Yes | No |
|---|--------------------------|--------------------------|
| Are installers careful with any sensitive parts while carrying equipment? | <input type="checkbox"/> | <input type="checkbox"/> |
| Did the installers make sure that various cables, especially optic cables, are not coiled too much? | <input type="checkbox"/> | <input type="checkbox"/> |
| Did the installers perform installations according to the manual? | <input type="checkbox"/> | <input type="checkbox"/> |
| Did the installers touch or place pressure on the sensors while installing? | <input type="checkbox"/> | <input type="checkbox"/> |
| Did the installer make sure 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 equipment be well balanced? | <input type="checkbox"/> | <input type="checkbox"/> |

6. After Installation

| | Yes | No |
|---|--------------------------|--------------------------|
| Does the chin rest successfully initialize after turning on the system? | <input type="checkbox"/> | <input type="checkbox"/> |
| Are 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"/> |
| Are they 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? ($Z_{input} \leq 0.5 \Omega$) | <input type="checkbox"/> | <input type="checkbox"/> |
| Do equipment and PC use the same dedicated circuit? | <input type="checkbox"/> | <input type="checkbox"/> |

9. Network Configuration:

| | 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 TCP/IP address assigned? | 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 grants this product compliance to the European Directive for Medical Devices 93/42/EEC as amended by 2007/47/EC as a class IIb device.

vatech A9TM

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