

# EzRay Air™ Wall

## Installation Manual

Model : VEX-S300W

Version : 1.47

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- English



Full version

**vatech**



## Notice

This manual covers the hardware installation procedures for the **EzRay Air Wall (Model: VEX-S300W)** intra-oral dental X-ray unit. An installation manual and user manual are shipped with each hardware unit.

In this manual, **Equipment** or **System** refers to the **EzRay Air Wall**.

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

A thorough review of this manual is recommended before installation to ensure proper installation of this equipment. The **EzRay Air Wall** is in steady improvement.

The information contained in this manual may be subject to change without notice, justification, or notification of the persons concerned.

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

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

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**Manual name: EzRay Air Wall (Model: VEX-S300W) Installation Manual**

**Version: 1.47**

**Publication date: 2021-01**

## Conventions Used in this Guide

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

	Warnings indicate information that should be followed with the utmost precision. Failure to comply with warnings may result in severe damage to the equipment and physical injuries to the patient or operator.
	Cautions indicate a situation that demands prompt but careful action, remedy, or emergency attention.
	Essential symbols indicate a necessary action or instruction.
	Notes help you optimize system performance. Carefully read each note to ensure that the equipment is used to its full potential.
	Radiation symbols indicate a possible danger from radiation exposure.
	ESD susceptibility symbols indicate that an item is susceptible to damage from electrostatic discharges.
<b>Warnings Regarding X-ray Radiation</b>	
	<ul style="list-style-type: none"> <li>Failure to install this equipment in an approved location may be dangerous to the patient and operator.</li> <li>Stationary radiation shielding must be installed to protect the operator from radiation.</li> <li>The X-ray system may cause injury to the patient if improperly used. Obey all federal and municipal standards regarding radiation safety.</li> <li>Operators must provide protective clothing to the patient before X-ray capturing. Pregnant women must consult with a doctor before being exposed to an X-Ray.</li> </ul>
	Failure to read and understand the information provided in this manual may result in physical injury, damage to the equipment, or equipment failure. Please read each chapter in its entirety and understand the information therein before attempting any of the installation procedures.



- Installers must read and understand the installation instructions fully before installation.
- The installer must install the system according to the instructions provided by this manual and perform the appropriate procedures.
- If the equipment has been stored at temperatures of below 10°C (50°F) for more than a couple of hours, allow the equipment to reach room temperature before applying mains voltage.
- People authorized by VATECH must only perform installation and related work.
- Do not connect any items or equipment to this system, which are not part of the system: **IEC60601-1-1**.
- Any equipment not approved by VATECH must comply with the applicable standards: **IEC 60950-1** for IT equipment (ex: PC) and **IEC 60601-1** for medical electrical equipment.
- All operators of this equipment are responsible for ensuring that the requirements outlined in **IEC 60601-1-1: Safety Requirements for Medical Electrical Equipment** are fully met to ensure the safety of patients, operators, and the environment.
- 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**

- Proper shielding of the room is essential: Since these requirements vary depending on the country, it is the installer's responsibility to verify that all applicable radiation safety requirements are met.
- This equipment should not be installed near other devices.
- Do not install the equipment in an area that is exposed to strong electromagnetic fields.
- Do not install this system in an area where there is the risk of an explosion.
- The electrical installation of this system 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.

**IMPORTANT**

**This equipment complies with the following standards:**

- IEC 60601-1
- IEC/EN 60601-1-2
- IEC 60601-1-3
- IEC 60601-1-6
- IEC 60601-2-65
- ISO 13485
- 21 CFR 1020.30 & 1020.31

# Table of Contents

<b>Notice.....</b>	<b>i</b>
<b>Conventions Used in this Guide .....</b>	<b>ii</b>
<b>Table of Contents.....</b>	<b>v</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 Manufacturer's Liability .....	1
1.2 Customer's Responsibility.....	1
<b>2. Before Installing the Equipment .....</b>	<b>3</b>
2.1 Required Tools .....	3
2.2 Unpacking the Boxes .....	5
2.3 Checking the Components .....	7
<b>3. Installing the Equipment.....</b>	<b>20</b>
3.1 Marking Drill points on the wall .....	23
3.2 Installing the Power Box Assembly .....	24
3.3 Installing the Horizontal Arm.....	34
3.4 Installing the Scissor Arm .....	37
3.5 Installing the X-Ray Generator Assembly.....	39
3.6 Connecting the Cables.....	43
<b>4. Product Specifications.....</b>	<b>55</b>
4.1 Mechanical Specifications.....	55
4.2 Technical Specifications .....	60
4.3 Electrical Specifications.....	61
4.4 Environmental Specifications.....	62
<b>Appendix.....</b>	<b>61</b>
Drilling Template .....	61
Connecting the Third-party Exposure Switch(Optional) .....	62
Installation Checklist.....	63

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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, has been carried out by an authorized agent by this installation manual.
- The electrical installation has been carried out by 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.

## 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 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 rating.
- Install the circuit breaker specified by this manual.
- Provide the installer(s) with the current dimensions of the room including the hallway and entry door sizes.

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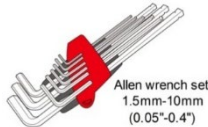
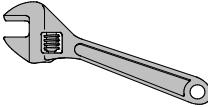
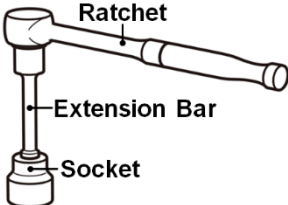
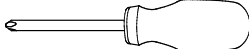


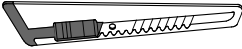

## 2. Before Installing the Equipment

### NOTICE


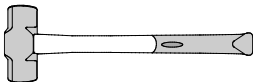
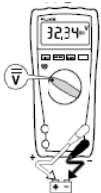


Two installers are required to install the equipment safely.

### 2.1 Required Tools


The following tools are necessary to install the equipment.

Item	Figure	Size
Wrench Set	 Allen wrench set 1.5mm-10mm (0.05"-0.4")	1.5 mm-10 mm
Monkey Spanner		200 mm
Ratchet with Extension Bar and Sockets	 Ratchet Extension Bar Socket	Socket: 13 mm (for M8), 17 mm (for M10)
Crosshead screwdriver with a magnetic tip		L=200 mm
Spirit Level		Type 70/300
Anti-static Gloves		-
Knife		-
Tape Ruler		5 m

## 2. Before Installing the Equipment

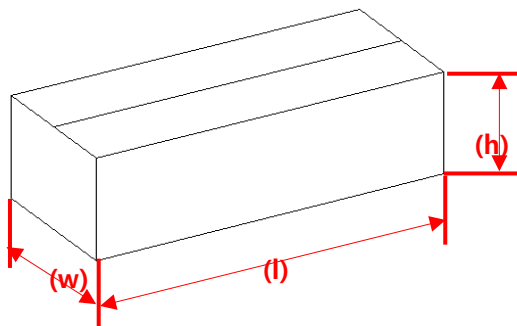
Item	Figure	Size
Marker Pen (thick tip)		-
Hammer		-
Multi-meter		-
Hammer Drill		-
Cutting Pliers		-

## 2.2 Unpacking the Boxes

<b>IMPORTANT</b>	Check the packaging for signs of damage visually before opening the package. If it appears damaged, do not open the package and immediately contact the shipping company, agent or VATECH		
<b>CAUTION</b>	Wear anti-static or general-purpose gloves. (Refer to ' <b>Parts and Accessories List</b> ' on pages 15-19.		
<b>Anti-static Gloves</b>	Part No.: 45 Qty.: 1 ea		

### Package Size

Item	Size (mm / inch)	Weight (kg/lbs)
Length	1,137 mm / 44.8"	26.6 kg (58.6 lbs) (Horizontal Arm 900 mm)
Width	443 mm / 17.4"	
Height	416 mm / 16.4"	

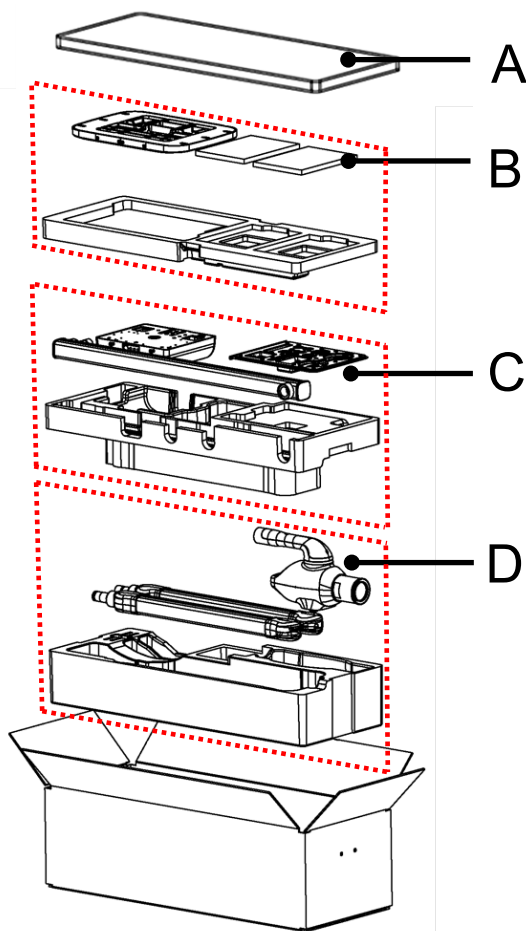


### Unpacking the Main Box

1. Move the main box to a convenient place as close as possible to the installation location.
2. Remove each box in the following order.

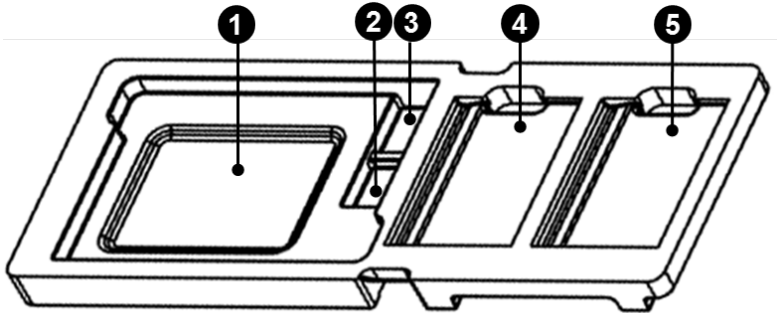
**A: Top Cover**  
**B: Upper Box**  
**C: Middle Box**  
**D: Lower Box**

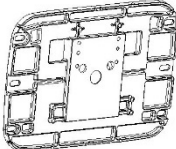

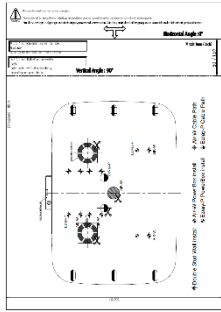
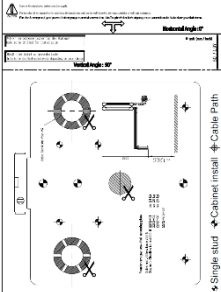
A → B → C → D











## 2.3 Checking the Components

### Upper Box (B)

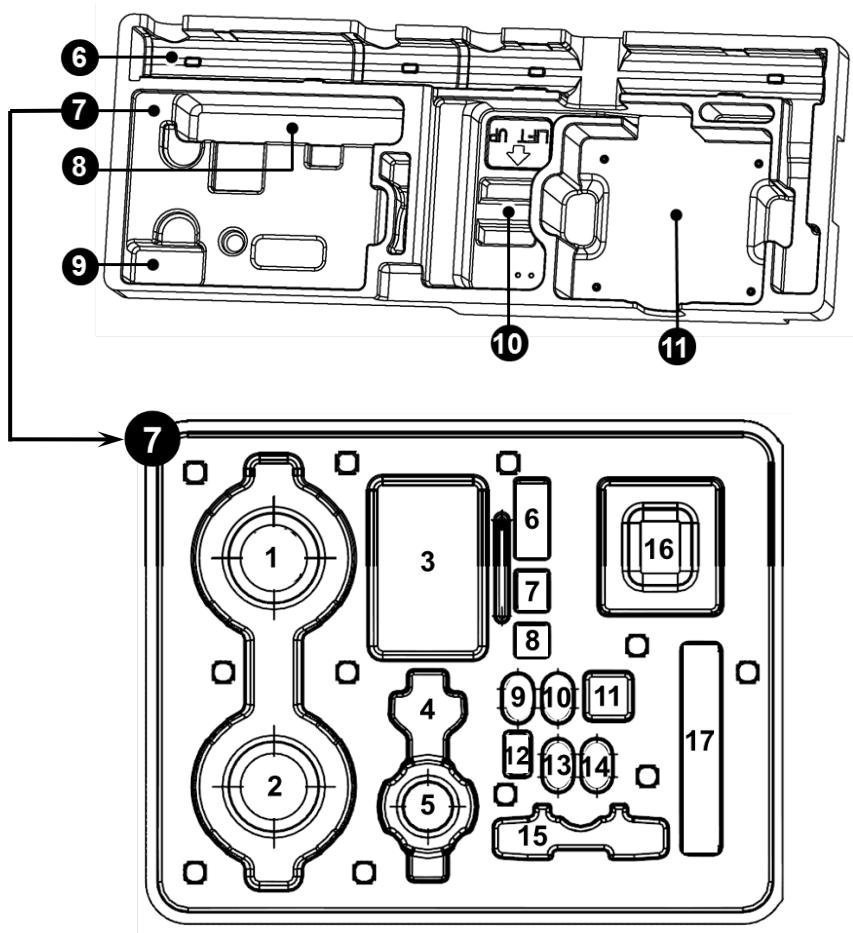





No.	Items	Figure	Qty.	Comments	Confirmed
1	Double Stud Frame		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Double Stud Cover		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	<Wall Bracket: Double Stud> Drilling Template for Double Stud		1	Paper (Size: A2)	YES <input type="checkbox"/> NO <input type="checkbox"/>
	<Wall Bracket: Single Stud> Drilling Template for Single Stud		1	Paper (Size: A3)	YES <input type="checkbox"/> NO <input type="checkbox"/>

## 2. Before Installing the Equipment


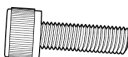










No.	Items		Figure	Qty.	Comments	Confirmed
2	<Wall Bracket: Double Stud>	Fisher Anchor (M10 x L40)		6	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
		Fisher Bolt (M10 x L35)		6	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	<Wall Bracket: Single Stud>	Blank	-	-	-	-
3	<Wall Bracket: Double Stud>	HEX HEAD WOOD SCREW (M10 x L70)		4	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
		HEX HEAD WOOD SCREW (M8 x L60)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
		with Flat Washer (M8)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	<Wall Bracket: Single Stud>	Blank	-	-	-	-
4	Installation Manual			1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Anti-static Gloves			1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
5	User Manual			1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>



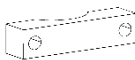






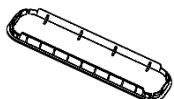

### Middle Box (C)




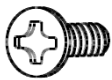



No.	Items	Figure	Qty.	Comments	Confirmed
6	Horizontal Arm Assembly		1	<b>3 options:</b> 1. 450 mm 2. 600 mm 3. 900 mm	YES <input type="checkbox"/> NO <input type="checkbox"/>
	<b>Accessory Kit</b>	-	-	-	-
7	1 Rectangular Cover 2x3 (option)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	2 Rectangular Cover 4x3		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>

## 2. Before Installing the Equipment

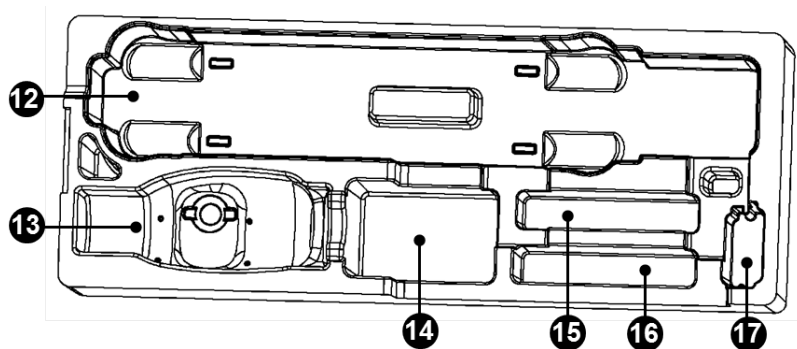
No.	Items		Figure	Qty.	Comments	Confirmed
7	3	HEX HEAD WOOD SCREW for Single Stud (M10 x L70)		3	For Single Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
		Wrench Bolt (M5 x L25)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	4	X-ray Generator Stopper		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	5	X-ray Generator Arm Bushing		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	6	Truss Screw (M4 x L6)		7	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
		Star Washer (M4)		3	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	7	Generator Cover Bolt (PH M3 x L6)		3	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	8	Fixing Truss Screw for X-ray Generator Stopper (M3 x L4)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	9	Silicone Cap (White)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	10	Silicone Cap (White)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
11	Power Box Sticker		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>	
12	X-ray Generator Arm Screw Cover 3		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>	

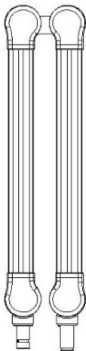
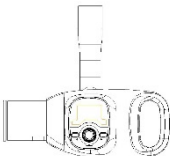


No.	Items	Figure	Qty.	Comments	Confirmed
7	X-ray Generator Arm Screw Cover 2		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	X-ray Generator Arm Screw Cover 1		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	ANTI-ROTATION BLOCK 2		1	ACETAL (Black)	YES <input type="checkbox"/> NO <input type="checkbox"/>
	ANTI-ROTATION BLOCK STIFFENER		1	Spc	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Fisher Anchor for Single Stud (M10 x L40)		3	For Single Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Fisher Bolt for Single Stud (M10 x L35)		3	For Single Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
17	Cable Tie		5	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
8	X-ray Generator Arm Cover		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Power Box Cover Deco		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Horizontal Arm Cable Cover		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Horizontal Arm Frame Cover		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>

## 2. Before Installing the Equipment




No.	Items	Figure	Qty.	Comments	Confirmed
9	Wrench Bolt for Double Stud (M8 x L20)		6	For Double Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Double Stud Cover Screw (FH M4 x L8)		8	For Double Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Double Stud Sticker		2	For Double Stud	YES <input type="checkbox"/> NO <input type="checkbox"/>
10	AC Power Cable (Option)		1	Length: 2 m	YES <input type="checkbox"/> NO <input type="checkbox"/>
11	Power Box Assembly (including Power Box Cover)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>

Lower Box (D)

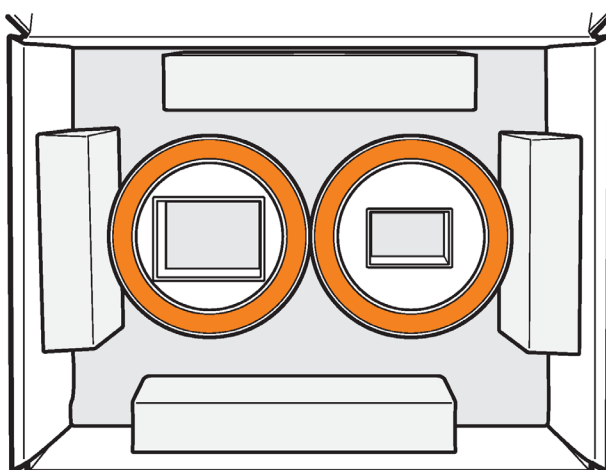




No.	Items	Figure	Qty.	Comments	Confirmed
12	Scissor Arm Assembly (including cables)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
13	X-ray Generator Assembly (including cables and <b>Round Cover</b> )		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
14	Remote Exposure Switch Assembly (including Holder and Double-sided Sticker)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Remote Exposure Switch Holder Screws (FH M3 x L16)		2	-	YES <input type="checkbox"/> NO <input type="checkbox"/>

## 2. Before Installing the Equipment


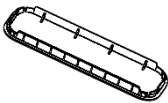
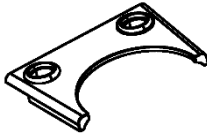







No.	Items	Figure	Qty.	Comments	Confirmed
15	Door Interlock Cable (option)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
16	Remote Exposure Switch Cable (Doorbell type) (Standard or Option)		1	- Standard for the USA - Option for the other regions	YES <input type="checkbox"/> NO <input type="checkbox"/>
17	Remote Exposure Switch (Doorbell type) (Standard or Option)		1	- Standard for the USA - Option for the other regions	YES <input type="checkbox"/> NO <input type="checkbox"/>

### C/S Component Box (Optional)



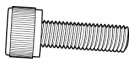



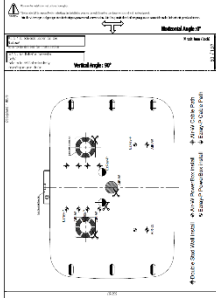


No.	Items	Figure	Qty.	Comments	Confirmed
1	Rotating Rectangular Cover 2x3 (3x2) (Option)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>
2	Rotating Rectangular Cover 4x3 (3x4) (Option)		1	-	YES <input type="checkbox"/> NO <input type="checkbox"/>

**Parts and Accessories List**







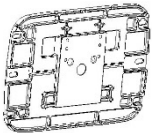


Part No.	Items	Specification	Figure	Qty.	Confirmed
1	Horizontal Arm Frame Cover	Material: ABS (White)		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
2	Horizontal Arm Cable Cover	Material: ABS (White)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
3	Power Box Cover Deco	Material: ABS (White)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
4	Silicone Cap (white)	Material: Silicone		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
5	Truss Screw	Size: M4 x L6		7	YES <input type="checkbox"/> NO <input type="checkbox"/>
6	Star Washer	Size: M4		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
7	X-ray Generator Arm Bushing	Material: AL		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
8	X-ray Generator Stopper	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
9	X-ray Generator Arm Cover	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
10	X-ray Generator Arm Screw Cover 1	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>








## 2. Before Installing the Equipment

Part No.	Items	Specification	Figure	Qty.	Confirmed
11	X-ray Generator Arm Screw Cover 2	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
12	X-ray Generator Arm Screw Cover 3	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
13	Generator Cover Bolt	Size: PH M3 x L6		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
14	HEX HEAD WOOD SCREW (Single Stud)	Size: M10 x L70		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
15	Fisher Anchor (Single Stud)	Size: M10 x L40		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
16	Fisher Bolt (Single Stud)	Size: M10 x L35		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
17	Drilling Template (Single Stud)	Paper Size: A3	 <Single Stud>	1	YES <input type="checkbox"/> NO <input type="checkbox"/>
18	Fixing Truss Screw for X-ray Generator Stopper	Size: M3 x L4		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
19	ANTI-ROTATION BLOCK 2	Material: ACETAL (Black)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
20	ANTI-ROTATION	Material: Spc		1	YES <input type="checkbox"/> NO <input type="checkbox"/>

Part No.	Items	Specification	Figure	Qty.	Confirmed
	BLOCK STIFFENER				
21	Wrench Bolt	Size: M5 x L25		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
22	Remote Exposure Switch Assembly (including Holder and Double-sided Sticker)	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
23	Remote Exposure Switch Holder Screws	Size: FH M3 x L16		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
24	AC Power Cable (Option)	Length: 2 m		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
25	Drilling Template (Double Stud)	Paper Size: A2	 <Double Stud>	1	YES <input type="checkbox"/> NO <input type="checkbox"/>
26	Cable Tie	-		3	YES <input type="checkbox"/> NO <input type="checkbox"/>
27	Rectangular Cover 2x3	- Material: ABS - FOV: 2x3 (3x2)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>

## 2. Before Installing the Equipment

Part No.	Items	Specification	Figure	Qty.	Confirmed
28	Installation Manual	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
29	User Manual	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
30	Remote Exposure Switch (Doorbell type) (Standard or Option)	- Standard for the USA - Option for the other regions		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
31	Remote Exposure Switch Cable (Doorbell type) (Standard or Option)	- Standard for the USA - Option for the other regions		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
32	Door Interlock Cable (Option)	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
33	Power Box Sticker	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
34	Double Stud Frame	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
35	Double Stud Cover	Material: ABS (White)		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
36	Double Stud Sticker	-		2	YES <input type="checkbox"/> NO <input type="checkbox"/>

Part No.	Items	Specification	Figure	Qty.	Confirmed
37	Rectangular Cover 4x3	- Material: ABS - FOV: 4x3 (3x4)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
38	HEX HEAD WOOD SCREW (Double Stud)	Size: M10 x L70		4	YES <input type="checkbox"/> NO <input type="checkbox"/>
39	HEX HEAD WOOD SCREW (Double Stud)	Size: M8 x L60		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
40	Flat Washer (Double Stud)	Size: M8		2	YES <input type="checkbox"/> NO <input type="checkbox"/>
41	Fisher Anchor (Double Stud)	Size: M10 x L40		6	YES <input type="checkbox"/> NO <input type="checkbox"/>
42	Fisher Bolt (Double Stud)	Size: M10 x L35		6	YES <input type="checkbox"/> NO <input type="checkbox"/>
43	Wrench Bolt (Double Stud)	Size: M8 x L20		6	YES <input type="checkbox"/> NO <input type="checkbox"/>
44	Double Stud Cover Screw	Size: FH M4 x L8		8	YES <input type="checkbox"/> NO <input type="checkbox"/>
45	Anti-static Gloves	-		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
46	Rotating Rectangular Cover 2x3	- Material: ABS - FOV: 2x3 (3x2)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>
47	Rotating Rectangular Cover 4x3	-Material: ABS - FOV: 4x3 (3x4)		1	YES <input type="checkbox"/> NO <input type="checkbox"/>

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### 3. Installing the Equipment

Before Start



Observe wall properties

During installation, the technician is responsible for the assessment of wall properties and selecting the method of attaching the unit to the wall.

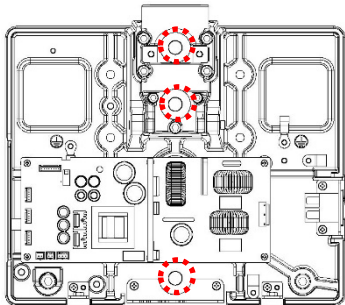
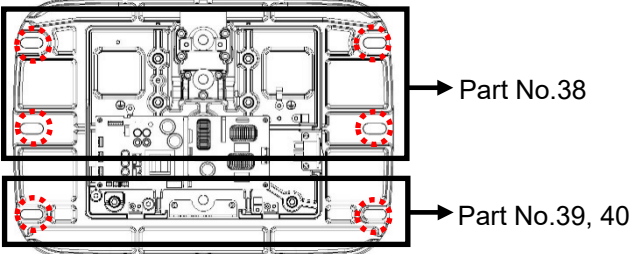
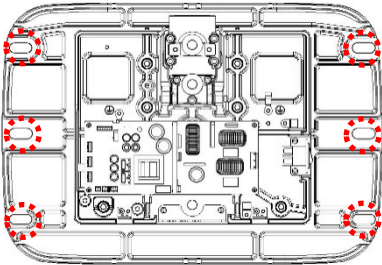
The wall construction must be able to resist a shear load of 76 kg (168 lbs) and tractive force of 204 kg (450 lbs) at each attachment location. Otherwise, some additional mounting supports must be used to fulfill this requirement.



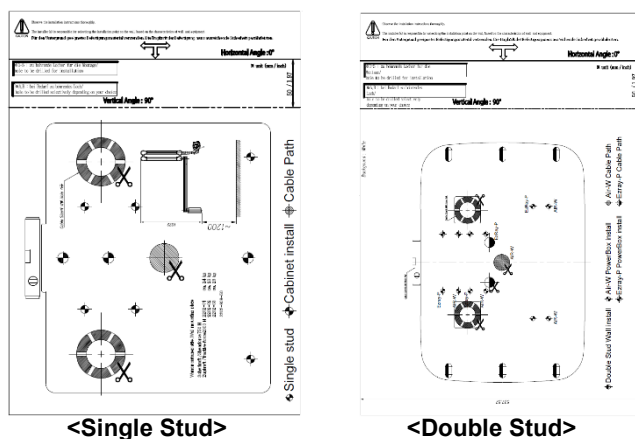
- You are advised to plan and study the installation environment carefully in advance before proceeding since the installation involves drilling the wall. Accurate measurement is of critical importance for a successful installation.
- The horizontal arm comes with one of three different lengths, depending on your purchase: L=450, 600, or 900 mm.
- Perform marking on the wall after performing accurate simulation several times with the arm provided.
- The spirit level should be placed on the location indicated in the figures to obtain an accurate level.

Tape Ruler	
Drilling Template	<div><p>&lt;Single Stud&gt;</p></div> <div><p>&lt;Double Stud&gt;</p></div>
Spirit Level	
Marker	

#### Mounting Overview

Mounting type	Mounting points on the wall
<b>Cabinet Installation and Wall Bracket Installation (Single Stud)</b>	 <p><u>Wood wall</u></p> <ul style="list-style-type: none"> <li>- Wood screw (M10 x L70) X 3 (Part No.14)</li> </ul> <p><u>Concrete wall</u></p> <ul style="list-style-type: none"> <li>- Fisher Anchor (M10 x L40) X 3 (No.15)</li> <li>- Fisher Bolt (M10 x L35) X 3 (No. 16)</li> </ul>
<b>Wall Bracket Installation (Double Stud)</b>	 <p><u>Wood wall</u></p> <ul style="list-style-type: none"> <li>- Wood screw (M10 x L70) X 4 (Part No.38)</li> <li>- Wood screw (M8 x L60) X 2 (Part No.39), Flat Washer (M8) X 2 (Part No.40)</li> </ul>  <p><u>Concrete wall</u></p> <ul style="list-style-type: none"> <li>- Fisher Anchor (M10 x L40) X 6 (Part No.41)</li> <li>- Fisher Bolt (M10 x L35) X 6 (Part No.42)</li> </ul>

### 3.1 Marking Drill points on the wall



1. Prepare the spirit level.
2. Attach the drilling template (**Single Stud: Part No.17** or **Double Stud: Part No.25**) temporarily.

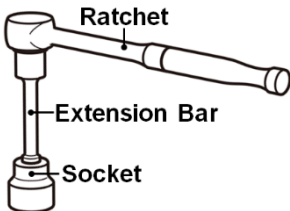
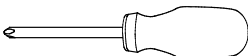


Place it on the wall and ensure leveling is obtained (the bubble should be located in the middle of the spirit level).

3. If it is, tape the drilling template temporarily at three or four corners.
4. Mark the holes on the wall according to the mounting type and then remove the drilling template.

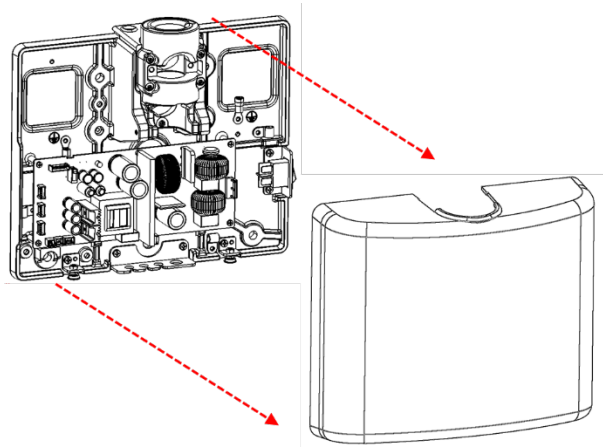
### 3.2 Installing the Power Box Assembly

#### 3.2.1 Mounting the Power Box Assembly (For wood walls)

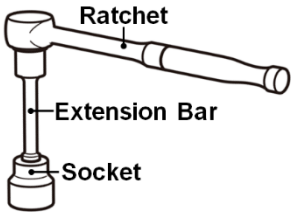

##### Cabinet Installation and Wall Mount Installation Type (Single Stud)

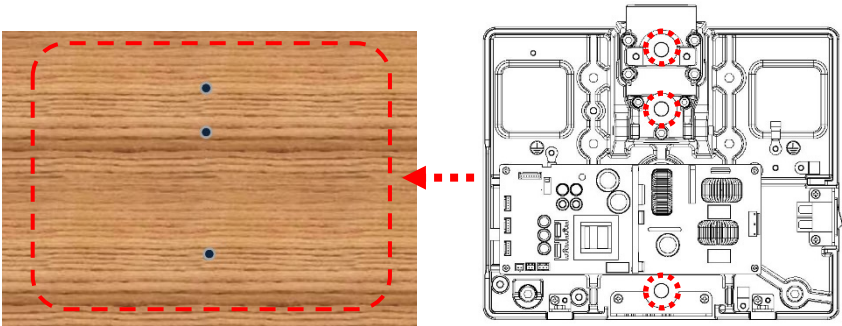
<b>Ratchet with Extension Bar and Socket</b>	Socket Size: 17 mm	
<b>Crosshead screwdriver w/ magnetic tip</b>	L=200 mm	
<b>HEX HEAD WOOD SCREW</b>	Part No.: 14 Size: M10 x L70 Qty.: 3 ea	
<b>Power Box Assembly</b>	Cables included	

1. Remove the Power Box Cover of the Power Box Assembly.



2. Attach the Power Box Base to the wall with three wood screws.

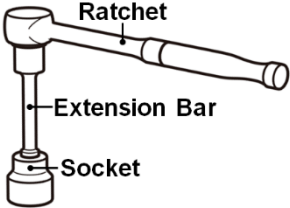

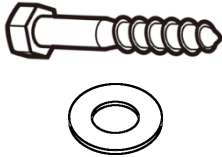
<b>Ratchet with Extension Bar and Socket</b>	Socket Size: 17 mm	
<b>HEX HEAD WOOD SCREW</b>	Part No.: 14 Size: M10 x L70 Qty.: 3 ea	

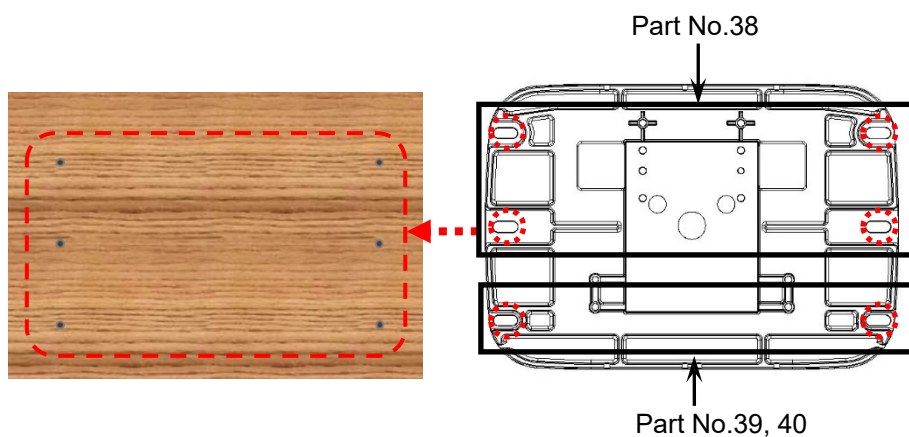


### 3. Installing the Equipment

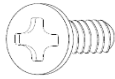
#### Wall Mount Installation Type (Double Stud)

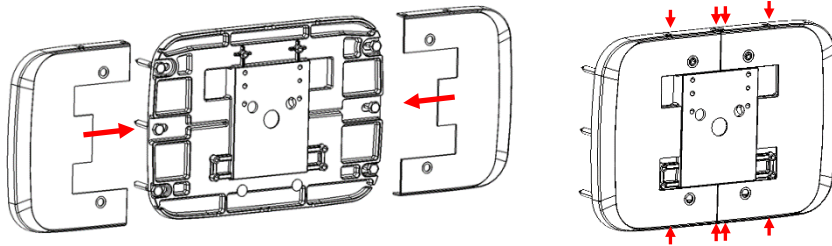
1. Perform Step 1 on *page 25*.
2. Attach the Double Stud Frame (Part No.33) to the wall with six wood screws.

<b>Ratchet with Extension Bar and Socket</b>	Socket Size: 17 mm (for M10) 13 mm (for M8)	
<b>HEX HEAD WOOD SCREW</b>	Part No.: 38 Size: M10 x L70 Qty.: 4 ea	
	1. Wood Screw Part No.: 39 Size: M8 x L60 Qty.: 2 ea 2. Flat Washer Part No.: 40 Size: M8 Qty.: 2 ea	

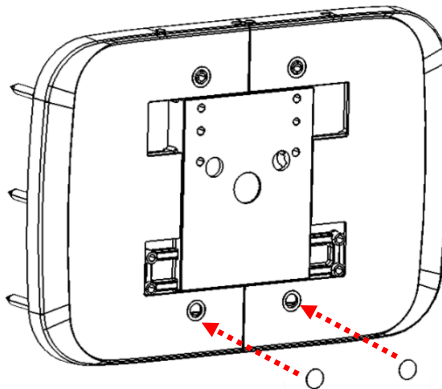


3. Assemble the Double Stud Covers (Part No.35) with eight flat head screws.

<b>Double Stud Cover Screw</b>	Part No.: 44 Size: FH M4 x L8 Qty.: 8 ea	
--------------------------------	--	--





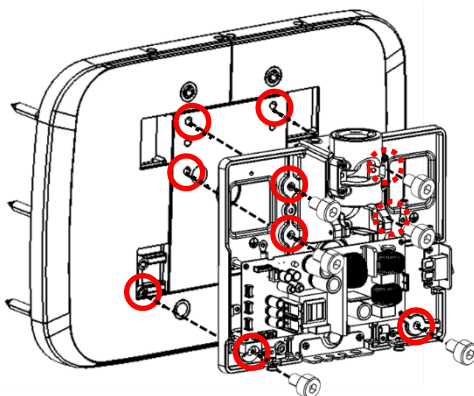
4. Attach two Double Stud Stickers (Part No.36) on each Double Stud Cover.



### 3. Installing the Equipment

5. Attach the Power Box Base to the Double Stud Frame with six wrench bolts.

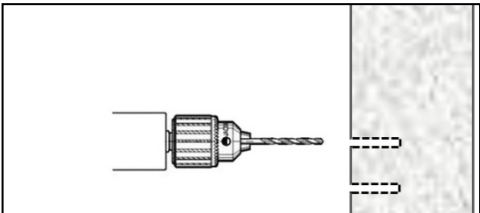
<b>Allen Wrench</b>	Size: 6 mm	
<b>Wrench Bolt</b>	Part No.: 43 Size: M8 x L20 Qty.: 6 ea	



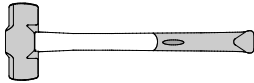

3.2.2 Mounting the Power Box Assembly (For Concrete walls)

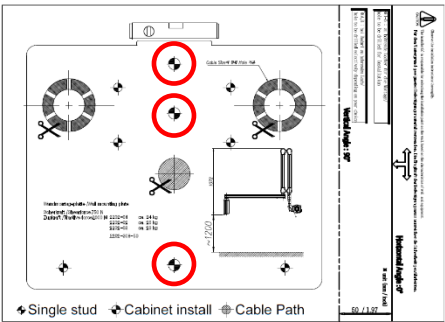
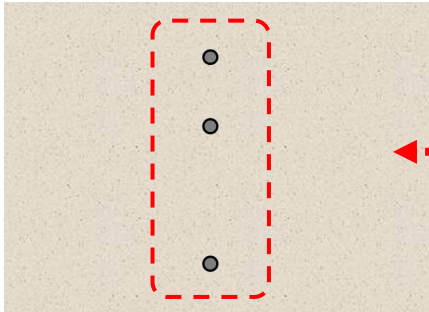
Cabinet Installation and Wall Bracket Installation Type (Single Stud)

- 1. Drill the marked points using the hammer drill.



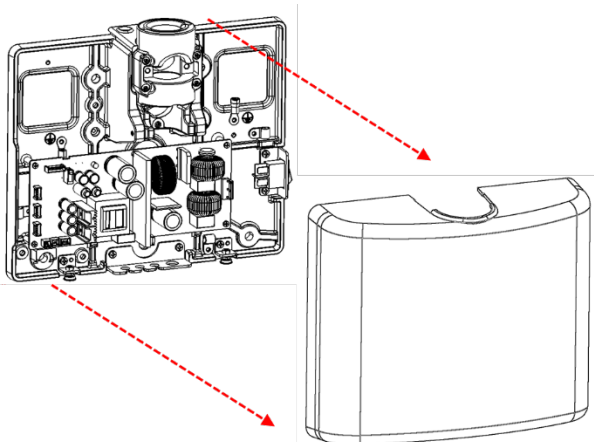
- 2. Remove the debris and clean the holes using the dust pump.
- 3. Put the Fisher Anchor (Part No.14) into the holes using the hammer.

Hammer		
Fisher Anchor	Part No.: 15 Size: M10 x L40 Qty.: 3 ea	



### 3. Installing the Equipment



4. Remove the Power Box Cover of the Power Box Assembly.

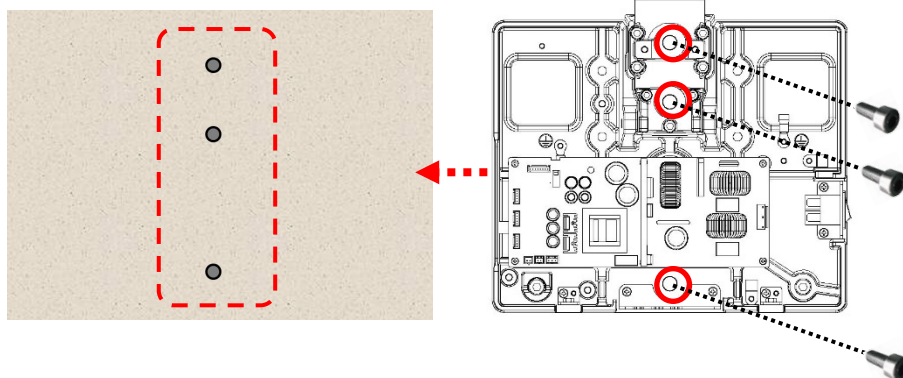


5. Attach the Power Box Base to the anchors with three fisher bolts.

#### IMPORTANT

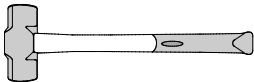

DO NOT tighten the bolts entirely until after leveling is complete.

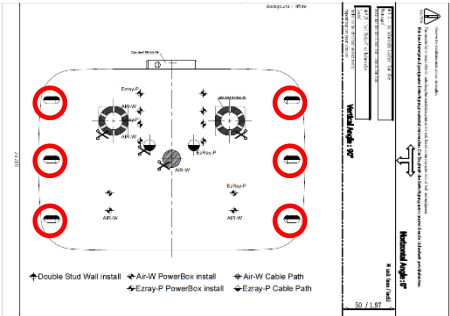
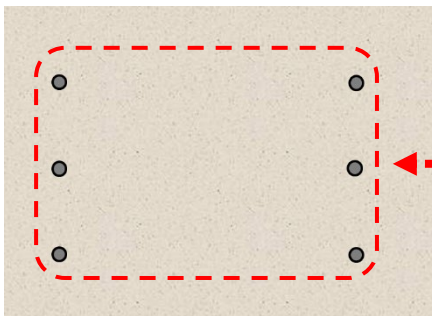
<b>Allen Wrench</b>	Size: 8 mm	
<b>Fisher Bolt</b>	Part No.: 16 Size: M10 x L35 Qty.: 3 ea	



Wall Bracket Installation Type (Double Stud)

- 1. Perform Step 1 and 2 on page 29.
- 2. Put the Fisher Anchor into the holes using the hammer.



Hammer		
Fisher Anchor	Part No.: 41 Size: M10 x L40 Qty.: 6 ea	

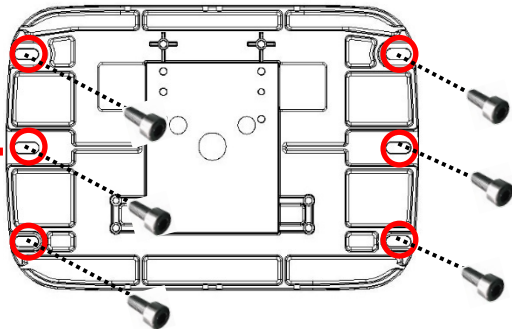
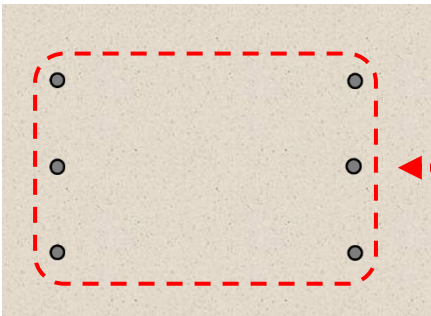


- 3. Attach the Double Stud Frame to the anchors with six fisher bolts.

IMPORTANT

DO NOT tighten the bolts entirely until after leveling is complete.

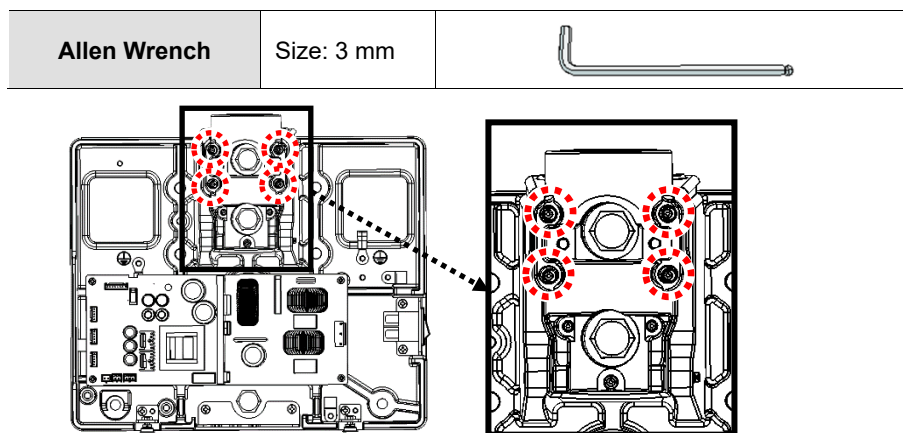
Allen Wrench	Size: 8 mm	
Fisher Bolt	Part No.: 42 Size: M10 x L35 Qty.: 6 ea	



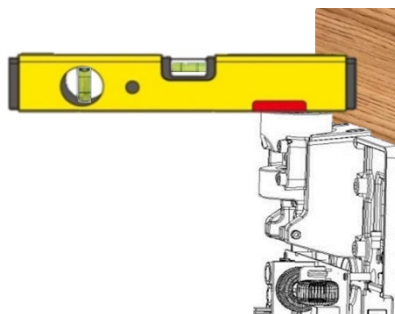
- 4. Perform Step 3 through 5 on pages 27 and 28.

### 3.2.3 Leveling the Power Box Assembly: Front/Rear

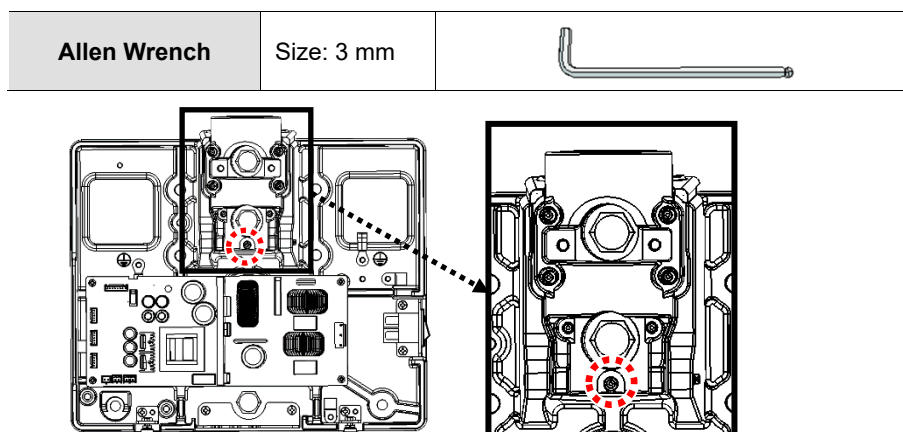
1. Slightly loosen the four wrench bolts before placing the spirit level on the equipment.



2. Place the spirit level on the position as shown in the figure.



3. To adjust the horizontality (level), loosen one wrench bolt by using the wrench.
4. Adjust the headless wrench bolt until the bubble on the spirit level is located in the middle.

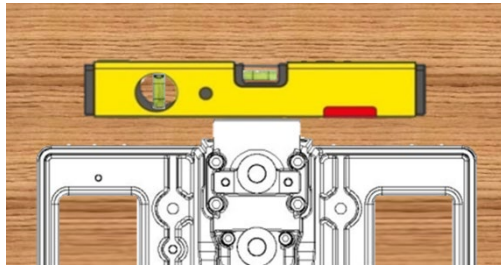


**NOTICE**

Since the Power Box Assembly is shipped with one bolt tightened, they are required to be loosened before leveling it.

### 3.2.4 Leveling the Power Box Assembly: Left/Right

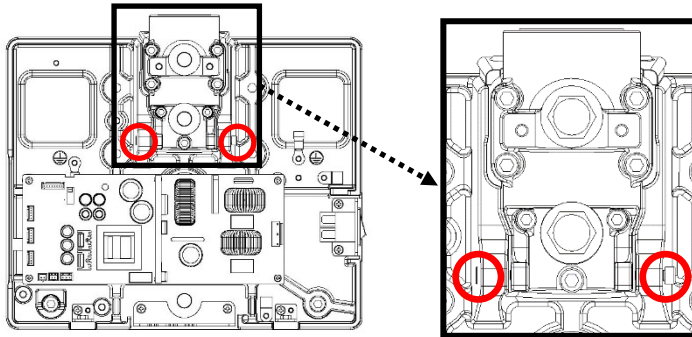
1. Place the spirit level on the position as shown in the figure.



2. After placing the spirit level in its position, adjust the two bolts until the bubble on the spirit level is located in the middle.

**Allen Wrench**

Size: 3 mm



### 3.3 Installing the Horizontal Arm

#### IMPORTANT

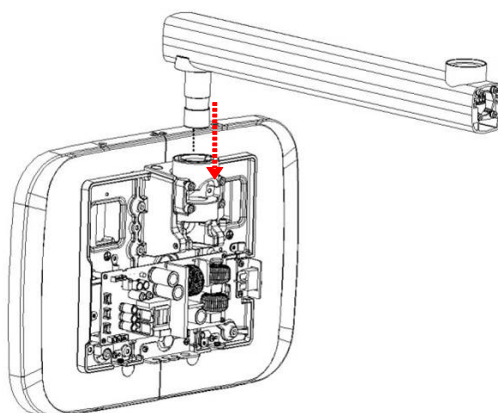
The length of the horizontal arm:

L= 450, 600, or 900 mm



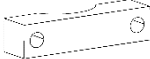

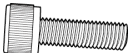
#### NOTICE

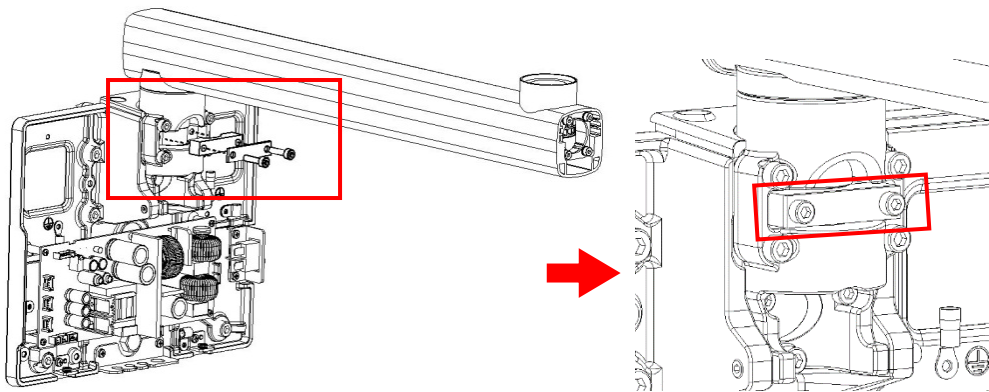
The installation procedures are the same regardless of the arm's length.

1. After pulling out the cables through the opening, insert the horizontal arm into the hole on the Power Box Assembly.



2. Fix the block assembly using the anti-rotation block2, anti-rotation block stiffness, and wrench bolts.

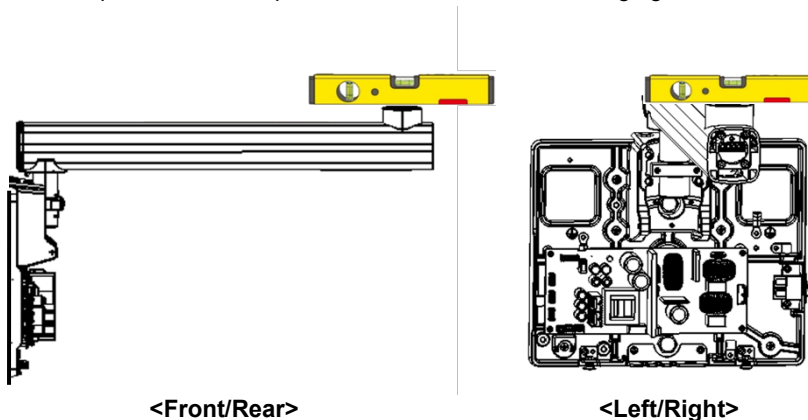
<b>Allen Wrench</b>	Size: 4 mm	
<b>Horizontal Arm</b>	Cable included	
<b>ANTI-ROTATION BLOCK2</b>	Part No.:19 Qty.: 1 ea	
<b>ANTI-ROTATION BLOCK STIFFENER</b>	Part No.: 20 Qty.: 1 ea	
<b>Wrench Bolt</b>	Part No.: 21 Size: M5 x L25 Qty.: 2 ea	

**IMPORTANT**

Make sure that the Horizontal Arm moves smoothly. If not, slightly loosen the wrench bolts.

### 3.3.1 Leveling the Horizontal Arm

1. Place the spirit level on the position as shown in the following figures.



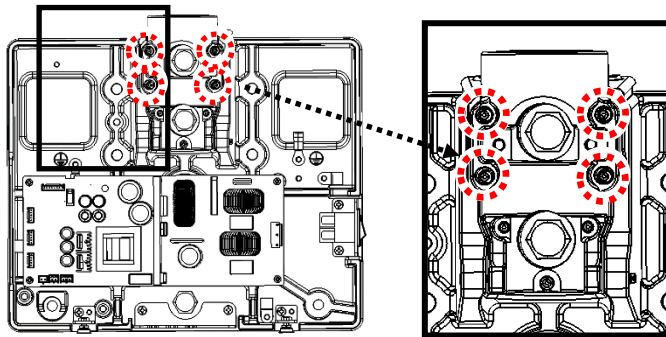
2. Check if the bubble on the spirit level is located in the middle.

### 3. Installing the Equipment

3. If it is not in the middle, follow the same procedures in '3.2.3 Leveling the Power Box Assembly: Front/Rear' and '3.2.4 Leveling the Power Box Assembly: Left/Right'.**Error! Reference source not found.**

#### IMPORTANT

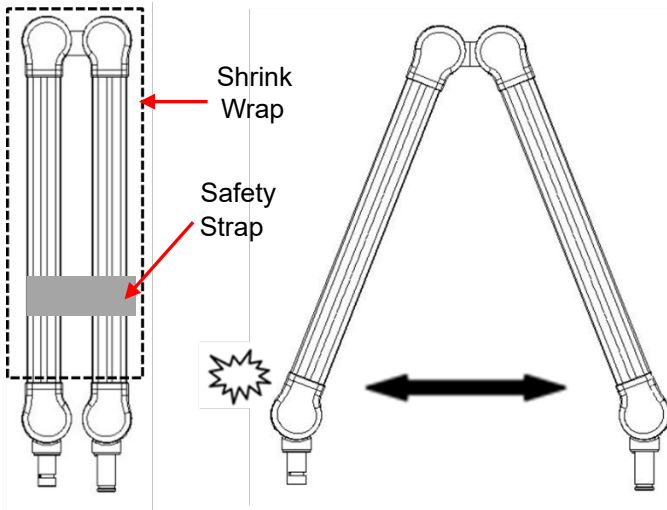
After leveling the Horizontal Arm is complete, make sure to fasten the four wrench bolts as shown in the following figures.



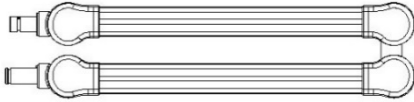
3.4 Installing the Scissor Arm

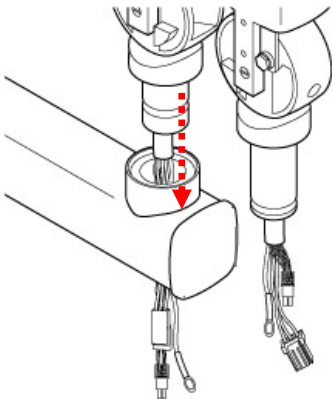


**The Scissor arm can cause injury during installation.**  
DO NOT remove the safety strap and shrink wrap for the scissor arm until the installation is completed.  
When you remove the strap and shrink wrap, the scissor arm will be opened by its spring tension. It can cause injury to personnel or damage to equipment.




1. Insert the cable and the scissor arm into the opening of the horizontal arm

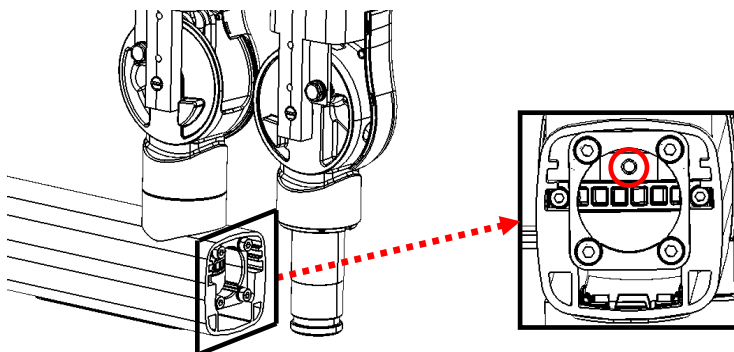
Scissor Arm Assembly	Cable included	
----------------------	----------------	--



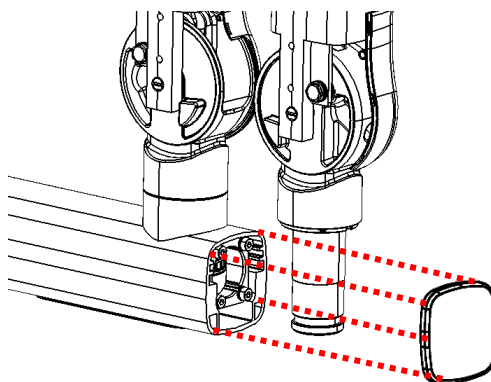
### 3. Installing the Equipment

2. Tighten the wrench bolt in the Horizontal Arm Frame End, and cover the Frame End with the Horizontal Arm Frame Cover (Part No.1).

<b>Horizontal Arm Frame Cover</b>	Part No.: 1 Qty.: 2 ea	
---------------------------------------	---------------------------	---



<Location of the hole to tighten the wrench bolt>



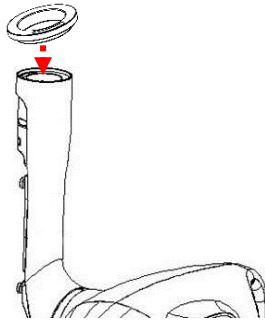
<Tightening the wrench bolt and covering the Frame End>

### 3.5 Installing the X-Ray Generator Assembly

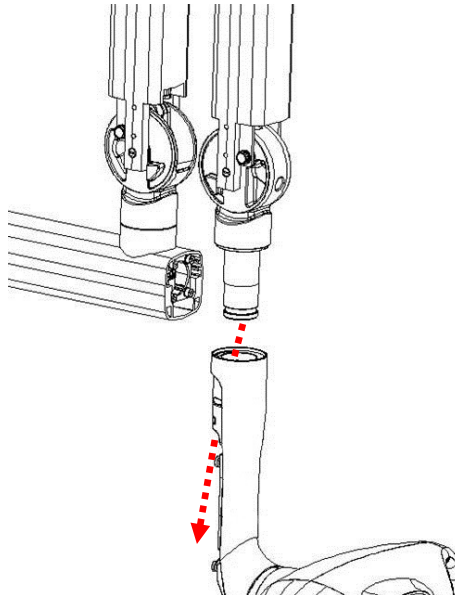


Handle the X-Ray tube head with care when installing the X-Ray tube head.

1. Place X-ray Generator Arm Bushing (Part No.7) on the top of the hole in the X-Ray Generator Arm.

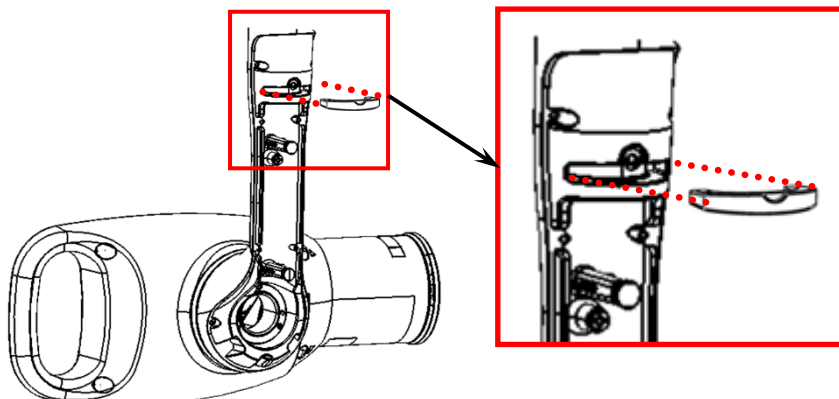


2. Attach the X-ray Generator Assembly to the scissor arm while making sure that the cables from the Scissor Arm go through the X-Ray Generator Arm's hole.



### 3. Installing the Equipment

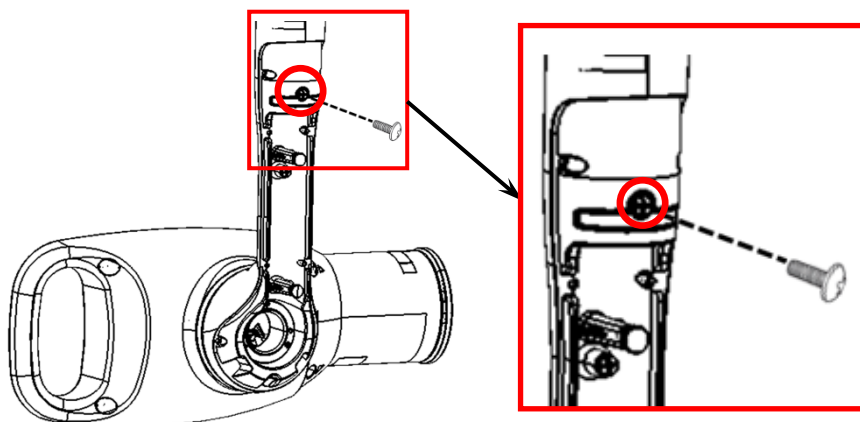
3. For information about connecting cables, please see '3.6.4 Cabling between the Scissor Arm and the X-ray Generator' on *page 48*.
4. Attach the X-ray Generator Stopper (Part No.8) to the rear top of the X-ray Generator Arm.



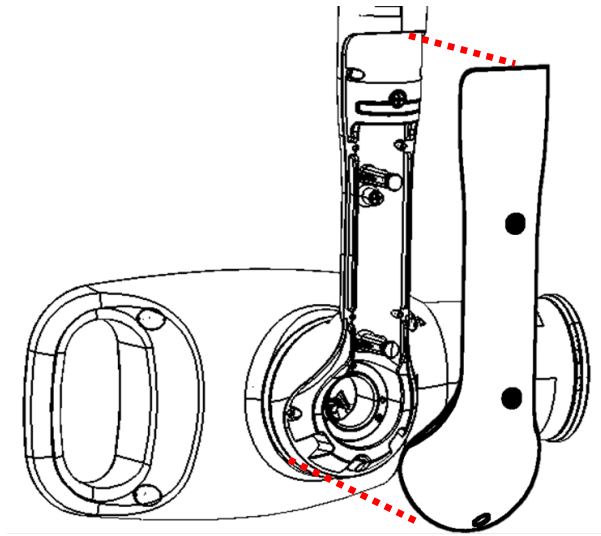
5. Tighten the screw above the attached stopper.

**Truss Screw for  
X-ray Generator  
Stopper**


Part No.: 18  
Size: M3 x L4  
Qty.: 1 ea

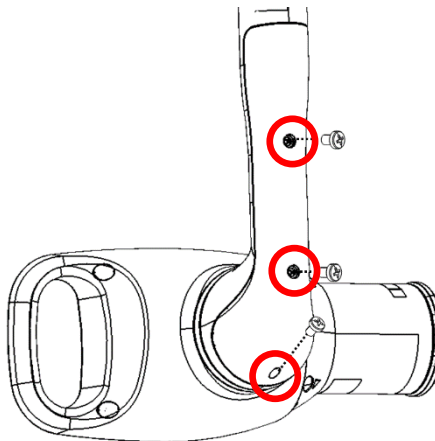


6. Cover the rear side of the X-ray Generator Arm with the X-ray Generator Arm Cover (Part No.9).






7. Tighten three bolts on the rear cover of the X-ray Generator Arm.

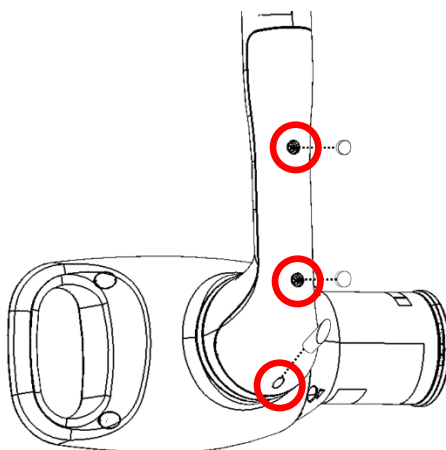
<b>Generator Cover Bolt</b>	Part No.: 13 Size: PH M3 x L6 Qty.: 3 ea	
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### 3. Installing the Equipment

8. Cover three holes with caps.

<b>GENERATOR ARM COVER CAP1</b>	Part No.: 10 Qty.: 1 ea	
<b>GENERATOR ARM COVER CAP2</b>	Part No.: 11 Qty.: 1 ea	
<b>GENERATOR ARM COVER CAP3</b>	Part No.: 12 Qty.: 1 ea	



### 3.6 Connecting the Cables



Whenever handling the cables and electronic board:

1. Wear the anti-static gloves (Part No.45).



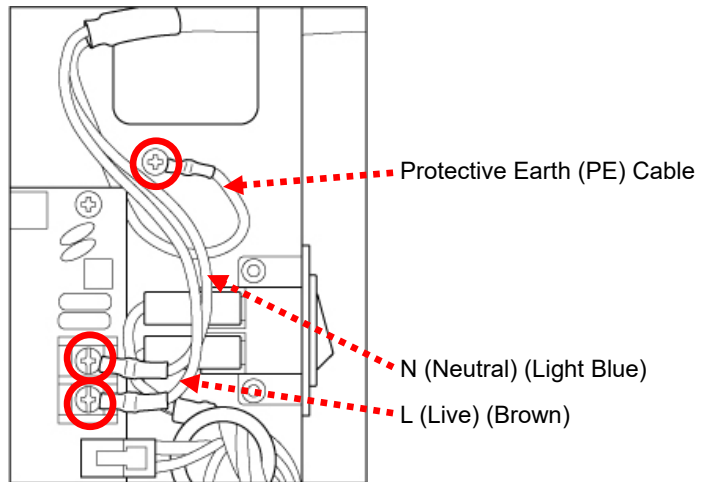
2. DO NOT wear a thick jacket.

#### IMPORTANT

Always ensure that the cables are firmly connected. A bad connection could cause deterioration of image quality.

#### 3.6.1 Connecting the Power Cord

1. Connect the N (Neutral) and L (Live) Connectors of the permanent power cord to the terminal blocks, and Protective Earth (PE) Cable to the Protective Earth Conductor.

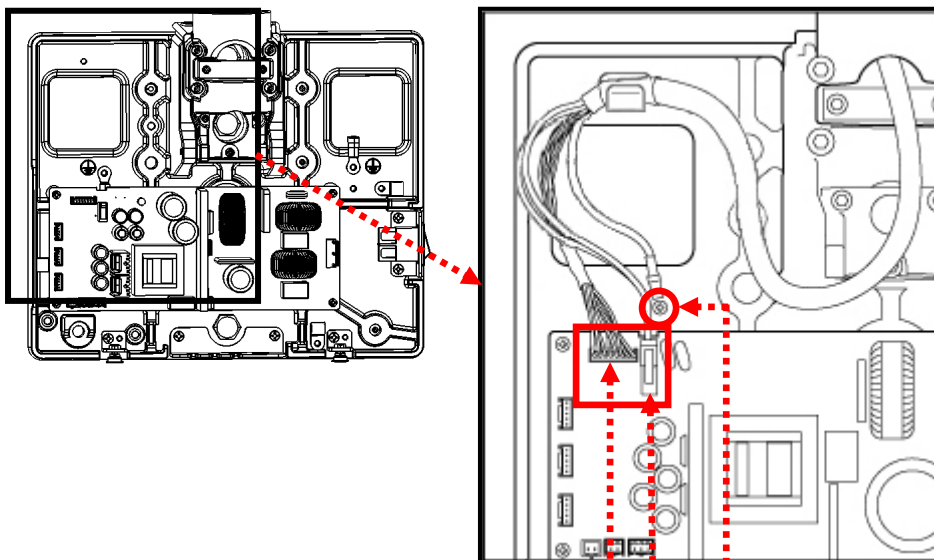


### 3.6.2 Connecting Horizontal Arm Cables

#### NOTICE

1. Cable Name: H001624 (L=450 mm) / H001625 (L=600 mm)  
H001626 (L=900 mm)
2. The installation procedures are the same, regardless of the Horizontal Arm's length.

1. Connect the cable **H001624** with Connector 1, 2 on the Power Box Board, and the Protective Earth (PE) Cable on the PE Conductor.



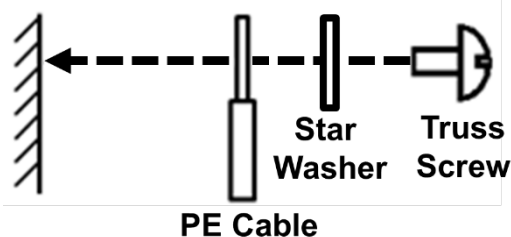
CN (Connector) 2

Protective Earth (PE) Cable


CN (Connector) 1

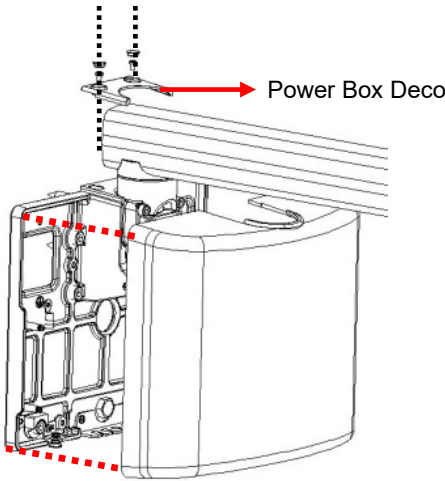
#### IMPORTANT

When you connect the **Protective Earth (PE) Cables** to the **PE conductor** by using the Truss Screw (**Part No.5**) with Star Washer (**Part No.6**), please refer to the illustration below.




2. Cover the Power Box Base with the Power Box Cover, and tighten two truss screws on the Power Box Deco.

<b>Truss Screw</b>	Part No.: 5 Size: M4 x L6 Qty.: 2 ea	
--------------------	--	--




3. Tighten two truss screws on the bottom of the Power Box Cover.

<b>Truss Screw</b>	Part No.: 5 Size: M4 x L6 Qty.: 2 ea	
--------------------	--	---

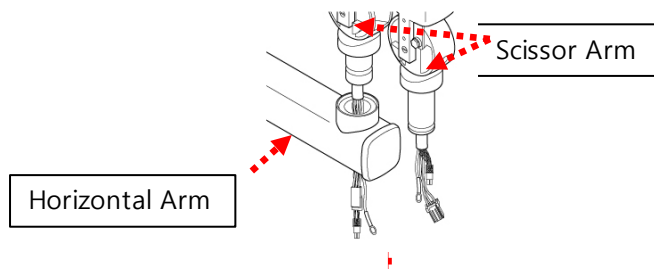


4. If the device has been installed with the permanent power cord, attach the Power Box Sticker to the Connector 4.

<b>Power Box Sticker</b>	Part No.: 32 Qty.: 1 ea	
--------------------------	----------------------------	--

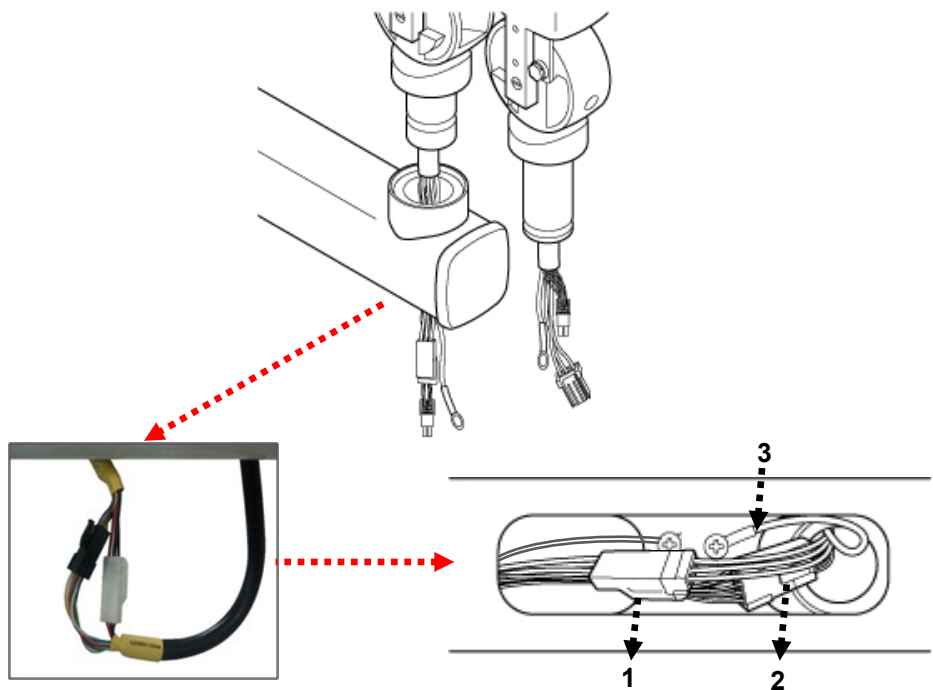


#### 3.6.3 Cabling between the Scissor arm and horizontal arm.



During cable installation, avoid any cable kinks and maintain the proper bending. Ensure that cables are not caught on the cover.

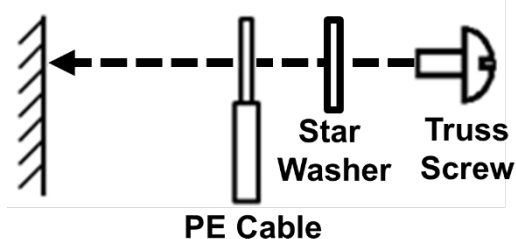
Connect the cables from the horizontal arm and the scissor arm.



1. White connector (3-pin) ↔ White connector (3-pin)
2. Black connector (8-pin) ↔ Black connector (8-pin)
3. Protective Earth (PE) Cable from the Scissor Arm

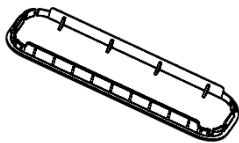
#### IMPORTANT

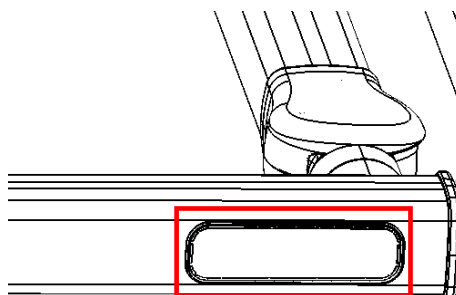
When you connect the **Protective Earth (PE) Cables** to the **PE conductor** by using the Truss Screw (**Part No.5**) with Star Washer (**Part No.6**), please refer to the illustration below.



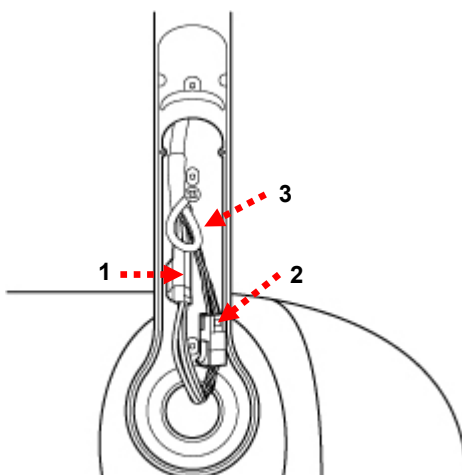
### 3. Installing the Equipment

1. Arrange the cables and cover the horizontal arm opening with the HORIZONTAL LOWER COVER (Part No.2).

<b>HORIZONTAL ARM CABLE COVER</b>	Material: ABS (White) Part No.: 2 Qty.: 1 ea	
---------------------------------------	---	--



#### 3.6.4 Cabling between the Scissor Arm and the X-ray Generator

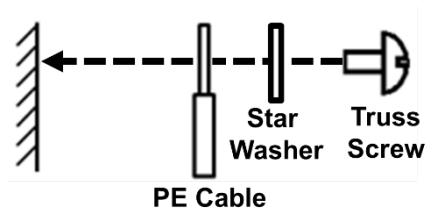


1. White connector (3-pin) ↔ White connector (3-pin)
2. Black connector (8-pin) ↔ Black connector (8-pin)
3. Protective Earth (PE) Cable from the Scissor Arm

#### IMPORTANT


When you connect the **Protective Earth (PE) Cables** to the **PE conductor** by using the Truss Screw (**Part No.5**) with

Star Washer (**Part No.6**), please refer to the illustration below.



3.6.5 Tie the cables

- 1. Tie the cables together with a cable tie

Cable Tie	Part No.: 26 Qty.: 2 ea	
-----------	----------------------------	--



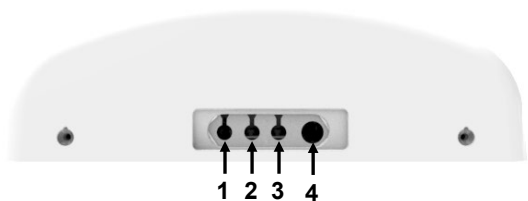
#### 3.6.6 View after Completion



3.6.7 Remote Exposure Switch and Power Cable Connections

There are four connectors on the bottom of the Power Box Assembly as described below.

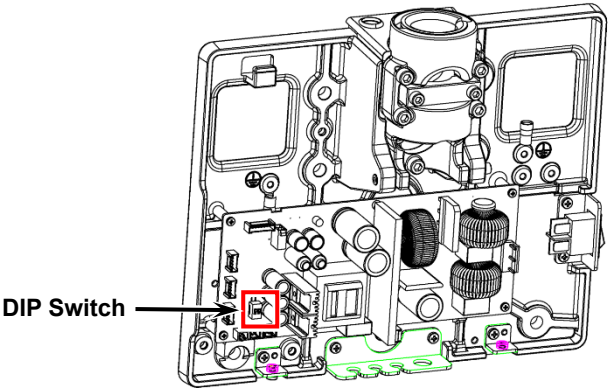
- **Connector 1, 2, 3:** Remote Exposure Switch Connectors
- **Connector 4:** AC Power Cable Connector




The standard and optional **Remote Exposure Switches**, and the **Door Interlock Cable** are connected to the **Connector 1, 2, and 3**. Please check all seven possible options in the table below.









**IMPORTANT**






Before connecting the cables, ensure that the DIP switch setting is set according to the instructions in the following table.  
Refer to the location of the DIP switch in the following figure.



Option No.	Description	Connector 1	Connector 2	Connector 3	Connector 4
Option 1	Press (1).		N/A	N/A	AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)			

### 3. Installing the Equipment

Option No.	Description	Connector 1	Connector 2	Connector 3	Connector 4
Option 2	Press (1) <b>and</b> (2) at the same time.		N/A		AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)		(2) Remote Exposure Switch (Option)	
Option 3	Press (1) <b>and</b> (2) at the same time.		N/A		AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)		(2) Remote Exposure Switch (Doorbell type) (Option)	
Option 4	Press (1).		N/A		AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)		(2) Door Interlock Cable (Option)	
Option 5	Press (1) <b>or</b> (2).			N/A	AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)	(2) Remote Exposure Switch (Option)		

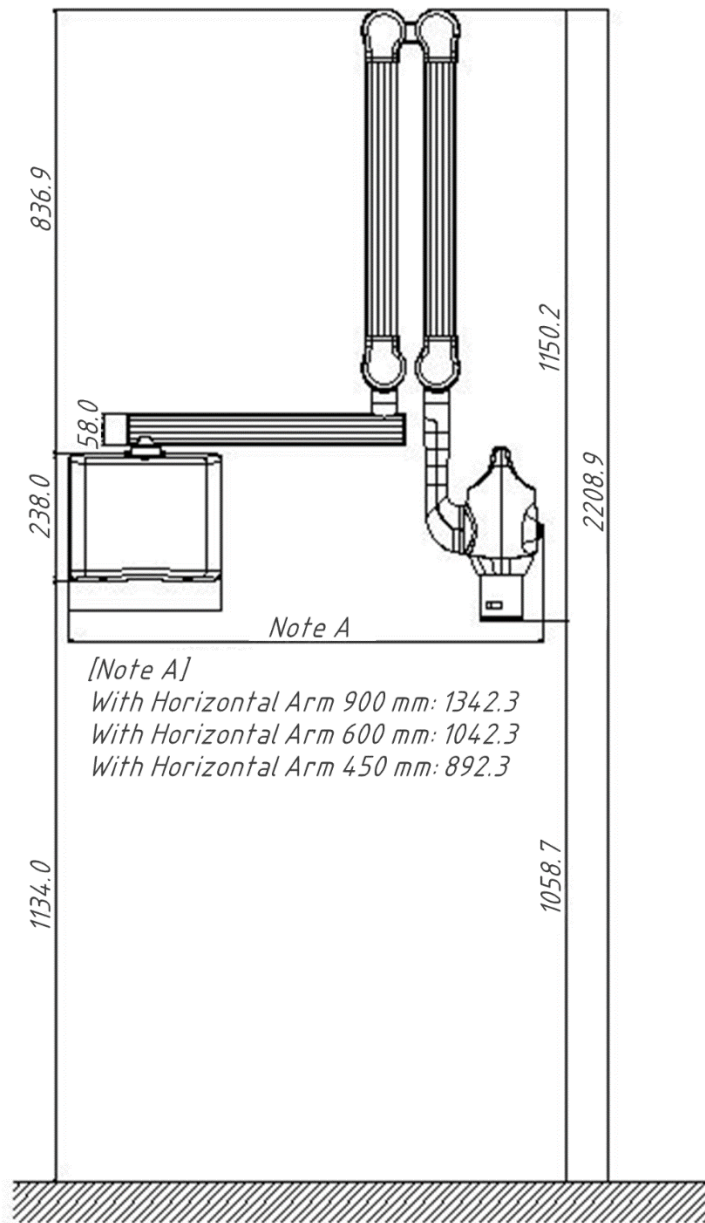
Option No.	Description	Connector 1	Connector 2	Connector 3	Connector 4
Option 6	Press (1) <b>or</b> (2).			N/A	AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)	(2) Remote Exposure Switch (Doorbell type) (Option)		
Option 7	Press (2) <b>and</b> (3) at the same time. (1): Not used in this option.				AC Power Cable (Option)
		(1) Remote Exposure Switch (Standard)	(3) Remote Exposure Switch (Doorbell type) (Option)	(2) Remote Exposure Switch (Doorbell type) (Option)	

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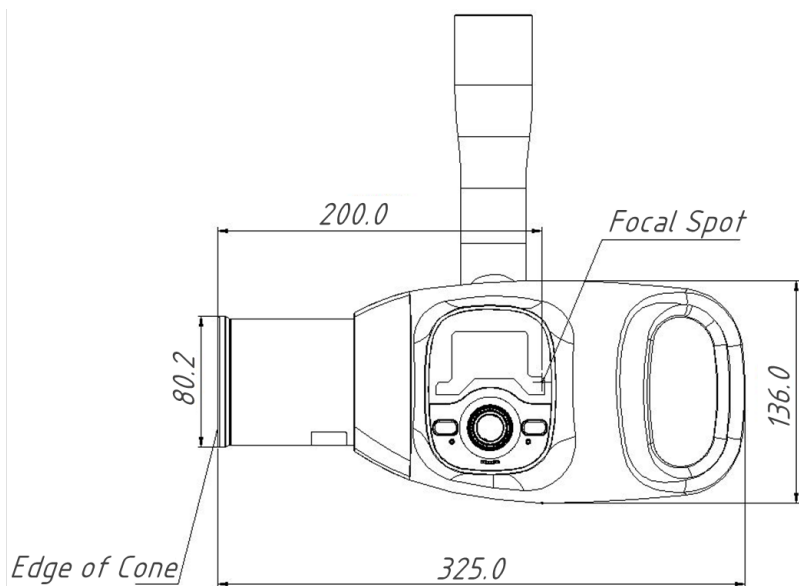
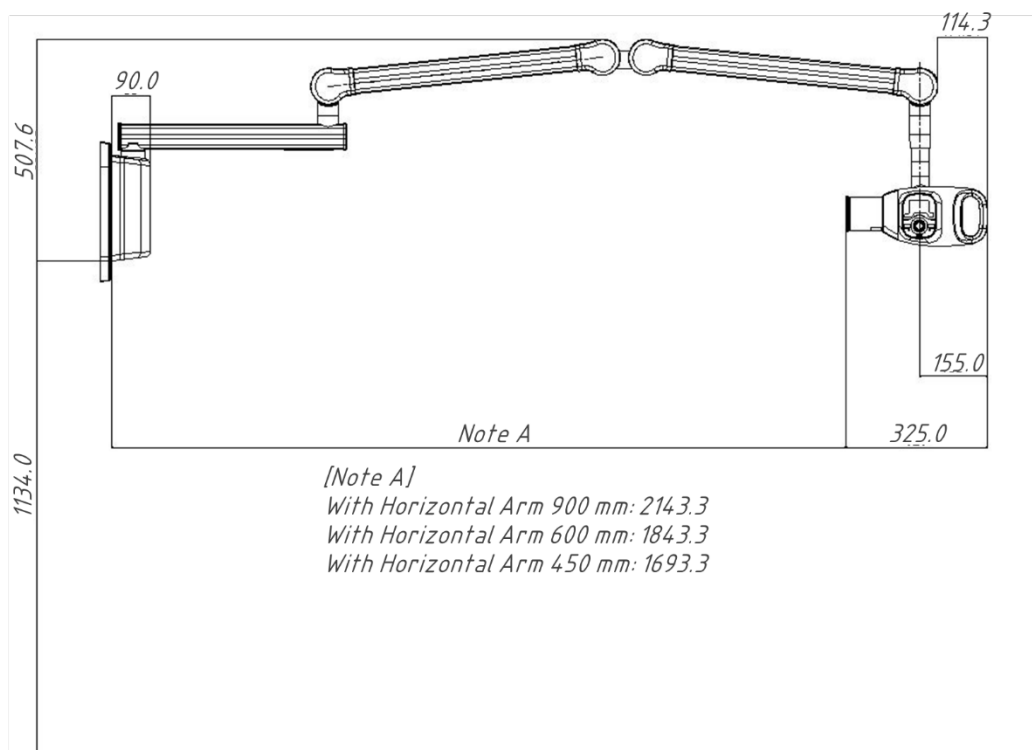
## 4. Product Specifications

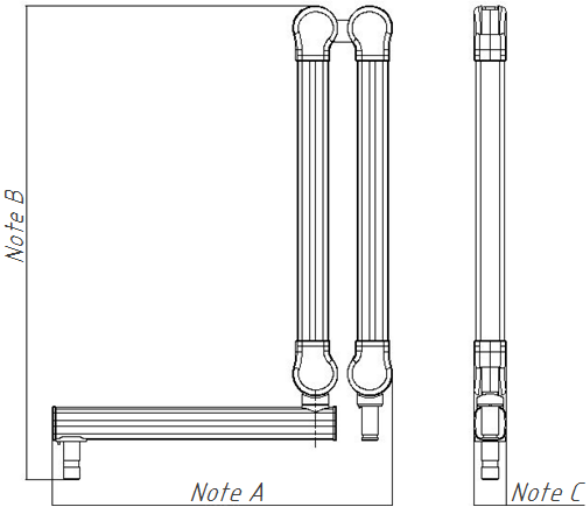
### 4.1 Mechanical Specifications

#### Dimensions

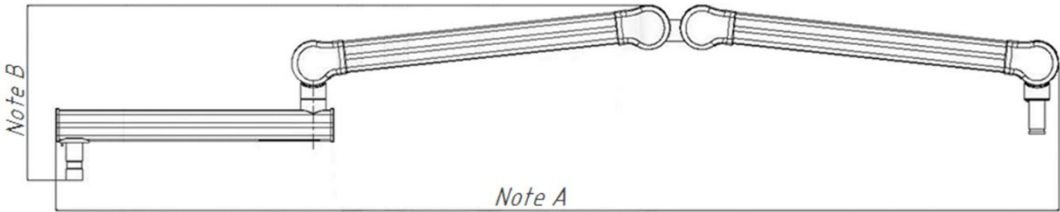


#### 4. Product Specifications





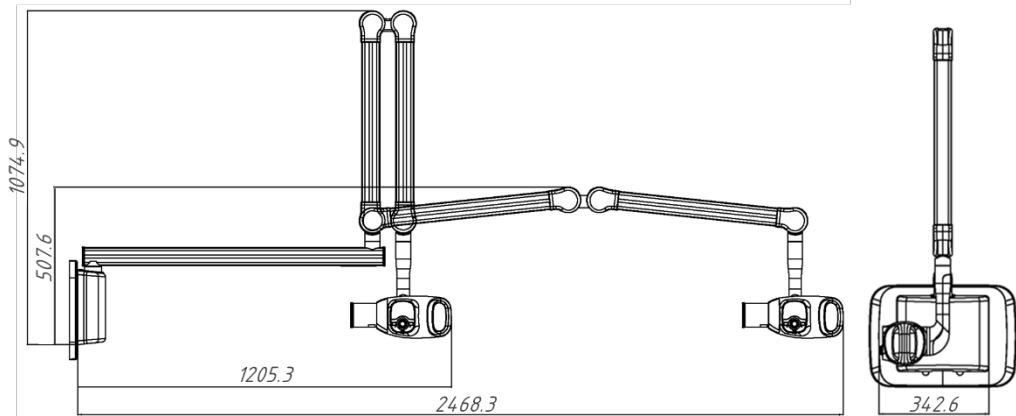
Horizontal Arm Length	Note A (L)	Note B (H)	Note C (W)
900 mm	1077.0	892.6	58.4
600 mm	777.0	892.6	58.4
450 mm	627.0	892.6	58.4



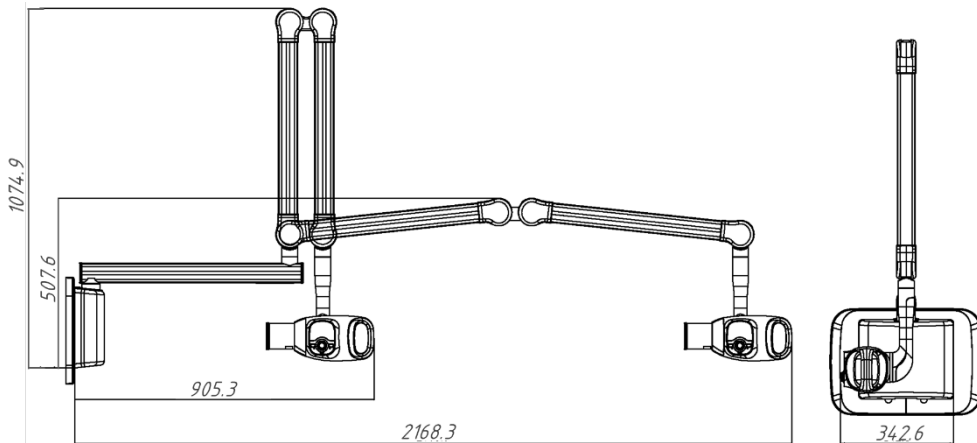
Horizontal Arm Length	Note A (L)	Note B (H)	Note C (W)
900 mm	2338.7	327.0	58.4
600 mm	2038.7	327.0	58.4
450 mm	1888.7	327.0	58.4

#### 4. Product Specifications

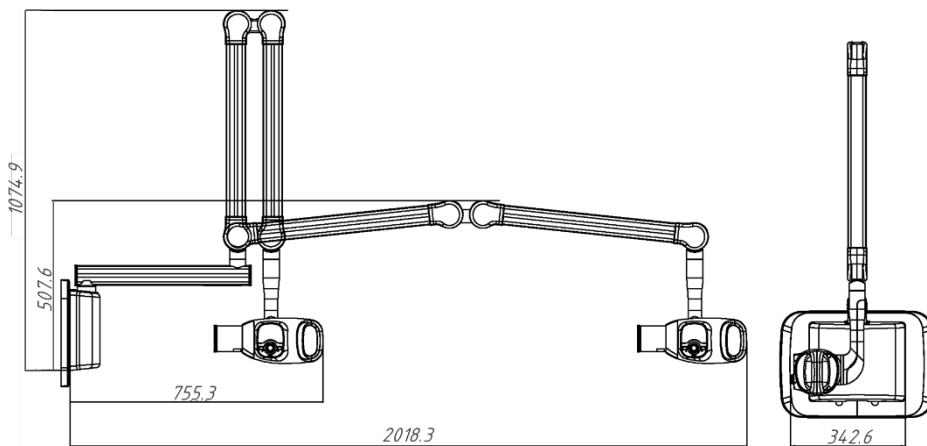
##### With Horizontal Arm 900 mm



##### With Horizontal Arm 600 mm



##### With Horizontal Arm 450 mm



Item	Item		Dimension (mm)	Weight (kg)
Total Assembly (including Power Box Assembly and X-ray Generator Assembly)	With Horizontal Arm:	With Scissor Arm:	-	-
	900mm	Folded	1205.3(L)x1074.9(H)x342.6(W)	17.9
		Unfolded	2468.3(L)x507.6(H)x342.6(W)	
	600mm	Folded	905.3(L)x1074.9(H)x342.6(W)	16.6
		Unfolded	2168.3(L)x507.6(H)x342.6(W)	
	450mm	Folded	755.3(L)x1074.9(H)x342.6(W)	15.9
Unfolded		2018.3(L)x507.6(H)x342.6(W)		
Total Arm Assembly	With Horizontal Arm:	With Scissor Arm:	-	-
	900 mm	Folded	1077.0(L)x892.6(H)x58.4(W)	11.45
		Unfolded	2338.7(L)x327.0(H)x58.4(W)	
	600 mm	Folded	777.0(L)x892.6(H)x58.4(W)	10.6
		Unfolded	2038.7(L)x327.0(H)x58.4(W)	
	450 mm	Folded	627.0(L)x892.6(H)x58.4(W)	10.15
Unfolded		1888.7(L)x327.0(H)x58.4(W)		
Horizontal Arm Assembly	900 mm		976.0(H) x 151.2(V) x 58.3(W)	3.65
	600 mm		676.0(H) x 151.2(V) x 58.3(W)	2.8
	450 mm		526.0(H) x 151.2(V) x 58.3(W)	2.35
Scissor Arm Assembly			797.6(W) x 184.0(L) x 58.4(H)	7.8
Power Box Assembly			287.8(W) x 238.0(L)	3.1
X-ray Generator Assembly			325.0(W) x 299.5(L) x 222.7(H)	2.4
X-ray Beam Limiting Device	X-ray Beam Area (mm)	Round type	FOV: < ∅ 60	0.013
		Rectangular type	FOV: 20 x 30 (30 x 20), 40 x 30 (30 x 40)	0.038 0.044
	SSD(Source to Skin Distance) (mm)		Min. 200	-

## 4.2 Technical Specifications

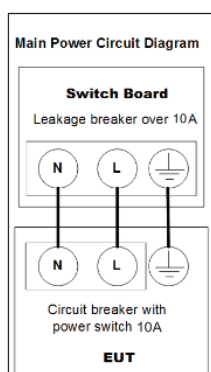
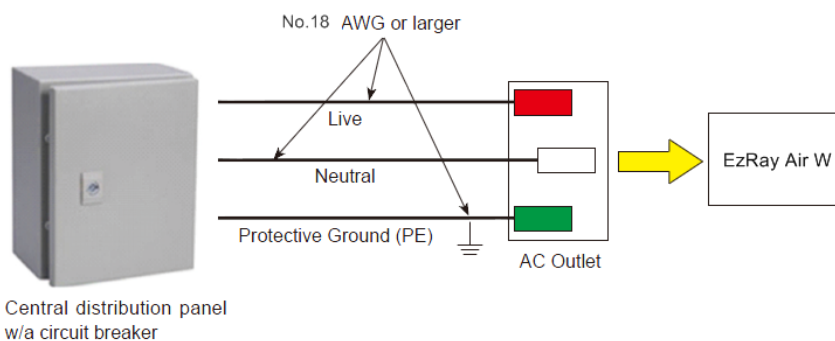
### X-ray Generator

Item		Description
High Voltage Generator (Assembly)	Model	DG- S0102V1
	Rated output power	Max. 0.2 kW
	Duty Cycle	1:60 or more (Exposure time: Interval time)
	Cooling Protection	Thermistor $\geq 65^{\circ}\text{C}$
	Inherent Filtration	1.8 mm Al / 65 kV
	Total Filtration	Min. 1.5 mm Al
	Type	Inverter Type
	Tube Voltage	55-65 kV
	Tube Current	1.0-3.0 mA
X-ray Tube	Manufacturer	VATECH Co., Ltd.
	Model	V1-650304 (Stationary Anode type)
	Version	2.0
	Focal spot size	0.4 mm (IEC 60336)
	Anode heat contents	Max. 2.7 kJ
	Maximum Anode Heat Dissipation	200 W
	Target Material	Tungsten
	Target Angle	12.5°
	Inherent Filtration	Min. 1.5 mm Al
	X-ray Coverage	70 mm at SID 200 mm
	Tube Voltage	Max. 65 kV
	Tube Current	Max. 3.0 mA

### 4.3 Electrical Specifications

Item	Description
Power Supply Voltage	100-240 V ~
Frequency	50/60 Hz (Single phase)
Power Rating	4-2 A
Tube Voltage	65 kV fixed ( $\pm 3\%$ )
Tube Current	<ul style="list-style-type: none"> <li>• Option A: 2.5 mA</li> <li>• Option B: 3.0 mA</li> </ul>
Accuracy Error	< kVp +10 %, < mA + 20 %, < s + 5 % or 20 ms

- The input line voltage depends on the local electrical distribution system.
- Allowable input voltage fluctuation requirement:  $\pm 10\%$
- Mode of operation: Continuous operation with cyclic loading 60 times the exposure time wait before next exposure can begin.



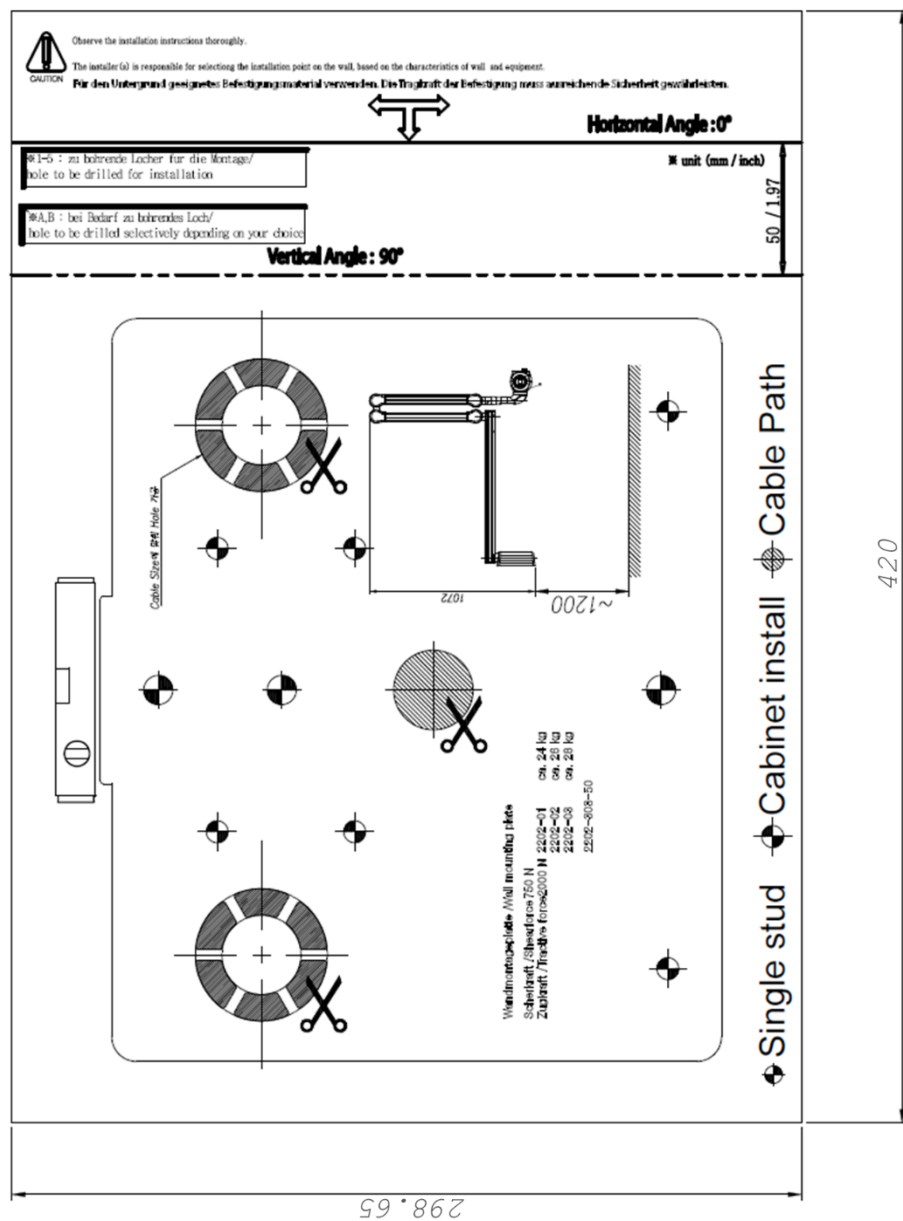
## 4.4 Environmental Specifications

Item		Description
During operating	Temperature	10 ~ 35 °C
	Relative humidity	30 ~ 75 %
	Atmospheric pressure	860 ~ 1060 hPa
Transport and storage	Temperature	-10 ~ 60 °C
	Relative humidity	10 ~ 75 % non-condensing
	Atmospheric pressure	860 ~ 1060 hPa

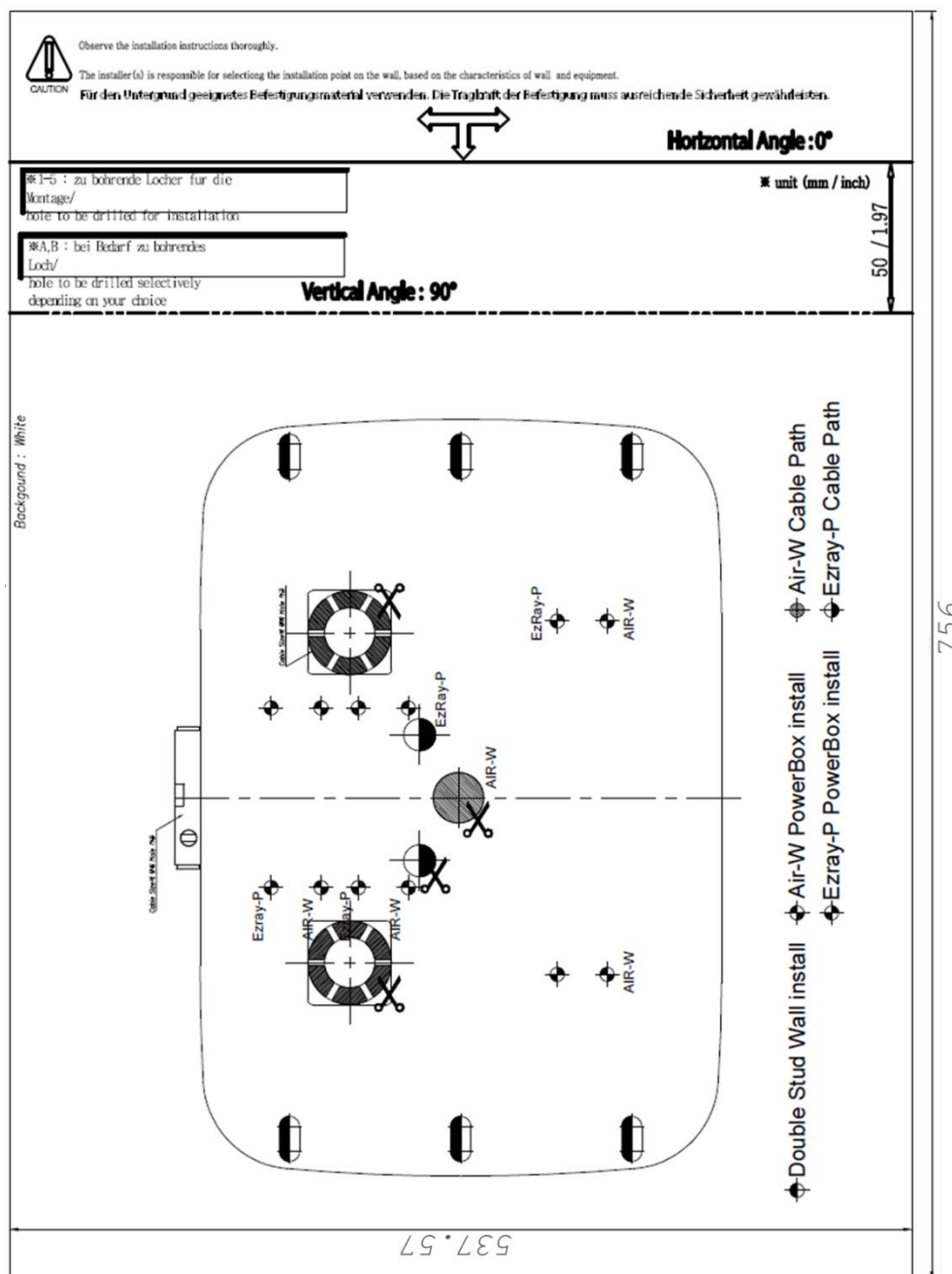
# Appendix

## Drilling Template

### <Single Stud>



## &lt;Double Stud&gt;

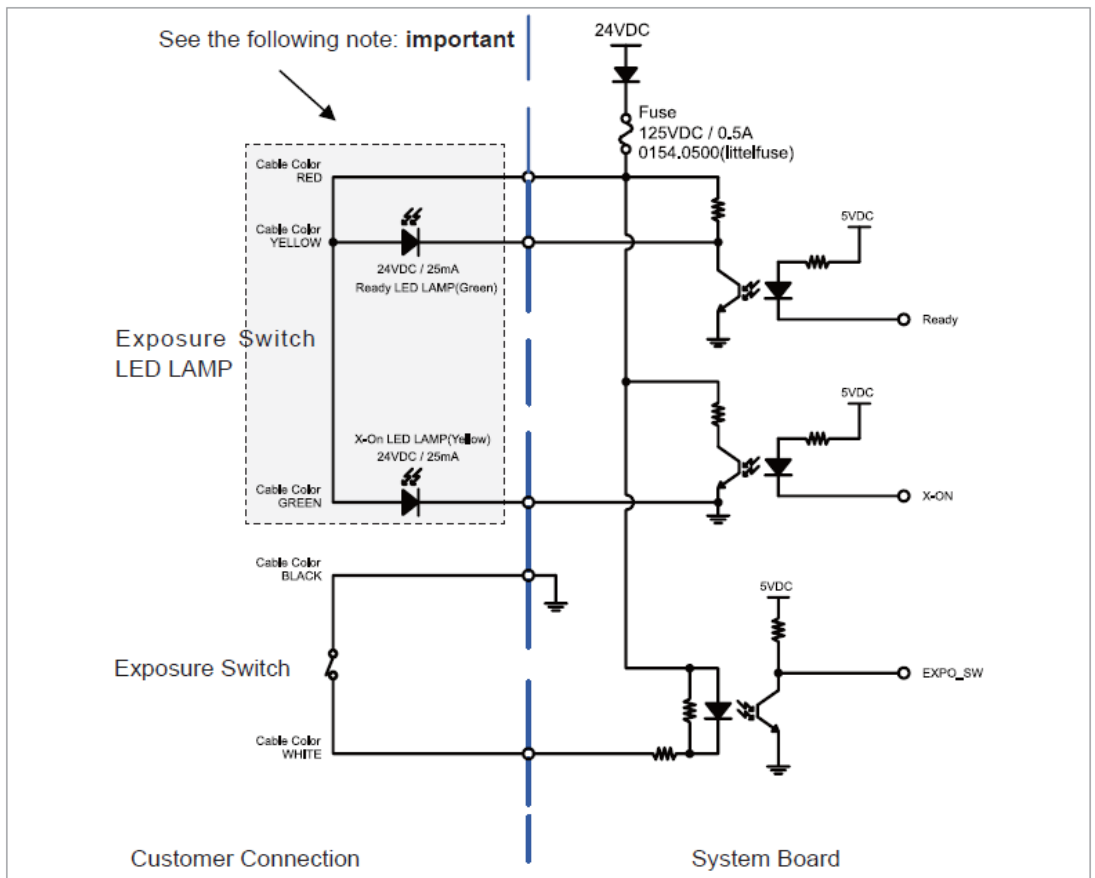


## Connecting the Third-party Exposure Switch(Optional)

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.



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

## Installation Checklist

### 1. General information:

Information about the equipment purchaser (Customer)	
Name of Clinic or Hospital	
Address	
Phone	
E-Mail	

Information about the equipment seller (Dealer)	
Name of dealer	
Phone	
E-Mail	
Website	

### 2. Installation information:

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

## 3. While installing equipment

While installing equipment	Yes	No
Are installers careful with any sensitive parts while carrying equipment?	<input type="checkbox"/>	<input type="checkbox"/>
Did installers perform installations, according to the manual?	<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 equipment be well balanced?	<input type="checkbox"/>	<input type="checkbox"/>

## 4. After installation

After installation Checklist	Yes	No
Is it OK after checking the equipment visually?	<input type="checkbox"/>	<input type="checkbox"/>
Does each arm move smoothly?	<input type="checkbox"/>	<input type="checkbox"/>
Do the arms (horizontal and scissor) drop down by themselves?	<input type="checkbox"/>	<input type="checkbox"/>
Does the LED on the front of the equipment display usually?	<input type="checkbox"/>	<input type="checkbox"/>
Does the equipment supply the power usually?	<input type="checkbox"/>	<input type="checkbox"/>
Does the test image look satisfactory?	<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.



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Fax: +33 1 64 11 43 39



# EzRay Air<sup>TM</sup> Wall