100kW Power Conditioning System (PCS)

Maintenance Manual

Version: 1.0.0

Copyright

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Conventions

General Conventions

The following conventions are used in this manual:

Note:
Indicates additional information that is relevant to the current process or procedure.

WARNING!
Warning information appears before the body of text indicting a hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION!
CAUTIONS APPEAR BEFORE THE TEXT IT REFERENCES. CAUTIONS APPEAR IN CAPITAL LETTERS TO EMPHASIZE THAT THE MESSAGE CONTAINS VITAL HEALTH AND SAFETY INFORMATION.

Typographical Conventions

The following typographical conventions are used in this document:

Italics

Indicates book titles.

`Constant width`

Indicates computer output shown on a computer screen, including menus, prompts, responses to input, and error messages.

Constant width bold

Indicates commands or information literally entered by a user on the computer. Variables contained within user input are shown in angle brackets (< >).

Indicates directory, file, path, and program/process names.

Bold italics

Indicates keyboard keys that are pressed by the user.

About to this Manual

Version Control

Table 1: Version Control

Rev.	Change Description	Date
1.0.0		

Purpose

This manual provides includes safety guidelines, detailed instructions for the maintenance and troubleshooting of the Delta PCS100.

Target Audience

This manual is intended for customers intending to maintain and troubleshoot these products. Installers should be certified technicians or electricians.

Manual Organization

This manual includes information covering the following areas:

- Front Matter: Safety, regulatory, convention and important information used throughout this manual and on the device.
- Chapter 1. Hardware Introduction: Overview of the system, including features, specifications, and physical descriptions.
- Chapter 2. Preventive Maintenance: Overview of guidelines and information for the maintenance of equipment and consumable components.
- Chapter 3. Maintenance: Processes required to repair field serviceable.

Maintenance Flowchart

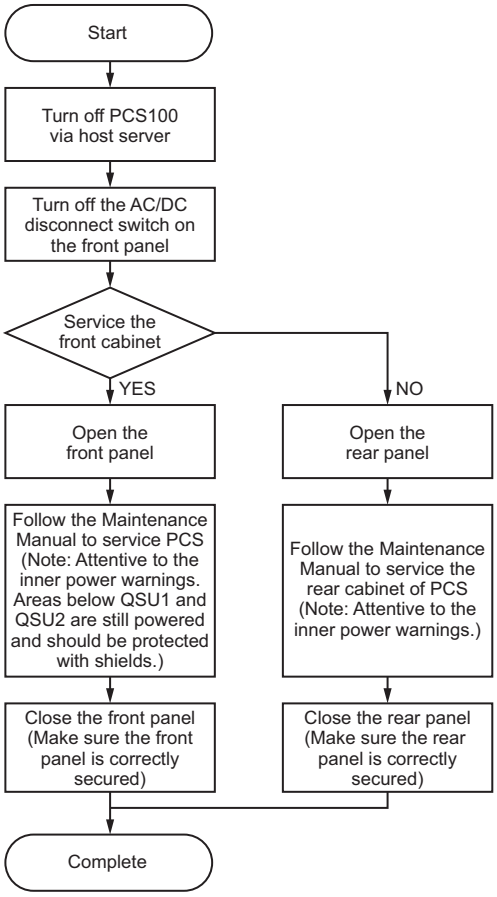

Figure 1. Maintenance Flowchart

Safety Instructions

Warnings

WARNING!

Read all the instructions before using this product.

WARNING!

This device should be supervised when used around children.

WARNING!

The PCS100 must be grounded through a permanent wiring system or an equipment grounding conductor.

WARNING!

Do not install or use the PCS100 near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.

WARNING!

Turn off input power at the DC SPD before installing or cleaning the PCS100.

WARNING!

Use the PCS100 only within the specified operating parameters.

WARNING!

Never spray water or any other liquid directly at the wall mounted control box. Never spray any liquid onto the charge handle or submerge the charge handle in liquid. Store the charge handle in the dock to prevent unnecessary exposure to contamination or moisture.

WARNING!

Stop using and do not use the PCS100 if it is defective, appears cracked, frayed, broken, or otherwise damaged, or fails to operate.

WARNING!

Do not attempt to disassemble, repair, tamper with, or modify the PCS100. The PCS100 is not user serviceable. Contact Tesla for any repairs or modification.

WARNING!

When transporting the PCS100, handle with care. Do not subject it to strong force or impact or pull, twist, tangle, drag, or step on the PCS100, to prevent damage to it or any components.

WARNING!

Do not touch the PCS100's end terminals with fingers or sharp metallic objects, such as wire, tools, or needles.

WARNING!

Do not forcefully fold or apply pressure to any part of the PCS100 or damage it with sharp objects.

WARNING!

Do not insert foreign objects into any part of the PCS100.

WARNING!

Use of the PCS100 may affect or impair the operation of any medical or implantable electronic devices, such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator. Check with your electronic device manufacturer concerning the effects that charging may have on such electronic devices before using the PCS100.

Cautions

CAUTION!

DO NOT USE PRIVATE POWER GENERATORS AS A POWER SOURCE FOR CHARGING.

CAUTION!

INCORRECT INSTALLATION AND TESTING OF THE PCS100 COULD POTENTIALLY DAMAGE EITHER THE BATTERY AND/OR THE PCS100 ITSELF. ANY RESULTING DAMAGE IS EXCLUDED FROM THE EQUIPMENT LIMITED WARRANTY.

CAUTION!

DO NOT OPERATE THE PCS100 IN TEMPERATURES OUTSIDE ITS OPERATING RANGE OF -13°F TO 122°F (-25°C TO +60°C).

Notes

Note:
Ensure that the PCS100's cables are positioned so it will not be stepped on, driven over, tripped on, or subjected to damage or stress.

Note:
Do not use cleaning solvents to clean any of the PCS100's components.

Note:
Be careful not to damage the circuit boards or components during installation.

Important Safety Instructions

This document contains important instructions and warnings that must be followed when installing and maintaining the PCS100.

Installation and Wiring Compliance

The installation and wiring must comply with local and regional electrical codes. The installation must be done by a certified electrician.

Preventing Electrical Shock

- Always connect the grounding connection on the PCS100 to the designated grounding system.
- Servicing of the PCS100 must be carried out by qualified personnel only.
- Disengage all AC and DC inputs before servicing any components.
- Always take precaution when touching bare terminals. High lethal voltages may be present even after the power has been removed.

Installation Environment

- The PCS100 should be installed indoor only in a well ventilated, cool, dry environment.
- Do not expose the PCS100 to moisture, rain, snow or liquids of any type.
- Do not obstruct the airflow, air intakes/exhaust to prevent the risk of overheating and fire.

Preventing Fire and Explosion Hazards

Maintenance or servicing the PCS100 may produce sparks. For this reason, the PCS100 should only be installed in an environment free of flammable material or gases. These areas may exclude locations that house gasoline-powered machinery, fuel tanks, and battery compartments.

Hardware Introduction

Overview

Delta’s Power Conditioning System (PCS) is a bi-directional conversion system that converts power between energy storage and grid, along with energy and grid power quality management features.

It supports demand charge management by peak shaving, enables load shifting for time-of-use savings, and provides real power and reactive power compensation to improve power quality.

In addition, the PCS100 can operate by local or remote control. The local access is enabled through the display panel and remote control access is performed through commands from a computer connected to the PCS100 through an RS485 communication link using Modbus protocols.

Environmental Considerations

The PCS100 can be installed where there is TN or TT power distribution system.

The PCS100 system installation must meet the following guidelines:

- The system must be installed on a level floor suitable electronic equipment. The floor must be able to support heavy weight and wheeling.
- The system must be installed in an area with temperature and humidity control free of conductive contaminants.
- The cabinet must be installed in a standalone configuration.

Enclosure Front and Side Sections

This section describes the physical characteristics of the PCS100. These converters are housed in IP55 enclosures. To better describe all of the components, the respective location are divided as follows: Front Side Locations, Access Door Locations, Front Compartment Locations (Internal), Rear Compartment Locations (Internal), and Rear Side Locations.

Front Side Locations

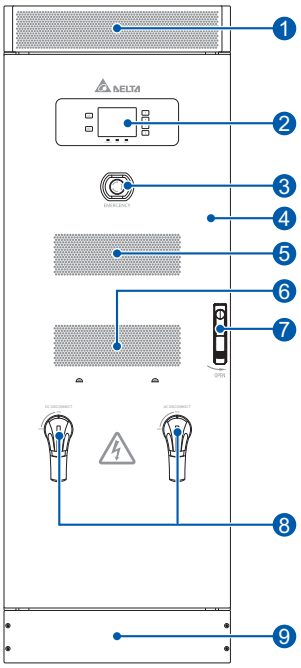

Figure 2. Front Panel View

Table 2: Front Panel View

No.	Description	No.	Description
1	Air exit (grill)	2	Display panel (keypad and display)
3	DC disconnect, emergency stop button	4	Front access door
5	Air outtake (filters)	6	Air intake (filters)
7	Enclosure door latch, lockable (handle and key hole)	8	AC and DC disconnect switches
9	Front side base cover ● Provides access for forklift ● Provides access for front side cable routing		

Left Side Locations

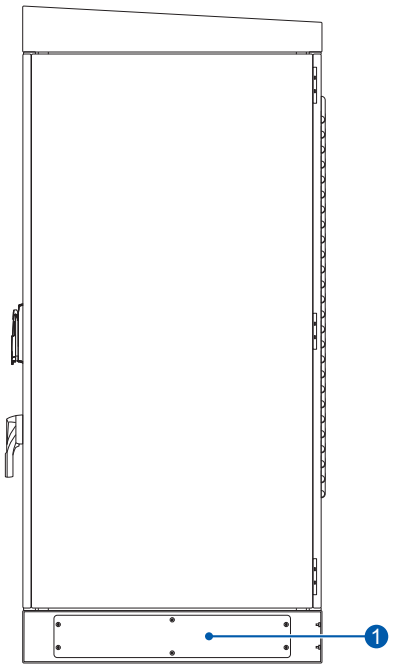

Figure 3. Left Side View

Table 3: Left Side View

No.	Description	No.	Description
1	Side base cover ● Provides access for forklift ● Provides access for front side cable routing		

Display Panel

The display panel is located on the top side of the front door. This panel includes ON/OFF buttons, function buttons, and status LEDs indicators (lit, when power is being generated by the PCS100).

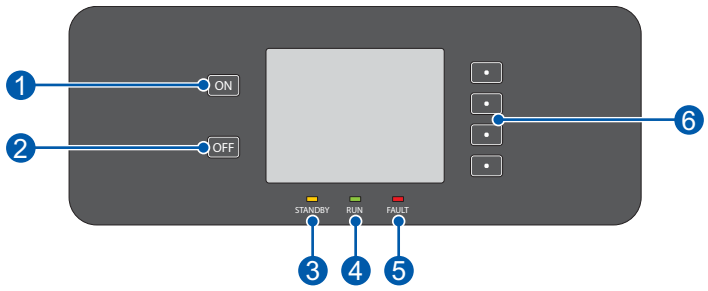

Figure 4. PCS100 Display Panel

Table 4: Display Panel

No.	Description	No.	Description
1	On button (Disabled)	2	OFF Button (Disabled)
3	Standby mode	4	Run mode
5	Fault mode	6	Function mode

On and Off Modes

The ON and OFF buttons located on the display panel are currently disabled.

Emergency Stop Button

The PCS100 is equipped with an emergency stop button located on the front door underneath the display panel.

The Emergency (off) button allows the energy feed from the rectifier to be interrupted through the main contactor by bypassing the microprocessor controller using a safety relay.

When the Emergency button is pressed, the emergency stop function is activated effectively shutting down the PCS100.

Control Switches

Under normal operating conditions, the ON/OFF control switches are in the ON position.

When a control switch is turned to the OFF (default) position the respective contactor is opened and immediately shuts down the corresponding section of the PCS100.

WARNING!

The control switches turn off the PCS100. However, live power still exists in both the DC and AC sections within the enclosure.

Internal Enclosure Views

Open Front Door

The front door houses a number of components and also provides access to the internal sections of the enclosure as it also serves as the front door way. The following figure illustrates the serviceable components as seen from an open access door.

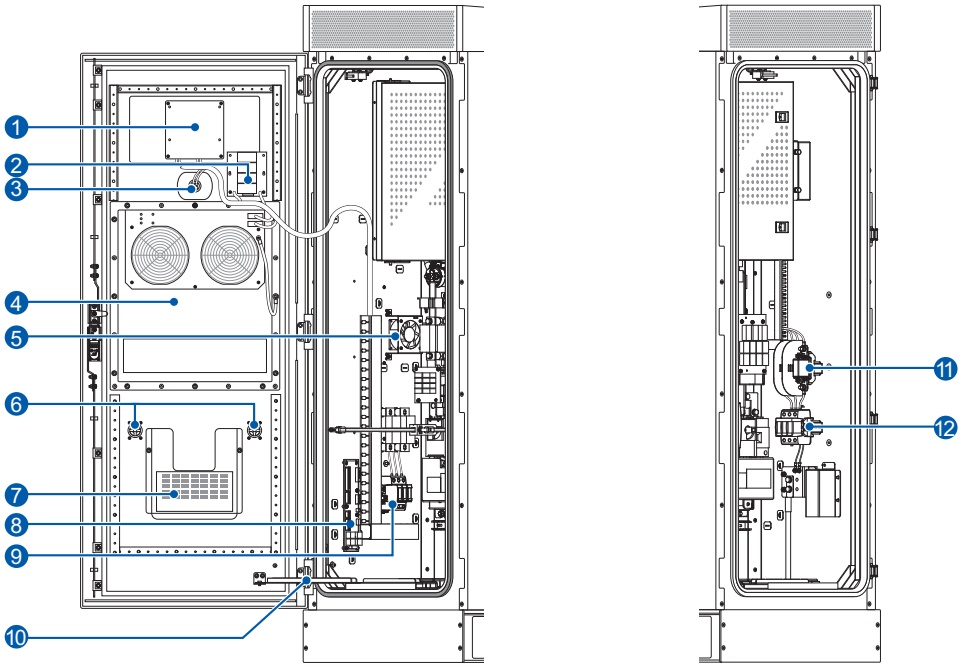

Figure 5. Open Front Door and Internal Cabinet Views

Table 5: Open Front Door and Internal Cabinet Views

No.	Description	No.	Description
1	LCD plate (L board)	2	Auxiliary heat exchanger power board (G board)
3	Emergency stop button	4	Heat exchanger
5	Ventilation fan for fuse (Fuse fan module)	6	AC and DC switch handles
7	Document box	8	Interface board (J board)
9	DC surge protector (DC SPD)	10	Cabinet door stay
11	AC SPD fuse	12	AC surge protector (AC SPD)

Front Compartment Locations

The Front Compartment is composed of two internal areas accessible after opening the front door of the cabinet. The initial area includes the Safety Cover and for this guide's purpose is named the Front Protective Cover area. The second area, Internal Compartment, is the section which houses the main bulk of the internal components and is accessible only after opening the Safety Cover and Control Box cover.

Front Protective Cover Locations

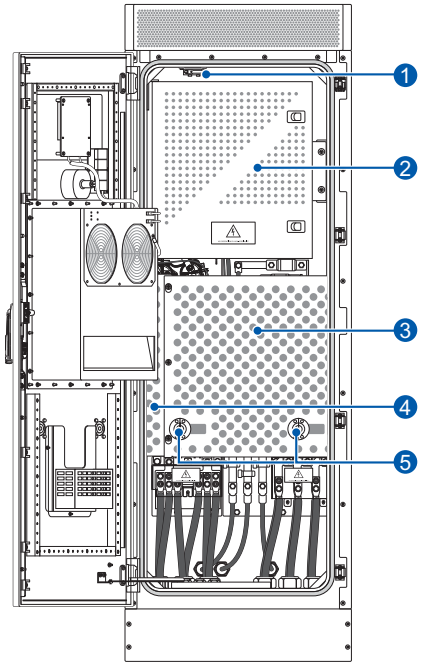

Figure 6. Front Compartment and Protective Cover Views

Table 6: Front Compartment and Protective Cover Views

No.	Description	No.	Description
1	Switch indicator for door state (Door sensor)	2	Control box cover
3	Safety cover	4	Safety cover bracket
5	Extension rods		

Cable Access Glands

All power cables and wiring can be routed through the bottom-front or bottom-rear floor locations in the enclosure.

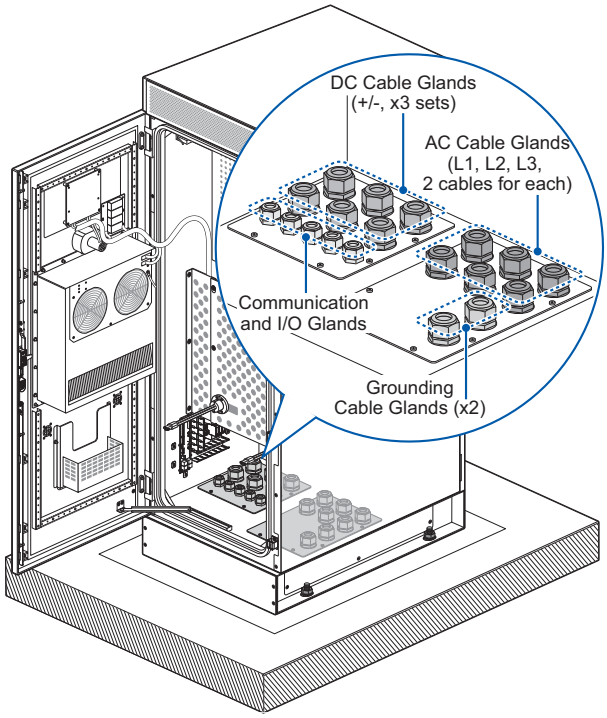

Figure 7. Cable Access Glands

Internal Compartment

The internal compartment houses the components only accessible after opening the cabinet's internal protective cover.

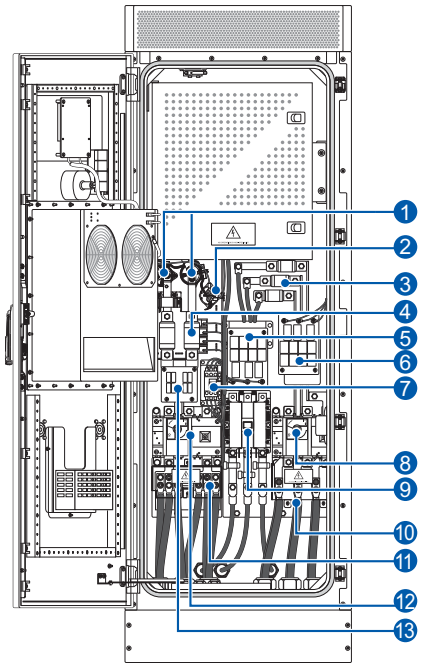

Figure 8. Front View of Components in an Open Compartment

Table 7: Front View of Components in an Open Compartment

No.	Description	No.	Description
1	DC main relay	2	DC softstart relay
3	AC fuse	4	DC fuse
5	AC EMI filter board (E board)	6	AC EMI filter board (E board)
7	AC softstart contactor	8	AC switch
9	AC main contactor	10	AC terminals with protective cover (L1, L2, L3)
11	DC terminals with protective cover (3 for +, 3 for -)	12	DC switch
13	DC EMI filter board (F board)		

Control Box

The control box includes a front cover, which acts as a door to access the interior. Once the cover is opened, the front view any installed components on this side are visible. By swinging open the front cover on the control box, you can gain access to the components on the rear side of the control box.

Once the control box is fully opened, the interior of the cabinet is accessible for servicing.

Front of Control Box

The following figure illustrates the front of an open control box. The location is accessible after opening the control box cover. When the control box is closed it is situated directly in front of the top interior of the cabinet.

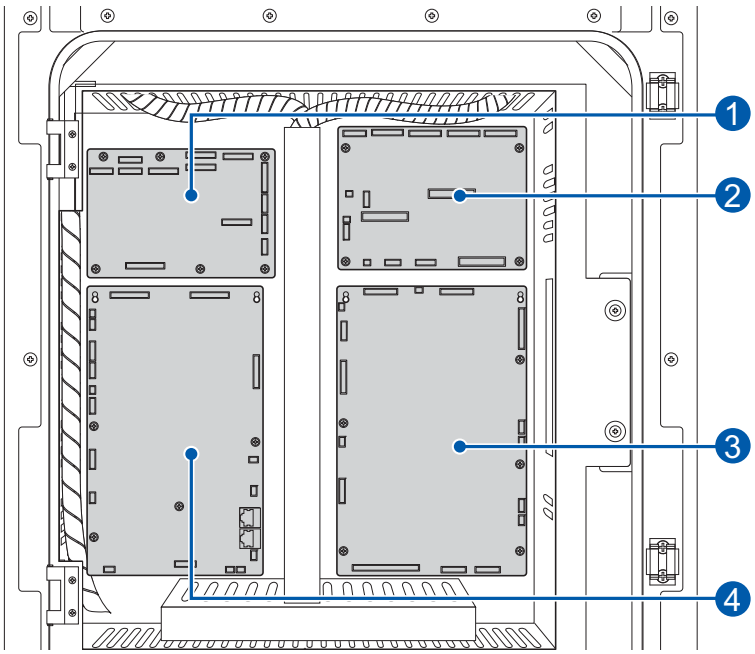

Figure 9. Components in Front of Open Control Box Cover

Table 8: Components in Front of Control Box Cover

No.	Description	No.	Description
1	Module sampling board (R board)	2	System sampling board (H board)
3	Module control board (M board)	4	System control board (S board)

Rear of Control Box Cover

The following figure illustrates the rear view of an open control box cover. When the cover is closed it is situated directly in front of the interior of the cabinet.

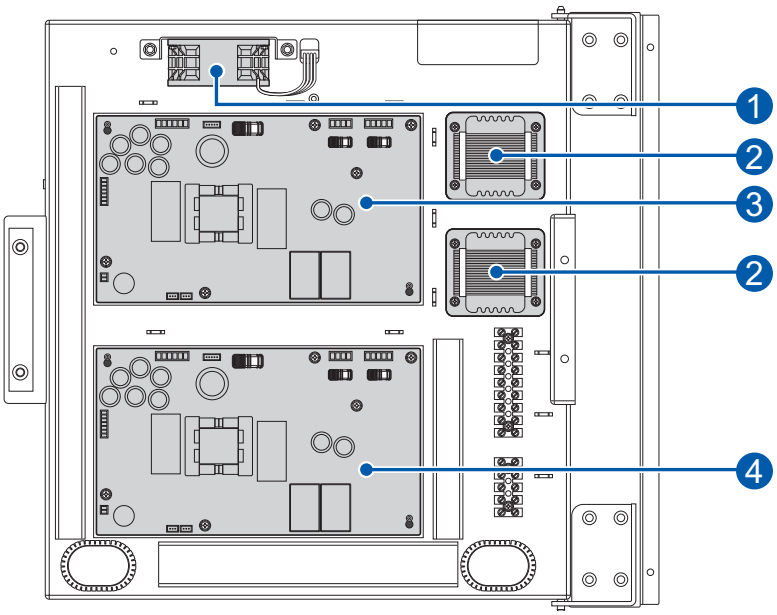

Figure 10. Components in Rear of Open Control Box Cover

Table 9: Components in Rear of Open Control Box Cover

No.	Description	No.	Description
1	Ventilation fan for aux power (Auxiliary power fan module)	2	Auxiliary transformer
3	Auxiliary power board (Module P board)	4	Auxiliary power board (System P board)

Cabinet Interior

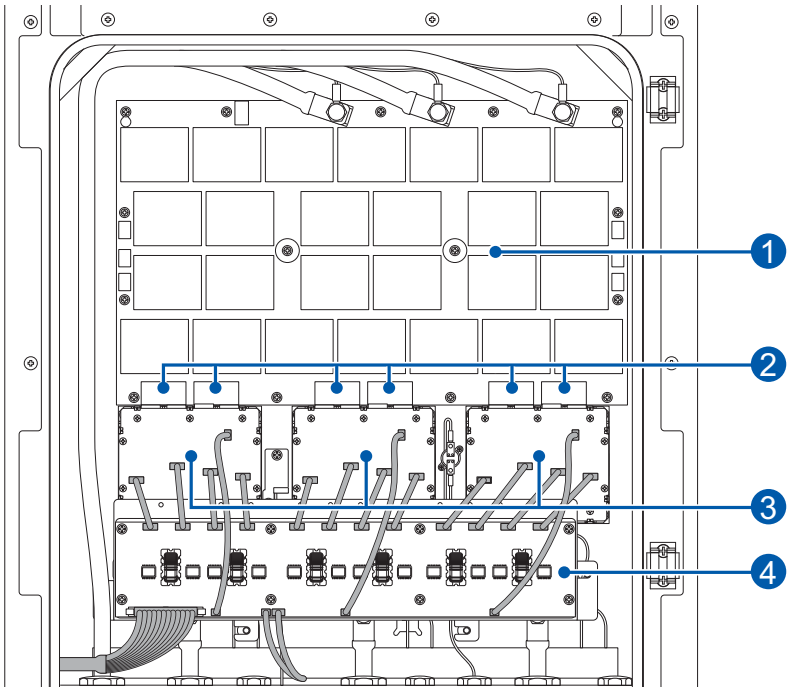

Figure 11. Components within Interior of Top Cabinet

Table 10: Components within Interior of Top Cabinet

No.	Description	No.	Description
1	DC cap board (D Board)	2	Copper bar and hall (IGBT to D board)
3	IGBT driver adapter board (A board)	4	IGBT driver board (B board)

Enclosure Rear Section

This section describes the physical characteristics of the rear sections for the PCS100.

Rear Access Door Locations

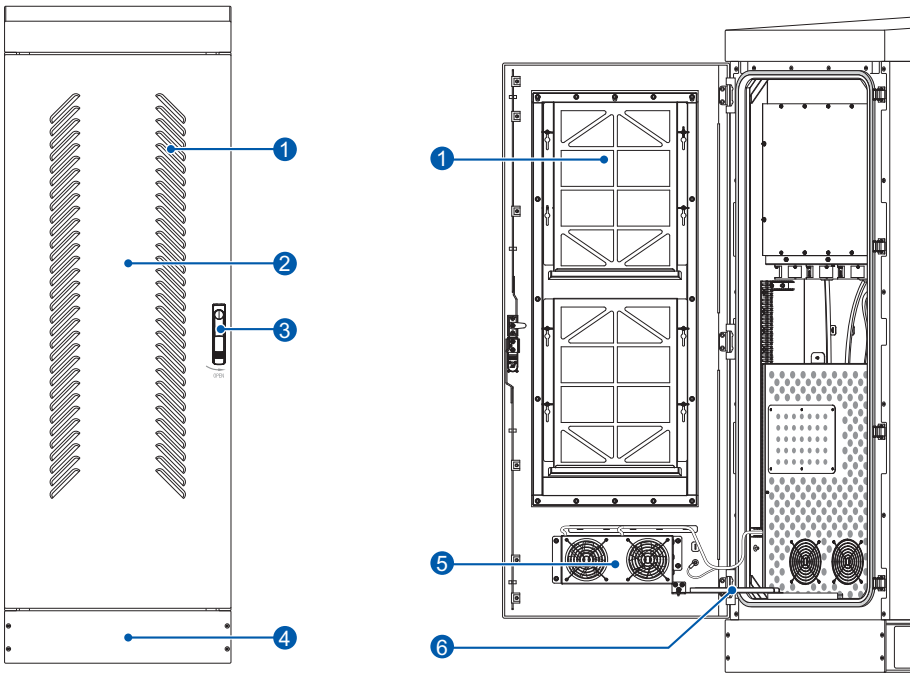

Figure 12. Rear View of Closed (Left) and Opened (Right) Cabinet

Table 11: Rear View of Closed and Opened Cabinet

No.	Description	No.	Description
1	Air intake (filters)	2	Rear access door
3	Enclosure door latch, lockable (handle and key hole)	4	Rear side base cover ● Provides access for forklift ● Provides access for front side cable routing
5	Ventilation fan module-choke (Choker fan module)	6	Cabinet door stay

Rear Compartment Locations

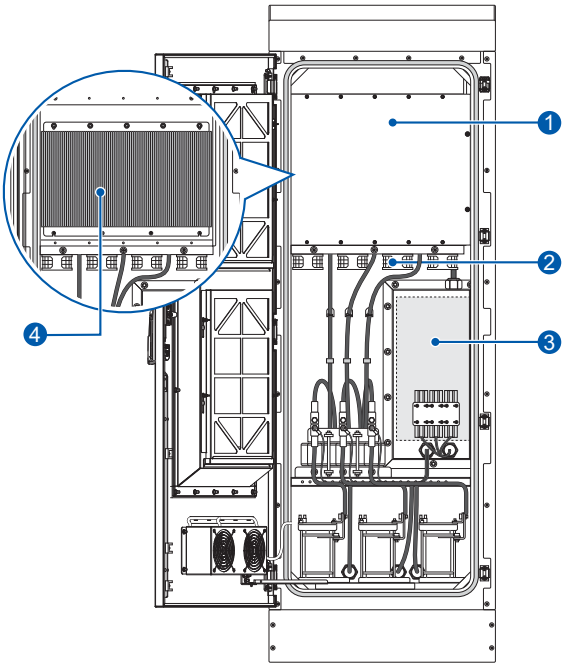

Figure 13. Open Compartment, Rear View

Table 12: Open Compartment, Rear View

No.	Description	No.	Description
1	IGBT HSK cover	2	Ventilation fan module-IGBT (IGBT fan module)
3	AC filter module (C Board) (Visible)	4	Inverter module (IGBT HSK)

Preventive Maintenance

The Delta 100kW Power Conditioning System (PCS) is a bi-directional conversion system that converts power between energy storage and grid. Due to the complexity of the PCS100, it is recommended to have all repairs or maintenance procedures performed by a qualified power supply technician. Before attempting any procedures, the technician must be familiar with the components of the PCS100 and the related procedures.

The components inside the Delta 100kW Power Conditioning System (PCS) are secured to the frame or enclosures, which are, in turn, secured to the frame. All serviceable parts and assemblies are designed for easy assembly and installation. The design of the PCS100 allows service personnel convenient access for maintenance and serviceability.

It is highly recommended to develop a regular maintenance schedule to keep the PCS100 operating as intended and prevent possible system failures.

General Overview

It is important to keep in mind that the PCS100 is designed to supply power in the event of a power failure from the power utility grid. The internal components of the PCS100 are unsafe until the DC power source is disconnected and the capacitors are discharged. After disconnecting the utility power and disabling the DC power, it is recommended that authorized service personnel wait at least five minutes for capacitor bleed-off before attempting to service any internal components.

Due to the complexity of the PCS100, it is highly recommended that all repairs be performed by a qualified power supply technician. Before attempting any service procedures, the technician should be familiar with the system and the operation design.

WARNING!

When servicing the PCS100, dangerous voltage levels may exist. All AC and DC capacitors should be discharged. Use extreme caution when measuring primary circuitry since this is at line potential.

Observe the following precautions before performing maintenance or servicing the PCS100:

- Remove any metal objects, rings or watches prior to attempting any work.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Disconnect the external power source prior to connecting or disconnecting terminals.

Preventive Maintenance Guidelines

While the PCS100 requires little preventive maintenance, it is advisable to follow a regular maintenance schedule, which includes periodic inspection, to keep the PCS100 operating normally. The task of maintaining or servicing the PCS100 must be performed by authorized service personnel.

WARNING!

Before starting any maintenance work, disengage the AC and DC capacitors. Follow the proper power down procedures to make sure that the power cannot be inadvertently turned back on.

Daily Maintenance

The following items should be performed on a daily basis:

- Inspect the area around the PCS100. Make sure the area is clean and access to the PCS100 is not hampered.
- Ensure the system operating normally. If a status LED indicates an error or fault, make sure to contact an authorized service technician.

Scheduled maintenance

WARNING!

When servicing the PCS100, dangerous voltage levels may exist. All AC and DC capacitors should be discharged. Use extreme caution when measuring primary circuitry since this is at line potential.

Periodic inspections of the PCS100 should be made to determine if any components, wiring, and connections exhibit evidence of wear:

- Monitor system parameters on the control panel “Enclosure Front and Side Sections” on page 2.
- Inspect all air intakes, see “Hardware Introduction” on page 1 for further details. Make sure all air intakes and exhaust openings are not blocked.
- Ensure the operating environment is within the parameters specified in “Environmental Considerations” on page 1.
- Perform a visual inspection of all internally mounted equipment, cables, and major components.
- Inspect all terminals, cables, and enclosures for corrosion.
- Inspect all fuses.
- Inspect the operation of all safety devices (emergency stop, door switches).
- Check the filters (located behind the front door) and wash or replace as necessary. Contact your service representative for replacement filters. To replace the filters:
  a. Open the front door latch and swing the doors open.
  b. Replace the filters.
  c. Close the doors and secure the latch.
- Obtain all operating voltages and current readings displayed on the front display panel.
- Record the check results and any corrective actions in a suitable log.
- Record all completed inspections.

Guidelines for Cleaning and General Inspection

The PCS100 should be cleaned from the interior first by blowing low pressure compressed air into the bottom of the unit first then continue by moving upwards.

By maintaining the PCS100 in good electrical condition, many hazards stemming from disrepair can be avoided. Any equipment defect or safety hazard should be reported. Do not use any defective equipment.

Guidelines for Cable Maintenance

Inspect cables frequently for damage to the insulation and the connectors. Replace or repair cracked or worn cables immediately. Do not overload cables. Do not touch the output terminal while equipment is energized.

Guidelines for Power Component Maintenance

All components must be kept clean and free of dirt and obstructions to prevent heat buildup, thus helping to increase the lifespan of the device.

It is also advisable to inspect all terminal blocks for evidence of overheating, most evident in loose electrical connections. In addition, inspect the following:

- tightness on electrical and mechanical connections
- all wiring, leads and cables
- cuts, abrasions, and signs of deterioration
- all leads for broken strands on the terminals
- all door hinges

The fasteners may be loosened due to thermal expansion and vibration. It is advisable to check and re-torque the following on a set schedule:

- clamps
- bolt-on connections
- mounting fasteners

The inspection process should be repeated every six (6) months. Make sure to follow the recommended torque specifications.

Guidelines for Air Filter Maintenance

The provided air filters help to maintain a uniform airflow through the system. The air filters must be in place at all times during operation. Aside from the airflow the air filters provide clean air circulation for the system.

The provided filters are permanent, recleanable types. They must be cleaned at regular intervals. The recommended maximum filter load for efficient performance is [dust levels per net sq./ft]. To clean the air filters, remove and flush the filters with a stream of water. After the filters have been flushed, allow the water to drain. It is not necessary to use cleaners or chemical solutions.

Guidelines for General Maintenance

Follow all local and regional guidelines when repairing electronic components. When servicing interconnecting lead connections to components, make sure proper wire terminations are used. Route all leads as neatly as possible using ties, clamps, etc. During maintenance, make sure to use only the same size components as the provided originals.

The hardware for this system is metric, however, there may be components present using standard sizes S.A.E. Only use metric tools to loosen or tighten metric components, as much as standard size tools should only be used on standard size components.

Maintenance

This section contains preventive maintenance instructions.

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

DANGEROUS VOLTAGE LEVELS MAY BE PRESENT FOLLOWING DISCONNECTION. DO NOT OPEN THE CABINET UNTIL A REASONABLE PERIOD OF TIME HAS ELAPSED.
DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

The internal components of the PCS100 are unsafe until the DC power source is disconnected and the capacitors are discharged. After disconnecting the utility power and disabling the DC power, it is recommended that authorized service personnel wait at least five minutes for capacitor bleed-off before attempting to service any internal components.

Due to the complexity of the PCS100, it is highly recommended that all repairs be performed by a qualified power supply technician. Before attempting any service procedures, the technician should be familiar with the system and the operation design.

Powering off the PCS100

To power off the system, see the following guidelines:

1. Check the system status on the front display panel to ensure that the system is not in a **SoftStart** or **Run** state.
2. If the system is in **SoftStart** or **Run** state, push the **PCS OFF** button on PCS HMI Tool to switch the PCS system to Standby mode.

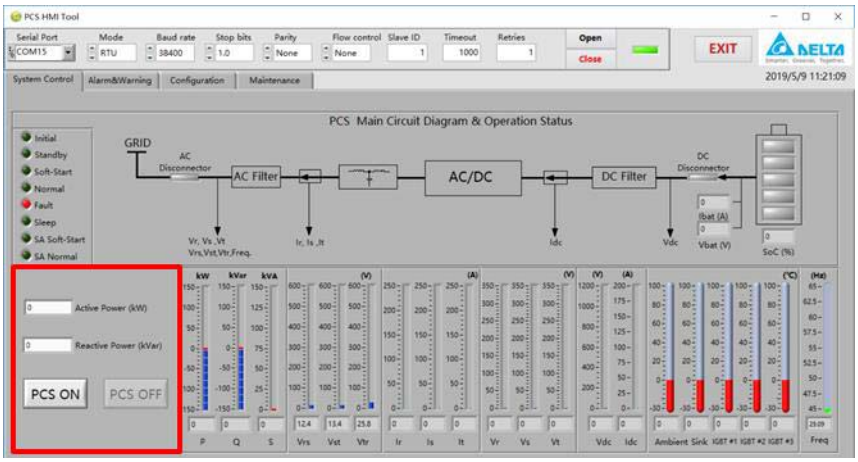

Figure 14. PCS HMI Tool - PCS ON/OFF Control

3. Turn the AC and DC switches on the front door to the **OFF** state as shown in Figure 15.

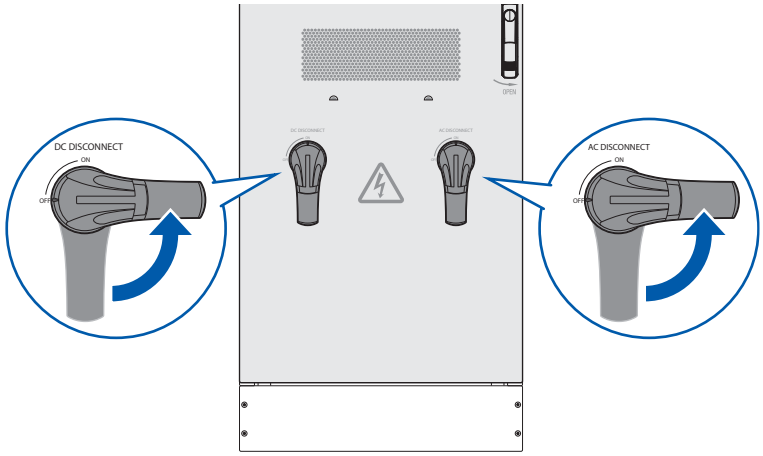

Figure 15. Disengaging the AC and DC Switches (OFF State)

Front Door

In order to install or remove components from the system, you first need to open the doors.

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

DANGEROUS VOLTAGE LEVELS MAY BE PRESENT FOLLOWING DISCONNECTION. DO NOT OPEN THE CABINET UNTIL A REASONABLE PERIOD OF TIME HAS ELAPSED.
DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Opening a Front Door

The AC and DC disconnects have an interlock mechanism to prevent the front door from being opened if they are not in the OFF position. After turning the disconnects to the OFF (horizontal) position, wait at least five minutes before opening the front door.

1. Rotate the switch handles to the OFF position to disconnect the AC and DC disconnects.

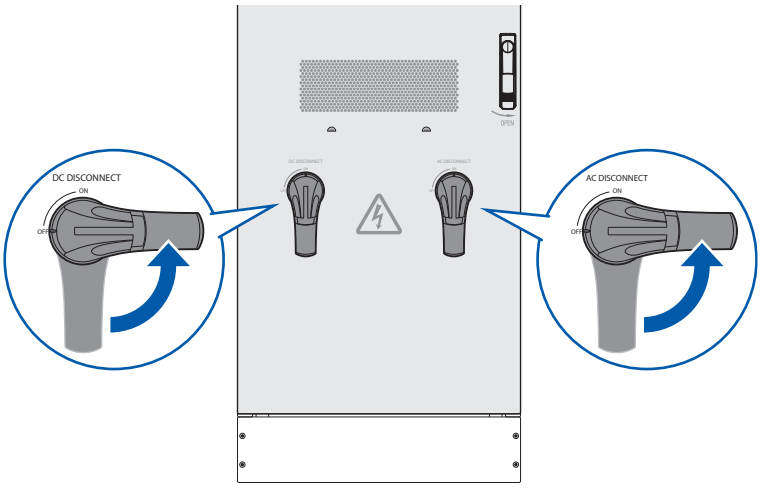

Figure 16. Disconnecting the AC and DC Inputs

2. Slide the keyhole cover up to locate the keyhole.

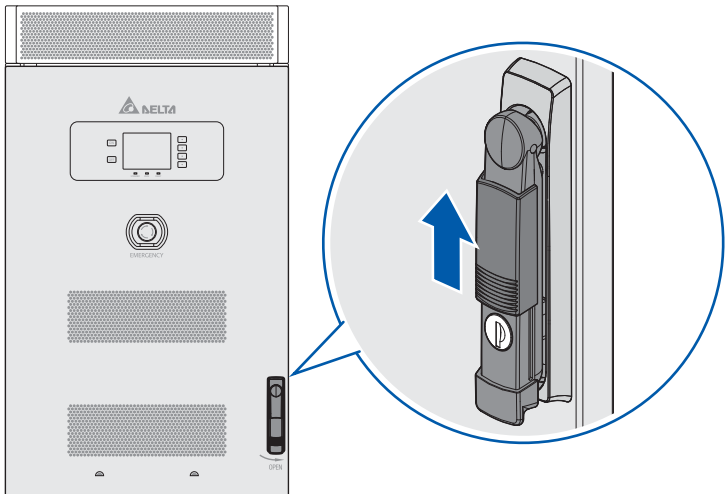

Figure 17. Uncovering a Keyhole Slot

3. Insert the key and turn it to retract the lock.

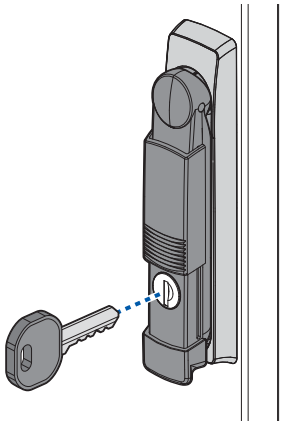

Figure 18. Unlocking a Front Door

4. Release the door handle then rotate it to open the door.

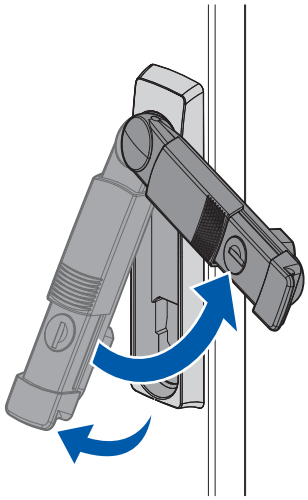

Figure 19. Opening a Door Handle

5. Open the front door open and swing it open until it locks in place.

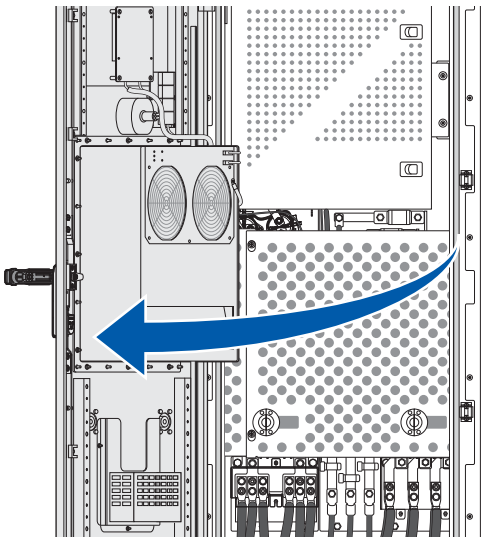

Figure 20. Opening a Front Door

Make sure the locking mechanisms at the bottom of the door engages in the track to keep the front door from closing accidentally.

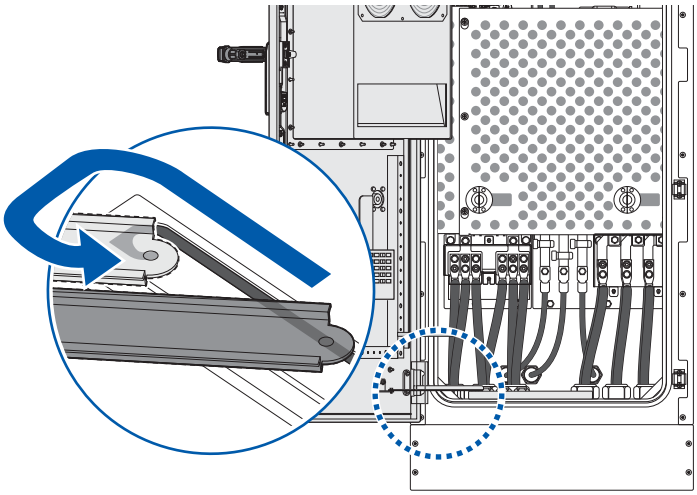

Figure 21. Locking a Front Door in a Cabinet

The front door locks in place when it is fully extended.

Closing a Front Door

1. Locate the track on the bottom corner of the cabinet, see Figure 22 Unlocking the Lower Track.
2. Locate the track at the bottom of the cabinet and lift it up to release the locking mechanism.
3. Once the track is unlocked, close the front door. Use gentle force to make sure it is flush in the cabinet.

   Make sure the locking mechanisms at the top and bottom of the door engage with the respective slits on the cabinet.

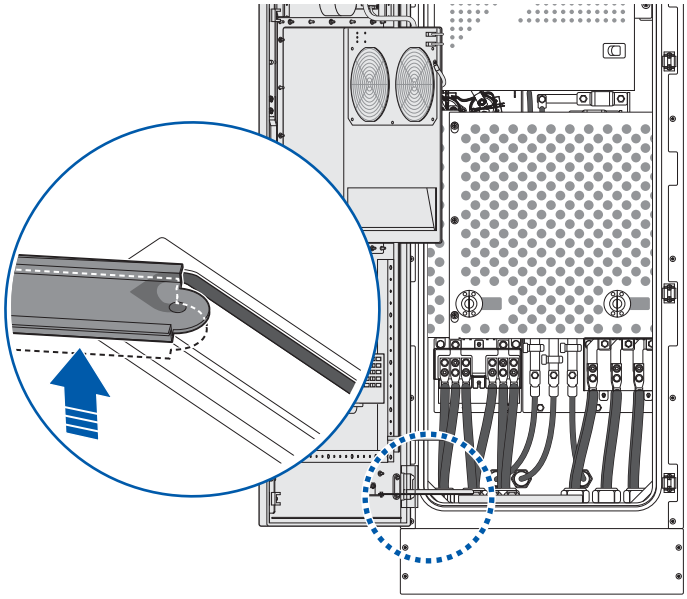

Figure 22. Unlocking the Lower Track

4. Maintain pressure on the door while rotating the door handle to the closed position.

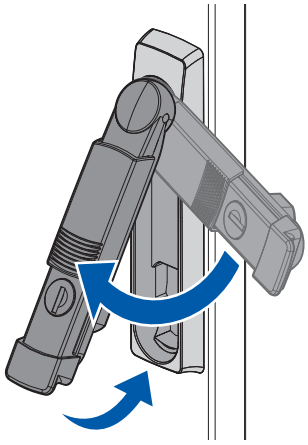

Figure 23. Closing a Door Handle

Note:
To ensure a closed front door, make sure there is no gap between the front door and the cabinet.

5. Insert the key and rotate it to engage the lock. Once the lock is engaged, remove the key.

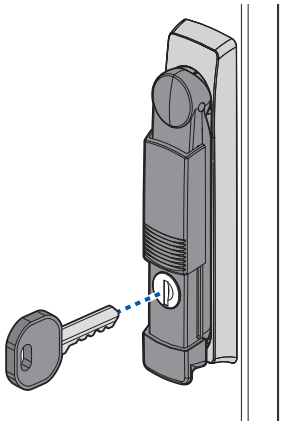

Figure 24. Locking a Front Door

6. Slide the keyhole cover down to complete securing the handle.

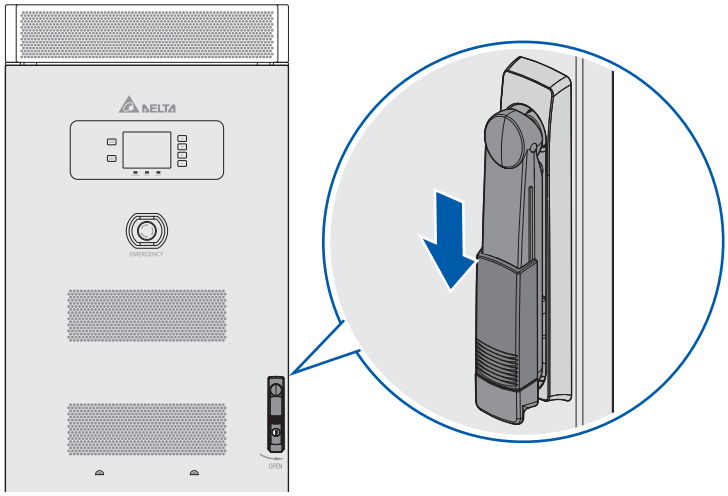

Figure 25. Securing a Keyhole Slot

7. Rotate the switch handles to the ON position to engage the AC and DC inputs.

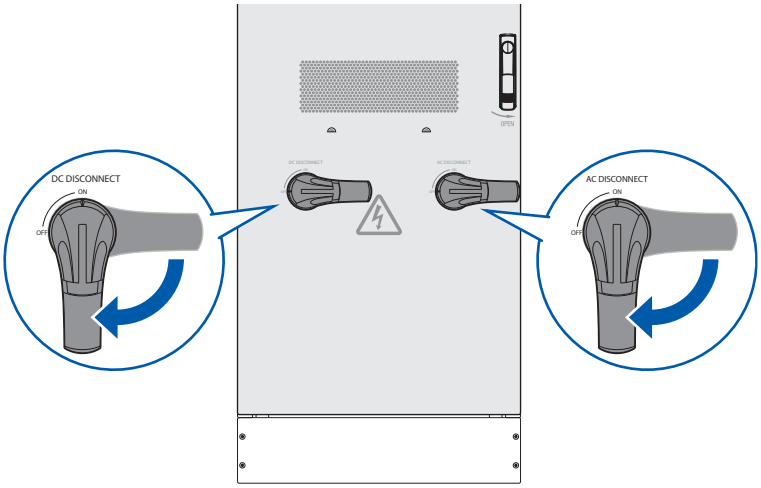

Figure 26. Engaging AC and DC Inputs

Rear Door

In order to install or remove components from the system, you first need to open the doors.

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

DANGEROUS VOLTAGE LEVELS MAY BE PRESENT FOLLOWING DISCONNECTION. DO NOT OPEN THE CABINET UNTIL A REASONABLE PERIOD OF TIME HAS ELAPSED.
DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Opening a Rear Door

1. Slide the keyhole cover up to locate the keyhole.

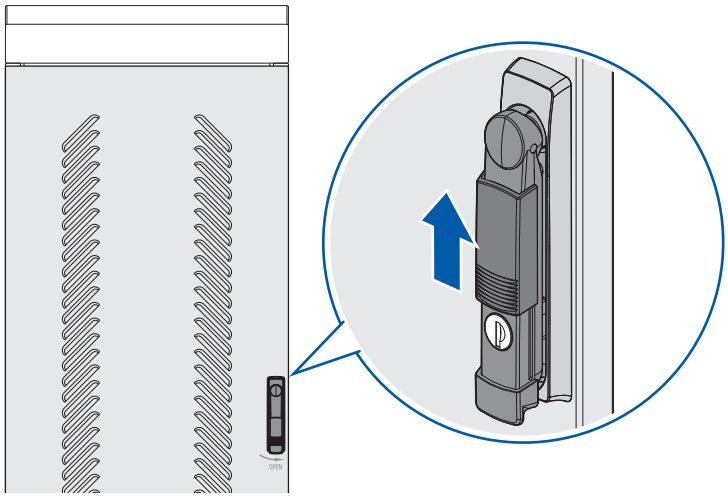

Figure 27. Uncovering a Keyhole Slot

2. Insert the key and turn it to retract the lock.

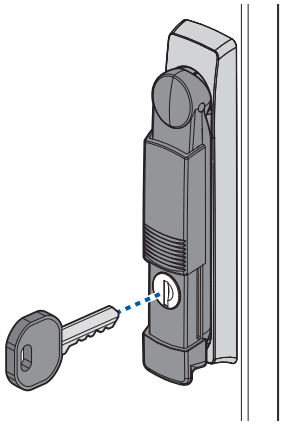

Figure 28. Unlocking a Rear Door

3. Release the door handle then rotate it to open the door.

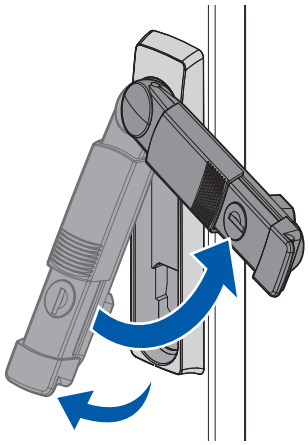

Figure 29. Opening a Door Handle

4. Open the rear door open and swing it open until it locks in place.

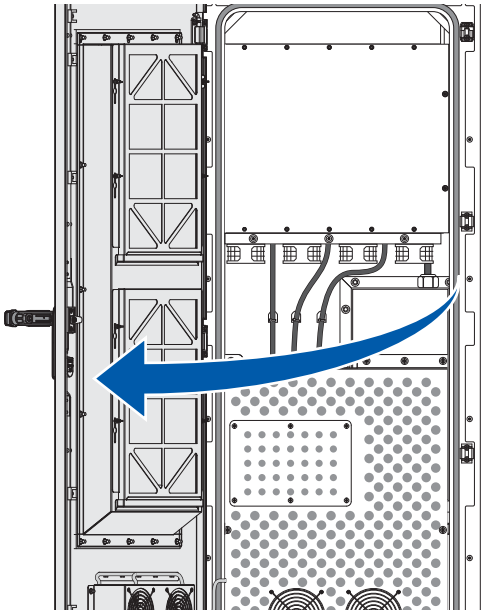

Figure 30. Opening a Rear Door

Closing a Rear Door

Before you close a door, make sure there are no obstructions hindering the door from closing correctly.

1. Maintain pressure on the door while rotating the door handle to lock the rear door to the cabinet.

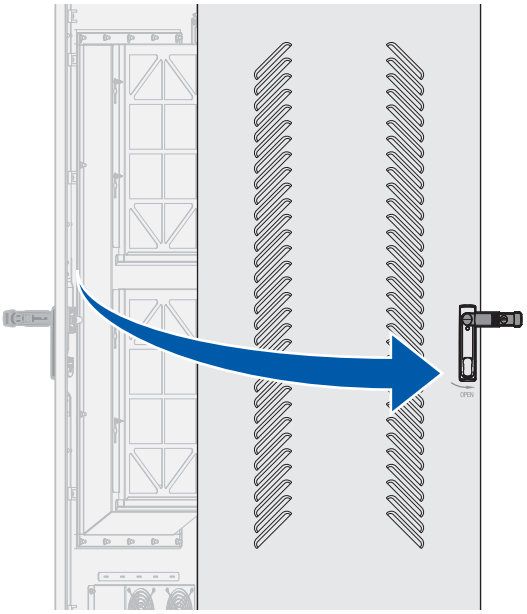

Figure 31. Closing a Rear Door

2. Maintain pressure on the door while rotating the door handle to the closed position.

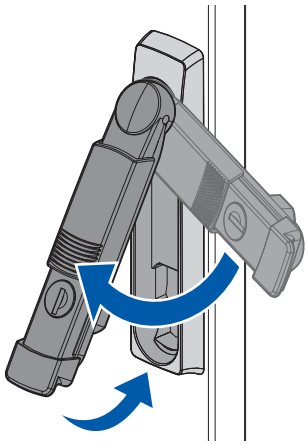

Figure 32. Closing a Door Handle

Note:
To ensure a closed front door, make sure there is no gap between the rear door and the cabinet.

3. Insert the key and rotate it to engage the lock. Once the lock is engaged, remove the key.

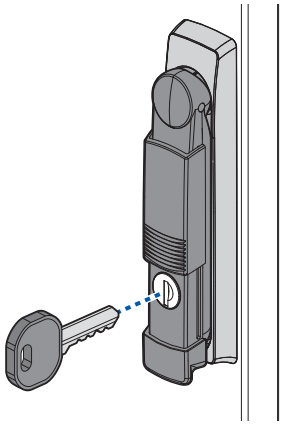

Figure 33. Locking a Front Door

4. Slide the keyhole cover down to complete securing the handle.

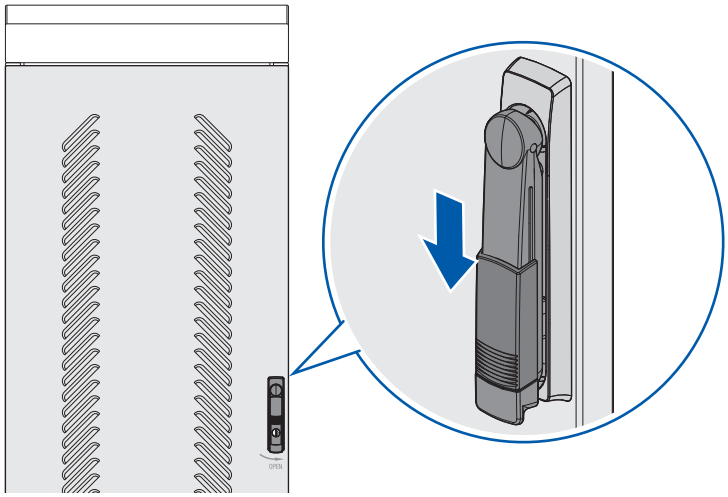

Figure 34. Securing a Keyhole Slot

Control Box

The control box is an enclosure made up of a front cover which provides access to its internal (front) components. Components can also be found on the rear of the control box.

When the control box is opened in its entirety, access can be gained to the top internal section of the cabinet.

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

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DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Opening a Control Box

The control box swings open to reveal the components on the rear side and the top internal section of the cabinet.

1. Open the front door. See “Opening a Front Door” on page 20.
2. Loosen the captive screws securing the control box.
3. Grasp the control box and swing it open.

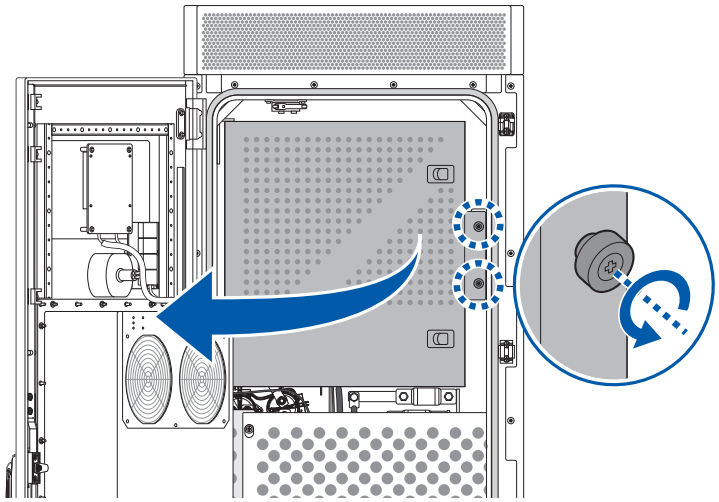

Figure 35. Opening a Control Box

Closing a Control Box

Before closing the control box, make sure the area is free of any cables that may have come loose.

1. Close the control box cover and tighten the captive screws.

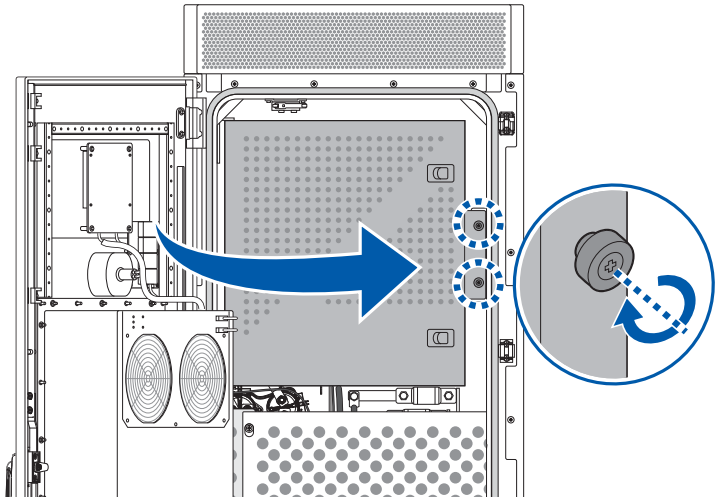

Figure 36. Closing a Control Box

2. Close the front door. See “Closing a Front Door” on page 22.

Opening a Control Box Cover

1. Open the front door. See “Opening a Front Door” on page 20.
2. Slide in the release latches to open the control box cover.

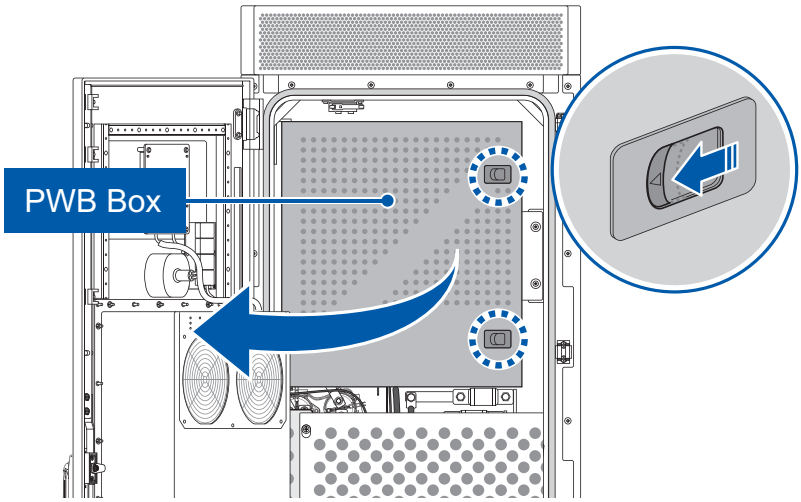

Figure 37. Opening a Control Box Cover

Closing a Control Box Cover

1. Before closing the cover, inspect the enclosure for any possible obstructions.
2. Gently close the control panel making sure your hands are not placed between the panel and the cabinet wall.
3. Press the panel in to engage the locking mechanisms.

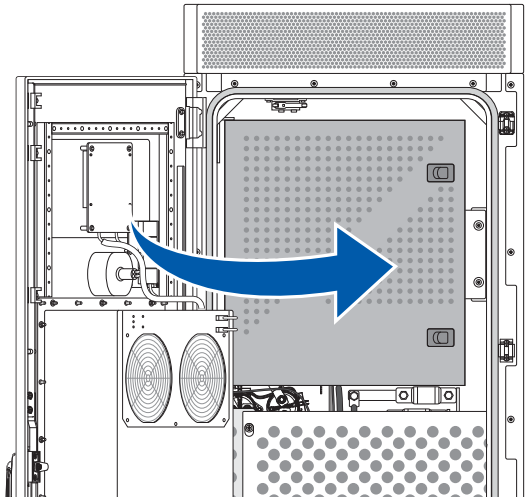

Figure 38. Closing a Control Box Cover

4. Close the front door. See “Closing a Front Door” on page 22.

Safety Cover

The safety cover is designed to prevent access to the bottom internal sections of the cabinet. To service key components, first open the safety cover.

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

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Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a Safety Cover

1. Open the front door. See “Opening a Front Door” on page 20.
2. The securing stoppers are held in place by the screws. Once the screws are removed, the stoppers fall off. Start on one side and remove the screws from the securing stopper.
3. Remove the two halves of the stopper and continue with the remaining stopper.

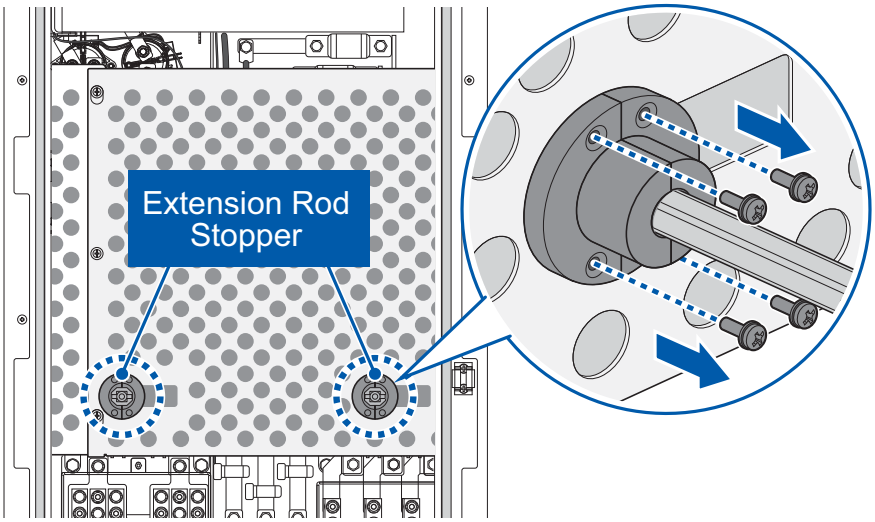

Figure 39. Removing the Extension Rod Stoppers

4. Once the securing stoppers are removed, the safety bracket can be removed. Remove the screws securing the safety cover.

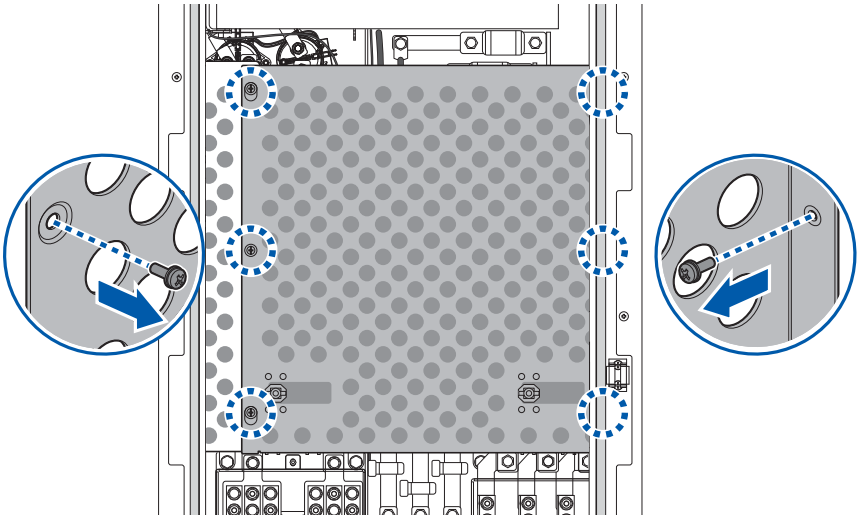

Figure 40. Removing the Safety Cover Screws

5. Slide the safety cover until the slits in the cover are flush with the extension rods. The extension rods must have access to pass through the slits without interference.

CAUTION!

When servicing the Safety Cover make sure to keep awareness of the Extension Rods. Caution is recommended to avoid injury or damage when the Extension Rods are protruding from the cabinet.

6. Grasp the safety cover and carefully slide it out through the extension rods. Pay attention to the position of the extension rods to avoid the possibility of injury.

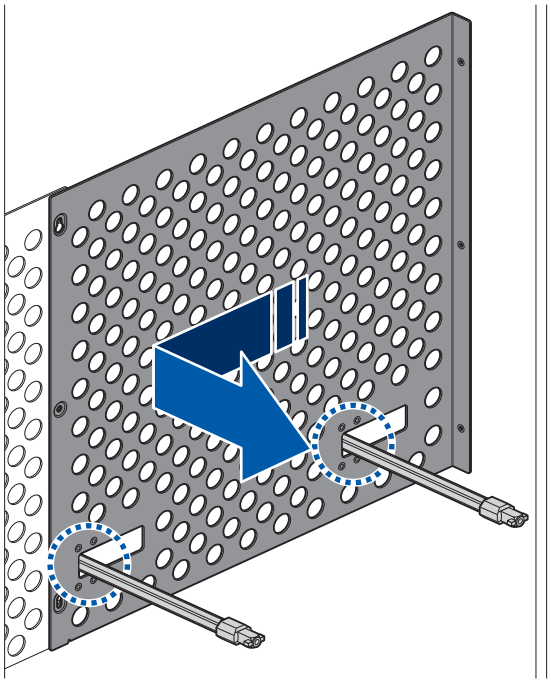

Figure 41. Sliding out the Safety Cover

7. Locate the safety cover bracket on the left side of the cabinet, see the following figure.
8. Remove the screws securing the safety cover bracket.
9. Remove the bracket.

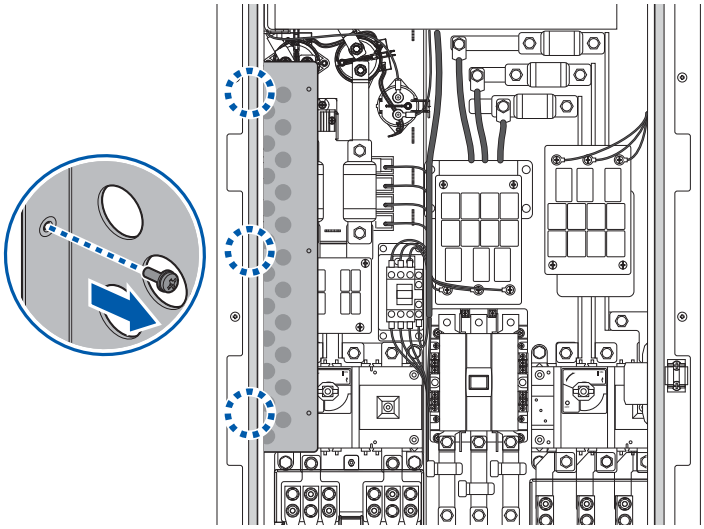

Figure 42. Removing a Safety Cover Bracket

10. Starting with the AC extension rod, locate the hex screw on the side of the extension rod, see the following figure.
11. Insert a hex-key wrench and remove the hexagon screw. This allows the extension rod to be free from the securing slot.
12. Gently pull the AC extension rod straight out.
13. Once removed, place the extension rod on a clean work surface.

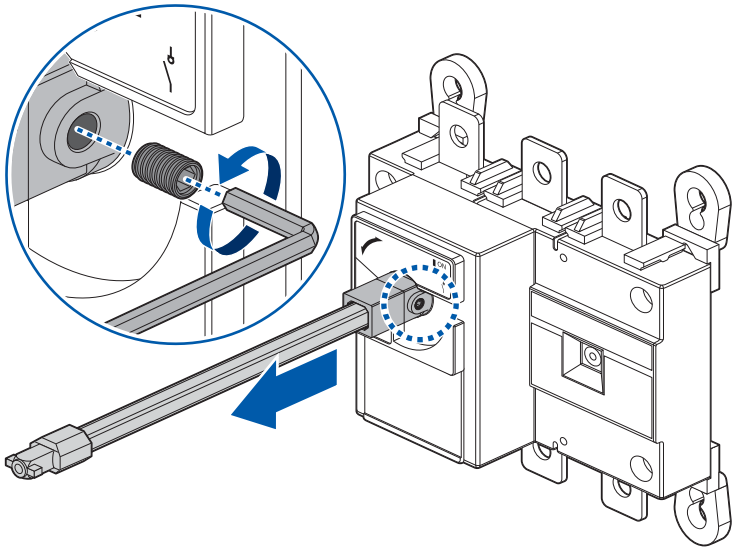

Figure 43. Removing the AC Extension Rod

14. Locate the DC extension rod and the hex screw on the side of the extension rod, see the following figure.
15. Insert a hex-key wrench and remove the hexagon screw. This allows the extension rod to be free from the securing slot.
16. Gently pull the DC extension rod straight out.
17. Remove the DC extension rod.

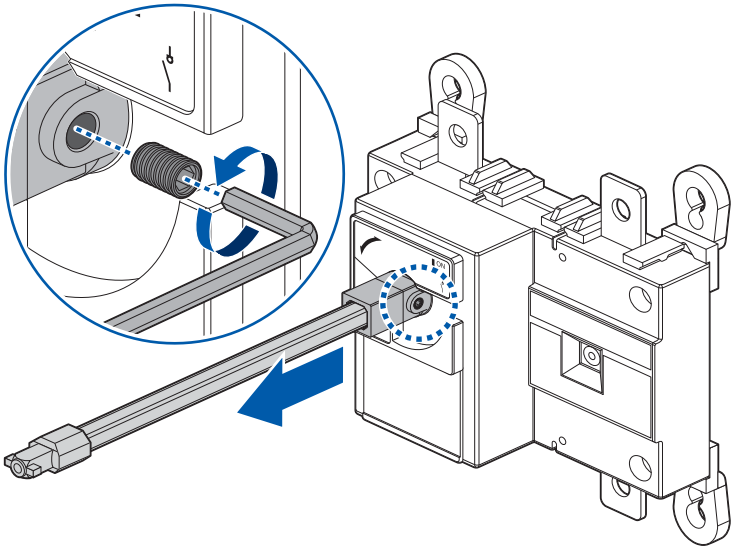

Figure 44. Removing the DC Extension Rod

Installing a Safety Cover

1. Starting with the DC extension rod, align the base of the rod to the socket. The base of the rod is design to fit on the socket in a specific alignment.
2. Insert the hexagonal screw in the screw hole on the rod and turn it to thread it in place.
3. Insert a hex-key wrench in the screw and turn it to secure the rod to the socket.

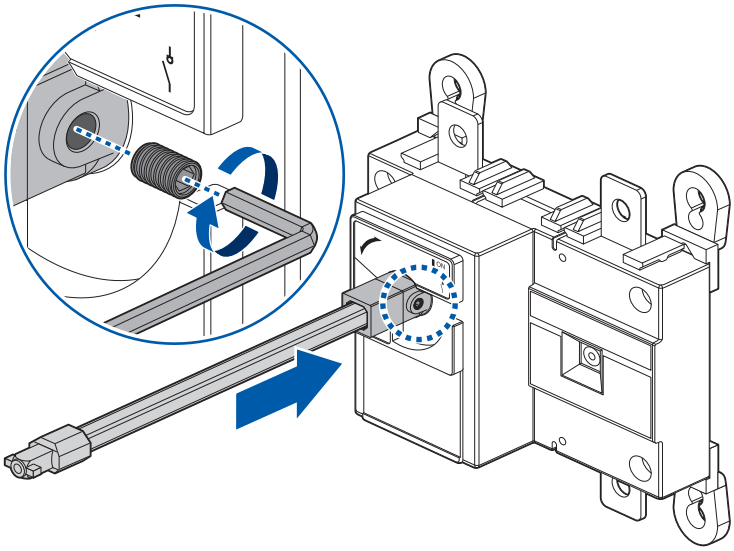

Figure 45. Installing a DC Extension Rod

1. Continue with the AC extension rod, align the base of the rod to the socket. The base of the rod is design to fit on the socket in a specific alignment.
2. Insert the hexagonal screw in the screw hole on the rod and turn it to thread it in place.
3. Insert a hex-key wrench in the screw and turn it to secure the rod to the socket.

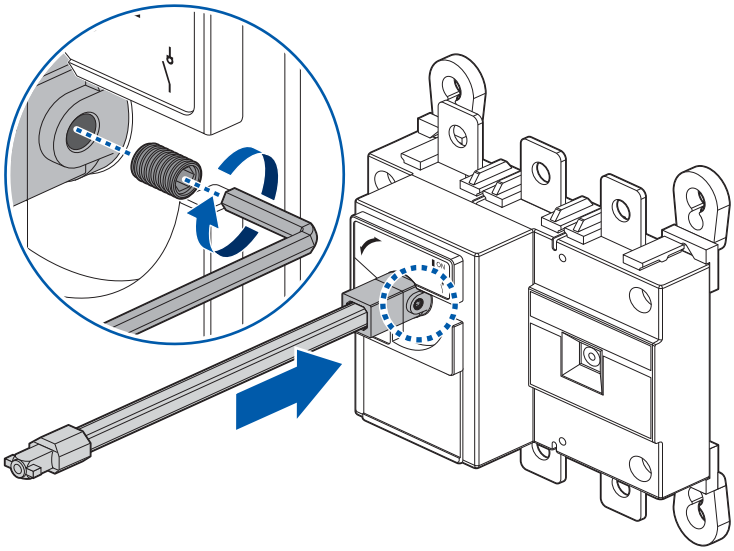

Figure 46. Installing an AC Extension Rod

4. Align the safety bracket on the chassis. The flat side of the bracket protrudes into the inner side of the cabinet. If properly aligned, the holes on the bracket and chassis column align.
5. While holding the cover bracket, insert the screws and tighten them to secure the cover bracket.

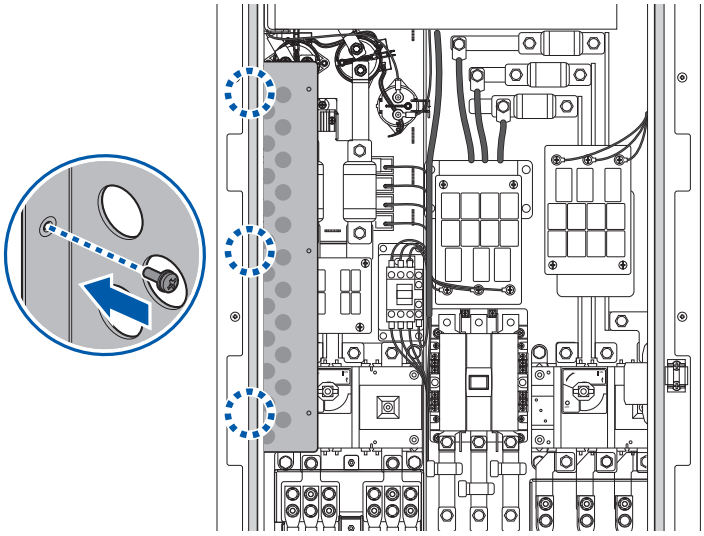

Figure 47. Installing a Safety Cover Bracket

6. Align the safety cover in the cavity. Make sure the extension rods are able to pass through the designed slits.
7. Install the safety cover into the cabinet and slide it to the right until the screw holes on the cover bracket and safety cover are aligned. The extension rods are flush in the slit opening. See the following figure.

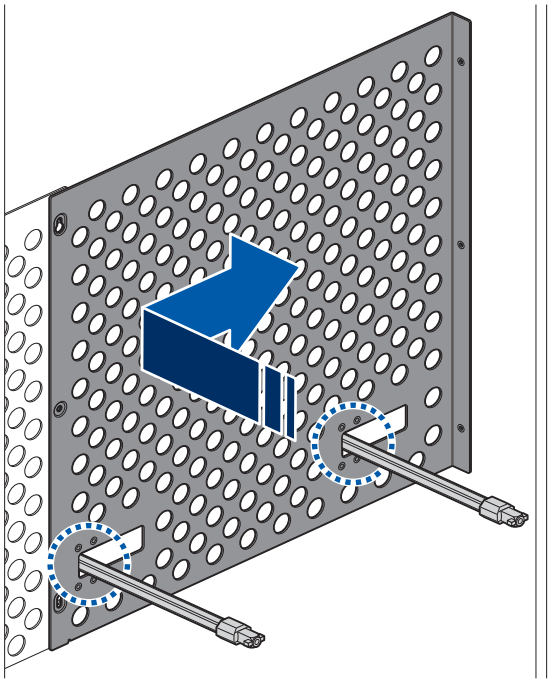

Figure 48. Installing a Safety Cover

8. Secure the safety cover to the chassis with screws.

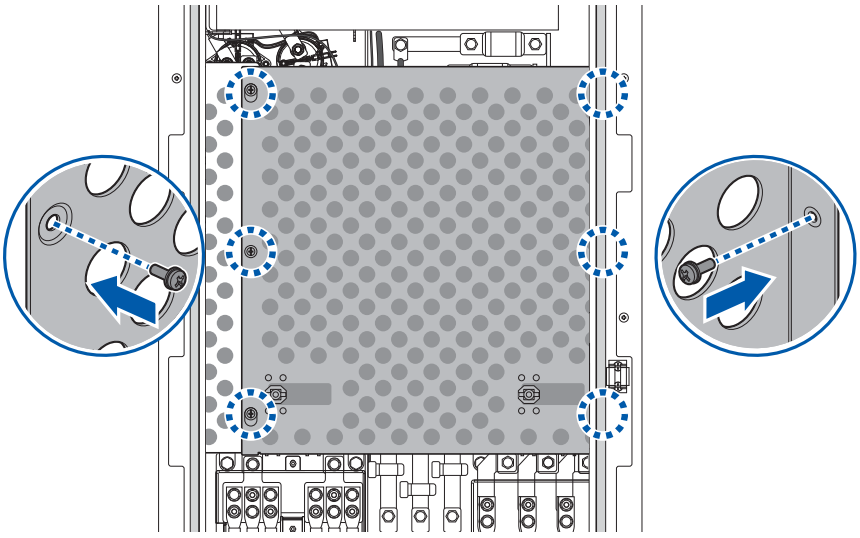

Figure 49. Securing a Safety Cover

9. Starting with one side, align one half of the extension rod stopper on the safety cover and align it with the screw holes.
10. Once aligned, insert the screws and secure the stopper in place.
11. Continue with the remaining half of the stopper.

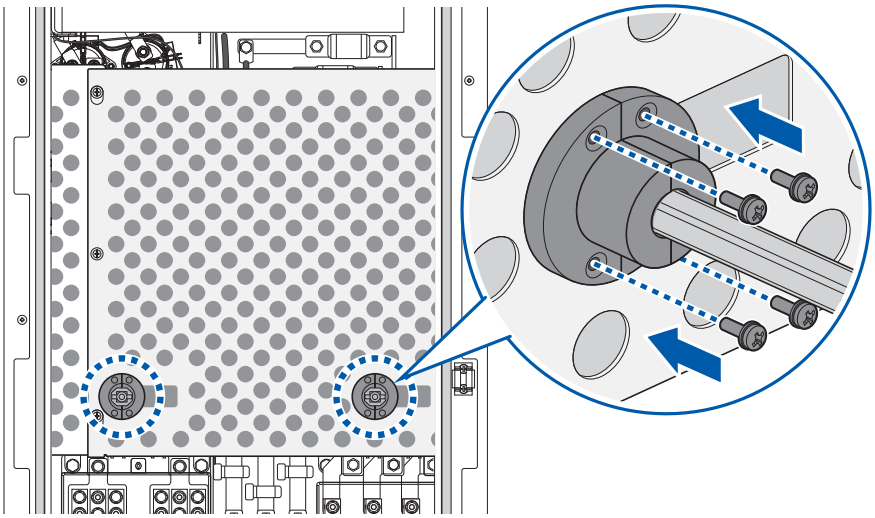

Figure 50. Installing the Extension Rod Stoppers

12. Once one side is complete, install the remaining stopper.
13. Close the front door. See “Closing a Front Door” on page 22.

Emergency Stop Switch

The emergency stop switch is housed on the front door. To facilitate maintenance on the switch, you will need access to both the internal and external sides of the front door.

The bus capacitor discharge time is 15 minutes. Before starting any maintenance, switch power off, wait for more than 15 minutes, and check for residual voltage with a meter etc., to avoid a hazard of electrical shock.

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CAUTION!

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an Emergency Stop Switch

1. Open the front door. See “Opening a Front Door” on page 20.
2. Locate the emergency stop button on the front door. See the following figure.

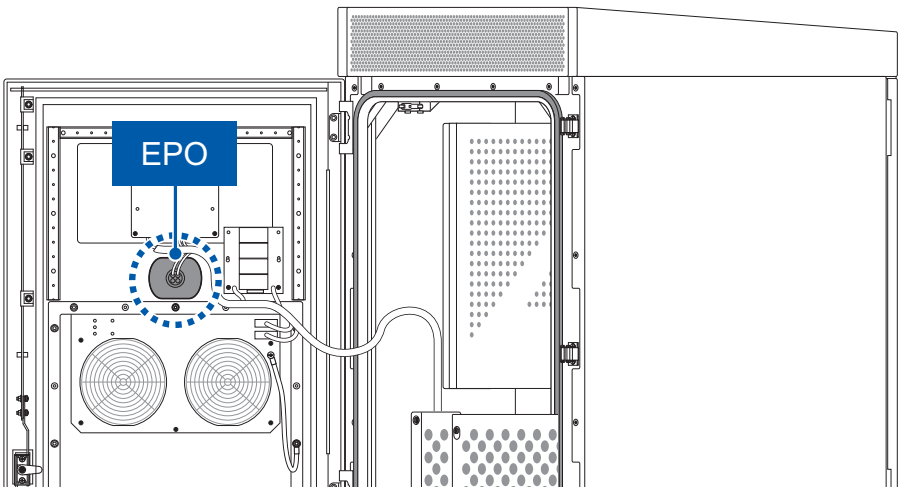

Figure 51. Emergency Stop switch Location

3. The rear side of the switch is accessible from the open panel. Locate the connecting wires on the switch.
4. The wires are secured by the screws. Loosen the captive screws to disconnect the wires.
5. Pull out the connecting wires.

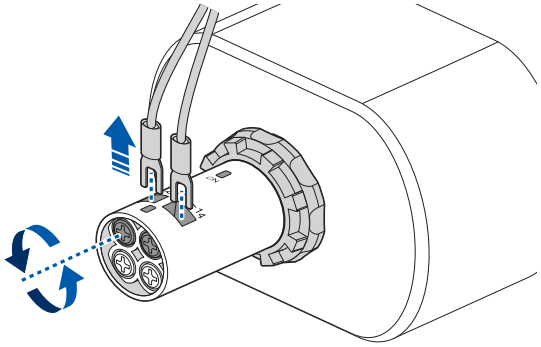

Figure 52. Disconnecting Wires on a Switch

6. Turn the locking nut to detach it from the barrel.

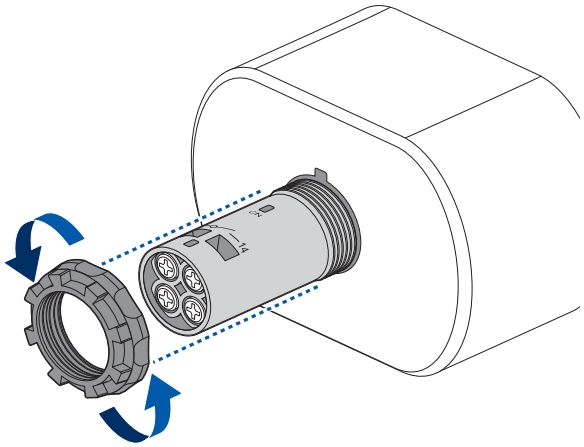

Figure 53. Removing a Locking Nut from a Switch

7. From the front of the cabinet locate the switch mechanism.
8. Grasp the switch and slide it out of the panel.

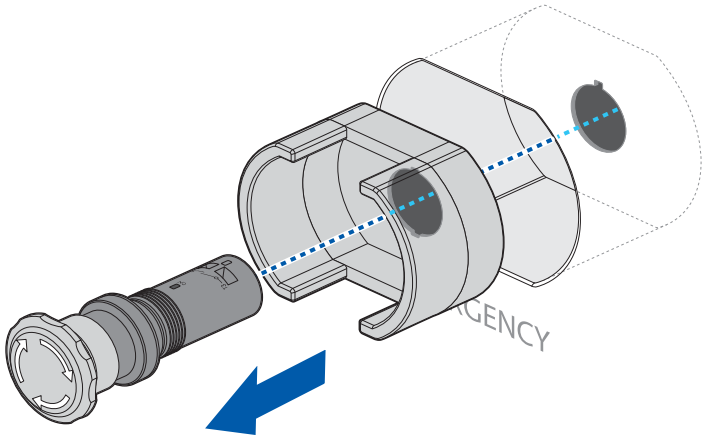

Figure 54. Removing an Emergency Stop Switch

Installing an Emergency Stop Switch

1. Open the front door if it isn't open already. See "Opening a Front Door" on page 20. To install an emergency stop switch, you will need to access the front and rear side of the front door.
2. While facing the external side the front door, locate the housing for the emergency stop switch.
3. Hold the plunger mechanism and align it so that the CN marking faces upwards and the plunger faces outwards in order to setup the proper alignment. See the following figure for further details.
4. Insert the barrel mechanism through the opening on the housing until it comes to a stop. The rubber ring in the middle of the mechanism should be flush in the opening of the housing.

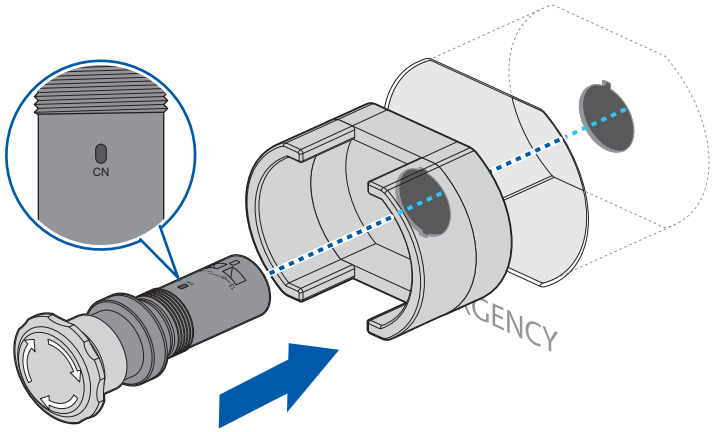

Figure 55. Inserting a Switch Mechanism in its Housing

5. Position yourself to view the inner side of the front door. From this angle the bottom side of the plunger mechanism is visible.
6. Inspect the mechanism to make sure it is inserted correctly. The screw threads on the barrel should all be visible if the mechanism is seated correctly.
7. Make sure the CN guide marks are facing upwards
8. Take a locking nut and position it so that the flat side faces the housing mechanism.
9. Insert the nut through the barrel until it reaches the threaded section. Turn the nut until it is flush with the mechanism.

   Make sure the plunger mechanism is seated securely in the housing before continuing with the remaining procedures.

   If the mechanism is loose, remove the locking nut and realign the plunger mechanism before attempting to secure it with the locking nut once again.

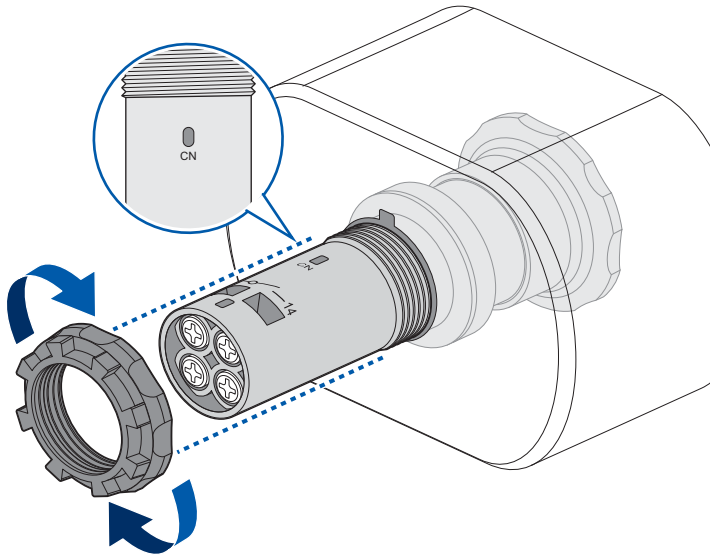

Figure 56. Installing a Locking Nut

10. Before inserting the connection wires, makes sure the CN marking is facing upwards.
11. Insert the connect (13) wire into the connector and turn the captive screw to secure it.
12. Once the first wire is secured, continue in the same way with the disconnect (14) wire.

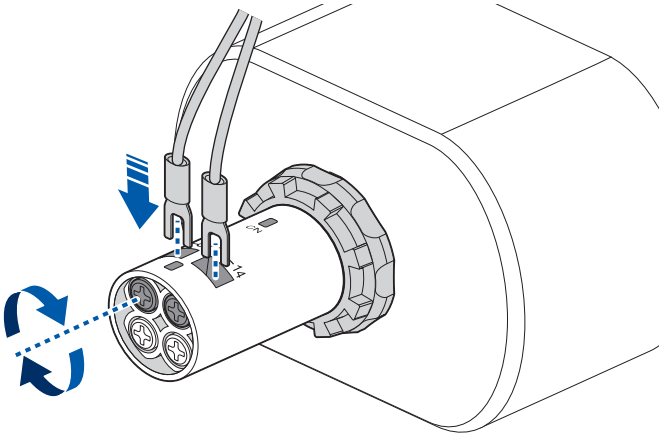

Figure 57. Connecting Wires on the Emergency Stop Switch

13. Close the front door. See “Closing a Front Door” on page 22.

AC and DC Switch Handles

The AC and DC switch handles are housed on the front door. To facilitate maintenance on the AC and DC switch handles, you will need access to both the internal and external sides of the front door.

The bus capacitor discharge time is 15 minutes. Before starting any maintenance, switch power off, wait for more than 15 minutes, and check for residual voltage with a meter etc., to avoid a hazard of electrical shock.

WARNING!

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CAUTION!

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Important Safety Instructions

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Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing AC and DC Switch Handles

1. Open the front door. See “Opening a Front Door” on page 20.
2. Locate the switch handle base located on the inner bottom side of the front door. There are two base locations, one for the AC switch and the other for the DC switch handle.
3. Remove the screws securing the switch handles.

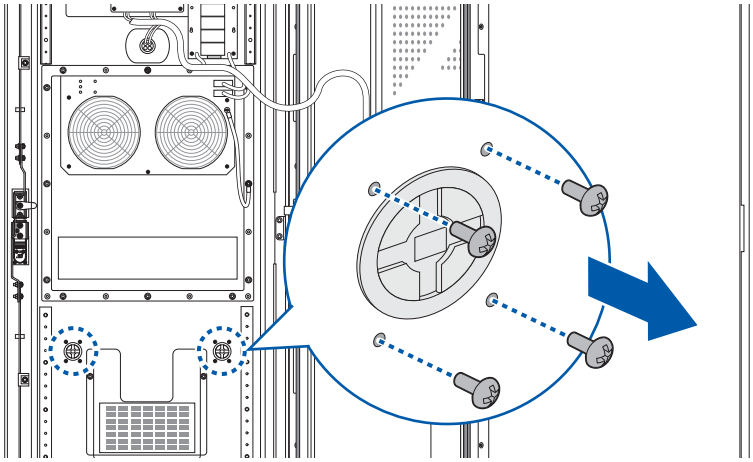

Figure 58. Removing Screws from a Handle Housing

4. Pull out the handles from the front of the front door.

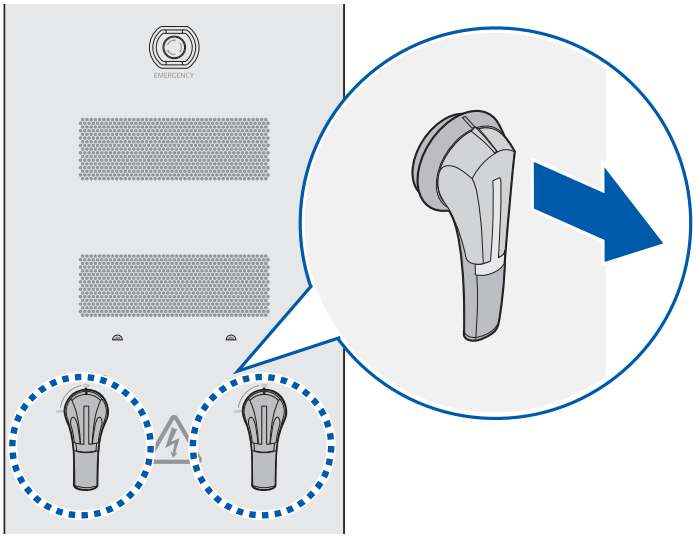

Figure 59. Removing AC and DC Switch Handles

Installing AC and DC Switch Handles

1. Open the front door. See “Opening a Front Door” on page 20.
2. Starting from the exterior side of the front door, locate the socket housing for the handles and align the handles to match the housing orientation.
3. Once aligned correctly, insert the handles through the housing. Make sure the handles are not tilted or skewed to one side when inserting.
4. Push the handles in until the seal at the base of the handle is flush with the front door.

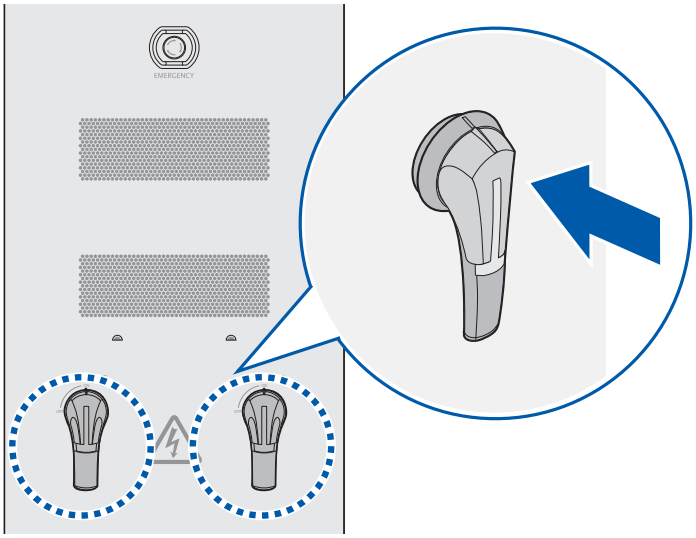

Figure 60. Installing AC and DC Switch Handles

5. Make sure the handles are seated correctly in place then locate the inner side of the front door. The socket housing is located at the bottom of the front door (inner side).
6. For the next step, it may be necessary to have a second individual hold the handle in place from the exterior of the front door. Insert the screws and tighten them to secure the switch handles to the front door.

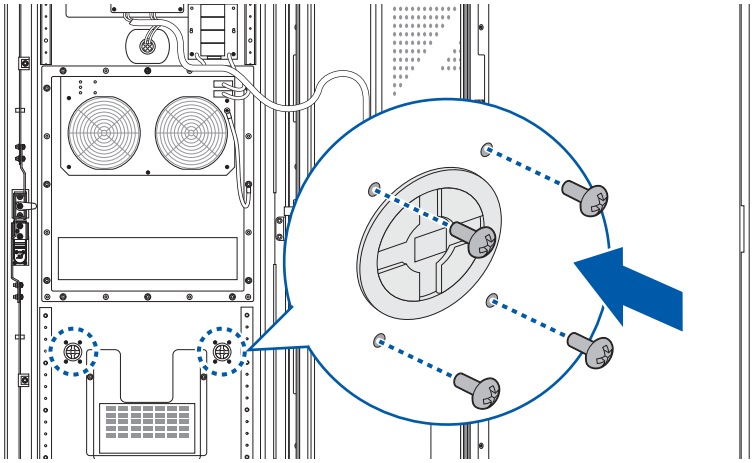

Figure 61. Securing AC and DC Switch Handles to the Front Door

7. Before closing the front door, inspect the switch handles from the exterior of the front door. There shouldn’t be a gap between the handle base and the front door. In addition, if the handle shakes slightly, it is not tightened correctly. Re-install the handles to ensure they are installed correctly.
8. Close the front door. See “Closing a Front Door” on page 22.

Ventilation Fan for DC-Side

The ventilation fan is housed in the cabinet. To facilitate maintenance on the fan, you will need access to the interior of the cabinet.

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CAUTION!

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Important Safety Instructions

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Note:

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a DC-Side Fan Module

The fan module is located on the DC side of the enclosure. In order to reach the fan assembly, you must first open the safety cover.

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the cable tray, see the following figure, with the end cap (top). Press the sides of the tray walls to unlock the end cap.
4. While holding the sides in, lift the end cap to remove it. Once the cap is removed, the fan cables are exposed for servicing.

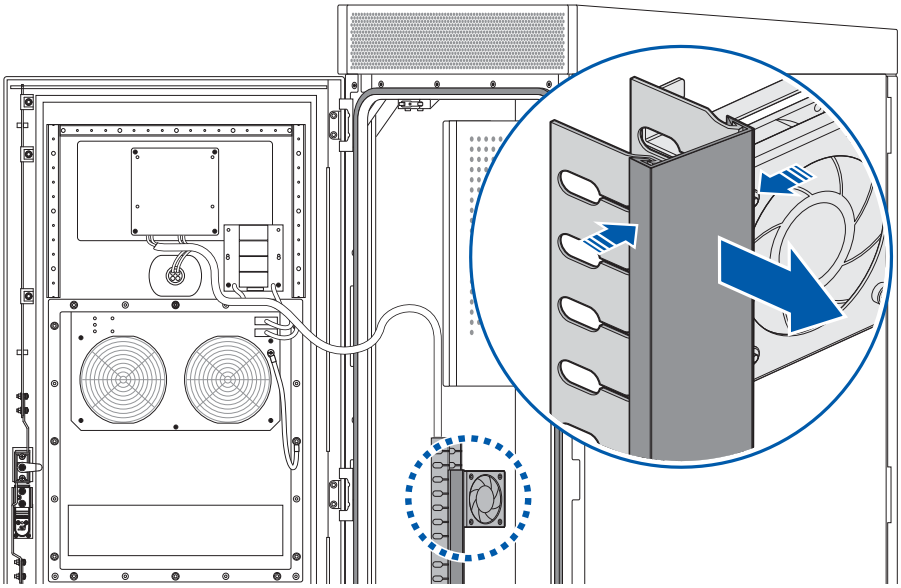

Figure 62. Removing an End Cap from a Cable Tray

5. Separate the cable ends to disconnect the fan assembly.

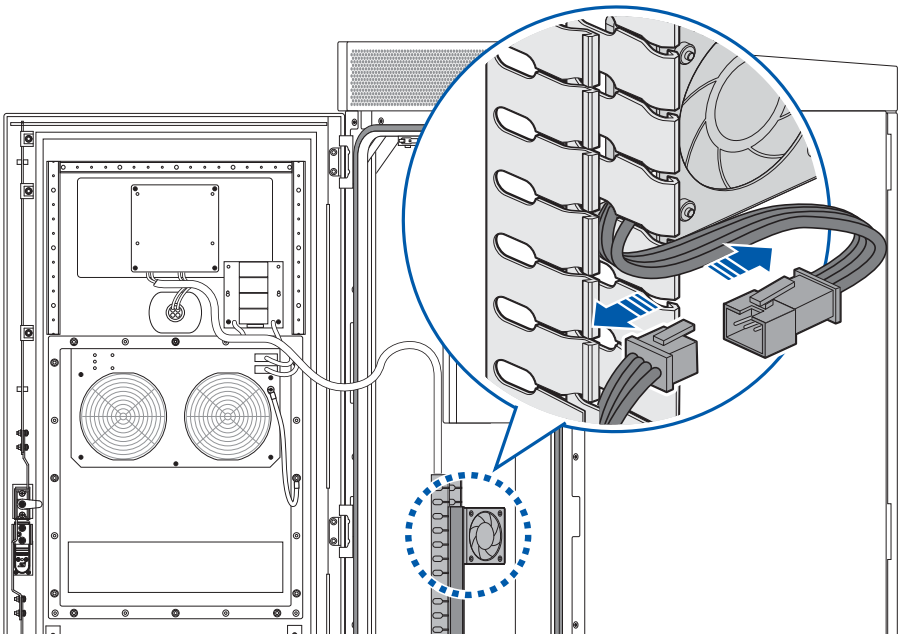

Figure 63. Disconnecting a DC-side Fan Assembly

6. Pull the cable leading to the fan module out of the tray channels.
7. Remove the nuts securing the fan assembly.
8. Remove the fan assembly.

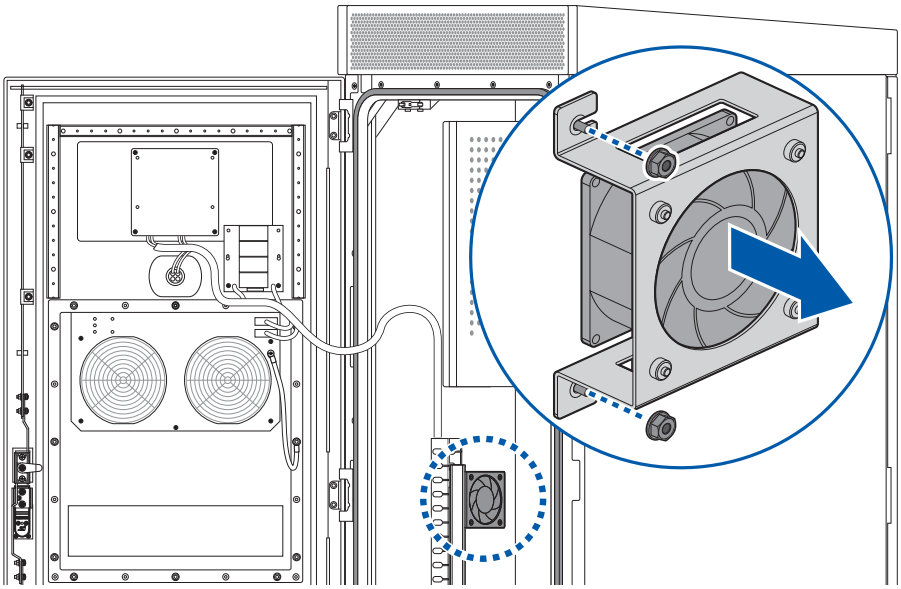

Figure 64. Removing a DC-side Fan Assembly

9. Locate the rear of the fan module and insert a screw driver through each hole to remove the screws securing the fan module.
10. Remove the fuse fan module.

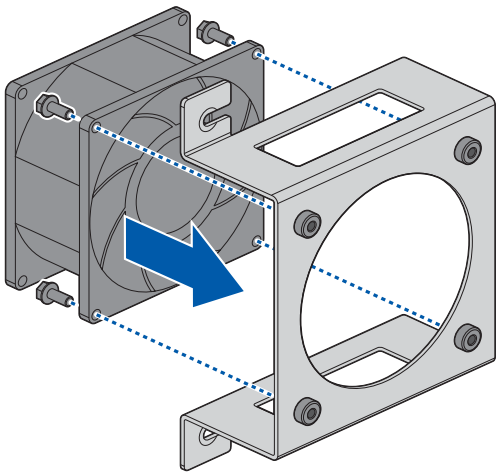

Figure 65. Removing a DC-side Fan Module

Installing a DC-Side Fan Module

1. Face the fan module so that it's sticker label is visible through the opening in the fan bracket. Position the fan cable so that it protrudes through the side facing the cable bracket.
2. Insert the fan module in the bracket making sure that the screw holes are aligned.
3. Insert a screw through a hole in the fan module then secure it with a screw driver. Make sure the cable does not sit underneath the fan module. If the cable is underneath, gently pull it through the end of the bracket.
4. Continue with the remaining screws.

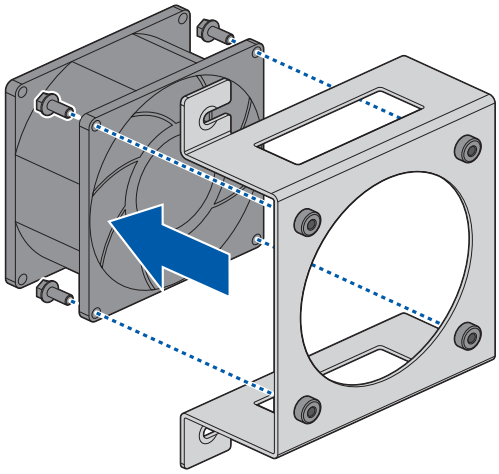

Figure 66. Assembling a DC-side Fan Assembly

5. Align the fan assembly over the bolts on the chassis and insert the bracket in place.
6. While holding the fan assembly in place, insert a nut on the bolt and turn it halfway.
7. Insert the second nut in place and tighten both nuts to secure the assembly.

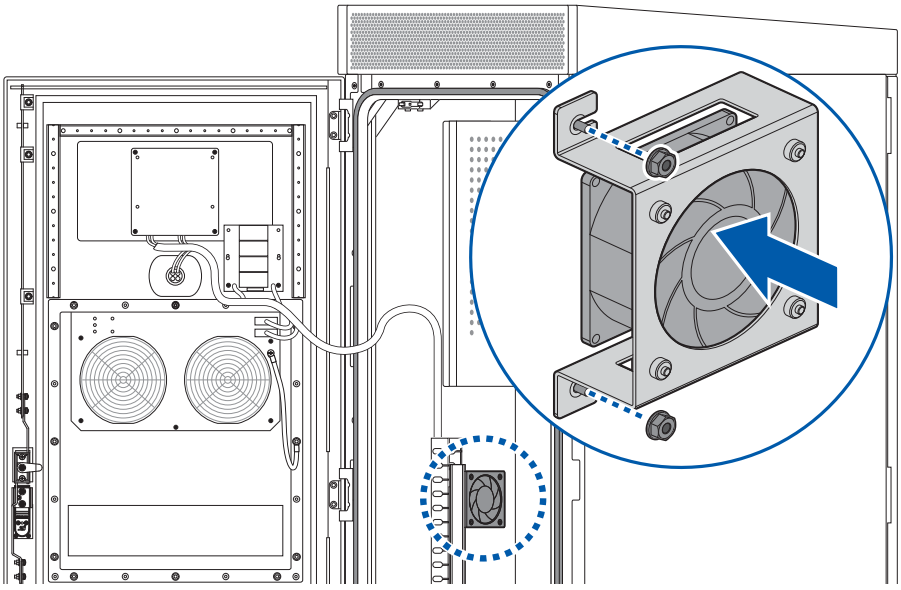

Figure 67. Installing a Fan Assembly

8. Hold the cable attached to the fan module and insert it in the channels of the cable tray. Make sure the head of the cable sits in the middle of the cable tray.
9. Locate the remaining cable end and connect it to the cable already inserted in the channel.
10. Once connected, lower the unsecured cable through into the tray. Make sure there is no excess cable outside of the cable tray.
11. Tuck any excess cable in the tray.

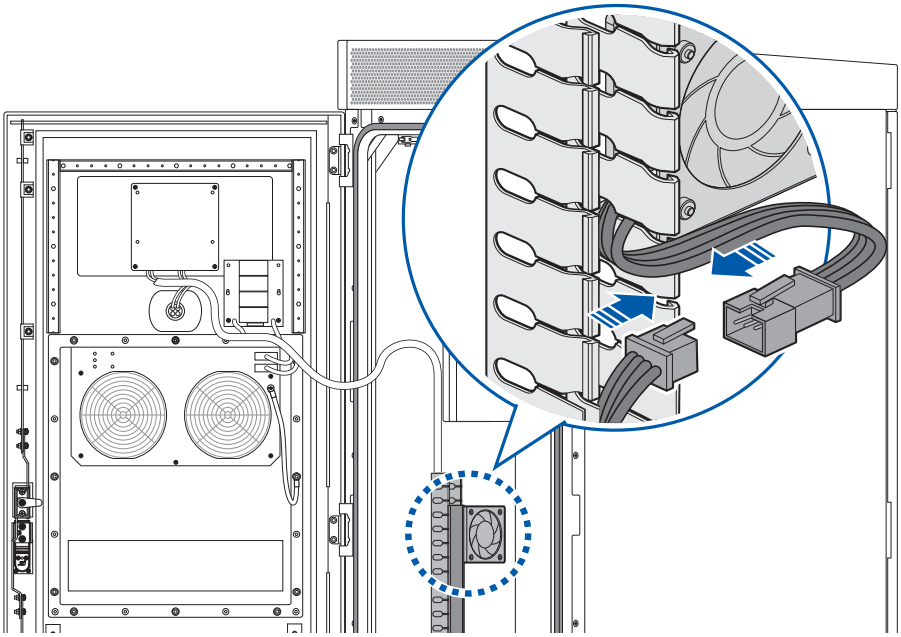

Figure 68. Connecting a Fan Module Cable

12. Place the end cap over the tray and press it in to secure. Make sure the cover is flush in the tray. No part of the cover should extend past the sides of the tray.

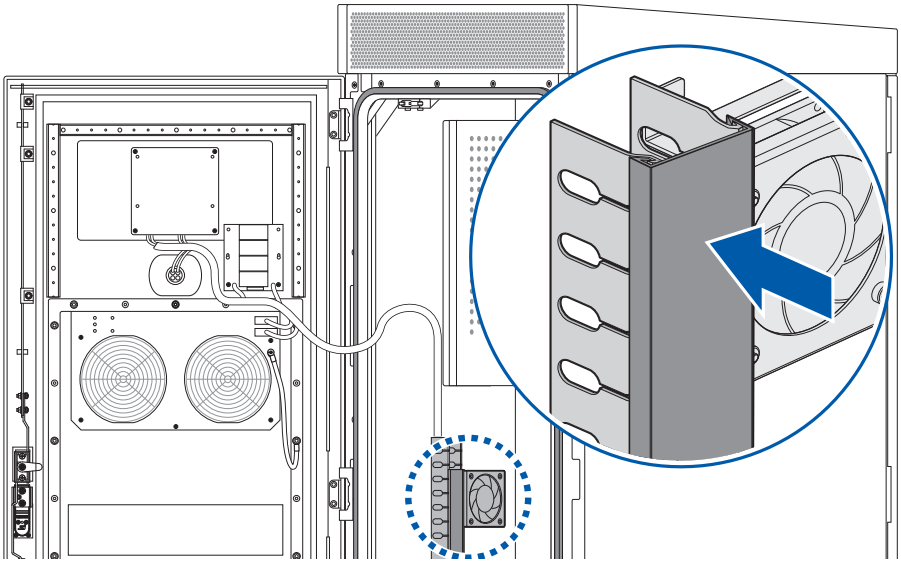

Figure 69. Installing a Bracket Cover

13. Install the safety cover. See “Installing a Safety Cover” on page 37.
14. Close the front door. See “Closing a Front Door” on page 22.

Heat Exchanger

The heat exchanger module is housed on the rear side of the front door. To facilitate maintenance on the fan, you will need access to the interior of the cabinet.

WARNING!

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Note:

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Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a Heat Exchanger

1. Open the front door. See “Opening a Front Door” on page 20. Make sure the front door is fully opened to allow for unrestricted access to the heat exchanger.
2. Take off the grounding wire by removing the screw securing one end of it.
3. Then locate the other end and remove the hexagonal nut securing that end.
4. Remove the grounding wire and place it in a clean work surface.

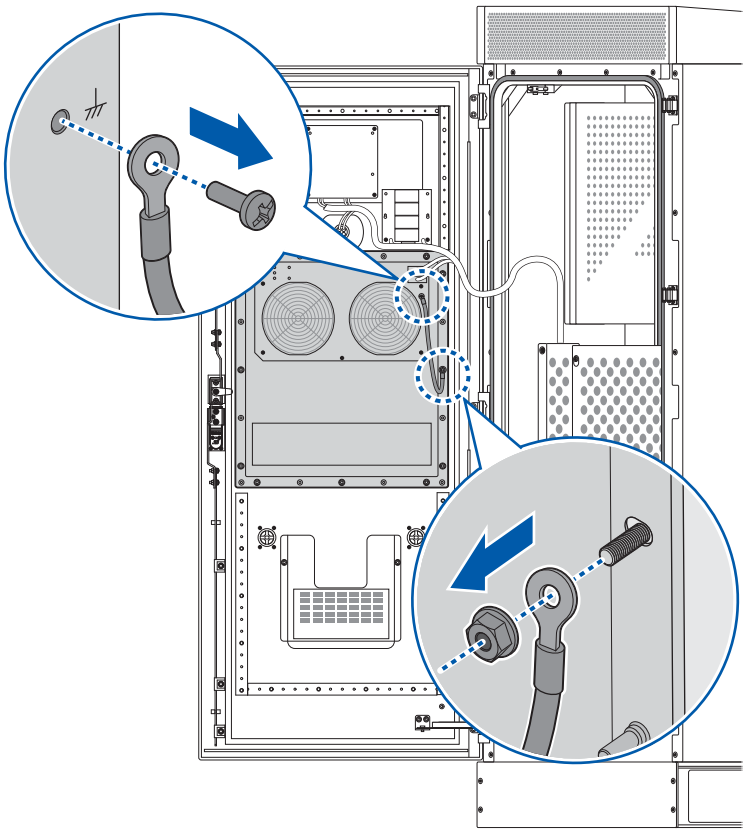

Figure 70. Disconnecting a Grounding Wire

5. Locate the data cables on the heat exchanger and loosen the captive screws securing them.
6. Pull the cables out to disconnect them.

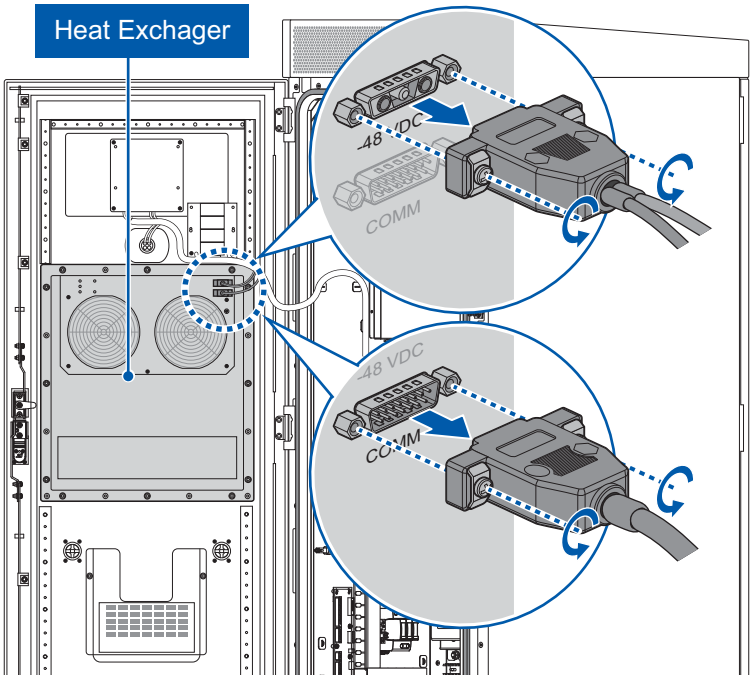

Figure 71. Disconnecting the Cables

7. Locate the hexagonal nuts on the parameter of the heat exchanger. Begin with the nuts on the bottom of the exchanger and move upwards to remove all the hexagonal nuts.

   You may need to hold the heat exchanger in place to prevent it from inadvertently falling off the front door.

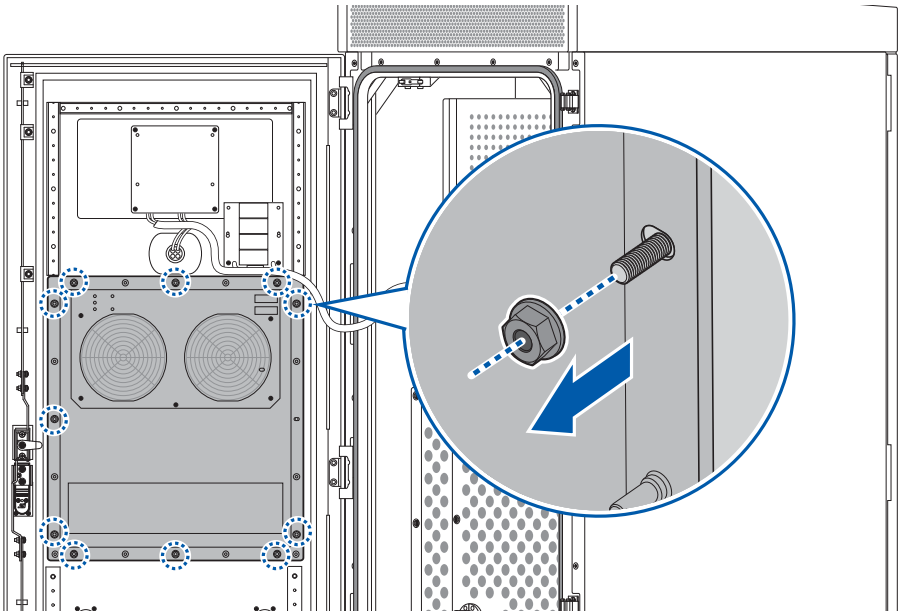

Figure 72. Removing the Hexagonal Nuts

8. Hold the bottom and top of the heat exchanger and lift it up slightly.
9. Once the heat exchanger is off the bolts, remove it off the front door.

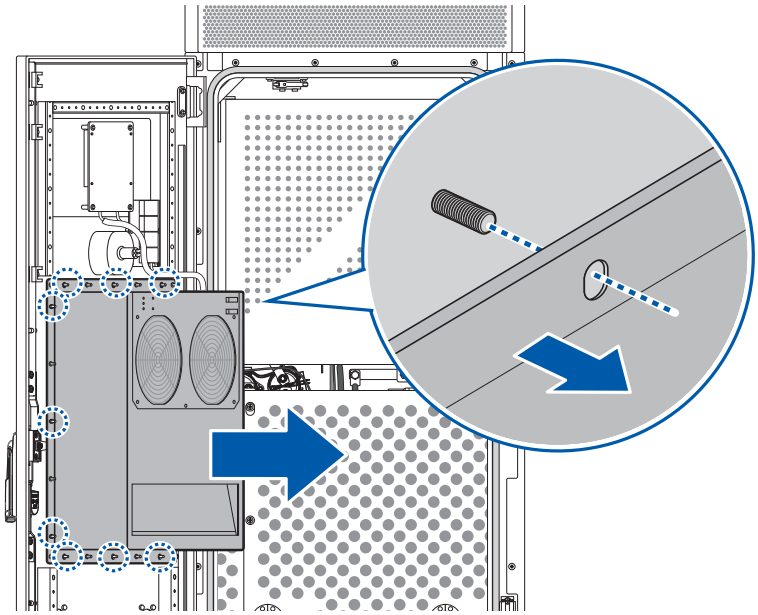

Figure 73. Removing a Heat Exchanger

10. Place the heat exchanger on a clean work surface.

Installing a Heat Exchanger

1. Hold the heat exchanger from the top and bottom. Align it on the front door so that the fan ports are facing up.
2. Align the parameter of the heat exchanger with the bolts on the rear of the front door.
3. Insert the housing of the heat exchanger in the front door. Make sure that each bolt passes through the holes on the housing.

   Press the housing in until it is flush into the front door.

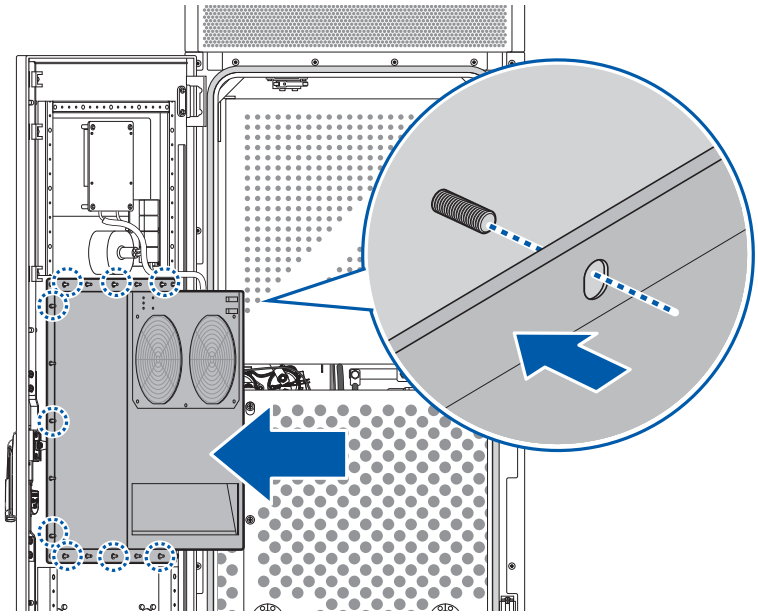

Figure 74. Installing a Heat Exchanger

4. Continue to hold the housing in place and insert a hexagonal nut at the top of the housing and tighten it halfway. This prevents the heat exchanger from falling off.
5. Once in place, continue from the bottom of the housing and inserting the remaining nuts.
6. Tighten all the nuts to secure the heat exchanger in place.

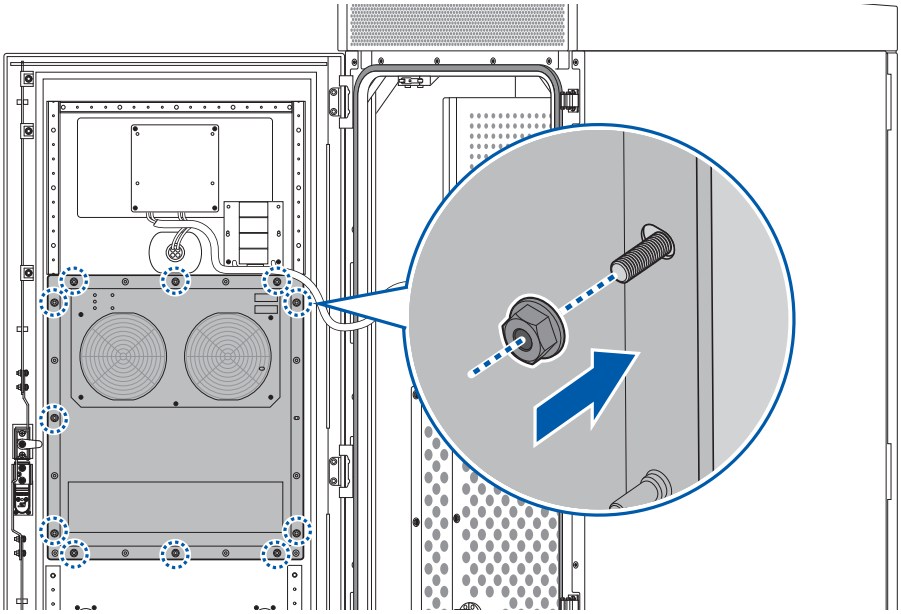

Figure 75. Securing the Hexagonal Nuts

7. Align the data cables to the ports and insert them. Make sure they are flush in the ports.
8. Connect the cables and secure the captive screws.

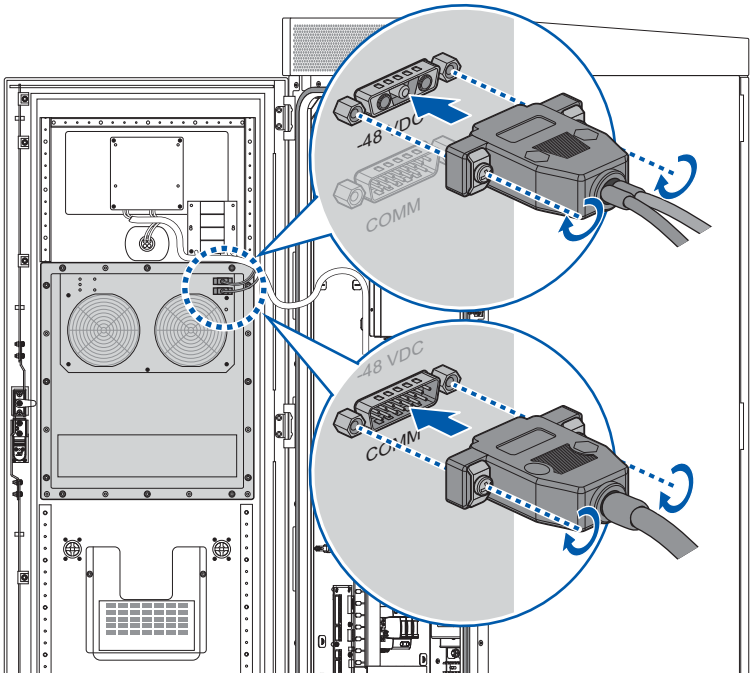

Figure 76. Connecting the Cables

9. Insert the grounding wire into the bolt on the exchanger cabinet.
10. Insert a screw through the one end of the grounding wire and align it with the grounding hole located on the front of the heat exchanger frame. Turn the screw to secure the wire in place.
11. Align the other end of the grounding wire to the bolt on the side of the heat exchanger frame and insert the wire through the bolt.
12. Secure the grounding wire in place with a hexagonal nut.

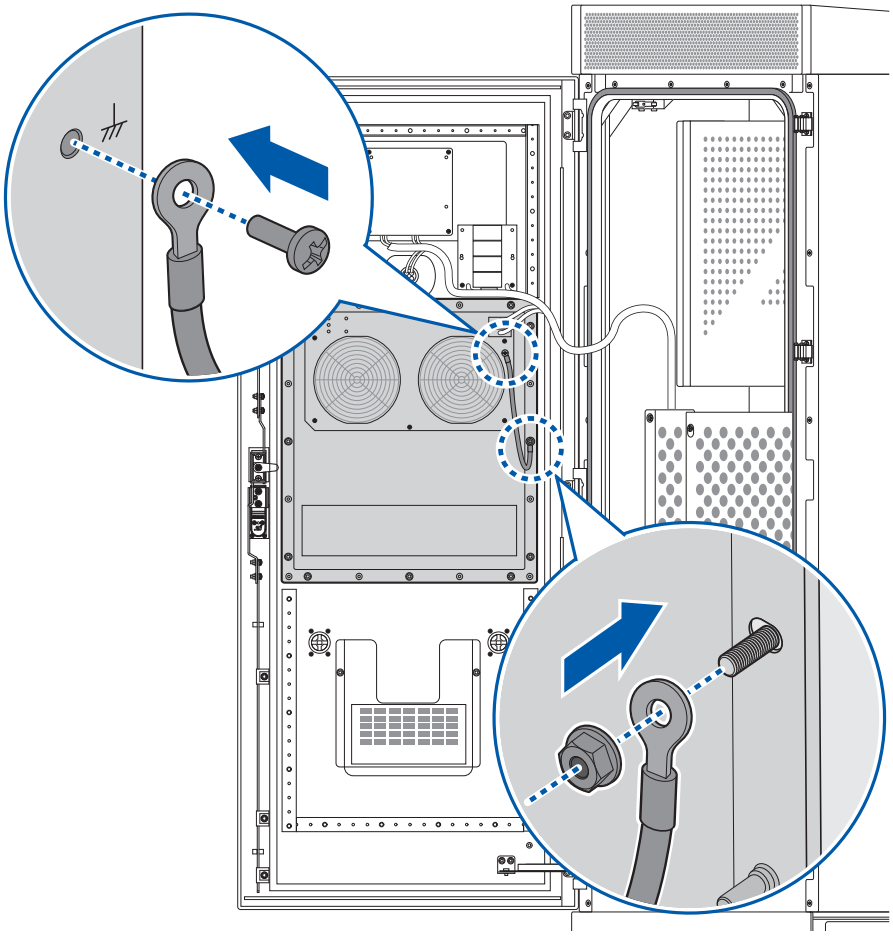

Figure 77. Connecting a Grounding Wire

LCD Plate

The LCD plate (L plate) is located on the rear of the front door and helps to maintain the LCD module in place. To service the LED assembly, you will need to first remove the L plate.

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an L Plate

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the screws securing the L plate. There are standoffs located on the top of the plate to hold it in place.
3. Slide the plate up to clear the standoffs and pull it off to remove it.

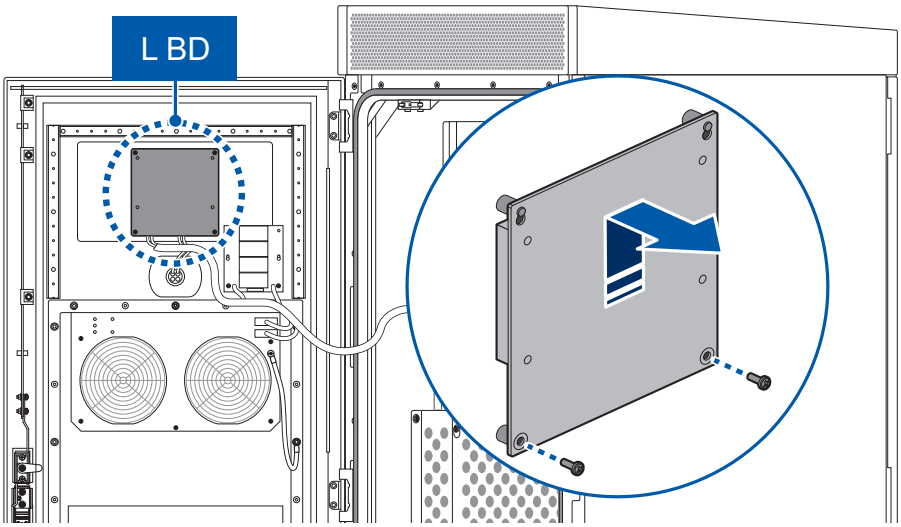

Figure 78. Removing an L Plate

4. Carefully turn the plate around to view the connecting cables located on the LCD module.
5. Disconnect the cables to fully disconnect the LCD assembly.
6. Place it on a clean work surface. The LCD module can be removed from the plate at this point.

Installing an L Plate

The following procedure assumes that the LCD assembly, see “LCD Module” on page 60, is already installed on the L plate.

1. Locate the front side of the L plate assembly to expose the LCD module.
2. The cable sockets are visible at the bottom of the assembly. Connect the required cables to the sockets. Take care to not pull the LCD assembly out to prevent damaging the cables or the connector pins.
3. Gently turn the LCD assembly around so that the LCD module faces the front door and align the top holes on the plate to the standoffs on the front door.
4. Insert the holes in the L plate into the standoffs until the plate is flush in the front door.
5. Slide the plate down until the screw holes are visible through the plate.
6. Secure the plate with screws.

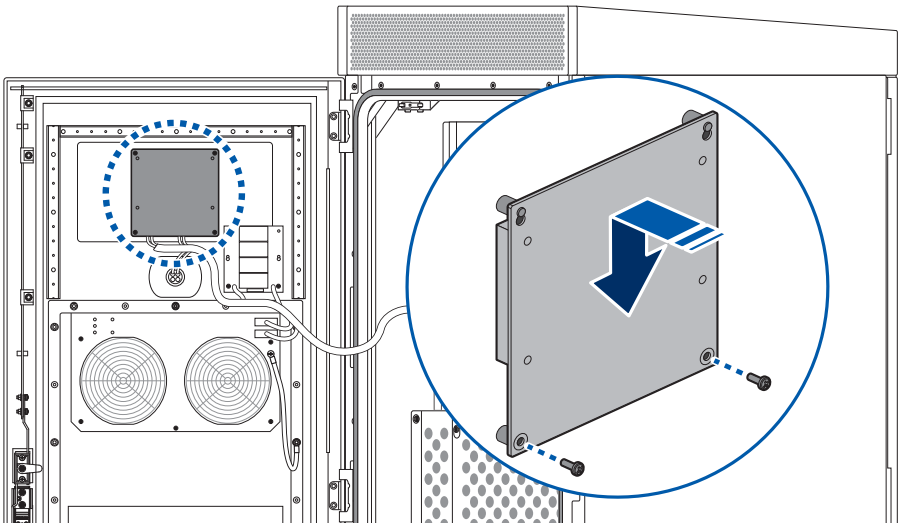

Figure 79. Installing an L Plate

7. Close the front door. See “Closing a Front Door” on page 22.

LCD Module

The LCD module is visible from the front of the front door. It is accessible for service from the interior and located behind the L plate, see “LCD Plate” on page 58.

WARNING!

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CAUTION!

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DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an LCD Module

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the L plate. See “Removing an L Plate” on page 59.
3. Locate the rear of the plate. The LCD module is secured to the plate using screws and bolts.
4. Remove the screws securing the LCD module.
5. Remove the LCD module.

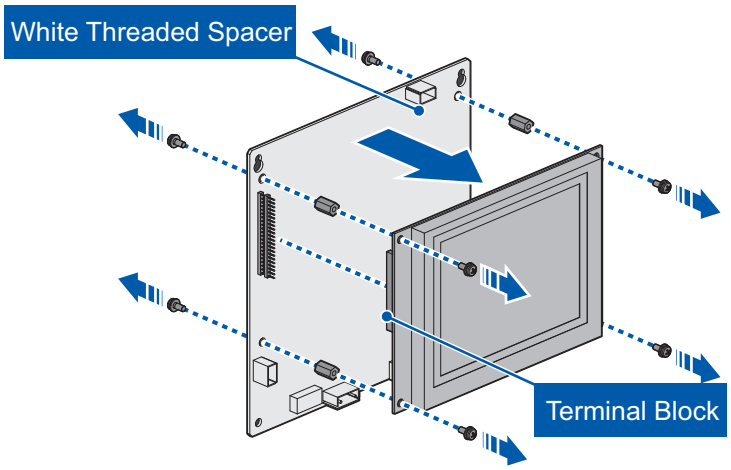

Figure 80. Removing an LCD Module

Installing a LCD Module

1. Situate the LCD module over the L plate. Take note of the terminal block socket and connector.
2. Install the bolts and LCD module.
3. Secure the LCD module with screws.

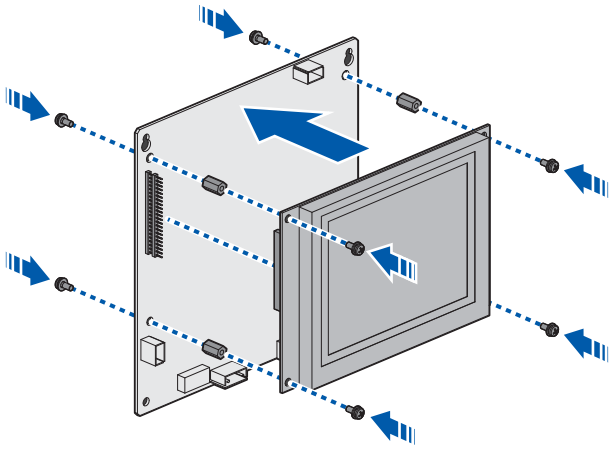

Figure 81. Installing an LCD Module

4. Install the L board. See “Installing an L Plate” on page 60.
5. Close the front door. See “Closing a Front Door” on page 22.

Auxiliary Heat Exchanger Power Board (G Board)

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a G Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Disconnect the cables from the G board.
3. Remove the screws securing the G board.
4. Slide and remove the G board.

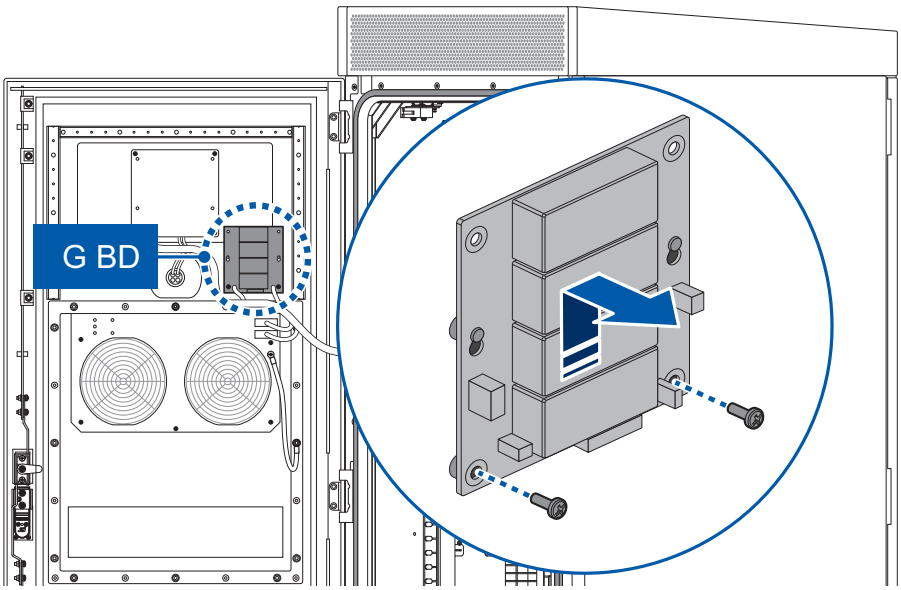

Figure 82. Removing a G Board

Installing a G Board

1. Align the posts on the front door with the keyholes on the G board.
2. Slide the G board to lock in place.
3. Secure the G board with screws.
4. Connect the cables to the L board.

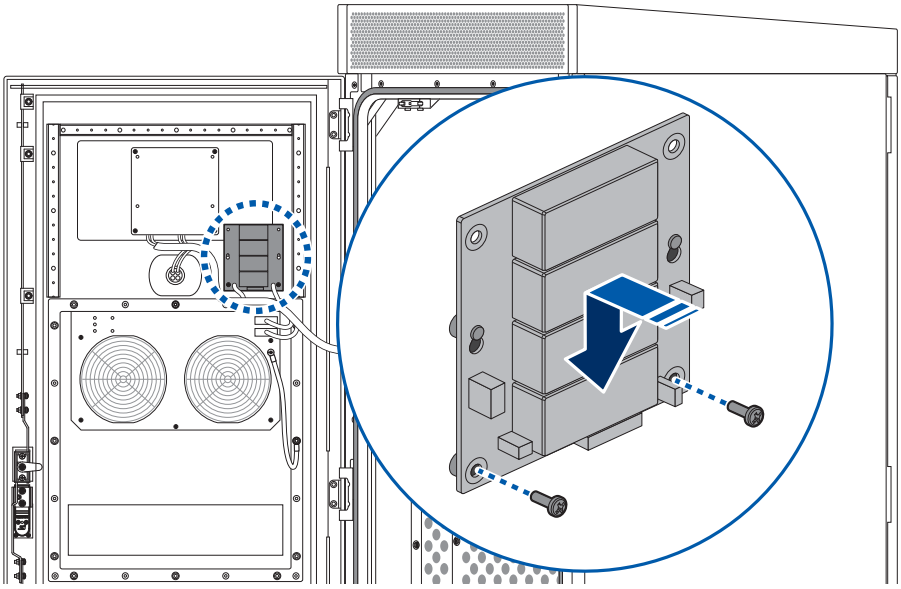

Figure 83. Installing a G Board

5. Close the front door. See “Closing a Front Door” on page 22.

Switch Indicator for Door State (Door Sensor)

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a Door Sensor

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the screws and washers securing the wires.
3. Remove the wires.

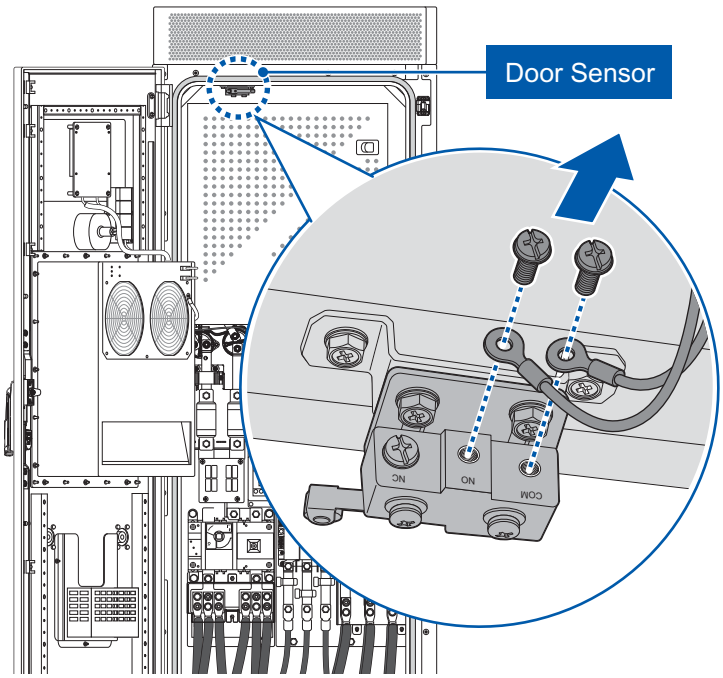

Figure 84. Removing the Wires

4. Remove the screws securing the door sensor.

5. Remove the door sensor.

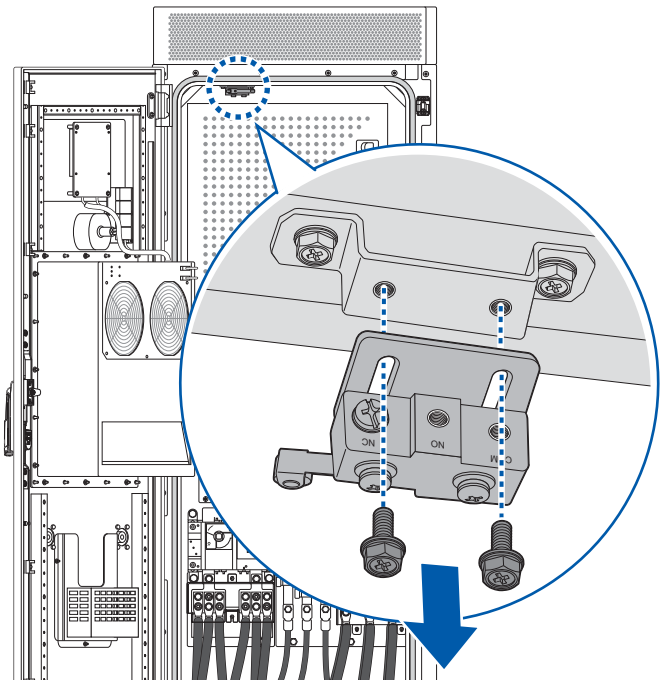

Figure 85. Removing a Door Sensor

Installing a Door Sensor

1. Align the door sensor with the holes on the top of chassis.
2. Secure the door sensor with screws.

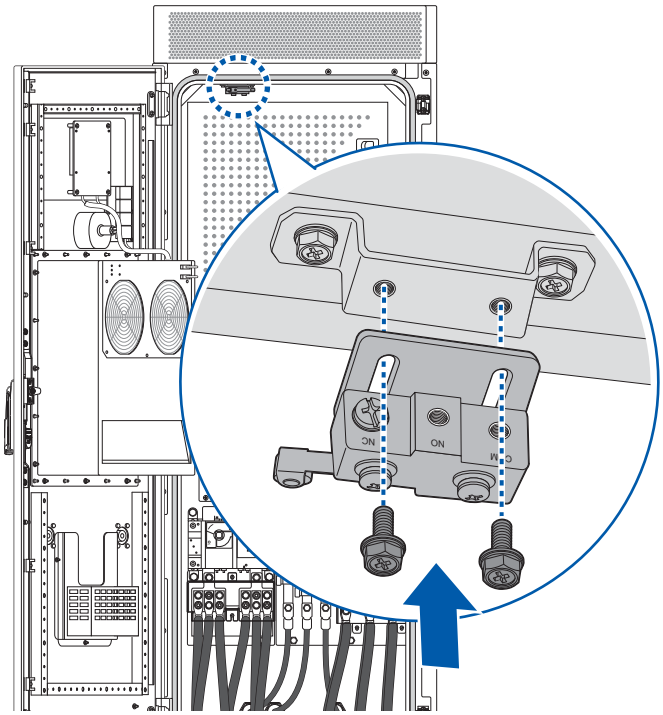

Figure 86. Installing a Door Sensor

3. Align one end of the wires to the holes on door sensor.
4. Secure the wires with washers and screws.

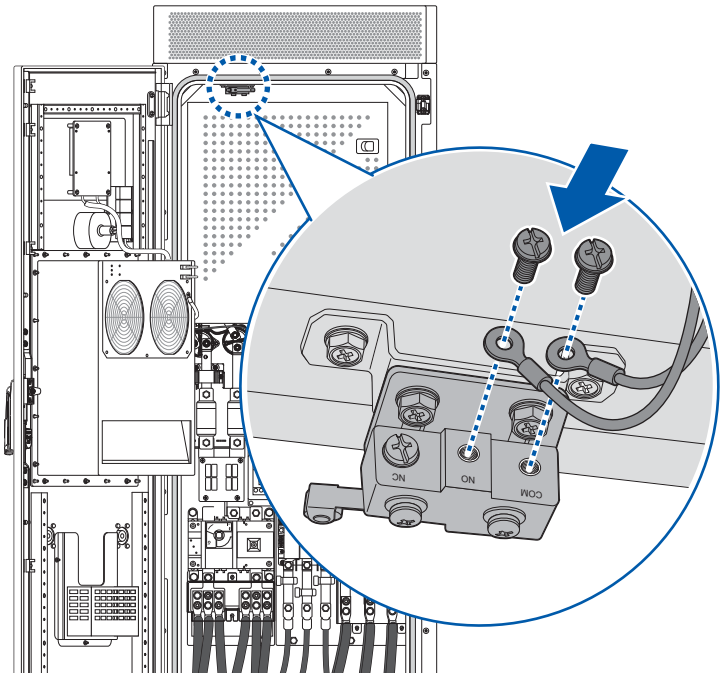

Figure 87. Installing the Wires

5. Close the front door. See “Closing a Front Door” on page 22.

DC Fuse

WARNING!

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- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a DC Fuse

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Remove the screws securing the DC fuse.
4. Remove the DC fuse.

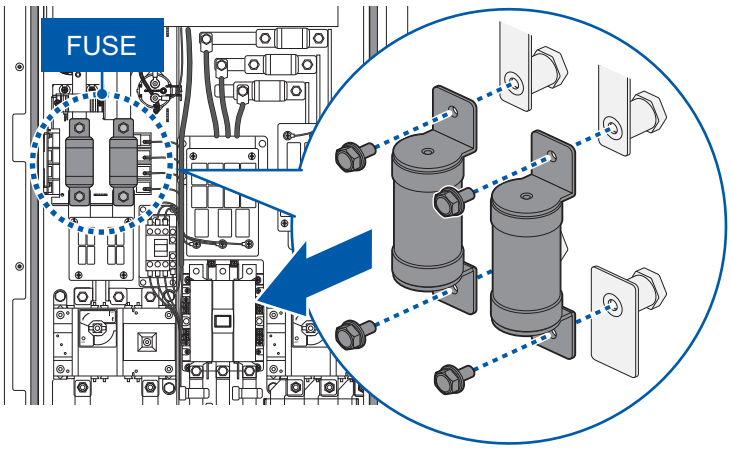

Figure 88. Removing a DC Fuse

Installing a DC Fuse

1. Align the DC fuse with the holes on the chassis.
2. Secure the DC fuse with screws.

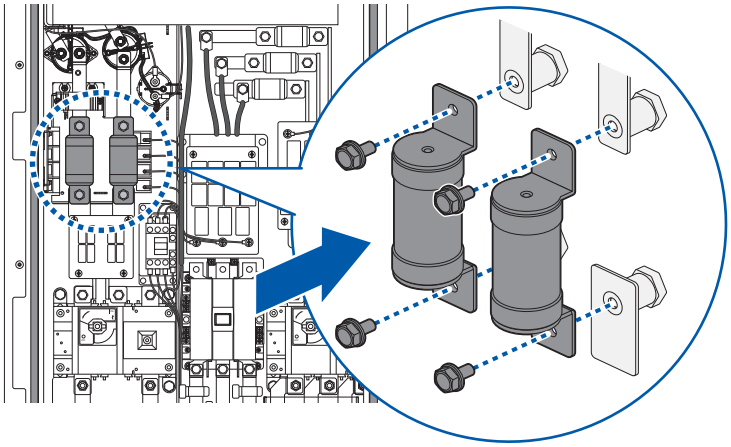

Figure 89. Installing a DC Fuse

3. Installing a safety cover. See “Installing a Safety Cover” on page 37.
4. Close the front door. See “Closing a Front Door” on page 22.

AC Fuse

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an AC Fuse

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Remove the screws securing the DC fuse.
4. Remove the AC fuse and wire (only available for the bottom of AC fuse).

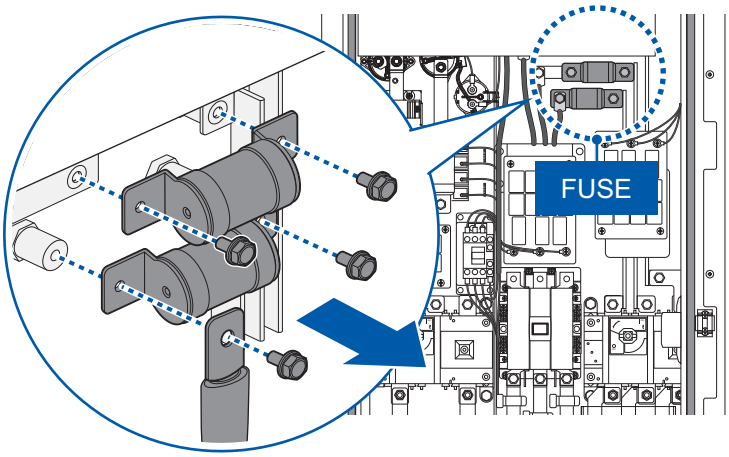

Figure 90. Disconnecting an AC Fuse and Wire

5. Open the control box. See “Opening a Control Box” on page 31.
6. Remove the screws securing the DC fuse.
7. Remove the DC fuse.

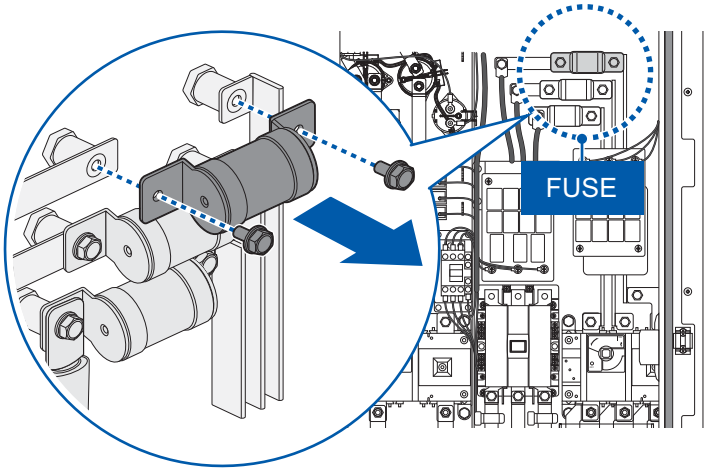

Figure 91. Removing an AC Fuse

Installing an AC Fuse

1. Align the AC fuse and secure the AC fuse with screws.

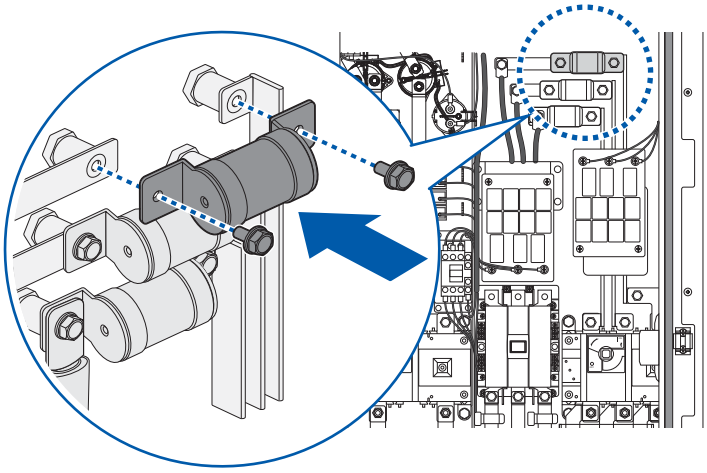

Figure 92. Installing an AC Fuse

2. Close the control box. See “Closing a Control Box Cover” on page 32.
3. Align the AC fuse and cable (only available for the bottom of AC fuse) with the holes on the chassis.
4. Secure the AC fuse with screws.

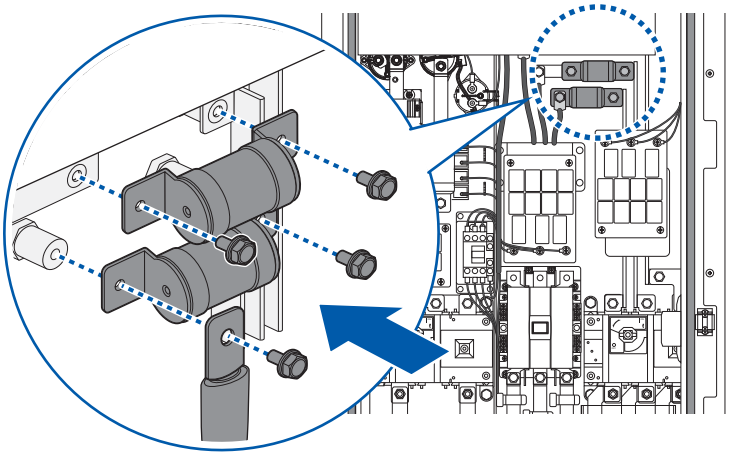

Figure 93. Installing an AC Fuse

5. Installing a safety cover. See “Installing a Safety Cover” on page 37.
6. Close the front door. See “Closing a Front Door” on page 22.

Fuse for AC Surge Protection (AC SPD Fuse)

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an AC SPD Fuse

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Remove the screws securing the AC SPD fuse and the wires.
4. Remove the wires.

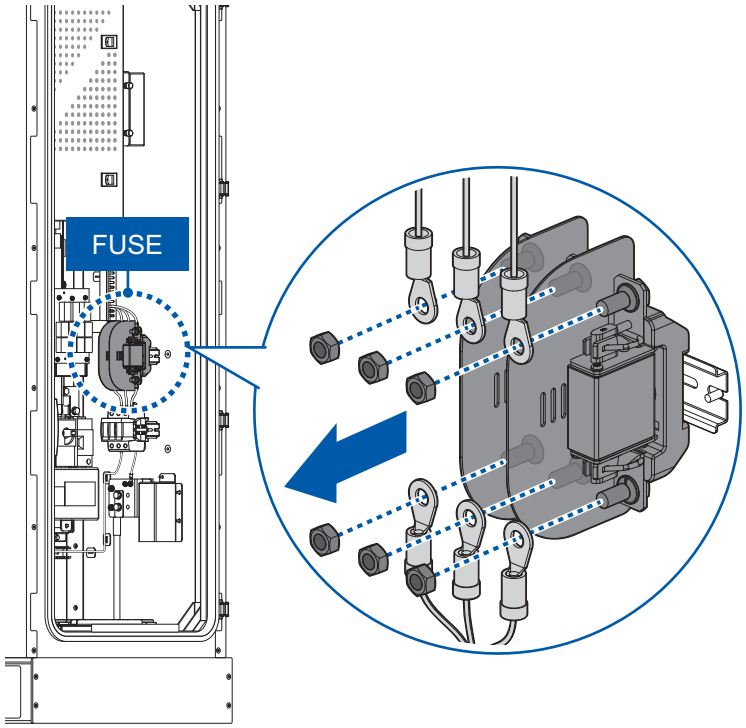

Figure 94. Removing the Wires

5. Push down on the top of the AC SPD fuse release tab with your finger. As the AC SPD fuse releases, lift the bottom of the AC SPD fuse.
6. Remove the AC SPD fuse from the SPD rail.

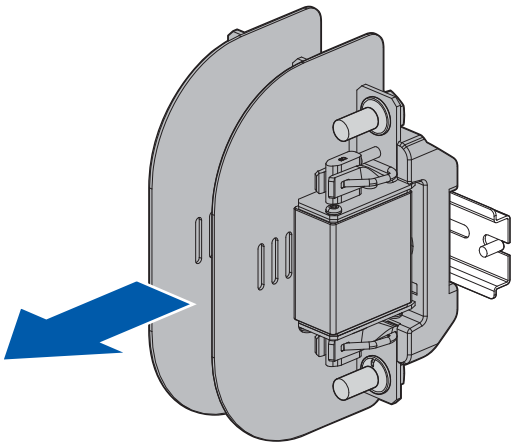

Figure 95. Removing an AC SPD Fuse

Installing an AC SPD Fuse

1. Position the rear of the AC SPD fuse directly in front of the SPD rail. Make sure the top of the AC SPD fuse hooks over the top of the SPD rail.
2. Once the AC SPD fuse is seated correctly in the SPD rail clip, press the front of the AC SPD fuse to rotate the AC SPD fuse down and into the release tab on the AC SPD fuse.

   If seated correctly, the bottom of the SPD rail should be fully inserted in the release tab.

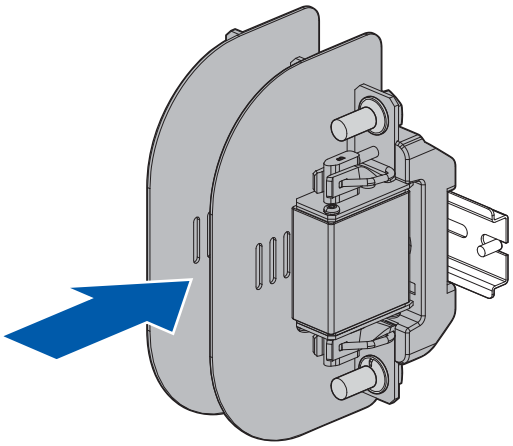

Figure 96. Installing an AC SPD Fuse on Rail

3. Align the wires over each end of the AC SPD fuse.
4. Secure the AC SPD fuse and wires with the bolts.

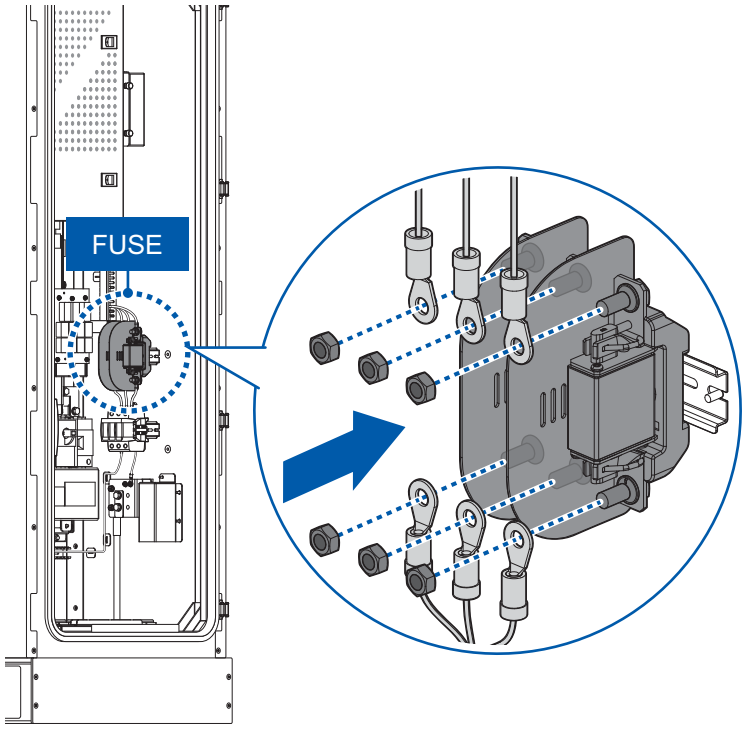

Figure 97. Installing Fuses on Posts

5. Installing a safety cover. See “Installing a Safety Cover” on page 37.
6. Close the front door. See “Closing a Front Door” on page 22.

AC Surge Protector (AC SPD)

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- Do not lay tools or metal parts on top of the cabinet.

Removing an AC SPD

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Loosen the captive screws securing the wires.
4. Pull out the wires from the AC SPD.

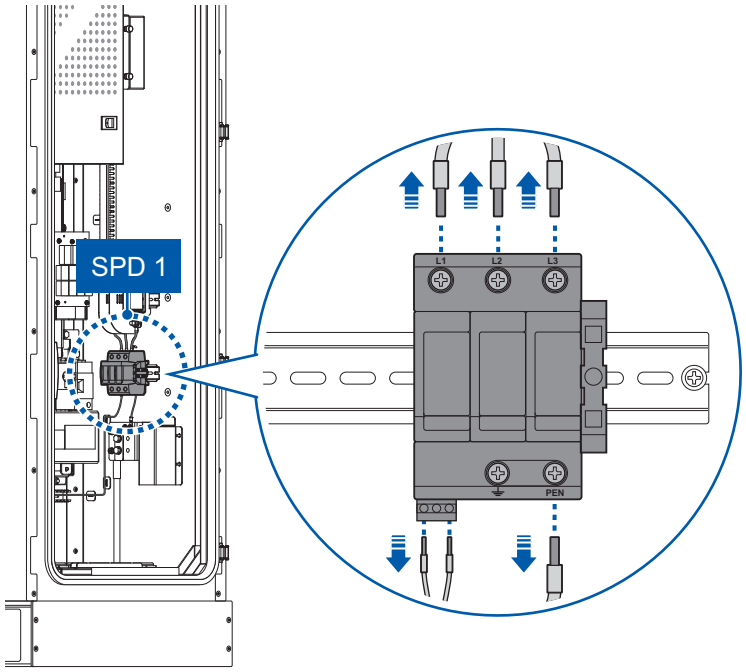

Figure 98. Disconnecting the Wires

5. Push down on the top of the AC SPD release tab with your finger. As the AC SPD releases, lift the bottom of the AC SPD.
6. Remove the AC SPD from the rail.

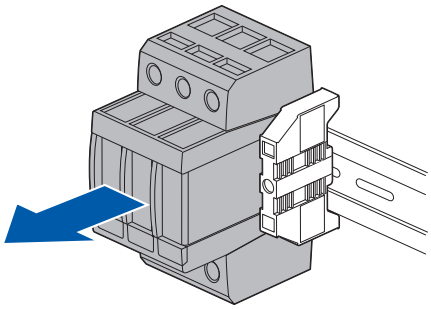

Figure 99. Removing an AC SPD

Installing an AC SPD

1. Position the rear of the AC SPD directly in front of the rail. Make sure the top of the AC SPD hooks over the top of the rail.
2. Once the AC SPD is seated correctly in the rail clip, press the front of the AC SPD to rotate the AC SPD down and into the release tab on the AC SPD.

   If seated correctly, the bottom of the rail should be fully inserted in the release tab.

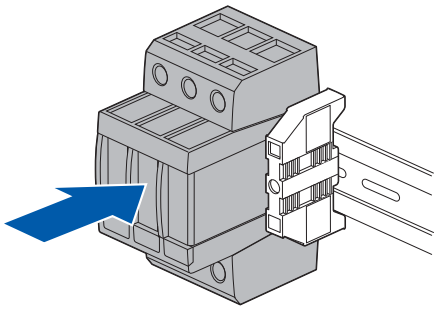

Figure 100. Installing an AC SPD

3. Insert the wires into the AC SPD.
4. Secure the captive screws to lock the wires.

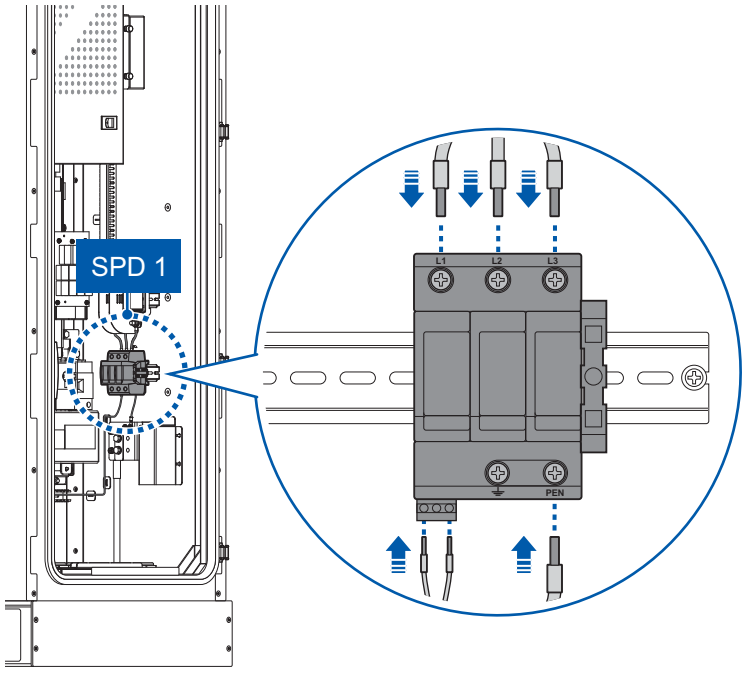

Figure 101. Connecting the Wires

5. Installing a safety cover. See “Installing a Safety Cover” on page 37.
6. Close the front door. See “Closing a Front Door” on page 22.

DC EMI Filter Board (F Board)

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an F Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Remove the screws securing the F board.
4. Remove the F board.

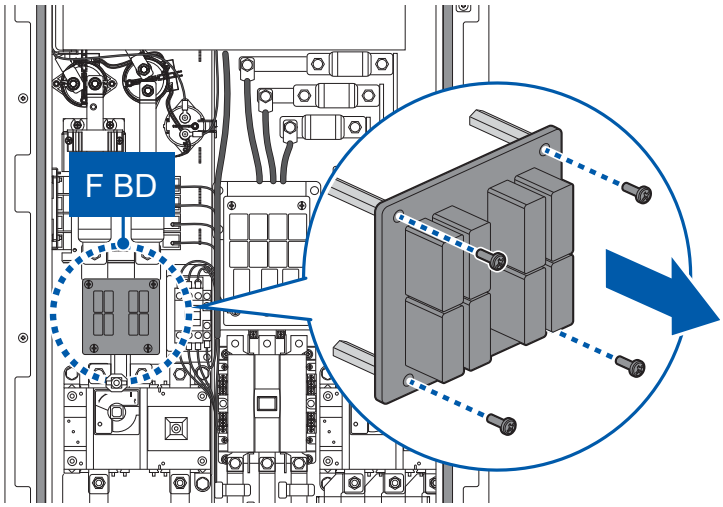

Figure 102. Removing an F Board

Installing an F Board

1. Align the F board with the posts on the chassis.
2. Secure the F board with screws.

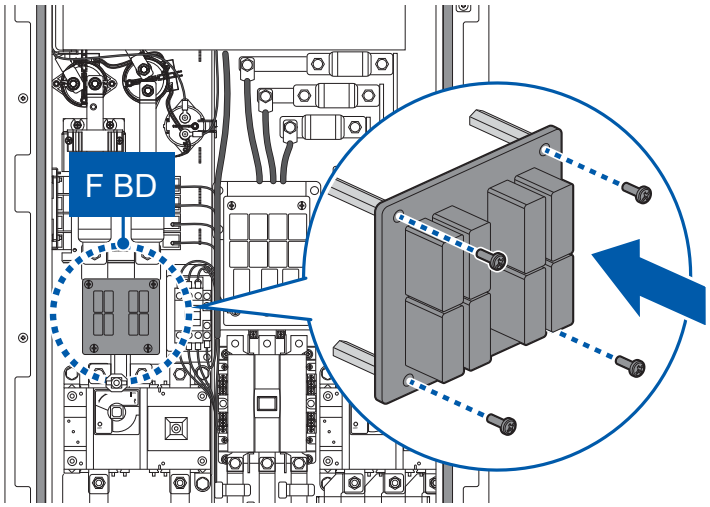

Figure 103. Installing an F Board

3. Installing a safety cover. See “Installing a Safety Cover” on page 37.
4. Close the front door. See “Closing a Front Door” on page 22.

AC EMI Filter Board (E Board)

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Before attempting any work around the PCS100, observe the following precautions:

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an E Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Remove the screws securing the E board and the wires.
4. Remove the E board and the wires.

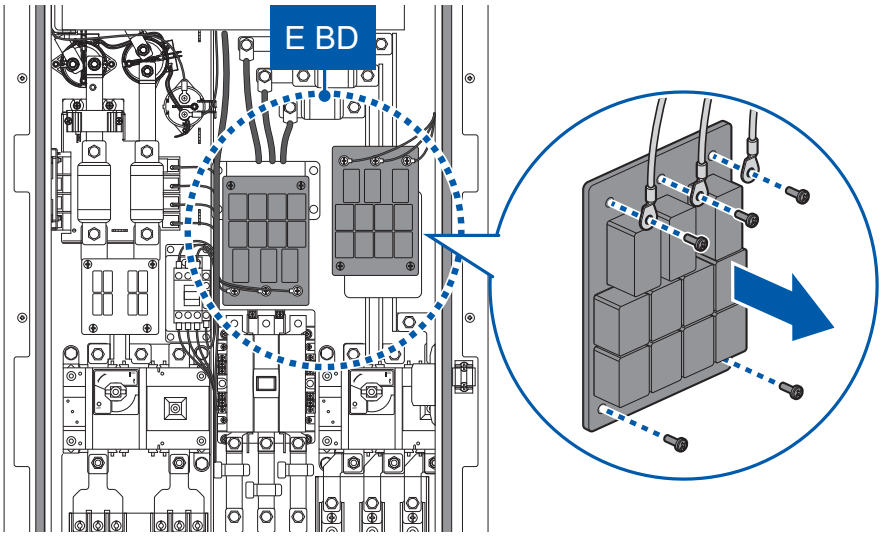

Figure 104. Removing an E Board and Wires

Installing an E Board

1. Align the wires and E board with the holes on the chassis.
2. Secure the E board and wires with screws.

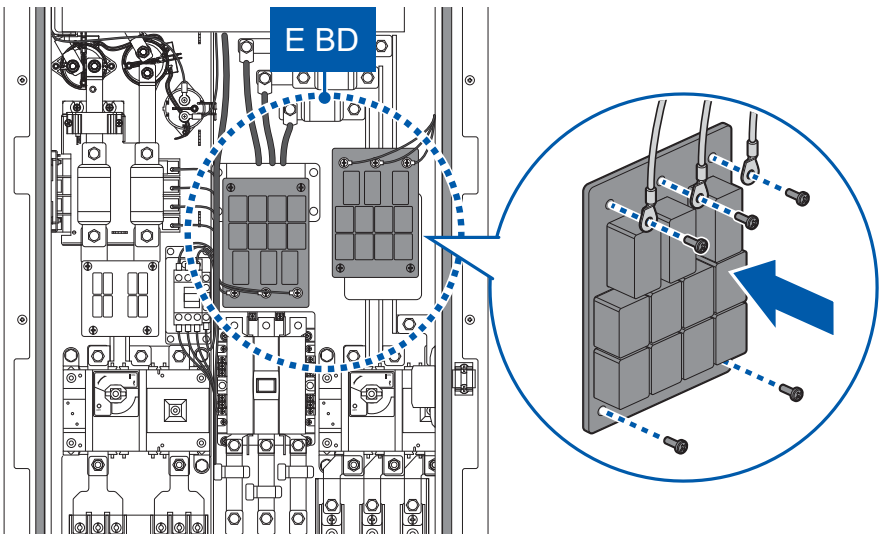

Figure 105. Installing an E Board and Wires

3. Installing a safety cover. See “Installing a Safety Cover” on page 37.
4. Close the front door. See “Closing a Front Door” on page 22.

Interface Board (J Board)

WARNING!

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CAUTION!

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Important Safety Instructions

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a J Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Disconnect the cables from the J board.

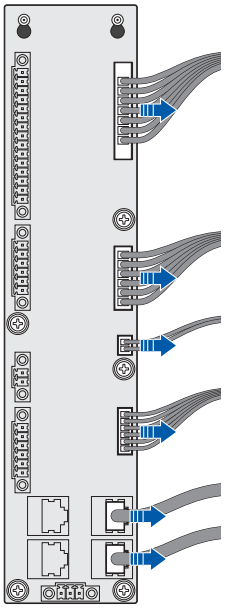

Figure 106. Disconnecting J Board Cables

4. Remove the screws securing the J board.
5. Slide and remove the J board.

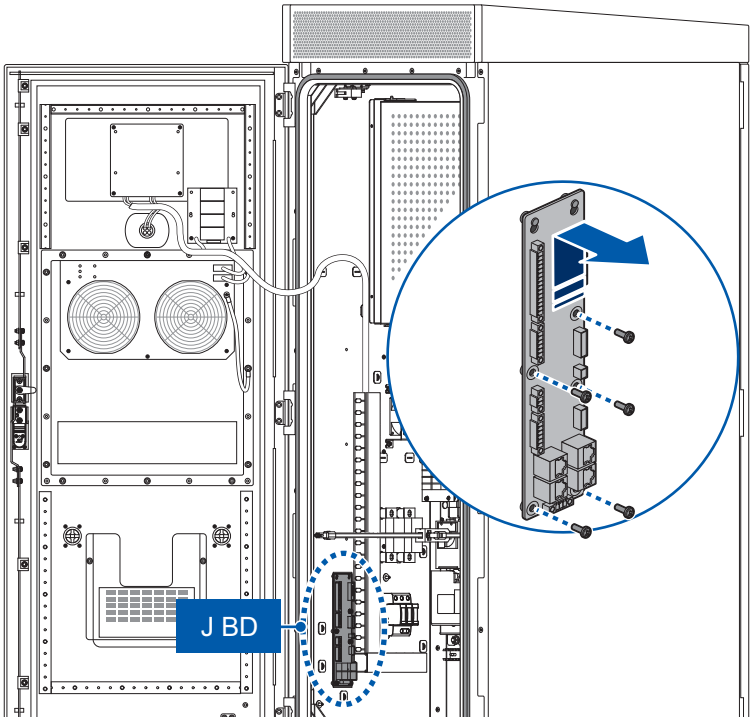

Figure 107. Removing a J Board

Installing a J Board

1. Align the posts on the chassis with the keyholes on the J board.
2. Slide the J board to lock in place.
3. Secure the J board with screws.

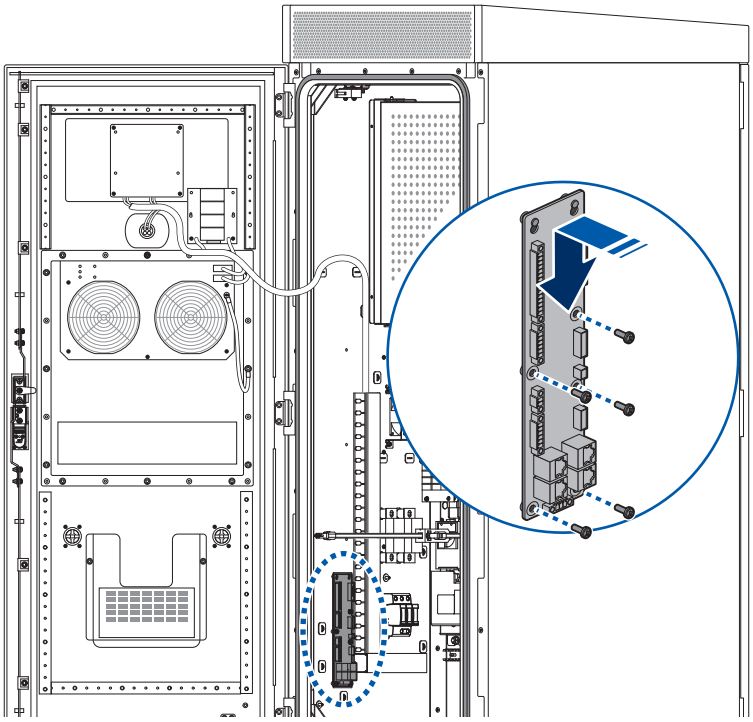

Figure 108. Installing a J Board

4. Connect the cables to the J board.

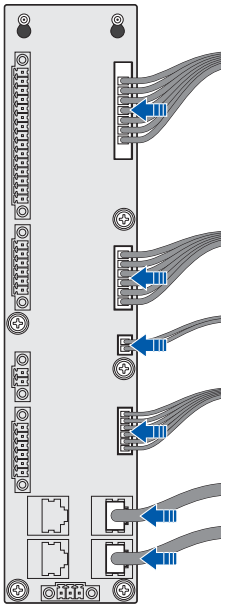

Figure 109. Connecting J Board Cables

5. Installing a safety cover. See “Installing a Safety Cover” on page 37.
6. Close the front door. See “Closing a Front Door” on page 22.

DC Surge Protector (DC SPD)

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

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- Only use tools with insulated handles.
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- Do not lay tools or metal parts on top of the cabinet.

Removing a DC SPD

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the DC SPD.

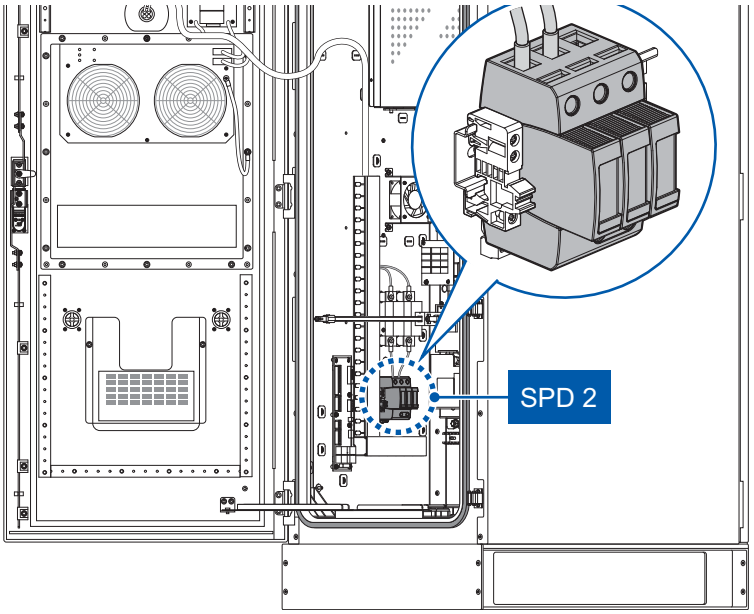

Figure 110. DC SPD Location

4. Loosen the captive screws securing the wires.
5. Pull out the wires from the DC SPD.

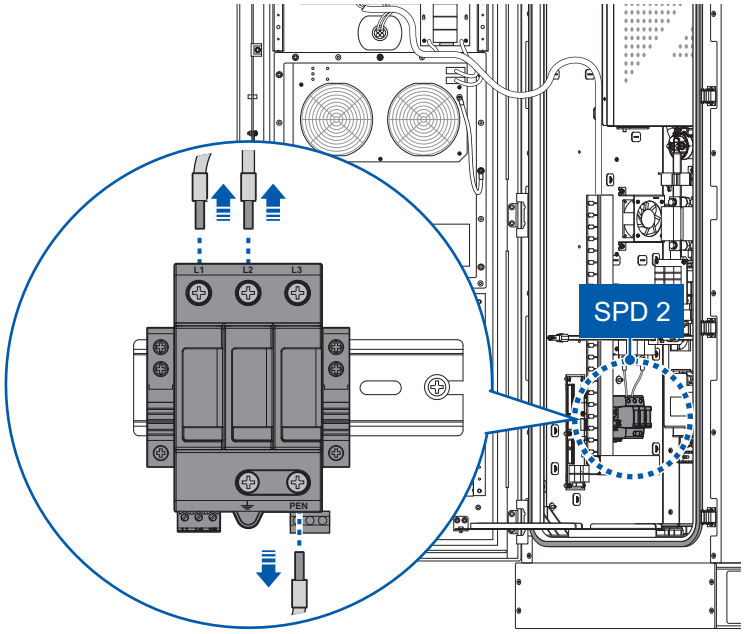

Figure 111. Disconnecting the Wires

6. Push down on the top of the DC SPD release tab with your finger. As the DC SPD releases, lift the bottom of the DC SPD.
7. Remove the DC SPD from the rail.

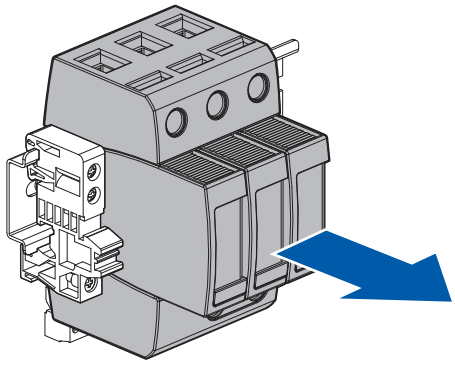

Figure 112. Removing a DC SPD

Installing a DC SPD

1. Position the rear of the DC SPD directly in front of the rail. Make sure the top of the DC SPD hooks over the top of the rail, as shown in the following illustration.
2. Once the DC SPD is seated correctly in the rail clip, press the front of the DC SPD to rotate the DC SPD down and into the release tab on the DC SPD.

   If seated correctly, the bottom of the rail should be fully inserted in the release tab.

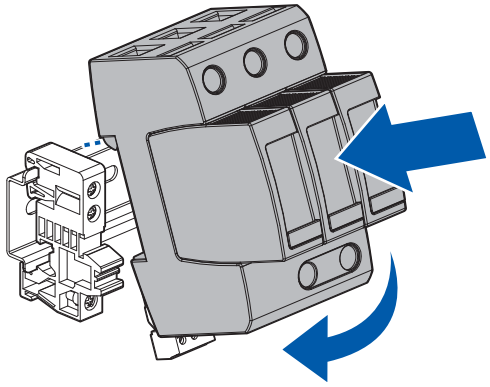

Figure 113. Installing a DC SPD

3. Insert the wires into the DC SPD.
4. Secure the captive screws to lock the wires.

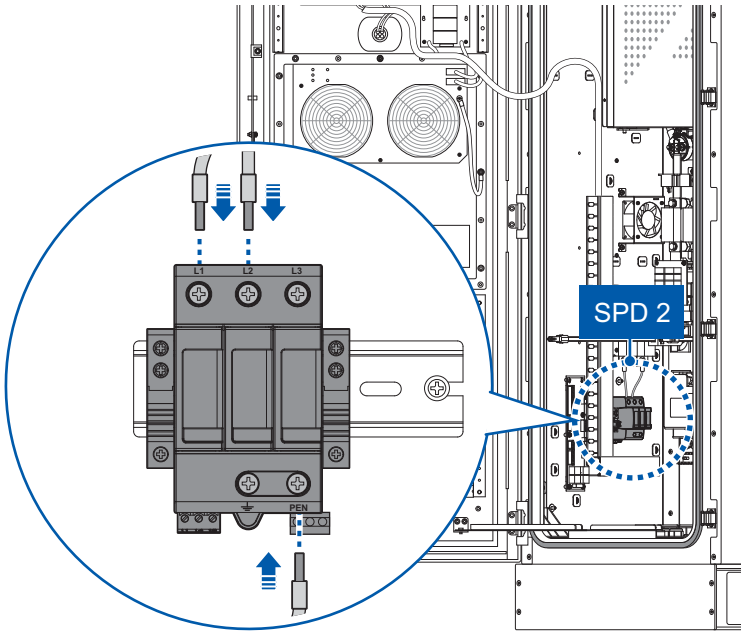

Figure 114. Connecting the Wires

5. Installing a safety cover. See “Installing a Safety Cover” on page 37.
6. Close the front door. See “Closing a Front Door” on page 22.

AC Switch

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an AC Switch

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the AC switch.

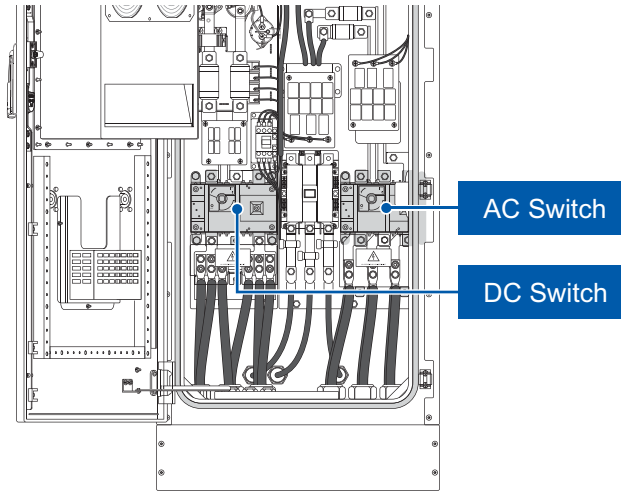

Figure 115. AC Switch Location

4. Loosen the captive screws securing the cable.
5. Remove the cable from the hole on the AC switch.

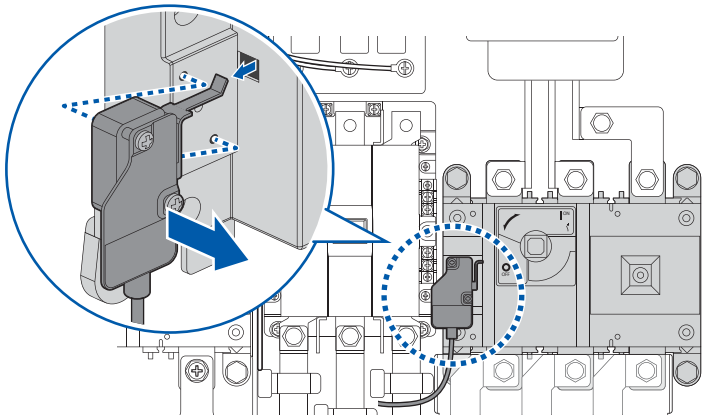

Figure 116. Removing a Cable

6. Remove the nuts securing the AC protection glass.
7. Remove the AC protection glass.

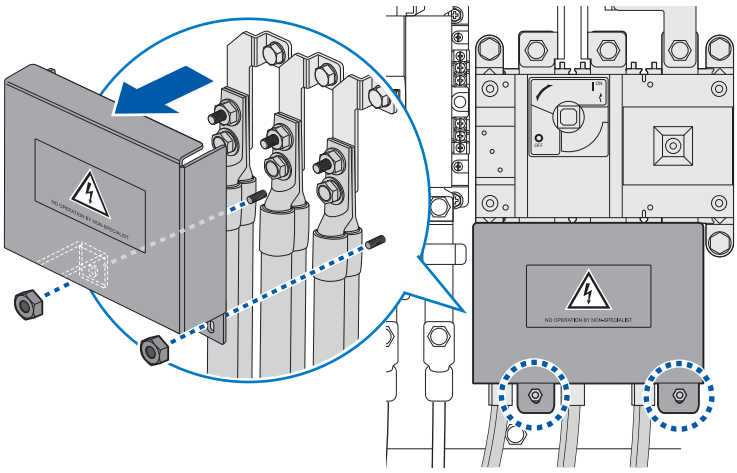

Figure 117. Removing an AC Protection Glass

8. Remove the screws securing the wires, washers and brackets.
9. Remove the nuts securing the wires.
10. Remove the wires, washers and brackets.

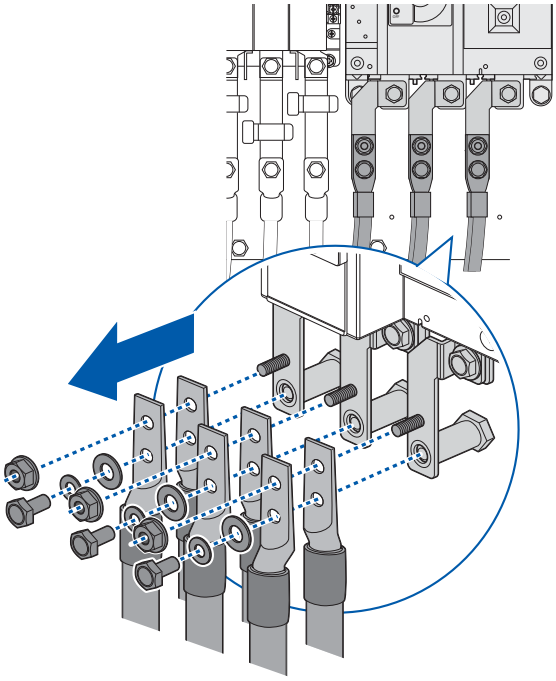

Figure 118. Removing the Wires, Washers and Brackets

11. Remove the screws securing the wires, washers and brackets.
12. Remove the wires, washers and brackets.

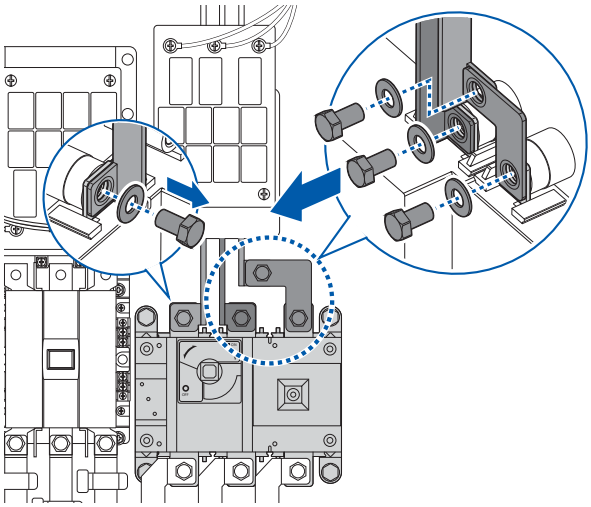

Figure 119. Removing the Wires, Washers and Brackets

13. Remove the screws securing the AC switch.
14. Remove the AC switch.

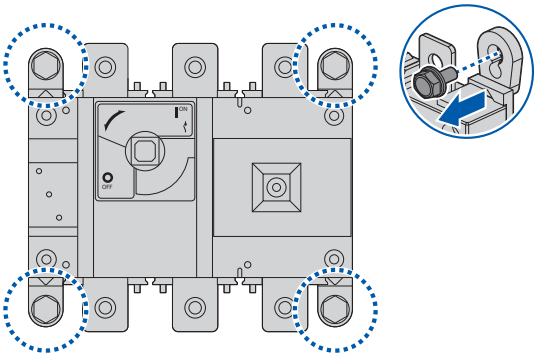

Figure 120. Removing an AC Switch

Installing an AC Switch

1. Align the holes on the AC switch with the posts on the chassis.
2. Secure the AC switch with screws.

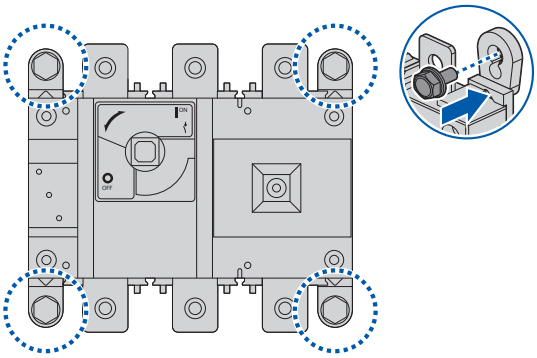

Figure 121. Installing an AC Switch

3. Align the wires, washers and brackets with the holes on the AC switch.
4. Secure the wires, washers and brackets with screws.

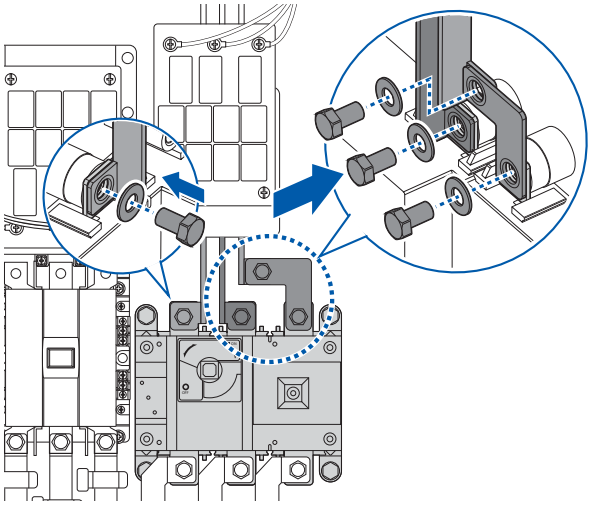

Figure 122. Installing the Wires, Washers and Brackets

5. Align the wires, washers and brackets with the holes on the AC switch.
6. Secure the wires, washers and brackets with screws.
7. Secure the wires and the washers with nuts.

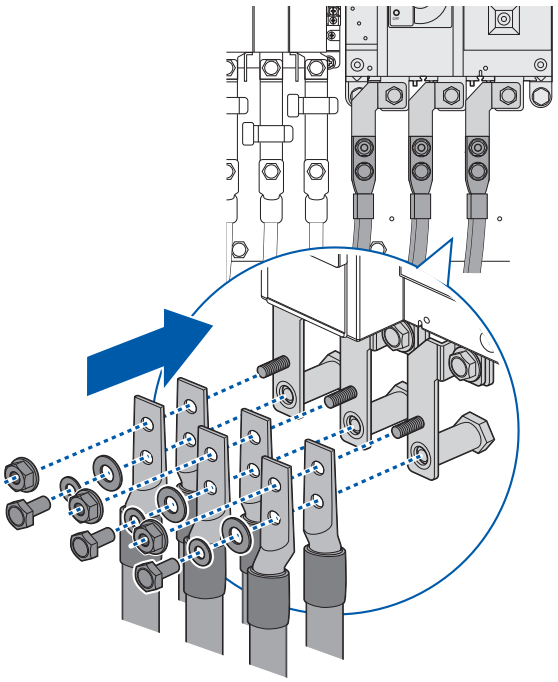

Figure 123. Installing the Wires, Washers and Brackets

8. Align the holes on the AC protection glass with the holes on the AC switch.
9. Secure the AC protection glass with nuts.

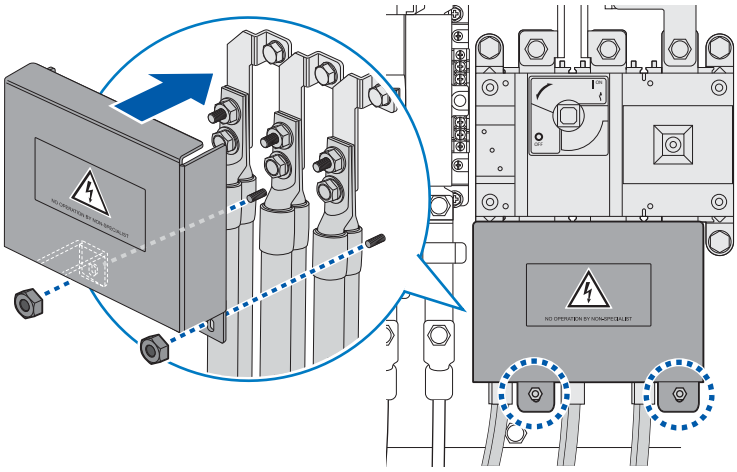

Figure 124. Installing an AC Protection Glass

10. Insert the cable into the slot on the side of AC switch. Make sure it aligned with the holes on the AC switch.
11. Secure the cable with captive screws.

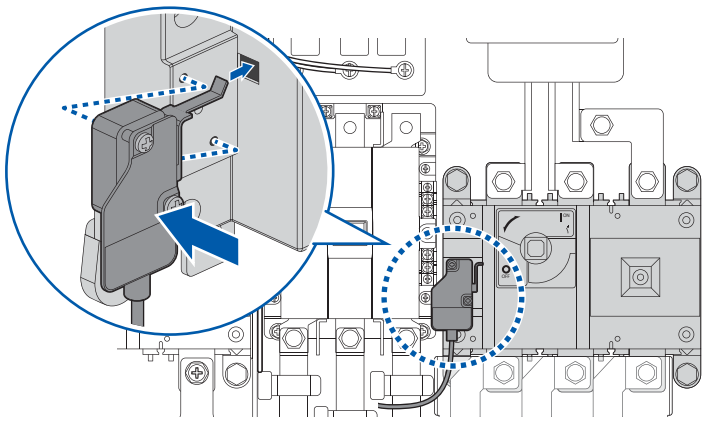

Figure 125. Installing a Cable

12. Installing a safety cover. See “Installing a Safety Cover” on page 37.
13. Close the front door. See “Closing a Front Door” on page 22.

DC Switch

WARNING!

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- Do not lay tools or metal parts on top of the cabinet.

Removing a DC Switch

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the DC switch.

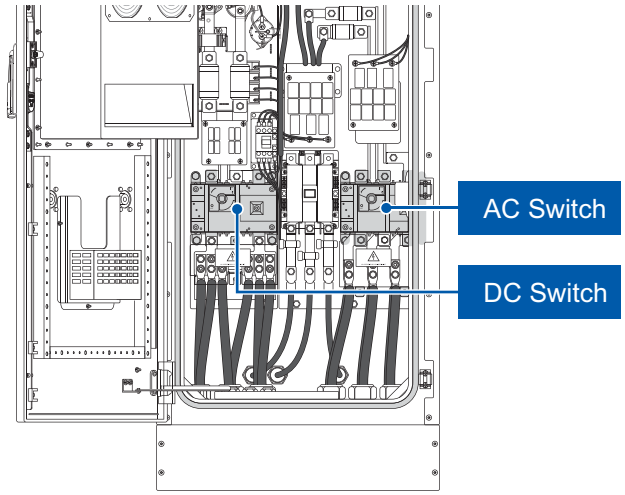

Figure 126. DC Switch Location

4. Loosen the captive screws securing the cable.
5. Remove the cable from the hole on the DC switch.

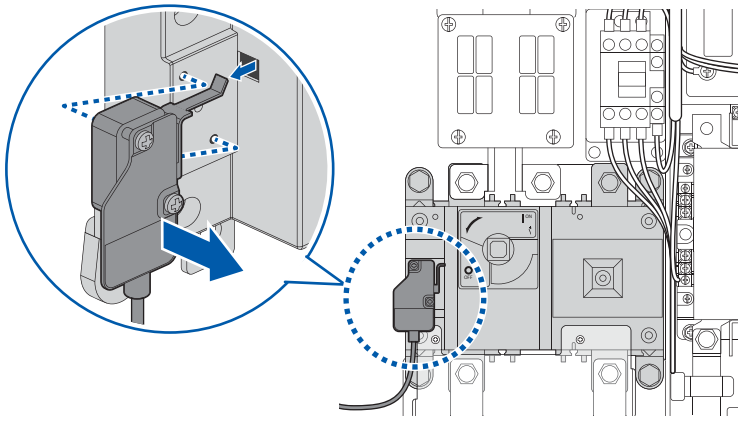

Figure 127. Removing a Cable

6. Remove the nuts securing the DC protection glass.
7. Remove the DC protection glass.

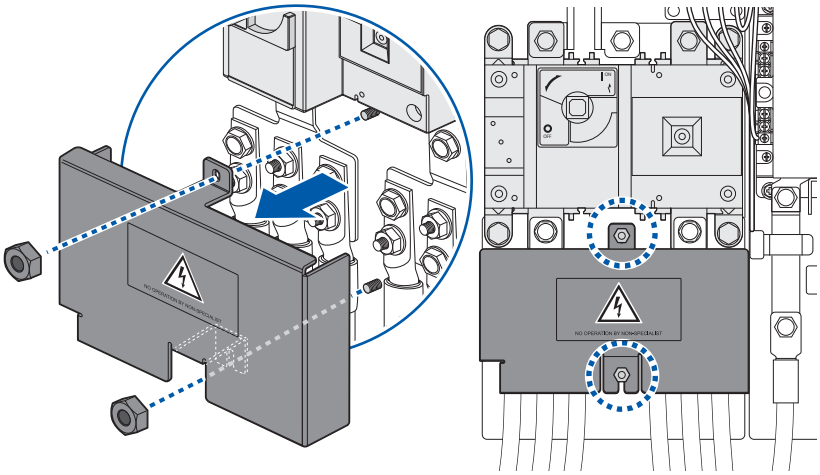

Figure 128. Removing a DC Protection Glass

8. Remove the screws securing the wires, washers and brackets.
9. Remove the nuts securing the wires.
10. Remove the wires, washers and brackets.

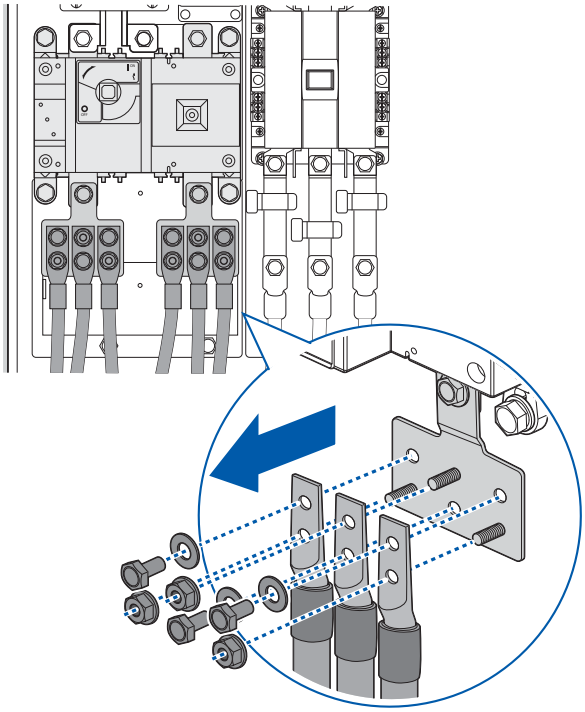

Figure 129. Removing the Wires, Washers and Brackets

11. Remove the screws securing the wires, washers and brackets.
12. Remove the wires, washers and brackets.

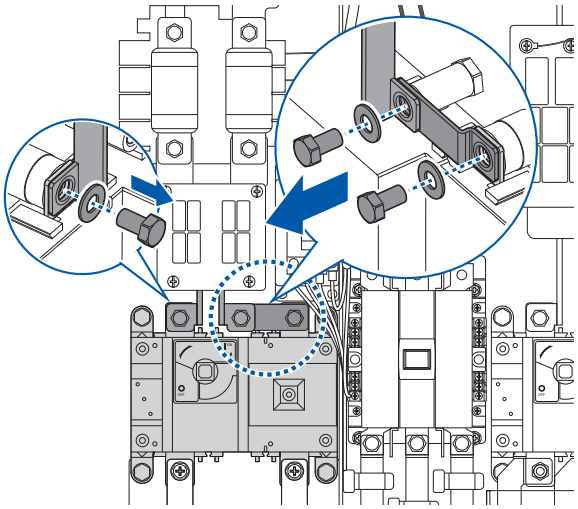

Figure 130. Removing the Wires, Washers and Brackets

13. Remove the screws securing the DC switch.
14. Remove the DC switch.

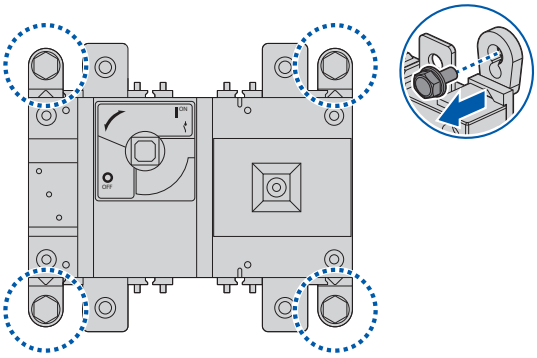

Figure 131. Removing a DC Switch

Installing a DC Switch

1. Align the holes on the DC switch with the posts on the chassis.
2. Secure the DC switch with screws.

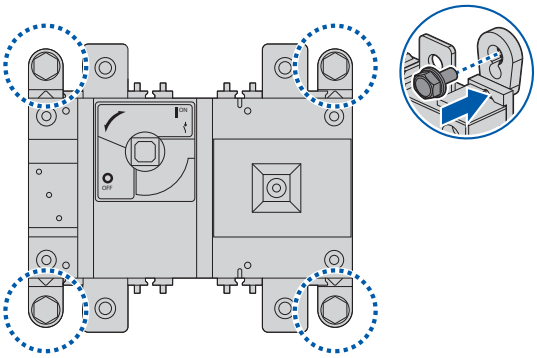

Figure 132. Installing a DC Switch

3. Align the wires, washers and brackets with the holes on the DC switch.
4. Secure the wires, washers and brackets with screws.

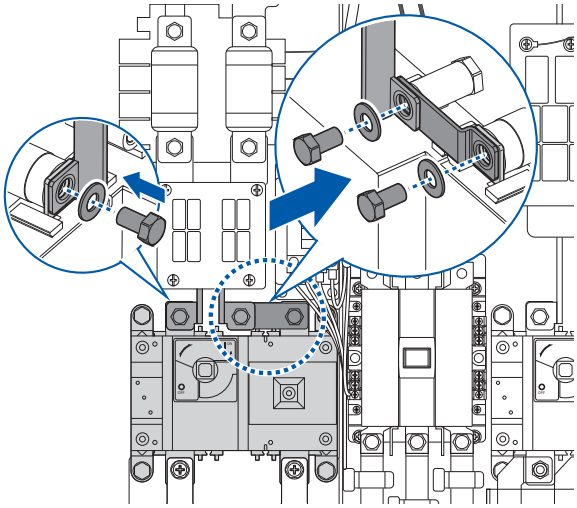

Figure 133. Installing the Wires, Washers and Brackets

5. Align the wires, washers and brackets with the holes on the DC switch.
6. Secure the wires, washers and brackets with screws.
7. Secure the wires and washers with nuts.

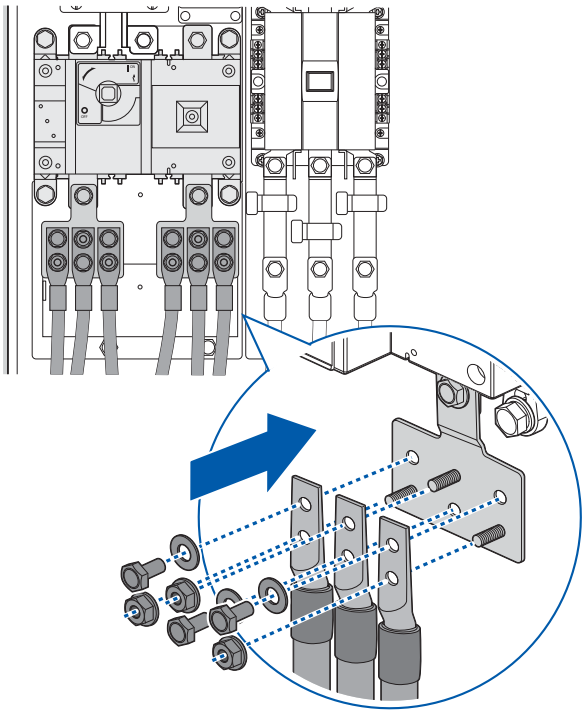

Figure 134. Installing the Wires, Washers and Brackets

8. Align the holes on the DC protection glass with the holes on the DC switch.
9. Secure the DC protection glass with screws.

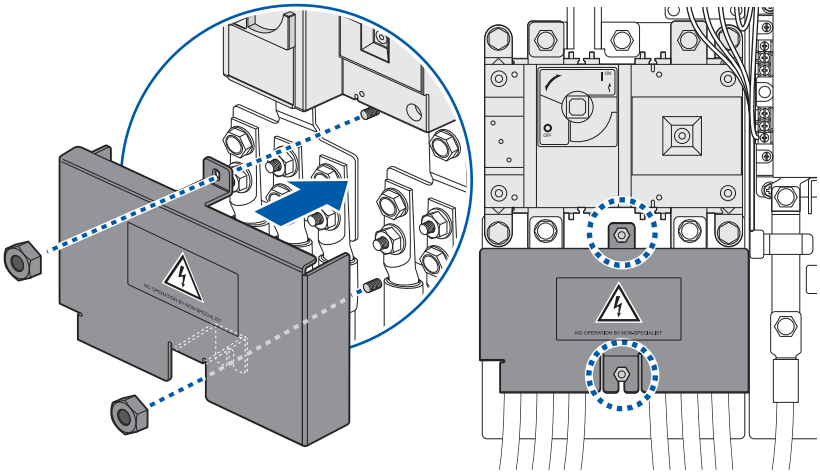

Figure 135. Installing a DC Protection Glass

10. Insert the cable into the slot on the side of AC switch. Make sure it aligned with the holes on the DC switch.
11. Secure the cable with captive screws.

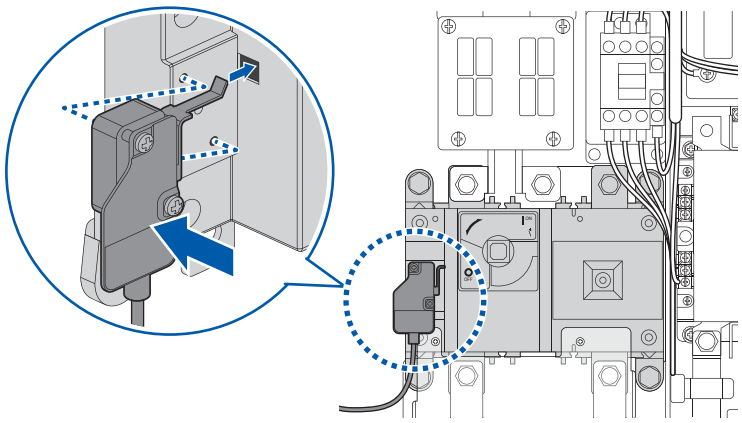

Figure 136. Installing a Cable

12. Installing a safety cover. See “Installing a Safety Cover” on page 37.
13. Close the front door. See “Closing a Front Door” on page 22.

AC Main Contactor

WARNING!

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- Do not lay tools or metal parts on top of the cabinet.

Removing an AC Main Contactor

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the AC main contactor.

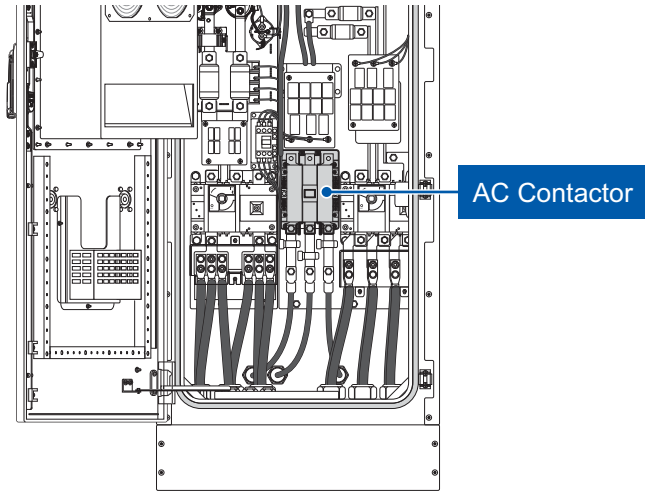

Figure 137. AC Main Contactor Location

4. Loosen the captive screws securing the wires.
5. Disconnect the wires.

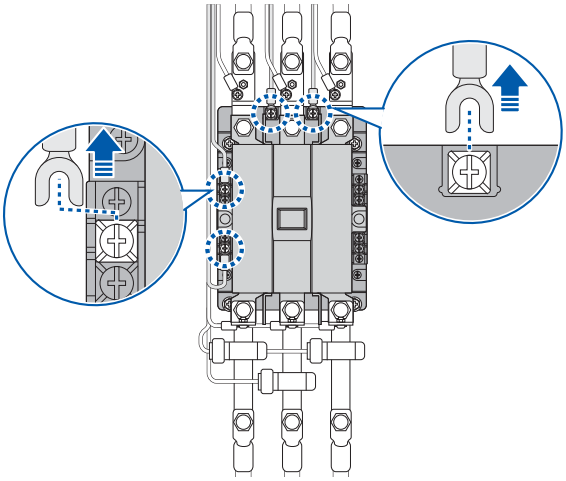

Figure 138. Disconnecting the Wires

6. Remove the screws securing the AC main contactor.

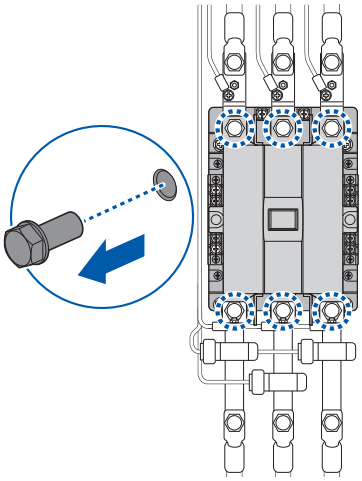

Figure 139. Removing the Screws

7. Remove the screws securing the wires.
8. Remove the wires.

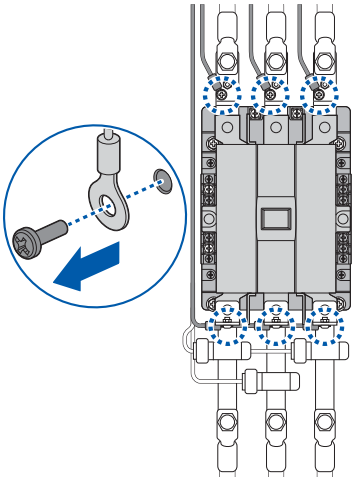

Figure 140. Disconnecting the Wires

9. Remove the screws securing the L-brackets.
10. Remove the L-brackets.

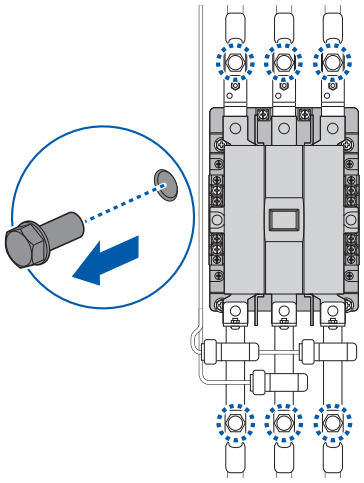

Figure 141. Removing the L-brackets

11. Remove the screws securing the AC main contactor.
12. Remove the AC main contactor.

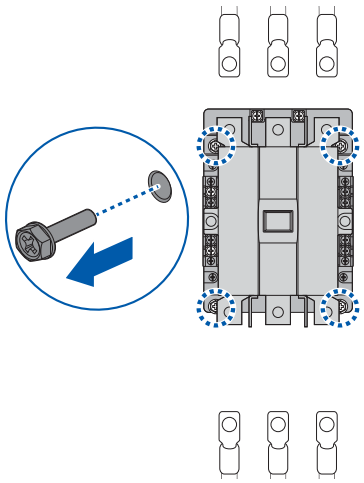

Figure 142. Removing an AC Main Contactor

Installing an AC Main Contactor

1. Align the holes on the AC main contactor with the holes on the chassis
2. Secure the AC main contactor with screws.

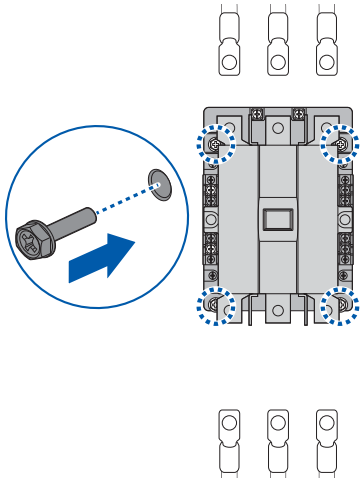

Figure 143. Installing an AC Main Contactor

3. Align the holes on the L-brackets with the holes on the chassis.
4. Secure the AC main contactor and L-brackets with screws.

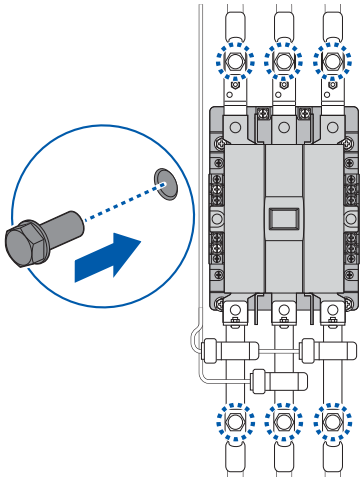

Figure 144. Installing the L-brackets

5. Align the holes on the wires with the holes on the L-brackets.
6. Secure the L-brackets and wires with screws.

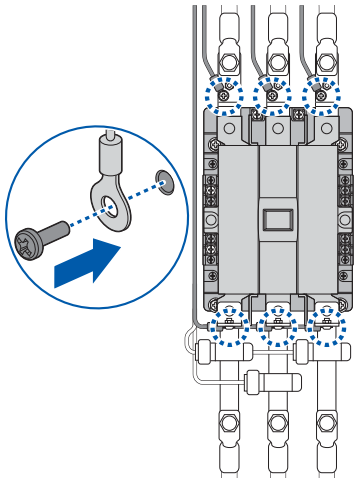

Figure 145. Connecting the Wires

7. Secure the AC main contactor and L-brackets with screws.

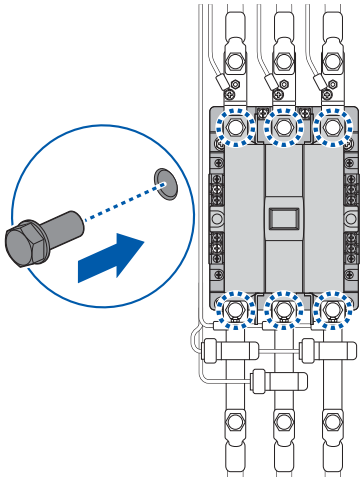

Figure 146. Securing the Screws

8. Insert the wires into the AC main contactor.
9. Secure the wires with captive screws.

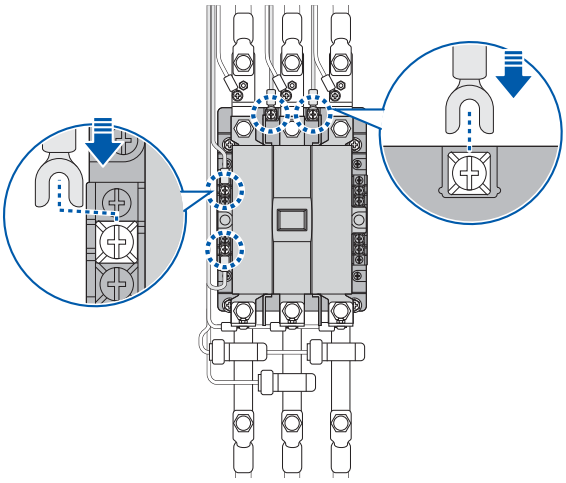

Figure 147. Connecting the Wires

10. Installing a safety cover. See “Installing a Safety Cover” on page 37.
11. Close the front door. See “Closing a Front Door” on page 22.

AC Softstart Contactor

WARNING!

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CAUTION!

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DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

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Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an AC Softstart Contactor

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Locate the AC softstart contactor.

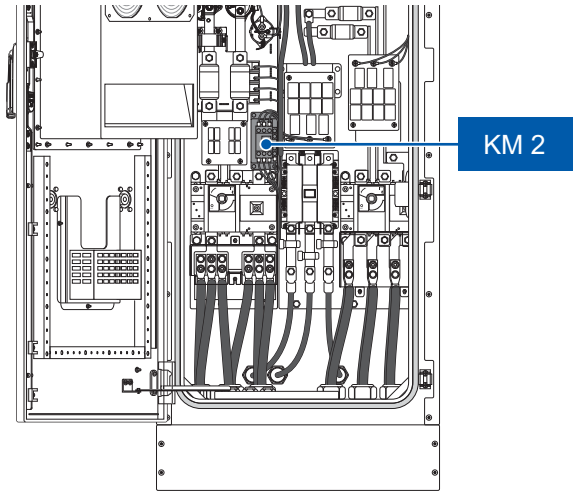

Figure 148. AC Softstart Contactor Location

4. Remove the screws securing the AC softstart contactor and the wires.
5. Remove the AC softstart contactor and the wires.

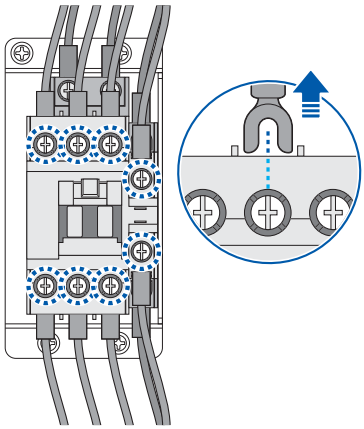

Figure 149. Disconnecting the Wires

6. Remove the screws securing the AC softstart contactor and the wires.
7. Remove the AC softstart contactor and the wires.

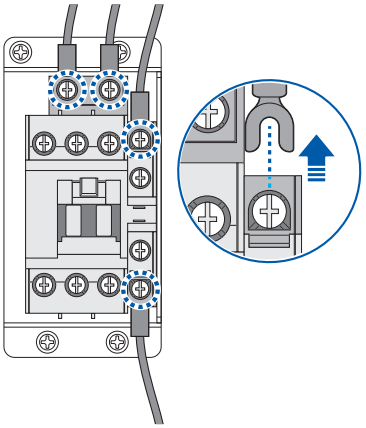

Figure 150. Disconnecting the Wires

8. Remove the screws securing the AC softstart contactor assembly.
9. Remove the AC softstart contactor assembly.

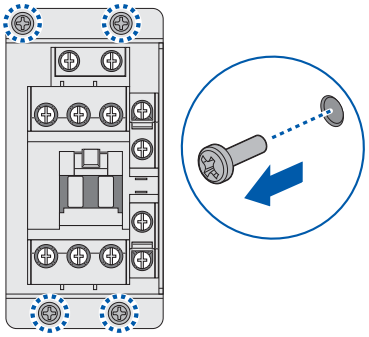

Figure 151. Removing an AC Softstart Contactor Assembly

10. Remove the screws securing the AC softstart contactor.
11. Remove the AC softstart contactor.

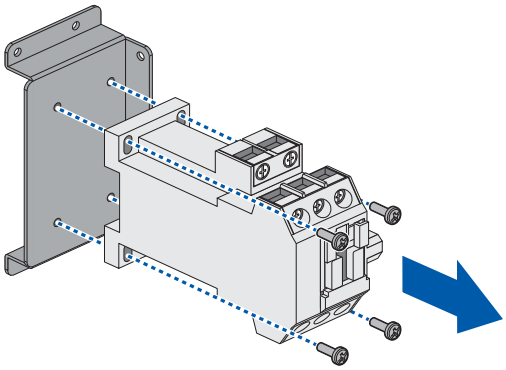

Figure 152. Removing an AC Softstart Contactor

Installing an AC Softstart Contactor

1. Align the holes on the AC softstart contactor with the holes on the AC softstart contactor bracket.
2. Secure the AC softstart contactor and AC softstart contactor bracket with screws.

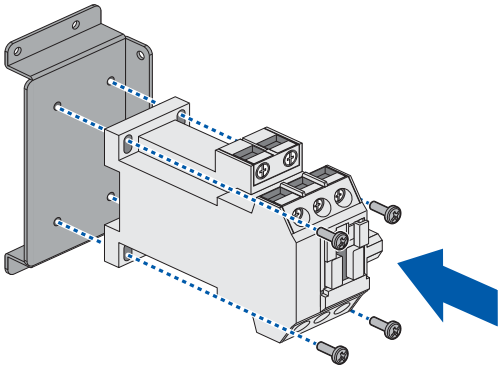

Figure 153. Installing an AC Softstart Contactor

3. Align the holes on the AC softstart contactor assembly with the holes on the chassis.
4. Secure the AC softstart contactor and the chassis with screws.

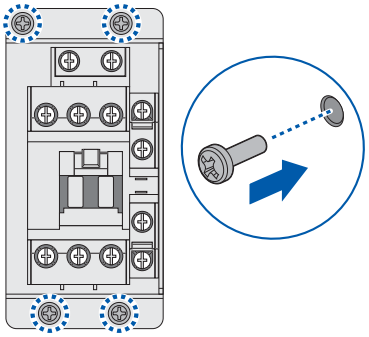

Figure 154. Installing an AC Softstart Contactor Assembly

5. Insert the wires into the AC softstart contactor.
6. Secure the wires with captive screws.

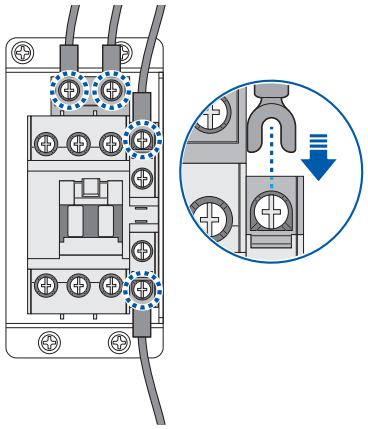

Figure 155. Connecting the Wires

7. Insert the wires into the AC softstart contactor.
8. Secure the wires with captive screws.

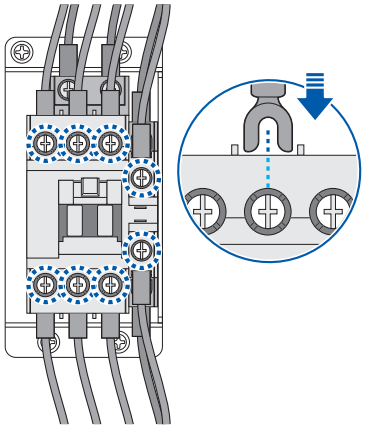

Figure 156. Connecting the Wires

9. Installing a safety cover. See “Installing a Safety Cover” on page 37.
10. Close the front door. See “Closing a Front Door” on page 22.

DC Main Relay

WARNING!

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CAUTION!

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Important Safety Instructions

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Note:

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a DC Main Relay

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Press to disconnect the cable from the DC main relay.

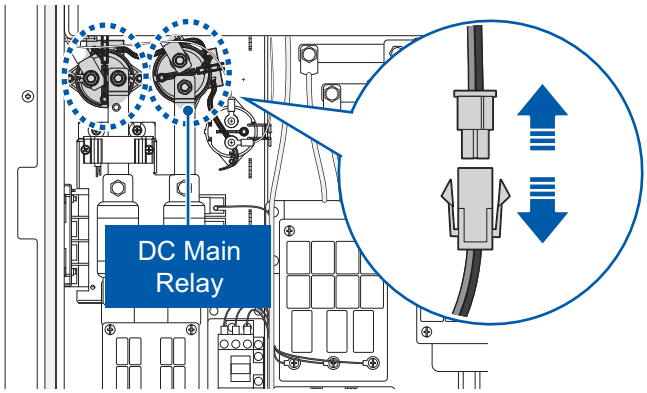

Figure 157. Disconnecting the Cable

4. Remove the nut securing the wires and the bracket.
5. Remove the wires and the bracket.

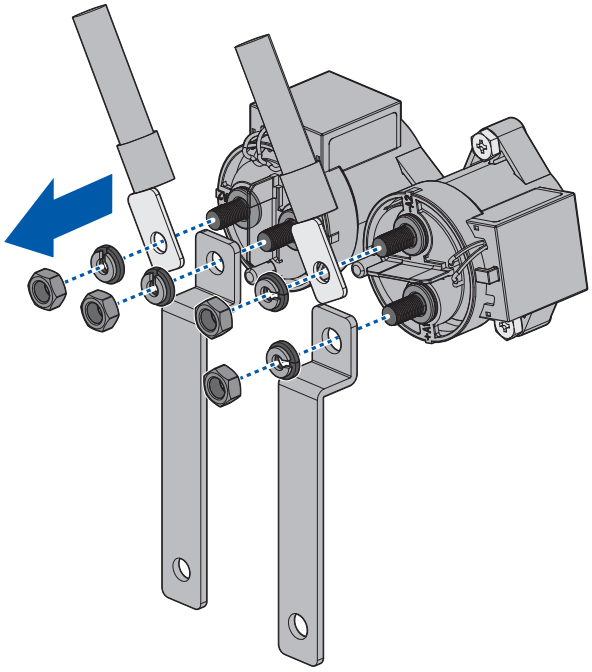

Figure 158. Removing the Wires and the Bracket

6. Remove the screws securing the DC main relay.
7. Remove the DC main relay.

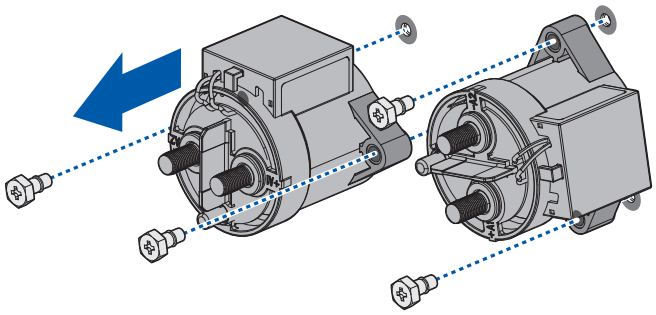

Figure 159. Removing a DC Main Relay

Installing a DC Main Relay

1. Align the holes on the DC main relay with the holes on the chassis.
2. Secure the DC main delay and chassis with screws.

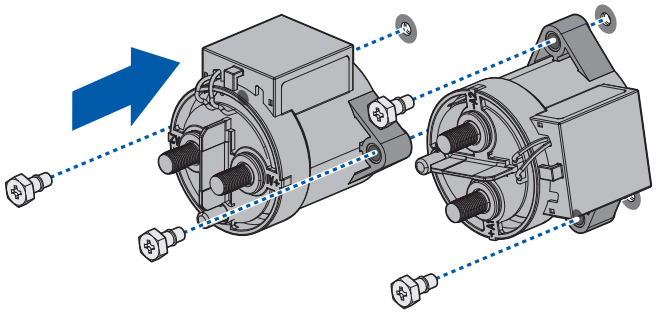

Figure 160. Installing a DC Main Relay

3. Align the hole on the wire with the post on the DC main relay.
4. Align the hole on the bracket with the post on the DC main relay.
5. Secure the wire and the bracket with nuts.

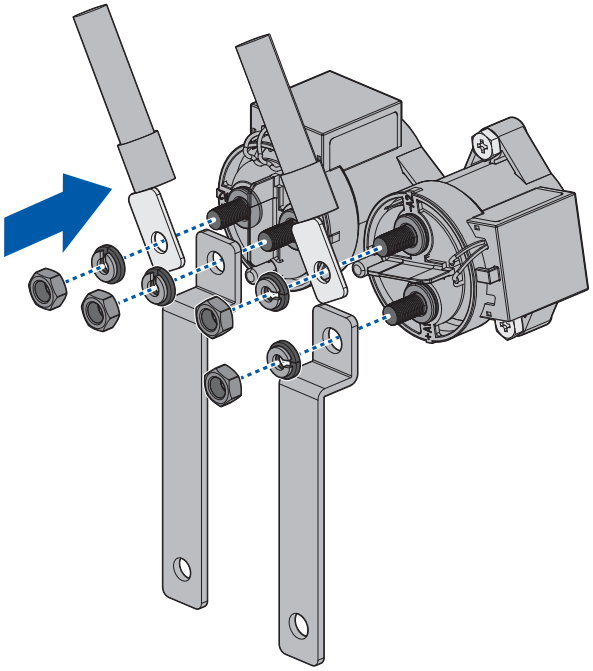

Figure 161. Installing the Wires and the Bracket

6. Connect the cable.

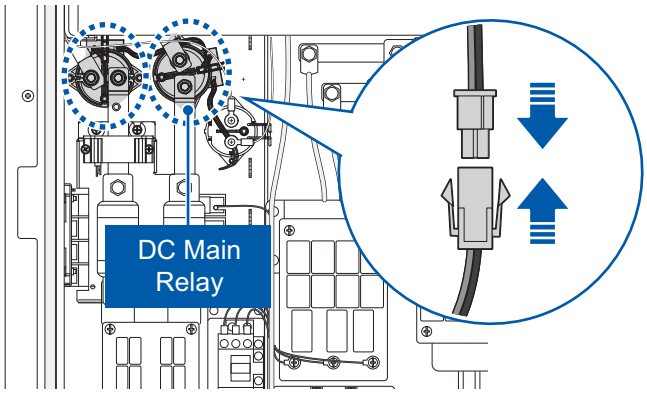

Figure 162. Connecting the Cable

7. Installing a safety cover. See “Installing a Safety Cover” on page 37.
8. Close the front door. See “Closing a Front Door” on page 22.

DC Softstart Relay

WARNING!

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- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a DC Softstart Relay

1. Open the front door. See “Opening a Front Door” on page 20.
2. Remove the safety cover. See “Removing a Safety Cover” on page 34.
3. Press to disconnect the cable from the DC softstart relay.

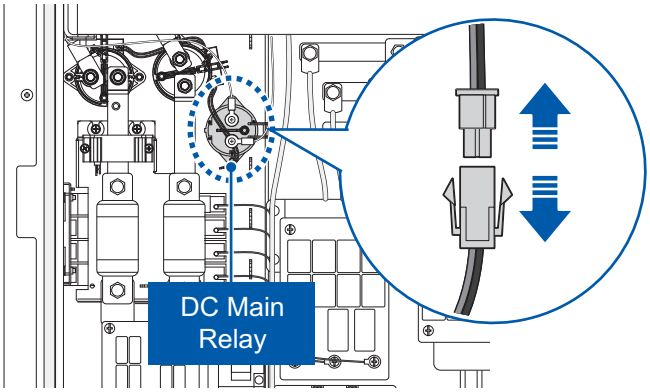

Figure 163. Disconnecting the Cable

4. Remove the screws securing the wires.
5. Remove the wires.

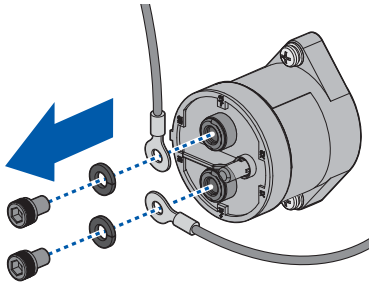

Figure 164. Removing the Wires

6. Remove the screws securing the DC softstart relay.
7. Remove the DC softstart relay.

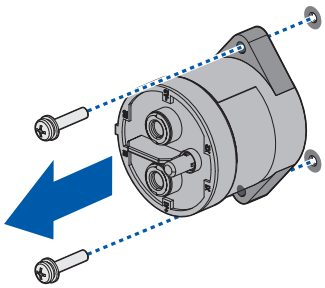

Figure 165. Removing a DC Softstart Relay

Installing a DC Softstart Relay

1. Align the holes on the DC softstart relay with the holes on the chassis.
2. Secure the DC softstart delay and chassis with screws.

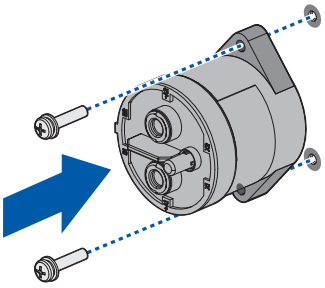

Figure 166. Installing a DC Softstart Relay

3. Align the hole on the wires with the holes on the DC softstart relay.
4. Secure the wires with screws.

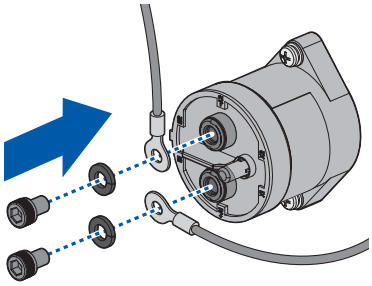

Figure 167. Installing the Wires

5. Connect the cable.

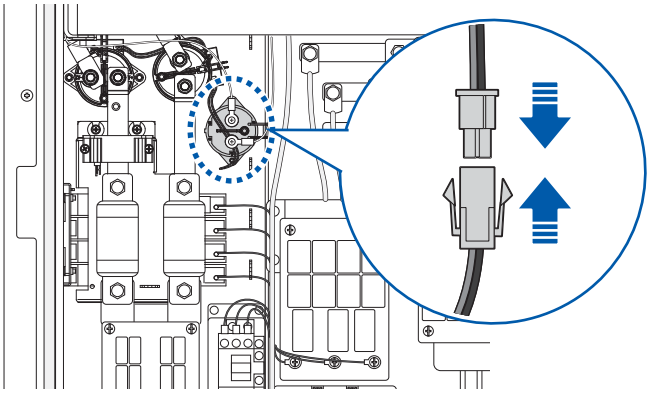

Figure 168. Connecting the Cable

6. Installing a safety cover. See “Installing a Safety Cover” on page 37.
7. Close the front door. See “Closing a Front Door” on page 22.

IGBT Driver Board (B Board)

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a B Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box. See “Opening a Control Box” on page 31.
3. Locate the B board.

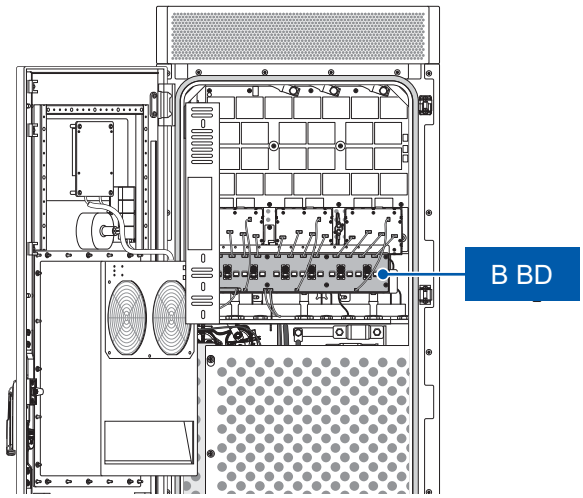

Figure 169. B Board Location

4. Disconnect the cables from the B board.

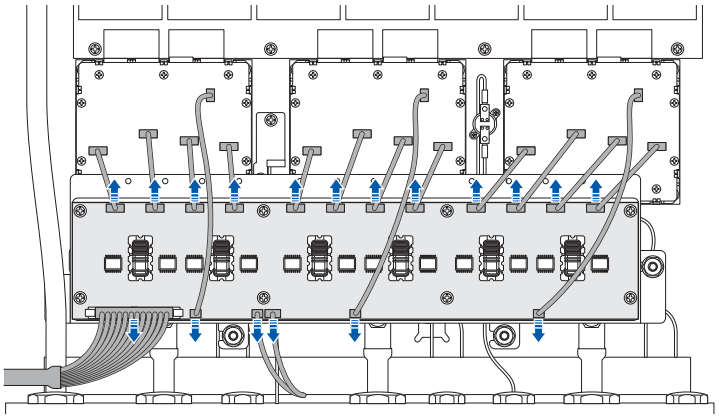

Figure 170. Disconnecting the Cables

5. Remove the screws securing the B board.
6. Remove the B board.

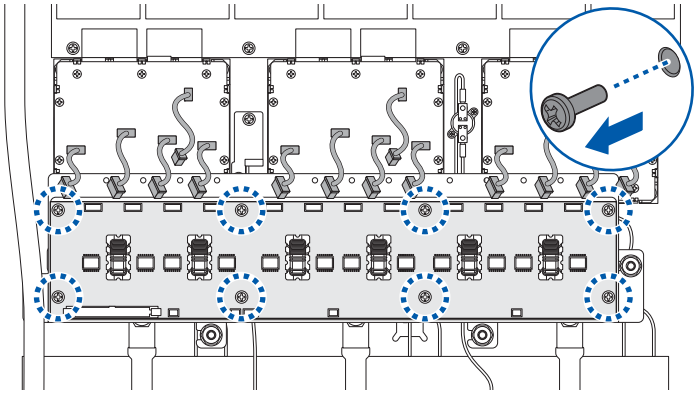

Figure 171. Removing a B Board

Installing a B board

1. Align the holes on the B board with the holes on the chassis.
2. Secure the B board and the chassis with screws.

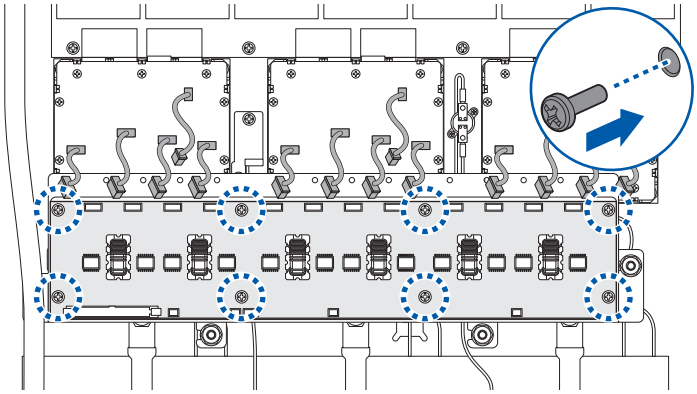

Figure 172. Installing a B Board

3. Connect the cables to the B board.

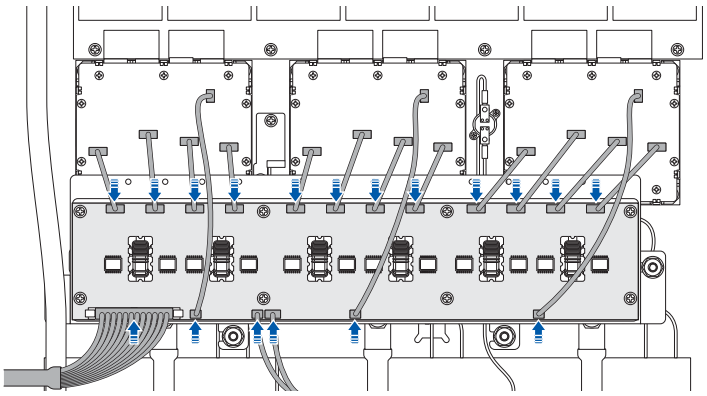

Figure 173. Connecting the Cables

4. Close the control box. See “Closing a Control Box” on page 31.
5. Close the front door. See “Closing a Front Door” on page 22.

IGBT Driver Adapter Board (A Board)

WARNING!

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CAUTION!

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Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an A Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box. See “Opening a Control Box” on page 31.
3. Locate the A board.

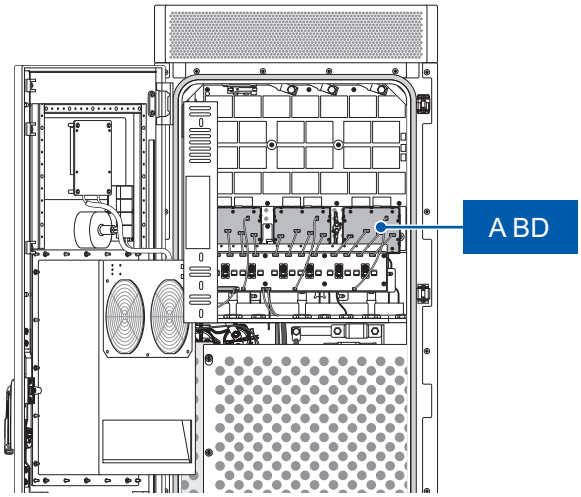

Figure 174. A Board Location

4. Disconnect the cables connecting the A and B boards.

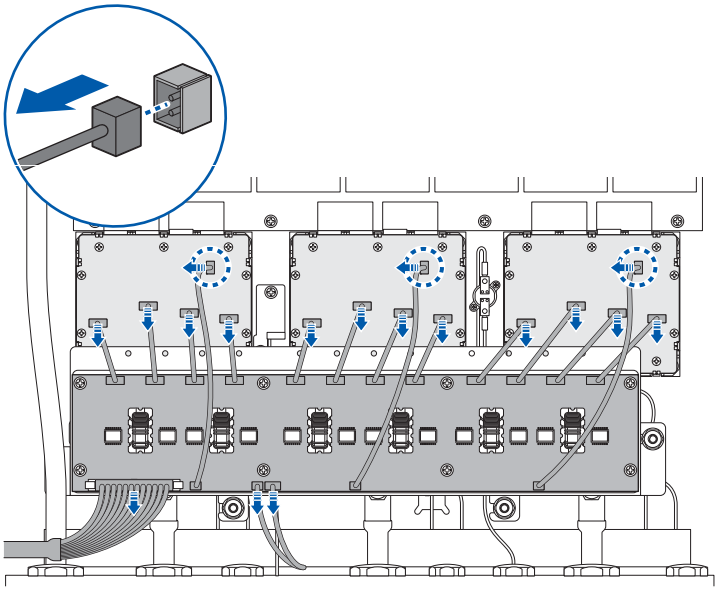

Figure 175. Disconnecting the Cables

5. Remove the nuts securing the B board assembly.
6. Slide and remove the B board assembly.

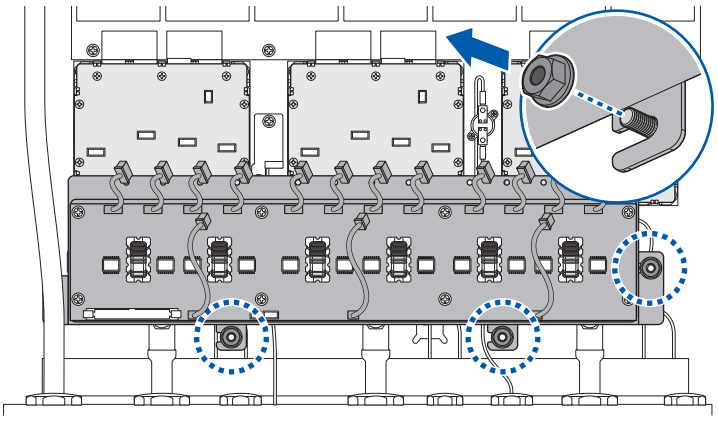

Figure 176. Removing a B Board Assembly

7. Remove the screws securing the A board.

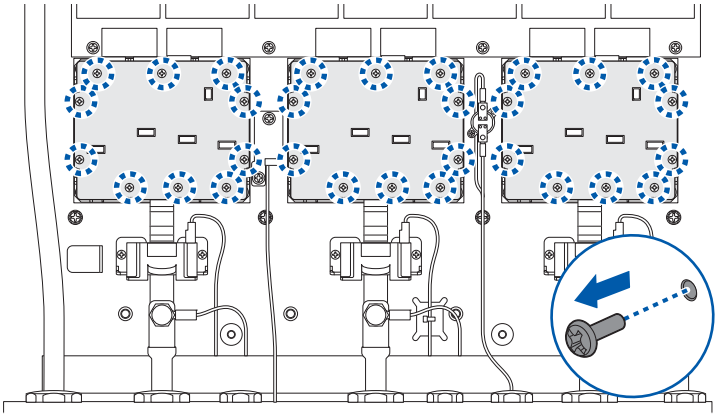

Figure 177. Removing the Screws

8. Release the hooks locking the A board.
9. Remove the A board

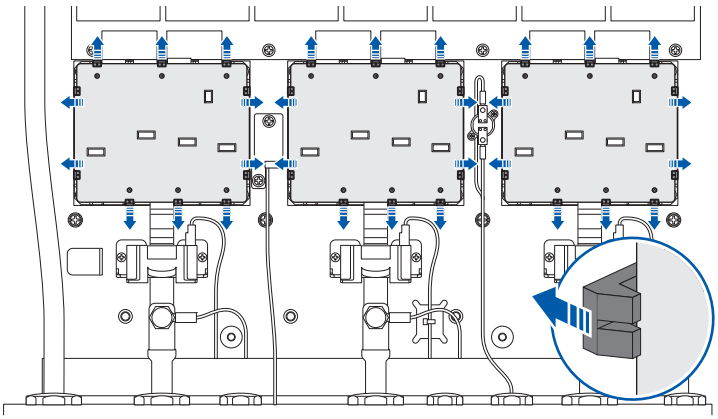

Figure 178. Removing an A Board

Installing an A Board

1. Align the holes on the A board with the holes on the chassis.
2. Install the A board. Make sure the hooks are locked in place as following illustration.

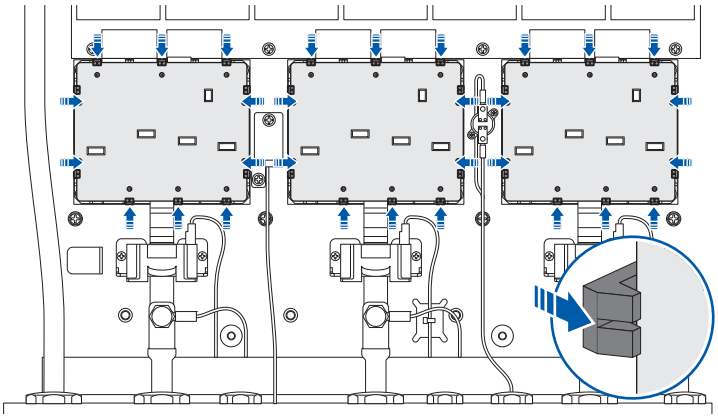

Figure 179. Installing an A Board

3. Secure the A board with screws.

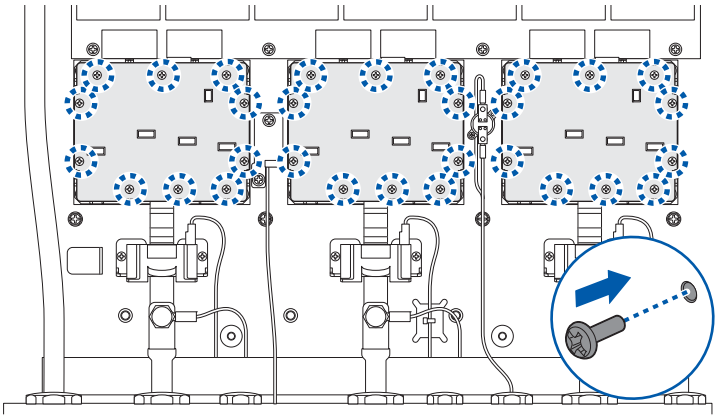

Figure 180. Securing the Screws

4. Install and slide the B board assembly to lock in place, see the following illustration.
5. Secure the B board assembly.

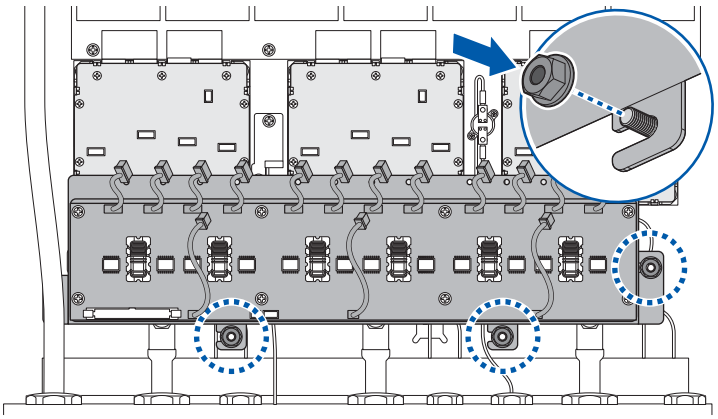

Figure 181. Installing a B Board Assembly

6. Connect the cables to the A and B boards.

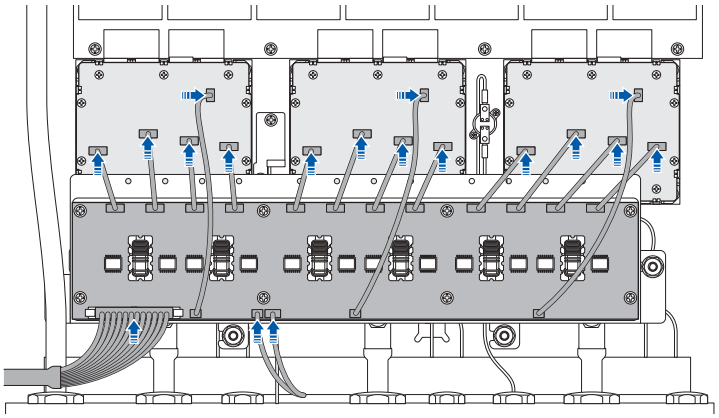

Figure 182. Connecting the Cables

7. Close the control box. See “Closing a Control Box Cover” on page 32.
8. Close the front door. See “Closing a Front Door” on page 22.

DC Cap Board (D Board)

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

DANGEROUS VOLTAGE LEVELS MAY BE PRESENT FOLLOWING DISCONNECTION. DO NOT OPEN THE CABINET UNTIL A REASONABLE PERIOD OF TIME HAS ELAPSED.
DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a D Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box. See “Opening a Control Box” on page 31.
3. Locate the D board.

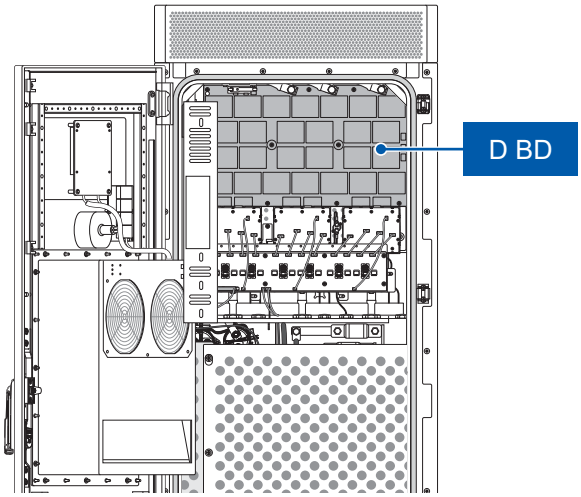

Figure 183. D Board Location

4. Remove the screws securing the cables.
5. Remove the cables.

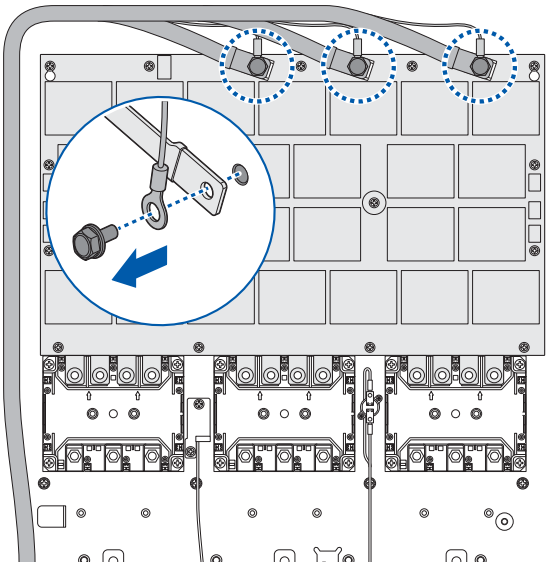

Figure 184. Disconnecting the Wires

6. Remove the screws securing the D board.

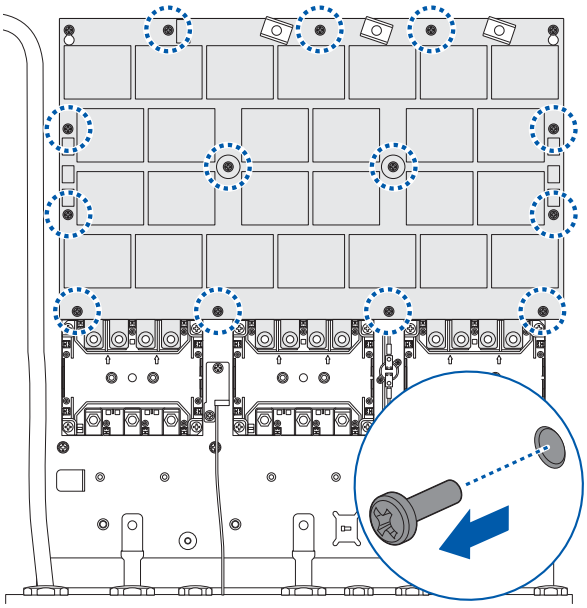

Figure 185. Removing the Screws

7. Loosen the captive screws securing the D board.

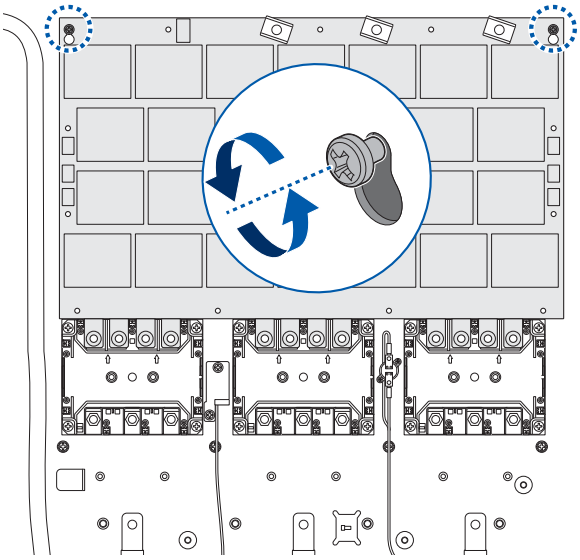

Figure 186. Loosening the Captive Screws

8. Slide and remove the D board.

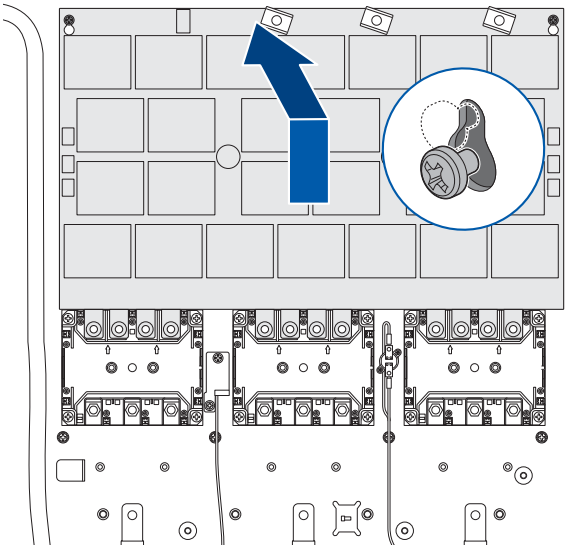

Figure 187. Removing a D Board

Installing a D Board

1. Align the holes on the D board with the captive screws on the chassis.
2. Slide to lock the D board in place as the following illustration.

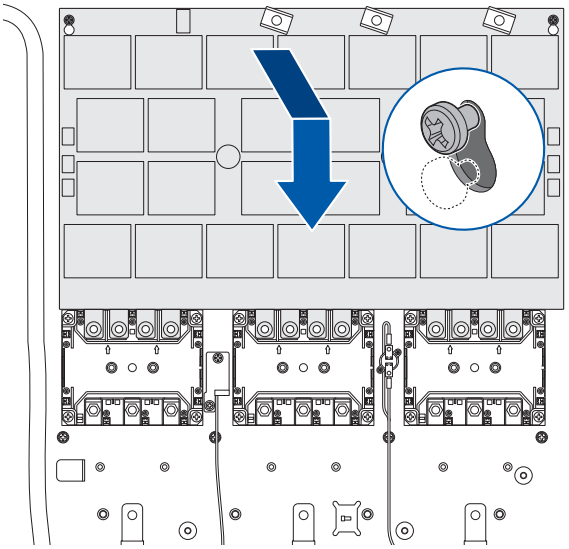

Figure 188. Installing a D Board

3. Secure the D board with captive screws.

Figure 189. Securing the Captive Screws

4. Securing the D board with screws

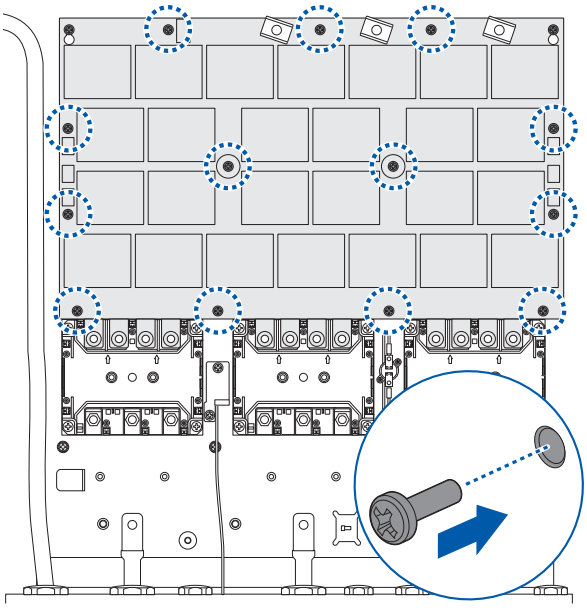

Figure 190. Securing the Screws

5. Align the holes on the wires with the holes on the D board.
6. Secure the wires and D board with screws.

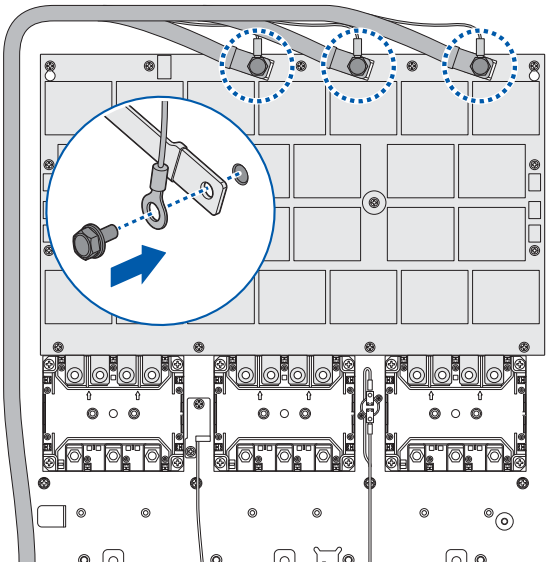

Figure 191. Connecting the Wires

7. Close the control box. See “Closing a Control Box Cover” on page 32.
8. Close the front door. See “Closing a Front Door” on page 22.

Module Control Board (M Board)

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

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DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

It is important to remember that the PCS100 is designed to supply power even when it is disconnected from the power grid. The interior of the PCS100 is unsafe until the DC power source is disconnected and the AC/DC inputs are disengaged. It is recommended to wait a period of at least five minutes for capacitor bleed-off before attempting to service any components.

Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a M Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the M board.

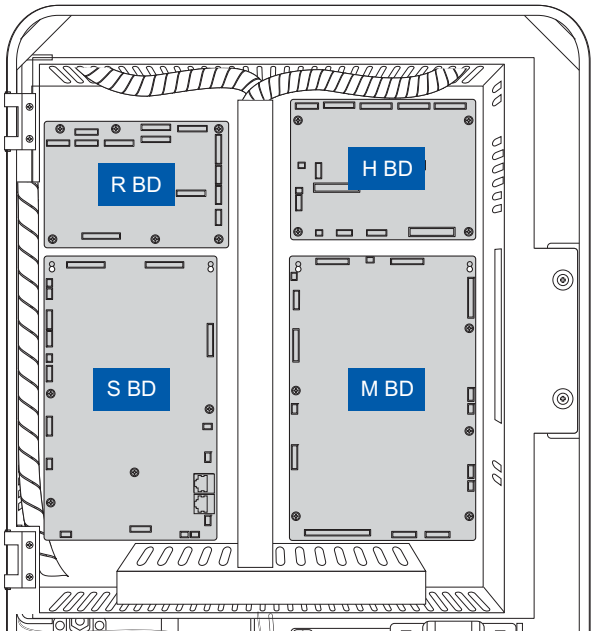

Figure 192. M Board Location

4. Disconnect the cables from the M board.

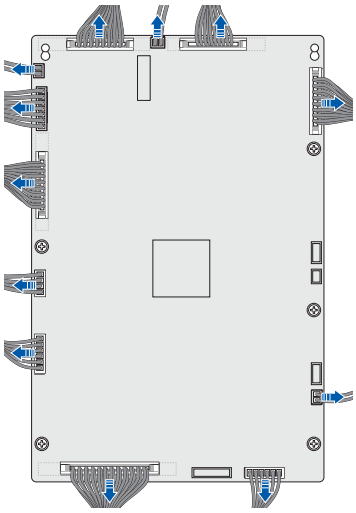

Figure 193. Disconnecting the Cables

5. Remove the screws securing the M board.
6. Remove the M board

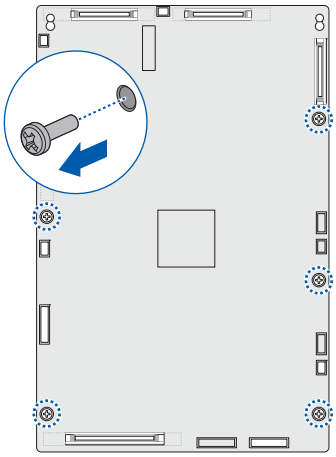

Figure 194. Removing a M Board

Installing a M Board

1. Locate the M board.

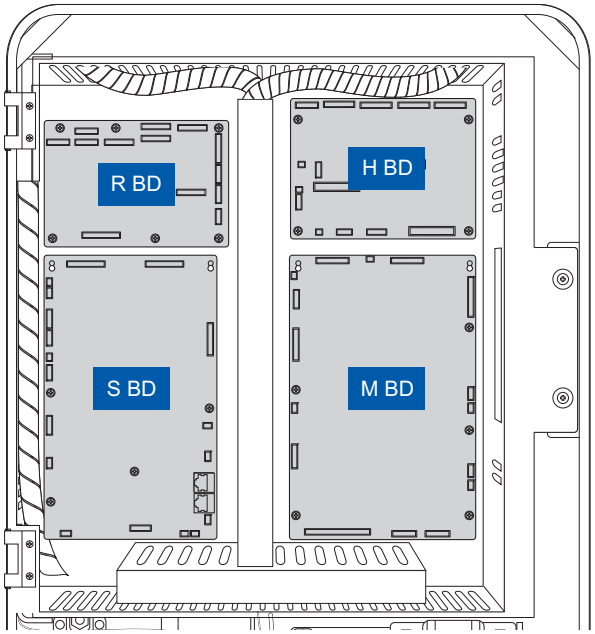

Figure 195. M Board Location

2. Align the holes on the M board with the holes on the control box.
3. Secure the M board and the control box with screws.

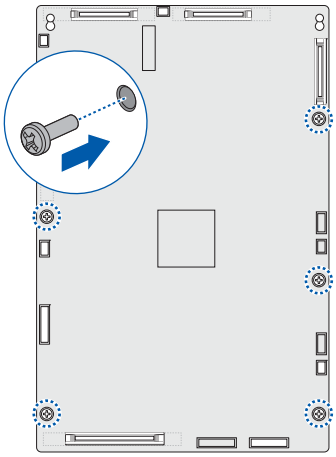

Figure 196. Installing a M Board

4. Connect the cables to the M board.

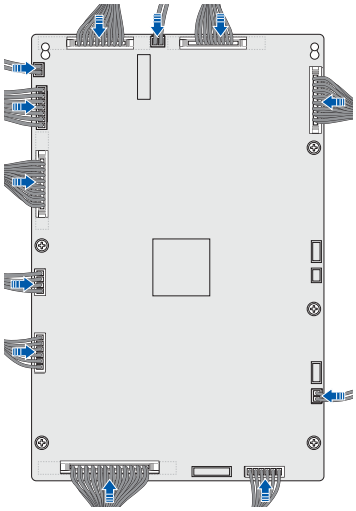

Figure 197. Connecting the Cables

5. Close the control box door. See “Closing a Control Box Cover” on page 32.
6. Close the front door. See “Closing a Front Door” on page 22.

System Control Board (S Board)

WARNING!

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CAUTION!

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Important Safety Instructions

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an S Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the S board.

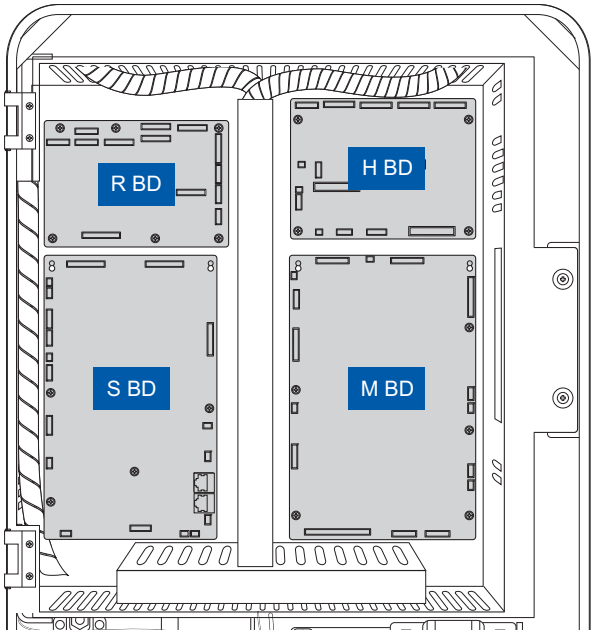

Figure 198. S Board Location

4. Disconnect the cables from the S board.

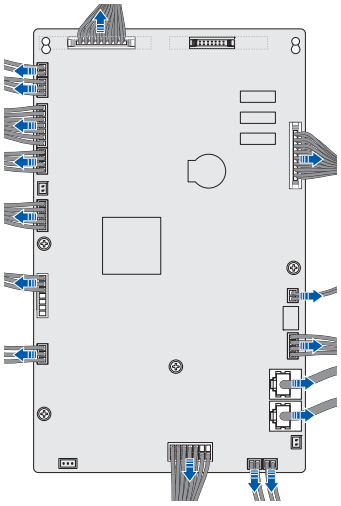

Figure 199. Disconnecting the Cables

5. Remove the screws securing the S board.
6. Remove the S board

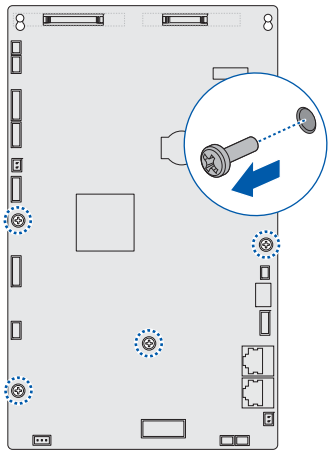

Figure 200. Removing the Screws

7. Slide and remove the S board.

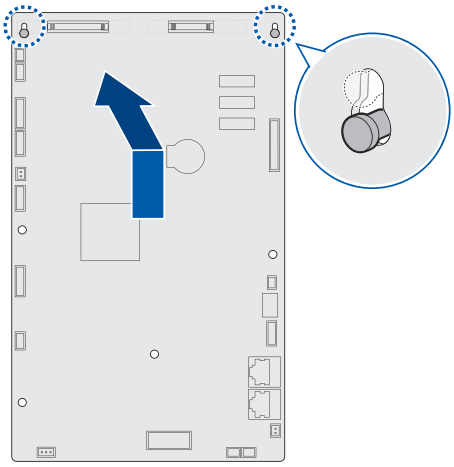

Figure 201. Removing an S Board

Installing an S Board

1. Locate the S board.

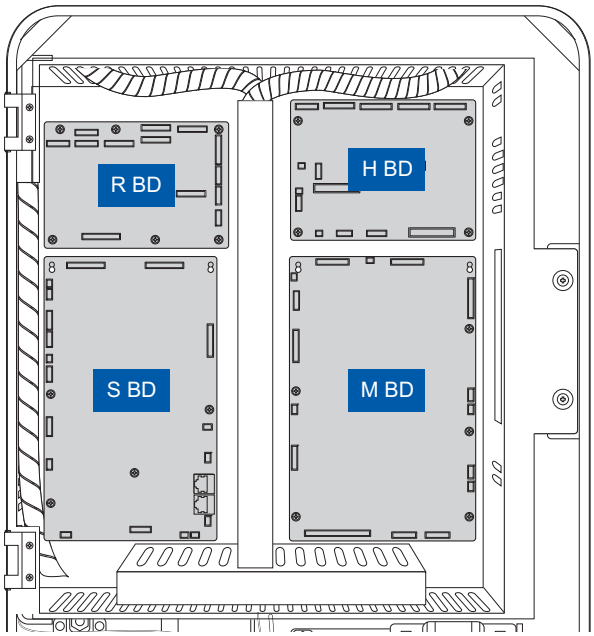

Figure 202. S Board Location

2. Align the holes on the S board with the captive screws on the chassis.
3. Slide to lock the S board in place as the following illustration.

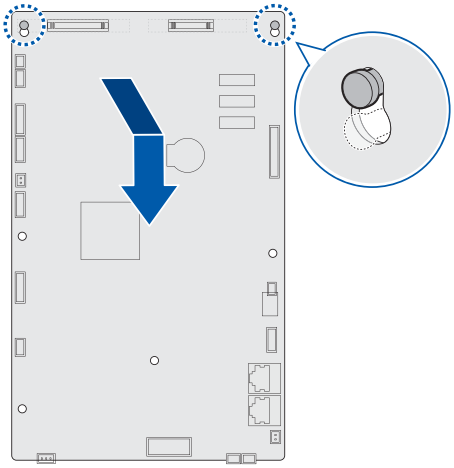

Figure 203. Installing an S Board

4. Align the holes on the S board with the holes on the control box.
5. Secure the S board and the control box with screws.

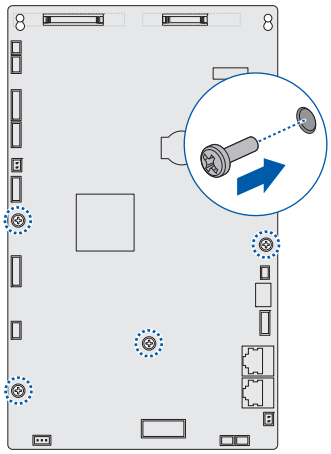

Figure 204. Installing the Screws

6. Connect the cables to the S board.

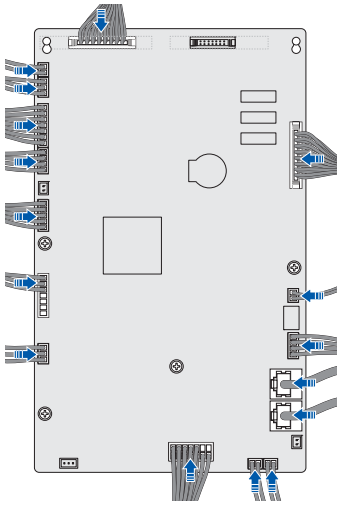

Figure 205. Connecting the Cables

7. Close the control box door. See “Closing a Control Box Cover” on page 32.
8. Close the front door. See “Closing a Front Door” on page 22.

Module Sampling Board (R Board)

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

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Important Safety Instructions

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a R Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the R board.

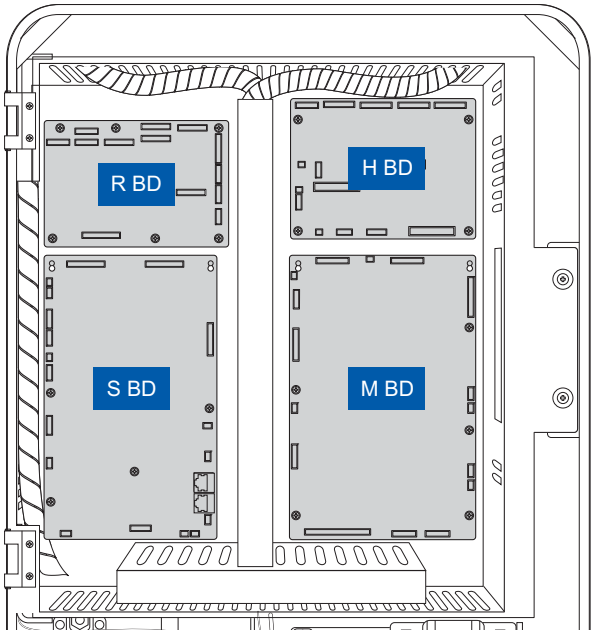

Figure 206. R Board Location

4. Disconnect the cables from the R board.

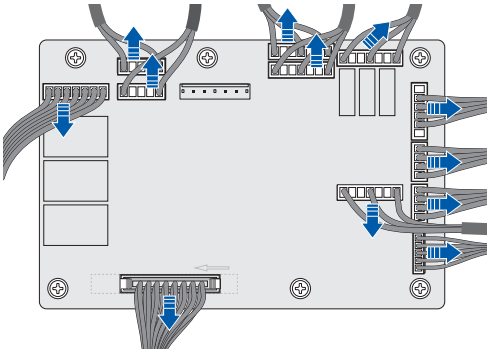

Figure 207. Disconnecting the Cables

5. Remove the screws securing the R board.
6. Remove the R board

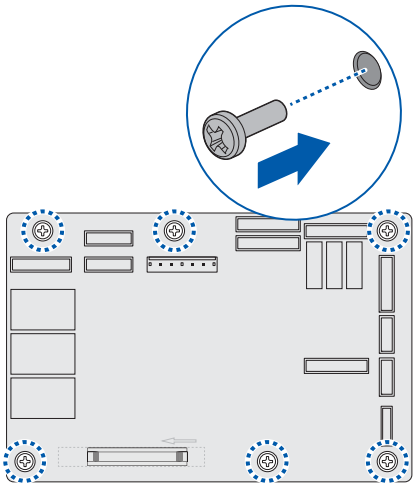

Figure 208. Removing a R Board

Installing a R Board

1. Locate the R board.

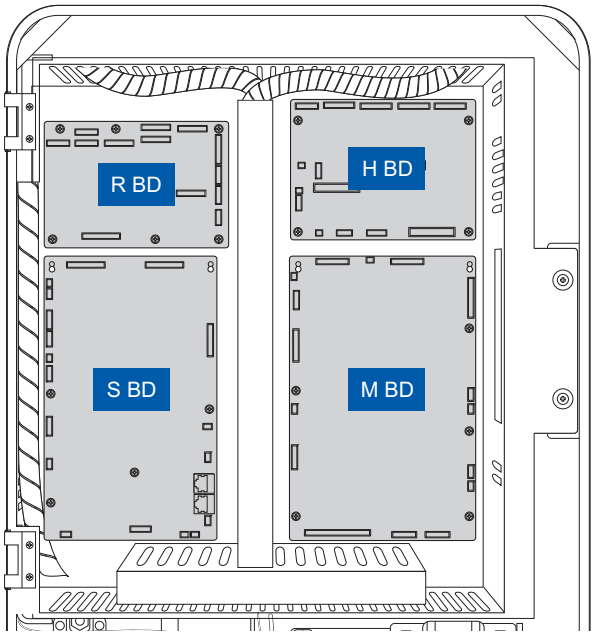

Figure 209. R Board Location

2. Align the holes on the R board with the holes on the control box.
3. Secure the R board and the control box with screws.

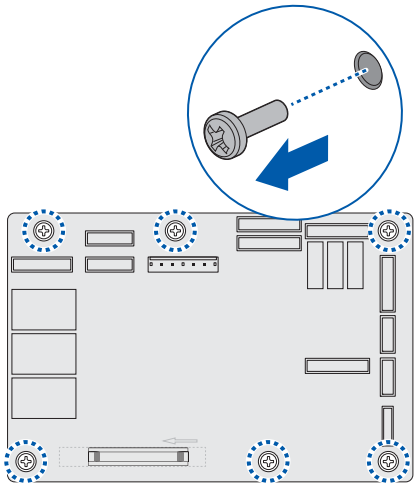

Figure 210. Installing a R Board

4. Connect the cables to the R board.

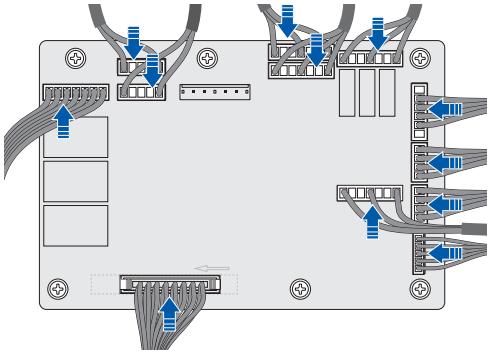

Figure 211. Connecting the Cables

5. Close the control box door. See “Closing a Control Box Cover” on page 32.
6. Close the front door. See “Closing a Front Door” on page 22.

System Sampling Board (H Board)

WARNING!

Read the “Safety Instructions” on page ix on the first at the beginning of this manual before performing any service on the components. Ignoring safety instructions may result in injury, damage or death.

CAUTION!

DANGEROUS VOLTAGE LEVELS MAY BE PRESENT FOLLOWING DISCONNECTION. DO NOT OPEN THE CABINET UNTIL A REASONABLE PERIOD OF TIME HAS ELAPSED.
DEATH, SERIOUS INJURY, OR HARDWARE DAMAGE CAN RESULT IF CAUTION IS NOT TAKEN.

Important Safety Instructions

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Note:

- Maintenance should only be performed by qualified personnel.
- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a H Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the H board.

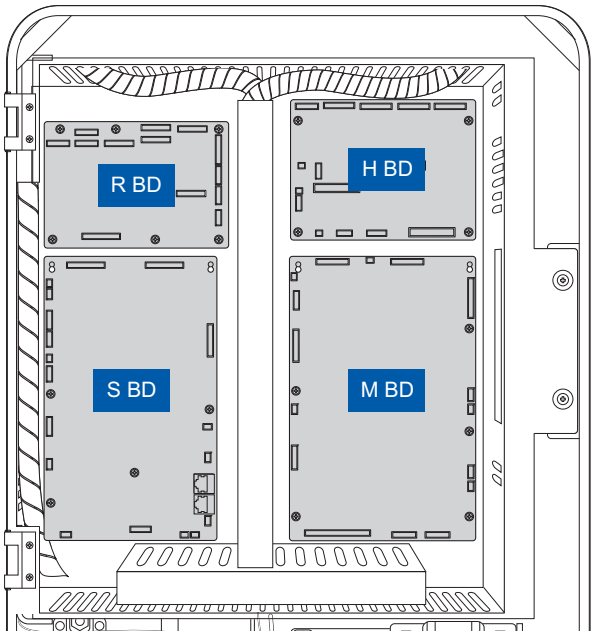

Figure 212. H Board Location

4. Disconnect the cables from the H board.

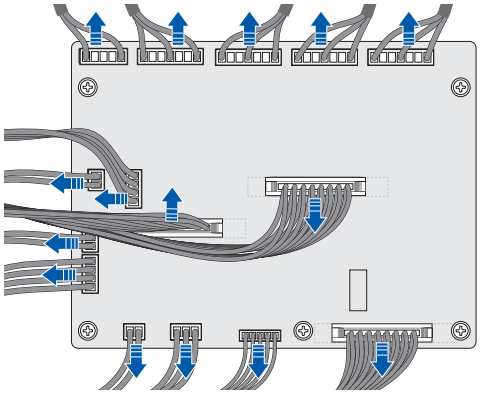

Figure 213. Disconnecting the Cables

5. Remove the screws securing the H board.
6. Remove the H board

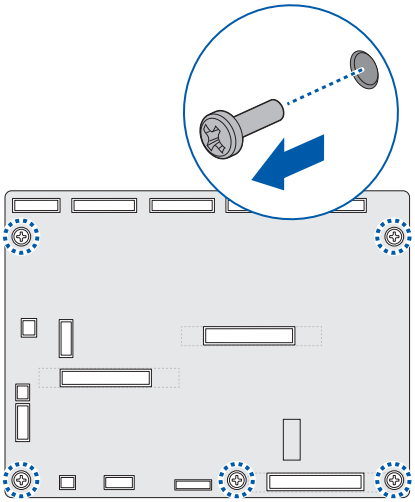

Figure 214. Removing a H Board

Installing a H Board

1. Locate the H board.

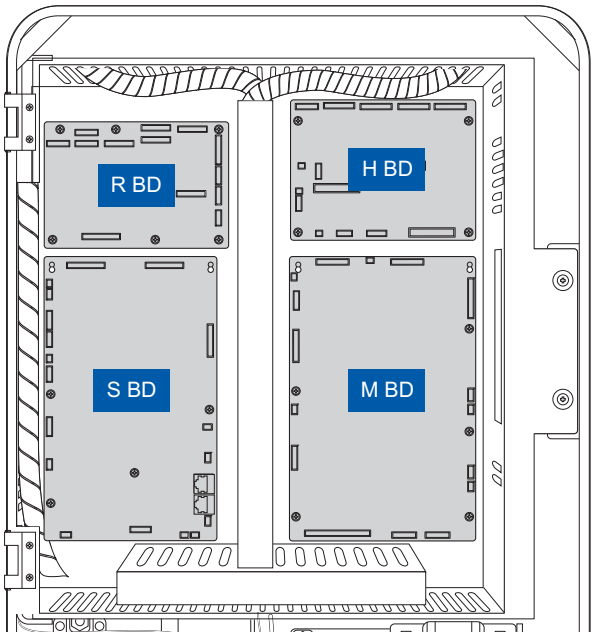

Figure 215. H Board Location

2. Align the holes on the H board with the holes on the control box.
3. Secure the H board and the control box with screws.

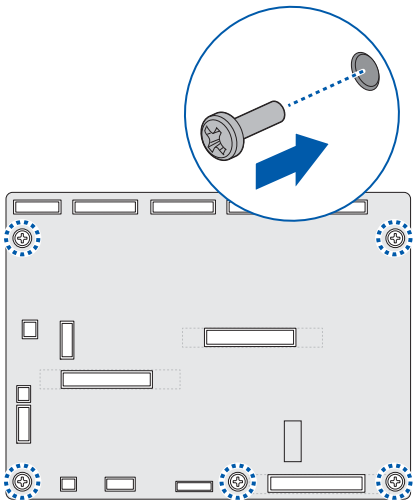

Figure 216. Installing a H Board

4. Connect the cables to the H board.

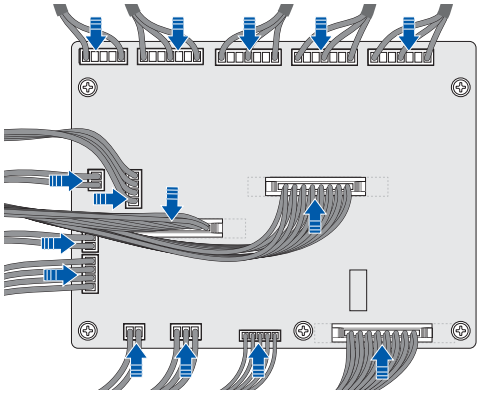

Figure 217. Connecting the Cables

5. Close the control box door. See “Closing a Control Box Cover” on page 32.
6. Close the front door. See “Closing a Front Door” on page 22.

Ventilation Fan for Auxiliary Power

WARNING!

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CAUTION!

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an Auxiliary Power Fan Module

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Disconnect the cable from the fan assembly.
4. Remove the screws securing the fan assembly.
5. Remove the fan assembly.

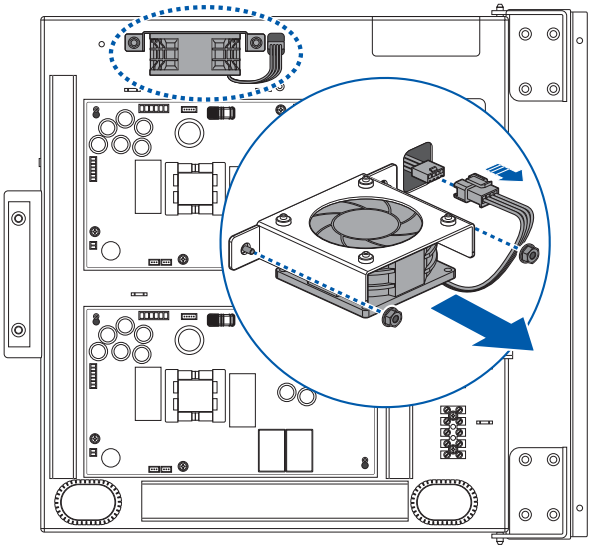

Figure 218. Removing a Fan Assembly

6. Remove the screws securing the auxiliary power fan module.
7. Separate the auxiliary power fan module from the fan bracket.

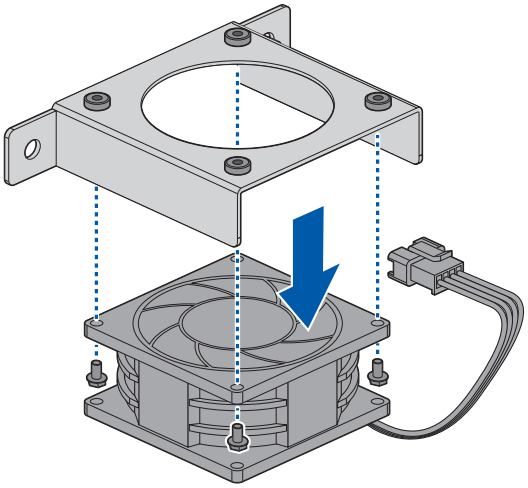

Figure 219. Removing an Auxiliary Power Fan Module

Installing an Auxiliary Power Fan Module

1. Install the auxiliary power fan module into the fan bracket.
2. Secure the auxiliary power fan module with screws.

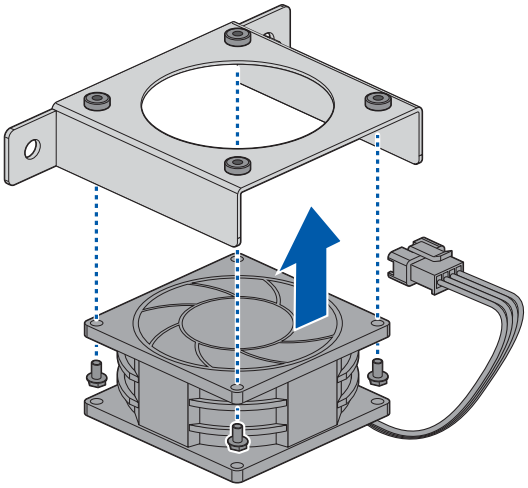

Figure 220. Installing an Auxiliary Power Fan Module

3. Align the fan assembly with the holes on the control box.
4. Secure the fan assembly with screws.
5. Connect the cable from the fan assembly.

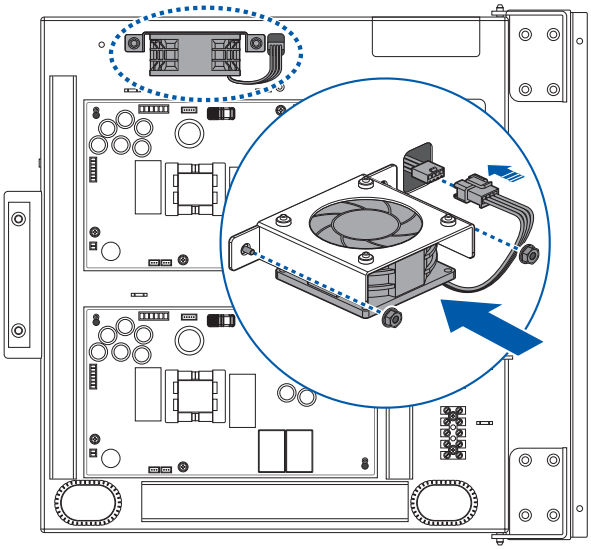

Figure 221. Installing a Fan Assembly

6. Close the control box door. See “Closing a Control Box Cover” on page 32.
7. Close the front door. See “Closing a Front Door” on page 22.

Auxiliary Power Board (P Board)

WARNING!

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Important Safety Instructions

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a P Board

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the P board.

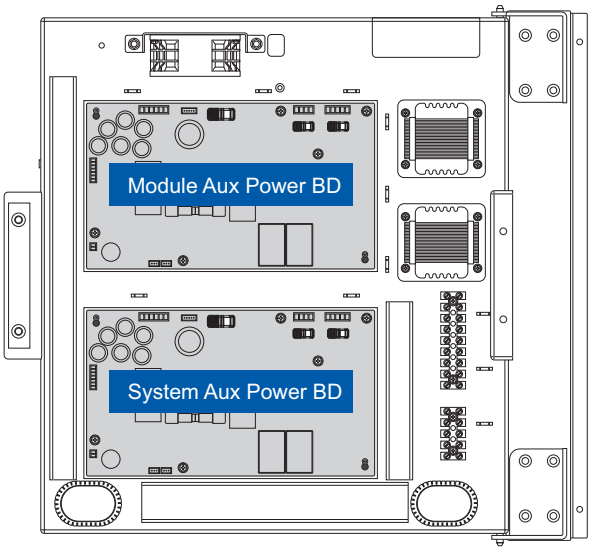

Figure 222. P Board Location

4. Disconnect the cables from the P board.

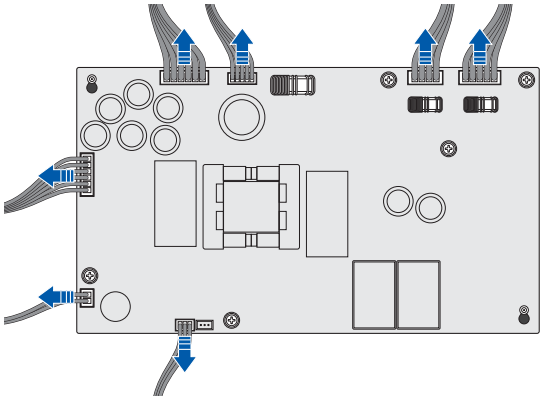

Figure 223. Disconnecting the Cables from the Top P Board

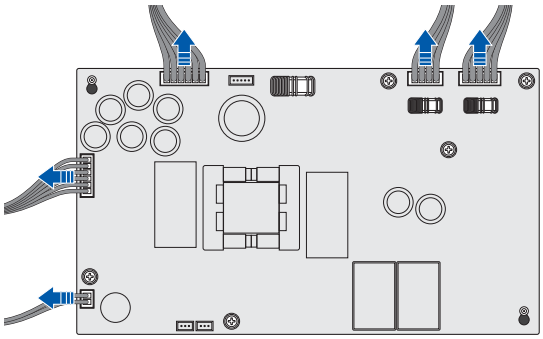

Figure 224. Disconnecting the Cables from the Bottom P Board

5. Remove the screws securing the P board.

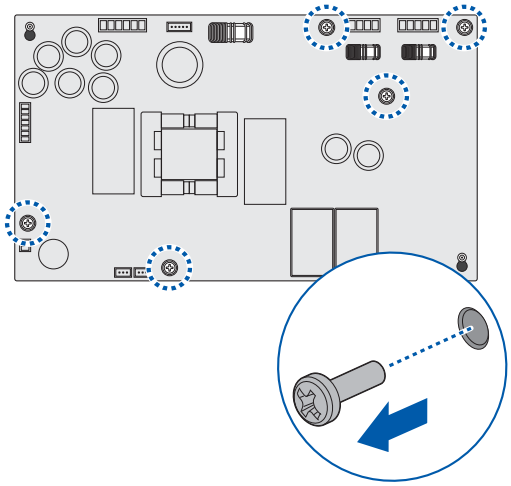

Figure 225. Removing the Screws

6. Slide and remove the P board.

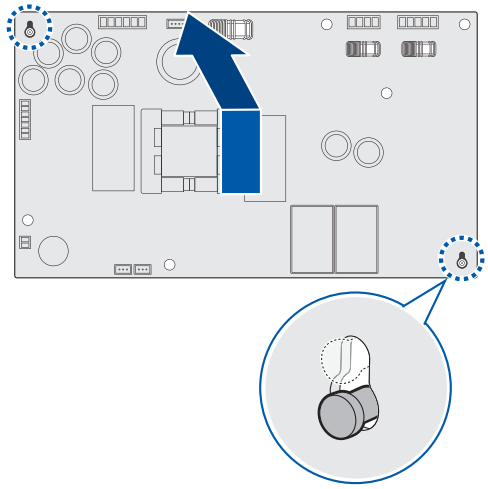

Figure 226. Removing a P Board

Installing a P Board

1. Locate the P board.

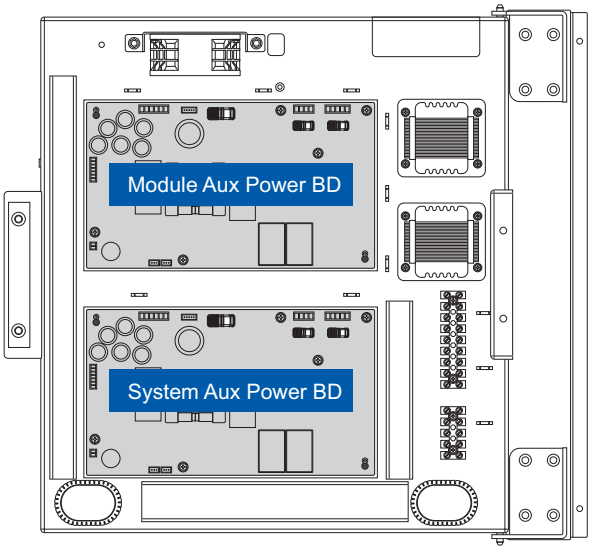

Figure 227. P Board Location

2. Align the holes on the P board with the captive screws on the chassis.
3. Slide to lock the P board in place as the following illustration.

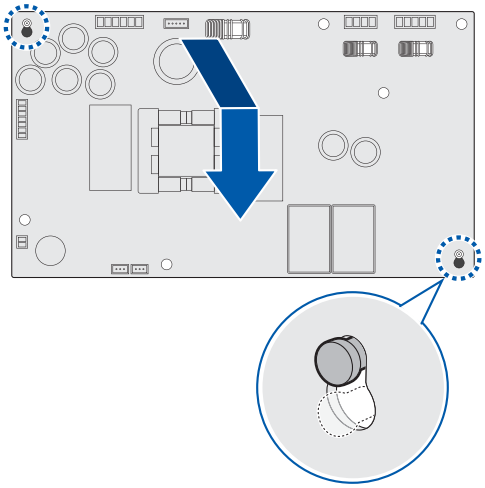

Figure 228. Installing a P Board

4. Secure the P board and the control box with screws.

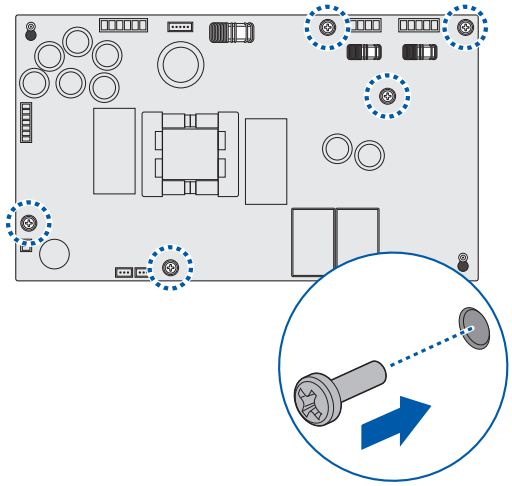

Figure 229. Installing the Screws

5. Connect the cables to the P board.

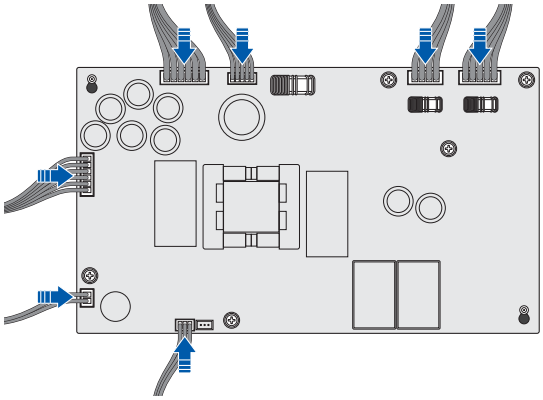

Figure 230. Connecting the Cables to the Top P Board

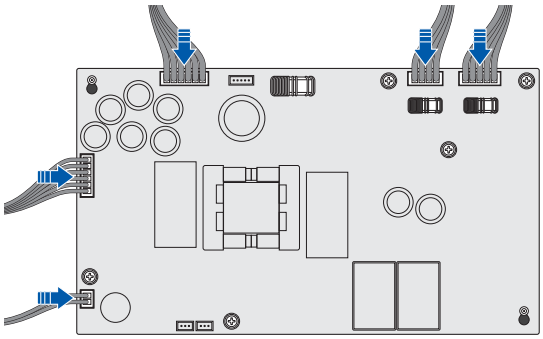

Figure 231. Connecting the Cables to the Bottom P Board

6. Close the control box door. See “Closing a Control Box Cover” on page 32.
7. Close the front door. See “Closing a Front Door” on page 22.

Auxiliary Transformer

WARNING!

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Important Safety Instructions

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Note:

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Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an Auxiliary Transformer

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box door. See “Opening a Control Box Cover” on page 32.
3. Locate the auxiliary transformer.
4. Remove the screws securing the auxiliary transformer.
5. Remove the auxiliary transformer.

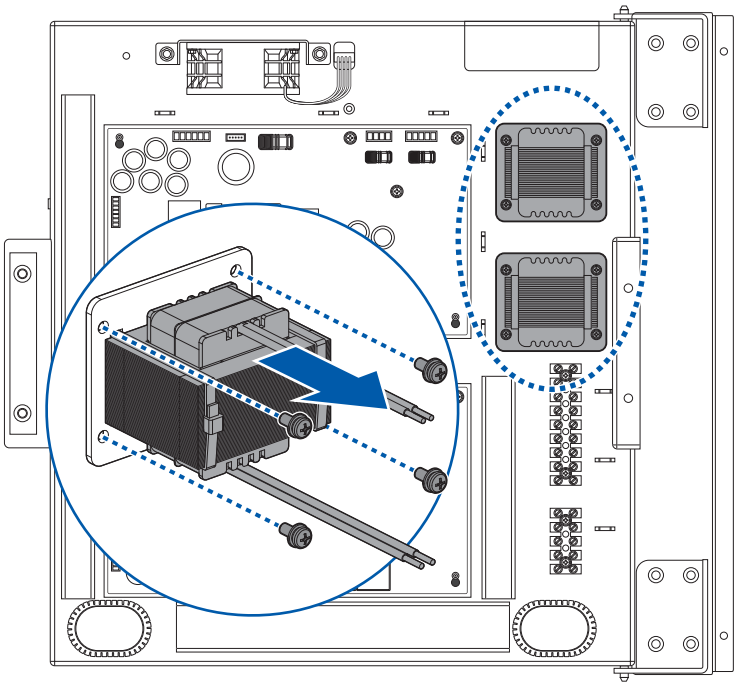

Figure 232. Removing an Auxiliary Transformer

Installing an Auxiliary Transformer

1. Align the holes on the auxiliary transformer with the holes on the chassis.
2. Secure the auxiliary transformer with screws.

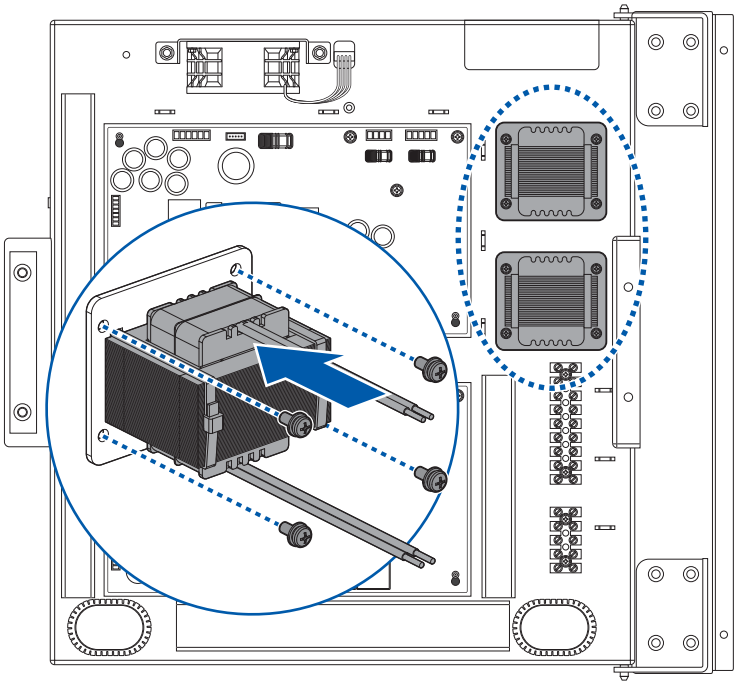

Figure 233. Installing an Auxiliary Transformer

3. Close the control box door. See “Closing a Control Box Cover” on page 32.
4. Close the front door. See “Closing a Front Door” on page 22.

Air Intake Filter

The filters need to be checked and changed periodically. Check the dustiness of the air inlet meshes to ascertain if cleaning is necessary.

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an Air Intake Filter

1. Open the rear door. See “Opening a Rear Door” on page 25.
2. Release the butterfly nuts and slide to remove the air filter cage from the rear door.

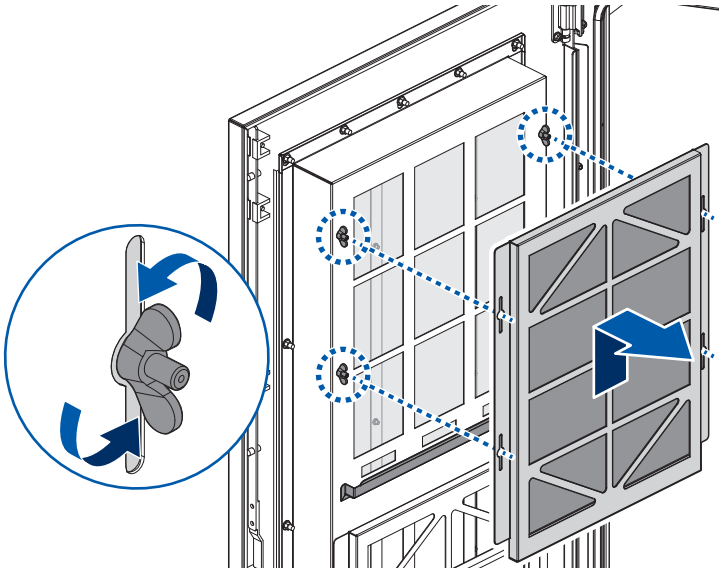

Figure 234. Removing an Air Filter Cage

3. Grasp the air filter from both sides and lift it up and out of the grating.

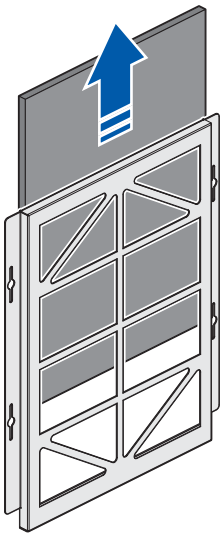

Figure 235. Removing an Air Intake Filter

4. Use a vacuum cleaner with an antistatic hose and nozzle to clean the filter. A normal vacuum cleaner creates static discharges.

   The filter can also be cleaned with water. Make sure the filter is completely dried before reusing it in the system.

Installing an Air Intake Filter

1. Position the filter over the cage and slide the air intake filter into place.

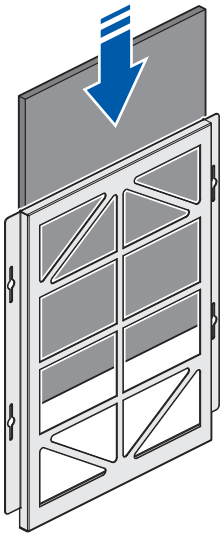

Figure 236. Installing an Air Intake Filter

2. Align holes on the air filter cage with the butterfly nuts on the rear door.
3. Slide down and secure the butterfly nuts to lock in place.

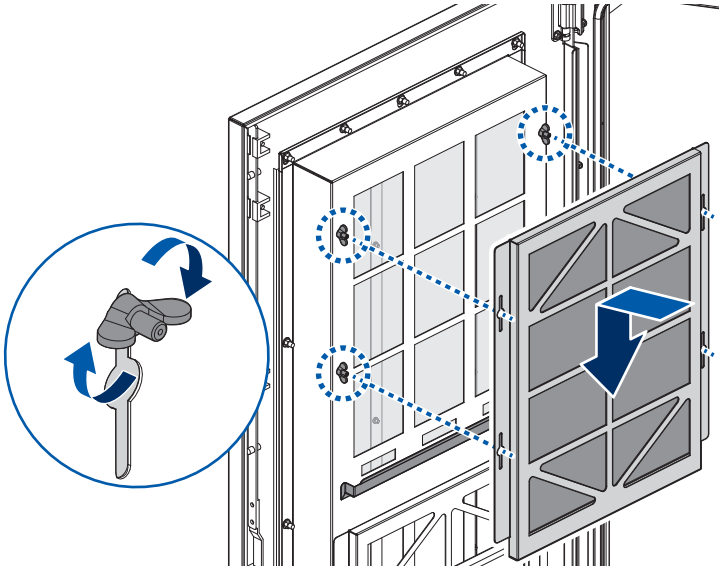

Figure 237. Installing an Air Filter Cage

4. Close the rear door. See “Closing a Rear Door” on page 28.

Ventilation Fan Module-IGBT

The lifespan of a fan component depends on both the usage and ambient temperature. Fan failure can be predicted by an increase in the noise level of the fan. Another effect of a defective fan is the rise in temperature within the system. Once these symptoms start appearing, fan replacement is recommended. Only use Delta specified components.

WARNING!

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- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an IGBT Fan Module

1. Open the rear door. See “Opening a Rear Door” on page 25.
2. Locate the fan module assembly. A temperature sensor cable is secured on the assembly. Remove the screw attaching the sensor cable to the assembly.
3. Remove the temperature sensor wire cable.
4. Disconnect the cable on the IGBT fan module.

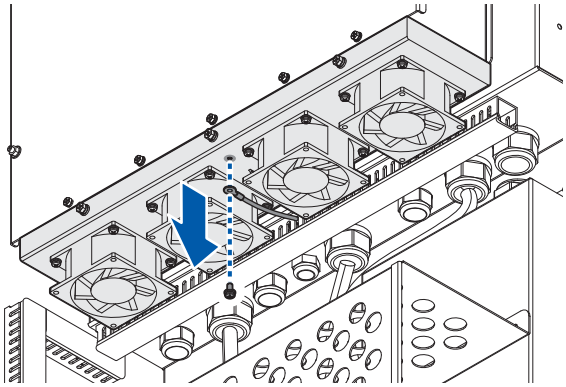

Figure 238. Disconnecting the Cables

5. Remove the screws securing the IGBT HSK cover.
6. Remove the nuts securing the IGBT HSK cover.
7. Remove the IGBT HSK cover.

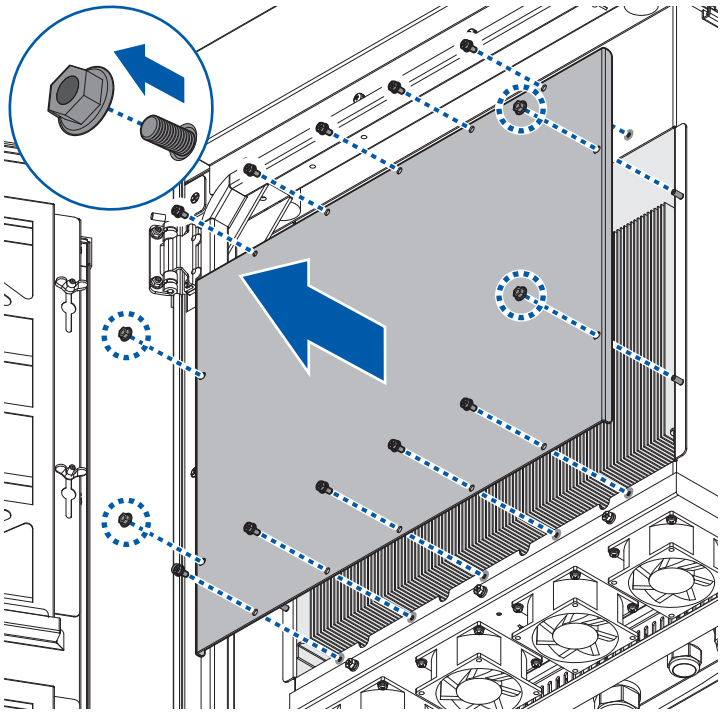

Figure 239. Removing an IGBT HSK Cover

8. Once the IGBT HSK cover is removed, the screws securing the IGBT fan module are exposed. Locate the nuts above the fan module assembly, see the following figure, and remove them.
9. There are thumb screws below the nuts, which were just removed. Loosen the thumb screws
10. Remove the IGBT fan module.

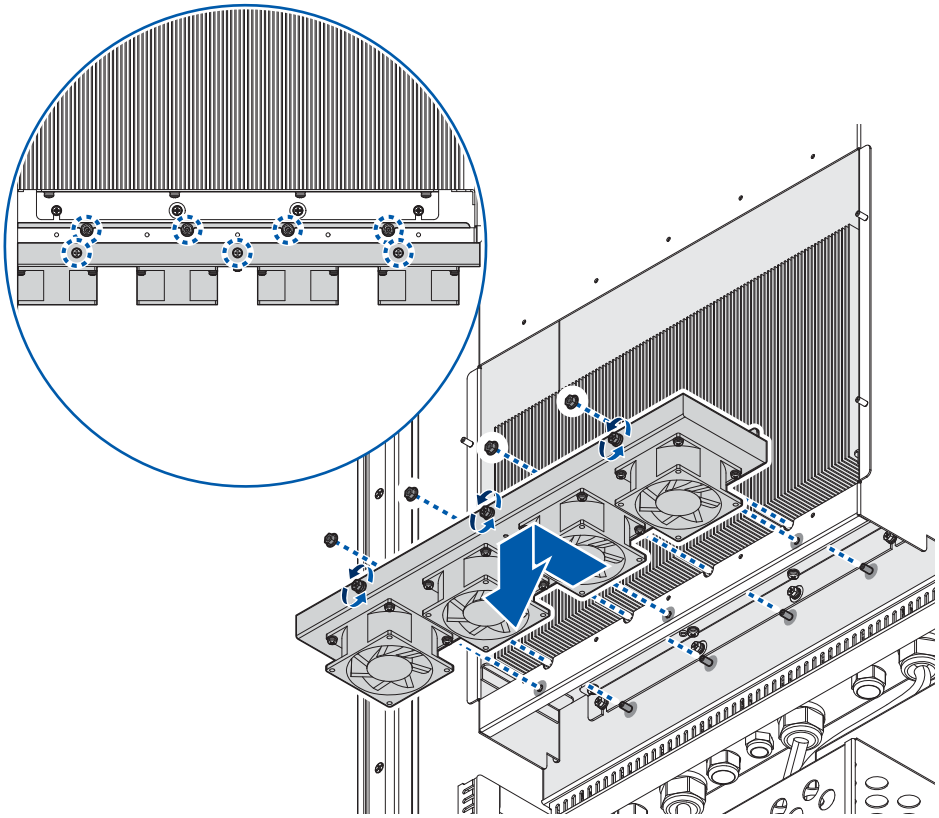

Figure 240. Removing an IGBT Fan Module

Installing an IGBT Fan Module

1. Align the parameter of the IGBT fan module with the bolts on the chassis.
2. Insert the IGBT fan module in the chassis. Make sure that each bolt passes through the holes on the fan module.
3. Secure the IGBT fan module in place with hexagonal nuts.
4. Secure the IGBT fan module with thumb screws.

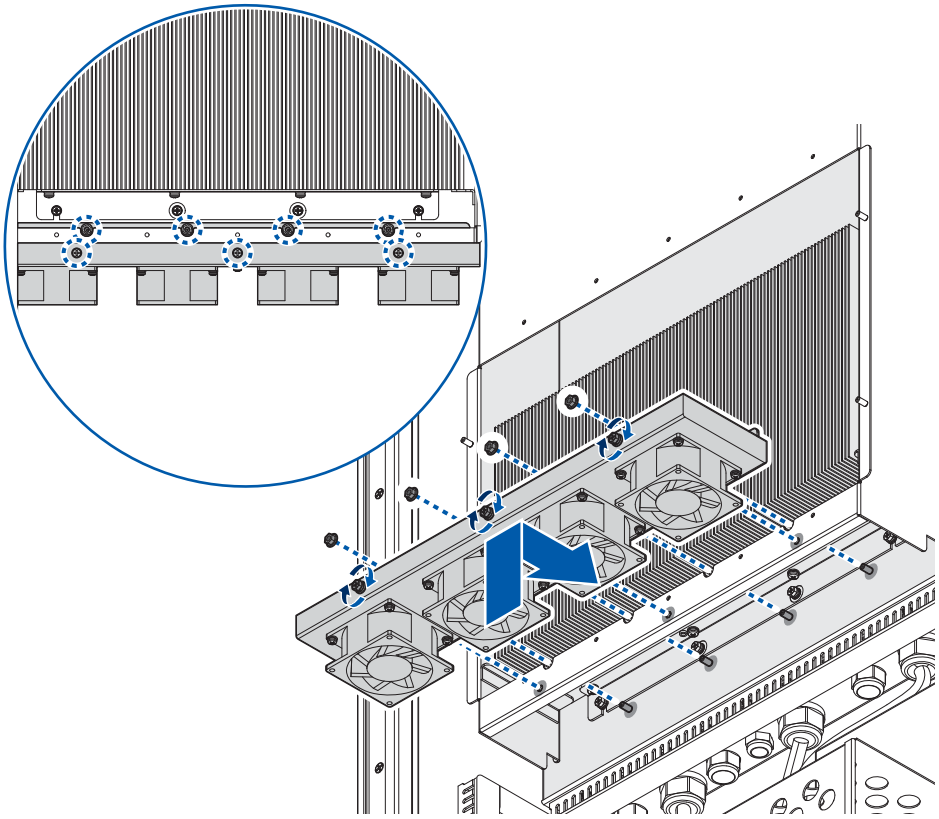

Figure 241. Installing an IGBT Fan Module

5. Insert the IGBT HSK cover in the cabinet. Make sure the holes on the cover align with the bolts on the cabinet.
6. Securing the IGBT HSK cover with screws.
7. Secure the IGBT HSK cover with hexagonal nuts.

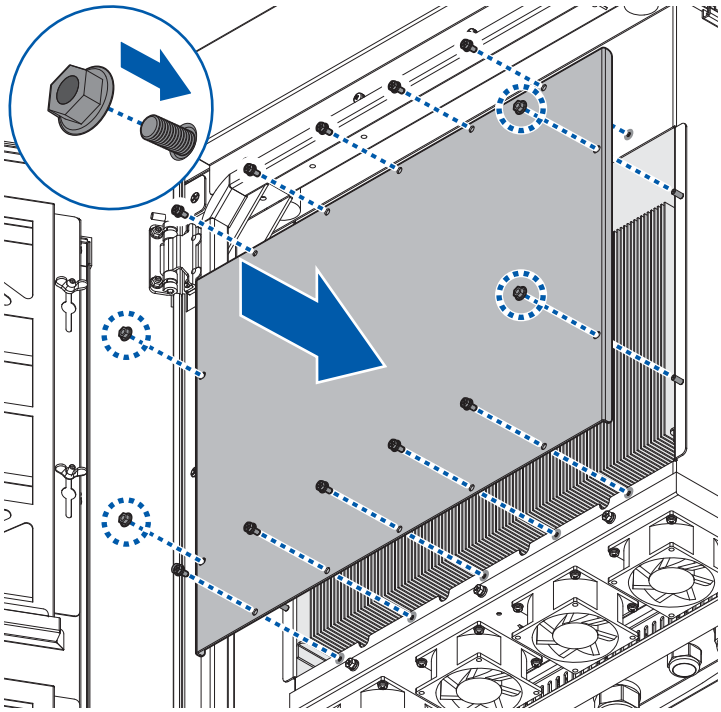

Figure 242. Installing an IGBT HSK Cover

8. Connect the cable to the IGBT fan module.
9. Align the temperature sensor cable with the hole on the IGBT fan module.
10. Secure the temperature sensor cable with a screw.

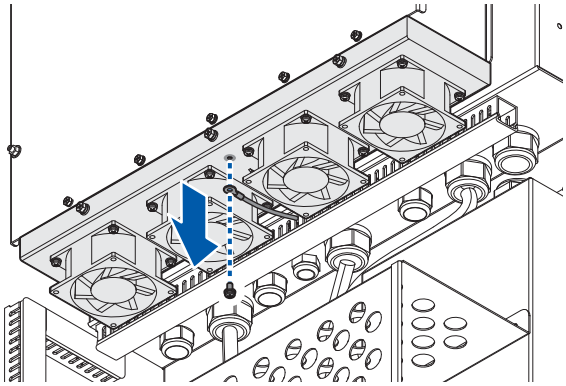

Figure 243. Disconnecting the Cables

11. Close the rear door. See “Closing a Rear Door” on page 28.

Ventilation Fan Module-Choke

WARNING!

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

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- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a Choker Fan Module

1. Open the rear door. See “Opening a Rear Door” on page 25.
2. Disconnect the cables from the choker fan module.

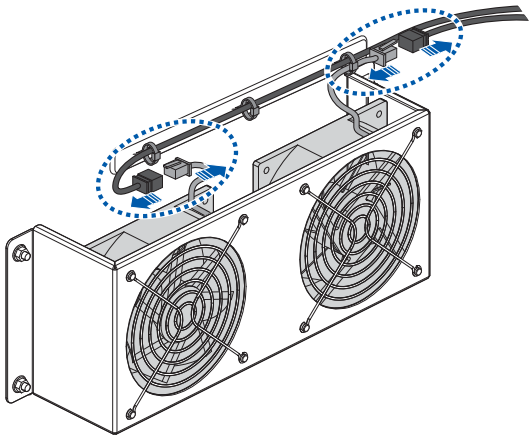

Figure 244. Disconnecting the Cables

3. Remove the screws securing the choker fan module.
4. Remove the choker fan module.

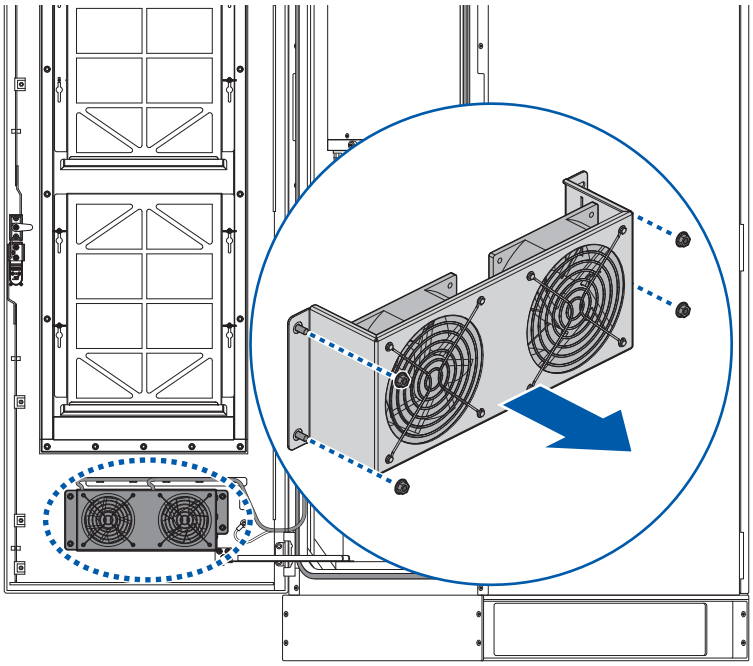

Figure 245. Removing a Choker Fan Module

Installing a Choker Fan Module

1. Align the choker fan module with the holes on the chassis.
2. Secure the choker fan module with screws.

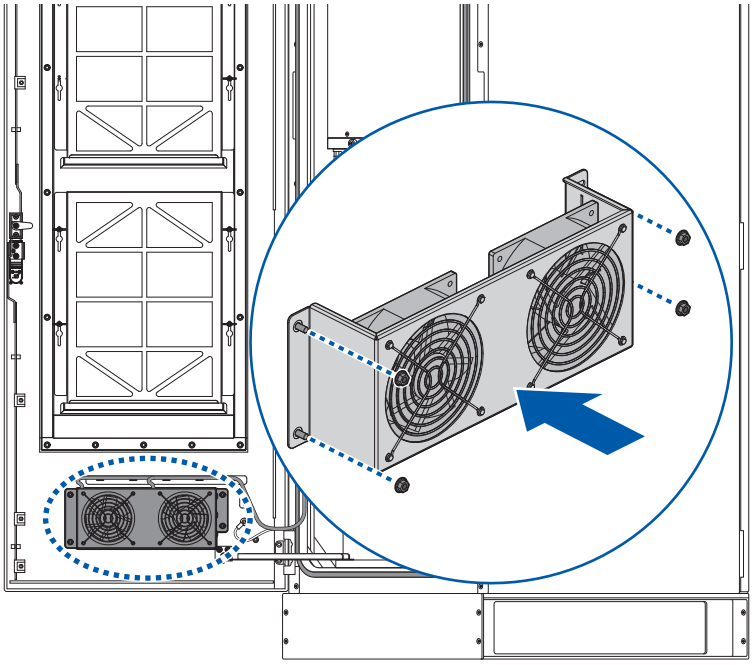

Figure 246. Installing a Choker Fan Module

3. Connect the cables to the choker fan module.

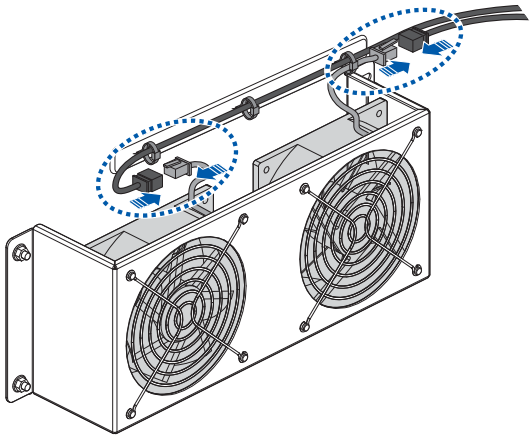

Figure 247. Connecting the Cables

4. Close the rear door. See “Closing a Rear Door” on page 28.

B Board Assembly

WARNING!

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a B Board Assembly

Two individuals are recommended for this procedure.

1. Open the front door. See “Opening a Front Door” on page 20.
2. Open the control box. See “Opening a Control Box” on page 31.
3. Directly behind the control box, the location of the B board is found.

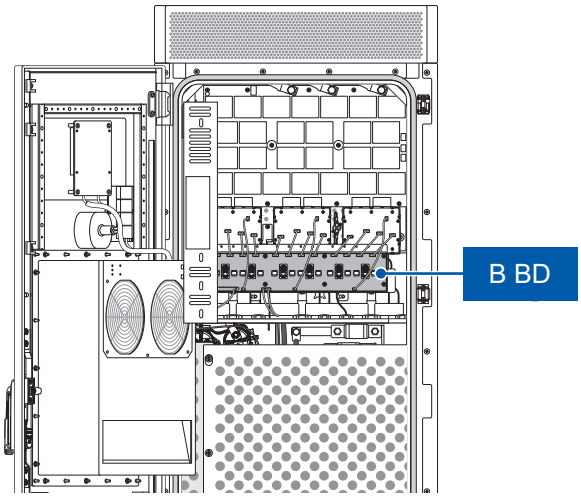

Figure 248. B Board Location

There are multiple cables connecting the A board to the B board as well as connections to the system.

4. Disconnect all wiring, see the following figure, from the B board and move the wires away from the board to allow for servicing.

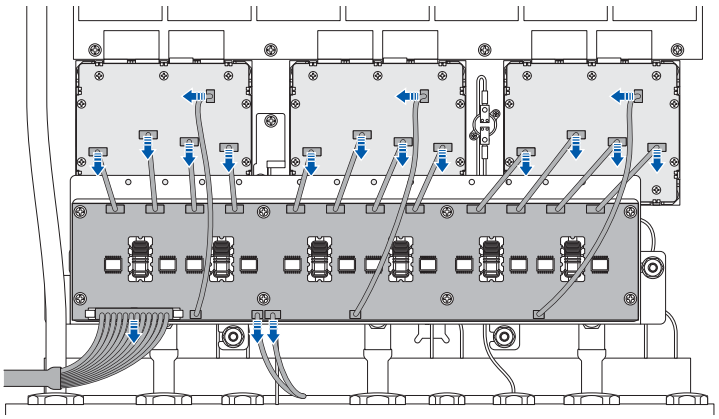

Figure 249. Disconnecting Wiring from the B Board

5. Locate the nuts securing the B board to the chassis and remove them.
6. Slide and remove the B board assembly, which includes the fixed plate.

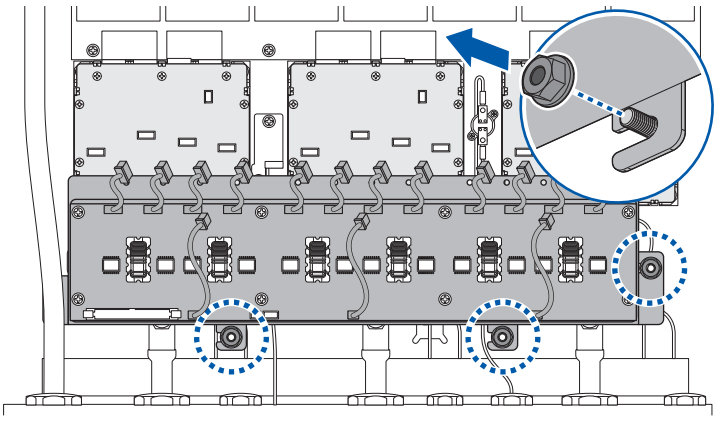

Figure 250. Removing a B Board Assembly

Installing a B Board Assembly

Installing the B board assembly requires angling the assembly at different angles. To prevent damage to the interior or the B board assembly, make sure you are aware of the edges or corners of the assembly when inserting into the location.

1. Orient the B board assembly so that the plate faces the interior of the cabinet and angle the left edges through the middle of the cabinet. Take care not to touch other components to prevent accidental damage.
2. Continue to insert the B board and carefully angle in the remaining side until the B board is situated above the installation area.
3. Lower the B board in place making sure the tabs on the plate are aligned with the bolts on the cabinet.
4. Slide the B board in place and secure it to the chassis with the provided nuts.

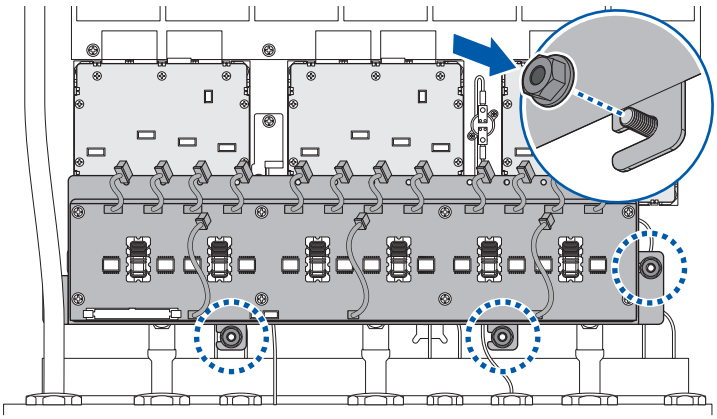

Figure 251. Installing a B Board Assembly

5. Once the B board is secured, begin connecting the cables from the control box and the A board.

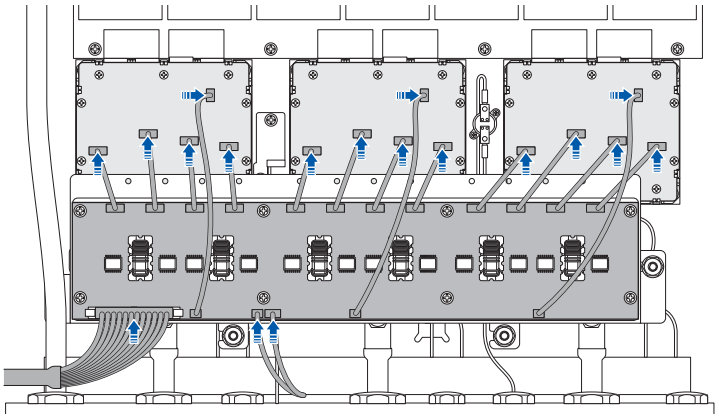

Figure 252. Connecting A and B Board Cables

6. Close the control box. See “Closing a Control Box” on page 31.
7. Close the front door. See “Closing a Front Door” on page 22.

A Board Assembly

WARNING!

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Note:

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- Lethal voltage is present in the PCS100. The unit must not be operated with the front door doors open. At no time should you make any assumptions of the electrical state of the PCS100.

Before attempting any work around the PCS100, observe the following precautions:

- Remove any watches, rings, or other metallic accessories.
- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an A Board Assembly

1. Remove the screws securing the IGBT HSK.

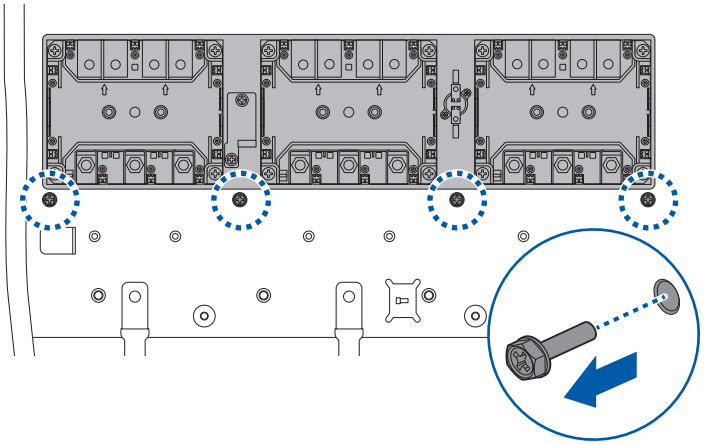

Figure 253. Removing screws from a Board

Installing an A Board Assembly

1. Securing the IGBT HSK cover with screws.

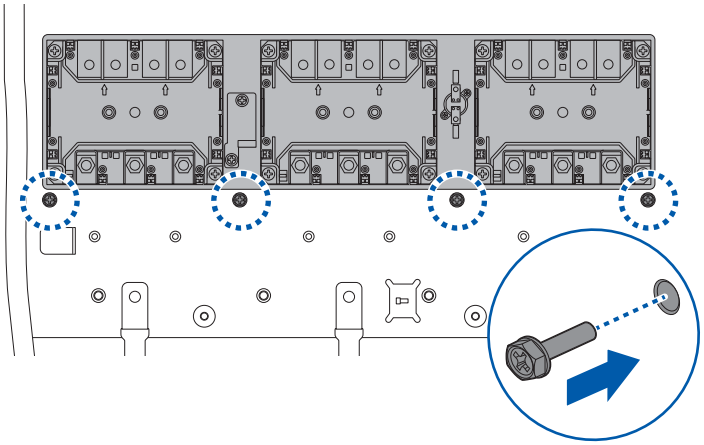

Figure 254. Securing the Screws

AC Filter Module (C Board)

WARNING!

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Before attempting any work around the PCS100, observe the following precautions:

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- Only use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing a C Board

1. Open the rear door. See “Opening a Rear Door” on page 25.
2. Remove the nuts securing the cover.
3. Remove the cover.

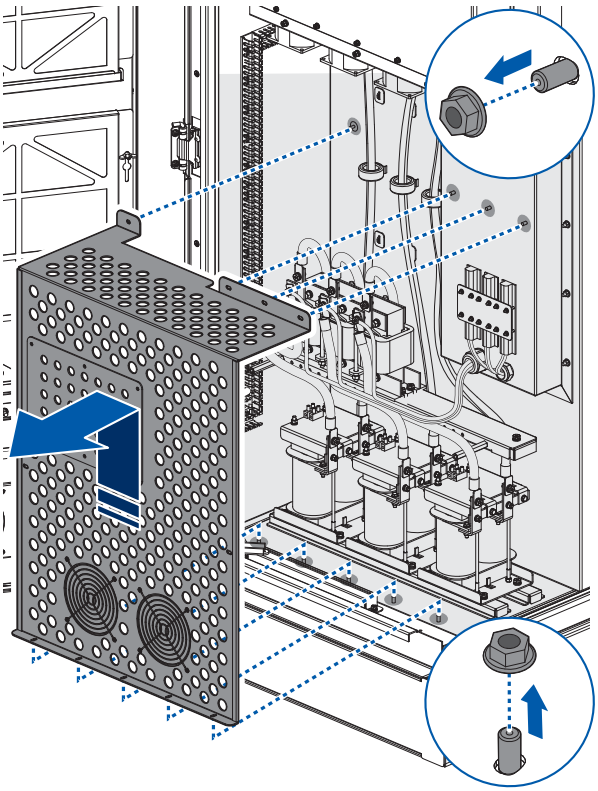

Figure 255. Removing the C Board Cover

4. Remove the screws securing the C board assembly.
5. Remove the C board assembly from the chassis.

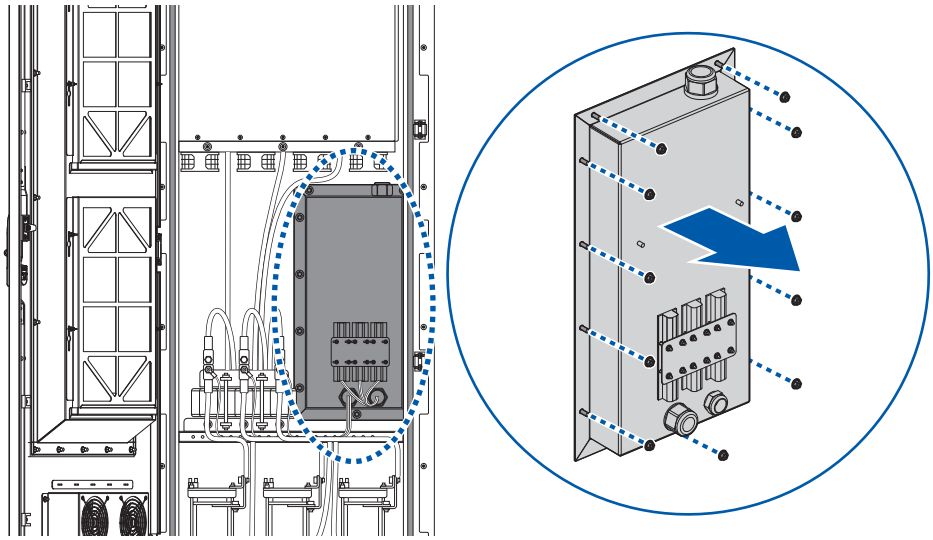

Figure 256. Releasing the C Board Assembly

6. Remove the nut and screw securing the cable, see the following illustration.

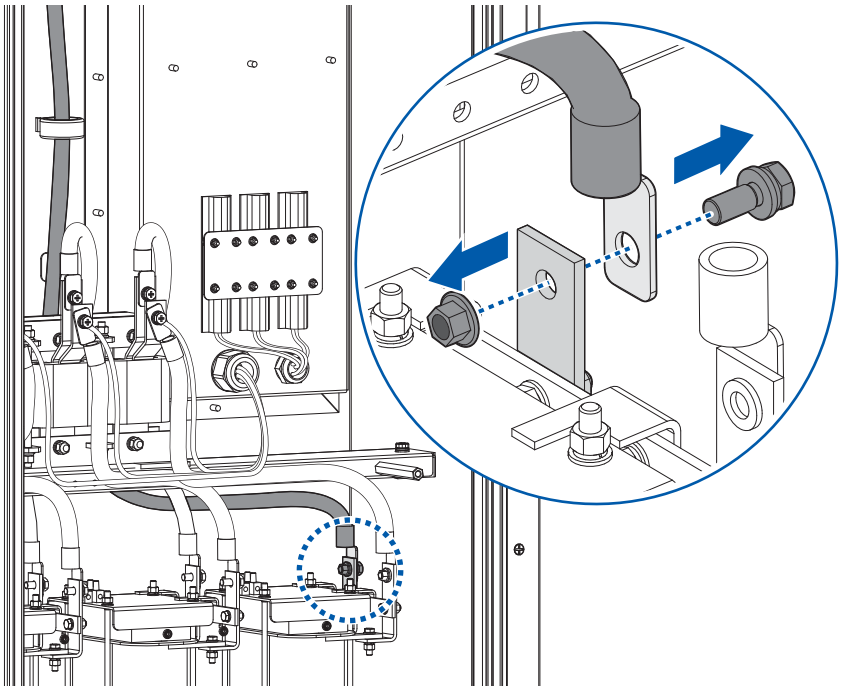

Figure 257. Releasing the Cable

7. Releasing the casing from the cable, see the following illustration.

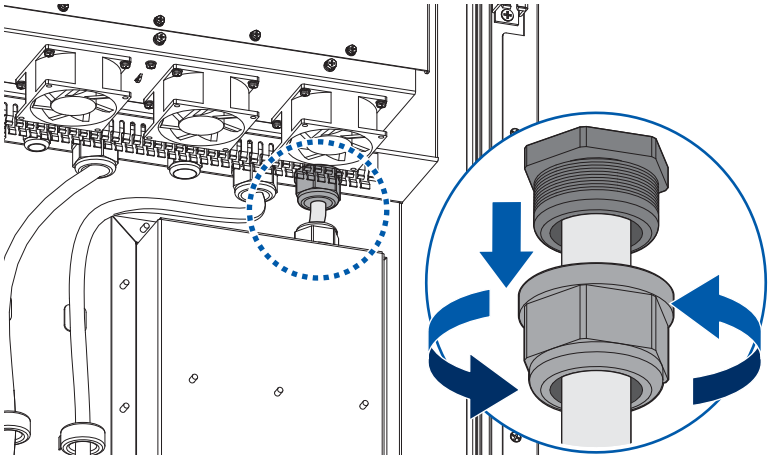

Figure 258. Releasing the Casing

8. Open the C board Assembly.

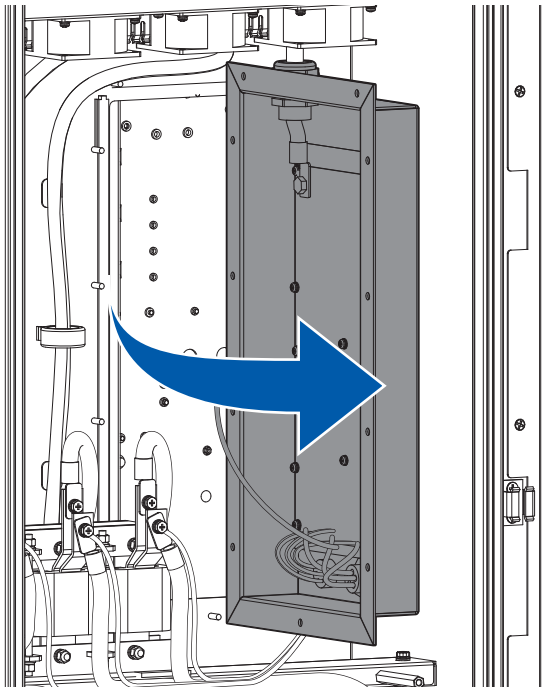

Figure 259. Opening the C Board Assembly

9. Disconnect the cables from the connectors on the C board.
10. Remove the screws securing the cables to the cover and disconnect the cables.

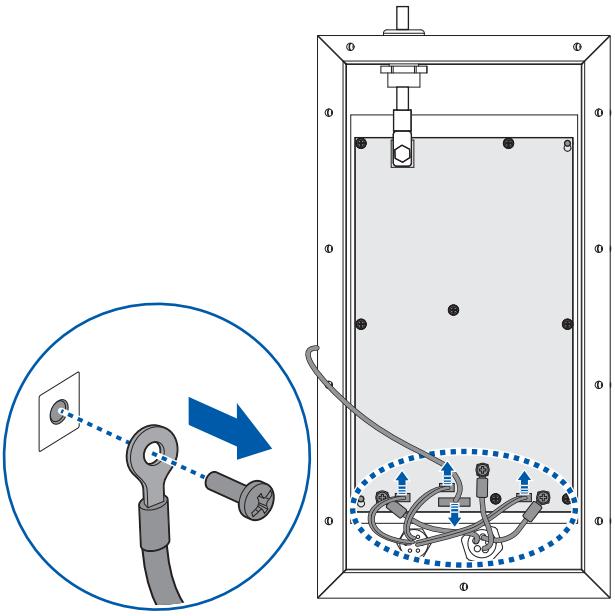

Figure 260. Disconnecting the Cables and Wires

11. Take off the wire by removing the screw securing one end of it.

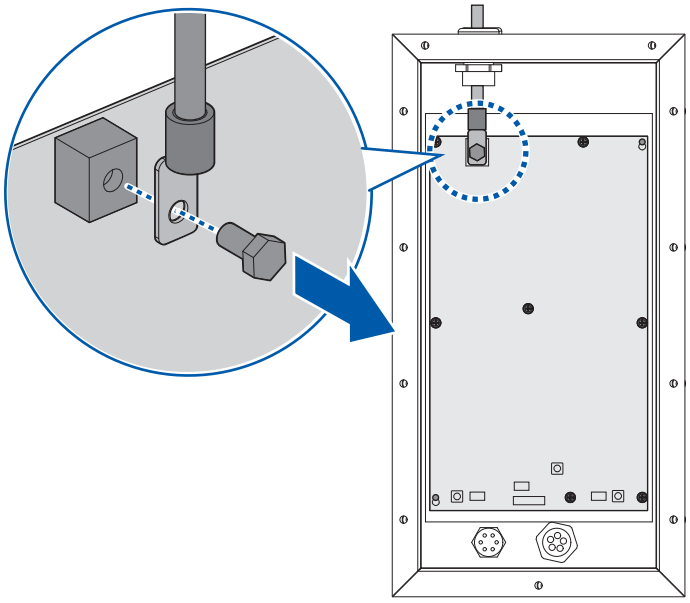

Figure 261. Disconnecting a Wire

12. Remove the screws securing the C board. There are standoffs located on the C board to hold it in place.

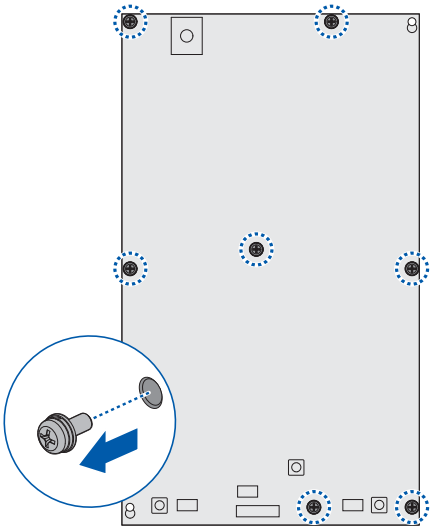

Figure 262. Removing the Screws from the C Board Assembly

13. Slide the C board upwards to clear the posts from the key holes and pull it off to remove it.

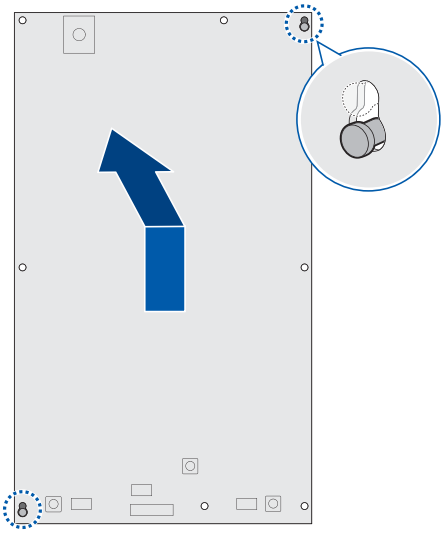

Figure 263. Removing a C Board

Installing a C Board

1. Align the holes on the C board to the posts on the C board cage. Make sure the connectors are facing front.
2. Insert the C board over the posts. Slide the C board down until the posts are secured in the key holes.

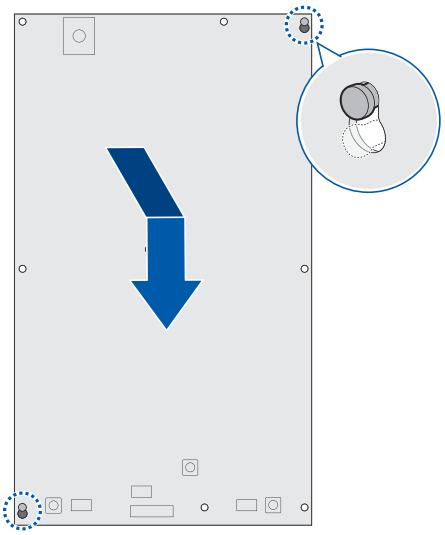

Figure 264. Installing a C Board

3. Secure the C board with screws.

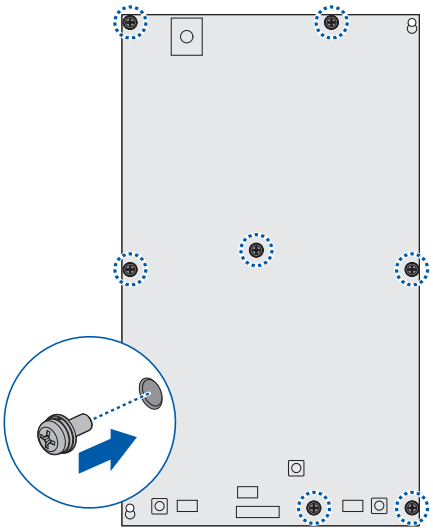

Figure 265. Securing the C Board

4. Insert a screw through one end of the wire and align it with the hole located on the top of the C board.
5. Tighten the screw to secure the wire in place.

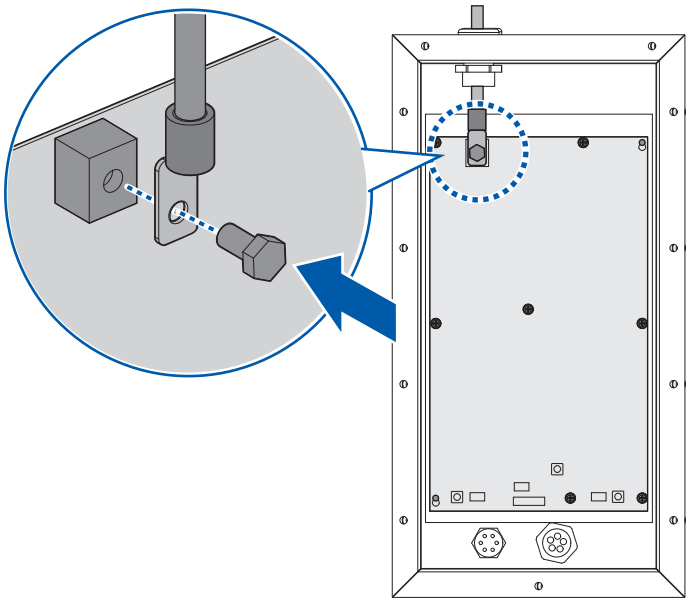

Figure 266. Connecting a Wire

6. Insert the screw through the wiring connector and into the casing. Tighten screw to secure the wire. Repeat for the remaining wires.
7. Connect the cables to the connectors on the C board.

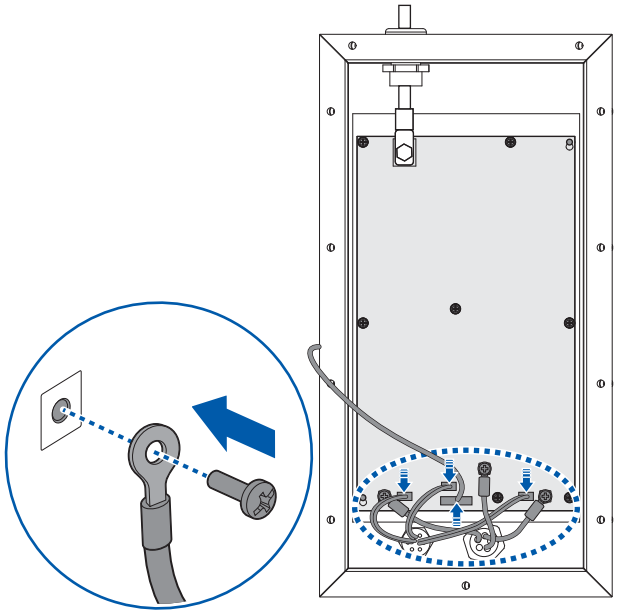

Figure 267. Connecting the Cables and Wires

8. Close the C board assembly.

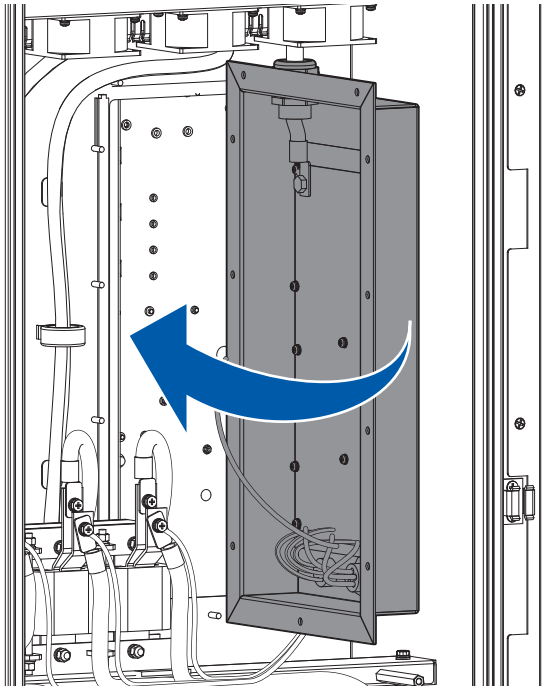

Figure 268. Closing the C Board Assembly

9. Insert the casing and rotate to securing the casing, see the following illustration.

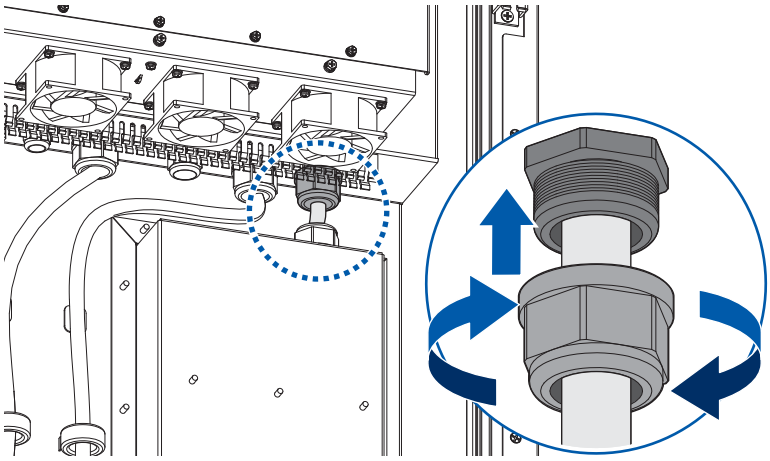

Figure 269. Securing the Casing

10. Insert a screw through the end of the cable and align it with the hole located on the bottom of the chassis.
11. Tighten the nut to secure the cable in place.

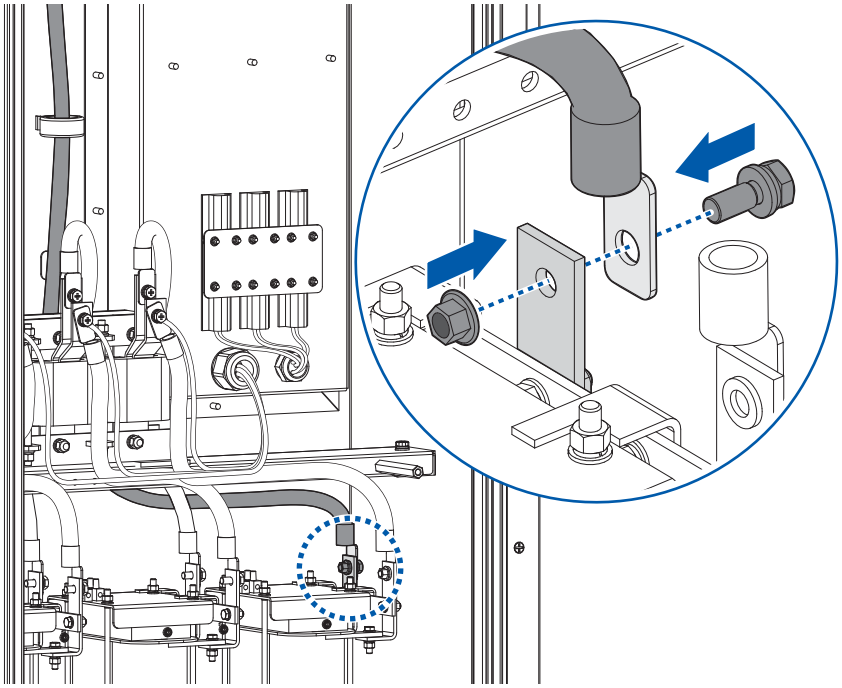

Figure 270. Securing the Cable

12. Align the C board assembly with the chassis.
13. Secure the C board assembly with screws.

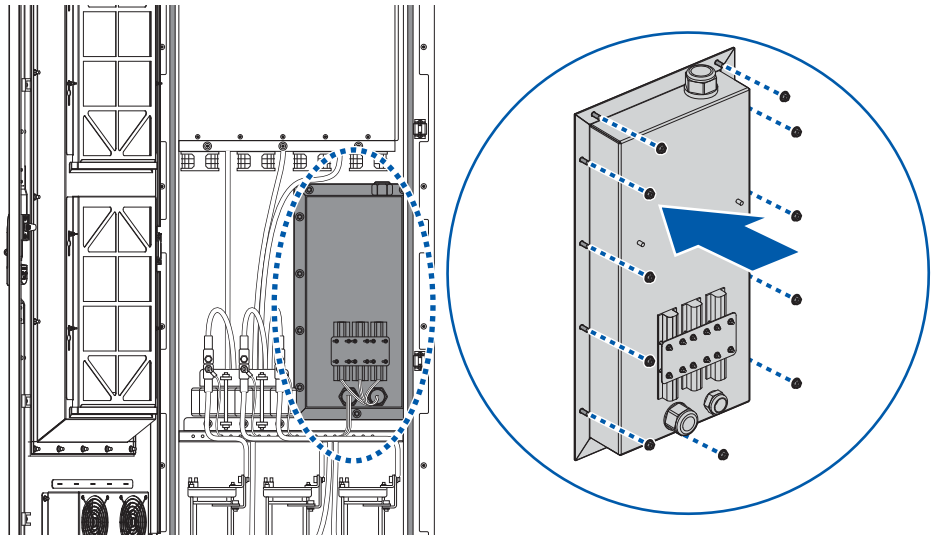

Figure 271. Installing a C Board Assembly

14. Install the cover into the cabinet.
15. Secure the cover with nuts.

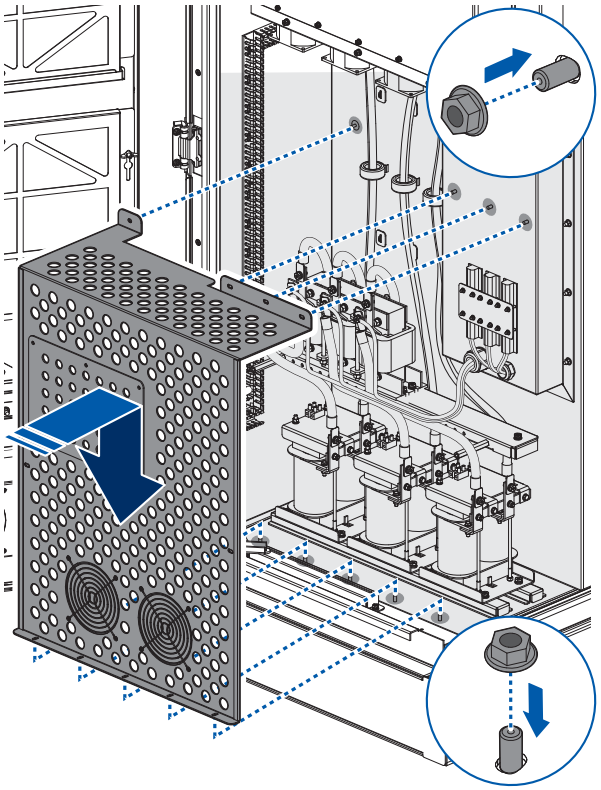

Figure 272. Installing the C Board Cover

16. Close the rear door. See “Closing a Rear Door” on page 28.

IGBT Heatsink (HSK)

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- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of the cabinet.

Removing an IGBT Heatsink (HSK)

1. Open the rear door. See “Opening a Rear Door” on page 25.
2. Remove the screws securing the IGBT HSK cover.
3. Remove the nuts securing the IGBT HSK cover.
4. Remove the IGBT HSK cover.

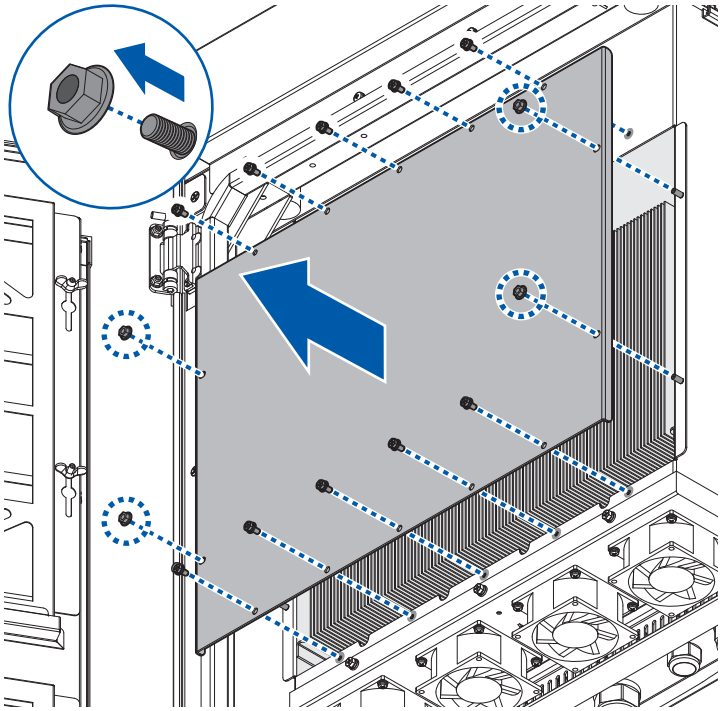

Figure 273. Removing an IGBT HSK Cover

5. Remove the screws securing the IGBT HSK.

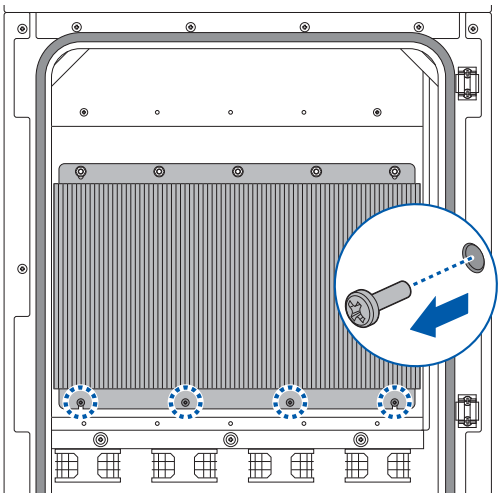

Figure 274. Removing the Screws

6. Remove the nuts securing the IGBT HSK.
7. Remove the IGBT HSK.

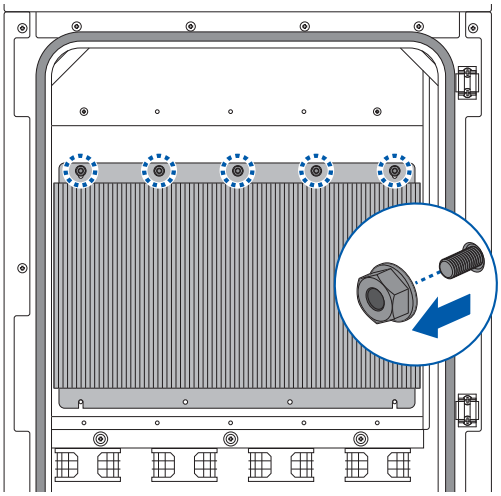

Figure 275. Removing an IGBT HSK

Installing an IGBT Heatsink (HSK)

1. Align the IGBT HSK with the posts on the chassis.
2. Secure the IGBT HSK and the chassis with nuts.

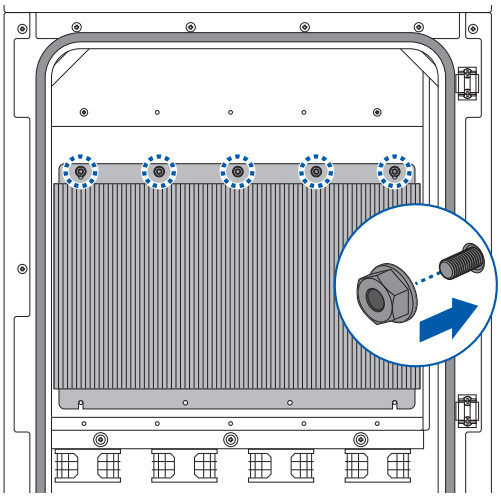

Figure 276. Installing an IGBT HSK

3. Securing the IGBT HSK and chassis with screw.

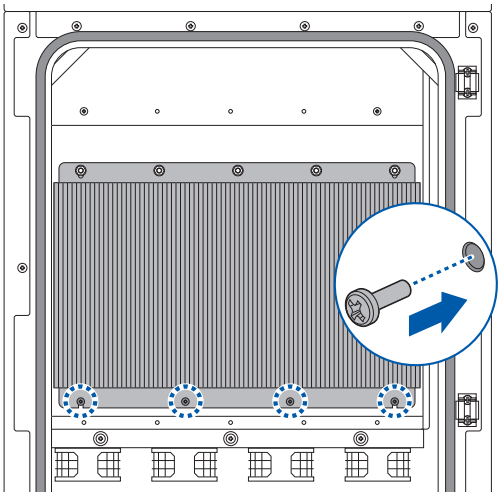

Figure 277. Installing the Screws

4. Insert the IGBT HSK cover into the bolt on the chassis.
5. Securing the IGBT HSK cover with screws.
6. Secure the IGBT HSK cover with hexagonal nuts.

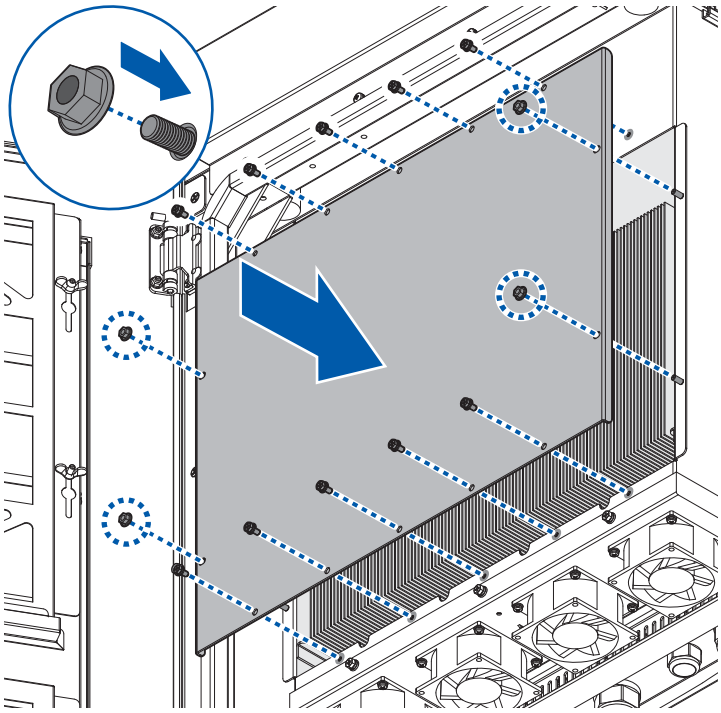

Figure 278. Installing an IGBT HSK Cover

7. Close the rear door. See “Closing a Rear Door” on page 28.