

# Galaxy VX

## Maintenance Bypass Cabinet

### Installation

05/2018



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Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

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# Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

## **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in death or serious injury**.

**Failure to follow these instructions will result in death or serious injury.**

## **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in death or serious injury**.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

## **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury**.

**Failure to follow these instructions can result in injury or equipment damage.**

## **NOTICE**

**NOTICE** is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

**Failure to follow these instructions can result in equipment damage.**

## Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

## FCC Statement

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Safety Precautions

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

All safety instructions in this document must be read, understood and followed.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Read all instructions in the Installation Manual before installing or working on this UPS system.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS system must be installed according to local and national regulations. Install the UPS according to:

- IEC 60364 (including 60364-4-41 - protection against electric shock, 60364-4-42 - protection against thermal effect, and 60364-4-43 - protection against overcurrent), **or**
- NEC NFPA 70, **or**
- Canadian Electrical Code (C22.1, Part 1)

depending on which one of the standards apply in your local area.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Install the UPS system in a temperature controlled indoor environment free of conductive contaminants and humidity.
- Install the UPS system on a non-flammable, level and solid surface (e.g. concrete) that can support the weight of the system.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS is not designed for and must therefore not be installed in the following unusual operating environments:

- Damaging fumes
- Explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from other sources
- Moisture, abrasive dust, steam or in an excessively damp environment
- Fungus, insects, vermin
- Salt-laden air or contaminated cooling refrigerant
- Pollution degree higher than 2 according to IEC 60664-1
- Exposure to abnormal vibrations, shocks, and tilting
- Exposure to direct sunlight, heat sources, or strong electromagnetic fields

**Failure to follow these instructions will result in death or serious injury.**

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill or cut holes for cables or conduits with the gland plates installed and do not drill or cut holes in close proximity to the UPS.

**Failure to follow these instructions will result in death or serious injury.**

**⚠ WARNING**

**HAZARD OF ARC FLASH**

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

**NOTICE****RISK OF OVERHEATING**

Respect the space requirements around the UPS system and do not cover the product's ventilation openings when the UPS system is in operation.

**Failure to follow these instructions can result in equipment damage.**

**NOTICE****RISK OF EQUIPMENT DAMAGE**

Do not connect the UPS output to regenerative load systems including photovoltaic systems and speed drives.

**Failure to follow these instructions can result in equipment damage.**

**Electrical Safety**

This manual contains important safety instructions that should be followed during the installation and maintenance of the UPS system.

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Disconnection devices for AC and DC must be provided by others, be readily accessible, and the function of the disconnect device marked for its function.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

**Failure to follow these instructions will result in death or serious injury.**

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed remotely from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Risk of voltage backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

**Failure to follow these instructions will result in death or serious injury.**



# Specifications

## Recommended Breaker and Cable Sizes

**⚠ CAUTION**

**HAZARD OF FIRE**

- Connect only to a circuit with the below specifications.
- Connect only to a circuit provided with a 1200 A branch circuit overcurrent protection maximum in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

**Failure to follow these instructions can result in injury or equipment damage.**

**NOTE:** Overcurrent protection must be provided by others.

**NOTE:** All wiring must comply with all applicable national and/or electrical codes (National Electrical Code, ANSI/NFPA 70).

Cable sizes in this manual are based on Table 310.15 of the National Electrical Code 2014 (NEC) with the following assertions:

- 90 °C conductors (THHN) for 75 °C termination
- Not more than three current carrying conductors in each conduit
- An ambient temperature of 30 °C
- Use of copper conductors
- 100% rated breakers

If the ambient room temperature is greater than 30 °C, use larger or additional parallel conductors in accordance with the correction factors of the NEC. The maximum allowable conductor size is 600 kcmil.

Equipment Grounding Conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122.

	625 kW			750 kW		
	Maximum OCPD (A)	Conductors per Phase (kcmil)	Equipment Grounding Conductor <sup>1</sup>	Maximum OCPD (A)	Conductors per Phase (kcmil)	Equipment Grounding Conductor <sup>1</sup>
Input	1000 <sup>2</sup>	3x400	2/0 AWG	1200 <sup>2</sup>	3x600	3/0 AWG
Bypass	800 <sup>2</sup>	2x600 (3x300)	1/0 AWG	1000 <sup>2</sup>	3x400	3/0 AWG
Output	800 <sup>2</sup>	2x600 (3x300)	1/0 AWG	1000 <sup>2</sup>	3x400	3/0 AWG
Battery	2000 <sup>3</sup>	5x500	250 kcmil	2000 <sup>2</sup>	5x600	250 kcmil

## Trip Settings for Maintenance Bypass Breaker (MBB)

	625 kW	500 kW (Expandable) and 750 kW
Ir	0.7	0.8
tr	20 <sup>4</sup>	20 <sup>4</sup>
Ii	8 <sup>4</sup>	10 <sup>4</sup>

1. If the conductors are run in conduits, there must be one conductor in each conduit.  
 2. Long-time setting (I<sub>r</sub>) = 1.0  
 3. Long-time setting (I<sub>r</sub>) = 0.9  
 4. Can be adjusted by the installer based on the installation coordination.

## Trip Settings for Static Switch Input Breaker (SSIB)

	625 kW	500 kW (Expandable) and 750 kW
$I_r$	0.7	0.8
$t_r$	$20^5$	$20^5$
$I_i$	$8^5$	$10^5$

## Trip Settings for Unit Output Breaker (UOB)

	625 kW	500 kW (Expandable) and 750 kW
$I_r$	0.7	0.8
$t_r$	$20^5$	$20^5$
$I_{sd}$	$2^5$	$2^5$
$t_{sd}$	$0.2 (I^2t \text{ off})^5$	$0.2 (I^2t \text{ off})^5$
$I_i$	$8^5$	$10^5$
Settings for ground fault protection		
$I_g$	J	J
$t_g$	$0.4 (I^2t \text{ off})$	$0.4 (I^2t \text{ off})$

## Recommended Bolt and Lug Sizes

### NOTICE

#### RISK OF EQUIPMENT DAMAGE

Use only UL approved two-hole cable lugs.

**Failure to follow these instructions can result in equipment damage.**

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
1/0 AWG	M12 x 35 mm	LCCF1/0-12-X	CT930	CD-920-2/0 Black P45
2/0 AWG	M12 x 35 mm	LCCF2/0-12-X	CT930	CD-920-3/0 Orange P50
3/0 AWG	M12 x 35 mm	LCCF3/0-12-X	CT930	CD-920-4/0 Purple P54
250 kcmil	M12 x 35 mm	LCCF250-12-X	CT-940CH/CT-2940	CD-920-300 White P66
300 kcmil	M12 x 35 mm	LCCF300-12-6	CT-940CH/CT-2940	CD-920-350 Red P71
400 kcmil	M12 x 35 mm	LCCF400-12-6	CT-940CH/CT-2940	CD-920-500 Brown P87
500 kcmil	M12 x 35 mm	LCCF500-12-6	CT-940CH/CT-2940	CD-920-500A Pink P99
600 kcmil	M12 x 40 mm	LCCF600-12-6	CT-940CH/CT-2940	CD-920-750 Black P106

5. Can be adjusted by the installer based on the installation coordination.

## Torque Specifications

Bolt size	Torque
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)
M12	50 Nm (36.87 lb-ft)

## Maintenance Bypass Cabinet Weights and Dimensions

Part Number	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVXMBCR625KG	280 (617)	1970 (77.6)	800 (31.5)	900 (35.4)
GVXMBCR750KG	280 (617)	1970 (77.6)	800 (31.5)	900 (35.4)

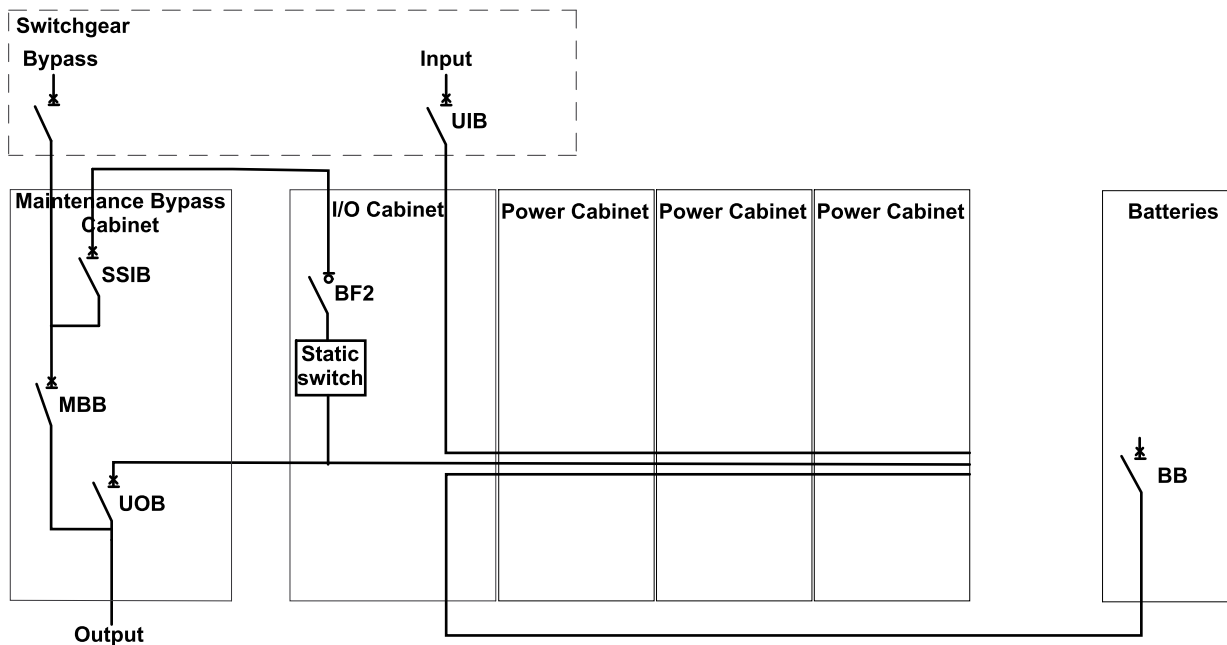
# Introduction

## Overview of Configurations

### Breakers in the System

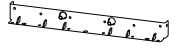


UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
BF2	Backfeed protection switch

### Overview of UPS with Remote Maintenance Bypass Cabinet – Dual Utility/Mains System



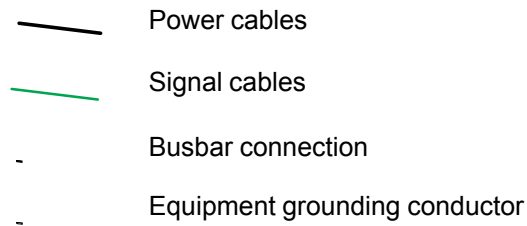
## Kits Shipped with the Maintenance Bypass Cabinet

### Installation Kit 0M-92439

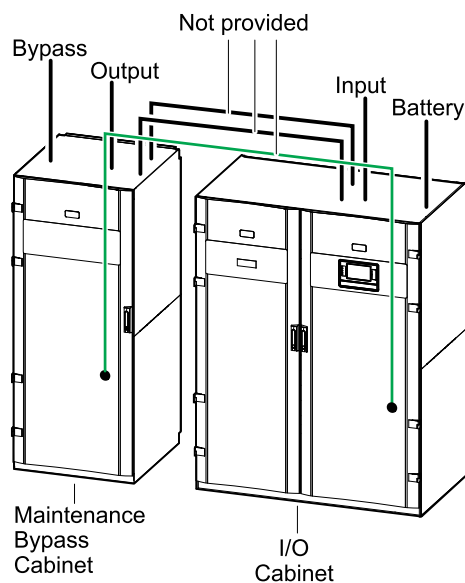
Part	Used in	Number of Units
Rear anchoring bracket	Mount the Rear Anchoring Bracket, page 14	1 
Front anchoring bracket	Mount the Front Anchoring Bracket, page 42	1 
M8 x 20 mm hexagonal torx with washer	Mount the Rear Anchoring Bracket, page 14 and Mount the Front Anchoring Bracket, page 42	7 

## Installation Procedure

For the illustrations below, these symbols have been used:



### Overview of Busbar, Signal Cables, and Power Cables in a System with Remote Maintenance Bypass Cabinet



1. *Mount the Rear Anchoring Bracket, page 14.*
2. *Position the Maintenance Bypass Cabinet, page 15.*
3. Prepare for cables. Follow one of the procedures:
  - *Prepare the Maintenance Bypass Cabinet for Cables in Top Cable Entry Systems, page 16.*
  - *Prepare the Maintenance Bypass Cabinet for Cables in Bottom Cable Entry Systems, page 18.*
4. *Connect Power Cables, page 22.*
5. Connect signal cables. Follow one of the procedures:
  - *Connect Signal Cables in Systems with Top Cable Entry, page 30.*
  - *Connect Signal Cables in Systems with Bottom Cable Entry, page 36.*
6. *Mount the Front Anchoring Bracket, page 42.*

# Mechanical Installation

## Mount the Rear Anchoring Bracket

### ⚠ DANGER

#### HAZARD OF TILTING

All rear and front anchoring brackets must be installed.

**Failure to follow these instructions will result in death or serious injury.**

### ⚠ DANGER

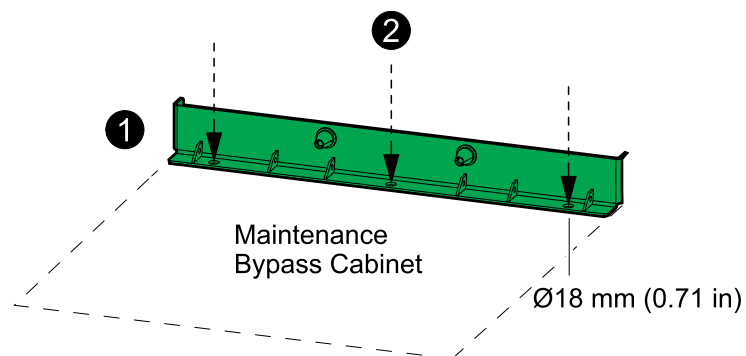
#### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Leave the UPS system covered while making anchoring holes to prevent dust or other conductive particles from entering the system.

**Failure to follow these instructions will result in death or serious injury.**

1. Place the rear anchoring bracket of the maintenance bypass cabinet in the final installation area.

#### Front View of the Rear Anchoring Brackets



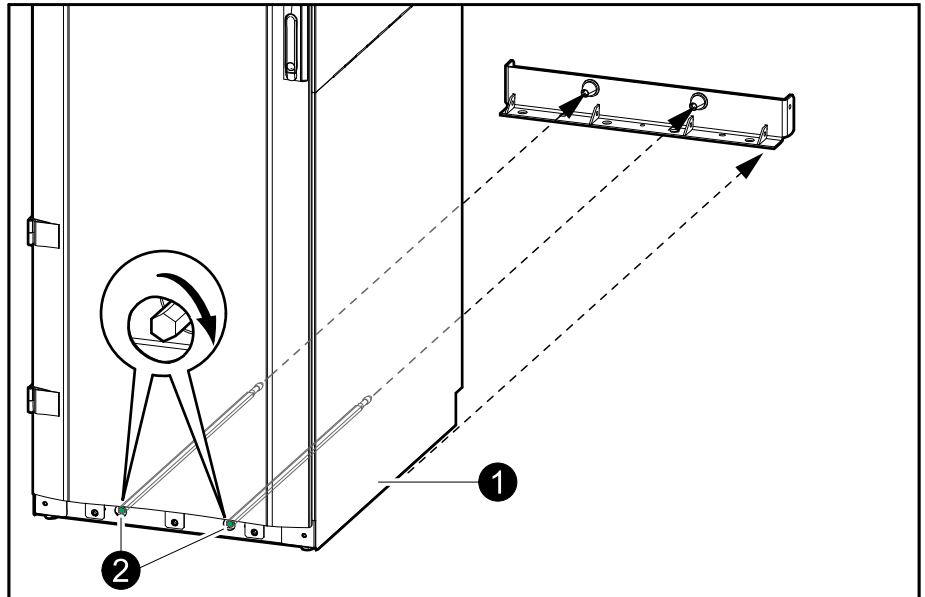
2. Mark the hole locations.
3. Mount the rear anchoring bracket to the floor. Bolts are not supplied.
4. Use a bubble-leveler to ensure that the bracket is level. Use the provided leveling shims if necessary.

## Position the Maintenance Bypass Cabinet

**NOTE:** The rear anchoring bracket must be mounted before performing this task.

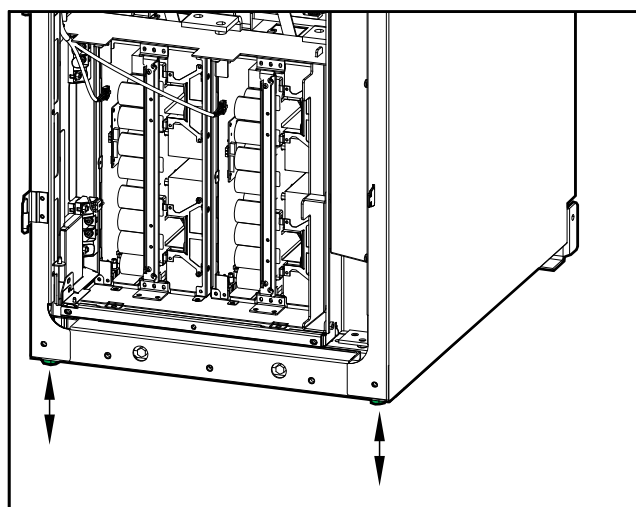
1. Push the maintenance bypass cabinet into position against the rear anchoring bracket — the cabinet will connect to the conic outcroppings on the bracket. Torque to 50 Nm (36.87 lb-ft).

### Front View of the Maintenance Bypass Cabinet



2. Fasten the cabinet to the rear anchoring bracket by tightening the bolt on the front of the cabinet.
3. Lower the two front feet until they connect with the floor – use a bubble-leveler to ensure that the cabinet is level. Use the provided levelling shims if necessary.

### Front View of the Maintenance Bypass Cabinet



# Prepare for Cables

## Prepare the Maintenance Bypass Cabinet for Cables in Top Cable Entry Systems

### **⚠ DANGER**

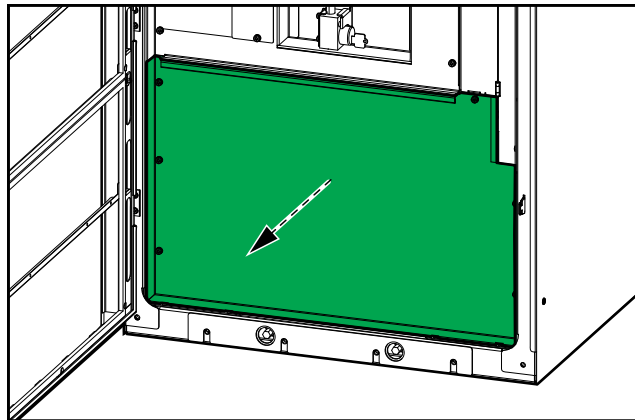
#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS system.

**Failure to follow these instructions will result in death or serious injury.**

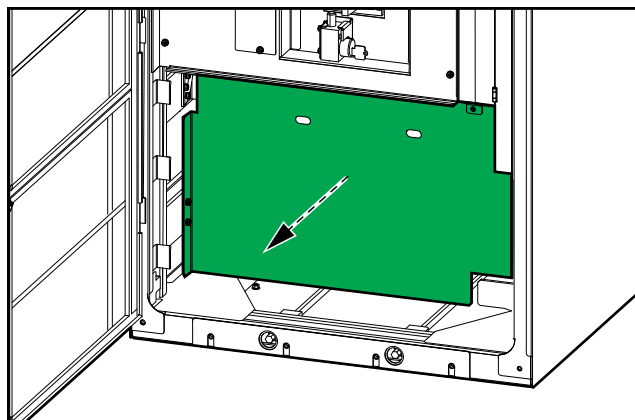
1. Remove the indicated plate in the bottom of the maintenance bypass cabinet.

#### **Front View of Maintenance Bypass Cabinet**



2. Remove the indicated plate in the bottom of the maintenance bypass cabinet.

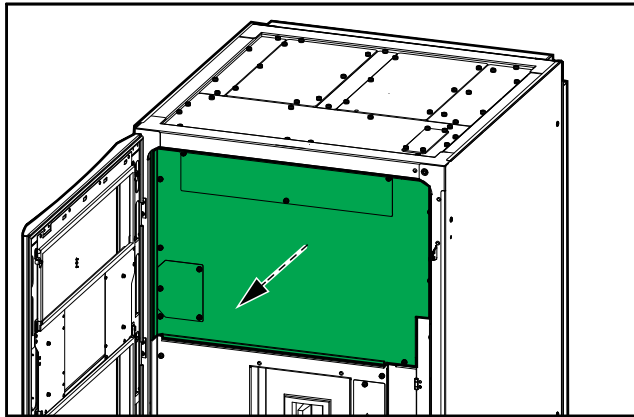
#### **Front View of Maintenance Bypass Cabinet**





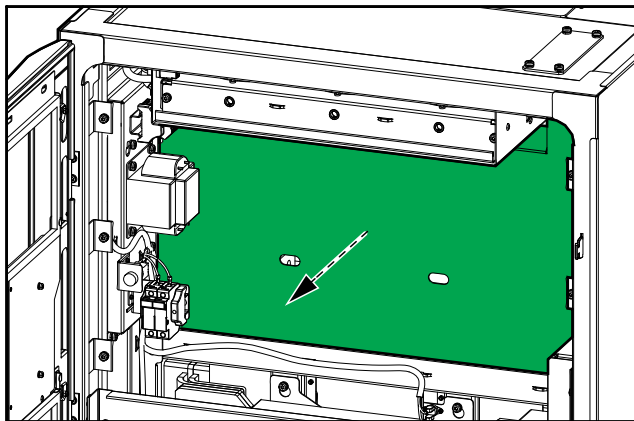
3. Remove the indicated plate in the top of the maintenance bypass cabinet.

**Front View of Maintenance Bypass Cabinet**



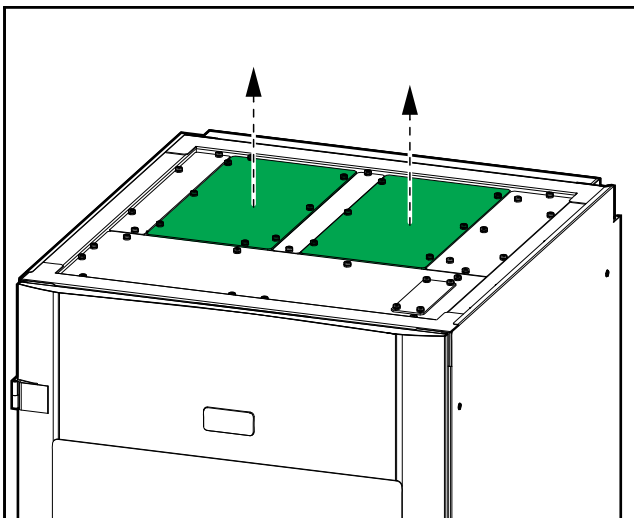
4. Remove the indicated plate in the top of the maintenance bypass cabinet.

**Front View of Maintenance Bypass Cabinet**

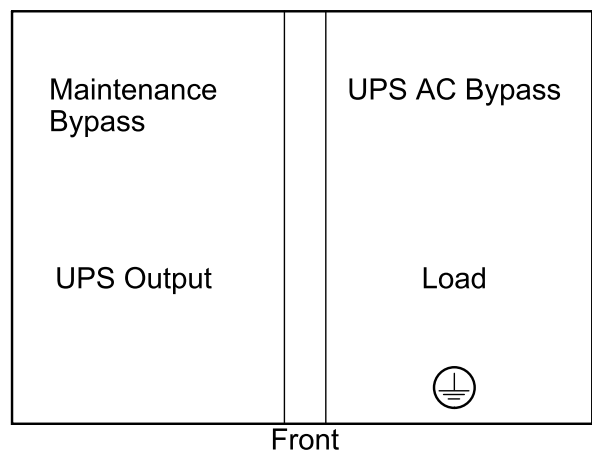


5. Loosen the bolts and remove the top gland plates of the maintenance bypass cabinet. Drill or cut holes for cables/conduits.

**Front View of the Maintenance Bypass Cabinet**



**Top View of Maintenance Bypass Cabinet Top Cover**



6. Install conduits and reinstall the top gland plates in the maintenance bypass cabinet.

**⚠ DANGER**

**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Ensure that there are no sharp edges that can damage the cables.

**Failure to follow these instructions will result in death or serious injury.**

## Prepare the Maintenance Bypass Cabinet for Cables in Bottom Cable Entry Systems

**⚠ DANGER**

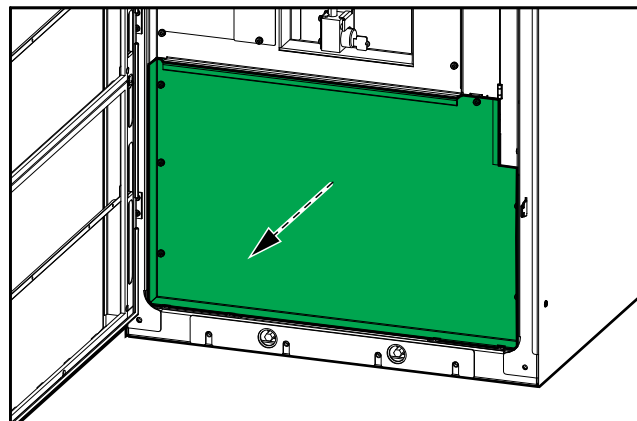
**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS.

**Failure to follow these instructions will result in death or serious injury.**

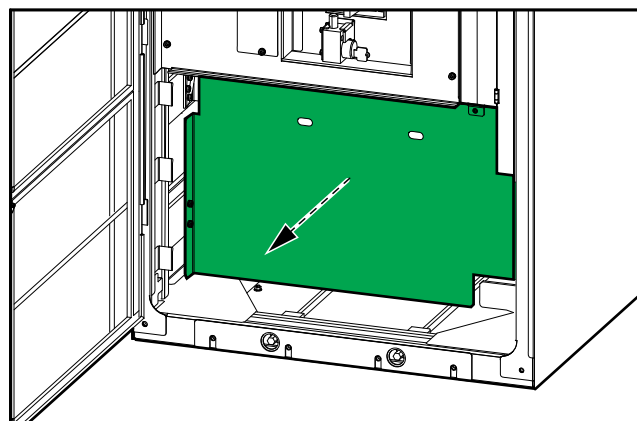
1. Remove the indicated plate in the bottom of the maintenance bypass cabinet.

**Front View of Maintenance Bypass Cabinet**



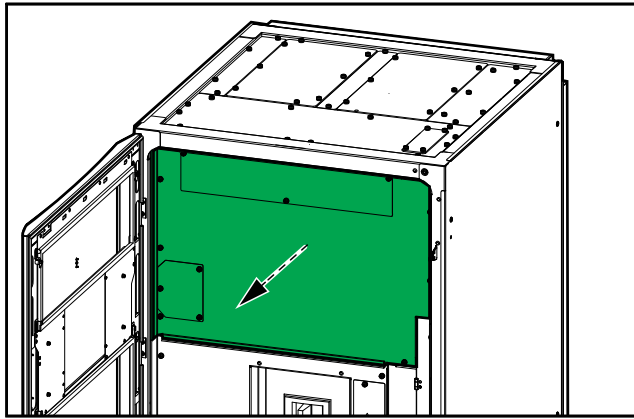
2. Remove the indicated plate in the bottom of the maintenance bypass cabinet.

**Front View of Maintenance Bypass Cabinet**



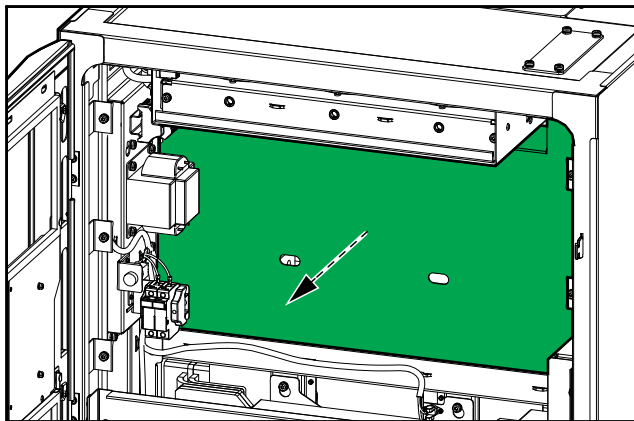
3. Remove the indicated plate in the top of the maintenance bypass cabinet.

#### Front View of Maintenance Bypass Cabinet



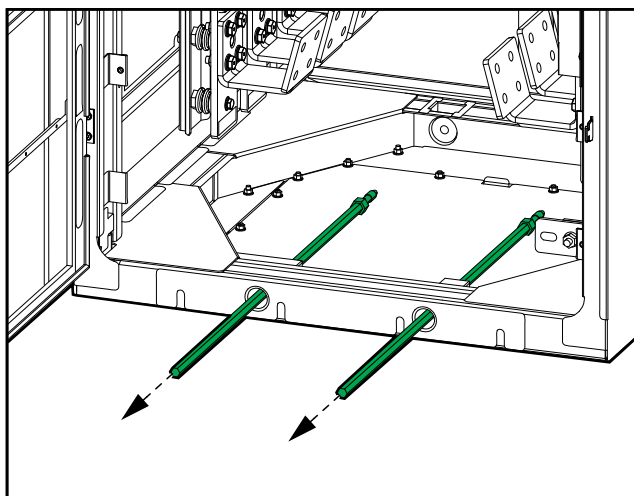
4. Remove the indicated plate in the top of the maintenance bypass cabinet.

#### Front View of Maintenance Bypass Cabinet



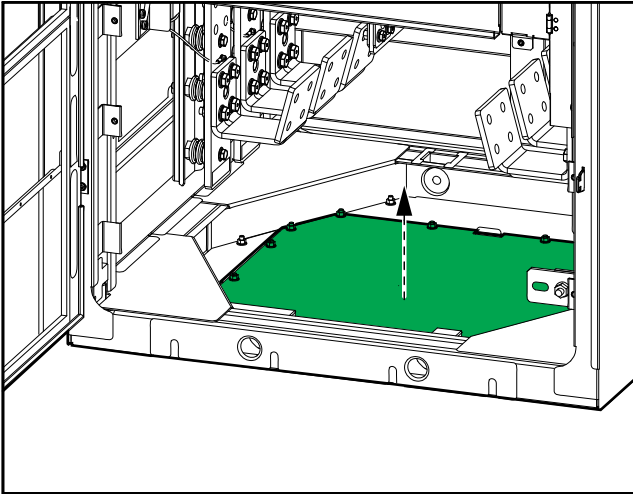
5. Remove the rods from the bottom of the maintenance bypass cabinet.

#### Front View of the Maintenance Bypass Cabinet

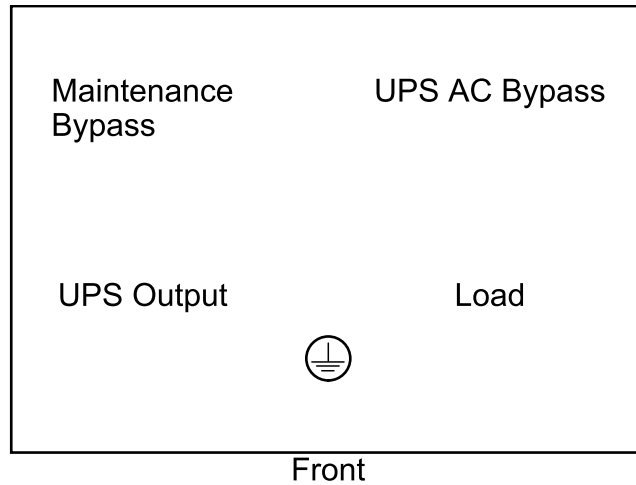


- 6. Loosen the bolts and remove the bottom gland plate of the maintenance bypass cabinet. Drill or cut holes for cables/conduits.

Front View of the Maintenance Bypass Cabinet



Top View of Maintenance Bypass Cabinet Bottom Cover



- 7. Install conduits and reinstall the bottom gland plate in the maintenance bypass cabinet.

**⚠ DANGER**

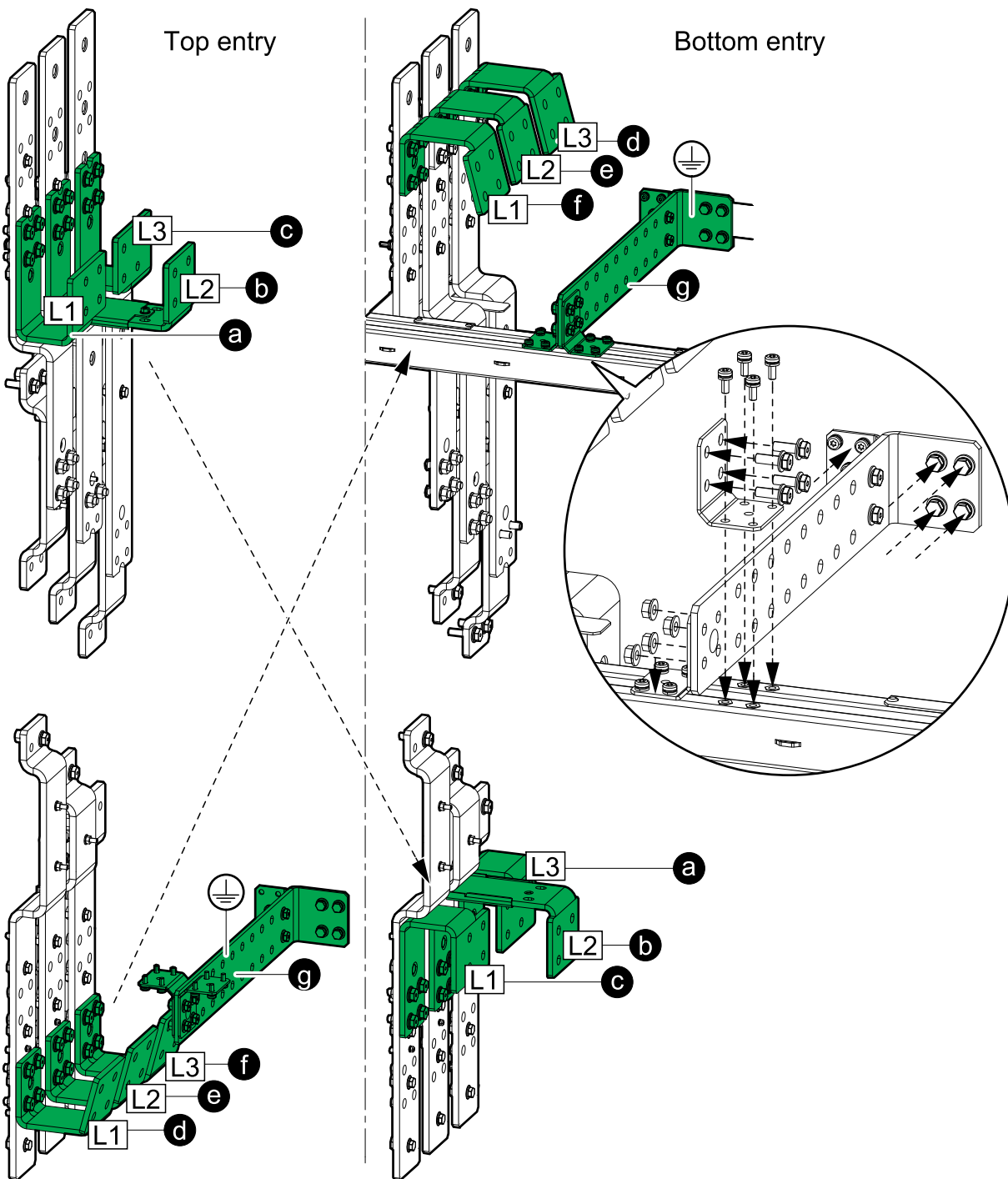
**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Ensure that there are no sharp edges that can damage the cables.

**Failure to follow these instructions will result in death or serious injury.**

- 8. Change the position of the busbars.  
**NOTE:** The busbars must be changed in both sides of the maintenance bypass cabinet.
  - a. Remove the L1 busbar from the top, rotate it, and install the busbar in the L3 location in the bottom of the maintenance bypass cabinet.
  - b. Remove the L2 busbar from the top, rotate it, and install the busbar in the L2 location in the bottom of the maintenance bypass cabinet.
  - c. Remove the L3 busbar from the top, rotate it, and install the busbar in the L1 location in the bottom of the maintenance bypass cabinet.
  - d. Remove the L1 busbar from the bottom, rotate it, and install the busbar in the L3 location in the top of the maintenance bypass cabinet.
  - e. Remove the L2 busbar from the bottom, rotate it, and install the busbar in the L2 location in the top of the maintenance bypass cabinet.
  - f. Remove the L3 busbar from the bottom, rotate it, and install the busbar in the L1 location in the top of the maintenance bypass cabinet.
  - g. Remove the equipment grounding conductor busbar and the two angles from the bottom, rotate the two angles, and install the busbars in the top of the maintenance bypass cabinet.

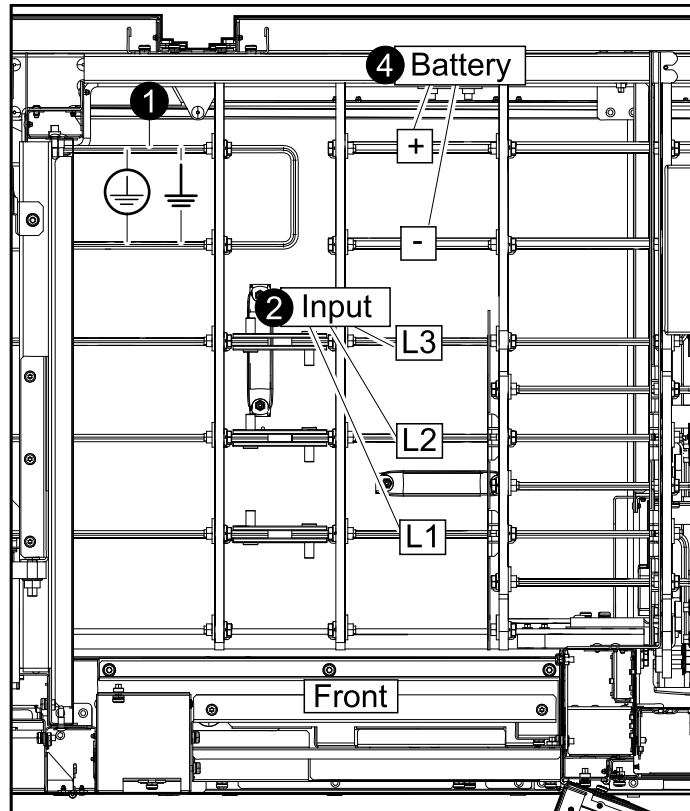
### Front View of the Busbars in the Left Side of the Maintenance Bypass Cabinet



# Connect Power Cables

1. Connect the equipment grounding conductor to the grounding busbar in the I/O cabinet.

## Top View of the Connection Area in the I/O Cabinet



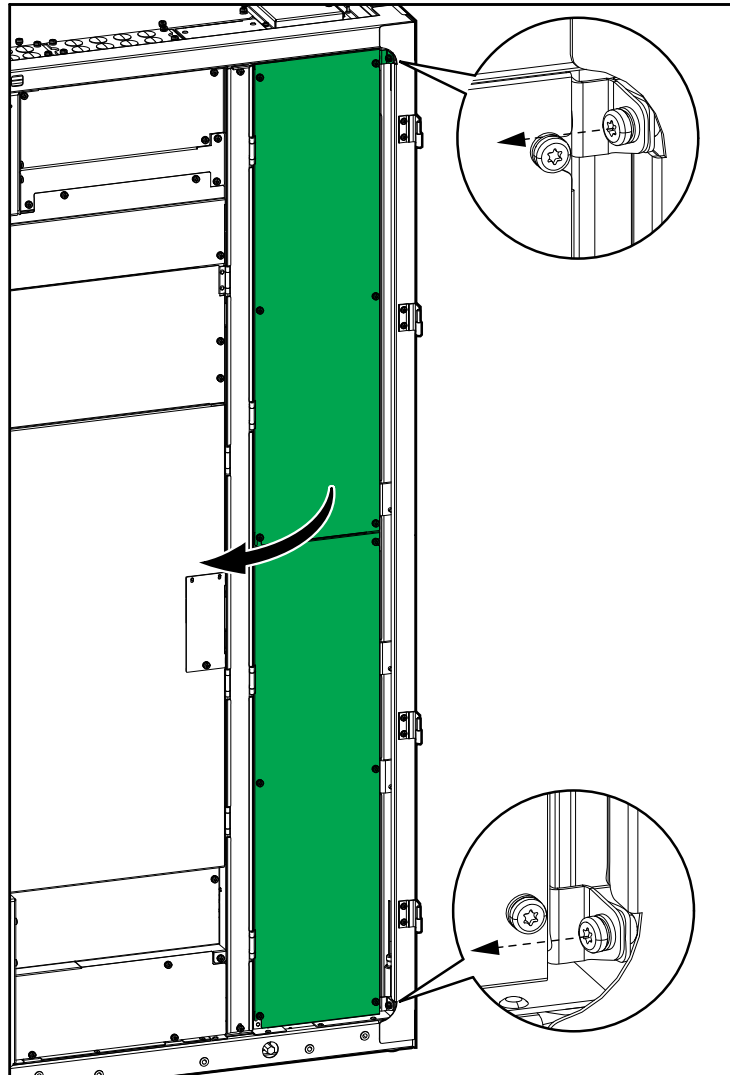
2. Connect the input cables (L1, L2, L3, G) to the input busbars in the I/O cabinet.

3. Only applicable to high impedance grounding systems:

**NOTE:** For high impedance grounding systems, the installation must include a ground-fault detection circuitry.

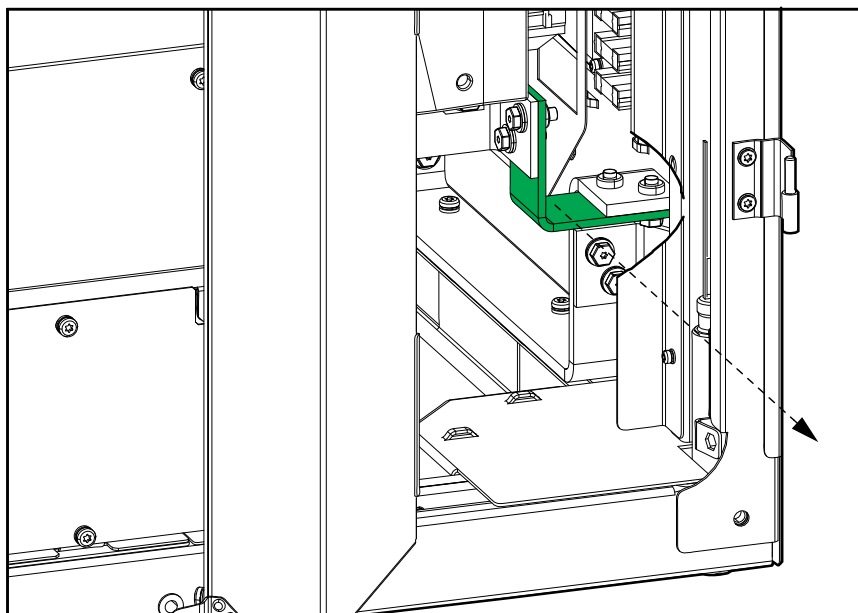
- a. Open the narrow door in the right side.

#### Front View of the I/O Cabinet



- b. Remove the jumper busbar.

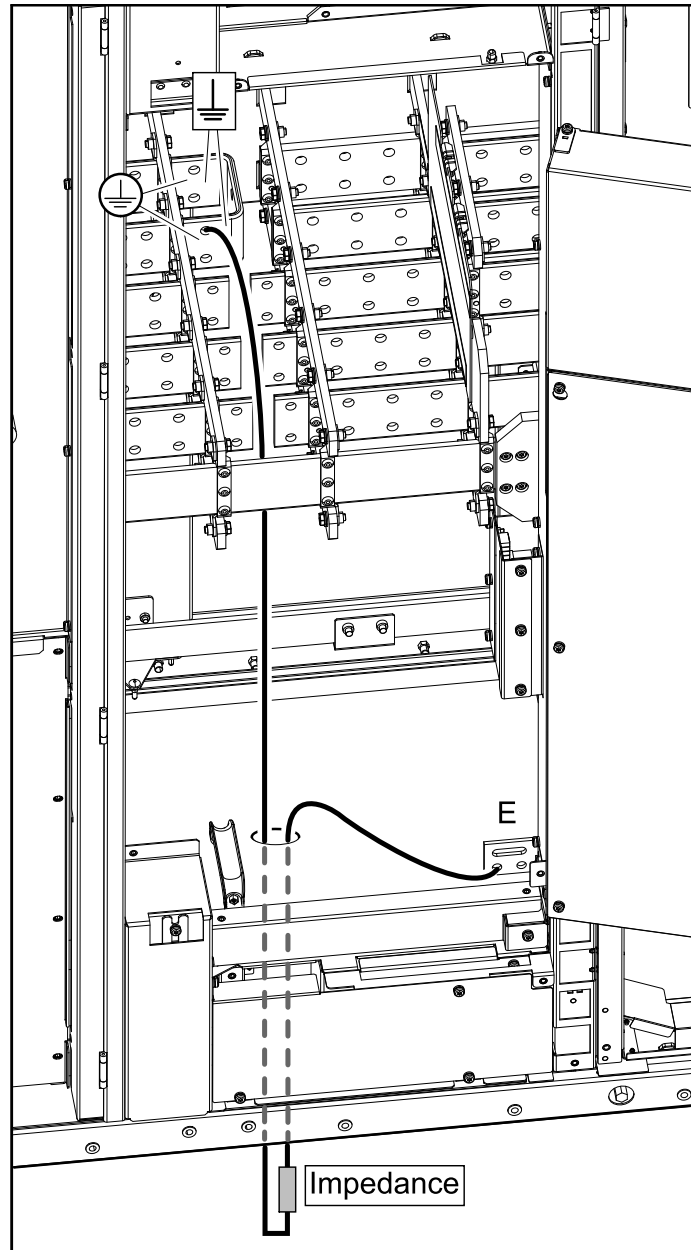
**Front View of the I/O Cabinet**





- c. Connect an external impedance between the “E” terminal and the equipment grounding bar according to NEC 2014 article 250.36.

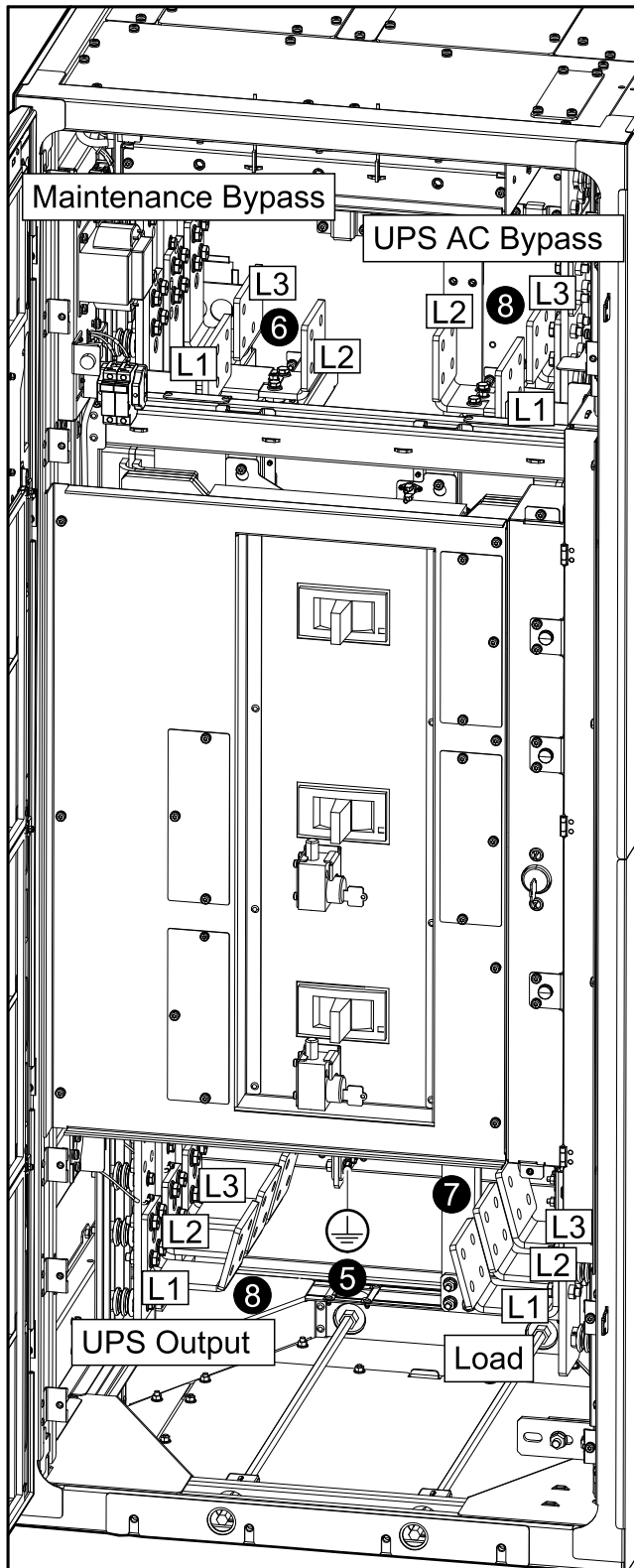
#### Front View of the I/O Cabinet



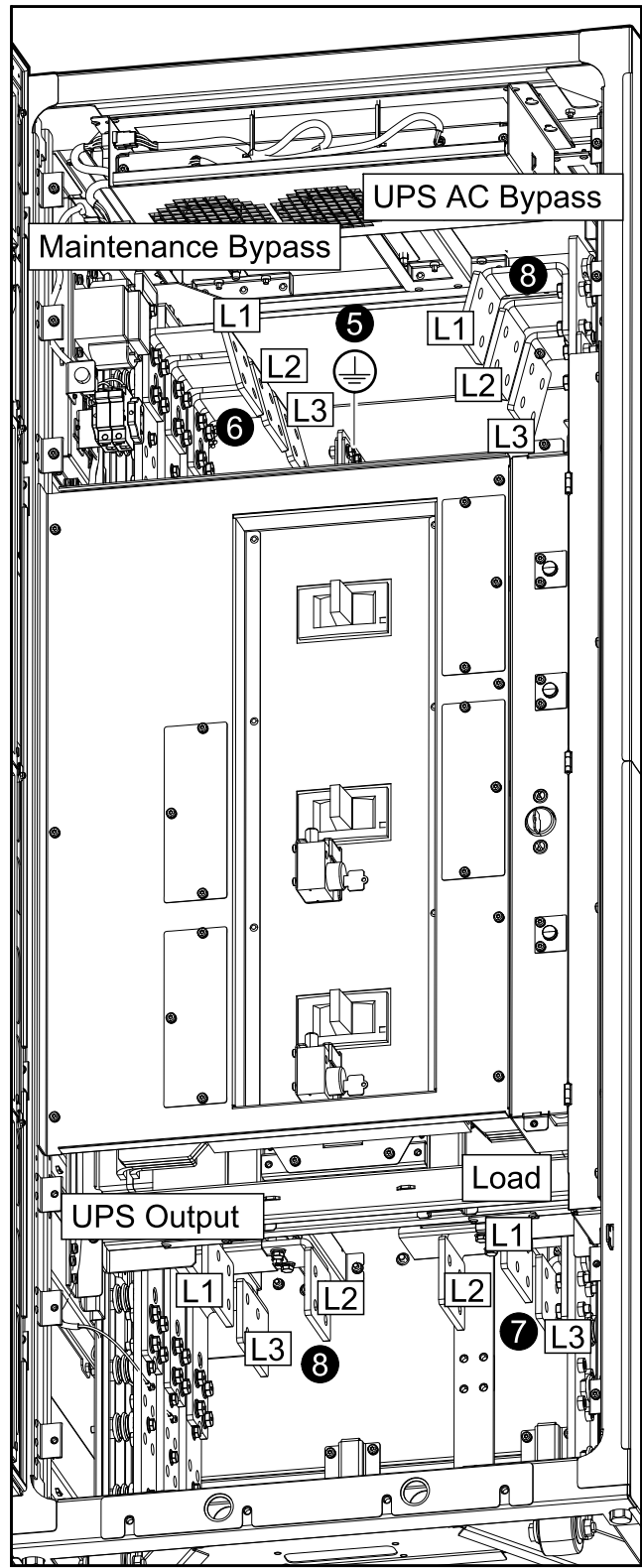
4. Connect the battery cables to the battery+ and battery- terminals in the I/O cabinet.

5. Connect the equipment grounding conductor to the grounding busbar in the maintenance bypass cabinet.

Front View of the Maintenance Bypass Cabinet in Top Cable Entry Systems



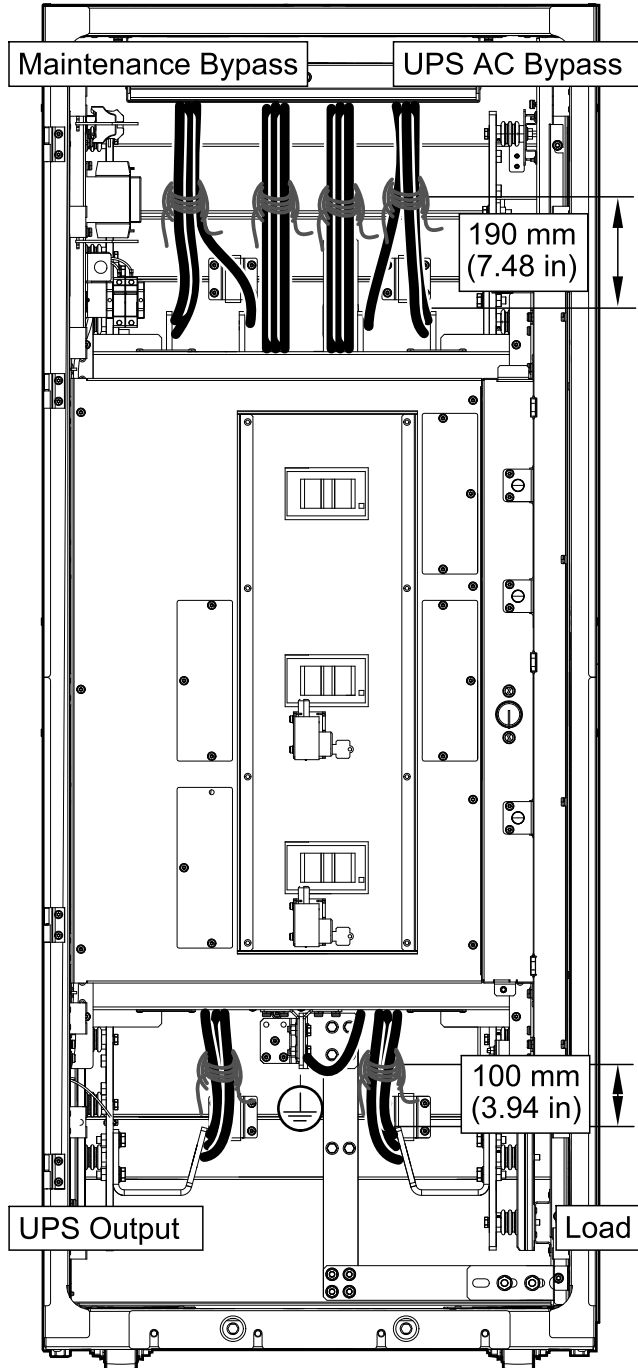
Front View of the Maintenance Bypass Cabinet in Bottom Cable Entry Systems



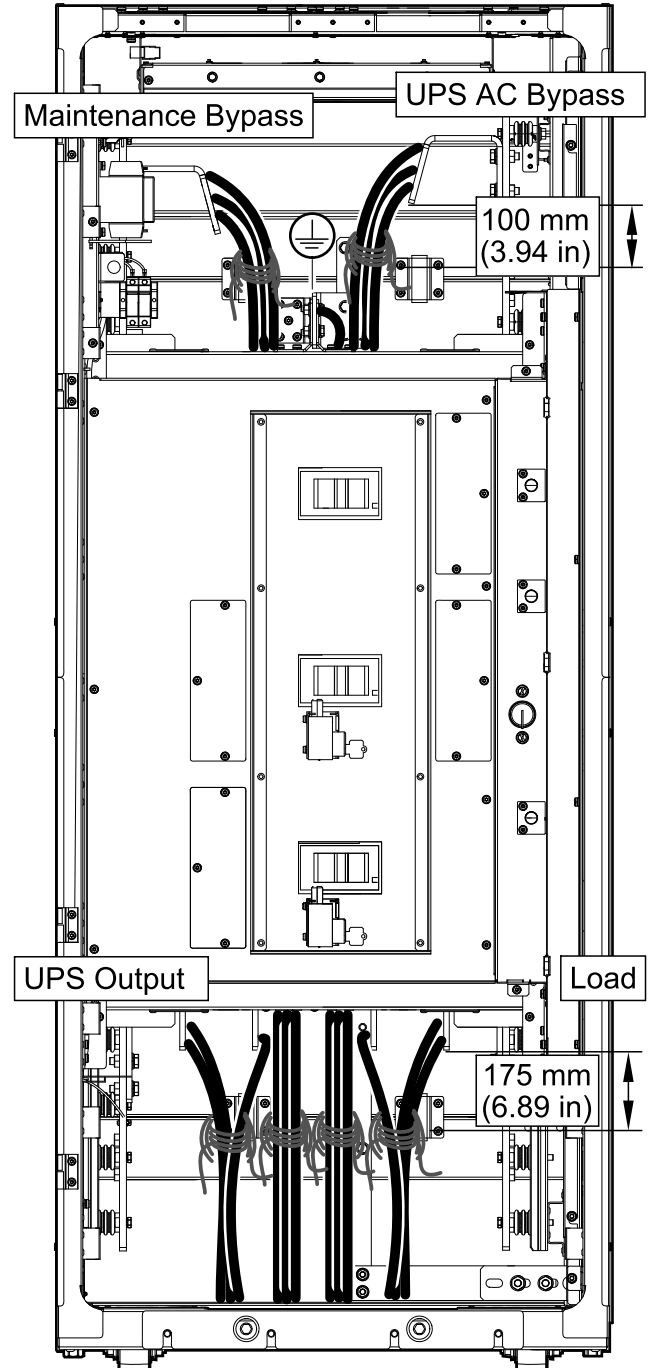
6. Connect the bypass cables (L1, L2, L3, G) to the **Maintenance Bypass** busbars in the maintenance bypass cabinet.
7. Connect the load cables (L1, L2, L3, G) to the **Load** busbars in the maintenance bypass cabinet.

8. Connect cables from the bypass terminals in the I/O cabinet to the **UPS AC Bypass** terminals in the maintenance bypass cabinet.
9. Connect cables from the output terminals in the I/O cabinet to the **UPS Output** terminals in the maintenance bypass cabinet.
10. Restrain the cables as described in *Restrain the Cables*, page 28.

**Front View of the Maintenance Bypass Cabinet in a Top Cable Entry System**



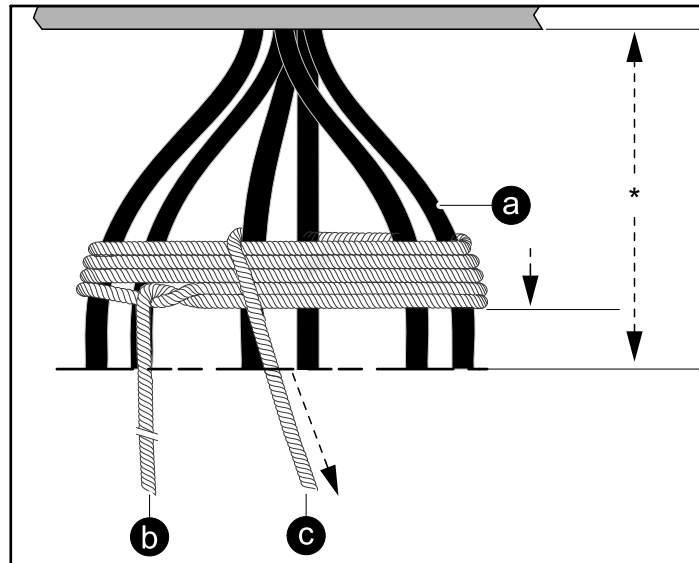
**Front View of the Maintenance Bypass Cabinet in a Bottom Cable Entry System**



## Restrain the Cables

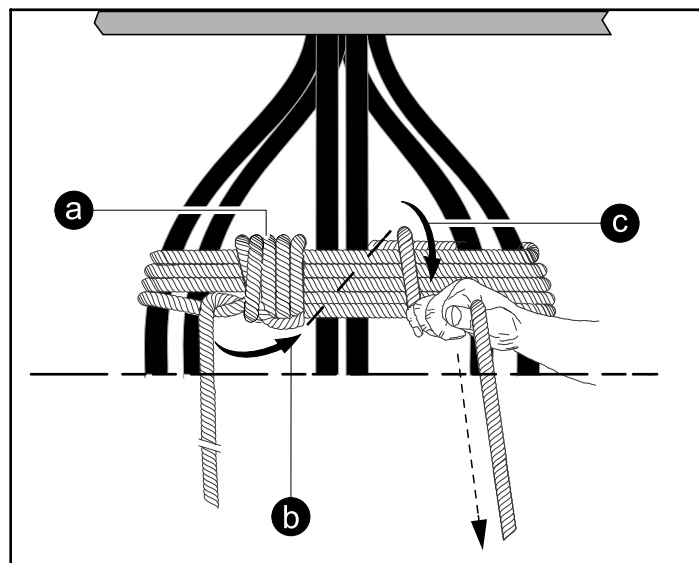
Use 3/8 in nylon rope to restrain the cables.

1. Wrap the rope around the cables (a). Wrap the cables four times leaving 1 m (3 ft) of excess rope at the first end (b). Pull rope (c) taut.

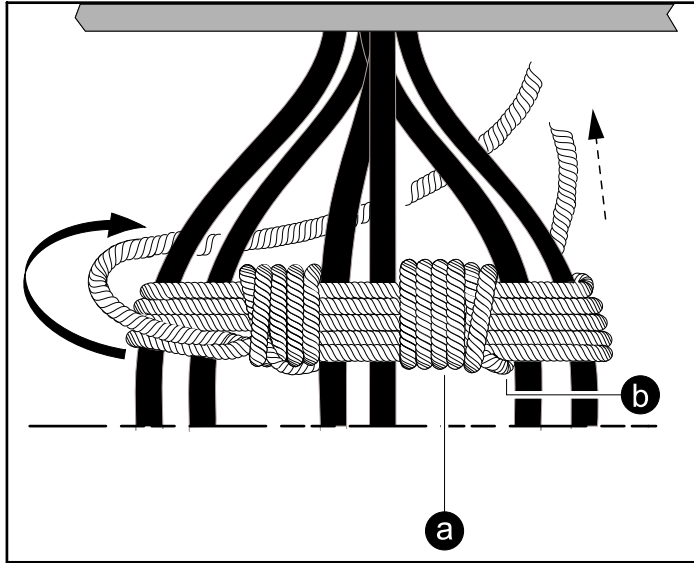


\* Unsupported cable length.

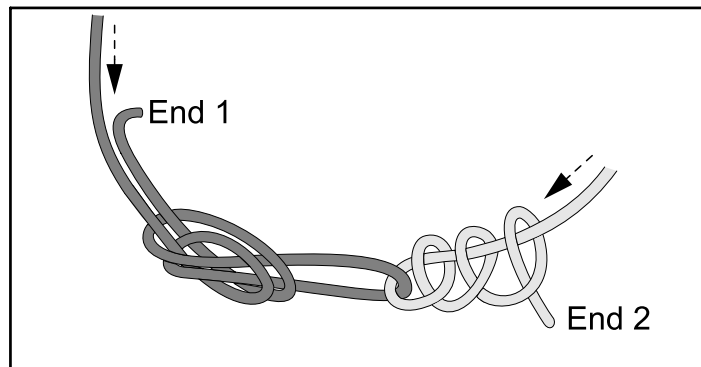
2. Wrap rope (a) several times until the space between the first two sets of cables is completely filled. Weave final rope loop underneath the previous loop (b). Bring rope (c) through the other open area and pull the rope taut.



3. Wrap rope (a) several times until the space between the second and the third set of cables is completely filled. Wave the final rope loop (b) underneath the previous loop as shown. Pull the rope taut.



4. Tie rope End 1 and End 2 together as shown. The rope must be taut. Cut off excess rope and tape ends to prevent fraying.



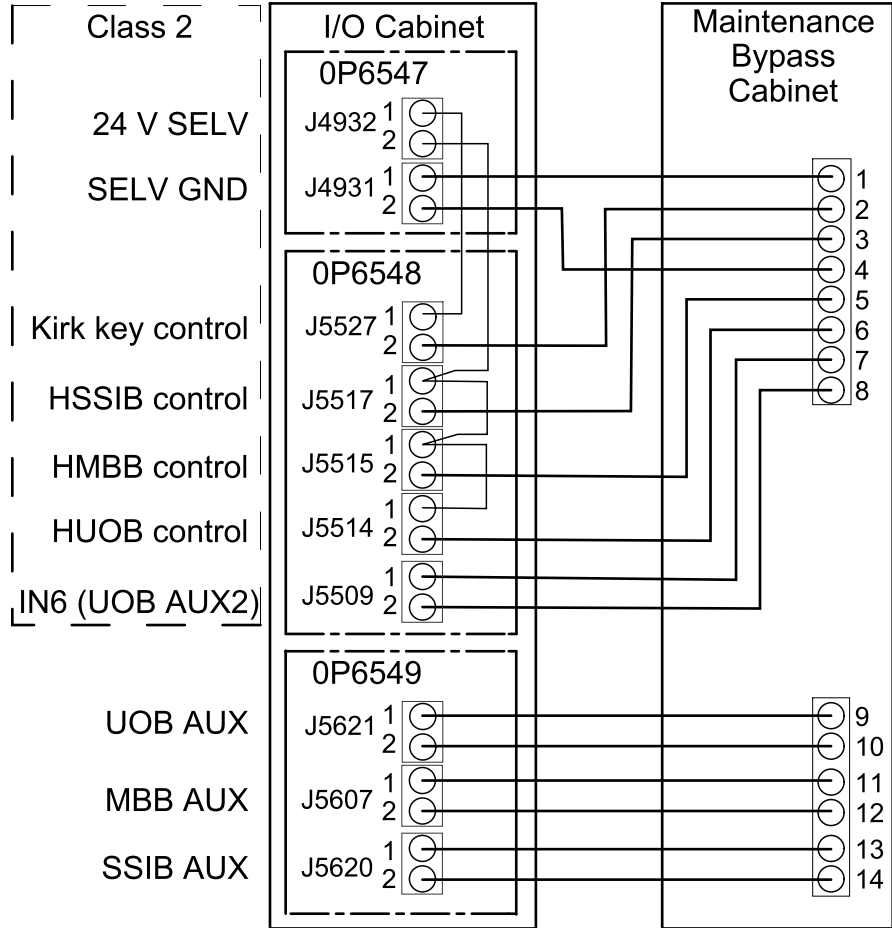
5. Repeat the procedure where needed.

# Connect Signal Cables

## Connect Signal Cables in Systems with Top Cable Entry

### Overview of Signal Cable Connections

**NOTE:** The UOB must include two separated auxiliary switches.



**NOTE:** Kirk key control, HSSIB control, HMBB control, and HUOB control refer to ground and UOB AUX, MBB AUX, and SSIB AUX refer to neutral.

## ⚠ DANGER

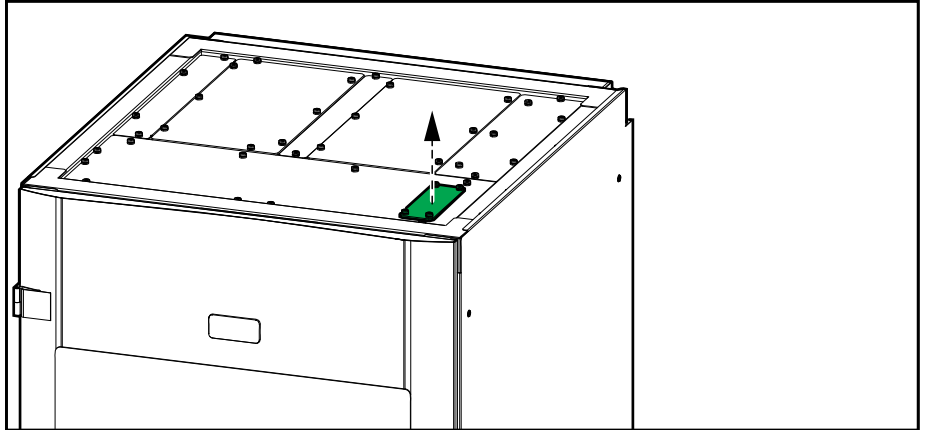
**HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS system.

**Failure to follow these instructions will result in death or serious injury.**

1. Loosen the bolts and remove the gland plate in the top of the maintenance bypass cabinet.

### Front View of the Maintenance Bypass Cabinet



2. Drill or cut holes for cables/conduits.
3. Install conduits and reinstall the gland plate.

## **⚠ DANGER**

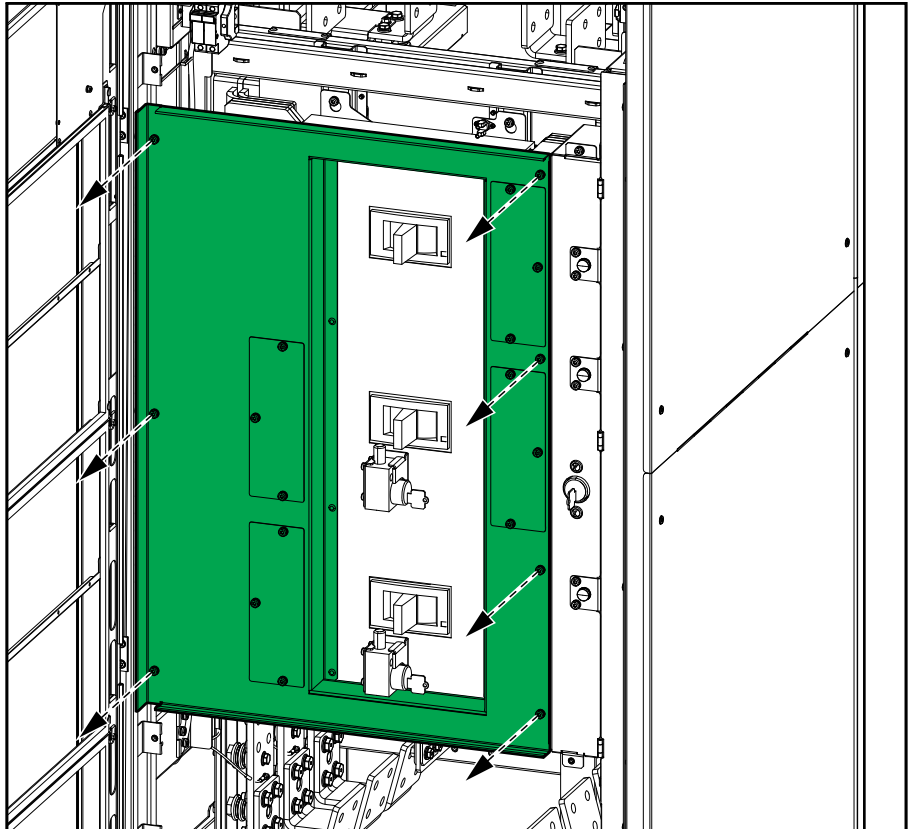
### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Ensure that there are no sharp edges that can damage the cables.

**Failure to follow these instructions will result in death or serious injury.**

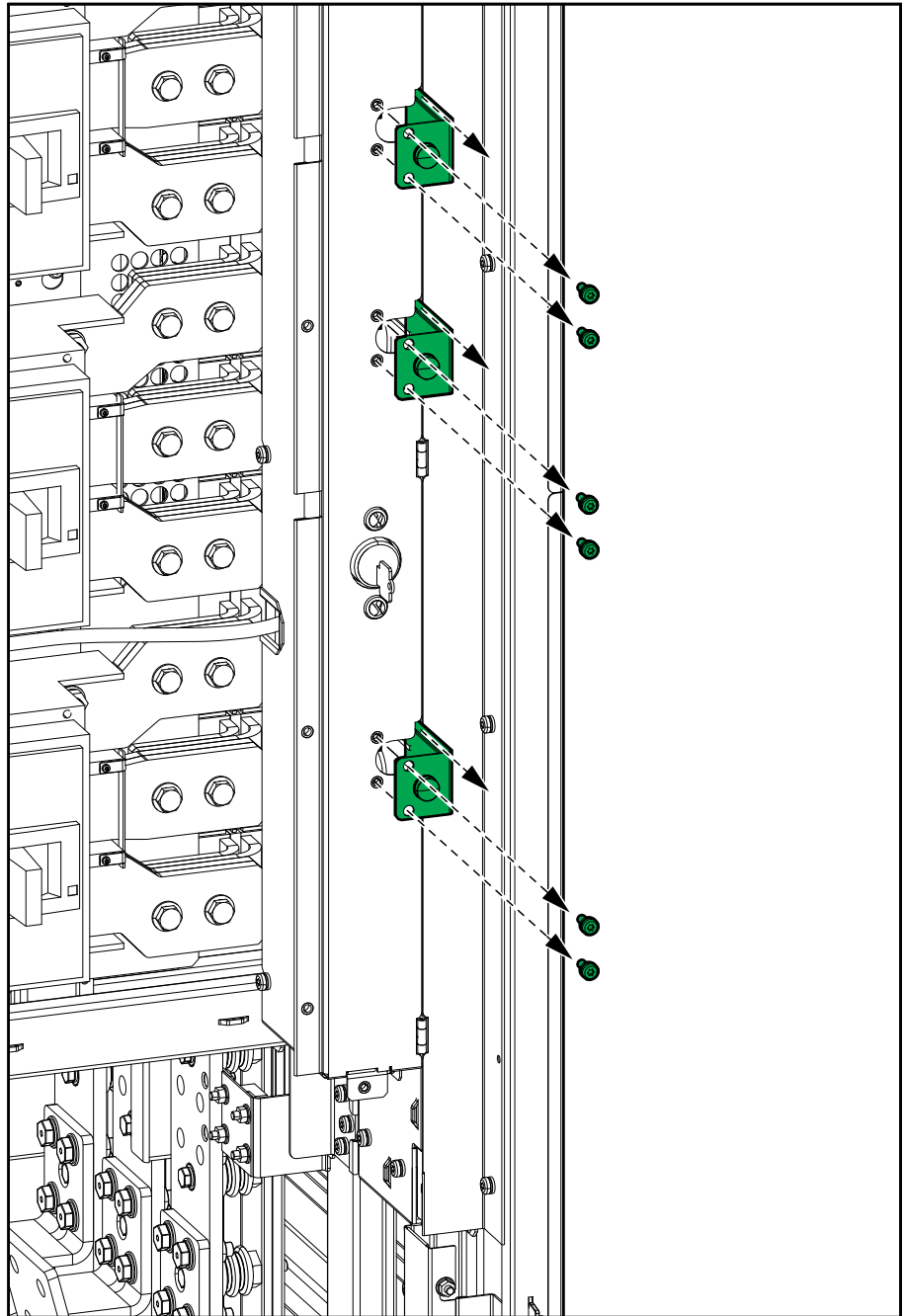
4. Remove the plate from the front of the breakers.

### Front View of the Maintenance Bypass Cabinet



5. Loosen the screws and slide out the three LEDs.

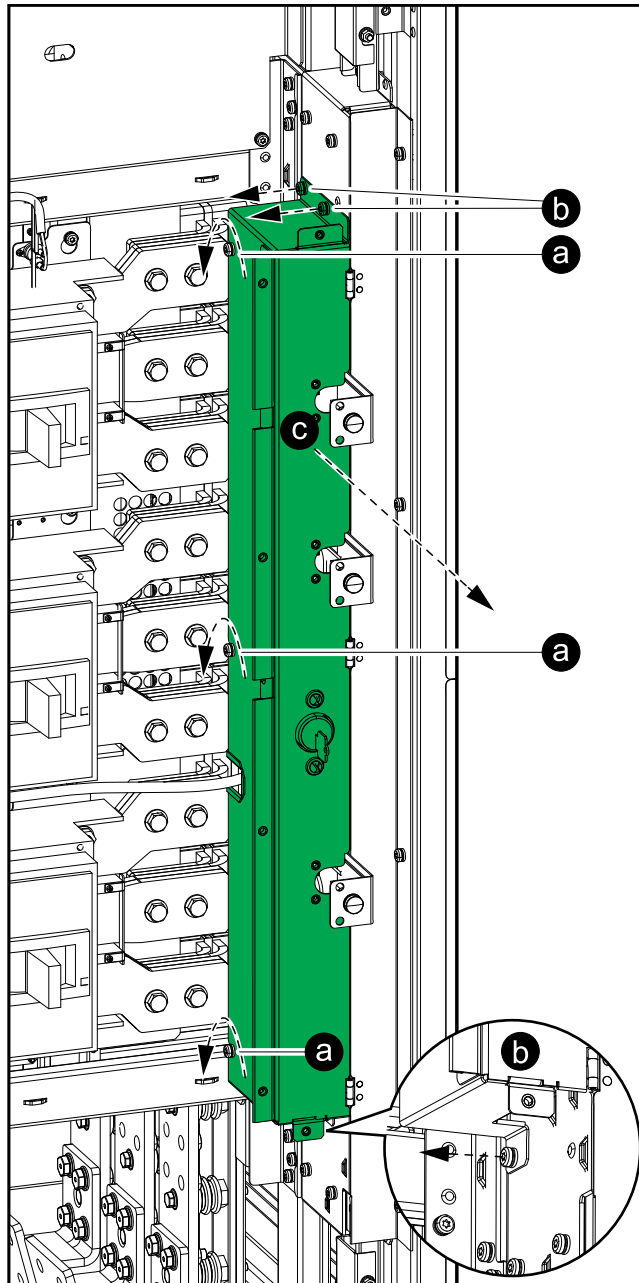
### Front View of the Maintenance Bypass Cabinet





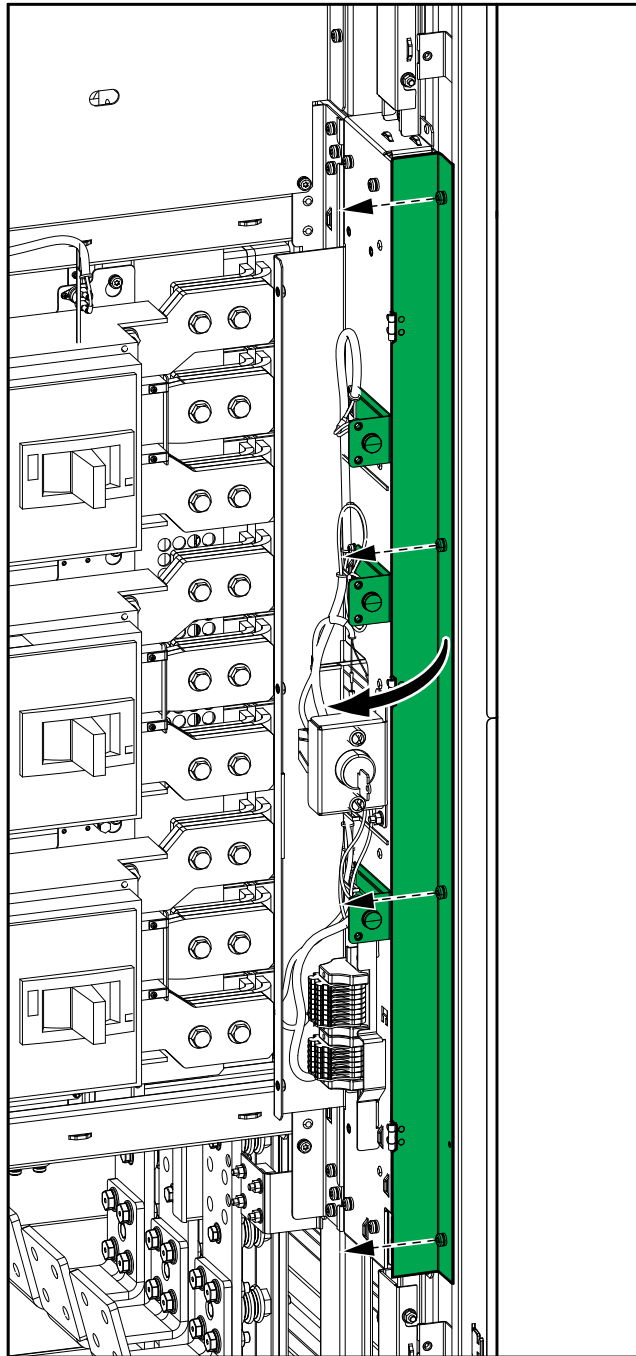
6. Remove the communication box:
  - a. Loosen the three screws from the side of the communication box.
  - b. Remove the two screws above and the screw below the communication box.
  - c. Slide out the communication box.

#### Front View of the Maintenance Bypass Cabinet



7. Push the LEDs back into position and open the cable routing cover.

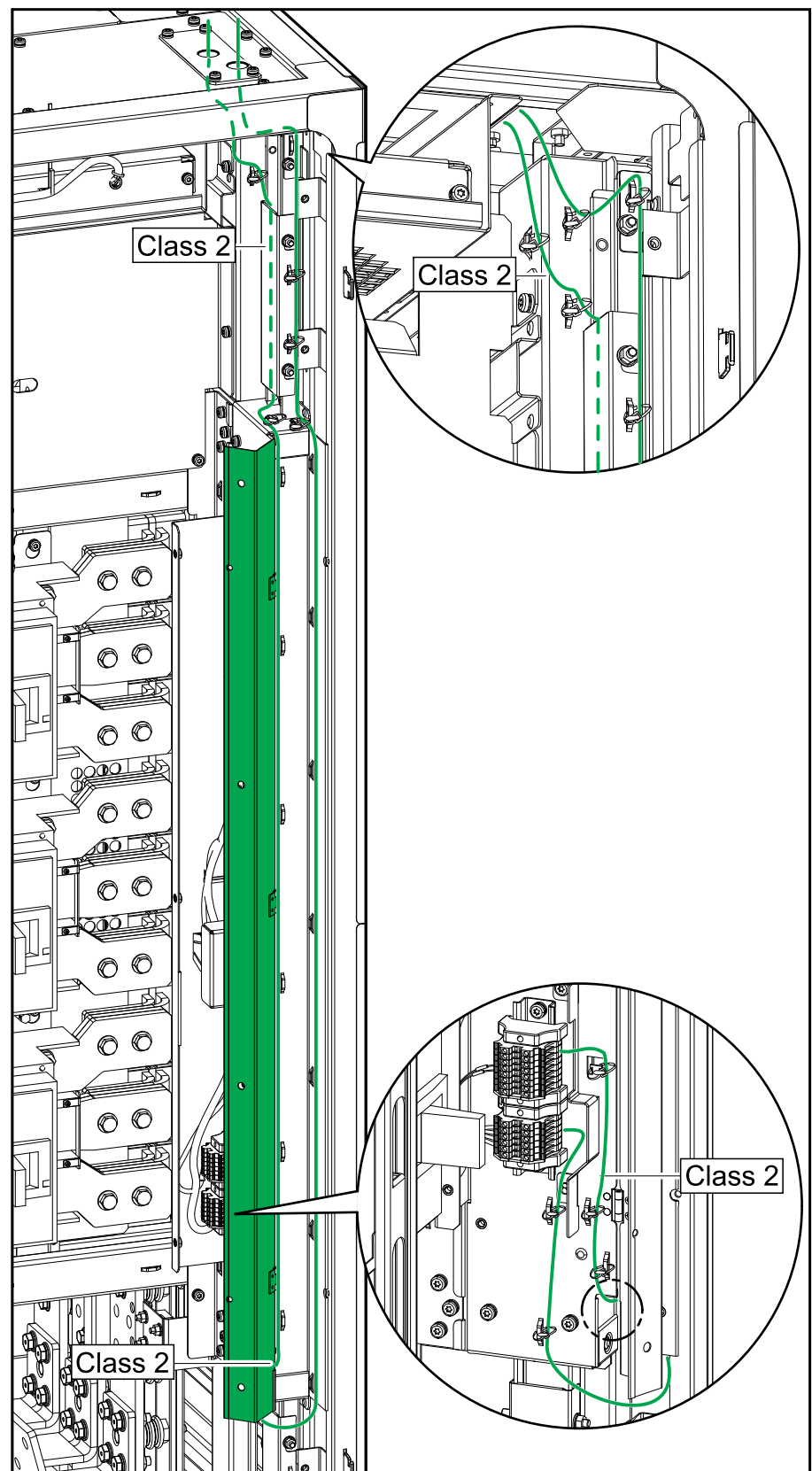
### Front View of the Maintenance Bypass Cabinet



8. Connect the signal cables to the boards in the I/O cabinet.

9. Route the signal cables from the I/O cabinet through the top of the maintenance bypass cabinet to the terminal block. Class 2 circuits must be isolated from the primary circuitry as shown on the illustration. Connect the signal cables in the maintenance bypass cabinet.

### Front View of the Maintenance Bypass Cabinet



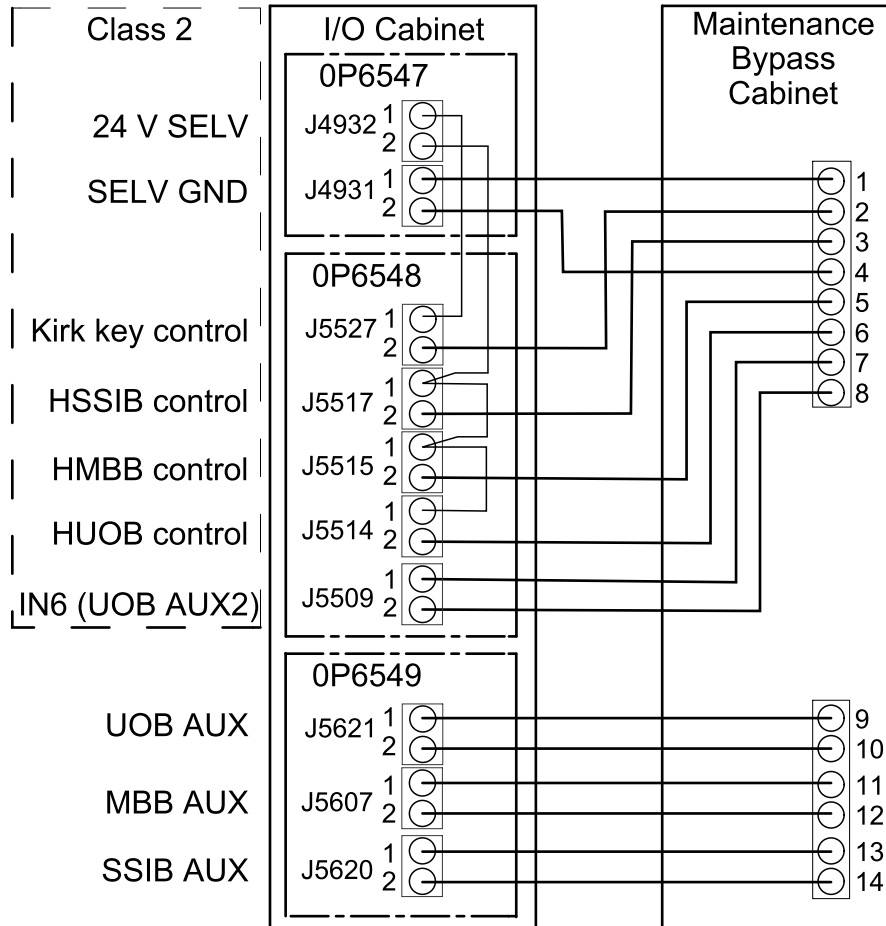
10. Close the cable routing cover.
11. Pull the LEDs out and reinstall the communication box.

12. Push the LEDs back into position and fasten with the screws.
13. Reinstall the plate in front of the breakers.

## Connect Signal Cables in Systems with Bottom Cable Entry

### Overview of Signal Cable Connections

**NOTE:** The UOB must include two separated auxiliary switches.



**NOTE:** Kirk key control, HSSIB control, HMBB control, and HUOB control refer to ground and UOB AUX, MBB AUX, and SSIB AUX refer to neutral.

## ⚠ DANGER

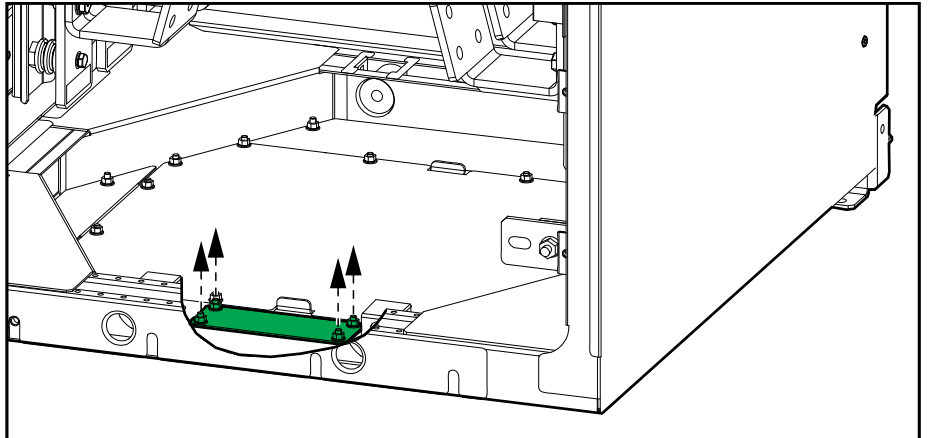
### HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS system.

**Failure to follow these instructions will result in death or serious injury.**

1. Loosen the bolts and remove the gland plate in the bottom of the maintenance bypass cabinet.

#### Front View of the Maintenance Bypass Cabinet



2. Drill or cut holes for cables/conduits.
3. Install conduits and reinstall the gland plate.

### **⚠ DANGER**

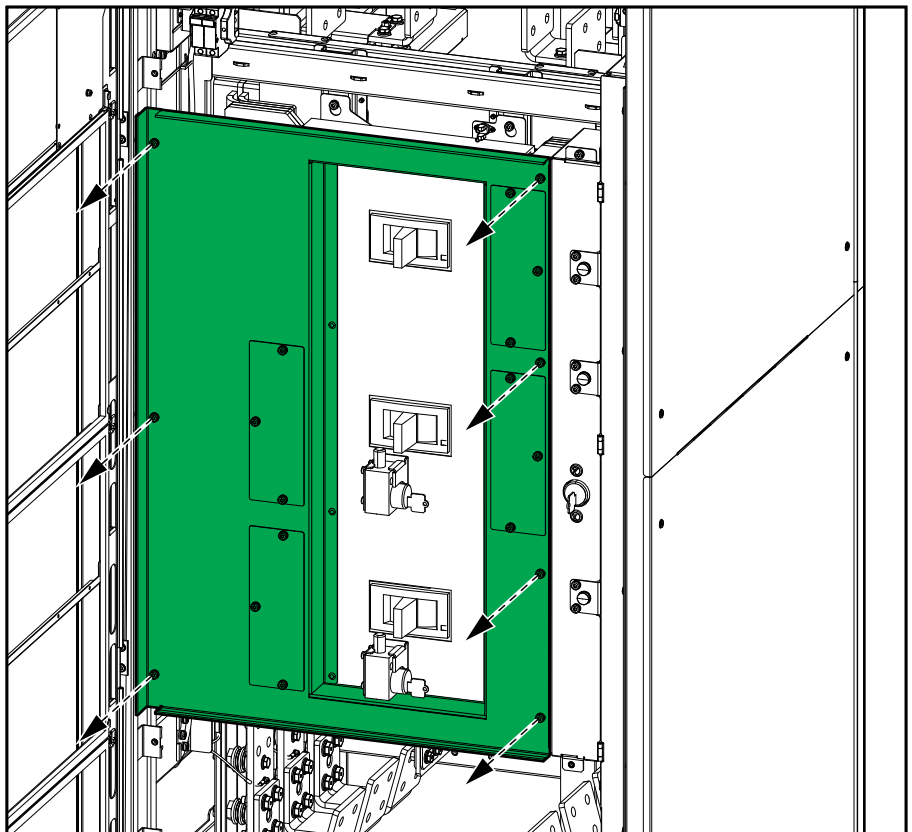
#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Ensure that there are no sharp edges that can damage the cables.

**Failure to follow these instructions will result in death or serious injury.**

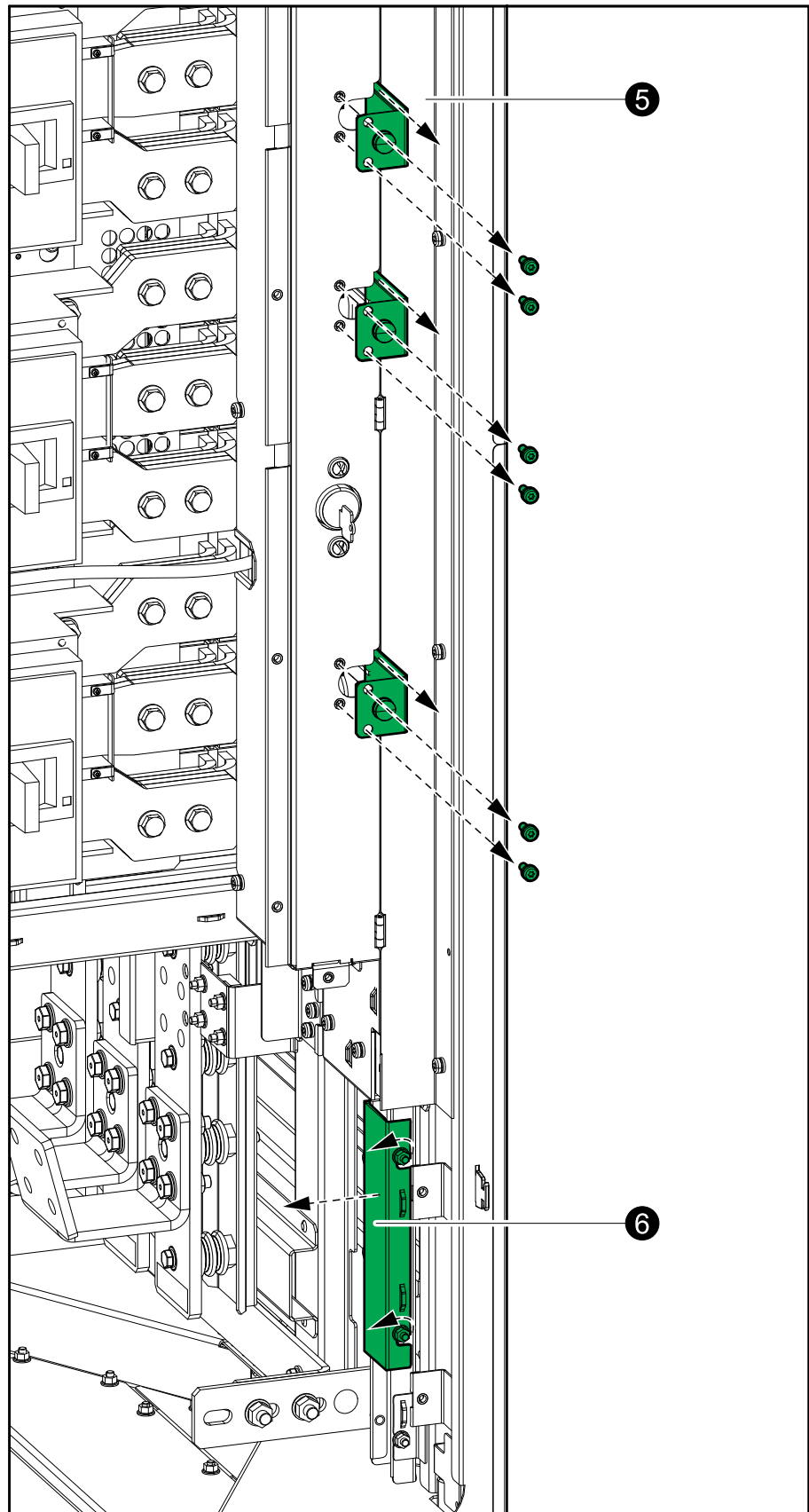
4. Remove the plate from the front of the breakers.

#### Front View of the Maintenance Bypass Cabinet



- Loosen the screws and slide out the three LEDs.

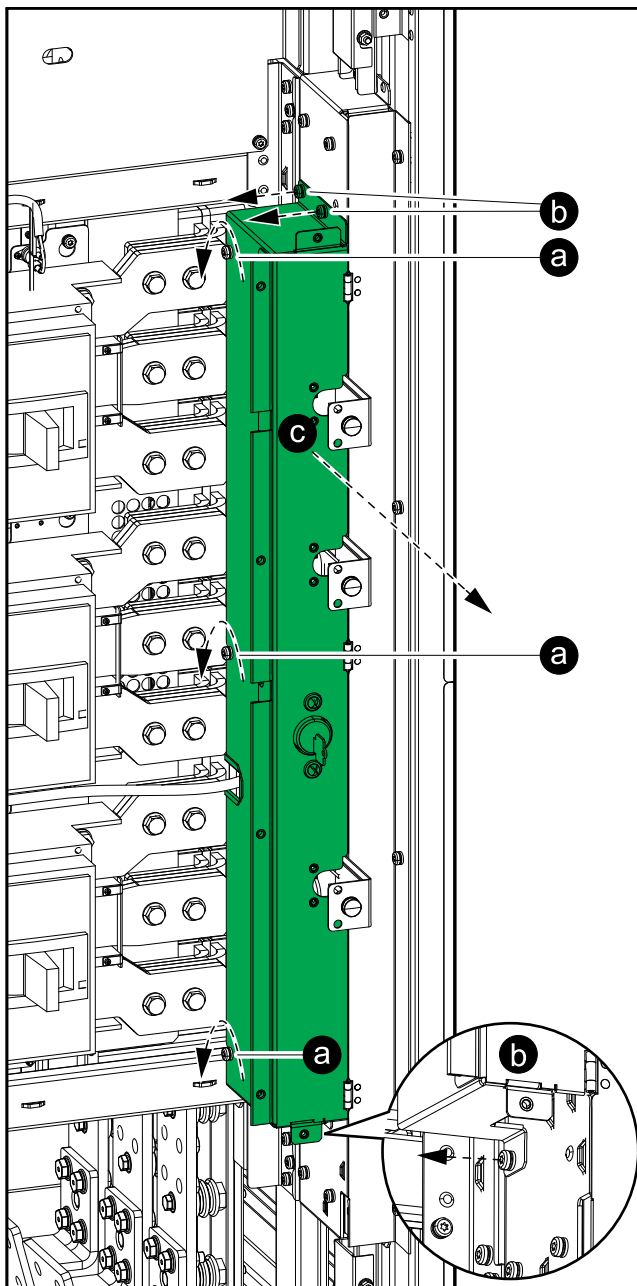
### Front View of the Maintenance Bypass Cabinet



- Remove the indicated plate to facilitate the routing of the signal cables.

7. Remove the communication box:
  - a. Loosen the three screws from the side of the communication box.
  - b. Remove the two screws above and the screw below the communication box.
  - c. Slide out the communication box.

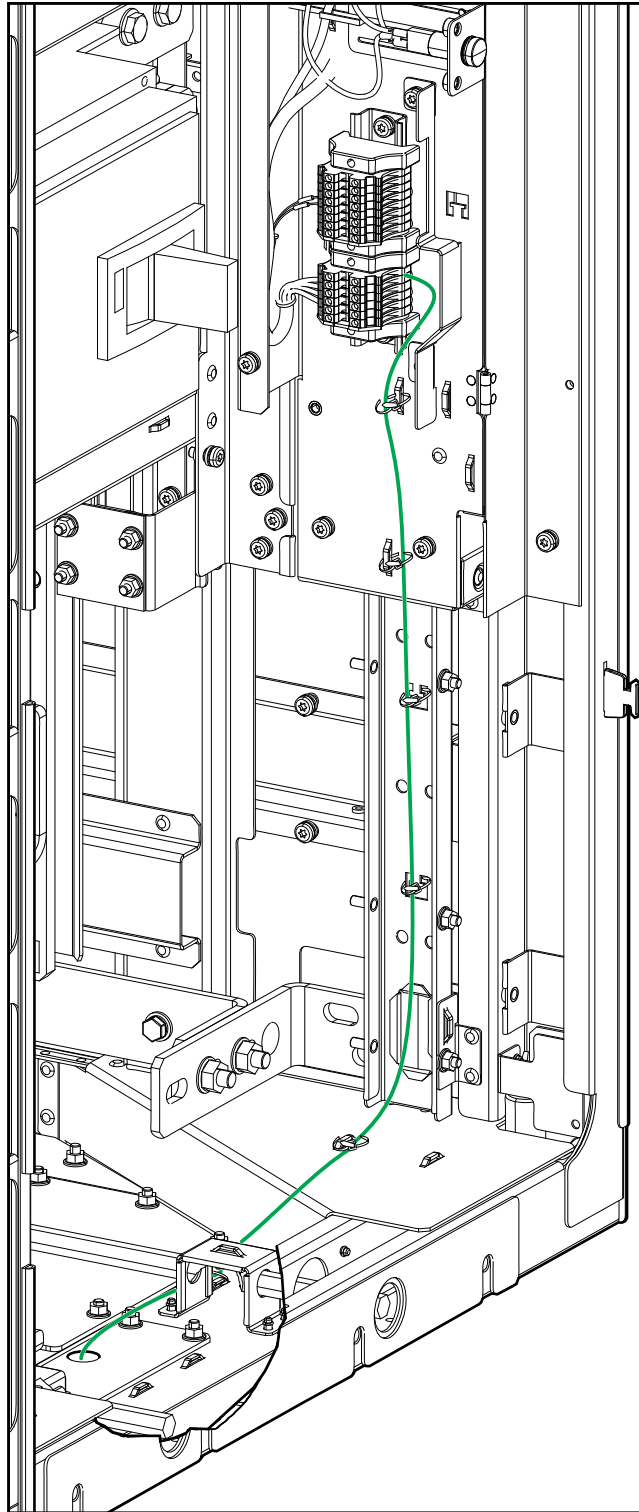
#### Front View of the Maintenance Bypass Cabinet



8. Connect the signal cables to the boards in the I/O cabinet.
9. Route the signal cables from the I/O cabinet through the bottom of the maintenance bypass cabinet to the terminal block.

10. Connect the signal cables for the primary circuitry to the bottom terminal block in the maintenance bypass cabinet.

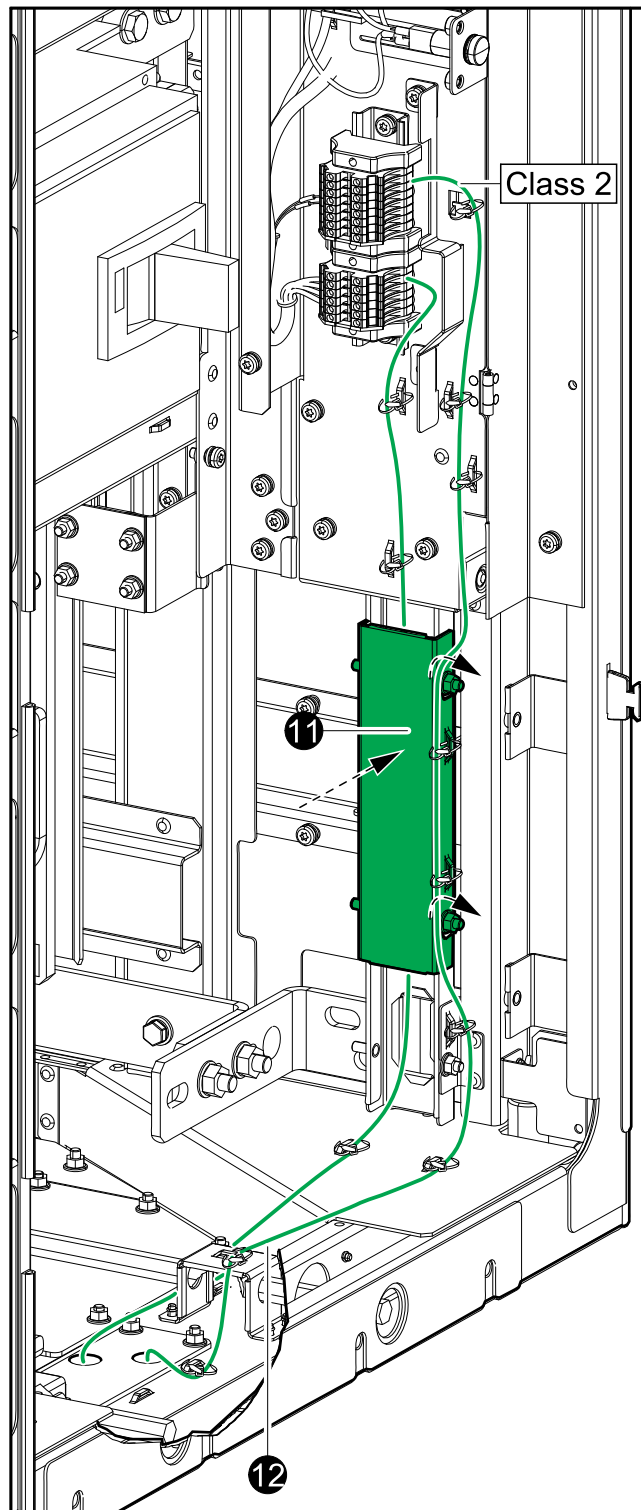
### Front View of the Maintenance Bypass Cabinet





11. Install the indicated plate.

### Front View of the Maintenance Bypass Cabinet

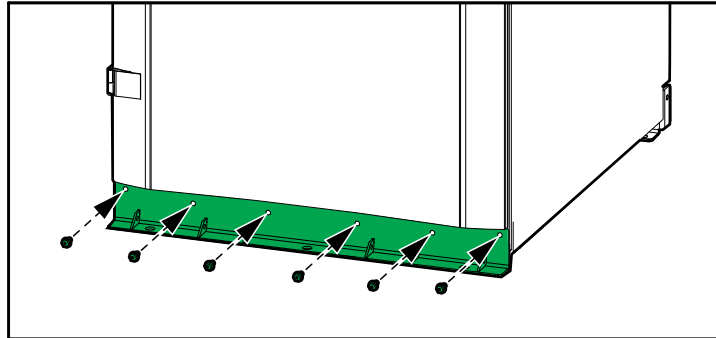


12. Connect the class 2 signal cables to the top terminal block in the maintenance bypass cabinet.
13. Reinstall the communication box.
14. Push the LEDs back into position and fasten with the screws.
15. Reinstall the plate in front of the breakers.

## Mount the Front Anchoring Bracket

1. Fasten the front anchoring bracket to the front of the cabinet using the provided bolts.

### Front View of the Maintenance Bypass Cabinet



2. Anchor the front anchoring brackets to the floor.  
**NOTE:** Floor anchoring bolts are not supplied.



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