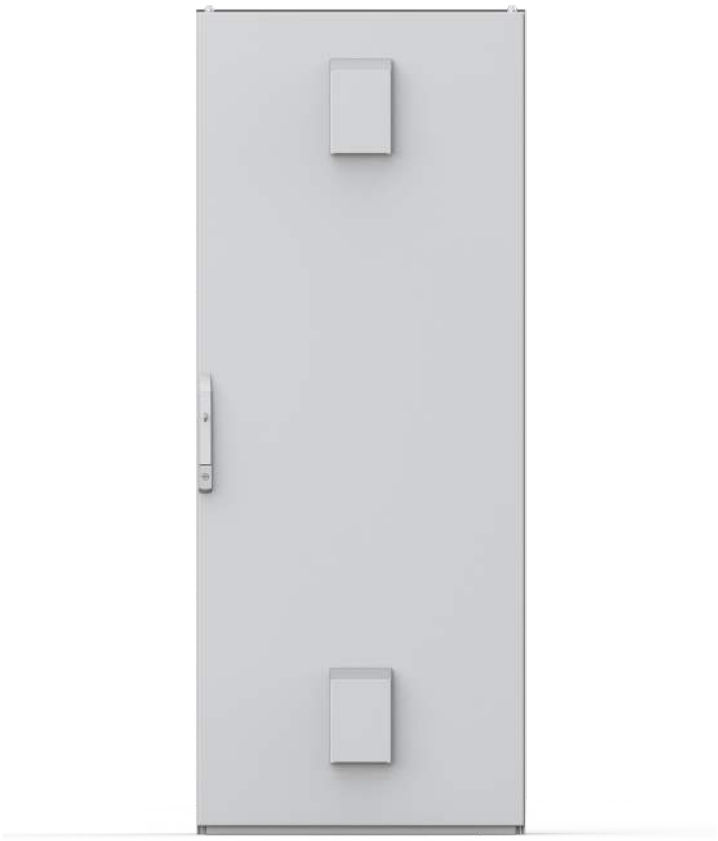
Power Hub

Express Plus DC Fast Charging Platform

Installation Guide



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions for Power Hub that shall be followed during installation, operation and maintenance of the unit.

WARNING:

1. **Read and follow all warnings and instructions before servicing, installing, or operating the ChargePoint® charging station.** Install and operate only as instructed. Failure to do so may lead to death, injury, or property damage, and will void the Limited Warranty.
2. **Only use licensed professionals to install your ChargePoint charging station and adhere to all national and local building codes and standards.** Before installing the ChargePoint charging station, consult with a licensed contractor, such as a licensed electrician, and use a trained installation expert to ensure compliance with local building and electrical codes and standards, climate conditions, safety standards, and all applicable codes and ordinances. Inspect the charging station for proper installation before use.
3. **Always ground the ChargePoint charging station.** Failure to ground the charging station can lead to risk of electrocution or fire. The charging station must be connected to a grounded, metal, permanent wiring system, or an equipment grounding conductor shall be run with circuit conductors and connected to the equipment grounding terminal or lead on the Electric Vehicle Supply Equipment (EVSE). Connections to the EVSE shall comply with all applicable codes and ordinances.
4. **Install the ChargePoint charging station on a concrete pad using a ChargePoint-approved method.** Failure to install on a surface that can support the full weight of the charging station can result in death, personal injury, or property damage. Inspect the charging station for proper installation before use.
5. **The product components are not suitable for use in Class 1 hazardous locations, such as near flammable, explosive, or combustible vapors or gases.**
6. **Supervise children near this device.**
7. **Do not put fingers into the electric vehicle connector.**
8. **Do not use this product if any cable is frayed, has broken insulation, or shows any other signs of damage.**
9. **Do not use this product if the enclosure or the electric vehicle connector is broken, cracked, open, or shows any other signs of damage.**
10. **Use only copper conductor wire, as specified, rated for 90 °C (194 °F).**

IMPORTANT: Under no circumstances will compliance with the information in a ChargePoint guide such as this one relieve the user of the responsibility to comply with all applicable codes and safety standards. This document describes approved procedures. If it is not possible to perform the procedures as indicated, contact ChargePoint. **ChargePoint is not responsible for any damages that may result from custom installations or procedures not described in this document or that fail to adhere to ChargePoint recommendations.**

Document Accuracy

The specifications and other information in this document were verified to be accurate and complete at the time of its publication. However, due to ongoing product improvement, this information is subject to change at any time without prior notice. For the latest information, see our documentation online at chargepoint.com/guides or chargepoint.com/eu/guides.

Copyright and Trademarks

Symbols

This guide and product use the following symbols:

DANGER: Risk of electric shock

WARNING: Risk of personal harm or death

CAUTION: Risk of equipment or property damage

IMPORTANT: Crucial step for installation success

Read the manual for instructions

Ground/protective earth

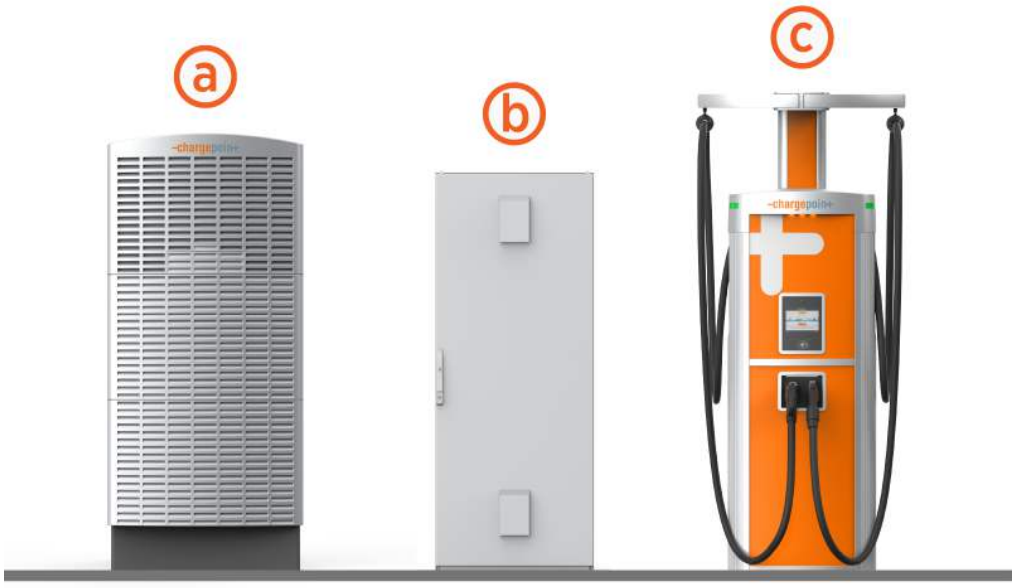
Illustrations Used in This Document

The illustrations used in this document are for demonstration purposes only and may not be an exact representation of the product. However, unless otherwise specified, the underlying instructions are accurate for the product.

Contents

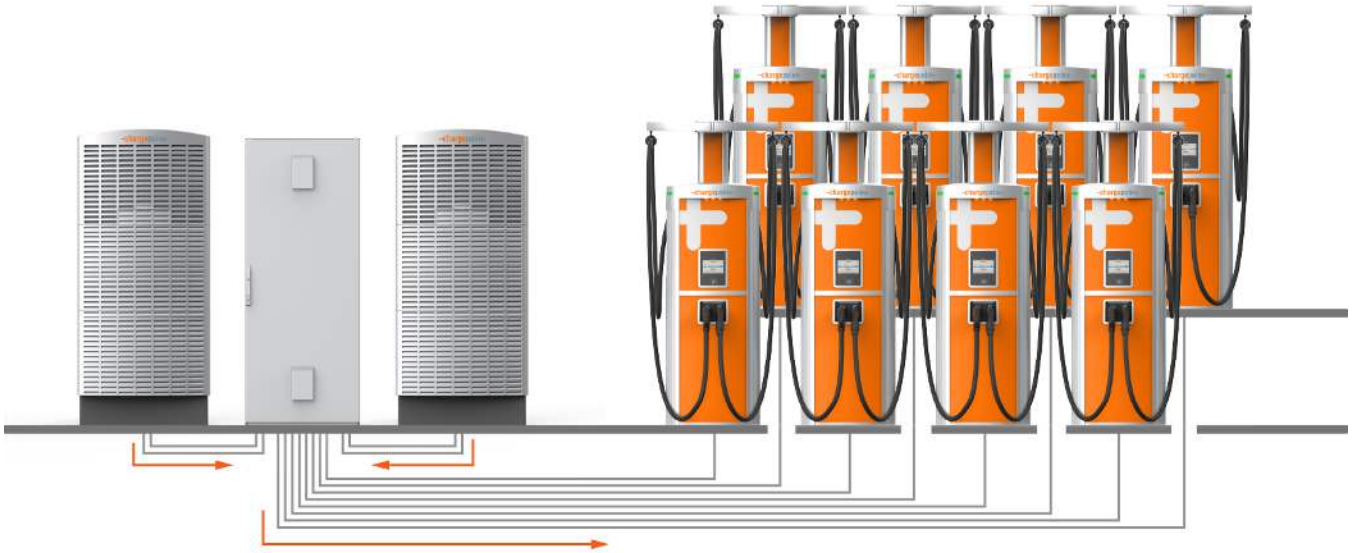
Introduction 1

Power Hub and Express Plus



The Power Hub is a component of the Express Plus product family. Express Plus is a modular solution for scalable fast charging of electric vehicles, comprising the following product components:

- **(a)** Power Block: Power cabinet that converts AC power to DC power. Supplies DC output power to Power Links, either directly or through a Power Hub. Each Power Block has two DC outputs.
- **(b)** Power Hub: Distribution cabinet that enables one or more Power Blocks to distribute charging power to more Power Links than a single Power Block could support by itself.
- **(c)** Power Link: Dispenser for electric vehicles, available in single or dual input variants. Can support up to two output cables or automatic connection devices with sequential or simultaneous charging.



The Power Hub is used in fleet charging architectures. Each Power Hub can accept input power from up to two Power Blocks, and then distribute that power to as many as eight Power Links (two or four of which can actively charge at a time, depending on configuration). The configuration shown above can charge two vehicles at a time and supports sequential charging of 16 vehicles.

Internal disconnect switches enable high voltage shutoff between the Power Hub and each of its connected Power Blocks. Low voltage and Ethernet connectivity are fed from the Power Blocks to the Power Hub, and from the Power Hub to Power Links.

Power Hub Installation Configurations

Riser Kit

The Power Hub can be installed on a riser if additional space beneath the Power Hub is needed to accommodate conduit fittings or cable glands. The riser raises the Power Hub cabinet off the ground by 100 mm (4 in). The Power Hub Riser Kit is ordered and shipped separately from the Power Hub.

Single or Double Input

The Power Hub ships equipped for high voltage DC inputs from one Power Block, denoted Power Block Left. This default configuration includes hardware for landing high voltage DC cables from Power Block Left, and a disconnect switch for high voltage DC power shutoff from Power Block Left.

The Power Hub can be configured to accept high voltage inputs from a second Power Block, denoted Power Block Right, by installing a Second Input Kit. The Second Input Kit includes hardware for landing high voltage DC input cables from Power Block Right, as well as a second disconnect switch for power shutoff from Power Block Right. Adding a second Power Block to a Power Hub doubles the potential power available to share across connected Power Links.

The Second Input Kit must be ordered separately, and is field installed into the Power Hub. Installation of the Second Input Kit can be performed solely from the front side of the cabinet; however it is more easily installed when there is both front and rear acess to the cabinet. In cases where the rear clearance of an installed Power Hub is less than 812.8 mm (32 in), it is easiest to install the Second Input Kit prior to mounting the Power Hub into its final location. For example, it may be installed in the field while the Power Hub is still attached to its shipping pallet. For the case in which an installed Power Hub may be connected to a second Power Block at a future time, consider pre-installing a Second Input Kit prior to initial cabinet mount.

The Second Input Kit is ordered and shipped separately from the Power Hub, and is field installed into the Power Hub.

Wire Entry

The Power Hub supports two types of conductor entry:

- Stub-up entry: The conductor wires enter the Power Hub from underground, through stubbed-up conduits.
- Surface entry: The conductor wires enter the Power Hub through its rear or sides, through conduits laid on the surface of the concrete.

Wires may be pulled prior to the installation of the Power Hub or after mounting the Power Hub enclosure. This guide follows the approach of pulling wires into the Power Hub after mounting the enclosure.

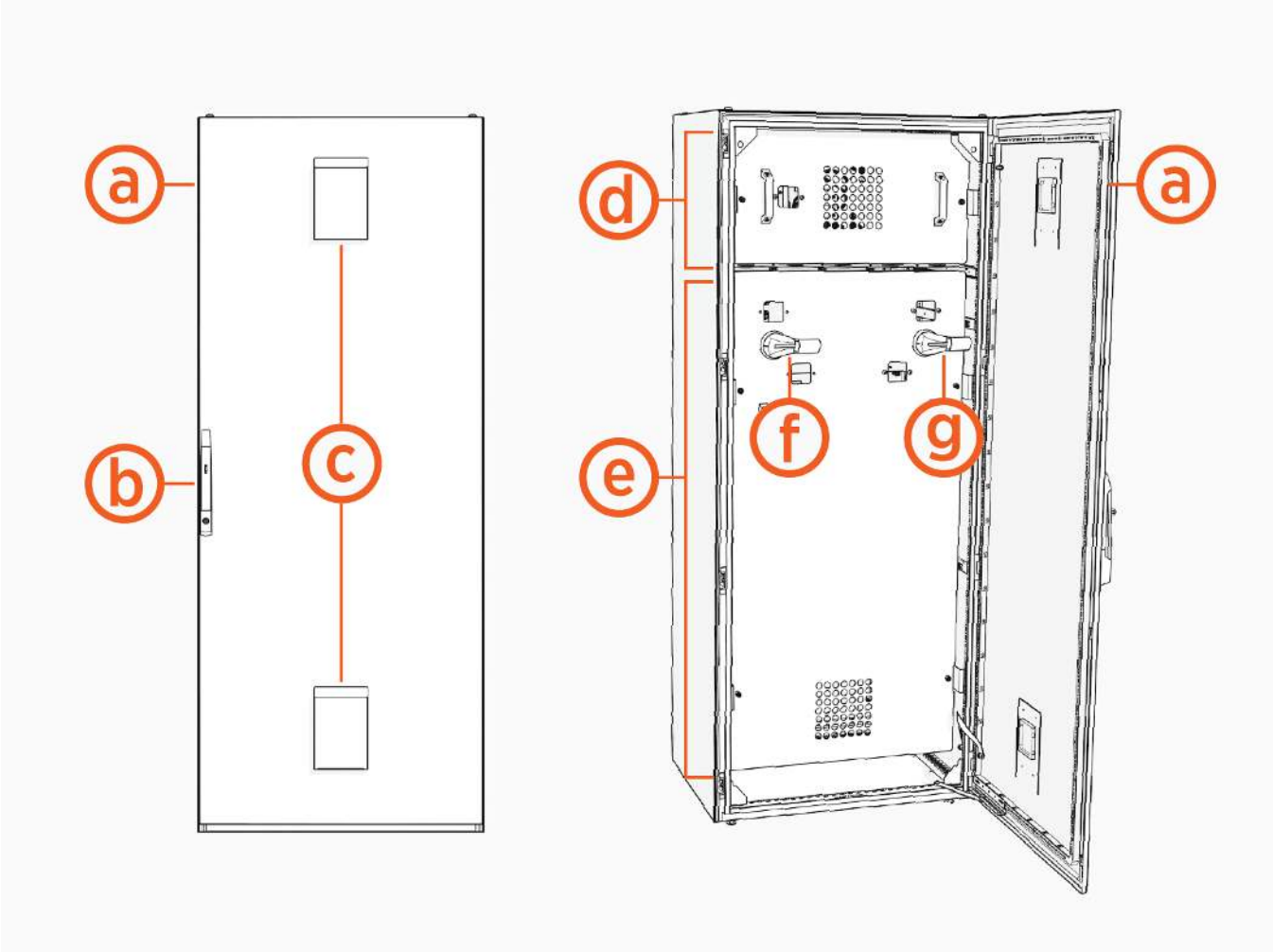
Split Bus

The Power Hub ships configured as a dual bus system that supports charging of two vehicles at a time, one vehicle per bus. When used with two Power Block inputs, the Power Hub can be configured in a split bus configuration that supports charging of four vehicles at a time. This configuration is achieved by removing a set of bus jumpers from the high voltage DC output terminals. Jumper removal is done in the field from the front of the cabinet.

Note: The Power Hub must have two Power Block inputs to be used in split bus configuration.

Power Hubs with a split bus configuration should be tagged as "split bus" on the site plan.

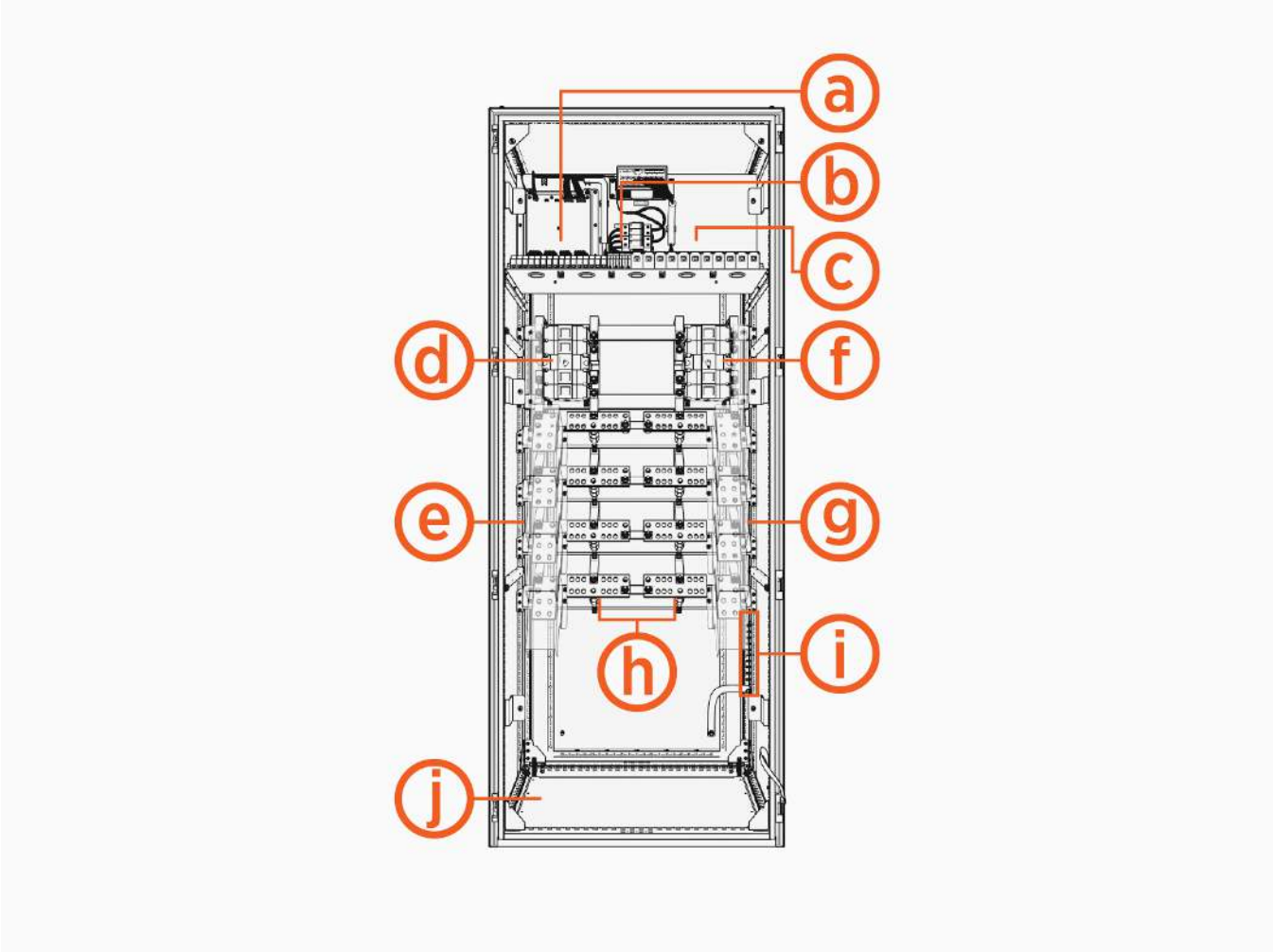
Power Hub Components



Power Hub exterior components:

- **(a)** Front door
- **(b)** Door handle with lock
- **(c)** Air vents
- **(d)** Low voltage cabinet dead front
- **(e)** High voltage cabinet dead front
- **(f)** Disconnect handle, left
- **(g)** Disconnect handle, right

  Note: The Power Hub does not ship with a right disconnect handle. It is field installed if the Power Hub connects to two Power Blocks.



Power Hub interior components:

- **(a)** 48 VDC output terminals
- **(b)** 48 VDC input terminals
- **(c)** Ethernet ports
- **(d)** Disconnect switch, left
- **(e)** High voltage DC input terminals, left
- **(f)** Disconnect switch, right

  Note: The Power Hub does not ship with a right disconnect switch. It is field installed if the Power Hub connects to two Power Blocks.
- **(g)** High voltage DC input terminals right

  Note: The Power Hub does not ship with these terminals installed. They are field installed if the Power Hub connects to two Power Blocks.
- **(h)** High voltage DC output terminals
- **(i)** Ground studs
- **(j)** Gland plate

Power Hub Guides

Access ChargePoint documents at chargepoint.com/guideschargepoint.com/eu/guides.

Document	Content	Primary Audiences
Datasheet	Full station specifications	Site designer, installer, and station owner
Site Design Guide	Civil, mechanical, and electrical guidelines to scope and construct the site	Site designer or engineer of record
Construction Signoff Form	Checklists used by contractors to ensure the site is correctly completed and ready for product installation	Site construction contractor
Installation Guide	Anchoring, wiring, and powering on	Installer
Operation and Maintenance Guide	Operation and preventive maintenance information	Station owner, facility manager, and technician
Service Guide	Component replacement procedures, including optional components	Service technician
Declaration of Conformity	Statement of conformity with directives	Purchasers and public

For assistance, contact ChargePoint Support (chargepoint.com/support).

Prepare for Installation 2

Check Site Readiness

Civil and Mechanical Readiness

Ensure that:

- The installation site (i.e., concrete pad or concrete surface) meets the conservative stability specifications given in the *Express Plus Power Hub Site Design Guide*, or has been inspected and approved by a structural engineer for the Power Hub dimensions and weight as given in the *Express Plus Power Hub Site Design Guide*.
- The concrete pad is fully cured and smooth.
- The slope at the installation site does not exceed 20 mm per meter (0.25 in per ft). If necessary, use a grinder or a hammer and chisel to remove any concrete that is not level with the rest of the concrete pad or surface.
- Four anchor bolts are installed in the concrete at the each installation location specified by the site drawings, and in accordance with instructions given in the *Express Plus Power Hub Site Design Guide*.
- The anchor bolt ends protrude 38 mm (1.5 in) above the concrete surface, and they are plumb.
- The wires and conduits meet the requirements given in the site drawings.
- The electrical equipment is installed and labeled in accordance with the National Electrical Code (NEC) and all applicable requirements of the serving electric utility company and the authority having jurisdiction.
- The installation site meets the drainage and clearance guidelines given in the *Express Plus Power Hub Site Design Guide*.
- Sufficient space is available to use a forklift or other lifting equipment, unpack, remove packing materials, and allow two people to freely move throughout the site.

Electrical Readiness

Refer to the *Power Hub Datasheet* and *Express Plus Power Hub Site Design Guide* at chargepoint.com/guideschargepoint.com/eu/guides for electrical input and output specifications.

Bring These Tools and Materials

Installing the Power Hub requires at least two people. Additionally, the installer must bring the following tools and materials. These are not provided by ChargePoint.

CAUTION: Comply with these guidelines to prevent component damage.

- Use appropriately sized tools to torque fasteners.
- Use the given torque values to tighten the fasteners.
- Ensure that the tools such as torque tool, multimeter, and Ethernet tester are calibrated.

Tools

Forklift

- Rated for ≥ 240 kg (530 lbs)
- Maximum size of forklift tines:
  - Width = 102–127 mm (4–5 in)
  - Maximum thickness ≤ 57 mm (2.25 in)
- If your site has height constraints, use alternative equipment

Flat eye web lifting sling

- Rated for 240 kg (530 lbs)
- 1.8 m (6 ft length)

Hard hat

Cut-resistant gloves

Safety glasses

Stepladder

Cable ties

Drill and drill bits (3.2–6.4 mm (1/8–1/4 in))

Cable puller or fish tape

Measuring tape or other tool to measure height, length, and distance

Level

Lock out/tag out equipment

Multimeter with CAT III 1000 V ratings, such as Fluke 87V or similar

Ethernet tester such as a Klein Tools VDV526-052 VDV LAN Scout Jr. Tester or similar


Conduit cutter (to cut up to 2.5 in conduits)


Wire cutters, including for Ethernet (Cat6 Shielded Twisted Pair (STP)) cable


Lug crimping tool and die


Torque wrench


Hex socket set (7/16 in, 9/16 in, 3/4 in, 15/16 in, including deep socket)


T25 Torx screwdriver


Phillips head screwdriver set


Torque paint pen


Anti-oxidant joint compound and wire pulling lubricant


Duct seal compound


Box cutter


Wire strippers, including Ethernet (Cat6 STP) cable


Ethernet (RJ45) connector crimping tool


Torque screwdriver


Hex wrench set (3/16 in, 8 mm, and adjustable)


Flat head screwdriver set


Paper towel roll


Permanent marker


Dielectric grease


Industrial vacuum cleaner

Tightening Torque

	Component	Fastener (Qty)	Tool	Torque
Enclosure Body	Anchor top nuts (no riser install)	5/8 in nut (x4 per enclosure)	15/16 in socket wrench	94.9 Nm (70 ft-lb)
	Anchor bolts (riser install)	M12 bolts (x4 per enclosure)	8 mm hex wrench	94.9 Nm (70 ft-lb)
Panels and plates	Dead fronts	Captive screws (x2 per panel)	#2 Phillips screwdriver	5.6 Nm (50 in-lb)
	Gland plate	T25 Torx screws (x8 per plate)	T25 Torx screwdriver	5.1 Nm (45 in-lb)
Wire landing	48 VDC input wire	Set screw (x1 per wire)	#2 Phillips screwdriver	2.8 Nm (25 in-lb)
	48 VDC output wire	Set screw (x1 per wire)	#2 Phillips screwdriver	1.7 Nm (15 in-lb)
	Ground wire lug nut	1/4 in serrated nut (x1 per lug)	7/16 in socket wrench	4.9 Nm (43 in-lb)
	HVDC wire lug nuts	1/2 in nut (x2 per lug)	3/4 in socket wrench	61.6 Nm (45 ft-lb)
Buses	HVDC input bus safety cover	Captive screws (x4 per cover)	3/16 in hex wrench	2.8 Nm (25 in-lb)

Materials

- Fasteners for securing cabinet to anchor bolts
  - Washers: 5/8 in, ASTM A240
  - Nuts: 5/8 in, hex, ASTM F594 and ANSI B18.22.1 Type A Plain
  - Quantity (x4) per Power Hub
- Ground wires, quantity and type as specified by site plan
- High voltage DC wires, quantity and type as specified by site plan
- 48 VDC wires, quantity and type as specified by site plan
- Outdoor rated Cat6 Shielded Twisted Pair (STP) Ethernet cables, quantity as specified by site plan
- Cat6 shielded connectors, quantity as specified by site plan

- High voltage DC lugs
    - Must be Listed lugs
    - Must be nickel, tin, or silver plated copper compression (not mechanical) lugs
        - Nickel plated is recommended
    - Long tongue with two holes
    - 13 mm (1/2 in) hole size
    - 44.5 mm (1-3/4 in) hole spacing
    - Maximum tongue width 19 mm (3/4 in)
    - Quantity as specified by site plan
- Ground wire lugs
    - Must be Listed lugs
    - Must be nickel, tin, or silver plated copper compression (not mechanical) lugs
        - Nickel plated is recommended
    - Single hole
    - M6 hole size
    - Maximum tongue width 19 mm (3/4 in)
    - Quantity as specified by site plan
- Weatherproof sealant

Power Hub Packages

Product	Package Detail	Dimensions (L x W x H)	Weight
Power Hub	Enclosure vertically bolted to pallet, wrapped in cardboard	1.22 x 1.01 x 2.18 m (48 x 40 x 86 in)	240 kg (530 lbs)
Riser Kit	Cardboard box	0.79 x 0.22 x 0.11 m (31 x 8.5 x 4.5 in)	7 kg (15.5 lb)
Second Input Kit	Cardboard box	0.89 x 0.38 x 0.23 in (35 x 15 x 9 in)	12.7 kg (28 lb)

CAUTION: Always transport and store the Power Hub in its original packaging. Use appropriate lifting equipment (forklift or crane, lifting straps, and any corresponding attachments and accessories). Ensure the load rating of all lifting equipment is adequate for the weight of the Power Hub.

CAUTION: Keep components in original packaging, free of moisture, and protected from damage until you install or service them at the site. Store all shipments of components in a dry covered location and protect from moisture.

IMPORTANT: Leave components in original packaging until needed. When removing, protect them from damage (such as scratches) by placing them flat on a blanket or tarp, face up. Do not stand up cover panels, as they may be knocked or blown over.

IMPORTANT: Keep components out of direct sunlight in a cool area until you install them.

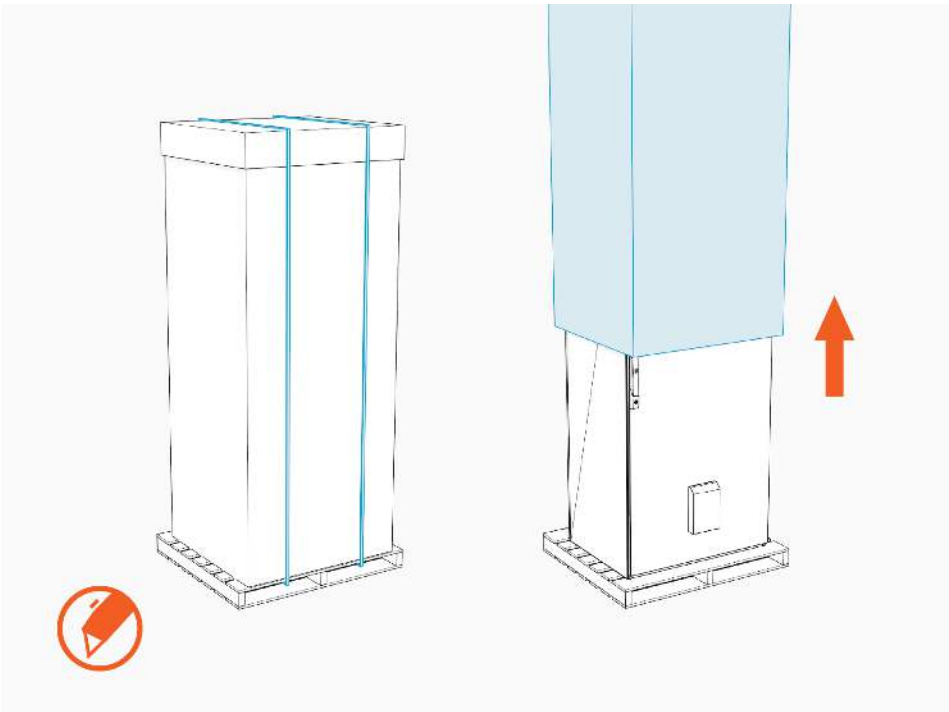
WARNING: AN UNSECURED POWER HUB IS HEAVY AND CAN CAUSE INJURY OR DEATH IF DROPPED. DO NOT STAND OR WALK BENEATH THE POWER HUB WHILE IT IS BEING MOVED. TAKE PRECAUTIONS AGAINST THE POWER HUB TIPPING OR SLIDING. Unpack and Inspect the Power Hub

Unpack and Inspect the Power Hub

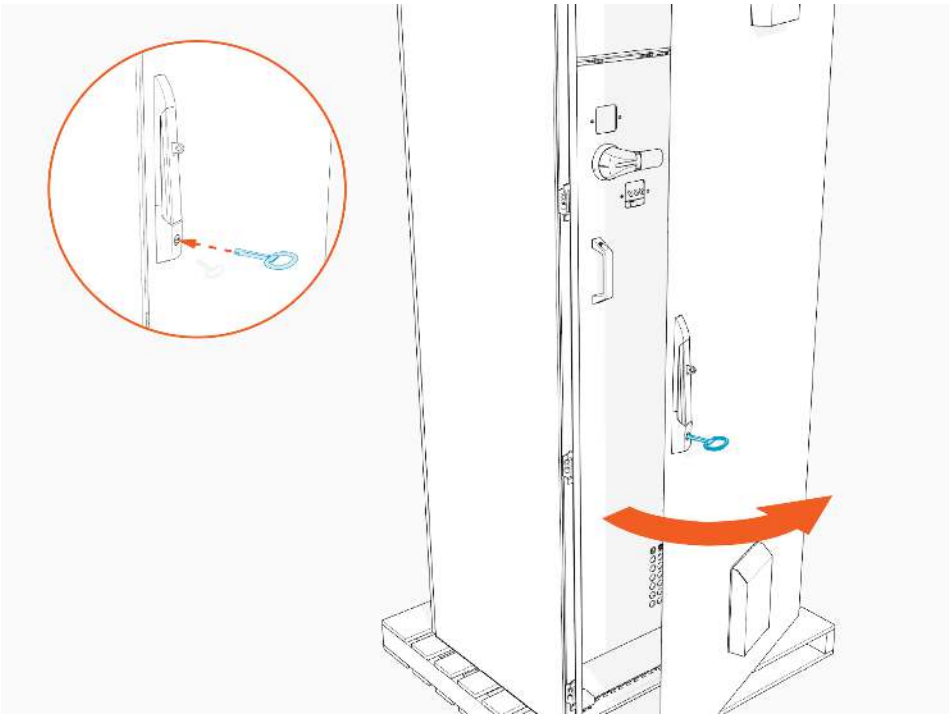
Unpack the Power Hub

The Power Hub ships vertically bolted to a pallet, and packaged in a cardboard wrap secured with straps. Before unpacking, use a forklift to transport the packaged Power Hub close to the installation site.

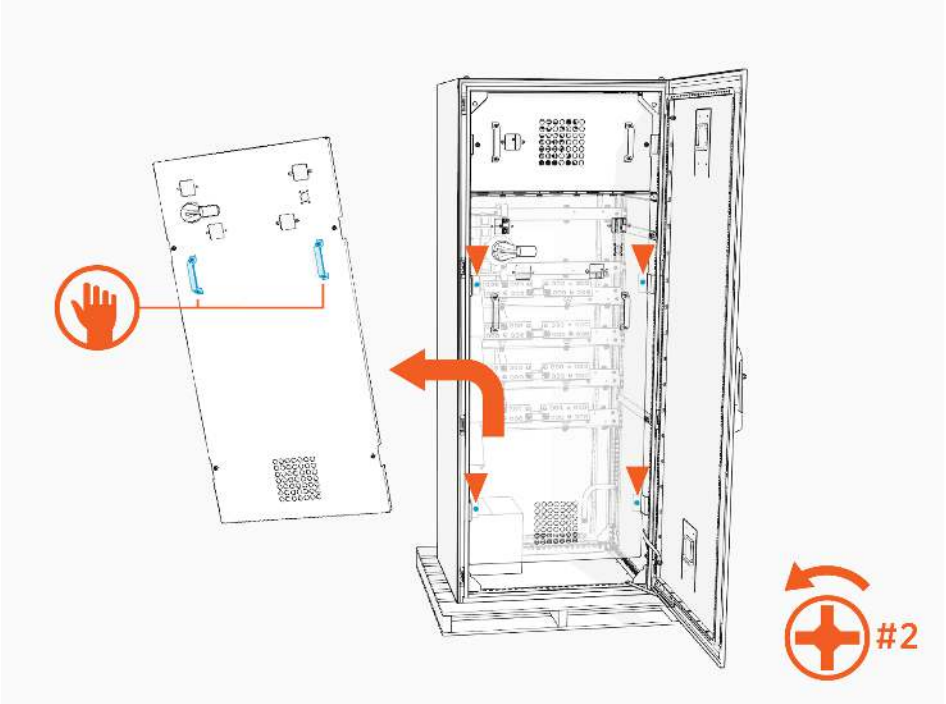
1. Remove the cardboard wrap.



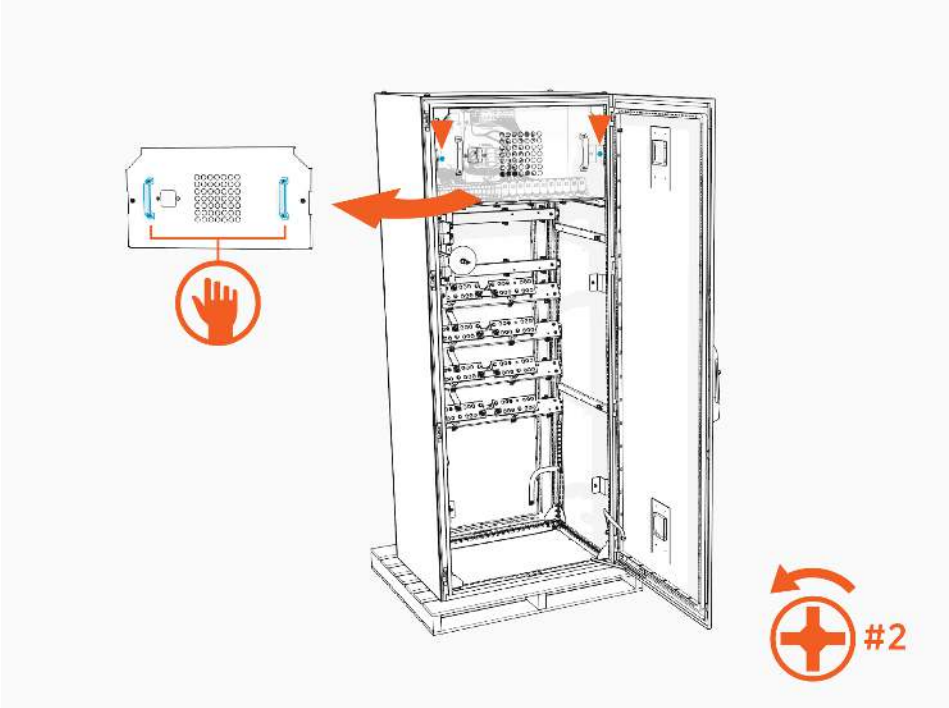
2. Locate the cabinet key zip-tied to the cabinet door. Remove the key from the door. Unlock and open the cabinet door.



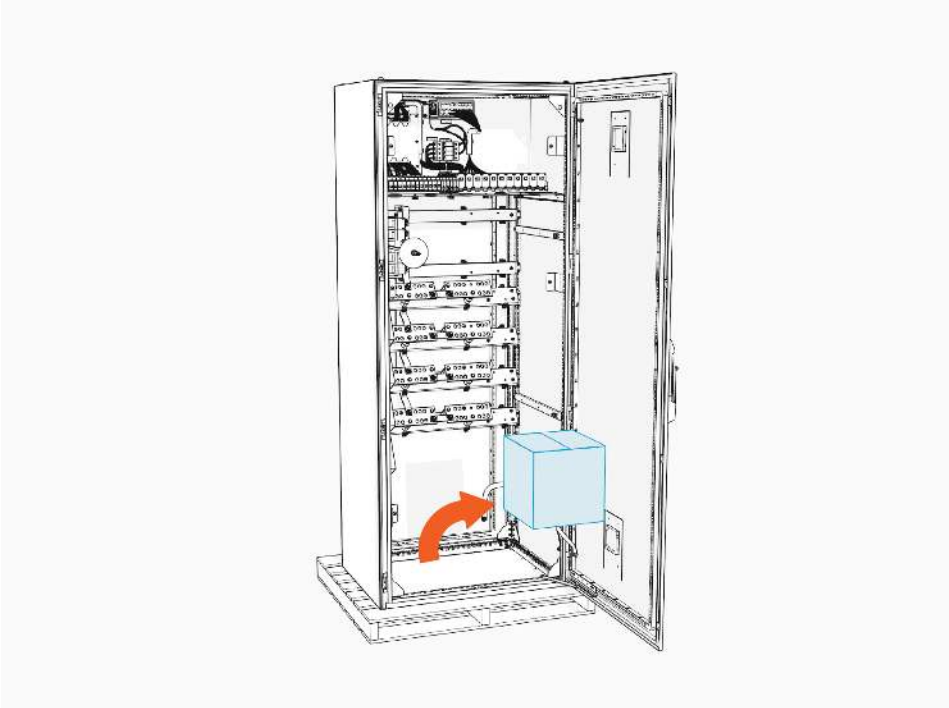
3. Remove the high voltage cabinet dead front. Loosen two captive screws (x2) on the dead front until they disengage. Use the handles to lift the dead front up and off. Set it aside in a safe location.



4. Remove the low voltage cabinet dead front. Loosen two captive screws (x2) on the dead front until they disengage. Use the handles to lift the dead front up and off. Set it aside in a safe location.

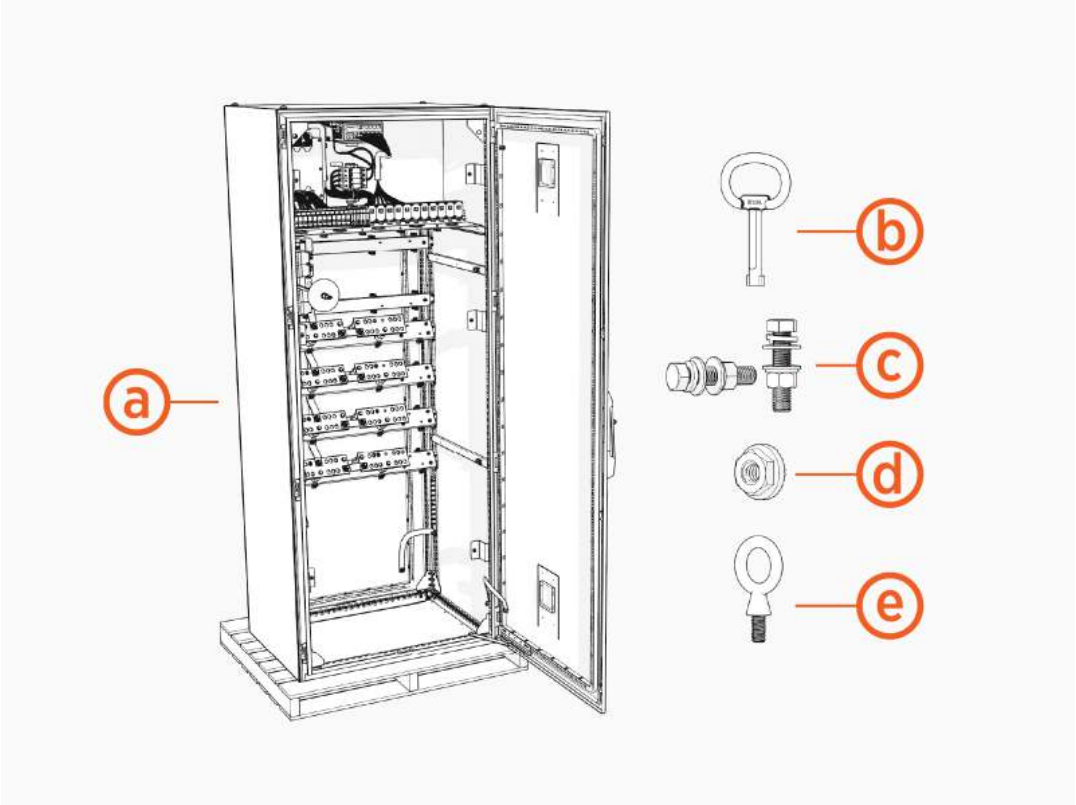


5. Retrieve a cardboard box of installation parts from within the cabinet.



Review Power Hub Parts

Ensure all contents shown below are present.



(a) Power Hub cabinet

(b) Key

(c) High voltage lug fasteners (x40)

- 1/2 x 2-1/4 inch bolt
- 1/2 inch lock washer
- 1/2 inch flat washer (x2)
- 1/2 inch Belleville washer
- 1/2 inch hex nut

(d) Ground lug fasteners (x12)

- 1/4 inch serrated flange nut

(e) M12 Eye bolts (x4)

Disconnect Power

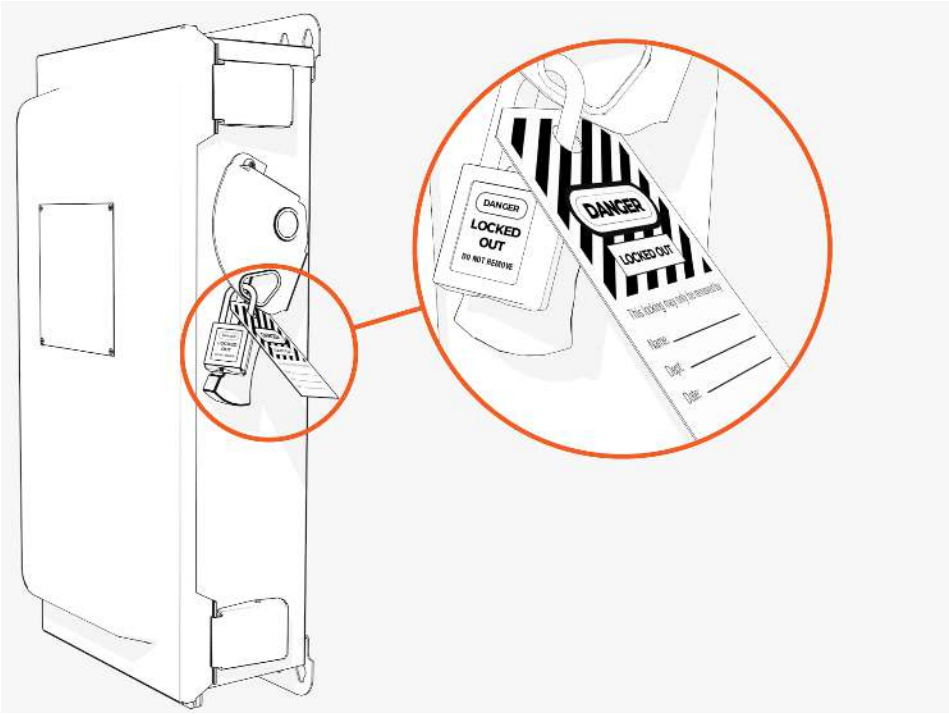
DANGER: RISK OF SHOCK

- Before any procedure, disconnect the power.
- Follow local code and site lockout/tagout procedure to de-energize the station.
- Wait for energy to dissipate (approximately five minutes).
- Keep power off until all covers and panels are reinstalled and the work is complete.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY, LOSS OF LIFE, OR PROPERTY DAMAGE.

1. Disconnect power at the Power Block that feeds the Power Hub.

   Note: Follow standard practice and local code to de-energize the applicable circuit and lock out/tag out the disconnect before proceeding.



2. Use a multimeter to test that power is off.

Install Power Hub 3

CAUTION: Warranty Limitation

- If the distribution cabinet is not installed and serviced by a ChargePoint certified installer or technician using a ChargePoint-approved method, the product is *excluded* from all ChargePoint and other warranties and ChargePoint is *not* responsible.
- You must be a licensed electrician and complete the training at chargepoint.com/installerschargepoint.com/eu/installers to become ChargePoint certified and to access the ChargePoint Cloud Dashboard.

WARNING: Do not install or service the charging station in inclement weather. If you work in rain or wind, you must use a weather-proof shelter that covers all boxes and components.

CAUTION: Use low torque settings when working with power tools during installation or servicing. Over-torquing can damage the equipment.

CAUTION: While installing fasteners inside the Power Hub, make sure not to drop the fasteners inside conduit openings. You may use conduit caps or covers to temporarily cover the conduit openings.

IMPORTANT: Ensure the installation complies with all applicable codes and ordinances.

IMPORTANT: If the site has height constraints for installation, contact ChargePoint to get instructions and clearances that you will need for the modified process.
Alternatively, you may use a forklift bracket kit, or a crane with lifting shackles and a spreader bar (constraints may differ among sites).

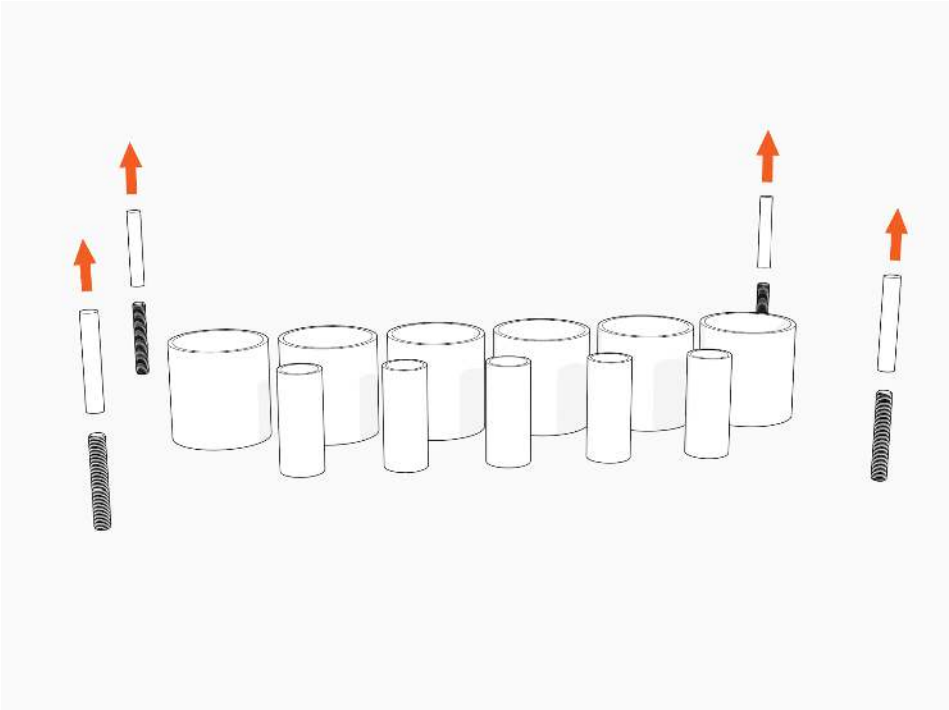
Note: In addition to these instructions, installers must reference the specific site scope and project drawings for additional information and considerations, including the system layout and any related electrical drawings.

Install Second Input Kit (As Required)

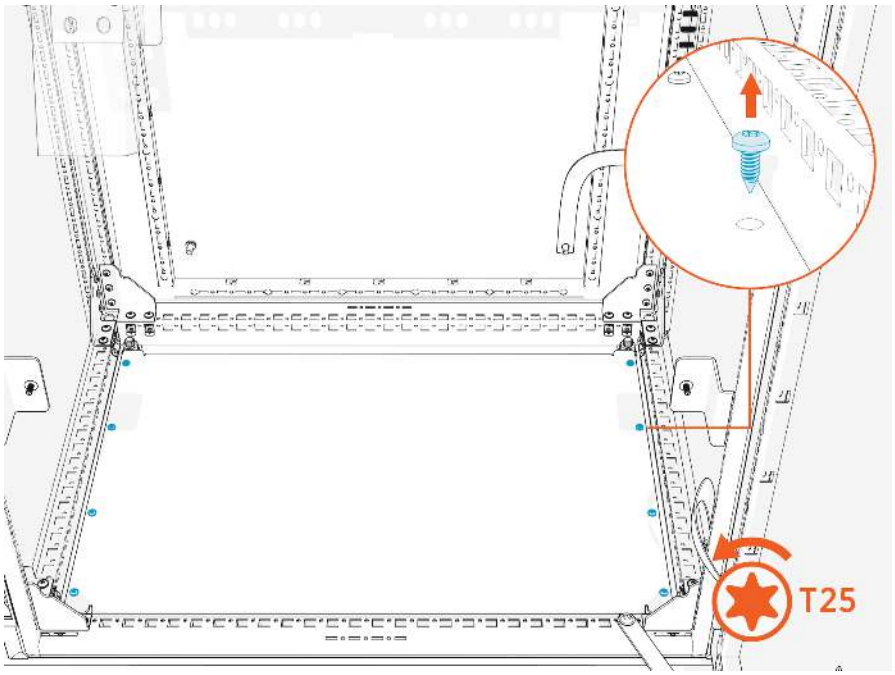
Refer to the site design drawings. If the Power Hub connects to two Power Blocks, install a Second Input Kit into the Power Hub while it is still mounted on its shipping pallet. See Appendix: Install Second Input Kit for installation instructions.

Prepare for Mount

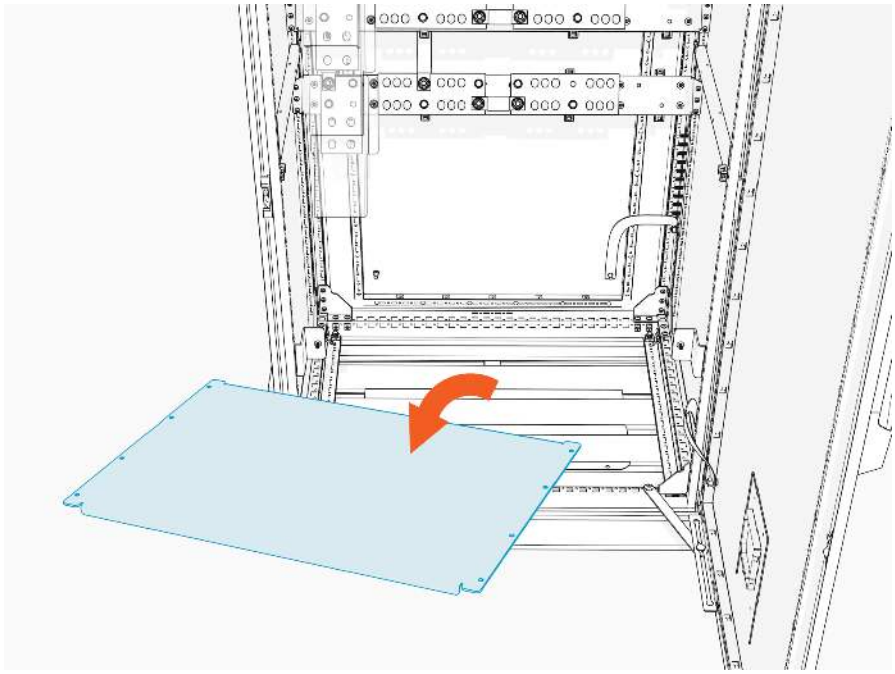
1. Remove plastic caps from anchor bolts.



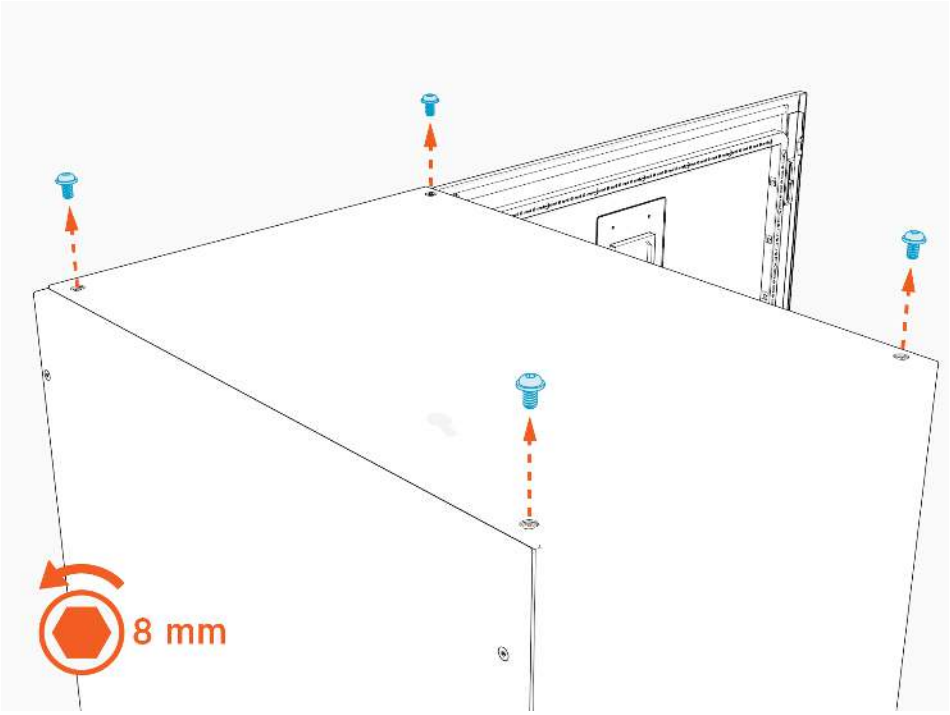
2. If the installation utilizes stub-up conduit entry, remove the gland plate.
    a. Remove the gland plate fasteners (x8).



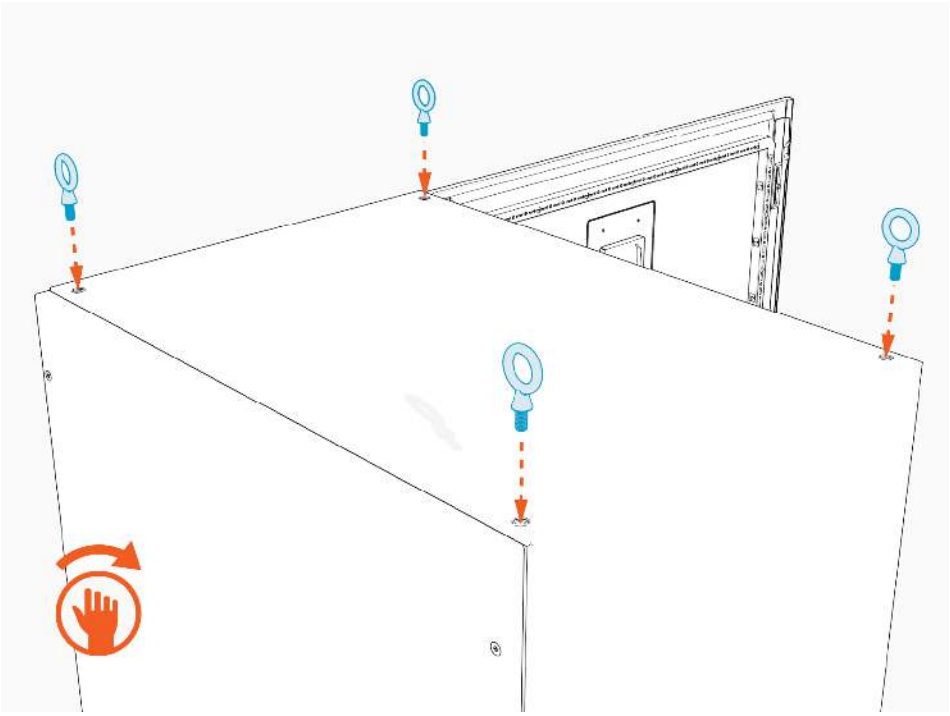
    b. Remove the gland plate from cabinet.



3. Remove the exterior top bolts (x4). Store the bolts for later reuse.



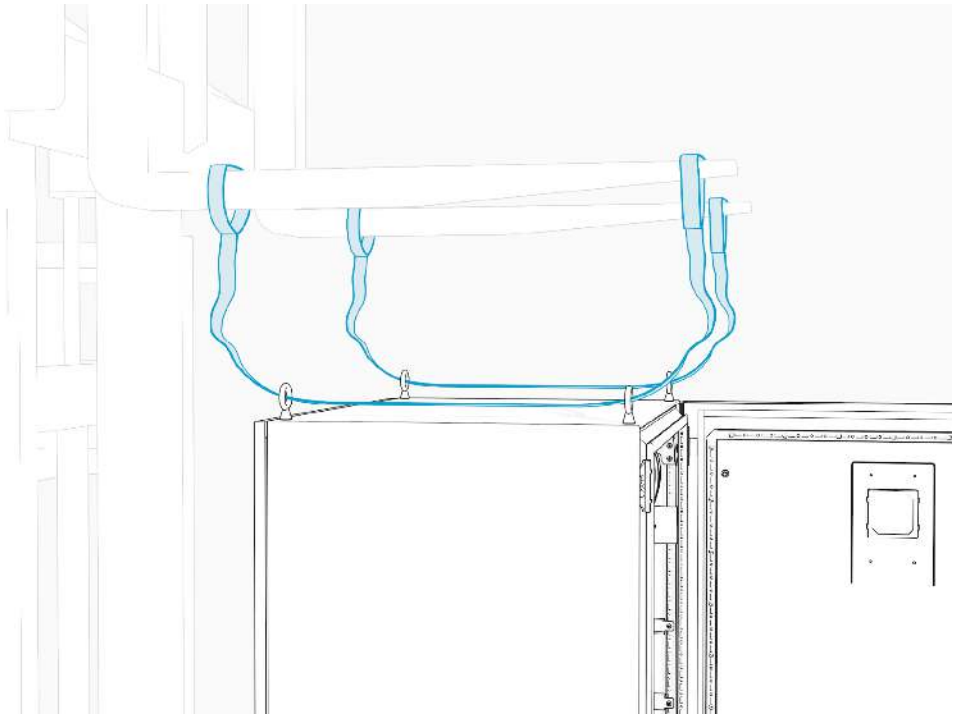
4. Install the eye bolts (x4) into the top of the cabinet. Hand tighten.



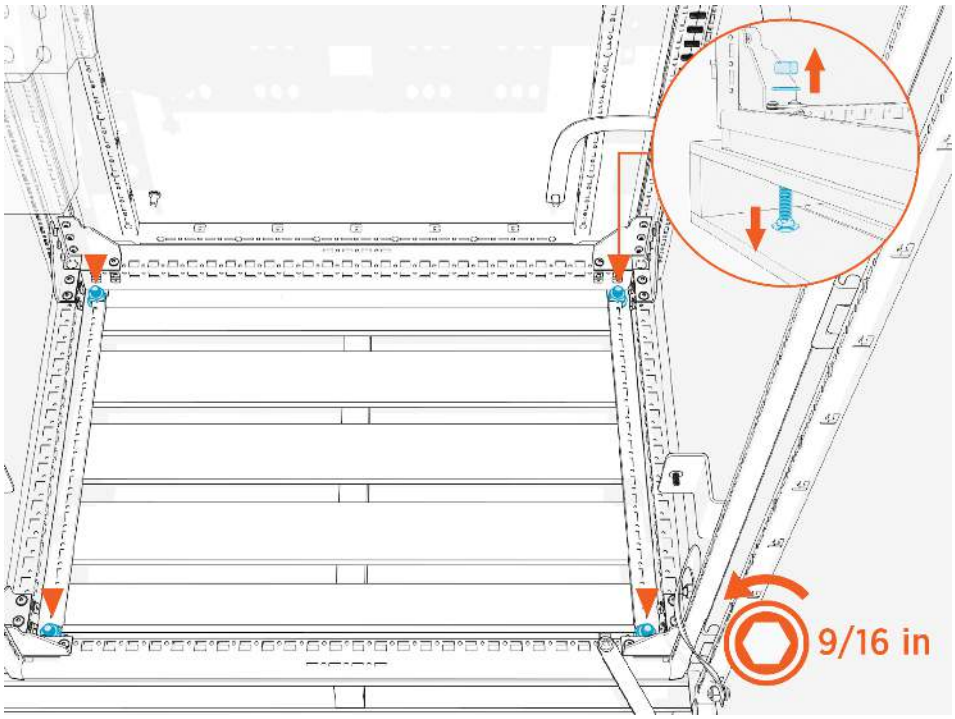
5. If the Power Hub requires a riser, assemble and install a Riser Kit. See Appendix: Install Riser Kit. Otherwise, proceed directly to the next section.

Mount Cabinet Direct to Pad

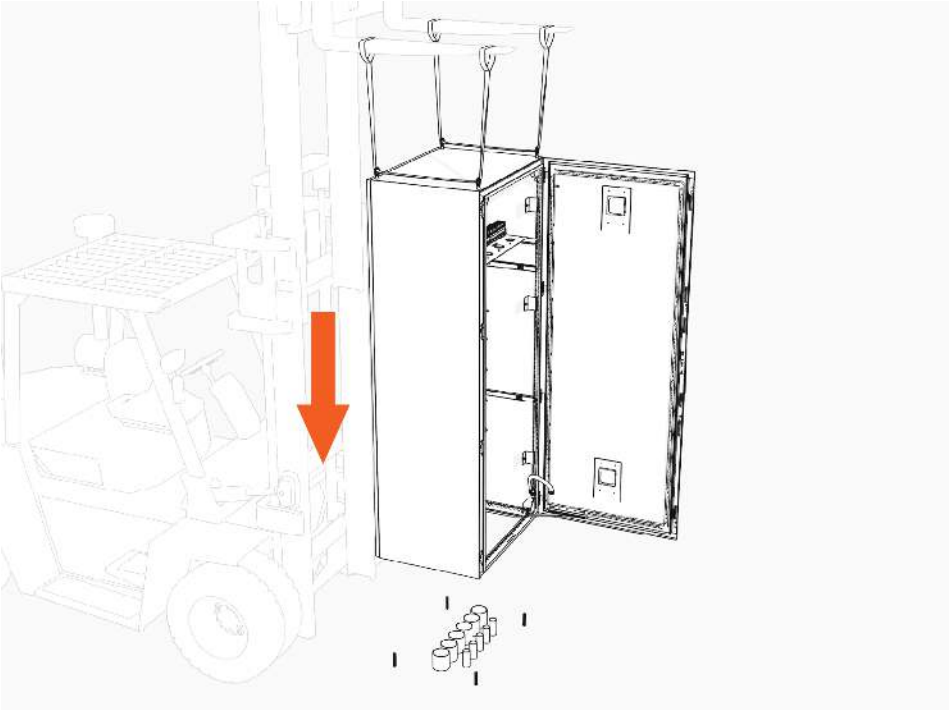
1. Thread the lifting slings through the eye bolts. Position the forklift tines over the Power Hub. Slide the sling eye loops over the tines. Keep the straps slack.



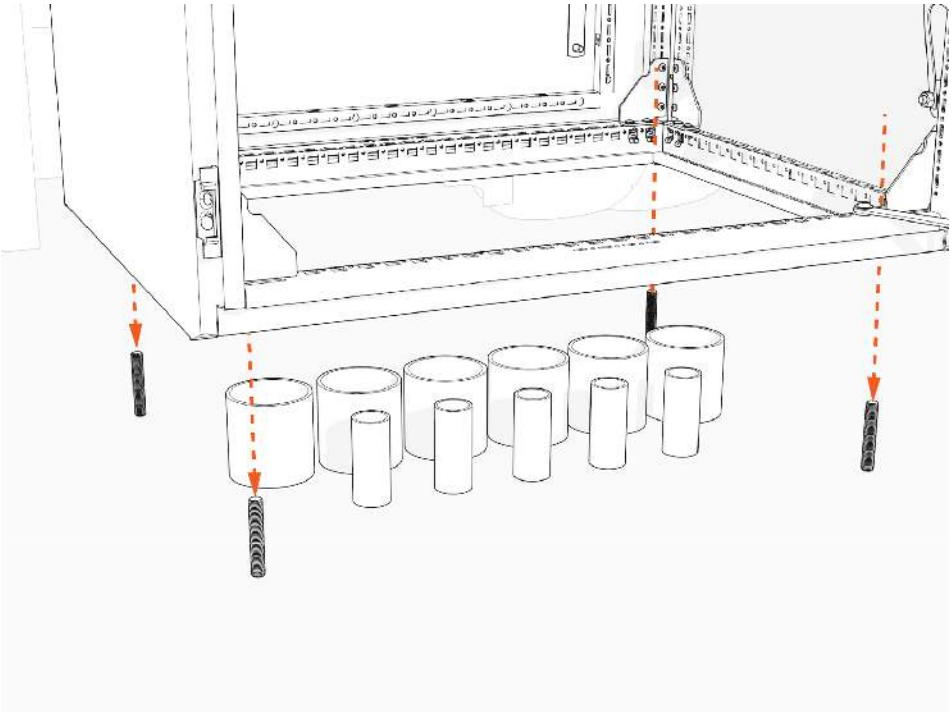
2. Remove nuts (x4) and washers (x4) from pallet bolts.



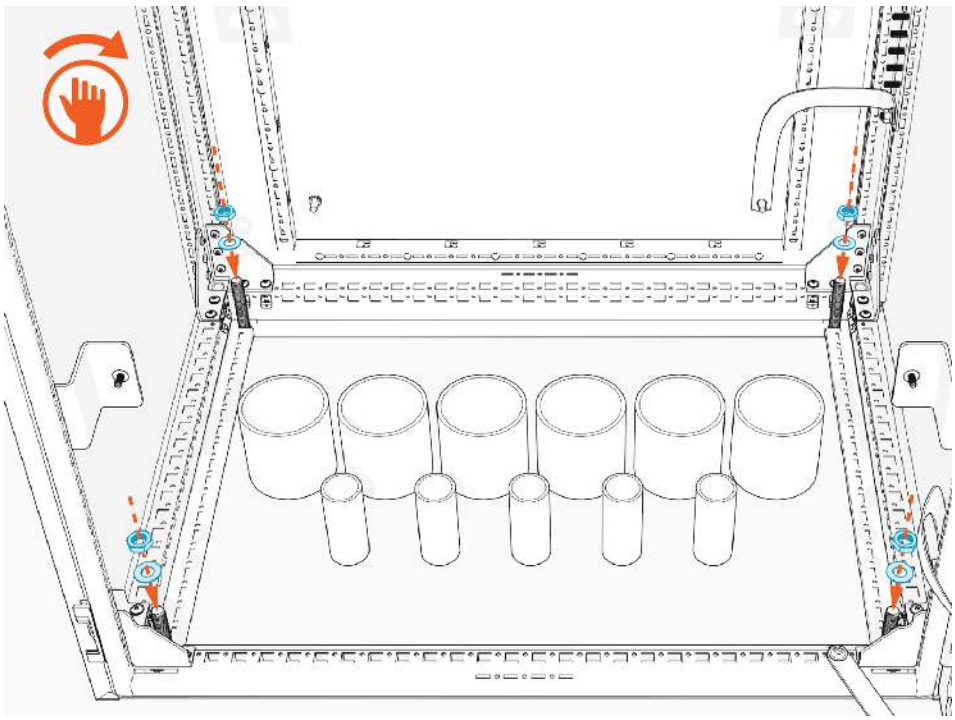
3. Use the forklift to carefully lift the Power Hub off the pallet. Position the Power Hub over the installation site.



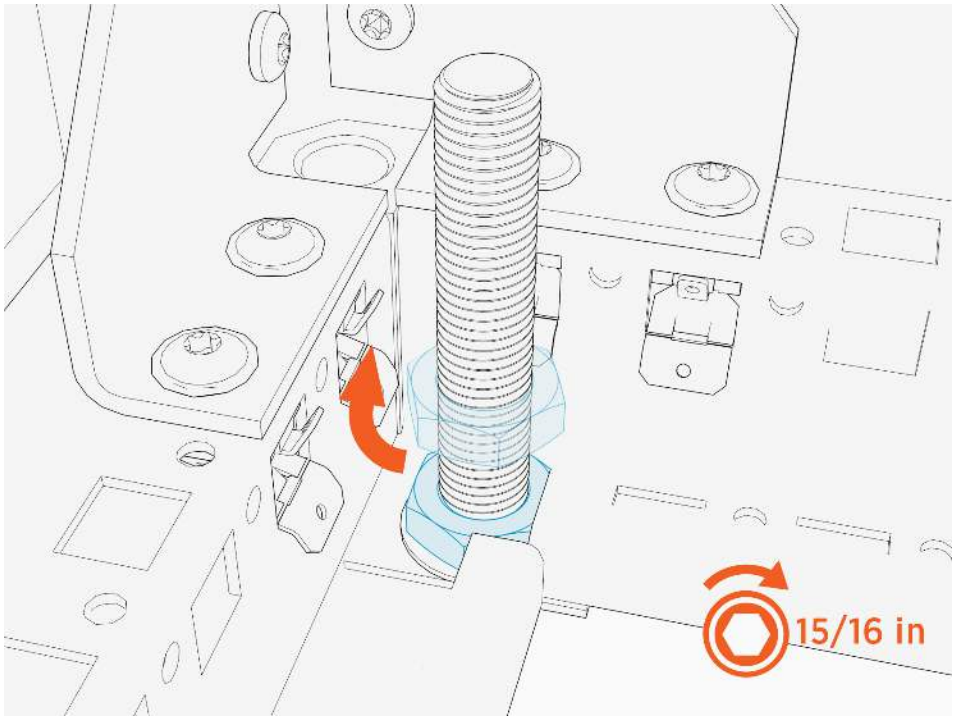
4. Slowly lower the Power Hub while aligning the cabinet anchor holes over the anchor bolts.



5. Install washer (x4) and top nut (x4) onto each of the anchor bolts. Hand tighten.



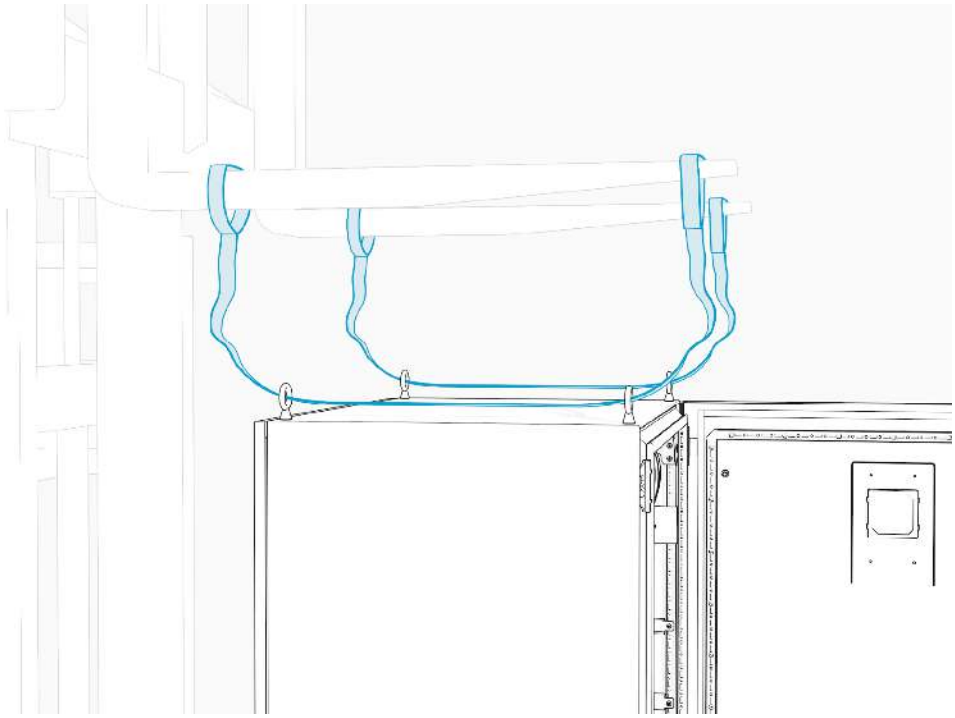
6. **Torque top nuts (x4) to 94.9 Nm (70 ft-lb).**



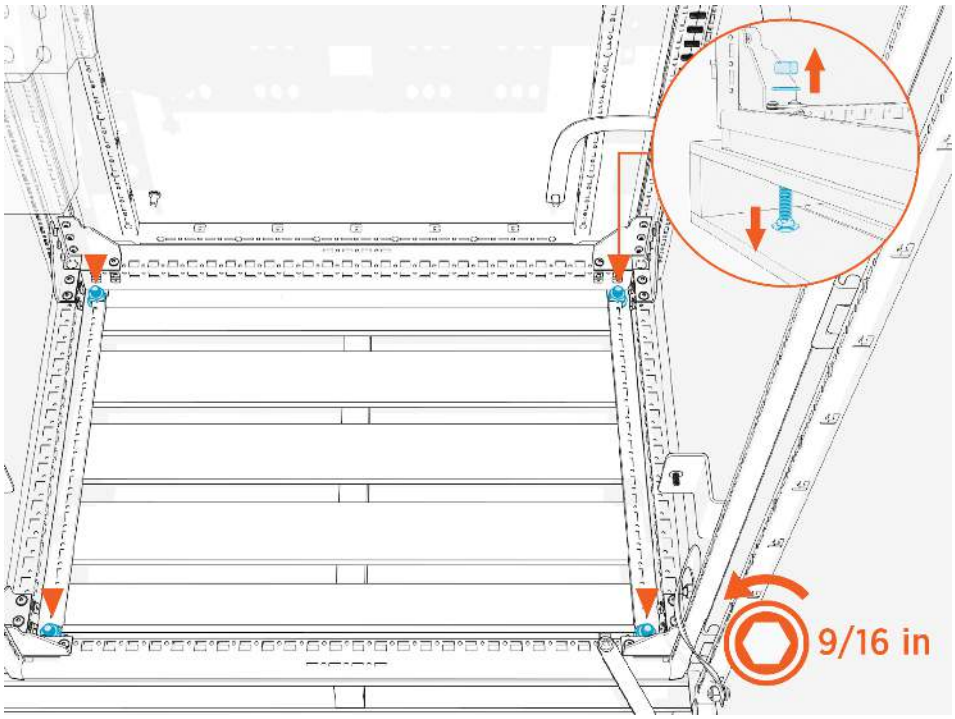
7. This concludes Power Hub mount direct to the pad. Proceed to Complete the Mount.

Mount Cabinet on a Riser

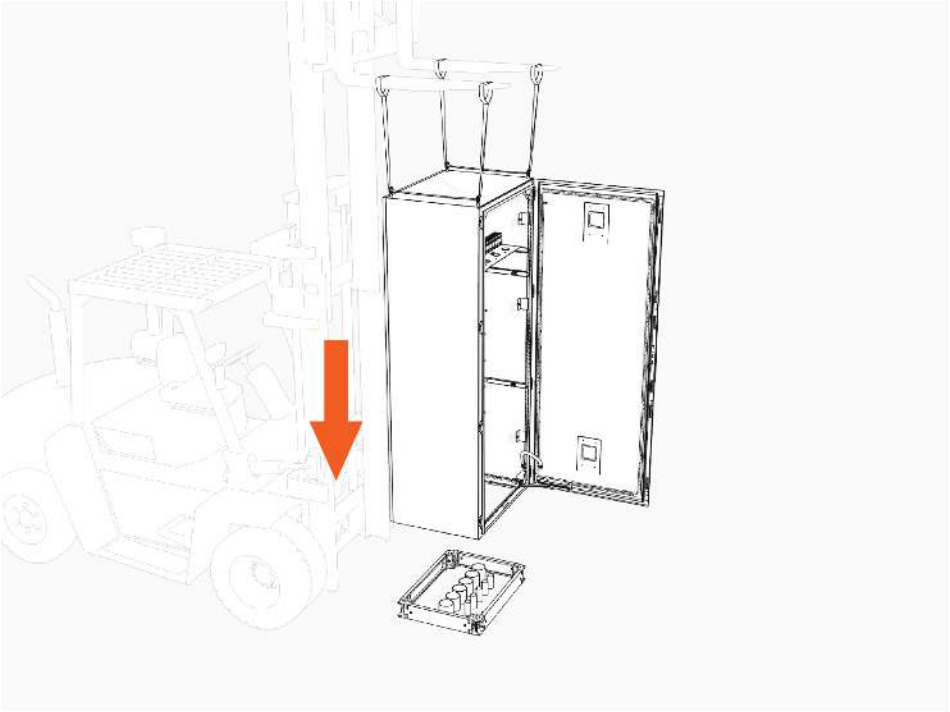
1. Thread the lifting slings through the eye bolts. Position the forklift tines over the Power Hub. Slide the sling eye loops over the tines. Keep the straps slack.



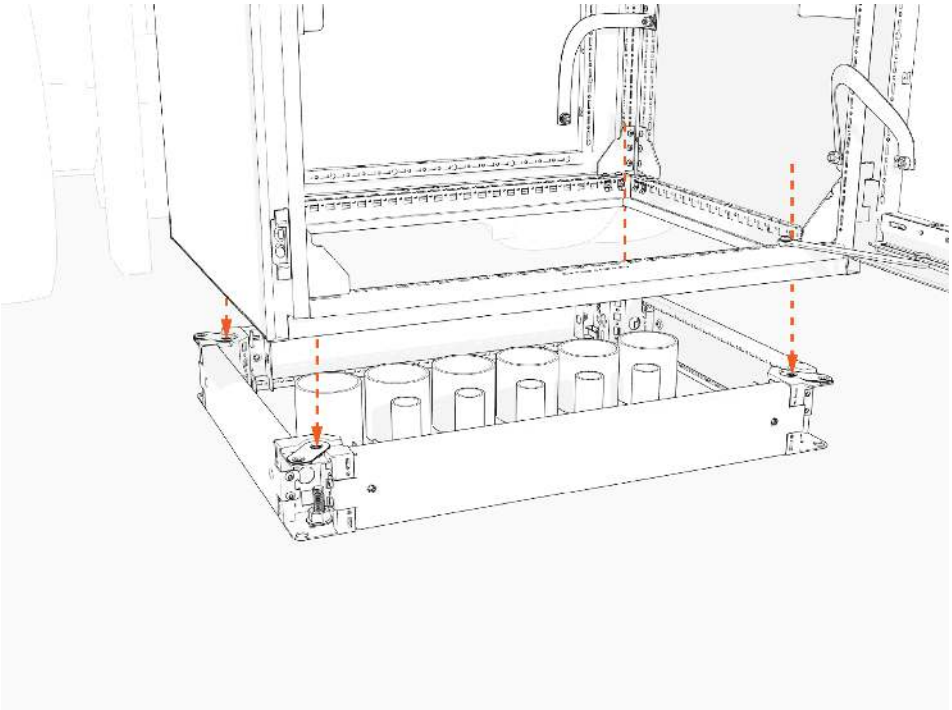
2. Remove nuts (x4) from pallet bolts.



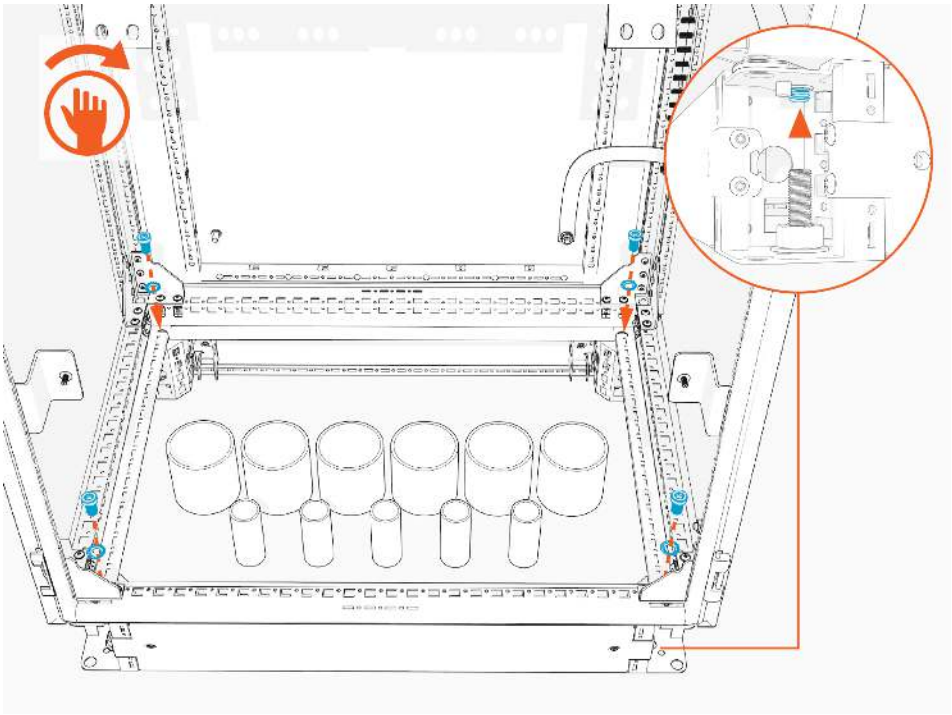
3. Use the forklift to carefully lift the Power Hub off the pallet. Position the Power Hub over the installation site.



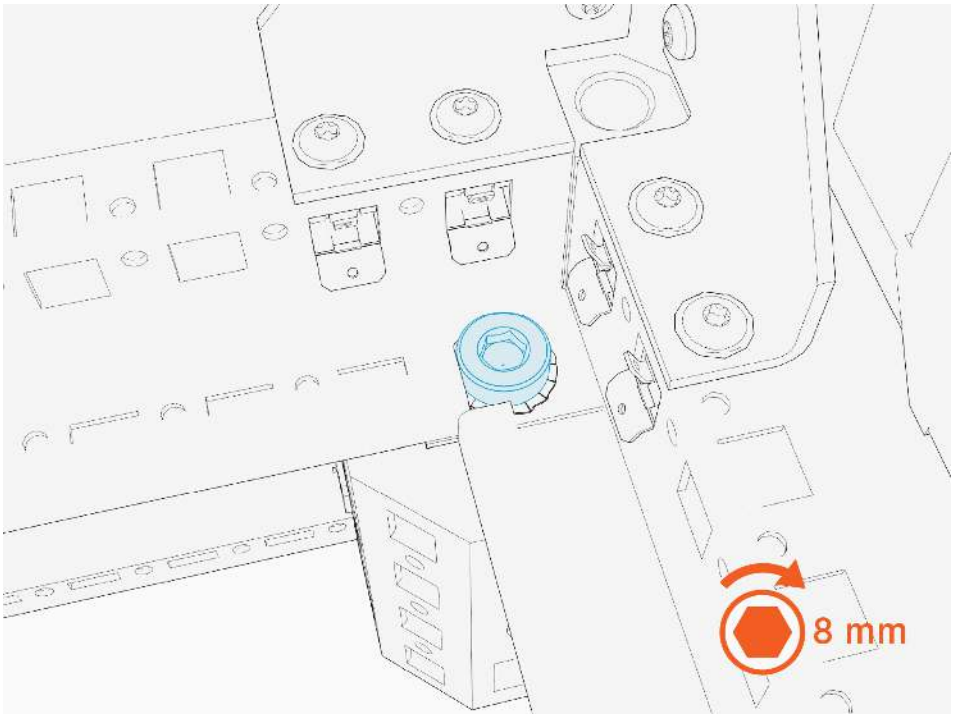
4. Slowly lower the Power Hub onto the riser. Align the cabinet anchor holes with the threaded holes on the riser.



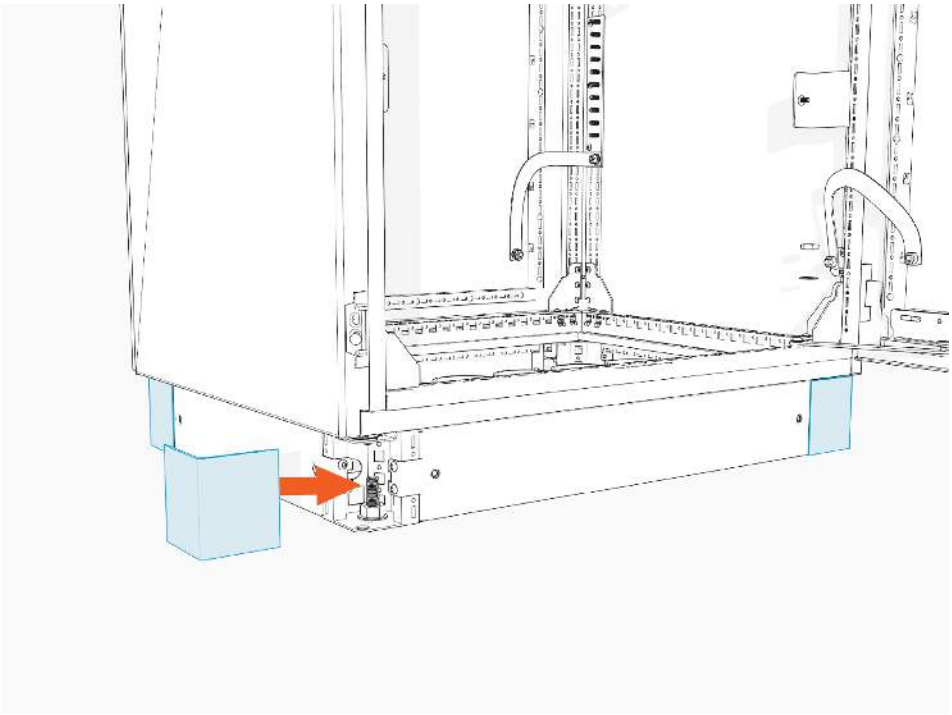
5. Install M12 bolts (x4) with toothed washers (x4) through the Power Hub anchor holes into the threaded holes on the riser. Hand tighten.



6. **Torque bolts (x4) to 94.9 Nm (70 ft-lb).**

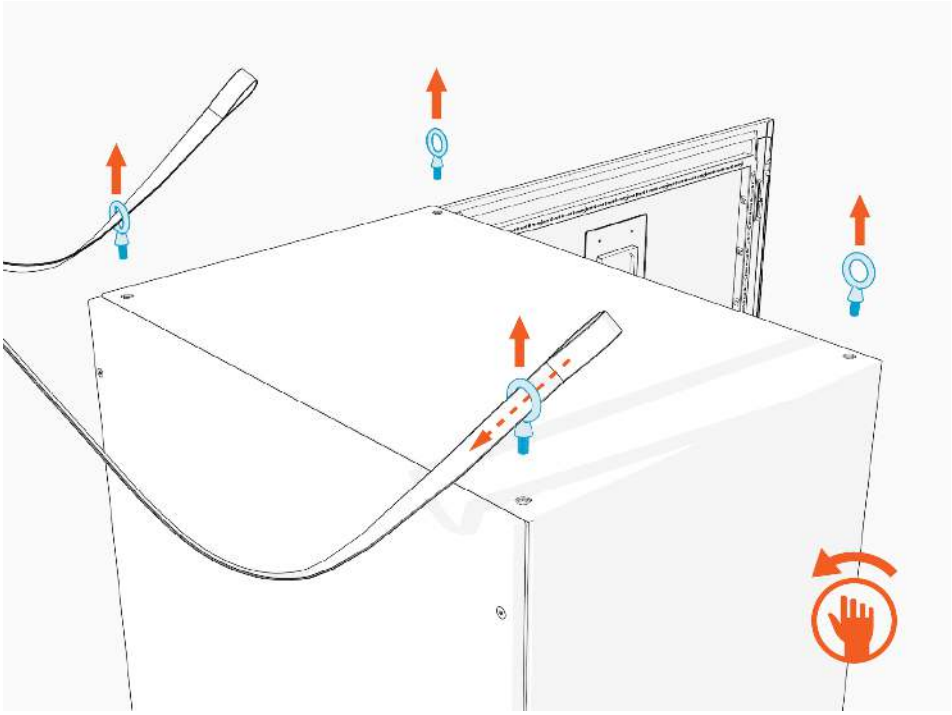


7. Install covers (x4) at each corner of the riser.

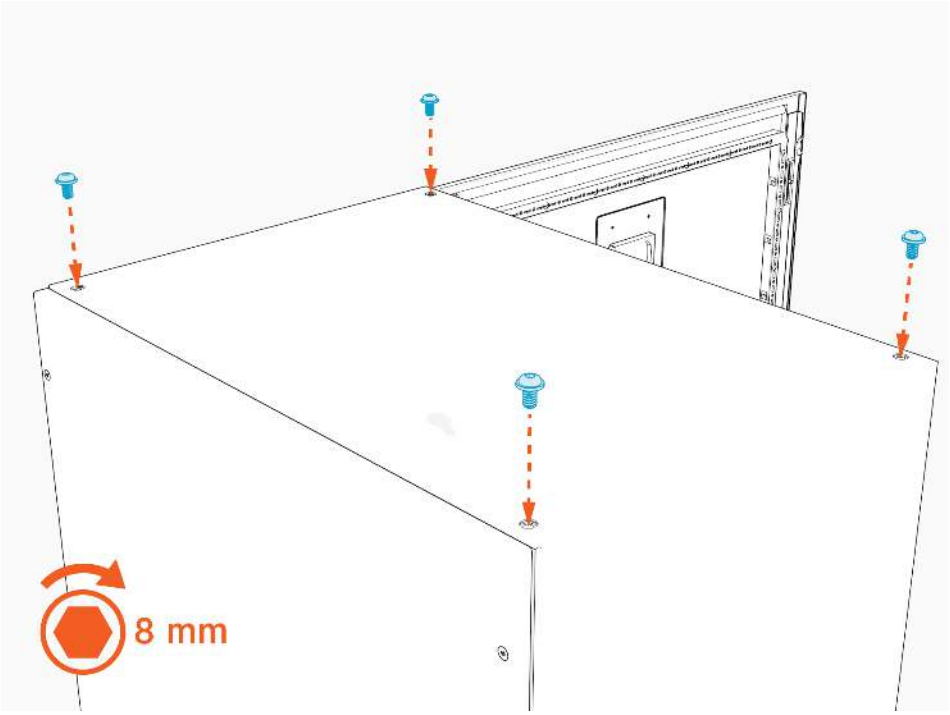


Complete the Mount

1. Release and remove the lifting slings. Remove the eye bolts.



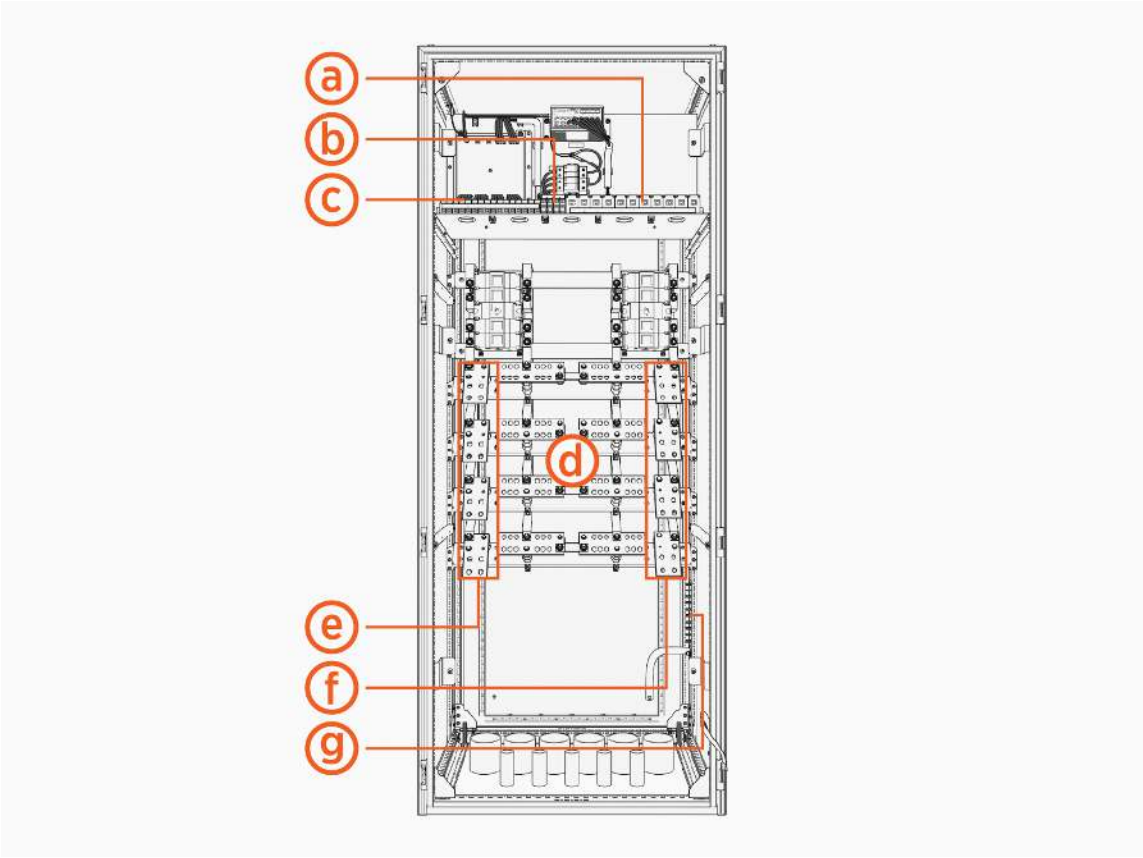
2. Reinstall the top bolts. Hand tighten the bolts.



3. Drill a weep hole with diameter 3.2–6.4 mm (1/8–1/4 in) into the lowest part of the Power Hub at its walls, to allow water to drain out of the enclosure.
4. Vacuum all debris from the bottom of the cabinet.
5. Install conduit fittings and gland plate, as applicable:
    a. If called for by the site design plan, install conduit fittings into the gland plate and then reinstall gland plate. **Torque gland plate T25 torx screws (x8) to 5.1 Nm (45 in-lb).**
    b. If called for by the site design plan, install conduit fittings into cabinet wall for surface conduit entry.

Wire Landing Locations

Review all wire landing locations.



(a) Ethernet ports, all ports equivalent

(b) 48 VDC input terminals, LV1 (+/-) and LV2 (+/-)

(c) 48 VDC output terminals, PL1 (+/-) through PL8 (+/-)

(d) High voltage DC output terminals, A1 (+/-) through A4 (+/-) and B1 (+/-) through B4 (+/-)

(e) High voltage DC input terminals left, Input A (+/-) Left and Input B (+/-) Left

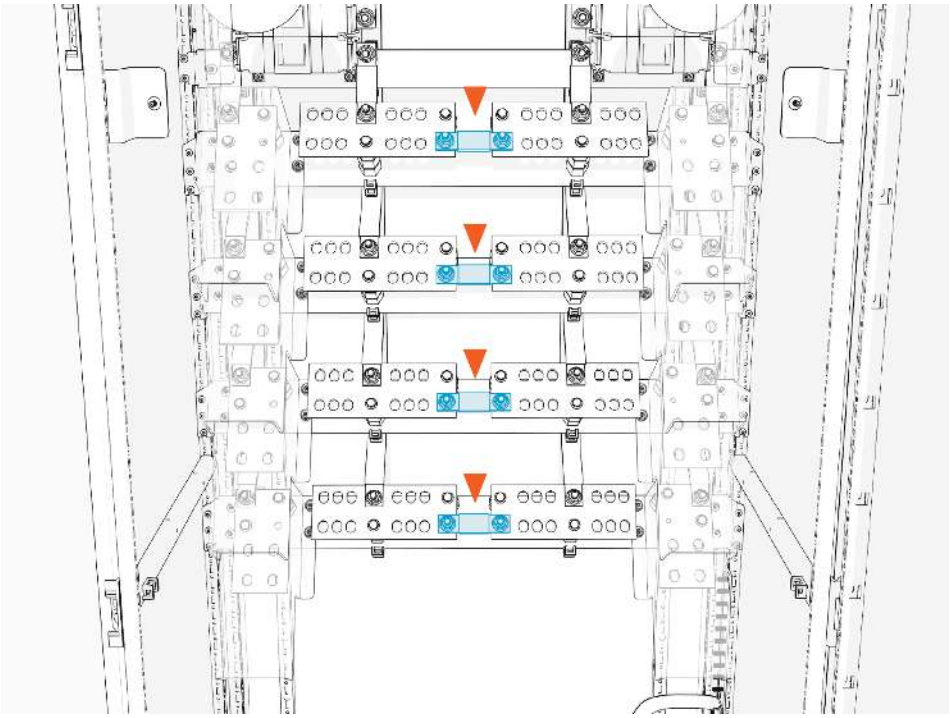
(f) High voltage DC input terminals right, Input A (+/-) Right and Input B (+/-) Right

Note: These terminals are absent if the Power Hub connects to only one Power Block.

(g) Ground studs

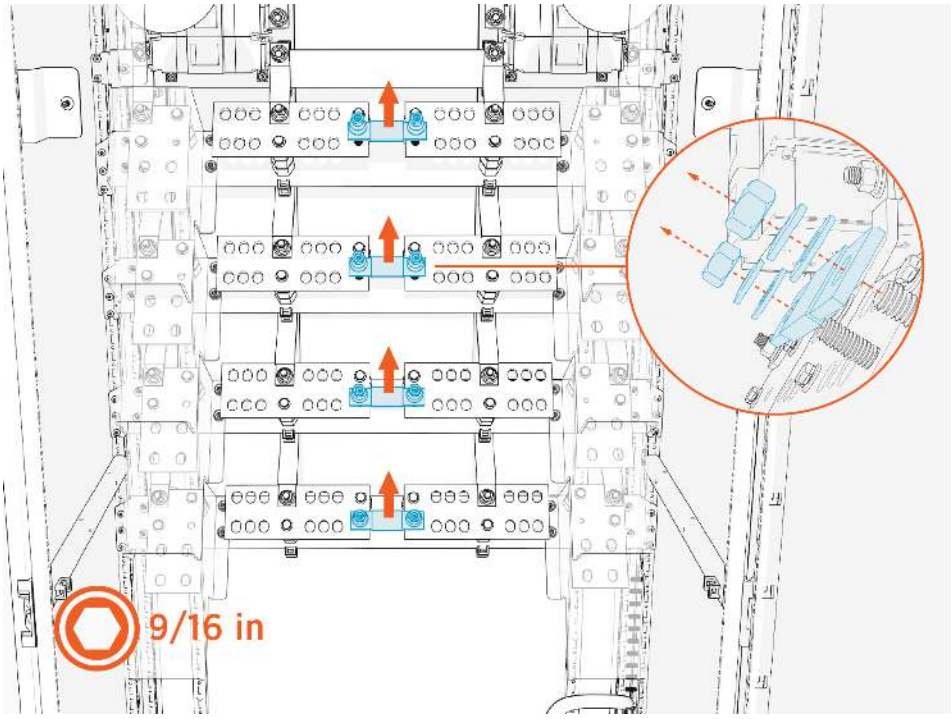
Split the Buses (As Needed)

1. Consult the site plan to determine if the Power Hub requires a split bus configuration. If not, skip this section and proceed to Pull and Connect Wires.
2. Locate the bus jumpers (x4) at the high voltage DC output terminals. Each jumper is secured with two bolts.



3. Use a socket wrench to remove all four bus jumpers.

IMPORTANT: All four bus jumpers must be removed. Do not remove a partial set of bus jumpers.



Pull and Connect Wires

Follow instructions in this section to pull and connect wires. Wires may be pulled and connected in any order, but the following practices are recommended for an orderly install:

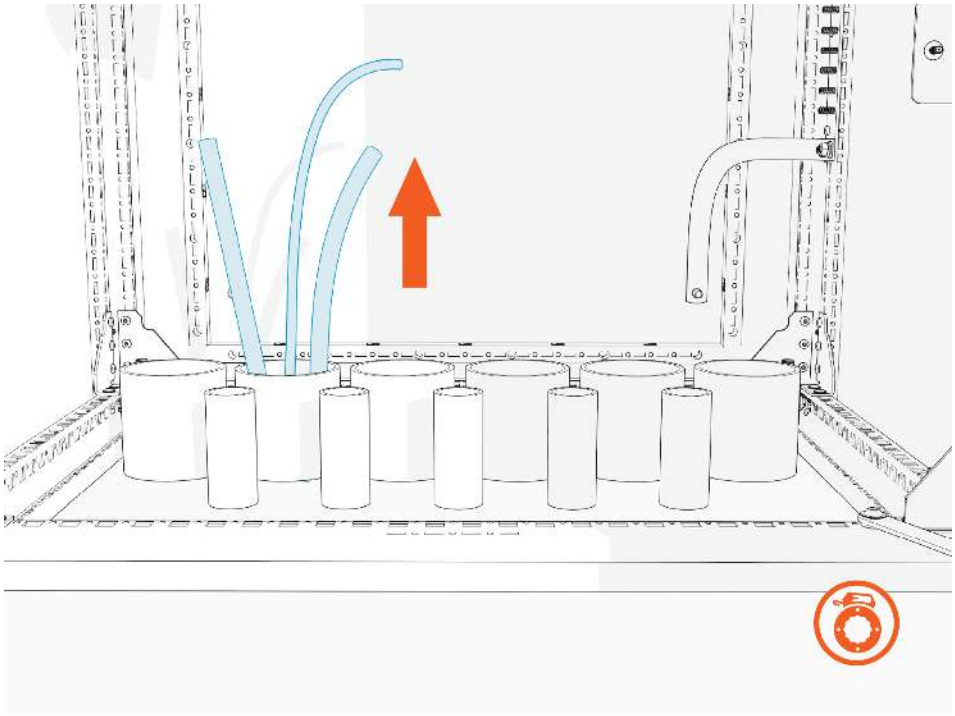
- Pull and connect one set of wires before pulling in another set of wires.
- Pull and connect wires from rear-most conduits first.
- Connect ground wires before connecting high voltage DC output wires. Once the high voltage DC wires are connected, there may be limited access to the ground wire terminals.

Note: There are many possible wire configurations for the Power Hub. Illustrations in this guide depict one of many wiring configurations, and may not represent the wiring configuration specific to your project.

High Voltage DC And Ground Wires

Pull Wires

1. Label the high voltage DC and ground wires at both ends.
2. Use a cable puller or fish tape to pull the high voltage DC and ground wires through the conduits. If necessary, use a non-conductive wire pulling lubricant to facilitate the pull.

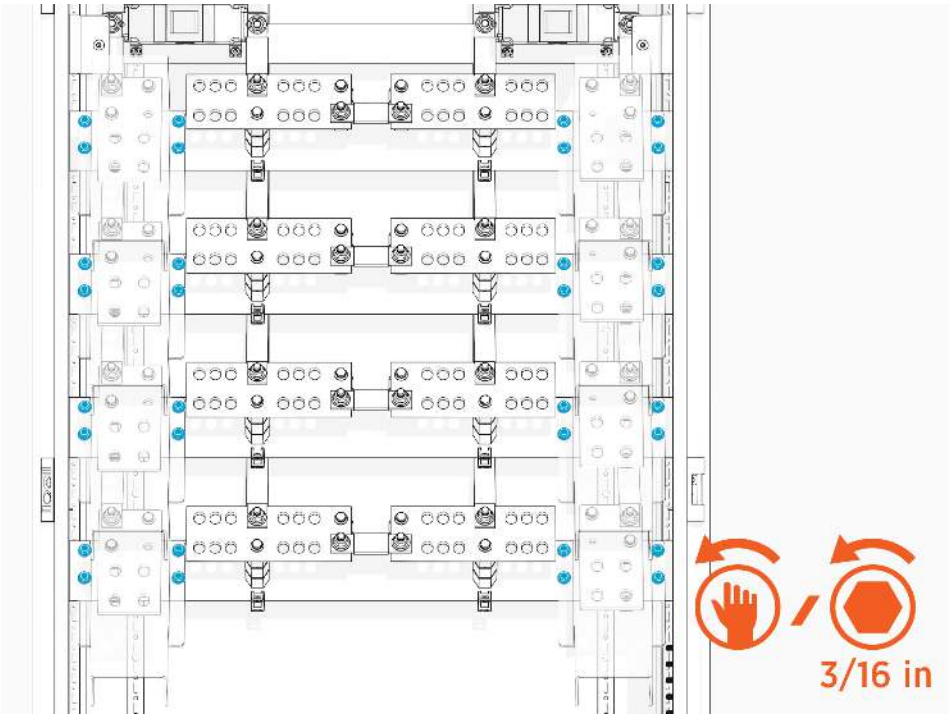


3. Wipe off any remains of wire pulling lubricant if applied while pulling the wires. Use paper towel.
4. Perform conductor insulation test on the high voltage DC wires. Have the results ready to provide upon request.

Measure and Cut High Voltage DC Input Wires

In this stage of the installation, lugs (with no wires attached) are temporarily staged onto the high voltage DC input terminals. They are used to measure and cut the high voltage DC input wires to length. Perform all steps below for each scheduled high voltage DC input wire. See Wire Landing Locations for location of wire landings.

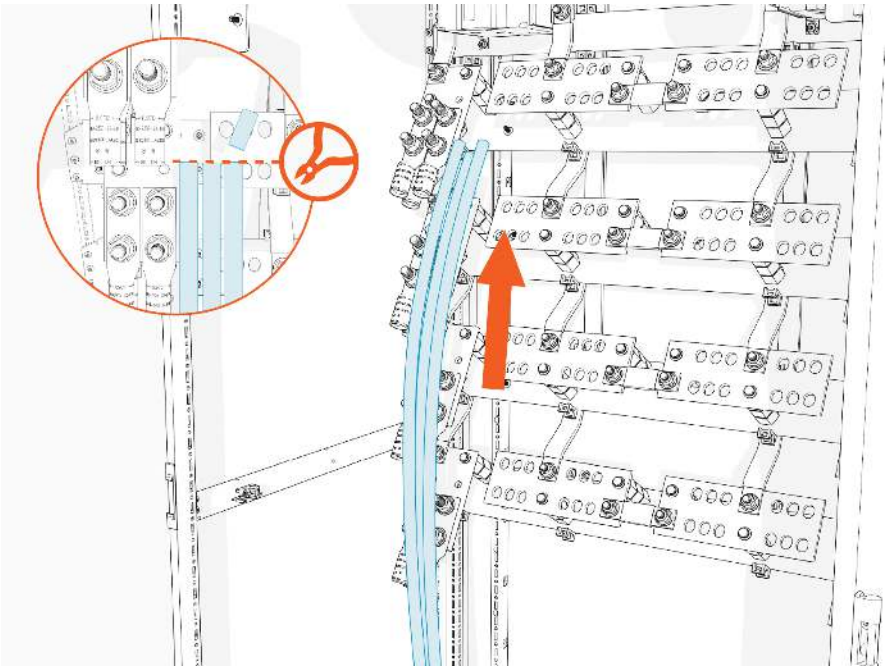
1. Remove the safety shields from all the high voltage DC input terminals. Work your way from the highest shield to the lowest shield. Each shield is held in place by four captive screws that can be loosened by finger or with a hex wrench. Set aside the covers in a safe location.



2. Install lugs without the wires onto the high voltage DC input terminals. Hand tighten.

Note: Two wires can be installed with one set of fasteners, as shown above, with one wire on top of the terminal and one wire beneath the terminal.

3. Pull each high voltage DC input wire up to reach its corresponding lug, until the wire end reaches the top of the lug barrel. Cut the wire to length.



4. Remove the lugs from the terminals.

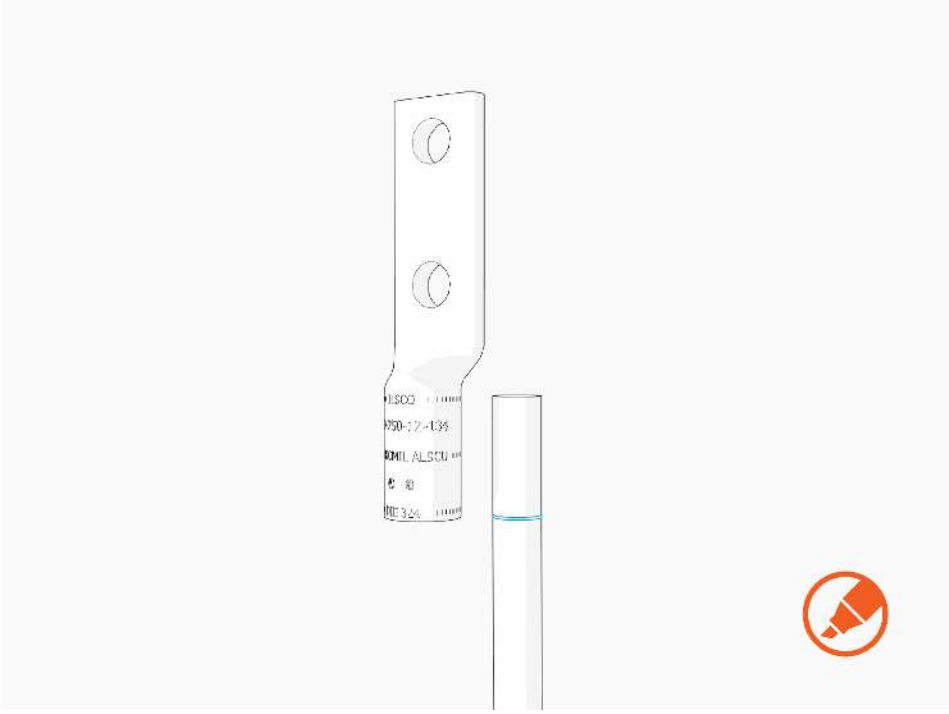
Connect High Voltage DC Input Wires

In this stage of the installation, the high voltage DC input wires are connected to their terminals. Repeat the steps below for each set of wires scheduled to land on a high voltage DC input terminal. See Wire Landing Locations for location of wire landings.

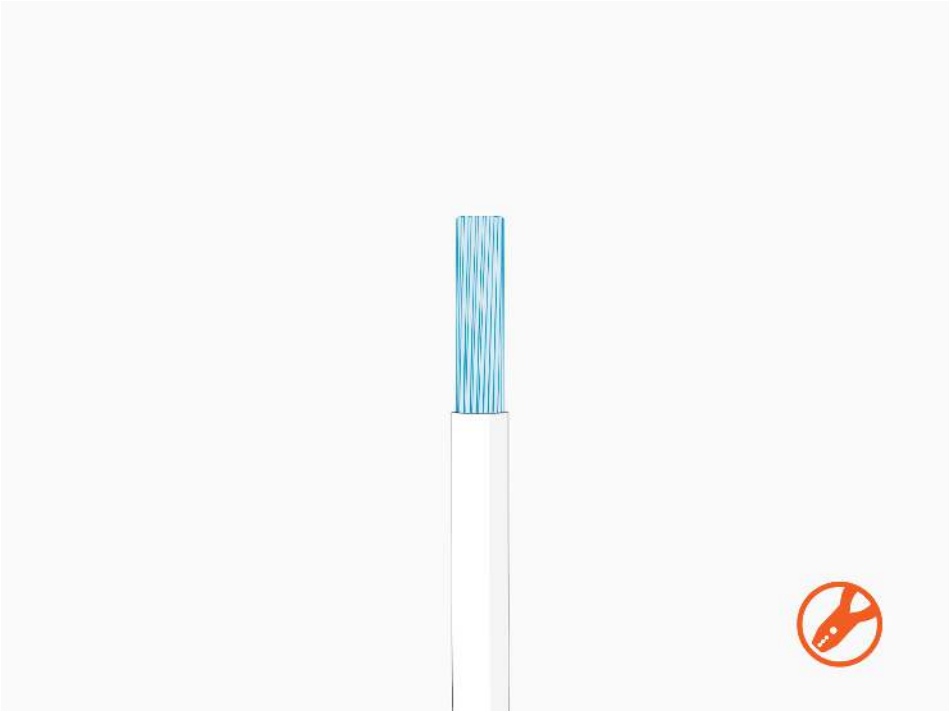
IMPORTANT:

- See Materials for lug specifications.
- Make sure no wire material is exposed below the lug barrel. If necessary, heat shrink or tape the exposed area to meet local code requirements.
- Make the connections starting at the lowest terminal and work upwards.

1. Hold the wire end parallel to a lug, aligning the tip of the wire to the top of a lug barrel. Mark the length of the barrel on the wire.

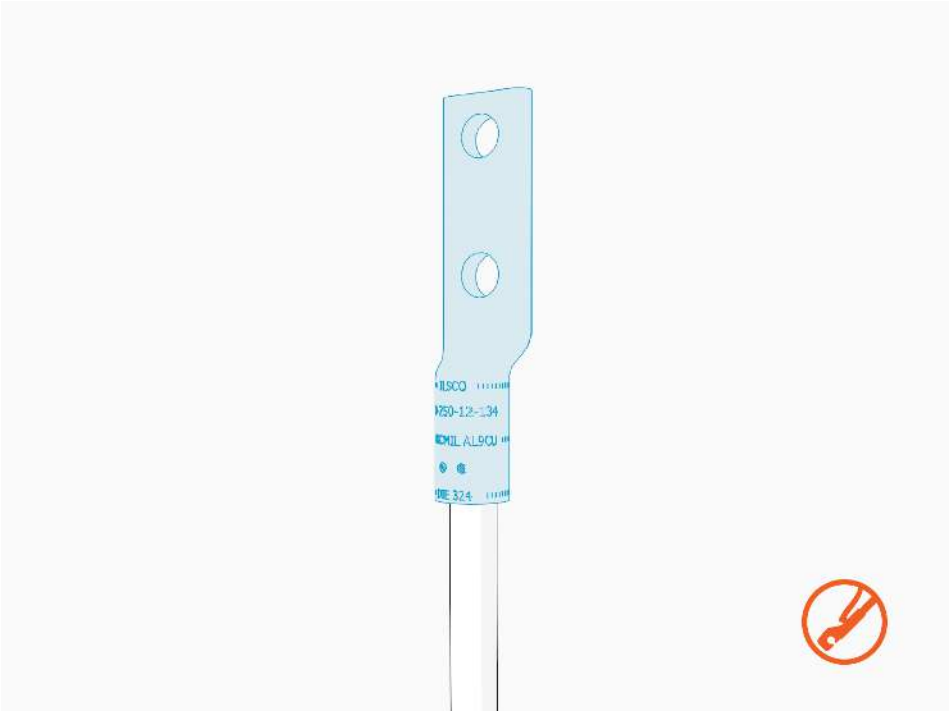


2. Strip the wire to the marked length.

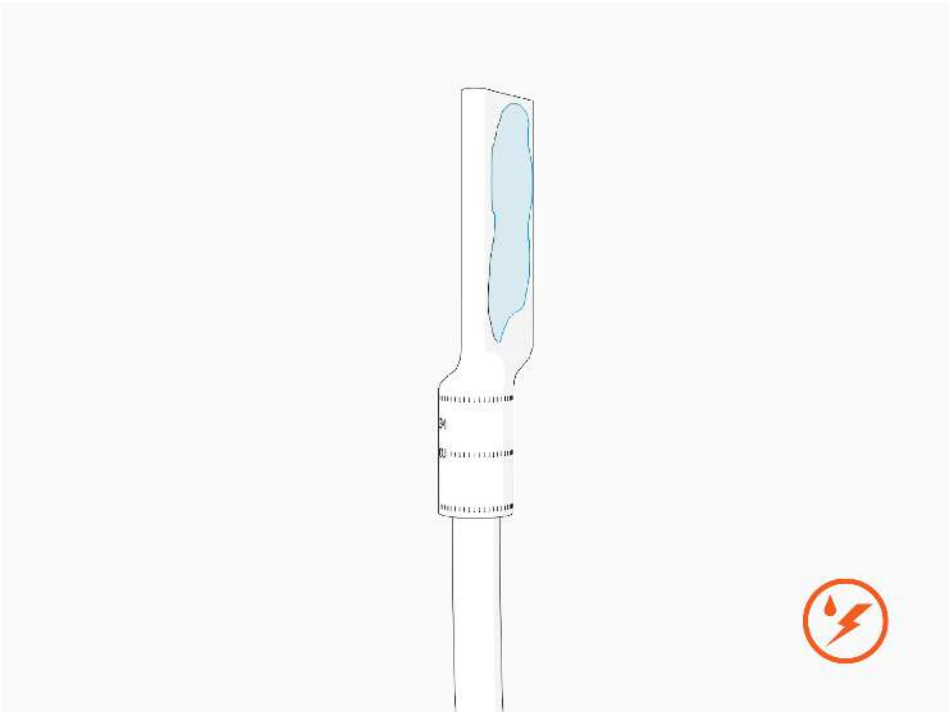


3. If recommended by the wire manufacturer or local code, apply an anti-oxidant joint compound to the stripped wire end to make a gastight joint with the lug.

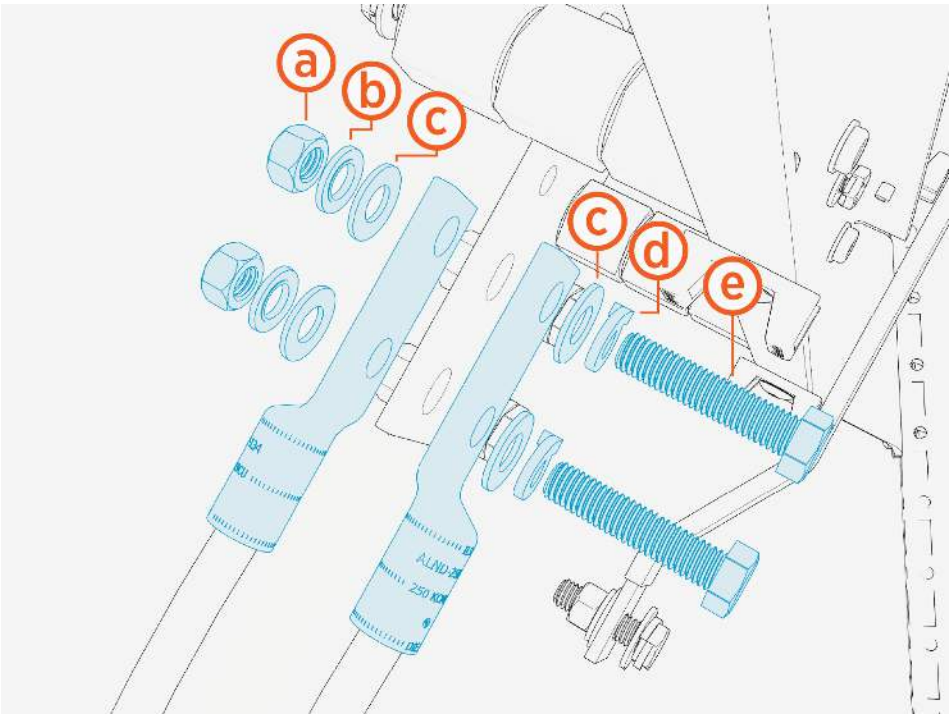
4. Crimp the lug onto the wire.



5. Apply dielectric grease to back of the lug.



6. Install the lug onto the high voltage DC input terminal.



Install the lugs using:

(a) 1/2 in hex nut

(b) 1/2 in Belleville washer

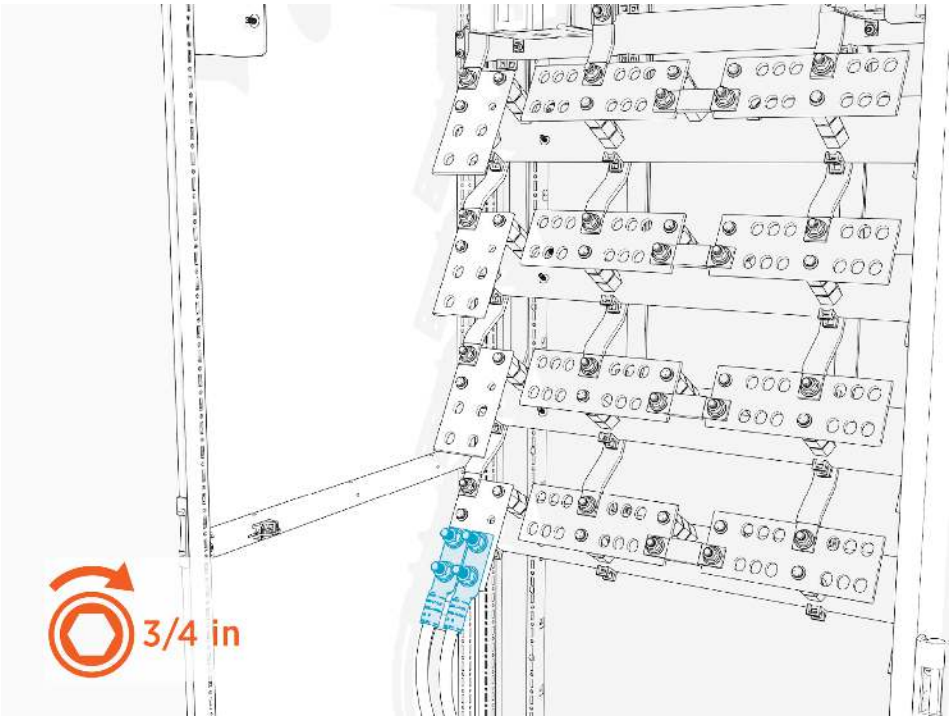
(c) 1/2 in flat washer

(d) 1/2 in lock washer

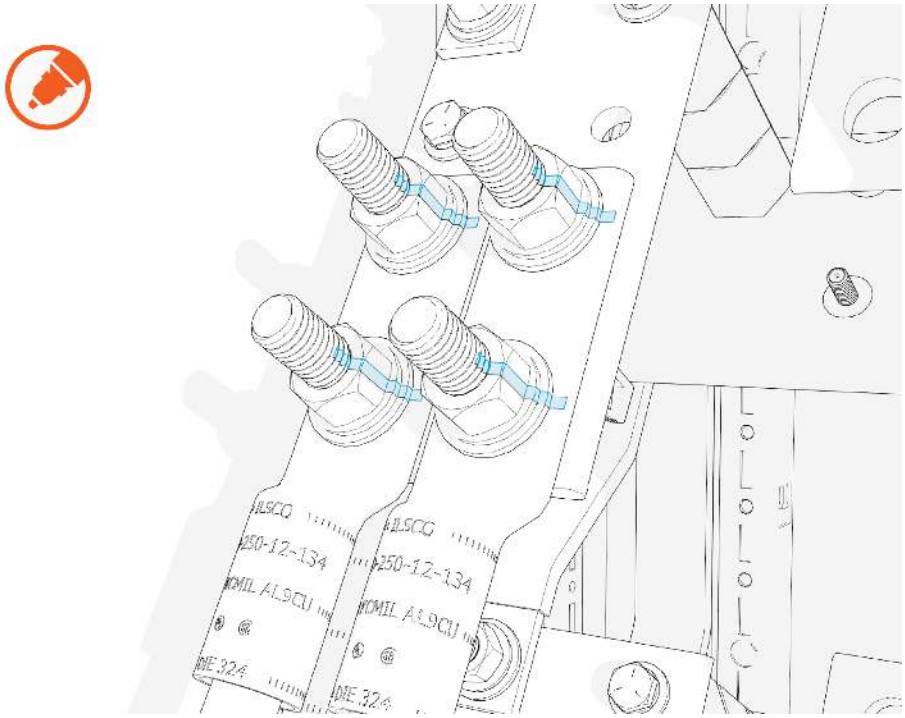
(e) 1/2 x 2-1/4 in bolt

Note: Two wires can be installed with one set of fasteners, as shown above, with one wire on top of the terminal and one wire beneath the terminal.

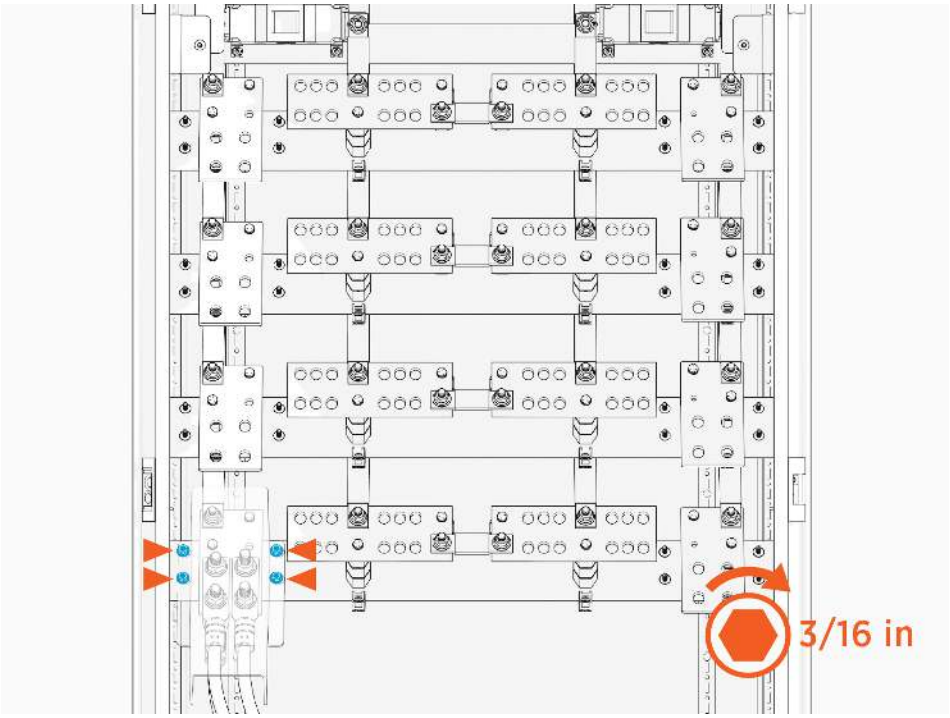
7. **Torque the fasteners to 61.6 Nm (45 ft-lb).**



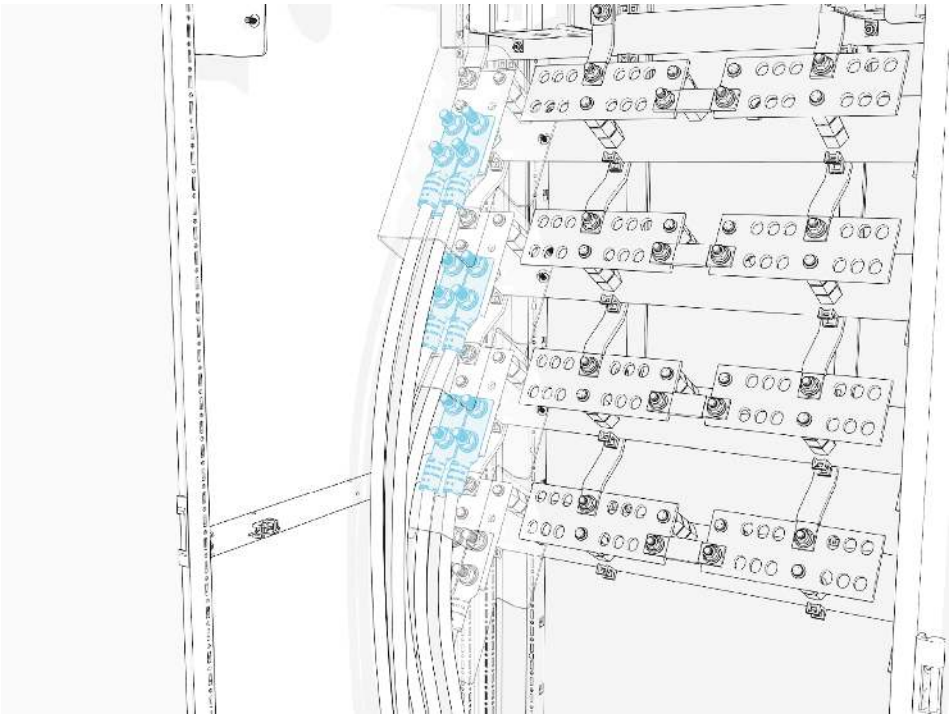
8. Mark all torqued connections.



9. Reinstall the safety shield over the high voltage DC input terminal. Tighten the captive screws (x4 at each shield). **Torque to 2.8 Nm (25 in-lb).**



10. Repeat for all wire sets landing on the high voltage DC input terminals, working from lowest terminal to highest terminal.

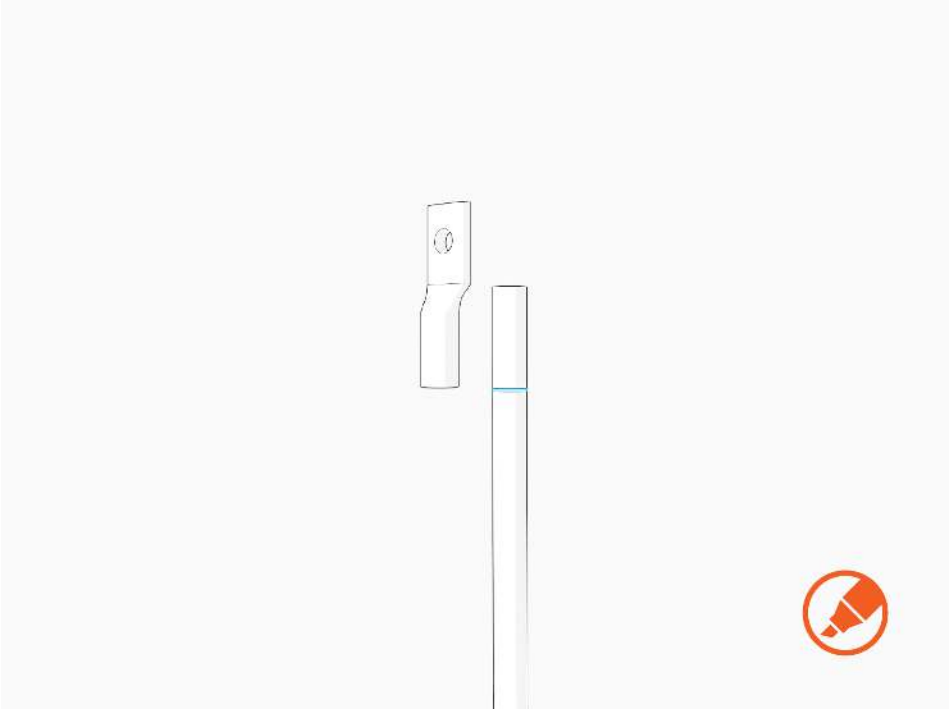


Connect Ground Wires

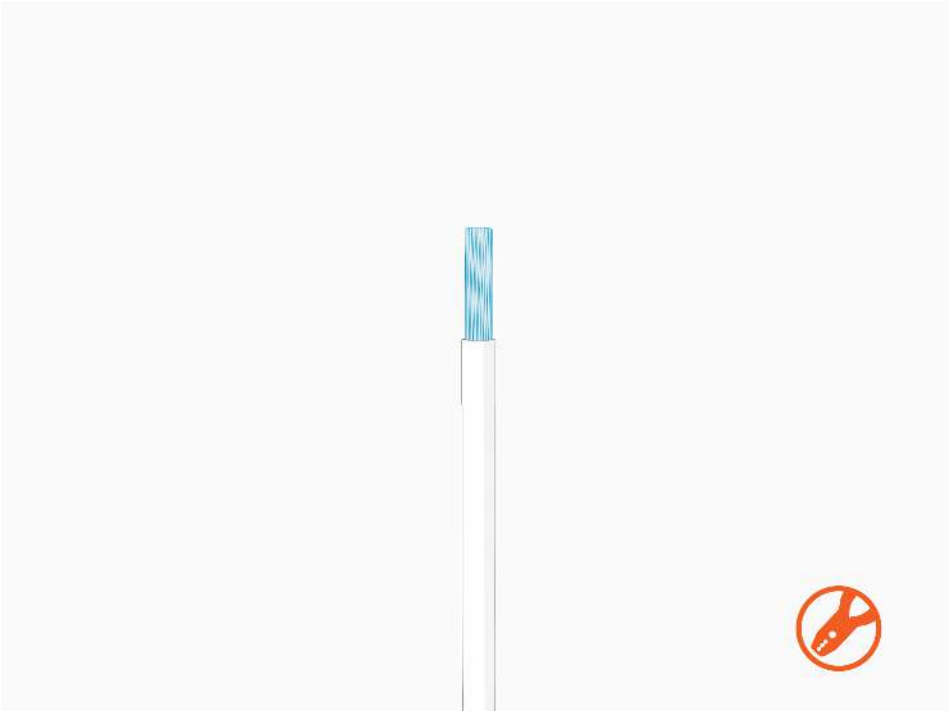
IMPORTANT:

- See Materials for lug specifications.
- Make sure no wire material is exposed below the lug barrel. If necessary, heat shrink or tape the exposed area to meet local code requirements.
- Make the connections starting at the lowest terminal and work upwards.

1. For each wire, hold the wire end parallel to a lug, aligning the tip of the wire to the top of a lug barrel. Mark the length of the barrel on the wire.

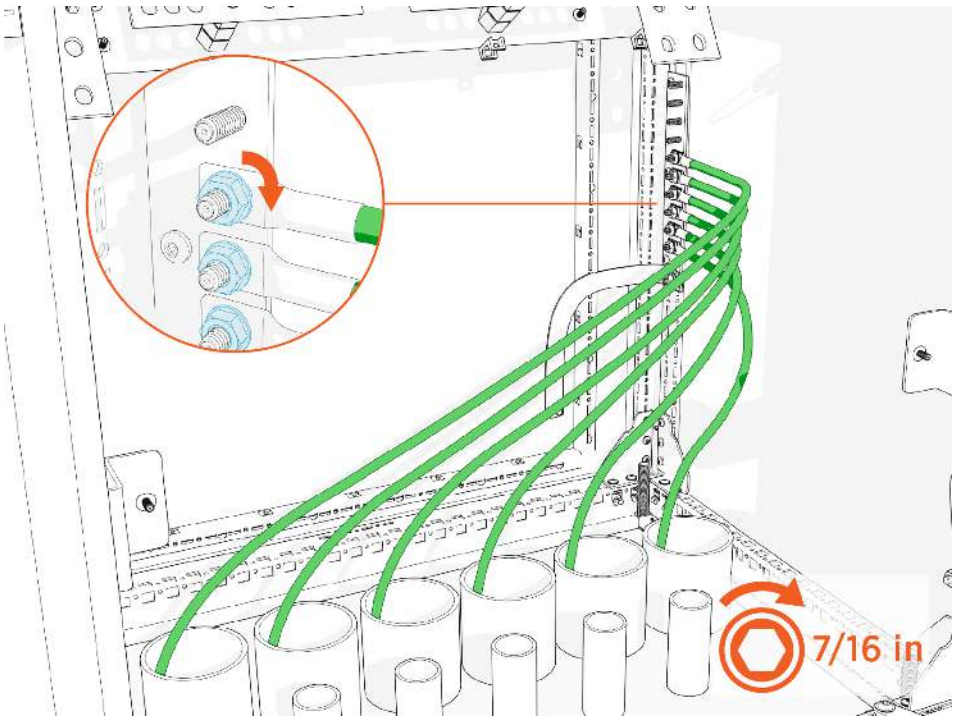


2. Strip the wires to the marked length.



3. Crimp lugs on the ground wires.

4. Land the ground wires onto the ground studs with 1/4 in nuts. **Torque to 4.9 Nm (43 in-lb).**



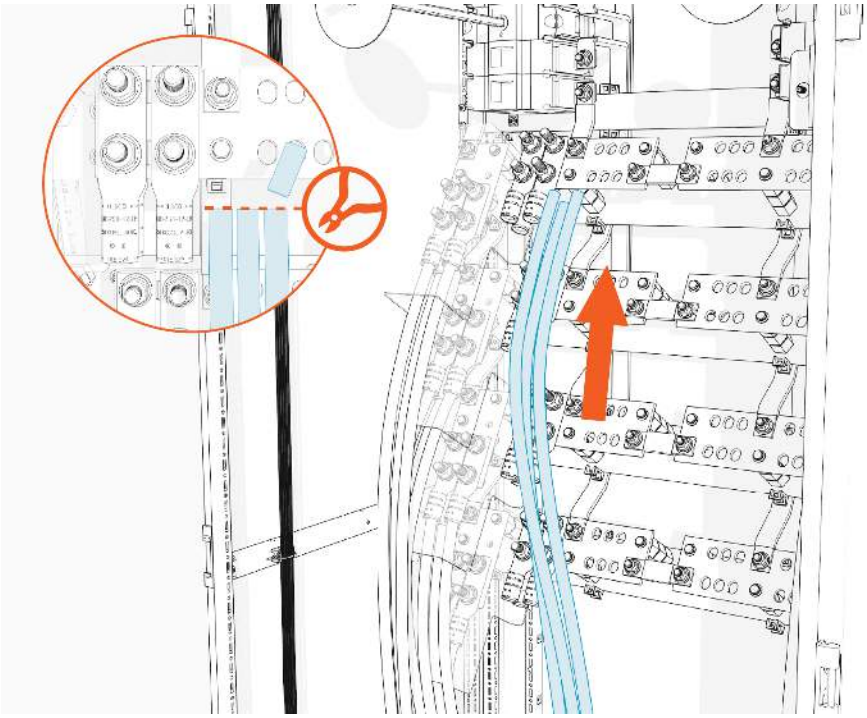
Measure And Cut High Voltage DC Output Wires

In this stage of the installation, lugs (with no wires attached) are temporarily staged onto the high voltage DC output terminals. They are used to measure and cut the high voltage DC output wires to length. Perform all steps below for all scheduled high voltage output wires. See Wire Landing Locations for location of wire landings.

1. Install lugs without the wires onto the high voltage DC output terminals and hand tighten.

Note: Two wires can be installed with one set of fasteners, as shown above, with one wire on top of the terminal and one wire beneath the terminal.

2. Pull each wire up to reach its corresponding lug, until the wire end reaches the top of the lug barrel. Cut the wire to length.



3. Remove the lugs from the terminals.

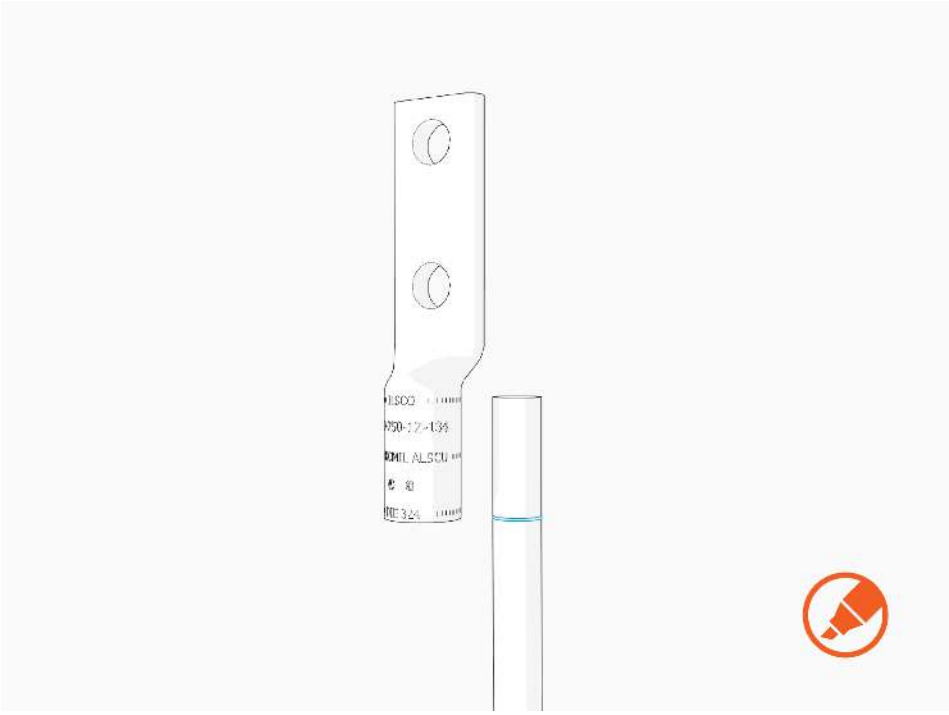
Connect High Voltage DC Ouput Wires

In this stage of the installation, the high voltage DC output wires are connected to their terminals. Repeat the steps below for each set of wires scheduled to land on a high voltage DC output terminal. See Wire Landing Locations for location of wire landings.

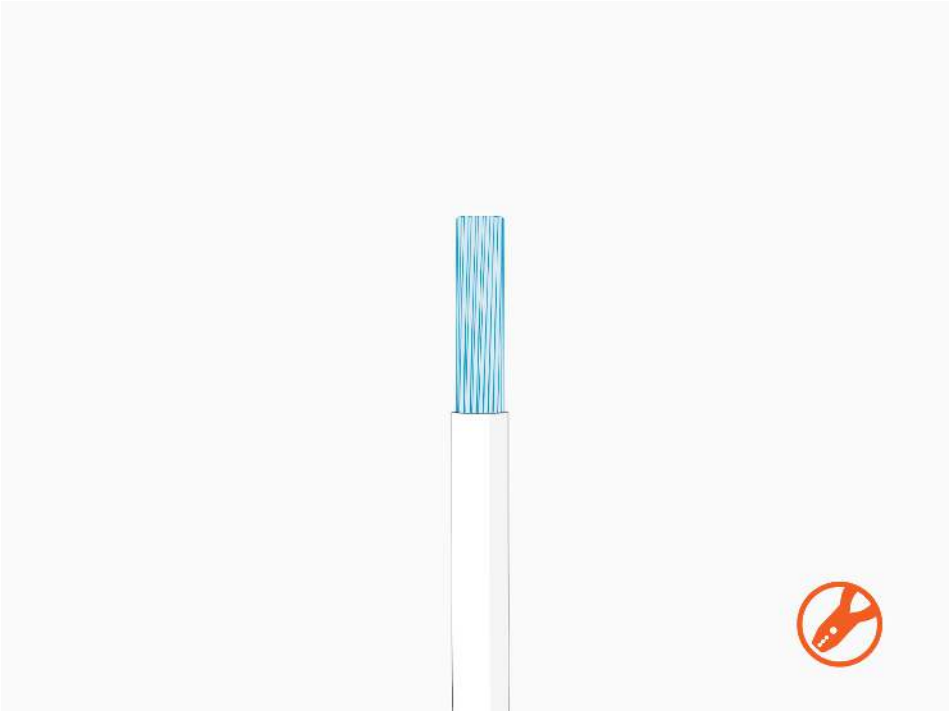
IMPORTANT:

- See Materials for lug specifications.
- Make sure no wire material is exposed below the lug barrel. If necessary, heat shrink or tape the exposed area to meet local code requirements.
- Make the connections starting at the lowest terminal and work upwards.

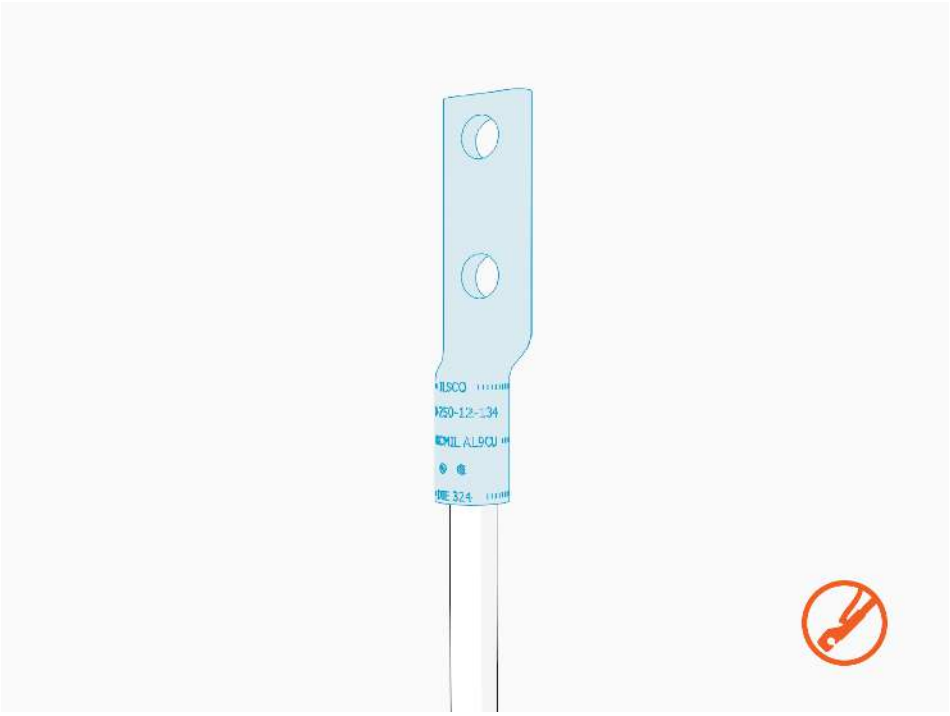
1. Hold the wire end parallel to a lug, aligning the tip of the wire to the top of a lug barrel. Mark the length of the barrel on the wire.



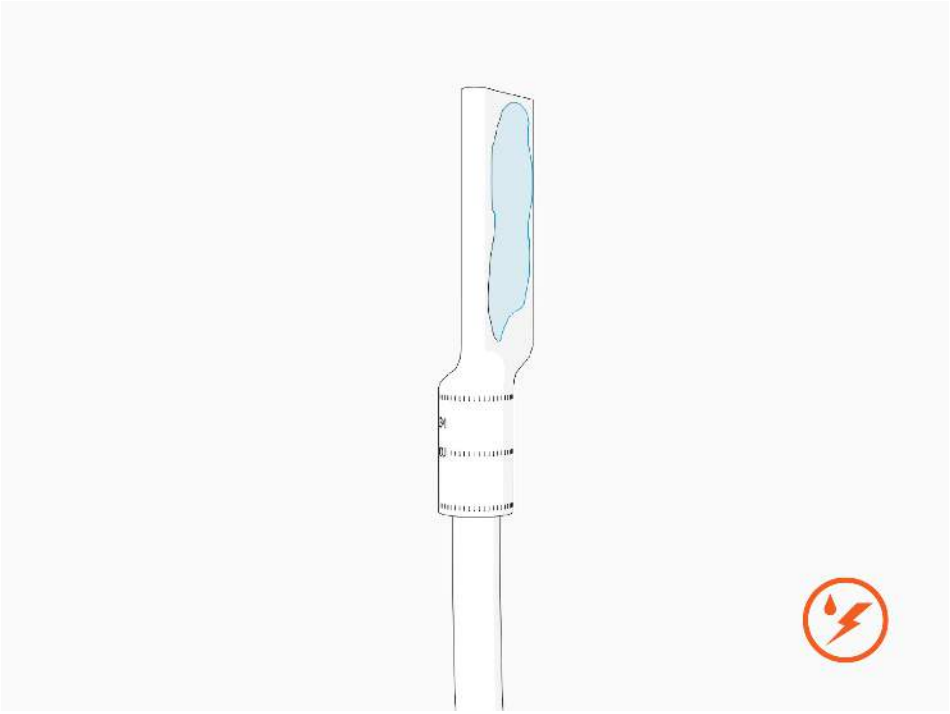
2. Strip the wire to the marked length.



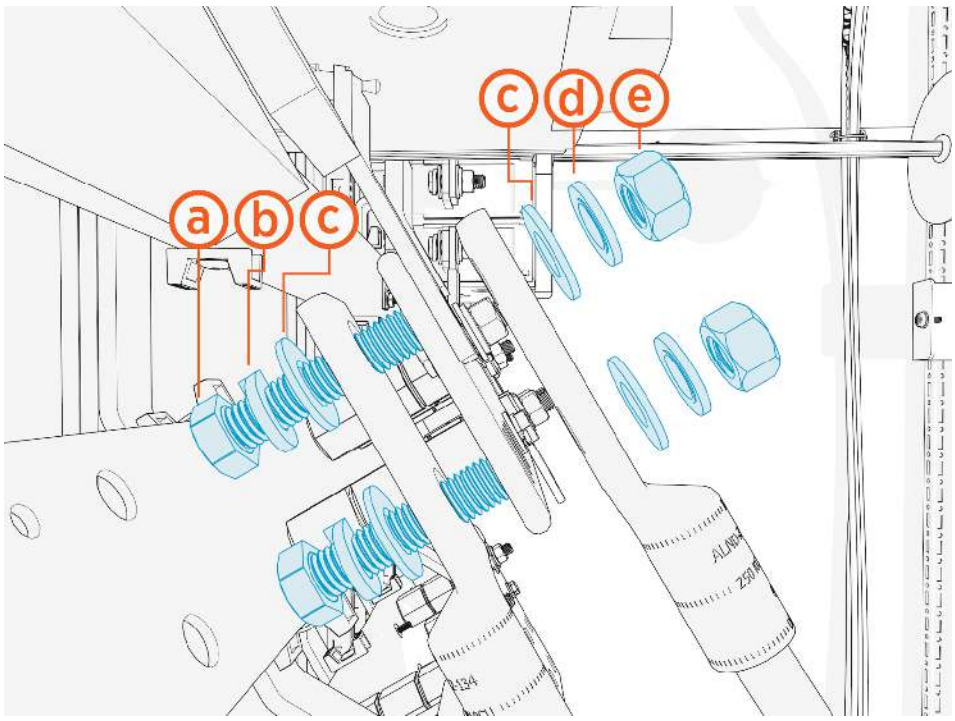
3. Crimp the lug onto the wire.



4. Apply dialetric grease to back of the lug.



5. Install the lugs onto high voltage DC output terminal.

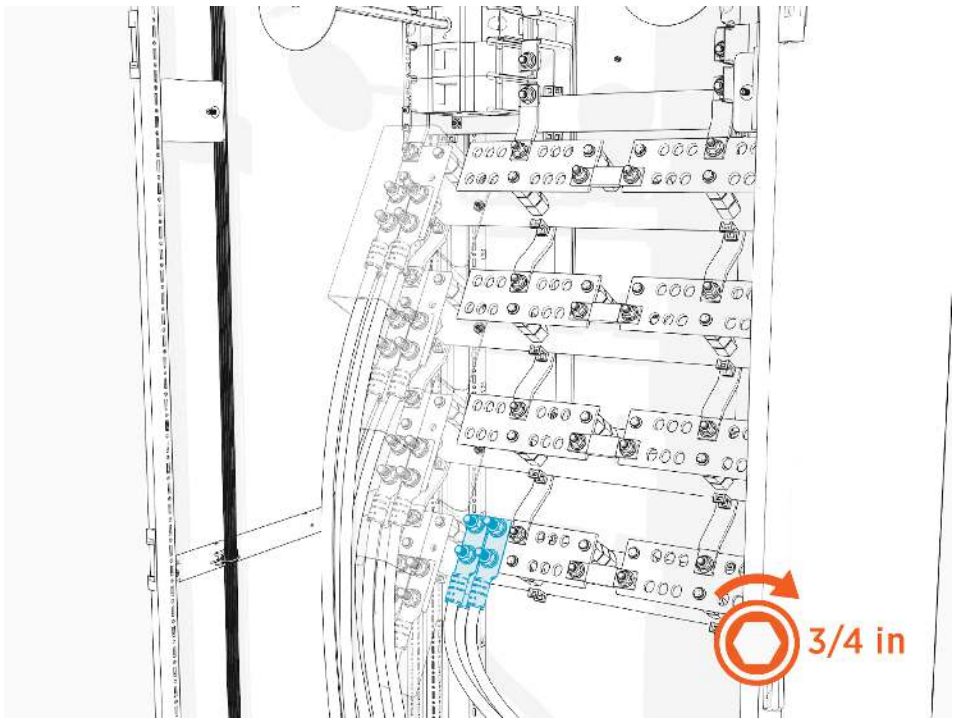


Install the lugs using:

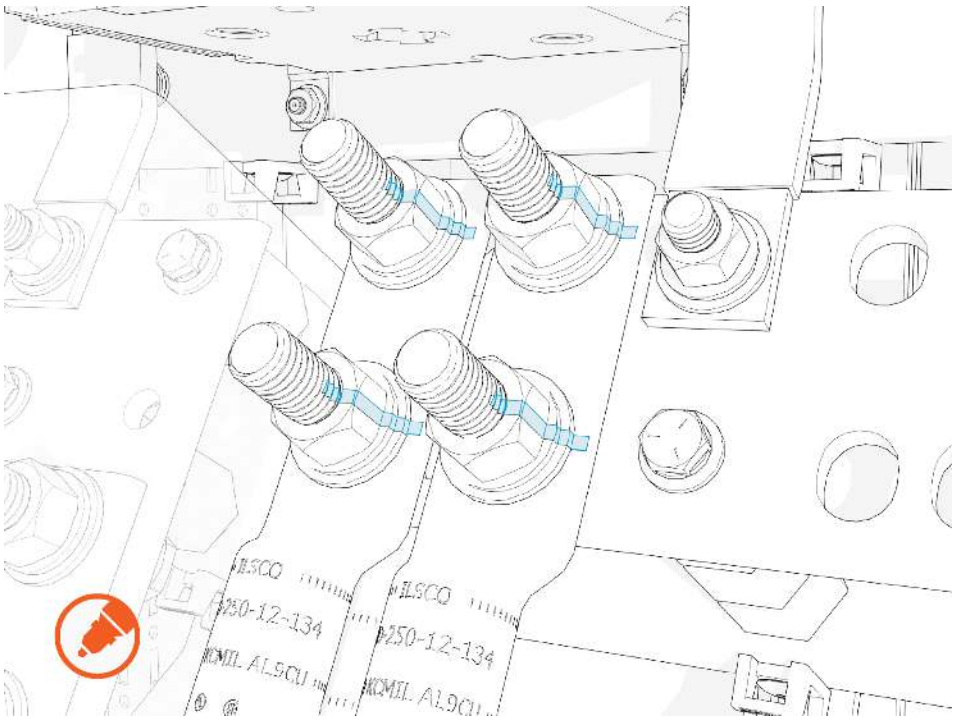
- **(a)** 1/2 x 2-1/4 in bolt
- **(b)** 1/2 in lock washer
- **(c)** 1/2 in flat washer
- **(d)** 1/2 in Belleville washer
- **(e)** 1/2 in hex nut

Note: Two wires can be installed with one set of fasteners, as shown above, with one wire on top of the terminal and one wire beneath the terminal.

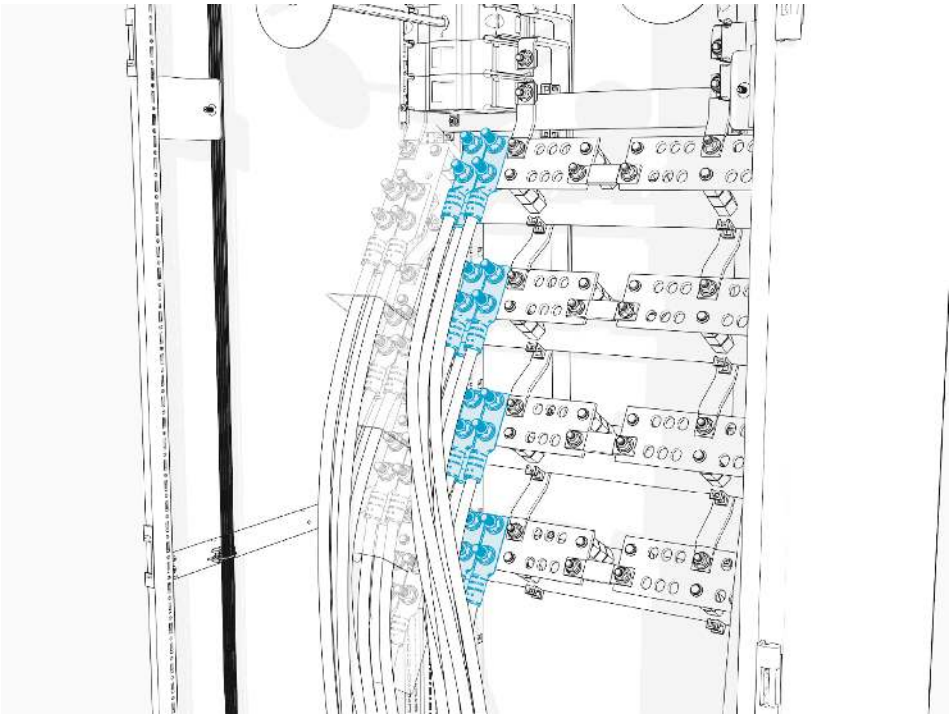
6. **Torque the fasteners to 61.6 Nm (45 ft-lb)**.



7. Mark all torqued connections.



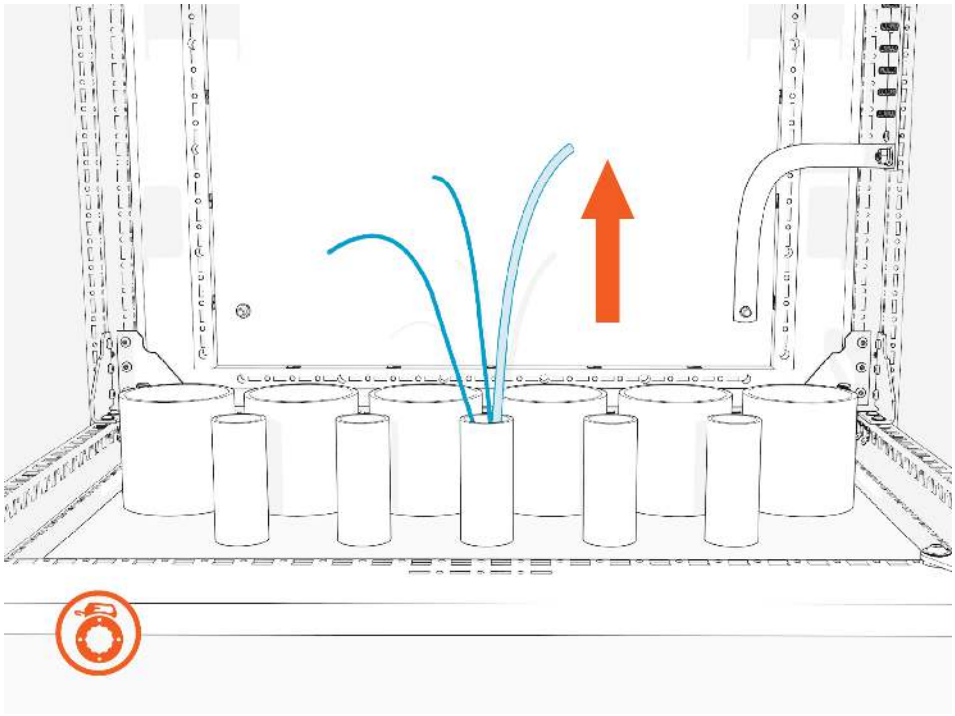
8. Repeat for all wire sets landing on the high voltage DC output terminals, working from lowest terminals to highest terminals.



Low Voltage Wires

Pull Wires

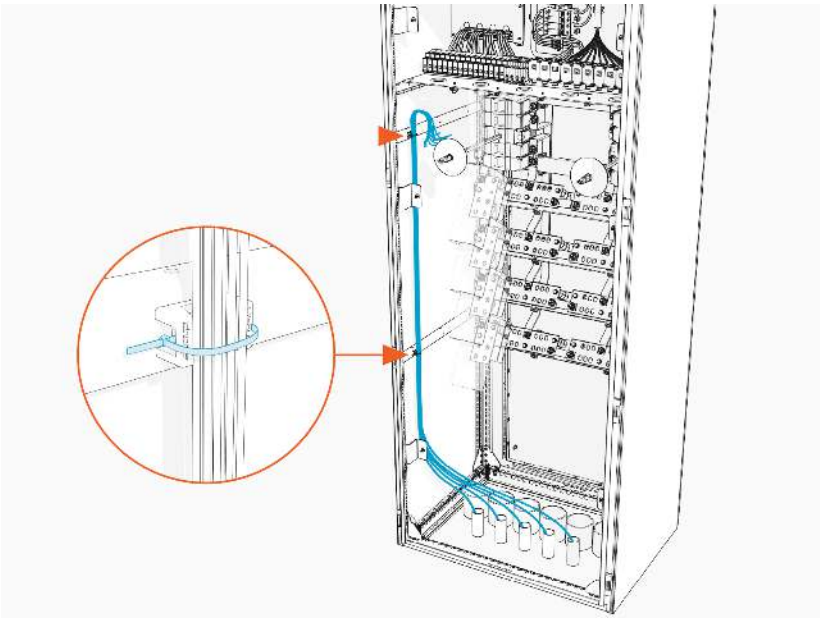
1. Label the 48 VDC and Ethernet wires at both ends.
2. Use a cable puller or fish tape to pull the 48 VDC and Ethernet wires through the conduits. If necessary, use a non-conductive wire pulling lubricant to facilitate the pull.



3. Wipe off any remains of wire pulling lubricant if applied while pulling the wires. Use paper towel.
4. Perform conductor insulator test on the 48 VDC wires. Have the results ready to present upon request.

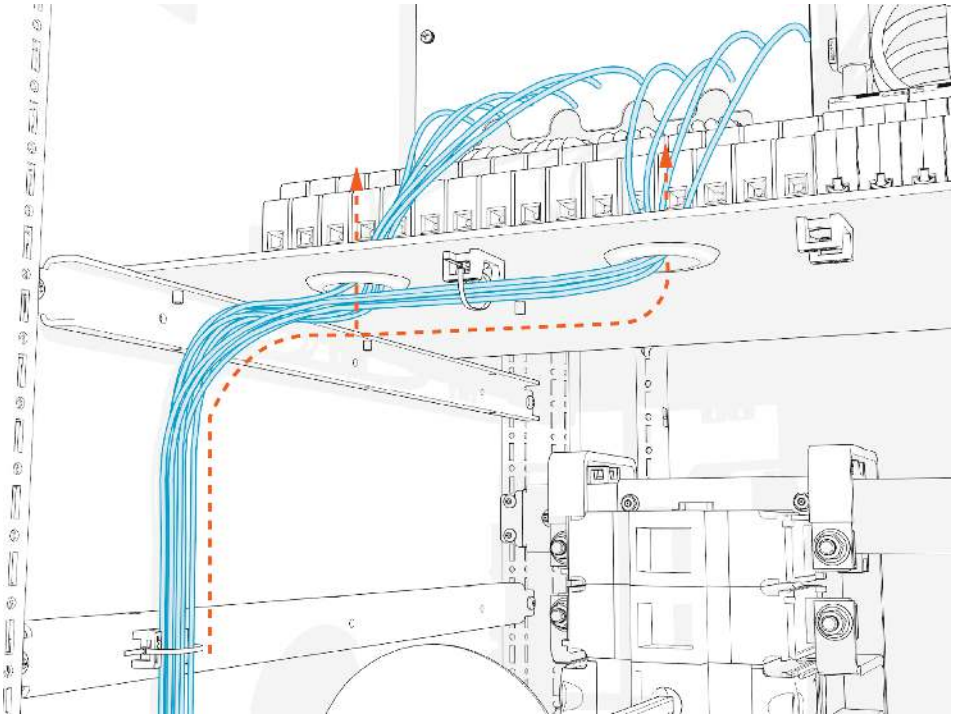
Connect 48 VDC Wires

1. Route the 48 VDC wires up the left side of the high voltage cabinet. Use cable ties to secure the wires to cabinet wall clips.

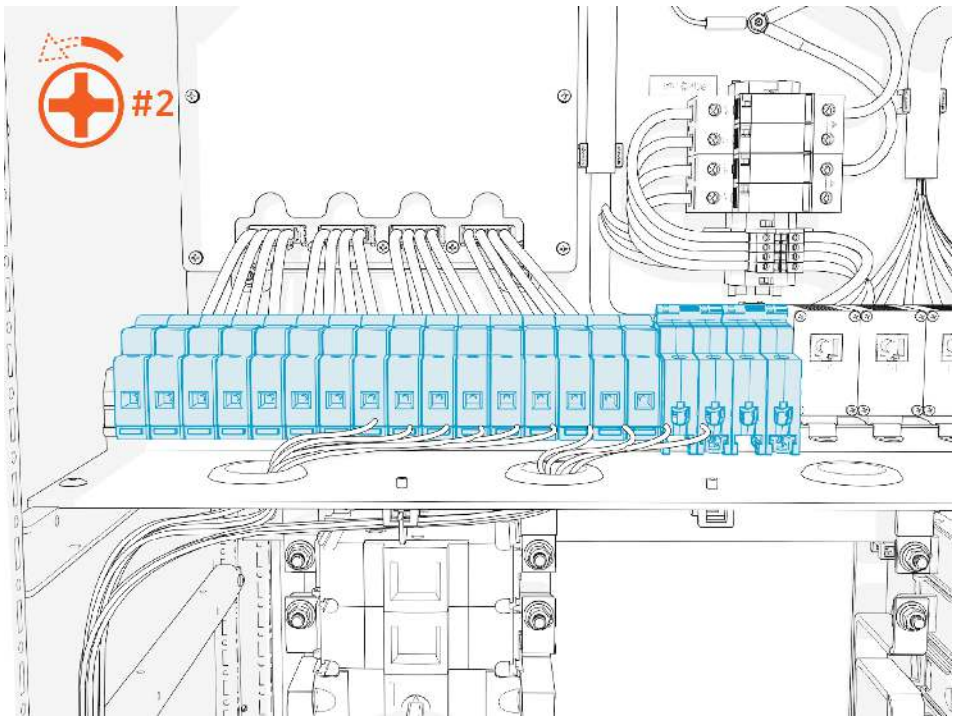


2. Route the wires across the ceiling of the high voltage cabinet and then through a grommet hole to reach the respective 48 VDC terminal block in the low voltage cabinet. See Wire Landing Locations. Use cable ties to secure the wires to the ceiling of the high voltage cabinet.

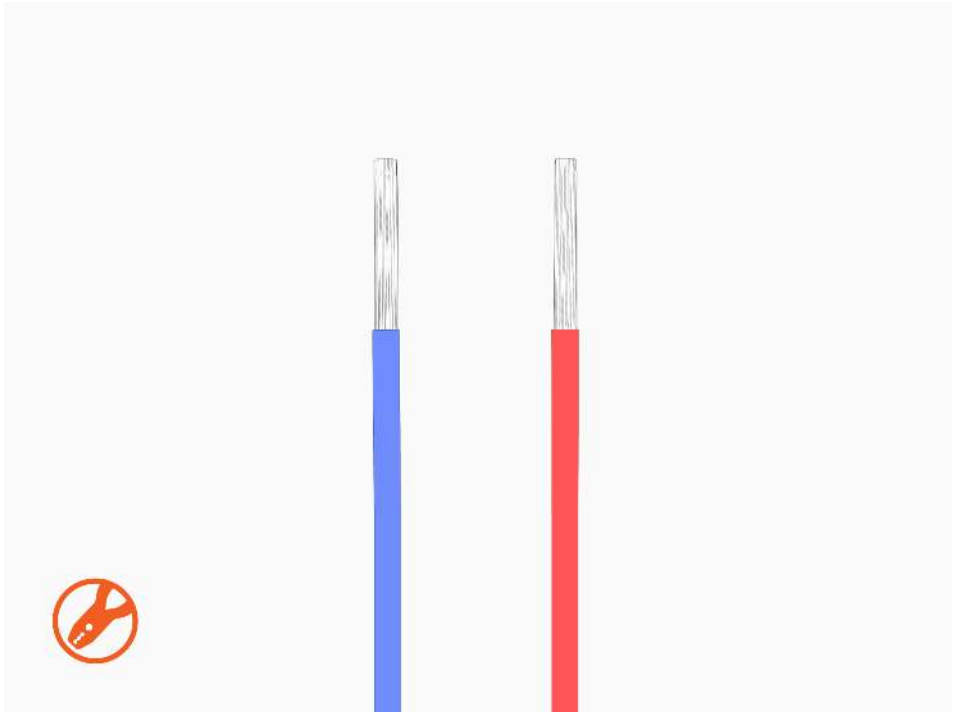
IMPORTANT: Ensure the wires route through a grommet hole to prevent them from being pinched against the dead front.



3. Loosen the set screws on the 48 VDC input circuit breaker and output fuse holders.

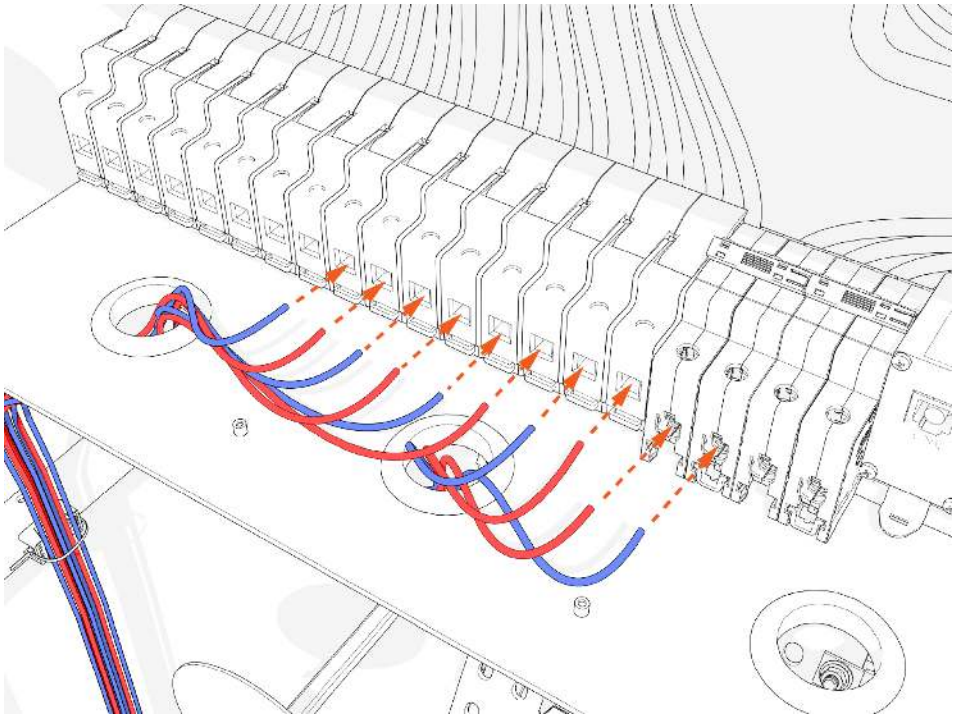


4. Cut the wires to length. Strip the wire ends 14 mm (0.6 in).

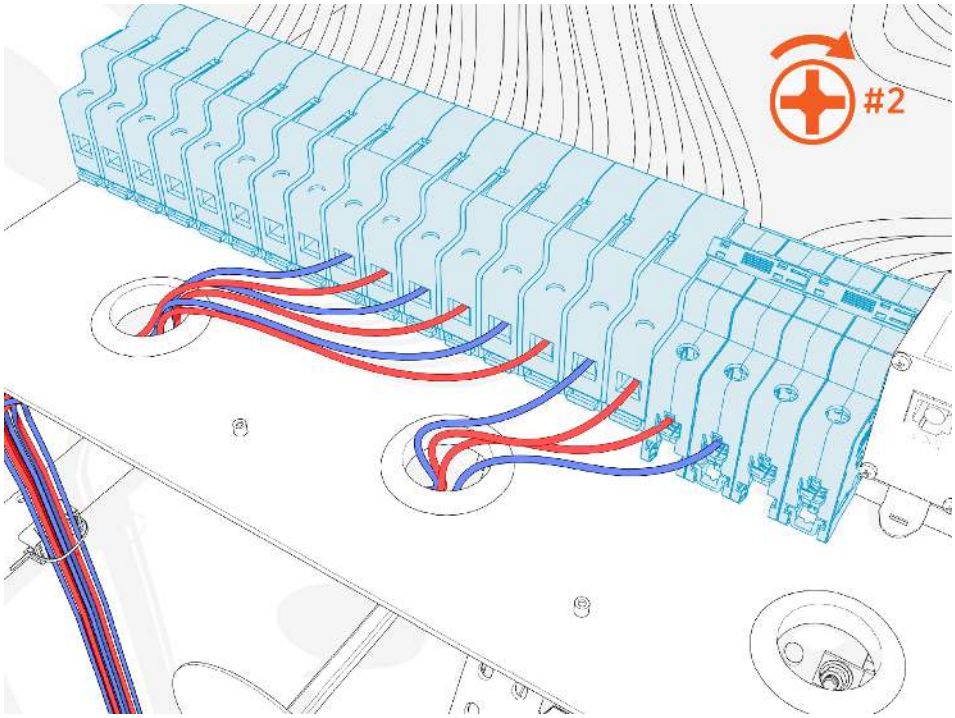


5. Insert each wire into its corresponding circuit breaker (input wire) or fuse holder (output wire).

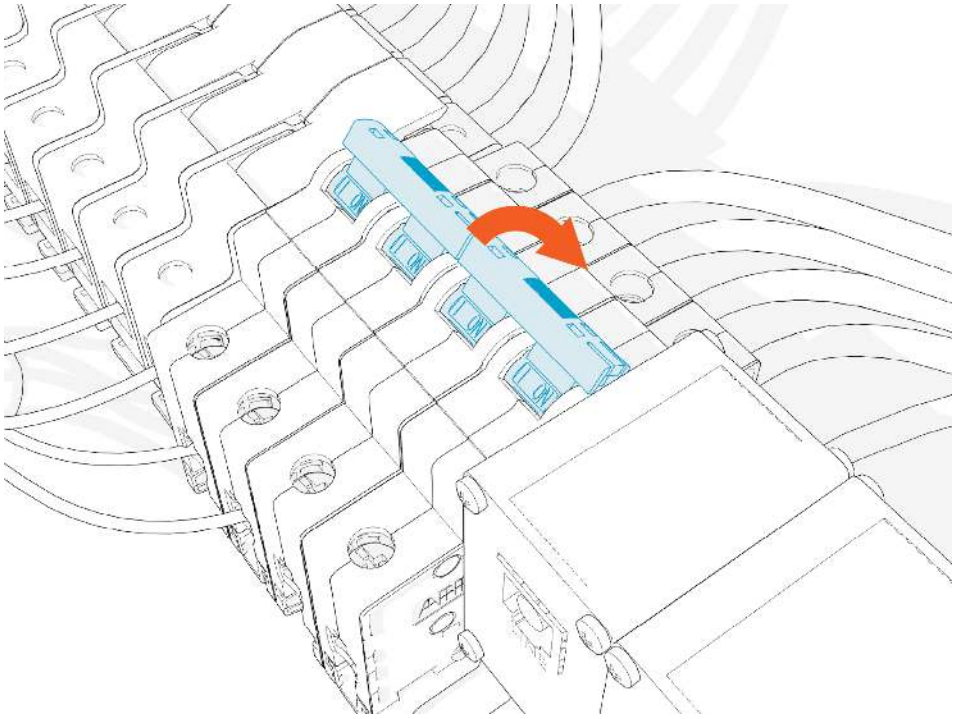
IMPORTANT: Insert positive wires (red) into the positive (+) terminals.



6. **Tighten fuse holder set screws to 1.7 Nm (15 in-lb)**. **Tighten circuit breaker set screws to 2.8 Nm (25 in-lb)**. Push-pull to test each connection is secure.

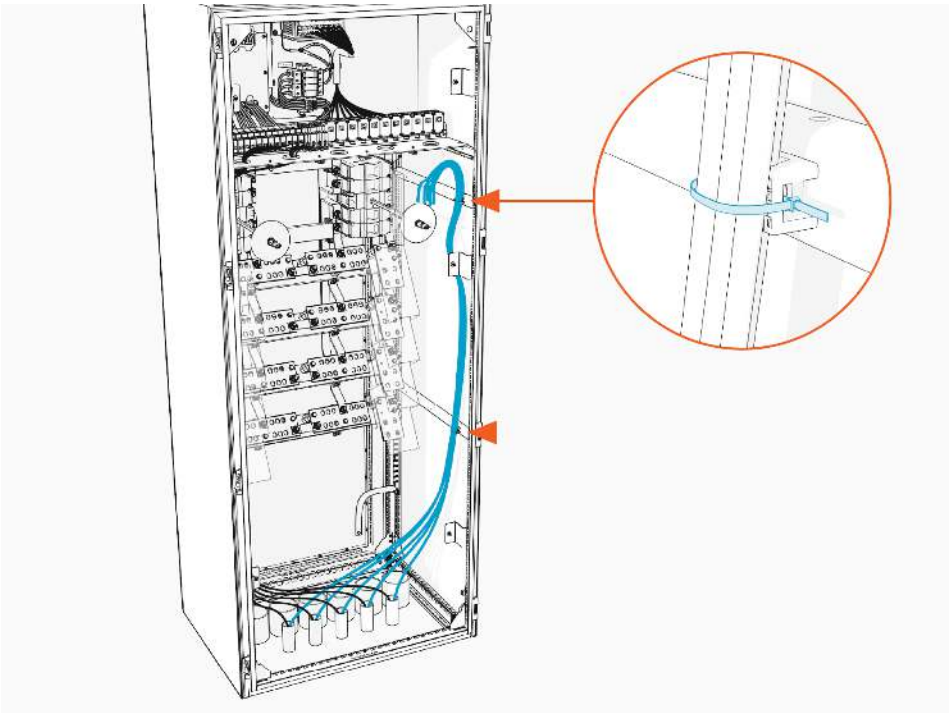


7. Ensure the relevant circuit breaker switches are in the ON position.



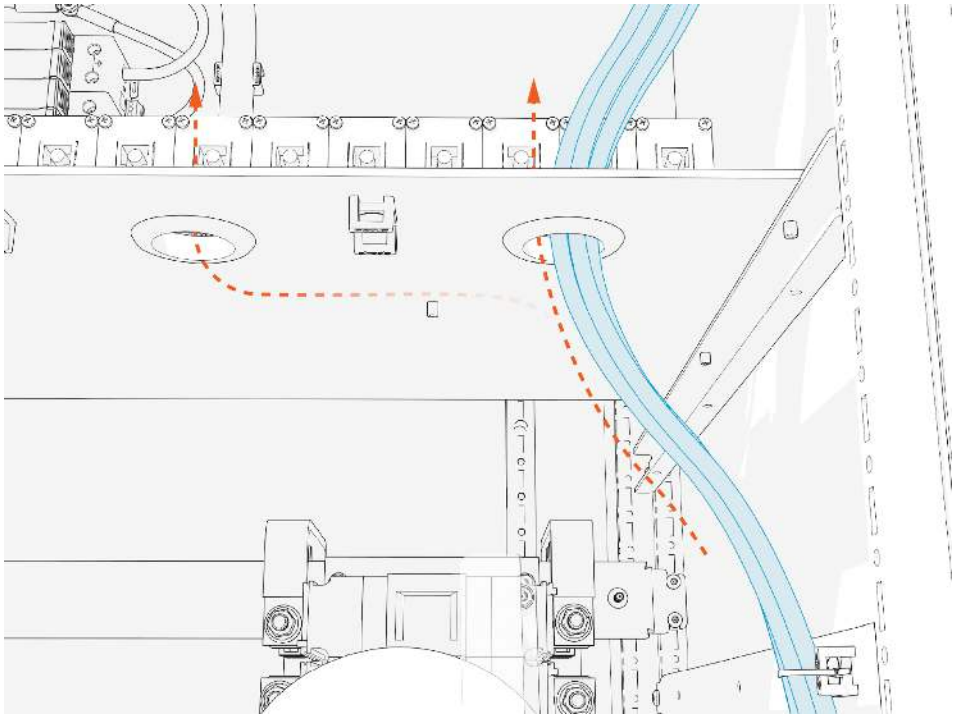
Connect Ethernet Cables

1. Route the Ethernet cables up the right side of the high voltage cabinet. Use cable ties to secure the wires to cabinet wall clips.

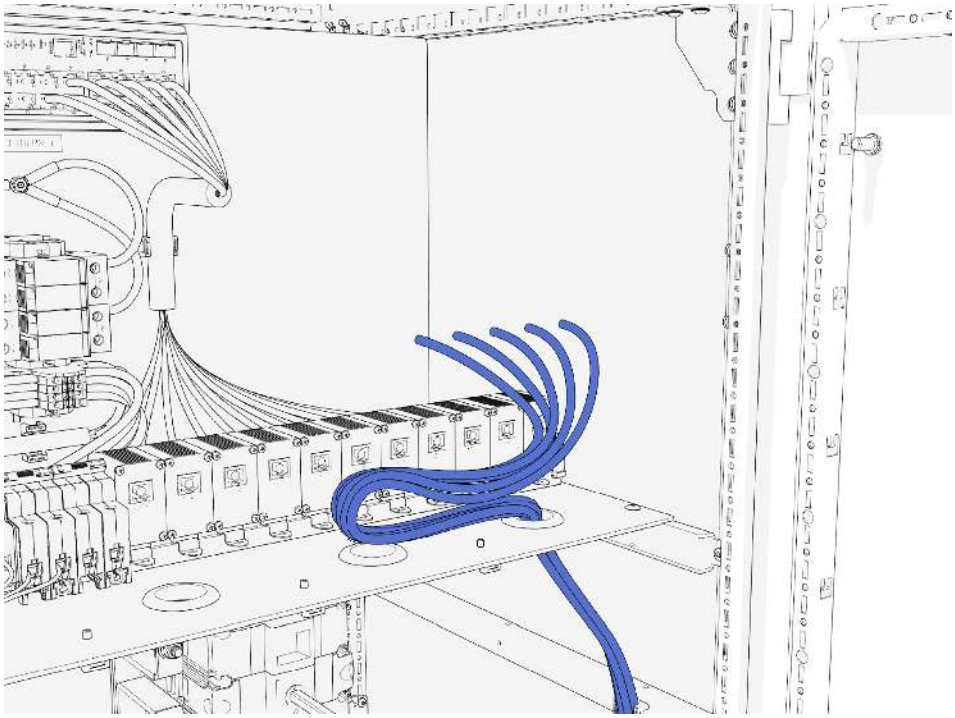


2. Route the Ethernet cables across the ceiling of the high voltage cabinet and then through a grommet hole to reach their respective Ethernet ports in the low voltage cabinet. See Wire Landing Locations for location of wire landings. Use cable ties to secure the cables to the ceiling of the high voltage cabinet.

IMPORTANT: Ensure the cables route through a grommet hole to prevent them from being pinched against the deadfront.

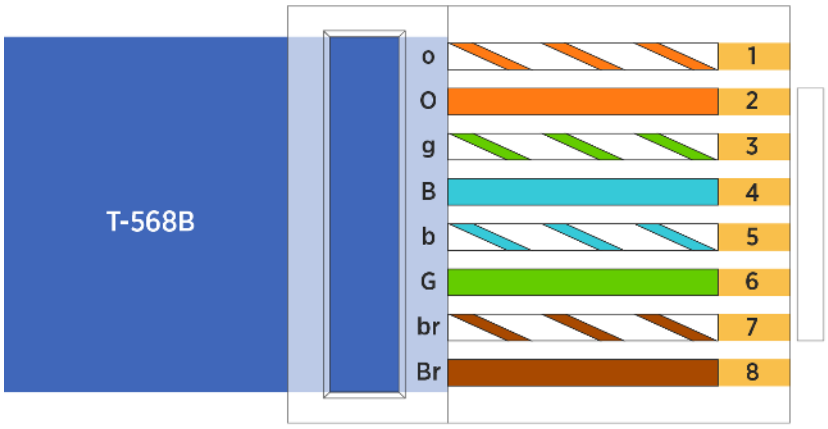


3. Trim loose end of the Ethernet cable to length. Allow for a service loop that lies horizontally across the bottom shelf of the cabinet.



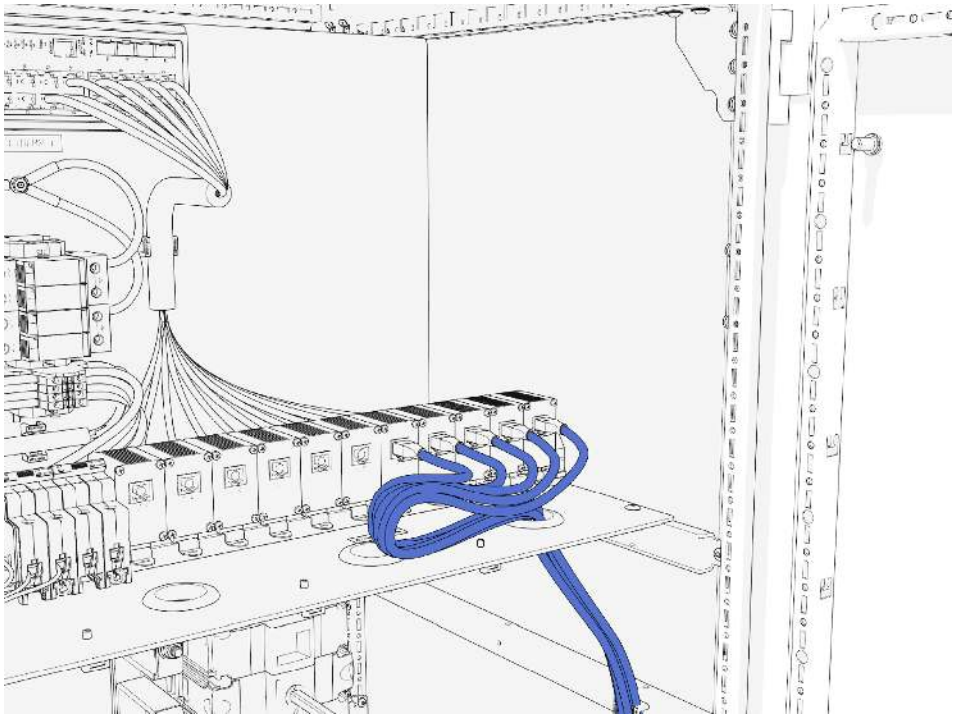
4. Field crimp a shielded RJ45 connector onto the end of each Ethernet cable. Use a straight-through T568-B pattern.

IMPORTANT: For Ethernet cables connecting from the Power Hub to Power Links, ground the shield wire at the Power Hub. For Ethernet cables connecting from the Power Hub to Power Blocks, do not connect the shield wire at the Power Hub. The shield wire must ground at the Power Block.

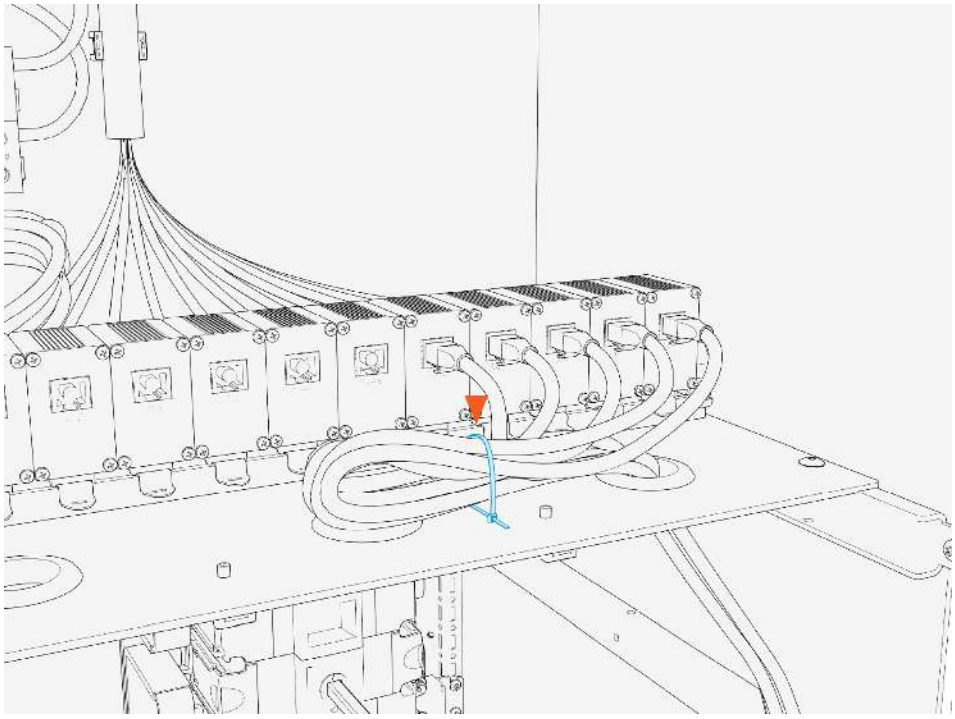


5. Test each Ethernet cable for functionality. Use an Ethernet tester.

6. Connect each Ethernet cable to an Ethernet port. All ports are interchangeable. There should be an audible click upon insertion. Push-pull to test the connection.

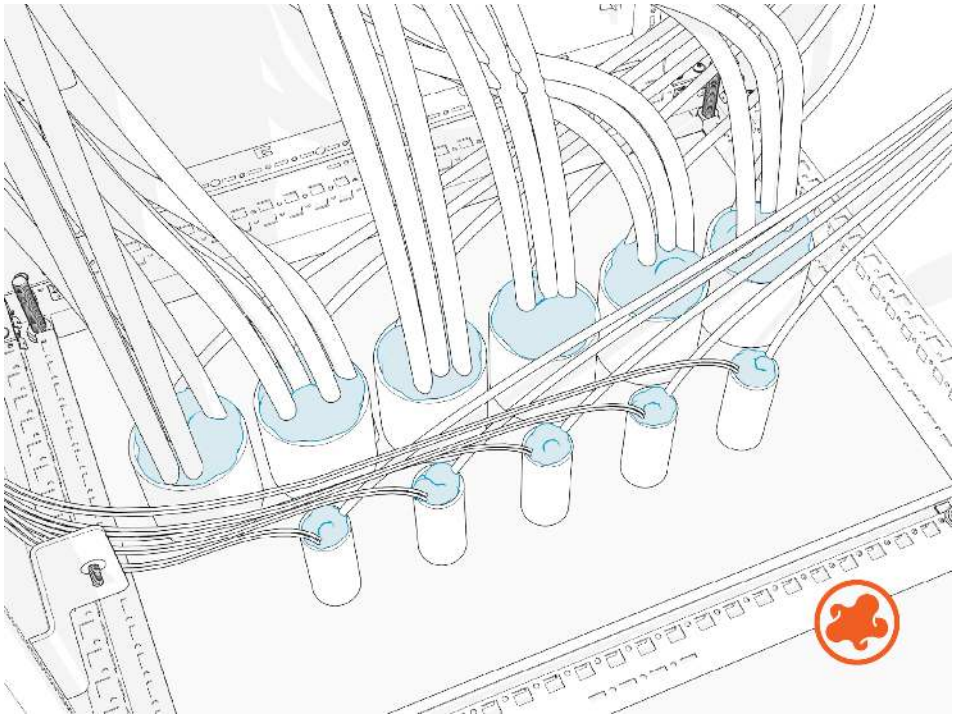


7. Use cable ties to dress the Ethernet cables.

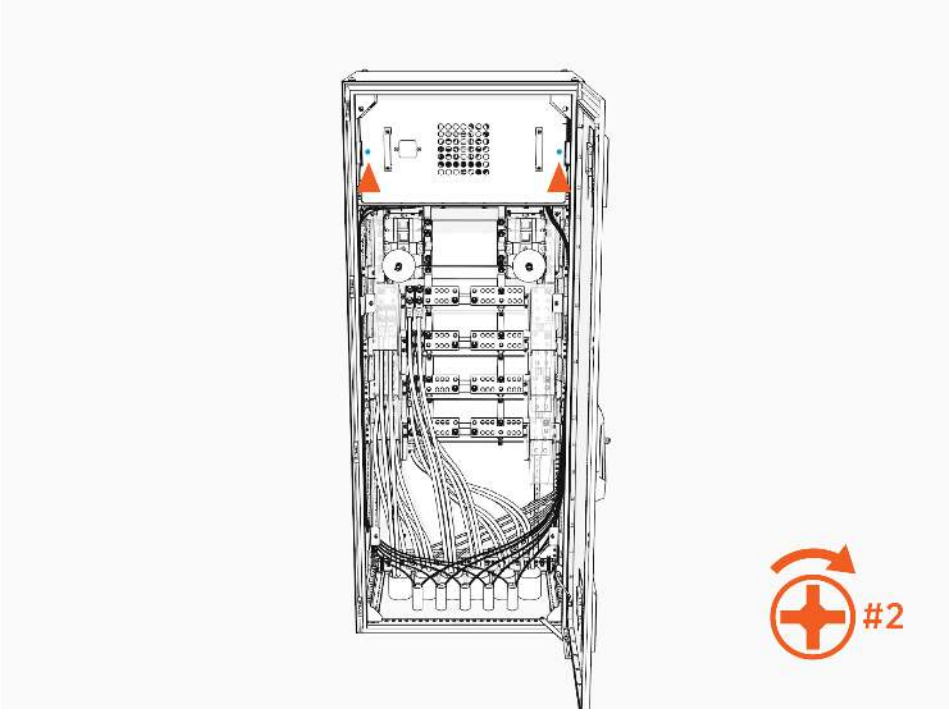


Finalize the Installation

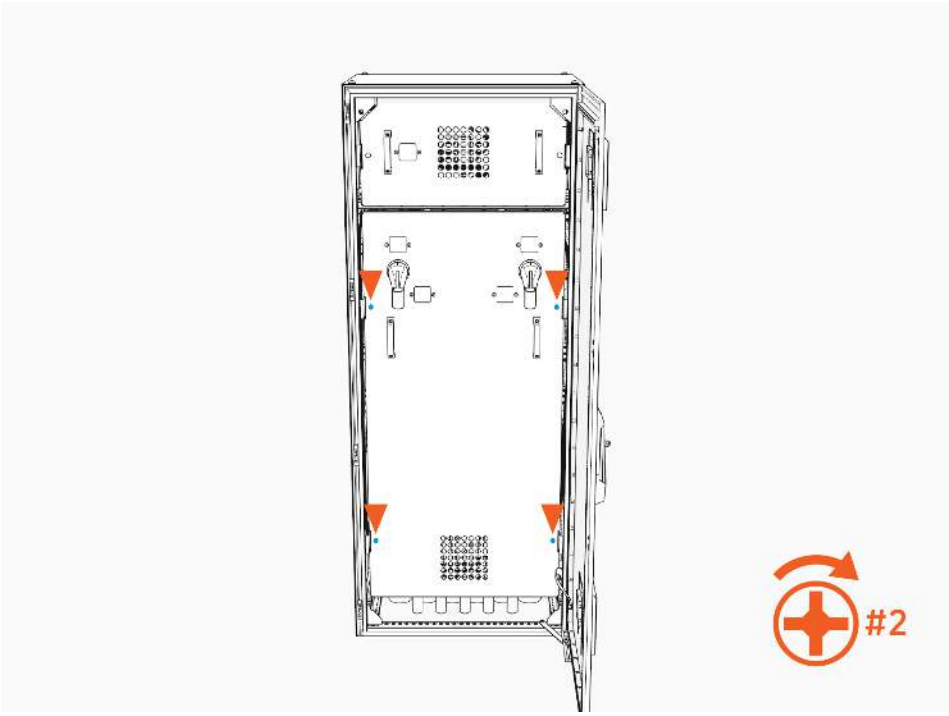
1. Vacuum all wire ends and metal shavings from the cabinet.
2. Use duct seal compound to seal inside conduit openings.



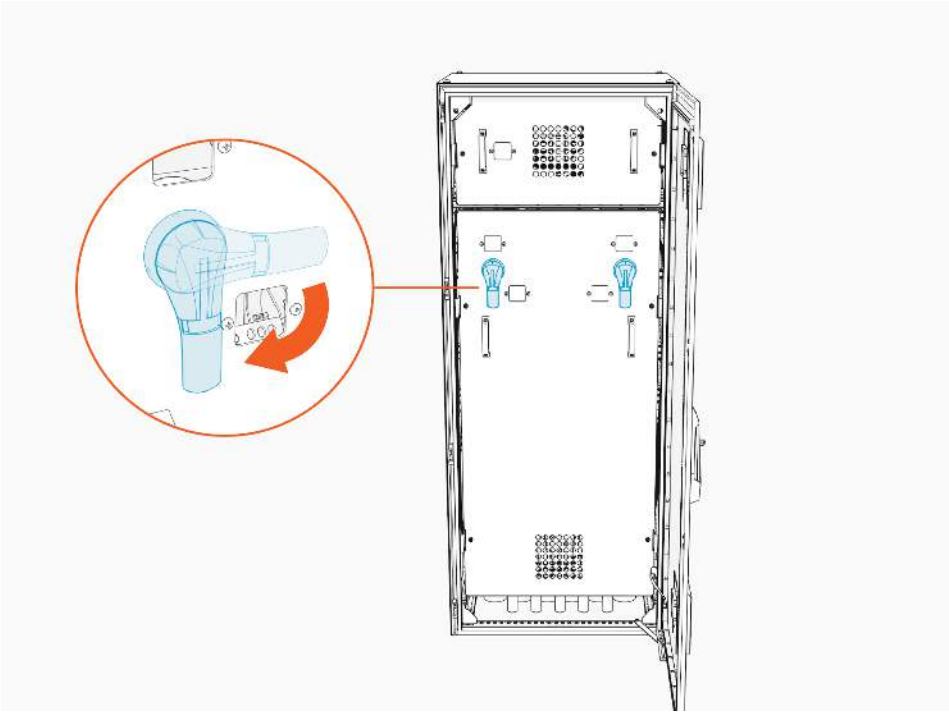
3. Reinstall the low voltage cabinet dead front. Tighten captive screws (x2) on the dead front. **Torque to 5.6 Nm (50 in-lb).**



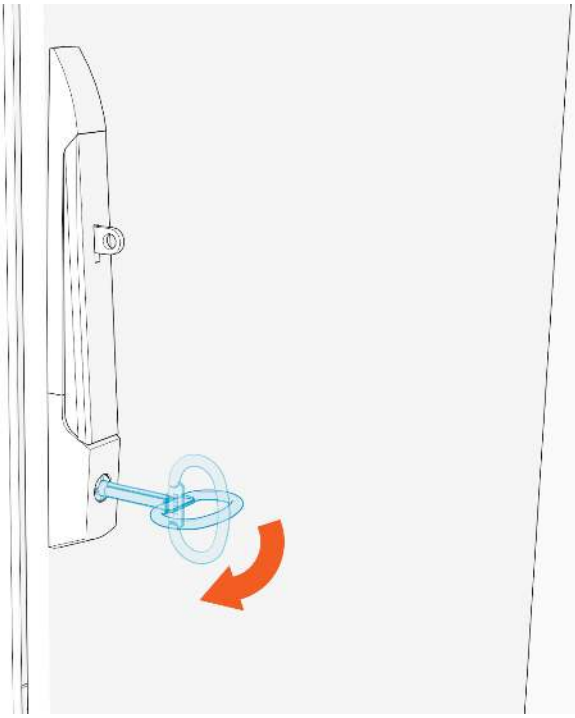
4. Reinstall the high voltage cabinet dead front. Be sure the disconnect switch shaft inserts into the disconnect handle on the dead front. Tighten the captive screws (x4) on the dead front. **Torque to 5.6 Nm (50 in-lb).**



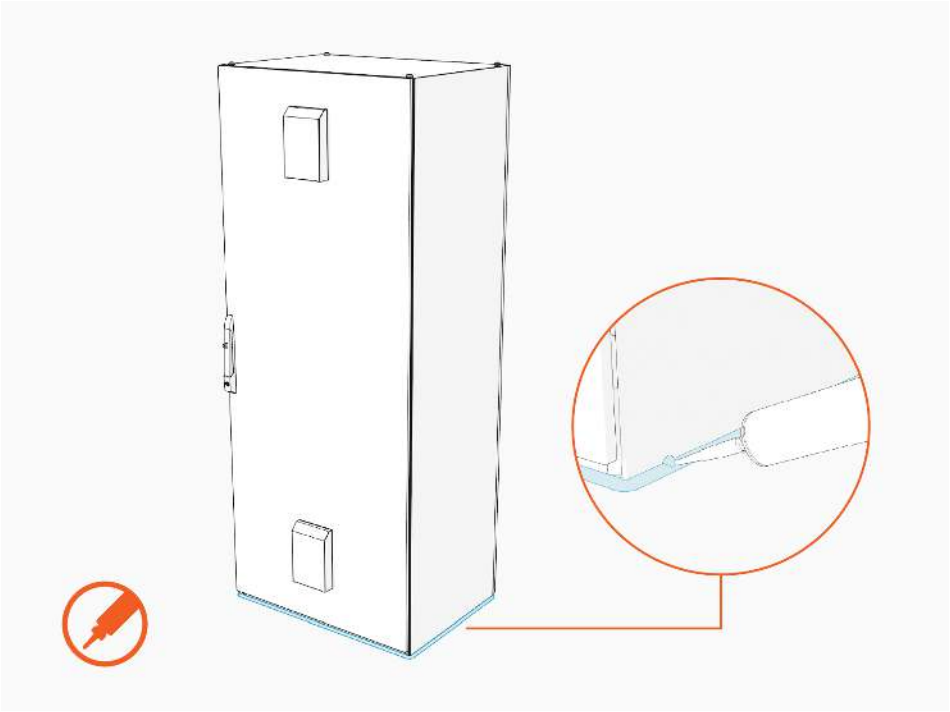
5. Turn each disconnect switch handle to the ON position. Align the fin on the handle with the ON mark.



6. Close and lock the door. Retain the key for future servicing of the Power Hub.



7. Use a weatherproof sealant to fully seal the Power Hub base to the concrete surface.



Appendix: Install Riser Kit A

The Power Hub can be installed on a riser if additional space beneath the Power Hub is needed to accommodate conduit fittings or cable glands. The riser raises the Power Hub cabinet off the ground by 100 mm (4 in). The Power Hub Riser Kit is ordered and shipped separately from the Power Hub.

Follow instructions in this appendix to unpack and install the Riser Kit.

Bring These Tools


Hard hat


Safety glasses


T30 Torx screwdriver


Torque wrench driver


Cut-resistant gloves

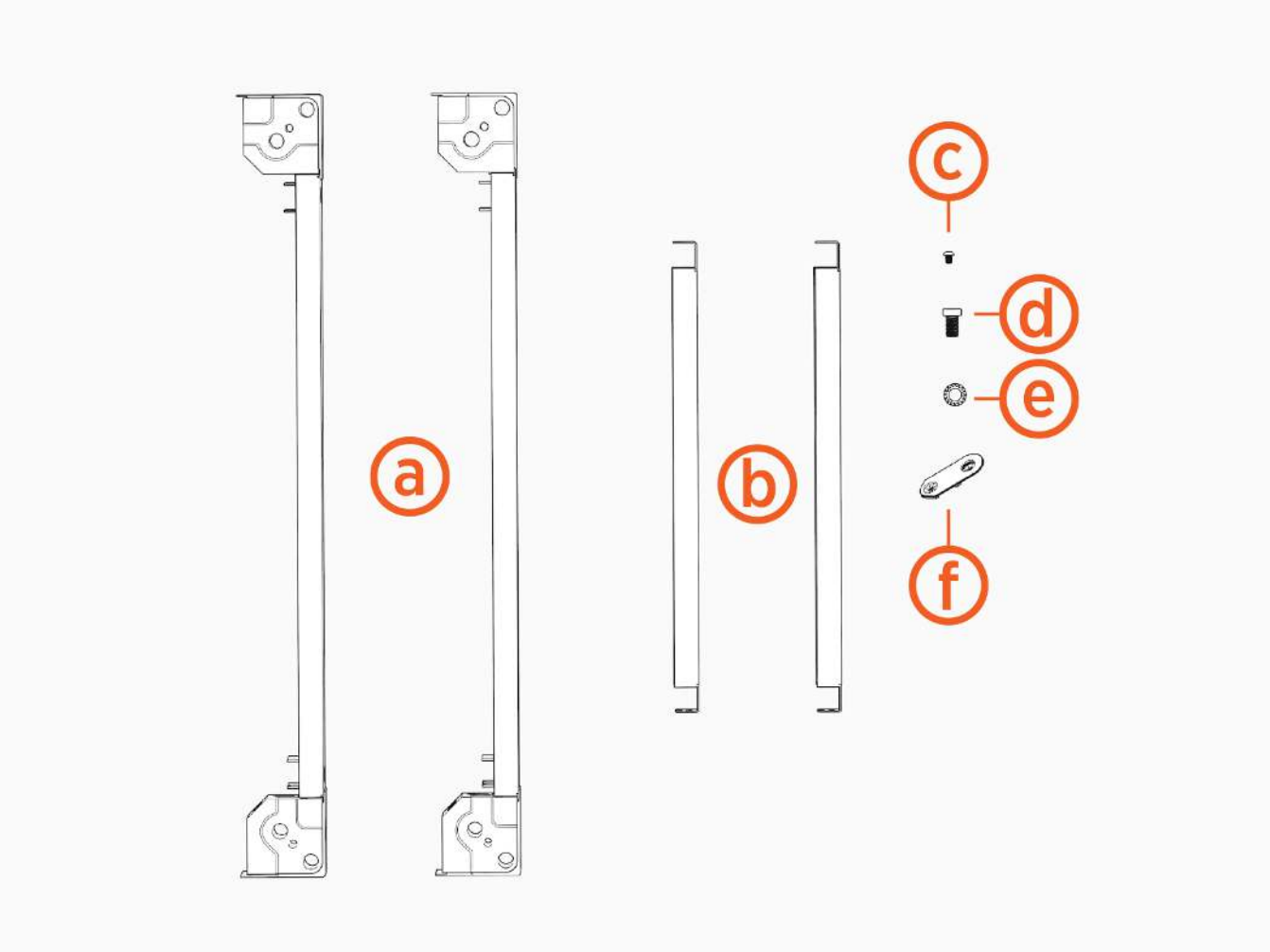

Box cutter


Hex socket (15/16 in, deep socket)


Rubber mallet

Unpack and Inspect Parts

The Riser Kit ships in its own box, separate from the Power Hub. Unpack the box and check to make sure the following parts are present:



(a) Base assemblies with corner covers attached (1 pair)

(b) Trim panels (1 pair)

(c) M5 x 12 mm self tapping screws (x16)

(d) M12 x 25 mm bolts (x4)

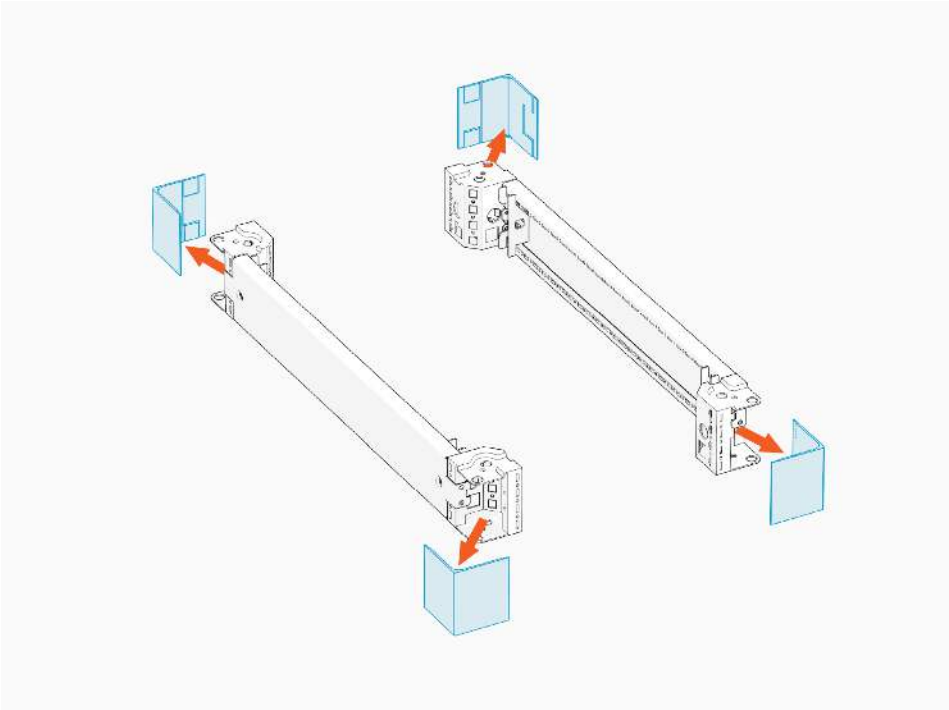
(e) 13 mm toothed washer (x4)

(f) Mounting aids (x4)

Assemble Riser

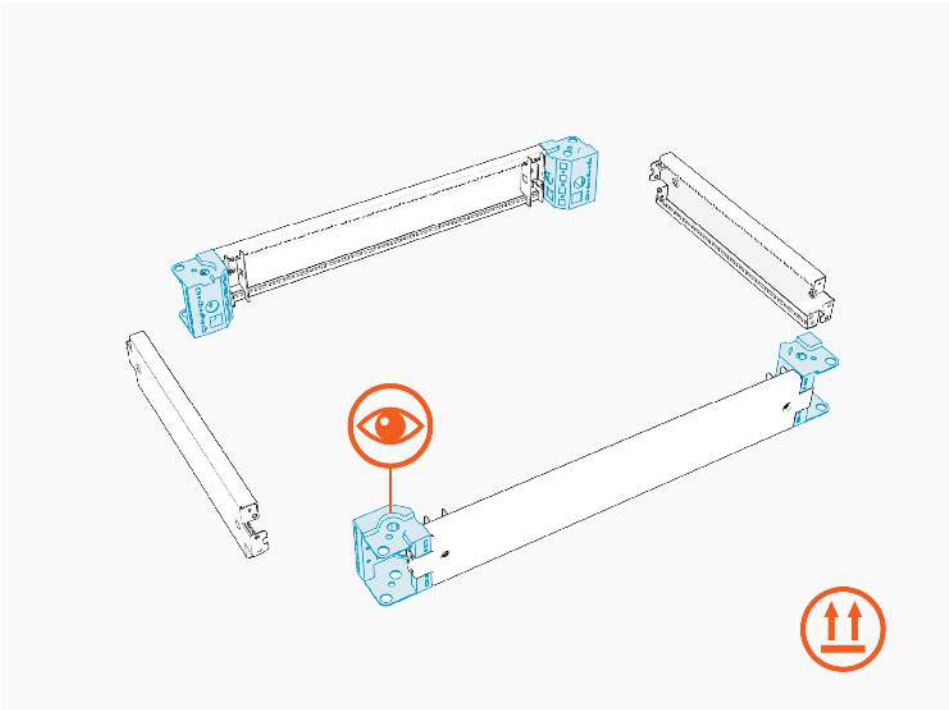
Note: ChargePoint recommends assembling the riser on a workbench or table top.

1. Remove the covers (x2) from each base assembly.

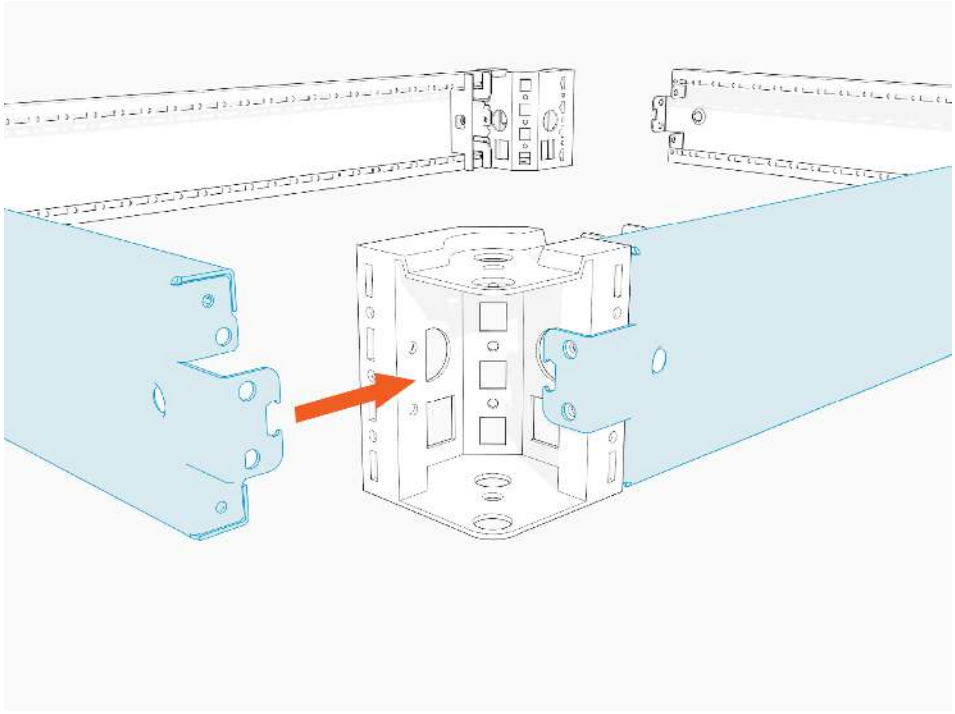


2. Arrange base assemblies and trim panels as shown below.

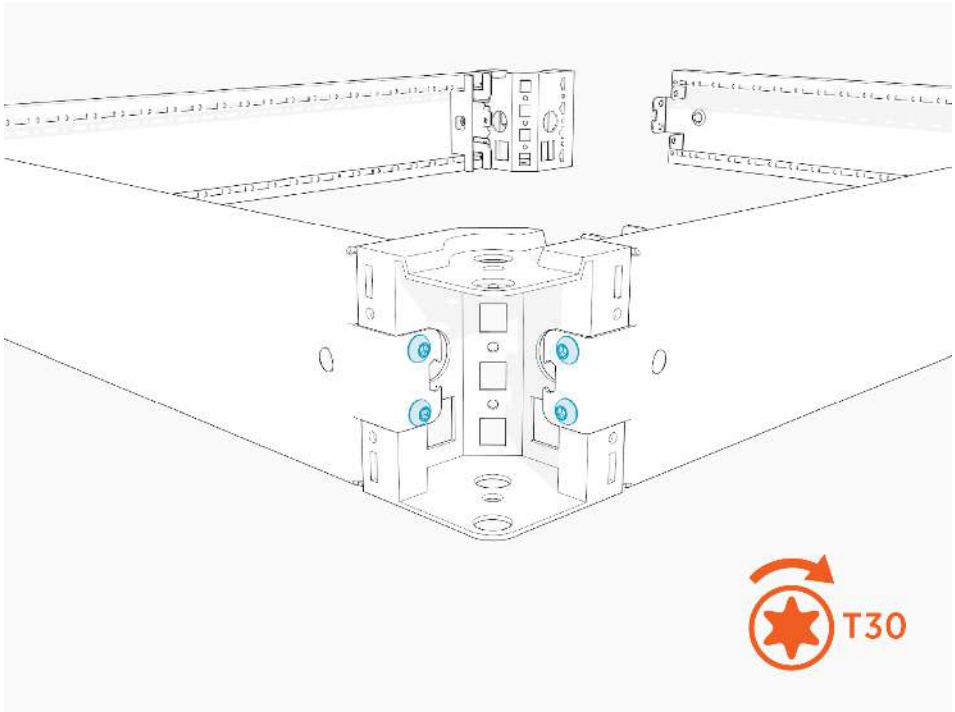
IMPORTANT: Make sure the internally threaded nuts on the base assemblies face upwards.



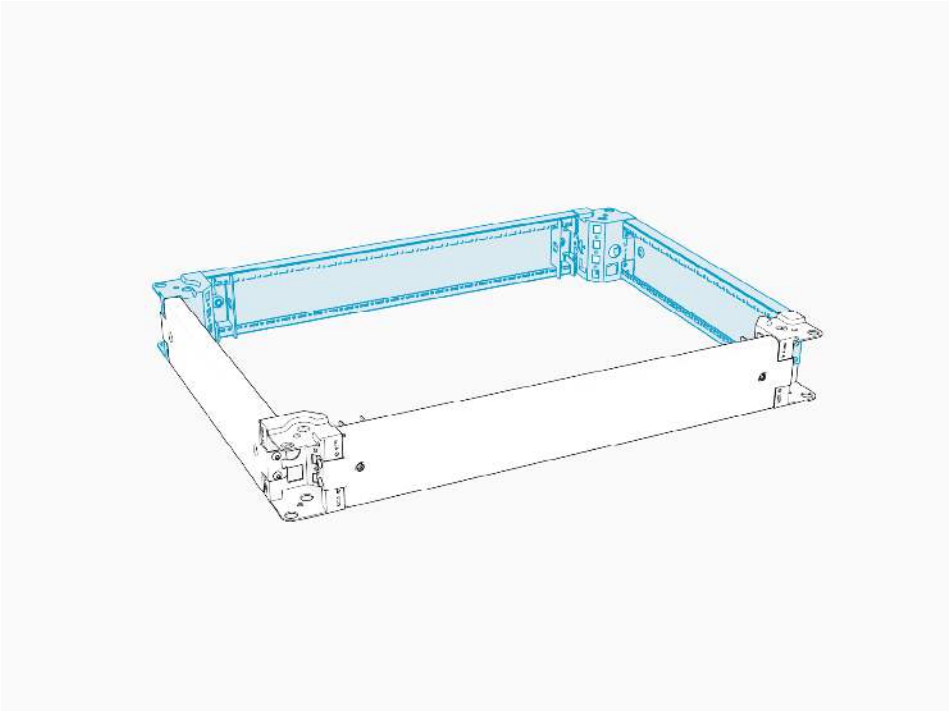
3. Starting at one corner of the layout, connect the end of one trim panel to its adjacent base assembly.



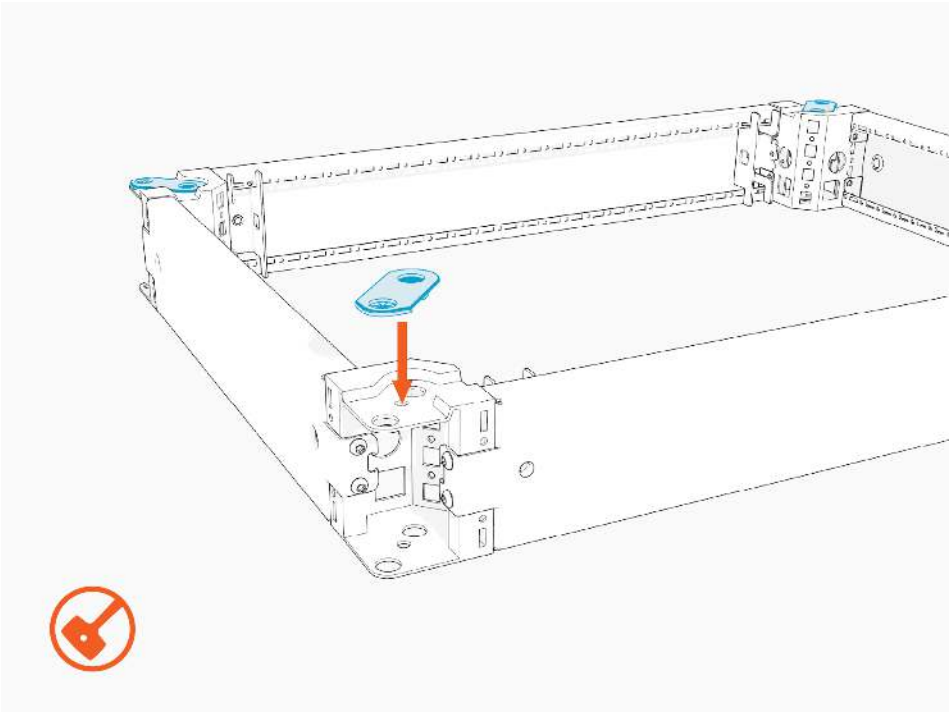
4. Install T30 screws (x4) to secure the all panels attached to the corner base piece.



5. Connect and secure the side trims at the remaining corners of the riser.

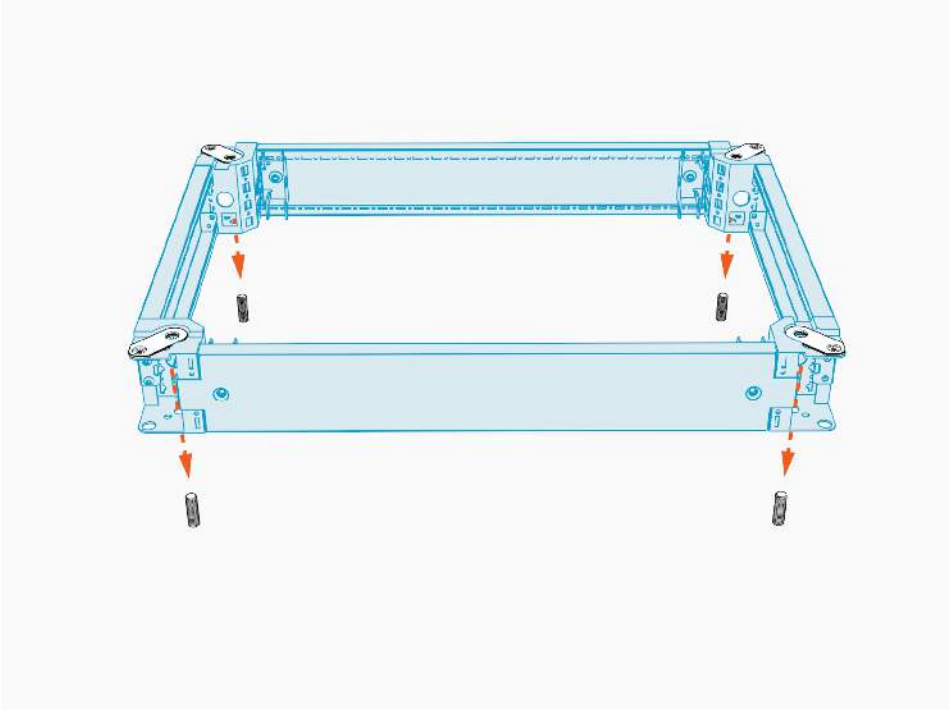


6. Install a mounting aid at each corner of the riser. Use a rubber mallet to tap the aid into place.

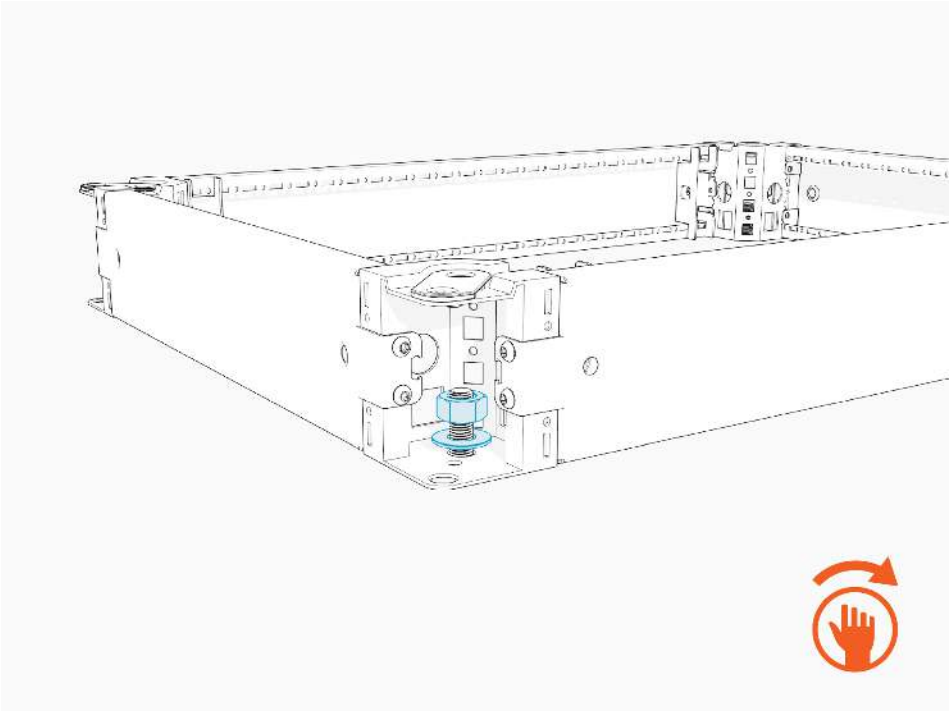


Install the Riser

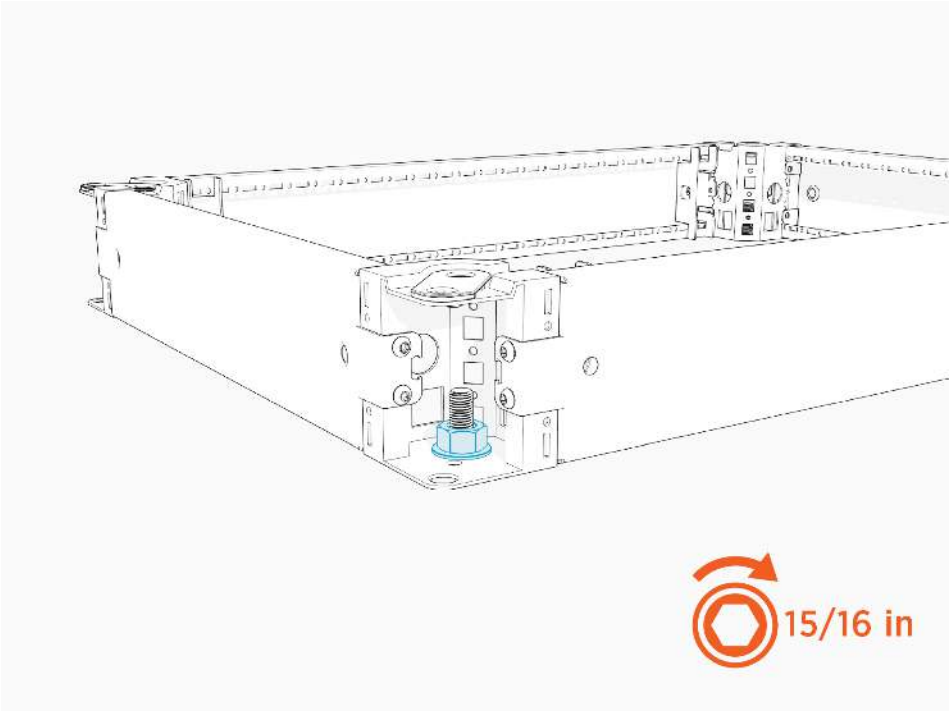
1. Bring the assembled riser to the Power Hub installation location. Place the riser down, aligning the riser anchor holes with the anchor bolts.



2. Install a washer and a top nut onto each of the anchor bolts and hand-tighten.



3. **Torque all top nuts to 94.9 Nm (70 ft-lb).**



4. This concludes the Riser Kit assembly and installation. Proceed to Mount Cabinet on a Riser.

Appendix: Install Second Input Kit B

The Power Hub ships equipped for high voltage DC inputs from one Power Block, denoted Power Block Left. This default configuration includes hardware for landing high voltage DC cables from Power Block Left, and a disconnect switch for high voltage DC power shutoff from Power Block Left.

The Power Hub can be configured to accept high voltage inputs from a second Power Block, denoted Power Block Right, by installing a Second Input Kit. The Second Input Kit includes hardware for landing high voltage DC input cables from Power Block Right, as well as a second disconnect switch for power shutoff from Power Block Right. Adding a second Power Block to a Power Hub doubles the potential power available to share across connected Power Links.

The Second Input Kit must be ordered separately, and is field installed into the Power Hub. Installation of the Second Input Kit can be performed solely from the front side of the cabinet; however it is more easily installed when there is both front and rear acess to the cabinet. In cases where the rear clearance of an installed Power Hub is less than 812.8 mm (32 in), it is easiest to install the Second Input Kit prior to mounting the Power Hub into its final location. For example, it may be installed in the field while the Power Hub is still attached to its shipping pallet. For the case in which an installed Power Hub may be connected to a second Power Block at a future time, consider pre-installing a Second Input Kit prior to initial cabinet mount.

Follow instructions in this appendix to unpack and install the Second Input Kit.

Note: These instructions assume the Power Hub cabinet is already opened. If the cabinet is not yet opened, see Unpack the Power Hub

Bring These Tools

Tools


Hard hat


Cut-resistant gloves


Safety glasses


Lock out/tag out equipment


Multimeter with CAT III 1000 V ratings, such as Fluke 87V or similar


Torque wrench driver


Hex socket set (10 mm, 7/16 in, 9/16 in, including deep socket)


T30 Security screwdriver


Box cutter


Torque screwdriver

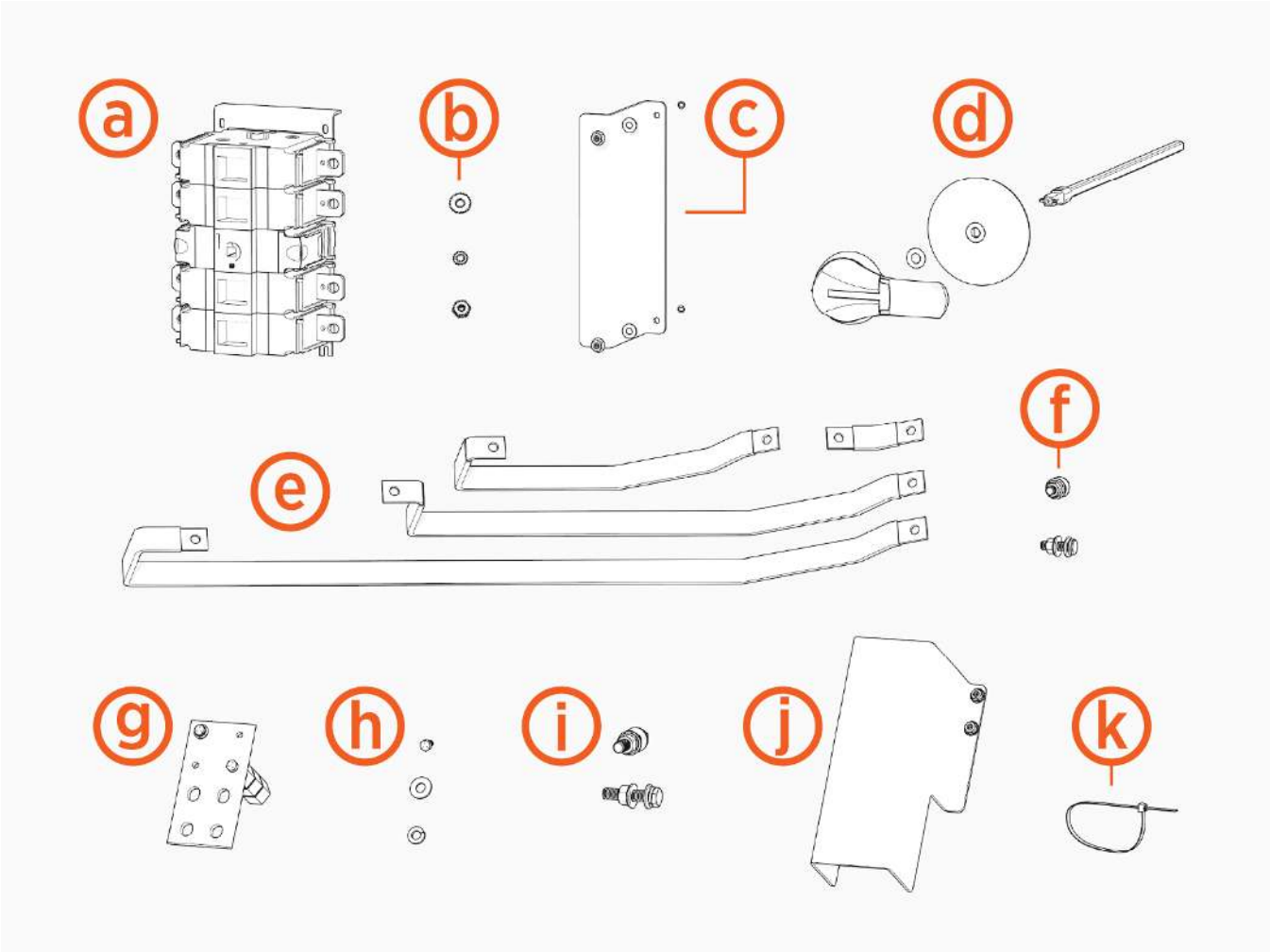

Hex wrench set (2.5 mm, 3/16 in, 9/16 in, and adjustable)

Tightening Torque

Component	Fastener (Qty)	Tool	Torque
Cabinet rear panel	T30 Security screw (x8)	T30 security screwdriver	5.1 Nm (45 in-lb)
Rear panel ground strap	3/8 in hex nut (x1)	9/16 in socket wrench	8.5 Nm (75 in-lb)
Disconnect switch body	#10 hex nut (x4)	10 mm socket wrench	3.4 Nm (30 in-lb)
Flex jumpers at disconnect switch	3/8 in hex nut (x8)	9/16 in socket wrench	35 Nm (26 ft-lb)
Flex jumpers at bus bar	3/8 in hex nut (x8)	9/16 in socket wrench	42.4 Nm (31 ft-lb)
High voltage DC bus assembly	1/4 in hex bolt (x8)	7/16 in socket wrench	10.2 Nm (90 in-lb)
High voltage DC bus safety cover	Captive screws (x16)	3/16 in hex wrench	2.8 Nm (25 in-lb)
Disconnect switch safety cover	Captive screws (x2)	3/16 in hex wrench	2.8 Nm (25 in-lb)

Unpack the Second Input Kit

The Second Input Kit ships in its own box, separate from the Power Hub. Unpack the box and check to make sure the following parts are present:



(a) Disconnect switch

(b) Disconnect switch fasteners (x4)

- #10 flat washer
- #10 split lock washer
- #10 hex nut

(c) Disconnect switch safety cover

(d) Disconnect switch handle kit (x1)

- Disconnect handle
- 400 mm shaft
- 0.412 inch o-ring (x2)
- Shaft warning tag

(e) Set of flex jumpers (2 sets of four)

(f) Flex jumper fasteners (x16)

- 3/8 x 1-1/4 inch hex head bolt
- 3/8 inch split washer
- 5/16 inch flat washer (x2)
- 3/8 inch belleville washer
- 3/8 inch hex nut

(g) High voltage DC bus assemblies (x4)

(h) High voltage DC bus assembly fasteners (x8)

- 1/4 x 5/8 inch hex head bolt
- 1/4 inch split lock washer
- 1/4 inch small flat washer

(i) High voltage lug fasteners (x16)

- 1/2 x 2-1/4 inch hex bolt
- 1/2 inch lock washer
- 1/2 inch flat washer (x2)
- 1/2 inch belleville washer
- 1/2 inch hex nut

(j) High voltage bus safety cover (x4)

(k) Zip ties (x20)

Disconnect Power

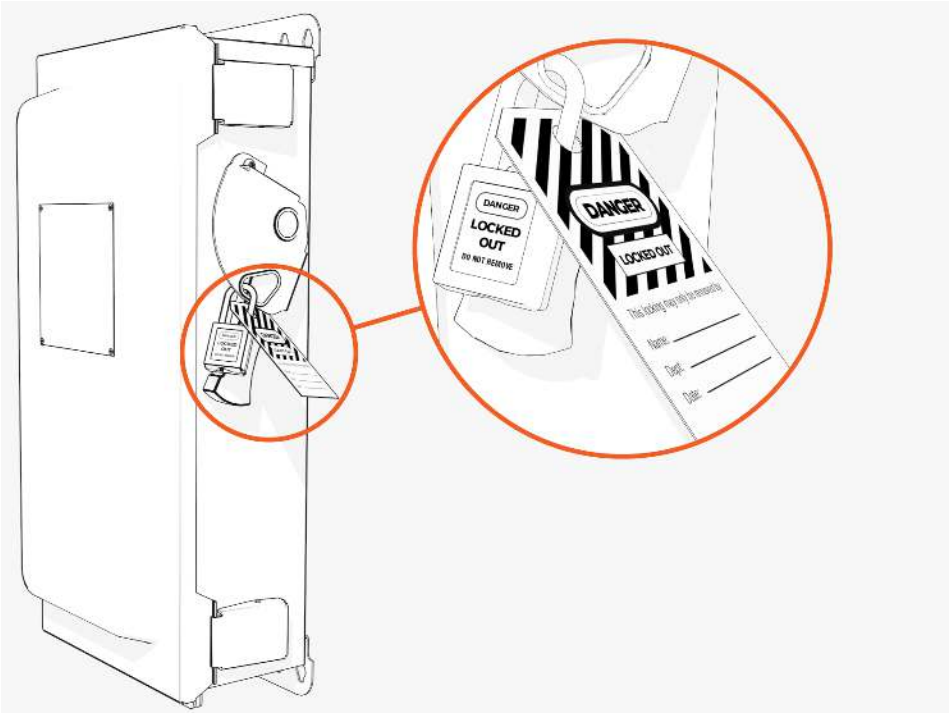
DANGER: RISK OF SHOCK

- Before any procedure, disconnect the power.
- Follow local code and site lockout/tagout procedure to de-energize the station.
- Wait for energy to dissipate (approximately five minutes).
- Keep power off until all covers and panels are reinstalled and the work is complete.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY, LOSS OF LIFE, OR PROPERTY DAMAGE.

1. Disconnect power at the Power Block that feeds the Power Hub.

   Note: Follow standard practice and local code to de-energize the applicable circuit and lock out/tag out the disconnect before proceeding.

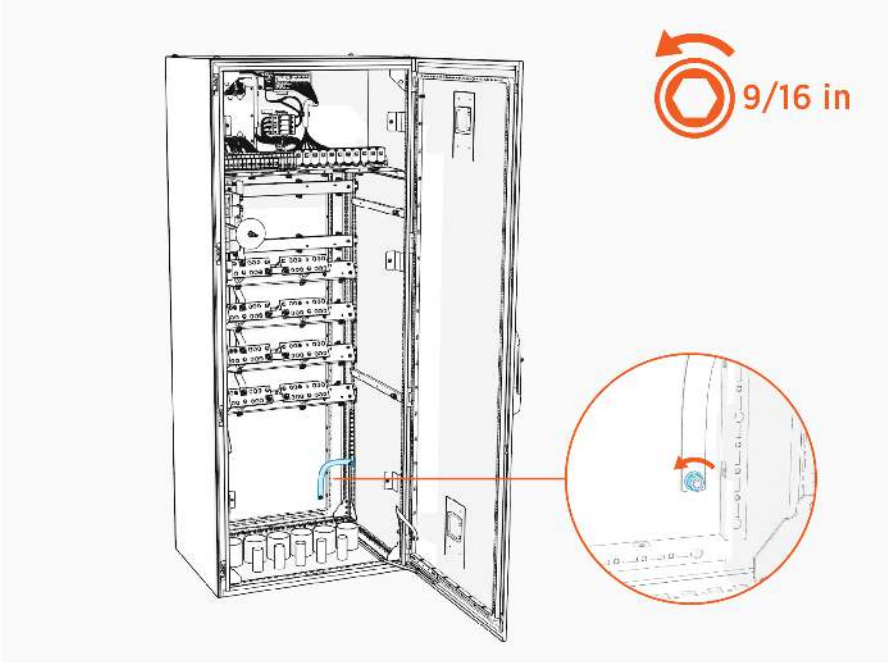


2. Use a multimeter to test that power is off.

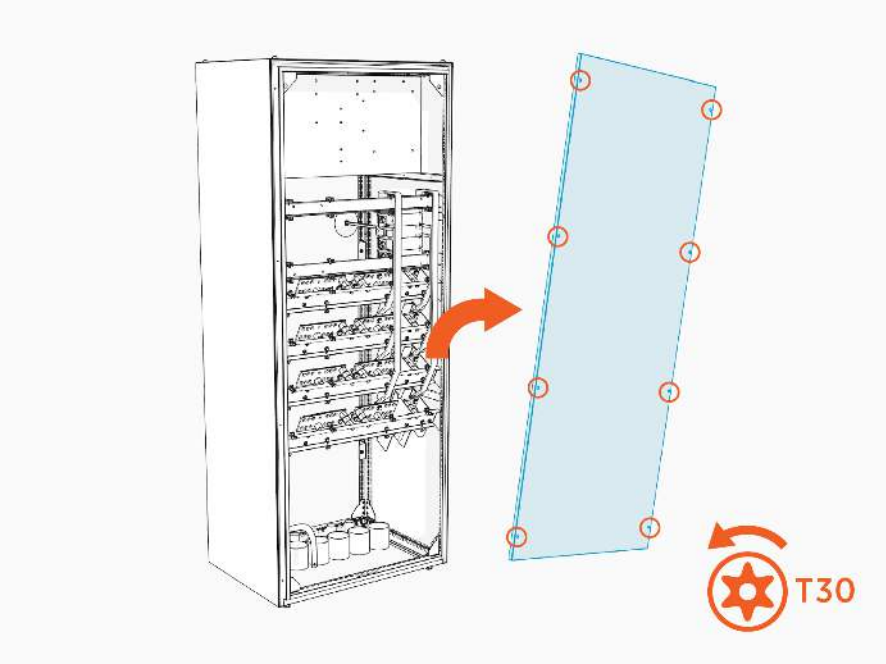
Mount the Disconnect Switch

1. If there is sufficient clearance behind the Power Hub, remove the rear panel of the cabinet. Skip this step if there is not enough clearance to remove the panel. Panel removal makes the installation process easier to carry out, but is not required.

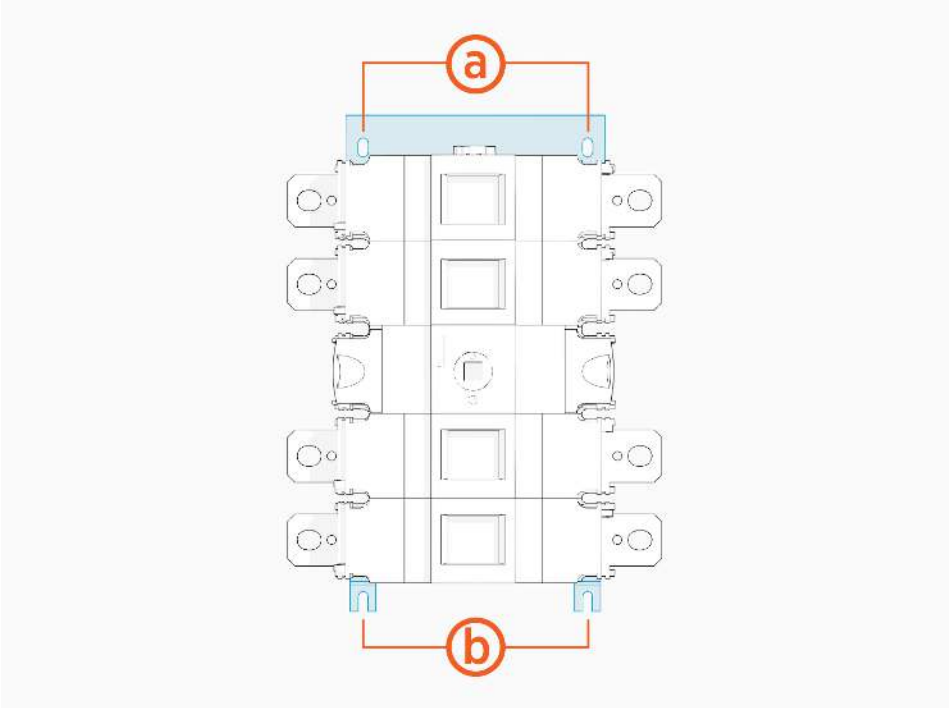
a. Remove the nut and washers securing the rear panel. Set aside the fasteners for later reinstall.



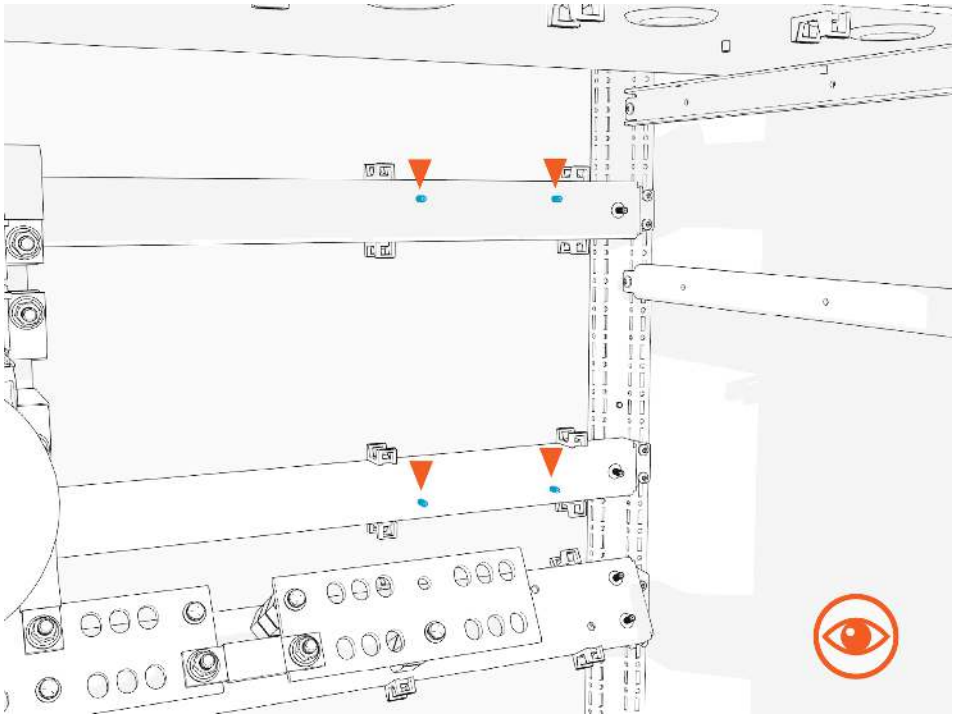
b. Remove the T30 Security screws (x8) on the rear panel. Remove the rear panel. Set aside fasteners and panel for later reinstall.



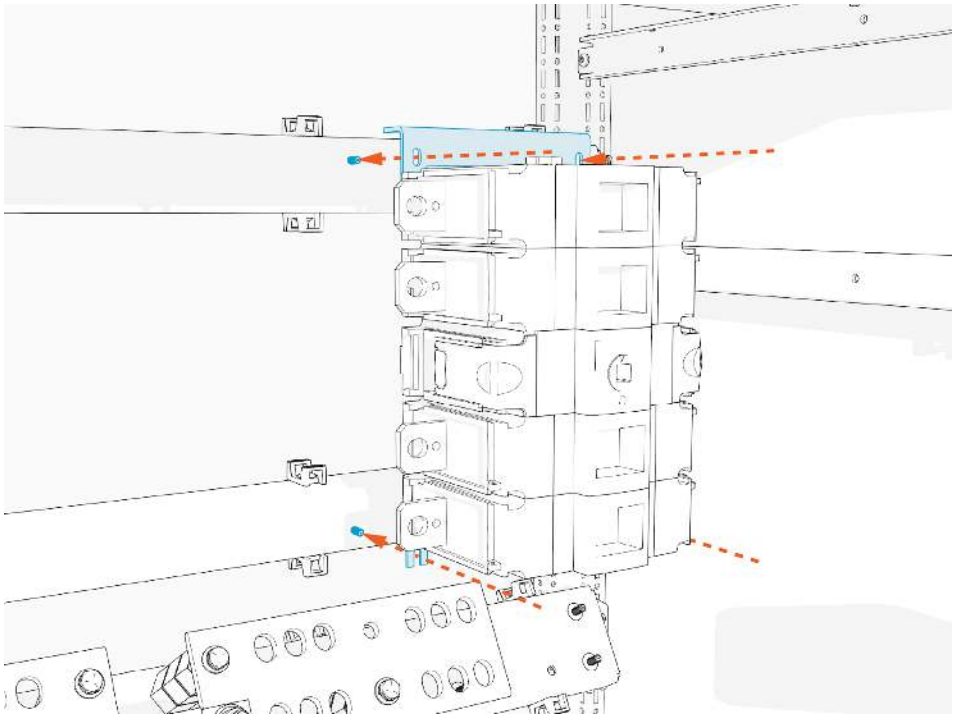
2. Identify the following parts on the disconnect switch:
   (a) A top mounting bracket with two mounting holes
   (b) Two bottom mounting feet



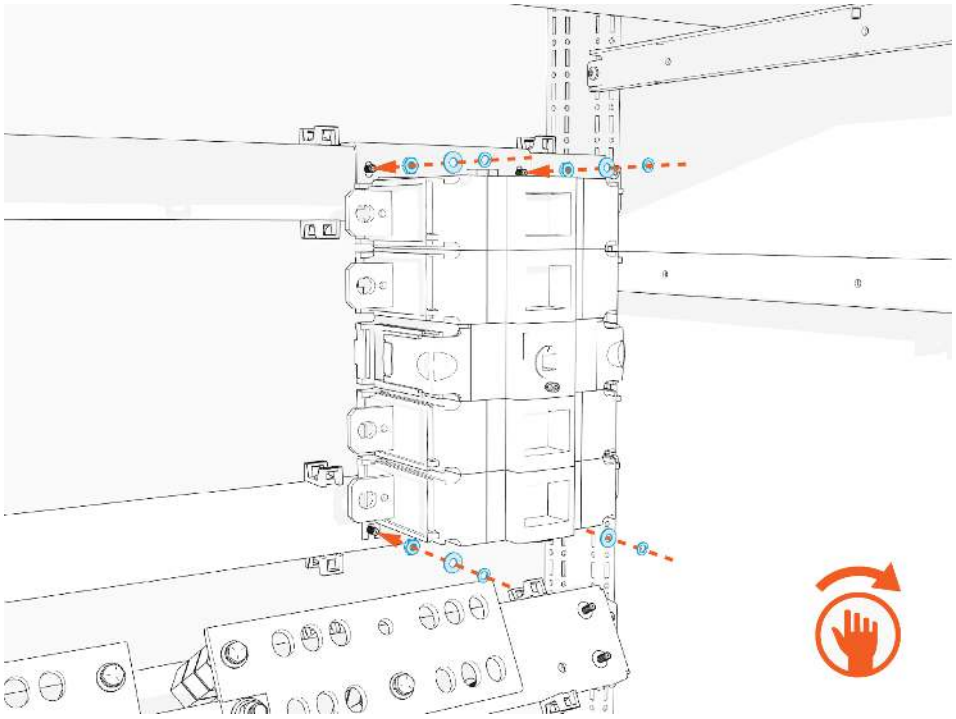
3. Inside the Power Hub cabinet locate two studs on the right side of the upper-most horizontal rail. Locate an additional two studs on horizontal rail just below.



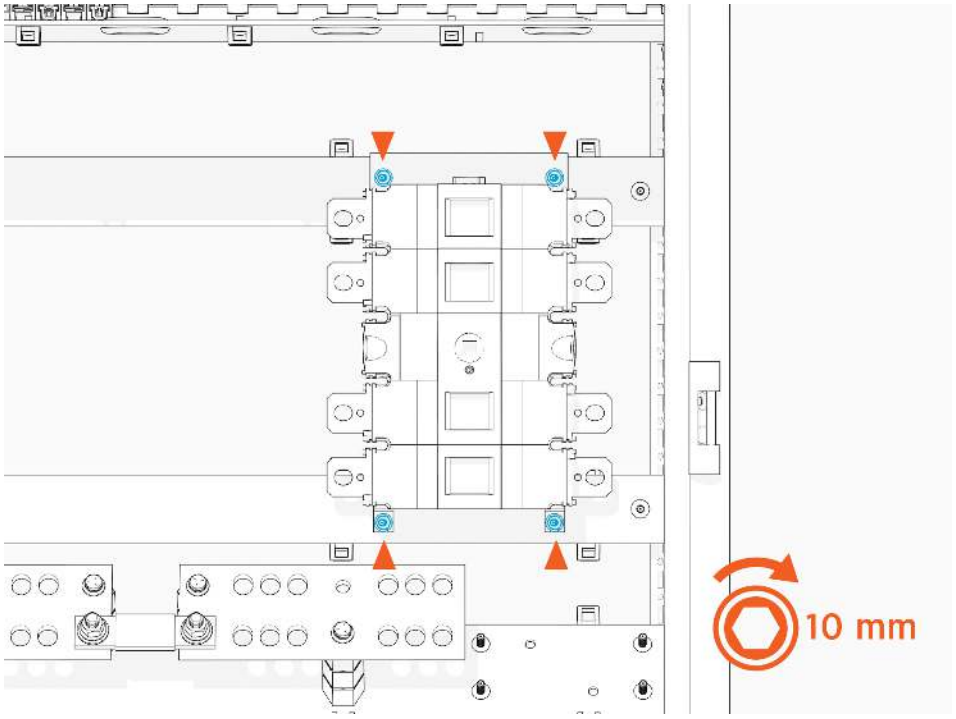
4. Mount the disconnect switch over the studs. Align the top mount holes over the upper studs. Seat the bottom mounting feet over the lower studs. The top mounting bracket should seat on the upper rail.



5. Install #10 fasteners (x4) to secure the top mounting bracket and bottom mounting feet. Hand tighten.

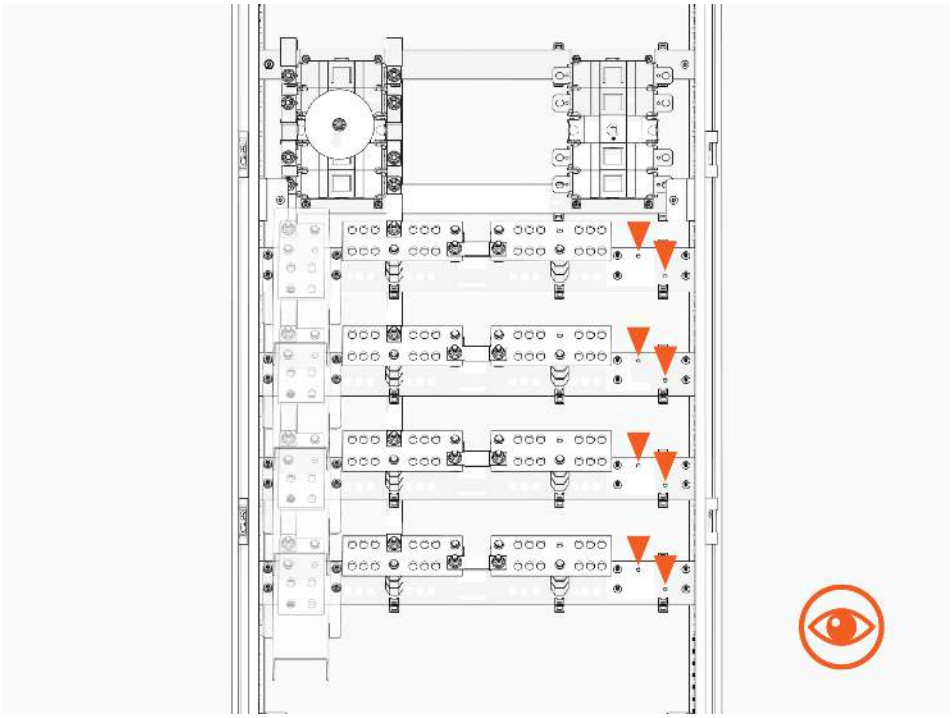


6. **Torque the fasteners (x4) to 3.4 Nm (30 in-lb).**

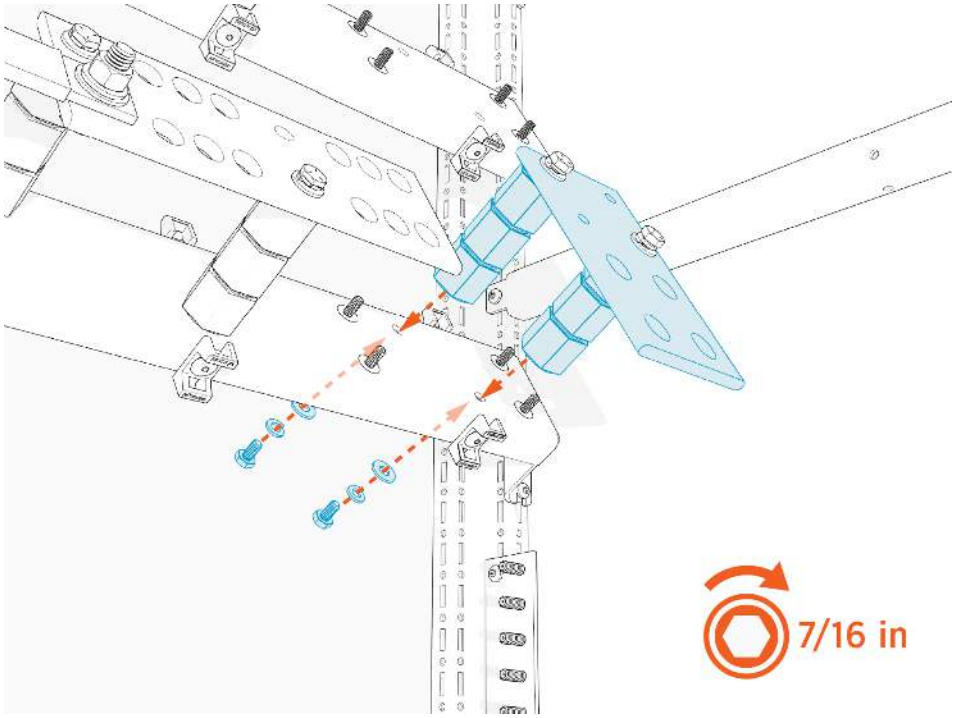


Install High Voltage Input Bus Bars

1. Inside the Power Hub cabinet locate four horizontal rails that host the high voltage input and output buses. On the right side of each rail, find two screw holes in a diagonal orientation.

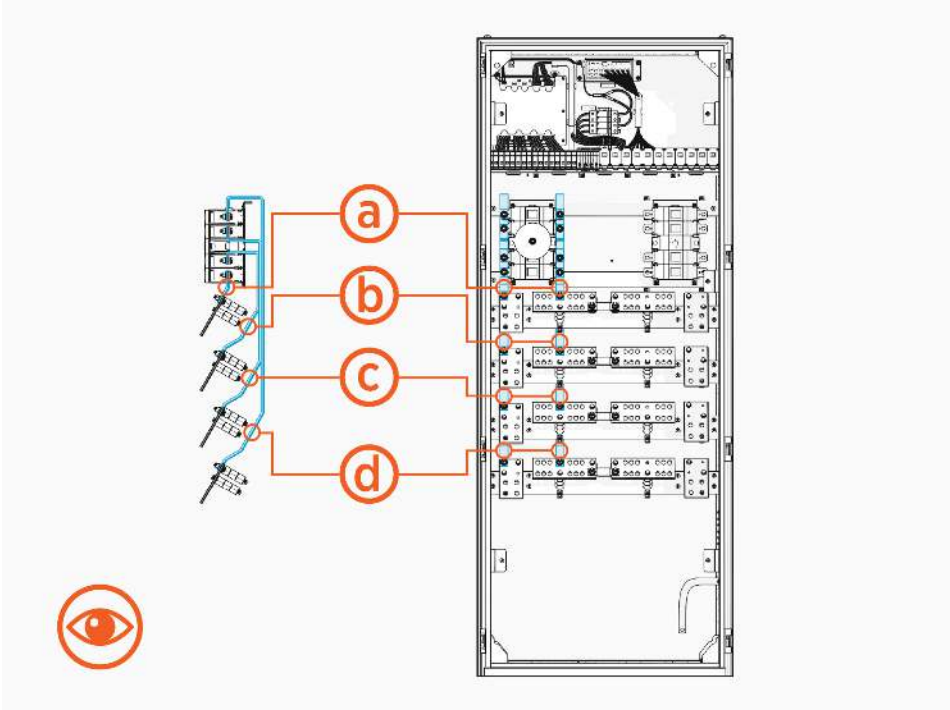


2. Working from the lowest rail to the highest, mount a high voltage DC bus assembly onto each rail. Secure the bus assembly at each screw hole with 1/4 in fasteners. **Torque bolts to 10.2 Nm (90 in-lb)**.

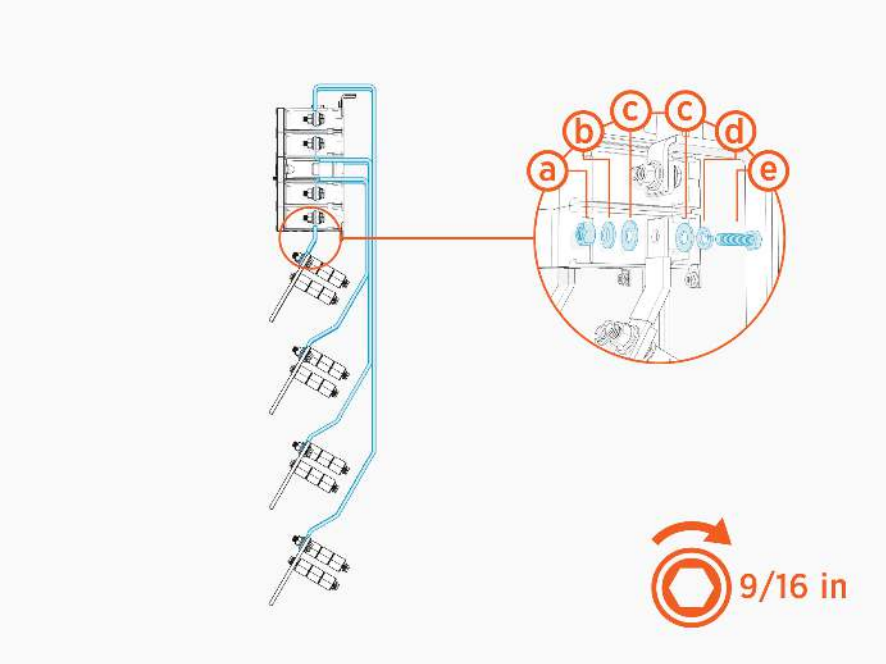


Install Flex Jumpers

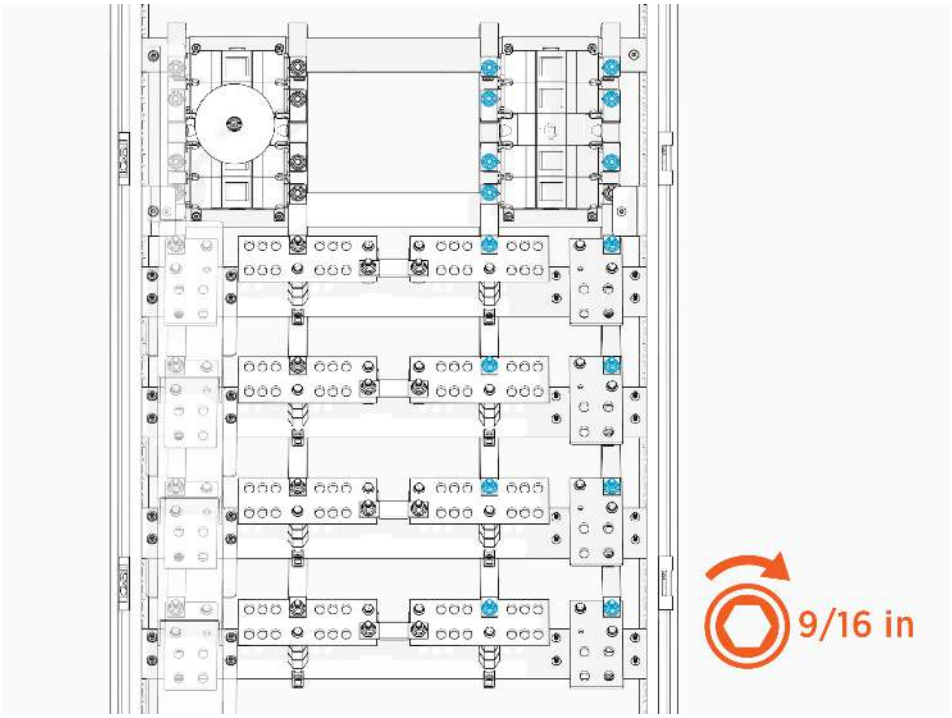
1. Study the set of jumpers connecting the left disconnect switch to the left-side high voltage output buses.



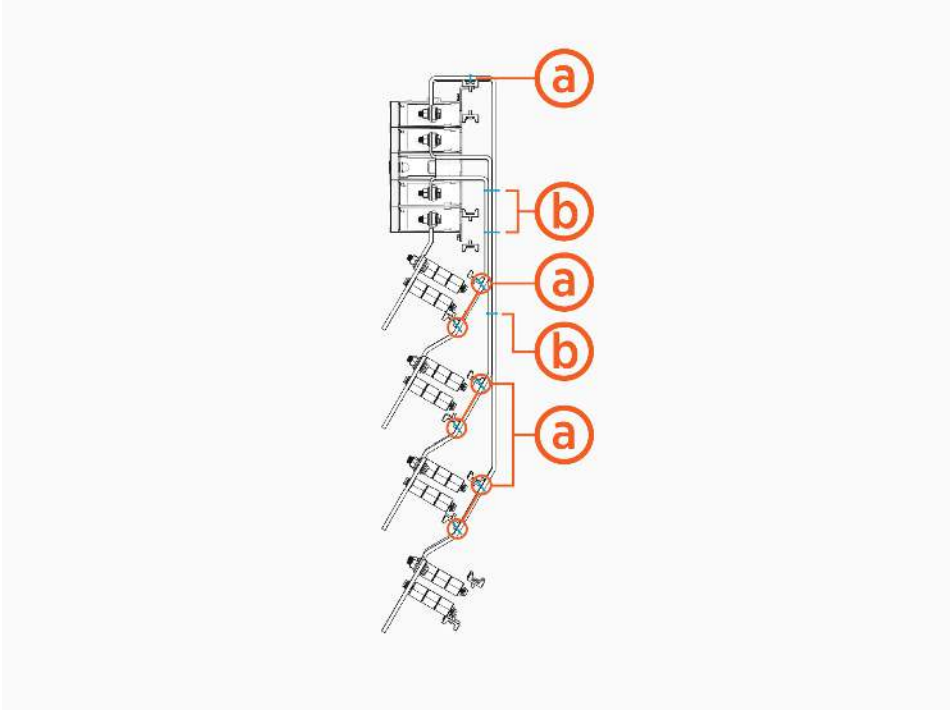
2. Working from shortest to longest jumper, install a duplicate set of jumpers at the right disconnect switch. Secure the jumpers at each end with the fasteners shown below:
   - **(a)** 3/8 in hex nut
   - **(b)** 3/8 in Belleville washer
   - **(c)** 5/16 in large flat washer
   - **(d)** 3/8 in split lock washer
   - **(e)** 3/8 x 1-1/4 in hex head bolt



3. **Torque fasteners (x8) at the disconnect switch to 35 Nm (26 ft-lb). Torque fasteners (x8) at the high voltage DC buses to 42.4 Nm (31 ft-lb).**

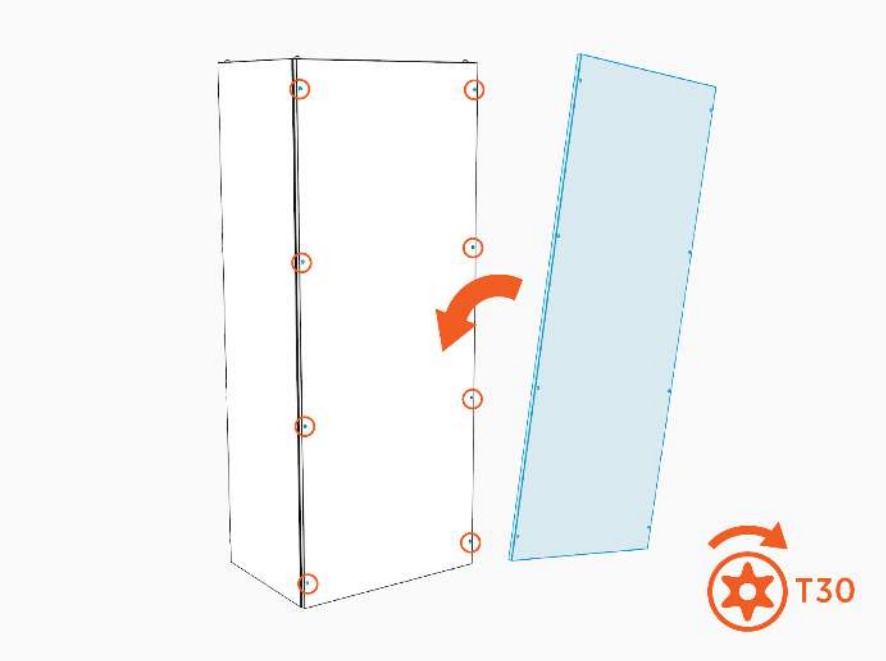


4. Use zip ties (20) to secure the flex jumpers at the following locations:
   (a) Secure flex jumpers to clip with zip tie
   (b) Secure jumpers together with zip tie

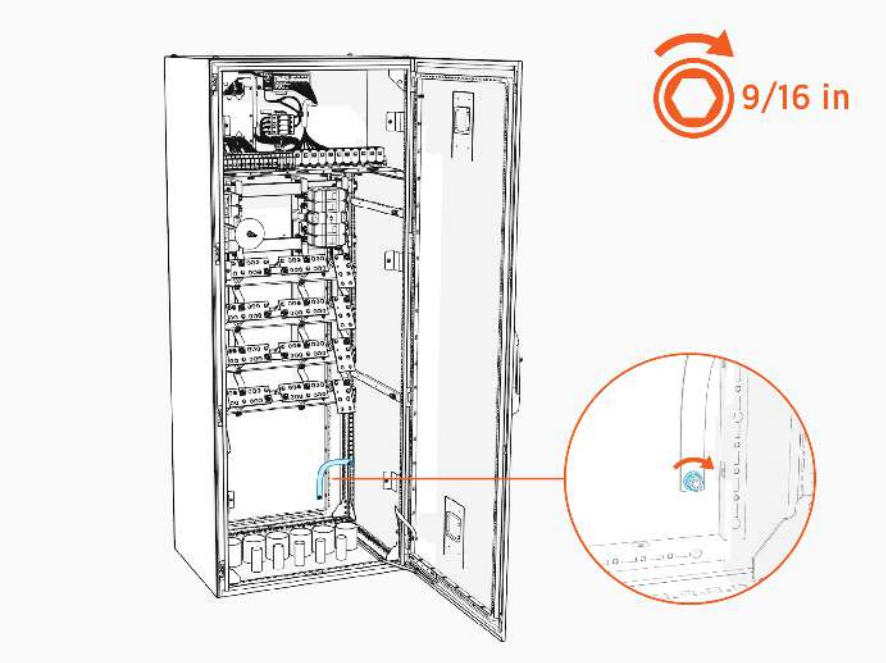


5. Trim the ends of the zip ties.

6. If applicable, reinstall the Power Hub cabinet rear panel.
    a. Fasten the cabinet rear panel with T30 Security screws (x8). **Torque to 5.1 Nm (45 in-lb).**



    b. Reconnect the ground strap to the rear panel. **Torque to 8.5 Nm (75 in-lb).**

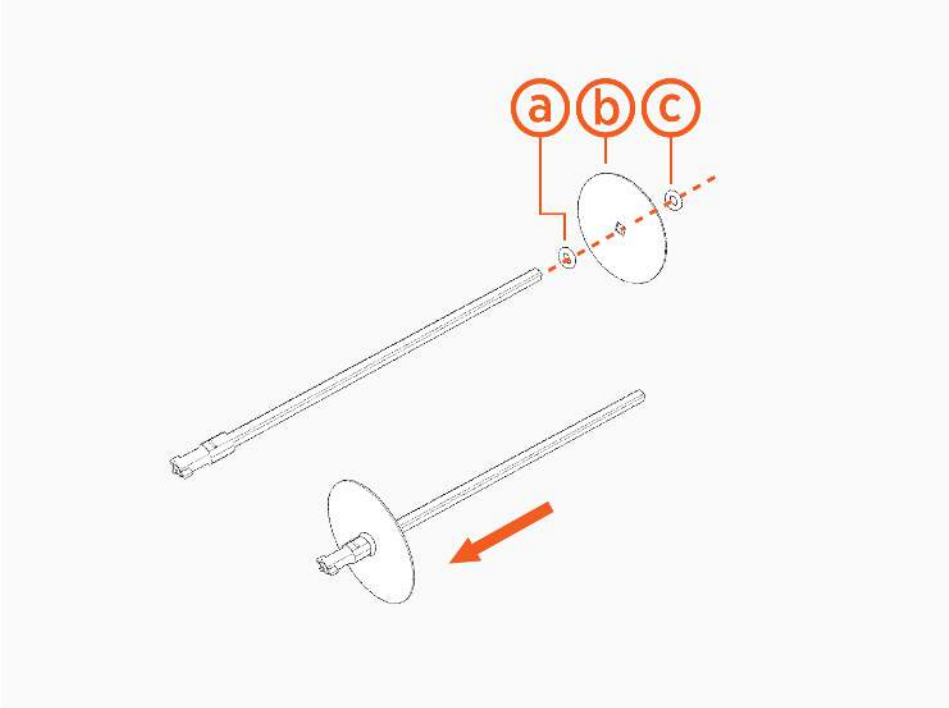


Install Disconnect Switch Safety Shield

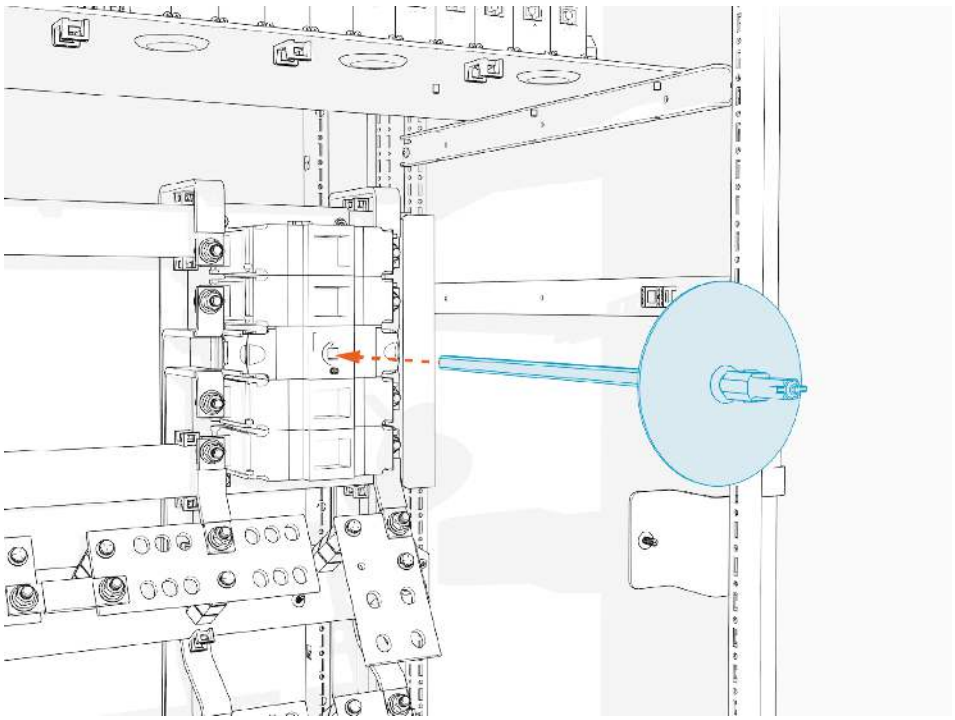
1. Peel off the protective plastic from the front and back of each shield.
2. Install the disconnect switch safety shield. **Torque the captive screws (x2) to 2.8 Nm (25 in-lb)**.

Install Disconnect Switch Handle

1. Slide the following components onto the disconnect switch shaft:
   - **(a)** Rubber o-ring
   - **(b)** Disconnect shaft safety tag
   - **(c)** Rubber o-ring

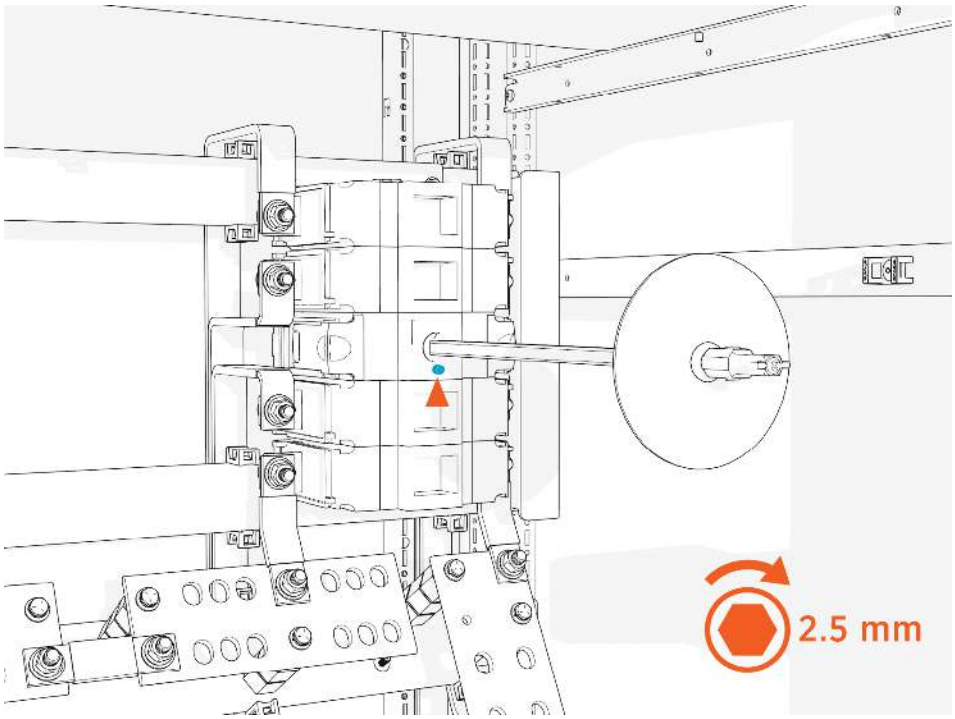


2. Insert the disconnect shaft into the front of the disconnect switch.

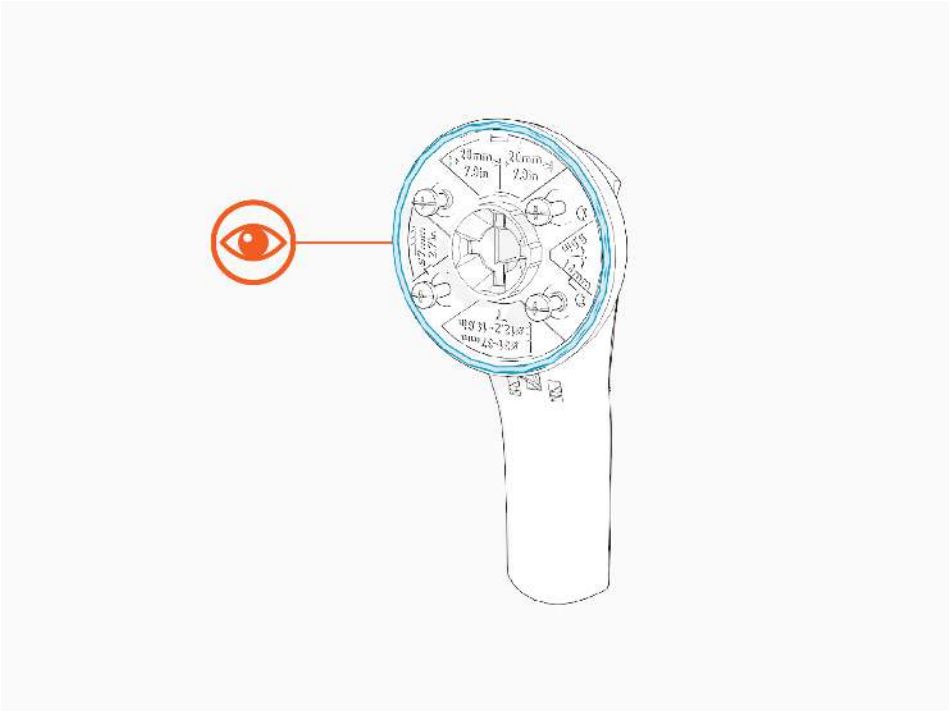


3. Tighten the disconnect switch shaft set screw. Hand tighten.

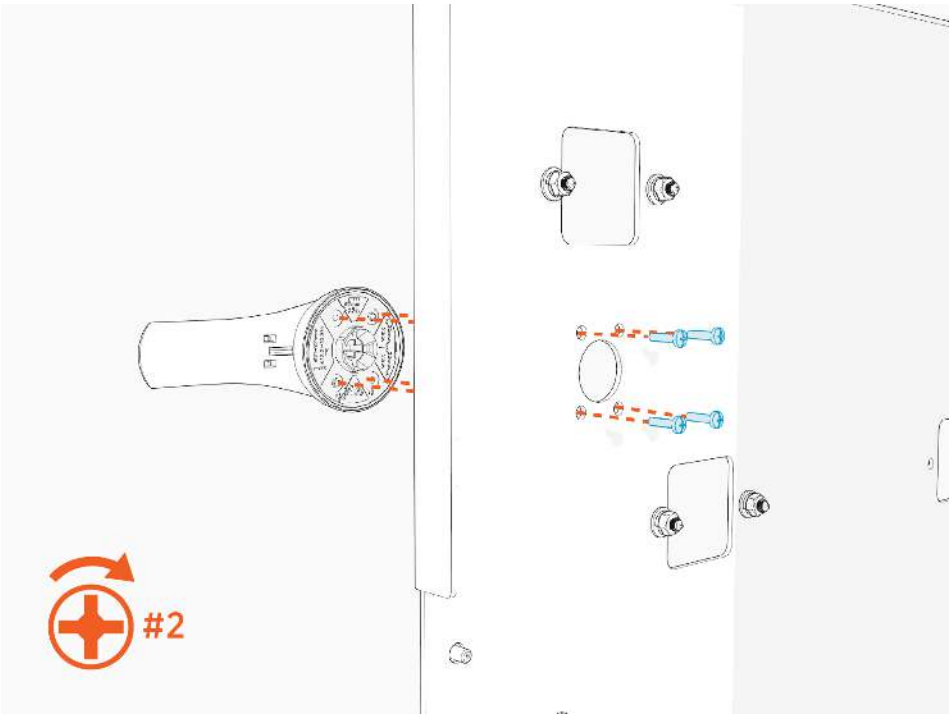
   Note: The set screw is angled upwards.



4. Inspect the disconnect switch handle. Ensure the rubber gasket is in place on back side of the handle.



5. Secure the disconnect handle to the dead front cover with Phillips head screws (x4). Hand tighten.



6. This concludes the Second Input Kit installation. Return to the Power Hub installation procedure Prepare for Mount.

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