

SmartTWO - BSR™

Installation Guide



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1. Maintenance and Safety

IMPORTANT SAFETY INSTRUCTIONS - PLEASE DO NOT DISCARD THESE INSTRUCTIONS

Read this guide carefully before installing the Electric Vehicle Supply Equipment (EVSE)

1. This dual charging station curbside pedestal was designed to be ground-based, installed on a non-combustible surface, and to host two SmartTWO™ charging stations.
2. Verify with local authorities that the location where the EVSE is to be installed is free from underground pipelines or electrical equipment, otherwise you might inflict serious injuries on yourself or bystanders.
3. Connect the power input of the charging station bases with 6 AWG to 8 AWG caliber copper or aluminum conductors rated for usage at a temperature of at least 75 °C (176 °F.)
4. Grounding: To ensure the safe operation of FLO® EVSEs, they must be connected to a grounding circuit compliant with local regulations and installed by a certified electrician.
5. Communicate with a certified contractor, certified electrician, or trained installer to ensure compliance with the local building code, regulations, security standards and weather conditions.
6. Any EVSE part alteration will automatically void the warranty.
7. Handle parts with care since they can be sharp-edged. Always use safety glasses and gloves when unpacking and installing the EVSE.
8. Some parts are heavy and could cause manual handling injuries. Always use proper lifting techniques and wear safety boots during installation.
9. Never insert your finger into the electric vehicle connector.
10. Never use the EVSE if the power cable seems damaged or if the insulation is damaged.
11. Never use the EVSE if the main case is broken, cracked, open or damaged.
12. This EVSE was designed to be used with electric vehicles equipped with an SAE-J1772 connector.

13. This EVSE is to be used to charge vehicles that do not require a ventilated environment during charging.
14. Replacement of the EVSE charging station, or cable connector must be performed by qualified service personnel.
15. If the enclosure of the EVSE's charging station is opened, all gaskets must be replaced.
16. Do not install the charging station on or over a combustible surface.

2. General

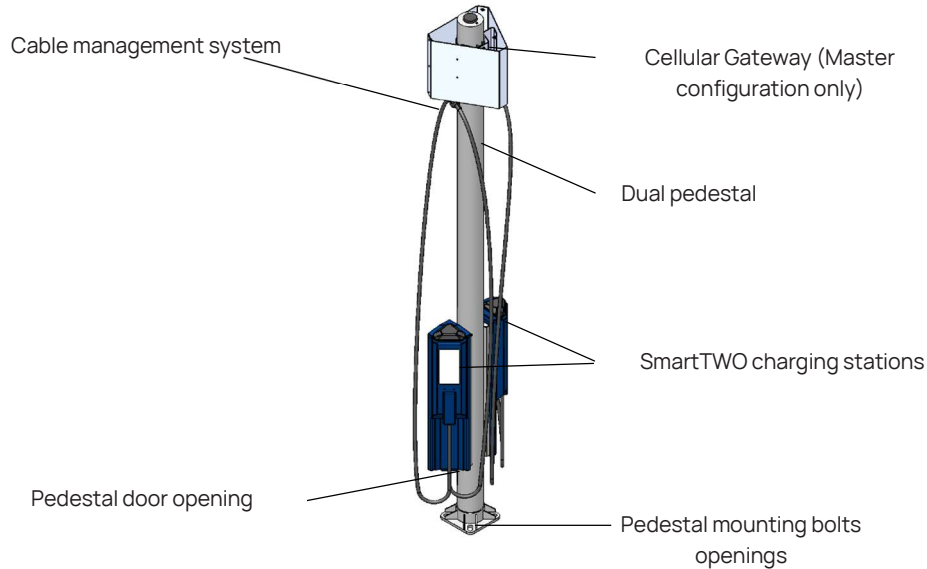
2.1. Configurations

The SmartTWO-BSR™ can be purchased with different configurations. The type of configuration needed varies based on the site layout.

Model	Description
Master SmartTWO-BSR	<p><u>Power input</u> From an integrated distribution cabinet (Installed at the back of the pedestal – Not provided by FLO) OR from a deported distribution cabinet.</p> <p><u>Communication</u> Integrated cellular gateway</p>
Auxiliary SmartTWO-BSR	<p><u>Power Input</u> From the Master SmartTWO-BSR integrated distribution panel OR a deported distribution panel.</p> <p><u>Communication</u> No gateway. Communicates via zigbee communication protocol with the Master SmartTWO-BSR gateway.</p>

2.2. Specifications

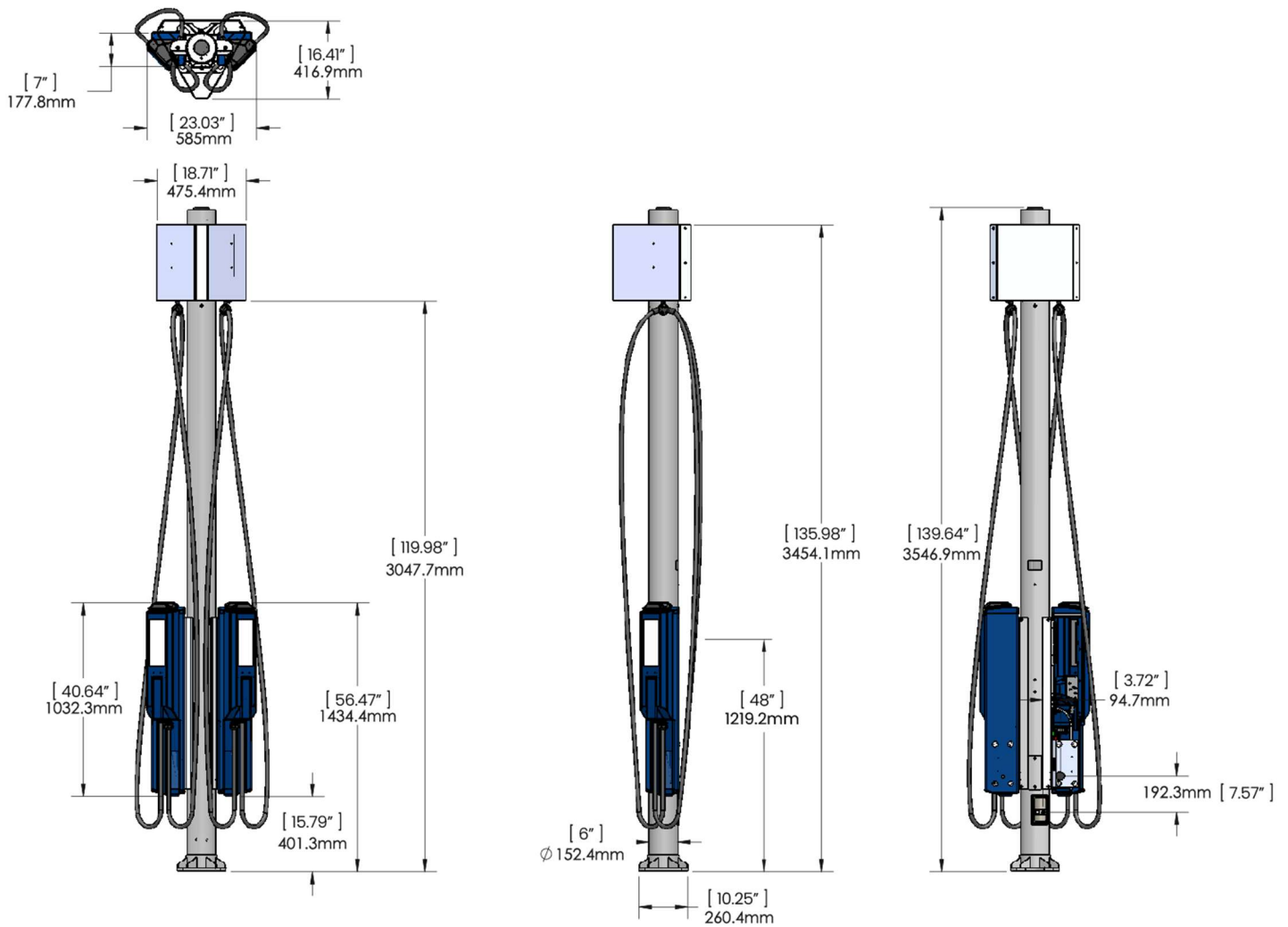
The SmartTWO-BSR is made of one dual pedestal, two SmartTWO charging stations and two cable management systems. Depending on the chosen configuration, the SmartTWO-BSR can also be provided with a Cellular Gateway.



Product family	SmartTWO-BSR
Models	Master SmartTWO-BSR Auxiliary SmartTWO-BSR
Aluminum casing	Type 3R
Storage temperature	-40 °C to 70 °C / -40 °F to 158 °F
Humidity	Up to 95% (non-condensing)
Weight	80 kg / 175 lbs
Electrical load	2 x 30 A @ 240 VAC or 208 VAC
Output current	6 A to 30 A (Maximum configurable by software for each charging station)
Frequency	60 Hz
Accessibility	ADA Compliant
Certifications	CSA certified USA: UL2594, UL2231-1, UL2231-2, CTEP
EMI Compliance	CAN - ICES-003 (A) / NMB-3 (A) USA - FCC 47 CFR part 15 class A

2.3. Dimensions

The dimensions below apply to both Master and Auxiliary configurations of the SmartTWO-BSR.



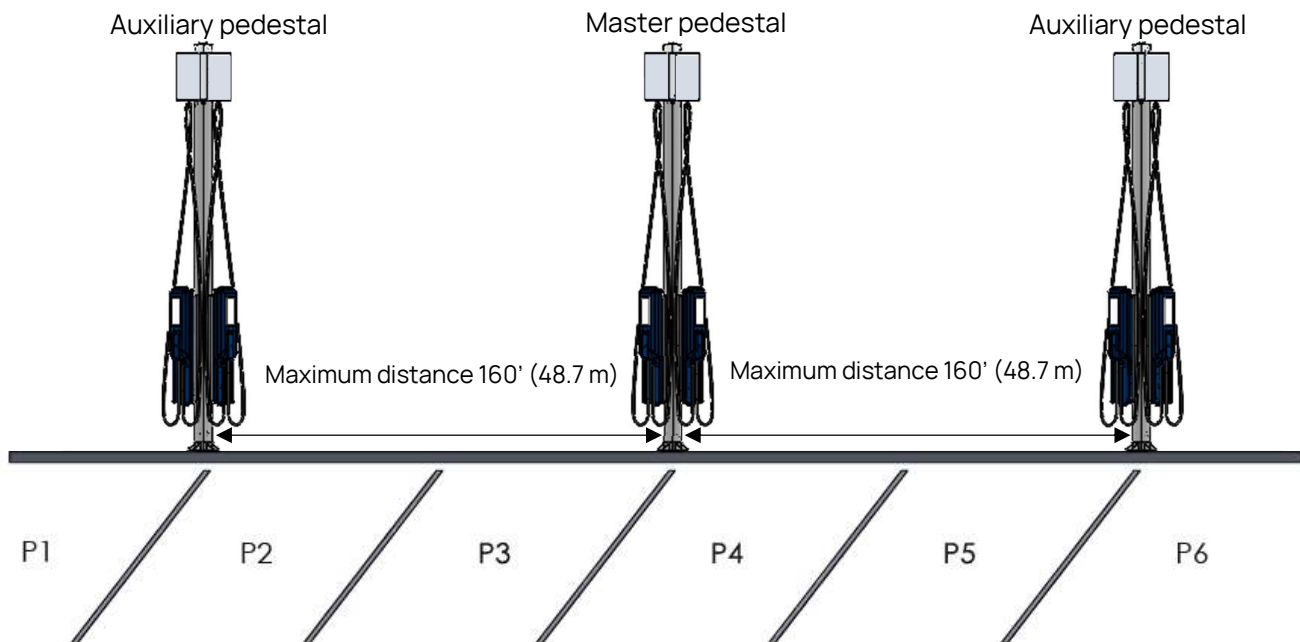
3. Site Layout

3.1. Pedestal Positioning

For each installation site, one master curbside pedestal should be installed, followed by auxiliary curbside pedestals (optional). The master curbside pedestal is equipped with a cellular LTE communication gateway that will link with up to 18 auxiliary unit charging stations (up to 9 pedestals) in close vicinity to the centralized network management server.

Prior to starting the installation, make sure that the specific location chosen for the master curbside pedestal installation has a good LTE signal strength. See the reference table below for typical LTE signal strengths. To ensure linking every charging station on a site, the maximum distance between any unit is 160' (48.7 meters), without any obstacle interfering with the line of sight.

RECOMMENDATION: Each pedestal is equipped with two charging stations. We recommend installing them at the junction of 2 successive parking spaces on the side of a street.



LTE signal strength

Excellent	Good	Fair	Poor	Deadzone
-90 dBm	-91 dBm to -105 dBm	-106 dBm to -110 dBm	-111 dBm to -119 dBm	-120 dBm

3.2. Concrete Base

The installer should make a concrete base on site (or use a prefabricated base). Two configurations are suggested depending on whether there is an integrated or deported electrical distribution panel.

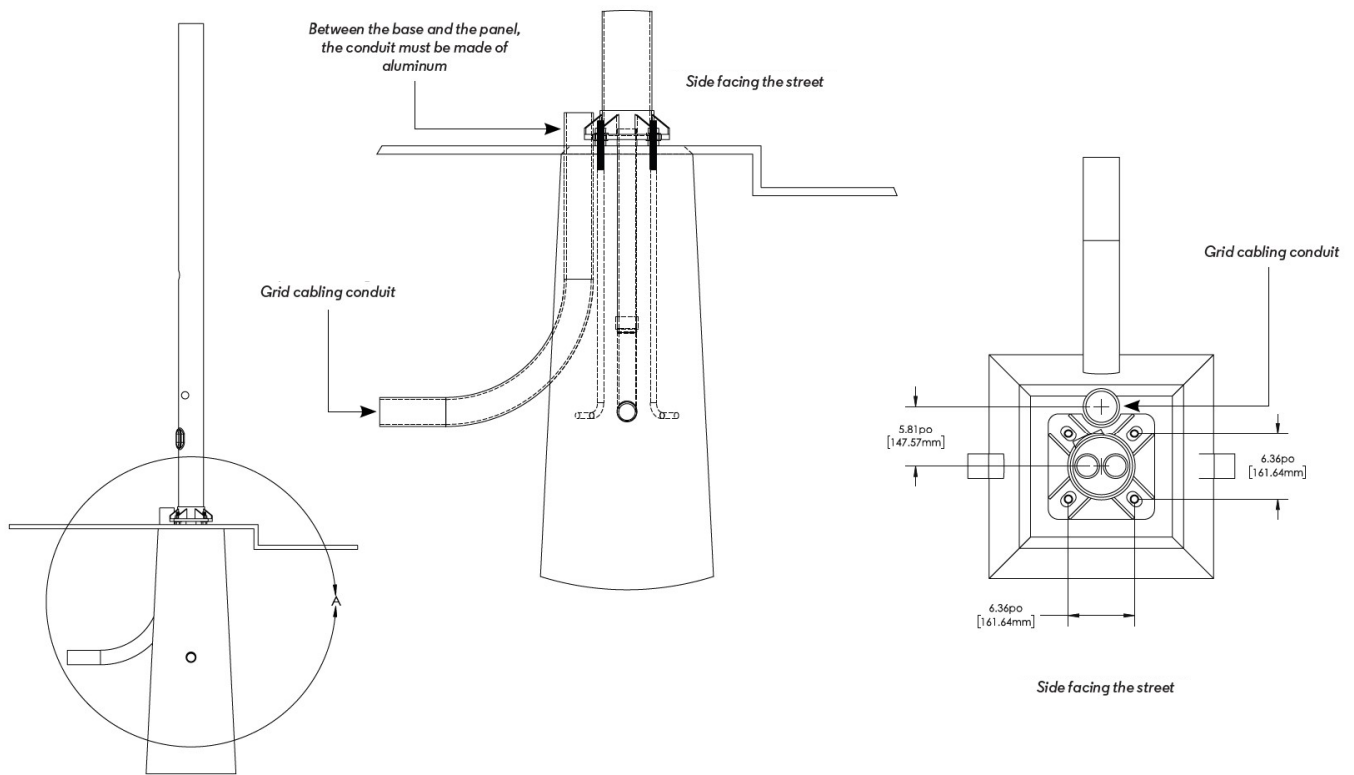
3.2.1. Concrete Base – For Master Pedestals with an Integrated Electrical Distribution Panel

When an electrical panel is installed on the back of the SmartTWO-BSR pedestal, it requires a separate conduit for the power input coming from the grid and going to the panel. The pedestal has a provision at the center of its base to let the power input pass from the concrete base up to the electrical panel.

The concrete base should have the following characteristics:

- Four 1" (25.4 mm) diameter threaded rods, spaced according to the pattern shown below.
- The rods should extend 4" (101.6 mm) out of the concrete base.
- Two cable conduits to pass the charging station wiring feeding the auxiliary SmartTWO-BSR.
- The cable conduits should exceed the concrete base by 2" (50.8 mm) in the center of the mast.
- One 2" to 3" (50.8 to 76.2 mm) diameter aluminium cable conduit to pass the grid cables to the integrated electrical distribution panel dedicated opening.

NOTE: The power input position for the integrated electrical distribution cabinet might vary. Validate that the cable can be routed correctly from the pedestal opening dedicated to the grid cabling conduit, to the position of the power input in the electrical distribution panel.

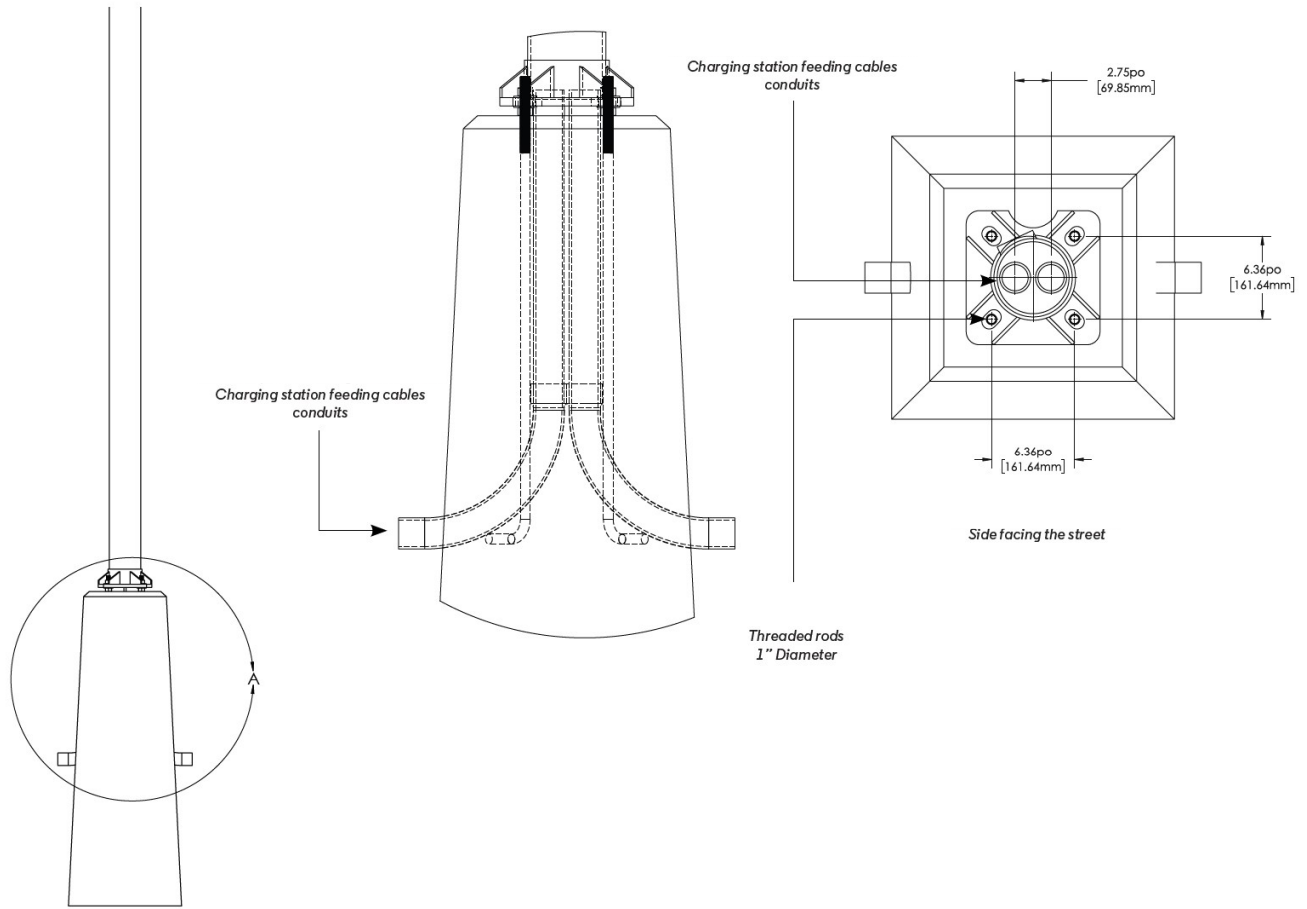


3.2.2. Concrete Base – For Pedestals without an Integrated Electrical Distribution Panel

This configuration is suitable for Auxiliary pedestals, and for Master pedestals without an integrated distribution panel. These configurations do not require grid power cables to be connected; therefore, the concrete base does not need a separate conduit to pass the grid cables.

The concrete base should have the following characteristics:

- Four 1" (25.4 mm) diameter threaded rods, spaced according to the pattern shown below.
- The rods should extend 4" (101.6 mm) out of the concrete base.
- Two cable conduits to pass the wiring feeding the charging stations.
- The cable conduits should extend over the concrete base by 2" (50.8 mm) in the center of the mast.

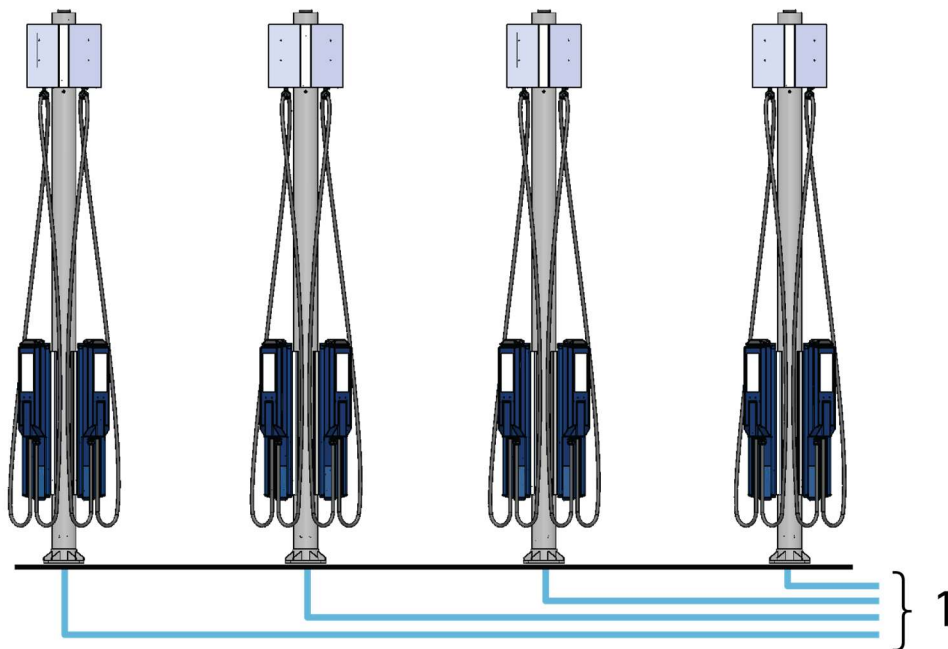


4. Electrical Configuration

Different electrical configurations are possible depending on the incoming power input.

4.1. Power Input: Deported Electrical Distribution Panel

These two configurations imply that the electricity is supplied by a deported electrical distribution panel that is not mounted on a Master SmartTWO-BSR pedestal. One conduit per pedestal is required to bring the cables to their respective pedestals.

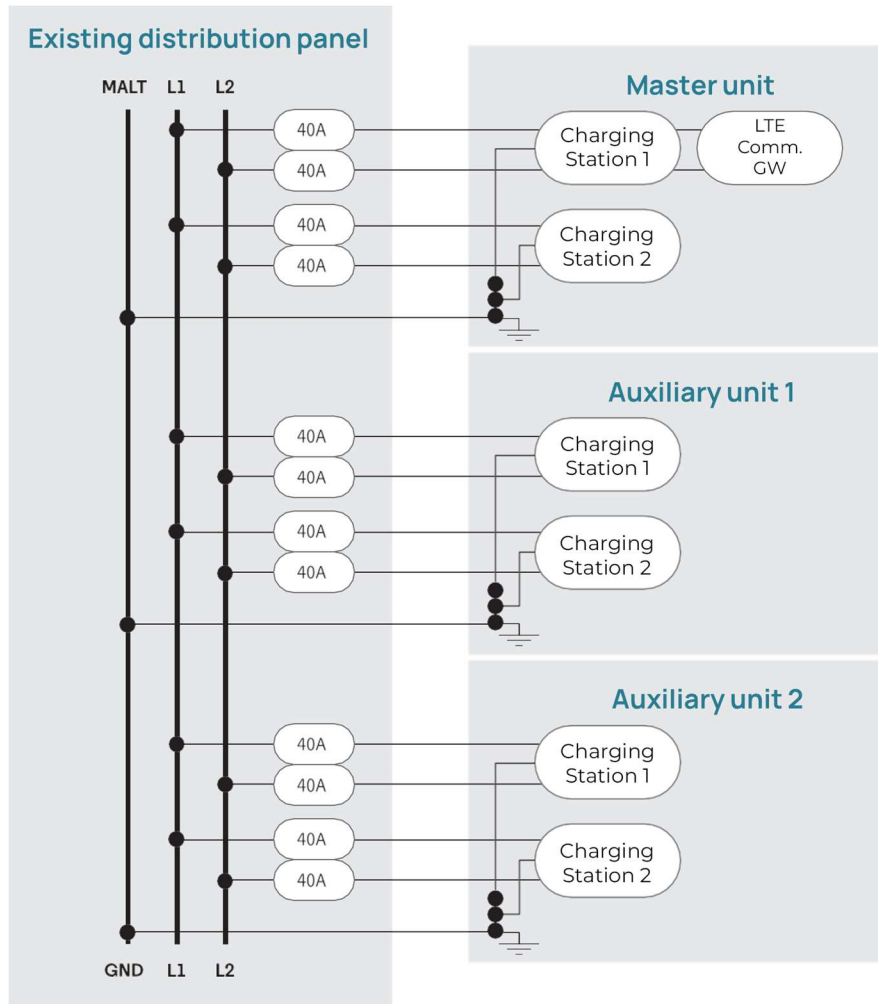


Number in Image	Description
1	Only 1 conduit per pedestal to bring the 2x 40 A circuit from the deported distribution panel.

4.1.1. 240V Split Phase Configuration

To feed each pedestal, two 240 V 40 A circuits (without neutral) are required to power the 208/240 V 30 A charging stations. In this case, only one conduit bringing all the cables in the center of the mast is required to feed the two charging stations installed on the pedestal.

Split-Phase Supply from an Electrical Cabinet

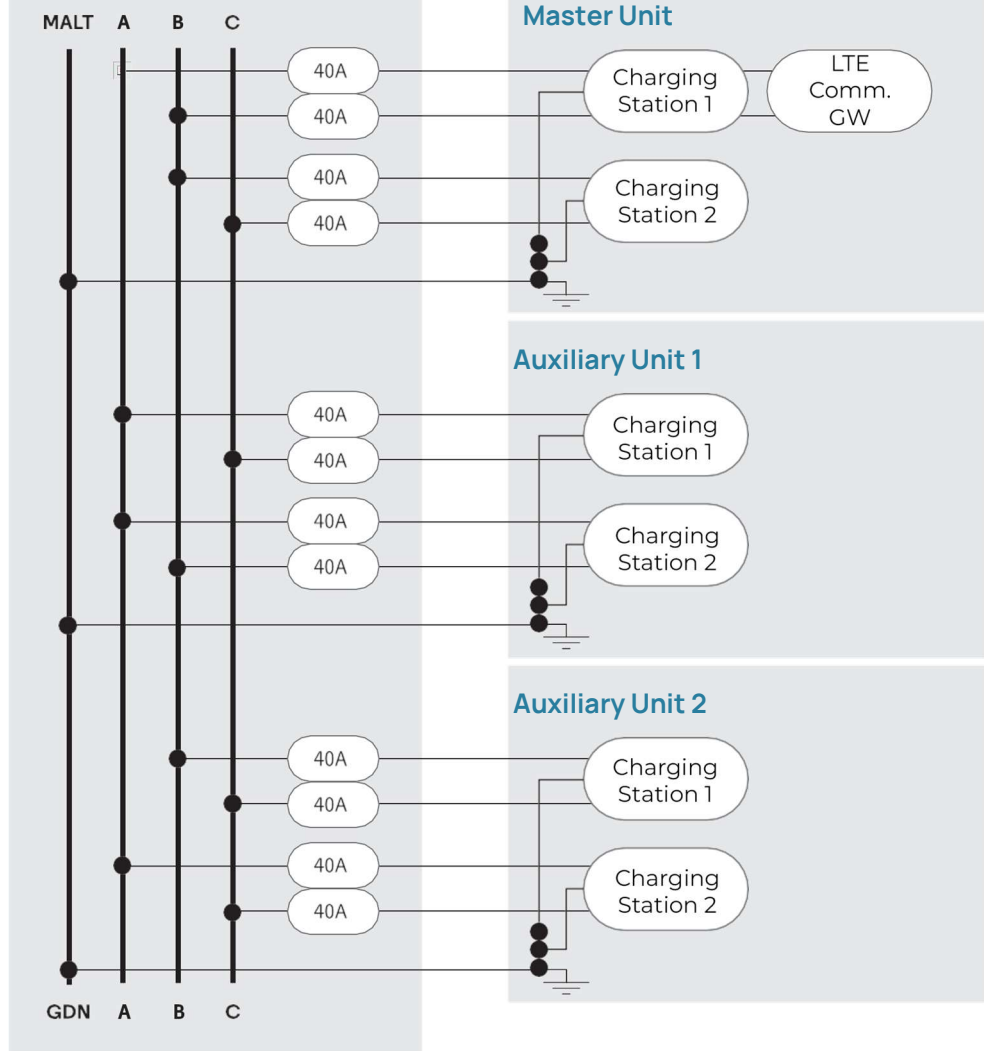


4.1.2. 208 V 3-Phase Supplied by a Deported Electrical Distribution Panel

To feed each pedestal, two x 40 A phase to phase circuits (without neutral) are required to power the 208/240 V 30 A charging stations. We highly recommend evenly distributing the connections among the 3 phases in order to keep the load as balanced as possible. In this case, only one conduit bringing all the cabling inside the center of the mast is required to feed the two charging stations installed on the pedestal.

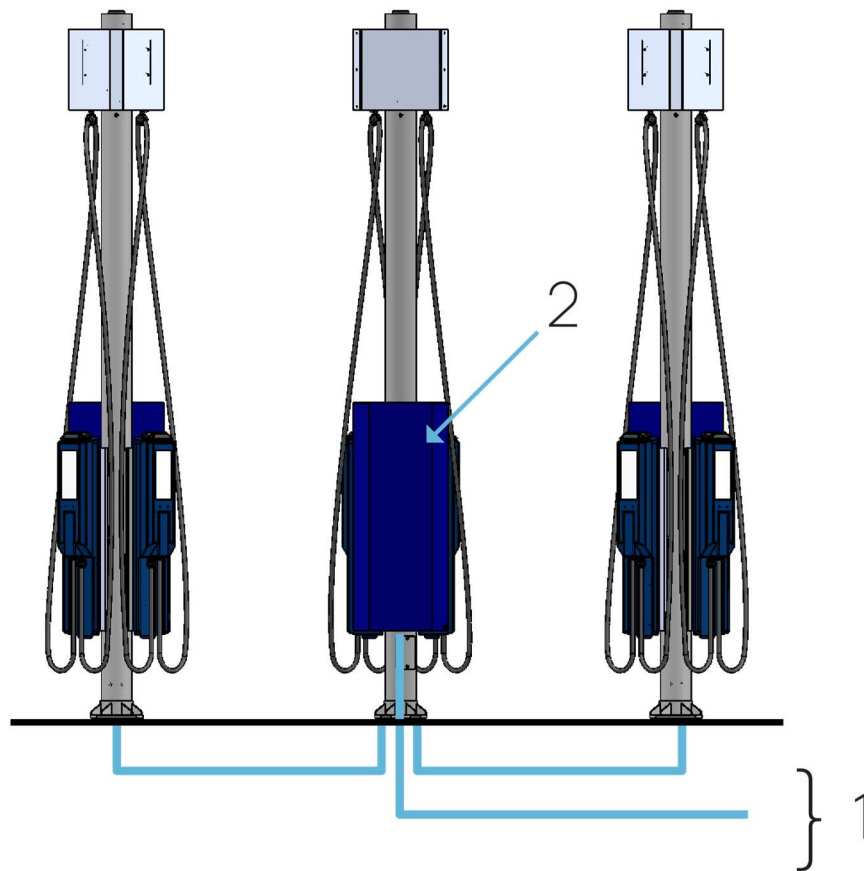
Three Phase Supply from an Electric Distribution Panel

Existing Distribution Panel



4.2. Power Input: Integrated Electrical Distribution Panel

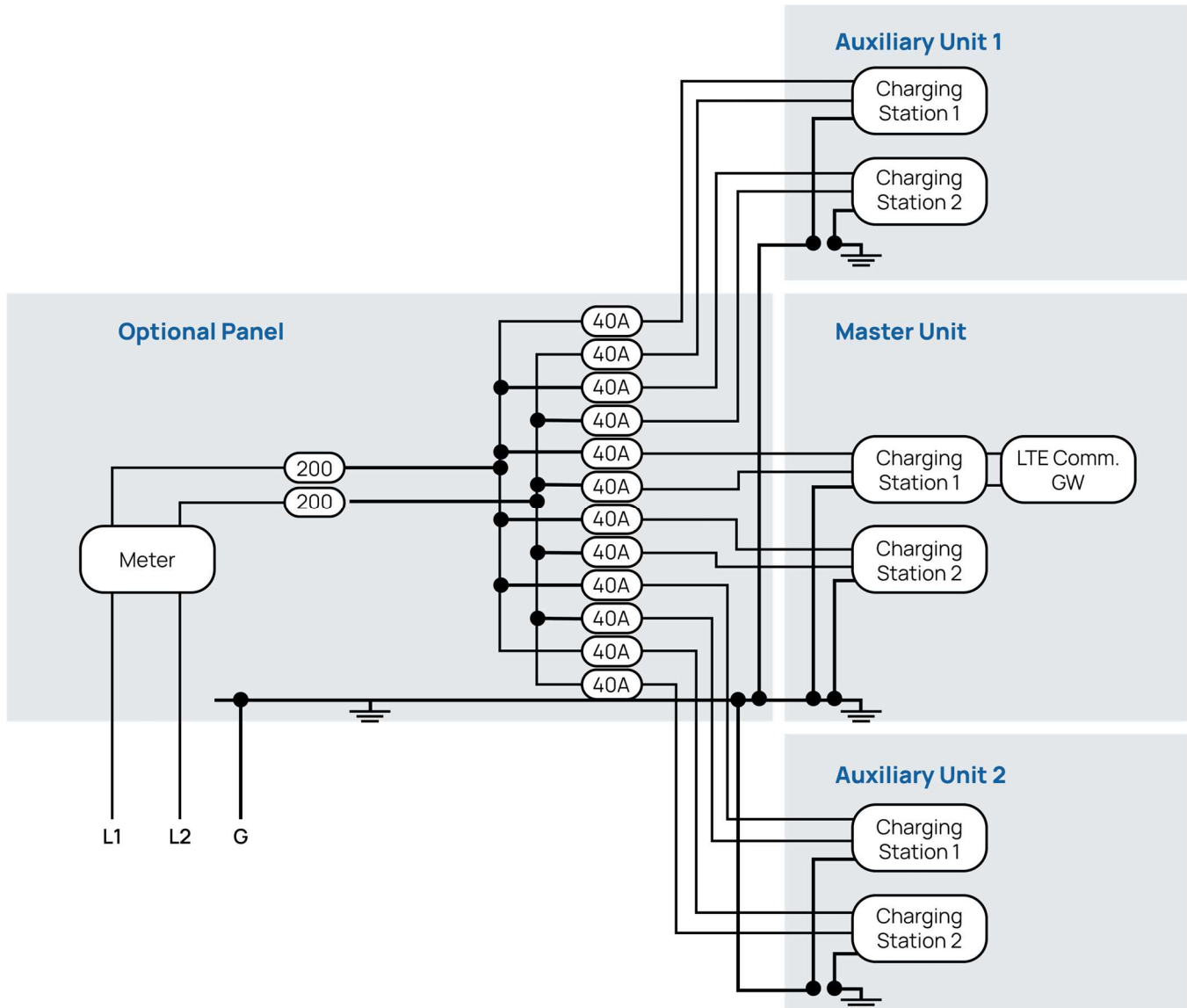
This configuration implies that an electrical distribution panel is installed on the back of the Master pedestal. The recommended layout should have one Master pedestal and up to two Auxiliary pedestals connected to the electrical distribution panel. See the *Integrated Electrical Distribution Panel* section for more information.



Number	Description
1	2-to-3-inch (50.8 mm to 76.2 mm) conduit bringing the feeding cables from the grid directly into the integrated electrical distribution panel
2	Integrated electrical distribution panel (Not provided by FLO)

4.2.1. 240 V Split Phase Configuration

To feed each pedestal, two 240 V 40 A circuits (without neutral) are required to power the 208/240 V 30 A charging stations. In this case, a separate conduit is needed to bring the grid cable to the integrated electrical distribution panel.



5. Integrated Electrical Distribution Panel

It is possible to install an electrical distribution panel that follows local regulations on the back of the Master SmartTWO-BSR pedestal.

NOTE: FLO only provides physical dimensions and guidelines. It does not provide electrical distribution panels and does not participate in the design of custom electrical distribution panels.

5.1. Electrical Design

The electrical design of the integrated electrical distribution panel should consider the pedestal and charging station's layout. The Master SmartTWO-BSR pedestal is designed with internal space to allow cable routing to up to six charging stations (two for the Master pedestal, four for auxiliary pedestals).

5.2. Mechanical Design

The Master SmartTWO-BSR pedestal is designed with provisions to install an electrical distribution panel (Not provided by FLO) on its back. The latter can be installed directly at the back of the Master SmartTWO-BSR pedestal using the dedicated threaded anchor points, or on a fabricated rack designed to fit on the Master SmartTWO-BSR pedestal.

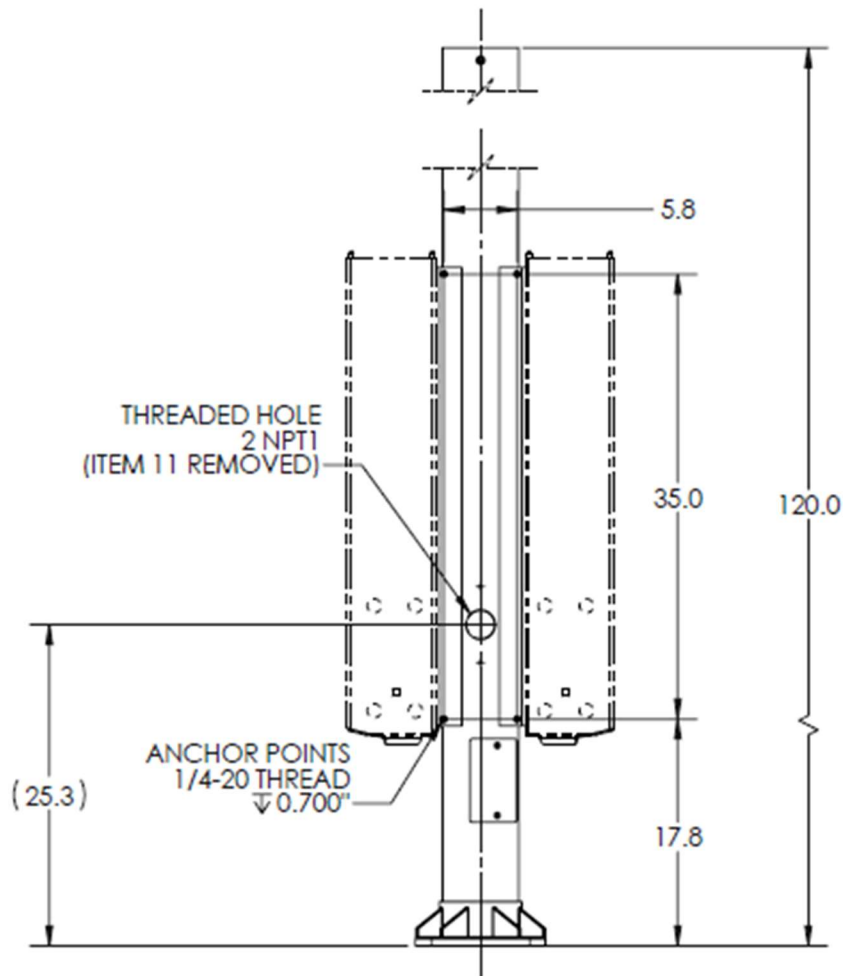
The section below provides guidelines to design a custom rack that will fit on the SmartTWO-BSR pedestal.

5.2.1. Anchor Points

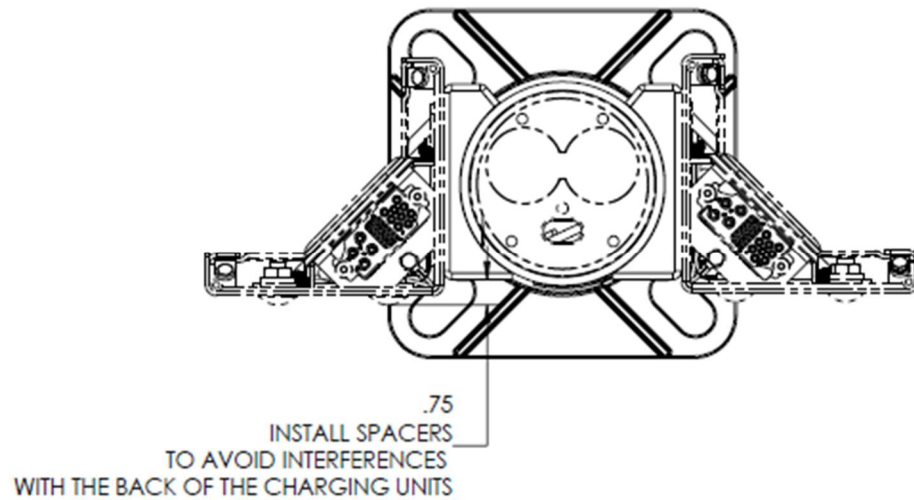
The fabricated rack should have the following anchor point characteristic:

- Four anchor points with 1/4-20 threaded inserts

RECOMMENDATION: We recommend designing horizontal slotted holes to match the anchor positioning tolerances ($5.8" \pm 1/8"$ or $147.32 \text{ mm} \pm 3.175 \text{ mm}$).



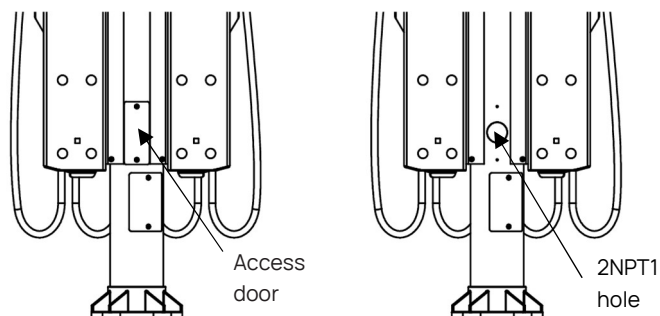
RECOMMENDATION: Use 3/4" (19.05 mm) spacers between the anchor points and the electrical distribution panel. This will prevent interference between the back of the pedestal and the electrical distribution panel.



5.3. Installation

The electrical distribution panel should be installed securely on the pedestal using the fabricated rack. The opening for the conduits should be sealed properly.

The next steps describe how to install the electrical distribution panel on the back of the Master SmartTWO-BSR pedestal:



1. Remove the pedestal upper access door by unscrewing the two screws. A 2NPT1 hole will be exposed.

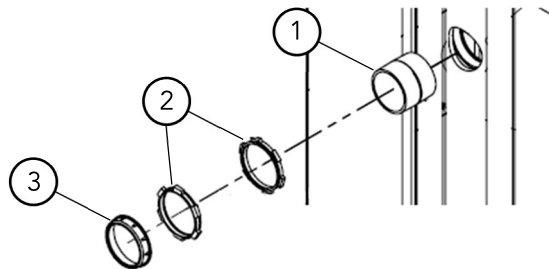
2. Seal the electrical distribution panel to the pedestal. To do so, we recommend using the following parts:

NOTE that depending on the chosen cabinet, the recommended parts might not be applicable.

- a. Standard-wall galvanized welded steel thread pipe nipple, 2 PIPE SIZE X 2" length, fully threaded:
 - i. McMaster Part number 4549K671.

NOTE: The length of the pipe may vary depending on the electrical distribution panel configuration. Measure accordingly to ensure a proper seal.

- a. 2-inch steel rigid/IMC sealing locknut with molded santoprene seal:
 - i. ABB Part number 146SL.
- a. Medium-wall & thick-wall conduit fitting, threaded bushing, 2 trade size:
 - i. THOMAS & BETTS Part number BU506.



6. Electrical Installation

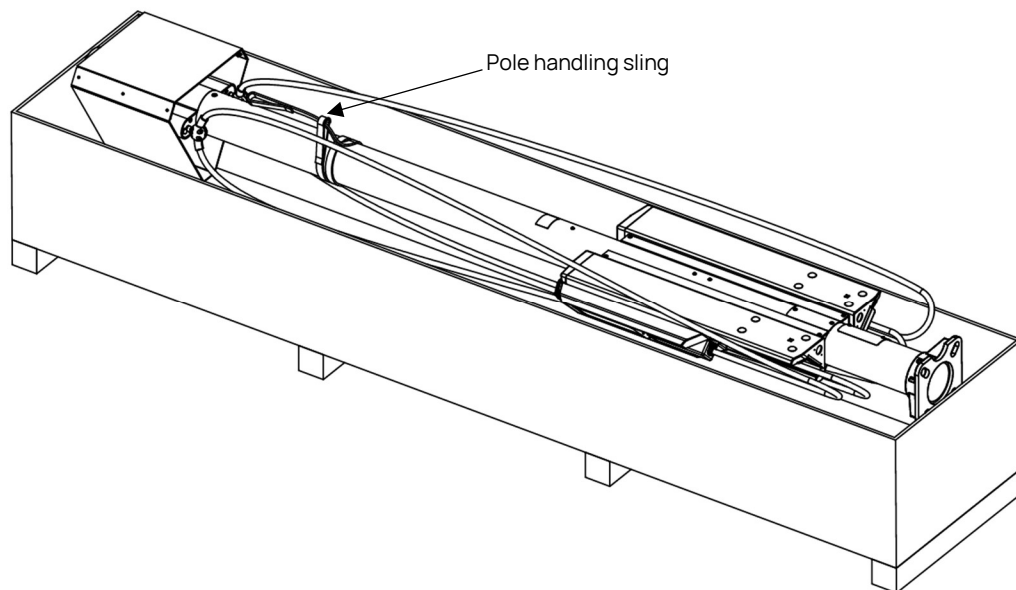
6.1. Lifting the Pedestal

Follow the steps below to lift the pedestal safely and securely:

1. Use a pole handling sling to lift the pedestal: put the pole handling sling around the pedestal only, avoiding charging stations and the cable management system.

WARNING:

- Avoid wrapping the sling around the cable management system cables.
- Do not put any weight on or lift the pedestal using the head, sign or cable management system.
- Use appropriate and safe pole handling sling and rigging technique according to your local regulations.



6.2. Pedestal Installation

Follow the steps below to install the pedestal:

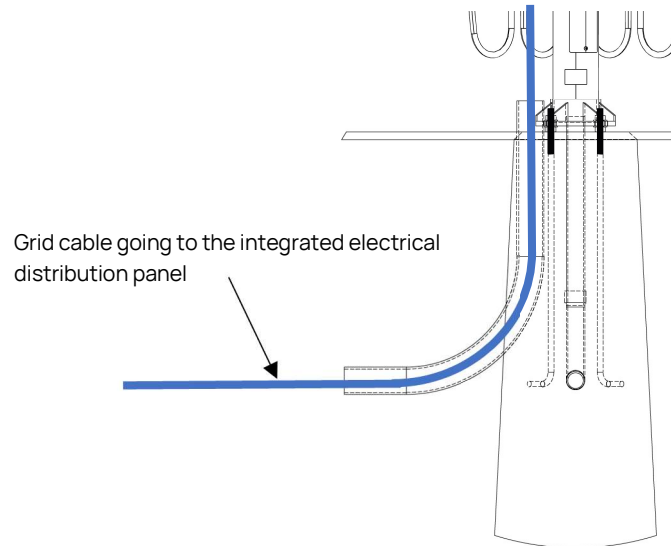
1. Position the pedestal on the concrete base and anchors, making sure the charging station will face the parking lots.
2. Fix the pedestal securely on the anchor following the anchor manufacturer recommendations.
3. Leave the charging station installation for later.

6.3. Integrated Electrical Distribution Panel Installation (Optional)

Follow the steps below to install the integrated electrical distribution panel:

1. If an integrated electrical distribution panel is used, make sure it is installed properly on the SmartTWO-BSR pedestal. See the *Integrated Electrical Distribution Panel* section for more information on the installation.
2. Insert the grid cable in the dedicated conduit in the concrete base.

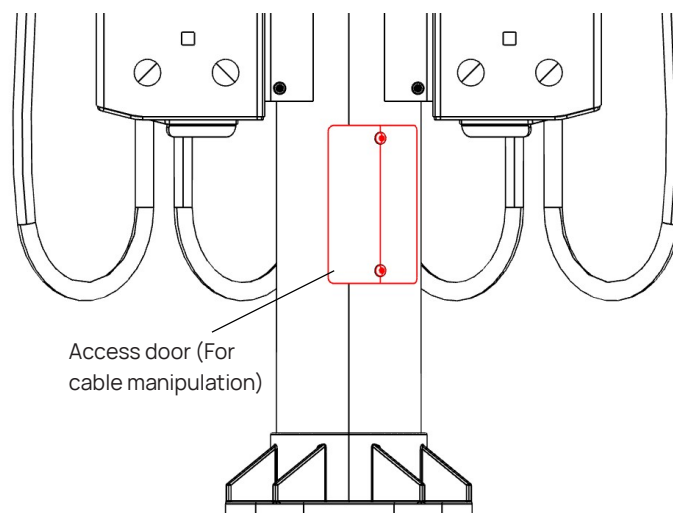
3. Connect the grid cable to the integrated electrical distribution panel following manufacturer recommendations.



6.4. Power Supply Cable Installation

The power supply and ground cables (L1, L2, GND) must be inserted in the pedestals in order to connect them to the charging stations. The installation steps vary depending on if an integrated or deported electrical distribution panel is used. The first step, detailed below, is common to installations with both types of panels:

1. Remove the access door from each pedestal by unscrewing the two screws.



6.4.1. Deported Electrical Distribution Panel

Follow the steps below when power cables come from a deported electrical distribution panel:

1. Pass the power supply cables in the underground conduits and feed them inside the corresponding pedestal concrete base conduits.
2. Use the pedestal access door to reach inside the pedestal and pull the cables from the concrete base conduits. Make sure the cables are long enough to reach the charging station terminals (Approximately 13.8" (350 mm) from the access door center). See the *Charging Station Connection* section for more information on how to connect the charging stations.

6.4.2. Integrated Electrical Distribution Panel

Follow the steps below when power cables come from an integrated electrical distribution panel:

1. Connect the Master and Auxiliary pedestal charging station cables (L1, L2, GND) on the integrated electrical distribution panel dedicated circuit breakers and ground bar, following the manufacturer recommendations.

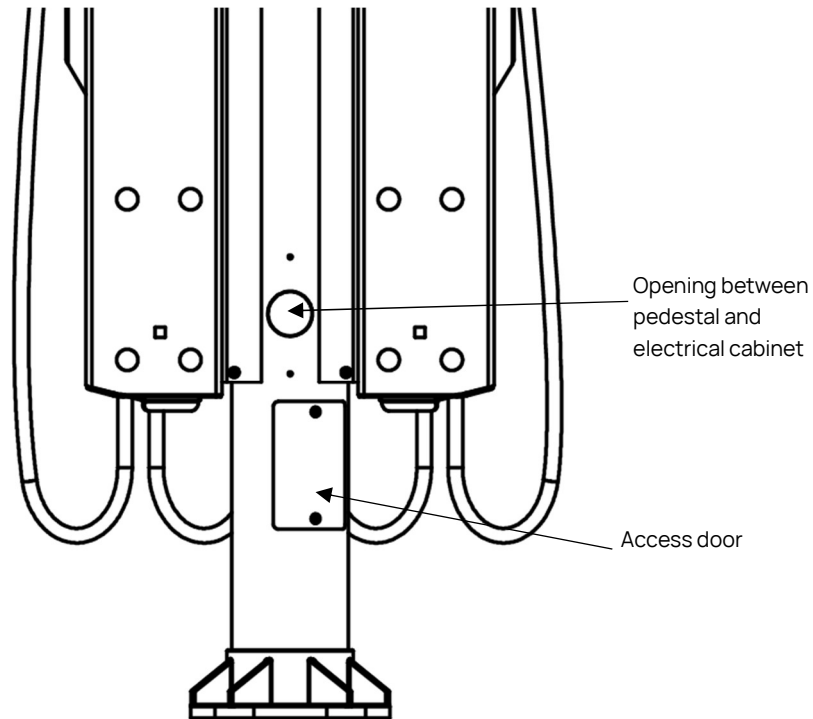
NOTE: One set of cables (L1, L2, GND) is required for each charging station to be powered by the integrated electrical distribution panel.

2. Connect the Master pedestal ground cable to the integrated electrical distribution panel ground bar following manufacturer recommendations.

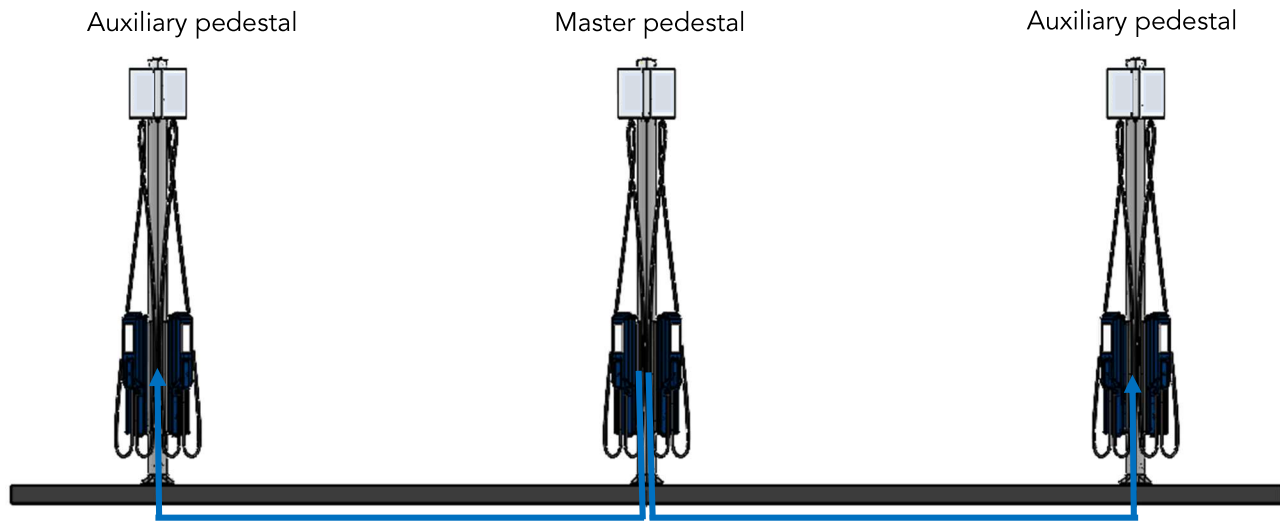
3. Feed all the cables mentioned above through the sealed opening between the integrated electrical distribution panel and the master pedestal.

NOTE: Make sure the Master pedestal charging station cables are long enough to reach the charging station terminals, approximately 13.8" (350 mm) from the Master pedestal opening.

NOTE: Make sure the Master pedestal ground cable is long enough to reach the pedestal ground bar located a few inches behind the access door.



4. Feed the auxiliary pedestal charging station cables (L1, L2, GND) down into the Master pedestal concrete base conduit openings, (reach inside the pedestal through the access door opening to do so).
5. Feed the cables to the Auxiliary pedestals, making sure they are long enough to reach the charging station terminals; approximately 13.8" (350 mm) from the Auxiliary pedestal access door center.

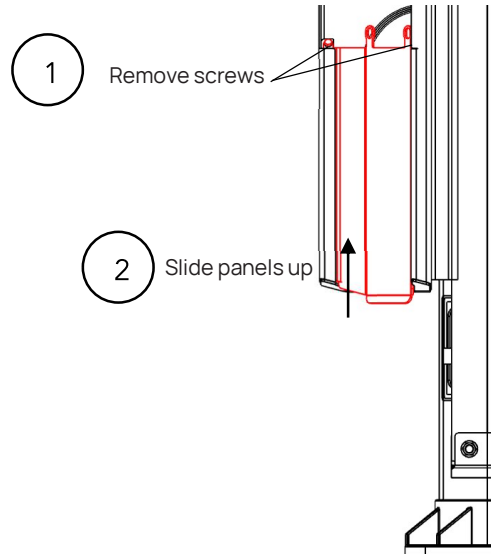


6.5. Charging Station Connection

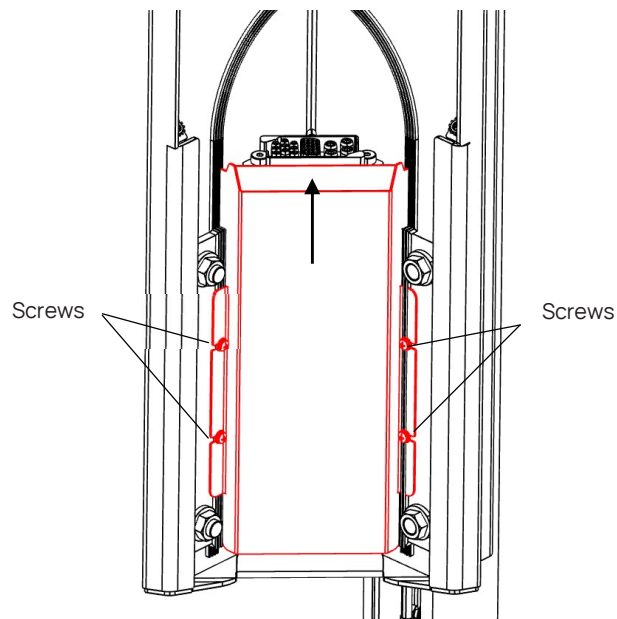
The power supply and ground cables must be connected to the charging stations. Follow the steps below to connect the cables to the charging stations:

6.5.1. Pedestal Panel Removal

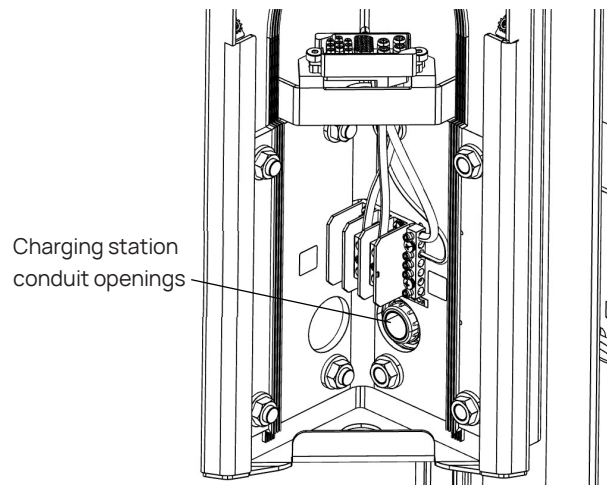
1. Remove the pedestal front panels by unscrewing the two screws on each charging station and sliding the panels towards the top.



2. Remove the protection panels by unscrewing the four screws on each charging station and pulling gently on the top of the panel.



The electrical components and the charging station conduit openings will become accessible.



6.5.2. Charging Station Cable Routing and Ground Connection

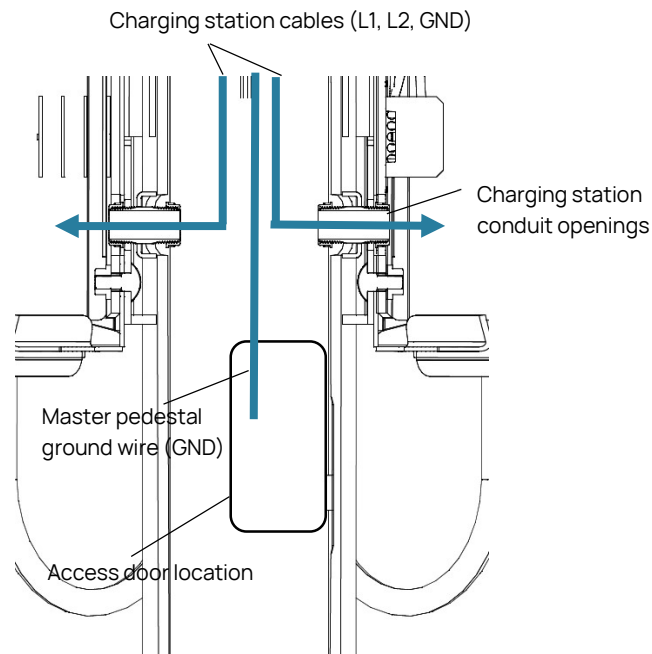
The feeding cables can come either from the back or bottom of the pedestal depending on if an integrated or deported electrical distribution panel is installed. Follow the steps below depending on your configuration.

6.5.2.1. Cables Coming from the Back of the Pedestal

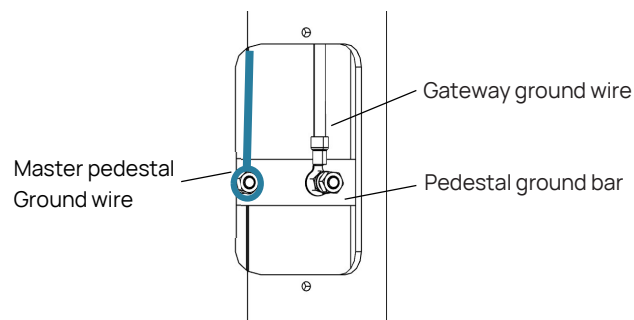
Follow the steps below for cables that come from the back of the pedestal:

1. Pull the charging station cables (L1, L2, GND) coming from the electrical distribution panel towards the 3/4" NPT (21 mm NPT) charging station conduit openings until they completely cross the conduits. Reach inside the pedestal through the access door opening to do so.

2. Pull the master pedestal ground wire (GND) coming from the integrated electrical distribution panel ground bar towards the pedestal access door.



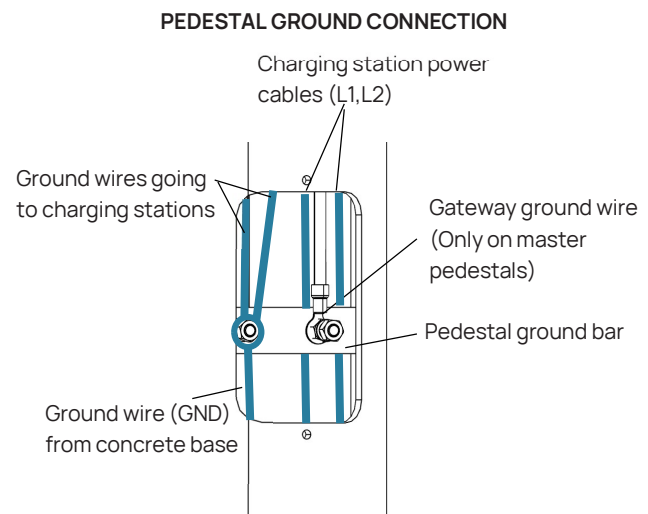
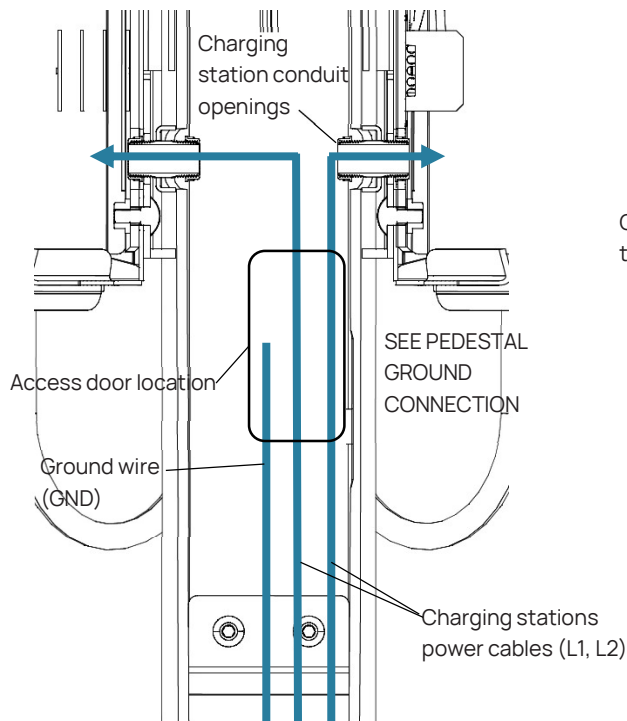
3. Connect the master pedestal ground wire to the pedestal ground bar on the empty nut using a 40 in-lbs / 4.5 N.m torque. The other nut is occupied by the gateway ground wire that is already connected.



6.5.2.2. Cable Coming from the Bottom of the Pedestal

Follow the steps below for installations with cables coming from the bottom of the pedestal:

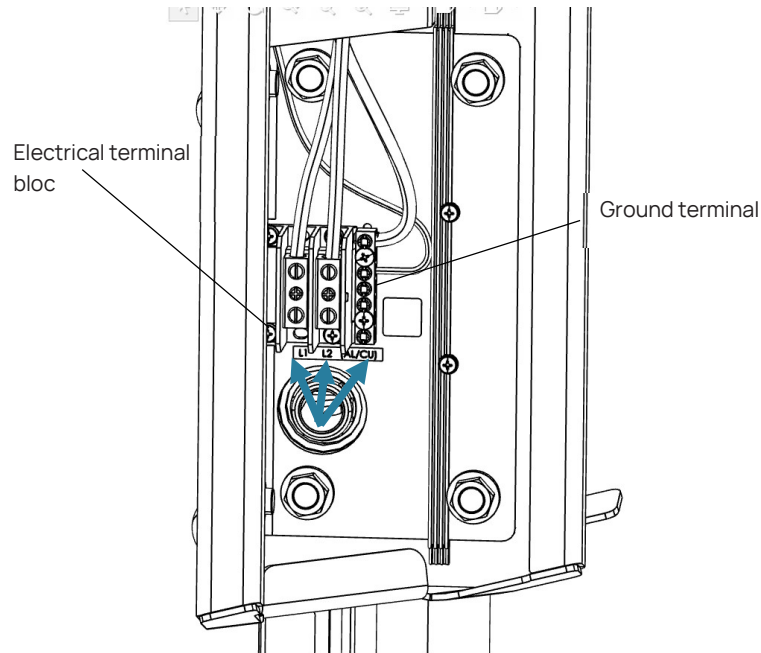
1. Pull the ground wire coming from the concrete base towards the pedestal door opening.
2. Connect the ground wire on the pedestal ground bar using a 40 in-lbs / 4.5 N.m torque.
3. Connect two ground cables on the pedestal ground bar (40 in-lbs / 4.5 N.m torque), making sure they are long enough to reach the charging station ground terminals. (Approximately 13.8" (350 mm) from the access door center).
4. Pull the power cables (L1, L2) coming from the concrete base and one ground wire (GND) coming from the pedestal ground bar towards the 3/4" NPT (21 mm NPT) conduit opening for each station, until they completely cross the conduits.



6.5.3. Charging Station Wire Connection

Follow the steps below for every charging station:

1. Tighten the ground cable (GND) to the ground terminal using a 30 lbs-in / 3.4 Nm torque.
2. Tighten the power cables (L1, L2) to the electrical terminal bloc using a 40 lbs-in / 4.5 Nm torque.



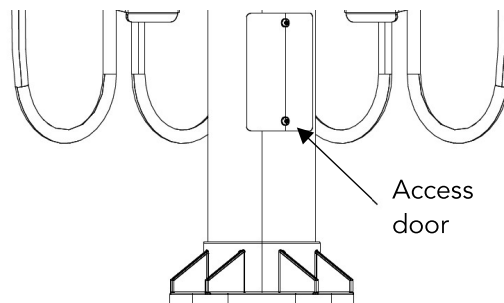
7. Charging Station Installation

Once the electrical connection is completed, re-install the protection panels and the charging station, and complete the preliminary tests.

7.1. Pedestal Access Door Installation

Follow the step below to install the access door:

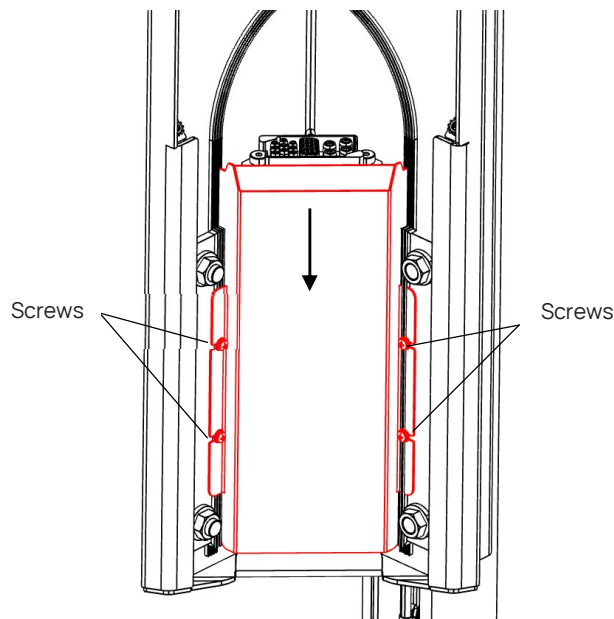
1. For each pedestal, close the pedestal and tighten the screws using a 10N*m or 80 lbs-in torque.



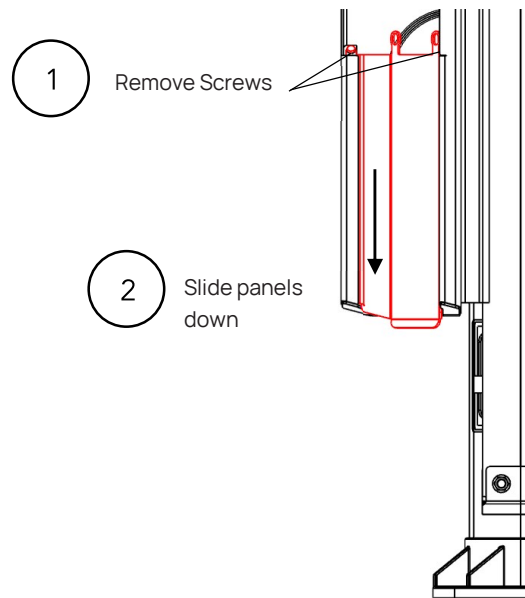
7.2. Pedestal Panel Installation

Follow the steps below to Install the panels for each pedestal:

1. Install the protection panel by sliding it down gently and tightening the four screws using a 10N*m or 80 lbs-in torque.

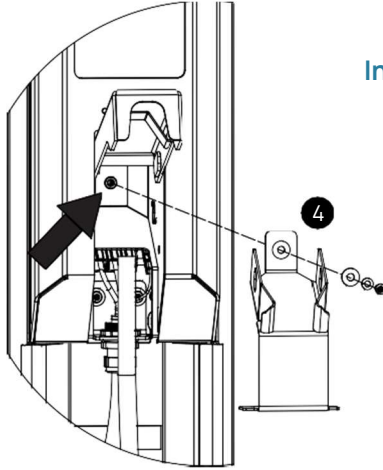


2. Install the front panels by sliding them down and tightening the two screws using a 10Nm or 80 lbs-in torque.



7.3. Charging Station and Connector Installation

NOTE that the numbers in brackets in the text refer to the material in the image.

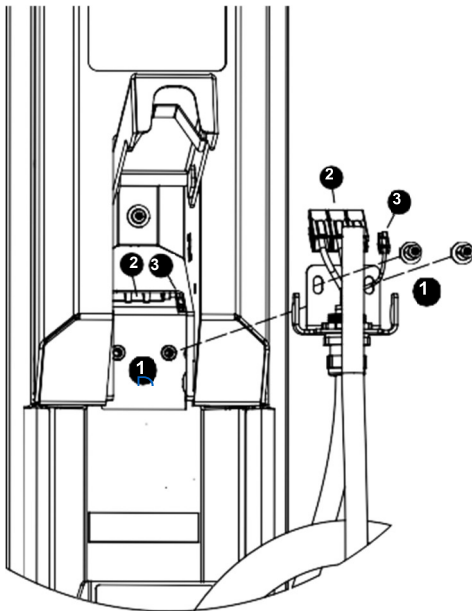
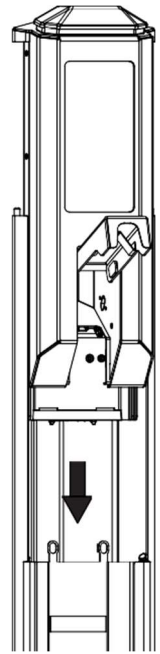


Installation of the charging station on its base

1. Unscrew the charging port holder (4).
2. Remove the charging port and cable assembly:
 - a. Disconnect the three positions connector (2) and the small black connector (3).
 - b. Unscrew the two brackets (1).
3. Slide the charging station into the base.

Important

- Do not slide the charging station down with excessive force. If the charging station doesn't slide down into position easily, gently shake the base of the charging station while guiding it into the base.
- Be careful not to damage the black plastic connectors on the bottom of the charging station on the top of the base.
- Once fully inserted, the spacing between the charging station and the base should be from 0 to 0.19" (0 to 3 mm).



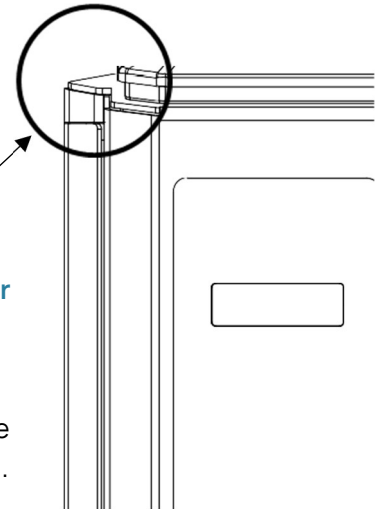
Warning

Never use a power tool to install the security screws, and never apply a torque of more than 18 Nm (160 pound-inches) when tightening them.

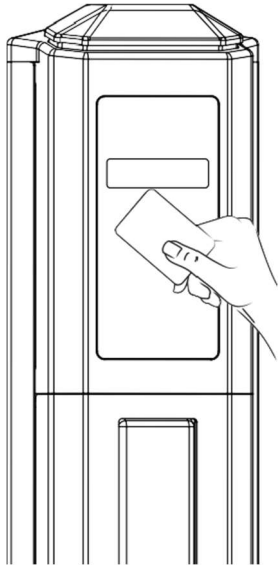
Installation of the charging coupling connector

1. Screw the bracket back into place (1).
2. Connect the three positions connector (2) and the small black connector (3) (the green connection should be on the right).
3. Screw the charging port holder back into place (4).

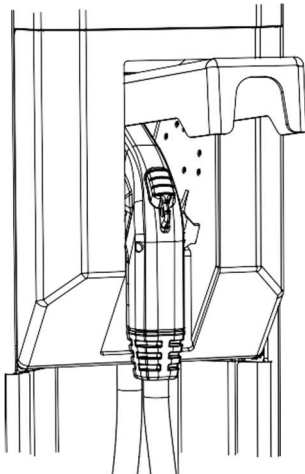
NOTE: Make sure the bottom of the charging port holder does not interfere with the base.



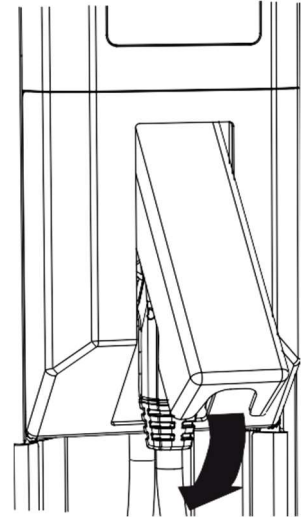
7.4. Preliminary Tests and Commissioning



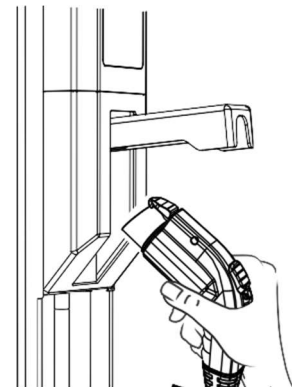
1



3



2



4

Instructions

1. Place the charging port in the holder and close the door (1 and 2).
2. Once the charging station is powered up, check the following:
 - a. The door is locked.
 - b. The charging station status lights turn GREEN.
 - c. The display shows the greeting messages.
3. Swipe the card provided with the charger in front of the display. The charger will react as follows (3):
 - a. Once the reader detects the card, it will emit an audible beep.
 - b. The access card is authenticated by the charging station.
 - c. if the test is successful, the WHITE charging station status lights will start flashing and the charging port will be unlocked (4).
 - d. If the charging port is inserted into an Electrical Vehicle, it will begin charging. If not, 1 minute later, the charging session will be cancelled.
4. If the preliminary test is successful:
 - a. Make sure you have installed the Communication Gateway according to the instructions described in the *Communication Gateway Installation Guide*, if necessary
 - b. Call AddEnergie for charger commissioning.

7.5. Preliminary Tests and Commissioning

Follow the instructions below to complete the preliminary tests and commissioning:

1. Place the charging port in the holder and close the door (1 and 2).
2. Once the charging station is powered up, confirm the following:
 - a. The door is locked.
 - b. The charging station status lights turn GREEN.
 - c. The display shows the greeting messages.
3. Swipe the card provided with the charger in front of the display. The charger will react as follows:
 - a. Once the reader detects the card, it will emit an audible beep.
 - b. The access card is authenticated by the charging station.
 - c. If the test is successful, the WHITE charging station status lights will start flashing and the charging port will be unlocked.
 - d. If the charging port is inserted into an electrical vehicle, it will begin charging. If not, 1 minute later, the charging session will be cancelled.
4. If the preliminary test is successful:
 - a. Make sure you have installed the Communication Gateway according to the instructions described in the *Communication Gateway Installation Guide*, if necessary.
 - b. Call FLO for charger commissioning:
1-855-543-8356

8. Copyright and Liability

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