

flo®

flo

SmartDC™ V3 Installation Guide



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1. Specifications



Model : SmartDC™

Version : V3

Company information: Services FLO Inc.

NOTE: The image shows the 50 kW model with the optional Cable Management System (CMS) and credit card reader.

1.1 Technical Specifications

Specification	50 kW	100 kW / 50 kW+
Type of charging station	DC fast charging station	
Nominal power supply	Three-phase 480 Y/277 V	
Nominal power	54 kVA	108 kVA
Nominal current	65 A (Select overcurrent protection for the charging station in accordance with the requirements of the local jurisdiction)	130 A (Select overcurrent protection for the charging station in accordance with the requirements of the local jurisdiction)
Incoming terminals	L1, L2, L3, Neutral terminal: (1) conductor size 4 AWG - 500 MCM (screw terminal) Grounding terminal: (1) conductor size 14 AWG - 2/0 AWG (screw terminal)	
Maximum output power	50 kW	100 kW
Output connector	SAE Combo (CCS1) and CHAdeMO	
Charging cables (maximum output current)	125 A	200 A
Charging cables (length)	6.1 m (20') Optional cable management system	3.7 m (12')
Operating temperature range	-40 °C à 50 °C (-40 °F à 122 °F)	
Storage temperature range	-40 °C à 70 °C (-40 °F à 158 °F)	
Operating altitude	< 2 000 m (< 6 562 feet)	
Enclosure	Type 3R, for exterior use	
Energy efficiency	Energy Star certified	
Efficiency	93 % or better	
Power factor	98 % or better	
Weight	Without cable management system: 255 kg (562 lb)	300 kg (661 lb)
	With cable management system: 300 kg (661 lb)	

1.2 Integrated Protection

The following integrated protections are included:

- Against voltage surges
- Against electrical insulation failures between DC output and ground
- Against continuity failures of the protective conductor (PE) between the charger and the vehicle

1.3 Standards Compliance

- UL 2202 : Standard for Safety for Electric Vehicle (EV) Charging System Equipment,
- UL 2231-1, UL 2231-2 : Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits
- CSA C22.2 NO. 107.1-16 : General Use Power Supplies
- CSA C22.2 NO. 281.1-12, CSA C22.2 NO. 281.2-12 : Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits
- FCC part 15 Class A
- ICES-3(A) / NMB-3(A)

NOTE: Consult technical support for more information on calibration.

1.4 Transformer



WARNING: When a step-down or step-up transformer is required to match the available supply voltage to the 480 volt rating required by the charger, the use of a Y auto-transformer, a Δ/Y transformer, or a Y/Y transformer is acceptable. A properly bonded neutral **MUST** be installed between the transformer and the charging station.



WARNING: The use of “Open Delta” auto-transformers or transformers with an “Open Delta” primary is prohibited.

1.5 Wiring Connection

- A 3-phase 4-wire (with Neutral) connection is required for the FLO SmartDC DC fast charger input supply.
- A Delta/WYE transformer is allowed if the SmartDC charger is connected via the WYE configured secondary.
- The charger can only be connected to a WYE configured transformer, NOT to a Delta, to ensure the Neutral wiring connection is available.
- An Autotransformer will require Neutral connection both on the primary and secondary side.
- **IMPORTANT:** Properly supplied Neutral is essential for adequate voltage to operate the station.
- Grounding and Bonding of the system shall be done according to local electrical code and the selected transformer manufacturer’s specifications to avoid grounding Loops.

1.6 Conductor Size

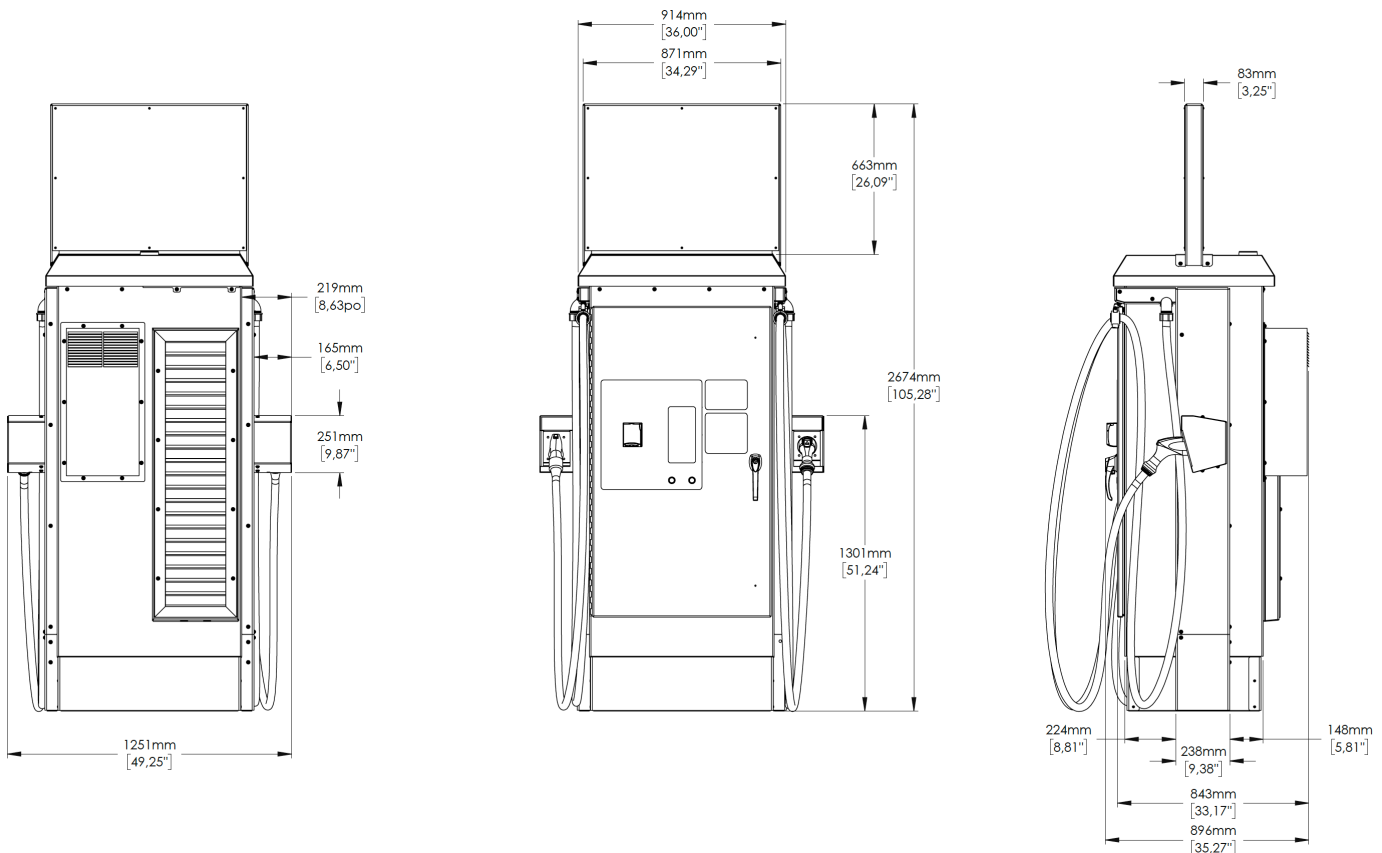
- It is important to note that the SmartDC input supply terminals accept up to a size 500 MCM conductor for L1,L2,L3 and Neutral terminals and up to 2/0 AWG for the grounding terminal.
- Please ensure to account for this requirement when performing load calculation and voltage drop provisions.

1.7 Clearance

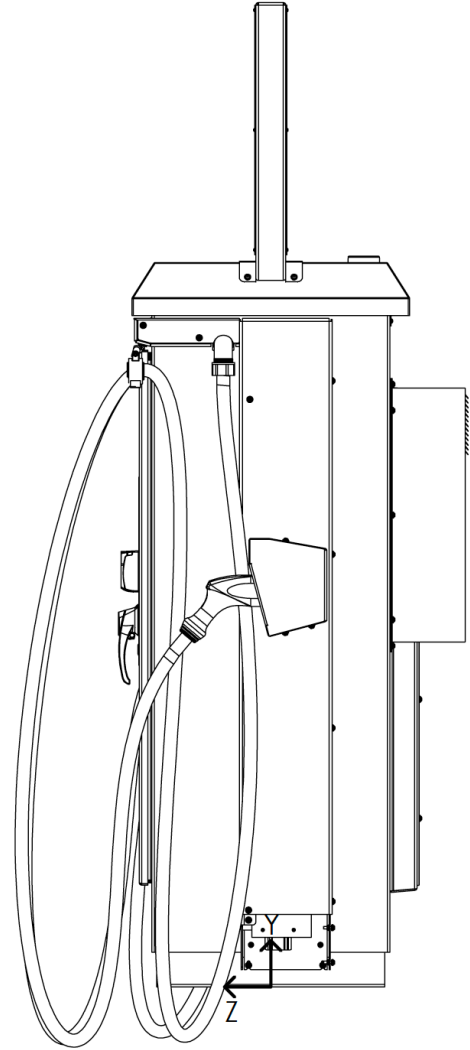
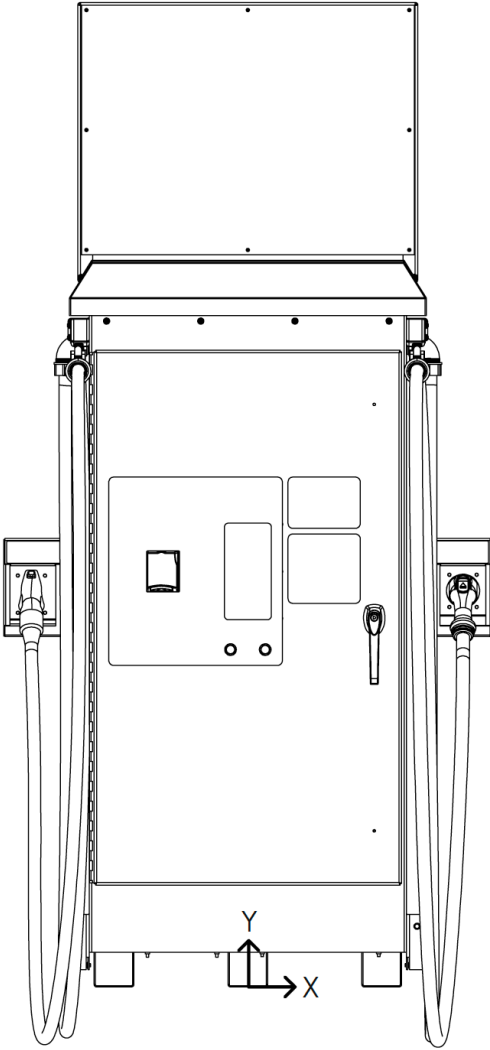
- There must be sufficient clearance, of 2ft (61 cm) minimum (3ft (91 cm) recommended), for the SmartDC from any wall or solid structure. This is to adhere to FLO's EV charging space clearance requirements as well as local standard code and regulations.
- The back and the front of the SmartDC enclosure must be accessible for maintenance, servicing, and ventilation. Or else, the warranty could be voided.

2. Dimensions

NOTE: The picture shows the 1251 mm (49.25") width with the cable management system. The width without the cable management system (CMS) is 1232 mm (48.50").



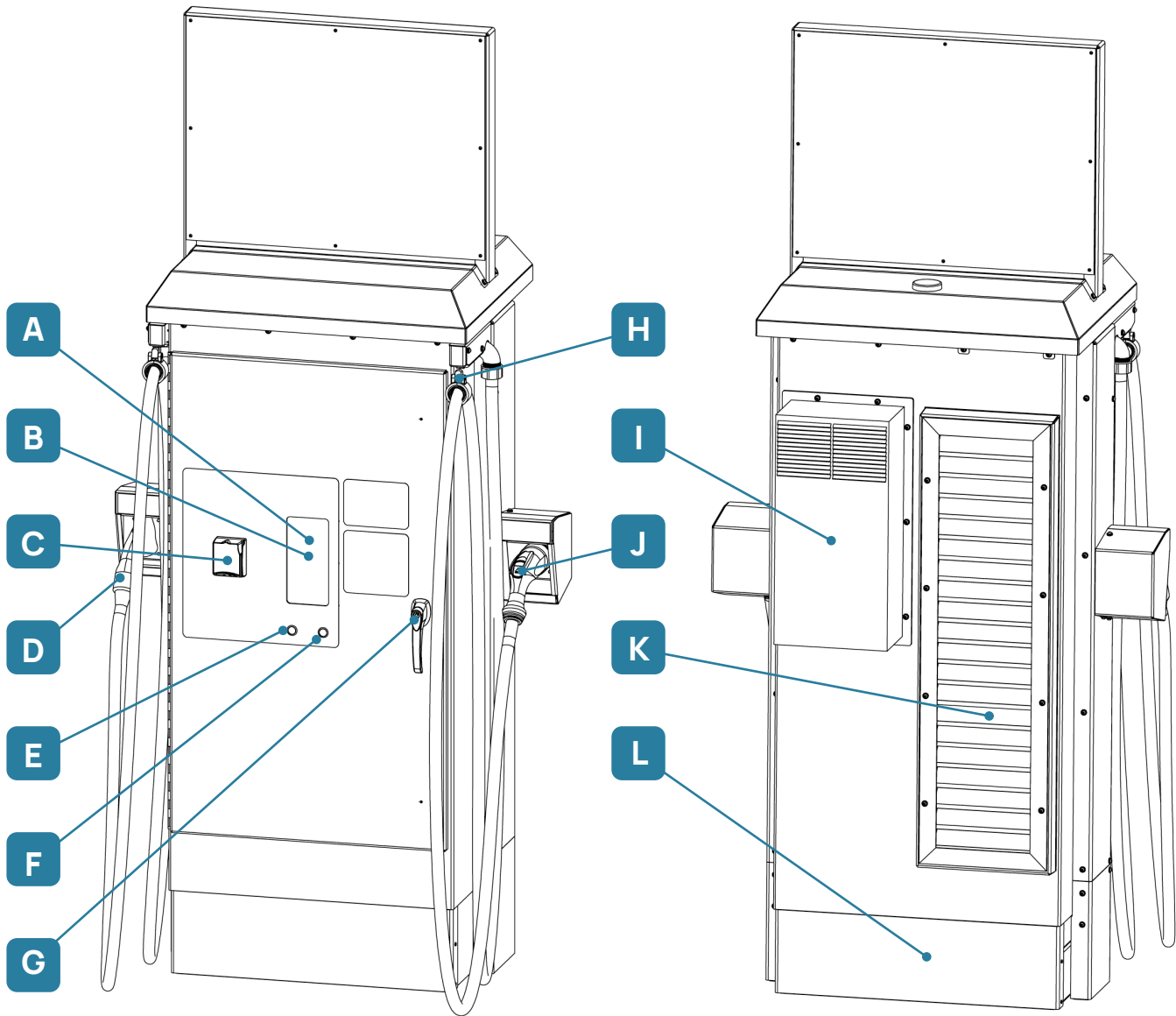
3. Center of Gravity



Center of gravity (approx.)	
X	25 mm (1")
Y	940 mm (37")
Z	58 mm (2")

* Shown with optional cable management system and credit card reader

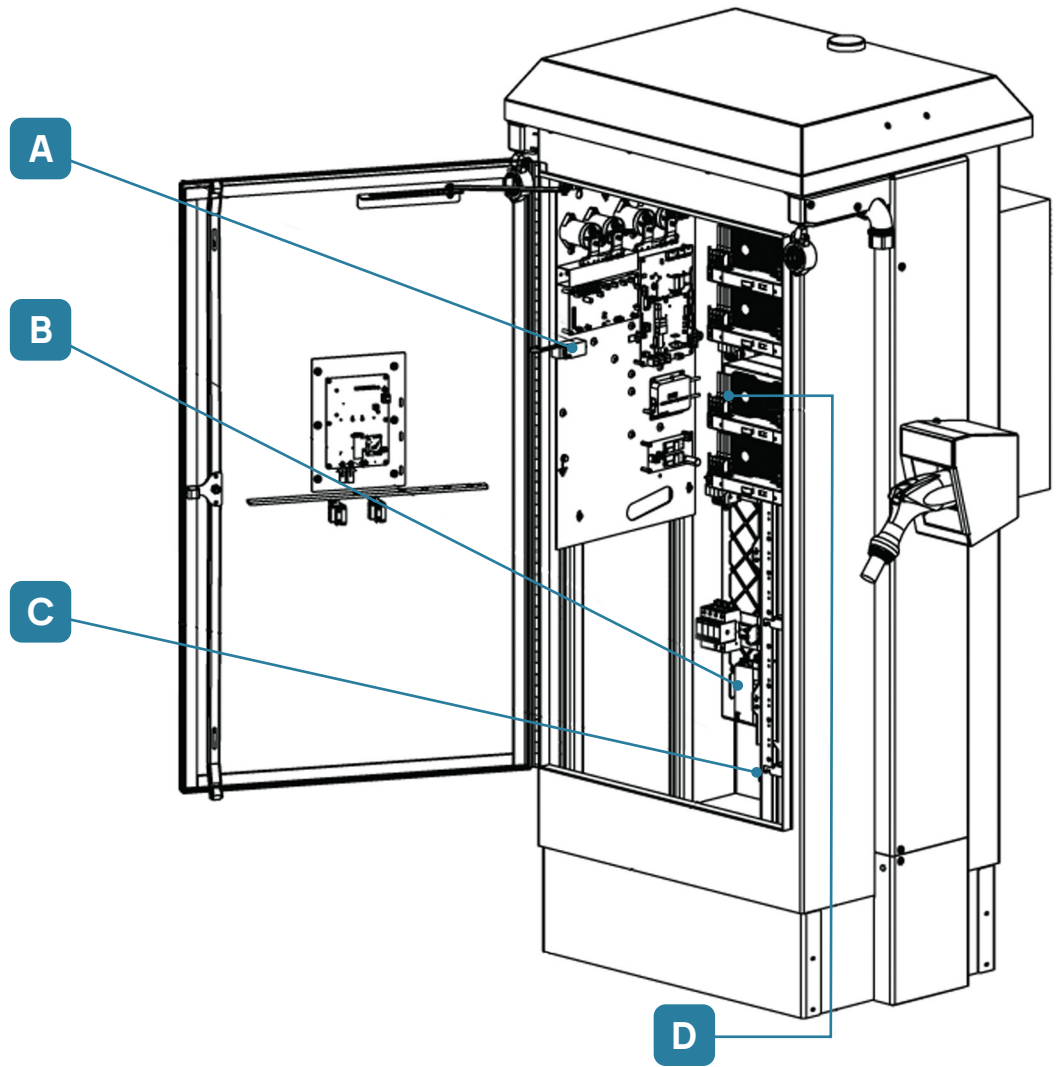
4. Exterior View of the Station



A	Display
B	RFID card reader
C	Credit card reader (optional)
D	SAE combo (CCS1) connector
E	Stop button
F	Start button

G	Door handle (padlockable)
H	Cable management system
I	Heat exchange unit
J	CHAdeMO connector
K	Air intake
L	Base cover

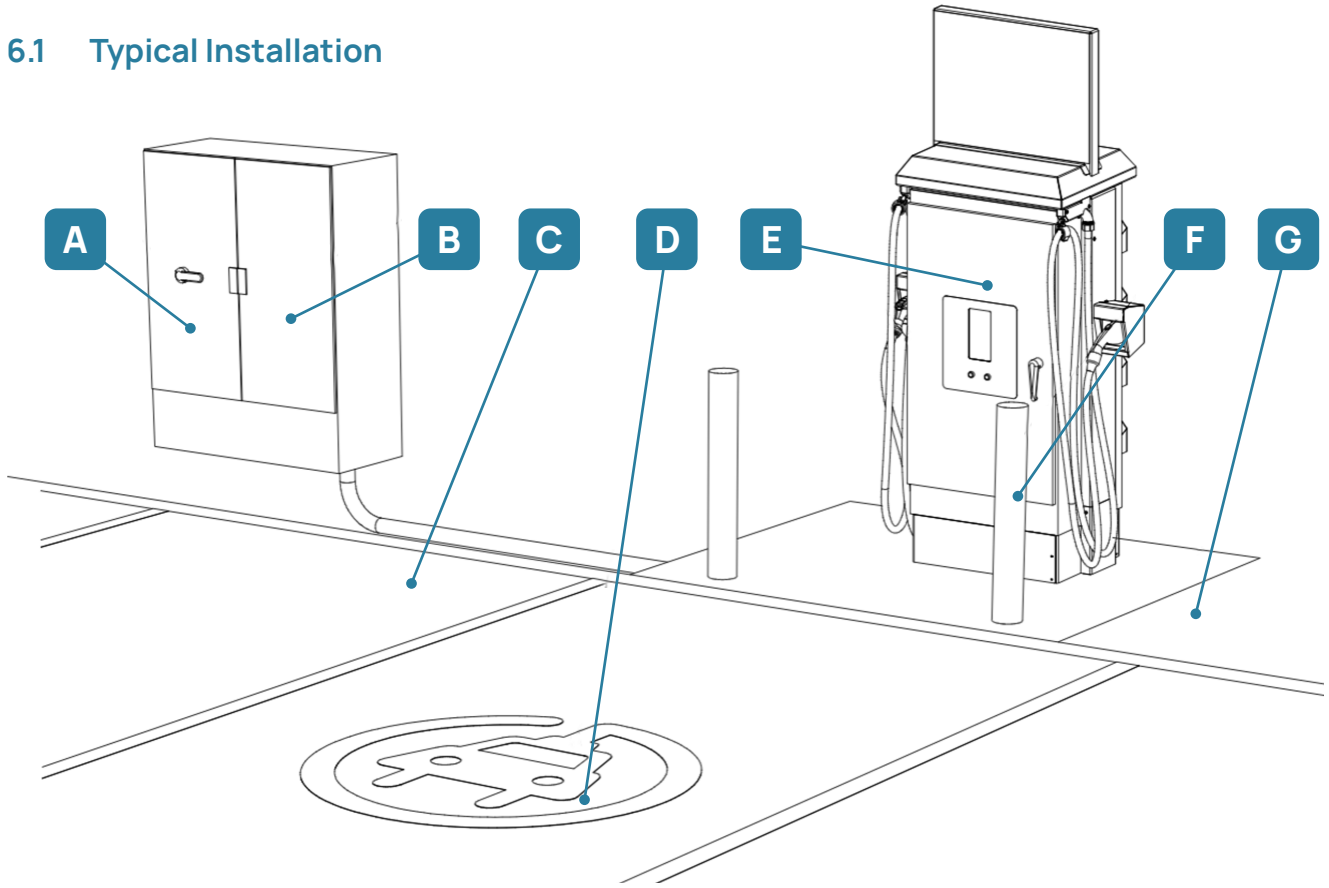
5. Interior View of the Station



A	Door switch
B	Three-phase power supply terminal block with neutral
C	Grounding terminal
D	AC/DC conversion modules

6. Installation

6.1 Typical Installation



- A** Master disconnect switch
- B** Electrical equipment cabinet (metering, protection and distribution)
- C** Power cable (three-phase 480 Y/277 Volts + NEUTRAL + GROUND)
- D** Parking space for the electric vehicle
- E** SmartDC station
- F** Protective bollard
- G** Concrete slab



WARNING: When a step-down or step-up transformer is required to match the available supply voltage to the 480 volt rating required by the charger, the use of a Y auto-transformer, a Δ/Y transformer, or a Y/Y transformer is acceptable. A properly bonded neutral **MUST** be installed between the transformer and the charging station.



WARNING: The use of “Open Delta” auto-transformers or transformers with an “Open Delta” primary is prohibited.

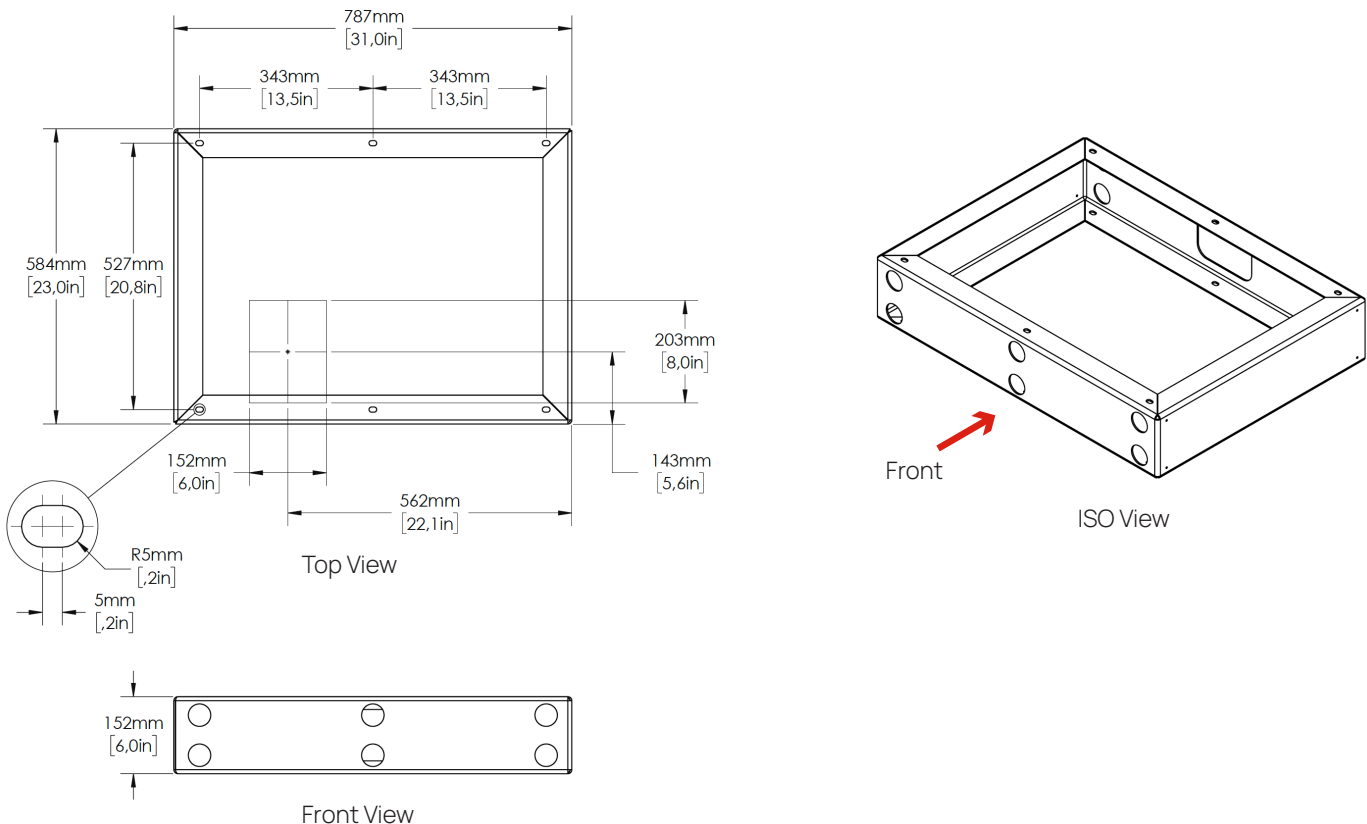
The product offers mounting configurations that support compliance with the Americans with Disabilities Act (ADA). Validate how to design the site with local authorities.

6.2 Site Preparation

Follow the steps below to prepare the site:

1. The station must be installed on a concrete slab.
2. The surface of the concrete slab must be large enough to allow for the installation of the station and the concrete bollards, while leaving enough space for user traffic. The figure below shows the ideal dimensions and distances to be respected.
3. The soil under the slab must be properly drained and stabilized (according to specific needs) so that it is not affected by frost.
4. An electrical conduit that complies with local regulations and is of appropriate diameter (depending on the wire size) should run the electrical cable under the perimeter of the station, preferably in the front left area under the station perimeter.
5. The anchors and conduit must be positioned to allow for the mounting of the base of the charging station.

NOTE: Refer to the site assessment requirements and the anchor supplier's recommendations for anchor selection.



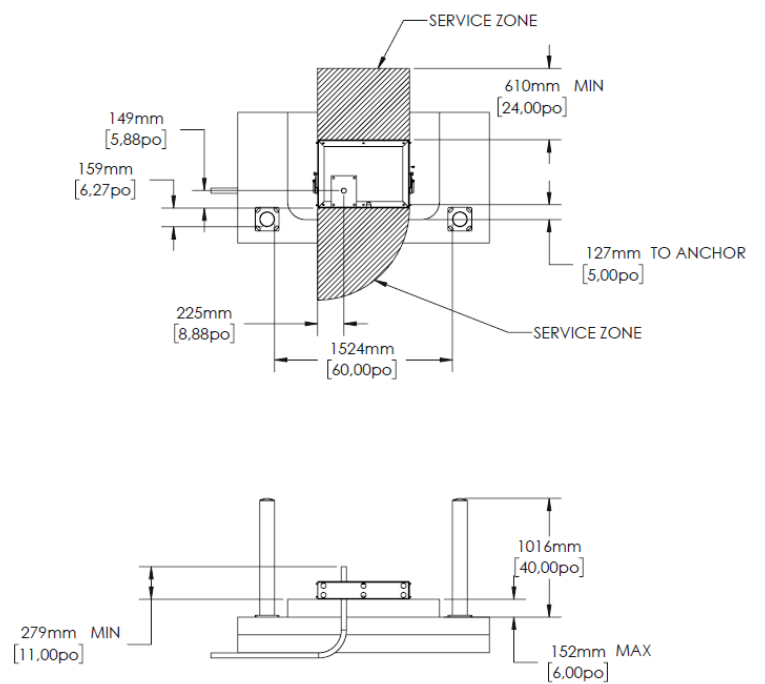
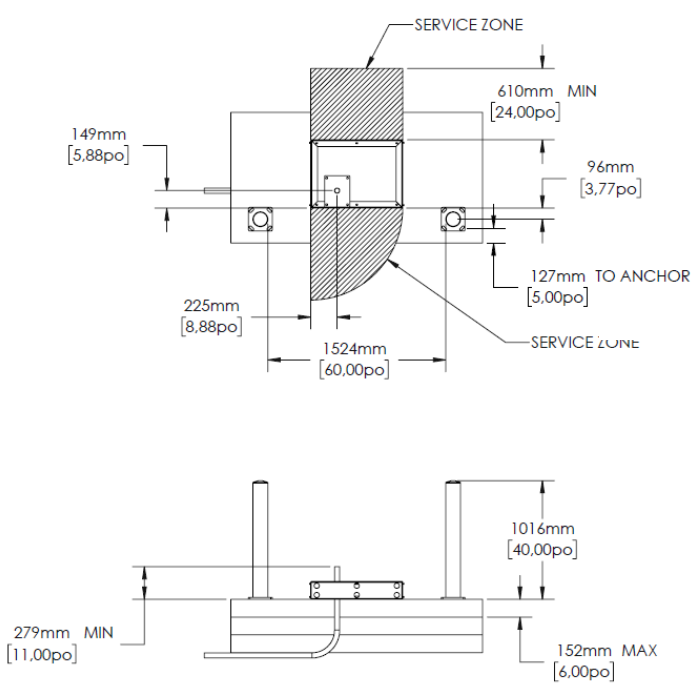
NOTE: The wiring conduit must be sealed to prevent moisture penetration.

IMPORTANT: If there is a wall behind the charging station, a minimum spacing of 24 inches (609.6 mm) must be maintained between the charging station and the wall.

IMPORTANT: For indoor installation, make sure that the sticker with the following warning is visible to the user:
 "WARNING: THIS UNIT IS DESIGNED ONLY FOR CHARGING VEHICLES THAT DO NOT REQUIRE VENTILATION WHILE CHARGING"

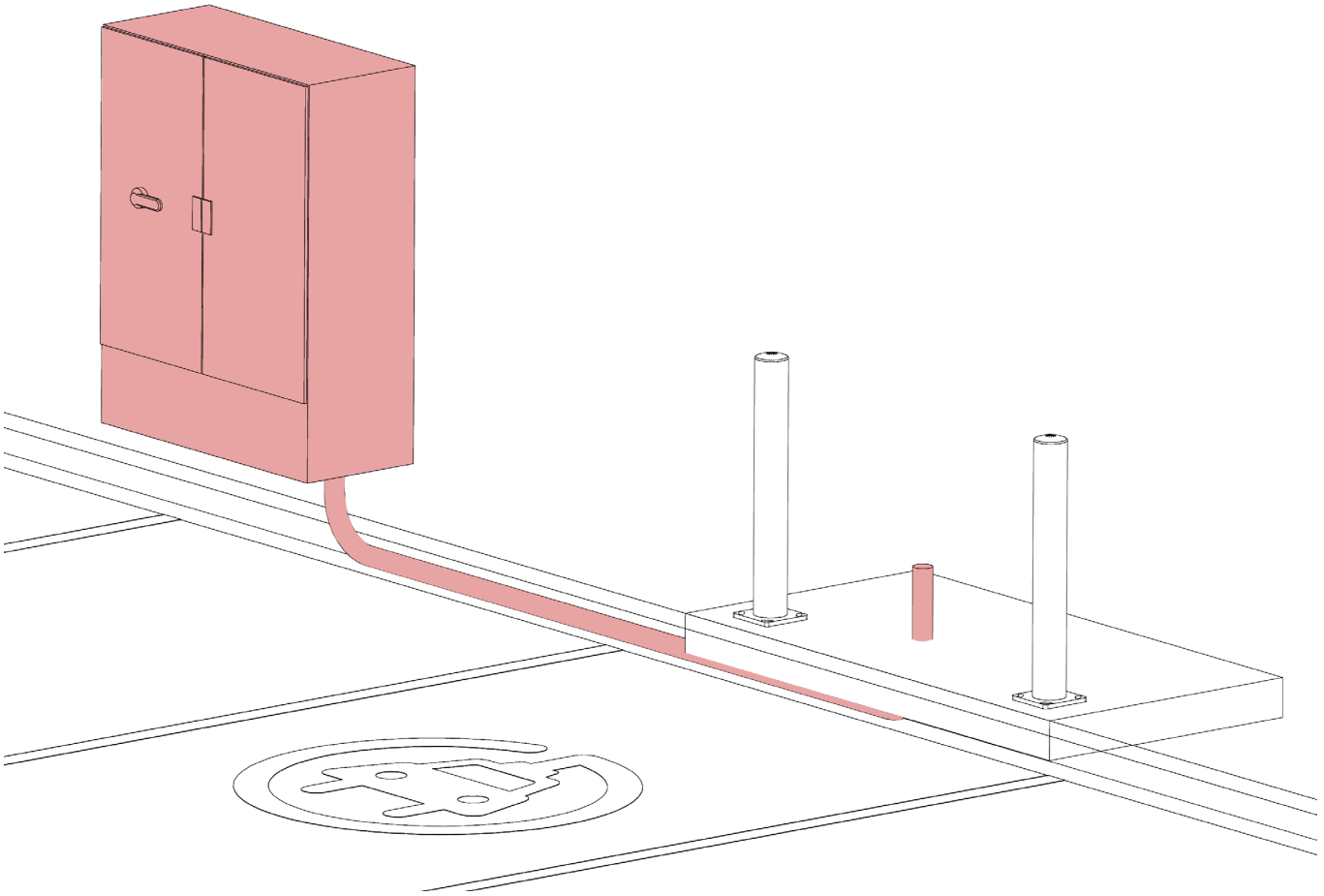
OPTION 1 : BOLLARDS ON THE CONCRETE BASE

OPTION 2 : BOLLARDS BESIDE THE CONCRETE BASE



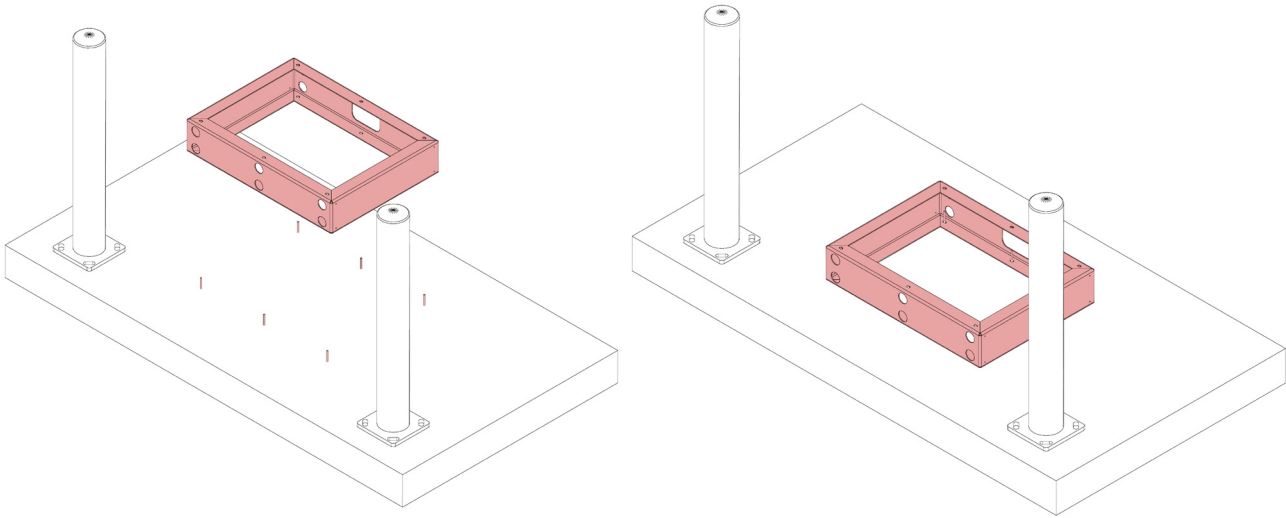
6.3 Safety Measures

1. Ensure that the upstream disconnect is in the open position and follows workplace electrical safety procedures, as required by the local jurisdiction.



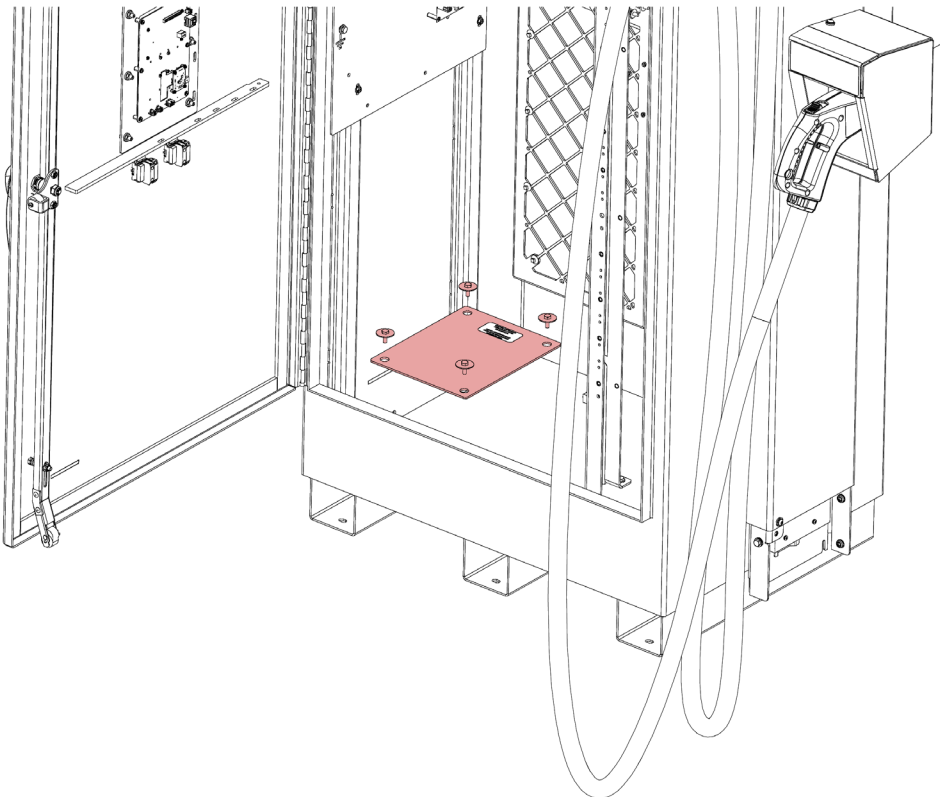
6.4 Installation of the Base on the Concrete Slab

Align the SmartDC base with the recessed anchors and tighten the bolts to secure the base to the ground.

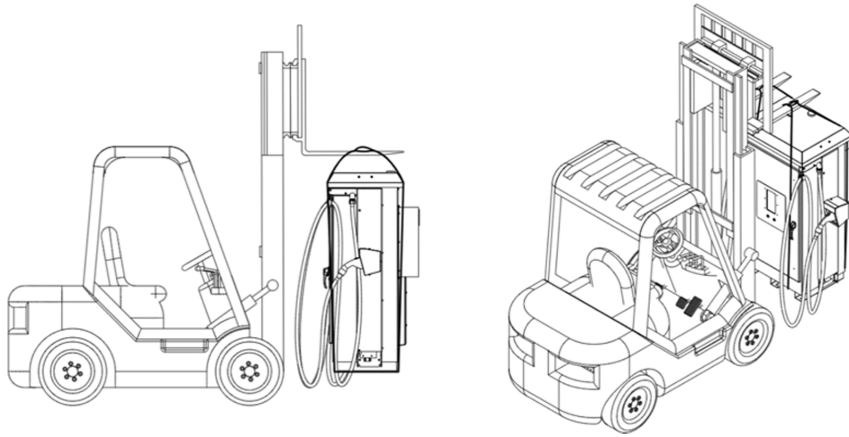


6.5 Installation of the Station on the Base

1. Remove the access plate to allow the power cable to pass through.



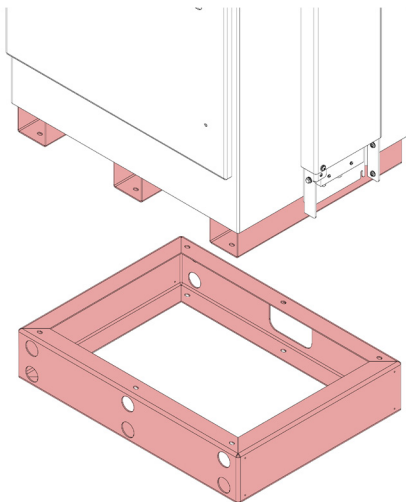
2. Lift and handle the station with 2 web slings measuring a minimum of 5.15 m (17') and having a minimum vertical working load limit of 1 406 kg (3100 lbs).



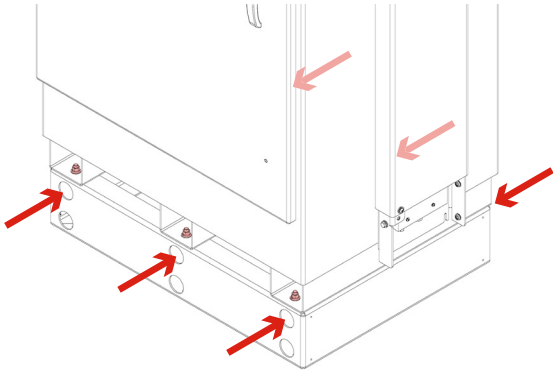
For example



3. Align the U-profiles (3) of the charging station with the holes in the base.

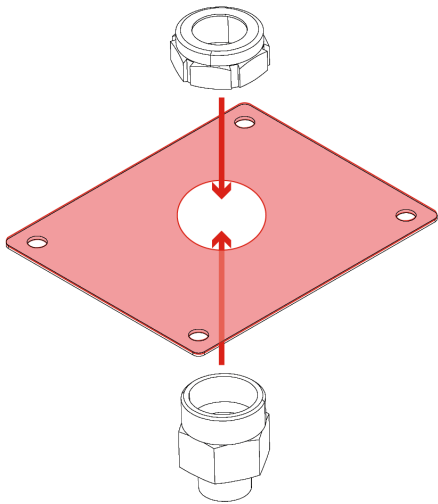


- Place the station on the base and tighten the 6 bolts (3 at the front and 3 at the back of the U-shaped channels).



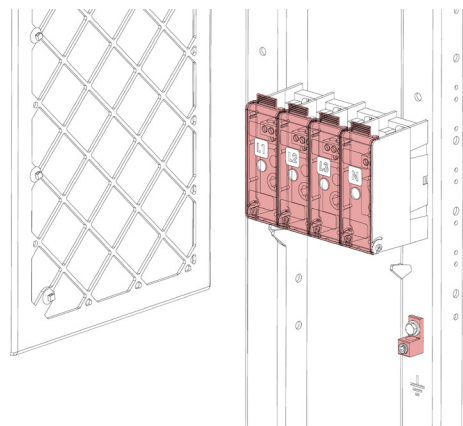
6.6 Connecting the Charging Station

- Punch a hole in the access plate to match the conductor size and pull the cables through the opening (Cable gland not included).

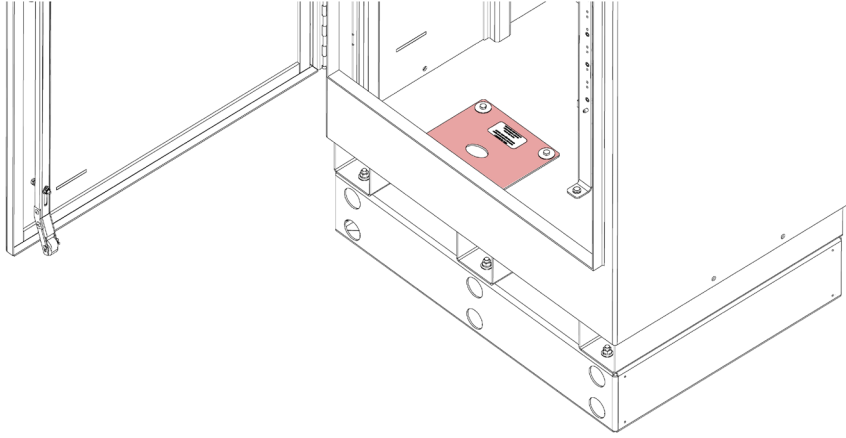


- Connect the conductors:
 - Connect the three-phase conductors (L1, L2, L3) and the neutral conductor (N) into the terminal with a torque of 56.5 N-m (500 lb-in).
 - Connect the grounding conductor into the grounding terminal with a torque of 5.6 N-m (50 lb-in).
 - Make sure all conductors are properly labeled (A, B, C, N, G) and that the sequence of the three-phase wires is followed.

NOTE : Connectors are compatible with copper and aluminum wires.

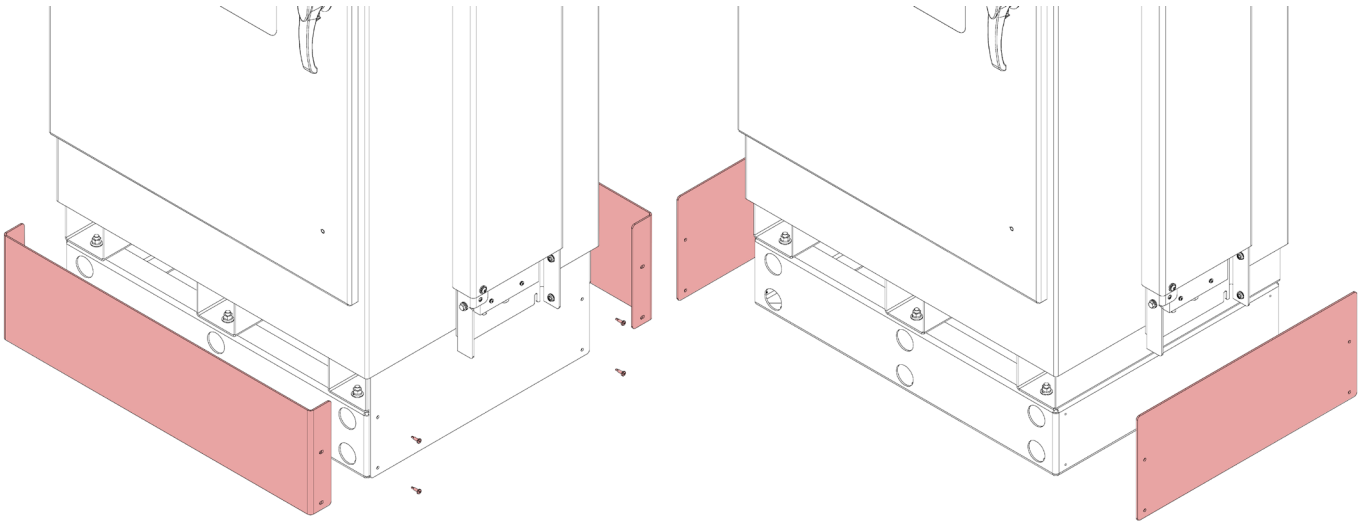


3. Place the cable entry plate back in its position and seal it.



6.7 Installation of the Base Coverings

1. Position the side cover plates, then the front and rear base cover plates and tighten the screws (8).



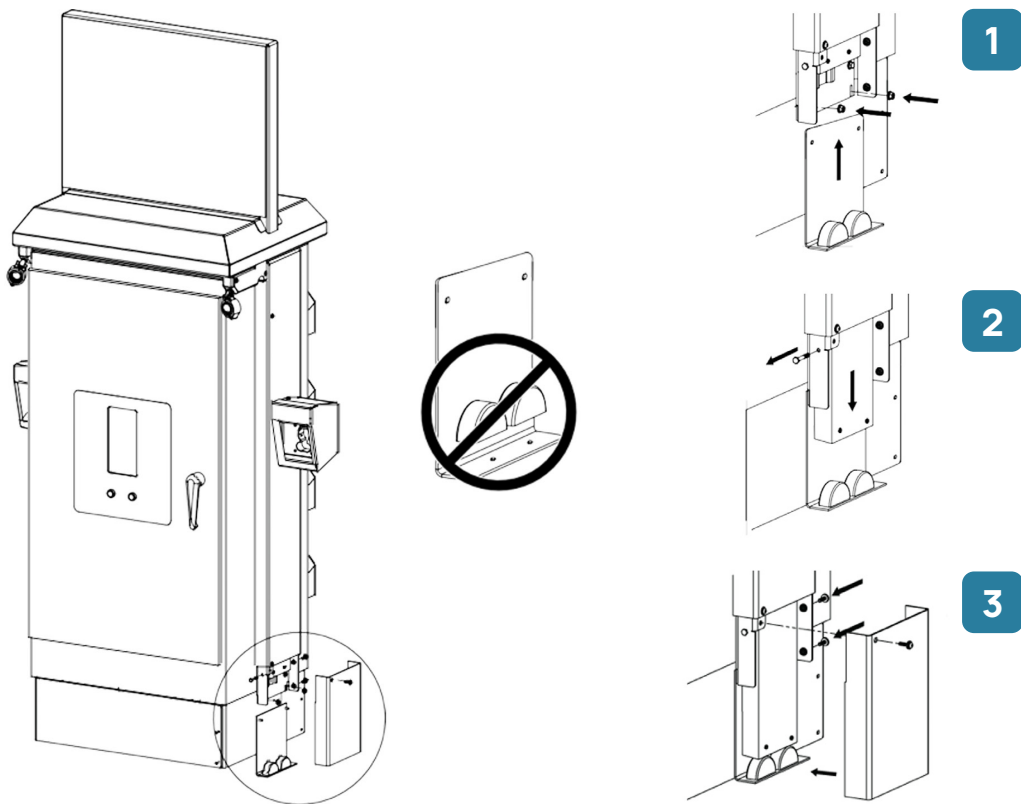
6.8 Cable Management System (Optional)

Counterweight installation:

1. Install the aluminum plate with the rubber stoppers and secure it with the bolts (make sure the aluminum plate rests firmly on the floor).
2. Remove the safety screw, and release the counterweight.

WARNING: DO NOT put your hands or fingers between the rubber stoppers and the counterweight.
3. Place the plate on the counterweight system.

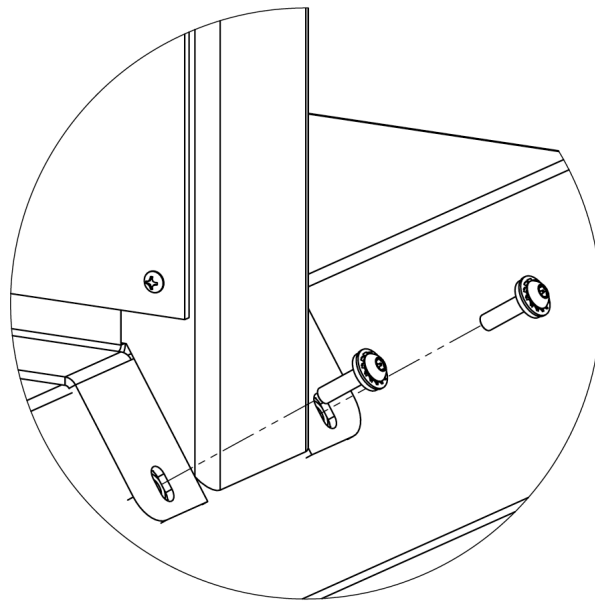
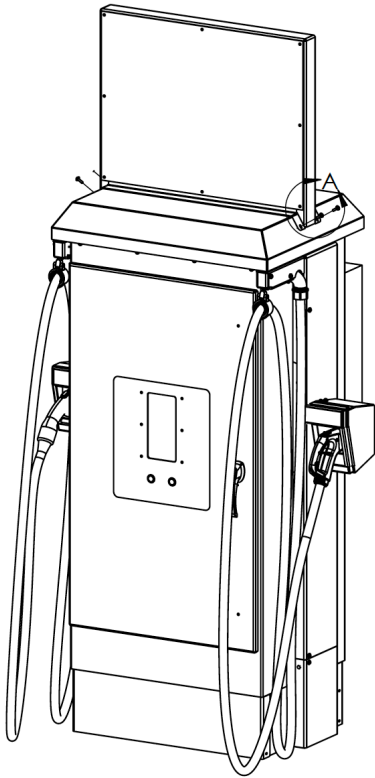
NOTE: This option is only available on the SmartDC 50 kW.



6.9 Installing the Sign

Align the panel with the 4 holes on top of the charging station and tighten the 4 bolts to secure the panel.

NOTE: If you have any problems installing the top panel, please contact FLO support.

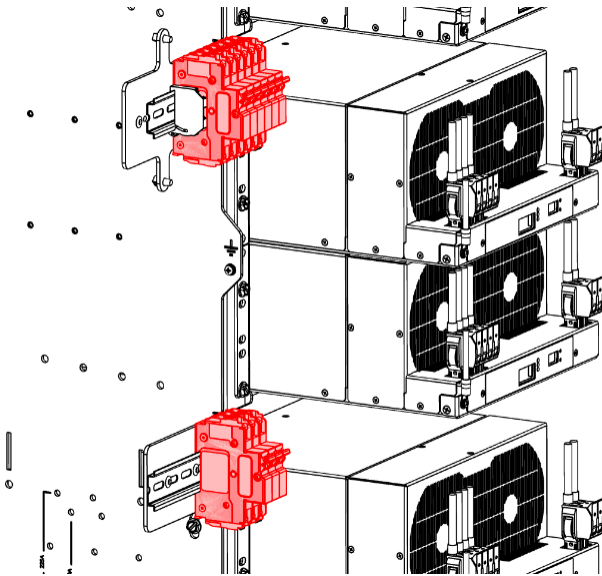


Detail A

7. Putting the Station into Service

7.1 Before Commissioning

1. The electrician must ensure that the electrical installation complies with the applicable electrical code, and that the station voltage is within the operating voltage range.
2. Make sure that each of the circuit breakers supplying the converters (50 kW: 2 breakers; 100 kW: 4 breakers) and the control power transformer breaker are in the closed (ON) position.
3. Close and lock the charging station enclosure door.



7.2 Commissioning

1. After the station is powered up, messages will appear on the display screen at the front of the station, confirming that it is now operational.
2. The station will then attempt to communicate with the FLO servers.
3. Once the station and gateway are powered up, please contact FLO technical support to complete the configuration: 1 855 543 8356.

8. Care and Maintenance of the Charging Station

THIS CHARGING STATION REQUIRES REGULAR MAINTENANCE TO ENSURE PROPER OPERATION AND TO MAINTAIN THE VALIDITY OF THE WARRANTY. PLEASE READ THE WARRANTY, WHICH IS AVAILABLE ON THE WEBSITE AT ALL TIMES.

MAINTENANCE MUST BE PERFORMED BY FLO QUALIFIED PERSONNEL.

The maintenance consists of:

1. Cleaning or replacing cooling system filters.

NOTE : It is important to maintain a good air flow inside the charging station to cool some components.

2. Inspection of critical charging station components, such as connector cable assemblies and power conversion modules.

We recommend that you perform maintenance on the charging station according to the following timeframes and the event that occurs first:

- > At least once a year
- > After 300 hours of use

In addition, more frequent maintenance is recommended when the charging station is installed in a dusty environment.

9. Copyright and Liability

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