

# **Installation and Operation Manual**

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MaxiCharger DC Fast

# 4 Preparation

The MaxiCharger is delivered in close proximity to the site. However, the owner is responsible for moving the MaxiCharger to its final location. If the MaxiCharger needs to be safely stored before installation, follow the conditions listed in [Table 9-2 Operating Conditions](#).

## 4.1 Before Installing

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Prior to installation, ensure that:

- The installation site is prepared.
- The appropriate service wiring, circuit protection, and metering are in place at the installation site.
- A grounding conductor that complies with local codes is properly grounded.
- If you choose to use a cellular network to communicate with the MaxiCharger, the cellular coverage at the installation site should be consistently strong. Use a cellular signal detection device to ensure the signal is above -90 dBm. If the signal is below -90 dBm, install repeaters to boost the strength of the cellular signal. Repeaters are often required when installing the MaxiCharger in underground environments such as in an underground garage or enclosed parking space.
- There is enough space available around the installation site to use a forklift or other lifting equipment, to unpack, and to allow people to work freely.
- All the parts and tools are available.
- You have read through the installation procedure.

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### **!** IMPORTANT

If you install the MaxiCharger in an area with frequent thunderstorms, a supplemental surge protection breaker must be installed at the service panel.

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## 4.2 Unpacking

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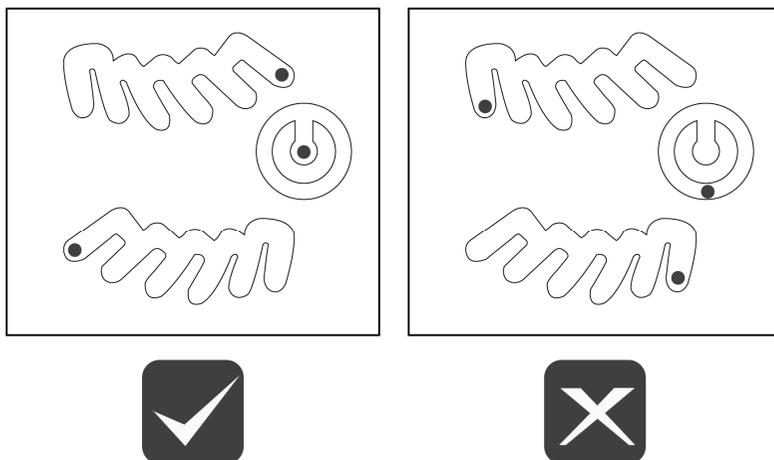
### NOTE

The unpacking operation should be performed by an installation engineer.

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#### ➤ To unpack the MaxiCharger (general procedure)

1. Check the tilt and inversion indicators and shock watch.
  - Observe the sensors attached to the wooden box for the degree of the tilt and complete overturn. If the sensors demonstrate severe tilt (over 30°) or total overturn as shown, refuse the delivery.



**Figure 4-1 Tilt and Inversion Indicators**

- If the shock watch appears red, contact Autel customer service and the delivery personnel, and then inspect the product for any damage. Do not accept the delivery until the inspection is complete and no damage is found.
2. Remove the packaging material and interior protection materials using appropriate tools.
  3. Inspect whether the MaxiCharger and the parts for installation are damaged. If any damage is found or the parts are not consistent with the order, contact your local dealer.
  4. Make sure that all parts are delivered according to the order.

## 4.3 Moving the Cabinet to the Site

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There are two ways to move the cabinet to the installation site:

- Hoist
- Forklift

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### **⚠ WARNING**

- Follow the safety instructions that apply to the hoisting equipment or forklift to move the cabinet.
- Take into account the dimensions, mass, and center of gravity of the MaxiCharger.

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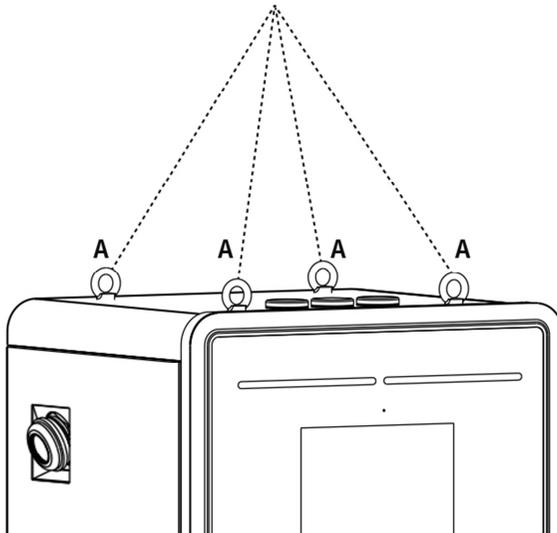
### **⚠ CAUTION**

- DO NOT drop the cabinet or subject it to strong impact.
  - DO NOT exceed a tilting angle of 30° .
  - Avoid excessive force on the hoisting points.
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### 4.3.1 Hoisting the Cabinet

#### ➤ To hoist the cabinet

1. Install the four eyebolts (M16) to the lifting holes (A).
2. Connect the cables of the hoisting equipment to the eyebolts or bolts with lifting loops.
3. Move the cabinet to the construction site.

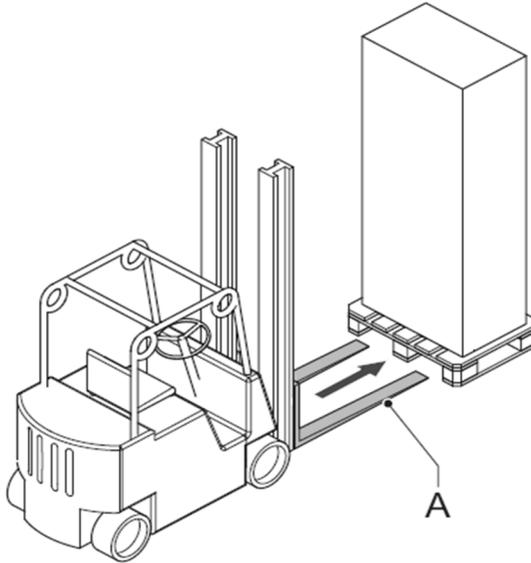


**Figure 4-2 Hoisting the Cabinet**

## 4.3.2 Forklifting the Cabinet

### ➤ To forklift the cabinet

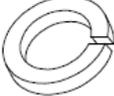
1. Make sure the forks (A) of the forklift truck in the gaps go through the gaps in the side of the pallet.
2. Move the cabinet to the construction site.

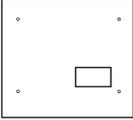
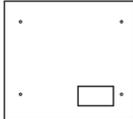


**Figure 4-3 Transporting the Cabinet by Forklift**

## 4.4 Packing List

**Table 4-1 Packing List**

<p><b>MaxiCharger</b></p>		<p><b>Expansion Bolt</b> (M16 x 150) 4 PCS</p>	
<p><b>Washer (10)</b> 5 PCS (for 120 kW only)</p>		<p><b>Washer (10)</b> 10 PCS (for 240 kW only)</p>	
<p><b>Hexagonal Nut</b> (M10) 5 PCS</p>		<p><b>Spring Washer</b> (10) 5 PCS (for 240 kW only)</p>	
<p><b>Bolt (M8 x 25)</b> 2 PCS</p>		<p><b>Packing List</b></p>	
<p><b>Eye Bolt (M16)</b> 4 PCS</p>		<p><b>Cabinet Door Key</b> 2 PCS</p>	
<p><b>Bolt (M10 x 30)</b> 5 PCS (for 120 kW only)</p>		<p><b>Bolt (M10 x 35)</b> 5 PCS (for 240 kW only)</p>	
<p><b>Screw (M4 x 10)</b> 24 PCS (for 120 kW only)</p>		<p><b>Screw (M4 x 10)</b> 48 PCS (for 240 kW only)</p>	

<p><b>Drilling Template</b> (for 120 kW only)</p>	 <p>A square drilling template with four small circles at the corners and a smaller rectangle centered in the lower-right quadrant.</p>	<p><b>Drilling Template</b> (for 240 kW only)</p>	 <p>A square drilling template with four small circles at the corners and a smaller rectangle centered in the lower-right quadrant.</p>
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## 4.5 Installation Tools

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**Table 4-2 Installation Tools**

Tool	Specification
Philips Screwdriver	Size: PH2
Slot Screwdriver	Size: 2.5 and 4.5
Open Spanner	<ul style="list-style-type: none"><li>● M8 (13 mm)</li><li>● M10 (15 mm)</li><li>● M16 (24 mm)</li></ul>
Ratchet Spanner with Socket and Extension	<ul style="list-style-type: none"><li>● M8 (13 mm)</li><li>● M10 (15 mm)</li><li>● M16 (24 mm)</li></ul>
Voltage Tester	Standard
Digital Multimeter	Standard
Hoisting Equipment or Forklift	Capable to lift the MaxiCharger safely. Refer to different specifications in <a href="#">Technical Specifications</a> .
Wire Stripper Tool	To strip the wires of the AC input cable.
Cable Lug Tools	Size: M10 (AC wires)

 **NOTE**

- The tools mentioned above are not provided. Be sure to have all the tools prepared prior to the installation.
  - This tool list does not necessarily include all the tools you may need.
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# 5 Installation

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## ❗ IMPORTANT

- The installation should be performed by an installation engineer.
  - Make sure all required permits are granted from local authorities.
  - Make sure the AC input cable is available.
  - Make sure the tools for installation are prepared, see [Table 4-2 Installation Tools](#).
  - Check the cable connection status and voltages before powering on the MaxiCharger.
  - Make sure there is no voltage on the AC input cable during the entire installation procedure.
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### ➤ **To perform an installation (general procedure)**

1. Prepare the site and unpack the MaxiCharger.
2. Install the cabinet.
3. Prepare for cable installation.
4. Connect the electrical wires.
5. Install the charging modules.
6. Install the external residual-current device.
7. Prepare for commissioning.

## 5.1 Preparing the Installation Site

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An installation site design is a prerequisite for determining conduit and wiring requirements from the panel to proposed parking spaces, as well as for measuring cellular signal strength and identifying suitable locations for any necessary cellular signal booster equipment.

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### IMPORTANT

Always check local codes or consult an engineer to ensure the site is prepared in accordance with all applicable regulations. Local authorities might not allow a unit to operate if it is not installed to code.

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#### ➤ To prepare an installation site (general procedure)

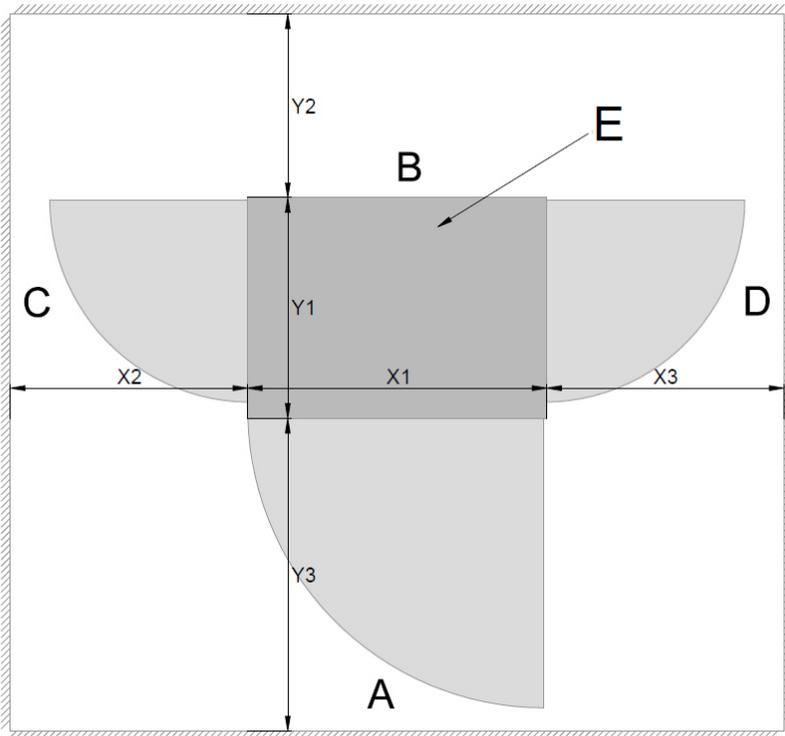
1. Make sure the site meets the requirements, see [Location Requirements](#).
  2. Prepare an external residual-current device if required by local rules, see [Installing the External Residual-current Device](#).
  3. Prepare the cables, including the AC input wire, PE wire, and Ethernet cable (if no cellular network is available).
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### NOTE

- To use an Ethernet cable, ensure the Internet connection is available for an approved service engineer and the network operating center of the manufacturer.
  - The cables enter the cabinet from the bottom or the rear side of the base.
  - Consider the maximum diameter of the cable inlet when you prepare the cables.
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4. Make sure that the cable slack is sufficient to guide the cables in the cabinet.
  5. Prepare the foundation for the cabinet.

## 5.1.1 Location Requirements

An installation space of 2420 x 1950 mm (for MaxiCharger DC 120) or 2620 x 2050 mm (for MaxiCharger DC 240) is required in order to ensure normal operation and proper airflow around the unit. The space is calculated as follows:



**Figure 5-1 Location Requirements**

- A. Front side of the MaxiCharger
- B. Rear side of the MaxiCharger
- C. Left side of the MaxiCharger
- D. Right side of the MaxiCharger
- E. Cabinet

**Table 5-1 Location Requirements (for MaxiCharger DC 120)**

Parameter	Specification	
	mm	in
X1	820	32.28
X2	800	31.5
X3	800	31.5
Y1	600	23.62
Y2	500	19.69
Y3	850	33.46

**Table 5-2 Location Requirements (for MaxiCharger DC 240)**

Parameter	Specification	
	mm	in
X1	820	32.28
X2	900	35.43
X3	900	35.43
Y1	700	27.56
Y2	500	19.69
Y3	850	33.46

- Choose a site where the charging cable is of sufficient length to be connected to the EV charge port. The standard length of the charging cable is 4 meters, but a 7.5-meter cable is also available.
- Take into account the limited reach of a wheelchair user.
- Determine appropriate ground anchoring locations where concrete exists or can be installed (no asphalt surfaces).
- Consider locations where it will be easy to add future stations.

- Determine optimum conduit layout to minimize linear conduit costs to multiple parking spaces. If possible, avoid or minimize trenching requirements.
- Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient. Identify costs for any necessary upgrades and/or a new dedicated electrical panel. We recommend you invite a certified electrician to evaluate available capacity and identify any upgrades that may be required.
- If a dedicated EV electrical panel is required, choose a panel location in close proximity to the existing electrical supply.
- Measure cellular signal strength to ensure adequate cellular coverage at the installation site. To ensure adequate signal strength in underground or enclosed parking structures, cellular repeaters may be required.
- We recommend you avoid locations under trees where sap, pollen or leaves would fall on the MaxiCharger and increase the station owner's site upkeep workload.
- For stall parking, we recommend you use perpendicular parking stalls that allow a vehicle to enter either front-first or rear-first, to better accommodate the varied charge port locations on different EVs. Diagonal stall parking is not advised.

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 **NOTE**

While Autel tests the MaxiCharger with a majority of modern vehicles, we cannot guarantee the port locations of future vehicles and cannot warrant the configurations proposed will work for all vehicles.

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- Choose adjacent parking spaces in an area with adequate lighting.
- Consider how easily drivers can find the stations they need to access.
- Check local requirements for accessibility and pathway width, sometimes called "path of travel", to ensure station placement does not restrict sidewalk use.

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 **IMPORTANT**

Place each MaxiCharger centered at the head of its parking space, with the touchscreen facing the vehicle. This placement maximizes cable reach for the varied charge port locations on different EVs.

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- Pull-through parking (gas station model) is not recommended.

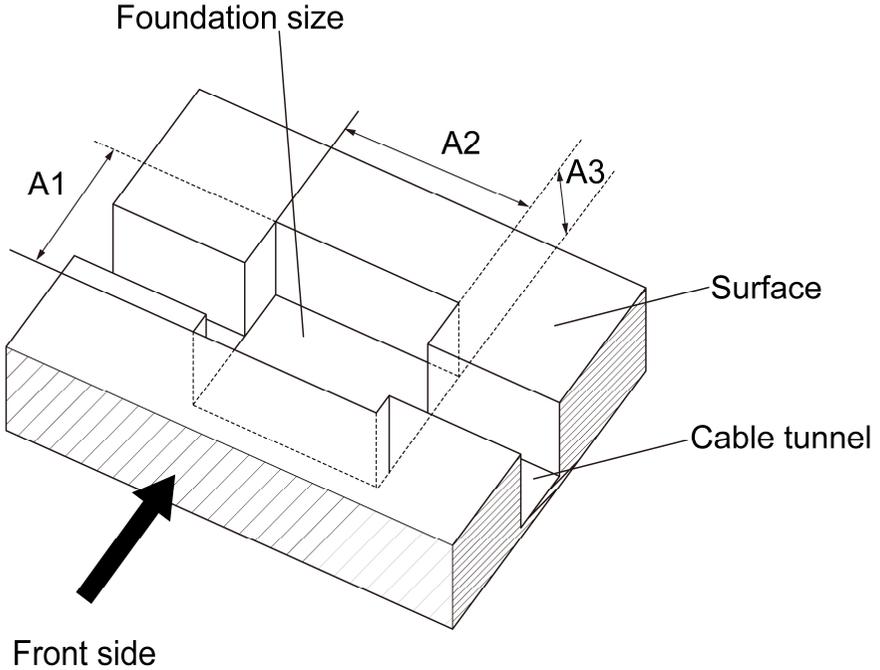
## 5.1.2 Preparing the Foundation

### ➤ To prepare a casted foundation

1. Dig a hole based on the foundation size.

#### ❗ IMPORTANT

- The minimum sizes of the hole for MaxiCharger DC 120 and MaxiCharger DC 240 are 820 x 640 x 500 mm and 820 x 740 x 500 mm, respectively.
- The foundation must meet the C30 requirements.

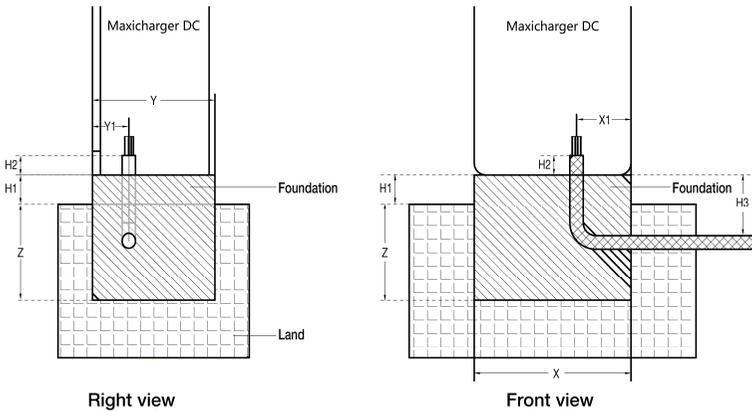


**Figure 5-2 Digging a Hole**

**Table 5-3 Digging a Hole Specifications**

Parameter	Specification			
	MaxiCharger DC 120		MaxiCharger DC 240	
<b>A1</b>	640 mm	25.2 in	740 mm	29.13 in
<b>A2</b>	820 mm	32.28 in	820 mm	32.28 in
<b>A3</b>	500 mm	19.68 in	500 mm	19.68 in

2. Pour the concrete into the hole. Make sure that the cable duct/conduit is in the correct position. Ensure that the conduit come out of the surface within the marked area (C). See [Figure 5-4 Drilling Holes](#) and [Table 5-6 Drilling Holes Specifications](#).



**Figure 5-3 Pouring the Concrete and Setting the Conduit**

**Table 5-4 Foundation Specifications**

Parameter	Specification			
	MaxiCharger DC 120		MaxiCharger DC 240	
<b>X</b>	820 mm	32.28 in	820 mm	32.28 in
<b>X1</b>	285 mm	11.22 in	275 mm	10.83 in
<b>Y</b>	640 mm	25.2 in	740 mm	29.13 in
<b>Y1</b>	190 mm	7.48 in	151 mm	5.94 in

Parameter	Specification			
	MaxiCharger DC 120		MaxiCharger DC 240	
Z	500 mm	19.69 in	500 mm	19.69 in
H1	150 mm	5.9 in	150 mm	5.9 in
H2	100 mm	3.94 in	100 mm	3.94 in
H3	350 mm	13.78 in	350 mm	13.78 in

**NOTE**

- Make sure the angle and diameter of the conduit meet the requirements for wires to be guided through.
- Make sure the size of the marked area (C) meets the specifications shown in [Table 5-6 Drilling Holes Specifications](#). The area (C) is marked in [Figure 5-4 Drilling Holes](#).

**IMPORTANT**

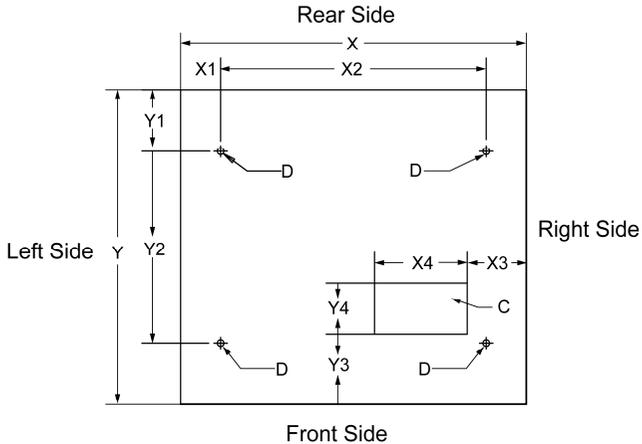
The foundation needs to be 150 mm above the surface.

3. Let the concrete dry.
4. Pull the wires through the conduit. Apply the cable slack according to the following specifications.

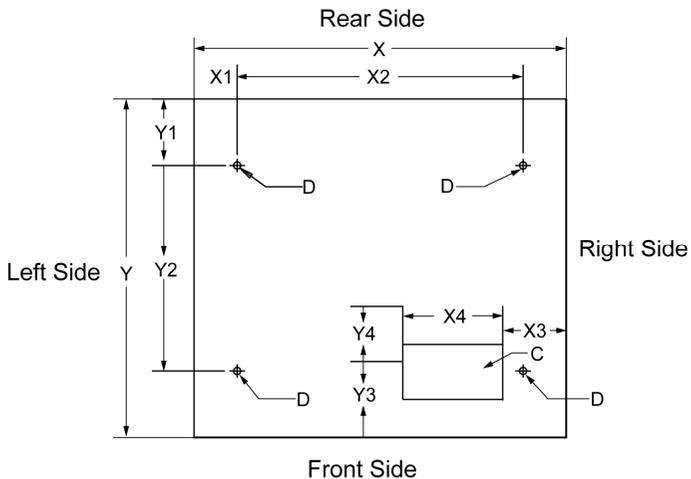
**Table 5-5 Cable Slack Specifications**

Parameter	Specification	
	mm	in
Required Cable Slack for the Ethernet Cable (Measured from the Top of the Foundation)	750	29.53
Required Cable Slack for the AC Input Cable (Measured from the Top of the Foundation)	600	23.62

5. Place the drilling template provided in the package onto the foundation, aligning with the marked area (C). Mark the four drilling holes (D) and remove the drilling template.
6. Drill four holes with over 110 mm in depth and 20 mm in diameter in the foundation at the marked positions (D) for inserting the expansion bolts into the holes. Clean the drilling ashes.



**For MaxiCharger DC 120**



**For MaxiCharger 240**

**Figure 5-4 Drilling Holes**

**Table 5-6 Drilling Holes Specifications**

Parameter	Specification			
	MaxiCharger DC 120		MaxiCharger DC 240	
<b>X</b>	820 mm	32.28 in	820 mm	32.28 in
<b>X1</b>	95 mm	3.74 in	95 mm	3.74 in
<b>X2</b>	630 mm	24.80 in	630 mm	24.80 in
<b>X3</b>	132 mm	5.51 in	140 mm	5.51 in
<b>X4</b>	220 mm	8.66 in	220 mm	8.66 in
<b>Y</b>	640 mm	25.20 in	740 mm	29.13 in
<b>Y1</b>	94.3 mm	3.71 in	144.3 mm	5.68 in
<b>Y2</b>	450 mm	17.72 in	450 mm	17.72 in
<b>Y3</b>	131 mm	5.16 in	91.5 mm	3.60 in
<b>Y4</b>	120 mm	4.72 in	120 mm	4.72 in

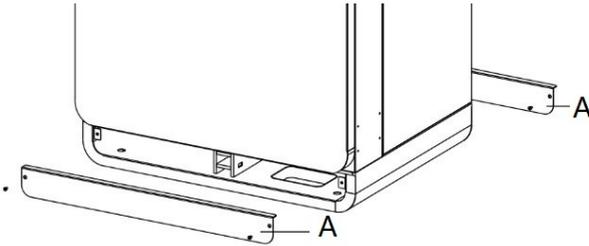
7. Tap four expansion bolts (M16 x 150) in the drilled positions (D) on the foundation. The expansion bolts needs to be 60 mm above the foundation.

## 5.2 Installing the Cabinet

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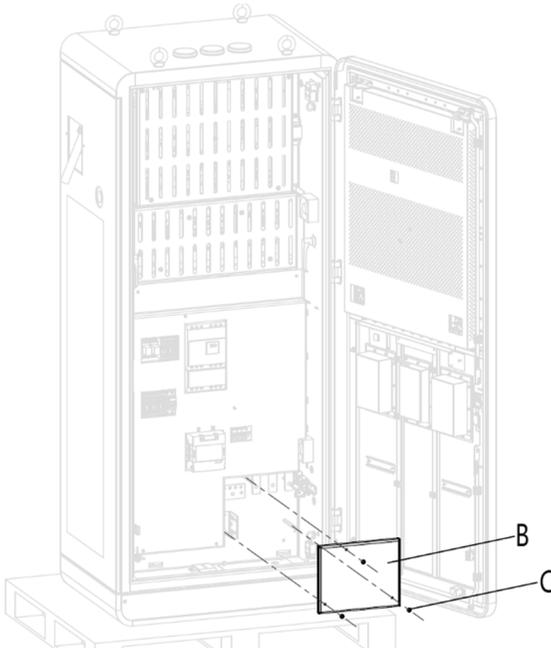
➤ **To install the cabinet**

1. Remove the front and rear base covers (A) using a screwdriver.



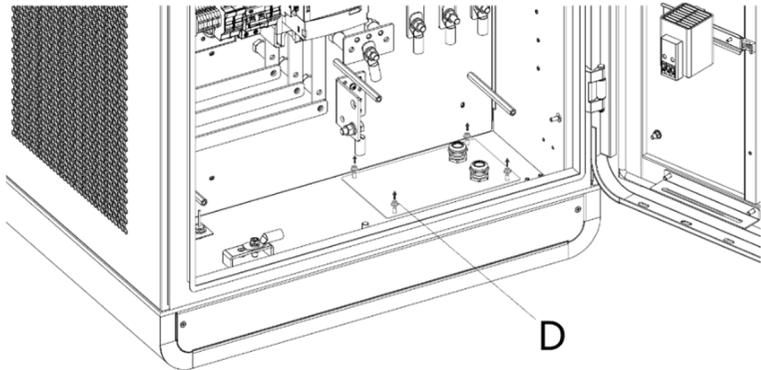
**Figure 5-5 Removing the Base Covers**

2. Open the front door of the cabinet. Remove the M6 screws (C) and the insulating barrier (B) from the cabinet. (Reinstall the insulating barrier when the commissioning procedure is complete.)



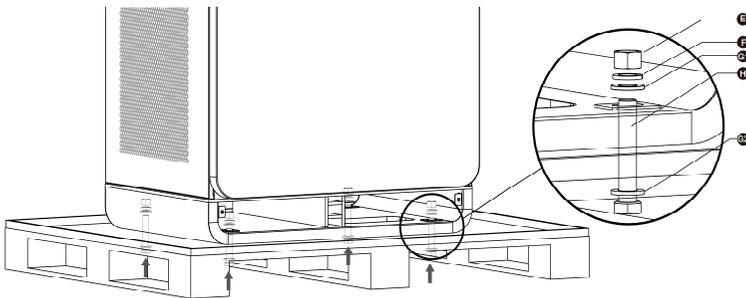
**Figure 5-6 Removing the Insulating Barrier**

3. Loosen the fasteners (D) on the cable gland plate to remove the plate and close the door.



**Figure 5-7 Loosening the Fasteners**

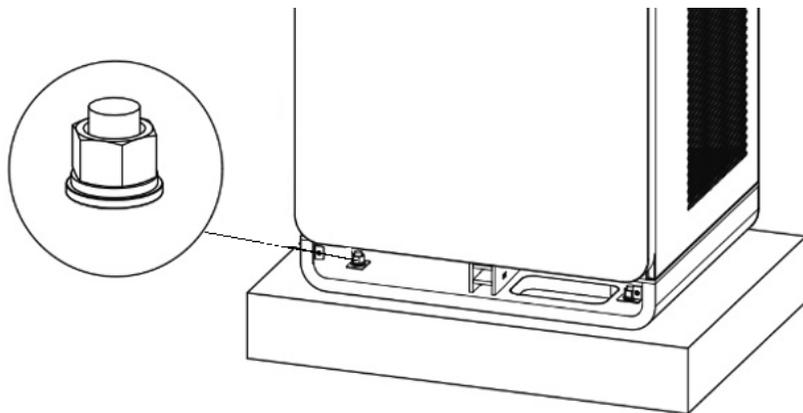
4. Remove the hexagonal nuts (E), spring washers (F), washers (G1), bolt (H), and washers (G2).



**Figure 5-8 Removing the Cabinet from the Pallet**

5. Discard the pallet.
6. Lift the cabinet with the hoisting equipment at 500 mm (19.69") above the foundation. Pull all the cables out of the foundation and guide the cables through the base of the cabinet.
7. Carefully lower the cabinet on the foundation. Make sure that the cabinet is aligned with the installation holes.
8. Remove the eyebolts (M16) on the top of the cabinet and seal the holes.

9. Tighten the bolts.



**Figure 5-9 Tightening the Bolts**

## 5.3 Preparing for Electrical Cable Installation

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➤ **To prepare for cable installation**

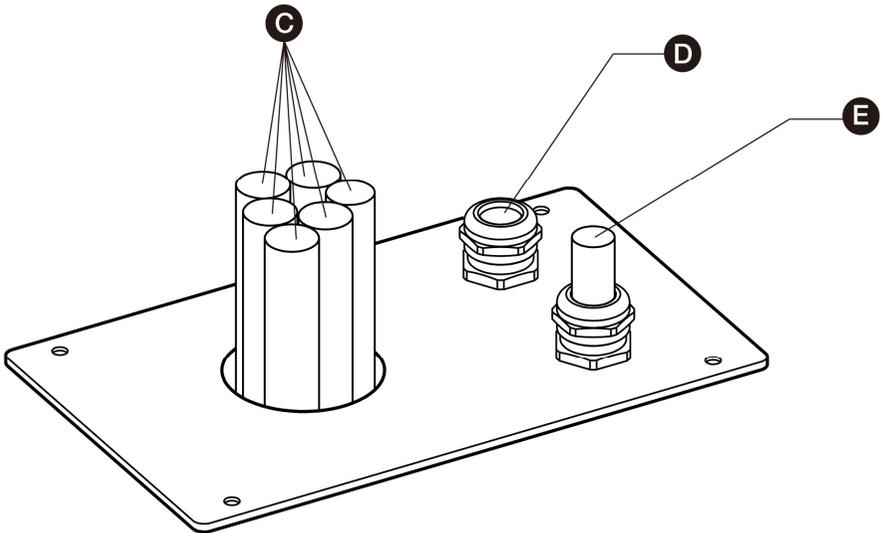
1. Reinstall the cable gland plate.
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**⚠ CAUTION**

If the cable gland for the Ethernet cable is not used, make sure that the cable gland is closed and sealed.

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2. Guide the AC input wires (C) and Ethernet cables (E) through the cable gland plate as instructed in the following figure and tighten the four fasteners to secure the cable gland plate.



*Figure 5-10 Guiding the Cables through the Cable Gland Plate*

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**⚠ CAUTION**

- If it is necessary, install the cable gland over the Ethernet cable.
  - The cable gland (D) is optional.
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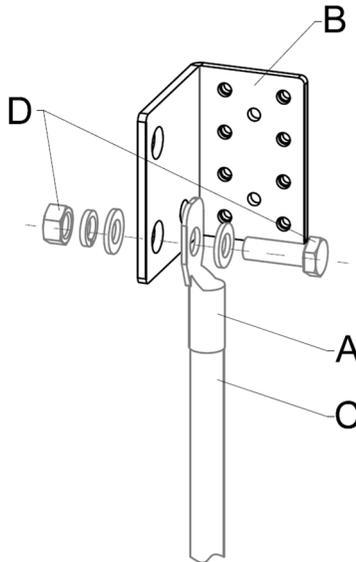
## 5.4 Electrical Wiring

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### 5.4.1 Connecting the PE Wire

➤ **To connect the PE wire**

1. Cut the PE wire (C) of the power cable to the correct length to reach the PE busbar (B).
2. Use the wire stripper to remove 20 mm of the insulation from the end of the wires (or strip the wire if necessary). Make sure that the strip length is compatible with the cable lug (A).
3. Use the crimping tool to attach the cable lug (A) to the end of the wire.
4. Use the fasteners (D) to attach the PE wire to the PE busbar.
5. Tighten the fasteners to the correct torque.



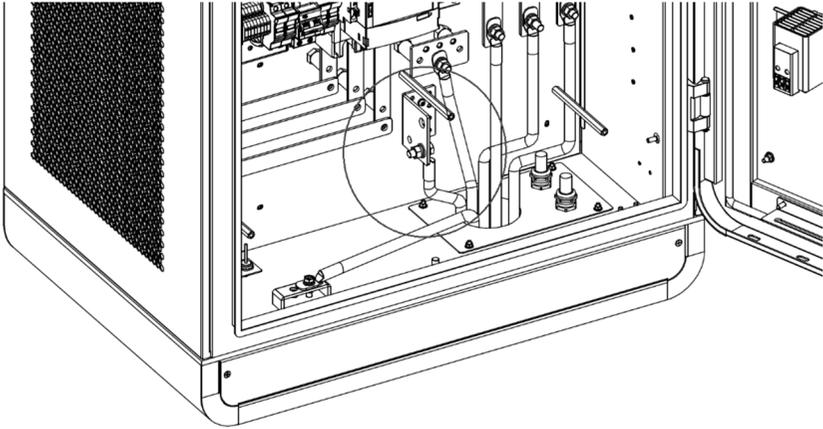
**Figure 5-11 PE Wire Connection**

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ⓘ **NOTE**

We recommend to use the torque  $20.5 \pm 2.5$  Nm ( $181.44 \pm 22.13$  lb·in).

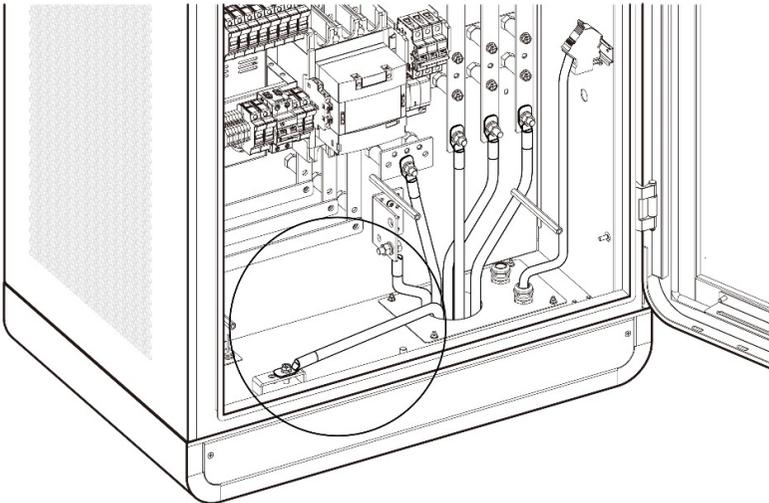
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**Figure 5-12 Connecting the PE Wire**

## 5.4.2 Connecting the Enclosure to the earth

- To connect the enclosure to the earth
  1. Connect the earthing conductor to the pin of the enclosure.
  2. Connect the earthing conductor to the earthing electrode.

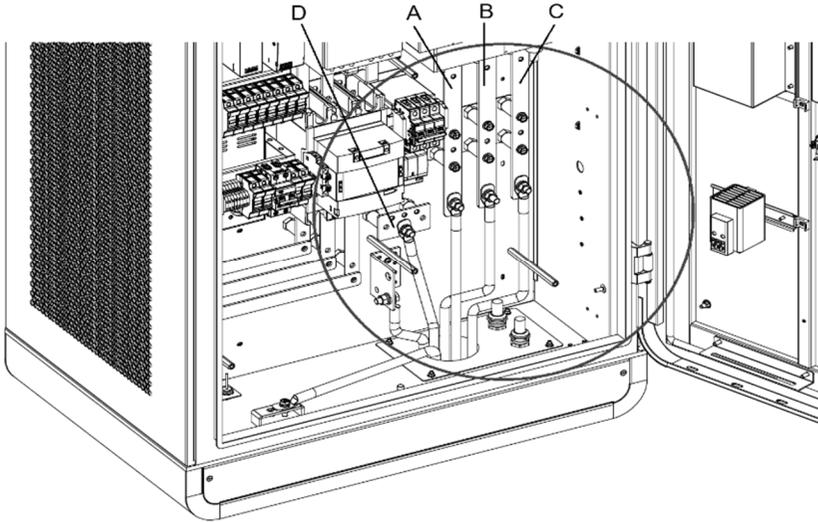


**Figure 5-13 Connecting the Enclosure to the earth**

### 5.4.3 Connecting the AC Input Wires

➤ **To connect the AC input wires**

1. Cut the wires N, L1, L2, and L3 to the correct length to reach the connectors on the AC fuse copper busbar.
2. Use the wire stripper to remove 20 mm of the insulation from the end of the wires (or strip the wire if necessary). Make sure that the strip length is compatible with the cable lugs.
3. Use the crimping tool to attach the cable lugs to the end of the wires.
4. Use the fasteners to attach the wires to the connectors:
  - L1 wire to the connector A
  - L2 wire to the connector B
  - L3 wire to the connector C
  - N wire to the connector D



**Figure 5-14 Connecting the AC Input Wires**

5. Tighten the fasteners to the correct torque.

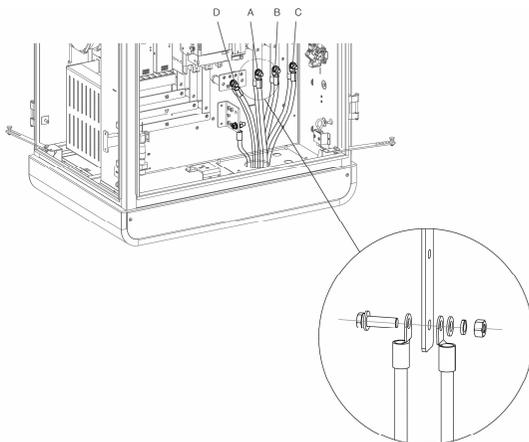
**NOTE**

- We recommend to use the torque  $20.5 \pm 2.5$  Nm ( $181.44 \pm 22.13$  lb·in).
- Required cable slack for the AC input cable (measured from the top of the foundation) is 600 mm (23.62").

6. Use cable ties to bundle the wires in two or three places.
7. If the conduit opening was not sealed as part of the site preparation process,

seal it using duct seal.

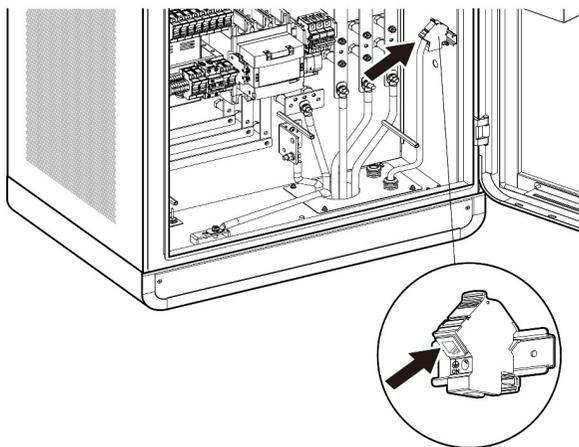
If needed, connect two AC input wires of the same type to each connector as shown below:



**Figure 5-15 Connecting the Two AC Input Wires**

### 5.4.4 Connecting the Ethernet Cable

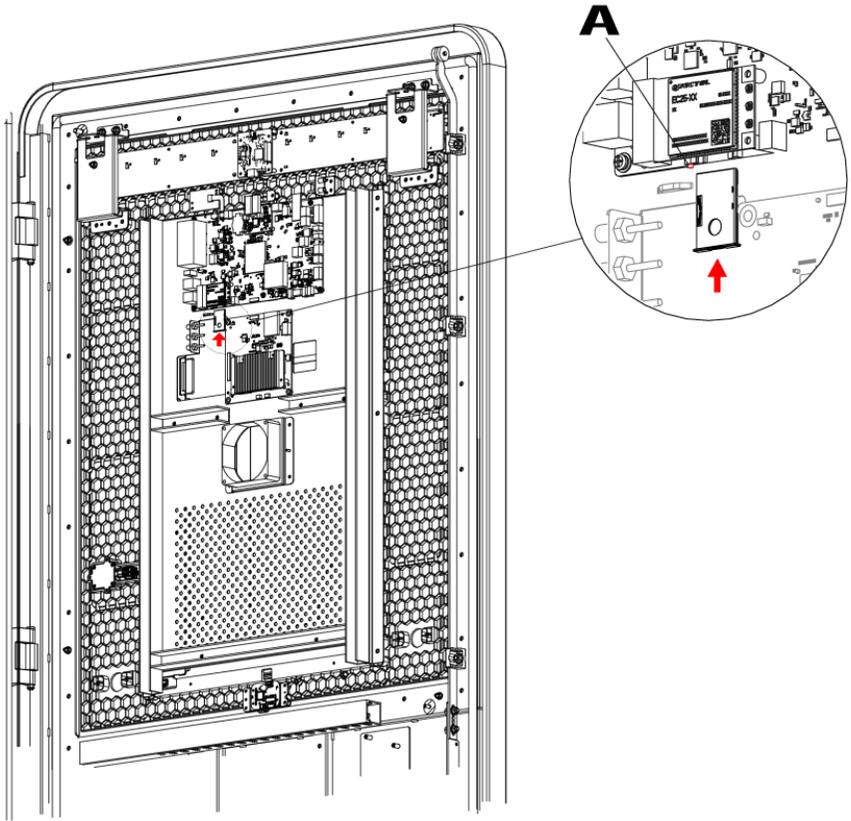
Connect the Ethernet cable to one of the RJ45 ports.



**Figure 5-16 Connecting the Ethernet Cable**

## 5.4.5 Installing SIM Card

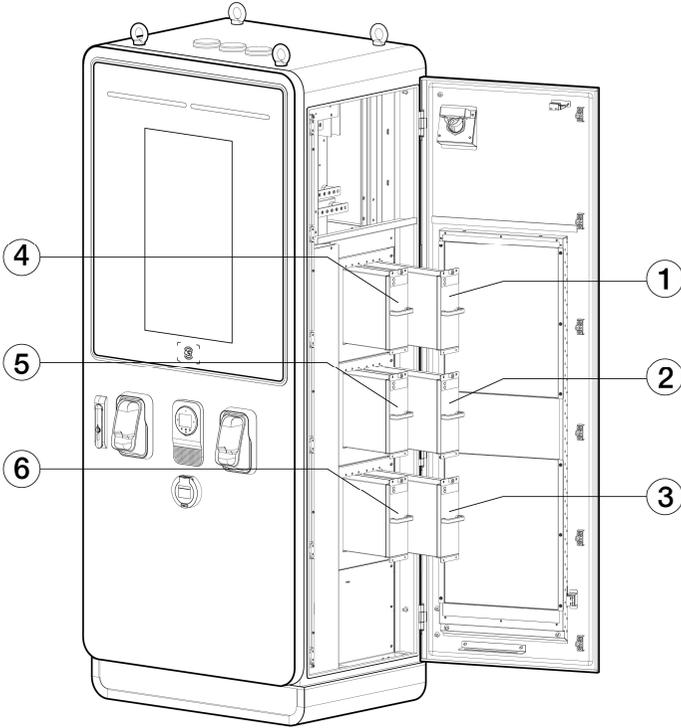
1. Press the button (A) to eject the SIM card tray.
2. Insert the SIM card into the tray. Ensure the card is placed correctly.
3. Push the card tray into the slot.



*Figure 5-17 Installing SIM Card*

## 5.5 Installing the Charging Modules

- To install the charging modules

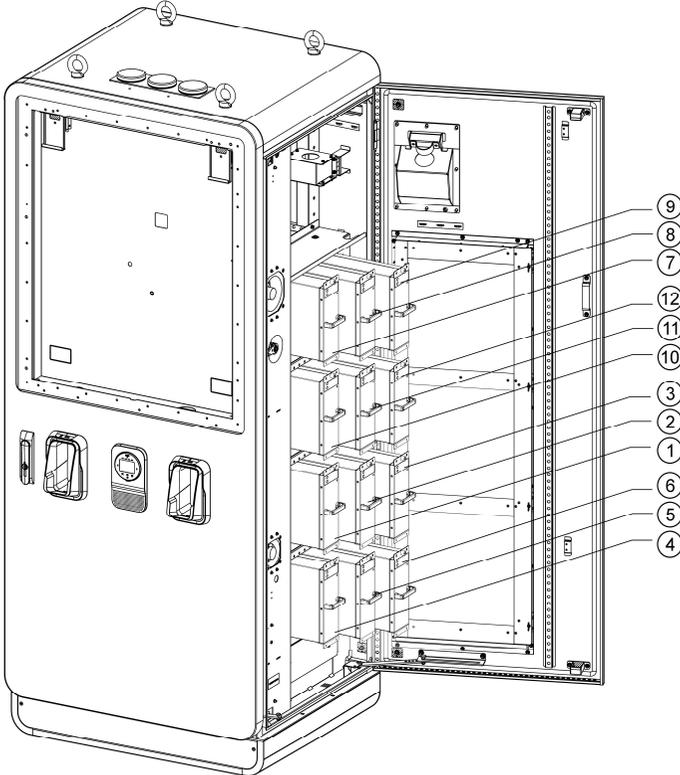


**Figure 5-18 Installing the Charging Modules (for MaxiCharger DC 120)**

1. Slowly push the module into the slot.

**Table 5-7 Charging Module Installation Specifications (for MaxiCharger DC 120)**

Type	Rated Power	Number of Modules	Location
<b>MaxiCharger DC 40</b> (EF040A2001/EF040C2001)	40 kW	2 PCS	1, 4
<b>MaxiCharger DC 60</b> (EF060A3001/EF060C3001)	60 kW	3 PCS	1, 2, 4
<b>MaxiCharger DC 80</b> (EF080A3001/EF080C3001)	80 kW	4 PCS	1, 2, 4, 5
<b>MaxiCharger DC 100</b> (EF100A3001/EF100C3001)	100 kW	5 PCS	1, 2, 3, 4, 5
<b>MaxiCharger DC 120</b> (EF120A3001/EF120C3001)	120 kW	6 PCS	1, 2, 3, 4, 5, 6



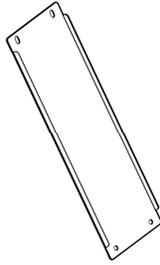
**Figure 5-19 Installing the Charging Modules (for MaxiCharger DC 240)**

**Table 5-8 Charging Module Installation Specifications (for MaxiCharger DC 240)**

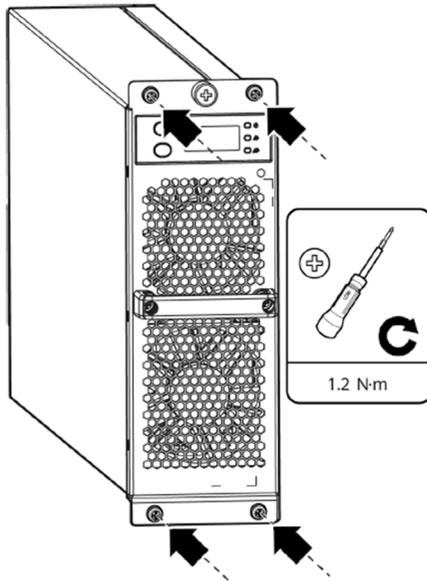
Type	Rated Power	Number of Modules	Location
<b>MaxiCharger DC 160</b> (EF160A3001)	160 kW	8 PCS	1, 2, 3, 4, 7, 8, 9, 10
<b>MaxiCharger DC 180</b> (EF180A3001)	180 kW	9 PCS	1, 2, 3, 4, 5, 7, 8, 9, 10
<b>MaxiCharger DC 200</b> (EF200A3001)	200 kW	10 PCS	1, 2, 3, 4, 5, 7, 8, 9, 10, 11
<b>MaxiCharger DC 220</b> (EF220A3001)	220 kW	11 PCS	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
<b>MaxiCharger DC 240</b> (EF240A3001)	240 kW	12 PCS	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

**IMPORTANT**

Install the sealing boards into the slots where the charging modules are not inserted.



**Figure 5-20 Sealing Board**



**Figure 5-21 Tightening the Screws**

2. Tightening the screws to the torque of 1.2 N·m (10.6 lb·in) to secure the modules.
3. After the installation is complete, set the hardware address. For details, contact manufacturer certified installation engineer.
4. Seal the cable holes of the cabinet and close the doors.

## 5.6 Installing the External Residual-current Device

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The MaxiCharger includes a Type A RCD integrated in the main breaker, and a RCCB for the auxiliary path.

The use of external RCD may cause a nuisance tripping during transient conditions such as when the AC contactor turns on at the start of charging. If an external residual-current device cannot be avoided due to local regulations, the in-rush current should be considered when selecting the device.

For the specifications of the residual-current device and the incidental current peaks, refer to [Technical Specifications](#).

## 5.7 Preparing for Commissioning

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### **!** IMPORTANT

Only a manufacturer qualified service engineer can commission the MaxiCharger.

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#### ➤ **To perform the commissioning**

1. Ensure the site complies with the following requirements:
  - The MaxiCharger is installed according to the instructions in this manual.
  - AC input power is available.
  - Internet access is available through a wired Ethernet connection, cellular service, or Wi-Fi.
  - An EV of each type of connector must be available for a compatible test during commissioning.
  - The site operator or owner is available to receive instructions from the manufacturer certified service engineer when the MaxiCharger is installed.
2. Ensure the following information is collected:
  - Name and address of the site
  - Contact information of the on-site contact person
  - Specification of the external fuse or breaker at the power distribution panel
  - Date when the installation is done
  - Photo of the MaxiCharger and the site surroundings
  - Special remarks (if any)
3. Someone should be present for assistance to energize the power to the MaxiCharger on the distribution panel.

### **!** IMPORTANT

The conduit opening must be sealed to protect the wiring from the environment.

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