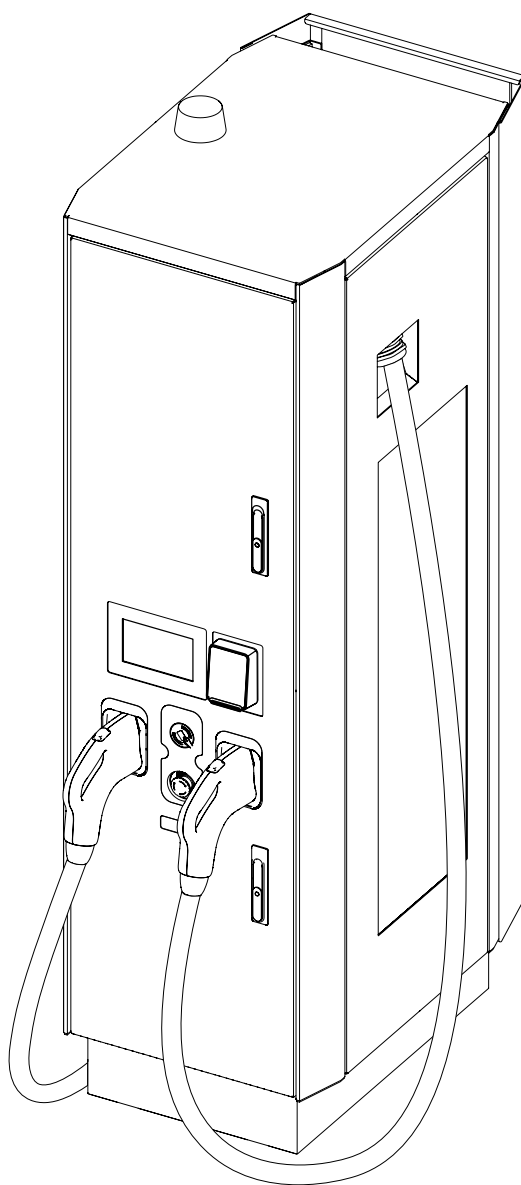


Operation and installation manual

Terra 94/124/184(NEVI) UL



**ATTENTION – IMPORTANT SAFETY INSTRUCTIONS**

This manual contains important safety instructions that must be followed during the installation and maintenance of the equipment.

**ATTENTION – SAVE THESE INSTRUCTIONS**

This document is a part of the equipment, keep it in a safe place near the equipment for easy reference during installation, operation and maintenance.

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1. Introduction and general information

This chapter will give instruction on the correct use of this document.

Chapter recipients:

- Owner
- Qualified installer
- User

1.1 Disclaimer and warranty conditions

ABB E-mobility shall not be liable for any damages, losses, costs or expenses resulting from the improper handling and use of the product described in this document and product related features, in particular resulting from non-compliance with the instructions of this document and other applicable regulations and standards (e.g. installation, transport, occupational health, digital security, and other safety standards). The warranty terms and conditions are only valid in the event that all instructions are complied with.

The warranty Terms and Conditions are considered to be valid if all indications in this manual are adhered to.



ATTENTION

If the equipment is used in a manner not specified in this manual (any condition deviating from those described herein must be expressly agreed with the manufacturer), the protections and the certifications provided by the equipment may be impaired with the consequent loss of warranty.



ATTENTION

Any modification, manipulation, or alteration not expressly agreed with the manufacturer, concerning either hardware or software, shall result in the immediate cancellation of the warranty.

1.2 Function and target of this document

The purpose of this document is to give the information that is necessary to safely do these tasks:

- Install the EVSE
- Operate the EVSE
- Perform basic maintenance tasks



NOTE

This manual covers the EVSE only and NO other equipment (external protection devices, electrical vehicles, etc) to which it is connected.

Some component's information given in this manual is taken from the original supplier documents. Please refer to the supplier websites for the complete and updated documentation.

The document is applicable to the following products (Including all variants and options):

- **Terra 94 UL**
- **Terra 124 UL**
- **Terra 184 UL and NEVI variant**



NOTE

“Terra xx4” is a generic name for the EVSE models to address the main types of the EVSE.

1.3 Language

The original instructions of this document are in English (EN-US). All other language versions are translations of the original instructions and the manufacturer cannot be held liable for errors in the translation. Refer to the original English version in case of doubts.

1.4 How to use this document

Make sure that you know the structure and contents of this document.
Read the safety chapter and make sure that you know all the instructions.
Do the steps in the procedures fully and in the correct sequence.

The document is intended for these groups:

- Owner of the EVSE
- Electrical designers and System integrator
- Qualified installer of the EVSE

1.5 Abbreviations

Abbreviation / Termin	Description
AC	Alternating current
CAN	Controller area network
CCS	Combined Charging System, a standard charging method for electric vehicles
CHAdeMO	Abbreviation of CHArge de MOve, a standard charging method for electric vehicles
CPU	Central processing unit
DC	Direct current
EMC	Electromagnetic compatibility
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
HMI	Human Machine Interface
HVC	Heavy Vehicle Charger
MCB	Miniature circuit breaker
MID	Measuring Instruments Directive
NACS	North American Charging Standard
NFC	Near field communication
NEVI	National Electrical Vehicle Infrastructure
OCPP	Open charge point protocol
PE	Protective earth
PPE	Personal protective equipment
RFID	Radio-frequency identification
SPD	Surge protective devices



NOTE

It is possible that not all abbreviations are present in this document.

1.6 Terminology

Terminology	Description
Network operating center of ABB EV Infrastructure	Facility of the manufacturer to do a remote check on the correct operation of the EVSE
Cabinet	Enclosure of the EVSE, including the components on the inside
Power cabinet	Intermediate unit that provides DC power to the Charge control set. Gets its power from a power distribution board.
Interlock	The Interlock is an isolated current loop and is a feature that makes the state of two mechanisms or functions mutually dependent.
Cable slack	Extra length of cable from the top of the foundation so that the cable length is sufficient to connect to the correct terminal in the EVSE
Grid provider	Company that is responsible for the transport and distribution of electricity
Local rules	All rules that apply to the EVSE during the entire lifecycle of the EVSE. The local rules also include the national laws and regulations
Open charge point protocol	Open standard for communication with charge stations
Protective devices	Devices for the personal protection of individuals against the risk of injury or electrical shock when they do commissioning, operation and maintenance activities. Examples of protective devices are a door, the electrical parts covers, the latches, etc.

Terminology	Description
Site operator	Entity that is responsible for the day-to-day control of the EVSE. The site operator does not have to be the owner
Qualified installer	The installer is a qualified person to install the EVSE according to the applicable local rules and fully knows the EVSE and its safe installation. The qualified installer obeys all local rules and the instructions in the operation and installation manual.
Owner	Legal owner of the EVSE
User	Owner of an EV, who uses the EVSE to charge the EV



NOTE
it is possible that not all terms are present in this document.

1.7 Document revision history

Version	Date	Description
002	April 2024	ADA compliant product, NACS connector, 184 NEVI variant



NOTE
Latest version of the manual can be downloaded at this [ABB library link](#)

2. Safety

This chapter contains the safety instructions which must be obeyed during installation, commissioning, operation and maintenance of the equipment. Always obey and follow the reading order of instruction exactly as described in this manual to prevent injury or damage to the equipment.

The manufacturer accepts no liability for failure to comply with the instructions for a correct installation and cannot be held responsible for any other upstream or downstream equipments.

The instructions provided in the manual do not replace:

- the safety devices
- the technical and operative data labels on the product
- the safety regulations in force in the country of installation

**NOTE**

The operators must read and comply with the technical information and instruction provided in the manual and in any additional attached documentation.

Chapter recipients:

- Owner
- Qualified installer
- User

2.1 Liability

The manufacturer declares that the equipment complies with the regulations currently in force in the country of installation and has issued the corresponding declaration of conformity.

The manufacturer is not liable for damages, losses, costs or expenses incurred by any user of the EVSE (e.g. the installation engineer or owner of the equipment) if such damages, losses, costs or expenses result from a failure to comply with the applicable safety instructions given by the manufacturer, including, but not limited to, the following:

- Comply with the local rules and the instructions in this manual. If the local rules contradict the instructions in this manual, the local rules must be applied.
- Power outages or disruptions to the electrical supply to the equipment.
- Accumulation of dirt or ingress of foreign substances within the equipment.
- Corrosion of component parts.
- Damage to software or hardware due to any IT security problem, such as but not limited to a virus breakout or malicious hacking of the system.
- Damage or failure of equipment caused by vermin, insect infestations or the like.
- Damage or failure resulting from faults in some other equipment connected to the EVSE.
- Damage or loss caused by hazards such as fire, flood, storm or the like or spillage or leakage of chemicals or harmful substances onto the equipment.
- Fault tracing caused by problems from a source external to the scope of work.
- Unprofessional or incorrect installation, installation not complying to standards, or installation not following the installation instructions contained in the product specific manual.
- Improper operation (in breach of the technical requirements or specifications or manuals of the product), negligence or repairs carried out by the Owner (or any third party not authorized by the manufacturer). It is absolutely forbidden to modify the equipment.
- Non-compliance with the applicable safety regulations or other legal standards by other parties than the manufacturer.
- Insufficient ventilation of the equipment.
- Operation of the equipment outside of its design conditions.
- Damage or failure due to relocations or alterations of the equipment from the original installation location or alteration of the overall normal condition of the system.
- Only make changes to the equipment if the manufacturer approves in writing of the changes.
- Damage or loss due to improper use of the equipment.
- EV low battery during use.
- Any check to make sure the battery is sufficiently recharged before using the EV.
- Deterioration resulting from transportation or particular environmental conditions;
- Performing maintenance incorrectly or not at all;
- The manufacturer is not responsible for disposal of the equipment, or part of it, which does not take place on the basis of the regulations and laws in force in the country of installation.
- Damage resulting from improper storage conditions.

2.1.1 Responsibilities and qualifications for the Users

Operators responsible of installation, operation, maintenance and service must:

- Know and implement the applicable laws and rules.
- Identify the hazards and do a risk assessment prior to commencing work that result from the working conditions on the site.
- Operate the equipment with the protective devices installed and make sure that all protective devices are re-installed after any installation or maintenance operation.
- Make an emergency plan that instructs people what to do in the event of an emergency relating to the equipment or to another site emergency.
- Make sure that all employees, the owner and third parties are qualified according to the applicable local laws and/or rules to do the work.
- Make sure that there is sufficient space around the equipment to safely do maintenance and installation activities.
- Identify a site operator who is responsible for the safe operation of the equipment and for the coordination of all work, if the owner does not do these tasks.

Moreover the qualified installer must:

- Fully knows the EVSE and its safe installation.
- Be qualified according to the applicable local rules to do the work.
- Obey all local rules and the instructions in the installation procedures in this document.

2.2 Intended use

This equipment has the exclusive function of fast EV charging and it is intended to be used both in indoor and outdoor environments.



DANGER

The manufacturer isn't liable for any risk and damage related to its different use. Use the equipment only for its intended use and do not change or alter the system under any circumstances. If you use the EVSE in any other way than described in the related documents, you can cause death, injury and damage.
Only use it in its original condition and with its proper aim.



NOTE

The equipment can be only connected to the electricity grid in countries for which it has been certified.
The equipment may only be used in compliance with all its technical characteristics.
Only use the EVSE with accessories that the manufacturer provides and that obey the local rules.



NOTE

- DC fast charge: no additional cables are required.
- AC charge (if present): the cable owned by the user must be used.

2.2.1 Risks related to improper use or product defect

Any improper use of the device is forbidden, even for common other arrangement related to the final scope and function.

To avoid any serious consequence on personal safety, please contact the service of the manufacturer in case of need of further warnings concerning the ways in which the equipment must not be used and which could occur. In the event of residual risks which persist, despite the protection and safety measures integrated in the machine and the complementary measures adopted, contact the service of the manufacturer immediately.



DANGER

Do not proceed with installation if the integrity of the equipment is compromised.
Do not use the equipment if you find any operating anomalies.

To avoid risk related to improper use of the product, it is forbidden:

- To install the equipment in environments subject to particular conditions of flammability or in adverse or disallowed environmental conditions, (temperature and humidity).
- To use the equipment with safety devices which are faulty or disabled.
- To use the equipment or parts of the equipment by linking it to other machines or equipment, unless expressly provided for.
- To modify operating parameters that are not accessible to the operator and/or parts of the equipment to vary its performance or change its isolation.
- To clean with corrosive products that could corrode parts of the equipment or generate electrostatic charges.
- To place any heavy object, sit or stand up on the device.

2.2.2 Residual risks









Despite the warnings and safety systems, there are still some residual risks that cannot be eliminated. These risks are listed in the following table with some suggestions to prevent them:















Risk analysis and description	Suggested action
Noise pollution due to installation in unsuitable environments or where individuals routinely work and/or animals dwell most of the time.	Reassess the environment or the place of installation.
Adverse external climatic conditions, accumulations of rainwater, low temperatures, high humidity, etc.	Maintain ambient conditions suitable for the system.
Overheating of components (transformers, accumulators, coils, etc.) which could cause burns. Clogged equipment cooling slots or systems.	Use suitable PPE. Wait for the parts to cool down before opening the equipment. Do not block cooling vents or heat sinks.

Risk analysis and description	Suggested action
Inadequate cleaning that: - does not allow adequate air intake for cooling - does not allows the reading of safety labels.	Clean the equipment, labels and installation environment.
Stored energy in components that could generate hazardous discharges.	Wait at least 15 minutes after turning off the EVSE and perform the total de-energization procedure before working on the internal components of the charger (refer to “9.3. Total de-energization of the EVSE”).
The EVSE contains components and circuit boards that are sensitive to electrostatic discharge.	Take ESD prevention measures to protect the electronic components during installation and maintenance of the EVSE.
Inadequate training of staff.	Ask for supplementary courses.
Incomplete installation, equipment or its components temporarily mounted.	Prevent unauthorized access to the installation area. Use a sufficient number employees and PPE.
No cable extensions, adapters, Y-cables or similar may be used unless explicitly stated by the vehicle manufacturer.	Manufacturer and national guidelines and regulations about charging stations must be taken into account.
The AC cable, owned by the user, could be damaged (valid only if the AC socket is present on the EVSE).	Check the integrity of the cable and connectors before connecting the cable to the EVSE.
Not allowed to place in ATEX environment.	Reassess the environment or the place of installation.

2.3 General signs and signal words





In the manual and/or in some cases on the equipment, the danger or hazard zones/components are indicated with signs, labels, symbols or icons.

Symbol	Description
	General risk With signal word ‘Danger’: If you do not obey the instruction, this can cause injury or death With signal word ‘Warning’: If you do not obey the instruction, this can cause injury With signal word ‘Caution’: If you do not obey the instruction, this can cause damage to the EVSE or to property
	Hazardous voltage that gives risk of electrocution
	Risk of pinching or crushing of body parts
	Rotating parts that can cause a risk of entrapment
	Hot surface that gives risk of burn injuries
	With signal word ‘Note’: A note gives more data, to make it easier to do the steps, for example
	Information about the condition of the EVSE before you start the procedure
	Requirements for personnel for a procedure

Symbol	Description
	General safety instructions for a procedure
	Information about spare parts that are necessary for a procedure
	Information about support equipment that is necessary for a procedure
	Information about supplies (consumables) that are necessary for a procedure
	Make sure that the power supply to the EVSE is disconnected
	Electrotechnical expertise is required, according to the local rules
	Alternate current
	Direct current
	Protective Earth (PE)
	 Sign that means that you must read the manual before you install the EVSE
	Waste from electrical and electronic equipment
	Center of gravity (CoG)
	NOTE It is possible that not all symbols or signal words are present in this document

2.4 Personal protective equipment

A Personal Protective Equipment (PPE) is clothing or equipment designed to protect/reduce employees from exposure to work place hazards and the risk of injury.

Symbol	Description
	Protecting clothing
	Safety gloves
	Safety shoes
	Safety glasses

2.5 Safety instructions

- Only perform the procedures as indicated in this document.
- Only perform any services as installation engineer or use the EVSE when you are fully qualified to do so.



DANGER

If and to the extent permitted by law, in case of inconsistency or contradiction, between any requirements or procedure contained in this document and any such local laws and/or rules, comply with the stricter laws and/or rules, requirements and procedures specified in this document.

2.5.1 Safety instructions during transport



- Put on the correct personal protective equipment.
- Make sure that the hoisting equipment or forklift truck can lift the EVSE safely.
- Take into account the mass and the center of gravity of the EVSE.
- Obey the applicable safety instructions for the hoisting equipment or for the forklift truck. For example, the instructions specified on the related shipment label that is applied to the EVSE packaging.



2.5.2 Safety instructions during installation



- Put on the correct personal protective equipment.
- Make sure that there aren't any supply voltages on the input cables during the complete installation procedure.
- Keep unqualified personnel at a safe distance during installation.
- Only use electrical wires of sufficient gauge and insulation to handle the rated current and voltage demand.
- Make sure that the load capacity of the grid is in accordance with the EVSE.
- Make sure that the wiring inside the EVSE is protected from damage and cannot get trapped when you open or close the EVSE.
- Do not open any covers/doors of the equipment in case of adverse climatic conditions. Infiltration of water or sand and presence of high humidity can cause damage of the equipment. It is of paramount importance to evaluate the weather conditions in the risk assessment prior any intervention on the equipment.
- Protect the EVSE with safety devices and measures that the local rules specify.
- Make sure that the EVSE is connected to a Protective Earth (PE).
- Make sure that the connections to the EVSE comply with all applicable local rules.



Additional instructions during ground works

- Make sure that the equipments used during ground works are certified.
- Comply with all applicable local rules.

2.5.3 Safety instructions during cleaning or maintenance



- Put on the correct personal protective equipment.
- Make sure that there isn't any supply voltages on the input cables during the complete cleaning or maintenance procedure. Refer to section [“9.3. Total de-energization of the EVSE”](#)
- Keep unauthorized personnel at a safe distance during cleaning or maintenance.
- If for cleaning or maintenance it is necessary to remove safety devices, immediately install the safety devices after the work.



2.5.4 Safety instructions during the use



Do not use the EVSE if the safety or the safe use of the EVSE is at risk. In these cases immediately contact the manufacturer:



- An enclosure has damage.
- An EV charge cable or connector has damage.
- Lightning struck the EVSE.
- There was an accident or a fire at or near the EVSE.
- Water entered the EVSE.
- The EVSE is hit by any object (vehicle, fallen tree, etc).
- The EVSE was vandalized.

2.6 Discard the EVSE or parts of the EVSE

Incorrect waste handling can have a negative effect on the environment and human health due to potential hazardous substances. With the correct disposal of this product, you contribute to reuse and recycling of materials and protection of the environment.

- Obey the local law and rules when you discard parts, packaging material or the EVSE.
- Discard electrical and electronic equipment separately in compliance with the local directive on waste of electrical and electronic equipment.
- Do not mix or dispose the EVSE with your household waste, at the end of use. Instead, hand the EVSE over to your local community waste collection point for recycling.
- For more information, contact the Government Waste-Disposal department in your country.

2.7 Cybersecurity

This product and its features are designed to be connected to and to communicate information and data via a network interface. The owner and site operator agree to use the product and its features at their sole risk, in its judgment. It is the owner and site operator's sole responsibility to provide and continuously ensure a secure connection between the product and the owner's and/or site operator's network or any other network (as the case may be). The owner and site operator shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information. Use of embedded software and ABB systems by owner and site operator is at your sole risk and quality, accuracy, and performance efforts are with you. ABB E-mobility is not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

3. Description

This chapter contains information about the models, details of the equipment, characteristics and technical data, overall dimensions and equipment identification.

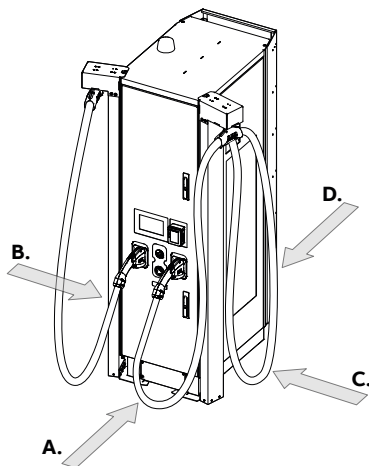
A description of the equipment characteristics is provided to identify its main components and specify the technical terminology used in the manual.

Chapter recipients:



- Owner
 - Qualified installer
-

3.1 Orientation agreements



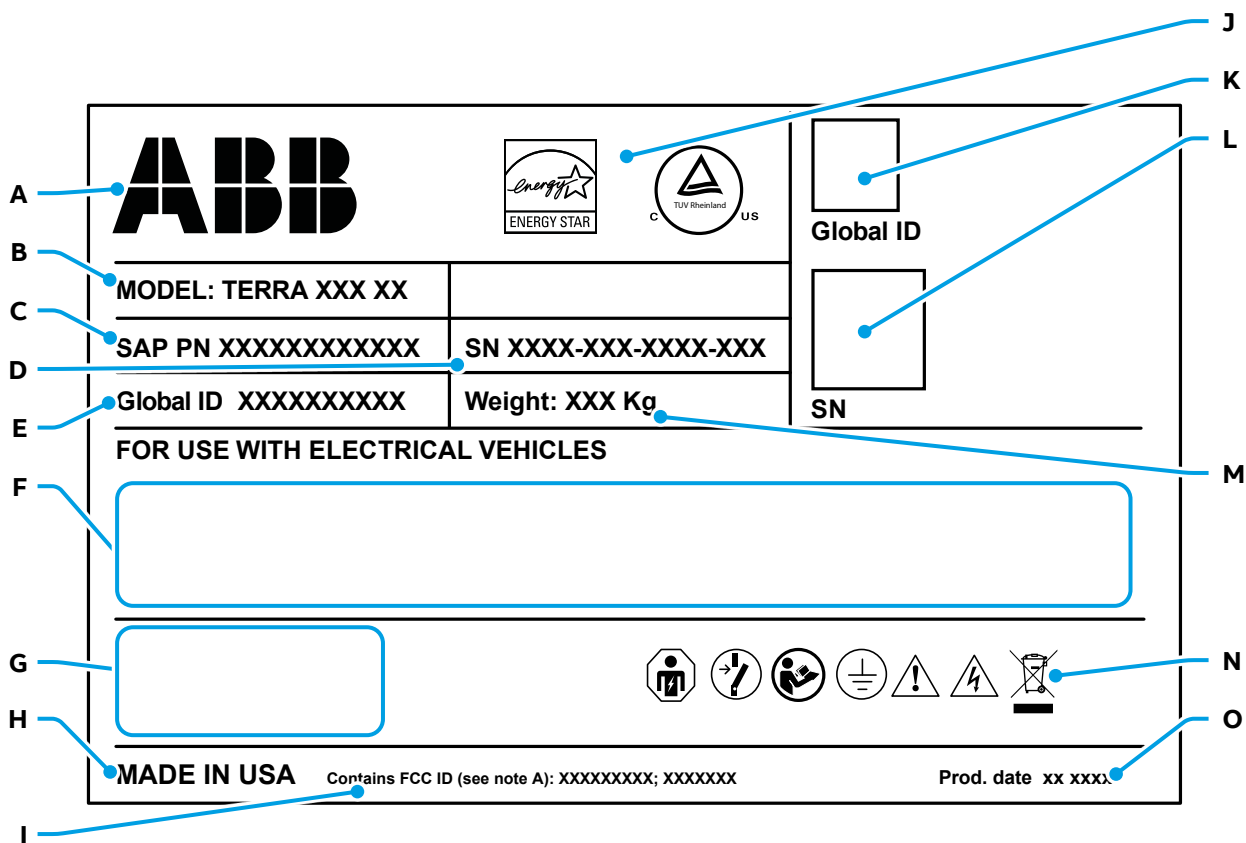
Ref.	Description
A	Front side: face forward to the EVSE during normal use
B	Left side
C	Right side
D	Rear side

3.1.1 EVSE model designation

Structure of the identification model designation of the EVSE.

Terra 184	UL	CC	6N4	
Main product	Localization	EV charge cable connection	- EV charge cable length - Connector type - Power rating	Field Description
Terra PPP				<ul style="list-style-type: none"> • “Terra” is the “charger identification”: • PPP is the “output power”: <ul style="list-style-type: none"> – 94 = 90 kW output power – 124 = 120 kW output power – 184 = 180 kW output power
	MM			<ul style="list-style-type: none"> • MM is the “localization”: <ul style="list-style-type: none"> – UL = for North America market
		XX		<ul style="list-style-type: none"> • XX is the “EV charging cable connection type”: <ul style="list-style-type: none"> – C = CCS1 – CC = CCS1 + CCS1 – CR = CCS1 + NACS ready – NC = NACS + CCS1 – NN = NACS + NACS – CJ = CCS1 + CHAdeMO
			ABC	<ul style="list-style-type: none"> • A is the “EV charge cable length”: <ul style="list-style-type: none"> – 4 = 4 m (13 ft) – 6 = 6 m (20 ft) • B is the “Connector type”: <ul style="list-style-type: none"> – N = Not liquid cooled – A = ABB air cooled connector and cable • C is the “Power rating”: <ul style="list-style-type: none"> – 4 = Max 400 A current

3.2 Type plate - Identification of equipment



Ref.	Description
A	Manufacturer
B	EVSE Model designation
C	Part number of the EVSE (Internal ABB use)
D	Serial number of the EVSE
E	ABB Global ID
F	EVSE main technical data
G	Address of the manufacturer (legal entity location)
H	Country of production
I	Certified radio frequency devices contained on the EVSE
J	Symbol of local certification
K	ABB Global ID - QR code
L	Serial number of the EVSE - QR code
M	EVSE weight
N	Safety and information symbols
O	Manufacturing date

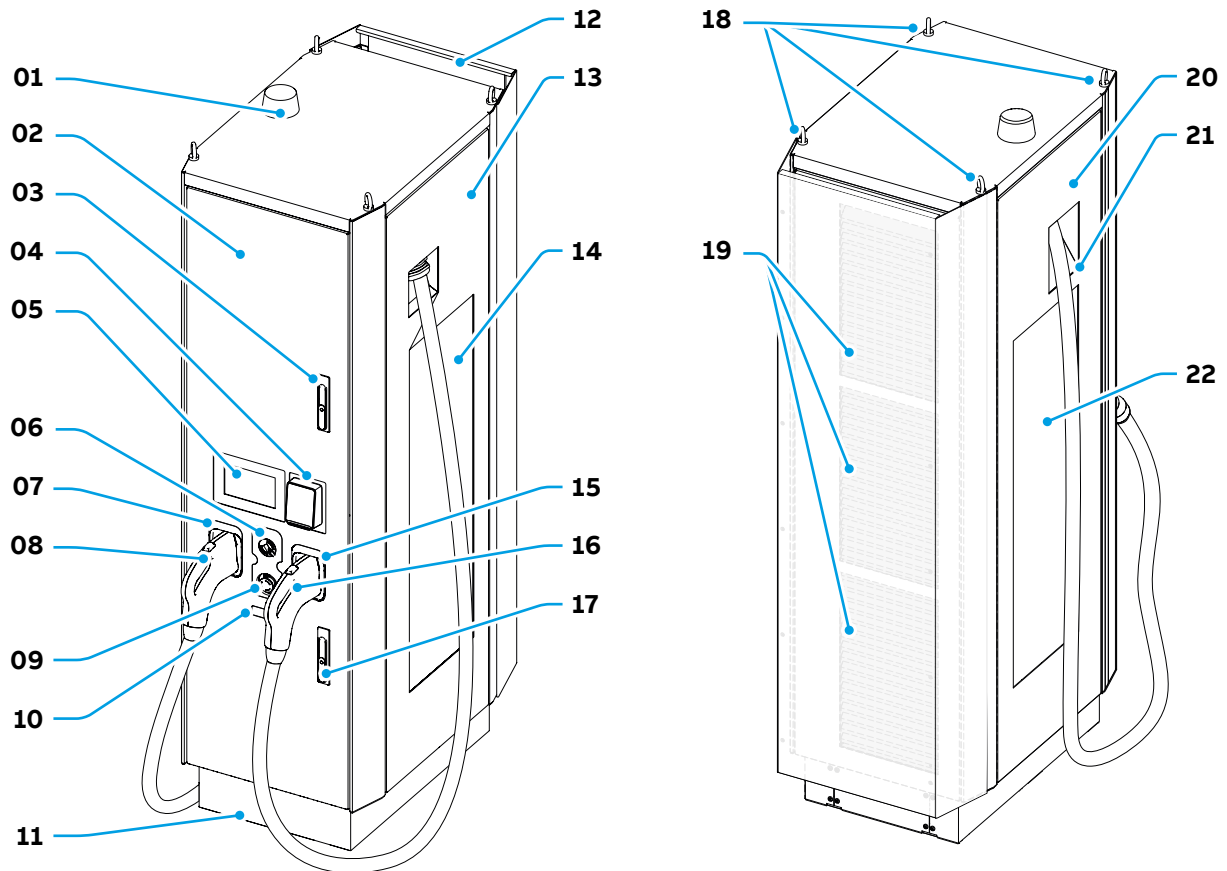


NOTE

Find the type plate on your EVSE to see the applicable data.

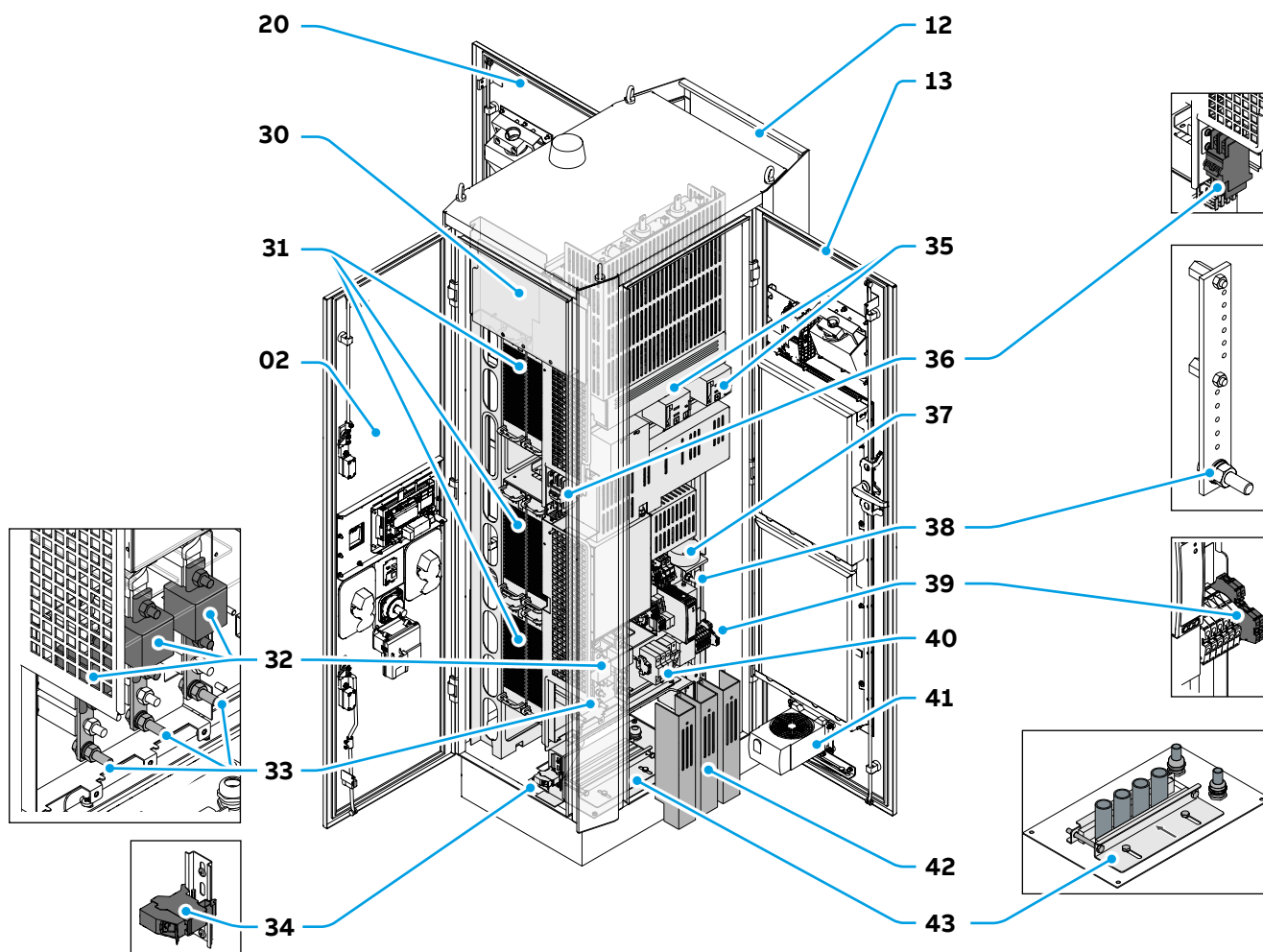
3.3 Overview

3.3.1 Overview of the EVSE, outside



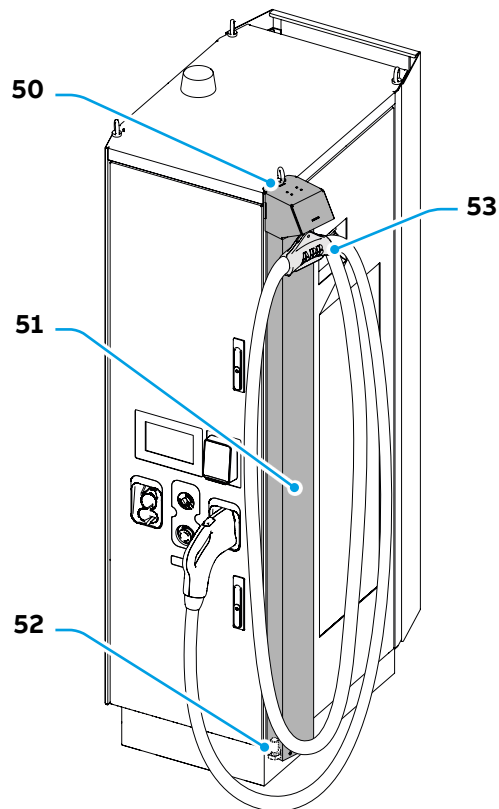
Ref.	Part	Function
01	Wireless antenna	To send and receive data via cellular signal
02	Front door	To access the power modules and Communication and control section
03	Upper swing handle lock	To lock and open the front door (together with lower swing handle lock)
04	Payment terminal	To pay for the charging session
05	Display	Human-machine interface (HMI)
06	RFID	To read the information from an RFID card
07	Connector holder - Output 1	To hold the charging connector of Output 1
08	Charging connector - Output 1	To connect the Output 1 of the EVSE to the EV
09	Emergency stop button	To stop the EVSE when there is an emergency
10	Meter display	To read the meter data
11	Removable base covers	To access the EVSE's anchoring points to the foundations
12	Rear air deflector (Air outlet)	To divert the hot air outlet upwards
13	Right door	To access the connection section
14	Air inlet with filter (right door)	To filter and let cooling air in
15	Connector holder - Output 2	To hold the charging connector of Output 2
16	Charging connector - Output 2	To connect the Output 2 of the EVSE to the EV
17	Lower swing handle lock	To lock and open the front door (together with upper swing handle lock)
18	Lifting points (Eyebolts)	Lifting points to connect the hoisting equipment
19	Air outlet with filter	To filter and let cooling air out
20	Left door	To give authorized personnel access to the inside of the EVSE
21	Type plate	Identification and technical data label
22	Air inlet with filter (left door)	To filter and let cooling air in

3.3.2 Overview of the EVSE, inside



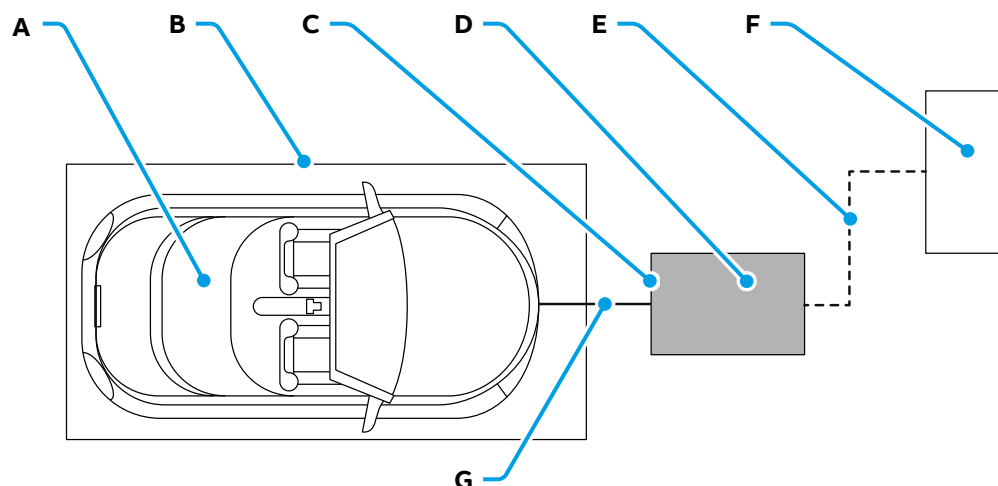
Ref.	Part	Function
30	Communication and control section	To allocate the communication and control board
31	Power modules	To provide the physical containment for various power components
32	AC input fuse	Input protection of the EVSE
33	Main AC terminals	To connect the AC input cable
34	Ethernet connector	To connect the EVSE to Internet (e.g. in case of lack of cellular signal)
35	Main DC breakers	To connect or disconnect the power modules
36	AC Auxiliary breaker	To connect or disconnect the AC auxiliary power supply
37	Tilt sensor device	Optional device to disconnect the AC input in case of collision, and consequent tilt, against EVSE
38	PE busbar	To connect the Protective Earth (PE) cable
39	Tilt sensor terminal block	To connect the tilt sensor device
40	Main AC SPD	Surge protection device. To protect the AC input line from overvoltage
41	Heater	To remove internal condensation
42	Main AC protection barriers	To protect the AC terminals from accidental contact
43	Cables entry plate	To route the cables inside the EVSE in the right position

3.3.3 Overview of the cable management system (option)



Ref.	Part	Function
50	Top attachment point	Upper fixing point to the EVSE
51	CMS	Cable management system
52	Bottom attachment point	Lower installation point to the EVSE
53	Cable clamp	To hook the charging cable

3.4 System Overview



Ref.	Part	Function
A	EV	Electrical Vehicle to be recharged
B	Parking space	To park the EV during charge session
C	Front of the EVSE	Side of EVSE with EV connectors and HMI (User Interface)
D	EVSE	EV charger
E	AC input cable	To supply the input AC voltage to the EVSE
F	Power distribution board	AC grid input protection and distribution circuits
G	EV charge cable	To connect the EV to the EVSE

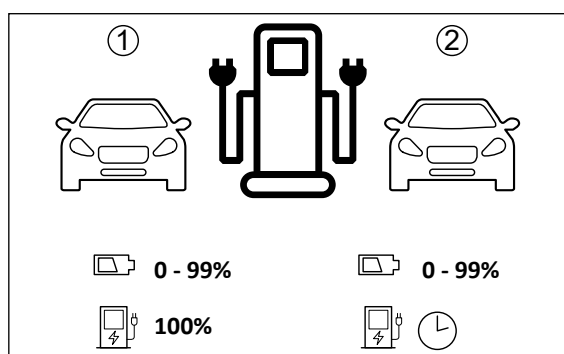
3.5 Power allocation strategies

The EVSE can be configured to operate with different power allocation strategies. The configuration can be changed at any time through the EVSE configuration tools.

The configuration of the EVSE allows for these power allocation strategies:

Power allocation strategy	Available for EVSE models
Sequential	All models
Concurrent	Models with more than one DC outlet (except for Terra 94)
Dynamic 'Fair share'	Models with more than one DC outlet (except for Terra 94)

3.5.1 Sequential power allocation



When the EVSE is configured for sequential power allocation, it can serve one EV at a time with DC fast charging.

In this configuration the EV charging power is the maximum power available to the EVSE, the rated power output. Effectively the maximum power output can be less than the rated power output because of power constraints. For example, the power output can be permanently limited due to site current or power constraints, or temporarily limited by power management systems.

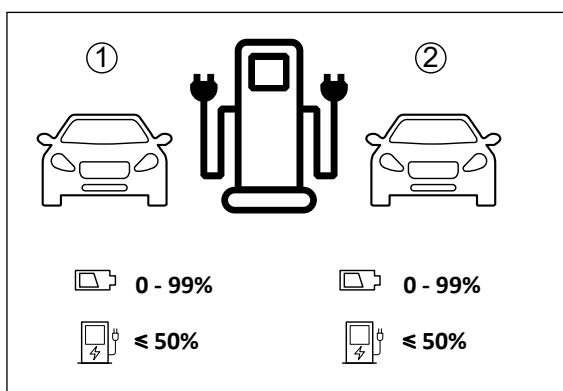
Only one DC charge session can be performed at a time. When a second EV is connected to the EVSE, the EVSE must first finalize the first charge session before a new charge session can start.



NOTE

EV charging with the use of the CCS standard can 'fall asleep' if the EVSE does not start the session within a few minutes. This is a common issue. It is recommended to connect a second EV only shortly before the first charge session ends.

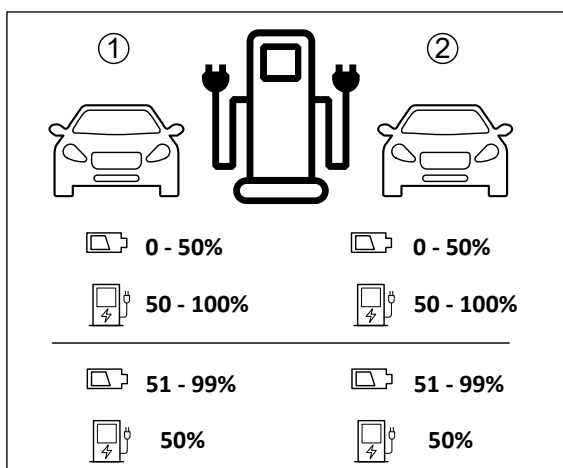
3.5.2 Concurrent power allocation



The power can be allocated in this way:

- EV1 and EV2 each receive a maximum of 50 % power from the EVSE until they are fully charged.

3.5.3 Dynamic power allocation 'Fair Share'



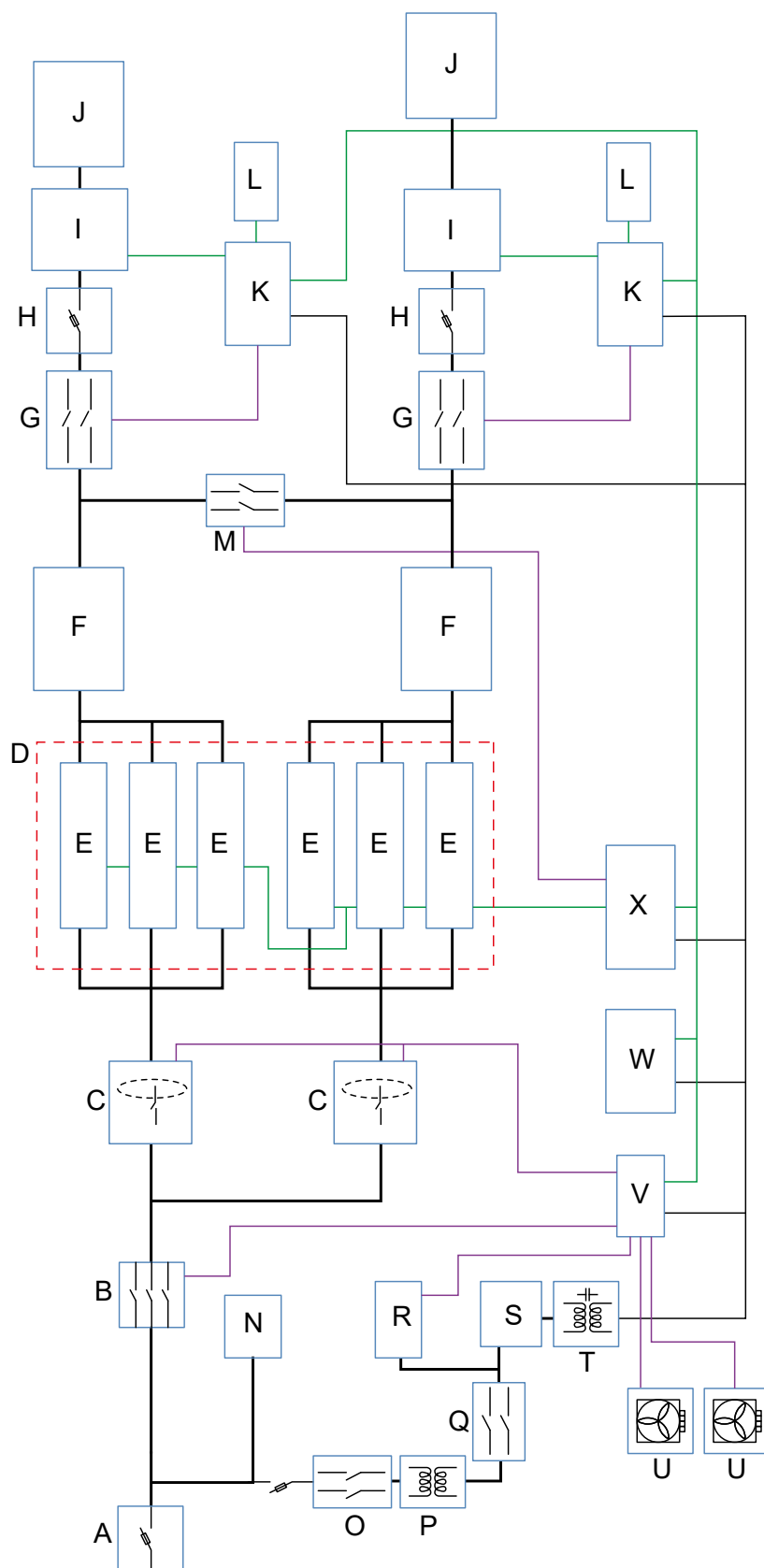
One EV connected => 100% of the power

Two EV connected => 50% of the power

When one of the EVs disconnect, if the other one can take more power, the available power goes back to 100%

3.6 Working principles

3.6.1 Terra xx4 variants CC, CJ, NC, and NN



Ref.	Description
A	Main fuse
B	AC contactor
C	Residual current device
D	Power module matrix
E	30kW power module
F	DC Filter
G	DC relay
H	DC fuse
I	Overcurrent board
J	EV
K	CPI board
L	IMI board
M	Interlink contactor
N	AC SPD
O	Breaker
P	Auxiliary transformer
Q	Auxiliary breaker
R	Heater
S	Power supply unit
T	DC EMC filter
U	DC cooling fans
V	CCB board
W	HMI
X	Power bridge board

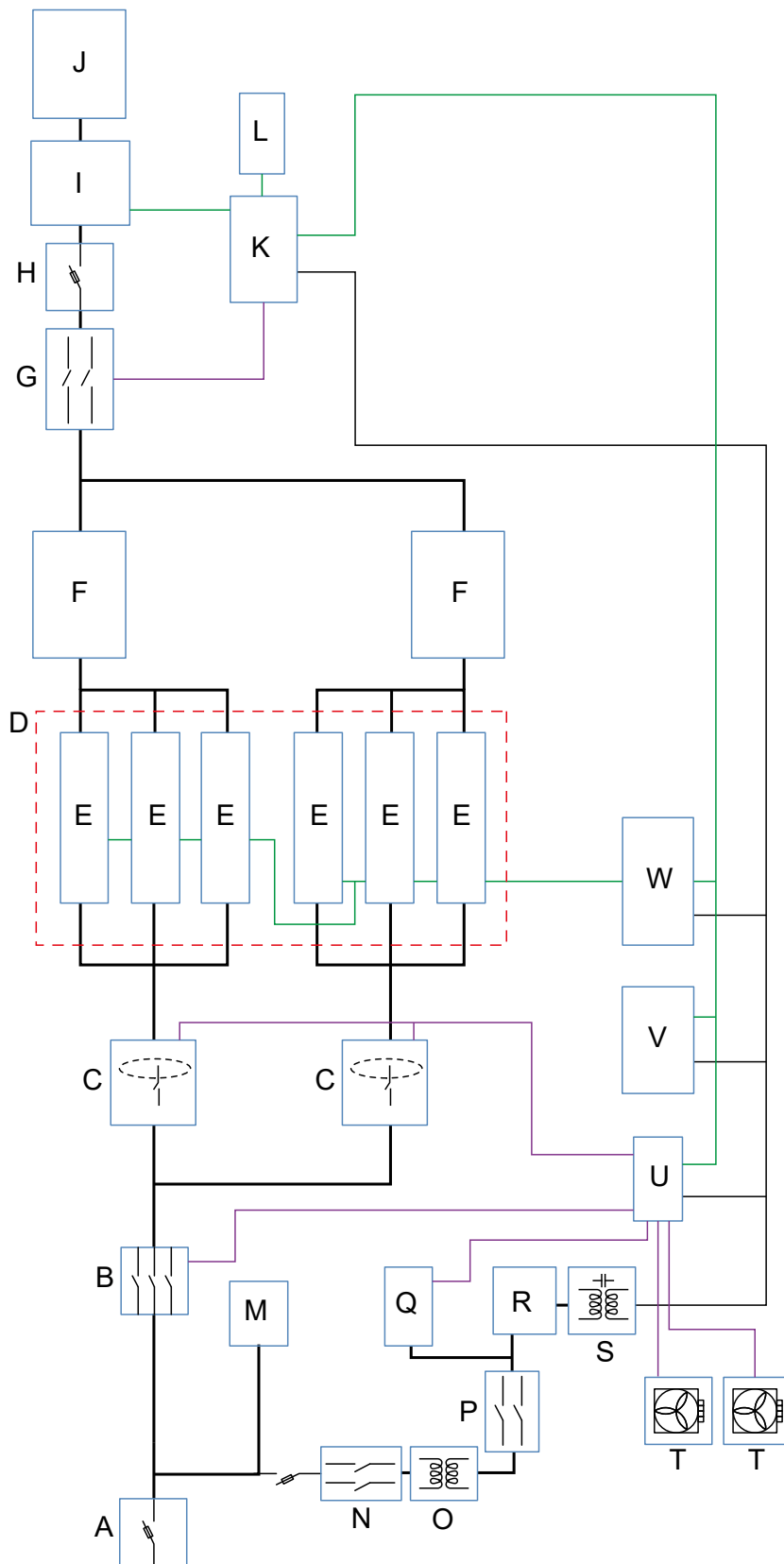
	Power connection
	Black and thin lines: auxiliary power connection.
	CAN bus.
	Control signal or monitoring signal.



NOTE

For Terra 94, the second array of three power modules is empty and it can perform only one DC charge session.

3.6.2 Terra xx4 variant C



Ref.	Description
A	Main fuse
B	AC contactor
C	Residual current device
D	Power module matrix
E	30kW power module
F	DC Filter
G	DC relay
H	DC fuse
I	Overcurrent board
J	EV
K	CPI board
L	IMI board
M	AC SPD
N	Breaker
O	Auxiliary transformer
P	Auxiliary breaker
Q	Heater
R	Power supply unit
S	DC EMC filter
T	DC cooling fans
U	CCB board
V	HMI
W	Power bridge board

—	Power connection
—	Black and thin lines: auxiliary power connection.
—	CAN bus.
—	Control signal or monitoring signal.

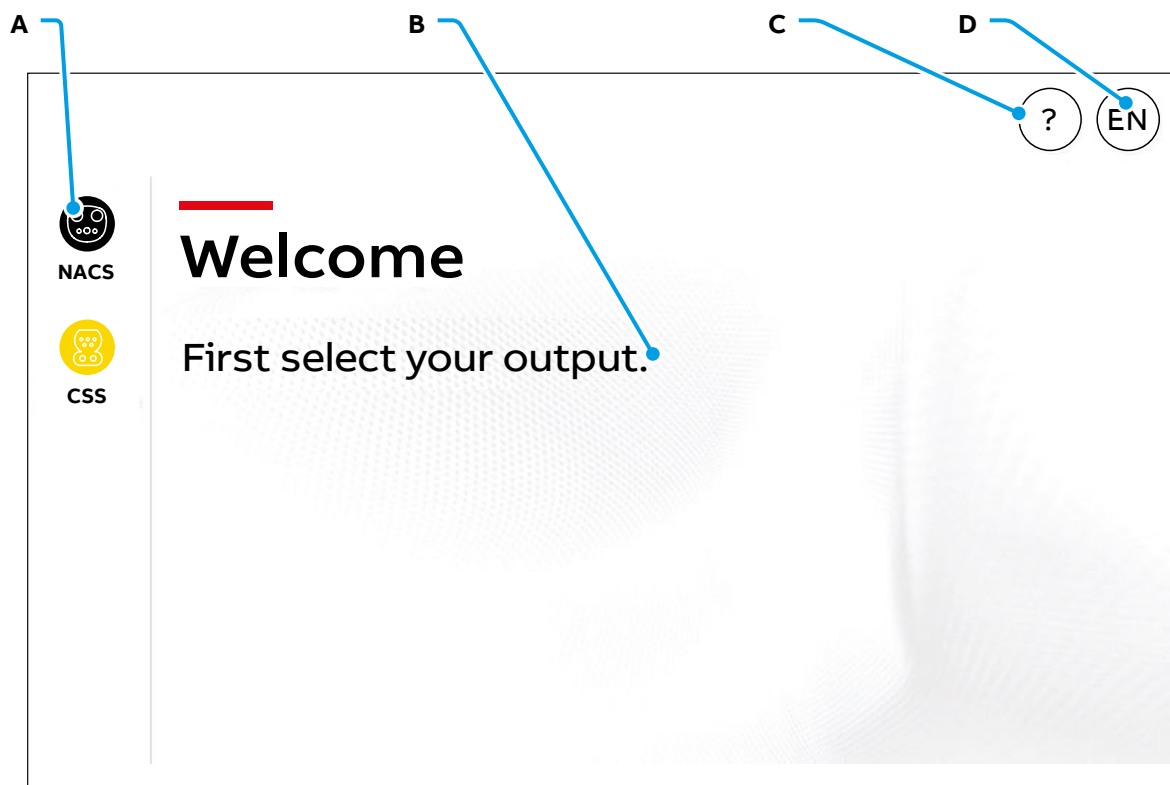


NOTE







For Terra 94, the second array of three power modules is empty and it can perform only one DC charge session.

3.7 Description of the touchscreen

3.7.1 General description of the layout



Ref.	Description	
A	Field to select the connector type	
B	Instruction field	
C	Information button	
D	Selected language	

Button	Name	Description
	CCS	To select the CCS connector
	CHAdeMo	To select the CHAdeMO connector
	NACS	To select the NACS connector
	Language	To change the language on the touchscreen. The button shows the code of the selected language
	Start	To start the charge session
	Stop	To stop the charge session

3.8 RFID - Authorization to charge

It is possible to use the EVSE with or without authorization.

An authorization can be based on radio frequency identification (RFID), a personal identification number, or a mobile authentication method. Authorization can be a standard solution from the manufacturer, or from an external company that offers authorization solutions via OCPP.

**NOTE**

Authorization requires a subscription to a back office.

3.9 Payment terminal

The payment terminal is used to pay the charging session and supports all common credit and bank cards. The touchscreen guides the user how to use the payment terminal.

**NOTE**

To use and adjust the settings of the payment terminal, ABB Payment Web tool is required.

3.10 Cloud service portal

ABB E-mobility provides a set of cloud-based tools to commission, monitor and troubleshoot the EVSE.

**NOTE**

Refer to the ABB E-mobility representative for more information.

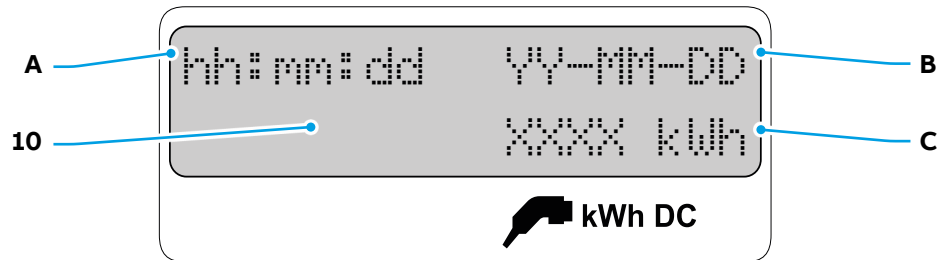
3.11 Options

3.11.1 Fiscal metering system

The EVSE can optionally be equipped with a DC energy meter.

The dedicated Meter display **(10)** on the front panel shows:

- A. Time (hh:mm:ss)
- B. Date (YY-MM-DD)
- C. Delivered DC power (kWh)

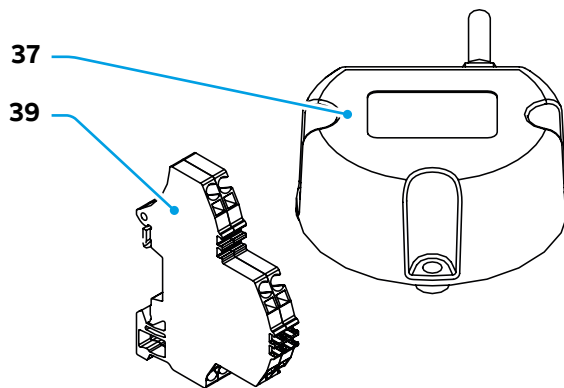


NOTE

The presence of the DC meter is mandatory in some countries. Do a check of the regulations that are applicable in the region of installation.

3.11.2 Tilt sensors

The tilt sensor device **(37)**, and dedicated screw terminal blocks **(39)** for connection, is an optional that disables the power from the incoming AC source when a tilt sensor detects a tilt of a cabinet of the EVSE in any direction.



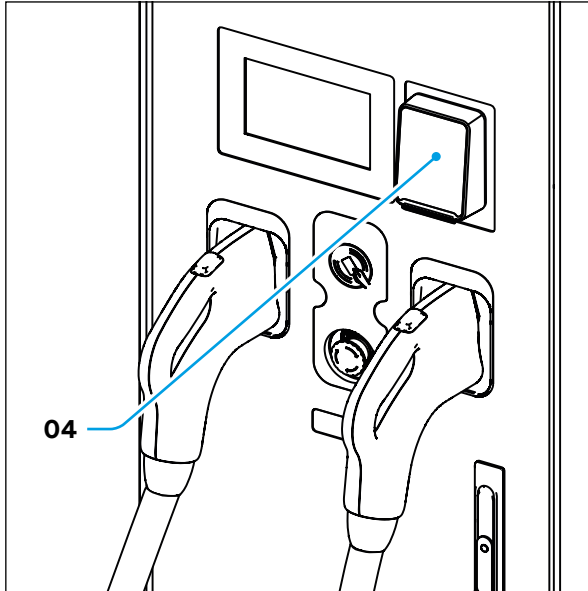
The tilt sensor is generally closed and opens when the tilt exceeds 10° in any direction, for example if a vehicle impacts against the EVSE. In these situations, the undervoltage release in the branch circuit breaker that supplies power to the EVSE is de-energized and the branch circuit breaker opens.

3.11.3 Payment terminal

The manufacturer can deliver the EVSE with different payment terminals **(04)**. The available options vary depending on the region and country where the EVSE is installed.

If you need more information about different options for payment terminals, ask the manufacturer.

The touchscreen guides the user how to use the payment terminal.



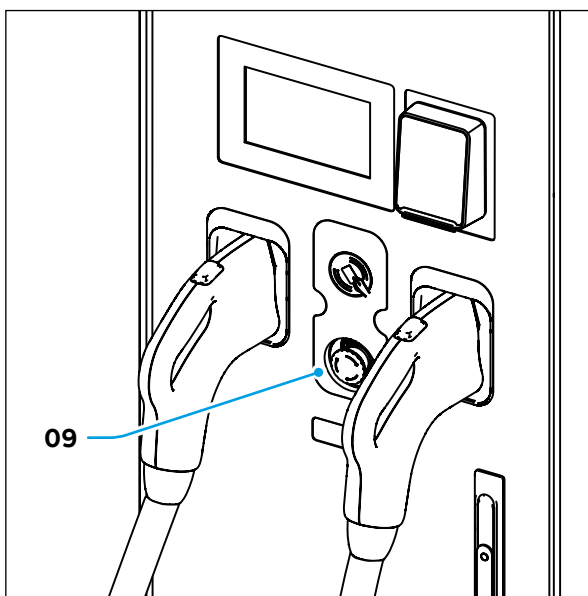
NOTE

To use and adjust the settings of the payment terminal, you require the ABB Payment Web tool.

3.11.4 Emergency Stop button

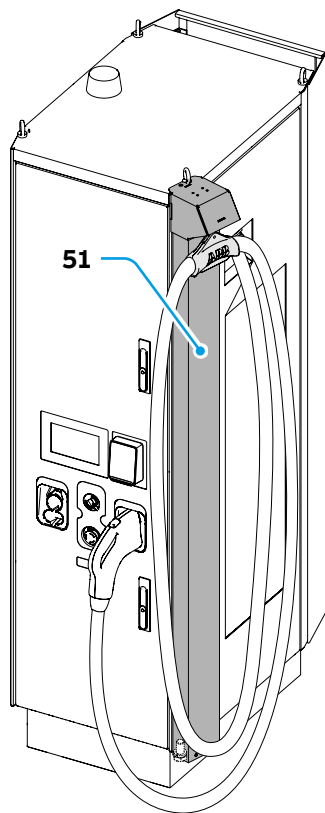
The optional Emergency Stop button **(09)** can be present on the EVSE front door, to stop the charging session.

The External Stop button **(09)** have a normally closed contact. When the button is activated (contact is open) the EVSE will to stop the charging session.



3.11.5 Cable management system

The CMS (51) (cable management system) helps to retract and hold the cables in position when the EVSE is not in use.



NOTE

The cable management system can be pre-assembled from the factory or shipped separately from the EVSE and installed during the commissioning of the charger.

3.11.6 Charging connector

The EVSE can be delivered with different charging connectors on the EV charge cables:

CCS 1	CHAdeMO	NACS



NOTE

For the current and voltage rating specifications, refer to the [“10.1.1. Technical data table”](#).

4. Transport, handling and unpacking

In this section are explained all the transport specification, including handling and unpacking procedures of the EVSE.

Chapter recipients:



- Owner
 - Qualified installer
-

4.1 Transport the EVSE to the site

A transport company delivers the EVSE close to the site. The movement of the EVSE to its final location is their responsibility.



NOTE

If you need to store the EVSE before installation, obey the ambient conditions for storage (refer to section [“10.1.2. Environmental Conditions”](#)).
DO NOT store the equipment in a location exposed to severe weather conditions (e.g. rain, snow or a high level of humidity).



CAUTION

It is prohibited to transport or handle the EVSE unless authorized. Respect the following safety measures!



WARNING

Please follow these steps to comply with the applicable Safety measures applicable to the working area including instructions for safe handling of the EVSE



DANGER

Handling personnel must wear all appropriate and applicable personal protective equipment (PPE) and follow all the applicable Health and Safety measures applicable to the working area.



NOTE

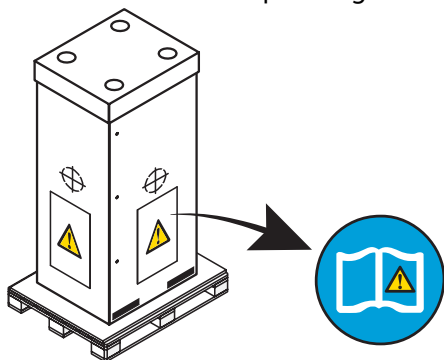
The manufacturer is not liable for any damages resulting from the improper handling and transportation of the EVSE, in particular resulting from non-compliance with these instructions and other applicable regulations and standards (e.g. transport, occupational health and other safety standards).

4.1.1 Visual inspection on the packaged EVSE

- Check and respect the indications of the symbols on the packaging:

Symbol	Description
	Handle with care
	Fragile
	Keep dry
	Center of gravity
	This side Up
	Do not stack
	Do not tilt

- Read and follow the operating and safety instructions labeled on the package.



- The package of product should must not be broken and/or scratched in any point.

**NOTE**

If the package is damaged and/or scratched check the external cosmetic of product by removing the protections.

- The pallet shall be intact and not damaged for a safe transportation and handling of the product.

**NOTE**

If damage is observed, document it and contact ABB.

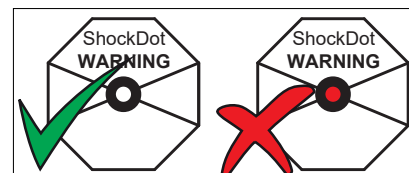
- Check the shock and tilt sensors.

When you unload the EVSE, if tilt and/or shock sensors are activated:

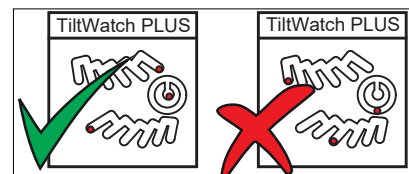
- Do not refuse the shipment.
- Make notation on delivery receipt and inspect for damage.
- If damage has occurred, leave item in its original packaging and indicate it on the transport document (ex. CMR – Bill of lading – AWB – delivery note); otherwise request immediate inspection from carrier within the applicable time period. Provide pictures to ABB service team also.

How to check the Shock sensor label

When the shock watch is subjected to an impact exceeding a specified G-level, the dot will become red creating a permanent and immediate indication of mishandling. Normal movement or road shock won't affect the device. Once activated, the shock watch cannot be reset.

How to check the Tilt sensor label

It provides indisputable evidence regarding the degree of inclination achieved by the EVSE during handling and transport. If inclinations exceed 30° the unit must be inspected.



- Check the integrity of the charging connector(s) of the EVSE. The charging connector(s) and their cables shall be not damaged and/or scratched.

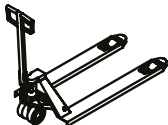
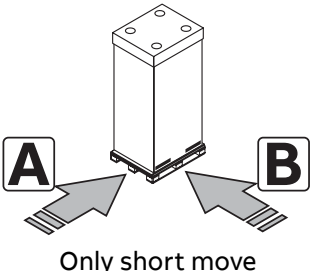

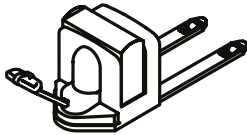
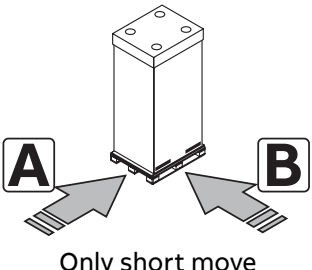

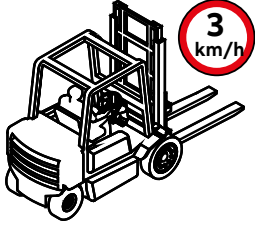
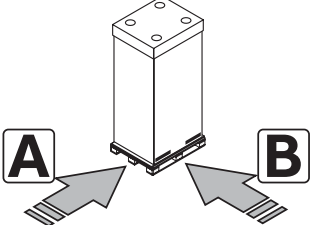
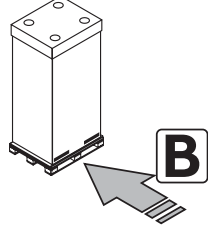
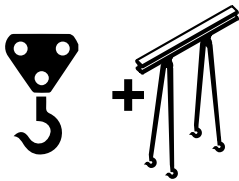
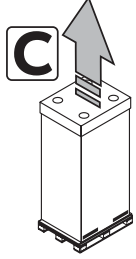
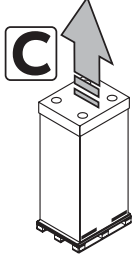
**NOTE**

If damage is observed, document it and contact ABB.

4.1.2 Visual inspection on the packaged EVSE

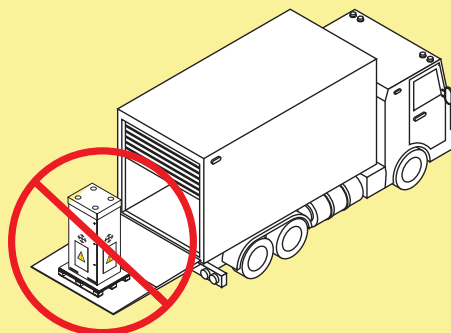
- Handling personnel must wear all appropriate and applicable personal protective equipment (PPE) and follow all the applicable Health and Safety measures applicable to the working area.
- Handling operators must comply to all local regulations.
- Check the weight on the transport document before moving the load.
- Check the position of the center of gravity before lifting the EVSE.
The higher the position of center of gravity, the more care is required to handle the EV Charger to avoid overturning.

- Check that the equipment used to move or hoist the EVSE is suitable, able to move the EV Charger based on weight.

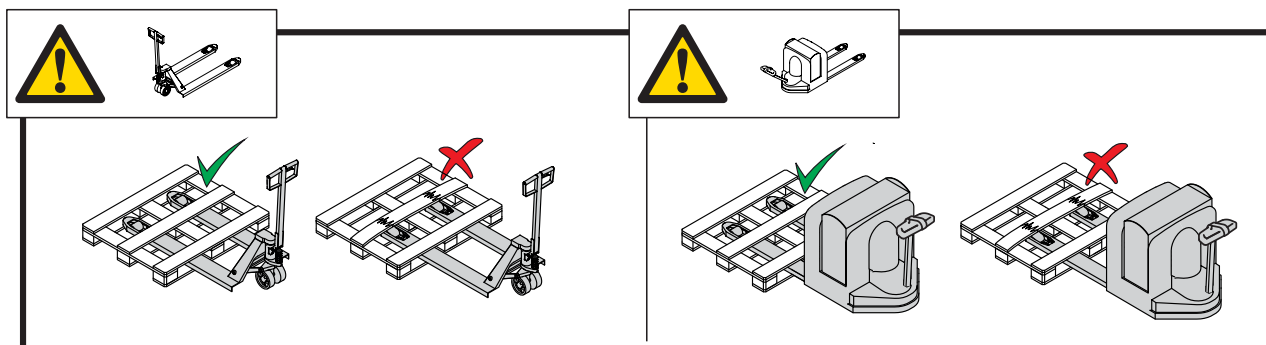
Equipment	Movement	Lifting
<ul style="list-style-type: none"> Pallet Jack 		
<ul style="list-style-type: none"> Pallet Stacker 		
<ul style="list-style-type: none"> Forklift Truck Wheel loader pallet fork 		
<ul style="list-style-type: none"> Hoist / Crane 		

DANGER

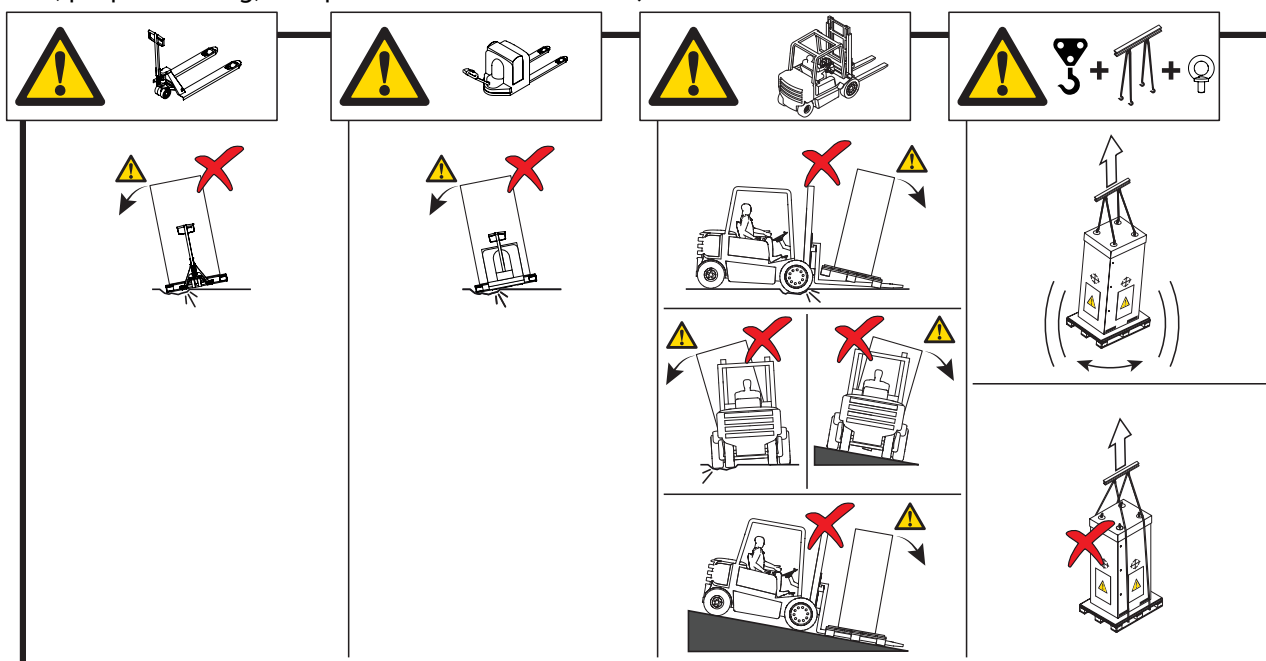
- The forks need to be fully able to move into the pallet to provide full support and operated by trained staff.
- Knowing the total weight, ropes and chains needs to be suitable and in safe conditions and operated by trained staff.
- Pallet jack and Pallet stacker are not suitable to lift up the EVSE. They can be used for short distance movement only.
- During movement operations the EVSE must be raised 3 cm max from the ground level.
- Do not use truck tail lift as lifting equipment.



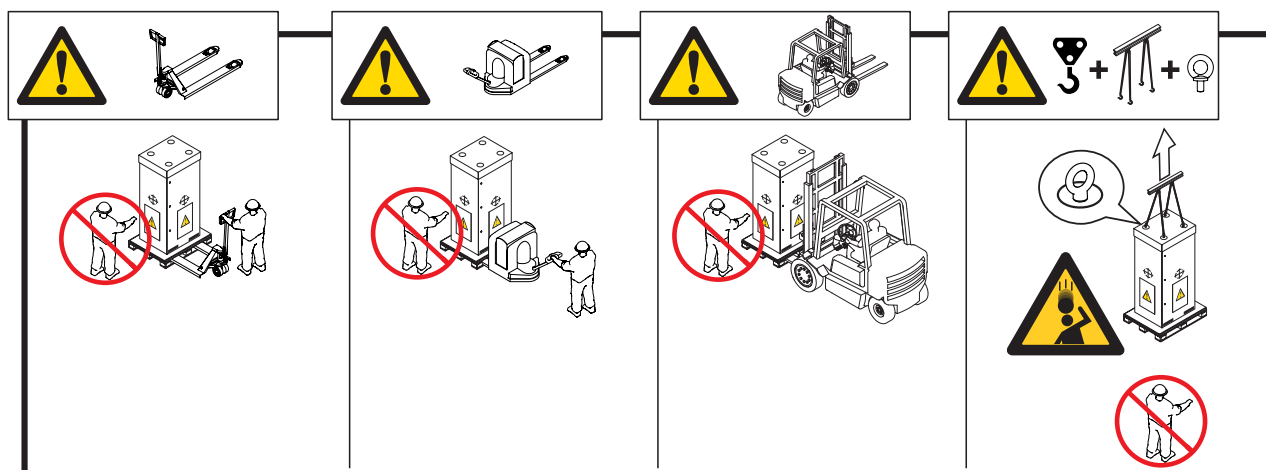
- Check that the pallet is not damaged. If there is damage, contact the responsible Health and Safety manager for the site to get instructed on how to unload the EV Charger and move it in a safe way. Pay particular attention to the position of the wheels of the Pallet jack and pallet stacker to avoid damaging the pallet.



- Check that the working place conditions are safe before handling the load (such as obstacle-free unloading area, proper flooring, safe path and other conditions).



- Ensure that the area is not accessible to unauthorized personnel and the personnel involved in handling the EV Charger are fully aware of the safety measures to apply when handling the EV Charger and keep sufficient distance away from the moving EV Charger.



4.1.3 Lifting of the EVSE



WARNING

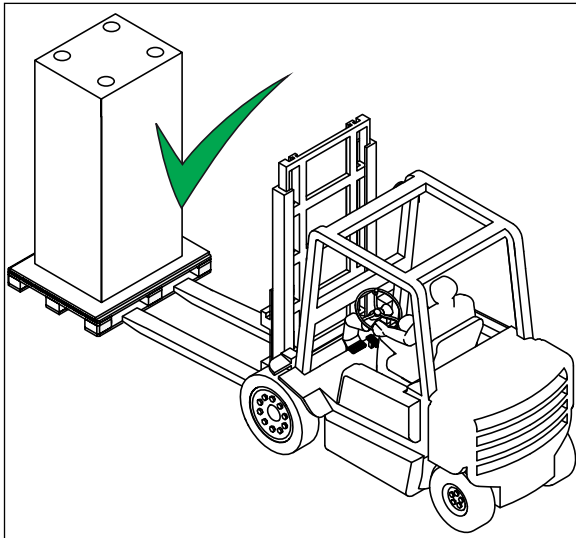
- Risk of pinching or crushing, the EVSE is heavy
- Make sure that the hoisting equipment can lift the EVSE safely
- Obey the safety instructions that apply to the hoisting equipment
- Take into account the dimensions, the weight and the center of gravity of the EVSE.



CAUTION

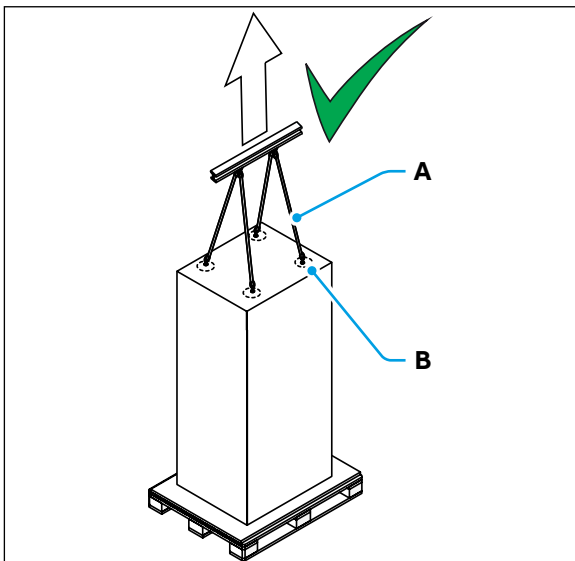
- Do not drop the cabinet.
- Do not tilt the cabinet.
- Make sure there are no dynamic forces on the lifting points.

4.1.3.1 Forklift Truck / Wheel loader pallet fork



- Move the forks of the forklift truck in the gaps at the side of the cabinet.
- Move the cabinet to the correct location.

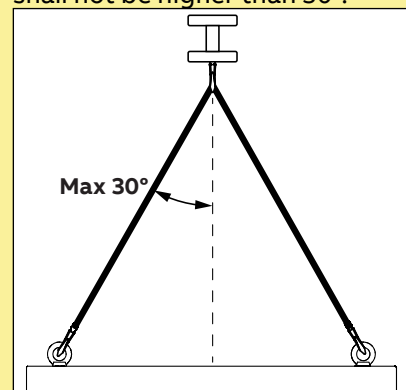
4.1.3.2 Hoist / Crane



- Open the four holes **(B)** on the top cover by pushing the precut cardboard in correspondence with each eyebolt.
- Connect the ropes or chain **(A)** of the hoisting equipment to the four eyebolts **(B)**.
- Align eyebolts (unscrewing it) to ropes/chains direction when lifting the EVSE.

DANGER

Inclination of ropes/chain from the vertical shall not be higher than 30°.



- Move the cabinet to the correct location.

5. Access to the internal parts

In this section are illustrated all the access procedures.

Chapter recipients:



- Qualified installer

5.1 Front door



HAZARDOUS VOLTAGE

Make sure that only qualified persons have access to the door key.

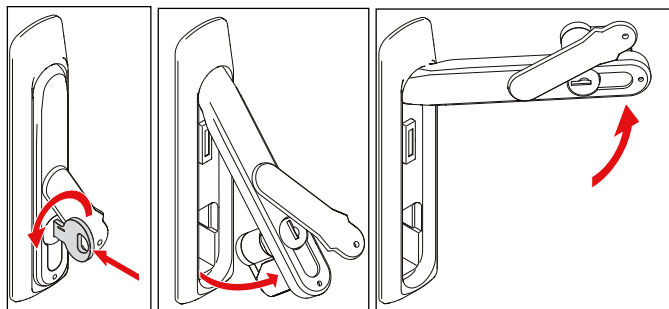
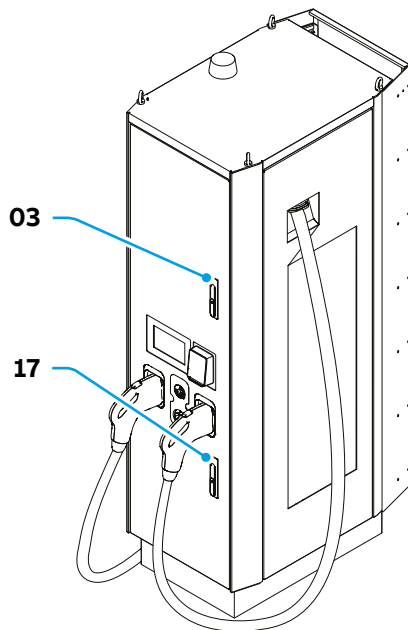


NOTE

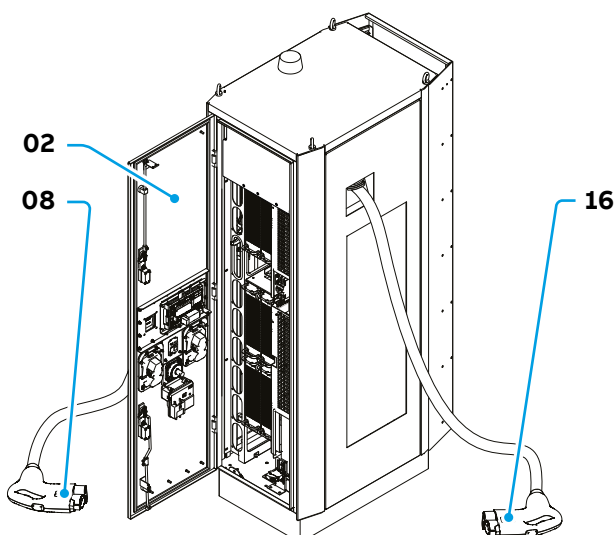
There is one unique door key for each cabinet.

5.1.1 Open the front door

Use the door key to unlock the upper and lower swing handle lock **(03)** **(17)** and to open the front door.



- Move the protection on the swing handle lock and insert the key. Turn the key to unlock the handle.
- Pull the handle forward until you can turn it to the right.
- Turn the handle to the right until the front door is free to open.



- Remove the Charging connector - Output 1 **(08)** and Charging connector - Output 2 **(16)** from the connector holders and put them down, being careful not to damage them.
- Open the front door **(02)**.

5.1.2 Close the front door

In order to close the front door **(02)** of the EVSE, repeat the operations described in the “Open the front door” section in reverse order.

5.2 Sides doors

When the front door **(02)** is open it is possible to access the side door opening systems:

Left door **(20)** - Internal left door handle **(A)**.

Right door **(13)** - Internal right door handle **(B)**.



HAZARDOUS VOLTAGE

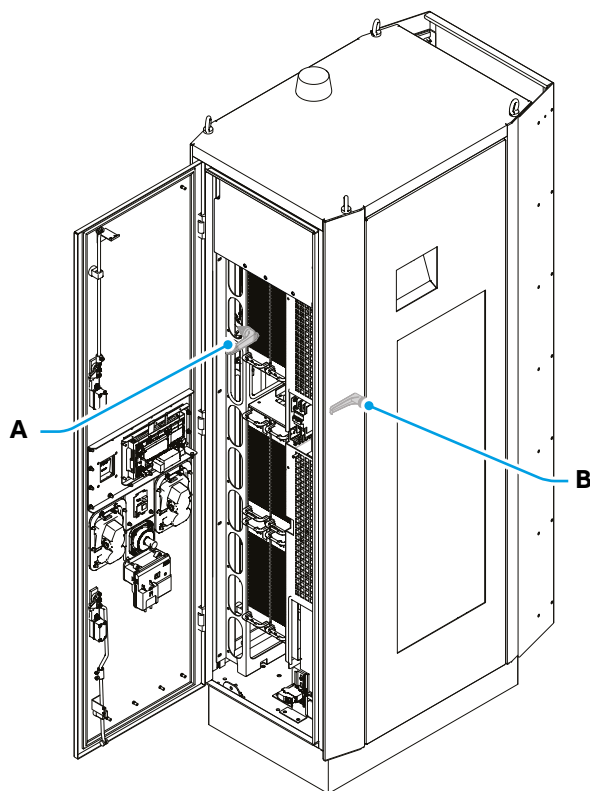
Make sure that only qualified persons have access to the door key.



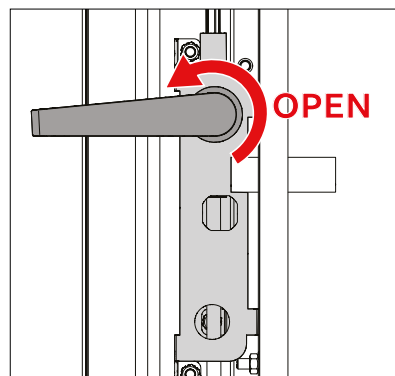
NOTE

There is one unique door key for each cabinet.

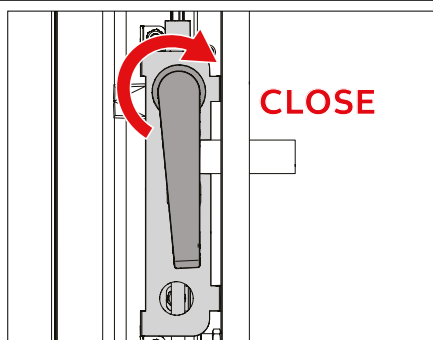
5.2.1 Open the left and right doors



- Open the front door.
- Rotate the internal handle **(A)** or **(B)** in OPEN position to open the respective side door.



5.2.2 Close the left and right doors

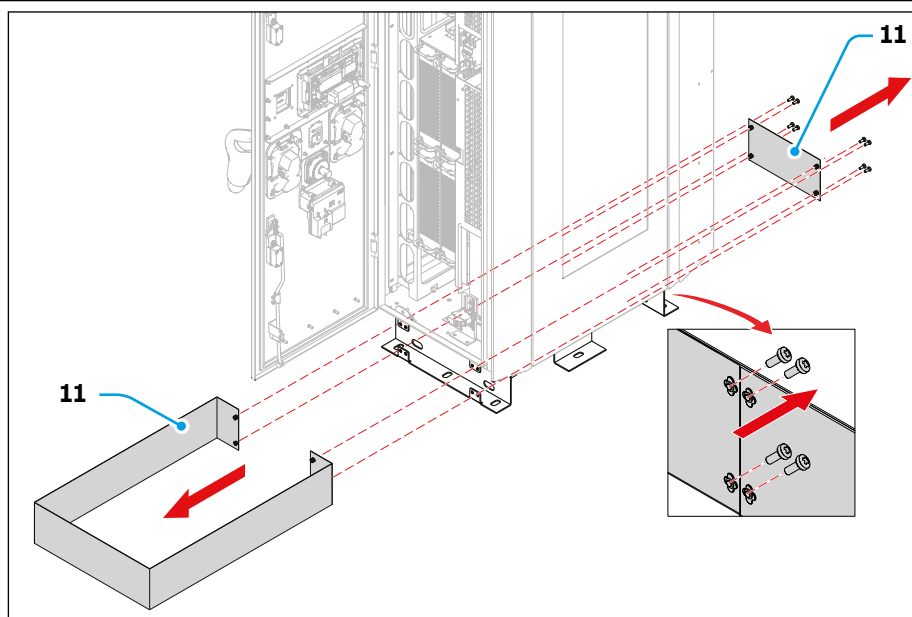


- In order to close the Left door **(20)** and/or the Right door **(13)** is necessary to push the door and rotate the internal handle in CLOSE position.
- Close the front door.

5.3 Border covers

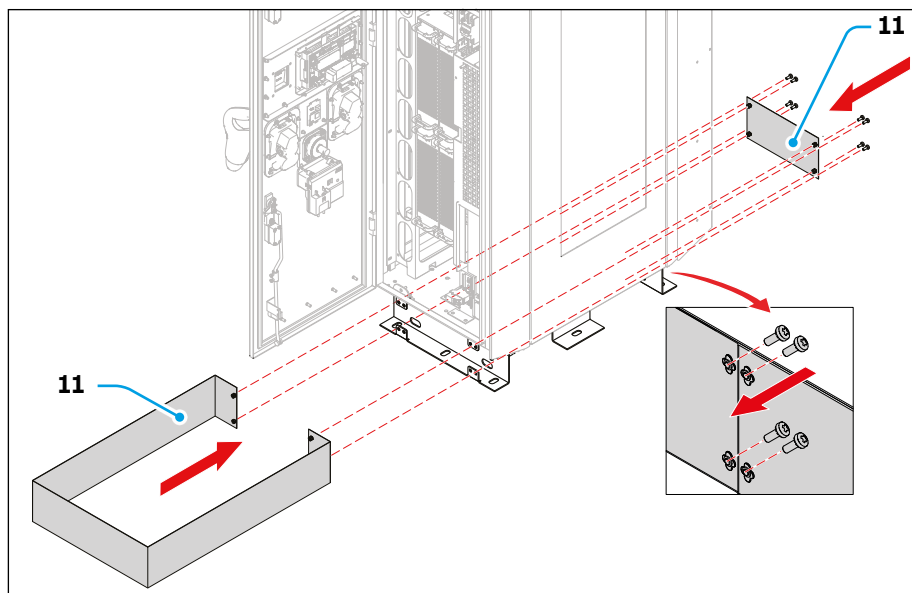
5.3.1 Remove the border covers

To access the fasten point between the EVSE and the floor is necessary to remove the Base cover **(11)**.



- Unscrew and remove the 8 fasteners of the base cover **(11)** on the rear side of the EVSE.
- Remove the back base cover.
- Remove the front base cover by sliding it forward.

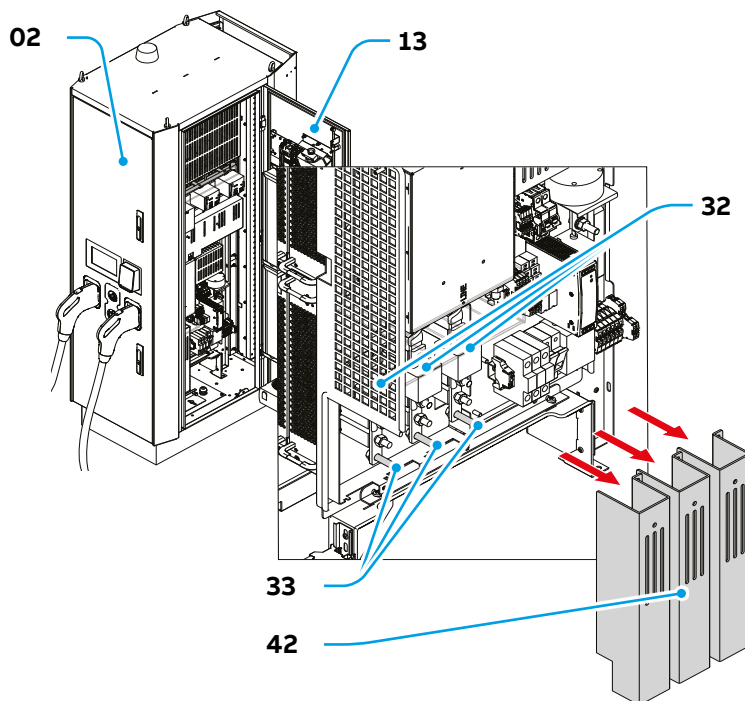
5.3.2 Install the border covers



- In order to install the base covers **(11)**, repeat the operations described in the “Remove the border covers” section in reverse order.

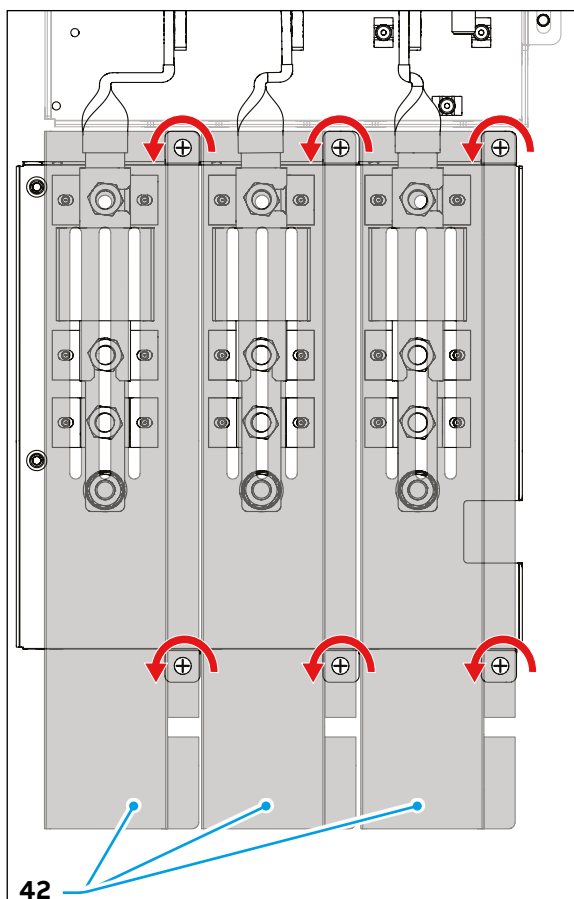
5.4 Main AC protection barriers

In order to remove the Main AC protection barriers (42) is necessary to open the front (02) and right doors (13). The Main AC protection barriers (42) are located over the Main AC terminals (33) or AC input fuse (32).



5.4.1 Remove the Main AC protection barriers

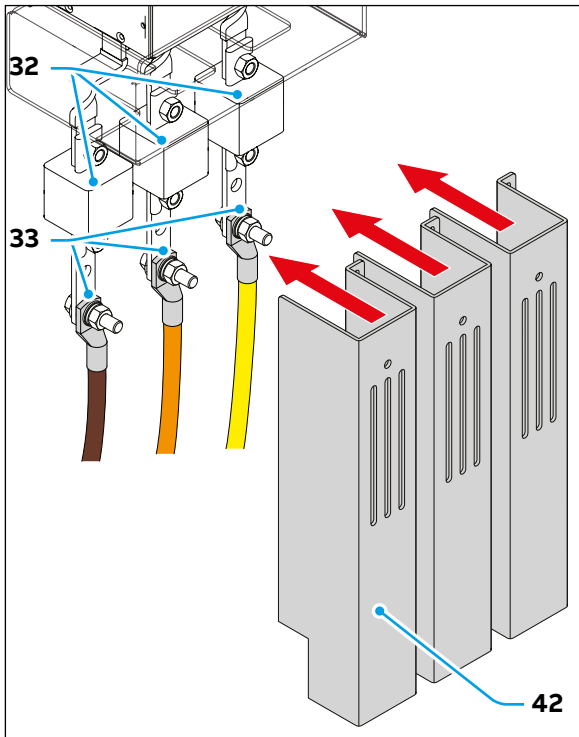
To access the Main AC terminals (33) or AC input fuse (32), is necessary to remove the Main AC protection barriers (42).



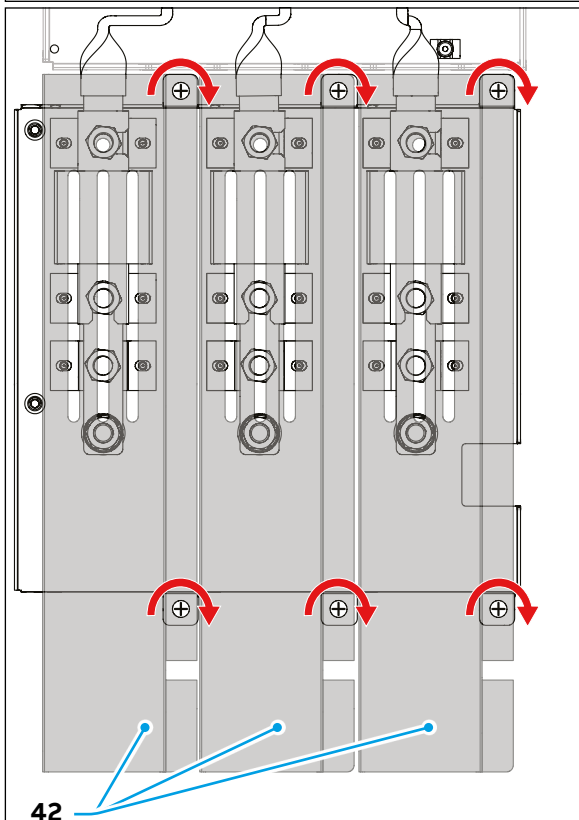
- Unscrew and remove the 6 screws (2 on each protection barrier).
- Remove the Main AC protection barriers (42).

5.4.2 Install the Main AC protection barriers

At the end of operation on the Main AC terminals (**33**) or AC input fuse (**32**), is necessary to install the Main AC protection barriers (**42**) to ensure the safety of the EVSE.



- Install the three Main AC protection barriers (**42**) using the six M5 screws (2 on each protection barrier).
- Tighten the screws to 11.5 lbf-in (1.3 Nm).



6. Installation

In this section are illustrated all the installation procedure.

Chapter recipients:



- Owner
 - Qualified installer
-

6.1 Unpacking



WARNING

Packaging elements (cardboard, cellophane, staples, adhesive tape, straps, etc.) may cause cuts and/or injuries if not handled with care. They should be removed with the proper equipment.



NOTE

The components of the packaging must be disposed in accordance with the regulations in force in the country of installation.



NOTE

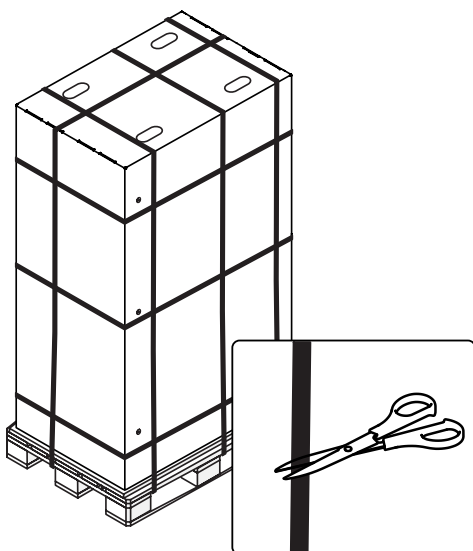
If you find damage or the parts are not according to the order, contact the local manufacturer service dept.

6.1.1 Unpacking procedure

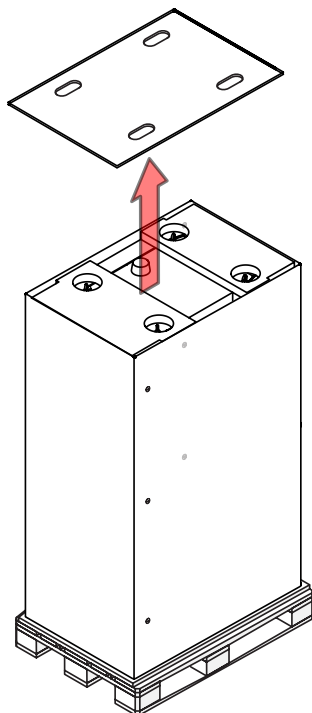


NOTE

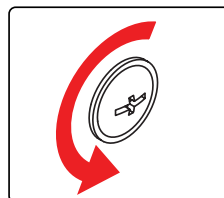
Make sure that all parts are delivered according to the order.



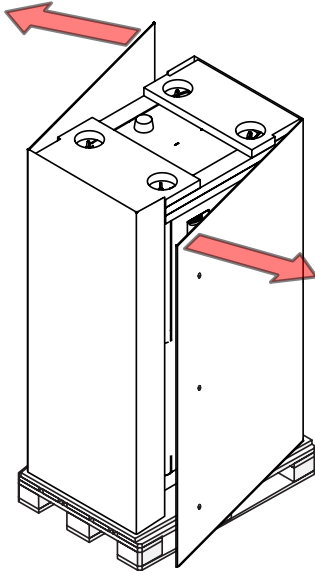
- Cut the plastic straps.



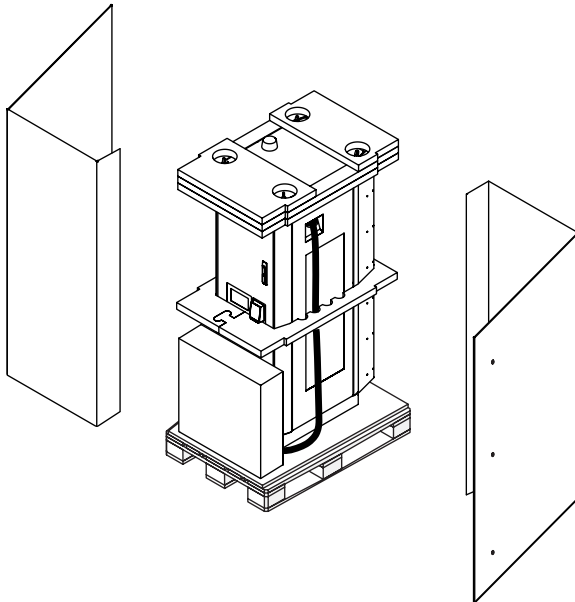
- Open the six locking mechanisms (3 on both sides).



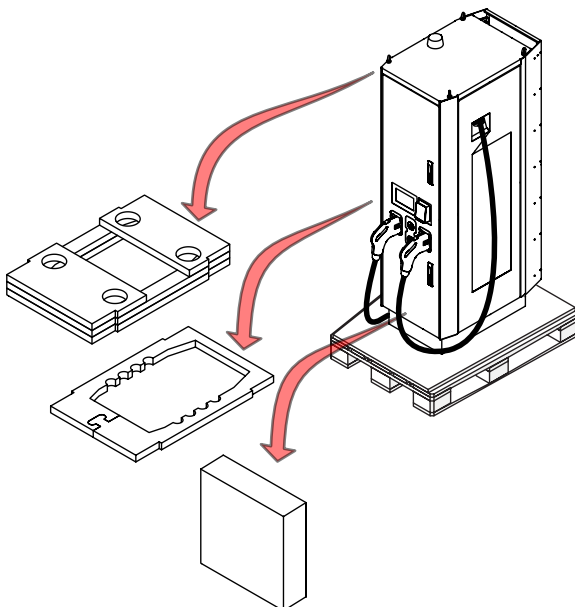
- Remove the external top cover.



- Spread the cardboard on both sides.





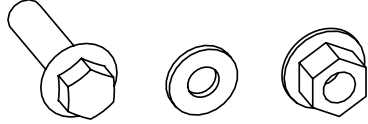

- Remove the two main parts of the packaging.
- Take out the supplied components. Refer to [“6.1.2. Components supplied with the EVSE”](#).



- Remove the internal foams.
- Remove the charging cable from the box.

6.1.2 Components supplied with the EVSE

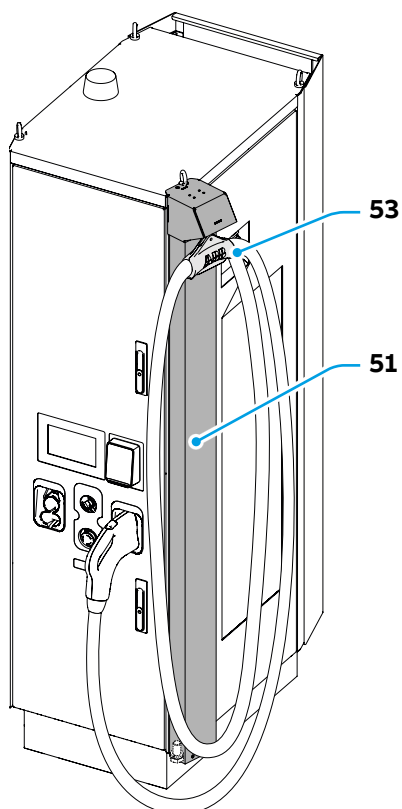
When the EVSE is unpacked, make sure all components supplied with the EVSE are present:

Component	Description	Quantity
	Keys to open the EVSE front door	2
	Nuts to install the EVSE to the floor	6
	Bolts + Washers + Nuts to install AC and PE cables	4 + 8 + 4 (Preinstalled on the AC terminals and PE busbar)
	Caps to be installed in place of the eyebolts	4

6.2 Installation of the EVSE

6.2.1 Install the charging cables on the optional CMS

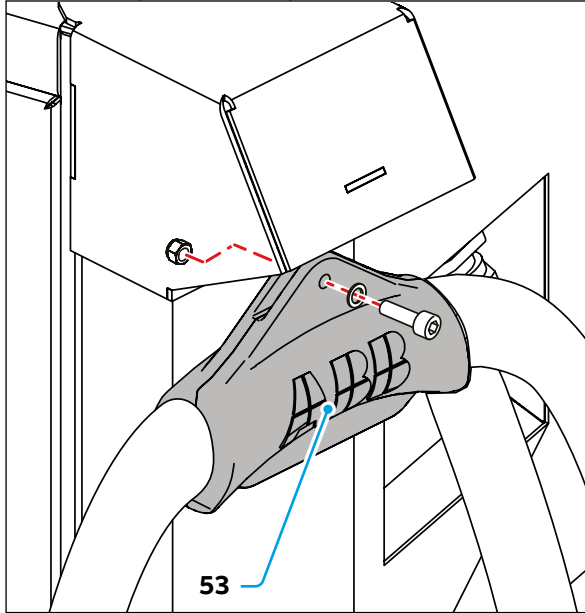
If the EVSE is equipped with CMS (51), the charging cables must be hooked up on the respective CMS using the Cable clamp (53).



The EVSE can be equipped with two types of cable clamp used to hook the charging cable on the CMS. Follow the steps below regarding the clamp that is present on the EVSE:

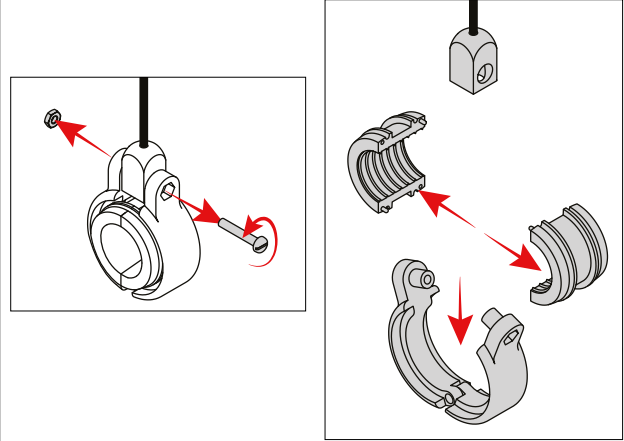
TYPE 1

- Install the cable clamp **(53)**, one on each charging cable, on the rope of the respective CMS.



TYPE 2

- Remove the cable clamp from the CMS by unscrewing the screw and the hex nut.

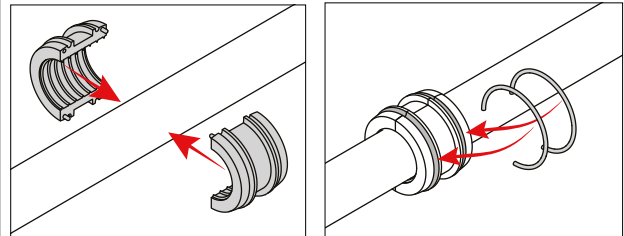


- Install the “Clamp insert” on the charging cable (at 8.2 in (250 cm) starting from the EVSE) and lock it in position by inserting the 2 springs.

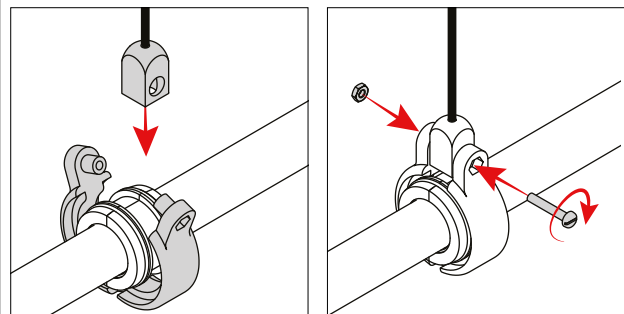
NOTE



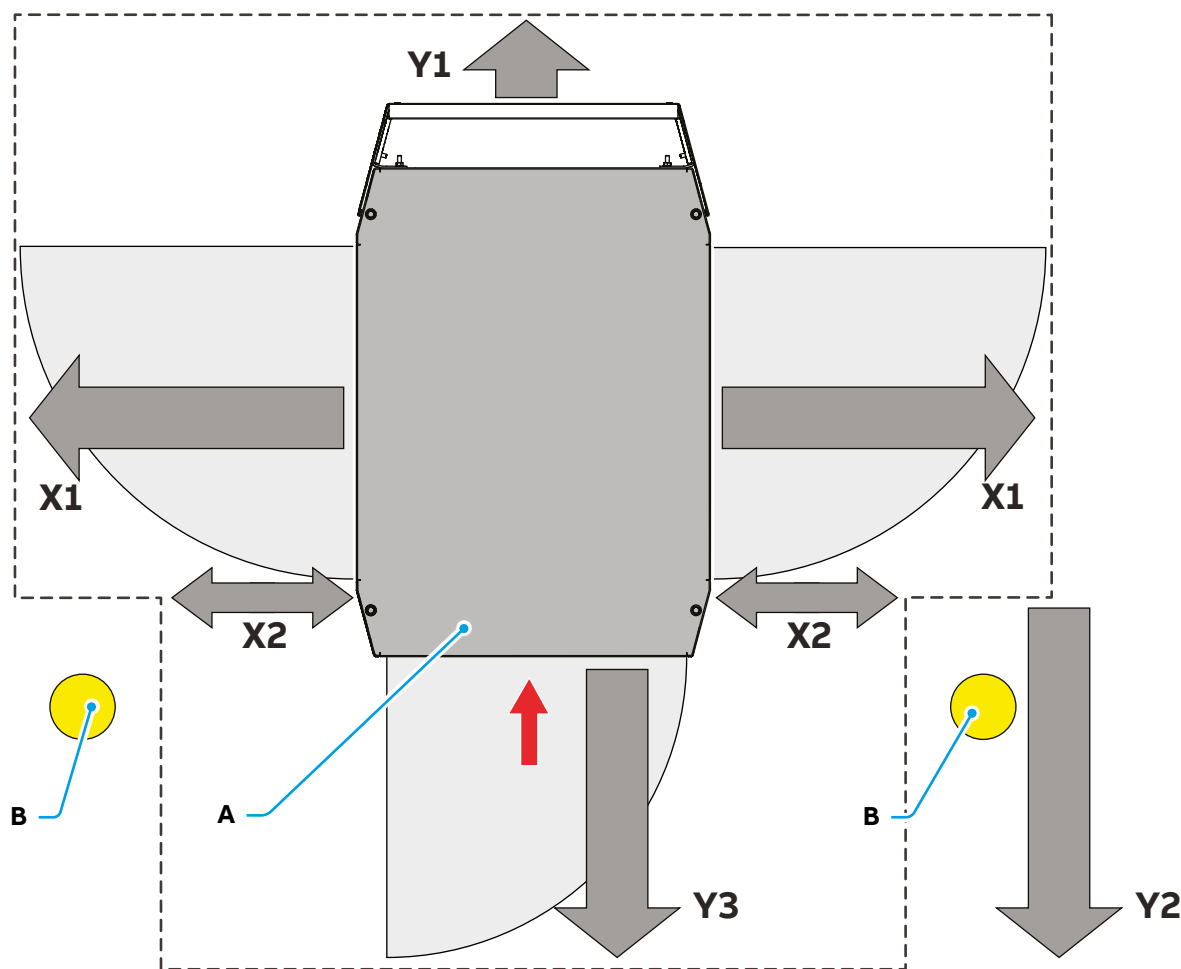
Before installing the clamp, some cable types require a layer of rubber tape between the charging cable and the clamp. Make sure the tape is installed properly in order keep a perfectly round profile without overlapping with its other end, approximately $\frac{1}{8}$ in gap.



- Install the clamp on the cable insert.
- Install the rope holder on the cable clamp.
- Install the screw and the hex nut to secure the holder and the cable clamp.



6.2.2 Floor space requirements



Parameter	Description	Specification	
		[in]	[mm]
A	EVSE (front side indicated by red arrow)		
B	Example of approved bollard location		
X1	Space to open the side doors	21	533
X2	Reduced side space to install the bollards	12	305
Y1	Space needed to secure the removable base cover	4	102
Y2	Increased front space to install the bollards	23	585
Y3	Space to open the front door	19	483

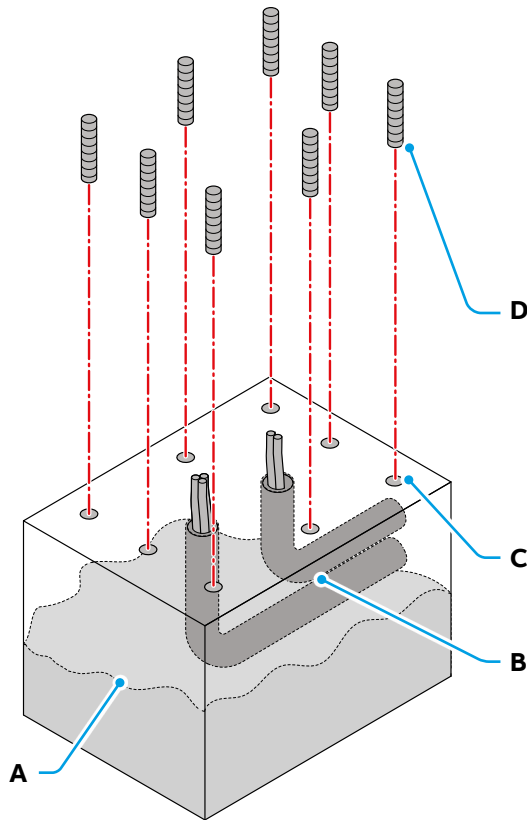


NOTE

These dimensions only refer to the required space to open the doors of the EVSE. A minimum of 1 m extra on front, left and right sides is required to allow commissioning and maintenance operations on the EVSE.

6.2.3 Prepare a custom foundation

The EVSE must be installed on a custom foundation suitable to support the weight of the equipment. Use the drawing of the [“11.2. Custom foundation - EVSE footprint”](#) to build the foundations before to install the EVSE as described in the instruction below:



- Dig the hole **(A)** for the casted foundation. For the specifications, refer to section [“11.2. Custom foundation - EVSE footprint”](#)
- Prepare the site and the underground cable conduits.



NOTE

Is recommended to route the power and signal cables inside separated underground cable conduits.

- Pour the concrete into the hole. Make sure that the cable conduits **(B)** are in the correct position.



NOTE

Let the concrete dry.



CAUTION

Make sure that the top surface of the foundation is above the ground level, to prevent intrusion of water.

- Route the cables inside cable conduits:
 - L1
 - L2
 - L3
 - Protective Earth PE
 - Ethernet (optional)
 - Signals (eg. tilt sensor)

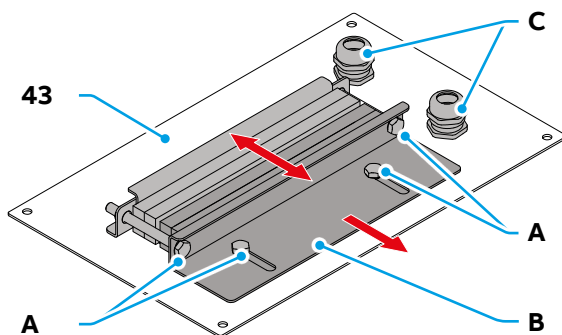


NOTE

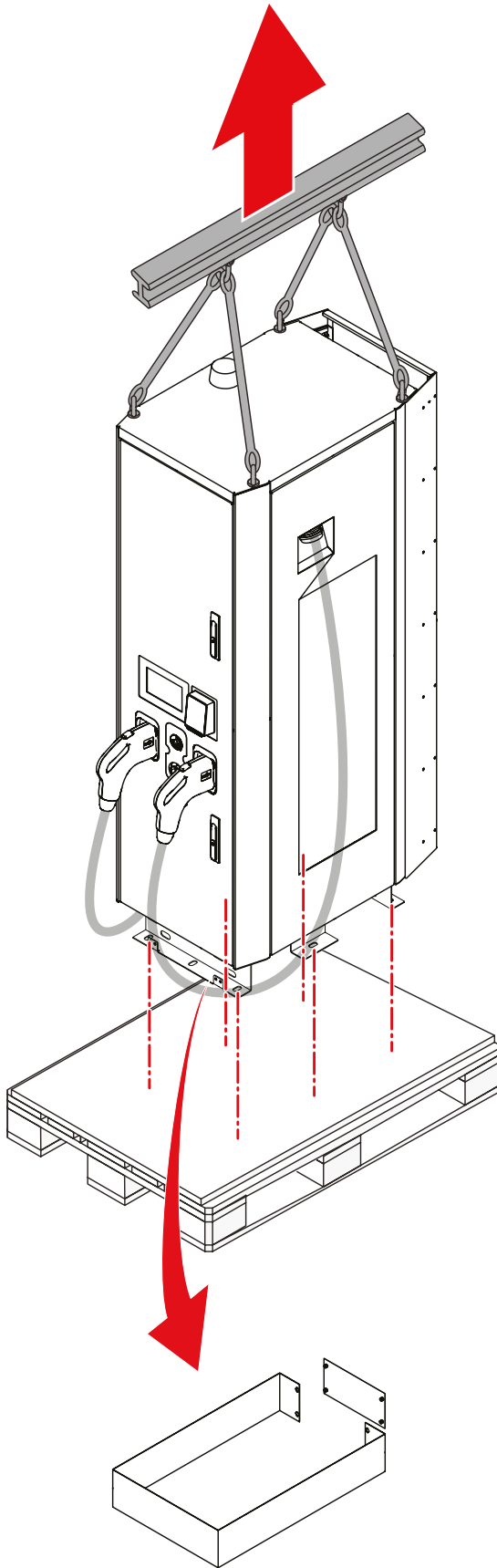
Max. cables diameter $1 \frac{37}{64}$ in (40 mm).
Cable slack at least $27 \frac{9}{16}$ (700 mm).

- Drill the fixing points **(C)**.
- Install the dowels **(D)**.

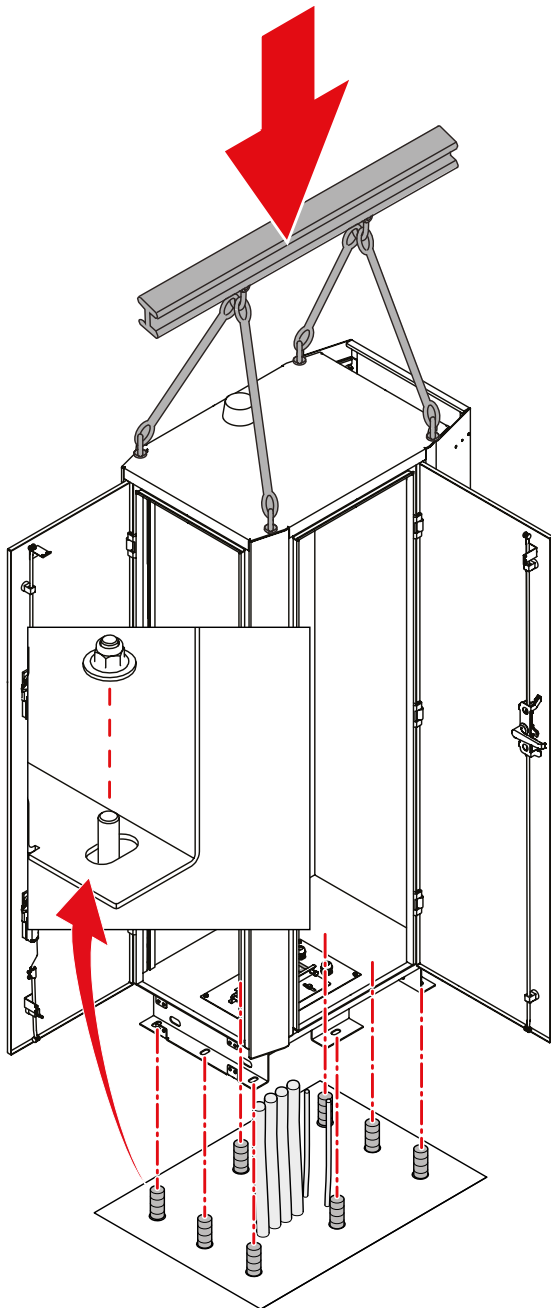
6.2.4 Install the EVSE on the foundation



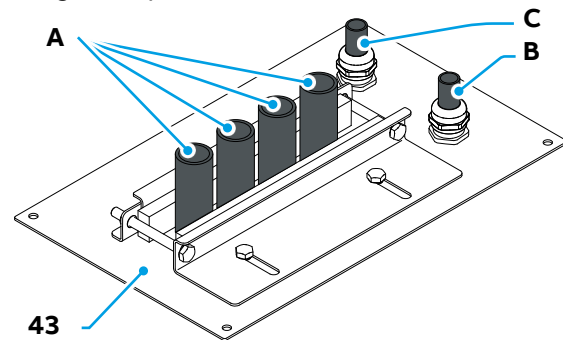
- Open the front and right doors. Refer to section [“5.1.1. Open the front door”](#) and [“5.2.1. Open the left and right doors”](#)
- Remove the Main AC protection barrier **(42)**. Refer to [“5.4. Main AC protection barriers”](#).
- Open the Cables entry plate **(43)**:
 - Loosen the fasteners **(A)**
 - Move the sliding plate **(B)** to open the cable inlet
- If it is necessary, open the cable glands **(C)** for the Ethernet and Signals cables.



- Connect the ropes/chains of the hoisting equipment to the eyebolts installed on the top side of EVSE.
- Hook up the lifting means and stretch the ropes leaving them slightly loose.
- Remove the Removable base cover **(11)**. Refer to [“5.3.1. Remove the border covers”](#).
- Remove the 6 bolts (3 on each side) used to secure the EVSE to the pallet.
- Lift the EVSE.



- Open the front (02) and right doors (13) of the EVSE when it is near to ground. Refer to section [“5. Access to the internal parts”](#)
- Remove the three Main AC protection barriers (42). Refer to section [“5.4.1. Remove the Main AC protection barriers”](#).
- Carefully lower the EVSE on the floor/foundation. During this phase the cables must be aligned and routed through the Cables entry plate (43):
 - L1, L2, L3, Protective Earth PE (A)
 - Ethernet (optional) (B)
 - Signals (optional) (C)


Risk of pinching or crushing of body parts

Make sure that cables do not get trapped between the EVSE and the base and that they are aligned to the AC and PE connection terminals.

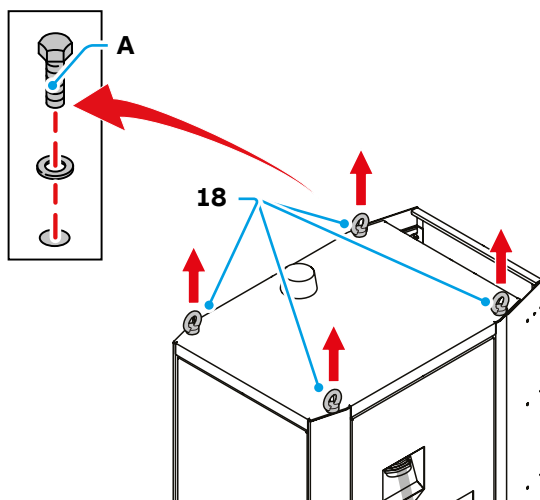

NOTE

Align the 8 holes in the EVSE to the threaded studs on the foundation.


CAUTION

Make sure that there are no kinks in the cables

- Install the 8 fasteners to secure the EVSE to the foundation.



- Remove the Lifting points (Eyebolts) (18) on the roof.
- Install the caps (A), each with a flat washer and a split lock washer.

The mechanical installation of the EVSE is completed and the electrical connections can be done.

7. Electrical connection

In this section are listed all the electrical connection procedure.

Chapter recipients:



- Qualified installer

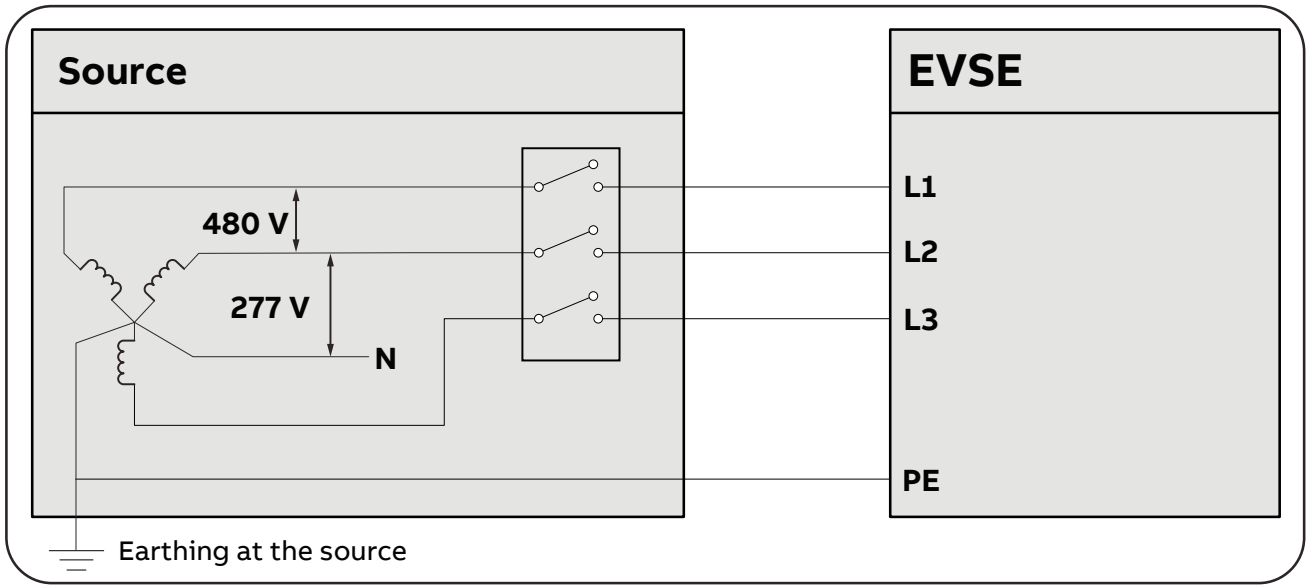


7.1 Electrical connection - preliminary operations


EN

7.1.1 AC low voltage network configuration

The following WYE network configuration is allowed for the AC connection of the EVSE:

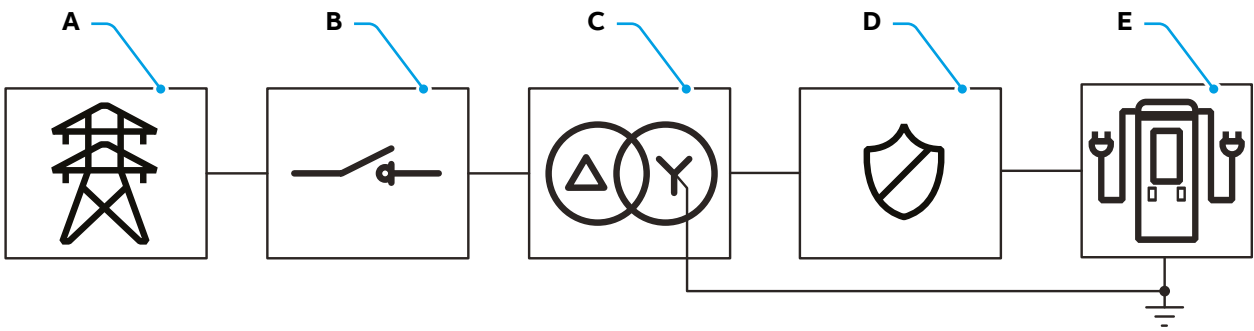



- Wire L1, L2, L3
- Wire PE to the charger earthing bar without interruption

**NOTE**
The EVSE must be wired with a WYE input. The neutral (N) connection is not required.

7.1.2 External AC input protections

General schematic to identify the position of AC protection devices.



Parameter	Description
A	Medium voltage network
B	Medium voltage breaker
C	Medium voltage/Low voltage transformer
D	Low voltage protection devices: - Overcurrent protection - Surge Protection Device (SPD) Type 1
	<div> This information does not supersede any legal regulations. The installer engineer should be aware that local regulations may impose requirements not reflected in this document. The most stringent requirements shall be applied.</div>
E	EVSE

7.1.2.1 Overcurrent protection

An external overcurrent protection device shall be installed to protect the line from medium voltage transformer to EVSE. The protection system can be chosen between the 3 options below:

1. Main Switch 3P + 3x fuses
2. Fuse switch 3P
3. Circuit Breaker 3P



NOTE

In weak grids the AC voltage may vary from nominal voltage; in these conditions EVSE works with higher input current than nominal one. This information has to be taken in consideration to properly select the overcurrent protection device.

The below table provides the technical data to size the overcurrent protection:

	AC input voltage [V]	AC input current [A]
Terra 94	Nom. 480	115
	Recommended input circuit breaker	150
Terra 124	Nom. 480	153
	Recommended input circuit breaker	200
Terra 184	Nom. 480	230
	Recommended input circuit breaker	300

7.1.3 Internet access

ABB requires an Internet connection to the charger for remote service operations including diagnosis, troubleshooting and performing software/firmware update.

It is the installer's responsibility to ensure reliable Internet connection to the charger. Contingency planning and the associated costs are the responsibility of the installer.

There are two options for the Internet connection:

- Internet via cellular network connection
- Internet via Ethernet connection

7.1.3.1 Internet via cellular network connection

Connection to the charger using the charger's standard featured hardware with ABB's Charger Connect service offering, is the preferred method. This solution provides Internet access via 4G LTE wireless network. It is expected that a cellular availability test is performed prior to construction to ensure there is reasonable signal quality to at least one of the above-mentioned operators 4G LTE bands 2 (1900 MHz), 4 (1700/2100MHz), or 12 (700 MHz).



NOTE

Signal strength must be greater than -85 dBm (RSSI) and measured with a cellular signal meter.



NOTE

The Charger supports SIM cards provided by ABB only. Any other types of SIM cards are not supported.

7.1.3.2 Internet via Ethernet connection

If the cellular connection is not available, Ethernet connection must be made to the charger.



NOTE

Once the charger is connected to the fixed Local Area Network (LAN), some settings must be performed by ABB service. Contact ABB for more details.

7.2 Protective earth (PE) connection



HAZARDOUS VOLTAGE

The EVSE's protective earth (PE) connection is mandatory.

The EVSE must be earthed via the connection points marked with the protective earth symbol and using a cable with an appropriate conductor cross-section for the maximum ground fault current that the system might experience.



CAUTION

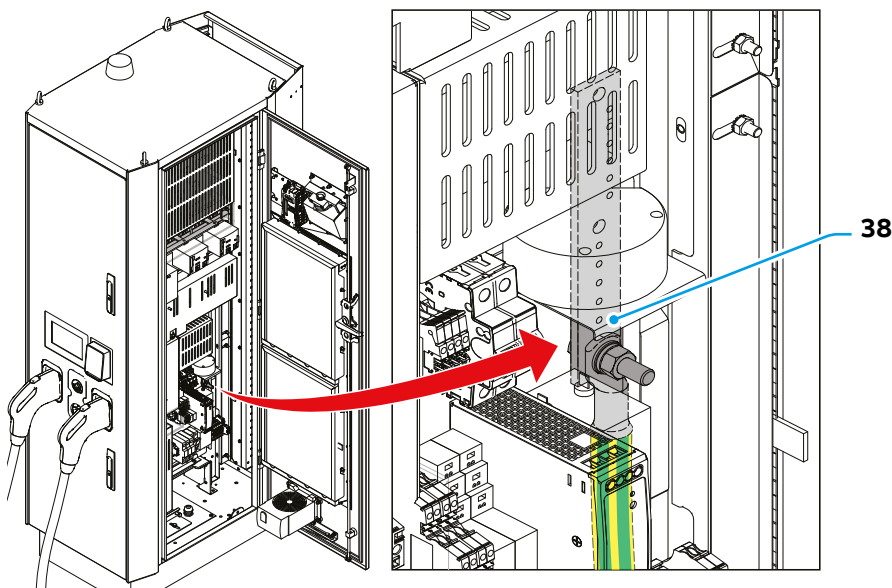
It is necessary to select the Ground (PE) wire size per NEC or local electric code.

The earth connection must be made through the Protective Earth (PE) internal connection busbar **(38)**.

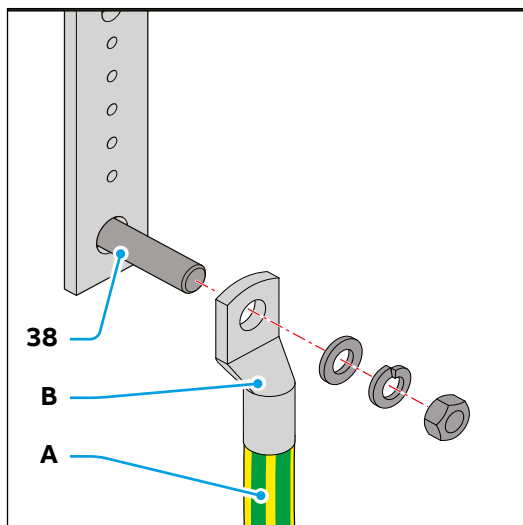


NOTE

Any failure of the EVSE not connected to PE is not covered by the warranty.



7.2.1 Connect the PE wire



- Prepare the PE cable:
 - Cut the PE cable **(A)**. Make sure that the length is sufficient for connection at the PE busbar **(38)**.
 - Strip the insulation from the end of the cable.
 - Attach the cable lug **(B)** to the end of the cable. Use the dedicated lug tool.

- Install the Main Protective Earth (PE) cable on the PE busbar **(38)**.

Cable lug

Hole	Ø11 for M10 ^(25/64) cable lug
------	--

- Tighten the fasteners to 292...389 lbf-in (33...44 Nm).

7.3

AC input connection



HAZARDOUS VOLTAGE

Before carrying out any operation, check that any external switch of voltage sources (upstream to the EVSE) are in OFF position and check for voltage absence on the AC conductors!

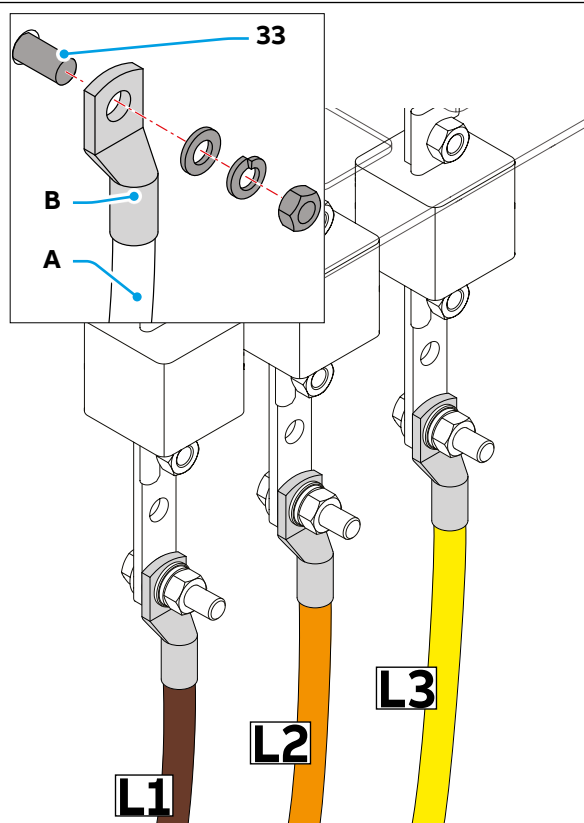
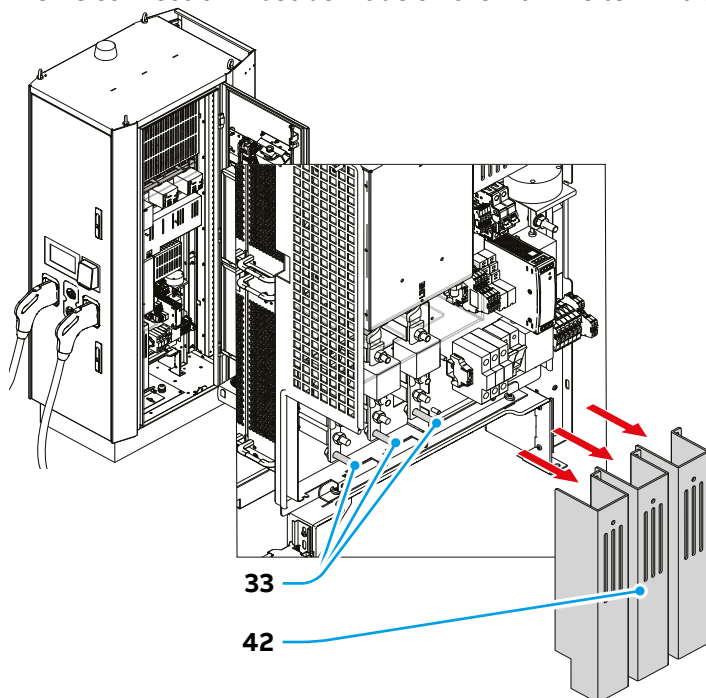
The EVSE must be connected to the AC input using cables with an appropriate conductor cross-section for minimize loss of power.



NOTE

Any failure of the EVSE not connected to PE is not covered by the warranty.

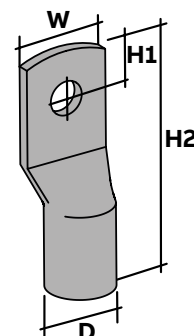
The AC connection must be made on the Main AC terminals **(33)**.



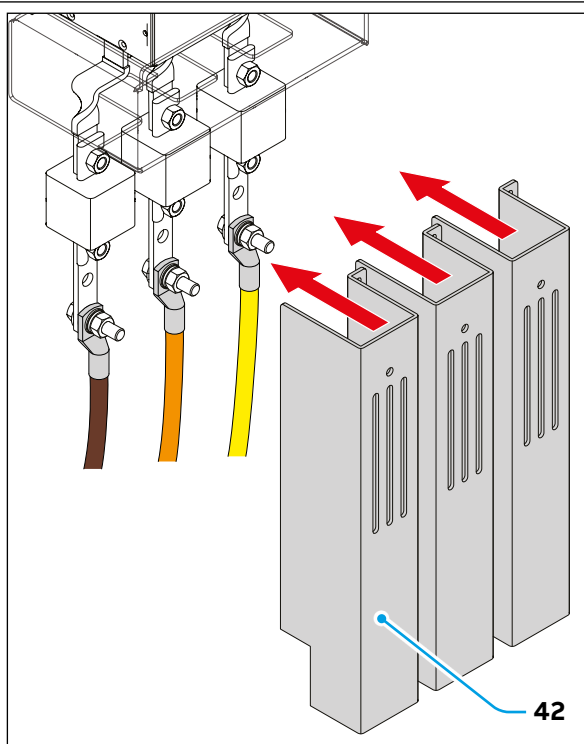
- Remove the three Main AC protection barriers **(42)**, if not previously removed. Refer to [“5.4.1. Remove the Main AC protection barriers”](#) for the procedure.
- Prepare the cables:
 - Cut the cables **(A)**. Make sure that the length is sufficient for connection at the Main AC terminals **(33)**.
 - Strip the insulation from the end of the cables.
 - Attach the cable lugs **(B)** to the end of the wires. The maximum dimensions of the cable lugs must be:

Cable lug dimension

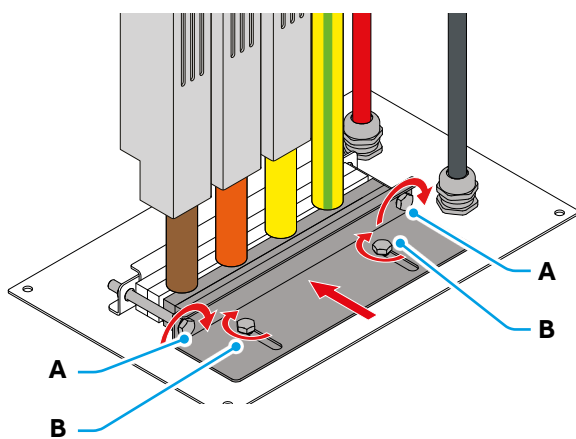
W	20
H1	50
H2	120
D	40
Hole	Ø11



- Connect the AC cables to the Main AC terminals **(33)**. Tighten the fasteners to 292...389 lbf-in (33...44 Nm).



- Install the three Main AC protection barriers **(42)**. Refer to [“5.4.2. Install the Main AC protection barriers”](#) for the installation procedure.



- Close the sliding plate using the 2 side screws **(A)**.

**NOTE**

Tighten the system until the sponges close the spaces around the AC cables.
Do not overtighten the AC cables to avoid damaging them.

**NOTE**

The AC cables entry system is not a cable retention system (use cable ties to lock the cables in place). The purpose of the AC cable entry system is to seal the cable openings through the sponges.

- Lock in position the plate by screwing the 2 screws **(B)**.

7.4 Ethernet connection

The charger's Ethernet communication, if the Ethernet port is enabled and an on-site Internet connection is available, allows to the charger to transmit telemetry data to the ABB EVCI Cloud without the need to install any additional devices (the logging functionality is already integrated into the charger by default). ABB's EVCI cloud platform consists of several solutions for monitoring and management of chargers in real-time. For more information, please refer to <https://new.abb.com/ev-charging/connected-services/web-modules>.

NOTE



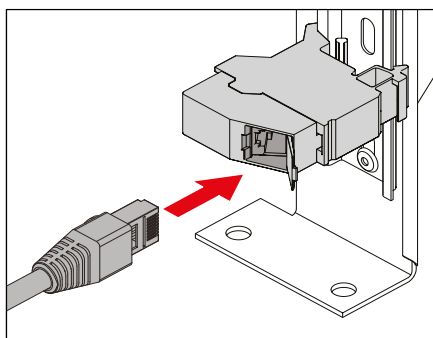
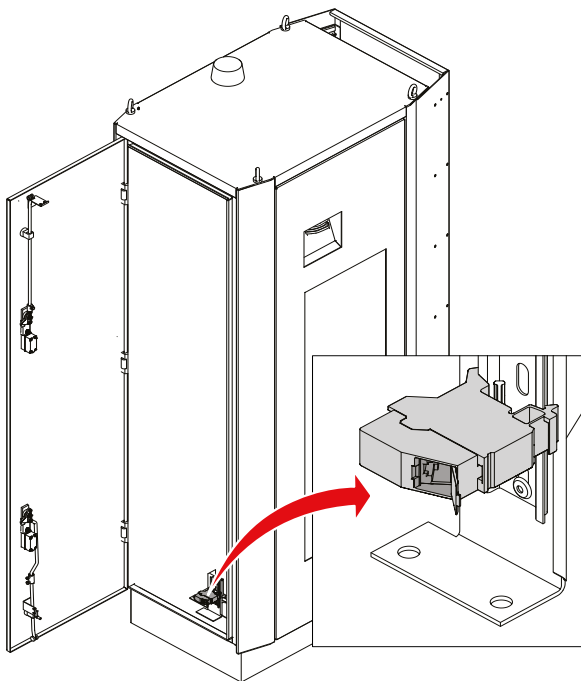
We recommend using at least a CAT 5e category Ethernet cable for standard connection performance.

For installations in environments with a high presence of electromagnetic interference and/or noise, we recommend using at least a CAT 6 shielded LAN cable.

For installations in environments subject to extreme conditions, consult an expert technician.

7.4.1 Connect the Ethernet cable

The Ethernet connection must be made on Ethernet connector **(34)**.



- Open the protective cover on the Ethernet connector **(34)**.
- Connect the Ethernet cable to the Ethernet connector **(34)**.

7.5 Tilt sensor (optional) connection

The tilt sensor device, when is activated (tilt more than 10°), allows to disconnect the main AC input voltage. The undervoltage release, connected to the tilt sensor, is de-energized and the main AC circuit breaker opens. The tilt sensor has a contact that is closed when the tilt sensor is de-energized and there is no tilt detected.



NOTE

The manufacturer recommends to use and an uninterruptible power supply for the 24 V DC, to prevent tripping of the branch circuit breaker. The circuit breaker, 24 V DC power supply delivered from an UPS and all other external components to the EVSE are not within the scope of ABB E-mobility, therefore are not provided.



NOTE

The owner is responsible for considering a voltage drop on the 24 V DC circuit. The owner must make sure that the undervoltage release of the branch circuit breaker receives the correct input voltage according to the required specifications.

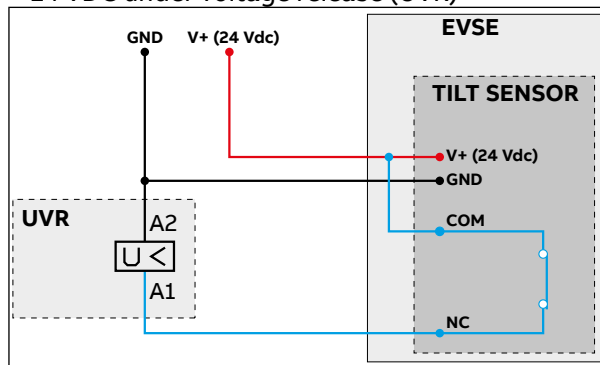


NOTE

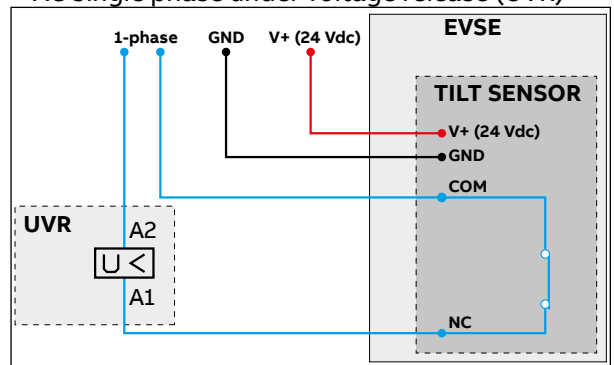
Refer to ["10.1.1. Technical data table"](#) for technical specifications.

The illustrations shows the tilt sensors interface with the power distribution system of the site.

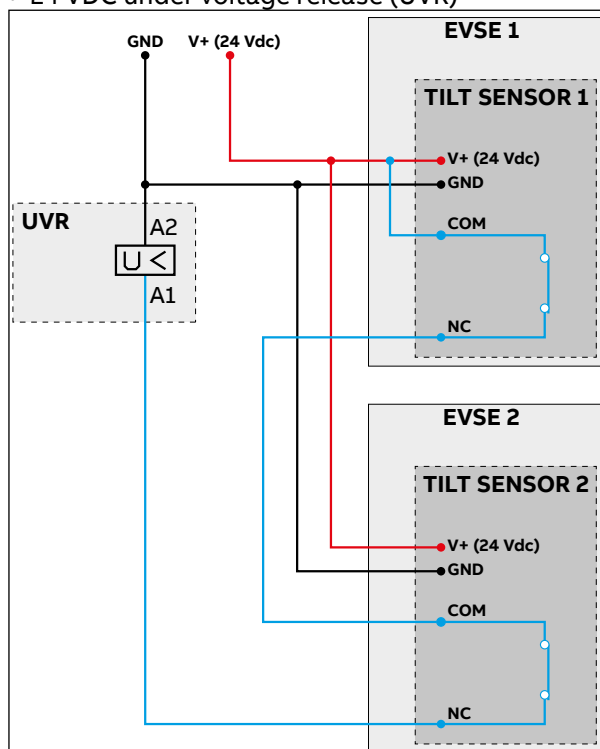
- Single EVSE
- 24 VDC under voltage release (UVR)



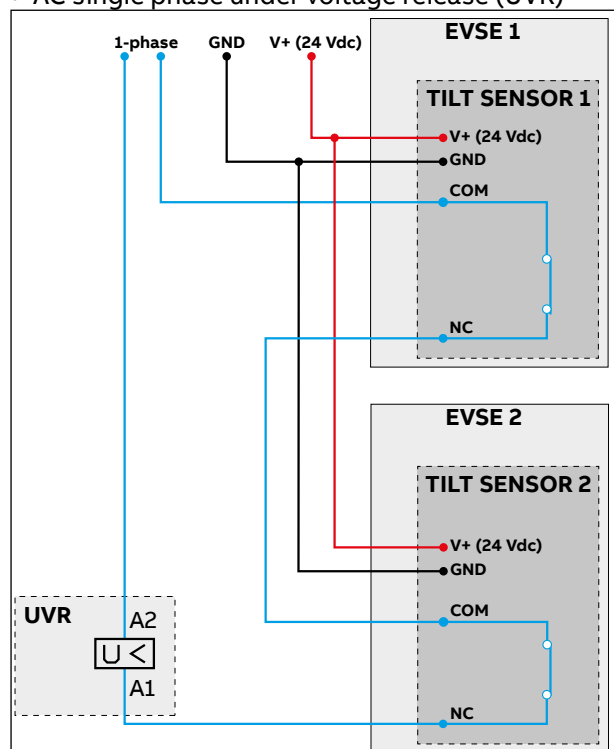
- Single EVSE
- AC single phase under voltage release (UVR)



- Multi EVSE
- 24 VDC under voltage release (UVR)

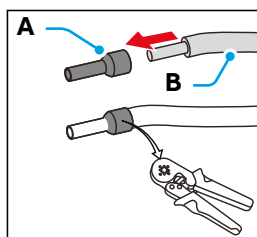
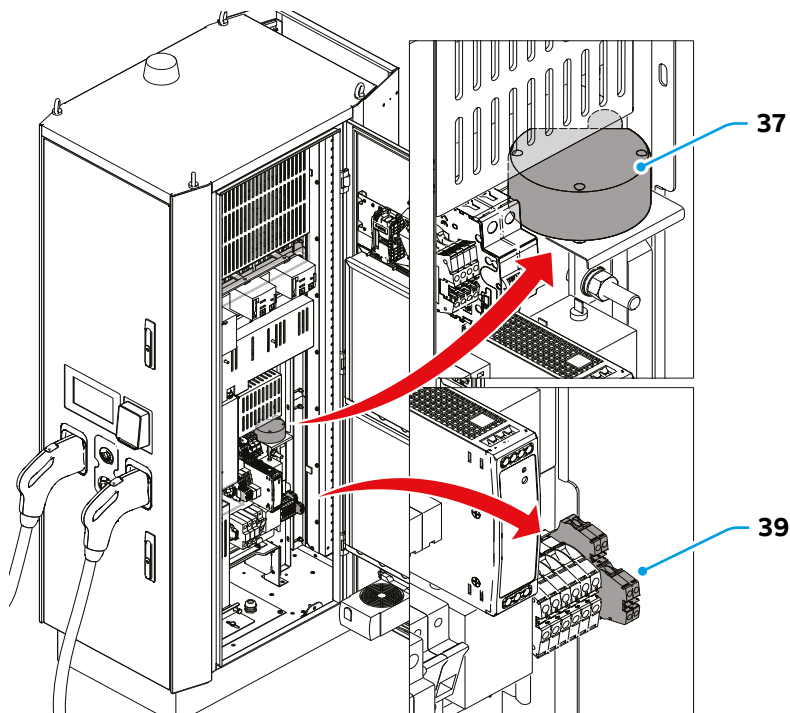


- Multi EVSE
- AC single phase under voltage release (UVR)

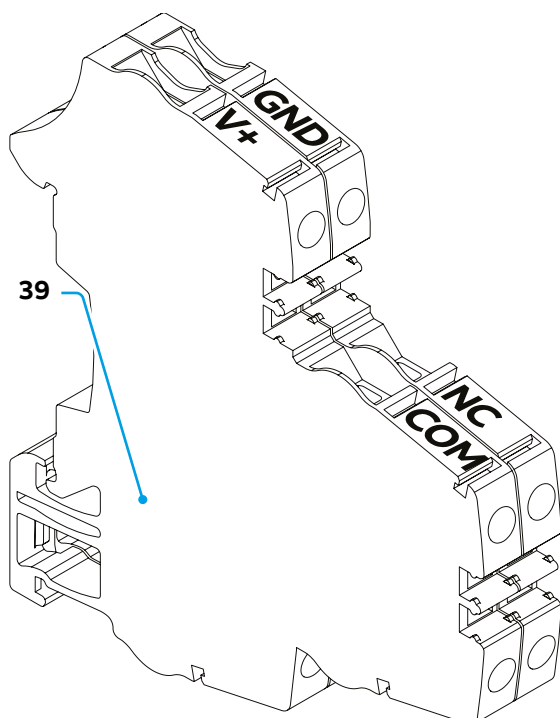


7.5.1 Connect the tilt sensor (option)

The connection of the tilt sensor (37) must be made on screw terminal block (39).



- Cut the 4 wires to connect the tilt sensor, so that they reach the lower side of terminal block (39).
- Strip the insulation from the end of the wires.
- Crimp a ferrule (A) on the end of the wires (B).



- To install the wires on the screw terminal blocks (39) follow the step:
 - Open the terminal (unscrew the frontal screw), then insert the wire into the terminal block.
 - Open the terminal keeping the wire in position. Tighten the screw to 11.5 lbf-in (1.3 Nm).

- Connect the following wires:

Wire	Description
GND	Power supply (24V) ground
V+	Power supply (24V) positive
COM	Relay - Common contact
NC	Relay - Normally closed contact

8. Operation and correct use

This chapter will give instruction on the correct use of the EVSE.

Chapter recipients:



- Owner
 - Qualified installer
 - User
-

8.1 Prepare for commissioning



Danger: Hazardous voltage

Do not commission the EVSE. Only a service engineer of the manufacturer is qualified to commission the EVSE

The below requirements and operations are Owner/Qualified installer responsibilities:

1. The Qualified installer should tell the owner that the EVSE is ready for commissioning.
2. The Owner/Qualified installer should check that the site is in accordance with these requirements:
 - The EVSE is installed
 - AC input power is available from the grid provider
 - Be present during the commissioning, for assistance and to energize the power to the EVSE on the power distribution board
 - Internet access is available, through cellular (default) or wired Ethernet connection.
In case of cellular connection, the signal strength must be greater than -85 dBm and should be measured with a cellular network signal meter. Handheld mobile phones are not recommended for assessing signal strength since they are not reliable measuring devices. Refer to [“7.1.3. Internet access”](#)
 - An EV must be available with a compatible connection. If the EVSE has more than one connection type, an EV of each type must be available
 - Night illumination must be sufficient to easily see the charging cables and other obstacles around the EVSE
 - The site operator or owner is available to receive instructions from the service engineer of the manufacturer
3. The Owner/Qualified installer should check that these data are available:
 - Contact data of the contact person on site
 - Address of the EVSE
 - Site name
 - Exact location of the EVSE: longitude and latitude. If there are more EVSEs on one location, make sure that the coordinates are slightly different (at least 0.0001 degree) so that the EVSEs are not at the same location on the map.
 - Specification of the external AC protection devices at the power distribution board
 - Installation date
 - Special remarks, for example to decline the authorization for the service engineer of the manufacturer to take photos
 - Photo of the surroundings/cables arrival of the EVSE

8.2 Prepare before use

- Appoint a site operator and an installation engineer, if these are other persons than you.
- Make sure that the EVSE is installed according to the instructions in this manual.
- Make an emergency plan that instructs people what to do in case of an emergency.
- Give instructions to each end user:
 - Emergency stop. Refer to section [“8.3.3. Emergency stop of a charge session”](#).
 - Charge session. Refer to section [“8.3. Charging session”](#).
- Make sure that the manufacturer service or authorized service partner commissions the EVSE. If not, contact the manufacturer when the EVSE is ready for commissioning.



General risk:

Make sure that you have approval of the manufacturer to use the EVSE after commissioning. After approval, do not perform any change on the EVSE.

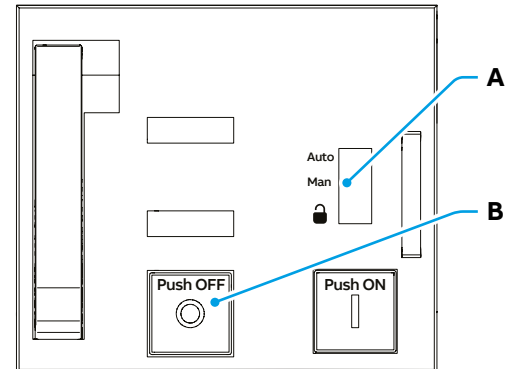
- Make sure that the space around the EVSE cannot get blocked.
- If necessary, remove condensation before use, to prevent damage to the EVSE.
- Start/stop a charge session. Refer to section [“8.3. Charging session”](#).

8.2.1 Remove condensation from the cabinet

To remove condensation inside the charger, carry out the following procedure:

- Perform the Total de-energization procedure. Refer to section [“9.3. Total de-energization of the EVSE”](#)
- Open the front and right doors. Refer to section [“5. Access to the internal parts”](#)

- Move the selector on the two main DC breakers (35) from the Auto to the Manual position (A).
- Push OFF (B) to open the two main DC breakers (35).



- Close the doors. Refer to section [“5. Access to the internal parts”](#)
- Set the upstream breaker to ON position to provide power to the EVSE.
- Wait four hours at least.



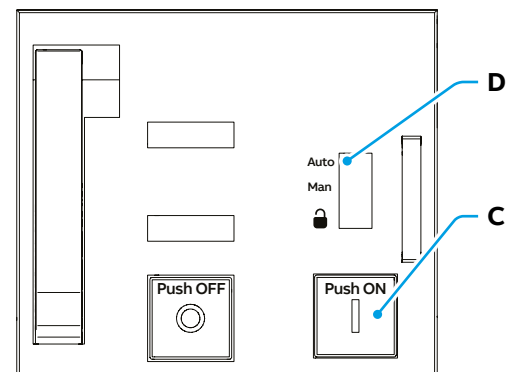
NOTE

The internal heater of the cabinet heats the inside of the cabinet and lets the condensation evaporate.

When the procedure is completed, perform the following operations to set the charger to normal operating conditions:

- Perform the Total de-energization procedure. Refer to section [“9.3. Total de-energization of the EVSE”](#)
- Open the front and right doors. Refer to section [“5. Access to the internal parts”](#)

- Push ON (C) to close the two main DC breakers (35).
- Move the selector on the two main DC breakers (35) from the Manual to the Auto position (D).



- Close the doors. Refer to section [“5. Access to the internal parts”](#)

8.3 Charging session

8.3.1 Start a charging session

- Park the electric vehicle with the charge inlet within reach of the connector.
- Turn off the electric vehicle.
- On the touchscreen, select the applicable **charging connector** button.

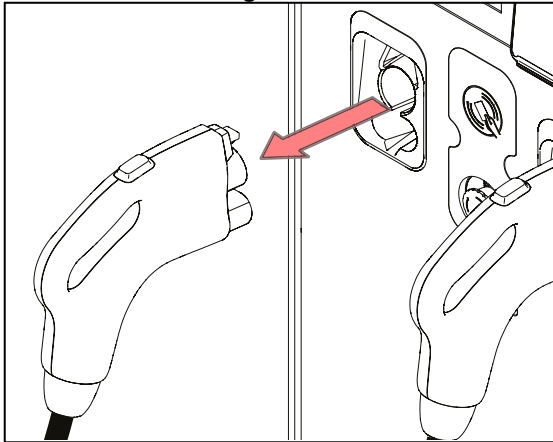
**NOTE**

If you skip this step, the EVSE selects the correct connector automatically when you connect the EV charge cable to the EV.

**Danger: Hazardous voltage**

Check the integrity of the charging cable and connector before connecting the electric vehicle. Do not start the charge session if damage is found.

- Remove the EV charge cable from the EVSE.



- Connect the EV charge cable to the connector on the EV.
- On the touchscreen, press the **Start** button.
- If the touchscreen shows a message to authorize the charge session, follow the instruction that the touchscreen shows.
- The EVSE charges the EV and shows the status on the touchscreen.

**Danger: Hazardous voltage**

The charging connector will be locked in position in order not to allow removal during the charging phase.

8.3.2 Stop a charging session

- On the touchscreen, press the **Stop** button.

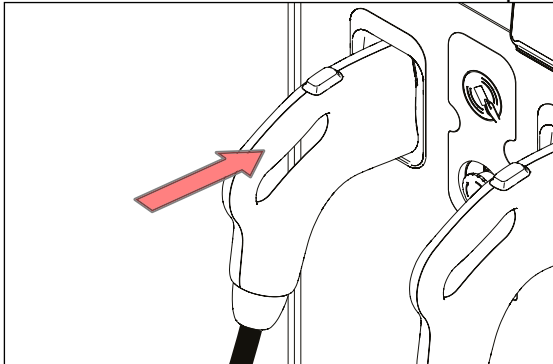
**NOTE**

When the battery is full, the charge session stops automatically.

**Danger: Hazardous voltage**

The connector is unlocked by the vehicle.

- Take the connector out of the vehicle and put it back in the connector holder on the EVSE.



8.3.3 Emergency stop of a charge session

NOTE

Stop by emergency stop button is possible only if the optional button is installed on the front door of the EVSE.

The EVSE stops the charge session when the emergency stop is pushed.

Only push the emergency stop if there is an emergency!

If there is an emergency:

- Push the emergency stop button. The EVSE stops the operation and the display will become red.
- Contact the Site operator.

**NOTE**

Only push the emergency stop if there is an emergency!

If the emergency stop button is accidentally pushed:

- Verify that the situation is safe.
- Pull the emergency stop button out by twisting the button. The EVSE is reactivated and after a few seconds the charger returns to normal operation.

9. Maintenance and troubleshooting

In this section the user will be instructed on maintenance and cleaning procedures.

Preliminary requirements



Owner

9.1 Routine maintenance

Maintenance activities on the EVSE shall be performed, at regular time-based intervals, to increase the lifespan and reduce possible downtime.



NOTE

The routine maintenance schedule may vary depending on the environmental conditions and number of charging sessions of the EVSE.



NOTE




In addition to routine maintenance, a scheduled component replacement shall be performed to guarantee the continuity of operation of the EVSE.
Contact ABB E-mobility for more information on available Service Level Agreements.



HAZARDOUS VOLTAGE

Operation on the inside of the EVSE shall be performed only by authorized or trained personnel.
To de-energize the EVSE for maintenance activities refer to section [“9.3. Total de-energization of the EVSE”](#)

The below table shows the frequency and the list of activities to be performed on the EVSE:

Frequency	Who	Activity
3 months (or as needed)	Owner	Visual inspection on the external parts of the EVSE: <ul style="list-style-type: none">• Exterior of the cabinet• Charging cables• Charging connectors• Connector holders• Cable management systems (if present)• Signs of rust that cause ingress of water <div>NOTE  When the EVSE is put in a corrosion sensitive environment, superficial rust is possible on welding points. This rust is only visual. There is no risk for the integrity of the EVSE.</div> <ul style="list-style-type: none">• Check there are no obstacles (animals, insects, leaves or anything) which could reduce the heat exchanging capacity of the EVSE. Functionality checks: <ul style="list-style-type: none">• Display• Display buttons• Status LED strip• RFID• Meter display (if present)• Payment terminal (if present) Clean the external parts of the EVSE: <ul style="list-style-type: none">• Cleaning agent with pH value between 6 and 8• Do not use abrasive tools.• Do not apply high-pressure water jets.
		Clean or replace the internal parts of the EVSE: <ul style="list-style-type: none">• Air filters (inlet and outlet) <div>General risk:  To be carried out only if:<ul style="list-style-type: none">• having completed the dedicated course by ABB E-mobility• the activity is not included in the Service Level Agreement (SLA)</div> <div>NOTE  Environment characteristic and number of charging sessions may increase or decrease the number of replacements during the life time of the charger.</div>

9.2 Troubleshooting

If you get a problem on the EVSE, the below troubleshooting can help to resolve the problem.



NOTE

If you cannot find a solution for the problem, please contact your local manufacturer service dept.

Problem	Possible cause	Possible solution
The display is black and it does not light up when you press a display button	Main AC voltage is missing	Check main AC voltage presence
	Upstream AC protection trip	Check and reactivate the upstream AC protection
	EVSE internal problem	Contact ABB E-mobility Service dept.
The display shows this message: Unable to lock the connector	The EV charge cable is not connected correctly to the EV.	Connect the EV charge cable to the EV correctly.
	You are not authorized for the charge session	Make sure that you have authorization to charge the EV.
The display shows this message: Unable to unlock the connector from car	A dangerous voltage is present on the EV charging cable	<ul style="list-style-type: none"> • Wait 5 minutes and start/stop the charging session again. • Press the Stop button (if present).
The display shows this message: Insulation detection error	There is an insulation problem on the EV or the EVSE	<ul style="list-style-type: none"> • Try to restart the charging session • Try another EVSE to charge the EV in order to understand in the problem is coming from the EV. • If the problem come from the EVSE, contact your local manufacturer service dept.
The display shows this message: The vehicle misbehaved	There is a communication problem between the EV and the EVSE	Contact your local manufacturer service dept.
The display shows this message: Out of order	The owner disabled the EVSE	Check if the EVSE is disabled via ABB EVCI Cloud or OCPP backend and if required enable it.
	EVSE internal problem	Contact ABB E-mobility Service dept.

9.3 Total de-energization of the EVSE

The total de-energization instruction specifies the use of mandatory PPE, tools, equipment and operations to carry out the electrical de-energization of the EVSE.



NOTE

This instruction does not supersede any legal regulations. The local regulations may impose requirements not reflected in this standard. The most stringent requirements must be applied.

9.3.1 Reference standards

- EN 50110-1 (CENELEC/CEN)
- Refer to EN 50110-2 (CENELEC/CEN) for additional National Annexes dedicated to CENELEC members Countries

9.3.2 Hazards

The system de-energization is not a sufficient condition to operate. All sources must be accurately identified and isolated with external isolation by dedicated breakers, they must be locked and tagged, then accurately verify the absence of any voltage atop (below the main breaker) the main incoming line.

9.3.3 Risk assessment - Weather conditions

- This instruction can be applied only in case of dry environment, without storming, lightning and raining.
- The doors must be placed in a locked position when opened.
- In the event of wind, it is necessary to strengthen the door locking mechanism with appropriate tools.

9.3.4 Working area preparation

Unplug and remove any vehicle from the EVSE under maintenance and secure it from any vehicles connection, if necessary, barricade the area with barriers, put warning signs to avoid unauthorized people to use them. Check that the area is dry and free from flammable materials and others hazard.

9.3.5 Personal Protective Equipment (PPE)

The below table mentions the mandatory Personal protective equipment (PPE) to be worn by the engineers working onsite.



NOTE

Check PPE before use. All the activities of this procedure (till the completion of the procedure) must be performed wearing the PPE.
Insulation gloves must be verified before and after use.

PPE	Description
Insulating gloves	<ul style="list-style-type: none"> • Insulating composite gloves class 0 EN 60903 (1000Vac-1500Vdc) electric arc tested cat.2 7kA EN61482-1-2; • Protective gloves (EN420 – EN388)
Arc-flash rated clothes	IEC 61482-1-2 Class 2 (ATPV 40 cal/cm ²) basic arc-flash protection added with overall arc-flash protection
Arc-flash rated head protection (balaclava)	IEC 61482-1-2 Class 1 (ATPV 8 cal/cm ²) arc-flash protection for head (balaclava)
Dielectric helmet with integrated arc flash visor	EN397 – EN50365 class 1 1000V EN166 – Arc flash visor grade 8
Safety shoes	Type S3 EN20345 Sole electrical resistance > 2000 MΩ tested EN20344

9.3.6 Safety equipment and tools

The below table shows the required tools and equipment's that are necessary to perform the steps of the total de-energization procedure.



NOTE

For safety reasons, service engineers shall check the functionality of the tools before start of work.

Tools and Equipment	Description
Voltage detector (EN 61243-2)	Duspol Digital 1,2kVdc 1kVac (suggested)
Safety tags “DO NOT OPERATE”	Safety tags “DO NOT OPERATE” with identification data (Name - Company - P. Ph number)
Safety Padlocks	Padlocks used to secure the Lockout Tagout device in place.
Grounding kit (IEC 61230)	Suggested kit composition: <ul style="list-style-type: none"> • Dehn: KFP 20 M10 (p/n: 754205) • Dehn: KFP 20 M12 (p/n: 754200) • Dehn : KKH 20 FS (p/n: 772312) • Dehn: UK 25 SK (p/n: 773 034) • Dehn: EKV4u1 16 G (four poles earthing and short-circuiting device)

9.3.7 Total de-energization procedure

1. Preliminary control:

Make sure that the unit must be turned on.

2. Identification of AC external main source:

Clearly identified the external AC main breaker with the plant manager cooperation and, if necessary, by functionality test of it.

3. Operate the main AC external source isolation and secure:

Turn off the external AC main breaker and carry out a LOTO.

4. Functionality check:

Check that the charger is shut down.

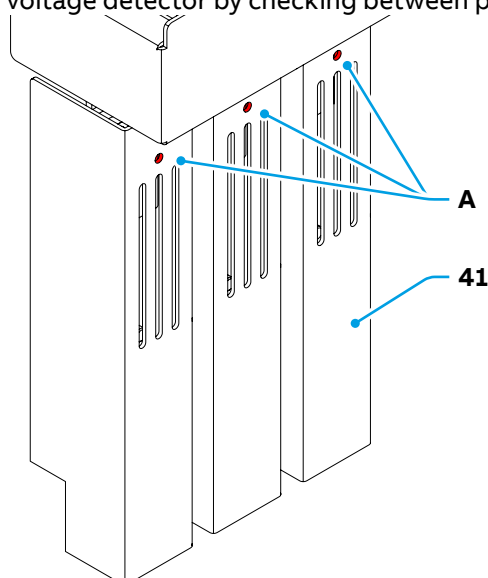
5. Operate the main AC external breaker:

Turn off the external AC main breaker.

6. Main Voltage absence check:

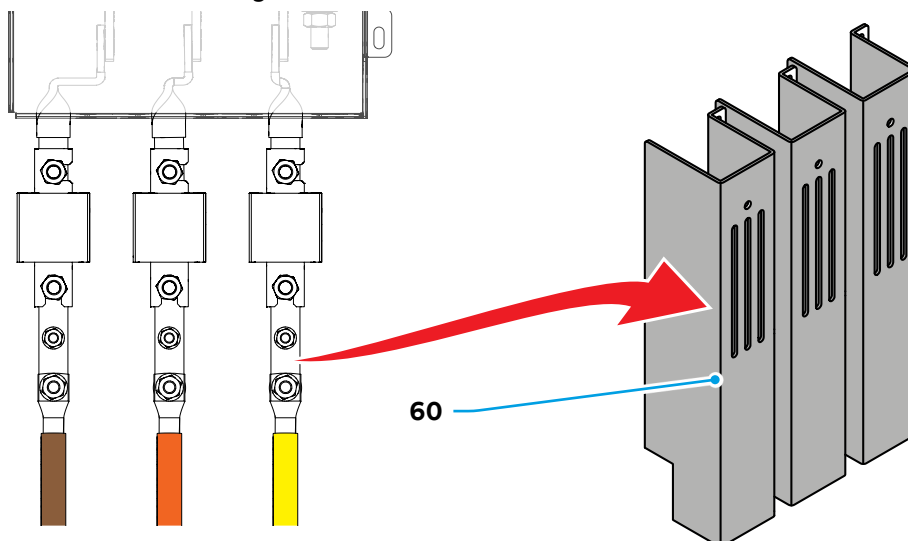
Check the absence of voltage below the main breaker of the EVSE, using the dedicated holes (A).

The verification must be carried out through the dedicated holes (A) in the Main AC protection barriers (41), using the voltage detector by checking between phases to ground and respectively between them.

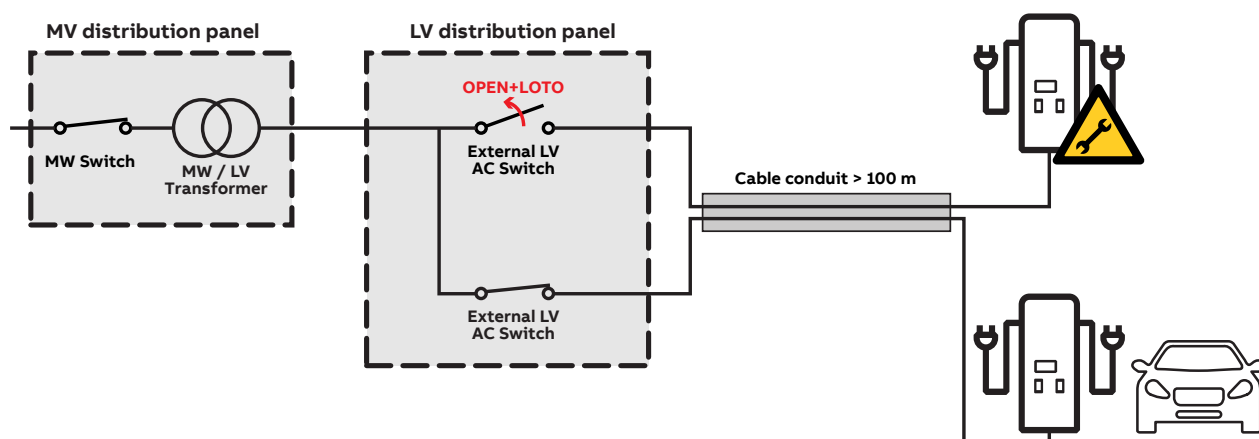


7. Insulating barrier removal:

remove the insulating barrier on the bottom side of AC main switch.

**8. Earthing and short circuiting incoming line assessment:**

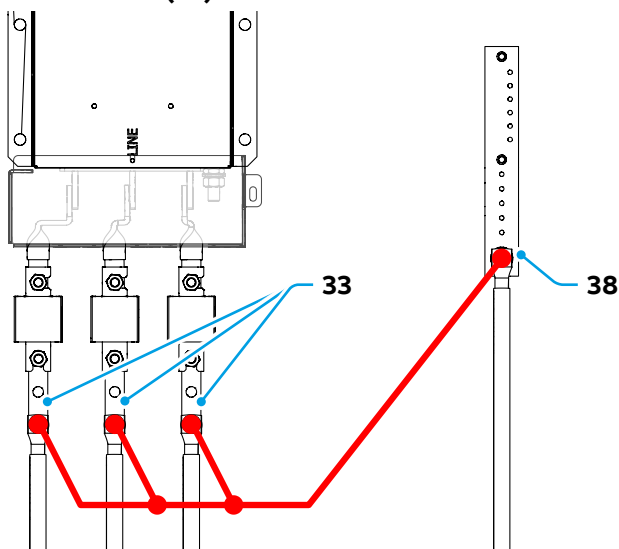
Is needed to make the earth and short-circuit connection on the main AC incoming line in presence of a site configured as below:

**NOTE**

Multiple chargers – AC lines in common cable conduit > 100m length – an AC line charged

9. Earthing and short circuiting (Only if necessary):

According to evaluation before, prepare the grounding kit and connect it from PE busbar (56) point to Main AC terminals (59).



10. Access to intervention area: Access inside the intervention area is now allowed.

11. End of activity: When the tasks are completed, remove any tools that were used (as well as the earthing short-circuiting if installed).

12. Insulating barriers restore: At the end of intervention, it will be necessary to restore the insulating barriers previously removed. Proceed by aligning them with the fixing holes and placing the self-tapping screws applying the proper tightening torque.

10. Technical data

This chapter contains information about the models, details of the equipment, characteristics and technical data, overall dimensions and equipment identification.

A description of the equipment characteristics is provided to identify its main components and specify the technical terminology used in the manual.




Chapter recipients:



- Owner
 - Qualified installer
-

10.1 Technical data

10.1.1 Technical data table

	Terra 94 UL	Terra 124 UL	Terra 184 UL
EVSE configuration			
Charging standard	Mode 4		
Number of outputs	1 or 2 based on the configuration		
Number of EV served	1	Up to two EV in parallel	Up to two EV in parallel
Available output connectors	CCS 1  / NACS  / CHAdeMO 		
Cable type	Air cooled cable		
Available cable Length	6 m (20 ft)		
Efficiency	> 96% @ 715 V DC		
DC Output			
Rated power	90 kW	120 kW	180 kW
Rated voltage	CCS 1: 150...920 V NACS: 150...920 V CHAdeMO: 150...500 V		
Max output current	CCS 1: 400 A NACS: 400 A CHAdeMO: 200 A		
AC Input			
Connection type	3Ø + PE (WYE System)		
Rated voltage	480 V ± 10%		
Rated frequency	60 Hz ± 5%		
Rated current	115 A	153 A	230 A
Max current @ Min. AC voltage (480 V - 10%)	126 A	168 A	253 A
Rated power	94.7 kW	125.9 kW	189.4 kW
Max short circuit current	65 kA		
Power Factor	> 0.99 @ rated DC power		
Total Harmonic Distortion (THD)	< 5 %		
Stand-by active power	50 W (heater off) / 900 W (heater on ¹)		
Protection	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, overtemperature, integrated SPD		
SPD	Yes, Type 2		
Tilt sensor (optional)			
Voltage input	20..24 V DC		
Current consumption	Maximum 30 mA		
Protection	Reverse polarity		
Mechanical			
Dimensions (W x H x D)	Without CMS: 1' 10" x 6' 28" x 2' 10" (565 x 1900 x 880 mm) With both CMS: 2' 09" x 6' 28" x 3' 03" (847 x 1900 x 922 mm)		
Mounting Type	Floor mounted		
Weight	772 lbs (350 kg)	800 lbs (365 kg)	870 lbs (395 kg)
Weight with packaging	849 lbs (385 kg)	877 lbs (398 kg)	947 lbs (430 kg)
Weight of each optional CMS	75 lb (34 kg)		
Enclosure type	Stainless steel 430 and Aluminum		
IK rating	IK10 (Display: IK08)		
Lifting points	4 x eyebolts (on the top of the EVSE)		
Environmental			
Ingress protection	Rain test (according to UL2202)		
Environmental type	Indoor and Outdoor		
Pollution degree	3 Outside (2 Inside)		
Noise level	< 62 dB(A) @ 3.2 ft (1 m), 77 °F (25°C), full power (on front door)		

	Terra 94 UL	Terra 124 UL	Terra 184 UL
User Interface			
Display type	7" LCD (touch)		
Display languages	English, French, Spanish (others available via Software upgrade)		
Authentication methods	RFID Option: payment terminal		
RFID system	Mifare ISO 14443 A/B to part 4 and ISO15693, ISO18092 / ECMA-340 (NFC). Others available on request (Calypso, Ultralight, PayPass, HID; and more)		
Energy metering	NIST		
Connectivity			
Embedded communication interface	Cellular, LAN		
Cellular modem	4G / LTE		
Communication Protocol	Open Charger Point Protocol (OCPP) 1.6 and 2.0		
Standards			
Mark of Conformity	cTUVus		
Safety standards	UL 2202:2009 R2.18, CSA STD C22.2 No 107.1-16		
EMC rating	Class A		
FCC Standards	47 CFR FCC part 22, 24, 27 (3G and 4G), 47 CFR FCC part 15b		
ISED Standard	RSS 132 + RSS 139 + RSS 199 (3G and 4G), ICES-003		
Additional standards	CHAdEMO 1.2 DC plugs compliant with UL 2251: 2017 (R2022) CSA C22.2 No. 282-17:2nd (R2022)		

1. The heater will operate daily when the outside air reaches the dew point, to avoid condensation inside the cabinet.
2. Min 0.94 at different output power and voltage

10.1.2 Environmental Conditions

	Storage (in the package)	Transportation ⁴ (in the package)	Installation (Operation) ⁵
Environment type	Indoor	Weather-protected ³	Indoor and Outdoor
Ambient air temperature	23...104 °F (-5...+40 °C)	-31...122 °F (-35...+50 °C)	-31...122 °F (-35...50 °C) derating from 104 °F (40 °C)
Relative Humidity	5...95% @ 86 °F (30 °C)	5...100% @ 80.6 °F (27 °C)	5...100% @ 80.6 °F (27 °C)
Altitude (without derating)	-	-	6500 ft (2000 m)
Condensation	No ⁶	No ⁶	Yes
Wind-driven precipitation	No	No	Yes
Formation of ice	No	No	Yes
Maximum storage time ¹	1 year ²	-	-

1. Starting from manufacturing date
2. Contact ABB if the EVSE has been stored for longer periods
3. Protected from the influences of meteorological conditions
4. Transportation conditions are those that the product can be exposed to while transported and handled in its original package
5. EVSE powered on
6. Moderate condensation on the package may occasionally occur due to variations in temperature

10.2 Cable specifications

AC Input	
AC cable cross section	350 MCM (copper) each phase (recommended)
AC connection type	M10 ($\frac{25}{64}$) cable lug
AC cable diameter (cable entry plate)	$\frac{53}{64} \dots 1 \frac{37}{64}$ in (21...40 mm)
Insulation	PVC or other material that is serviceable for outdoor, UV-protected and suitable for use in underground ducts
Protective Earth (PE)	
PE cable cross section	Select the Ground (PE) wire size per NEC or local electric code
PE connection type	M12 ($\frac{15}{32}$) cable lug
PE cable diameter (cable entry plate)	$\frac{53}{64} \dots 1 \frac{37}{64}$ in (21...40 mm)
Insulation	PVC or other material that is serviceable for outdoor, UV-protected and suitable for use in underground ducts
Ethernet	
CAT	CAT 5e (recommend) CAT 6 (high presence of electromagnetic interference and/or noise)
Ethernet cable diameter (cable entry plate)	$\frac{25}{64} \dots \frac{43}{64}$ in (10...17 mm)
Insulation	PVC or other material that is serviceable for outdoor, UV-protected and suitable for use in underground ducts
Tilt sensor (option)	
Number of wires	4 (2 wires for power supply and 2 wires for relay contacts)
Max. Wires cross section	12 AWG (4 mm ²) without ferrule 14 AWG (2.5 mm ²) with ferrule
Cable diameter (cable entry plate)	$\frac{25}{64} \dots \frac{43}{64}$ in (10...17 mm)
Insulation	PVC or other material that is serviceable for outdoor, UV-protected and suitable for use in underground ducts

10.3 Torque specification

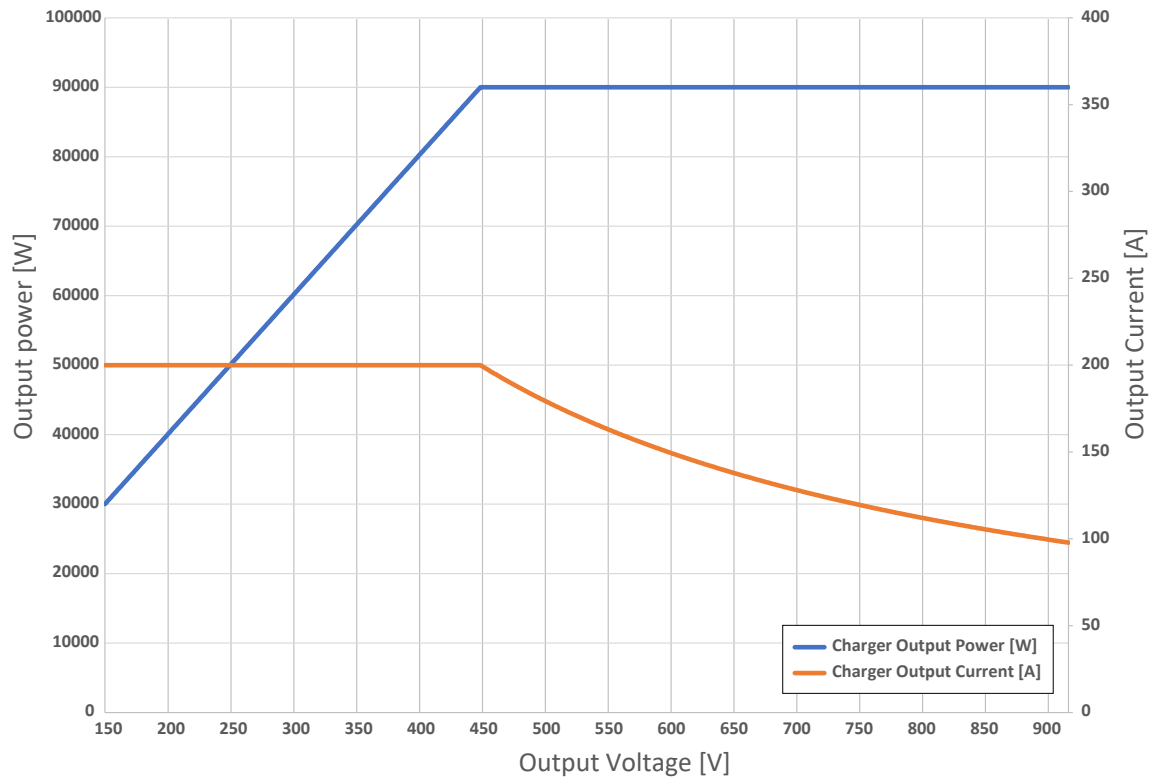
Parameter	Specification
Fasteners for the PE wire	442.5...663.8 lbf-in (50...75 Nm)
Fasteners for the L1, L2, L3	292...389 lbf-in (33...44 Nm)
Tilt sensor screw terminal block	11.5 lbf-in (1.3 Nm)
Fasteners for the connection of the EVSE to the base (M12 bolt)	177 lbf-in (20 Nm)

10.4 Terra 94 - Output power and current Vs output voltage curve

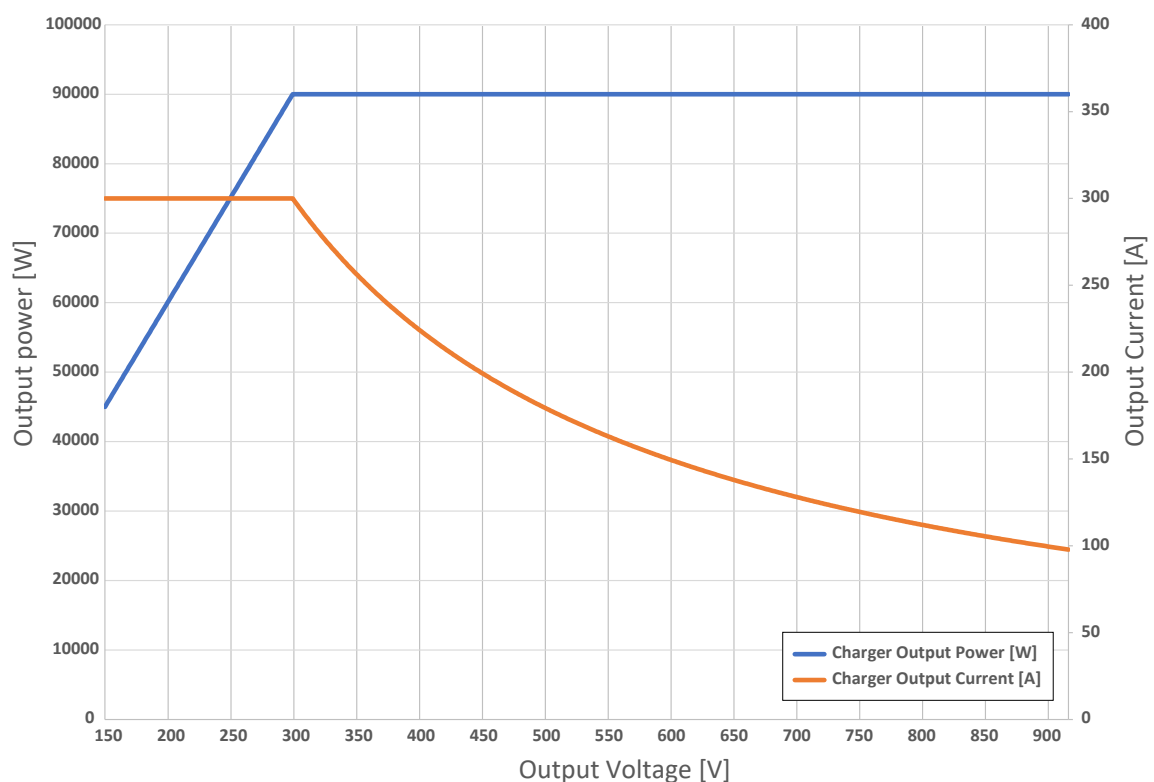
EVSE output power may be reduced by:

- Environmental conditions(e.g ambient temperature)
- Time between charging sessions
- E-Vehicle power peak duration and battery State of Charge (SoC)

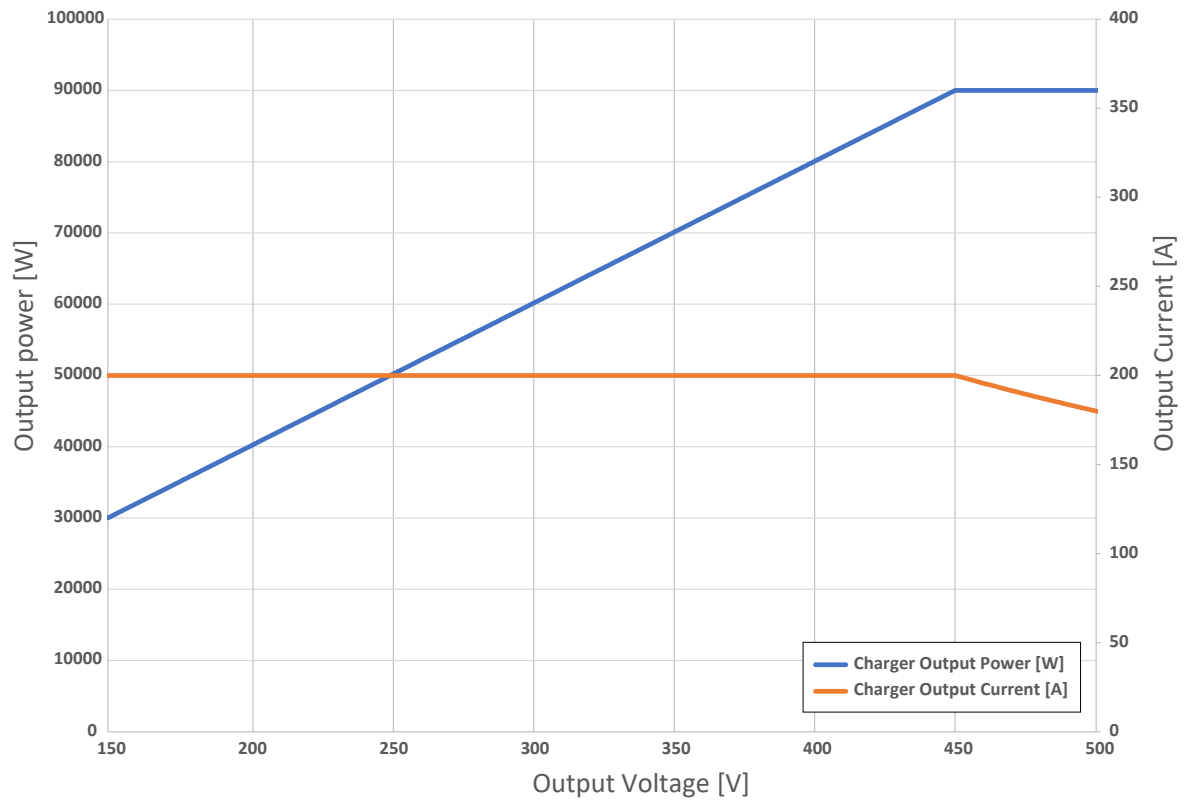
10.4.1 CCS1 (200 A) - 1 session



10.4.2 CCS1 (400 A) - 1 session



10.4.3 CHAdeMO (200A) - 1 session

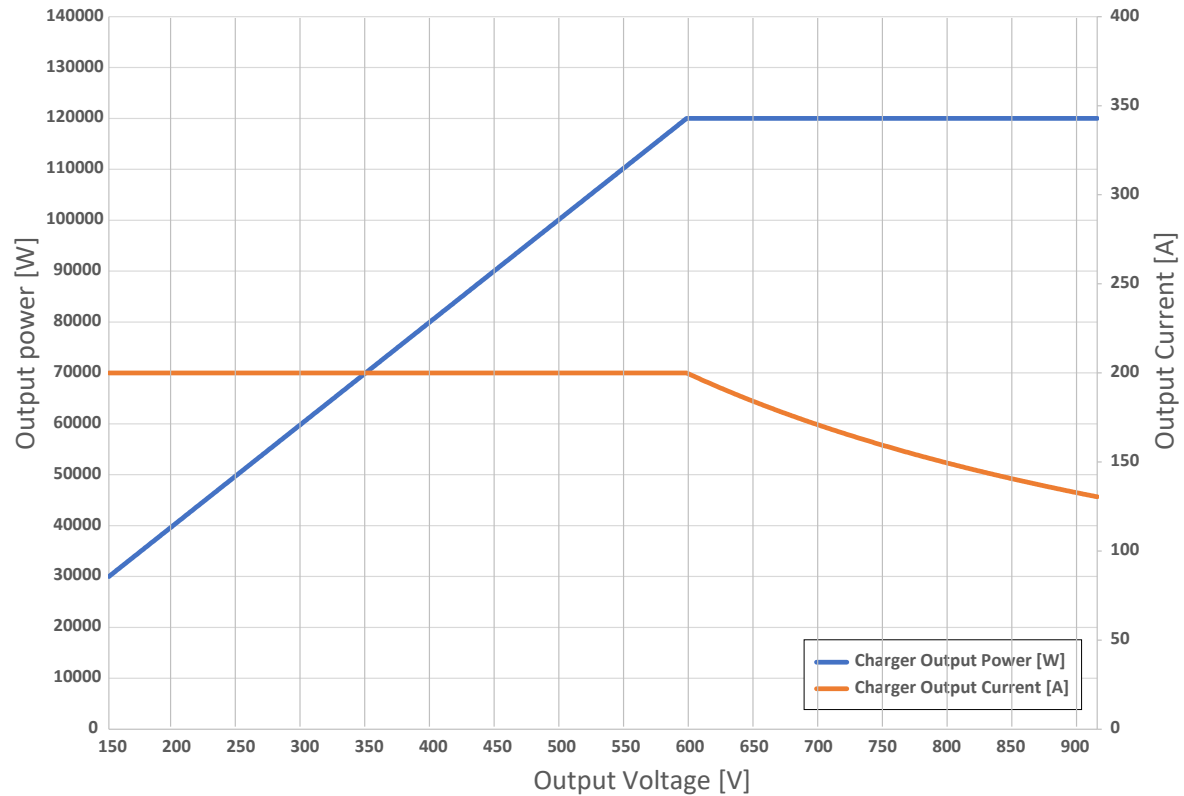


10.5 Terra 124 - Output power and current Vs output voltage curve

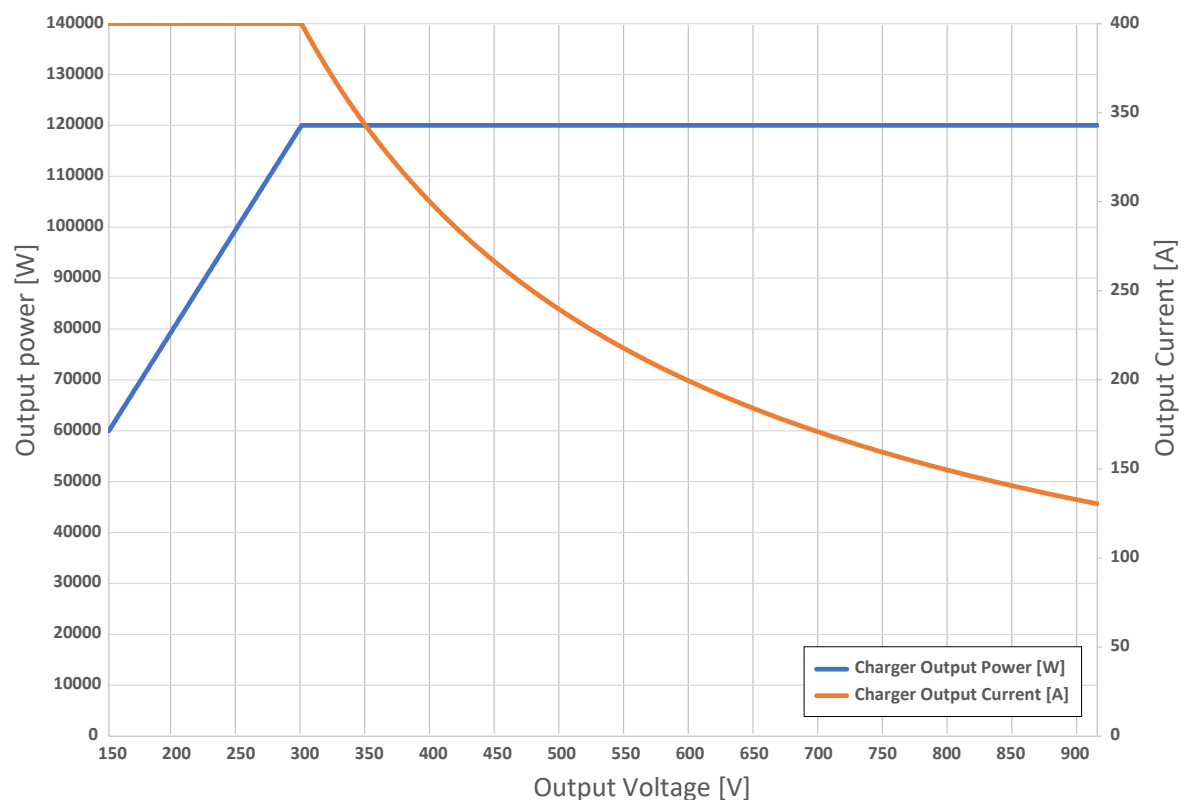
EVSE output power may be reduced by:

- Environmental conditions(e.g ambient temperature)
- Time between charging sessions
- E-Vehicle power peak duration and battery State of Charge (SoC)

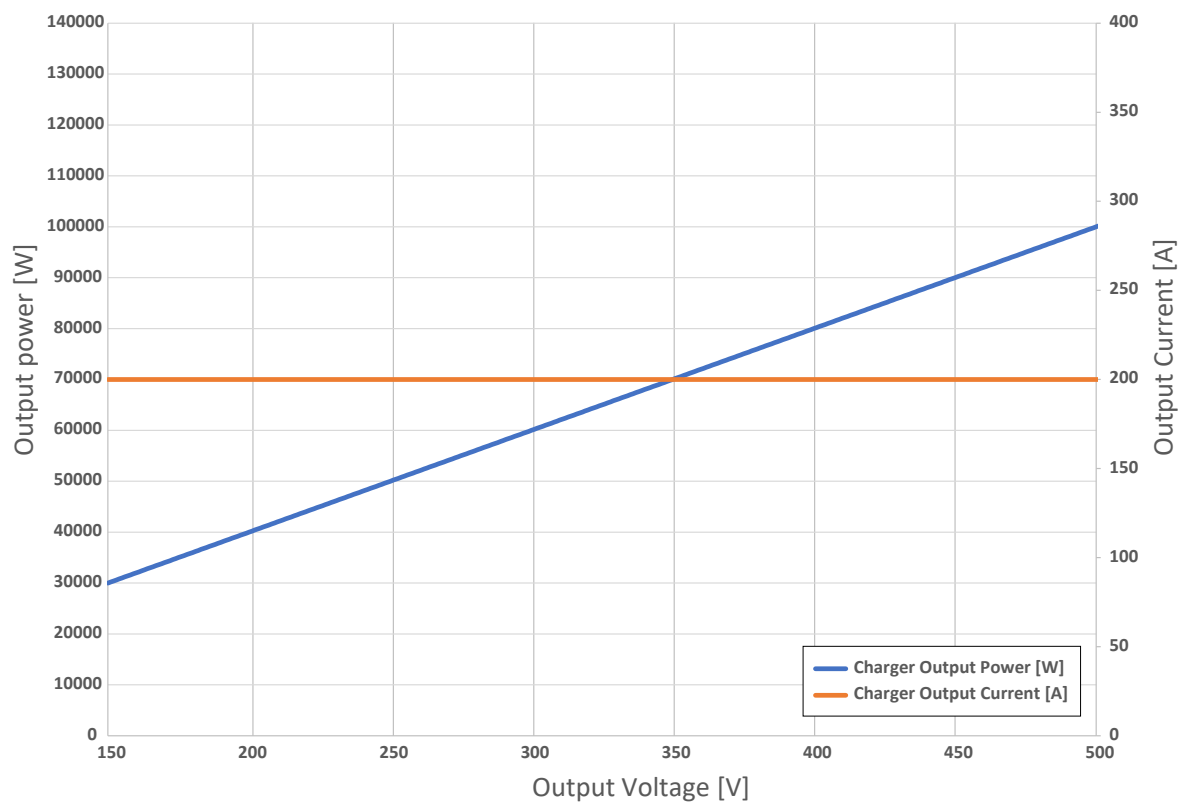
10.5.1 CCS1 (200 A) - 1 session



10.5.2 CCS1 (400 A) - 1 session



10.5.3 CHAdeMO (200A) - 1 session

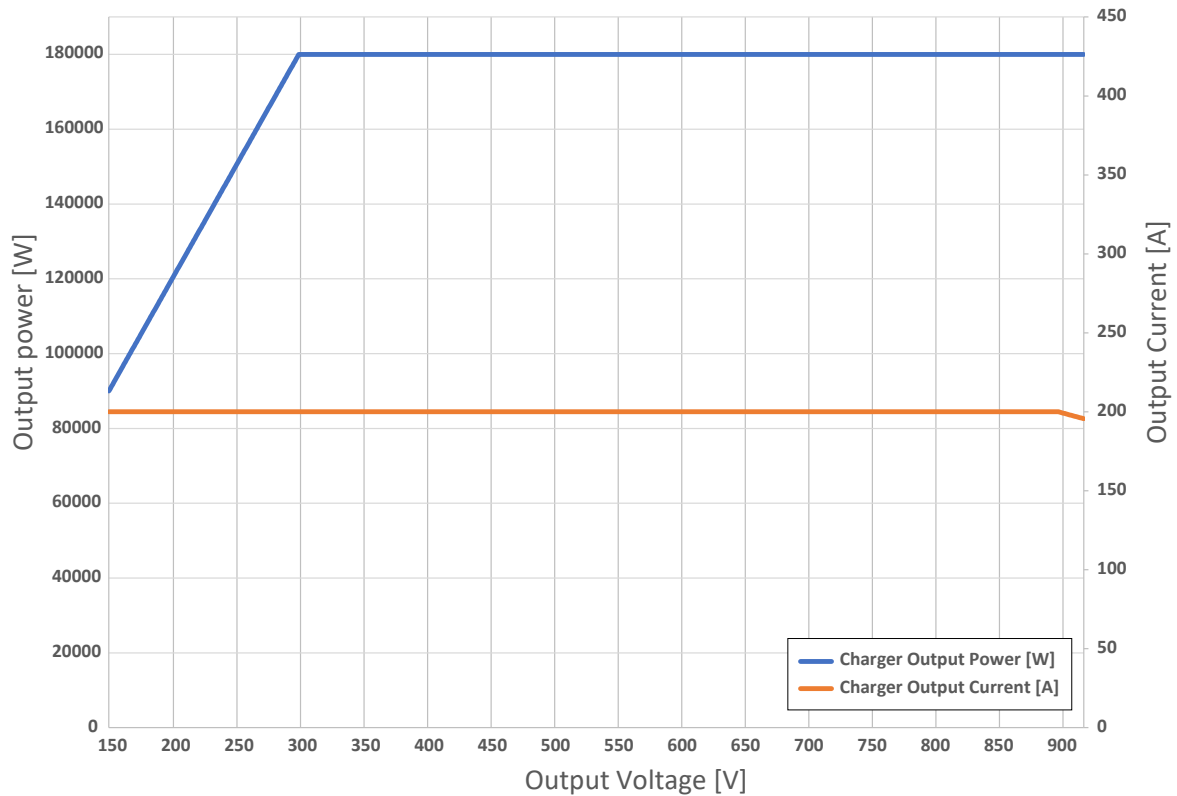


10.6 Terra 184 - Output power and current Vs output voltage curve

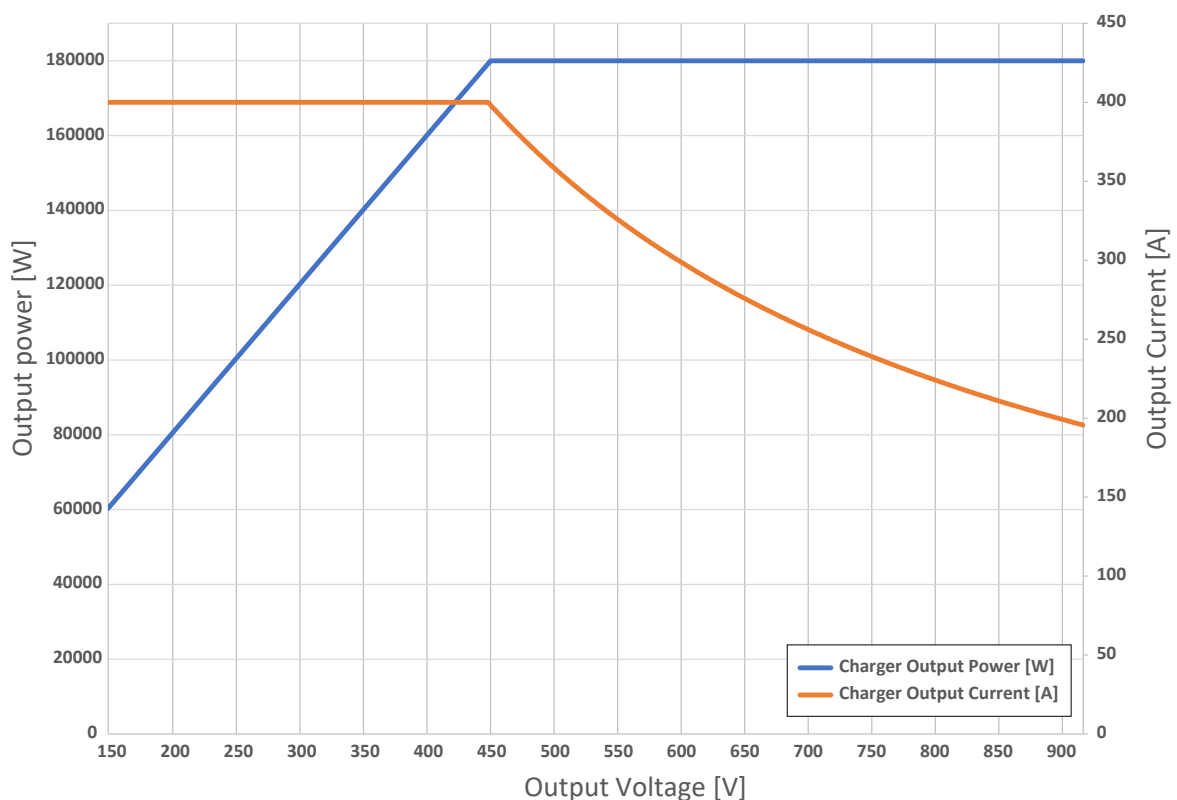
EVSE output power may be reduced by:

- Environmental conditions(e.g ambient temperature)
- Time between charging sessions
- E-Vehicle power peak duration and battery State of Charge (SoC)

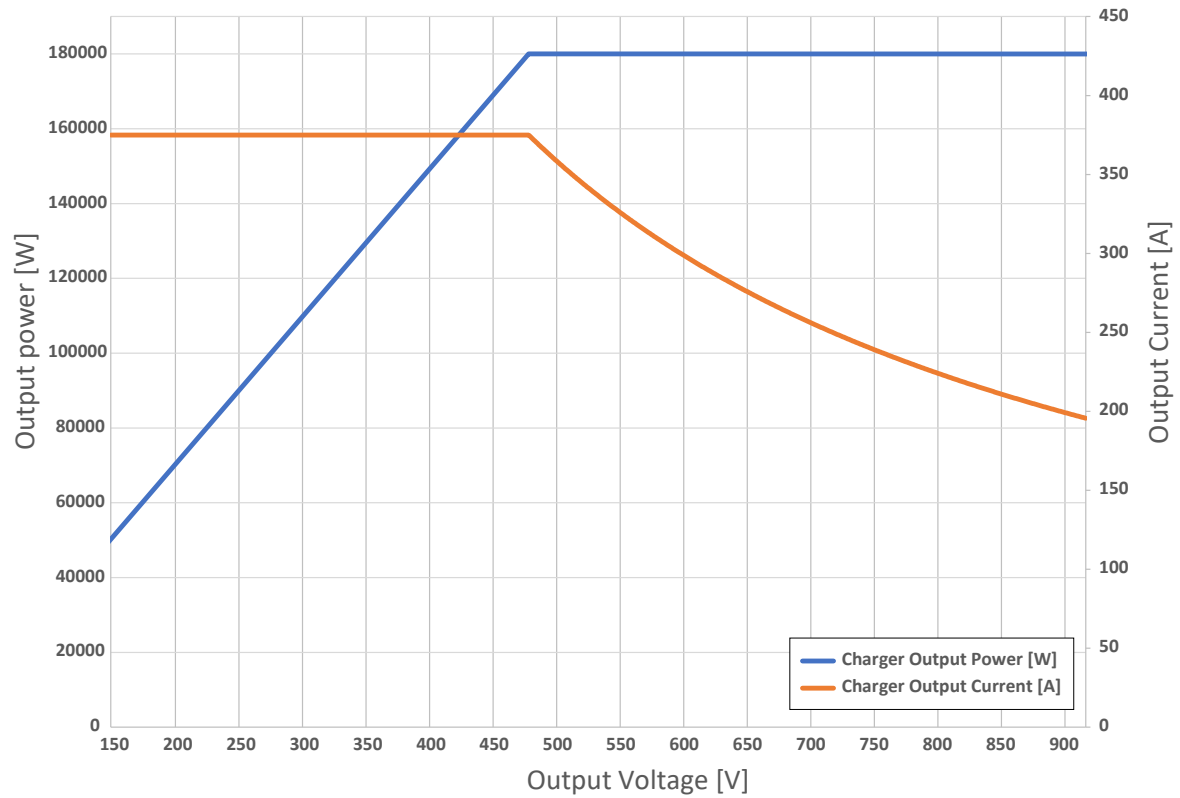
10.6.1 CCS1 (200 A) - 1 session



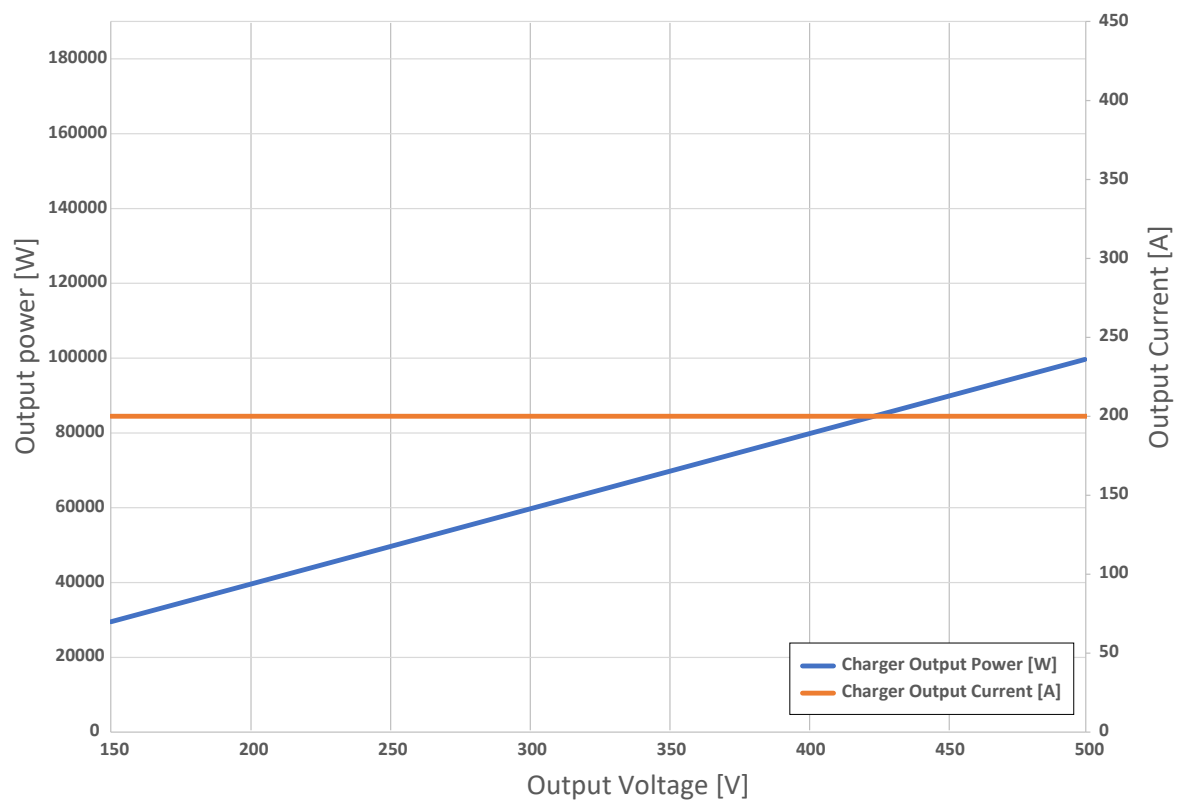
10.6.2 CCS1 (400 A) - 1 session



10.6.3 NACS (375 A) - 1 session



10.6.4 CHAdeMO (200A) - 1 session



11. Attachments

In this section additional technical drawing, specification, schematics are given.

**NOTE**

If you need further information, please contact your local manufacturer service dept. Refer to section [“Manufacturer and contact data”](#)

Chapter recipients:

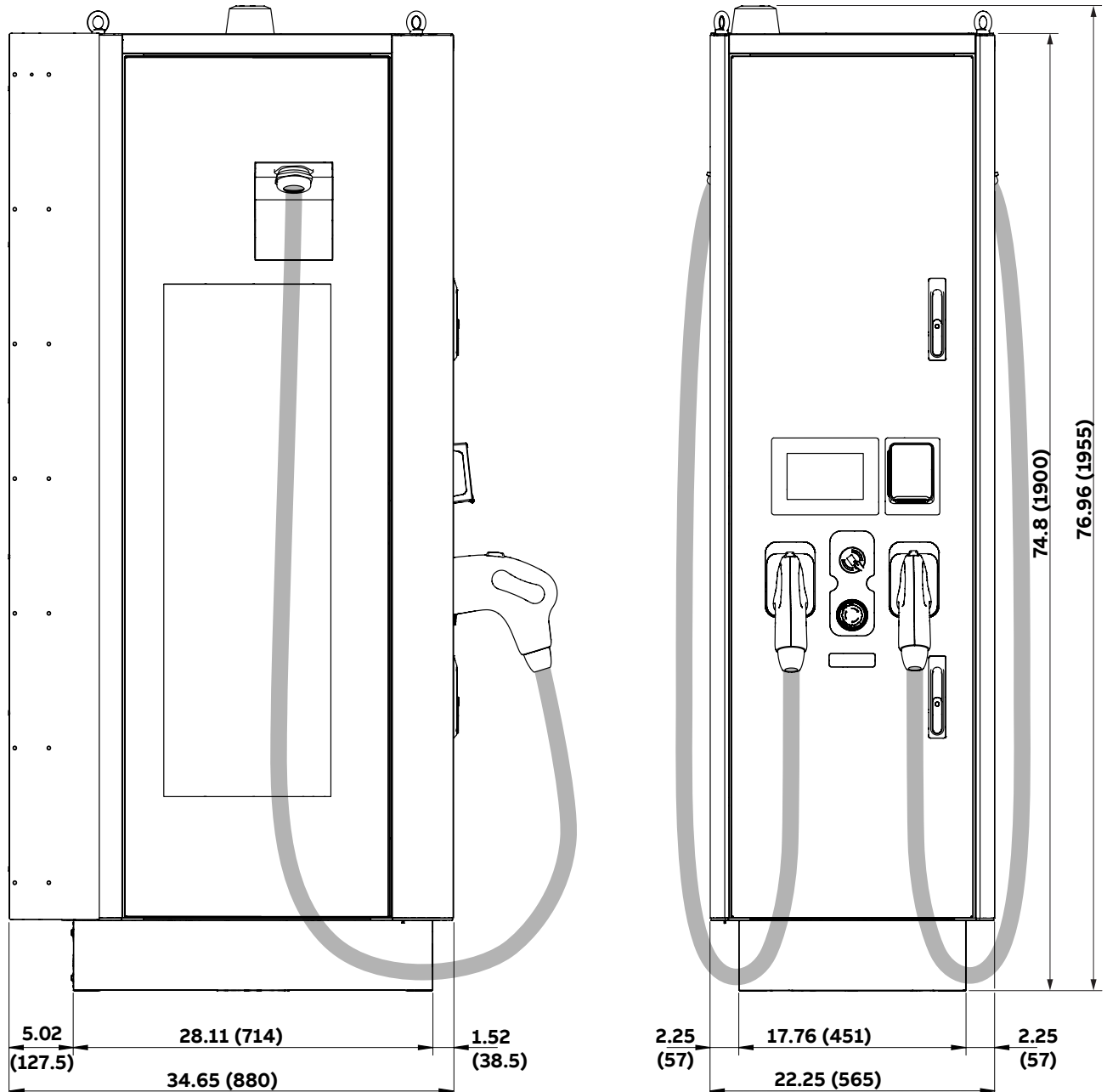
- Qualified installer

11.1 EVSE dimensions

11.1.1 EVSE dimensions without CMS


NOTE

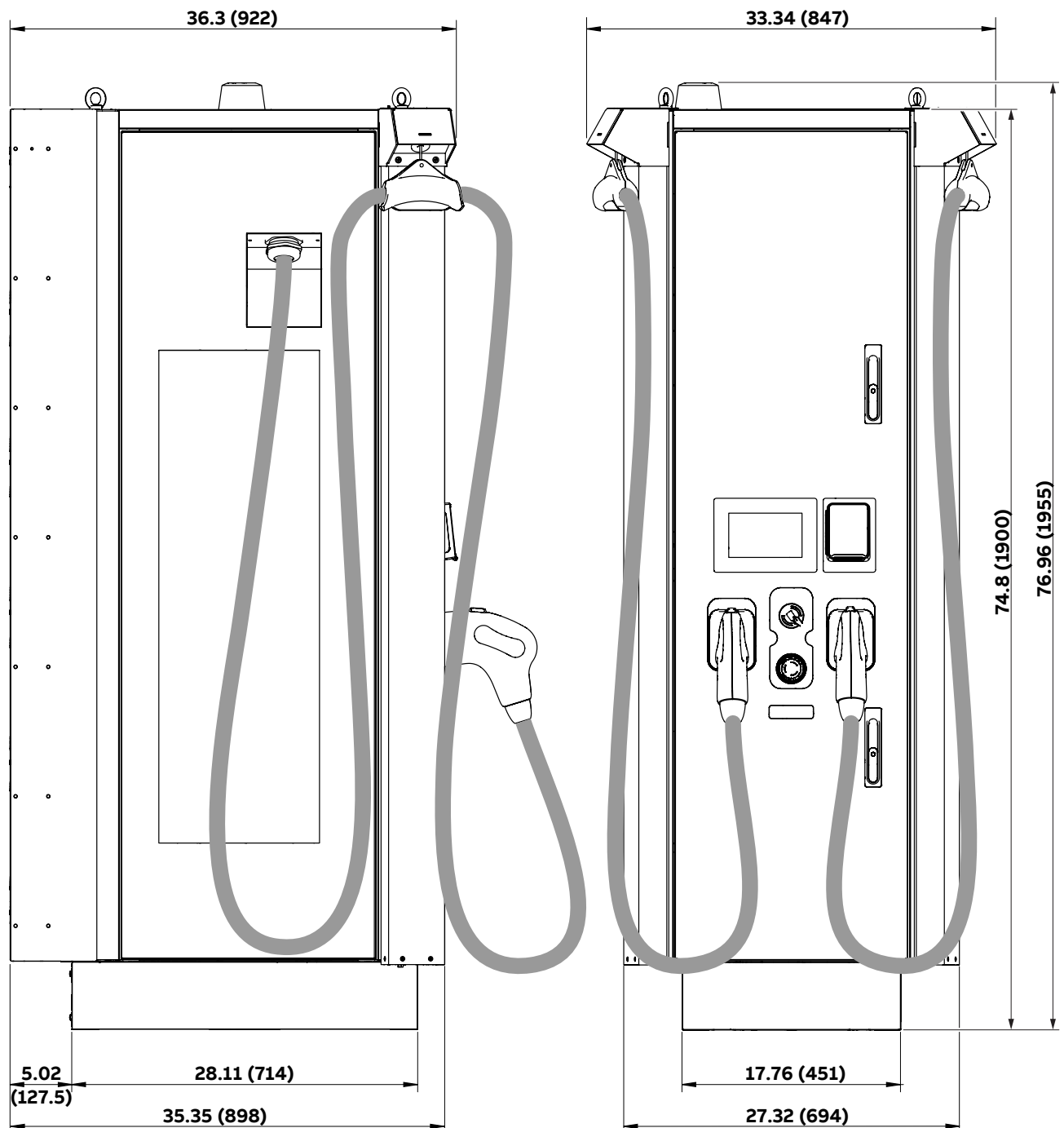
The measurements in the drawing are in inches and millimeters [in (mm)]



11.1.2 EVSE dimensions with two CMS

**NOTE**

The measurements in the drawing are in inches and millimeters [in (mm)]



11.2 Custom foundation - EVSE footprint

The drawing (top view) shows all the necessary measurements to prepare a custom foundation:

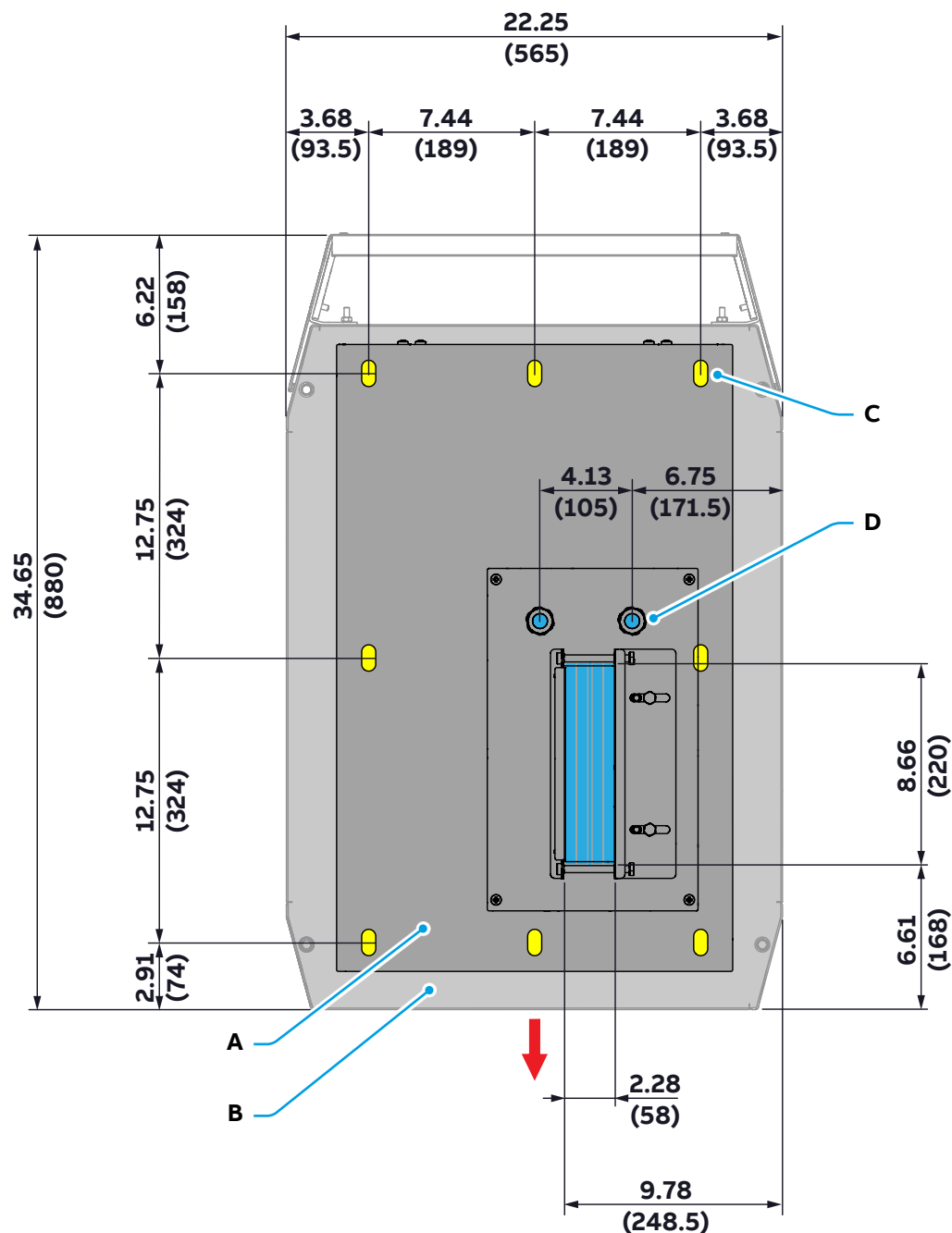
- drill the holes to fasten the EVSE to the floor/basement (in yellow)
- prepare the position of the cables coming from the underground cable conduit (in blue)



NOTE

The red arrow indicates the front side of the EVSE.

The measurements in the drawing are in inches and millimeters [in (mm)]



Parameter	Description
A	EVSE base footprint
B	EVSE cabinet footprint
C	Holes to install the EVSE to ground/foundation (M10 bolt)
D	M25 cable glands

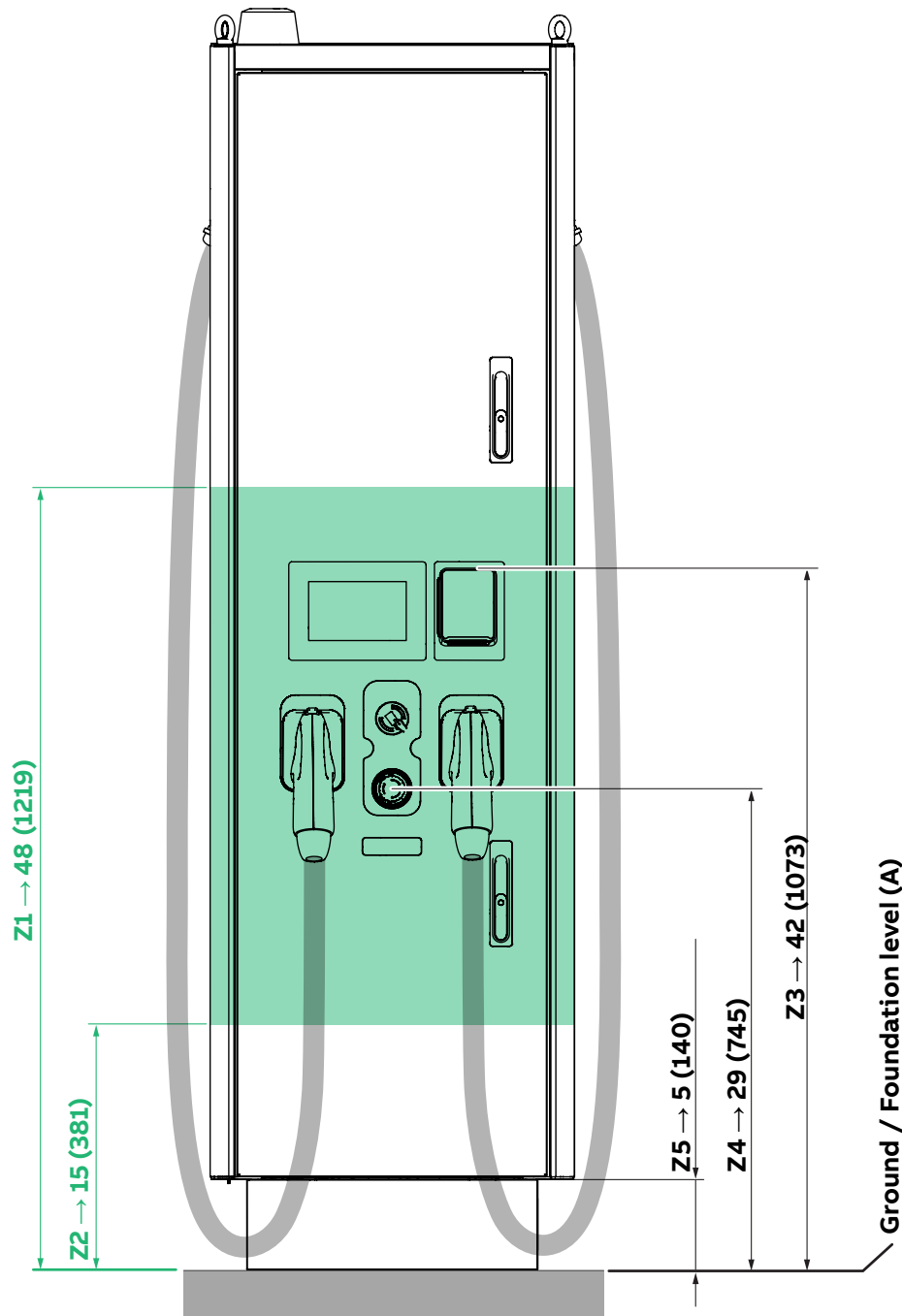
11.3 Height of user operable elements

According to ADA (American with Disabilities Act) the height of user operable elements must be between specific limits. The distance from the base of the EVSE to the minimum and maximum height of the user operable elements must be accordance with the ADA recommendations.



NOTE

It is the responsibility of the installer to make sure that the EVSE complies with ADA requirements. The measurements in the drawing are in inches and millimeters [in (mm)]



Parameter	Description
A	Ground / Foundation level
Z1	Max. ADA recommendations height
Z2	Min. ADA recommendations height
Z3	Highest height of user operable element on the EVSE (payment terminal)
Z4	Lowest height of user operable element on the EVSE (optional emergency button)
Z5	Height of the EVSE base

11.4 Center of gravity (without CMS)

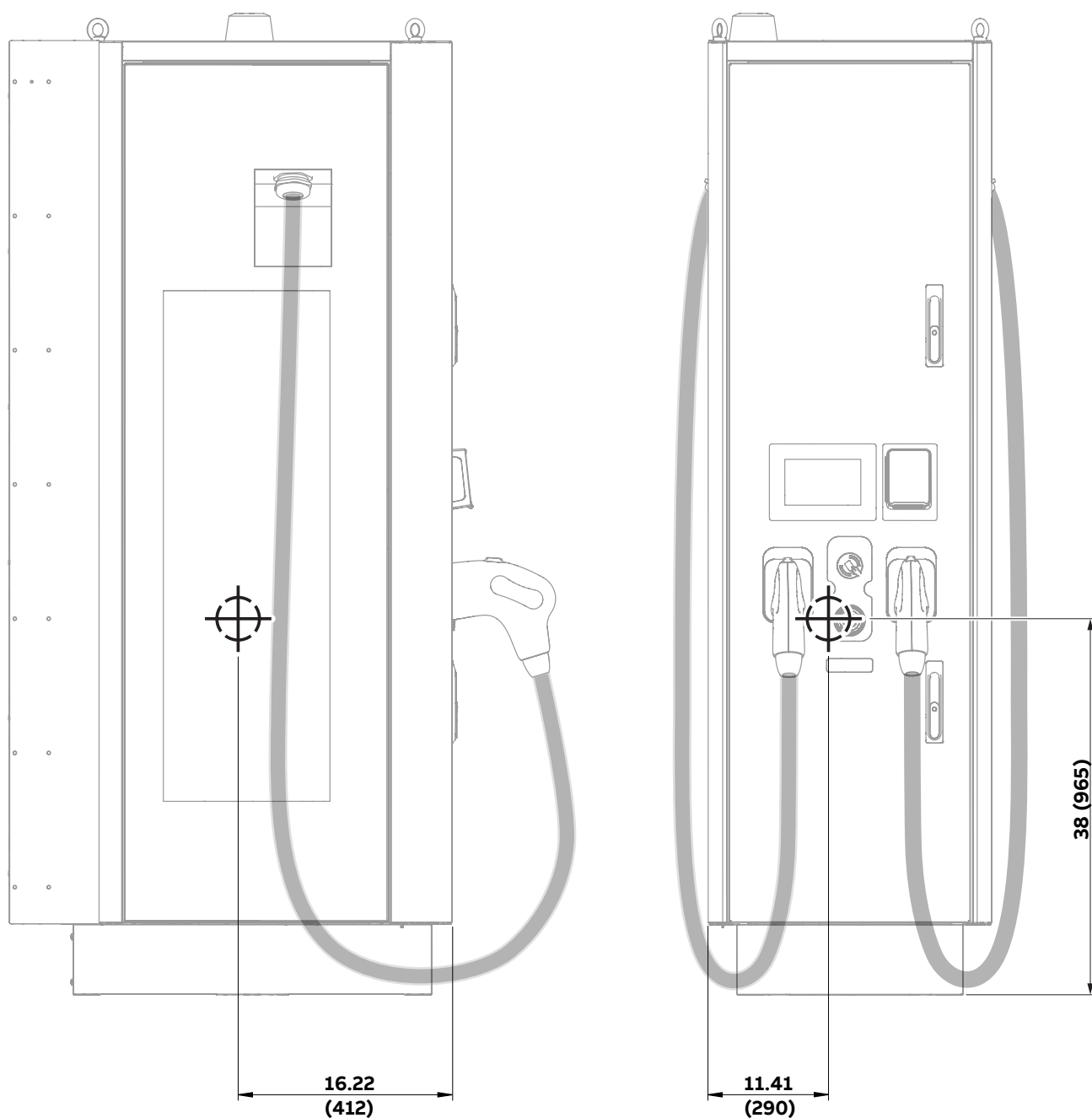
The measurement in the drawing are related to T184 model (with two charging cables).

**NOTE**

For the T94 and T124 models, take into account a tolerance of ± 3 in (77 mm) for each measurement.

**NOTE**

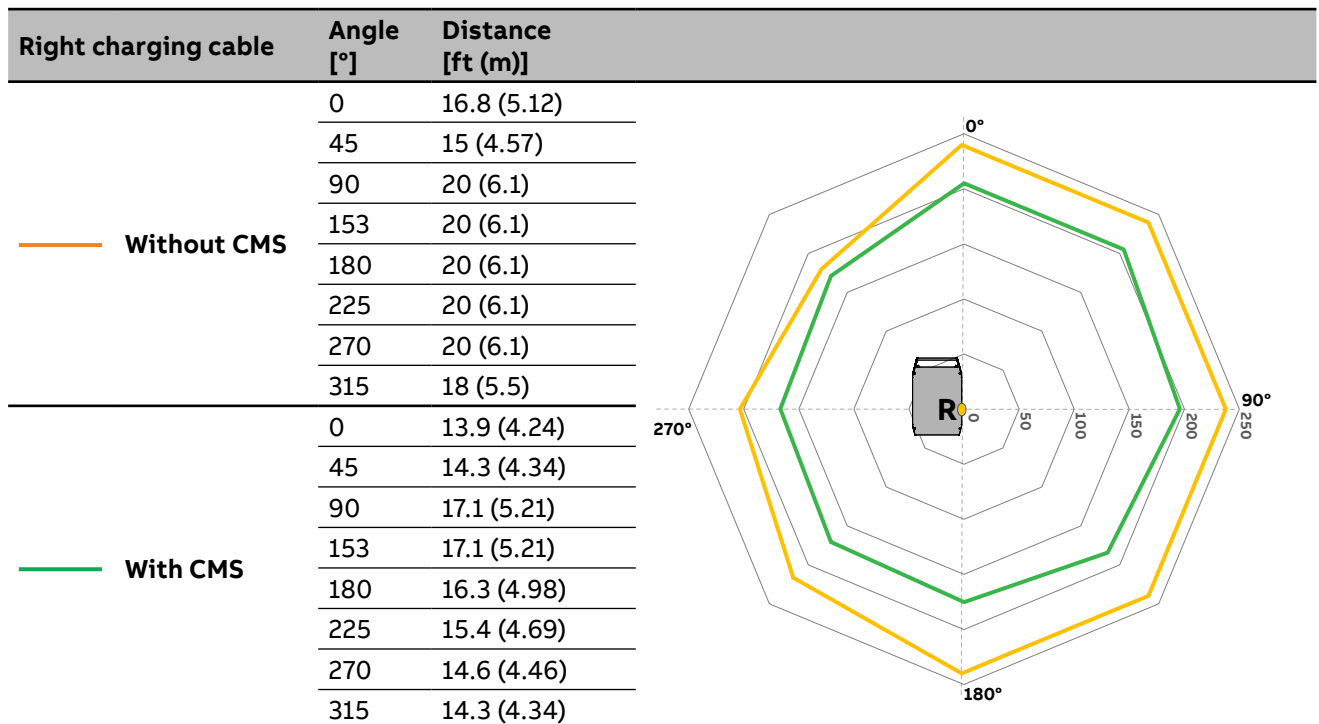
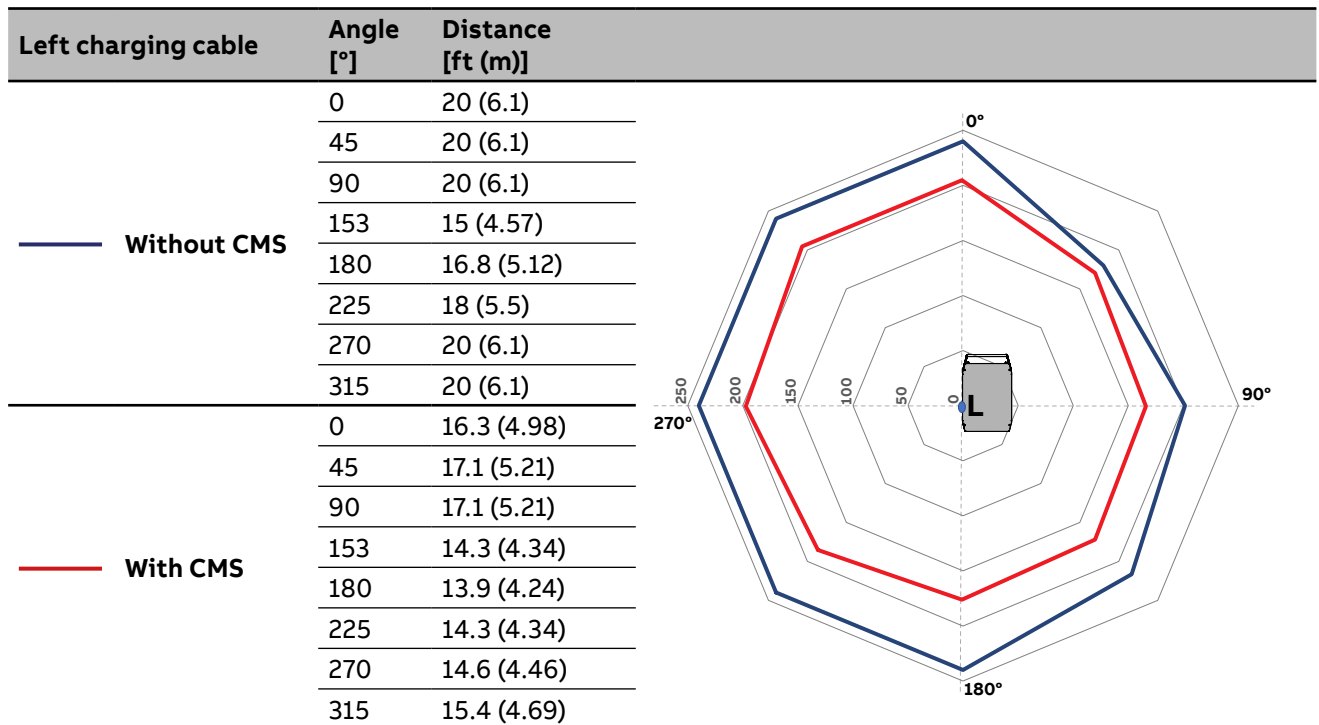
The measurements in the drawing are in inches and millimeters [in (mm)]



11.5 Charging cable reach


NOTE

Charging cable length 20 ft (6 m).
Tolerance: +/-6 inches.





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