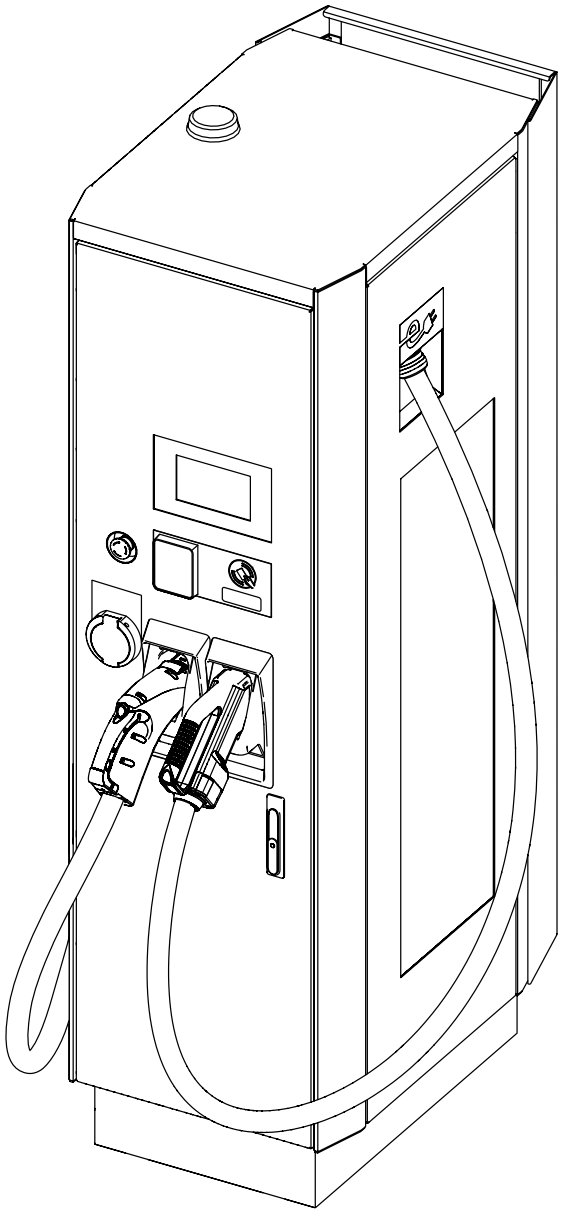
ABB CHARGING STATION

Operation and installation manual

Terra 94/124/184 - CE



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ATTENTION – IMPORTANT SAFETY INSTRUCTIONS
This manual contains important safety instructions that must be followed during operation, installation and maintenance of the EVSE.

ATTENTION – SAVE THESE INSTRUCTIONS
This document is a part of the EVSE, keep it in a safe place near the EVSE for easy reference during installation, operation and maintenance.

Copyright

Manufacturer and contact data

Manufacturer name and address	Contact
ABB E-mobility B.V. Heertjeslaan 6 2629 JG Delft The Netherlands	Reach out to the local entity of ABB E-mobility B.V. for support: https://e-mobility.abb.com/contact-centers/

Document revision history

Version	Date	Description
001		Initial version
002	November 2022	Fiscal meter info
003	September 2023	
004	August 2024	New manual "Installation and operation" layout and structure

NOTE
Latest version of the manual can be dowloaded at this ABB library link

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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
- Handling and transportation company
- User

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1.1 Disclaimer and warranty conditions

ABB E-mobility is not liable for any damages, losses, costs or expenses resulting from the improper handling, installation 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).

ATTENTION
Any modification, manipulation, or alteration not expressly agreed with the manufacturer, concerning either hardware or software, shall result in the immediate nullification of the warranty.
In the event that the instructions set out in this manual are not strictly complied with, any warranty applicable to this EVSE will be rendered null and void with immediate effect. Any deviation to the instructions contained in this manual must be approved (in writing) prior to such deviation is executed by ABB E-mobility or authorized Service partners. In the event that ABB E-mobility suffers any damage as a result of the non-compliance with the instructions set out herein, ABB E-mobility reserves the right to seek recourse for such damages from the party causing such damages. Reach out to the contact centre for support: https://e-mobility.abb.com/contact-centers/

1.2 Function and target of this document

The document is applicable to the following products (Including all variants and options):
- **Terra 94 CE**
- **Terra 124 CE**
- **Terra 184 CE**

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.

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.
Follow 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 installers
- User

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
NFC	Near field communication
OCPP	Open charge point protocol
PE	Protective earth
PPE	Personal protective equipment
RCD	Residual current device
RFID	Radio-frequency identification
SPD	Surge protective devices

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.
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

Terminology	Description
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.

2. Safety

This chapter contains the safety instructions which must be handling during installation, commissioning, operation and maintenance of the EVSE. Always obey and follow the reading order of instruction exactly as described in this manual to prevent injury or damage to the EVSE.
The manufacturer is not liable for any damage caused as a result of such failure to comply with the instructions for any upstream or downstream equipment to the EVSE.

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
- Handling and transportation company
- User

2.1 Liability

The manufacturer declares that the EVSE 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 EVSE) 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 EVSE.
- Accumulation of dirt or ingress of foreign substances within the EVSE.
- 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 EVSE 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 EVSE.
- 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 EVSE.
- Non-compliance with the applicable safety regulations or other legal standards by other parties than the manufacturer.
- Insufficient ventilation of the EVSE.
- Operation of the EVSE outside of its design conditions.
- Damage or failure due to relocations or alterations of the EVSE from the original installation location or alteration of the overall normal condition of the system.
- Only make changes to the EVSE if the manufacturer approves in writing of the changes.
- Damage or loss due to improper use of the EVSE.
- 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 EVSE, 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 for installation, operation, maintenance and service must:

- Comply with the applicable (local) laws and regulations..
- Identify any hazards and do a risk assessment prior to commercing work that result from the working conditions on the site.
- Operate the EVSE with the protective devices installed and make sure that all protective devices are re-installed after any installation or maintenance operation.
- Prepare and execute an emergency plan that instructs people what to do in the event of an emergency relating to the EVSE 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 EVSE to safely handling, commissioning, do maintenance and installation activities.
- Identify a site operator who is responsible for the safe operation of the EVSE 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 a qualified technician and have a valid license to work on EVSE chargers.
- Comply all local rules and the instructions in the installation procedures in this document.

2.2 Intended use

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

DANGER
ABB E-mobility is not liable for any risk and damage related to any use other than the use described in this manual. The EVSE shall only be used in accordance with the intended use set out in this manual and no party has the right to make any changes without express permission from ABB E-mobility.

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

2.2.1 Risks related to improper use or product defect

To avoid risk related to improper use of the EVSE, it is forbidden:
- To install the EVSE in environments subject to particular conditions of flammability or in adverse or disallowed environmental conditions, (temperature and humidity).
- To use the EVSE with safety devices which are faulty or disabled.
- To use the EVSE or parts of the EVSE 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 EVSE to vary its performance or change its isolation.
- To clean with corrosive products that could corrode parts of the EVSE or generate electrostatic charges.
- To place any heavy object, sit or stand up on the EVSE.

To avoid any serious consequence on personal safety, to know the ways in which the EVSE must not be used and in the event of residual risks which persist, despite the protection and safety measures integrated in the EVSE, reach out to the local entity of ABB E-mobility for support.

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

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
Stored energy in components that could generate hazardous discharges.	Wait at least 15 minutes after turning off the EVSE and perform the total isolation procedure before working on the internal components of the charger (refer to “9.3. Total de-energization of the EVSE”).

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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 EVSE cooling slots or systems.	Use suitable PPE. Wait for the parts to cool down before opening the EVSE. Do not block cooling vents or heat sinks.
Inadequate cleaning that: - does not allow adequate air intake for cooling - does not allows the reading of safety labels.	Clean the EVSE, labels and installation environment.
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, EVSE or its components temporarily mounted.	Prevent unauthorized access to the installation area by barricading the area and placing warning signs indicating the condition of the EVSE.
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.
Hand/finger crushed into CMS slot of the EVSE when it comes back to resting position	The CMS is retracted by its spring towards its resting position. Pay attention and do not put your hand or fingers along the path of CMS, when the CMS is moving, there is risk of injury.

2.3 General signs and signal words

In the manual and/or in some cases on the EVSE, 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

Symbol	Description
	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
	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

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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
	Work helmet

2.5 Safety instructions

- Only perform the procedures as indicated in this document.
- Only perform any services as qualified installer or user of the EVSE when you are fully qualified to do so.

DANGER
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 conditions.

2.5.1 Safety instructions - Transport of the EVSE

- Wear on the correct personal protective equipment.
- Only use hoisting equipment to lift the EVSE as permitted by ABB E-mobility.
- 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 - Installation of the EVSE

- Wear on the correct personal protective equipment.
- Make sure that there is no voltage on the input cables prior to conducting any installation activities.
- 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.
- During installation and electrical connection of the cables (AC, PE, Ethernet, signals, etc.) do not modify the configuration and positioning of the electrical system inside the EVSE.
- Make sure that the internal electrical system and connection cables (AC, PE, Ethernet, signals, etc.) are protected from damage and cannot get trapped in any part of the EVSE.
- Do not open any covers/doors of the EVSE in case of adverse climate conditions. Infiltration of water or sand and presence of high humidity can cause damage of the EVSE. It is of paramount importance to evaluate the weather conditions in the risk assessment prior any intervention on the EVSE.
- Protect the EVSE with safety devices and measures as specified in accordance with local legislation and regulations.
- 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 - Maintenance of the EVSE

- Wear on the correct personal protective equipment.
- Make sure that there aren't supply voltages on the input cables during the complete cleaning or maintenance procedure. Refer to "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 or protection, immediately install them after the work.

2.5.4 Safety instructions - Use of the EVSE

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.
This includes, but is not limited to, these conditions:

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

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 WEEE - 2012/19/EU Directive on waste of electrical and electronic equipment.
- As the symbol of the crossed out wheeled-bin on your EVSE indicates, 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 EVSE, characteristics and technical data, overall dimensions and EVSE identification.

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

Chapter recipients:

- Owner
- Qualified installer
- User

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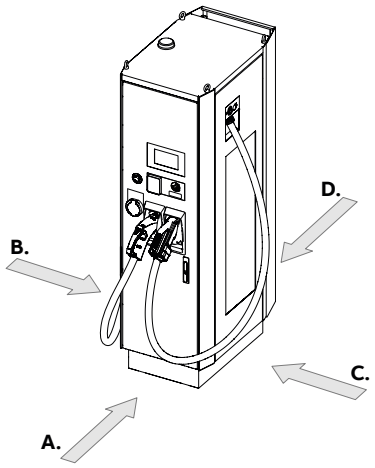
3.1 Orientation agreements



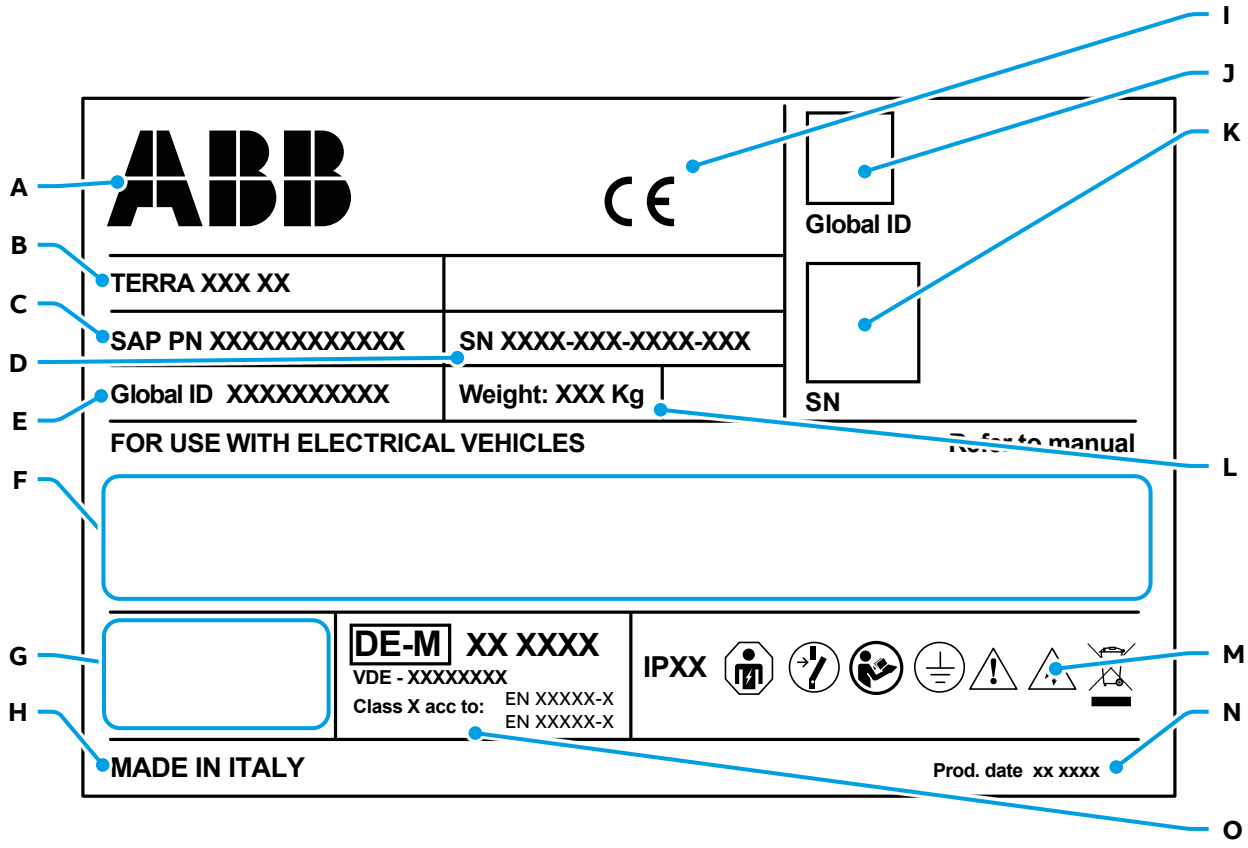
Ref.	Description
A	Front side: face forward to the EVSE during normal use
B	Left side
C	Right side
D	Rear side

3.1.1 EVSE model designation

Structure of the identification model designation of the EVSE.

Terra 184	CE	CCT	6N4	
Main product	**Localization**	**EV charge cable connection**	**- EV charge cable length - Connector type - Power rating**	**Field Description**
Terra PPP				• **“Terra” is the “charger identification”:** • **PPP is the “output power”:** – 94 = 90 kW output power – 124 = 120 kW output power – 184 = 180 kW output power
	MM			• **MM is the “localization”:** – CE = for IEC market
		XXX		• **XXX is the “EV charging cable connection type”:** – C = CCS2 – CC = CCS2 + CCS2 – CJ = CCS2 + CHAdeMO – CCT = CCS2 + CCS2 + AC Socket, Type 2 – CJT = CCS2 + CHAdeMO + AC Socket, Type 2
			ABC	• **A is the “EV charge cable length”:** – 4 = 4 m – 6 = 6 m – 8 = 8 m • **B is the “Connector type”:** – N = Not liquid cooled – A = ABB air cooled connector and cable • **C is the “Power rating”:** – 2 = Max 200 A current – 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	Symbol of local certification
J	ABB Global ID - QR code
K	Serial number of the EVSE - QR code
L	EVSE weight
M	Safety and information symbols
N	Manufacturing date
O	MESS EV certified charger identification

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

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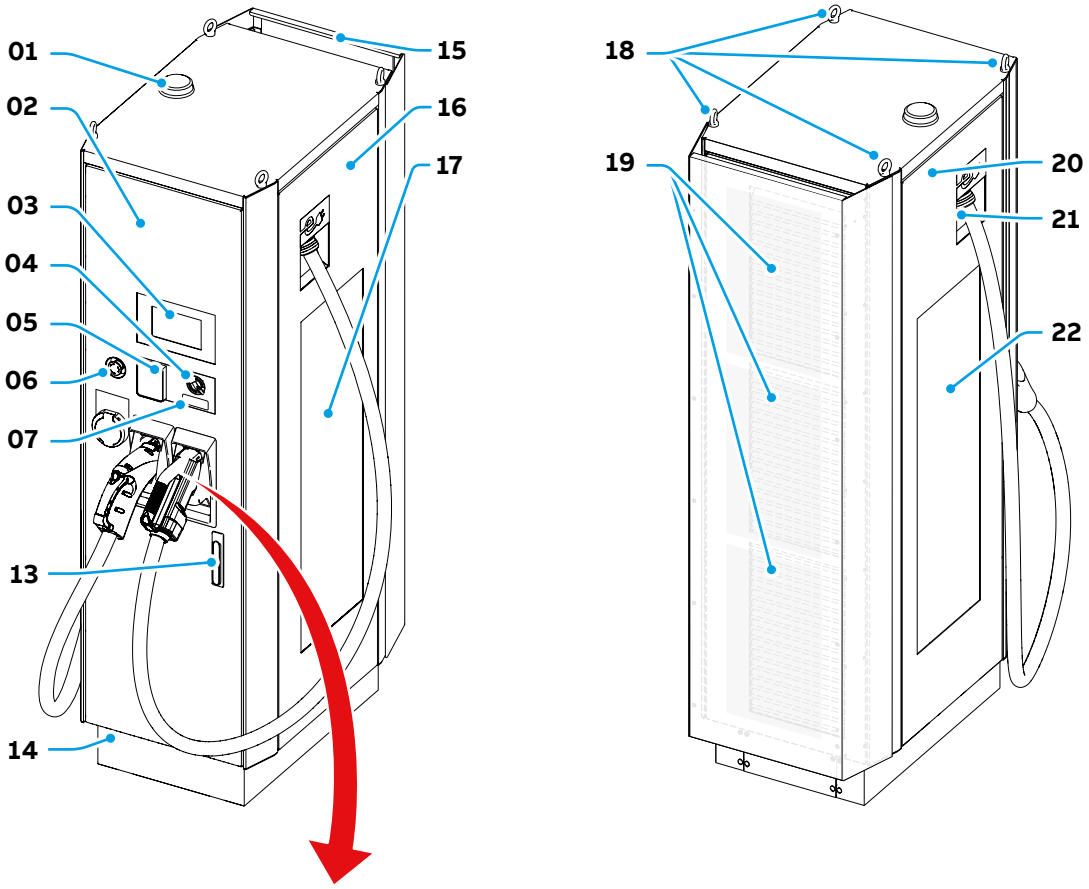
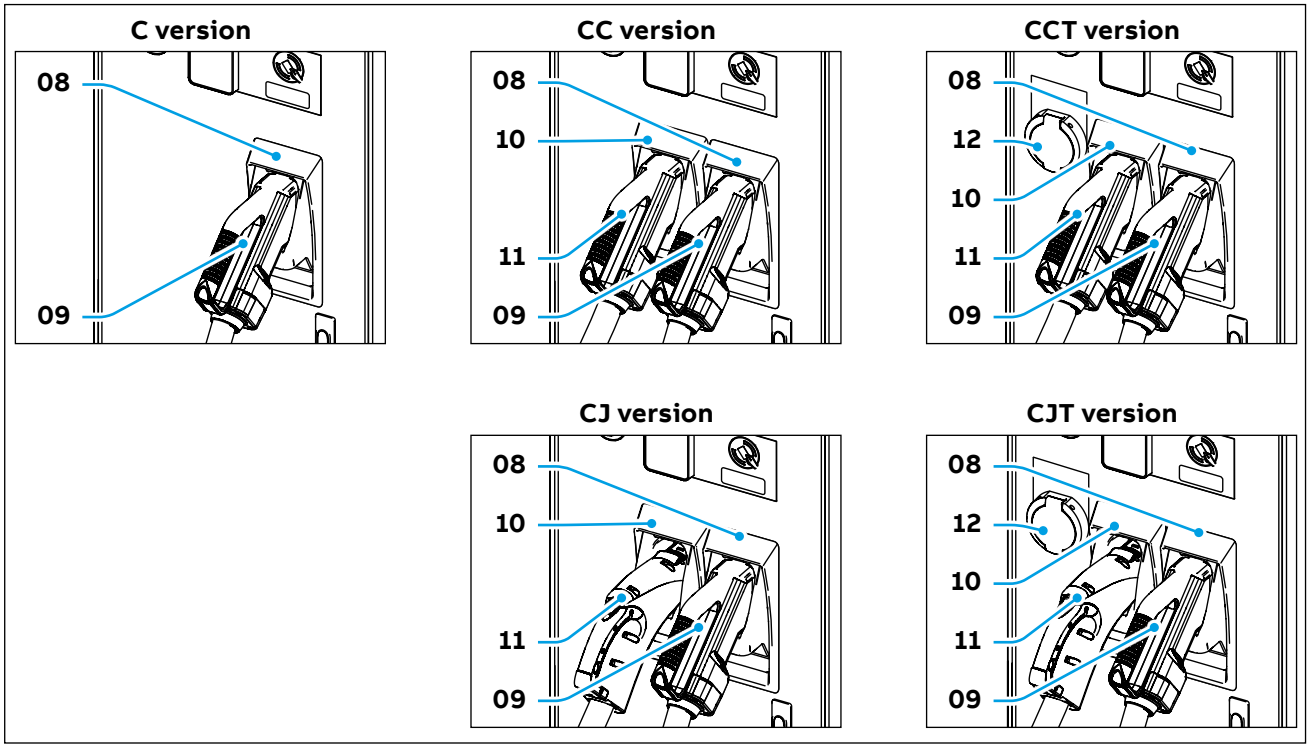
3.3 Overview

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	Display	Human-machine interface (HMI)
04	RFID	To read the information from an RFID card
05	Payment terminal	To pay for the charging session
06	Emergency stop button	To stop the EVSE when there is an emergency
07	Meter display	To read the meter data
08	Connector holder - Output 1	To hold the charging connector of Output 1
09	Charging connector - Output 1	To connect the Output 1 of the EVSE to the EV
10	Connector holder - Output 2	To hold the charging connector of Output 2
11	Charging connector - Output 2	To connect the Output 2 of the EVSE to the EV
12	AC socket, Type 2	To connect AC recharging cable
13	Swing handle lock	To lock and open the front door
14	Removable base covers	To access the EVSE's anchoring points to the foundations
15	Rear air deflector (Air outlet)	To divert the hot air outlet upwards
16	Right door	To access the connection section
17	Air inlet with filter (right door)	To filter and let cooling air in
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

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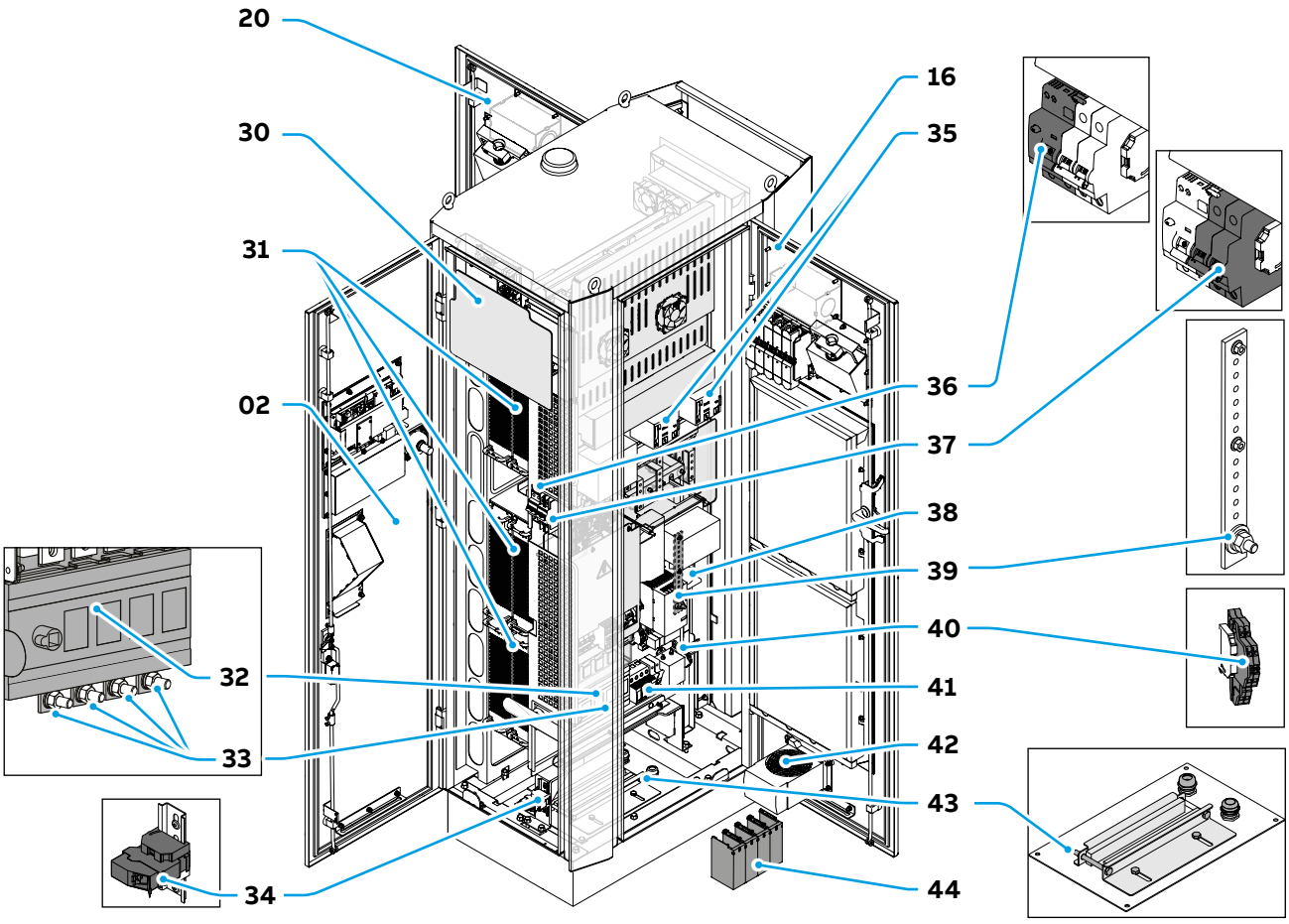
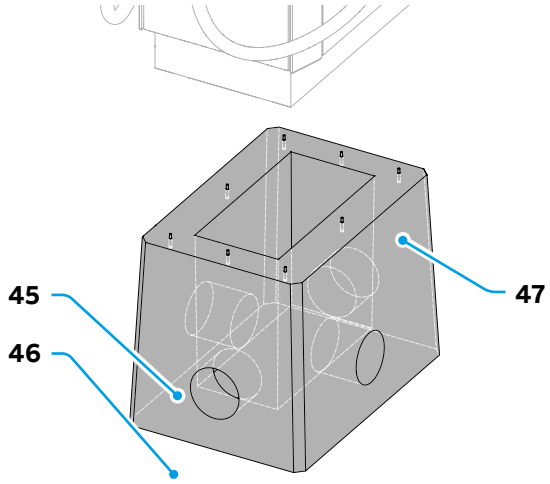
3.3.2 Overview of the EVSE, inside



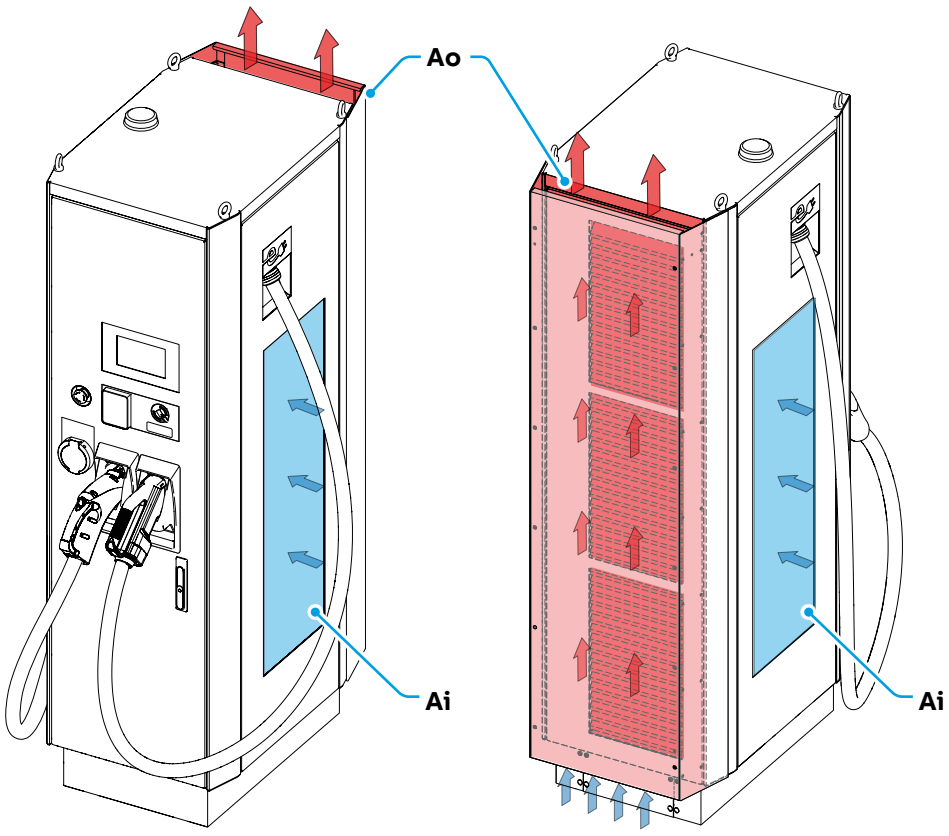
Ref.	Part	Function
30	Communication and control section	To allocate the communication and control board
31	Power modules	To provide the physical containment for various power components
32	Main AC switch	Input protection of the EVSE
33	Main AC terminals	To connect the AC input cable
34	Ethernet connector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

3.3.3 Overview - Foundation and cables entry



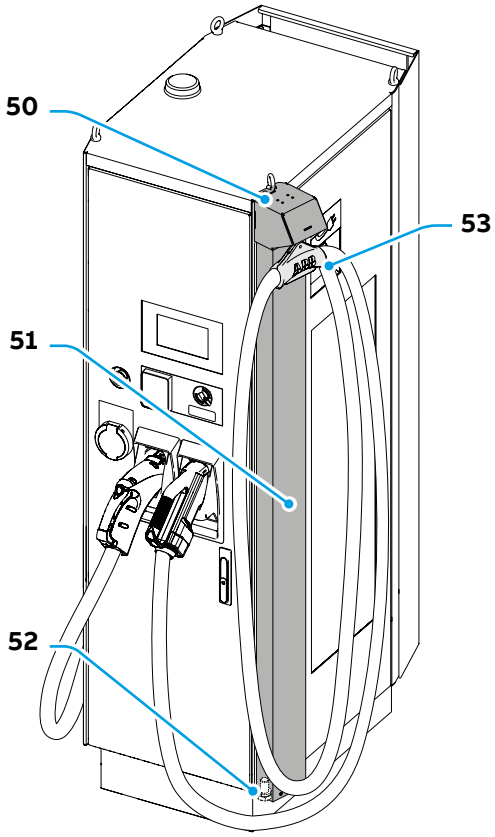
Ref.	Part	Function
45	Concrete foundation (Global ID ABB4EPY420074R1)	To anchor the EVSE on the floor and route the cables
46	Cable inlet	To route the cables inside the concrete foundation
47	Dowel	To anchor the EVSE to the concrete foundation

3.3.4 Overview - Air openings and filters



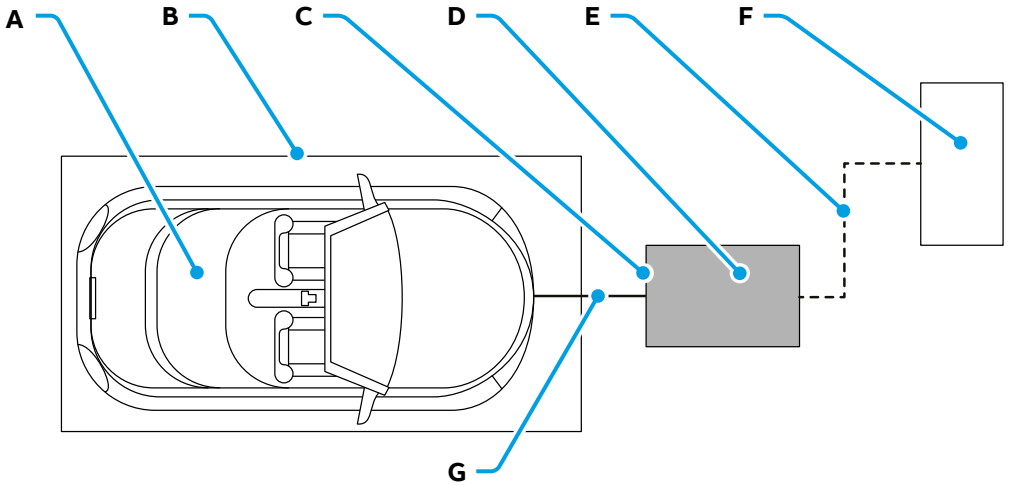
Ref.	Part	Function
Ai	Air inlet with filter	To filter and let cooling air in. The airflow makes sure that the parts on the inside of the EVSE do not become too hot.
Ao	Air outlet with filter	To filter and let cooling air out.

3.3.5 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



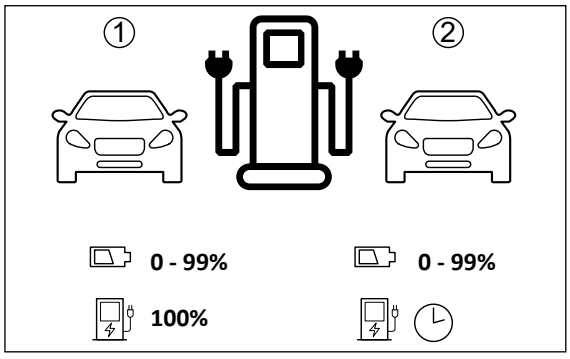
Ref.	Part	Function
A	EV	Electrical Vehicle to be recharged
B	Parking space	To park the EV during charge session
C	Front of the EVSE	Side of EVSE with EV connectors and HMI (User Interface)
D	EVSE	EV charger
E	AC input cable	To supply the input AC voltage to the EVSE
F	Power distribution board	AC grid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

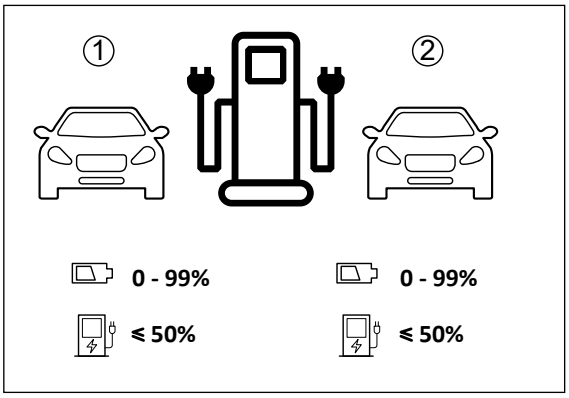
3.5.1 Sequential power allocation



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.

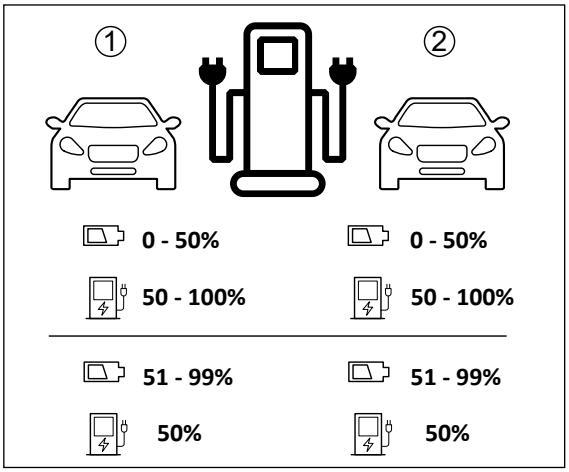
3.5.2 Concurrent power allocation



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%

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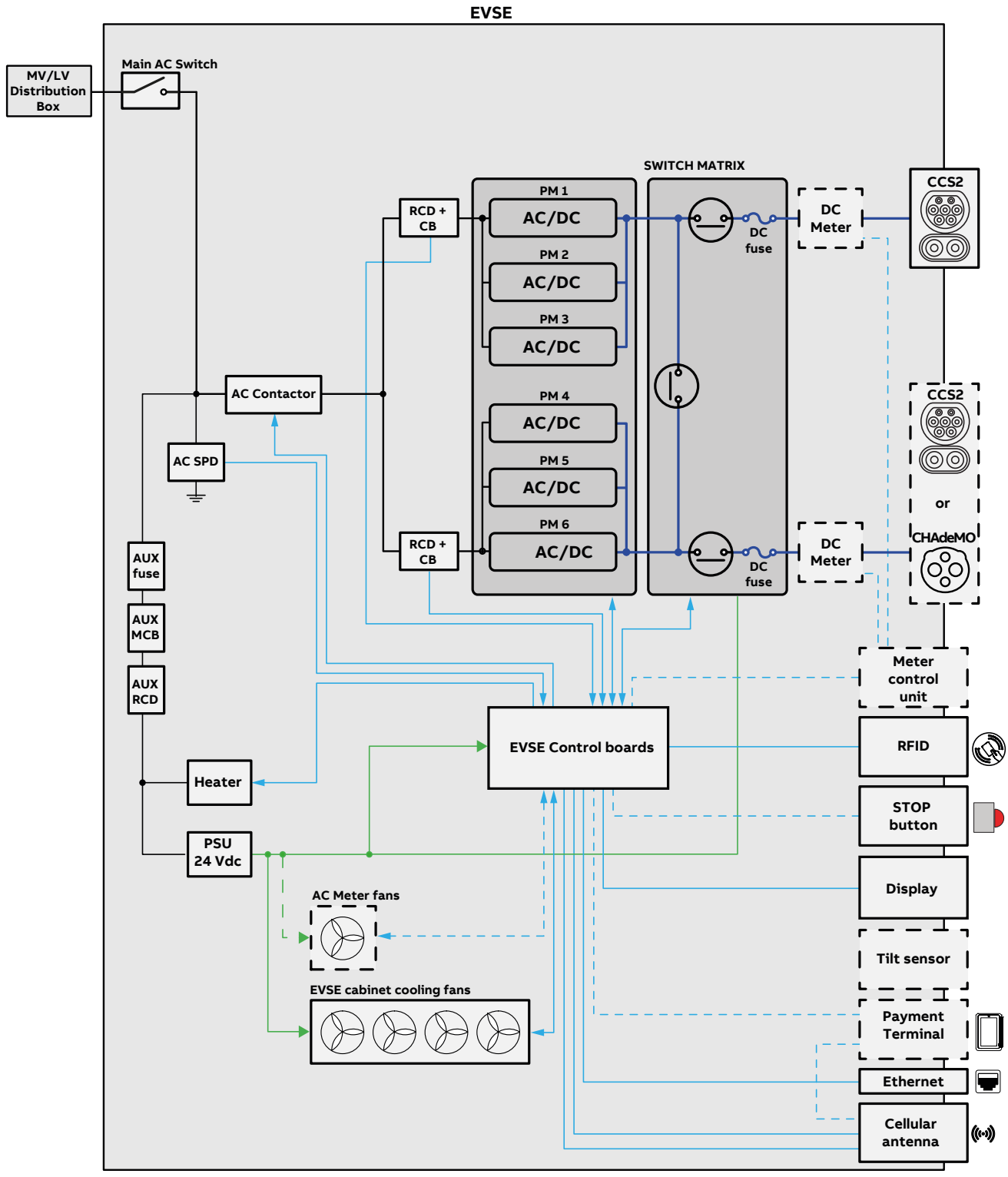
3.6 Block diagram

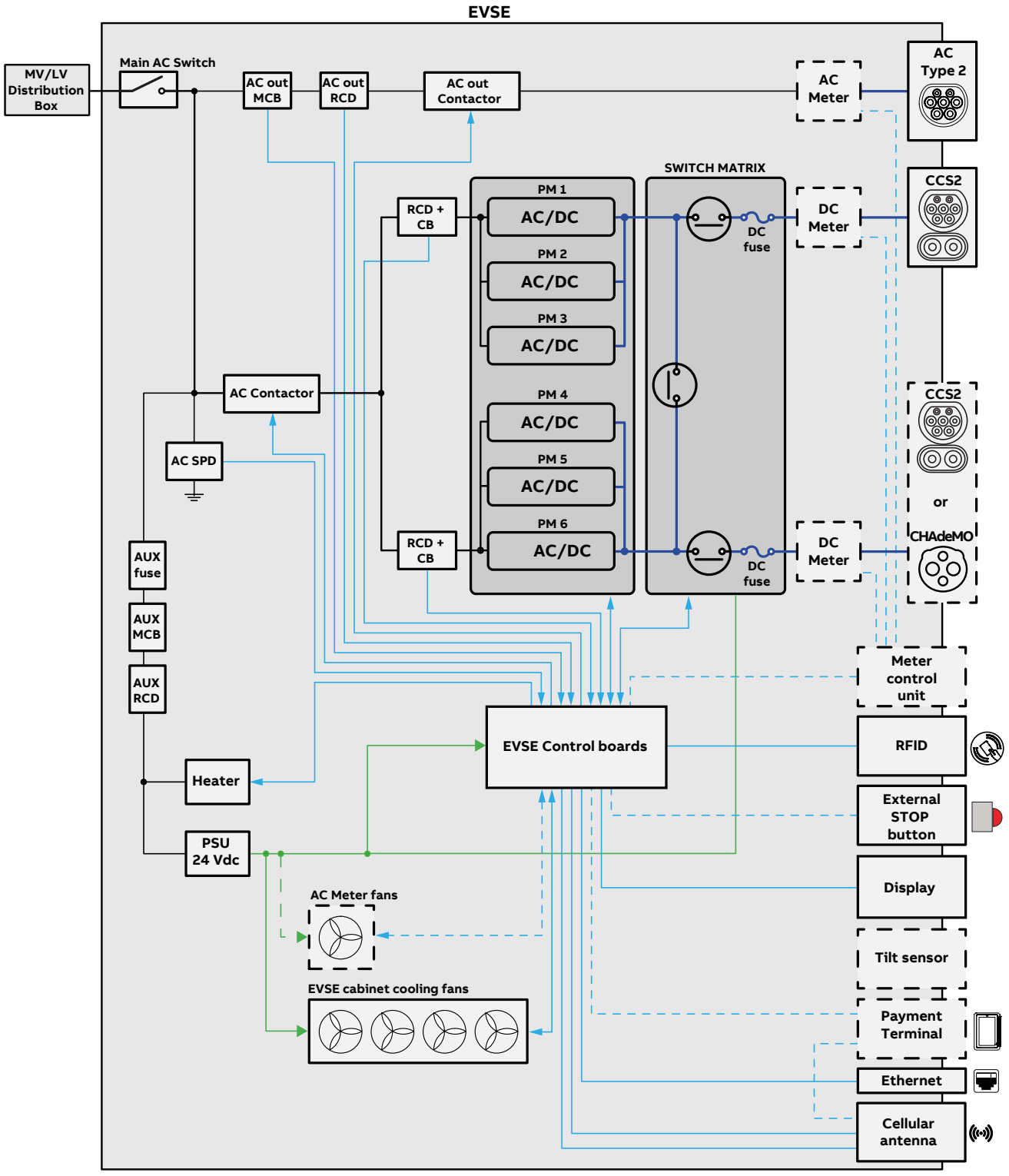
3.6.1 Terra xx4 - C, CC and CJ models



Colours	Description
━━━	Bold lines: AC power line
───	Thin lines: AC auxiliary line
───	DC power line
───	Control signal or monitoring signal
───	DC auxiliary line (24 Vdc)

EN

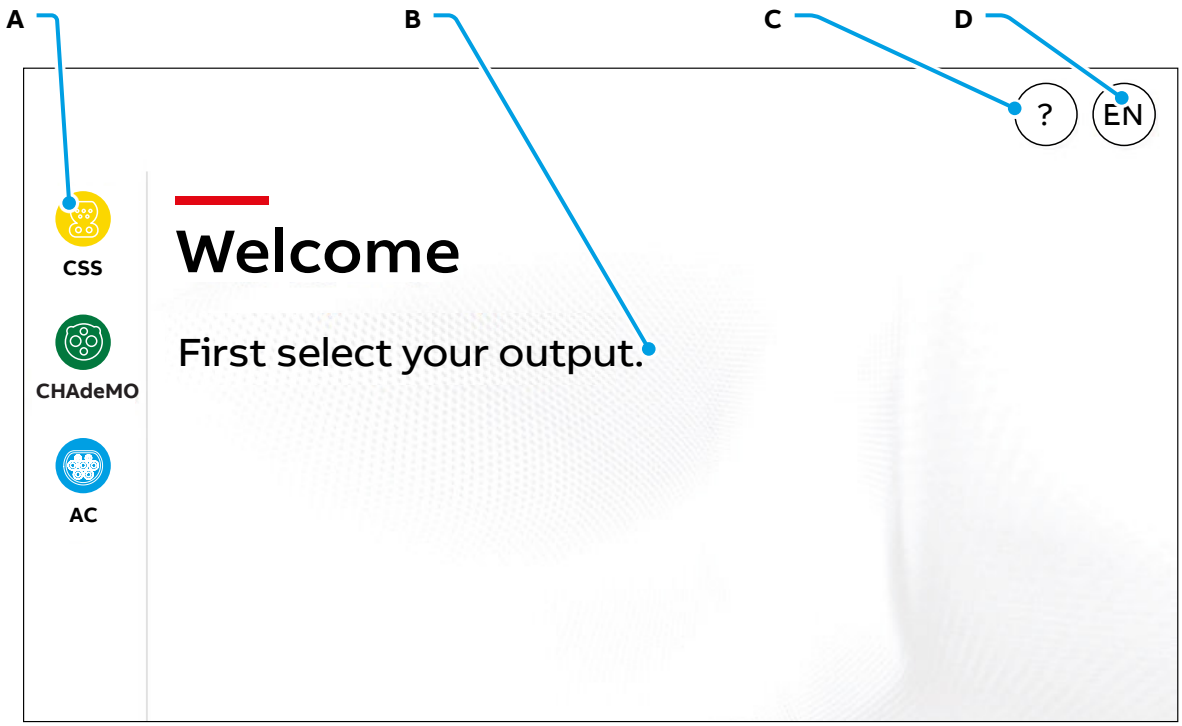
3.6.2 Terra xx4 - CCT and CJT models



Colours	Description
	Bold lines: AC power line
	Thin lines: AC auxiliary line
	DC power line
	Control signal or monitoring signal
	DC auxiliary line (24 Vdc)

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

Description of the buttons:

Button	Name	Description
	CCS	To select the CCS connector
	CHAdeMo	To select the CHAdeMo connector
	AC	To select the AC socket (Type 2)
	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
RFID Authorization shall be enabled by Charge Point Operator (CPO) OCPP server backend

3.9 Cloud service portal

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

NOTE
Reach out to the local entity of ABB E-mobility for more information:
https://e-mobility.abb.com/contact-centers/.

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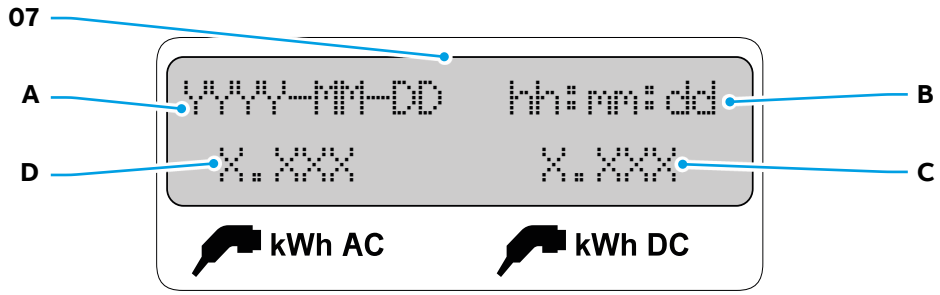
3.10 Options

3.10.1 Fiscal metering system

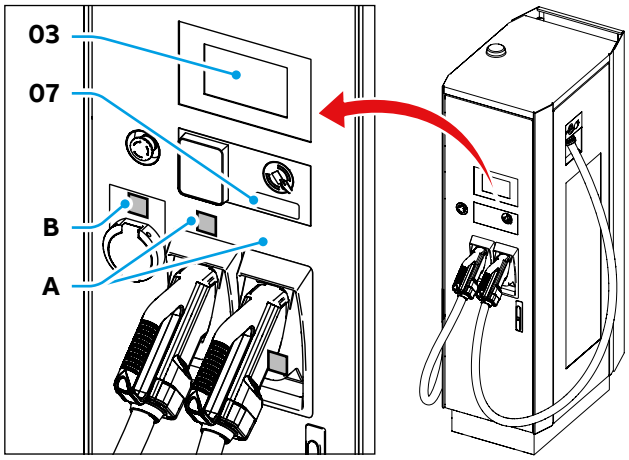
The EVSE can optionally be equipped with an energy metering system (consisting of DC or AC measurement depending on the configured outlets on the EVSE). The dedicated Meter display **(07)** on the front panel shows:
A. Date (YYYY-MM-DD)
B. Time (hh:mm:ss)
C. Delivered DC power (kWh)
D. Delivered AC power (kWh). Available only if the AC output is present.



NOTE
The presence of the energy metering system is mandatory in some countries. Do a check of the regulations that are applicable in the region of installation.

NOTE
For the German and Austria market the EVSE is equipped with energy metering system to comply with “MessEG”. Refer to the online dedicated documentation:
- EU Declaration of conformity
- Mess EV Declaration of conformity
- Mess EV Measurement accuracy information according to the type test certificate (Messrichtigkeitshinweise gemäß Baumusterprüfbescheinigung)

The meter display **(07)** shows legally relevant information.
Non legally relevant information are shown in the main HMI **(03)**.



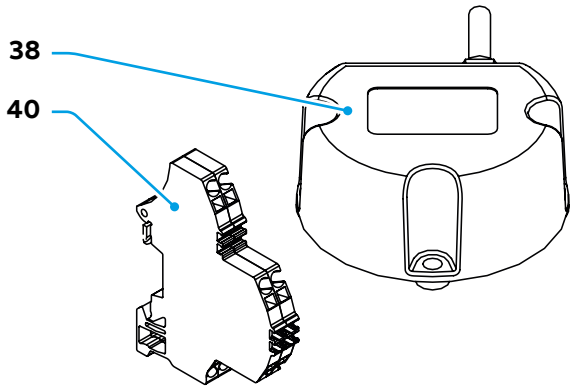
The signed meter data created by the metering system can be retrieved by users from the operator of the charging station; the data integrity can be checked using the public keys **(A) (B)** that allows to decrypt the legally relevant metering data of the charging session.
Transparency software (V1.3.0) shall be used for data validation. It can be retrieved at https://safe-ev.org/en/.

The public key is an unique ID of an energy meter installed on the EVSE which is connected to the corresponding outlet and is visible on a QR-code sticker next to the charging connector holder:
- Public key sticker of DC outlet **(A)**
- Public key sticker of AC outlet **(B)**

NOTE
For more detailed information please reach out to the operator of the charging station.

3.10.2 Tilt sensors

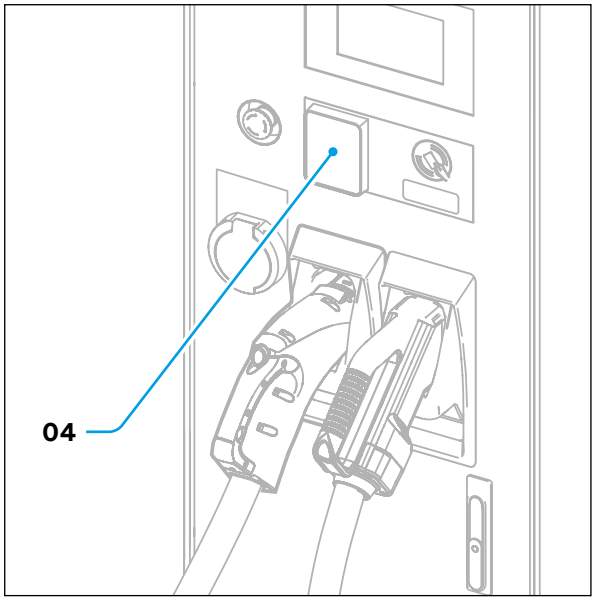
The tilt sensor device **(38)**, and dedicated screw terminal blocks **(40)** for connection, is an optional device that disables the power from the incoming AC source when it detects a tilt of the EVSE in any direction.



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. It can be used to open (in combination with undervoltage release circuit) the upstream protections keeping the EVSE de-energized.

3.10.3 Payment terminal

The EVSE can be optionally equipped with payment terminal **(04)** enabling merchants to provide secure payment methods and enhance their customer’s experience.



Some Payment terminals are fully integrated with EVSE software providing guidance during the payment process on the EVSE display.

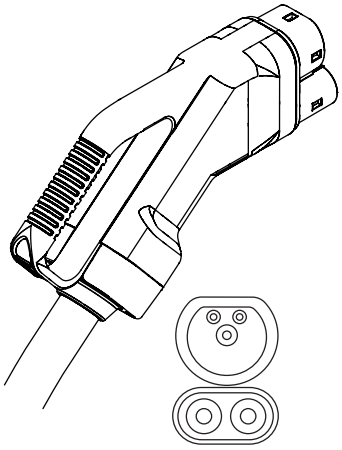
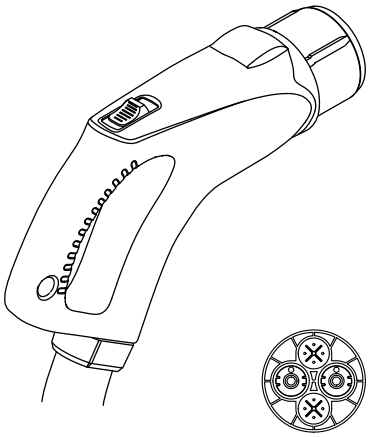
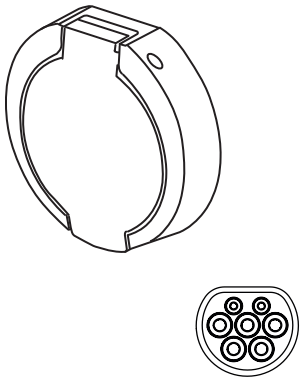
NOTE
Check with ABB E-mobility sales team the complete list of available payment terminals.

3.10.3.1 Alternative cellular modem

The EVSE can be optionally equipped, in addition to the pre-installed cellular modem, with an alternative one for customer purpose. This modem can be used for sending OCPP messages to the CPO back-end via CPO SIM card.

3.10.4 Charging connector

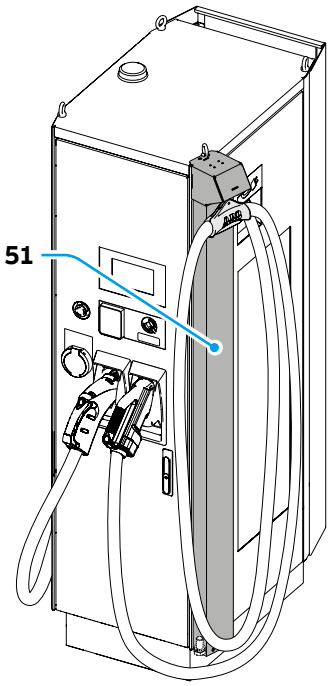
The EVSE can be delivered with different charging connectors on the EV charge cables:

CCS 2	CHAdeMO	AC socket, Type 2
		

NOTE
For the current and voltage rating specifications, refer to the “10.1. Technical data”.

3.10.5 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.

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
- Handling and transportation company

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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 EVSE 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 without following the applicable instructions accurately. Comply with all instructions to safely handle the EVSE

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.

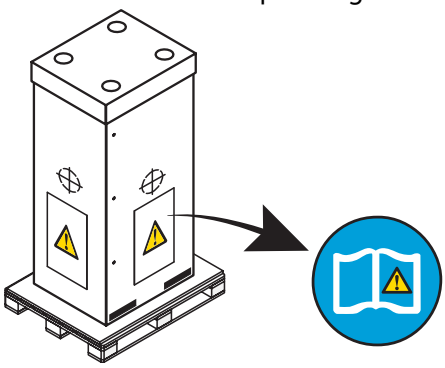
NOTE
The manufacturer is not liable for any damages resulting from the improper handling and transportation of the EVSE, in particular resulting from non- compliance with these instructions and other applicable regulations and standards (e.g. transport, occupational health and other safety standards).

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. If damage is observed, document it and contact ABB E-mobility.

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

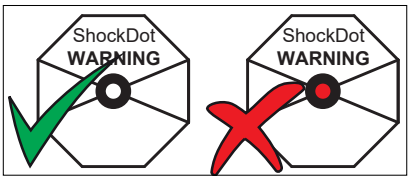
> **NOTE**
> If damage is observed, document it and contact ABB E-mobility.

- Check the shock and tilt sensor labels.

> **NOTE**
> The Tilt Watch and Shock Watch sensor label are placed on the outside of the packaging of the EVSE.

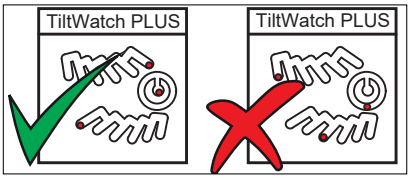
In the event that the tilt sensor shows that the EVSE has been tilted by more than 50° and/or if the shock sensor has been activated, proceed to:
- inspect the EVSE. The packaging must be removed in order to examine the extent of the damage to the EVSE. In case the EVSE is mechanically damaged, externally or in its inner parts, and cannot be installed, provide pictures to ABB E-mobility service team.
- take photographs as evidence of any damage.
- record the damage on the transportation document (e.g. CMR/waybill or AWB/air waybill) before accepting the delivery. State which type of EVSE is damaged and how many EVSE’s are damaged.
- accept the EVSE with reserve and return to the forwarder the transport document with the reserve indicating the damage.

<u>How to check the Shock sensor label</u>



The Shock Watch sensor contain a tube filled with red liquid held in suspension. When the EVSE is subjected to an impact exceeding a specified G-level, the shock disrupts the surface tension of the liquid, releasing the highly visible red dye into the length of the tube, creating a permanent and immediate indication of mishandling.
Normal movement or road shock will not affect the shock sensor device (it is only triggered by those impacts for which it is designed).
Once activated, the shock watch sensor cannot be reset.

<u>How to check the Tilt sensor label</u>



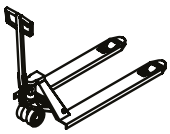
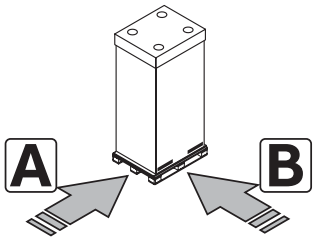
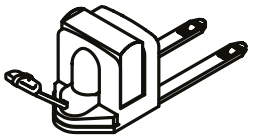
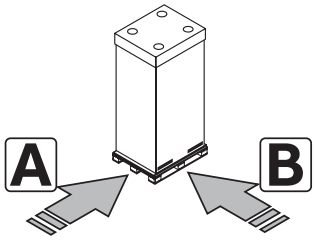
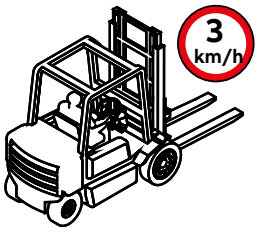
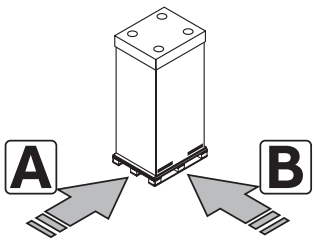
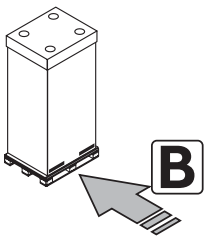
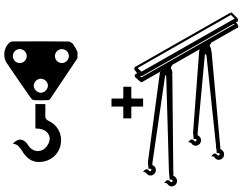
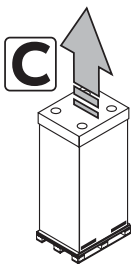
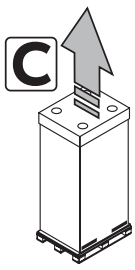
The Tilt Watch Sensor provides 360° monitoring and indicating the exact angle of tilt or whether complete overturn occurred. This represent an indication of mishandling that may result into a damage.
The Tilt Watch Sensor is immune to normal handling conditions and aircraft takeoff angles.

- 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 E-mobility service team.

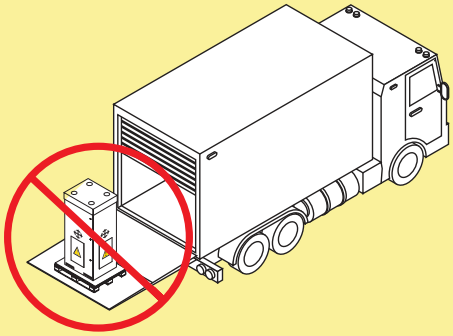
4.1.2 Preliminary checks on lifting equipment

- 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.

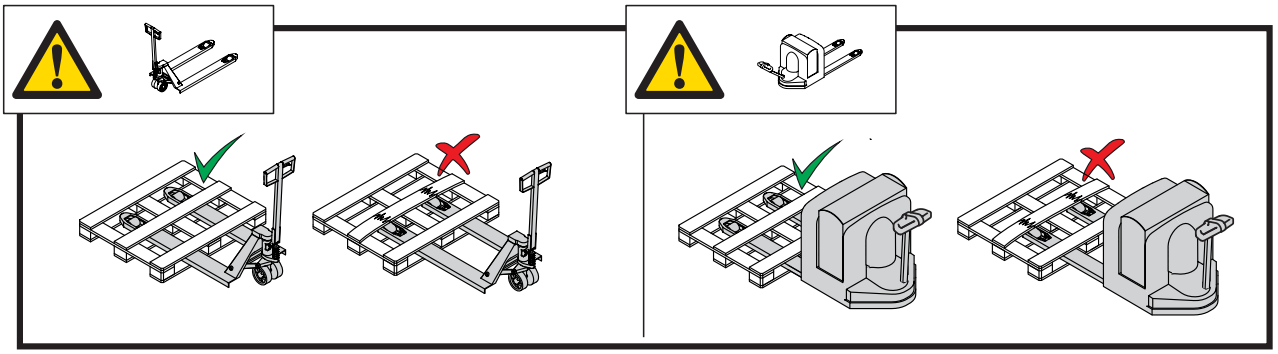
Equipment	Movement	Lifting
• Pallet Jack 	 Only short move	
• Pallet Stacker 	 Only short move	
• Forklift Truck • Wheel loader pallet fork 		
• Hoist / Crane 		

DANGER

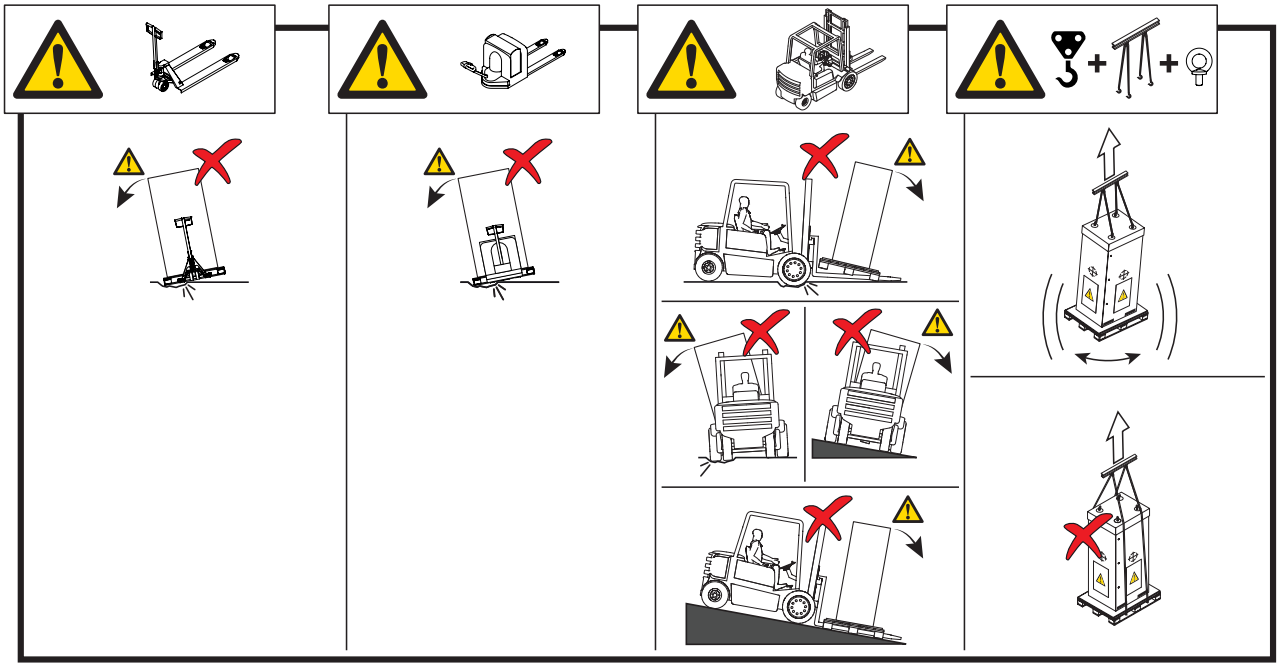
- The forks need to be fully able to move into the pallet to provide full support and operated by trained staff.
- Knowing the total weight, ropes and chains needs to be suitable and in safe conditions and operated by trained staff.
- Pallet jack and Pallet stacker are not suitable to lift up the EVSE. 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.



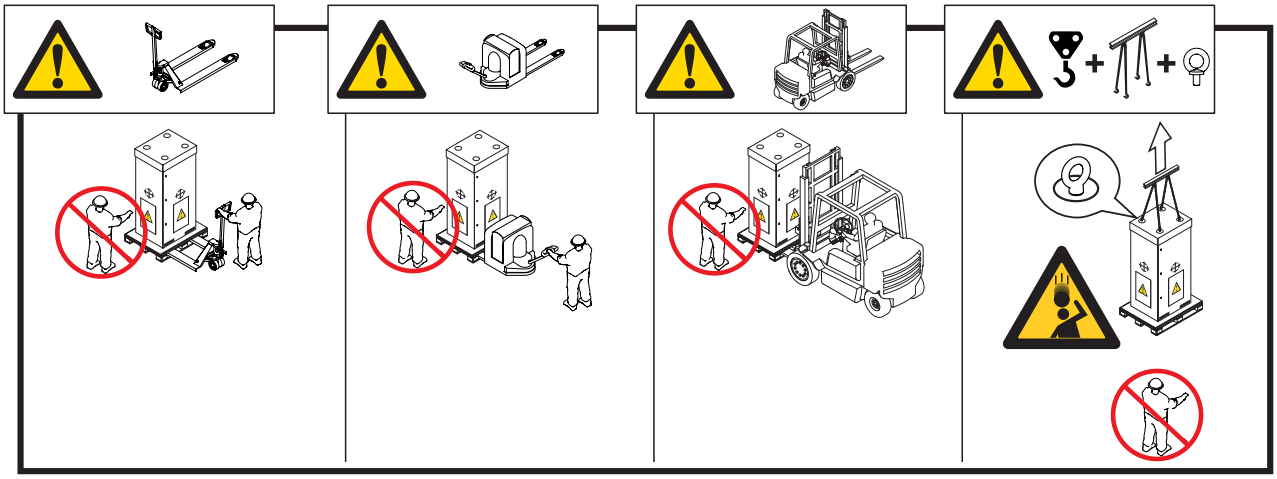
- Check that the pallet is not damaged. If there is damage, contact the responsible Health and Safety manager for the site to get instructed on how to unload the EV Charger and move it in a safe way.
  Pay particular attention to the position of the wheels of the Pallet jack and pallet stacker to avoid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



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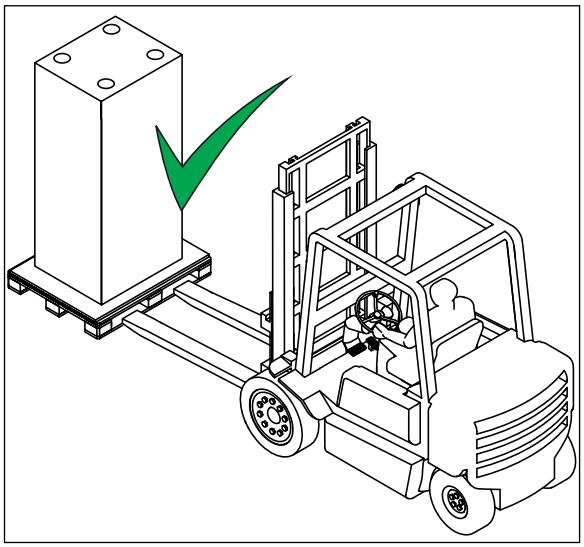
4.2 Lifting of the EVSE

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.

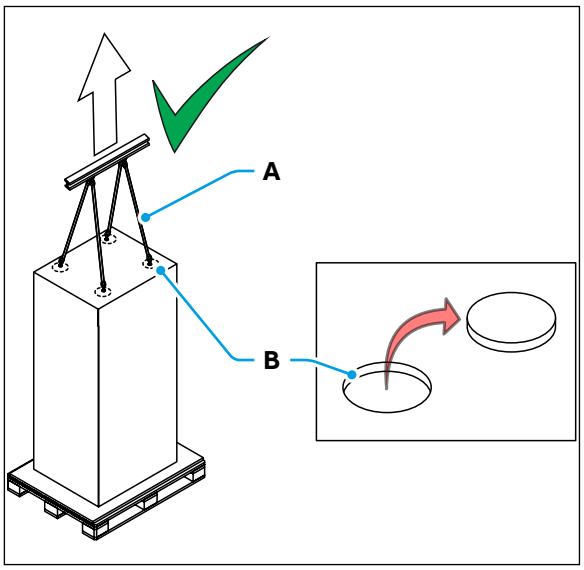
CAUTION
- Do not drop the cabinet.
- Do not tilt the cabinet.
- Make sure there are no dynamic forces on the lifting points.

4.2.1 Forklift Truck / Wheel loader pallet fork



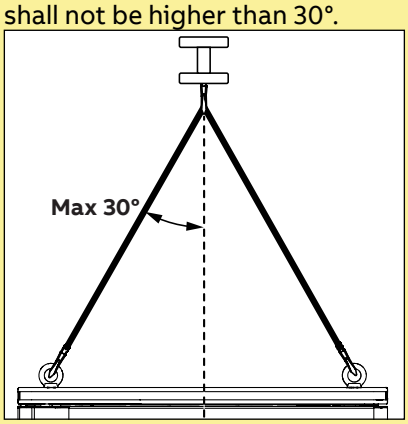
- Move the forks of the forklift truck in the gaps at the side of the cabinet.
- Move the cabinet to the correct location.

4.2.2 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 inside of EVSE

In this section are illustrated all the access procedures.

Chapter recipients:

- Qualified installer

EN

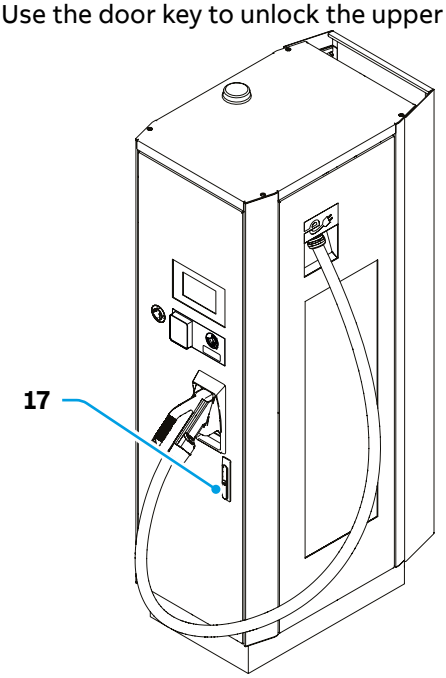
5.1 Front door

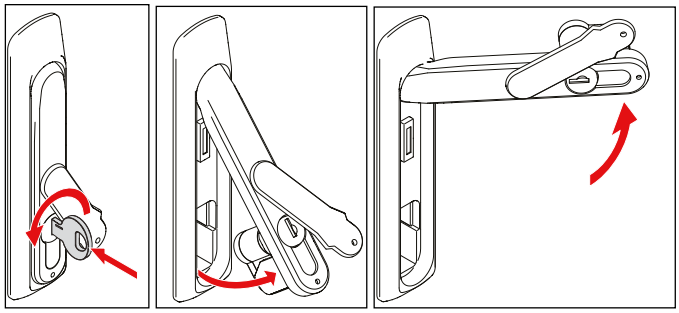
HAZARDOUS VOLTAGE
Make sure that only qualified persons have access to the door key.

NOTE
There is one unique door key for each EVSE.

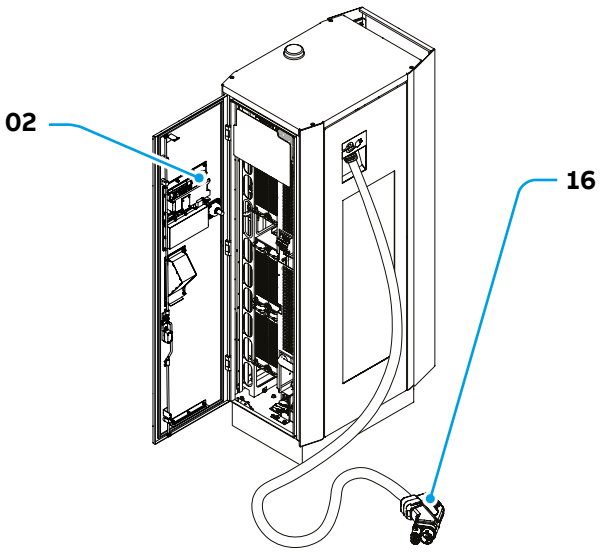
5.1.1 Open the front door

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

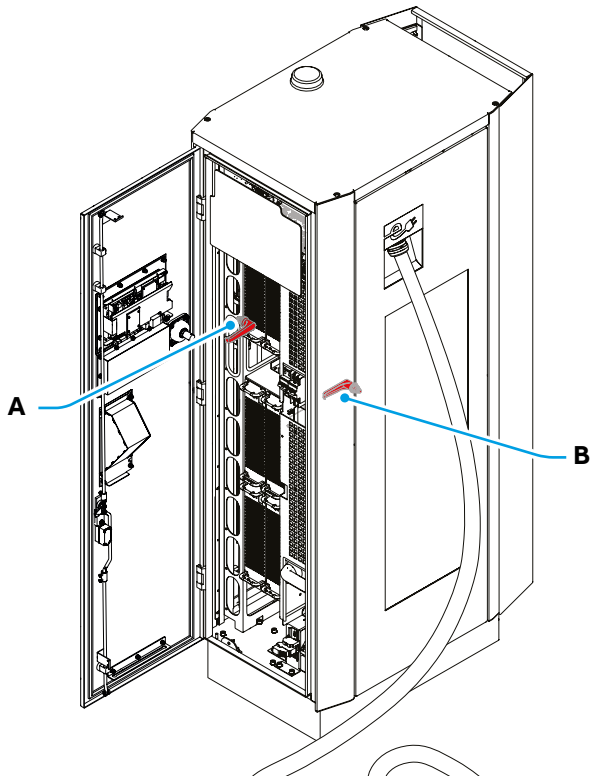
5.2 Sides doors

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)**.

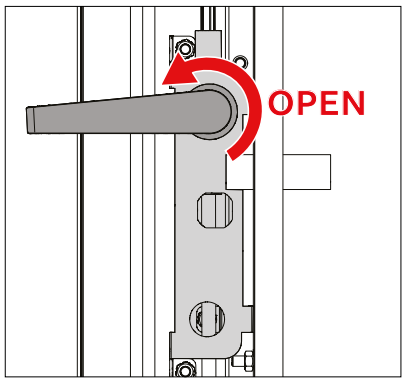
HAZARDOUS VOLTAGE
Make sure that only qualified persons have access to the door key.

NOTE
There is one unique door key for each EVSE.

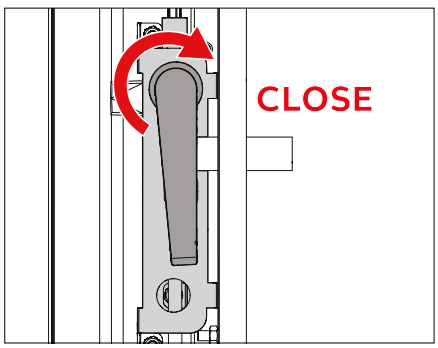
5.2.1 Open the left and right doors



- 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



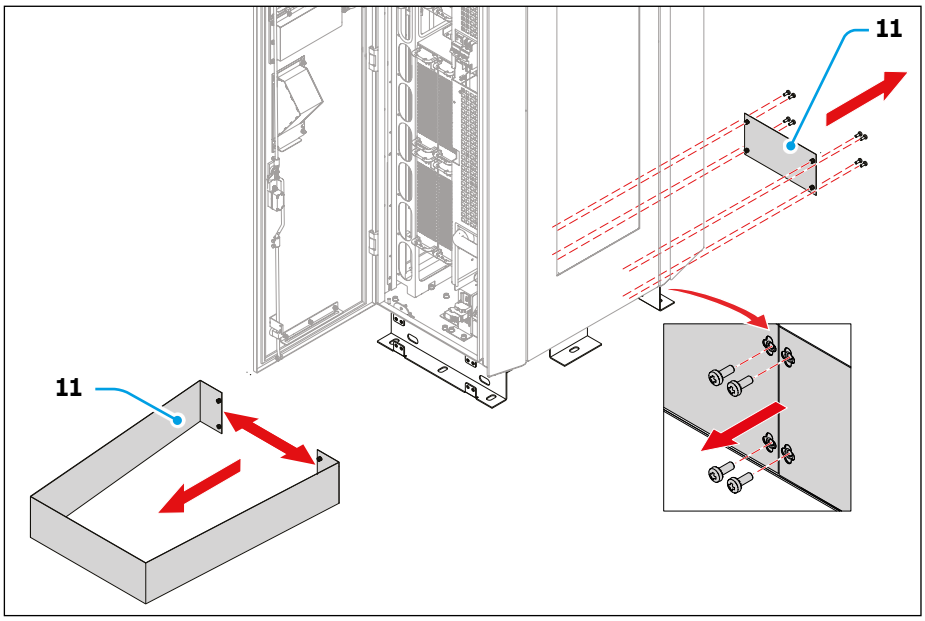
- In order to close the Left door **(20)** and/or the Right door **(13)** is necessary to push the door and rotate the internal handle in CLOSE position.
- Close the front door.

EN

5.3 Border covers

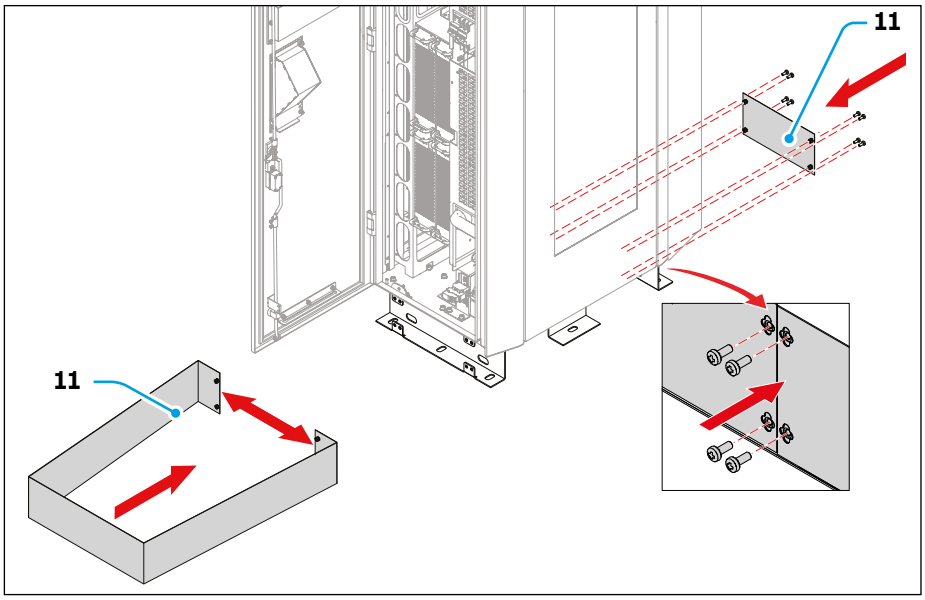
5.3.1 Remove the border covers

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.

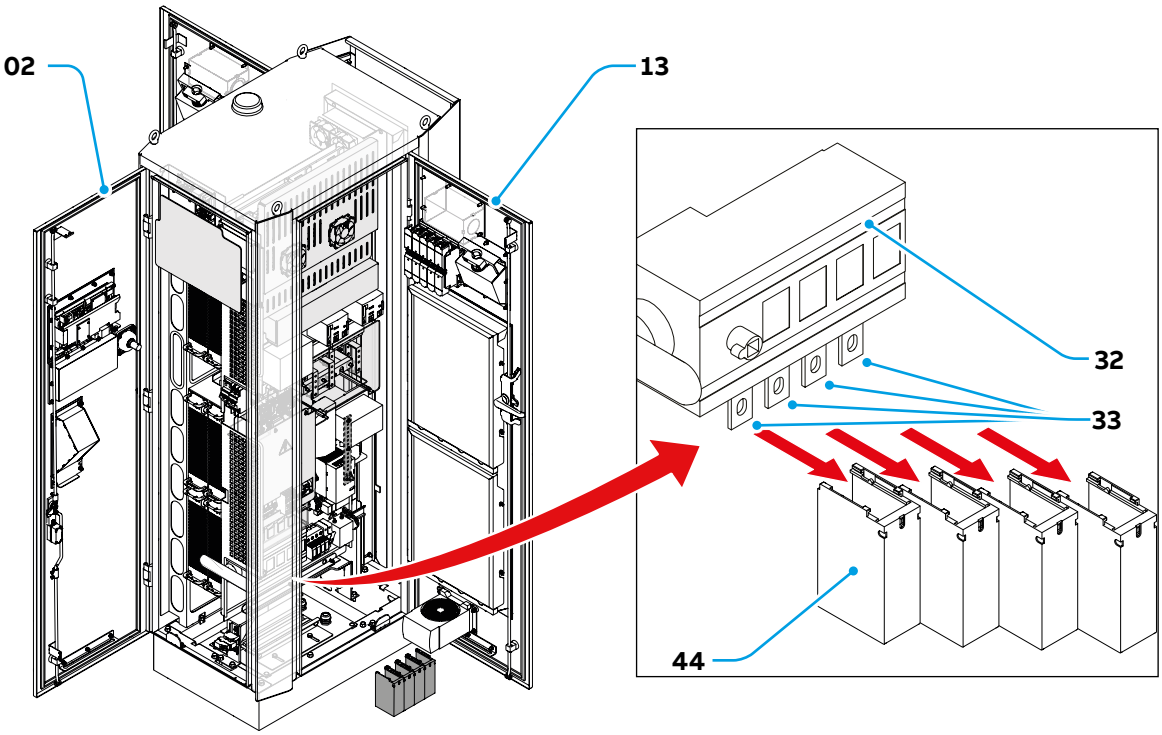
5.3.2 Install the border covers



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

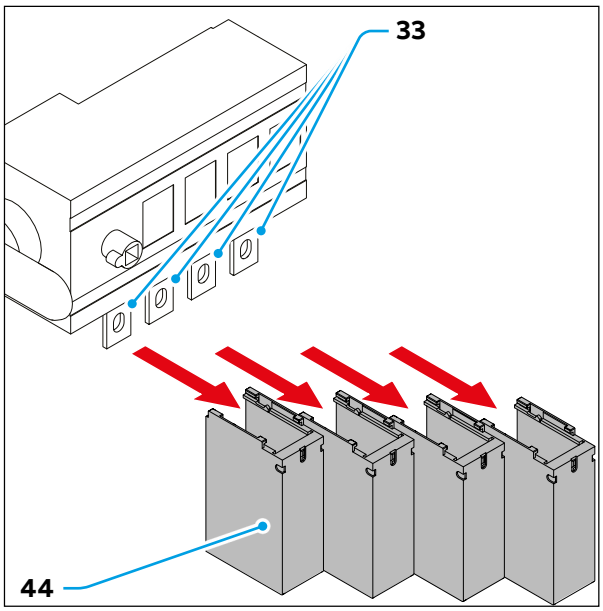
5.4 Main AC protection barriers

In order to remove the Main AC protection barriers **(44)** is necessary to open the front **(02)** and right doors **(13)**. The Main AC protection barriers **(44)** are located over the Main AC terminals **(33)** or AC input fuse **(32)**.



5.4.1 Remove the Main AC protection barriers

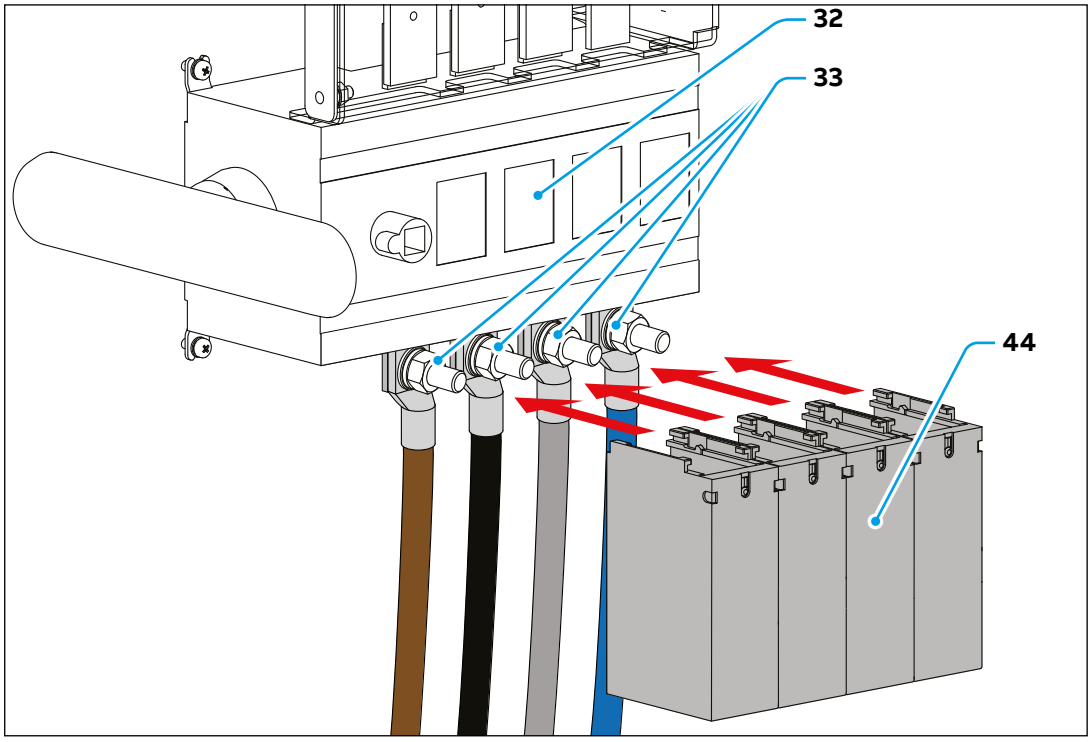
To access the Main AC terminals **(33)** is necessary to remove the Main AC protection barriers **(44)**.



- Unscrew and remove the 6 screws (2 on each protection barrier).
- Remove the Main AC protection barriers **(44)**.

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 **(44)** to ensure the safety of the EVSE.



6. Installation

In this section are illustrated all the installation procedure.

Chapter recipients:

- Owner
- Qualified installer
- Handling company

EN

6.1 Unpacking

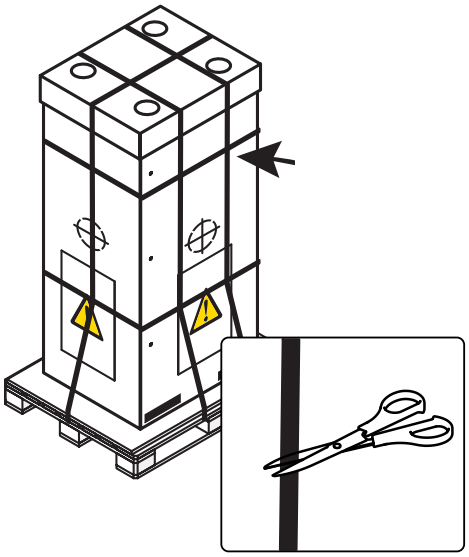
WARNING
Packaging elements (cardboard, cellophane, staples, adhesive tape, straps, etc.) may cause cuts and/or injuries if not handled with care. They should be removed with the proper equipment.

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

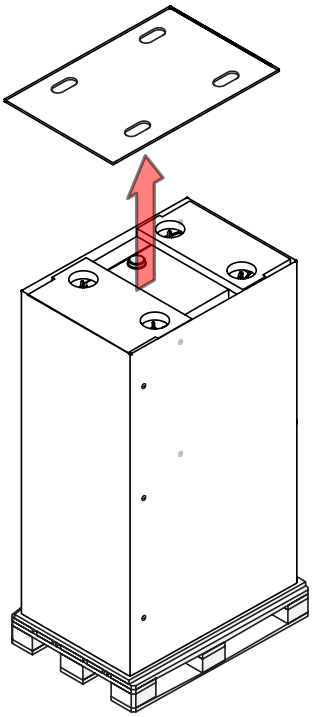
NOTE
If you find damage or the parts are not according to the order, contact the local manufacturer service dept.

6.1.1 Unpacking procedure

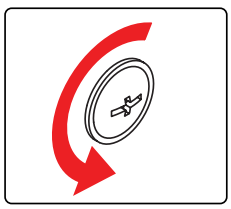
NOTE
Make sure that all parts are delivered according to the order.



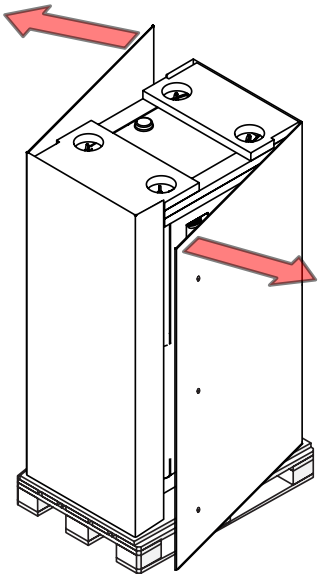
- Cut the plastic straps.



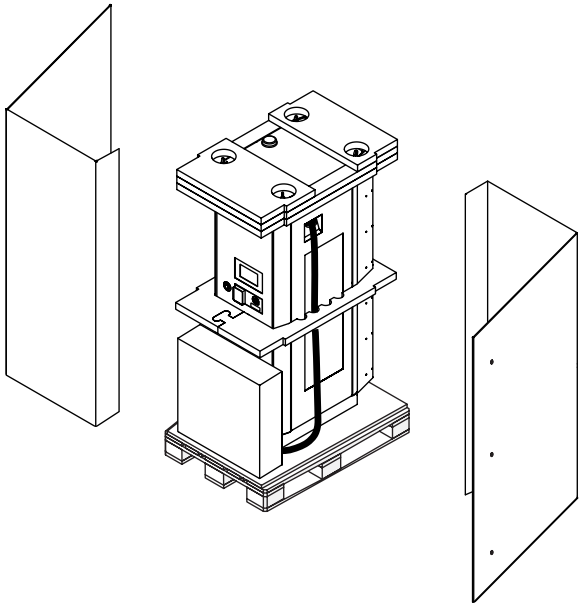
- Open the six locking mechanisms (3 on both sides).



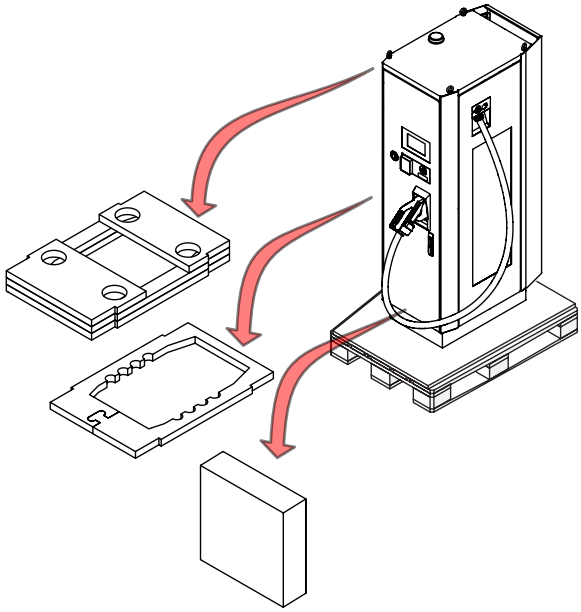
- Remove the external top cover.



- 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”).

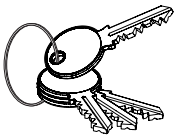
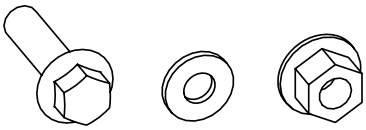


- Remove the internal foams.
- Remove the charging cable from the box.

EN

6.1.2 Components supplied with the EVSE

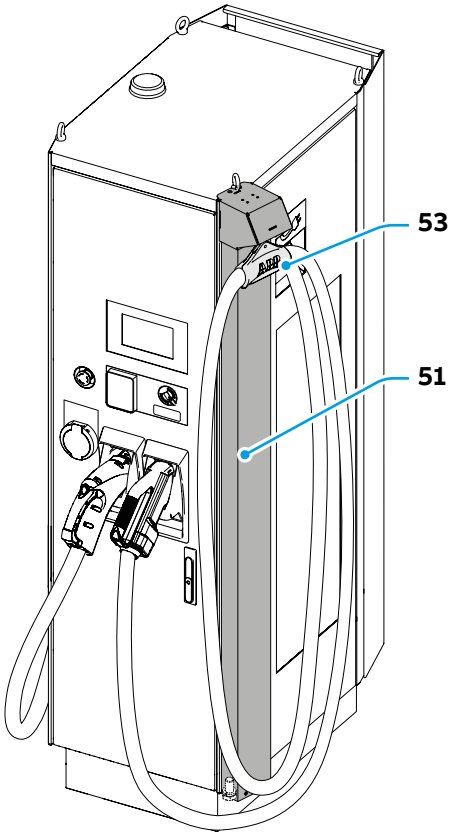
When the EVSE is unpacked, make sure all components supplied with the EVSE are present:

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

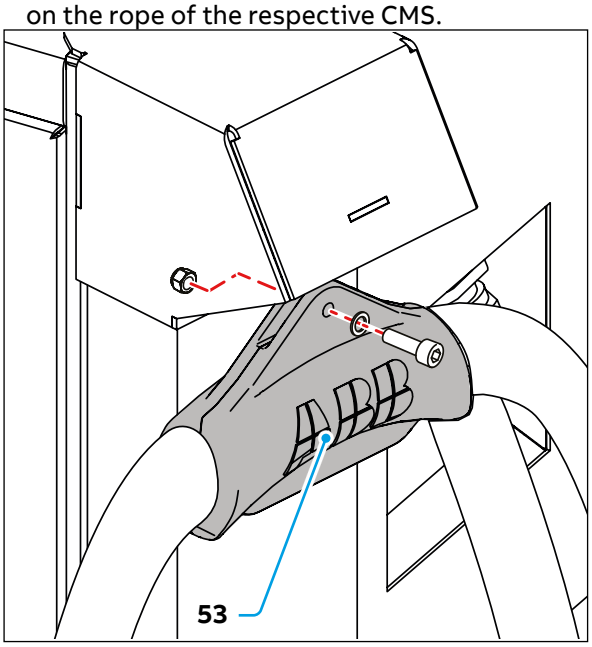
If the EVSE is equipped with CMS **(51)**, the charging cables must be hooked up on the respective CMS using the Cable clamp **(53)**.



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:

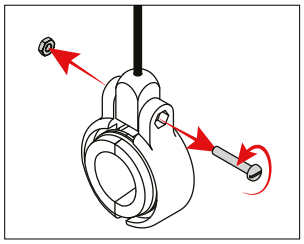
TYPE 1

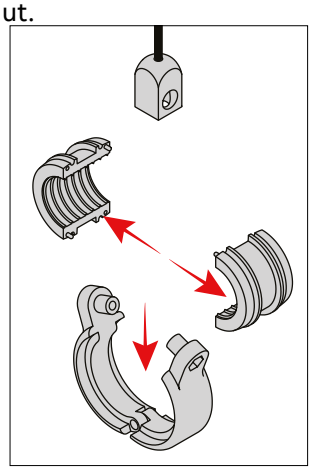
- Install the cable clamp **(53)**, one on each charging cable, on the rope of the respective CMS.



TYPE 2

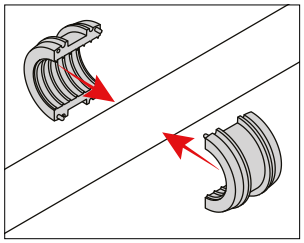
- Remove the cable clamp from the CMS by unscrewing the screw and the hex nut.

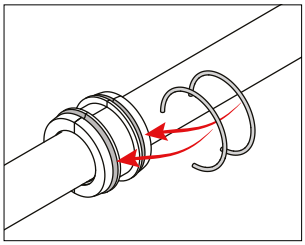




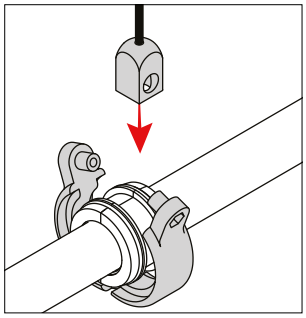
- Install the “Clamp insert” on the charging cable (at 8.2 in (250 cm) starting from the EVSE) and lock it in position by inserting the 2 springs.

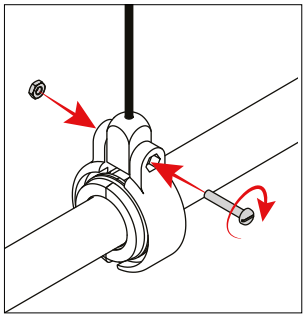
NOTE
Before installing the clamp, some cable types require a layer of rubber tape between the charging cable and the clamp. Make sure the tape is installed properly in order keep a perfectly round profile without overlapping with its other end, approximately 1/8 in gap.



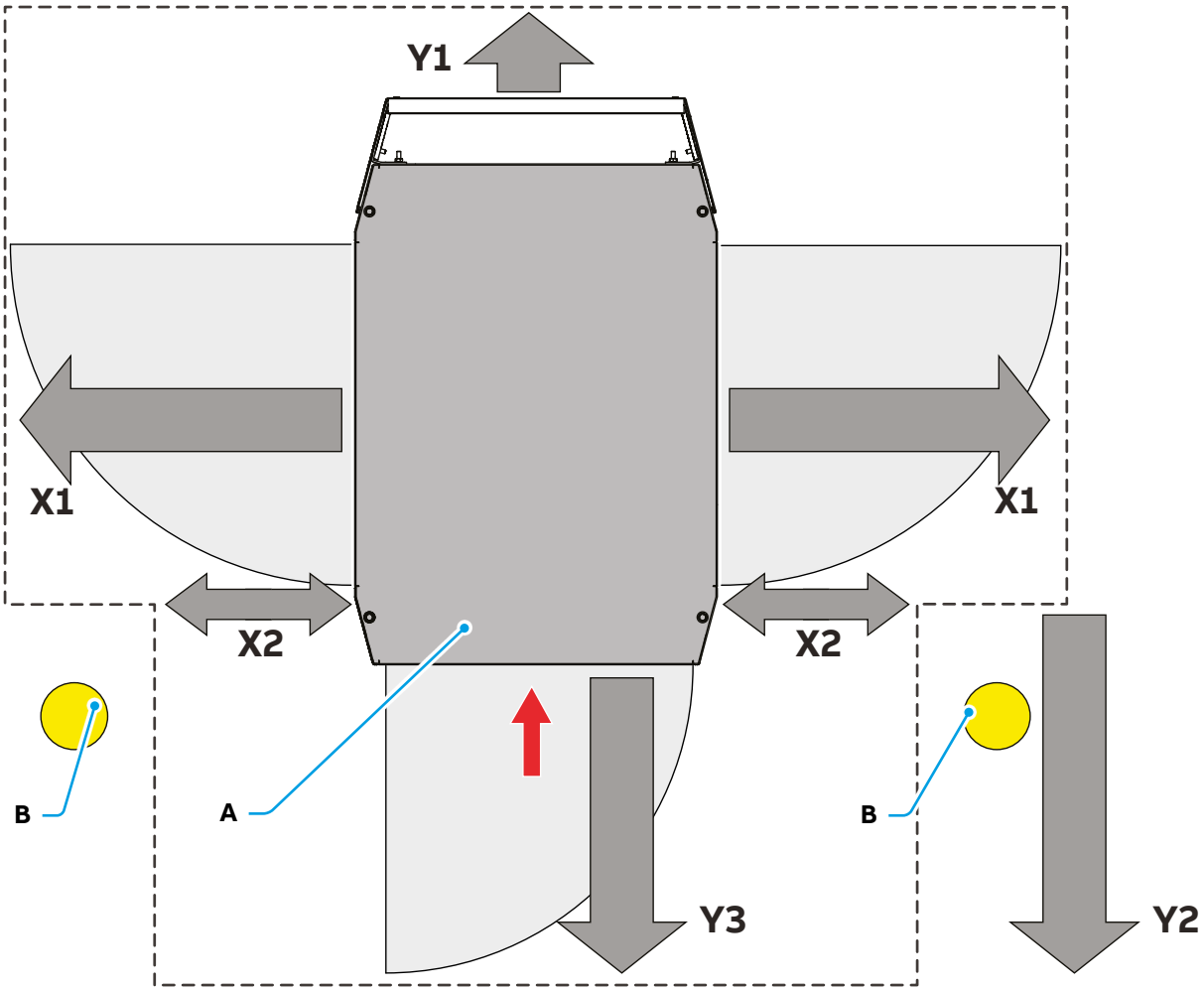


- Install the clamp on the cable insert.
- Install the rope holder on the cable clamp.
- Install the screw and the hex nut to secure the holder and the cable clamp.





6.2.2 Floor space requirements



Parameter	Description	Specification [mm]
A	EVSE (front side indicated by red arrow)	
B	Example of approved bollard location	
X1	Space to open the side doors	540
X2	Reduced side space to install the bollards	310
Y1	Space needed to secure the removable base cover	110
Y2	Increased front space to install the bollards	585
Y3	Space to open the front door	500

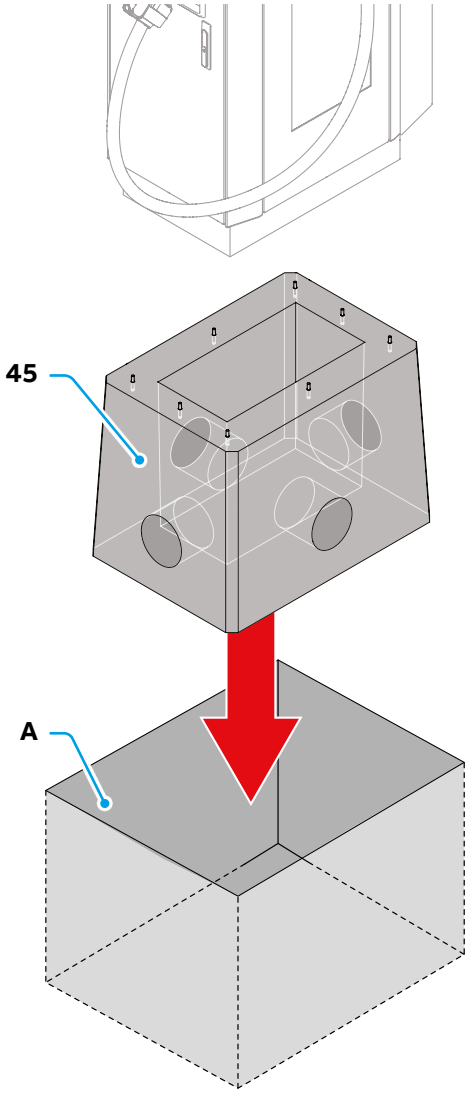
NOTE
These dimensions only refer to the required space to open the doors of the EVSE. A minimum of 1 m extra on front, left and right sides is required to allow commissioning and maintenance operations on the EVSE.

6.2.3 Prepare the foundation

The EVSE can be installed on:

- **Prefabricated foundation** (to be ordered from ABB E-mobility). In this case follow the instruction below to install the EVSE
- **Custom foundation**. In this case use the drawing of the "11.5. Custom foundation - EVSE footprint" to build the foundations before to install the EVSE as described in the instruction below

6.2.3.1 Prepare the prefabricated foundation



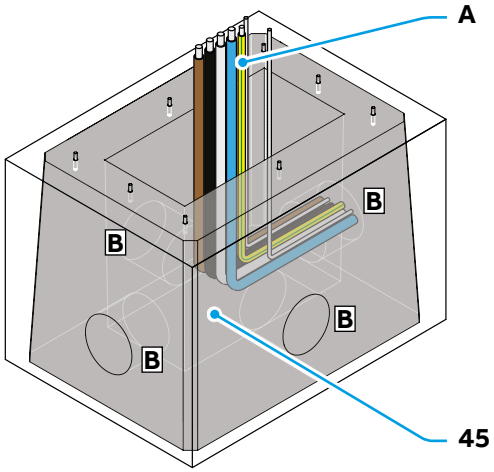
- Take the prefabricated Concrete foundation **(45)**.

> **NOTE**
> Contact the manufacturer to order the foundation for your EVSE.

> **NOTE**
> Refer to "11.4. Prefabricated foundation" for the foundation specifications.

- Dig the pit **(A)** for the Concrete foundation **(45)**.
- Place the Concrete foundation **(45)** in the ground pit.

> **NOTE**
> The foundation does not have a front/back direction. Check the orientation using the figure alongside where the position of the EVSE is simulated

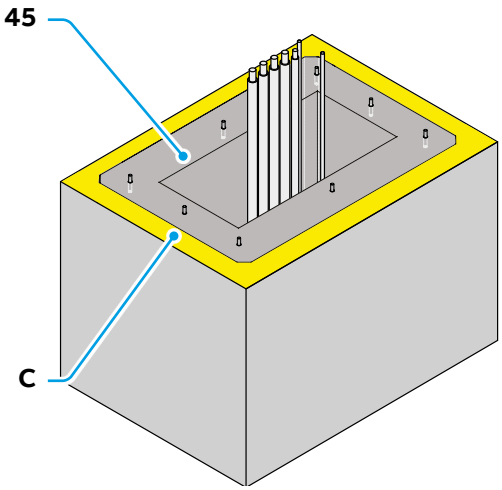


- Prepare the site and the underground cable conduits; route the power and signal cables **(A)** inside the Concrete foundation **(45)** using the 4 entry holes **(B)** and applying cable slack of each cable 700 mm.

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

> **NOTE**
> Max. cable diameter 38 mm.

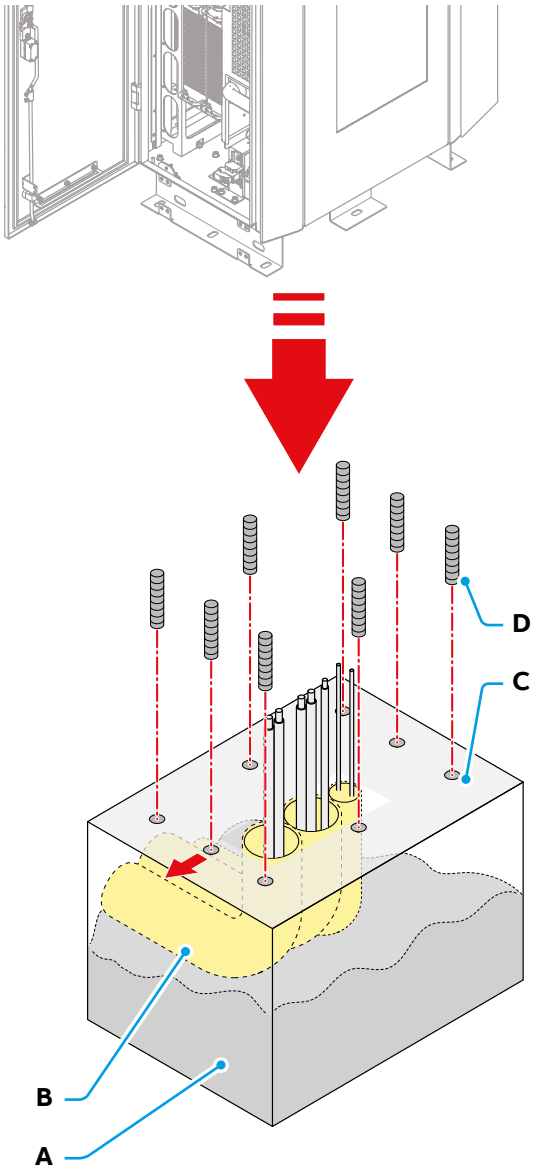
EN



- Pour concrete **(C)** around the Concrete foundation **(45)** to lock in place the conduits and the foundation itself.

6.2.3.2 Prepare the custom foundation

The EVSE must be installed on a custom foundation suitable to support the weight of the equipment. Use the drawing of the “11.5. 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.
- Prepare the site and the underground cable conduits (the red arrow indicate the front side of the EVSE).

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

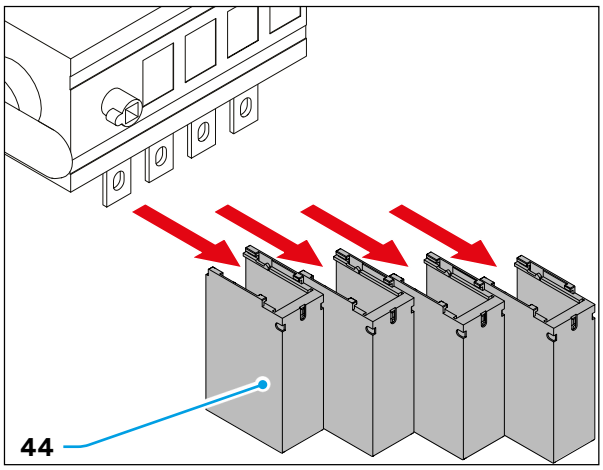
> **NOTE**
> Max. cable diameter 38 mm.
> Cable slack at least 700 mm.

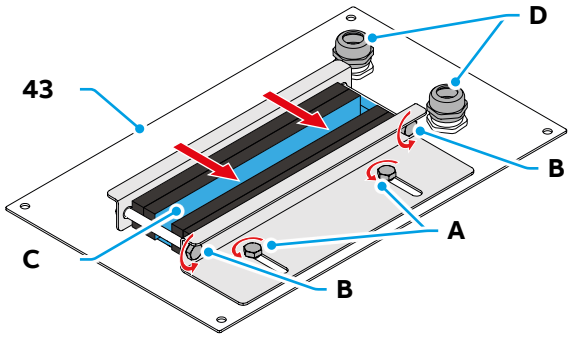
- Pour the concrete into the hole. Make sure that the cable conduits **(B)** are in the correct position.

> **NOTE**
> Let the concrete dry.

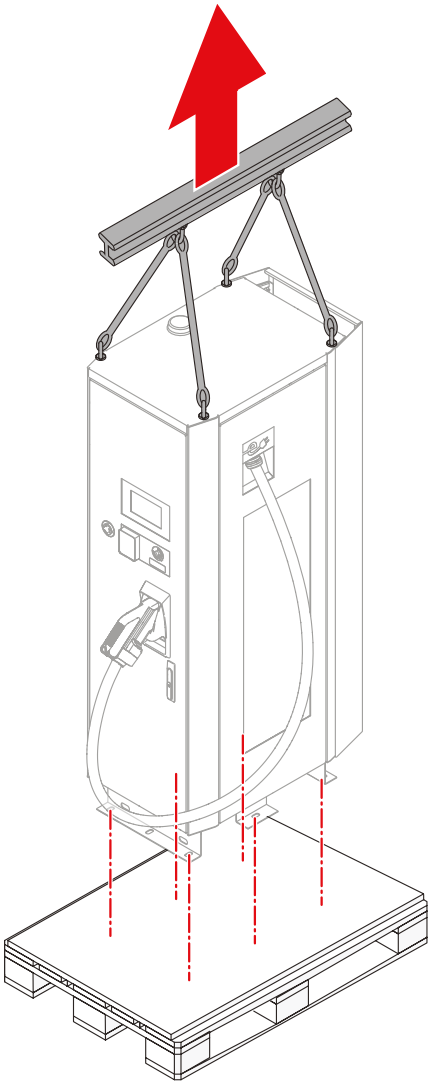
- Drill the fixing points **(C)**.
- Install the dowels **(D)**.

6.2.4 Install the EVSE on the foundation

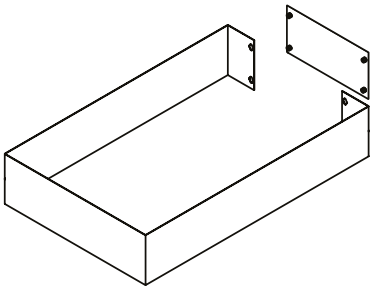




- Open the front and right doors. Refer to section “5.1. Front door” and “5.2. Sides doors”
- Remove the Main AC protection barrier **(44)**. Refer to “5.4.1. Remove the Main AC protection barriers”.
- Open the Cables entry plate **(43)**:
  - Loosen the fasteners **(A)**
  - Unscrew the side bolts **(B)** to move the sliding plate and open the cable inlet **(C)**
- If it is necessary, open the cable glands **(D)** for the Ethernet and Signals cables.

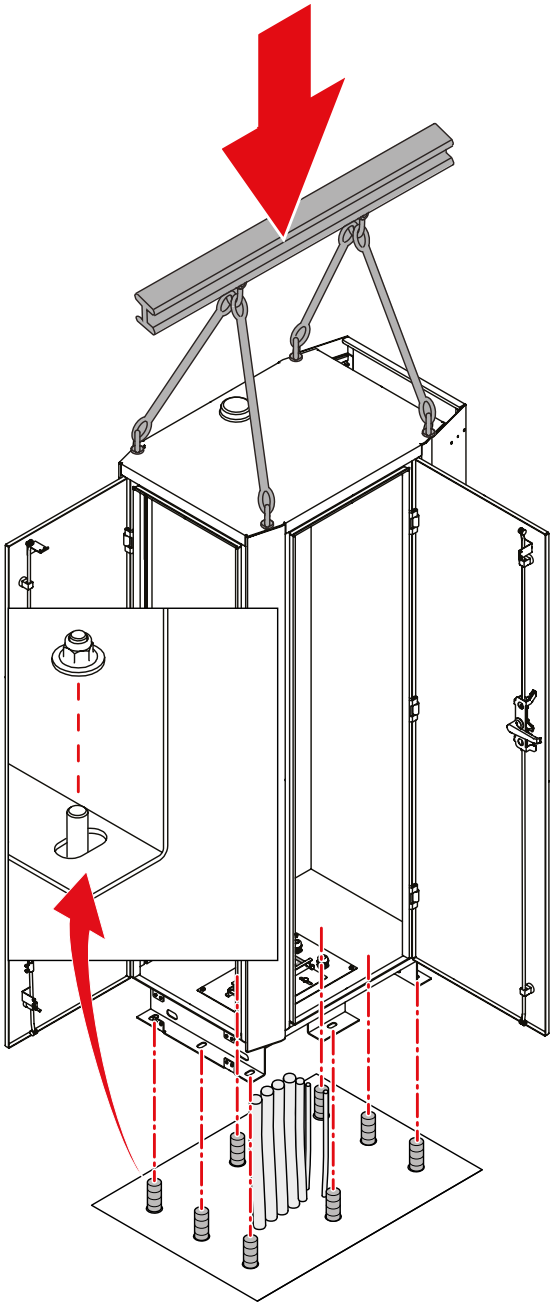


- Connect the ropes/chains of the hoisting equipment to the eyebolts installed on the top side of EVSE.
- Hook up the lifting means and stretch the ropes leaving them slightly loose.
- Remove the Removable base cover **(11)**. Refer to “5.3.1. Remove the border covers”.

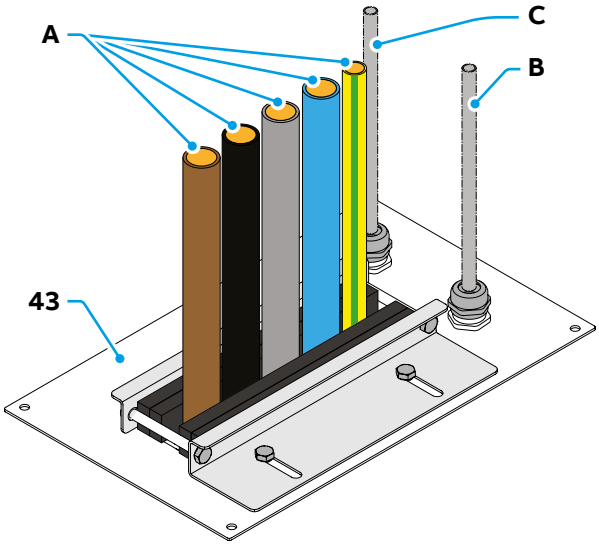


- Remove the bolts used to secure the EVSE to the pallet.
- Lift the EVSE.

EN



- Open the front **(02)** and right doors **(13)** of the EVSE when is near to ground. Refer to section “5.1. Front door” and “5.2. Sides doors”
- 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, Neutral and Protective Earth PE **(A)**
  – Ethernet (optional) **(B)**
  – Signals (optional) **(C)**

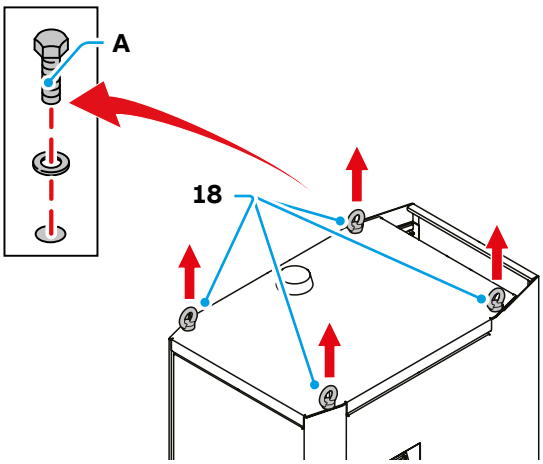


Risk of pinching or crushing of body parts
Make sure that cables do not get trapped between the EVSE and the base and that are aligned to the AC and PE connection terminals.

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.
- Install the Removable base cover **(11)**. Refer to “5.3.2. Install the border covers”.



- 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

EN

7.1 Electrical connection - preliminary operations

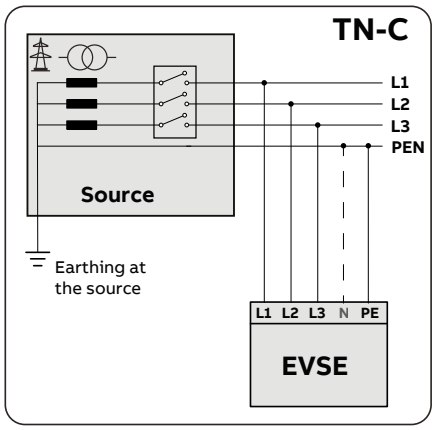
7.1.1 Supported low voltage network types

The following network configurations are permitted for the connection of the EVSE:

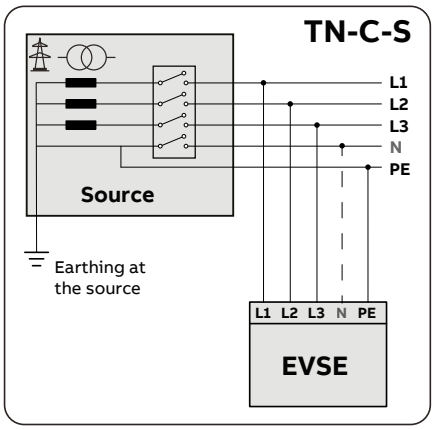
- TN-C
- TN-C-S
- TN-S
- TT

NOTE
Operation in IT networks is not allowed.

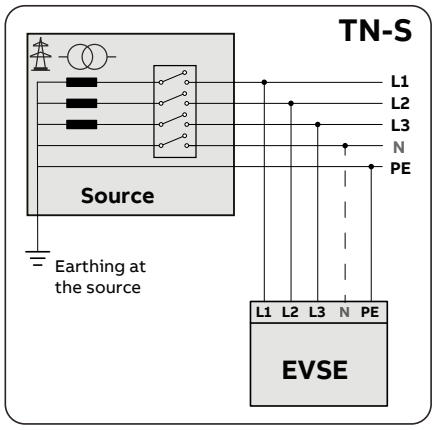
NOTE
The neutral (N) connection is not present in all EVSE models (dashed line on the below schematics).



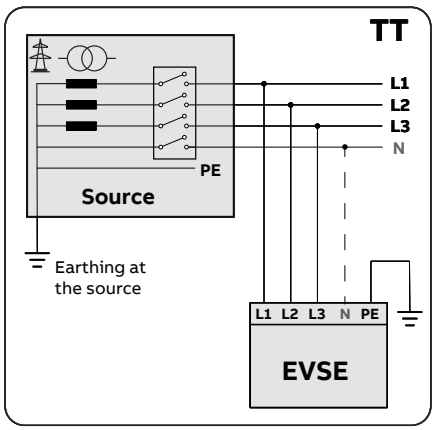
- Wire L1, L2, L3
- Wire N (if available on the EVSE)
- Wire PEN to the charger earthing bar with no interruptions



- Wire L1, L2, L3
- Wire N (if available on the EVSE)
- Wire PE to the charger earthing bar without interruption



- Wire L1, L2, L3
- Wire N (if available on the EVSE)
- Wire PE to the charger earthing bar without interruption

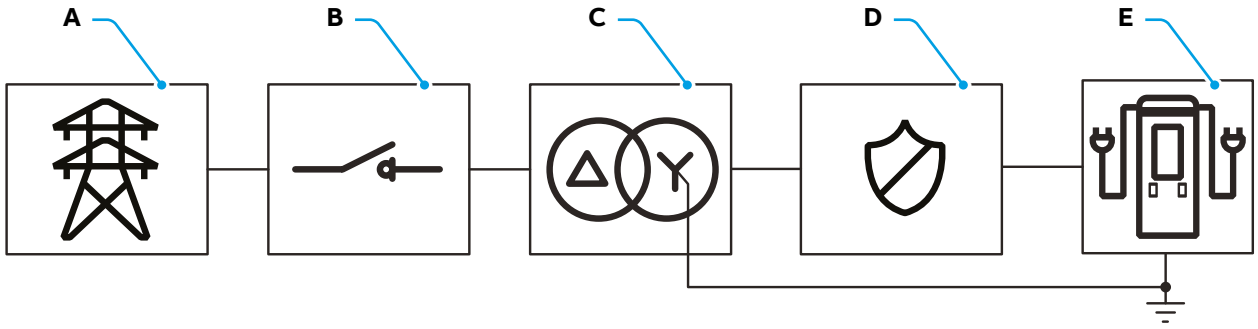


- Wire L1, L2, L3
- Wire N (if available on the EVSE)
- Do not wire Main PE to the charger
- Connect Local PE to charger earthing bar

NOTE
Adjustable RCD is mandatory

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 - Residual Current Protection (RCD) - Surge Protection Device (SPD) Type 1 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.
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 + 3x fuses (aRL or gRL)
2. 3x fuses (aRL or gRL)
3. Magnetic Circuit Breaker 3p (thermal protection not mandatory)

NOTE
In weak grids the AC voltage may vary from nominal voltage; in these conditions EVSE works with higher input current then 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:

	Terra 94	Terra 124	Terra 184
Rated AC input current	140 A	187 A (C, CC, CJ models) 220 A (CCT, CJT models)	280 A (C, CC, CJ models) 312 A (CCT, CJT models)
Max AC input current	144 A	195 A (C, CC, CJ models) 227 A (CCT, CJT models)	290 A (C, CC, CJ models) 322 A (CCT, CJT models)
Rated short-time withstand current (r.m.s) I_{cw}	25 kA duration 125 ms		
Rated peak withstand current I_{pk}	52.5 kA		

7.1.2.2 Residual current device (RCD) protection

HAZARDOUS VOLTAGE
If the enforced local regulation of electrical installations require the use of a residual Current Device (RCD), a Type B or B+, with adjustable residual operating current (IΔn [mA]), is mandatory.

NOTE
When using residual-current device with a lower operating current (IΔn), there is a risk of false tripping of the residual-current device, depending on the system design.

NOTE
In the case of systems which consist of several EVSE connected to a single protection, adjustment of tripping value and time, may be required.

In case of installation of a residual current protection device, this shall meet the following characteristics in order to prevent false protection tripping:

RCD Specifications	Terra 94 / Terra 124 / Terra 184
Type	B / B+
Suggested sensitivity IΔn	300 mA

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 EVSE 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.

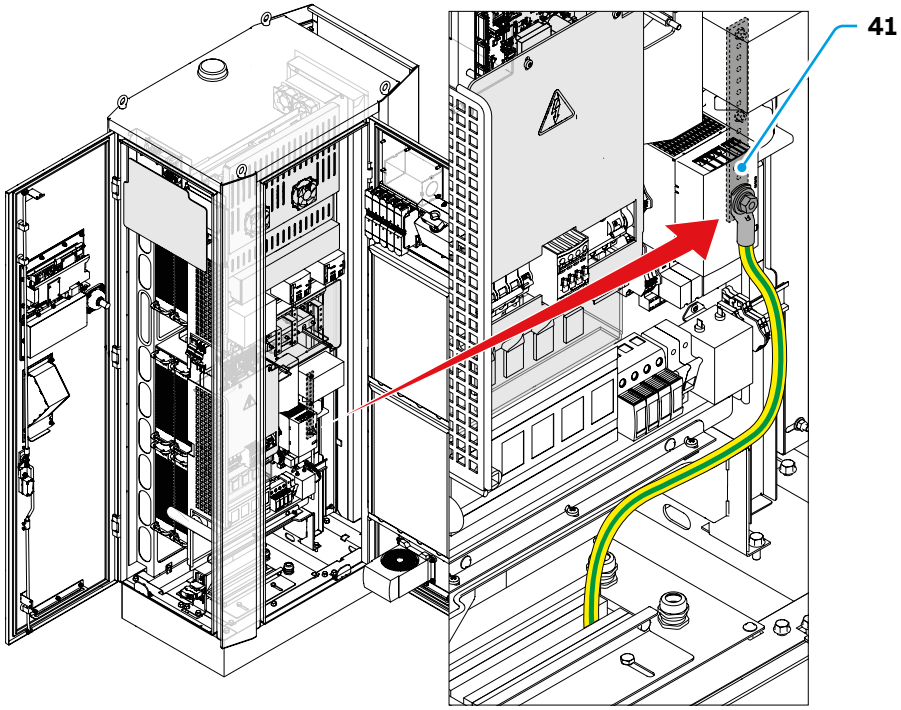
NOTE
Once the charger is connected to the fixed Local Area Network (LAN), some settings must be performed by ABB service. Contact ABB for more details.

7.2 Protective earth (PE) connection

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

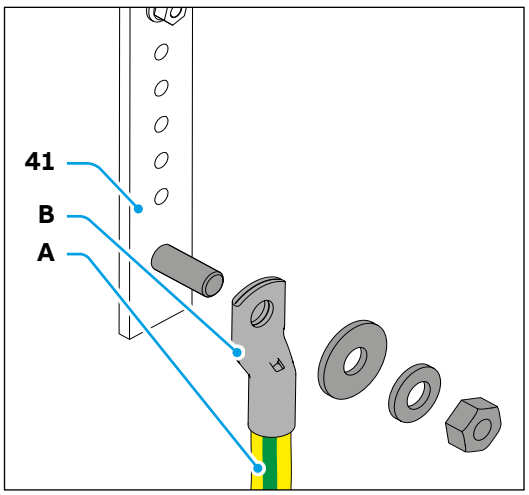
The EVSE must be earthed via the connection points marked with the protective earth symbol and using a cable with an appropriate conductor cross-section for the maximum ground fault current that the system might experience.
The earth connection must be made through the Protective Earth (PE) internal connection busbar **(41)**.

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



CAUTION
In compliance with standards it is necessary to install a earthing cable in one of the protective earth terminal with a minimum section of at least half of the phase cable cross section.
This is valid only if the protective earthing conductor is made of the same metal as the phase conductors. If this is not so, the cross-sectional area of the earthing conductor is to be determined in a manner which produces an equivalent conductance.

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 **(41)**.
  - 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 cable lug

- Tighten the fasteners to 33...44 Nm.

EN

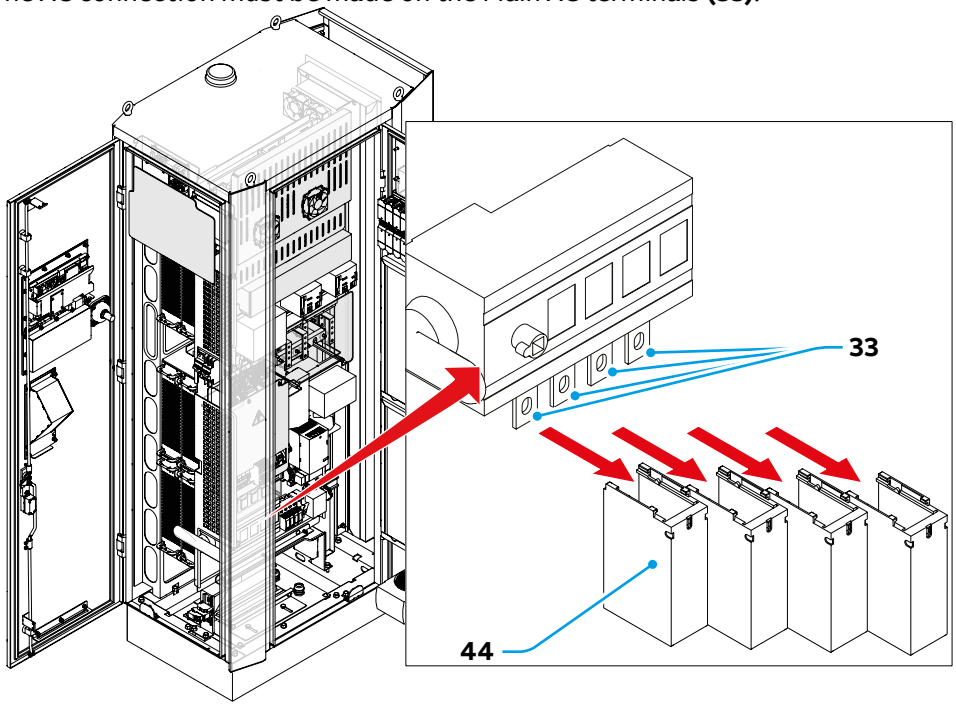
7.3 AC input connection

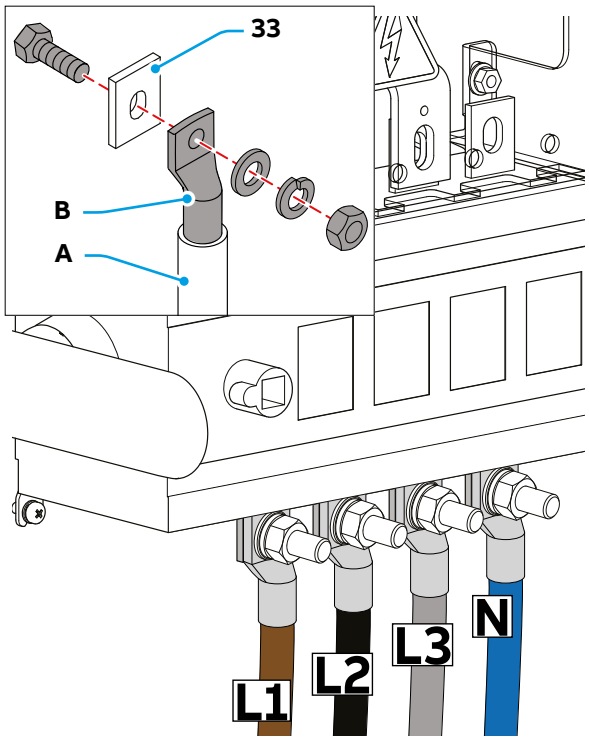
HAZARDOUS VOLTAGE
Before carrying out any operation, check that any external switch of voltage sources (upstream to the EVSE) are in OFF position and check for voltage absence on the AC conductors!

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)**.

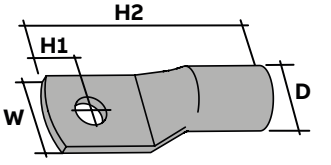




- Remove the three Main AC protection barriers **(44)**, if not previously removed. Refer to “5.4.1. Remove the Main AC protection barriers” for the procedure.

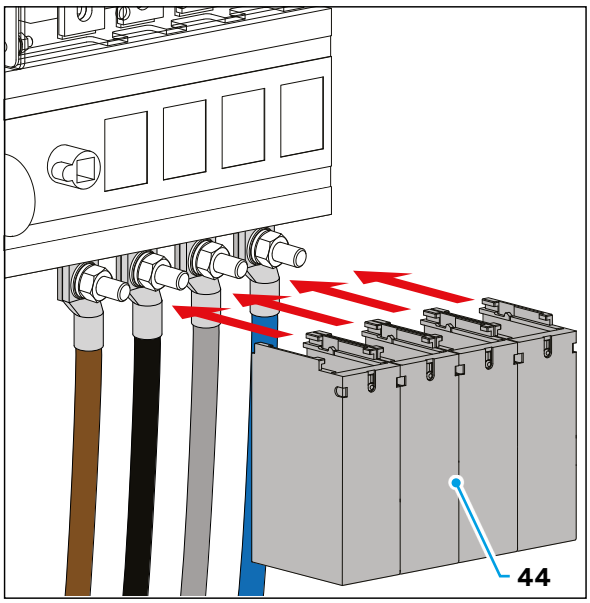
- Prepare the cables:
  - Cut the cables **(A)**. Make sure that the length is sufficient for connection at the Main AC terminals **(33)**.
  - Strip the insulation from the end of the cables.
  - Attach the cable lugs **(B)** to the end of the wires. The maximum dimensions of the cable lugs must be:

Max cable lug dimension	
W	25
H1	10
H2	95
D	40
Hole	Ø11 (M10)

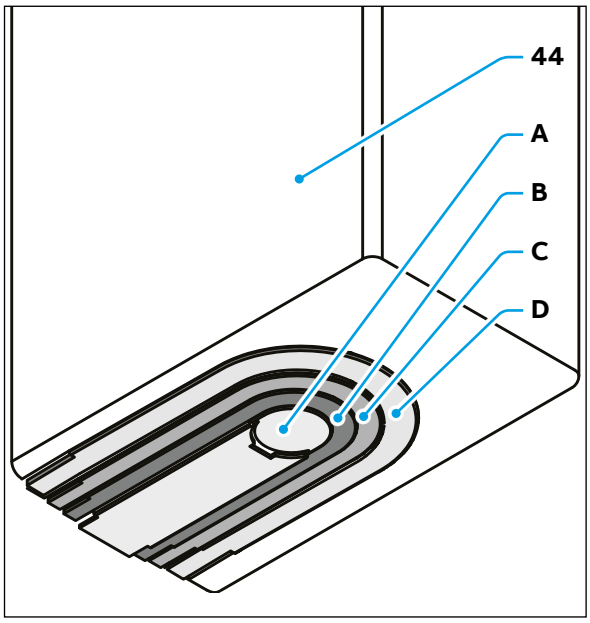


- Connect the AC cables to the Main AC terminals **(33)**:
  - L1 (Brown), L2 (Black),L3 (Grey)
  - Neutral (Blue)

- Tighten the fasteners to 33...44 Nm.

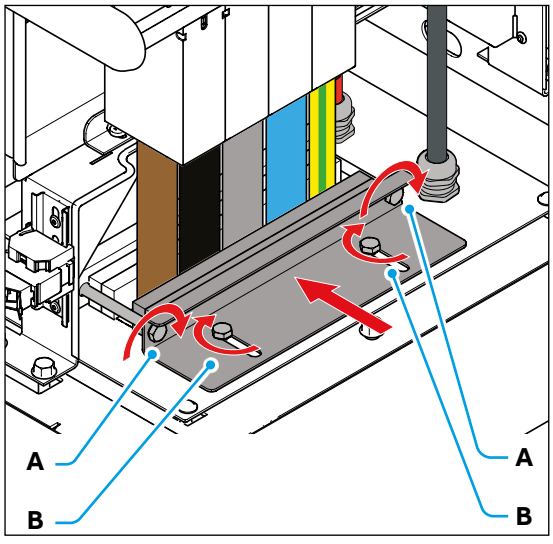


- Install the Main AC protection barriers **(44)** by sliding them on the Main AC switch **(32)**. Refer to "5.4.2. Install the Main AC protection barriers" for the installation procedure.



NOTE
Each Main AC protection barrier **(44)** has 4 knockouts, on the bottom side, to be removed based on the diameter of the cable:
A - 12 mm
B - 20 mm
C - 26 mm
D - 35 mm

7.4 Secure the input connection cables



- 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.

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

EN

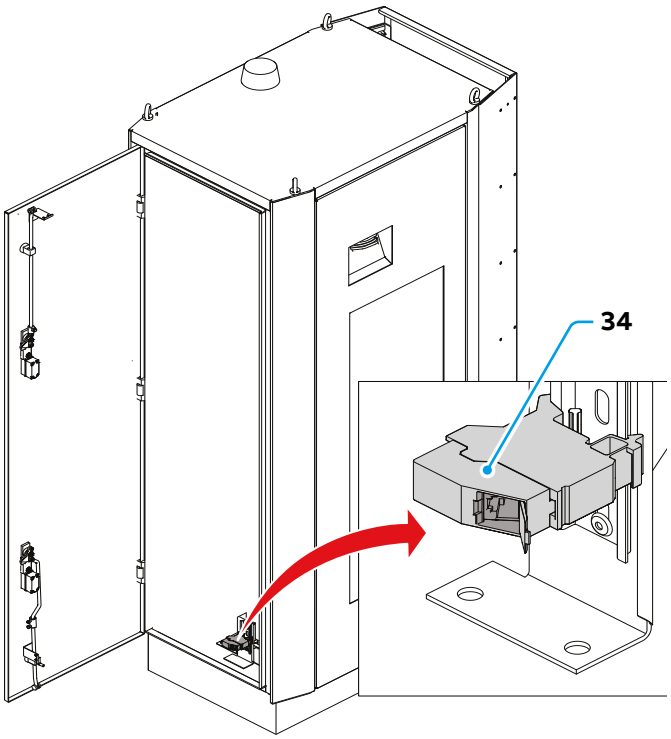
7.5 Ethernet connection

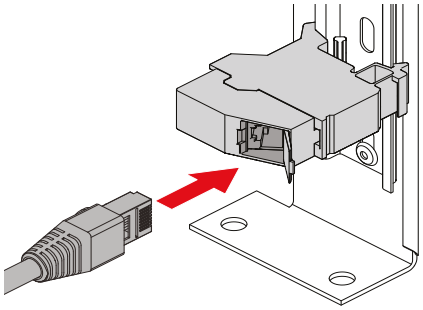
The charger’s Ethernet communication, if the Ethernet port is enabled and an on-site Internet connection is available, allows to the charger to transmit telemetry data to the ABB EVCI Cloud without the need to install any additional devices (the logging functionality is already integrated into the charger 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.

7.5.1 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)**.

EN

7.6 Tilt sensor (optional)

The tilt sensor connections allow to connect the circuit to enable AC circuit breaker tripping mechanism during activation of EVSE tilt sensors. When the tilt sensor is activated (tilt more than 10°) the undervoltage release in the branch circuit breaker that supplies power to the EVSE is de-energized and the branch circuit breaker opens.

The tilt sensor has a contact that is closed when the tilt sensor is de-enenergized 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.

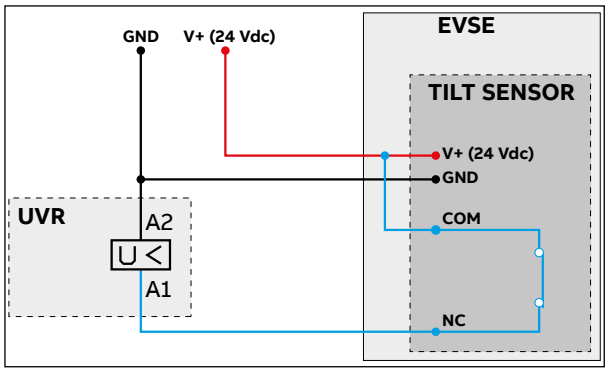
NOTE
The owner is responsible for considering a voltage drop on the 24 V DC circuit.
The owner must make sure that the undervoltage release of the branch circuit breaker receives the correct input voltage according to the required specifications.

NOTE
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.

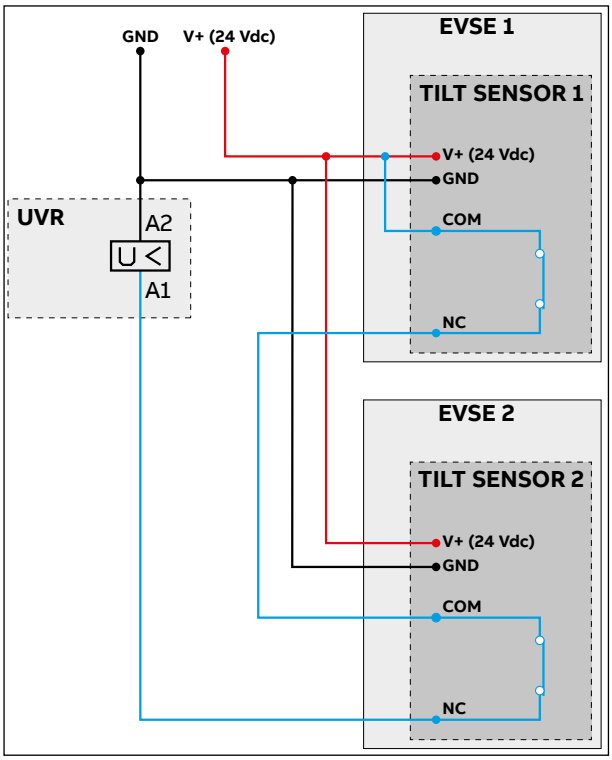
NOTE
Refer to “10.1.1. Technical data table” for technical specifications.

The illustration shows the tilt sensors interface with the power distribution system of the site:

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

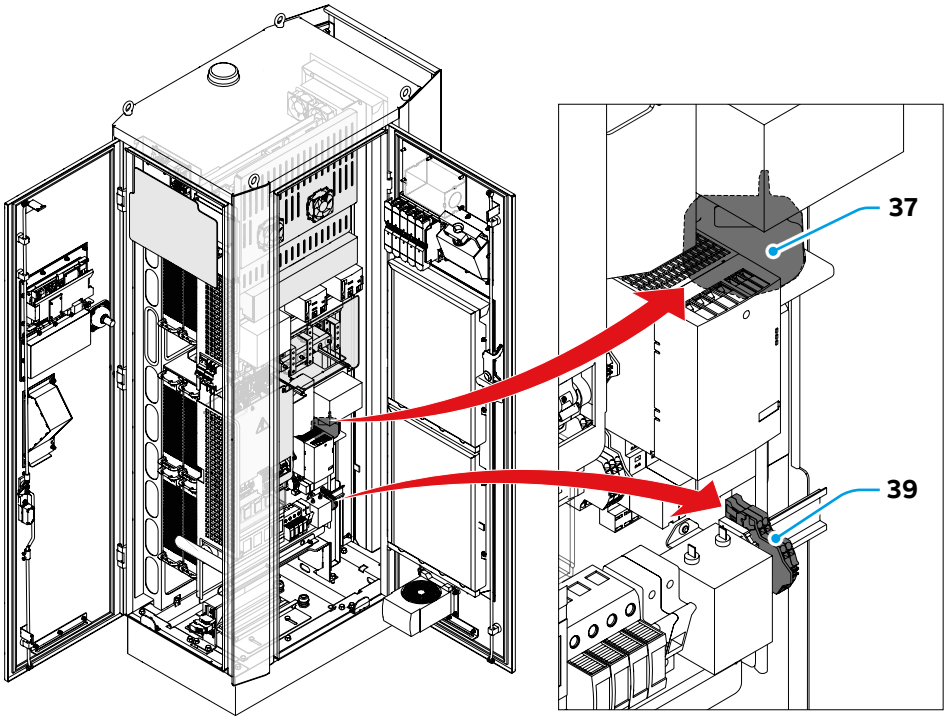


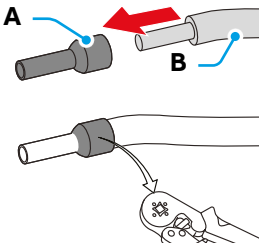
- Multi EVSE
- 24 VDC under voltage release (UVR)



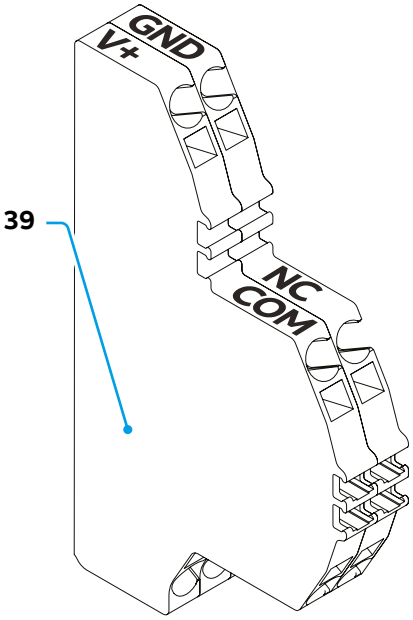
7.6.1 Connect the tilt sensor (option)

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

EN

8.1 Prepare for commissioning of the EVSE

Danger: Hazardous voltage
Under no circumstances is any person other than a service engineer of ABB E-mobility (or service parners) authorised to commission the EVSE.

The below requirements and operations are Owner/Qualified installer responsibilities before commissioning of EVSE can take place:

1. The qualified installer have to inform the owner that the EVSE is ready for commissioning
2. The owner/qualified installer must inform ABB E-mobility that the EVSE is installed correctly in order to schedule the commissioning and ensure that the site complies with these requirements:
   - The EVSE is correctly installed
   - AC input power is available from the grid provider
   - The qualified installer have to 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. Refer to “7.1.3. Internet access”
   - An electrical vehicle, with compatible connection inlet, have to be available to test the EVSE functionalities. If the EVSE has more than one charging connector type, electrical vehicles with charging inlet for each type must be available
   - Night illumination must be sufficient to easily see the charging cables and other obstacles around the EVSE
   - The owner is available to receive instructions from the ABB E-mobility service engineer
   - If necessary, remove internal condensation before use, to prevent damage to the EVSE.
3. The owner/qualified installer have to make sure that these data are available:
   - Contact data of the contact person on site
   - Address of the EVSE
   - Site name
   - Installation date
   - 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
   - Special remarks (e.g.. to decline the authorization for the service engineer of the manufacturer to take photos)
   - Photo of the top view, side view, foundation/cables arrival view, torque markings of the EVSE
   - Any safety incidents occurred
   - Any concerns/challenges face during installation

8.2 Prepare for use of the EVSE

When the EVSE has been commissioned and before being used by the end user, the owner have to ensure that:
- Make sure that the EVSE is installed according to the instructions in this manual
- Make sure to have the approval from ABB E-mobility to use the EVSE after commissioning

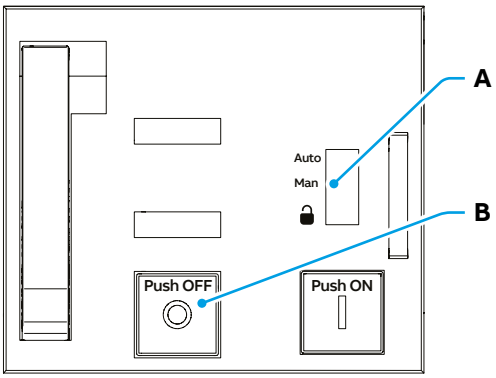
General risk:
After the approval, do not perform any change on the EVSE.

- Make an emergency plan that instructs people what to do in case of an emergency
- If necessary, give special instructions to end user on how use the EVSE
- Make sure that the space around the EVSE cannot get blocked

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 inside of EVSE”

- 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)**.

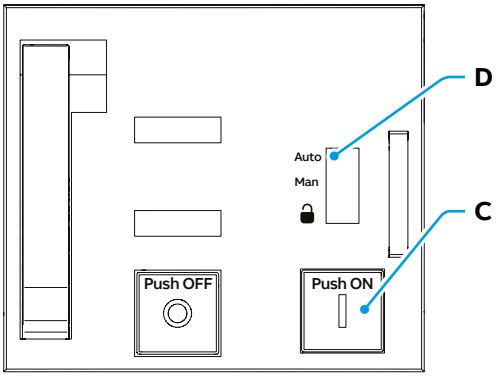


- Close the doors. Refer to section “5. Access to the inside of EVSE”
- Set the upstream breaker to ON position to provide power to the EVSE.
- Wait four hours at least.

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 inside of EVSE”

- 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 inside of EVSE”

EN

8.3 Charging session

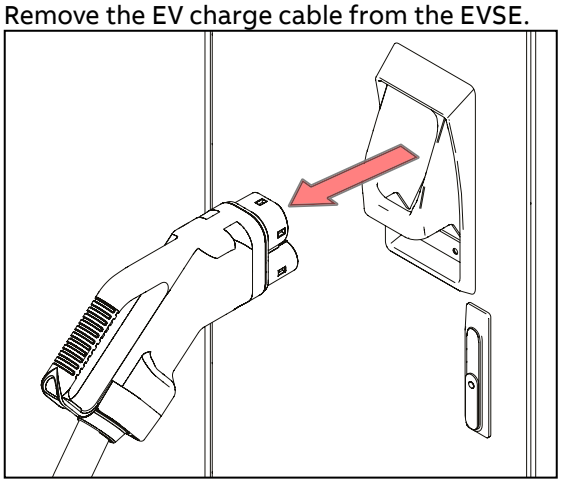
8.3.1 Start a charging session

- 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 locked in position in order not to allow removal during the charging phase.

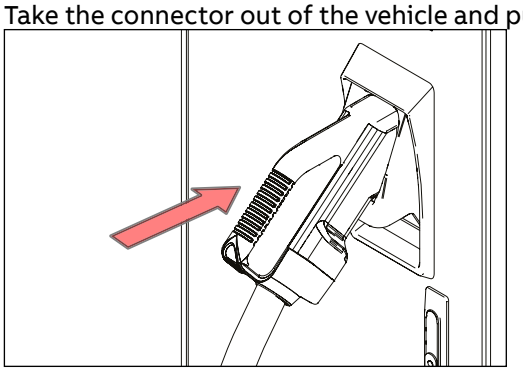
8.3.2 Stop a charging session

- 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 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
- Qualified installer
- ABB E-mobility Service or authorized service partners

EN

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:** • Exterior of the cabinet • Charging cables • Charging connectors • Connector holders • Cable management systems (if present) • Signs of rust that cause ingress of water **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. • Check there are no obstacles (animals, insects, leaves or anything) which could reduce the heat exchanging capacity of the EVSE. **Functionality checks:** • Display • Display touch • Status LED strip (if present) • RFID • Meter display (if present) • Payment terminal (if present) **Clean the external parts of the EVSE:** • Cleaning agent with pH value between 6 and 8 • Do not use abrasive tools. • Do not apply high-pressure water jets.
1 year	Owner (trained staff only)	**Clean or replace the internal parts of the EVSE:** • Air filters (inlet and outlet) **General risk:** To be carried out only if: • having completed the dedicated course by ABB E-mobility • the activity is not included in the Service Level Agreement (SLA) **NOTE** Environment characteristic and number of charging sessions may increase or decrease the number of replacements during the life time of the charger.

EN

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 reach out to the local entity of ABB E-mobility B.V. for support:
https://e-mobility.abb.com/contact-centers/.

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	• 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	• 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, reach out to the local entity of ABB E-mobility B.V. for support.
The display shows this message: **The vehicle misbehaved**	There is a communication problem between the EV and the EVSE	Reach out to the local entity of ABB E-mobility B.V. for support
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 back-end 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 (AC input voltage, optional tilt sensor power supply, etc.) 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 on-site.

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

PPE	Description
Insulating gloves	• 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/cm2) 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/cm2) 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.

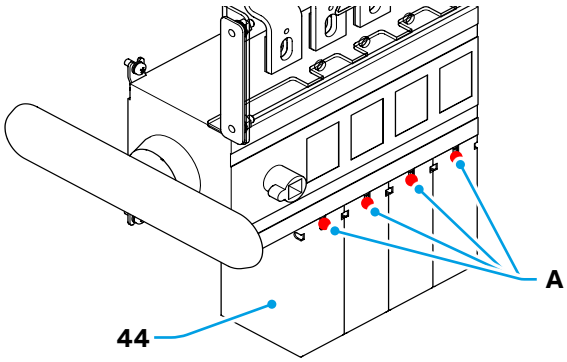
Tools and Equipment	Description
Voltage detector (EN 61243-2)	Duspol Digital 1,2kVdc 1kVac (suggested)
Safety tags “DO NOT OPERATE”	Safety tags “DO NOT OPERATE” with identification data (Name - Company - P. Ph number)
Safety Padlocks	Padlocks used to secure the Lockout Tagout device in place.
Grounding kit (IEC 61230)	Suggested kit composition: • 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

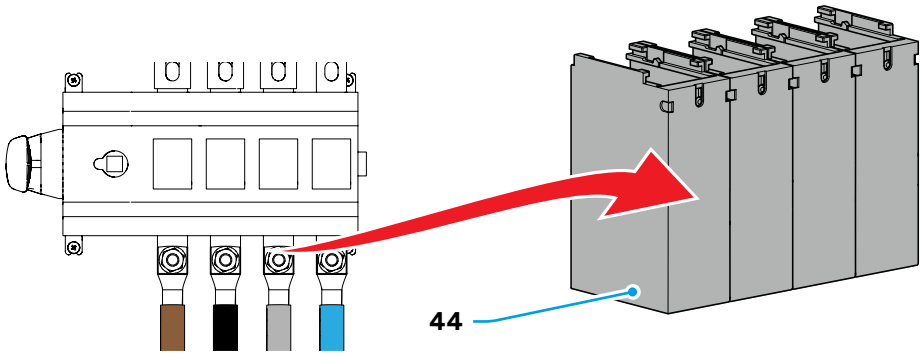
1. **Preliminary control**:
   Make sure that the unit must be turned on.
2. **Identification of AC external main source**:
   Clearly identified the external AC main breaker with the plant manager cooperation and, if necessary, by functionality test of it.
3. **Operate the main AC external source isolation 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 internal breaker**:
   Turn off the internal AC main breaker.

   HAZARDOUS VOLTAGE
   Wait at least 15 minutes after turning off the EVSE before perform any operation on the EVSE.

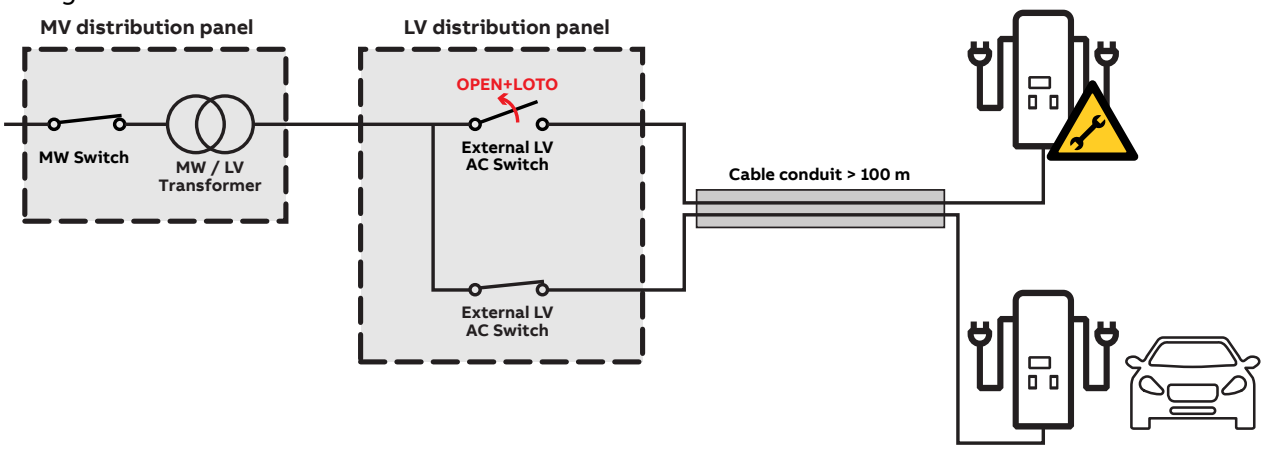
6. **Main Voltage absence check**:
   Check the absence of voltage below the main breaker of the EVSE, using the dedicated holes **(A)**.
   The verification must be carried out through the dedicated holes **(A)** in the Main AC protection barrier **(44)**, using the voltage detector by checking between phases to ground and respectively between them.



7. **Insulating barrier removal**:
   Remove the Main AC protection barrier **(44)** on the bottom side of AC main switch.

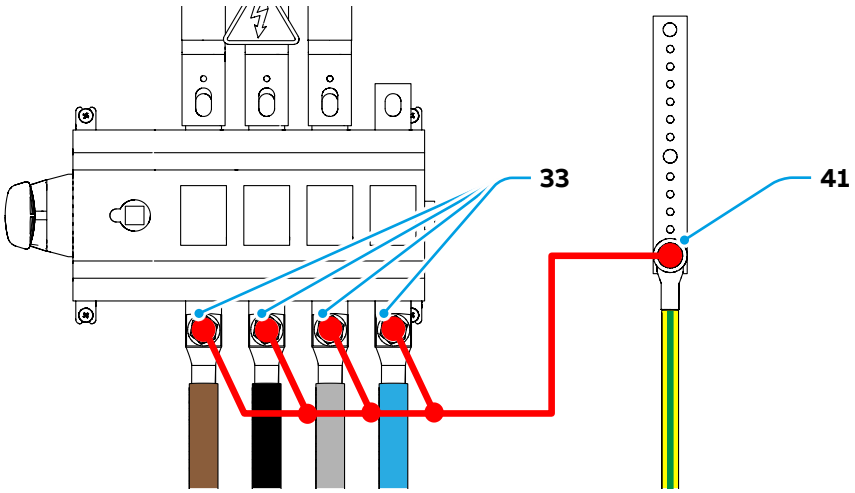


8. **Earthing and short circuiting incoming line assessment**:
   Is needed to make the earth and short-circuit connection on the main AC incoming line in presence of a site configured as below:



> **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 **(41)** point to Main AC terminals **(33)**.



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. **Protection barriers restore**: At the end of intervention, it will be necessary to restore the protection 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 EVSE, characteristics and technical data, overall dimensions and EVSE identification.

A description of the EVSE 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 CE	Terra 124 CE	Terra 184 CE
EVSE configuration			
Charging standard	Mode 4		
Number of outputs	1 or 2 DC output (based on the configuration) 1 AC output socket (based on the configuration)		
Number of EV served	1 on the configuration C 2 on the configuration CC or CJ 3 on the configuration CCT or CJT		
Available output connectors	CCS2  / CHAdeMO  / AC Socket, Type 2 		
Cable type	Air cooled cable		
Available cable Length	4 m, 6 m and 8 m [2]		
Efficiency	> 95 % @ 800 V DC		
DC Output			
Rated power	90 kW	120 kW	180 kW
Rated voltage	CCS2: 150...920 V CHAdeMO: 150...500 V		
Output current	CCS2: Nominal 300 A - Maximum 400 A CHAdeMO: Maximum 200 A		
AC Output (T model only)			
AC output power	N/A	22 kW	
AC output voltage	N/A	Three phases, 400 V ± 10%	
AC output current	N/A	32 A	
AC Input			
AC connection	Three phases + Neutral + PE		
Rated AC voltage	400 V ± 10 %		
Rated AC frequency	50 Hz ± 5 Hz		
Rated AC current	140 A	187 A (C, CC, CJ) 220 A (CCT, CJT)	280 A (C, CC, CJ) 312 A (CCT, CJT)
Max AC current @ Min. AC voltage (400 V - 10%)	144 A	195 A (C, CC, CJ) 227 A (CCT, CJT)	290 A (C, CC, CJ) 322 A (CCT, CJT)
Rated short-time withstand current (r.m.s) I_{CW}	25 kA duration 125 ms		
Rated peak withstand current I_{pk}	52.5 kA		
Max apparent power	96 kVA	128 kVA (C, CC, CJ) 152 kVA (CCT, CJT)	192 kVA (C, CC, CJ) 215 kVA (CCT, CJT)
Stand-by power	50 W / 900 W (heater on [1])		
Stand-by apparent power	120 VA / 1000 VA (heater on [1])		
Power Factor	> 0.99 @ full power		
Total Harmonic Distortion (THD)	< 4.5 %		
Earthing systems	TN-S, TN-C, TN-C-S, TT (with upstream RCD)		
Overvoltage category	III		
Protection Class	1		
Protection	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated SPD		
SPD	Yes, Type 2		
Tilt sensor (optional)			
Voltage input	20..24 V DC		
Current consumption	Maximum 30 mA		
Protection	Reverse polarity		

	Terra 94 CE	Terra 124 CE	Terra 184 CE
Mechanical			
Dimensions (W x H x D)	Without CMS: 565 x 1930 x 880 mm With two CMS: 847 x 1930 x 922 mm		
Mounting Type	Floor mounted		
Weight	430 kg	445 kg	475 kg
Weight with packaging	465 kg	480 kg	510 kg
Weight of each optional CMS	15 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	IP54		
Environmental type	Indoor and Outdoor		
Pollution degree	3 Outside (2 Inside)		
Noise level	< 65 dB(A) @ 1 m, 25°C, full power (on front door)		
User Interface			
Display type	7” LCD (touch)		
Display languages	English, French, German, Italian, Spanish (others available via Software upgrade)		
Authentication methods	RFID (Standards, Cards..) On-screen PIN code authorization Option: payment terminal Prepared for ISO 15118 - 2 PnC		
RFID system	Mifare ISO 14443 A/B to part 4 and ISO15693 Others available on request (Calypso, Ultralight, PayPass, HID; and more)		
Energy metering	Eichrecht/PTB for DC outlet MID compliant for AC outlet		
Connectivity			
Embedded communication interface	Cellular, LAN		
Cellular communication	GSM / 4G / LTE		
Communication Protocol	Open Charger Point Protocol (OCPP) 1.6 (and previous versions)		
Standards			
Mark of Conformity	CE		
Low Voltage Directive	EN IEC 61851-1:2019, IEC 61851-23:2014, EN IEC 62311:2020		
EMC Directive	Class A according to: EN IEC 61000-6-1, EN 61000-6-4:2007+A1, IEC 61851-21-2:2021, EN 301489-1 V2.2.0:2017		
RED Directive	EN 300 330 V2.1.1: 2017, EN 301 908-13 V11.1.2:2017, EN 301489-1 V2.2.0:2017, EN 50364:2010, EN IEC 62311:2020, EN 301489-52 V1.1.0:2020, EN 301 908-2 V13.1.1: 2020		
Additional standards	IEC 62196-2, IEC 62196-3 DC plugs compliant with IEC 62196-1:2014, Cabinet IP rating according to IEC 60529:2013		

1. The heater will operate daily when the outside air reaches the dew point, to avoid condensation inside the cabinet.
2. CMS option is not compatible with 8 m charging cable length.

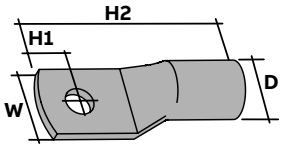
10.1.2 Environmental Conditions

General risk:
The EVSE is equipped with a heater being active in harsh conditions (high humidity and very low temperature) It is highly recommended not to keep the installed EVSE de-energized with no cover nor shelter to avoid condensation or formation of ice inside the unit.

	Storage (in the package)	Transportation [4] (in the package)	Installation (Operation) [5]
Environment type	Indoor	Weather-protected [3]	Indoor and Outdoor
Ambient air temperature	-5...+40 °C	-35...+50 °C	-35...50 °C derating from 40 °C
Relative Humidity	5...95% @ 30 °C	5...100% @ 27 °C	5...100% @ 27 °C
Altitude (without derating)	-	-	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	up to 1 x 185 mm² each phase [1)]
AC connection type	M10 cable lug **Max. cable lug dimension** **W** 25 **H1** 10 **H2** 95 **D** 32 **Hole** Ø11 (M10) 
AC cable diameter (cable entry plate)	21...38 mm
Insulation	Material serviceable for outdoor, UV-protected and suitable for use in underground ducts according to local rules.
Protective Earth (PE)	
PE cable cross section	At least half of the phase cable cross section
PE connection type	M10 cable lug
PE cable diameter (cable entry plate)	21...38 mm
Insulation	Material serviceable for outdoor, UV-protected and suitable for use in underground ducts according to local rules.

Ethernet	
CAT	CAT 5e (recommend) CAT 6 (high presence of electromagnetic interference and/or noise)
Ethernet cable diameter (cable entry plate)	10...17 mm
Insulation	Material serviceable for outdoor, UV-protected and suitable for use in underground ducts according to local rules.
Tilt sensor (option)	
Number of wires	4 (2 wires for power supply and 2 wires for relay contacts)
Max. Wires cross section	4 mm^2 without ferrule 2.5 mm^2 with ferrule
Cable diameter (cable entry plate)	10...17 mm
Insulation	Material serviceable for outdoor, UV-protected and suitable for use in underground ducts according to local rules.

1. Electrical designers/qualified installers shall select the proper conductor cross section depending on type of core, insulation, ambient temperature, method of installation and other conditions. Special cable lugs with reduced footprint may be required; they shall respect the max cable lug dimension.

10.3 Torque specification

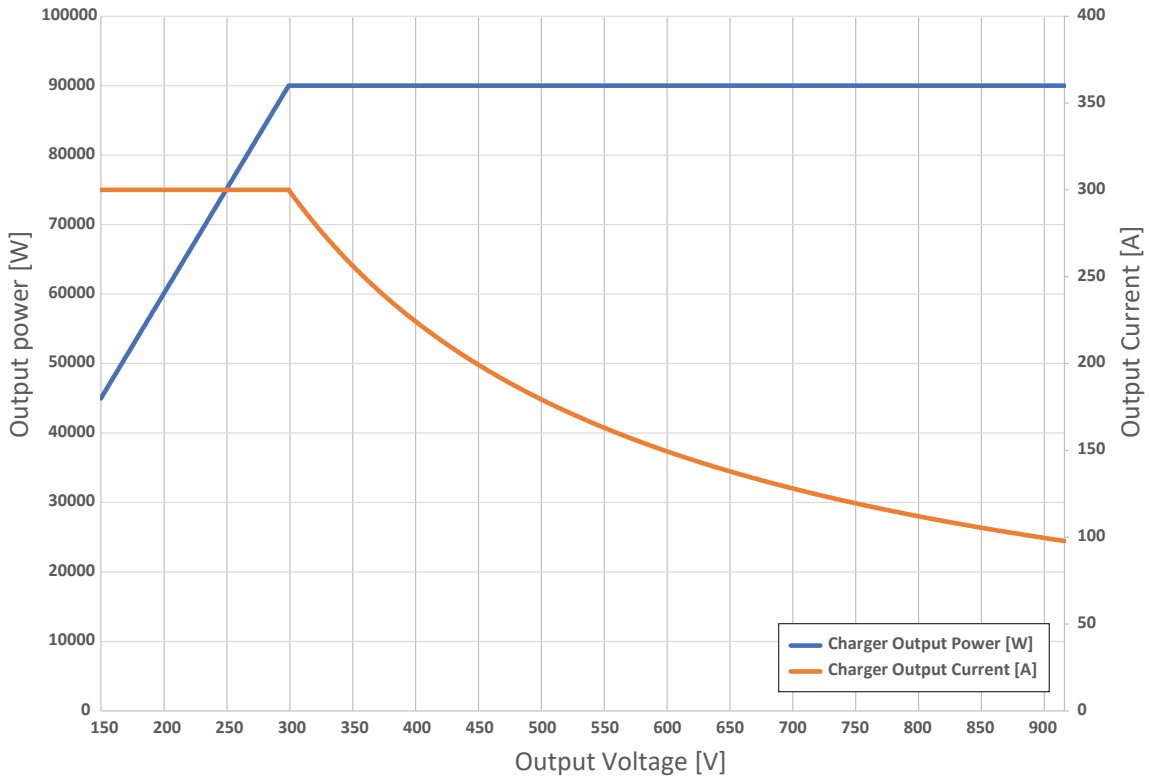
Parameter	**Specification**
Fasteners for the PE wire	33...44 Nm
Fasteners for the L1, L2, L3 and N	33...44 Nm
Tilt sensor screw terminal block	1.3 Nm
Fasteners for the connection of the EVSE to the base (M12 bolt)	20 Nm

EN

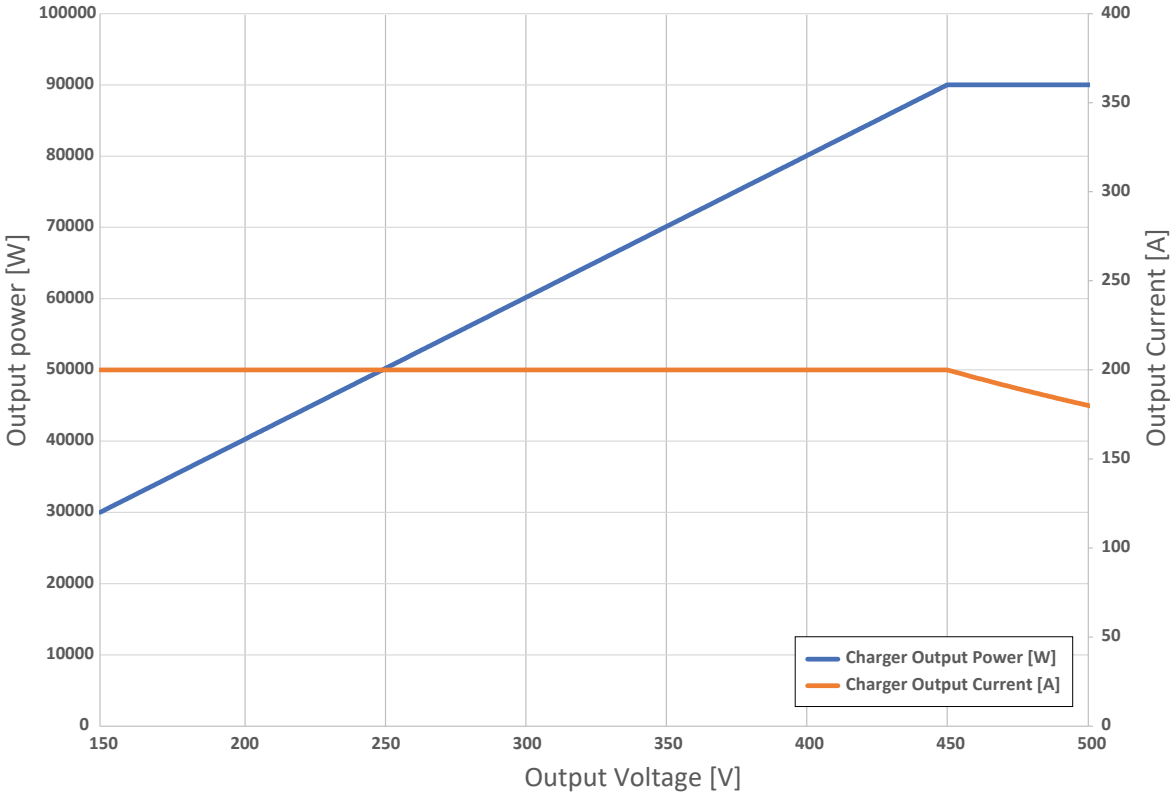
10.4 Terra 94 - Output power and current Vs output voltage curve

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 CCS2 (400 A) - 1 session



10.4.2 CHAdeMO (200A) - 1 session



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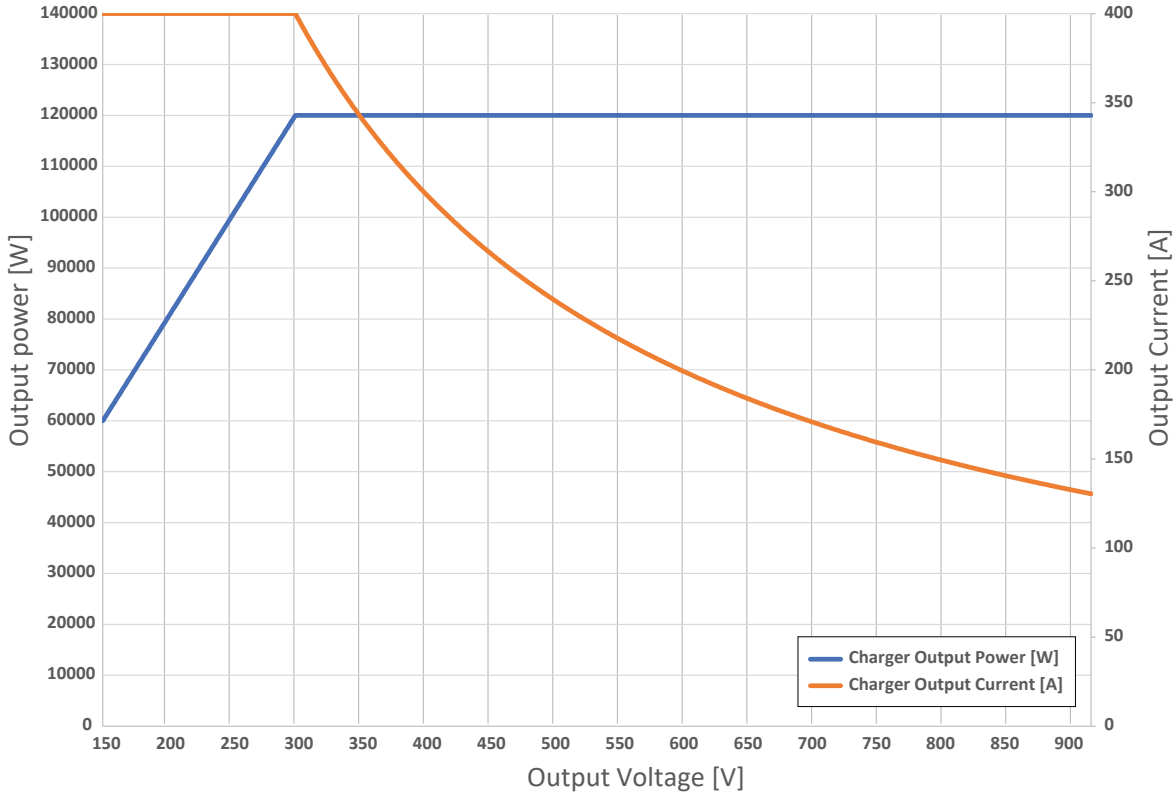
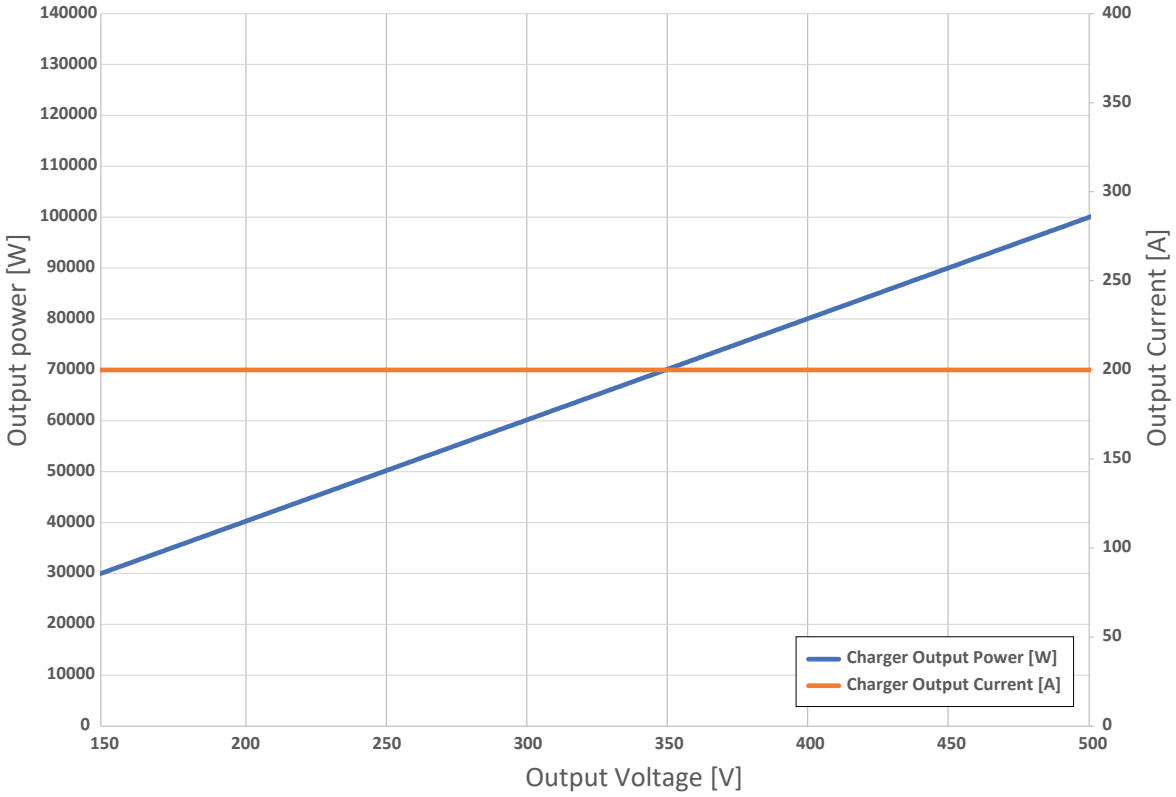
10.5 Terra 124 - Output power and current Vs output voltage curve

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 CCS2 (400 A) - 1 session



10.5.2 CHAdeMO (200A) - 1 session



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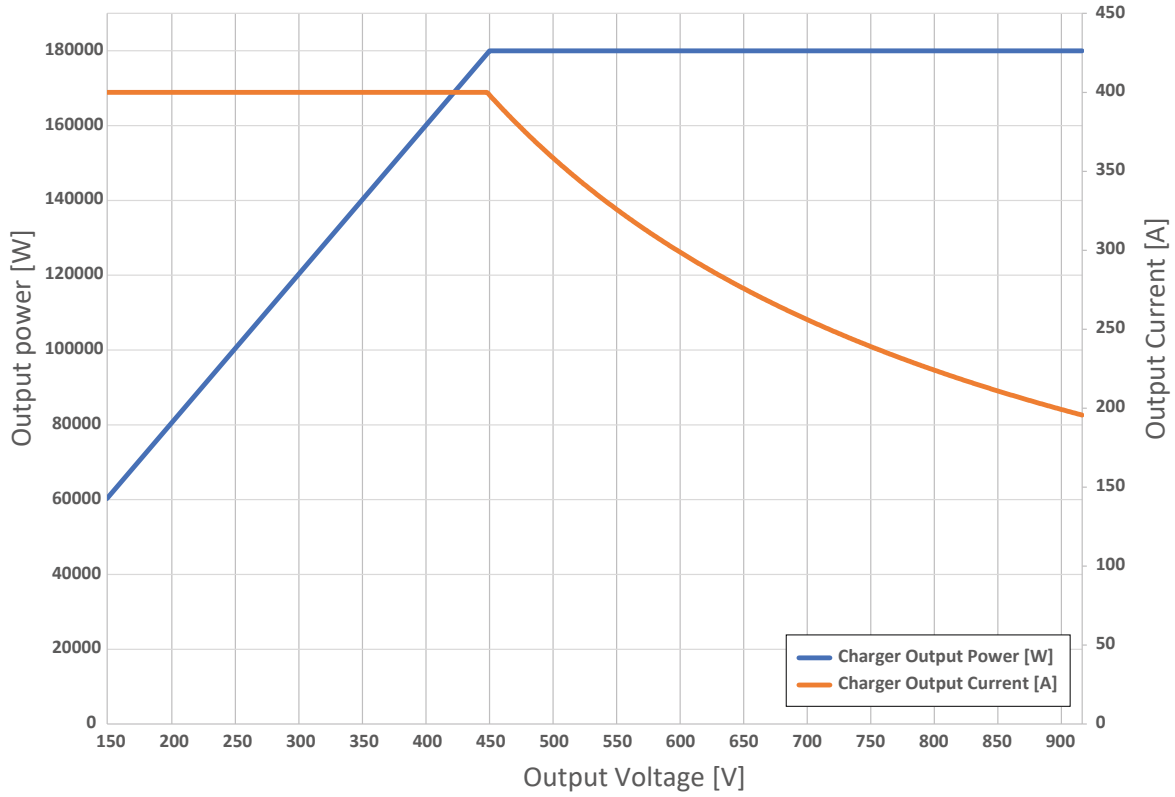
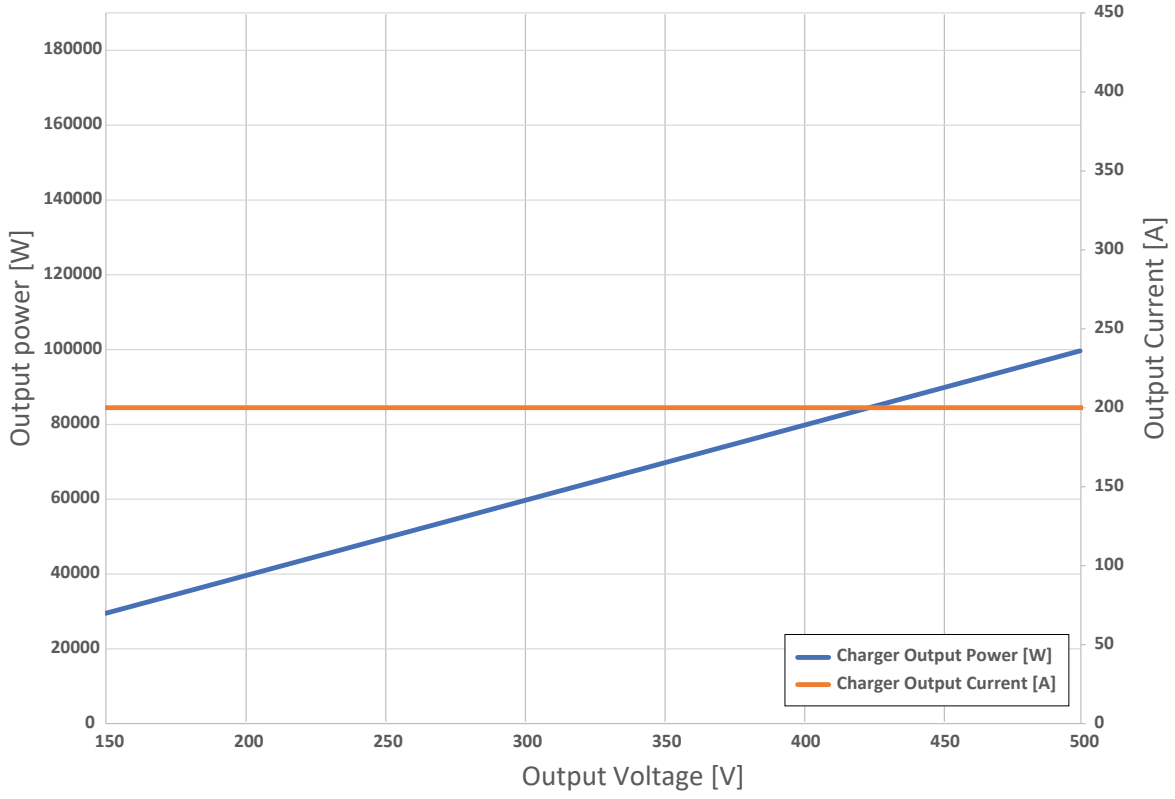
10.6 Terra 184 - Output power and current Vs output voltage curve

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 CCS2 (400 A) - 1 session



10.6.2 CHAdeMO (200A) - 1 session



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11. Attachments

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

NOTE
If you need further information, reach out to the local entity of ABB E-mobility B.V. for support:
https://e-mobility.abb.com/contact-centers/

Chapter recipients:

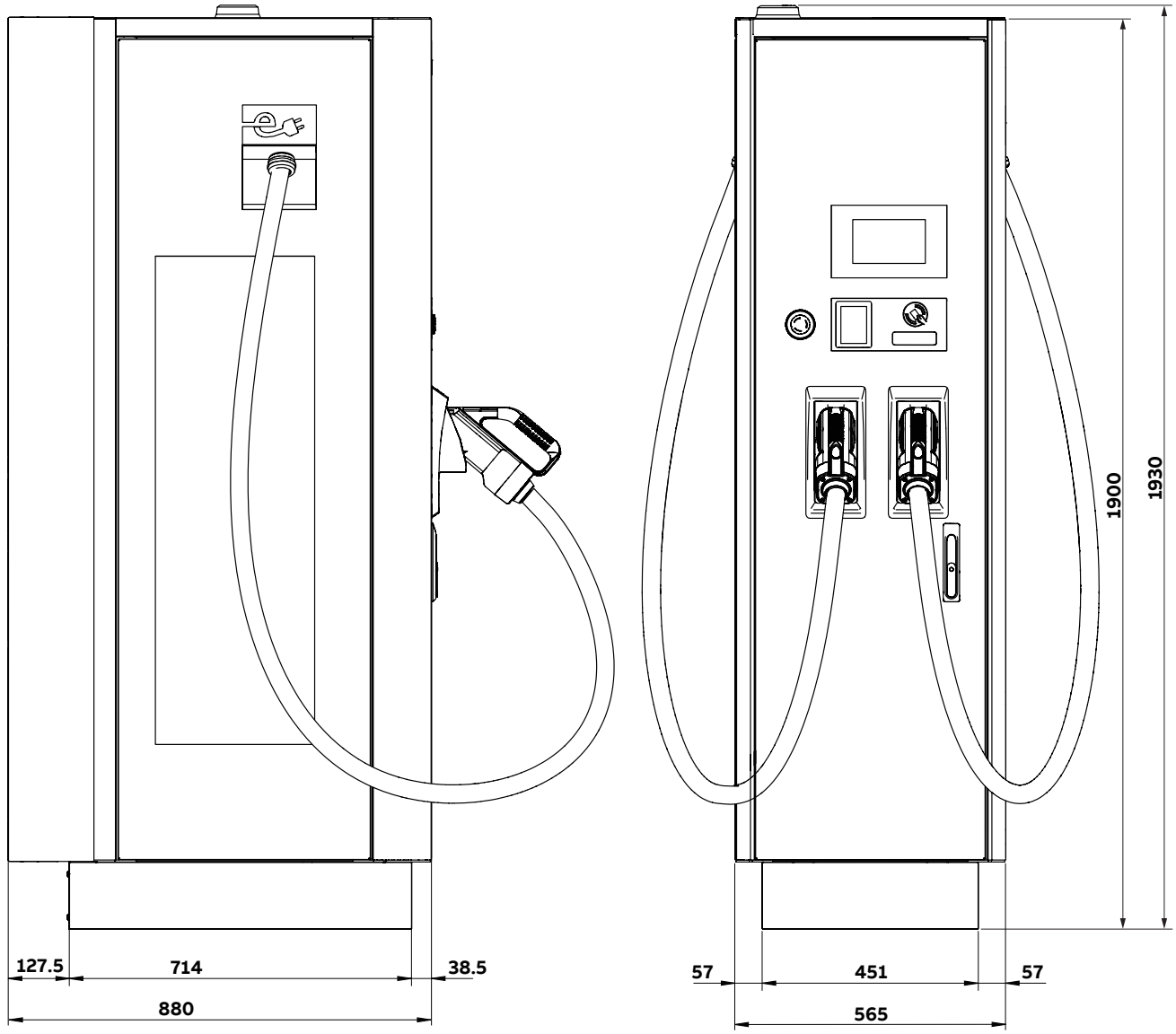
- Owner
- Qualified installer

EN

11.1 EVSE dimensions

11.1.1 EVSE dimensions without CMS

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



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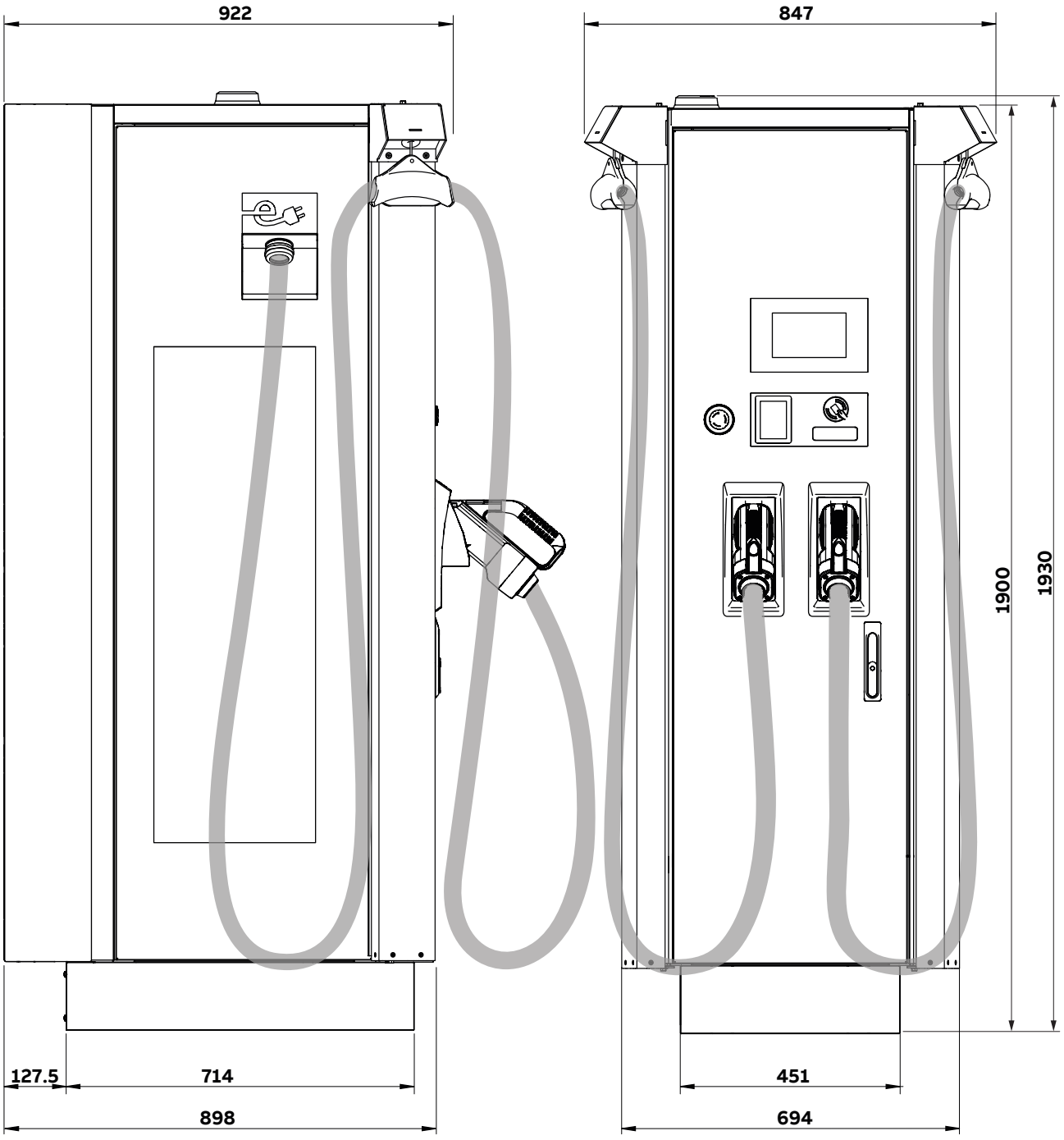
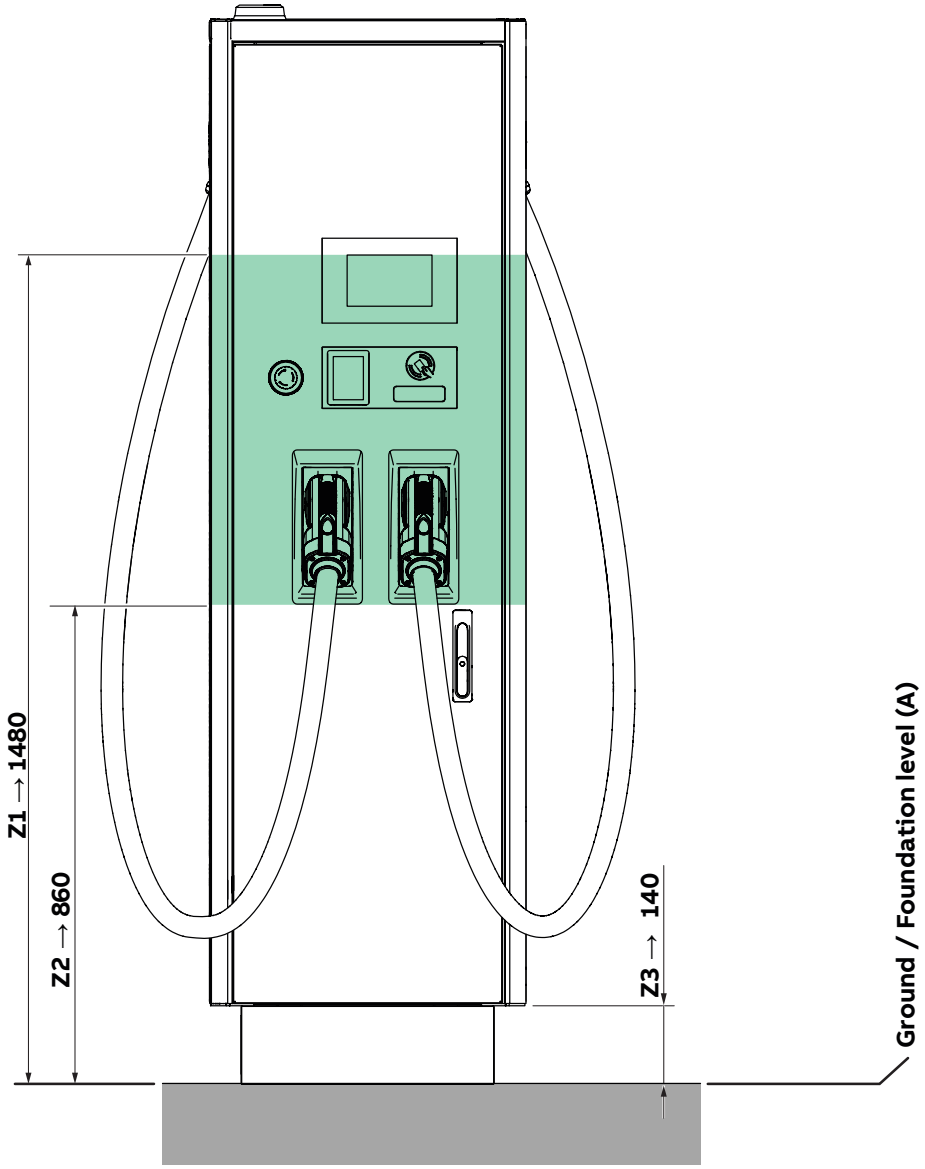
11.1.2 EVSE dimensions with two CMS

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



11.2 Height of user operable elements

NOTE
The measurements in the drawing are in millimeters (mm)



Parameter	Description
A	Ground / Foundation level
Z1	Highest height of user operable element on the EVSE (payment terminal)
Z2	Lowest height of user operable element on the EVSE (optional meter display)
Z3	Height of the EVSE base

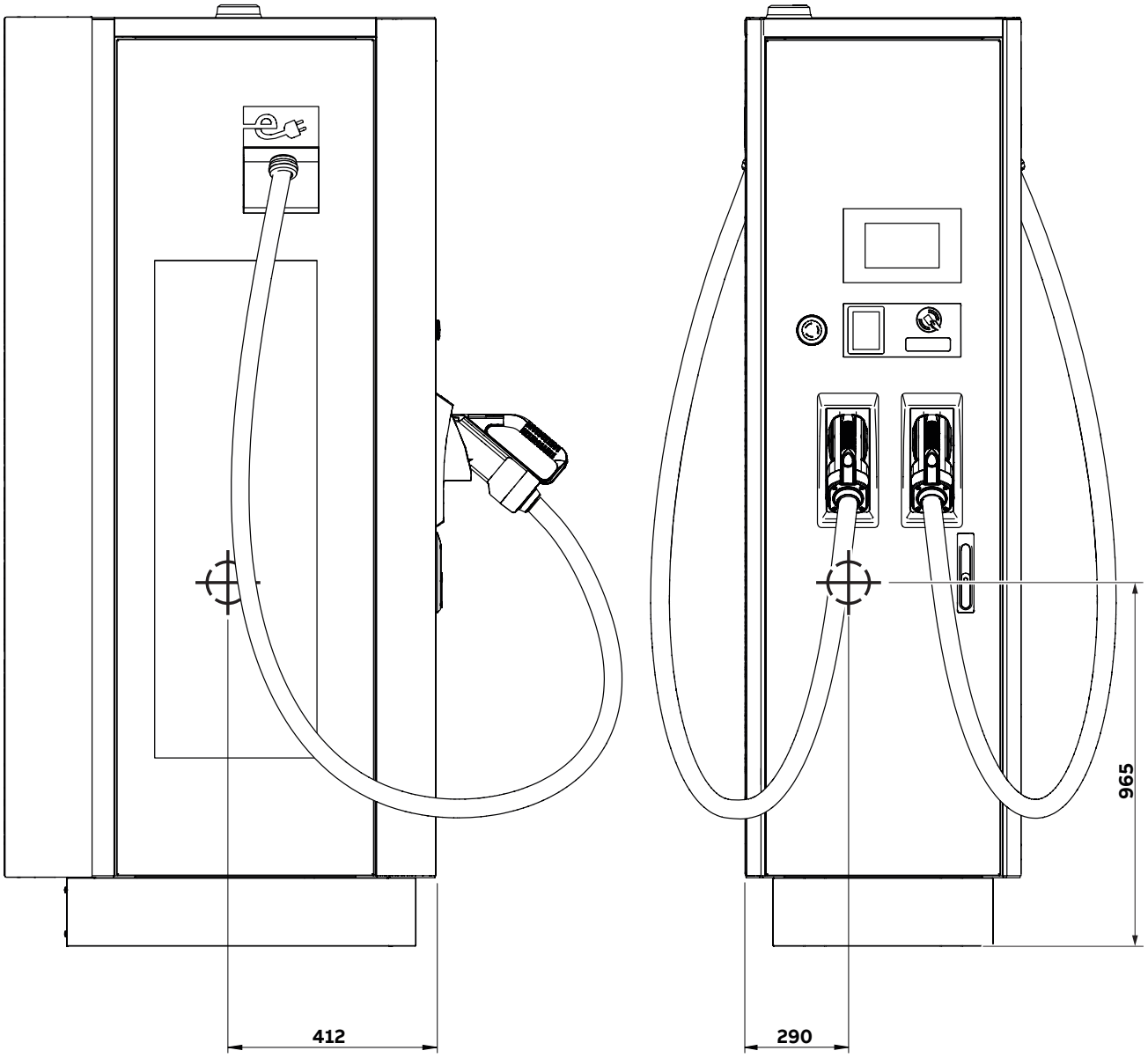
EN

11.3 Center of gravity (without CMS)

The measurement in the drawing are releted 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)]



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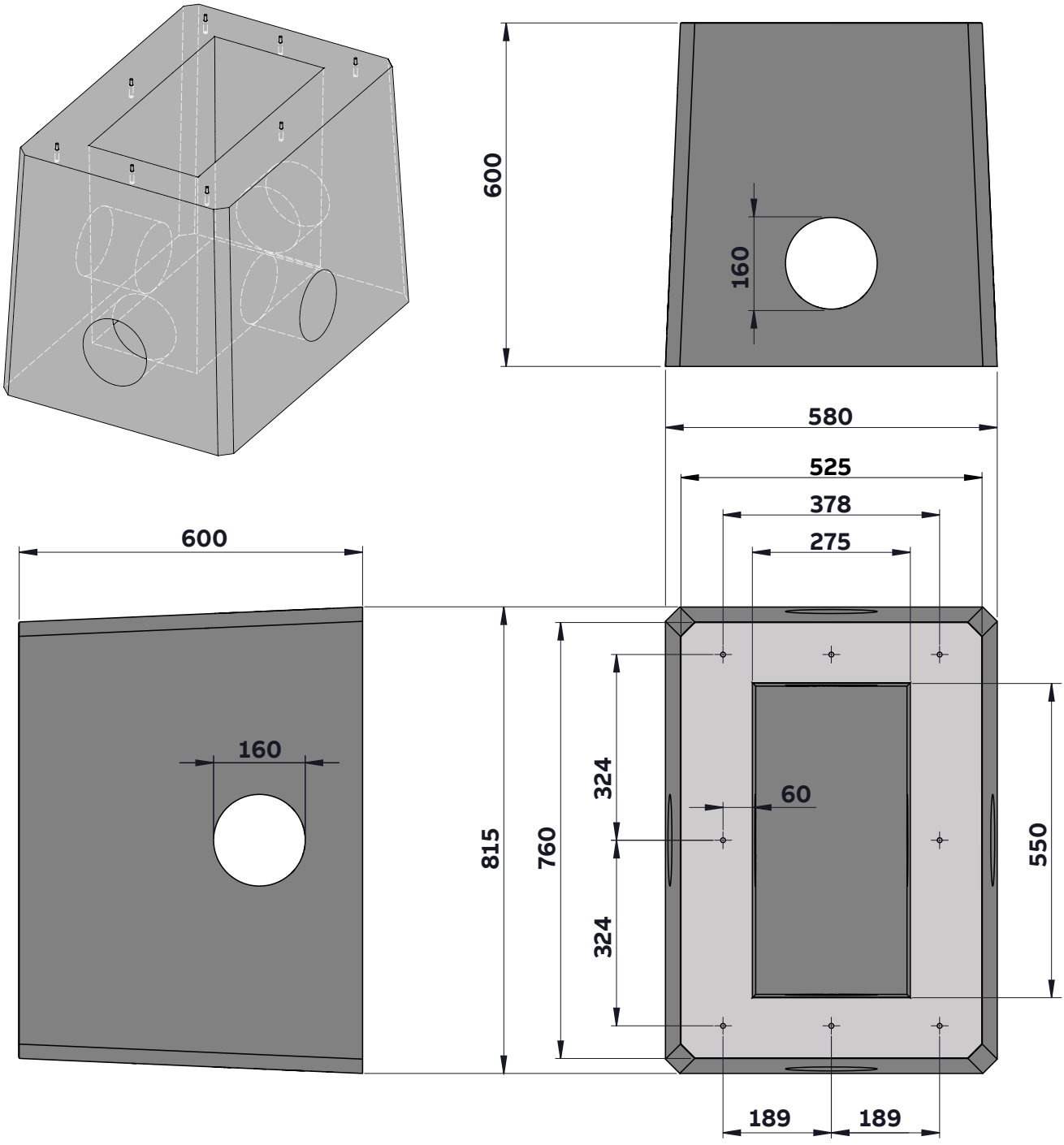
11.4 Prefabricated foundation

The drawing of the prefabricated foundation (Global ID ABB4EPY420074R1) shows all the necessary measurements.

NOTE
The measurements in the drawing are in millimeters (mm).
On the top side of the prefabricated foundation an arrow indicates the front side.
The weight of the concrete foundation is about 450 kg.
Each side has a round hole (160 mm) to fit the underground cable conduits.



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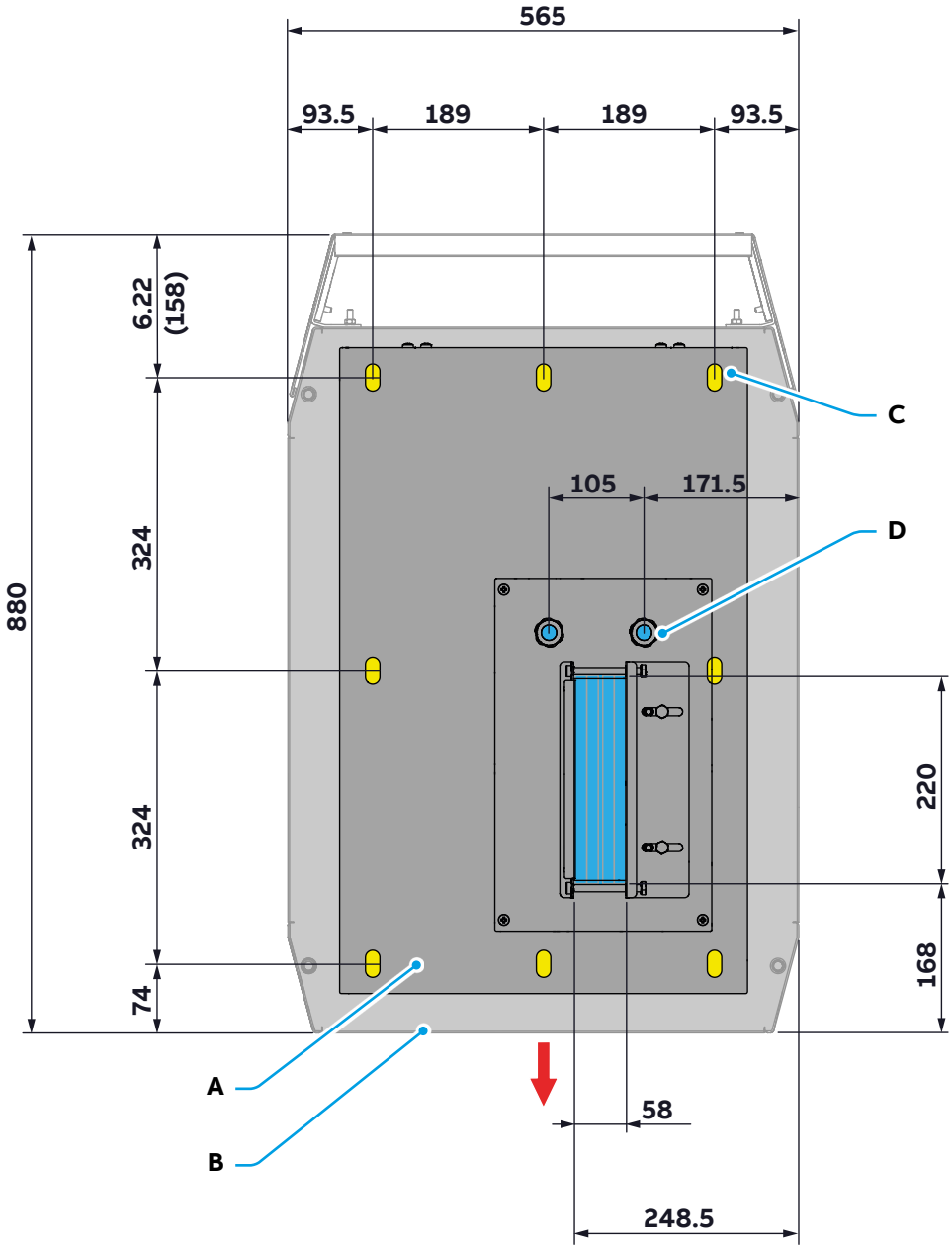
11.5 Custom foundation - EVSE footprint

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)]

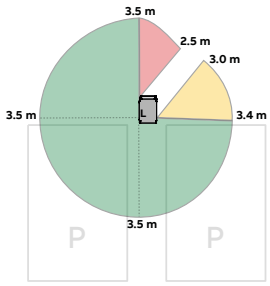
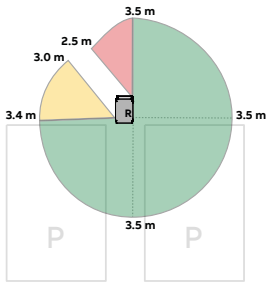
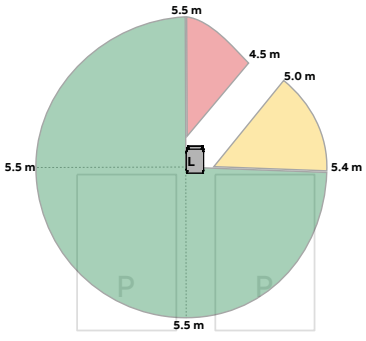
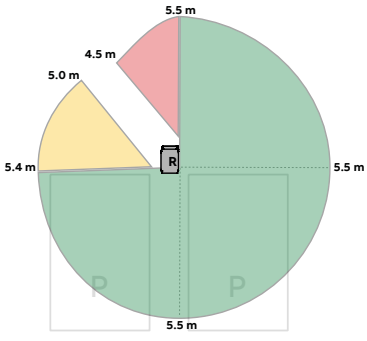
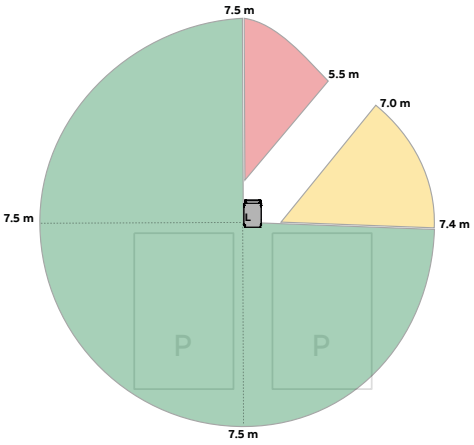
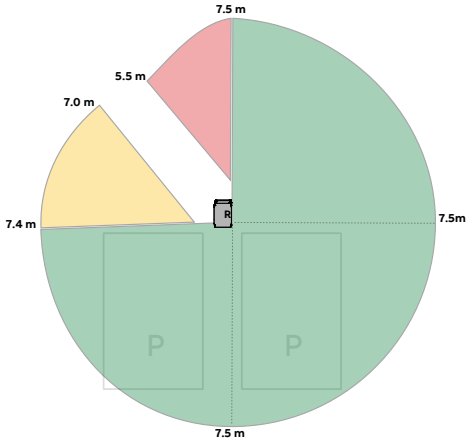


Parameter	Description
A	EVSE base footprint
B	EVSE cabinet footprint
C	Holes to install the EVSE to ground/foundation (M10 bolt)
D	M25 cable glands

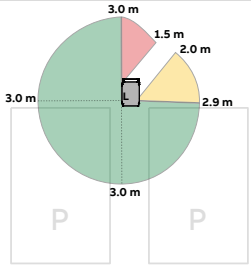
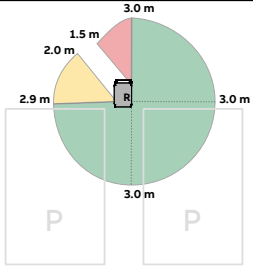
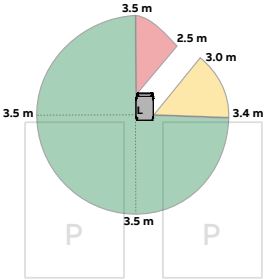
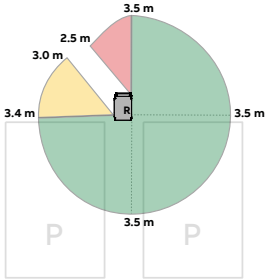
EN

11.6 Charging cable reach

11.6.1 Charging cable reach without CMS

Cable lenght	CMS	Left side charging cable	Right side charging cable
4 m **Tolerance: +/- 20 cm.**	**No**		
6 m **Tolerance: +/- 20 cm.**	**No**		
8 m **Tolerance: +/- 20 cm.**	**No**		

11.6.2 Charging cable reach with CMS

Cable lenght	CMS	Left side charging cable	Right side charging cable
4 m **Tolerance: +/- 20 cm.**	**Yes**		
6 m **Tolerance: +/- 20 cm.**	**Yes**		

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