USER MANUAL

HVC PD Opportunity Charger

User and Operation Manual

Version 0. 4

Notice

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Version control

Version	Date	Remarks
V0.1-0.2	01-12-2018	Released next version with pilot feedback
V0.3	01-03-2019	Released next version with updated graphics
V0.4	22-05-2019	Updated document nr and format

Table of Contents

Glossary

AC
Alternating Current.

ACM
ACS Control Module

ACS
Automatic Control System. In this charger system the pantograph.

CAF
Customer Acceptance Form.

Charge control set
Set of sub-system of the charger systems which includes the ACS, the control module for the ACS, the communication unit and a status indicator of the charge process.

DC
Direct Current.

Grid provider
Company responsible for the transportation and distribution of electricity.

HMI
Human Machine Interface; the screen on the charger.

HVC
Heavy Vehicle Charger.

Power Cabinet
Intermediate unit that provides 150 kW of 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.

LAN
A computer network that interconnects computers systems within a limited area.

NOC
ABB Network Operating Centre; remotely checks the correct functioning of the charger.

MCB
Mechanical Circuit Breaker

OppCharge
Is a trade name of fast charging method for electric vehicles.

Owner
The legal owner of the charger.

Pantograph
The mechanical contact linkage of the charger through which the DC charge power is electrical transported to the electrical vehicle.

PE
Protective Earth.

PPE
Personal Protective Equipment. Equipment such as safety shoes, helmet, glasses, gloves.

RCD
Residual-Current Device.

RFID
Radio-Frequency IDentification. RFID is a communication technology by means of radio waves to transfer data over a very short distance between a reader and an electronic tag or card.

Site operator
The entity is responsible for the day to day control of the charger. The site operator can be the owner, but not necessarily.

User
The owner of an electric vehicle, who uses the Charge Station to charge that vehicle.

WiFi
A technology that allows electronic devices to connect to a wireless LAN (WLAN) network.

1. Introduction

1.1. Preface

This guide describes the general operation and daily operator instructions for the HVC Opportunity Charger.

The HVC Opportunity Charger is a DC fast charger system for hybrid or electrical buses that are compatible with the OppCharge interface[1]. It is not permitted to use the HVC Opportunity Charger to charge any other equipment, or to use the HVC Opportunity Charger for any other purposes.

Before using the HVC Opportunity Charger, read this User and Operator Guide carefully and attentively. Follow the instructions in this User and Operator Guide. ABB is not responsible for any damage that has been caused by not, or incorrectly following and executing the instruction as described in this manual.

1.2. Intended document users

This document is intended to be used by:

- As a reference to the bus drivers of hybrid or electrical buses who will use the HVC Opportunity Charger to (re)charge there buses.
- As a reference for site operators who are responsible for the chargers operation on site, performing daily inspection and maintenance activities and who are able to perform simple trouble shooting activities, after instruction of a certified ABB technician.

1.3. Owner responsibilities

The owner and site operator are required:

- To operate the charge system with the protective devices installed and to make sure all protective devices are correctly installed after carrying out installation or maintenance.
- To write an emergency plan that instructs people what to do in case of emergency.
- To prepare the site where the charge system will be installed, according to the requirements described in this guide.
- To make sure that there is enough space around the charger to carry out maintenance work.
- To appoint a person responsible for the safe operation of the charge station and for the coordination of all work.

The owner of the charger is warned that changes or modifications that are not explicitly approved by ABB could void the owner's authority to operate the equipment or ABB's warranty.

Neither ABB nor its affiliates shall be liable to the purchaser of this product or third parties for damages, losses, costs or expenses incurred by purchaser or third parties as a result of: an accident, misuse or abuse of this product or unauthorized modifications, repairs or alterations to this product, or failure to strictly comply ABB operating and maintenance instructions.

[1] More information on OppCharge via www.oppcharge.org.

1.4. Signs

The following signs are used on the equipment and in this manual:

	**DANGER** **Hazardous voltage** Identifies a hazard that could result in severe injury or death through electrocution.
	**WARNING** **Various** Identifies a hazard that could result in severe injury or death.
	**WARNING** **Rotating parts** Identifies a hazard that could result in injury due to the presence of rotating or moving parts.

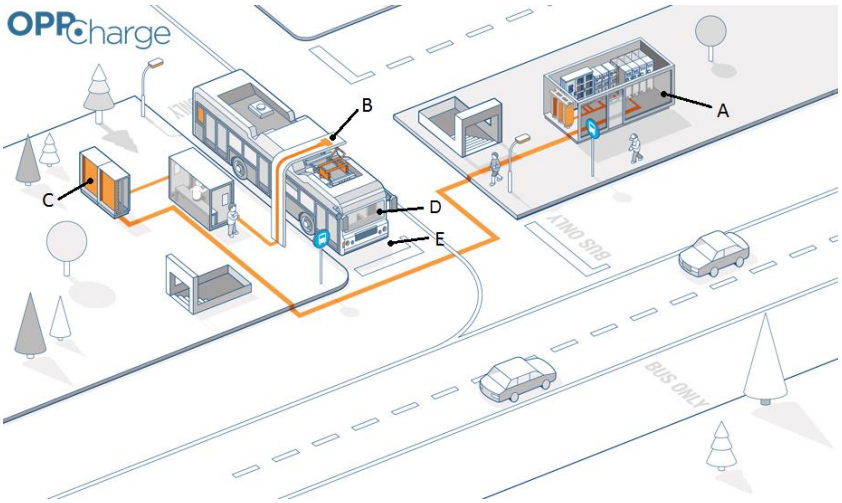
	**WARNING** **Pinch Hazard** Identifies a hazard that could result in injuries in which some body parts are pinched or crushed.
	**WARNING** **Fall Hazard** Identifies a hazard that could result in injury due unsafe work at height.
	**CAUTION** **Various** Identifies a hazard that could result in damage to the machine, other equipment, and/or environmental pollution.
	**CAUTION** **Environmental damage** Identifies a special indications as well as biddings and prohibitions to avoid damages in the environment. This sign refer to present national regulation according the environment.
	**NOTICE** Contains remarks, suggestions or advice.

1.5. Safety regulations

	**WARNING** If the pantograph is damaged, take the following steps: 1. Do not use the charge system. 2. Contact the owner / site operator.
	**WARNING** If there is an emergency: 1. Push the emergency stop. 2. Contact the owner / site operator. 3. Act according to the emergency procedure of the owner / site operator.
	**WARNING** Operation after damage or accidents: • If there is a fire in or nearby the charger; • If the charger was immersed in water, or any other fluid; • If the charger is damaged in any way. Do not use the charger. Contact the owner / site operator.

2. Description of the product

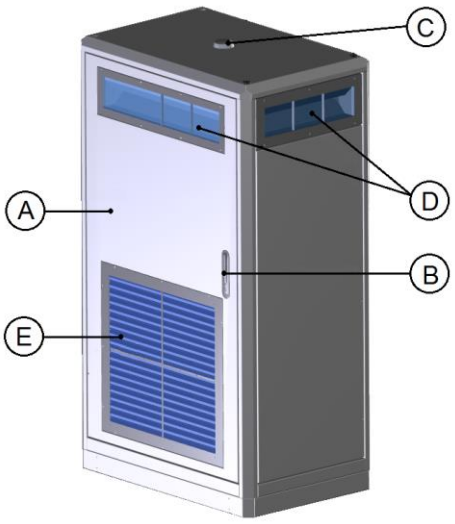
2.1. Overview of the system



A Low voltage power distribution cabinet of the owner
B Charge Pole with ACM and Pantograph
C Power Cabinet(s)
D Electric hybrid and/or full electric bus
E Bus stop space for Opportunity Charging (OppCharge)

2.1.1. Power cabinet HVC 150 (S)

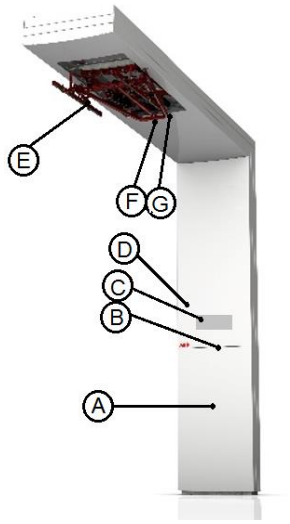
A Door
B Door handle / lock
C 3G Antenna
D Air inlets (also on the left and back side)
E Air outlet



	CAUTION
	The Power Cabinet has air inlets (D) and an air outlet (E) to control the temperature inside the cabinet. Do not install or place any objects near or against these air inlets and outlet. If necessary, take precautions to prevent snow or any other objects from blocking the air inlets and outlet.

2.1.2. Charge Pole

A Door to ACM
B Emergency button
C Charge state indicator light (beacon)
D Distance sensor
E Pantograph
F WiFi communication unit
G RFID unit (if installed, optional)



2.2. Description of user interface

There are three indicator lights (C) at the Charge Pole that serve as an information for the bus driver:

Color	State	Charge status
	Continuous	Ready to charge
	Blinking	Initializing
	Continuous	Charge complete
	Blinking	Charging
	Continuous	Error

Under the beacon (C) there is a red Emergency button (B). This Emergency button can be used only in an emergency situation. When pushing this Emergency button it will immediately stop the charging process and cut off the DC power from the charger. See also section *Emergency stop* on page 16.

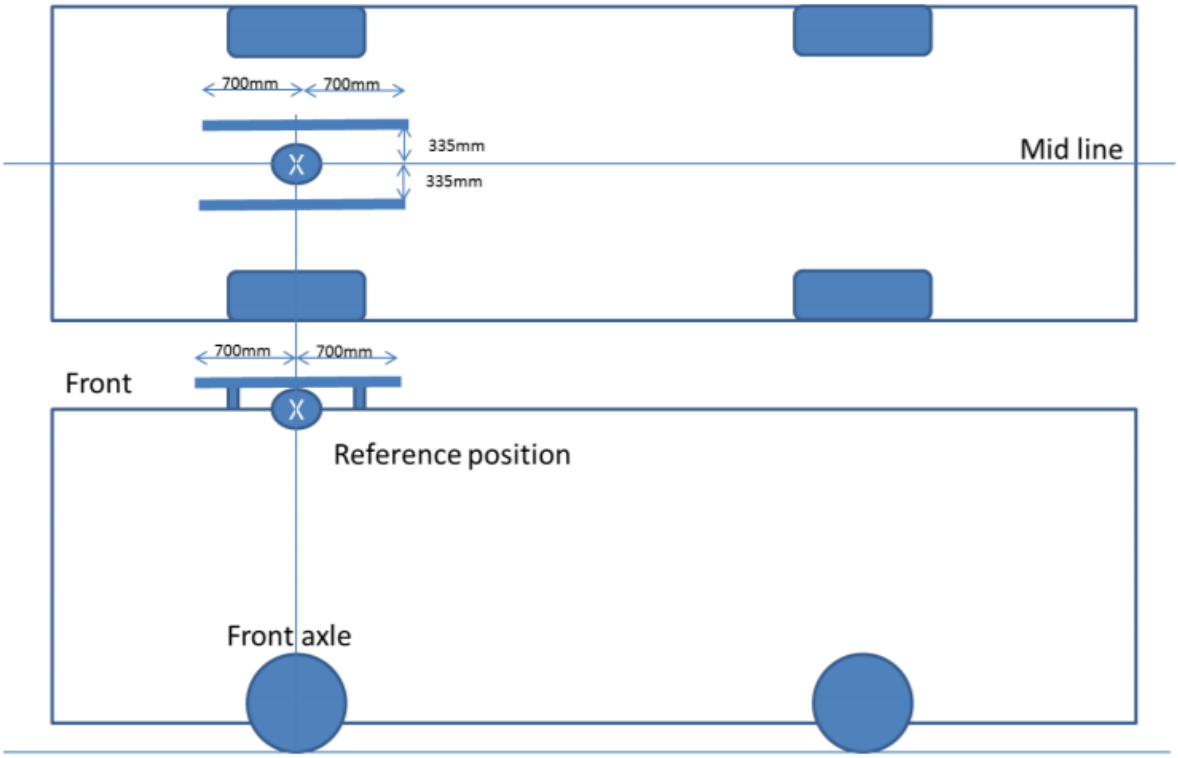
2.3. Charger system configurations

The HVC Opportunity Charger is built up with a modular architecture. There are three HVC Opportunity Charger systems available, depending on the DC output power:

Charger system	Power Cabinet(s)	DC output power
HVC 150P Opportunity Charger	HVC 150	150 kW
HVC 300P Opportunity Charger	HVC 150 and HVC 150S	300 kW
HVC 450P Opportunity Charger	HVC 150 and 2x HVC 150S	450 kW

3. Alignment of the bus

It is important that the Pantograph is in the right position in relation to the bus, so that the Pantograph can make good physical contact with the power charge connection rails on the roof of the bus.
For most electric hybrid and/or full electric bus, the front wheelbase is exactly below the power charge connection rails on the roof of the bus. Check the technical specifications of the used electric hybrid / full electric bus for the correct position of the power charge connection rails.

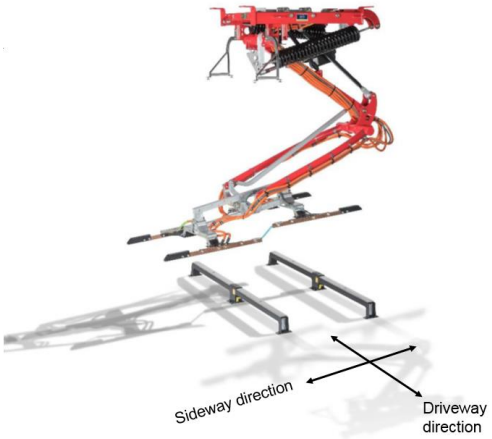


Reference position of the connection rails directly above the front wheelbase.

3.1. Tolerance position Pantograph

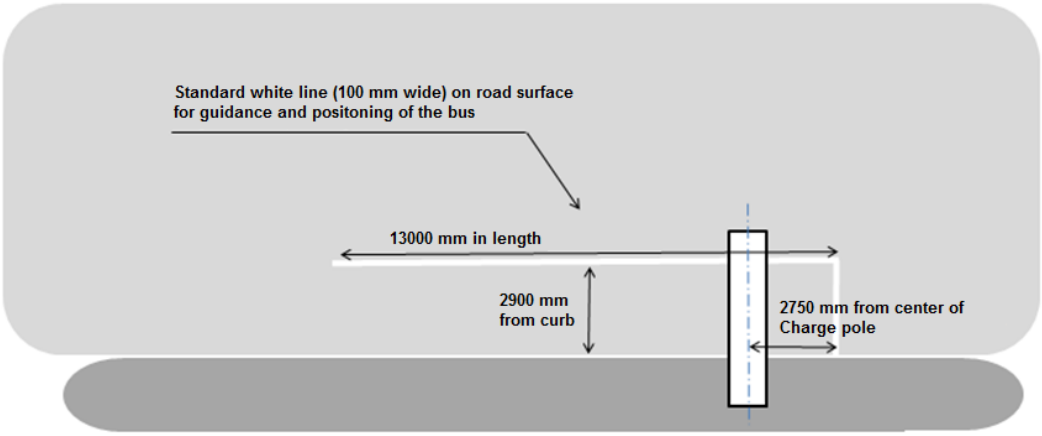
In general the bus has a certain freedom degree to position under the Pantograph:

- Driving direction: +/- 300 mm, 600 mm in total;
- Sideways: +/- 250 mm, 500 mm in total;
- Height: 1600 mm.



3.2. Alignment support options

Standard advice to support the alignment between the bus and the Pantograph is to apply white lines at the bus stop to instruct the bus driver where to stop, see picture below as an example.



Additional alignment options are shown below:

	NOTICE
	There are special manuals available that describe alignment options for specific hybrid and electric bus types. Contact your local ABB sales department for request of this manual.

4. Quick instruction charging

	NOTICE
	Always read the operating instructions of the used electric hybrid and/or full electric bus when using the HVC Opportunity Charger.

4.1. Instruction to the bus driver

1. **Information provided by the bus**
   Information display in the bus
   Live feed of the charge status

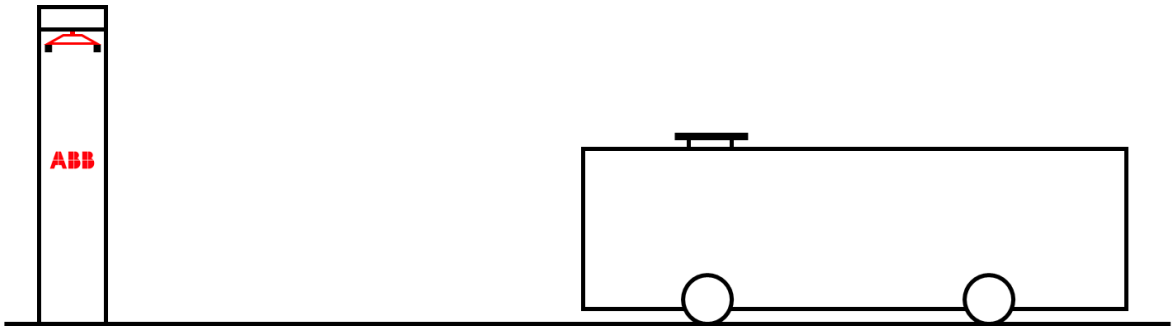
Example display in the bus (depends on the bus OEM and type)

2. **Information provided by the charger**
   Indicator lights (beacon) on the charge pole
   Visible from the driver's seat
   Indicating the charge process with different colors, see section *Description of user interface* on page 10

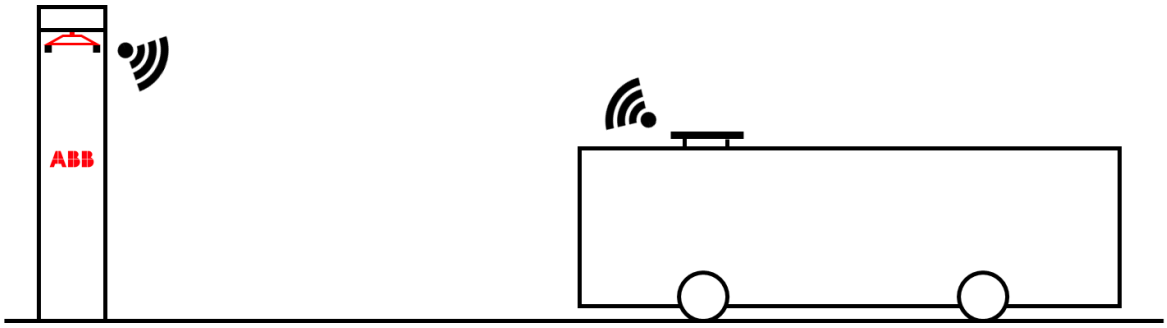
View from the driver on the beacon

4.2. Prepare for charging

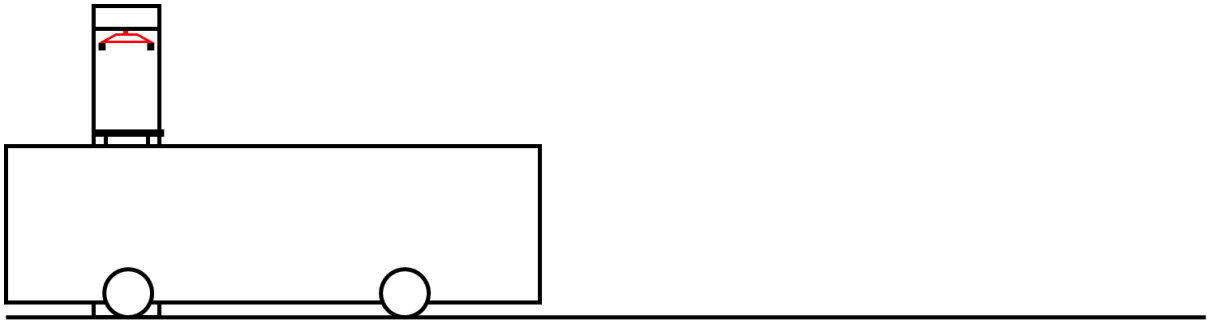
Bus arrives at stop for charging.



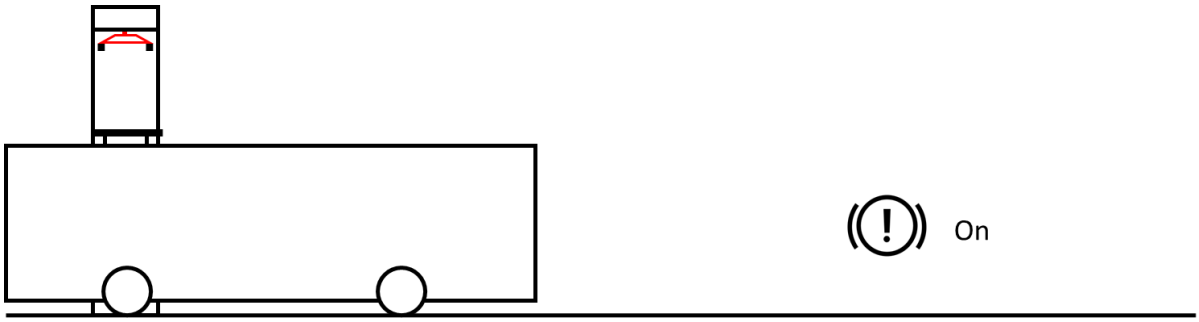
Wi-Fi communication starts between the charger and the bus.



The driver aligns the bus according to the lines on the road or by one of the other alignment options (see section *Alignment of the bus* on page 11).

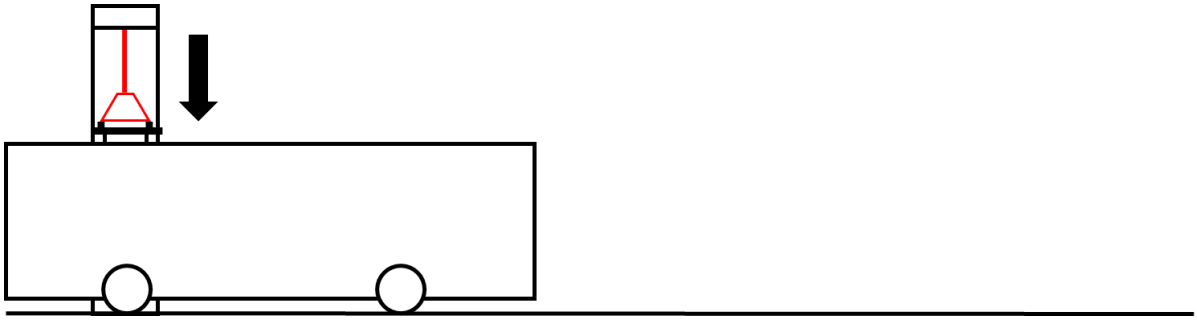


The driver indicates the readiness to start charging by applying the handbrake.



4.3. Charging procedure starts

Pantograph comes down automatically. Time between applying the handbrake (initiate cycle) and start charging is between 15-30 seconds, depending on integration at the bus side.



PE and safety check (continuous) is performed between the bus and the charger.

- When safety check is positive: start of power flow.
- When safety check is negative: Pantograph goes up automatically and bus driver receives a notification on the dashboard (e.g. when the positioning of the bus is not correct).

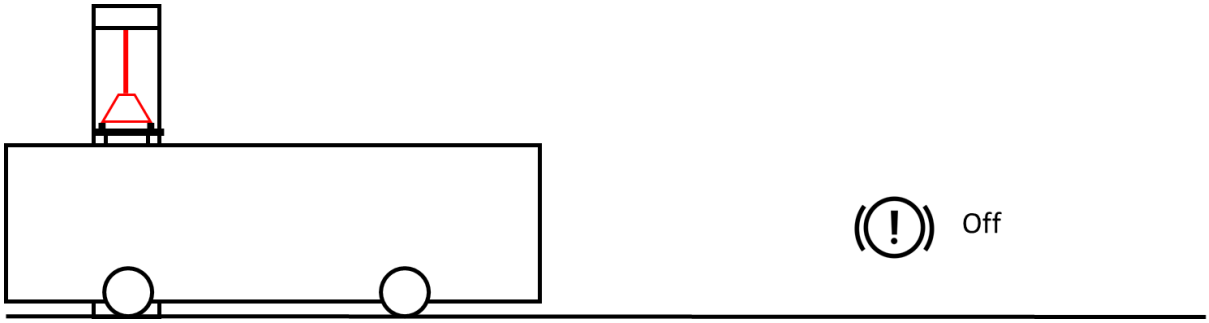
Status during charging can be checked by reading out the dashboard display in the bus or by looking at the charge status indicator light (beacon) on the charge pole (see section *Description of user interface* on page 10).

During charging the charging process can be interrupted at any time by releasing the handbrake.

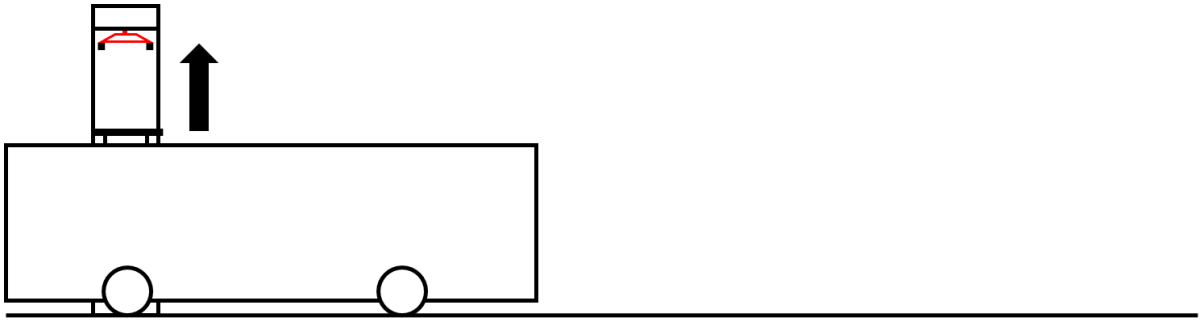
4.4. Charging procedure ends

Bus driver sees that the charge progress is complete or he/she has to interrupt the charging process to continue the operation.

Bus driver indicates readiness by releasing the handbrake.



Pantograph goes up automatically. Time between bus indication a stop charge (release handbrake) until clearance to drive away is 5 seconds.



4.5. Charging procedure complete

Sensors will check if the pantograph is up and send a confirmation to the bus.
Bus driver receives OK signal on the dashboard.

Bus driver drives away.

4.6. Power shutdown during charging

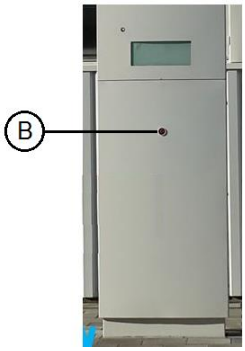
The Pantograph will return to its idle position when the supply is turned off. Due to power shutdown there is no communication possible between the bus and the charger. Therefore the bus will not get the OK signal from the charger indicating that the Pantograph is completely lifted. As a result the bus cannot drive away until:

- The bus driver reset the bus (this is dependent on the bus OEM, read the operating instructions of the bus);
- The bus driver waits until the power is back on and the bus receives the OK signal.

4.7. Emergency stop

If there is an emergency:

1. Push the emergency stop button (B).



The charger stops immediately the charging process and cut off the DC power from the charger.

	NOTICE
	The emergency stop button does not disconnect the charger system from the mains voltage! This emergency stop button disconnect only the DC power voltage lines, the control of the charger are still operational.

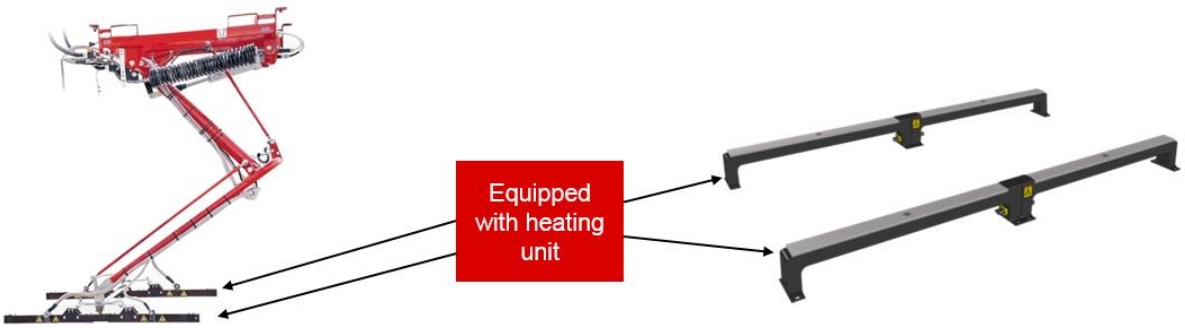
2. Contact the Site operator.

	NOTICE
	Emergency button is pressed accidentally If the emergency stop button is accidentally pushed: 1. Verify the situation is safe. 2. Turn the emergency stop button clockwise. • The emergency button is released and the charger is reactivated. • After a few seconds the charger returns to normal operation.

4.8. Operation in the winter

Charger side
To support the operation in the winter the contact strips of the Pantograph are equipped with a heating unit designed for de-icing the contact strips. Power rating is 60 W.

Bus side
To support operation in the winter, the rails are equipped with a heating unit that is designed for de-icing the rail.



Additional measures:

- Park the buses inside or under a roof during the night;
- If parked outside, remove the snow from the top of the bus before start of operation;
- Additional heating unit surrounding the rails on top of the bus (not part of the ABB offering).

5. Operator Instructions

5.1. Cleaning of the cabinet and charge pole

	DANGER
	**Electrical components** • Do not apply high-pressure water jets. Water may leak into the cabinet. • Only use cleaning agents with a pH value between 6 and 8. • Do not use cleaning agents with abrasive components. • Do not use abrasive tools.

The cabinet of the Power Cabinet and Charge pole is made from powder coated high quality stainless steel. The coating must be kept in good condition.

Clean the Charger three times a year in the following way:

- Remove rough dirt by rinsing with low-pressure tap water.
- Apply a neutral or weak alkaline cleaning solution and let it soak.
- Remove dirt by hand with a non-woven nylon hand pad.
- Rinse thoroughly with tap water.
- Optionally, apply wax on the front for extra protection and gloss.
- Check the coating on damage.

	NOTICE
	**Rust forming** When the charger is placed in a corrosion sensitive environment, the forming of superficial rust is possible on the welding points on the side grills. This rust is merely visual, there is no possibility this will form a risk on the cabinets integrity. The rust can be removed with the cleaning procedure above. To prevent the rust from reappearing; prime the areas with a transparent or color-like priming finish.

5.2. Preventive maintenance

Maintenance is done according the maintenance schedule. The charger must be inspected and serviced yearly by a certified technician.

5.2.1. Service inspection of the cabinets

The following points must be checked regularly:

- Internal RCDs and RCBOs need to be tested on correct functioning on a regular basis. During the yearly maintenance round that is advised to be executed by a certified ABB technician, this will be checked.
- Powder coating: look for damage, cracks or ruptures.

5.2.2. Emergency stop inspection

It is advised to test the emergency button every time someone of the operator or service organization visits the location of the charger. This test needs to be done at least once a year e.g. during a preventive maintenance round.

Test only when the charger is in idle mode and ready to charge:

1. Press the emergency button.
    - The indicator light (beacon) will turn red.
2. Reset the emergency button by turning the knob clockwise.
    - After a few moments, the charger returns to its idle state.

5.2.3. Special inspections

In the following cases the charger must be checked by ABB service personnel before further use:

- If it was struck by lightning.
- If it is damaged due to an accident or fire.
- If its location has been flooded.

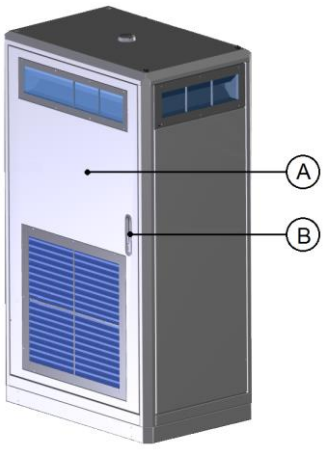
5.3. Problem resolving

The site operator or helpdesk is the first response to a customer call. The helpdesk can remotely solve simple problems for the customer.

In special cases the site operator with knowledge of the charger can be asked by ABB support to report about the status of some internal components of the charger. Therefore a brief description of the position and function of these components is described on the next pages.

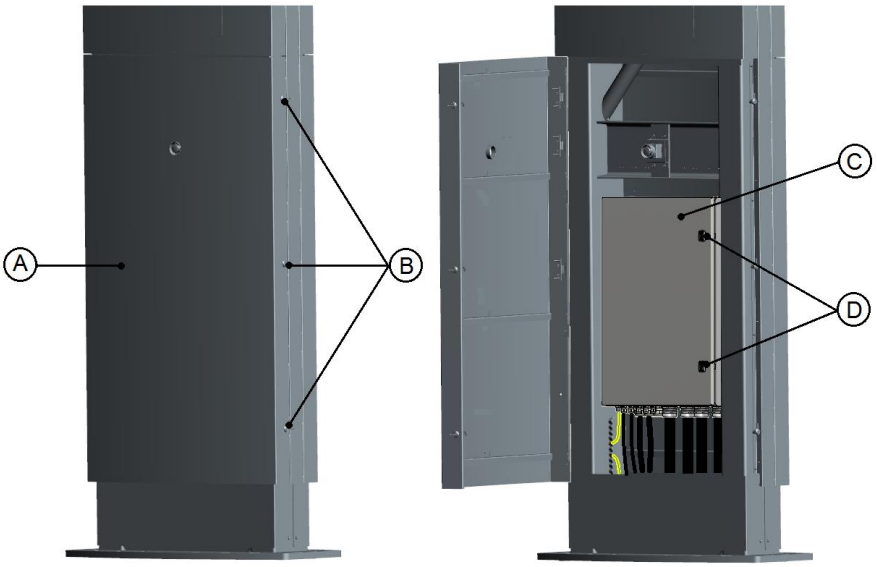
5.3.1. Overview of the Power Cabinet

A Door
B Door handle / lock (per Power Cabinet Unique system key)



	WARNING
	Do not open the Power Cabinet door if you are not familiar with working with high voltage and high current.

5.3.2. Overview of the Charge pole

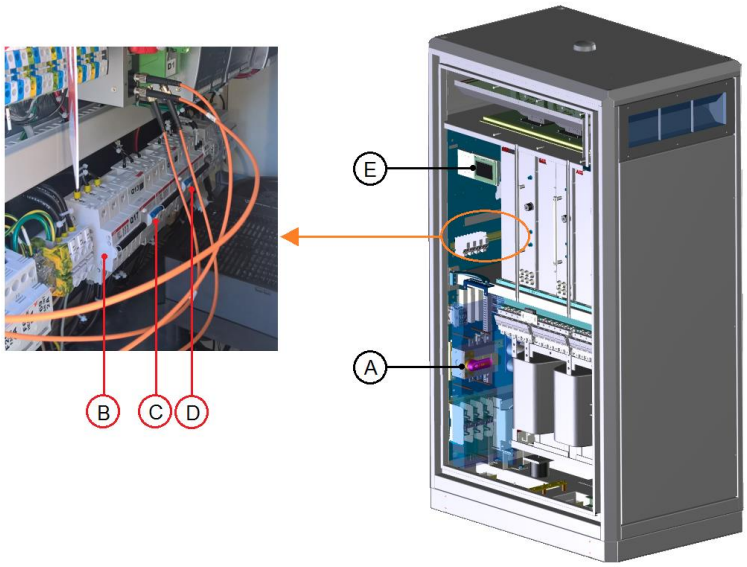


A Front door Charge pole
B Cylinder locks (3x) (per Charge pole unique system key)
C Door ACM
D Locks (2x) (square key)

	WARNING
	Do not open the Charge pole and ACM door if you are not familiar with working with high voltage and high current.

5.3.3. Component overview Power Cabinet

The main components as can be seen with an open front door:

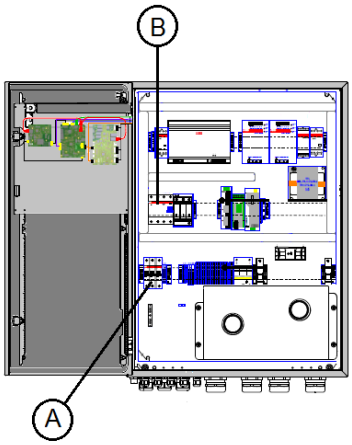


A Main switch
B MCB (Q17) AC power supply for ACM
C RCD (Q13) control
D RCD (Q12) redundant control
E Display (only present in HVC 150)

5.3.4. Component overview ACM

The main components as can be seen with an open front door:

A MCB (F4) AC power supply
B RCD (Q1) AC power supply



5.4. Technical functioning

5.4.1. Normal operation

Normal positions of the different switches and breakers when the charger is in operation (idle; not charging):

Power Cabinet

- Main switch (A): Vertical (“1”)
- MCB (Q17) AC power supply for ACM (B): up
- RCD (Q13) control (C): up
- RCD (Q12) redundant control (D): up

ACM

- MCB (F4) AC power supply (A): up
- RCD (Q1) AC power supply (B): up

5.4.2. Switch the charger system on/off

In case it is necessary to switch off the charger system, this can be done by turning off the main switch (A in Power Cabinet, see section *Component overview Power Cabinet* on page 21):

1. Open the front door.
2. Locate the main switch (A).
3. Turn the handle counterclockwise to the horizontal position, marked with “0”.

To switch the charger back on, turn the handle clockwise to the vertical position, marked with “1”. After about a minute the indicator light (beacon) will turn green.

	NOTICE
	Operating the main switch is quite arduous. Use both hands if needed and be careful not to injure yourself.

6. Contact information

	NOTICE
	**In case of problems** Contact the site operator.

ABB Service department

- PLEASE INSERT YOU CONTACT DETAILS

ABB

ENGLISH

Electrical and electronic equipment to be separately collected in compliance with the Directive on waste electrical and electronic equipment (WEEE - 2012/19/EU)

The symbol (crossed out wheeled-bin) on your product indicates that the product shall not be mixed or disposed with your household waste, at their end of use.

This product shall be handed over to your local community waste collection point for the recycling of the product.

For more information, please contact your Government Waste-Disposal department in your country.

Inappropriate waste handling could possibly have a negative effect on the environment and human health due to potential hazardous substances. With your cooperation in the correct disposal of this product, you contribute to reuse, recycle and recover the product and our environment will be protected.

FRANÇAIS

Équipements électriques et électroniques collectés séparément conformément à la Directive relative aux déchets d'équipements électriques et électroniques (WEEE - 2012/19/EU)

Ce symbole (poubelle interdite) apposé sur le produit indique qu'en fin de vie ce produit ne doit pas être traité avec les déchets ménagers.

Il doit être remis à un point de collecte approprié pour le recyclage des appareils électriques et électroniques.

Pour de plus amples informations, veuillez contacter le service de collecte des déchets ménagers local.

Ce produit contient des substances potentiellement dangereuses qui peuvent avoir des effets néfastes sur l'environnement et la santé humaine. En veillant à la mise au rebut correcte de ce produit, vous contribuerez à assurer le traitement, la récupération et le recyclage de ce produit et à protéger l'environnement.

ESPAÑOL

Aparatos eléctricos y electrónicos recopilados de modo separado en conformidad con la Directiva sobre residuos de aparatos eléctricos y electrónicos (WEEE - 2012/19/EU)

Los productos identificados con este símbolo (papelera tachada) no deben eliminarse como residuos domésticos una vez finalizada su vida útil.

Este producto debe entregarse a un punto de recogida de la comunidad local para su recuperación y reciclado.

Para mayor información, sírvase ponerse en contacto con el Departamento de Disposición de Desechos de su Ayuntamiento.

El manejo inadecuado de los residuos supone riesgos para la salud humana o el medio ambiente. Con la reutilización, el reciclado de los materiales u otras formas de valorización de tales productos usted contribuye de manera importante a la protección de nuestro medio ambiente.

NEDERLASNDS

Elektrische en elektronische apparatuur worden afzonderlijk ingezameld in naleving van de vereisten van de Richtlijn betreffende afgedankte elektrische en elektronische apparatuur (WEEE - 2012/19/EU)

Het symbool (doorgekruisde afvalbak op wielen) op het product geeft aan dat het product aan het einde van haar levensduur niet samen met of in de vorm van huishoudafval mag worden weggegooid.

Het product moet naar een verzamelplaats (milieudepot) worden gebracht waar dergelijke producten worden gerecycled.

Neem voor meer informatie contact op met de relevante overheidsafdeling voor afval/vuilnis die in uw land bestaat.

Het kan nadelige gevolgen hebben op voor mens en milieu als afval op een verkeerde manier wordt behandeld waardoor potentieel schadelijke stoffen vrij komen. Door uw medewerking te verlenen en dit product op de juiste wijze wegwerpt, kunt u een bijdrage leveren aan het herstellen, hergebruiken en recyclen van dit product om zo ons milieu te beschermen.

DANSK

Elektrisk og elektronisk udstyr indsamles særskilt i overensstemmelse med direktiv om affald af elektrisk og elektronisk udstyr (WEEE - 2012/19/EU)

Symbolet (en overstreget affaldsspand med hjul) på produktet angiver, at produktet ikke må blandes med eller bortskaffes sammen med almindeligt husholdningsaffald, når det er udtjent.

Produktet skal afleveres til det lokale affaldsindleveringssted til genbrug.

Kontakt venligst afdelingen for bortskaffelse af affald i din kommune angående yderligere information.

Uhensigtsmæssig bortskaffelse af affald kan have en negativ virkning på miljøet og folks helbred, da det kan indeholde potentielle, farlige substanser. Med din medvirken i henseende til forskriftsmæssig bortskaffelse af dette produkt, kan du bidrage til genbruge, recirkulere og genindvinde produkterne og samtidigt medvirke til, at vores miljø vil blive beskyttet.

DEUTSCH

Elektro- und Elektronikgeräte sind getrennt zu sammeln in Einklang mit der Richtlinie über Elektro- und Elektronik-Altgeräte (WEEE - 2012/19/EU)

Dieses Symbol (ausgekreuzte Mülltonne) auf dem Produkt bezeichnet, dass Altgeräte usw.

nicht wie normaler Haushaltsabfall in den Müll gegeben werden dürfen, sondern zum Recycling an einer hierfür vorgesehenen Annahmestelle abzugeben ist.

Für nähere Informationen wenden Sie sich bitte an die für Müllentsorgung zuständigen örtlichen Behörden.

Bei unsachgemäßer Entsorgung besteht das Risiko nachteiliger Auswirkungen auf Umwelt und Gesundheit durch potentiell gefährliche Substanzen. Durch Ihre Kooperation zur ordnungsgemäßen Entsorgung fördern Sie die Wiederverwendung, das Recycling und die Rückgewinnung von Stoffen und tragen zum Umweltschutz bei.

ITALIANO

Apparecchiatura Elettrica ed Elettronica oggetto di raccolta differenziata in conformità alla Direttiva sui Rifiuti di apparecchiature Elettriche ed Elettroniche (WEEE - 2012/19/EU)

Il simbolo (un bidone sbarrato da una croce) indica che il prodotto non deve essere smaltito con i rifiuti domestici, alla fine della sua vita.

Questo prodotto deve essere consegnato al punto di raccolta rifiuti della propria comunità locale per il suo riciclaggio.

Per ulteriori informazioni, rivolgersi all'organo statale preposto allo smaltimento dei rifiuti nel proprio paese.

Uno smaltimento dei rifiuti inappropriato può avere effetti negativi sull'ambiente e sulla salute umana a causa di sostanze potenzialmente pericolose. Collaborando allo smaltimento corretto di questo prodotto, si contribuisce al riutilizzo, al riciclaggio e al recupero del prodotto, e alla protezione del nostro ambiente.

PORTUGUÊS

Equipamentos Eléctricos e Electrónicos recolhidos seletivamente de acordo com a Diretiva relativa aos resíduos de equipamentos elétricos e eletrónicos (WEEE - 2012/19/EU)

O símbolo (caixote de lixo de rodas com uma linha cruzada) em seu produto indica que o produto, no fim da sua vida útil, não deve ser misturado ou eliminado com o lixo doméstico comum.

Este produto deverá ser entregue a uma estação de recolha de lixo da comunidade local para a reciclagem do produto.

Para mais informações, entre em contacto com o Departamento de Tratamento de Lixo do Governo do seu país.

O tratamento de lixo incorrecto poderia provocar um efeito negativo no meio ambiente e saúde humana devido a substâncias potencialmente perigosas. Com a sua cooperação para a eliminação correcta deste produto, contribuirá para a reutilização, reciclagem e recuperação do produto, e nosso meio ambiente será protegido.

SVENSKA

Elektriska och elektroniska produkter ska samlas in separat i enlighet med direktivet om avfall som utgörs av eller innehåller elektrisk eller elektronisk utrustning (WEEE - 2012/19/EU)

Denna symbol (en överkorsad soptunna) på produkten innebär att produkten ej ska blandas eller slängas med ditt hushållsavfall när den är förbrukad.

Produkten ska lämnas till en lokal insamlingsplats för denna slags produkter för återvinning.Kontakta kommunkontoret för närmare detaljer om var du finner sådana insamlingsplatser.

Olämplig avfallshantering kan få negativa effekter på miljön och på mänsklig hälsa då en produkt kan innehålla farliga ämnen.

Vi ber om ditt samarbeta i bortskaffningen av denna produkt för att bidra till återvinning, återanvändning och en hälsosammare miljö.

SUOMI

Sähkö- ja elektroniikkalaitteet on kierrätettävä erikseen sähkö- ja elektroniikkalaiteromusta annetun direktiivin (WEEE - 2012/19/EU) mukaisesti

Tuotteeseen merkitty symboli (ylitse ruksattu jätesäiliö) osoittaa, että tuotetta ei saa sekoittaa eikä hävittää talousjätteiden kanssa.

Tuote on luovutettava sopivaan tällaisten laitteiden kierrätyksestä huolehtivaan keräyspisteeseen.

Pyydä lisätietoja jäteasioista vastaavilta paikallisilta viranomaisilta.

Tämän tuotteen asianmukaisen hävittämisen varmistamisella autetaan estämään sen mahdolliset ympäristöön ja terveyteen kohdistuvat haittavaikutukset, joita voi aiheutua muussa tapauksessa tämän tuotteen epäasianmukaisesta käsittelystä. Hävittämällä tuotteen asianmukaisesti autat varmistamaan, että tuote uudelleenkäytetään, kierrätetään ja kerätään ja ympäristöä suojellaan.

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NOTES