

**POWERCHOICE 250A DISPENSER**

# Installation manual



# Notice

This document contains information about one or more PACCAR/Heliox products and may include a description of or a reference to one or more standards that may be generally relevant to the products. The presence of any such description of a standard or reference to a standard is not a representation that all of the PACCAR products referenced in this document support all of the features of the described or referenced standard. In order to determine the specific features supported by a particular PACCAR product, the reader should consult the product specifications for that particular product.

PACCAR/Heliox may have one or more patents or pending patent applications protecting the intellectual property in the PACCAR products described in this document.

The information in this document is subject to change without notice and should not be construed as a commitment by PACCAR. PACCAR assumes no responsibility for any errors that may appear in this document. In no event shall PACCAR be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall PACCAR be liable for incidental or consequential damages arising from use of any software or hardware described in this document.

This document and parts thereof must not be reproduced or copied without written permission from PACCAR/Heliox and the contents thereof must not be imparted to a third party nor used for any unauthorized purpose.

# Copyrights

All rights to copyrights, registered trademarks, and trademarks reside with their respective owners.

Copyright © 2022 PACCAR/Heliox

# Contents

<b>1</b>	<b>Preface</b>	<b>4</b>
1.1	About the document	4
1.1.1	Structure of this document	4
1.2	Target groups	4
		4
<b>2</b>	<b>Introduction</b>	<b>5</b>
2.1	Site layout considerations	5
2.2	Distance from dc outlet column to base station	5
2.3	Floorplan	6
2.4	Install options	7
<b>3</b>	<b>Civil work and mechanical installation</b>	<b>8</b>
3.1	Prepare for installation	8
3.1.1	Preparation	8
3.2	Wall mount	9
3.2.1	Installation kit	9
3.2.2	Install the column against the wall	10
3.3	Install the base frame + foundation	11
3.3.1	Installation kit	12
3.3.2	Preparations	12
3.3.3	Install the base frame	13
3.4	Install base frame on the floor	14
3.5	Install base frame on the floor with chemical anchors	14
3.6	Install the column on the base frame	14
<b>4</b>	<b>Electrical installation</b>	<b>15</b>
4.1	Preparation	15
4.1.1	Switch off base product	15
4.2	Overview of connections to be made	16
4.2.1	Charge column ccs2	16
4.2.2	Connecting charge column	17
4.2.3	Multiple dc outlet columns	18
4.3	After installation test	19

# 1. Preface

This section gives the requirements and instructions for the installation of the DC outlet column 250A CCS type-2.

## **1.1 About the document**

This document is part of the technical handbook which is an integral part of the DC outlet column.

### **1.1.1 Structure of this document**

This document gives an installation instruction of the DC outlet column. For easy access to the information, this document is divided into chapters.

The chapters are:

- the introduction;
- the civil work, to detail the pad and foundation work to be done;
- the mechanical installation, to detail the lifting, mounting and installation work to be done;
- the electrical installation, to detail the electrical work to be done.

## **1.2 Target groups**

The information given in this document is meant for use by the authorized persons who are involved with the planning, supervision and execution of the given tasks. These tasks are, but not limited to, handling, transport, storage and the installation.

For the execution, different skills and authorizations are required. For material not covered in this manual, please refer to the introduction document to find the proper section of the handbook to reference.

Work involved with the EVSE (base station and DC outlet column) calls for the safe work procedures with and in the vicinity of electrical installations.

## 2. Introduction

The installation of the DC outlet column requires administrative work to obtain the required permits as well as civil work to excavate the trenches for the foundation, conduits, ductbanks, cables, and other underground needs. Contact your local authorities and follow local processes to obtain the necessary permits.

For locations where the DC outlet column is exposed to the possibility for collisions with vehicles, consider the installation of collision prevention equipment.

After completion of the civil work, the DC outlet column can be installed. When the mechanical work is completed the DC outlet column should be electrically connected and commissioned.

### 2.1 Site Layout Considerations

- There are several aspects to locating the DC outlet equipment at a macroscopic scale that improve performance, lifetime, and ease of operation. These items are very dependent on the end user's site and intended use, so they are covered as concept considerations in this section.
- The access of the installation site shall be of sufficient size to allow the transport packages for the DC outlet equipment to pass. If the access doors/gates/corridors are too small for the safe transport of the transport packages, special provisions may need to be made to allow installation. The maximum size of the DC outlet package is 120x80x140cm.
- For locations where the DC outlet is exposed to direct sunlight and high ambient temperatures for most of the day, it is required to install protection from direct sunlight or place the DC outlet under shade.
- For locations where the DC outlet is exposed to the possibility for collisions with vehicles, it is highly recommended to install collision prevention equipment. This may be in the form of bollards or a significantly raised curb.
- For locations with significant snow accumulation or snow drifts, it's recommended to install barriers or a shelter to protect snow from blocking air intake vents. Airflow needs should be respected in all installations. The DC outlet is air cooled by a set of internal fans which take in the air from the ventilation grids in the bottom of the cabinet and release the warm air from the ventilation grids in the top of the cabinet. The air intake has filters to prevent contamination of the internal side of the cabinet. Keep the ventilation grids free from debris and obstacles to allow for a free flow of air.
- The maintenance tasks for the DC outlet are done from the top and the front of the cabinet. Consider this when spacing units and planning service with vehicles present.
- The operation area is at the front of the cabinet. Normally, the charging process is started, monitored, and stopped automatically by the EV. In case of abnormal operation, it is possible to stop the charging process with the Charge abort button or the emergency stop button.
- The escape routes are very location specific and shall comply with the national and local rules and regulations. Keep in mind that a safe escape route is provided during the maintenance tasks (with the door open).
- The cabinet can be connected to another external DC outlets by daisy chain. Even if these are not initially all deployed, reservation of space is prudent to allow future expansion.

### 2.2 Distance from DC outlet column to base station

Overall cable length from base station to the most distant DC outlet must be  $\leq 100\text{m}$ .

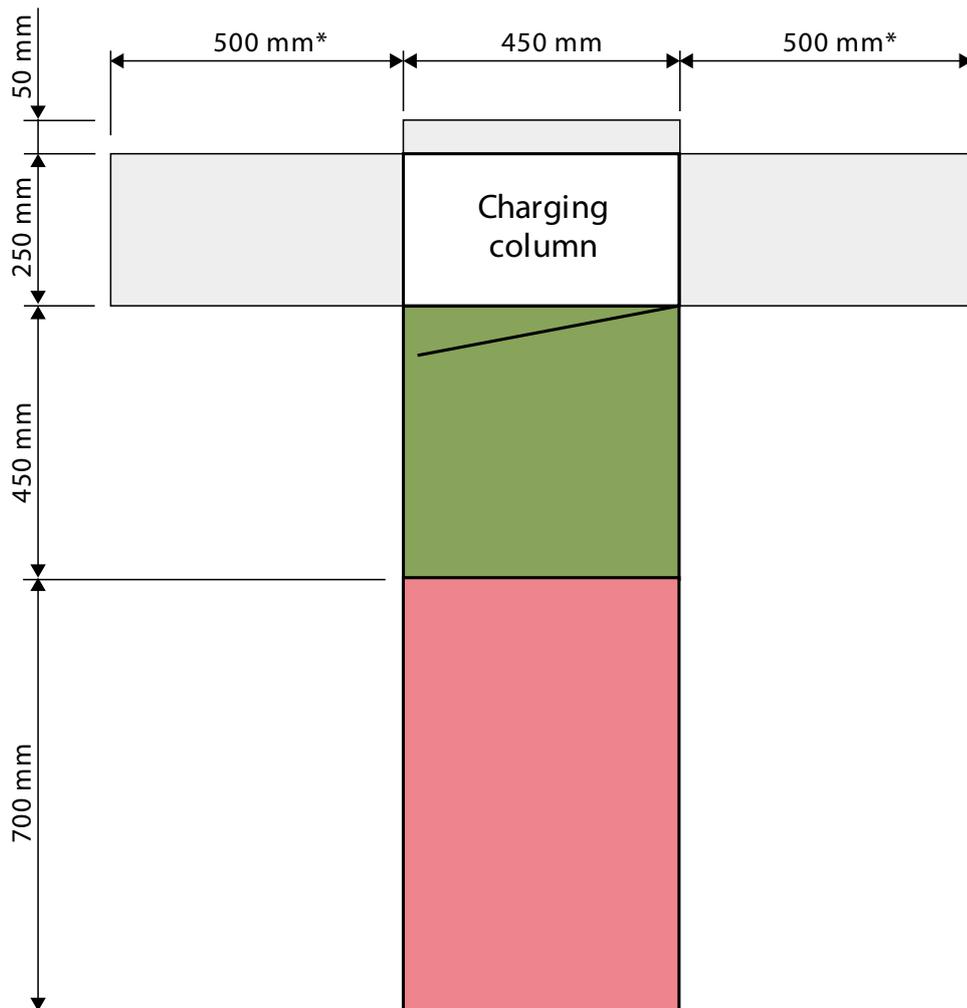


**Note:**

If a distance beyond 100m is required, consult Heliox for the possibilities.

### 2.3 Floorplan

The DC outlet column is designed to be mounted on the floor. The figure shows the top view.



\* Because of cables on the right side of the cabinet and maintenance activities on the left side, a clearance of 500 mm on both sides is recommended.

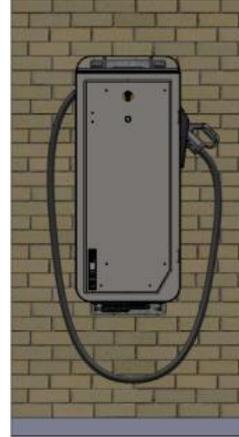
## 2.4 Install options

The DC outlet columns can be installed in two ways:

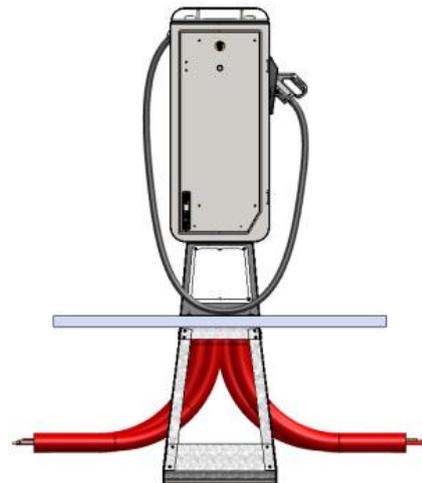
- Single column
- Daisy chain<sup>1</sup>

### The (mechanical) installation options:

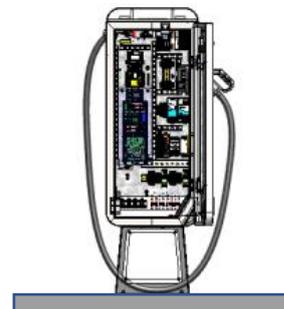
1. Wall mount See paragraph 3.2 Wall mount for civil work and mechanical installation.



2. Base frame + foundation See paragraph 3.3 Install the base frame + foundation and 3.6 Install the column on the base frame for civil work and mechanical installation.



3. Concrete mount See paragraph 3.4 Install base frame on the floor or 3.5 Install base frame on the floor with chemical anchors for civil work and mechanical installation on the floor. After that see paragraph 3.6 Install the column on the base frame



<sup>1</sup> Daisy chain is a term that describes the ability to connect a series of devices together using a single connection between two devices.

# 3. Civil work and mechanical installation



**Danger:**

Failing to adhere to these points may result in a variety of consequences from damaged equipment to personal harm or death.

The civil work and mechanical installation require hoisting or lifting tasks that may require multiple people or machines for that purpose.

It is the sole responsibility of the installer, to make sure:

- the mechanical installation work is executed in compliance with the, local and national Codes, Directives, Standards, Rules and Regulations;
- the hoisting and lifting work is executed by certified persons and with appropriate equipment.

## 3.1 Prepare for installation



**Caution:**

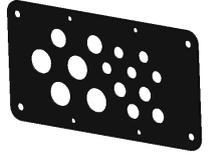
Be careful when you handle the coated and painted parts. Damaged coating can cause corrosion. Corrosion can cause serious damage to the parts.

### 3.1.1 Preparation

1. Put the pallet with the cabinet on a flat and stable surface with sufficient space to work.
2. Remove and discard the packaging material.
3. Dispose of the packaging material in accordance with the local regulations.

## 3.2 Wall mount

### 3.1.1 Installation kit

Quantity	Description	
2	Mount bracket	
4	Washer DIN267 M8	
4	Bolt DIN912 M8 x 20	
1	Gland plate + seal HE2121033-01	

Not included in the installation kit:

Quantity	Description	
4	DIN571 10 mm (length to be determined at location)	
4	DIN9021 M8	
	Appropriate plugs for DIN571 10mm	
*	Gland M32 x 1.5	
*	Gland M25 x 1.5	
*	Gland M20 x 1.5	
*	Gland M16 x 1.5	
*	Blind plug M32 x 1.5	
*	Blind plug M25 x 1.5	
*	Blind plug M16 x 1.5	

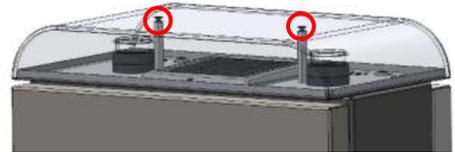
\* Number of glands depend on daisy chain.

### 3.2.2 Install the column against the wall

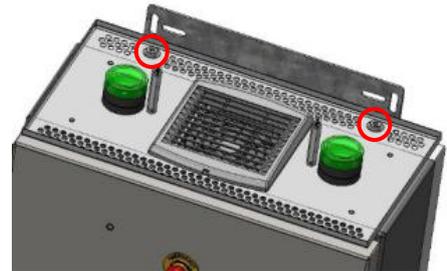
1. Mark drill holes.
2. Drill holes for appropriate plugs for fixation screws DIN571 10 x (xxx) mm
3. Fixate the bracket with bolts and washers that came with the installation kit.



4. Unscrew the 2 screws on top of the hood.
5. Take off the hood.



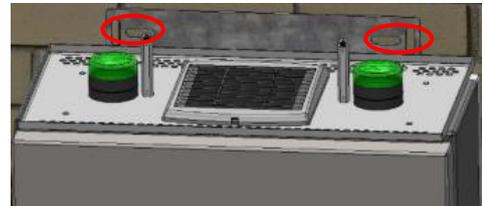
6. Fixate the top bracket with DIN912 M8x20 + M8 washer.



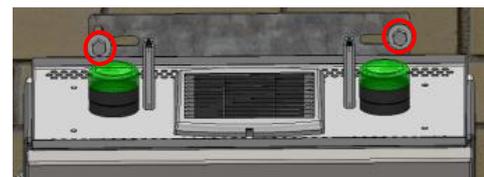
7. Mount column at bottom bracket.  
Fixate with DIN912 M8x20 + M8 washer.



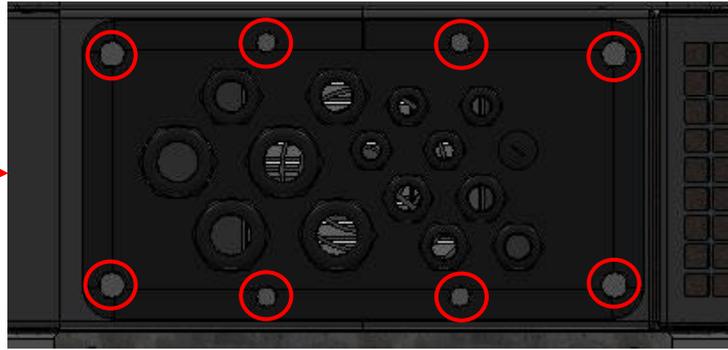
8. Mark needed drill holes.



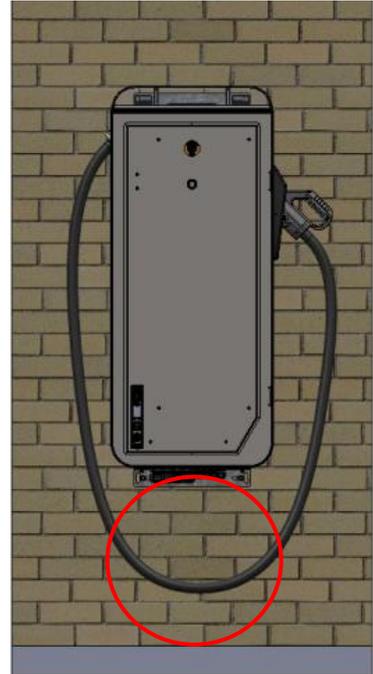
9. Unmount column from bottom bracket.
10. Drill appropriate holes at marked spots for the plugs.
11. Place the plugs and mount the column at the bottom bracket again.
12. Fixate top bracket to the wall with DIN571 10x150mm screws and DIN9021 M8 washers.
13. Place the hood again and fixate it.



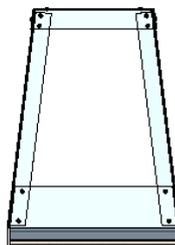
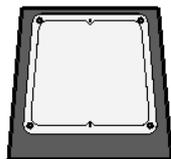
14. Fixate the gland plate.



- 15. Mount needed glands
- 16. Close not used gland holes with blind plugs.
- 17. Place cable conduit (if applicable).



### 3.3 Install the base frame + foundation

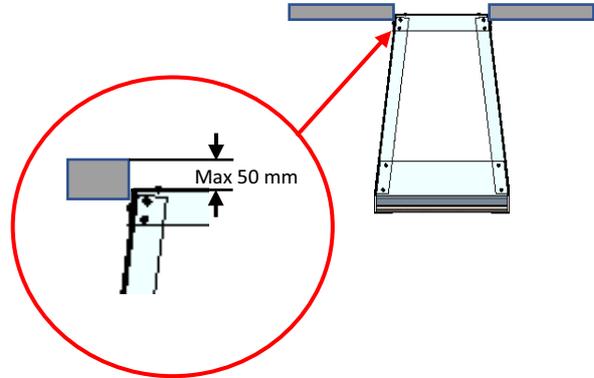


### 3.3.1 Installation kit

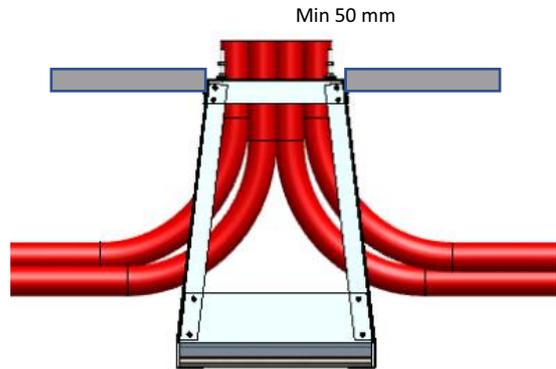
There is no installation kit for this option. All bolts and nuts are included.

### 3.3.2 Preparations

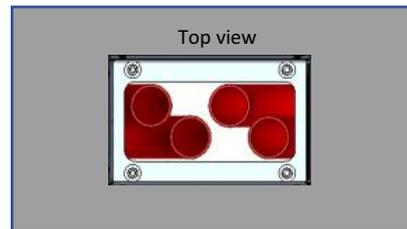
1. Dig a hole to fit the foundation.  
Measurements of the foundation:  
 $l \times w \times h = 500 \times 300 \times 695$  mm.
2. Install the foundation with the top max. 50 mm below pavement.  
Place concrete block at the bottom of the foundation.  
Try to install with minimal tilt.



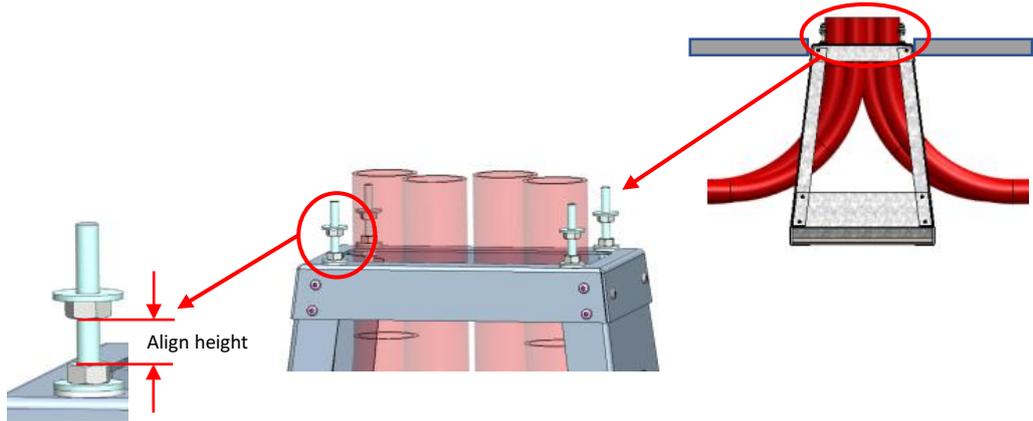
3. Install the conduits in such way that top of conduit is at least 50 mm above pavement level.
4. Fill the foundation with sand.  
Make sure its fully filled and secured.



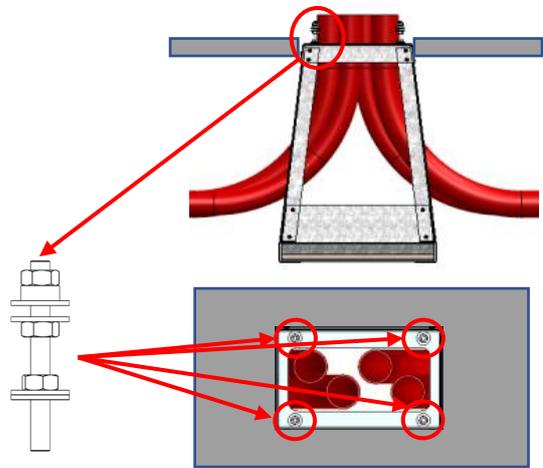
5. Now install the wires and cables in the conduits first. See infra structure of system what wires and cables are needed.



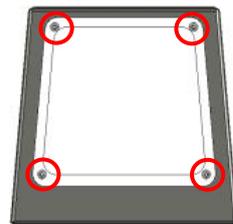
### 3.3.3 Install the base frame



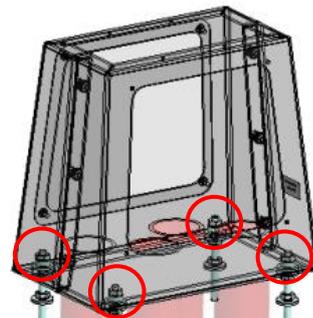
1. Install the threaded rods with washers and nuts onto the foundation.



2. Unscrew the (4) top nuts and washers.
3. Align the 4 nuts in desired height to level the base frame (and eventually the column).
4. Unscrew the 4 screws of base frame to remove the front.

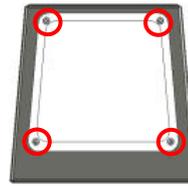


5. Install the base frame and fixate it with use of washers and nuts (4x)

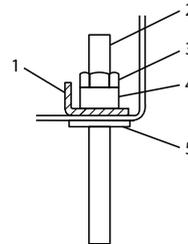


### 3.4 Install base frame on the floor

1. Unscrew the 4 screws of base frame to remove the front.



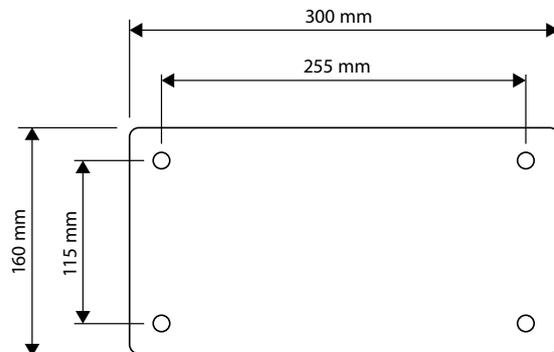
2. Mount the base on the floor.  
Use 4 threaded rods. Make use of:
  - plinth under ring (1)
  - threaded rod M10 (2)
  - nut M10 (3)
  - flat washer (4 and 5)



### 3.5 Install base frame on the floor with chemical anchors

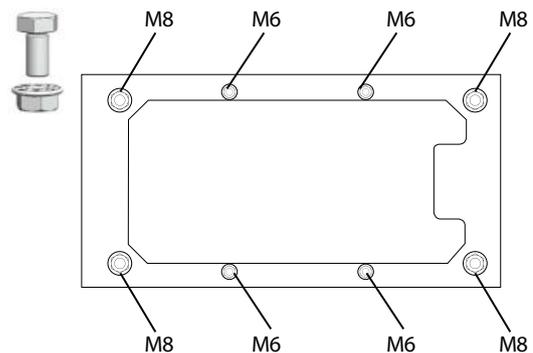
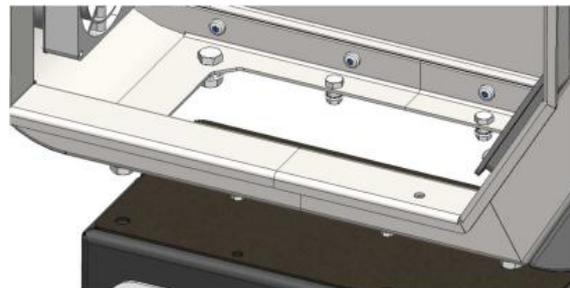
Mount the base with chemical anchors:

- Drill the holes (10mm), use the mold.
- Apply the chemical anchor.
- Mount the base.



### 3.6 Install the column on the base frame

Install the cabinet and fix it with use of washers and nuts: 4 x M8 + 4 x M6.



# 4. Electrical installation



**Danger:**

Risk of electrocution. Make sure, it is safe to work on the electrical installation. Energized electrical systems are hazardous and can cause electrical shock. Electrical shock can cause (serious) injury to persons.



**Note:**

When connecting cables:

1. Where possible allow for sufficient over length for future repair of the connections.
2. Where possible make sure, sufficient length is available for 3x a repair session.
3. Adhere to the minimum bending radius of 5x the cable diameter
4. Install the cables in accordance with the manufacturer's instruction.

## 4.1 Preparation

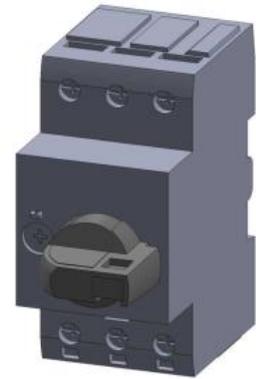


**Note:**

All cables/wires from the base station will enter the DC outlet column via an opening in the bottom. It is possible to remove the panel of the base easily to have good access during installation of the DC outlet column and all the cables/wires.

### 4.4.1 Switch off base product

1. De-energize base product by switching off main and auxiliary circuit breakers. Ensure that no voltage is present at feeding output wires. See documentation of the Base product.
2. Lock-out/Tag-out the base product and the related systems to prevent that the base product can get energized unintentionally.
3. Make sure, the electrical parts and connections are clean, dry and free of corrosion
4. Wait 5 mins before opening the base product / DC outlet due to the discharge time of the capacitors.



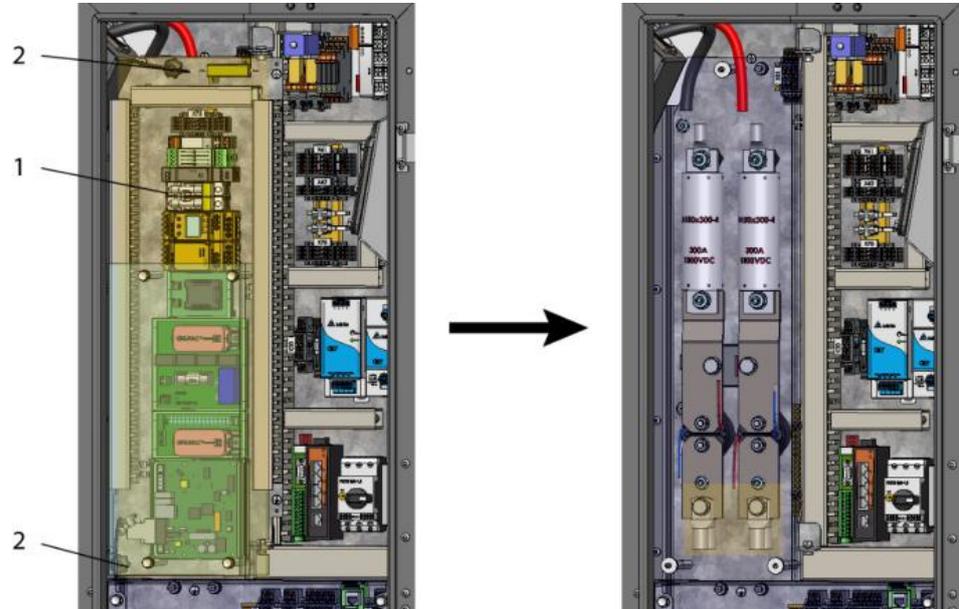
**Danger:**

Lock-out/tag-out is required and verification of no voltage is required.

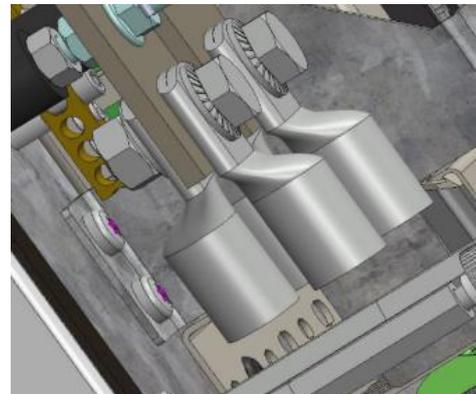
## 4.2 Overview of connections to be made

### 4.2.1 Charge column CCS2

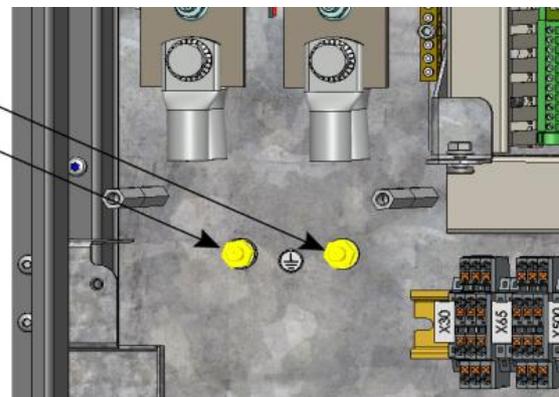
The power connections are located behind the control panel (1). Use the rotary knob (2) on top and bottom to open the panel to access the connections.



The DC connections are highlighted:  
Max. cable cross section 125 mm<sup>2</sup>.  
Max. 2 cables per connection (daisy chain).



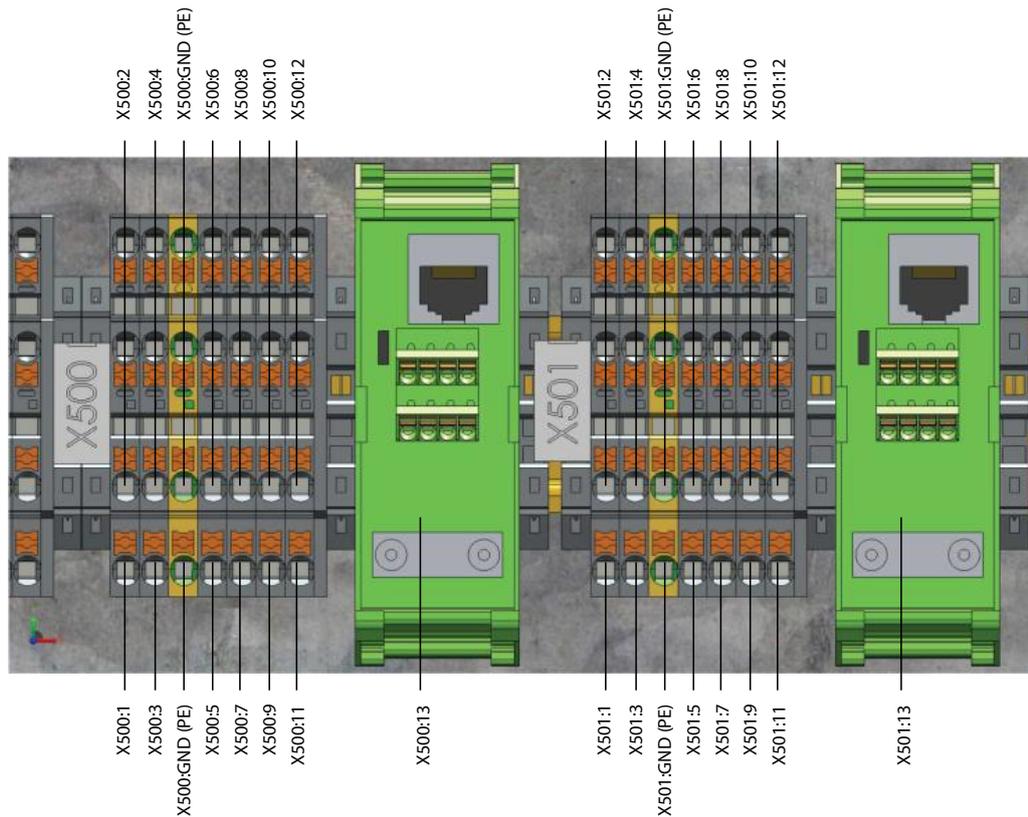
The earth connection is just below the DC connections:



#### Note:

A backing wrench is required when making high current connections at contactors. It is imperative that no torque is transferred to the contactor chassis.

## 4.2.2 Connecting charge column



Charge column connections

Cable	Function	DC Outlet input connection	DC Outlet output connection
AC input and output	L1	X500:1	X501:1
	L2	X500:2	X501:2
	L3	X500:3	X501:3
	N*	X500:4	X501:4
	GND (PE)	X500:GND (PE)	X501:GND (PE)
CAN input and output	CAN_H	X500:5	X501:5
	CAN_L	X500:6	X501:6
	Shield	200SH2	201SH2
Low voltage interface		X500:7	X501:7
		X500:8	X501:8
		X500:9	X501:9
Emergency stop input and output		X500:10	X501:10
Interlock (door switch) input and output		X500:11	X501:11
		X500:12	X501:12
Ethernet input and output	Communication	X500:13	X501:13
DC+ input and output	DC+	110Q5 A1+ connection flag	110Q5 A1+ connection flag
DC- input and output	DC-	110Q6 A2 connection flag	110Q6 A2- connection flag
GND (PE) input and output	GND (PE)	GND (PE) bonding bolt	GND (PE) bonding bolt

\* connected when daisy chained



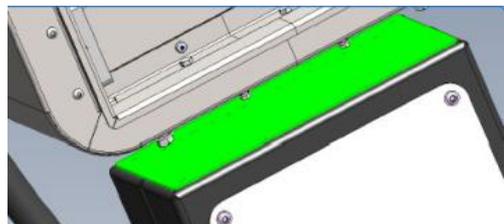
## 4.2 After installation test

1. Make sure, visually and by measurement, the connections are made correctly.  
The connections are torque tight and marked.
2. Make sure, it is safe to do the resistance test with the use of valid, calibrated equipment.
3. Validate the operation of the resistance tester.
4. Measure the contact resistance between cable lug and connected component (matching colors indicates measuring points).
5. The measurement should read less than 0.05mΩ.
6. Make a note of the results and keep them with the Charge column.
7. If the resistance measurement fails the specifications, contact the Heliox service department for advice on how to proceed.
8. If the test fails, do any necessary work.
9. Close the cabinet.
10. Mount the front panel of the base.
11. Switch off main switch in cabinet until the charging column is commissioned.



**Note:**

Installer is responsible for closing possible holes in the foam seal between base and cabinet.



DAF Trucks N.V.  
Hugo van der Goeslaan 1  
P.O. Box 90065  
5600 PT Eindhoven  
The Netherlands  
daf.com



ISO14001  
Environmental  
Management System



IATF16949  
Quality  
Management System

*All rights to copyrights, registered trademarks, and trademarks reside with their respective owners.  
Copyright © 2022 PACCAR/Heliox. All rights reserved.*

EN-1021