

## INSTALLATION MANUAL

# VersiCharge Ultra 50™

## 50 kW DC fast charger



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## Important safety instructions and specifications. Save these instructions.

This manual contains important instructions for the VersiCharge Ultra 50™ electric vehicle fast charger model:

US2:VSCULT50SAG, 50kW DC

These instructions must be followed during installation of the unit.

For charger operating instructions, see US2:VSCULT50SAG Operating Manual (document SIDS-T40046-00-4AUS).

For charger maintenance instructions, see US2:VSCULT50SAG Maintenance Manual (document SIDS-T40047-00-4AUS).

### Identifying symbols



CAUTION



RISK OF ELECTRIC SHOCK



Equipment Grounding Conductor Symbol



Phase Symbol



Alternating Current Supply Symbol



### CAUTION

The Ultra 50 fast charger must be installed and serviced only by qualified electrical personnel. To achieve EMC compliance, the chassis of the Ultra 50 must be grounded to the earth locally at the charger.



### CAUTION

In the event of a circuit breaker trip, the charger must be inspected by a Siemens-certified service agent before the charger is re-energized.

### Grounding instructions

This unit is to be connected to a grounded, metal, permanent wiring system; and an equipment-grounding conductor is to be run with circuit conductors and connected to equipment-grounding terminal or lead on battery charger. Connections to the battery charger shall comply with all local codes and ordinances. Observe all pertinent national, regional and local safety laws and regulations when installing and commissioning the Ultra 50 fast charger.

### Wiring size

3ø: 4 AWG  
Use 90°C Copper Wire  
Use 4 AWG insulated grounding conductor

1ø: 18 AWG  
Use 90°C Copper Wire

An insulated grounding conductor that is identical in size, insulation material and thickness to the grounded and ungrounded branch-circuit supply conductors except that it is green with or without one or more yellow stripes is to be installed as part of the branch circuit that supplies the unit or system. This grounding conductor is to be grounded to earth at the service equipment or, when supplied by a separately derived system, at the supply transformer.

## **Important safety instructions and specifications. Save these instructions.**

### **Input:**

3Ø WYE CONNECTED

277/480V  $\pm 10\%$

60Hz  $\sim$

55kW

1Ø, 120V

60Hz  $\sim$

250W

The Ultra 50 must be connected to a circuit provided with an appropriate branch circuit over-current protection in accordance with the National Electrical Code, ANSI/NFPA 70.

### **Tightening torque:**

#### **Wiring terminals:**

Breaker 4.0 Nm/35 lb-in

#### **Service hatch:**

2.0 Nm/17.70 lb-in

#### **Operating temperature:**

-35° to 50°C / -31° to 122°F

#### **Maximum ambient temperature:**

55°C /131°F

#### **Weather rating:**

NEMA Type 3R

## FCC Notice

### Information to the user (FCC Part 15.105)

#### Class A product:

#### NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### Modification warning (FCC Part 15.21)

In addition, the user's manual or instruction manual shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment (see below for example).

***Warning: Any changes or modifications not expressly approved by (Siemens Industry, Inc.) could void the user's authority to operate this equipment.***

## Packaging, handling and receipt

Read these instructions carefully to become familiar with Ultra 50 packaging and handling procedures prior to unpacking and installation.

In all cases, the Ultra 50 is to be transported to the installation site in its original packaging and only unpacked at the installation site.

Installation, commissioning and servicing of the Ultra 50 should only be carried out by qualified personnel.

### Materials:

The Ultra 50 is transported in a reinforced cardboard crate. Please respect the environment and recycle/reuse the materials.

### Storage:

Store in the original packaging in a horizontal position.

Storage temperature:

-20 to 45°C / -4 to 113°F.

### Handling:

Only lift the Ultra 50 packaging to its horizontal orientation using a forklift, pallet jack or with lifting straps and engine hoist, forklift or crane. Check the weight on the delivery documents and ensure the lifting apparatus used is compatible.

### Receipt:

Check that the crate packaging is in good condition and that the Ultra 50 is not damaged.

If there are any problems noted, make a formal complaint to the carrier and notify your supplier.

### Packed crate weight:

260 kg / 573 lbs

### Crate size:

850(W) x 2150(H) x 450(D)mm

33.5(W) x 84.5(H) x 18(D) inches

### Ultra 50 size:

750(W) x 2000(H) x 330(D)mm

29.5(W) x 78.7(H) x 13(D) inches

(without plugs)

### Ultra 50 weight:

165 kg / 364 lbs

## Site configuration

### Site survey:

The Ultra 50 can be installed onto a newly prepared concrete pad, or onto an existing concrete surface, with service wiring supplied through conduit via the foundation or above ground.



### CAUTION

A qualified engineer must survey the installation site to determine the correct ground preparation for the size and weight of the Ultra 50, in accordance with all local applicable codes and regulations.

If a foundation to supply power from underground is to be prepared, follow the underground power instruction for installation.

If the charger is to be installed onto an existing concrete surface, follow the above ground power instruction for installation.

The Ultra 50 is best installed following the recommended site configuration requirements.

### Ground fixing:

The Ultra 50 is to be fixed to the ground through the baseplate fixing holes with 4 x M16 or 5/8-11 inch fasteners (not supplied). The fasteners should fix the Ultra 50 securely to the foundation through the baseplate and protrude 30-40mm/1.2-1.6 inch maximum from the foundation surface, in accordance with the dimensions and fixing points shown in: Figure 5: Fixing guide.

See Figure 1: Dimensions walls or obstacles, for installation against or near walls or other obstacles.

### Foundation requirements:

The foundation must be flat, even, and the appropriate density for the weight of the Ultra 50.

Check the flatness and level of the foundation and level of the Ultra 50 baseplate prior to fixing.

### Communications:

4G network capability or Ethernet.

The Ultra 50 is fitted with a Harting external IP65 rated Ethernet port. This port can be accessed temporarily during installation. If a more permanent, sealed connection is required, use Harting external Ethernet connector, 9153000401. See page 23 for Ethernet port access.

### Site restriction:

Installation shall not be done in a commercial garage (repair facility) or closer than 6 meters/20ft of an outdoor motor fuel dispensing device.

# Site configuration

## Minimum measurement requirements:

Contact your Siemens representative for installation advice, if your minimum measurements are smaller than shown in Figure 1.

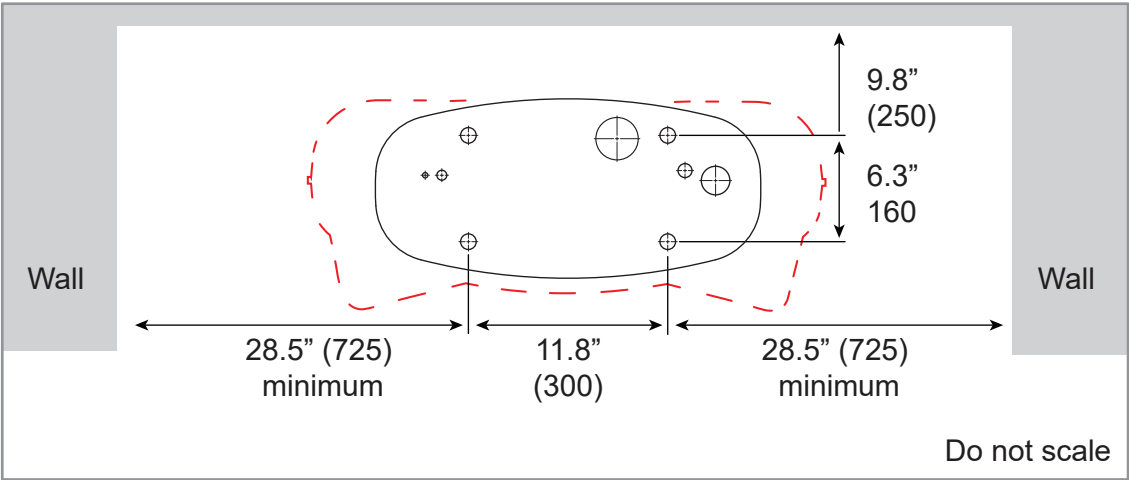


Figure 1: Dimensions walls or obstacles



## Site configuration

### Ultra 50 charging cable range:

The standard Ultra 50 cable reach is approximately 2.0 meters/6.5 feet as shown in these site layouts.

Customized lengths are also available. Contact your supplier should your requirements differ.

If longer length cables are used, please ensure the cable is kept tidy and close to the Ultra 50 sides at all times.

### Single carparking bay:

To service one car bay, 500mm/20 inches of space is recommended between the car and the Ultra 50 front and back for ease of use.

Wheel stops installed at 1200mm/4 feet from the center-front of the Ultra 50 can achieve this.

If the Ultra 50 is to be installed with its back or sides against, or near a wall or other obstacle, use the minimum distances shown in Figure 2.

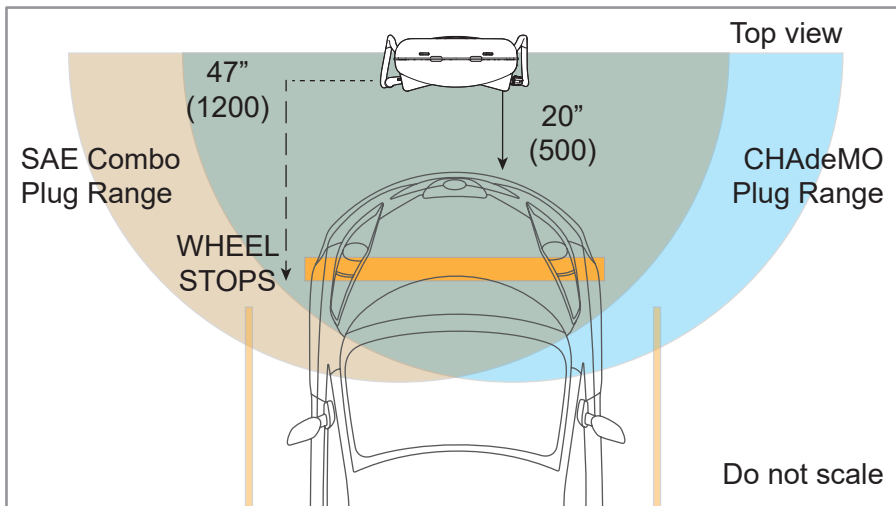


Figure 2: Single car parking minimum distances

Site configuration

Site configuration back-to-back units:

When being installed back to back, a minimum distance of 300mm/12 inches between the Ultra 50 chargers is recommended.

To ensure this minimum distance is observed, use the dimensions for foundation positioning in Figure 3.

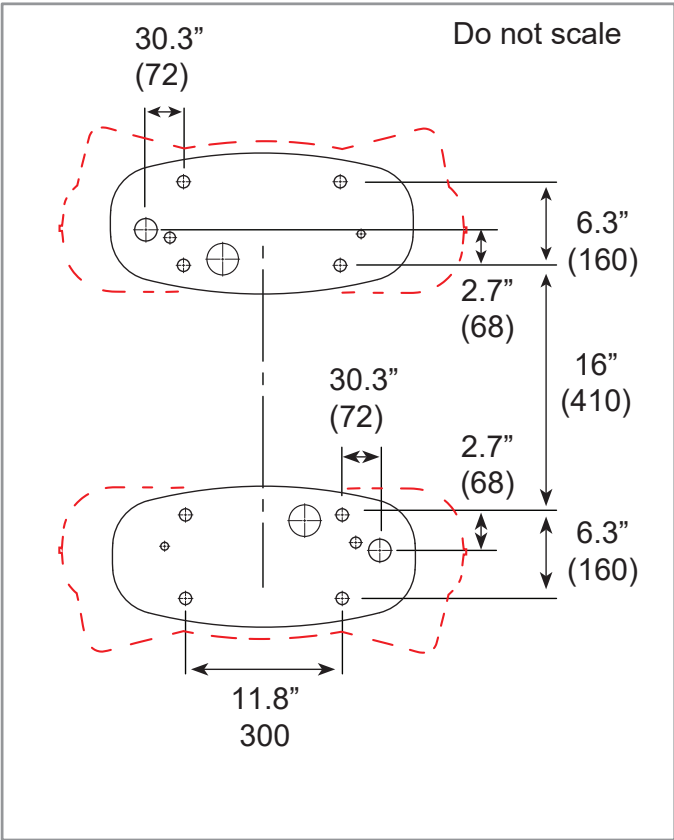


Figure 3: Back to back units

Site configuration servicing:

An additional space of 700mm/27.5 inches from the center-front of the baseplate is required to open the front panel for servicing, as shown in Figure 4.

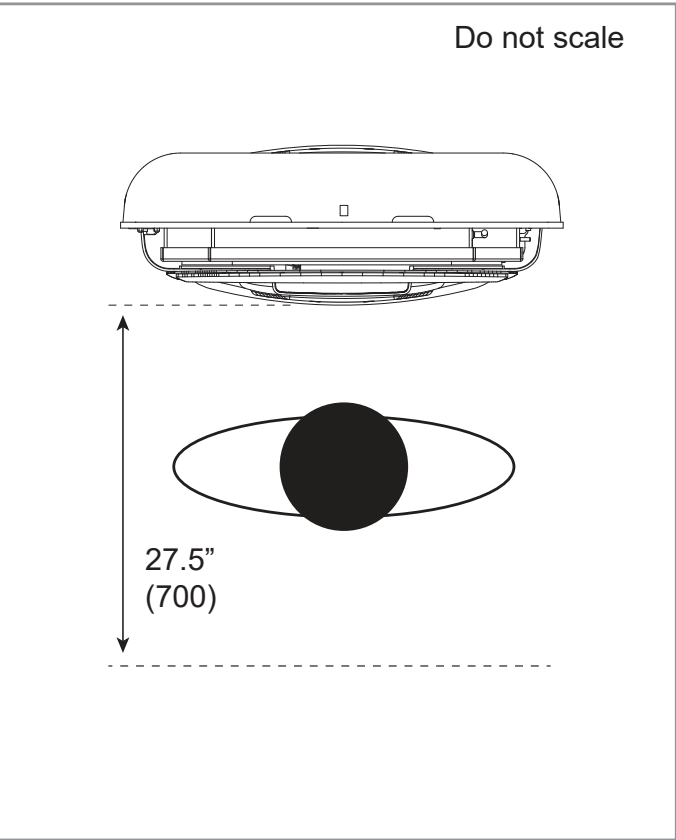


Figure 4: Servicing distance requirement

## Underground power preparation

If a concrete foundation is being prepared to bring power into the Ultra 50 through the baseplate, use the following as a guide for preparation.

Use the Ultra 50 template (supplied in the crate kit) or measure, as per Figure 5, to ensure the fixing points are correct.

Locate mounting studs and conduit within 0.05" (1.25mm) tolerance.

surface of the concrete pad, and precisely located in the 50mm power hole location in relation to the mounting studs. This ensures the sealing of the supplied Flexa conduit system into the foundation.

### Fixing points:

Use 4x 5/8-11 studs, protruding 1.2-1.6 inches above the surface. If the studs protrude more than this, it will be impossible to remove and replace the radiator if required.

### Foundation power hole:

When preparing the concrete foundation, a 1-1/4" NPT female coupling (not supplied) is to be inserted flush with the top

### Ethernet cable hole:

If hardwiring in the Ethernet, use this hole for the cabling.

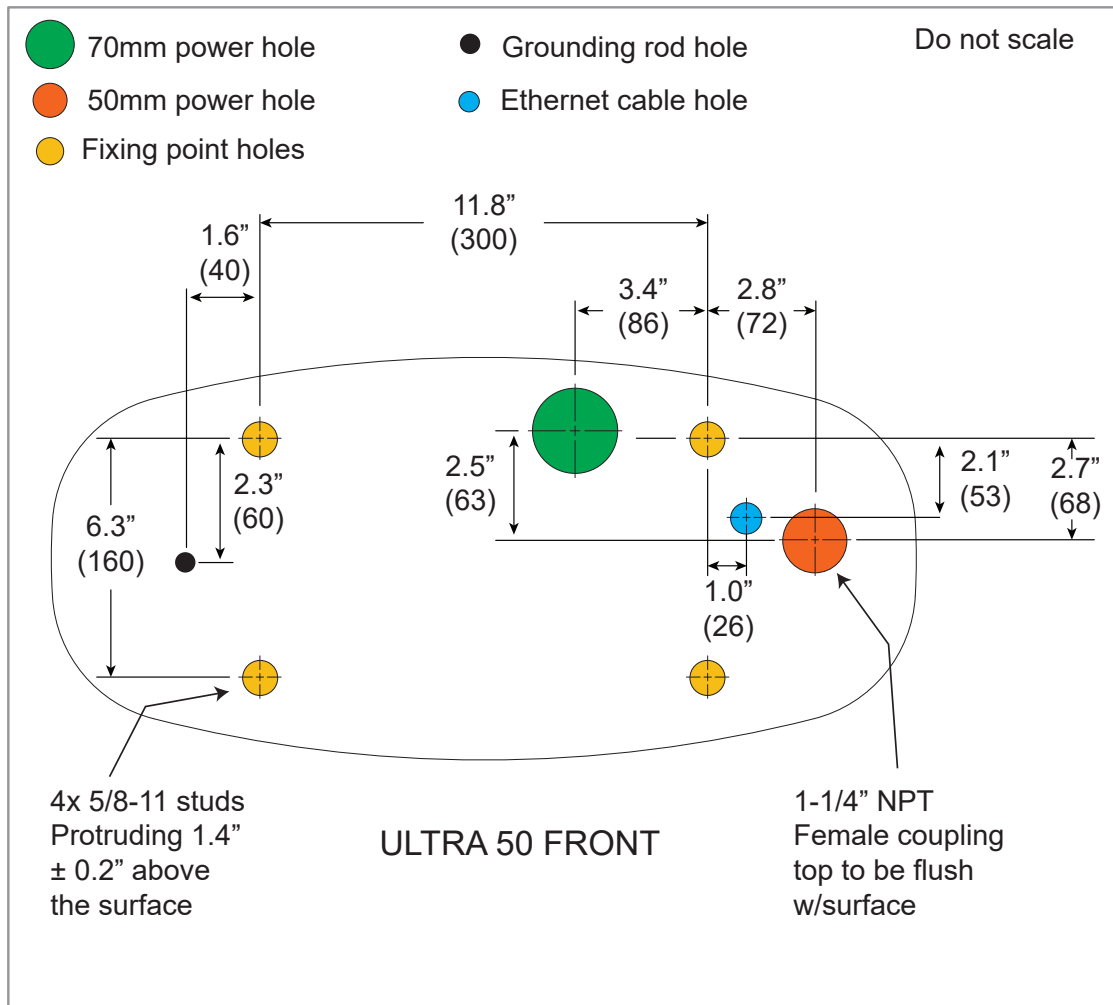


Figure 5: Mounting reference

## Above ground power preparation

If power via conduit is being supplied to the Ultra 50 above ground, the conduit will enter the Ultra 50 via the back radiator panel on the left-hand side, as shown in Figure 6.

Use the Ultra 50 template (supplied in the crate kit), or measure as per Figure 5, to ensure the fixing points are correct. Locate mounting studs and conduit within 0.05" (1.25mm) tolerance.

To ensure the correct seal is maintained into the Ultra 50, only use Flexa 1-1/4 inch ROHRflex conduit, order code 0237.202.036 (not supplied) to bring power cabling into the Ultra 50.

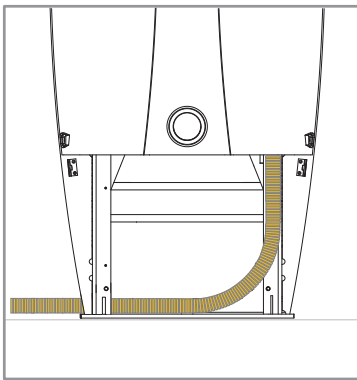


Figure 6

Leave at least 1 meter/3 feet of power cabling from the back-left fixing point, for installation as shown in Figure 7.

Prior to installation the conduit and wiring will require trimming.

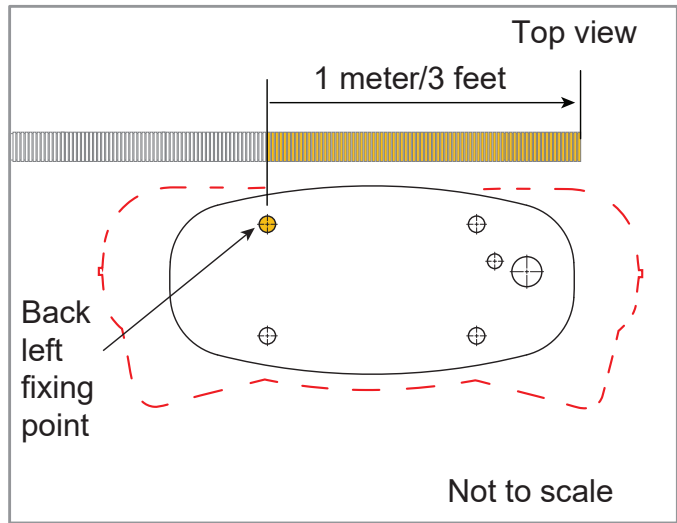


Figure 7

### Fixing points.

Use 4 x 5/8-11 studs, protruding 1.2-1.6 inches above the surface. If the studs protrude more than this it will be impossible to remove and replace the radiator, if required.

### Ethernet cable hole:

If hardwiring in the Ethernet, use the hole referenced in Figure 5.

## Installation requirements and equipment



These instructions provide a systematic guide for installing and commissioning the Ultra 50.

The Ultra 50 must be installed and serviced by qualified electrical personnel.

Observe all pertinent national, regional, and local safety regulations when you install and commission the Ultra 50.

The Ultra 50 has a NEMA Type 3R electronics enclosure rating, however, as it must be opened for installation, this is best done in dry weather or under cover to avoid moisture or debris ingress.

Installation shall not be done in a commercial garage (repair facility) or closer than 6 meters/20ft of an outdoor motor fuel dispensing device.

The Ultra 50 must be properly installed, assembled and commissioned according to these instructions before it is used. Prior to installation contact your supplier to organise commissioning information.

### Supplied with Ultra 50:

5mm pin hex tool to remove the M8 security screws fixing the plastic panels.

2.5mm hex 'L' wrench

Lifting straps

Blanking plugs are fitted for transport and storage.

Flexa conduit system

Black ferrite ring ID13x40mm

Black ferrite ring ID25x43mm

Grey ferrite ring

Baseplate template

The Ultra 50 is shipped with a temporary, single-phase power cable which allows the unit to be powered prior to installation. This allows for software updates, charger configuration and/or 4G connectivity testing. The cable has a male IEC socket and an IEC female lead is required to supply power.

If pre-installation power up is required, contact your supplier prior to the installation date to synchronize with Siemens.

### Required equipment:

Lifting apparatus. See pg 4 for weights. Ensure lifting apparatus is sufficiently rated.

For height restricted areas alternative lifting methods are available. Contact your supplier for more information.

4x M16 or 5/8 galvanised or SS washers

4x M16 or 5/8-11 galvanised nuts to match fasteners.

Flexa PN 0237.202.036 conduit (above ground power installations only).

### Tools:

Socket set & ratchet or adjustable spanner.

Allen keys or socket set hex bits.

Power driver

### Sockets required:

8mm for radiator removal and service hatch removal.

10mm socket for earthing strap removal.

16mm for removal of shipping baseplate bolts.

Approved external sealant.

DOCUMENT KEY:  

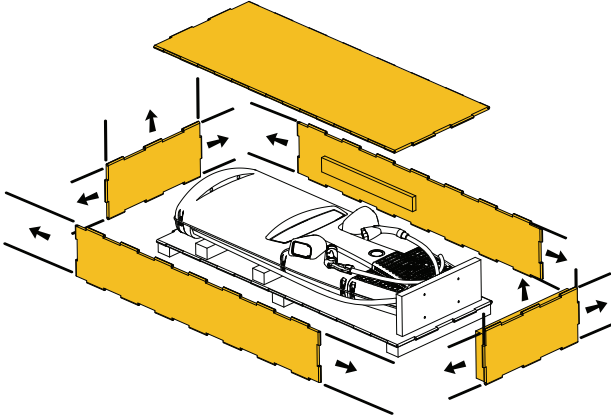
Items shown in orange are parts that require action for that step.

## Unpacking and installation preparation

### 1. Open crate

Move the crate as close to the prepared installation site as possible. Ensure there is enough room to maneuver the lifting apparatus.

Remove/slide out all crate tubes to disassemble the cardboard crate.




### 2. Lift Ultra 50 to vertical

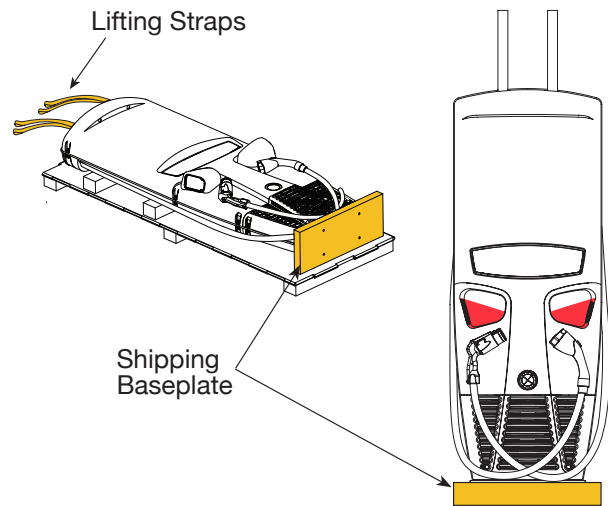
Securely attach the lifting straps at the top of Ultra 50 to the lifting apparatus and gently raise to a standing position on the shipping baseplate.

The Ultra 50 must remain attached to the lifting equipment until the mounting bolts have been installed.

**NOTE:** The Ultra 50 is 2050mm/6.72ft tall on the shipping baseplate.

 Do not use the plug holders to assist lifting the charger at any stage.

Once upright, remove all wrapping.

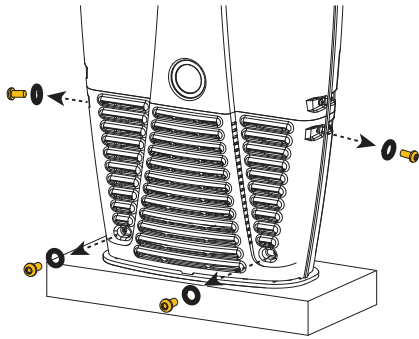


## Unpacking and installation preparation

### 3. Remove front and rear radiator panels

If access to the rear radiator panel is difficult, the internal radiator may be removed to access the rear-base fixing points. If so, remove the front radiator panel only and go to item 5.

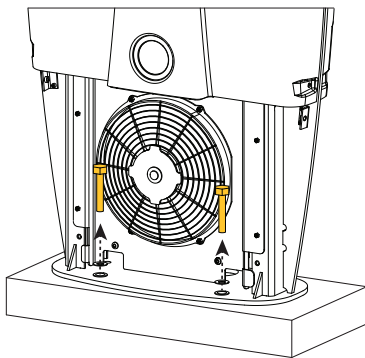
Unscrew the 8x security screws and remove them and the washers from both radiator panels using the 5mm pin hex tool. Pull the radiator panels away from the metalwork frame to remove.



### 4. Remove shipping bolts

Unscrew the 4x bolts from the shipping base to disengage. 16mm socket required.

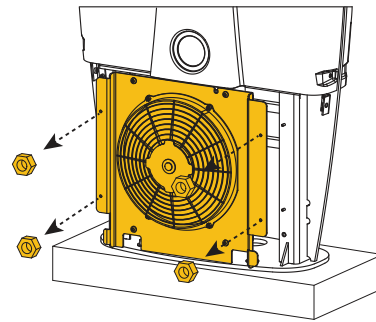
**Note:** Keep the plastic inserts from the bolts for later use.



Removing the radiator from the base of the Ultra 50 gives more space to bring power into the unit, however, removing the radiator is not always required. Assess the situation on site.

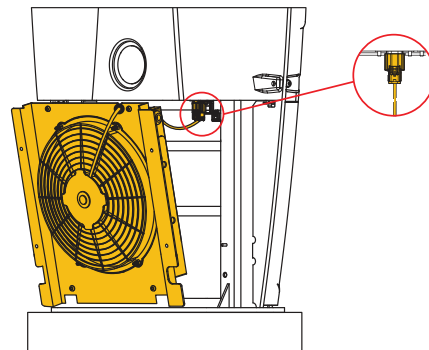
### 5. Remove radiator (optional)

Unscrew the 4x nuts using an 8mm nut driver to remove the radiator. Pull the radiator off the fasteners, and sit the radiator on the base plate.



Reach behind and unclip the four-way connector.

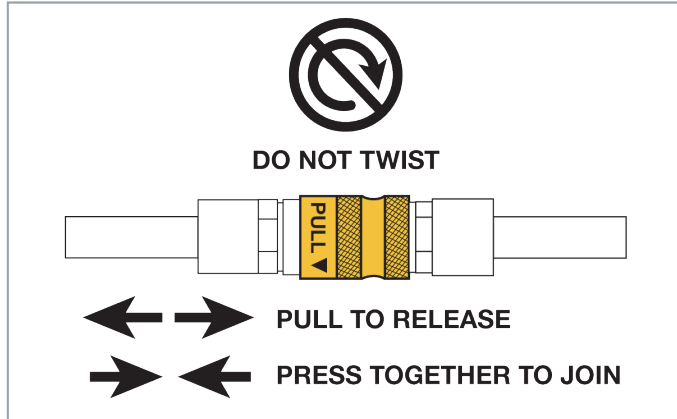
The four-way connector is the left-hand plug attached to the underside of the unit. Squeeze the front clip and pull down to release.



## Unpacking and installation preparation

The radiator cooling system must be disengaged from the unit. Unclip the two quick-release parts. One is on the base behind the radiator, the other is on the left side with the expansion bag.

**NOTE:** Do not twist or pull on the tubing engaged with the metal quick release parts. Pull on the metal parts to release, and press the metal parts together to join.



Store the radiator in a safe place ensuring no damage to cooling hoses for later re-assembly.

For the purpose of this manual, the following installation pictures are shown without the radiator.

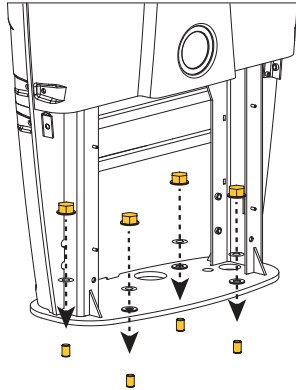


# Installation

## 1. Secure to foundation

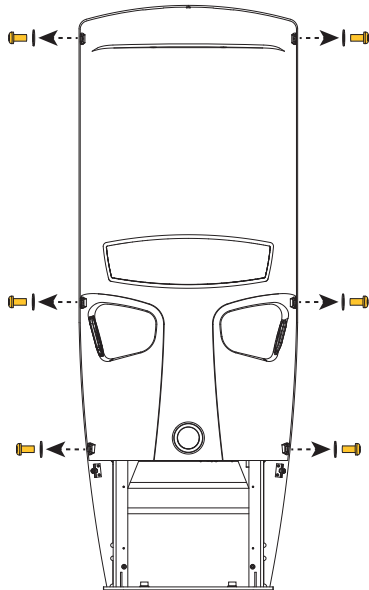
Lift the Ultra 50 by the supplied lifting straps, place onto the prepared foundation and secure with the specified fasteners.

**Note:** Use the plastic inserts you kept earlier in the baseplate holes.



## 2. Remove fasteners from front panel

Remove the 6x security screws and washers from the front panel using the provided 5mm pin hex tool.



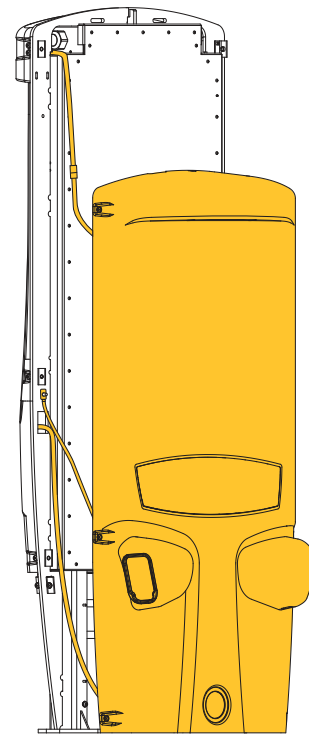
## 3. Place front panel on ground

The front panel is attached to the enclosure with wiring and an earthing strap on the front left-hand side.

Lift the front panel up to release from the top hook and gently lower to the ground in front of the Ultra 50.

In calm conditions, it may be possible to keep the front panel connected during commissioning. If this is possible, go to page 17, item 5.

If in doubt, disconnect the front panel (see pg 17, item 4) and store in a safe place until the unit is ready to close for use.

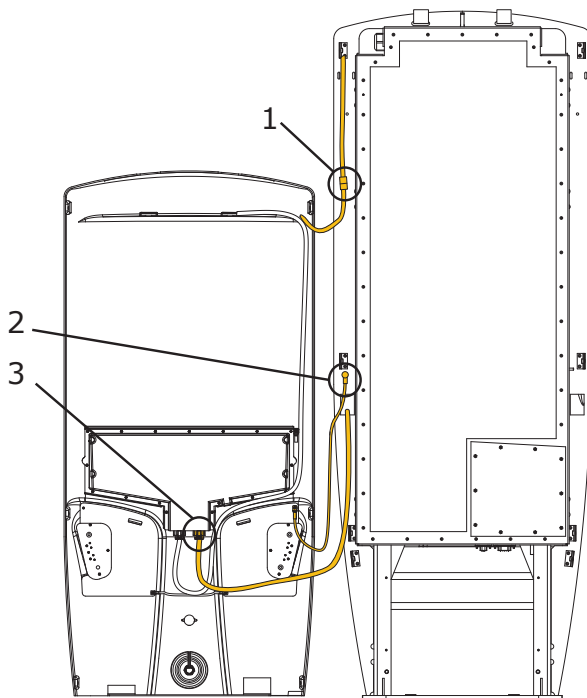


## Installation

### 4. Disconnect front panel

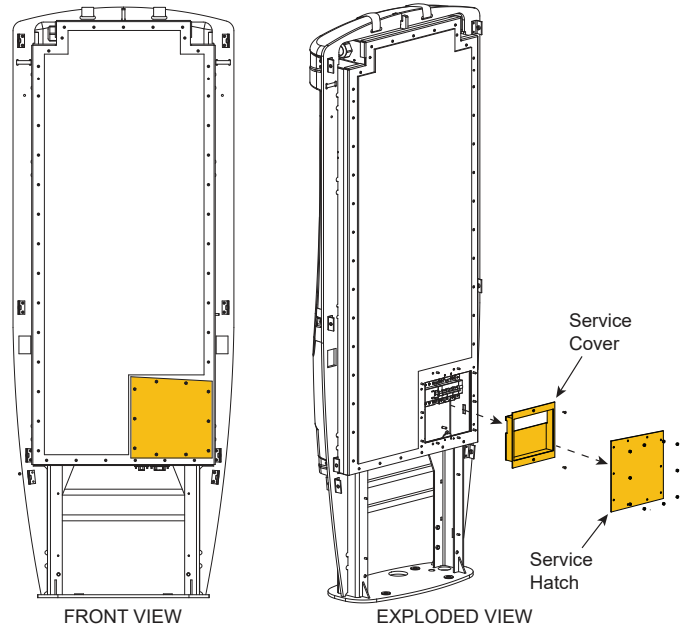
There are three points to disconnect:

1. Wiring to the top, rear panel.  
Squeeze the connector to disconnect.
2. Earthing strap.  
Unscrew the nut on the metalwork with a 10mm socket.  
Remove the nut and earthing strap lug from the stud.
3. Connector 'B' on the HMI panel.  
Connector 'B' detaches by squeezing the connector front and rear with your fingers and pulling down.



### 5. Remove service covers

To prepare the wiring for the VersiCharge Ultra, remove the service hatch and cover to allow access to the internal enclosure. Use an 8mm socket and 2.5mm hex bits.



The Service Hatch has an attached gasket. Ensure this is carefully stored to avoid damage or accumulation of debris.

### 6. Pre-installation power up

The Ultra 50 is shipped with a temporary single-phase power cable which allows the unit to be powered prior to installation. This is attached to the M40 blanking plug. This allows for software updates, charger configuration and/or 4G connectivity testing.

The cable has a male IEC socket and an IEC female lead is required to supply power.

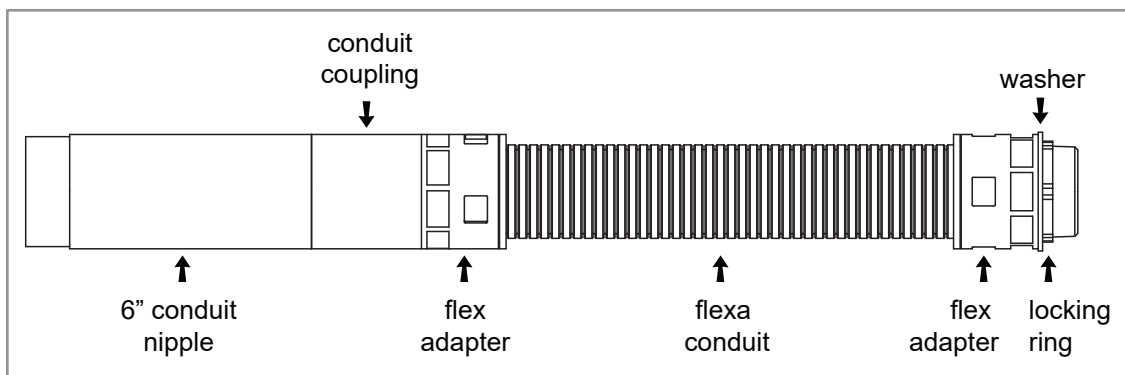
If pre-installation power up is required, contact your supplier to synchronize with Siemens.

### 7. Remove IEC cable wiring

Remove the M40 blanking plug and IEC cable wiring from the switch gear.

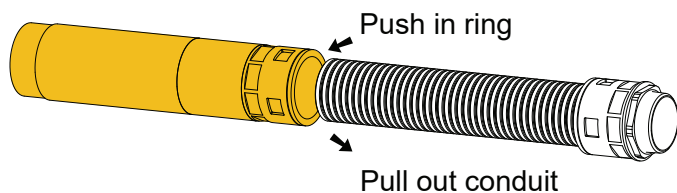
## Underground conduit and wiring

The Ultra 50 is supplied with a Flexa conduit system in the crate kit, with all parts attached.



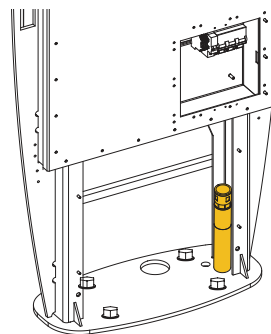
### 1. Disassemble the Flexa system

Detach all pieces of the system below the conduit. The flex adapter is removed by pushing in the adapter ring, and pulling out the conduit.



### 2. Fit Flexa system into base

Install the 6" conduit nipple, conduit coupling and flex adapter into the embedded 6" coupling (not supplied) in the foundation, using sealant on all threads.

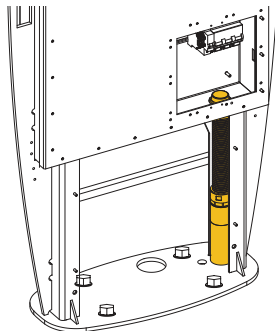


## Underground conduit and wiring

### 3. Prepare remaining Flexa system

Remove the locking ring from the remaining section of the Flexa system.

Push the Flexa conduit into the installed flex adapter to attach. Attach the top, flex adaptor into the hole inside the service hatch with the washer on the outside of the box, and secure inside with the locking ring.



### 4. Feed through wiring

Pull the wires from the service disconnect into the switchgear area running at least 12" (300mm) of wiring into the interior.

Connect the wires to the terminal block, according to the wiring diagram inside the service hatch. Also see section Wire and Commission in this document.



#### CAUTION

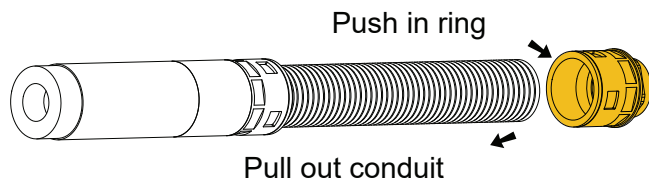
To achieve the NEMA 3R rating, the conduit must be fitted correctly into the supplied fittings.

Check that the conduit is pressed firmly into the flex adapters, and the locking ring is secure.

## Above ground conduit and wiring

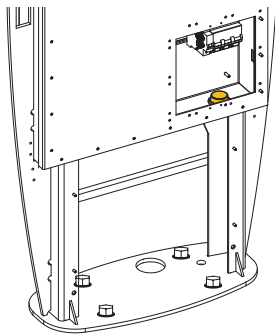
### 1. Disassemble the Flexa system

Remove the end, flex adapter by pushing in the ring of the conduit fitting, and pulling out the conduit.



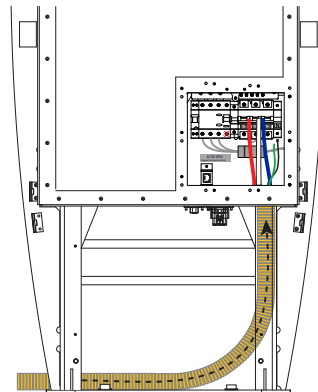
### 2. Fit Flexa adapter into enclosure box

Attach the top flex adapter into the hole inside the service hatch with the washer on the outside of the box, and secure inside with the locking ring.



### 3. Attach Flexa conduit

Feed the Flexa conduit (not supplied) from the rear left of the unit and press fit into the flex adapter. Use the slots in the rear channel to cable tie the conduit in place if necessary.



### 4. Feed through wiring

Pull the wires from the service disconnect into the switchgear area running at least 12" (300mm) of wiring into the interior.

Connect the wires to the terminal block according to the wiring diagram inside the service hatch. Also see section Wire and Commission in this document.




### CAUTION

To achieve the NEMA 3R rating, the conduit must be fitted correctly into the supplied fitting.

Check that the conduit is pressed firmly into the flex adapters, and the locking ring is secure.

Wire and commission

 **CAUTION**

Wiring and commissioning the charger is to be done by qualified electrical personnel only.

The wiring diagram is also available on the inside of the Service Hatch.


In all cases:

Use Copper Conductors only.

Check that the wiring is sitting behind the lower face of the switch gear so they will not interfere with the service cover.

When completed, switch on the breaker and check the interface panel on the front door is cycling through the icons. Each icon will be lit in turn on the interface panel.

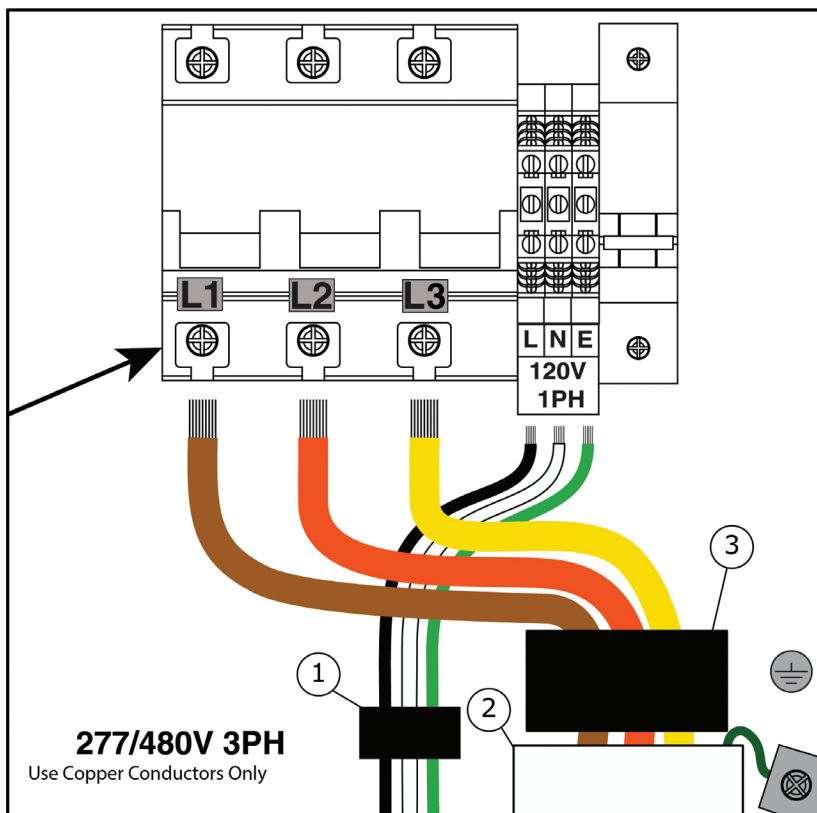
Contact your supplier to run through the diagnostic testing to commission the unit.

 **CAUTION**

When the wiring and cabling is connected, refit the service cover BEFORE you turn on power supply to the charger.

The power supply to the charger should never be on without the service cover fitted.

## Wire and commission



### WIRING DIAGRAM

All single phase wires through small black ferrite (1) only:

Small black	=	L
Small white	=	N
Small Green/Yellow	=	E

**IMPORTANT NOTE:** ALL WIRING MUST SIT BEHIND THE SWITCHGEAR SURFACE INDICATED BY THE ARROW TO AVOID INTERFERENCE WITH THE SERVICE COVER.

All 3 phase and grounding wire through large grey ferrite (2).  
3 phase only through large black ferrite (3).  
Connect all phase wiring in accordance with local regulations.

Trim the wires leaving a minimum of 300mm/12 inches exposed.

Single-phase wires thread through the small, black ferrite (1) only.

Three-phase brown, orange, yellow, and green/yellow ground wiring thread firstly through the large grey ferrite (2).

Three-phase brown, orange, yellow only thread through the large black ferrite (3).

Bend the wires to the side of the ferrite rings and up into the connection points.

Check that the wiring is sitting behind the lower face of the switch gear so they will not interfere with the service cover.

Tightening Torque:

Breaker 4.0 Nm/35 lb-in

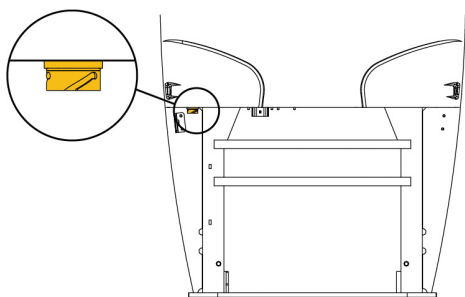
Check the breaker terminals are tightened to the above settings.

## Ethernet port access

The Ethernet port is situated under the enclosure box on the back left. The rear, radiator panel must be removed to access this location.

Twist to disengage the cap and plug in the Ethernet cable.

If hardwiring in the Ethernet cable, please see page 5 for connector details.





## Closing checklist

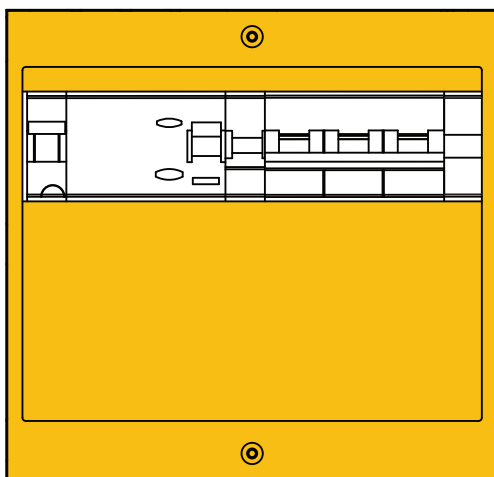
Once the charger has been commissioned, the unit requires re-assembly and closing prior to operation.

Follow these steps in order to ready the unit for operation:

### 1. Remove lifting straps

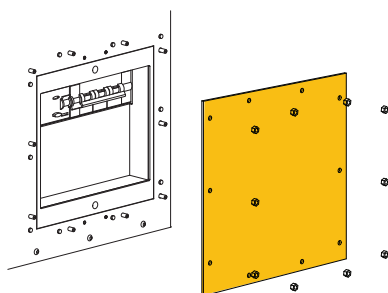
Carefully remove the lifting straps from the top slots in the metalwork.

### 2. Attach service cover



Place the Service Cover over the switch gear, and ensure it sits flush with the metalwork panel, prior to fastening with screws with a 2.5mm hex bit. If it doesn't sit flush, remove and ensure the wiring is sitting behind the lower face of the switch gear.

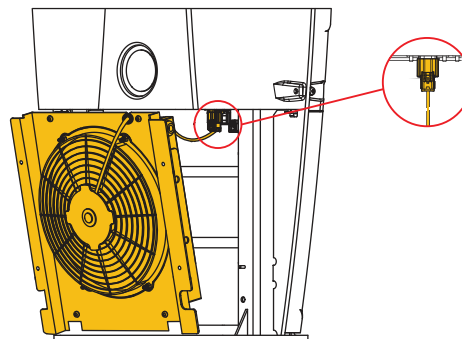
### 3. Attach service hatch over service cover



Check the gasket has not been damaged or soiled. If using a power drill to fasten the nuts, ensure the correct torque setting of not greater than 2.0 Nm/17.70 lb-in.

If using a hand tool, fasten until resistance felt. Do not over tighten.

### 4. Re-attach radiator (if required)



- Angle the radiator and rest on the baseplate.
- Re-connect the four-way connector.
- Re-connect cooling hoses by pressing the metal parts together, and ensure they are sitting out of the way, to avoid pinching the hose or obstructing the radiator.



### CAUTION

Ensure there is no leakage at this point.



**DO NOT TWIST**



**PULL TO RELEASE**



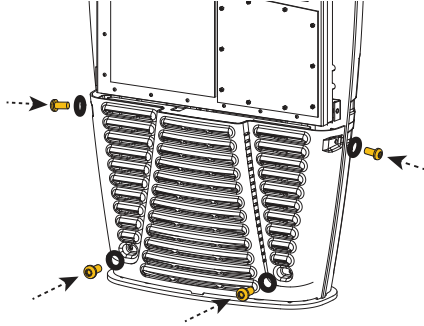
**PRESS TOGETHER TO JOIN**

## Closing checklist

- Place the radiator onto the fixing studs.
- Fasten the radiator onto the studs with the supplied nuts using an 8mm socket.

### 5. Replace cap on Ethernet port

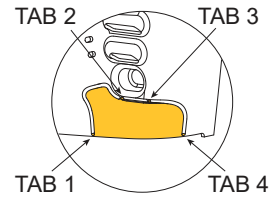
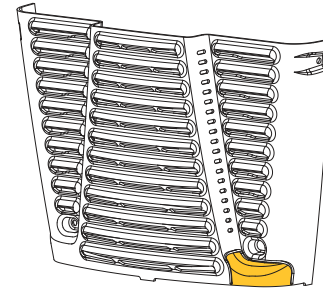
### 6. Attach front/rear radiator panels



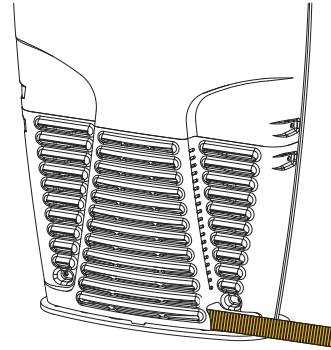
Sit the radiator panel on the base and against the metalwork, lining up the plastic holes with the bracket nuts. Fasten with nylon washers and security screws using the 5mm Pin Hex tool. Do not over tighten.

If the power is above ground, the rear radiator panel provides the exit point for the conduit from the Ultra 50.

Cut the four tabs on the lower, right hand of the radiator panel to remove the material to open the conduit exit point.



Replace the rear radiator panel ensuring the conduit is fitted securely within this exit area.



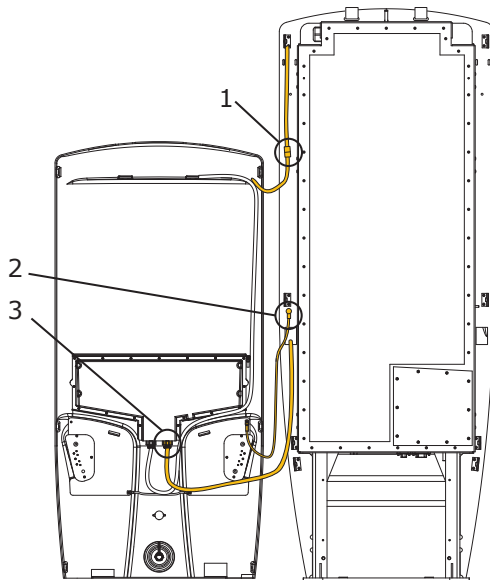
If there are more than two conduit hoses (possible Ethernet cable in conduit) place the largest at the base with the smaller feeding above.

## Closing checklist

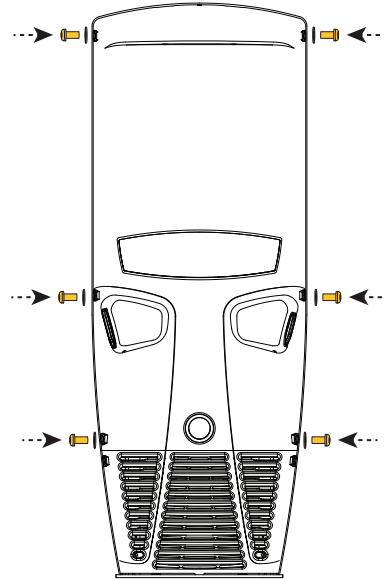
### 7. Re-attach front panel wiring

If required, there are three points to re-connect:

1. Wiring to the top, rear panel.  
Plug in connector.
2. Earthing strap.  
Replace the earthing strap lug on the stud and secure with the nut using a 10mm socket.
3. Connector 'B' on the HMI panel.  
Plug in Connector 'B'.



### 8. Attach front panel



Gently place the front panel on the top hook ensuring the panel sits outside the fastening brackets. Check that the top hook is engaged. It will hold in position. Secure with the nylon washers and security screws with the 5mm Pin Hex tool ensuring the plastic holes line up with the bracket nutserts. Do not over tighten.

The Ultra 50 fast charger is now ready for operation.

**Legal Manufacturer**

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