



SERVICE CENTER INFORMATION

SCI18-85

DATE :	November 2018	SECTION : 23 ACCESSORIES
SUBJECT :	Prevost Ultimate Entertainment System- Icomera X-CUBE Installation - Volvo 9700	

First Release

12-21-2018

APPLICATION

Model	VIN
Volvo 9700 Coaches Model Year : ALL	All Vehicles

DESCRIPTION

The intent of this procedure is to guide you through the steps required to install the Prevost Ultimate Entertainment System components in a Volvo 9700 coach.

The procedure describes the steps required to proceed to a *typical installation* in the vehicle second parcel rack. *Custom installations are possible*; refer to the general guidelines table at the end of the procedure for important requirements when installing the system other locations.

SPECIAL TOOLS & MATERIAL

Part No.	Description	Qty
682989	Silicone remover 5 liters	1
684685	Black sealant - Simson ISR 70-03	1
7770447	Snap-on FC48A crow foot 1-1/2" x 3/8" drive	1
7775182	Prevost antenna tool	1
-	Small angle grinder & cutting disk	1

MATERIAL

Order kit #SCI18-85 which includes the following parts:

Part No.	Description	Qty
900240	Module Icomera X-CUBE Advanced (1tb)	1
900268	Harness Power Module Icomera X-CUBE	1
900274	Antenna dual LTE,WIFI, GPS M-band, 6' (2m)	1
900275	Antenna dual LTE, multiband, 15'	1
900388	Antenna WIFI cable RFC cat2, port 1	1
900396	Antenna WIFI cable RFC cat2, port 2	1
900397	Antenna WIFI cable RFC cat2, port 3	1
900223	Antenne WIFI hs sensity MIMO, 2.4-5ghz	1
400835	Icomera WIFI antenna bracket	1
504013	Cable tie mount, black 1/4"	8
500613	Scr tp pan ph Z050 #10x1/2	8
504637	Cable tie, nylon blk (std)	30
5001299	Scr ma pan ph SS 10-32x3/4	2
500519	Nut well 10-32x.518	2
500638	Scr tp bdg ph z050 #8x1/2	5
500865	Scr tp bdg ph z050 #12x1 1/2	4
285478	Bushing/spacer	4
061515	Ground cable	1
504398	Grommet 1.375x.062x.437x1.75	1
563061	In-line fuse holder ATO	1
562407	Fuse, blade 10A	1
562228	Butt splice 16-14	3
561246	Terminal Ring 3/8"	2
560784	Shrink tubing double wall 0.25"-0.08"	1ft
561681	Loom nyl .35id black slt	1ft
562218	Plas. conv nyl 1.0ID black	1ft
560669	Wire, 16 AWG, GXL, Red	20ft
560673	Wire, 16 AWG, GXL, Black	20ft
562387	Plas. conv .25ID Black slt	20ft

NOTE

Material can be obtained through regular channels.

PROCEDURE



DANGER

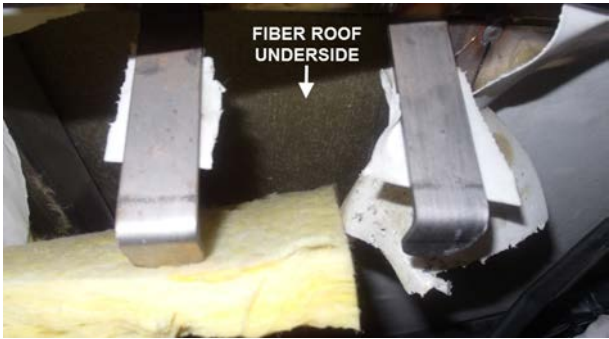
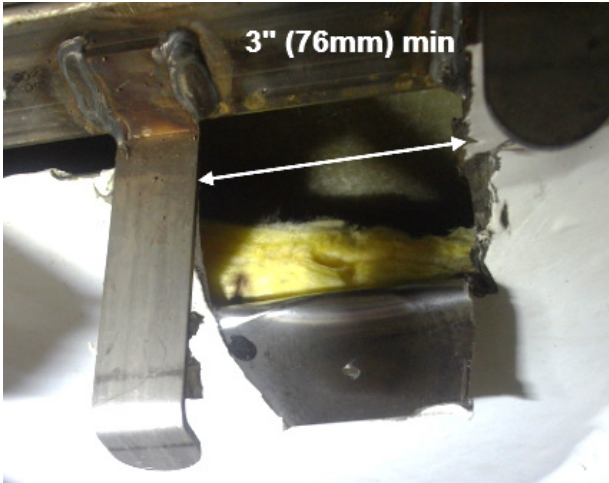
Park vehicle safely, apply parking brake, stop engine. Prior to working on the vehicle, set the ignition switch to the OFF position and the battery master switch (master cut-out) to the OFF position.

1. Open the first left (driver) and right (entrance door) parcel rack compartments and remove both covers to access the overhead area.



2. On the right (entrance) side, remove some of the insulating material between the two "L" shaped brackets. Remove just enough to expose the underside of the fiber roof.



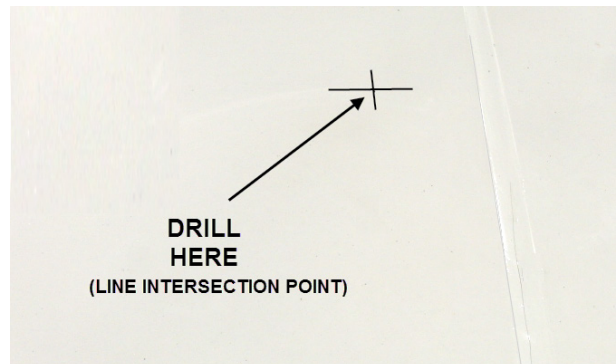
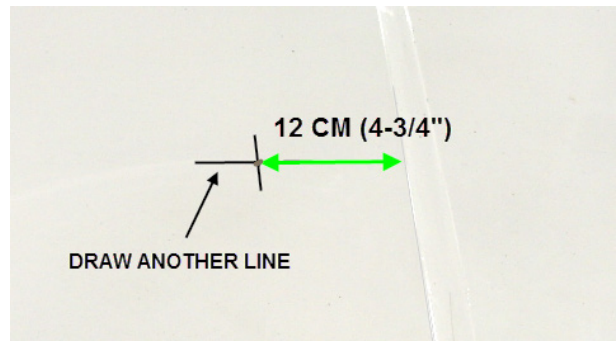
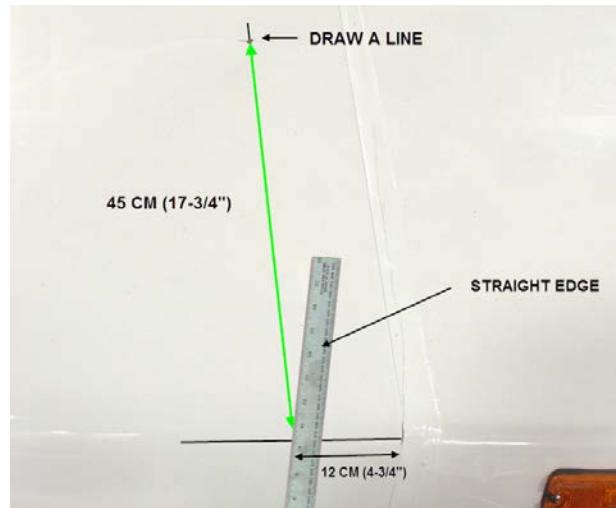
	 FIBER ROOF UNDERSIDE
3. On the driver's side, an opening in the stainless sheet metal must be cut between the "L" brackets to access the roof. - First remove part of the foam under layer from the stainless sheet. - Insert a rotary cutter (with a fine cutting disk) between the brackets (bent the brackets as necessary) and cut the stainless sheet to produce at least a 3-inch opening (alternately, a 3 1/2-inch stainless steel compatible (carbide) hole saw with a shortened drill bit can also be used in conjunction with a small angled drill) .  CAUTION • Protect the area under and around the cut with a welding blanket to prevent fire/damage from metal sparks – Air ducting is particularly at risk in this area. • Wear appropriate eye protection.	 3" (76mm) min

4. Mark the antenna locations on both sides of the vehicle roof.

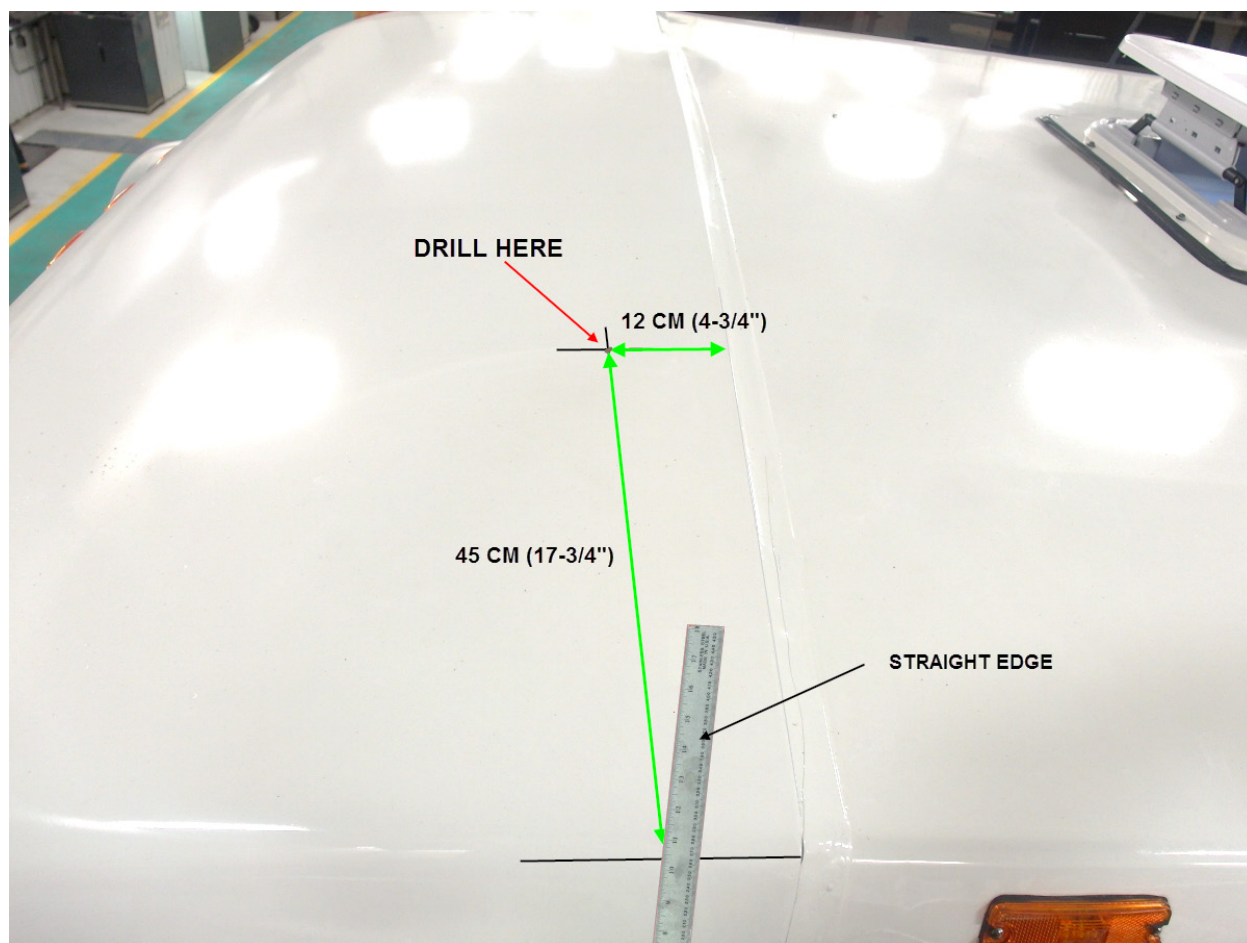


DANGER

- Do not climb on the vehicle roof without appropriate safety harness and life line.
 - The use of an approved elevator (scissor lift) is highly recommended.
- Put a straight edge or ruler on the side of the vehicle roof at approximately 12cm (4.75") from the edge (sealant joint) of the fiberglass part of the roof.
- From this starting point, draw a line on the roof at the 45cm (17.75") mark (front to rear of the vehicle).
- From the edge of the fiberglass roof draw another line at the 12cm mark (from left to right).
- The intersection of both lines indicates the drilling position for the antenna.
- Repeat the process on the other side of the vehicle

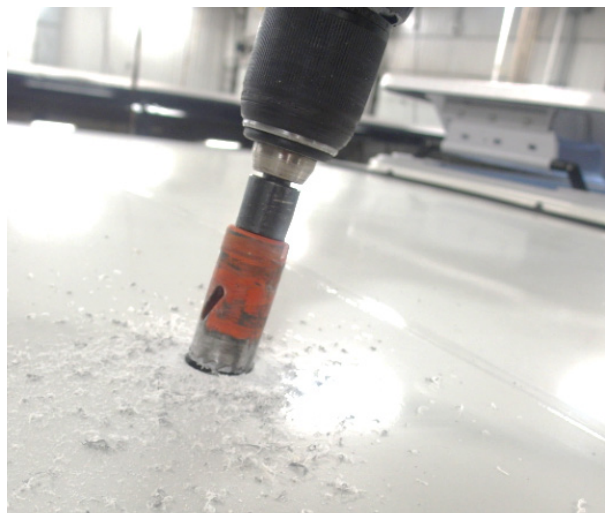


ANTENNA HOLE LOCATION ON ROOF (DRIVER'S SIDE SHOWN)

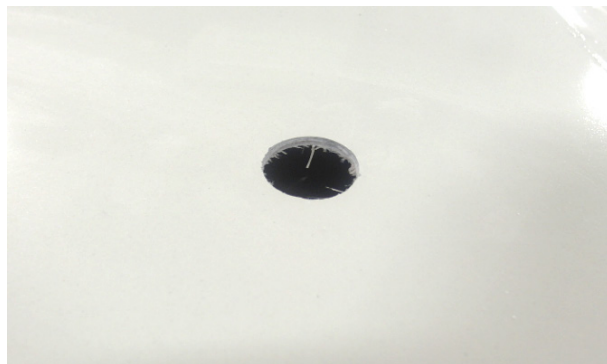


5. Drill the antenna mounting holes in the vehicle roof.

- Use a 1in hole cutter (hole saw) and drill at the determined points on both sides of the vehicle.



- Remove sharp edges as required (exterior) & remove debris from the vehicle roof.



6. Install the antenna on the vehicle roof

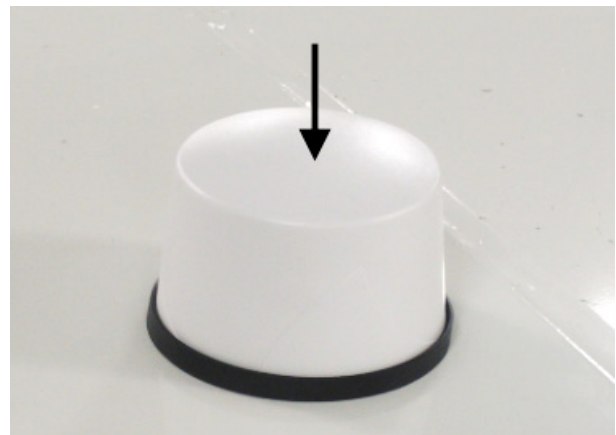
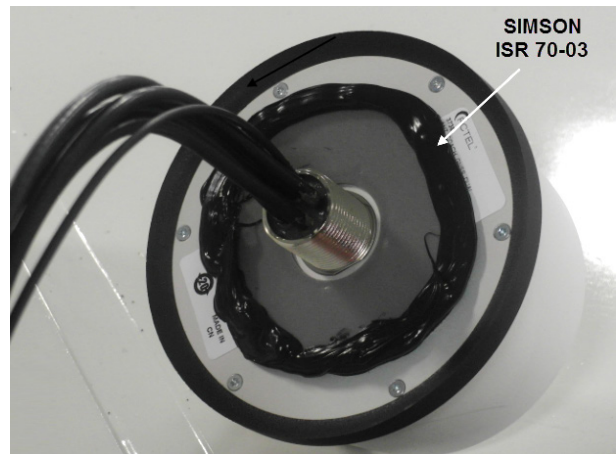
IMPORTANT

*The antenna **900274** with the smaller GPS cable (5 cables total) must be installed on the driver side of the vehicle.*

- Clean the hole area with anti-silicone cleaner.
- Pass the antenna cables through the hole and route them in the parcel rack.



- Apply a large bead of black Simson ISR 70-03 sealant around the antenna center adhesive (peel-off the adhesive protector).
- Carefully insert the antenna in its location and apply pressure to ensure complete contact of the sealant with the roof.
- Repeat the process on the other side of the vehicle with antenna **900275** (4 cables).



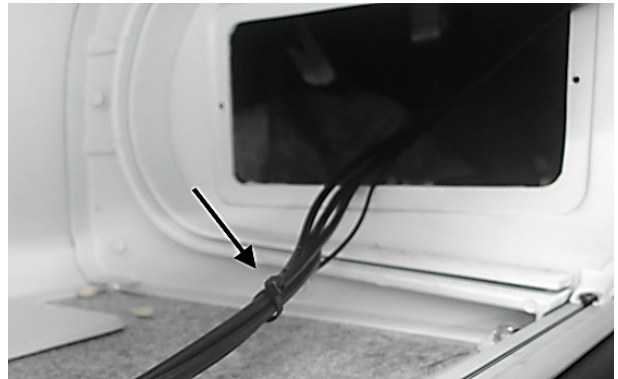
7. Secure the antennas to the vehicle roof.
- Snugly hand tight the antenna slotted mounting nuts inside the vehicle left and right compartments.
 - Screw the mounting nuts enough to compress the antenna base rubber seal.
 - Apply final torque to both nuts to finalize the antennas installation on the vehicle roof.

Prevost special tool # **7775182** and **7770447** (mounted on a 3/8" drive torque wrench) are recommended.

TORQUE: 9 to 14 Nm (80 to 120 lb-in)



8. On both sides, pass the antenna cables through the opening in the parcel rack and secure the cables together in several places using nylon cable ties (driver's side shown).



9. Route the right side antenna cables to the left (driver's) side parcel rack compartment.

- Pass a flexible steel rod or a steel fish tape from the retractable sun shade opening up through the parcel rack area.
- Tape the connector ends of the antenna cables to the rod and pull to "fish" them through the sunshade opening.
- Route the antenna cables through the entire sunshade opening up to the driver's side area (make sure the cables are routed over the sunshade).



- Pass the cables in the parcel rack area (use the fishing tape as required).



10. Secure the antenna cables to the "L" bracket.

- Insert all antenna cables (9 total) in a length of supplied **562218** 1 inch convoluted tubing.
- Secure the cables and convoluted tubing to one of the "L" shaped brackets inside the left overhead compartment with one of the supplied cable ties (shorten the tubing as req.).
- Add two more cable ties at both ends of the tubing to secure to the cables.



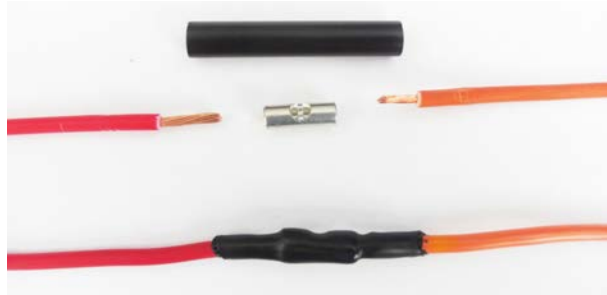
11. Prepare the X-CUBE power cable using the supplied material.

- Connect the supplied fuse holder **563061** to one end of the red wire **560669** (20ft). Use supplied butt splice **562407**.
- Connect a round terminal **561246** to the other end of the fuse holder.
- Connect the other supplied round terminal to the black wire **560673** (20ft).

IMPORTANT

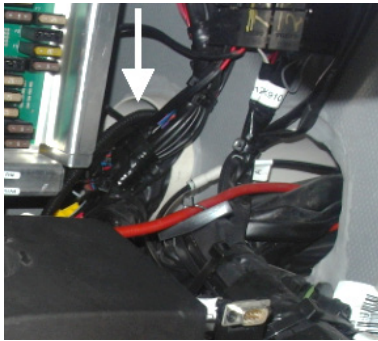
*Solder all connections, protect with supplied shrink tubing **560784***

- Tape the black and red wires together every 18in (+/- 45cm) and insert the jointed wires in the convoluted plastic tubing **562218** (20ft) (cut to length the tubing, as required to expose the fuse holder part).
- Insert the ATO 10A fuse **562407** supplied with the kit.



12. Route the power cable from the front Junction Box to the front electrical compartment.

- Open the vehicle electrical compartment, one access trap is located behind the driver's seat (move seat forward); the other is in front of the passenger seat (first row).
- In the vehicle front junction box (located in the stair area), locate the pass through canalization that connects the junction box to the electrical compartment (rearmost canalization).

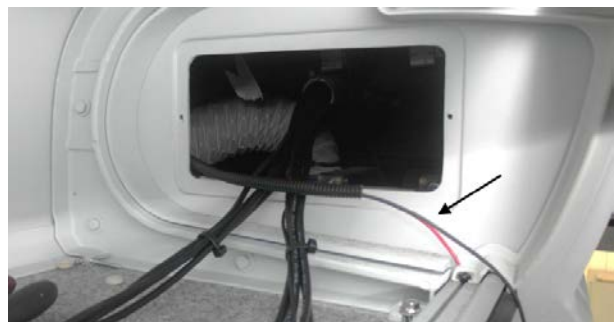
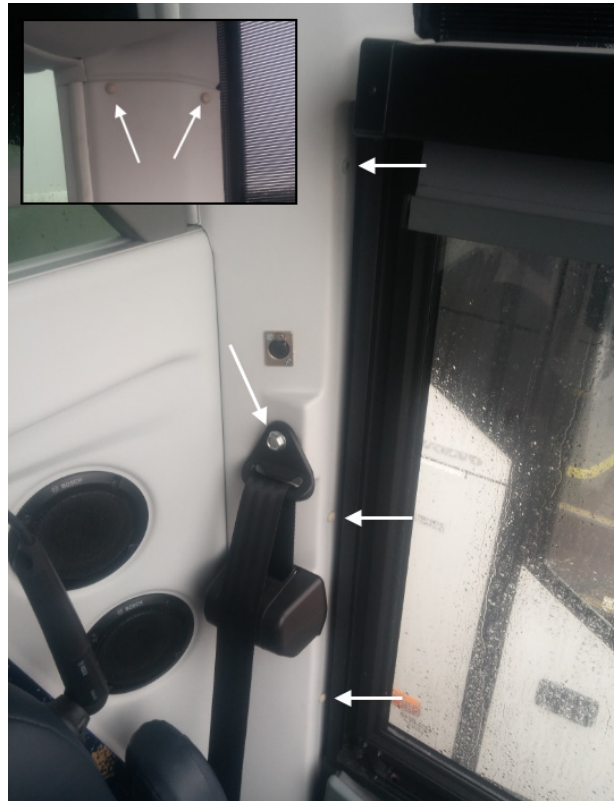


- Pass a flexible steel rod or a steel fish tape from the electric compartment to the front junction box.
- Tape the ends of the black and red wires (ends without connectors) to the rod and slowly pull to pass the wires through the canalizations and in the electrical compartment.



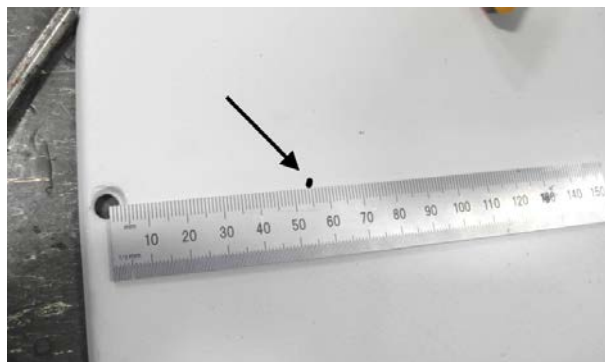
13. Route the power cable from the front electrical compartment to the driver's side parcel rack.

- Unfasten the pillar cover in the driver's area to access the electrical cables routed behind it (seatbelt may need to be removed first).
- Pass a flexible steel rod or a steel fish tape from the pillar area down to the electric compartment.
- Tape the ends of the black and red wires to the rod and slowly pull to pass the wires through the pillar area.
- Pass the rod from the overhead compartment down to the pillar area and tape the black and red wires.
- Pull carefully to pass the wires through the overhead compartment up to the parcel rack.



14. Pass the antenna cables through the left overhead cover.

- Mark the cover at +/- 55mm (2-1/4") from the screw hole centerline.
- Drill a 1-3/8" (35mm) opening in the cover.
- Install the supplied **504398** grommet in the cover opening.
- Pass the antenna connectors through the cover grommet (one by one starting with the bigger GPS connector).

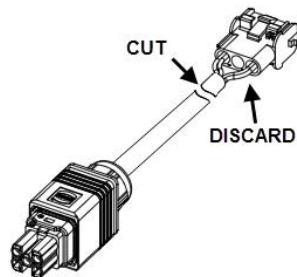


15. Insert the Icomera factory power cable through the grommet and connect the cable to the black and red wires.

- Insert the Icomera cable through the grommet.

NOTE

If a 3 prongs connector is factory installed at the end of the cable, cut and discard the 3 prongs connector.



- Twist the cable wires number 1 and 2 together.
- Twist the cable wires number 3 and 4 together.

NOTE

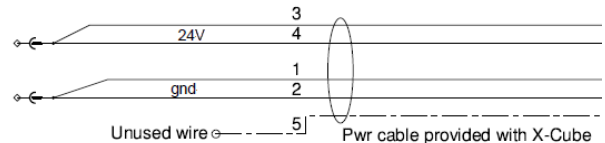
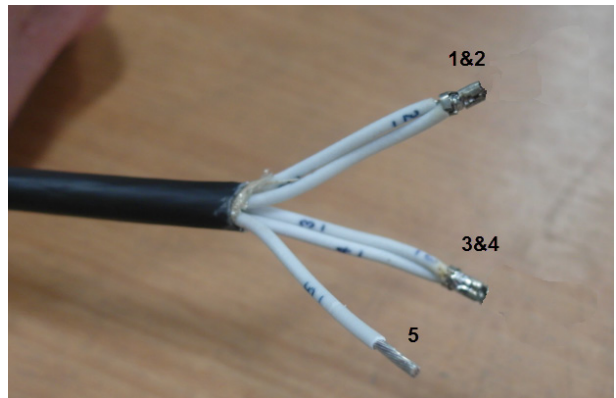
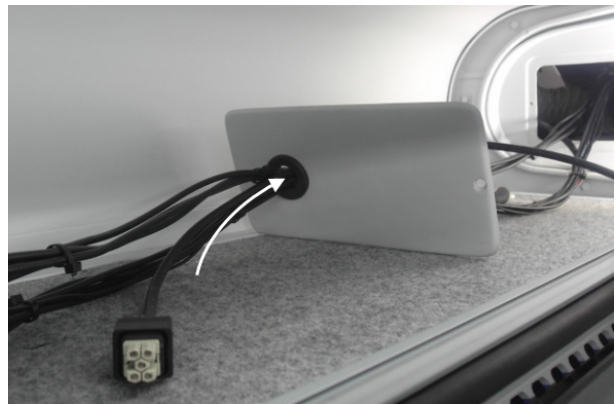
Wires are numbered.

- Connect the black wire to the number 1 and 2 wires of the Icomera cable (gnd).
- Connect the red wire to the number 3 and 4 wires of the Icomera cable (24V).
- Wire number 5 of the Icomera cable is not used.

IMPORTANT

*Solder all connections, use supplied **562228** butt splices and protect with supplied shrink tubing **560784***

- Cover the connection with a length of 0.25" ID **562387** convoluted tubing.
- Add a shorter length of 0.35" ID **561681** convoluted tubing over the larger diameter part of the cable (tape the ends to secure in place).

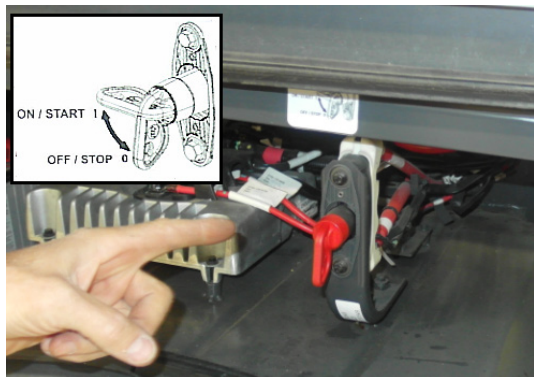


16. Connect the power harness to the vehicle power source in the front junction box.

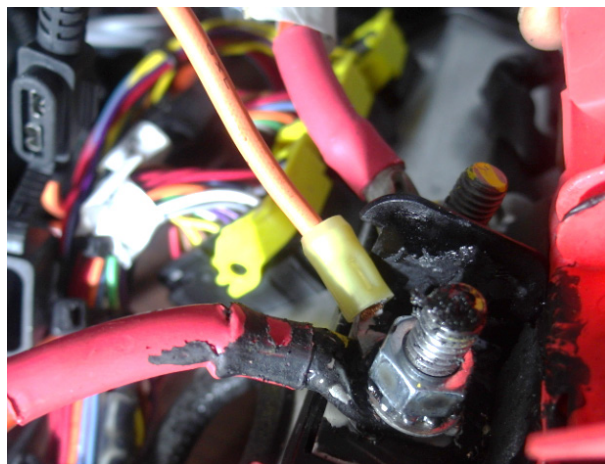
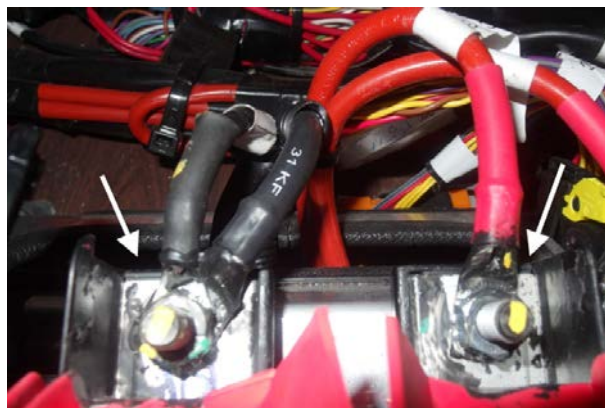
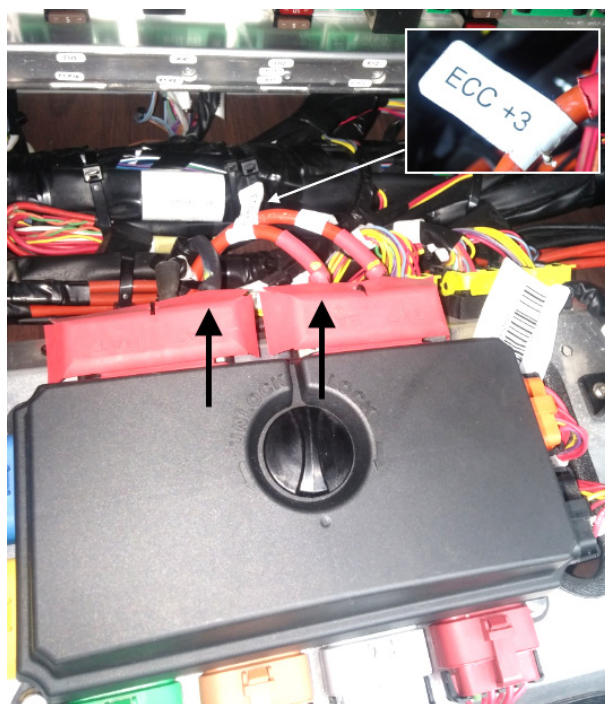


CAUTION

Make sure that the main power switch is set to the OFF position (flipped down).



- In the front junction box, locate the fuse box ECC+30 power cable and corresponding ground next to it.
- Lift the protective rubber caps (BAT+ and BAT-) to expose the cable connections and remove the holding nuts from the stud connectors.
- Connect the fuse holder side of the harness to the ECC+30 stud connector.



- Connect the harness black wire to the ground connection (BAT- / black cables) next to it.
- Put a layer of protective rubber coating to the terminals and flip back the protective covers.

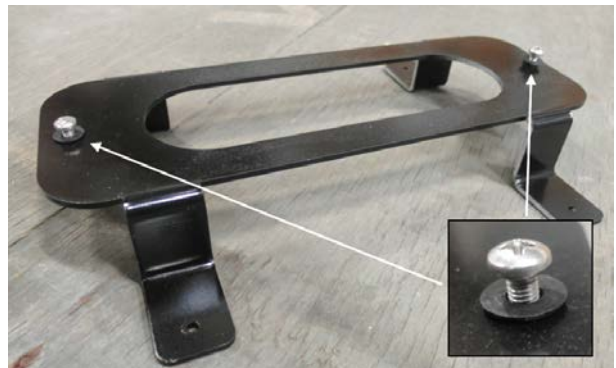
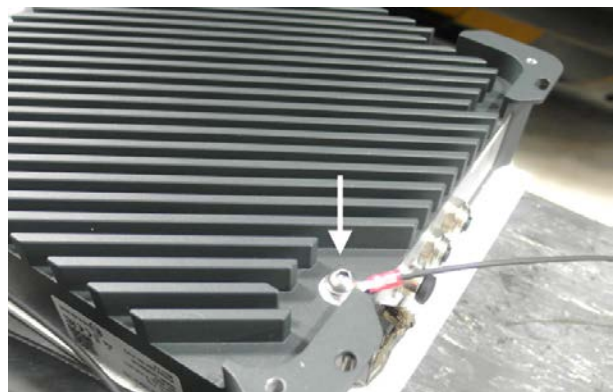


17. Position the Icomera X-CUBE module and WIFI antenna in the parcel rack.

- Connect the supplied ground cable **061515** to the underside of the X-CUBE **900240** module body.
- Place the X-CUBE module in the parcel rack. For ease of connection; *do not secure* the module to the parcel rack floor at this point.
- Install the WIFI inside antenna **900223** on the antenna bracket **400835**, secure using nut wells **500519** and **5001299** screws.



- Connect the WIFI short cables **900388**, **900396** and **900397** to the underside of the antenna.



Cables are identified PORT1, PORT2 and PORT3; Make sure they are connected to the corresponding antenna ports (WIFI 1, WIFI 2 and WIFI 3).



- Position the antenna and cables in the parcel rack next to the X-CUBE module. *Do not secure* to the parcel rack at this time.



18. Connect the X-CUBE module to antennas and power source.

IMPORTANT

All cables are identified close to their connectors.

Double check and make sure all cables are connected at their respective position.

- Pass the ground cable of the module through the grommet and connect to the vehicle chassis in the overhead compartment using one of the **500638** screws.



- Connect the WIFI inside antenna to the X-CUBE module W1-1, W1-2 and W1-3 ports.
- Connect the driver side antenna to port W2-1, W2-2, C3-M & C4-A of the X-CUBE module.
- Connect the driver side GPS cable to the GPS connection of the module.
- Connect the curb (entrance door) antenna to port C3-A, C4-M, C5-A and C5-M of the X-CUBE module.
- Connector W2-3 is not used
- Connect the X-CUBE power cable.

INSIDE WIFI ANTENNA connection to X-Cube



ANTENNA X-CUBE
WIFI 1 = W1
WIFI 2 = W2
WIFI 3 = W3

DRIVER SIDE ANTENNA connection to X-Cube (2 x WIFI - 2X LTE - GPS)

Connect one of the antenna WIFI cable to W2-1

Connect the other antenna WIFI cable to W2-2

Connect one of the antenna LTE cable to C3-M

Connect the other LTE cable to C4-A

IMPORTANT: Do not connect both LTE cables to C3 or C4

Connect the GPS on the large connector



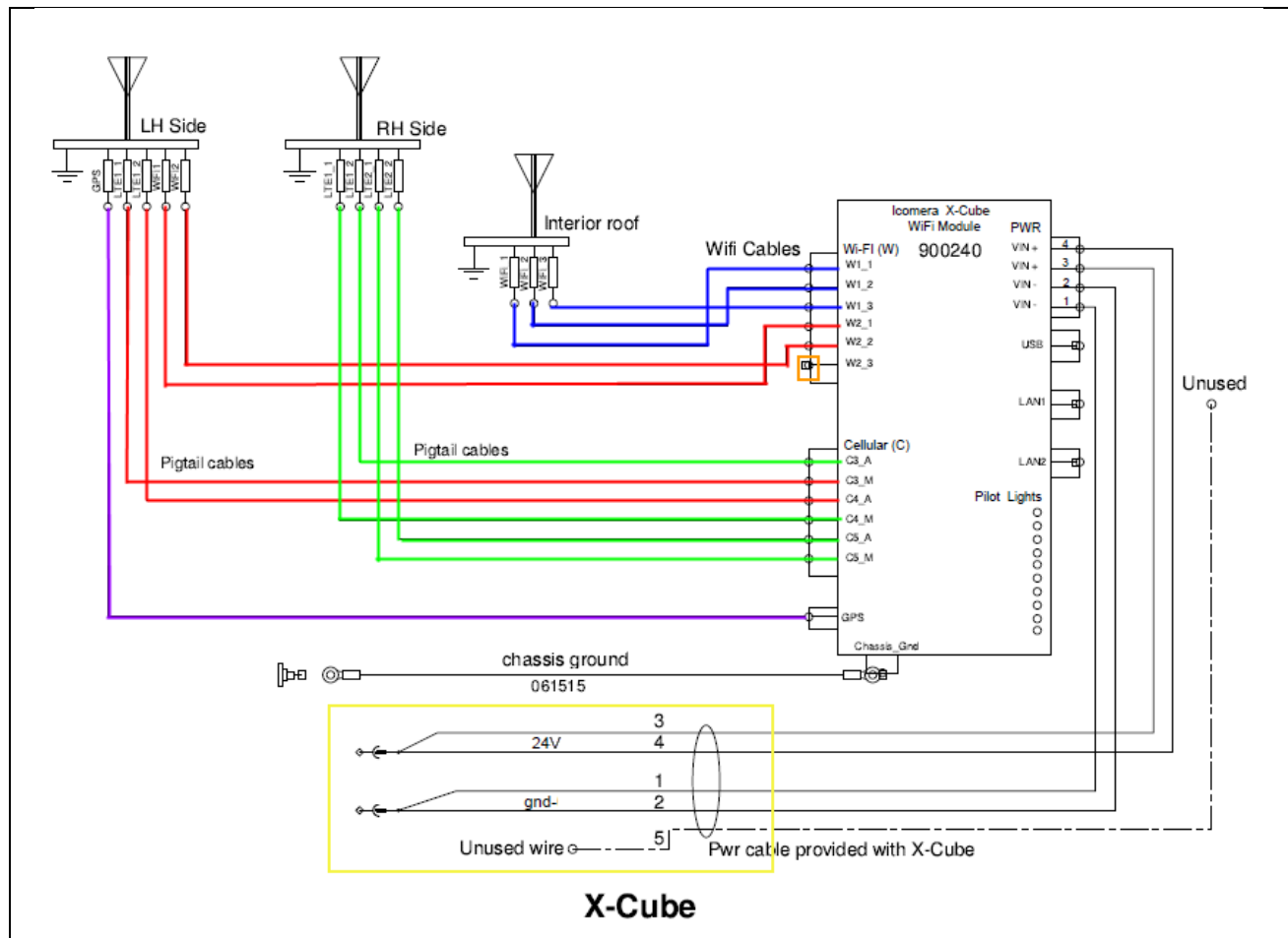
CURB SIDE ANTENNA connection to X-Cube (4X LTE)

Connect antenna cables to:
C3A, C4-M, C5-A & C5-M



X-CUBE POWER CONNECTION





19. Secure X-CUBE and components to the parcel rack.

- Pivot the connected X-CUBE module so the antenna cables are facing the interior of the parcel rack.
- Raise the X-CUBE module from the parcel rack floor using the supplied **285478** spacers installed at the four corners of the module.

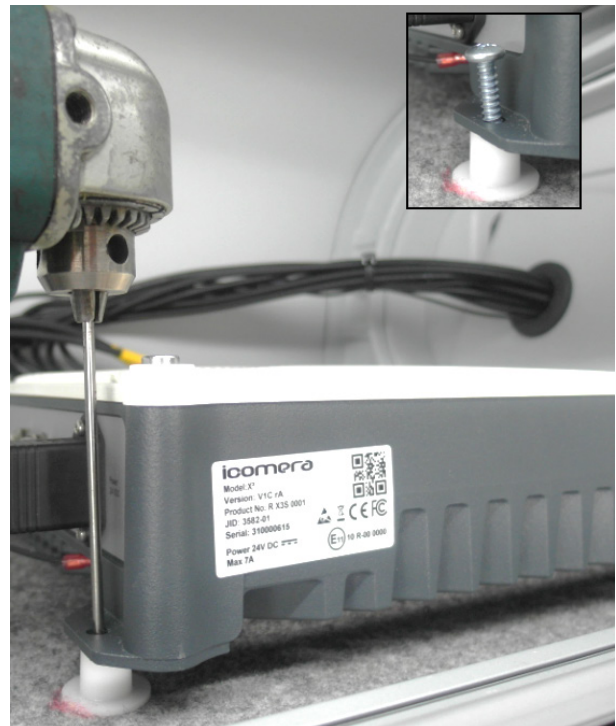


CAUTION

Securing the module directly to the parcel rack floor may cause overheating due to lack of airflow under the module.

Always use spacers to raise the module at least 13mm (1/2in) from the mounting surface.

- Drill pilot holes at the center of the bushing and secure to the floor using the supplied **500865** screws.



- Position the WIFI antenna and support assembly close to the module without bending the antenna cable ends more than 90 deg (suggested position shown in pictures).
- Drill pilot holes through the support mounting holes and secure the support using the supplied **500638** screws.
- Route the excess length of wire/antenna cables inside the overhead compartment (secure using cable ties).
- Reinstall the overhead compartment side cover.
- Reinstall all interior trims/covers and close all compartments inside the vehicle to complete the installation.

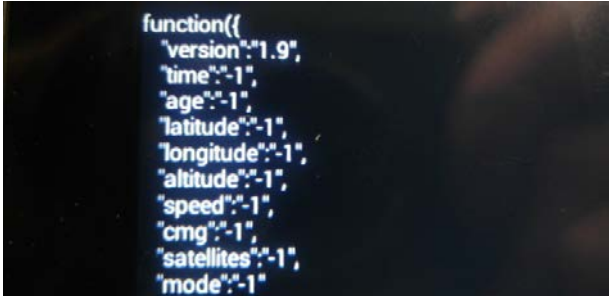


20. Check for proper operation of the system.

- Set the main power switch to the ON position and start the vehicle.
- Move the vehicle outside and wait +/-15 minutes for the system to acquire data and GPS signals.
- Check that all X-CUBE pilot lights on the side of the module are turning to green.
- Using an available online application like "Wi-Fi Analyzer", check for proper WIFI signal reception

Signal should not drop below -60dBm anywhere in the vehicle.



Check for GPS localization of the vehicle using suitable application.	
21. Take note of the serial numbers. - Take note of the X-CUBE module serial number.  - Also take note of the Vehicle Identification Number (VIN).	

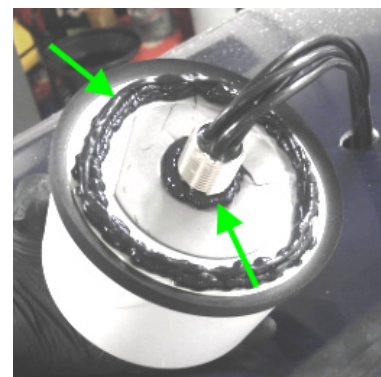
PARTS / WASTE DISPOSAL

Discard waste according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)

GENERAL INSTALLATION GUIDELINES (CUSTOM INSTALLATIONS)

EXTERIOR ANTENNAS INSTALLATION:

- Antennas should be mounted on a flat surface on each side of the vehicle.
- Minimum distance between exterior antennas is 1 meter (40in), 1.5 meters (60in) is recommended.
- Antenna with GPS connector must be mounted on the same side as the X-CUBE module (shorter cable length).
- Adhesive must be used between the antenna base and the vehicle roof (do not rely on factory double sided tape to seal the installation).
- Antenna nuts must be torqued **80 to 120 lb-in (9 to 14 Nm)**



INTERIOR ANTENNA INSTALLATION (WI-FI):

- Antenna should be mounted close to the X-CUBE module.
- Antenna must be mounted above head height.
- Wi-Fi antenna is intended for indoor/dry areas use only.

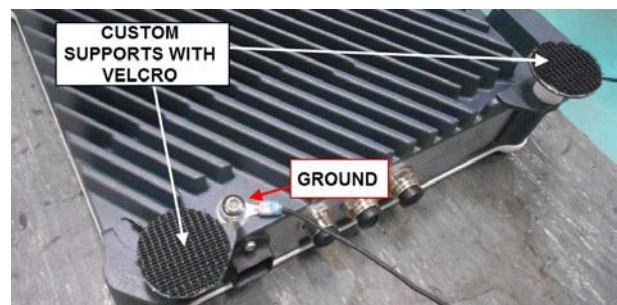


X-CUBE MODULE INSTALLATION (POSITION):

- The X-Cube module can be mounted horizontally or vertically.
- A cooling air gap of at least 1/2in (13mm) must be present between the module and the mounting surface (use spacers).
- It is possible to mount the X-CUBE module over existing equipment using strong Velcro (air gap must be maintained using spacers, also make sure that the X-CUBE module will not obstruct other equipment cooling openings or fins).



- Do not install other equipment over the X-CUBE module.
- X-CUBE module must be grounded to vehicle chassis (use provided ground connection under the module).



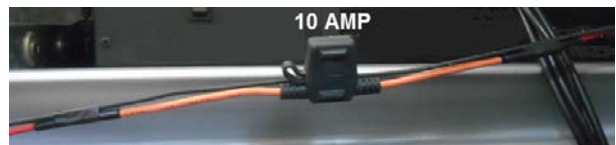
CABLE ROUTING:

- Cables must be routed in a way that prevents tensile stress and sharp bends.
- Use cable ties to secure cables from the same antenna every 12 to 18in (300 to 450mm) intervals.



POWER CABLE:

- Supplied power cable can be extended as long as the same gage wire is used and that connections are soldered.
- Cable must be connected to a direct 24V connection with a 10 Amp inline fuse.



NOTE

When using a direct 24V circuit, connection will be lost as soon as the vehicle ignition is switched to OFF.

