2nd Gen Revel – External Regulator Conversion

In this guide we will show you how to convert your auxiliary alternator from internal regulation, to externally regulated.

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INTRODUCTION

Adding this upgrade to your 2nd Generation Revel will resolve the overcharging battery issue, as well as the constant battery reseting issue.

For more, read our blog post Regulators & Alternator Charging (2nd Gen Revels).

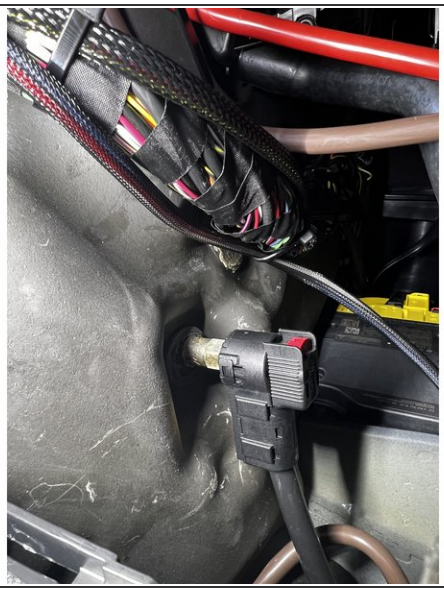
TOOLS:

- Flush Cut Pliers (1)
- 6" Extension for Socket Wrench (1)
- E12 External Torx Socket (1)
- Socket Wrench 3/8" Drive (1)
- Wire Cutters (1)
- Wire Crimpers (1)
- Wire Strippers (1)
- Heat Gun or Torch (1)
- 7mm Deep Socket (1)
- 10mm Deep Socket (1)
- 15mm Shallow or Deep Socket (1)
- 13mm Shallow or Deep Socket (1)
- Ball Peen Hammer (1)
- #2 Phillips Screwdriver (1)
- 3/8" Nut Driver Bit for Drill or Impact Driver (1)
- Drill/Impact Driver (1)
- #2 Phillips Bit for Drill or Impact Driver (1)
- Paperclip or Metal Wire (1)
- 8mm Deep Socket (1)
- 3/8" Drive Extension - 3" (1)
- Torque Wrench 3/8" Drive (1)
- Mercedes Belt Tensioner Tool (1)

PARTS:

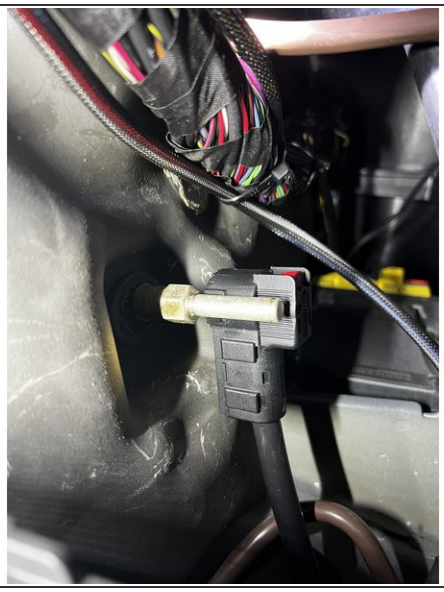
- Zip Ties (1)
- External Regulator Conversion Kit (1)

Step 1 — VS30 Battery Disconnect



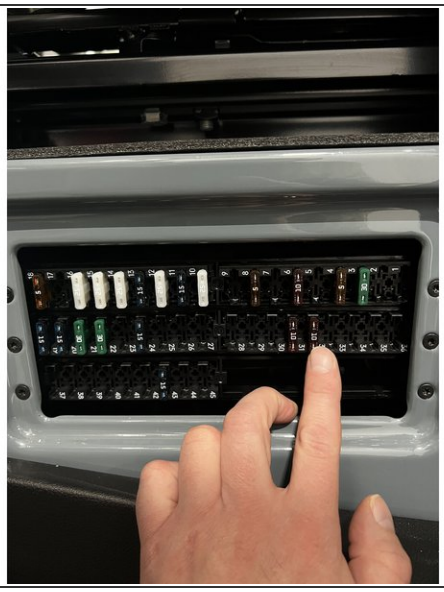
- Remove battery ground disconnect access cover to expose battery ground disconnect

Step 2



- Depress the red tab on the battery ground disconnect, and pull to remove from ground stud

Step 3

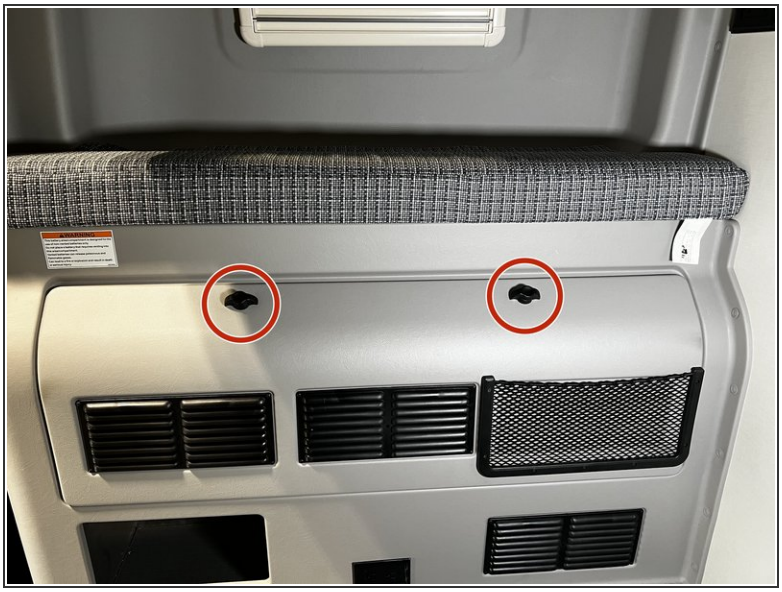


- Remove the fuse panel cover from the driver side seat base to expose fuse panel
- Locate and remove fuse #32

Step 4 — Solar Disconnection

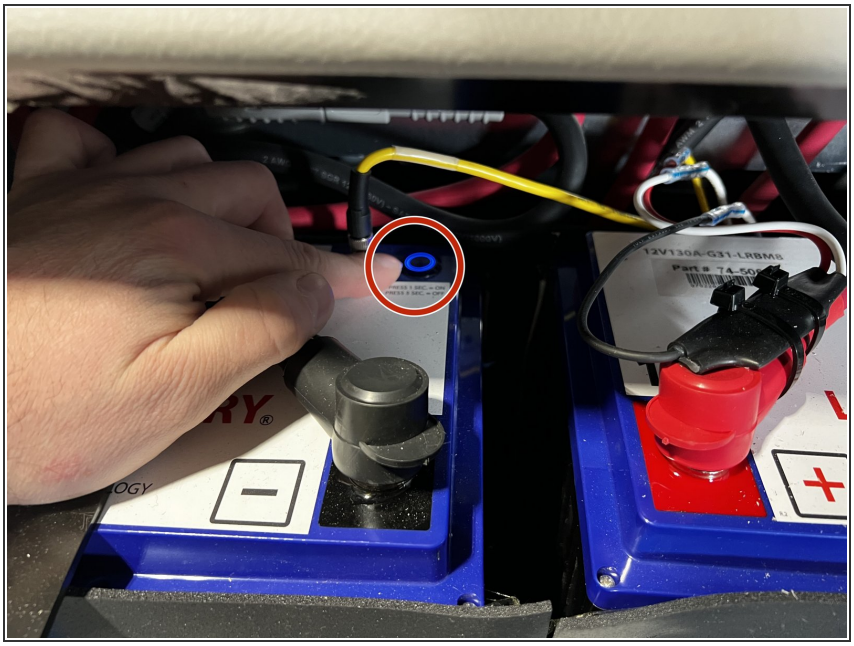
- Turn the solar disconnect knob located on the control panel to the "OFF" position.

Step 5 — Battery Cover Removal



- Locate the battery compartment in the driver's side rear of the van.
- Turn the locking knobs to release the battery compartment cover.
- Lift and remove cover.

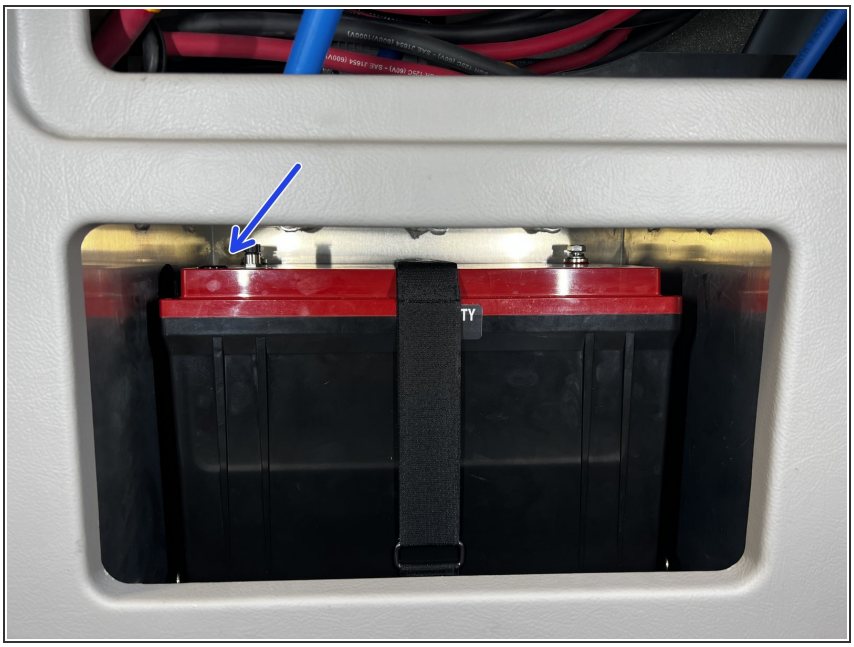
Step 6 — Shutting of Batteries



- Locate the "ON/OFF" switch on the batteries.
- Depress and hold the button for 5 seconds until the blue LED on the battery ON/OFF switch goes off. Do this for each battery.
- If the LED light does not go off, depress and hold the ON/OFF button again for 5 seconds.

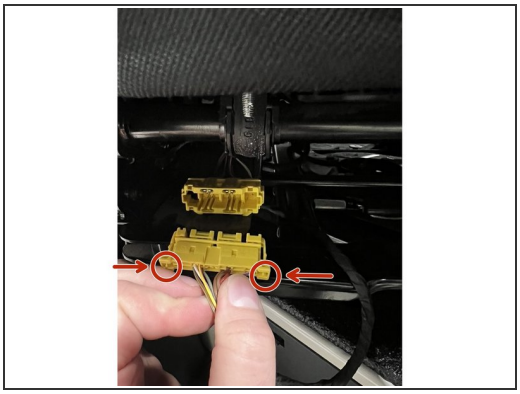
⚠ Ensure ALL batteries are off.

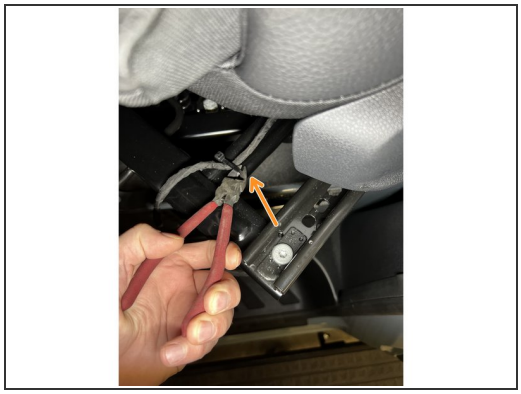
Step 7 — 3rd Battery Shutdown

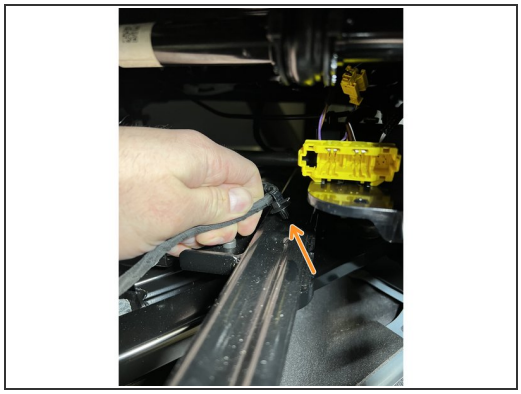


- If equipped with a 3rd battery, the ON/OFF switch will be located on the front left corner of the battery. Depress for 5 seconds to turn the battery off.

Step 8 — Seat Wire Harness Disconnection







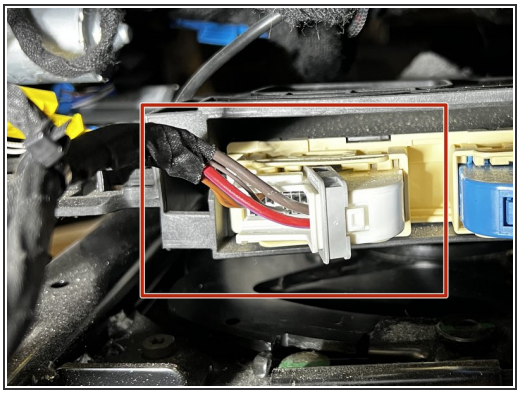
- Disconnect the yellow plug for the seat wire harness by depressing the tabs on each side, and pulling connector out.

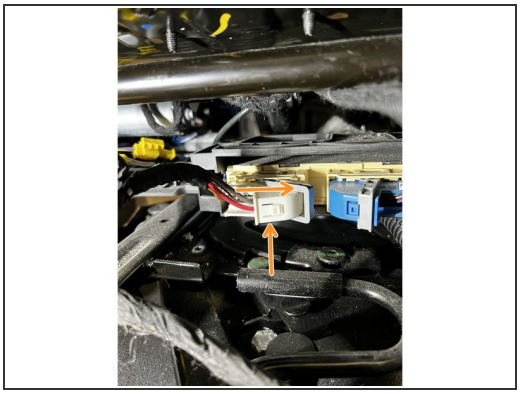
ⓘ Tabs are depressed inwards, towards the center of the plug.

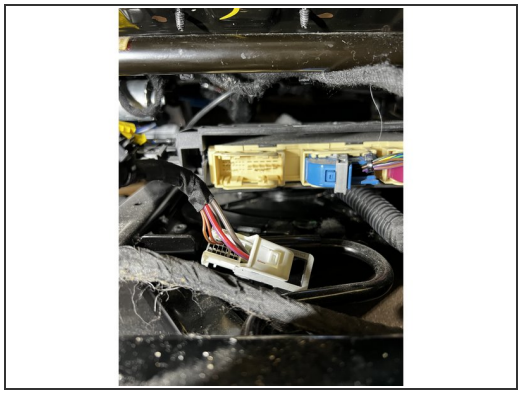
- Remove seat wire harness from seat rails by unclipping securement clips along the seat rails.

⚠ If equipped with power seats, you will need to adjust the seats to allow them to swivel PRIOR to disconnecting the battery.

Step 9 — Disconnecting Power Seat Harness





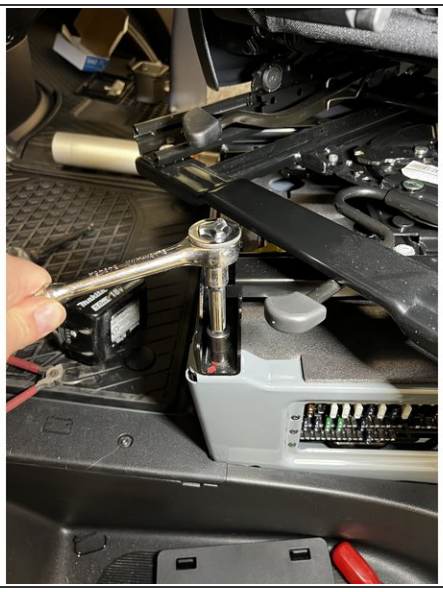


- If you van does not have power seats, skip to the next step.
- Located the harness for power seats on the module under the seat.
- To disconnect the plug, depress the locking tab, and move the locking lever to the right to release the plug from the module.

Step 10 — Seat Wire Harness Removal

- Route seat wire harness and the power seat harness (if equipped) through the opening in the seat swivel.

Step 11 — Seat Removal



- Using the E12 Torx socket and socket wrench, begin removing the 4 seat bolts that secure the seat to the seat base.

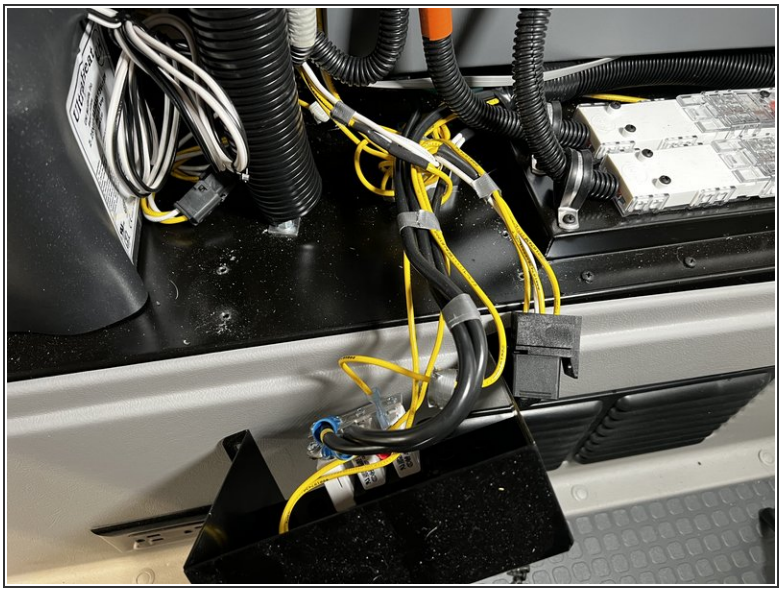
ⓘ It will be necessary to rotate the seat to access all the seat bolts.

- Once the 4 seat bolts have been removed, the seat can be lifted out of the vehicle.

ⓘ Adjust the seat back to the upright most position to make the seat easier to remove from the van.

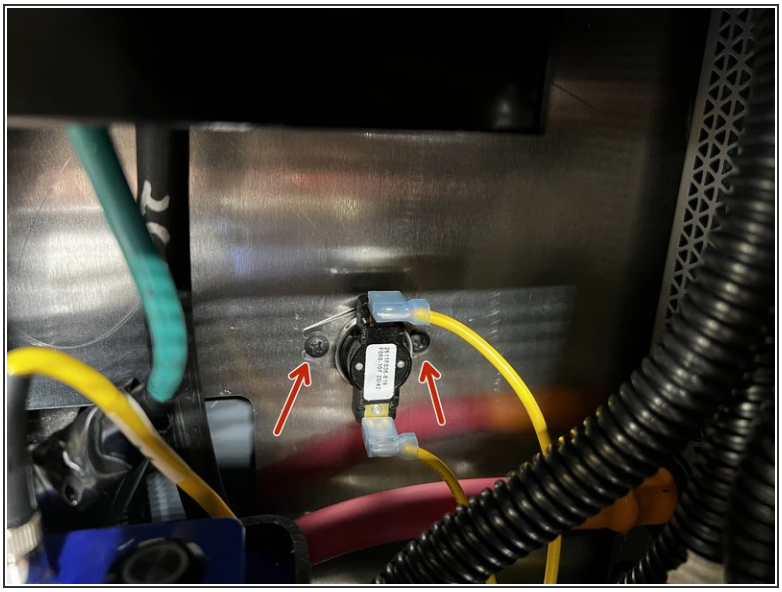
⚠ Take care to not scratch the door panel or the B pillar on the van when removing the seat. Masking tape can be used on the seat base to help prevent damage.

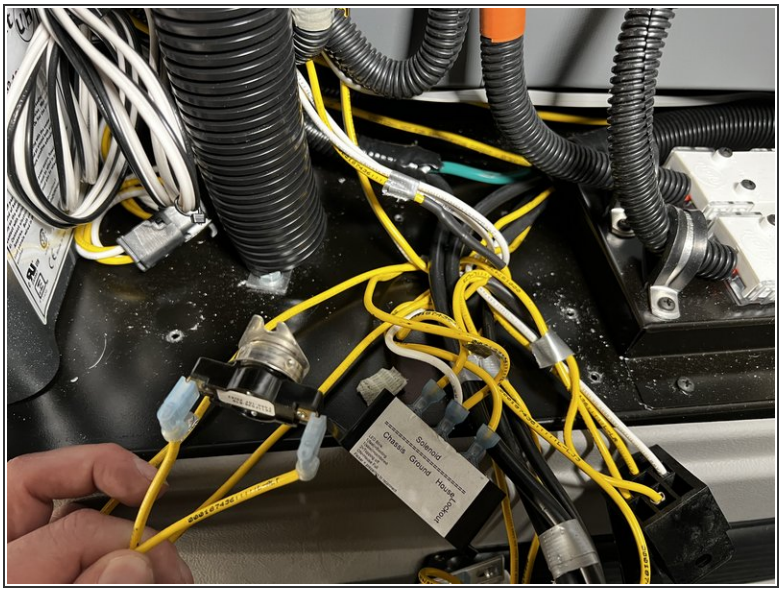
Step 12 — Battery Compartment Disassembly



- Remove the 4 screws securing the breaker box to the battery compartment using a #2 Phillips bit.
- Once the screws are removed, let the breaker box hang out of the way.

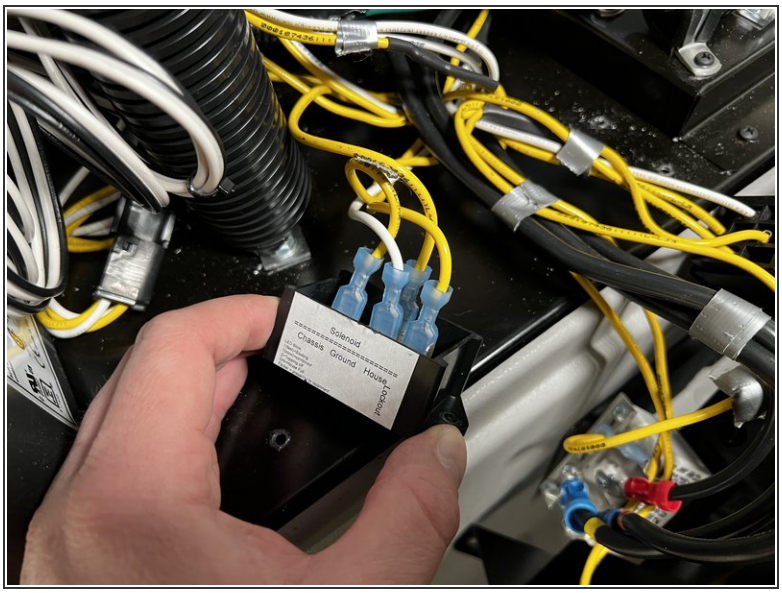
Step 13 — Battery Compartment Disassembly - Temp. Sensor





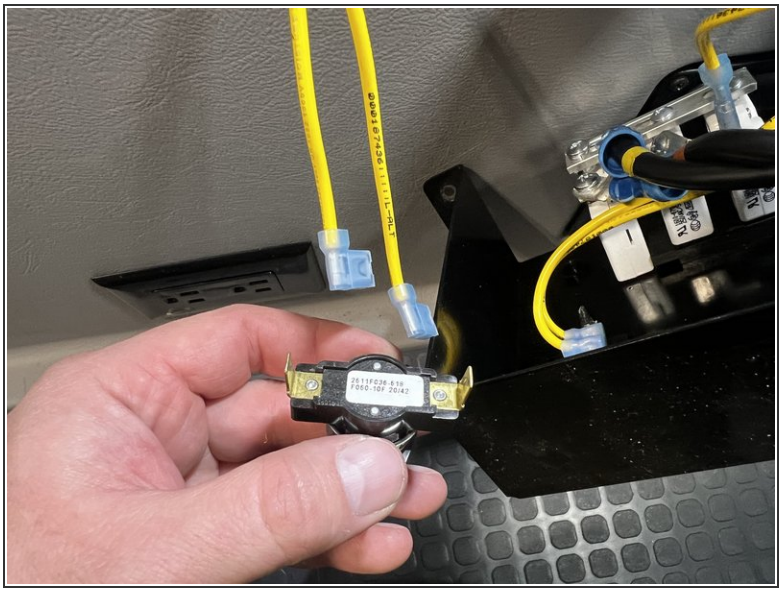
- Locate the battery compartment temp sensor on the back wall of the battery compartment.
- Use a #2 Phillips bit to remove the screws securing the temp. sensor.
- Pull the temp. sensor to the front of the battery compartment.

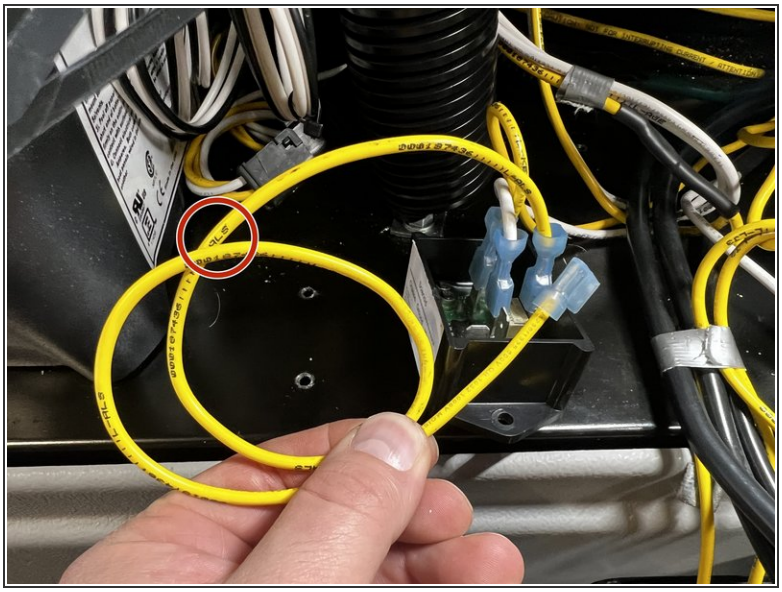
Step 14 — Battery Compartment Disassembly - Combiner Removal



- Located the combiner behind the breaker box. Using a #2 Phillips bit, remove the screws securing the combiner.

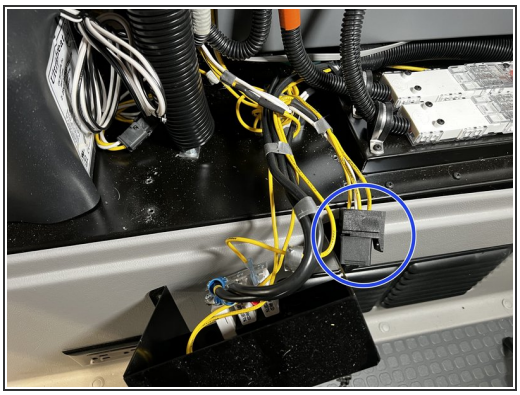
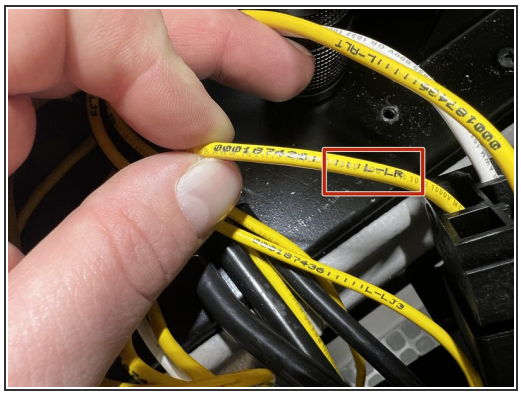
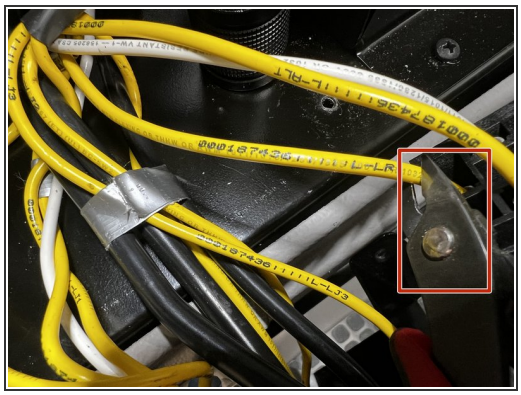
Step 15 — Temp. Sensor Wire Removal





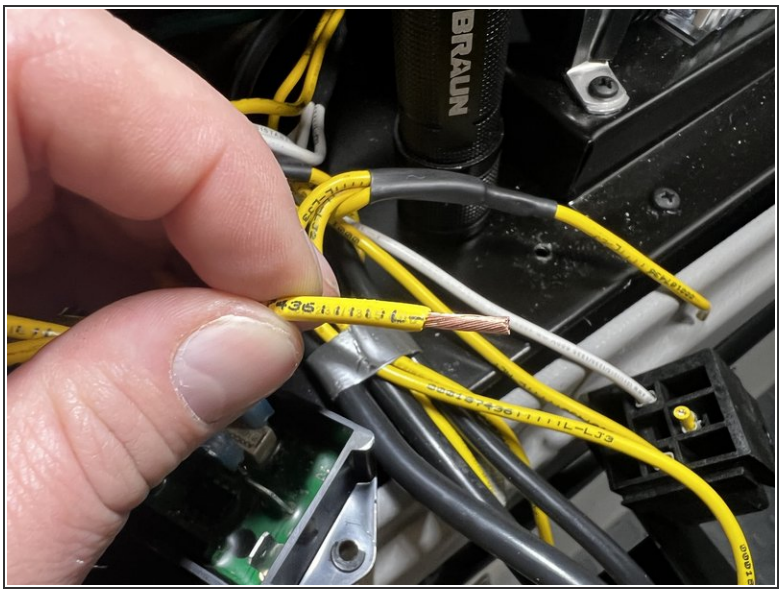
- Remove the wires from the temp. sensor.
- One of the wires, labeled "ALS" goes to the combiner. Remove this wire from the combiner and discard.
- The other wire from the temp. sensor will not be reused, and will be secured in the battery compartment in a later step.
- Set the temp. sensor aside for now.

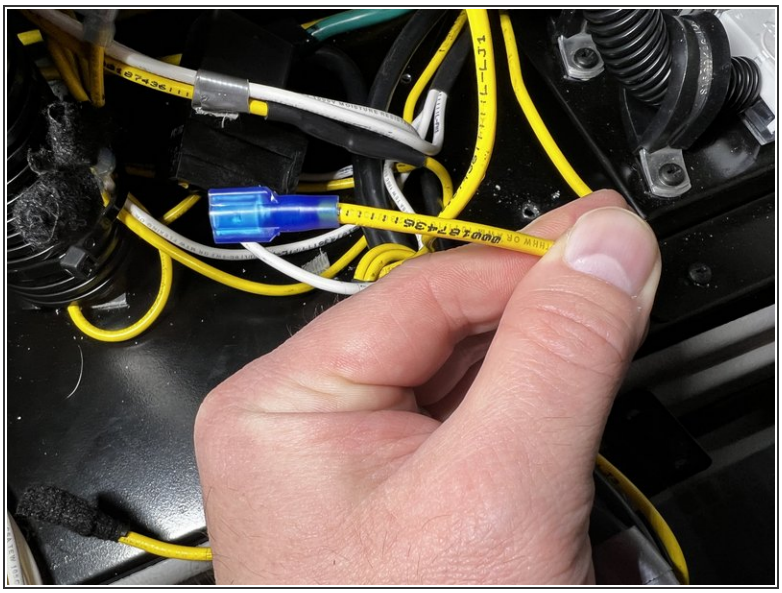
Step 16 — Battery Compartment Temp Sensor Rewiring

- Locate the relay for the combiner.
- On the relay, there is a yellow wire labeled "L-LR". Cut this wire from the relay.

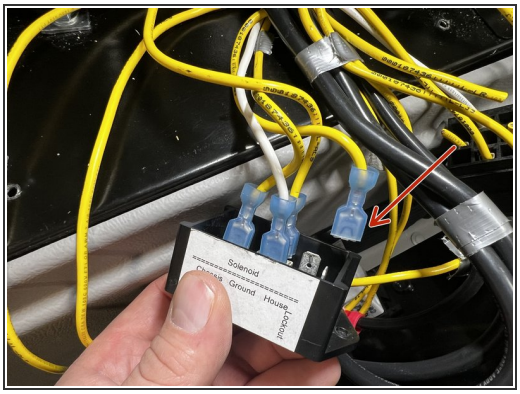
Step 17 — Battery Compartment Temp Sensor Rewiring





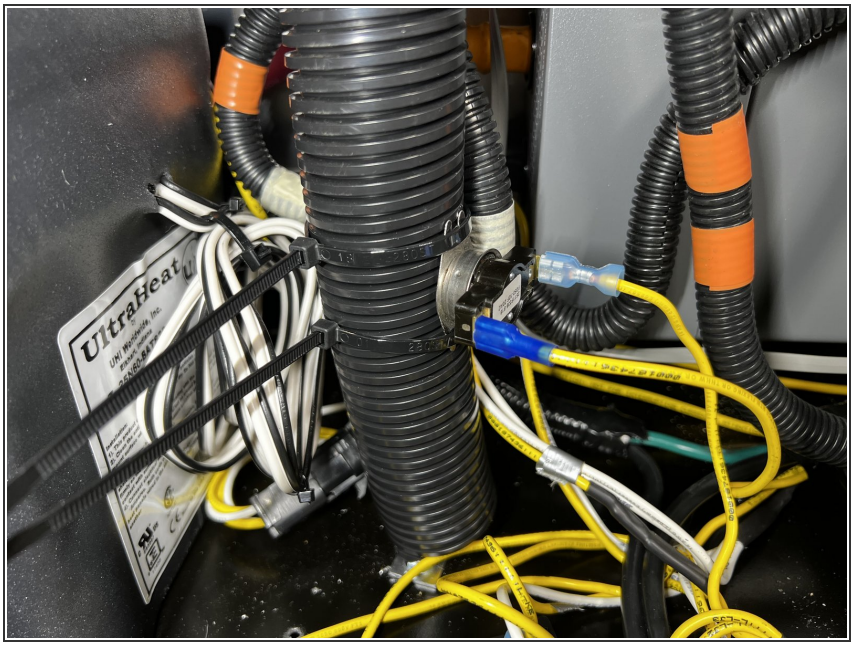
- Strip approx. 3/8" of insulation from the wire labeled "L-LR"
- Crimp the provided spade terminal onto the wire labeled "L-LR"

Step 18 — Battery Compartment Temp Sensor Rewiring



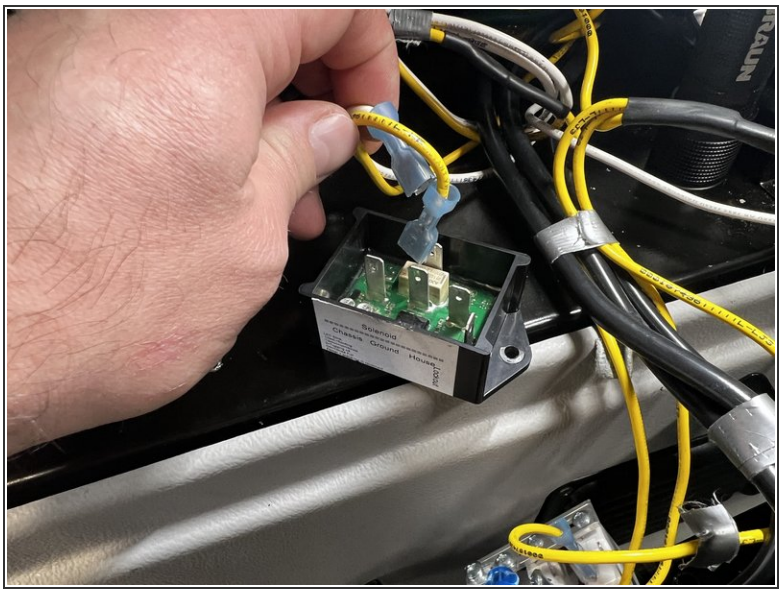
- Locate the wire labeled "L-L J 1" on the battery combiner. Remove this wire form the combiner.
- Take the wire labeled "L-L J 1" and connect to one of the spade terminals on the temp sensor.
- Take the wire labeled "L - LR" that you installed the spade terminal on, and connect to the other side of the temp. sensor.

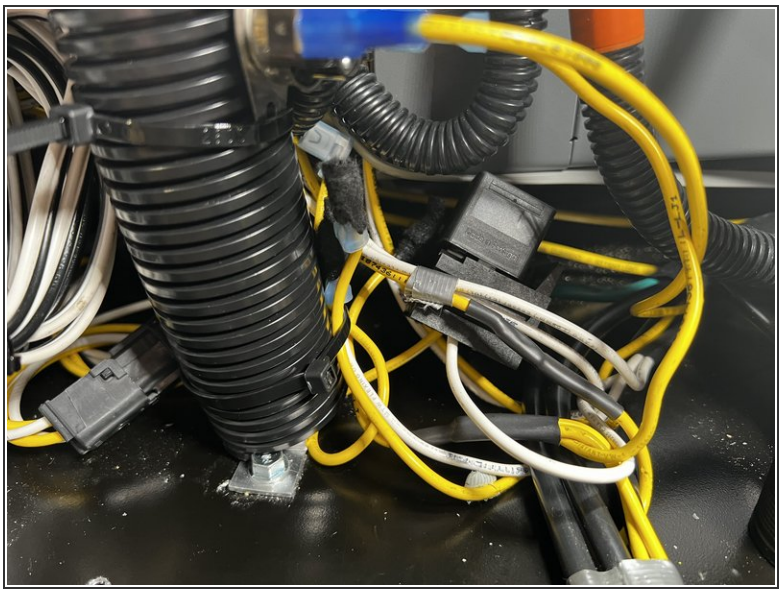
Step 19 — Securing the Temp. Sensor



- Take the temp sensor and secure the sensor to the vertical support in the cabinet using the zip ties provided.
- Cut the tails of the zip ties flush.

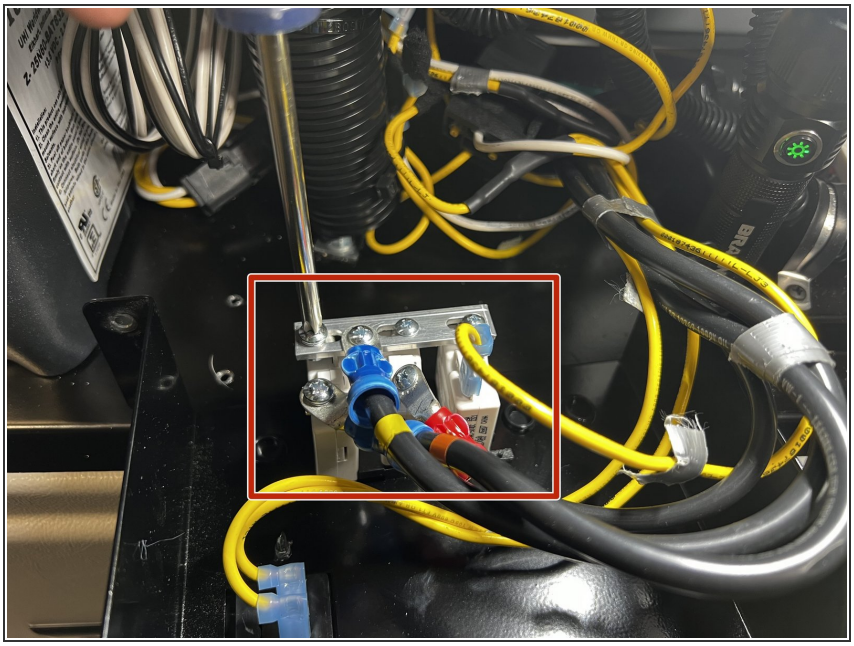
Step 20 — Combiner Removal





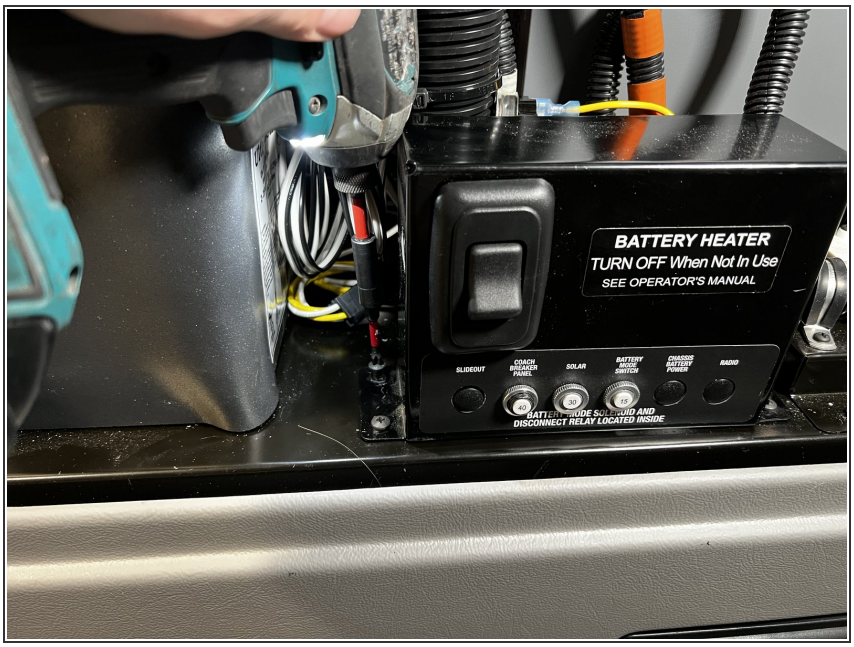
- Remove the remaining wires off the combiner, and discard the combiner.
- Secure the relay and any disconnected wires in the compartment by coiling them up, and using a provided zip tie to secure to the vertical support.

Step 21 — Checking Breaker Wire Connections



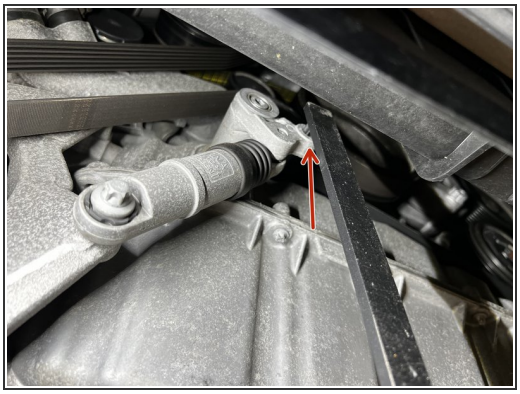
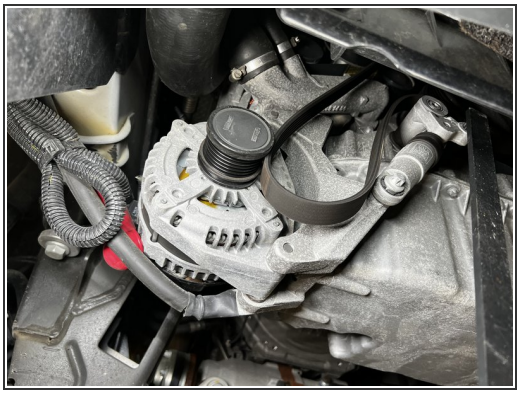
- Now is a good time to ensure the wire connections on the back of the breakers are secure, before reinstalling the breaker panel.
- Use a #2 Phillips screw driver to ensure the wire connections are tight on the back of the breakers.

Step 22 — Battery Compartment Reassembly



- Place the breaker panel back into the battery compartment, and reinstall using the screws removed previously to secure it to the compartment.

Step 23 — Alternator Drive Belt Removal

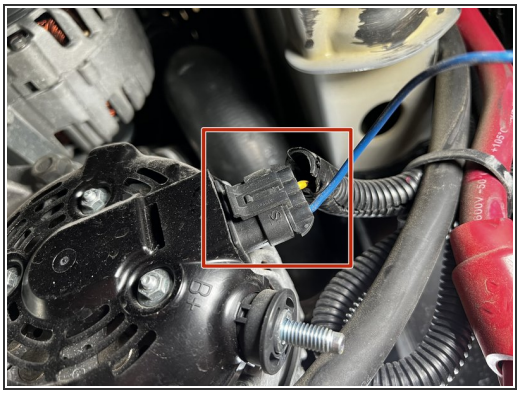
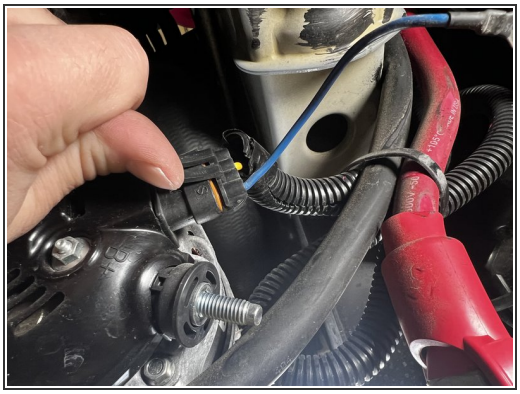




- Locate the aux alternator belt tensioner on the front of the engine.
- Insert the belt tensioner release tool into the belt tensioner.
- Pull the belt tensioner release tool towards the passenger side of the vehicle to release the tensioner.
- While keeping pressure on the belt tensioner release tool, remove the belt from the alternator pulley.
- Once the belt is removed, gently ease the belt tensioner release tool back to the driver's side until the tensioner is no longer under tension.

Step 24 — Alternator Positive Cable Removal

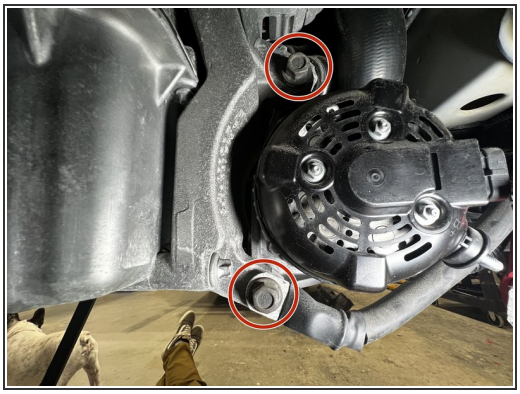
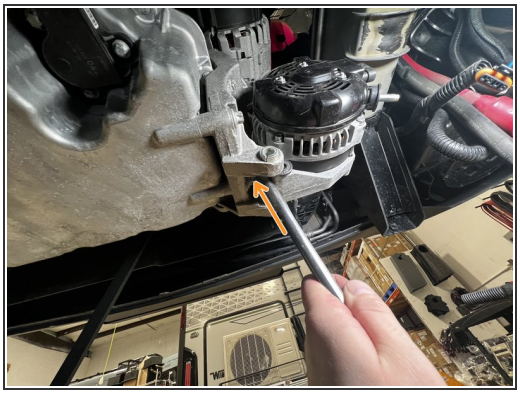
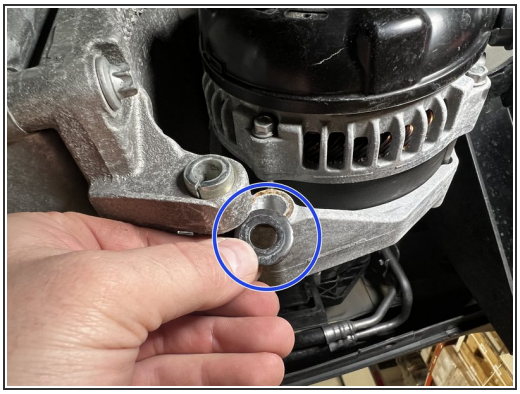

- Locate the protective boot covering the positive terminal on the alternator. Slide this boot back to expose the nut securing the positive wire to the alternator.
- Using a 13mm socket and wrench, remove the nut securing the positive cable and the small blue wire form the stud.
- Set the nut aside, as it will be reused.

Step 25 — Alternator Field Connector Removal


- Locate the field connector on the alternator.
- Remove this plug by prying up on the release tab, and pulling out from the alternator.

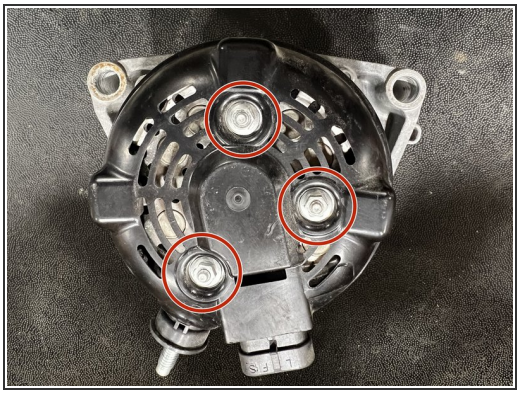
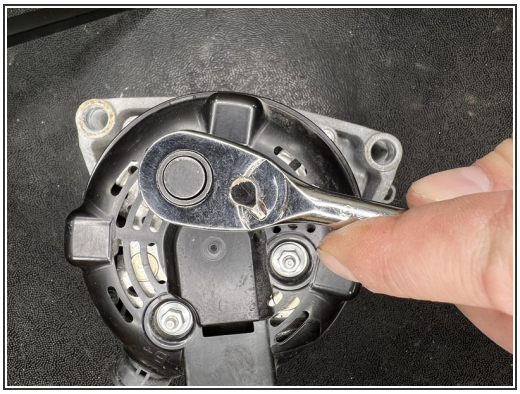
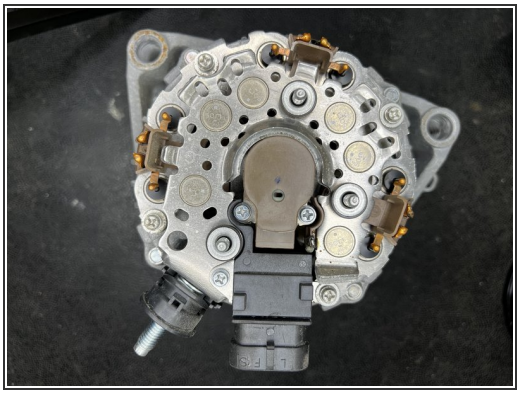
Step 26 — Alternator Removal

- Locate the two bolts securing the alternator to the mounting bracket on the engine.
- Use a 15mm socket and wrench to remove the bolts.
- With both bolts removed, gently pry the bottom of the alternator out from the bracket.
- Take care to not lose the metal spacers that go between the alternator and the bracket. There are two of them, one on the top, and one on bottom. We will reuse them.
- With the bottom of the alternator loose from the mounting bracket, grasp the alternator and pull the alternator the rest of the way out.

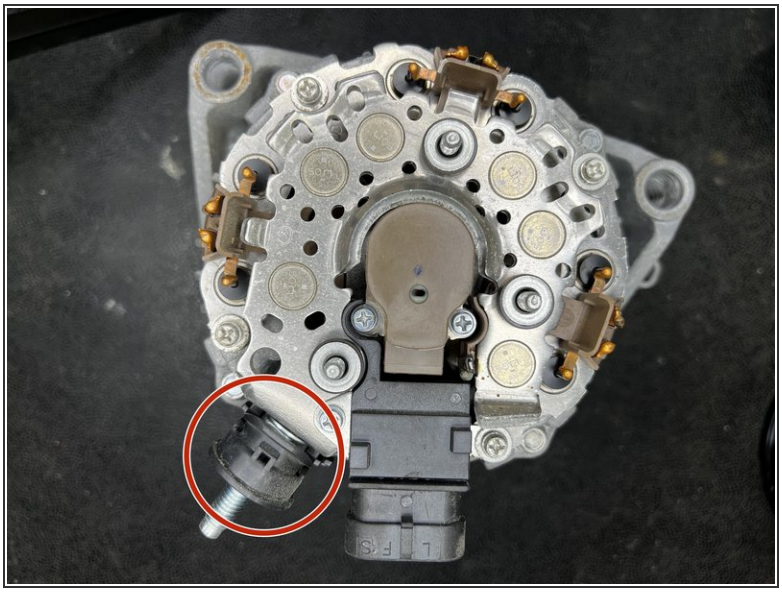
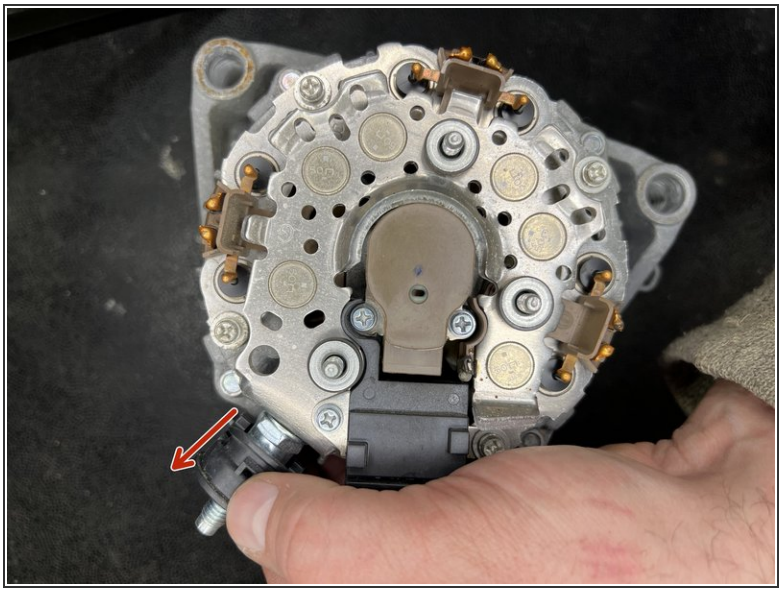
⚠ Take care to not drop the alternator onto the ground, or onto yourself. Damage to you or the alternator can occur.

Step 27 — Alternator Disassembly

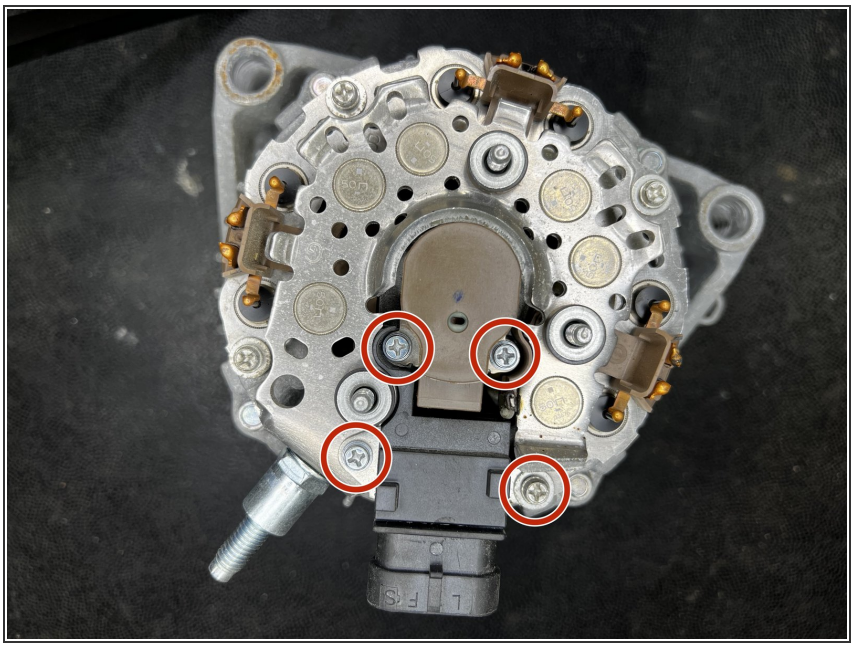
- With the alternator removed from the vehicle, place it on a suitable work surface
- Locate the 3 nuts securing the back cover to the alternator. Use a 8mm socket and wrench to remove them.
- Lift the rear cover off and set aside.

Step 28 — Alternator Disassembly

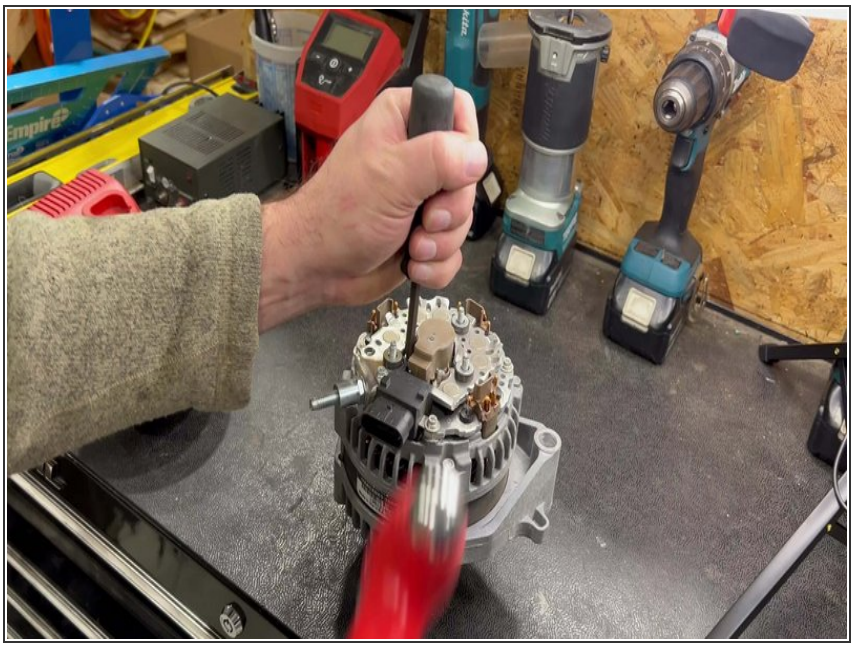
- Slide the plastic sleeve off the positive stud, and set aside.

Step 29 — Alternator Disassembly - Terminal Block and Brush Cap Removal



- Locate the 4 Phillips head screws that secure the brush cap and regulator onto the alternator.

Step 30 — Alternator Disassembly - Terminal Block and Brush Cap Removal



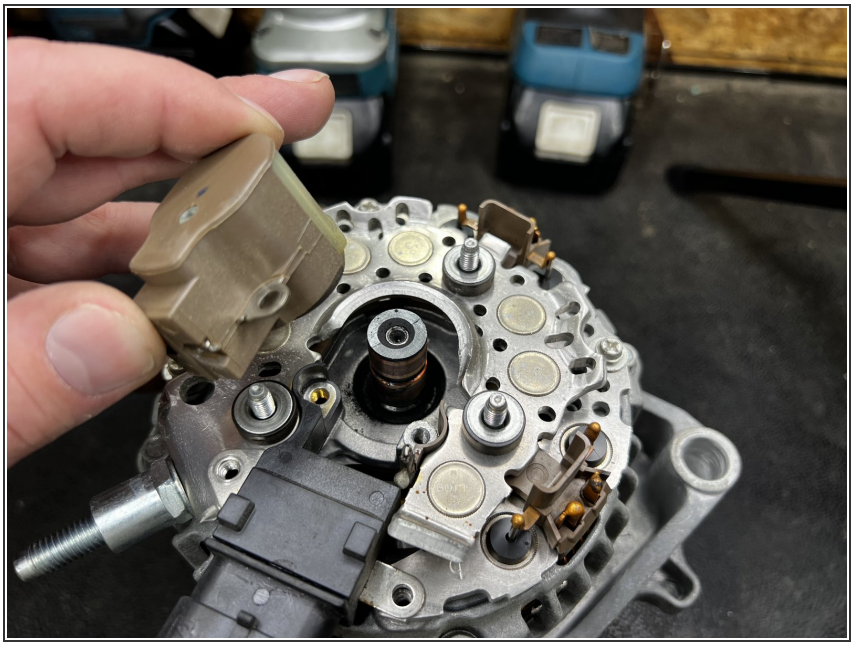
- Using a #2 Phillips screw driver, place the screw driver into the screw head. Strike the screwdriver with a hammer to seat the screwdriver into the screw.

⚠ It is very important that you strike the screwdriver with a hammer. The screw heads are very easy to strip and damage.

- Once the screws are loose, remove the 4 screws and set aside.

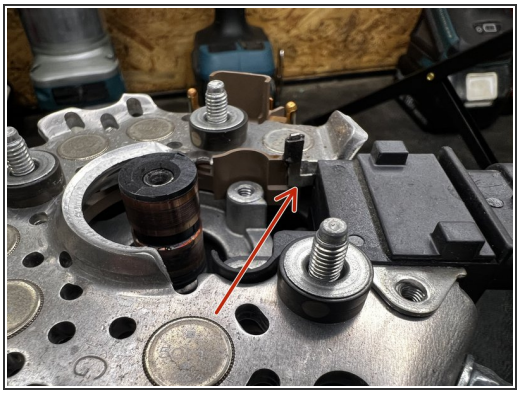
ⓘ Take note of the location of the one longer screw when removing the screws.

Step 31 — Alternator Disassembly - Terminal Block and Brush Cap Removal



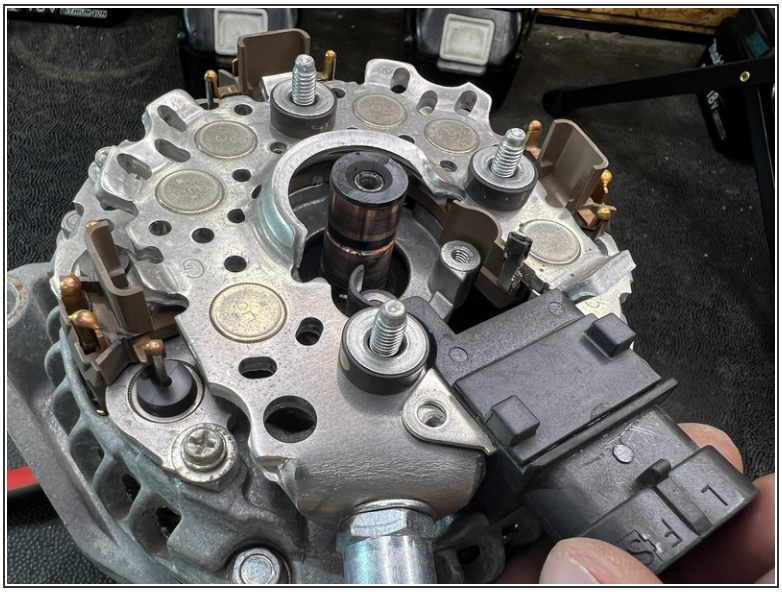
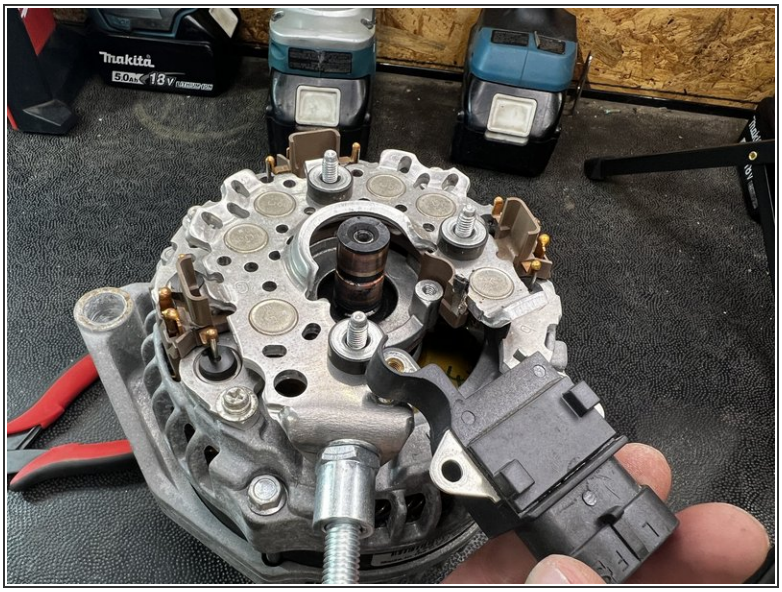
- With the 4 screws removed securing the internal regulator and the brush cap, lift the brush cap off and set aside.

Step 32 — Alternator Disassembly - Terminal Block and Brush Cap Removal

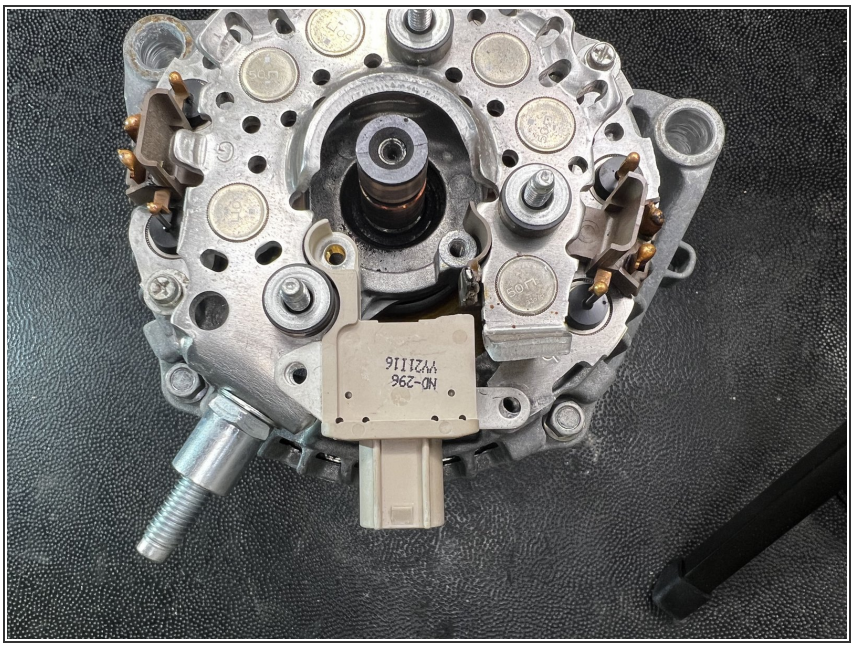

- With the brush cap removed, locate the solder joint on the internal regulator.
- Cut the excess solder off using cutting pliers.
- Using the flush cut pliers, cut the metal strap on the internal regulator that is soldered to the alternator.

Step 33 — Alternator Disassembly - Terminal Block and Brush Cap Removal

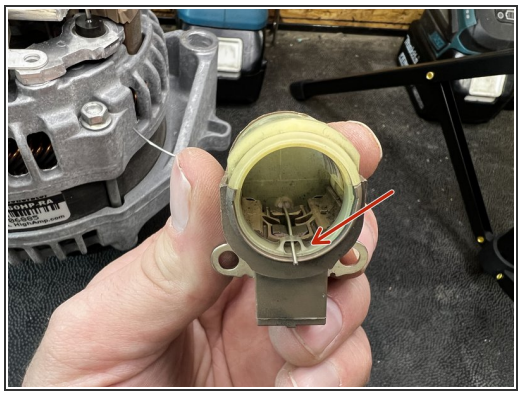
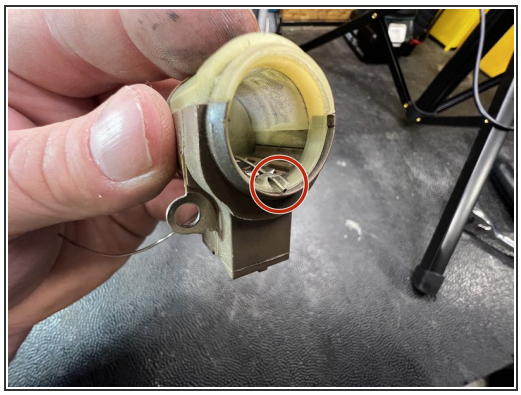
- With the solder joint cut free, lift up on the internal regulator and remove from the alternator. This regulator can be discarded.

Step 34 — New Terminal Block Installation



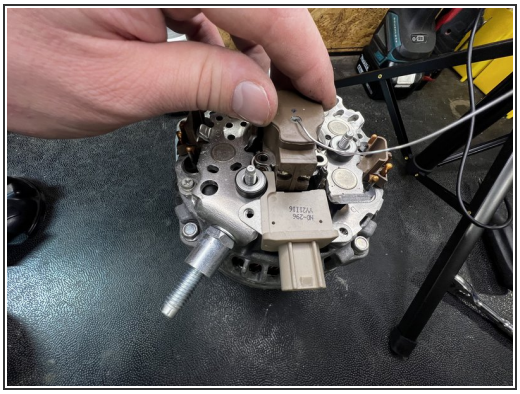
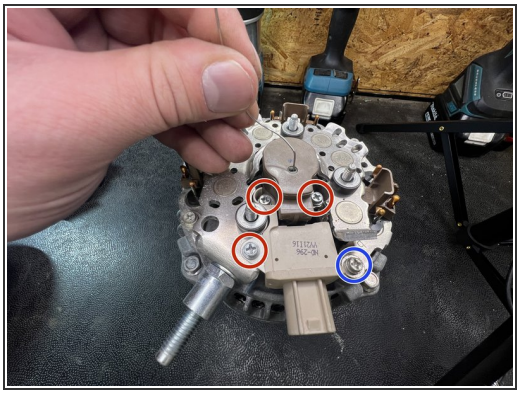
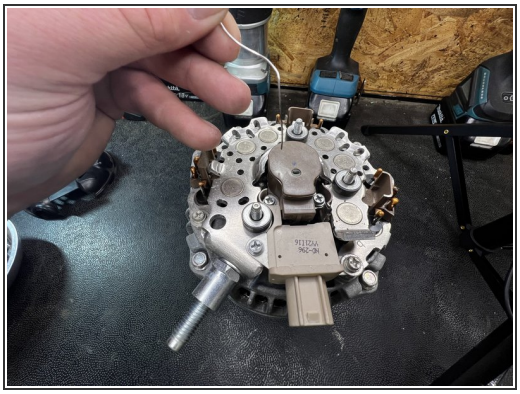
- Take the new terminal block provided in the kit and place onto the alternator as shown.

Step 35 — Brush Cap Reinstallation

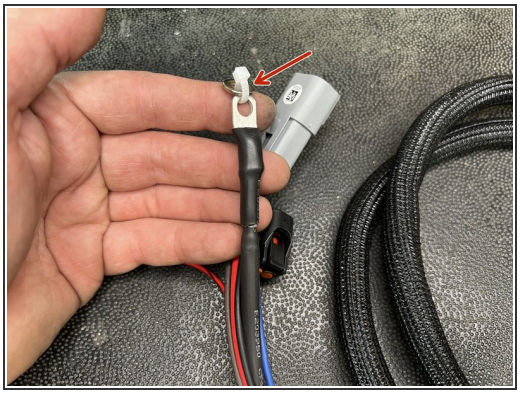
- To aide in the reinstallation of the brush cap, it is necessary to compress and "lock" the brushes in the brush cap.
- Place your finger in the brush cap and depress the brushes.
- Using a paper clip or piece of metal wire, feed it into the hole on the top of the brush cap. Slide the wire between your fingers and the brushes.
- Feed the wire through the bottom tab on the brush cap. and remove your finger. The metal wire should stop at the end of the brush cap, with no excess protruding from the brush cap.
- The brushes will now be held compressed in the cap by the wire.

Step 36 — Brush Cap Reinstallation

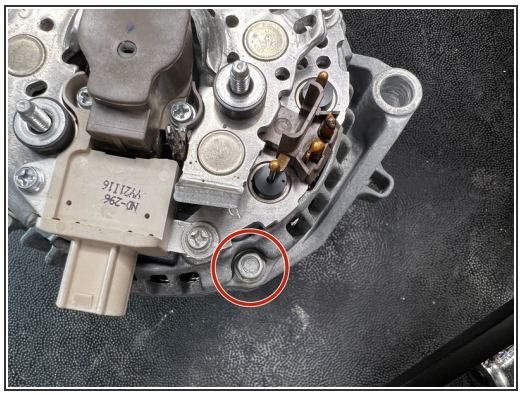
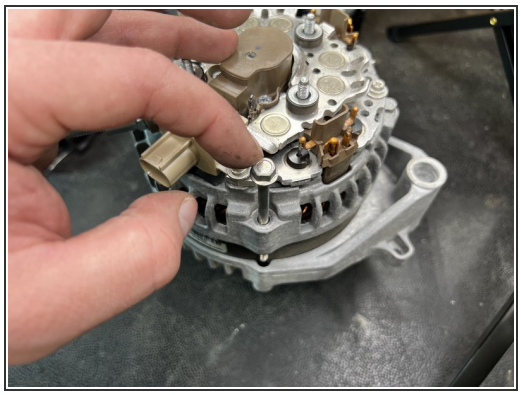
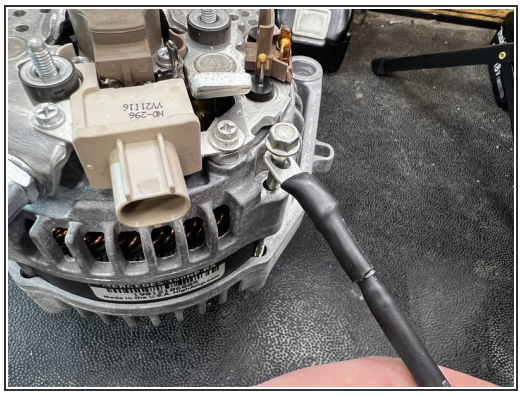
- Place the brush cap back onto the alternator.
- Secure the brush cap and terminal block with the screws removed previously. The one longer screw location is indicated by the blue circle.Snug these screws, but do not over-tighten and damage the screw head.
- With the brush cap and terminal block secured, remove the metal wire from the brush cap to release the brushes.

Step 37 — Alternator Temp. Sensor Install


- Locate the alternator wire harness provided in the kit. Unplug the connector to separate the alternator regulator harness from the alternator sub harness. We are going to be using the regulator harness, which is the one with all the spade terminals attached.
- The alternator temp. sensor is the gray wire. There is a washer zip tied to the end of the wire. Cut the zip tie and remove the washer. Discard the washer as it will not be used.

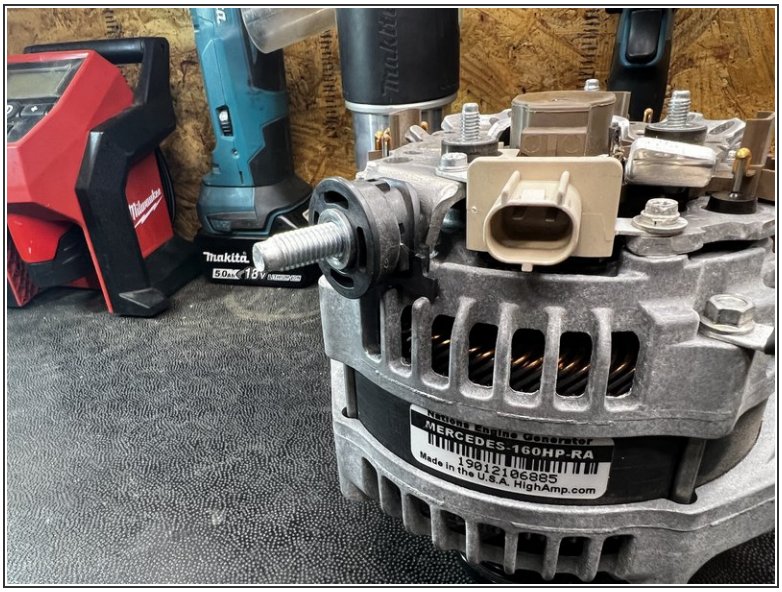
Step 38 — Alternator Temp. Sensor Install

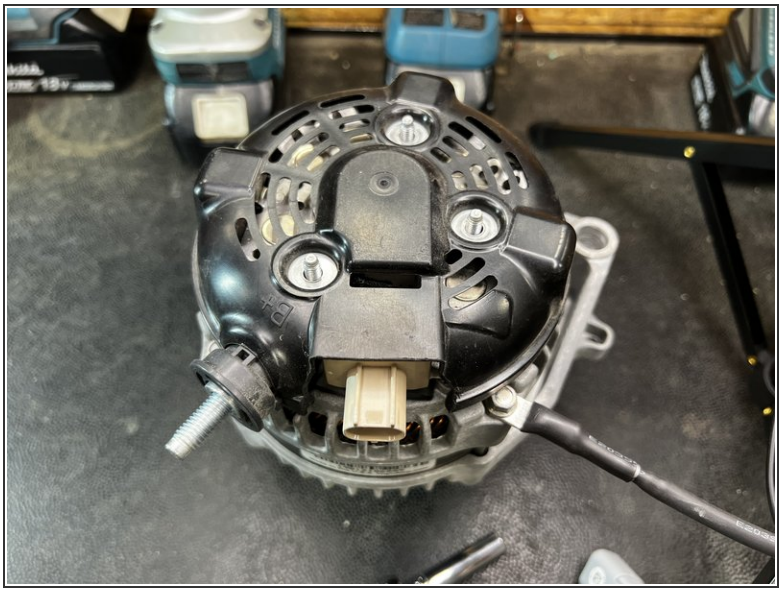




- Remove the alternator case bolt using an 8mm socket and wrench as shown in the image.
- Place the bolt through the alternator temp. sensor, and reinstall the bolt. Snug this bolt, but do not over tighten.
- Do not separate the temp. sensor from the harness. The alternator will get installed with the harness attached.

⚠ It is CRUCIAL that you DO NOT over-tighten the alternator case bolt when installing the temp. sensor!! The bolt only needs to be snug and secure. If you over-tighten the bolt, you can damage the bolt and alternator, which can lead to alternator failure!

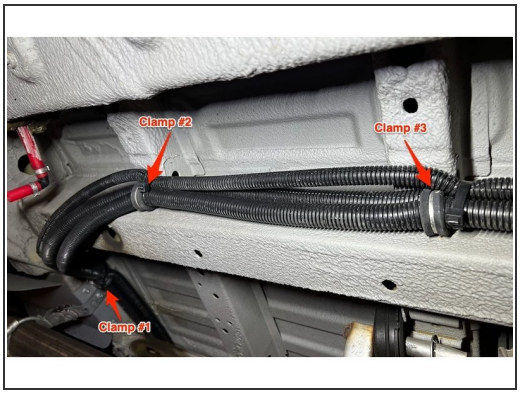
Step 39 — Alternator Reassembly

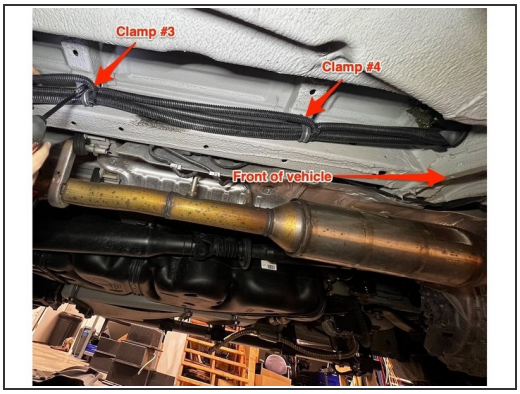


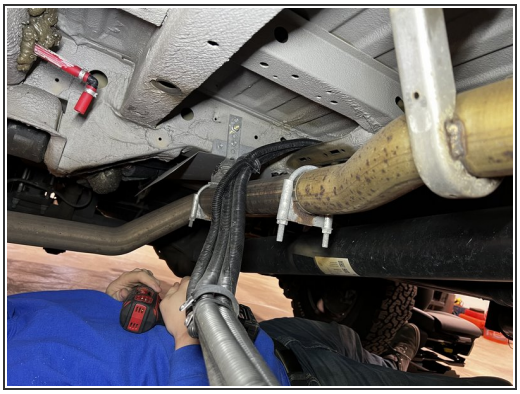


- Slide the plastic sleeve back onto the positive stud on the alternator. Ensure it is oriented correctly.
- Place the back cover back on the alternator. Secure using the nuts previously removed using an 8mm socket and wrench.

Step 40 — Extending Alternator Battery Cable





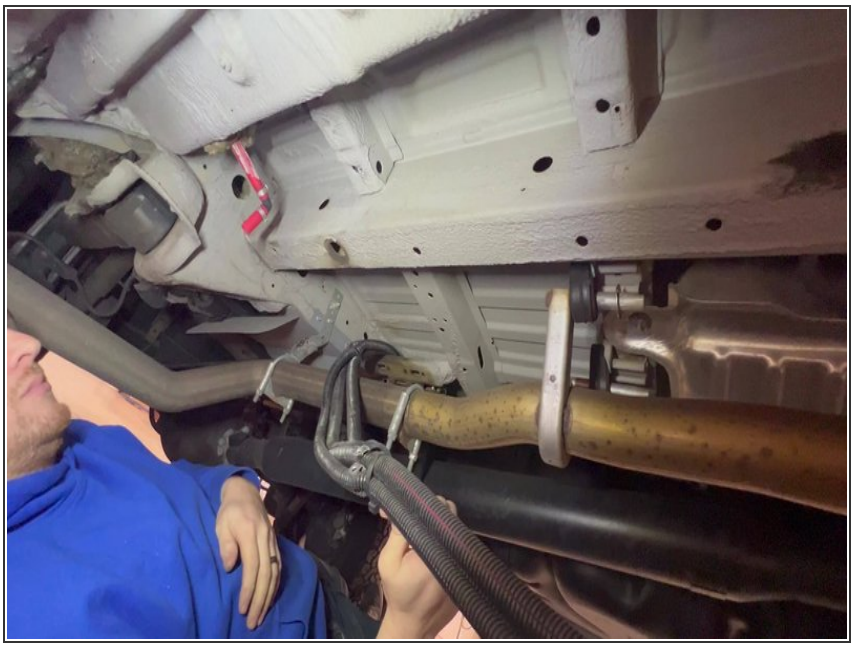


- Locate the 4 clamps securing the positive and negative cables that run from the alternator to the battery compartment. These clamps are on the passenger side underneath of the vehicle.
- Starting with the rear most clamp (clamp #1) remove the screws securing the clamps to the underside of the vehicle using the 3/8" nut driver bit and drill/impact driver.
- Remove all the screws securing the 4 clamps and let the wires drape down.
- Set them aside as we will reuse them.

Step 41 — Extending Alternator Battery Cable

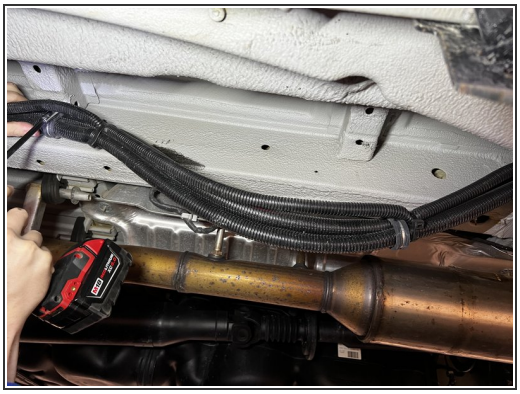
- Remove and discard the rear most clamp from the wires.

Step 42 — Extending Alternator Battery Cable



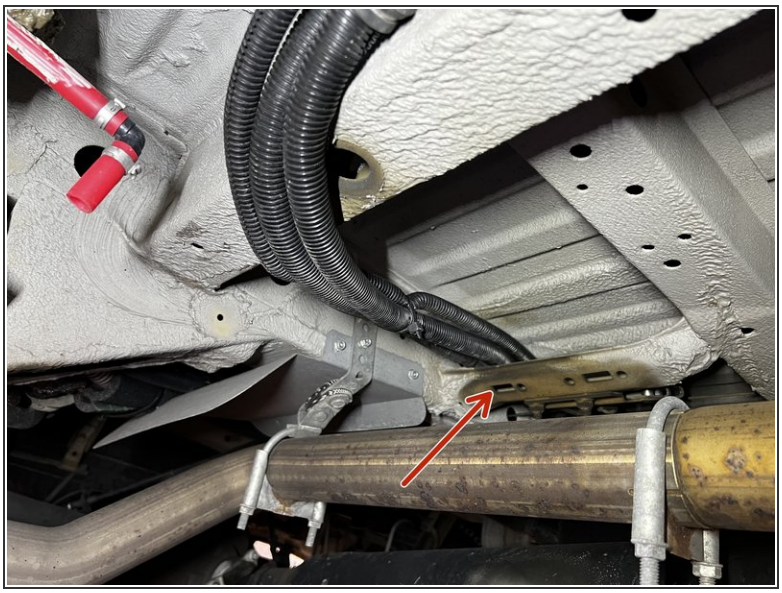
- With the rear most clamp removed, we can generate slack in the wires by moving them towards the front of the vehicle. See video for reference.
- Starting with the second rear most clamp (clamp #2 in previous images), move the wires towards the front of the vehicle. Slide the clamp down the wires, and reinstall the self drilling screw into the same hole it was removed from.

Step 43 — Extending Alternator Battery Cable



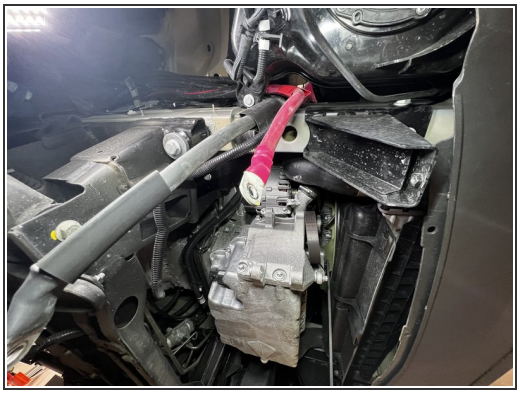
- Continue to the next clamp. Hold the wires tight with one hand, and with the other hand slide the clamp down the wires, lining the clamp up with the original hole in the underside of the vehicle.
- Reinstall the self drilling screw securing the clamp in the same hole it was removed form.
- Continue this for the remaining clamp, working the clamp down the wire, and reinstalling the clamp to the same spot it was removed from. Work the slack from the wires to the front of the van.
- Once you have all the clamps reinstalled, pull the wires from their ends at the front of the van to gain slack for securing to the alternator.

Step 44 — Extending Alternator Battery Cable



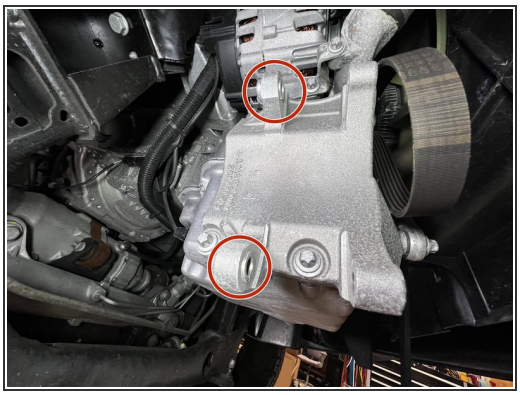
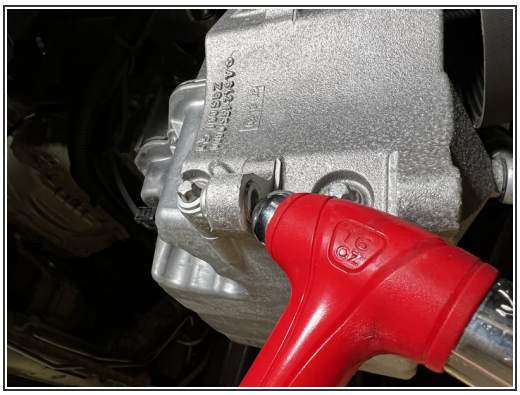
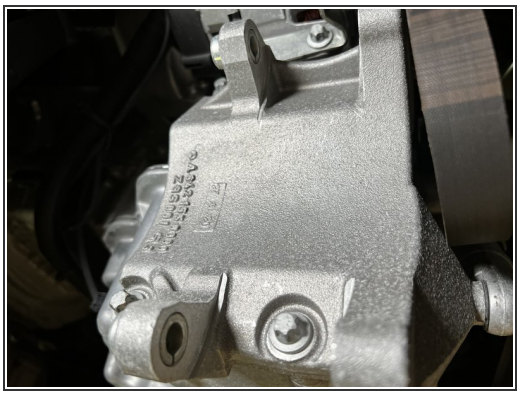
- Since we removed rear-most clamp, secure the wire bundle the rear crossmember support using a provided zip tie.

Step 45 — Inspecting Battery Cables for Chaffing



- With the battery cables extended, inspect the wires closely for chaffing damage near where the wires go under the front frame rail to connect to the alternator. Also inspect the heat shrink on the cable lugs for damage.
- If chaffing damage is found, use the provided heat shrink to slide over the damaged area. Use a torch or heat gun to shrink the heat shrink tubing.

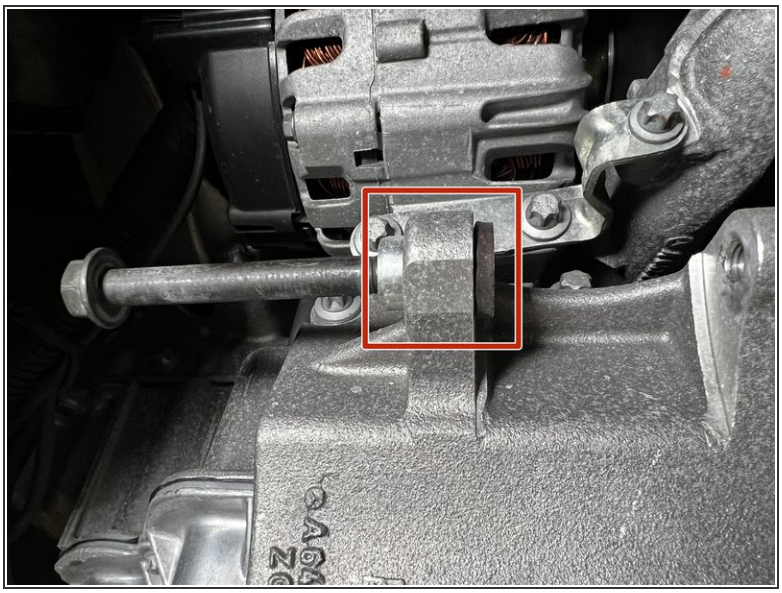
Step 46 — Alternator Reinstallation

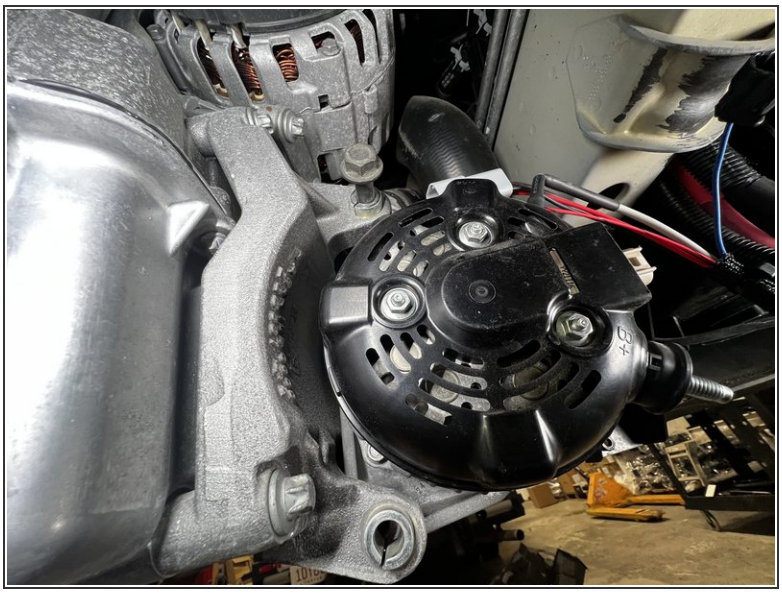




- Using a ball peen hammer, **gently** tap the sleeves in the alternator mounting bracket to the rear of the vehicle until they are flush with the mounting bracket. This will make the alternator much easier to reinstall.

⚠ Take care to not strike the mounting bracket hard with the hammer, which could potentially damage the bracket.

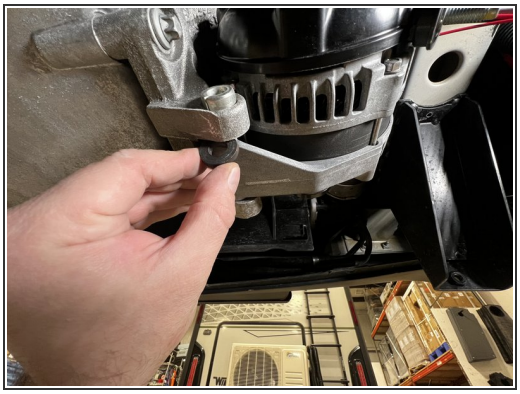
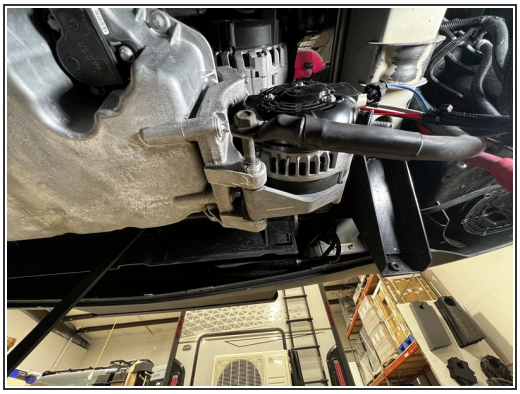
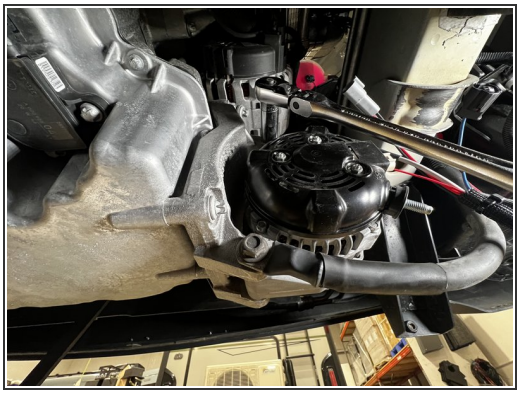
Step 47 — Alternator Reinstallation





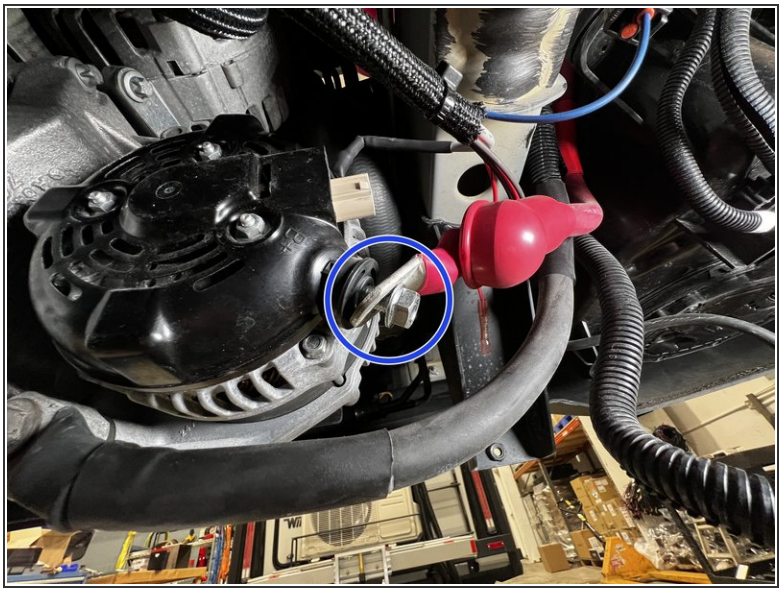
- Take the top mounting bolt and slide it into the mount. Install the metal spacer onto the bolt. The bolt should protrude just enough to hold the spacer.
- Lift the alternator into place, and slide the top mounting bolt through the alternator. Just start the bolt by hand.

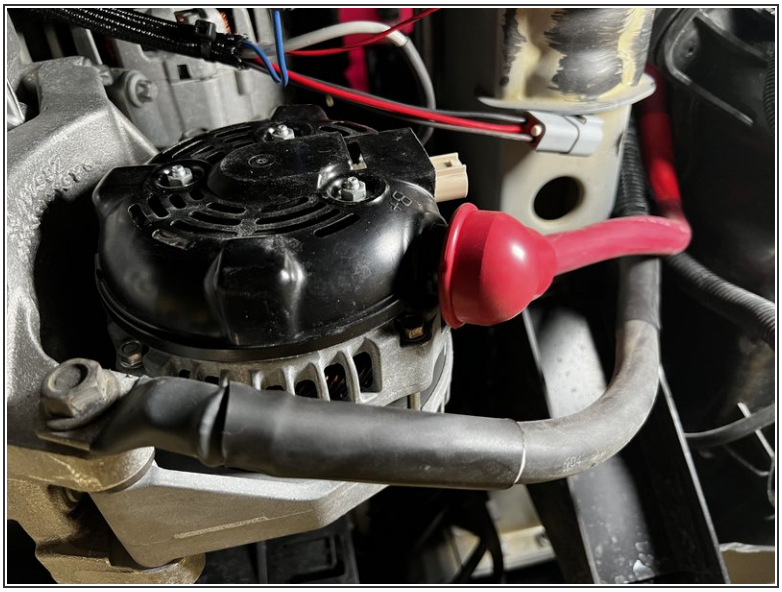
Step 48 — Alternator Reinstallation

- Slide the lower mounting bolt through the negative (black) cable lug.
- Place the metal spacer between the alternator mounting bracket and the alternator.
- Slide the bolt through the alternator mounting bracket and alternator. Start the bolt by hand.
- Once both the alternator mounting bolts are started, tighten them using a 15mm socket and wrench. Ensure the bolts are snug, but do not over tighten them and damage the threads in the mounting bracket.

Step 49 — Alternator Reinstallation



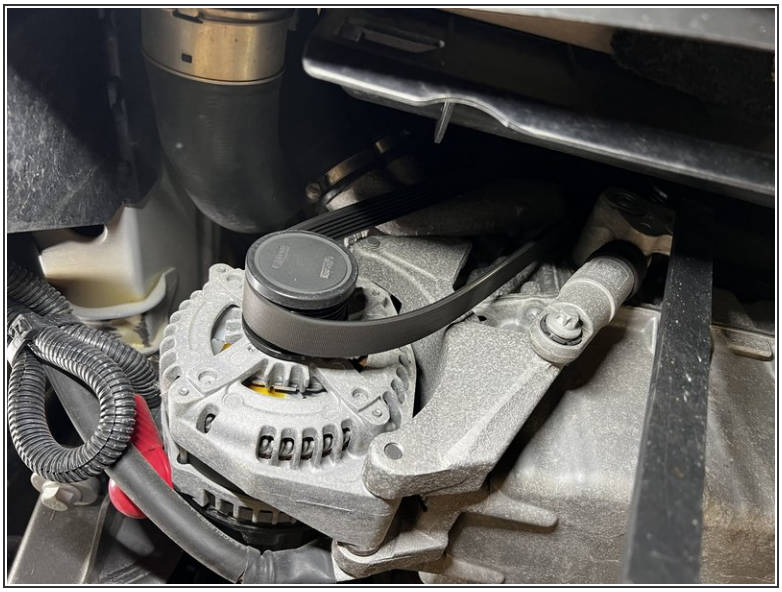


- Connect the positive (red) wire onto the positive post on the alternator. Reinstall the nut and tighten using a 13mm socket and wrench.

⚠ Ensure the nut is snug, but do not over tighten. The stud can be broken off the alternator if care is not taken.

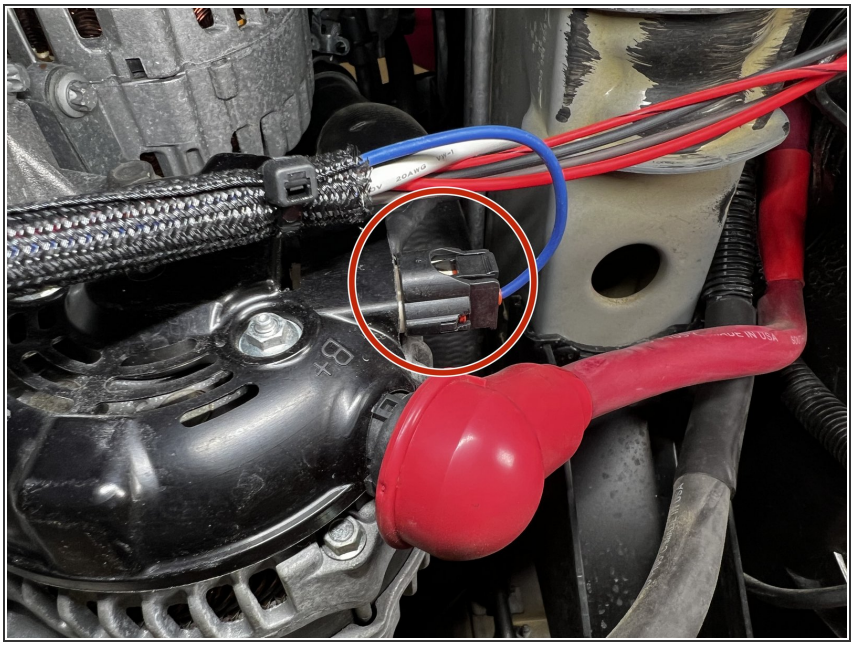
- Slide the protective boot back over the stud.

Step 50 — Alternator Reinstallation



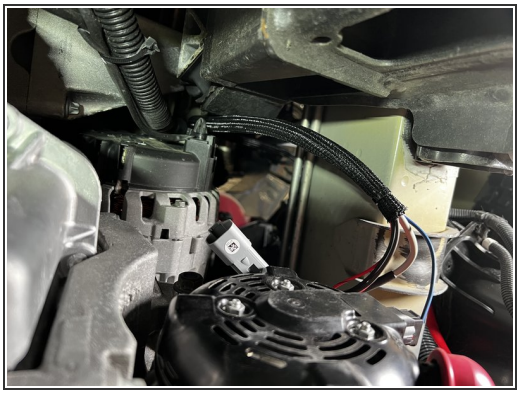
- Use the belt tensioner release tool to release the tensioner. Pull the tool towards the passenger side of the vehicle to release the tensioner.
- Slide the belt back onto the alternator.
- Ensure the belt is properly seated onto to all pulleys.
- Release the tensioner tool, and remove the tool from the tensioner.

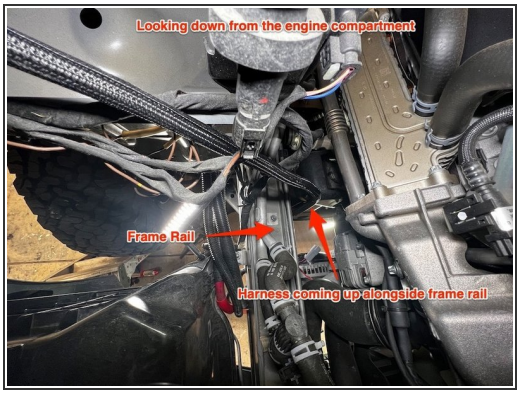
Step 51 — Field Wire Connection

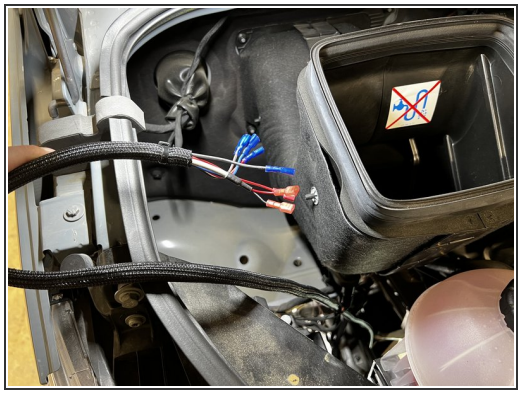


- Connect the field wire connector to the alternator. This is the blue wire with a connector on the end of it.

Step 52 — Alternator Harness Installation







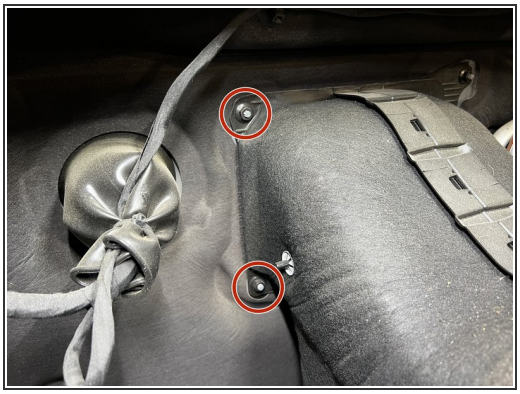
- Take the alternator regulator harness and route it up to the passenger side of the engine compartment. It will go along side the inner frame rail.
- Set the harness off to the side, as we will install the regulator next.

Step 53 — Regulator Installation to Mounting Bracket

- Locate the regulator, mounting hardware, and the mounting bracket.
- Install the regulator onto the mounting bracket as shown. Install the hardware, and use a 10mm socket and wrench to tighten the nuts.

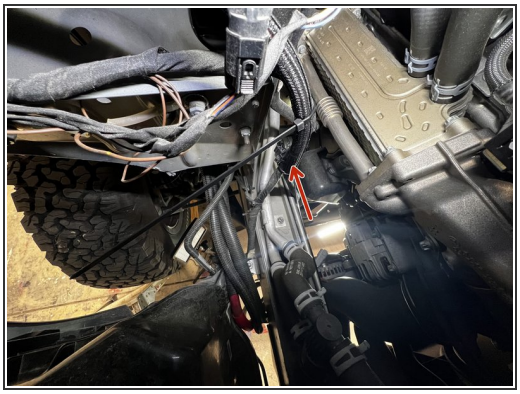
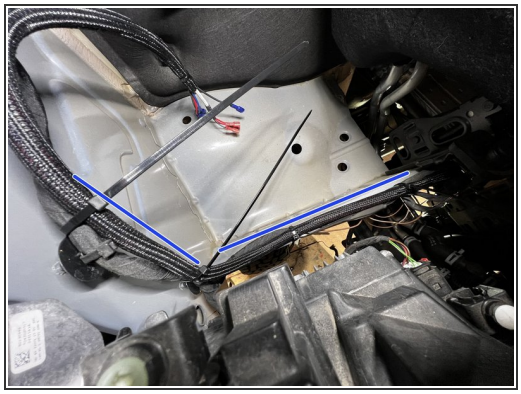
ⓘ In some images you may notice a sticker on the regulator. This is for internal use, so do not worry if there is a different label on your regulator versus what is shown in the images.

Step 54 — Regulator Installation



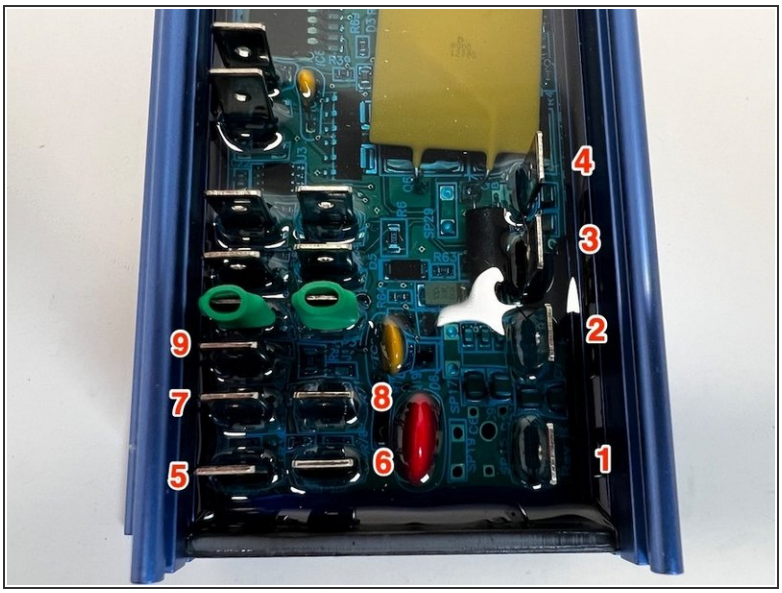
- Locate the HVAC air intake on the passenger side of the engine compartment.
- Remove the 2 nut securing the HVAC air intake duct on the passenger side of the vehicle using a 10mm socket and wrench.
- Slide the regulator and mounting bracket **over** the mounting studs and HVAC air intake duct.
- Reinstall the nuts using a 10mm socket and wrench, and snug.

Step 55 — Alternator Harness Installation

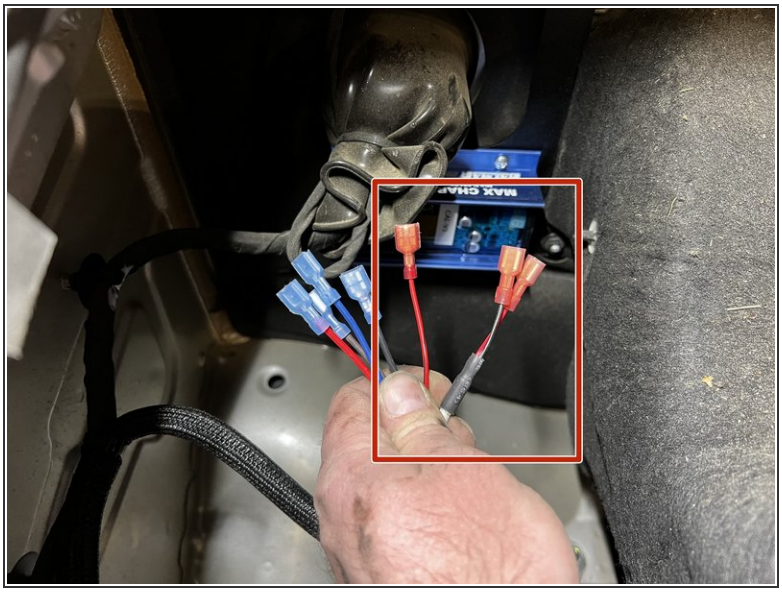

- Route the harness along the OEM harness running up the inner fender. Secure using the provided zip ties.
- Continue following the OEM harness along the inner fender support, towards the fender. Secure using the provided zip ties.
- Route the alternator harness along the fender, towards the regulator.

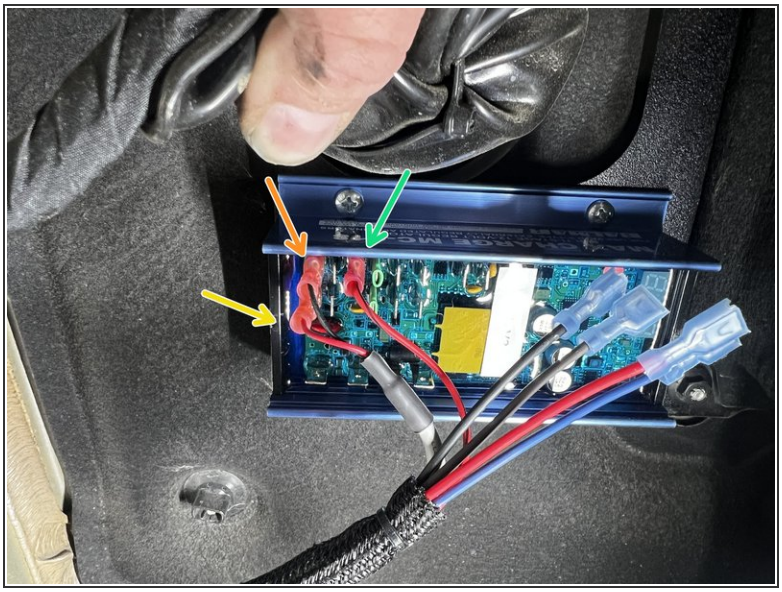
Step 56 — Balmar Regulator Pin Out Diagram



- This is the pin out diagram for the Balmar regulator. This will be needed in the coming steps.

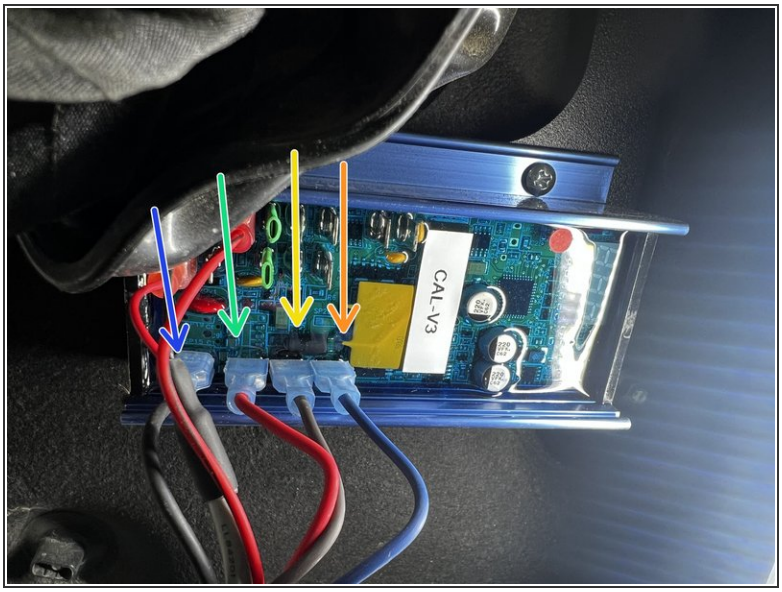
Step 57 — Alternator Regulator Harness Connection





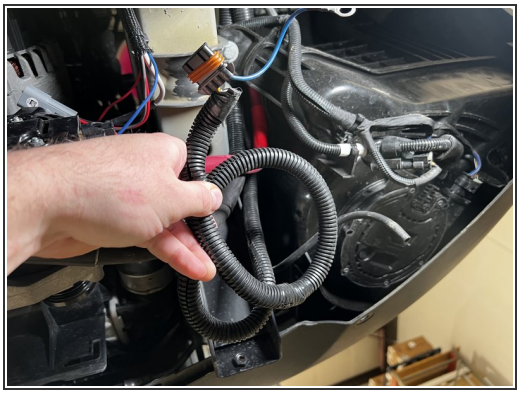
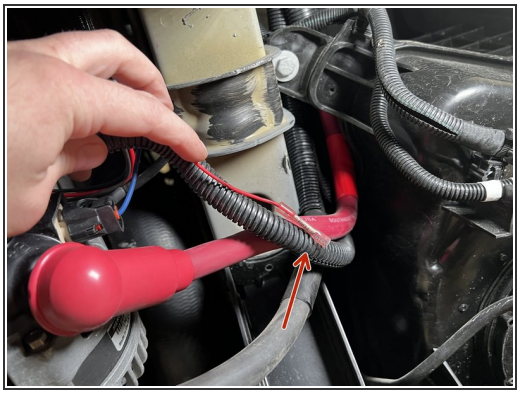
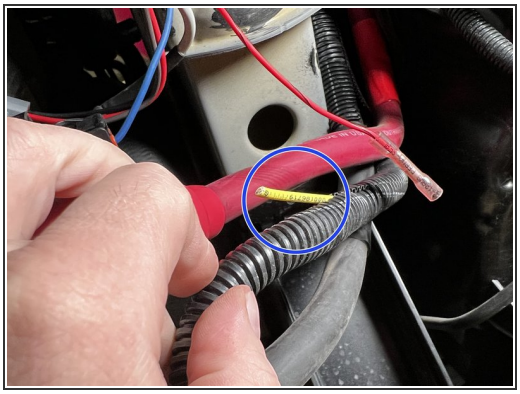
- Connect the alternator temp. sensor negative (black) wire to pin #5.
- Connect the alternator temp. sensor positive (red) wire to pin #6
- Connect the voltage sense (red w/black stripe) wire to pin #9

Step 58 — Alternator Regulator Harness Connection



- Connect the ground (black) wire to pin #1
- Connect the power (red) wire to pin #2
- Connect the ignition (brown) wire to pin #3
- Connect the field (blue) wire to pin #4
- Once all the wires are connected, ensure the harness is properly secured, and cut any zip tie tails flush.

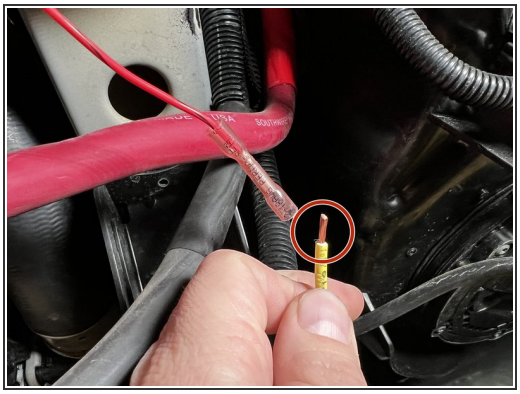
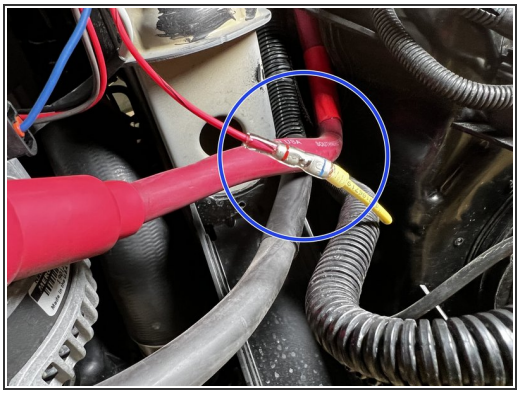
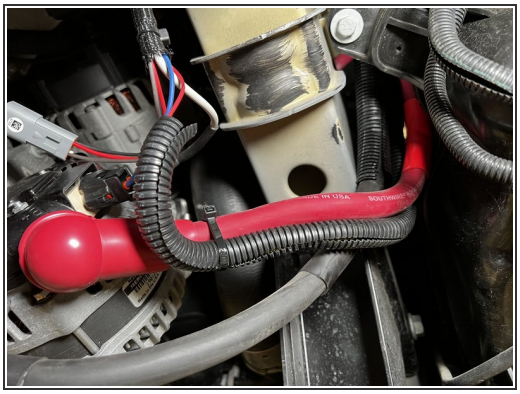
Step 59 — Alternator Harness Installation

- Locate the original harness that plugged into the alternator.
- Take the red w/black stripe wire (has a butt connector pre-installed) and lay it along the original harness that plugged into the alternator. Use this to determine where to cut the original harness, and mark the cut location.
- Pull the yellow wire out of the split loom, and cut the wire at the mark you made. Discard the cut end of the yellow wire.

ⓘ The pre-installed butt connector may be slightly different than the one depicted in the images.

Step 60 — Alternator Harness Installation

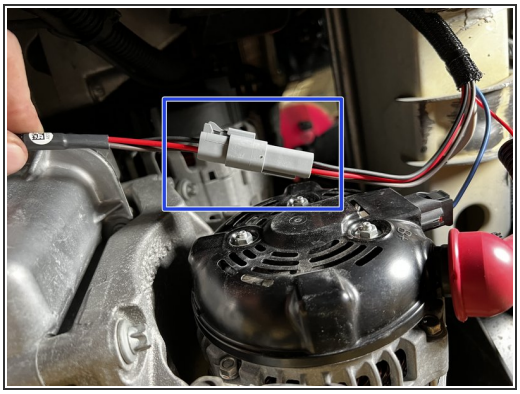
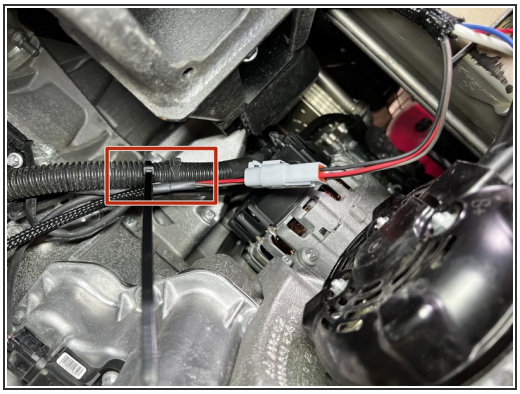




- Strip approx. 3/8" of insulation off the yellow wire.
- Install the stripped end of the yellow wire into the butt connector. Crimp and heat shrink this butt connector.

ⓘ The pre-installed butt connector may be slightly different than the one depicted in the images.

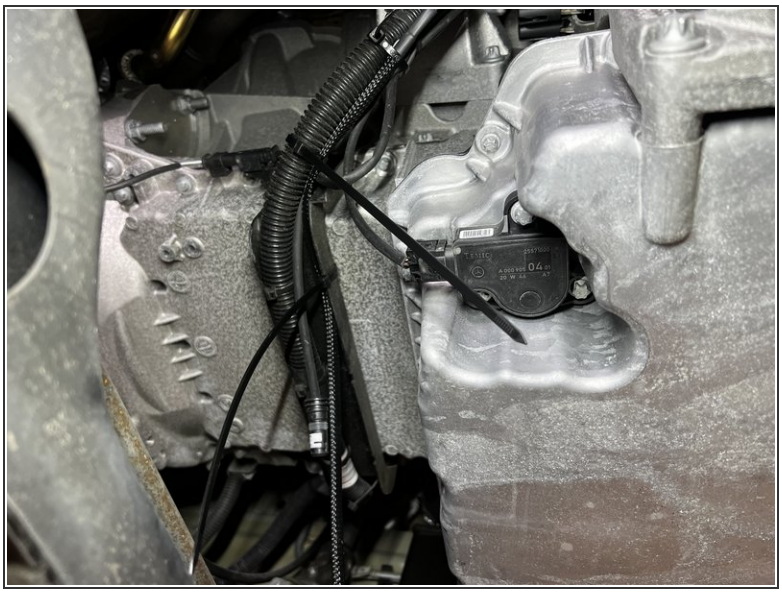
- Slide the split loom over the butt connector, and onto the red w/black stripe wire. Trim the excess split loom and discard. Secure the wire using a zip tie to the positive (red) battery cable.

Step 61 — Alternator Sub Harness Installation

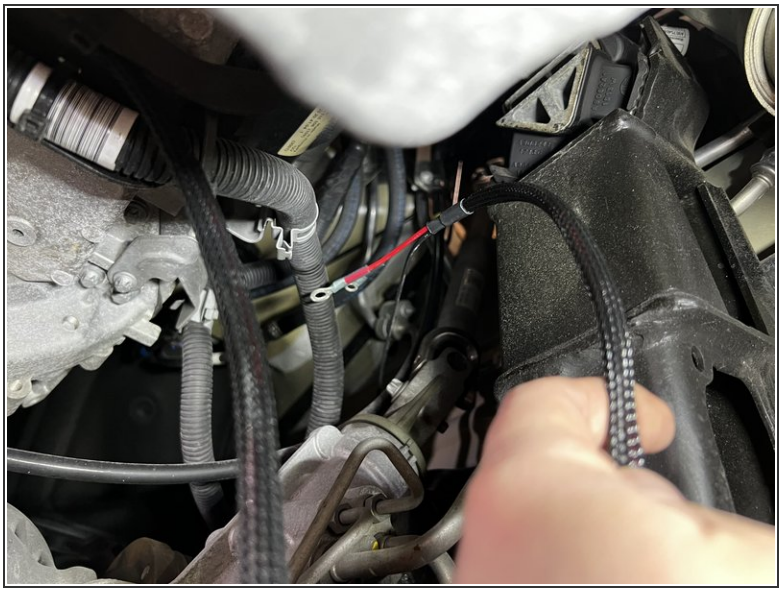
- Locate the alternator sub harness.
- Plug the end of the alternator sub harness into the deutsch connector on the regulator harness.
- Secure the sub harness to the OEM wire harness to support the deutsch connector using a provided zip tie.

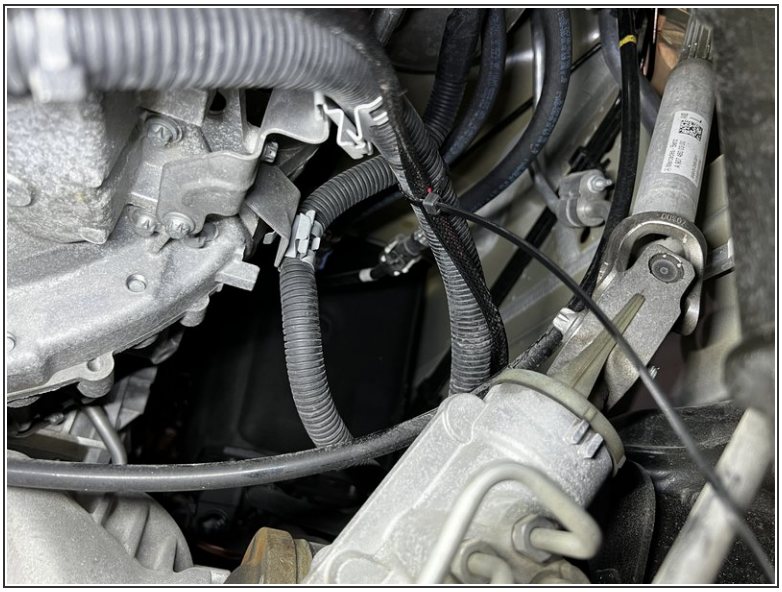
Step 62 — Alternator Sub Harness Installation



- Continue securing the alternator sub harness, following the OEM wire harness that runs in the plastic wiring tunnel under the oil pan of the engine.
- There are holes in the plastic wire tunnel to route zip ties through to secure the alternator sub harness. Trim the zip tie tails once the zip ties are secure.

Step 63 — Alternator Sub Harness Installation





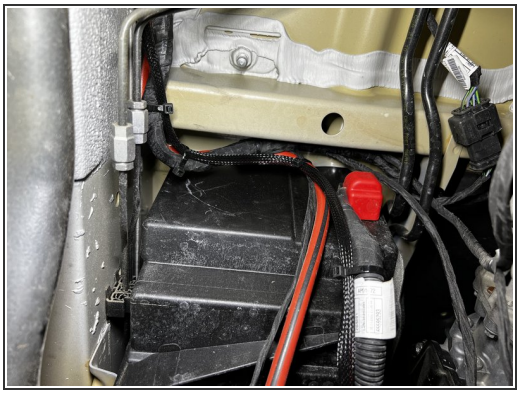
- Continue routing the alternator sub harness along the OEM wire harness, around the steering shaft.
- Secure the alternator sub harness to the OEM wire harness using the provided zip ties.

Step 64 — Alternator Sub Harness Installation



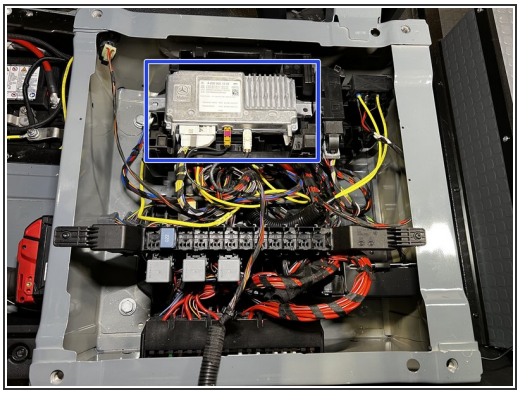
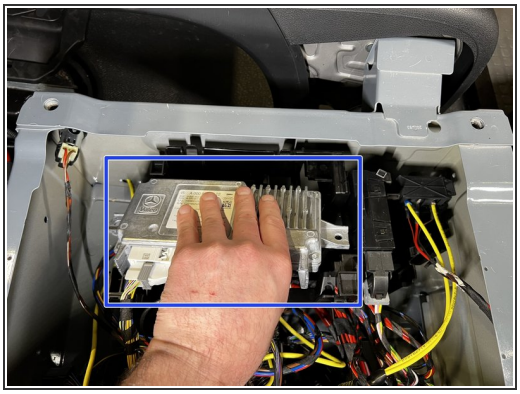
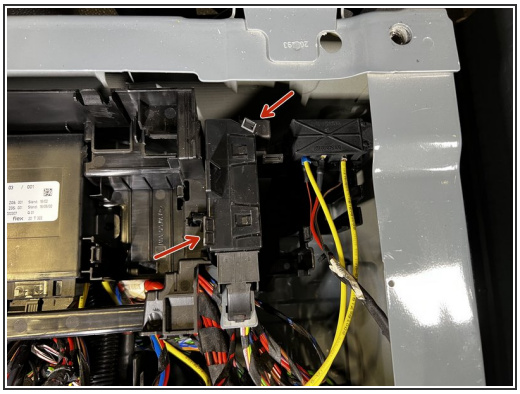
- Continue following the OEM wire harness over the CV axle, securing along the way with the provided zip ties.
- Open the plastic cover on the battery box.
- Route the alternator sub harness along the OEM wire harness that runs on the bottom of the battery box, securing along the way with the provided zip ties.
- Close the plastic cover after the zip ties are secured.

Step 65 — Alternator Sub Harness Installation

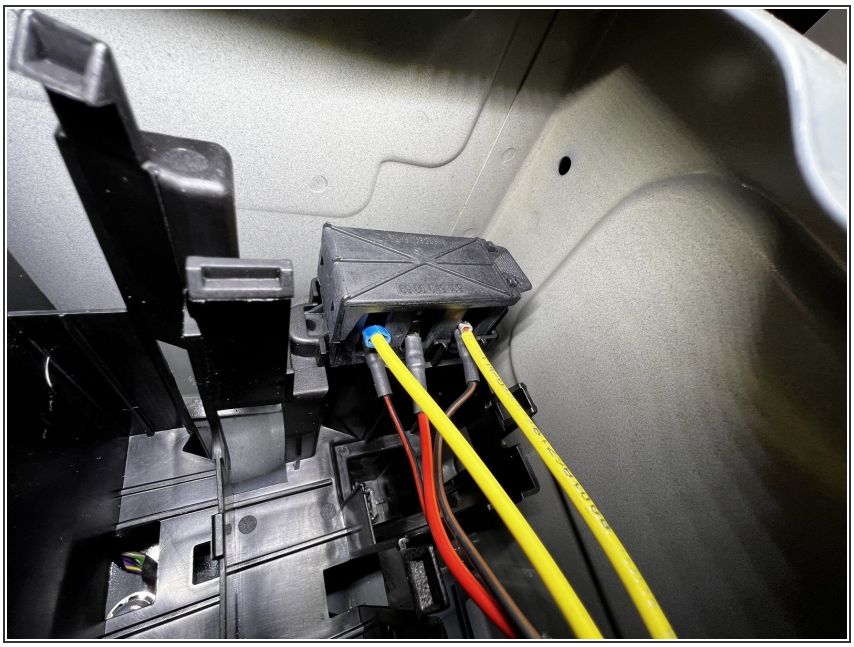

- Continue following the OEM wire harness up and along the back of the battery compartment, securing along the way with the provided zip ties.
- Follow the OEM harness until you reach the wire pass through boot that goes through the floor to under the driver's seat base.
- The alternator sub harness will pass through this boot to enter into the driver's seat base.

Step 66 — Seat Base Wiring Disassembly

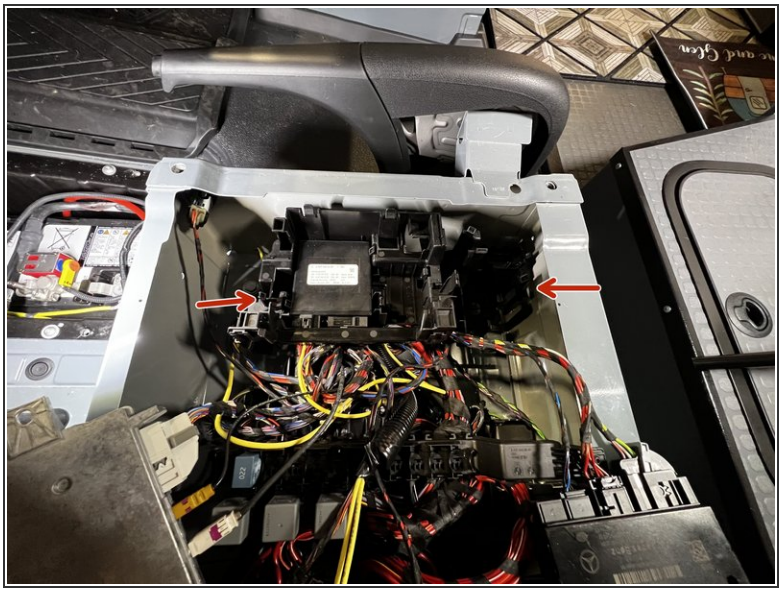
- Remove the silver module from the module mounting bracket by lifting up and pulling towards the driver's door.
- Remove the next module by pushing the locking tabs to the side, and lifting up.

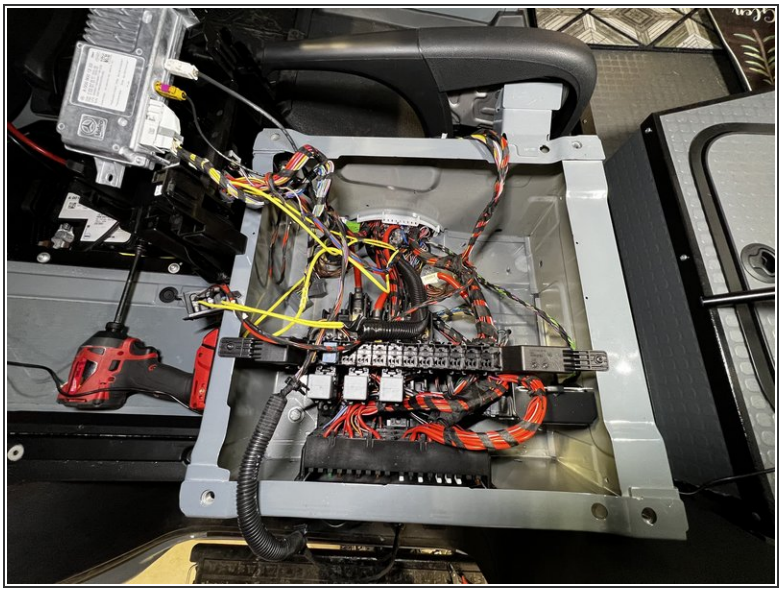
Step 67 — Seat Base Wiring Disassembly



- Remove the EK1 module by pushing the locking tab (near the rear of the seat base) to the rear of the van, and lifting the right side of the EK1 up to slide it out of the mount.

Step 68 — Seat Base Wiring Disassembly





- Using a 10mm socket and wrench, remove the 2 nuts securing the module mounting bracket to the seat base. There is 1 nut on each side.
- With the nuts removed, lift the module mounting bracket up and move it to the side, leaving all wires connected. Set the previously removed modules off to the side as well.

Step 69 — Alternator Sub Harness Installation

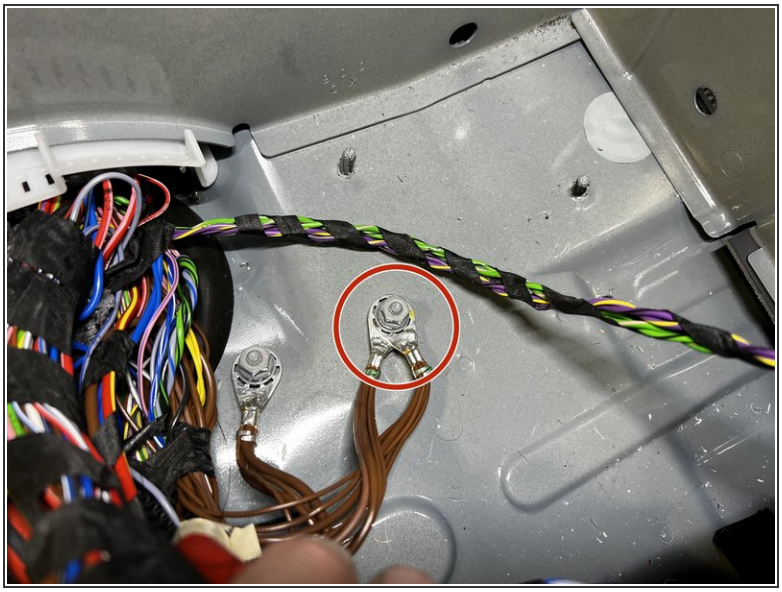


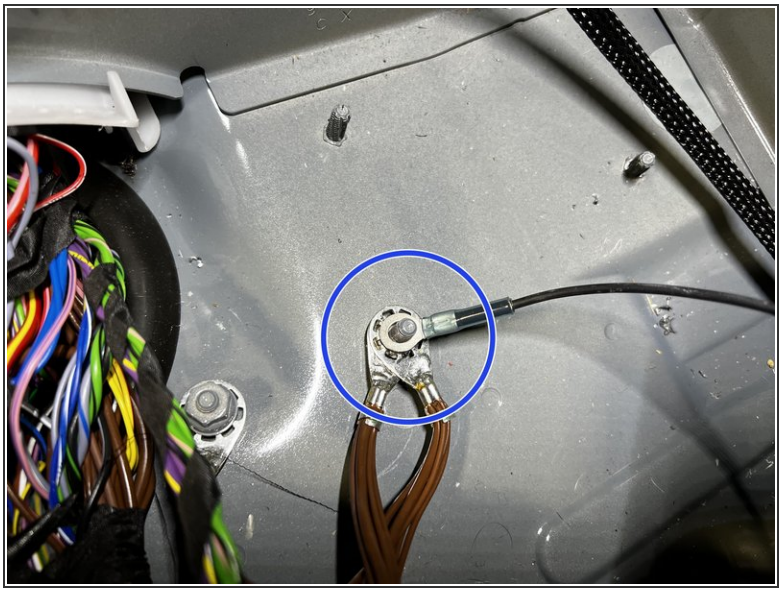
- Under the van locate the wire pass through boot that goes under the driver's seat.
- There is typically a zip tie securing the boot closed. Cut this zip tie.
- In order to pass the alternator sub harness up, the foam in the boot needs to be removed. Use your fingers to break apart the foam in the boot.

⚠ Do **not** use anything other than your hand to break apart the foam. There are very fine wires that are easily damaged in the boot and foam!

- Once enough foam is removed, pass the alternator sub harness through the boot up into the driver's side seat base. Secure the boot closed with one of the provided zip ties.

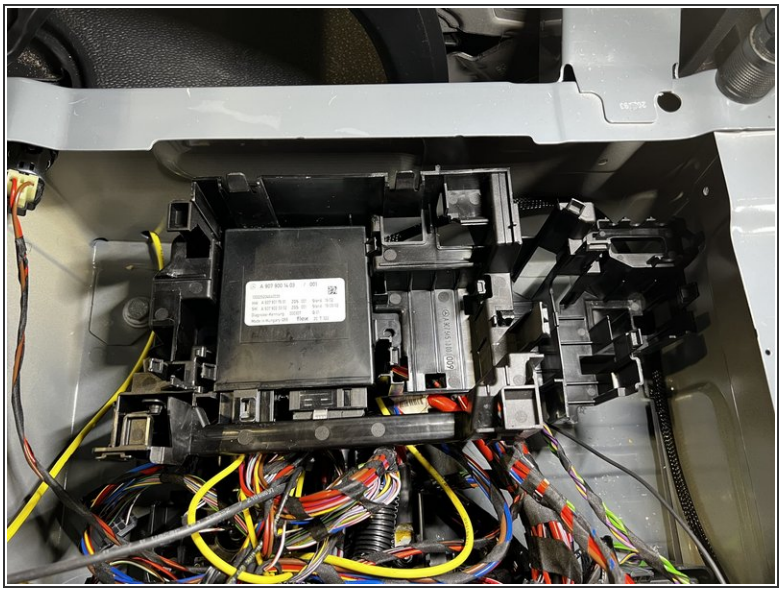
Step 70 — Alternator Sub Harness Connection

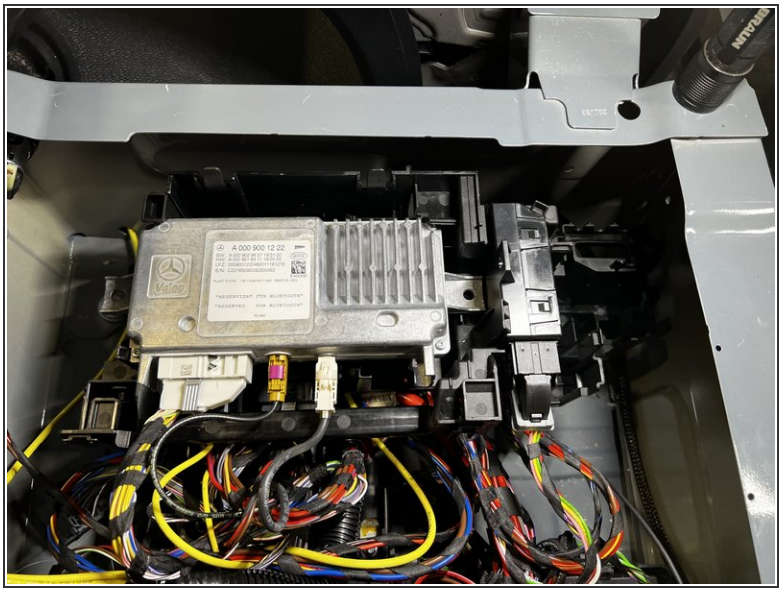




- Locate one of the ground studs under the seat base towards the rear. Remove the nut using a 10mm socket and wrench.
- Place the long black wire from the alternator sub harness onto the ground stud, and reinstall the nut. Tighten the nut using a 10mm socket and wrench.
- The alternator sub harness should route along wall of the seat base closest to the passenger side of the vehicle. Ensure the wire from the alternator sub harness faces the passenger side of the vehicle.

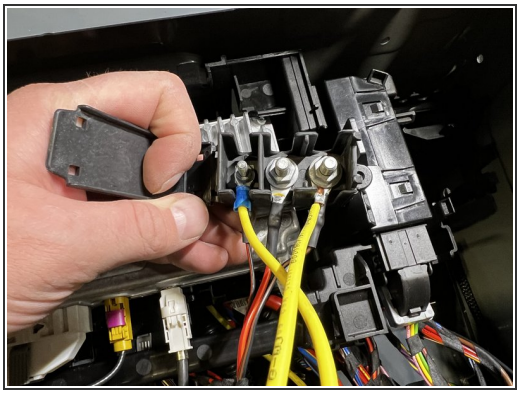
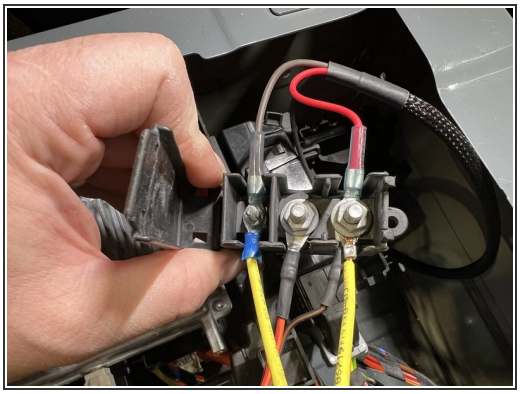
Step 71 — Module Mounting Bracket Reinstallation





- Reinstall the module mounting bracket, ensuring no wires are being crushed by the bracket.
- Reinstall the nuts securing the module mounting bracket using a 10mm socket and wrench.
- Place the two modules removed from the mounting mounting bracket back into the bracket. Leave the EK1 module out as we will be connecting the remaining wires to it.

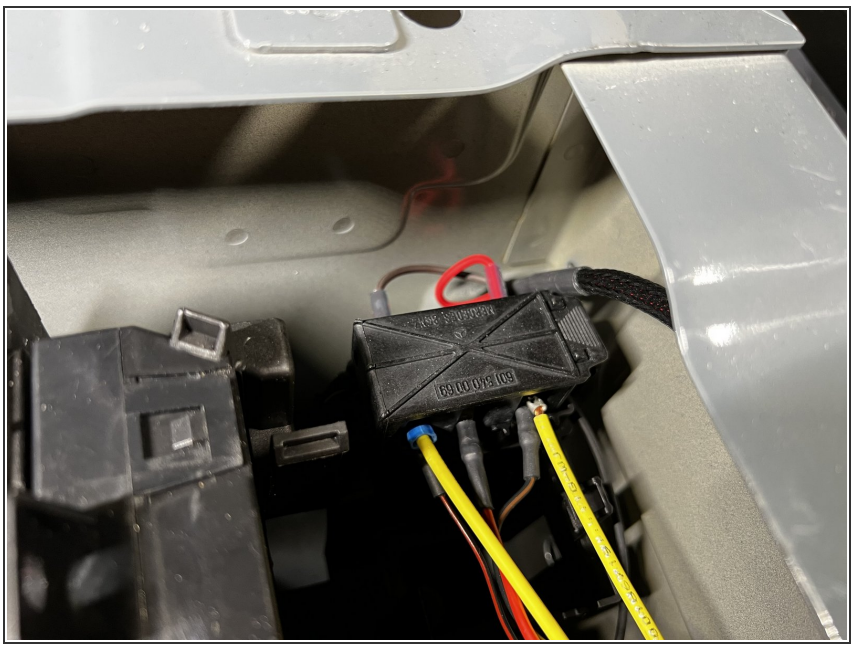
Step 72 — Connecting the Alternator Sub Harness Wires

- Open the cover on the EK1 module by prying up on the tab.
- Using a 10mm socket and wrench, remove the nut on the right side of the EK1 module. Place the red wire onto this stud, and reinstall the nut.
- Using a 7mm socket and wrench, remove the nut on the left side of the EK1 module. Place the brown wire onto the stud, and reinstall the nut.

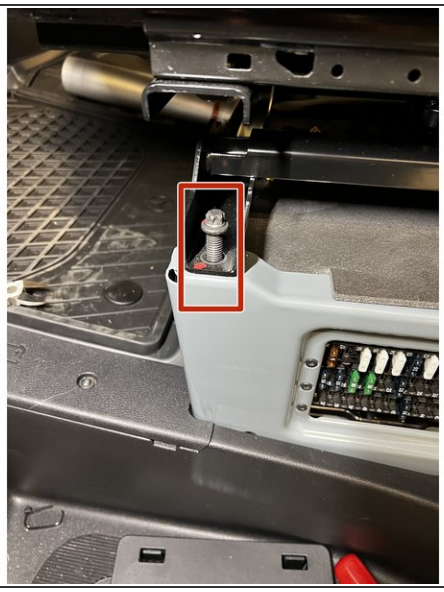
⚠ Take care tightening the nuts on the EK1 module to not over tighten them.

Step 73 — EK1 Module Reinstallation



- Reinstall the EK1 module into the mounting bracket.

Step 74 — Installing Seats Back Into Van

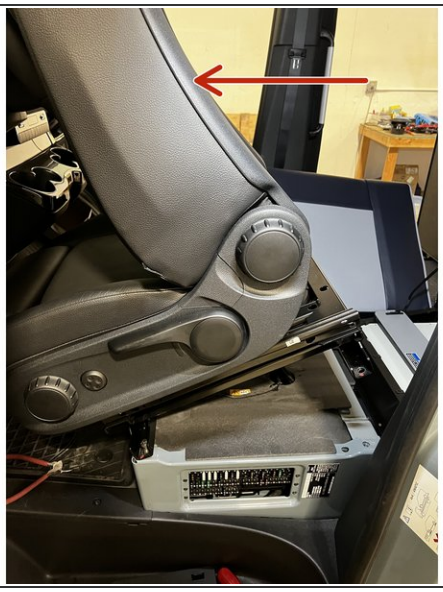


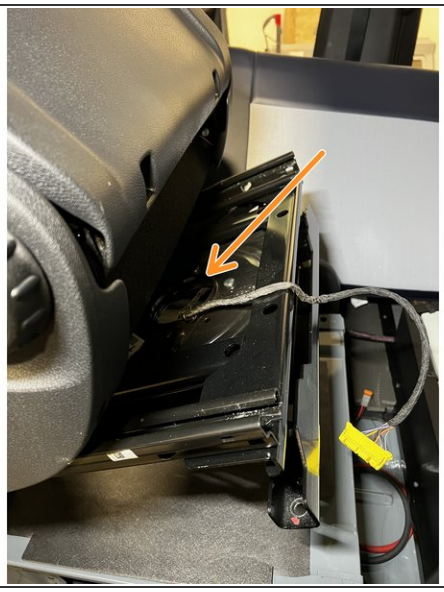
- Lift the seat into the van, and place on the seat base.

ⓘ Take care not to scratch the seat base when placing seat into van. Masking tape can be used on the seat base to help avoid damage.

- Start the front 2 seat bolts into the base by hand, only a few turns.

Step 75 — Installing Seat Bolts and Seat Wire Harness





- With the front 2 bolts started, tilt the seat forward.
- Feed the seat wiring harness through the center hole up through the seat swivel.
- Lower the seat back onto the base, and start the rear 2 seat bolts by hand.

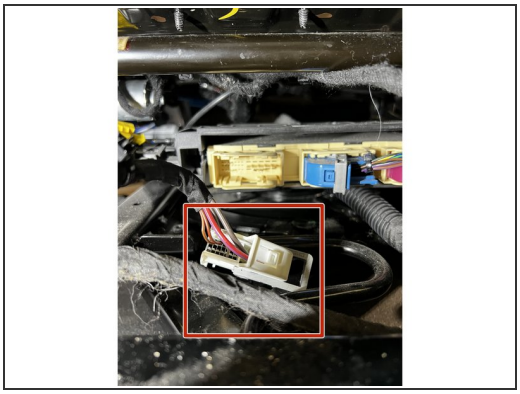
⚠ Take care to start the seat bolts by hand to avoid cross threading the bolt into the nut on the seat base.

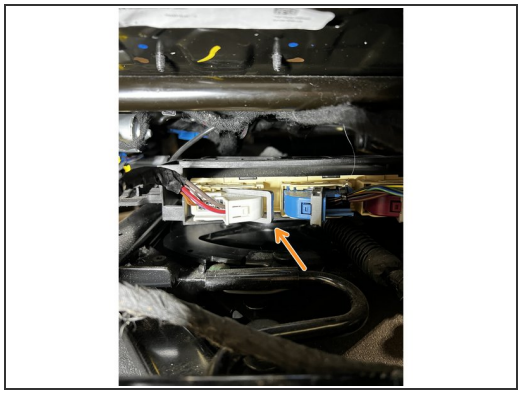
Step 76 — Final Torque of Seat Bolts

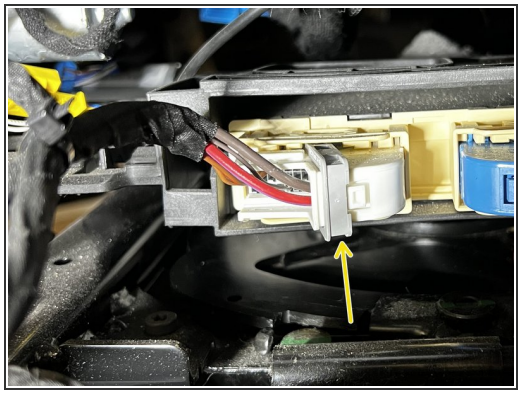
- With all the seat bolts started, tighten all the bolts and torque to 29 ft/lbs.

ⓘ Seat will need to be swiveled to access all the seat bolts.

Step 77 — Seat Wiring Harness - Power Seats



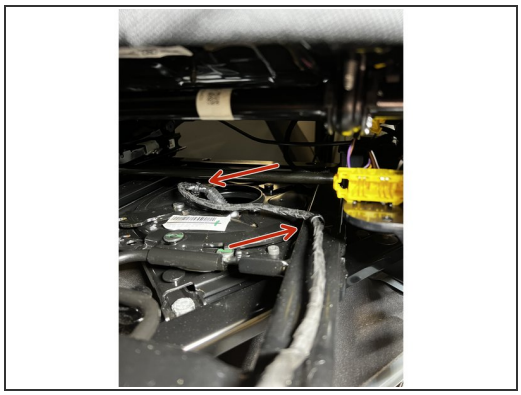
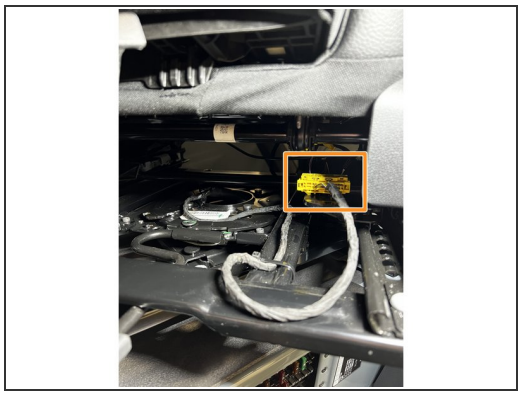




ⓘ If your van does not have power seats, skip to step 5

- Route the power seat harness to the control module under the seat, along with the seat wire harness.
- Insert the plug into the module. As the plug is inserted, the locking lever will start to close.
- Once the plug is fully seated, the lever can be moved into the locked position.

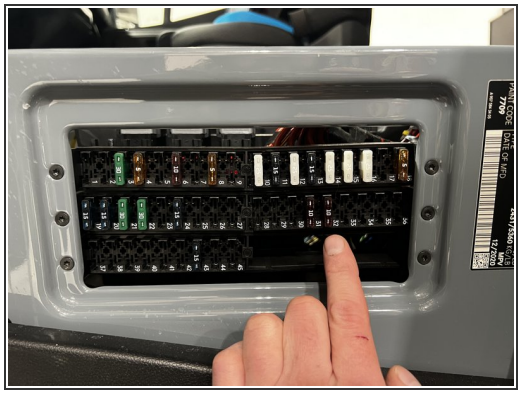
Step 78 — Seat Wire Harness Routing


- Route seat wire harness along seat rails, securing to the seat rail.
- Connect the plug from the seat wire harness into the connector on the seat.
- Secure the excess wire to the seat rail using a zip tie and trim zip tie tail.

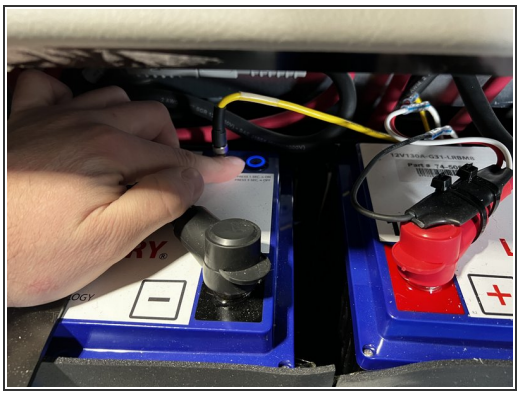
⚠ Ensure there is enough slack in the wire harness to allow the seat to slide forward and backwards, as well as rotate.

Step 79 — VS30 Battery Reconnection

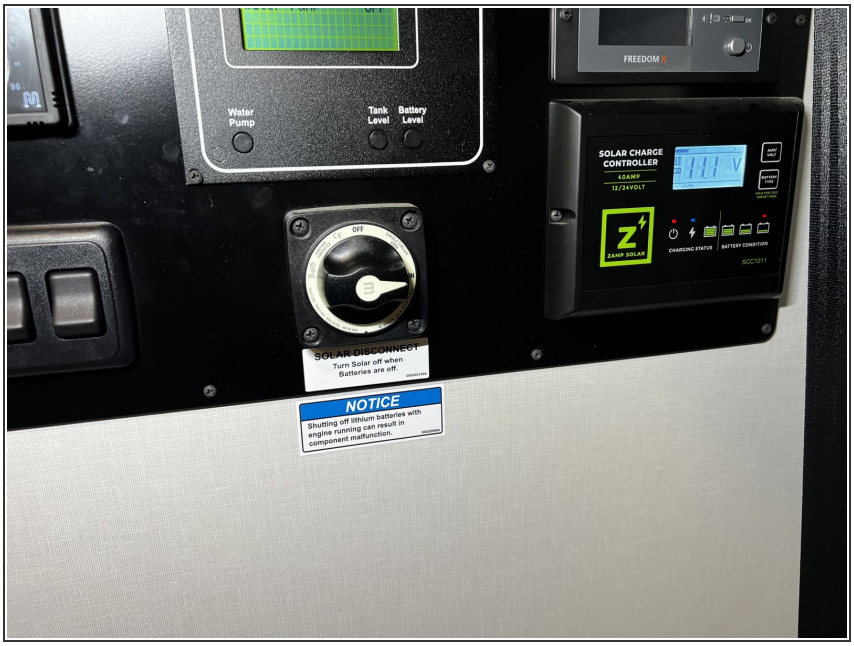

- Place the battery disconnect terminal back onto the ground stud.
- Push the battery disconnect terminal onto the stud until it clicks. Give the terminal a tug to ensure it is fully seated.
- Reinstall fuse #32
- Reinstall the battery disconnect access cover.

Step 80 — House Battery Power On



- Press the ON/OFF button on each battery to turn them on. The blue LED should illuminate when the battery is powered on.
- If equipped with a 3rd battery, ensure to power on that battery as well.
- Reinstall the battery compartment cover.

Step 81 — Solar Reconnection



- Turn the solar disconnect knob to the "ON" position on the control panel.