

ELECTRON AUTOMOTIVE

This visual aid will take you through the entire process on a 2nd generation Prius (2004-2009) on how to gain access to the hybrid battery, remove it from the vehicle, disassemble it, exchange the battery modules, reassemble it, and finally, reinstall it.

- 1) Open the rear hatch and remove the rear floor board by turning the latches to ensure it is unlocked and pull up from the handle at the middle rear edge.



- 2) Remove the rear storage container by inserting your hands into the slots on either side of the container and pulling up. You may have to tilt it at an angle to bring it out of the rear hatch.





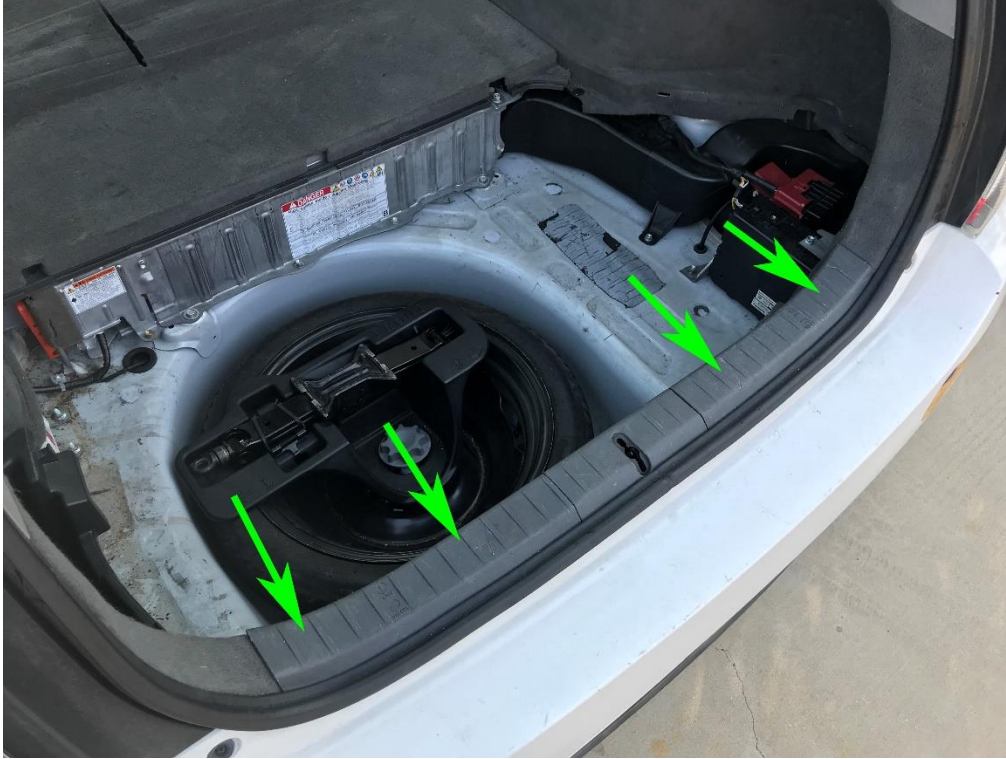
- 3) Remove the cover to the small storage container on the left-hand side by simply lifting up on it and the 12-volt battery cover on the right-hand side by removing the plastic side cover and firmly pulling up. This one will give a little resistance due to the fittings that cover up the auxiliary battery.



- 4) Disconnect the negative terminal of the auxiliary battery from the rear of the vehicle using a 10mm socket. Reinstallation torque is 77in lb



- 5) Remove the rear deck trim by pulling up on it with a firm grip in order to disconnect the 4 clips that are located approximately at the following arrow locations.



- 6) Remove the rear hatch shade if it is present by lifting up at either end.



- 7) Slide the seat belts out of the guides on the top of the rear seat back and lower the rear seats.



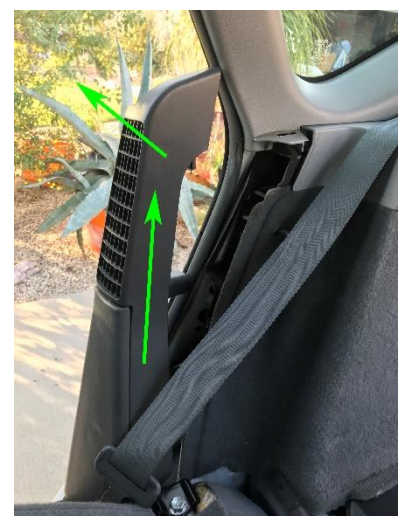
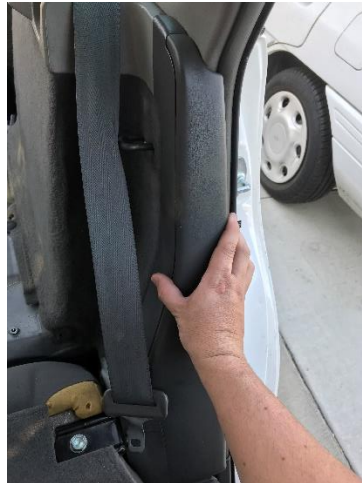
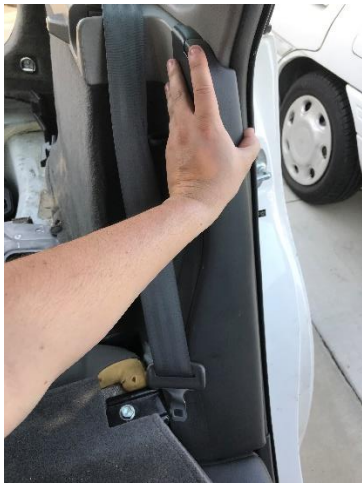
- 8) Remove the rear floor board on top of the hybrid battery by removing the two bolts and luggage strap connectors labeled 1 and 2 and then pull up firmly to disconnect the clips roughly located near the X marks in the following picture. Reinstallation torque is 57in lb





The floor board will still be attached by the velcro on the back of it and 2 hidden clips that you will need to remove the velcro to gain access to (as seen in the photo above). These clips can simply be pulled out by hand or using needle nose pliers.

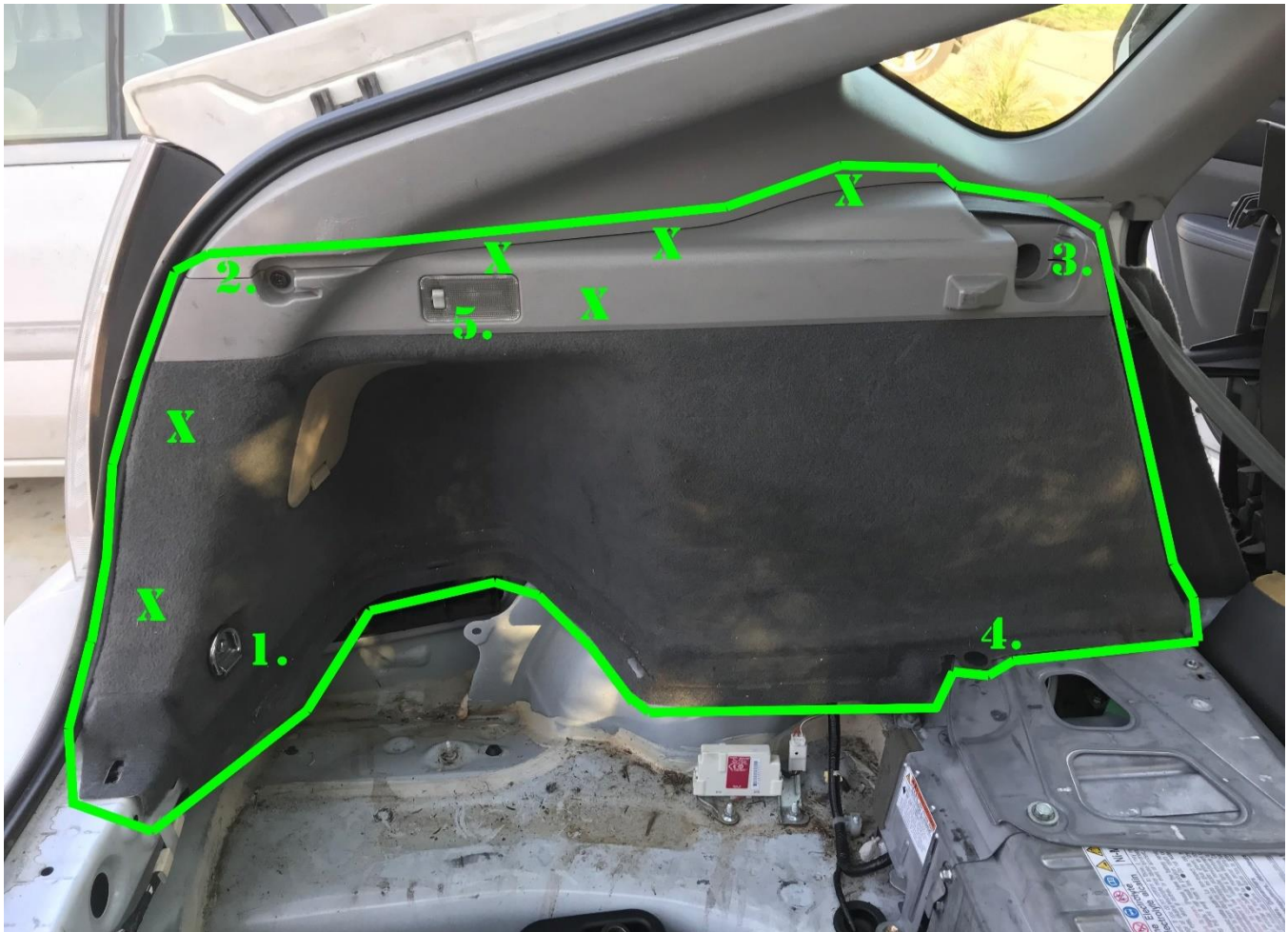
- 9) Disconnect rear seat side frames on both sides by firmly grabbing with both hands and pulling up and toward yourself. There is a bolt to remove this piece if it is too difficult to dislodge that can be accessed by spreading the material between this piece and the rear seat.



- 10) Next remove the small storage bucket on the left hand side of the rear hatch. There is a plastic nut in the bottom of the bucket that is easiest removed by pinching with pliers and pulling off. After this plastic nut is removed, the bucket can be lifted and removed.



- 11) Remove the left and right side panels of the rear interior walls. There are three 10mm bolts to be removed labeled 1, 2, and 3 (use an extension), and one exterior clip labeled 4 to be removed by hand or with needle nose pliers. There are interior clips located roughly around the X marks that will give resistance and just need to be pulled on to disconnect. The left-hand side will then have 1 plug to disconnect behind the light labeled 5. Use caution when removing the first couple clips that are closest to the very rear of the vehicle, as these clips are just glued to the fabric and can rip off easily. It is recommended to grab from the plastic base of the clip when removing these.



10mm Bolt 1

Reinstallation torque is 57in lb



10 mm Bolt 2

26in lb



10mm Bolt 3

49in lb



External Clip 4



Use caution when removing these first 2 clips behind the Interior wall and try to pull from the plastic base of the clip.

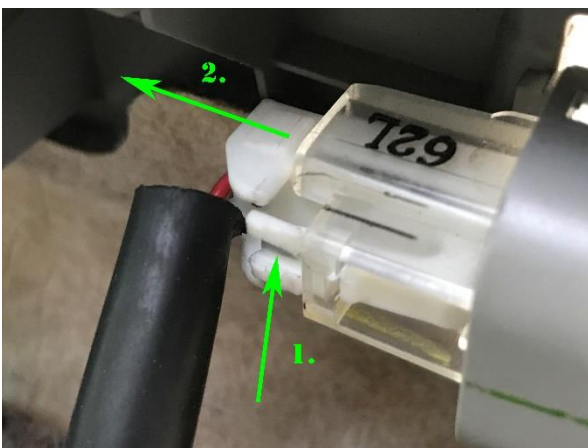


The rest pulls off easily.

Behind this light is

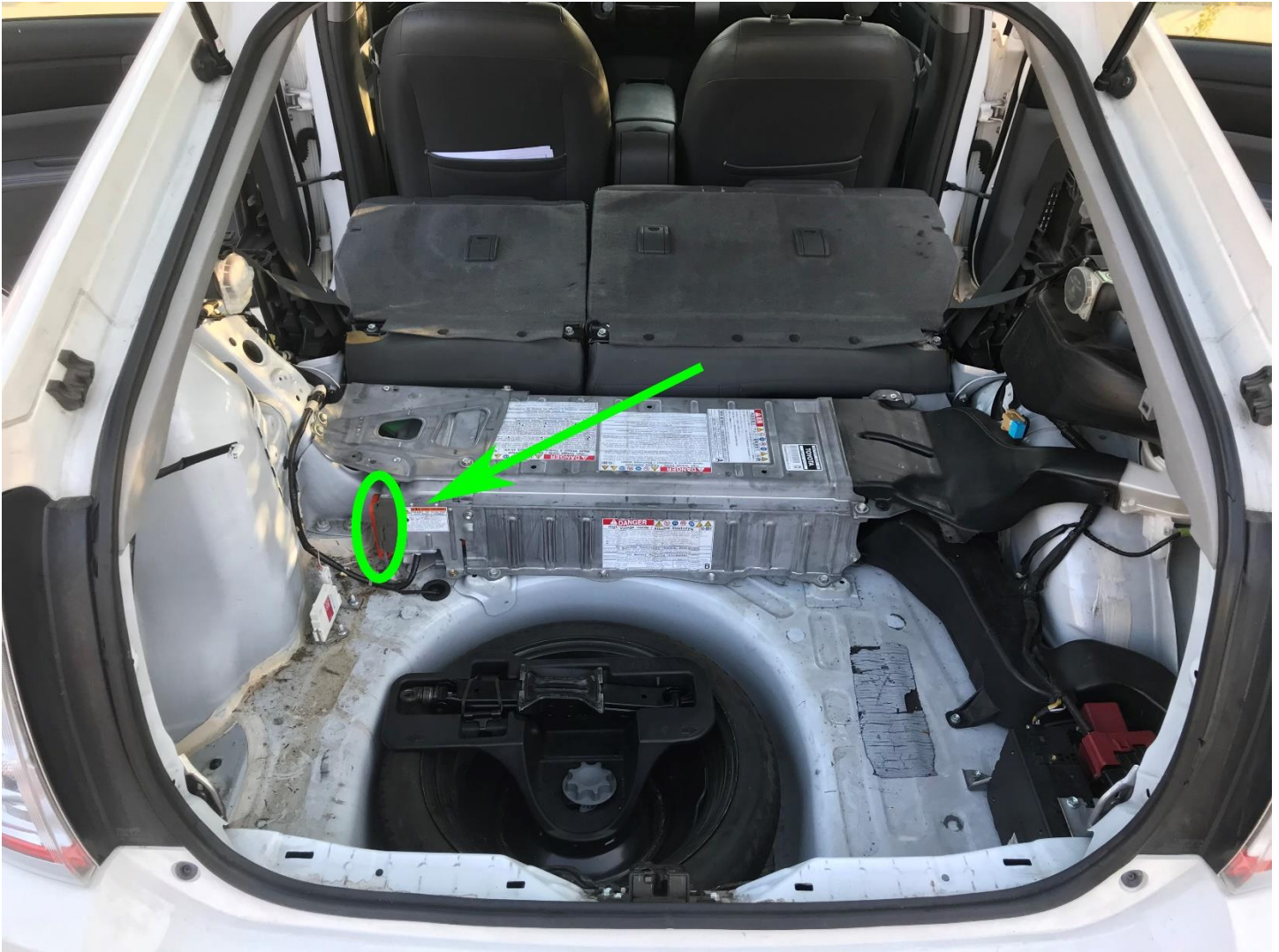
a plug.

Disconnect the plug.



This plug can be stubborn, first press down on the release (1.) then pull it out away from you toward the front of the vehicle (2.)

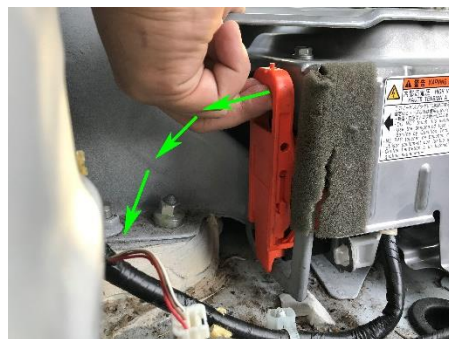
The entire hybrid battery assembly should now be visible, and once we remove the safety plug, we can begin to disconnect it.



- 12) Remove the orange safety plug by pulling the handle UP, then swing it OUT and DOWN, and then it will pull out horizontally. Set aside somewhere where it will not possibly get reinstalled until it is safe to do so. When the safety plug is removed, the voltage of the battery is cut down to a safe level and the vehicle will not start.



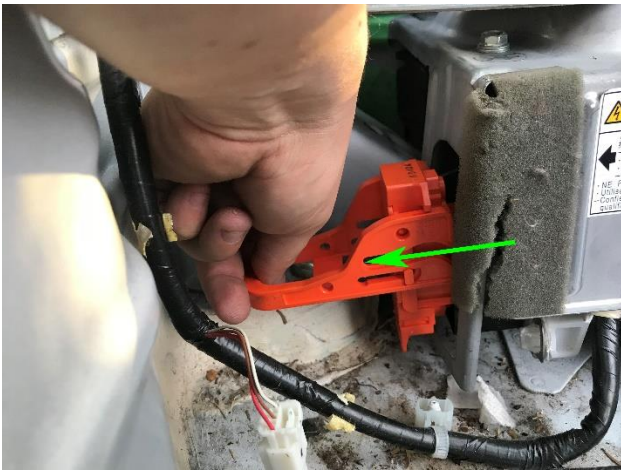
First Pull Up



Then Swing Down



Until Horizontal



The safety plug will now pull out horizontally.



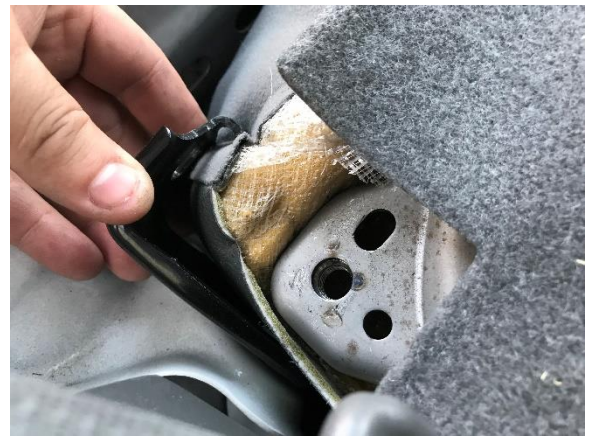
When it is out, the locking system is visible.

- 13) Remove four 14mm bolts in order to remove the rear seats which allows easier access to the back side of the hybrid battery. Reinstallation torque is 27ft lb

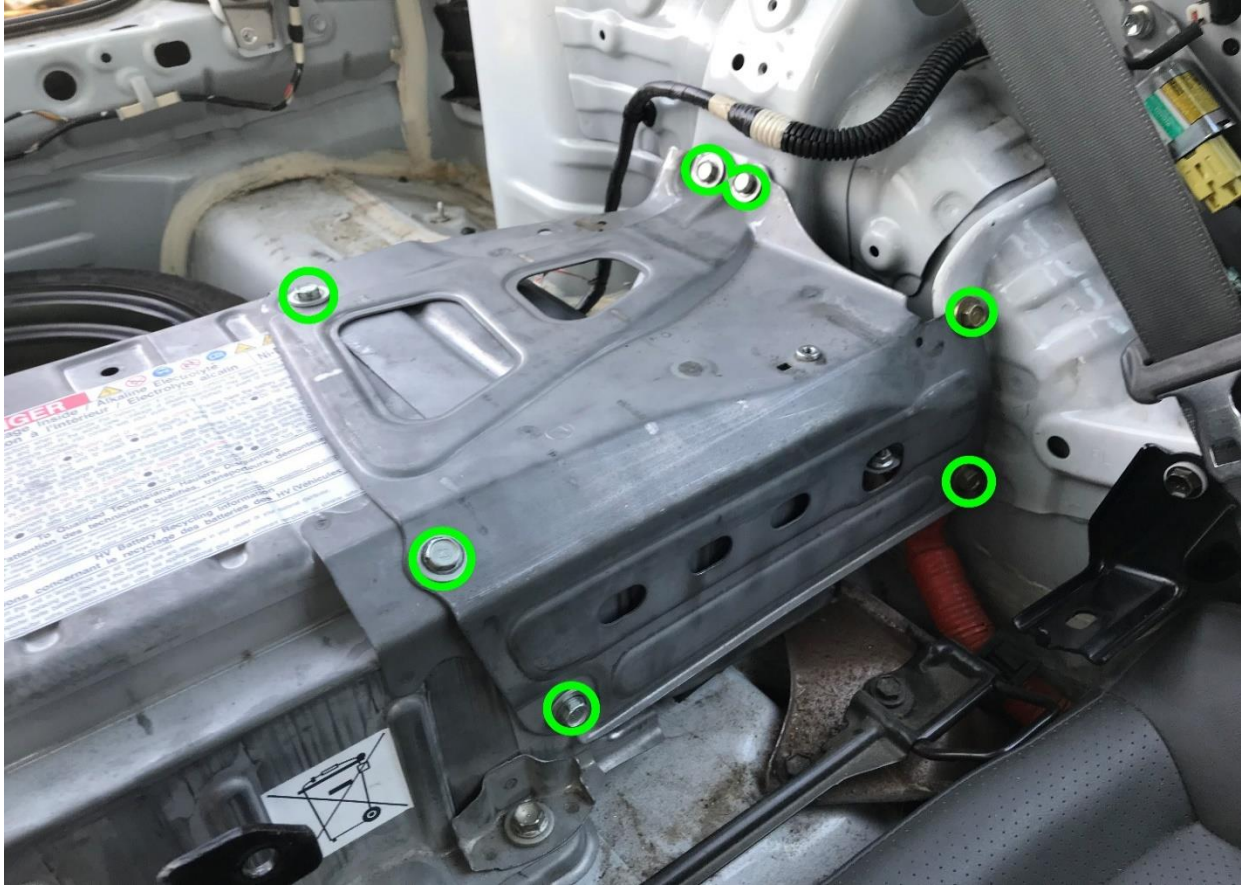


After you remove the 14mm bolts, the black brackets can be swung back and out of the way, and the seats can be moved forward and onto the floor, out of the way.

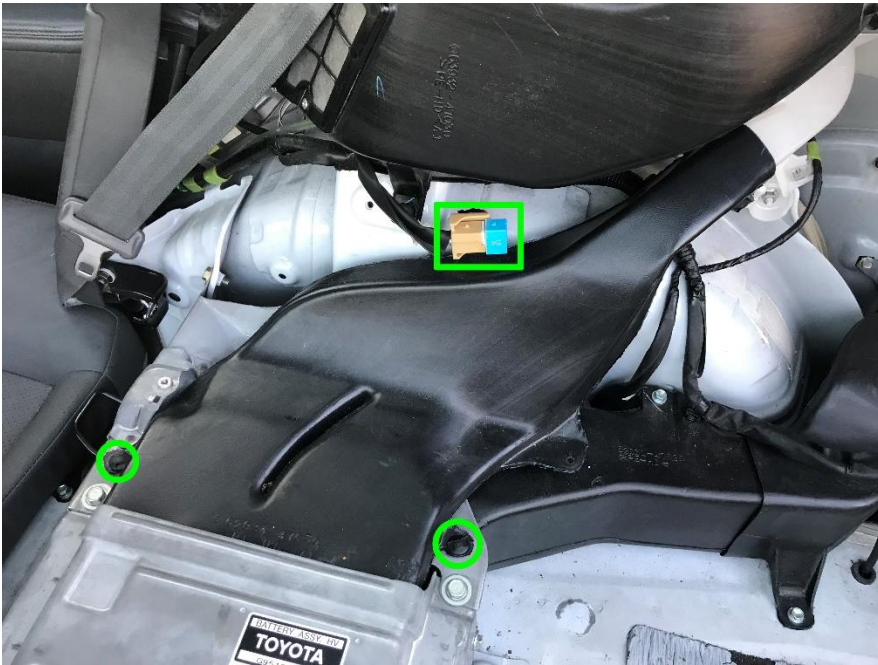
Reinstallation torque is 27ft lb



- 14) Remove the left hybrid battery bracket by removing seven 12mm bolts.
Reinstallation torque is 21ft lb



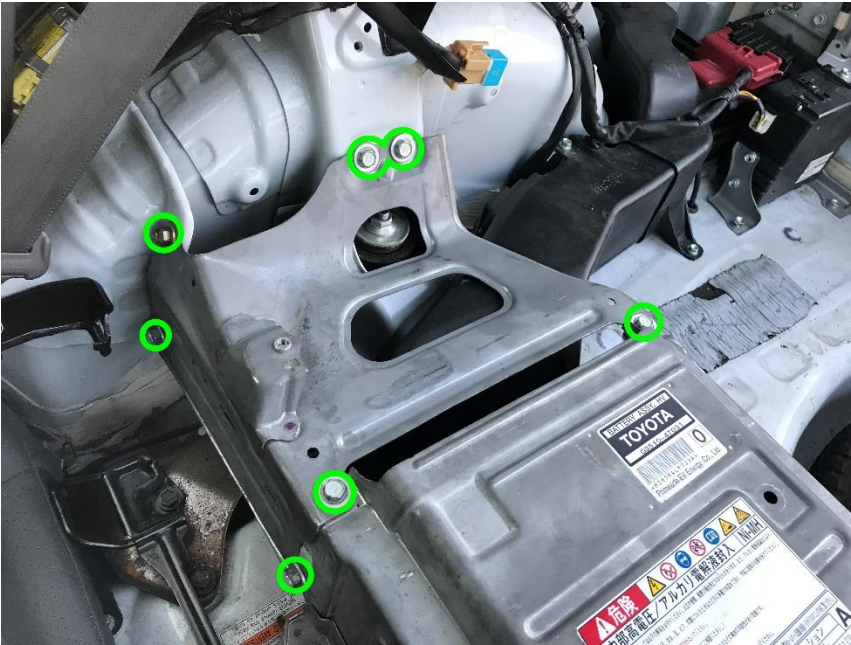
- 15) Remove the top ventilation duct on the right-hand side of the hybrid battery by removing two black clips with needle nose pliers and removing a sensor that is clipped into the duct by pulling on it or using needle nose pliers to pinch the bottom of the sensor base so that it will slide back out.



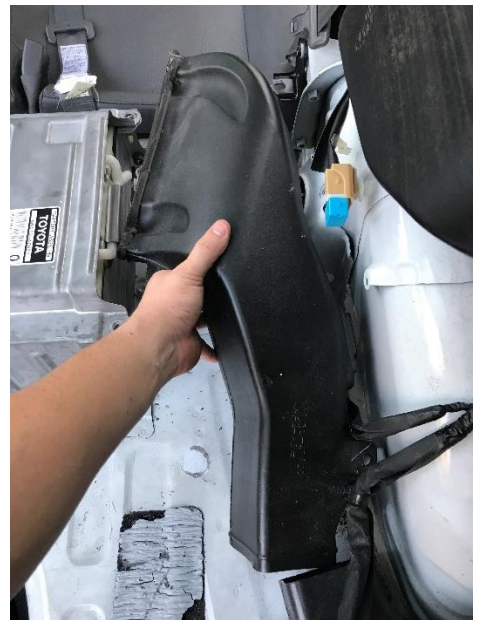
Once the sensor and clips are out, you can remove the duct by first pulling it off of the fan, and then up and out.



- 16) Remove the right hybrid battery bracket by removing seven 12 mm bolts.
Reinstallation torque is 21ft lb



- 17) Remove the bottom exhaust duct by removing one black clip and a 10 mm bolt. Also remove the ventilation hose that connects to the white tube coming from the top of your hybrid battery. Reinstallation torque is 35in lb



This duct can be put aside out of the way with the sensor still connected, or if it is in your way, it can be completely removed by removing one plug and unclipping one wire.



the area above the 12-volt auxiliary battery.

If you choose to keep the wires connected, the duct can be pushed up and out of the way into

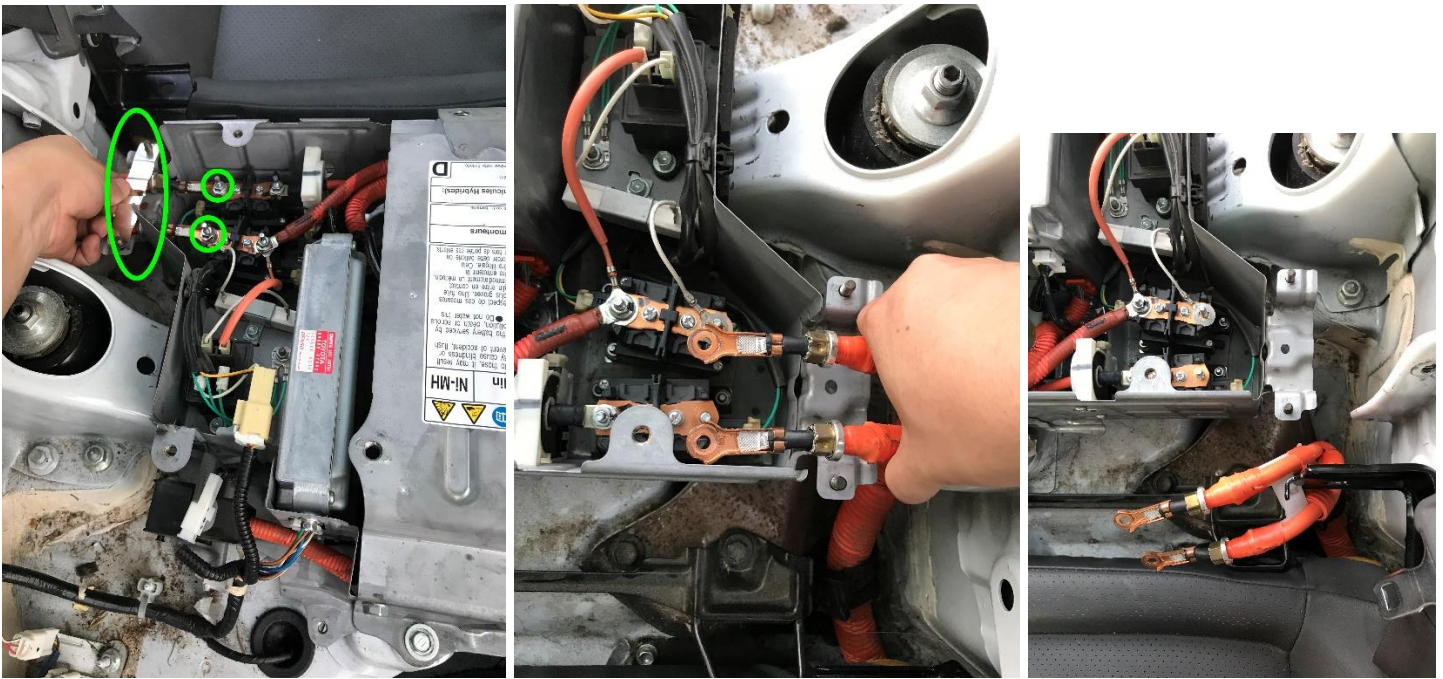


Simply pull on this hose to remove it.

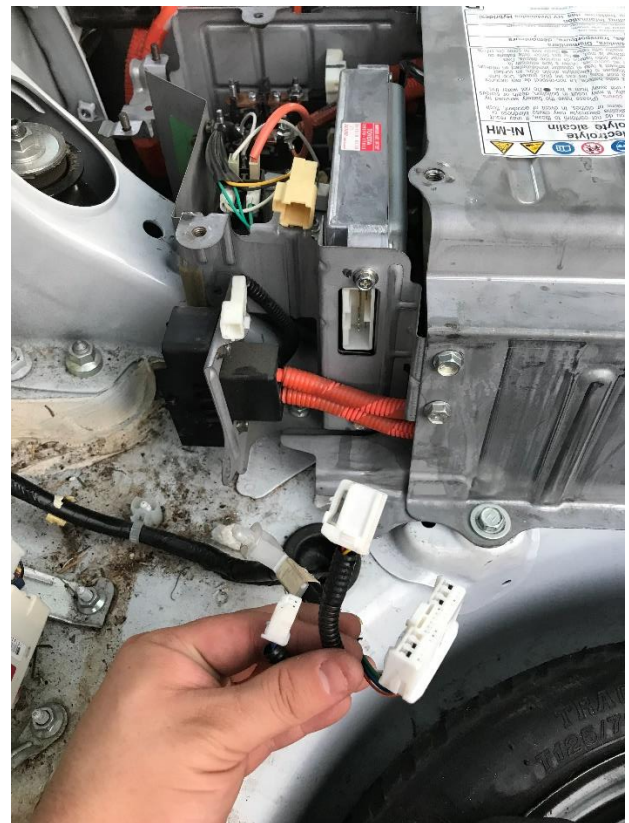
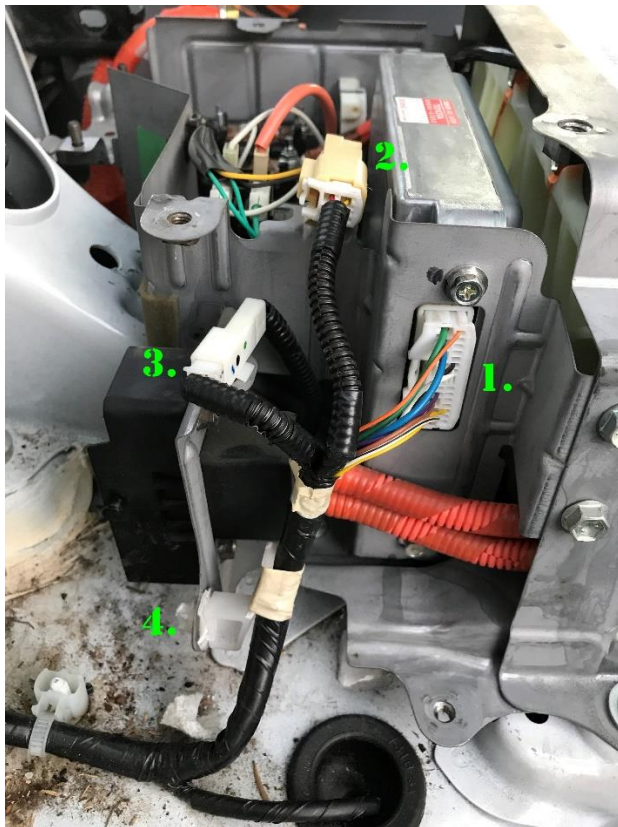
- 18) Remove the hybrid battery electronics cover by removing two 10mm nuts and three 10mm bolts. Reinstallation torque is 66in lb



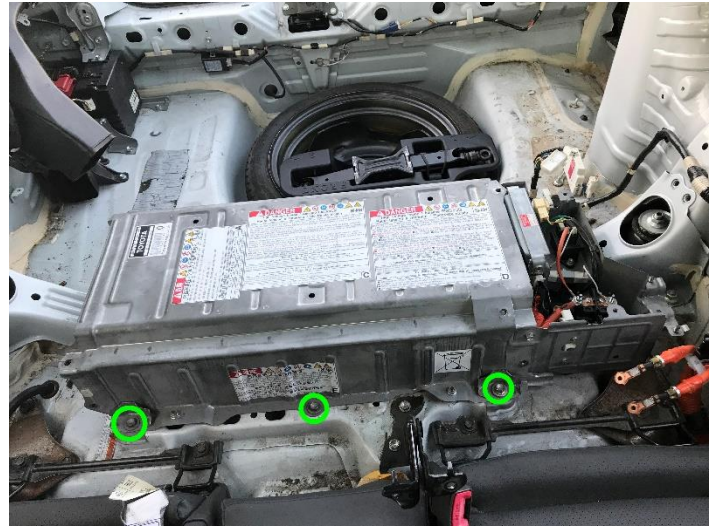
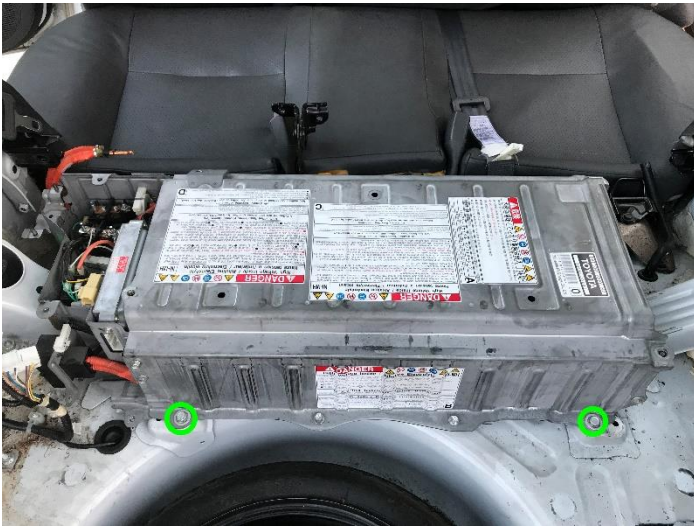
- 19) Remove the two 8mm bolts securing the orange high voltage cables to the battery. Move high voltage cables aside. Reinstallation torque is 50in lb



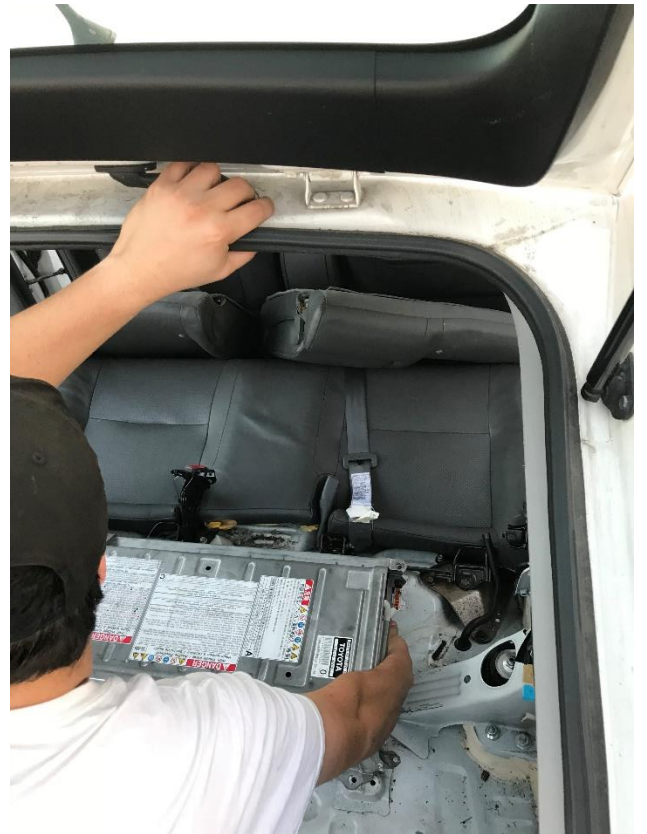
20) Remove the 3 plugs (1. Battery Computer Connector, 2. System Main Relay Connector, and 3. Interlock Connector) and one clip (4.) at the front left of the hybrid battery.

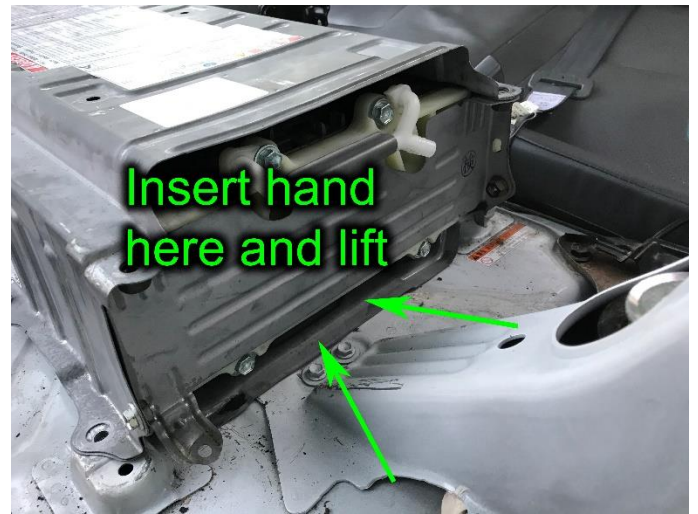
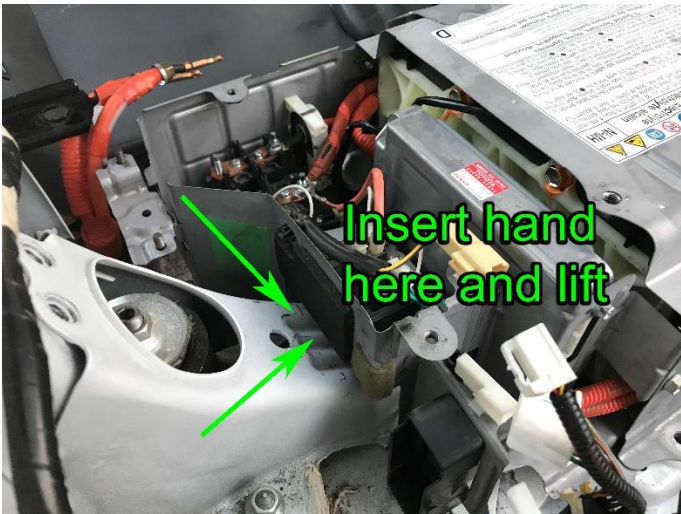


21) Remove the last five 12mm bolts securing the hybrid battery to the chassis of the car to free it for removal. Reinstallation torque is 21ft lb



22) The hybrid battery is now loose and ready for removal. While it is possible for a single person to remove the hybrid battery, it weighs a lot and is placed awkwardly where it can lead to injury, so we suggest that you have a friend or family member help you lift the battery in and out of the vehicle. It helps if you have someone on the left and another on the right and use one your outer hand to grab the battery, while the inner hand supports the weight by pushing against the roof of the rear hatch like in these photos.

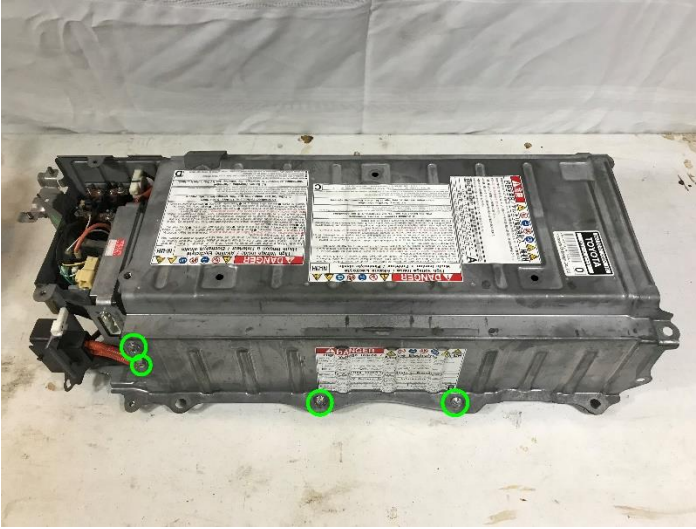




23) Now that the battery is out of the vehicle, you can move it to a flat workspace to begin disassembly. Start by removing the side cover on the side of the battery that is opposite of the electronics by removing one 10mm bolt and a rectangular white clip.

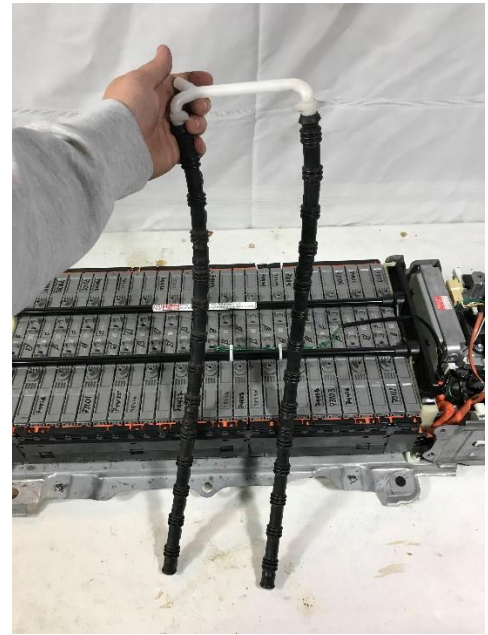


- 24) Next remove seven 10mm nuts/bolts that are securing the case of the hybrid battery so that the top may then be removed. Reinstallation torque is 71in lb



After removing these nuts and bolts, the cover should lift straight off.

- 25) Next remove the vent tubes that go across the battery pack on both sides by just starting at one end and pulling it off.



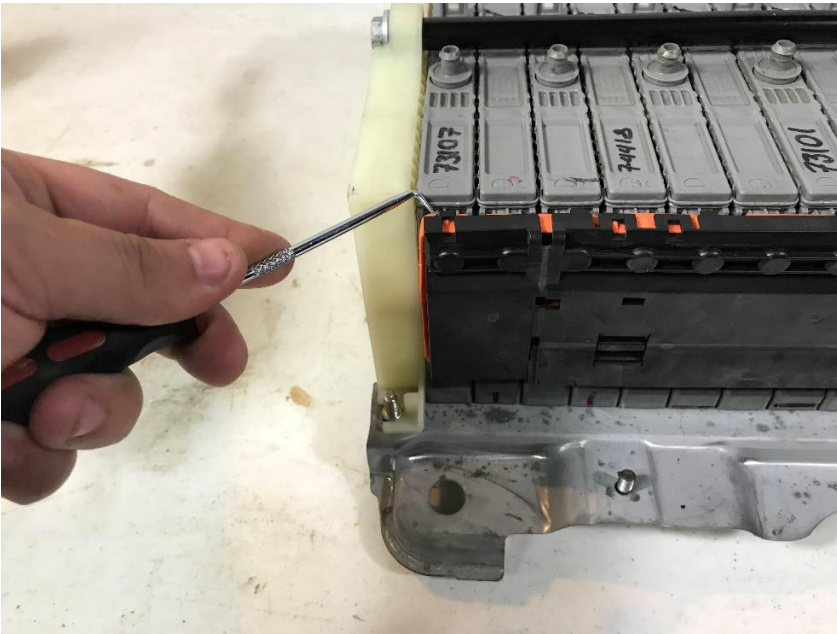
26) Unclip the yellow temperature sensor at the end of the green wire. Sometimes this clip breaks and if so, it is not an issue. It can be placed into the top of a battery module and will actually sense the heat sooner than it would from the metal from which it was previously mounted. Then remove the green temperature from the top air dam and then pull off the air dam.



Note: If your temperature sensor broke off, you will want to place it on the 14th or 15th battery module like so:



27) Remove the black bus bar covers, there will be 2 on each side of the battery. Also open the cover over the break in the battery modules.

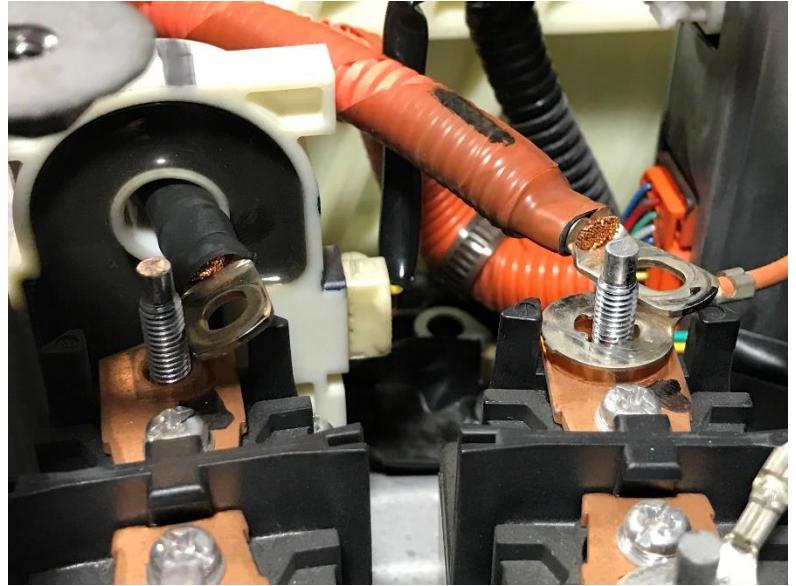
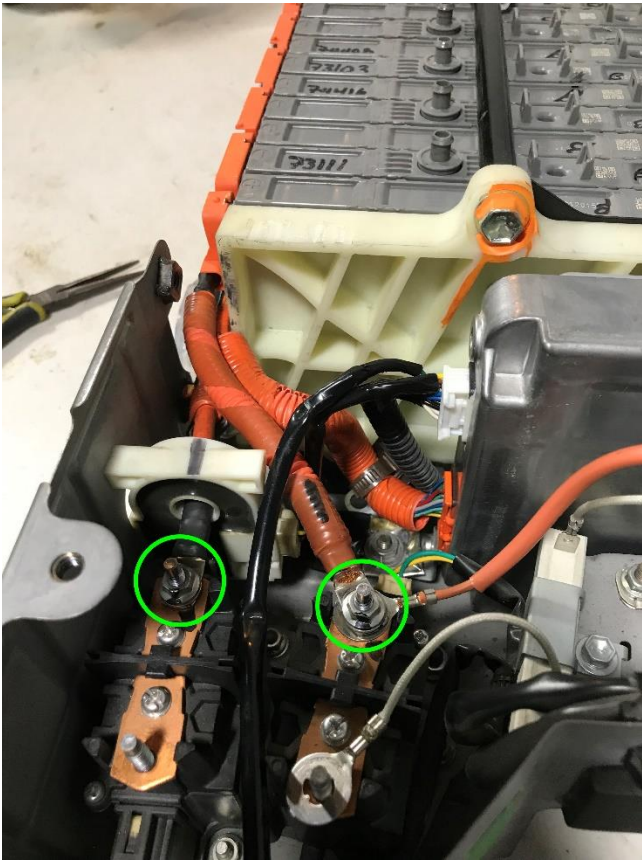


28) Remove all of the 8mm bus bar nuts on both sides of the battery pack. Then remove all of the orange bus bars. **During reinstallation it is VERY important to torque**

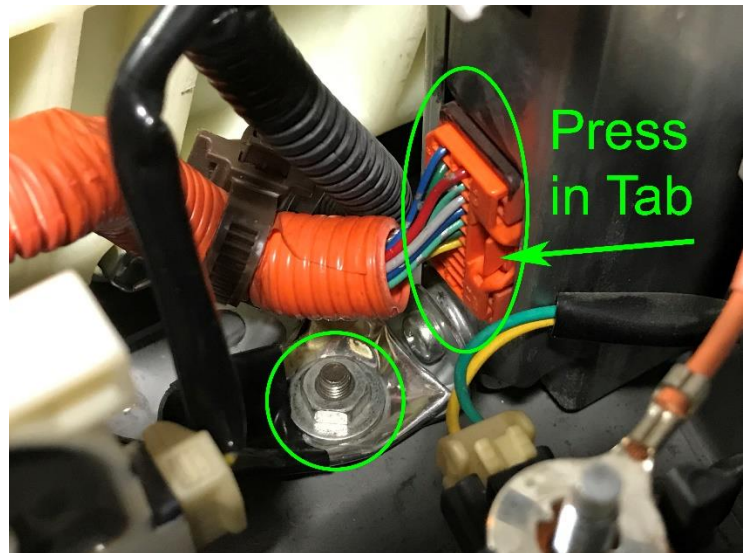
the bus bar nuts to 60 inch lbs. Under torquing can result in the car not starting or battery failure and over torquing can immediately damage the battery beyond repair by breaking the stud off. Reinstallation torque is 60in lb



29) Remove the two 8mm nuts on the relays to free the cables going to the harness. Reinstallation torque is 50in lb



30) Remove the 10mm nut grounding the longer black cable and unplug the orange bus bar harness from the computer. Reinstallation torque is 74in lb

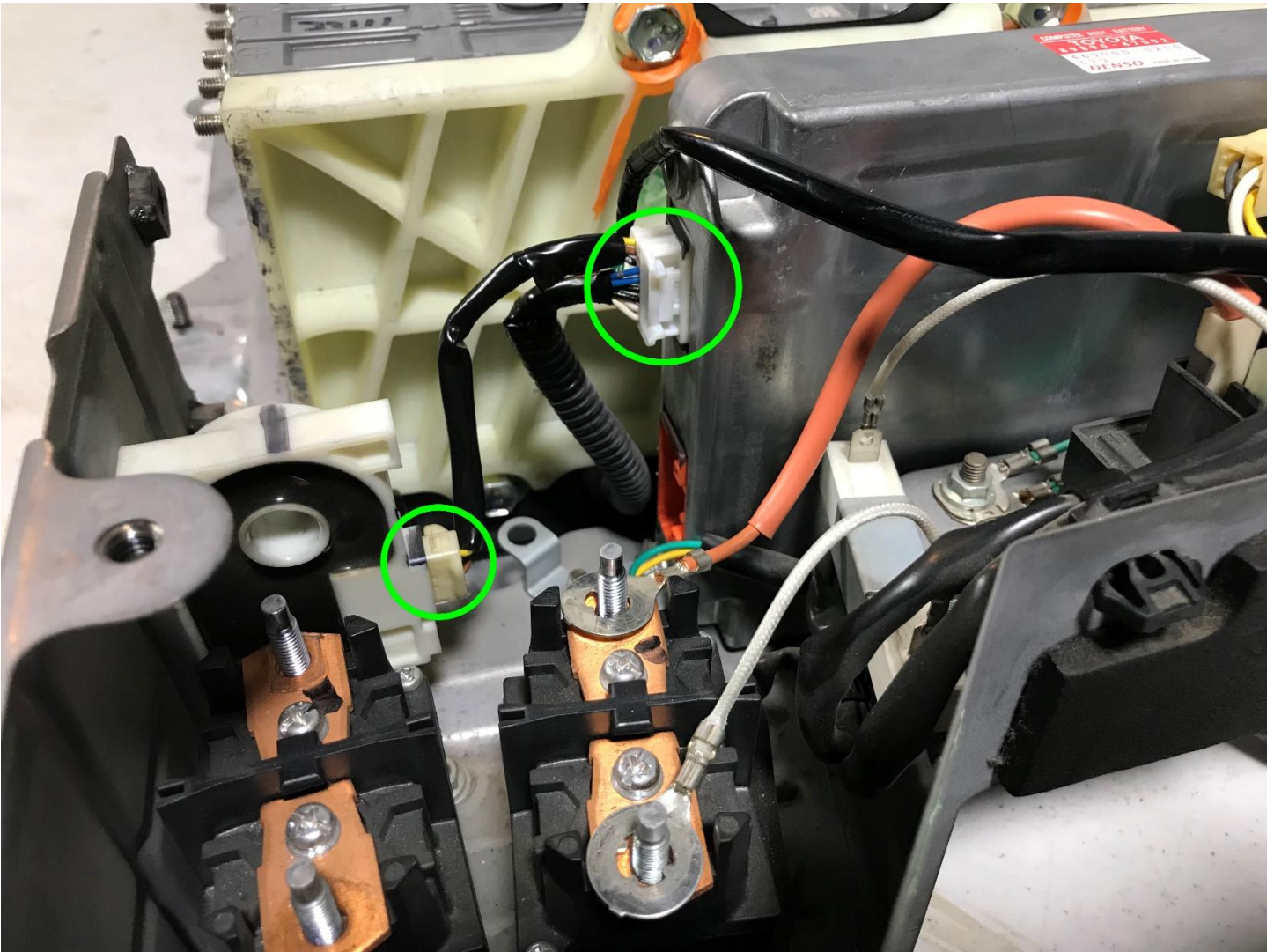


The brown clip can be difficult to get to, but will need to be removed in order to free the harness. Removing the two 8mm nuts on the back of the computer can be helpful to give yourself space to remove the brown clip.

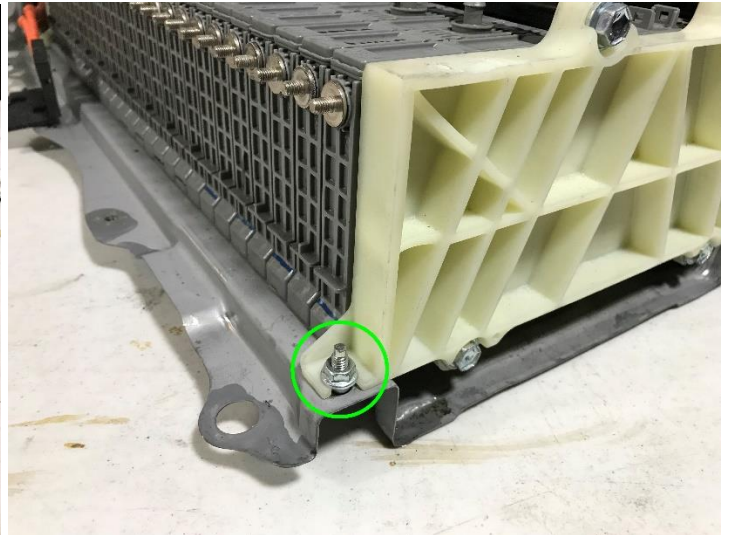
Once freed, you can safely remove the harness.



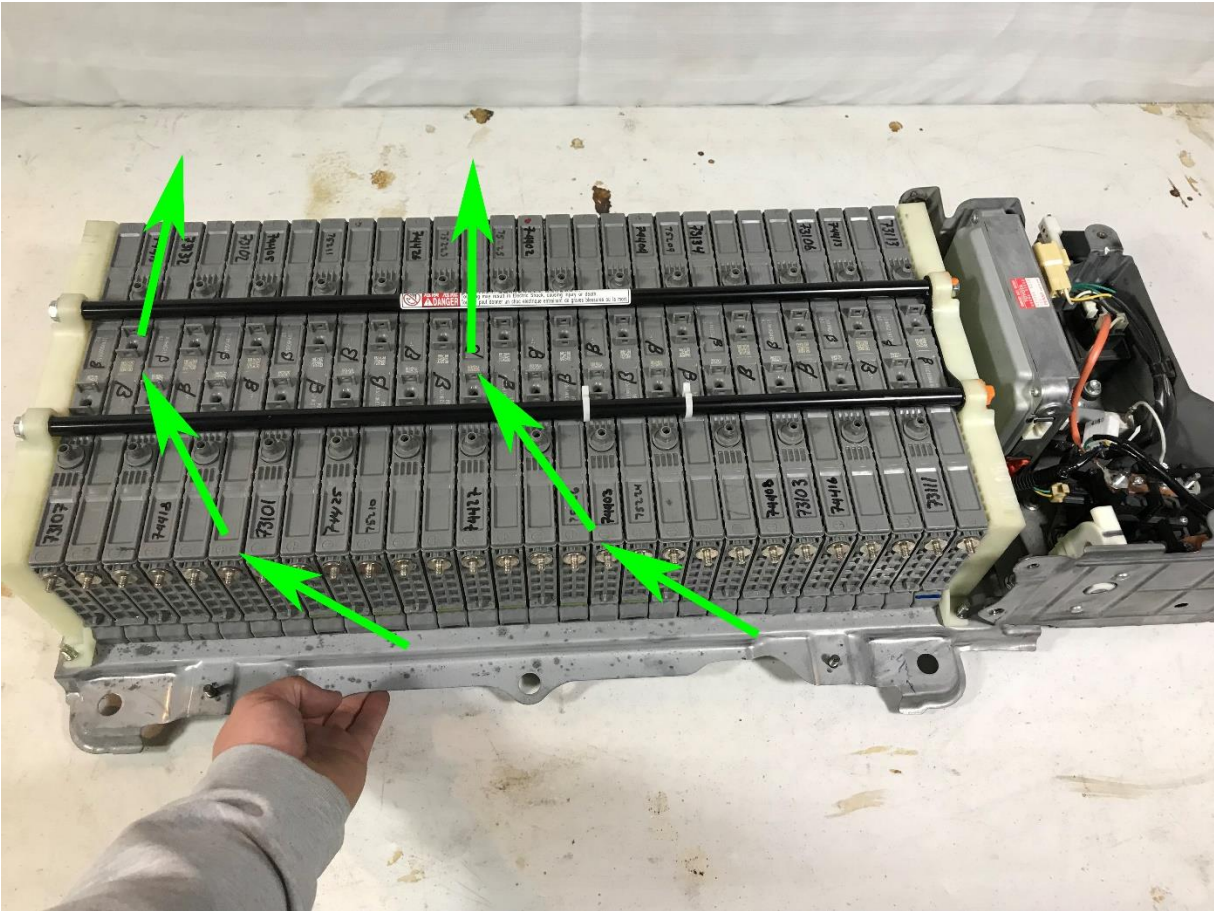
31) The next step is to disconnect the thermistor plugs.



32) Remove the two 10 mm nuts securing the battery block down to the bottom half of the case. There are still bolts on the bottom securing the battery to the case. Reinstallation torque is 90in lb



33) Now we are going to flip the battery over so that the bottom of the case is facing up.

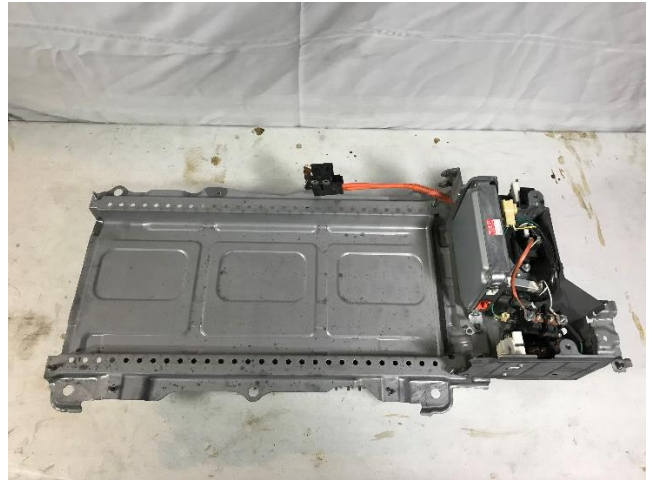
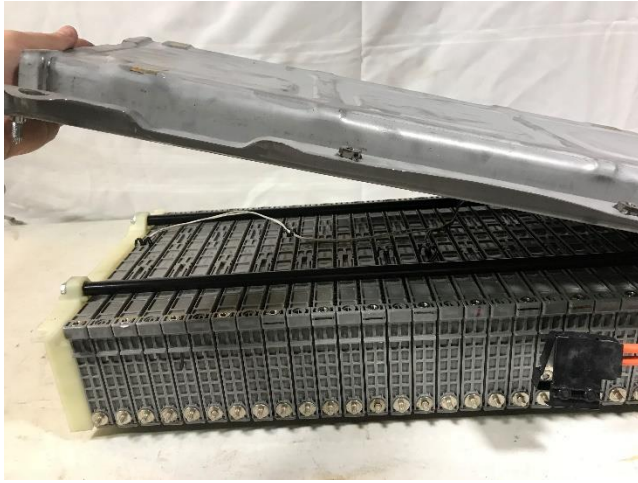




- 34) Remove all of the module bolts which are the last bolts connecting the case to the battery pack.



After removing all of the module bolts, the case should easily be able to lift off the battery pack and be set off to the side until reassembly. Reinstallation torque is 60in lb

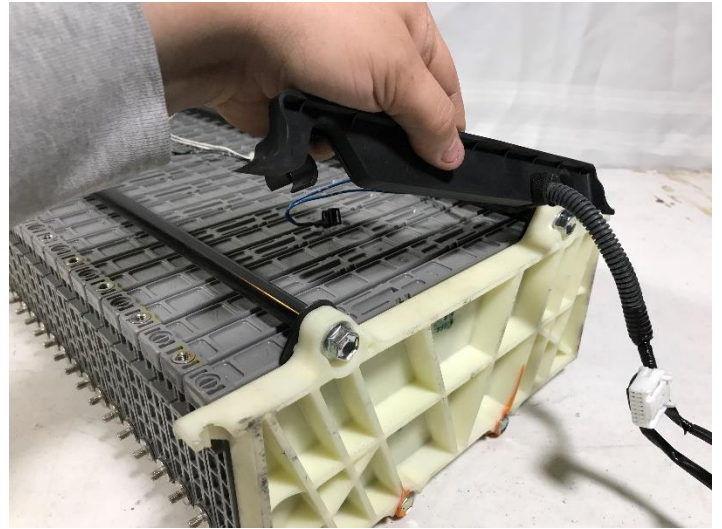
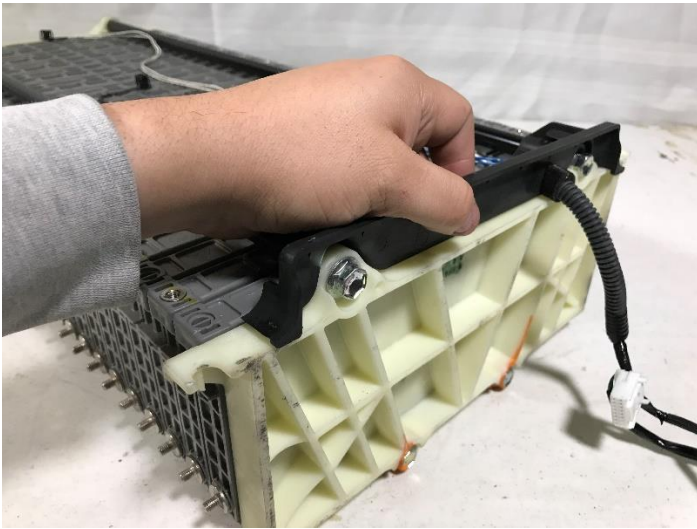


Now all that remains should be the battery pack with the bottom thermistor cables attached

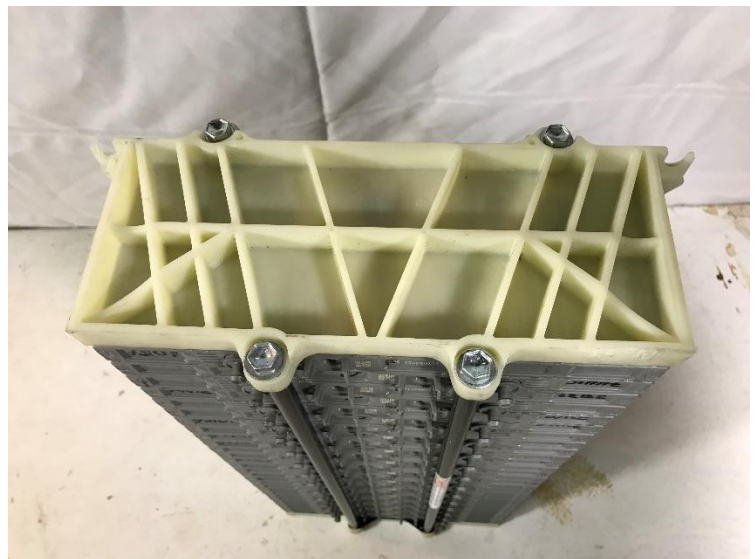
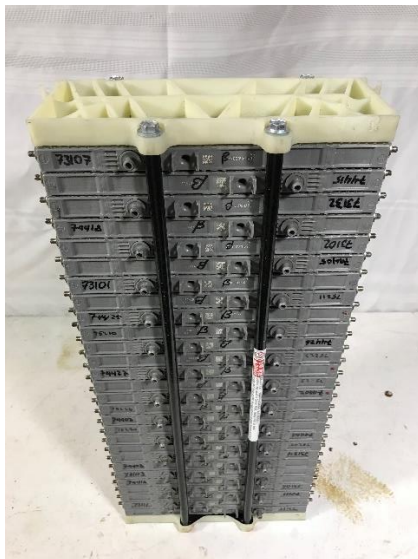
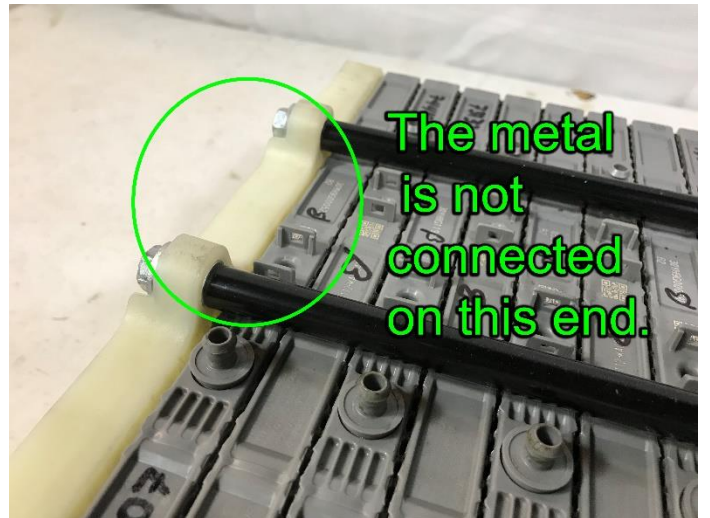
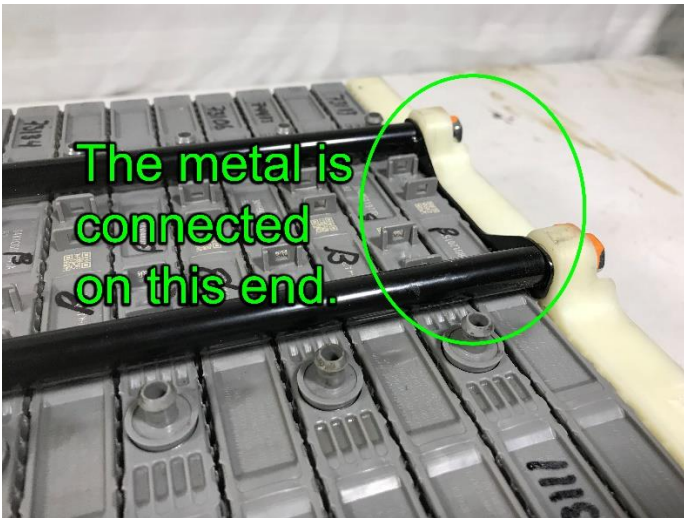


35) Remove the thermistor sensors using a pick or pliers. Then remove the air dam.





36) Now to the last few steps, opening the compression block. First, take note of the two ends. One end connects the black bars of the compression block, while at the other end, the metal is not connected. We are going to open the end where the metal is not connecting. Stand it up with the connected side on the bottom and the other side facing up. Then remove the four 12mm bolts.



- 37) Now your hybrid battery is completely disassembled, and you may now swap out the battery modules for the new set. Take note of the end modules, how the positive terminal is on the top right and the bottom left. When reassembling the battery, they will need to alternate positive and negative with positive on the top right and bottom left like this.



- 38) Before closing up the compression block and beginning reassembly, take a moment to double check that all the battery modules are correctly aligned. Each battery module should have points where they meet and connect flush. Pay close attention to the ends of the battery modules by the terminals. None of the battery modules should be protruding out farther than the rest.



39) After ensuring proper placement of the battery modules, close up the compression block with the four 12mm bolts and begin following the steps backwards to reassemble and reinstall your hybrid battery and get your car running again!