Hi Performance Electric Vehicle Systems

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INSTALLATION INSTRUCTION

Club Car Precedent Installation Notes

CURTIS 1234, 1236 OR 1238
AC INDUCTION MOTOR/
CONTROLLER

REVISION: D

Date: 5-21-15

This kit is designed to integrate an HPEVS AC Induction Motor and an Curtis AC controller model 1234, 1236 or 1238 into a Club Car Precedent. Verify the kit contains the following parts:

- 1 ea.- AC motor
- 1 ea.- Curtis Motor controller (1234, 1236 or 1238 model)
- 1 ea.- Controller mounting plate
- 1 ea.- Upper mounting plate bracket
- 2 ea.- Lower support brackets
- 1 ea.- Wire Harness kit (system and dash harness)
- 1 ea.- Multi Function Display (mounting hardware included)
- 1 ea.- Menu button
- 3 ea.- Motor cables (14 ½")
- 1 ea.- Contactor to controller (+) red cable (15")
- 1 ea.- Battery to contactor (+) red cable (20")
- 1 ea.- Battery to controller (–) black cable (20")
- 2 ea.- Battery interconnect cables (14 ¼ ")
- 2 ea.- Battery interconnect cables (9 ½")
- 1 ea.- Battery interconnect cable (8")
- 3 ea.- ¼"-20 x 2" screws
- 4 ea.- ¼"-20 x 1 ¼" screws
- 4 ea.- ¼"-20 x 1" screws
- 5 ea.- ¼"-20 x ½" screws
- 4 ea.- ¼"-20 x ¾" screws
- 24 ea.- ¼" flat washers
- 17 ea.- ¼" lock washers
- 2 ea.- ¼"-20 x ¾" self taping screws

INSTRUCTIONS:

COMPONENTS REMOVAL & PREPARATION

1. Turn ON/OFF Switch to OFF position and remove key from key switch.

2. Remove all battery cables. These will be replaced with heavier gauge cables that are included with the kit.

3. Remove the two middle batteries to facilitate access to the stock controller.

4. Remove the rear motor cover by prying out (about ¾") the center pin of the retainers. Remove the retainer. Note that the center pin of the retainer may fall outside of the retainer; if it does partially reinsert it. Installation of the rear motor cover is the reverse procedure.

Rear Motor Cover Location

Closer View

5. Remove the car dash (consult with service manual). Unplug any connectors. Remove the back-up buzzer (to be relocated). The dash will be modified at later steps.

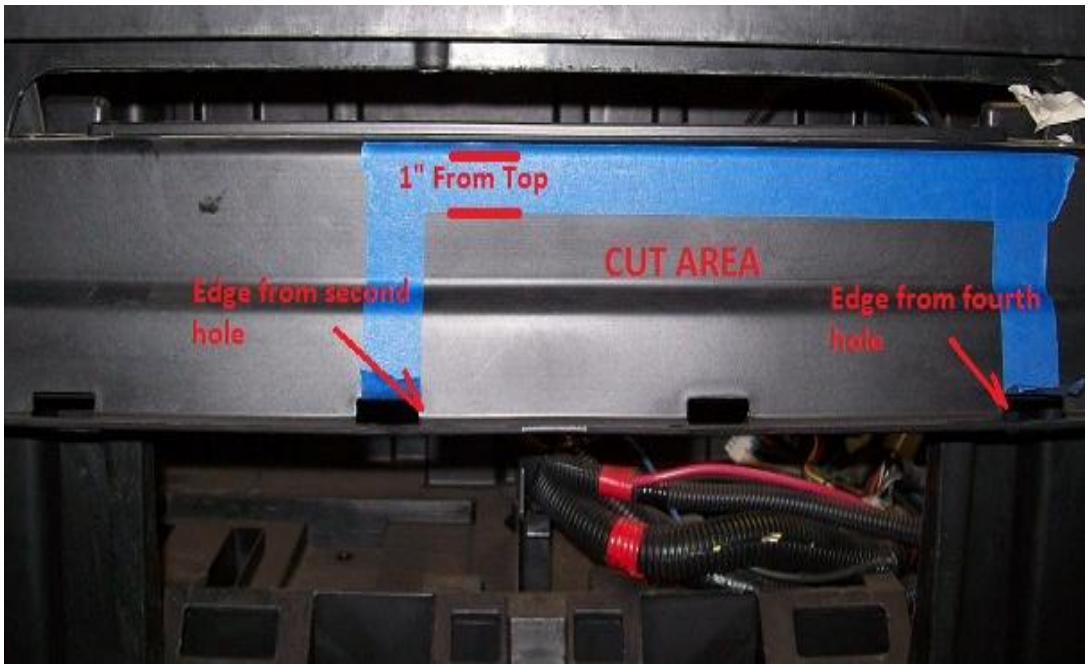
6. Remove the stock motor. Save the 5/16" bolt that was used to fasten the lower portion of the motor; it will be reused when installing the new AC motor.

7. Remove the stock controller plate by unscrewing the black screw located at the top plate. Disconnect all the connectors. Do not cut any wires at this time. The original stock wire harness will be re-used. Remove and save the following items from the stock controller plate:

    a. Charge computer
    b. Stock Contactor. Note: The contactor is removed by sliding it up. Do not break the retainer legs. Discard the resistor across the main terminals.
    c. Controller plate black screw

8. Remove the rear controller dust cover (motor area).

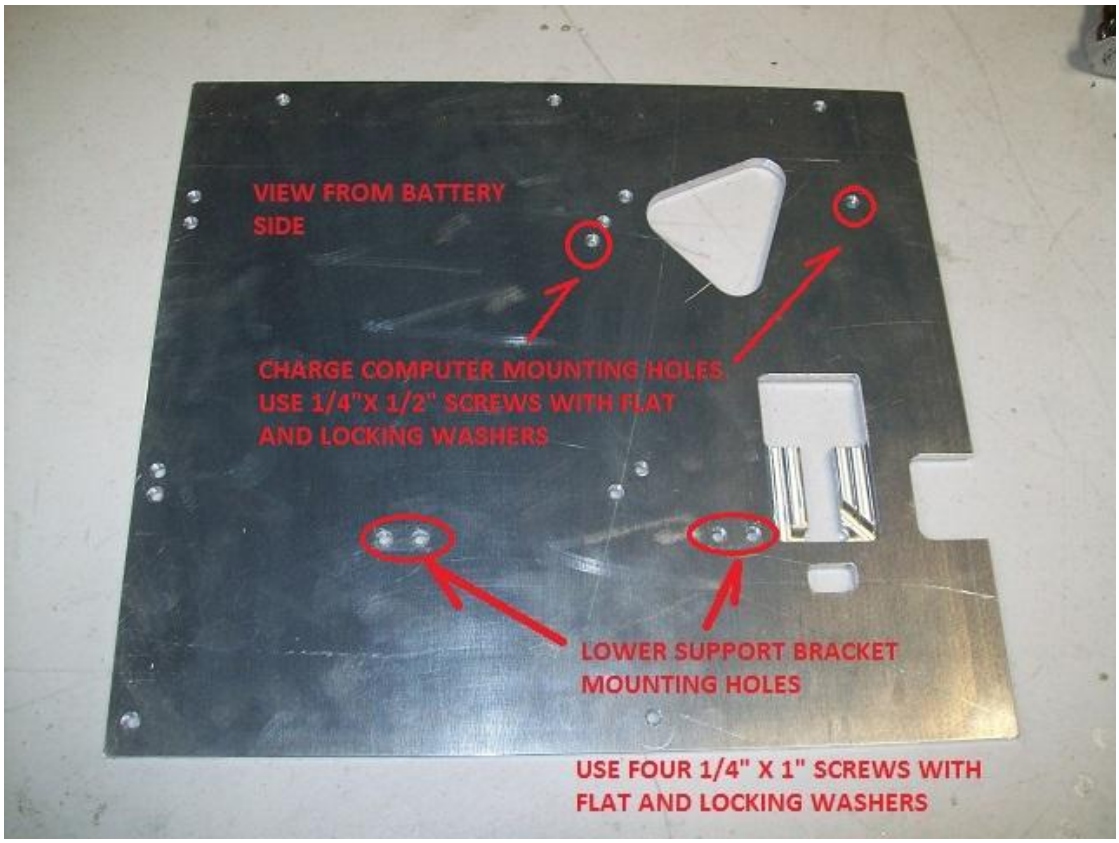
9. Mark and cut the rear controller plastic opening. See pictures below.



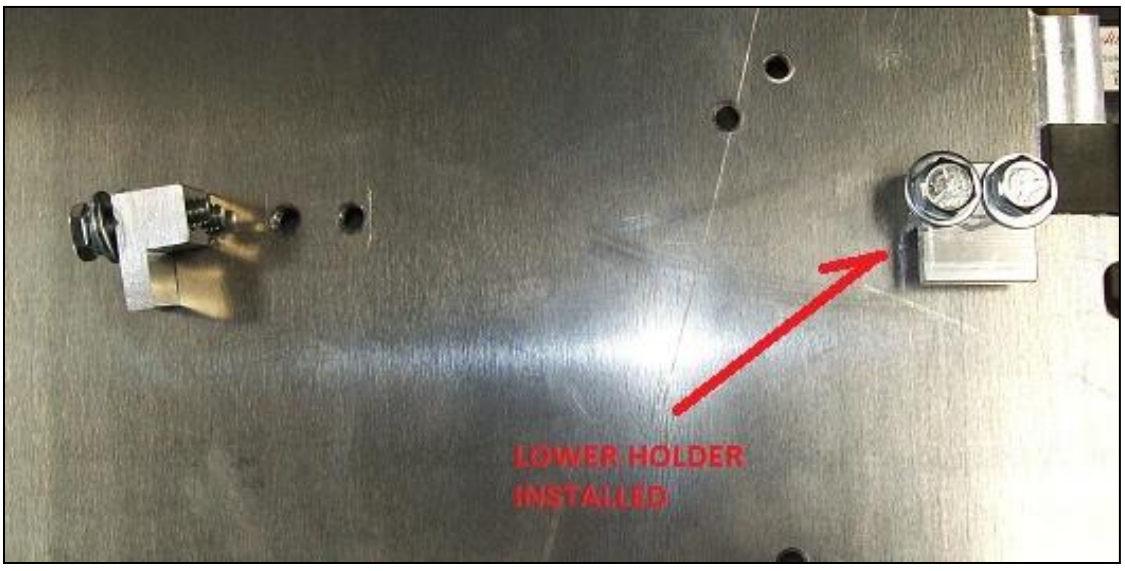
Before cutting

After cutting

AC SYSTEM COMPONENT INSTALLATION



1. Install the lower support brackets. See above picture for holes locations. Use the four ¼”-20 x 1” screws, flat and lock washers to install the lower support brackets. Make sure that the screws do not protrude to the other side of the plate. The lower support bracket should create a “hook” or gap where the controller plate will be mounted in the car. See pictures.

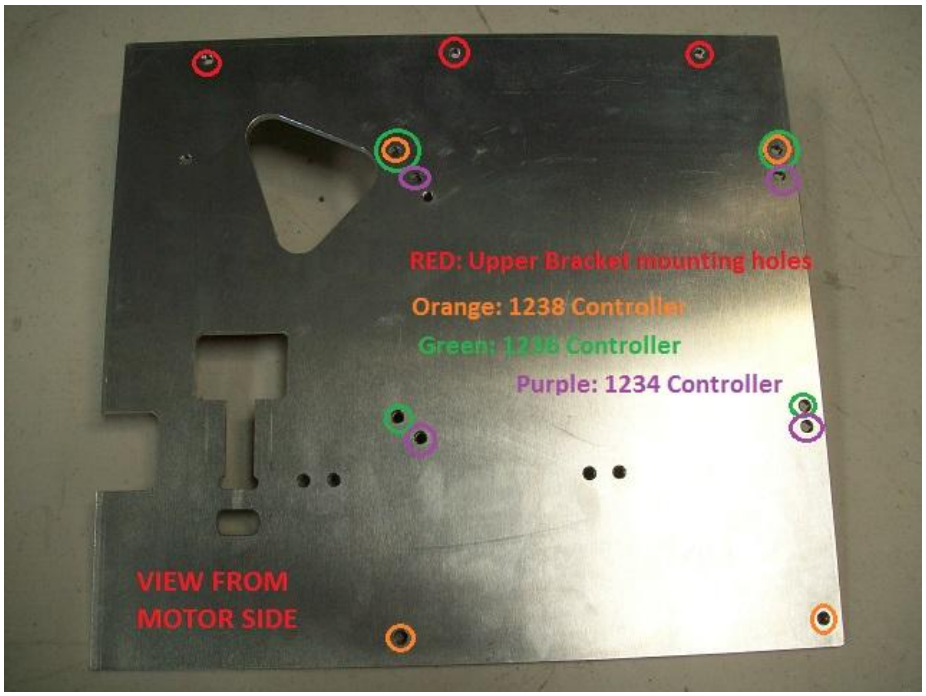


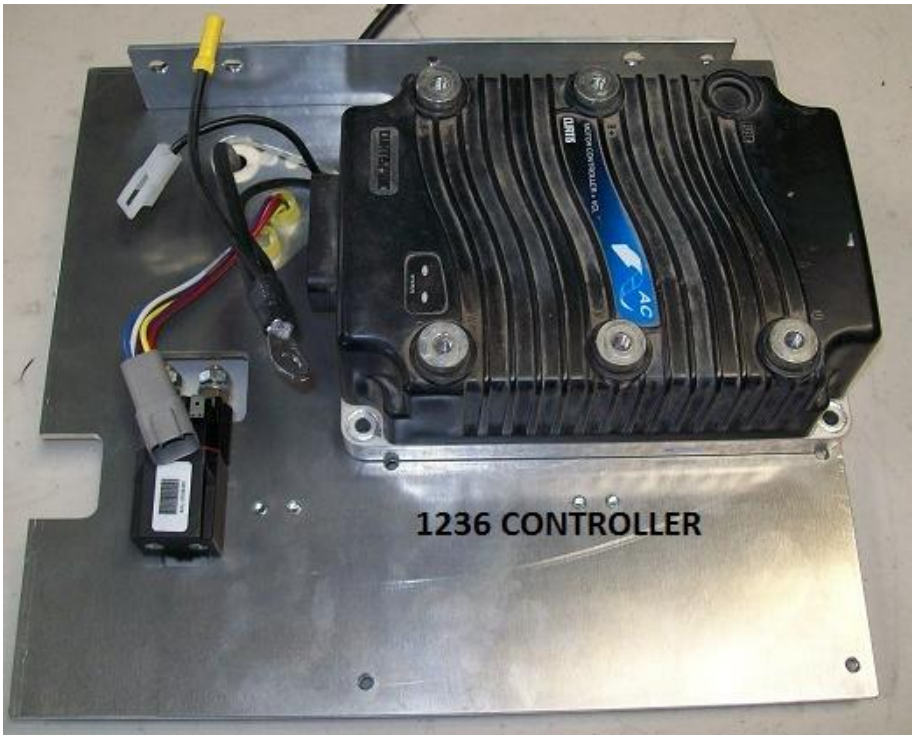
2. Install the contactor by sliding it until the retainer bottoms out in the opening. The contactor body must be located on the motor side, similar to the stock location.

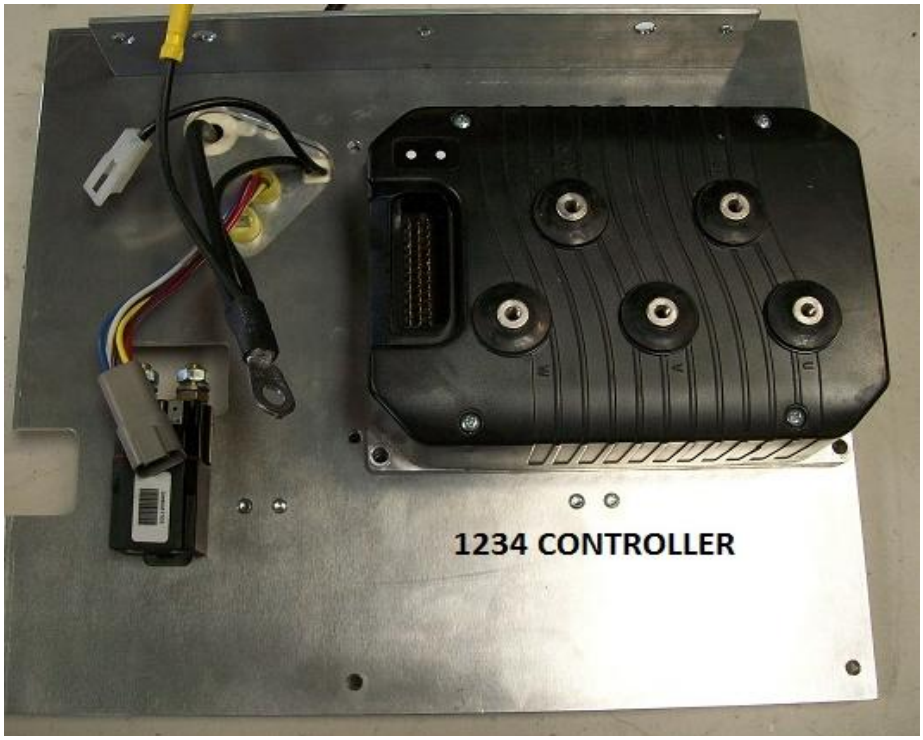


3. Install the upper mounting plate bracket. The upper mounting bracket is facing the motor side of the car. Use three ¼”-20 x ½” screws, flat and lock washers to install the upper mounting plate bracket. There is no need to fully tighten the screws at this step. The bracket’s wider side will be mounted on top of the car similar to the stock controller bracket.

4. Install the AC controller. Similar to the stock controller, the controller is mounted on the motor side of the car. Depending on the controller type used in a particular application, different sized screws will be used. For the 1236 and 1238 controllers, use four ¼”-20 x 1¼” screws; four lock washers, and nine flat washers. Each corner of the controller requires two flat washers. The upper left corner near the charge computer requires three flat washers instead of two. For 1234 controller, use four ¼”-20 x ¾” screws, flat and lock washers. The following picture shows the location of the mounting holes.



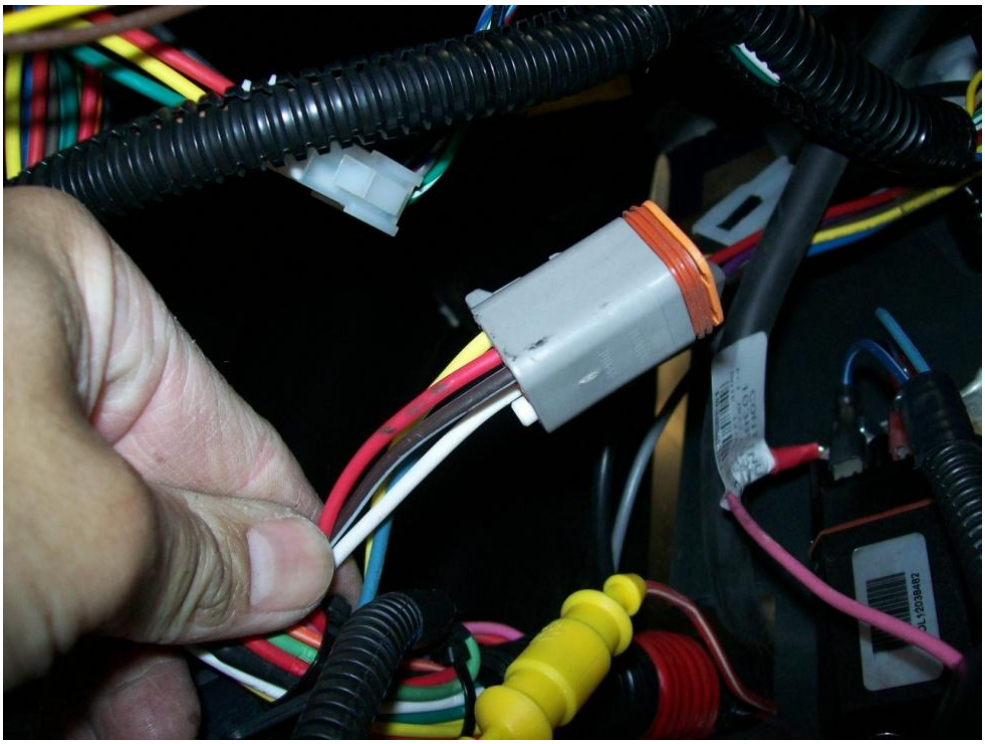

1236 CONTROLLER


1234 CONTROLLER

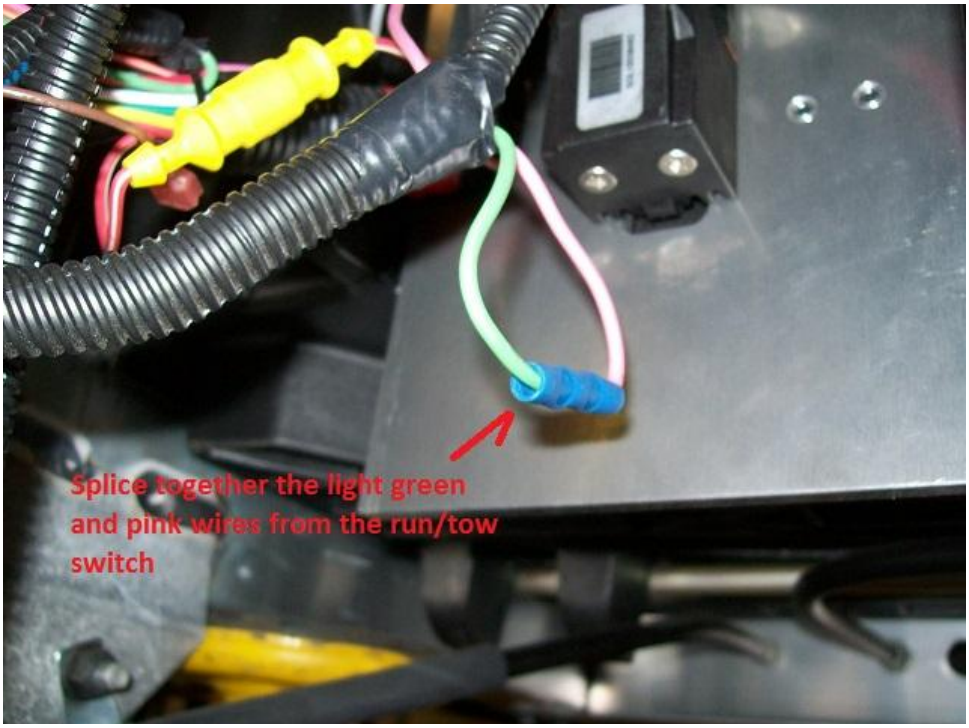
5. Install the supplied red 15” cable from the contactor’s switched side to the controller at the fuse end. Loosely install the supplied 20” black cable to the controller. Loosely install the red 20” cable to the contactor’s hot side. See picture.

6. Locate the pink wire from the stock harness that provides power to the system components (charge computer, dash, etc.). Cut the stock quick disconnect terminal and install a 5/16” ring terminal.

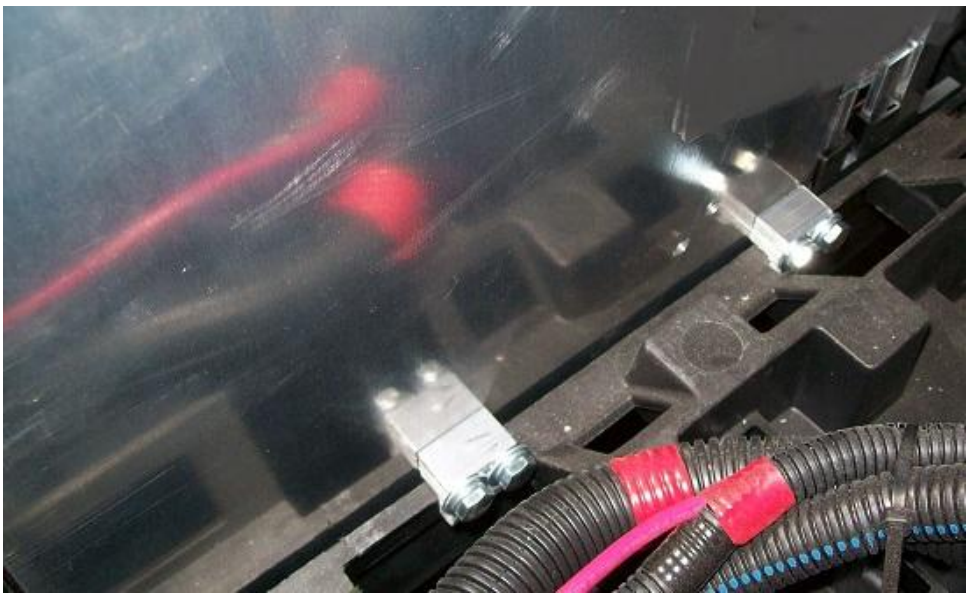
7. Locate the 6 pin grey connector from the stock harness. Locate and cut the brown/ white wire. Install a male ¼” quick disconnect.

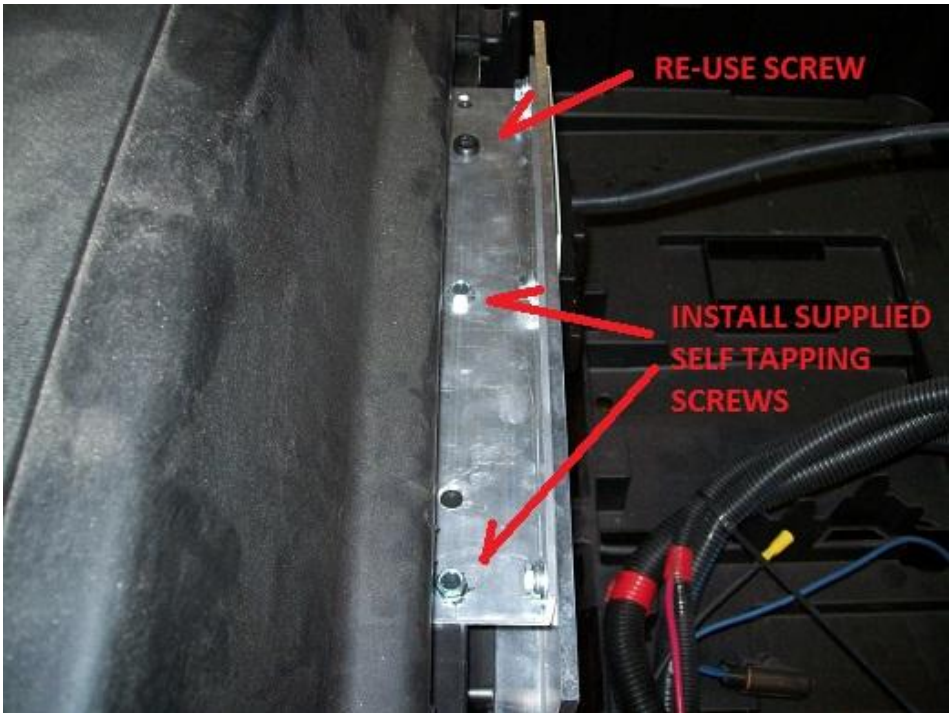


8. Cut the quick disconnect terminals that were connected to the stock “Run / Tow” switch (Light green and pink wires). Splice these wires together. The “Run/ Tow” switch is no longer needed.

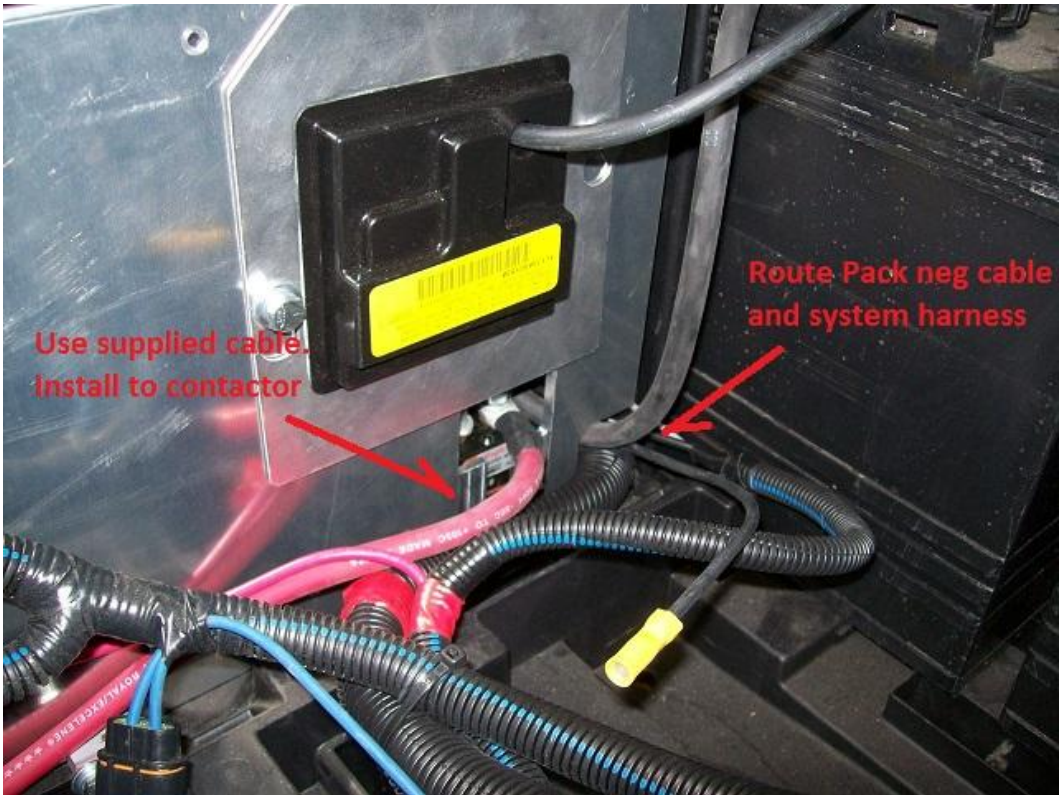


9. Install the AC controller plate in the car. The lower support bracket should insert the battery pack tray. The upper bracket should rest on top of the battery pack tray. Reuse the black screw saved from the removal of the stock controller. Use the supplied two ¼”-20 x ¾” self tapping screws. Once these three screws are secured, proceed to tighten the upper bracket to the plate screws that were loosely installed earlier. See pictures.





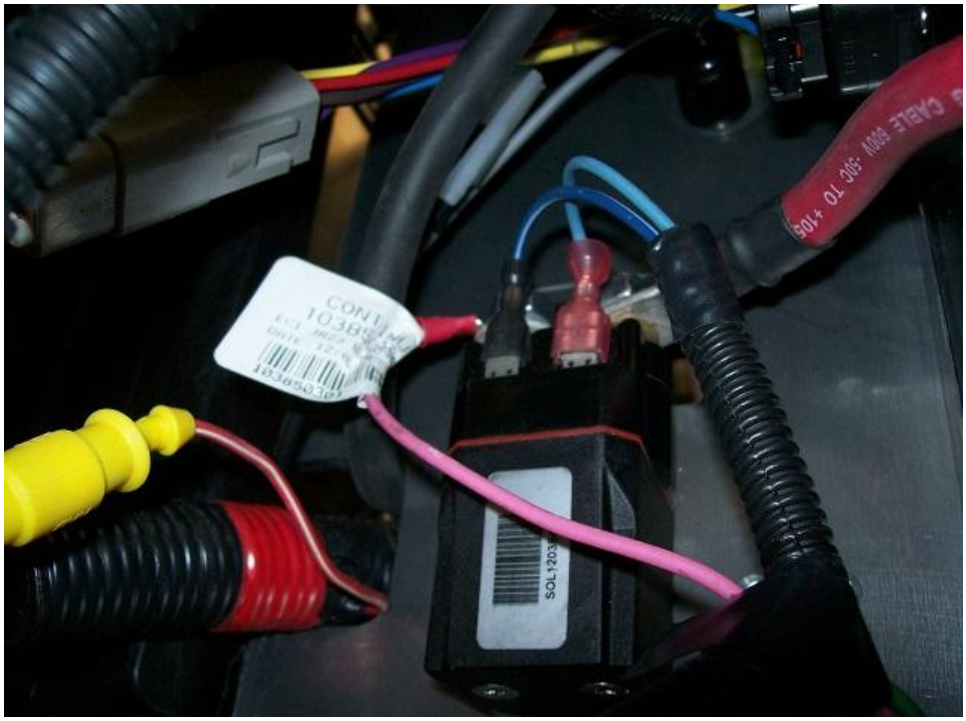
10. Route the stock wiring harness and the 20” negative cable from the controller through the side access cutout.



11. Install the supplied wire system wire harness. Connect the black 35 pin connector to the controller and the white 16 and 4 pin connectors to the stock harness.

12. Install the pink wire from the stock harness that provides power to system components (charge computer, dash, etc.) to the hot side of the contactor. Fully tighten the nut to secure the 20” red cable and pink wire to their final position. Make sure that the terminal lug does not touch the plate. As an added precaution, a cable boot may be used.

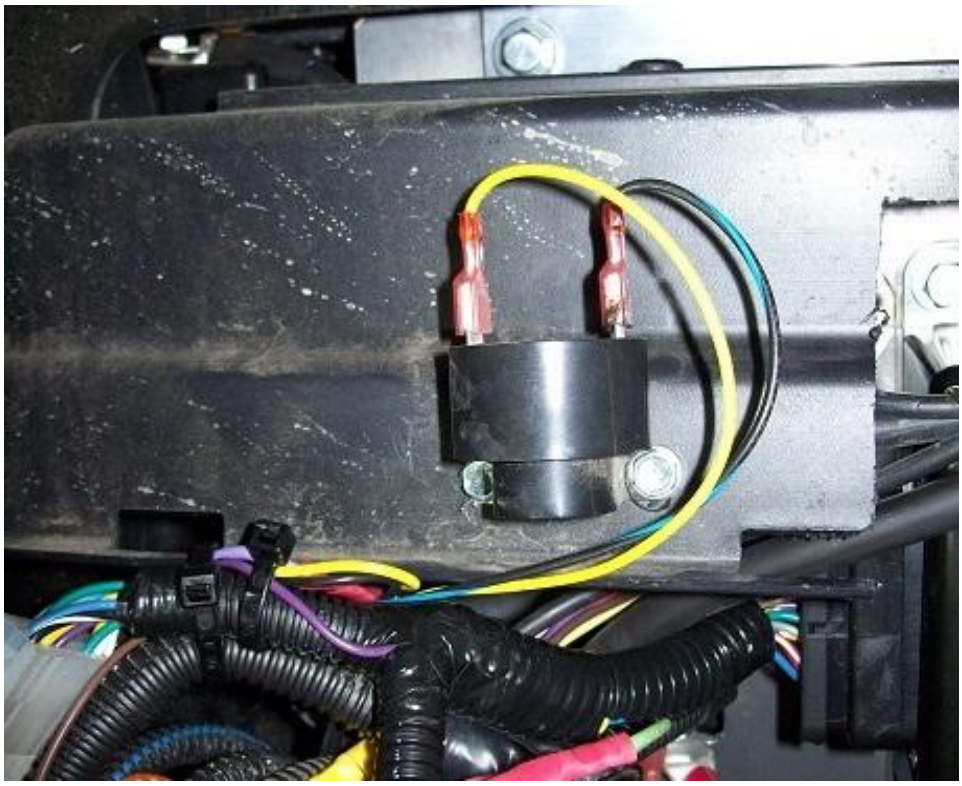
13. Re-connect the stock contactor coil wires (Light blue and Blue/ white).



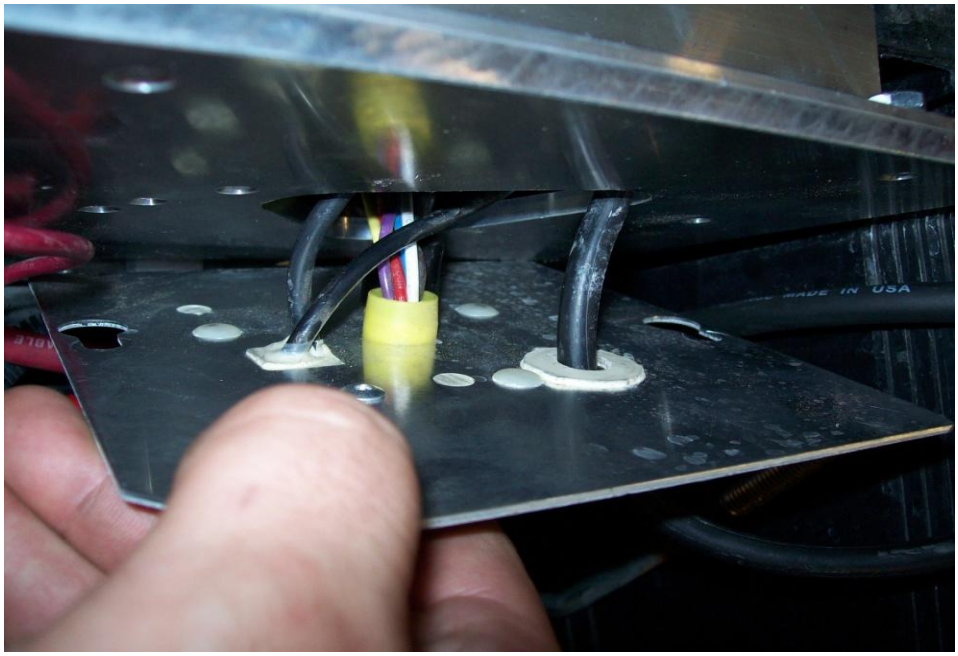
14. Connect the other end of the 20” red cable and the stock red charge wire to the (+) positive side of the pack.

15. Connect the brown wire from the new system harness to the grey wire that had the male ¼” quick disconnect installed (From step 7 on page 10 of this manual).

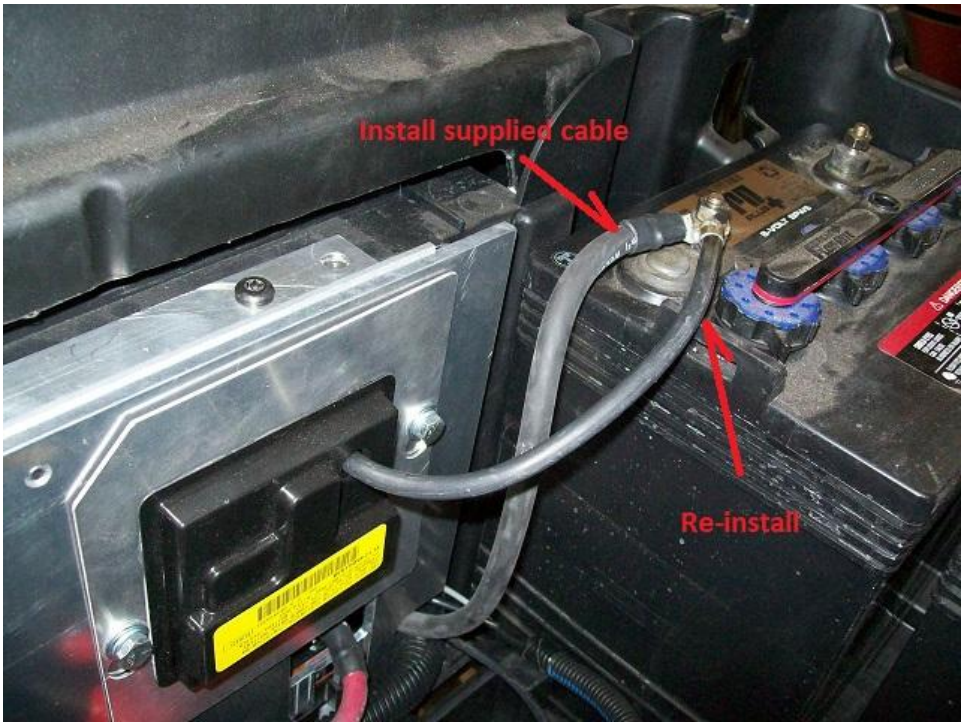
16. Install the reverse buzzer to under the seat. Connect the black/blue wire to the buzzer's negative terminal. Connect the yellow wire to the buzzer's positive side terminal.



17. Reconnect the charge computer quick disconnect connections. Reconnect the stock charge cable and the supplied 20” negative cable to the (-) negative side of the pack.



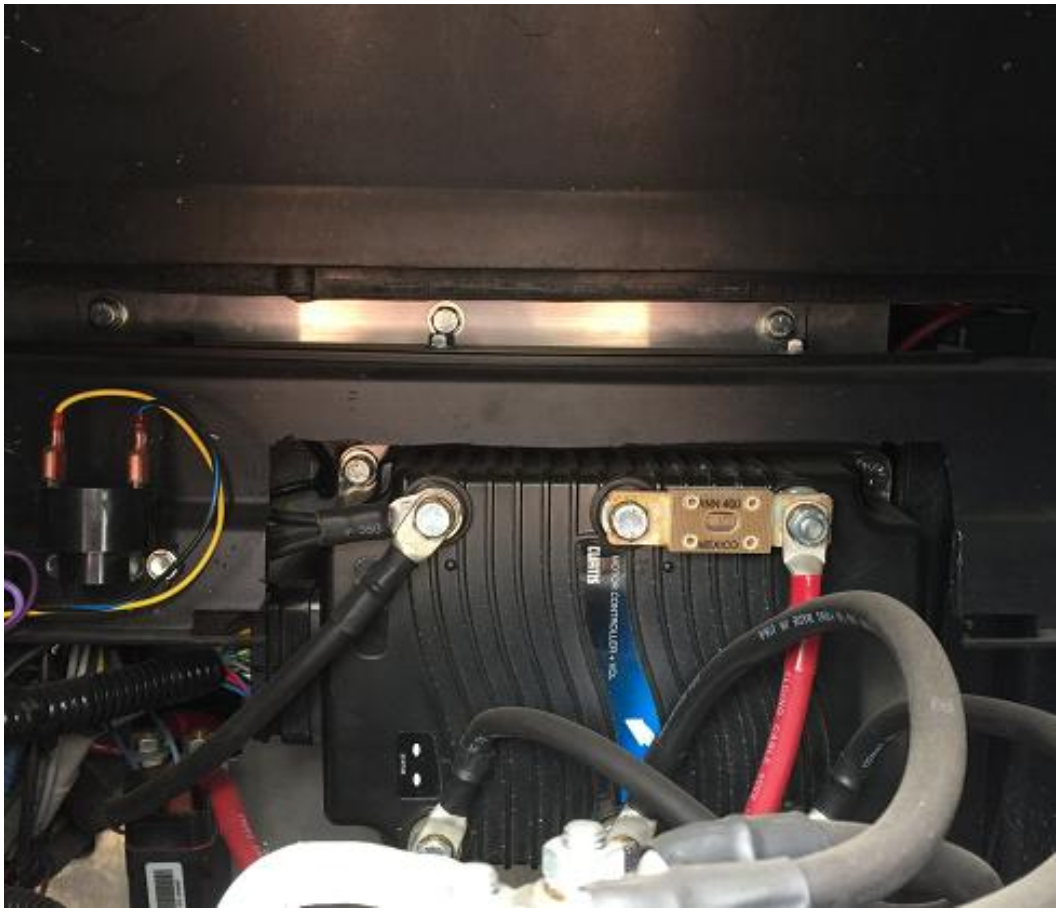
18. Install the charge computer on the supplied controller plate. Use two ¼”-20 x ½” screws, four flat and two lock washers. Do not over tighten the screws. Make sure that the installed screws protrude to the other side of the plate.



19. Proceed to secure any loose and/or excess wires to avoid any damage.

20. Install the AC motor. Use the supplied three ¼”-20 x 2” screws, flat and lock washers. Reuse the stock 5/16” bottom bolt.

21. Install the 14½” motor cables between the motor and controller. Note the connection phase designation (i.e. U, V & W).



Controller Installed (1236 Controller); View from Rear Motor Cover Access.

Motor Installed; View from Rear Motor Cover Access.

DASH MODIFICATION

1. Remove the stock harness from the dash.

2. Remove the yellow charge light and install golf street switch in place.

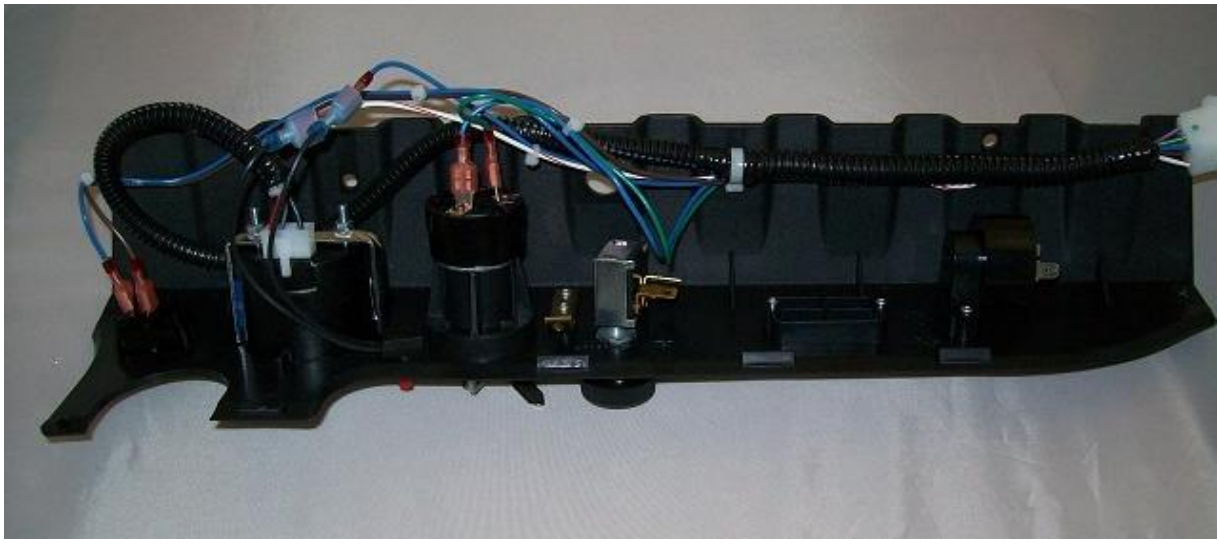
3. Cut a 2 1/16” (52 mm) hole in the dash to install the display. Install the display with the included hardware.

4. Drill a 3/8” hole near the display for the menu button. Install the menu button by securing the retainer ring.

5. Install the kit dash harness. The harness has a plastic retainer to secure it to the dash similar as the stock harness.

6. Connect the harness to the dash components. The connections are the following:

    a. Key Switch: Blue and Green
    b. Golf-Street Switch: Blue and Brown
    c. Menu Button: Blue and White/ Red
    d. Multi function Display: White 8 pin connector



7. Re-install the dash and reconnect the stock lighting system.

8. Re-install the two middle batteries. Reconnect the batteries with the supplied battery cables.

Driving the car with the A-C Drive System

When key switch is first turned on, the system needs about 2 seconds to come online. After this time has expired, select the desired drive direction at the Forward/Reverse switch and press the accelerator pedal. The drive wheels could be in either direction when first turned on.

BDI: (Dash Display), the BDI will display Battery Charge level (LED's at bottom) as well as text messages.

BDI Message	Mode
MPH	Cart in Street Mode (displays vehicle speed)
GOLFMODE	Cart in Golf Mode (see note below)
REVERSE	Cart in Reverse direction (see note below)
LOWBATT	Cart in Limp Home mode (see note below)

Street Mode gives the vehicle a Max speed of 25 Miles per hour. Acceleration & Regenerative Brake torque are set at maximum level.

When in Golf Mode the cart speed is limited to 12 Miles per hour. Acceleration & Regenerative Brake torque are also reduced.

Drive Mode can be changed on "The Fly". There is no need to stop the vehicle when changing from Street to Golf or vice-versa.

When Cart is in Reverse, speed is reduced to 8 Miles per hour. Acceleration & Regenerative Braking torque are also reduced.

Limp Home mode is automatically activated when the Battery charge level has dropped below 20%. The maximum cart speed is restricted up to 15 Miles per hour at Street mode. It is recommended to charge the batteries as soon as possible to prevent damage to the batteries from being over discharged.