



Hi Performance Electric Vehicle Systems

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## **INSTALLATION INSTRUCTIONS**

### **Club Car DS Installation Notes**

**CURTIS 1232, 1234, 1236 OR 1238  
AC INDUCTION MOTOR/ CONTROLLER**

## Installation Instructions Club Car Curtis Controller

1. Disconnect Negative Battery Cable, Disconnect Positive Battery Cable.
2. Remove cart's rear body. (Removal of front body is optional).
3. Disconnect all Motor and Controller wires.
4. Remove original Motor and Controller (remove controller mounting plate, if equipped).
5. Remove original wiring harness. Unplug any connector (cut as little as possible). If equipped with Rear Brake Lights Kit (DIAGRAM 2.1), label and keep factory wires from the brake pedal/ park switch. These wires will be reused to enable the brake lights. (See DIAGRAM 2.2 & 2.3)
6. Install new AC 9 Motor. (Use supplied ¼-20 Bolts, reuse original 5/16-18 Bolt Do not over torque Motor Bolts).
7. If clearance from the passenger shock mount to the motor's fan shield is less than one inch (viewing from the top), cut/trim passenger side rear shock ( See PICTURE 1.1 for reference). This procedure is not needed if cart has been lifted.
8. With the supplied controller mounting plate, reposition the controller plate supports to the opposite side. The supports were originally installed such way for shipping purposes. Adjust the supports as needed after reposition.
9. Install the Controller & Factory Main Contactor to mounting plate. (Use supplied ¼-20 bolts and lock-washers). Main plug on controller should be positioned to the bottom right of plate.
10. Install the Controller mounting plate in cart. Top bracket mounts to the bottom of the body support. See PICTURE 1.2

11. Install the battery charging equipment. The charging equipment would be either the factory Charge Computer or an on-board Delta-Q Battery Charger.
  - 11.1. For Factory Charge Computer, see PICTURE 1.2 and DIAGRAM 2.4 for reference.
  - 11.2. For on-board Delta-Q Battery Charge, see PICTURE 1.3 and DIAGRAM 2.5 for reference.
12. Connect Motor Cables from the controller to the AC9 Motor at each appropriate phase. Motor Cables and Battery Cables should be at least #2 AWG. See DIAGRAM 2.10 for reference.
13. Connect one side of the Main Contactor to the Fuse Post on the Controller.
14. Connect Negative Battery Cable to the controller. (DO NOT connect to Battery at this point).
15. Install Wiring Harness. See PICTURES 2.1 & 2.2 and DIAGRAMS 2.9
16. Connect the throttle connectors (R2 & R3) from the wiring harness to the throttle module. See Diagram 2.9
17. Connect wires to FWD/REV switch, See DIAGRAM 2.6
18. Drill a 2 1/16" hole in the dash panel for the Dash Display. See DIAGRAM 2.8 for Dash Panel Connections
19. Plug cable with 8 pin connector into the back of the Dash Display.
20. Connect Red Wire to one side of Key switch. See DIAGRAM 2.8
  - 20.1. If charge computer is used, connect orange wire from charge light to the same side of the key switch as red wire.

21. Connect Blue wires to key switch (See DIAGRAM 2.8). Extra Blue jumpers/splices are required to connect the Golf/Street Switch, and optional Brake light Relay.
22. Connect the Yellow wire to the + (positive) side of the reverse buzzer, and the Gray wire to the – (negative) side. See DIAGRAM 2.8
23. Connect a Blue wire from the key switch to terminal 2 on the Golf/Street switch, and the Brown wire to terminal 1. (Golf Mode is selected when terminals 1 and 2 are connected together). See DIAGRAM 2.8
24. For carts equipped with Rear Brake Light Kit, install a 12VDC automotive type relay in a suitable location where both factory and system wires can be connected together. The factory brake wires were disconnected and labeled at step #5.

The below connections can be reviewed by using the DIAGRAMS 2.2, 2.3 & 2.8

- 24.1. Connect the factory +12V source wire to the relay at terminal #30.
  - 24.2. Connect the factory RED wire of the rear brake lights to the Brake Relay at terminal #87.
  - 24.3. Connect a Blue wire from the key switch to the Brake Relay at terminal 86.
  - 24.4. Connect the Orange wire to the Brake Relay at 85 terminal.
25. Connect Orange/White wire to the – (negative side of the Main Contactor), and Blue/White wires to the + (positive side). Remove any resistor, diode.
  26. Connect Fuse Wire and the + Battery cable to the Main Contactor. If equipped with Charge Computer, Connect Red Wire from Charge Computer to the same Terminal. (Yellow wire on Charge Computer not used. See DIAGRAM 2.4).
  27. Plug in Encoder Cable.

28. DOUBLE CHECK ALL CONNECTIONS.

29. Secure all wires, harnesses and cables to the cart's frame by using tie straps.

30. Install 10 Amp Fuse at the fuse holder in the system harness.

31. Connect – (negative) Battery Cable.

32. Test Cart on jack stands.

## 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.

<u>BDI Message</u>	<u>Mode</u>
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.

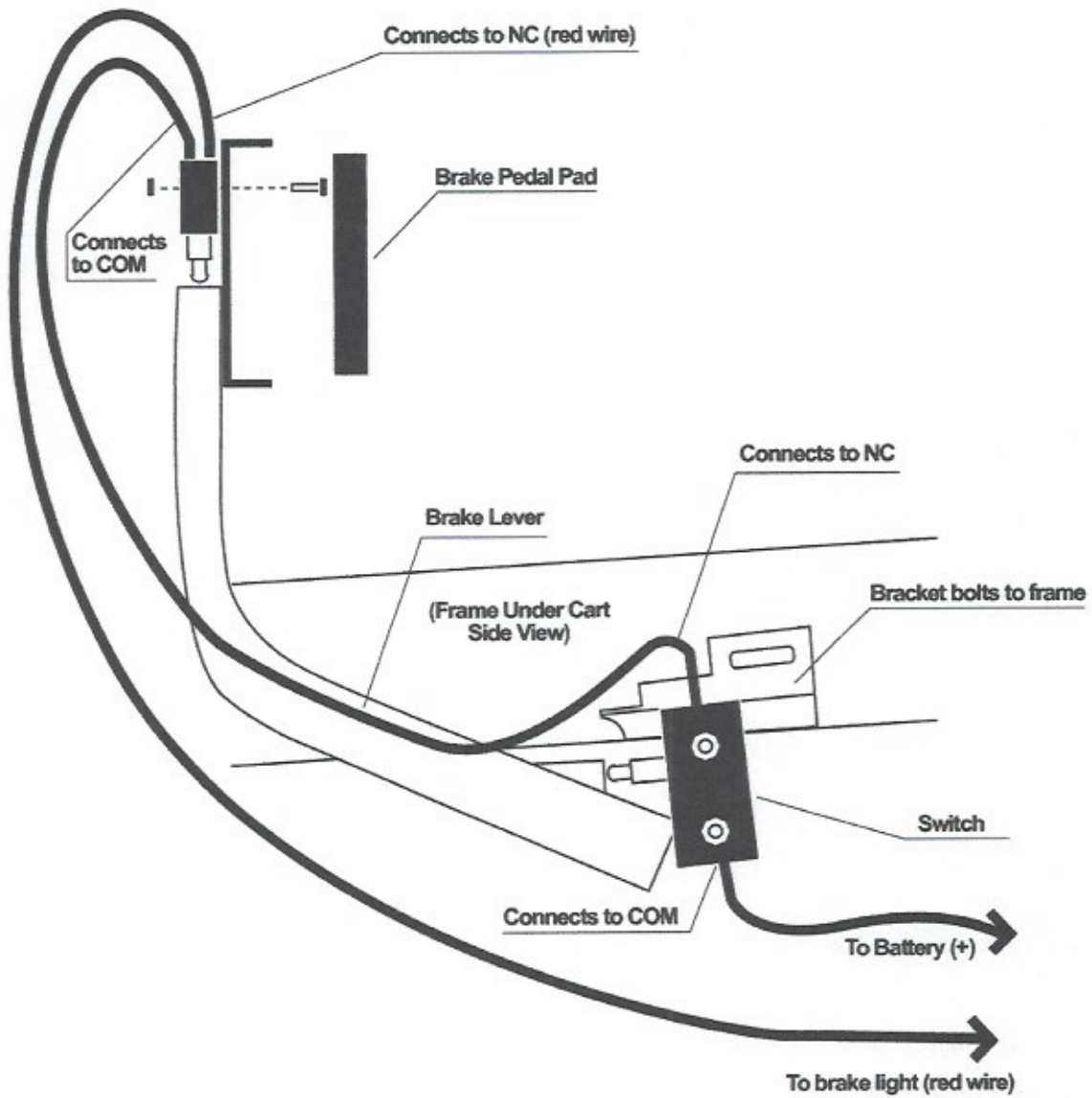
When in Golf Mode the cart speed is limited to 12 Miles per hour. Acceleration & Regenerative Brake torque are also reduced.

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.

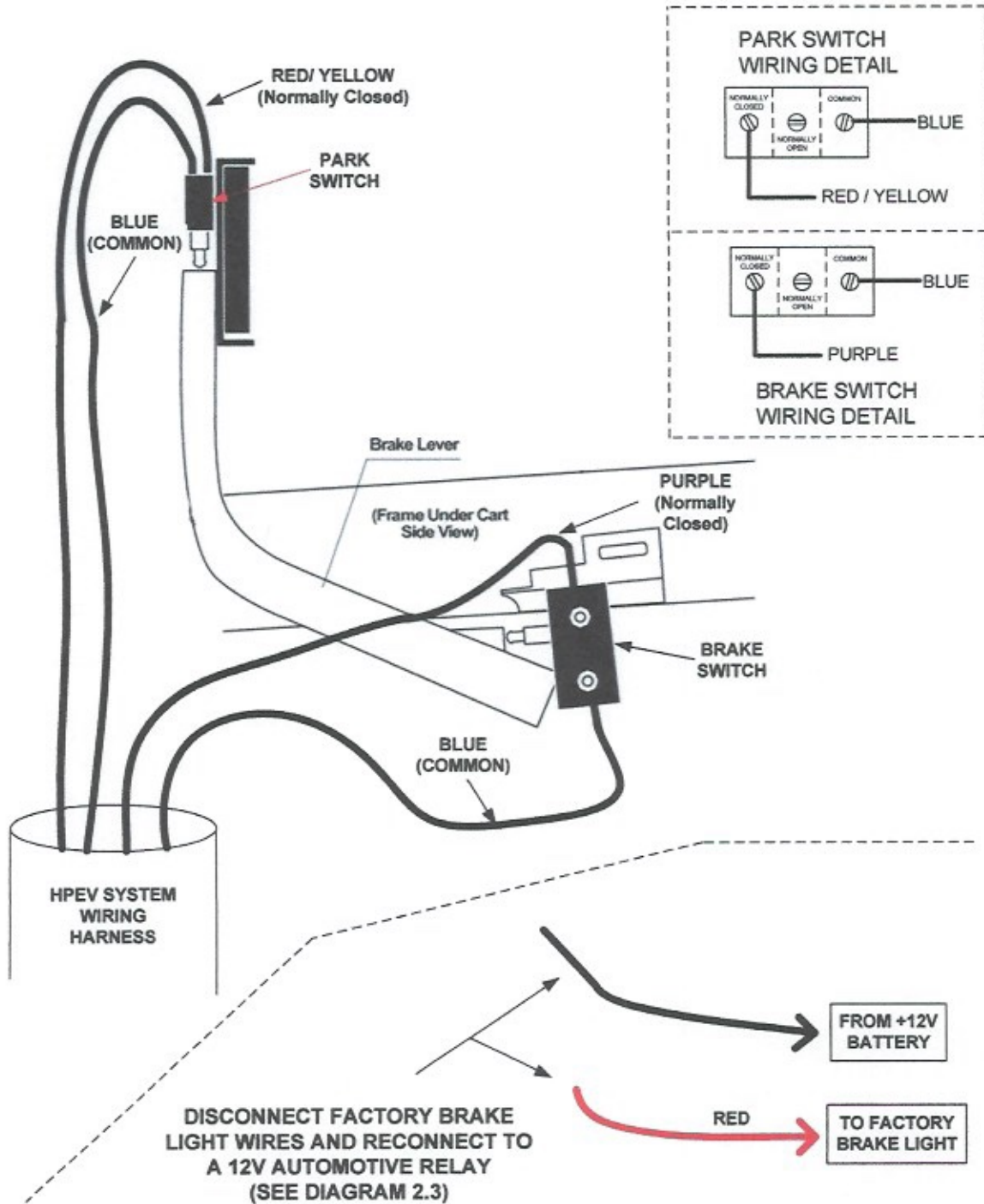
When Cart is in Reverse, speed is reduced to 8 Miles per hour. Acceleration & Regenerative Braking torque are also reduced.

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.

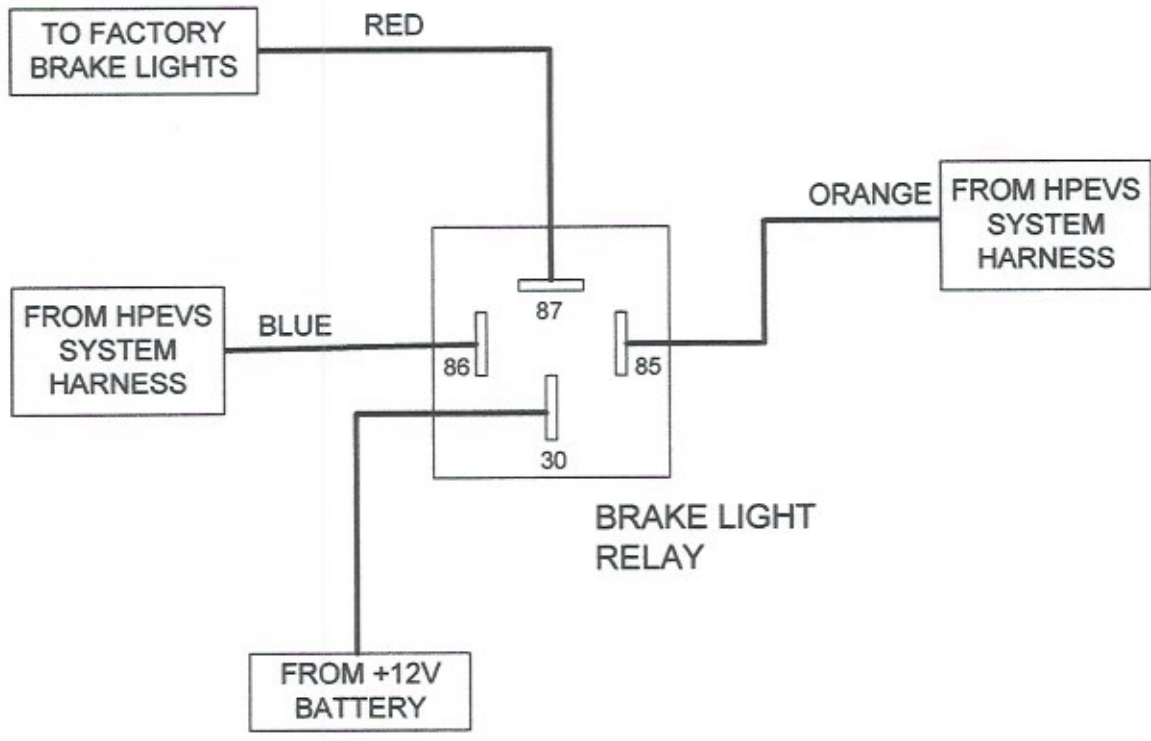
# CLUB CAR FACTORY BRAKE LIGHT KIT WIRING DETAIL -DIAGRAM 2.1



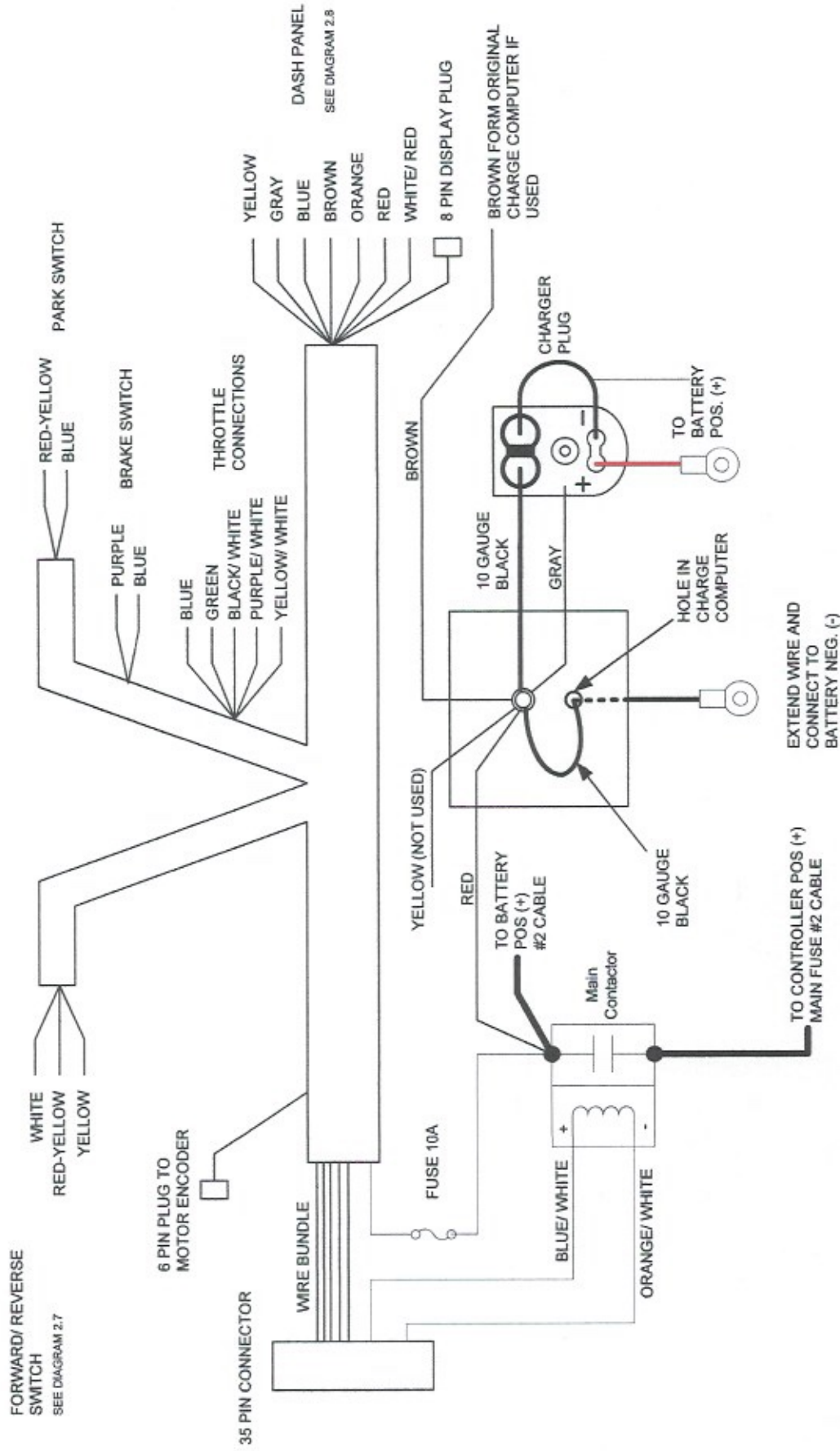
## HPEV AC-9 SYSTEM BRAKE LIGHT WIRING DETAIL -DIAGRAM 2.2



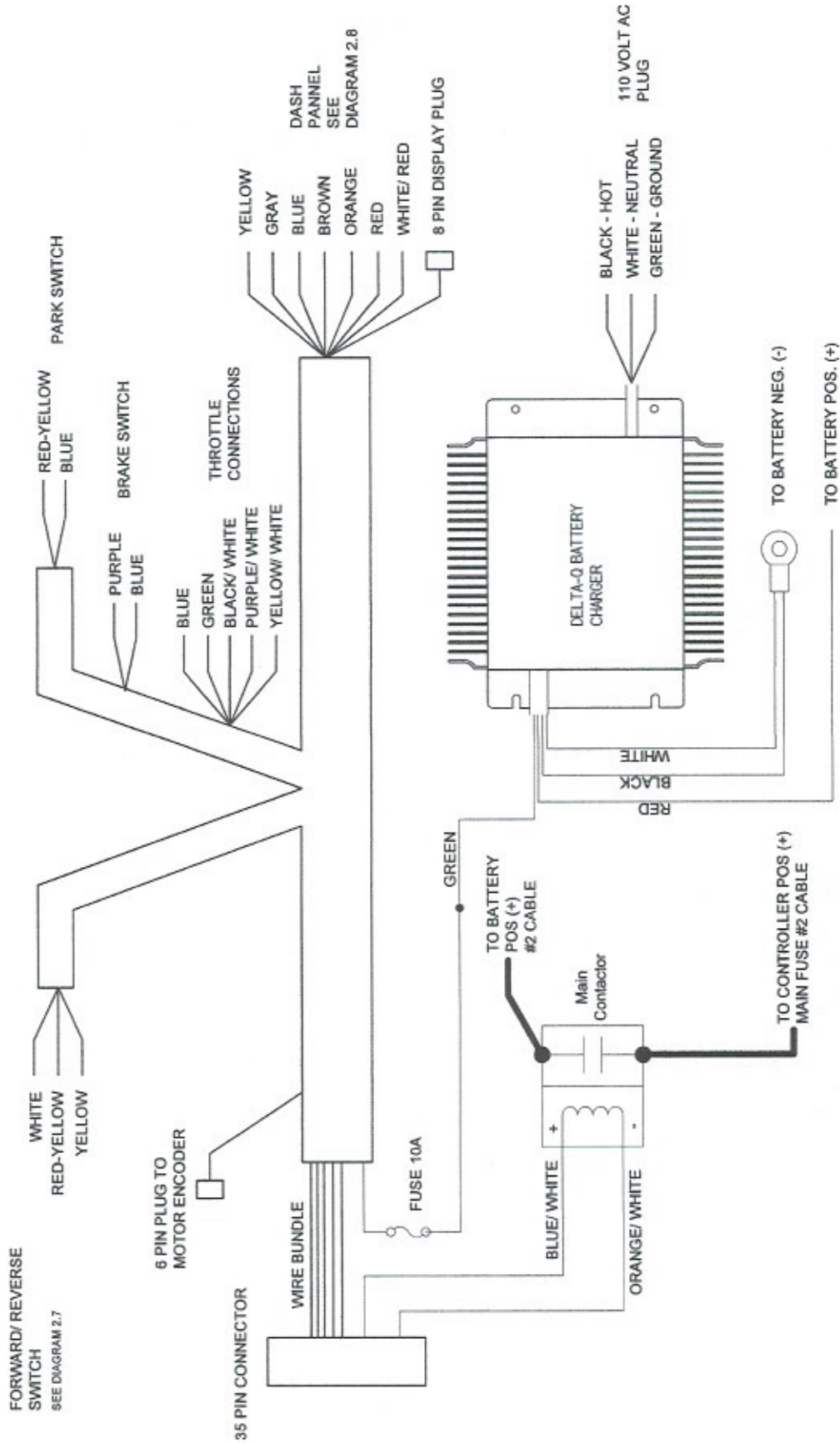
# BRAKE LIGHT REWIRING RELAY DETAIL -DIAGRAM 2.3



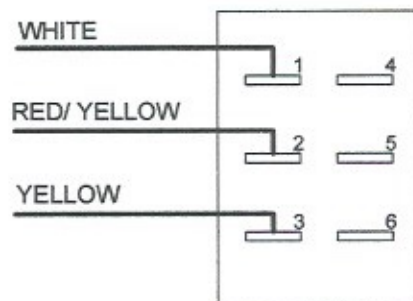
# CLUB CAR WIRING HARNESS with CHARGE COMPUTER (ORIGINAL EQUIPMENT) - DIAGRAM 2.4



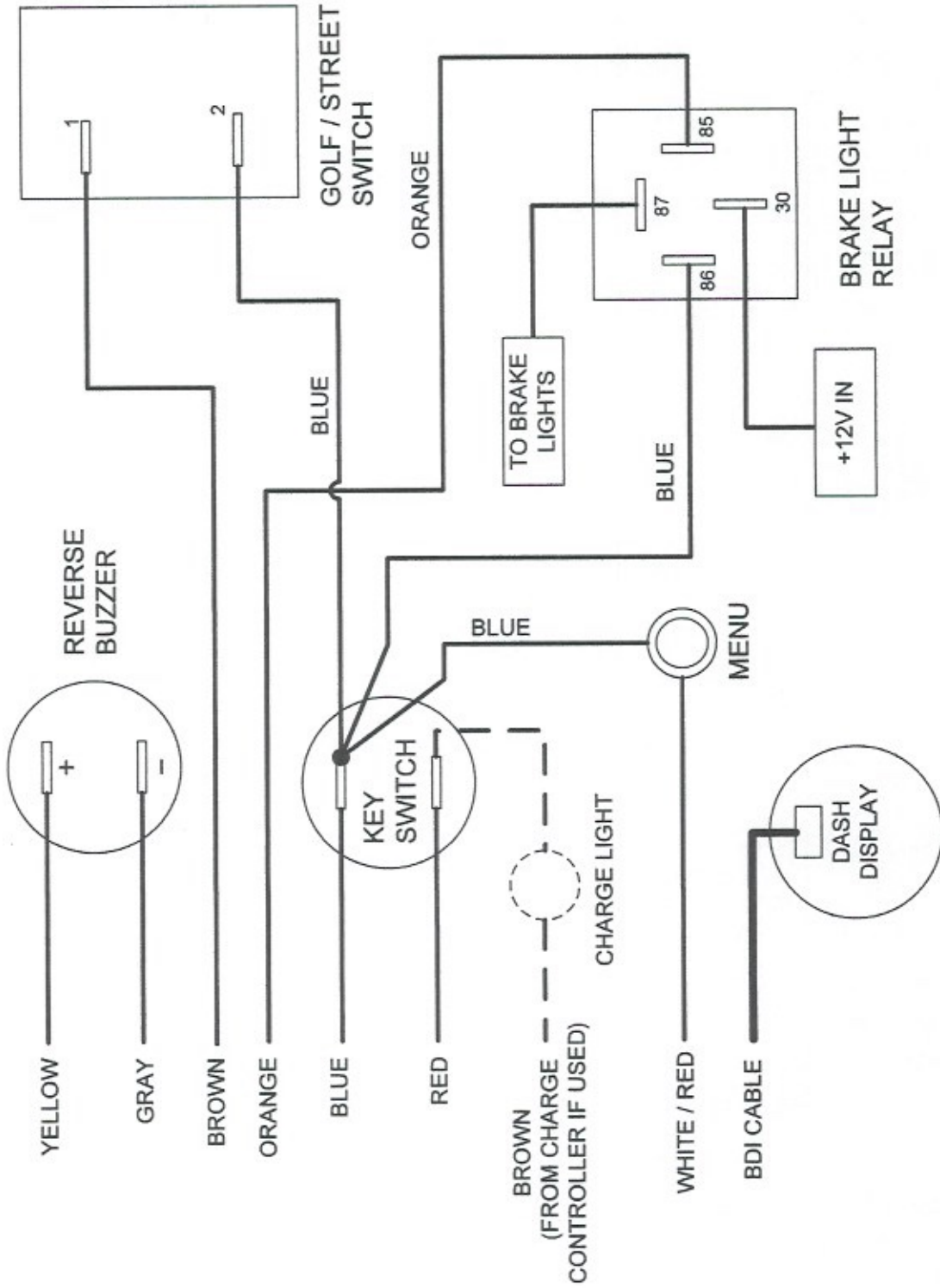
# CLUB CAR WIRING HARNESS with ON BOARD DELTA-Q BATTERY CHARGER - DIAGRAM 2.5



FORWARD/ REVERSE SWITCH DETAIL - DIAGRAM 2.6

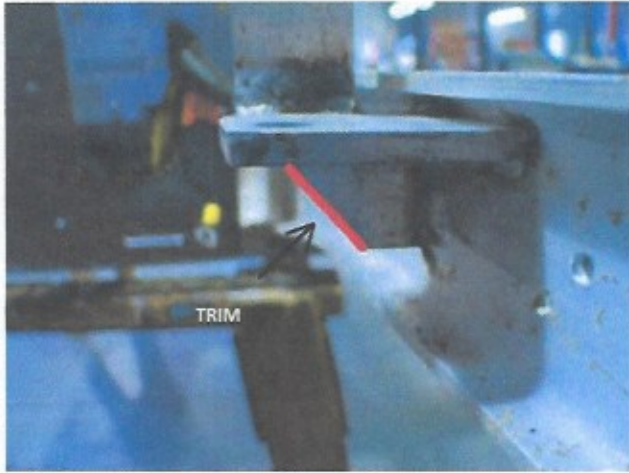


# CLUB CAR DASH PANEL WIRING DETAIL - DIAGRAM 2.8





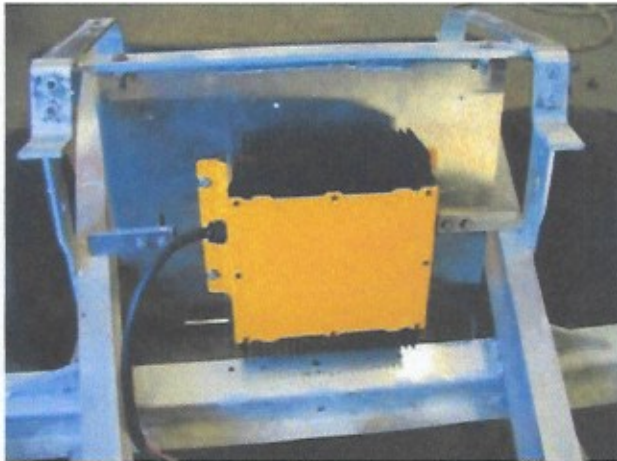




PICTURE 1.1



PICTURE 1.2



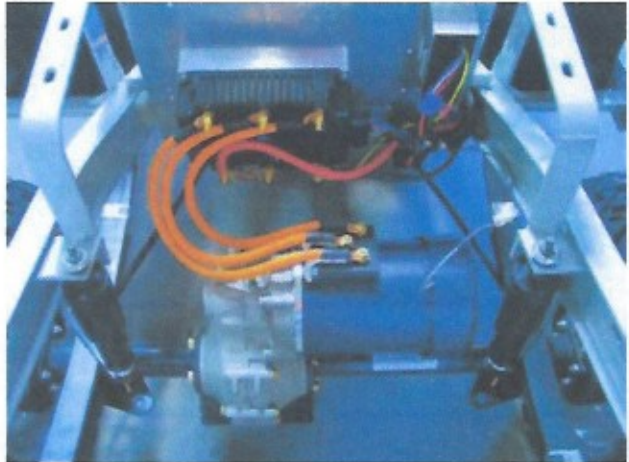
PICTURE 1.3



PICTURE 2.1



PICTURE 2.2



CONTROLLER MOUNTING