

STQ CC0 IQK SPEED KIT For 48-volt Club Car 2001 ~ Present DS Models with IQ System Speed Kit Conversion Instructions



STQ CC0 IQK Club Car IQ Speed Kit Conversion Instructions

Thank you for purchasing our exclusive STQ CC0 IQK Speed Kit. We take great pride in our products and feel certain that this kit will offer you many years of trouble-free service. We ask that you take a moment to read these instructions completely before beginning your installation. Familiarity with the parts and an understanding of the procedures will ensure that your installation goes smoothly and safely. Additionally, it will give you an opportunity to determine if your cart might have any damaged, corroded, or missing parts which will need replacing prior to using your new speed kit.

About This Speed Kit

This speed kit is designed specifically for Club Car 48 volt IQ System electric golf carts. If you are unsure of your golf cart type, please see our catalog or contact our technical department, toll free a 1-888-444-9994, or online at www.buggiesunlimited.com. During the installation of this kit you will be upgrading four major electrical components from your golf cart, with four high performance components in our STQ CC0 IQK Speed Kit. These parts are: the motor, the speed controller, the solenoid, and the forward reverse assembly. All of your electrical connections will be made between these components and the battery group. You should allow about 4 hours for installation. As you complete each step, it is recommended to check it off as completed. This way if you are unable to complete this installation all at one time, you will know exactly where you left off.

Parts Included In Our Kit

- 1) High Performance electric motor (per application).
- 2) 700 amp speed controller.
- 3) Main solenoid (48 V).
- 4) 4 gauge Club Car cable kit including:
 - a) 1 red coded cable.
 - b) 2 blue coded cables.
 - c) 1 white coded cable.
 - d) 1 orange coded cable.
 - e) 1 green coded cable.
 - f) 1 black coded cable.
 - g) 1 yellow coded cable.
 - h) 5 red/black coded cables.
- 5) Forward & reverse switch assembly.
- 6) Jumper buss bar.
- 7) Pre-charge resistor.
- 8) Wire harness kit
- 9) Hardware kit.
- 10) F&R Switch Handle (not shown)
- 11) Screw
- 12) Bracket



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Tools And Materials Required To Install Kit

- 1) SAE socket set, with ratchet and 3" and 6" extensions.
- 2) SAE combination wrench set.
- 3) #2 Phillips and Flat Tip screwdrivers.
- 4) Wire cutters.
- 5) Wire crimpers.
- 6) Heavy weight grease.
- 7) Safety goggles/glasses.
- 8) Lifting Jack & Jack-stands
- 9) Torque Wrench (in/lb & ft/lb)
- 10) Drill (not shown)
- 11) 7/32" Drill Bit (not shown)



Additional Tools Which Make The Job Better And Faster

- 1) Battery Carrying Strap. Part #BT8001.
- 2) Battery Terminal Protector Spray. Part # BT60512.
- 3) Battery Terminal Re-Facer. Part # BU6002.
- 4) Electronic Multi-meter. Part # BU6001.
- 5) Small Box of Baking Soda. (Local store purchase)
- 6) Quality Anti-Sieze Compound or Wheel Bearing Grease. (Local store purchase)



BT8001



BT60512



BU6002



BU6001

A Note Before Starting

Throughout this conversion, we will be discussing the connection of #4 heavy gauge cables to several different electrical components. Some cables will be attached to threaded terminals or "posts" as found on motors and others will be attached to flat bus bars. An understanding of each of these cable connections is important. Let's first cover the threaded terminals. You will notice these terminals utilize a set of double nuts to hold the cable terminal firmly in place. Typically, a cable terminal and a washer will be sandwiched between these two nuts. An open-end wrench of the appropriate size should be used to hold the top nut, while using another wrench to hold the bottom nut. This eliminates the possibility of damaging the terminals or internal parts of the motor. (See fig 5) Failure to use the double wrench technique on double-nutted terminals can permanently damage the motor. You will also want to use the double wrench technique when making connections at the flat bus bars of the controller, but care should also be given to avoid twisting or bending the bars. Again, the seals at the base of the controller bus bars are fragile and subject to damage, if handled improperly. Seal damage or bent bus bars will **void** the warranty for that component.

Conversion Process

⚠ CAUTION: During this installation it is necessary that you wear eye protection at all times. A lifting jack and appropriately rated jack stands must be used to lift and safely support the cart.

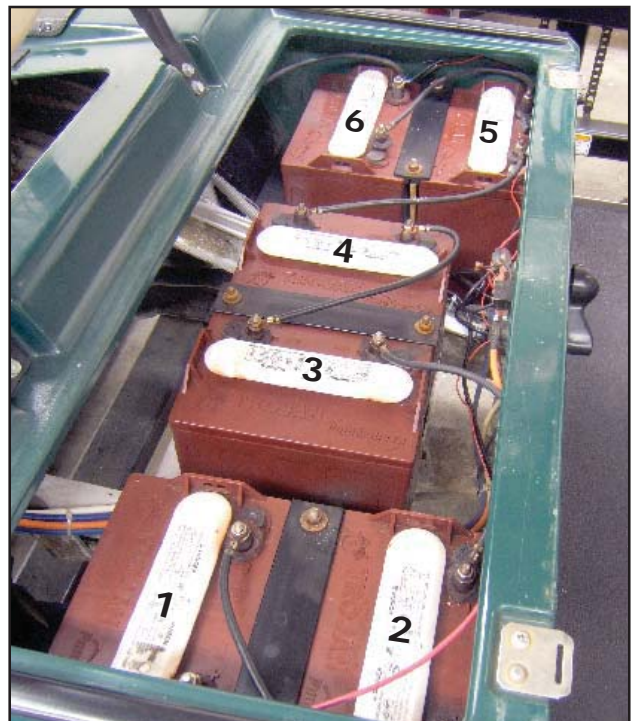
- 1) Seat Removal:** Grasp the seat handles and rotate the seat forward and lift the seat from the hinges.
- 2) Access Panel Removal:** Remove the black plastic rear access panel that is located between and behind the front seats using a #2 Phillips screwdriver. It will be easier to get at the necessary connections, if you remove the sweater basket or any other seats or cargo boxes on the rear of the cart. You can also access the components from under the cart if needed.
- 3) Battery Disconnect:** Make sure you have the correct eye protection before continuing. Be sure the Tow Switch is in the Tow position, then remove the battery cable connections at battery #1 and #6. See figure 3. Remove all short battery cables from each battery at this point. It will not be necessary to remove the batteries to install this kit. It is recommended to clean the batteries using a mixture of 1 cup of baking soda and 1 gallon of water. For best results, re-face the battery terminal connections to achieve optimal electrical flow (see additional tools above). Rinse completely then allow time to dry before continuing with component removal.
- 4) Controller Discharge:** With the cart in reverse and key switch on, hold the accelerator pedal half way until the back up buzzer stops. This may take a couple of minutes. i
- 5) Controller and Solenoid Removal:** First remove the controller cover, then disconnect all of the cables and main wire harness connections from the controller. See figure 6a. Be sure to depress the lock tabs before attempting to remove the wire harness plugs from the controller. See figure 6b. Now remove the four



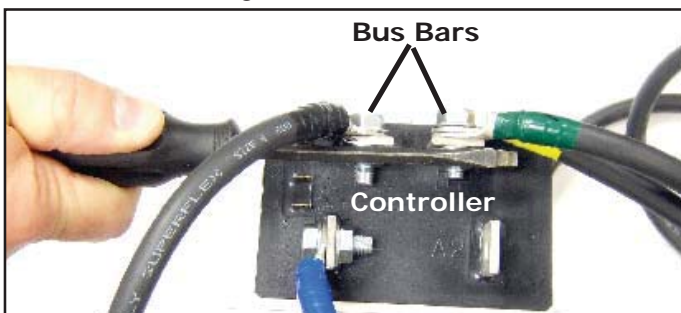
1. Seat Removal



2. Access Panel Removal



3. Battery Disconnect



4. Controller Discharge

controller mounting bolts and remove the controller from the cart. The four mounting bolts will be re-used, so set them aside for now. Next, remove the two mounting bolts that hold the solenoid to the frame. See figure 6c. Keep these two bolts also since they too will be used later. Unplug the main wire harness from the onboard computer. See figure 6a.

- 6) **Motor Removal:** Using the lifting jack, lift the cart high enough for you to comfortably work under the cart.

CAUTION: Make sure to use a lifting jack to lift the cart and use appropriately rated jack stands to safely support the cart before proceeding!

Before removing the motor, clean the area where the rear axle assembly meets the motor. Mud or dirt, which may have accumulated on this area, could drop into the motor coupling, causing damage to motor or axle parts. Next, Use the double wrench method to disconnect each of the 4 cables from the motor.

WARNING: The motor is very heavy and could drop suddenly! Be prepared for this sudden drop to protect yourself from possible injury. We strongly recommended that you have a second person assist with handling and lowering this motor by using a strap around the motor.

Now, remove the 3 mounting bolts through the axle housing, using a 7/16" socket and remove one bolt securing the motor mounting clip under the motor, using a 1/2" socket. Support the motor with both hands placed around the motor, then wiggle and pull outward away from the axle assembly until the motor is loose. See figure 7.

THE MOTOR IS HEAVY, BE CAREFUL!

NOTE: If motor does easily not slide off of the rear axle assembly, contact our tech department for assistance.

- 7) **Cable and Wire Harness Removal:** All of the remaining 6 gauge cables on your cart (between batteries, etc.) can now be removed. The end of the main battery negative cable will need to be cut off in order to remove it from the computer. See figure 8. Save all hardware removed, since most of it will be re-used. Next, unplug the tow switch and Forward & Reverse switches, from the main wire harness. Unplug the main wire harness from the onboard computer and also remove the 2 retaining screws securing the main harness to the key switch. Cut any tie straps securing the main wire harness to the chassis and remove the harness.

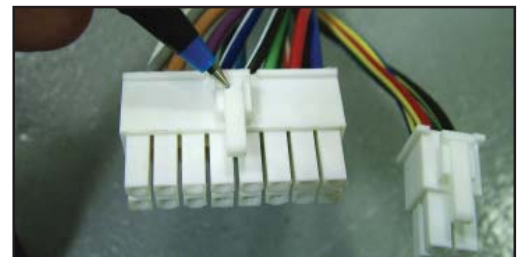
- 8) **Forward & Reverse and Tow Switch Removal:** Remove the 3 bolts securing the forward and reverse switch to the rear



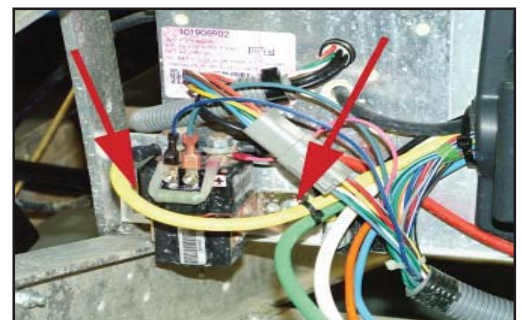
5. Opposing Wrench Technique



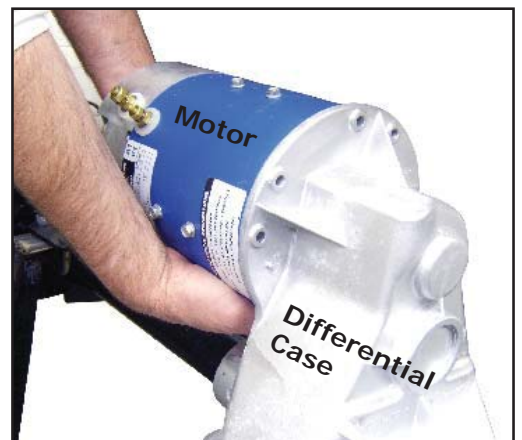
6a. Controller Removal



6b. Controller Plugs



6c. Remove Solenoid



7. Remove Motor

body of the cart and set it aside. Next, remove the nut on the top of the Tow Switch and remove the switch from the switch plate. It too can be set aside. See figure 9.

- 9) **Component Installation Preparation:** Before installing our SPEED KIT into your cart, take a little time to clean the areas now exposed by the removed components. The motor mount may have some grit or dirt around the opening of the mount. A moist rag or small brush can be used to clean that area. Avoid letting dirt fall into the housing. Be sure to check the mounting surface of the controller to be sure it is completely clean. Wipe it down with a damp cloth to remove dirt or film. This area acts as a heat sink and dirt will interfere with the controller's performance.

10) **Motor Installation:**

Before mounting the motor, lubricate the splines but not the end of the motor shaft with anti-sieze compound or a quality heavy-weight grease available from any auto parts store. Lift the new motor up into place and slide it onto the shaft of the axle assembly. With some gentle side to side movement and pressure toward the housing, the motor should slide up tight to the housing with little effort. **DO NOT USE THE MOUNTING BOLTS TO DRAW THE MOTOR ONTO THE REAR AXLE ASSEMBLY INPUT SHAFT.** If it does not slide into place easily, remove the motor and inspect for dirt or debris which might prevent the motor from sliding onto the shaft. Rotate the motor so that 2 terminals are high in front of the motor and 2 are low in front. See figure 10. Align the mounting holes of the motor to the mounting holes of the housing and insert the three mounting bolts. Tighten these three bolts using a criss-cross tightening pattern, to ensure that the motor is not binding or stressed. Tighten to 5 ~ 6 ft. lb. Now install the lower clip to support the motor. Torque to 6 ~ 7 ft. lb. See figure 11.

11) **Forward and Reverse Assembly Installation:**

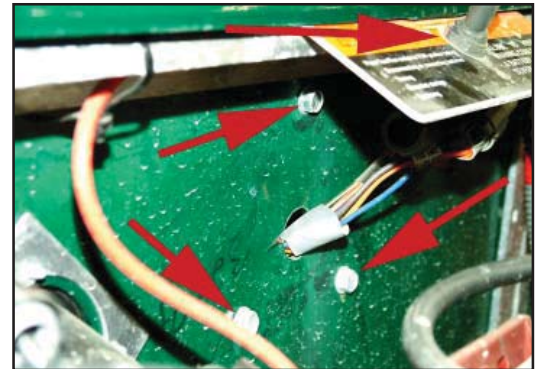
Remove the lever from the forward/reverse switch assembly, then place the entire assembly **INSIDE** of the rear body (under the empty tow switch plate), at the same mounting location as the original forward/reverse switch and mount box. Attach the assembly to the mounting area on the cart using the hardware supplied in the kit. Finally, secure the shift lever to the switch shaft (outside of the body) using the screw included with the switch. Refer to pictures 9.

12) **Controller and Solenoid Installation:**

Position the controller against the open area in the middle of the frame panel (staying close to the onboard computer) and mark the 4 holes as shown in figure 12. **DO NOT** mount the controller too far to the right or there will not be sufficient



8. Remove Battery Negative Cable



9. Forward and Reverse Removal & New Switch Location

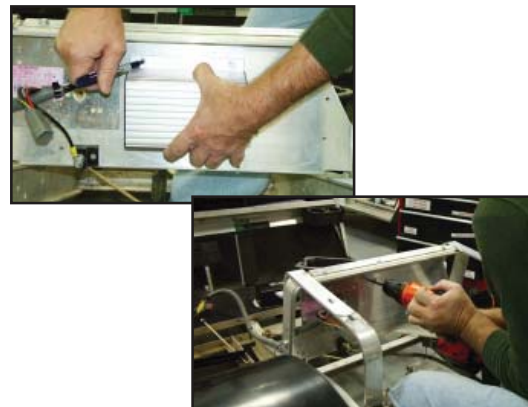


10. Motor Top View



11. Install Motor Clip

clearance between the controller and the solenoid. Make sure you have the controller terminals to the right (passenger) side of the cart. Now drill the holes you have marked using a 7/32" drill bit. Install the controller using the original "thread forming" bolts used to mount the original controller. These bolts will thread the holes as they are installed, without requiring any special preparation. Using the original hardware from the main solenoid, install the new solenoid to the right of the controller. Use the two holes already in the frame. See figure 13. Install the solenoid with the terminals towards the controller.

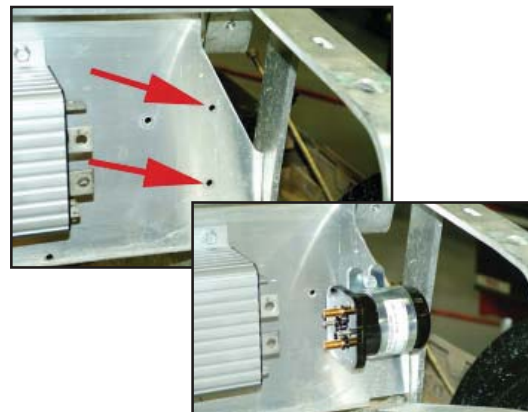


12. Controller Installation

13) CONNECTING THE CABLES:

It is now time to connect the cables to your new controller, solenoid, forward and reverse switch and motor.

NOTE: For maximum visibility, our photos show the components out of the vehicle or the body has been removed. Install the cables as directed but refrain from tightening hardware until all connections have been completed. Remember to use the double wrench technique to prevent twisting of stud connections or bus bar connections.

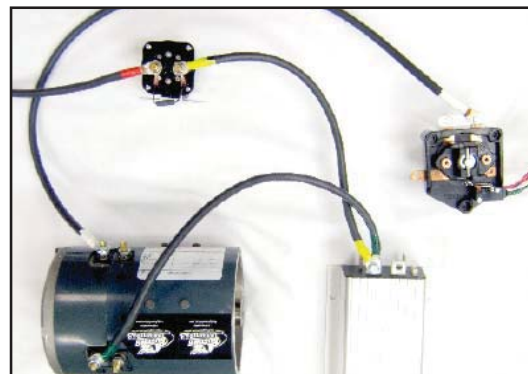


13. Solenoid Mounting

a) Install the Pre-Charge Resistor in place across the two large terminal posts of the solenoid installed earlier.

b) Route the 23" Red coded cable from the top empty large solenoid post. See figure 14. The other end of this cable will **eventually** connect to the main positive post of #1 battery. **NOTE: DO NOT connect this cable to the battery at this time!**

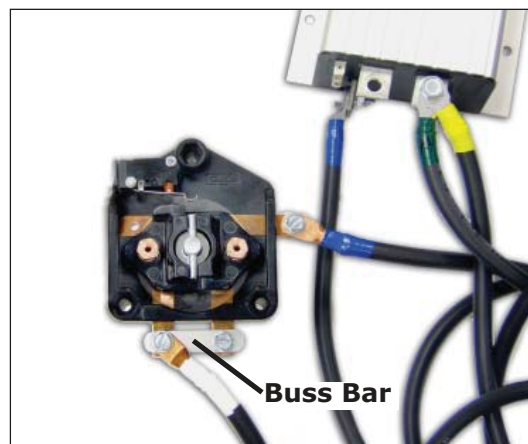
c) Route the 14" Yellow coded cable from the bottom empty large post on the solenoid, to "B+" on the controller. Also from "B+" terminal of the controller, route the 16" Green coded cable to "A2" on the drive motor. Leave all of the hardware loose at this time. See figure 14.



14. Red, Yellow, Green & White Cables

d) Route the 65" White coded cable from the "A1" connection on the motor, to the left hand (solid) terminal of the forward & reverse switch. Add the bus bar to this and the right hand solid terminal at this time. Use the hardware supplied to mount cable and buss bar to forward/reverse switch. Leave all of the hardware loose at this time. See figure 14 & 15.

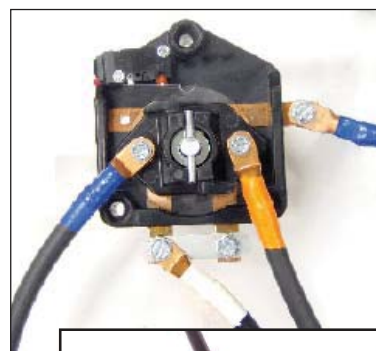
e) Route the 61" Blue coded cable from the "M-" on the controller, to the right hand solid terminal on the forward and reverse assembly. Leave all of the hardware loose at this time. See figure 15.



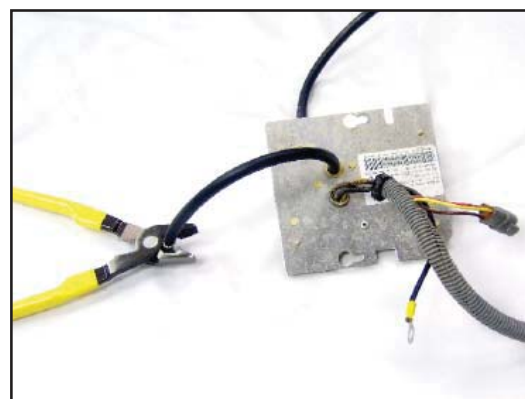
15. Blue Cable Installation

NOTE: A2 terminal on controller will not be used.

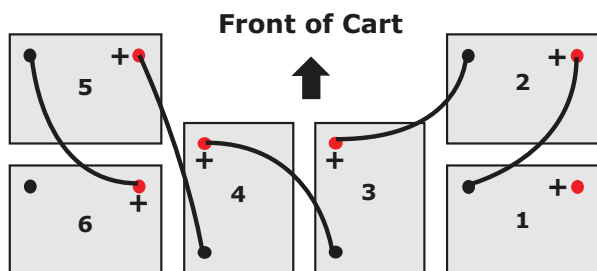
- f) Route the 65" Blue coded cable to the left hand moving contact on the forward and reverse assembly and the other end of this cable to the "S2" on the motor. Leave all of the hardware loose at this time. See figure 16.
- g) Route the 60" Orange coded cable to "S1" on the motor and to the right hand moving contact of the forward and reverse switch. Leave all of the hardware loose at this time. See figure 16.
- h) Locate the 30" cable with the Black color code on one end. You will find that the opposite end has no terminal on it. Route the unfinished end of the Black coded cable through the center hole in the computer, **THEN** crimp on the new 5/16" terminal lug (which was included in the kit). See figure 17. One end of this cable connects to the "B-" terminal on the controller. See figure 18. The other end will later be connected to the negative post on battery #6 of the battery pack. **NOTE: DO NOT connect this cable to the battery at this time!** Leave all of the hardware loose at this time. **NOTE: Check that the crimp you have performed is tight and secure. This connection will have high current power going through it and a weak crimp could cause excessive heat, resulting in a failed or melted connection.**
- i) Route the 5 short cables between the batteries (with the red and black coded ends), as per the battery drawing (see figure 19). Red connects to the positive post of one battery and black to the negative of the next battery. Do not over tighten (90 to 110 inch pounds of torque). **PLEASE take a moment now to verify your connections are EXACTLY as shown below.**



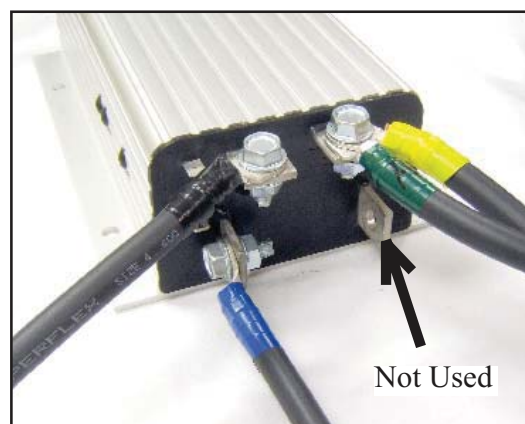
16. Orange Cable Installation



17. Black Cable Installation Through Center Hole in Computer



19. Battery Pack Wiring Diagram



18. Black Cable Installation

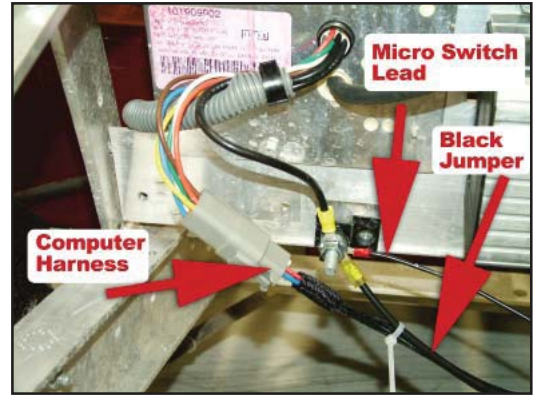
- j.) Now it is time to tighten all the cable connections EXCEPT the main solenoid and the controller B- terminal connections. Leave these loose for the moment. Keep in mind to use the double wrench technique to prevent

twisting of stud, cable or bus bar connections.

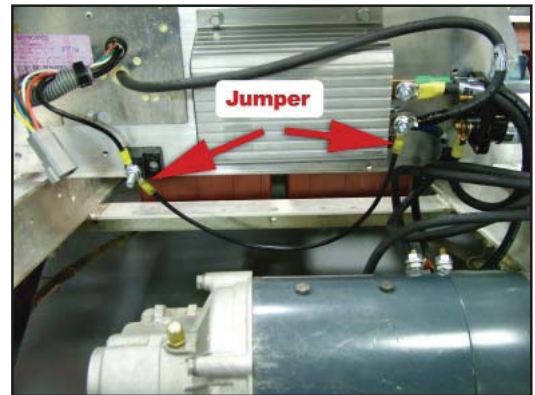
14) ACTIVATION WIRING

All of the original wire harness should have been removed in step 7 above. Now it is time to install the replacement harness sections by following the steps below. Remember to leave all hardware finger tight until all of these steps have been completed.

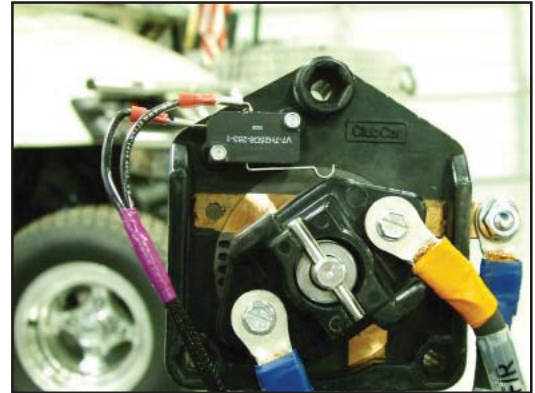
- a) Locate the short computer harness with the red & black wires going into the 6 pin gray plug. Connect the plug end to the carts computer. Place the eye terminal of the red lead onto the main solenoid #1 top terminal, along with the main battery positive (+) cable. Place the eye terminal of the blue lead onto the main solenoid small #4 terminal, towards the rear of the vehicle. See figure 20.
- b) Locate the short 15” black 10 gauge lead with an eye terminal on each end. One end will be installed onto the negative terminal block near the computer. The other end will be added to the “B-” terminal of the controller. See figure 21.
- c) Locate the 67” wire harness with two black wires. At one end, the two small tab connectors will be connected to the micro switch on the Forwards & Reverse Switch Assembly. Then, route the wires along the right (passenger side) frame I beam and under the frame support (behind the right side batteries). See figure 23. One lead will be added to the “B-” terminal under and right of the computer. The other black lead will be installed onto the main solenoid small #3 terminal towards the front of the cart. See page 11.
- d) Next, you will need to add the 94” Key Switch Wire Harness (two leads - one green and one blue). The end with two small eye terminal connectors will connect to the key switch as shown in figure 23. Route the harness under the front of the cart and down the right (passenger side) of the main frame I beam, along the same routing as the 67” harness to the controller area. Connect the blue lead (with the fuse holder) to the top large terminal #1 of the main solenoid.
- e) The last remaining 54” harness will complete the system. Begin by installing the 2 and three pin plugs into the MCOR speed switch openings under the floor board and route the harness up the same path as the previous two harnesses. It is advised to tape the leads to aid insertion through the frame support behind the right side batteries. Connect the remaining leads as follows:
 - 1.) Yellow lead to #3 tab terminal on controller.



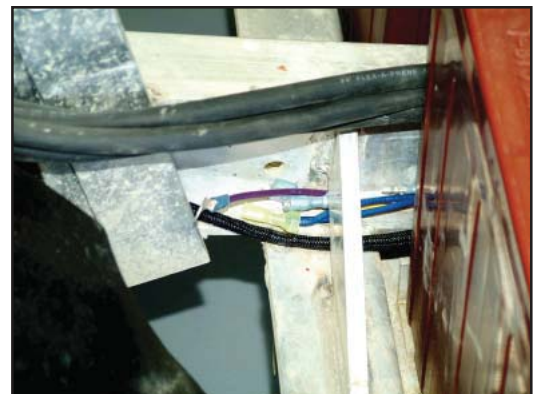
20. Install Computer Harness & Black Jumper



21. Install Negative Jumper



22. Install Micro Switch Harness



23. Harness Routing

- 2.) White lead to #2 tab terminal on speed controller.
- 3.) Purple lead to B- terminal on speed controller.
- 4.) Blue to the #1 tab terminal of the speed controller and the final blue lead to the main solenoid small terminal #4, towards the rear of the vehicle.

f.) Torque all of the hardware which has been left finger tight up to this point. This includes the controller, solenoid and computer negative terminals. Use care when tightening these terminals. Controller terminals should be tightened using the double wrench method. Solenoid terminals should be tightened with care since the larger terminals are soft and will strip or break off easily. Also, make sure that any cables or wiring on one terminal do not touch the cables or wiring positioned on another adjacent terminal.

NOTE: When tightening the large solenoid post nuts be sure the nut lock washer totally compresses and no movement is found in the connections. These copper posts are soft and will break off if too much torque is applied. Check to make sure that cable or wiring on one terminal are not touching cable or wiring positioned on another adjacent terminal.

15) FINAL BATTERY CABLE CONNECTIONS

At this time check and recheck all wiring and cable connections for proper torque and routing. If all is in good order, it is time to make the final battery connections.

- a) Connect the 23" Red coded cable to #1 battery positive post. Make sure the red 12 gauge charging cable is connected as well. Torque to 90 to 110 inch pounds.
- b) Connect the 30" Black coded cable to the negative post of #6 battery. You may notice some light arcing at the point of contact. This is normal and merely indicates the pre-charge of the capacitors in the controller. **NOTE:** A very heavy or server arc will indicate wiring problems and the wiring will need to be rechecked. Torque to 90 to 110 inch pounds.
- c) After the final connection is made (cart still supported on jack stands) place the car in the forward position and with the key switch on, push slowly on the accelerator. The cart should now run in the slow mode and as you accelerate the speed should gradually increase to full speed. Stop the wheels by applying the brakes and test run in the reverse mode. If all tests well, let the cart back down on the ground and test drive the cart. Install all removed accessories such as rear seats and inspection covers. Make sure all cables are tie strapped to solid areas as not to rub or bind on any moving parts.

NOTE: NEVER reverse direction without coming to a complete stop.

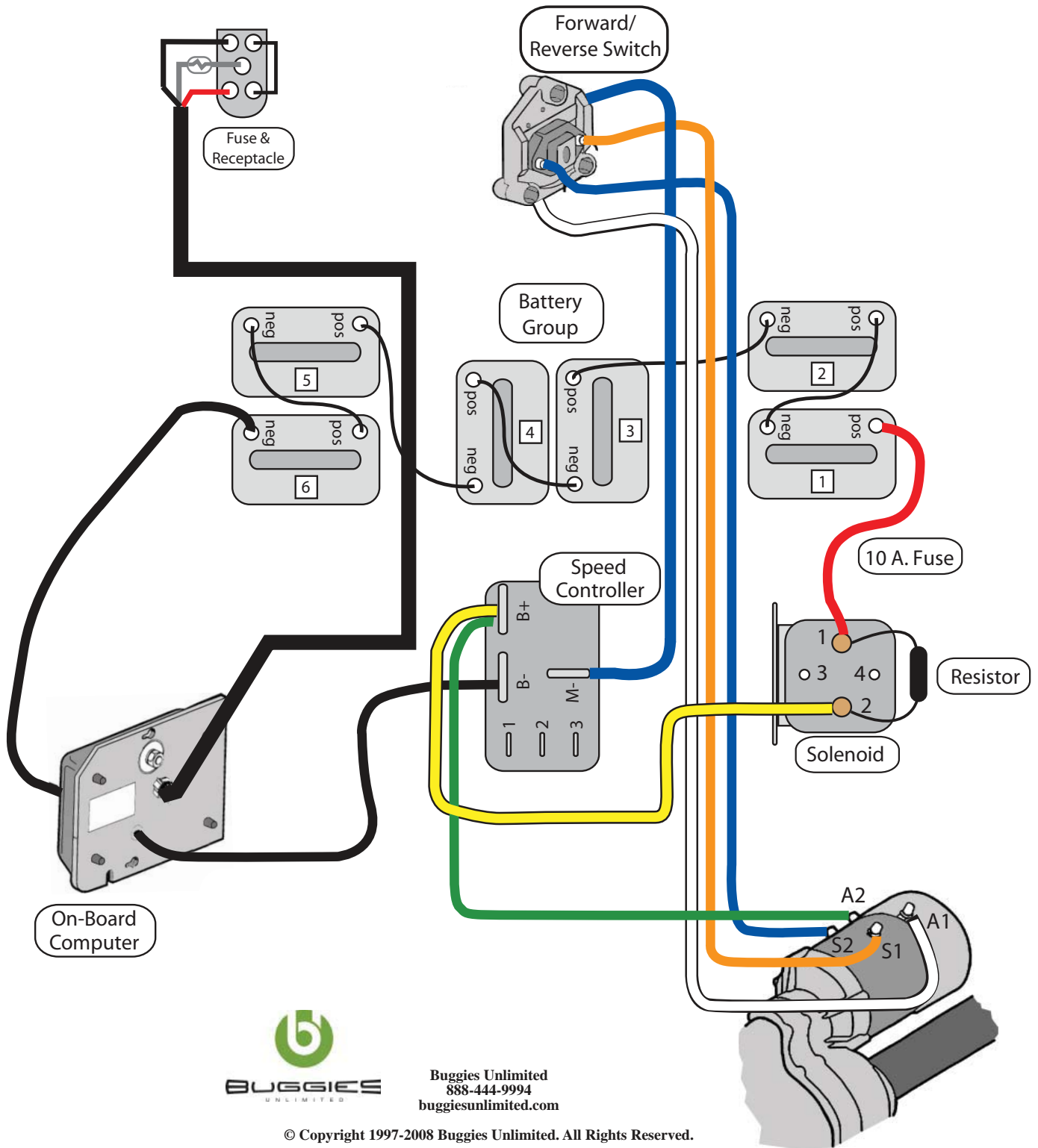


24. Positive Battery Connection



25. Negative Battery Connection

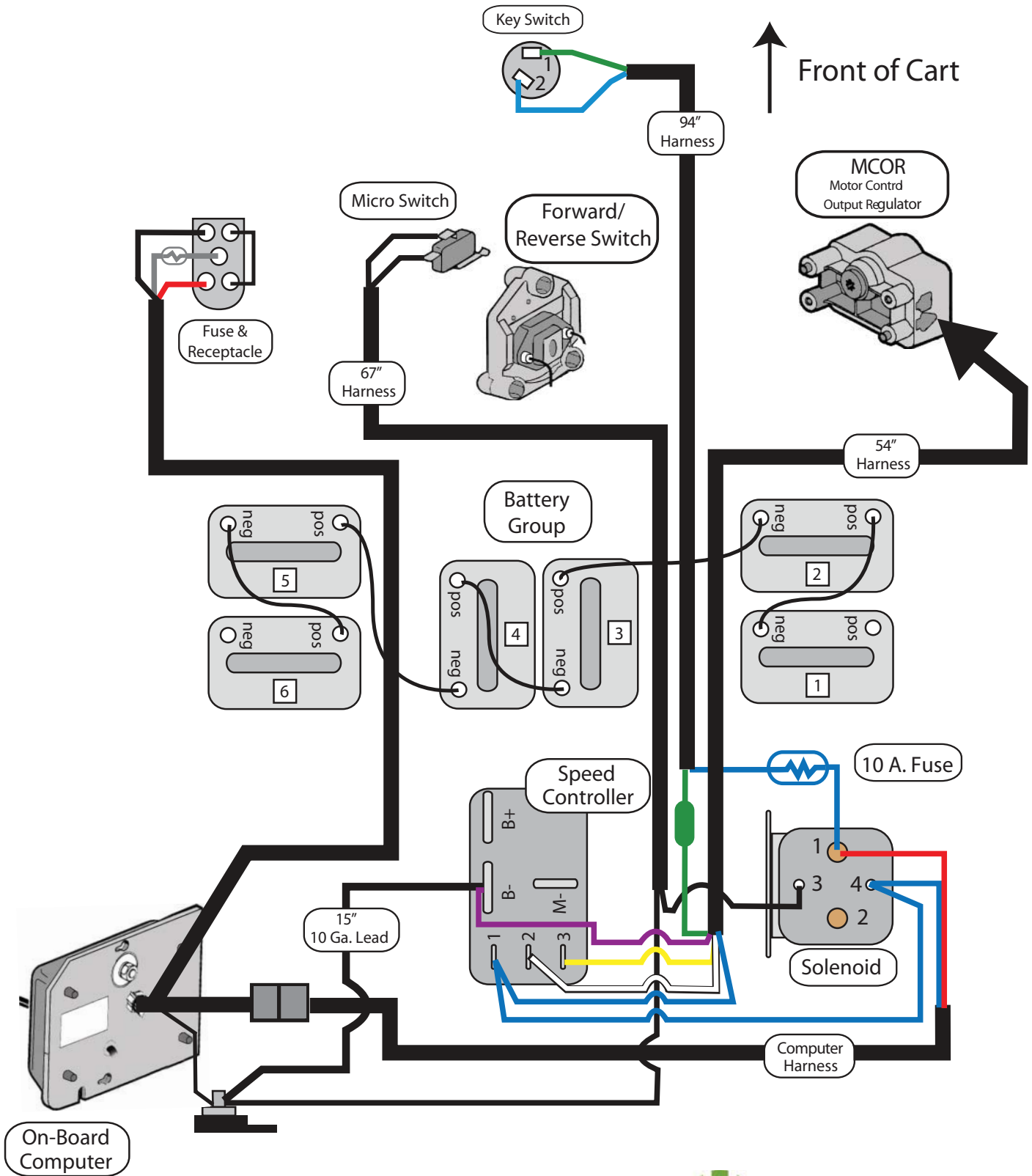
↑ Front of Cart



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STQ CC0 IQK Motor/Controller Wiring



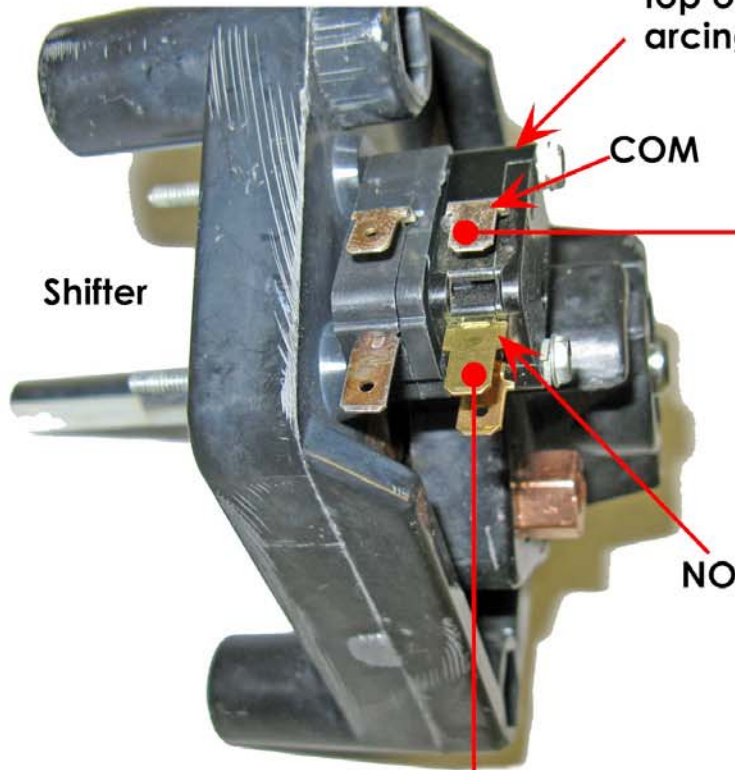
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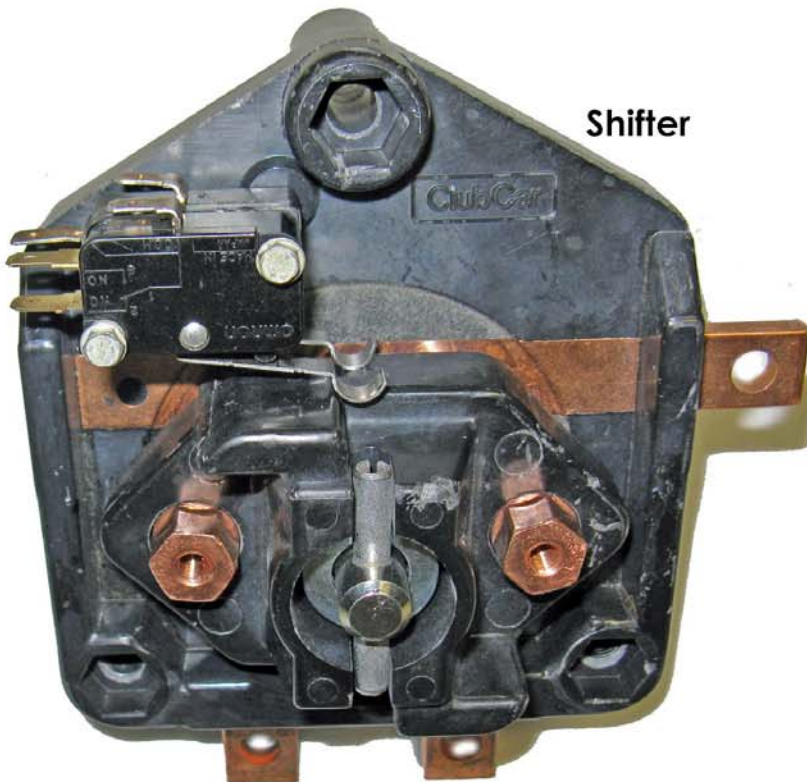
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STQ CC0 IQK Activation Circuit Wiring

Buzzer switch mounts on top of the existing anti-arcing switch.



Back up buzzer is located under the dash area



Connect a red 18 gauge wire to the COM (common) terminal on the back up switch. Connect the other end of this red wire to battery positive on the charging receptacle. Connect a red 18 gauge wire from NO (normally open) on the back up switch to Battery Positive on the Buzzer. Connect a black 18 gauge wire from Battery negative on the charging receptacle to battery negative on the Buzzer.