



1551 S. Vineyard Avenue
Ontario, CA 91761
(909) 923-1973

INSTALLATION INSTRUCTION

Club Car Precedent Lithium Battery Pack Installation Notes

REVISION: A

Date: 11-12-16

Disclaimer: HPEVS assumes that the installer possesses appropriate knowledge and skill to perform the installation of our drive system into any vehicle. If you feel that you DO NOT have the appropriate knowledge and skill to perform the installation, please seek help from a professional installer.



CAUTION: DO NOT HANDLE THE ELECTRICAL CONNECTORS WHEN THE SYSTEM IS ENERGIZED. DOUBLE CHECK THE VOLTAGE POTENTIAL WITH A VOLTAGE METER PRIOR TO HANDLING MAKING SURE VOLTAGE IS AT 0V. FAILURE TO DO SO WILL RESULT IN INJURY OR DEATH!

SCOPE: This instruction set is given as a detailed guide to install HPEVS complete lithium battery pack into a **Club Car Precedent golf car**. Included in this system are 16 100Ahr batteries, one Orion BMS Jr. and one delta-Q battery charger.

STOCK LEAD ACID BATTERY REMOVAL

1. Set the park brake.
2. Turn ON/OFF Switch to OFF position and remove key from key switch.
3. If equipped, place the Run/Tow switch into the Tow position.
4. Disconnect the stock lead acid battery cables based on (Fig. 1)

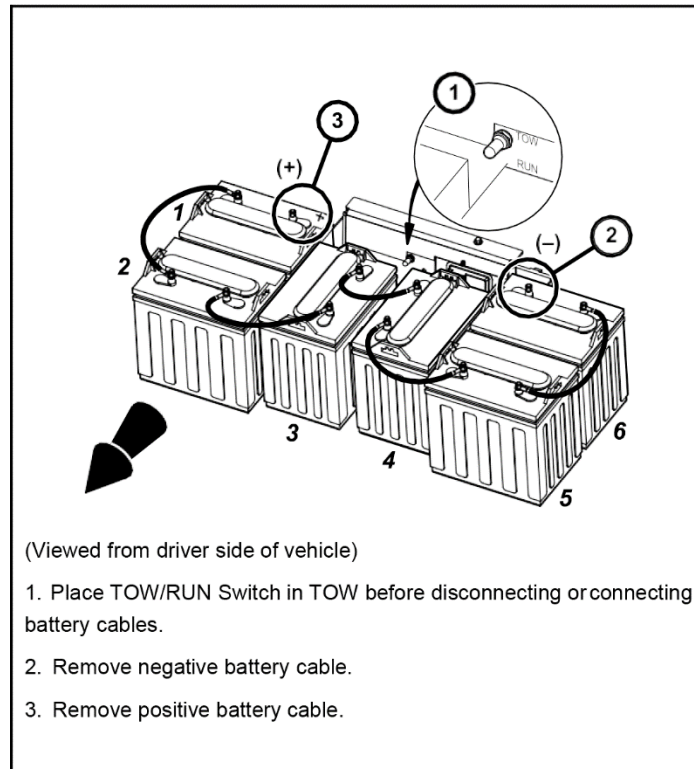


Fig. 1

5. Remove all battery cables from the stock batteries.
6. Remove all batteries from the stock battery tray/tub.

Stock Controller Removal:

1. To remove the stock controller plate, locate the black screw (Torx T-40) located at the top plate. **NOTE: RETAIN THE BLACK TORX BIT SCREW. IT WILL BE USED IN THE INSTALLATION OF NEW CONTROLLER PLATE ANGLE BRACKET.** (Fig. 2)



Fig. 2

2. Remove the controller plate from the cart. (Fig. 3)



Fig. 3

3. Once access is available to the backside of the controller 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. Stock Contactor. Note: The contactor is removed by sliding it up out of the slot. Do not break the retainer legs. Discard the resistor across the main terminals.
 - b. Controller plate black screw.

Battery Tub/Tray Modifications

Minor modifications need to be performed to the battery tray/tub so that the new lithium battery tray kit can be installed into this position.

There are three areas in the tray/tub that needs to be modified to allow for 1) the lithium battery pack to sit flush in the tray/tub; 2) allowing for the routing of the stock wiring harness through the tub/tray so that it reaches the back area of the vehicle where the controller is located.

1. For reference, here is a stock battery tray/tub that is out of a Club Car Precedent looking into the battery tray area. (Fig.4)



Fig. 4 Looking from the rear of cart forward

2. To ensure that the lithium battery tray sits flush within the battery tray/tub, there is a section of raised plastic that needs to be removed. (Fig. 5)

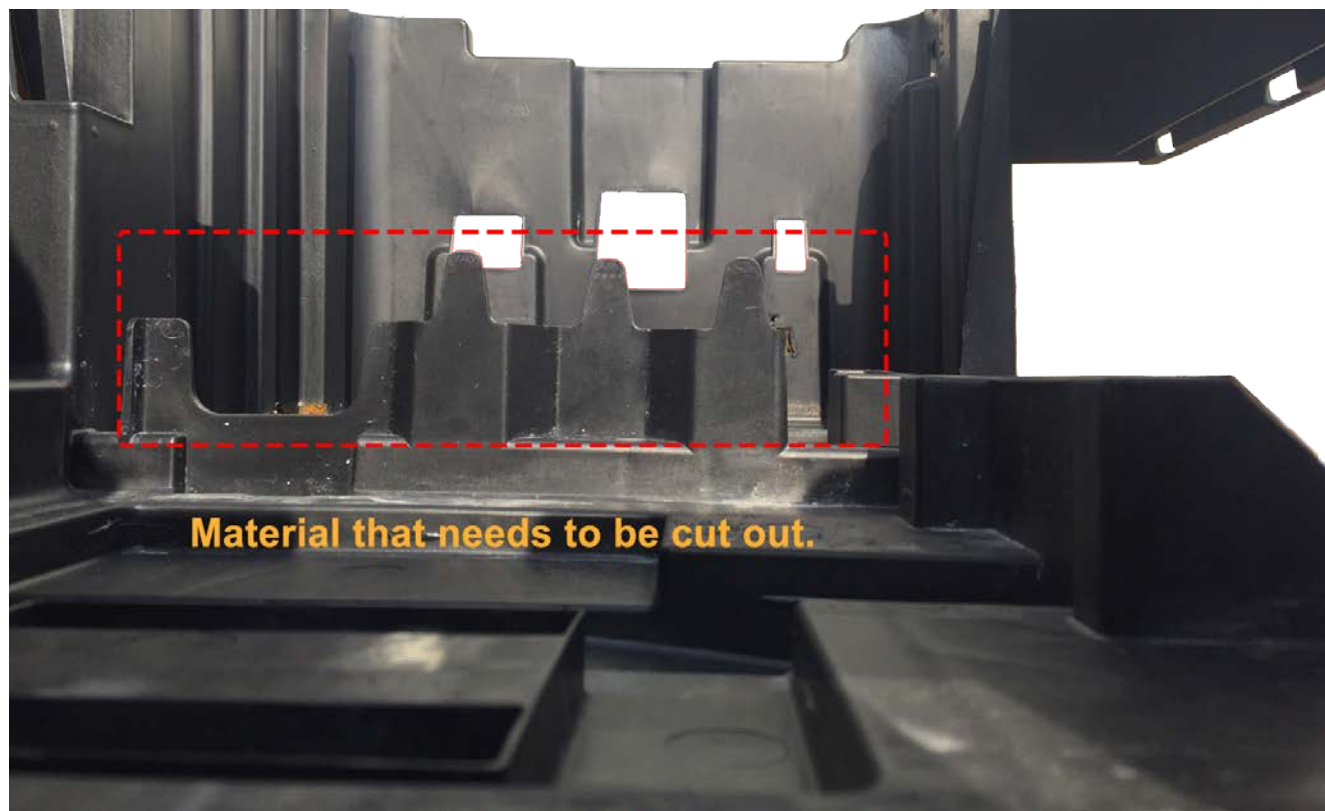


Fig. 5

3. Using a saw or cutoff wheel (pneumatic saw is highly recommended), cut the peak raised plastic material flush to the base from which this plastic material is located. (Fig. 6)



Fig. 6- Raised material removed.

Plastic material removed for wiring harness routing

Next, there is a small piece of plastic located on the bottom of the tray/tub that needs to be removed to allow for proper routing of the stock golf car wiring harness underneath the new lithium battery tray.

1. The piece is located towards the front of the tray/tub on the bottom along the lines of the previous cut. (Fig. 7)
2. The piece needs to be fully cutout and should end up being flush with the surrounding plastic material area.(Fig. 8)

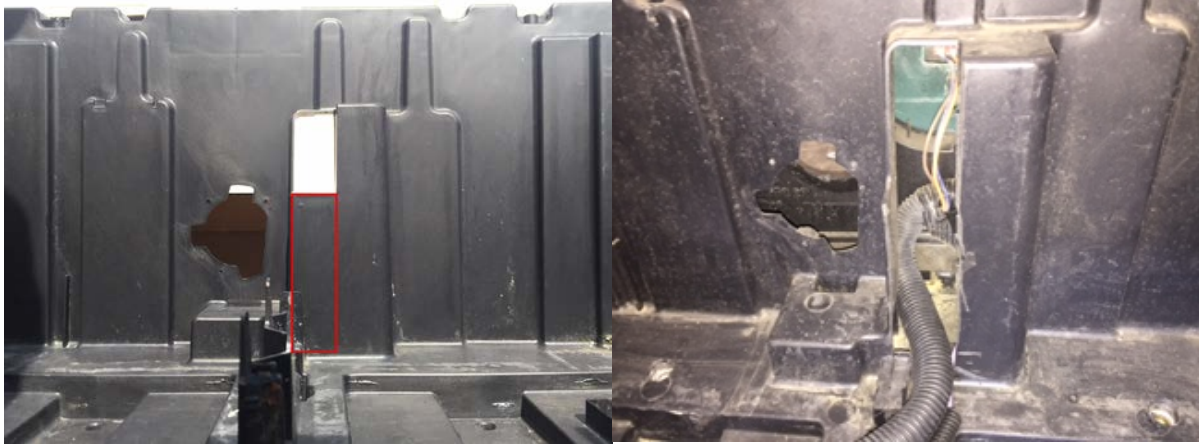


Fig. 7



Fig. 8- Finished cut

3. Cut away plastic along the front side of the battery tub/tray to allow for a slot that the stock wiring harness can be routed away from the existing access hole. The harness will need to lay as flat as possible along the bottom surface of the battery tray/tub.



1. Next, a through hole needs to be drilled in the plastic to allow for the wiring harness to exit out of the battery tray/tub into the motor/controller area located in the back of the car. Using a 1 3/4" hole saw proceed to drill the hole on the rear driver side of the floor. Note that the hole has to be close as possible to the bottom surface of the battery tub/tray. (Fig. 9)





Fig. 9

2. Proceed to route the OEM harness through the battery tray/tub as shown then carefully feed the harness through the hole. (Fig. 10)





Fig. 10- OEM wiring harness routing

LITHIUM BATTERY PACK INSTALLATION



Installation of the HPEVS into the vehicle will require two people to set the pack into the battery tray/tub.

1. Install the lithium battery pack with the delta-Q charger located on the driver side of the vehicle. It is very important that the battery pack is located as far back as possible against the rear wall of the vehicle's battery tray/tub. (Fig. 11)



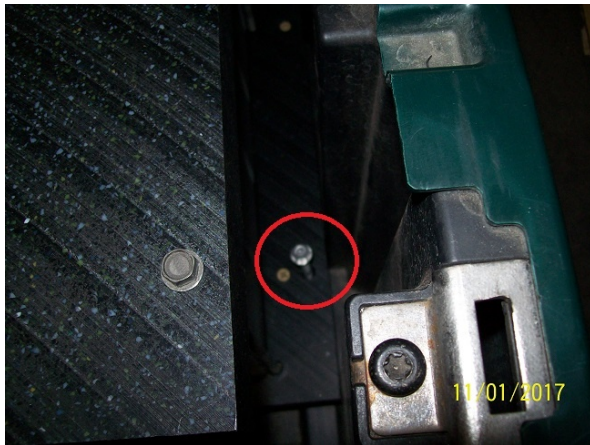
Fig. 11-Lithium battery pack installed into golf car

2. Using the supplied (4) ¼" x 4" stainless self-tapping; self-drilling screws (Fig. 12), secure the lithium battery pack to the vehicle's frame. There are four predrilled holes located in the bottom piece of the lithium battery pack tray. An impact driver is highly recommended in the process of drilling these screws into the frame.

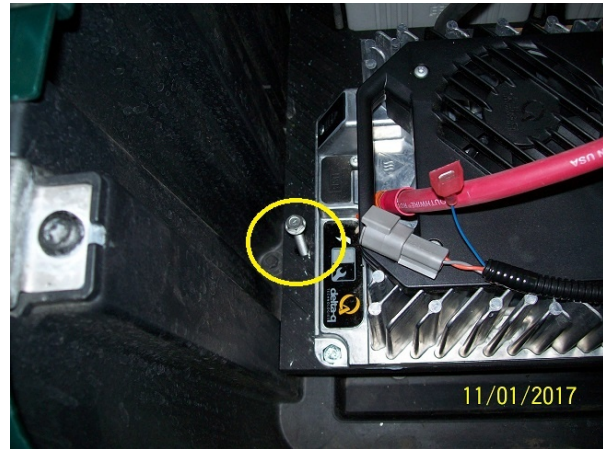


Fig. 12- self-tapping screws

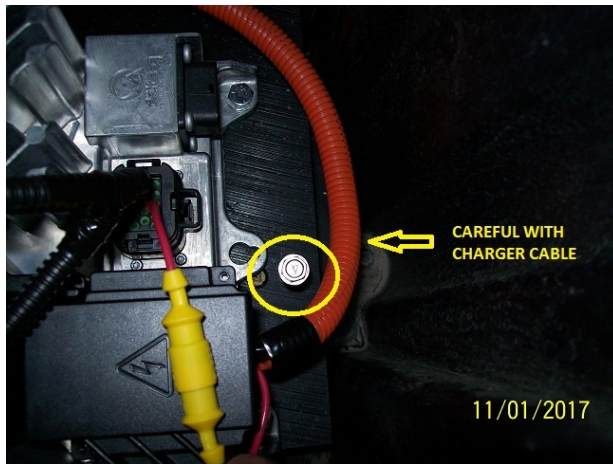
3. There are four locations that need to be secured.



Front passenger side



Front Driver side



Rear Driver side



Rear Passenger side

4. Make sure that all four mounting screws are tight and secure.

INSTALLING CONTROLLER MOUNTING PLATE

The controller mounting plate allows for all of the electrical items being used to have a mounting place.

1. Find and mount the controller mounting plate angle bracket to the location where the old controller mounting plate was located. (Fig. 13)



Fig. 13- Controller mounting plate angle bracket

2. Reuse the black mounting screw that was saved when the stock controller was removed and two $\frac{1}{4}$ "-20 x $\frac{3}{4}$ " self-tapping screws that are supplied with the kit.
3. Mount the bracket to the original controller mounting point using the black screw first; keep the screw loose at this time. (Fig. 14)



Fig. 14- Black screw and angle bracket installed



4. Install the Orion Jr. BMS onto the controller mounting plate using the supplied $\frac{1}{4}$ " x 20 button head screws. **NOTE: the Orion Jr. BMS module connector ports will need to be facing down when mounted. Note "Run/Tow" identifier in the photograph.** (Fig. 15)
5. Mount the lower support brackets onto the controller plate at this time. (Fig. 16)



Fig. 15



Fig. 16

6. As the controller mounting plate is lowered into the mounting position, reinstall the two connectors onto the Orion Jr. BMS module.
7. Connect the power wire (smaller connector) first. (Fig. 17)
8. Connect the larger connector second. (Fig. 18)



Fig. 17



Fig. 18

9. Carefully position the controller plate into the mounting position making sure not to damage the BMS wiring harnesses. The lower mounting brackets should be inserted into the slots of the battery pack lower tray. Secure the controller plate to the upper bracket by using the ¼"-20 screws. (Fig. 19)



Fig. 19

10. Secure and tighten the rest of the self-tapping screws that are used to hold the controller mounting angle plate to the original controller mounting position.
11. Move to the back of the car and locate the controller plate through the access panel.
12. Install the stock contactor on the controller plate located on the slot for the contactor. (Fig. 20)





Fig. 20- Contactor installed on new controller plate

13. Install the shunt resistor to controller B- cable. The cable has two types of lugs installed at each end. The larger hole (3/8") (Fig. 21) lug needs to be installed onto the shunt load side. (Fig. 22)



Fig. 21- 3/8" lug

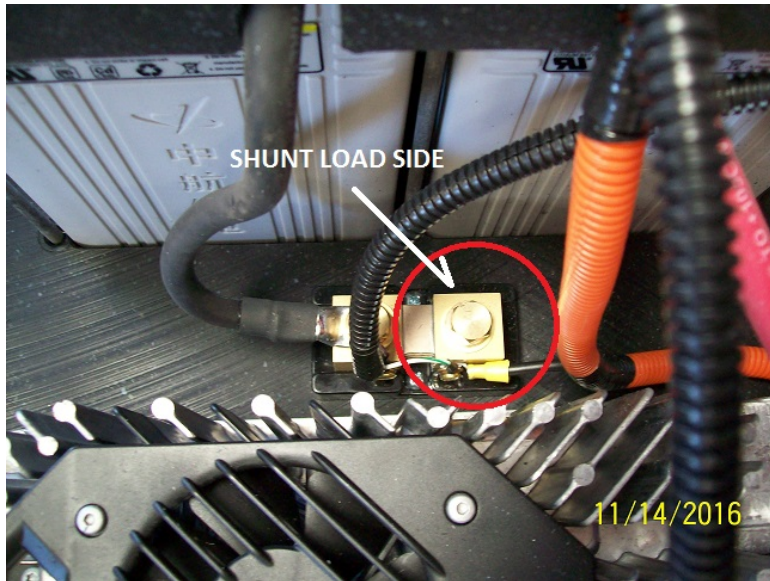


Fig. 22- Shunt load side

14. Feed the power cable and pack negative (B- cable) beneath the controller plate and into the motor/controller area at the back of the vehicle. (Fig. 23)



Fig. 23- Cable routing from battery pack

15. Carefully remove the electrical tape off of the pack positive cable lug install the lug onto the contactor. (Fig. 24)

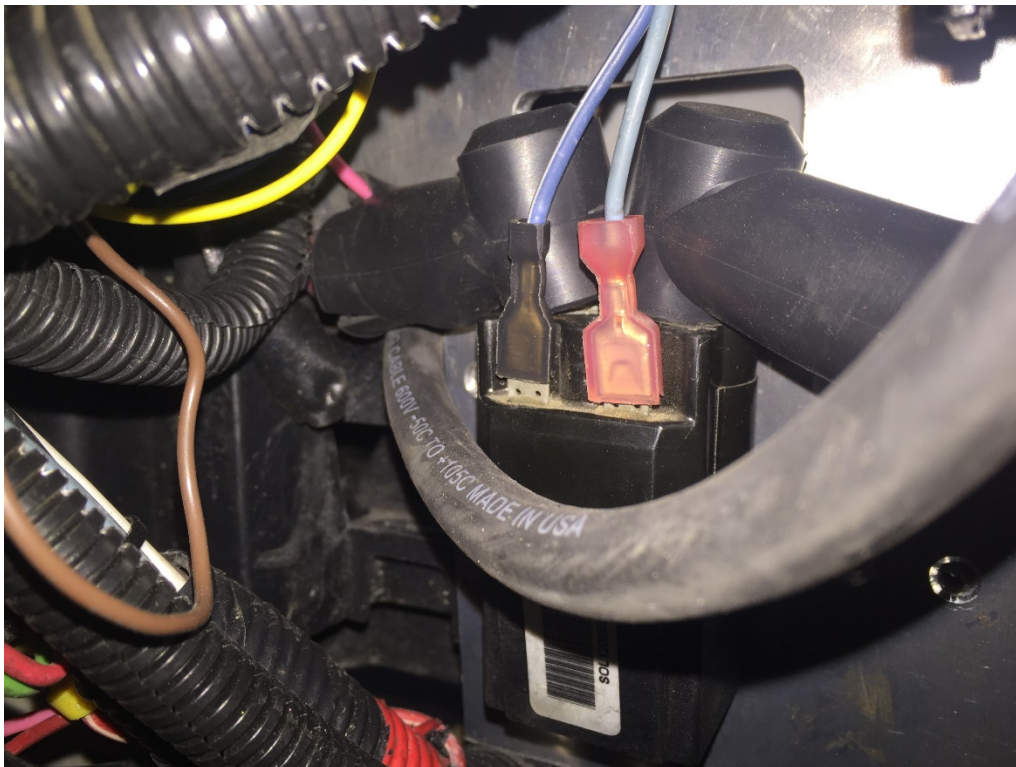


Fig. 24- Install pack positive cable onto contactor

16. Install the pack negative (B- cable) onto the B- terminal located on the controller.
(Fig. 25)

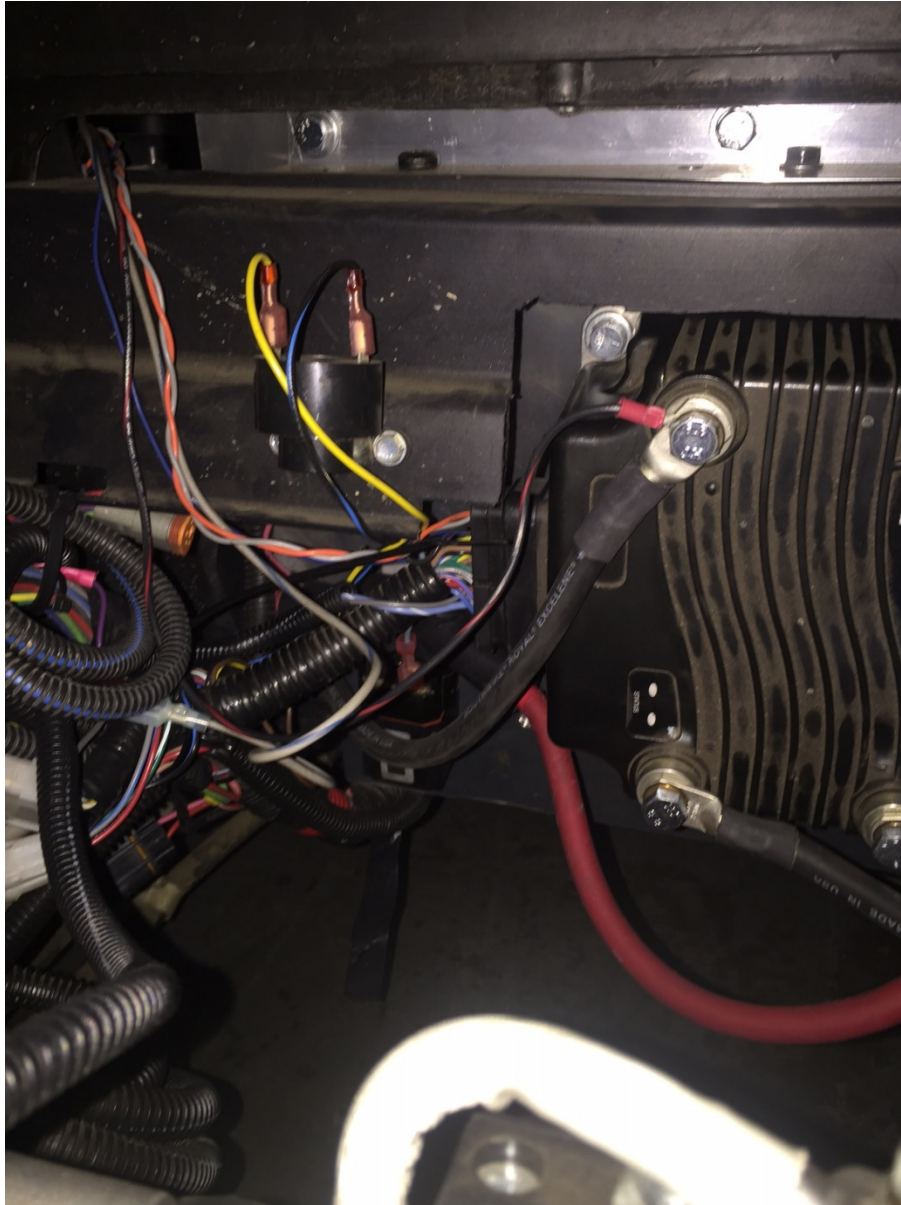


Fig. 25- Connect pack negative to B- on the controller

17. After the HPEVS drive system has been installed (SEE Precedent System Installation Instructions), proceed to connect the 2 pin Deutsch connector and the blue wire to the drive system harness. (Fig. 26)



Fig. 26- Electrical connections