

Replacing The Controller On The Retro -20 Electric Scooter

The following sequence of photographs will try to illustrate the various steps that must be taken in order to replace the controller on the EVTA R-20 electric motorcycle.

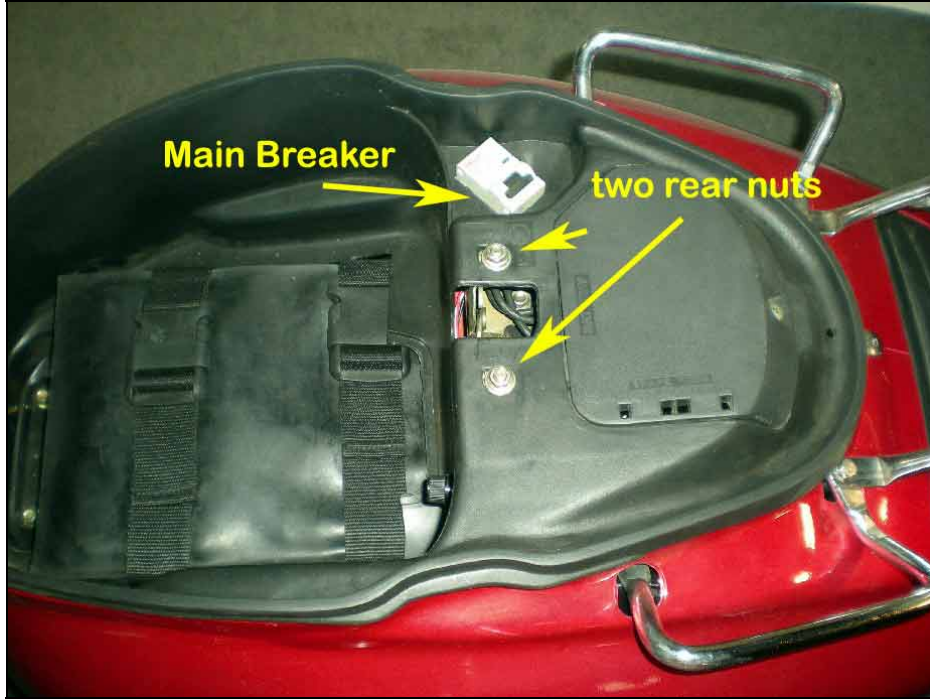
NOTE: It is important to point out that the R-20 is powered by a set of five 12V batteries which in series deliver 60V to the controller and motor and that measures need to be taken to insure that an accident, which can result in serious injury, does not occur. We recommend that insulated tools be used and that the batteries remain covered with the rubber protective covering whenever possible as well as the circuit breaker kept on the OFF position.

As an additional precaution, as soon as it is possible, it would be wise to disconnect the positive terminal on the uppermost battery thereby cutting all current to any part of the vehicle.

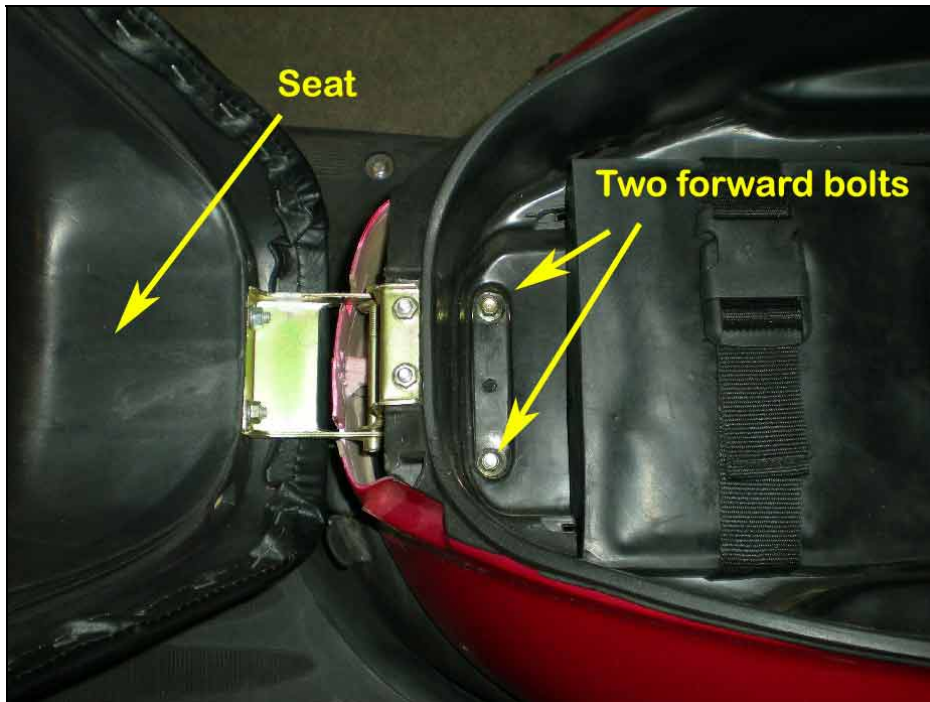
To begin with, place the motorcycle (scooter) on its permanent or parking stand on a dry, stable, and flat floor with room enough around it to be able to work on it from all sides. Once the bike is on its stand and you have turned both the ignition key and circuit breaker to the OFF position, you can begin to take it apart.

The first step is to open the seat using the ignition key in order to begin taking apart the rear of the bike where the controller is located.





Under the seat there are several nuts and bolts that must be removed (shown on pictures above and below)

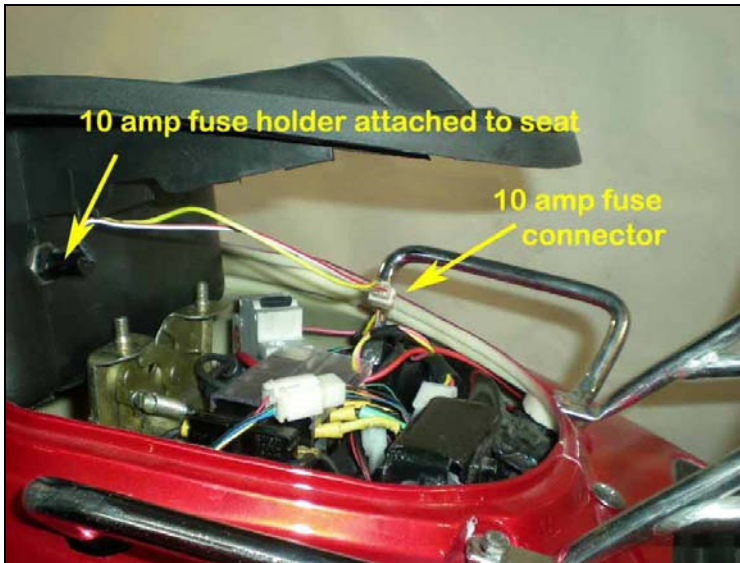




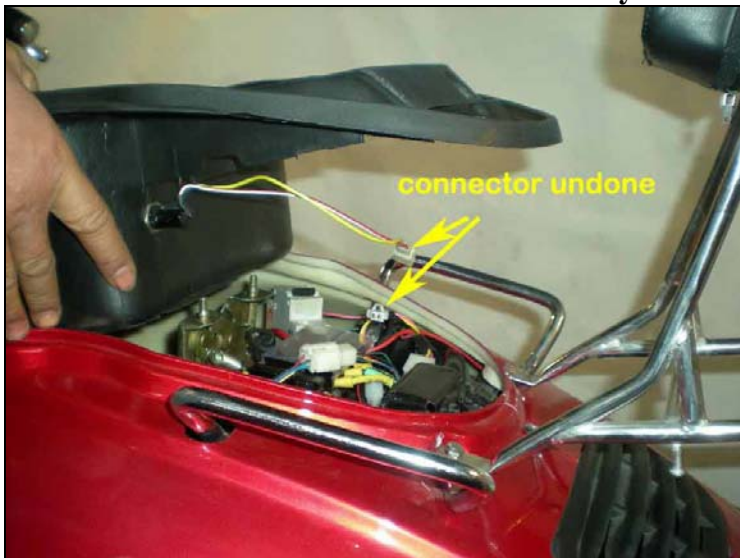
The two pictures above show that the nuts and bolts have been removed



Nuts and bolts removed



The 10 amp fuse connector must be disconnected before the seat assembly can be removed.





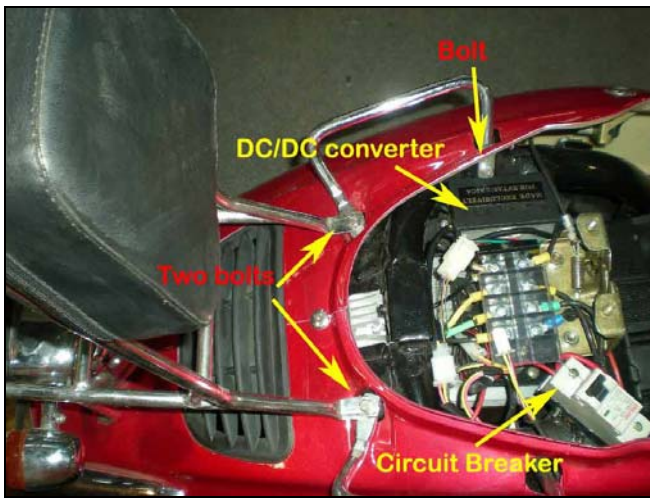
The entire seat assembly should then be able to slip up and out from the plastic body



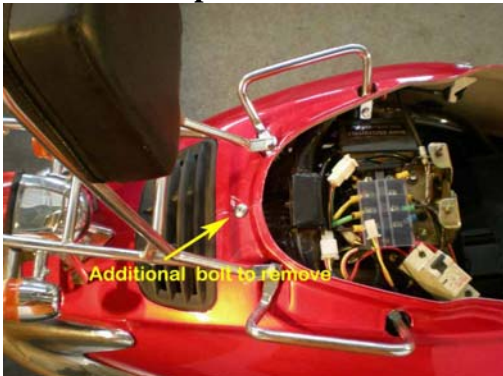
The seat assembly can then be put aside. Note the 10 amp fuse holder still attached.



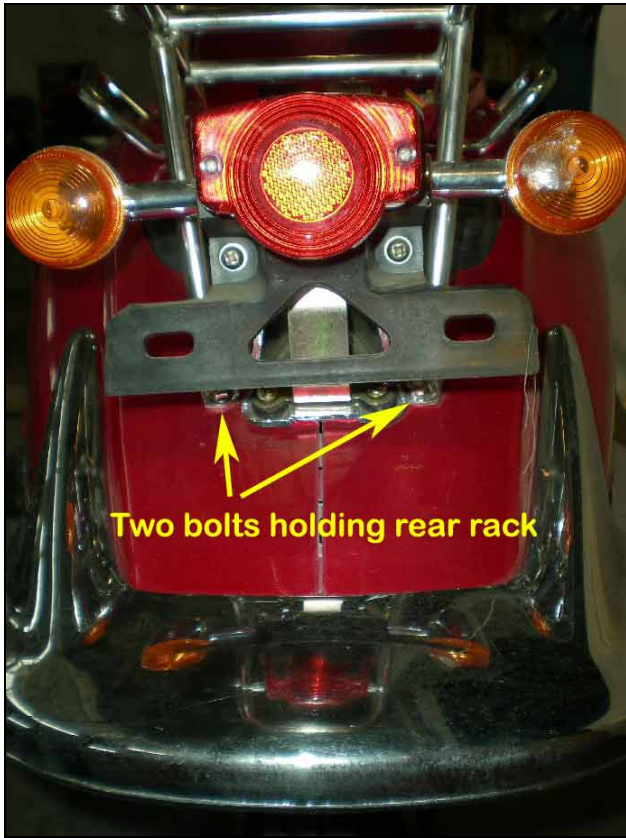
The next step is to remove the rear handle bars and the rear rack with the back rest.



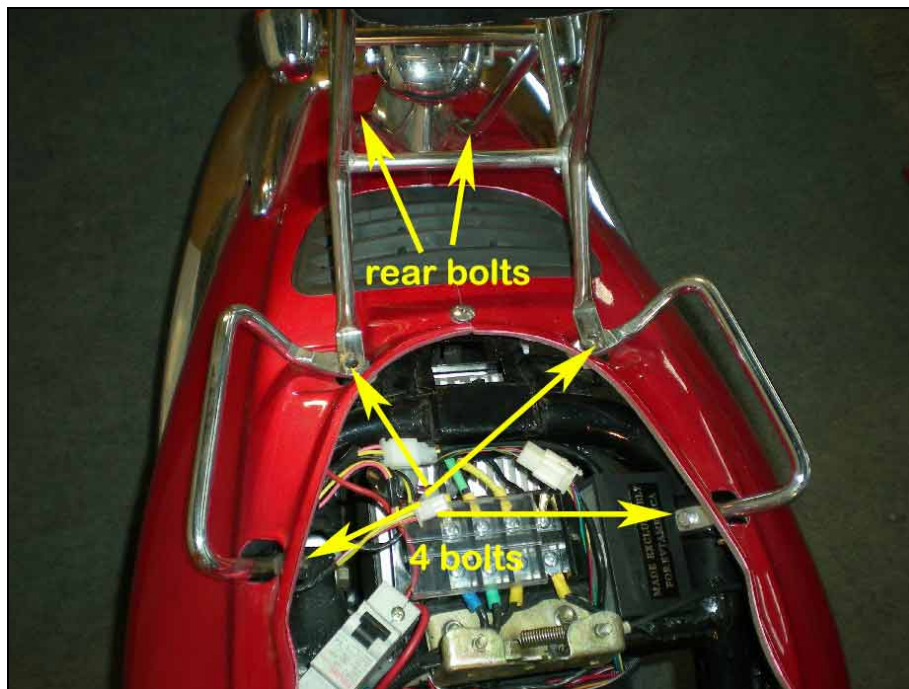
Note that you can already see most of the electrical components and for those that are just looking for a loose connection in places like the circuit breaker you need not go further.



There is an additional bolt in the middle top.



There are two rear bolts.



The picture above shows all the bolts holding the rear rack and side handles.



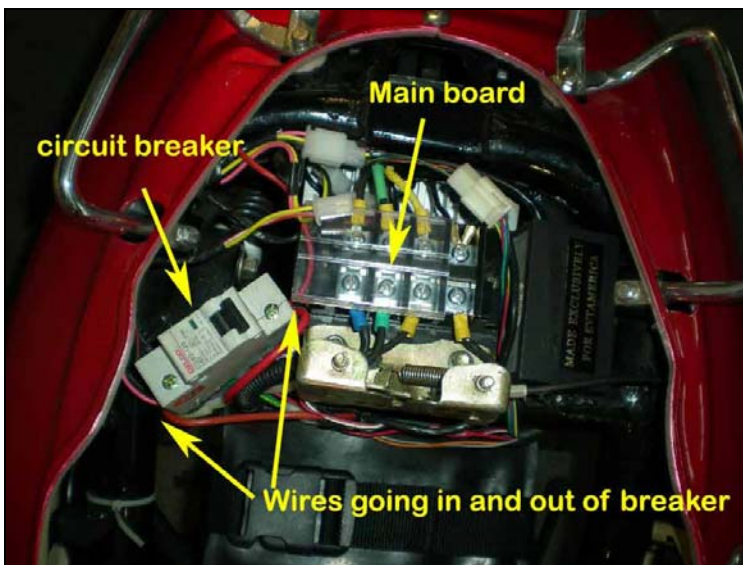
Rear rack and back rest with 4 bolts

bars below.

Rear rack removed and side handle



Two handles with the two additional bolts

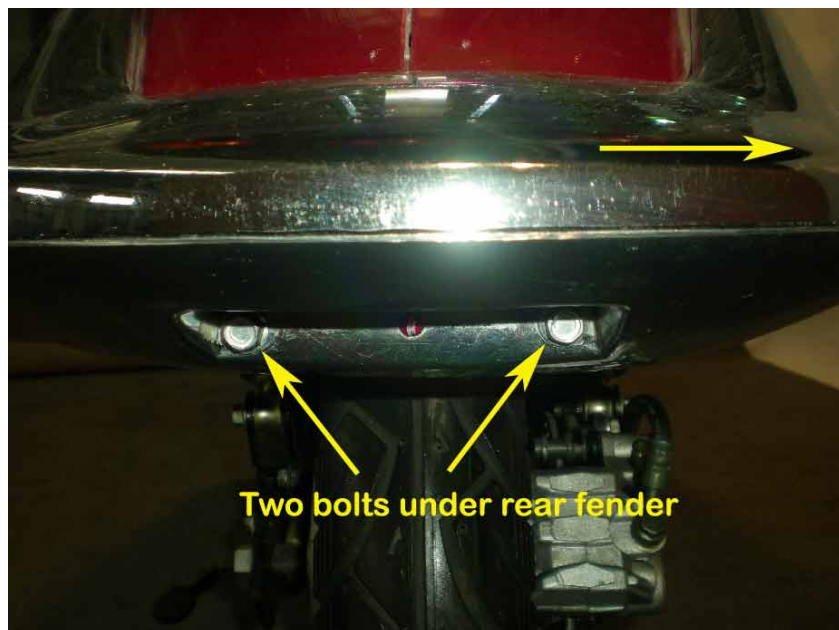


Main board
circuit breaker
Wires going in and out of breaker

Picture shows most wires.

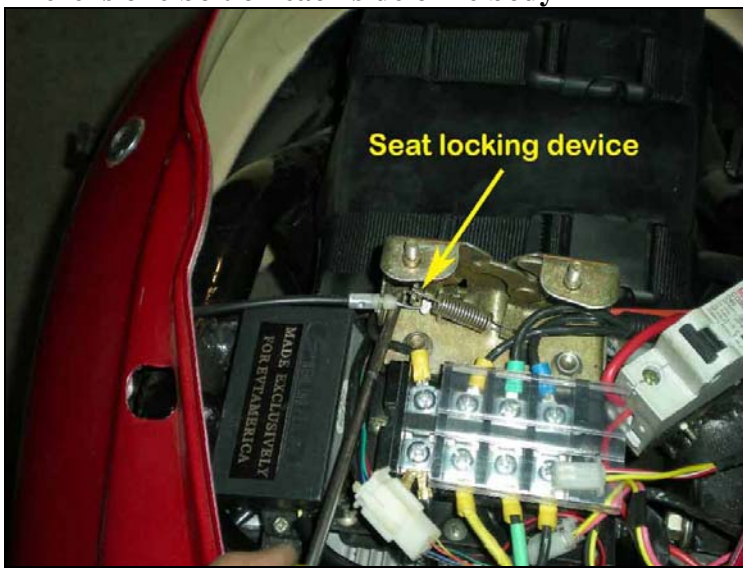


The next step will be to remove the plastic 'skin' of the R-20 and we start by removing the two bolts shown below.





There is one bolt on each side of he body

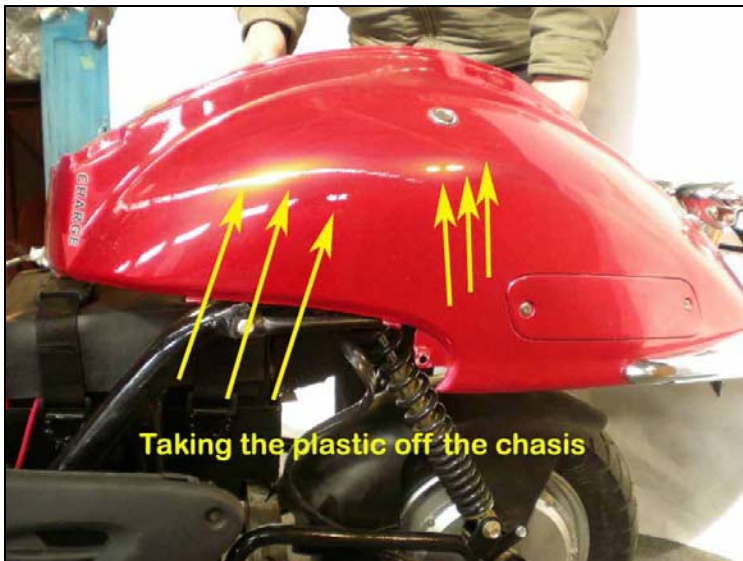


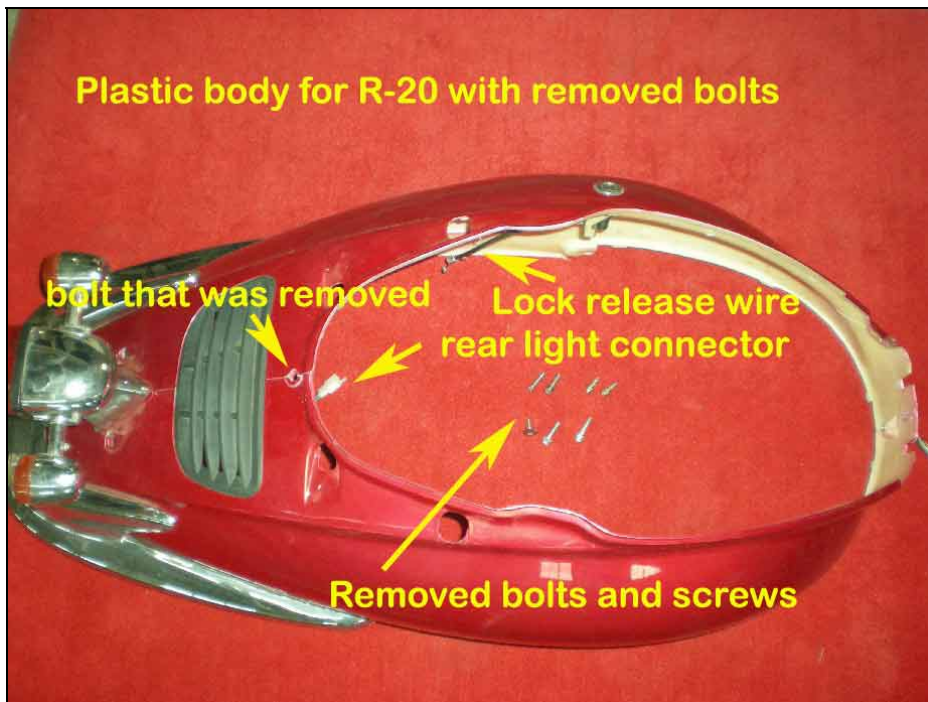
The seat locking device that goes from the side lock to the middle must be disengaged before the plastic can be removed.



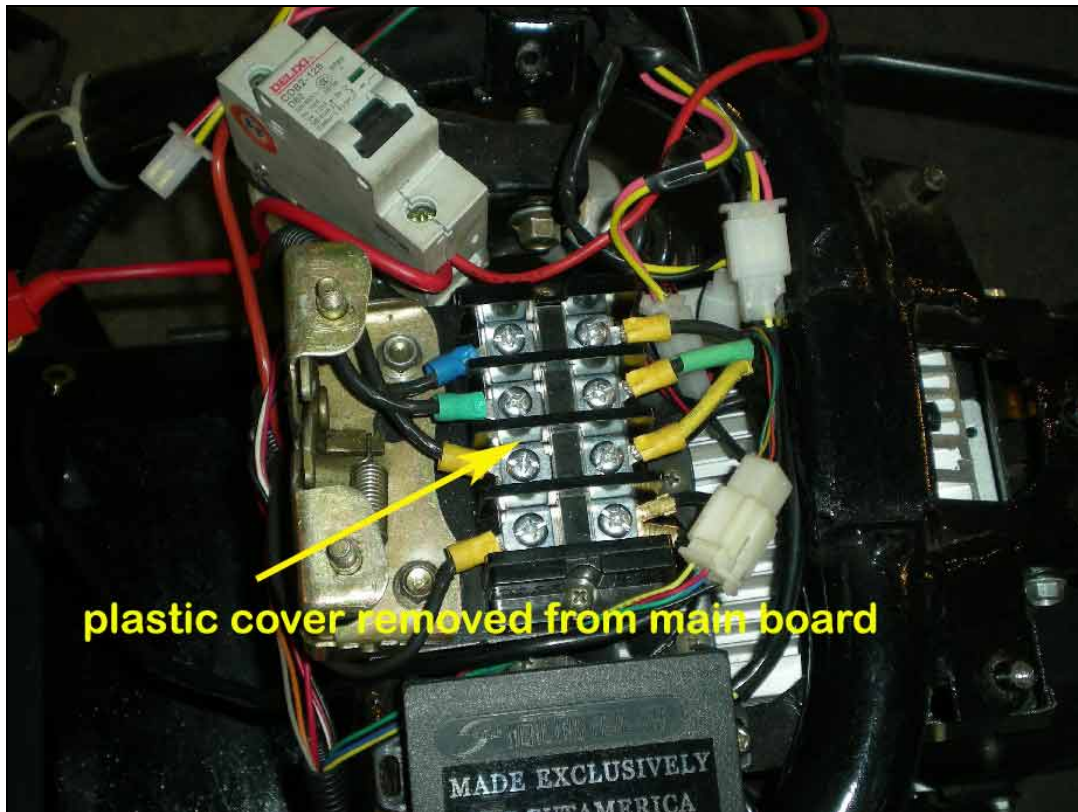


The connectors to the rear lights must also be disconnected before removing the plastic body.

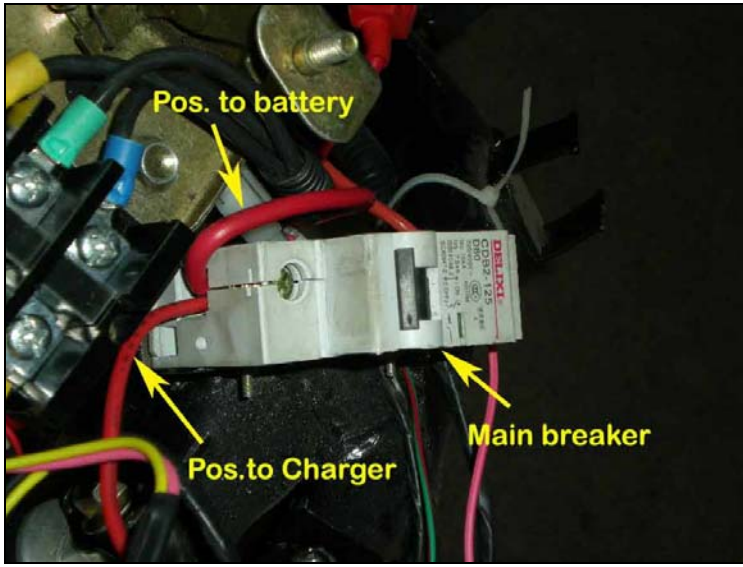




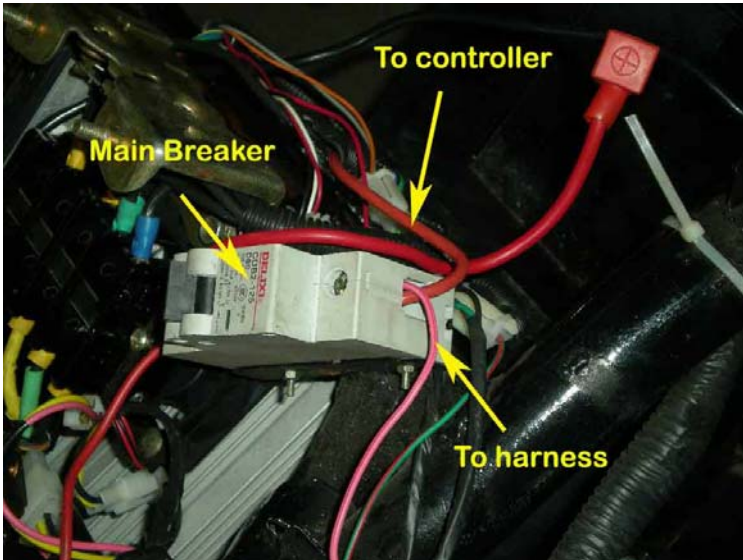
Now the plastic body is removed carefully over the top of the chassis and also put aside.



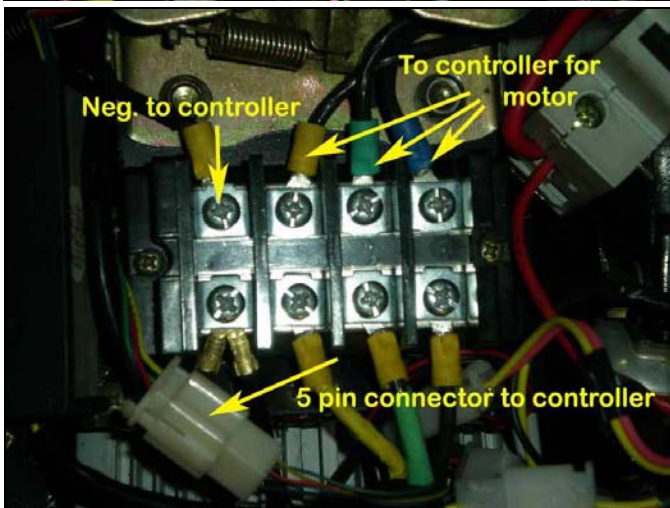
Now with all the plastics removed we can see the wires, connectors and components.



The main circuit breaker



Other side of circuit breaker



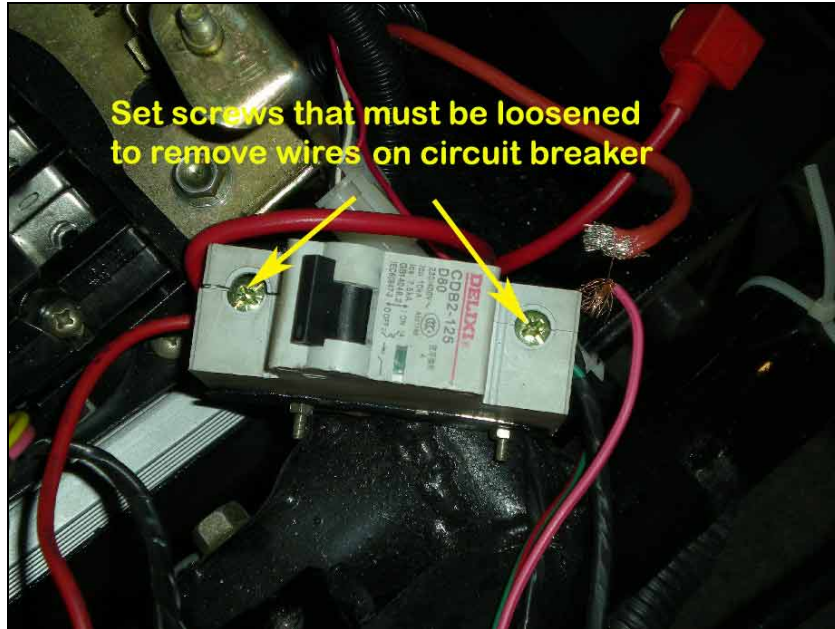
The wires to controller are shown.



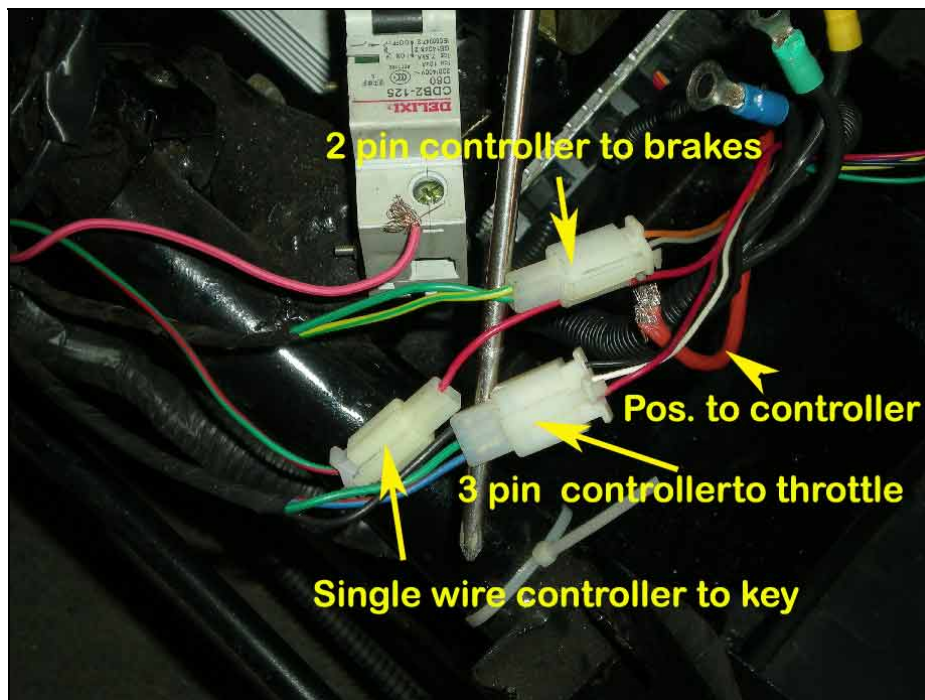
The DC to DC converter which converts 60V DC current to 12V DC current is located to the side but its location can vary slightly depending on the particular bike. For those that need to replace the converter all that needs to be done is to remove the two screws holding it in place and unplug the 3 pin connector.



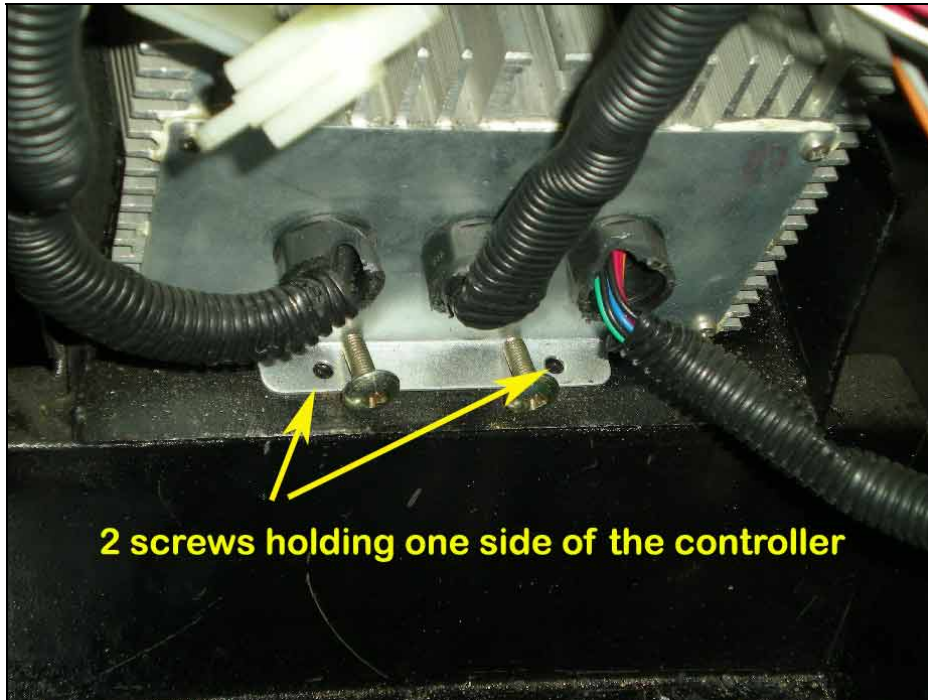
Picture shows controller wires.



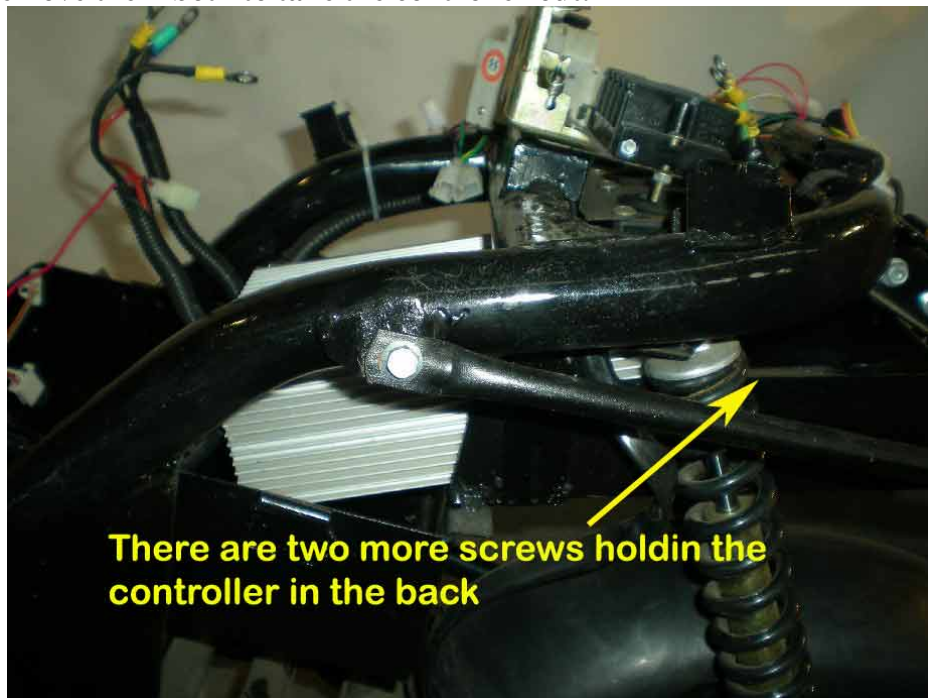
The wire from the controller to the circuit breaker must be removed.



The connectors that need to be unplugged before removing the controller



There are 4 screws holding the controller to the chassis, two in front and two in back. Remove them both to take the controller out.



Note that when all the wires and connectors have been loosened or disconnected the controller will come out sliding it towards the front of the bike and under the fan assembly which need not be removed. Note also that the heat sensor connector has to be unplugged from the controller to which it is attached (cemented)



R-20 Controller

Once the controller is removed it will look like the one pictured above except that the one in the picture does not have the heat sensor attached. The 45 degree cut in the upper back side is so that it will fit the R-20 frame properly.

After replacing the controller follow the instructions in reverse in order to re-assemble the R-20. Please make sure that all the wires are tight as well as all the connectors properly plugged.

A word of advice; test the motorcycle and make sure everything works before you complete the assembly.