

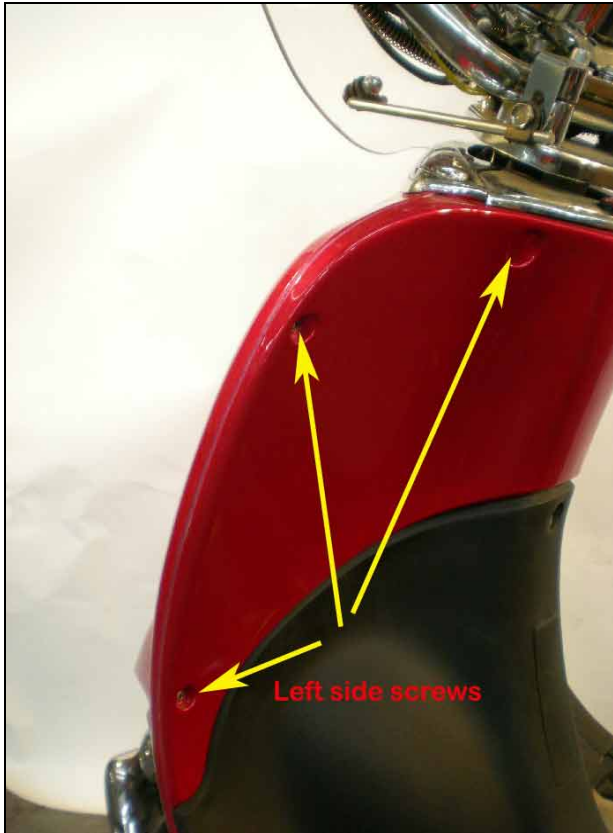
## Changing the Throttle on the Retro 20 EVTA Electric Scooter

The following is a sequence of photographs that will show the R-20 motorcycle owner how to change the throttle on the vehicle. The throttle used by the R-20 electric motorcycle is a Hall Effect throttle and it is quite delicate in its construction. The throttle, when working well will range from 0 to 5 Volts, the latter when at full acceleration. These throttles, while delicate in construction can and usually withstand years of use, (there are over 40 million electric scooters in China that use the Hall Effect throttles) but they can also break if forced too often or simply are defective and do not register their full range, which can result in not being able to achieve top speed or, even worse, not allowing the vehicle to run at all. The throttle runs on 12Volts and is fed by the 60V to 12V DC to DC converter. Should the converter stop working, the throttle will also stop working.

The first step on the R-20 is to take the front plastic cover off so that the connector that connects the throttle to the harness can be exposed.



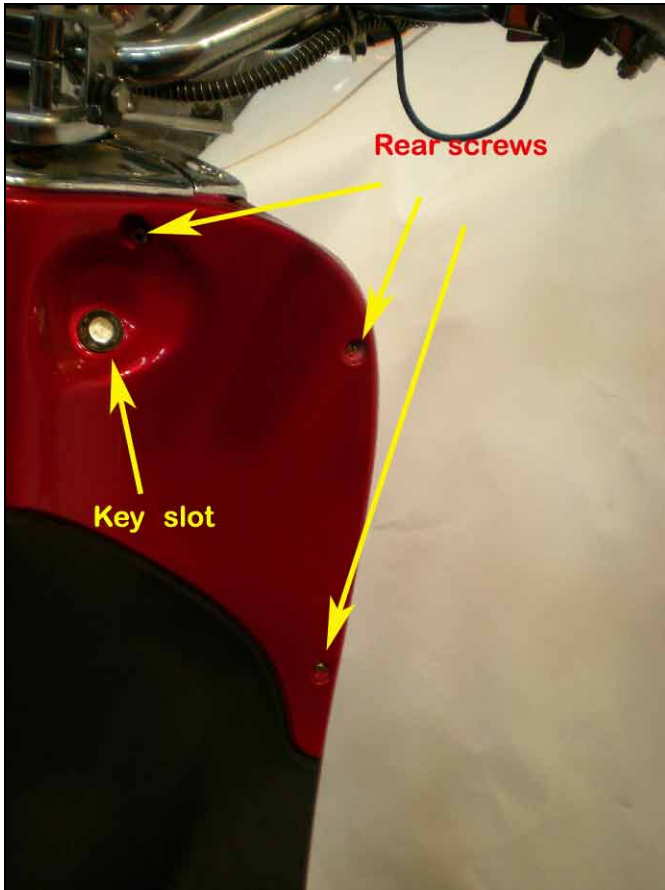
The center screw or bolt on the front of the R-20 is the first one to take out.



**There are 3 screws on the back left**



**And 3 more on the right back side and they all have to be removed. The picture above shows removing the upper one. A Phillips screwdriver is needed for all these.**



**Note: aside from the screws, the key slot might also become misaligned so care has to be taken to guide it when reassembling.**



**There are 2 more screws that must be removed on the underside behind the front wheel fender. (Left and right side)**



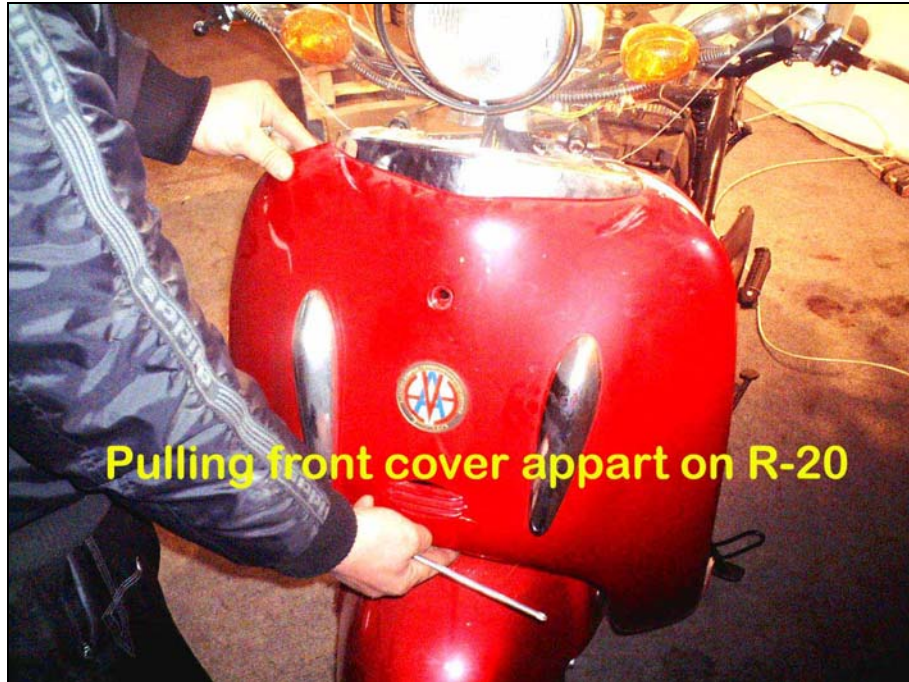
There are 2 more screws on either side (left and right) on the bottom side panel that must be removed to allow the front piece to come out freely.



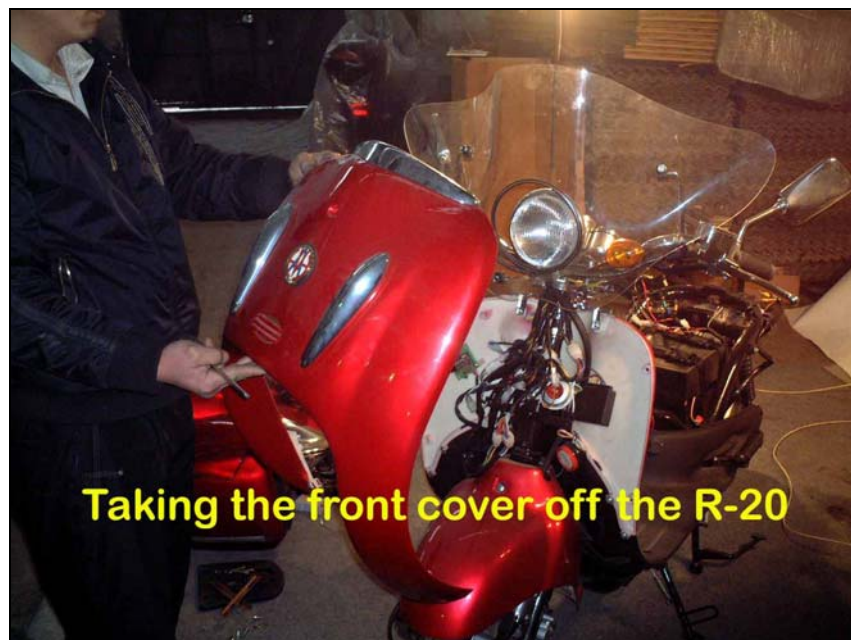
And then 2 more screws in the back of the side panel which need to be removed as well.

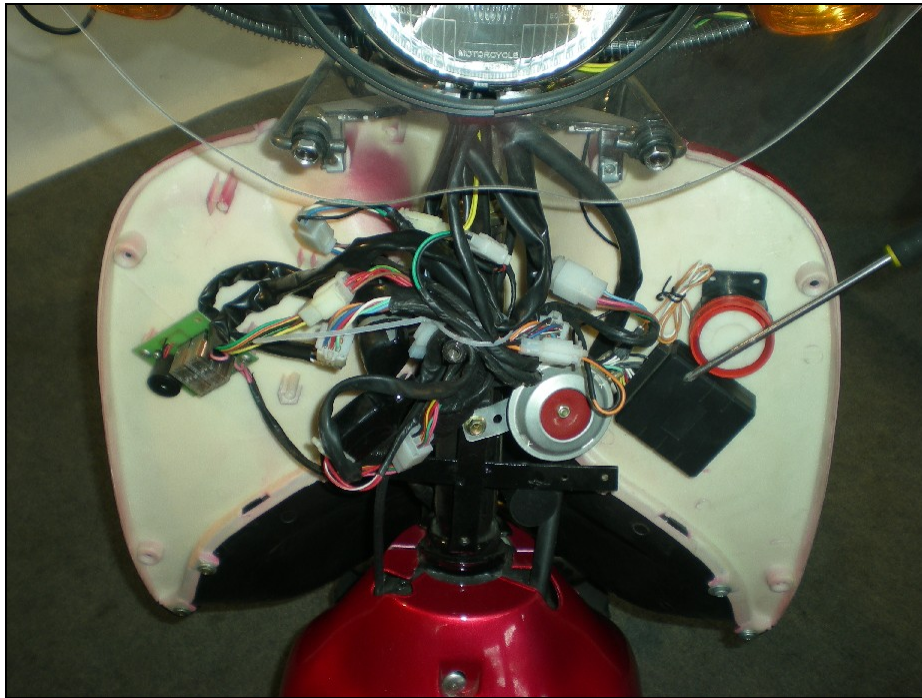


After taking out the screws, the side panels can be removed and put aside.



Now the front plastic cover can pulled apart. Note: take care to hold the bottom as indicated on the photo to prevent the cover from scratching the front wheel fender (you may want to cover the fender with a towel to prevent accidental scratching) The front may be hard to pry apart at first and you may need a flat head screw driver or flat object to help it start the process, but be very careful as there is always the possibility of scratching and/or breakage as there are several plastic 'tongues' that fit into corresponding slots around the edges of the entire plastic piece.

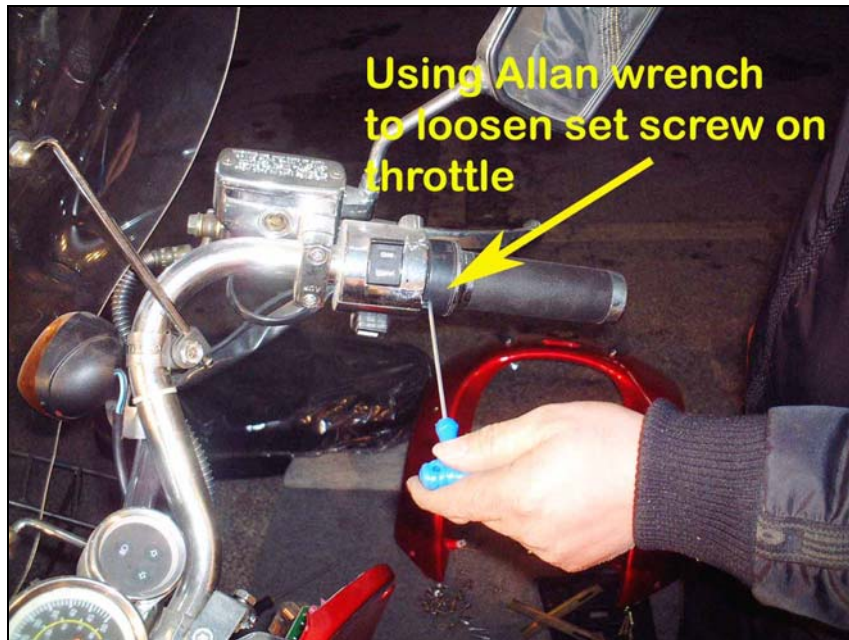




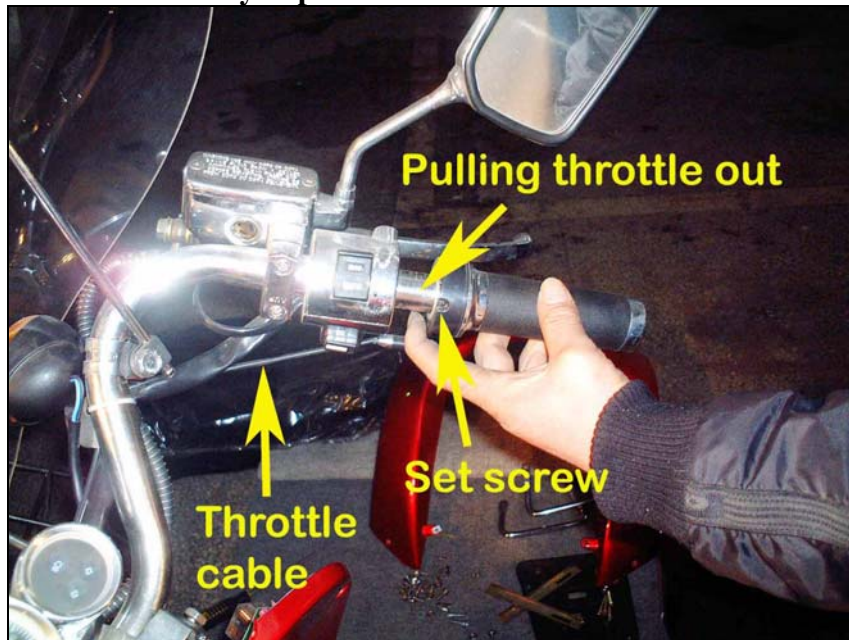
**The exposed front of the R-20 showing the alarm, horn, relays, and many connectors including the throttle connector**



**The above photo shows the throttle 3 pin connector. Note the colors (green-black and white-black). This connector must be unplugged before removing the throttle.**



Now we turn to the throttle and it is held in place by an Allan head set screw, which usually sits on the bottom side of the throttle. Loosen this set screw and the throttle should slip out. Note: make sure to lead the cable that goes from the throttle to the connector as you pull the throttle from the metal handlebar.



The new throttle is simply slipped on the handlebar and the set screw tightened. Note: look carefully before you tightened the set screw as there is only one right way to put the throttle correctly. Then the connector is replaced, tested and the plastic reinstated, reversing the process described.

We recommend that you use two persons to replace the plastics; one to hold the plastic in place while the other sets the screws.