



**EW-46**

**Service & Repair Manual**



[www.ewheelsdealers.com](http://www.ewheelsdealers.com)

**(888) 571-2845 - Service**

**(888) 305-0881 - Sales**

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## Customer Diagnosis

### Complete Loss of Power:

1.) If the scooter has no power when turned on, the first thing to check is that the circuit breaker underneath the seat\* is flipped to the on position. If the circuit breaker is labeled with an “I” and an “O”, the “I” is the on position.

2.) Check that the light on the charger turns from green while plugged just into the wall outlet, to red when plugged into the scooter and wall outlet.

*If neither of these steps returns power or the charger light is staying green, please contact EWheels service department directly for assistance*

### **Loss of Throttle Response:**

1.) If the throttle does not respond when turned, the first thing to check is the current battery charge. Look at the battery indicator when the scooter power it turned on. If the scooter is not displaying a full charge, please fully charge the machine

2.) The only feature of the EW-46 that can cut off power to the motor is the brake sensors that are within the brake handles. To check the brake sensors, pull the brake handle while looking at the taillights with the scooter's power turned on. If the sensors are working correctly, the brake lights will illuminate when the brake handle is pulled and turn back off when the brake handle is released.

3.) If the above steps have been followed and the machine is still not driving, the next step is to reset the controller (brain) for the scooter. Turn the circuit breaker to the off ("O") position, and let it sit in the off position for a minimum of three hours to allow for the controller (brain) to restart.

### **Loss of All Lights:**

1. If all lights will not come on at all even the power light on the dash, it's more than likely going be a voltage regulator in the rear of the scooter, under the seat, under the storage box. It's a small metal box with 1 connection going to it. (See page 37)

### **Charging Issues:**

If the scooter is completely dead the charger will show a Green Light but only for about 30min to 1 hour. After the time it will switch over the red light indicating that the scooter is charging. If it stays green, then you would need to test the charger.

If you are noticing that your scooter is getting less and less miles every time its full you might need to get the batteries checked. A good indication that you might have bad batteries is if you have a full charge and when twisting the throttle, the battery level drops very low.

*If following these steps still do not allow the scooter to drive, please contact Ewheels service department directly for assistance.*

*\*If unsure on how to open the seat, please check page 8 of the owner's manual.*

## **Section 2 – Technical Diagnosis Guide**

### **All Possible Tools Needed:**

- 1.)** Metric wrench set
- 2.)** Metric socket wrench set
- 3.)** Metric hex wrench set
- 4.)** Phillips head screwdriver set (#1, #2, #3)
- 5.)** Multimeter or voltage tester
- 6.)** Floor jack (optional, not needed)
- 7.)** Solder pen and solder
- 8.)** Shrink wrap tubing
- 9.)** Zip ties (any length or color)
- 10.)** Box cutter
- 11.)** Wire stripper
- 12.)** 3/8<sup>th</sup> Ratchet (Extensions If Needed )

## **Throttle Power loss/ Throttle Testing:**

### **Checking Connections**

Start by checking all connections on both ends of the wire harness, focusing specifically on the three-wire throttle connector and motor wires. Make sure no pins are pulling out of the backside of any connectors, and that the pins on the female side of connectors are not folded over to the side of the connectors.

There are very rare instances where a short in the accessory wiring can cause the machine not to drive. To ensure this is not the issue, please leave lights, turn signals, and all other accessories turned off.

A continuity test can be run on each side of connectors to ensure there is not an issue with the connector pins making proper contact. Connections can be checked by separating the connecting pins, one separated the pins can be folded or pulled out of the connectors.

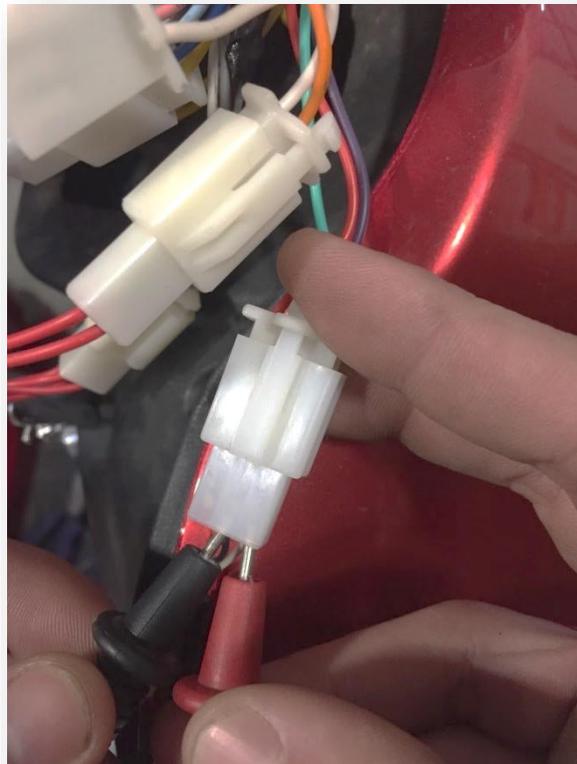


### Testing the Throttle:

The throttle responds via a hall effect positioning sensor. The sensor increases its output voltage the more the throttle is pulled. To test this sensor, start by turning the scooter on. Next, set your multimeter to DC 20 volts (or closest setting). While leaving the scooter powered on, and ensuring the throttle to harness, harness to controller, and controller to motor connections are plugged in, insert the multimeter red lead into the throttle connections red wire, and the black multimeter lead into the throttle connections black wire. The voltage reading should be around .82 volts when the throttle is not being pulled (no load).

If you are getting the correct voltage with the power turned on, without pulling the throttle (no load), then the next step is to check the throttle voltage under load (while pulling the throttle). The voltage should increase to around 3.51 volts under full load (while fully rotated). The scooter should engage forward when the voltage rating hits approximately 1.54 volts. If all steps above are followed, and the scooter is not driving, the throttle is not the component causing the problem.

*If the throttle is not working properly, please contact EWheels service department directly for a replacement.*



### Testing the Rheostat (Speed Knob/Potentiometer):

To test that the rheostat (speed knob/potentiometer) is working properly, you can disconnect it from its wire harness connection, and try to see if a throttle response returns. This removes all the limitation and ohm resistance from the positioning sensor in the throttle.

The rheostat can also be tested with a multimeter. The rheostat will have an OHM rating of 100k if it is a sport EW-36, which is marked on the rheostat itself. Set your multimeter to OHM 100K (or closest setting above 100K) and use the two ports with the wires soldered on to obtain an OHM reading. Twist the knob with your leads attached, and check that the rheostat varies from approximately 0, to the 100k OHM's it is rated for.

*If the rheostat (speed knob/potentiometer) is not working properly, please contact EWheels service department directly for a replacement.*



## Testing the Wire Harness:

To test that the wire harness is working properly, visually inspecting and running continuity checks will be necessary. Touch your leads together to see if your specific multimeter beeps when there is continuity.

If your leads are long enough, you can run test of both ends of each wire on the wire harness. If your leads are not long enough to reach both ends of the harness, you can find something conductive to cross the pins of two wires in a connector that are located right by each other (screwdriver tip, paperclip, or any other conductive item you have available to you). Doing this will allow for one multimeter lead to receive the voltage being sent from the other multimeter lead, which helps to verify there are no breaks in the wires being tested. If crossing connections, ensure that the power is turned off, and that both ends of the wire harness are not plugged in.

Focus on testing the throttle wires, rheostat (speed knob/potentiometer), and brake sensors, which all pertain to drivability issues. Testing accessory wiring is not needed when diagnosing drivability issues.

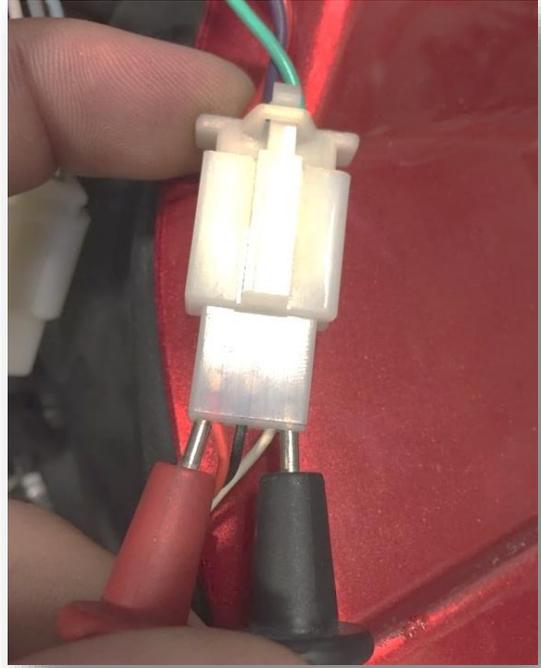


*If the wire harness has breaks that are not able to be repaired, please contact EWheels service department directly for a replacement.*

### Testing the Controller:

To test that the controller is working properly, checking the output voltage for the throttles positioning sensor will be necessary. Leave the scooter power turned on while testing, but **Do Not** cross the throttle wires or a short may occur which can cause damage, personal injury, or death.

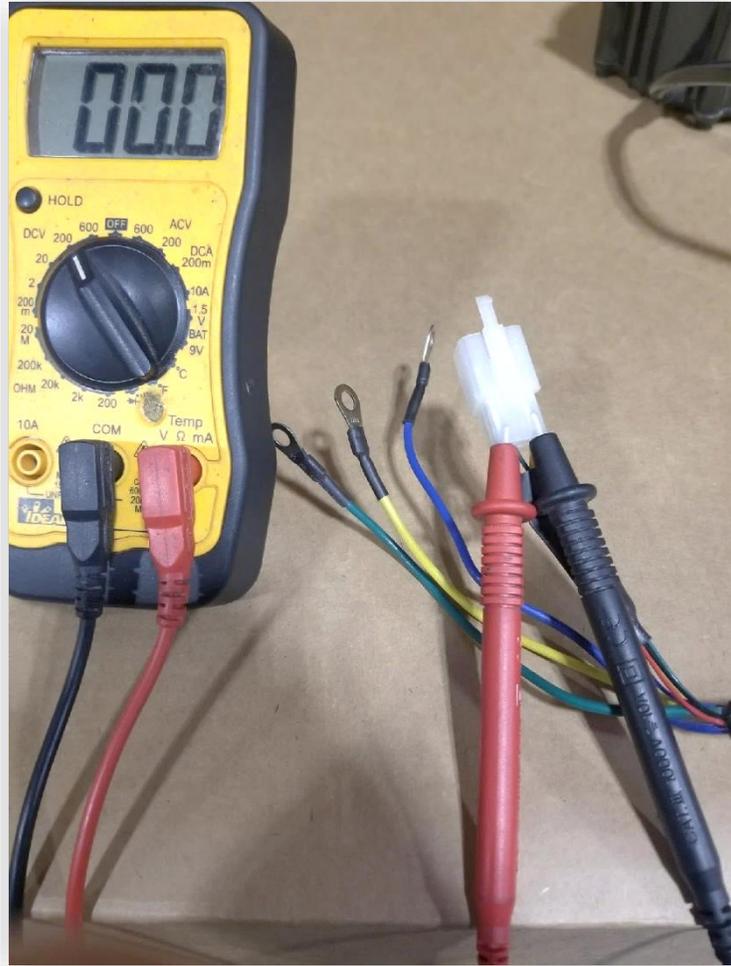
Use the two outside wires of the three prong throttle wires on the harness, shown in the picture, to obtain a voltage reading. Set the multimeter to DC 20 (or closest setting higher than 20). If the controller is working properly, it should be emitting approximately 3.48 volts while plugged into the harness with the scooter power turned on, or approximately 4.99 volts with the harness connection unplugged. If there is no voltage under load, this means the controller has failed and needs to be replaced.



To test that the controller is emitting the proper voltage to the motor, connect your multimeter to any color combination on the motor phase wires where they connect at the yellow junction box. Set your meter at DC 50 or higher, and test under load (with the scooter power turned on, while pulling the throttle). The voltage should start at 0 and increase between 2.5-3.6 volts while under full load (holding the throttle pulled at the way).

*\*Continued next page\**

Next, check that the controller is supplying the motor Hall Effect sensors with the proper voltage, which is approximately 4.95-5 volts. Leave the scooter powered on and the connector connected. This reading should be obtained at the black and red, yellow and green, and green and blue sensors wires while not under load.



*If the controller is not working properly, please contact EWheels directly for a replacement.*

## Testing the Motor

Start by testing the resistance at the motor phase lines using all color combinations. If your meter displays any resistance levels other than infinite/zero, then the motor needs to be replaced.

Next, check that the Hall Effect positioning sensor's voltage is decreasing when the wheel is being rotated. Rotate the wheel by hand, not with the throttle.

While under a full load (with the throttle pulled all the way) the motor should respond if the controller, harness, and throttle have already been tested, and the brake sensors and rheostat have already been checked. If not, the motor needs to be replaced.



Going internal with the motor to determine if the differential, transfer case, motor hall sensors, or other internal components is the issue is not recommended for field service technicians. Typically, the labor costs for disassembling, testing, and reassembling will exceed the cost for a replacement motor. If the control unit is emitting the proper power to the motor under load, the brake sensor is not activated, and the rheostat is unplugged, and the motor is not engaging,

## **Intermittent or Random Loss of Throttle Issue**

The scooter could be intermittently driving, or not consistently accelerating for three different reasons. It could be a loose connection, a tension issue in the brake handle, or an issue with the batteries under load.

### **1. Loose Connection**

For random loss of throttle response while driving, start by checking both ends of the wire harness connections for a loose wire pin or connector. Focus on wiring pertaining to drivability (throttle, brake sensors, motor wires, speed knob wires).

### **2. Brake Tension**

Lack of tension in the brake handle is the most likely culprit to cause random loss of throttle response while driving. The brake cables can slightly stretch out during normal usage, and the brake pads will wear from normal usage. When the cable stretches and the brake pads wear, this can cause the brake handle to become loose and have a slight amount of play, which can cause the brake sensor to activate while riding randomly. To test if there is a lack of tension in the brake handle, use one finger, and tap the brake handle towards the hand grip with the scooter power turned on. If the brake lights turn on and off while you tap the handle with a single finger, then this is the issue.





### **Battery Load Issue**

If the scooter is fully charged, but the battery charge indicator dips from high down to low when the throttle is pulled, this indicates there is an issue with the batteries. Testing the voltage of the batteries may indicate if the batteries are charged or not but, does not indicate if there is an issue with the batteries. To properly test, a load tester like the one in the photo below must be used.

A load tester will be required to properly test the batteries under load. However, if the batteries are multiple years old, the scooter has issues accelerating, or if you experience any of the symptoms above, then load testing can be skipped to avoid additional cost if needed. Sealed lead acid batteries have a typical life span of 2-3 years which all depends on how they are maintained. If the batteries are within this time frame and experiencing any of the above issues, replacement of all four (4) batteries is recommended.

# Testing the Charging System

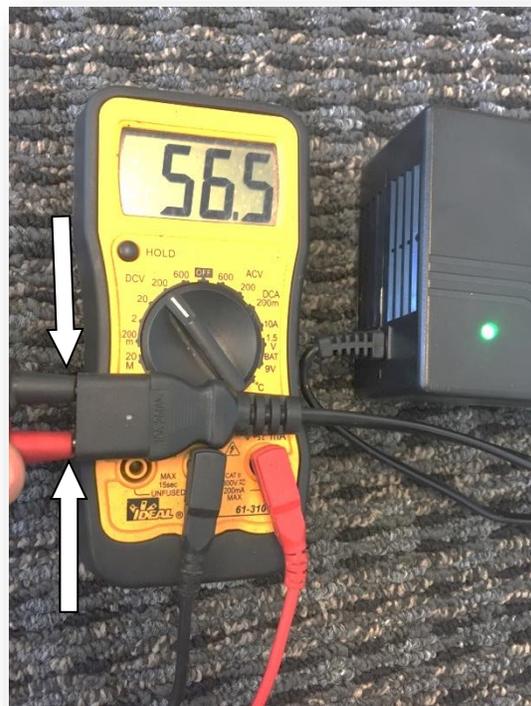
To test the charging system, a multimeter or voltage tester will be required. If the scooter is not recharging properly, testing the output voltage of the charger, and voltage at the charger port, will help narrow down the issue may be.

## 1. Testing the Charger

To test the output voltage of the charger, plug the chargers power supply directly into a wall outlet, but not into the scooter. Set your multimeter to DC 200 or higher and insert a multimeter lead into each of the two parallel prongs as shown in the photo below.

If the charger is working properly, it should be emitting anywhere from 54 volts to 57 volts.

*If the charger is not working properly, please contact EWheels service department directly for a replacement.*

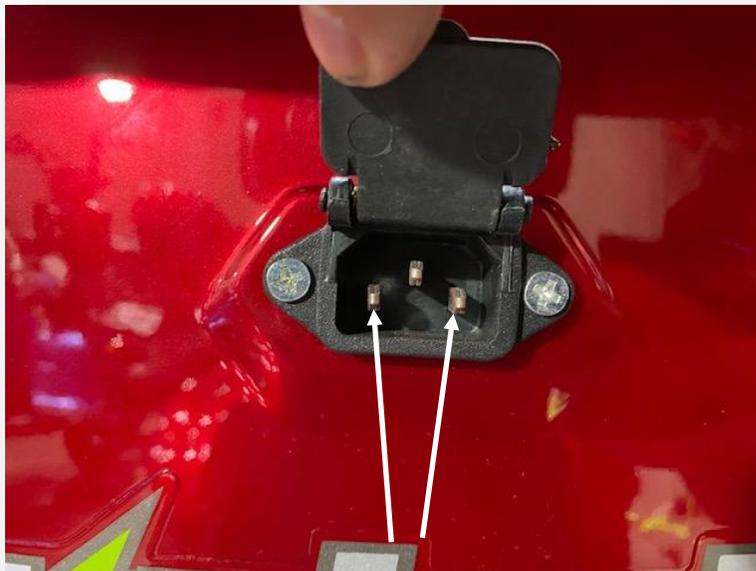


## Testing the Charger Port

If the charger is emitting the proper voltage, the next item to test is voltage at the charger port. Set the multimeter to DC 200 volts, or closest setting higher than 200 volts, and use the two parallel prongs to obtain a voltage reading from the two parallel charger port prongs as shown in the photo below. Do not cross the multimeter leads or charger port prongs, or damage and injury could occur.

This voltage reading will vary depending on the current charge of the scooter's batteries. If there is no voltage reading at all, this would indicate the batteries are completely discharged, or there is a wiring or connection issue somewhere between the charger port leading back to the batteries. Run continuity test on the battery terminal wires, wire harness connections, and charger port wiring to determine which is the issue.

*If the charger port, battery terminal wiring, or wire harness need to be replaced, please contact EWheels service department directly.*



# Section 3- Upkeep and Maintenance

## Daily Checks Before Riding

### 1. Charge Level

Make sure there is enough charge in the batteries to complete the distance you intend to travel. If you are going to be traveling more than half the rated capable mileage, a full charge is recommended. Never let the batteries become completely depleted or sit for an extended period uncharged. Doing so will damage the batteries, decrease the capable mileage, and shorten the useable life span of the batteries. Periodically check the charge indicator needle while using the scooter.



### 2. Brake Tension

Check tension in the brake lines by squeezing either brake handle to see if it can travel and touch the hand grip. If it is, tension will need to be added to the brake lines. Test both handles for a lack tension.

**Brake Tension Continued-** Increasing tension in the brake lines will eliminate this issue. The right-hand brake controls the front brake. The left-hand brake controls the back brakes. Tighten the adjustment nut on the effected handle to eliminate the issue.

### 3. Tire Pressure

Visually inspect the tires on all three wheels to make sure they all have ample tire pressure. If the scooter has a tire that appears to be low, adding air to the tire will be required. Inspect the tire is between 30-35 PSI daily.

A tire with ample pressure will appear like the one to the right. Checking the exact PSI (pounds per square inch) with a gauge is recommend monthly, opposed to daily.

A tire with a loss of tire pressure will appear like the one photo to the left. If the tire appears to of lost pressure, testing the PSI (pounds per square inch), and adding air to the tire will be necessary.



When the PSI (pounds per square inch) is less than 15 pounds, and air is added to the tire, it is recommended to avoid use for 24 hours. Check the pressure 24 hours after it was added, to make sure the tire does not have a leak. If the tire does have a slow leak, spraying soapy water on the tire can help locate the area where the air is leaking from. If there is a hole on the tire from a puncture, a “tubeless tire repair kit” can be used to repair the hole in the tire. EWheels directly does not sell “tubeless tire repair kits”, but they can be obtained at local stores or online.

*If tires or wheels need to be replaced, please contact EWheels directly for a replacement.*

## **Monthly Checks**

**It is recommended monthly to check that the rear axle securing nuts, front axle bolt, seat bolts, headset bolt, transaxle to swing arm bolts, and the motor to axle bolts.**

The front wheel is held on by a bolt that is a 19mm. This can be removed with a socket and ratchet or wrench.

The rear wheel is held on by a bolt that is a 19mm. This can be removed with a socket and ratchet or wrench.



### **Front Axle Replacement**

You are going to start with taking the front wheel off the unit. Once completely remove the brake pads, then the brake hardware and take the wire out.



You will be using a 10 mm allen wrench and a 19 mm socket wrench to loosen the nut to take the axle bolt off.



The seat is securing by two bolts, and the seat latch. The seat bolts are a 5mm hex head bolt on the bolt side, and 10mm on

the nut side. Avoid overtightening or the seat will not be able to be lifted easily.

The headset bolt is a  
either side to be able



**13mm.** Turn the handlebars to  
to gain access to the nut side.



There are two transaxles to swing arm bolts on each side of the scooter. The bolt size is going to be . Make sure the bolts are tight on each side. If there is a gap between the axle bracket and the swing arm, this is normal. If overtightened bolts from the transaxle to swing arms can potentially snap.

There are five bolts on each side axle that securing the axle housing to the differential/motor assembly. Make sure all bolts are tightened with the same amount of pressure to avoid potential oil leaks with a 5mm.

## Yearly Maintenance



It is recommended to change the transaxle oil between from one to three years. Unlike a gasoline engine, the motor does not require a specific amount of oil to operate properly. It is strictly the lubrication method to avoid overheating in the differential assembly. There is a drain and fill bolt on the top and bottom of the motor. Drain old oil, replace fill bolt, and use 10W-30 motor oil to refill the transaxle, with approximately  $\frac{1}{2}$  quart.

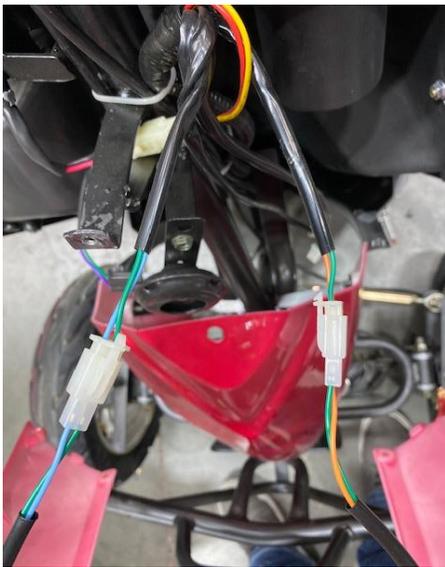
## Section 4- Body Panel Removal and Disassembly

There is a total of eight removable painted body panels on the EW-46. Removing paneling may be required for gaining access to different parts of the scooter for normal maintenance or diagnosing issues. See below for specific panel removal.

## Headset panel, Headlight Shroud Removal

Start by removing the mirrors. You will also need to remove all screws along the (Headlight Shroud). You need to also remove the front big screw as shown in photo's below. There will be 2 more next to the (Headset Shroud). The last 3 are you will see once the (Headlight Shroud) is removed. There will be 1 bigger one and 2 smaller ones on the side as shown.





## Removing Floor Board

There will be Philip screws on the front and back side of the running board.  
There is also bolts that are a 10mm socket or screw driver (Philips head)  
Remove the 4 bolts on the floor board where your feet go and the side screws  
as well.



## Front Wheel Fender's

On each front fender there is going to be a total of 3 bolts that use a 10mm socket and ratchet or a 10mm wrench. Once they are removed the plastic-colored fender will come off.



## Main Body Shroud

To remove the main body shroud, power to the machine must be turned off via the circuit breaker, and the seat and storage box underneath the seat need to be dismantled or unplugged. Make sure these things are done before proceeding.

There is a total of twelve securing bolts, three wire harness connections, and one latch cable that will need to be removed or unplugged before the main body shroud can be lifted off the scooter.

### **\*Make Sure Circuit Breaker Is OFF First\***

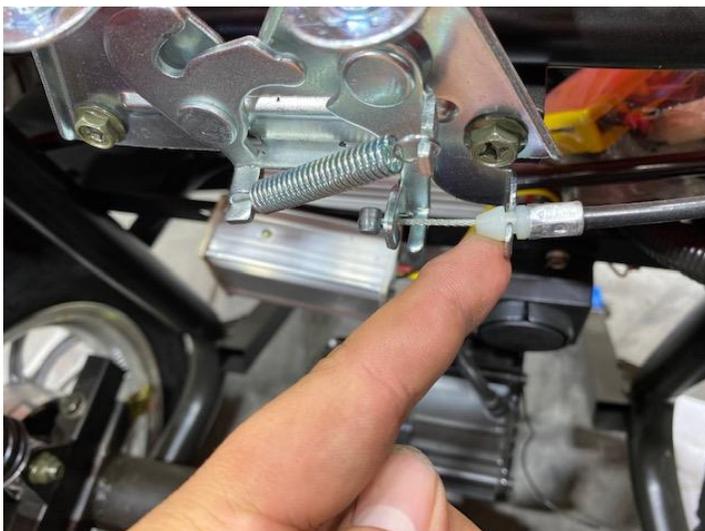
There is a total of (x4) philips screws that connect the storage box to the frame of the machine. The 2 wires that go to the circuit breaker will also need to be removed before the storage box can come out of the unit.



You're going to want to remove both wires going to the circuit breaker before removing the storage box.

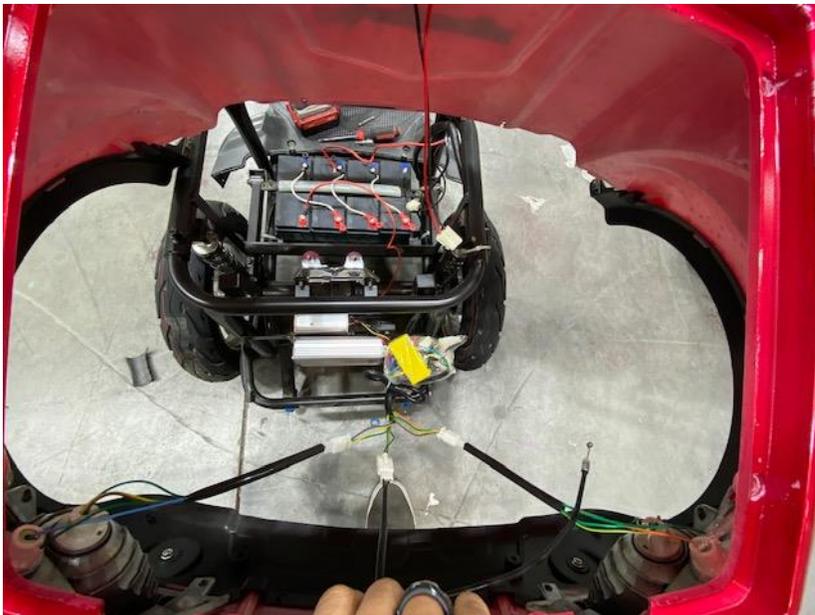


Once complete you will remove the storage box, this is what you will see.



Remove the cable that goes to the truck lock. You're going to want to pull up in the metal/plastic part and remove the end of the cable.

You're going to also want to remove the 2 philip screws in the front just below the charger port as well as the rear bolts that look to hold the rear bumper.



The next step would be to remove the connectors that go to both taillight fob.

Once all these steps have been followed, the main body shroud can now be lifted off. Tilt the main body shroud's back end towards the front of the scooter, without lifting the front end. Then, the lip of the main body shroud will be able to clear the floorboard and be pulled off. Removal of the floorboard is not necessary but may be preferred to avoid accidental damage. (Your now DONE!!)

## Back Bumper (Attached to Main Body Shroud)



Remove all screw that attach the bumper to the body shroud on the inside. Keep in mind that there are going to be screws that go along the inside of the bumper.

Remove all four screw to remove the taillight assembly as well.

## Section 5 – Maintenance Part Diagram

### Wear and Tear Item Replacement (Tires, Brake Pads, Bulbs, Batteries, Back and Front Shocks, Axels, Motor and Throttle)

**Tires** - The tires may need to be replaced every 6 months - 3 years, depending on usage. The back wheels are secured by a single wheel securing nut located in the middle of the wheel. The nut size is going to be a 19mm socket.



A jack or stand will be needed to remove the front tire. The front wheel is secured by the front axle bolt. On the wheel nuts there will be covers that need to just be popped off. The size you're going to need is going to be a 19mm socket to take this off.

**(Tip – Giving brakes tension when taking off wheel nuts helps wheel not move.)**

**Brake Pads** - The brake pads may need to be replaced every 6 months - 3 years, depending on usage. To replace the brake pads, remove the front and back tire.



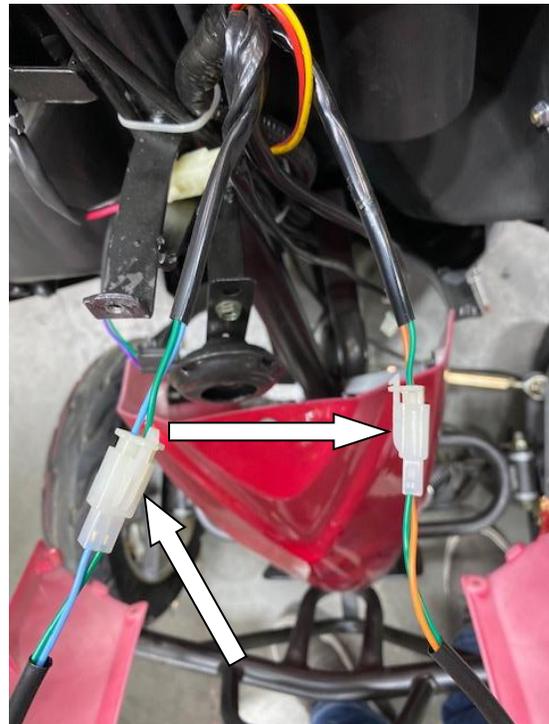
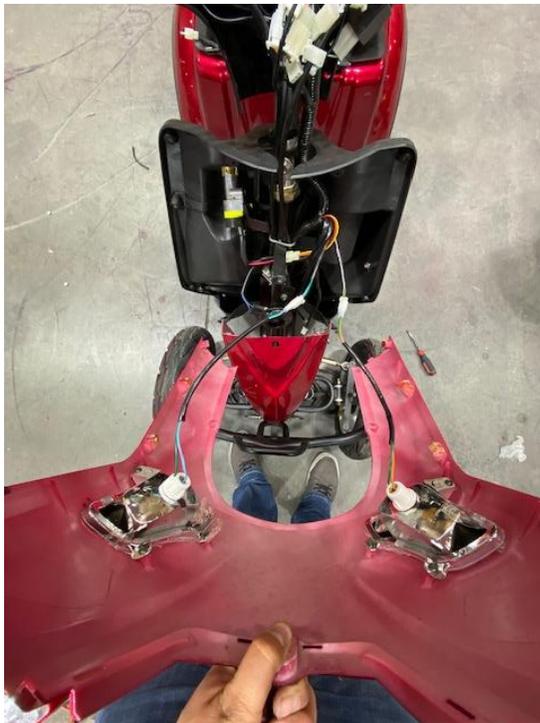
The brake pads are held onto the axle's brake pad catch, and to the actuating brake tension arm with spring tension. Pull the two sides of the brake pads away from each other to remove, and duplicate the reinstall the new pads



Squeeze the pads together with your hands and they will fold like so. Pull them off and take the springs off to replace the front brake shoes.

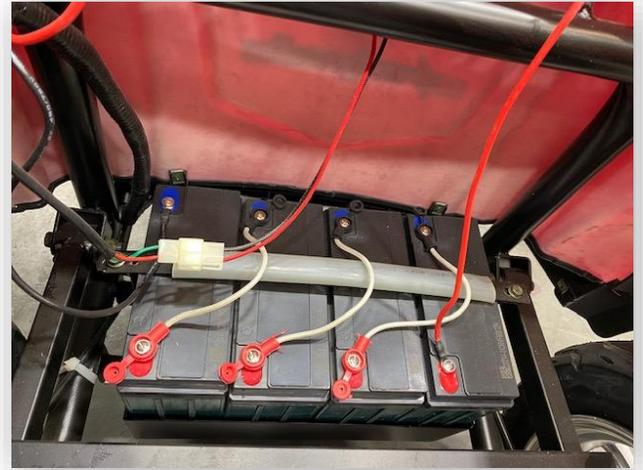
## Front Running Lights

With the EW-46 there are not going to be bulbs that can be replaced on this unit. When replacing the headlight fob on this unit you will need to remove the front shroud. There is going to be a total of 6 philip screws to remove the headlight fob. All replacement parts are going to be a plug and play for this unit. Once this done you will need to just plug it back in and its complete.



**Batteries** - The batteries may need to be replaced every 2 - 3 years, depending on how they are maintained. To replace the batteries, first start by removing the storage box located underneath the seat. Once removed, the batteries will be exposed. There is a securing bar across the top of the batteries. To remove this bar, remove the two 10mm bolts that secure the bar.

**Current Model** - The batteries are now wired in a positive to negative series. There is one wire harness wire that connects the first batteries positive. From there, the batteries are wired with two-sided terminal wires that connect battery number one's remaining positive, to battery number two's negative. This sequence is continued until there is only battery number four's positive terminal available without a wire connected. Finish the battery wiring by connecting the remaining wire that is connected to one of the sides of the circuit breaker, to batter number four's remaining positive terminal. Refer to the photo below for a visual reference.



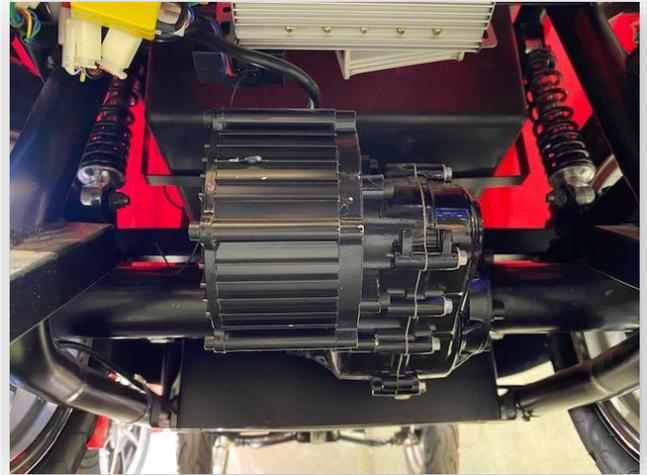
**Back Shocks** - removing the storage box underneath the seat will be necessary. Replace the shocks separately to avoid frame to frame contact. The top, and bottom bolt for the rear shocks is going to be a socket and wrench. (14mm)



## Transaxle, Motor, or Axle Replacement

**Transaxle** - The transaxle refers to the entire motor, differential, axle assembly. The motor and axles can be replaced separately. Follow both the motor, and axle replacement guide for full transaxle replacement.

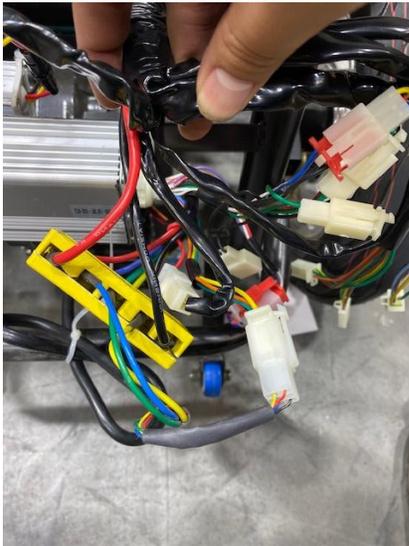
**Motor** - To remove the motor, you must first start by removing both rear wheels. The anti-tip wheels will act as a jack so the body panels will not make contact with the ground. Using a floor jack can help raise the work surface higher but is not necessary.



Once the rear wheels are removed, the next step is to remove the four 14mm axle to swing arm bolts. These bolts secure the transaxle assembly to the swing arms.

## Controller Phase Wire Disconnect

Once the transaxle has been dropped from the swing arms, the next step is to disconnect the motor wires. The three heavier gauge motor phase wires will be connected to the controller unit in a yellow junction box. The thinner gauge motor hall sensors will be housed in a clip style connector. Disconnect all the motor wires before proceeding.



**Motor Oil** - The EW-36 uses 5W-30 motor oil (synthetic or non-synthetic). If completely empty, refill the motor with up to  $\frac{1}{2}$  quart of oil

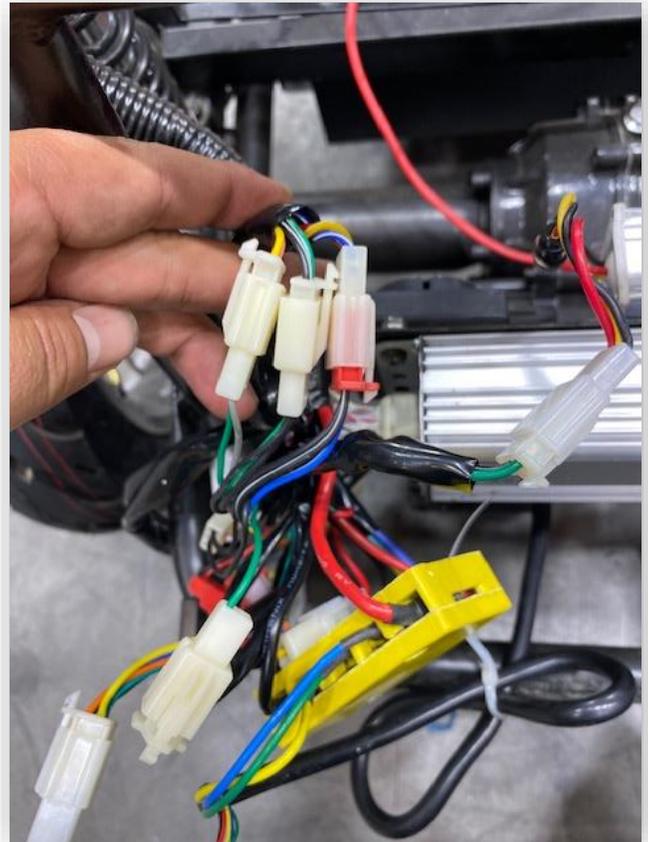
The final step is to remove either side axle assembly. When either axle is removed, the remaining axle that is still connected to the motor will have room to be able to drop away from the frame. Both axles are secured by five 6mm hex (Allen wrench) bolts. Ensure the motor to axle seal is salvaged is just the axle or motor is being replaced.

## Wire Harness and Brake Cable Replacement

**Wire Harness** - The wire harness runs the length of the machine, from front to back. Replacing the wire will require removing the seat, storage box underneath the seat, main body shroud, headlight body panel, and front sliding plate.

Running the replacement harness next to the previous harness is recommended to avoid mismatching the wire harness connectors. As you unplug one connection from the old harness, plug the connector immediately into the new harness's identical connector to avoid confusion.

Once all connections have been replaced, remove the old wire harness and the entirety its mounts. Zip tie the new harness to the frame at the same points the old harness was mounted. Test that all functions of the scooter are working as they should prior to reinstalling the body paneling.



**Front Brake Cable** - Removing the headlight body panel will be necessary to replace the front brake cable. Once done, the brake handle cable mount will be exposed. Before you remove the cable from the handle, first remove the adjusting nut, spring, and mounting spacer.

Once the brake cable hardware is removed, the brake line will have no tension. Remove the cable from the brake handle next by turning the barrel



adjuster with securing washer to the point where the adjuster and washers cut outs match up with the cut out for the brake handle.

Once lined up, pull the brake cables housing away from the handle until the cable and cable housing can be slid out from the handles housing.



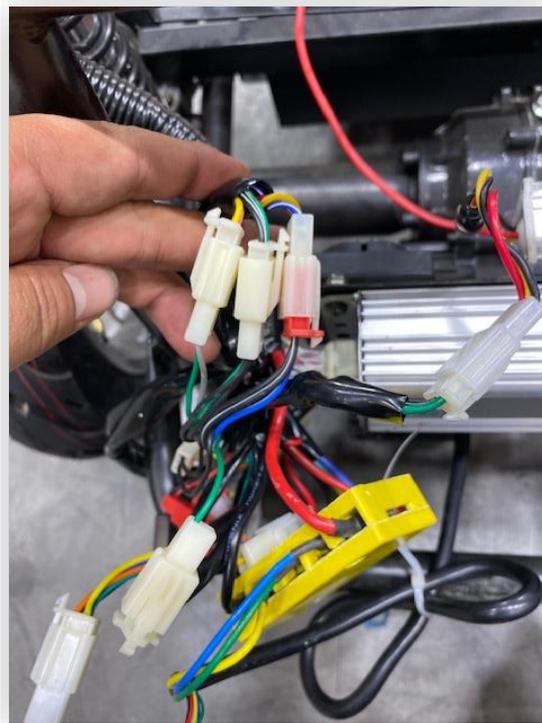
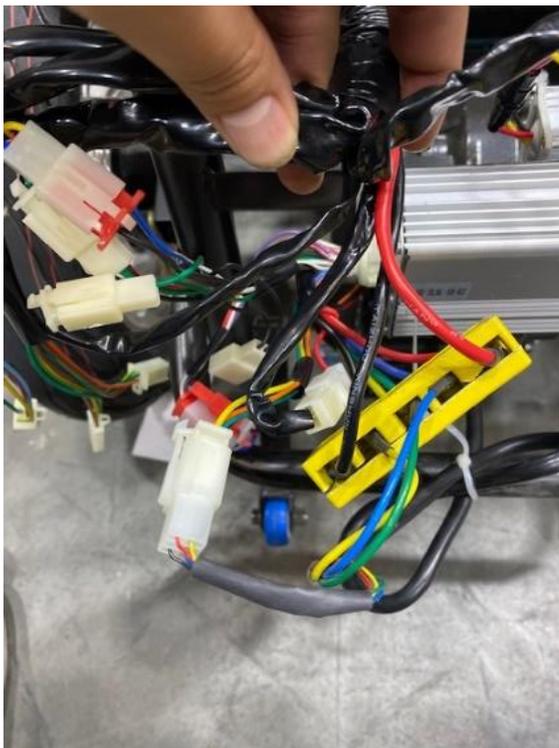
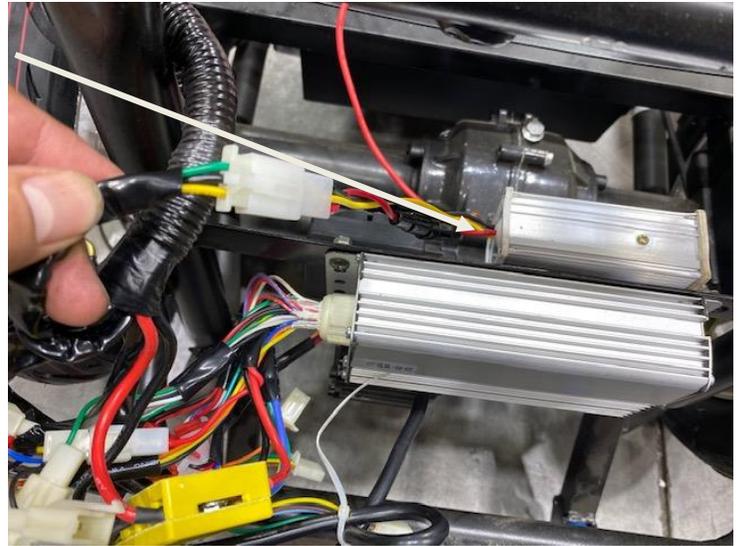
## Rear Brake Pads/hardware Removal

- Remove the rear wheel as well to get to the caliper.
- Then there will be one nut to remove on the inside of the wheel to get brake hardware off.



### Removal or Swapping of Voltage Regulator -

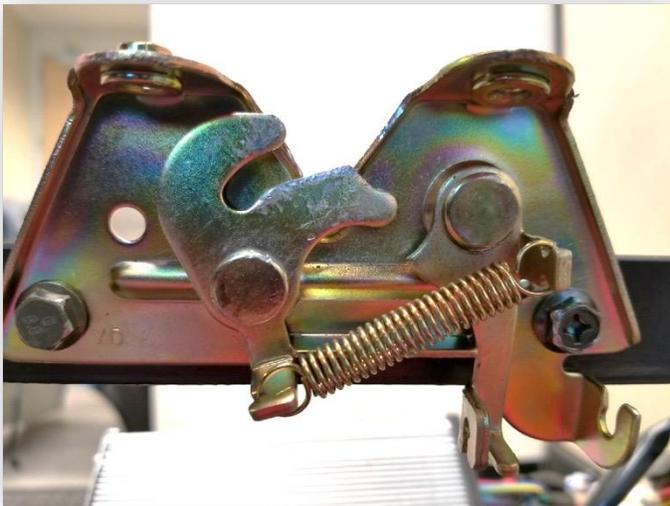
Removing the main body shroud is going to be necessary for this. It's going to be in the back and have 1 bolt and 1 connector keeping it in place, remove those and its out. Please see the photo below for a visual.



**Controller** – To remove or replace the controller, the seat, storage box and the main body shroud must be removed. Once removed, the controller will be exposed. All EWheels controllers will be plug and play (no modifications required) replacements. If any connector differences occur, please contact EWheels service department.



**Security Alarm System** – The alarm system plugs directly into the controller via two connectors. When replacing, separate the original alarm system connectors, dismount, and install the replacement using the same controller connectors. There is a 8mm nut and Philips



## **Seat Latch and Seat Latch Cable Replacement**

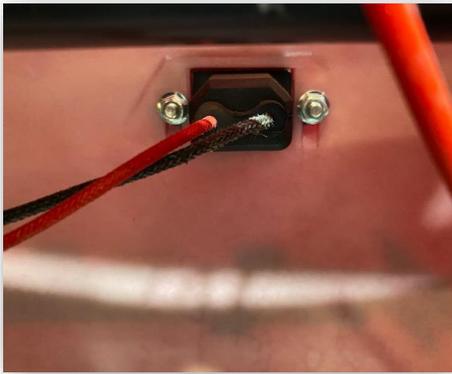
**Seat Latch Cable** – To replace the seat latch cable, the seat and storage box, and main body shroud must be removed. Once removed, dismount the original seat latch cable from the seat latch release lock cylinder, and install the replacement seat latch cable into the

original seat latch release lock cylinder. Reinstall the main body shroud and hook the new cable to the seat latch.



## Charger Port Replacement

**Charger Port Replacement** – To replace the charger port you're going to need a Philip screwdriver and an 8mm wrench. Make sure to disconnect the connector as well.



**Ignition Replacement** – Once the front big headlight shroud is removed you can now access the ignition to get it replaced. There will be 2 Phillip screws that hold the ignition into place, after being removed with a snub nose screwdriver you can now go to the back side. Unscrew the black screws.

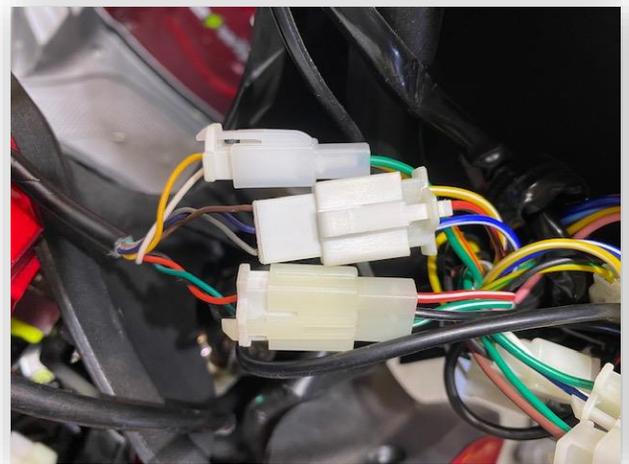


## Speedometer, Throttle and Brake Handle Replacement

**Speedometer Replacement** – To replace the speedometer, start by removing the headlight shroud. Once removed, separate the original speedometer's electrical connector and take out the three securing screws that mount the speedometer to the front tiller guard. Save the original speedometer's dash bulbs to save for future replacements.



**Throttle Replacement** – To replace the throttle, start by removing the headset shroud. Once removed, separate the original throttle's electrical connector, and loosen (but do not remove) the 3 MM set screw for the original throttle. Disconnect both connectors and your job is complete.



**Front Bumper Guard Removal** – You will need a 10mm socket and ratchet. You will need to remove the top and bottom bolt to take this off.



**Left Brake Handle Replacement** - To replace the left brake handle, start by removing the headlight shroud. Once removed, take off the securing nut and bolt. Both the nut and the bolt are 10MM.

## Button Replacement

**Button Replacement** – To replace the high/low beam, turn signal, forward/reverse, or horn button, start by removing the headlight shroud. Once removed, locate the button you intend to replace, and separate the electrical connector. Then, dismount the original button by depressing the push clamps on each side of the button. A flat head screwdriver can help to depress the push tabs easier.



## Seat Backrest, Seat Bottom, Arm Rest, and Basket Replacement

**Seat Backrest Replacement** – To replace the backrest you are going to want to remove the x4 (5mm) allen wrench bolts as shown below. The plastic mechanism covers will need to be removed to get the x2 (6MM) Allen bolts of each arm rest.

Remove the 4 bolts as shown in the photo using a long extension and ratchet with a 6mm Allen wrench socket.



## Bottom Rest Replacement

To replace the bottom portion of the seat, start by removing both seat mechanism covers with a Phillips screwdriver. There are going to be 2 philip screws that hold the seat mechanism cover on as shown with the arrows below.

Lifting the seat up may make it easier to get to the screw on the bottom side. You will slide this plastic cover off the lever on the seat as shown in the photo.



*(The back rest will the come off once all bolts are removed on each side in above photo )*



Remove all 4 bolts using a **13mm** socket with a ratchet. Be careful as there are 4 spacers as well that will be.

**Arm Rest Replacement** – To replace the armrest, start by removing the mechanism covers on the side of the seat the armrest is being replaced. Then, take out the two 6mm hex head bolts, and install the new armrest. This is for both sides of the seat.

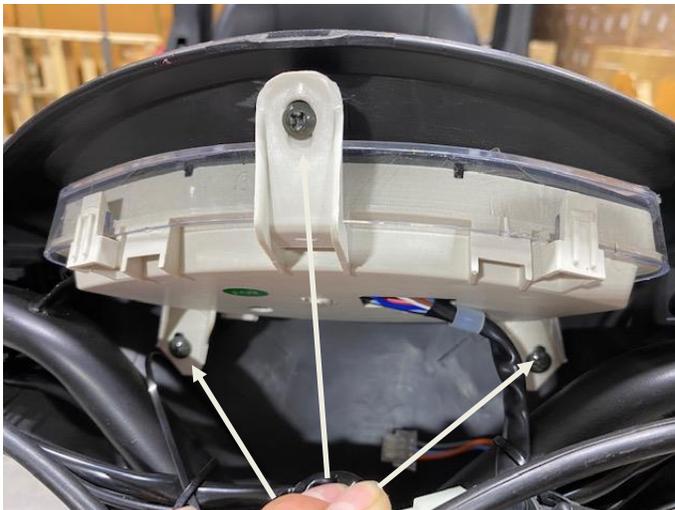
## Floorboard and Horn Replacement

**Horn** – To replace the horn, start by removing the front body shroud and sliding front plate. Once removed, unplug the electrical connectors that plug in the horn. Then, use a 10MM wrench or flat head screwdriver to remove the bolt that secures the horn to the frame.



## Black Tiller Guard Removal

**First** - Remove the headlight first with a Phillips screwdriver as shown in photos. Then there will be a total of 3 screws to be removed for this shroud to be removed, 2 of them on the inside and 1 on the outside of it as well. ( Update Photos and Description )



Will There will be 3 screws that are holding speedometer to the black tiller guard. Remove all 3 with a Philips screw driver.

**Key Note -** The speedometer can be removed as well if needed once this has been completed. A 10mm socket and ratchet can also be used to remove the outside bolt.