



General Maintenance / Electrical Troubleshooting &  
Diagnostics Manual 2012

12.5 24V

16.0 24V

16.0 36V

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# General Maintenance Checks

If you purchased your OSET Bike through one of our accredited UK dealerships then the bike will have been checked and a Pre-Delivery-Inspection (PDI) should have been carried out.

## **A PDI from your local dealership will have included :**

- Removal of all packaging & full build completion of the bike from part factory assembly .
- A check to determine all fixings and components are secure and safe for use.
- Fine adjustment of controls.
- A check to ensure batteries accept and hold a full charge.
- A check to ensure correct chain tension.
- A check to ensure nothing has been damaged or altered from factory settings during transit.

In some cases it may be that you purchased your OSET direct from us . In the event you were not located in close proximity to an accredited OSET dealership . In this scenario we may have supplied direct, and as a result you would have received your OSET in the original crate straight from the factory. OSET can not be held liable for the completion of the build and stress that during assembly you follow the guidelines set out in the accompanying user manual.

Every effort is made by the factory to ensure the highest standard of quality control is met, and furthermore the PDI checks carried out by the dealership ensures your OSET is first ridden as our designers and factory intended. However as with anything mechanised maintenance and care is necessary in order to keep your OSET in its best condition. To do so we have compiled a list of tasks or jobs you may wish to carry out in order to help you get the best out of your OSET.

# Basic Weekly Checks

We at OSET believe our electric trials bikes are virtually maintenance free, and in terms of the electronic components that is certainly the case. However, it is still a small wheeled motorcycle and as with all things mechanised there are a few general maintenance items that you should consider, to get the best from your bike.

If you do not feel confident to perform these checks yourself then your local OSET dealership may be able to assist you, or alternatively you can call OSET Bikes Ltd on 0843 289 2890 for advice.

**Here is a list of the minimum checks you should carry out on your OSET on a weekly basis. (Time = 10 mins)**

- Check all components are secure, start at the front of the bike and work in a methodical manner checking the tension on each bolt and fasteners, including handlebar clamp, stem / steerer, wheel nuts / skewers, brake calliper, levers and controls, plastics, swing arm bushes, motor bolts.
- Check battery bag straps for signs of wear.
- Check tyre wear and tyre pressures \*\*OSET recommend the following tyre pressures for trials use.
  - 12.5 24V (Standard 12.5 x 2.4 Tyre) Rider age 3-5 8-10 PSI
  - 16.0 24V/36V (OSET Kenda Nevis Tyres) Rider age 5-6 10-12PSI
  - 16.0 24V/36V (OSET Kenda Nevis Tyres) Rider age 7- 10 12 – 15 PSI

# Basic Monthly Checks

**Here is a list of checks to perform each month. (Total Time = 20 mins)**

- Brake pad wear rates. Keep an eye on the amount of braking material on your brake pads (Depending on the conditions the bike has been ridden in will determine how often pads would need replacing). Removing the pads themselves is not necessary, however you will need to remove the calliper in order to inspect the pad.
- Ensure the Brakes on your OSET are well adjusted. Please refer to page 16 - 18 of this document for further details.
- Ensure drive losses have been minimised, by this we mean any factor that could increase the resistance of the wheels to turn. This could be anything from wheel bearings, to the chain line, chain tension, motor bearings, poorly adjusted brakes. More information on how to check each of these items is present throughout this document.
- Check your OSET's brakes and controls are well adjusted to the needs of the rider. As your child grows, so will his / hers ability and skill level change. These changes may influence your child's ability to pull on the brake levers . For example their strength may increase over time and the original lever reach and biting point of the brake (i.e. when the brake pads contact the braking surface) may no longer be sufficient. Furthermore the cable may have stretched resulting in the biting point of the brake disappearing towards the handlebar resulting in little or no stopping power.
- While it is very unlikely that you will ever have to act on this, in the interest of rider safety, we feel with any bike it is important to check the frame for signs of wear or fatigue that may be an occurrence of impact during a crash. In this case report findings to OSET Bikes Ltd on 0843 289 2890.

# Electrical diagnostics

**This part of the document is designed to help the user identify any faults they may be facing with their OSET Bike.**

Simply look-up the symptom or fault you are experiencing from the left hand column and follow through the component check order column utilising the notes column for guidance until you have solved your problem. The next steps are then explained in the solution column. If you are still struggling or require further assistance then please do not hesitate to give the technical department a call on 0843 289 2890. We are always happy to help and certainly do not like the idea of bikes out there not working or performing how they should!

In exceptional cases, it may be necessary to send components or wiring looms or complete electrical systems to us, in order to solve any problems. Repair and diagnostic work can be carried out by us at OSET HQ, we endeavour to turn around items as quickly as possible. We charge £20 per hour for labour plus any parts needed to fix the problem. However in most cases we can fix any electrical problem in under 30 mins. Please call 0843 289 2890 for advice should you require this service. Alternatively one of our OSET dealer may be able to carry out the work.

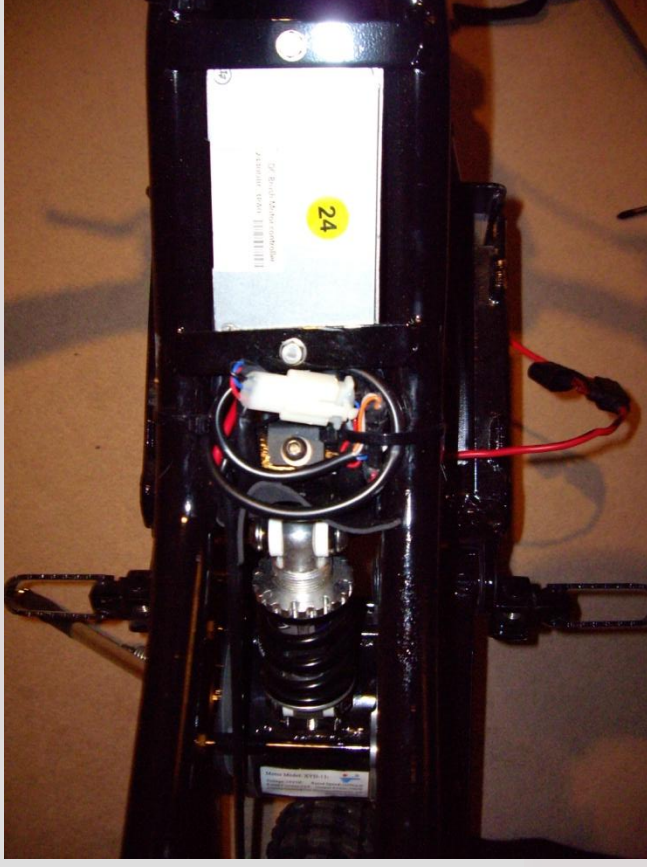
In most cases you won't even require tools for most of the checks you will need to make in order to diagnose a fault with your OSET, as your OSET has been designed with simplicity in mind.

Symptom	Component Check Order	Notes	Solution
1. No Power or a Sudden Loss of Power	1.1. Potentiometer (speed dial)	In most cases this is likely to be caused by a faulty potentiometer. Locate the potentiometer positioned behind the rear splash guard. Remove guard and plastic seat unit, and disconnect and remove the batteries. You should now be able to follow the wires from the potentiometer to the controller (silver box – attached to top of chassis). There is a small black push fit connector connecting the potentiometer to the controller. Disconnect this and re-fit the batteries. Your OSET will run without the potentiometer but you will lose the ability to regulate the top speed.	1. Order a potentiometer. There are two types of these. A mk22 was fitted to models circa 2007-2009. A mk47 was fitted to models 2010-2012.
	1.2. Connection Check	There are many connections all over your OSET and as with anything electrical it is important that there is nothing that could compromise the system. Simply isolate each connection & disconnect. Inspect each one and check for evidence of 'arcing', debris, loose wiring or anything obvious. Wagging wires and connections as you go you may be able to assign your problem to a specific connector or portion of wiring.	1. Replacement connecting blocks are available if you would like to create a factory repair to your OSET. Alternatively it is perfectly ok to use a standard spade connector, or if you are <u>competent</u> solder the connection back together, ensuring the wire has been reinsulated.
	1.3. Relay	The relay is located directly underneath the seat unit. It is a small black box which is simply a switch, which operates when you turn the key of your OSET. A relay which is operating correctly should make a noticeable clicking noise when the bike is turned on. Absence of the 'click' will probably mean that your relay is faulty. A relay that is not working will also mean you will have none of the charge indicating lights showing on the throttle body.	1. Replace the relay. Please ensure you have the year of manufacture and model of your OSET to hand before calling as this does influence which relay you will need.





1.1 – The potentiometer on your OSET is located between the key switch and charge port just above the battery tray. The potentiometer can be adjusted from the rear with a flat blade screwdriver through the access hole in the rear splash guard.



1.3 – The Relay pictured to the left 'off the bike' and above located on a 12.5 24v. To remove simply undo the 4mm Allen bolt securing it to the frame, disconnect the key switch at the black connector and from the wiring harness via the larger white connector.





**Symptom****Component Check Order****Notes****Solution**

1. No Power or sudden Loss of power (cont).

1.4. Fuse Holder / Wiring Harness

This is the wiring loom that links the batteries to the relay, controller and charge port of your OSET. Firstly remove the fuse from the harness (located beneath the battery cover) and check the fit. If the fuse is particularly loose in the holder, close up the connection with a small flat blade screwdriver. If there is not a good connection here it could cause 'arcing' and in some cases heat developing in the area, This may mean that the wiring has been compromised. If there is no pitting on the fuse there is probably no damage. However there is a small diode in the harness which is responsible for controlling the flow of current when charging and heat can damage this.

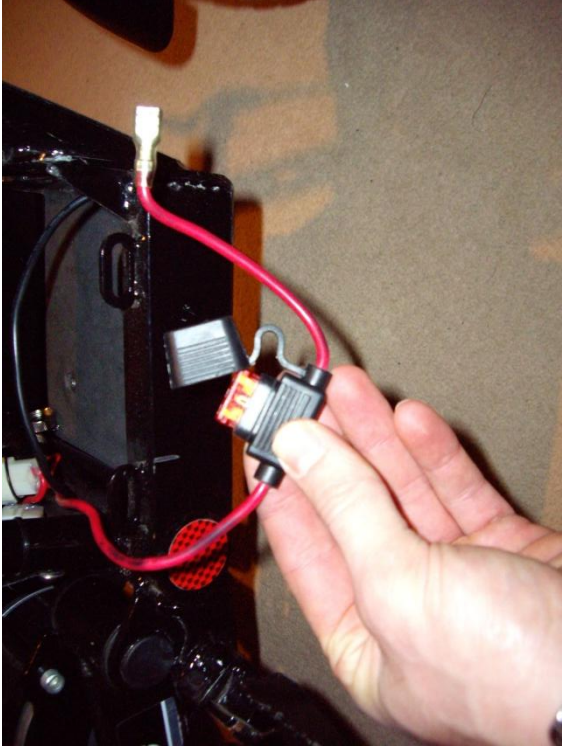
1. If you feel that there could be a problem with this component then please do give OSET UK a call. A member of our technical team will be able to help you. Replacement wiring harnesses are available as a 'plug and play' replacement.

2. Decreased Run Time

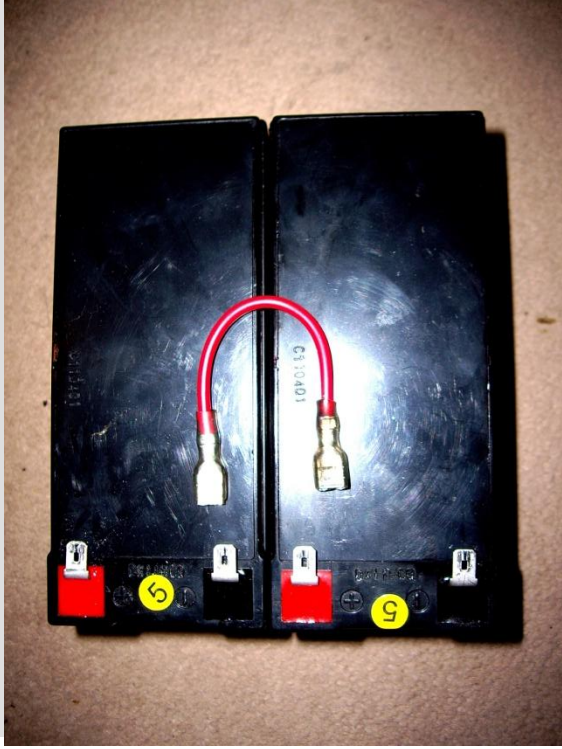
2.1. Batteries. \*Run Time is difficult to quantify for electric motorcycles as there are so many factors, such as the weight of the rider, type of terrain, riding style etc that can influence it. We approximate 1 hour to 1 ½ hours run time for all our current OSET models. However if you feel that your batteries are not at this level then check the following.

The LED battery indicator level is displayed on the throttle body on the handlebar of the bike. At full power following a charge all 4 lights should display red. If you see less than this it is an indication that your batteries are either not producing the required voltage or they are unable to accept a charge from the OSET charger. There are a number of scenarios in which this could occur and this is simply a case of isolating one to your situation. It is possible to test the output of each battery with a multimeter if you have access to one. Good batteries will generate around 13v each. Batteries showing only 12.1v, 12.2v or less will either mean they have not been charged adequately, have a bad cell, or are simply old and are past their best. Our sealed lead acid gel type batteries should last for around 200-300 charge cycles or 18 months. After this time they will still operate but will not be able to give the same run time as when the OSET was new.

1. Purchase New Batteries to restore the level of run time.  
2. Accept that the batteries are old and past their best.



1.4 – Location of fuse. Check for damage to the fuse, and the integrity of the associated loom (Wiring Harness).



2.1 – The Voltage output of the batteries can be checked by means of a Multimeter. Measure each battery individually by placing the electrodes of the Multimeter across the terminals.

## Symptom

## Component Check Order

## Notes

## Solution

<p>2. Decreased Run Time (cont).</p>	<p>2.2. Chain Line, tension &amp; Drive Losses.</p> <p>It is important to consider correct maintenance of your OSET. For example, incorrect tension of your OSET's chain could result in energy losses. A chain that is run too loose (apart from coming off all the time) will cause 'chain slap' – whereby the chain flails and creates more resistance for the motor to overcome, which subsequently requires more power and eventually runs the batteries down. The reverse of this – having the chain too tight, can place an increased amount of tension on the motor shaft and subsequently cause a drive loss. Lastly if the front sprocket and rear sprocket are not in good alignment with each other then it will cause the chain to twist and increase the friction levels, also causing a drive loss. It may be that it is time to replace the chain if you are unable to get a consistent level of tension. Maybe the chain is now stretched too far or the sprocket is warped or bent due to an impact.</p>	<ol style="list-style-type: none"><li>1. Check for correct chain tension, there should be around 1-2mm of movement in the chain if you were to squeeze the chain just behind the front sprocket with your finger and thumb.</li><li>2. Check for correct chain line, i.e. that the rear sprocket is directly inline with the front sprocket.</li><li>3. Replace chain.</li></ol>
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2.2 – Correct chain line can be seen (above left). It is very important to ensure the rear wheel is located square in the swing arm to enable the rear sprocket to run directly inline with the front sprocket. The tension of your chain can be adjusted via the chain tugs located on the rear axle (above right). Tip – correct chain tension can be found by locating your finger and thumb on the top and bottom of the chain just in front of the chain cover mounts. You should be able to squeeze the chain together by 1-2mm. If your rear and or front sprocket is damaged or worn, your chain is twisted or stretched then you will need to replace them.

**Symptom****Component Notes****Solution****Check Order**

2. Decreased Run Time (cont).	2.3. Brake Drag.	Ensure that both of the cable operated disc/band or V-brake that are fitted to your OSET are correctly adjusted, as any unnecessary contact between pad material and rotor of brake shoe, will cause friction which ultimately the motor must overcome by drawing power from the batteries more quickly.	<ol style="list-style-type: none"><li>1. Cable Operated Brakes (16.0 &amp; 12.5): Check the cable can move freely within the cable outer, look for any wear in the cable, debris or corrosion that could cause it to snag. Ensure that the cable is well lubricated. A cable oiler is a useful tool for this.</li><li>2. Hydraulic Brakes (20.0): Remove the brake pads &amp; ensure the slave pistons are able to return freely. Clear any debris behind the brake pad &amp; surrounding the pistons and lubricate if necessary. A lazy piston could cause the brake to rub.</li><li>2. Disc Brake Models (16.0): Ensure that the rotor is central in the calliper, and that the rotor is running straight and true.</li><li>3. Front V-Brake models (12.5): Ensure brake pads are orientated so they are parallel to the rim, that they will contact the rim only and not the tyre, and importantly that the rim runs straight and true.</li><li>4. Rear Band Brake Models (2007 16.0 24v): Ensure the brake shoe is free from debris and corrosion, and that the 'band' mechanism itself is well lubricated.</li></ol>
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2.3 – 12.5 24v Front V-Brake / rear band brake cable operated models. The V-Brake on your OSET can be adjusted first by ensuring that the brake pads are correctly aligned to the braking surface on the rim, ensure that the pad will contact the rim fully & square on, & that it will not touch the tyre. Tension the brake cable either by the barrel adjuster on the brake lever or by pulling more cable through the lever arm. Lever reach adjustment will affect the amount of cable being pulled through and therefore could result in the pads dragging - ensure you have 1-2mm gap between the brake pad and the wheel rim on both sides.





2.3 (cont) – The Rear Band brake is mounted on the swing arm. There is a small amount of adjustment at the end of the cable here, check that the band itself is not dragging on the braking surface, ensure that the internals on the band brake are not damaged and that the brake is free from debris.





2.3 – Cable operated mechanical disc brakes - cable tension adjustment can be made via the barrel adjustment on the lever and at the calliper. Lever reach adjustment can be seen above by using a 2.5mm Allen key. Again always ensure that before you make any adjustment the wheel is sitting square in the fork dropouts and that the quick release system is firmly secured. Spin the wheel to check the disc is running true.  
Note if you have signs of uneven pad wear, i.e. you can see areas of the disc that is not making contact with the pad, then check the alignment of the calliper ensure you have 1-2mm gap each side of the disc rotor.



2.3 – A Hydraulic Brake upgrade is available for all 16.0 models. The Tektro Auriga Comp has been modified by OSET so that hose lengths are a correct fit. While the brakes do come with full instructions, we have included the basics here.

The basic calliper adjustment and alignment to the disc rotor are the same as per the cable operated version as mentioned earlier. Lever reach can be adjusted on the front of the lever, while the biting point is adjusted with a 2.5mm Allen key at the master cylinder.

Hydraulic disc brakes offer benefits to the rider in terms of lowering the resistance of the brake lever to move (ideal for little hands) and increasing stopping power.

Generally these brakes require less maintenance than their cable operated counterparts as there is no cable that needs lubricating and tensioning. Similarly the pads return with more force due to the mechanics of this type of system.

However, in the event of a damaged hose these brakes may require a re-bleed to fill the system back up with mineral oil, and to remove any air from the system. In this scenario we would advise your local OSET dealership to carry out the repair, unless you are proficient yourself.



**Symptom****Component  
Check Order****Notes****Solution**

2. Decreased Run Time (cont).	2.4. Motor Bearings/shaft & Drive Losses.	Remove the motor from the bike and inspect the motor shaft and sprocket. You should be able to turn the shaft freely with your hand. If you cannot, there may be some debris that has worked its way into the motor over time and is causing unnecessary resistance. Secondly, check for wear in the motor bearings by pushing the shaft in towards the motor casing. You should not be able to do this. If there is excessive play in these bearings it will cause the chain to rub against the motor mount bracket on the swing arm. The increased friction will cause the motor to work harder for the same level of performance and as a result will drain the batteries more quickly than usual.	1. Replace Motor Bearings** - we do not recommend you tackle this unless you have access to the appropriate tools. Please call us at OSET for advice first. 2. Replace the Motor.
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2.4 – Here the motor has been completely removed from the bike. To do this you must first disconnect from the controller. Secondly, remove the rear wheel, and the lower rear shock mount. You will now be able to remove the swing arm from the bike by removing the swing arm bushings (an 8mm Allen key is necessary). Lastly, split the swing arm to free the motor by removing all 3 of the motor mount bolts. You will now be able to check the motor bearings simply by assessing whether you have any ‘play’ or movement on the motor shaft. If you do, then you will need to replace the motor bearings. In most cases we suggest a better solution is to replace the motor altogether.



**YOU SHOULD TAKE EXTREME CAUTION IN THIS PROCEDURE AS THE MAGNETS IN THE MOTOR ARE EXTREMELY STRONG AND YOU SHOULD TAKE CARE TO NOT TRAP YOUR FINGERS DURING RE-ASSEMBLY**

Symptom	Component Check Order	Notes	Solution
3. Battery Not Charging	3.1. Dead Batteries?	It may be that there is no problem with the charger or charging system on the bike but the batteries are no longer in a fit enough state to accept a good charge. The output of the batteries can be measured by the process described in 2.1.	1. Check Battery output level if below 12.1v it is likely the batteries need replacing.
3.2. Charger Output.	3.2. Charger Output.	If you have access to a multimeter, then it is possible to measure the voltage output of the charger by placing the electrodes of the multimeter into the output lead of the charger. MK1 & MK2 Chargers: For 36v models the correct reading should be between 38-41v, for 24v models the correct reading should be between 28-31v. MK3 Chargers operate slightly differently. When the charger is not under load a 36v charger will elicit around 48v, and around 38v during a charge. While a 24v charger will elicit around 42v not under load and around 32 during a charge. If you are not sure about performing this test then call us or we can carry out this test at OSET HQ.	1. If the voltage output from the charger is dramatically outside of the stated range, then call us at OSET immediately.
3.3. Off Bike Charging Test.	3.3. Off Bike Charging Test.	If you have one of our Off Bike Charge Kits, then you will be able to remove the batteries from your OSET and charge through the kit. If the batteries will accept a charge in this way then you can rule out any possibility of a wiring issue with the bike.	1. Order Off Bike Charge Kit from OSET.



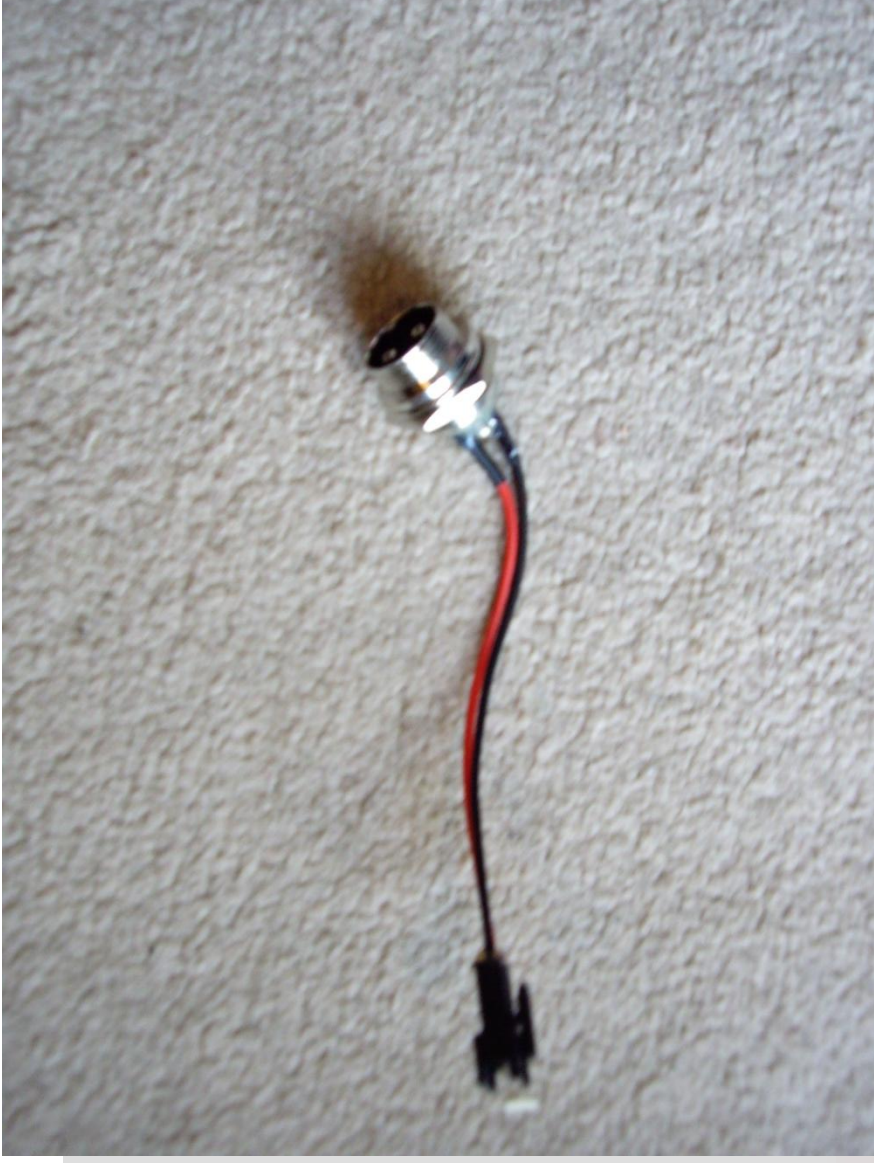
3.2 – Place the electrodes from your multimeter into the top two holes on the charger to bike lead to get your voltage output reading.



**WARNING – TAKE EXTREME CARE WHEN PERFORMING THIS PROCEDURE AS YOU ARE DEALING WITH MAINS VOLTAGE .**

Symptom	Component Check Order	Notes	Solution
3. Battery Not Charging (cont).	3.4. Charging Test.	<p>MK1 (2007-2009) &amp; MK2 Chargers (2010-2011): Put the bike on charge, flick the switch at the wall and look at the LED on the charger. This should be green when not plugged into the bike ; red when you are charging the batteries and should trip to green after around 4-5 hours indicating a full charge. If it does not do this then you may not be getting any charge to the batteries or the batteries, due to their condition, may be unable to accept an adequate charge.</p> <p>MK3 Chargers (2012): These chargers operate slightly differently.</p> <ol style="list-style-type: none"> <li>1. plug the charger into the mains outlet – the light on the charger will flash green and then turn to solid green.</li> <li>2. plug the charger lead into the charge port on the bike – the light will flash red indicating the batteries are charging.</li> <li>3. once the batteries are fully charged – the light will turn to solid green. If it does not do this then you may not be getting any charge to the batteries or the batteries, due to their condition, may be unable to accept an adequate charge.</li> </ol>	<ol style="list-style-type: none"> <li>1. Order a replacement Charger. In this case it is advisable to talk your symptoms through with a member of the OSET technical team.</li> </ol>
3.5. Charge Port.		<p>Check the condition of the charge port. As with all things electrical it is important to have good contact at the connection. Look for any signs of damage, debris or corrosion that could be causing a problem. Remove the rear splash guard so you can inspect the wiring at the rear of the charge port, this should have well soldered connections insulated by a resin material with two small wires, one of which connects at small black connector with the controller, while the other connects in the same way to the wiring harness. Check that both these connections are intact and that the wiring is still well insulated.</p>	<ol style="list-style-type: none"> <li>1. Any damage to this will require a replacement Charge Port.</li> </ol>





3.5 - Here you see a charge port removed from the OSET. The charge port connects into the wiring harness. Ensure that the wires look in good shape and that the back of the port is still well sealed with resin. It is a very simple component and as a result there is little that could go wrong.

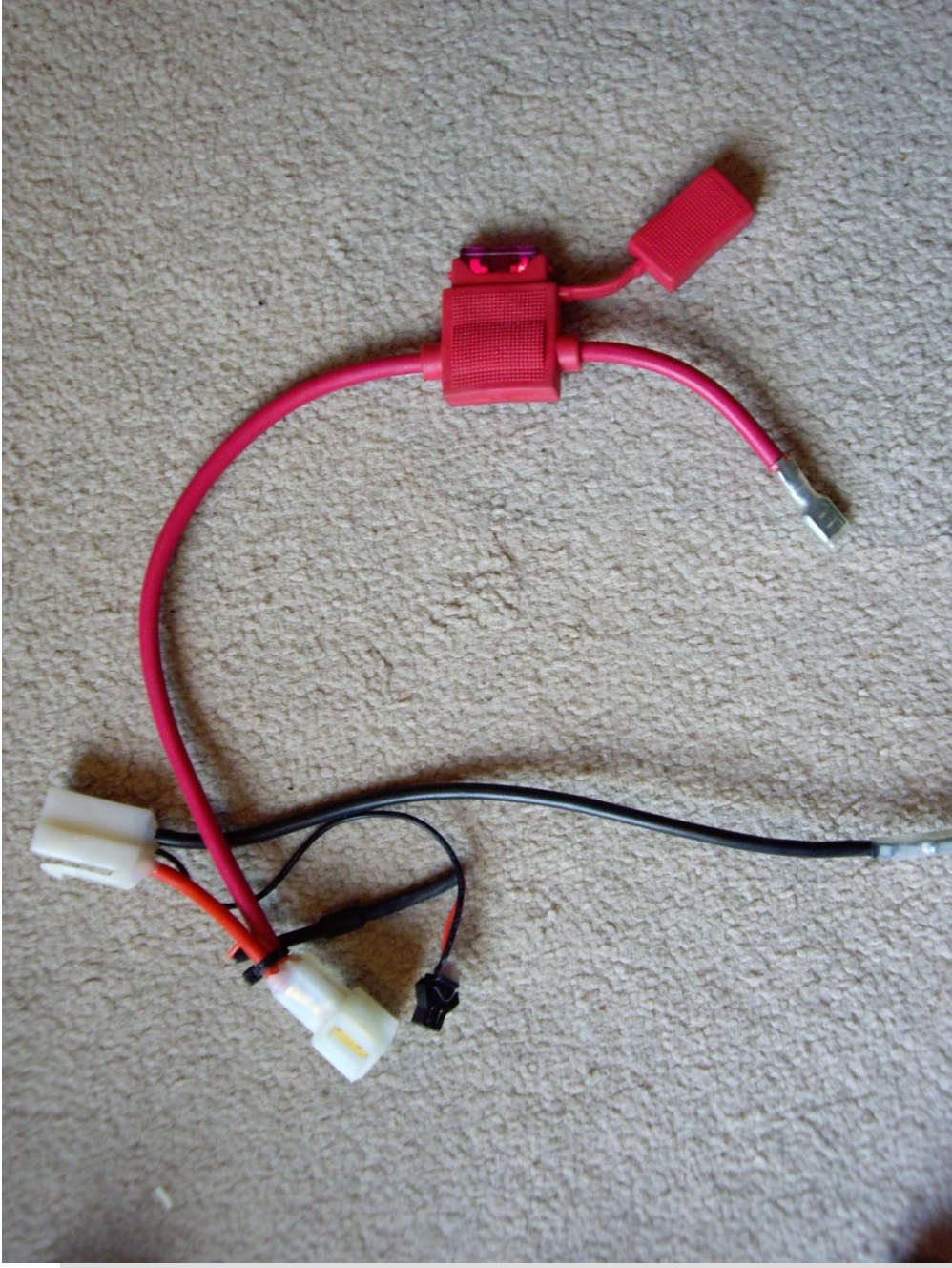


**Symptom****Component  
Check Order****Notes****Solution**

3. Battery  
Not  
Charging  
(cont).

This is the component that is effectively the loom, connecting from the battery terminals themselves right through to the relay and controller. Current feeds from the charge port into this and then onto the batteries. Anything that could block the flow of current will result in the batteries not charging. Check the fuse in the holder and ensure the connection is tight, ensure also that the spade connectors on the terminals create a secure fit with the battery. Once all of this is checked and you have ruled out all of the above, it is possible that the diode built into the harness is no longer allowing current to flow from the charger.

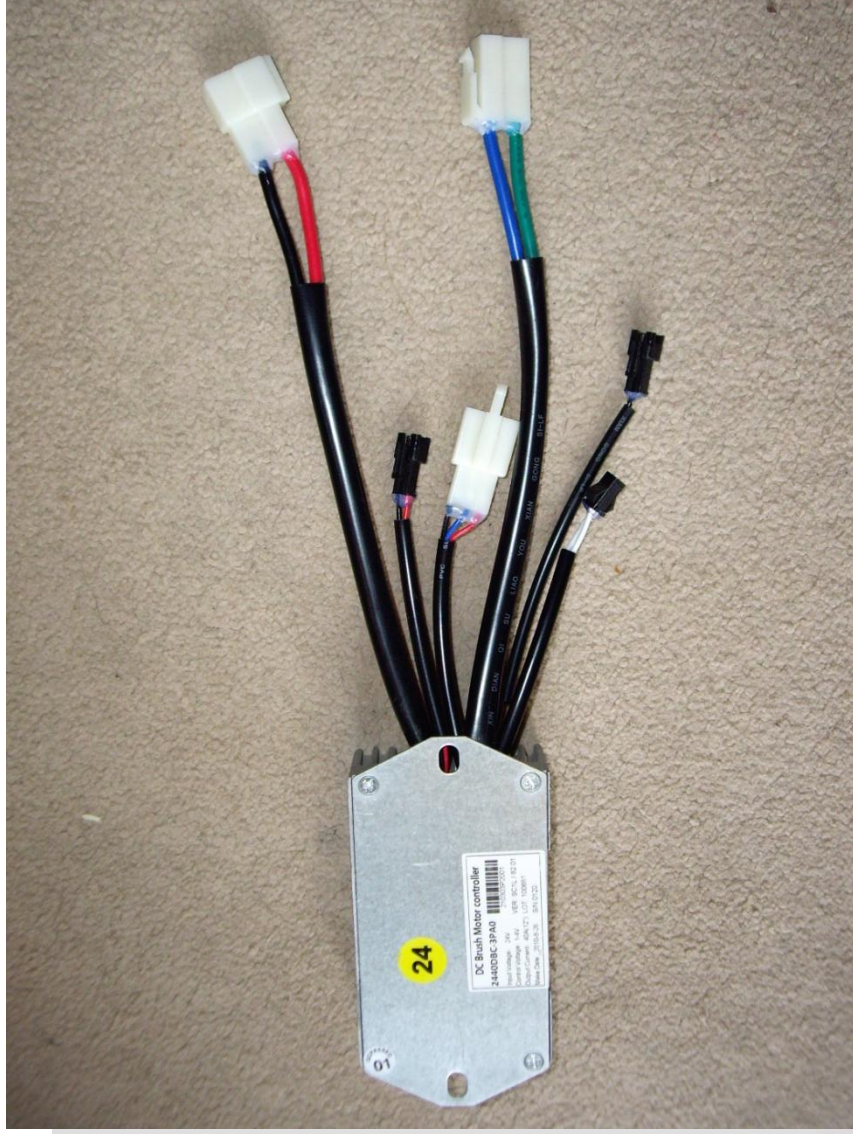
1. Order a new wiring harness. Ensure you have the year of manufacture of your OSET to hand, as our sales department will need this to designate you the correct replacement.



3.6 - This picture shows a wiring harness disconnected from the bike. To remove it you must disconnect from the controller, relay, charge port, and the batteries.

Symptom	Component Check Order	Notes	Solution
<p>4. My OSET won't turn on? No lights on the LED throttle display</p>	<p>4.1. Relay</p>	<p>The relay is the small black box mounted in the seat area of the frame. It connects to the controller unit and the key switch of your OSET and feeds in to the wiring harness. When turning the key have a listen to the relay. In a relay that is operating correctly you should be able to hear a noticeable 'clicking' noise, shortly followed by the charge indicator lights on the throttle being displayed. If there is an absence of this, it is likely that the relay needs replacing. Another cause of the relay not activating would be a faulty key switch. The two key connection wires (one from the relay and one from the controller) can be shorted together – creating an 'on' condition. If the relay now clicks, the key switch is the problem. If it does not, it is likely the relay.</p>	<p>1. No Click from Relay? - Order a New Relay – be sure to quote the correct voltage for your model. (It is important for this component to specify the year of manufacture, as the main wires running to the vertical and horizontal pin connector are reversed on later models). – **You are aiming for the Red wire from the wire harness to run into the red wire from the relay**. 2. Relay Clicking? - Order a new key switch.</p>
	<p>4.2. Connection Check</p>	<p>If you can hear the relay actuating as detailed above, then double check all the connections running from the battery terminals, through the wiring harness, fuse, and key switch. Check for any debris and evidence of arcing.</p>	<p>1. Replace connections if needed. All connector blocks are available from OSET UK</p>
	<p>4.3 Controller</p>	<p>Once the above avenues of enquiry have been looked into, it may be that your OSET has developed a fault with the control unit. In this case there is very little you can do as it is a sealed unit. There is a small circuit board within, and if this has been damaged in some way or has stopped functioning then the only solution is to change it.</p>	<p>1. Replace Controller, again be sure to quote the year of manufacturer of your OSET.</p>





4.3 – Your controller unit is located on the top tube of the frame. It connects directly with the throttle (via both 3 pin white connector & small 2 pin black connector), the motor, (large white connector Green & Blue wires), the wire harness (large white connector red & black wires), the potentiometer (via small back two pin connector – x2 white wires), & one side of the key switch (via small two pin connector – small single back wire). Before assuming the highly unlikely scenario of your controller not functioning, rule out connections problems first.

## Symptom

## Component Check Order

## Notes

## Solution

5. Intermittent Throttle response / LED Charge Indicator Displayed / Power in system but no drive at the motor.

### 5.1 Throttle

The Throttle is a relatively simple component and works by regulating the power to the motor via the controller. In some cases the throttle body can become damaged through the bike being dropped on its right hand side. While there may be no evidence of damage from the outside, there may be inside.

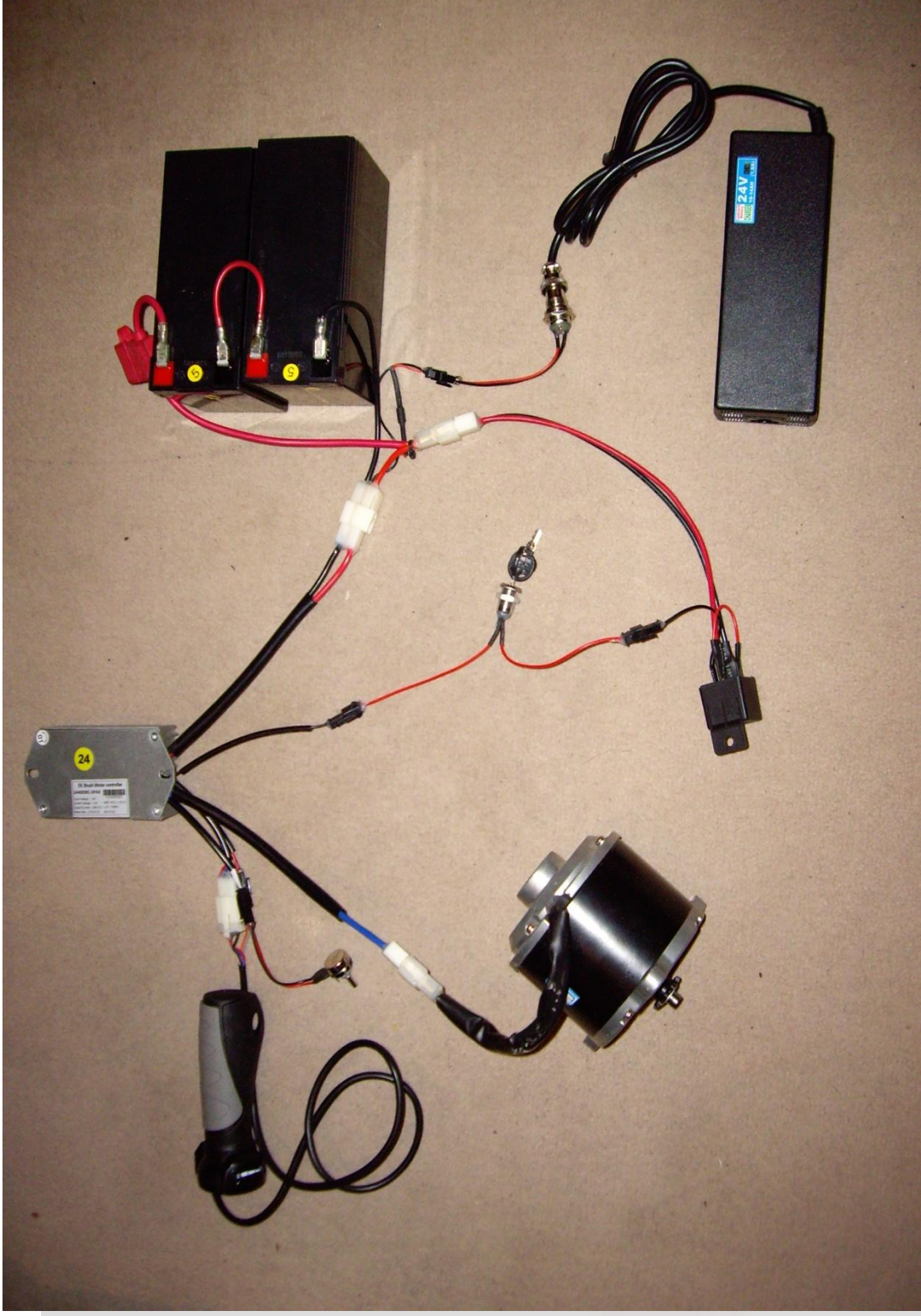
1. Check year of manufacture of your OSET before ordering a replacement, check also whether you will require a white connector or black connector to maintain compatibility with your controller.



5.1 – Here the throttle is removed from the OSET. In 99.9% of cases faults with throttle will be a direct result of the bike being dropped on its right hand side. While there may be no visible damage, the resistor in the throttle body could have been damaged, resulting in either an intermittent message to the controller or no message at all.



Tip – A good little modification you can do on all OSET Bikes is to fit a pair of standard off-road motorcycle grips. This can be done by using a sharp blade to cut down the seam of the standard grip. The grip can be peeled off and a new grip fitted. In doing this you will now be able to fit a standard mountain bike bar end into the handlebar. Now in the event of a crash or mishap the throttle body will be protected.

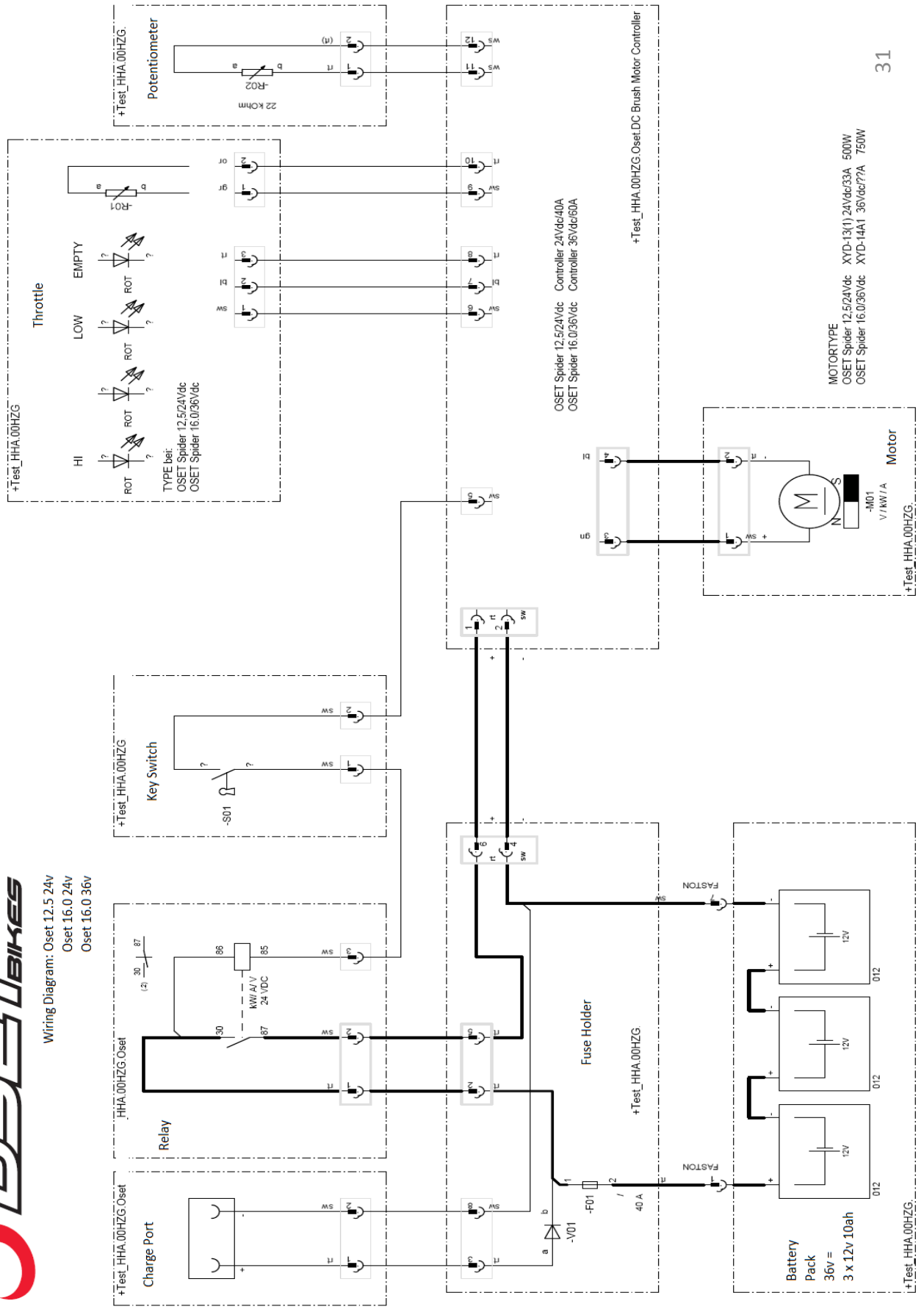


We understand that it can be quite difficult to see how everything goes together on the OSET. Here you can see all the electrical components mentioned throughout this document all connected up correctly off the bike.



Wiring Diagram: Oset 12.5 24v  
 Oset 16.0 24v  
 Oset 16.0 36v

\*Note: Individual components have been revised across 2007 / 2008 / 2009 / 2010 / 2011 models.



MOTORTYPE  
 OSET Spider 12.5/24Vdc XYD-13(1) 24Vdc/33A 500W  
 OSET Spider 16.0/36Vdc XYD-14A1 36Vdc/77A 750W