

OWNERS HANDBOOK & INSTALLATION MANUAL

VERSION 1.1 - 2022

WWW.KO-MOTO.COM THE ULTIMATE UPGRADES

The background of the cover features a dynamic design with a black and white checkered flag on the left and right sides. A large, bold, red diagonal stripe runs from the top left towards the bottom right. The words "KO MOTO" are written in large, white, blocky capital letters across this red stripe. Below the stripe, the text "POWERED BY KO TECHNOLOGIES" is written in a smaller, white, sans-serif font, following the curve of the stripe. In the lower right area, there is a detailed white line drawing of a motorcycle engine, showing various components like the cylinder, pistons, and valves. The overall aesthetic is high-tech and performance-oriented.

KO MOTO

POWERED BY KO TECHNOLOGIES

FIND US ON FACEBOOK [FACEBOOK.COM/KOTECHNOLOGIES](https://www.facebook.com/kotechnologies)

EMAIL [INFO@KO-MOTO.COM](mailto:info@ko-moto.com)
FOR SUR-RON AND TALARIA

WELCOME TO KO MOTO

Please read through this owners manual carefully prior to fitting and using your KO Moto upgrade parts. It is important that you understand the features and limitations. This guide contains information on how to fit and maintain our motor and contrller, but it does not contain any information on how to ride and electric motorcycle safely.

If you require more information please email
support on info@ko-moto.com.





GENERAL RIDER WARNINGS

Any activity on a motorcycle, whether it be on road or off-road has a potential risk of serious injury or even death. It is the riders responsibility to see these risks are assessed and mitigated as much as possible when they are riding their bikes.

By choosing to install and ride your bike using the Ko Moto products you are assuming this risk and the consequences of doing so. It is important that you understand the legal and regulatory rules of the location you are riding in. It is also important that you to engage in regular maintenance checks of your bike to reduce the risk of injury.

Any medical conditions that may impair your ability to make the correct judgements, react to a given situation in traffic, or off road should be discussed fully with a medical professional prior to riding your bike, or using any of our upgrade equipment.

You must understand the law of the location you are riding in. We do not endorse any illegal activity or failure to follow, or comply with your legal requirements as a rider. As a rider it is your responsibility to act within the law that governs your country at all times.

In addition to the warnings above you should fully familiarise yourself with our product prior to using it. Test any new tunes, or settings you have saved to the controller in a sensible manner and always test the brakes and the throttle several times before heading off on your journey. Follow the bike manufacturers guidance on maintenance at all times.

If you are a parent or guardian by using our upgrade products you are responsible for the safety of your child. Our products are not designed to be used by any user under the age of 18 years old. Always ensure that the proper safety precautions are used while riding.



RIDING IN WET WEATHER

We do not recommend riding your bike in the wet. Take extra care while riding in wet conditions and decrease your riding speed in conjunction with this. Do not fully immerse our product in water.



GENERAL INFORMATION

Throughout the course of this handbook please note the following symbols



WARNING

Warnings, precautions and potential risks associated with your use of the KO Moto upgrade parts for the Sur-Ron and Talaria



DANGER

Issues that may pose a risk to your personal health if consecutive issues are ignored.



TIP!

Our recommendation on fitting, or useage



CONSUMER SAFETY INFORMATION

Motorcycles and electric bikes can be dangerous. Any rider will need to exercise caution and ride within their limits to prevent the chance of serious injury or damage to property. Ensure you always check the bike before riding, remembering to check that all bolts are secure and your brakes are functional prior to use. Always follow the safety steps of the bike manufacturer prior to riding to make sure you are operating the bike safely.

When you receive your KO Moto controller, or motor please can you thoroughly inspect the unit prior to fitting. If you find any defects which may lead to safety concerns please contact us immediately and do not fit the product to your bike. Defects include, crack, leakages, breaks, frayed cabling and incorrectly fitting contacts. If you have any questions or concerns about the products you receive please contact us directly prior to fitting the parts. You can do so either via email at info@ko-moto.com, or on Facebook www.facebook.com/kotechnologies.



FITTING AND INSTALLATION

This product is designed to be fitted and installed by a professional bike mechanic. We would highly recommend that you install this product with the help of an authorised and recommended bike mechanic / technician. We would never recommended anyone without the requisite experience to install our products without the correct level of expertise in doing so. From time to time (as with all motorcycle / bike products) we would recommend maintenance work at regular intervals to ensure that you are operating your bike safely and within the guidelines of your bike manufacturer. This includes regular servicing at the specified intervals. Do not ride your bike if you suspect that our products have not been installed correctly. Take the bike directly to the nearest specialist mechanic if you have any concerns or would like a safety inspection completed.



LEGAL INFORMATION

Please check the law of the country, or state you are located in prior to riding. These include age restrictions, speed, motor wattage and road accessibility. It is your responsibility to ensure that you are operating in accordance with the legal requirements of the locality you are riding in. We will not take any responsibility for users that do not follow the law of the country they reside in and those who use our motor and controller to drive dangerously, partake in illegal activity, or cause damage to themselves, others, or property. Please ride safe and legally while using our product.



INTENDED USE

No Warranty or liability will be accepted for useage deviating from this intended use. If safety precatons are not observed, if the product is overloaded, or faults are not properly addressed and rectified. We will also not accept wannaty claims for errors in fitting and assembly, neglect, lack of care, lack of maintenance or any modifications to any part of the product. This includes but is not limited to disassembly, soldering, external modifications and operation outside of specification.



DANGER

If either motor or controller is used outside of its intended use and specification there may be risk of death or serious injury to the user, or those around the user. Do not operate either motor or controller outside of specified voltage and power settings in this user hand book. Doing so not only invalidates the warranty, but also presents serious risk of a fire and serious injury / damage to property.



UNBOXING YOUR KO MOTO

Please fully read all of these instructions, taking time to ensure the fitting process is fully understood and followed prior to attempting to fit the controller, or motor to your bike. Please ensure you unbox the motor and controller carefully to prevent accidental damage. Please perform a visual inspection prior to fitting. If any serious damage has occured in transit please contact info@ko-moto.com.

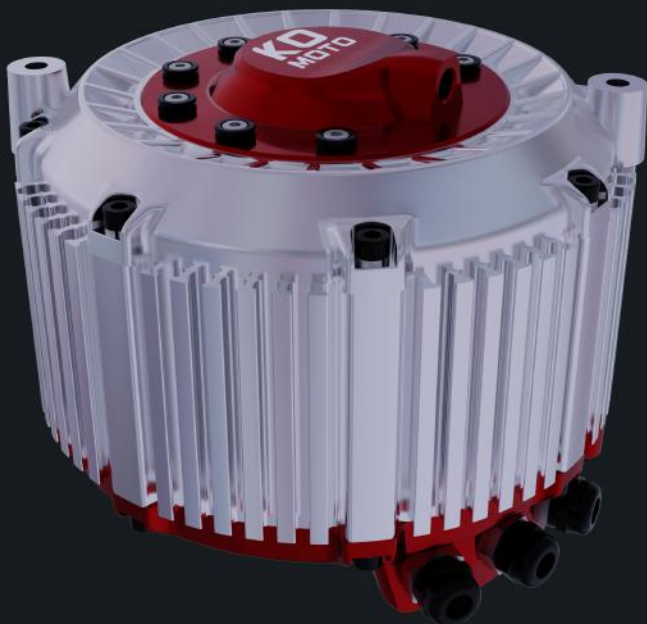


UNBOXING & INSTALLTION VIDEO

For a full video installtion guide for the motor and controller please visit www.ko-moto.com/installationguide.



MOTOR SPECIFICATION



MOTOR CASING FEATURES

DIRECT DROP IN REPLACEMENT FOR SUR-RON- AND SEGWAY X260.

MOTORWEIGHT (INCLUDING WIRES) - 10KG-

MOTORCYCLE GRADE ANODIZED FINISH FOR MAXIMUM-DURABILITY AND HEAT DISPERSION (NOT POWER COATED).

7075 AIRCRAFT GRADE BILLET MACHINED END CAPS AND SENSOR CAP.

STAINLESS STEEL WATER PROOF PHASE AND SENSOR WIRE GLANDS.

INTERNAL MOTOR FEATURES

INTERNAL MAGNET MOTOR (IPM) KO DEISGNEED MANUFACTURED ROTOR / STATOR.

STATOR DIMENSIONS - 160mm X 53mm.

WORKING VOLTAGE - 48V-100V.

COLD ROLLED SAE 1045 STEEL SHAFT

CUSTOM KO DESIGNED AND PATENTED ROTOR AND HEAT SINK DESIGN ALLOWS HEATSOAK DISSIPATION ON THE ENDS OF THE STATOR.

KO DESIGNED AND PATENTED INTERNALS PRESSURE EQUILIZATION SYSTEM COMPATIBLE.

KO DESIGNED AND PATENTED CRYO COLD AIR INJECTION SYSTEM COMPATIBLE.

KO DESIGNED AND MANUFACTURED CRYO ROTOR/ STATOR ANTI CORROSION COATING.

INDUSTRY LEADING SKF BEARING AND SEALS FOR THE LOWEST ROLLING RESISTANCE AND EFFICEINCY.

JAPANESE SOOURCED 0.15 NIPPON STEEL STATOR / ROTOR LAMINATED.

INDUSTRY LEADING 1.5mm AIR GAP.

INDUSTRY LEADING 150°C / 302F SH50 NEO MAGNETS.

HAND WOUND 220°C HIGH TEMP COPPER WINDINGS.

CUSTOM WATERPROOF DEISGNEED (IP69) AND MANUFACTURED HALL SENSOR WITH 12 MONTH REPLACEMENT WARRANTY AGAINST WATER / MOISTURE DAMAGE.

MOTOR OPERATING SPECIFICATION

POWER - 35KW (BASED ON THE MOTOR RATING, YOUR BATTERY WILL DETERMINE THE POWER PRODUCED BY THE MOTOR)

MAX TORQUE @60V - 58NM - (USING SUR-RON 60V STANDARD BATTERY)

MAX STABLE ROTOR RPM - 13,000RPM

MAX IMUM RPM @60V - 5,200PRM

MAX EFFICIENCY 97%





INSTALLATION INSTRUCTIONS

From here you can read detailed installation instructions along with pictures. If you would prefer to watch the installation video you can find this at www.ko-moto.com/installation guide. Please follow these installation instructions carefully to ensure correct operation of your KO Moto product.



DANGER

Before you perform any installation work on your bike please ensure to disconnect the power system / battery and ensure that the fuse position is switched to off. Working on the bike while it is still powered presents a risk of damage, or possible injury. Prior to reconnecting the battery ensure you have the fuse switched to the off position.

MOTOR INSTALLATION



STEP 1 - SETTING UP



To install your new motor you will need to turn your bike upside down or raise it on a table for better access. You will also require a selection of allen keys, screw drivers, a ratchet set and torque wrench. You may also require a clamp to remove the pulley off of the existing motor to fit onto your new motor.

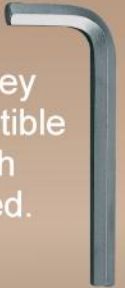
STEP 2 - REMOVE BASH GUARD

To fit your new motor you have to remove the old one. The first step in this process is to remove the bash guard

Please remove the bolts marked with the appropriate allen key. This will allow the bash gaurd to detach from the rest of the frame

Area to remove highlighted in red

Allen key or compatible wrench required.



opposing face with bolts highlighted

Place the bashguard to one side making note of the orientation of the silver clips and the bolts used to fasten it.

once you have removed your bashguard please proceed to the next step.

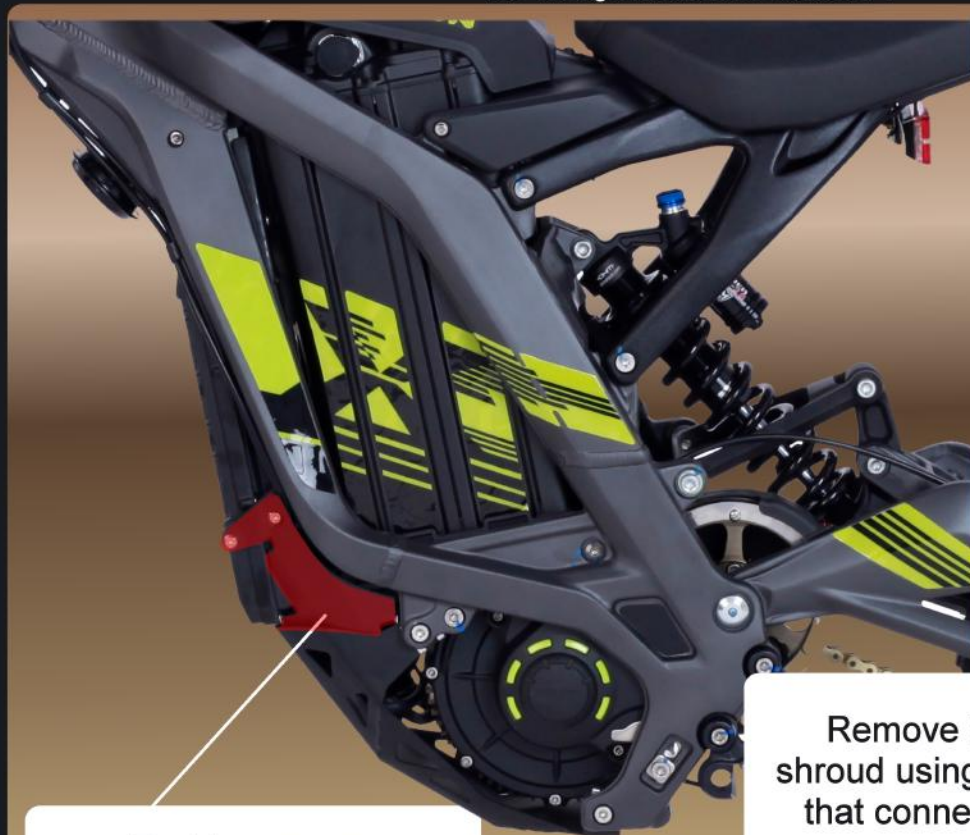


DANGER

The Sur-Ron and Talaria are heavy trying to lift the bike over by yourself may result in injury, or damage to your bike. Always get another person to help you turn the bike over.

STEP 3 - REMOVE PLASTIC SHROUD

The next part of the old motor removal is to take off the thin plastic shroud that is found between the bashguard and the controller .



Part to remove



Area to remove highlighted in red



screwdriver
& allen key
or compatible
wrench
required.

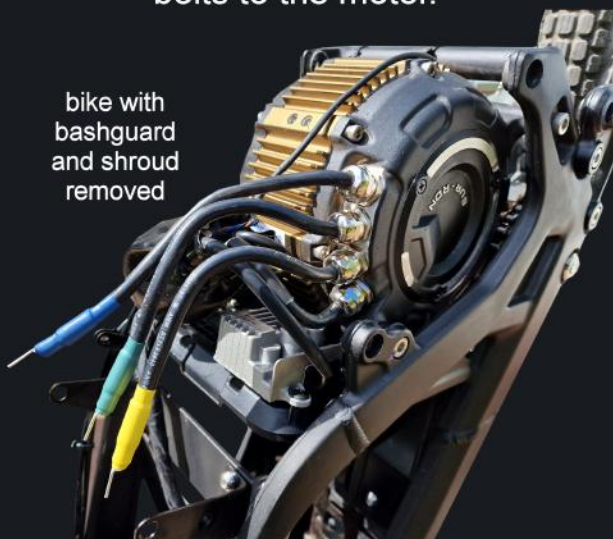
Remove bolt either side of the plastic shroud using an Allen key. Remove screws that connect the shroud to the controller using a screwdriver

STEP 4 - REMOVE CONTROLLER WIRES

Once the plastic shroud above has been removed and set aside the next step is to remove the phase connectors from the controller. (For a full guide on how to remove the controller please see the controller installation guide).



Once the controller phase wires have been disconnected you should now be able to start removing the bolts to the motor.



bike with
bashguard
and shroud
removed

STEP 5 - REMOVE THE MOTOR CAP

Now you have access to the motor it is time to start releasing the bolts that hold it in place.



Loosen the highlighted bolt to allow the tension lever to be removed. This will allow you to remove the motor pulley cover.



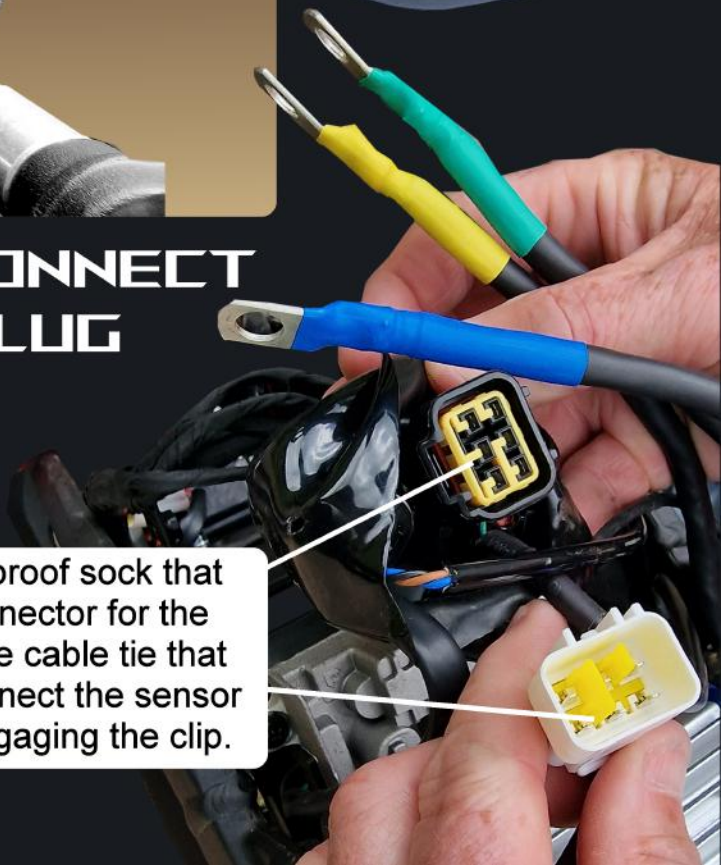
screwdriver & allen key or compatible wrench required.

To remove the shaft cover use an allen key. once the bolts are removed lift the cover off and set to one side with the bolts.



STEP 6 - DISCONNECT THE SENSOR PLUG

Locate the waterproof sock that contains the connector for the sensor and cut the cable tie that fastens it. Disconnect the sensor cable plug by engaging the clip.



STEP 7 - REMOVE THE MOTOR

Now you have access to the motor it is time to start releasing the bolts that hold it in place.



Allen key
or compatible
wrench
required.

Remove motor retaining bolts ensuring to note location of spacers and washers. Retain these to fit the new motor. When removing the bolts ensure to support the weight of the motor to avoid damage.



Bolts with spacer from
opposing face
(Pulley side)

Once the motor is released
you can pull off the belt and
leave it in position to be fitted
to the new motor.

you can now completely
remove the old motor.

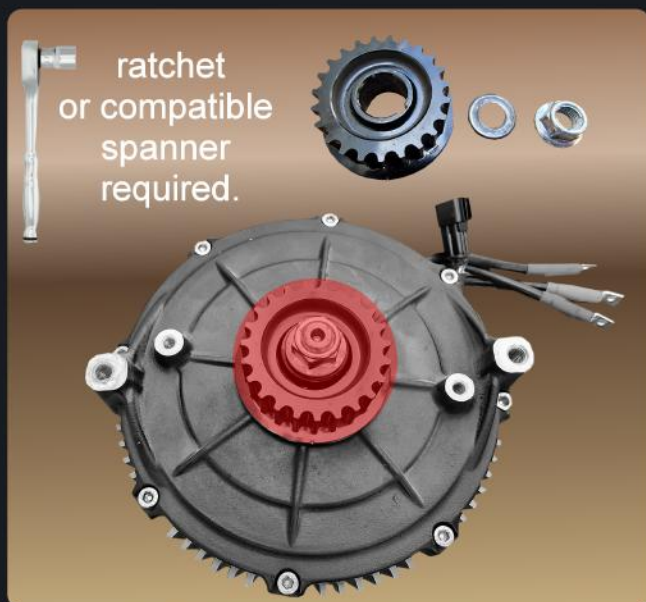
When you have removed the old motor there is just
one step before fitting the new motor to your bike.
When you have removed the old motor we do
recommend checking the belt for signs of wear
prior to fitting the new motor.

Pulley must be removed and fitted to new motor



STEP 8 - REMOVE THE PULLEY

The next step is to remove the pulley from the old motor.



The pulley can be removed using an appropriate ratchet or spanner. This can be a little tricky as the bolt is normally very tight. We would recommend clamping the pulley with rubber grips to allow sufficient force to be used without damaging it.

Once you have removed the pulley you can prepare the new motor by removing the bolt on the shaft and also take off the protective cover on the shaft. This will reveal the body of the shaft and the spline that is required to fit to the pulley you have just removed.



Slot the pulley on to the new motor and use the bolt provided to tighten the pulley down. It is very important to ensure that you are using appropriate threadlock on the shaft at this stage. This will keep the bolt on the pulley secure during use.



STEP 9 - FIT THE KO MOTOR

Tip - when re-assembling your bike refer to the manufacturers torque settings for your bolts. Always use threadlock to ensure the bolts stay secure.



Once you have fitted the pulley to your new motor you can now start getting it into place. Perform a test fit. Secure the motor to the chasis using the bolts and spacers from the old motor. Ensure the belt is connected and you adjust the tension to an appropriate level. Once a test fit is complete you can then do a final fit. Remove the bolts and apply appropriate threadlock to each to ensure a secure fit.

Tip - When adjusting the belt tension it is very important not to overtighten the belt. This will significantly reduce the lifetime of the belt and may cause it to snap.

STEP 10 - MOTOR POSITION & BELT TENSION



Ensuring you have the right tension on your belt is very important. To do this you need to loosen the bolt highlighted and slide the motor up and down engaging the lever until the correct tension is achieved.

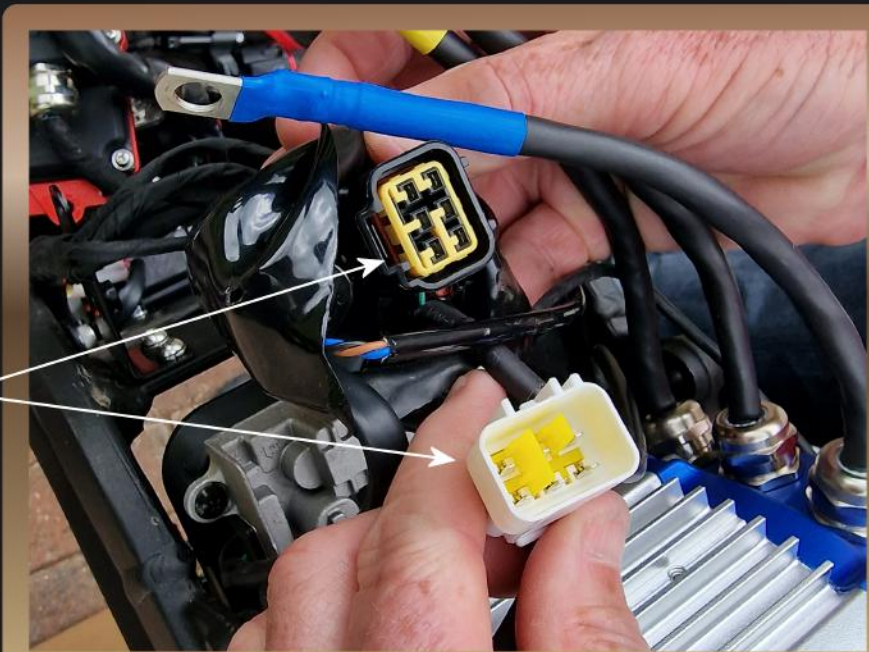
Please make sure the belt is not too tight to test this you can use your finger to push the belt to see how much it moves. The belt should move a little bit (a few mm) in each direction. If it is too tight then you need to loosen it up a little.

STEP 11 - RECONNECT THE SENSOR CABLING.



Once you have achieved the correct belt tension you can reconnect the sensor cabling and seal the waterproof sock back up using a cable tie.

Tip: Ensure the sensor connectors fully click into place before sealing up the waterproof sock.



When closing up the waterproof sock please ensure that the connectors are fully covered prior to tightening it up with a cable tie.



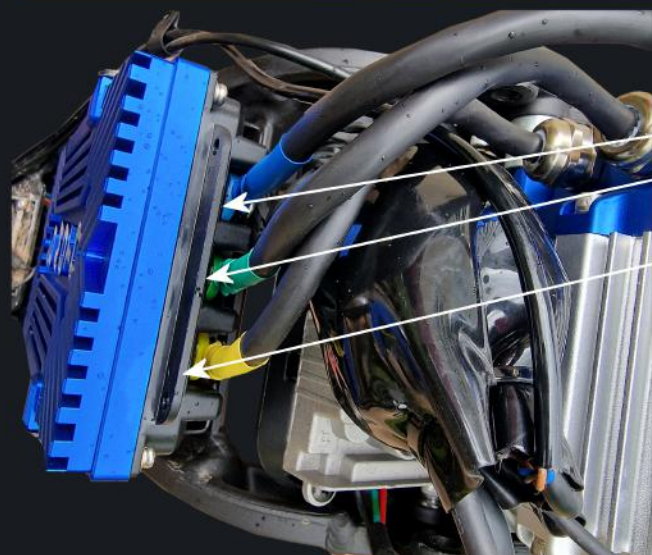
The next step in the process is connect up the phase wires of the motor to your controller.

STEP 12 - WIRE AND MOUNT THE CONTROLLER

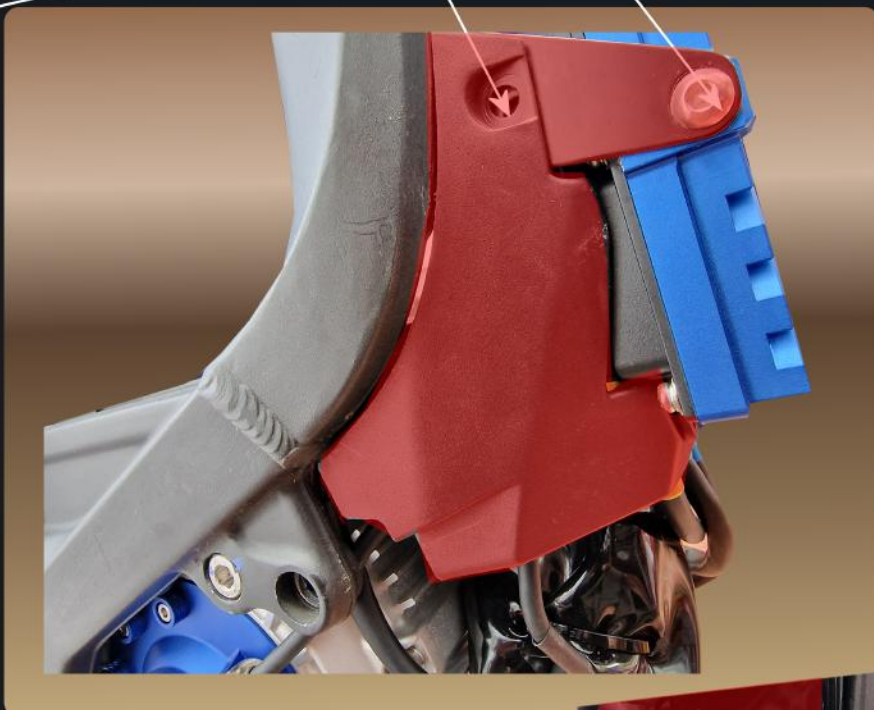


When you reconnect your controller it is very important to note that all of the connectors are colour coded. Please ensure that cables are fitted to the corresponding correct colour to prevent malfunction or damage to the unit.

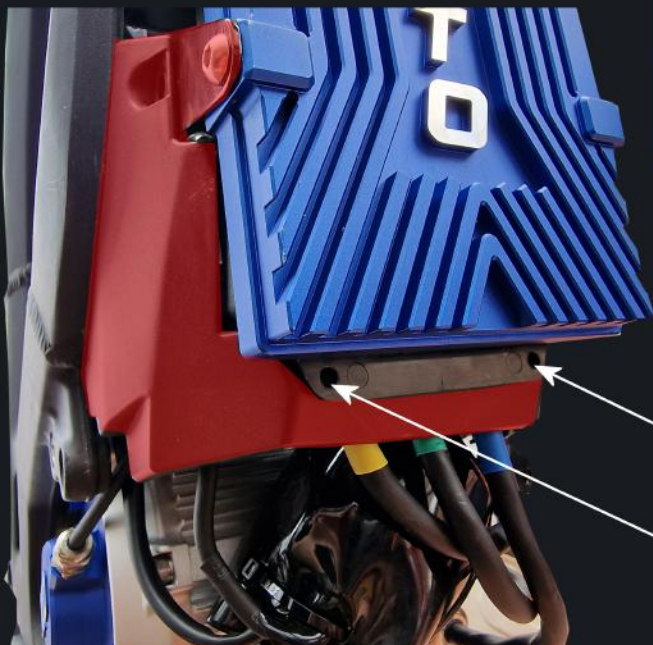
Once the controller is connected to the phase and power wires you can re-mount it to the frame of the bike using the fittings provided. There are several mounting points for this as indicated previously in the guide. When refitting the controller pay careful attention to the cabling so that it is not snagged or pinching when everything is closed up.



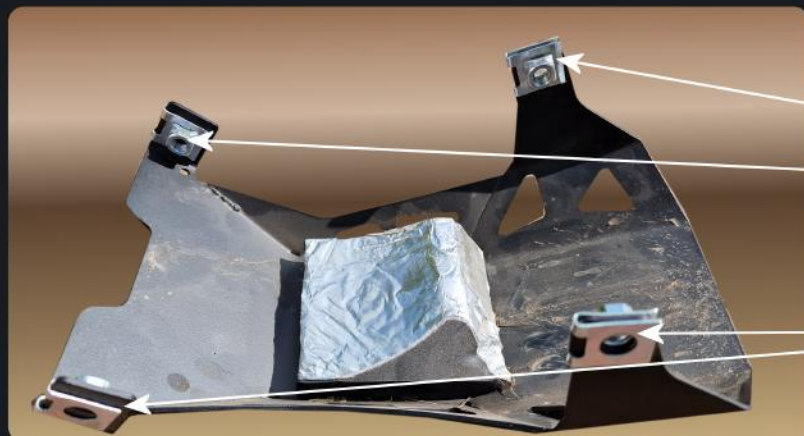
Prior to fitting the plastic cover between the bashguard and the controller ensure your waterproof sock and all cabling are tidy and free from snags (use cable ties where appropriate).



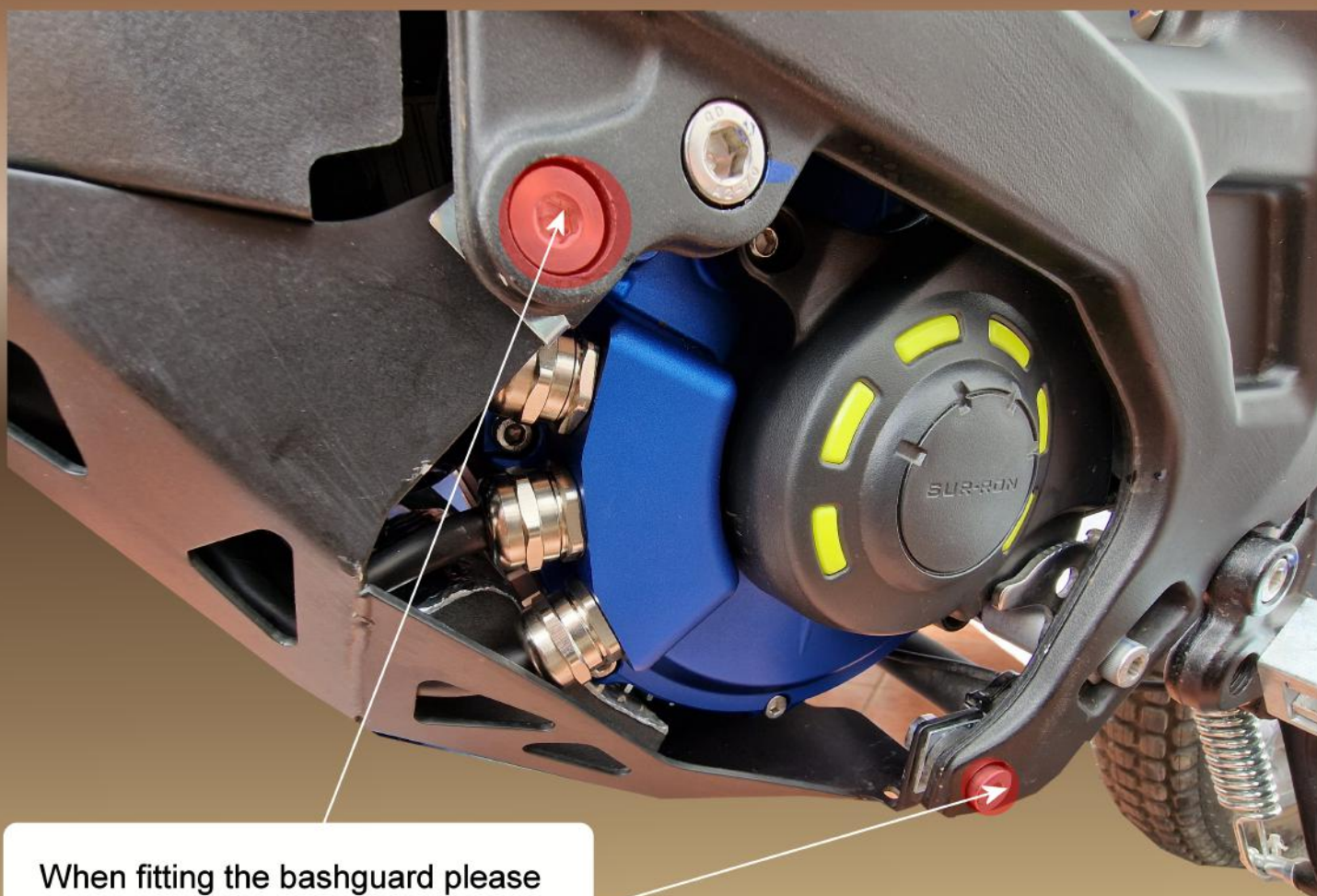
When fitting the controller we would recommend starting with the top and working your way downwards. Please note that the controller mounts over the plastic protector at the bottom.



STEP 13 - REFIT THE BASH GUARD



Before you reconnect your bash guard please ensure that you have the connecting clips located in the right position as shown in the image to the left. This will make things easier to fit and save time adjusting them.



When fitting the bashguard please note that the phase wires of the motor may present a little resistance these can be manipulated with the correct amount of force to get the bash guard in position. Prior to tightening everything down please make sure that there is nothing touching or rubbing the motor or its connectors.

Once the bash guard is fitted and secured your assembly work is now completed and you are ready to begin configuring and updating the controller. Please visit our website www.ko-moto.com to download the software and view the software guide. If you require more information regarding the fitting of the motor or controller you can contact us directly at info@ko-moto.com.



CONTROLLER SPECIFICATION



CONTROLLER CASING FEATURES

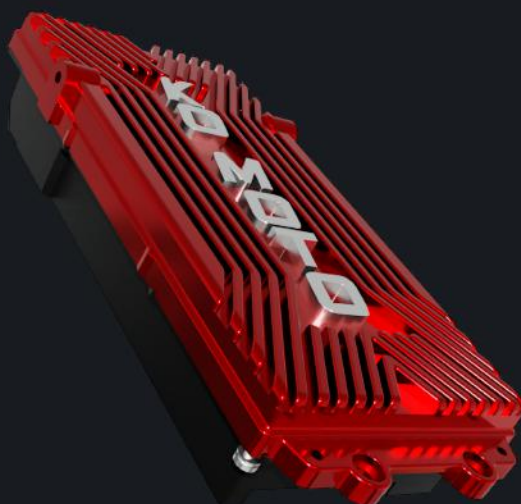
CNC HEATSINK DESIGN

FULLY MOULDED PLASTIC REAR.

IP76 WATER INGRESS PROTECTION.

FACTORY FIT USING THE SAME FIXINGS
AND CABLING AS THE STANDARD SUR-RON AND
TALARIA BIKES.

32 PIN REMOVABLE CABLING FOR EASY SWITCH OUTS.



CONTROLLER PERFORMANCE

INPUT VOLTAGE RANGE - 40V-99V

WORKING VOLTAGE 48-84V

MAX PHASE CURRENT - 800A

MAX CURRENT - 370A

PEAK OUTPUT POWER - 35KW

INGRESS PROTECTION - IP67

OPERATING TEMPERATURE
-25-80DEGREES CELSIUS

MAXIMUM EFFICIENCY > 98%

The KO Controller is supplied with supporting software for PC allowing the end user to tune the bike to their specifications. Continual development of this software will take place to cater to the needs of the community with regular updates posted on this site.

STEP 1 - DROP THE BASHGUARD

To fit your new controller you have to remove the old one. The first step in this process is to drop the bash guard.

screwdriver
& allen key
or compatible
wrench
required.



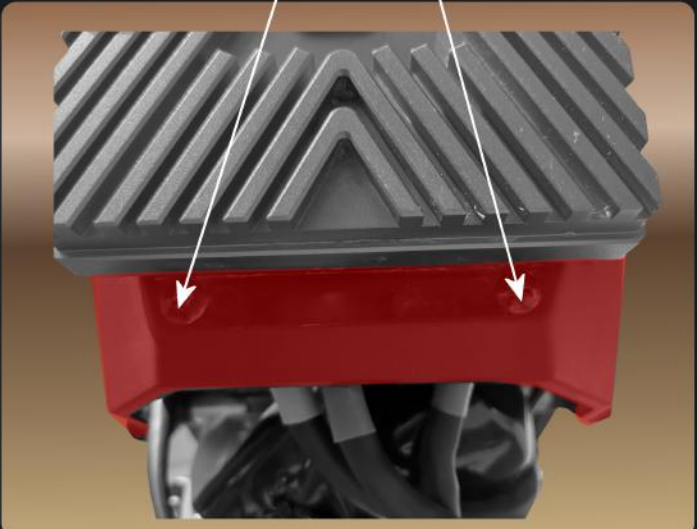
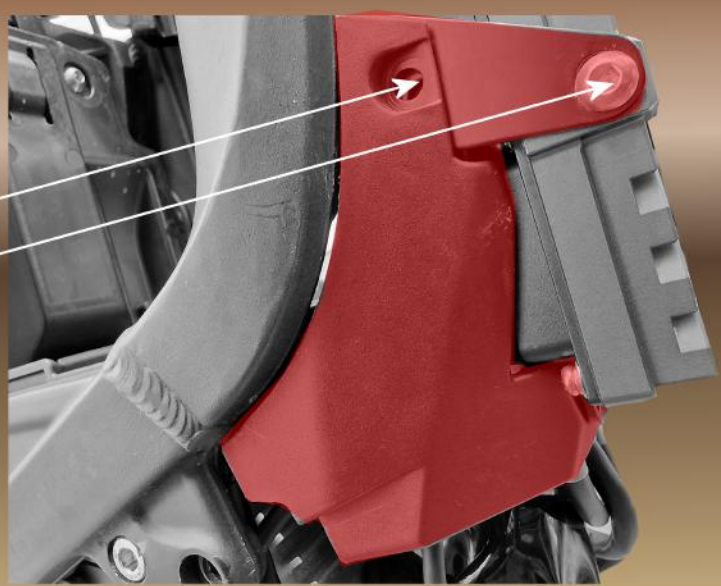
Area to remove
highlighted in red

Remove the highlighted bolt to
allow the bash guard to drop .
This will then allow you to remove
the plastic covering between the
bash guard and the controller.

once you have dropped your bashguard
you are now ready to remove the plastic
cover that will allow you access to the
bottom of the controller.

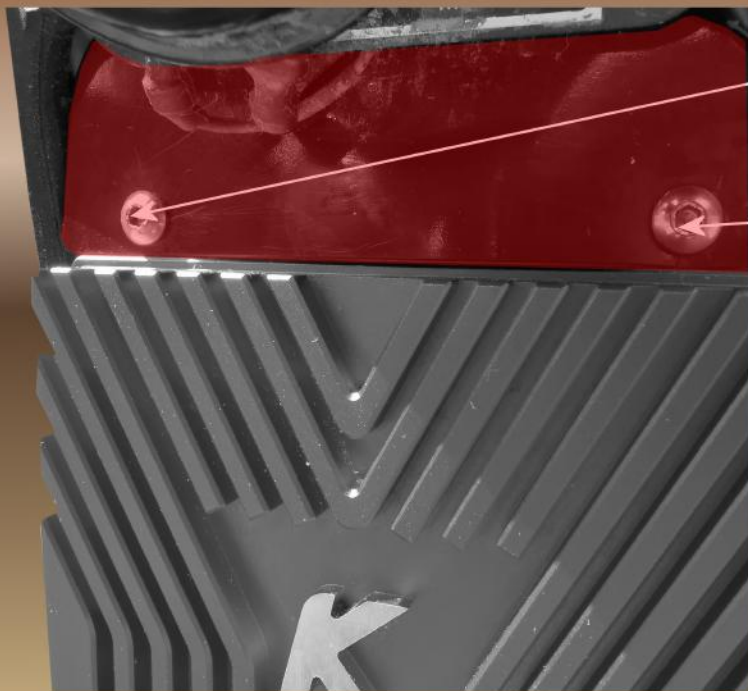
STEP 2 - REMOVE THE PLASTIC COVER

Remove the indicated bolts and screws
to release the plastic cover and give
access to the bottom of the controller.



When removed the
plastic cover should
be put to one side
for re-assembly.

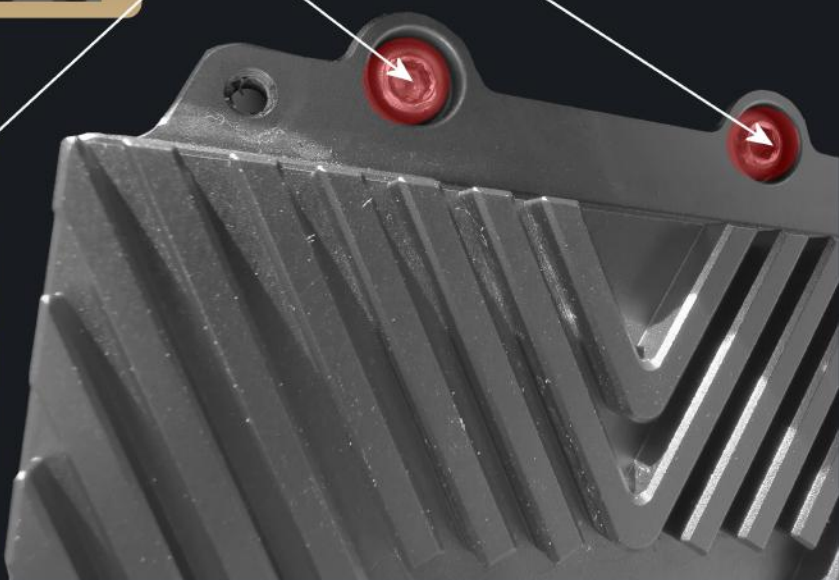
STEP 3 - REMOVE THE FINAL BOLTS SECURING THE CONTROLLER



Remove the bolts that hold the plastic cable tidy at the top of the controller.

Allen key or compatible wrench required.

Once you have removed the plastic cable tidy you will see a further two bolts which are mounting the controller to the frame of the bike. Remove these and the controller will drop away from the frame, allowing access to the power cables and motor phase wires.

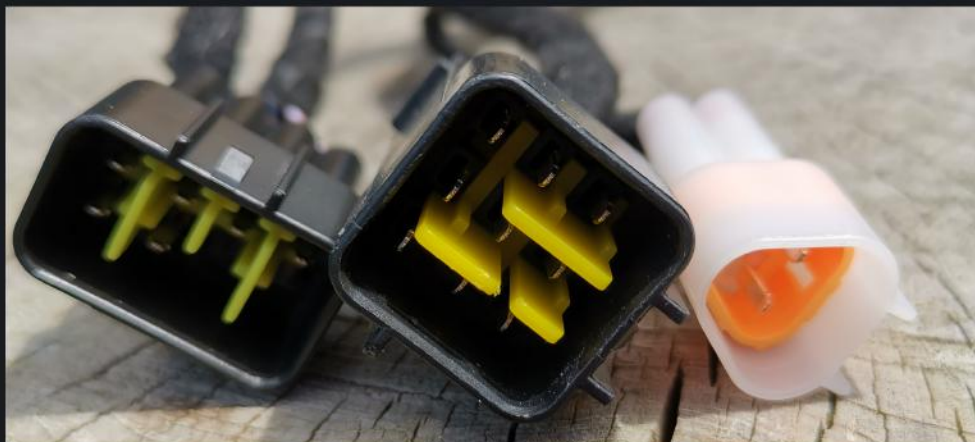


STEP 4 - REMOVE THE HIGHLIGHTED BOLTS TO GAIN ACCESS TO CONTROLLER CABLING



Remove the bolts highlighted on either side of the bike. This will allow you to drop the panel inside the battery compartment and allow access to the connectors for the controller (which are situated under the ignition switch). There are three connectors to remove.

STEP 5 - DISCONNECT CONTROLLER CABLING FROM YOUR HARNESS.

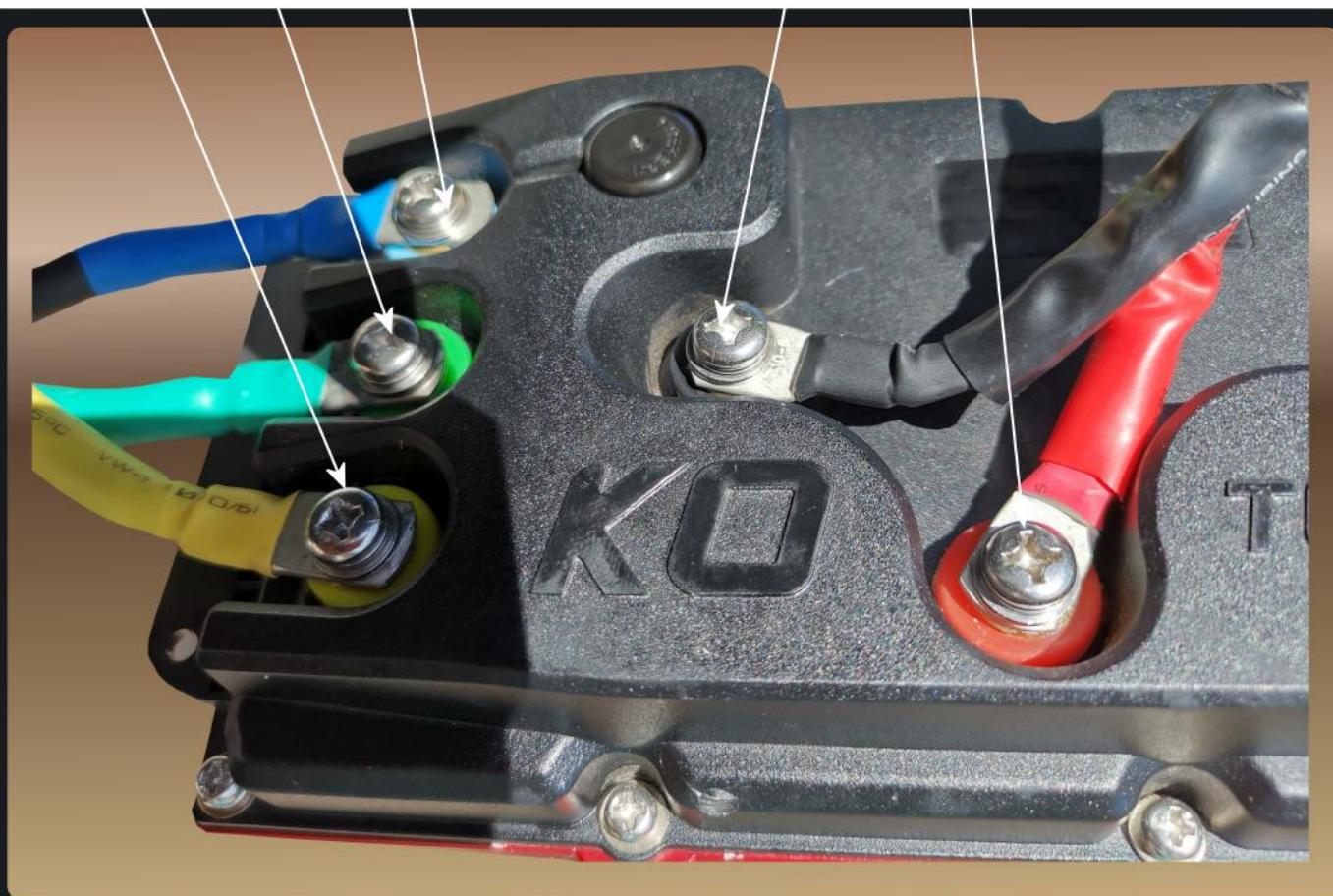


To disconnect the controller cabling you need to unclip the three connectors that are attached to the bikes wiring harness. The cables from our controller will be a direct like for like replacement, using the same connectors.

Once you have removed these connectors and fully finished the next step you should connect up the new controller using the harness provided and the same method in reverse.

STEP 6 - REMOVE MOTOR PHASE AND POWER CABLES AND CONNECT YOUR NEW CONTROLLER USING THE SAME METHOD.

The phase and power connectors are colour coded for ease of use. When connecting the new controller up please ensure that you use the bolts and washer provided and that each cable is secured prior to remounting the controller



STEP 7 - ONCE YOU HAVE CONNECTED THE CABLING RE-MOUNT YOUR CONTROLLER

Once you have connected your controller up, you can now begin the process of re-mounting it and replacing the covers and bashguard.

At this stage we personally like to use a small amount of blue loctite on the bolts to ensure they do not work loose.

Once you have fitted everything back in place you should have a final visual inspection to ensure that no cabling is pinching and everything is seated correctly.

For more information on fitting the controller or the motor please email us on info@ko-moto.com, or message us on [facebook.com/kotechnologies](https://www.facebook.com/kotechnologies)

YOUTUBE INSTALLATION GUIDE



We also have a full video installation guide available at ko-moto.com/installationguides along with software guides and downloads for your new Ko Moto Controller.



STEP - 9 DOWNLOAD KO MOTO SOFTWARE FOR PC AND ANDROID

Head over to ko-moto.com/downloads to download the controller software and android app