



Fitting Guide for HL/G30 Hub Kits

Important: For your own safety you must read this manual before attempting to fit this kit. You must also ensure that you fit the kit in strict accordance with the instructions in this manual.

Before you start the installation of your kit, please read the following:

This kit is intended to be fitted by someone who is competent and experienced at fitting electric kits to bikes. If you are not experienced and/or lack the necessary tools to complete any of the procedures in this manual, you should seek the advice of a professional who can fit the kit for you. If necessary, call us on [01702 435566](tel:01702435566) or email us at support@wooshbikes.co.uk and we will try and put you in touch with someone in your area that has the necessary expertise to properly fit your kit. You will of course need to pay for the technician to install your kit, these costs are not covered by Woosh Bikes.

Warranty Terms:

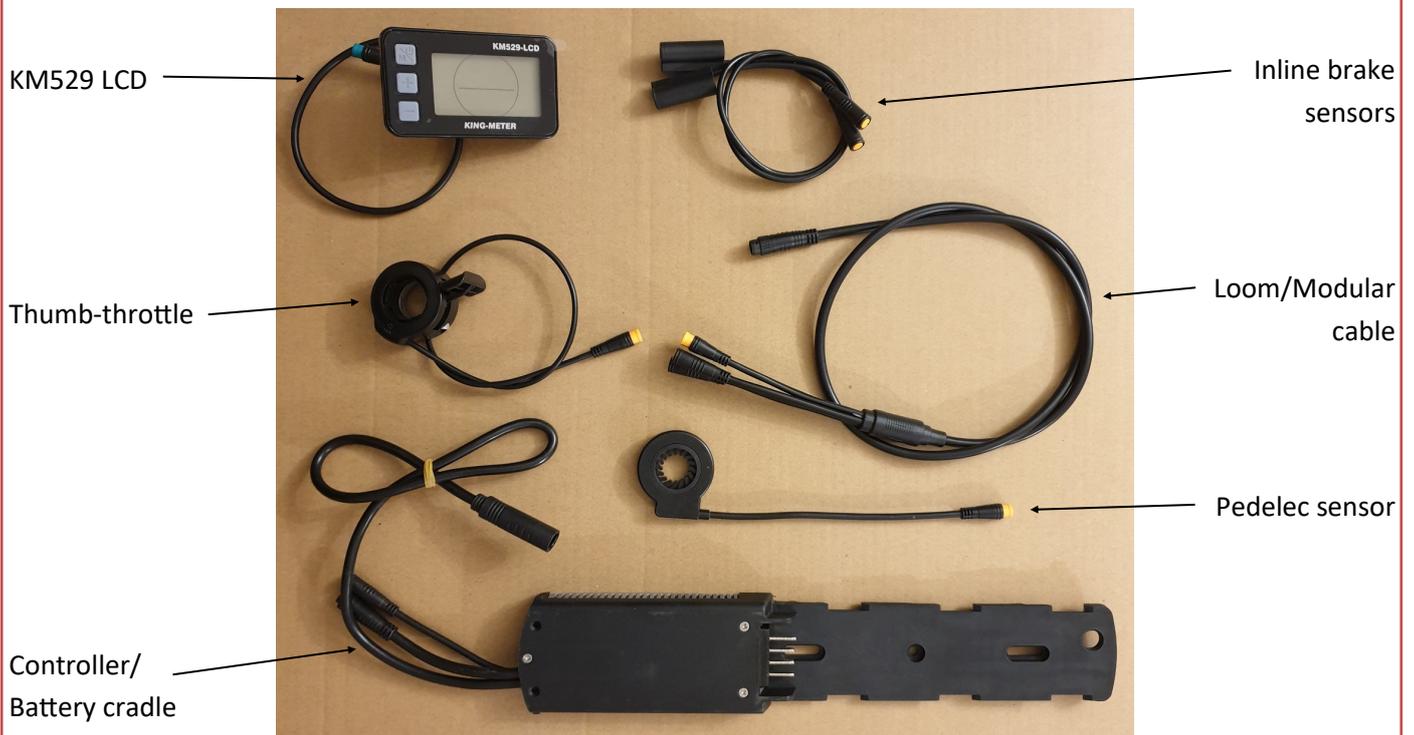
If your kit is fitted by a professional installer, it will be covered by our standard one year warranty, which means that in the event of a failure, you would first need to have the person that installed your kit confirm the issue and likely cause, then you (or the installer) would need to contact us and provide us with the details of the fault. If the issue cannot be resolved over the phone or via email, then you would need to return the faulty part to us at your expense. We will then repair or replace the faulty part and send it back to you at our expense. If the kit was not fitted by a professional and/or the failure that has occurred is due to poor/incorrect installation, or the kit has been used improperly, the warranty will be voided.

What's in the Box

Ensure that you have all the parts listed below before going any further, if there are any missing parts, contact us on 01702 435566.

The motor kit comprises of a motor wheel with hub motor, a battery cradle with integral controller, a battery, a charger, modular cable/loom, pedal-assist sensor, a thumb throttle, brake sensors and a King-Meter KM529 LCD. Ensure that you have all of these items, a photo of the items is show below so you can easily identify each of the parts. Not shown in the photo below are the battery itself , the charger, and the motor wheel (which will differ depending on the type ordered), ensure you have the complete kit before you start.

HL Kit



G30 Kit

As above but with different battery and cradle



Installation of the various Pedelec Assist Sensor (PAS) types

There are three types of PAS that can be used, two that fit on the right side of the bike between the chain-ring and frame, and the left-side sensor, which slots into the end of the bottom bracket.

The **right-side PAS** kit consists of two parts, these are the sensor itself and the PAS disc. There are two different options for the disc/magnet-ring part of the PAS kit (see below-right), depending on whether you have a square taper bottom bracket or something else. In all cases, the sensor ring is mounted behind the lip of the fixed cup, or behind the right bearing shell (in the case of a BB with external bearings).

The PAS disc for square taper bottom brackets is simply slid down the axle so that it is close to, but not touching the sensor. For all other types of bottom bracket, you would need to use the alternate disc which comes in three parts—the two halves of the magnet ring, and the support/mounting plate. Ideally, the mounting plate is cable-tied to the smallest chain ring (using the loops around the outside of the plate), and the two halves of the magnet ring are then glued to the plate. In some cases, there is not always enough room to do this, and the ring needs to be bonded directly to the smallest chain ring and/or you may need to use the **seat-post mounted sensor** instead—see next page.



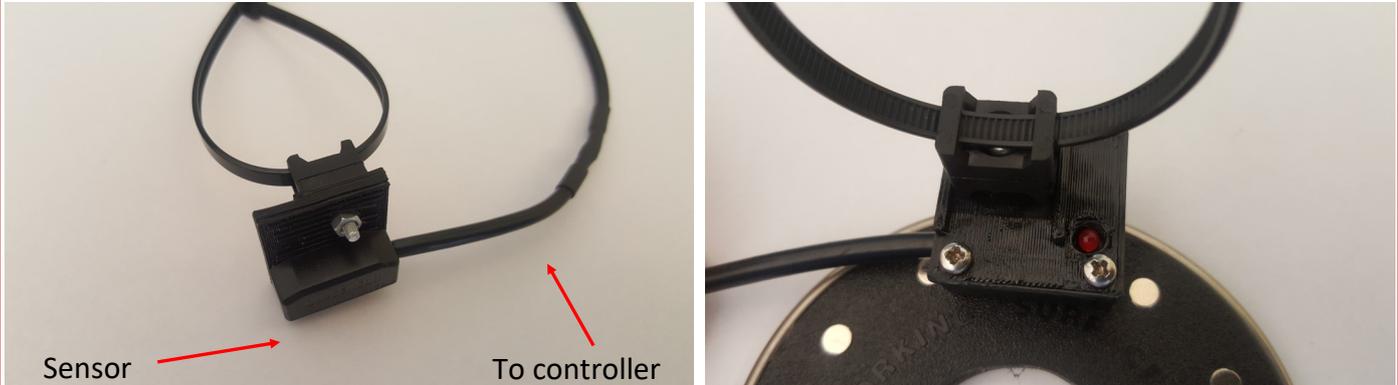
Installation Notes:

You need to ensure that the disc is the correct way around on the axle. The disc should be fitted such that the arrows on the disc are on the left side (facing the sensor). For other non-square taper bottom brackets, the two halves of the magnet ring only fit on the mounting plate one way, so you can't get it wrong.

With external bearing shells, it is sometimes necessary to fit a spacer behind the shell, we can supply these, but in many instances, you can just take one from the left side and move it over to the right.

Seat-post mounted PAS:

The seat-post mounted sensor is shown below and is simply cable-tied to the lower part of the seat tube. If the sensor isn't sitting back far enough, it is possible to remove one of the plastic spacers on the rear of the mounting buy simply undoing the bolt and then removing the lower of the two spacers. The sensor should be positioned as shown below-right, so that the magnets pass by the correct part of the sensor.



Left-side pedelec assist sensor (PAS):

The left-side PAS slides down the axle on the left side of the bottom bracket and meshes with the splines. This PAS is not suitable for *all* square-taper bottom brackets, if you have a plastic cup (as opposed to a metal cup), the left-side PAS will likely not be suitable. Although they look very similar, the left-side PAS will not mesh with the plastic cup.

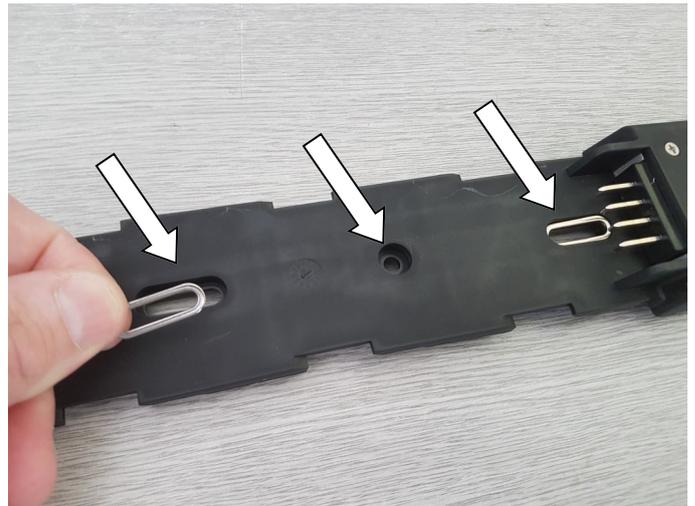
The left-side PAS requires a gap of 7mm between the rear face of the left crank and the bottom bracket. If it is less, you may need to shave a little off the rear face of the crank to avoid crushing the PAS when you re-fit the crank. Alternatively, we usually have in stock 127mm bottom brackets that in most cases would give you the space you require.



HL Battery/Controller

The HL battery-cradle/controller included with this kit mounts on your down-tube, where your bottle holder would normally be. If the bike does not have these fixings or they are not in a suitable position, you will need to fit riv-nuts (supplied) to allow you to mount the battery cradle. Ensure that you mount the cradle high enough along the down-tube so that the cradle doesn't foul on the chain-ring. You will also need to ensure that there is sufficient clearance at the top end of the battery, the battery needs to be slid upwards a little when removing it. Be careful not to mount the cradle too low, or you may find that the battery hits the seat-tube before it's fully engaged on the cradle. The space required is 38cm x 10cm.

Don't forget to use the supplied washers and rubber supports (shown below). If you bolt the cradle to the frame without using the washers/supports, the plastic will deform and eventually break.



Once the cradle has been secured to the frame, fit the battery in place and check that it fits correctly. Next, remove the battery from the cradle and continue on with the installation of the kit. **Do NOT continue the installation with the battery in place.** You should only re-fit the battery when all leads have been correctly terminated/secured and the kit installation is complete. If you leave the battery attached, you may accidentally short something and damage the battery and/or kit components.



Motor Wheels:

There are several different options for the motor wheel, front, rear, 26", 700c, cassette hubs, freewheel hubs etc. We would normally have identified the motor/wheel that would best suit your bike before the order was placed.

G30 Battery/Controller

The G30 battery-cradle/controller included with this kit mounts on your down-tube, where your bottle holder would normally be. If the bike does not have these fixings or they are not in a suitable position, you will need to fit riv-nuts (supplied) to allow you to mount the battery cradle. Ensure that you mount the cradle high enough along the down-tube so that the cradle doesn't foul on the chain-ring. The battery requires a space of 18cm x 7.5cm

Don't forget to fit the rubber spacers/supports (shown below).



Once the cradle has been secured to the frame (using the supplied bolts), fit the battery in place and check that it fits correctly and that the lock is functioning. Next, remove the battery from the cradle and continue on with the installation of the kit. **Do NOT continue the installation with the battery in place.** You should only re-fit the battery once all of the cables have been correctly terminated/secured and the installation of the kit is complete.



Motor Wheels:

There are several different options for the motor wheel, front, rear, 26", 700c, cassette hubs, freewheel hubs etc. We would normally have identified the motor/wheel that would best suit your bike before the order was placed.

85SX

Important note for purchasers of the 85SX motor wheel

You must **NOT** use rotor bolts longer than **10mm**. Longer bolts will protrude too far into the motor housing and will damage the motor.

Motor Wheel

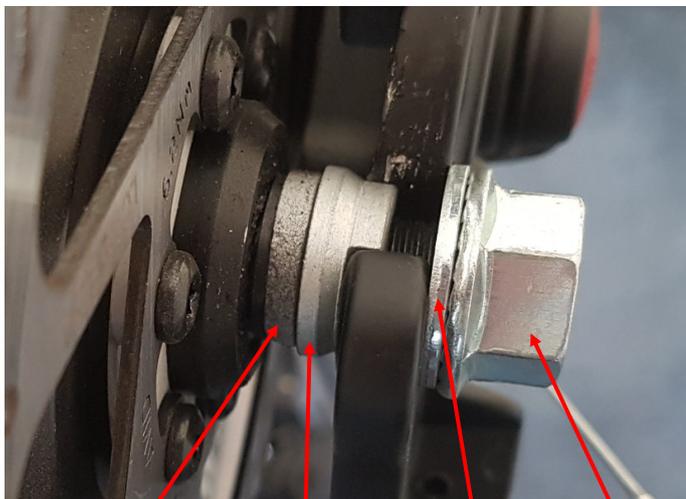
Swap the tyre, tube and freewheel/cassette (in the case of a rear wheel) from your original wheel over to the motor wheel.

The wheel comes with the nuts and washers that you will need, they should normally be fitted in the order shown below, but sometimes it is necessary to re-arrange them, or to fit additional washers to ensure the wheel is correctly aligned. The anti-rotation washer for instance, can be flipped around and fitted on outside of the drop-outs if necessary. If you have disc brakes, loosen the two bolts indicated below-left before fitting the wheel to the bike. This will allow you to make any minor adjustments immediately. If you are experienced, you can remove the callipers if you prefer and re-fit them later. Don't forget to tighten the calliper bolts after the wheel is correctly fitted and the rotor correctly aligned.



The normal order for the nuts/washers is as below-left, but as mentioned above, it may be necessary to re-arrange them to suit your particular bike. On the drive-side, try to leave enough space so that if the chain were to come off, it won't get jammed between the frame and cassette/freewheel.

Ensure that the motor cable exits downwards, and also ensure that the metal coil is far enough down the cable so that it protects the cable from the edges where it exits the spindle. It can be slid down further by hand if it's not in the correct position.



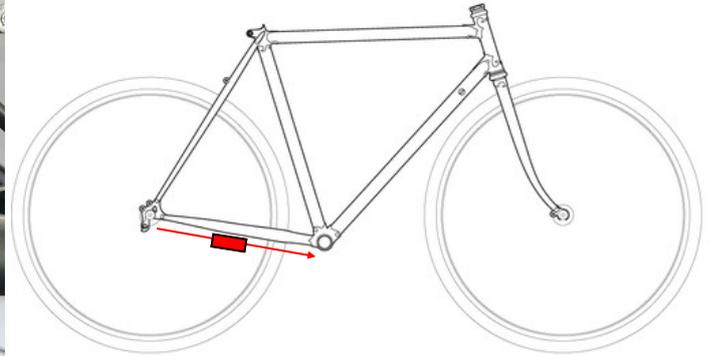
Thick washer Torque washer Thin washer Nut



There is a cut-out where the cable exits the axle. This cut-out and the cable should face downwards towards the ground. In the case of a **front wheel**, the cable should also **exit downwards before looping back up** towards the fork. This is to prevent water collecting at the aperture.

Motor Wheel cont...

To complete the installation of the wheel, fit the nut covers. The left side cover simply pushes on, the drive side cover should be slid down the cable and fitted as shown below-right.



The red arrow on the diagram above-right shows the typical route for the motor cable (in the case of a rear hub conversion), with the quick-release connector (in the cable) indicated by the solid red box. Remember to properly secure these cables to the frame using cable-ties before riding the bike.

Cable orientation:

It is possible to fit the front motor wheels the wrong way around, and so to avoid any mishaps, please refer to the table below, and ensure that the wheel is fitted correctly. For all **XF07 front hub** installations, the wheel should be fitted such that the motor cable exits the hub on the right side.

Motor Wheel	Orientation
XF07 Front Hub	Cable exits the right side of the hub
XF08 Rear Hub	Cable exits the right side of the hub
SWX02 Rear Hub	Cable exits the right side of the hub
DGW22C Rear Hub	Cable exits the right side of the hub
SX85 Rear Hub	Cable exits the left side of the hub
G060500DC Rear Hub	Cable exits the right side of the hub
Q70 Front Hub (Brompton Kit)	Cable exits the left side of the hub

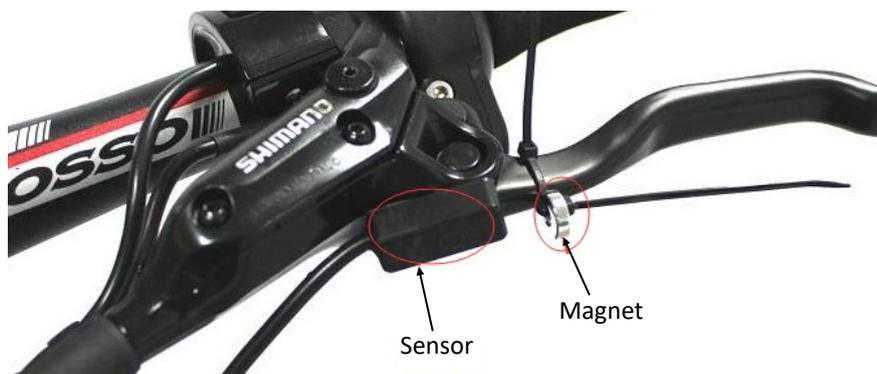
Handlebar Components:

The display would normally be mounted on the left side. If you decide not to fit the throttle (a lot of people don't), then it is not necessary to fit brake cut-outs. If you are using throttle, you **will** need to fit one of the three types of brake cut-outs: Levers (for cabled brakes), inline sensors (for cabled brakes), hydraulic sensors which can also be used for cabled brakes in situations where the gear shifter and brake levers are a single unit.

To fit the thumb-throttle & brake levers (if being used), slide the grips off, loosen the existing components, and remove any that are being replaced, then slide the thumb-throttle (and levers if being used) in place and then re-tighten the bolts to secure them in place. The display has a clamp, and so should be fitted after the other components are in position. The throttle is universal and can be fitted to either side.



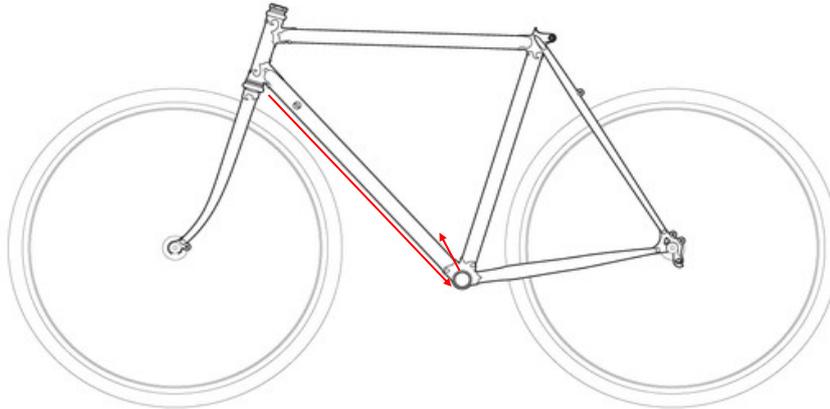
If you have hydraulic brakes or brake levers that have an integral gear shifter, you will need to use the hydraulic sensors. As the magnet moves away from the sensor, the cut-out is activated, it should be fitted as shown below.



Inline Sensors: Feed the brake cable through as shown below-right. Be sure to use the plastic insert between the sensor and barrel adjuster.



The next step is to run the modular cable (for the LCD, throttle and brake cut-outs) from the front of the bike, to the controller .



Ensure that there is enough play in the cables so that they do not get stretched or pulled as the handlebars are rotated.

The connectors are all colour coded and should be mated with the matching colours on the modular cabling. There are arrows on each connector which must be lined up before pushing the connectors together. In some instances, the cable from the LCD may be green, this mates with the black/green connector.



Ensure that the arrows line up on both sides before pushing the connectors firmly together, be careful with them and don't force them or you may bend/damage the pins. Also be sure to mate the cables with the matching coloured connectors.

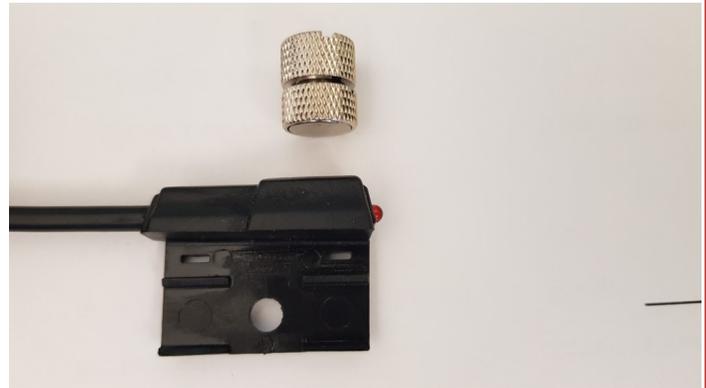
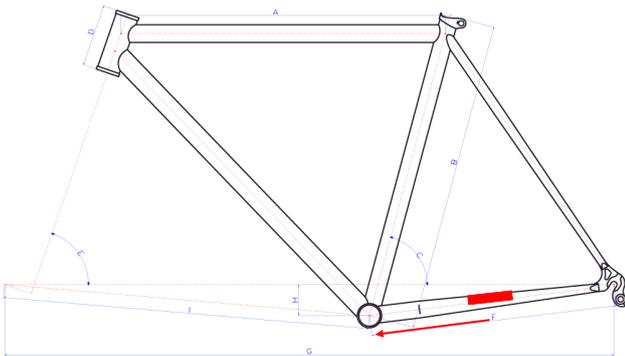
Depending on which brake sensors/levers your kit is supplied with, the connectors on the loom may be different to those shown above. **If your kit was supplied with inline brake sensors**, you will have three yellow connectors, one for the throttle and another for each of the inline sensors.

If you have too much slack in the cables, you will need to coil them up and secure them with cable-ties as tidily as possible. Ensure that none of the cables are hanging loosely or in a position where they may get caught/snagged on any other parts whilst the bike is being ridden.

Speed Sensor:

Note: Most of the kits we supply now do not require an external speed sensor, it is built into the hub. In these cases, you will not receive a speed sensor with your kit, and you can skip to the next page.

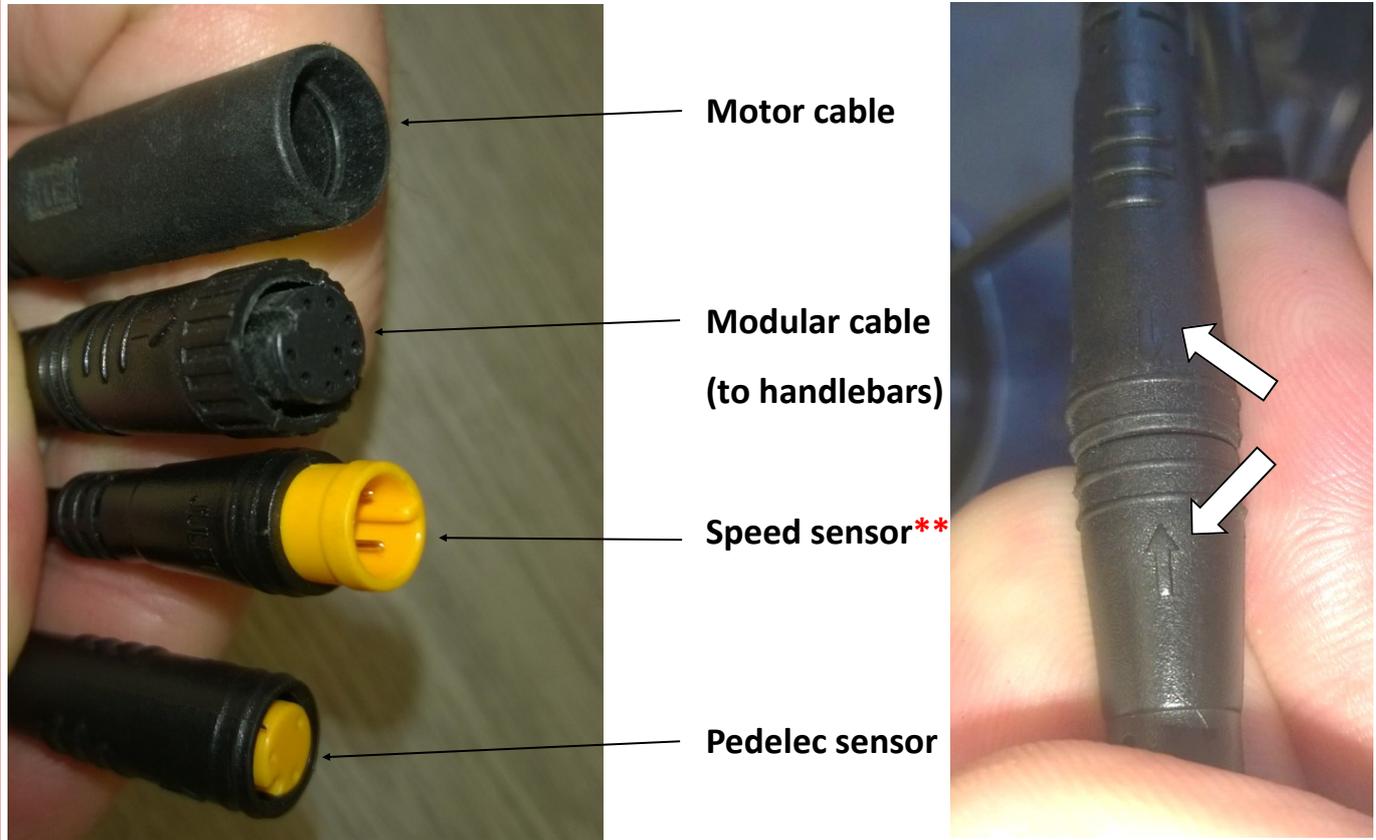
The speed sensor consists of two parts, the sensor itself and a magnet that is attached to one of the spokes. The sensor is normally fitted at the rear. The speed sensor is mounted approximately half-way along the inside of the chain stay as shown in the diagram below (in Red). Simply secure the sensor to the frame with cable-ties, it may be necessary to fit a spacer between the sensor and the frame to bring the sensor closer to the magnet, otherwise it may not



Run the cable along the chain stay as indicated in **RED** above, securing it with cable-ties and ensuring that the cable is clear of the wheel/tyre. See the next page for the various connections to the controller.

Controller Connections:

Exiting from the bottom of the battery cradle are three or four cables, these are for the speed sensor, the motor wheel, the pedelec sensor and the modular cable. The modular cable runs up to the handlebars and connects to the display unit, the thumb-throttle and the brake levers. All of the connectors have arrows on them that need to be correctly aligned before pushing the connectors firmly together.



** Note for wheels with hall-sensors (9-pin motor cable):

If your motor has hall/speed sensors built-in, you will have a 9-pin connector on the motor cable, (instead of a 3-pin cable) and you will **NOT** have a cable for a speed sensor. The controller for motors with hall-sensors will only have three cables exiting from the bottom of the cradle, instead of four.

LCD—Control Panel

The display has many advanced features and modes, these include back-lit display (for night riding), indicator options for max speed, average speed and current speed and a battery power indicator. It also features a walking mode which is used when you want to wheel/push the bike, this is basically a very low speed mode which is activated by pressing and holding the minus (-) button, this can also be used as a start-aid.



Warning:

The display comes pre-configured and limited to 15mph. Incorrect settings could cause damage to the kit components and also result in a bike that is not UK road legal. Modifications made to the controller configuration will void your warranty if found to be a contributing factor to a failure.

Turning Control Module On/Off

To turn on the control module press and hold the top (Mode) button. Press and hold the same button to turn off the module and disable all electric features of the bike.

Turning Backlight On/Off

To turn on the display backlight, press and hold the "Up" button. Press and hold the same button to turn it off.

Varying Pedal Assist Level

To alter the level of assistance provided simply press the Up/Down arrows to cycle through the 5 levels of assistance. Level 1 offers the least assistance while level 5 offers the greatest assistance.

Speed Display Mode

There are three different modes for the speed display, these are current speed, average speed and maximum speed. To switch between these modes, press and hold the "Up and Mode" buttons for approx. 1 second to cycle through the modes.

Walking Mode/Start- Aid

The bike also supports a walking mode which is basically a very slow mode allowing you to walk next to the bike at approx. 6m/h. This is activated by pressing and holding the "Down" button. As soon as the button is released, the bike will stop. This can be used to start off, if you find it difficult from a stand-still.

Display Mode

To switch between Odo (overall distance travelled) and Trip mode (current trip distance travelled), press the "Mode" button. **To reset the trip computer press and hold both the top and bottom buttons.**

Battery care:

Some care is needed to ensure that the battery performs at its best and lasts as long as possible. All batteries age over time, and the way that they age is that the range you can achieve will gradually decrease. Follow the instructions below to ensure your battery performs as well as possibly for as long as possible. Charge the battery once or twice per week as needed.

Do NOT charge the battery in extremely cold conditions. The battery can be easily removed from the bike and charged whilst off the bike if it's more convenient. Allow the battery to warm up to room temperature before charging.

If the battery is not in regular use i.e. over the winter, you should charge the battery for around 10 minutes ever three to four weeks. When the bike is to be put back into service, fully charge the battery as normal. Try and keep the battery around two thirds full when not being used.

General battery care:

Do not attempt to open the outer casing of the battery.

Do not attempt to repair the battery.

Do not immerse the battery in water.

Keep the battery away from children.

Do not drop, pierce or otherwise damage the battery.

Ensure the battery is not exposed to temperatures above 55 degrees Celsius or extreme humidity.

Do not use the bike in an environment where temperatures are below -5 or greater than 55 degrees Celsius.

Lithium batteries do not perform at their best during the winter months, and so the range may vary from one season to another.

Charging the battery:

Plug the charger into the socket on the right-side of the battery, then plug the other end into the mains socket and switch it on. While the battery is charging, the LED on the charger will glow RED, when charging is complete, the LED will go GREEN. If the charger is on but not attached to the battery, the LED will also be GREEN. If you experience a sudden drop in capacity, run the battery down quite low, then fully charge it. Once full, leave the charger switched on and connected to the battery for a further two hours. This will help to balance the cells internally and restore normal operation.



Battery operation:

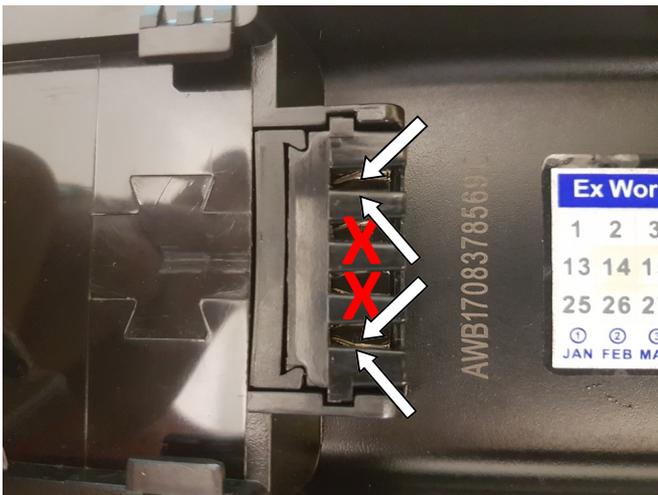
The HL and G30 batteries are effectively always on, and when the button at the top is pressed, it shows the current state of the battery—the more lights illuminated, the more full the battery is.



Troubleshooting (HL Battery):

Bike cutting out, display switching itself off whilst riding:

If you find after some months that the display/motor cuts out when riding, it is likely that the contacts on the underside of the battery need some cleaning/adjustment. It is not normally anything more than this.



Clean out any excess grease, and then use a cocktail stick or a small flat screwdriver to flex the contacts inwards, a close-up of an individual terminal is shown above right, and shows the parts that need to be flexed. It is only necessary to do this to the outer terminals, as the middle ones are not connected.

Error 25 on the display:

This error message indicates an issue with the brake sensors. If you are seeing this error, it is likely that the bike will not provide any assistance and the throttle will not work. To figure out which sensor is at fault, unplug one sensor and then the other until you know which sensor is causing the problem. If you have levers or inline sensors, the faulty one will likely need replacing. If you have the hydraulic-type sensors, it is likely that the magnet has moved too far away from the sensor, and can usually be resolved just by bringing the magnet closer to the sensor.

Rack battery:

The rack batteries (unlike the downtube batteries) have a switch towards the rear left of the unit which is used to turn the battery on/off—a master-switch effectively.



At the very end (the rear-most part) of the battery), there is small button in the middle, pressing this button ***firmly and holding it*** will illuminate the LED's either side of the button. This is used to give a rough indication of the battery status— if all LED's are illuminated (regardless of colour) this means that the battery is full (or thereabouts). As the battery drains, the lights will go out one by one, until only the red LED's remain. If only the red LED's illuminate when pushing the button, the battery should be charged soon.

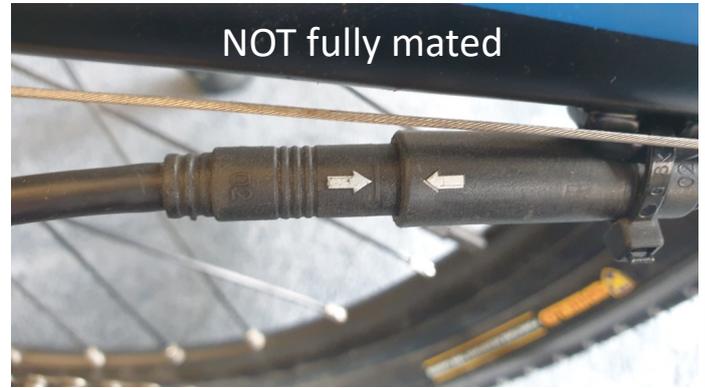
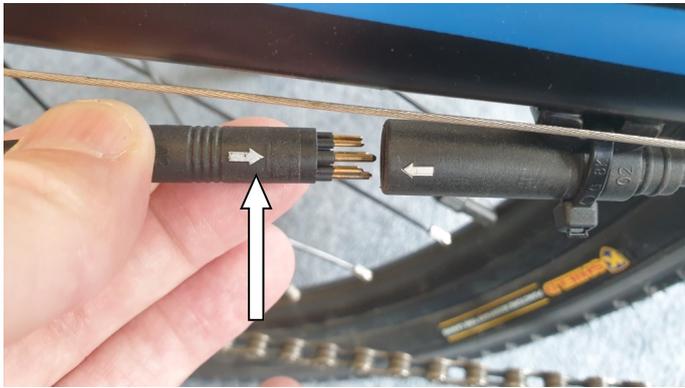
The LED's cannot ever change colour, **the red LED's will not, and cannot ever go green.**



Charging the rack batteries is done in exactly the same way as with the downtube batteries, and can be done with the battery on or off the bike. When the battery is charging, the LED on the charger will be red, when charging is complete, the LED will go green. The LED will also be green when the charger is switched on, but NOT connected to a battery.

Troubleshooting cont.

If the kit seems to function but does not seem to have much power, or the kit functions but no speed is indicated on the display. It is likely that the connection where the cable from the controller meets the cable coming from the controller is not fully mated. The connector must be pushed such that the female side is pushed all the way up to line on the male side.



Woosh Support:

Kit support is done primarily via email. This way it's possible for us to keep track of your case much more easily than when support is conducted over the phone. Using email allows us to refer back to previous conversations quickly and easily, and also allows us to receive photos/videos from the customer illustrating the issue. This, in turn allows us to provide written instructions with photos where necessary to help get you back up and running as quickly as possible.

If you have an issue, and it's something that can be shown in a photo or video, please email over the details including the photos etc. and we will get back to you ASAP, normally later the same day.

Support staff are not available at the weekends, emails received over the weekend will be read and replied to on the following working day.

Email: support@wooshbikes.co.uk