Owner's Manual

Operation and Maintenance Instructions

Wisper 705se (Canada)

May 2011 4th edition

We strongly recommend that you read this entire manual before using your Wisper bike

Wisper Limited

User Guide

Introduction and Purchaser Responsibilities

Thank you for choosing a Wisper electric bicycle. By making the decision to use an electric bike you are helping to safeguard our environment by saving our planet's precious resources and reducing carbon pollution.

Before you use your Wisper bike you must read this manual carefully. If there is anything you do not understand completely please contact Voltage Bikes Ltd or your bike dealer. The statements below set out your responsibilities as the owner/rider of an electric bike.

It is your responsibility as a cyclist to obey all relevant federal and provincial laws and regulations that apply to the operation of a power assisted bicycle. The laws that apply to a power assisted bicycle are similar to those for a normal bicycle. However, there are some minor variations. For example, in British Columbia, the bicycle can only legally be used on the road by a person aged 16 years or older. In addition, an approved bicycle helmet must be used when riding.

If you are unfamiliar with cycling, we recommend that you attend a cycle proficiency course prior to using your electric bike. As with all bicycles it is important that you stay within safe limits and adjust your riding to match conditions; remember the bike will not stop as quickly on wet or icy surfaces.

It is the rider's responsibility to ensure they are in proper physical condition to ride a Wisper electric bicycle.

The bicycle must be assembled by a person competent in bike mechanics. None of Wisper Bikes Ltd, Voltage Bikes Ltd or any of its distributors, accept any legal liability for accident or injury caused by improper installation of any of the components utilised on this electric bicycle. If you are not fully competent with bicycle maintenance and tuning procedures, you must have your bike checked over by a qualified bicycle technician before riding it.

The rider is responsible for inspecting and making sure the bike is in safe working order prior to riding each time. Before each use of your bike you should:

1) Check the handle bars and handle bar stem are properly tightened;
2) Check all other nuts and bolts and fixings are properly tightened, pay particular attention to the motor fixings, wheel nuts, side kick stand, yoke and steering head

bearings;

3) Check brakes and brake isolators are functioning properly;
4) Check tire pressures are 60psi / 4.1bar and tires are not damaged;
5) Check reflectors and lights (if fitted) are functioning properly;
6) Make sure battery is fully charged;
7) Load battery into bicycle and turn on with key;
8) Check the power indicator lamps are illuminated on the left hand side of the handle bars. If they do not illuminate press the on / off switch once;

You must take your bike in to be serviced and checked by a qualified bike mechanic before 300km of riding or within three months, whichever occurs first. This is standard good practice for any new bike, and particularly important for an ebike with the extra loading placed on the wheels. The service must include spoke tensioning for both front and rear wheels.

Wisper bikes are not mountain bikes and should not be ridden as such. The bikes should not be jumped, ridden on terrain which causes significant jarring, or in areas where the motor or other electrical components are likely to become submerged.

Wisper offers a warranty on its bikes purchased from a Wisper dealer (see the owner's manual for details). To validate the warranty, the retail customer must register the bike at www.wisperbikes.com under the warranty menu within 14 days of purchase. The warranties will only be valid if the procedures set out in this manual are followed. For example, when not in use for long periods (e.g. over winter), the battery must be topped up periodically.

Operating an electric bicycle involves risk and danger which can result in serious bodily harm and injury to the rider or to other persons or property. These risks are potentially greater than the risks associated with riding a non-electric bicycle, due to the additional power supplied by the electric motor.

The purchaser/rider assumes all risks associated with operating the Wisper electric bicycle and fully assumes and accepts responsibility for all losses, cost and damages as a result of, or relating to, the operation of the electric bicycle including, without limitation, personal or third party injury or harm, and property damage or economic loss suffered by the owner/operator or by any third party.

Happy cycling!
Wisper Ltd

Part 1 Caring for your Wisper bike and checks

Although your Wisper bike has been thoroughly tested prior to delivery, it is very important that you check the bike thoroughly before its first use. Equally important are frequent and regular spot checks they will protect you and your Wisper bike.

Please read this manual carefully. Only on full understanding of all the functions of this electric bicycle should you attempt to use it.

Your Wisper bike has been transported in a strong seven-layered corrugated carton. To save space it has been delivered with the front wheel, handlebars, seat post and seat, rear rack and pedals ready for assembly with the tool kit provided.

* Rack not supplied on 905se sport model

** Your retailer may have assembled your bike for you, if not you will find fitting instructions on the Wisper website www.wisperbikes.com

1 Before you set off for the first time

1.1 Check the handle bars and handle bar stem are properly tightened

1.2 Check all other nuts and bolts and fixings are properly tightened, pay particular attention to the motor fixings, side kick stand, yoke and steering head bearings

1.3 Check brakes and brake isolators are functioning properly

1.4 Check tyre pressures are correct and tyres are not damaged

1.5 Check reflectors and lights if fitted are functioning properly

1.6 Make sure battery is fully charged

1.7 Load battery into bicycle and turn on with key

1.8 Check the **power indicator lamps** are illuminated on the left hand side of the handle bars if they do not illuminate press the **on / off** switch once

1.9 To avoid dangerous unplanned acceleration, always make sure that the electrical system is turned off and the **power indicator lamps** are not illuminated when mounting, dismounting or leaving the bike unattended. For your safety, please turn off the power key on the battery when stopped or walking the bike

1.10 Remember to validate your warranty by visiting http://wisperbikes.com/Warranty-Registration-Form.php and filling in your details.

2 Before each use

It is important you perform a quick check of your bike every time you use it. Checks should include the following (if you do find any damage or problems do not use the bike until the problem has been solved or you have had the faulty item checked by a bike mechanic or your retailer).

2.1 Check tyres for any visible damage
2.2 Check tyre pressures
2.3 Check for any loose nuts bolts or fixings
2.4 Check brake functions
2.5 Check electronic functions
2.6 Check reflectors are in place and lights are working
2.7 Check your battery for any visible signs of damage

3 Battery care

3.1 Before you use the battery for the first time it is best to give it a full charge. Your battery is charging when the orange light is lit on the charger unit (you can also usually hear the fan operating). If the orange light is not lit, try switching the power switch on the charger unit on and off to allow the unit to 'read' the battery. To condition your new battery, you should complete three 'shallow' discharges i.e.

discharging to about 3 of 4 green lights showing before recharging. After this "conditioning" process you can then charge and discharge the battery as and when you require, although we recommend keeping it topped up.

3.2 A lithium ion battery will slowly discharge over time as it sits in storage. If a battery is allowed to fully discharge, this will stress the cells in the battery and reduce the capacity and life of the battery. During normal riding, the Wisper batteries have a battery management system (BMS) which switches off the electrical system when the voltage drops to a certain point i.e. the battery is not allowed to fully discharge and the cells are protected. However, the BMS will not prevent a battery from slowly discharging as it sits in storage. Therefore, it is important to ensure that your battery retains some charge over the winter months. Unfortunately, it is also not ideal to put your battery in storage with 100% charge as this can put some stress on the cells. The following actions are therefore recommended for battery care:

- Store your battery with a partial charge, ideally 40-80%. While charging, you can check the number of green lights on the battery indicator (with the key switched on) … aim for two-three lights (four lights is fully charged). Another way of checking that the battery hasn't reached full charge, is that the amber light on the charger is still on and you can hear the charger fan operating;
- Depending on how fully charged the battery was initially, it will normally take about 1-2 hours to give the recommended partial charge;
- If you end up charging your battery to 100% (the green light on the charging unit comes on), go for a ride to discharge it partially before storing the battery;
- Check your battery every couple of months of storage and give it a top up if the battery indicator has dropped to one light;
- Ideally, the battery should be stored in a cool place. Significantly elevated temperatures over prolonged periods can reduce battery capacity. Also avoid freezing the battery.

3.3 Before setting off on any journey it is always better to have a fully charged battery

3.4 Always remember that you use up to three times more power when setting off under the twist throttle. To preserve the life of each charge always set off using pedal assist.

3.5 Do not expose the bicycle or battery pack to fire, heat sources, acid or alkaline substances.

3.6 When leaving your bicycle during hot weather always leave in a shaded well ventilated area.

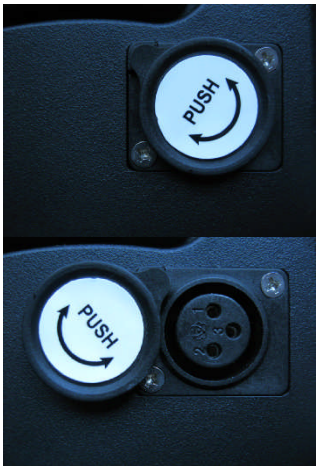
3.7 For best results always recharge the battery at room temperature.

3.8 Before unloading the battery make sure it is turned off at the key, then raise the saddle and unload the battery using its handle.

3.9 If your battery is damaged or appears to be overheating for any reason immediately return it to your retailer for advice and a safety check.

4 Recharging your battery

4.1 First connect the charger to the mains and turn the mains power on. Make sure the charger is turned off (at the switch on the charger unit) and connect the charger to your battery (refer the recharge point picture). Finally, turn on the charger. Red and yellow lamps on the charger indicate the battery is charging, when the yellow light turns green the battery is fully charged. Always turn off the charger and disconnect from the mains after charging. Always disconnect the charger from the mains before disconnecting the charger from the battery.



4.2 When charging the battery always do so in a well ventilated area.

4.3 Do not leave the charger connected to the mains when not in use.

5 Water

5.1 Your electric bicycle is rain and splash proof.

5.2 The electrical components of the vehicle, such as motor, battery, and controller, must not be submerged in water.

6 Maintenance and adjustments

6.1 **IMPORTANT!** Do not attempt to open the casings of the battery, motor or controller it could be dangerous and all warranties will become void. If you experience a problem contact our service department or your retailer.

6.2 Wheel spokes should be adjusted after 300 kms riding. Handlebar and saddle tubes should never be raised beyond the maximum indicated by a safety line around the tubes. The recommendation of the torque on the nuts as follows:

(A) Front axle nuts.	46N.M
(B) Back axle nuts.	70N.M
(C) Handlebar clamp bolts. Bolt 1:16N.M, bolt 2:10N.M (Refer 15.1 picture)	
(D) Handlebar stem expander bolt.	(18 to 20)N.M
(E) Seat pillar clamp nut/bolt.	(5-8) N.M
(F) Brake cable anchor bolt.	5N.M
(G) Brake centre bolt.	11N.M
(H) Seat clamp nuts.	24N.M
(I) Crank nuts.	R:42N.M L: 46N.M
(K) Gear shifter nuts.	4N.M
(L) V brake caliper nuts.	10N.M
(M) Rear carrier nuts.	8N.M

(N) Mudguard bracket nuts. 8N.M

Other nuts torque depends on the nuts volume. M4：2.5-4.0N.M M5：4.0-6.0N.M M6：6.0-7.5N.M

6.3 Your bike has a rear derailleur that will automatically tension your chain. However if the chain becomes loose or frequently comes off the front cog, you can easily adjust the chain tension by loosening the rear axle nuts slightly, and adjusting the tension bolts. Make sure that the chain runs freely and re tighten the axle nuts.

6.4 The brake levers should lock the wheels when compressed half way between their open position and touching the handle bars.

6.5 Warning: Handlebar hand grips or tube end plugs should be replaced if damaged, as bare tube ends have been known to cause injury.

6.6 Warning: Any replacement forks must have the same rake and same tube inner diameter as the originals fitted to the bicycle.

6.7 Disc brake pad wear and replacement. Remove the brake pads and check them for wear. If they have worn to the point where the caliper piston pin-positioning hole goes all the way through, then they need to be replaced.

IMPORTANT braking distances increase on wet or icy roads.

6.8 Lubrication:

6.8.1. Once a month: lubricate the chain, all pivot points on derailleur and derailleur pulleys with chain lube. Also apply a light oil to the upper fork leg where the lower leg slides on it. Wipe clean.

6.8.2. Every three months: lubricate the brake lever pivots and gears with light oil / chain lube. Also lubricate the brake bushes (not the rubber brake shoes or disc) with a little grease.

6.8.3 Once a year: have your dealer re-grease the bottom bracket bearings, headset bearings, wheel bearings. Also, lubricate pedal axles where they thread into the crank arms, handlebar stem.

6.9 Recommended tools for proper maintenance:

- Torque wrench with lb•in or N•m gradations;
- 2, 4, 5, 6, 8 mm Allen wrenches
- 9, 10, 15 mm open-end wrenches;
- 15 mm box end wrench
- Socket wrench and 14, 15, and 19 mm sockets;
- T25 Torx wrench
- No. 1 Phillips head screwdriver;

- Bicycle tube patch kit; and
- tire pump

7 Technical specifications & performance

Type	Wisper Works 705se

Performance

Assisted range	14Ah up to 90km (pedal assist level 2) 15.5Ah up to 100km (PAL 4)
Maximum speed	32kph
Weight with battery	23.9kg
Maximum load	110kg

Battery specifications

Cell Type	Advanced Environmental Lithium Polymer with BMS
Capacity	14Ah (2010) 15.5Ah (2011)
Rated voltage	36V

Main Controller specifications

Low voltage safeguard	31.5V
Overload current safeguard	18A

Main hub motor specifications

Motor type	Hi speed brushless geared
Rated power	Aus 200W / NZ Europe 250W / USA Canada 350W
Rated voltage	36V

Charger	Lithium 115 to 230V 36V fan cooled

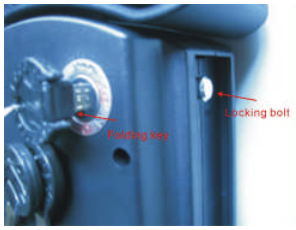
8 Simple Trouble shooting

Problem	Possible reasons	Trouble shooting
Top speed too slow	1. Low battery voltage 2. Handle bar control problem 3. Damage to motor driveline	1. Recharge battery fully 2. Call service 3. Call service
Power on but motor not working	1. Battery not connected 2. Fused 3. Motor connection damaged 4. Handle bar control unit problem	1. Re install battery 2. Replace fuse 3. Call service 4. Call service
Driving shorter distance per recharge	1. Tyre pressure too low 2. Undercharge or charger fault 3. Battery capacity loss or damage 4. Hill climbing, frequent stops, strong head winds, over loading	1. Check pressures 2. Recharge completely or have charger inspected 3. Replace battery 4. Use power assist and try and avoid throttle only

Part 2 Controls and Equipment

In this section we will describe the functions and any specific maintenance needed on all the main controls and ancillary equipment.

9 Battery on off and battery lock



9.1 Your Wisper bike has one key. The key turns the battery on/off and locks the battery in the bike. Please keep a careful note of the key numbers as we cannot replace them without these numbers should they become misplaced.

9.2 The battery is connected to the electrical system of the bike automatically when you slide the battery into the frame. To turn on the bike's electrical system, turn the key in the battery clockwise, to turn off the power turn the key anti-clockwise.

9.3 When the battery has been turned on the bike is now ready for use. The ON/OFF button on the handle bar isolates the power from the bike, when the bike is "on" you will see the battery power lights illuminate above the capacity indicator. When the ON/OFF button is pushed and the lights go out you have turned the bike "off". When the bike is "off" you will not get any assistance from the battery and motor and the bike is effectively simply an unpowered push bike.

9.4 To lock the battery into the bike frame, turn the key clockwise and a locking bolt will secure the battery to the frame. If you want to turn the battery power on, turn clockwise again, if you want to unlock, press the key in and turn the key anti-clockwise fully while the key is in lock position. (Refer to picture) Read 3 and 4 for battery care and advice on charging at the beginning of this manual.

9.5 The battery can be charged either on or off the bike.

9.6 To remove the battery turn off the power by turning the key to position "Unlocking" and raise the seat post to its maximum height. Using the handle on top of the battery, lift out the battery.

9.7 To replace the battery reverse the procedure for removing it.

On the handle bars

10 The ON/OFF button

10.1 To turn the power on so the pedelec and throttle work simply press the ON/OFF button once, the lights will illuminate showing the power is on. When the ON/OFF button is pushed again and the capacity indicator lights go out you have turned the bike “off”. When the bike is “off” you will not get any assistance from the battery and motor and the bike is effectively simply an unpowered push bike.

11 The LIGHT button

11.1 The LIGHT button can be found close to the ON/OFF button. If you press it when the bike power is on, the LED headlight on the front fork will illuminate. Press it again to switch off the light. The power for the light comes from the bike battery. Due to the low power consumption, use of the light will not reduce your range. On 2011 bikes, the switch will also activate the rear light.

12 Pedelec mode and ASSIST button

12.1 When you first ride your Wisper bike you will notice that after one turn of the pedals the motor will start working to assist you by adding power to the back wheel. This is the standard or pedelec mode. To continue using the pedelec mode you must keep turning the pedals, if you stop the motor will stop and the bike will slow to a halt. If you start pedaling again after one turn the motor will start again.

12.2 You will find the ASSIST button on the panel on the handle bars with L.M.H (low, Medium, High) with three LED’s (small lights) on 2010 bikes. For the 2011 bikes, there are six levels of pedal assist and a zero level where the motor does not engage. When the button is pressed sequentially the LED shifts between the various pedal assist levels.

12.3 High mode is used when you need the maximum amount of assistance from the motor. Lower modes are used in high traffic situations or poor conditions such as ice and snow when higher power could be dangerous.

13 Throttle

13.1 The throttle can be used independently to the pedelec mode in some countries such as the Canada, UK, Australia, and New Zealand. Check with your supplier if it is legal in your region. Bikes are usually set up to be legal in the region in which they are supplied.

13.2 The independent use of the throttle, when available, will enable you to use the throttle without pedaling.

13.3 The use of the throttle in pedelec mode is legal in most countries. Throttle in pedelec mode enables you to apply the power to the motor as long as you are pedaling the bike, if you stop pedaling the motor will stop too. If you have the pedelec mode set below maximum, you can increase the assistance from the motor to 100% of available power simply by turning the throttle towards you.

IMPORTANT Make sure your throttle and handlebar grips and the grip on the left are always intact and in good condition. Uncovered handlebar tubes can be very dangerous.

14 Brakes

14.1 Your bike is fitted with disc brakes front and rear.

14.2 The brakes on your Wisper bike are fitted with cut outs which are required by law. This means that when you pull on either the back or front brake lever the motor immediately stops working.

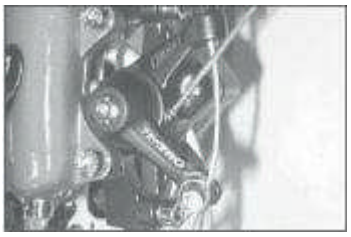
14.3 Regularly inspect brake pads for wear. Replace disc brake pads that are thinner than 1.0 mm. Mechanical disc brakes offer several advantages over traditional rim brakes: better braking in wet, muddy or other adverse conditions; less braking power fade over extended downhill braking; and the ability to continue braking even if your rim becomes bent or distorted.

14.3.1. Adjust the pads and caliper

14.3.1.1. On the disc brake use a 5mm Allen wrench to adjust the stationary caliper adjusting bolt at the back (hub side) of the caliper. Adjust the bolt so that there is 0.3mm clearance between the stationary (hub side) and the rotor.

14.3.1.2. Adjust the cable adjuster bolt on the caliper So that there is 0.3mm clearance between the outside pad and the rotor.

14.3.1.3. Adjust the spring tension to the desired modulation by tightening/loosing the tension modulation adjuster bolt on the caliper with 2mm Allen wrench



14.3.2. Installing and removing pads.

Caution: The pads and rotor must be kept clean and free from oil or grease based contamination. If the pads become contaminated you must discard them and replace them with a new set. A contaminated rotor should be cleaned with detergent solution, rinsed thoroughly and dried.

14.3.2.1. Holding the pad end-tab, insert it into caliper slot with its metal backing towards the piston. Make sure the hole in the metal backing goes over the piston pins. When correctly inserted, the pad will be held in place magnetically, repeat the procedure for the other pad.

14.3.2.2. Pads can be removed by grasping the pad end-tab, lifting the pad clear of the piston pin and then maneuvering it out of the rotor slot in the caliper body.

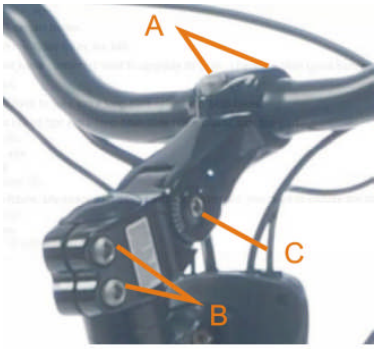
Note: Disc brake pads are held in the caliper magnetically. No tools are required to install or remove them. As the left and right pads are the same they maybe inserted on either the left or right of the caliper.

14.3.2.3. Warning: If you are unsure about any part of the installation process you should seek advice from Wisper service center or qualified mechanic.

15 Handle bar stem

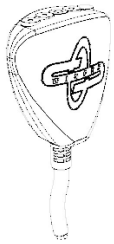
15.1 Your bike has been fitted with a angle adjusting handlebar clamp that allows you to change the height of the bars with a 5mm tool to find the most comfortable riding position. A locking bolt not shown in the figure is located underneath the stem.

15.2 The stem and handle bars need to be fitted before you use the bike.



A-Handle bar clamp bolt
B-Stem expender bolt
C-Angle adjusting bolt

16 The front connection box



16.1 The front connection box allows for the easy removal for repair or replacement of any of the electronic components on the handle bars. On the 2011 bikes, a simple plug and play manifold makes removal even easier.

17 Quick release saddle height adjustment

17.1 Your Wisper bike has been fitted with a quick release saddle post collar to facilitate the movement of the saddle to remove the battery or to change the riding position.

17.2 It is important that the nut on the collar is tightened so the post will not move in the bike tube. Make this adjustment with the quick release lever in the open position.

17.3 Adjust the seat to the correct height and close the lever. When you sit on the saddle there should be no vertical movement at all in the saddle post.

18 Saddle post suspension

18.1 For your comfort your bike has been fitted with saddle post suspension it has been set for a person weighing 75kg. If you are lighter than this you may not feel any benefit and if you are heavier you may feel the suspension bottoming out.

18.2 The suspension post can be adjusted by removing the whole post with saddle attached from the bike. On the bottom of the post you will find an allen key adjuster. Simply turn it clockwise to tension the spring for heavier people and anticlockwise to release tension for lighter people.

IMPORTANT never raise the saddle past the point where the maximum marks on the saddle post are visible above the quick release collar

19 Rims and spokes

19.1 It is essential to get your spokes checked and tightened after 300 kms or three months riding. If this service has not been undertaken at the correct time this may cause damage to the wheels and spokes that will not covered under our guarantee.

20 Chain and drive wheel

20.1 The chain and drive wheel are made from rust proof materials.

20.2 Lightly oil with bicycle chain oil the chain at least once a month.

20.2 Because your bike has a rear derailleur the chain will be automatically adjusted.

21 Derailleur

21.1 Full details on how to adjust and maintain your derailleur can be found on our website www.wisperbikes.com Electric bikes, Manuals.

Warranty

Repair or replacement of components

IMPORTANT To validate this Warranty the retail customer must register the bike at www.wisperbikes.com within 14 days of purchase.

Only use this product in accordance with this user manual. We offer a limited warranty of on the following items.

1	The main frame	Six years
2	Gears, bearings, motor shell, hub motor, front forks	Two years
3	Handle bar controls, brakes (excluding brake shoes and pads)	One year
4	Controller and Charger	Two years
5	Battery casing, battery leak, battery capacity step-down more than 30%	Year one full replacement; years two and three pro rata
6	Paintwork (excluding deliberate or accidental damage)	Two years
7	Front and rear axle, flywheel or chain wheel	One year
8	Electro plating, on wheel rims, rack and kickstand	Six months
9	Other cases that render the bike unsafe to use.	By negotiation

1. If the product has a quality fault within 15 days of delivery the part will be repaired or replaced or in exceptional circumstances we may replace the whole vehicle.

2. The period of assurance shall commence from the day delivery was made to the retail customers or from the day the retail customer collected the bike from the retailer.

3. To validate this Warranty the retail customer must register his / her bike at www.wisperbikes.com within 14 days of purchase.

Exceptions to Limited Warranties

1. Damage resulting from misuse, not maintaining the vehicle or not following the guidelines within this user guide
2. Accidental or deliberate damage
3. Damage due to private repair or alteration by user or unauthorised service centre.
4. Failure to produce invoice or proof of purchase.
5. Spare parts and components worn in normal use.
6. Failure to register your bike at www.wisperbikes.com within 14 days of purchase.

It is essential to get your spokes checked and tightened after 300kms. If this service has not been undertaken at the correct time this may cause damage to the wheels and spokes that will not covered under our guarantee.

Service through:

Your retailer
or
Wisper Ltd
10 Oakenbrow
Sway
Hants
UK
SO41 6DY
Tele: 01590 681553
Mobile: 07977 185830
douglas.lawson@wisperbikes.com
www.wisperbikes.com