

Tomcat, Bionic Buddy User Manual.

Dear Customer

Thank you for supporting British industry by choosing the fantastic Bionic Buddy from Tomcat SNI Ltd, winner of the “Queens Award for Enterprise in Innovation” in 2013 and 2019.

We are very proud to tell you that the Queens award is described by the H.M. Cabinet Office as the “Highest accolade that can be bestowed on a British company”.

Electrical and electronic components apart, this product has been designed and manufactured at our Gloucester factory. Those components we do not manufacture ourselves are supplied or manufactured by other UK companies, so we thank you for supporting British industry by buying this very British product.

Customer Service

We are proud to offer our customers the very best in product aftercare because we understand the importance of good service and we also know that things can change. Our customer service and spares departments are open 6 days a week, between 10 am and 5 pm, Monday to Saturday, for technical advice, spare parts, service and general assistance throughout the life of your product.

Product Overview.

The Bionic Buddy is a battery powered drive accessory that can be retrofitted to the entire Tomcat range of trikes with the exception of the Tiger and pre 2020 versions of the Tamara. The BIONIC BUDDY has a maximum speed of 4mph which is twist grip regulated either by the rider or carer.

e-drive

The e-drive consists of a powerful 250watt motor, 2.9Ah battery (in a lockable cradle) and control module all of which are mounted on a detachable, lightweight aluminium chassis. The control throttle is mounted on the trike's handlebars or carer control handle, according to specification. A battery charger completes the electric system.

Rider controlled throttle.

On rider-controlled trikes, the throttle is mounted on the right handlebar. A waterproof connector is provided on trikes with a detachable two-part frame.

Carer controlled throttle.

On Carer Controlled trikes the throttle is mounted on the detachable steering/braking arm and connects to the electrical system with a waterproof connector. When BIONIC BUDDY is fitted to Carer Controlled trikes it can only be controlled by the carer as by definition, the rider is not in full control of the vehicle.

Trike and trike drive suitability.

The tricycle drive must incorporate a “free-wheel” mechanism for safety. This can either be a simple single speed free-wheel, a multi-speed hub, a derailleur cassette drive, or a Tomcat (Fixed and Free) Dual Drive™. Trikes with a single speed fixed drive (i.e. when the wheels turn, the pedals turn) must be converted to a Dual Drive™ by Tomcat.

Bionic Buddy cannot be fitted to any other make of tricycle.

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Important Safety Notes concerning changeover of the Dual Drive™

- Bionic Buddy must only be used with the trike in free-wheel mode, i.e. with the free-wheel options mentioned above, or with a Tomcat Dual Drive™ set to (free-wheel).
- On trikes fitted with Dual Drive™, it is **ESSENTIAL** that you **SWITCH OFF THE POWER to BIONIC BUDDY and APPLY THE PARK BRAKE** before changing between fixed and free wheel drive and vice versa. This is to prevent the trike moving by accident or through the rider pedalling away as you make the change. Not carrying out this instruction could lead to injury. **Ensure new users are made fully aware of this important safety issue.**

De-mounting Bionic Buddy.

BIONIC BUDDY complete with motor and battery is demountable. When in service it attaches to the trike, at two attachment points, one a locator, and the other, a latch. Each attachment point is secured with a screw, to brackets welded to the frame. These brackets have been a standard fitting on most Tomcats since September 2016; therefore the BIONIC BUDDY is retrofittable to most Tomcat trikes built since that date.

Drive method

To drive the trike, the motor tyre of BIONIC BUDDY is lowered into contact with the nearside wheel of the vehicle. When power is switched on and the throttle is turned, the motor will drive the trike forward at a speed regulated by the throttle position. To disconnect the drive, BIONIC BUDDY is lifted clear of the nearside wheel until it locks into its non-driving position.

Friction Drive.

BIONIC BUDDY automatically regulates the friction between the drive motor and nearside wheel depending upon changing load conditions and tyre pressure, however, drive friction can be manually adjusted when required. Refer to "Friction Drive Control" on page 7 of this manual.

Bionic Buddy main features and benefits.

- Retrofits to most Tomcats built after September 2016.
- Can be easily fitted by the customer.
- Ideally suited for use in hilly regions or difficult terrain.
- Ideally suited to limited strength, stamina, heart weakness or degenerative conditions.
- Works without the rider pedalling.
- Can be instantly engaged or disengaged by the carer, during the trip.
- Automatically adjusts drive force to road conditions.
- Can be easily and fully removed when not required.
- Twist grip throttle control by rider or carer (as appropriate).
- Tomcat **on-site**, or RTB (Return to Base) retrofitting service available. (chargeable service).
- Approximate 12-mile range on full battery charge.
- Lightweight Construction.

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Compatibility.

BIONIC BUDDY can be retrofitted to the following Tomcat Products built after Sept 2017

- Tomcat Fizz – all sizes.
- Tomcat Roadhog – all sizes
- Tomcat Handy – all sizes
- Tomcat Dragon
- Tomcat Dragonfly
- Tomcat Bullet – all types

BIONIC BUDDY can be retrofitted to the following Tomcat Products built after June 2020

- Tomcat Fizz – all sizes.
- Tomcat Roadhog – all sizes
- Tomcat Handy – all sizes
- Tomcat Dragon
- Tomcat Dragonfly
- Tomcat Bullet – all types
- Tomcat Arrow – all types

Optional Extras

- There are currently no optional extras for the BIONIC BUDDY.

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BIONIC BUDDY Specification

BIONIC BUDDY is a trademark of Tomcat SNI Ltd.	
Maximum User Weight	120kg
Motor Power	250watts
Motor Volts	36v
Battery Power	5.4Ah
Battery Charge Level Indicator?	Yes
Battery Safety Fuse	15amps
Battery Charge Volts	42v
Battery Charge Time	2.1 hours
Battery Safety Lock	Yes
Battery Removable?	Yes
Charge on Vehicle?	Yes
Battery Lock?	Yes
Speed Control Type	Twist Throttle
Road Speed (All trike models)	0 – 4mph (0 -6kph) variable
“On-Off” drive engagement function	Manual by carer.
Detachment	By Quick Release latches
Total “on Vehicle” Weight	6kg
Off Vehicle Weight (with battery)	4kg
Battery Weight	1.5g
Off Vehicle dimensions	58cm x 35cm x 15cm

BIONIC BUDDY Fitting Instructions.

Contents of Pack as supplied.

- Chassis Assy, complete with motor, locking battery docking station, and controller.
- Battery, c/w 2 x keys.
- Battery Charger.
- Throttle Assembly (C/W Carer Control Arm on carer-controlled models).
- Locator Assembly
- Latch Assembly.

Converting your Tomcat to use BIONIC BUDDY – the essentials.

To convert your Tomcat tricycle to use BIONIC BUDDY, you need to fit two adaptor assemblies called the Location Adaptor (assembly) and the Latch Adaptor (assembly). Once these assemblies are fitted, BIONIC BUDDY can be attached or removed from the trike in seconds. On Carer Controlled™ Tomcats you will need an additional Carer Control Arm which can be customer fitted.

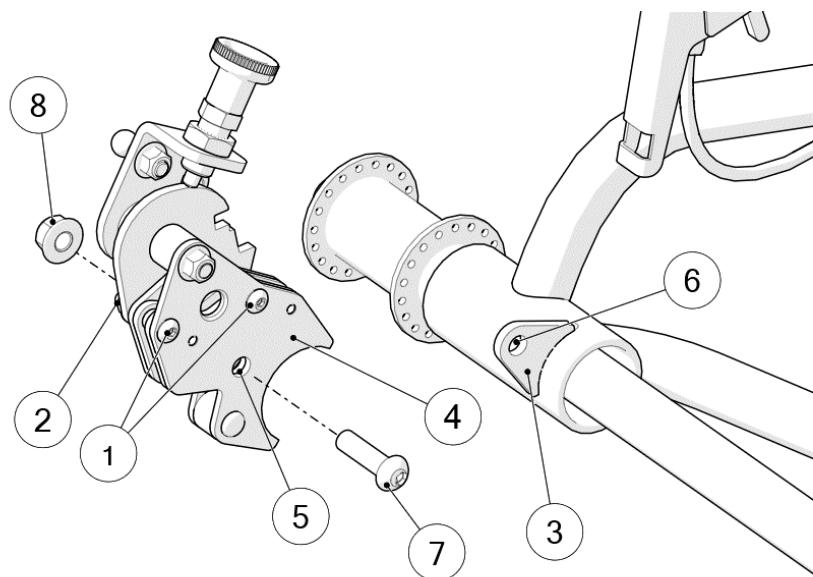
Note: BIONIC BUDDY cannot be retro-fitted to Rider Controlled trikes by the end user and must be converted on site, by a qualified Tomcat rep, or returned to base (RTB).

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Fitting the Location Adaptor (assembly).

- Fit the Location Adaptor over the nearside (left) bracket (3) so that the “locator hole plate” (4) is facing the right-hand wheel, (When viewed from the rear of the trike).
- Align the 8mm hole (5) in the locator hole plate (4) with the 8mm hole (6) in the nearside (left) bracket (3) and insert the 8mm dome head screw (7) in the direction of the left wheel as shown. The screw is a close fit; therefore, it will be necessary to rotate it with the 5mm Allen key provided. After 3 turns, the screw MUST be in alignment with the 8 mm hole (6) in the bracket (3) before it can enter the bracket and pass through. If it is not aligned – align it! Do not force the screw. If difficulties arise, use a large Phillips screwdriver or similar round instrument to roughly align the holes.
- Once aligned, continue screwing with the Allen key until the screw is fully home.
- Fit the nut (8) and washer and tighten firmly. Now use the 4mm Allen Key and 10mm spanner to tighten all other screws and nuts (1 & 2).
- The Location Adaptor is now fitted.

Note: Paint in the bracket holes will give the screw resistance as it passes through. Only if the paint thickness is exceptionally heavy, should it be necessary to clean the bracket hole of paint. If problems arise, screw the 8mm screw through the bracket to cut a thread in the paint before removing the screw and fitting the Location Adaptor as above.

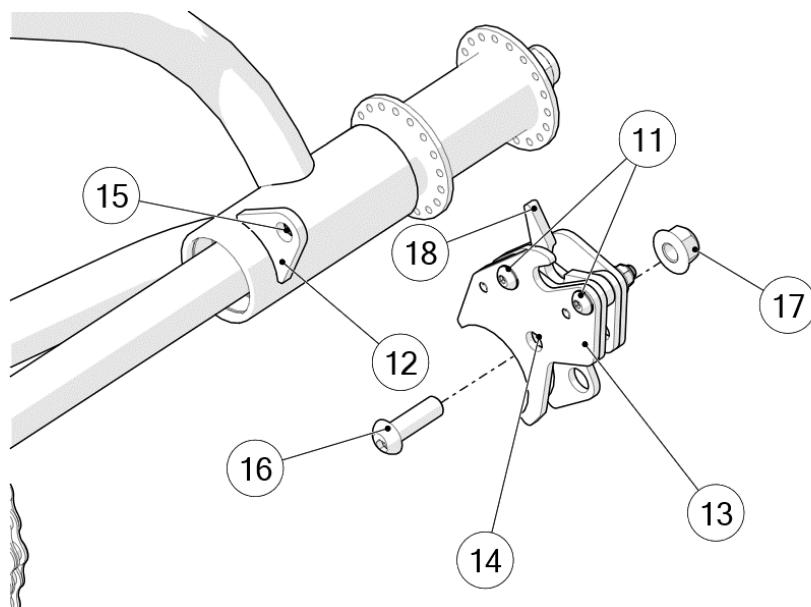


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Fitting the Latch Adaptor

- Fit the Latch Adaptor over the offside (right) bracket (12) so that the notched latch plate (13) is facing the left-hand wheel, (When viewed from the rear of the trike).
- Align the 8mm (14) hole in the latch plate with the 8mm hole (15) in the offside (right) bracket (12) and insert the 8mm dome head screw (16) from the inner face of notched latch plate (13) in the direction of the right wheel. The screw is a close fit, therefore it will be necessary to rotate it with the 5mm Allen key provided. After 3 turns the screw MUST be in alignment with the 8 mm hole (15) in the bracket (12) before it can enter the bracket and pass through. If it is not aligned – align it! Do not force the screw. If difficulties arise, use a large Phillips screwdriver or similar round instrument to roughly align the holes.
- Once aligned, continue screwing with the Allen key until the screw is fully home.
- Fit the 8mm nut and washer (17) and tighten firmly. Now use the 4mm Allen Key and 10mm spanner to tighten all other screws (11).
- Check that the latch trigger (18) operates freely. If it does not, remove the adaptor assembly, clean away any debris that may be forcing the assembly apart and refit.
- The Latch Adaptor is now fitted.

Note: Paint in the bracket holes will give the screw resistance as it passes through. Only if exceptionally heavy, should it be necessary to clean the bracket hole of paint. If problems arise, screw the 8mm screw through the bracket to cut a thread in the paint before removing the screw and fitting the Location Adaptor as above.



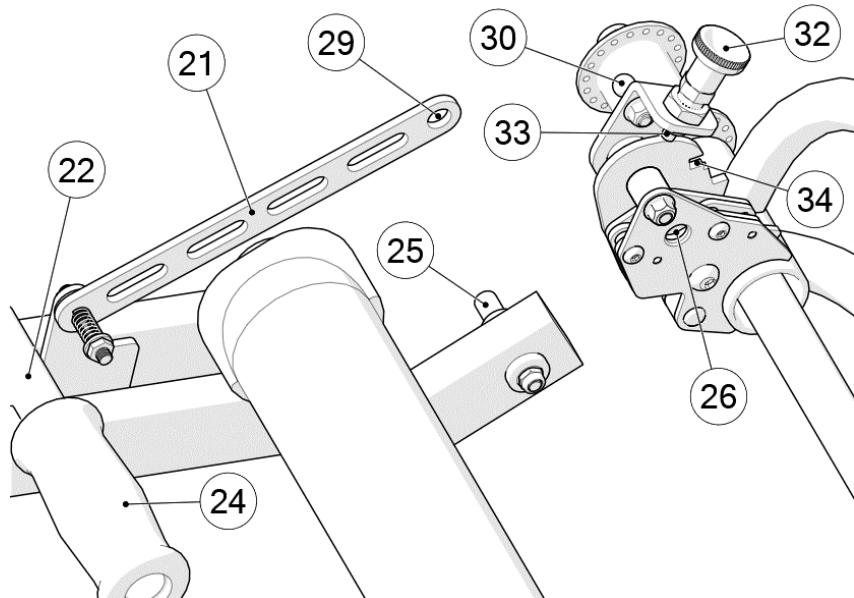
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Fitting and Removing BIONIC BUDDY.

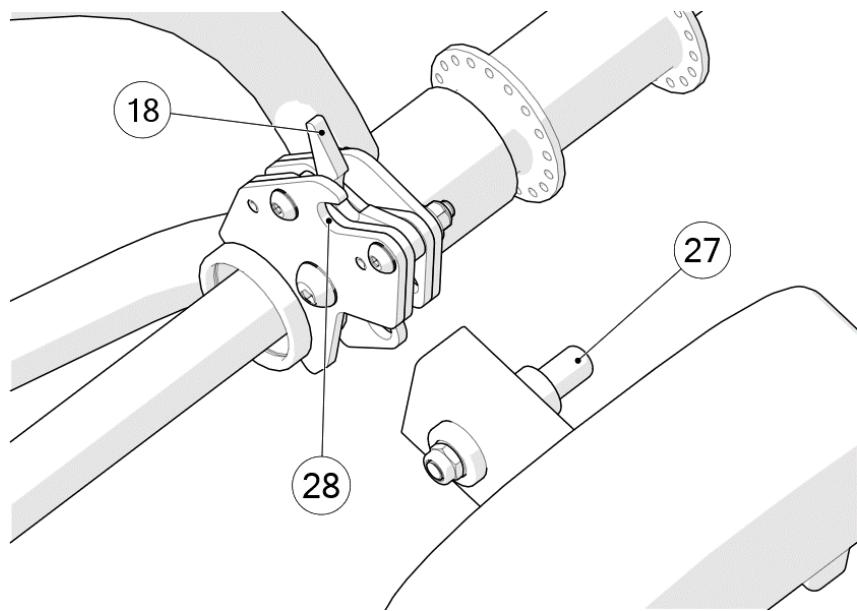
You can fit or remove BIONIC BUDDY to and from the trike in seconds. You may want to do this on days when BIONIC BUDDY is not needed, to transport BIONIC BUDDY, to swap BIONIC BUDDY between two different Tomcats, or for storage. Whatever the purpose, it is very easy to do by following these instructions.

To attach and remove BIONIC BUDDY to and from the trike.

- Rotate the link bar (21) so that it rests on the carry bar (22).
- Lift the BIONIC BUDDY with the carry bar grip (24). The balance of BIONIC BUDDY will cause it to dip slightly at the motor end. Retain that sloping angle as you insert the locator pin (25) on the motor side of the BIONIC BUDDY chassis, into the locator hole (26) of the Locator adaptor.
- Now guide the locator pin (27) on the opposite side of BIONIC BUDDY chassis into the notch (28) of the Latch Adaptor assembly. When slight resistance is felt, push firmly and BIONIC BUDDY will lock in place in the latch adaptor.
- Gently lower BIONIC BUDDY by the carry grip (24) until the motor tyre contacts the wheel.
- Rotate the link bar (21) to its working position so that the hole (29) in the link bar hooks over the pivot pin (30). If necessary, lift the knob (32) to release the sprung pin (33) from the notch (34).
- To remove BIONIC BUDDY, unhook the link bar (21) and rotate it so that it rests on the carry bar (22).
- Press the trigger (18) on the Latch Adaptor.
- Draw the pivot pin (27) clear of the Latch Adaptor and remove BIONIC BUDDY as a reversal of the fitting procedure.



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Engaging and Disengaging the Drive of BIONIC BUDDY.

You may want to disengage BIONIC BUDDY during your journey to allow the rider to pedal normally, then re-engage it when you come to a hill, etc. It is very easy to do this and takes just seconds. Proceed as follows.

- With the link bar (21) connected, lift BIONIC BUDDY by the carry grip (24) until the latch trigger (32) engages with the notch (34). BIONIC BUDDY is now disengaged.
- To re-engage, support BIONIC BUDDY by the carry grip (24) and lift the knob (32) until the trigger pin is fully retracted from the notch (34).
- Now gently lower BIONIC BUDDY back into the engaged position with the motor tyre in contact with the wheel.

General Operating Instruction.

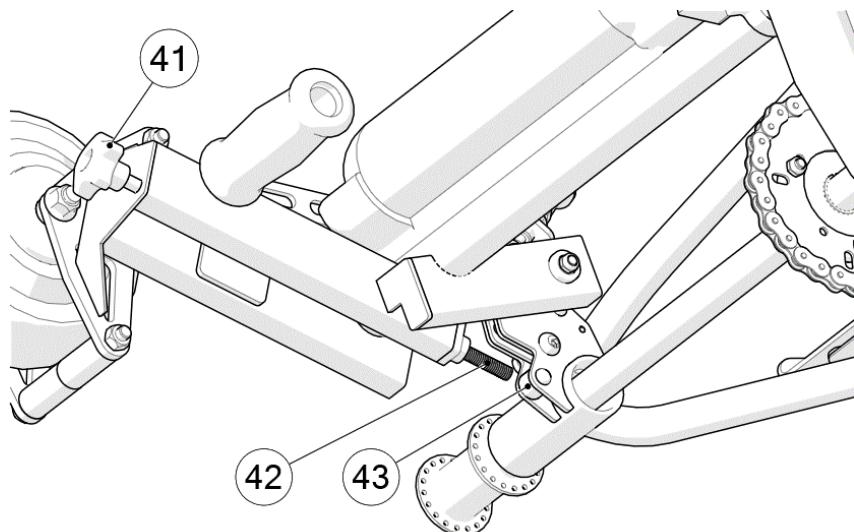
Friction Drive Control.

Certain factors will alter Bionic Buddy's friction contact with the wheel and thus its driving efficiency. These factors include tyre pressure, rider weight, wet or dry conditions, tyre wear etc. In normal circumstances Bionic Buddy, will self-adjust its friction grip with the wheel without you realising it, however, in certain circumstances you may experience either slippage or alternatively, a jerky "pull away". Bionic Buddy is equipped with a friction drive adjuster to remedy these issues.

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Setting the Friction Adjuster Knob.

Drive friction is controlled by the Friction Adjuster Knob (41). Turning the Adjuster Knob anti-clockwise will increase drive friction, whilst turning the knob clockwise will reduce jerky starts. To set the friction for normal conditions with the drive engaged, the tip of the screw (42) should be almost touching (within half a turn of) the bobbin (43).



Tip: The touch point of the adjuster screw and bobbin is easy to find as follows:

Disengage the Drive of BIONIC BUDDY as described above, so that the motor tyre is latched clear of the wheel. Turn the knob anti clockwise 3 or 4 turns then lower the motor tyre back into engagement with the wheel. Now slowly turn the knob clockwise. You will feel a light rotational resistance as you turn, which will suddenly increase when the screw touches the bobbin. Turn the knob back (anti-clockwise) by half a turn and your drive is set and ready to go!

Bionic Buddy is now set for most rider weights, wet and dry weather, and level and hilly riding conditions.

Troubleshooting Drive Problems.

- In very wet conditions on hilly slopes, more friction than normal may be required. To create more friction, rotate the Friction Adjuster Knob anticlockwise, one rotation at a time until the motor drives without slip.
- Setting the Friction Adjuster Knob for too much friction, may cause jerky “pull away” in normal circumstances. To correct jerky “pull away”, rotate the Friction Adjuster Knob back to the normal setting as described above, or until the jerking stops.
- Do not allow the motor tyre to slip against the wheel for more than a few seconds or tyre wear will result.
- Bionic Buddy will stop driving against a very soft or very worn tyre. Check pressures regularly and always maintain pressures within 5lbs or 0.3bar of the handbook pressure or the maximum pressure printed on the tyre wall.

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- Badly centred tyres may cause Bionic Buddy to slip or slow as the wheel rotates. To check for a badly fitted tyre, remove Bionic Buddy and spin the wheel. If it is not running true, or has bulges, BIONIC BUDDY may slip. Remove and renew, or refit the tyre.
- Bionic Buddy may not drive well against slick tyres, poor quality tyres, or high- or low-profile tyres. **Always replace tyres with Tomcat supplied or recommended tyres.**

IMPORTANT INFORMATION BEFORE USING BIONIC BUDDY FOR THE FIRST TIME.

Safety First! Important information for first time users and regular users.

- Ensure you read and fully understand these instructions before attempting to use the product.
- **When a new carer or supervisor uses BIONIC BUDDY for the first time, ensure they also read and fully understand these instructions.**
- Ensure that you, and every successive new user, **practices speed control of BIONIC BUDDY, BEFORE first use with a rider.** The drive may seem frisky and may cause the trike to swerve at first attempt. This will not happen with the weight of the rider on the trike but mastering a smooth start with no rider onboard will accustom you to driving BIONIC BUDDY smoothly. When you have mastered a smooth, gentle start, you are ready to use BIONIC BUDDY with the rider.
- Before seating the rider and whenever BIONIC BUDDY is not in use, **switch off the battery.**
- When operating Dual Axle™ between fixed and free-wheel drive and vice versa, **ALWAYS** switch off power and apply the handbrake.

Using BIONIC BUDDY with the Rider

- Set the Dual Axle (if fitted) to free-wheel mode. **Note: BIONIC BUDDY must only be used in conjunction with a “Free-wheel” drive mode, or injury to the rider may occur.**
- Disengage BIONIC BUDDY as instructed in section **Engaging and Disengaging the Drive of BIONIC BUDDY.**
- Seat the rider as normal, ensuring **ALL safety straps are secured**, particularly trunk and feet related straps.
- Switch on BIONIC BUDDY, and slowly pull away, accelerating gently to a comfortable walking speed.
- Slow down when approaching and negotiating corners.
- When braking, release your grip on the throttle before applying the brake.

Main Component Care and Maintenance.

Battery

- Always charge the battery after use. Never leave the battery in an uncharged state.
- Charge the battery regularly when not in use. **Never** exceed 2 months between charges.
- **Never** leave the battery switched on as this will slowly drain the battery.
- Ensure the battery is locked when on the vehicle.
- Only charge the battery with the charger supplied.
- To check battery level, briefly press the “indicator” button located on the battery end, between switch and charge socket. Up to four indicators will light to indicate the battery level. Ensure the battery is fully charged (four lights) before commencing each journey.
- The battery can be charged on or off the vehicle. Press the power switch to “Off” when charging.

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- Refit the stopper to the charge socket after each charge. Never expose the open charge socket to the elements.
- To remove the battery, press the power switch to “off”, unlock with the key provided and lift the battery away from the cradle from the power switch end. Fitting the battery is a reverse of this procedure.
- Never expose the cradle terminals to the elements.
- The battery is protected by a 15amp x 250v (20mm x 5mm) cartridge fuse. To replace the fuse, unscrew the Phillips head cap on the switch end of the battery. If a recurrent event, contact Tomcat.
- Dispose of old batteries at an authorised disposal site, i.e. your local reclamation site.

Motor

- The motor is not user serviceable and no maintenance is required.
- Do not interfere with the motor power cable, its connector or its securing clips.
- Disengage the motor and switch off the battery when not using it to drive the vehicle. This will protect the motor and reduce the pedalling force required by the rider.
- Do not put your hand near, or between the trike wheel and motor at any time.
- Do not allow small children near the motor or trike wheel at any time.
- Do not allow children to play with the product. Remove the battery to secure storage when not in use.
- Periodically make a visual check that all nuts and bolts of the motor frame and brackets are secure.

Control module

- The Control Module contains no user serviceable parts.
- Do not open the Control Module for any reason.
- Do not interfere with the Control Module cables, connectors or securing clips.
- Do not subject the Control Module to water pressure jets.
- Keep the Control Module clean at all times.
- Do not lift the BIONIC BUDDY with the Control Module or its cables.

Throttle

- The Throttle has no user serviceable parts.
- Do not disassemble the throttle for any reason.
- Do not interfere with the throttle cables, connectors or securing clips.
- Do not subject the throttle to water pressure jets.
- Keep the throttle clean at all times.
- Do not lift the BIONIC BUDDY with the throttle or cables.

Unplugging waterproof connectors.

- Locate the connector and whilst holding the plug and socket in each hand, unscrew the connector rings and gently pull the connector apart.
- To re-connect, **align the arrows on the plug and socket** before gently pushing together. Never use excess force and ensure that the plug and socket are squarely aligned before pushing together, screw back together the connector rings.