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## **USER MANUAL E-BIKE (PEDELEC)**

*Original Instructions*

## **MANUAL DEL USUARIO E-BIKE (PEDELEC)**

*Traducción de Instrucciones Originales*

## **MANUEL D'UTILISATEUR VAE (PEDELEC)**

*Traduction des Instructions Originales*

## **MANUALE D'USO - BICICLETTA A PEDALATA ASSISTITA (PEDELEC)** *Traduzione delle Istruzioni Originali*

## **전기 자전거 사용자 설명서 (PAS 시스템)**

*원문 설명서의 번역*

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# 1. Introduction

## **Dear Customer,**

Thank you for choosing Tern, a leader in urban mobility and transportation!  
We design bikes that bring together all the things people need to drive less and ride more.

We are dedicated to the goal of sustainable transportation, and design and manufacture bicycles for urban transport with a focus on portability and utility. Tern donates at least 1% of net profits every year to social and environmental causes.

## **General Safety Notes**

### **Turn the page**

Your bicycle has specially designed components so please read this manual carefully before riding. Before hitting the road, spend some time to understand how to operate your new bicycle in a safe environment such as a parking lot.

### **Respect others on the road**

Please obey traffic laws and respect motor vehicles. You and your bike will always lose in a vehicle collision and you can also injure pedestrians. Stay alert and show consideration to other road users.

### **Head protection**

A good, authorized bike helmet may prevent injury in an accident. Wear one, it's a no-brainer.

### **Servicing precautions**

Do not proceed with servicing or adjustments without proper knowledge or tools.

### **Hit the books**

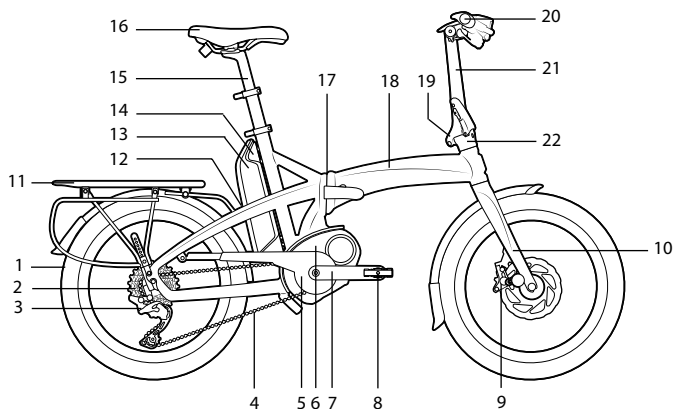
This manual is only to be used in conjunction with other manuals included with your pedelec such as motor, control system, component, and folding manuals.

## **Where to Go for Additional Help**

If you are unsure about anything, please talk to your local Tern dealer. Tern dealers are specialists in Tern products and servicing.

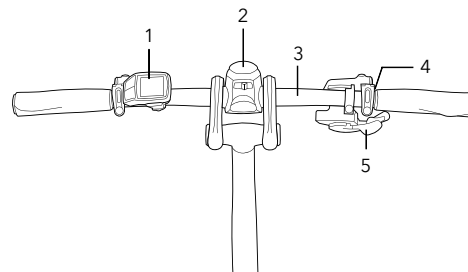
# 2. General Information

## Bike Parts



- 1. Wheel
- 2. Cassette
- 3. Rear Derailleur
- 4. Chain/Belt
- 5. Chainring
- 6. Motor
- 7. Crankset
- 8. Pedal
- 9. Brakes
- 10. Fork
- 11. Carrier/Rack
- 12. CE Frame Sticker
- 13. Battery
- 14. Battery Lock
- 15. Seat Post
- 16. Saddle
- 17. Frame Joint
- 18. Frame
- 19. Handlepost Joint
- 20. Handlebar
- 21. Handlepost
- 22. Headset

## Handlebar



- 1. Controller/Display
- 2. Light
- 3. Handlebar
- 4. Brake Lever
- 5. Shifter

## Meaning of Icons



Indicates how to use the product or items that require special attention.



Incorrect action could result in damage to the equipment.



Life-threatening danger if instructions are not followed or preventive measures are not taken.



You must have the proper tool, such as a torque wrench for items that require a specific torque. A torque that is too high or too low can cause parts to fall off or break and can lead to serious accidents and injuries.

## 3. Legal Details

### Manufacturer

Mobility Holdings Limited (Hong Kong), Taiwan Branch  
8F-8, Lane 609, Chongxin Road, Section 5, Sanchong District, New Taipei City, Taiwan  
Contact: [service@ternbicycles.com](mailto:service@ternbicycles.com) / Website: [www.ternbicycles.com](http://www.ternbicycles.com)

### Marking on Bike

If your Tern is a pedelec, it will have a CE frame sticker which confirms that it has passed all tests outlined in EN 15194.

### Declaration of Conformity

This user manual complies with the requirements of EN 15194 and Machinery Directive EC/2006/42.  
See the separate Declaration of Conformity insert.

Edition 2 Rev 2, October 2018

## 4. Local Regulations

Pedelec stands for pedal electrical cycles. They are also known as EPACs which stands for Electrically Power Assisted Cycles. Pedelecs are bicycles with a motor that provides assistance when a rider starts to pedal. The A-weighted emission sound pressure level at the driver's ears is less than 70 dB(A). When a rider stops pedaling, the assistance stops. Some bikes will also have a push assistance mode with a max speed of 6 km/hr.

In general, electric bikes are viewed by law as more similar to a conventional bicycle than a motorized scooter or motorcycle. In most cases, an electric bike can be ridden in bike lanes, on bike paths, and can be locked to bike racks like a regular bicycle. Riders are not required to have a driver's license to operate an electric bike and are not required to obtain any special licensing or registration for their pedelecs.

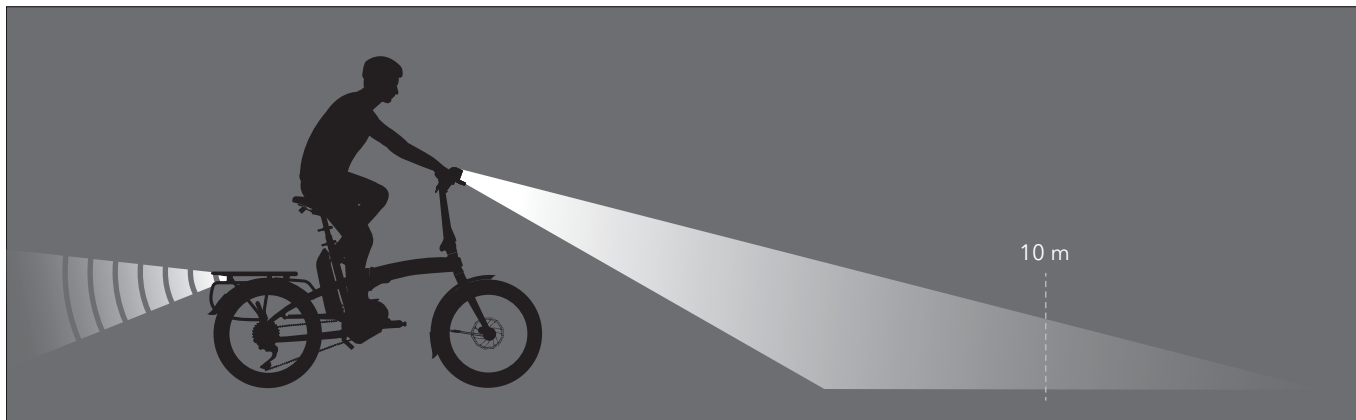


**It's important to note that the specific laws, rules, and guidelines governing electric bike use may vary from country to country. If you are not using your bicycle in Germany, it's important to familiarize yourself with the laws in your specific location before you begin riding your pedelec. Take time to learn local bike laws before hitting the road.**

To use public roads with your pedelec in Germany, your bike must be equipped in accordance with Road Licensing Regulations (StVZO) and the Road Traffic Act (StVO). Please note there may be different regulations that apply in your country.

## StVZO

The lighting system needs to have the K-number mark to be legal on public roads. The front and rear lights must be powered by the same power source.



The front light projection center must be no more than 10 meters from the front of the bike on the road. The rear light must be mounted at least 25 cm above the road surface.

Reflectors are required, in addition, to lights. In the front, a white reflector is required. In the rear, at least two red reflectors are required. Two yellow reflectors must be attached to each pedal.

Each wheel must meet at least one of the below requirements:

- Two yellow reflectors
- White reflective rings on both sidewalls of the tires

The braking system must have independent functioning front and rear brakes.

You must maintain the bike in good condition.

## 5. Intended Use

### Built for Urban Warriors, not Stuntmen



- Tern bicycles are only designed for one person riding with both wheels in contact with the ground on paved roads only. They are not intended for racing, jumps, hops, wheelies or anything of the kind. The manufacturer and dealer are not liable for any direct or consequential damages. The warranty will be void if your pedelec is not used in accordance with the intended usage.



- Using the bike for off-road riding, jumps or stunts may cause damage to the frame and risk injury or death to the rider.

### Watch the Weight



- Maximum carrying capacity = Rider weight + Cargo weight
- If you have a folding Tern Pedelec, the standard carrying capacity is 105 kg (230 lbs). If the capacity stated here differs from your pedelec's CE Frame Sticker's, follow the CE Frame Sticker. If you have a non-folding Tern Utility Pedelec, refer to the CE frame sticker for maximum allowable weight and read the Utility Pedelec Supplemental Manual for balancing the load.



- If carrying cargo or extra weight, make sure the bike is stable and is within the maximum load capacity.
- Practice handling the bike in a safe area before riding on public roads.
- If not properly handled, sudden shifts in load while riding can affect your balance and lead to serious injury or death.

<b>CE</b>	EPAC according to EN 15194	ternbicycles.com
	Max. 250 W, 25 km/h	
	Bike/Max weight: 21.8 kg/105 kg	
	Model: Vektron 510 EU25	
	Model Year: 2017	
	Tern Bicycles, 8F-8, No.6, Lane 609, Chung Hsin Rd., Sec 5, Sanzhong Dist, New Taipei City, Taiwan	

CE Frame Sticker example

## 6. Unfolding and Folding your Tern

Please see the separate enclosed folding instructions.

## 7. Before the First Ride

### Hit the Books before You Ride

Spend some time to understand how to operate and use your new bike before hitting the road. Operating manuals for individual components and folding instructions for your specific bike are supplied together with this manual. Please read all the manuals. If anything is unclear, ask your dealer.

### Please Check

#### Electrical system

- Make sure you are familiar with the function of all the controller buttons and meaning of the displays.
- Please consult the information in the relevant section from the manual of the motorized system manufacturer.

#### Wheels

- Check the Tire pressure and make sure it is within the minimum and maximum values indicated on the sidewalls of the Tires.
- Spin both Wheels to make sure they rotate smoothly, are true (not wobbling) and do not rub against the Brakes. If the Wheel wobbles side to side or rubs against the Brake Pads, take the bike to a qualified bike shop to have the Wheel trued or replaced.



**Wheels that do not run true may indicate problems with the Spokes or Tires.**

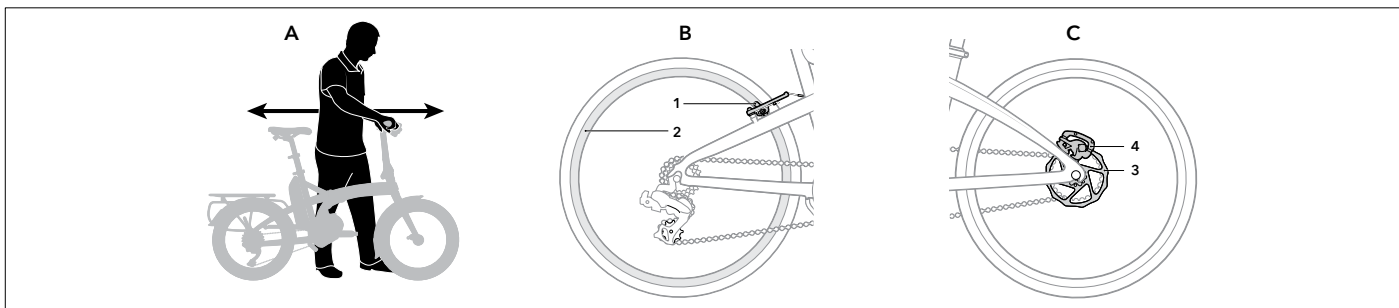
#### Headset

- Stand with the Front Wheel pressed firmly between your legs and try to twist the Handlebar. If movement occurs, realign your Handlebar and tighten the Headset and handpost base or service it at your dealer.
- Lift the Front Wheel off the ground and swing it from side to side. Does it feel smooth? If you feel any binding or roughness in the steering, you may have an overly tight Headset. Have your dealer check it.





## Brakes



- Test your Brakes by standing next to your bike, pull both Brakes, and rock the Bike back and forth. (A) The Bike should not roll and the Brake Pads should remain firmly in place.
- Does your Tern feel solid? If you feel a clunk with each forward or backward movement of the bike, you probably have a loose Headset. Have your dealer check it. *Note that for certain Disc Brakes you may feel a bit of play when attempting to rock the bike back and forth. These are caused by the built-in clearances between the Brake Pads and the Brake Caliper to allow for thermal expansion and is considered normal. In these cases, it's not a loose Headset.*
- Rim-Actuated Brakes (B) have Brake Pads (1) that align with the Rim (2). The Brake Pads press against the Rim to slow the Wheel so make sure the Brake Pads align with the Rim. Check Rim and Pads for wear.
- Disc Brakes (C) have a Disc Rotor (3) and a Disc Caliper (4). Pads inside the Disc Caliper squeeze the Disc Rotor to slow the Wheel but can get very hot under use. Do not touch them immediately after riding.
- Which Lever operates the Front Brake and which Lever operates the Rear Brake varies depending on the country. For countries such as United Kingdom and Japan, the left lever operates the rear brake and the right lever operates the front brake. For USA, Germany and most other countries the right lever operates the rear brake and the left lever operates the front brake.



**Be careful not to damage the Disc Rotor or Disc Caliper when changing wheels or by pulling the Brake Levers when the Disc Rotor is not aligned.**



**Make sure to test the braking power before heading into traffic. It can be much more powerful than what you are used to. Squeezing the Lever too fast can lead to unintended sudden stopping and cause you to crash or get rear ended.**

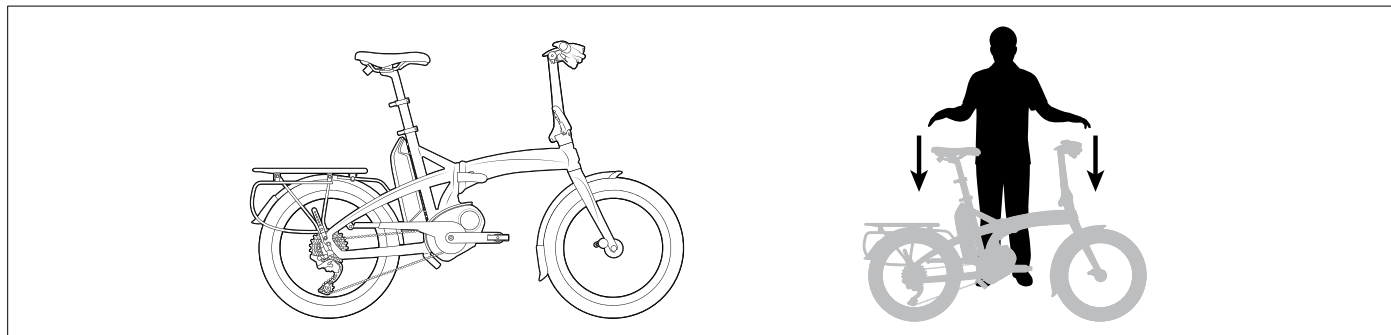
### Gears

- Test ride in a safe area away from traffic to familiarize yourself with the function of the Gear Shifters and how to upshift and downshift. Check that indexing (shifting from gear to gear) is crisp and that you are able to shift into the lowest and highest gears without the Chain skipping.
- If your Tern uses an Internal Gear Hub (IGH), avoid shifting and pedaling hard at the same time. Unlike derailleurs, most conventional IGH's are designed in such a way that it shifts optimally when coasting or not pedaling / coasting / stationary. This mean Internal Gear Hubs can shift when you are stopped, a very nice feature in stop-and-go urban traffic.
- Check for tight links in the Chain and that the Chain turns freely through the Gears.



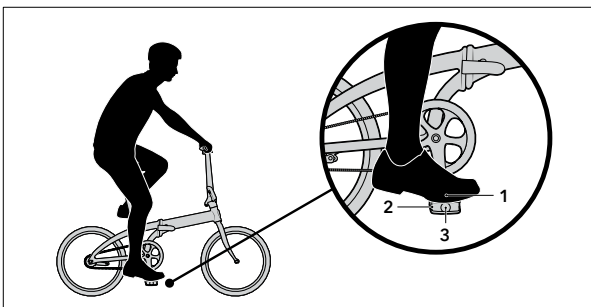
**With a pedelec, drive assistance begins immediately when you step on the pedal. Squeeze the brakes before mounting your bike to avoid any unintentional movement.**

### For any noise



Lift the bike up about 10 cm and drop it to the ground. If you hear any unusual noise or notice issues with Frame stability (especially Frame and Handlepost Joints), book it for a service appointment at your dealer.

## How the bike fits

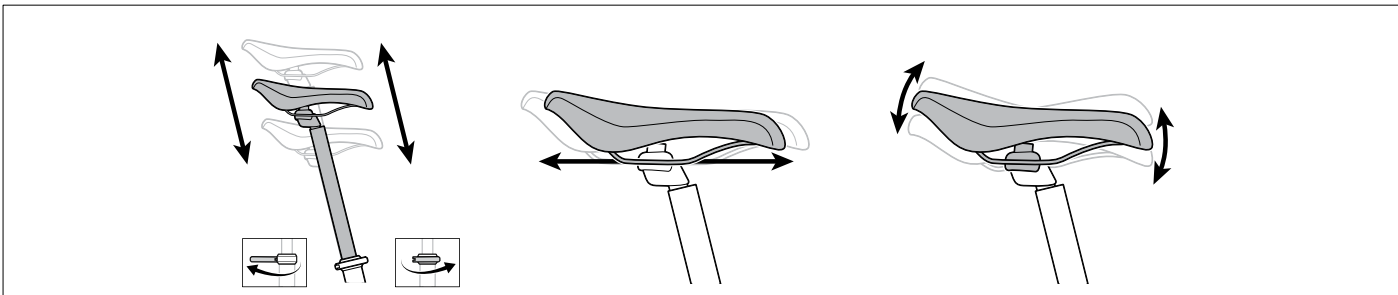


The best riding position is the one that you are most comfortable in, but a badly adjusted bicycle may lead to back or joint pain and reduce your control. Check that your Saddle and Handlebar are at the correct height and that you can reach Brake and Gear Levers comfortably.

For most people, the ball of the foot (1) should be placed on the Pedal (2) directly above the Pedal Spindle (3).

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## Saddle



- The saddle height is an important component of the overall riding position. While seated, you should have a slight bend in your knee when the Pedal is pushed down all the way. The leg should not be fully extended so make sure the Saddle is not too high. If the seat is too low, repetitive strain on the knee may lead to pain.
- The Saddle can be moved up and down, forward and back and angled up and down. Play around with it to get the best fit. A badly fitted Saddle can injure nerves, joints, and blood vessels.



Refer to section 15 for appropriate saddle rail torque values

- When riding, your hips should remain stationary and your knee should only bend about 20-25° when the pedal is all the way down.
- The Saddle should be roughly parallel to the ground, but if it's not comfortable, tip the Nose down to relieve pressure on the crotch or up to distribute your weight over a greater area of the Saddle. The seat should be tilted no more than 5° up or down.
- Moving the Saddle backward works your glutes harder and forward works your quads harder. Generally, the front of the knee should not pass the Pedal Spindle. Once comfortable, check your saddle height again and adjust as necessary.



**Do not raise the Seatpost above the minimum insertion line etched on the post. Doing so may result in post/frame failure and serious injury. If proper saddle height cannot be achieved without raising the post above this line, you need a longer Seatpost. Similarly, do not lower the Seatpost below the maximum insert mark when riding. The lower exposed portion may hit objects on the pavement and cause a riding hazard.**

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### Stem

Models fitted with Andros Stems are adjustable in angle and height without tools. Please refer to the included manual for information on how to adjust the Stem positions.

### Handlebar orientation

Rotate your Handlebar so that your palms are supported and that your fingers can easily reach the Brake and Gear Levers. For Handlebar adjustment procedures, refer to the Stem manual included with your Tern.

## 8. Before Every Ride

Be sure to check the following before every ride:

### Electrical System

- Check that the battery is seated properly in the carrier on the frame and fully plugged in.
- Check the controller display for any warnings or error messages. Resolve the error before riding.
- Check that the battery is adequately charged for the length of ride you are planning to do.
- Make sure the front and rear lights are illuminated when they are actuated and remain on when the bike is at a standstill.

### Mechanical



As with all mechanical components, the bicycle is subjected to wear and high stresses. Different materials and components might react to wear or stress fatigue in different ways. If the design life of a component has been exceeded, it may suddenly fail, possibly causing injuries to the rider. Any form of crack, scratches, or change of coloring in highly stressed areas indicate that the life of the component has been reached and it should be replaced.

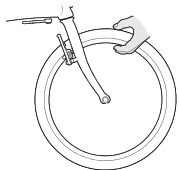
## ABC Quick Drop Test

We design our bikes so that they can be everyday companions. For safety, however, we recommend this test before each ride:

**A**

### AIR

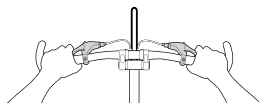
Check the air pressure on your Tires. Use your thumb to press the Tires. They should feel nice and firm but avoid over-inflating.



**B**

### BRAKES AND BARS

Check the Brakes by squeezing the Levers and making sure the bike stops. Check that the Brake Cables are undamaged and untangled.



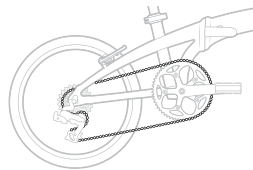
Check that Bars (Handlebar, Handlepost, Handlebar Extensions) are tightly in place and undamaged by turning the Handlebar left and right with the Front Wheel in between your legs.



**C**

### CHAIN AND CABLES

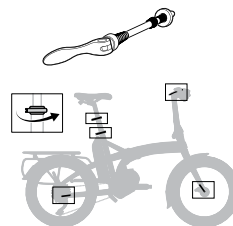
Check that Chain turns freely through Gears by rotating the Crank backwards, and make sure Cables are undamaged.



**QUICK**

### QUICK RELEASES

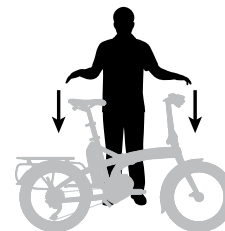
Check that Quick Releases (Wheels, Seat Tube, Handlepost) and Joints (Frame, Handlepost) are closed securely.



**DROP**

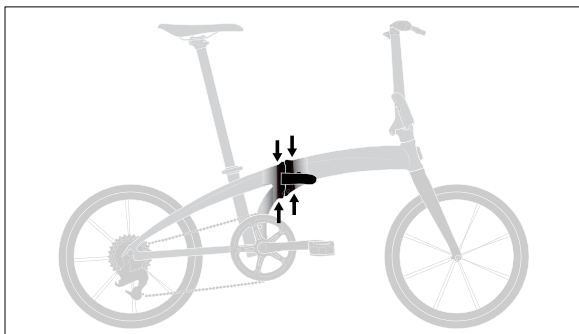
### DROP THE BIKE

Lift the bicycle a few inches and drop it to the ground. If anything shakes or rattles, make adjustments before riding.



## Check the Welds

In addition to this test, please check the weld area around the Frame Joint.



Your Pedelec will experience stress and wear during riding. Check Frame welds for deformation and changes in color which may indicate cracking. This is especially important if the bike has fallen over or has been involved in a crash. Note that aluminum parts, once bent, cannot be safely bent back into place and will require replacement.

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## Rim

The Rim should be clean and undamaged. Look out for discolorations, scratches or wear. If you have Rim Brakes, the contact surface should be checked for pits or grooves. Some Rims have a wear indicator on the brake contact surface; once the Rim wears down to the wear indicator it should be replaced.



**A worn or damaged Rim may fail without warning and cause the rider to crash.**

## Wheels

- Check that the Wheels are fixed inside the Fork by pushing from each side. They shouldn't slide along the Hub Axle.
- Use your hands to squeeze the neighboring pair of Spokes. If Spoke tension difference is pronounced, have your Wheel trued.
- Make sure your Wheels are securely seated by lifting each end of the bike and knocking the Wheel toward the opening of the Dropout; the Hub Axle should stay in position.

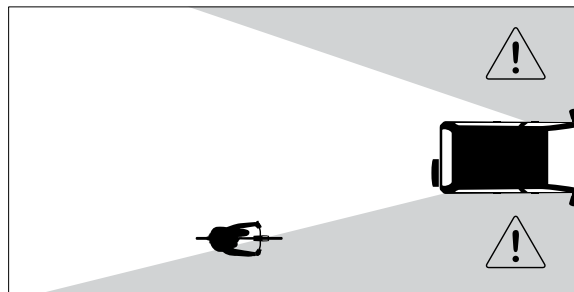
## Saddle

Try to turn the Saddle by hand to make sure the Seatpost and Saddle are securely clamped; there should be no movement in either the Seatpost or Saddle.

## 9. Safe Riding

### Keep Your Eyes on the Road

Check for potholes and other dangers, like car doors opening and kids playing. Also, think about your own visibility and avoid entering vehicle blind spots.



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### Wake Up!

You need to stay alert when riding. Don't wear earphones or headphones that affect your hearing or sunglasses if they hinder your vision. Don't ride if you have consumed alcohol or are on medication that affects your motor skills.

### Stand out from the Crowd

Riding in low light or poor visibility, such as at night, dawn, dusk, in rain or in fog is much more dangerous than in daytime lighting conditions. Wear bright colors and reflective gear.

### Stay Clean - Shine Bright

Reflectors should be clean, unbroken and mounted correctly. Don't cover reflectors with loose clothing or bags. Also, they only reflect light in some directions, so you need lights to make sure you are seen with all around visibility. Make sure your lights are working properly.

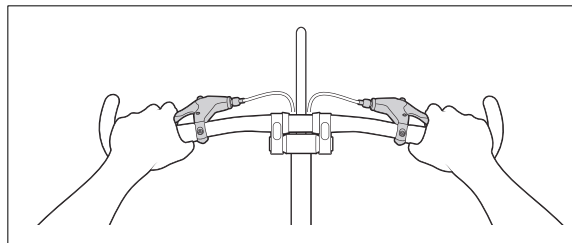
### Using Brakes

#### Go with the flow

Braking distances increase in wet weather or under heavy load, so brake more gently and earlier under those circumstances.

#### Easy tiger

To prevent skidding when slowing or stopping your bike, pull Brakes gradually. Skidding does not slow you down faster and means you can't steer well so it should be avoided.





**Lean back**

If you slam on your Front Brake, you may fly over the Handlebar or your Rear Wheel may slide out behind you. If the Rear Wheel rises, lean back and ease off your Front Brake.

**Be a Straight Shooter**

- Ride cautiously and defensively when visibility is reduced. Your movement may be obscured so ride predictably. (Heck, you should always ride this way regardless of the conditions!)
- Use a bell, horn or your voice to indicate your intention to pass and do so in advance so as not to startle the rider you are passing.
- Travel in a straight line unless you are avoiding hazards or passing and always indicate your intention to turn or pass.

## 10. Passenger and Cargo Transport

Riding with passenger(s), cargo, or both affect the pedelec's weight, balance, center of gravity, and handling. For your safety, please read the below guidelines.

### Changes in Handling

A combination of factors – including the structural rigidity of the frame, individual component strength, steering behavior, and weight distribution – affect the bike's handling. **When riding with a heavy load, the pedelec will require more effort to balance and more time to brake.**

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There is a strong relationship between the weight of the rider and the amount of cargo the rider can comfortably balance and ride with. In practice, **cargo weight should be no more than 80% of the rider's weight.**

Get familiar with riding a loaded pedelec in a safe area before riding on public roads.



- If you have a utility pedelec, refer to the included Utility Pedelec Supplement for specific rider-to-cargo weight and cargo positioning guidelines.
- Do not to exceed the maximum carrying capacity, which includes rider weight, passenger weight, rear rack, child seat(s) and any other accessories. Check the CE frame sticker on the pedelec frame for the maximum weight limit.

### Riding With Children

You may install and use a child seat provided that your seat and setup meet the following requirements (Based on EN 14344, European Standard for Child's Seats for Bicycles):

- The seat is designed so that any contact between the child's feet and the wheel is impossible.
- The child's fingers are protected against being caught in any part of the Saddle (such as the springs of suspension saddles).
- The carrier (rack) is approved for mounting child seats.

As a general guideline, the Child Seat should be mounted as far forward as possible for keeping the weight centralized. Mounting the Child Seat too far behind the Rear Wheel axis may cause the Front Wheel to lift off the ground unintentionally.

Always check thoroughly the balance. Mount the Child Seat and load with dummy weight equivalent to that of the child. Test ride in various road conditions including riding uphill and make sure the Front Wheel does not have tendency to lift off the ground.



The Child Seat should **NOT** be mounted or attached to the seatpost.

### Approved Child Seat

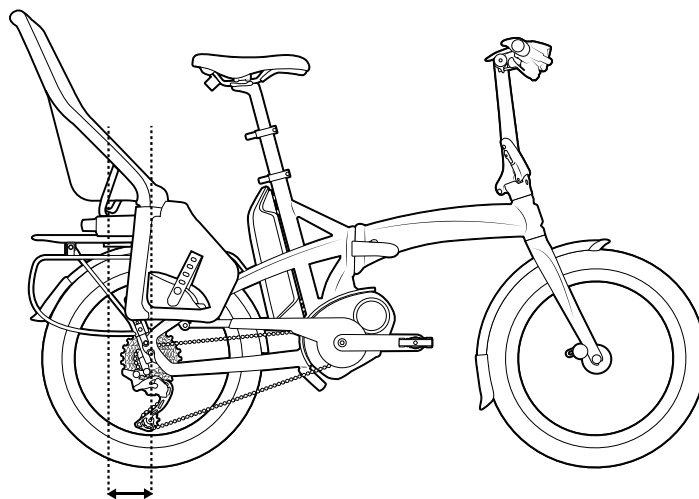
The Thule Yepp Maxi Easyfit is approved for use with your Tern.

### Safety and Precautions

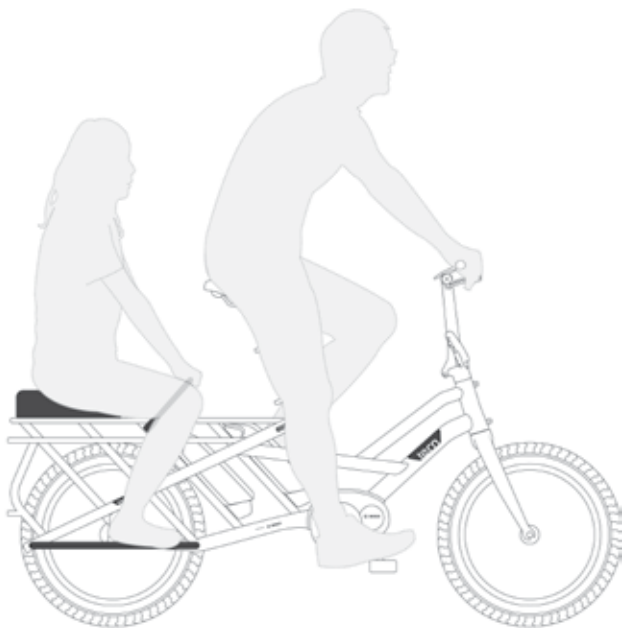
- Children - regardless of age - should be strong enough to hold up their head and withstand the bouncing that comes with riding.
- Check for sufficient heel clearance. Heel clearance varies with the rider's foot size and the child's leg length.
- Make sure the seat is properly mounted in accordance with the manufacturer's instructions.
- Make sure the maximum gross weight is not exceeded.
- Make sure that nothing can get caught in the Wheel Spokes, Saddle Rails, and Springs.
- Make sure the child is wearing a helmet and the straps are adjusted for a snug fit.
- Always hold onto your pedelec when a child is in the child seat to prevent the pedelec and child from falling over.
- Periodically check on your child while riding as they may fall asleep. Don't let their head strain excessively to one side.



Do not use trailers to transport children.



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### Riding With a Passenger

If you have a Tern utility pedelec, it is designed to carry an adult passenger if:

- The passenger can straddle the pedelec and properly rest his/her feet on the foot pegs or foot platforms.
- It has a seat securely attached to the pedelec frame (the Tern Sidekick™ Seat Pad fulfills this requirement).
- There is a place for the passenger to rest his or her feet (the Tern Sidekick™ Lower Deck and Sidekick™ Foot Pegs fulfill this requirement).



**It may be illegal to carry passengers on a pedelec in your area even if it has been designed or adapted to do so. Check your local regulations before carrying passengers.**

### Footrest

Footrests such as Tern Sidekick™ Lower Deck and Sidekick™ Foot Pegs are designed for passengers to rest their feet when seated on the rack.



**Do not stand on the foot rests.**

### Kickstand and Parked Weight

If your pedelec is equipped with a kickstand, it can make loading and unloading easier. However, please note the kickstand's maximum weight limit.

When loading cargo onto your pedelec with the kickstand down, do not exceed the maximum weight limit of the kickstand.



**Do not sit on the pedelec with the kickstand down. This can damage the kickstand and the kickstand mount on the pedelec frame.**

For a list of kickstand maximum weight capacities, go to: <https://www.ternbicycles.com/support/techtips/maximum-weight-capacity>

## Riding With Cargo

If the rear of the pedelec is fully loaded, test that the front wheel does not lift off and make the pedelec tip over.

## Cargo Positioning

Position cargo so that the center of gravity is as close to the centerline of the pedelec as possible. Secure the cargo as close to the front of the rack as possible.

Balance the load. For example, when carrying a box, you should try to carry two if possible (one on either side). Lopsided loads can pull the pedelec to one side.

## Securing Cargo

Make sure your cargo is secured by straps rated for the weight of your cargo.

## Checking for Interference

- Make sure that you have enough space to sit properly, pedal, and steer the bike without any interference.
- Cargo should not interfere with normal operations of the brakes and derailleur(s).
- Long or large objects should be positioned far enough from the pedals to avoid heel strikes.
- Tall or large objects in the front of the bike should not block your vision.



**If you cannot position cargo to fulfill ALL of the above requirements, do not attempt to ride with cargo!**

# 11. Transporting your Tern

## Public Transportation

Pedelects can generally be transported on trains and public transportation, like conventional bicycles.

Please check with the rail or public transport operator for specific requirements:

- Some operators require you to pre-book a space and buy a separate ticket for the pedelec.
- Some allow travel with your pedelec only during off-peak hours.
- Some require a cover to be placed on the pedelec.

## Airplane

- Batteries used on pedelecs are considered potentially hazardous and cannot be transported on airplanes.
- Inquire with your local forwarder to see if you can ship the battery separately.

## Car

- Your Tern can be transported with a standard roof or rear-mounted bicycle carrier provided it is under the maximum load capacity of the bike carrier. To reduce the weight, remove the battery from your Tern and place it inside the vehicle.
- We suggest transporting your Tern inside your vehicle if you drive a hatchback or have sufficient trunk space. Be careful not to damage the Derailleur.
- When entering into a parking structure or garage, be mindful of the pedelec on the roof of the car and make sure it is lower than the maximum height clearance.

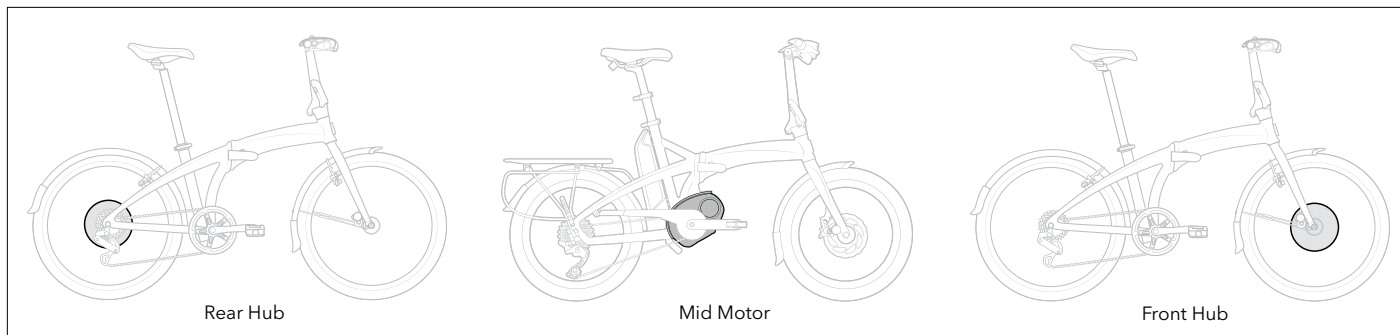
## 12. ABCs of Pedelec

### Concept

Pedal assist electric bikes or pedelecs are equipped with an electric motor that provides assistance when the bike is being pedaled. The assist is activated by a pedal action sensor designed to detect when the pedal is being turned. In Europe, pedelecs are limited to 25 km/h (15 mph). In the United States, the limit is 32 km/h (20 mph). Assistance is cut off above those designated speeds.

The controller allows you to select the degree of power assist provided by the motor from economy to sport mode, enabling you to tailor the performance of the bike to fit your specific style and road topographies.

Your Tern may use a Mid-Drive Motor or Hub Motor. See the diagram below:



### Other Pedelec Features

#### Walk-assist

Selected Tern pedelecs come with a walk-assist function. It allows the rider to push or trolley the bike with less effort. This is beneficial for certain road conditions, such as going uphill. The assist is limited to walking speed. Please refer to the motor manufacturer's instruction for more detail.

#### Battery lock

Your Tern pedelec may be equipped with a battery lock. Always lock the battery in place before you ride and store the keys in a safe place. If you lose your keys, contact your local Tern dealer for key recovery service.

### Charging

Your Tern pedelec comes with battery charger compatible with your country's voltage. For more usage and safety information, please refer to the motor manufacturer's instruction.

### Multi-Battery Configuration

If your pedelec allows use of more than one battery pack, read the below instructions.

### On-Bike Charging

If both batteries are installed, charge using only one charger. The batteries will charge simultaneously.

Connect the charger to the charging port adjacent to the motor. The rear port is sealed to prevent using both ports simultaneously.

### Off-Bike Charging

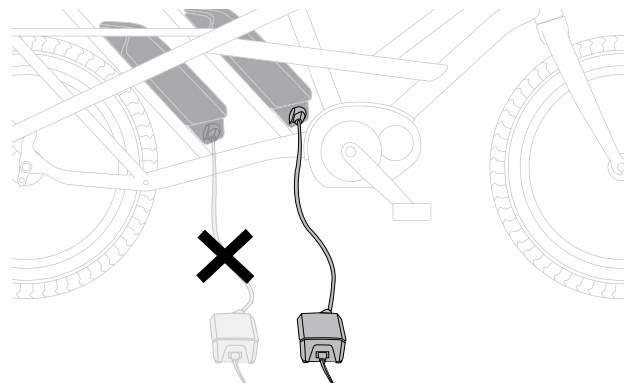
Each battery can be charged individually if removed from the pedelec.

### Terminal Lid

When riding the bike in single battery configuration, make sure to cover the exposed terminal with the supplied socket terminal lid to protect the circuits.

### Lighting

Your Tern pedelec comes with front and rear lighting directly powered by the battery onboard. Use the lights according to your local road regulations.





## Battery

- Your Tern pedelec is equipped with a lithium-ion battery. Modern lithium-ion batteries have more than 500 full discharge cycles before the capacity decreases. The battery does not have a memory effect so you may charge the battery at any time and do not have to wait until the battery is completely depleted before charging again. If you're going to stop using the bike for more than a month, charge the battery to about 80% full before storage. Never fully drain the battery and leave it uncharged for a prolonged period of time as this may damage the battery permanently.
- Only use the original charger from the battery manufacturer. Do not use another charger, even if the plug fits.



**Batteries must not be disposed of in landfills or by incineration**

- When your Tern's battery has reached the end of its service life, it should be treated as hazardous waste material and should not be disposed of in normal household trash. Ask your dealer for advice on proper disposal.

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## Tampering with the motor system



**It is forbidden to tamper with the motor system, in any way. Aftermarket devices or software that alters the speed limit and/or an addition of throttle and/or other devices will void the warranty of your bike. It will potentially create a severe safety hazard and might be considered unlawful.**

## Additional Info

Please read the separate enclosed manuals from the drive manufacturer for information on:

- Drive and controller operations
- Proper handling of charger and battery
- Troubleshooting
- Maintenance
- Cleaning

## 13. Tips for Riding a Pedelec

### Starting Off

When the controller is on, the power assist will be applied immediately when you step on the Pedal. It is, therefore, recommended to mount your Tern with the controller off. After you are seated, make sure no weight is on the pedals to prevent accidental movement, then turn on the controller. Start off at the lowest level of assistance.

Certain motor systems ask you not to put any weight on the Pedals before powering on so it can reset itself correctly.

### Selecting the Correct Level of Assistance

Do not only ride in high gear with power assist. Change gears as you would on a conventional bicycle to maintain an efficient cadence for your riding style. This will maximize the efficiency of the assistance to your power input.

For example, with a Bosch Mid-Drive Motor system, keeping your cadence constantly at approximately 90 rpm, regardless of speed, will ensure the motor is assisting you most efficiently.

### Riding with Power Assistance

How much you pedal determines how much assistance the motor provides. All pedelecs have an internal control algorithm to stop assisting as soon as you stop pedaling. This is an inbuilt safety feature conforming to EN 15194 (EPAC - Electrically Power Assisted Cycles).

When cornering on a pedelec, stop pedaling sooner than you are used to, otherwise, you may have too much speed through the turn.

As you are likely to be traveling at an average above speed, look further up the road and be ready to brake whenever a possible situation appears before you.

Due to the near silent nature of an electric motor, pedestrians and other cyclists may not hear you approaching.

Ride defensively, wear bright clothing, signal your intentions, and use your bell when necessary.

## **Riding without Power Assistance**

Your Tern is designed to be ridden normally like a conventional bike if the power assist is turned off. If you are going downhill or want to extend your range you can turn off the assistance but keep the display on to watch your speed. However, if the battery runs empty during your ride, the lights will not function since they are connected to the motor battery.

If your Tern is fitted with a Valo Direct light, you may purchase a Tern spade to USB cable and connect an USB power bank to turn on the light so you don't ride in the dark. The power bank should indicate how much power remains and provide you a visual alarm (such as blinking) when the power level is low (less than 20%). Verify empirically that there is enough power to last your ride after the low indicator has turned on.

## **Range of Battery**

Range varies depending on factors such as:

### **Average riding speed**

The faster you go the more energy is required and the quicker the battery will be depleted. However, if you ride faster than the maximum assist speed, the motor assist will completely shut off and the motor will not drain the battery.

### **Assistance level used**

The best way to conserve battery power is pedaling effort! Using less assistance and exerting more effort into pedaling will decrease battery power consumption and result in a longer range.

### **General maintenance**

Keep Tire pressure correctly inflated. Maintain and lubricate moving parts.

### **Stop-and-go traffic**

Starting from a standstill will always require more energy. To extend your range, start in Eco mode.

### **Rider's weight and cadence**

The motor will use up more energy for heavier riders. Keeping a cadence of at least 60 rpm will be more efficient.

### **Road conditions (road surface, terrain, wind)**

Unpaved (dirt, gravel) roads, headwinds, and going uphill will reduce your range.

**Battery capacity**

- Batteries, measured in watt-hours, have different energy capacities. In general, the more watt-hours, the longer the range, the more expensive battery, and the heavier your pedelec is.
- Ambient temperature can have a significant impact on battery capacity. Battery capacity is tested at a reference temperature of 23°C (73F). Large deviations from the reference temperature will drain the battery faster due to changes in internal resistance and will shorten the range.
- As the battery ages, the original capacity diminishes. This is true of all batteries but some chemistries last longer than others.

You can always check the amount of charge remaining in the battery from the control display.

# 14. Service



Your Tern has many advanced parts and components. Many bicycle service and repair tasks require special knowledge and tools. Do not begin any adjustments or service on your bicycle unless you are able to properly complete them. Improper adjustment or service may result in damage to the bicycle or cause serious injury. Consult your dealer if you need any help.

## Keeping It Real

When replacing components such as the Frame, Fork, Tires, Rims, Brakes, Front and Rear Lights, Kickstand, Handlebar, Handlepost, Stem, Drive Unit, Battery, or Control Unit/Display, etc., use the original spare parts or Tern-approved replacements. They are tested to ensure they work safely with your Tern pedelec. We recommend you visit a Tern dealer for parts and repairs.

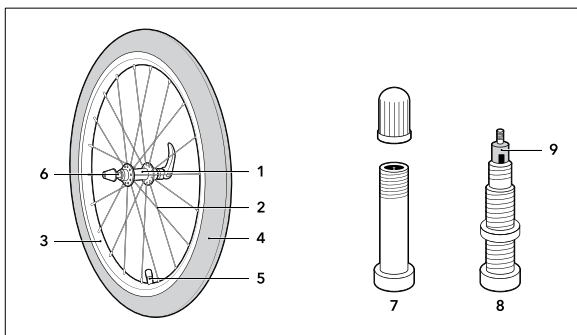


Service actions that you can (and should) perform do not require special tools or knowledge beyond what is presented in this manual. They are listed below:

## Stay Slick

Remember to maintain and lubricate your bike using appropriate lubricants. Ask your dealer when and where to lubricate on your bike.

## Air



- The Wheel consists of a Hub (1), Spokes (2), Rim (3), Tire (4), Valve (5) and Axle (6).
- The Valve may be a Schrader (7) or a Presta (8) type. Presta Valves have a Valve Cap (9) that must be loosened before inflating.
- Check the air pressure is within bounds as indicated on the sidewall of the Tire.
- Check your Tires to see if they have adequate tread depth and no punctures.

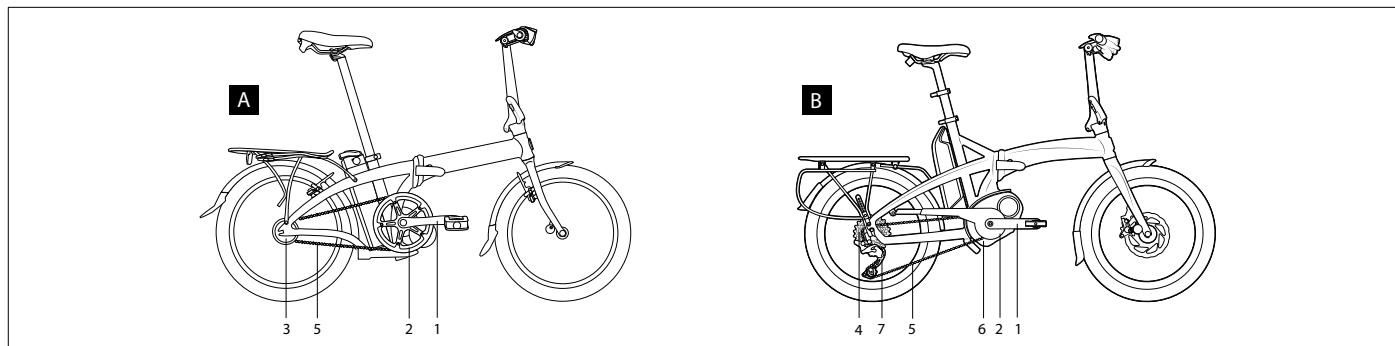
## Brakes

Make sure the Brakes are working with proper stopping power. The Levers should stop short of touching the Handlebar.



**Riding with improperly adjusted or worn Brakes is dangerous and can result in injury or death. Check the Brake manufacturer's instructions for care and operation of your Brakes. Keep Brake surfaces clean and free from oil or lubricants. Replace worn Brakes with authorized replacements.**

## Chain, Cranks, and Cables



A bicycle drivetrain has an Internal (A) or External (B) hub. The drivetrain consists of the Cranks (1), Chainring (2), Rear Sprocket (3) or Cassette (4), Chain (5), Front Derailleur (6) and Rear Derailleur (7). Bicycle gears are numbered from 1 upwards, with 1 being the lowest and easiest gear.

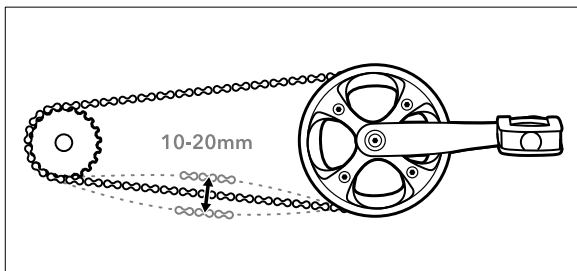
The lower gears are used for climbing and the higher ones are for descending. We recommend you practice shifting gears in a safe location.

To check that your Chain is fully connected with the Chainring, rotate the Cranks and ensure no gaps or kinks are visible.

Before riding, shift through all Gears and make sure the Chain and Derailleurs are fully functional. If your Gears are not shifting smoothly, we recommend consulting your dealer. If the Rear Derailleur is malfunctioning, do not use the highest and lowest gears of the Rear Cassette since the Chain or Wheel may get jammed which can cause bicycle damage or rider injury.

Check all control Cables and Housings for rust, kinks, and fraying. They should be replaced if damaged.

## Chain Tension



The chain endures huge tension forces from pedaling. For optimal shifting and efficiency, the Chain must connect with the teeth properly.

To check for excessive slack, shift to the smallest gear on the Cassette (if applicable) to create the greatest amount of slack in the Chain. Chain slack should be within 10-20 mm per span. This amount of slack is equally applicable to all internal hub gear chain drives.

Note: Belt drive tension is more complicated and should be serviced by dealers.

Excessive slack can be caused by a Chain that is worn and stretched. A stretched Chain will not sit properly in the teeth. Over time, gaps between the teeth of the Sprockets becomes greater, mirroring the shape of the Chain. Replacing a Chain when it is worn will help extend the life of the most expensive Cassette and Chainring.

For internal gear hubs, excessive slack can also be due to misadjustment of the rear wheel position relative to the dropout.

If you are not sure if the chain slack is from chain wear or wheel misadjustment, take your bike to the dealer for servicing.

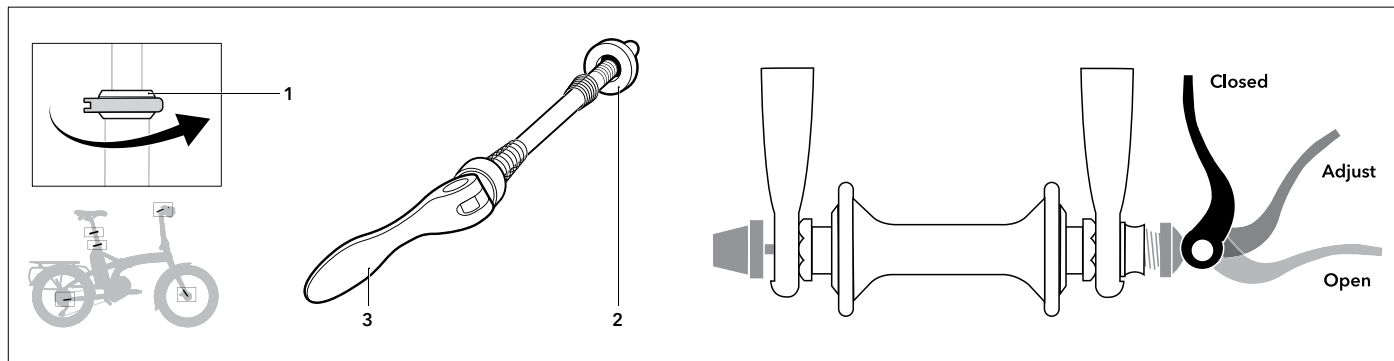
## Cleaning

When your Tern needs cleaning, use a bucket of water and gently sponge off any accumulated dirt and salt from your bike. Dry your Tern after cleaning to prevent rusting.



**Do not clean your Tern using a pressurized spray or steam because water can be forced into sealed areas and damage your bike.**

## Quick Releases



The Quick Release uses over-center cam action to clamp the component in place and allows for easy, tool-less removal.

A Quick Release has a Clamp (1), an Acorn (2) and a Lever (3). The concave side closes inward.

The Acorn allows you to adjust the clamping force. Closing the Lever as it passes the over-center point requires increasing force. This force should require you to use the palm of your hand.

Quick Releases hold the Wheels, Seatpost, and Handlebar in place.

When tightened on Wheels, the Quick Release should emboss the Fork Dropouts.

When tightened on the Seatpost, the Seatpost should not rotate.

When tightened on the Handlebar, the Handlebar should not rotate.

When the Lever is closed, position it in a way so that it cannot accidentally open through contact during riding.



**Quick Releases are very convenient but many accidents occur because of misuse. Improper adjustment may result in damage to the bicycle or in an accident which can cause serious injury or death.**



## Quick Release and Fasteners



Check that quick releases and important nuts and bolts that keep your wheels, handlebar and seatpost in place are properly closed and adequately tightened. Correct tightening force is vital. Too little force and the fastener may not hold securely. Too much force and the fastener can strip threads, stretch, deform or break. Either way, incorrect tightening can result in component failure and cause loss of control and accidents. See section 15 for correct torque values. If you're unsure, visit your dealer and ask them to show you the proper way.



All other repair or maintenance which is not specifically described in this manual should be performed by your dealer.

# 15. Torque Settings

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## It's all Torque to Me



Torque Values are standard measures of how much you must tighten a bolt and are listed below. When a torque value is given, a torque wrench should be used to ensure that the correct torque is applied.

## Recommended Tightening Values - Torque Values

Frame and Fork			
Component	lbf.in	Newton Meters (Nm)	kgf.cm
Kickstand Mounting Bolt	53-60	6-8	61-69
Water Cage Mounting Bolt	25-35	2.8-4	29-40
Rack Bolts	25-35	2.8-4	29-40
Fender Bolts	50-60	5.6-6.8	58-69

Brakes			
Component	lbf.in	Newton Meters (Nm)	kgf.cm
Brake Lever (Flat Bar)	53-60	6-6.8	61-69
Brake Lever (Drop Bar)	55-80	6.2-9	63-92
Disc Rotor to Hub (M5 bolts)	18-35	2-4	21-40
Caliper Mount	55-70	6.2-7.9	63-81

Wheels			
Component	lbf.in	Newton Meters (Nm)	kgf.cm
Free Hub Body	305-434	34.5-49	352-499
Cassette Sprocket Lockring	260-434	29.4-49	299-499
Front Axle Nuts	180	20.3	207
Rear Axle Nuts	260-390	29.4-44.1	299-449

Drivetrain			
Component	lbf.in	Newton Meters (Nm)	kgf.cm
Pedal into Crank	307	34.7	353
Crank Bolt (Splined and Square Spindles)	300-395	33.9-44.6	345-454
Bottom Bracket (External Shell)	610-700	40-50	702-805
Bottom Bracket (Cartridge and Cup-and-Cone)	435-610	49.1-68.9	500-702

Others			
Component	lbf.in	Newton Meters (Nm)	kgf.cm
Steerer Clamp Bolt (Stem)	70-89	8-10	80-102
Top Cap Bolt	35-53	4-6	41-62
Handlebar Clamp Bolts (4 Clamp Bolts)	36-53	4-6	41-62
Saddle Rail Clamp	70-89	8-10	80-102

# 16. Service and Maintenance Schedule

## Service Intervals

### Break-in

All bikes go through a normal break-in period. Your bike will last longer and work better if you break it in before riding it hard. We recommend all riders get a quick tune-up one month after purchase so that the dealer can adjust cables and other key parts.

### Maintenance schedule

Your bike needs a regular tune-up by an Authorized Tern Dealer. Below is our recommended tune-up frequency based on how often you ride, and under what conditions.

## Types of Riding

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<b>HEAVY RIDER</b> <i>Tune-Up Frequency</i> <b>Monthly</b>	<b>FREQUENT RIDER</b> <i>Tune-Up Frequency</i> <b>Bi-Monthly</b>	<b>RECREATIONAL RIDER</b> <i>Tune-Up Frequency</i> <b>Quarterly</b>	<b>LIGHT RIDER</b> <i>Tune-Up Frequency</i> <b>Annually</b>
<p>Rides 25 km (15 mi) or more daily</p> <p>Rides in all weather conditions</p> <p>Rides on roads with bumps and/or potholes</p> <p>Carries 105 kg (230 lb) or less on the bike, including rider's weight</p>	<p>Rides 3 or 4 times a week or an average of 100 km (62 mi) per week</p> <p>Sometimes rides in wet weather</p> <p>Rides on roads with bumps and/or potholes</p> <p>Carries 105 kg (230 lb) or less on the bike, including rider's weight</p>	<p>Rides once or twice a week</p> <p>Rides in dry weather or occasional light rain</p> <p>Always rides on smooth bicycle paths or paved roads</p> <p>Carries 105 kg (230 lb) or less on the bike, including rider's weight</p>	<p>Rides once or twice a month</p> <p>Only rides in dry weather</p> <p>Always rides on smooth bicycle paths or paved roads</p> <p>Carries 105 kg (230 lb) or less on the bike, including rider's weight</p>

**Service Record**

Inspection 1	Inspection 2	Inspection 3
Within 1 month of purchase or 200 km		
Date	Date	Date
Work Done	Work Done	Work Done
Replaced or Repaired Parts	Replaced or Repaired Parts	Replaced or Repaired Parts
Stamp/Signature of dealer	Stamp/Signature of dealer	Stamp/Signature of dealer

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Inspection 4	Inspection 5	Inspection 6
Date	Date	Date
Work Done	Work Done	Work Done
Replaced or Repaired Parts	Replaced or Repaired Parts	Replaced or Repaired Parts
Stamp/Signature of dealer	Stamp/Signature of dealer	Stamp/Signature of dealer

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# 17. Warranty

## Tern Limited Warranty

Tern bicycles are sold on behalf of our company (“Tern”) by selected Authorized Tern Dealers who understand the assembly and service needs of our products. Tern provides a warranty against defects in materials and workmanship to the original retail purchaser (“Owner”) of a Tern bicycle from the date of purchase according to the following terms:

**Five Years:** Frame, Handlepost, and Fork

**One Year:** All Tern or BioLogic branded parts and components, except as noted below.

Any other parts or components are covered by the stated warranty of the original manufacturer of that part or component.

## Extended 10-Year Warranty

Owners who sign up for Tern Care on [ternbicycles.com](http://ternbicycles.com) will be covered by an extended 10-year warranty for the Frame, Handlepost, and Fork, as long as they sign up within 30 days of purchase and are the original purchasers. In addition, the bike must have been assembled by an Authorized Tern Dealer at the time of purchase—regardless of whether the bike was purchased from a physical or online store.

The following items are excluded from the extended 10-year warranty:

- Frame and Handlepost Latches
- Paint finish
- Bikes for commercial use

The warranty does not mean that the Frame, Handlepost, and Fork are indestructible. All materials can fail if pushed beyond design and manufacturing limits. It simply means that these items are covered under the specific terms of this limited warranty.

## Owner’s Responsibility

The Owner shall demonstrate reasonable care and use, and follow preventive maintenance, storage, and lubrication schedules as required by use, climate and other pertinent factors. Should a product defect become known, the Owner should stop riding the bicycle and transport the bike or part(s) to an Authorized Tern Dealer for warranty repair (within the applicable warranty period). The transport of the bike or any bike part to and from the dealer shop is the Owner’s responsibility and at the owner’s expense.

All claims to this warranty must be made through a Tern Authorized Dealer or exclusive distributor. Proof of purchase, either digital or physical copy, must be supplied with any warranty request. All Tern bicycles must be registered via Tern Care before a warranty claim may be processed.

In addition, the Owner must confirm that they have received the Owner Briefing from their dealer or that they have watched the Owner Briefing video on [ternbicycles.com/support](http://ternbicycles.com/support).

## Exclusions

This warranty does not cover damage and/or defects that occur under the following conditions:

- If a bike has been used, ridden, handled, maintained or overloaded in a manner that does not abide by the product specifications, intended use or guidelines in the Owner's Manual. This includes, but is not limited to, off-road riding.
- Normal wear and tear. Parts are subject to varying wear depending on use, load, weather, road conditions, etc.
- Paint finish is considered consumable and is not part of the warranty.
- If a bike or part has been re-assembled, repaired or maintained by personnel not authorized by Tern.
- If a bike has been subjected to fire, flood, accidental breakage, improper actions by third parties, and/or any event outside Tern's control.
- Modification of the Frame, Fork, Handlepost, or Components.
- Installation of Parts, Accessories, Motor Units or Batteries not originally intended or compatible with the bicycle as sold.
- If the frame number and/or service tag on the bike have been defaced, modified, manipulated or is otherwise not clearly identifiable.

## Tern Warranty Support

Tern will repair or replace any parts that manifest a defect in materials and/or workmanship during the warranty period. Any part that is replaced pursuant to this warranty will be replaced by parts of the same or similar design. However, Tern reserves the right to replace defective parts with other parts of different design or color manufactured by or on behalf of Tern, provided that such replacement will not reduce the function of the original part.

Due to product evolution and obsolescence, some components may not be available for older models. In these cases, sourcing and payment for components are the responsibility of the Owner.

Tern may, at its discretion, repair or replace defective parts falling outside the warranty period, but such work shall not be deemed to be any admission of liability.

Any Frame, Handlepost, or Fork replaced under the warranty terms will be covered for the remaining period of the warranty of the bike.

This is the only warranty made by Tern and no employee, agent, or reseller of Tern is authorized to make any other warranty on behalf of Tern.

This warranty is expressly limited to the repair or replacement, at Tern's discretion, of a defective part and is the sole remedy of the warranty. This warranty applies only to the original retail purchaser and is not transferable. This warranty only covers bicycles and bicycle components purchased through an Authorized Tern Dealer and is only valid within the country in which the bicycle was originally purchased. As not all models or parts are sold in all countries, service is not guaranteed outside of the original country of purchase. Claims made outside of the original country of purchase or the Authorized Tern Dealer network may be subject to additional fees and/or delays in obtaining service parts and information. For internet sales, the original country of purchase is defined as the country in which the seller is located.

Should there be any modifications done on the bike that is not specified by Tern, the Owner assumes complete responsibility for any risk or injury that may arise from riding or using a bicycle with any modifications or changes from the standard manufacturer's offering excepting manufacturer mandated modification(s) ("Modified Bicycle"). The Owner understands that a Modified Bicycle does not necessarily conform to relevant safety standards so using and/or riding is inherently dangerous and may cause serious injuries, including bodily injury and/or damage to personal property.

This limited warranty is in lieu of all other expressed or implied warranties, including any warranty of fitness for a particular purpose or use otherwise applicable to this product. Tern shall not be liable for any special incidental or consequential damage, including lost profits. There are no warranties extended other than as provided herein. This limited warranty may be modified only by Tern.

If any part of this warranty does not comply with local law, then it shall be deemed separable from the rest of this warranty, which remains enforceable and shall be interpreted as the closest meaning of that written above, in English, or the minimum required by such local law. This warranty does not affect the statutory rights of the consumer.



## 18. Declaration of Conformity (For countries within EU)

According to EC directive 2006/42/EC on machinery (Annex II A)

This declaration relates exclusively to the machinery in the state in which it was placed on the market and excludes components which are added and/or operations carried out subsequently by the final user. The declaration is no longer valid if the product is modified.

Herewith, we declare, that your Tern Pedelec complies with all essential requirements of the Machinery Directive 2006/42/EC and Directive 2004/108/EC relating to electromagnetic compatibility.

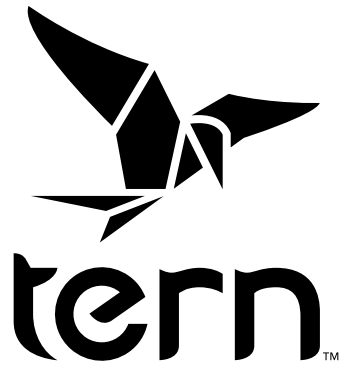
The following technical standards were used:

EN 15194:2017 Electrically power assisted cycles (EPAC)

Taipei, October 2018

### **Tern Bicycles**

8F-8, No. 6, Lane 609, Chung Hsin Rd, Sec 5,  
Sanhong District, New Taipei City, Taiwan  
[ternbicycles.com](http://ternbicycles.com)



Tern Bicycles

[ternbicycles.com](http://ternbicycles.com)

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