

# **TRIKKE**<sup>™</sup> PROFESSIONAL MOBILITY

**DEFENDER**



## **Owner's Manual**

TRIKKE DEFENDER

**TRIKKE Defender and TRIKKE Positron are professional grade Light Electric Vehicles (LEV) for personal mobility.**

**Developed to offer quick and efficient transport of an individual in a wide range of terrain: street, sidewalk, walk paths, on and off-road, indoor and outdoors.**





FIRST ASSEMBLY VIDEO

## FIRST ASSEMBLY (watch assembly video)

- 1) Remove the unit from the packing box
- 2) Unfold the frame, lock the folding levers.
- 3) Attach handlebar (cables route in front of the handlebar post), align with front wheel, tight handlebar clamp bolts really well.
- 4) Attach the siren to the top of front structure (60V model, 72V does not need it).
- 5) Secure the cables loom to the side of the front structure with the small clamps.
- 6) Install battery – a) battery must be switched OFF b) make sure the key-lock pin is retracted (counterclockwise). c) identify front and back side of the battery d) place the battery on the tray tilted to the back. e) push the battery forward against the lock all the way and turn the key clockwise to lock. Remove the key from the lock and place in a safe place.
- 7) Check/calibrate tires pressure. Use a floor pump or electric pump with a reliable gauge. Front 50psi, Rear 65psi.

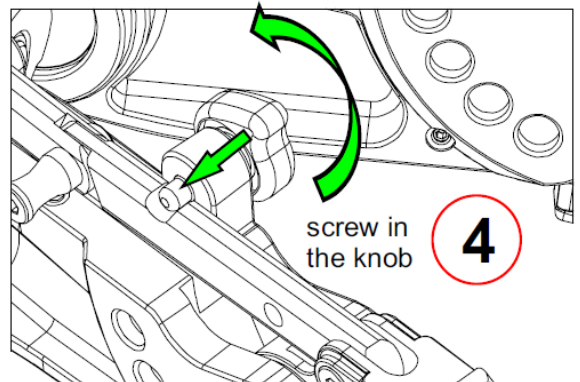
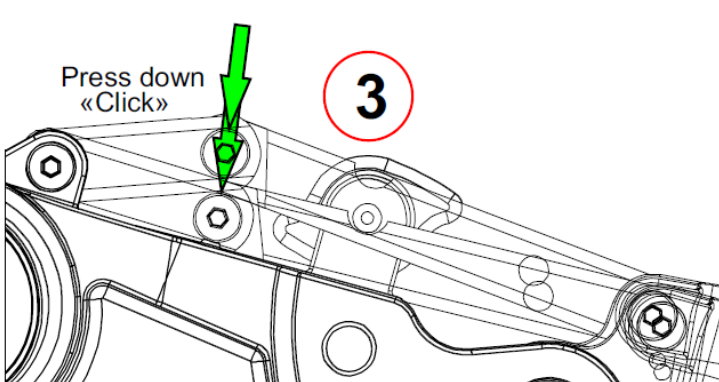
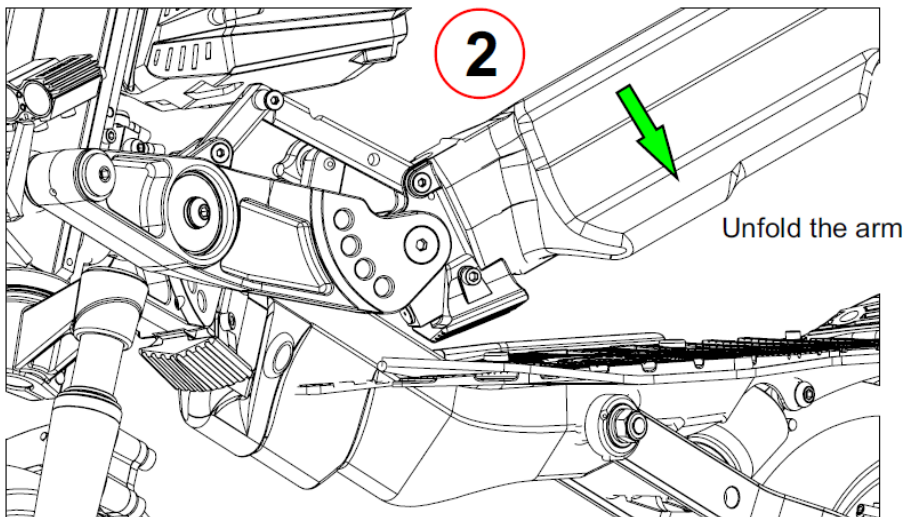
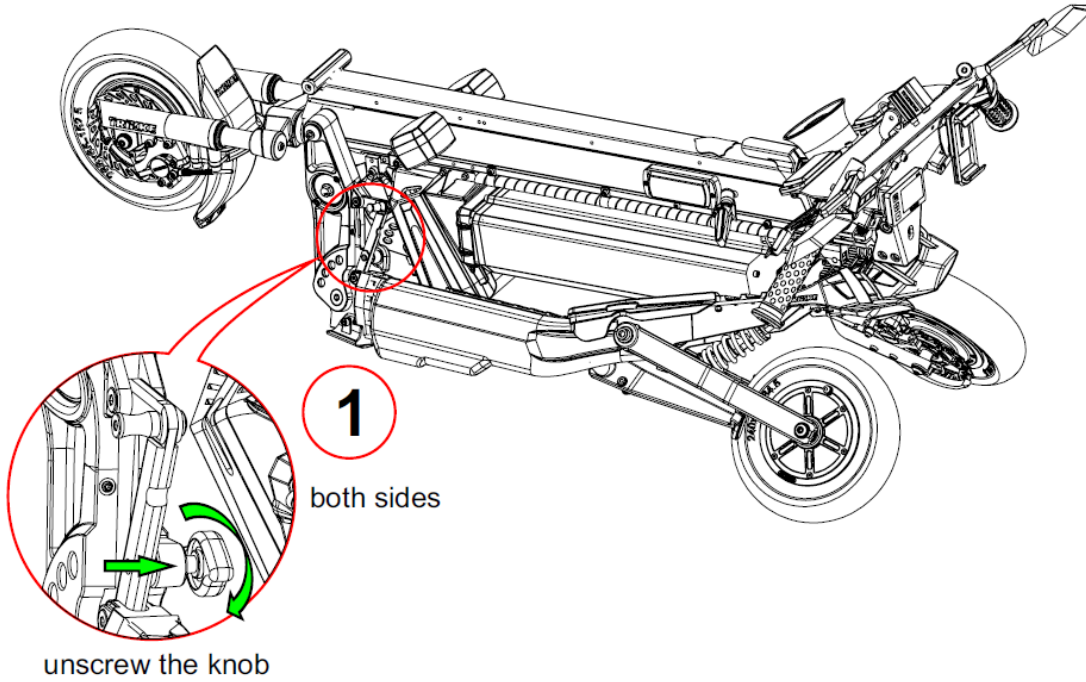
## UNFOLDING

- 1) Retract the lock knob on each folding mechanism (LH and RH) about 3/8" (1cm)
- 2) Unfold the frame
- 3) Press down the tensioners (while leaning the vehicle to the opposite side) until it snaps into locked position
- 4) Screw the knobs in until it locks. These will be on top of the tensioners as a safety pin.

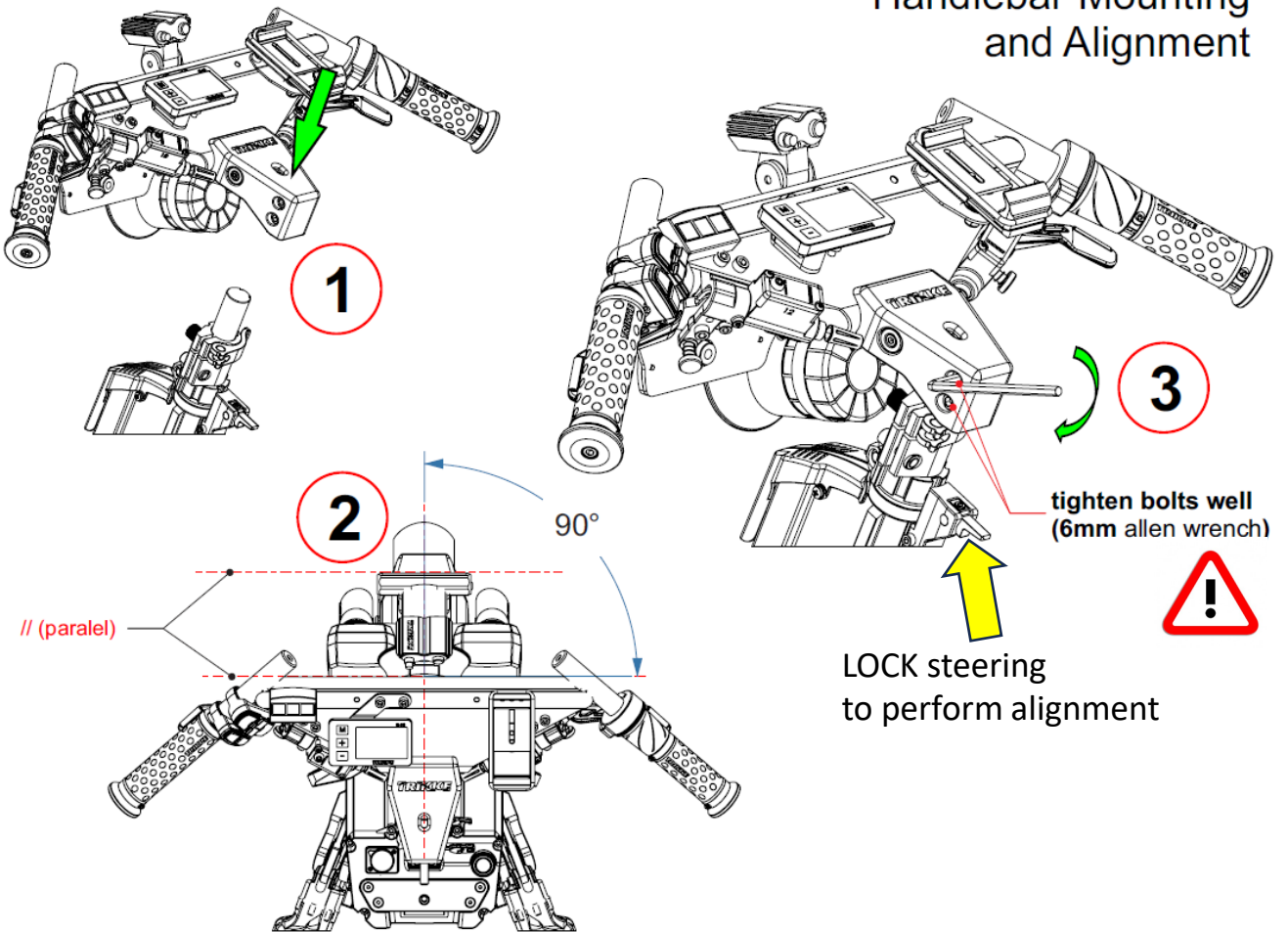
## FOLDING

- 1) Retract the lock knob on each folding mechanism (LH and RH) until the tip clears the levers.
- 2) Pull the center knob up to unlock the tensioners (while leaning the vehicle to the opposite side)
- 3) Fold the frame
- 4) Screw the knobs into the hole through the lever in order to lock the frame folded. This is imperative for handling and transport.

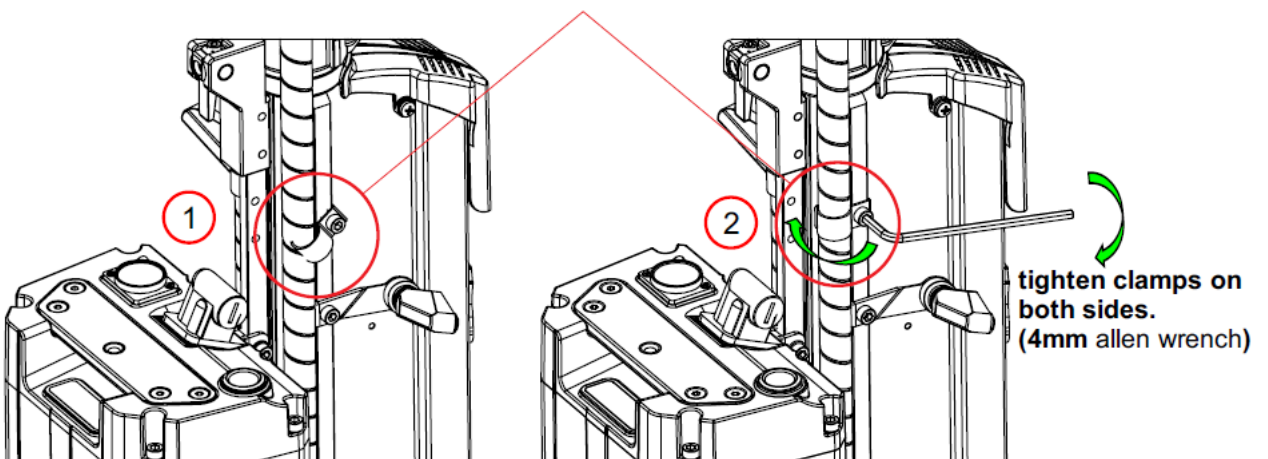
## Unfolding the Frame



## Handlebar Mounting and Alignment



## Securing Cable loom to the frame



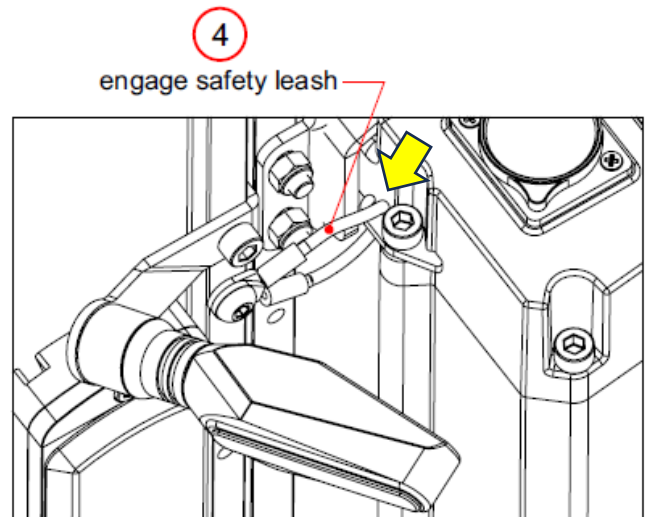
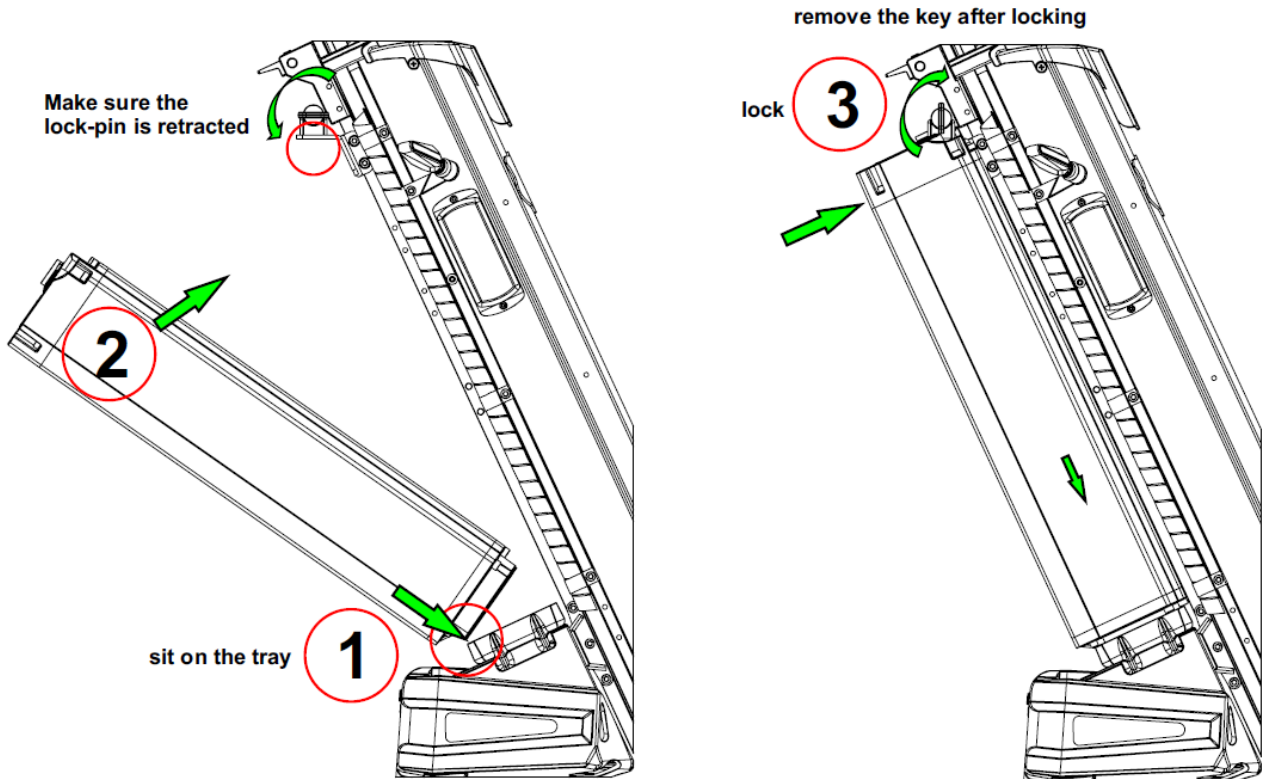


## Installing the Battery



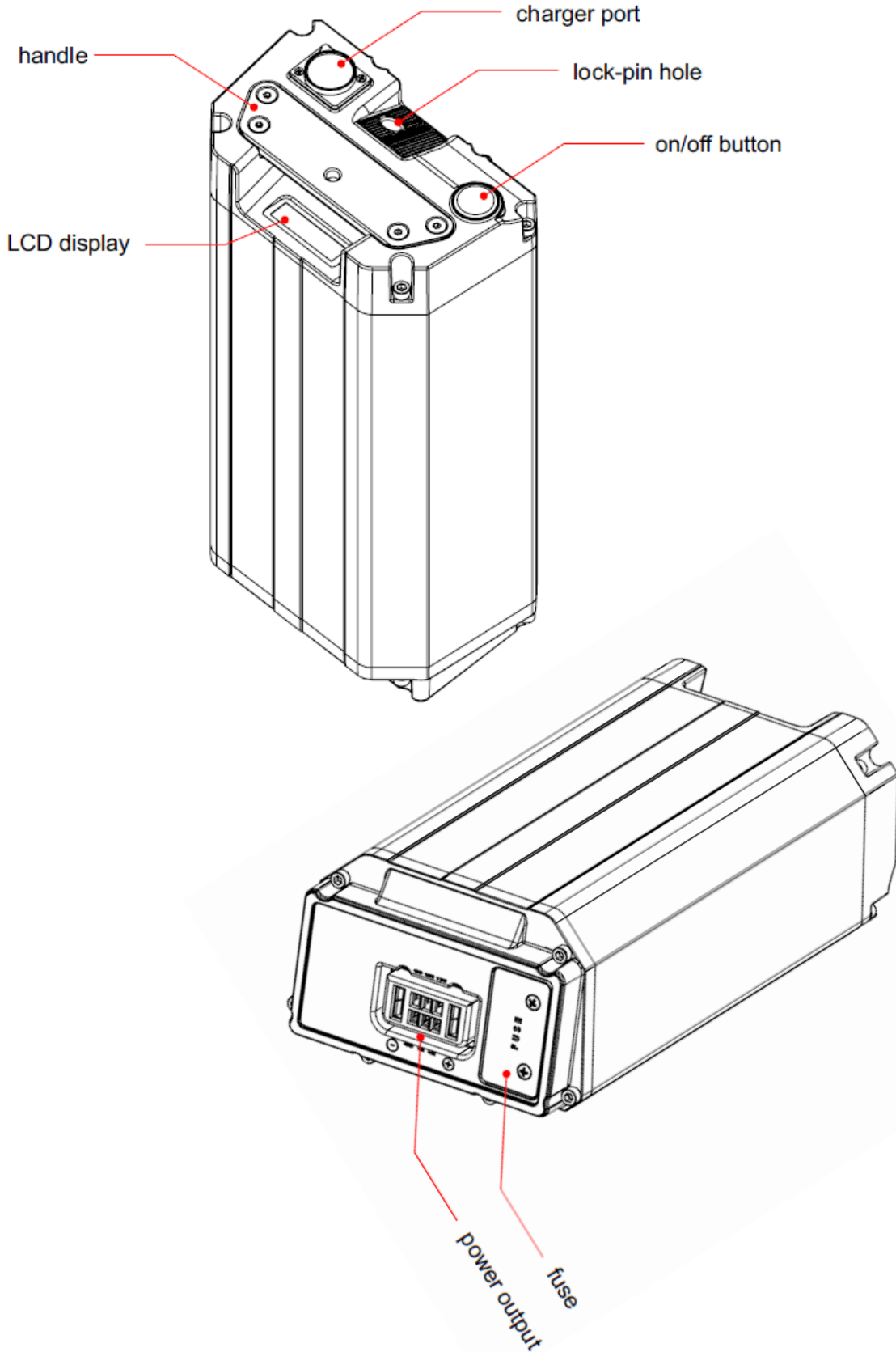
Make sure the battery is switched **OFF** for installation

### Installing the battery



Left side of the vehicle

## Battery





## OPERATION (watch operation tutorial video)

Turn On the battery power: press in the on-off switch.  
The battery LCD will light up showing the % of remaining charge.

Push [M] button on Display to turn ON the drive system.

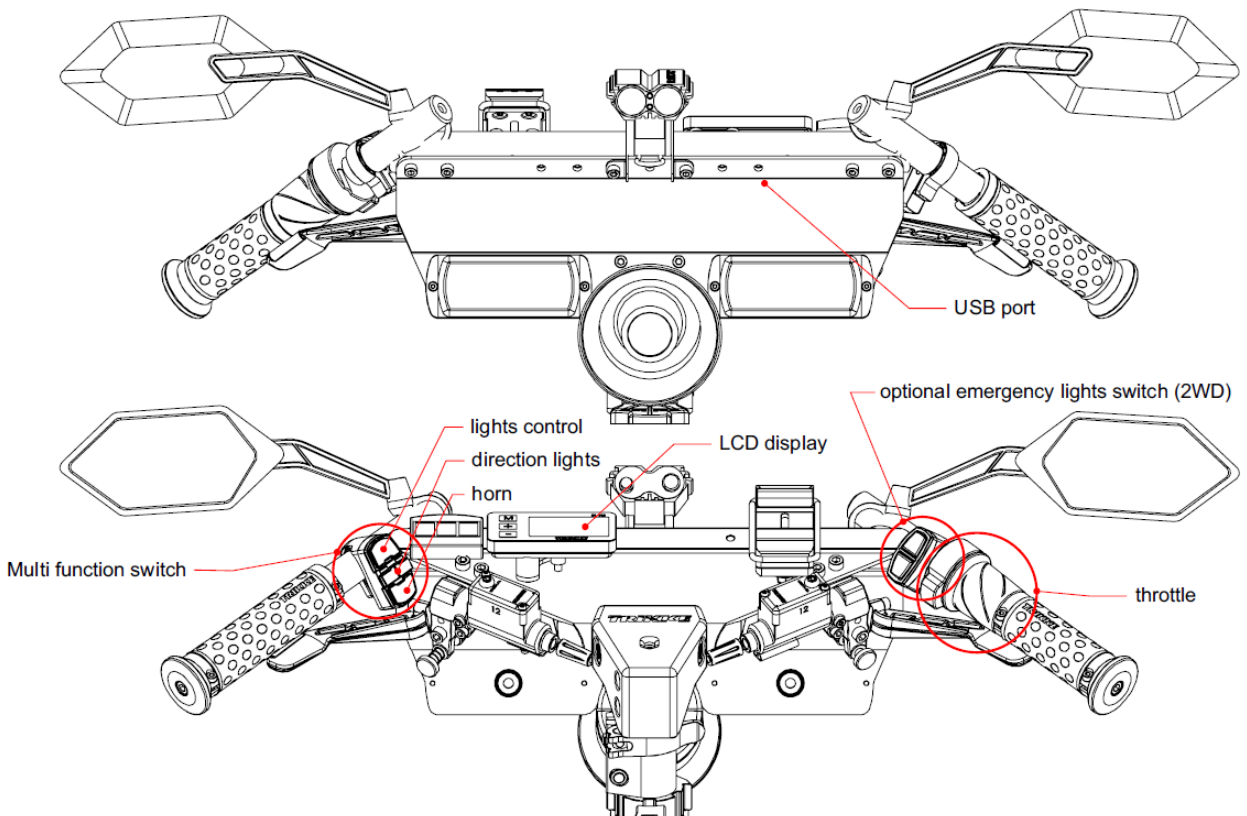
OPERATION GUIDE VIDEO

By default, the display is selected to PAS 2 (power level 2 of 5). You can increase or decrease the power by using the [+] and [-] buttons

Gently twist the throttle towards you to make the vehicle move forward. The more angle you turn the throttle, the speed will increase.

Use the brake levers situated on both sides of the handlebar to apply brake and reduce speed or stop. Apply brakes evenly and gently. Avoid squeezing the brakes too hard as it cause the wheels to lock and skid. Right hand brake for rear wheels. Left hand brake for front wheel. Do not use front brake heavily while turning, the front wheel may skid or lock, causing loss of control.

## Handlebar mounted controls





LCD Display - operation

**Turning Display ON-OFF and sleep**  
 \* After switching the battery power ON you will have to press M button to turn the display ON and start the system.  
 \* To turn the system OFF press and hold M button. You may also switch the battery power OFF.  
 \* After a preset time of non-operation, the display will power down (sleep).  
 \* Press M to wake the system up. (models with RFID key swipe the card)



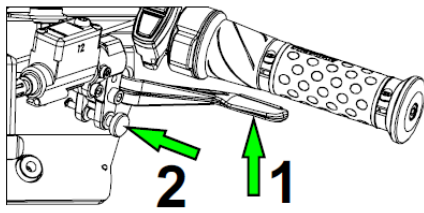
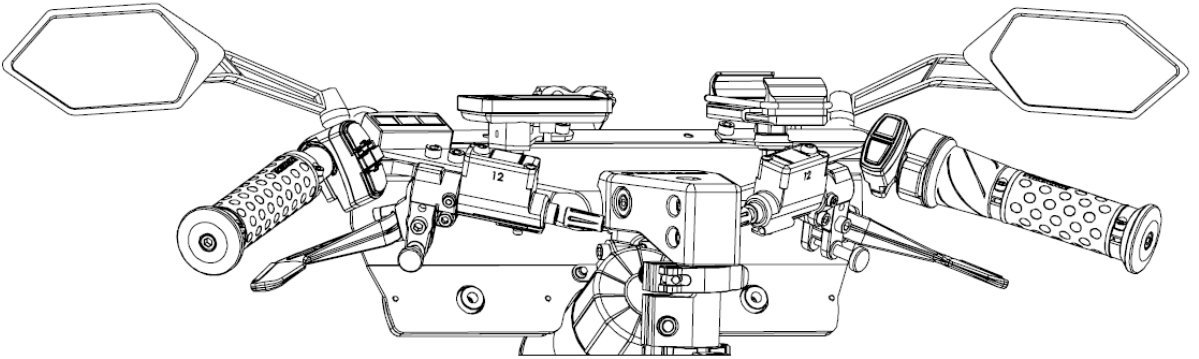
TRIKKE drive system - Display Settings

To enter SETTINGS press [+] and [-] buttons together for 2s. It will prompt for passcode "Cd" (enter 3333)  
 Use [M] button to scroll through parameters P01-P16. Use [+] and [-] buttons to change value.  
 Press and hold [+] and [-] buttons to exit SETTINGS and go back to main screen (or wait for 30s and it will go back to main screen by itself) .  
 By-pass the rfid key ("Card" by holding [-] for 15s. Enter 4 digit code. Use [+] to switch position, use [-] to change numbers.

| PARAMETER | description                 | range   | Factory value  | NOTE  |
|-----------|-----------------------------|---|--|---|
| P01       | Speed limiter               | 0-100% of the top speed   | 100  | 100 = 28mph Defender<br>100 = 37mph Positron 60V<br>100 = 43mph Positron 72V  |
| P02       | Motor magnets count         | do not change   | 30   |   |
| P03       | Tire circumference          | 753mm (rear wheel)  | 753  |   |
| P04       | unit                        | Miles ; Km  | Miles  |   |
| P05       | System voltage              | 48V ; 60V ; 72V   | 48 / 60 / 72   |   |
| P06       | System timeout              | 1-30 minutes  | 10   |   |
| P07       | Number of motors            | 1 (FWD); 2 (2WD); 3 (3WD)   | 3  |   |
| P08       | Speed sensor                | do not change   | 1  |   |
| P09       | Odometer reset              | 1 ; 0 will reset to zero  | 1  | if you change this parameter to "0" there is no way back.                     |
| P10       | Starting power assist       | 1,2,3,4,5 choose default power at start up  | 2  |   |
| P11       | Blue Tooth key              | not used  | 0  |   |
| P12       | Immobilizer (motor jamming) | 0 – off ; 1 - on 30 sec delay   | 1  | engages 30s after turning display off. Must keep battery switched ON to work. |
| P13       | Regenerative braking        | not used  | 0  |   |
| P14       | RFID card pairing           | pair up to 3 cards. Show card near the [+] button to pair. Hold [-] button for 10s to delete all cards. | 1, 2, 3 ... 0  |   |
| P15       | Pass Code "Cd" 4 digits     | used to access settings and to by-pass rfid key   | factory default 3333<br>can be changed to any passcode | to by-pass RFID key > hold [-] for 20 sec and enter code                      |
| P16       | Power level limiter         | 1, 2, 3, 4, 5   | 5  | if select 3, rider can only use 1,2,3 (4 and 5 not available)                 |

# PARKING

## a) Lock parking brakes (both sides)

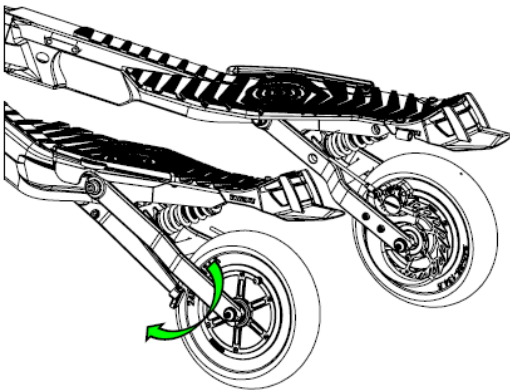


**Lock:**

- 1) squeeze lever
- 2) Push-in the plunger and release lever

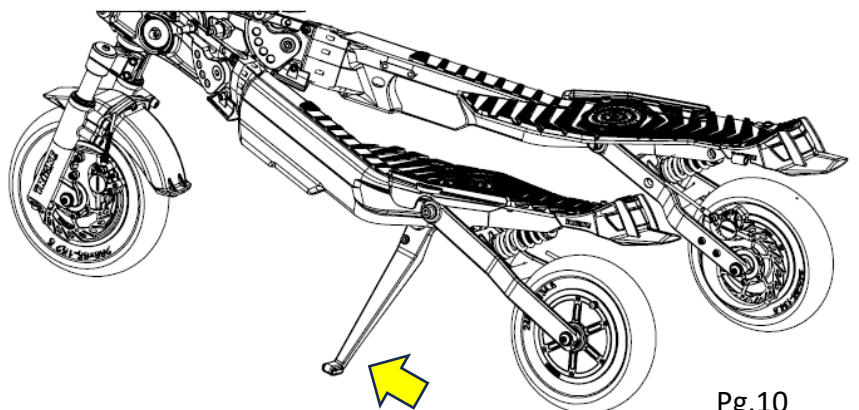
**Unlock:**

- Squeeze lever



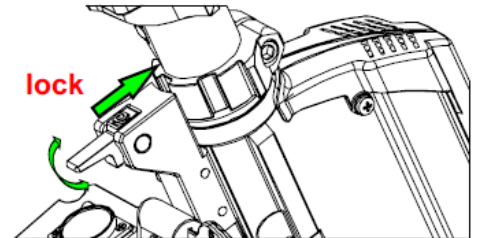
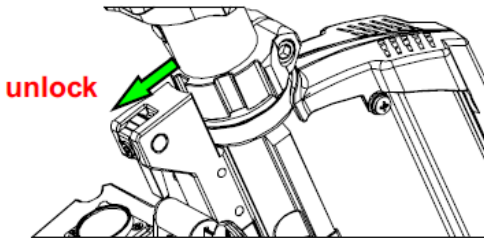
## b) Set the kick-stand

Turn handlebar to the left and lean the vehicle over the kick-stand.



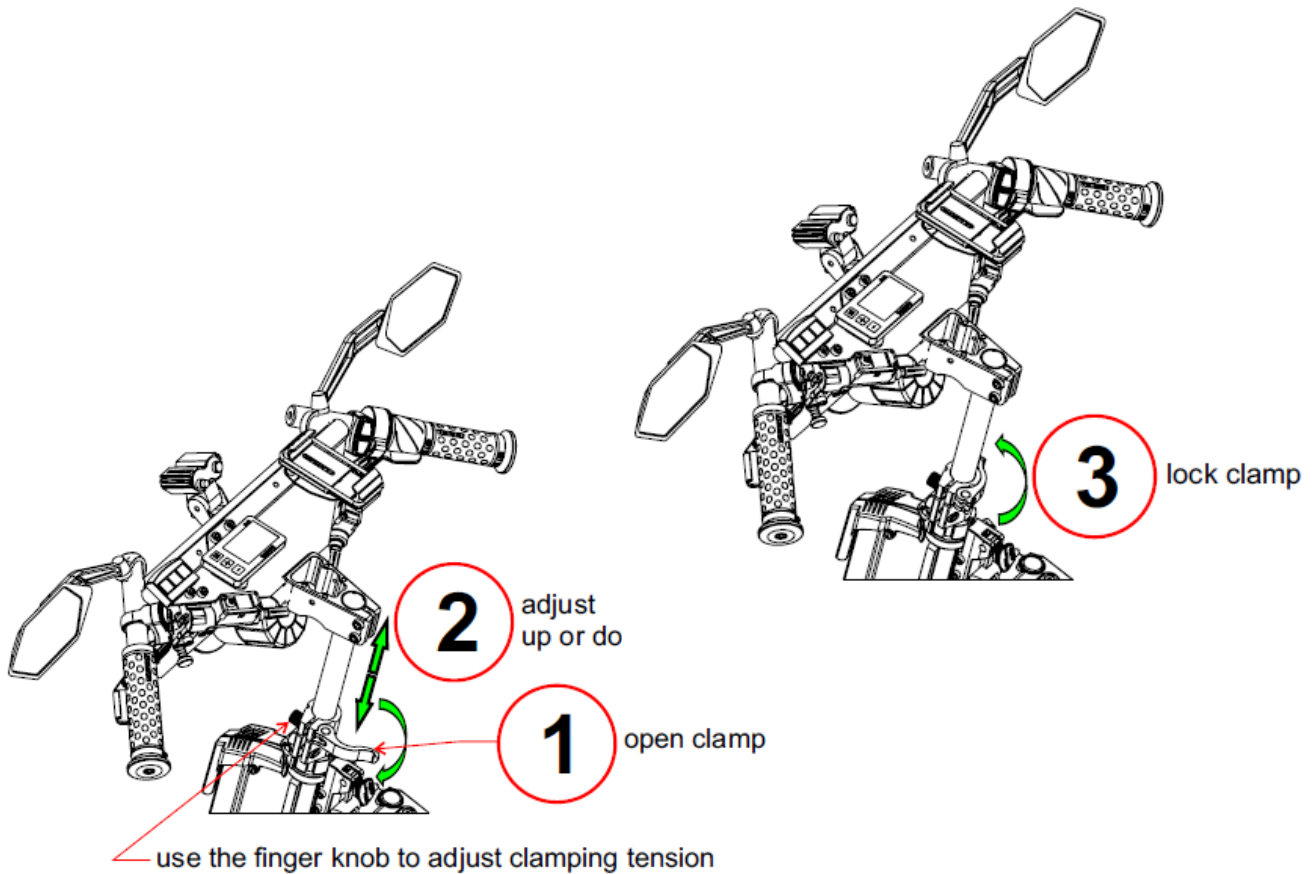
## Steering lock

Useful for transport and maintenance, as well as theft deterrent.



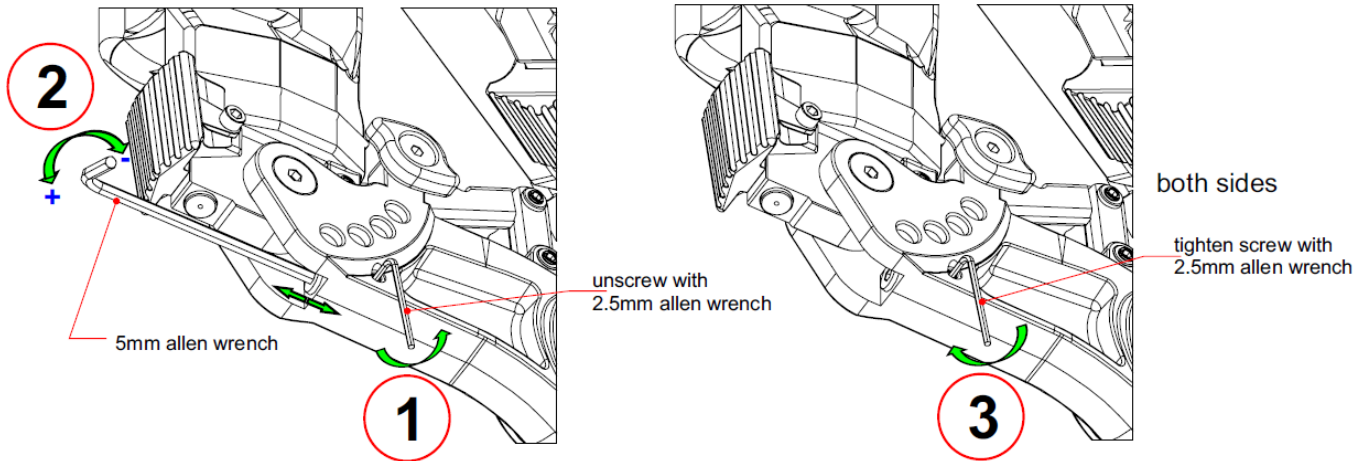
## Handlebar Height Adjustment

Useful for transport and maintenance, as well as theft deterrent.



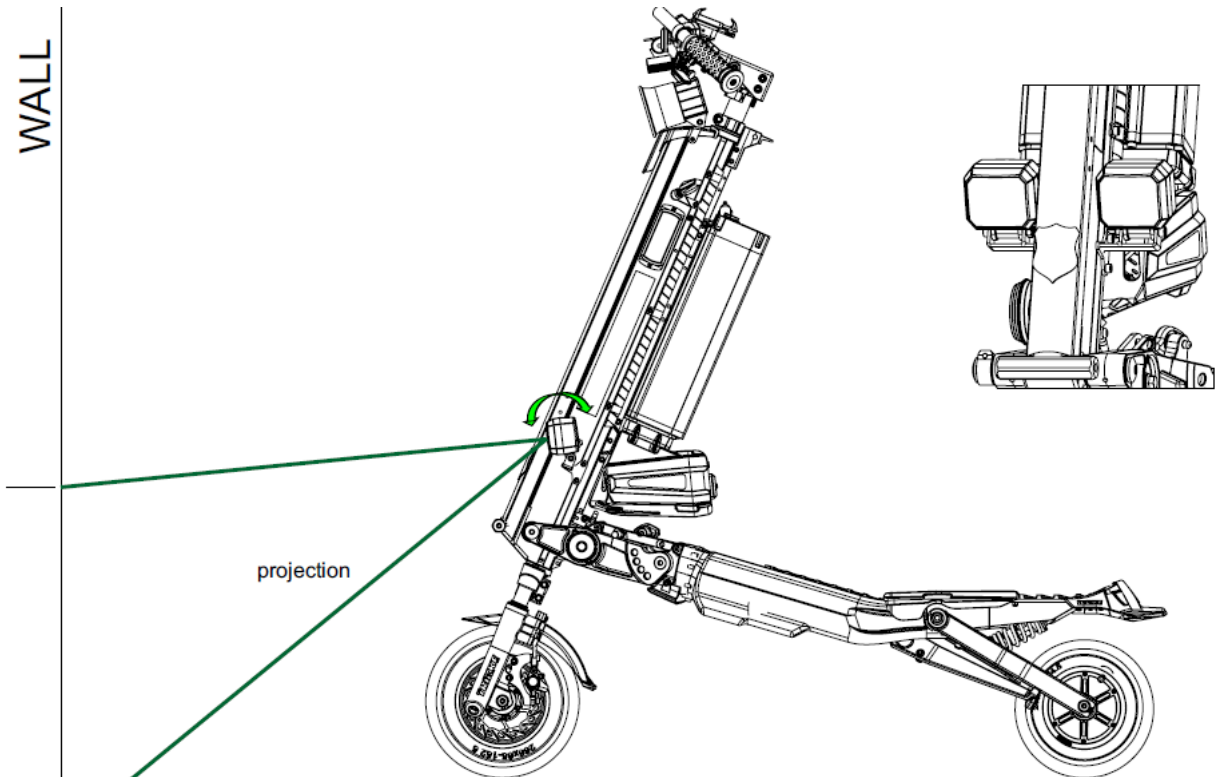
## Folding Mechanism – adjusting lock tension

Keep a good tension to eliminate any play.  
Reduce the tension for easy operation.

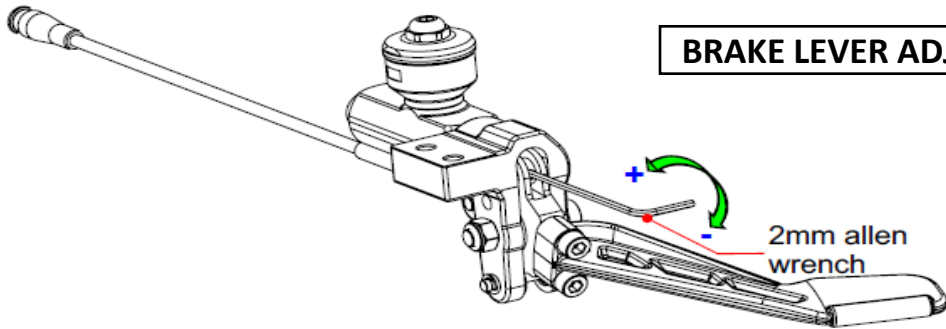


## Headlight adjustment

Adjust the headlight projection angle by tilting the headlight on the bracket.

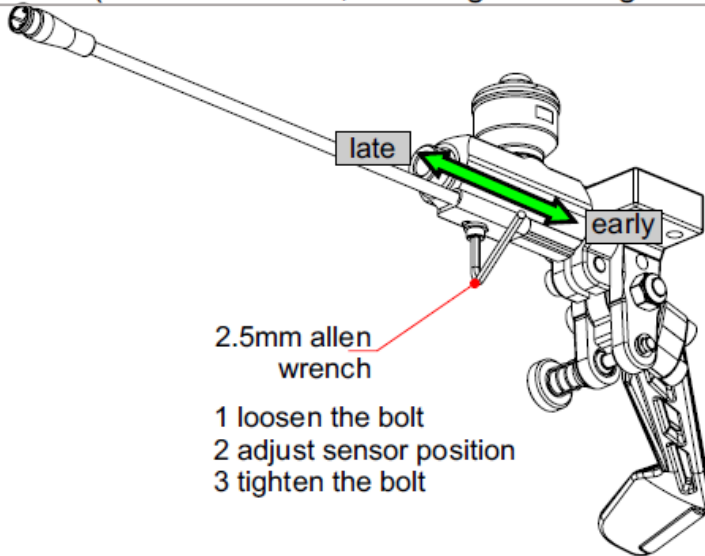


adjusting brake lever reach and parking brake tension



**BRAKE LEVER ADJUSTMENT**

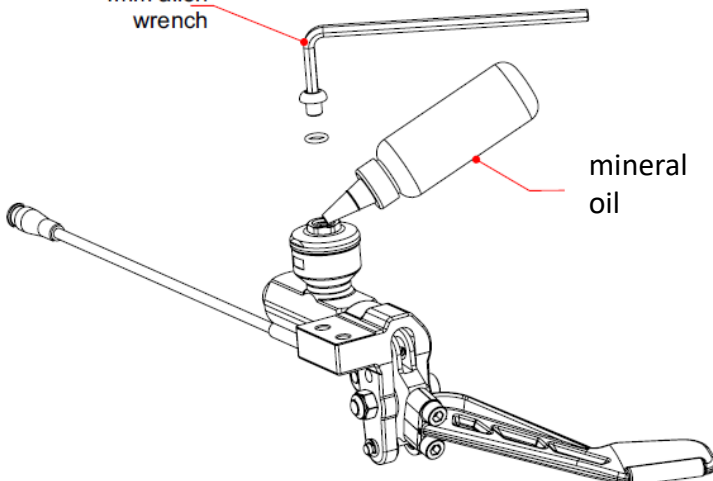
adjusting brake switch activation  
(motor kill switch, brake light and regen brake)



**BRAKE SWITCH  
ADJUSTMENT**

RIGHT lever = drive kill  
switch  
LEFT lever = brake light  
switch

4mm allen  
wrench



**ADDING OIL  
TO BRAKE RESERVOIR**



**MAINTENANCE**

**TIRE PRESSURE**

Check and inflate every 3 weeks!

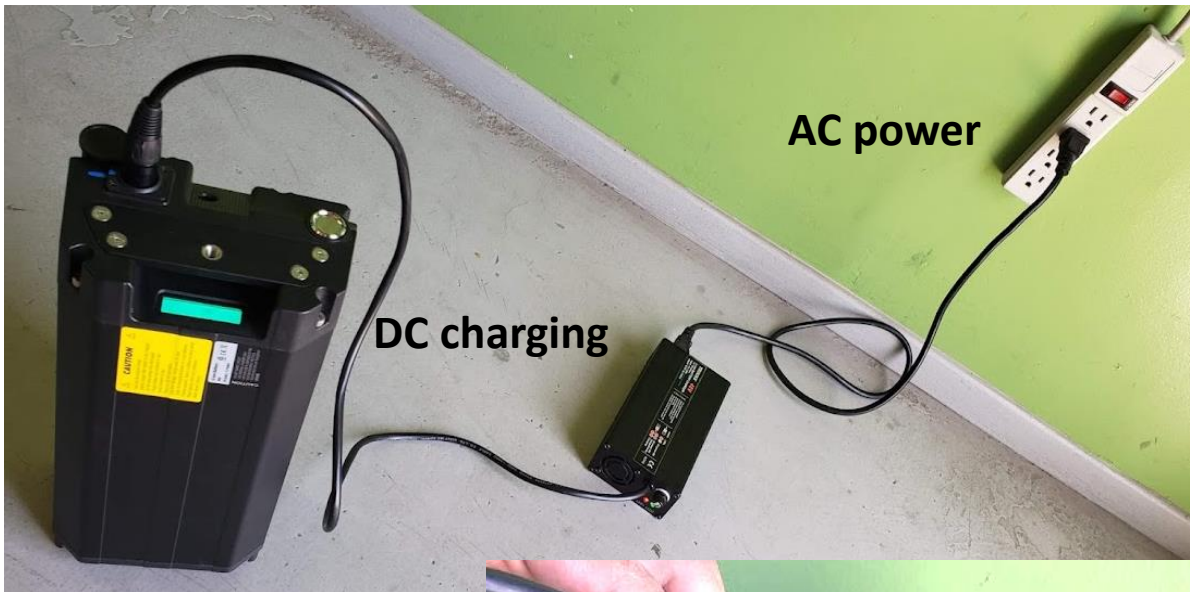


**Standard air tire  
FR 40-50 psi RR 50-65 psi**

**CLEANING:** wipe with a soft cloth and all-purpose cleaner

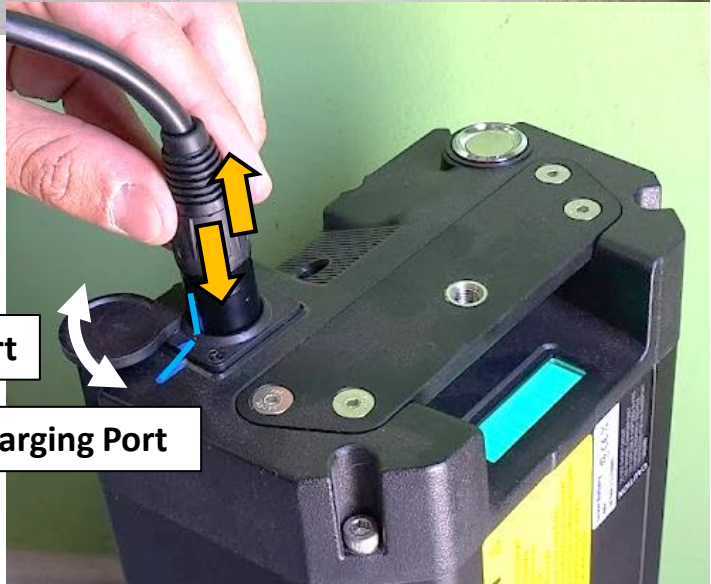


# CHARGING



AC power

DC charging



Align blue lines to insert

Charging Port

## CHARGER



AC power ON

**GREEN** - not charging or battery already charged

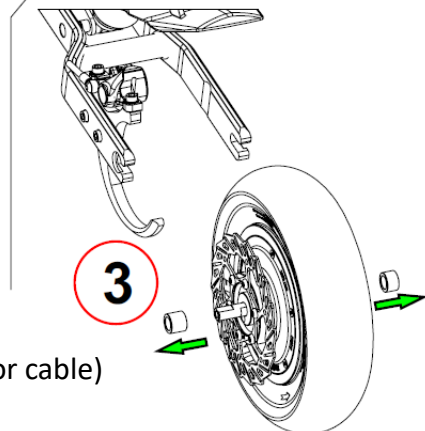
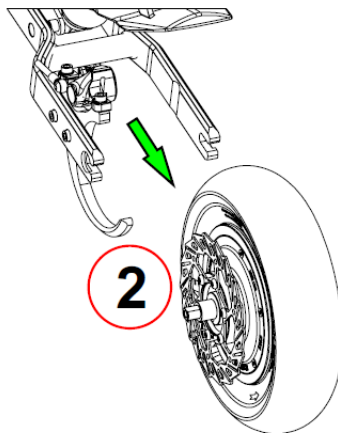
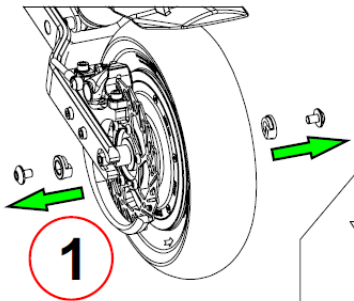
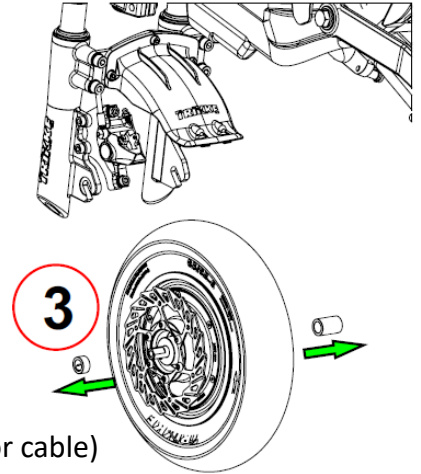
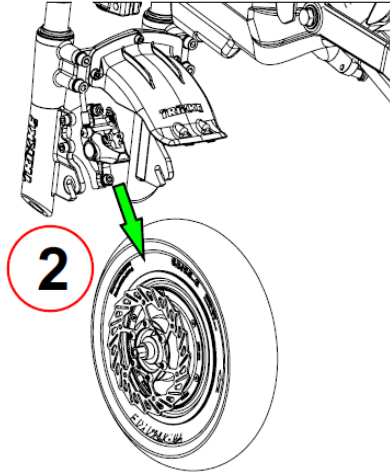
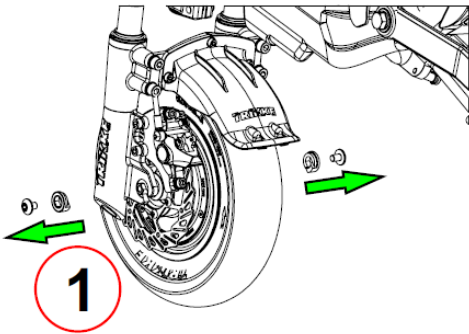


Fan ON

**RED** – charging in progress



**Removing/installing FRONT wheel**

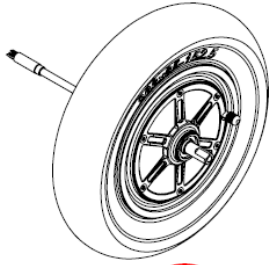


**Removing/installing REAR wheel**

(Disconnect/Connect motor cable)

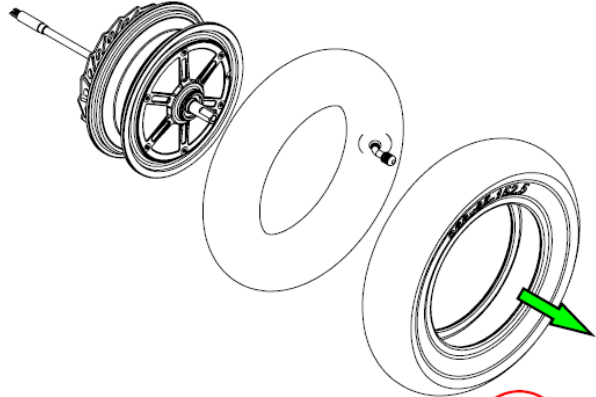
## Replacement Tire and Tube

front and rear

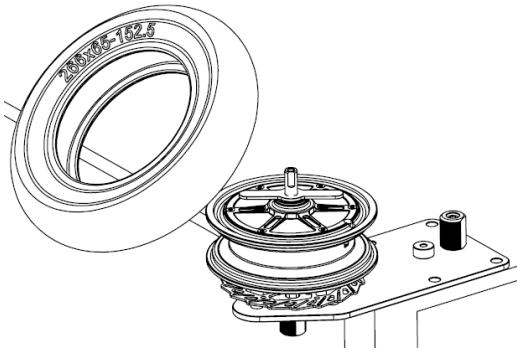


1

Using the TRIKKE tire changer

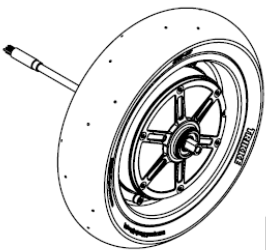


2

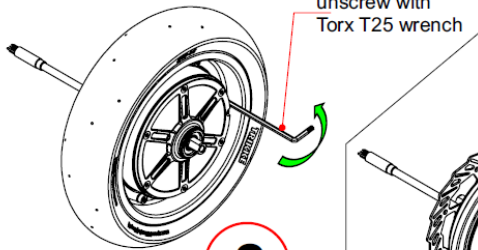


## Replacement Solid Tire Option

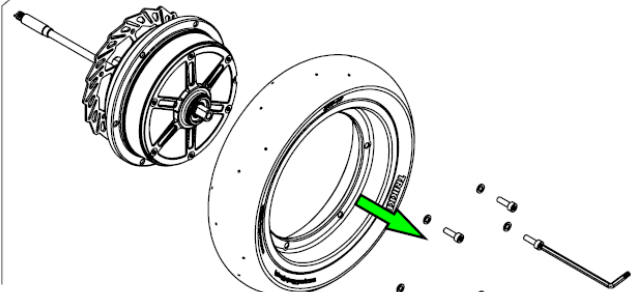
front and rear



1



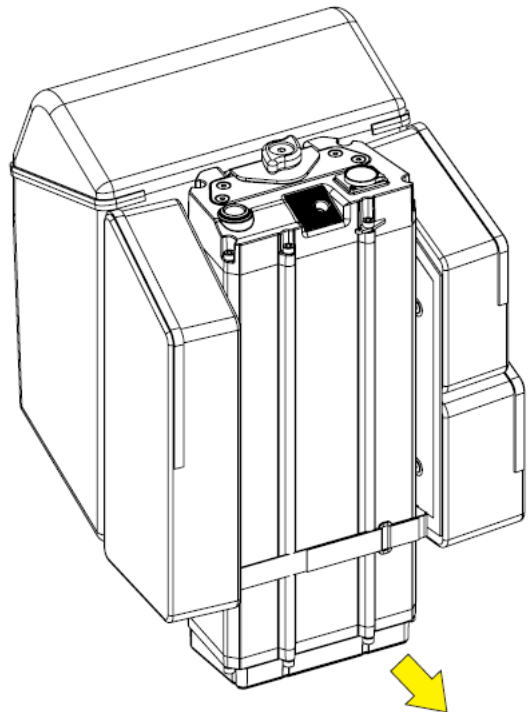
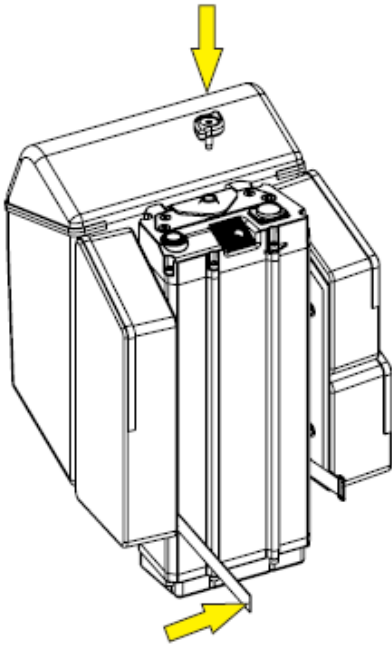
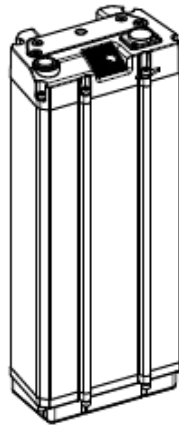
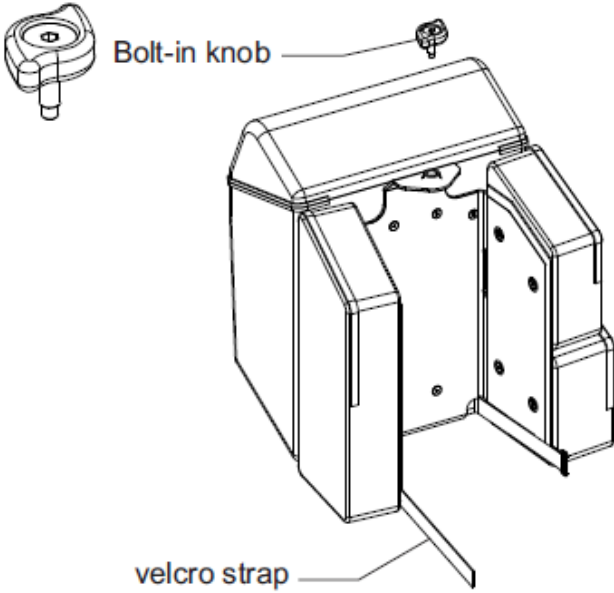
2



3

\* optional accessory

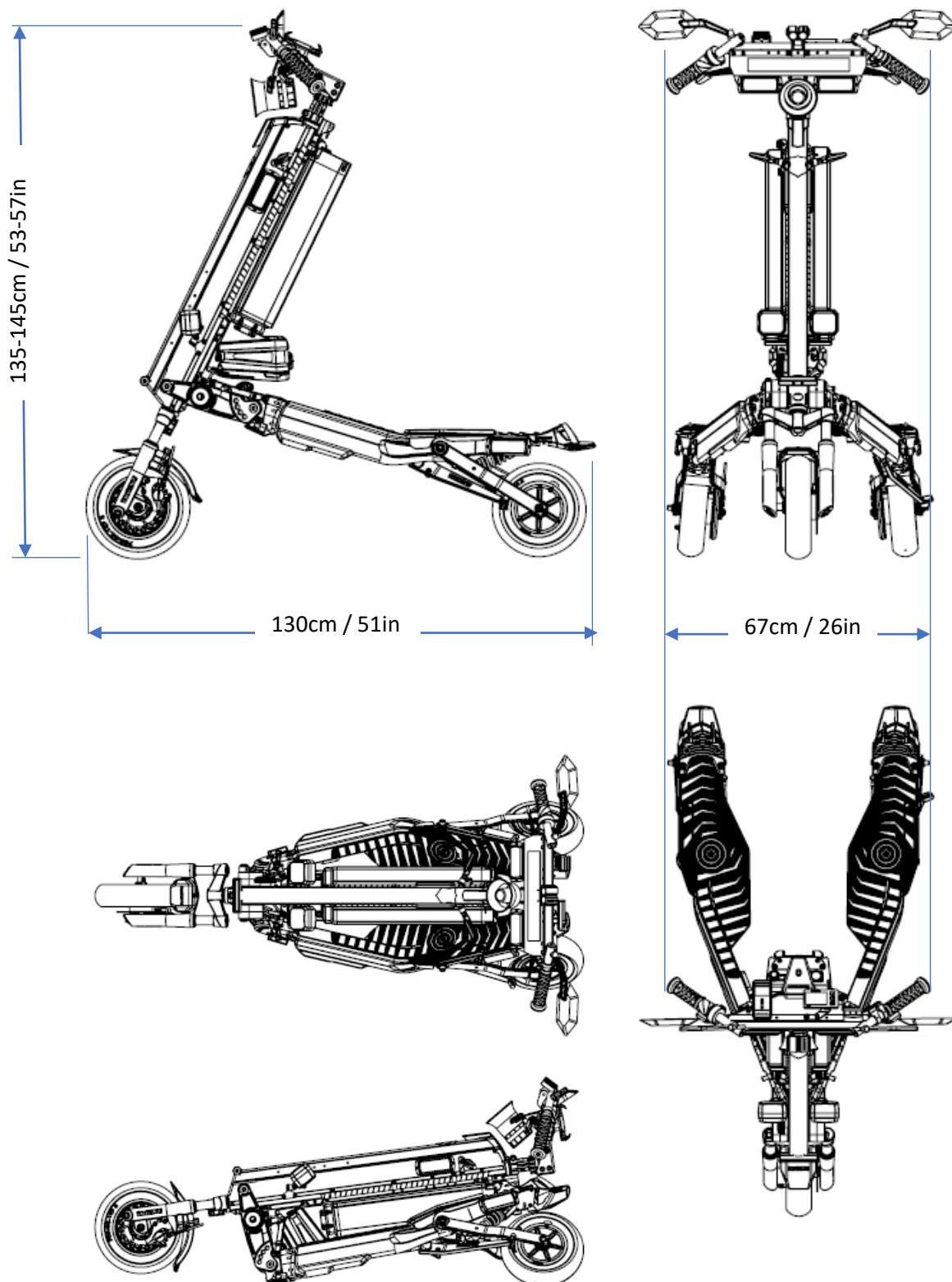
**Mounting the GEAR BAG to the battery**



mount to the Trikke



## General Dimensions



## Specifications and Features

|                                   | DEFENDER 48V 2WD             | DEFENDER 48V 3WD             |
|-----------------------------------|------------------------------|------------------------------|
| electric drive system             | DC 48V - 24A                 | DC 48V - 36A                 |
| acc line                          | DC 12V                       | DC 12V                       |
| battery (Li-ion)                  | 48V 1170Wh                   | 48V 1170Wh                   |
| charging V / A / time             | 54.6V 5A 4h                  | 54.6V 5A 4h                  |
| electric rated power              | 550W                         | 850W                         |
| electric peak power               | 1100W                        | 1700W                        |
| traction power (brake power)      | 850W                         | 1250W                        |
| traction                          | 2WD                          | 3WD                          |
| motor                             | 2x BLDC direct drive         | 3x BLDC direct drive         |
| motor controller                  | 2x FOC 12A                   | 3x FOC 12A                   |
| max rider's weight                | 250lbs (110kg)               | 300lbs (135kg)               |
| Vehicle weight (w/battery)        | 69lbs (31kg)                 | 80lbs (36kg)                 |
| frame                             | AL6061 - foldable            | AL6061 - foldable            |
| overall dimensions                | L51" x H57" x W26"           | L51" x H57" x W26"           |
| adjustable handlebar height       | 5" (12.5cm)                  | 5" (12.5cm)                  |
| deck height                       | 11" (28cm)                   | 11" (28cm)                   |
| tires                             | inflatable 60psi (4.1Bar)    | inflatable 60psi (4.1Bar)    |
| phone holder                      | optional                     | optional                     |
| gear bag                          | optional                     | optional                     |
| emergency lights                  | optional - 2                 | optional - 3                 |
| LED headlight                     | 1x 2000 lm with DRL          | 1x 2000 lm with DRL          |
| rear lights                       | single point                 | dual running/brake/turn      |
| beep horn                         | yes                          | yes                          |
| siren                             | optional                     | optional                     |
| RFID key                          | standard                     | standard                     |
| rear suspension                   | swing arm - spring           | swing arm spring/oil adjust  |
| front suspension                  | telescopic spring/oil damper | telescopic spring/oil damper |
| hydraulic disc brakes             | 2 rear - one lever           | all wheel - 2 levers         |
| climbing ability (200lbs)         | 7% (4deg)                    | 12% (7deg)                   |
| * top speed (unregulated)         | 23mph (37km/h)               | 28mph (45km/h)               |
| ** range mixed terrain (200lbs)   | up to 20 miles (32km)        | up to 20 miles (32km)        |
| ** range on flat terrain (200lbs) | up to 25 miles (40km)        | up to 25 miles (40km)        |

(\*) max speed can be locked at any level by factory

(\*\*) range will vary depending on topography, tire pressure, average speed, start/stop pattern, power level setting

Scan to watch online video  
Basic Riding Orientation



## SAFE RIDING:



- It is recommended the rider receive basic riding and safety training before operating the vehicle. Official training available by Trikke Tech, California.
  - Rider must learn and understand the safety aspects of riding and operation.
  - Rider must get familiar with all features of the vehicle.
  - It is highly recommended to wear a safety helmet.
- 
- *Stand on the vehicle in a straight up posture.*
  - *Grip handlebars with both hands at all time.*
  - *Do not lean back or pull up on the handlebars*
  - *Do not lean over the handlebar.*
  - *Do not turn sharply. Make smooth and progressive turns.*
  - *Be aware of the terrain around you. Scan for debris and obstacles as you ride.*
  - *Watch for traffic of cars and pedestrians.*
  - *Reduce speed to a walking pace around pedestrians, be courteous.*
  - *Although it is a stable platform, there are always conditions that vary with the environment, which may surprise you, such as cracks in the pavement, sand, gravel, potholes, tree branches, people or other vehicles. Falls and accidents can occur.*

## SAFETY EQUIPMENT:



ALWAYS USE SAFETY EQUIPMENT, ESPECIALLY A HELMET. A helmet is essential when riding a Trikke EV or any exposed wheeled vehicle.

We also recommend that you wear gloves, elbow and knee pads for additional protection.



## TRIKKE DEFENDER STANDARD COMMERCIAL WARRANTY



Trikke Tech warrants this product (including all components) against defects in material or workmanship as follows:

### **Frame - 3 years Limited Warranty**

Trikke Tech electric vehicle frames include a 3-year warranty covering geometry defect structural failure. Trikke Tech reserves the right to replace individual parts or the whole frame. Individual parts may not match the original frame color. Failure to originate by misuse, accidents or abuse are excluded.

Other components are warranted for **12 months**. In the event of a defective or faulty part, Trikke Tech will ship the replacement part free of charge and Customer will be responsible for performing the replacement. Exclusions: parts subject to normal wear and tear. Brake lines, brake pads, tires, inner tubes, bearings and trim components will be replaced for claims within the first 30 days of purchase. These parts are not covered by any additional warranty.

### **Lithium-ion Battery - 12 months Limited Warranty**

Lithium-ion batteries originally installed on a Trikke electric vehicle or a replacement battery purchased from Trikke Tech, its distributors or authorized dealers are warranted for 12 months from the original purchase, with full replacement within the first 45 days, and partial (pro rate) replacement after the initial 45 days of use. A suspect battery must be shipped to Trikke Tech for warranty, the Customer being responsible for shipping and costs.

Trikke Tech will then check the battery and either repair or replace it. The battery will be returned to Customer at Trikke's expense. Pro-rata replacement takes into consideration the full number of months passed since the purchase date and divides the base retail price of a new battery by 12 (twelve). If a new battery is required, Customer will be expected to pay 1/12 of the retail cost of the battery for every month of use (if after 45 days of use).

Purchases of replacement battery under pro-rata warranty must be directly from Trikke Tech. The new battery will be warranted with a new term of 12 month under the same conditions described above. Important facts about the aging of lithium-ion batteries: The current technology of lithium-ion batteries presents a natural degradation (aging, loss of capacity) even if not in use. The level of degradation will depend on factors like discharge current (fast or low riding speed setting), temperature of operation/storage and the number of cycles of discharge. Trikke Panasonic/Samsung/LG batteries cells should retain a minimum of 70% of the original capacity at **500 recharges** if operated at normal power level and at temperatures ranging between 32-100F (0-40C).

Exclusions: Damages to the battery caused by short circuit, moisture, impact, perforation, abuse or marks of tampering with the battery pack will void the above warranty. Batteries kept discharged for long periods of time may not recover working capacity and will be permanently damaged – failure to keep the proper charge level of battery will void the warranty.

**TRIKKE DEFENDER  
STANDARD COMMERCIAL WARRANTY**



**Electrical Components - 12 months Limited Warranty**

Electrical components, including motor, electronic controller, throttle and associated parts (excluding the battery) carry a 12 months warranty from the original purchase date. Failure originated by water, misuse, accidents or abuse are excluded. Warranty is limited to the replacement of the part. Defective parts must be shipped to Trikke Tech or presented to an authorized service center for analysis prior to replacement.

LIMITATIONS ON WARRANTY THE ABOVE WARRANTY IS THE ONLY REMEDY PROVIDED BY TRIKKE TECH FOR ITS ELECTRIC VEHICLES. NO OTHER PARTY HAS EXPRESS OR IMPLIED AUTHORITY TO CHANGE THIS WARRANTY IN ANY MANNER. TRIKKE TECH DISCLAIMS ANY LIABILITY FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

**COMMERCIAL WARRANTY APPLIES "FOR COMMERCIAL USE"**

\*\*\* Available **EXTENDED Commercial Warranty** (please consult sales department)

Frame – Total 5 years

Lithium-ion Battery – Total 24 months

Electrical Components – Total 24 months



## **PRODUCT LIFE CYCLE**

The Trikke™ Trikke EV vehicle has a lifecycle. The duration of this cycle varies with the maintenance and care received during their time of use, and the type and amount of use that the vehicle is subjected. The vehicle must be inspected periodically by observing indicators of fatigue and other indicators of potential problems. These are very important safety checks to help prevent accidents, injuries to the rider and shortening the lifecycle of the vehicle.

THIS IS AN INTEGRATED AND FINAL STATEMENT OF TRIKKE'S LIMITED WARRANTY. COMPANY DOES NOT AUTHORIZE OR ALLOW FOR ANYONE, INCLUDING ITS AUTHORIZED DEALERS OR REPRESENTATIVES, TO EXTEND ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. NO OTHER REPRESENTATION AND NO STATEMENT OF ANYONE BUT THE COMPANY, INCLUDING A DEMONSTRATION OF ANY KIND BY ANYONE, SHALL CREATE ANY WARRANTY REGARDING THE TRIKKE CAMBERING VEHICLE. ALL OF THE REMEDIES AVAILABLE TO THE ORIGINAL OWNER ARE STATED HEREIN.

IT IS AGREED THAT TRIKKE TECH, INC.'S LIABILITY UNDER THIS LIMITED WARRANTY SHALL BE NO GREATER THAN THE AMOUNT OF THE ORIGINAL PURCHASE PRICE AND IN NO EVENT TRIKKE TECH, INC. BE LIABLE SHALL FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

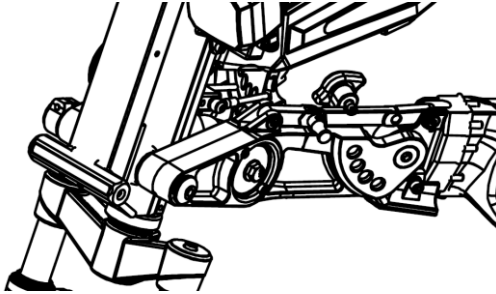
## **DISCLAIMER**

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## TRIKKE 3CV TECHNOLOGY

The unique 3CV technology developed by Trikke Tech uses a mechanism that allows the Trikke EV frame to camber and the wheels to adapt to the terrain, and the vehicle to lean into turns while keeping the three points of support always in contact with the ground to ensure optimal stability at any speed. This cambering mechanism is elegantly simple and provides the necessary rigidity, geometry and assistance to the rider's motion, to allow a greater control, speed, comfort, durability and above all the full confidence of riding



## Patent and Trademark Information

The TRIKKE EV vehicle is a product developed by TRIKKE TECH, INC. Protected by US and International patents.

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**TRIKKE™** PROFESSIONAL  
MOBILITY



# Owner's Manual

Models:

DEFENDER 3WD

DEFENDER 2WD

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