



DUO

Owner's Manual

First Edition, 2026

(This manual meets EN ISO-4210, 16 CFR 1512 and EN 15194 Standards)



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USER'S
MANUALS**



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Introduction

Thank you for your purchase of a **DUO** from TLG Mobility.



WARNING: This model is a Class 3 E-bike with an upper speed limit of 28 mph (45 km/h), which requires that in most states, all riders must be at least 16 years old to operate this E-bike.



WARNING: All Class 3 riders must wear helmets, regardless of age. Please note that wearing a helmet is mandatory, in most states, for all riders under 18 years old, whether on motorized or non-motorized bikes.

We take pride in bringing you a quality product that will offer years of enjoyment. **Please read and understand fully this User's Manual and the general E-Bike Owner's Manual (delivered with your bike) before assembling and riding your bike;** the latest version of this User's Manual is available at <https://www.tlgmobility.com/support>.

At TLG POWERSPORTS we care about your safety and the safety of those around you. We want you to thoroughly enjoy your TLG E-bike safely and reliably for many years to come.

Please read, understand, and follow all safety notices, cautions, and warnings in this specific User's Manual and in the general E-Bike Owner's Manual delivered with your E-bike and for any accessories or attachments you add to make your E-bike the perfect match for you.

If you are not sure you have the skills, experience, and special tools required for assembly and maintenance, get help from a local, certified, and reputable bike mechanic.

Be sure to check all hardware for correct torque (see "Tools and recommended torque values" on page 5) during assembly. Before each ride, follow the recommendations in the "Safety checklists" on page 29.

Finally, take care of your new DUO by following the guidelines in "Recommended service intervals" on page 31.

WE ARE HERE TO HELP! If you have questions after reading this manual, please contact us by email (support@tlgmobility.com), and / or call us at **1-619-865-0807** . Thanks for riding TLG!



WARNING: DO NOT alter or modify anything in your E-bike's electrical system, battery, digital controls, physical components, or drive train. Doing so will void your warranty. Any such modifications may result in damage to your bike, other property, or injury or death to you or others.



WARNING: This E-bike is not to be operated by anyone under the age of 16. Children under the age of 16 may lack the necessary judgment and skill to safely operate the E-bike, potentially resulting in damage to the bike, damage to other property, serious injury, and/or death. Please also check your local laws, which may require a higher age for legally riding this E-bike.



CAUTION: IF YOU SELECT TO USE A CUSTOM PASSCODE AT THE DISPLAY TO SECURE YOUR DUO, PLEASE WRITE IT DOWN TO REMEMBER IT AFTER CHANGING IT FROM THE ORIGINAL DEFAULT PASSCODE. IF YOU DO NOT REMEMBER IT, YOU WILL

NOT BE ABLE TO UNLOCK THE DISPLAY AND YOUR E-BIKE AT ALL! THE PASSCODE IS THE FIRST INFORMATION YOU WILL HAVE TO ENTER IN THE DISPLAY WHEN STARTING YOUR E-BIKE. SEE PAGES 22 & 23 FOR MORE DETAILS.

Using this manual

This manual contains critical details about how to safely operate and maintain your **DUO**. Read it carefully and familiarize yourself with your E-bike before riding it. Pay special attention to safety messages shown here.

NOTICE: A "notice" is important information that can help you avoid bike/property damage or extend the life of parts and the bike.



CAUTION: A "caution" statement indicates a hazardous situation that, if not avoided, could result in minor or moderate injury or property damage.



WARNING: A "warning" statement indicates a hazardous situation that, if not avoided, could result in death, serious injury, or property damage.



DANGER: A "danger" statement indicates a hazardous situation that, if not avoided, will result in death, serious injury, or property damage.

Riding any bike or other vehicle always involves some risk of serious injury or death. Your safety depends on many factors including your bike knowledge, your bike's maintenance, foreseeable riding conditions, etc. There are also factors we cannot control or anticipate in every situation or condition while riding. This manual makes no representations about the safe use of bikes under all conditions. If you have any questions, please contact a TLG authorized dealer immediately in your area.

Assembly and first adjustment of your E-bike from TLG POWERSPORTS requires special tools and skills. We recommend that you have this done by a certified and reputable bike mechanic.



WARNING: Incorrect assembly, adjustments, maintenance, or use of your E-bike can cause component or performance failure, loss of control, serious injury, or death. Even if you are an experienced bike rider, you must read and understand the entire manual and any documentation provided for subcomponents or accessories before riding. If you are not sure you have the experience, skills, and tools to correctly perform adjustment steps in this manual, consult a local, certified, reputable bike mechanic.

Keep this manual and any other documents that came with your DUO. All content in this manual is subject to change or withdrawal without notice.

Visit "www.tlgmobility.com/community/help-center" to view and download the latest version of this manual. TLG POWERSPORTS makes every effort to ensure the accuracy of its documentation and assumes no responsibility or liability if any errors or inaccuracies appear within.

Anatomy of your E-bike



Tools and recommended torque values

The tools listed below are for general guidance, some bolt heads on your bike may vary, requiring a different tool (e.g., a 4mm Allen wrench instead of a 5mm Allen wrench). If so, use the proper tool that fits the bolt head. Such differences will not affect the recommended torque for that piece of hardware. If you are installing accessories from TLG Mobility, any necessary instructions, important safety information, and torque specifications will come with your accessory and/or will be available online at

<https://www.tlgmobility.com/support> Tools / Recommended torque

BOLTS	TOOL	RECOMMENDED TORQUE
Handlebar Area		
Stem clamp bolts (two bolts)	5mm Allen	12 Nm
Stem faceplate bolts (four bolts)	5mm Allen	12 Nm
Headlight angle adjustment bolt	Phillips screwdriver	3 Nm
Locking grip adjustment bolt	3mm Allen	2 to 3 Nm
Front fender to Struts mounting bolt	3mm Allen	3 Nm
Front fender mounting arm eyelet bolts	4mm Allen	6 Nm
LCD display clamp bolts	2.5 or 3mm Allen	2 to 3 Nm
Brake lever clamp bolts	4mm Allen	8 Nm
Shifter clamp bolt	5mm Allen	10 Nm
Thumb power assist clamp bolt	3mm Allen	3 Nm
Brake Calipers & Rotors		
Rear brake caliper to frame mounting bolts (a rear wheel)	5mm Allen	6-8 Nm
Front brake caliper mounting bolts (on front fo	5mm Allen	6-8 Nm
Brake pads to calipers	Needle-nose pliers	Bend at tip of pin
Brake rotor to hub	Torx T-25 wrench	7 Nm
Front wheel		
Front axle nut	15mm wrench	35 Nm
Rear wheel		
Rear axle nut	18mm wrench	45 Nm
Dropout Area		
Derailleur mounting bolt	5mm Allen	10 Nm
Derailleur hanger mounting bolt Built-in	N/A	N/A
Rear fender to Struts mounting bolt	3mm Allen	3 Nm
Rear fender mounting arm eyelet bolts	4mm Allen	6 Nm
Derailleur/shift cable clamp bolt	5mm Allen	6 Nm
Taillight mounting bolt	8mm Bolt	5 Nm
Kickstand mounting bolt	5mm Allen	10 Nm
Bottom bracket & crank area		
Pedals into crank arm	15mm pedal wrench	30 Nm
Crankarm bolt into bottom bracket spindle	8mm Allen	35 Nm
Crankarms removal	CCP-22 Park Tool	
Cassette removal	FR-5.2 Park Tool	
Chainring bolts	5mm Allen	12-14Nm
Crank chainring guard	5mm Allen	10-12Nm
Bottom bracket and cups	BBT-19.2 Park Tool	50 Nm

See "List of Components on your E-bike" on page 4 and "Handlebar Features" on page 13 for name and location of parts listed in the Tools and recommended torque values chart above.

Adjusting for comfort and safety

Adjusting the handlebar angle

Most riders will feel comfortable with the handlebar angled so that it is roughly parallel with the front fork, as shown in the center position in the illustration below. Once you sit on the bike, you may decide that you would like the handlebar to be angled slightly closer to the seat. To change the angle, loosen the stem face-plate bolts just enough to allow the handlebar to pivot and position it as you prefer. Re-tighten the stem faceplate bolts according to the value listed in "Tools and recommended torque values" on page 5. Sit on the bike and test the fit and positioning, making sure the handlebar can turn freely without touching your body. Be sure the gap between the faceplate and stem is even and torque all faceplate bolts according to the value listed in "Tools and recommended torque values" on page 5.

While seated you should be able to put your feet flat on the ground. If you cannot reach the ground with your feet flat and stable, TLG POWERSPORTS recommends you do not operate this bike.

Fine-tune the brake lever positioning

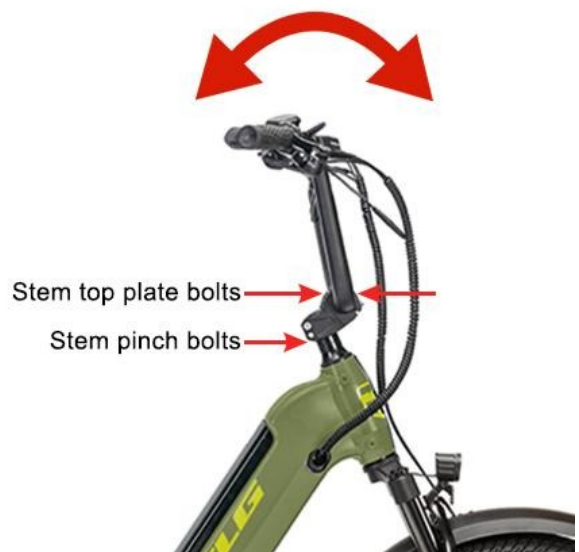
The angle of the brake levers can be adjusted for the most comfortable hand position possible. For most riders, this will allow them to rest two or three fingers comfortably on each brake lever while keeping their wrists in a neutral position. To adjust the angle, follow these steps:

1. Loosen the brake lever clamp bolts using the appropriate Allen wrench. See illustration on page 7 for bolt location. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5.
2. Adjust the angle of the brake lever so it is comfortable for the rider.
3. Re-tighten the brake lever clamp bolt according to the value listed in "Tools and recommended torque values" on page 5.

TIP! The locking grip adjustment bolts are located on one end (here on the left side), or both ends of each grip. If you need to tighten, adjust or replace them, follow the value listed in "Tools and recommended torque values" on page 5.



Locking bolt for Grip



Brake lever position and related warnings

Brake Specifications

Spec	Detail
Type	Tektro® HD-E3120 Hydraulic Disc Brakes
Front Rotor	203mm
Rear Rotor	180mm
Feature	Integrated brake sensors (motor cut-off on brake)

 **DANGER:** A brake lever that can touch the handlebar grip when squeezed can result in the brake caliper not pressing the pads into the brake rotor fully or at all, which means that the brake will not function properly or at all. Not being able to bring the bike to a complete stop puts the rider at a high risk of serious injury or death. Always make sure that squeezing the brake lever does not cause it to touch the handlebar grip. Also make sure that a squeeze of the brake lever to halfway between the lever's neutral position and the handlebar grip results in the brake caliper pressing the brake pads against the brake rotor.

If you do not own a torque wrench or have the skills to check the tightness of your hardware, consult a local and certified bike mechanic for help. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5.

This is a critical safety step that you must not skip. See the illustration below for additional information about adjusting brake lever clearance from the handlebar grip. If you are not sure you have the experience, skills, and tools to correctly perform adjustment steps in the manual, consult a local and certified bike mechanic.

Fine tune the Brake Levers position

Clearance from grip is adjustable when the lever is disengaged.

Fine adjustment bolt: you can adjust the reach of the lever depending on the size of your hands.



Fine Adjustment Bolt / 2mm Allen wrench



Brake Lever

Proper clearance from grip when engaged (See Fig. below)



WARNING: Improper clearance from grip: The brake lever should never touch the grip when fully engaged.

Battery information

Battery Specifications

Spec	Detail
Type	Lithium-Ion, Internal, Removable
Voltage / Capacity	48V / 15Ah (720Wh)
Cells	LG ING21700M50LT
Certification	UL2271 Certified
Water Resistance	IP67
Optional Extender	15Ah (720Wh) Rear Rack Extender Battery

The battery that comes with your **DUO** is a state-of-the-art, lithium-ion battery that is designed to give you years of power with proper care and use. Follow the recommendations here for the best possible performance.

- The battery should be fully recharged after each use so that you will get the maximum range on your next ride and reduce the chance that you will over-discharge the battery, which can reduce its lifespan. There is no memory effect on this type of battery, so charging after short rides will not cause damage.
- Charging the battery after a ride generally takes up to 9 hours, depending on distance travelled, riding characteristics, terrain, payload, battery age, and other factors. In rare cases, charging may take longer to allow the battery management system to balance the battery, particularly when the bike is new, after long periods of storage, or if the battery has been completely depleted.
- Do not operate the bike with the key in the key port. Not only do you risk injuring your leg, but damage to the electrical system can occur.



DANGER: Never open the battery housing, which will void the warranty and can result in battery damage. It can also expose you to caustic substances and electrical shock or it could create a fire hazard, which can lead to serious injury or death.



WARNING: Using aftermarket battery accessories or products that have not been tested by TLG Mobility for safety and compatibility may void your warranty, create an unsafe riding condition, result in bike/property damage, or cause serious injury or death. If you use products not tested and recommended by TLG POWERSPORTS, you do so at your own risk.



WARNING: Never immerse or submerge the battery (including the battery mount) in water or liquid, which can cause damage, serious injury, or death.



WARNING: Using a damaged battery or charger can create additional bike damage or a fire hazard. Stop using your battery and charger and contact TLG POWERSPORTS immediately if any of the following occur: (1) Your charger's flexible power cord or output cable or any of the electrical cables on your bike is frayed, has broken insulation, or any other signs of damage, (2) Your battery or charger is physically damaged, non-functional, or performing abnormally, (3) Your battery or charger experienced a significant impact from a fall, crash, or shipping damage, with or without

obvious signs of damage, or (4) Your charger becomes too hot to touch (it is designed to get warm with normal use), makes an unusual smell, or shows other signs of overheating. Store any damaged battery or charger in a safe location and, as soon as possible, recycle or otherwise dispose of it according to local rules. Contact TLG POWERSPORTS Product Services if you have any questions or to purchase a compatible replacement battery or charger.

NOTICE: Always follow any safety information attached to the battery or charger. A sample label for the battery that shipped with your bike is shown on page 9, although some details may differ by manufacturing location.

NOTICE: Failure to follow the battery-charging best practices outlined here and in the following sections could result in unnecessary wear to the charging components, battery, and/or charger, and could lead to an underperforming or non-functional battery. Batteries damaged due to improper care will not be replaced under warranty.

Removing and installing the battery

You can charge your battery when it is on or off your E-bike. If you choose to remove it for charging, storage, transportation, security, or some other reason, keep the following best practices in mind to prevent battery damage.

BATTERY REMOVAL

- To remove the battery, insert the key into the key port, turn the key counterclockwise to the unlocked position, rotate the safety knob under the down tube and carefully pull the battery down until the battery detaches from the battery mount inside the down tube (see illustration below).
- Be careful not to drop or damage the battery when removing it from the bike.

NOTICE: When the battery is off its mount, protect the battery terminal contacts from damage and be sure not to touch them. If terminals are damaged, please discontinue use and contact TLG POWERSPORTS Product Support immediately.

BATTERY INSTALLATION / MOUNTING

- To install the battery, insert the key into the key port and make sure it is in the unlocked position.
- Do not force the battery into the battery mount; carefully align and slowly slide the battery down until it is in place.
- Ensure the battery is properly secured to the bike before each ride by locking the battery and then carefully pulling up on it with both hands to test the security of the battery's attachment to its mount.

Before charging your battery

Before charging your battery, make sure to first check the battery, charger, and electrical cables for signs of damage. Store and use the charger in a safe place away from children, direct sunlight, dirt, debris, liquids, tripping hazards (including electrical cords), or any materials that could ignite in the unlikely event of a charger or battery malfunction. Position the charger and battery where they are not at risk for falls or other impacts.



WARNING: Letting the charger's plug contact metal objects could cause a power discharge (a spark), which could injure you or create a fire hazard.



WARNING: Letting a battery charge unattended increases the risk that a charging problem will go undetected and lead to component damage or a fire hazard. Always charge your battery where you can monitor it and in a location that does not block your main exit in case of emergency. Your battery needs to charge at room temperature or a bit cooler 10°C to 25°C (50°F to 77°F). It generates heat while charging, but it is designed to air-cool; keep it uncovered and the lights facing upwards on a flat, stable, hard surface.

NOTICE: Charging your battery in excessively hot conditions or interfering with its ability to air-cool can damage your battery or charger. Always charge your battery at room temperature: 10°C to 25°C (50°F to 77°F). Charging your battery at low temperatures may slow charging or prevent a full charge. Keep the battery and charger uncovered, make sure the charger is on a hard, flat, stable surface, and use the charger right-side up (with charging lights facing upwards).



Charging procedure

Spec	Detail
Input	100-240V AC
Output	54.6V DC / 2A
Technology	Gallium Nitride (GaN)
Certification	BC Certified & UL Listed

To charge your battery, review the advice in the paragraph named "Before charging" on Page 9 and then follow these steps.

1. Ensure the battery power is off. Push the power button on the remote until the screen goes blank.
2. Open the rubber cover on the charging port at the bottom on the left side of the battery (see image on page 11).
3. Plug the charger into a power outlet. Connect the charger input plug (120-volt plug) to the power outlet.
4. Keep the battery installed on the bike or remove the battery and place it on a hard, smooth, flat surface with its external cover facing down. Connect the DC output plug from the charger to the charging port on the side of the battery and plug the charger into the battery's charging port. Charging should initiate and will be indicated by the LED charger light turning red. When charging is complete, the indicator light will turn green.
5. Once the battery is fully charged, indicated by the charging indicator light turning green, unplug the charger from the wall outlet first and then remove the DC output plug (round barrel connector) from the battery charging port. Be sure to pull gently on the plugs, not on the cables themselves.

NOTICE: The charger is designed to stop charging automatically when the battery is full. Nonetheless, leaving your battery charging longer than necessary can cause needless wear. We recommend you remove the charger from the battery within 30 minutes of the green light indicating a complete charge. Store the charger carefully, making sure its plug does not come in contact with liquids, dirt, debris, or metal objects, which can damage the plug and interfere with future operation.

TIP! We recommend you follow these steps when plugging in and unplugging your charger.

To plug in your charger:

1. Start with the charger unplugged from both the power outlet and battery.
2. Plug the charger into the power outlet.
3. Plug the charger into the battery port.

To unplug your charger:

1. Start with the charger plugged into both the power outlet and battery.
2. Unplug the charger from the power outlet.
3. Unplug the charger from the battery.



WARNING: Charging your battery with a charger other than one supplied by TLG POWERSPORTS and designed for your specific model and serial number can cause damage to your bike's electrical system or create a fire hazard. Only use a battery charger designed for your bike and supplied by TLG POWERSPORTS.



CAUTION: An unlocked or improperly attached battery can fall off a moving bike, causing

damage or injury. Always check that the battery is properly attached and locked to the frame before moving or riding your bike

Estimated charging time

The time the charger takes to fully charge the battery depends on distance travelled, riding characteristics, terrain, payload, battery age, and other factors. The table below provides a rough estimate of charging times based on common distances travelled in regular operation.

NOTICE: The battery may take longer to charge when fully depleted, when very new, and after 3-5 years of regular use. If your battery does not seem to be charging normally, takes longer to charge than expected, or you are experiencing substantial reduction in range, discontinue use and please contact us by e-mail (support@tigmobility.com), and/or call us at **1-619-865-0807**

Charging Time | Approx. Range Added

1 hour	approx. 4.6 km (2.8 miles)
2 hours	approx. 9.2 km (5.7 miles)
3 hours	approx. 13.8 km (8.5 miles)
4 hours	approx. 18.4 km (11.4 miles)
5 hours	approx. 23 km (14.2 miles)
6 hours	approx. 27.6 km (17.1 miles)
7 hours	approx. 32.2 km (20 miles)
8 hours	approx. 36.8 km (22.8 miles)
9 hours	approx. 43.2 km (26.8 miles)

Long-term battery storage

If storing your bike for longer than two weeks at a time, follow the recommendations below to maintain the health and longevity of your battery.

- Power off the battery and keep the battery installed on the bike or remove the battery from the frame for storage.
- Store the battery in a dry, climate-controlled, indoor location between 50°F to 77°F (10°C to 25°C).
- We recommend that you store your battery at approximately 40-75% charged. Check the battery's charge level monthly. If necessary, charge the battery to about 40-75% of its full capacity.
- Storing your battery for long periods at full charge can cause range decline over time.
- Storing your battery for long periods at very little or no charge can cause permanent range decline or a non-functional battery.

NOTICE: Incorrect storage of your battery can result in a damaged or non-functional battery. Follow the above recommendations to reduce such risk.

Low Battery Protection & Sleep Mode

Your battery has a built-in protection feature that automatically enters sleep mode when the charge level is low and the battery has not been used or charged for a period of time:

- Below **20%:** If the battery is not powered on or charged for 3 consecutive days, it will enter sleep mode.
- Below **5%:** If the battery is not powered on or charged for 2 consecutive hours, it will enter sleep mode.

NOTICE: "Unused" means the battery is neither powered on nor being charged during the stated period.

When the battery is in sleep mode, the display will not turn on. To wake the battery, use any of the following methods:

1. Remove the battery from the bike and reinstall it.
2. Connect the charger to the battery.

3. Short press the battery button.



CAUTION: If the battery level drops below 3% and remains unused for 24 consecutive hours, the battery will enter deep sleep mode. In deep sleep mode, the battery can only be reactivated by connecting the charger. Removing and reinstalling the battery or pressing the battery button will not work.



CAUTION: Always charge your battery in a clean, clear, dry, and safe space, away from direct sunlight. Do not cover or leave unattended. Never charge your battery for more than 8 hours at a time for a full charge under normal room temperature.



Charging Port



Battery On/Off button

Operation of your DUO

Spec	Detail
Type	Hub-Drive Motor
Rated Power	750W
Peak Power	800W
Voltage	48V
Torque	100 Nm
Efficiency	>= 80%
Water Resistance	IPX6

HOW THE ELECTRICAL SYSTEM WORKS

Your **DUO** offers two complementary methods to get power assistance from the motor to propel your E-bike forward: a pedal assist system (PAS) and a thumb-activated throttle assist.

HOW PEDAL ASSIST WORKS

Engaging pedal assist while pedaling will generate assistance from the motor to help propel the E-bike forward. Pedal assist uses the Torque sensor or the Cadence sensor (depending on your preference / See below) built into the drivetrain of the bike. The Torque sensor or Cadence sensor detects when you pedal and signals the electric motor to provide the level of pedal assistance (0-5) you have selected. When at a stop, be careful not to put pressure on the pedals or the bike will move forward. To reduce this risk, while at a stop, always keep at least one hand activating one of the two brake levers to cut off power to the motor. When you dismount, power off the bike before moving it.

SWITCHING BETWEEN TORQUE AND CADENCE SENSOR MODES

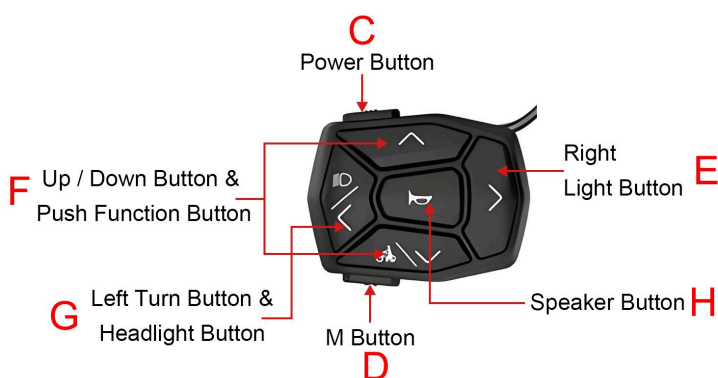
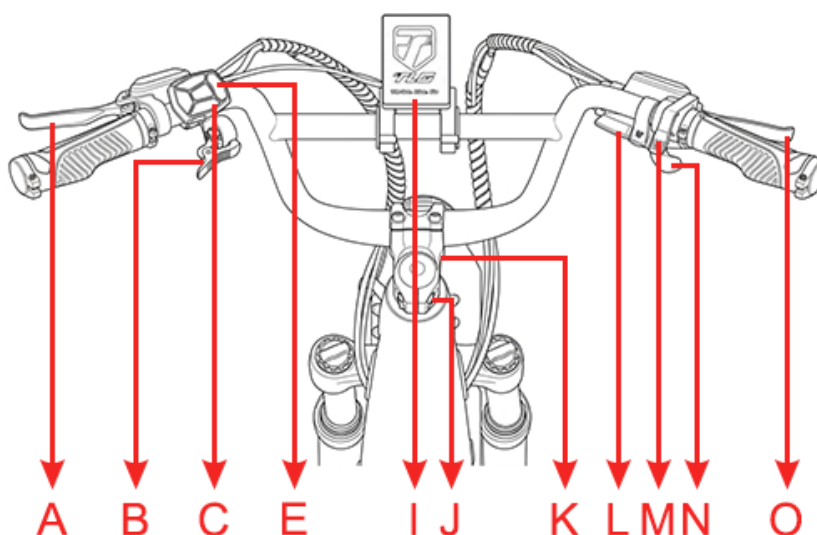
Your **DUO** is equipped with a Bottom Bracket set, controller and display, which allow for switching back and forth between Torque and Cadence sensor modes according to your riding preferences, simply and directly on your display.

The Torque mode will allow your E-bike to run with a smoother, more natural riding feel and will lengthen your battery charge while on pedaling mode as it is designed to fully use the rider's power output. The Cadence mode will allow your E-bike to run with less pedaling effort as it detects small crank arm rotations (1/30 to 1/20 of a turn) to generate power at the rear wheel and maintain a constant speed with as little pedaling as possible while riding. The Cadence mode can also function very well under normal active pedaling to achieve a performance close to the Torque sensor mode. Please note that the throttle assist will work equally well under both modes as selected.

HOW THUMB THROTTLE ASSIST WORKS

To engage the thumb throttle assist while pedaling, slowly and carefully depress the thumb throttle assist button and it will generate assistance from the motor to help propel the E-bike forward. When the bike is on and you are pedaling at an adequate cadence or torque level, the thumb throttle assist acts as an on-demand pedal-assistance boost. Choosing between assist levels (1-5) will increase / decrease speed. When at a stop, be careful not to put pressure on the thumb throttle or the bike will move forward. To reduce this risk, while at a stop, always keep at least one hand activating one of the two brake levers to cut off power to the motor. When you dismount, power-off the bike before moving it.

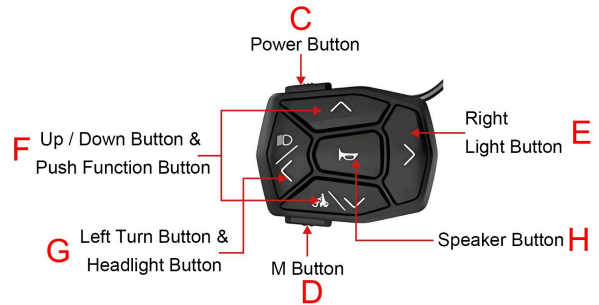
Handlebar features



HANDLEBAR CONTROLS & FEATURES

A	Left brake lever (for front brake)	I	LCD display
B	Mechanical Bell	J	Stem Pinch Bolts
C	Power Buttons	K	Headlight(under display)
D	Mode Button	L	Shifter display window
E	Lights ON/OFF Button / Right Turn Signal	M	Thumb throttle assist lever
F	^ / v  Power-Assist(PAS) control buttons	N	Up-Shifter lever
G	Lights ON/OFF Button / Left Turn Signal	O	Right brake lever (for rear brake)
H	Speaker Button		

Quick Start Guide



Powering On/Off:

Ensure the display is properly connected to the controller. To power on , press and hold the **Power** button - the boot-up logo will appear, followed by the main riding screen. To power off , press and hold the **Power** button again.

If no operation is performed and the speed remains at 0 with bus current below 1A for the duration of the auto-sleep timer, the display will shut off automatically. The auto-sleep interval can be customized in Settings (options: 5 / 10 / 20 / 30 min, or OFF).

Startup Screen :

When you power on the bike, a boot-up logo will appear on the display for 2 seconds. Once the display establishes communication with the controller, it will automatically switch to the main riding screen.



Controls & Display Overview:



Display Remote Functions

The DUO display is controlled by a 7-button remote operating unit located on the handlebar. The remote includes a Power button, Up Arrow, Down Arrow, Left Button, Right Arrow, Horn Button, and M Button. These controls allow the rider to power on the system, adjust pedal assist, operate the headlight and turn signals, sound the horn, and confirm selections.

Power Button :

Press and hold the Power button to turn the display and bike system on.

Up Arrow :

Press the Up Arrow button to increase the assist level or move upward through menu options.

Down Arrow :

Press the Down Arrow button to decrease the assist level or move downward through menu options. Press and hold the Down Arrow button while the bike is at a complete stop to engage walk mode.

Left Button :

The Left button controls the headlight and left turn signal functions (Left and right signals cannot be activated together).

Right Arrow :

Press the Right Arrow button to activate the right turn signal (Left and right signals cannot be activated together).

Horn Button :

Press the Horn button to sound the horn and alert surrounding vehicles, cyclists, or pedestrians. *(Horn availability depends on your bike's configuration.)*

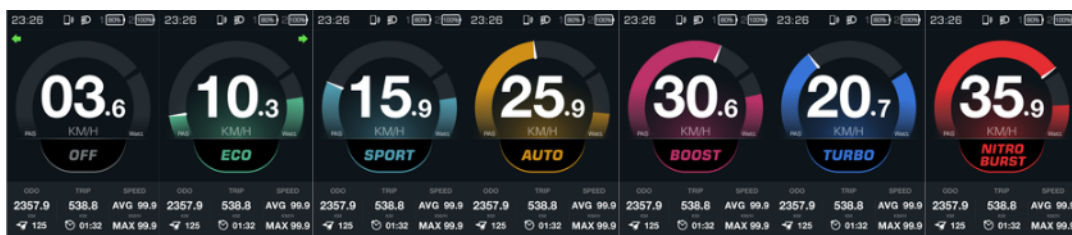
M Button :

Used to switch between display screens and enter the parameter settings menu.

Selecting Pedal Assistance:

Use the left remote  /  buttons to switch between the desired amount of pedal assistance. There are five levels of pedal assist plus an off mode:

OFF → ECO → SPORT → TURBO → AUTO → BOOST → NITRO BURST (this level requires longpressing the up up button to enter) are selectable.



- Press  to step up one level.
- Press  to step down one level.
- Assist levels do not wrap around - you'll need to step back through each level individually.

Walk Mode:

Bring the bike to a complete stop before you use walk mode for safety, then hold the  button on the left remote for 2 seconds to engage walk mode. *Only use walk mode after you ensure both yourself and any nearby obstacles or people are clear from being struck by the bike.

Throttle:

The throttle is located to the right of the power button and is operated using your right thumb. This will power the bike on demand from a complete stop.

Battery Removal:

You can choose to charge the battery as installed on the E-bike or removed from the E-bike. To remove the battery, unlock it by turning the provided key counterclockwise in the lock and rotate the knob under the down tube; The battery will pop out of the bike's downtube. When re-installing the battery, turn the front wheel sideways, insert the battery from below toward the bottom of the down tube, then push up on the front of the battery until it clicks into place (lock still open), then turn the key clockwise to lock the battery in place.



Battery Lock & Unlock

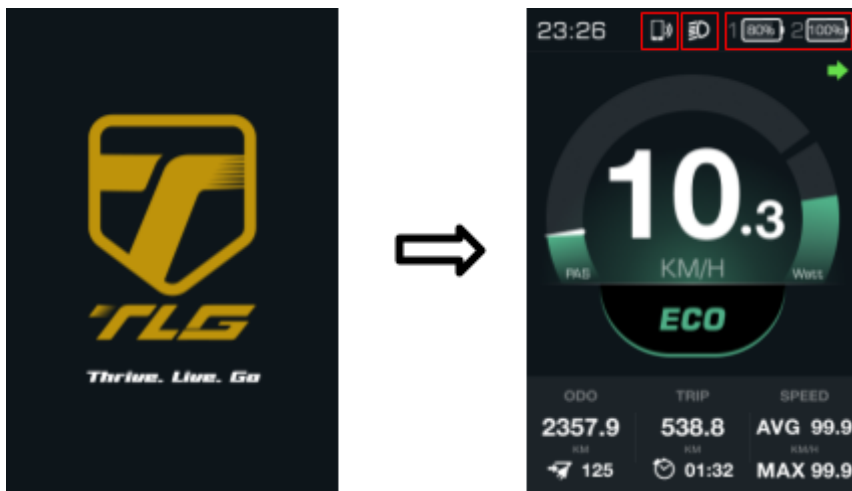
Electrical controls and operation

The table and image below show the various features and information displayed on the LCD display.

Functions overview

The **DUO** display offers a variety of features to suit your riding needs, including:

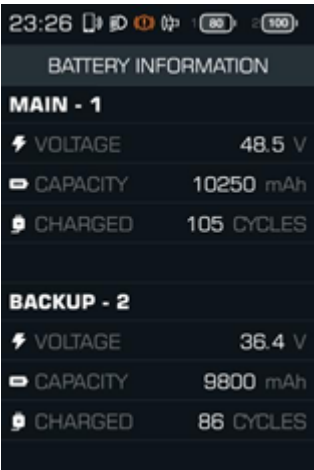
- Paired with an independent left-mounted control pad, ergonomically designed
- Customizable boot-up screen and UI
- Metric / Imperial unit switching
- Standard display functions: speed, odometer, battery level, and more
- Assist mode usage statistics
- Walk-assist function
- Error code display
- Parameter settings and advanced settings
- OTA firmware upgrade support
- Motor power and pedal power statistics (*pedal power requires torque sensor support)
- Bluetooth data passthrough; vehicle parameters adjustable via app
- Periodic maintenance and service reminders
- Automatic headlight function
- RTC module for real-time clock display
- On-demand charging function via button press, enabling phone charging



Screen I - Battery Info

This screen displays your battery status, including voltage, charge percentage, and total charge cycles. Data is provided by the battery BMS. If BMS data is unavailable, the field will show "---".

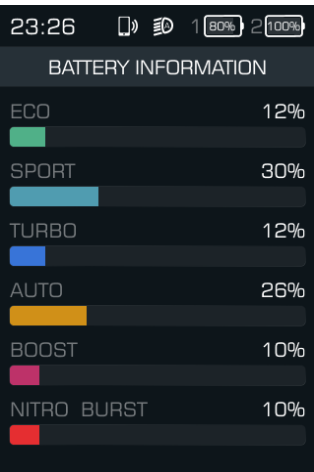
For dual-battery systems, this screen shows both batteries: MAIN-1 (primary) and **EXT-2 (extender)**. If no **extender battery** is detected, the **extender** fields will show "---".



Battery Info

Screen II - Assist Mode Stats

This screen shows a percentage breakdown of how long each assist level was used during your ride. The data is calculated by the display based on your actual riding activity. Assist mode stats can be reset to zero through the Data Reset function.



Assist Mode Stats

Screen III - Ride Data Analysis

This screen shows detailed riding data and performance stats.

Power Analysis: Average motor power, max motor power, and the ratio between rider power and motor power output. Rider-to-motor power ratio requires controller support.

Biometric Data: Cadence (pedaling RPM) and health metrics including heart rate and calories burned. Cadence requires a torque sensor. Heart rate requires a Bluetooth or ANT+ compatible device. If unsupported or no device is connected, the field will show "---".



CAUTION: Using the Walk Mode Assist inappropriately can cause you to lose control of the bike, causing bike damage or injury. Use the Walk Mode only while off the E-bike, with both hands on the handlebar, and with at least one hand on a brake lever so that you can quickly cut off power to the motor if necessary.

Start-up procedure

After you have read this manual, and your bike has been correctly assembled according to the assembly instructions, with all components correctly secured, and you are wearing proper protective gear, follow the steps below to power on the bike and select a pedal assist level.



CAUTION: Getting onto the bike or riding it with the key in the battery can cause injury to your leg and damage to the key or lock mechanism. Always remove the key before riding the bike.

1. Check that the battery is locked securely.
2. Turn on the bike. Press the power button on the left-hand control for approximately two seconds until power is delivered to the LCD display and display information appears. If the bike doesn't turn on, the battery may need to be woken up. Wake up the battery by removing it from the bike and by pressing and holding down the power button on the battery until the light illuminates (see figure on page 20).
3. Select your desired level of pedal assistance (PAS) from OFF through BOOST (5 levels) using the Up/Down control buttons. see the illustration "Handlebar features" on page 21. Level 0 provides no pedal assistance,

level 1 provides the lowest amount of pedal assistance, and level 5 provides the highest amount. Start at PAS level 0 or 1 and increase PAS levels one at a time as you get comfortable.



WARNING: Engaging the pedal assist feature, especially at a high setting, will cause acceleration that may be greater than expected, especially for relatively new riders, and that can cause loss of control, serious injury, or death. To reduce risk, always start at PAS level 0 or 1.

4. Begin riding carefully, with the proper protective gear on, you may now operate your E-bike. Begin by pedaling on flat ground, clear of obstacles and people, with the bike in an easy (low) gear and at pedal assist level 1. You may also use the thumb throttle assist to accelerate and maintain your desired speed.

The rear derailleur is controlled by the right-side shifter. The function of the rear derailleur is to move the drive-chain from one gear sprocket to another. The smaller sprockets on the gear cluster (cassette) produce higher gear ratios. Pedaling in the higher gears requires greater pedaling effort but takes you a greater distance with each revolution of the pedal cranks. The larger sprockets produce lower gear ratios. Using them requires less pedaling effort but takes you a shorter distance with each pedal crank revolution. Moving the chain from a smaller sprocket of the cassette to a larger sprocket result in a downshift. Moving the chain from a larger sprocket to a smaller sprocket result in an upshift. The rider must be pedaling forward for the derailleur to move the chain from one sprocket to another.

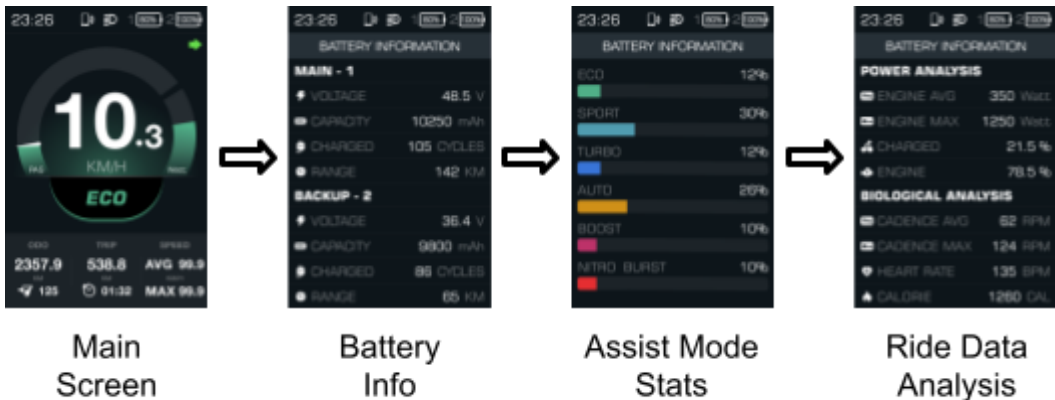
5. Use the thumb-throttle assist (next to the right handlebar grip) by slowly and carefully pressing it downwards. Do not use the thumb throttle assist unless you are on the bike, and please carefully note that the thumb throttle assist can be activated with downward pressure on its lever any time the bike is powered on.



WARNING: Be careful not to accidentally press the thumb throttle lever, which can cause a sudden acceleration. If you are not prepared for this acceleration, you can lose control of the bike, which can lead to serious injury or death. To reduce this risk, always keep at least one hand ready to squeeze the brake lever to cut off power to the motor. When you dismount, power off the E-bike before moving it.

Display Screens

Press the M button to cycle through the following display screens:

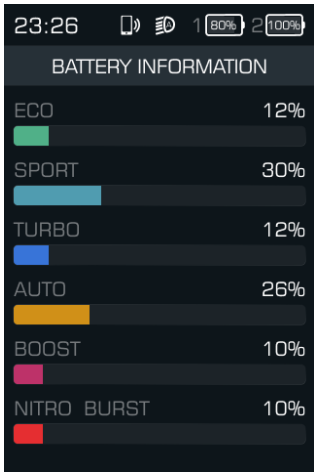


- Main Screen: Shows real-time speed, battery level, assist level, clock, headlight status, turn signals, brake status, throttle status, Bluetooth connection, and trip data (trip distance, odometer, total ride time, average speed, max speed, and trip timer).
- Battery Info: Shows battery voltage, charge percentage, and total charge cycles. Supports dual battery display (Main and Extender). If no BMS data is available, the field will show as blank.
- Assist Mode Stats: Shows a percentage breakdown of how long each assist level was used during your ride.
- Ride Data Analysis: Shows motor power stats (average and max output), rider-to-motor power ratio, cadence, heart rate, and calories burned. *Heart rate requires a Bluetooth or ANT+ compatible device. Cadence requires a torque sensor. If unsupported, the field will show as blank.

Walk Assist mode (off the bike)

Press and hold the  button for a few seconds to enter Walk Assist mode. Your e-bike will move on its own (without pedaling) at a constant low speed and the display will show the walk assist icon. Release  to stop the power output immediately and return to the previous mode before Walk Assist.

 **Use** the Walk Assist function only while you are off the bike and while making sure its usage is safe for riders around you and yourself. Make sure to steer clear of the pedals as these might turn while your bike is moving in Walk Assist mode.



Display screen when Walk Assist is on.

 **The Walk Assist mode can only be used when pushing your e-bike. Please do not use it while riding.**

PAS (Pedal Assist) level selection

Press  or  to switch the PAS level of your E-bike to change the motor's output power. (The following pictures are only for illustration of different speeds in different PAS levels. The specific speed is subject to the actual model) The available levels are:

OFF → ECO → SPORT → TURBO → AUTO → BOOST

- Press ▲ to increase one level.
- Press ▼ to decrease one level.
- Assist levels do not wrap around - you'll need to step back through each level individually.



PAS level display interface

Switching between Torque & Cadence sensor modes

Your DUO is equipped with a Bottom Bracket set, controller, and display that support switching between Torque and Cadence sensor modes to match your riding style.

How to switch: With the display on the main riding screen, press and hold **M** for a few seconds to toggle between Torque mode and Cadence mode.

- When **Cadence mode** is active, a cyclist icon will appear in the lower left of the display.
- When **Torque mode** is active, no cyclist icon is displayed.

Torque Mode delivers a smoother, more natural riding feel and extends battery life by fully utilizing the rider's pedaling power.

Cadence Mode requires less pedaling effort - it detects small crank arm rotations (as little as 1/30 of a turn) to generate motor power and maintain a constant speed with minimal pedaling. Cadence mode also performs well under normal active pedaling, achieving performance close to Torque mode.

The throttle works equally well in both modes.

Headlight, Tail Light & Turn Signal Specifications

Headlight: 90 Lux, 48V 4.5W high-output integrated LED, adjustable angle, K-Mark Lamp Standard, IPX6.

Tail Light: TLG® Logo Light with integrated turn signals, steady warning light, brake highlight, and hazard warning flashers, IPX6 waterproof.

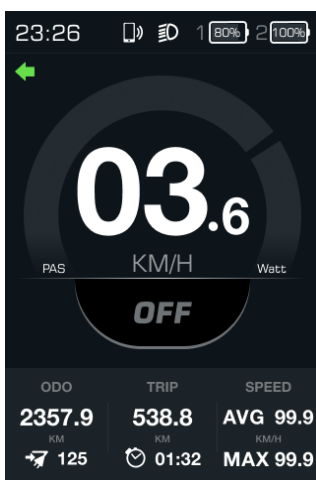
Turning lights On/Off

Your E-bike features an automatic headlight that detects ambient light and turns the headlight on or off accordingly. The auto headlight is enabled by default each time you power on.

To manually override the headlight, press and hold the  button. This will toggle the headlight on or off regardless of the auto setting. A headlight icon will appear on the display when the light is on.



Once you manually turn off the headlight, the auto headlight function will also be disabled until the next power cycle. Screen brightness will dim when the headlight is on.

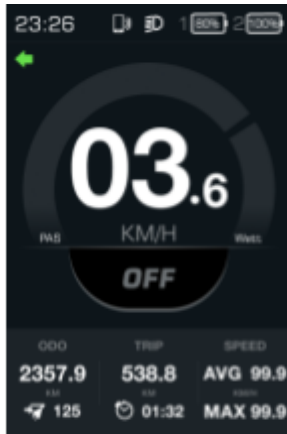


Headlight Control

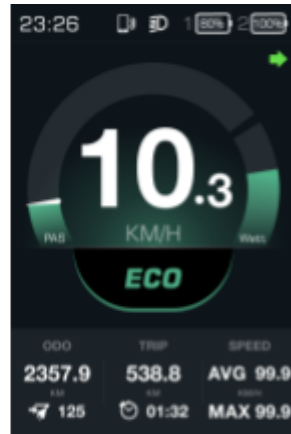
Right / Left Turn Signals and On/Off function

Turn Signals Short press  for left turn signal, or short press  for right turn signal. Left and right signals cannot be on at the same time.

Headlight The headlight turns on automatically based on ambient light. To manually toggle the headlight on or off, press and hold .



Left turn display interface selected



Right turn display interface selected

Hazard Warning Lights

To activate the hazard warning flashers, double press the Power  button while the bike is powered on. Both left and right tail light indicators will flash simultaneously to alert surrounding traffic. Double press the Power  button again to turn off the hazard lights.

The hazard warning flashers are integrated into the TLG® Logo tail light and operate independently from the front turn signals.



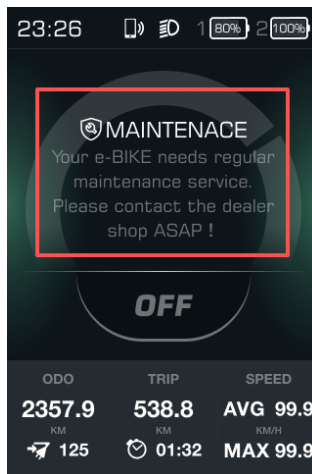
Hazard lights are intended for use when the bike is stopped or in an emergency situation. Do not rely on hazard lights as a substitute for safe riding practices.

Service Reminder

Your e-bike will remind you when routine maintenance is due. A pop-up notification will appear on the display at the following intervals:

- At 930 miles (1,500 km) - reminder appears once at startup. Press any button to dismiss.
- At 3,100 miles (5,000 km) - reminder appears twice at startup. Press any button to dismiss.

To reset the service reminder after maintenance, connect the bike to an authorized Service Tool. Your service history will be logged at the same time.

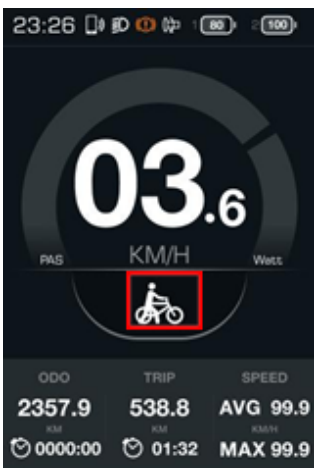


Service Reminder

Walk Assist

With the bike at a complete stop, press and hold  to engage walk assist. The motor will move the bike at a low, steady speed. Release  or press any other button to stop.

 Only use walk assist while off the bike. Stay clear of the pedals - they may turn while the bike is moving.



Walk Assist

Brake Indicator

When the brake lever is engaged, a brake icon  will appear at the top of the display. The icon disappears once the brake is released.



Brake Indicator

Throttle Indicator

When the throttle is connected and detected by the controller, a throttle icon  will appear on the display. If no throttle is connected, the icon will not be shown.



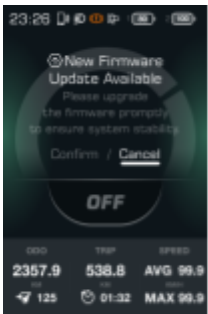
With throttle



Without throttle

OTA Firmware Update

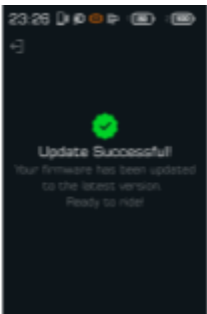
When a new firmware version is available, an update prompt will appear each time you power on the bike. Follow the on-screen instructions to complete the update.



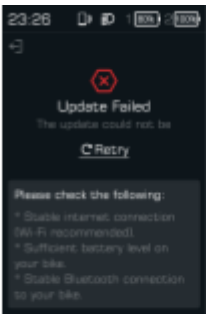
Upgrade Available



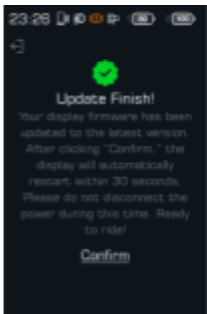
Updating



Controller/Battery Update Complete



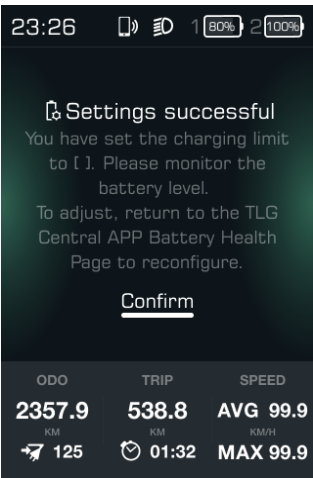
Update Failed



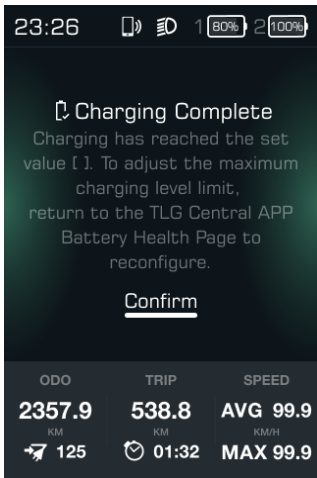
Display Update Complete

App Charging Limit

You can set a battery charge limit through the app. When the limit is set, a notification will appear on the display. Once the battery reaches the set limit during charging, a second notification will pop up. Notifications will only appear if the display is powered on while charging.



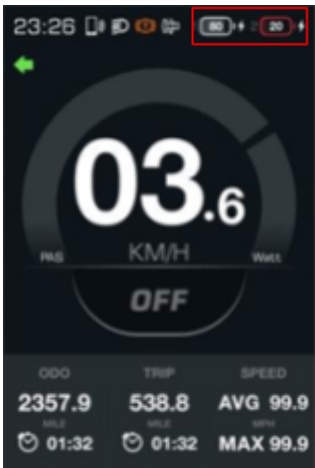
Set charging limit via app



Charge limit reached

Charging Display

When the charger is connected while the display is powered on, a charging icon will appear on the battery indicator. The battery frame will turn green while actively charging.



Battery Level Display

The battery icon on the display shows your remaining charge in real time. The icon frame changes color based on battery status:

- Green frame - battery level above 20%
- Red frame - battery level at or below 20%
- White frame - battery not in use
- Red frame flashing (1Hz) - battery below 5%, low voltage warning. Motor assist is disabled.

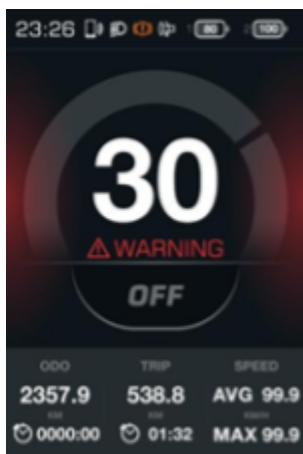
To exit low voltage mode, the bike must be powered off and recharged until the battery level is at or above 5%. Battery percentage requires BMS or controller support.

Remaining Battery Percentage	Battery Indicator	Description
100%		Displays full battery
80%		Displays 80% level
60%		Displays 60% level
40%		Displays 40% level
20%		Displays 20% level
10%		Displays 10% level
5%		Displays 5% level

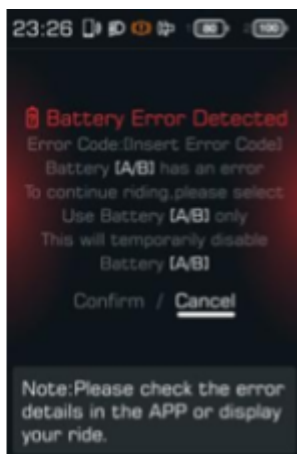
Error code display

When a fault is detected, an error code will flash (1Hz) in the speed area of the display. You can press any button to return to the normal screen, but the error code will reappear after 5 seconds if the fault persists.

If a battery fault occurs on a dual-battery system, the display will prompt you to switch to the **extender**



Error Code Display



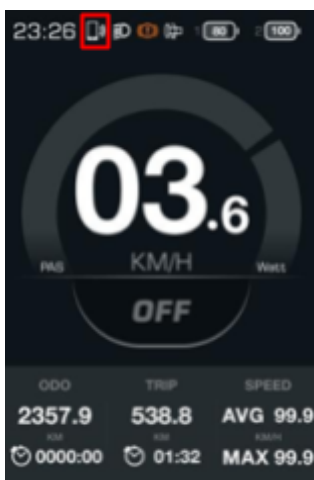
Battery Fault



When an Error Code appears on the display, please troubleshoot the problem right away. Your E-Bike will not be able to ride normally until the problem is solved.

Bluetooth Connection

When your phone is successfully connected to the display via the TLG app or Bluetooth proximity unlock, a Bluetooth icon will appear in the upper left corner of the display .

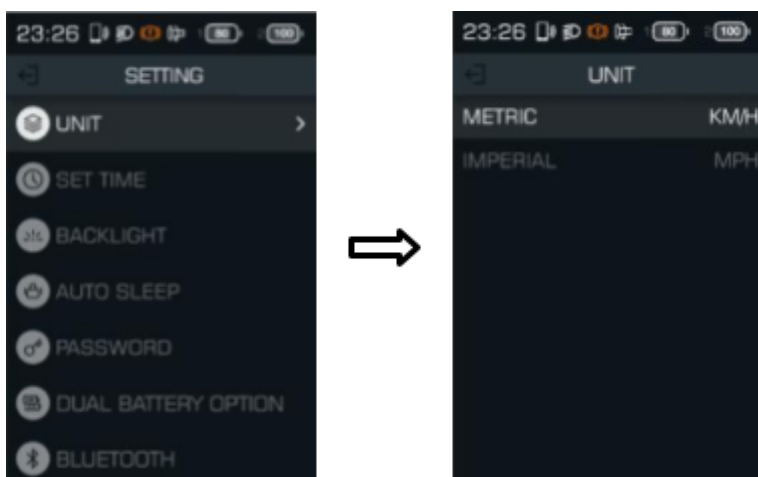


Personalized parameter settings

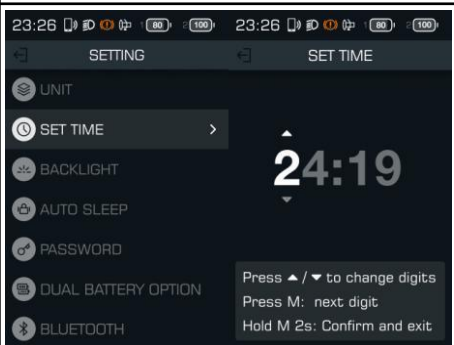
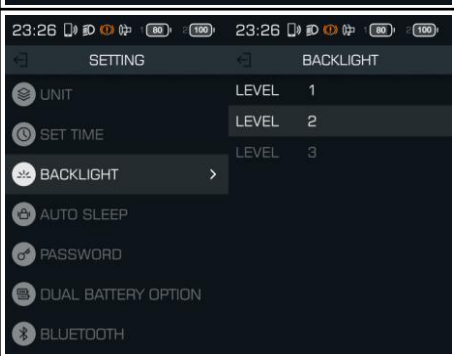
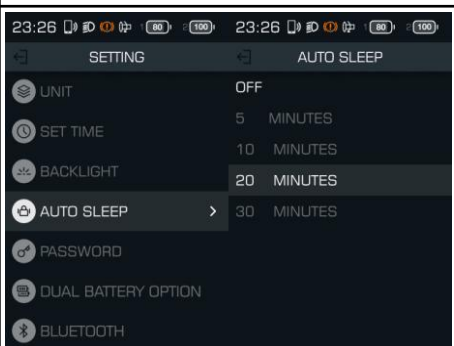
Within 10 seconds of powering on, press and hold M to enter the Settings menu. Use  /  to scroll

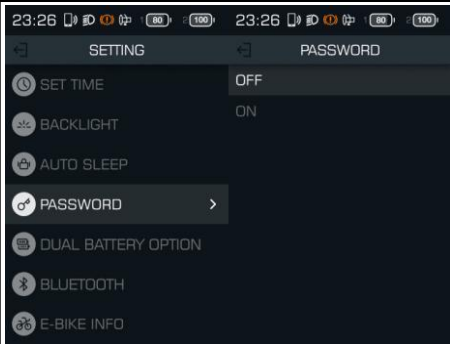
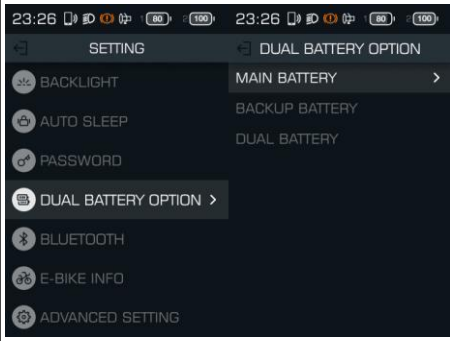
through options. Short press M to enter a setting, use  /  to adjust the value, then press and hold M to confirm and exit. Press and hold M again to return to the previous menu.

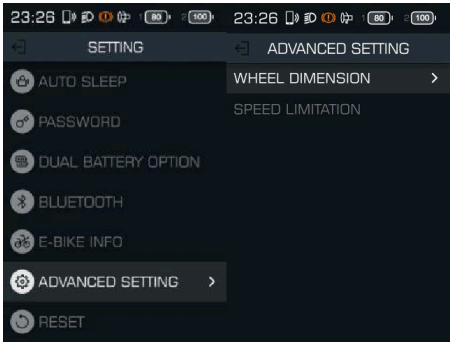
If you start riding above 3 mph (5 km/h) while in Settings, the display will exit to the main screen and unsaved changes will be lost.

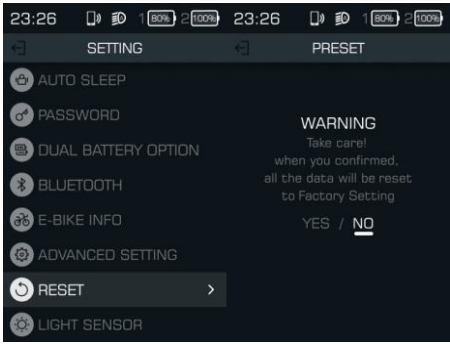
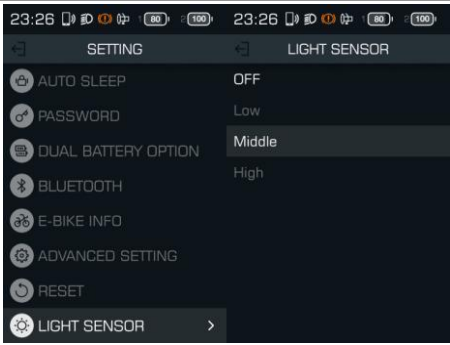


Settings Menu - Complete Parameter Reference Table

Setting Item	Menu Display Content	Setting Parameter Definition	Parameter Value Definition	Notes
Unit Setting		UNIT	Value = KM/H Value = MPH	Default value: KM/H KM/H = metric system MPH = imperial system
Time Setting		SET TIME	Customization	Factory default uses Beijing time.
Backlight Intensity Setting		BACK LIGHT	Value = LEVEL 1: Backlight brightness 60% Value = LEVEL 2: Backlight brightness 80% Value = LEVEL 3: Backlight brightness 100%	Default value: LEVEL 3
Auto Sleep Time Setting		AUTO SLEEP	Value = OFF, 5, 10, 20, 30 min	Default value: 5 min OFF means auto sleep is disabled.

Startup Password Setting		PASSWORD	Value = OFF / ON When the parameter is set to ON, the user can set a 4-digit password.	Default: OFF (Can be used together with Bluetooth proximity unlock)
Battery Setting		DUAL BATTERY OPTION	Value = MAIN BATTERY Value = Extender Battery Value = DUAL BATTERY	Default value: DUAL BATTERY This menu is displayed only when the battery connection status is detected.
Bluetooth Proximity Unlock		BLUETOOTH	Value = PROFILE 1 - PROFILE 9	Read instructions: 1. The Bluetooth password must be enabled first before using this function together. 2. Up to 9 mobile phones can be paired.

Display Information Reading		Display INFO	Read only	Displayed according to the communication protocol content.
Battery Info Reading		BATTERY INFO	Read only	Displayed according to the communication protocol content.
Controller Information Reading		CONTROLLER INFO	Read only	Displayed according to the communication protocol content.
Advanced Setting Option		ADVANCED SETTING	Enter the Level-2 parameter setting interface.	Refer to the advanced setting instructions for details.

Factory Reset		RESET	Restore factory settings.	All parameters are restored to factory defaults.
Light Sensor Setting		LIGHT SENSOR	Value = OFF Value = LOW Value = MIDDLE Value = HIGH	Default value: HIGH

Advanced Setting Functions

 **WARNING:**The advanced settings are intended for specific protocol content only and allow modification of controller and system parameters through the protocol. This function is for developers or users with advanced technical capability only. Unauthorized or incorrect adjustment of related parameters may affect normal system operation or maintenance. Improper parameter settings or other setting issues may cause the vehicle system to malfunction or even cause other faults. Please modify system parameters carefully.

To ensure safer use of this function, users are strongly advised to contact the relevant manufacturer's customer service before making any modifications to confirm whether the hardware version of the current product supports this function. Users should also contact the manufacturer's sales and technical support teams to confirm whether they have the ability to maintain this function.

The parameter descriptions for each function in the advanced setting interface are as follows:

Setting Item	Menu Display Content	Setting Parameter Definition	Parameter Value Definition	Notes
Wheel Size Setting		WHEEL DIMENSION	Value = 16, 18, 20, 22, 24, 26, 27.5, 28, 29	Default value: 26
Speed Limitation Setting		SPEED LIMITATION	Value = 10 to 45	Default value: 25 Step = 1

Data Reset

To clear your trip data, wait at least 10 seconds after powering on, then press and hold M while on any sub-screen (not the main screen). A confirmation dialog will appear. Use  /  to select your choice, then short press M to confirm.

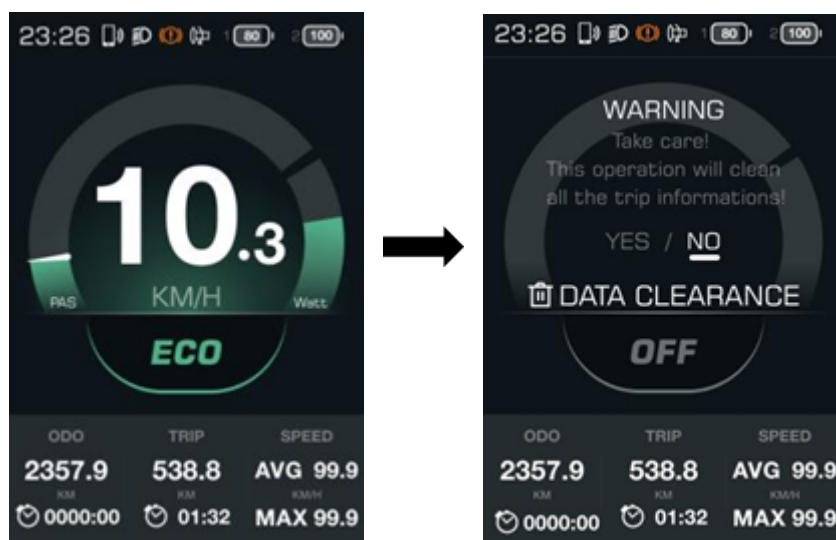
The following data will be reset to zero:

- Trip distance
- Average speed
- Max speed
- Assist mode usage stats

The dialog will automatically close after 30 seconds of inactivity, or press and hold M to cancel.



Odometer (ODO) and total ride time cannot be cleared from the display. These can only be reset using an authorized Service Tool.



Riding range

We suggest that you select a lower pedal assistance level when you are getting to know your **DUO** and travel routes. Once you become familiar with your range requirements and the capabilities of your bike, you can adjust your riding characteristics if you desire.

The table below provides range estimates under example conditions to help you understand the factors that can increase or decrease range. TLG POWERSPORTS makes no claims about the range that you might experience in a particular situation.

Range Estimates Under Example Conditions

46 miles (74 km): hilly terrain, light pedaling, high pedal assist level, frequent throttle use, windy conditions, or heavy payload.

60 miles (97 km): flat terrain, light to moderate pedaling, lower pedal assist level, minimal throttle use, not windy, and moderate payload.

70 miles (113 km): favorable conditions, steady moderate pedaling, low pedal assist level, minimal throttle use, proper tire pressure, and normal payload.

Best practices for extending range and battery life

Follow the best practices listed below to help extend your riding range and battery life:

- Whenever possible, avoid applying thumb throttle assist when the bike has slowed to very low speeds, has stalled, or is stopped.
- Reduce your use of pedal / throttle assist whenever possible.
- Avoid climbing hills steeper than 15% in grade.
- Avoid sudden starts and stops.
- Accelerate slowly.



Parking, storage, and transport

Please follow these tips to ensure your bike is well cared for when you are not using it.

PARKING AND STORAGE

- Park in accordance with local rules and regulations.
- Park indoors whenever possible. If you must park outdoors in rainy or wet conditions, do not do so for an extended period of time, and afterwards park in a dry location to allow the bike systems to dry out. When any bike is exposed to wet conditions, it will need a more frequent maintenance schedule to prevent rust and corrosion and to ensure all systems work safely.
- Avoid parking or storing your bike in direct sunlight, which can cause damage to the display.
- Do not park or store your bike in excessive heat, such as inside of a parked car on a hot day. Never exceed the temperature range of: -20°C to 50°C (-4°F to 122°F).
- After you park, power off the battery and lights to conserve battery power. Ensure that the battery is locked to the frame or remove the battery and bring it with you for security. Remove the key from the key port and take it with you.
- Register your bike at www.tlgmobility.com to increase the chance you will get your bike back in the unfortunate event it is stolen.
- Lock up your bike to reduce the risk of theft. Consult a local, certified, and reputable bike shop for more information on how to protect your bike from theft.
- Power off the bike before pushing or carrying it to avoid accidental acceleration from activating pedal assist or thumb throttle assist.
- Only use racks (such as a bike rack for your car or other vehicle) designed for the size and weight of your E-bike. Pay particular attention to whether the rack can accommodate the width of your E-bike tires.
- When carrying your E-bike on a rack for transport, remove the battery, and place/wrap it securely inside your vehicle with a fireproof E-bike battery bag (not included), making sure that its plugs and contacts are protected and that it cannot roll around. This will reduce the weight of the bike, make lifting and loading it easier, and protects your battery from damage. Check your online or local retailer.
- Do not leave the battery in direct sunlight or any location that is or may become excessively hot or cold, like a parked car, for extended periods.
- Before using public transportation (buses, trains, etc.) to transport your E-bike, check with the relevant transportation authority for any rules that might pertain to E-bikes, including rules governing weight limits, tire widths, lithium-ion batteries, etc.
- Avoid transporting the E-bike on a vehicle rack or in a pickup truck bed during rain, which may cause water damage to the electrical components.

Carrying loads (cargo or a passenger) safely

Total maximum payload of the DUO: 420 lbs. (191 kg)



WARNING: TLG POWERSPORTS does not endorse riding with a passenger on your DUO E-bike unless you have purchased all TLG accessories to safely carry a passenger on this model.

Please check www.tlgmobility.com and/or contact TLG POWERSPORTS at 619-865-0807

- Carrying extra weight significantly affects braking, acceleration, turning, balancing, and riding ability. These effects can be increased by challenging riding conditions, such as when roads are wet or slick. Hills that are normally easy to climb or descend without cargo can become challenging or even dangerous once extra weight is loaded onto the bike. Extra weight will increase the time it takes to slow the bike down when braking.
- Practice riding with light cargo in a flat and open area that is free of obstacles before attempting to ride with heavier loads, or in wet or hilly conditions.
- With extra weight on your bike, it is more important than ever to use both front and rear brakes, and always apply the rear brake first to prevent excessive strain on the front wheel & fork and to prevent loss of control. Ensure both front and rear brakes are properly adjusted and maintained.
- Load cargo as low as possible to keep the bike's center of gravity low and improve stability.
- Always support the bike when loading or when it is loaded with cargo or a passenger. The kickstand is not designed to be used for supporting cargo or passengers. Do not assume the bike is stable and balanced when using the kickstand.
- Ensure cargo loads are properly secured, and periodically check that no cargo loosens, risks interfering with any moving parts, or risks touching or dragging on the ground.
- When carrying heavy loads or a passenger, plan your routes to avoid challenging hills and other hazards.
- It is always your responsibility to ensure that anything loaded on the E-bike will not interfere with your ability to safely operate the bike.



WARNING: Failure to ensure that cargo or a passenger cannot interfere with your rider's control of the bike can lead to serious injury or death. You are always responsible for securing loads, loose straps, and assessing passenger's ability to ride safely.



WARNING: Carrying cargo or a passenger significantly affects braking, acceleration, turning, and balancing, which can increase the risk of falls and other accidents, potentially leading to property damage, serious injury, or death. To reduce such risk, practice riding with light cargo in a flat, open area before attempting to carry heavier cargo or a passenger, especially on roads or hills and in wet conditions.



WARNING: Loading cargo or a passenger without supporting your bike can cause the bike to tip, leading to damage or serious injury. The kickstand is designed to support an unoccupied, unloaded bike on a hard, flat, stable surface, and not to support your weight, the weight of a passenger, or cargo. Always support your bike when loading or unloading cargo or a passenger.



WARNING: Using the front brake by itself can cause excessive stress on components, damage to the bike and parts, loss of control, injury, or death. Always apply the rear brake before applying the front brake, using both brakes for all operations.



WARNING: To reduce the risk of injury, always closely supervise children when using your bike near them.



WARNING: Serious injury or death can occur if clothing or body parts contact either wheel or other moving parts while the bike is in motion. Check yourself and any passenger for any clothing or body part coming in contact with either wheel or any other moving part before riding. It is your responsibility to make sure that you and any passenger are safe and clear of any moving parts.

Maintenance

Follow these maintenance guidelines to ensure your **DUO** is safe and fun to ride.

Check and service your bike regularly

As on any bike, certain parts need to be replaced periodically due to wear, and sometimes parts become damaged for several reasons. Check your bike before each ride by following the directions in "Safety checklists" on the next page.

Have your bike regularly serviced by a certified and reputable bike mechanic. Components of any E-bike are subject to higher wear compared to the components of bikes without power assistance. This is because E-bikes can travel at higher average speeds than regular bicycles and generally weigh more.

Higher wear is not a defect in the product and is not subject to warranty. Typical components affected are the tires, brake pads and rotors, suspension forks, spokes, wheels, and the battery. If you need to replace a part on your bike, visit tlgmobility.com.

If you want a component that is not listed there, contact TLG POWERSPORTS Product Support at **1-619-865-0807**. Be extremely careful about using parts or accessories that TLG POWERSPORTS has not tested for safety and compatibility with your specific bike model.



WARNING: Using aftermarket accessories or components (trailers, stands, vehicle racks, etc.) that have not been tested by TLG POWERSPORTS for safety and compatibility with your specific bike may void your warranty, create an unsafe riding condition, result in bike/property damage, or cause serious injury or death. If you use replacement parts or accessories not tested and recommended by TLG POWERSPORTS, you do so at your own risk.

Safety checklists

BEFORE YOUR FIRST RIDE

- Make sure handlebar cables were routed correctly when the handlebar was installed. Turn the handlebar fully to the left and right and make sure this does not pull any of the cables or wires tight.
- Make sure your pedals are secure using a pedal wrench. Torque to 35 Nm. (see "Tools and recommended torque values" on page 5).
- Check that the cable connectors on the bike are all plugged in securely.
- Check the brake functions per the illustrations on page 7 but note that brakes can rub a little the first few times you ride. This is okay and normal; any squeak or noise should go away with use.
- Check everything on the "Before every ride" list below **BEFORE EVERY RIDE**.
- Check the items on the checklist below before every ride or every 25-45 miles (40-72 km), whichever comes first. If you find anything amiss with your bike, do not ride it until you are sure it is fixed. Consult a local, certified, and reputable bike mechanic or contact a TLG POWERSPORTS authorized dealer if you have any questions.

Brake system

- Check brake pads and ensure the brake pad material is not thinner than the backing plate it attaches to.



- Ensure brake pads are correctly positioned in relation to the brake rotors.
- Ensure brake housing are correctly adjusted and show no obvious wear and leaking.
- Ensure brake levers are properly positioned and tightly secured to the handlebar.
- Ensure the brake lever guard is appropriate.
- Check that the taillight brightens when you squeeze each brake lever.
- Wheels & tires Ensure tires are holding air and inflated to within the PSI limits displayed on the tire sidewalls.
- Ensure tires have good tread, have no bulges or excessive wear, and are free from any other damage.
- Check the axle nuts on the rear wheel to ensure they are correctly tightened (see "Tools and recommended torque values" on page 5).
- Check the security of the front-wheel and the rear wheel axle hardware. The wheel security and hardware torque should also be checked on a regular basis (see "Tools and recommended torque values" on page 5). Either wheel can become loose or unsecured with normal use.



WARNING: An improperly secured front or rear wheel can cause loss of control, accidents, serious injury, or death. Check that both wheels are properly secured during assembly and before each ride.

Steering

- Ensure the handlebar and stem are correctly aligned, adjusted, and tightened for proper steering. See "Adjusting the handlebar angle" on page 6.
- Perform a handlebar twist test to ensure the stem clamp bolts are secure. See "Handlebar twist test" on page 53.
- Ensure the handlebar is set correctly in relation to the fork and the direction of travel.
- Ensure the handlebar grips are secure and undamaged.

Bearings

- Check that headset, wheel, pedal, and bottom-bracket bearings are lubricated, run freely, and display no excess movement, grinding, or rattling.

Drivetrain: cranks, pedals, chain, derailleur, shifter

- Ensure pedals are securely tightened to the cranks. See "Tools and recommended torque values" on page 5.
- Ensure the cranks are not bent and are securely tightened to the bottom bracket. See "Tools and recommended torque values" on page 5.
- Ensure the chain is clean, lubricated, and runs smoothly. Take extra care with chain maintenance if the bike is used in wet, salty, dusty, or otherwise damaging conditions.
- Check that the derailleur is adjusted and functioning properly.
- Ensure the shifter is attached to the handlebar securely and is shifting properly.

Frame, fork, and seat

- Check that the frame and fork are not bent or broken.
- Motor drive assembly & thumb throttle power assist.
- Ensure the hub motor is spinning smoothly and is in good working order.
- Ensure the power cable running to the hub motor is secured and undamaged.
- Check the axle nuts to ensure they are correctly tightened (see "Tools and recommended torque values" on page 5).
- Ensure thumb throttle assist and pedal assist are operating normally.

Battery

- Ensure the battery is charged.
- Ensure there is no damage to the battery.
- Lock the battery to the frame and check that it is secured. Remove the key from the key port before riding and put it away in a safe location.
- Ensure the battery gauge on the LCD displays enough charge bars for your planned ride.

Cables

- Look over electrical cable connectors to make sure they are fully seated and free from debris or moisture.
- Check cables and cable housing for obvious signs of damage.
- Ensure cables are secured away from moving parts.
- Ensure headlight, taillight, and brake light are functioning, adjusted properly, and unobstructed.

Accessories & protective gear

- Ensure all reflectors are properly fitted and not obscured.
- Ensure all accessories and components installed on the bike are properly secured and functioning.
- Check all protective gear, clothing, cargo, and accessories for loose or potentially loose straps/elements and secure them.
- Ensure you and any passenger wear helmets and other required riding protective gear and inspect these items for signs of damage.
- If your bike has fender / mudguards: Ensure they are centered over the wheels, adjusted properly, properly secured (see "Tools and recommended torque values" on page 5), and have no cracks or holes.



WARNING: Riding your bike when any component's useful life is surpassed can cause that component to fail, resulting in loss of control, serious injury, or death. Pay attention to signs of wear such as cracks, scratches, component color change, and operational changes that could indicate a component needs replacing. Before each ride, check your bike using the "Safety checklists" on page 19. Perform regular maintenance according to "Recommended service intervals" below. If you are not sure you have the experience, skills, and tools to perform safety checks and regular maintenance, consult a local certified, reputable bike mechanic for help.

Recommended service intervals

Regular maintenance of any bike is key to ensuring the best possible performance and reducing wear and tear on systems. Ideal service intervals vary depending on use conditions. We generally recommend inspections, service, and necessary replacements be performed at the time or distance intervals described below, but you should have your bike serviced more frequently if you ride with heavy payloads or in harsh conditions. Have your bike inspected immediately if you notice problems if your bike has been involved in a fall or other accident.



WARNING: Have your bike inspected by a certified, reputable bike mechanic after any fall, crash, or accident, as these can cause damage (visible or internal / not readily apparent), make your bike unsafe, and lead to serious injury or death. Be particularly cautious about using a battery that has experienced a significant impact from a fall or crash; a damaged battery may not show external signs of damage. Using a damaged battery or charger can create additional bike damage or a fire hazard. For more information, see "Battery information" on page 8.

AFTER BREAK-IN PERIOD OF 50-75 MILES (80-120 KMS) Inspect

- Check all cables / housings and the chain for stretch.
- Check spoke tension and the trueness of the wheels. See "Wheel Truing" on page 52.
- Check all bolted connections for loosening and ensure they are tightened to recommended torque values (see "Tools and recommended torque values" on page 5).

Service

Have a certified, reputable bike mechanic perform a thorough tune-up.



WARNING: Certain components can stretch or loosen during your bike's break-in period, which can lead to component failure and potential injury or death. Be sure to have a certified, reputable bike mechanic perform a thorough tune-up after this break-in period or sooner if you notice any problems or if you ride with heavy payloads or in harsh conditions.

WEEKLY or 100-150 MILES (160-240 KMS) Inspect

- Check hardware for proper torque (see "Tools and recommended torque values" on page 5).
- Check drivetrain for proper alignment and function (including chain, freewheel, chainring, and derailleur).
- Check wheel trueness and spoke tension, and check for quiet wheel operation (without spoke noise). If applicable to your model.

Check the frame for any damage. Service

- Clean frame by wiping frame down with damp cloth. If needed, adjust the brake tension.
- Clean and lube the chain. Wipe off excess lube with a rag after a few minutes

Replace

Replace any components confirmed to be broken or damaged beyond repair by TLG POWERSPORTS Product Support or a certified, reputable bike mechanic.

MONTHLY or 250-500 MILES (400-800 KMS) Inspect

Check brake pad wear, alignment, and the brake levers' guard (hydraulic brakes). Check for proper shifting and proper derailleur cable tension.

Check chain stretch.

Check all brake housings for potential damage or kinks. Check shifter cable for corrosion and fraying.

Check wheel trueness and spoke tension, and check for quiet wheel operation (without spoke noise). See "Wheel Truing" on page 52.

Checking brakes & motor Cut-Off switches

All vehicles, including your **DUO**, need reliable brakes. Test your brake levers, brakes, and motor Cut-Off wire sensors as described below for proper functioning before every ride. If anything seems wrong, take your bike to a local, certified, and reputable bike mechanic, or contact TLG POWERSPORTS Product Support.



WARNING: Touching the brake rotor, which has sharp edges and can get very hot while you are riding, can cause serious injury, slicing damage, or burns. The brake rotor heats up from normal friction when the brake pads press against the brake rotor to slow or stop the bike. Touching the brake rotor with bare skin can also transfer natural oils to the rotor, which can decrease braking performance. Do not touch the brake rotor when it is in motion or right after you have ridden your bike. Touch the brake rotor only for necessary maintenance when it is cool, not moving, and while you are wearing clean gloves or using other appropriate protective equipment.

1. Test the brake levers.

- a. Fully squeeze each lever and ensure the front and rear brake levers do not touch the handlebar grips.
- b. Make sure each lever is properly oriented and firmly secured to the handlebar. See brake lever adjustment instructions on page 7.

2. Test each brake.

- a. Squeeze the left brake lever to lock the front brake, and then try to push the bike forward using the handlebar. The front wheel should not spin.
- b. Squeeze the right brake lever to lock the rear brake. Again, push against the handlebar to try moving the bike forward. The rear wheel should not spin.

3. Test the motor Cut-Off switches.

The front and rear brake levers contain motor Cut-Off switches, which cut off power from the motor whenever the brakes are applied.

- a. In a clear, open area, turn on the bike. With appropriate protective gear and clothing, sit on the bike.
- b. Squeeze the front brake lever (on the left side of the handlebar) to engage the front brake.
- c. Lightly apply the thumb throttle assist. The bike should not move since the brake is applied.
- d. Release the thumb throttle assist.
- e. Release the brake.
- f. Test that the thumb throttle assist now operates with the brake not engaged.
- g. Release the thumb throttle assist.
- h. Perform steps "a" to "g" again, this time with the rear brake lever (on the right side of the handlebar).

Tire and wheel care

The tires and inner tubes that came with your E-bike are designed for durability and safety for regular cycling activities. Wheels and tires need to be checked before each use as described below, to make sure they're in good condition. Always replace tires and inner tubes that have punctures, cuts, bulges, damage, or excessive wear before you ride.

TIRE INFLATION

Inflate tubes and tires to within the PSI range stamped onto the tire sidewall.



WARNING: Under-inflating your tires can result in loss of control. Over-inflating can make tires burst. Either scenario can lead to serious injury or death. Always maintain the correct air pressure of your tires as listed on the tire sidewall and use a regulated air source with a pressure gauge so that you can measure air pressure accurately.

WHEEL TRUING

Your wheels should always spin straight ("true") and must be repaired or replaced if they wobble side to side or up and down when spinning. To test them, do this:

1. With your E-bike safely mounted on a proper E-bike stand, spin the front or rear wheel, one at a time.
2. Brace a dull pencil against the frame or fork, with the tip just touching the rim. If the gap between the spinning rim and pencil changes more than 5 mm, your wheels may need truing. If your wheels become untrue or if spokes loosen, which can happen with normal use, we recommend that you have a certified, reputable bike mechanic perform wheel tuning & truing operations. Do not attempt to true wheels or tighten spokes unless you have the highly specialized skills and tools to do so.

TIRE REPLACEMENT

Even tires equipped with built-in flat-preventative tire liners can and do get flats from punctures, pinches, impacts, and other causes. If you get a flat tire or see evidence of tire wear, you must replace your tire and/or tubes before operating the bike again. Otherwise, you risk bike/property damage, serious injury, or death.



WARNING: Removing a tube from your wheel rim before the air has been released from it can cause the tube to burst, potentially causing serious injury. Always release air pressure before removing your tube.



WARNING: Aftermarket tires or inner tubes not provided by TLG POWERSPORTS may not be compatible with your wheels or the performance requirements of your E-bike. Such tires can fail or create unsafe riding conditions, causing serious injury or death. Always use replacement tires and tubes that are sized to be compatible with your wheels and bike frame. For safety and as required by law, ensure replacement tires have sufficient reflective sidewall striping. For more information on tire or tube replacement, consult a local certified, reputable bike mechanic

Handlebar twist test



WARNING: An improperly secured wheel and/or handlebar stem can cause loss of control, accidents, serious injury, or death. Check that the front wheel and handlebar stem are properly secured during assembly and before each ride, as described below.

1. Stand at the front of the bike, facing the handlebar, and brace the front wheel between your feet and lower legs.
2. Try to twist the handlebar. Hold both handlebar grips and push forward with your right hand while pulling back with your left hand. Push and pull at the same time with about 20 lbs. (9kg) of force with each hand.
3. Ensure the handlebar and wheel stay properly aligned. The handlebar and handlebar stem should be tightly secured, and the handlebar should be perpendicular to the front wheel axis.
4. Repeat the twist test pushing forward with your left hand while pulling back with your right hand, using about 20 lbs. (9kg) of force with each hand.
5. To tighten, align the handlebar and stem and torque the stem clamp bolts evenly. Be sure to torque the stem clamp bolts evenly to the specification listed in "Tools and recommended torque values" on page 5. After torquing the stem clamp bolts to the proper specification, perform the twist test again. If the handlebar still moves, contact TLG POWERSPORTS Product Support.



WARNING: If you are not sure you have the experience, skills or tools to correctly perform all steps to secure and verify the security of the handlebar, front wheel, and handlebar stem, consult a certified, reputable bike mechanic.

Guard against rust, corrosion, and water damage



WARNING: Damage to your E-bike's electrical system caused in any manner, including water intrusion, can lead to battery failure, electrical system malfunction, or electrical fire and consequent property damage, injury, or death. Follow all recommendations to reduce chance of water damage. If you have any questions, contact TLG Mobility Bikes Product Support.

Like any vehicle used outdoors, your **DUO** needs care to ensure it is not damaged by the elements. Follow these steps for a long, healthy life for your E-bike:

- Store under shelter and in an upright position; avoid leaving the bike in the rain or exposed to corrosive substances such as water, salt, or de-icing substances. If exposed to rain, dry your bike afterwards, and apply an anti-rust treatment to the chain and other unpainted steel surfaces.
- To clean your E-bike, power off the bike and its battery, and wipe the frame and components with a clean, damp cloth. If needed, apply a mild, non-corrosive detergent mixture to the damp cloth and wipe the frame and components. Dry by wiping with a clean, dry cloth. Never use high-pressure water and

washers to clean your E-bike.

- Wipe down your bike frequently and wipe or spray all unpainted metal parts with anti-rust treatment.
- If painted metal parts become scratched or chipped, use touch up paint or nail polish to prevent rust.
- Never immerse or submerge the bike or any components in water or liquid, which can damage the electrical system.
- Avoid riding on the beach, in coastal areas with high-salinity fog, or on surfaces treated with salt or de-icing compounds. Doing so exposes your bike to salt or other substances that are very corrosive. Corrosion of electrical components can lead to permanent damage that can cause battery failure, electrical system failure, or electrical fire. Damage from corrosion is not covered under warranty.

Troubleshooting

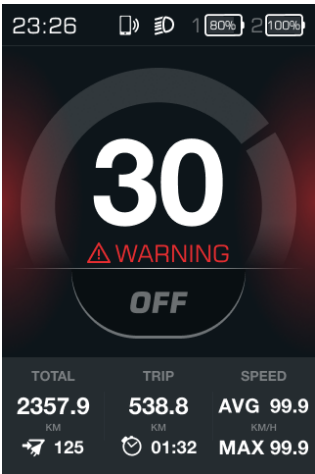
Problem	Most common solutions
Prepare the bike for maintenance	Turn off the bike, remove the battery, and press and hold the power button to discharge remaining power.
The E-bike does not power on:	
Insufficient battery power	Charge the battery.
Battery will not wake up	Wake up battery by removing it from frame and by pressing and holding the battery button at the bottom for three seconds.
Battery not properly or fully secured in mount	Remove, inspect (see below) and re-Install battery correctly after inspection and cleaning.
	Inspect the battery and battery mount terminals. Check for any dirt, damage, or moisture at the base of the battery and the lower battery mount and clean accordingly with a dry rag.
The battery will not charge:	
Charger not well connected	Adjust the connections.
Charger light remains green while charging	Is the battery already fully charged? Check number of charged bars on display / If battery not fully charged, replace the charger.
Charger overheats above functional temperature range	Stop using the charger and replace it.
Charger damaged or damaged cords	Replace the charger
Battery still does not charge / Battery damaged	Contact TLG Mobility Product Support to replace battery. Disconnect and store damaged battery in a safe location (use fireproof battery bag for safe storage) and recycle or dispose of as soon as possible according to local rules or laws.
Wiring damaged	Replace.

Problem	Most common solutions
Faulty wire connections	Disconnect, clean and reconnect properly all accessible exterior connectors (see below).
	Prepare your bike for maintenance and recheck all wire connections. Unplug one connector at a time, inspect the inside, reconnect it, and turn on the bike to see if the error is resolved. As you work through the connectors, safely use a cutter to cut zip-ties as needed to create enough slack to unplug the connector. Re-install connectors and wires with a Zip-tie to properly hold them in place in their respective frame guides.
Improper turn-on sequence	Turn on bike with proper sequence: Hold the start button for 3 seconds and release. Let the display run through its start sequence with numbers going up and down. Check for potential error code. Switch from PAS 0 to PAS 1 and above for desired level of assistance. To ride: release brake levers and activate assistance by pedaling or using the throttle.
Irregular acceleration and/or reduced top speed	
Insufficient battery power	Charge or replace battery.
Loose or damaged thumb throttle	Tighten or replace.
Throttle wire not fully connected	Disconnect wires in front of handlebar and reconnect properly.
When powered on, the motor does not respond	
Brake levers are squeezed	Check the brake levers to make sure they are fully disengaged. If one lever is engaged, it cuts all power to the bike.
Loose connecting wire to rear hub motor	Disconnect and reconnect properly: make sure the motor cable is zip tied to the frame, if not, on most models, the disc brake rotor will cut through the motor cable.
Loose or damaged motor plug wire	Reconnect properly or replace
Motor does not respond when using throttle	Loose connection or Faulty Throttle / Replace
Motor does not respond when pedaling	Check Torque / Cadence sensor connection and function at BB set / Replace if defective
If BB set wire is properly connected and BB set is n defective	Defective controller / Check and replace if needed.
If Controller function is correct	Dual-Hall Power-Assist sensor failure / Replace motor
Motor does not respond when pedaling or using throttle	Check that brakes are disengaged, check for error codes, check external connectors / Controller needs to be checked for function / Controller needs to be replaced.
If still no function after replacing controller	Check wiring harness internally and externally / Damaged motor / Replace.

Prepare the bike for maintenance	Turn off the bike, remove the battery, and press and hold the power button to discharge remaining power.
Lower Maximum Speed for Indicated Class	Contact your TLG dealer or TLG Mobility Product Support for instructions
Reduced range:	
Low tire pressure	Inflate tires to PSI stamped on sidewall
Low battery	Charge battery fully before each ride
Driving with too many hills, headwind, frequent braking, or excessive load	Use more pedal-assistance / Use Torque sensor mode / Or adjust route
Battery discharged for long period without regular charges	Recharge the battery
Disc brakes rubbing	Adjust the brake calipers
Faulty, damaged or worn-out battery	Contact TLG Mobility Product Support to replace battery. Disconnect and store damaged battery in a safe location (use fireproof battery bag for safe storage) and recycle or dispose of as soon as possible according to local rules or laws.
No difference felt between either mode while switching	Defective connection from Bottom Bracket / Check and reconnect.
If connection is correct	Defective controller / Check and Replace if needed.
Pedal Assist mode is locked in one PAS position (1 to 5)	Defective connection from Bottom Bracket or at display / Check and reconnect
If all connections are correct	Defective Bottom Bracket set / Replace
If problem is not solved after BB set replacement	Defective controller / Check and Replace if needed.

Error detection

Your **DUO** is equipped with an error detection system integrated into the display and controller (see "Electrical controls and operation" on page 15 for more information). In the rare event of an electrical issue with the bike, you may see a specific code on the display. If this happens, we recommend that you cease operation, take a short video of the display if possible, and contact **TLG POWERSPORTS at 619-865-0807**.



Location of Error code Display

The following errors are the most common ones and can help in troubleshooting the issue.

TLG DUO - Error Code Table:

Error code	Definition	Error code	Definition
0x03	Brake engaged	0x41	Battery overvoltage
0x04	Throttle failure	0x42	Battery undervoltage
0x05	Throttle not returned to neutral	0x43	Battery overcurrent
0x06	Low voltage protection	0x44	Cell overvoltage
0x07	Overvoltage protection	0x45	Battery high temperature
0x08	Motor Hall sensor failure	0x46	Battery low temperature
0x09	Motor phase line failure	0x47	SOC too high
0x10	Motor high temperature protection	0x48	SOC too low
0x11	Motor temperature sensor failure	0x49	Cell undervoltage
0x12	Current sensor failure	0x89	IOT-controller communication failure
0x14	Controller high temperature protection	0x95	IOT connection failure
0x15	Controller temperature sensor failure	0x96	IOT CAN communication failure
0x21	Speed sensor failure	0x97	E-bike tilt alarm
0x23	Headlight fault	0x98	Interference alarm
0x27	Overcurrent protection	0x99	IOT low battery alarm
0x30	Display-controller communication failure	0x4A	Battery short circuit
0x31	Low voltage protection (controller)	0x4B	Temperature differential fault
0x32	Overvoltage protection (controller)	0x4C	Cell voltage differential fault
0x33	Brake detection circuit failure	0x4D	Fuse failure
0x35	15V power supply detection failure	0x4E	Other battery fault
0x36	Button detection circuit failure		
0x37	Watchdog failure		

Ride as safely as possible

Ride by taking the sensible measures outlined in this section to increase your safety. Bicycling is an exciting, delightful, and practical way to get around, but like any sport, it involves risk of injury and death. By choosing to ride a bike, you assume responsibility for those risks.



WARNING: Incorrect assembly, maintenance, or use of your E-bike can cause component or performance failure, loss of control, serious injury, or death. Even if you are an experienced bike rider, you must read and understand the entire manual and any documentation provided for subcomponents or accessories, before riding. If you are not sure you have the experience, skills, and tools to correctly perform all steps in this manual, consult a local, certified, reputable bike mechanic.

Be thoroughly educated about your bike before riding it

Practice riding your bike, braking, shifting gears, and using the power assist systems in a controlled location before venturing into traffic or other risky conditions.

The electrical system on your E-bike (see "Electrical controls and operation" on page 23) offers various levels of power assistance and lighting for different operating conditions and user preferences. Be sure you understand these features before riding. If power assist or lighting is functioning abnormally, intermittently, or not at all, please discontinue using your E-bike immediately and contact TLG POWERSPORTS Product Support for assistance or consult a local, certified, reputable bike mechanic.

Take extreme care getting to know and learning to control the power assist and brake systems. Your **DUO** is probably heavier than other bikes you've ridden, and it will handle quite differently from lighter bikes, especially when you are accelerating or decelerating. Learn to maintain a comfortable stopping distance from all other objects, riders, and vehicles at different speeds, conditions, and with varying payloads.

Age and ability requirements



WARNING: This E-bike is not to be operated by anyone under the age of 16. Children under the age of 16 may lack the necessary judgment and skill to safely operate this Class 3 E-bike, potentially resulting in damage to the bike, damage to other property, serious injury, and/or death. Please also check your local laws, which may require a higher age to ride this **DUO**.

It is your responsibility to know and obey local regulations regarding rider age and other requirements. You must also have the physical ability, reaction time, and mental capability to understand and obey all local laws governing E-bike usage and to manage traffic, variable road conditions, and sudden situations. If you have an impairment or disability (e.g., visual impairment, hearing impairment, physical impairment, cognitive or language impairment, seizure disorder) or any other condition that could affect your ability to safely operate a vehicle, consult your physician before riding any bike.



DANGER: Riding any bike under the influence of alcohol, drugs, or any substance or condition that could impair your motor function, judgment, reaction time, or ability to safely operate a vehicle, puts you at very high risk of serious injury or death. Operate bikes and other vehicles only when you are sober and otherwise physically and mentally prepared to ride safely.

Know and obey all relevant local laws

The **DUO** is a Class 3 E-bike and has a 750 Watts rear hub motor. Please check relevant rules in the locations you intend to ride for a full understanding of all necessary legal rules for operating your **DUO**. This manual will refer to your **DUO** as a "bike" or "E-bike." It is your responsibility to know the local laws

that govern any type of vehicle you use.

Safety check before each ride

Before each ride, you must check your bike to ensure everything is working properly. Follow the instructions on the "Safety checklists" on page 48 and ground your safety checks in a solid understanding of bike maintenance, which is explained in "Maintenance" on page 47, a section that includes an important chart, "Recommended service intervals" on page 50, which you should follow as well. If you are ever unsure about how to check or maintain your bike or if you find any problems with it, take it to a certified, reputable bike mechanic or contact TLG POWERSPORTS Product Support.

Ride appropriately for conditions

Always travel at speeds appropriate for local terrain and conditions as well as your experience level. When in doubt, slow down.



WARNING: Using the front brake by itself can cause excessive stress on components, damage to the bike and parts, loss of control, injury, or death. Always apply the rear brake before applying the front brake, using both brakes for all operations.

Always use a low pedal assist level until you are comfortable with your **DUO** and confident about controlling its power, weight, and responsiveness (e.g., during start-up, turns, and braking) at different speeds, in different conditions, and with whatever payloads you might carry.

Riding with your headlight on will make you more visible in any conditions. The headlight will turn on when the bike is powered on. We recommend you keep it on whenever you ride.

Concentrate on the path ahead. Avoid potholes, gravel, ice, wet or oily roads, wet leaves, curbs, train tracks, speed bumps, drain gates, thorns, broken glass, and other obstacles, hazards, and puncture-flat risks.



WARNING: Crossing train tracks or similar grooved or raised surfaces at a diagonal can make the surface "grab" or deflect your wheel, causing your bike to suddenly get stuck or crash, leading to serious injury or death. Always cross such hazards at a perpendicular angle or, when in doubt, dismount and walk your bike across.

PATH RIDING

Be a good citizen of shared-use paths and facilities. Keep your speed reasonable and below path speed limits, pass carefully and kindly. Use your voice and/or an added bell to signal your presence to others, especially when passing.

ROAD RIDING

When riding on streets, obey the same road laws as all other road vehicles as well as local rules governing bike or E-bike usage. Sharing the road with other vehicles present many hazards. Always take these precautions:

- Expect the unexpected such as opening car doors or cars backing out of driveways.
- Be extra careful at intersections and when preparing to pass other vehicles or other cyclists.
- Ride predictably, in a straight line, and with the flow of traffic. Never ride against traffic.
- Use correct hand signals to indicate turning and do so well in advance of turning.
- Ride defensively. To other road users you may be hard to see.
- Increase your visibility by following the tips in "Low-visibility conditions" on page 63.

OFF-ROAD RIDING

Riding off road requires close attention and specific skills, and it presents variable conditions and hazards. Do not ride off road unless you have the appropriate skills. If you choose to ride off road, wear appropriate protective gear and do not ride alone in remote areas.

HOT OR COLD CONDITIONS

Riding, parking, or storing your bike in excessively hot conditions can cause damage to the display and other components.

Do not park or store your bike in direct sunlight for extended periods. For more information on safe and recommended storage conditions. See "Parking, storage, and transport" on page 45.

LOW-VISIBILITY CONDITIONS



WARNING: Riding at night or in other low-visibility conditions (dawn, dusk, fog, rain, mist, snow, etc.) makes it harder to see and avoid hazards and makes it harder for others to see and avoid you, which increases risk of accidents, serious injury, or death. Wet, slippery surfaces will compound your risk of injury or death. Avoid these conditions whenever possible. If you must ride in these conditions, following the guidelines below can reduce risk.

- Wear reflective and brightly colored clothing.
- Slow down.
- Use familiar routes with street lighting, if possible.
- Ensure tire wall, pedal, and other reflectors are installed and unobstructed.
- Ensure headlight and taillight/brake light are turned on, functioning correctly, and unobstructed.

WET CONDITIONS

This E-bike is not meant for use in puddles, heavy rain, or streams. Never immerse or submerge this product in water or liquid as the electrical system may be damaged. See "Guard against rust, corrosion, and water damage" on page 45.



WARNING: Riding in wet conditions means slippery hands, feet, and riding surfaces, which greatly increases your risk of accidents, serious injury, or death. Low-visibility conditions (night, dusk, dawn fog, mist, rain, snow, etc.) will compound your risk of injury or death. If you must ride in wet conditions, following the guidelines below can reduce risk.

- Decrease riding speed to help you control the bike in slippery conditions.
- Brake earlier since it will take longer to slow down in wet conditions.
- Take care to be more visible to others on the road, following the tips in "Low-visibility conditions" above.
- Remember that road hazards are more difficult to see when wet, so proceed with extra caution.

EXTREME RIDING

The **DUO** is not appropriate for extreme riding. TLG Mobility strongly recommends against such use.



DANGER: Extreme riding puts you at very high risk of serious injury or death. Extreme riding includes but is not limited to jumps, stunts, or any riding that exceeds your capabilities or the strength and integrity limitations of bike components or otherwise leads to dangerous situations. Never engage in extreme riding or any type of riding that exceeds your capabilities.

Wear a helmet and appropriate protective gear

We strongly advise that you wear a properly fitting, certified E-bike safety helmet while riding your E-bike, which may be required by law in your area.

Wear appropriate protective gear including closed-toe shoes. If you are wearing loose pants, secure the bottom using appropriate leg clips or bands to prevent the fabric from flapping and getting caught in the chain or other moving parts. Never use items such as headphones or hoods that can compromise your hearing or field of vision. A local, certified, and reputable bike shop can help advise you on what gear is best for the weather and other riding conditions in your area.

Increase your visibility with bright colors and reflective outerwear or vests. Never compromise your ability to be seen or heard by removing your E-bike's reflectors, blocking or removing the headlight or taillight, or removing the bell if it is supplied with your e-bike.



DANGER: Riding any bike without a helmet puts you at very high risk of serious head injury or death. Always wear a properly fitted helmet that covers the forehead. Many locations require specific safety devices. It is your responsibility to familiarize yourself and comply with the laws, rules, and regulations

where you ride.

Limited Warranty Policy and TLG Total Shield

BY USING YOUR TLG PRODUCTS YOU AGREE TO BE BOUND BY ALL THE TERMS OF THIS LIMITED WARRANTY, THE MOST CURRENT OF WHICH CAN BE FOUND ON WWW.TLGMOBILITY.COM. BEFORE USING YOUR TLG PRODUCT PLEASE READ THIS POLICY CAREFULLY. TLG RESERVES THE RIGHT TO UPDATE ITS WARRANTY POLICY FROM TIME TO TIME IN ITS SOLE DISCRETION.

Don't Miss a Ride!

TLG is committed to delivering high-quality, reliable Products to our customers. We stand behind our products so that you don't have to worry about missing a ride!

Limited Warranty

Our Limited Warranty Policy (Policy) warrants against defects in materials and workmanship and applies only to TLG Products purchased from an authorized TLG retailer (www.tlgmobility.com/dealers/) or from TLG's official website (www.tlgmobility.com). The Policy provides warranty coverage on the complete bike for a period of two (2) years from the date of purchase, as long as Product has been registered within 60 days of purchase. The frame is protected by TLG's warranty for the lifetime of the original owner.

If the Product was originally purchased from a source other than an authorized retailer or from TLG's official website, it will not be covered by this Policy.

Subsequent Ownership

This Policy is transferable to subsequent owners, as long as the original purchase was made in accordance with this Policy and the original proof of purchase is provided when filing a claim.

What Is Not Covered:

This Policy does not cover any damage or defects to covered components resulting from failure to follow instructions in the owner's manual, as well as the following:

- Damages caused by misuse, abuse, or by accident or negligence
- Custom paint, damage caused to paint by improper care, use of solvents and other harsh chemicals, crashes, scratches, or other wear-and-tear
- Failure to observe care instructions including incorrect assembly, installation or maintenance
- Unauthorized modification or alteration including any repair done outside of TLG Customer Service

- Installation of components, parts, or accessories not originally intended for or compatible with the Product
- Labor charges for part replacement or changeover
- Cosmetic scratches or non-structural blemishes
- Specific to battery: the warranty does not cover damage from power surges, use of improper charger, improper maintenance or other such misuse, normal wear, water damage, or improper storage (under F -4° or above F 113°)

This Policy does not apply to Products whose serial number or production code has been deliberately altered, defaced, or removed. This warranty is expressly limited to the repair or replacement of a defective Product as determined in TLG's sole discretion and expertise. TLG is not responsible for incidental or consequential damages unless prohibited by state law. Claims made outside the country of original purchase may be subject to fees and additional restrictions.

Making a Warranty Claim:

Warranty claims must be made through an authorized TLG Retailer or via (<https://www.tlgmobility.com/support/>). Warranty is only valid with proof of purchase on registered products. Handwritten or auction site receipts will not be accepted. Note: Please remember to bring or send your Product to an Authorized TLG Retailer in an assembled, reasonably clean and sanitary condition and accompanied by the original, dated sales receipt for the bicycle (be sure to keep your receipt in a safe place!).

If TLG determines, in its sole discretion, that your Product is subject to this Policy, TLG will:

1. Repair the Product at no charge for parts; a. If Product was purchased directly from TLG's website or an authorized affiliate's website, labor charges will be covered at 60% of relevant Retailer's posted labor rate (remaining 40% is owner's responsibility) b. If Product was purchased directly from an authorized Dealer, labor charges will be covered by Dealer c. If Product is taken to an unauthorized Dealer for repair, labor costs will be borne 100% by Customer
2. Replace the Product with the same model Product
3. Replace the Product with a comparable Product or offer a comparable option should your Product be discontinued or otherwise unavailable.

You are responsible for all taxes, fees, or other charges, including shipping, transportation, postage or otherwise, except where prohibited. Until received by TLG, you will bear the risk of loss. To the fullest extent permitted by law, the above three remedies shall be your sole and exclusive remedies under this Policy and supersede any prior contrary or additional representations, whether oral or written.

Due to product evolution and obsolescence (such as products that have been discontinued or are no longer kept in stock), some frames or components may not be available for older or limited-edition models. In these cases, TLG may elect to provide a replacement that they determine to be the most comparable model.

It is your responsibility to regularly inspect and properly maintain your bicycle. Some items that typically exhibit damage from normal wear-and-tear include:

Bearings	Tubes	Wheel braking surface
Brake pads	Saddles	Spokes
Suspension	Chain	Handlebar and grips
Chainrings	Seals	Cables and housing
Cassettes	Shifters and gears	Bushings
Tires	Free hub bodies	--

Paint fading caused by the effects of ultraviolet light (UV) or outdoor exposure is not covered by this Policy.

TLG reserves the right to refuse warranty service to any person who in TLG's sole discretion, abuses its Products or this Policy.

Damage During Shipping:

Damage to a Product during shipping is not covered by this Policy. Notwithstanding such limitation, TLG agrees to replace such damaged Products if you:

- Notify TLG of damage to a Product in the shipping process within seven (7) days of the date of your receipt of the Product
- Immediately provide TLG with dated pictures and/or a video of the damaged Product
- Inspect the Product immediately upon receipt of the Product; or note in clear detail any immediately recognizable damage to the Product on the shipper's Bill of Lading prior to signing off on the shipment of the Product
- Return all original packaging and paperwork when you return the new, unused Product to TLG

If you choose to set up your own independent shipping method, such as use of a freight forwarder or other similar service, TLG will not be responsible for the replacement of any Products damaged during such shipping method.

THE REMEDIES STATED ABOVE ARE THE EXCLUSIVE REMEDIES UNDER THIS WARRANTY. ANY AND ALL OTHER REMEDIES AND DAMAGES THAT MAY OTHERWISE BE APPLICABLE ARE EXCLUDED, INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES, DAMAGES TO OTHER PROPERTY, OR ANY PUNITIVE DAMAGES.

THIS IS THE ONLY WARRANTY MADE BY TLG ON ITS FRAMES AND COMPONENTS, AND THERE ARE NO WARRANTIES WHICH EXTEND BEYOND WHAT IS STATED HEREIN. ANY WARRANTIES THAT MAY OTHERWISE BE IMPLIED BY LAW INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED.

PLEASE REFER TO THE DOCUMENTS INCLUDED WITH YOUR BICYCLE FOR POSSIBLE FURTHER RESTRICTIONS.

THIS LIMITED WARRANTY GIVES THE CONSUMER SPECIFIC LEGAL RIGHTS. THE CONSUMER MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE OR COUNTRY TO COUNTRY. SOME STATES AND COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR WARRANTIES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. IF IT IS DETERMINED BY A COURT OF COMPETENT JURISDICTION THAT A CERTAIN PROVISION OF THIS LIMITED WARRANTY DOES NOT APPLY, SUCH DETERMINATION SHALL NOT AFFECT ANY OTHER PROVISION OF THIS LIMITED WARRANTY AND ALL OTHER PROVISIONS SHALL REMAIN IN EFFECT.

For questions concerning warranty, contact your authorized TLG retailer or TLG at:

TLG eBikes, 2501 E Smiderle Lp, Ontario, CA 91764 phone#
+1-619-865-0807 /+1-619-572-6487

If you are the original owner and your Product is not eligible for coverage under this Policy, please refer to TLG Total Shield which may provide you with a solution. See below:

TLG Total Shield

TLG Total Shield extends and/or supplements TLG's Limited Warranty for 5 years with an additional level of coverage when your issue doesn't fit neatly into the Limited Warranty categories. If your bike is stolen, damaged (regardless of fault), TLG will help you get back on your bike by offering you the following pricing discounts:

Year of Ownership	Retail Discount	Dealer Discount
1	30%	25%
2	25%	20%
3	20%	15%
4	15%	10%
5	10%	5%

Rules and Limitations:

Accident: a digital photo of the damaged part must be provided and approved by TLG prior to replacement approval (one replacement per part, e.g., one derailleur replacement cancels future derailleur replacements for that Product)

No additional discounts or offers may be combined to "stack" offers. Should an exact replacement for the part or model not be available, TLG will determine a "like for like" replacement.

Please note: TLG Total Shield does not include wear-and-tear items such as chains, cassettes, cables, tires, tubes, and adjustments.

TLG Total Shield is free of charge to the original owner for Products purchased from an authorized TLG Retailer or from www.tlgmobility.com.



Please note: TLG Total Shield is non-transferable to any subsequent owner.

Assembly Instructions



WARNING: Incorrect assembly, adjustments, maintenance or use of your E-bike can cause component failure, loss of control, injury or death. Even if you are an experienced bike rider, you must read and understand the entire manual and any documentation provided for subcomponents or accessories before riding. If you are not sure you have the experience, skills, and tools to correctly perform, adjustment steps in this manual, consult a local, certified, reputable bike mechanic.

1. Open Box at top flaps. Discard staples with pliers to avoid cuts to your hands.
2. Remove the 2 small-parts boxes on top and set aside.
3. Remove all foam inserts on top of box.
4. With a second person, lift and remove the E-bike from the box and set it upright on the ground.
5. With a second person, set bike on stable bike stand designed for 70 lbs. + bikes if available.
6. Remove all packaging material /protections one by one. Be careful not to scratch the paint and decals if using a blade to cut the tape on foam protections.
7. Be sure to leave the plastic insert on bottom of forks.
8. Remove front wheel and fender by cutting Zip-ties holding the wheel to the bike, place wheel to the side.
9. Cut Zip-ties holding handlebar & its complete equipment. Bring to the front of the fork.
10. Remove 4 x Allen bolts from stem front plate -do not remove the two pinch- bolts from stem (see Fig. 1).

Fig. 1



11. Place bars into stem slot, center bars within stem (see Fig. 3). Replace stem plate back onto stem and install / thread the 4 Allen bolts in and arrange the handlebar angle into your preferred position (See Fig.2).

Fig. 2



12. Once bars are positioned, tighten all 4 x Allen bolts using a 4mm Allen wrench in a cross pattern. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5. (see Fig. 3).

Fig. 3



13. Check position of display and headlight and re-adjust / tighten as needed. Do not over-tighten the 3mm Allen bolts (x2) of the display mount. Ensure all hardware is tightened properly according to the values in "Tools and recommended Torque values" on page 5 (See Fig. 4 & Fig. 5).

Fig. 4



Fig. 5



14. Remove packaging from front fender.
15. Remove fender mounting bolt and nut from fork bridge.
16. Install fender from back of the fork arch, place fender hanger on fork bridge bolt. (see Fig. 6).

Fig. 6



17. Install nut onto bridge bolt, holding fender in place, do not fully tighten
18. Remove fender strut bolts from backside of the fork legs, install the fender struts and reinstall the strut bolts, holding them in place (See Fig. 7). Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5.

Fig. 7



19. Remove packing spacer from caliper brake to allow front rotor to set in when installing the front wheel (See Fig.8).

Fig. 8



20. If without a proper bike stand, lower kickstand to stand the bike up on its own.
21. Center front fender and fully tighten fender bolts. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5.
22. Undo axle bolts and spacers on front wheel to be able to set the front wheel in the fork legs (See Fig. 19).

Fig. 9



23. If without a proper bike stand, have a second person hold up front end using the handlebar, and place the front wheel and its axle in the fork. Make sure to install the front brake rotor between the front caliper brake pads.
24. Place washers and axle nuts back on both sides of axle. Tighten front axle nuts with a 6mm Allen wrench or ratchet wrench. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" in page 5 (See Fig. 10&11below).

Fig. 10



Fig. 11



25. Use a bolt on the side of the headlight to adjust and tighten its angle. Check the tightness of the headlight clamp on the handlebar. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5 (see Fig 12).

Fig. 12



26. Remove pedals from accessory box & install with a dab of grease on both axles. Be sure to note the L (Left) and R (Right) decals on each pedal and install accordingly on the correct side. Turn clockwise to tighten the right-side pedal on the drive-side and counterclockwise to tighten the left-side pedal on the non-drive side (See Fig 13).

Fig.13



27. Ensure headset is tight by loosening the stems pinch bolt, tighten up the top cap Allen bolt, and then retighten the stem pinch bolts. Ensure all hardware is tightened properly according to the values in "Tools and recommended torque values" on page 5 (See Fig 14).

Fig. 14



WARNING: Disc brake calipers should come adjusted and centered from the factory. In the event they are not properly adjusted, check with your TLG dealer or local bike shop. If you are not sure you have the experience, skills, and tools to correctly perform adjustment steps in the manual, consult a local, certified, reputable bike mechanic.



2501 E Smiderle Lp, Ontario, CA 91764

1-619-865-0807

tlgmobility.com