



OWNER'S MANUAL
CTY2 V1.0

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**BEEP!
BEEP!**



WELCOME

YOU ARE NOW THE PROUD OWNER OF AN ONYX CTY2.

In this document we will cover the basic landscape and maintenance of the CTY2.

We want to thank you for choosing ONYX as your new form of transportation and recreational use. We welcome you to the ONYX riding community. We hope you use this manual to provide for reference in the operation, inspection and basic maintenance of your ONYX. We are constantly updating and refining our product. Please to use this document to keep yourself up to speed for many enjoyable miles to come.

Sincerely,
ONYX Motorbikes

GET IN TOUCH

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ONYX Motorbikes Group
facebook.com/groups/onyxmotorbikes

WARNING

Riding an electric bike is extremely dangerous. Use of this product can result in serious damage, injury, or death. ONYX products function differently from conventional bicycles and are dangerous. To minimize risk of serious injury, protective equipment should be worn at all times including a helmet. You are responsible for your own safety. Use this product with extreme caution and at your own risk.

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CALIFORNIA PROPOSITION 65

WARNING: Operating, servicing, or maintaining a passenger vehicle or off-highway motor vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

CALIFORNIA PERCHLORATE ADVISORY

WARNING: Certain components of this motorbike such as lithium batteries may contain perchlorate material. Special handling may apply for service or end of life disposal. See www.dtsc.ca.gov.

QUICK START GUIDE



CTY2 MODEL

LET'S GET READY TO RIDE

Okay you are super tempted to ride the bike, but let's get the bike fully charged and ready to ride before you go ride off into the sunset. Your bike should come nominally charged when shipped. If you ride the bike uncharged you could cause problems with operating the bike. So let's get started!

Whether you are a seasoned cyclist or new to the electric motorbike scene, riding an ONYX CTY2 is an awesome experience every time and everywhere you get to ride one. Pedaling your heart out is great exercise and gets the blood flowing for sure, but being able to twist the throttle to give you power whenever you need it gives you a rush and a thrill like nothing else! However, there are some general riding considerations to understand and keep in mind your CTY2 that will keep you and others around you safe and happy.

PRE-RIDE SAFETY CHECK

Before every ride, it is the owner responsibility to check and maintain your vehicle according to the schedule below unless service is needed otherwise:

- + Check the Headlight, Tail Light, & Any Other Installed Lighting for Proper Operation
- + Check Tire Rotation – Should Spin Smooth & Straight
- + Check Tire Pressure (32 psi F&R)
- + Check Front & Rear Brake Operation
- + Check Battery Charge Level
- + Check & Torque Fork, Axle, Handlebar, and Suspension Nuts and bolts (see **General Information > CTY2 Torque Specifications, page 27**)

PREPARING FOR THE FIRST RIDE

Wear properly fitting protective gear including at minimum: full-face helmet, gloves, long pants, long sleeve bright colored shirt, full-toed shoes, and a reflective vest. Do not wear loose fitting pants or shoes that can get caught in the chain, pedals, or wheels. Additional items that can make your riding experience safer, better, and more comfortable can include sunglasses (that will fit and work with your helmet) and a jacket. Be careful wearing anything that can limit your flexibility, mobility, or vision.

If your locale does not require you to obtain and maintain a valid motorcycle/moped driver's license, ONYX strongly recommends that you do so anyway. In addition to learning more about and being tested on knowing the rules of the road for safety reasons, having a moped/motorcycle driver/rider license will help put any law enforcement agent at ease in case they question your ride or ability to ride... Additionally, even if your locale does not require you to complete any formal training, ONYX strongly recommends that you take a moped or motorcycle riding course for proper training, especially if you are new to motorbikes in general. Contact your State or local Department of Motor Vehicles or law enforcement agency for any recommendations or suggestions on training programs or courses. These courses will often count as partial or full credit for obtaining your motorcycle/moped driver's license!

Be sure to attend to the following before your first ride:

- + Be sure to switch on headlight at low visibility. When your bike is on there will always be a running light halo on.
- + Obey all traffic regulations.
- + Use hand signals when turning or changing lanes. Please respect property of others and ride carefully. Keep your feet on the pedals at all times. Keep the pedals level, especially on turns.
- + After reaching maximum speed, reduce the throttle opening to 3/4. While the reduction in speed will hardly be noticeable, energy consumption nonetheless will be considerably reduced.
- + Remember that regenerative (regen) braking is very strong and can sometimes slow the bike to a stop alone but it can be unreliable especially at a full battery charge. So always use the regen brake feature with caution.

BASIC BATTERY + CHARGING GUIDE

Getting the maximum performance out of the Onyx CTY2 requires taking great care of its battery. For detailed battery and charging information see *OPERATING INSTRUCTIONS, BATTERY OPERATION, page 44.*



CTY2 MODEL

CHARGING THE BATTERY

Your Onyx CTY2 will include a 5 amp charger and a 23ah 60v battery.

1. Remove the seal cover from the charging port located at the bottom right of the battery carriage
2. Align the plug to the charging port. Note: Charging port will only go in one way.
3. Once charging plug has been inserted, turn the connector counter clockwise.
4. To ensure proper charging, the yellow tab must fall into place. You will hear a click once it's in place.



CONSTANT VOLTAGE CHARGING

When the Standard 5 Amp Onyx CTY2 charger light turns green that means 97% (69.2 volts) of the charge is complete. The remaining 3% to charge to 100% (71.4 volts) takes 95 more minutes after the charger light turns green. This last 3% is called "constant voltage" and is done through trickle charging.

It is okay to charge the Onyx CTY2 to 97% (69.2 volts) (charger light turns green) and go for a ride. Charging to 100% is not necessary every time.

BATTERY SAG

Become familiar with the amount of battery sag full throttle causes in eco mode, normal mode, and sport mode. Sag is described as the amount of electricity drawn depending on how much throttle is given. On a colder day it is not uncommon at full throttle for the voltage sag to be 7 volts and on warmer days for it to be between 4 volts to 5 volts.

- + Each mode limits the amount of sag.
- + Eco mode will help prevent cut offs by reducing battery sag.
- + The amount of throttle given directly controls the amount of battery sag.

BATTERY CUT OFF

When the amount of battery sag falls below 51 volts with a 23ah battery, the Onyx CTY2 will turn off.

Cut off occurs because the battery management is protecting the batteries from damage. If it completely cuts out your battery will reset within 10 seconds. You will need your key fob to unlock the bike.

One way to prevent the Onyx CTY2 with 23ah battery from completely cutting off is to immediately activate regenerative braking by using your rear brake.

PRO TIP

- + Riding faster consumes more battery.
- + Become familiar with how many miles away your destination is going to be.
- + Keep your battery charge levels above 20 percent which is 57 volts on the display voltmeter.
- + How well the battery is taken care of directly impacts the CTY2's performance, battery sag and top speed.

USEFUL RIDING INFORMATION



CTY2 MODEL

BEFORE YOU RIDE...

Research and understand your local laws and classifications where you live as well as where you intend to ride!

ONYX Motorbikes recommends that you register and insure your CTY2 in one way or another if you want to and IF YOU NEED TO. Please consult your local laws.

Respect the environment, and tread lightly. Don't tear up or ride off of designated roads and trails. It is cool to blaze your own trail sometimes, but make sure it is OK to do so without damaging the local vegetation or animal population!

Be aware of your surroundings. Remember that e-bikes are quiet. Be aware of joggers, people pushing strollers, and other cyclists that may be on or near the paths and lanes that you may be using.

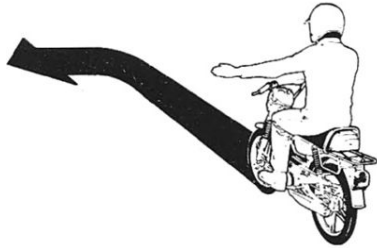
Consider installing some or all of the following items as they can help or enhance your riding experience, safety and visibility on the public roads with other drivers:

- + Rearview Mirrors
- + Front and/or Rear Wheel Fender(s)
- + License Plate (with a light to illuminate the plate)
- + Front & Rear Side Reflectors

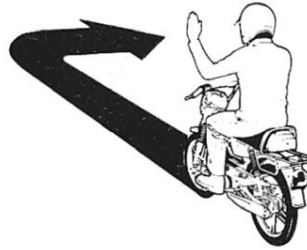
Visit onxmotorbikes.com to purchase some of the available accessories.

Whether you are a seasoned cyclist or new to the electric bike scene, riding an ONYX CTY2 is an awesome experience every time and everywhere you get to ride one.

HAND SIGNALS



LEFT TURN



RIGHT TURN



STOP

SAFETY INFORMATION



CTY2 MODEL

GENERAL SAFETY INFORMATION

The high performance CTY2 should be treated with extreme caution. Proper safety gear, including a regionally approved helmet, eye protection, riding boots, gloves, and protective clothing should be worn while riding to reduce the risk of potential injury.

Never permit a guest to ride your electric motorbike without proper instruction. Never use alcohol or mind-altering drugs before operating your CTY2. The owner assumes all responsibility while operating their CTY2. The seller assumes no liability for misuse or operator negligence.

Prior to each use the rider must check everything in the “Pre-Ride Safety Check” section of the Quick Start Guide.

Modifications and additional loads may affect your bikes performance, handling, range and operation. Use caution.

OPERATING SAFETY INFORMATION

Your safety depends in part on the good mechanical condition of the CTY2. Be sure to follow the maintenance schedule and adjustment requirements contained in this manual. Be sure you understand the importance of checking all items thoroughly before riding and abiding by the local, state, and federal laws.

IMPORTANT LABELS & WARNINGS

Read all additional warnings and product instructions in this owner’s manual, as well as safety labels, before operating your CTY2. (see **BATTERY SAFETY TIPS, page 44**)

IDENTIFICATION NUMBER LOCATIONS

FRAME NUMBER LOCATION

The frame number is etched underneath the rear seat down tube.

MOTOR SERIAL NUMBER LOCATION

The motor number can be found on the pedal chain side etched on the hub motor side cover plate. The motor number starts after the ONYX.

FOB CODE

The fob code is found on your key fob.



GENERAL INFORMATION



CTY2 MODEL

STANDARD CTY2 MODEL TECH SPECS

ONYX Motorbikes reserves the right to make changes to the product information contained on this site at any time without notice, including with respect to equipment, specifications, models, colors, and materials.

GENERAL VEHICLE INFORMATION

ITEM	SPECIFICATION		
Drivetrain	100% Electric Direct-Drive Rear Hub Powertrain		
Transmission	Clutchless Shiftless Direct Drive Rear Hub Motor		
Drive Modes	ECO ¹ = Economy	NRM = Normal	SPT = Sport
Motor Power (continuous)	500W (governed) ¹	750W (limited)	1500W (limited)
Riding Range	60 miles ¹	40 miles	20 miles
Top Speed (limited)	Approx. 15 mph ¹	Approx. 20 mph	Approx. 40 mph (max.)
Pedal Assist	Full-Function, but Passive-Assist (not pedelec)		
Battery Type	Single Removable 60V Lithium-Ion Battery Pack		
Anti-Theft Protection	Anti-Theft Power Lock + Multi-Function Remote Alarm Key Fob		
Front Fork/Suspension Design	Heavy-Duty Motorcycle Style Forged Aluminum Fork		
Rear Suspension	Swingarm with Double 300mm Adjustable Coilover Shock Absorber		
Brakes	Front Hydraulic & Rear Mechanical Disc Brakes with Binary Power Regeneration		
Tires	17" Diameter x 3.00" Wide		

Headlight	Powerful Harley-Style 3-Element LED Bright White Projector Headlight with Halo Ring Running Light
Tail Light	Bright Red LED Brake Tail Light with Running Light
Frame	Automotive Grade Steel Tube Chassis and Strong Battery Holder Tray Chassis
Display	LED Backlit Multi-Function Speedometer, Clock, Odometer, Battery "Gas" Gauge, Battery Voltage Reading
Basic Dimensions	Compact 67" Long x 40" Tall x 27.5" Wide
GVWR - Gross Vehicle Weight Restriction	506 lbs. (229 kg)
Total Curb "Wet" Weight (with battery)	145 lbs. (65. kg)
Maximum (Payload) Carrying Capacity (including rider, installed accessories, and gear)	300 lbs. (136 kg)
Total "Dry" Weight (without Battery)	131 lbs. (59 kg)
Front Axle Weight Distribution	64 lbs. (29.2 kg); 41%
Rear Axle Weight Distribution	92 lbs. (41.8 kg); 59%

BATTERY INFORMATION (Battery Cell information, see *OPERATING INSTRUCTIONS, BATTERY OPERATION, page 44*)

ITEM	SPECIFICATION
Charge Capacity	23 Ah
Battery Weight	15lbs (6kg)
Battery Dimensions	11.75" long x 3.730" wide x 6.688" tall
Battery Cell Components	21700 4500mAh
Battery Cells	Customized 17S Lithium battery pack
Voltage Cut Off	The BMS is programmed to cut off at 72.5 volts to 47.6 volts.
Recommended Voltage Charge Rate	Recommended voltage charge and discharge range is between 71.4 volts and 51 volts



CTY2 MODEL

ELECTRONICS INFORMATION

ITEM	SPECIFICATION
LCD Dash Display	Bright Multi-Function LCD Display in Streamlined Housing with Current Speed, Charge Level Indicator, Odometer, Trip Odometer, Voltage Reading
LCD Dashboard	Drive Mode Indicator (ECO, NRM, SPT), Headlight Indicator, Left/Right Turn Indicator (optional function)
Front Headlight	Multi-Function LED Headlight, LED Ring Running Light (always on), 3-Element High Power LED
Rear Tail Light	Red LED Tail Light with Brake Light
Throttle	Half-Grip Twist Throttle with Kill Switch and Mode Select Switch
Battery Nominal Voltage - Output	60 VDC
Battery Case Dimensions	12.25" x 7.125" x 3.5" (310 mm x 180 mm x 90mm)
Battery Weight	15 lbs. (6 kg)
Operating Voltage Range	50-71.4 VDC
Maximum Charge Voltage	71.4 Volts +/- 2%
Battery Capacity	23 Amp-hour / 1,446 Watt-hour (1.4kWh)
Rated Current	55 Amps (constant current, discharge)
Peak Current	~70 Amps
Typical / Max Charge Current	5 Amps – Recommended Standard / 10 Amp Maximum
Battery Cell Type	High-Quality 3.7V Lithium Ion - NCM (Nickel Cobalt Manganese Oxide Based) 21700 Cells
ONYX Battery Pack Configuration	17S5P
Battery Pack Cell Matching & Grouping Tolerances	Cell Capacity Gap = +/- 30 mah; Cell Voltage Gap = +/- 5 mV; Cell Internal Resistance Gap = +/- 3 mOhm
ONYX Battery Management System (BMS)	Integrated Battery Battery Management System (BMS manages safe and efficient charging and balancing of each and all battery cells as a system to maintain battery life and performance)
ONYX Battery BMS Management Scheme	The BMS has an overcharge voltage protection function that detects and protects single cells in addition to serial groupings that will cut off charging to 4.25 V +/- 50 mV (recover at 4.15 V +/- 50 mV). The over-discharge cutoff is 2.8 V +/- 80 mV (recover at 2.85 V +/- 150 mV). Also each cell incorporates PTC and CID protections. PTC (Positive Thermal Coefficient) provides external short condition cell protection, and CID (Current Interrupt Device) provides overcharge condition cell protection.

Battery Load Connector	Heavy-Duty Anti Spark QS8
Battery Charge Cable Connector Type	XT-90 with Externally Accessible PowerCon Charge Port
Battery (Charge Cycle) Life	Rated for 800 Charge Cycles
Battery Charger – Standard Charge	Separate External 71.4 VDC Output, Fixed Output 5 Amp Smart Charger, 110 VAC and 230 VAC Power Cord
Battery Charger Output	5 Amps @ 71.4 VDC (recommended; standard rate charger)
Battery Charger Charge Cable Connector Type	PowerCon (male)
Battery Charger Charge Cable Connector Pinout	Male - L = DC+ (positive); N = DC- (negative)
Typical Battery Charge Time – Empty to Full	80% Charge = 2.5 Hours 100% Charge = 4.5 Hours
Motor Controller Type	Electronic Sine Wave
System & Motor Speed Controller Features	High-Efficiency 60V, 1500W (max.) Sinusoidal Wave Brushless DC (BLDC) Waterproof Motor Controller with: Regenerative Power Support During Braking; Hardware Over-Current and Over-Voltage Protection; LED Fault Code; Thermal and Current Cutback Plus Low Voltage Battery Protection Shutdown; Rugged Waterproof Aluminum Housing for Maximum Heat Dissipation; Blue-tooth (Android Support)
Motor Type	4T Turn Count Brushless DC (BLDC) Permanent Magnet 1500W Electric High Power Spoke Rear Hub Motor with 3 Hall Sensors
Max. Motor Peak Torque	133.5 ft-lb (181N-m)
Motor Rated Power	750W (nominal in ECO Mode) up to 1500W (maximum)
Motor Environmental Protection	IP54
Motor Temperature Protection	Thermic Probe (sense to prevent overheating)
Anti-Theft Protection Devices	Audible Motion-Activated Alarm with Bike Activation/Deactivation Control and Power Button Fob (set of 2 fobs provided); Uniquely Cut Key Lock for Battery Cover (set of 2 keys provided)
Anti-Theft Alarm dB Level	120 dB
Anti-Theft Alarm Frequency	433 MHz
Anti-Theft Alarm Fob Battery Type	CR2032
Wiring	Complete Insulated and Wrapped Wiring Harness with Water-Resistant Connectors



CTY2 MODEL

MECHANICAL INFORMATION (continued)

ITEM	SPECIFICATION
Frame	Automated Robot-Formed and Welded Tubular and Plate Steel Construction
Fork	Heavy-Duty ONYX-Designed Non-Adjustable Motorcycle Fork with Steel Fork Brace
Fork Spring Stiffness	Heavy-Duty ONYX-Designed Non-Adjustable Motorcycle Fork with Steel Fork Brace
Fork Suspension Travel	3" (80 mm)
Battery Cover Material	5 Ply Laminated Mahogany Plywood with Brown Stain
Headtube Length	5.7" (145mm)
Handlebar	7/8" DIA Tubular Steel 27.5" (700 mm) Wide 22mm outer diameter
Handlebar Rise	2" (51 mm)
Dropout Width – Front	4.25" (108 mm)
Dropout Width – Rear	5.75" (150 mm)
Brake System Type – Front	Single-Piston Hydraulic 220 mm DIA Hydraulic Disc Brake
Brake Operation – Front	Right Hand
Front Brake Type	Single-Piston Hydraulic 220 mm DIA Hydraulic Disc Brake with Braided Stainless Steel Brake Hose
Front Brake Rotor Disc	Cross-Drilled Slots 220 mm DIA x 5 mm THK
Front Brake Fluid Type	DOT-3
Front Brake Caliper Style	ZUMA50 BWS YW50 Front Left
Front Brake Pad Type Material	Semi-Metallic; Powerful Initial Bite with Long Life and Thermal Stability Up to 1100 °F
Front Brake Pad Style	Yamaha Zuma 50 02-11, 49mm (61mm w/tabs) x 27mm x 4 mm THK (NOTE: Replacement must match shape and configuration.)
Brake System Type – Rear	Dual Piston Line-Pulled Hydraulic 205mm DIA 6-Bolt (Pitch Circle Diameter = 44 mm) Drilled Disc Brake; Regenerative Braking Energy Recovery System
Brake Operation – Rear	Left Hand
Rear Brake Type	High-Strength Aluminum Alloy Material HB-100 Single Piston Line-Pulled Hydraulic Disc Brake

Rear Brake Rotor Disc	Cross-Drilled 205 mm DIA x 1.9 mm THK (8" DIA x 0.07" THK) with 6 Low-Profile Head Mounting Screws
Rear Brake Pad Material	Semi-Metallic
Rear Brake Pad Style	Mountain Bicycle (MTB), 34.2 mm x 26.6 mm x 4 mm THK (NOTE: Replacement must match shape and configuration.)
Bicycle Gearing	1 x 1-Speed
Bicycle Crank Gear Set	28-Tooth, 6.38"DIA (162 mm) Forged Alloy Gear
Rear Freewheel Sprocket	16-Tooth Gear
Bicycle Chain	1/8" Track x 1/2" Wide Bicycle Chain
Grips	Durable Black Vinyl
Kickstand	Side-Mount Heavy-Duty Single One-Piece Steel Single Stand Arm with Heavy-Duty Spring
Bicycle Crank Arm Length - Overall	6" (152 mm)
Bicycle Crank Arm Shaft Length - Center-to-Center	4.875" (124 mm)
Pedals	Nylon Platform with Traction Nubs, Standard 9/16" x 20 TPI Threading
Seat	Durable Vinyl Coated Comfortable Medium Density Foam

WHEEL + TIRE INFORMATION

CTY2 MODEL

ITEM	SPECIFICATION
Tire Options	17" DIA x 3" Wide All-Weather Street (standard) 17" DIA x 3" Wide All-Weather Dirt (standard)
Wheel Rim Type	17" DIA x 1.60" W with Laced Spokes
Wheel Spoke Type	12 Gauge Stainless Steel, Silver
Tire Configuration	Spoke Rim + Inner Liner + Inner Tube + Tire
Standard Tire Size	3.00-17 (3" W x 17" Inner Dia.)
Maximum Tire Width	3" Front & Rear
Tire Options	OEM Street Tire, VuroStar
Tire Manufacturer	VuroStar
Tire Model	VuroStar Tube Type
Primary Tire Application	All-Season Street On-Road
Tire Width	3.00"
Rim Size	17"
Tire Position	Front/Rear
SideWall	Blackwall
Tire Load Rating	47P (maximum 386 lbs. per tire)

Average Tire Tread Lifespan ²	5 Years or 12,000 miles (20,000 kms) in the Front and Rear Position
Tire Application Features	Puncture Resistance; Superior Grip on Dry Surfaces; Good Grip on Damp Surfaces

1– ONYX Motorbike must be used in ECO mode on public roads in order to comply with U.S.A. Federal Class 2 Electric Bicycle requirements under Consumer Product Safety Commission (CPSC) Title 15 - COMMERCE AND TRADE CHAPTER 47 - CONSUMER PRODUCT SAFETY, Sec. 2085 - Low-speed electric bicycles (U.S. Public Law 107-319 in 2002; 15 USC 2085, SEC. 38. (b)). Use of any other mode on public roads may be prohibited unless local laws, restrictions, and regulations allow use of other drive modes. ALWAYS CHECK THE LAWS AND REGULATIONS IN THE AREA YOU INTEND TO RIDE BEFORE YOU RIDE THERE.

2– Tire tread wear and lifetime results will vary. Tire lifespan is not covered under ONYX's standard warranty and will vary depending on type and areas of use. Below are various factors that can cause abnormal wear:

- Under-inflation/overloading can cause tread distortion and irregular wear. More seriously they may result in a sudden failure of the tire due to excessive tire flexing.
- High-speed means rapid tread wear, especially due to harder acceleration and extra braking.
- Temperature of riding surface – higher temperature causes faster wear
- Rough surfaces cause higher abrasion and shorter lifetime of a tire.
- Mechanical irregularities such as distorted wheels, incorrect brake adjustment, bad dumpers, excessive tolerance in frame-wheel bearings can also cause severe wear.
- Unbalanced rotating weight (heavy spots on rim) can cause irregular tread wear.

FASTENER LOCATION



CTY2 MODEL



Fig.
3.1

TORQUE SPECIFICATIONS

It's good practice to periodically check over your bike for loose nuts. Below is a table of torque specifications for various fasteners on your bike.

FASTENER	TORQUE	NOTES
Handlebar Clamp	20nm	
Triple Tree Bolts	30nm	
Front Brake Plate	30nm	
Front Axle Nut	80nm	272 RED LOCTITE
Lower Shock Mount	30nm	
Rear Axle Nut	90nm	272 RED LOCTITE
Rear Axle Stay	12nm	



CTY2 MODEL

TYPICAL CTY2 MODEL DISTANCE RANGE

The battery gives the bikes an expected range of between 20-75 miles on a single charge for the ONYX CTY2 depending on the mode you use, the amount of pedaling you do, the terrain, and your size/weight. All of these things affect your overall range. For example, only using the throttle consumes the most battery power, but you can help increase your range by pedaling whenever possible to conserve battery power.

As a basic reference, take a look at the graphic below to get an idea about how far you can go on a single charge with the 60 Volt CTY2 Model:

75 MILES

ECO MODE
MAX SPEED = 15
MPH

40 MILES

NRM MODE
MAX SPEED = ~20
MPH

20 MILES

SPT MODE
MAX SPEED = ~40
MPH

NOTE

The throttle-only estimates are based on a 170 pound rider riding a standard CTY2 model on flat paved roads with nominal stops and starts with no pedaling assistance.

PHYSICAL DIMENSIONS

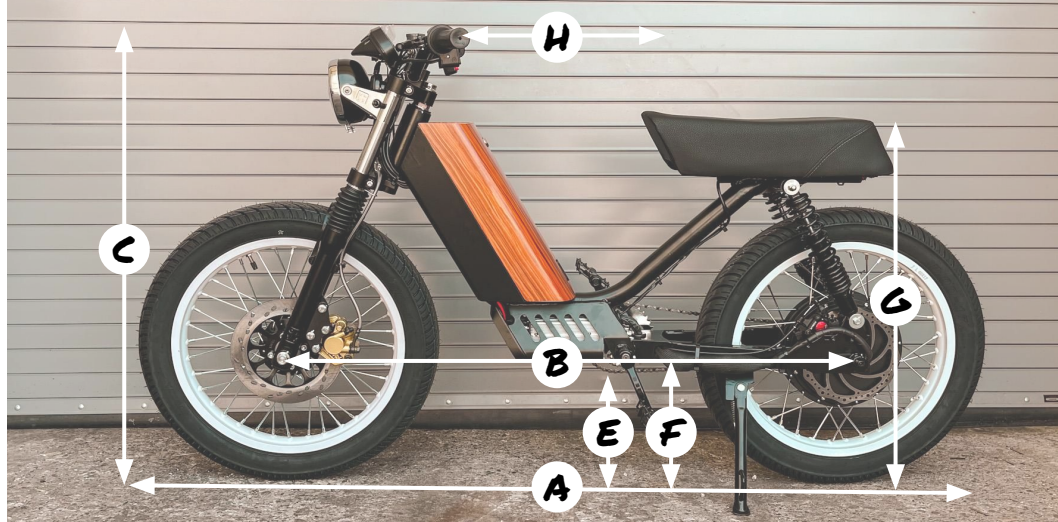


Fig.
3.2

	SPECIFICATION	MEASUREMENT
A	Overall Length	68"
B	Wheelbase – Center to Center	44.5"
C	Overall Height – from Ground to Top of Display	37.25"
Not shown	Handlebar Width – Brake Lever Tip to Tip (Grip End to Grip End)	27" (25")
E	Ground Clearance – Ground to Bottom of Chain Ring	8.5"
F	Pedal Shaft Clearance – Ground to Center of Shaft	11.5"
G	Seat Height – Ground to Top of Seat	30"
H	Handlebar Reach Distance – from End of Seat to Grips	15"

OPERATING CONTROLS



CTY2 MODEL

CTY2 MODEL FEATURES OVERVIEW

1	Headlight
2	Pedals
3	Battery Charging Port
4	Controller Compartment
5	Rear Hub Motor
6	Battery Cover
7	Brake Light
8	Electronics Compartment
9	Kickstand
10	Front Disc Brakes
11	Rear Disc Brakes
12	Front Forks
13	Rear Shocks
14	Display
15	Controls
16	Seat
17	Main Frame
18	Swingarm

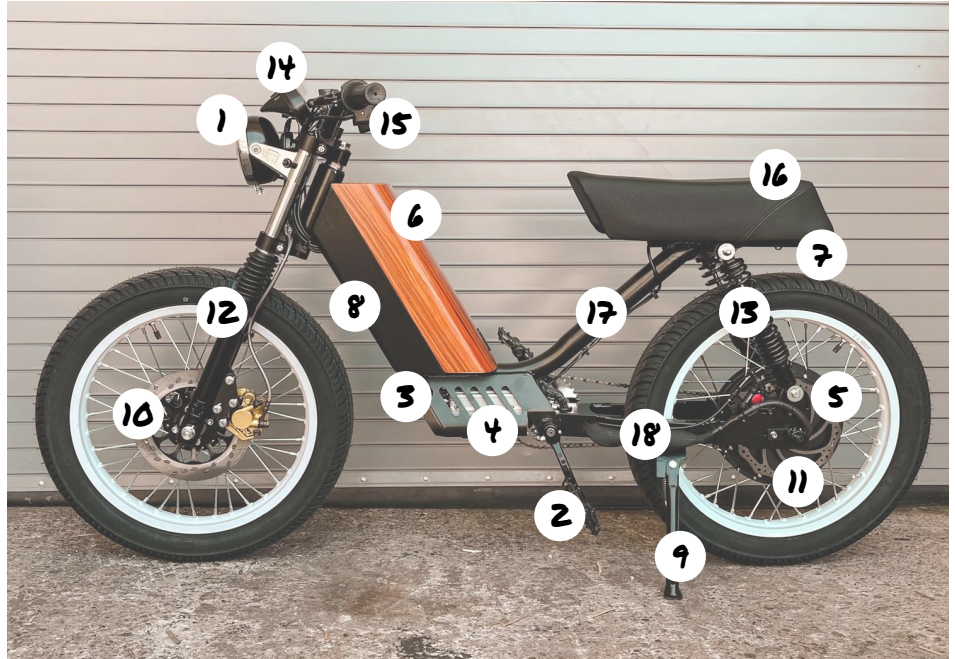


Fig. 4.1

HEADLIGHT

The daytime halo running light is always on for safety and visibility. The switch for the High Beam switch is located on the left side controls and the indicator light illuminates in blue on the Dashboard.

*(See **Handlebar Control Overview, Page 34** and **LCD Dash Overview, Page 35**)*

TAIL LIGHT/BRAKE LIGHT

The tail light is always on for safety and visibility. The brake light is activated with the two brake levers on the controls.

*(See **Handlebar Control Overview, Page 34**)*

PEDALS

Pedals are connect to the rear axle via a single gear and chain.

BATTERY COVER

Remove the battery cover to remove the battery for charging or transportation.

*(See **Battery and Charger Overview, Page 40**)*

REAR HUB MOTOR

1500W electric direct-drive hub motor.

*(See **General Vehicle Information, Page 18**)*

ELECTRONICS COMPARTMENT

This compartment houses the wiring harness and other electronic components.

HANDLEBAR CONTROL OVERVIEW



CTY2 MODEL

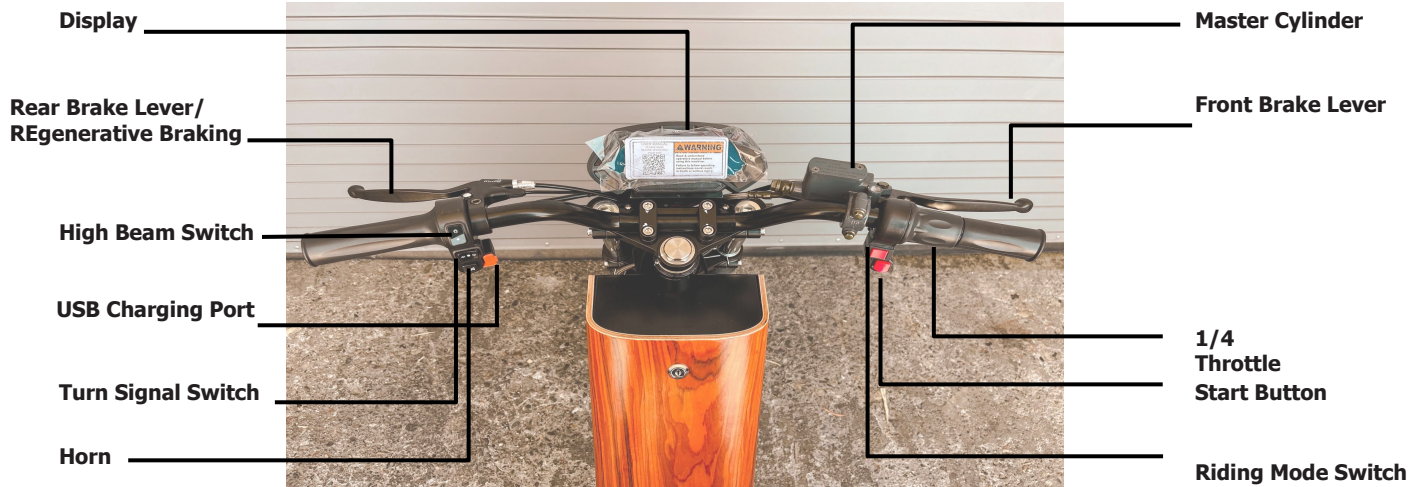


Fig.
4.2

PRO
TIP

GO FARTHER BY BRAKING

The key to going farther is using regenerative braking system, or the rear brake. When able to brake safely try using regen braking only to recharge the battery while you are riding. If you are an absolute beast you can try holding the regen brake and pedal at the same time to attempt to charge the bike. Good Luck! ;)

LCD DASH DISPLAY OVERVIEW

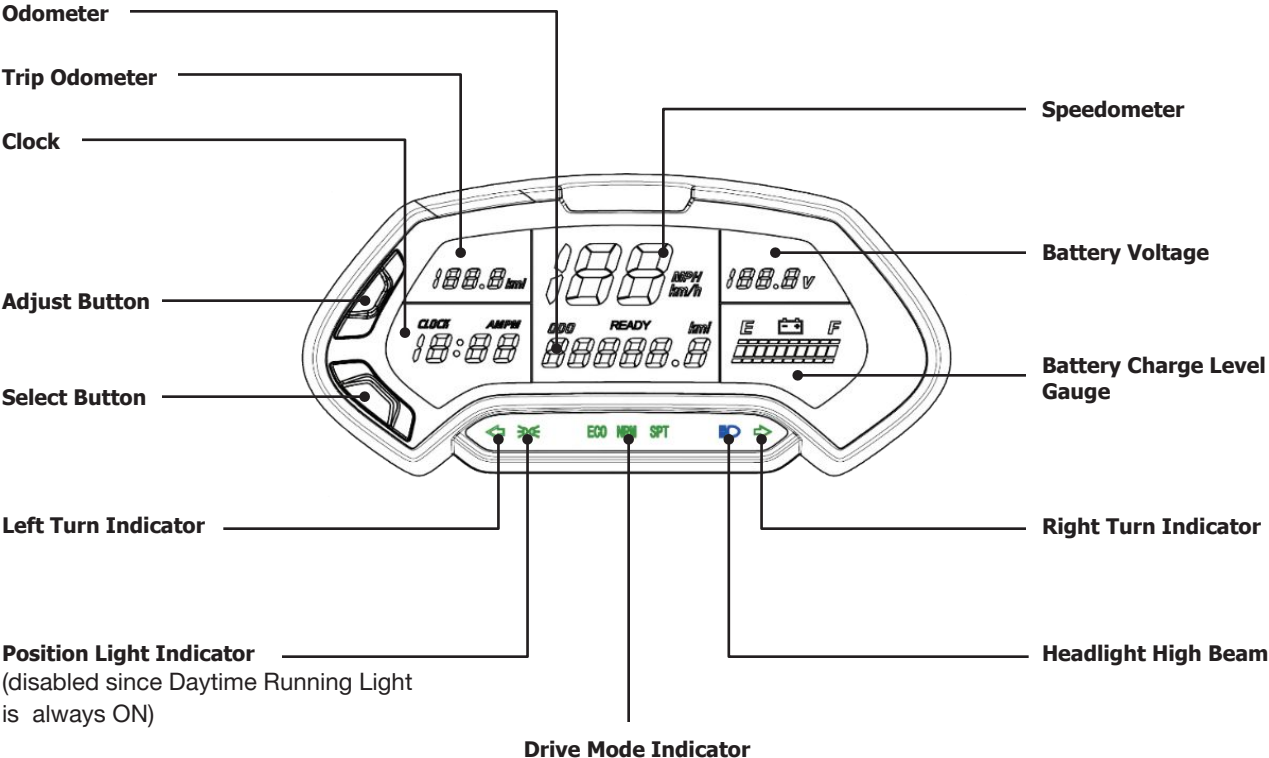


Fig. 4.3



CTY2 MODEL

LEFT SIDE CONTROLS

REAR REGENERATIVE BRAKE

The left brake lever not only controls the rear mechanical brake, but it also controls the regen braking. To activate regen braking you only need to depress the lever slightly to activate the switch. Regen is very effective in not only stopping the bike but also recharging the battery. If you are able to use the regen brake to safely stop the bike every time you can dramatically increase your range. The sensitivity of this braking will be fully adjustable in the upcoming mobile application. Warning: regenerative braking should not be used as a reliable means of stopping the bike. While it works almost every time regen braking can stop working suddenly especially if the battery is near a full charge because there is no- where for the energy to go. Also when applying regen your throttle will be killed. So when you release the regen brake lever make sure you are not giving the throttle any power. For these reasons always use regen braking with extreme caution.

HEADLIGHT SWITCH

To control the headlight you simply toggle the light switch up on the left hand control to activate the bright LED projector beam. The running lights are always on for safety and only use 0.1v in 5 hours of use. The high beam headlight does use more volts and will drain the battery slightly faster so only use when needed. Note that because the headlight is very bright, make sure you adjust the light so that it is not angled up and obstructing other driver's vision. (Fig. 4.2)

HORN BUTTON

The horn button is located on the left hand controls and to activate the horn you simply press the button. (Fig. 4.2)

BLINKER SWITCH

Each bike is outfitted with a blinker switch and blinkers. Note: You must only use 12v LED blinkers. (Fig. 4.2)



RIGHT SIDE CONTROLS

THROTTLE ON/OFF SWITCH (KILL SWITCH)

In total there are three ways to turn off the bike the only way to completely turn off the bike is to turn off the battery or disconnect it from the bike. The kill switch allows the user to quickly turn off the bike by the push of a button on the throttle. This does not deactivate the system like the unlock button does on the key-fob. Only use this button to temporarily turn off power to the throttle. Never store or transport the bike only using this button to kill the power.

(Fig. 4.2)

HALF-LENGTH THROTTLE

A quarter twist throttle is used to help save energy by encouraging you to rest your hand and coast. Warning: the throttle is extremely sensitive. *(Fig. 4.2)*

DRIVE MODE SWITCH (3 MODES)

Each bike is outfitted with a three speed function switch. This allows you to toggle through the software limited modes of ECO / NORM / SPRT. To activate each mode effectively you should not be moving. Otherwise to work properly you must bring the bike's speed below the mode's threshold. Toggle from left to right starting with ECO to get a feel for each mode. Note NORM and SPRT mode are for off-road use only. *(Fig. 4.2 + 4.3)*

FRONT BRAKE MASTER CYLINDER AND LEVER

The brake control levers are mounted on the handlebar.

Right (2) lever controls the front wheel brake.



CTY2 MODEL

KEY-FOB BUTTON LAYOUT

POWER ON / OFF / ARM

Each bike comes equipped with two key fob remotes that can turn on and off the main power to standby, and set the alarm. Note this does not fully kill the power to the system which allows for the alarm and clock to function. Once the battery is removed or turned off you will need to first turn the battery back on for the following to work correctly again.

TURN OFF ALARM + POWER ON

1: Press the Unlock button twice on the key fob and two audible chirps should sound to confirm you have activated the system. (C)

2: Press the Bolt button twice to turn on the system and listen for one chirp. The dash, and running lights should illuminate immediately following this step so long as the throttle power button is in the ON position. (D)

(See Right Side Controls - Throttle On / Off)

POWER OFF TO STANDBY (LOCKED BUT NOT ARMED)

1: Press the Unlock button twice on the key fob and a audible chirp should sound to confirm you have deactivated the system. The dash, and running lights should turn off following this step if your power button is in the on position. (C)

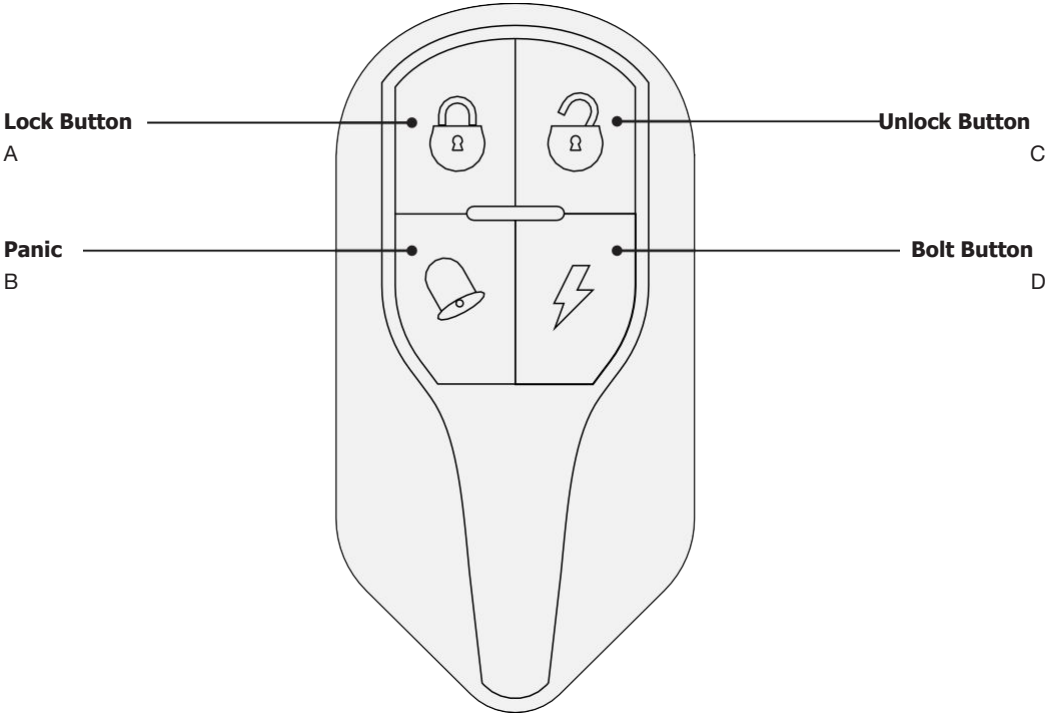
ARMING THE ALARM

1: Make sure you have followed the steps to power off the system to standby.

2: Make sure your power button on your throttle is in the off position.

3: Press the Lock button once to arm the alarm. (A)





OPERATING INSTRUCTIONS



CTY2 MODEL

GENERAL OPERATION

1. Prop the bike on its kickstand.
2. Use the key-fob to activate the bike's power.
3. Press the kill switch on the throttle to power up the system.

THROTTLE

The speed of the bike is controlled with a twist grip on the right side of the handlebar. To accelerate twist the throttle towards you very slowly; to decelerate release slowly. Read the Pro-Tip in this section about staying above 51 volts when you throttle.

BRAKING

To slow down, release the throttle control and apply equal pull to both brake levers. Application of both brakes at the same time is essential to prevent premature brake wear and/or loss of vehicle control.

CAUTION: Be alert when riding on wet or sandy surfaces. Loss of traction between tire and road can occur under these conditions. Be careful when braking, turning, or accelerating under adverse conditions.

STOP AND PARK

Switch off bike with the kill switch. Turn off the bike with the key-fob. Rest the bike on the kickstand and set the alarm. It is highly recommended to lock the bike with lock and use a front disc brake lock for added security. A high security locking device is recommended along with a GPS tracking device commercially available

PRO
TIP

STAY ABOVE 51 VOLTS!

When riding you will notice the voltage drop as you pull the throttle. The amount of voltage drop is also known as voltage sag. This is normal and should be noted that this is the best way to gauge how much energy you have left.

The battery is programmed (BMS) to cut out at 51V to protect the battery. If you depend only on the battery level meter you will find yourself out of juice before you realize it. This is due to the fact that battery level meters are great for at-a-glance info, but never give you accurate data to really gauge the distance you can go with the energy available. So the key to getting back home is to never let the voltage drop below 51 volts while you are pulling the throttle. If it does the BMS will kick in and kill the power.

BATTERY OVERVIEW**23AH BATTERY (STANDARD) BATTERY TECHNICAL SPECIFICATIONS**

CTY2 MODEL

ITEM	SPECIFICATION
Charge Capacity	23 Ah
Battery Weight	15 lbs
Battery Dimensions	12.25" long x 7.125" wide x 3.5" tall
Battery Cell Components	21700 Cells
Battery Cells	Customized 17S5P Lithium battery pack
Voltage Cut Off	The BMS is programmed to turn the battery off for protection at 51 volts
Recommended Voltage Charge Rate	Recommended voltage charge and discharge range is between 71.4 volts and 50 volts

BATTERY CELL TECHNICAL INFORMATION

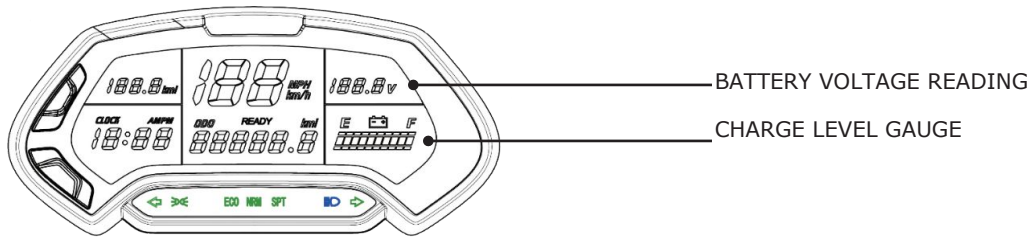
Each battery cell will only retain 80% of its capacity if stored for a month between 4 degrees Fahrenheit to 122 degrees Fahrenheit.

Each battery cell is designed to be charged between 32 degrees Fahrenheit to 113 degrees Fahrenheit.

BATTERY PERFORMANCE

Getting the maximum performance out of the Onyx CTY2 requires taking great care of its battery. Understanding that the bike and the battery are two separate things goes a long way. There are four things to understand about the Onyx CTY2 battery which also applies to a EUC, eBoard, eScooter, and other eBikes.

- Balancing the battery pack is an absolute must.
- No identical lithium battery packs are the same.
- There will generally be a 3% percent difference between identical battery packs.
- Lithium battery packs perform differently at 100% charge and 50% charge.



The Onyx CTY2 draws 0.6 volts while it is turned on.

	ACTUAL BATTERY VOLTAGES
100% Charge	71.4 Volts
80% Charge	67.32 Volts
60% Charge	63.24 Volts
40% Charge	59.16 Volts
20% Charge	55.08 Volts

40



CTY2 MODEL

BATTERY SAG

Become familiar with the amount of battery sag full throttle causes in eco mode, normal mode, and sports mode. Sag is described as the amount of electricity drawn depending on how much throttle is given. On a colder day it is not uncommon at full throttle for the voltage sag to be 7 volts and on warmer days for it to be between 4 volts to 5 volts.

- Each mode limits the amount of sag.
- Eco mode will help prevent cut offs by reducing the sag amount.
- The amount of throttle given directly controls the amount of sag.

BATTERY CUT OFF

When the amount of battery sag falls below 51 volts, the Onyx CTY2 will turn off. Cut off occurs because the battery management system is programmed to protect the batteries from damage from low voltage.

LOW BATTERY LEVELS

The Onyx CTY2 battery does not discharge in a straight constant line, it is more like a curve where the top of the charge above 85% and the charge below 15% deplete faster. The entire 71.4 volts are available but spread out and discharged at a different rate towards the top of the charge and bottom of the charge.

The 23 Ah battery will cut out at 51 volts. If the battery is unbalanced, it can cut out at a higher value, depending on the degree in different voltages between the individual cells.

BATTERY DISCHARGE CURVE

The Onyx CTY2 battery management system is programmed from 4.20 volts (71.4 volts) to 3 volts (51 volts). The benefits of this voltage range are a better battery cycle life by not discharging lower than 3.00 volts and it's safer to not charge above 4.20 volts. Nominal voltage is where most of the battery's capacity is stored, between 3.6 volts (61.2 volts) and 3.695 volts (62.8 volts).

PRO TIP

- + Riding faster consumes more battery.
- + Become familiar with how many miles away your destination is going to be.
- + Not balancing the individual battery cells makes for a not so great battery.
- + Keep your battery charge levels above 20 percent which is 69.9 volts on the display voltmeter.
- + How well the battery is taken care of directly impacts the Onyx CTY2's performance, battery sag, and top speed.

BATTERY COVER, REMOVAL, AND REINSTALL



CTY2 MODEL

The battery cover is made of a pressure-formed plywood and should be handled with extreme care. Below are the steps for proper removal of the cover so you do not break the cover. Never force, pry, or hit the cover or you could cause major damage to the wood.

1: Unlock the cover, gently slide the wood cover upwards towards the handlebars.

2: Now slide the cover away from the bike to be able to remove the cover from the bike.



PRO TIP

- + Keep one of the duplicate keys and key-fob in a safe place so you do not lose all your keys at once.
- + Do not re-adjust the seat forward or there will be no room for the wood cover to slide backwards.

3: Undo the battery straps and begin to pull out the red and black connector as well as the yellow connector.





BATTERY REMOVAL

Removing the battery is very easy but you need to take extreme caution when doing anything related to the battery. Below are the steps to safely remove the battery for charging it off the bike.

1: Turn off the battery via the bluetooth-enabled ONYX BMS App.

Never attempt to unplug the battery with the battery switch in the “ON” position. Once off unplug the battery connectors.

2: unplug the black and red connector as well as the yellow connector.

3: To fully remove the battery grab the battery case and lift directly out leading from the bottom. In the meantime make sure to gently help the battery cables out of the bike.

Notes: Reverse this process for installation

For Installation, ensure BOTH black and red connectors as well as the yellow connectors Are FULLY connected.



BATTERY CHARGING

Follow the charging steps below with extreme care.

1: Charging your battery externally

Attach provided charge adapter to the 5 Amp charger.

2: Once attached to the charger begin to attach both yellow connectors

Note: Connection will only work one way.

3: Once the connectors are fully connected ensure your light on the charger goes from green to red.



BATTERY CHARGING

CTY2 MODEL

CHARGING DON'TS

- Don't leave the battery fully charged (71.4v) when not riding.
- Don't charge immediately after riding. Wait for the battery to cool. Charge an hour after.
- Don't discharge the battery below 15% (53.5v to 54v) to keep it healthier.
- Don't charge the battery where it can be exposed to temperatures below 32° F or above 120° F.
- Leaving the battery fully charged to 100% (71.4v) when not riding for a day or two is okay but don't make a habit of it.

CHARGING DOS

- Once a month balance charge the battery to maintain its health.
- Between rides, leave the battery charged at 88% (68v to 70v volts on display).
- One hour before riding, charge battery to 97% (70.6 volts on display).
- When not riding for long periods, store the battery at 50% (61.2 volts on display).

See *Battery Maintenance + Safety Tips*, page 60

CONSTANT VOLTAGE CHARGING

When the Onyx CTY2 charger (5 Amps) light turns green that means 97% of the charge is complete. The remaining 3% to charge to 100% (71.4 volts) takes 95 more minutes after the charger light turns green. This last 3% is called “constant voltage” and is done through trickle charging.

It is okay to charge (5 Amps) the Onyx CTY2 to 97% (charger light turns green) and go for a ride.

CHARGING PREFERENCES

Depending on the desired use or needs of different riding styles, there is a balanced charging method that works for everyone.

As an example, it's okay to keep the charger plugged in all the time and maintain a constant 71.4 volts full charge. Although this will reduce the charge cycles of the battery to 800 or less, after which about 85% of the total battery capacity will be available. Battery sag will increase by 15%, and cut-offs will happen sooner around 52 volts. Keeping in mind that all batteries are supposed to be replaced over time.

Increasing the charge cycles (*See Battery Charger, page 48*) with the stock charger will fit with the majority of the Onyx CTY2 owner's use of the bike. In turn, providing a cleaner flow of electrons between the anode and cathode through the electrolyte, which extends the life of the battery, reduces sag, and lowers cut off voltage in the long run.

4

8



CTY2 MODEL

BATTERY CHARGER

CHARGING WITH THE STOCK CHARGER

The normal charging process with the Onyx CTY2 stock charger is to unplug the charger when the charger light turns green, which only charges the battery to 97%. This, in turn, is slightly less stressful on the battery cells than being charged to 100% (71.4 volts). Being charged to 97% is good for about 800-1000 charge cycles.

CHARGE CYCLE BENEFIT

Increasing the charge cycles also means that the electrolyte that is between the anode and cathode will be healthier for the electrons to pass through. Which means better current draw, lower sag levels, and lower cut off levels.

INCREASE CHARGE CYCLES WITH THE STOCK CHARGER

Increase the charge cycles from 800 to 1500 with the stock Onyx CTY2 charger by following the method below.

- When not riding, maintain the battery charged to 67.7 volts (82%) on the display by unplugging the charger when the charge reaches approximately 67.7 volts.
- Full charge for 87 minutes (one and a half hours) before riding to go from 67.7 volts (82%) to 70.7 volts (97%) then unplug the charger when the charger light turns green.



BATTERY BALANCING

Battery balancing refers to techniques to improve the available capacity of the battery and/or increase the battery's capacity and keep the battery safe. Variations in battery cells come from a number of factors including cell age, environmental exposure, impurities.

BATTERY CHARGING SAFETY

Overnight charging and consecutive balancing are safe to do as the Onyx CTY2 stock charger and onboard battery management system provide redundant fail-safe mechanisms. As the battery charge level (5 amps) arrives at 97% (70.78 volts) the charger will reduce its amperage output substantially lower and begin trickle charging. In turn, reducing its heat output and shutting off its cooling fan for the remainder of the charging, trickle charging, and also during the battery balancing.

NEW BATTERY BALANCING

Battery balancing is available on the Onyx CTY2 although it is not available on most e-bikes. Battery balancing serves the purpose of equalizing the voltage between all 85 individual battery cells inside the Onyx CTY2 battery. When a battery is balanced, 100% of its capacity is available, whereas an unbalanced battery provides less than 100% of its capacity and causes premature battery degradation. Balancing occurs automatically when the BMS detects an unbalanced situation.



CTY2 MODEL

BATTERY MANAGEMENT SYSTEM

The Onyx CTY2 battery management system which is contained inside the battery requires that the charger be plugged in for it to balance individual cells even if the battery is fully charged. The Onyx CTY2 battery is comprised of 85 21700 batteries.

The Onyx BMS (battery management system) is programmed to maintain the individual batteries between 4.20 volts charged to 3.00 volts depleted. Although individual 21700 batteries can be charged as high as 4.25 volts and as low as 2.50 volts, it is healthier for the batteries in terms of charge cycles and safer to keep batteries between 4.20 volts and 3.00 volts. During riding, the BMS monitors the voltage of the battery pack as a whole and that of the individual battery groups. One of the functions of the BMS is to protect the batteries from undercharging. If the BMS detects any individual cell(s) that have depleted closer to 3.00 volts (51 volts) before all the other batteries, it will cut off the battery to protect the lower unbalanced depleted battery(s) from undercharging below 3.00 volts.

BATTERY SAFETY + MAINTENANCE TIPS

Maintaining and caring for your battery will help prolong it's life while promoting safe and efficient use. Below are some tips for keeping a healthy battery.

Safe Battery Temperature Ranges

OPERATING -20°C — 50° C

CHARGING 0° — 45° C

STORAGE 0° — 60°C

Temperatures over 100°C will sacrifice the life of the battery. It will burn or explode at temperatures over 140°C.

- + Never leave your battery on the charger after it is done charging. Although the battery charger does have a cut off this is good practice to keep your battery safe.
- + Only use the provided charger. Use of after-market high-speed chargers is at your own risk.
- + Avoid constant exposure to extreme temperatures for a long battery life.

- + Always unplug the battery when working on the bike.
- + Always charge your battery before use after sitting for a few days
- + Long term storage should be stored at 50% charged at room temperature. Never store the battery on empty.
- + Avoid fully discharging your battery frequently to prolong the life of the cells.
- + Keep the bike off while charging the battery in the bike. You can turn the bike on to check the battery charging progress but do not leave the bike on.
- + Do not drop the battery.
- + Do not use a damaged battery.

BATTERY STORAGE



CTY2 MODEL

STORING THE ONYX CTY2 BATTERY

When storing the Onyx CTY2 battery, charge it to 50% (61.2 Volts) and turn off the discharge function using the app.. Lithium batteries are under the most strain when they're fully charged or completely discharged. At 50% charge, this means that half of its moveable lithium ions are in the lithium cobalt oxide layer and the other half are in the graphite layer. At 50% charge, the battery is under the least possible strain.

BATTERY TEMPERATURES

- **DO NOT STORE THE BATTERY WHERE IT WILL GET ABOVE 120 DEGREES FAHRENHEIT.**
- It's preferable to not store the battery outdoors when temperatures drop below 32 degrees Fahrenheit.
- When the temperature outside is below 45 degrees Fahrenheit, allow the battery to rest for an hour after riding before charging it, allowing it to get closer to room temperature.

MAINTENANCE

GENERAL MAINTENANCE + SERVICE

OWNER RESPONSIBILITIES

Take care of your ONYX Motorbike, and it will take care of you! Provide routine care for your ONYX bike as detailed in this chapter. The owner is responsible for learning and obeying all federal, state, regional, and local laws regulating the operation and maintenance of an electric bike.

SERVICE SHOP CONSIDERATIONS

If these procedures outlined in the maintenance and service schedule are beyond your ability, bring your bike back to either ONYX shop for regular maintenance. If there is no shop in your area, we recommend calling ONYX Tech Support: **+1 (310) 800-2531**

Be sure that whoever services your bike completes the maintenance record and save all service documents should you transfer this vehicle to another owner. Additionally, service records can help advise our technicians about your vehicle's history.

RECOMMENDED MAINTENANCE + SERVICE SCHEDULE



CTY2 MODEL

SERVICE	EVERY RIDE	1 MONTH (or 30 HOURS)	6 MONTHS (or 100 HOURS)	12 MONTHS (or 200 HOURS)	24 MONTHS (or 400 HOURS)
Check the Headlight, Tail Light for Proper Operation	V				
Check Tire Pressure (32 psi F&R)	V				
Check Front Brake & Adjust	V	V	V	V	V
Check Rear Brake & Adjust	V	V	V	V	V
Check Battery Charge Level	V				
Check & Torque Fork, Axle, Handlebar, and Suspension Nuts (SEE CTY2 TORQUE SPECS TABLE, page 53)	V	V	V	V	V
Wipe Down & Dry Frame & Rest of Bike Parts Using a Soft Cloth	V				
Carefully Check Tires for Any Debris or Wobble	V				
Check Front Brake Fluid Level (DOT3)		V	V	V	V
Check Battery Strap to Make Sure Battery Is Secure	V	V			
Lube and Tension Bicycle Chain		V	V	V	V
Check Rear Wheel & Motor Alignment		V			
Lube Rear Brake Cable			V	V	V
Inspect and Clean Frame			V	V	V
Check Hub Motor Cable and Clearance			V	V	V
Lube All Moving Parts and Bearings			V	V	V
Check Battery Connections				V	V
Change Key Fob Battery				V	V
Check Tire Tread Depth				V	V
Change Front Brake Fluid (DOT3)					V
Change Front and Rear Brake Pads					V
Check Wheel Trueness					V

BASIC MAINTENANCE

CLEANING

Regularly clean and lubricate all moving parts, tighten nuts/bolts, and adjust as required. This includes all steering parts, bicycle pedals, suspension, and wheel parts.

(See *General Information > CTY2 Torque Specifications, page 27*)

CHECK YOUR NUTS + BOLTS

With any moving vehicle it is good practice to always check your hardware before you ride. You can do a visual by doing a full walk around the bike before every ride and you should do a physical check after every couple rides to make sure nothing is vibrating loose. Most bikes that encounter rough terrain will need attention more frequently.

CHECK YOUR ELECTRICAL

CHECK THE CONDITIONS OF YOUR WIRES

Inspect all wires for sheathing wear and loose connections.

ALARM KEY FOB BATTERY REPLACEMENT

Using a fine tip flat head screwdriver pop the two chrome sides off, starting from the top of the remote. When those are off, starting from the bottom, work your way around the outside and the calm shell will open. The fob takes a CR2032 battery.

BATTERY AND CHARGER MAINTENANCE

See *OPERATING INSTRUCTIONS > BATTERY CHARGING, page 52*)

BATTERY

BATTERY CHARGER



DETAILED SERVICE GUIDES FOR THE FOLLOWING CAN BE FOUND ONLINE AT:
WWW.ONYXMOTORBIKES.COM/PAGES/USER-MANUAL.



CTY2 MODEL

BRAKE SERVICE

FRONT BRAKE

The front brake is hydraulic and requires brake fluid to operate. You should always check to make sure your brake reservoir has enough fluid in it to operate properly or you will eventually lose your ability to stop with the front brake. There is a window on the side of the reservoir that tells you how much fluid is left when you look at it level. If you do not have experience with maintaining hydraulic brakes have a professional refill or bleed the brakes for you when needed. Never attempt to ride with leaks or damaged brake lines.

CHECK BRAKE PADS

CHECK BRAKE FLUID RESERVOIR

REAR BRAKE

Besides replacing the brake pads when needed you should adjust the brake cable when the pads wear down and/or the cable settles during regular use.

CHECK BRAKE PAD

ADJUST BRAKE FOR PERFORMANCE

WHEEL + TIRE SERVICE

SERVICING THE FRONT WHEEL + TIRE

REMOVING THE FRONT WHEEL

REPLACING THE FRONT TIRE + TUBE

INSTALLING THE FRONT WHEEL

SERVICING THE REAR WHEEL + TIRE

REMOVING THE REAR WHEEL

REPLACING THE REAR TIRE + TUBE

INSTALLING THE REAR WHEEL

CHAIN + FREE WHEEL

REPLACING THE BICYCLE CHAIN

Keep your chain and freewheel lubricated regularly to prevent premature wear, and clean your chain after a dirty or salty ride.

LONG TERM STORAGE

Follow best practices for Li-Ion battery maintenance. There is much debate about how to keep your battery lasting a long time so do your research and decide what fits your riding habits best.

REMOVING AND STORING THE BATTERY

See *OPERATING INSTRUCTIONS > BATTERY REMOVAL*, page 50

section for information of battery removal.

TROUBLESHOOTING

ELECTRIC MOTORBIKE PRECAUTIONS

Your ONYX Motorbike has high voltage components. The high voltage used by these components is dangerous and can cause personal injury, severe burns, electric shock and even fatal injury unless appropriate precautions are taken. Always observe and obey the instructions on labels attached to components on the vehicle. They are there for your safety. Do not touch, attempt to remove or replace any high voltage parts, wiring or connectors. If the motorbike is involved in an accident do not touch any high voltage wiring connectors or the components connected to the wiring. If a fire occurs, extinguish visible flame with a Class D power-type fire extinguisher. After flame has been extinguished, douse with a water-based fire extinguisher.

(See **SAFETY INFORMATION**, page 14)

(See **BATTERY SAFETY TIPS**, page 51)

COMMON TROUBLESHOOTING

All our bikes are carefully inspected before shipping. However, even after a bike is inspected, technical issues can occur. Following are some ways to diagnose common issues “should one arise” and get you back on the road again. If you are unable to diagnose and fix the issue on your own, bring the bike by one of our authorized repair shops. If there is no shop in your area, call our customer service support line: (310) 800-2531.

PRO TIP

DON'T FREAK OUT

It may feel confusing at first...but read carefully, give us a call and keep refreshing your browser because we are constantly updating our manual.



GENERAL PERFORMANCE CONCERNS

These are probable issues and diagnostic solutions.



CTY2 MODEL

UNRESPONSIVE THROTTLE

1. Likely the left brake lever is stuck, activating the brake light and the regen braking. Regen braking prevents the throttle from allowing a signal to the controller. If the lever is not engaged then check the wires coming from the left lever where the brake light switch is located. Peel back the rubber boot and see if the two connectors are touching. If so reattach the two connectors to the brake light switch on the lever. When the two wires are touching this creates the same result as the lever activating the regen brake making the throttle unresponsive.

2. If the lever brake switch is fully connected then possibly one of the wires inside the bike has worked its way out of a connector. This is very rare but can happen especially if you try working on the electronics inside the bike and tug/move on the harness. To solve this you will need to remove the battery tray.

3. You damaged the throttle by accidentally spilling a massive amount of corrosive liquid such as brake fluid on the throttle housing. The only solution here is to purchase a new replacement throttle.

SPEED CONTROLLER ERROR CODES

The speed controller has a green light (no issues) and flashing red light to indicate errors in the controller or motor.

<https://kellycontroller.com/wp-content/uploads/kls-s/KellyKLS-SUserManualV1.10.pdf>

HORN AND/OR RUNNING LIGHTS DO NOT WORK

Check the connectors and see if they have disconnected and need to be reattached.

REAR BRAKE FEELS WEAK

Since the rear brake is a mechanical hybrid caliper using a cable to activate the hydraulic piston, you will need to periodically adjust the cable. If you use the rear brake a lot you will benefit from using the regen braking to save you from having to do regular adjustments or pad replacements.

FRONT BRAKE FEELS SOFT

Check for leaks or loose banjo bolts on the brake line. If you find any leaks, do not ride the bike and have the front brake serviced by a moped/motorcycle mechanic.

CHAIN IS LOOSE OR POPS OFF THE GEARS

The rear wheel might have become loose, allowing the wheel to slide forward and making the chain loose.

REAR FREEWHEEL SPROCKET IS MAKING NOISE

If the rear freewheel is starting to make noise when riding then you need to lube the freewheel. WD40 is okay but you should use a bike lubricant for the freewheel. If you let this get worse the freewheel will eventually fail due to drying out and it could seize.

FRONT FORK FEELS LOOSE WHEN STOPPING

While this is rare it can be very strange when you come to a stop and the bike feels like there is some play in the front- end. This means you need to tighten down the top fork nut right behind the handlebars. For good measure make sure all the parts are secure and there is no loose hardware.

ADDITIONAL TROUBLESHOOTING RESOURCES

Below are some helpful links to further troubleshoot your bike and gain more knowledge of how your bike functions.

FACEBOOK GROUPS

The ONYX Motorbikes Group on Facebook is a great resource for troubleshooting, mods and community

ONYX Motorbikes Facebook Group:

<https://www.facebook.com/groups/onyxmotorbikes>

TERMS & CONDITIONS



CTY2 MODEL

GENERAL INFORMATION

ONYX Motorbikes, a corporation duly organized and validly existing under the laws of the US, hereinafter referred to as ONYX, is a manufacturer and developer of electric motorbikes, components and associated gear.

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- Avoid excessive speed and be particularly careful on difficult terrain.
- All performance modifications and installations are at your own risk.
- Never change the voltage level or tamper with the battery. Doing so can result in a short circuit, fire and/or personal injuries.
- By purchasing and/or riding our bikes, you take full responsibility for any use, and/or misuse of the product and agree that ONYX holds no responsibility for any consequences, legal, or other, of such use and/or misuse.
- Finally, read the owner's manual carefully, follow all instructions therein and enjoy your bike!

RETURNS & EXCHANGES

Every bike is individually built to order which requires us to allocate funds to facilitate the build. On the date of purchase, a non-refundable fee of \$299.99 will be deducted from the total refundable amount.

IMPORTANT: Please keep your original packaging for the bike for at least 30 days. In the event that you wish to return your bike, then we will **need** you to repackage and return it with the original packaging.

30 days after a bike is delivered, it will no longer be eligible for a return.

In the event of a valid return, the order must be returned to us in perfect condition. Shipping charges on returned merchandise are subject to change. Please email customer service at info@onyxmotorbikes.com to request your return.

RETURN INSTRUCTIONS

1. Contact info@onyxmotorbikes.com to start your return. Please provide order number(s) and item(s) that you are requesting to return.
2. All returns must include an RMA form and RA number, which will be provided to you by a customer service representative.
IMPORTANT: Please note that any returns that are missing an RMA form and RA number will not be refunded.
3. Refunds will be processed once the item has been received at our warehouse and inspected. Refunds can take 5-10 business days.
4. Please keep proof of the return. If the package is lost in transit we will need a receipt or tracking number to grant the refund.



WARRANTY & COMPLAINTS

ONYX assures the legitimacy of our products to be of high quality and destined for their recommended purpose with no problems with manufacturing process or craftsmanship. In case of any issue with our product, kindly inform us through email before returning to cut off charges for posting an item. For items bought through our website email us at <https://onyxmotorbikes.zendesk.com/>. We will respond to your claim with a solution and return procedure when necessary.



CTY2 MODEL

If you have any inquiry concerning our warranty contact us at <https://onyxmotorbikes.zendesk.com/>.

FULL WARRANTY POLICY ONYX BIKES

ONYX warrants that the bikes sold by ONYX are free of manufacturing defects in material and workmanship when delivered to the buyer.

The warranty on each component on the bike is limited to 30 days from the date of delivery and is limited to the original buyer. Example: if a drive train part for some reason would malfunction, that whole part will be replaced.

The warranty does not cover against damages caused by normal wear and tear.

The warranty does not apply in the event of abuse, neglect, carelessness, using the product in any way other than intended, replacement with any part or accessory other than original ONYX parts and products, attempt of reparation or modification unless expressly permitted in writing by ONYX.

ONYX waives all responsibility for any third party for consequences that might result from the use or handling of any ONYX product by any legal or natural person.

FULL WARRANTY POLICY ONYX PRODUCTS, OTHER THAN BIKES

ONYX warrants that the products sold by ONYX are free of manufacturing defects in material and workmanship when delivered to the buyer.

The warranty is limited to 30 days from the date of delivery and is limited to the original buyer.

The warranty does not cover against damages caused by normal wear and tear.

The warranty does not apply in the event of abuse, neglect, carelessness, using the product in any way other than intended, replacement with any part or accessory other than original ONYX parts and products, attempt of reparation or modification unless expressly permitted in writing by ONYX.

ONYX waives all responsibility for any third party for consequences that might result from the use or handling of any ONYX product by any legal or natural person.

NOTES



FIRST RESPONDER INFORMATION

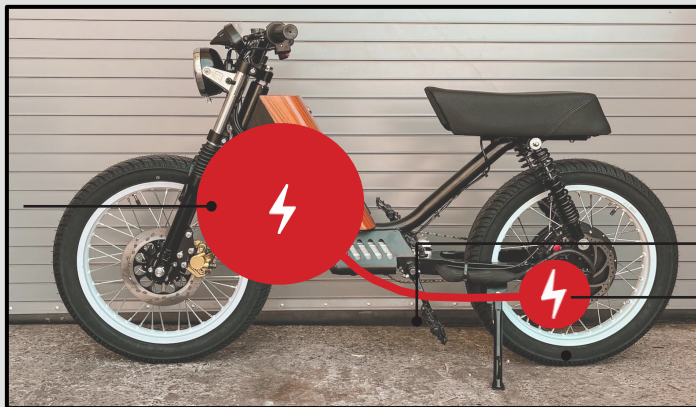
This bike contains a 60V battery connected by phase wires to a rear hub motor.

NEVER cut any high voltage cables or cabling.

High voltage cables can hold charge for up to 60 seconds after disabling the vehicle.

HIGH VOLTAGE COMPONENT LOCATIONS

BATTERY COMPARTMENT






PHASE WIRES

HUB MOTOR



MOPEDS ARE BACK !

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