



21" Commercial Walk-Behind Lawn Mower

Operator's Manual

21" COMMERCIAL WALK-BEHIND LAWN MOWER

Operator's Manual

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Introduction

The Oso 21" Commercial Walk-Behind Lawn Mower is an electric walk-behind lawn mower that is powered using a Lithium Iron Phosphate or LiFePo4 battery.

Batteries are charged using the supplied Oso Charging Station from a standard 110V plug.

Battery power is used to turn the cutting blade and rear self-drive wheels to move the mower forward.

Please make sure you fully read and understand this operator's manual before using the Oso 21" Commercial Walk-Behind Lawn Mower.

Overview

SAFE, RELIABLE, DURABLE & EASY TO USE FEATURES

SAFE

EMERGENCY STOP BUTTON

Emergency stop push-button to stop mower quickly

EASY TO USE

SINGLE CONTROL LEVER

Innovative single control lever to control both blade & wheels with variable wheel speed

SAFE

BLADE SAFETY SWITCH

Prevent accidental turning of the blade

EASY TO USE

REAR HEIGHT ADJUSTER

Single motion to control height of both wheels

SAFE

MAIN ON/OFF SWITCH

Cut off power to blade & wheels

SAFE

WHEEL CONTROL LEVER

Disengages wheel brakes when not in use to prevent free rolling

RELIABLE

DURABLE

BATTERY

Steel case enclosed 35Ah battery that is waterproof & safe with 2-hour runtime

DURABLE

SHIELD

Stainless steel shield to protect electronics housing from accidental damage

DURABLE

DECK

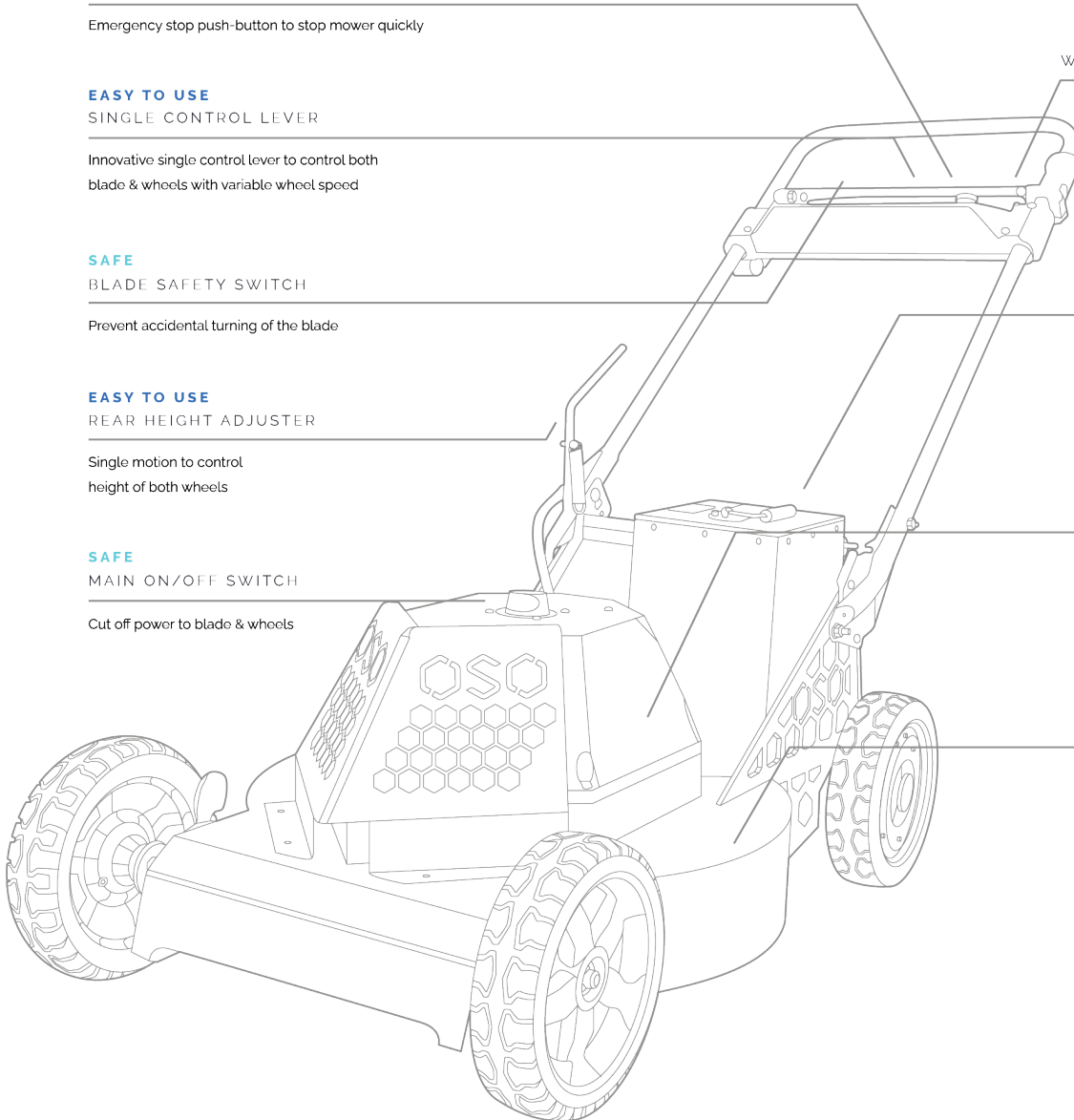
Fabricated 1/4" aluminum deck, built to last

SAFE ●

DURABLE ●

RELIABLE ●




EASY TO USE ●



Specifications

- Mower Specifications
 - 21" commercial, self-propelled drive system with mulching and bagging support
 - Blade – 21" Toro compatible blade
 - Front Wheels – Toro compatible 9" front wheels
 - Rear Wheels – 9"/10" wheels with built in self-propel motors
- Technical Specifications
 - Mower
 - Battery – 48V, 38Ah, LifePO4
 - Motor – 60V, 1800W, Brushless DC
 - Hub wheels – 48V, 350W
 - Runtime – 2-3 hours
 - Charger
 - Voltage – 110V 15A/20A AC
 - Charge time – Overnight, 6 batteries with 15A or 10 batteries with 20A
 - Cost/battery - 2KWh @ local electricity cost/KWh
- Safety Features
 - Blade brake to quickly stop the blade in less than 2 seconds after blade cutoff
 - Emergency Stop button in control panel to shut off blade
 - Blade Start safety switch to prevent accidental blade start

Understanding the Warning Stickers

	<ul style="list-style-type: none"> • Risk of dismemberment. Keep hands and feet away from any moving parts, such as the lawn mower blade. • Never put your hands or feet near or under the mower. • Never clean the mower or replace the blade without first disconnecting and removing the battery.
	<ul style="list-style-type: none"> • Indicates that there are blades that move. Risk of dismemberment. Keep hands and feet away from any moving parts, • Never put your hands or feet near or under the mower. • Never clean the mower or replace the blade without first disconnecting and removing the battery.
	<ul style="list-style-type: none"> • Read the Operator's Manual before using the mower. • Receive proper training and instruction before using the mower. • The lawn mower can throw objects. Keep people 50 feet away when operating the mower. • Only use the lawn mower with the grass bag or mulching plug properly installed. • Keep hands and feet away from moving parts, especially the blade. • Dangerous noise levels. Wear hearing protection when operating the mower. • Keep hands and feet away from the sides and bottom of the mower. • When operating the mower on an incline, mow parallel to the incline. Do not mow directly up and down the incline.

Setup Guide

Getting Started

1. Unpack all the contents and make sure they match the items included in your order.
2. Inspect all parts for any visible transportation damage.
3. Batteries are delivered between 80% to 100% charged.
4. To charge a battery, place it in one of the battery charger bays. Connect the battery plug to the corresponding bay charger plug. Close the charger door and confirm the charging status light is Red.
 - a. A Red light means the battery is being charged.
 - b. A Green light means the battery has been fully charged.
5. Once the battery shows 100%, place it in the Battery Holder Bay on the Lawn Mower. Ensure the battery is placed in the proper orientation and that it fits in the holder. Connect the battery plug to the mower connector. Ensure you hear an audible click.
6. To turn On the Mower:
 - a. Turn the Main Switch to the "ON" position
 - i. The Cooling Fan will start running immediately after the battery is plugged in and the Main Switch is turned ON. If you don't hear the Cooling Fan, please call Oso Customer Support or your Sales Representative.

Warning - Using the mower without the Cooling Fan running can cause the mower to overheat under some conditions. This could result in permanent damage to the electrical and electronic components. This will void the warranty.

- b. Disengage the Emergency Stop by twisting the control panel red button. The button will slightly pop up. Press it down again to engage the Stop.

- c. The Mower Status Light (farthest light to the left) should turn Green in less than 15 seconds. If this Status Light does not turn On, or it turns Red, please review the troubleshooting steps, or contact Oso Customer Support.
- d. When finished, please engage the Emergency Stop button by pressing it down, then turn the Main Switch back to the OFF position.

General Safety Guidelines

- This is a professional product capable of amputating hands and feet if improperly used or if the user fails to follow the instructions. Pay attention to the mower, its surroundings, and any debris on the ground. Objects on the ground other than grass can be thrown out from under the cutting area at high speed. Follow all safety instructions to avoid serious injury or death.
- Read and follow the instructions and warnings in this Operator's Manual before using the mower.
- Do not put your hands or feet near moving parts or under the mower. Do not operate the machine without all systems and components in place and functioning properly on the machine.
- Do not put the mower on its side with the battery plugged in and installed on the mower.
- Keep bystanders and children out of the operating area. Do not allow children to operate the machine.
- Allow only people to operate the machine that meet the following:
 - Understand the Operating Instructions
 - Fully trained and physically capable
 - Familiar with higher-power commercial lawn mowing
- Do not operate the mower on an incline that is greater than 30 degrees.
- If the control lever for the blade or wheel is damaged and does not move up or down freely while also springing back to its normal position when released, do not use the mower.
- To stop both the self-drive and cutting blade at any time, engage the Emergency Stop button by pressing it down.
- For servicing, engage the Emergency Stop button by pressing it down and turn the main power switch to the OFF position. Ensure that all moving parts have stopped moving.

Basic Operation

1. Mower

- a. Make sure mower is on grass and that there are no obstacles or debris in front of the mower.
- b. Adjust the cutting height to the desired level prior to connecting the battery and powering ON the mower, by utilizing the height adjuster handle on the back for the rear wheels and the levers at the each of the front wheels.
 - i. *Warning - Adjusting the height-of-cut could bring your hands into contact with a moving blade and result in serious injury. Shut off the mower, unplug and remove the battery and wait for all moving parts to stop before adjusting the cutting height. Do not put your fingers under the cutting deck when adjusting the cutting height.*
- c. Next, place the battery in the mower battery bay and plug it into the mower, toggle the main switch to the ON position and disengage the Emergency Stop button by slightly rotating it clockwise. Wait for about 15 seconds while the mower fully powers on. The first (left) LED light on the main mower housing will light up green when the mower is ready to use.
 - i. Note: The blade will not start until the mower has fully powered on and all internal systems have initialized, so please wait about 15 seconds.
- d. Self-Propel System
 - i. To activate the self-propel system, **gently** pull up the control lever until the mower starts to move forward. As the control bar is pulled, notice that the speed of the self-propel system continues to increase the farther you engage the lever.

Warning - If you are a new user, please first familiarize yourself with this mower's drive control. Practice on an open grassy area by slowly pulling the control bar and understanding the mower speed output. Do not pull the control

bar all the way up on a flat area if you are not familiar with its drive system.

- ii. To de-activate the self-propel system, release the control lever just far enough until the mower stops moving. Letting go of the control lever completely (no hands on the controls) will also shut off the blade.
- e. To activate the blade rotation, gently pull the control lever slightly with one hand and with the other hand press the Blade Start Button. Notice that to be able to start the blade, you must pull the control lever just slightly. However, if you keep pulling the control level, you will engage the self-propel system, so it is important that you familiarize yourself with this process.

The self-propel system can be used without the blade being on, which can be useful when transporting the mower.

- f. To stop the blade rotation, fully let go of the control lever. You can disengage the self-propel system while keeping the blade on by releasing the control lever just enough to slow the self-propel system to a stop, but not so far as to fully disengage the blade.

Notice that when slowing down the self-propel speed, if the control level is released too far, the blade will also stop as well. If this is not the user's intention, please practice stopping the self-propel system while leaving the blade on by familiarizing yourself with the different positions of the control lever.

- g. If you must use the grass bag for collection, please first turn off the mower and wait for all moving parts to stop. Remove the grass plug, lift the grass door, and hang the bag from the tabs on the mower.
 - i. *Warning – Removing or installing the glass plug insert could bring your hands into contact with a moving blade and result in serious injury. Shut off the motor, remove the battery, and wait for all moving parts to stop before installing or removing any component related to the grass bag. Do not put*

your fingers under the housing when installing or removing the grass plug or bag.

- h. If mulching is desired, make sure the grass plug is inserted in the grass chute after the grass bag is removed.
- i. If you see the mower Status Light (first light on the left) turn red at any time, please contact Oso Customer Support or your Sales Representative.

2. Charger

- a. Ensure the charger box is placed indoors, in a dry, flat area and connected to a 120V grounded outlet with at least a 15A breaker.
 - a. **Warning – Do not charge the batteries inside living or working areas. Recommended areas include any covered area such as a garage or dedicated shop. We do not recommend charging the batteries outdoors. Do not charge the battery if there is any visible damage to the battery casing or the battery appears to be visibly swollen. Do not attempt to charge the batteries using any method other than the Oso Charging Station.**
- b. The charger box contains an internal GFCI (Ground-Fault Circuit Interrupter). If the battery charger lights do not come on once it is connected to the wall plug, make sure there is no visible water present in or around the charger. The GFCI will reset automatically once any issues are resolved.
 - a. This is an electric charger, and as such, please follow all basic safety precautions when dealing with electricity. There is a risk of electric shock or death. Make sure all components are dry and all wires do not have any signs of fraying or other damage.
- c. To charge the batteries, insert them in any of the empty charger bays and connect each battery's plug to the connector from the charger. Close the lid to start charging.
 - Tip – You can use the charger without having a battery in every charger bay.**
- d. The charging status light for each bay will turn Red when charging and Green when charging has been completed.

- e. Charging time varies based on the battery charge state when plugged in as well as other safety factors. To extend the usable life of the battery, plan each charging to take up to 10 hours.

Tips for a Better Mowing Experience

- Unlike gas mowers, the Oso mower self-drive is not connected to the blade motor and is independent. For a better experience, slow down the wheels by slightly loosening your grip on the control lever when you hear your blade slowing down.
- When the battery light turns yellow, you have about 15 minutes left before the battery runs out completely.
 - Tip - Please ensure you have a spare battery ready. It is possible for wheels to still turn even if the battery charge is too low to turn the blade
- The Oso mower wheel speed is variable. Please pay attention to grass cut quality to maintain optimal wheel speed.
- Do not overload the grass bag for better performance. Empty the grass bag frequently.
- Always place the battery in the charger at the end of the day and ensure the charger is connected to 120V plug and the status light is either red or green. Red indicates battery is charging.
- Charger is designed to be weather resistant, but please charge the batteries under a covered roof to avoid electrical hazards.
- Do not charge batteries inside a residence, office, or any enclosed space where people could be living or working.
- The Battery is heavy and weighs over 30 lbs. Use caution when lifting and transporting. Do not attempt to lift the battery if you have any condition that would prevent you from lifting heavy weights.

Understanding the Indicator Lights

The Oso Mower comes equipped with 3 status lights. These lights are important to understand the operation of the mower.

- Status Light – (Farthest light to the left from the user position)
 - Green – Indicates everything is normal and mower is ready to be used.
 - Red – Mower is indicating an error condition. All lights will turn Red when this occurs.

Warning – When the mower indicator lights are red, and the blade does not start after battery connect and disconnect, please do not attempt starting the blade more than once without calling Oso customer support

- Network Light – (Middle light)
 - Blue – Mower is connected to a 4G LTE network
 - Purple – Mower is connected to a WiFi network

Tip – This light will not always be on. That's ok. None of the Network Lights affect the performance of the Mower.

- Battery Light (Farthest light to the right)
 - Green – Battery has greater than 15 minutes of runtime
 - Yellow – Battery has less than 15 minutes left at the current usage rate. Please continue to use the mower if you are satisfied with cut quality. Eventually your blade will stop turning. Under most conditions the self-propel system will continue to work at very low battery levels.

Proper Care and Maintenance

- Cleaning
 - Clean the mower after each use. Before performing any cleaning, make sure the battery is disconnected and all moving parts have stopped rotating.
 - Ensure there is no debris, grass, sediments stuck under the cutting area.
 - **Warning – The mower blade is sharp. Use caution when cleaning around the blade.**
 - Blow air on the cooling vents so any stuck debris on the filters blow out to the outside.
 - Wipe clean the area with LED lights to ensure status visibility.
 - Remove sediment from tires until the rubber treads are visible.
 - Although the mower is weather resistant, we do not recommend that you directly hose down the main housing and control panel with high pressure water. Metal parts, the blade, and all wheels can be hosed down using a typical home garden hose with no more than 50 psi. Ensure the mower is dried to prevent corrosion.
- Storage
 - Store the mower, batteries and charger in a dry, ventilated and flat indoors space. This is a heavy commercial piece of equipment that can roll down incline surfaces. Make sure it is properly secured.
- Maintenance
 - Our mower was designed for minimal maintenance.
 - Follow cleaning steps detailed on the Proper Care and Maintenance section of this manual
 - Before operating the mower, ensure the control lever moves freely as you tighten your grip. The control lever should immediately spring back to its resting position when

released. If the control lever is stuck or if it moves down slowly, inspect the spring that pulls it down and check that there is no debris stuck in between the spring and other parts. Inspect that there is no debris or sediments around the pivoting points of the control lever and that it moves freely.

- Before operating the mower, and with no battery connected, ensure the blade is properly attached and that it rotates freely. If the blade is tilted, not centered, or broken, discard immediately.
- Once a week, lubricate the handlebar rotating pivot points with a silicone-based lubricant. Ensure control lever moves freely and that it returns to its resting position.
- Once a week inspect there are no missing, broken, or bent parts.
- Once a week inspect that all buttons on the control panel are functional and move normally.
- Once a week, leave the mower with the battery connected overnight. This will ensure the mower gets the latest software updates available.
- A sharpened blade optimizes the cutting performance of all lawn mowers. Please contact Oso Customer Support if you need guidance on the proper steps of removing or attaching a blade to the mower.

Troubleshooting

Problem Observed	Possible Reason	Recommended Solution	Light Status
Self-propel system and/or blade do not work	Battery not plugged in	<ol style="list-style-type: none"> 1. Ensure the battery is placed in the mower and properly plugged in. 2. Unplug and plug battery. Wait 15 seconds. 	All lights are Off
	Main Switch in Wrong Position	Ensure the Main Switch is turned into the ON position	All lights are Off
	Emergency Stop Button is Engaged	Ensure the Emergency Stop button is not engaged. Slightly rotate clockwise and confirm it pops up.	All lights are On
LED lights do not turn on	Battery is Depleted or Not Connected Properly	Ensure the battery is in the mower properly and plugged in with a secure connection. Unplug and plug battery. Wait 15 seconds. Ensure battery is fully charged.	All lights are Off
Self-propel system stops working during use	High Load Drive Protection may have been triggered	<ol style="list-style-type: none"> 1. Let go of the control lever completely until it returns to its resting place. This will reset the self-propel system from a high load safety stop. 2. Unplug and plug the battery, wait for at least 15 seconds. 	Not Applicable
Blade stops working	Blade Physically Stuck	Unplug and remove the battery from the mower. Inspect for debris stuck under the cutting area. Ensure blade moved freely	Status Light (farthest to the left) is Red
	Safety Reset – The blade was Momentarily Under High Load	<ol style="list-style-type: none"> 1. Let go of the control lever completely until it returns to its resting place. This will reset the blade from a high load safety stop. 2. Unplug and plug the battery, wait for at least 15 seconds. 	Status Light (farthest to the left) is Red
Blade stops while pivoting around	Control Lever Released Too Far / Training / Practice	When pivoting around, when slowing self-propel system, ensure the control bar is not fully released to its resting place. There is a control lever position where the blade stays on but the self-propel system is not engaged. This could take practice to maintain the blade during pivoting.	All lights working
Blade slows down / performance decrease	Battery needs to be replaced	Follow the instructions to replace the battery	Battery Light (farthest to the right) is Red

Disclaimers

- If the tamper proof seals on handle control panel, head assembly and charger panels are tampered all warranties will be voided
- If the mower blade hits something hard moving and if you continue to use the mower all warranties will be voided
- If you use the mower on an incline more than 45 degrees, all warranties and injury claims will be voided
- If you don't use appropriate caution before accessing grass chute or under the mower all warranties and injury claims will be voided
- If you don't read this manual prior to operating the mower all warranties will be voided
- California Proposition 65 Warning
 - The power cord on this product contains lead, a chemical known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling.
 - Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.