

DR[®] ELECTRIC ZERO TURN MOWER

SAFETY & OPERATING INSTRUCTIONS



Models:

ZT5E 48"

ZT5E 60"

Serial No. _____

Order No. _____

DR Power Equipment

Toll-free phone: 1-800-DR-OWNER (376-9637)

Website: www.DRpower.com

WARNING

Read and understand this manual and all instructions before operating the DR ELECTRIC ZERO TURN MOWER.

Table of Contents

To the new operator..... 4

Using this manual..... 4

Conventions used in this manual 5

Serial Number and Order Number 5

Additional Information and Potential Changes 5

California Proposition 65..... 5

Chapter 1: General Safety Rules..... 6

Labels 6

Pictogram Descriptions..... 8

Warnings, Cautions, and Notices 9

Protecting Yourself and Those Around You 9

Safety for Children and Pets 10

Handling the Battery Pack and Charger Safely 11

Chapter 2: Setting Up the DR ELECTRIC ZERO TURN MOWER..... 12

Controls and Features 12

Specifications..... 13

Touch Screen Display 14

Control Display Functions..... 14

Mower Control Panel..... 18

Chapter 3: Operating the DR ELECTRIC ZERO TURN MOWER..... 19

Safe Operating Practices 19

Using a Ramp 19

Safety Start Interlock System..... 19

Mower Operation..... 20

Operating Suggestions..... 24

Mowing on Slopes 25

Loss of Steering Control 26

Deck Cutting Height Adjustment..... 26

Braking 27

Seat Adjustment 28

Lap Bar Adjustment..... 28

Chapter 4: Service and Maintenance..... 29

Safe Servicing Practices..... 29

Maintenance..... 29

Maintaining the Mower 30

Chapter 5: DR Power E-Series Lithium Battery Pack and Electrical System..... 33

Battery and Electrical System Safety Practices	33
Battery Pack Charging and Maintenance	34
Installing the Battery Pack (ZT5E Mower)	35
Removing the Battery Packs	36
Disposing of the Battery	36
Chapter 6: DR ELECTRIC ZERO TURN MOWER Features	37
Roll Over Protection System	37
To Fold the Roll Over Protection System:.....	37
To Raise the Roll Over Protection System to Upright Position	37
Towing: (ZT5E-60 only - optional bolt-on hitch required)	38
Chapter 7: Troubleshooting	39
Troubleshooting Table.....	39
Troubleshooting Table (Continued)	40
Error Code Descriptions and Remedies.....	40
Chapter 8: Parts Lists	45
Daily Checklist for the DR ZERO TURN MOWER	47
End of Season and Storage	47

To the new operator

It is the **owner's responsibility** to make certain that the operators and mechanics read and understand this manual and all decals before operating this machine. It is also the **owner's responsibility** to make certain that the operators and mechanics are qualified and physically able individuals, properly trained in the operation of this equipment. All operators and mechanics must become familiar with the safe operation of the equipment, operator controls and safety signs. Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator. The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

Using this manual

The purpose of this manual is to assist owners and operators in maintaining and operating the mower. Please read it carefully; information and instructions furnished can help you achieve years of dependable performance.

General operation, adjustment and maintenance guidance is outlined for both the experienced and novice DR Power Mower user. Operating conditions vary considerably and cannot all be addressed individually. Through experience, however, operators should find no difficulty in developing good operating skills suitable to most conditions.

Directions used in this manual, for example RIGHT or LEFT, refer to directions when seated on the mower/standing facing forward, unless otherwise stated. Photographs and illustrations used were current at the time of printing, but subsequent production changes may cause your machine to vary slightly in detail. **DR Power Products reserves the right to redesign and change the machine as deemed necessary, without notification. If a change has been made to your machine which is not reflected in this owner's manual, or the parts manual, see your DR Power Products dealer for current information and parts.**

Conventions used in this manual

WARNING

This indicates a hazardous situation, which, if not avoided, **could** result in death or serious injury.

CAUTION

This indicates a hazardous situation, which, if not avoided, **could** result in minor or moderate injury.

NOTICE

This information is important in the proper use of your machine. Failure to follow this instruction could result in damage to your machine or property.

DANGER

This indicates a hazardous situation, which, if not followed, **will** result in death or serious injury.



Serial Number and Order Number

A Serial Number is used to identify your machine and is located on the Serial Number Label on your machine. An Order Number is used to check and maintain your order history and is located on your packing slip. For your convenience and ready reference, enter the Serial Number and Order Number in the space provided on the front cover of this manual.

Additional Information and Potential Changes

DR Power Equipment reserves the right to discontinue, change, and improve its products at any time without notice or obligation to the purchaser. The descriptions and specifications contained in this manual were in effect at printing. Equipment described within this manual may be optional. Some illustrations may not be applicable to your machine.

California Proposition 65

 **CALIFORNIA WARNING:** This product can expose you to chemicals including lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chapter 1: General Safety Rules

WARNING

Read this safety & operating Instructions manual before you use the DR BATTERY POWERED LAWN MOWER. Become familiar with the operation and service recommendations to ensure the best performance from your machine. If you have any questions or need assistance, please contact us at www.DRpower.com or call toll free 1 800 DR OWNER (376 9637) and one of our Technical Support Representatives will be happy to help you.

Labels

The DR ELECTRIC ZERO TURN MOWER carries prominent labels as reminders for its proper and safe use. Shown below are copies of all the Safety and Information labels that appear on the equipment. Take a moment to study them and make a note of their location on your mower as you set up and before you operate the unit. Replace damaged or missing safety and information labels immediately.



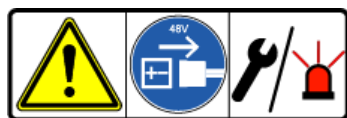
#MGUPN068



#MGUPN067



#MGUPN066



#MGUPN072



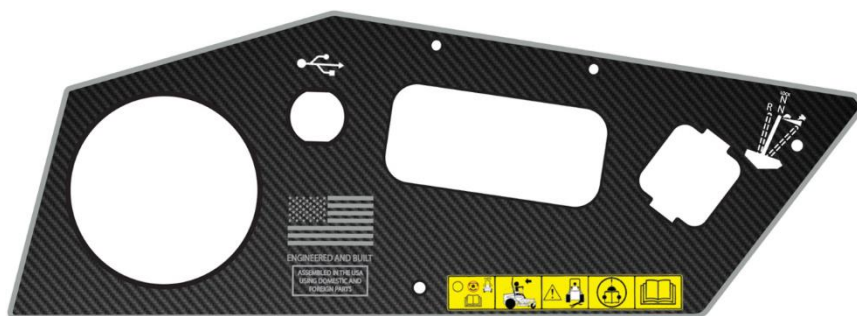
#MGUPN077

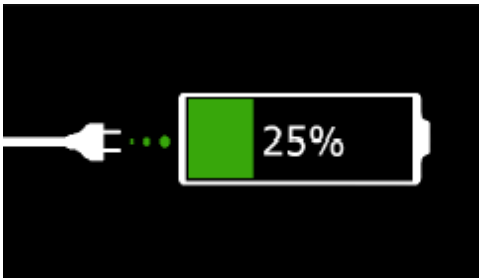


#MGUPN075

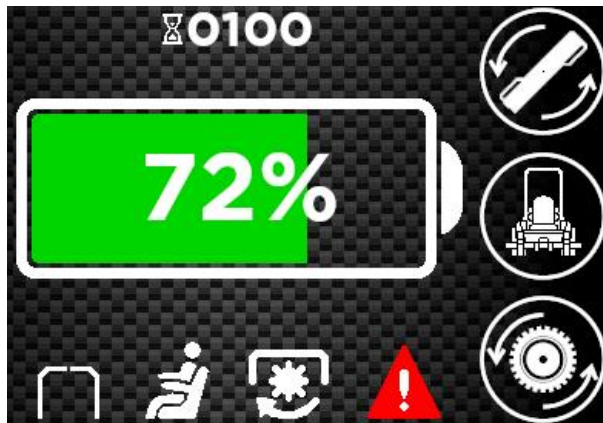


#MGUPN076





Charging Screen



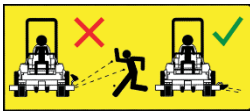
Pictogram Descriptions



Do not mow around people.



No riders while operating mower.

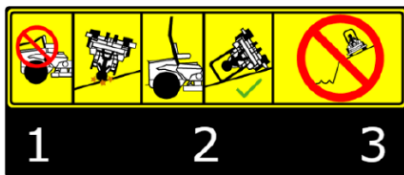


Chute must be placed down in foreign objects.



Shutdown Procedure

- 1: Power off, Power Take Off, Lap bars out.
 - 2: Look behind you when operating in reverse.
 - 3: Do not mow around people. Watch out for small children that may be around the mower during operation.
 - 4: Read and learn manual before operating the mower.
 - 5: Refer to the manual for any question regarding operation.
-



- 1: When Roll Over Protection System are down during operation, serious injury or death can occur.
 - 2: Keep the Roll Over Protection System up to provide adequate rollover safety
 - 3: Do not mow on steep edges or cliffs.
-



1. Do not mow around other people.
 2. Do not let additional people ride on mower during use.
 3. Mow with the chute down to prevent debris from injuring people or property.
-



Power Take Off Operation

1. Pull the Power Take Off switch up to engage the Power Take Off.
 2. Push the Power Take Off switch down to disengage the Power Take Off.
-



Lap Bars

1. Move the handlebars forward to move the mower forward.
 2. Move the handlebars backwards to move the mower backwards.
 3. The handlebars when at rest will put the mower in neutral.
 4. Placing the handlebars outward will place the mower in neutral lock.
-

Warnings, Cautions, and Notices

General Safety

WARNING

Safe operation of the DR ZERO TURN MOWER is necessary to prevent death or serious injury. Always take the following precautions when operating this machine:

- The DR ZERO TURN MOWER is designed to mow grass. Do not use it for any other purpose.
- If the machine makes an unusual noise or vibration or if there are obstructions underneath the machine, shut off the DR ZERO TURN MOWER POWER. Inspect the machine for clogs or loose parts. Clear any obstructions and repair and/or replace damaged parts.
- The mower blades are sharp. Wrap the blades or wear gloves and use extra caution when servicing.
- Always keep the machine in good, safe operating condition. Always make certain nuts and bolts are tight. Do not use substitute hardware.
- See manufacturer's instructions for proper operation and installation of accessories. Only use accessories approved by DR Power Equipment.
- Use the DR ZERO TURN MOWER only in daylight or very well-lit work areas.
- Always give undivided attention to the machine and your surroundings. Watch for traffic when mowing near roadways.
- Disengage the mower blades and exercise extreme caution when on or crossing drives, walks, or roads.
- When operating over uneven and/or slippery terrain, use extreme caution.
- Do not operate the machine when under the influence of drugs, alcohol, or medication.

Protecting Yourself and Those Around You

WARNING

This is a high-powered machine with moving parts operating at high speeds. Always take the following precautions when operating this machine:

- Always wear protective goggles or safety glasses with side shields.
- Wear sturdy shoes with non-slip treads.
- Wear long pants while operating the mower.
- Avoid wearing loose clothing or jewelry which can catch on moving parts
- We recommend wearing gloves while mowing. Be sure your gloves fit properly and do not have loose cuffs or drawstrings.
- Allow only responsible adults who are familiar with these safety rules and operating instructions to use your DR ZERO TURN MOWER.
- Keep your hands and feet away from the blades while the mower is running.
- Never allow people to ride on the mower.
- Before mowing, clear the area of objects such as rocks, toys, wire, bones, sticks, etc.
- Never remove or alter standard parts or add anything to the DR ZERO TURN MOWER especially all shields and guards.
- Before and while moving backwards, look behind, and down, for small children.
- Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.

Safety for Children and Pets

WARNING

Tragic accidents can occur if the operator is not alert to the presence of children and pets. Children are often attracted to the machine and the mowing activity. *Never* assume that children will remain where you last saw them. Always follow these precautions:

- Keep children and pets at least 100 feet from the working area and ensure they are under the watchful care of a responsible adult.
 - Be alert and turn the machine off if children or pets enter the work area.
 - Never allow children to operate the Mower.
 - Use extra care when approaching blind corners, shrubs, trees, or other objects that may block your view of a child or pet.
-

Slope Operation

WARNING

All slopes require caution. If you feel uneasy on a slope, do not mow it. Always take the following precautions when using this machine on slopes:

- Always mow across the face of slopes. Exercise extreme caution when changing direction on slopes.
 - Never operate near drop-offs, ditches, or embankments, or on slopes greater than 15 degrees
 - Never operate on wet or slippery slopes
 - Slow down when changing directions
 - Do not tow equipment on slopes
 - Do not mow wet grass on slopes
 - Turn slowly and on the most level ground.
-

Handling the Battery Pack and Charger Safely

WARNING

- DO NOT use a fully discharged battery pack until it is recharged. Over discharge of the battery pack will shorten the battery life and may cause permanently damaged.
- Recharge a discharged battery pack at least 15 minutes after complete discharge.
- Always fully charge battery packs.
- Charge battery packs while on the mower. Individual battery packs can be charged alone when removed from the mower.
- DO NOT charge the battery below 32°F (0°C). The battery packs BMS (internal battery management system) is set to not allow charging below 32°F (0°C).
- DO NOT Discharging the battery pack below +3°F (-16°C), the capacity/runtime is drastically reduced overall as it gets colder.
- NEVER CHARGE the battery packs above 100°F (38°C). The battery pack battery management system (internal battery management system) is set to not allow charging above internal battery cell temperature of 115°F (46°C).
- Remove all battery packs from the machine when storing batteries.
- Do not store battery packs in temperatures below -4°F (-20°C).
- Store battery packs with state of charge at about 50-70% or minor cycle life reduction is possible.
- Cycle (charge and discharge) the battery packs every 3-9 months in temperatures 32°F (0°C) and above.
- Avoid severe vibration.
- Battery packs weighs 40 lbs. Use caution when lifting battery packs out of mower.
- Do not throw or drop the battery pack.
- Secure the battery pack while transporting in a vehicle.
- Clean the exterior surface of the battery pack with damp cloth and mild detergent.
- DO NOT use solvents or harsh cleaning solutions when cleaning the battery packs.
- DO NOT submerge battery packs in liquid.
- Keep grass, dirt and debris from collecting near battery pack terminals in the receivers. Keep the dust plugs in place on the receiver connector when batteries are removed.

WARNING

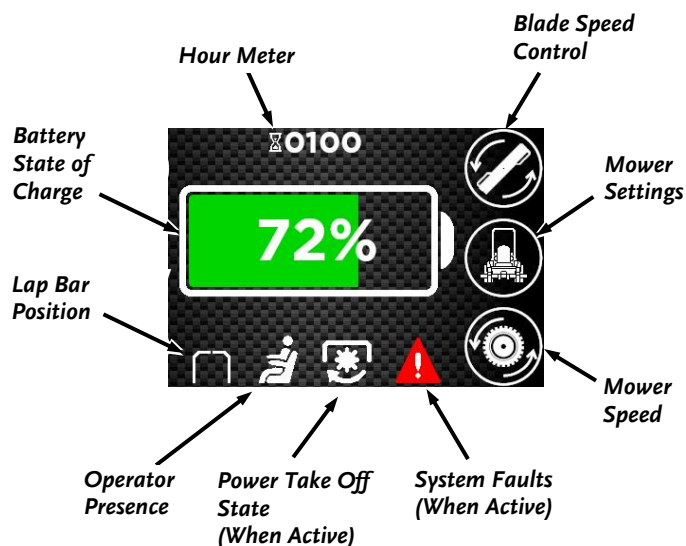
- Use only the DR® E-Series 48V Charger with DR® E Series Battery Packs. Use of a different Charger may cause a fire or explosion.
- DO NOT use the DR® E-Series 48V Charger with batteries from other manufacturers or other DR® products: Use with batteries other than the DR® E-Series Battery Packs will void warranty and can lead to equipment damage, fire, serious injury or death.
- DO NOT touch un-insulated portion of charger (terminal pins) of output connector.
- DO NOT use charger with defective cords and wires. Replace defective cords and wires immediately.
- DO NOT expose charger to rain, vapor or liquid.
- DO NOT use an extension cord to charge mower.
- DO NOT leave cords coiled. Heat can build up and melt insulation of extension cord wires.
- DO NOT add or remove battery packs from mower while charging. Unplug charger from wall outlet first, then packs can be removed from mower safely.

Controls and Features



Specifications

	XT5E60	XT5E48
Drive Transmission	Electric Motor/Gear Reduction	Electric Motor/Gear Reduction
Electrical System Power	7.9kW (24 Hp equivalent)	7.9kW (24 Hp equivalent)
Battery Type	48V-52AH Li-ion (2.5kWh) (rechargeable) <i>battery not included</i>	48V-52AH Li-ion (2.5kWh) (rechargeable) <i>battery not included</i>
Transaxle	Hydro-Gear ZT2800e	Hydro-Gear EZTe
Run Time	35 minutes per battery	45 minutes per battery
Speed	8 mph forward, 3 mph reverse	8 mph forward, 3 mph reverse
Blade Tip Speed	16.9k-17.9k fpm	13.2k-14.9k fpm
Cutting Capacity	Up to 12" Tall Grass	Up to 12" Tall Grass
Cutting Width	60"	48"
Cutting Height	1.5"-5"/15 height adjustments	1.5"-5.25"
Discharge	Pivoting rubber/right side	Pivoting rubber/right side
Machine Weight (without batteries)	704 lbs.	620 lbs.
Wheels		
Anti-scalp	4" spherical (4)	4" spherical (2)
Front tire size	11"x4.5" Pneumatic caster	11"x4.5" Pneumatic caster
Rear tire size	22"x10.5"x8" Pneumatic Turfsaver	20"x9.5"x8" Pneumatic Turfsaver



Touch Screen Display

The ZT5E mowers are equipped with a 4.3-inch color touch screen display that provide driver information.

Use of the touch screen can change the blade speed and ground drive speed to high or low by touching the respective icons on the home screen. The speeds can be changed while the mower is in motion.

The Mower Application Page can be accessed by pressing the icon on the Home Screen. The default mower application screen is the battery State of Charge page. The battery screen displays the State of Charge of each installed battery pack and its relative voltage. The State of Charge will display as negative when discharging and positive when regeneration is occurring.



Control Display Functions

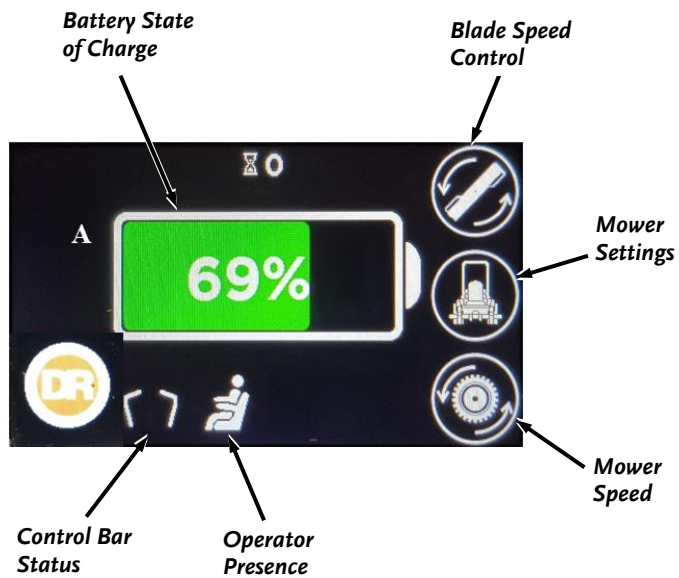
Mower Startup Passcode

1. Enter the **User Passcode** to unlock the mower.

Note: Admin Passcode – Mower display access 4 digit code that allows user passcode re-set. It is set at the factory, is unique to the mower and **cannot** be reset by the user.

Note: User Passcode - Mower display access code that allows mower operation. The default passcode is set at the factory and can be re-set by the user. The User Passcode must be only 4 digits.

Home Screen



Blade Speed Control



High

Low

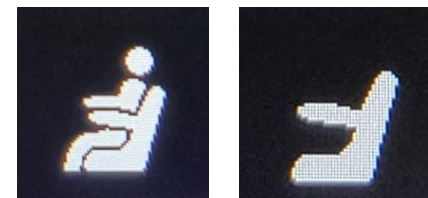
Mower Speed



High

Low

Operator Presence



Present

Not Present

Control Bars Status



Out

In

Fault Screen

FAULT SCREEN



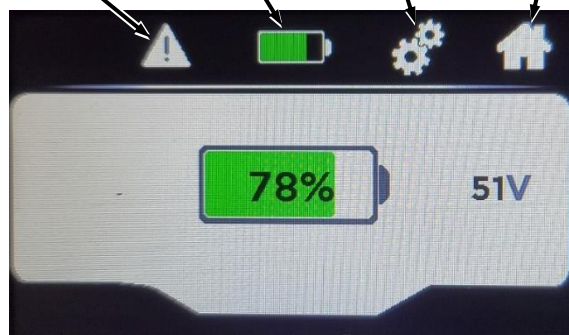
No Faults

FAULT SCREEN

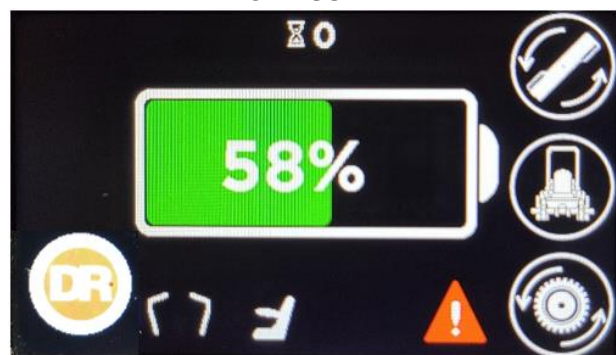


Active Fault

Faults State of Charge and Voltage Settings Return to Home



HOME SCREEN



Active Fault



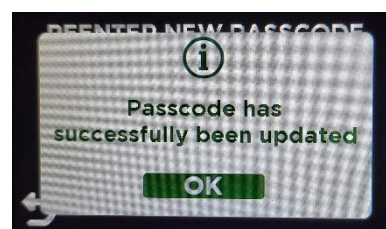
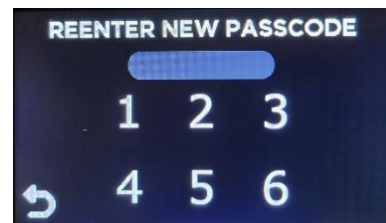
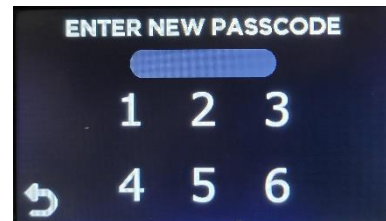
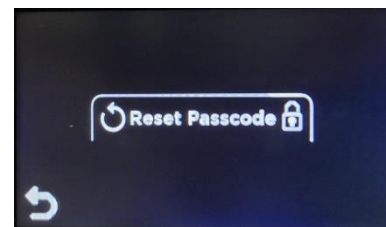
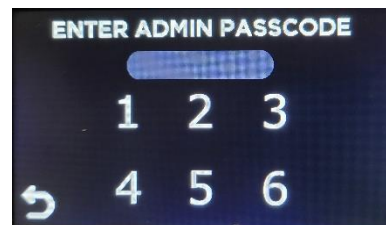
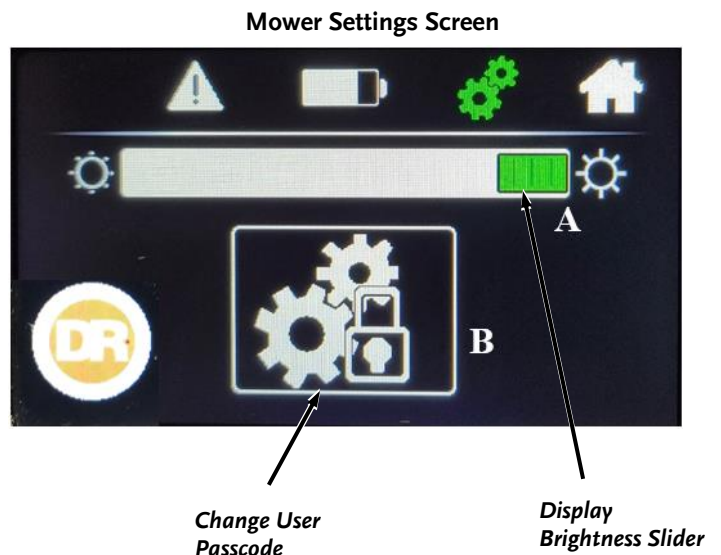
Settings Screen

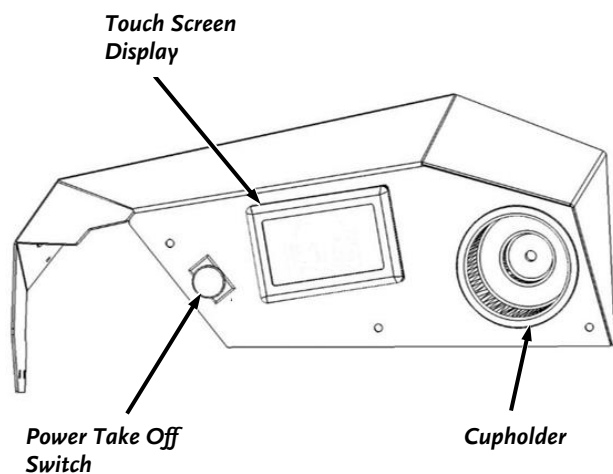
Change User Passcode

2. Select the Change User Passcode button from the mower settings screen.
3. Enter the admin passcode for the mower (this is different from the user passcode and cannot be reset by the user).

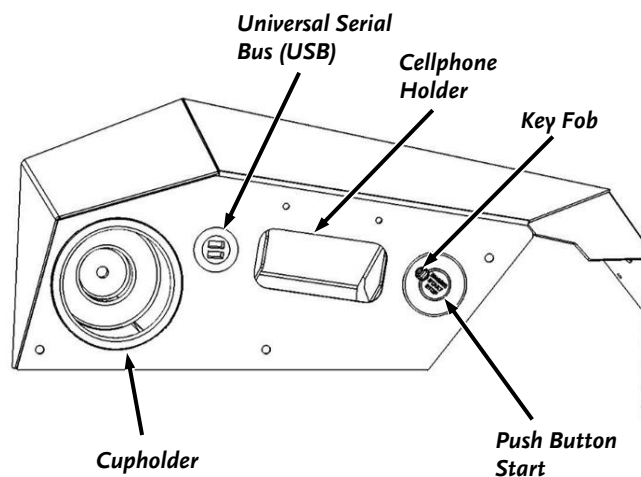
Note: The Admin passcode is found under hood, next to the hood latch.

4. Select Reset Passcode.
5. Enter a new passcode, then re-enter the same passcode to confirm.
6. New passcode confirmed.





Right Side



Left Side

Mower Control Panel

The power take off switch engages the deck blade motors.

Note: Pull the power take off switch up to engage blades and push down to disengage blade motors. There is a delay before blades will start.

The touch screen display shows battery charge level, mower speed, blade speed, and other information about the mower.

The Universal Serial Bus (USB) charger is used for portable electronics.

The push button start powers the mower on and off.

Note: The key fob must be inserted for push button start to function.

Chapter 3: Operating the DR ELECTRIC ZERO TURN MOWER

Safe Operating Practices

WARNING

Read and understand all warnings listed in “Chapter 2 General Safety Rules” before operating the ZT5E Mower.

Mower Movement

1. To stop the mower, move right and left lap bars to neutral. Push bars outward into the neutral slots.
2. To slow down the mower, pull back gently on both lap bars.
3. To slow down the mower during reverse operation, push forward gently and right and left lap bars.

Using a Ramp

Use extreme caution when loading and unloading a unit onto a truck or trailer with a ramp. Use only a single, full width ramp; do not use individual ramps for each side of the unit. Having a full width ramp provides a surface for the mower frame to contact if the unit starts to tip backwards. It also reduces the risk of a wheel going off and the machine tipping over. Do not exceed a 15-degree angle between the ramp and the ground or between the ramp and the trailer or truck. When on a ramp avoid sudden acceleration. It is recommended to drive up ramps rear wheels first to reduce the potential for tipping.

Safety Start Interlock System

The machine is equipped with a safety start interlock system. It consists of a seat switch, a hood switch and a charge port switch.

Note: Check mower safety start interlock system prior to each operation.

This safety start interlock system is an important mower safety feature. It should be repaired immediately if it malfunctions.

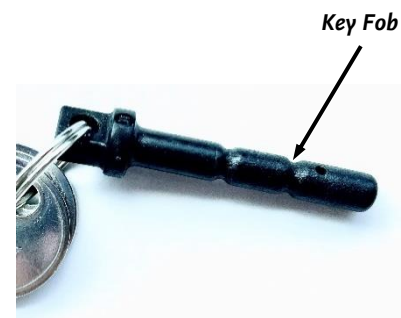
- The mower has a separate seat switch which will stop the drive system and deck motors when the operator is unseated for any reason while the mower is operating. This is a safety feature designed to prevent runaway or accidental entanglement.
- The mower has a separate hood switch which will stop the drive system and deck motors when the rear hood is opened for any reason while the mower is operating. This is a safety feature designed to prevent battery change while mower is operating (battery & mower damage can occur).
- The mower has a separate charge port switch which will stop the drive system and deck motors when a battery charger is connected for any reason while the mower is operating. This is a safety feature designed to prevent charger & connector damage.

Inspection

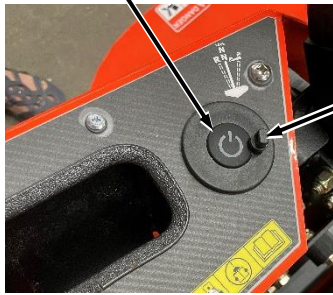
The operator must be on the seat when testing the seat switch.

1. Insert the key fob.
2. Press push button start to turn machine on.
3. Keep lap bars in neutral position.
4. Pull deck blades to ON position.
5. Slowly raise off the seat. The deck blade system should stop.

Note: If the deck blade system fails to stop when the operator is off the seat and if the cause cannot be determined, contact DR Power immediately.



Push Button
Start



Key Fob

Mower Operation

Starting the Mower

1. Insert the key fob.
2. Press push button start ON, button will light up.
3. Type in passcode on the touch screen; (new mower code is "1234").
4. Check the appropriate speed mode by switching High/Low Drive Speed Switch to LOW position.

Note: It is always recommended to start out in low mode/slow speed.

5. Pull right and left lap bars inward until stops are contacted.

6. Pull up on power take off switch to start cutting blades for mowing.

Note: Only engage blades when lap bars are in the NEUTRAL position. Never engage blades when moving.

7. Push lap bars forward for forward motion and pull backwards for reverse motion. Electric brake will engage 0.5 seconds after both lap bars are returned to neutral.

Stopping the Mower

1. Return lap bars to the Neutral/Stop position.
2. Push down on the power take off switch to turn off the blades.
3. Push lap bars outward into the neutral slots. After 0.5 seconds brakes will engage.
4. Push button to the OFF position.
5. Remove push button key fob.

Note: If operator leaves seat with mower in the ON position, the unit will need RESET by pressing the push button start from OFF to ON.

Driving the Mower

CAUTION

Never make sudden stops or reverse direction. The steering is designed for SENSITIVE response. Rapid movement of the steering control levers in either direction could result in a reaction of the machine that can cause serious injury.

CAUTION

Rapid movement of lap bars is not recommended as damage to the electric system components may occur.

After pressing the push button start to ON position:

- **To go forward**, push both lap bars forward an equal distance.
- **To go in reverse**, pull both lap bars rearward an equal distance.
- **To turn left**, move the right lap bar farther forward from neutral than the left lap bar.
- **To turn right**, move the left lap bar farther forward from neutral than the right lap bar.
- **Zero radius turn**, move one lap bar forward and the other lap bar back of neutral. This will allow the drive wheels to counter-rotate.
- **To stop**: move both lap bars to neutral, middle position and push levers outward into the neutral slots.

Note: For emergency stops, turn the push button start to the OFF position. This will shut down the traction drive system and the deck blade system.

- **To decrease speed:** gently pull back on both lap bars to decrease speed when moving forward. When moving in reverse, gently push forward on both lap bars.
- **To increase speed,** increase the lap bars distance from neutral. The farther forward the lap bars are from neutral, the faster the machine will travel forward. The farther back the lap bars are from neutral, the faster the machine will go in reverse. Changing the drive speed control switch from low to high will increase or decrease the speeds of mower in forward, reverse and while turning.

Lap Bars

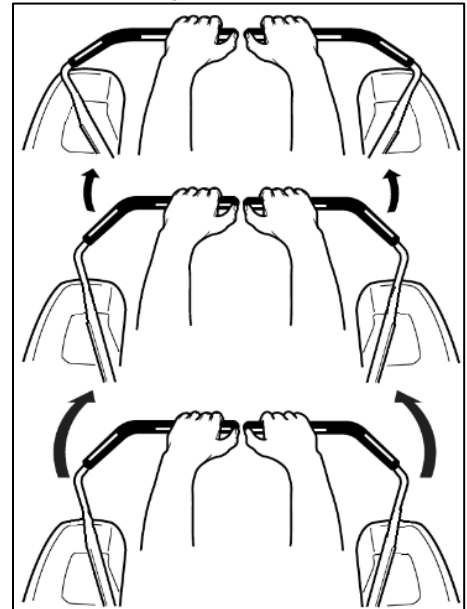
WARNING

The lap bars are very responsive: For smooth operation, move controls slowly, avoid sudden movement. Use caution when making turns and avoid over-steering. Slow speed practice maneuvers are recommended to become familiar with these characteristics before attempting high speed operation.

1. To move forward, place your hands on the bars and slowly push forward.
2. To speed up, continue to push the bar further. To slow down, slowly move the lap bars toward neutral.

Note: The lap bars of the mower respond quickly. Make sure to move the lap bars gradually.

Lap Bar Controls

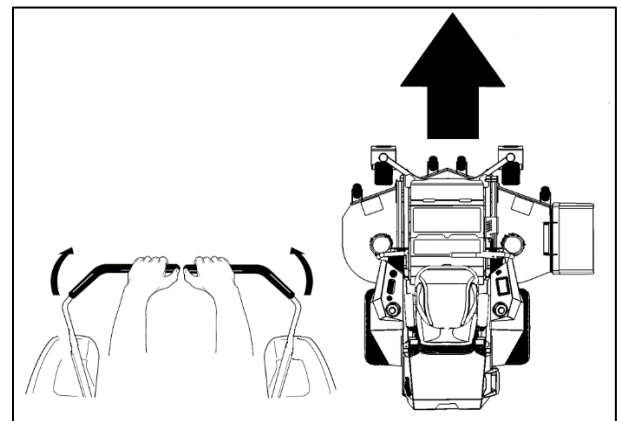


Mower Movement

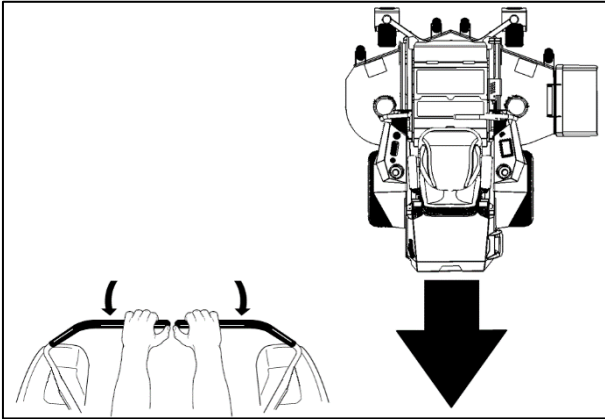
Forward Travel

Slowly move both lap bars forward at the same time, from neutral. Slow down and repeat.

Forward Travel



Reverse Travel



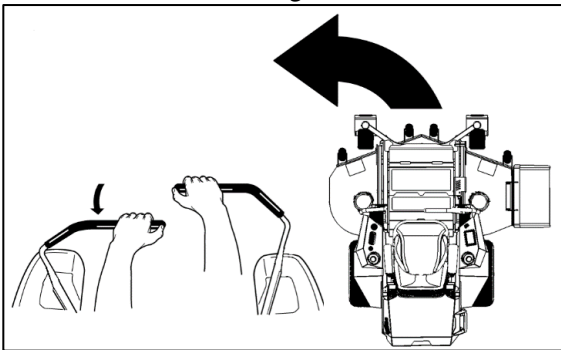
Reverse Travel

! WARNING

The operator's view is limited when driving in reverse. If possible, do not mow in reverse. Always look down and behind before and while backing up.

Slowly move both lap bars at the same time, back from neutral.

Executing Turns

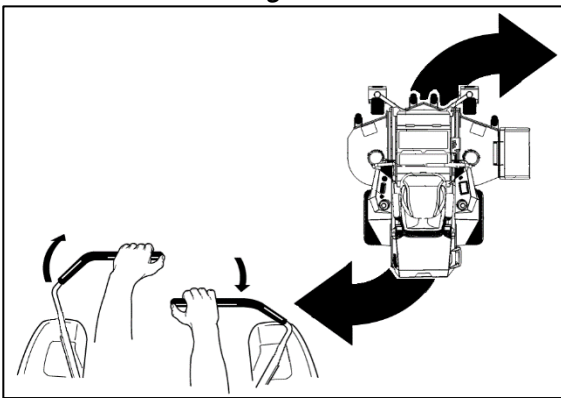


Turning Around a Corner

Bring one lap bar slowly back toward neutral while driving forward. Repeat several times.

Note: To prevent pivoting on the tire tread, keep both wheels pointed slightly forward. Fig. 14

Turning In-Place



Turning In Place (Zero Turn)

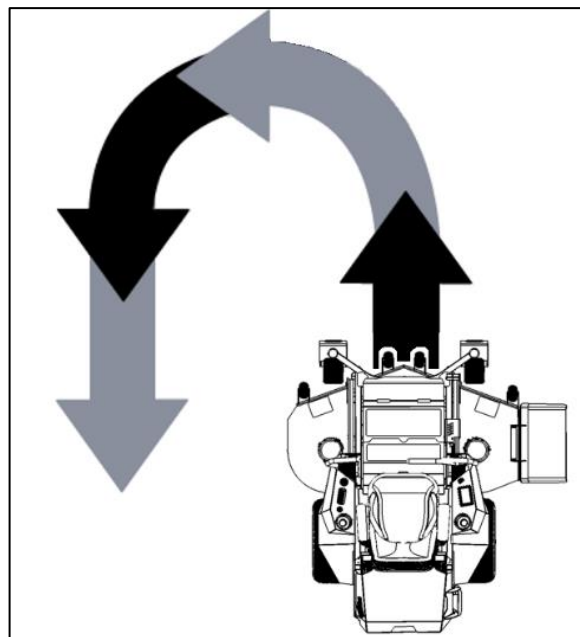
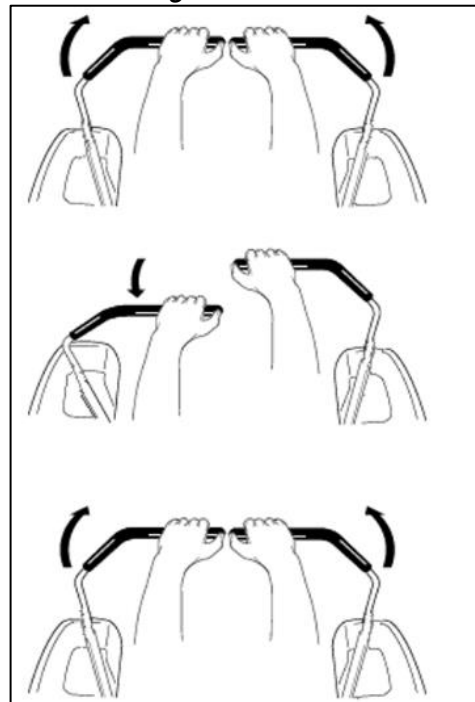
To turn in place, slowly move one lap bar forward from neutral and One lap bar back from neutral at the same time. Repeat several times.

Note: Changing the amount each bar is pulled, forward or back, changes the "pivot point".

Executing An End-of Row Turn

1. Slow down at the end of the row.
2. Move the right lap bar forward slightly while moving the left lap bar back to center and then slightly back from center.
3. Begin mowing forward again.

Executing an End-Of-Row Turn



Operating Suggestions

Direct grass discharge to right side away from un-mown area. Select a mowing pattern that directs grass discharge towards the outside, not towards center, of mowing area. Generally, this means using a pattern utilizing left turns because discharge is to right. In any case, avoid throwing grass discharge onto un-mowed area because grass is then mowed “twice”. Mowing twice puts an unnecessary load on the unit and reduces mowing efficiency.

When mowing a lawn for the first time cut grass slightly longer than normal to avoid scalping uneven terrain. When possible, it is best to use the cutting height that was used in the past. When cutting grass taller than six inches, you may want to mow the lawn twice to achieve a better quality of cut.

During normal mowing, cut only about 1/3 of the grass blade. Cutting more than that is not recommended unless grass is sparse as it is the end of the mowing season.

Alternate mowing direction to keep the grass growing straight and better dispersion of the clippings.

Remember, grass grows at different rates at different times of the year. Mow more often in the early spring to maintain the same cutting height. As the growth rate slows in mid-summer, mow less frequently. If you cannot mow at a regular interval, mow at a high cutting height; then mow again two days later at a lower cutting height.

Raise the cutting height of the mower if the cutting width of the mower is wider than the previous mower. This ensures that uneven turf is not cut too short.

Raise the cutting height of the mower if the grass is slightly taller than normal or if it contains a high degree of moisture. Then mow it again with the cutting height set lower.

Note: *Keep blades sharp. Many problems with incorrect cutting patterns are due to dull blades or blades which have been sharpened incorrectly. Information on sharpening blades is listed in this manual's maintenance section. Blade sharpness should be checked regularly.*



Keep the chute down on the deck to prevent flying objects from injuring or hitting people.

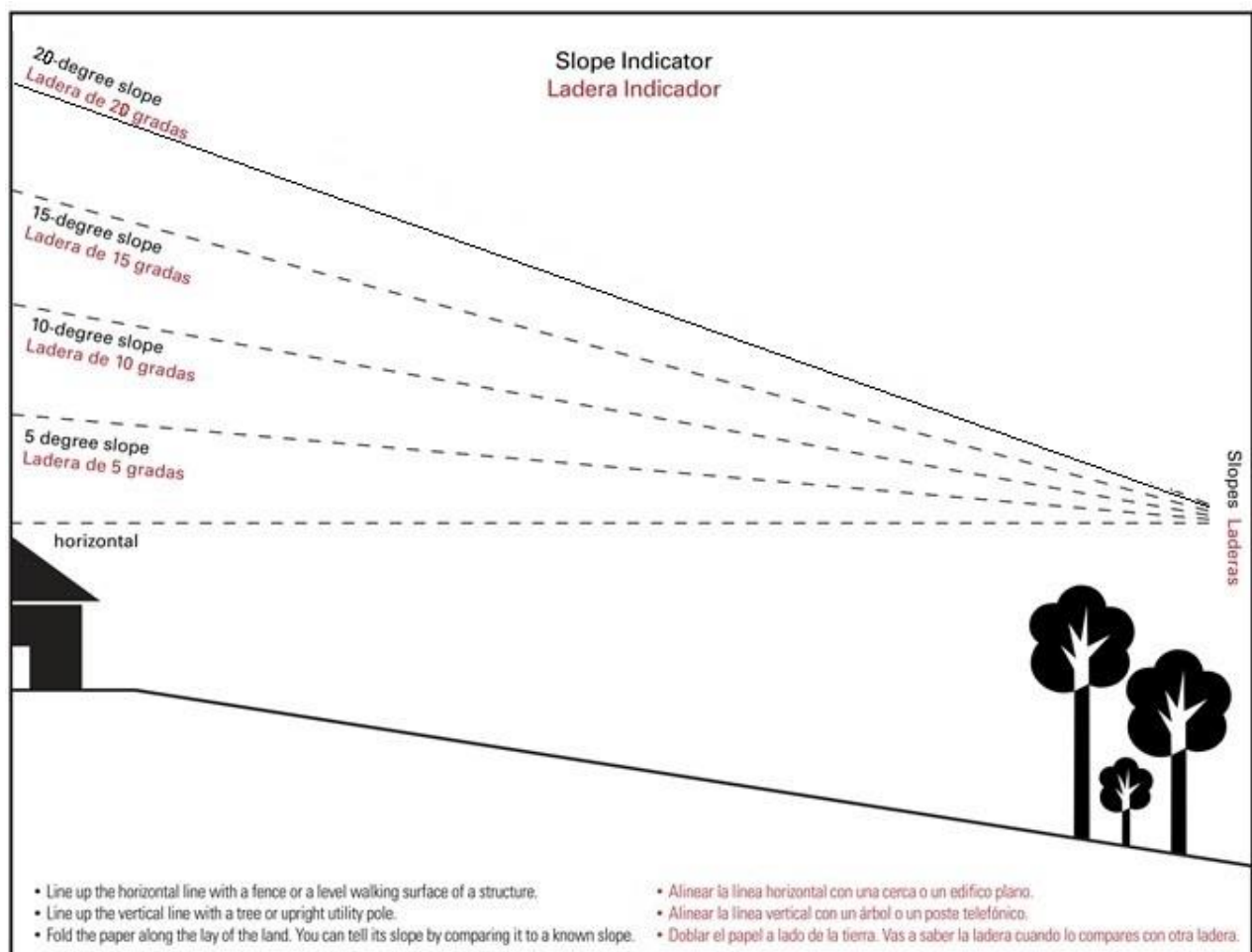
Mowing on Slopes

Refer to Slope Indicator, below, when determining the degree of slope to be mowed. If any loss of traction is detected, wait until the condition that caused the problem is resolved before attempting to operate on the slope again.

WARNING

Slopes are a major factor in loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up on the slope or feel uneasy; do not mow it. Always take the following precautions when using this machine on slopes:

- Do not use the mower on slopes greater than 15 degrees. Doing so could cause the machine to tip over and result in serious injury or damage to your machine.
- Turn slowly and on the most level part of the slope.
- Maximize traction by turning the front of the machine uphill, rather than downhill.
- Exercise extreme caution when changing direction on slopes.
- Never operate near drop-offs, ditches, or embankments.
- Never operate on wet or slippery slopes.
- Do not tow on slopes.
- Operate the mower at much slower speed when mowing on slopes.



Loss of Steering Control

When operating on slopes up to 15 degrees, be aware of any conditions that may cause the mower drive tires to lose traction. Loss of drive tire traction can cause loss of steering control.

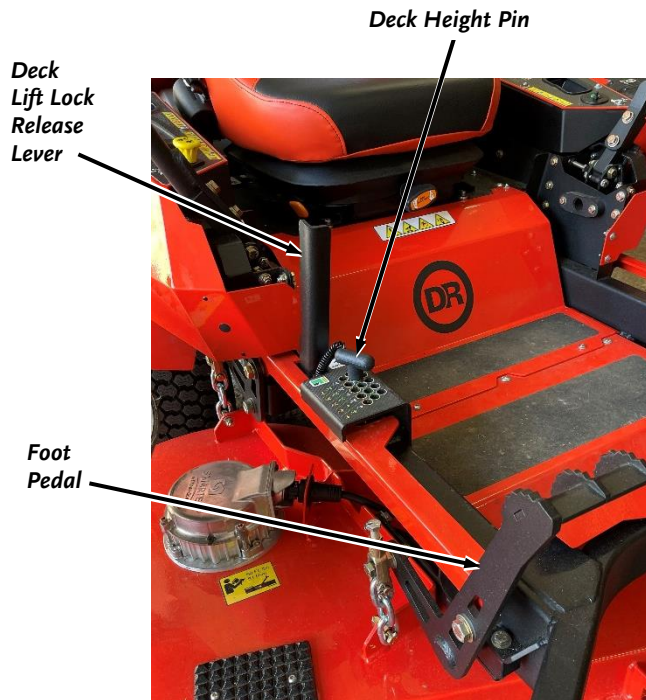
If steering control is lost:

1. Disengage the Blade.
2. Return lap bars to neutral.
3. Turn mower to OFF position.

Terrain conditions can affect traction resulting in possible loss of machine control. Some conditions to be aware of are:

- Wet terrain
- Holes, ruts, and washouts
- Mounds of dirt
- Sand, loose dirt, gravel, and clay
- Dense and tall grass
- Tire pressure

Attachments mounted to the mower will also affect the way it handles on a slope. Be aware that each attachment's characteristics vary.



Deck Cutting Height Adjustment

1. Change the deck height by pushing the foot pedal on the right side of the frame to the furthest forward position until locked.

Note: Adjust deck height from 1.5 to 5.0" in $\frac{1}{4}$ inch increments.

2. Place the deck height pin in the marked hole for desired cutting height.
3. With the deck height pin firmly in place, proceed to push the foot pedal forward and pull back on deck lift lock release lever.
4. Slowly lower the deck with the foot pedal onto the deck height pin.

Note: Using the foot pedal, the deck can be quickly raised while mowing, to avoid stumps, rocks or other obstacles that can damage the mower deck.

Note: When lowering the deck with foot pedal, the deck will not go below previously selected height.

Anti-scalp Wheels

Anti-scalp wheels are designed to minimize scalping when mowing on rough, uneven terrain.

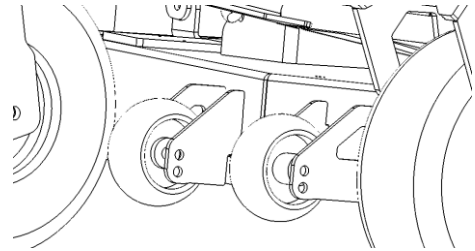
1. Set the mowers cutting height.
2. Adjust the anti-scalp wheels so they extend below the deck but **do** not contact the ground.

Note: Wheels should always be at least 1/4" to 3/4" below the deck.

3. With the unit sitting on a flat level surface, the wheel position can be adjusted up or down, 3/4" to 1-3/4" below the blade surface, as needed.

Note: Move the wheels up or down, in 1/2" increments, using the different axle mount holes in the wheel mount bracket.

Anti-scalp Wheels



Braking

The drive brakes will automatically engage when mower lap bars are in the neutral position or there has been no operator input. The drive brakes are engaged when the mower is shut off or the batteries are removed.

To move the mower without power, push or tow, the drive brakes must be manually released.

Manual Brake Release

WARNING

The mower will roll downhill with the drive brakes released. Block the rear tires to prevent mower from rolling.
Never drive the mower with drive brakes released.

Tools and Needed:

- 1" Wrench

To disengage the drive brakes;

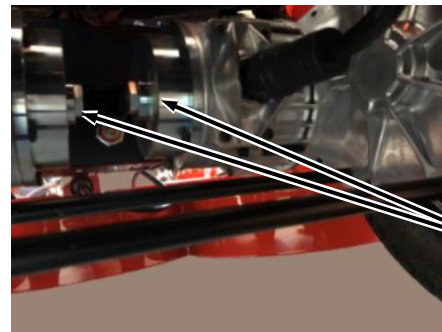
1. Turn the mower off.
2. Remove all battery packs.
1. Loosen the drive brake override plugs using a 1" wrench. Turn counter-clockwise three full turns.

Note: The drive brake override plug is located on the back center of each rear wheel drive motor. Access is from under the rear of mower.

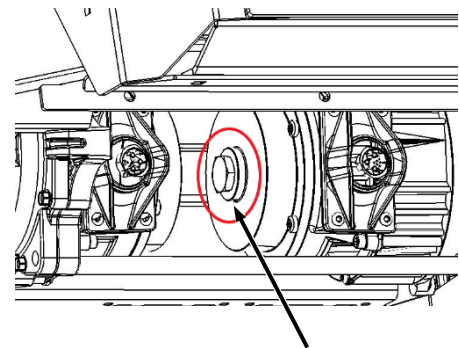
2. With both drive brake override plugs loosened, the brakes will now be released and the mower should roll.

To engage the drive brakes;

1. Tighten the drive brake override plugs using a 1" wrench. Turn clockwise until they seat on the motor. Torque the override plugs to 17-21 ft lbs.



Drive
Brake
Override
Plugs



Drive Brake
Override Plug

NOTICE

Failure to re-engage drive brake override plugs could cause serious damage to your mower and void mower warranty.



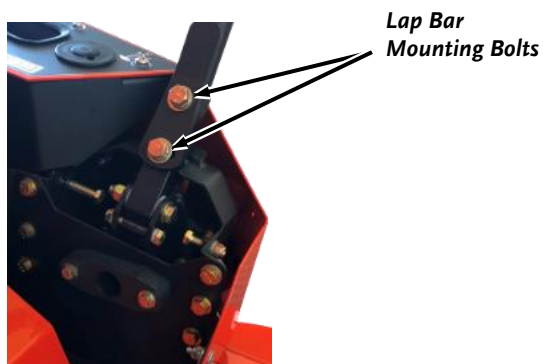
Seat Lever

Seat Adjustment Knob

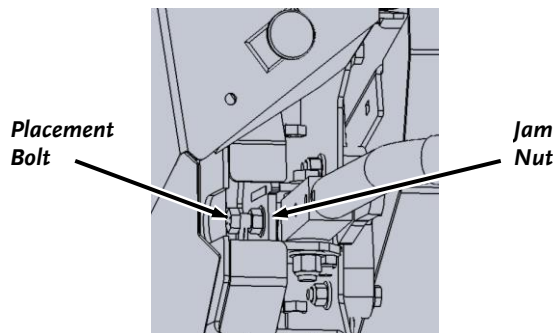


Lap Bars

Lap Bar Mounting Bolts



Lap Bar Mounting Bolts



Placement Bolt

Jam Nut

Seat Adjustment

The seat can be adjusted forward and rearward by adjusting the seat lever. Make sure the seat is locked in place after positioned.

Seat ride firmness can be adjusted by rotating the seat adjustment knob clockwise to increase firmness and counter-clockwise to reduce firmness.

Lap Bar Adjustment

To adjust the lap bar alignment

1. loosen the mounting bolts and rotate the lap bar forward or rearward.
2. Tighten the mounting bolts when alignment is complete.

To adjust the lap bar placement

1. loosen the jam nut and adjust the placement bolt, in or out, to properly set the bar end spacing.
2. Tighten the jam nuts when the lap bar is in the correct place.

Safe Servicing Practices

 WARNING

- This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.
- Wait for all movement to stop before adjusting, cleaning or servicing the mower.
 - Any maintenance operation that requires the removal of safety covers should be performed by a trained service technician.
 - Repairs or maintenance requiring power should be performed by trained maintenance personnel only. Read and observe safety warnings in front of the manual.
 - Never work under the machine or any attachment unless machine is safely supported with jack stands.
 - Use only appropriate jack stands, with a minimum weight rating of 2000 pounds (907.2 kg) to block the unit up. Use in pairs only. Follow the instructions supplied with the vehicle stands.
 - Allow machine to cool before servicing.
 - Tighten nuts and bolts.
-

Note: Always turn mower OFF and disconnect battery (remove all battery packs) when any maintenance or repairs are performed on the mower.

Maintenance

Regular maintenance is the best prevention for costly downtime or expensive, premature repair. Remain alert for unusual noises, they could be signaling a problem. Visually inspect the machine for any abnormal wear or damage. A good time to detect potential problems is while performing scheduled maintenance service. Correct any problems as quickly as possible.

Some repairs require the assistance of a trained service mechanic and should not be attempted by unskilled personnel. Consult DR Power customer service when assistance is needed.

When servicing the machine, make sure it is safely supported with jack stands. Jack stands must have a minimum weight rating of 2000 pounds (907.2 kg) to block the unit up. Use in pairs only. Follow the instructions supplied with the vehicle stands.

Torque

Torque Values	
Wheel (lug) Nuts	65 to 75 ft.-lbs.
Blade spindle bolt bottom	60 ft.-lbs.
Drive Brake Override Plugs	17 to 21ft.-lbs.

 WARNING

Make sure to tighten drive wheel lug nuts and blade spindle bolts. Failure to correctly torque these items may result in the loss of a wheel or blade, which can cause serious damage or personal injury. Call DR Power Products or a DR Power Products Dealer for assistance.

When the machine is first operated, torque check the all lug nuts after the first 2 hours of operation and following removal for repair/replacement. For normal operation, torque check the all lug nuts every 100 hours of operation.

Cleaning the Mower

WARNING

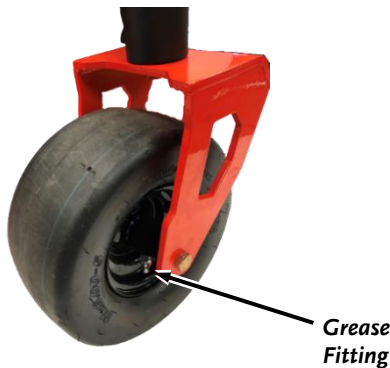
- DO NOT use hands to clean under the mower. Use a stick or a similar instrument.
- Keep the battery compartment, deck and operator's station clean of accumulated trash, grass clippings, and other debris.
- Clean flammable material from machine with dry cloth or compressed air.
- DO NOT spray battery/electronics compartment with water.
- DO NOT use solvents, harsh cleaners or abrasives.

Inspect mower for grass clippings and wire and string tangles after each use. The underside of the mower deck may collect a buildup of grass clippings and dirt, especially when grass is wet or has high moisture content. This build-up will harden, restricting blade and air movement and will probably show a poorer quality of cutting. Therefore, it should be removed after each use.

To clean the mower:

1. Park the mower on level ground.
2. Place the steering control levers in the neutral position.
3. Place the power take off switch in the OFF position.
4. Raise the deck to transport position.
5. Turn the mower OFF.
6. Remove the push button key fob.
7. Disconnect the battery by removing all battery packs from the battery compartment.
8. Use a stick or similar instrument to clean any debris from under the mower and from the discharge chute.
9. Clean the battery and drive motor compartments, mower deck, seat etc. of all dirt and debris.

Note: Prevent fires by keeping battery compartment, deck and operator's station clean of accumulated trash, grass clippings, and other debris.



Maintaining the Mower

NOTICE

Recommended maintenance is to be performed at the beginning of each mowing season and after every 50 hours of operation.

Tires

Tools Needed:

- Tire Pressure Gauge
- Air Compressor

1. Remove the Valve Stem Protective Cap and check the tire pressure with a Tire Pressure Gauge.

Note: For level mowing, maintain an air pressure of 12 psi of all four tires.

Lubrication

Use SAE multi-purpose grease for front wheel bearings.

Electrical System

No user serviceable parts are in the electrical compartment.

Mower Blades

Make sure to check the mower blades before each use. Keep the mower blades sharp.

WARNING

- Never attempt to straighten a bent blade by heating or weld a cracked or broken blade as the blade may break and cause serious injury. Replace worn or damaged blades.
- Always wear adequate eye protection when grinding mower blades. Mower blades are sharp and can cut. Make sure to wear gloves and use extra caution when servicing them.

DANGER

Never work with blades while mower push button is ON. Turn mower OFF and disconnect battery by removing all the battery packs. Block up mower when you must work under it. Always check for blade damage if mower strikes a rock, branch or other foreign objects during mowing.

Mower Blade Removal

1. Use a floor jack to raise the front of mower.
2. Hold the blade to the motor shaft from underneath.
3. Use a 3/4" wrench or socket to remove the hex head bolt.

Note: *If needed, use a 1-1/4" channel lock pliers to keep the blade adapter from turning while removing the blade bolt.*

4. Remove the blade adapter.

Mower Blade Service

Sharpen - Sharpen the mower blade with the use of a hand file.

Balance - To check the blade for balance, place the blade on an inverted line punch or 1/2" bolt. The blade should not lean or tilt. Spin the blade slowly by hand, blade should not wobble. If blade is out of balance, balance it before reinstalling on the mower.

Note: *A commercial balancing tool is available through most hardware supply stores.*

Straightness - Lay the mower blade on a flat surface and check for distortion. Replace any distorted blade.

Mower blade installation

Note: *Make sure that the blade adapter is seated properly on the blade motor shaft before tightening the blade cap screw.*

1. Use a floor jack to raise the front of mower.
2. Use a 3/4" socket with a torque wrench to attach the blade to the motor.

Note: *If needed, use a 1-1/4" channel lock pliers to keep the blade adapter from turning.*

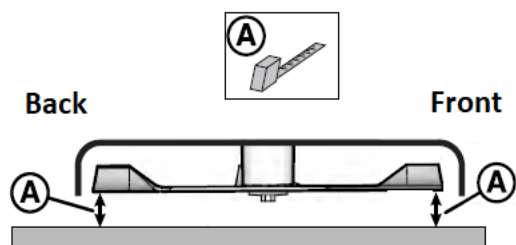
WARNING

Failure to correctly torque the bolt may result in the loss of the blade which can cause serious injury.

3. Torque the cap screws to 60 ft-lb on the motor shafts when installing blades.

Note: *The blade sail (curved part) must point up, toward the inside of the deck to ensure proper cutting. All three cutting blades rotate clockwise.*

Note: *When mounting blades, rotate them after installation to ensure blade tips do not touch each other or sides of the mower.*



Cutting Height Adjustment

Mower Deck

Determining if the Deck Leveling Needs to be Adjusted

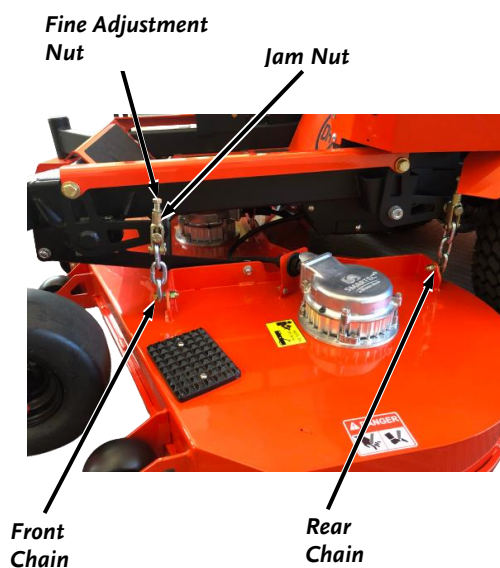
1. Park the unit on a flat, level surface.
2. Disengage the Power Take Off
3. Engage the parking brake
4. Turn the push button start switch to OFF, and remove the key fob.
5. Lock the deck lift pedal in the TRANSPORT position.
6. Place the cutting height adjustment pin in the 4" position and lower the deck lift pedal until the deck lift arm contacts the cutting height adjustment pin.
7. Verify that the tires are inflated to the correct pressure.
8. Verify that the mower blades are flat, not bent or broken.

Note: Replace bent or broken blades.

9. Position the outside mower blades so they face front-to-back.
10. Measure the distance between the front mower blade tip (A) and the ground. If the distance is not equal to 4" (10,2 cm), proceed to "Deck Leveling Adjustment".
11. Measure the distance between the rear mower blade tip (A) and the ground. If the distance is not equal to 4-1/4" (10,8 cm), proceed to "Deck Leveling Adjustment".
12. Repeat steps 10 and 11, above, for the other side of the machine.

Deck Leveling Adjustment

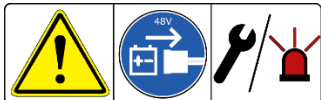
1. Set the mower deck to the 4" (10,2 cm) cutting height position.
2. Measure the distance between the front mower blade tips (A) and the ground.
3. If the measurement is greater than 4" (10,2 cm), loosen the jam nut and turn the front chain fine adjustment nut counter-clockwise to lower the deck.
4. If the measurement is less than 4" (10,2 cm), loosen the jam nut and turn the front chain fine adjustment bolt clockwise to raise the deck.
5. Repeat steps 2 through 4, above, until the distance is 4" (10,2 cm) (9,5 cm to 10,8 cm).
6. Tighten the front jam nut.
7. Measure the distance between the rear mower blade tip (A) and the ground.
8. If the measurement is greater than 4-1/4" (10,8 cm), loosen the jam nut and turn the rear chain fine adjustment nut counter-clockwise to lower the deck.
9. If the measurement is less than 4-1/4" (10,8 cm), loosen the jam nut and turn the rear chain fine adjustment bolt clockwise to raise the deck.
10. Repeat steps 7 through 9, above until the distance is 4-1/4" (10,8 cm).
11. Repeat steps 1 through 10, above, for the other side of the machine.



Chapter 5: DR Power E-Series Lithium Battery Pack and Electrical System

The DR Power ZT5E mower is powered by a 48-volt electrical system and up to 3-E-Series Li-ion battery packs. When maintained properly, will provide years of useful life.

Battery and Electrical System Safety Practices



Disconnect the battery before maintenance or in an emergency. If the steps are not performed, there is a chance for injury.

⚠ WARNING

- Any maintenance operation of electrical components should be performed by DR Power trained service technician.
 - DO NOT attempt to cross vehicle roads or railways with low battery levels.
 - DO NOT spray battery/electronics compartment with water.
 - Always use insulated tools on battery packs.
 - Mower blades can be engaged before the mower has started moving, always ensure the power take off switch is pushed down (disengaged) until you are ready to mow.
 - Keep the area clear of bystanders while the blades are engaged.
 - All maintenance and storage areas should be properly ventilated in accordance with applicable fire codes and ordinances to avoid fire hazards.
 - Never allow flames, sparks or smoking near battery packs.
 - Keep battery packs out of reach of children.
 - Never modify or remove safety devices.
 - Prevent the battery terminals from touching any metal mower parts when removing or installing battery.
 - Do not allow metal tools to short between the battery terminals and metal mower parts.
 - Always keep protective battery cover in place (hood closed).
-

Battery Pack Charging and Maintenance

The DR E-SERIES BATTERY PACK uses sealed, Lithium-Ion Battery cells. You **MUST** charge the Battery Pack for at least 90 minutes before you use it for the first time. If you do not charge it before using it, the Battery Pack's charging capacity may decrease.

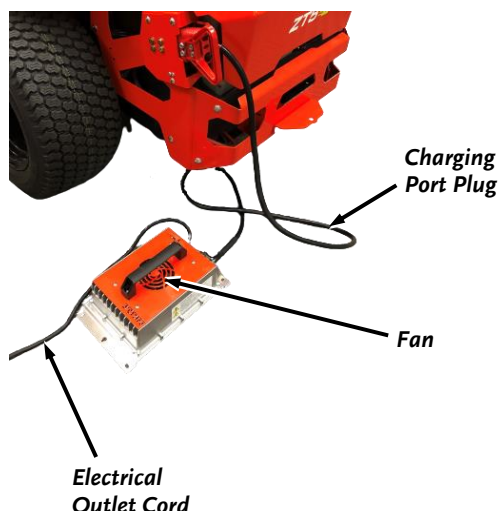
NOTICE

To prolong the battery pack cycle life and make sure the packs stay in good condition, refer to ***“Handling the Battery Pack and Charger Safety”***.

The battery pack will need to be charged when battery voltage becomes low and the drive motor slows to “limp” mode (2mph). When the battery discharges to this point, disengage the mower blades and return the mower to the battery charging area.

Always charge battery packs after each use. Immediately charge the battery at least 15 minutes after a complete discharge. Once charging is complete, charger can be disconnected. Charger may not turn back on once charging is complete.

LEMC2348 Charger



Charger: LEMC2348 (Standard Charger)

NOTICE

You should operate the Battery Charger in a dry place with temperatures between 32°F (0°C) and +100°F (+37.8°C). Operating above +100 °F can cause degradation of the Battery Pack performance. The battery pack will not charge completely at low temperatures (below 0F).

The LEMC2348 charger will charge from a Standard 110-120VAC outlet at 23 amps-48volts. The line current draw will be up to 15 amps from the wall outlet.

Note: It is recommended to have a dedicated circuit for charging.

The LEMC2348 charger has a fan on the top of unit for cooling and 2 cords. The cord with the RED Anderson Connector plugs into the charging port of the mower and the second cord plugs into the electrical wall outlet. The charger also has a light on the front of the unit, RED indicates charging and GREEN indicates battery is charged.

Charging Battery Packs When Not Installed on Mower

12. Connect the electrical outlet cord of the charger to a 120VAC outlet. When the battery is not installed on the mower (no load condition): The Green/Red light will alternately flash on.

13. Insert the charging port plug into the battery pack.

Note: The light on the charger will flash red, indicating between 0 and 99% charge. When the battery is fully charged, the light will be a solid green, indicating charging is complete.

14. Unplug the charger from the outlet and remove the charging plug port from the battery pack.

Charging Battery Pack When Installed on Mower

Note: Batteries do not need to be removed from the mower for charging.

1. Install the battery packs on the mower. Refer to “Installing the Battery Pack”.
2. Insert the push button key fob.
3. Press the push button start to start the mower (activate Pack Management System).

Note: User passcode on the touch screen is not needed.

4. Connect the charging port plug from the charger into the mower charge port in rear of the mower.

Note: Mower will not drive when charger is plugged into mower charge port.

5. Plug the electrical outlet cord from the charger into a 120VAC outlet (read charger placard). The light on the charger will turn red and its cooling fan will turn on. This will indicate the charger is functioning properly.
6. A fault code “No Charger Power Detected” will come up on display screen until the charger is turned on.

Note: If state of charge is over 95% fault code will not display.

- The fault code will go away once the charger is plugged in and screen displays charging current, amps and display battery pack voltage.
 - The fault code display will automatically turn off after 15 minutes, but the charger will continue to charge.
7. DO NOT add or remove battery packs from mower while charging.
 8. When the unit is fully charged, the light on the charger will turn green and its cooling fan will turn off.
 9. To disconnect the charger, unplug the charger cord from the wall outlet first. Then unplug the charger from mower charging port.

Note: If the charger connector **is not** removed from the mower charge port the mower will not provide power to the drives and a fault code will appear on the display. To fix the fault, remove the connector from the mower.

10. Press the push button start to reset mower.

Installing the Battery Pack (ZT5E Mower)

11. Open the hood and insert the Battery pack into the Mower.
12. Lower the battery pack into the receiver. Ensure the Battery is pushed in completely so the latch locks it in place. Repeat for the remaining battery packs.

Mower Charge Port



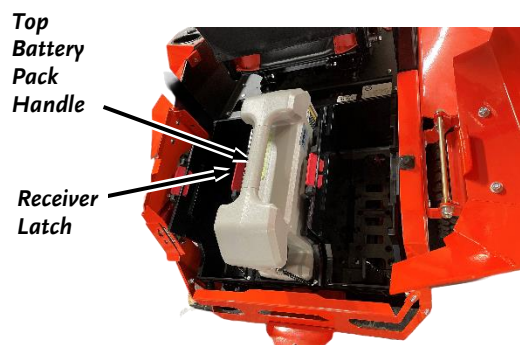
Charging Port Plug



Battery Pack

Hood





Removing the Battery Packs

1. Release the hood latch by depressing the center button.
2. Lift the hood to full upright position.
3. Remove the dust plug from the battery handle storage position. Allow the plug to hang from the tether.
4. Grasp the top battery pack handle and with the opposite hand push the red receiver latch toward the battery handle.
5. Lift the battery straight up out of the mower, release the latch.
6. Insert the dust plug onto the receiver connector.

Disposing of the Battery

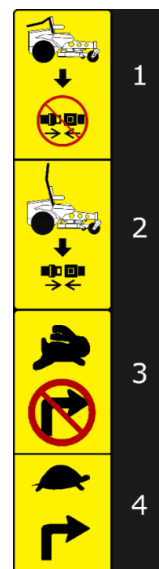
NOTICE

Please dispose of used batteries in a responsible and environmentally sound way.
Never throw away used batteries in your household trash.

Call your local Solid Waste Management District or your local waste handler to locate the collection site nearest you. Some collection sites recycle Batteries year-round; others collect them periodically. You can also visit the Web site of Earth 911 for more information [www.earth911.org]. The site lists recycling centers located near you.

Roll Over Protection System

1. When the roll bar is in the down position, DO NOT keep the seatbelt fastened while operating the mower.
2. When the roll bar is in the up position, keep the seatbelt fastened while operating the mower.
3. When moving FAST 🐇, do not make sharp turns.
4. When moving SLOW 🐢, it is safer to make sharp turns.



To Fold the Roll Over Protection System:

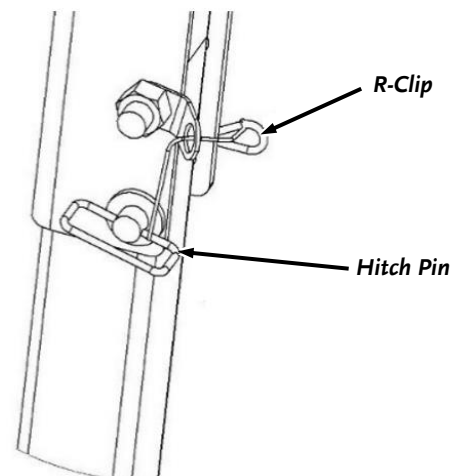
WARNING

To avoid personal injury: Make sure that both Hitch Pins are properly installed and secured with R-Clips.

1. Remove both R-clips and then pull outward on hitch pins while steadying the upper roll over protection system bar.
2. Fold the roll over protection system slowly rearward until lower holes align.
3. Reinstall hitch pins and R-clips into holes in roll over protection system frame to lock.

To Raise the Roll Over Protection System to Upright Position

1. Remove both R-clips and hitch pins while steadying the upper roll over protection system bar.
2. Raise roll over protection system to the upright position.
3. Align hitch pin holes, insert both hitch pins and secure with R-clips.



Towing: (ZT5E-60 only - optional bolt-on hitch required)

! WARNING

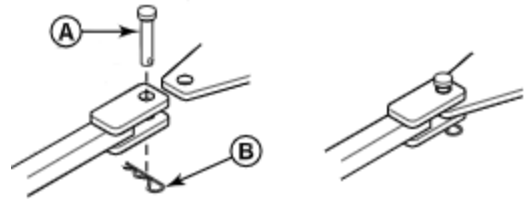
- Towing loads can cause loss of traction and loss of control on slopes. Never tow on slopes greater than 5 degrees (9% grade). See the SLOPE OPERATION section.
- Excessive towing loads can damage the mower drive and cause loss of control.

Reduce speed when towing; Do not exceed 3 mph. Occasional towing only.

Towing Limits

Mower Model	PPZ5060S000N
Max Total Rolling Weight (trailer plus load)	200 lbs.
Max Tongue Weight	50 lbs.
Max Towing Slope	5° (9%)
Max Towing Speed	3 mph

Secure the trailer to the mower with an appropriately sized (A) clevis pin (5/8" max.) secured with a clip (B).



Reduce towed weight when operating on slopes. The surface being driven on greatly impacts traction and stability. Wet or slippery surfaces can greatly reduce traction and the ability to stop or turn. Carefully evaluate the surface conditions before operating the mower and trailer.

Chapter 7: Troubleshooting

Most problems are easy to fix. Consult the Troubleshooting Table below for common problems and their solutions. If you continue to experience problems, contact us at www.DRpower.com or call toll-free 1-800-DR-OWNER (376-9637) for support.

WARNING

Before performing any maintenance procedure or inspection, turn the machine off.

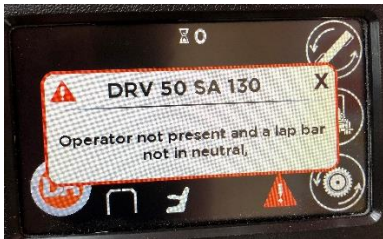
Troubleshooting Table

SYMPTOM	POSSIBLE CAUSE AND REMEDY
<i>For All Electrical Problems</i>	⇒ RESET Mower Primary Control Computer. ⇒ Turn the mower OFF for approximately 5 seconds with push button & then turn it back ON.
<i>Mower will not start</i>	⇒ Make sure the push button start is pressed ON, button center is illuminated when ON. ⇒ Make sure the key fob is in place. ⇒ Check all battery connections by making sure battery packs are fully seated and latched in the receivers. ⇒ Check that the battery hood is closed & latched. ⇒ Make sure batteries are charged. NOTE: Battery temperature must be above freezing (32F) to operate the mower.
<i>Mower blades stop while mowing</i>	⇒ When battery voltage becomes low the mowing deck motors will stop and the drive motors will slow to “limp” mode (2mph). When the batteries discharge to this point, they require recharging. NOTE: The mower blades should be disengaged, and the mower should immediately be returned to the battery charging area. Then connect mower to the battery charger.
<i>Loss of deck operation</i>	⇒ The deck fails to operate with fully charged batteries. ⇒ RESET Mower primary control computer by turning mower OFF with push button and wait approximately 5 seconds. Then turn the mower back to ON. If this does not remedy the problem - Contact DR Power Products.
<i>Mower drives stop due to low charge and mower will not move or moves in “limp” mode</i>	⇒ Turn blades off, turn mower OFF, wait approximately 5 seconds. Turn mower back to ON (<i>this resets primary mower controller</i>). NOTE: If manual operation is needed to return to charging station or to move mower without battery power, loosen both Ground Drive Brake Override Plugs to release ground drive brakes. Always push or tow unpowered mower slowly. NOTE: Never drive mower with ground drive brake override plugs loose. Always tighten ground drive brake override plugs to torque to 17 ft-lb before driving. Failure to torque ground drive brake override plugs could cause serious damage to your mower and void mower warranty!
<i>Mower/Battery Packs will not charge</i>	⇒ Check that charger connector is fully seated in mower charge port or battery pack. ⇒ Check all battery connections by making sure battery packs are fully seated and latched in the receivers. ⇒ Battery temperature must be above freezing (32F) to allow charging. ⇒ Reset charger by unplugging it from the wall outlet, wait 20 seconds and re-insert into outlet.

Troubleshooting Table (Continued)

SYMPTOM	POSSIBLE CAUSE AND REMEDY
Uneven cutting height	⇒ The blade(s) are not sharp. Sharpen the blades. ⇒ A cutting blade(s) is/are bent. Install new cutting blade(s). ⇒ The deck is not level. Re-level mowing deck per section XX in this manual. ⇒ The underside of the deck is dirty. Clean the underside of the deck. ⇒ Tires improperly inflated. Adjust air pressure to proper psi. ⇒ A blade spindle is bent. Contact DR Power Products.

Error Code Descriptions and Remedies



DRV = Error Code (Byte Value); SA = System Address

System Address	Mower Module Name
130	Left Lap Bar Sensor Module (LLBSM)
131	Right Lap Bar Sensor Module (RLBSM)
132	Electrical Vehicle Integration Module (eVIM)
134	Left Ground Drive Module (LGDM)
135	Right Ground Drive Module (RGDM)
136	Bluetooth Module
138	Left Deck Control Module (LDCM)
139	Center Deck Control Module (CDCM)
140	Right Deck Control Module (RDCM)
144	Left Safety Supervisor Module (LSSM)
145	Right Safety Supervisor Module (RSSM)

Error Code (Byte Value)	Description	Cause or mower state	User Action
1	Primary Sensor Out of Range		Cycle Push Button Start
2	Current draw is too HIGH.		Cycle Push Button Start
4	Battery voltage is too LOW (for too long)		Cycle Push Button Start
5	Battery voltage is too HIGH (for too long)		Cycle Push Button Start
6	Temperature is too HIGH (for too long),		Cycle Push Button Start, Reduce speed
7	Control controller area network (CAN) Bus communication was lost		Cycle Push Button Start
8	Security communication was lost		Cycle Push Button Start
9	Lap-bar neutral limit switch indicates neutral, but sensor is too far from neutral	Lap Bar shift	Contact service
10	Device has not been system- calibrated	Drive Disabled Until Calibration Completed	Contact service
11	Hardware self-test indicates hardware damage		Cycle Push Button Start. If error persists, contact service
15	Primary sensor is not reliable	Drive Disabled	Contact service
16	The setting is not valid or supported		No drive until resolved, Contact service
17	The device received an invalid or unsupported control mode		No drive until resolved, Contact service
19	E-Motor Disabled	Drive state in Neutral	Cycle Push Button Start
23	CAN Bus Error Encountered	Drive Disabled	Cycle Push Button Start, If error persists contact service
24	Device has reset due to hardware watch dog	Drive Disabled	Cycle Push Button Start
25	System-calibration aborted due to a change in the system	Drive Disabled	Contact Service
26	State is invalid	Drive Disabled	Contact Service
29	The controller has detected that its motor is stalled	Drive Disabled	Cycle Push Button Start. Inspect motor connections
30	The controller has detected that its motor has experienced a failure	Drivability disabled	Contact Service
31	The controller has detected a failure in its switching hardware	Drivability disabled	Contact Service
32	The detected RPM was out of bounds (for too long)		Cycle Push Button Start Contact Service if error continues
33	A system error has occurred causing the system to coast		Cycle Push Button Start
34	The brake circuit is not functioning correctly	Drivability disabled	Inspect Wiring at Motor. Contact Service for assistance
35	The water-detection circuit has found moisture inside the controller housing	Drivability disabled	Allow to dry Contact Service
41	Lap-bar position is not centered for at least one device	Drivability disabled	Return Lap-bar to Neutral position. Cycle Push Button Start

Error Code (Byte Value)	Description	Cause or mower state	User Action
42	Lap bar in during start		Move Lap bars out
43	The PTO is engaged on startup		Cycle the PTO Switch off/on
44	Operator not present while PTO engaged		Cycle Push Button Start
45	Operator is not present OR charger plug connected to mower	Drivability disabled until resolved	Remove Charger plug or Sit on seat
48	The fault buffer inside the device has filled to capacity	Drivability disabled	Cycle Push Button Start. Contact Service
49	Operator not present while brake disengaged	Drivability disabled	Cycle Push Button Start
50	Lap-Bar out of neutral position when operator not present	Drivability disabled	Cycle Push Button Start
51	Lap-Bar out of neutral position and Brake is engaged	Drivability disabled	Cycle Push Button Start. If error persists, contact service
57	Mismatch in another ECU's reported serial number	Drivability disabled until resolved	Contact Service
60	VIM has lost communication with a controller	Drivability disabled	Cycle Push Button Start
62	VIM has detected at least one controller is in its reset state	Drivability disabled	Cycle Push Button Start
70	The VIM has lost communication with a Blade Controller	Blades Disabled	Cycle Push Button Start
71	Low Voltage or Blade Fault Detected	Blades Disabled	Limp Home or Cycle Push Button Start
72	The VIM does not see a POST complete message from a GDM	Drivability disabled	No drive until resolved, Contact Service
95	ECU has features enabled that require loading saved "expected" serial numbers, however "expected" serial number information is not available	Drivability disabled	Contact Service
100	Motor Hall sensor were determined to be ABC phasing while the Phase wires were determined to be CBA.	Drivability disabled	Contact Service (Most likely a swap of two-phase wires will clear up the issue)
101	There should be 120 electrical degrees of difference between the two indexing steps. (Indexing current was not large enough or the vehicle was on the ground)	Drivability disabled	Contact Service
102	Calibrations should not be attempted if the motor has any initial RPM or is on the ground on a hill	Drivability disabled	Contact Service
103	The maximum RPM could not be met.	Drivability disabled, Bus voltage too low	Contact Service
104	The drive took too long to coast to a stop, Drive was not freewheeling	Drivability disabled	Contact Service
105	The algorithm couldn't sync up. Rotor that has not held a good skew angle.	Drivability disabled	Contact Service

Error Code (Byte Value)	Description	Cause or mower state	User Action
106	Current goal for indexing could not be met.	Hardware failure.	Contact Service
107	A Calibration failed due to a dependency that was not met.	Drivability disabled	Contact Service
108	The Calibration expected a locked rotor, but found that it was not	Drivability disabled	Contact Service
115	BMS has reported an error and the vehicle has entered Limp Home mode	"Limp Mode"	Contact Service
116	BMS has reported a SOC value under the configured cutoff and the vehicle has entered Limp Home mode	"Limp Mode"	Contact Service
117	BMS has reported that a charger is connected, and the vehicle has entered Disabled mode	Disabled Mode	Contact Service
118	The eVIM has lost connection to the BMS and the vehicle has entered Limp Home mode	"Limp Mode"	Cycle Push Button Start. If error persists, contact service
BMS000	Cell voltage too HIGH	Disabled Mode	Contact Service
BMS001	Cell volt too LOW	Disabled Mode	Contact Service
BMS002	Over current while charging		Disconnect charger, Contact Service
BMS003	Over current in 1 cell during discharging	Disabled Mode	Contact Service
BMS004	Over current in 2 cells during discharging	Disabled Mode	Contact Service
BMS005	HIGH temperature during charging	Disabled Mode	Allow pack to cool before charging continues. Contact Service if error continues
BMS006	LOW temperature during charging	Disabled Mode	Allow pack to warm before charging continues. Contact Service if error continues
BMS007	HIGH temperature during discharging	Disabled Mode	Allow pack to cool before continuing use
BMS008	LOW temperature during discharging	Disabled Mode	Allow pack to warm before continuing use
BMS009	Battery Pack State of Charge too LOW		Return to charging station
BMS010	Cells have exceeded delta voltage tolerance	Disabled Mode	STOP battery pack use, Contact Service
BMS011	Cells have exceeded delta temperature tolerance	Disabled Mode	STOP battery pack use, Contact Service
BMS012	Pack voltage too HIGH		Disconnect from charger. Inspect Charger. Contact Service
BMS013	Pack voltage too LOW		Return to charging station or inspect battery terminal. Contact Service
BMS014	MOSFET Fault.		Do Not use battery pack. Replace battery pack. Contact Service

Error Code (Byte Value)	Description	Cause or mower state	User Action
BMS015	Battery pack has detected a short circuit		Discontinue use until serviced. Contact Service

Chapter 8: Parts Lists

See parts manual, A0002948444, for complete list of mower parts.

DR® ZT5E Mower & E-Series Battery Pack



3-Year Limited Warranty

Terms and Conditions

The DR® ZT5E machine is warranted for three (3) years or 500 hours, whichever occurs first, against defects in materials or workmanship when put to ordinary and normal consumer use. The 2.5 kWh E-series battery is warranted for five (5) years or 1,000 hours, whichever occurs first.

For the purposes of all the above warranties, "ordinary and normal use" does not include misuse, accidents or damage due to inadequate maintenance.

DR Power Equipment certifies that the DR® ZT5E is fit for ordinary purposes for which a product of this type is used. DR Power Equipment, however, limits the implied warranties of merchantability and fitness in duration to a period of three (3) years or 500 hours, whichever occurs first, in consumer use.

DR Power Equipment certifies that the DR® ZT5E SERIES 2.5 kWh battery and charger is fit for ordinary purposes for which a product of this type is used. DR Power Equipment, however, limits the implied warranties of merchantability and fitness in duration to a period of five (5) years or 1,000 hours, whichever occurs first, in consumer use.

The Limited Warranty on the DR® ZT5E and E-SERIES 2.5 kWh battery pack starts on the date the machine ships from our factory. Each Warranty is applicable only to the original owner.

The warranty holder is responsible for the performance of the required maintenance as defined by the manufacturer's owner's manuals. The warranty holder is responsible for replacement of normally wearing parts such as the tires and blades. Accessories to the machine are not covered by this warranty.

During the warranty period, the warranty holder is responsible for the machine transportation charges, if required. During the warranty period, warranty parts will be shipped by standard method at no charge to the warranty holder. Expedited shipping of warranty parts is the responsibility of the warranty holder.

SOME STATES DO NOT ALLOW LIMITATIONS ON THE LENGTH OF IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

DR Power Equipment shall not be liable under any circumstances for any **incidental or consequential damages or expenses** of any kind, including, but not limited to, cost of equipment rentals, loss of profit, or cost of hiring services to perform tasks normally performed by the DR® ZT5E or E-SERIES 2.5 kWh battery pack.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

Daily Checklist for the DR ZERO TURN MOWER

To help maintain your DR ZERO TURN MOWER for optimum performance, we recommend you follow this checklist each time you use your machine.

- [] Check the general condition of the Mower, e.g.; nuts, bolts, welds, etc.
- [] Check Tire Pressure
- [] Check the blade for tightness, nicks and wear. Remove any wrapped weeds and grass from the Blade Bearing Housing to prevent buildup.

End of Season and Storage

- Remove the battery packs, refer to “Disconnecting the Battery Packs”.
- Store the battery packs and charger in a clean, dry area at temperatures above -4°F (-20°C).
- Charge batteries to 50 to 70%.

Note: Store battery packs indoors.

- Install dust plugs on receiver connectors.
- If you will not use the machine over a long period, cycle (charge and discharge) the battery every 3 to 9 months at temperatures above freezing.
- Wash the outside of the machine with a mild detergent and water.
- Replace all worn or damaged parts.
- Thoroughly lubricate wheel bearings, refer to “Maintaining the Mower”.



800 HINESBURG ROAD, SOUTH BURLINGTON VERMONT 05403

©2022 DR Power Equipment. All rights reserved