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MASPORT ZTR OWNER'S MANUAL

IMPORTANT. Please read the Owner's Manual and Warranty before using this product. The Warranty does not cover damage due to misuse or failure to follow the instructions.

IMPORTANT: **Keep these instructions and the engine booklet in a safe place for future reference. They contain important information about your mower.**

Part №: 543948.A.0

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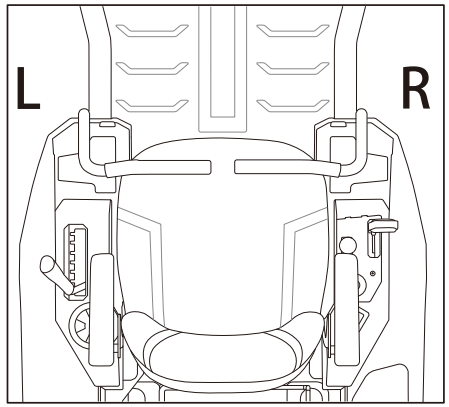
1. General Information

Reference

All references in this manual to the left side or right side and front or back of the machine are from the operator's position. All language translations of this document derive from the initial English source file.



Environmental Disposal

Recycle all packaging, used oil, and batteries according to applicable government regulations.

2 Operator Safety

Save These Instructions

Save these instructions for future reference. This manual contains safety information to make you aware of the hazards and risks associated with the product and how to avoid them. It also contains important instructions that must be obeyed during the initial set-up, operation, and maintenance of the product.

This product is designed and intended for cutting well maintained grass and is not intended for other purposes.

It is important that you read and understand these instructions before you attempt to start or operate this equipment.

Make sure that you are fully familiar with the controls and the correct use of the product.

Know how to stop the unit and disengage controls quickly.

Safety Alert Symbol and Signal Words

The safety alert symbol ⚠ in this manual identifies safety information about hazards that can result in personal injury. The use of **IMPORTANT**, **NOTE**, and **NOTICE** in the text shows clarifications, exceptions, or alternatives to the procedures. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

⚠ DANGER: Indicates an immediately hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Slope Identification Guide

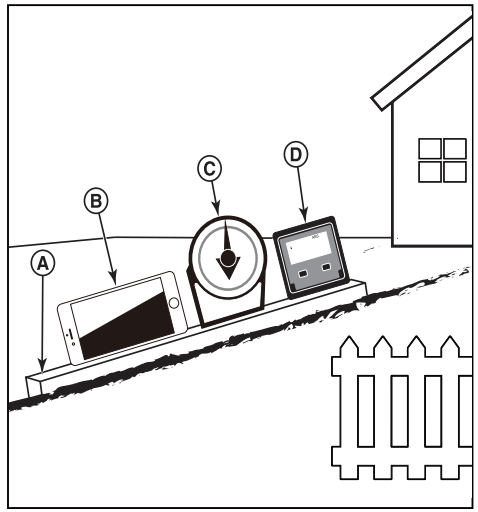


Fig. 1

How to measure the slope of a lawn surface with a smart phone or an angle finder tool:

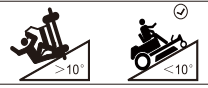
⚠ WARNING: Do not operate on slopes greater than 15 degrees.

1. Use a straight edge at least two (2) feet long (A, Fig. 1). A 2x4 or a straight piece of metal works as well.
2. Angle finder tools:
   a. **Use your smart phone:** Many smart phones (B, Fig. 1) have an in-clinometer (angle finder) located under the compass application (app). Alternatively, you can search your phone's app store for an in-clinometer app.
   b. **Use angle finder tools:** Angle finder tools (C and D, Fig. 1) are available at local hardware stores or online (also called in-clinometer, protractor, angle meter, or angle gauge). Dial type (C) or digital type (D) work, others may not. Read and obey the user instructions supplied with the angle finder tool.
3. Put the two (2) feet long straight edge along the steepest part of the lawn slope. Put the board up and down the slope.
4. Lay the smart phone or angle finder tool on the straight edge and read the angle in degrees. This is the slope of your lawn.

Safety Decals

The following safety symbols appear on this product. Before you operate the mower, please study them and learn their meaning.

IMPORTANT: If the safety decals become worn or damaged, and cannot be read, order replacement decals from your authorized service center.

Symbol	Explanation
	Safety alert symbol
	Read operator's manual
	Maintain safety devices
	Avoid amputation injury
	Keep bystanders away
	Look behind while backing
	Never carry children
	Avoid steep slopes
	Keep hands and feet away
	Avoid thrown objects
	Do not step
	Do not operate the mower without the discharge chute in its proper place.
	Do not touch the hot surface

Safety Instructions

⚠ WARNING: Read and follow all safety rules and instructions in this manual before attempting to operate this machine. Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING: This machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

CALIFORNIA PROPOSITION 65: Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

General safety practices

- Read, understand, and follow instructions and warnings in this manual and on the machine, engine, and attachments.
- Only allow operators who are responsible, trained, familiar with the instructions, and physically capable to operate the machine.
- Do not carry passengers and keep bystanders away.
- Do not operate the machine while tired, ill or under the influence of alcohol or drugs.
- Do not operate the machine during severe weather, such as lightning or thunderstorms.
- Follow the manufacturer's recommendation for wheel weights and/or counterweights.
- Never allow children under 14 years of age to operate the mower. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the mower and should be trained and supervised by an adult.
- Data indicates that operators age 65 and above are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the mower safely enough to protect themselves and others from serious injury.
- If situations occur which are not covered in this manual, use care and good judgment to deal with the situation or contact your customer service representative for assistance.

Preparation Before Operating

- Clear the operating area of any objects which could be thrown by or interfere with operation of the machine.
- Keep the area of operation clear of all bystanders, particularly small children. Stop the machine and attachment(s) if anyone enters the area.
- Do not operate the machine without the entire grass catcher, discharge chute, or other safety devices in place and functioning properly. Check frequently for signs of wear or deterioration and replace as needed.
- Wear appropriate personal protective equipment such as safety glasses, hearing protection, and footwear.
- Be aware of the mower discharge direction and do not direct it at anyone.
- Use only accessories and attachments approved for this mower by the mower manufacturer. Read, understand, and follow all instructions provided with the approved accessory or attachment.

Operating

- Only operate the engine in well ventilated areas. Exhaust gases contain carbon monoxide, a deadly poison.
- Only operate the machine in adequate light and good visibility.
- Avoid holes, ruts, bumps, rocks, or other hidden hazards. Uneven terrain could overturn the machine or cause the operator to lose their balance or footing.
- Do not put hands or feet near rotating parts or under the machine. Keep clear of the discharge opening at all times.
- Do not direct discharge material toward anyone. Avoid discharging materials against a wall or obstruction. Material may ricochet back toward the operator. Stop the blade(s) when crossing gravel surfaces.
- Do not leave a running machine unattended. Always park on level ground, disengage the blade(s), set parking brake, and stop the engine.
- Do not mow in reverse unless absolutely necessary. Always look down and behind before and during reversing.
- Check overhead clearances carefully before driving under low hanging tree branches, wires, door opening, etc., which could result in serious injury.
- Never carry passengers.
- A missing or damaged chute deflector can cause blade contact or thrown object injuries.
- Do not operate the mower without the chute deflector or entire grass catcher in its proper place.
- Use extra care with grass catchers or other attachments. These can change the stability of the mower. Always follow the attachment manufacturer's instructions.

- Stop the blade(s) when crossing gravel drives, walks, or roads, and while not cutting grass.
- Watch for traffic when operating near or crossing road ways. This mower is not intended for use on any public roadway.
- Do not operate the mower while under the influence of alcohol or drugs.
- The muffler and engine become very hot after long use and can cause serious burn injuries. Do not touch the muffler or engine immediately after use. Allow the mower to cool for five minutes before attempting any service.

Children Specific

- Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.
- Keep children out of the operating area and under the watchful care of a responsible adult other than the operator.
- Do not carry children, even with the blade(s) shut off. Children can fall off and be seriously injured or interfere with safe operation. Children who have been given rides in the past can suddenly appear in the mowing area for another ride and be run over or backed over by the machine.
- Be alert and turn the mower off if a child or bystander enters the area.
- To avoid back-over accidents, always look behind and down for children.
- Use extreme care when approaching blind corners, doorways, shrubs, trees, or other objects that may block your vision of a child who may run into the path of the mower.
- Do not allow any child to joy ride on the mower. The mower is not a toy or a go-cart. Warn your children that the mower can be dangerous and they must stay away from it at all times.
- Keep children away from hot or running engines. They can suffer burns from a hot muffler or engine.
- Remove key when the mower is unattended to prevent unauthorized operation. Make certain the key is inaccessible to small children.

Slope Specific

⚠ WARNING: Slopes are a major factor related to accidents. Operation on slopes requires extra caution.

⚠ WARNING: If at rest on an uphill slope, do not abruptly extend the drive handles fully forward to initiate forward movement. Doing so can result in a rear overturn (the front tires lift off the ground and the machine flips over backwards).

- Travel in the manufacturer recommended direction on slopes. Use caution while operating near drop-offs, ditches, water hazards or embankments.
- Avoid mowing wet grass.
- Do not operate machine under any condition where traction, steering, or stability is in question. Tires could slide even if the wheels are stopped.
- Always keep the machine in gear when going down slopes. Do not coast downhill.
- Avoid starting and stopping on slopes. Avoid making sudden changes in speed or direction. Make turns slowly and gradually.
- Use extra care while operating machine with a grass catcher or other attachment(s). They can affect the stability of the machine.

Fire and Fuel Specific

- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove fuel cap or add fuel with the engine running or hot.
- Do not refuel indoors or in enclosed spaces.
- Do not store the machine or fuel container, or refuel, where there is an open flame, spark, or pilot light such as a water heater or other appliances.
- If fuel is spilled, do not attempt to start the engine; and avoid creating any source of ignition until fuel vapors have dissipated.
- To help prevent fires: keep machine free of grass, leaves, or other debris build up; clean up oil or fuel spillage and remove any fuel soaked debris; allow machine to cool before storing.
- Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.

Hauling

- Use full width ramps for loading and unloading the machine for transport.
- Use extra care when loading or unloading the mower into a trailer or truck. This mower should not be driven up or down ramp(s) because the mower could tip over, causing serious personal injury. The mower must be pushed manually on ramp(s) to load or unload properly.
- Raise the deck to the highest position for loading clearance.

Towing

- Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes.
  The total towed weight (trailer and load) must not exceed 400 lbs.

Service

- Keep machine in good working order. Replace worn or damaged parts.
- Use caution when servicing blades. Wrap the blade(s) or wear gloves. Replace damaged blades. Do not repair or alter blade(s).
- Disconnect spark plug wire(s) and the negative battery cable before making any repairs.
- Operate the equipment ONLY outdoors.
- Keep exhaust gas from entering a confined area through windows, doors, ventilation intakes, or other openings.
- To avoid serious injury or death, do not modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. Never tamper with factory setting of the engine governor. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
- Never tamper with the safety interlock system or other safety devices. Check their proper operation regularly.
- Operate the equipment ONLY outdoors.
- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Never attempt to make adjustments or repairs to the mower while the engine is running.
- Only use genuine replacement parts. Use of service parts which do not meet the original equipment specifications may lead to improper performance and compromise safety.

⚠ WARNING: Running engine gives off carbon monoxide, an odorless, colorless, poisonous gas. Breathing carbon monoxide can cause headaches, fatigue, dizziness, vomiting, confusion, seizures, nausea, fainting or death.

3 Assembly Instructions

⚠ NOTICE: This lawn mower is shipped without gas in the engine.

⚠ WARNING: If any parts are damaged or missing, do not operate this product until the parts are replaced. Use of this product with damaged or missing parts could result in death or serious injury.

⚠ WARNING: Do not attempt to modify this product or create accessories not recommended for use with this product. Any such alteration or modification is misuse and could result in a hazardous condition resulting in death or serious injury.

⚠ WARNING: To prevent accidental starting that could result in death or serious injury, always disconnect the engine spark plug boot from the spark plug when assembling parts.

⚠ WARNING: Never operate the mower without the proper safety devices, guards, and chute in place and working. Never operate the mower with damaged safety devices. Operating the mower with missing or damaged parts could result in death or serious injury.

Some parts of your new lawn mower have not been completely installed for shipping purposes. To ensure safe and proper operation, all parts and hardware must be assembled as instructed below using appropriate tools to ensure proper tightness.

SCarefully remove the product and any accessories from the package. Make sure that all items listed in the Packing List are included.

Inspect the product carefully to make sure no damage occurred during shipping.

Packing list	Qty
Mower	1
Seat Assembly	1
Left Drive Control Lever	1
Right Drive Control Lever	1
Knob For Drive Control Lever	2
Oval head square neck bolt (M8x70)	2
Hexagon flange bolt (M8x80)	2
Hex flange nut (M8)	2
Hitch plate	1
Operator's manual	1
Engine manual	1
12-13mm open-end wrench	2
Ignition key	2
Spark Plug Tool - ZTR50 Only	1

Assemble the Seat

1. Align the two threaded holes on the bottom of the seat with the two eyelet slots on the seat pan. Slide the seat downward to secure it.
2. Choose one of five holes on the seat pan and thread the wing nuts into the holes (a). Secure with supplied wing nuts (b). You can move the seat to your desired position by selecting between the five different holes. (Fig.2A)

NOTE: Keep bolts and wing nuts loose until all bolts are in your desired position. In addition, wing nuts(b) used in second step are secured onto the bolts (a) of the seat for shipment. Therefore you need screw the nuts counterclockwise to get it loose before following the second step.

3. Securely tighten all bolts and wing bolts.
4. Take hold of the seat switch wiring harness and pass it underneath the battery securing rod. Connect the seat switch wiring harness to the seat switch. (Fig.2B&Fig.2C)

NOTE: Mower will not operate without the seat switch wiring harness connected.

⚠ WARNING: Be sure the seat is locked into place before operating the mower. A seat that is not secure can cause the operator to shift and lose control of the mower, resulting in death or serious injury.

⚠ WARNING: The seat switch shall not be tampered with or disabled. Check the seat switch before operating the mower.

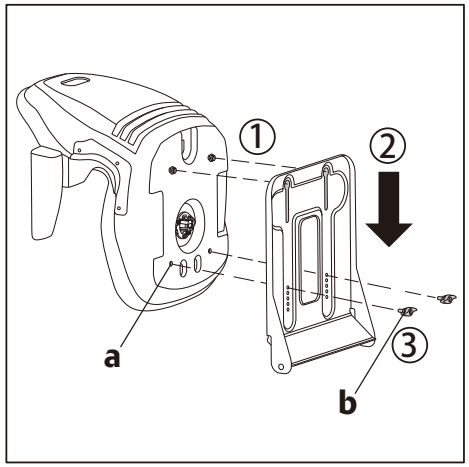


Fig. 2A

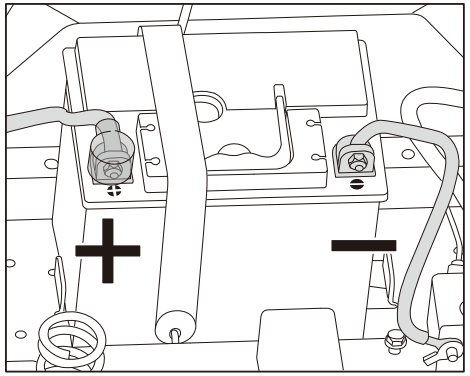


Fig. 2B

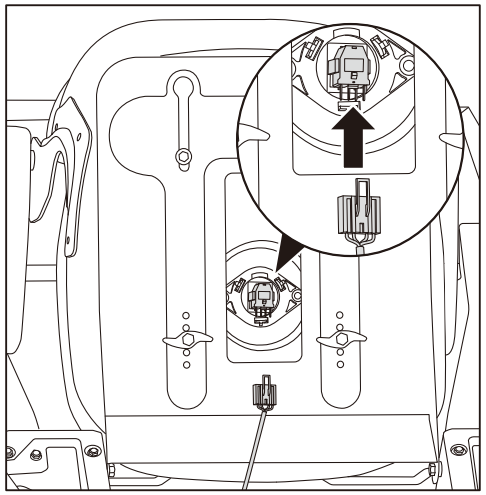


Fig. 2C

Assemble Drive Control Lever

1. Keep the larger tip of the upper handle adjuster in line with the adapter that secures the lever to the mower.
2. Connect them tightly by screwing the knob clockwise.
3. Repeat this process on the remaining side.

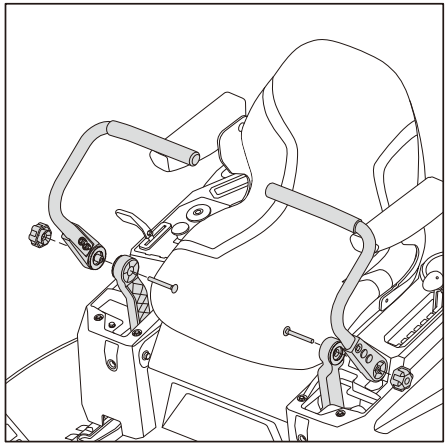


Fig. 3

To adjust the height of the lever:

1. Remove the two bolts and two lock nuts that secure the drive control lever to the upper handle adjuster.
2. There are two selectable positions, with the ability to move up or down for adjustment. Secure the two bolts either in the upper or lower position. (Fig.4)

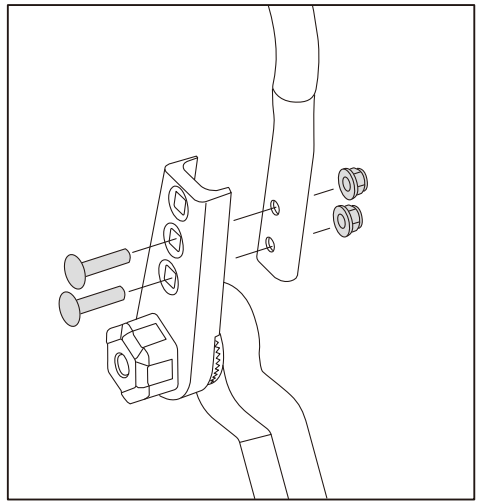


Fig. 4

To adjust levers forward/rearward:

The drive control levers are designed to be adjustable. Adjust them to a comfortable position for you before operation.

1. Rotate the knob counter-clockwise to loosen it.
2. Lift and rotate the drive control lever into the desired position.
3. Rotate the knob clockwise to secure the drive control lever into position.
4. If the levers do not line up after making the knob adjustment, loosen nuts, align levers, and re-tighten nuts.

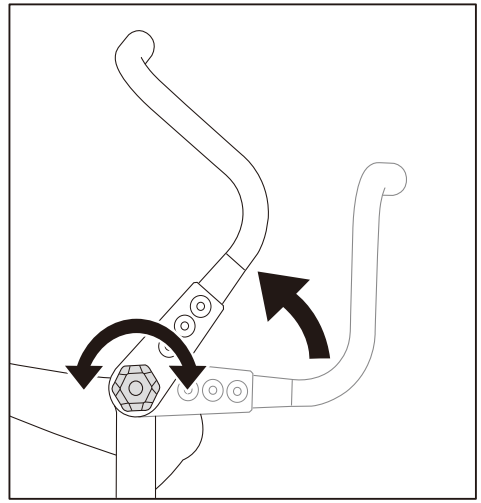


Fig. 5

Install Hitch

To tow objects or install the grass catcher, locate the hitch and install it on the rear of the frame using two bolts and nuts. The bolts are to be inserted into the top face of the frame and the nuts are to be threaded on from the bottom as shown in Fig.6.

NOTE: Hitch and hex bolts are provided in the hardware pack.

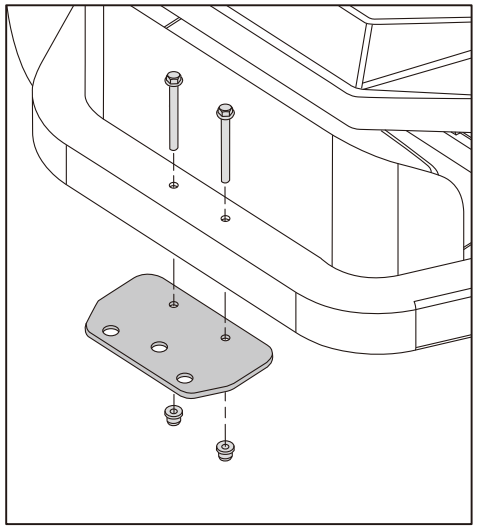


Fig. 6

Connecting the Battery

The battery is located under the operator's seat. To connect the battery cables, proceed as follows:

1. Attach the positive cable (red) to the positive battery terminal using the bolt and nut.

2. Attach the negative cable (black) to the negative battery terminal using the bolt and nut.

⚠ WARNING: When attaching battery cables, always connect the positive cable to its terminal FIRST, and then connect the negative cable. Additionally, a protective case is placed over the positive cable to prevent it grounding. Always keep the protective case in place when connecting the battery.

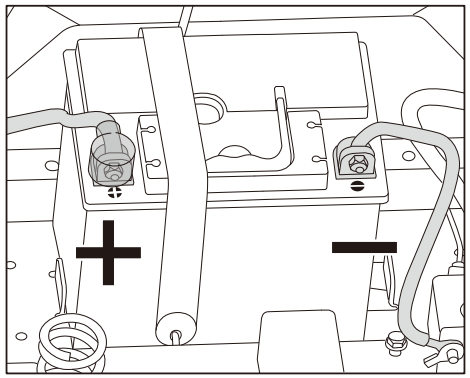


Fig. 7

Check/Adjust the Tire Pressure

⚠ NOTICE: To ensure that the grass is cut level, each front tire must be set to the same pressure. The same is true for the rear tires.

Recommended tire pressure:

- Set the front tires to 20 psi
- Set the rear tires to 14 psi

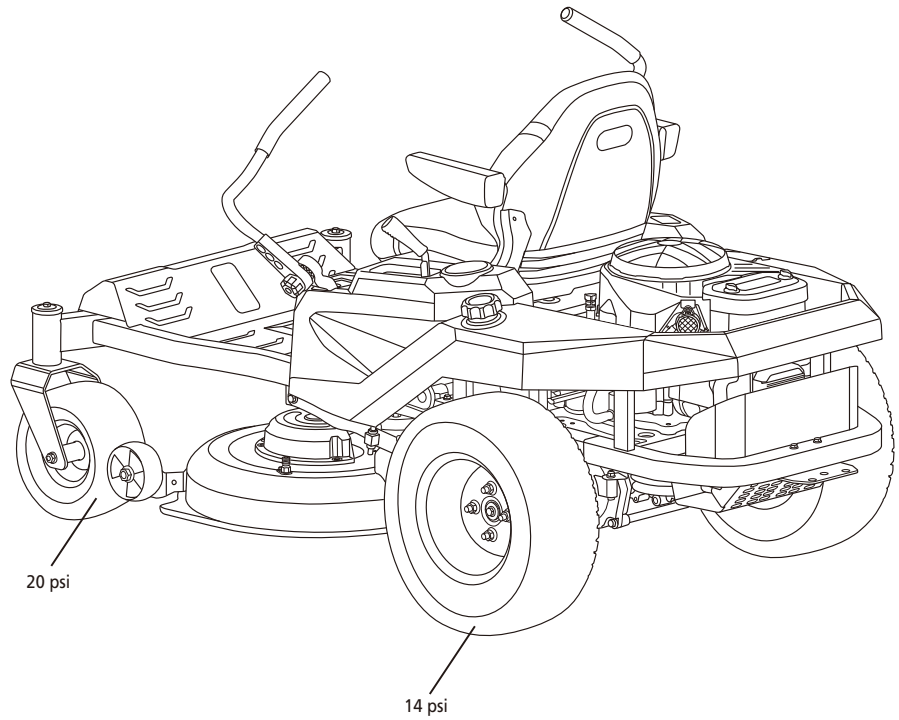


Fig. 8

4 Features and Controls

The following control symbols appear on this product. Before you operate the mower, please study them and learn their meaning.

Symbol	Explanation
	FAST throttle position
	SLOW throttle position
	OFF ignition position
	RUN ignition position
	START ignition position
	Parking brake
	PTO ON (blades engaged)
	PTO OFF (blades disengaged)
	SHORT grass height
	LONG grass height
N	Gear is in neutral
R	Gear is in reverse
	The mower can be pushed by hand after pulling out the bypass-valve lever.

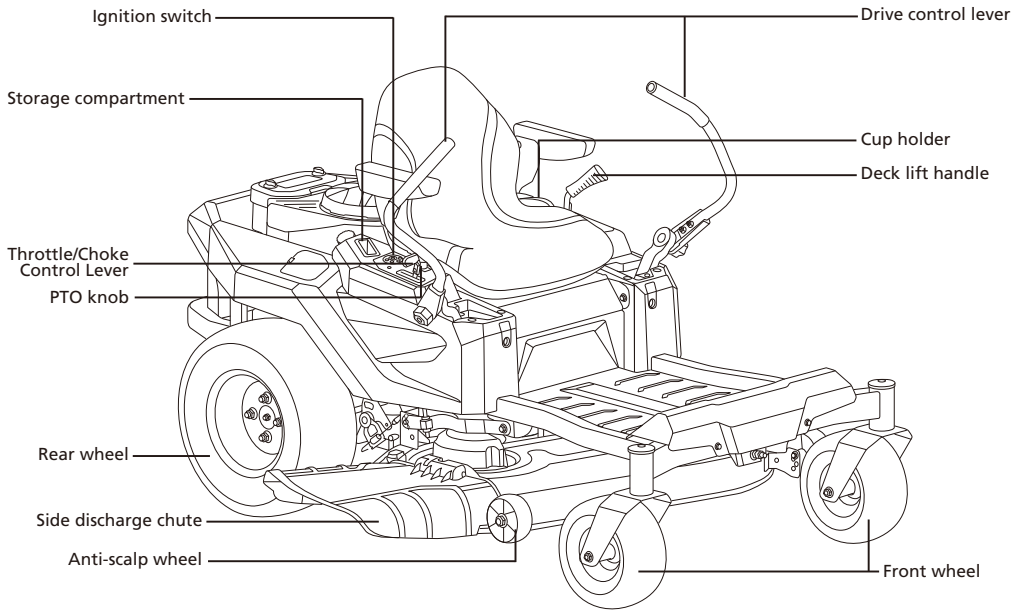


Fig. 9

1. Leveling the Cutting Deck

The drive control levers are located on each side of the operator's seat. The hinged levers pivot outward to permit the operator to sit in the seat or dismount. To start the mower's engine, the drive control levers must be fully out and in the PARK position. When the drive control levers are fully outward, the parking brake is engaged.

Each drive control lever controls their respective transmission. Consequently, these levers control all of the mower's movements. Driving and steering using these control levers is quite different from a conventional mower and will take practice to master. Refer to the Operation Instruction section for further reference.

To move the lever:

R — Reverse: Pull the lever backward to get the mower to reverse.

N — Neutral: Keep the mower in neutral condition.

P — Park: Set the parking brake.

— Low moving speed.

— High moving speed.

2. Throttle/Choke Control Lever

Push the throttle/choke control lever forward to increase the engine speed. The mower is designed to operate with the throttle/choke control lever at full throttle (FAST) while being driven and the mower deck is engaged. Pull the throttle/choke control lever rearward to decrease the engine speed. When starting the engine, push the control lever fully rearward into the SLOW position. After starting and warming the engine, move the control lever forward to the FAST position. Throttle is not meant to control unit' speed, throttle should remain in high speed while operating blades.

3. Power Take-Off (PTO)

The PTO switch operates the electric PTO clutch mounted on the bottom of the engine crankshaft. Pull the switch knob upward to engage the PTO clutch or push the knob downward to disengage the clutch.

The PTO switch must be in the "OFF" position when starting the engine.

4. Ignition Switch

The ignition switch has three positions:

STOP — The engine and electrical system is turned off.

RUN — The mower electrical system is energized.

START — The starter motor will turn over the engine. Release the key immediately when the engine starts.

NOTE: To prevent accidental starting and / or battery discharge, remove key from the ignition switch when mower is not in use.

5. Storage Compartment

The storage tray is located on the rear of the right console.

6. Cup Holder

The cup holder is located on the rear of the left console.

7. Deck lift handle

The deck lift handle is used to raise and lower the mower deck. To lower the deck, pull the deck lift handle to the right out of the index notch and push downward. To raise the deck, pull the handle upward. Ensure the handle is fully positioned into the height index notch when the desired height is attained.

8. Fuel Tank Cap

Turn the fuel tank cap at least two clicks counter-clockwise and pull upward to remove. The fuel cap is tethered to the mower to prevent losing it. Do not attempt to remove the cap from the mower. Fill tank to ½" below the bottom of the filler neck, allowing some space in the tank for fuel expansion. Do not overfill the tank.

Push the cap downward on the fuel tank fill neck and turn at least two clicks clockwise to tighten. Always re-install the fuel cap tightly onto the fuel tank after removing.

5. Operating the Mower

Read the Operation Instruction section before you operate this machine. Make sure that you know the controls and how to stop the unit in an emergency.

Operating Area

- Know the area where you plan to operate the mower.
- Make sure that the area is free of unwanted material that could be picked up by the blades and thrown.

DANGER: This machine is capable of throwing objects that will injure bystanders or cause damage to buildings.

- Do not operate the machine without the complete grass catcher, discharge chute, or other safety devices in place and functioning properly. Check frequently for signs of wear or deterioration and replace as needed.
- Clear the operating area of any objects which could be thrown by or interfere with the operation of the machine.
- Move the machine outside before you start the engine.

WARNING: Engines give off carbon monoxide, an odorless, colorless, poisonous gas. Breathing carbon monoxide can cause nausea, fainting, or death.

- Note all slopes and drop-offs.

DANGER: Operating on slopes, near water, or near drop-offs can result in loss of control and roll-over.

- Mow up and down slopes, not across.
- Reduce speed and be careful on slopes.
- Do not operate on slopes over 15 degrees.
- Give yourself a minimum of two mower widths of clearance around water, retaining walls, or drop-offs.
- Avoid mowing wet grass.
- Do not operate the machine under any condition where traction, steering, or stability is in question. The tires could slide even if the wheels are stopped.
- Avoid starting and stopping on slopes.
- Avoid making sudden changes in speed or direction.
- Make turns slowly and gradually.
- Be careful while operating machine with a grass catcher or other attachment(s). They can affect the stability of the machine.
- Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes.
- See the section "Towing with the mower"
- Make sure that the operating area is clear of bystanders, especially children.

DANGER: This mower is capable of amputating hands and feet.

- Stop the mower when children or others are near.
- Keep children out of the operating area and under watchful care of a responsible adult.
- Do not carry passengers, especially children, even with the blade(s) shut off. Children can fall off and be seriously injured or interfere with safe machine operation. Children who have been given rides in the past can suddenly appear in the mowing area for another ride and be run over or backed over by the machine.

Use care when approaching blind corners, shrubs, trees, or other objects that obscure vision.

Safety Interlock System Tests

This machine is equipped with a Safety Interlock System. Do not attempt to bypass or tamper with the switches and devices.

DANGER: Mowing in reverse can be hazardous to bystanders. Tragic accidents can occur if the operator is not alert to the presence of children. DO NOT mow in reverse if children are present. Children are often attracted to the machine and the mowing activity.

WARNING: If the machine does not pass the four tests below do not operate the machine.
See an Authorized service center.

Test 1 — Engine will NOT crank if:

- Power Take Off (PTO) switch is ENGAGED, OR
- Parking brake is NOT fully set (drive control levers not in the outward position).

Test 2 — Engine will crank and start if:

- PTO is DISENGAGED, AND
- Parking brake is fully set (drive control levers set in the outward position).

Test 3 — Engine will SHUT OFF if:

- Operator rises off seat with PTO switch ENGAGED, OR
- Operator rises off seat with parking brake NOT fully set (drive control levers not in the outward position).

Test 4 — Mower Blade Stopping Time Check

The mower blades and mower drive belt will come to a complete stop in five seconds after the PTO switch is DISENGAGED. If the mower drive belt does not stop in five seconds, see an Authorized Service Dealer.

Engine

Check and Add Engine Oil

Other high-quality detergent oils are acceptable if classified for service SF, SG, SH, SJ or higher. Do not use special additives. Outdoor temperatures determine the proper oil viscosity for the engine. Use the chart to select the best viscosity for the outdoor temperature range expected.

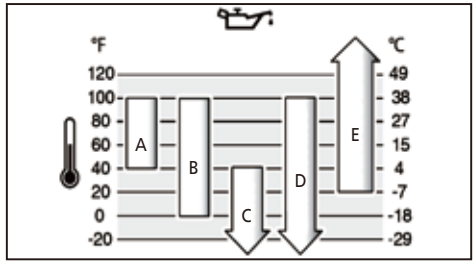


Fig. 10

A	SAE 30 - Below 40 °F (4 °C) the use of SAE 30 will result in hard starting.
B	10W-30 - Above 80 °F (27 °C) the use of 10W-30 can cause increased oil consumption. Check oil level more frequently.
C	5W-30
D	Synthetic 5W-30
E	Vanguard® Synthetic 15W-50

*Below 40˚F (4˚C) the use of SAE 30 will result in hard starting.

**Above 80˚f (27˚C) the use of 10W-30 can cause increased oil consumption.

- Stop the engine and remove the key. Make sure that the oil fill area is clean.
- Remove the engine oil dipstick (a, Fig.11). Wipe the dipstick clean, ensuring no oil remains.
- Install and tighten the dipstick.
- Remove the dipstick again and check the oil level.
- Make sure that the oil level is around the middle of the FULL mark on the dipstick. (Fig.12).

- If the oil level is FULL, install and tighten the dipstick.
- If the oil level is LOW, add oil into the oil fill tube. (Fig. 12)
- Wait one minute and check the oil level again.
- If engine oil is sufficient, install and tighten the dipstick.

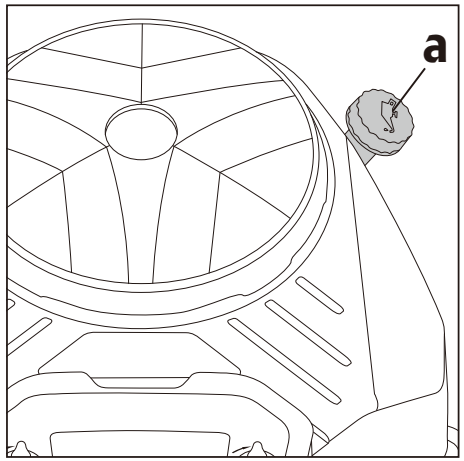


Fig. 11

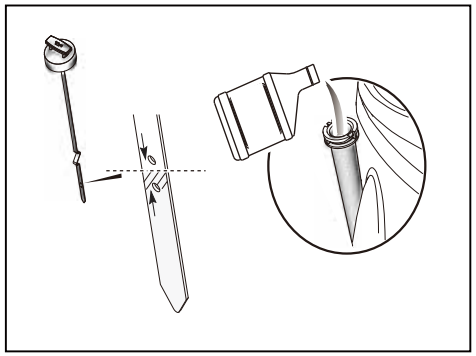


Fig. 12

Fuel Recommendations

Fuel must meet these requirements:

- Clean, fresh, unleaded gasoline.
- A minimum of 87 octane. For high altitude, see section below.
- Gasoline with up to 10% ethanol (gasohol) is acceptable.

NOTICE: Do not use unapproved gasoline, such as E15 and E85. Do not mix oil in gasoline or modify the engine to run on alternate fuels. Use of unapproved fuels will damage the engine components, which will not be covered under warranty.

To protect the fuel system from gum formation, mix a fuel stabilizer into the fuel. See Storage section. All fuel is not the same; if start or performance problems occur, change fuel providers or brands. This engine is certified to operate on gasoline.

High Altitude

At altitudes over 5,000 feet (1524 meters), a minimum of 85 octane gas is acceptable.

For carbureted engines, high altitude adjustment is required to maintain performance. Operation without adjustment will cause decreased performance, increased fuel consump tion, and increased emissions.

Add Fuel

WARNING: Fuel and its vapors are extremely flammable and explosive. Always handle fuel with extreme care. Failure to observe these safety instructions can cause fire or explosion which could result in severe burns or death.

When Adding Fuel

- Stop the engine and let it cool for at least 3 minutes before you remove the fuel cap.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Fill fuel tank outdoors or in a well-ventilated area.
- Do not overfill fuel tank. To allow for expansion of the fuel, do not fill above the bottom of the fuel tank neck.
- Keep fuel away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.
- If fuel spills, wait until it evaporates before you start the engine and avoid creating any source of ignition.
- Use only an approved fuel container.

1. Remove any debris from the fuel cap area.
2. Remove the fuel cap (Fig.13)
3. Use a funnel when filling the fuel tank with fuel. Monitor the lever of the fuel by looking at the see-through tank behind the operator's seat. DO NOT fill above the bottom of the fuel tank neck.
4. Install the fuel cap.

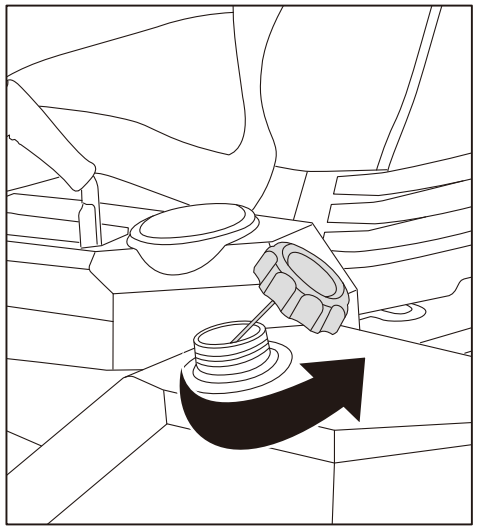


Fig. 13

Operation Instructions

Start the Engine

WARNING: Fuel and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

When you start the engine:

- Make sure that the spark plug, muffler, fuel cap, and air filter are installed correctly.
- Do not crank the engine with spark plug removed.
- If the engine floods, move the throttle to the FAST position and crank until engine starts.

WARNING: Engines give off carbon monoxide, an odorless, colorless, poisonous gas. Breathing carbon monoxide can cause nausea, fainting, or death.
Fire or explosion can cause severe burns or death.

- Start and operate the engine outdoors.
- Do not start or operate the engine in enclosed area, even if doors or windows are open.

1. Check the oil level. See Check and Add Engine Oil section.
2. Operator should be sitting in the mower seat with the drive control levers fully out and in the park position.
3. Make certain the PTO is in the "OFF" position. Move the choke control or throttle/choke control into the SLOW position.

NOTE: If the engine is warmed up, it may not be necessary to choke the engine.

4. Turn the key clockwise to the START position. After the engine starts, release the key. It will return to the RUN position.
5. As the engine warms up, gradually pull the throttle/choke control lever forward to the FAST position.
   Do not use the choke position to enrich the fuel mixture, except as necessary to start the engine.
6. Allow the engine to run for a few minutes at mid-throttle before putting the engine under load.

NOTICE: In the event of an emergency, turn the ignition switch to the STOP position. This will stop the engine. See Stop the Engine section.

Using the Throttle/Choke Lever

The throttle/choke lever is located on the right panel. When starting the engine while it is cold, push the throttle/choke lever fully rearward into the SLOW position. (Fig.14)

The purpose of the mechanism is to restrict the flow of air so that the fuel-air mixture is made richer (more fuel, less air) which aids in starting the engine. After starting the engine, let the engine runs for 3-5 minutes at mid-throttle, and move the throttle lever forwards to the FAST position.

NOTICE: When operating the mower with the cutting blade engaged, move the throttle to the FAST position.

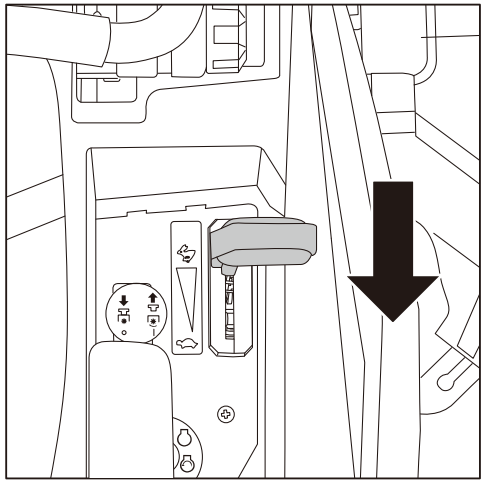


Fig. 14

Stop the Engine

WARNING: Fuel and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

Do not choke the carburetor to stop the engine.

1. If the blades are engaged, disengage the blades.
2. Move drive levers to the neutral position.
3. Move drive control levers to the Park position.
4. Move the throttle to the SLOW position.
5. Turn the ignition key switch to the STOP position. Remove the key.

NOTICE: In the event of an emergency, turn the ignition switch to the STOP position. This will STOP the engine.

Driving the Mower

⚠ NOTICE: This mower is not equipped with a gas pedal. The travel speed of the mower is controlled by the drive control levers' position and throttle position.

⚠ WARNING: Keep all movement of the drive control levers slow and smooth. Abrupt movement of the control levers can affect the stability of the mower and could cause the mower to flip over, which could result in serious injury or death to the operator.

⚠ NOTICE: Operating a zero-turn mower is not like operating a conventional type riding mower. First-time operators should become completely familiar with the mower's operation and controls before operating the mower.

1. Adjust the operator's seat to the most comfortable position that allows you to operate the controls.
2. Move the two drive control levers inward to the neutral position. This disengages the parking brake.
3. Move the throttle lever to the full throttle position.
4. To drive the mower, firmly grasp the respective drive control levers with your right and left hands and continue with Driving the Mower Forward in the next section.

⚠ WARNING: Always maintain a firm grip on the control levers. Do NOT release the control levers to slow or stop the mower; move levers to neutral position using your hands.

⚠ NOTICE: The drive control levers must be moved fully inward before pushing forward or backward to ensure brakes are fully disengaged. Parking the mower on uneven terrain or a hill may cause the brakes to bind and not release fully. In this case the mower will not drive when the drive control levers are moved. If this happens, move the drive control lever in the opposite direction slightly to take the load off the brakes and allow them to release fully.

Driving the Mower Forward:

1. From the neutral position, slowly and evenly move both drive control levers forward. The mower will start to move forward.
2. As the drive control levers are pushed farther forward the speed of the mower will increase.
3. To slow the mower, move the drive controls levers rearward to attain the desired speed or move the drive control levers to the neutral position to stop the mower.

Driving Forward

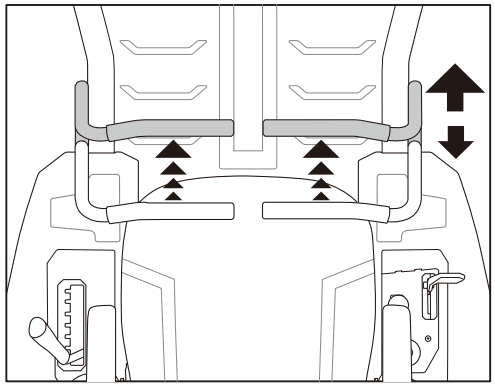


Fig. 15

Turning the Mower While Driving Forward:

⚠ WARNING: Sharp turns can affect control of the mower. ALWAYS slow the mower before making sharp turns.

To turn the mower while driving forward, move the drive control levers as necessary so that one drive control lever is rearward of the other. The mower will turn in the direction of the rearward drive control lever.

1. To turn to the right, move the right drive control lever rearward of the left drive control lever. (Fig.16A)
2. To turn to the left, move the left drive control lever rearward of the right lever. (Fig.16B)
3. The greater the distance between the two levers, the sharper the mower will turn.

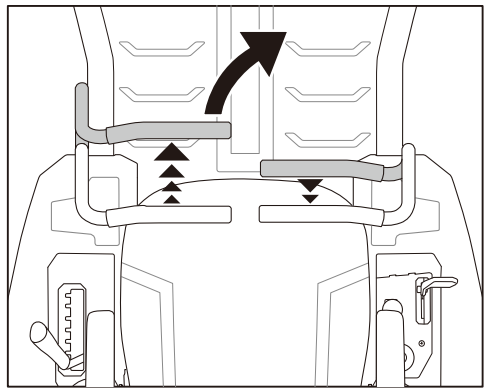


Fig.16A

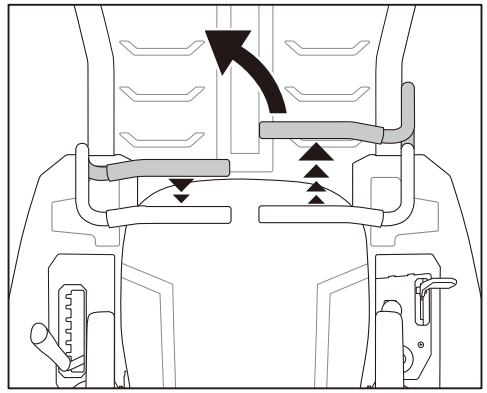


Fig.16B

Driving the Mower in Reverse:

⚠ WARNING: Always look behind and down on both sides of the mower before backing. Always look behind while traveling in the reverse direction. Mowing in reverse is not recommended.

1. From the neutral position, slowly and evenly move both drive control levers rearward. The mower will start to move in the reverse direction.
2. As the drive control levers are pushed farther rearward the speed of the mower will increase.
3. To slow the mower, move the drive control levers forward to attain the desired speed or move the drive control levers to the neutral position to stop the mower.

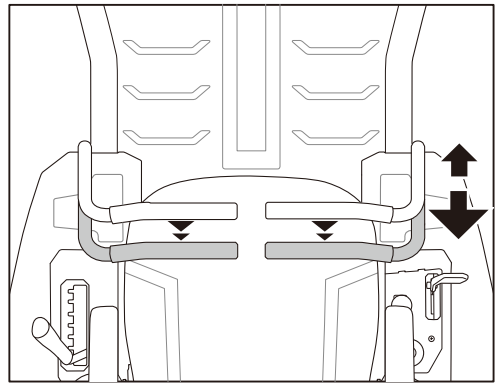


Fig.17

Turning the Mower While Driving Rearward:

To turn the mower while driving rearward, move the drive control levers as necessary so that one drive control lever is forward of the other. The mower will turn in the direction of the forward drive control lever.

1. To turn to the right while traveling in reverse, move the left drive control lever forward of the right drive control lever. (Fig.18A)
2. To turn to the left while traveling in reverse, move the right drive control lever forward of the left drive control lever. (Fig.18B)

NOTE: Making a "pivot turn" on grass will greatly increase the potential for defacement of the turf.

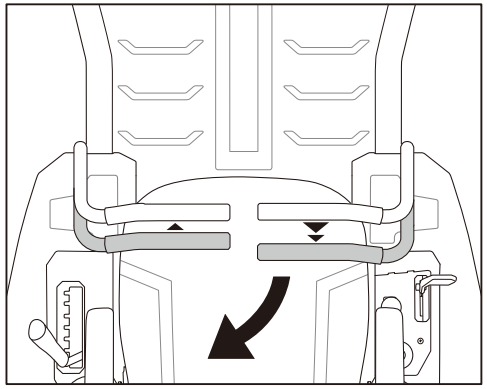


Fig.18A

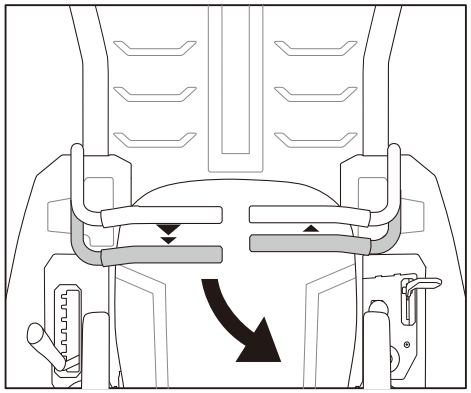


Fig.18B

Executing a Zero Turn

1. Stop the forward or reverse motion of the mower by moving the two drive control levers to neutral.
2. To turn clockwise, move the left drive control lever forward while simultaneously moving the right drive control lever rearward. (Fig.19A)
3. To turn counter-clockwise, move the right drive control lever forward while simultaneously moving the left drive control lever rearward. (Fig.19B)

NOTE: Making a "zero turn" on grass will greatly increase the potential for defacement of the turf.

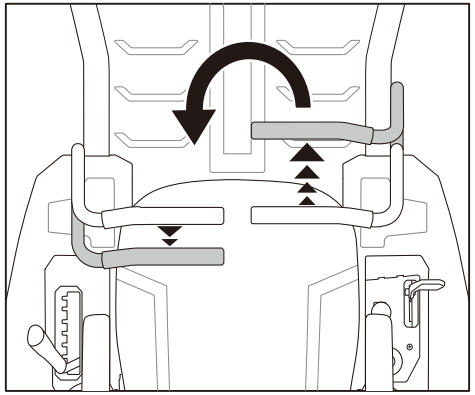


Fig.19A

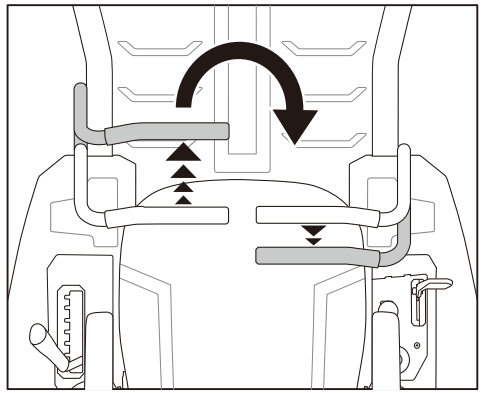


Fig.19B

Stopping the Mower

1. Move both drive control levers to the neutral position to stop the motion of the mower.
2. Push the PTO downward to the OFF position.
3. If dismounting the mower, move the drive control levers fully outward in the neutral position, which also engages the parking brake. Move the throttle to the SLOW position, turn the key to the STOP position, and remove it from the ignition module.

⚠ WARNING: Do not leave the seat of the mower without disengaging the PTO and moving drive control levers fully outward into the Park Brake engaged position. If leaving the mower unattended, turn the ignition key to the STOP position and remove key.

Adjusting the Mower Cutting Height

⚠ CAUTION: Stop the mower and disengage blades before adjusting the cutting height of the deck.
The deck adjusting lever is located on the mower's left fender. It is used to change the height of the cutting deck. The height (distance from the blade to the ground) can be adjusted from 1" to 4" inch (7 height positions).

To change the height of cut, move the lever out of the notch, then up or down to the position that is best suited for your application.

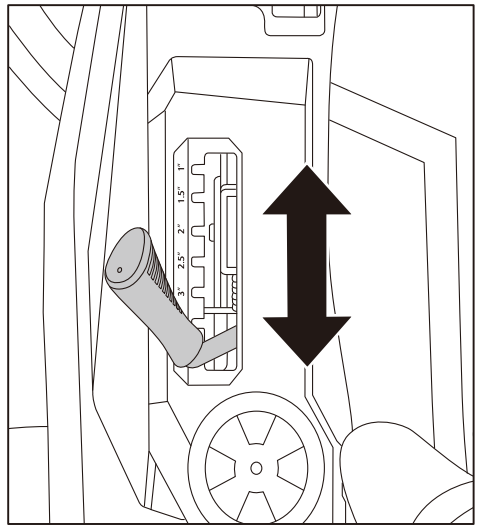


Fig.20

Adjusting Deck Anti-scalp Wheel

⚠ NOTICE: The bottom of the deck anti-scalp wheels should be positioned approximately 1/8 in. - 1/2 in. off the ground when the mower is at the desired cutting height. This will minimize the chance of scalping the lawn in most situations.

⚠ NOTICE: The left and right wheels should be set at the same positions.

⚠ NOTICE: Adjustment can be achieved by threading bolt into four different holes.

To adjust the wheels:

1. Park the mower on a level surface and engage the parking brake.
2. Stop the mower and remove the key. Allow blades to come to a complete stop.
3. Set the deck to the desired height.
4. Remove bolt and nut holding the wheel in place.
5. Move the wheel to a position that's approximately 1/8 in. - 1/2 in. off the ground.
6. Replace the bolt and nut; tighten securely. The recommended torque is 22-26 ft. lbs.
7. Repeat steps 4-6 on the other anti-scalp wheel.

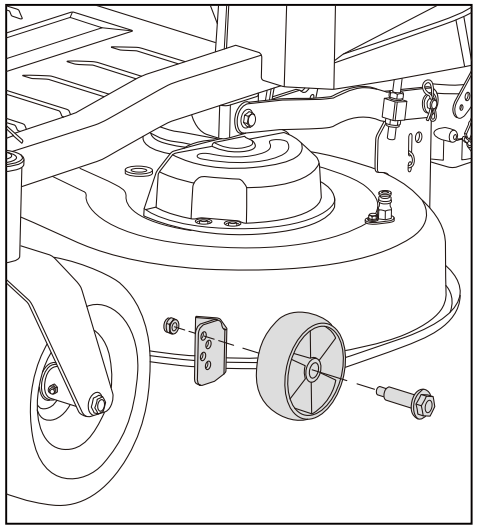


Fig. 21

Mowing

DANGER: This machine is capable of amputating hands and feet, and throwing objects. Failure to obey the safety instructions could result in serious injury or death.

- Only operate the machine in daylight hours or good artificial light.
- Avoid holes, ruts, bumps, rocks, or other hidden hazards. Uneven terrain can overturn the machine or cause the operator to lose their balance or footing.
- Do not direct discharge material toward anyone. Avoid discharging material against a wall or obstruction as material may ricochet back toward the operator.
- Stop the blades when crossing gravel surfaces.
- Do not leave a running machine unattended. Always park on level ground, disengage the blades, set parking brake, stop engine and remove starter insert or key.

NOTICE: The PTO switch must be DISENGAGED when starting the engine.

Engaging the PTO

Engaging the PTO transfers power to the cutting deck to enter mowing mode. To engage the PTO:

1. Move the throttle to the FAST position.
2. Pull the PTO switch up/out into the ENGAGED (ON) position.
3. To disengage the PTO, push the PTO switch down/in to the DISENGAGED (OFF) position.

NOTE: When operating the mower be certain that the throttle is always in the FAST position. Operating with the throttle at less than full throttle may lead to premature battery wear and a poor quality cut.

Mowing in reverse

DANGER: Mowing in reverse can be hazardous to bystanders. Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

- Keep children out of the operating area and under the watchful care of a responsible adult.
- Do not carry passengers, especially children, even with the blade(s) shut off. Children can fall off and be seriously injured or interfere with the safe machine operation. Children who have been given rides in the past can suddenly appear in the mowing area for another ride and be run over or backed over by the machine.
- Do not mow in reverse unless absolutely necessary. Always look down and behind before and while backing.

Once the Blades are Engaged

1. Move the two drive control levers inward to the neutral position which also disengages the parking brake.
2. Move the throttle to the full throttle position.
3. Slowly and evenly move both drive control levers rearward. The mower will start to move in the reverse direction.

Mowing Tips

WARNING: To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children, and pets away from the machine while it is in operation. Stop the machine if anyone enters the area.

- Mowing should always be done with the throttle in the FAST position for optimal cutting results.
- Keep the blades sharp. Jagged cuts increase the likelihood of the tip of the grass blade browning or developing a disease.
- After completing a pass in your lawn, overlap the previous pass by approximately 2 – 3”.
- Change the direction you mow each time to prevent ruts from developing in your lawn.
- Do not cut the grass too short. Short grass is prone to weed growth and yellows quickly in dry weather.
- Set the mower cut height at the recommended setting for the type of grass in your lawn. Cutting your lawn too short will prevent it from deepening its root system as the grass will use its energy to regrow the grass blades, rather than the root system. A deep root system will allow the grass to find nutrients and water in the soil, especially in periods of drought.
- Raise the mower cut height during the summer or periods of drought.
- Do not cut during the hottest part of the day. Doing so stresses the grass.
- Follow the “1/3 Rule”. Take off no more than 1/3 of the grass blade length at a time.
- When cutting long, thick grass, it may be necessary to go back over the cut area a second time.
- Do not cut wet grass. Dry grass is less likely to clump together and more likely to be standing upright, which will result in a clean, even cut.
- Mow across slopes, not up and down. If mowing a slope, start at bottom and work upward to ensure turns are made uphill.
- For best results it is recommended that the first two laps be cut with the discharge thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.

- The speed of the mower will affect the quality of the mower cut. Mowing at full speed will adversely affect the cut quality. Control the ground speed with the drive control levers.
- When approaching the other end of the strip, slow down or stop before turning. A U-turn is recommended unless a pivot or zero turn is required.
- Do not attempt to mow heavy brush and weeds or extremely tall grass. Your mower is designed to mow lawns, NOT clear brush.
- Keep the blades sharp and replace the blades when worn.

When stopping the mower for any reason while on a grass surface, always:

- Move the drive control levers fully outward into the Parking Brake engaged position.
- Shut engine off and remove the key.
- Doing so will minimize the possibility of having your lawn ''browned'' by hot exhaust from your mower's running engine.

6. Maintenance

Good maintenance is essential for safe, economical, and trouble-free operation. Follow the inspection and maintenance recommendations and schedules in this manual.

Before adjustments and repairs:

- Use ONLY the correct tools
- DO NOT tamper with the governor spring, links, or other parts to increase engine speed.
- Replacement parts must be of the same design and installed in the same position as the original parts. Other parts may not perform as well, may damage the unit, void the warranty, and may result in injury.
- All checks, adjustments and replacements not described in this manual must be carried out by your Dealer or a specialized Service Center.
- The engine powering this equipment is supplied with a separate Engine Owner's Manual provided by the engine manufacturer. Always refer to and strictly follow the engine manual details Failure to follow the manufacturer's engine instructions may cause equipment damage and will void your engine warranty.

⚠ WARNING: Improper maintenance, or failure to correct a problem before operation, or use of non-conforming replacement components, can cause malfunction and could result in death or serious injury.

⚠ CAUTION: Before performing any type of maintenance/service, disengage the blades, shut off the engine, and wait until all moving parts have come to a complete stop. Disconnect spark plug wire and keep it away from the spark plug. Always wear safety glasses while performing any adjustments or repairs.

⚠ NOTICE: Refer to engine operator's manual for detailed engine maintenance.

⚠ NOTICE: If you are unsure how to perform any of the maintenance items listed below, please contact customer service or a qualified service center for assistance.

Maintenance Schedule

Zero Turn Mower

Every 8 Hours or Daily
Check the safety interlock system.
Remove any debris from the mower, mower deck, and engine compartment.
Every 25 Hours or Annually*
Check the tire pressure.
Check the mower blade stopping time.
Check for loose hardware on the mower.
Every 50 Hours or Annually*
Clean the battery and cables.
Check the mower brakes.
See an Authorized Service Dealer Annually
Lubricate the mower.
Mower blades check**

*Whichever comes first.

**Check the mower blades more often in regions with sandy soils or high dust conditions.

ENGINE

First 5 Hours
Change the engine oil.
Every 8 Hours or Daily
Check the engine oil level.
Every 25 Hours or Annually*
Clean the air filter.
Every 50 Hours or Annually*
Change the engine oil.
Replace the oil filter.
Annually
Replace the air filter.
See an Authorized Service Dealer Annually
Inspect the muffler.
Replace the spark plugs.
Replace the fuel filter.
Clean the air cooling system.

*Whichever comes first.

Cleaning the Mower

⚠ WARNING: The engine, muffler, and surrounding metal surfaces will be very hot and can cause burns to the skin. Let the mower cool for at least five minutes before cleaning. Exercise caution to avoid burns.

⚠ CAUTION: Do not use pressure washer or garden hose to clean your mower other than to clean the underside of the deck. It may cause damage to electrical components, spindles, pulleys, bearings, or the engine. The use of water will result in shortened life and reduce serviceability.

NOTICE: Debris can accumulate anywhere on the mower, especially on horizontal surfaces. Additional cleaning may be necessary when mowing in wet conditions or when mulching.

NOTICE: Fuel leaks/spills, oil leaks/spills, and excess llubrication can also become collection sites for debris. Immediate repair and cleaning up oil or fuel spills can help reduce fire hazards.

NOTICE: Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, dust, oil, grease, etc.

- Clean around the engine, including the engine intake screen, exhaust manifold, muffler, and muffler shield.
- Clean the top of the mower deck, under the spindle covers, and belt area.
- Clean around and near the transmissions.

Cleaning the Mower Deck

NOTICE: The mower ONLY comes with a washout port block off plate. A garden hose quick disconnect is NOT included and must be purchased separately.

1. Put the mower on a smooth, level surface.
2. Attach the quick disconnect (a) to the garden hose (b) and then connect it to the washout port (c) on the mower deck. (Fig. 22)
3. Turn ON the water supply.
4. Start the engine.
5. Set the height of cut to the lowest position.
6. Engage the Power Take-Off (PTO) to activate the mower blades. The rotation of the blades and the water will help clean the bottom of the mower deck.
7. Disengage the PTO.
8. Stop the engine.
9. Turn OFF the water supply.
10. Remove the garden hose and quick disconnect from the washout port.

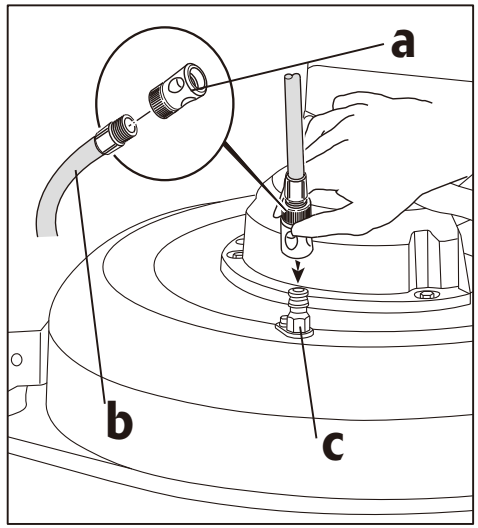


Fig. 22

Leveling the Cutting Deck

If your lawn appears unevenly cut after using the mower, the cutting deck may need adjusting. Before deciding that leveling the cutting deck is necessary, make sure the tires are properly inflated to the recommended psi when mowing.

> ⚠ DANGER: Mower blades are sharp. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.

Before beginning:

1. Make sure the drive control levers are in the PARKING BRAKE ENGAGED position.
2. Stop the engine and remove the key.
3. Lower the cutting deck to its lowest position.

To make front-to-back adjustment:

1. Position the right blade so that the ends now point toward the front and back of the mower.
2. Measure the distance from the tip of the blade to the ground. For optimal cutting results, the front tip of the blade should be from 1/4 in. to 3/8 in. lower than the rear tip.
3. If front-to-back adjustment is needed, after loosening the outer jam nut (a, Fig. 23), turn the inner adjustment nut (b, Fig. 23) clockwise to raise or counterclockwise to lower the front of the cutting deck.
4. Measure again to verify the front tip is now 1/4 in. to 3/8 in. lower than the rear tip. If not, continue to adjust and measure until they are.
5. Without moving the inner adjustment nut, re-tighten the outer jam nut to secure the inner adjustment nut in place.

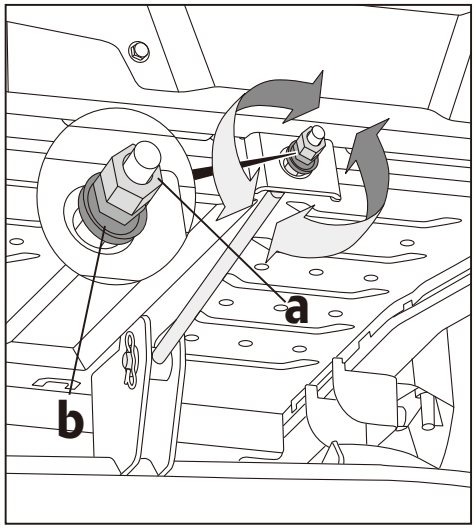


Fig. 23

To make side-to-side adjustment:

1. Position the blades so that the ends point toward the sides of the mower.
2. Measure the distance from the bottom, outside tip (cutting tip) of the blade to the ground. Measure the left blade's lower edge to the ground and the right blade's lower edge to the ground. If the measurements are less than 1inch off (the lowest position), proceed to the next step.
3. Turn the upper adjustment nuts (a) upward. Turn the lower adjustment nuts (b) up to lift or down to lower two sides of the cutting deck. (Fig.24A&Fig.24B)
4. Measure again. If the height difference between two sides of the deck is more than 1/10 inch, adjust the deck again until both blade tip measurements taken earlier are equal.
5. Turn the upper adjustment nuts downward to their original positions.

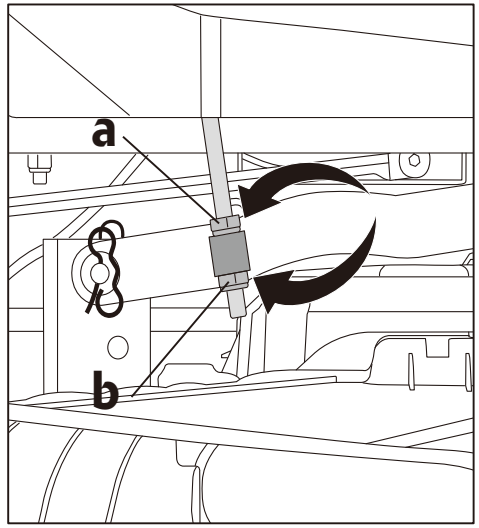


Fig. 24A

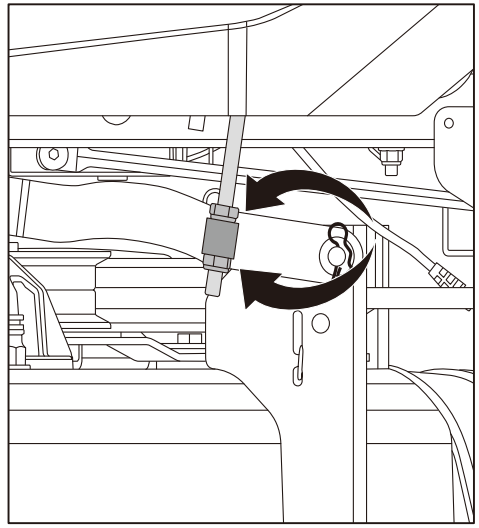


Fig. 24B

Removing the Cutting Deck

> ⚠ DANGER: Mower blades are sharp. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.

Removing the deck will make it easier to replace belts, pulleys, and blades.

1. Make sure the drive control levers are in the PARKING BRAKE ENGAGED position.
2. Stop the engine and remove the key.
3. Lower the cutting deck to its lowest position.
4. Remove 3 hitch pins, 2 on the right (Fig. 25A&Fig. 25B), 1 on the left (Fig. 25C) that secure the deck in place.
5. Slip the deck belt off the electromagnetic clutch.
6. Slide the deck out from under the mower.
7. Reverse the process to reattach the deck to the mower.

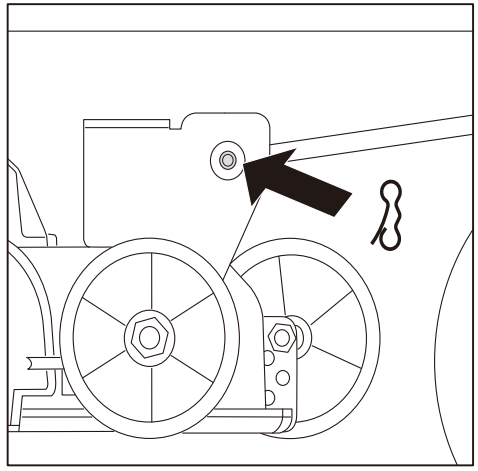


Fig. 25A

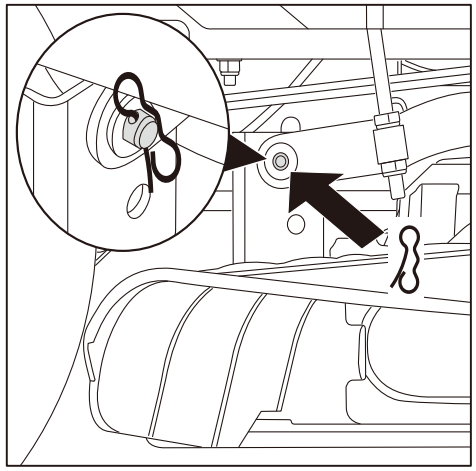


Fig. 25B

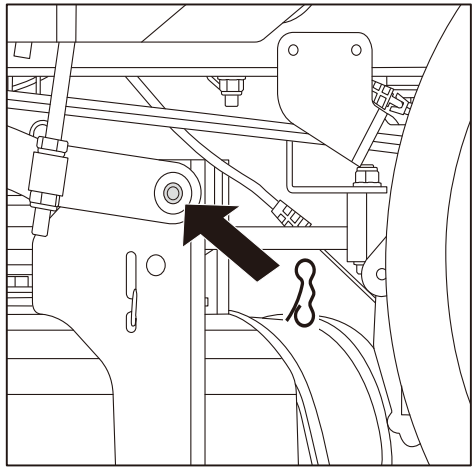


Fig. 25C

Changing the Deck Belt

⚠ WARNING: Stop the engine, engage the parking brake, and remove the key.

⚠ WARNING: Belts on your mower are subject to wear and should be replaced if any signs of wear are present.

1. Remove the deck. Refer to the "Removing the Cutting Deck" section.
2. Remove the two belt protective covers (a, Fig. 26A) by removing the six screws that fasten them to the deck.
3. Remove the fixed pulley (b, Fig.26A) and tension pulley (c, Fig.26A).
4. Remove the fixed pulley (b, Fig.26B), tension pulley (c, Fig.26B) and idler pulley (d, Fig. 26B).
5. Carefully remove the deck belt from around the pulleys.
6. Reverse the process to reattach a new deck belt to the deck.

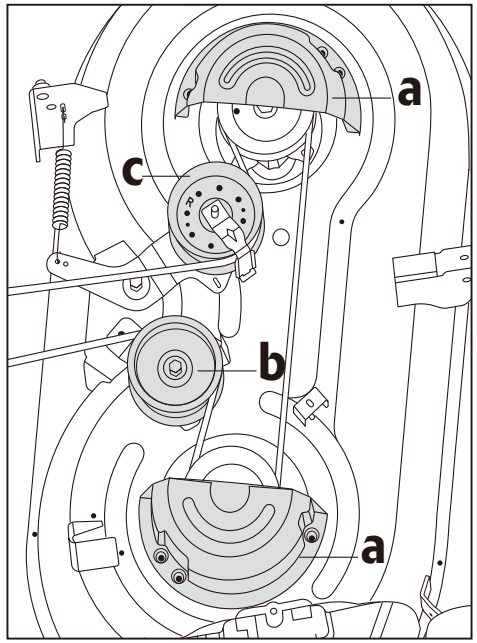


Fig. 26A (For model 553421)

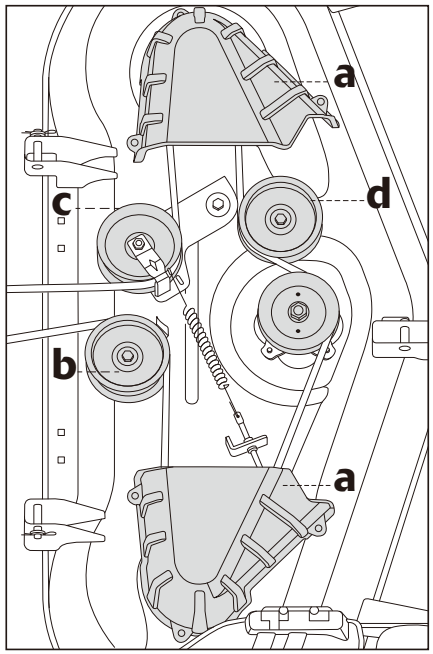


Fig. 26B (For model 553422)

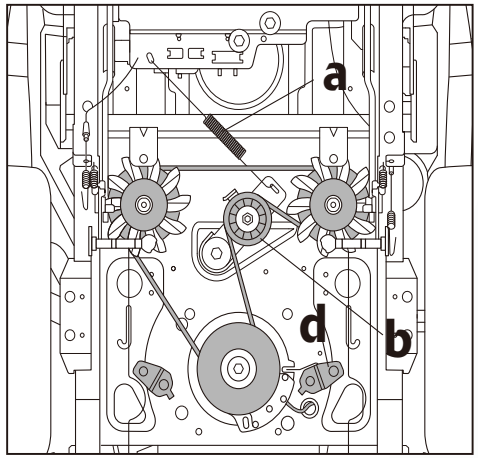


Fig. 27A

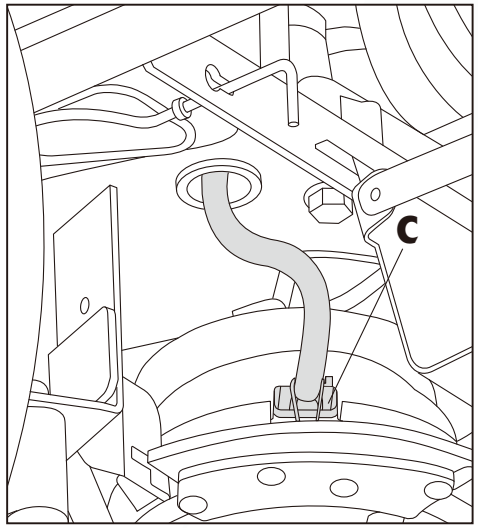


Fig. 27B

Changing the Drive Belt

⚠ WARNING: Stop the engine, engage the parking brake, and remove the key.

⚠ WARNING: To change the drive belt, it is recommended to raise the mower by either placing it on a lift or by using a jack and jack stands.Make sure the mower is properly secured and the parking brake is set before proceeding. Failure to properly secure the mower could cause it to fall, resulting in death or serious injury.

1. Remove the deck. Refer to the "Removing the Cutting Deck" section.
2. Remove the tension spring (a, Fig. 27A).
3. Remove the tension wheel (b, Fig. 27A).
4. Unplug the electromagnetic clutch harness from its connector (c, Fig. 27B).
5. Remove the mounting bracket from the electromagnetic clutch (d, Fig. 27A).
6. Remove the drive belt.
7. Reverse the process to reattach a new drive belt to the mower.

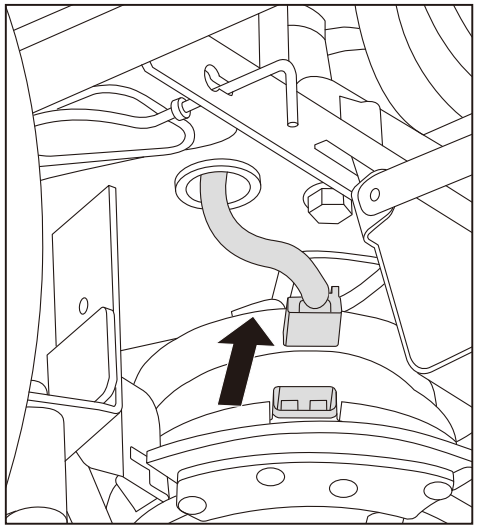


Fig. 27C

Replacing the Cutting Blades

⚠ CAUTION: Only use replacement blades authorized by the manufacturer of your mower. Use of blades not authorized is hazardous and may damage your mower.

⚠ WARNING: Mower blades are sharp. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.

For best results, please use the Masport genuine replacement blade

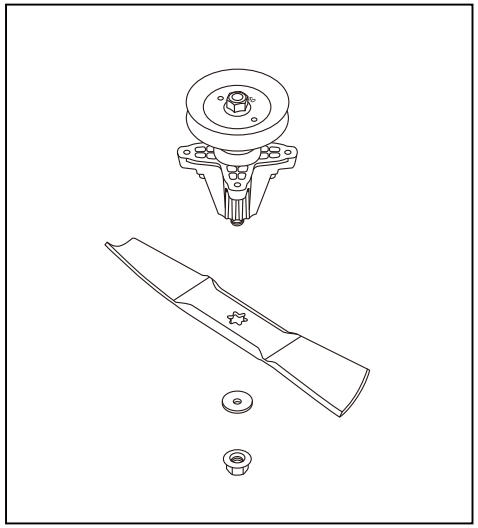


Fig. 28

1. Shut off the engine, remove the key, and make sure the drive control levers are in the PARKING BRAKE "P" position.
2. Remove the deck. Refer to the “Removing the Cutting Deck” section.
3. Use a blade removal tool (not provided) to prevent the blade from turning.
4. Loosen the blade nut by turning it counterclockwise (as viewed from bottom of the mower) using a 24 mm wrench or socket (not provided).
5. Remove the blade nut, washer and blade. (Fig.28)
6. When replacing or re-installing the blade, be sure to install the blade on the side with its stamped part number facing the ground (the same direction as working blades).
7. Thread the blade nut and washer on the shaft and finger tighten.
8. Torque the blade nut down clockwise using a torque wrench (not provided) to ensure the bolt is properly tightened. The recommended torque for the blade nut is 70-85 ft. lbs.
9. Repeat the above steps with the second and third blade.

⚠ WARNING: Ensure blade is properly seated and the blade nut is tightened to the torque specifications above. Failure to properly attach the blade could cause it to come loose and result in death or serious injury.

Sharpening the Blade

1. To properly sharpen the cutting blades, remove equal amounts of metal from both ends of the blades along the cutting edges. Always grind each cutting blade edge equally to maintain proper blade balance.
2. Test the blade’s balance using a blade balancer (not provided). Grind metal from the heavy side until it balances evenly.

⚠ WARNING: A poorly balanced blade will cause excessive vibration, may damage the mower, and result in death or serious injury.

Checking the Tire Pressure

For the correct traction and the best mowing performance, make sure that the front tires are inflated to 20 psi and the rear tires inflated to 14 psi. See “Tire Pressure” in the Specifications section.

⚠ NOTICE: There can be a difference in tire inflation pressure from the "Maximum Inflation" shown on the side of the tires.

Battery Maintenance

⚠ WARNING: Always shield eyes and protect skin and clothing when working near batteries.

- Spray the terminals and exposed wire with a battery terminal sealer, or coat the terminals with a thin coat of grease or petroleum jelly, to protect against corrosion.
- Always keep the battery cables and terminals clean and free of corrosion.
- When storing the mower for extended periods, disconnect the negative battery cable. It is not necessary to remove the battery.
- All batteries discharge during storage. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge more rapidly.
- The battery must be stored with a full charge. A discharged battery can freeze sooner than a charged battery. A fully charged battery will store longer in cold temperatures than hot.
- Recharge the battery before returning to service. Although the mower may start, the engine charging system may not fully recharge the battery.

Replacing the Battery; Cleaning the Battery and Battery Cables

⚠ WARNING: When you remove or install battery cables, always disconnect the NEGATIVE (black) cable FIRST and reconnect it LAST. If not done in this order, the positive terminal can be shorted to the frame by a tool.

NOTICE: DO NOT remove or connect the battery cable while the engine is ON.

1. STOP the engine. Remove the key.
2. Remove the latch (a) end of the battery securing strap from the small hole. (Fig.29)
3. Remove another end of the battery securing rod into the concave groove. (Fig.29)
4. Disconnect the NEGATIVE (-) cables from the battery first.
5. Disconnect the POSITIVE (+) cables from the battery last.
6. Clean the battery surface with baking soda and water.
7. Use a wire brush and terminal cleaner to clean the battery terminals and cable ends.
8. Lubricate the battery terminals with petroleum jelly or non-conducting grease.
9. Install the battery.
10. Connect the POSITIVE (+) cables to the battery first.
11. Connect the NEGATIVE (-) cables to the battery last.
12. Install the battery securing rod.

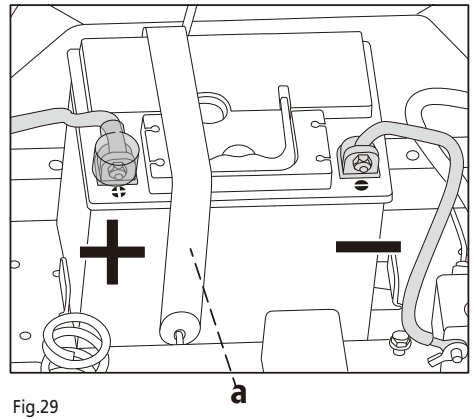


Fig.29

Charging the Battery

⚠ WARNING: Keep open flames and sparks away from the battery. Gases from the battery are very explosive.

A dead battery or one too weak to start the engine can be the result of a defect in the charging system or other electrical components. If there are doubts about the cause of the problem, see an Authorized Service center.

Checking the Mower Blade Stop Time

⚠ WARNING: If the mower blade does not STOP in 5 seconds or less, the clutch must be adjusted. DO NOT operate the machine until the adjustment has been corrected by an authorized service center.

Changing the Engine Oil and Oil Filter

NOTE: The oil filter should be changed at every oil change interval.

1. Put the unit on a level surface.
2. Stop the engine and remove the key.
3. Locate the oil drain sleeve and pull it downward to remove it. (Fig.30A)
4. Place the oil drain sleeve under the drain plug.
5. Place a collection container below the oil drain sleeve.
6. Rotate counterclockwise and pull the drain plug outward. (Fig.30B)
7. After the oil has drained, re-install the oil drain plug tightly.
8. Remove the oil filter and discard correctly.
9. Before you install the new oil filter, lightly lubricate the oil filter gasket with clean oil.
10. Install the oil filter by hand until the gasket touches the oil filter adapter, then tighten the oil filter ½ to ¾ turns.
11. Refill the engine with new oil.

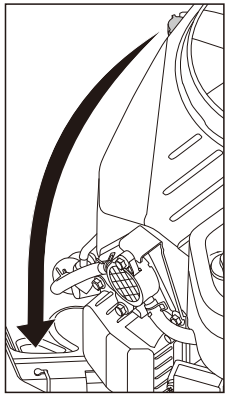


Fig.30A

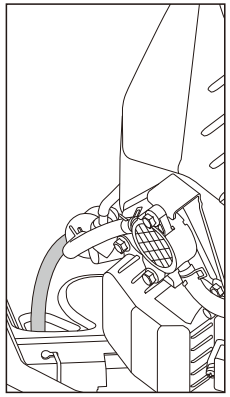


Fig.30B

Checking the Engine Oil Level

1. Remove the dipstick. Wipe the dipstick clean of remaining oil.
2. Install and tighten the dipstick.
3. Remove the dipstick again and check the oil level.
4. Make sure that the oil level is at the middle of the FULL mark on the dipstick.
5. If the oil level is FULL, install and tighten the dipstick,
6. If the oil level is LOW, add oil into the oil fill tube.
7. Wait one minute and check the oil level again. Continue to add oil and check the level until it is FULL.
8. Install and tighten the dipstick.

Changing the Air Filter

⚠ WARNING: DO NOT start or operate the engine without an air filter as it is a fire hazard.

NOTICE: DO NOT use pressurized air or solvents to clean the air filter. Pressurized air can damage the filter and solvents will dissolve it.

1. Loosen the fasteners and remove the cover.
2. Remove the air filter.
3. Clear unwanted material or debris that can get into the carburetor throat.
4. Lightly tap the air filter on a hard surface to loosen debris. If the air filter is dirty, replace it.
5. Install the air filter.
6. Install the cover and tighten the fasteners.

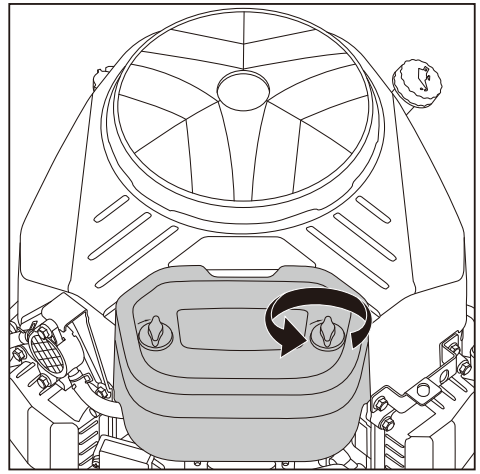


Fig.31

Checking the Spark Plug

⚠ WARNING: Unintentional sparking can result in fire or electric shock. Unintentional start up can result in entanglement, traumatic amputation, or laceration.

When you test for spark:

- Use an approved spark plug tester.
- DO NOT check for spark with the spark plug removed.

⚠ NOTICE: Spark plugs have different heat ranges. It is important that the correct spark plug is used, otherwise engine damage can occur. Replace the spark plug with the same type or an equivalent one.

Checking the Spark Plug Gap

Use a spark plug feeler gauge (A) to check the gap between the two electrodes. When the gap is correct, the gauge will drag slightly as you pull it through the gap.

To adjust the spark plug gap, use a spark plug gauge and gently bend the curved electrode. Make sure that you do not touch the center electrode or the porcelain.

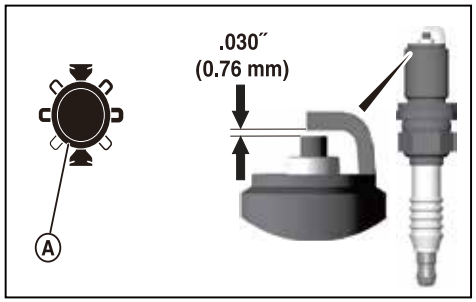


Fig.32

Installing the Spark Plug

Tighten the spark plug with your fingers, and them, tighten it with a wrench,

- 180 in-lbs, OR
- ½ turn when you install the original spark plug, OR
- ¼ turn when you install a new spark plug

NOTE: The 50" machine may require the use of the special spark plug tool provided with the machine.

Pushing the Mower By Hand

Pushing the mower may be necessary for moving the mower into and out of a garage or shed. It may also be necessary for loading into and out of a trailer.

1. Shut off the power and stop the engine
2. Disengage the PTO Switch.
3. To engage the bypass-valve lever, pull the lever back and into the elongated section of irregular slot. Repeat on opposite side.
4. Ensure the drive control levers are in the neutral position.
5. After moving the mower, reverse Step 1 to disengage the bypass-valve levers.

Towing with the Mower

- Attach equipment ONLY at the hitch point.
- The total towed weight (trailer and load) must not exceed 400 lbs. and not exceed a tongue weight (up or down) of 20 lbs.
- When towing, do not operate on slopes greater than 5 degrees. The weight of the towed equipment on slopes can cause loss of traction and loss of control.
- DO NOT let children or others in or on towed equipment.
- DO NOT place the drive control levers in the neutral position and coast down hill.

7 Transport

Empty the fuel tank with a suction pump before transporting the machine. Start the engine and let it run until it has used up all remaining gasoline.

- Close the fuel cap firmly.
- Let the engine cool down before transporting.
- Use full width ramps for loading and unloading the machine for transport.
- Use extra care when loading or unloading the machine into a trailer or truck. This machine should not be driven up or down ramp(s), because the machine could tip over, causing serious personal injury. The machine must be pushed manually on ramp(s) to load or unload properly.

8 Storage

WARNING: Never store the unit with fuel in an enclosed, non-ventilated structure. Fuel vapors can travel to an ignition source (such as a furnace, water heater, etc.) and cause an explosion.

Store it away from furnaces, stoves, water heaters, or other appliances that have pilot lights or other ignition sources because they can ignite fuel vapors.

Mower

Disengage the Power Take-Off (PTO), set the parking brake, remove the key, and let the machine cool.

Before storage, clean, inspect and maintain all components of the mower. Refer to Section 6 MAINTENANCE for details.

If you remove the battery, the battery life will increase. Make sure that the battery is in a cool, dry location, and keep it fully charged. If the battery is left in the unit, disconnect the negative cable.

Fuel System

Fuel can become stale when kept in a storage container for more than 30 days. Each time you fill the container with fuel, add STA-BIL 360 Protection to the fuel as specified by the manufacturer's instructions. This keeps fuel fresh and decreases fuel-related problems or contamination in the fuel system.

It is not necessary to drain fuel from the engine when STA-BIL 360 Protection is added as instructed. Before storage, turn the engine ON for 2 minutes to move the fuel and stabilizer through the fuel system.

Before starting the machine after it has been stored:

- Check all fluid levels. Check all maintenance items.
- Do all recommended checks and procedures found in this manual.
- Fully charge the battery.
- Drive the mower without a load to make certain all the mower systems are functioning properly.

9 Troubleshooting

⚠ WARNING: Before performing any type of maintenance, disengage all controls and stop the engine. Wait until all moving parts have come to a complete stop. Disconnect spark plug wire and ground it against the engine to prevent unintended starting. Always wear safety glasses during operation or while performing any adjustments or repairs.

NOTICE: If you can't solve the problems of the machine, take the mower to an authorized service center for assistance.

Troubleshooting the Mower

PROBLEM	LOOK FOR	REMEDY
The engine will not start.	The parking brake is not engaged.	Move the two drive control levers outward into the park position.
	The fuel tank is empty.	If engine is hot, let it cool, and then fill the fuel tank again.
	The PTO switch is in the ON position.	Move the PTO switch to the OFF position.
	The engine is flooded.	Disengage the choke.
	The battery terminals are dirty.	Refer to "Replacing the Battery; Cleaning the Battery and Battery Cables" section.
	The battery is discharged or dead.	Charge or replace the battery.
	Loose or broken wiring.	Visually check wiring. If wires are frayed or broken, see an Authorized Service Center.
The engine starts hard or runs poorly.	The fuel mixture is too much.	Clean the air filter.
The engine knocks.	Low oil level.	Check and add oil as required.
	Incorrect grade of oil.	Refer to the "Changing Engine Oil" section.
Excessive oil consumption.	The engine is too hot.	Check the engine fins, blower screen, and air filter.
	Incorrect grade of oil.	Refer to the "Changing Engine Oil" section.
	Too much oil in crankcase.	Drain excess oil.
The engine exhaust is black.	The air filter is dirty.	Refer to the "Changing the Air Filter" section.
	The choke is closed.	Open the choke.
The engine runs, but the mower will not drive.	The transmission is in neutral.	Move the drive control levers into the forward gear.
	The bypass valve is in the open position.	Close bypass valve.
	When the control lever is in neutral state, the hydraulic bridge parking gear plate engages.	Check if the hydraulic bridge tension spring has fallen off. If it has, please go to an authorized center for repair.
	The drive belt fell off.	Please go to an authorized center for maintenance.
The mower steers hard or handles poorly.	The tires are not inflated correctly.	Refer to the "Check Tire Pressure" section.
The mower cut is uneven.	The tires are not correctly inflated.	Refer to the "Check Tire Pressure" section.
	Cutting deck uneven.	Refer to the "Leveling the Cutting Deck" section.
The mower cut looks rough.	The engine speed is too slow.	Set to throttle lever to FAST.
	The ground speed is too fast.	Slow down.
	Cutting blade wear.	Check and replace a new blade if necessary.
The engine stalls easily with the mower blades engaged.	The engine speed is too slow.	Set to throttle lever to FAST.
	The ground speed is too fast.	Slow down.
	Dirty or clogged air cleaner.	Refer to "Changing the Air Filter" section.
	Height-of-Cut is too low.	Cut tall grass at maximum Height-of-Cut during first pass, or follow the "1/3 Rule during operation.
	The engine is not at the operating temperature.	START the engine and let it warm up for several minutes.
The engine starts, and the machine drives, but the mower will not cut.	The Power-Take Off (PTO) is disengaged.	Engage the PTO.
	Electromagnetic clutch wiring detachment.	Checking the wiring port. If it fell or is damaged, please go to an authorized center for maintenance.

NOTE: For all other problems, contact an Authorized Service Center.

10. Specifications

Specifications Chart

MOWER MODEL	553421	553422
Engine		
Model	LONCIN/ LC2P73F	LONCIN/ LC2P80F
Displacement	586 cc	764 cc
Max. Engine speed	3100 rpm	3100 rpm
Blade rotation speed	3000 rpm	3400 rpm
Horsepower	16.8 hp (12.5kw)	22.8hp (17kw)

Transmission		
Front Travel Speed	0-7.0 mph	0-7.0 mph
Reverse Travel Speed	0-3.0 mph	0-3.0 mph
Mower Deck		
Cutting Width	42 in.	50 in.
Cutting Height	1 in. - 4 in. (approx.), 7 positions	1 in. - 4 in. (approx.), 7 positions
Number of Blades / Lift	2 Blades / Standard lift	3 Blades / Standard lift
Blade Part Number	2105200368	2135200024

Chassis		
Front Tire Size	11 in. x 6.0 in – 5.0 in.	11 in. x 6.0 in – 5.0 in.
Rear Tire Size	20 in. x 10.0 in. – 10.0 in.	20 in. x 10.0 in. – 10.0 in.
Front Tire Pressure	20 psi	20 psi
Rear Tire Pressure	14 psi	14 psi
Turning Radius	0 in.	0 in.
Electrical System		
Fuse	20 Amp	20 Amp
Charging System Capacity	9 Amp	9 Amp
Battery Cold Cranking Amps	230 CCA	230 CCA
Battery Voltage	12V	12V
Battery Capacity	18Ah	28 Ah
Battery Type	BCI Group U1	BCI Group U1
Dimensions & Weight		
Length	77.1 in.	77.1 in.
Width	53.6 in.	61.7 in.
Width (with side discharge chute up)	45.0 in.	52.0 in.
Height	43.0 in.	43.0 in.
Weight	237kg	249 kg.
Capacity		
Engine Oil Capacity	1.7 L	2.4 L
Fuel Tank Capacity	11.4 L	11.4 L

11. Disposal

- Gasoline and oil are hazardous waste. Dispose of these materials properly.
- Do not pour gas or oil into the ground or into household garbage. Contact your local recycling authority.
- Some recycling centers will accept gas and oil and will recondition it or recycle it safely. Your city's government official should be able to direct you to the right recycling place. Then, call the recycling location in advance to see if they have any instructions that you'll need to follow.
- If disposing of entire mower, contact your local metal scrap yard.