

RZ 142
RZ 152

STIHL

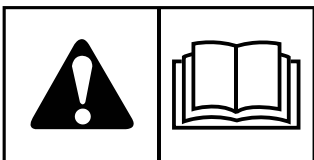


Operator's Manual



WARNING

Read Operator's Manual thoroughly before use and follow all safety precautions. Improper use can cause serious or fatal injury.



0478-194-8200-A

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General Information

Thank you for purchasing this quality-built STIHL zero-turn riding mower. We're pleased that you've placed your confidence in the STIHL brand.

The manuals included with this unit contain safety information to make you aware of the hazards and risks associated with the unit and how to avoid them. This zero-turn riding mower was designed to be used as described in the operator's manual for finish cutting of established lawns and is not intended for any other purpose. It is important that you read and understand the instructions thoroughly before attempting to start or operate this equipment.

Save these original instructions for future reference.

The images in this document are representative, and are meant to complement the instructional copy they accompany. Your unit may vary from the images displayed. *LEFT* and *RIGHT* are as seen from the operator's position.

Have your authorized STIHL servicing dealer show you how to operate your zero-turn riding mower.

Do not lend or rent your unit without this operator's manual. Allow only persons who have the proper training and fully understand the information in this manual to operate the zero-turn riding mower.

For further information, or if you do not understand any of the instructions in this manual, please go to STIHL.ca or contact your authorized STIHL servicing dealer.



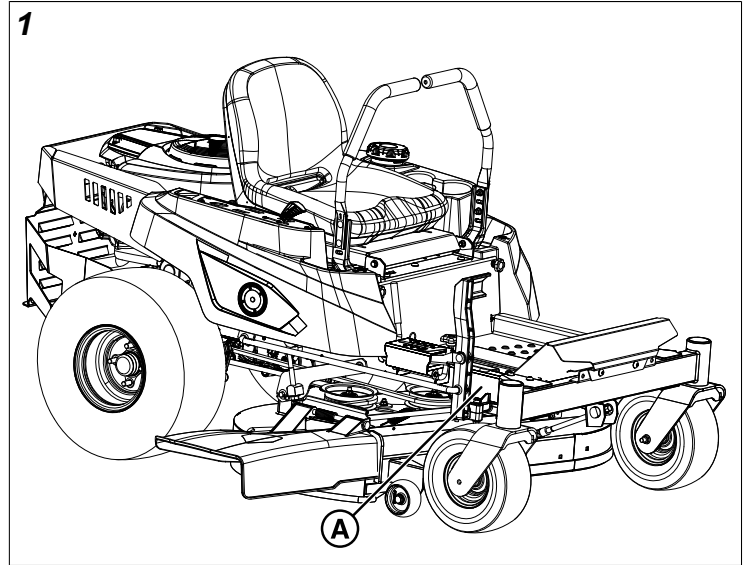
Recycle all packaging, used oil, and batteries according to applicable government regulations.

Identifying Your Unit

The following products are covered by this manual:

RZ 142.0 & RZ 152.0

The product identification tag (A, Figure 1) can be found in the location as shown in Figure 1.



Record your model number, product serial number, engine model number and engine serial number in the space provided for easy access.

When contacting your authorized STIHL servicing dealer for replacement parts, service or information you **MUST** have these numbers.


Note: For the location of the engine identification numbers refer to the engine operator's manual.


PRODUCT REFERENCE DATA	
Unit Model Number:	
Unit Serial Number:	
Dealer Name:	
Date Purchased:	


ENGINE REFERENCE DATA	
Engine Make:	
Engine Model:	
Engine Type / Specification:	
Engine Code / Serial Number:	


Operator Safety

Safety Alert Symbol and Signal Words

The safety alert symbol  identifies safety information about hazards that can result in personal injury. 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 a hazard which, if not avoided, **will** result in death or serious injury.

 **WARNING** indicates a hazard which, if not avoided, **could** result in death or serious injury.

 **CAUTION** indicates a hazard which, if not avoided, **could** result in minor or moderate injury.

NOTICE indicates information considered important but not hazard-related.

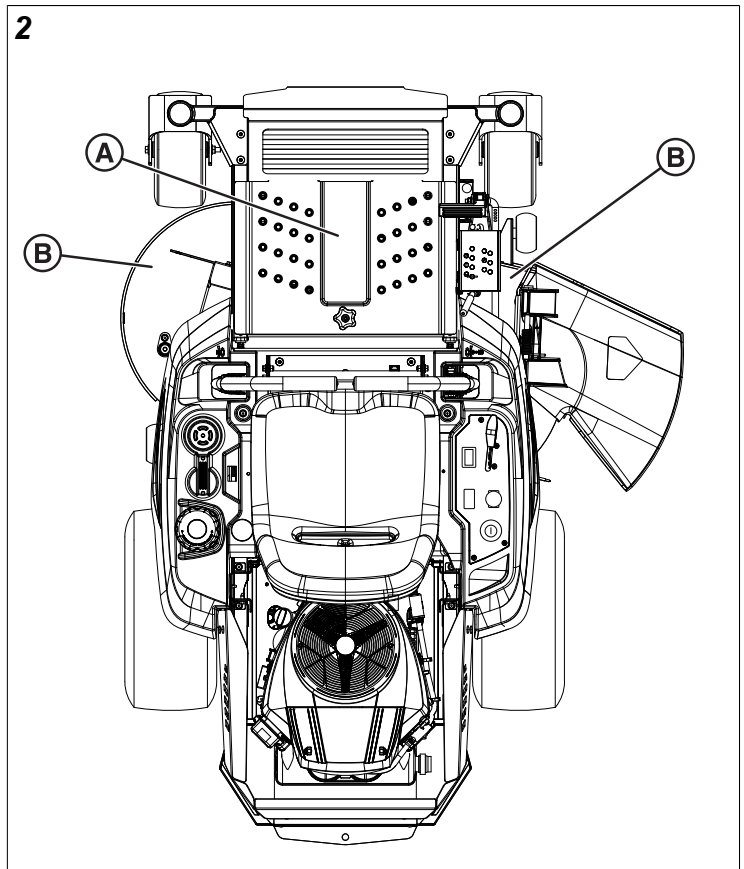
Safety Decals and Symbols

Read the safety decals before operating your unit. The cautions and warnings are for your safety. Understand and follow all safety decals to reduce the risk of a personal injury or property damage.

 **WARNING**

If any safety decals become worn or damaged and cannot be read, order replacement decals from your local authorized STIHL servicing dealer.

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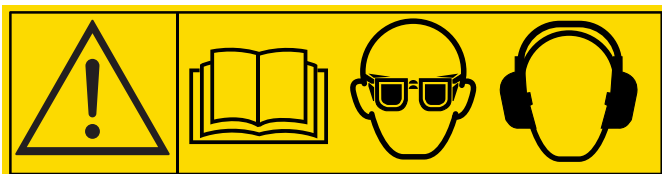
- A. Part Number: WB01-967-7210 - Decal, Main Safety
- B. Part Number: WB01-967-7215 - Decal, Danger, Cut Hand/Foot

Decal, Main Safety

Part Number: WB01-967-7210



WARNING



Avoid serious injury or death.

- Read the operator's manual before using this product.
- Wear ear and eye protection.
- When leaving machine, shut off, remove key, and set parking brake.
- Be sure blade(s) and engine are stopped before placing hands or feet near blade(s).

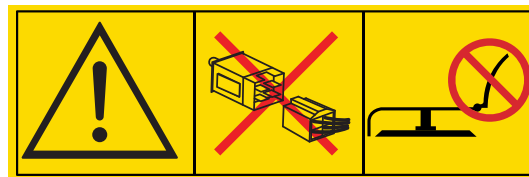
WARNING



Avoid serious injury or death.

- Do not operate this machine unless you are trained.
- Know the location and function of all controls.

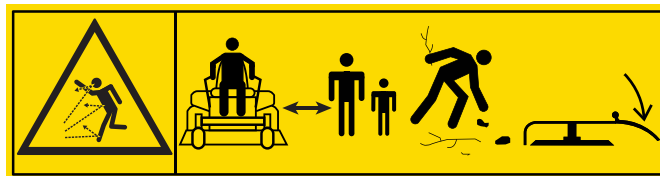
DANGER



Avoid serious injury or death.

- Keep safety devices (guards, shields, switches, etc.) in place and working.

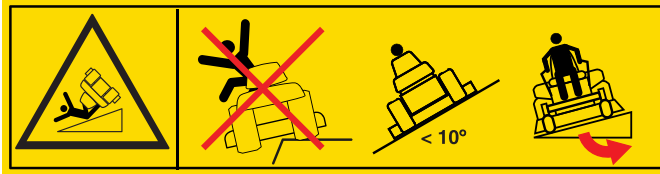
DANGER



Thrown objects and amputation hazard.

- Stop the mower when children or others are near. Keep bystanders away.
- Remove objects that could be thrown by the blade.
- Do not mow without discharge chute or entire grass catcher in place.

! DANGER



Water, retaining walls, and drop-off hazards.

Wheels dropping over edges may result in serious injury, death or drowning.

- Do not operate down slope towards or near water, retaining walls, or drop-offs.
- Give yourself a minimum of two mower widths of clearance around these hazards.

Loss of control and roll over hazard.

Operating on slopes can be hazardous and cause loss of control and roll overs.

- Do not operate on slopes over 10 degrees.
- Avoid sudden turns or rapid speed changes.
- Reduce speed and use extreme caution on slopes.
- Avoid turning down slopes; if possible turn up slopes.

! DANGER

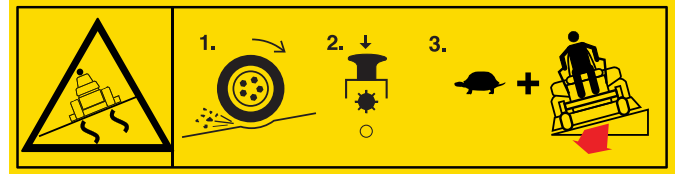


Amputation hazard.

Rotating blades cut off arms and legs.

- Do not carry riders (especially children) even with the blades off. They may fall off or return for another ride when you are not expecting it.
- Look down, behind, and to the side before changing directions and while backing.

! DANGER



Loss of traction, sliding, steering, and control on slopes hazard.

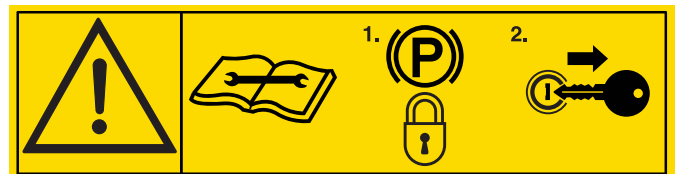
If machine stops forward motion on a slope, stop the blades and drive slowly off the slope.

Wet or soft slope hazard.

Wet or soft slopes can cause sliding and loss of control.

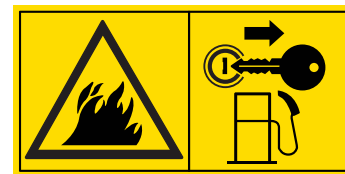
- Do NOT operate on slopes when grass is wet.
- Do NOT operate on slopes when soil is soft (such as after heavy rains).

! DANGER



Engage the parking brake, remove the key, and consult technical literature before performing service or maintenance.

! WARNING



Fire hazard.

Gasoline is flammable. Yard debris is combustible.

- Allow engine to cool for at least 3 minutes before refueling.
- Keep unit cleared of yard debris.
- This equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. Contact local fire agencies for regulations relation to fire prevention requirements.

Decal, Danger, Cut Hand/Foot

Part Number: WB01-967-7215



DANGER

Amputation and thrown objects hazard.



Do not operate mower unless discharge chute or entire grass catcher is in its proper place.



DANGER

Keep hands and feet away from deck.



To avoid injury from rotating blades stay clear of deck and keep others away.

Safety Instructions

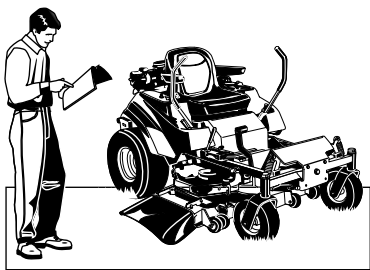
General Safety



WARNING

- Read, understand, and follow the instructions and warnings in this manual and on the unit, engine, and attachments before you operate this unit.
- Failure to read and follow these safety instructions could result in loss of control of the unit, severe personal injury, or death to you, or bystanders, or damage to property or equipment. This mowing deck is capable of amputating hands and feet and throwing objects.
- Do not operate this unit unless you have been trained. The owner is responsible for training the users. Reading and understanding this operator's manual is a way to train yourself.
- If the operator(s) or mechanic(s) cannot read English it is the owner's responsibility to explain this material to them. Other language translations of this manual may be available. See your authorized STIHL servicing dealer.
- Power equipment is only as safe as the operator. If it is misused, or not properly maintained, it can be dangerous. The owner/user can prevent, and is responsible for, accidents or injuries occurring to themselves, other people, or property.
- Only let adults who are responsible, trained, familiar with the instructions, and physically capable to operate the unit.
- Never let children or untrained people operate or service the unit. Local regulations may restrict the age of the operator.
- Do not operate the unit while under the influence of alcohol or drugs.
- Never use a smart phone, tablet, or other electronic device while operating. Distracted operation can increase the risk of accident or personal injury.
- Wear appropriate personal protective equipment such as safety shoes, long pants, safety glasses, and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Use common sense, and think through what you are doing. If you are not sure that the task you are about to perform can be safely done with the equipment you have chosen, ask a professional: contact your authorized STIHL servicing dealer.
- Do not put hands or feet near rotating parts or under the unit. Keep clear of the discharge opening at all times.
- Keep the unit in good working order. Replace worn or damaged parts.
- Use full width ramps when you load and unload the unit for transport.
- Use care with grass catchers or other attachments. These can change the stability of the unit. See attachment or accessory manual or contact your authorized STIHL dealer for information on proper wheel weights or counterweights.
- To help prevent fires, keep the unit free of grass, leaves, or other unwanted material. Clean remaining oil or fuel spillage. Remove fuel soaked debris and let the unit cool before storage.

Read the Manual



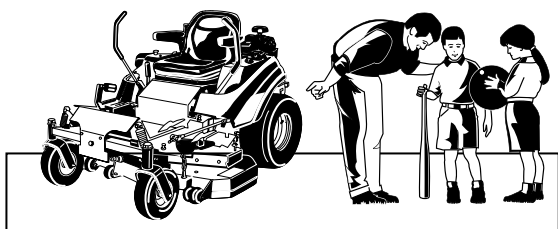
WARNING

The operator's manual contains important safety information you need to be aware of, understand, and apply **BEFORE** you operate your unit and **DURING** operation.

Safe operating techniques, an explanation of the product's features and controls, and maintenance information is included to help you get the most out of your investment.

Read this operator's manual thoroughly before use and follow all safety precautions. Improper use can cause serious or fatal injury.

Children



WARNING

Tragic accidents can occur if the operator is not alert to the presence of children. Do not allow children anywhere near the area of operation. Children are often attracted to the unit and the mowing activity. Never assume that children will remain where you last saw them. If there is a risk that children may enter the area where you are mowing, have another responsible adult watch them.

- Keep children out of the mowing area and under the watchful care of another responsible adult other than the operator.
- Be alert and turn the unit off if children enter the area.
- Always look down, behind, and to the side for children before changing directions and while backing.
- Before and during reverse operation, look behind and down for small children.
- Never carry children, even with the blade(s) off. They may fall off and be seriously injured or interfere with safe unit operation. Children who have been given rides in the past may suddenly appear in the mowing area for another ride and be run over or backed over by the unit.
- Never allow children to operate the unit.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

Operation

WARNING

- Clear the operating area of any objects which could be thrown by or interfere with operation of the unit.
- Only operate in daylight or good artificial light. The LED lights supplied with the unit or as an accessory contribute to visibility but are not considered good artificial light suitable for night time mowing.
- Keep away from holes and hidden hazards.
- Do not operate on public roads.
- Never operate the unit without guards securely in place. Be sure all interlocks are attached, adjusted, and functioning properly.
- Stop the unit on level ground, disengage the PTO, engage the parking brake, and shut off the engine before leaving the operator's position for any reason including emptying the grass catchers or unclogging the chute.
- Never carry passengers and keep pets and bystanders away.
- Do not direct discharge material toward anyone. Avoid discharging material against a wall or obstruction. Material may ricochet back toward the operator. Stop the blade(s) when crossing gravel surfaces or when you are not mowing.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Do not change the engine governor setting or overspeed the engine.
- To help prevent fires, keep the unit free of grass, leaves, or other unwanted material. Clean remaining oil or fuel spillage. Remove fuel soaked debris and let the unit cool before storage.

Starting

WARNING

- Only operate in well ventilated areas. Exhaust gases contain carbon monoxide, a deadly poison.
- Be sure all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position.

Mowing

WARNING

- Do not mow in reverse unless absolutely necessary. Always look down, behind, and to the side before changing directions and while backing.
- Do not direct discharge material toward anyone. Avoid discharging material against a wall or obstruction. Material may ricochet back towards the operator. Stop the blade(s) when crossing gravel surfaces. Do not operate

the mower without either the entire grass catcher or the deflector in place.

- Slow down and use caution when making turns and when changing directions on slopes.
- Never raise deck with the blades running.
- Never leave a running unit unattended. Always disengage the PTO, set parking brake, stop engine, and remove keys before dismounting. Keep hands and feet away from the blades.
- Turn off the PTO switch to disengage the blades when not mowing.
- Never operate without guards securely in place. Be sure all interlocks are attached, adjusted properly and functioning properly.
- Never operate with the discharge deflector raised, removed or altered, unless using a grass catcher.
- Stop on level ground, disengage the PTO, engage the parking brake, shut off the engine before leaving the operator's position for any reason including emptying the grass catchers or unclogging the chute.
- Stop equipment and inspect blades after striking objects or abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the blades.

Moving Parts



WARNING

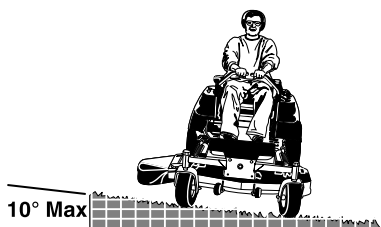
This unit has many moving parts that can injure you or someone else. Remain seated during operation and follow the safety instructions in this operator's manual to reduce the risk of injury.

The mower deck has spinning mower blades that can amputate hands and feet. Do not allow anyone near the unit while it is running. Keep safety devices (guards, shields, and switches) in place and working.

This zero-turn riding mower is equipped with an operator presence interlock system. Do NOT attempt to alter or bypass the system. See your authorized STIHL servicing dealer immediately if the system does not pass all the safety interlock system tests found in this manual.

Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Slope Operation



WARNING

Operation on slopes can be dangerous. Using the unit on a slope that is too steep where you do not have adequate wheel traction (and control) can cause sliding, loss of steering, control, and possible roll over. Do not operate the unit under any condition where traction, steering, or stability is in question. Tires could slide even if the wheels are stopped. Do not operate on a slope greater than 10 degrees (a 3.5 foot rise over a 20 foot length).

Avoid turning down slopes; if possible turn up slopes. Avoid sudden turns or rapid speed changes. Reduce speed and use extreme caution on ALL slopes.

The surface condition you are on can greatly impact your ability to safely operate this unit. Operating on wet or slippery slopes can cause sliding and loss of steering and control. Do not operate on slopes that are slippery, wet, or have soft soil conditions.

If you feel uncomfortable about operating the unit on a slope, don't do it.



WARNING

Slopes are a major factor related to loss-of-control and tipover accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not drive on it.

Do not use this unit on slopes greater than 10 degrees.

Select slow ground speed before driving onto slope. Use extra caution when operating on slopes with rear-mounted grass catchers.

Avoid turning down slopes; if possible turn up slopes. Use caution when changing direction and do not start or stop on a slope.

Do:

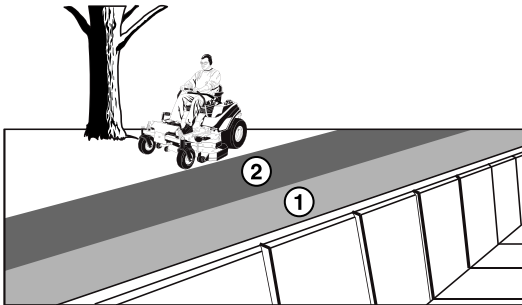
- Remove obstacles such as rocks, tree limbs, etc.
- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Use only accessories and attachments approved by the manufacturer.
- Avoid holes, ruts, bumps, rocks, or other hidden hazards. Uneven terrain could overturn the unit, or cause the operator to lose their balance or footing. Tall grass can hide obstacles.
- Slow down and use extra care on slopes. Be sure to travel in the recommended direction on slopes. Turf conditions can affect the unit's stability. Use caution when operating near drop-offs.
- Slow down and use caution when making turns and when changing directions on slopes.
- Use slow speed. Choose a slow speed so that you will not have to stop or change speed while on the slope.
- Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.

- Use care with grass catchers or other attachments. These can change the stability of the unit. See your attachment or accessory manual or contact your authorized STIHL dealer for information on proper wheel weights or counterweights.

Do NOT:

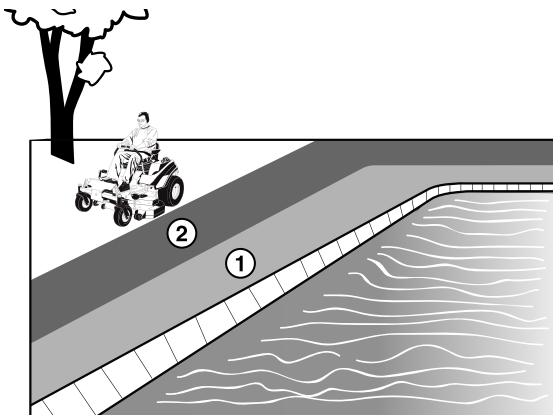
- Avoid starting, stopping, or turning on a slope. Do NOT make sudden changes in speed or direction, which could cause the mower to roll over.
- Do not mow down slopes towards or near drop-offs, ditches, or embankments. The mower could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in. Give yourself a minimum of two mower widths of clearance around these hazards.
- Do not mow on wet grass. Reduced footing or traction could cause sliding.
- Do not try to stabilize the unit by putting your foot on the ground.
- Do not mow excessively steep slopes.
- Do not use grass catcher on steep slopes.
- Do not mow slopes if you cannot back up them.

Retaining Walls, Drop-Offs, and Water



! WARNING

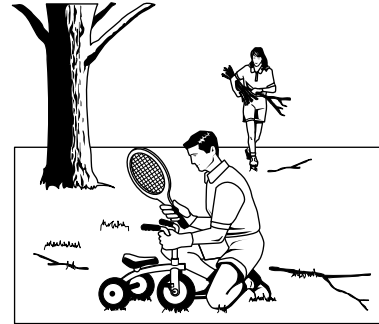
Retaining walls and drop-offs around steps and water are a common hazard. Do NOT operate down slope towards or near water, retaining walls, or drop-offs.



! WARNING

Give yourself a minimum of two mower widths of clearance around these hazards and hand-trim with a walk behind mower or string trimmer. Wheels dropping over retaining walls, edges, ditches, embankments, or into water can cause rollovers, which may result in serious injury, death, or drowning.

Thrown Objects



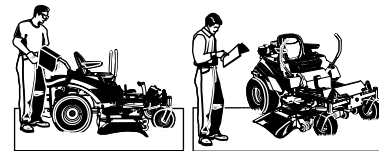
! WARNING

This unit has spinning mower blades. These blades can pick up and throw debris that could seriously injure a bystander. Clear the operating area of any objects which could be thrown by, or interfere with operation of, the unit.

Do not operate the unit 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.

Do not allow anyone in the area while the unit is running. If someone enters the area, shut the unit off immediately, and wait until they leave to re-start the unit.

Fuel and Maintenance



 **WARNING**

Always disengage all drives, shut off the engine, and remove the key before doing any cleaning, refueling, or servicing.



Fuel and its vapors are extremely flammable. Do not smoke while operating or fueling. Do not add fuel while engine is hot or running. Allow engine to cool for at least three (3) minutes prior to adding fuel.

Do not add fuel indoors, in an enclosed trailer, garage, or any other enclosed area that is not well ventilated. Fuel spills should be cleaned up promptly and before operation begins.

Fuel should be stored only in sealed containers approved for fuel.

Proper maintenance is critical to the safety and performance of your unit. Keep the unit free of grass, leaves, and excess oil. Be sure to perform the maintenance procedures listed in this manual, especially periodically testing the safety system.

 **WARNING**

To avoid personal injury or property damage, use extreme care in handling fuel. Fuel is extremely flammable and the vapors are explosive.

- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only approved fuel containers.
- Never remove the fuel cap or add fuel with the engine running or while hot. Allow the engine to cool for three (3) minutes before adding fuel.
- Never add fuel to, or drain fuel from, the unit indoors.
- Never store the unit or fuel container where there is an open flame, spark, or pilot light such as near a water heater or other appliance.
- Never fill fuel containers inside a vehicle or on a truck bed with a plastic bed liner. Always place containers on the ground away from your vehicle before filling.
- Remove fuel-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a fuel dispenser nozzle.
- Keep nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If fuel is spilled on clothing, change clothing immediately.
- Never over-fill the fuel tank. Replace fuel cap and tighten securely.
- Use care in handling fuels. They are flammable and vapors are explosive.
- If fuel is spilled, do not attempt to start the engine but move the unit away from the area of spillage and avoid

creating any source of ignition until fuel vapors have dissipated.

- Replace all fuel tank caps and fuel container caps securely.

 **WARNING**

- Keep all hardware, especially blade attachment bolts, tight and keep all parts in good working condition. Replace all worn or damaged parts.
- Never tamper with safety devices. Check their proper operation regularly.
- Disengage the PTO, set the parking brake, stop the engine and remove the ignition key and/or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning, or repairing.
- Clean grass and debris from mower deck, drives, mufflers, and engine to prevent fires. Clean up oil or fuel spillage.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Park the unit on level ground. Never allow untrained personnel to service the unit.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect the battery cables or remove the spark plug wire(s) before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Use care when checking blades. Wrap the blade(s) with a shop towel or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open, well ventilated area, away from spark and flames. Unplug the charger before connecting or disconnecting from the battery. Wear protective clothes and use insulated tools.
- Grass catcher components are subject to wear, damage, and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturer's recommended parts, when necessary.
- Check brake operation frequently. Adjust and service as required.
- Use only STIHL recommended replacement parts when making repairs.
- Always comply with factory specifications on all settings and adjustments.
- Only authorized STIHL servicing dealers should be utilized for major service and repair requirements.
- Never attempt to make major repairs on this unit unless you have been properly trained. Improper service procedures can result in hazardous operation, equipment damage and voiding of manufacturer's warranty.

WARNING

Units with hydraulic pumps, hoses, or motors: Hydraulic fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. If foreign fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result. Keep body and hands away from pin holes or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, and not hands, to search for leaks. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system. If leaks occur, have the unit serviced immediately by your authorized STIHL servicing dealer.

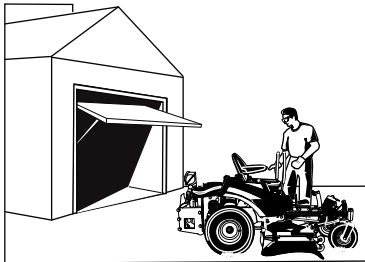
WARNING

Stored energy device. Improper release of springs can result in serious personal injury. Springs should be removed by an authorized STIHL servicing dealer.

WARNING

Units equipped with an engine radiator: Stored energy device. To prevent serious bodily injury from hot coolant or steam blow-out, never attempt to remove the radiator cap while the engine is running. Stop the engine and wait until it is cool. Even then, use care when removing the cap.

Enclosed Areas



WARNING

Only operate this unit outdoors and away from unventilated areas such as inside enclosed trailers and garages. The engine emits poisonous carbon monoxide gas and prolonged exposure in an enclosed area can result in serious injury or death.

Towed Equipment

WARNING

- Tow only with a unit that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
- Follow the manufacturer's recommendations for weight limit for towed equipment and towing on slopes. See *Attaching a Trailer* under OPERATION.
- Never allow children or others in or on towed equipment.
- On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
- Travel slowly and allow extra distance to stop.
- Do not shift to neutral and coast down hill.

Emissions

WARNING

- Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.
- Look for the relevant Emissions Durability Period and Air Index information on the engine emissions label.

Hearing Protection

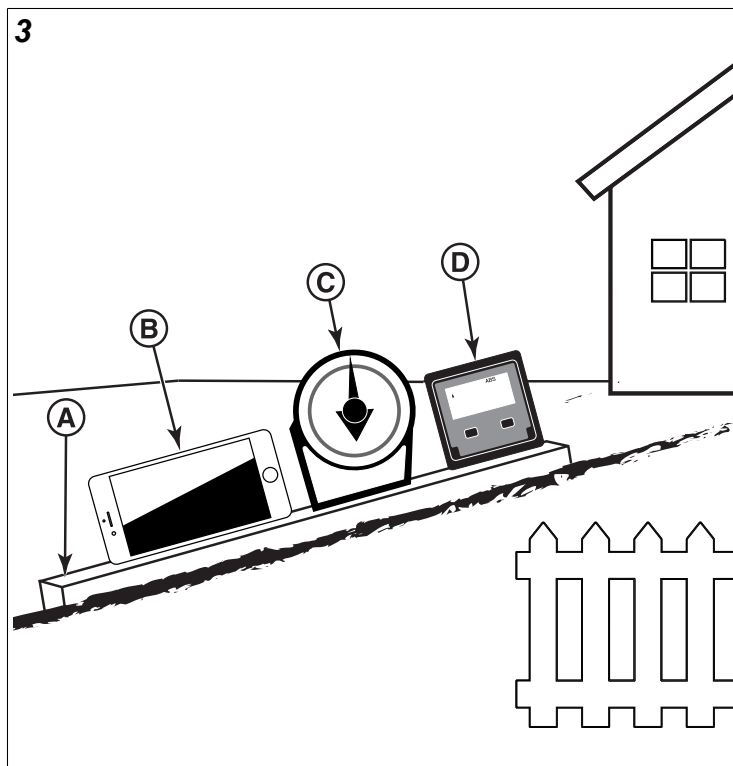
WARNING

OSHA regulations may require the use of hearing protection when exposed to sound levels greater than 85 dBA for an 8 hour time period.

This unit produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss though extended periods of exposure.

Wear ear and eye protection when operating this unit.

Slope Identification Guide



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



To reduce the risk of serious personal injury or death, never operate on slopes greater than 10 degrees.

1. Use a straight edge at least two (2) feet long (A, Figure 3). A 2x4 or a straight piece of metal works well.
2. Angle finder tools:
 - a. **Use your smartphone:** Many smartphones (B, Figure 3) have an inclinometer (angle finder) located under the compass application (app). Or, search an app store for an inclinometer app.
 - b. **Use angle finder tools:** Angle finder tools (C and D, Figure 3) are available at local hardware stores or online (also called inclinometer, 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 smartphone or angle finder tool on the straight edge and read the angle in degrees. This is the slope of your lawn.

Note: A paper gauge slope identification guide is included in your product literature packet.

Safety Interlock System



DO NOT operate unit if any safety interlock or safety device is not in place and functioning properly. Contact your authorized STIHL servicing dealer immediately for assistance. DO NOT attempt to defeat, modify, or remove any safety device.

Operational SAFETY Checks

Test 1 - Engine **MUST NOT** crank if:

- PTO switch is engaged, OR;
- Ground speed control levers are not locked in their START/PARK positions.

Test 2 - Engine **SHOULD** crank if:

- PTO switch is NOT engaged, AND;
- Ground speed control levers are locked in their START/PARK positions.

Test 3 - Engine **MUST SHUT OFF** if:

- Operator rises off seat with PTO engaged, OR;
- Operator rises off seat ground speed control levers not locked in their START/PARK positions.

Test 4 - Blade Brake Check

The mower blades and mower drive belt should come to a complete stop within five (5) seconds after electric PTO switch is turned off (or operator rises off the seat). If mower drive belt does not stop within five (5) seconds, see your authorized STIHL servicing dealer.

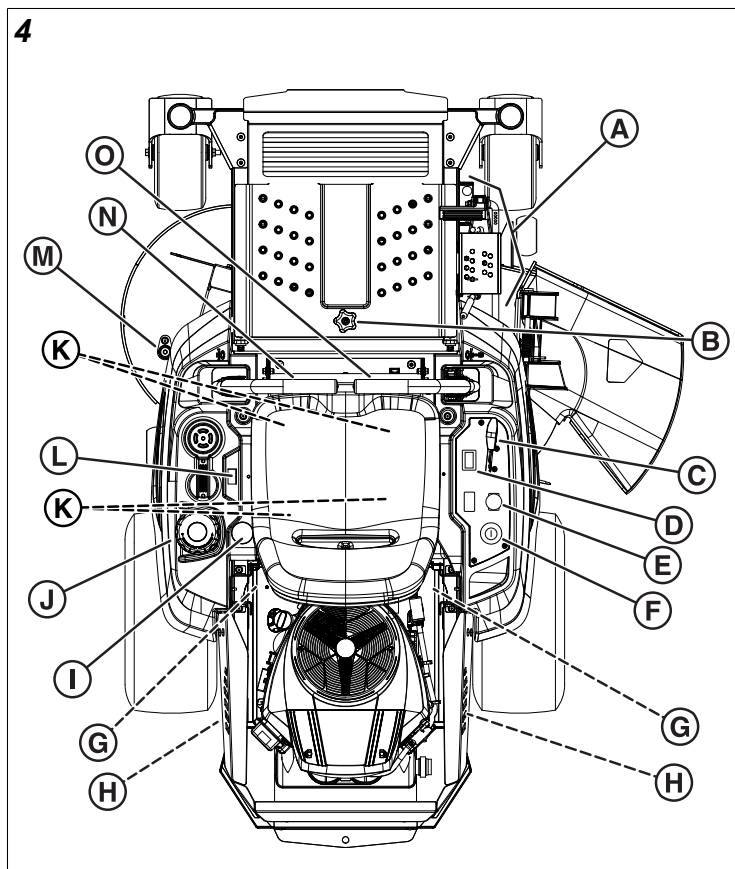
Note: Once the engine is stopped, the PTO switch must be turned off and the ground speed control levers must be locked in their START/PARK positions in order to start the engine.

Features and Controls

Control Functions and Locations

The information below briefly describes the function of individual controls. Starting, stopping, driving, and mowing require the combined use of several controls applied in specific sequences. To learn what combination and sequence of controls to use for various tasks see the OPERATION section.

Zero-Turn Riding Mower Controls

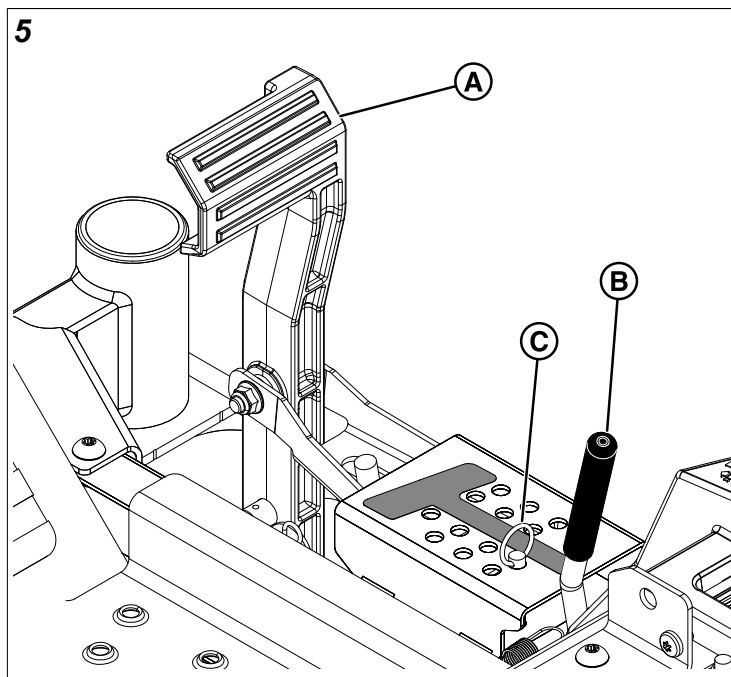




- A. Deck Lift Pedal, Cutting Height Adjustment Pin, and Deck Lift Lock Lever
- B. Removable Floor Plate
- C. Throttle Control
- D. Hour Meter
- E. PTO (Power Take Off) Switch
- F. Ignition Switch
- G. Transmission Oil Fill/Tanks (One per transmission if equipped)
- H. Transmission Release Levers (One per transmission)
- I. Fuel Level Gauge (if equipped)
- J. Fuel Tank Cap
- K. Seat Adjustment Hardware
- L. Dual USB Charging Port (if equipped)
- M. Deck Washout Port
- N. Left Ground Speed Control Lever

O. Right Ground Speed Control Lever

Deck Lift Pedal, Cutting Height Adjustment Pin, and Deck Lift Lock Lever: These controls are used to adjust the cutting height of the mower deck.


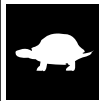
Depress the deck lift pedal (A, Figure 5) until the deck lift lock lever (B) locks the mower deck into the 4-1/2" (11,4 cm) TRANSPORT position. Place the cutting height adjustment pin (C) into the hole for the desired cutting height. Depress the deck lift pedal, move the deck lift lock lever outwards, and slowly release the deck lift pedal until it rests against the cutting height adjustment pin.



	
Cutting Height Adjustment Pin	Deck Lift Lock Lever

Removable Floor Plate: The floor plate can be removed for easy access to the mower deck. To remove the plate, remove the retainer hardware and tilt the floor pan up and then remove from the unit. Reverse the process for re-installation.

Throttle Control: The throttle controls engine speed. Move the throttle forward to increase engine speed and back to decrease engine speed. Always operate at FULL throttle when mowing.

	
Fast throttle speed.	Slow throttle speed.






Hour Meter: This unit is equipped with an hour meter that records the number of hours that the engine has been run.



PTO (Power Take Off) Switch: The PTO switch engages and disengages the mower blades. Pull UP on the switch to engage, and push DOWN to disengage.

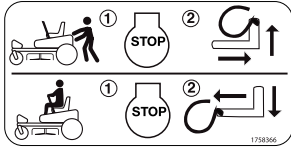
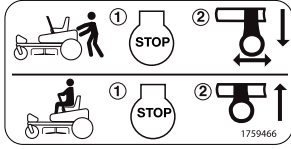
Ignition Switch: The ignition switch starts and stops the engine, it has three positions:

		
OFF: Stops the engine and shuts off the electrical system.	RUN: Allows the engine to run and powers the electrical system.	START: Cranks the engine for starting.

Note: Never leave the ignition switch in the RUN position with the engine stopped—this drains the battery.

Transmission Oil Fill: Transmission oil is added through the hydraulic oil tanks. It also serves as extra holding capacity for oil as the transmissions heat up and the hydraulic oil expands. See *Check / Fill Transmission Oil* for oil level check and fill procedures.

Transmission Release Levers:

Symbol	Control Name
	Transmission Release Levers
	Transmission Release Levers (Models with Suspension)

Each transmission is equipped with a transmission release lever. These levers deactivate the transmissions so that the unit can be pushed by hand. Both transmission release levers must be in the same position whether you are driving the unit or pushing it by hand. See *Pushing the Unit by Hand* for operational information and control location.



Fuel Level Gauge: Displays the fuel level in the tank.

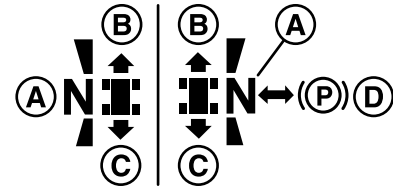
Fuel Tank Cap: To remove the cap, turn **counter-clockwise**.

Seat Adjustment Hardware: The position of the seat can be adjusted forwards or backwards to meet the comfort needs of the operator. See *Seat Adjustment* for instructions on adjusting the seat position.

Dual USB Charging Port: Open the top doors to access the two (2) USB charging ports. The USB port provides a total current of up to 3.15 amps and its center LED indicates when charging is in process. The ignition switch must be in the RUN position for charging.

Deck Washout Port: The washout port allows you to connect a typical garden hose to the left-hand side of the mower deck to remove grass and debris from the underside. See *Washing the Mower Deck* for instructions on how to use the washout port.

Ground Speed Control Levers: These levers control the ground speed and direction of the zero-turn riding mower.



- A. **Neutral**
- B. **Forward**
- C. **Reverse**
- D. **Parking Brake Engaged**

The left lever controls the left rear drive wheel and the right lever controls the right rear drive wheel and engages the parking brake.

Moving a lever forward from the NEUTRAL position (A) increases the FORWARD (B) speed of the associated wheel and pulling back on a lever increases the REVERSE (C) speed.

Tilting the ground speed control levers outwards from the NEUTRAL position will engage the parking brake (D). Tilting the ground speed control levers in towards the NEUTRAL position will disengage the parking brake.

Note: The further a lever is moved away from the neutral position, the faster the drive wheel will turn.

See the *Zero-Turn Riding Mower Driving Practice* section for steering instructions.

Operation

Before First Time Operation

- Be sure to read all information in the OPERATOR SAFETY and OPERATION sections before attempting to operate this unit.
- Become familiar with all of the controls and how to stop the unit.
- Drive in an open area without mowing to become accustomed to the unit.

WARNING

- Never operate on slopes greater than 10 degrees.
- Select slow ground speed before driving onto a slope. Use extra caution when operating on slopes with a rear-mounted grass catcher.
- Avoid turning down slopes; if possible turn up slopes. Use caution when changing direction on slopes and do NOT start or stop on a slope.

WARNING

- Never allow passengers to ride on the unit.
- Before leaving the operator's position for any reason, engage the parking brake, disengage the PTO, stop the engine and remove the key.
- To reduce fire hazard, keep the engine and zero-turn riding mower free of grass, leaves, and excess grease. Do NOT stop or park unit over dry leaves, grass or combustible materials.
- Fuel is highly flammable and must be handled with care. Do NOT remove the fuel cap(s) or add fuel with the engine running or while hot. Do NOT allow open flame, smoking, or matches in the area. Avoid over-filling and wipe up any spills.

WARNING

Do NOT load this zero-turn riding mower on a trailer or truck using two separate ramps. Only use a single ramp that is at least one foot wider than the width of the rear wheels of this unit. This unit has a zero turning radius and the rear wheels could fall off the ramps, or the unit could tip over injuring the operator or bystanders.



Checks Before Starting

- Check that the crankcase is filled to the full mark on the crankcase oil fill and dipstick. If necessary, add oil through the engine oil fill. See the engine operator's

manual for instructions, engine oil dipstick location, and oil recommendations.

- Make sure that all nuts, bolts, screws, and pins are in place and tight.
- Adjust the seat position and make certain you can reach all of the controls from the operator's position.
- Fill the fuel tank with fresh fuel. Refer to the engine operator's manual for fuel recommendations.
- Suspension units only: Check the hydraulic oil level.

Starting the Engine

WARNING

- If you do not understand how a specific control functions, or have not yet thoroughly read the FEATURES AND CONTROLS section, do so now.
- Do NOT attempt to operate the unit without first becoming familiar with the location and function of all controls.

1. While sitting in the operator's seat, make sure that the PTO switch is disengaged and the ground speed control levers are locked in the START/PARK position.

Note: The parking brake is automatically engaged when the ground speed control levers are locked in the START/PARK position.

2. Set the throttle control to the FAST position.

Note: This engine is equipped with a ReadyStart® feature and does not require a manual choke lever.

3. Insert the key into the ignition switch and turn it to START.
4. After the engine starts, reduce to half throttle speed and allow the engine to warm. *Warm up the engine by running it for at least a minute before engaging the PTO switch or driving the unit.*
5. After warming the engine always operate the unit at the FAST throttle position when mowing.

In the event of an emergency the engine can be stopped by simply turning the ignition switch to OFF. Use this method only in emergency situations. For normal engine shut down follow the procedure given in *Stopping the Zero-Turn Riding Mower.*

Stopping the Zero-Turn Riding Mower

1. Drive the unit to a flat, level surface and return the ground speed control levers to the middle (NEUTRAL) position to stop the unit's movement. Pivot the levers outward to lock them in the START/PARK position. This action automatically engages the parking brake.
2. Disengage the PTO by pushing down on the PTO switch. Move the throttle control to the SLOW position and turn the ignition switch to OFF. Remove the key.

Zero-Turn Riding Mower Driving Practice

Before attempting to drive the zero-turn riding mower make sure you have read the FEATURES AND CONTROLS section and understand the location and function of all of the unit's controls.

The ground speed control levers of this zero-turn riding mower are responsive, and learning to gain a smooth and efficient control of the unit's forward, reverse, and turning movements will take some practice.

Before you begin mowing, spend some time going through the maneuvers shown in this manual and become familiar with how the unit accelerates, travels, and steers.

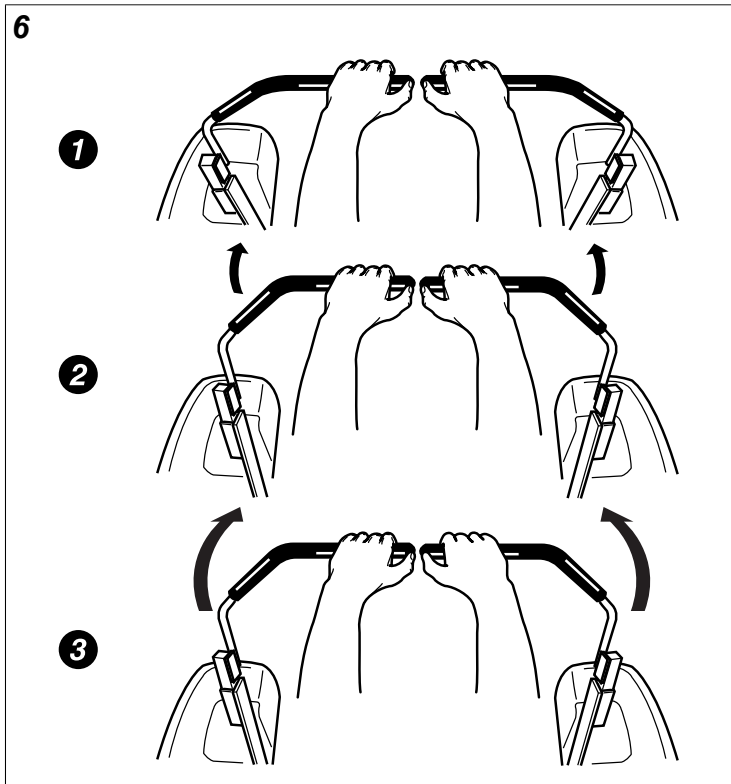
Locate a smooth, flat area of your lawn with plenty of room to maneuver. Clear the area of objects, people, and animals before you begin. Operate the unit at mid-throttle during this practice session (ALWAYS operate at full throttle when mowing), and turn slowly to prevent tire slippage and damage to your lawn.

We suggest you begin with the *Smooth Travel* procedure, and then advance through the forward, reverse, and turning maneuvers.

Smooth Travel

The ground speed control levers of the zero-turn riding mower are responsive.

The BEST method of handling the ground speed control levers is in three steps — as shown in Figure 6.

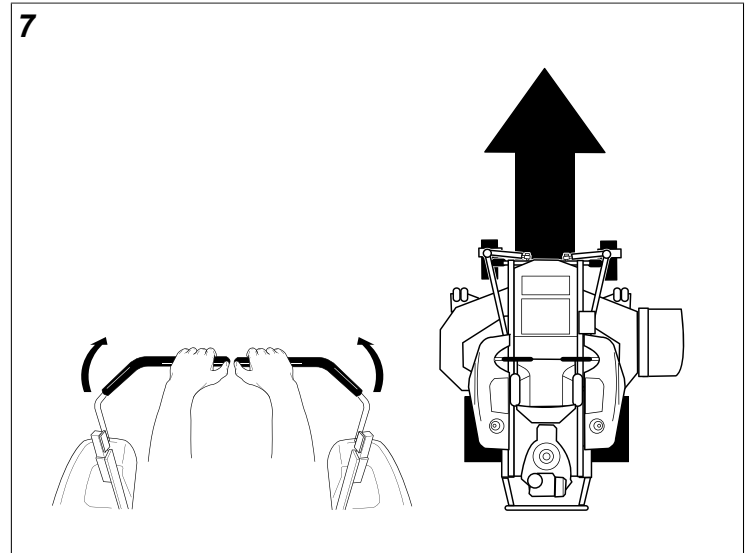


FIRST, place your hands onto the levers as shown.

SECOND, to go forward gradually push the levers forward with your palms.

THIRD, to speed up move the levers farther forward. To slow down smoothly, slowly move the levers toward neutral.

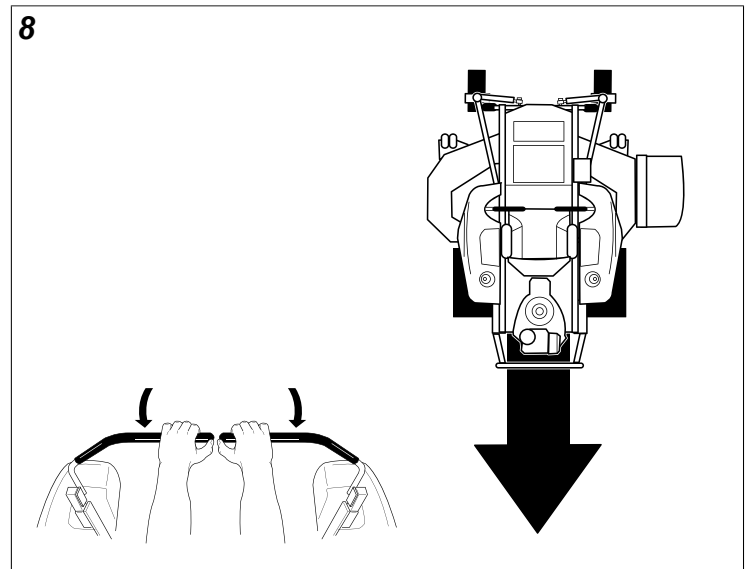
Basic Driving Forward Travel Practice



Gradually move both ground speed control levers — evenly FORWARD from neutral. Slow down and repeat.

Note: Straight forward travel takes practice. If necessary, top speed can be balance-adjusted — see the *Speed Balancing Adjustment* in the MAINTENANCE PROCEDURES section of this manual.

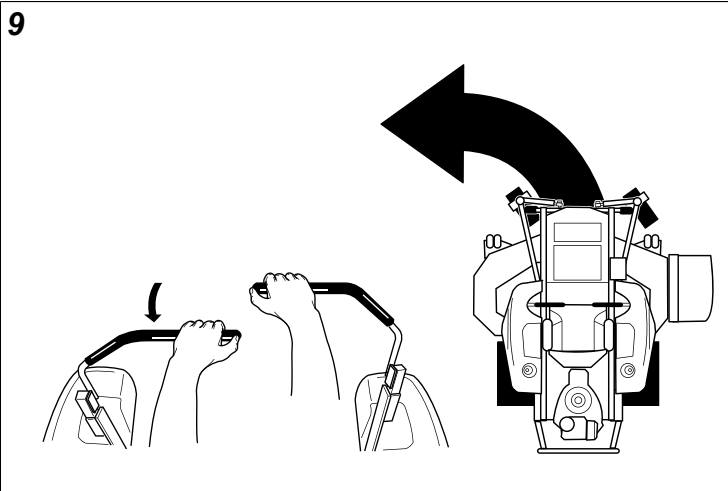
Reverse Travel Practice



LOOK DOWN AND BEHIND, then gradually move both ground speed control levers evenly BACK from neutral. Slow down and repeat.

Note: Practice backing up for several minutes before attempting to do so near objects. The zero-turn riding mower turns sharply in reverse as well as forward, and backing up straight takes practice.

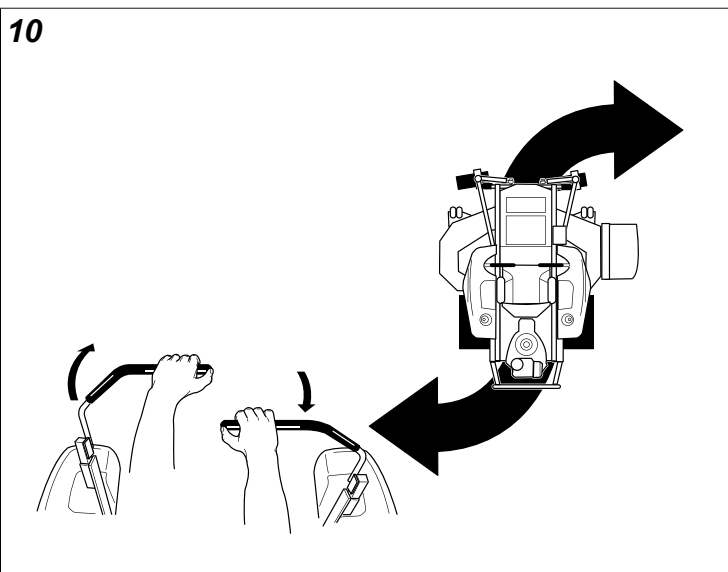
Practice Turning Around A Corner



While traveling forward allow one ground speed control lever to gradually return back toward neutral. Repeat several times.

Note: To prevent pivoting directly on the tire tread, it is best to keep both wheels going at least slightly forward.

Practice Turning in Place

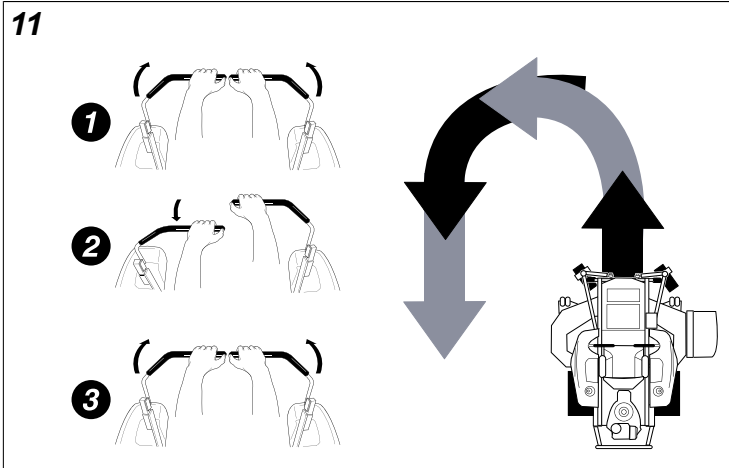


To turn in place, “zero-turn,” gradually move one ground speed control lever forward from neutral and the other lever back from neutral simultaneously. Repeat several times.

Note: Changing the amount each ground speed control lever is pulled—forward or back, changes the “pivot point” you turn on.

Advanced Driving

Executing an End-Of-Row Zero-Turn



Your zero-turn riding mower's unique ability to turn in place allows you to turn around at the end of a cutting row rather than having to stop and Y-turn before starting a new row.

For example, to execute a left end-of row zero turn:

1. Slow down at the end of the row.
2. Move the RIGHT ground speed control lever forward slightly while moving the LEFT ground speed control lever back to center and then slightly back from center.
3. Begin mowing forward again.

This technique turns the unit LEFT and slightly overlaps the row just cut — eliminating the need to back up and re-cut missed grass.

Mowing

1. Make sure that the PTO switch is disengaged, the ground speed control levers are locked in their START/PARK positions, and the operator is in the seat.
2. Start the engine. See *Starting the Engine*.
3. See the mower cutting height. See *Cutting Height Adjustment*.
4. Set the throttle to the 1/2 throttle position

Note: It is best practice to engage the PTO with the throttle set at the minimum throttle position necessary to engage the deck drive system without stalling the engine.

5. Engage the PTO by pulling up on the PTO switch.
6. Move the throttle to the FAST position and pivot the ground speed control levers in from the START/PARK position to the neutral “N” position.
7. Begin mowing.
8. When finished, reduce throttle speed so that the engine idles and push the PTO switch down to shut off the PTO.
9. Stop the engine. See *Stopping the Zero-Turn Riding Mower*.

Mowing Recommendations

Several factors can affect how well your unit cuts grass, Following proper mowing recommendations can improve the performance and life of your unit.

Height of Grass

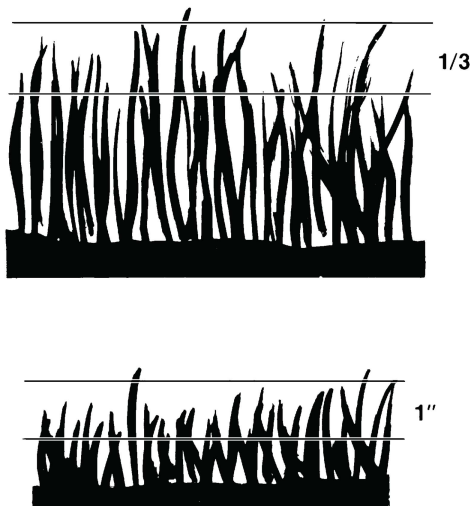
Often cutting height is a matter of personal preference. Typically, you should mow the grass when it is between three and five inches high. The proper cutting height range for a specific lawn will depend upon several factors, including the type of grass, the amount of rainfall, the prevailing temperature, and the lawn's overall condition.

Cutting the grass too short causes weak, thin grass plants, which are easily damaged by dry periods and pests. Cutting too short is often more damaging than allowing the grass to be slightly higher.

Letting grass grow a bit longer—especially when it is hot and dry—reduces heat build-up, preserves needed moisture and protects the grass from heat damage and other problems. However, allowing grass to grow too high can cause thin turf and additional problems.

Cutting off too much at one time shocks the plant's growth system and weakens the grass plants. **A good rule of thumb is the 1/3 rule: to cut no more than one third of the grass height, and never more than 1 inch at a time.**

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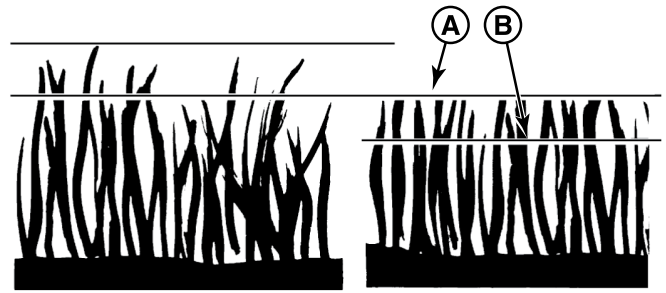


The amount of grass you are able to cut in one pass is also effected by the type of mowing system you are using (for example, broadcasting with side discharge decks can process a much larger volume of grass than mulching does).

Tall grass requires incremental cutting. For extremely tall grass, set the cutting height at maximum for the first pass (A, Figure 13), and then reset it to the desired height and mow a second (B) or third time.

Don't cover the grass surface with a heavy layer of clippings. Consider using a grass collection system and starting a compost pile.

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When and How Often to Mow

The time of day and condition of the grass greatly affect the results you'll get when mowing. For the best results, follow these guidelines:

- Mow when the grass is between three and five inches high.
- Mow with sharp blades. Short clippings of grass one inch or shorter decompose more quickly than longer blades. Sharp mower blades cut grass cleanly and efficiently, preventing frayed edges which harm the grass.
- Mow at time of day when the grass is cool and dry. Late afternoon or early evening often provide these ideal mowing conditions.
- Avoid mowing after rain or even heavy dew, and never mulch when the grass is wet (moist grass does not mulch well, and clumps beneath the mower deck).

Mowing Patterns

Always start mowing on a smooth, level area.

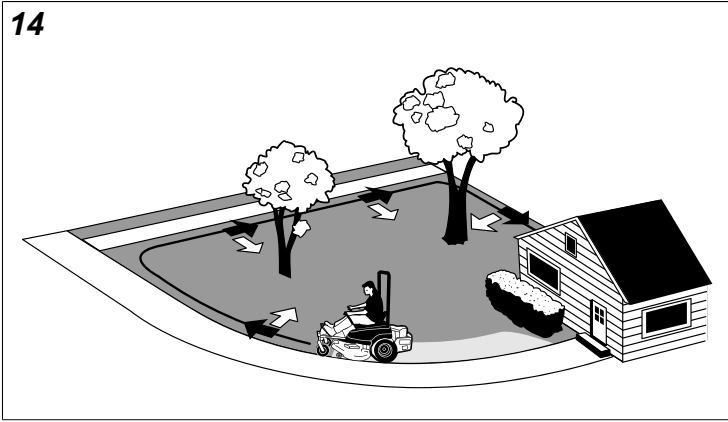
The size and type of area to be mowed will determine the best mowing pattern to use. Obstructions such as trees, fences and buildings, and conditions such as slopes and grades must also be considered.

- Cut long straight strips overlapping slightly.
- Where possible, change patterns occasionally to eliminate matting, graining or a corrugated appearance.
- For a truly professional cut, mow across the lawn in one direction, then re-cut the lawn by mowing perpendicular to the previous cut.

Note: Always operate the engine at FULL THROTTLE when mowing.

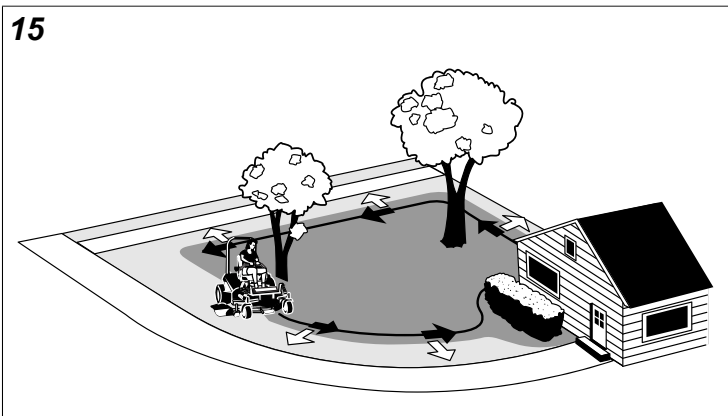
If you hear the engine slowing down, you are mowing too fast—using a slower ground speed will improve the cutting efficiency of the blades and prevents many common cutting problems. Use an appropriate ground speed for the thickness and height of the grass you are cutting (3rd gear or slower for manual gear models). If you hear the engine slowing down you are mowing too fast, use a slower ground speed.

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Where possible, make one or two passes around the outside of the area discharging the grass INTO the lawn to keep the cut grass off fences and walks.

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The remainder of the mowing should be done in the opposite direction so that the clippings are dispersed OUT onto the area of lawn previously cut.

Mowing Methods

Broadcast Mowing

Broadcasting, or side-discharging, disperses fine clippings evenly over the entire lawn. Many golf courses use this method. Your mower has a deep dish deck to allow freer circulation of clippings so they are broadcast evenly over the lawn.

Engine Speed & Ground Speed for Broadcasting:

Always operate the engine at full throttle when mowing. If you hear the engine slowing down, you are mowing too fast—using a slower ground speed will improve the cutting efficiency of the blades and prevents many common cutting problems.

ALWAYS use an appropriate ground speed for the thickness and height of the grass you are cutting (3rd gear or slower for manual gear models). If you hear the engine slowing down you are mowing too fast, use a slower ground speed.

How Much Grass to Cut Off When Broadcasting:

Mow when the grass is 3-5 inches long. Do not cut the grass shorter than 2 to 2-1/2 inches. Do not cut off more than 1 inch of grass in a single pass.

Mulching

Mulching consists of a mower deck which cuts and re-cuts clippings into tiny particles and which then blows them down INTO the lawn. These tiny particles decompose rapidly into by-products your lawn can use. UNDER PROPER CONDITIONS, your mulching mower will virtually eliminate noticeable clippings on the lawn surface.

Note: When mulching under heavy cutting conditions, a rumbling sound may be present and is normal.

Mulching Requires EXCELLENT Mowing Conditions:

Mulching mowers cannot function properly if the grass is wet, or if the grass is simply too high to cut. Even more than normal mowing, mulching requires that the grass be dry and the appropriate amount is cut.

Do not use the mower as a mulching mower during the first two or three mowings in the spring. The long grass blades, quick growth, and often wetter conditions are more suitable for broadcasting (side-discharging) or grass bagging operation.

Engine Speed & Ground Speed for Mulching:

Use full engine throttle matched with a slow ground speed so that clippings will be finely cut. Ground speed while mulching should be HALF of the speed that would be used when broadcasting (side discharging) under similar conditions. Since mulching requires more horsepower than broadcasting, using a slower ground speed is vitally important for proper mulching operation.

How Much Grass to Mulch:

The best mulching action typically results from cutting only the top 1/2 inch to 3/4 inch of grass blade. This provides short clippings which decompose properly (much more quickly than longer clippings). The ideal cutting height will vary with climate, time of year, and quality of your lawn. We recommend that you experiment with both the cutting height and ground speed until you achieve the best cut. Start with a high cutting height and using progressively lower settings until you find a cutting height that is matched to your mowing conditions and preferences.

Pushing the Unit by Hand



WARNING

Unsafe Operation Hazard.

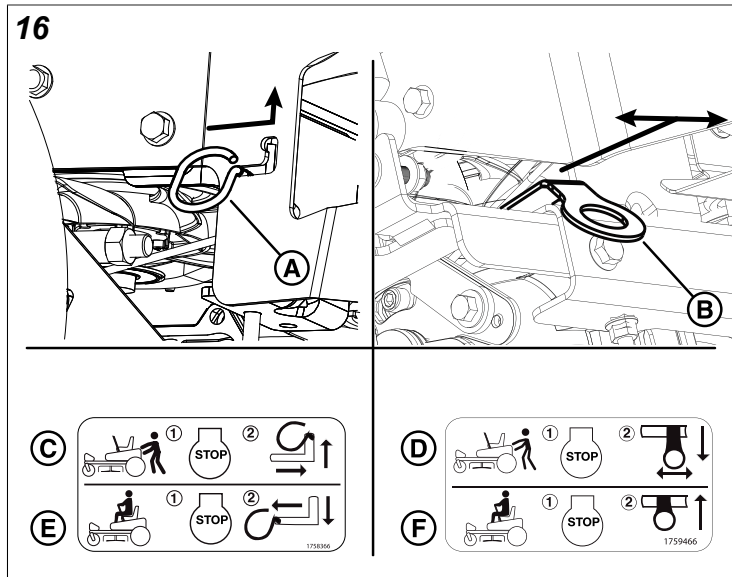
DO NOT disengage the transmissions and coast down slopes. DO NOT use transaxle release levers to disengage the transmissions unless the unit's motion can be controlled and the engine is off.

NOTICE

Do not tow unit. Towing the unit will cause transmission damage. Do not use another vehicle to push or pull this unit.

1. Disengage the PTO, lock the ground speed control levers into their START/PARK positions, turn the ignition switch to OFF, remove the key, and wait for all moving parts to stop.

2. Locate the transmission release levers on the rear of the unit.
 - **Non-suspension Models:** The transmission release levers (A, Figure 16) are located on the sides of the bumpers.
 - **Suspension Models:** The transmission release levers (B) are located on the rear of the unit beneath the bumper.



There is one transmission release lever on each transmission. The transmission release levers open and close the transmission bypass valves.

3. To open the transmission bypass valves (bypass position):
 - **Non-suspension Models:** Pull the transmission lever towards the rear of the unit, then up in the slot, and allow it to rest in the notch (C). Repeat this process for the other side of the unit.
 - **Suspension Models:** Pull the transmission release lever out towards the rear of the unit and then towards the center of the unit (D). Repeat this process for the other side of the unit.
4. Pivot the ground speed control levers in from the START/PARK position to the neutral 'N' position to disengage the parking brake. The unit can now be pushed by hand.
5. After moving the unit, close the bypass valve (run position):
 - **Non-suspension Models:** Pull the transmission release lever towards the rear of the unit, then down in the slot, and then push it towards the front of the unit (E). Repeat the process for the other side of the unit.
 - **Suspension Models:** Pull the transmission release lever out towards the side of the unit and then push forward (F). Repeat this process for either side of the unit.

Note: Both transmission release levers must be in the same position.

Attaching a Trailer

Secure the trailer with an appropriately sized clevis pin (A, Figure 17) and clip (B). See OPERATOR SAFETY for additional safety information regarding towed equipment and towing.



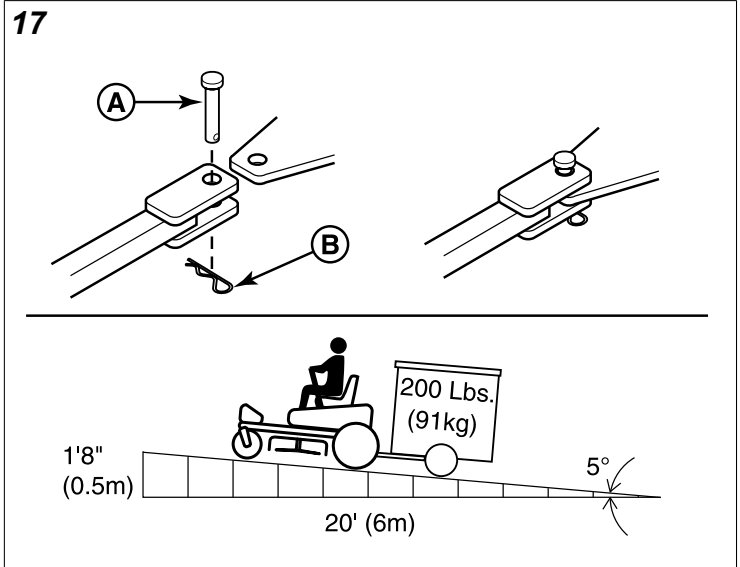
WARNING

Towing Hazard

Towed loads can be hazardous and cause loss of control 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 unit with towed equipment.

- The maximum gross (trailer & load) weight of the trailer should not exceed 200 lbs (91 kg).
- The maximum tongue weight should not exceed 20 lbs (9,1 kg).
- Do not operate on slope exceeding 5 degrees.
- Reduce speed and use extreme caution on slopes.
- Do not tow with a grass bagger attached.



Excessive towed loads can cause loss of traction and loss of control on slopes. 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 unit and trailer, and never operate on slopes greater than 5°.

Storage



WARNING

Fuel and Explosion Hazard

Never store the unit (with fuel) in a closed structure without sufficient airflow. Fuel vapors can travel to an ignition source (such as a furnace, water heater, etc.) and cause an explosion. Fuel vapor is also toxic to humans and animals.

When Storing Fuel Or Equipment With Fuel in Tank

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

Equipment

Disengage the PTO, lock the ground speed control levers in the START/PARK position, turn the ignition switch to OFF, and remove the key.

Battery life will be increased if it is removed. Put in a cool, dry place and keep fully charged during storage. If the battery is left in the unit, disconnect the negative cable.

Clean all debris from the unit and the engine compartment.

Apply paint or rust preventative to any areas where paint is chipped or damaged.

Engine and Engine Oil

While the engine is still warm, change the engine oil.

Follow all storage instructions described in the engine operator's manual that was included with your unit.

Before starting the unit after it has been stored:

- Check all fluid levels. Check all maintenance items.
- Do all recommended checks and procedures found in this manual and the engine operator's manual that was included with your unit.
- Let the engine warm up for several minutes before use.

Maintenance Schedule

The following schedule should be followed for normal care of your unit. You will need to keep a record of your operating time. Determining operating time is easily accomplished by observing the hour meter.

For engine maintenance schedules and procedures, please refer to the engine operator's manual.

UNIT MAINTENANCE
Every 8 Hours or Daily.*
Check the safety interlock system.
Clean debris off unit.**
Every 25 Hours or Annually.*
Check mower blade stopping time.
Check unit for loose hardware.
Check tire pressure.
Every 50 Hours or Annually.*
Check the unit's brakes.
Clean battery and cables.
See your Authorized STIHL Servicing Dealer Annually to:
Lubricate the unit.
Check mower blades**

* Whichever comes first.

** More often in hot (over 85° F; 30° C) weather or dusty operating conditions.

ENGINE MAINTENANCE
Every 8 Hours or Daily*
Check engine oil level.
Clean debris from engine compartment.**
Every 50 Hours
Check/Clean spark arrester.***
Refer to the Engine Operator's Manual:
Service air filter.
Change engine oil and filter.
Check/Replace spark plugs.
Check/Replace fuel filter.

* Whichever comes first.

** More often in hot (over 85° F; 30° C) weather or dusty operating conditions.

*** If equipped, replace if damaged.

Maintenance Procedures

Service and Maintenance Safety



WARNING

Amputation and crushing hazard

Specific steps must be taken in order to perform service and maintenance procedures safely.

Read and follow all the applicable safety and instructional messages in this manual.

Always disengage the mower blades, set the parking brake, turn the engine OFF, remove the ignition key, and wait for all movement to stop prior to performing service and maintenance procedures.

Always disconnect the spark plug wire(s) and fasten it away from the plug before beginning any maintenance or service procedures in order to prevent accidental ignition.

Wear appropriate personal protective equipment such as safety shoes, safety glasses, gloves, and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.

Use of parts that are not authorized or approved by STIHL may cause serious or fatal injury or property damage.

- STIHL recommends that only authorized STIHL replacement parts be used for repair or maintenance.

Checking/Adding Fuel



WARNING

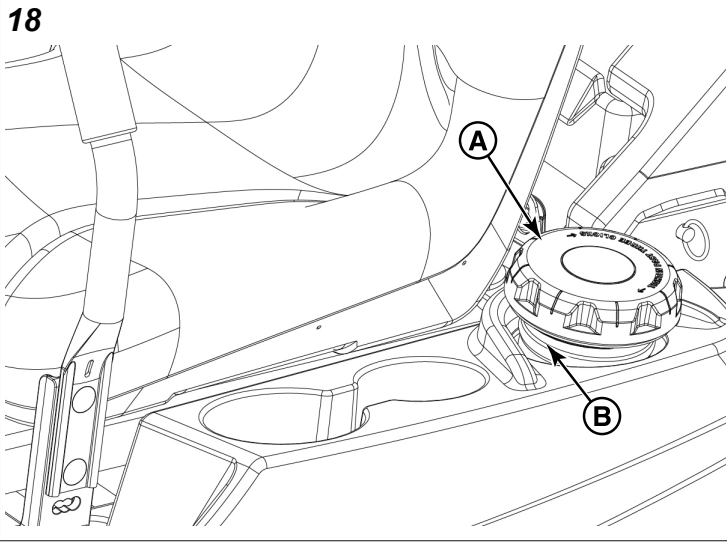
Fuel and its vapors are extremely flammable and explosive.

Fire or explosion can cause severe burns or death.

When Adding Fuel

- Turn engine off and let engine cool at least 3 minutes before removing 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 starting engine.

1. Clean the fuel cap area of dirt and debris. Remove the fuel cap (A, Figure 18).



2. Fill the fuel tank with fuel. To allow for expansion of the fuel, do not fill above the bottom of the fuel tank neck (B).
3. Reinstall the fuel cap.

NOTICE

Refer to your engine operator's manual for specific fuel recommendations.

Replacing the Fuel Filter



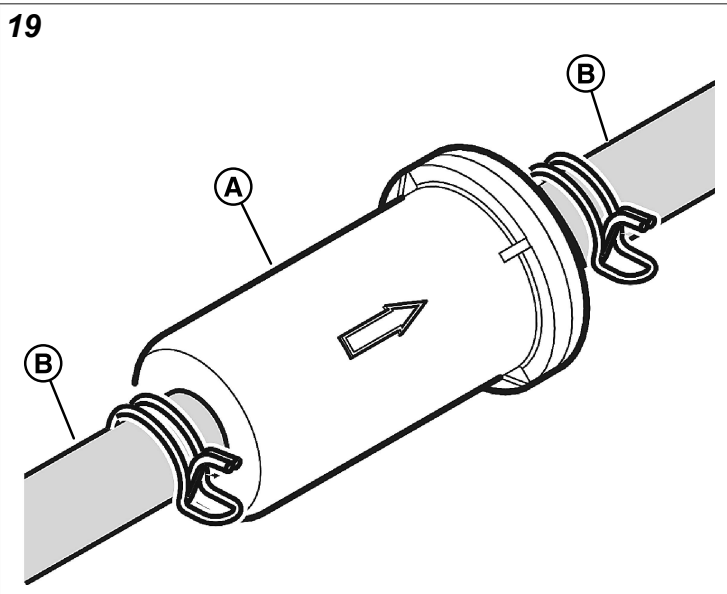
WARNING

Fuel and its vapors are extremely flammable and explosive.

Fire or explosion can cause severe burns or death.

Do NOT remove the fuel filter when the engine is hot, as spilled gasoline may ignite. Do NOT spread hose clamps further than necessary. Ensure clamps grip hoses firmly over filter after installation.

The fuel filter (A, Figure 19) is located in the fuel line (B) between fuel tank and carburetor, near the fuel pump.



If filter is dirty or clogged, replace as follows:

1. Disconnect the negative battery cable.
2. Place a container below the filter to catch spilled fuel.
3. Using pliers, open and slide the hose clamps away from the fuel filter.
4. Remove hoses from filter.
5. Install new filter in proper flow direction in fuel line.
6. Secure with hose clamps.
7. Connect the negative battery cable when finished.

Check Engine Oil Level

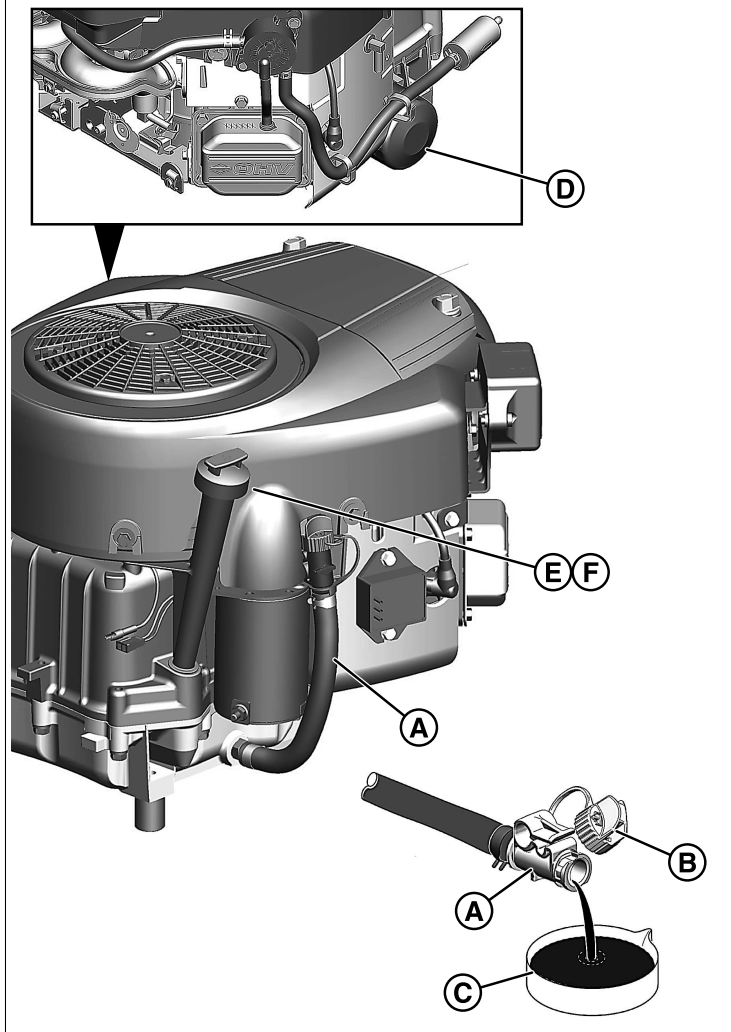
Interval: Before Each Use

Refer to the engine operator's manual for dipstick and oil fill locations and specific engine oil check and fill procedures.

Changing the Engine Oil and Filter

1. Warm the engine by running it for a few minutes. (Refer to the engine operator's manual for oil and filter replacement instructions.)
2. Remove the oil drain hose (A, Figure 20) from its storage position and route the hose so that when the oil drain cap (B) is removed the oil can be drained into a suitable container (C).

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- Place a suitable container under the oil drain hose to catch the oil. Turn and remove the oil drain cap and drain the engine oil.
- After draining, install the cap and wipe up any spilled oil. Install the oil drain hose to its storage position so it is retained during normal operation.
- Place an absorbent shop cloth under the engine oil filter (D). Remove the engine oil filter and replace with a new one.
- Add engine oil (refer to engine operator's manual) in the fill tube (E) and check the amount of oil in the engine using the engine oil dipstick (F).
- Remove the shop cloth and wipe up any spilled oil.

Clean the Engine Compartment with Air and Water

Pressurized air and/or water can cause debris and/or hot water to be blown out. This action could result in personal injury.

When cleaning with air and/or water wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi). The maximum water pressure for cleaning purposes must be below 275 kPa (40 psi).

Engine Maintenance

For engine maintenance schedules and procedures, please refer to the engine operator's manual.

Containing Spilled Fluids and Proper Disposal of Waste

Make sure that fluids are contained when performing inspection, maintenance, testing, adjustment, and repair of the unit. Be prepared to collect the fluid with suitable leakproof containers before opening or disassembling any component containing fluids. Do not pour waste onto the ground, down a drain, or into any source of water.



Improper disposal of waste can threaten the environment. Dispose of all fluids according to local regulations and mandates.

Servicing the Exhaust System

Inspect the muffler for cracks, corrosion, or other damage. Remove the spark arrester, if equipped, and inspect for damage or carbon blockage. If replacement parts are required, make sure to use only original equipment replacement parts.



WARNING

Replacement parts must be of the same design and installed in the same position as the original parts. Other parts could result in damage or an injury.



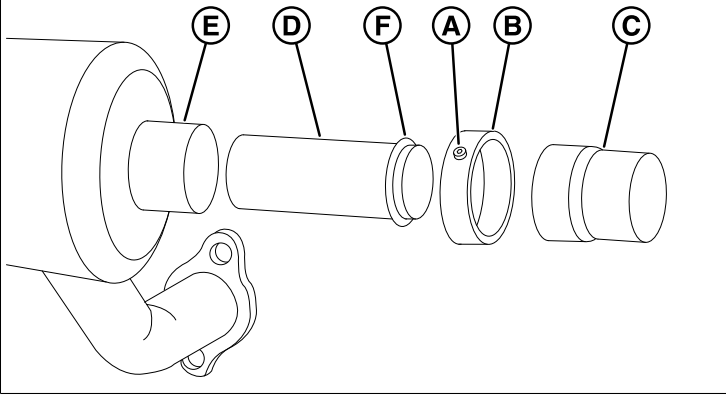
CAUTION

Wait until the muffler is cool before working around or near the muffler.

Replacing the Spark Arrester - Multi Piece Style

- Loosen the set screw (A, Figure 21) on the retaining ring (B) and slide off over the tip of the tailpipe extension (C).

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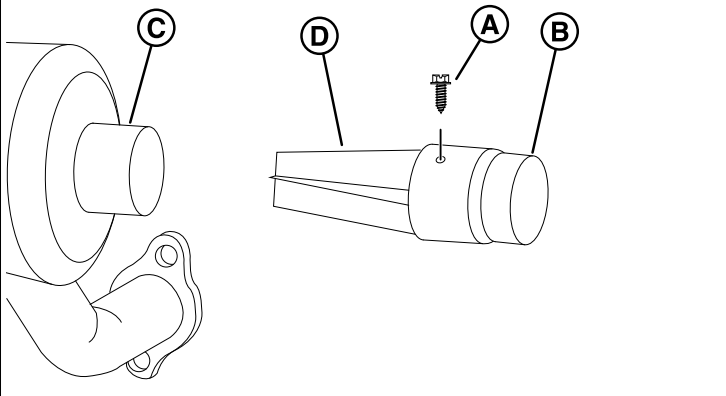


2. Remove the tailpipe extension. You may need to use pliers to remove the tailpipe extension if it is stuck due to corrosion.
3. Slide the screen (D) out of the tailpipe (E) and shake the screen to remove the built up soot and carbon. The amount of carbon collected will vary depending on the fuel used, air quality, engine age, and condition. (A soft non-metallic brush may be required to fully clean the screen).
4. Carefully inspect the screen for any tears, rips or any other damage which will prevent the screen from operating properly. Replace screen if damaged.
5. Slide the screen into the tailpipe of the muffler until the retaining lip (F) is sitting against the tip of the tailpipe.
6. Slide the tailpipe extension over the tailpipe of the muffler. The extension is designed to fit tightly and you may need to twist it to get it to slide on.
7. Slide the retaining ring over the tailpipe extension until it circles the expanded section of the extension where the muffler tailpipe and tailpipe extension overlap. Torque set screw to 38 in-lbs (4,3 Nm).

Replacing the Spark Arrester - Single Piece Style

1. Remove the screw (A, Figure 22) that secures the spark arrester (B) to the muffler tailpipe (C).

22



2. Remove the spark arrester. You may need to use pliers to remove the spark arrester if it is stuck due to corrosion.

3. Shake the spark arrester to remove the built up soot and carbon from the spark arrester's screen (D). The amount of carbon collected will vary depending on the fuel used, air quality, engine age, and condition. (A soft non-metallic brush may be required to fully clean the screen).
4. Carefully inspect the screen for any tears, rips or any other damage which will prevent the screen from operating properly. Replace the spark arrester if damaged.
5. Slide the spark arrester into the tailpipe of the muffler until the spark arrester is fully seated.
6. Install the screen into the spark arrester and then tighten.

Fuse Identification and Location

The electrical system for this unit is equipped with replaceable fuse(s). See the chart below for the circuit, amperage, and approximate location of the fuses.

Non-suspension Models:

Circuit	Amperage	Approximate Location
Main	20 amp	Center of the unit and near the battery.

Suspension Models:

Circuit	Amperage	Approximate Location
Main	20 amp	Center of the unit and near the battery.
USB Charging Port	5 amp	Center of the unit and near the battery.

Servicing the Hydraulic System

Non-Suspension Models:

Units without a suspension system are equipped with two (2) sealed transmissions. If your transmission requires any service work please see your authorized STIHL servicing dealer to have this work performed.

Suspension Models:

Units with a suspension system are equipped with two (2) transmissions and oil expansion tanks. Each transmission has its own expansion tank. Please follow the instructions in the following sections for the service and maintenance for your unit's transmissions.

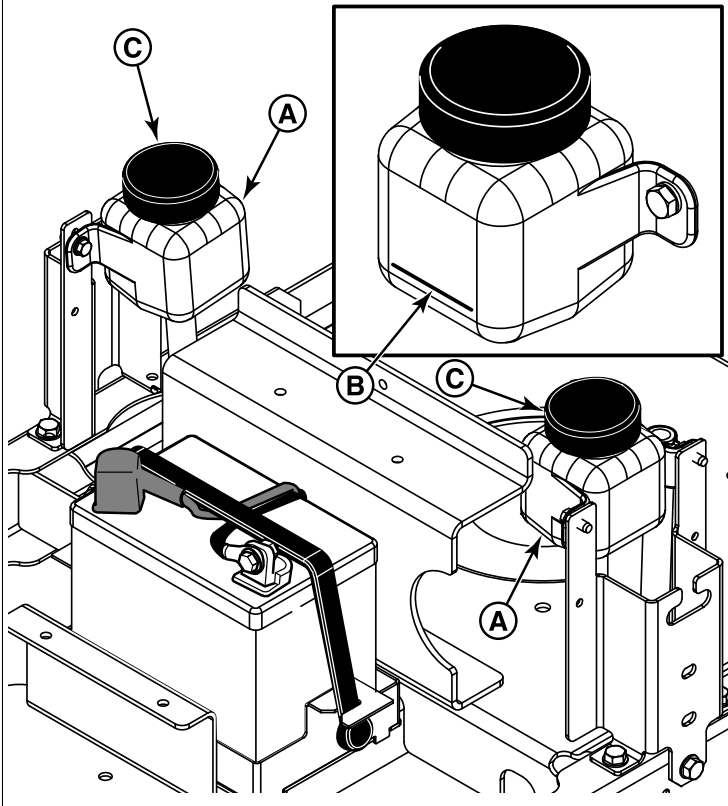
Check / Fill Transmission Oil Level

This unit is equipped with two transmission oil tanks. One transmission oil tank only supplies oil to one transmission. The level of oil in both transmission oil tanks must be checked, and if necessary, filled.

Oil Type: 20W-50 conventional detergent motor oil.

1. Locate the transmission oil tanks (A, Figure 23).

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2. Check the oil level when the unit is cold. The oil should be up to the "FULL COLD" mark (B). If the oil is below this level, proceed to step #3.
3. Before removing the tank caps (C), make sure the area around the tank cap and fill neck of the tank is free of dust, dirt, or other debris. Remove the tank cap.
4. Add oil up to the "FULL COLD" mark.
5. Reinstall the tank caps.
6. After adding oil to the tanks, it may be necessary to purge air from the hydraulic system. See *Purging the Air from the Hydraulic System* procedure. If the unit is not driving properly, see your authorized STIHL servicing dealer.

Transmission Oil Filter Change

Change Interval: Every 400 Hours or Yearly (Initial hydraulic oil and filter change after first 100 hours of operation).

It is recommended that the procedure for changing the hydraulic oil and transmission filter be performed by an authorized STIHL servicing dealer.

Purging the Air from the Hydraulic System

Due to the effects air has on efficiency in hydraulic drive systems, it is critical that it be purged from the system.

These purge procedures should be implemented any time a hydraulic system has been opened to facilitate maintenance or any additional oil has been added to the system.

The resulting symptoms of air in the hydraulic system may be:

- Noisy operation.
- Lack of power or drive after short term operation.

- High operation temperature and excessive expansion of oil.

Before starting, make sure the transaxles/transmissions are at the proper oil levels. If it is not, fill to the specifications outlined in the *Check / Fill Transmission Oil Level* procedure.


Purging Air from the Hydraulic System:

1. Chock the front wheels to prevent the unit from rolling. Raise the rear of the unit so that the unit's rear tires do not contact the ground. Position jack stands under the rear bumper of the unit to secure it.
2. Open the transaxle's bypass valves (see *Pushing the Unit by Hand* for the location and function of the bypass valves), start the engine, release the parking brake, and slowly move the unit's ground speed control levers in both forward and reverse directions (5 to 6 times), as air is purged from the unit, the oil level will drop.
3. Stop the engine and engage the parking brake.
4. Close the transaxle's bypass valves, start the engine, release the parking brake, and slowly move the unit's ground speed control levers in both forward and reverse directions (5 to 6 times), as air is purged from the unit, the oil level will drop.
5. Stop the engine. Remove the jack stands from underneath the unit.
6. Repeat the process detailed above but with the unit's drive wheels on the ground. The procedure should be performed in an area free of any objects or bystanders.

It may be necessary to repeat the process detailed above until all the air is completely purged from the system. When the transaxles/transmissions operate at normal noise levels and move smoothly forward and reverse at normal speeds, then the transaxles/transmissions are considered purged.

Lubrication


Lubricate the unit at the location shown in the following figures as well as the lubrication points listed below.

Grease: 

- Mower deck spindles (A, Figure 24).
- Rear transmission cradle pivots (A, Figure 25 - Suspension models only).
- Front caster wheel axles (A, Figure 26).

Use grease fittings when present. Disassemble parts to apply grease to moving parts when grease fittings are not installed.

Not all greases are compatible. Your product is manufactured using Heavy Duty Lithium Complex EP, NLGI grade 2 grease. Using non-compatible grease could damage or cause premature parts failures.

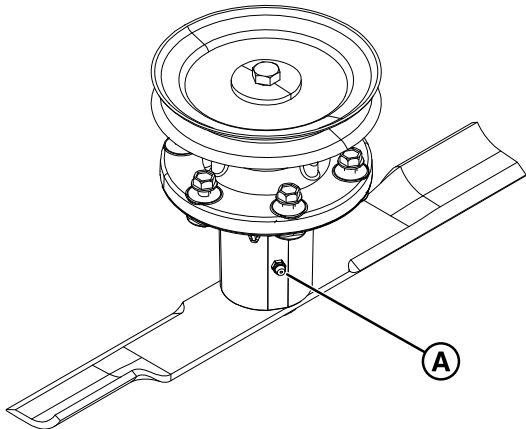
Oil: 

- Deck lift linkage pivots (A, Figures 27 and 28).
- Mower deck idler arm (B, Figures 27 and 28).

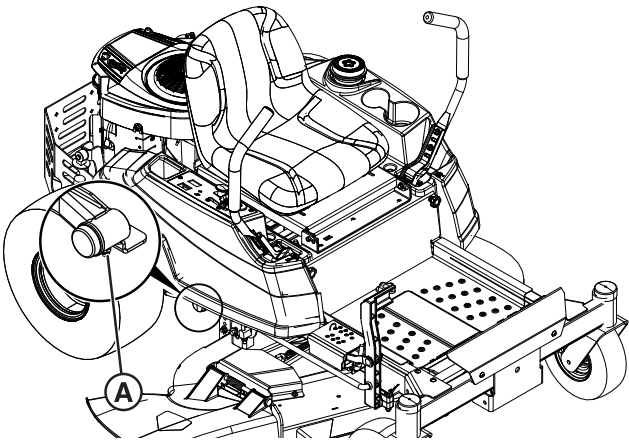
Generally, all moving metal parts should be oiled where contact is made with other parts. Keep oil and grease off belts

and pulleys. Remember to wipe fittings and surfaces clean both before and after lubrication.

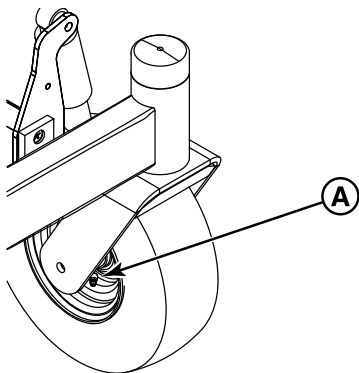
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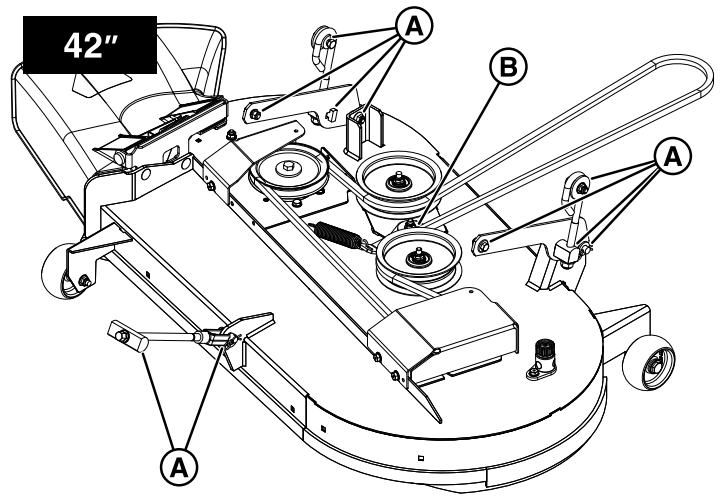
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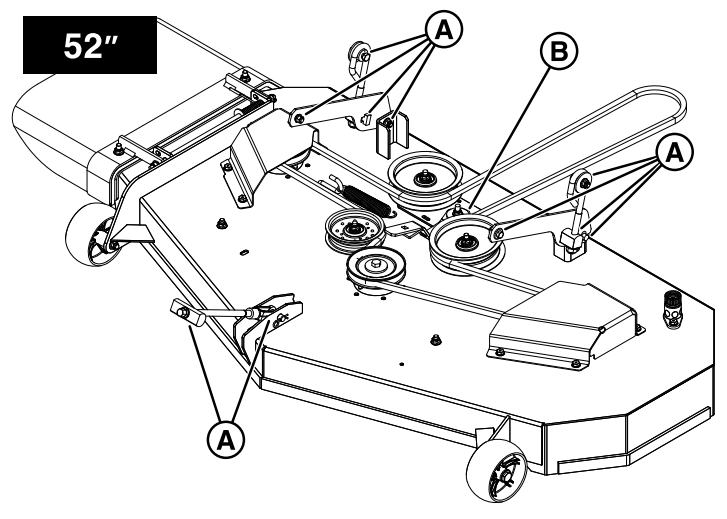
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27



28



Servicing the Mower Blades

Removing the Mower Blades



CAUTION

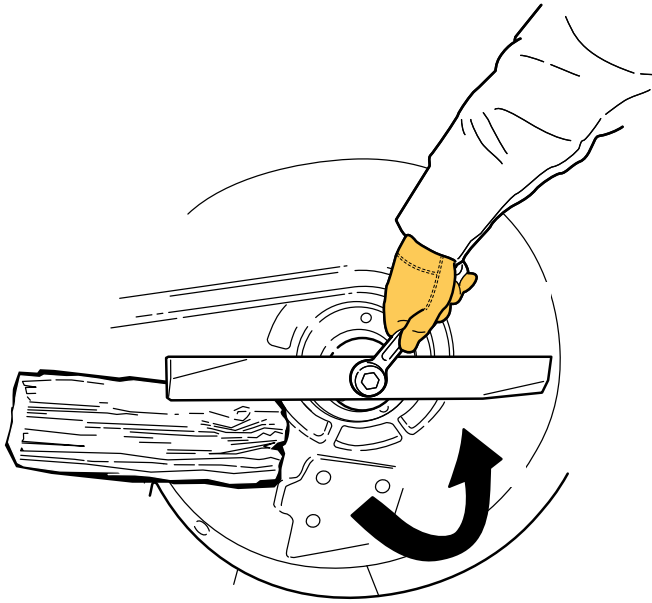
Laceration hazard

Mower blades are sharp.

Always wear gloves when handling, or working near, mower blades.

1. Use a block of wood to prevent the mower blade from turning as shown in Figure 29.

29



- Using a wrench, remove the bolt securing the blade to the spindle.

Inspecting, Sharpening, and Balancing the Mower Blades



CAUTION Laceration hazard.

Mower blades are sharp.

Always wear gloves when handling, or working near, mower blades.

- Remove the mower blade from the unit. See *Removing the Mower Blades*.
- Clean the blade to remove any dried grass or other debris.



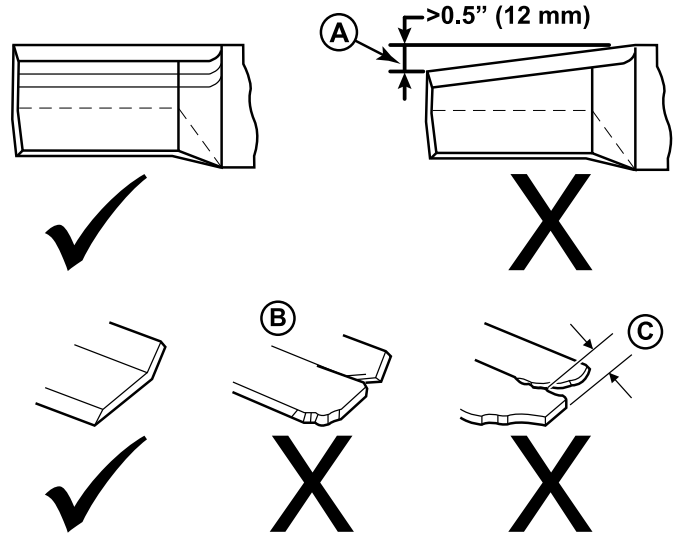
DANGER Thrown objects hazard

Avoid injury: a worn or damaged mower blade can break and a piece of the blade could be thrown into the operator's area or bystander's area resulting in serious personal injury or death.

- Inspect the mower blade every 25 hours or at least once per year.
 - If the mower blade hits a solid object, stop the engine immediately and inspect the mower blades.
 - Never weld or straighten bent mower blades.
- Inspect the mower blade (Figure 30). Discard the mower blade if it has any of the following conditions:

- More than .5" (12,7 mm) of the mower blade metal has been removed from previous sharpening or wear (A).
- The air lifts are excessively eroded (B) and the notch (C) is .25" (6,35 mm) deep or greater.
- The mower blade is broken or bent.

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- If the cutting edges are not sharp or have nicks, sharpen the blades.



WARNING Thrown objects and fire hazard

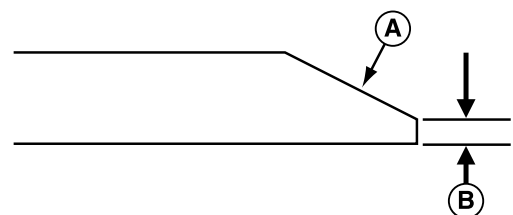
Grinding mower blades throws sparks and fine metal particles that are capable of igniting gasoline and gasoline vapors, and that can injure unprotected eyes.

Be sure all flammable materials are cleared from the area where grinding will occur.

Always wear safety glasses or goggles when grinding mower blades.

- Use a grinder, hand file, or electric blade sharpener to sharpen the mower blades by removing an equal amount of material from the cutting edge of each end of the blade.
- Keep the original bevel (A, Figure 31) when grinding. DO NOT change the mower blade bevel.

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- The mower blade should have a maximum of 1/64" (0,40 mm) cutting edge (B) or less.



CAUTION

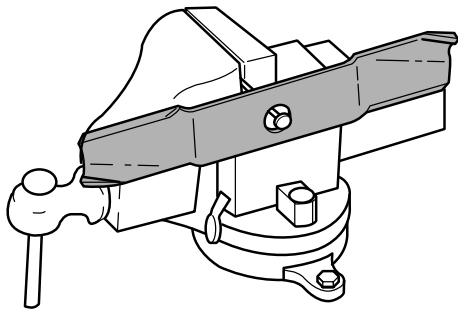
Thrown objects hazard.

An unbalanced mower blade can create excessive vibration and damage the unit, or cause mower blade failure resulting in thrown debris.

Be sure blade is balanced before installing.

- Clamp a nail in a bench vise, hang the blade on the nail, and position the blade in a level horizontal position as shown in Figure 32.

32



- Check the balance of the blade. If either end of the blade moves downward the end that moves downward is heavier than the other. Sharpen the heavy end until balance is achieved.
- Repeat the process until the mower blade remains in the horizontal, level position.

Installing Mower Blades



CAUTION

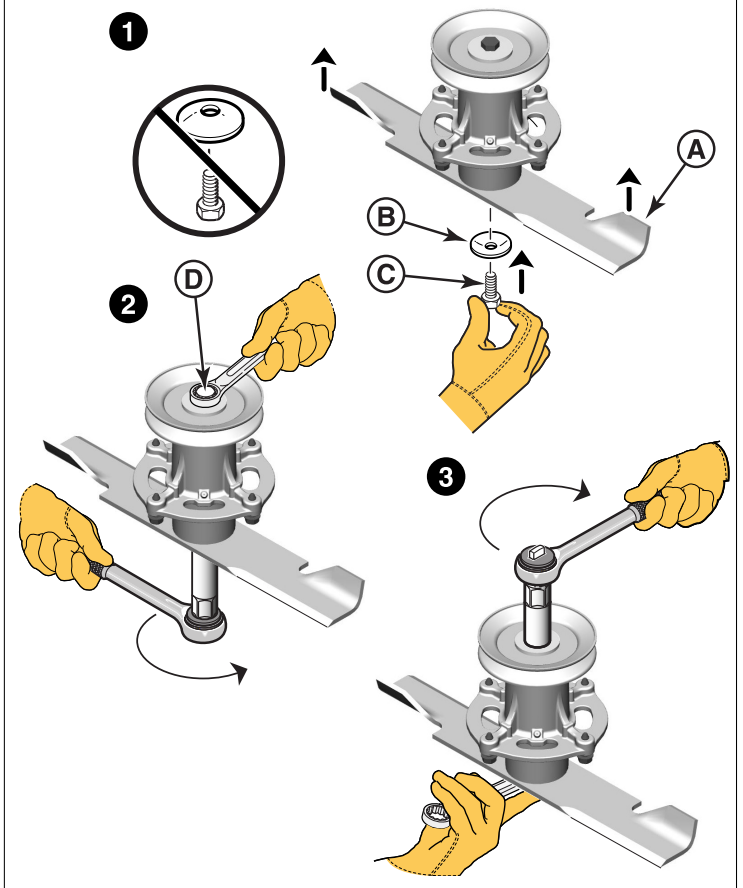
Laceration hazard

Mower blades are sharp.

Always wear gloves when handling, or working near, mower blades.

- Install each blade with the airlifts (A, Figure 33) pointing up towards the mower deck as shown. Install the concave side of the washer (B) towards the blade. Install the blade mounting bolt (C) hand tight to hold the washer and blade onto the shaft (make sure the blade is fully seated onto the shaft).

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- Tighten the blade mounting bolt to 50 - 60 ft. lbs. (68 - 81 Nm) of torque while holding onto the pulley bolt (D) with a wrench.
- Tighten the pulley bolt to 50 - 60 ft. lbs. (68 - 81 Nm) of torque while holding onto the blade mounting bolt with a wrench.

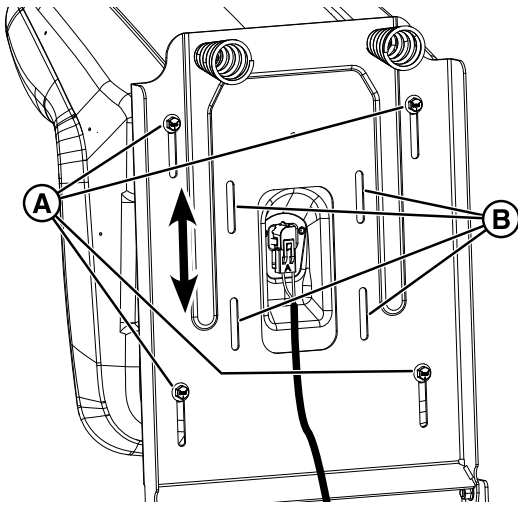
Seat And Ground Speed Control Lever Adjustments

The seat and ground speed control levers should be adjusted so that the ground speed control levers can be moved through their full range of motion without contacting the operator's legs.

Seat Adjustment

- Raise the seat.
- Loosen the adjustment hardware (A or B, Figure 34, depending on seat type) under the seat base.
- Slide the seat forward or backward to the desired position.
- Tighten the hardware to 80 lb-in (9 Nm).

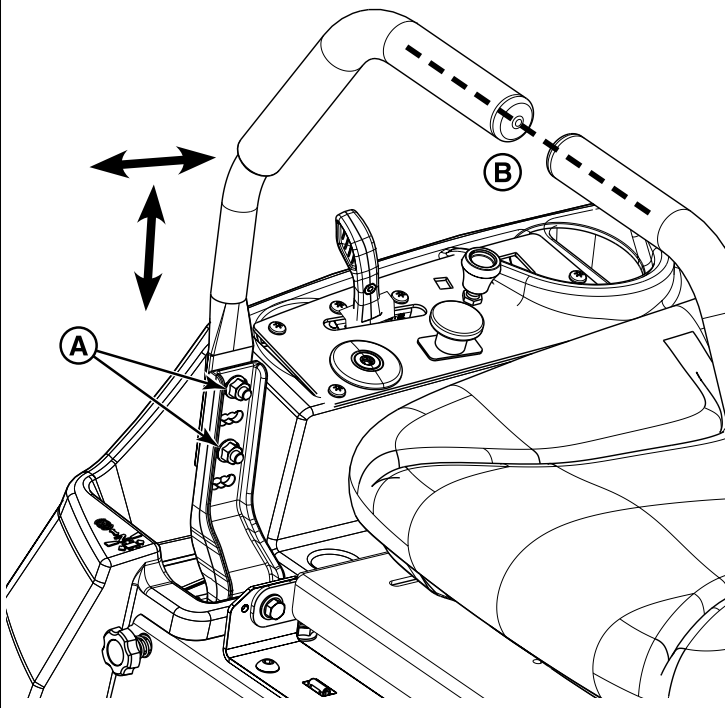
34



Ground Speed Control Lever Adjustment

1. Loosen the ground speed control lever mounting hardware (A, Figure 35) to adjust the levers forward and backward.
2. Remove the hardware to raise or lower the levers.
3. Always be sure to adjust both levers so that they are aligned (B, Figure 35).
4. After adjustment is complete, tighten the hardware to 13 lb-ft (18 Nm).

35



Speed Balancing (Tracking) Adjustment

If the unit drifts to the right or left when the ground speed control levers are in the maximum forward position, the top speed of each of these control levers can be balanced. Only adjust the speed of the wheel that is traveling faster.

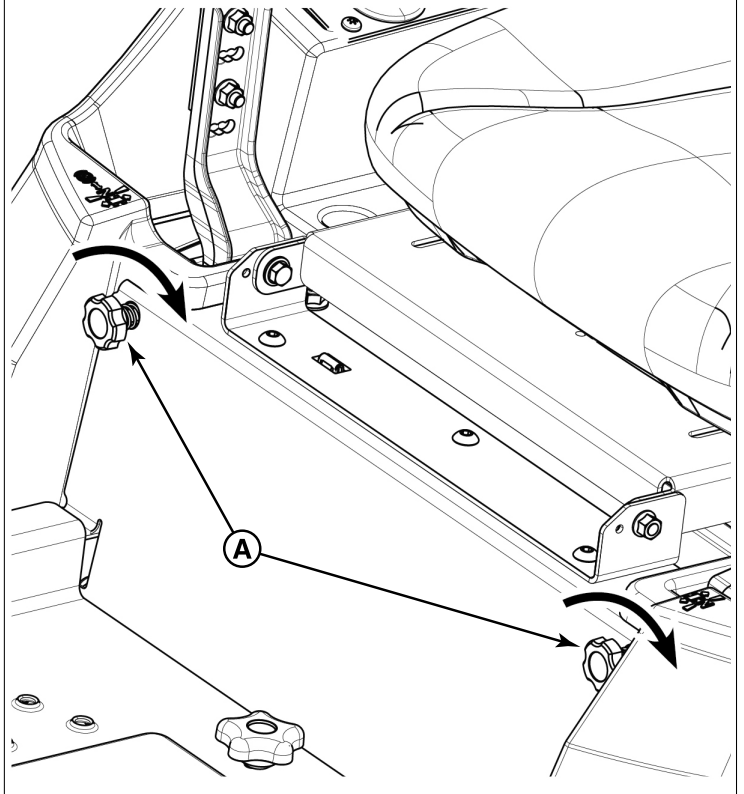
1. Tighten the knob (A, Figure 36) of the faster wheel by 1/2-turn (clockwise) increments until the unit travels (tracks) straight.



WARNING

DO NOT adjust the unit for a faster overall speed forward or reverse than it was designed.

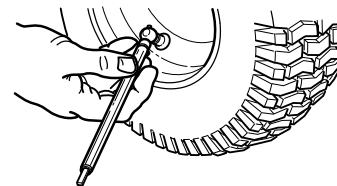
36



Checking Tire Pressures

Tire pressure should be checked periodically (see Figure 37), and maintained at the levels shown in the *Specifications* chart. Note that these pressures may differ slightly from the "Max Inflation" stamped on the side-wall of the tires. The pressures shown provide proper traction and extend tire life.

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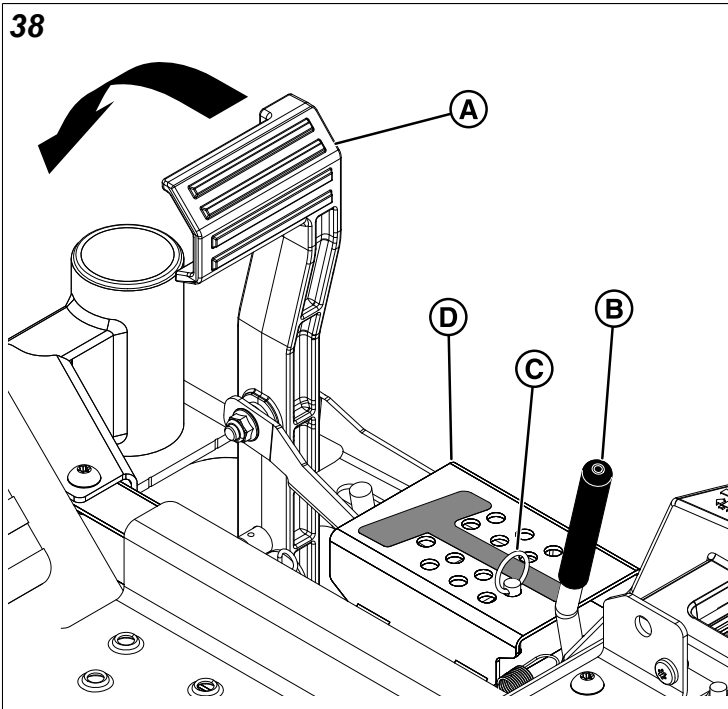


Cutting Height Adjustment

The deck lift pedal adjusts the mower cutting height. The cutting height is adjustable between 1-1/2" (3,8 cm) and 4-1/2" (11,4 cm) in 1/4" (0,64 cm) increments.

To adjust cutting height:

1. Fully depress the deck lift pedal (A, Figure 38) until the deck lift lock lever (B) locks the deck into the highest position (transport position).



2. Place the cutting height adjustment pin (C) into the hole for the desired cutting height.

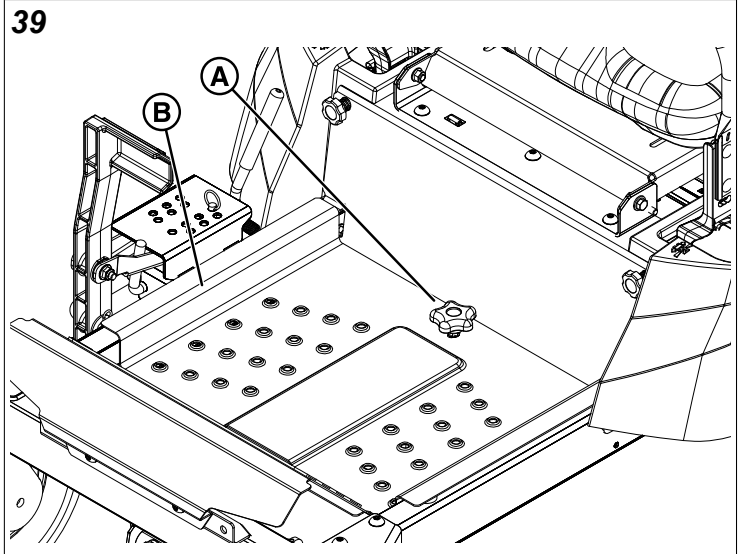
Note: Make sure the pin is inserted into the holes in both upper and lower plates of the adjustment bracket (D).

3. Depress the deck lift foot pedal and then push the deck lift lock lever towards the right to release the lock.
4. Slowly release the deck lift pedal until it comes to rest against the cutting height adjustment pin.

Floor Pan Removal and Installation

This unit is equipped with a removable floor pan which can be removed to provide better access to the mower deck.

1. Loosen and remove the retaining hardware (A, Figure 39) that secures the floor pan (B) to the frame of the unit.



2. Tilt the back end of the floor pan up and then remove it from the unit.
3. To install the floor pan: reverse the removal procedure.

Neutral Adjustment

The neutral system for this unit is a function of the transaxles.

1. Drive the unit to a flat, level surface. Engage the parking brake and disengage the PTO.
2. Without touching the ground speed control levers disengage the parking brake. If the unit moves, the neutral systems on the transaxles are not correctly adjusted. See your authorized STIHL servicing dealer.

Suspension Adjustment (if equipped)

The shock assemblies (A, Figure 40 - front shown, rear similar) can be adjusted to vary the amount of pre-load applied to the springs. This allows the operator to customize the ride according to operator's weight and operating conditions.

Less Pre-Load:

- Light operator weight
- Softer, more cushioned ride
- Best for relatively flat terrain

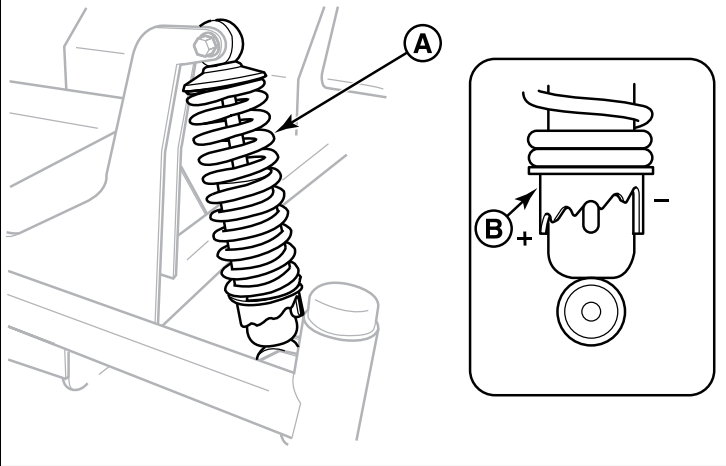
More Pre-Load:

- Heavy operator weight
- Stiffer, more rigid ride
- Better handling and greater stability on hilly terrain

To Adjust the Spring Pre-Load:

1. Park the unit on a flat, level surface. Disengage the PTO, pivot the ground speed control levers out to the START/PARK position, and stop the engine.
2. Turn the pre-load adjustment collar (B, Figure 40) to a higher notch (-) to decrease the pre-load, or to a lower notch (+) to increase the pre-load. Make sure all shocks are set to the same amount of pre-load.

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Parking Brake Adjustment

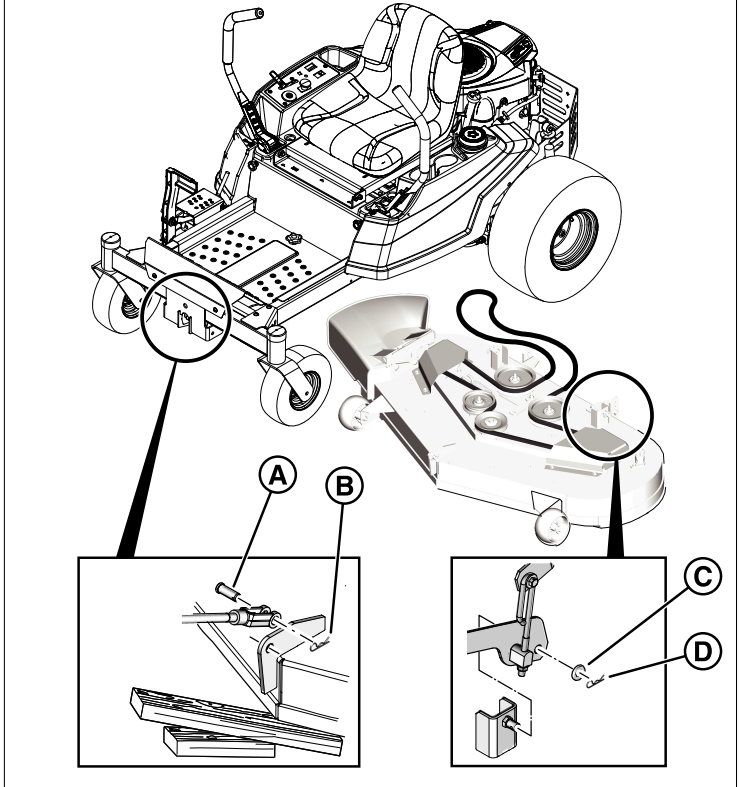
The parking brake is not adjustable. If the parking brake does not function properly, do not use the zero-turn riding mower! See your authorized STIHL servicing dealer to have the parking brake serviced.

Mower Deck Removal and Installation

Removing the mower deck makes deck maintenance items easier to perform.

1. Drive the unit to a flat, level surface and return the ground speed control levers to the middle (NEUTRAL) position to stop the unit's movement. Pivot the levers outward to lock them in the START/PARK position. This action automatically engages the parking brake.
2. Disengage the PTO by pushing down on the PTO switch. Move the throttle control to the SLOW position and turn the ignition switch to OFF. Remove the key.
3. Remove the mower deck drive belt as described in *Mower Deck Drive Belt Replacement*.
4. Lower the mower deck to its lowest cutting height.
5. Using a board or with the help of a second person, lift the front of the deck to relieve the pressure on the mounting hardware. Remove the pin (A, Figure 41) and clip (B). Carefully lower the deck to the ground.

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6. Using a board or with the help of a second person, lift the left rear of the deck to relieve the pressure on the mounting hardware. Remove the washer (C) and clip (D). Carefully lower the deck to the ground. Repeat to disconnect the right side of the deck.
7. Raise the deck to its highest cutting position and then slide the mower deck out from beneath the left side of the unit.
8. Reverse the process to install the mower deck.
9. Check the mower deck leveling as described in *Deck Leveling Adjustment*.

Deck Leveling Adjustment

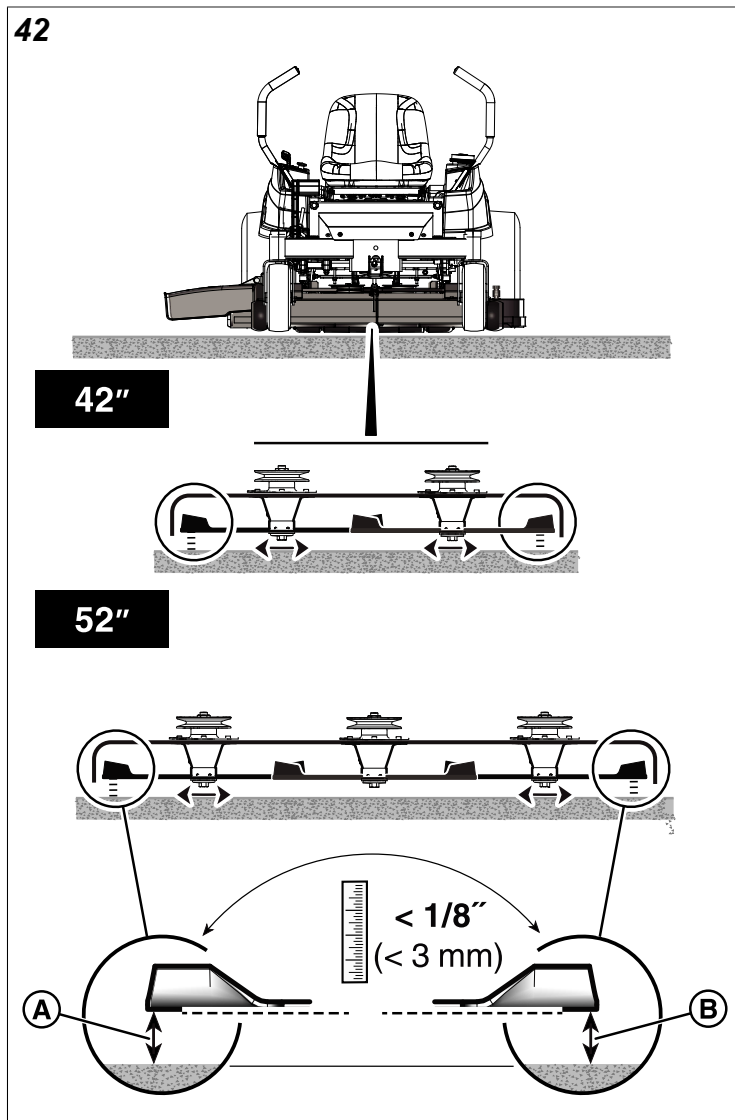


WARNING

Wear heavy gloves when handling or working around cutting blades. Blades are extremely sharp and can cause severe injury.

1. Drive the unit to a flat, level surface and return the ground speed control levers to the middle (NEUTRAL) position to stop the unit's movement. Pivot the levers outward to lock them in the START/PARK position. This action automatically engages the parking brake.
2. Disengage the PTO by pushing down on the PTO switch. Move the throttle control to the SLOW position and turn the ignition switch to OFF. Remove the key.
3. Set the mower deck to the 4-1/2" (11,4 cm) cutting height.
4. Turn the front caster wheels so they are facing front-to-back.

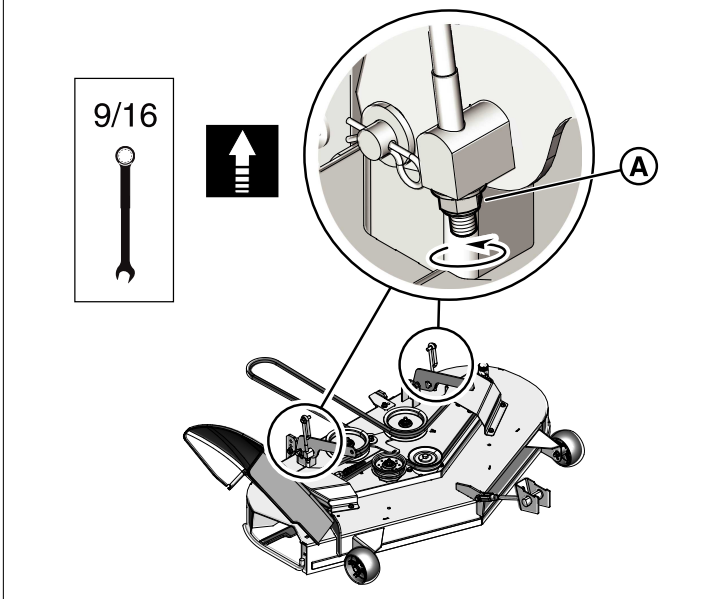
5. Verify that the tire pressures are correct:
 - Front: 22 psi (1,52 bar)
 - Rear: 12 psi (0,83 bar)
6. Verify that the mower blades are flat, and not bent or broken. A bent or broken blade must be replaced.
7. Position the two mower blades so that they are side-to-side.
8. Measure the distance between the outside tips of the blades and the ground (A and B, Figure 42).



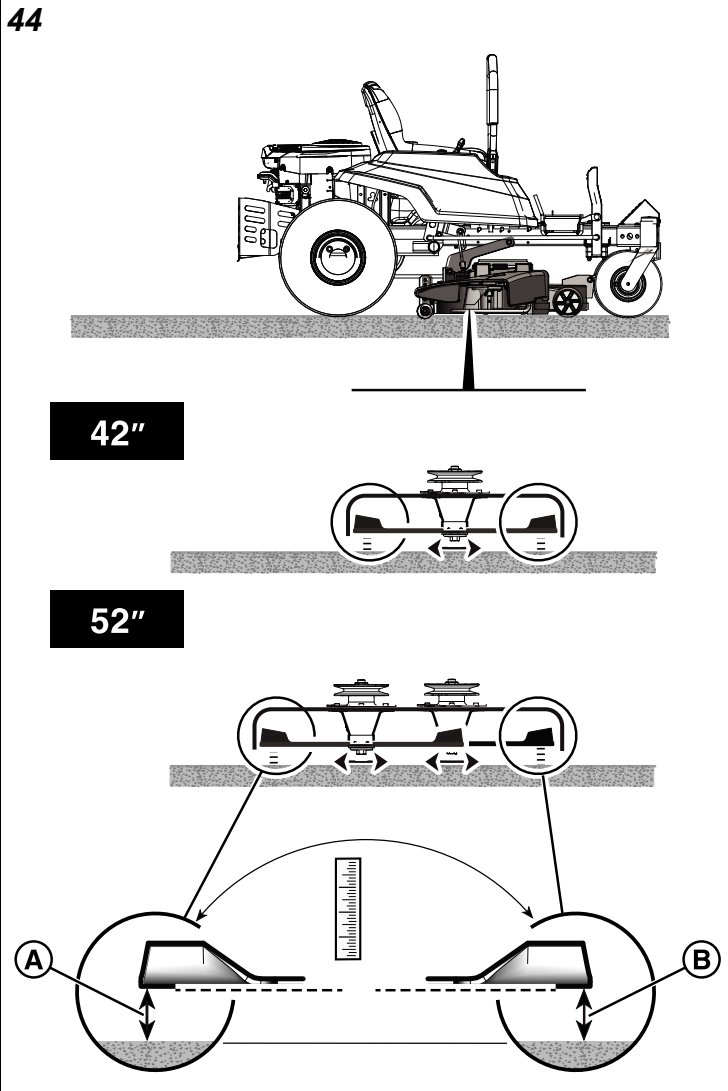
- if measurements A and B DO NOT measure 4-1/2" (11,4 cm), adjustment is needed. Continue with step # 9.
- if measurements A and B DO measure 4-1/2" (11,4 cm) no adjustment is needed, skip forward to step # 10.

9. Tighten the nuts (A, Figure 43) (right or left side) as needed to adjust side-to-side leveling. The difference between measurements should be less than 1/8" (3 mm).

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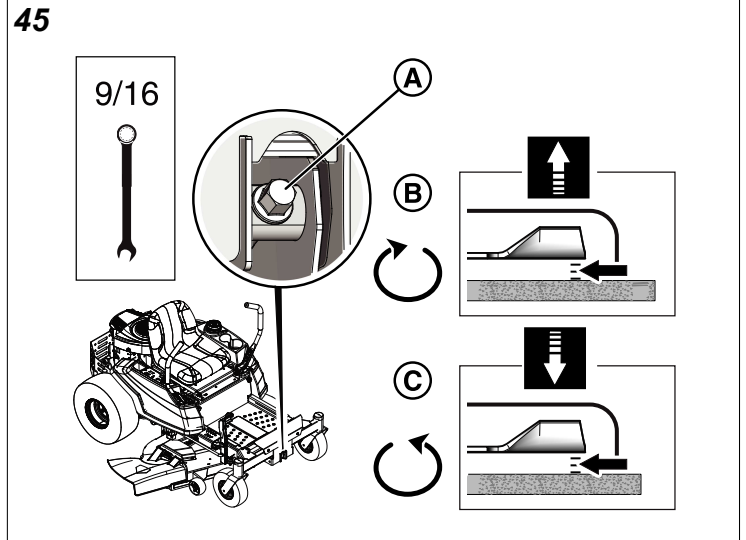


10.
 - **42" Mower Decks:** Position the right side blade so it is pointing front-to-back.
 - **52" Mower Decks:** Position the right side and center blades so they point front-to-back.
11. Measure the distance between the outside tips of the blades and the ground (A and B, Figure 44).



- **42" Mower Decks:** The difference between measurement A and B should be less than 1/8" (3 mm).
- **52" Mower Decks:** The rear measurement A should be 3/16" (5 mm) higher than the front measurement B.

12. If adjustment is necessary, turn the front adjustment nut (A, Figure 45) **clockwise** (B) to raise the front of the deck or **counter-clockwise** (C) to lower the front of the deck.



Mower Deck Drive Belt Replacement

NOTICE

To avoid damaging belt, **do not pry over pulleys.**

1. Drive the unit to a flat, level surface and return the ground speed control levers to the middle (NEUTRAL) position to stop the unit's movement. Pivot the levers outward to lock them in the START/PARK position. This action automatically engages the parking brake.
2. Disengage the PTO by pushing down on the PTO switch. Move the throttle control to the SLOW position and turn the ignition switch to OFF. Remove the key.
3. Position the deck at the 2-1/2" (6,4 cm) cutting height.
4. Remove the floor pan and mower deck guards to gain access to the mower deck drive belt.

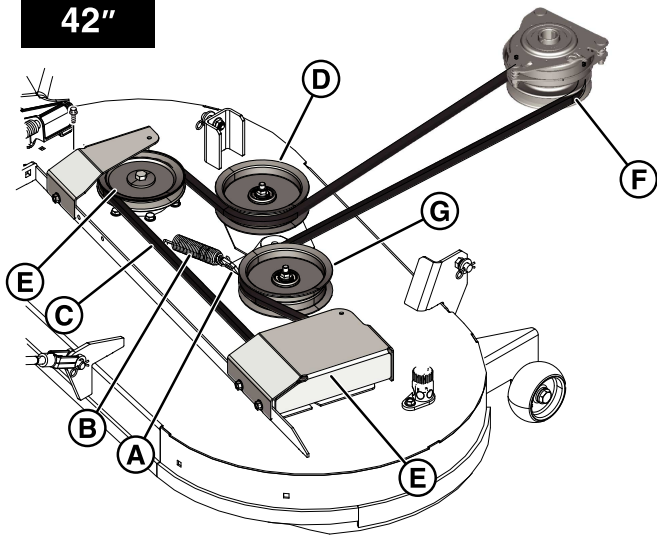


WARNING

- Use extreme caution when rotating the idler arm with your hand due to the increased tension in the spring as the idler arm is being rotated. Injury may result if the idler arm is prematurely released while the spring is under tension.
5. Rotate the idler arm (A, Figures 46 and 47) in the direction so that it stretches the belt tensioning spring (B) to relieve the tension on the belt (C).

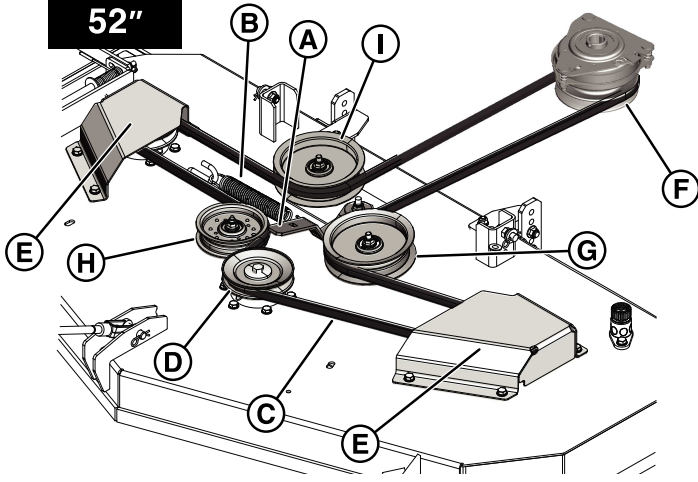
46

42"



47

52"



6.
 - **42" Models:** Remove the belt from the rear stationary idler pulley (D, Figure 46). Carefully allow the idler arm to rotate back into position.
 - **52" Models:** Remove the belt from the center spindle pulley (D, Figure 47). Carefully allow the idler arm to rotate back into position.
7. Remove the old belt and replace with a new one.
8.
 - **42" Models:** Make sure that the V-side of the belt is installed in the grooves of the two (2) spindle pulleys (E, Figure 46) and the PTO clutch pulley (F) and that the back side of the belt contacts the face of the adjustable idler pulley (G). Carefully rotate the idler arm so that it stretches the tensioning spring and install the mower deck so that the back side of the belt contacts the rear stationary idler pulley (D).
 - **52" Models:** Make sure that the V-side of the belt is installed in the grooves of the left and right spindle pulleys (E, Figure 47) and the PTO clutch pulley (F) and that the back side of the belt contacts the face

of the adjustable idler pulley (G) and the front and rear stationary idler pulleys (H and I). Carefully rotate the idler arm so that it stretches the tensioning spring and install the mower deck drive belt so that V-side of the belt goes into the grooves of the center spindle pulley.

9. Carefully release the tension on the idler arm.
10. Install the mower deck guard and the floor pan.
11. Run the mower deck under a no-load condition for about five (5) minutes to break in the new belt.

Washing the Mower Deck

The washout port allows you to connect a typical garden hose to the left-hand side of the mower deck to remove grass and debris from the underside.



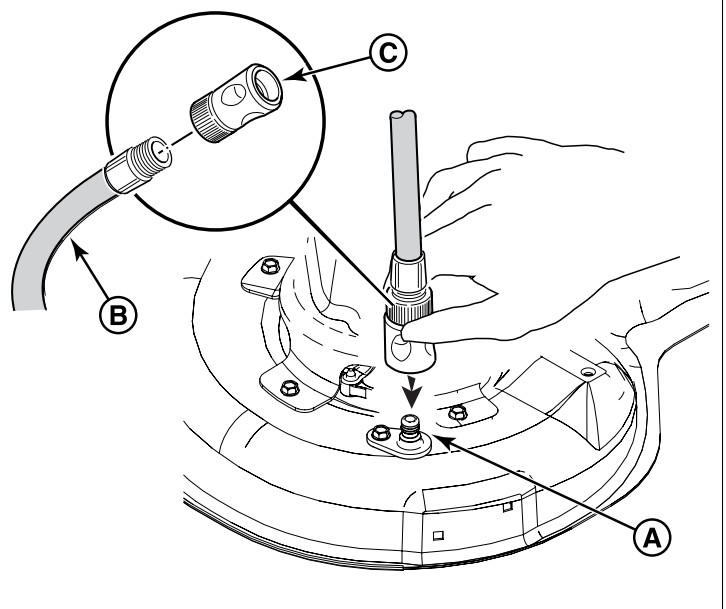
WARNING

Amputation and Thrown Object Hazard.

Contact with the mower blades, or with objects thrown by the mower blades, could result in death or serious injury.

- Before running the mower, make sure the hose is properly connected and does not come into contact with the blades.
 - When the mower is running and the blades are engaged, the person cleaning the mower deck must be in the operator position, with no bystanders in the area.
1. Park the unit on a smooth level surface.
 2. Attach the quick disconnect (C, Figure 48) to garden hose (B) and connect to the washout port (A) on the mower deck.

48

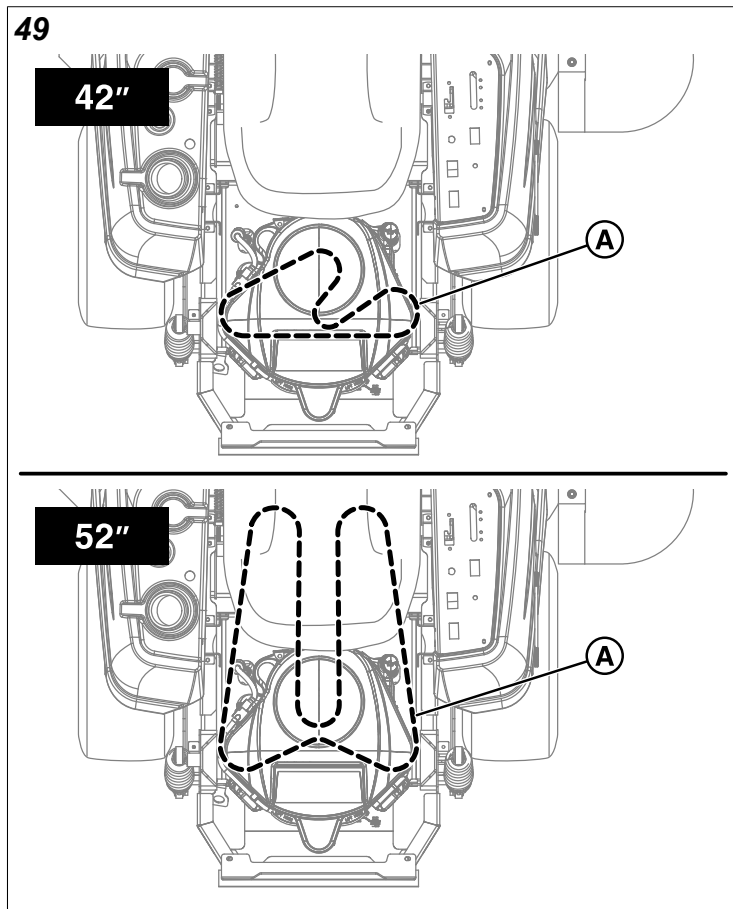


3. Run water to remove grass and debris from the underside of the mower deck.

- Turn the mower on and place in the highest cutting position.
- Turn the mower off.
- Remove the garden hose and quick disconnect from the washout port when completed.

Transmission Drive Belt Replacement

This zero-turn riding mower is equipped with a transmission drive belt (A, Figure 49) that is located under the engine deck of the unit.



Inspect the Condition of the Transmission Drive Belt

Service Interval: Every 400 hours or annually.

- Drive the unit to a flat, level surface and return the ground speed control levers to the middle (NEUTRAL) position to stop the unit's movement. Pivot the levers outward to lock them in the START/PARK position. This action automatically engages the parking brake.
- Disengage the PTO by pushing down on the PTO switch. Move the throttle control to the SLOW position and turn the ignition switch to OFF. Remove the key.
- Visually inspect the belt (A, Figure 49) for cracks, frayed edges, burn marks or any other damage. If the belt is damaged, it must be replaced.
- To replace the transmission drive belt the PTO clutch must be removed from the engine's crankshaft so it is recommended that the procedure for replacing the

transmission drive belt be performed by an authorized STIHL servicing dealer.

Battery Maintenance



Be careful when handling the battery.

Battery acid can cause severe burns. Avoid contact with skin. Wear protective gear (safety goggles/face shield and gloves) when working with the battery.

Keep the battery out of reach of children.

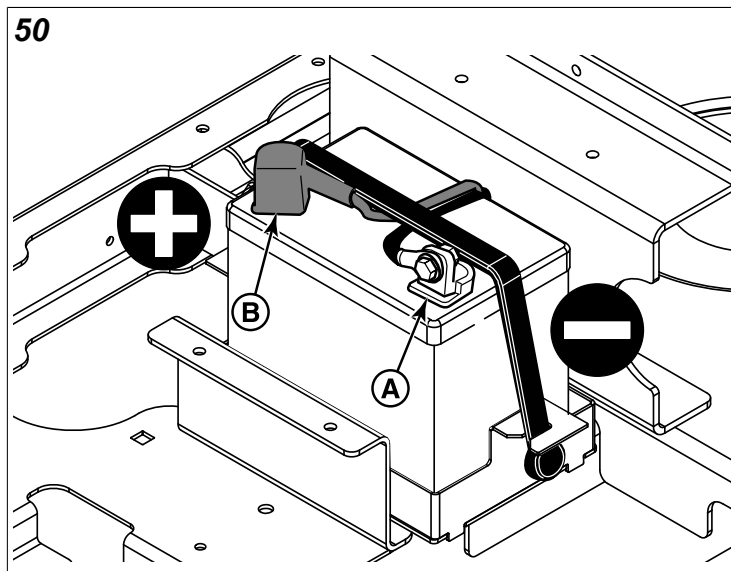
To avoid an explosion, keep open flames and sparks away from the battery, especially while charging.

When removing or installing battery cables, disconnect the negative cable FIRST and reconnect it LAST. If not done in this order, the positive terminal can be shorted to the frame by a tool.

Cleaning the Battery and Cables

This unit is equipped with a maintenance-free BCIU1 battery.

- Disconnect the cables from the battery, negative [-] cable first (A, Figure 50).



- Clean the battery terminals and cable ends with a wire brush until shiny.
- Reinstall the battery and reattach the battery cables, positive [+] cable first (B).
- Coat the cable ends and the battery terminals with petroleum jelly or non-conducting grease.

Checking Battery Voltage

A voltmeter can be used to determine condition of the battery. When the engine is off, the voltmeter shows battery voltage, which should be 12 volts. When the engine is running, the voltmeter shows voltage of charging circuit which normally is 13 to 14 volts.

A dead battery, or one too weak to start the engine, may not mean the battery needs to be replaced. For example, it may mean that the alternator is not charging the battery properly.

If there is any doubt about the cause of the problem, see your authorized STIHL servicing dealer. If you need to replace the battery, follow the steps under *Cleaning the Battery and Cables*.

Charging the Battery



WARNING

Keep open flames and sparks away from the battery; the gasses coming from it are highly explosive. Ventilate the battery well during charging.

A dead battery or one too weak to start the engine may be the result of a defect in the charging system or other electrical component. If there is any doubt about the cause of the problem, see your authorized STIHL servicing dealer.

To charge the battery, follow the instructions provided by the battery charger manufacturer as well as all warnings included in the OPERATOR SAFETY section of this manual. Charge the battery until fully charged. Do not charge at a rate higher than 10 amps.

Jump Starting with Auxiliary (Booster) Battery

Jump starting is not recommended.

Troubleshooting

While normal care and regular maintenance will extend the life of your unit, prolonged or constant use may eventually require that service be performed to allow it to continue to operate properly.

This troubleshooting guide lists the most common problems, their causes, and remedies.

Refer to MAINTENANCE PROCEDURES for instructions on how to perform most of these minor adjustments and service repairs yourself. If you prefer, all of these procedures can be performed for you by your authorized STIHL servicing dealer.



WARNING

Remove ignition key prior to performing maintenance on the unit.

To avoid serious injury, perform maintenance on the unit or mower deck only when the engine is stopped and the parking brake is engaged.

Always remove the ignition key, disconnect the spark plug wire(s) and fasten it away from the plug(s) before beginning the maintenance, to prevent accidental starting of the engine.

Troubleshooting the Zero-Turn Riding Mower

Problem: Engine will not turn over and start.	
Cause	Remedy
Ground speed control levers are not in START/PARK positions.	Lock ground speed control levers in START/PARK positions.
PTO (electric clutch) switch is in ON position.	Place in OFF position.
Out of fuel.	If engine is hot, allow it to cool, then refill the fuel tank.
Engine flooded.	Open the choke (if equipped).
Battery terminals require cleaning.	Clean the battery terminals.
Battery discharged or dead.	Recharge or replace.
Spark plug(s) faulty, fouled or incorrectly gapped.	Clean and gap or replace.

Engine starts hard or runs poorly.	
Cause	Remedy
Fuel mixture too rich.	Clean air filter. Check the choke (if equipped).
Spark plug faulty, fouled or incorrectly gapped.	Clean and gap or replace.

Engine knocks.	
Cause	Remedy
Low oil level.	Check/add oil as required.
Using wrong grade oil.	See engine operator's manual.

Excessive oil consumption.	
Cause	Remedy
Engine running too hot.	Check engine fins, blower screen, and air cleaner.
Using wrong grade oil.	See engine operator's manual.
Too much oil in crankcase.	Drain excess oil.

Excessive oil consumption.	
Cause	Remedy
Engine running too hot.	Check engine fins, blower screen, and air cleaner.
Using wrong grade oil.	See engine operator's manual.
Too much oil in crankcase.	Drain excess oil.

Engine exhaust is black.	
Cause	Remedy
Dirty air filter.	Replace air filter.
Engine choke control is in closed position.	Open choke control (if equipped).

Engine runs, but unit will not drive or handles poorly.	
Cause	Remedy
Transmission release lever(s) in "bypass" position.	Move transmission release lever(s) to the "drive" position.
Transmission drive belt or pulleys is greasy or oily.	Clean as required.
Steering lever linkages are loose.	See an authorized STIHL servicing dealer.

For all other issues, see an authorized STIHL servicing dealer.

Troubleshooting Common Cutting Problems

Problem: Streaking	
Streaking is when thin strips of uncut grass are left behind the mower. Streaking is usually caused by operator error or poor blade maintenance.	
Cause	Remedy
Blades are not sharp.	Sharpen your blades.
Blades are worn down too far.	Replace your blades.
Engine speed is too slow.	Always mow at full throttle.
Ground speed is too fast.	Slow down.
Deck is plugged with grass.	Clean out the mower.
Not overlapping cutting rows enough.	Overlap your cutting rows
Not overlapping enough when turning.	When turning your effective cutting width decreases—overlap more when turning.

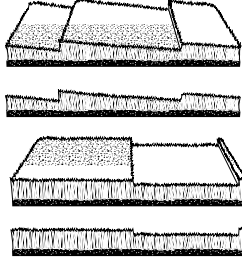
Problem: Scalping	
Scalping is when the mower deck comes close to or hits the ground. Scalping can be caused by the mower deck misadjustment, unevenness in the lawn, or by mower deck bouncing because the ground speed is too fast.	
Cause	Remedy
Lawn is uneven or bumpy.	Roll or level the lawn.
Mower deck cutting height is set too low.	Raise the cutting height.
Ground speed is too fast.	Slow down.

Problem: Scalping

Deck is not leveled correctly.	Correctly level the deck.
Tire pressure is low or uneven.	Check and inflate the tires.

Problem: Stepped Cutting

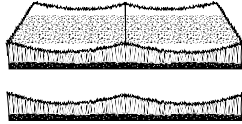
Stepped cutting is sharp ridges or uneven levels left in the lawn surface. Stepped cutting is usually caused by mower deck damage or misadjustment, or damage to the mower blades.



Cause	Remedy
Deck is not leveled correctly.	Level the deck correctly.
Tires are not properly inflated.	Check and inflate the tires.
Blades are damaged.	Replace the blades.
Deck shell is damaged.	Repair or replace the deck.
Mower spindle is bent or loose.	Repair or replace the spindle.
Blades are installed incorrectly.	Reinstall the blades correctly.

Problem: Uneven Cutting

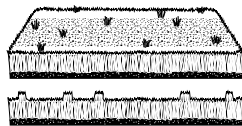
Uneven cutting is waviness or smooth troughs in the lawn surface. Uneven cutting is usually caused by mower deck damage or misadjustment.



Cause	Remedy
Deck is not leveled correctly.	Level the deck correctly.
Blades are dull or worn.	Sharpen or replace the blades.
Blades are damaged.	Replace the blades.
Deck is clogged with grass clippings.	Clean out the deck.
Deck shell is damaged.	Repair or replace the deck.
Mower spindle is bent or loose.	Repair or replace the spindle.
Blades are installed incorrectly.	Reinstall the blades correctly.
Tires are not properly inflated.	Check and inflate the tires.

Problem: Stringers

Stringers are sparse patches of uncut grass left behind the mower. Stringers are usually caused by operator error or poor blade maintenance.



Cause	Remedy
Blades are not sharp or nicked.	Sharpen your blades.
Blades are worn down too far.	Replace your blades.
Engine speed is too slow.	Always mow at full throttle.
Ground speed is too fast.	Slow down.
Deck is plugged with grass.	Clean out the mower.

Specifications

Specifications are correct at time of printing and are subject to change without notice.

ENGINE

For complete engine specifications see the engine manufacturer's operator's manual included with your unit.

Fits models: RZ 142.0

Briggs & Stratton® 44U777 Professional Series with ReadyStart®	
Make	Briggs & Stratton®
Model	44U777-0010-G1
Electrical System	12 volt, 9 amp alternator; Battery: 230 CCA

Fits models: RZ 152.0

Briggs & Stratton® 44S977 Professional Series with ReadyStart®	
Make	Briggs & Stratton®
Model	44S977-0046-G1
Electrical System	12 volt, 9 amp alternator; Battery: 230 CCA

CHASSIS

Fuel Tank Capacity	3 gallons (11,4 L)
Rear Wheels	
Tire Size (Non-suspension Models)	20 X 8 - 8
Tire Size (Suspension Models)	20 X 10 - 10
Inflation Pressure	12 psi (0,83 bar)
Front Tires	
Tire Size	11 X 6 - 5
Inflation Pressure	22 psi (1,52 bar)

TRANSMISSIONS

Non-suspension Models:

Make	Hydro-Gear®
LH Model	ZD-AUBB-2A7B-3XPX
RH Model	ZD-DUBB-2A7C-2XPX
Type	EZT®
Hydraulic Fluid	Sealed Transaxle
Speeds @ 3400 rpm	Forward: 0 - 7 mph (0 - 11 km/h)
	Reverse: 0 - 4 mph (0 - 6 km/h)

Suspension Models:

Make	Hydro-Gear®
LH Model	ZH-JPBB-SF7B-2XLX
RH Model	ZH-MPBB-SF7C-3XLX
Type	ZT-2800®

Hydraulic Fluid	SAE 20W-50 motor oil
Speeds @ 3400 rpm	Forward: 0 - 8 mph (0 - 13 km/h)
	Reverse: 0 - 4 mph (0 - 6 km/h)

DIMENSIONS

Models with 42" Mower Decks	
Overall Length	74" (188 cm)
Overall Width	48" (122 cm)
Overall Height	40" (102 cm)

Models with 52" Mower Decks	
Overall Length	74" (188 cm)
Overall Width	54" (137 cm)
Overall Height	41" (104 cm)

Compliance Statement and ISED Declarations

Operation is subject to the following two conditions:

- this device may not cause harmful interference.
- this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna,
- increase the separation between the equipment and receiver,
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected,
- consult an authorized STIHL servicing dealer or an experienced radio/TV technician for help.

Do not change or modify this product in any way unless specifically allowed in this manual, since this could void your authority to operate it.

This Class B digital apparatus complies with Canadian ICES-002.

Limited Warranty

STIHL Limited Warranty Policy

This product is sold subject to the STIHL Limited Warranty Policy, available at www.STIHL.ca. It can also be obtained from your authorized STIHL servicing dealer.

If your unit is equipped with a dual function hour meter that displays both engine hours and PTO hours, warranty coverage is based on the engine hours as displayed by the hour meter.

STIHL