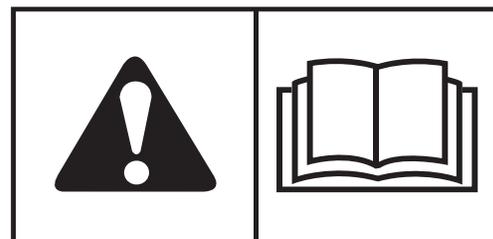


# S200xt

Zero-Turn Riding Mower



Model	Description	Model	Description
5900830	S200XTBV2861	5901233	S200XTKOH2761
5900937	S200XTKAV2661	5901280	S200XTBV2761
5900951	S200XTBV3261	5901286	S200XTBV3272
5901023	S200XTB2861	5901287	S200XTBV3672
5900582	S200XTB3061	5901367	S200XTBVE2861
5900601	S200XTBV3661	5901368	S200XTBV2661
5901021	S200XTKAV2661	5901379	S200XTBV2661 CAL
5900504	S200XTBV32	5901380	S200XTKAV2661 CAL
5900583	S200XTB30	5901381	S200XTKOH2761 CAL
5900585	S200XTBV36	5901423	S200XTB2761 CAL
5900505	S200XT/72"	5901424	S200XTBVE2861 CAL
5901510	S200XTBVE3761	5901511	S200XTBVE3772

This manual is available in Spanish. For a copy, contact your Snapper Pro dealer or [www.snapperpro.com](http://www.snapperpro.com).

Este manual está disponible en Español. Para obtener una copia, póngase en contacto con su distribuidor Snapper Pro o [www.snapperpro.com](http://www.snapperpro.com).

**Thank you** for purchasing this quality-built SNAPPER PRO product. We're pleased that you've placed your confidence in the SNAPPER PRO brand. When operated and maintained according to the instructions in this manual, your SNAPPER PRO product will provide many years of dependable service.

**This manual contains** safety information to make you aware of the hazards and risks associated with this machine and how to avoid them. This machine is designed and intended to be used and maintained according to the manual and operated by trained professionals for finish cutting of established lawns and is not intended for any other purpose. It is important that you read and understand these instructions thoroughly before attempting to start or operate this equipment. **Save these original instructions for future reference.**

PRODUCT REFERENCE DATA	
Unit Model Number	Unit SERIAL Number
Mower Deck Model Number	Mower Deck SERIAL Number
Dealer Name	Date Purchased
ENGINE REFERENCE DATA	
Engine Make	Engine Model
Engine Type/Spec	Engine Code/Serial Number

See *Features and Controls* for the location of Identification Numbers

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 5375 N. Main St.  
 Munnsville, NY 13409-4003  
 (800) 933-6175  
[www.SnapperPro.com](http://www.SnapperPro.com)

**⚠ WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

**⚠ WARNING**

Battery posts, terminals, and related accessories contain lead and lead compounds - chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

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*NOTE: In this manual, "left" and "right" are referred to as seen from the operating position.*

## Operating Safety



Congratulations on purchasing a superior-quality piece of lawn and garden equipment. Our products are designed and manufactured to meet or exceed all industry standards for safety.

Do not operate this machine unless you have been trained. Reading and understanding this operator's manual is a way to train yourself.

Power equipment is only as safe as the operator. If it is misused, or not properly maintained, it can be dangerous! Remember, you are responsible for your safety and that of those around you.

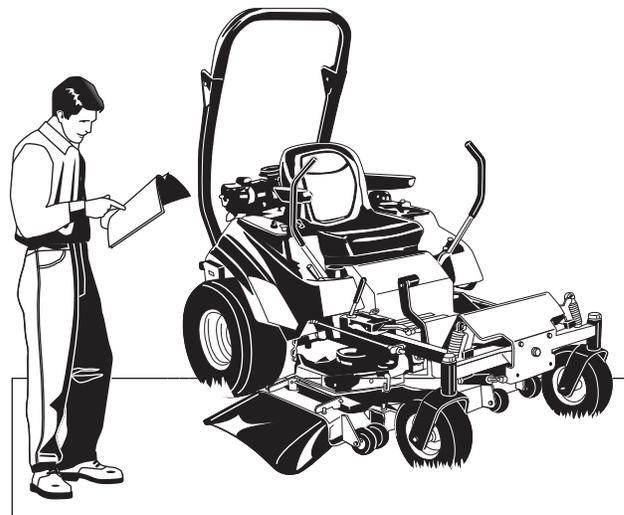
Use common sense, and think through what you are doing. If you are not sure that the task you are about to perform can be safely done with the equipment you have chosen, ask a professional: contact your local authorized dealer.

## Read the Manual

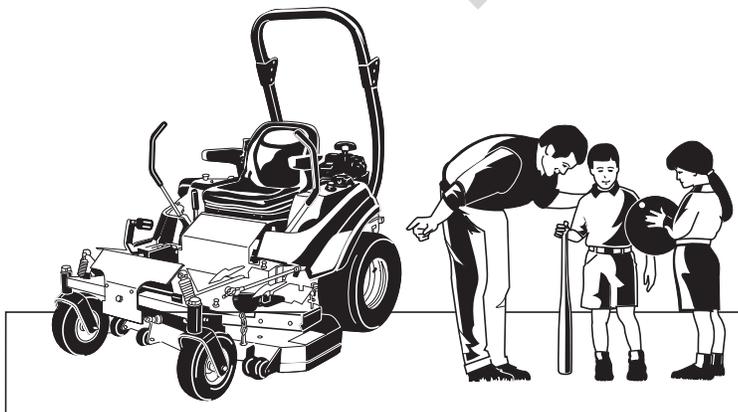
The operator's manual contains important safety information you need to be aware of **BEFORE** you operate your unit as well as **DURING** operation.

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 equipment investment.

Be sure to completely read the Safety Rules and Information found on the following pages. Also completely read the Operation section.



## Children



Tragic accidents can occur with children. Do not allow them anywhere near the area of operation. Children are often attracted to the unit and 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.

## Slope Operation



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 rollover. You should not operate on a slope greater than a 5.4 foot rise over a 20 foot length (15 degrees).

Always mow across slopes, not up and down (to maintain traction on the wheels) and avoid sudden turns or rapid speed changes. Reduce speed and use extreme caution on ALL slopes.

Also, note that the surface condition you are on can greatly impact your ability to safely operate this machine. 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.

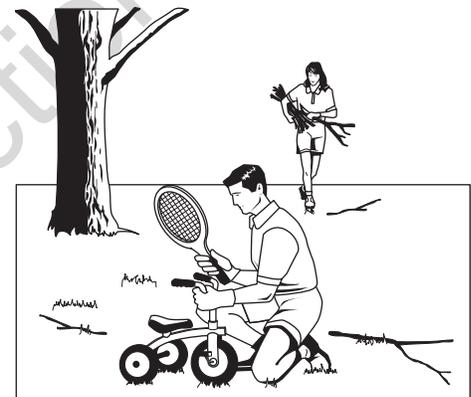
If you feel unsure about operating the unit on a slope, don't do it. It's not worth the risk.

## Thrown Objects

This unit has spinning mower blades. These blades can pick up and throw debris that could seriously injure a bystander. Be sure to clean up the area to be mowed and remove objects that could be thrown by the blade **BEFORE** you start mowing.

Do not operate this unit without the entire grass catcher or discharge guard (deflector) in place.

Also, do not allow anyone in the area while the unit is running! If someone does enter the area, shut the unit off immediately until they leave.

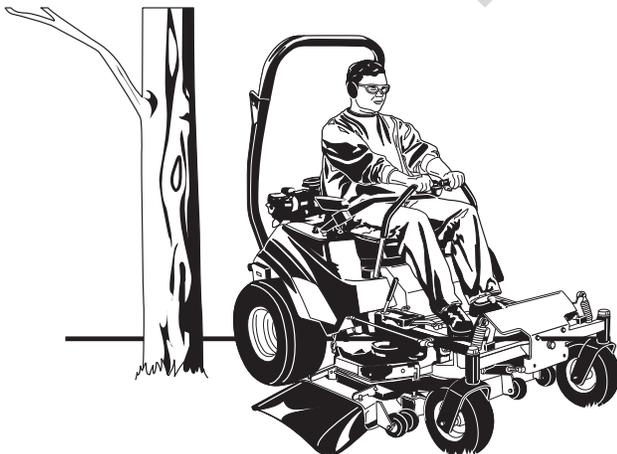


## Moving Parts

This equipment has many moving parts that can injure you or someone else. However, if you stay in the operator zone (stay seated in the seat), and follow the safety rules in this operator's manual, the unit is safe to operate.

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.

To help you, the operator, use this equipment safely, it is equipped with an operator-present safety system. Do **NOT** attempt to alter or bypass the system. See your dealer immediately if the system does not pass all the safety interlock system tests found in this manual.

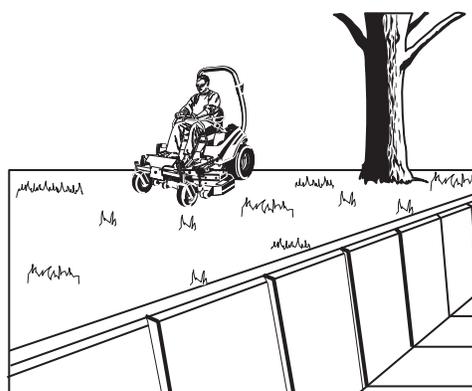




## Roll Bar Use

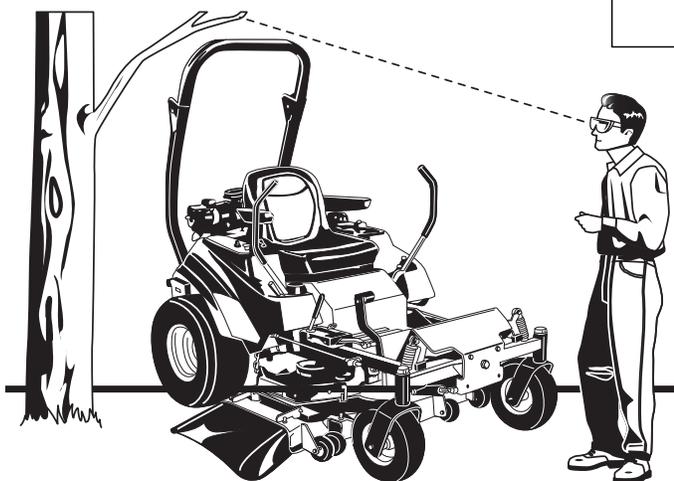
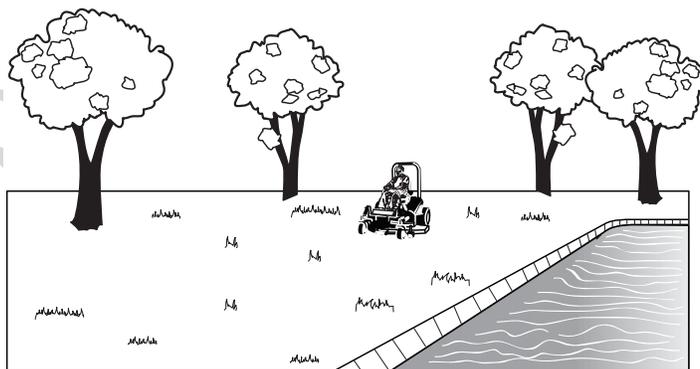
Keep the roll bar in the raised position and fasten the seat belt. There is no roll over protection when the roll bar is down! Do not jump off if the mower tips (it is safer to be secured by the seat belt with the roll bar raised.)

Lower the roll bar only when necessary (such as to temporarily clear a low overhanging obstacle) and NEVER remove it. Do NOT use the seat belt when the roll bar is down. Raise the roll bar as soon as clearance permits.



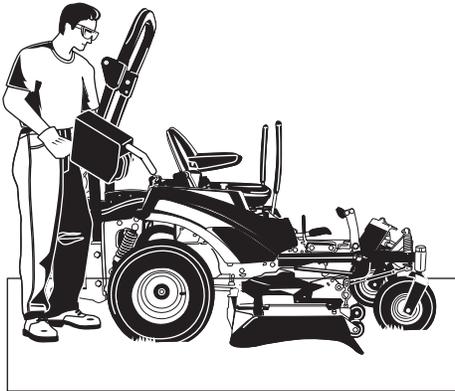
## Retaining Walls, Drop-offs, and Water

Retaining walls and drop-offs around steps and water are a common hazard. 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.



## Overhead Obstacles

Check for overhead clearances before driving under any objects. Do not allow the roll bar to contact low overhanging obstacles such as tree branches and guide wires.



## Fuel and Maintenance

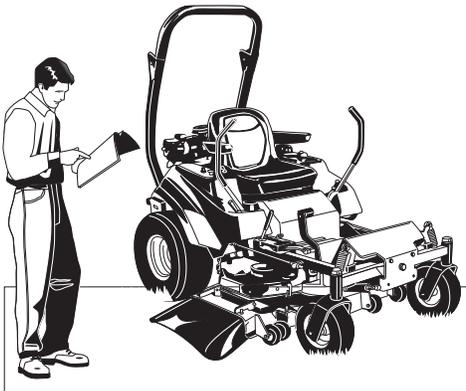
Always disengage all drives, shutoff the engine, and remove the key before doing any cleaning, refueling, or servicing.

Gasoline and its vapors are extremely flammable. Do not smoke while operating or refueling. Do not add fuel while engine is hot or running. Allow engine to cool for at least 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. Gasoline spills should be cleaned up promptly and before operation begins.

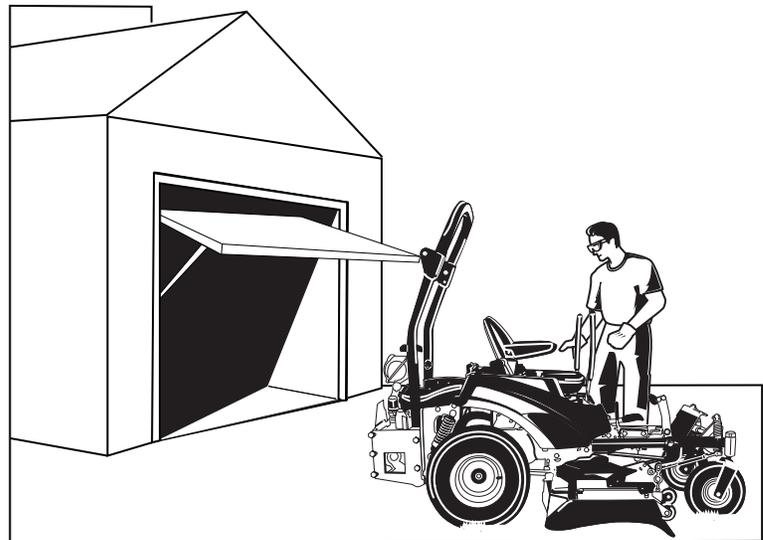
Gasoline should be stored only in sealed containers approved for fuel.

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.



## Enclosed Areas

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



# Operator Safety



Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of 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.** The triangle  in text signifies important cautions or warnings which must be followed.

## TRAINING

1. Read, understand, and follow all instructions in the manual and on the unit before starting. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this material to them.
2. Become familiar with the safe operation of the equipment, operator controls, and safety signs.
3. All operators and mechanics should be trained. The owner is responsible for training the users.
4. Only allow responsible adults, who are familiar with the instructions, to operate the unit.
5. Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
6. The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.
7. Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the riding mower safely enough to protect themselves and others from serious injury.

## PREPARATION

1. 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.
2. Wear appropriate clothing including safety shoes, safety glasses and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
3. Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire, which can be thrown by the machine.
4. Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
  - a) Use only an approved container.
  - b) Never remove fuel cap or add fuel with the engine running. Allow engine to cool before refueling. Do not smoke.
  - c) Never refuel or drain the machine indoors.
5. Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

## OPERATION

1. Never run an engine in an enclosed area.

2. Mow only in the daylight or with good artificial light, keeping away from holes and hidden hazards.
3. Be sure all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position. Use seat belts if provided.
4. Be sure of your footing while using pedestrian controlled equipment, especially when backing up. Walk, don't run. Reduced footing could cause slipping.
5. Slow down and use extra care on hillsides. Be sure to travel in the recommended direction on hillsides. Turf conditions can affect the machines stability. Use caution when operating near drop-offs.
6. Do not mow in reverse unless absolutely necessary. Always look down and behind before and while traveling in reverse.
7. Be aware of the mower discharge direction and do not point it at anyone. Do not operate the mower without either the entire grass catcher or the deflector in place.
8. Slow down and use caution when making turns and when changing directions on slopes.
9. Never raise deck with the blades running.
10. 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 cutting units.
11. Turn off the PTO switch to disengage the blades when not mowing.
12. Never operate with guards not securely in place. Be sure all interlocks are attached, adjusted properly and functioning properly.
13. Never operate with the discharge deflector raised, removed or altered, unless using a grass catcher.
14. Do not change the engine governor setting or overspeed the engine.
15. Stop on level ground, lower implements, disengage drives, engage parking brake, shut off engine before leaving the operator's position for any reason including emptying the grass catchers or unclogging the chute.
16. Stop equipment and inspect blades after striking objects or abnormal vibration occurs. Make necessary repairs before resuming operations.
17. Keep hands and feet away from the cutting units.
18. Look behind and down before backing up to be sure of a clear path.
19. Never carry passengers and keep pets and bystanders away.
20. Do not operate the unit while under the influence of alcohol or drugs.
21. Slow down and use caution when making turns and crossing roads and sidewalks. Stop blades if not mowing.
22. Use care when loading or unloading the machine into a trailer or truck.

23. Use care when approaching blind corners, shrubs, trees or other objects that may obscure vision.
24. To reduce fire hazard, keep unit free of grass, leaves & excess oil. Do not stop or park over dry leaves, grass or combustible materials.

## WARNING

**It is a violation of California Public Resource Code, Section 4442, to use or operate the engine on any forest-covered, brush-covered or grass-covered land unless the exhaust system is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order. Other states or federal jurisdictions may have similar laws. Contact an Authorized Service Dealer to obtain a spark arrester designed for the exhaust system installed on this engine.**

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

## CAUTION



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

**Wear hearing protection when operating this machine.**

## SLOPE OPERATION

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

## WARNING

**Do not use this machine on slopes greater than 15°.\***

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

**Mow across the face of slopes, not up and down, use caution when changing directions and DO NOT START OR STOP ON SLOPE.**

### Do

1. Mow across slopes, not up and down.
2. Remove obstacles such as rocks, tree limbs, etc.
3. Watch for holes, ruts, or bumps. Uneven terrain could overturn the unit. Tall grass can hide obstacles.
4. Use slow speed. Choose a slow speed so that you will not have to stop or change speed while on the slope.

\*This limit was determined per International Standard ISO 5395-3:2013, Section 4.6 and is based on the ISO 5395-3 Stability Test procedure described in Annex A. The 15 degree "limit of stability" is equal to 60% of the angle at which machine lift-off occurred in static tests. Actual dynamic stability may vary depending on operating conditions.

5. Use extra care with grass catchers or other attachments. These can change the stability of the unit.
6. Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.
7. See your authorized dealer for recommendations of available weights to improve stability.

### Do Not

1. Avoid starting, stopping, or turning on a slope. If tires lose traction (i.e. machine stops forward motion on a slope), disengage the blade(s) (PTO) and drive slow off the slope.
2. Do not turn on slopes unless necessary, and then, turn slowly and gradually uphill, if possible. Never mow down slopes.
3. Do not mow near drop-offs, ditches, or embankments. The operator could lose footing or balance or mower could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
4. Do not mow on wet grass. Reduced footing or traction could cause sliding.
5. Do not try to stabilize the unit by putting your foot on the ground. (ride-on units)
6. Do not mow excessively steep slopes.
7. Do not use grass catcher on steep slopes.
8. Do not mow slopes if you cannot back up them.

## TOWED EQUIPMENT (RIDE-ON UNITS)

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

## CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the unit and the mowing activity. Never assume that children will remain where you last saw them.

1. Keep children out of the mowing area and under the watchful care of another responsible adult.
2. Be alert and turn unit off if children enter the area.
3. Before and during reverse operation, look behind and down for small children.
4. 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 machine.
5. Never allow children to operate the unit.
6. Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

## EMISSIONS

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

## IGNITION SYSTEM (GASOLINE MODELS)

1. This spark ignition system complies with Canadian ICES-002.

## SERVICE AND MAINTENANCE

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

### Safe Handling of Gasoline

1. Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
2. Use only approved gasoline containers.
3. Never remove the gas cap or add fuel with the engine running. Allow the engine to cool before refueling.
4. Never fuel the machine indoors.
5. Never store the machine or fuel container where there is an open flame, spark, or pilot light such as near a water heater or other appliance.
6. Never fill 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.
7. Remove gas-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 gasoline dispenser nozzle.
8. 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.
9. If fuel is spilled on clothing, change clothing immediately.
10. Never over-fill the fuel tank. Replace gas cap and tighten securely.
11. Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
12. If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
13. Replace all fuel tank caps and fuel container caps securely.

### Maintenance and Storage

1. Always observe safe refueling and fuel handling practices when refueling the unit after transportation or storage.
2. Always follow the engine manual instructions for storage preparations before storing the unit for both short and long term periods.
3. Always follow the engine manual instructions for proper start-up procedures when returning the unit to service.
4. Never store the machine or fuel container inside

- where there is an open flame, such as in a water heater. Allow unit to cool before storing.
5. Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
6. Keep all hardware, especially blade attachment bolts, tight and keep all parts in good working condition. Replace all worn or damaged decals.
7. Never tamper with safety devices. Check their proper operation regularly.
8. Disengage drives, lower implement, set parking brake, stop engine and remove key or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
9. Clean grass and debris from cutting units, drives, mufflers, and engine to prevent fires. Clean up oil or fuel spillage.
10. Let engine cool before storing and do not store near flame.
11. Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
12. Park machine on level ground. Never allow untrained personnel to service machine.
13. Use jack stands to support components when required.
14. Carefully release pressure from components with stored energy.
15. Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
16. Use care when checking blades. Wrap the blade(s) or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
17. Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
18. Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothes and use insulated tools.
19. 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.
20. Check brake operation frequently. Adjust and service as required.
21. Use only factory authorized replacement parts when making repairs.
22. Always comply with factory specifications on all settings and adjustments.
23. Only authorized service locations should be utilized for major service and repair requirements.
24. 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.
25. Units with hydraulic pumps, hoses, or motors: **WARNING:** 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 dealer.

26. **WARNING:** Stored energy device. Improper release of springs can result in serious personal injury. Springs should be removed by an authorized technician.
27. Models equipped with an engine radiator: **WARNING:** 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 extreme care when removing the cap.

## ROLL BAR INSTRUCTIONS

For models equipped with factory-installed Roll Over Protection System (ROPS).

### **WARNING**

**In order to avoid serious injury or death from roll over, it is important to follow the warnings listed below.**

#### OPERATIONAL WARNINGS

- Always use the seat belt when the roll bar is in the raised position.
- Never use the seat belt when the roll bar is in the down position.
- Remember there is no roll over protection when the roll bar is in the down position so it is very important to always keep the roll bar in the raised position whenever possible.
- Lower the roll bar to the down position only when it is absolutely necessary.
- Check for overhead clearances before driving under any objects. Do not allow roll bar to contact low overhanging obstacles such as tree branches and guide wires.
- Never remove the roll bar from the vehicle.
- Do not exceed the machine weight rating of the roll bar.
- Read and follow all of the instructions shown below regarding the inspection and maintenance of the roll bar structure and the seat belt.

#### INSPECTION OF THE ROLL BAR PROTECTIVE STRUCTURE

### **WARNING**

**Failure to properly inspect and maintain the ROLL BAR protective structure can cause serious injury or death.**

A ROLL BAR, like any other safety device, needs to be periodically inspected to verify that the integrity of the device has not been compromised through normal machine use, misuse, age degradation, modifications, or a roll over.

To maintain operator roll over protection and roll bar effectiveness:

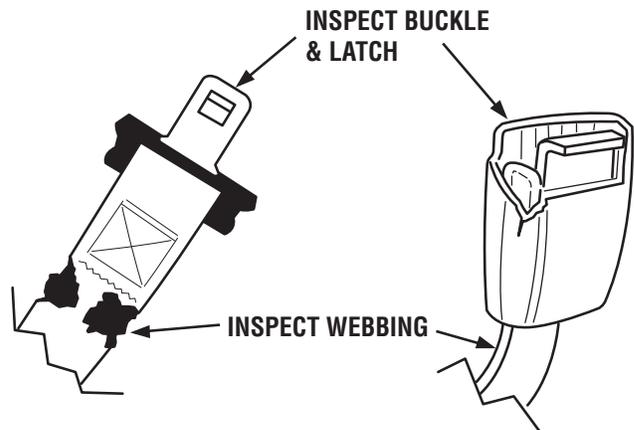
- If a ROLL BAR becomes damaged for any reason, such as a collision, roll over or impact, the ROLL BAR must be replaced. Small undetectable cracks can reduce the effectiveness of the ROLL BAR. Never weld, straighten, or repair the ROLL BAR.
- Never alter the ROLL BAR by welding anything to it or by drilling additional holes.
- **BEFORE FIRST TIME USE** - Inspect the ROLL BAR structure and mounting hardware for:
  - 1) Check to make sure the machine GVW (Gross Vehicle Weight), including attachments, restrained payload, fuel and operator, is not in excess of the maximum weight specified on the ROLL BAR label.
  - 2) Make sure there isn't any missing, damaged, or loose mounting hardware.
  - 3) Make sure the ROLL BAR has been correctly and completely installed.
- **EVERY 100 HOURS** - Inspect the ROLL BAR structure and mounting hardware for:
  - 1) Any cracks in the structure (structural members and/or welds).
  - 2) Significant corrosion on any part of the ROLL BAR structure or hardware.
  - 3) Missing, damaged, or loose mounting hardware
  - 4) Mounting hardware that is of a grade lesser than specified.
  - 5) Machine GVW (Gross Vehicle Weight), including attachments, restrained payload, fuel and operator, in excess of the maximum weight specified on the ROLL BAR label.
  - 6) Any modifications that have been made, such as unauthorized welds and holes.
  - 7) Any permanent deformation or twisting of the ROLL BAR structure.
  - 8) That the ROLL BAR label is still in place and is readable.
  - 9) That the ROLL BAR on-product warning labels are still on the ROLL BAR and are readable.
- If there is any doubt as to the condition of the ROLL BAR, remove the machine from service and contact your dealer for assistance.

## **! WARNING**

Failure to properly inspect and maintain the seat belt can cause serious injury or death.

### **INSPECTION AND MAINTENANCE OF THE ROLL BAR SEAT BELT**

- The seat belt like the ROLL BAR, needs to be periodically inspected to verify that the integrity has not been compromised through normal machine use, misuse, age degradation, modifications, or a roll over. If the seat belt does not pass all of the following tests, it should be replaced.
- **BEFORE EACH USE** – Conduct the following inspections/maintenance of the seat belt and retraction mechanism:
  - 1) Check for dirt or debris in the retraction mechanism. If dirt or debris is found, it should be removed.
  - 2) Check to make sure the retraction mechanism retracts easily and completely.
  - 3) Check for damage to any part of the seat belt such as nicks, cuts, loose stitching, or fraying.
  - 4) Check that the buckle and latch operate properly and that the latch plate is not excessively worn, deformed, or the buckle is damaged or cracked. The seat belt should latch and release easily.

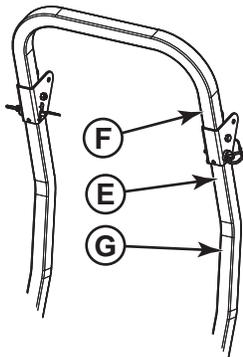
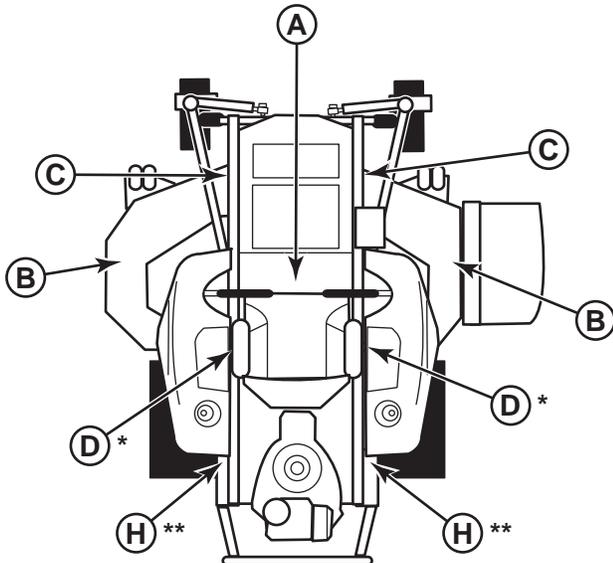


## Safety Decals

Before operating your unit, read the safety decals. The cautions and warnings are for your safety. To avoid a personal injury or damage to the unit, understand and follow all safety decals.

**⚠ WARNING**

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



- \* These decals are located on the guards above the transmission fans.
- \*\* These decals are located behind the ROPS on the frame of the unit.

<p><b>A</b> Part No.: 5103595 - Decal, Main Safety</p>	
<p><b>B</b> Part No.: 7101665 - Decal, Danger</p>	
<p><b>C</b> Part No.: 5061245 - Decal, Pinch Point</p>	
<p><b>D</b> Part No.: 5103184 - Decal, Warning</p>	
<p><b>E</b> Part No.: 5104082 - Decal, Warning, FLDG RL BR</p>	<p><b>F</b> Part No.: 510405 - Decal, Warning, ROPS</p>

# Operator Safety

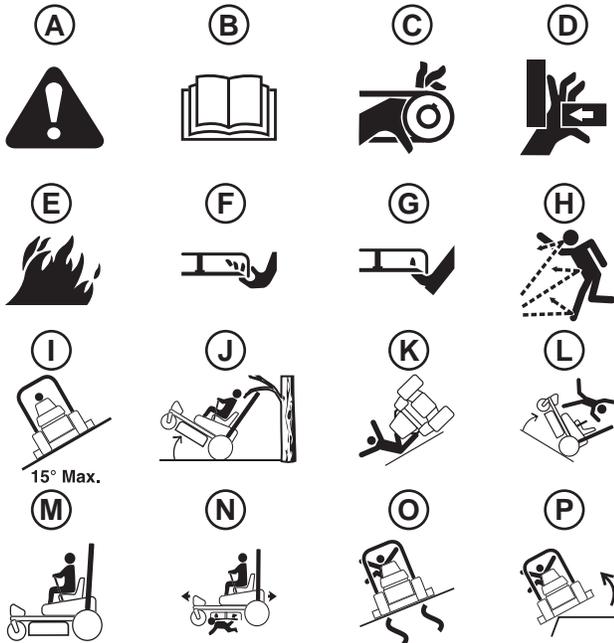
G	Part No.: 5104083 - Decal, Caution, FLDG RL BR	H	Part No.: 5100683 - Decal Warning, ROPS Removed

M	Keep ROPS in Raised Position
N	Keep Children Away
O	Slippery Slopes
P	Dropoffs

## Safety Alert Symbol & Signal Words

The alert symbol is used to identify 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 the injury. In addition, a hazard icon may be used to represent the type of hazard. An explanation of hazard levels and icons are as follows:

## Safety Icons



**DANGER**  
This indicates a hazard which, if not avoided, **will result in serious injury or death.**

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

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

**NOTICE**  
These messages presented without the alert symbol indicate a situation where the unit or property could be damaged.

Callout	Description
A	Alert
B	Read the Manual
C	Amputation - Rotating Parts
D	Pinch Point
E	Fire Hazard
F	Amputation - Hand in Blade
G	Amputation - Foot in Blade
H	Thrown Objects
I	Maximum Slope Angle for Safe Operation
J	Overhead Obstacles
K	Rollover Hazard
L	Tipover



## Safety Interlock System

This unit is equipped with safety interlock switches. These safety systems are present for your safety, do not attempt to bypass safety switches, and never tamper with safety devices. Check their operation regularly.

### Operational SAFETY Checks

#### Test 1 — Engine should NOT crank if:

- PTO switch is engaged, OR
- Parking brake is not engaged, OR
- Motion control handles are not in the NEUTRAL position.

#### Test 2 — Engine SHOULD crank if:

- PTO switch is NOT engaged, AND
- Parking brake is engaged, AND
- Motion control handles are locked in the NEUTRAL position.

#### Test 3 — Engine should SHUT OFF if:

- Operator rises off seat with PTO engaged, OR
- Operator rises off seat with parking brake disengaged.
- Operator moves motion control handles out of their neutral positions before disengaging parking brake.

#### Test 4 — Blade Brake Check

Mower blades and mower drive belt should come to a complete stop within seven (7) seconds after electric PTO switch is turned off (or operator rises off seat). If mower drive belt does not stop within seven (7) seconds, see your dealer.

*NOTE: Once the engine has stopped, PTO switch must be turned off, parking brake must be engaged, and the motion control handles must be locked in the NEUTRAL position after the operator returns to the seat in order to start the engine.*

## WARNING

**If the unit does not pass a safety test, do not operate it. See your authorized dealer. Under no circumstance should you attempt to defeat the purpose of the safety interlock system.**

## Features and Controls

### Identification Numbers



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

Record your part number, serial number and engine serial numbers in the space provided on the inside front cover for easy access. These numbers can be found in the locations shown in Figure 1.

*NOTE: For location of engine identification numbers, refer to the engine owner's manual.*

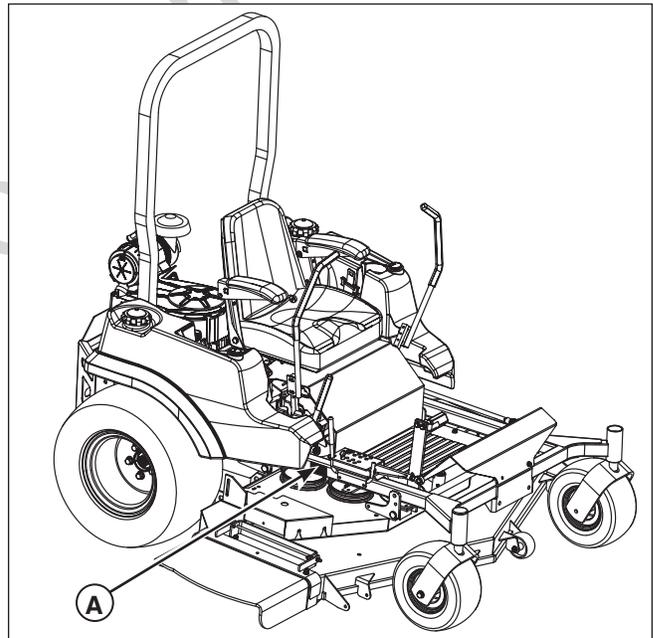


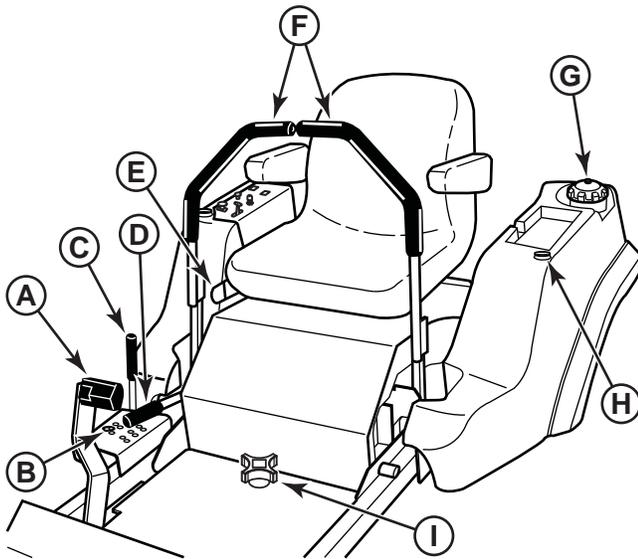
Figure 1. Identification Numbers  
A. Identification Tag

# Features & Controls

## Zero-Turn Rider Controls

### Control Functions and Locations

The information below briefly describes the function of individual controls. Starting, stopping, driving, and moving 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.



A	Deck Lift Pedal
B	Cutting Height Adjustment Pin
C	Deck Lift Lock Lever
D	Parking Brake Lever
E	Seat Adjustment Lever
F	Ground Speed Control Levers
G	Fuel Tank Cap
H	Fuel Level Gauge
I	Removable Floor Pan (S/N: 2016518420 & Above)

### Deck Lift Pedal, Cutting Height Adjustment Pin, & Deck Lift Lock Lever

These control the cutting height of the mower deck. Depress the pedal until it locks into the 6" (15,2 cm) position. Place the adjustment pin in the desired cutting height and release the lift lock lever.

### Parking Brake Lever

	DISENGAGE	Releases the parking brake.
	ENGAGE	Locks the parking brake.

Pull the parking brake lever back to engage the parking brake. Move the lever fully forward to disengage the parking brake. *NOTE: To start the unit the parking brake must be engaged.*

### Seat Adjustment Lever

The seat can be adjusted forward and back. Move the lever towards the left, position the seat as desired, and release the lever to lock the seat in position.

### Ground Speed Control Levers

These levers control the ground speed of the rider. The left lever controls the left rear drive wheel and the right lever controls the right rear drive wheel.

Moving a lever forward increases the FORWARD speed of the associated wheel, and pulling back on a lever increases the REVERSE speed.

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

*See the Operation section for proper steering instructions.*

### Fuel Tank Cap

To remove the cap, turn counter-clockwise.

### Fuel Level Gauge

Displays the fuel level in the tank.

### 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 machine. Reverse the process for re-installation.

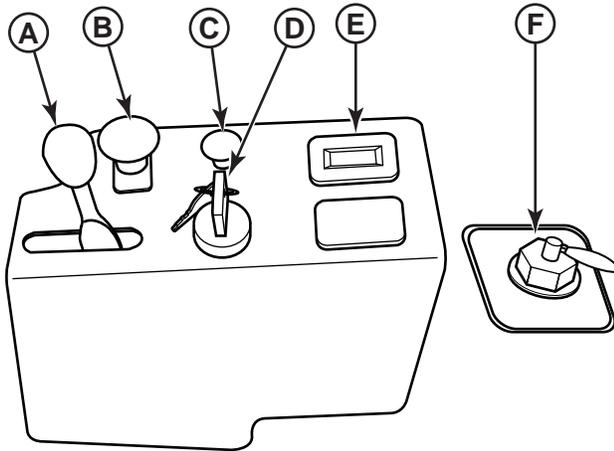
### Hydraulic Actuator

Icon	Control Name
	Hydraulic Actuator

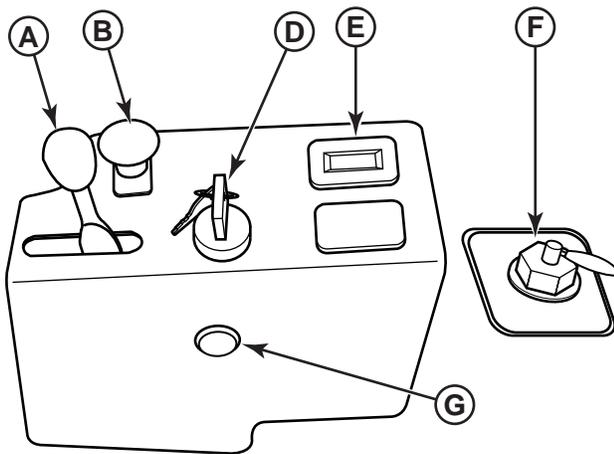
Each transmission on this unit is equipped with a

hydraulic actuator. The hydraulic actuators deactivate the transmission so that the unit can be pushed by hand. Both hydraulic actuators 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.

## Instrument Control Panel - Carbureted Models:



## Instrument Control panel - Electronic Fuel Injected Models:



A	Throttle Control
B	PTO (Power Take Off) Switch
C	Choke
D	Ignition Switch
E	Hour Meter
F	Fuel Selector Valve
G	Malfunction Indicator Lamp (M.I.L.)



### 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.



### PTO (Power Take Off) Switch

The PTO switch engages and disengages the mower. Pull UP on the switch to engage, and push DOWN to disengage.



### Choke

Close the choke for cold starting. Open the choke once the engine starts. A warm engine may not require choking. Pull the knob UP to close the choke. Push to knob DOWN to open the choke.



### 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.*



### Hour Meter

The hour meter measures the number of hours the PTO has been engaged. The hour meter has a self contained power source so the total hours are always visible.



### Fuel Shut Off Valve (Dual Tank Models)

Turning the handle to the desired position determines which tank will be supplying fuel. With the handle pointing LEFT, it will draw fuel from the left-hand tank. With the handle pointing RIGHT, it will draw fuel from the right-hand fuel tank. With the handle pointing towards the operator, it will shut off fuel flow to the engine.

### Malfunction Indicator Lamp (M.I.L.)

The malfunction indicator lamp detects problems with the engine. If the malfunction indicator lamp begins to flash while you are operating the unit, see the engine operator's manual.

## Operation

### General Operating Safety

Before first time operation:

- Be sure to read all information in the Safety and Operation sections before attempting to operate this tractor and mower.
- 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 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, tractor and mower free of grass, leaves and excess grease. Do not stop or park tractor over dry leaves, grass or combustible materials.**

**Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is still hot from recent operation. 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 rider 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 rider. This rider has a zero turning radius and the rear wheels could fall off the ramps, or the rider could tip over injuring the operator or bystanders.**



### **! WARNING**

**Never operate on slopes greater than 15°.**

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

**Mow across the face of slopes, not up and down, use caution when changing directions and DO NOT START OR STOP ON SLOPE.**

### Checks Before Starting

- Check that crankcase is filled to full mark on dipstick. See the engine Operator's Manual for instructions, dipstick locations and oil recommendations.
- Fill the fuel tank with fresh fuel. Refer to engine manual for fuel recommendations.
- Make sure all nuts, bolts, screws and pins are in place and tight.
- **Dual Fuel Tank Models:** Make sure the fuel valve is in the "ON" position.
- Check the tire pressures. See *Check Tire Pressures*.
- Make sure that the Roll Bar is adjusted in the upright position. See *Raise and Lower the Roll Bar*.
- Adjust the seat position, and make certain you can reach all controls from operator's position. See *Seat Adjustment*.
- Adjust the height of the mower deck to the desired position. See *Mowing Height Adjustment*.

## Checking Tire Pressures

Tire pressure should be checked periodically, and maintained at the level 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.

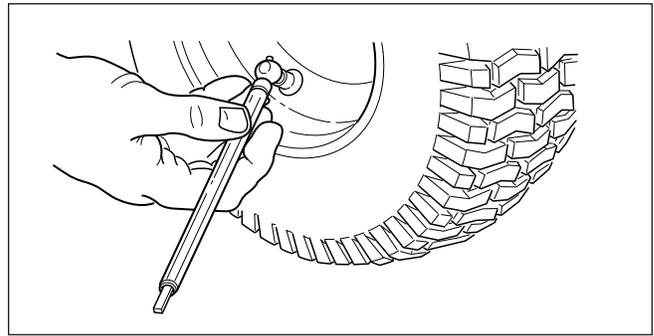


Figure 3. Checking Tire Pressure

## Seat Adjustment

See Figure 4. The seat can be adjusted forward and backward. Move the lever towards the left, position the seat as desired, and release the lever to lock the seat into position.

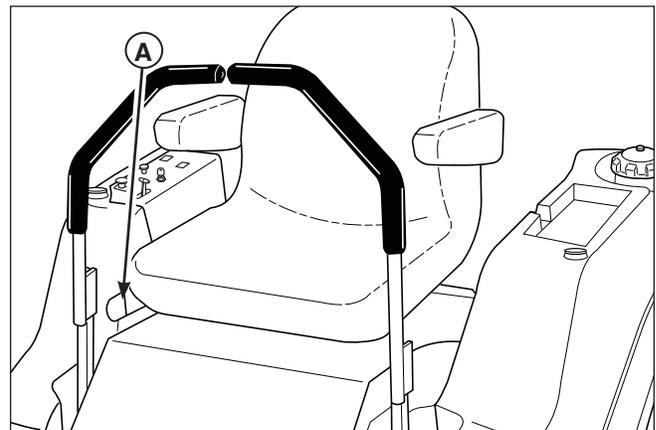


Figure 4. Seat Adjustment  
A. Seat Adjustment Lever

## Mowing Height Adjustment

The cutting height adjustment pin (A, Figure 5) controls the mower cutting height. The cutting height is adjustable between 1-1/2" (3,8 cm) and 6" (15,2 cm) in 1/4" (0,64 cm) increments.

1. Depress the deck lift foot pedal (B) until it locks into the 6" (15,2 cm) position.
2. Place the cutting height adjustment pin in the desired cutting height.
3. Depress the deck lift foot pedal then push the lock lever (C) toward the right to release the lock.
4. Release the deck lift foot pedal until it comes to rest against the cutting height adjustment pin.

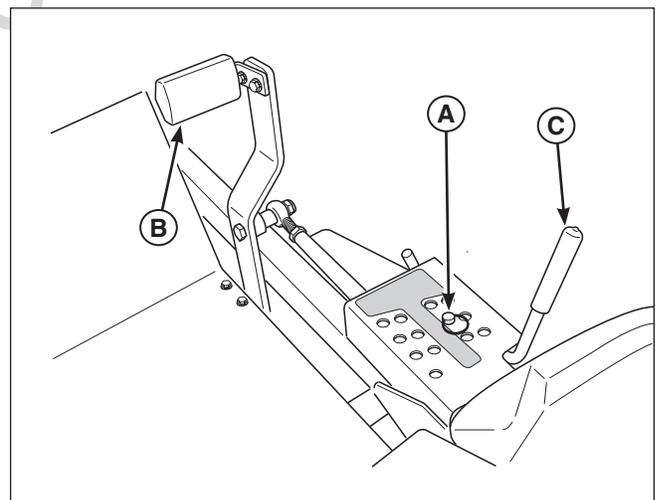


Figure 5. Mowing Height Adjustment  
A. Cutting Height Adjustment Pin  
B. Deck Lift Foot Pedal  
C. Deck Lift Lock lever

## Foot Pedal Adjustment

The deck lift foot pedal can be adjusted to accommodate the operator's height for optimal comfort.

### To adjust pedal position:

1. Remove the foot pedal (A, Figure 6) from the pedal mount tab (B).
2. Remove the pedal mount hardware (C) and rotate the tab 180 degrees.
3. Reinstall the pedal mount hardware and tighten securely.
4. Reinstall the foot pedal on the pedal mount tab in the proper orientation as shown in Figure 6.

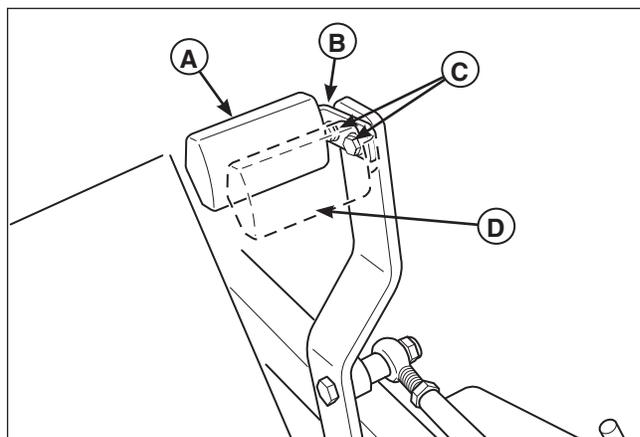


Figure 6. Foot Pedal Adjustment

- A. Deck Lift Foot Pedal
- B. Pedal Mount Tab
- C. Pedal Mount Hardware
- D. Optional Position

## Raise and Lower the Roll Bar

### **⚠ WARNING**

**AVOID SERIOUS INJURY OR DEATH FROM ROLL OVER:**

Keep roll bar in the raised position and use the seat belt.

**THERE IS NO ROLL OVER PROTECTION WHEN THE ROLL BAR IS DOWN**

Lower the roll bar only when necessary and NEVER remove it.

Do NOT use seat belt when the roll bar is down.

Raise the roll bar as soon as clearance permits.

Do NOT jump off if mower tips.

### To Lower the Roll Bar:

1. Pull the hair pin clips (A, Figure 7) out of the retainer pins (B).
2. Push or pull the top of the roll bar (C) forward against the rubber stops (D) and remove the retainer pins (B).
3. Lower the roll bar into the down position (see insert, Figure 8).

### To Raise the Roll Bar:

1. Pull the hair pin clips (A) out of the retainer pins (B) and remove the retainer pins.
2. Raise the roll bar (C) until the rubber stops (D) contact the upright tubes.
3. Push or pull the top of the roll bar forward against the rubber stops and reinstall the retainer pins and hair pin clips to secure the roll bar in the raised position.

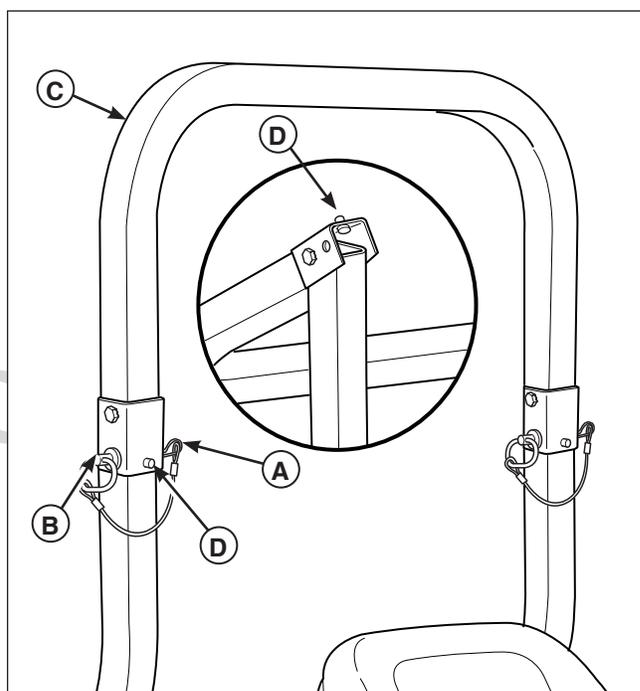


Figure 7. Raise & Lower the Roll Bar

- A. Hair Pin Clip
- B. Retainer Pin
- C. Roll Bar
- D. Rubber Stop

## Starting the Engine - Carbuerated Models

### **WARNING**

If you do not understand how a specific control functions, or have not yet thoroughly read the **FEATURES & CONTROLS** section, do so now.

**Do NOT attempt to operate the tractor without first becoming familiar with the location and function of ALL controls.**

1. While sitting in the operator's seat, engage the parking brake by pulling the parking brake lever back, make sure the PTO switch is disengaged (pressed down fully) and the motion control handles are locked in the NEUTRAL position.
2. **NOTE: A warm engine may not require choking.**  
Set the engine throttle control to FULL throttle position. Then fully close the choke by pulling the knob OUT fully.
3. Insert the key into the ignition switch and turn it to START.
4. After the engine starts, gradually open the choke (push knob down fully). Reduce to half throttle speed and allow to warm up.

*Warm up the engine by running it for at least a minute before engaging the PTO switch or driving the rider.*

5. **After warming the engine, ALWAYS operate the unit at FULL THROTTLE when mowing.**

***In the event of an emergency the engine can be stopped by simply turning the ignition switch to STOP. Use this method only in emergency situations.***

*For normal engine shut down follow the procedure given in STOPPING THE RIDER.*

## Starting the Engine - Electronic Fuel Injected Models

### **WARNING**

If you do not understand how a specific control functions, or have not yet thoroughly read the **Features & Controls** section, do so now.

**Do NOT attempt to operate the unit without first becoming familiar with the location and function of all controls.**

*NOTE: To prime a dry fuel system, turn key switch to ON position for one minute. Allow fuel pump to cycle and prime system. Turn key switch OFF.*

1. While sitting in the operator's seat, engage the

parking brake and make sure the PTO switch is disengaged and the ground speed control levers are locked in the neutral position.

2. Position the throttle control midway between slow and fast positions.
3. Insert the key into the ignition switch and turn it to START position. Release switch as soon as engine starts. If starter does not turn engine over, shut off key switch immediately, and consult engine operator's manual. Warm up the engine by running it for atleast a minute before engaging the PTO switch or driving the rider.
4. After warming the engine always operate the unit at FULL throttle when mowing.

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

## Stopping the Rider

1. Returning the ground speed control levers to the middle position will stop rider movement. Pivot the levers outward and lock them in NEUTRAL.
2. Disengage the PTO by pushing down on the PTO switch.
3. Engage the parking brake by pulling the handle up until it locks into position.
4. Move the throttle control to mid-throttle position and turn the ignition key to OFF. Remove the key.

## Pushing the Rider By Hand

### NOTICE

Do NOT tow rider.

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

1. Disengage the PTO, engage the parking brake, turn the ignition OFF, and remove the key.
2. Locate the bypass actuators (A, Figure 8) on the side of the unit's transmissions. There is one bypass actuator on each transmission. The bypass actuator opens and closes the transmission bypass valves.
3. To open the transmission bypass valves rotate the bypass actuator **clockwise** to the "bypass" position" (marked "bypass" on the transmission) (B).
4. Disengage the parking brake. The zero-turn rider can now be pushed by hand.
5. After moving the zero-turn rider, close the bypass valves by rotating the bypass actuator **counter-clockwise** to the "run" position (marked "run" on the transmission) (C).

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

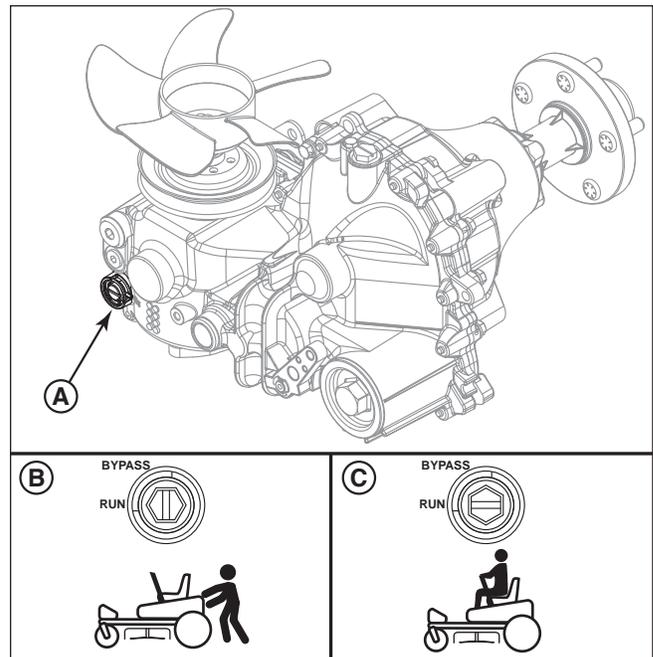


Figure 8. Hydraulic System By-Pass  
A. Hydraulic Bypass Valve

Not for  
Reproduction

## Zero Turn Driving Practice

The lever controls of the Zero Turn rider are responsive, and learning to gain a smooth and efficient control of the rider's forward, reverse, and turning movements will take some practice.

Spending some time going through the maneuvers shown and becoming familiar with how the unit accelerates, travels, and steers — before you begin mowing — is absolutely essential to getting the most out of the Zero Turn rider.

**Locate a smooth, flat area of your lawn** — one 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 to the right, and then advance through the forward, reverse, and turning maneuvers.

You must release the parking brake prior to moving the control levers inward.

## Smooth Travel

The lever controls of the Zero Turn rider are responsive.

The BEST method of handling the ground speed control levers is in three steps — as shown in Figure 9.

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.

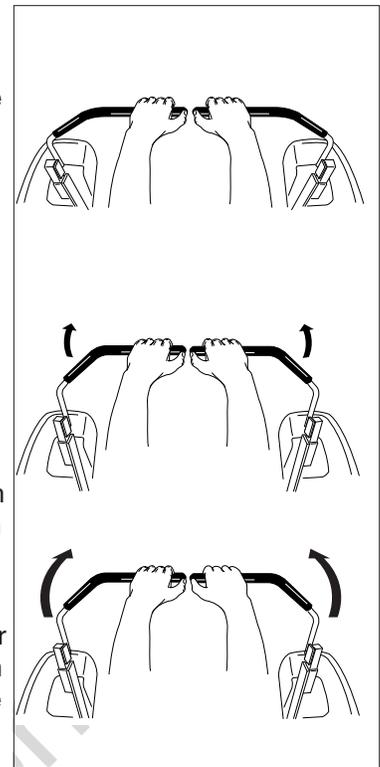


Figure 9. Move Control Levers Gradually

## 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 Adjustments section near the back of this manual.*

## Reverse Travel Practice

LOOK DOWN & 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 rider turns sharply in reverse as well as forward, and backing up straight takes practice.*

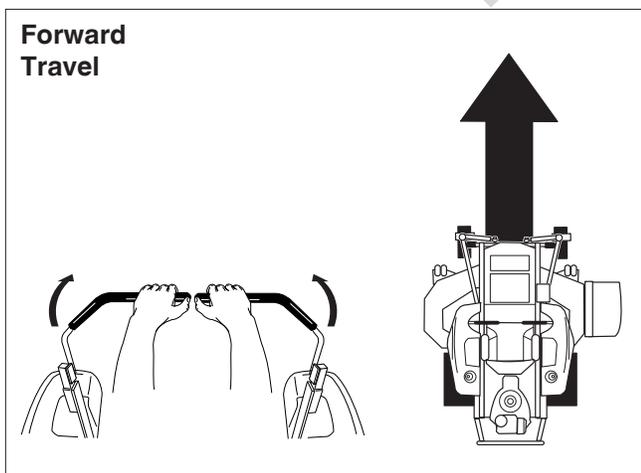


Figure 10. Forward Travel

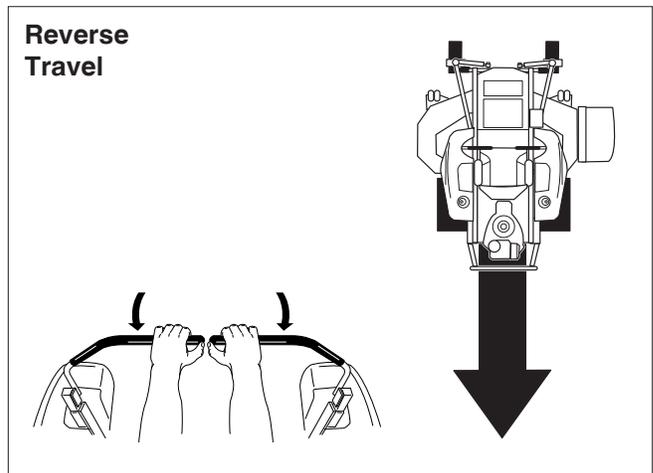


Figure 11. Reverse Travel

## Practice Turning Around a Corner

While traveling forward allow one handle 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.*

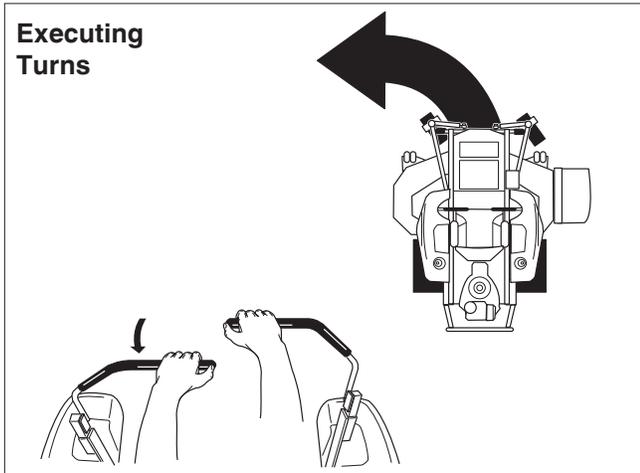


Figure 12. Turning Around a Corner

## Practice Turning In Place

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

*NOTE: Changing the amount each lever is pulled—forward or back, changes the “pivot point” you turn on.*

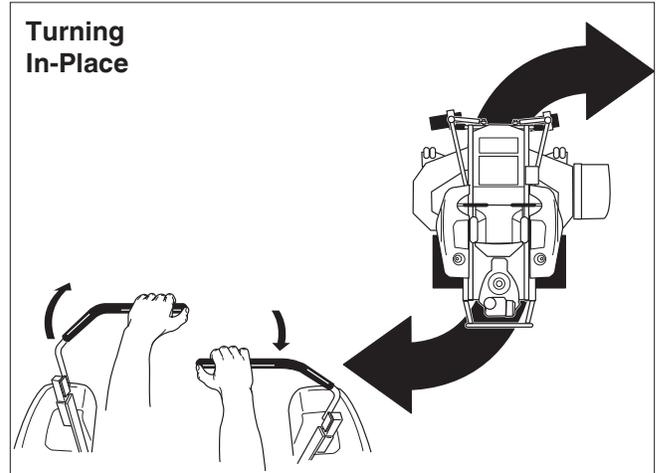


Figure 13. Turning in Place

## Executing an End-Of-Row Zero Turn

Your Zero Turn Rider’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 rider **LEFT** and slightly overlaps the row just cut—eliminating the need to back up and re-cut missed grass.

*As you become more familiar and experienced with operating the Zero Turn rider, you will learn more maneuvers that will make your mowing time easier and more enjoyable.*

**Remember, the more you practice, the better your control of the Zero Turn will be!**

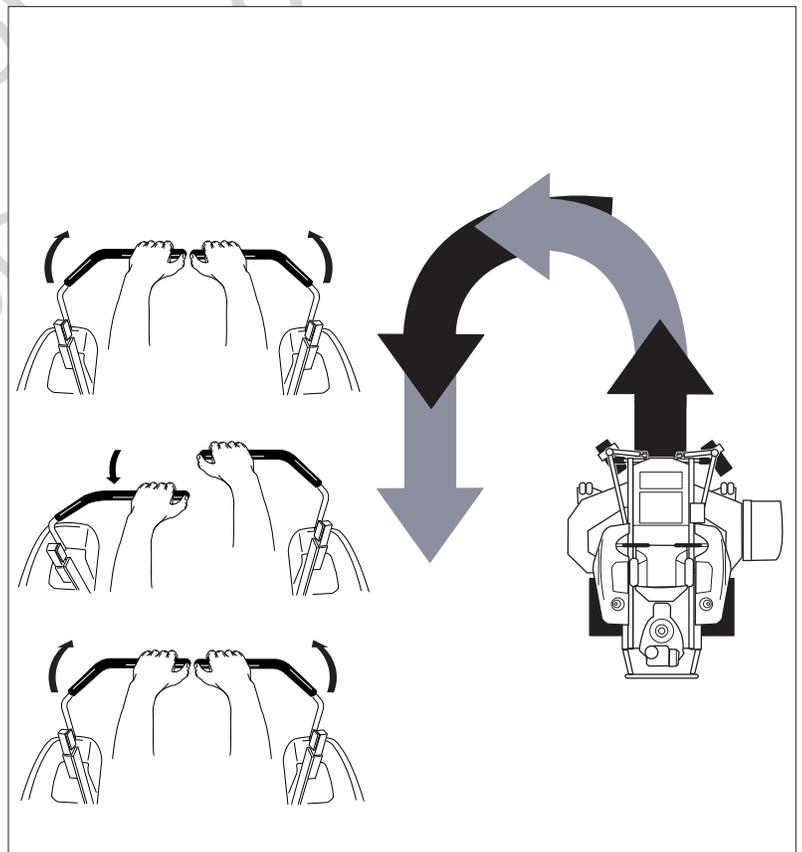


Figure 14. Executing an End-Of-Row Turn

## Mowing

1. Engage the parking brake. Make sure that the PTO switch is disengaged, the ground speed control levers are locked in the NEUTRAL position and the operator is in the seat.
2. Start the engine. See *Starting the Engine*.
3. Set the mower cutting height.
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 begin mowing.
7. When finished, reduce throttle speed so that the engine idles and push the PTO switch down to shut off the PTO.
8. Stop the engine. See *Stopping the Rider*.

## Mowing Recommendations

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

### 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.**

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).

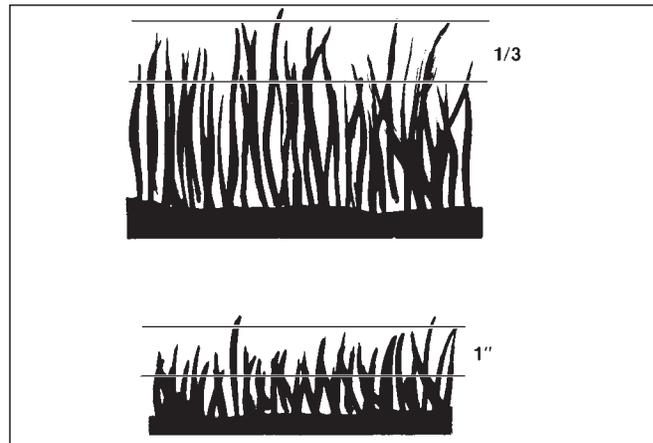


Figure 15. Proper Cutting Height

### Tall Grass Requires Incremental Cutting

For extremely tall grass, set the cutting height at maximum for the first pass, and then reset it to the desired height and mow a second 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.

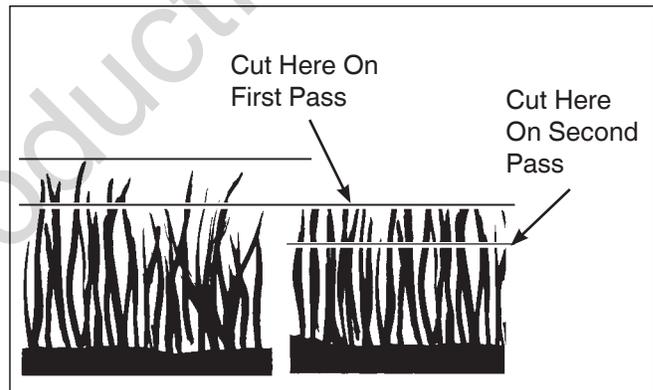


Figure 16. Incremental Cutting

## 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:

1. Mow when the grass is between three and five inches high.
2. 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.
3. Mow at time of day when the grass is cool and dry. Late afternoon or early evening often provide these ideal mowing conditions.
4. 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

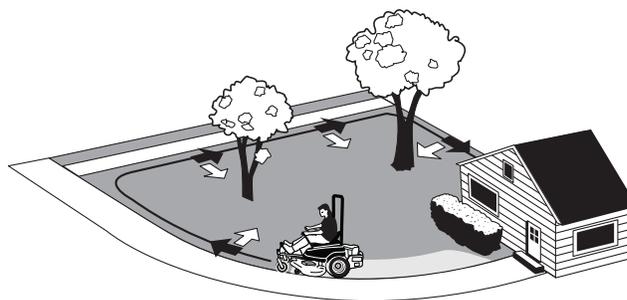
Always start mowing on a smooth, level area.

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.

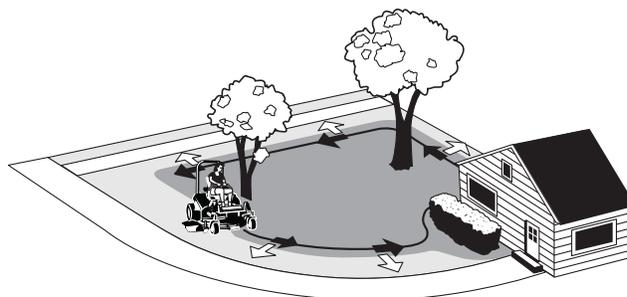
1. Cut long straight strips overlapping slightly.
2. Where possible, change patterns occasionally to eliminate matting, graining or a corrugated appearance.
3. For a truly professional cut, mow across the lawn in one direction, then recut the lawn by mowing perpendicular to the previous cut.

**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.



*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.*



*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

### Proper 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

## Proper Mulching

Mulching consists of a mower deck which cuts and recuts 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.

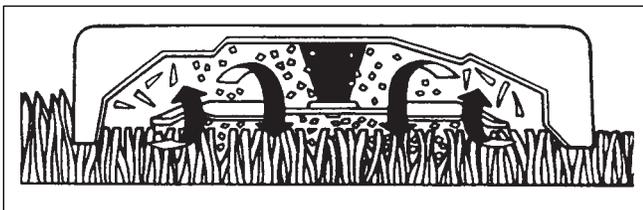


Figure 17. Mulching Action

## Attaching A Trailer

The maximum weight of a towed trailer should be less than 200 lbs (91kg). Secure the trailer with an appropriately sized clevis pin (A, Figure 18) and clip (B).

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 10°. See SLOPE OPERATION and TOWED EQUIPMENT in the safety section of this manual for additional safety information.

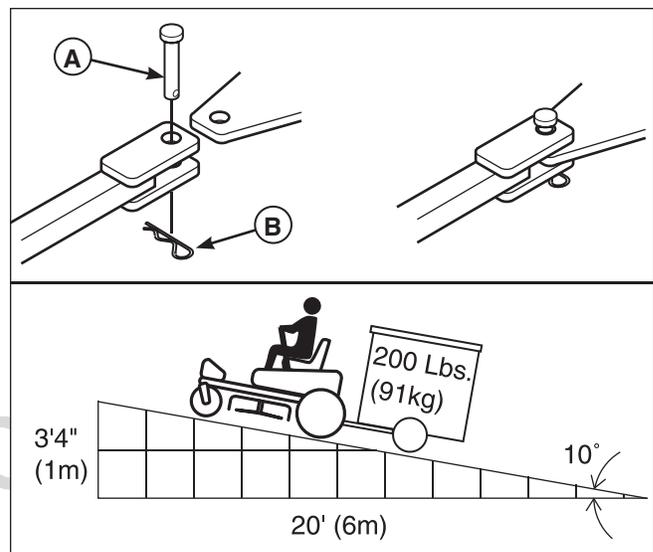


Figure 18. Trailer Weight Recommendations

A. Clevis Pin

B. Clip

## Storage

### Temporary Storage (30 Days Or Less)

Remember, the fuel tank will still contain some gasoline, so never store the unit indoors or in any other area where fuel vapor could travel to any ignition source. Fuel vapor is also toxic if inhaled, so never store the unit in any structure used for human or animal habitation.

Here is a checklist of things to do when storing your unit temporarily or in between uses:

- Keep the unit in an area away from where children may come into contact with it. If there's any chance of unauthorized use, remove the spark plug (s) and put in a safe place. Be sure the spark plug opening is protected from foreign objects with a suitable cover.
- If the unit can't be stored on a reasonable level surface, chock the wheels.
- Clean all grass and dirt from the mower.

### Long Term Storage (Longer Than 30 Days)

Before you store your unit for the off-season, read the Maintenance and Storage instructions in the Safety Rules section, then perform the following steps:

1. Drain crankcase oil while engine is hot and refill with a grade of oil that will be required when unit is used again.
2. Prepare the mower deck for storage as follows:
  - a. Remove mower deck from the unit.
  - b. Clean underside of mower deck.
  - c. Coat all bare metal surfaces with paint or light coat of oil to prevent rusting.
3. Clean external surfaces and engine.
4. Prepare engine for storage. See engine owner's manual.
5. Clean any dirt or grass from cylinder head cooling fins, engine housing and air cleaner element.
6. Cover air cleaner and exhaust outlet tightly with plastic or other waterproof material to keep out moisture, dirt and insects.
7. Completely grease and oil unit as outlined in the Normal Care section.
8. Clean up unit and apply paint or rust preventative to any areas where paint is chipped or damaged.
9. Be sure the battery is filled to the proper level with water and is fully charged. Battery life will be increased if it is removed, put in a cool, dry place and fully charged about once a month. If battery is left in unit, disconnect the negative cable.

## WARNING

**Never store the unit, with gasoline in engine or fuel tank, in a heated shelter or in enclosed, poorly ventilated enclosures. Gasoline fumes may reach an open flame, spark or pilot light (such as a furnace, water heater, clothes dryer, etc.) and cause an explosion.**

**Handle gasoline carefully. It is highly flammable and careless use could result in serious fire damage to your person or property.**

**Drain fuel into an approved container outdoors away from open flame or sparks.**

10. Drain fuel system completely or add a gasoline stabilizer to the fuel system. If you have chosen to use a fuel stabilizer and have not drained the fuel system, follow all safety instructions and storage precautions in this manual to prevent the possibility of fire from the ignition of gasoline fumes. Remember, gasoline fumes can travel to distant sources of ignition and ignite, causing risk of explosion and fire.

*NOTE: Gasoline, if permitted to stand unused for extended periods (30 days or more), may develop gummy deposits which can adversely affect the engine carburetor and cause engine malfunction. To avoid this condition, add a gasoline stabilizer to the fuel tank and run the engine a few minutes, or drain all fuel from the unit before placing it in storage.*

## Starting After Long Term Storage

Before starting the unit after it has been stored for a long period of time, perform the following steps.

1. Remove any blocks from under the unit.
2. Install the battery if it was removed.
3. Unplug the exhaust outlet and air cleaner.
4. Fill the fuel tank with fresh gasoline. See engine manual for recommendations.
5. See engine owner's manual and follow all instructions for preparing engine after storage.
6. Check crankcase oil level and add proper oil if necessary. If any condensation has developed during storage, drain crankcase oil and refill.
7. Inflate tires to proper pressure. Check fluid levels.
8. Start the engine and let it run slowly. DO NOT run at high speed immediately after starting. Be sure to run engine only outdoors or in well ventilated area.

## Regular Maintenance

### Maintenance Schedule

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

<b>UNIT MAINTENANCE</b>
<b>Before Each Use</b>
Check Safety Interlock System
Check Rider Brakes
Check Rider / Mower for loose hardware
Check Hydraulic Oil Level**
<b>Every 25 Hours</b>
Clean Deck & Check / Replace Mower Blades*
Lubricate Rider & Mower*
Check Tire Pressures
<b>Every 100 Hours</b>
Check Mower Blade Stopping Time
Clean Battery & Cables
Initial Change of Hydraulic Oil
<b>Every 400 Hours or Yearly</b>
Change Hydraulic Oil & Filter

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

\*\* Change original hydraulic oil after first 100 hours of operation.

<b>ENGINE MAINTENANCE</b>
<b>Before Each Use</b>
Check Engine Oil Level
<b>Every 25 Hours</b>
Check / Clean Cooling Fins & Intake*
<b>Every 50 Hours</b>
Check / Clean Spark Arrester**
<b>Refer to Engine Manufacturer's Owner's Manual</b>
Service Air Filter
Change Engine Oil & Filter***
Check / Replace Spark Plugs
Check / Replace Fuel Filter

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

\*\* If equipped. Replace if damaged.

\*\*\* Change original engine oil after first 5 hours of operation.

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# Maintenance

## Checking / Adding Fuel

To add fuel:

1. Remove the fuel cap.
2. Fill the tank to about 1-1/2" (3,81 cm) of the bottom of the filler neck. This will allow for fuel expansion.

*NOTE: Do not overfill. Refer to your engine manual for specific fuel recommendations.*

3. Install and hand tighten the fuel cap.

## Fuel Filter

**Carbureted Models:** The fuel filter is located in the fuel line between fuel tank and carburetor, near the fuel pump.

**Fuel Injected Models:** The fuel filter is located in the fuel line between the fuel tank and 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 hose clamps from fuel filter.
4. Remove hoses from filter.
5. Install new filter in proper flow direction in fuel line.
6. Secure with hose clamps.
7. Reconnect the negative battery cable when finished.

## Change Oil & Filter

1. Warm engine by running for a few minutes. (Refer to the engine operator's manual for oil & filter replacement instructions.)
2. Place the oil drain hose (A, Figure 19) down through the hole (D) in the engine deck.
3. Place a small pan under the oil drain hose to catch the oil. Using the appropriate tools, remove the cap (B) from the drain hose and drain the engine oil into the pan.
4. Replace the cap and wipe up any spilled oil.
5. Place an absorbent shop cloth under the engine oil filter. Remove the engine oil filter and replace with a new one.
6. Remove the shop cloth and wipe up any spilled oil.

## Engine Maintenance

Refer to engine owner's manual for all engine maintenance procedures and recommendations.

## Inspect Muffler and Spark Arrester

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

Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is still hot from recent operation. Do not allow open flame, smoking or matches in the area. Avoid over-filling and wipe up any spills.

Do not remove fuel filter when 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.

## NOTICE

Do not use gasoline containing METHANOL, gasohol containing more than 10% ethanol, gasoline additives, premium gasoline, or white gas because engine/fuel system damage could result.

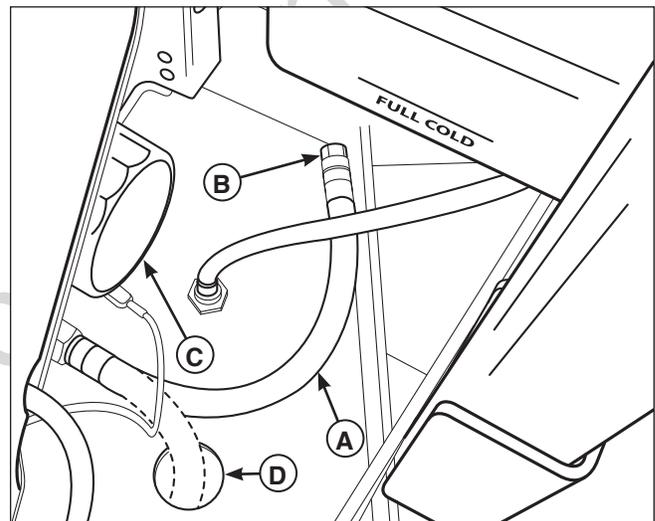


Figure 19. Engine Oil Drain (Briggs & Stratton Vanguard Engine Shown)

- A. Oil Drain Hose
- B. Cap
- C. Oil Filter
- D. Hole for Drain Hose

## **!** WARNING

Replacement parts must be the same and installed in the same position as the original parts or fire could result.

## Lubrication

Lubricate the unit at the locations shown in Figures 20 through 23 as well as the following lubrication points.

### Grease:



- front caster wheel axles & yokes
- deck lift pivot blocks
- mower deck spindles
- mower deck idler arm

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

Not all greases are compatible. Red Grease (p/n 5022285) is recommended, automotive-type high-temperature, lithium grease may be used when this is not available.

### Oil:



- control handle pivots
- seat plate pivots
- deck lift pivots
- discharge chute hinge

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.

### Lubricating the Front Casters:

*NOTE: Front casters should be lubricated annually.*

1. Remove the 1/4-28 bolt (A, Figure 23) screwed into the front caster and install a 1/4-28 grease fitting.
2. Grease the front caster.
3. Remove the 1/4-28 grease fitting and reinstall the 1/4-28 bolt.
4. Repeat process for the other side of the machine.

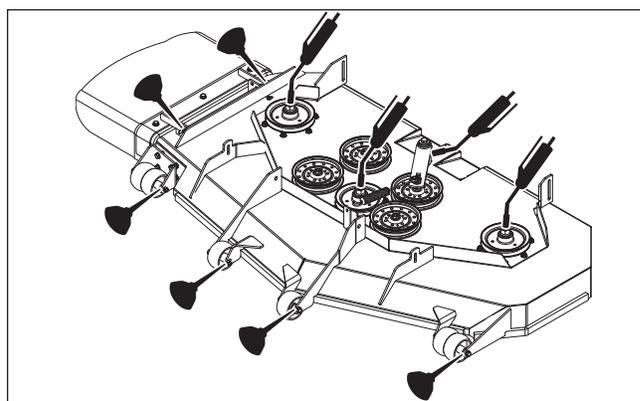


Figure 20. Deck Lubrication

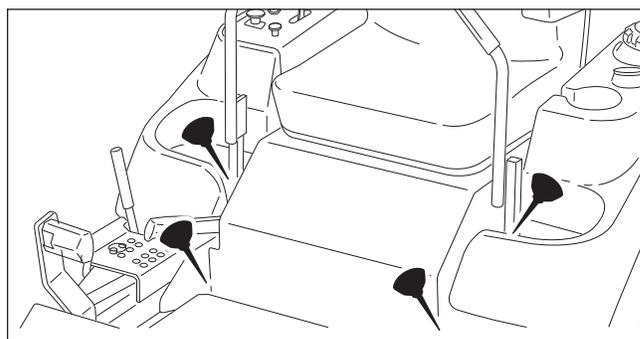


Figure 21. Control Handle Pivots & Seat Plate Pivots

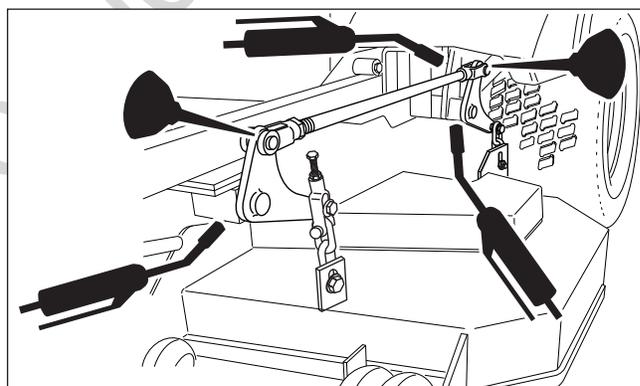


Figure 22. Deck Lift Linkage Pivots

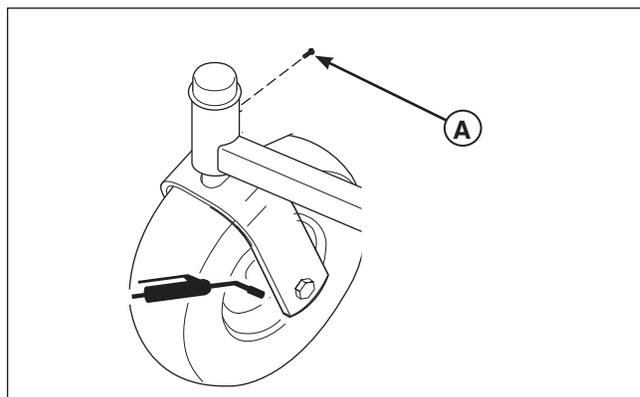


Figure 23. Front Caster & Wheel  
A. 1/4-28 Bolt

## 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 tanks must be checked, and if necessary, filled.

**Oil Type:** SAE 20W-50 motor oil

1. Locate the transmission oil tanks (A, Figure 24).
2. Check the oil level when the unit is cold. The oil should be up to the "FULL COLD" mark (B) on the transmission oil tanks. If the oil is below this level, proceed to step 3.
3. Before removing the tank cap (C), make sure the area around the tank cap and fill neck of the tank is free of dust, dirt and other debris. Remove the tank caps.
4. Add oil up to the "FULL COLD" mark.
5. Re-install the tank caps.
6. After adding oil to the tanks, it may be necessary to purge air from the hydraulic system. If the unit is not driving properly perform the *Purging the Air from the Hydraulic System* procedure.

## Transmission Oil Filter Change

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

Filter Part Number: 5101987X2

*Note: Removing the oil filter from the transaxle will drain the oil tank. Have a suitable container ready to catch any spilled oil. The manufacturer recommends that this be a dealer only service item.*

1. Locate the hydraulic oil filter on the side of the transaxle.
2. Remove the oil filter cover (A, Figure 25) from the transaxle to drain the oil. Remove the O-ring (B) from the cover and discard the O-ring.
3. After the oil has drained from the transaxle, remove the oil filter (C) from the transaxle housing.
4. Install a new filter and a new O-ring onto the filter cover and install the filter cover. Torque the filter cover to 480-580 in-lbs (54.2 - 65.5 Nm).
5. Remove the top oil fill vent port (D) and fill the transaxle with new 20W50 motor oil through the expansion tank until the oil reaches the oil fill vent port.
6. Install the top oil fill vent port plug and continue filling the system with oil until the fill line is reached in the expansion tank.
7. Repeat this process for the other side of the machine.
8. Perform the *Purging the Air from the Hydraulic System* procedure.

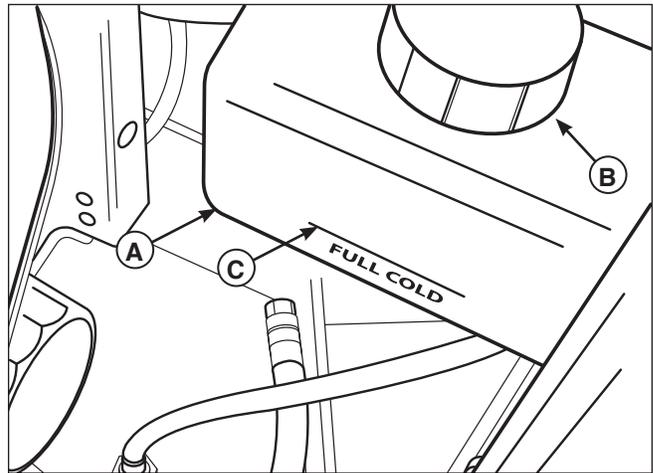


Figure 24. Checking Hydraulic Oil Level  
A. Hydraulic Oil Reservoir  
B. Reservoir Cap

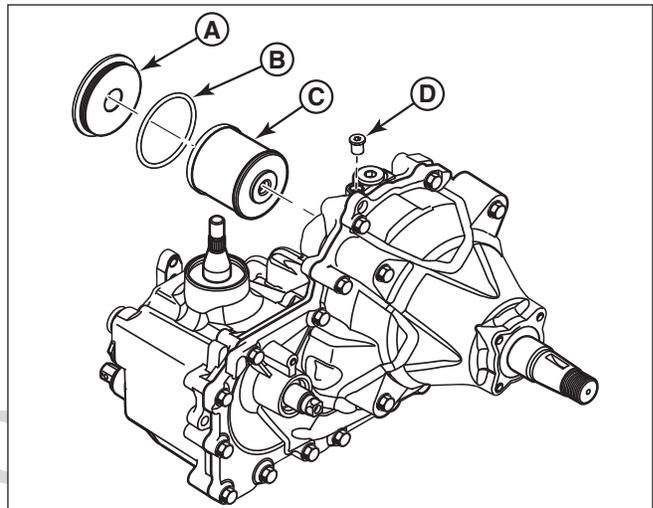


Figure 25. Transmission Oil Filter Change  
A. Oil Filter Cover  
B. O-Ring  
C. Oil Filter  
D. Oil Fill Vent Port

## **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 machine from rolling. Raise the rear of the machine so that the vehicle's rear tires do not contact the ground. Position jack stands under the rear bumper of the machine to secure it.
2. Open the transaxle's bypass valves (see *Pushing the Rider by Hand* for the location and function of the bypass valves), start the engine, release the parking brake, and slowly move the zero-turn rider'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 zero-turn rider'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 machine.
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.

## Servicing The Mower Blades

### Removing the Mower Blade

#### **CAUTION**

**Avoid injury! Mower blades are sharp.**

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

1. To remove the mower blade, use a 1" wrench on the flats of the spindle shaft and remove the mower blade mounting bolt with a 15/16" wrench (Figure 26).
2. If there are no flats on the spindle shaft, wedge a wooden block between the mower blade and the mower deck housing to keep the mower blade from turning.

#### **DANGER**

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

- Inspect the mower blade every 25 hours or at least once a year.
- If the mower blade hits a solid object, stop the engine immediately and inspect the mower blade.
- Never weld or straighten bent mower blades.

### Inspecting the Mower Blades

1. Remove the mower blade from the unit. See *Removing the Blade*.
2. Inspect the mower blade (Figures 27 & 28). **Discard the mower blade if it has any of the below conditions.**
  - A.) Has more than .5" (12,7 mm) of the mower blade metal removed from previous sharpening or wear (D, Figure 28).
  - B.) The air lifts are excessively eroded (B & C, Figure 28) and the notch (C) is .25" (6,35 mm) deep or greater.
  - C.) Mower blade is bent or broken.
3. If the cutting edges are not sharp or have nicks, sharpen the blades. See *Sharpening the Mower Blades*.

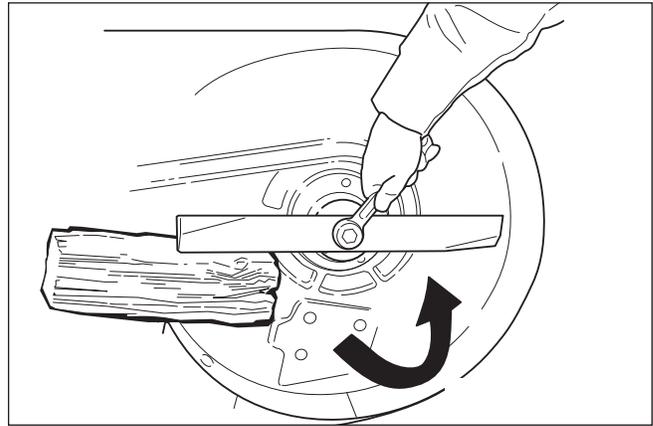


Figure 26. Loosening the Mower Blade for Removal

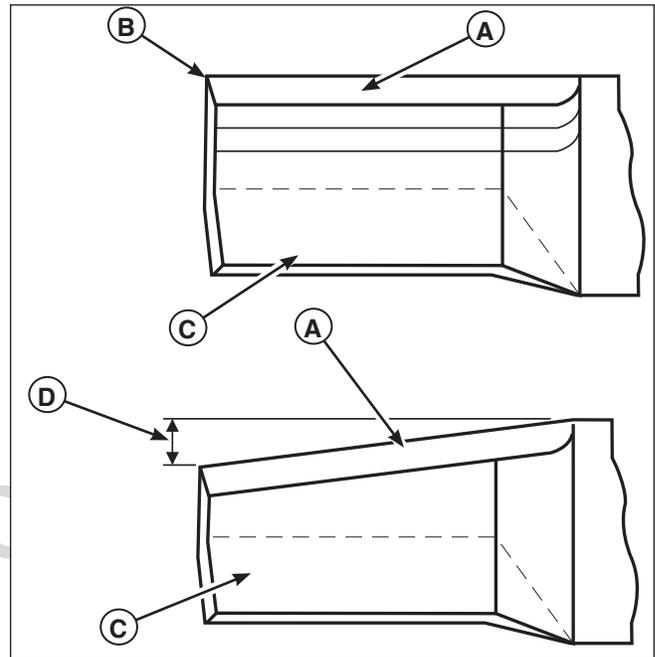


Figure 27. Inspecting the Mower Blade Tips  
 A. Mower Blade Cutting Edge  
 B. Square Corner  
 C. Air Lift  
 D. Wear Measurement - DISCARD Mower Blade If greater than .5" (12,7 mm)

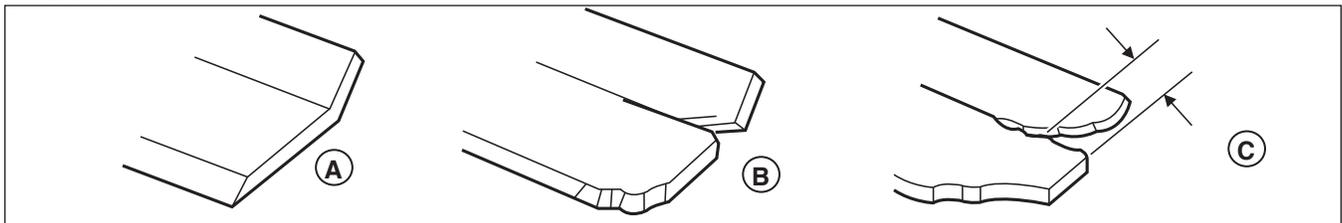


Figure 28. Inspecting the Mower Blade Air Lifts  
 A. New Mower Blade B. Mower Blade at Wear Limit (A notch begins to form) C. Mower Blade in Dangerous Condition (If notch measures .25" (6,35 mm) or greater DO NOT USE Replace with new mower blade.)

## Sharpening the Mower Blade

### **CAUTION**

**Avoid injury! Mower blades are sharp.**

- Always wear gloves when handling the mower blades.
- Always wear safety eye protection when grinding.

1. Sharpen the mower blades with grinder, hand file, or electric blade sharpener.
2. Sharpen the mower blade by removing an equal amount of material from each end of the mower blade.
3. Keep the original bevel (A, Figure 29) when grinding. **DO NOT** change the mower blade bevel.
4. The mower blade should have a maximum 1/64" (0,40 mm) cutting edge (B) or less.
5. Balance the mower blades before installing.

### **CAUTION**

**Avoid injury! Keep mower blades balanced.**

- An unbalanced mower blade can create excessive vibration and damage the unit or cause mower blade failure.

## Balancing the Mower Blades

1. Clean the mower blade to remove any dried grass or other debris.
2. See Figure 30. Put the mower blade on a nail in a vise and turn the mower blade to the horizontal position.
3. Check the balance of the mower blade. If either end of the mower blade moves downward, sharpen the heavy end until the mower blade is balanced. *See Sharpening the Mower Blades* for proper sharpening instructions.
4. Repeat the process until the mower blade remains in the horizontal position.

## Reinstalling the Mower Blades

1. Reinstall each mower blade with the air lifts pointing up towards the mower deck as shown in Figure 31. Secure with the mower blade mounting bolt and flat washer (A & B, Figure 31) and torque to 70 ft. lbs (94 Nm).
2. If there are no flats on the spindle shaft, wedge a wooden block between the mower blade and the mower deck housing to keep the mower blade from turning.

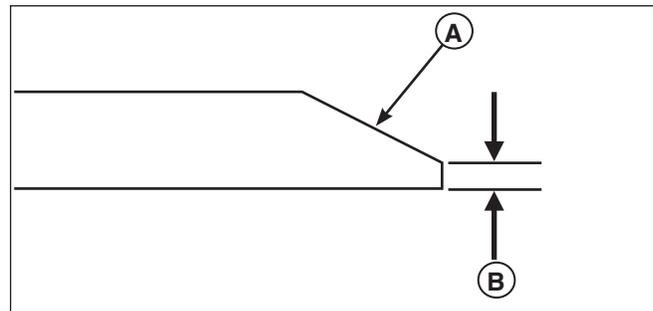


Figure 29. Sharpening the Mower Blade  
A. Mower Blade Bevel  
B. Mower Blade Cutting Edge

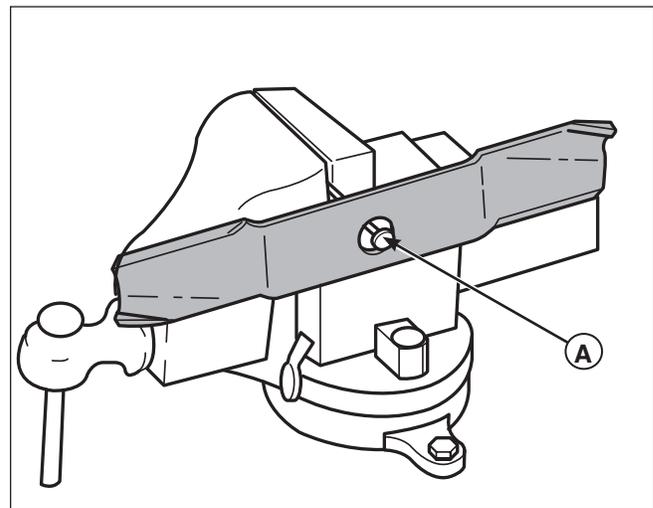


Figure 30. Balancing the Mower Blade  
A. Nail

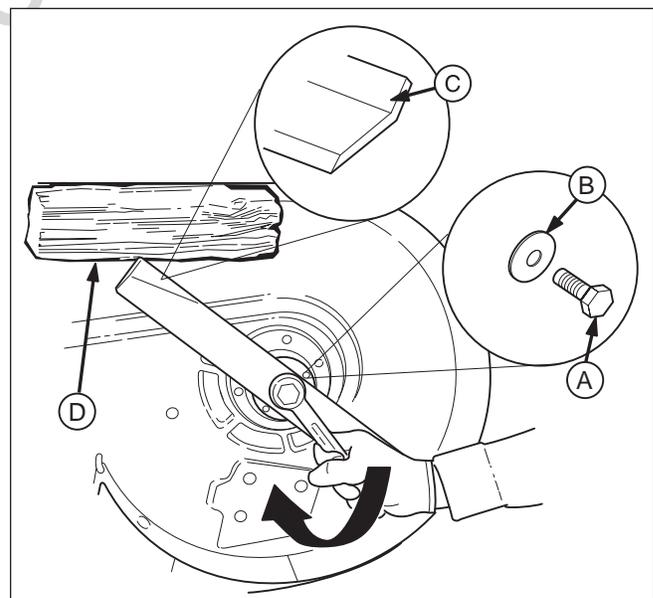


Figure 31. Tightening the Mower Blade for Installation  
A. Mower Blade Mounting Bolt  
B. Flat Washer  
C. Mower Blade Air Lift (Points Up For Installation)  
D. 4 X 4 Wooden Block

## Ground Speed Control Lever Adjustment

The control levers can be adjusted in three ways. The alignment of the control levers, the placement of the levers (how close the ends are to one another) and the height of the levers can be adjusted.

### To Adjust the Handle Alignment

Loosen the mount bolts (A, Figure 32) and pivot the lever(s) (B) to align with each other.

### To Adjust the Handle Placement

Loosen the jam nuts and adjust the placement bolt (C, Figure 33) in or out to properly adjust the lever end spacing.

### To Adjust the Handle Height

Remove the mounting hardware and reposition the handle either up or down from its original position. You will need to readjust the handle alignment as described above.

## Speed Balancing Adjustment

If the rider veers to the right or left when the ground speed control levers are in the maximum forward position, the top speed of each of these levers can be balanced by turning the adjustment bolt(s) (A, Figure 33). Only adjust the speed of the wheel that is traveling faster.

### To Reduce the Speed of the Faster Wheel

1. Loosen the securing nut.
2. Turn the top speed adjustment bolt COUNTER-CLOCKWISE to reduce the speed.



## WARNING

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

3. Retighten the securing nut when adjustment is complete.

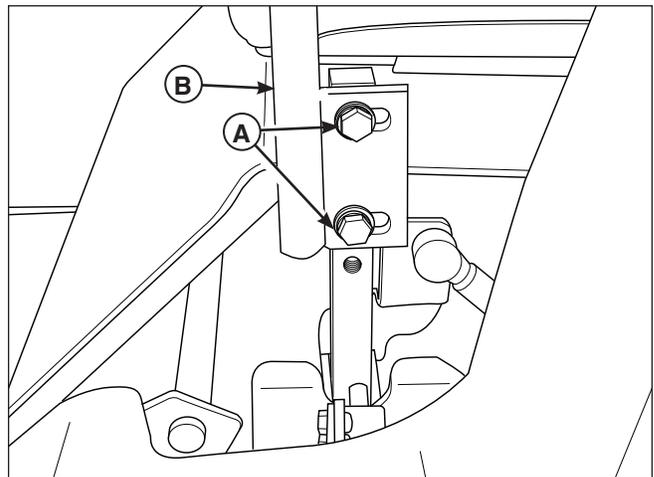


Figure 32. Control Lever Adjustment

A. Placement Hardware

B. Ground Speed Control Lever

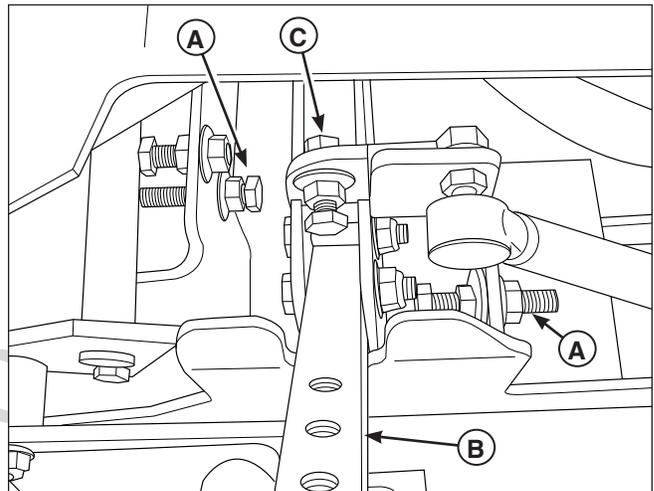


Figure 33. Top Speed Adjustment

A. Top Speed Adjustment Bolt

B. Control Lever Base

C. Alignment Hardware

## Neutral Adjustment

If the tractor “creeps” while the ground speed control levers are locked in NEUTRAL, then it may be necessary to adjust the linkage rod.

*NOTE: Perform this adjustment on a hard, level surface such as a concrete floor.*

1. Disengage the PTO, engage the parking brake and turn off the engine.
2. There are two nuts (B, Figure 34) on the linkage rod. Loosen the nuts from the ball joints and turn the linkage rod (A) to adjust. If the machine creeps forward, turn the rod CLOCKWISE (while standing at the rear of the machine, facing forward), if the machine creeps backward, turn the rod COUNTERCLOCKWISE.
3. Lock the nuts (B) against the ball joints when neutral is achieved.

*NOTE: This adjustment should not be performed while the machine is running. It may take several attempts to achieved neutral, depending upon how much the machine creeps.*

## Parking Brake Adjustment

1. Disengage the PTO, stop the engine, block the front wheels, remove the ignition key, and engage the parking brake.
2. Locate the brake spring (A, Figure 35).

**S/N: 2014161188 & Below**

3. With the parking brake engaged, measure the compressed spring length. The spring should be 2-3/8” (6,0 cm) when compressed.

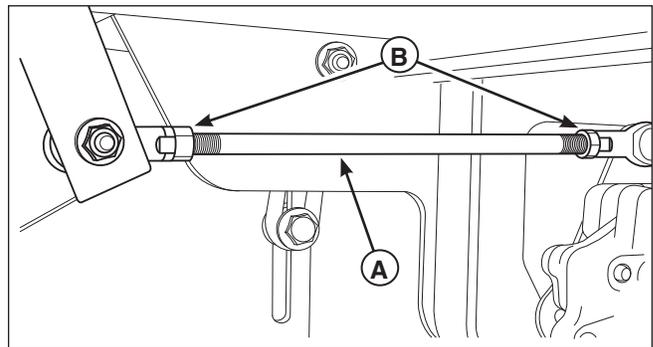
### **CAUTION**

**Do not adjust the spring to be shorter than 2-5/16” (5,9 cm) when compressed. This may damage the brake mechanism.**

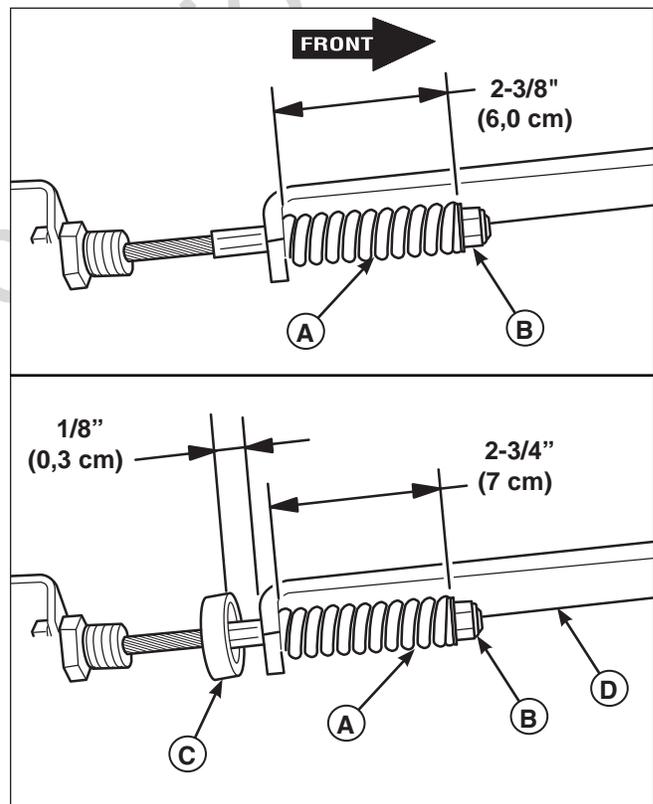
4. If the spring is not within this range, release the parking brake and turn the adjustment nut (B) to compress or release the spring.
5. Engage the parking brake and remeasure the spring.

**S/N: 2014161189 & Above**

3. With the parking brake engaged, measure the compressed spring length. The spring should be 2-3/4” (7 cm) when compressed.
4. If the spring length does not equal the measurement, the spring length will need to be adjusted.
5. Disengage the parking brake.
6. Loosen the set collar (C) and slide it away from the back of the parking brake bracket (D).



**Figure 34. Neutral Return Adjustment**  
**A. Adjustment Linkage Rod**  
**B. 5/16” Nut**



**Figure 35. Parking Brake Adjustment**  
**A. Brake Spring**  
**B. Adjustment Nut**  
**C. Set Collar**  
**D. Parking Brake Bracket**

## **CAUTION**

Do not adjust the spring to be shorter than 2-11/16" (6,8 cm) when compressed. This may damage the brake mechanism.

7. Turn the adjustment nut (B) to compress or release the spring.
8. Engage the parking brake and re-measure the spring. Continue this process until the compressed spring length measures 2-3/4" (7 cm).
9. Position the set collar 1/8" (0,3 cm) away from the parking brake bracket and tighten.

If this does not correct the braking problem, see your Snapper Pro dealer.

## Deck Rod Timing Adjustment - 61" Models

1. Park the machine on a flat, level surface. Disengage the PTO, engage the parking brake, turn off the engine, and remove the ignition key. Rear tires must be inflated to 15 psi (1,03 bar); front tires to 25 psi (1,72 bar).
2. To check the lift rod timing, measure and record the distance between the lift pivots and the rod pivots. Repeat for other side of unit. See Figure 36.
3. If the measurements for the rods are equal, no further adjustment is required. If the measurements are NOT equal (greater than 1/8" (3,17 mm) difference), adjustment is required continue with Step 4.
4. Lock the deck lift pedal in the 6" (15,2 cm) position. Remove the cutting height adjustment pin and lower the mower deck.
5. To ensure that the deck is in the lowest position, push the pedal by hand towards the rear of the unit and install the height adjustment pin in the 3" (7,6 cm) position to hold in place.
6. Block up the mower deck until all hanger chains are slack. Refer to Figure 38.
7. See Figure 37. To adjust the lift rod, loosen the jam nut on the front clevis then remove the 1/2" clevis pin fastening the clevis to the lift pivot arm. Turn the clevis clockwise to shorten the distance between the rod pivots or counterclockwise to lengthen the distance between the rod pivots. Reinstall the clevis on the lift pivot arm and secure with the 1/2" clevis pin previously removed. Tighten the jam nut against the clevis.
8. Remove the blocks from the under the mower deck.
9. Remove the cutting height adjustment pin from in front of the deck lift pedal arm. Lift mower deck and reinstall adjustment pin in desired mowing height.

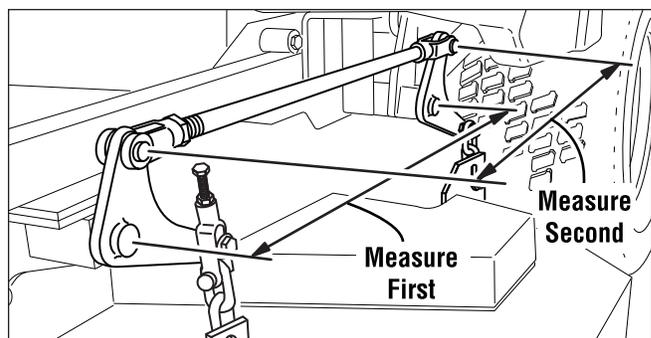


Figure 36. Check Lift Rod Timing

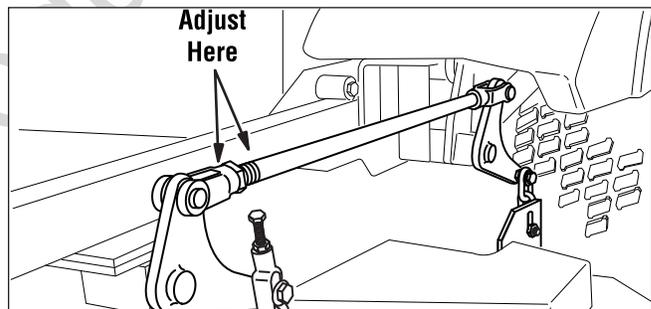


Figure 37. Adjust Lift Rod Timing

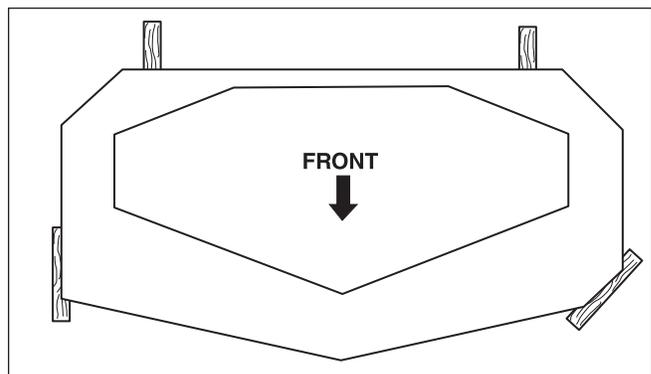


Figure 38. 2 x 4 Locations

## Deck Rod Timing Adjustment - 72" Models

1. Park the machine on a flat, level surface. Disengage the PTO, engage the parking brake, turn off the engine, and remove the ignition key. Rear tires must be inflated to 15 psi (1,03 bar).
2. To check lift rod timing measure and record the distance between the lift pivots and the rod pivots. Repeat for other side of the unit. See Figure 39.
3. If the measurements for the rods are equal, no further adjustment is required. If measurements are not equal (greater than 1/8" (3,17 mm) difference) adjustment is required, continue with step #4.
4. Lock the deck lift pedal in the 6" (15,2 cm) position. Remove the cutting height adjustment pin and lower the mower deck.
5. To ensure that the deck is in the lowest position, push the pedal by hand towards the rear of the unit and install the height adjustment pin in the 3" (7,6 cm) position to hold in place.
6. Block up the mower deck until all hanger chains are slack. Refer to Figure 40.
7. See Figure 41. To adjust the lift rod, loosen the jam nut on the front clevis then remove the 1/2" clevis pin fastening the clevis to the lift pivot arm. Turn the clevis **clockwise** to shorten the distance between the rod pivots or **counter-clockwise** to lengthen the distance between the rod pivots. Reinstall the clevis on the lift pivot arm and secure with the 1/2" clevis pin previously removed. Tighten the jam nut against the clevis.
8. Remove the blocks from under the mower deck.
9. Remove the cutting height adjustment pin from in front of the deck lift pedal arm. Lift mower deck and reinstall adjustment pin in desired mowing height.

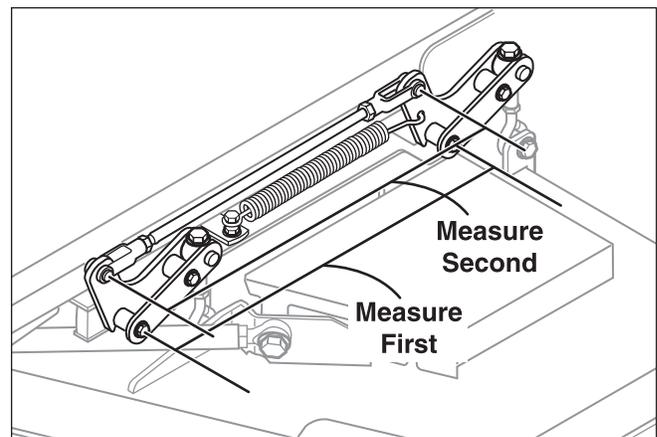


Figure 39. Check Lift Rod Timing

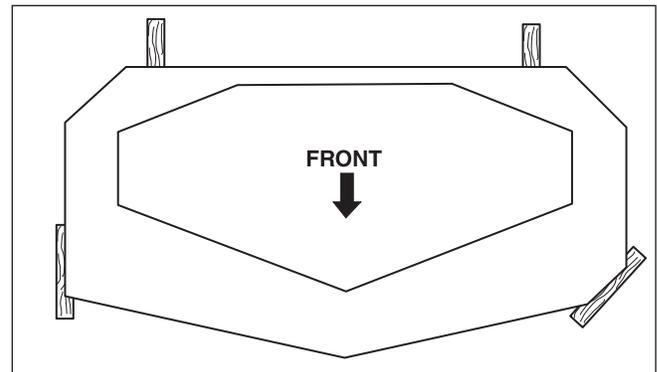


Figure 40. 2 x 4 Locations

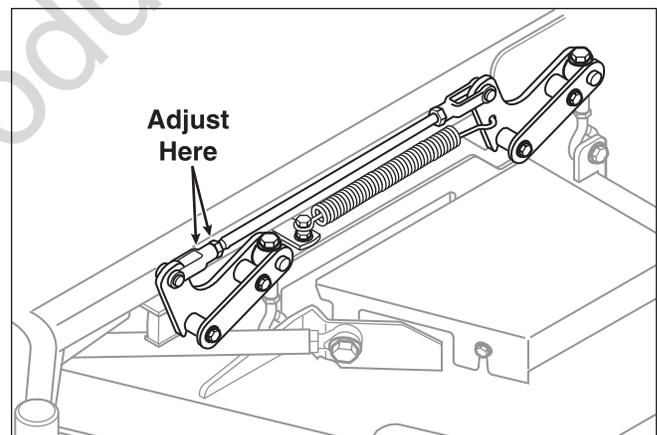


Figure 41. Adjust Lift Rod Timing

## Deck Leveling Adjustment

Before adjusting the deck level, the deck lift rod timing must be checked and/or adjusted.

### Determining if the Deck Leveling Needs to be Adjusted:

#### **! WARNING**

**Avoid Injury! Mower blades are sharp. Always wear gloves when handling blades or working near blades.**

1. Park the unit on a flat, level surface. Disengage the PTO, engage the parking brake, turn the ignition switch to OFF, and remove the ignition key.
2. Lock the deck lift pedal in the TRANSPORT position. Place the cutting height adjustment pin in the 4" position and lower the deck lift pedal until the deck lift arm contacts the cutting height adjustment pin.
3. Verify that the tires are inflated to the correct pressures.
4. Verify that the mower blades are flat, and not bent or broken. A bent or broken blade must be replaced.
5. See Figure 42. Position the mower blades to that they face front-to-back.
6. Measure the front tip (A) of the blade from the cutting edge to the ground.
7. Measure the rear tip (A) of the blade from the cutting edge to the ground.
8. Repeat the process on the other side of the machine.
  - the front measurements should equal 4" (10,2 cm).
  - the rear measurements should equal 4-1/4" (10,8 cm).

If the measurements do not equal the measurements as listed above, adjust the deck leveling.

### Deck Leveling Adjustment - 61" Models:

1. Place the deck height adjustment pin in the 4" (10,2 cm) position.
2. Place 2 X 4 blocks (A, Figure 43) under each corner of the mower deck with the 3-1/2" sides being vertical. Place a 1/4" (0,64 cm) thick spacer (B) on the top of the rear blocks.
3. Loosen the nuts (A, Figure 44) and allow the front of the deck to rest on the 2 X 4's. Slide the chains in the slots until the chains are tight and tighten the nuts.
4. Loosen the nuts (B) and allow the rear of the deck to rest on the 2 X 4's and 1/4" spacers. Slide the chains in the slots until the chains are tight and

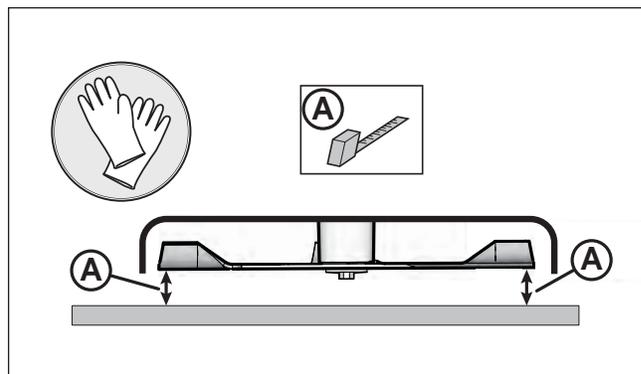


Figure 42. Checking The Blade Height Measurement

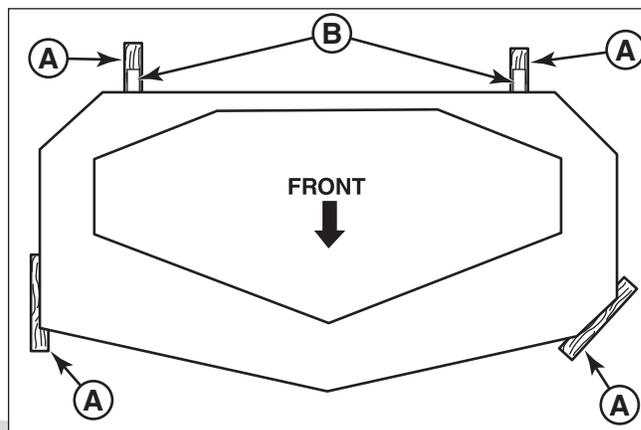


Figure 43. 2 x 4 and 1/4" Spacer Locations

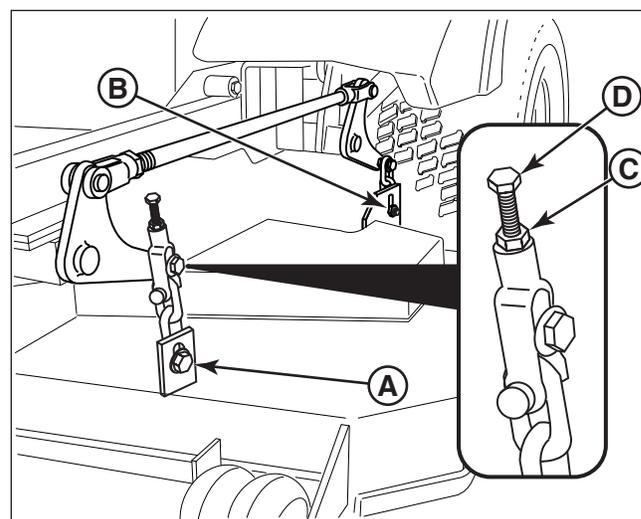


Figure 44. Deck Leveling Adjustment - 61" Models

tighten the nuts.

5. Repeat the process for the other side of the unit.
6. Remove all the blocks and spacers for under the mower deck.
7. Perform the **Determining if the Deck Leveling Needs to be Adjusted** procedure to verify that the deck has been leveled correctly.
  - If the mower deck does not measure 4" (10,2 cm) in the front and 4-1/4" (10,8 cm) in the rear, proceed with step #8.
8. Loosen the jam nut (C) and turn the fine adjustment bolt (D) to adjust the deck height.
  - Turn the bolt **clockwise** to raise the deck.
  - Turn the bolt **counter-clockwise** to lower the deck.
9. Once the desired measurements are achieved, re-tighten the jam nut.
10. Repeat the process for the other side of the unit.

### Deck Leveling Adjustment - 72" Models:

1. Place the deck height adjustment pin in the 4" (10,2 cm) position.
2. Loosen the jam nuts (A, Figure 45) on all four deck linkages.
3. Turn the hex adjusters (B) clockwise to raise the mower deck or counter-clockwise to lower the mower deck.
4. Re-check the measurements at all four positions and adjust as necessary until the deck measures correctly.
5. Tighten all four of the jam nuts.

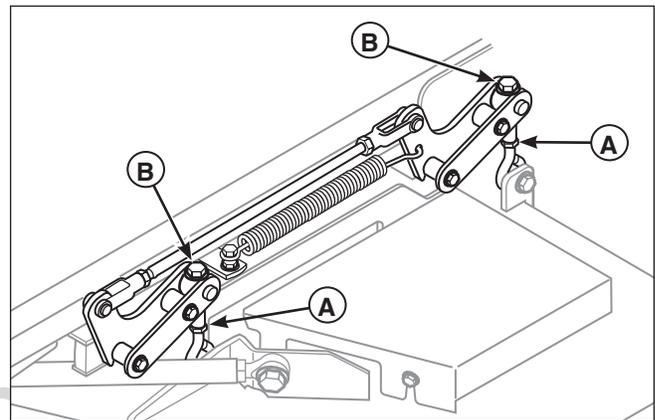


Figure 45. Hanger Chain Adjustment

A. Jam Nut

B. Deck Height Adjuster

## Mower Belt Replacement - 61" Mower Decks

### NOTICE

To avoid damaging belts, **DO NOT PRY BELTS OVER PULLEYS.**

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, engage the parking brake, turn off the engine, and remove the ignition key.
2. Lower the mower deck to its lowest cutting position and remove the mower deck guards.



### WARNING

Use extreme caution when rotating the idler arm with the breaker bar, due to the increased tension in the spring as the idler arm is being rotated. Injury may result if the breaker bar is prematurely released while the spring is under tension.

(S/N: 2016953545 & Below):

3. Using a 1/2" breaker bar, place the square end in the square hole located in the end of the idler arm (F, Figure 46). Carefully rotate the breaker bar **counter-clockwise**, which will relieve the tension on the belt exerted from the idler arm.

(S/N: 2016953546 & Above):

3. Using a 1/2" breaker bar, place the square end in the eight-sided hole located in the end of the idler arm (F, Figure 47). Carefully rotate the breaker bar **counter-clockwise**, which will relieve the tension on the belt exerted from the idler arm.

(S/N: All)

4. Slide the drive belt (A, Figures 46 & 47) over the edge of the stationary idler pulley (D). Carefully release the tension on the breaker bar.
5. Remove the old belt and replace with a new one. Make sure the V-side of the belt runs in the pulley grooves.
6. Install the drive belt on the PTO pulley, the spindle pulleys (B), the front stationary pulleys (C), and the adjustable idler pulley (E).
7. Carefully rotate the breaker bar **counter-clockwise** and install the belt on the rear stationary idler pulley (D). Carefully release the tension on the breaker bar.

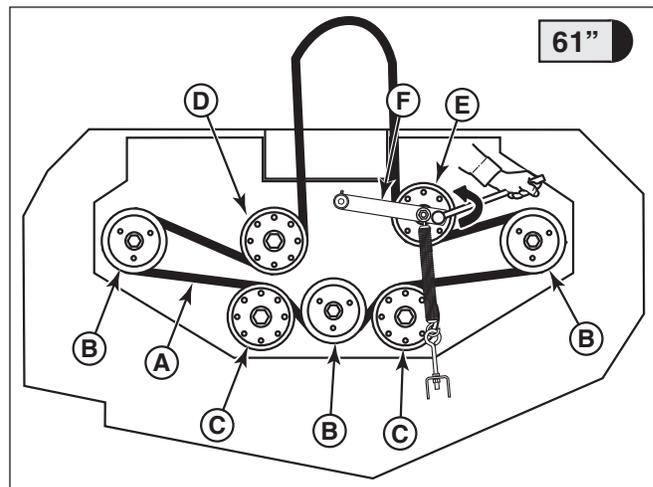


Figure 46. Mower Deck Drive Belt Routing - 61" Models (S/N: 2016953545 & Below)

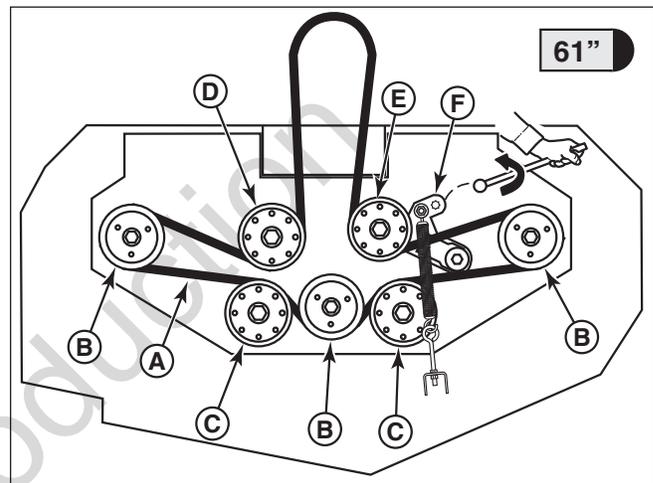


Figure 47. Mower Deck Drive Belt Routing - 61" Models (S/N: 2016953546 & Above)

## Mower Belt Replacement - 72" Mower Decks

### NOTICE

To avoid damaging belts, **DO NOT PRY BELTS OVER PULLEYS.**

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, engage the parking brake, turn off the engine, and remove the ignition key.
2. Lower the mower deck to its lowest cutting position and remove the mower deck guards.



### WARNING

Use extreme caution when rotating the idler arm with the breaker bar, due to the increased tension in the spring as the idler arm is being rotated. Injury may result if the breaker bar is prematurely released while the spring is under tension.

**(S/N: 2016950122 & Below):**

3. Using a 1/2" breaker bar, place the square end in the square hole located in the end of the idler arm (E, Figure 48). Carefully rotate the breaker bar **counter-clockwise**, which will relieve the tension on the belt exerted from the idler arm.

**(S/N: 2016950123 & Above):**

3. Using a 1/2" breaker bar, place the square end in the eight-sided hole located in the end of the idler arm (E, Figure 49). Carefully rotate the breaker bar **counter-clockwise**, which will relieve the tension on the belt exerted from the idler arm.

**(S/N: All)**

4. Slide the drive belt (A, Figures 48 & 49) over the edge of the stationary idler pulley (F). Carefully release the tension on the breaker bar.
5. Remove the old belt and replace with a new one. Make sure the V-side of the belt runs in the pulley grooves.
6. Install the drive belt on the PTO pulley, the spindle pulleys (B), the front stationary pulley (D), and the adjustable idler pulley (C).
7. Carefully rotate the breaker bar **counter-clockwise** and install the belt on the rear stationary idler pulley (F). Carefully release the tension on the breaker bar.

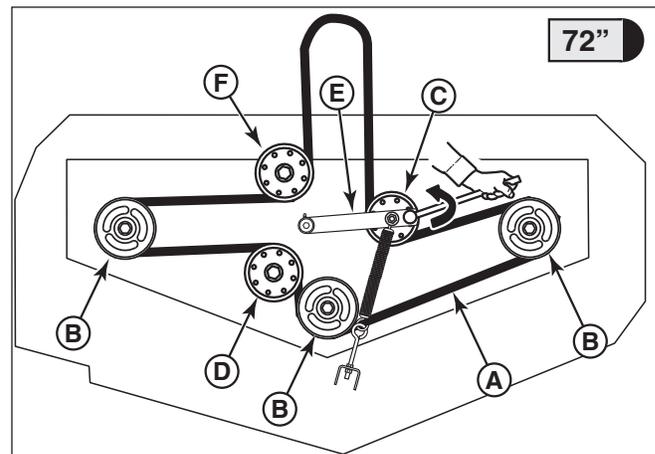


Figure 48. Mower Deck Drive Belt Routing - 72" Models (S/N: 2016950122 & Below)

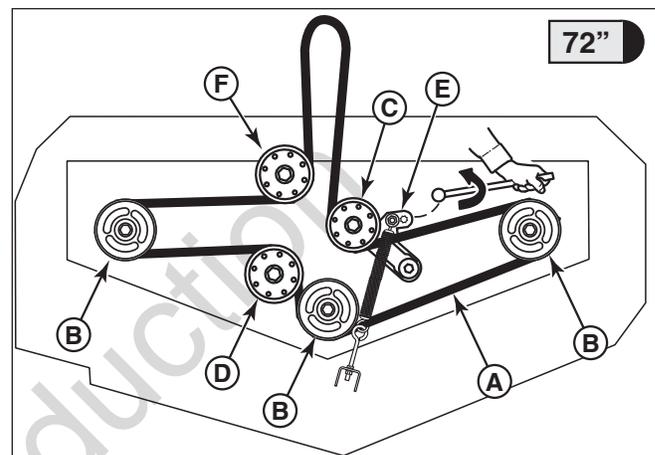


Figure 49. Mower Deck Drive Belt Routing - 72" Models (S/N: 2016950123 & Above)

## Checking / Adjusting the Mower Belt Idler Tensioning Spring Length - All Models

Mower Deck Belt Tensioning Spring Length		
Deck Size	Serial Number	Measurement
61"	2016953545 & Below	7-1/4" ± 1/8" (18,42 cm ± 0,13 cm)
61"	2016953546 & Above	12-1/2" (32 cm)
72"	2016950122 & Below	6-3/4" ± 1/4" (16,2 cm ± 0,64 cm)
72"	2016950123 & Above	12-1/2" (32 cm)

1. Set the mower deck to the 3-1/2" (8,9 cm) cutting position.
2. Use the **Mower Deck Belt Tensioning Spring Length** chart to determine the correct spring length for your unit.
3. Measure the coil length (A, Figure 50) of the mower belt idler tensioner spring (B). The measurement should equal the measurement as indicated in the chart. If not, continue with step #4.
4. Loosen the jam nut (C) on the eye bolt (D).
5. Turn the adjustment nut (E) until the correct measurement as indicated in the chart is achieved.
6. Re-tighten the jam nut.
7. Re-install the mower deck guards.
8. Run the mower under no-load condition for about 5 minutes to break-in the new belt.

### Deck Lift Assist Springs

The deck lift assist springs (A, Figure 51) are factory set to provide optimal lifting performance.

Although they are fastened with an adjustable anchor, this is **not an adjustment point**.

Do NOT attempt to adjust the spring length or lifting performance will be compromised.

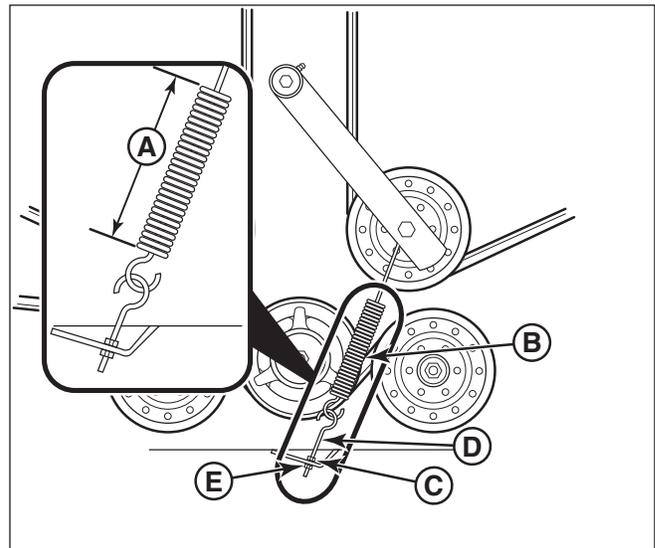


Figure 50. Mower Belt Idler Spring Length  
 A. Mower Belt Tensioner Spring  
 B. Measurement  
 C. Jam Nut  
 D. Adjustment Nut

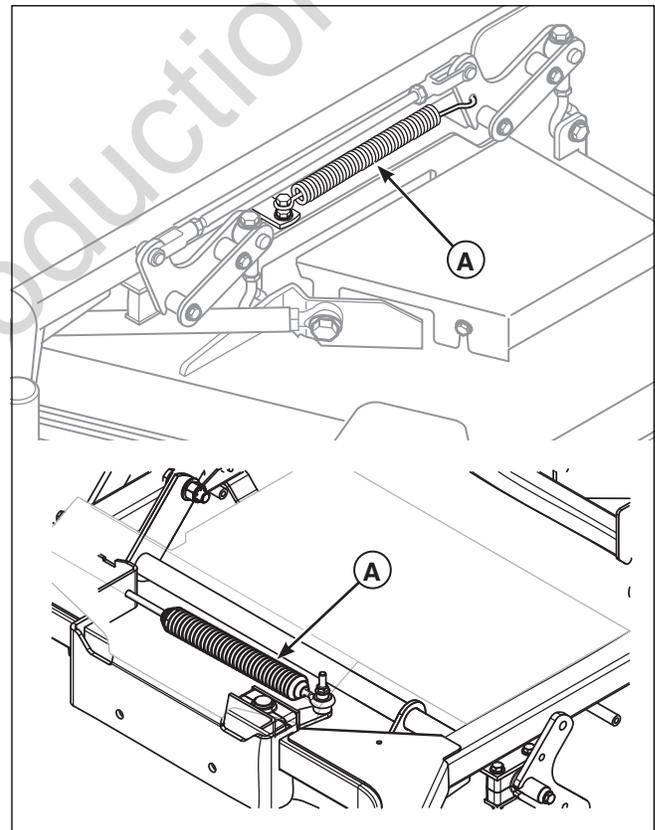


Figure 51. Deck Lift Assist Spring Location  
 A. Deck Lift Assist Spring

## Hydraulic Pump Drive Belt Replacement

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, engage the parking brake, turn off the engine, and remove the ignition key.
2. Remove the PTO drive belt (see MOWER BELT REPLACEMENT for removal instructions).
3. Remove the hardware that secures the clutch anchor pad to the PTO clutch.



### WARNING

**STORED ENERGY DEVICE:** Improper release of the belt tension spring can result in personal injury. Use extreme caution when removing this spring.

4. Loosen the nut on the spring anchor eyebolt (G, Figure 52) to release the majority of the belt tension. Use caution and remove the nut to completely release the tension.
5. Remove the old belt and replace it with the new one. Make sure the V-side of the belt runs in the grooves of the crankshaft pulley and transaxle pulleys (B & C).
6. Reinstall the spring anchor eyebolt (G) into the anchor tab and loosely fasten the nut. Adjust the anchor eyebolt until a measurement of 6-3/8" (16,2 cm) is achieved from spring body. Tighten nut.
7. Reinstall the clutch anchor pad to the PTO clutch and secure with the hardware previously removed.
8. Reinstall the PTO drive belt.

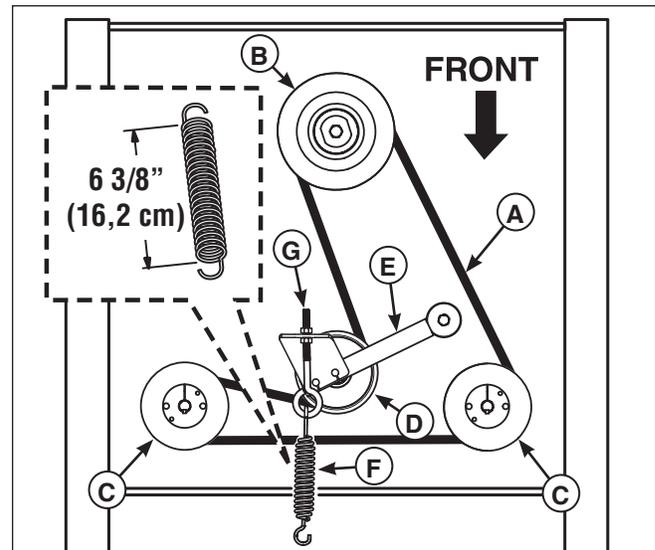


Figure 52. Hydraulic Drive Belt Replacement

- A. Pump Drive Belt
- B. Crankshaft Pulley
- C. Transaxle Pulley
- D. Idler Pulley
- E. Idler Arm
- F. Spring
- G. Spring Anchor Eyebolt

## Electronic Fuel Injection (EFI) System - Fuel Injected Models

EFI is an electronically-controlled fuel management system which is monitored by an Electronic Control Unit (ECU). A Malfunction Indicator Lamp (M.I.L.) will illuminate if problems or faults are detected. Servicing by an authorized dealer is necessary.

### **CAUTION**

Do not disconnect or reconnect ECU wiring harness connector or any individual components with the ignition switch in the "ON" position. This can send a damaging voltage spike through the ECU.

Unplug harness from ECU before performing any welding on equipment.

## Cleaning the Battery and Cables

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

### **WARNING**

Be careful when handling the battery. Avoid spilling electrolyte. Keep flames and sparks away from the battery.

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.

1. Disconnect the cables from the battery, negative (black) cable first (B, Figure 53).
2. Clean the battery terminals and cable ends with a wire brush until shiny.
3. Reinstall the battery and reattach the battery cables, positive (red) cable first (A).
4. Coat the cable ends and battery terminals with petroleum jelly or non-conducting grease.

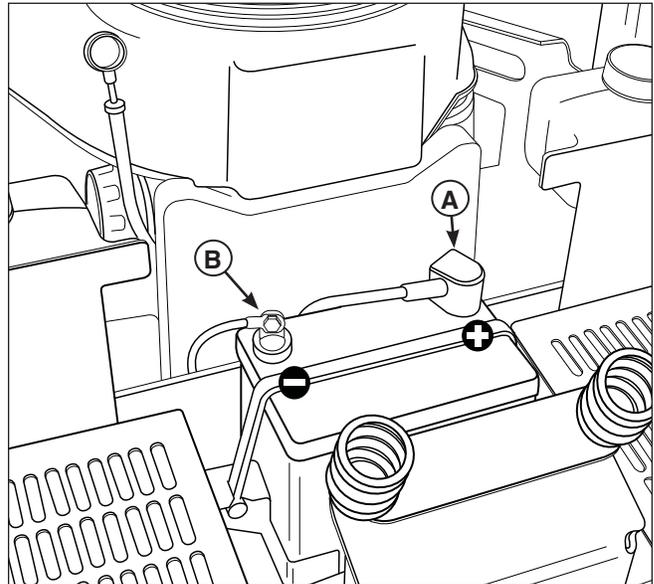


Figure 53. Battery Compartment  
A. Positive (+) Cable & Terminal  
B. Negative (-) Cable & Terminal

## Floor Pan Removal & Installation (S/N: 2016518420 & Above)

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 54) that secures the floor pan 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 re-install the floor pan: Reverse the removal procedure.

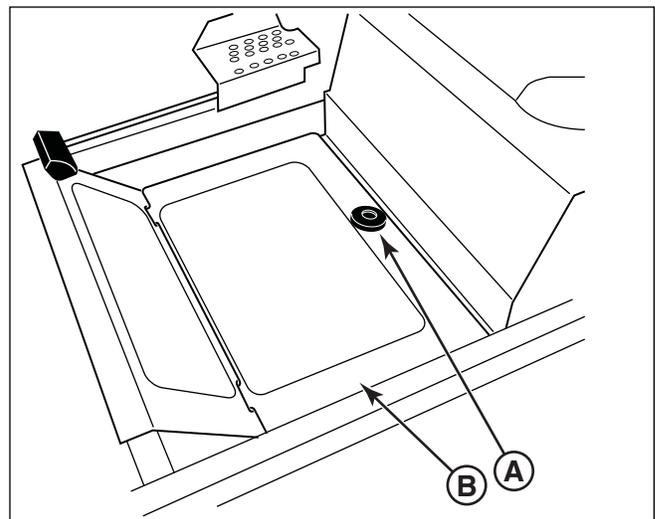


Figure 54. Floor Pan Removal & Installation

## Electric PTO Clutch Adjustment

This procedure pertains to models equipped with a 37 gross HP\* Briggs & Stratton engine.



### WARNING

To avoid serious injury, perform adjustments only with the engine stopped, the ignition key removed, and the unit parked on level ground.

Check the electric PTO clutch adjustment after the initial 25 hour break-in period and then after every 100 hours of operation. If the electric PTO clutch is slipping or the electric PTO clutch will not engage, the air gap can be adjusted by removing the re-gap shim to allow the electric PTO clutch to function.

1. Loosen both brake mounting bolts (A, Figure 55) 1/2 to 1 full turn as shown in Figure 55.

*NOTE: Do not remove the brake pole (B) from the electric PTO clutch. The brake pole **must** remain in the correct position to ensure proper brake torque.*

2. Using needle nose pliers, grasp the tab of the re-gap shim (C) and remove the re-gap shim from the electric PTO clutch.
3. Re-torque each brake mounting bolt to 10 ft. lbs. (13,5 Nm).
4. Using a .010" thick feeler gauge (A, Figure 56), verify that the gap is present between the rotor (B) and armature face (C) on both sides of the brake pole as shown in Figure 57.
  - If the gap is less than .010, the electric PTO clutch will need to be replaced;
  - If sufficient gap is present, proceed to the *Blade Brake Check* procedure.

### Blade Brake Check

Mower blades and mower deck drive belt should come to a complete stop within seven (7) seconds after electric PTO switch is turned off.

1. With parking brake engaged, PTO disengaged and an operator in the seat, start the engine.
2. Have an assistant observe the mower drive belt through the open end of the left-hand arbor cover. Engage the PTO and wait several seconds. Disengage the PTO and check the amount of time it takes for the mower drive belt to stop.
3. If the mower drive belt does not stop within seven (7) seconds, perform the *Electric PTO Clutch Adjustment*. If the belt still does not stop within seven (7) seconds, see your dealer.

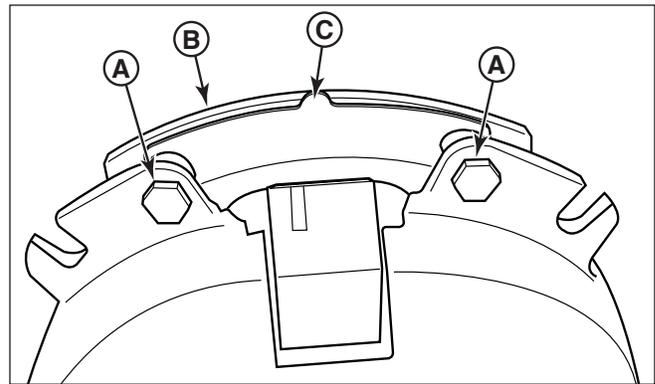


Figure 55. Electric PTO Clutch Brake Mounting Bolts

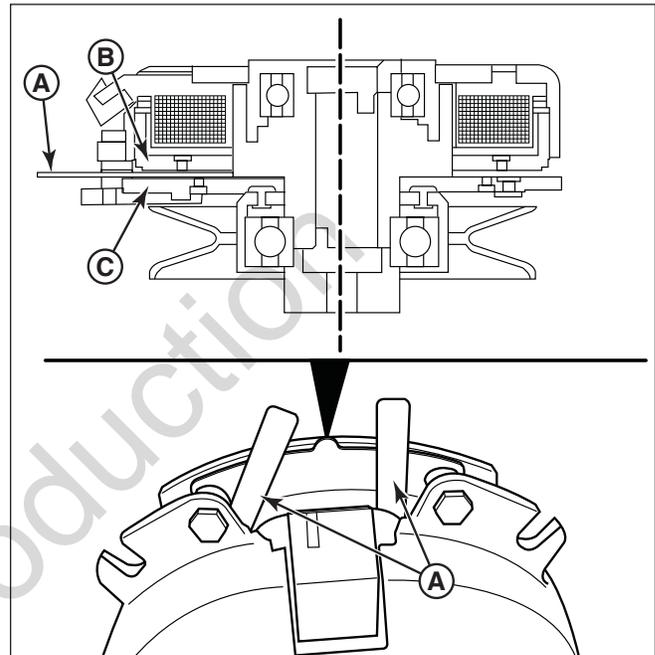


Figure 56. Electric PTO Clutch Gap Measurement with Feeler Gauge

## Battery Service



### WARNING

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

### Checking Battery Voltage

A voltmeter can be used to determine condition of battery. When engine is off, the voltmeter shows battery voltage, which should be 12 volts. When 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 dealer. If you need to replace the battery, follow the steps under Cleaning the Battery & Cables in the Regular Maintenance Section.

### Charging a Completely Discharged Battery



### WARNING

Do NOT charge battery with key switch ON. Never use a quick battery charger to start engine. Always disconnect negative (-) battery cable before charging battery.

1. Be aware of all the safety precautions you should observe during the charging operation. If you are unfamiliar with the use of a battery charger and hydrometer, have the battery serviced by your dealer.
2. Add distilled water sufficient to cover the plate (fill to the proper level near the end of the charge). If the battery is extremely cold, allow it to warm before adding water because the water level will rise as it warms. Also, an extremely cold battery will not accept a normal charge until it becomes warm.
3. Always unplug or turn the charger off before attaching or removing the clamp connections.
4. Carefully attach the clamps to the battery in proper polarity (usually red to [+] positive and black to [-] negative).
5. While charging, periodically measure the temperature of the electrolyte. If the temperature exceeds 125° F (51.6° C), or if violent gassing or

spewing of electrolyte occurs, the charging rate must be reduced or temporarily halted to prevent battery damage.

6. Charge the battery until fully charged (until the specific gravity of the electrolyte is 1.250 or higher and the electrolyte temperature is at least 60° F). The best method of making certain a battery is fully charged, but not over charged, is to measure the specific gravity of a cell once per hour. The battery is fully charged when the cells are gassing freely at low charging rate and less than 0.003 change in specific gravity occurs over a three hour period.

### Jump Starting With Auxiliary (Booster) Battery

Jump starting is not recommended. However, if it must be done, follow these directions. Both booster and dis-charged batteries should be treated carefully when using jumper cables. Follow the steps below EXACTLY, being careful not to cause sparks. Refer to Figure 57.

1. Both batteries must be of the same voltage.
2. Position the vehicle with the booster battery adjacent to the vehicle with the discharged battery so that booster cables can be connected easily to the batteries in both vehicles. Make certain vehicles do not touch each other.
3. Wear safety glasses and shield eyes and face from batteries at all times. Be sure vent caps are tight. Place damp cloth over vent caps on both batteries.
4. Connect positive (+) cable to positive post of discharged battery (wired to starter or solenoid).
5. Connect the other end of same cable to same post marked positive (+) on booster battery.
6. Connect the second cable negative (-) to other post of booster battery.
7. Make final connection on engine block of stalled vehicle away from battery. Do not lean over batteries.
8. Start the engine of the vehicle with the booster battery. Wait a few minutes, then attempt to start the engine of the vehicle with the discharged battery.
9. If the vehicle does not start after cranking for ten (10) seconds, STOP PROCEDURE. More than ten (10) seconds seldom starts the engine unless some mechanical adjustment is made. Allow a sixty (60) second cool down period between starting attempts. Failure to follow these guidelines can burn out starter motor.
10. After starting, allow the engine to return to idle speed. Remove the cable connection at the engine or frame. Then remove the other end of the same cable from the booster battery.

11. Remove the other cable by disconnecting at the discharged battery first and then disconnect the opposite end from the booster battery.
12. Discard the damp cloths that were placed over the battery vent caps.

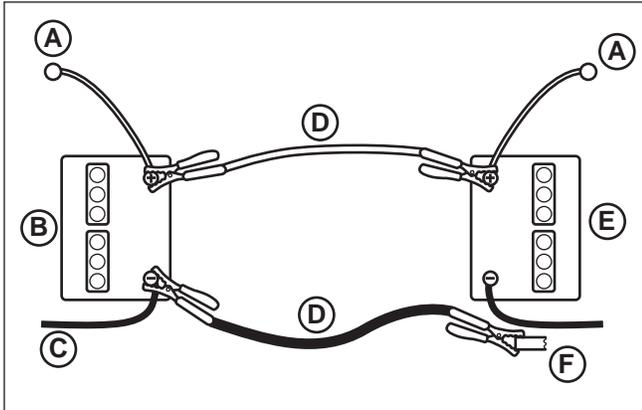


Figure 57. Jump Starting

***This hook-up is for negative grounded vehicles.***

Callout	Description
A	To Starter Switch
B	Starting Vehicle Battery
C	To Ground
D	Jumper Cable
E	Discharged Vehicle Battery
F	Engine Block

***Make sure vehicles do not touch.***

## **⚠ WARNING**

Any procedure other than the preceding could result in:

- (1) personal injury caused by electrolyte squirting out the battery vents,
- (2) personal injury or property damage due to battery explosion,
- (3) damage to the charging system of the booster vehicle or of the immobilized vehicle.

Do not attempt to jump start a vehicle having a frozen battery because the battery may rupture or explode. If a frozen battery is suspected, examine all fill vents on the battery. If ice can be seen or if the electrolyte fluid cannot be seen, do not attempt to start with jumper cables as long as the battery remains frozen.

## **⚠ WARNING**

For your personal safety, use extreme care when jump starting. Never expose battery to open flame or electric spark – battery action generates hydrogen gas which is flammable and explosive. Do not allow battery acid to contact skin, eyes, fabrics, or painted surfaces. Batteries contain a sulfuric acid solution which can cause serious personal injury or property damage.

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.

To avoid engine damage, do not disconnect battery while engine is running. Be sure terminal connections are tight before starting.

## Troubleshooting

### Troubleshooting Chart

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

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

See the information on the following pages 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 local authorized dealer.

### WARNING

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

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

### Troubleshooting the Rider

Problem	Cause	Remedy
<b>Engine will not turnover or start.</b>	<ol style="list-style-type: none"> <li>1. Parking brake not engaged.</li> <li>2. PTO (electric clutch) switch in ON position.</li> <li>3. Out of fuel.</li> <li>4. Engine flooded.</li> <li>5. Fuse blown.</li> <li>6. Battery terminals require cleaning.</li> <li>7. Battery discharged or dead.</li> <li>8. Wiring loose or broken.</li> <li>9. Solenoid or starter motor faulty.</li> <li>10. Safety interlock switch faulty.</li> <li>11. Spark plug(s) faulty, fouled or incorrectly gapped.</li> <li>12. Water in fuel.</li> <li>13. Gas is old or stale.</li> </ol>	<ol style="list-style-type: none"> <li>1. Engage parking brake.</li> <li>2. Place in OFF position.</li> <li>3. If engine is hot, allow it to cool, then refill the fuel tank.</li> <li>4. <b>Carbuerated Models:</b> Move choke control to closed position. <b>Fuel Injected Models:</b> See authorized dealer.</li> <li>5. Replace fuse.</li> <li>6. Clean the battery terminals</li> <li>7. Recharge or replace.</li> <li>8. Visually check wiring &amp; replace broken or frayed wires. Tighten loose connections.</li> <li>9. Repair or replace. See authorized dealer</li> <li>10. Replace as needed. See authorized service dealer.</li> <li>11. Clean and gap or replace. See engine manual.</li> <li>12. Drain fuel &amp; replace with fresh fuel.</li> <li>13. Drain fuel &amp; replace with fresh fuel.</li> </ol>
<b>Engine starts hard or runs poorly.</b>	<ol style="list-style-type: none"> <li>1. Fuel mixture too rich.</li> <li>2. Spark plug faulty, fouled, or incorrectly gapped.</li> </ol>	<ol style="list-style-type: none"> <li>1. A.) Clean air filter. B.) <b>Carbuerated Models:</b> Check choke adjustment. <b>Fuel Injected Models:</b> See authorized dealer.</li> <li>2. Clean and gap or replace. (See engine manual.)</li> </ol>
<b>Engine knocks.</b>	<ol style="list-style-type: none"> <li>1. Low oil level.</li> <li>2. Using wrong grade oil.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check/add oil as required.</li> <li>2. See engine manual.</li> </ol>
<b>Excessive oil consumption.</b>	<ol style="list-style-type: none"> <li>1. Engine running too hot.</li> <li>2. Using wrong weight oil.</li> <li>3. Too much oil in crankcase.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean engine fins, blower screen and air cleaner.</li> <li>2. See engine manual.</li> <li>3. Drain excess oil.</li> </ol>
<b>Engine exhaust is black.</b>	<ol style="list-style-type: none"> <li>1. Dirty air filter.</li> <li>2. Engine choke control is in closed position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace air filter. See engine manual.</li> <li>2. Open choke control.</li> </ol>
<b>Malfunction Indicator Lamp (M.I.L.) is flashing (Fuel Injected Models Only)</b>	<ol style="list-style-type: none"> <li>1. Problem with fuel injection system.</li> </ol>	<ol style="list-style-type: none"> <li>2. See your authorized service dealer.</li> </ol>

## Rider Troubleshooting Continued.

Problem	Cause	Remedy
<b>Engine runs, but rider will not drive.</b>	<ol style="list-style-type: none"> <li>1. Transaxles are disengaged.</li> <li>2. Belt is broken.</li> <li>3. Drive belt slips.</li> <li>4. Brake is not fully released.</li> </ol>	<ol style="list-style-type: none"> <li>1. Engage the transaxles. See Pushing the Rider by Hand.</li> <li>2. See Drive Belt Replacement.</li> <li>3. See problem and cause below.</li> <li>4. See authorized service dealer</li> </ol>
<b>Rider drive belt slips.</b>	<ol style="list-style-type: none"> <li>1. Pulleys or belt greasy or oily.</li> <li>2. Tension too loose.</li> <li>3. Belt stretched or worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean as required.</li> <li>2. Adjust spring tension. See Drive Belt Replacement</li> <li>3. Replace belt.</li> </ol>
<b>Brake will not hold.</b>	<ol style="list-style-type: none"> <li>1. Brake is incorrectly adjusted.</li> <li>2. Brake pads worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. See Parking Brake Adjustment.</li> <li>2. Replace with new brake pads.</li> </ol>
<b>Rider steers or handles poorly.</b>	<ol style="list-style-type: none"> <li>1. Steering linkage is loose.</li> <li>2. Improper tire inflation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and tighten any loose connections.</li> <li>2. See Regular Maintenance Section.</li> </ol>

## Troubleshooting the Mower

Problem	Cause	Remedy
<b>Mower will not raise.</b>	<ol style="list-style-type: none"> <li>1. Lift linkage not properly attached or damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. See authorized service dealer for repair.</li> </ol>
<b>Engine stalls easily with mower engaged.</b>	<ol style="list-style-type: none"> <li>1. Engine speed too slow.</li> <li>2. Ground speed too fast.</li> <li>3. Cutting height set too low.</li> <li>4. Discharge chute jamming with cut grass.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set to full throttle.</li> <li>2. Decrease Ground Speed.</li> <li>3. Cut tall grass at maximum cutting height during first pass.</li> <li>4. Cut grass with discharge pointing toward previously cut area.</li> </ol>
<b>Excessive mower vibration.</b>	<ol style="list-style-type: none"> <li>1. Blade mounting bolts are loose.</li> <li>2. Mower blades, arbors, or pulleys are bent.</li> <li>3. Mower blades are out of balance.</li> <li>4. Belt installed incorrectly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten to 70 ft.lbs. (94 N.m.).</li> <li>2. Check and replace as necessary.</li> <li>3. Remove, sharpen, and balance blades. See Maintenance Section.</li> <li>4. Reinstall Correctly.</li> </ol>
<b>Excessive belt wear or breakage.</b>	<ol style="list-style-type: none"> <li>1. Bent or rough pulleys.</li> <li>2. Using incorrect belt.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace.</li> <li>2. Replace with correct belt.</li> </ol>
<b>Mower drive belt slips or fails to drive.</b>	<ol style="list-style-type: none"> <li>1. Idler pulley spring broken or not properly attached.</li> <li>2. Mower drive belt broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace as needed.</li> <li>2. Replace drive belt.</li> </ol>
<b>Mower does not engage.</b>	<ol style="list-style-type: none"> <li>1. Electrical wiring damage.</li> <li>2. PTO clutch not adjusted</li> <li>3. Battery voltage too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate &amp; repair damaged wire.</li> <li>2. See PTO Clutch Adjustment section</li> <li>3. Recharge battery and check alternator. See Battery Maintenance section.</li> </ol>

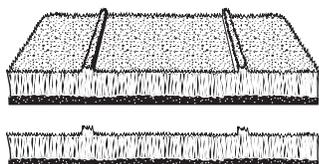
## Troubleshooting Common Cutting Problems

### PROBLEM

### CAUSE

### REMEDY

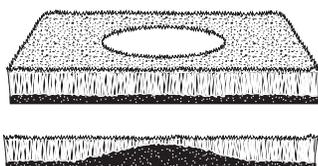
#### Streaking



1. Blades are not sharp.
2. Blades are worn down too far.
3. Engine speed is too slow.
4. Ground speed is too fast.
5. Deck is plugged with grass.
6. Not overlapping cutting rows enough.
7. Not overlapping enough when turning.

1. Sharpen your blades.
2. Replace your blades.
3. Always mow at FULL throttle.
4. Slow down.
5. Clean out the mower.
6. Overlap you cutting rows.
7. When turning your effective cutting width decreases—overlap more when turning.

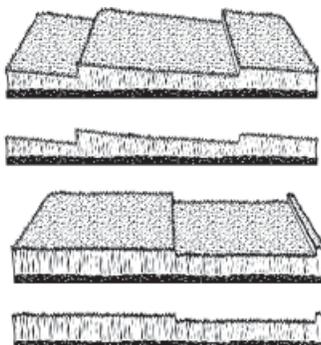
#### Scalping



1. Lawn is uneven or bumpy.
2. Mower deck cutting height is set too low.
3. Ground speed is too fast.
4. Deck is not levelled correctly.
5. Tire pressure is low or uneven.

1. Roll or level the lawn.
2. Raise the cutting height.
3. Slow down.
4. Correctly level the deck.
5. Check and inflate the tires.

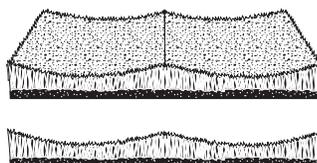
#### Stepped Cutting.



1. Deck is not leveled correctly.
2. Tires are not properly inflated.
3. Blades are damaged.
4. Deck shell is damaged.
5. Mower spindle is bent or loose.
6. Blades are installed incorrectly.

1. Level the deck correctly.
2. Check and inflate the tires.
3. Replace the blades.
4. Repair or replace the deck.
5. Repair or replace the spindle.
6. Reinstall the blades correctly.

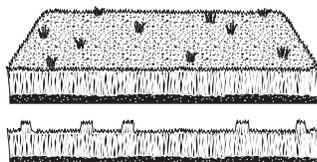
#### Uneven Cutting



1. Deck is not leveled correctly.
2. Blades are dull or worn.
3. Blades are damaged.
4. Deck is clogged with grass clippings.
5. Deck shell is damaged.
6. Mower spindle is bent or loose.
7. Blades are installed incorrectly.
8. Tires are not properly inflated.

1. Level the deck correctly.
2. Sharpen or replace the blades.
3. Replace the blades.
4. Clean out the deck.
5. Repair or replace the deck.
6. Repair or replace the spindle.
7. Reinstall the blades correctly.
8. Check and inflate the tires.

#### Stingers



1. Blades are not sharp or nicked.
2. Blades are worn down too far.
3. Engine speed is too low.
4. Ground speed is too fast.
5. Deck is plugged with grass.

1. Sharpen your blades.
2. Replace your blades.
3. Always mow at full throttle.
4. Slow down.
5. Clean out the mower.

## Specifications

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

### ENGINE

#### 26 Gross HP† Kawasaki

(Product Model: 5900937)

<b>Make</b>	Kawasaki
<b>Model</b>	FX730-AS00-R
<b>Displacement</b>	44.3 Cu. in (726 cc)
<b>Electrical System</b>	12 Volt, 15 amp. Alternator, Battery: 340 CCA
<b>Oil Capacity</b>	2.2 US Qt. (2.1 L) w/ Filter

#### 28 Gross HP\* Briggs & Stratton

(Product Model: 5900830)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	541777-0110-E1
<b>Displacement</b>	54.88 Cu. in (896 cc)
<b>Electrical System</b>	12 Volt, 20 amp. Alternator, Battery: 340 CCA
<b>Oil Capacity</b>	2.4 qt. (2.25 L) w/ Filter

#### 32 Gross HP\* Briggs & Stratton

(Product Model: 5900951, 5900504, & 5901286)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	543777-0120-E1
<b>Displacement</b>	54.62 Cu. in (895 cc)
<b>Electrical System</b>	12 Volt, 20 amp. Alternator, Battery: 340 CCA
<b>Oil Capacity</b>	2.4 US qt. (2.3 L) w/ Filter

#### 25.5 Gross HP† Kawasaki

(Product Model: 5901021 & 5901380)

<b>Make</b>	Kawasaki
<b>Model</b>	FX801V-ES00-S
<b>Displacement</b>	52.0 Cu. in (852 cc)
<b>Electrical System</b>	12 volt, 15 amp. charging coil; Battery: 340 cca
<b>Oil Capacity</b>	1.9 US qt. (1.8 L) w/ filter

#### 27 Gross HP\* Briggs & Stratton Commercial Turf

(Product Model: 5901280 & 5901423)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	49L977-0125-G5
<b>Displacement</b>	49.43 Cu. in (810 cc)
<b>Electrical System</b>	12 volt, 16 amp. Alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.1 US qt. (2.0 L) w/ filter

#### 28 Gross HP\* Briggs & Stratton Commercial Turf

(Product Model: 5901023)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	49L977-0125-G5
<b>Displacement</b>	49.43 Cu. in (810 cc)
<b>Electrical System</b>	12 volt, 16 amp. Alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.1 US qt. (2.0 L) w/ filter

#### 29/27 Gross HP<sup>1</sup> Kohler EFI

(Product Model: 5901233 & 5901381)

<b>Make</b>	Kohler
-------------	--------

<b>Model</b>	ECV749-3022
<b>Displacement</b>	45.6 Cu. in (747 cc)
<b>Electrical System</b>	12 volt, 20 amp. Alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.0 US qt. (1.9 L) w/ filter

#### 30 Gross HP\* Briggs & Stratton Commercial Turf

(Product Model: 5900582 & 5900583)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	49M977-0114-G5
<b>Displacement</b>	49.43 Cu. in (810 cc)
<b>Electrical System</b>	12 volt, 16 amp alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.1 US qt. (2.0 L) w/ filter

#### 36 Gross HP\* Briggs & Stratton Vanguard

(Product Models: 5900585, 5900601, & 5901287)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	613777-0116-G1
<b>Displacement</b>	60.60 Cu. In (993 cc)
<b>Electrical System</b>	12 volt, 20 amp alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.4 US qt (2.3 L) w/ filter

#### 26 Gross HP\* Briggs & Stratton Vanguard

(Products Models: 5901368 & 5901379)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	49R977-9322-96
<b>Displacement</b>	49.42 Cu. in (810 cc)
<b>Electrical System</b>	12 Volt, 16 amp. Alternator, Battery: 340 cca
<b>Oil Capacity</b>	2.1 US qt. (2.0 L) w/ filter

#### 28 Gross HP\* Briggs & Stratton EFI

(Product Models: 5901367 & 5901424)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	49E877-0001-G1
<b>Displacement</b>	49.42 Cu. in (810 cc)
<b>Electrical System</b>	12 Volt, 20 amp. Alternator, Battery: 340 cca
<b>Oil Capacity</b>	2.1 US qt. (2.0 L) w/ filter

#### 37 Gross HP\* Briggs & Stratton EFI

(Product Models: 5901510 & 5901511)

<b>Make</b>	Briggs & Stratton
<b>Model</b>	61E877-0001-J1
<b>Displacement</b>	60.60 Cu. in (993 cc)
<b>Electrical System</b>	12 volt, 20 amp. alternator; Battery: 340 cca
<b>Oil Capacity</b>	2.4 US qt. (2.3 L) w/ filter

†**Power Ratings:** All power levels are stated gross horsepower per SAE J2723 as rated by Kawasaki and tested per the SAE J1995 test standard. The gross power curves and more information can be viewed at [www.kawasaki-criticalpower.com](http://www.kawasaki-criticalpower.com).

\***Power Ratings:** The gross power rating for individual gasoline engine models is labeled in accordance with SAE (Society of Automotive Engineers) code J1940 Small Engine Power & Torque Rating Procedure, and is rated in accordance with SAE J1995. Torque values are derived at 2600 RPM for those engines with "rpm" called out on the label and 3060 RPM for all others; horsepower values are derived at 3600 RPM. The gross power curves can be viewed at [www.BRIGGSandSTRATTON.COM](http://www.BRIGGSandSTRATTON.COM). Net power values are taken with exhaust and air cleaner installed whereas gross power values are collected without these attachments. Actual gross engine power will be higher than net engine power and is affected by, among other things, ambient operating conditions and engine-

# Specifications

to-engine variability. Given the wide array of products on which engines are placed, the gasoline engine may not develop the rated gross power when used in a given piece of power equipment. This difference is due to a variety of factors including, but not limited to, the variety of engine components (air cleaner, exhaust, charging, cooling, carburetor, fuel pump, etc.), application limitations, ambient operating conditions (temperature, humidity, altitude), and engine-to-engine variability. Due to manufacturing and capacity limitations, Briggs & Stratton may substitute an engine of higher rated power for this engine.

**<sup>1</sup>Power Ratings:** Power (hp) and Torque (lbs ft) specifications for Kohler general purpose engines are rated pursuant to Society of Automotive Engineers (SAE) J1940 based on gross output testing performed according to SAE J1995 without the air cleaner and muffler. Actual engine power and torque are lower and affected by accessories (air cleaner, exhaust, charging, cooling, fuel pump, etc.), application, engine speed, ambient operating conditions (temperature, humidity and altitude) and other factors. This J1940 / J1995 rating provides consistent measurement to customers who may want to control the intake and exhaust features of the engine. For more information, contact Kohler Co. Engine Engineering Department. Kohler Co. reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligation.

## CHASSIS:

<b>Fuel Tank Capacity</b>	12 gallons (45,4 L) - Dual Tank Models
	6 gallons (22,7 L) Single Tank Models
<b>Rear Wheels</b>	Tire Size: 24 X 12.00 - 12
	Inflation Pressure: 15 psi (1,03 bar)
<b>Front Wheels</b>	Tire Size: 13 X 6.50 - 6
<i>Models w/ Flat Free Tires:</i>	Inflation Pressure: N/A
<i>Modles w/ Air Filled Tires:</i>	Inflation Pressure: 25 psi (1,72 bar)

## TRANSMISSIONS:

Make	Hydro-Gear®
Model	ZT-5400 Transaxles
Hydraulic Fluid	SAE 20W-50 motor oil
Speeds @ 3400 rpm	Forward: 0-10 MPH (0-16,09 km/h)
	Reverse: 0-5 MPH (0-8.05 km/h)

## DIMENSIONS:

	<b>61" Models</b>	<b>72" Models</b>
<b>Overall Length</b>	79" (201 cm)	82" (208 cm)
<b>Overall Width (deflector up)</b>	63" (160 cm)	73.5" (187 cm)
<b>Overall Width (deflector down)</b>	76" (193 cm)	88" (224 cm)
<b>Height</b>	68" (173 cm)	
<b>Weight (aprox.)</b>	1175 lbs. (534 kg)	1351 lbs. (613 kg)

# SLOPE IDENTIFICATION GUIDE

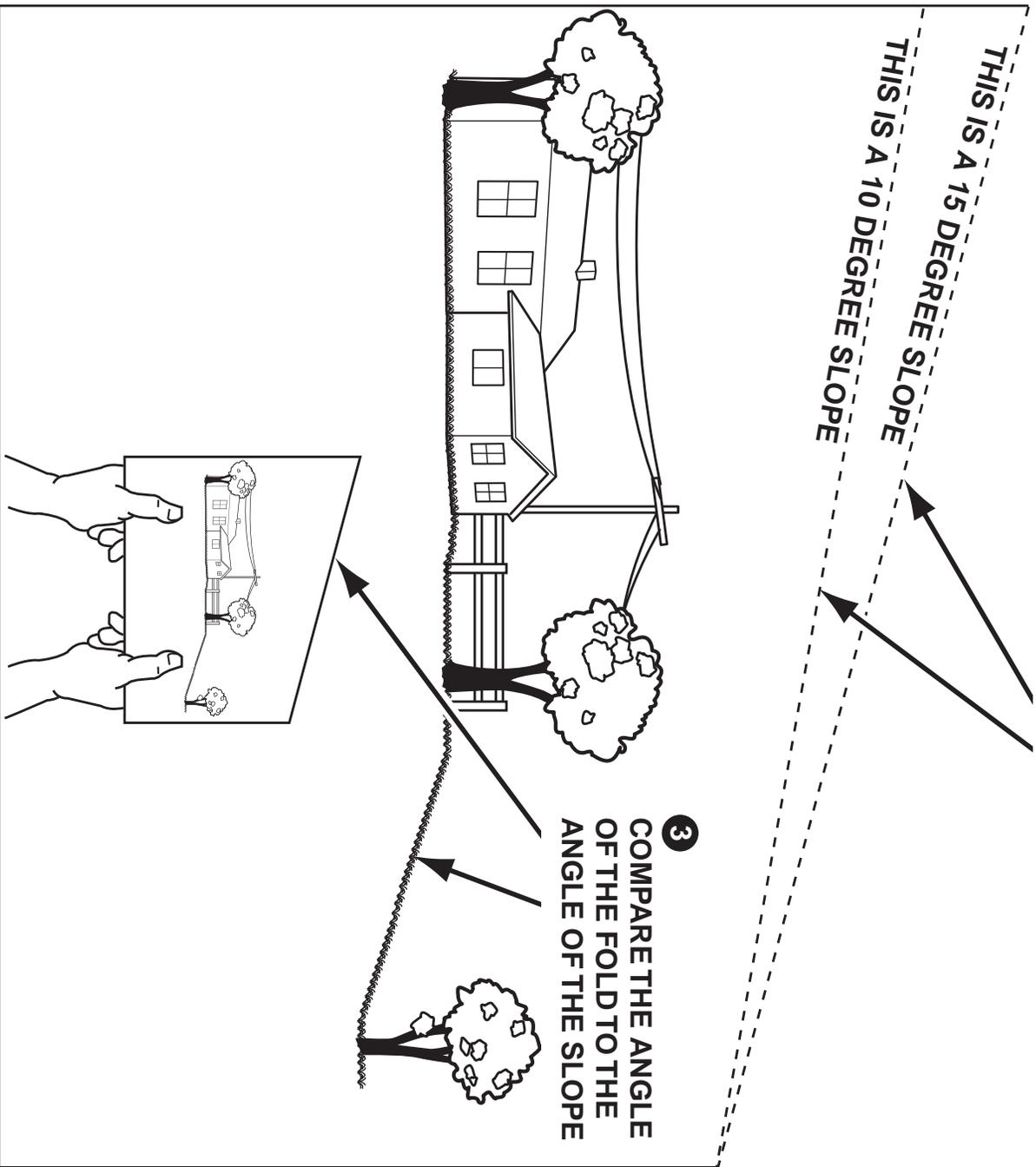
**1 FOLD ALONG APPROPRIATE DOTTED LINE**

THIS IS A 15 DEGREE SLOPE  
THIS IS A 10 DEGREE SLOPE

**3 COMPARE THE ANGLE OF THE FOLD TO THE ANGLE OF THE SLOPE**

**2**

**ALIGN THIS EDGE WITH A VERTICAL SURFACE (TREE, POLE, FENCE POST, BUILDING, ETC)**



## INSTRUCTIONS

1. Fold this page along the dotted line indicated above.
2. Align the left edge of this guide with a vertical tree, a power line pole, a fence post, or any vertical structure.
3. Compare the angle of the fold with the angle of the hill.





Not for  
Reproduction

**LIMITED WARRANTY**

Briggs & Stratton warrants that, during the warranty period specified below, it will repair or replace, free of charge, any part that is defective in material or workmanship or both. Transportation charges on product submitted for repair or replacement under this warranty must be borne by purchaser. This warranty is effective for and is subject to the time periods and conditions stated below. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at [WWW.SNAPPERPRO.COM](http://WWW.SNAPPERPRO.COM). The purchaser must contact the Authorized Service Dealer, and then make the product available to the Authorized Service Dealer for inspection and testing.

**There is no other express warranty. Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to one year from purchase, or to the extent permitted by law. All other implied warranties are excluded. Liability for incidental or consequential damages are excluded to the extent exclusion is permitted by law.** Some states or countries do not allow limitations on how long an implied warranty lasts, and some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.\*\*

**WARRANTY PERIOD**

Covered Parts	Standard Warranty Period	Rental Warranty Period
Riding mowers	4 years (48 months) or 500 hours, whichever occurs first. Unlimited hours during the first 2 years (24 months) (+Except as noted below)	90 days
Walk mowers (over 30 inches of cutting width)	2 years (24 months) unlimited hours (+Except as noted below)	90 days
+Belts, Tires, Brake Pads, Hoses, Battery, Blades	90 days	90 days
+Attachments	1 year	90 days
+Engine*	See Engine Operator's Manual	See Engine Operator's Manual

\* Emissions-related components are covered by the Emissions Warranty Statement.

\*\* In Australia - Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. For warranty service, find the nearest Authorized Service Dealer in our dealer locator map at [FERRISINDUSTRIES.COM/AU](http://FERRISINDUSTRIES.COM/AU), or by calling 1300 274 447, or by emailing or writing to [salesenquires@briggsandstratton.com.au](mailto:salesenquires@briggsandstratton.com.au), Briggs & Stratton Australia Pty Ltd, 1 Moorebank Avenue, NSW, Australia, 2170.

The warranty period begins on the date of purchase by the first retail end user, and continues for the period of time or hours stated in the table above.

**No warranty registration is necessary to obtain warranty on Briggs & Stratton products. Save your proof of purchase receipt. If you do not provide proof of the initial purchase date at the time warranty service is requested, the manufacturing date of the product will be used to determine the warranty period.**

**ABOUT YOUR WARRANTY**

We welcome warranty repair and apologize to you for being inconvenienced. Warranty service is available only through *SNAPPER PRO* Authorized Service Dealers. Most warranty repairs are handled routinely, but sometimes requests for warranty service may not be appropriate. This warranty only covers defects in materials or workmanship. It does not cover damage caused by improper use or abuse, improper maintenance or repair, normal wear and tear, or stale or unapproved fuel.

**Improper Use and Abuse** - The proper, intended use of this product is described in the Operator's Manual. Using the product in a way not described in the Operator's Manual or using the product after it has been damaged will void your warranty. Warranty is not allowed if the serial number on the product has been removed or the product has been altered or modified in any way, or if the product has evidence of abuse such as impact damage, or water/chemical corrosion damage.

**Improper Maintenance or Repair** - This product must be maintained according to the procedures and schedules provided in the Operator's Manual, and serviced or repaired using genuine Briggs & Stratton parts or equivalent. Damage caused by lack of maintenance or use of non-original parts is not covered by warranty.

**Normal Wear** - Like all mechanical devices, your unit is subject to wear even when properly maintained. This warranty does not cover repairs when normal use has exhausted the life of a part or the equipment. Except as noted in the warranty period, maintenance and wear items such as filters, belts, cutting blades, and brake pads (except engine brake pads) are not covered by warranty due to wear characteristics alone, unless the cause is due to defects in material or workmanship.

**Stale Fuel** - In order to function correctly, this product requires fresh fuel that conforms to the criteria specified in the Operator's Manual. Damage caused by stale fuel (carburetor leaks, clogged fuel tubes, sticking valves, etc) is not covered by warranty.

**Other Exclusions** - This warranty excludes damage due to accident, abuse, modifications, alterations, improper servicing, freezing or chemical deterioration. Attachments or accessories that were not originally packaged with the product are also excluded. There is no warranty coverage on equipment used for primary power in place of utility power or on equipment used in life support applications. This warranty also excludes failures due to acts of God and other force majeure events beyond the manufacturer's control.



# OPERATOR'S MANUAL