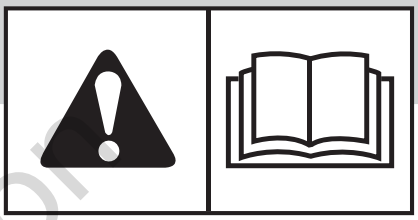
SNAPPER PRO™

Operator's Manual

SW5 Series

Walk-Behind Mowers



Model No.:	Description
5900966	SW5BV1632, Walk-Behind Mower w/ 32" Mower Deck
5900538	SW5KAV1532, Walk-Behind Mower w/ 32" Mower Deck
5900950	SW5KAV1632, Walk-Behind Mower w/ 32" Mower Deck

BRIGGS & STRATTON POWER PRODUCTS GROUP, LLC
5375 NORTH MAIN STREET
MUNNSVILLE, NY 13409
800 933 6175

5102908
Rev C

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

Illustrated Parts Lists

The Illustrated Parts List for this machine can be downloaded from www.snapperpro.com. Please provide model and serial number when ordering replacement parts.

⚠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.

Contact Information:

Briggs & Stratton Power Products Group, LLC
5375 N. Main St.
Munnsville, NY 13409-4003
(800) 933-6175
www.SnapperPro.com

Table of Contents

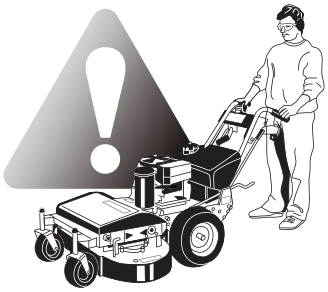
NOTE: In this manual, "left" and "right" are referred to as seen from the operator's position.

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 safety alert triangle ⚠ in text signifies important cautions or warnings which must be followed.

Operating Safety



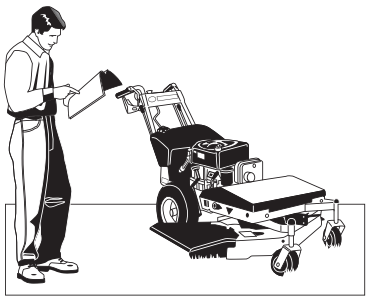
Congratulations on purchasing a superior-quality piece of lawn and garden equipment. Our products are designed and manufactured to meet or exceed all industry standards for safety.

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

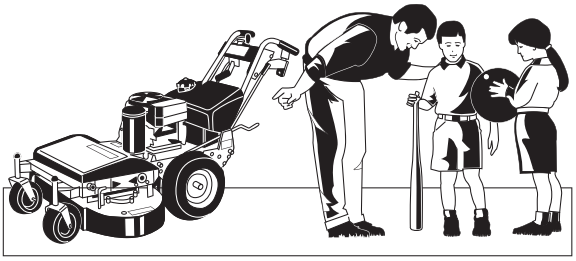


The operator's manual contains important safety information you need to be aware of BEFORE you operate your unit as well as DURING operation.

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.

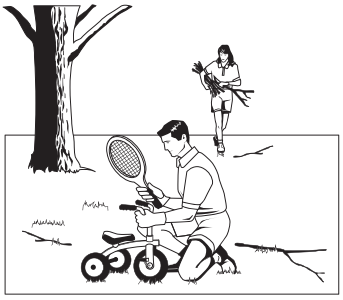
Slope Operation

You could be seriously injured if you use this unit on too steep of a slope. Using the unit on a slope that is too steep where you do not have adequate footing and unit traction (and control) can cause you to lose control and possibly slip and fall or roll the unit over.

Always mow across slopes, not up and down (you could slip and fall.)

Also, note that the surface you are on can greatly impact your ability to safely operate this machine. Wet grass or soft soil can seriously affect your footing and traction of the unit. Do not operate on slopes that are slippery, wet, or have soft soil.

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.

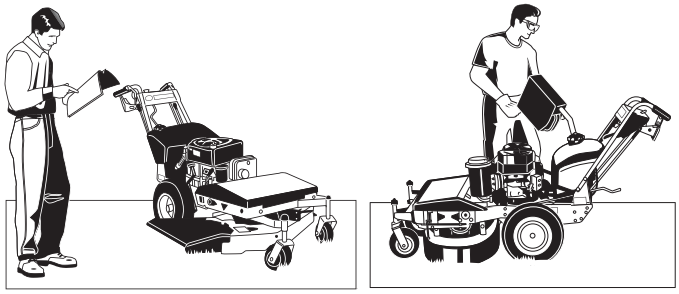
Moving Parts

This equipment has many moving parts that can injure you or someone else. However, if you stay in the operator zone (area behind the handles and controls), 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.

Fuel and Maintenance



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

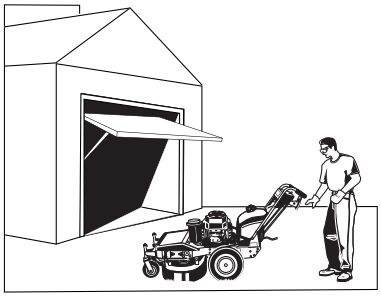
Gasoline and its vapors are extremely flammable. Do not smoke while operating or refueling. Do not add fuel while engine is hot or running. Allow engine to cool for at least 3 minutes prior to adding fuel.

Do not add fuel indoors, in an enclosed trailer, garage or 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.

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

Wear hearing protection when operating this machine.

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.

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

Operating on steep slopes can cause sliding and loss of steering, control and rollover.
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.
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.
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 mow excessively steep slopes.
6. Do not use grass catcher on steep slopes.

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 allow children to operate the unit.
5. 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.

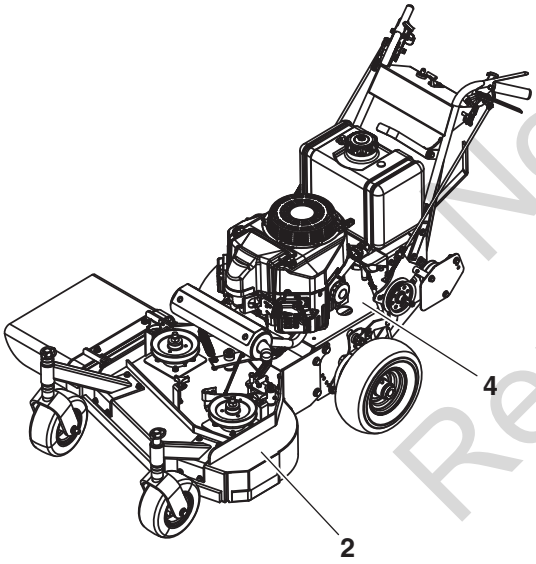
Safety Decals

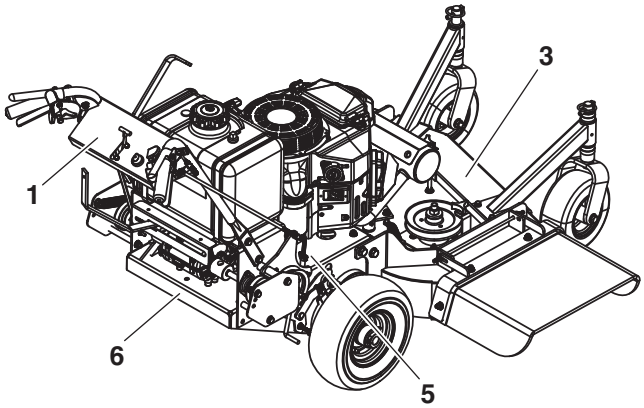
This unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing. Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operate this equipment safely and effectively, we have placed several safety labels on the unit to remind you of this important information while you are operating your unit.

All DANGER, WARNING, CAUTION and instructional messages on your mower and mower deck should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety and it is important! The safety decals below are on your mower and mower deck.

If any of these decals are lost or damaged, replace them at once. See your local dealer for replacements.

These labels are easily applied and will act as a constant visual reminder to you, and others who may use the equipment, to follow the safety instructions necessary for safe, effective operation.





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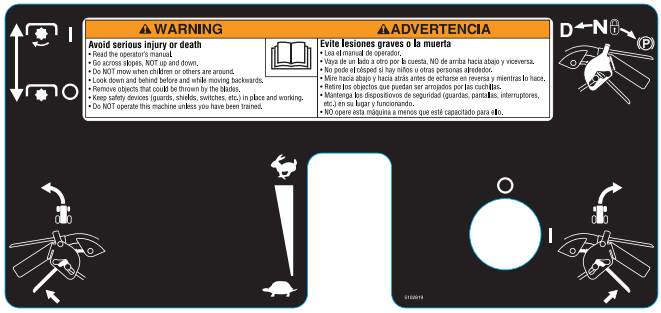

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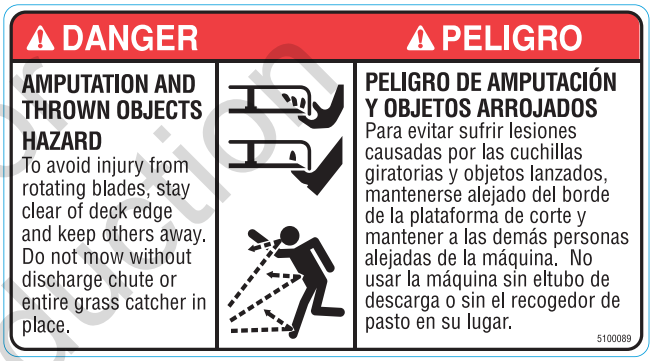

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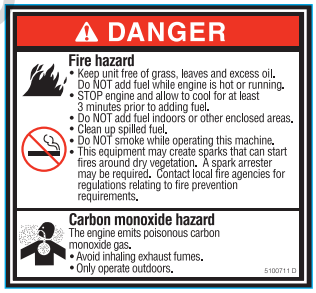

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Safety Interlock System

This unit is equiped 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:

- Blade engagement lever is in the engaged position, OR
- Gear speed selector lever is in gear.

Test 2 — Engine SHOULD crank if:

- Blade engagement lever is in the disengaged position, AND
- Gear selector lever is in NEUTRAL position

Test 3 — Engine should SHUT OFF if:

- Operator releases the operator presence handles with the blade engagement lever in the engaged position, OR
- Operator releases the operator presence handles with the gear selector lever in gear.

Test 4 — Blade Brake Check:

Mower blades and mower drive belt should come to a complete stop within seven (7) seconds after blade engagement lever is moved to the disengaged position (or operator releases the operator presence handles). If mower drive belt does not stop within seven (7) seconds, see your dealer.

NOTE: Once the engine has stopped, blade engagement lever must be in the disengaged position, steering levers must be locked in the parking brake position, and the gear selector lever must be in the NEUTRAL position 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.

Safety Icons

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:

⚠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 serious injury or death.**

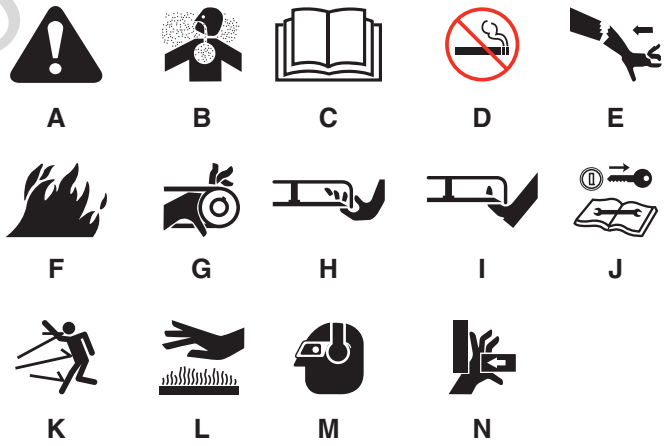
⚠CAUTION

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

NOTICE

This message presented without the alert symbol indicates a situation where the unit or property could be damaged.

Safety Icons



A) Alert; B) Toxic Fumes; C) Read the Manual; D) Open Flame Hazard; E) Kickback; F) Fire Hazard; G) Amputation: Rotating Parts; H) Amputation: Hand in Blade; I) Amputation: Foot in Blade; J) Remove Key Before Servicing; K) Thrown Objects; L) Hot Surface; M) Wear Protective Gear; N) Pinch Point

Features and Controls

Identification Numbers

North American Models

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

Record your model / serial number and engine serial numbers on the space provided for easy access. These numbers can be found in the locations shown.

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

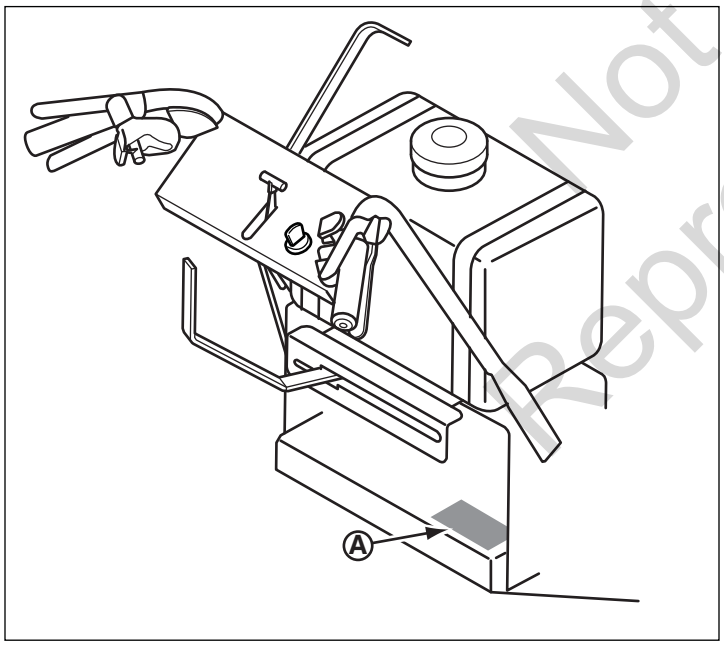
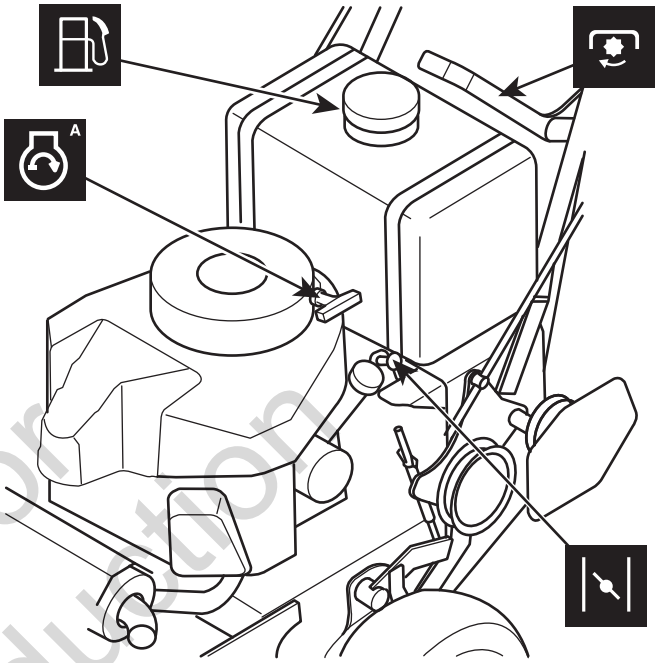


Figure 1. Identification Numbers
A. Identification Tag

Control Functions

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



Recoil Starter

The recoil starter handle is used to start the engine.

Fuel Tank Cap

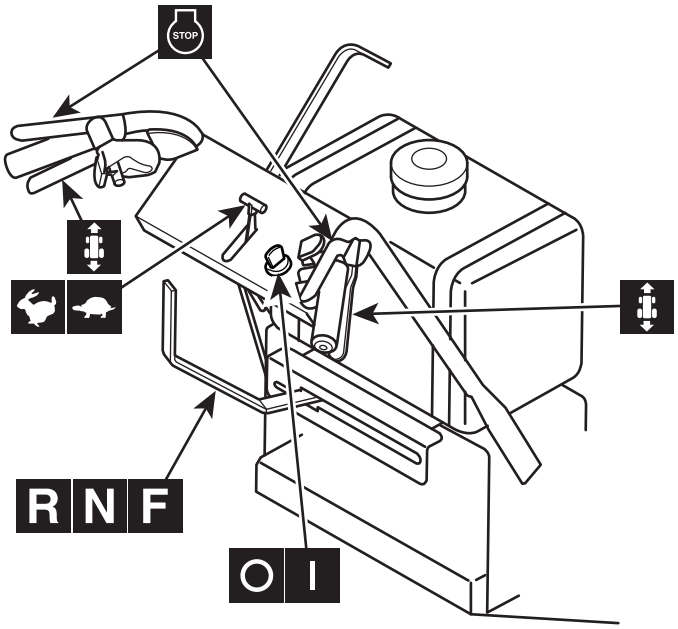
To remove the cap, turn counterclockwise.

Blade Engagement Handle

The blade engagement handle engages and disengages the mower. Push the handle forward and down to engage the mower, and pull the handle back and up to disengage the mower.

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 the knob DOWN to open the choke.



Engine Kill / Operator Presence Handles

These handles are a major factor in the safety interlock system of the mower. Both handles are tied together so depressing one handle depresses both. The operator must depress the handles in order to deactivate the engine kill system. Handles must be depressed to disengage the parking brake and engage the PTO switch.

Steering Levers

These levers are used to steer the unit.

Gently squeezing the right steering lever will turn the unit right. Gently squeezing the left steering lever will turn the unit left.

Squeezing both levers together will slow the unit by declutching the drive belts and engaging the brake.

Throttle Control

The throttle controls the engine speed. Move the throttle control forward towards the FAST position to increase the engine speed and back towards the SLOW position to decrease the engine speed. Always operate at FULL throttle.

R N F Gear Selector Lever

This unit is equipped with a 6-speed gearbox. This lever controls the ground speed of the mower.

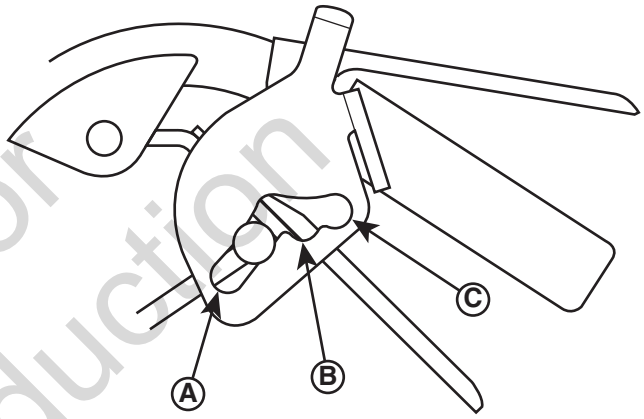
From the neutral position, moving the lever toward the right engages the FORWARD TRAVEL gears. The higher the number gear selected, the faster the mower will travel. From the neutral position, pushing the lever down and to the left engages the REVERSE TRAVEL gear.

O I Ignition Switch

The ignition switch starts and stops the engine, it has two positions:

OFF Stops the engine

RUN Rotate the ignition switch to the RUN position before pulling on the starter rope to start the engine.



Neutral Lock / Parking Brake Plates

These multi-positional plates control the position of the steering levers and will disengage the power to the ground drive belts and engage the parking brake.

A. **Drive Position** - Positioning this steering levers in this position will allow the machine to be driven.
B. **Neutral Lock Position** - Positioning the steering levers in this position will lock the mower in neutral.
C. **Parking Brake Position** - Positioning the steering levers in this position will engage the parking brake of the machine.

To position the steering levers in the neutral lock position, squeeze both steering levers and pull the plate backwards until it locks in the steering lever in the neutral lock position.

To position the steering levers in the parking brake position, squeeze both steering levers and pull the plate backwards until it locks in the steering levers in the parking brake position.

NOTE: When disengaging the steering levers from either the neutral lock or parking brake position with the ground speed selector lever in gear, release both steering levers gradually and evenly to prevent the unit from lunging forward or reverse.

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 unit.
- Become familiar with all of the controls and how to stop the unit.
- Drive in an open area without mowing to become accustomed to the unit.

Checks Before Starting

- Check that crankcase is filled to full mark on the engine oil dipstick (**A, Figure 2**). See the engine Operator's Manual for instructions and oil recommendations.
- Fill the fuel tank (**B**) with fresh fuel. Refer to engine manual for fuel recommendations.
- Make sure all nuts, bolts, screws and pins are in place and tight.
- Check the tire pressures. See *Check Tire Pressures*.

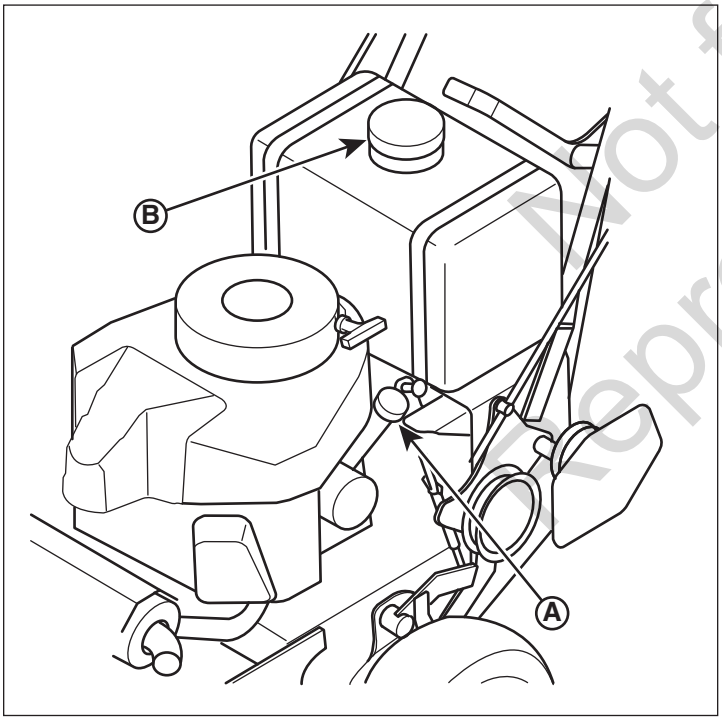


Figure 2. Prestart Checks

⚠WARNING

Operating on steep slopes can be dangerous.

- Select slow ground speed before driving onto a slope.
- Mow across the face of slopes, not up and down, use caution when changing directions and DO NOT START OR STOP ON A SLOPE.

⚠WARNING

- Before leaving the operator's position for any reason, engage the parking brake, disengage the blades, stop the engine and remove the key.
- To reduce fire hazard, keep the engine, unit 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

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

Starting the Engine

1. Make sure that the steering levers are locked in the parking brake position, the blade engagement lever is in the disengaged position and the ground speed selector lever is in neutral.
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 RUN.
4. Grasp the recoil starter handle and pull slowly until resistance is felt and then pull rapidly. (You may have to pull several times before the engine starts. If the engine fails to start within a reasonable number of attempts, discontinue and check engine manual for further instructions.
5. 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 unit.

6. **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 MOWER.*

Stopping the Mower

1. Gently squeeze both steering levers and pull the lock plates backwards to lock the steering levers in the parking brake position.
2. Pull the blade engagement lever up and backwards to disengage the blades.
3. Return the gear selector lever to neutral.
4. Release the operator presence handles.
5. Move the throttle control to mid-throttle position and turn the ignition key to OFF. Remove the key.

Driving the Mower

Before attempting to drive the mower make sure you have read the Features and Controls section and understand the location and function of the controls.

For normal use, the throttle should be kept fully open and the ground speed of the machine determined by the gear selector lever. When transporting the machine or when loading or unloading from a truck or trailer, partial throttle should be used to slow the reaction time of the controls and reduce noise.

Practice maneuvering the machine at a slow engine speed on level ground with the blades disengaged until you are familiar with the controls.

To Move Forward

1. Gently squeeze both steering levers and pull the lock plates backwards to lock the steering levers in the NEUTRAL position.
2. Select the appropriate forward ground speed gear.
3. Depress the operator's presence handles to deactivate the safety interlock system.
4. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forward.
5. Release both steering levers gradually and evenly to prevent the unit from lunging forward.

To Slow or Stop Machine

1. Gently squeeze both steering levers evenly to slow the machine.
2. Continue to squeeze the steering levers and the pull the lock plates backwards to lock the steering levers in the parking brake position.

To Move Backward

Reverse gear is "reverse assist" only, the operator must pull the unit backwards.

1. Gently squeeze both steering levers and pull the lock plates backwards to lock the steering levers in the NEUTRAL position.
2. Select reverse with the gear selector lever.
3. Depress the operator's presence handles to deactivate the safety interlock system.
4. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forward.
5. Release both steering levers gradually and evenly to prevent the unit from lunging backwards.

Turning the Machine

NOTE: Always reduce speed before attempting to turn.

Turning Left:

Gently squeeze the left hand steering lever. A sharp or gentle turn is determined by the amount of forced applied to the steering lever.

Turning Right:

Gently squeeze the right hand steering lever. A sharp or gentle turn is determined by the amount of forced applied to the steering lever.

Changing Gears

1. Gently squeeze both steering levers and pull the lock plates backwards to lock the steering levers in the neutral position.
2. Select the desired gear using the gear selector lever.
3. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forwards.
4. Release both steering levers gradually and evenly to prevent the unit from lunging forwards or backwards.

Mowing

Before mowing, set cutting height as described in *Cutting Height Adjustment.*

1. Make sure that the blade engagement lever is in the disengaged position.
2. Start the engine (see *Starting the Engine*).
3. Set the throttle control to FULL.
4. Depress the operator's presence handles to deactivate the safety interlock system.
5. Engage the blades by pushing the blade engagement lever forward and down.
6. Begin mowing. See *Mowing Recommendations* for tips on mowing patterns, lawn care, and trouble shooting information.
6. When finished, disengage the blades by pulling the blade engagement lever up and back.
7. Stop the engine (see *Stopping The Engine*).

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

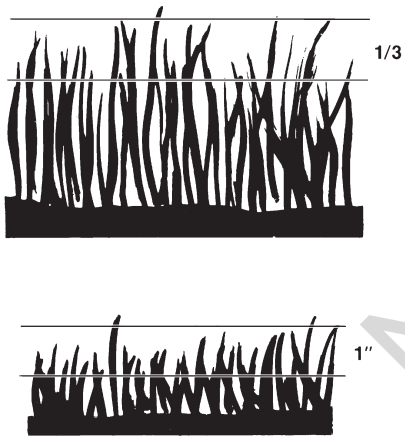
Often cutting height is a matter of personal preference. Typically, you should mow the grass when it is is between

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).

Tall Grass Requires Incremental Cutting

For extremely tall grass, set the cutting height at maximum for the first pass (**A, Figure 3**), and then reset it to the desired height and mow a second (**B**) or third time.

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

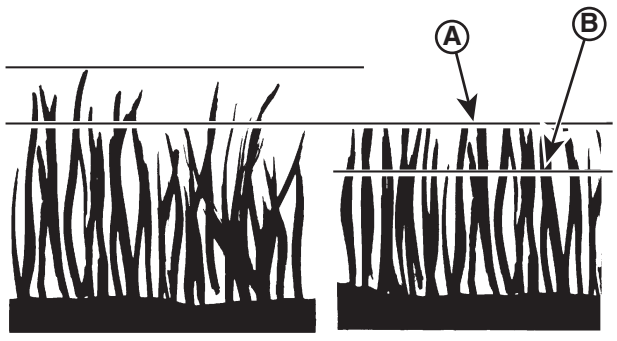


Figure 3. Incramental Cutting

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

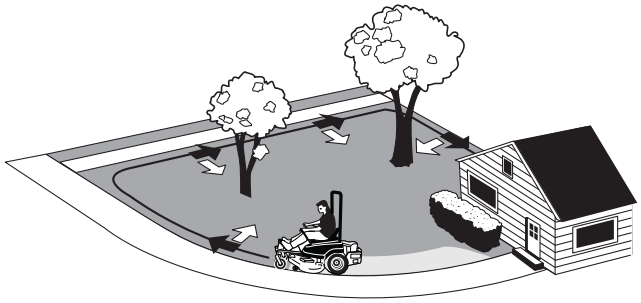
Always start mowing on a smooth, level area.

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.

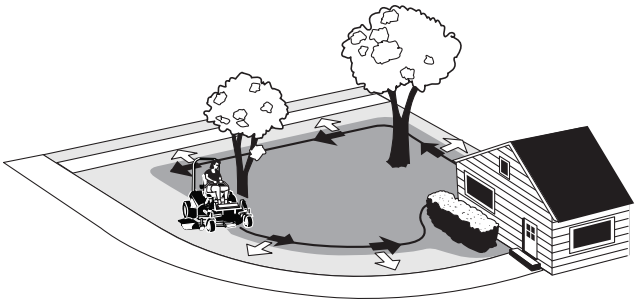
1. Cut long straight strips overlapping slightly.
2. Where possible, change patterns occasionally to eliminate matting, graining or a corrugated appearance.
3. For a truly professional cut, mow across the lawn in one direction, then recut the lawn by mowing perpendicular to the previous cut.

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 that 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 to high to cut. Even more than normal mowing, mulching requires that the grass be dry and the the appropriate amount is cut.

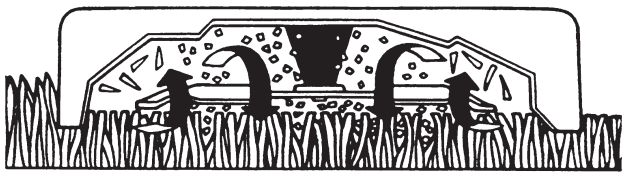
Do not use the mower as a mulching mower during the first two or three mowings in the spring. The long grass blades, quick growth, and often wetter conditions are more suitable for broadcasting (side-discharging) or grass bagging operation.

Engine Speed & Ground Speed for Mulching:

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

How Much Grass to Mulch:

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



Pushing the Mower by Hand

NOTICE

Towing the units will cause gearbox and drive belt damage. Do NOT use another vehicle to push or pull this unit.

1. Make sure that the blade engagement lever is disengaged, lock the steering levers in the Neutral lock position, shift the gear selector lever to NEUTRAL turn off the ignition and remove the key.
2. The mower can now be pushed by hand.

Check Tire Pressures

Tire pressure should be check periodically, and maintained at the levels shown in the 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, improve cut quality and extend tire life.

Tire	Size	Pressure
Rear	13 X 5 - 6	15 psi (1,72 bar)
Front	9 X 3.5 - 4	N/A (Flat Free Tire)

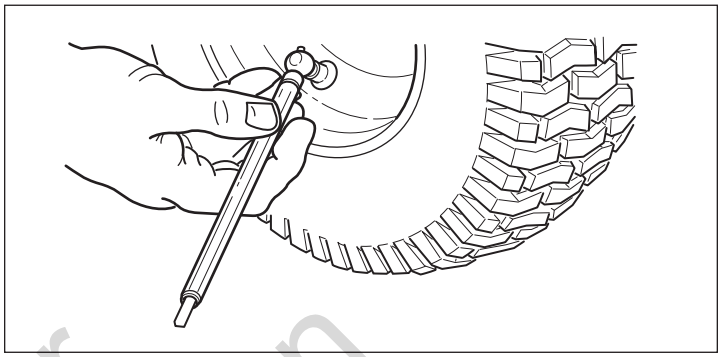


Figure 4. Checking Tire Pressure

Cutting Height Adjustment

The cutting height is adjustable from 1-1/4” (3.2 cm) to 4-1/2” (11.4 cm) by adjusting the axle position, the number of spacers below the caster arm and the number of blade spacers below each spindle.

Refer to the Cutting Height Adjustment table and select the cutting height range in the left hand column which corresponds with the range of cutting heights you will use the most. Adjustments within this range can be made by adjusting the number of spacers below the caster arm and the number of blades spacer below each spindle.

After selecting the desired cutting range, see *Adjusting the Axle Position, Adjusting the Number of Spacers Below the Caster Arm* and *Adjusting the Number of Blade Spacers Below Each Spindle* and make adjustments to obtain the specific cutting height.

Cutting Height Adjustment

Cutting Height Range	Axle Position	Number of Spacers Below Caster Arm	Number of Spacers Below Spindle				
			4	3	2	1	0
1-1/4 - 2-1/4” (3.2 - 5.72 cm)	A	0	1-1/4” (3.2 cm)	1-1/2” (3.8 cm)	1-3/4” (4.4 cm)	2” (5.1 cm)	2-1/4” (5.72 cm)
1-5/8 - 2-5/8” (4.1 - 6.7 cm)	B	0	1-5/8” (4.1 cm)	1-7/8” (4.8 cm)	2-1/8” (5.4 cm)	2-3/8” (6 cm)	2-5/8” (6.7 cm)
1-3/4 - 2-3/4” (4.4 - 7 cm)	B	1	1-3/4” (4.4 cm)	2” (5.1 cm)	2-1/4” (5.72 cm)	2-1/2” (6.4 cm)	2-3/4” (7 cm)
2 - 3” (5.1 - 7.6 cm)	C	0	2” (5.1 cm)	2-1/4” (5.72 cm)	2-1/2” (6.4 cm)	2-3/4” (7 cm)	3” (7.6 cm)
2-1/4 - 3-1/4” (5.72 - 8.3 cm)	C	1	2-1/4” (5.72 cm)	2-1/2” (6.4 cm)	2-3/4” (7 cm)	3” (7.6 cm)	3-1/4” (8.3 cm)
2-3/8 - 3-3/8” (6 - 8.6 cm)	C	2	2-3/8” (6 cm)	2-5/8” (6.7 cm)	2-7/8” (7.3 cm)	3-1/8” (7.9 cm)	3-3/8” (8.6 cm)
2-1/8 - 3-1/8” (5.4 - 7.9 cm)	D	0	2-1/8” (5.4 cm)	2-3/8” (6 cm)	2-5/8” (6.7 cm)	2-7/8” (7.3 cm)	3-1/8” (7.9 cm)
2-1/2 - 3-1/2” (6.4 - 8.9 cm)	D	1	2-1/2” (6.4 cm)	2-3/4” (7 cm)	3” (7.6 cm)	3-1/4” (8.3 cm)	3-1/2” (8.9 cm)
2-3/4 - 3-3/4” (7 - 9.5 cm)	D	2	2-3/4” (7 cm)	3” (7.6 cm)	3-1/4” (8.3 cm)	3-1/2” (8.9 cm)	3-3/4” (9.5 cm)
2-7/8 - 3-7/8” (7.3 - cm)	D	3	2-7/8” (7.3 cm)	3-1/8” (7.9 cm)	3-3/8” (8.6 cm)	3-5/8” (9.2 cm)	3-7/8” (9.8 cm)
3 - 4” (7.6 - 10.2 cm)	E	2	3” (7.6 cm)	3-1/4” (8.3 cm)	3-1/2” (8.9 cm)	3-3/4” (9.5 cm)	4” (10.2 cm)
3-3/8 - 4-3/8” (8.6 - 11.1 cm)	E	3	3-3/8” (8.6 cm)	3-5/8” (9.2 cm)	3-7/8” (9.8 cm)	4-1/8” (10.5 cm)	4-3/8” (11.1 cm)
3-1/2 - 4-1/2” (8.9 - 11.4 cm)	E	4	3-1/2” (8.9 cm)	3-3/4” (9.5 cm)	4” (10.2 cm)	4-1/4” (10.8 cm)	4-1/2” (11.4 cm)

Adjusting the Axle Position

Desired cutting range can be achieved by adjusting the axle position.

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Chock the front tires of the unit.
3. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forward.
4. Remove the steering levers from the pivot plate by removing the hair pins from the barrel nuts (**A, Figure 18**) .
5. Loosen but do not remove the axle pivot bolts (**A, Figure 5**) and the axle position bolts (**B**).
6. Position a jack so that it is centered under the rear of the engine deck (**C**).

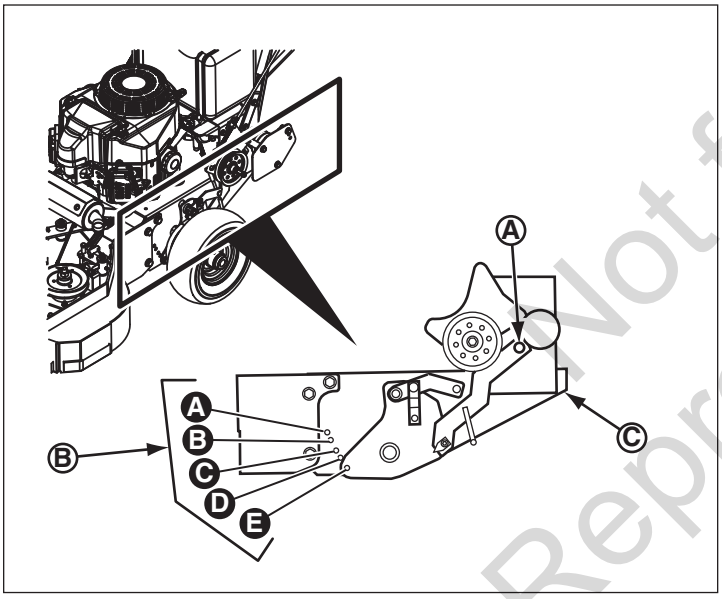


Figure 5. Adjusting the Axle Position (Left Side Shown with Tire and Pulley Guard Removed)

7. Using the jack, raise the rear of the engine deck up enough to remove the axle position bolts.
8. Using the jack, raise or lower the rear of the engine deck so that the two axle position bolts can be reinstalled in the desired hole location.
9. Tighten the axle position bolts.
10. Tighten the axle pivot bolts.
11. Lower the unit and remove the jack.
12. Reinstall the steering levers into the pivot plate and secure by installing the hair pins into the barrel nuts.
13. Check the *Brake Adjustment* and *Steering Lever Adjustment*.

Adjusting the Number of Spacers Below the Caster Arm

After adjusting the axle position it may be necessary to adjust the number of spacers below the caster arm in order to achieve the desired cutting height.

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Push down on the handles to raise the front of the machine.
3. Have an assistant place jack stands underneath the front of the deck to support it in the air.
4. Remove the quick pin (**A, Figure 6**) from the caster (**B**) and remove the caster from the caster arm (**C**).

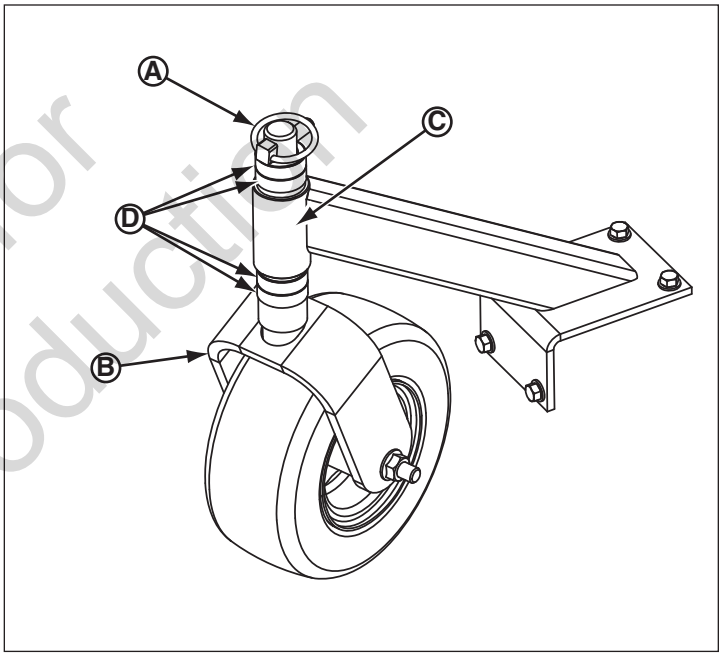


Figure 6. Adjusting the Number of Spacers Below the Caster Arm

5. Adjust the number of spacers (**D**) below the caster arm to achieve the desired cutting height per the Cutting Height Adjustment Table to correspond with the selected axle position
6. Install the remaining spacers on top of the caster arm.
7. Reinstall the quick pin.
8. Repeat for the other caster arm.

Adjusting the Number of Blade Spacers Below Each Spindle

After adjusting the axle position and the number of spacers below the caster arms it may be necessary to adjust the number of blade spacers below each spindle in order to achieve the desired cutting height.

The same number of blade spacers installed below each spindle must be used on all spindles in order to achieve a level cut.

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Push down on the handles to raise the front of the machine.
3. Have an assistant place jack stands underneath the front of the deck to support it in the air.
4. Using tools, hold the blade bolt (**A, Figure 7**) and loosen and remove the spindle nut (**B**).
5. Adjust the number of spacers (**C**) installed between the spindle (**D**) and the blade (**E**) to achieve the desired cutting height per the Cutting Height Adjustment Table to correspond with the selected axle position and the number of spacers below each caster.
6. Install the remaining spacers above the spindle washer (**F**).
7. Torque the blade bolt to 70 ft. lbs. (94 Nm).
8. Repeat the process for all of the blades on the unit.

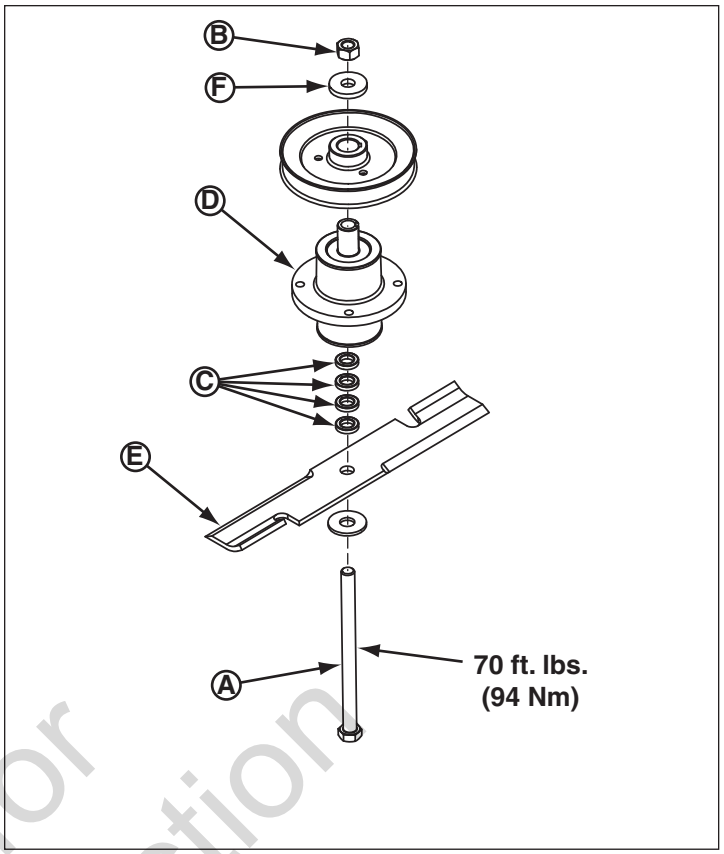


Figure 7. Adjusting the Number of Blade Spacers Below Each Spindle

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.
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.

⚠ WARNING

Fuel and its vapors are extremely flammable and explosive.

Fire or explosion can cause severe burns or death.

- Never store the unit, with gasoline in the 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.

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.

Maintenance Schedule

The following schedule should be followed for normal care of your mower and mower deck. You will need to keep a record of your operating time. Determining operating time is easily accomplished by multiplying the time it takes to do one job by the number of times you've done the job, or you can install an hour meter.

MOWER MAINTENANCE
Before Each Use
Check Safety Interlock System
Check Mower's Brakes
Check Mower for Loose Hardware
Every 25 Hours
Check Mower Drive Belt Tension
Check Gearbox Drive Belt Tension
Every 100 Hours or Annually*
Check Mower Blade Stopping Time
Clean Deck & Check / Replace Mower Blades
Lubricate Mower**
Check Tire Pressure

* Whichever comes first.

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

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

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

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

Maintenance Procedures

⚠ WARNING

Remove the ignition key prior to performing maintenance on the unit.

- To avoid serious injury, perform maintenance on the tractor or mower only when the engine is stopped and the parking brake is engaged.
- Always remove the ignition key, disconnect the spark plug wire and fasten it away from the plug before beginning the maintenace, to prevent accidental starting of the engine.

Checking / Adding Fuel

To add fuel:

1. Remove the fuel cap (**A, Figure 8**).
2. Fill the tank to 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

The fuel filter is located in the fuel line between fuel tank and carburetor, near the fuel pump. If filter is dirty or clogged, replace as follows:

1. Place a container below the fuel filter (**B**) to catch spilled fuel.
2. Using pliers, open and slide hose clamps from fuel filter.
3. Remove hoses from filter.
4. Install new filter in proper flow direction in fuel line.
5. Secure with hose clamps.

⚠ WARNING

Fuel and its vapors are extremely flammable and explosive.

Fire or explosion can cause severe burns or death.

- 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.

Change Oil & Filter

1. Warm engine by running for a few minutes. (Refer to the engine operator's manual for oil and filter replacement instructions.)
2. Park the machine on a flat, level surface.
3. Place a small pan under the engine deck, below the drain hole to catch the oil.
4. Using the appropriate tools, remove the drain cap (**C**), and drain the engine oil
5. After draining, replace the drain cap and wipe up any spilled oil.
6. Place an absorbent shop cloth under the engine oil filter (**D**). Remove the engine oil filter and replace with a new one.
7. Remove the oil dipstick (**E**) and refill with oil. (Refer to the engine operator's manual for oil recommendations.)
8. Remove the shop cloth and wipe up any spilled oil.

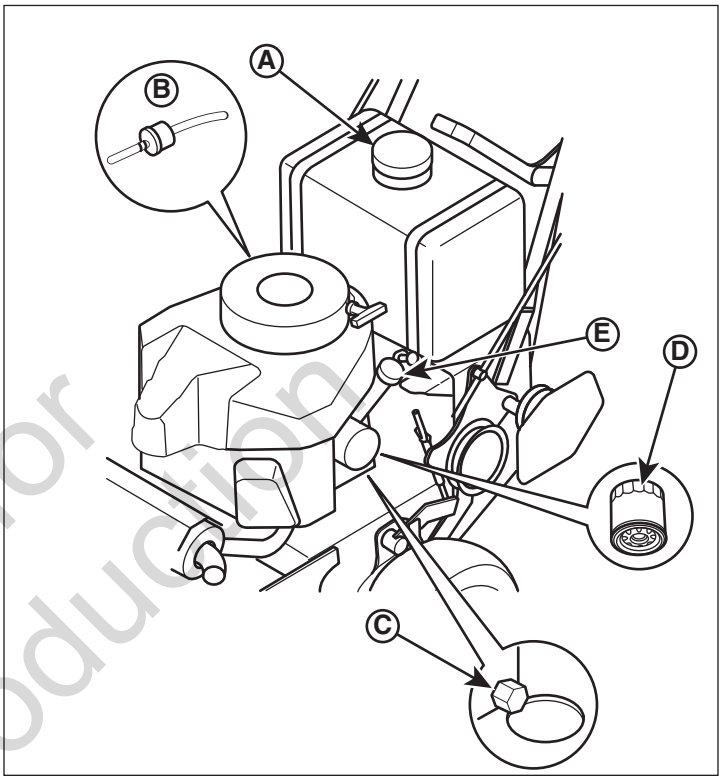


Figure 8. Engine Oil Drain

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

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

Engine Maintenance

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

Lubrication

Lubricate the unit at the locations shown in the following figures as well as the following lubrication points.

Grease:

- front caster wheel axles
- front caster wheel pivots
- blade spindles
- brake arm pivots
- idler arm pivots

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:

- operator presence handle pivots
- steering lever pivots
- lock plates pivots
- discharge chute pivots

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.

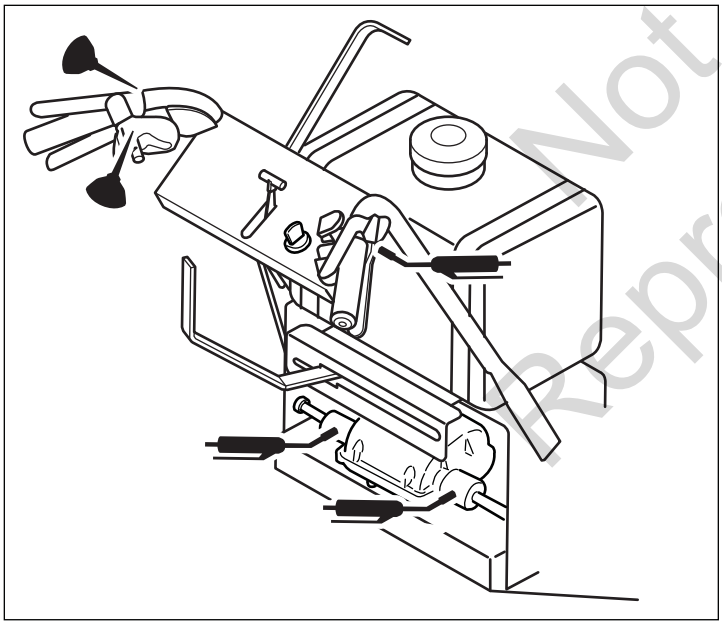


Figure 9. Lubricate Handle Bar Pivots & Gearbox Couplers

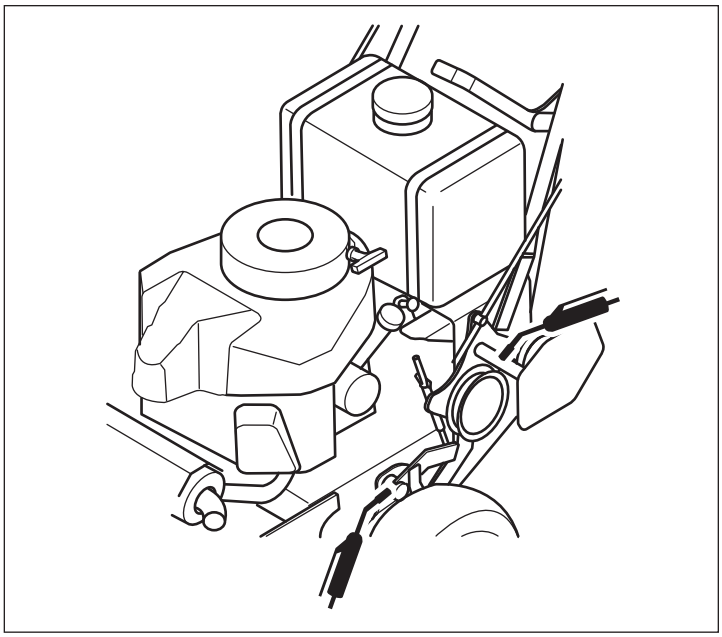


Figure 10. Lubricate Brake Levers

Lubricating the Front Casters:

The front casters should be lubricated daily.

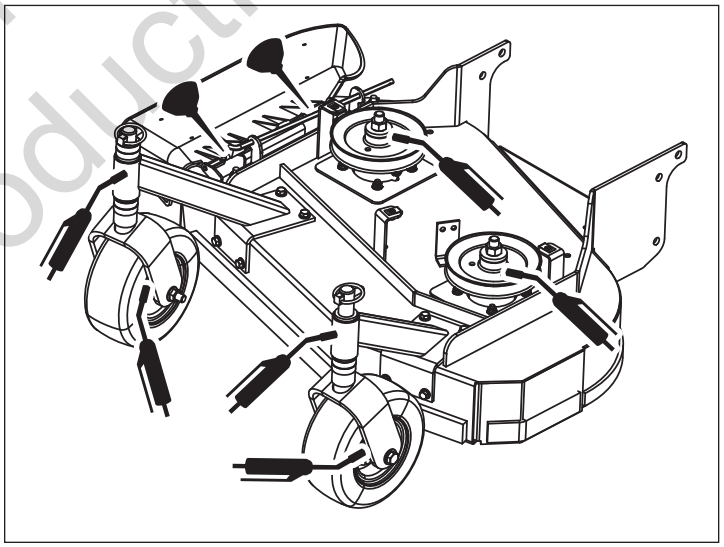


Figure 11. Mower Deck Lubrication Points

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 two (2) 15/16" wrenches to remove the nut from the top of the blade bolt (Figure 12).

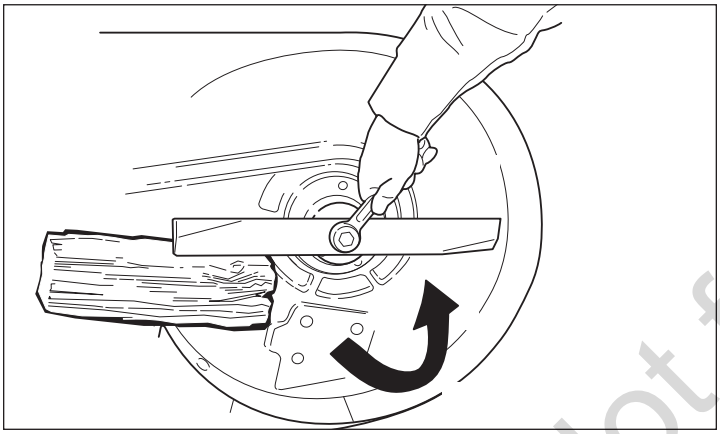


Figure 12. Loosening the Mower Blade for Removal

Inspecting the Mower Blades

⚠ 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 blades.
- Never weld or straighten bent mower blades.

1. Remove the mower blade from the unit. See Removing the Blade.
2. Inspect the mower blade (Figures 13 & 14). 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 (**A, Figure 13**).

   B.) The air lifts are excessively eroded (**A & B, Figure 14**) and the notch (**B**) 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*.

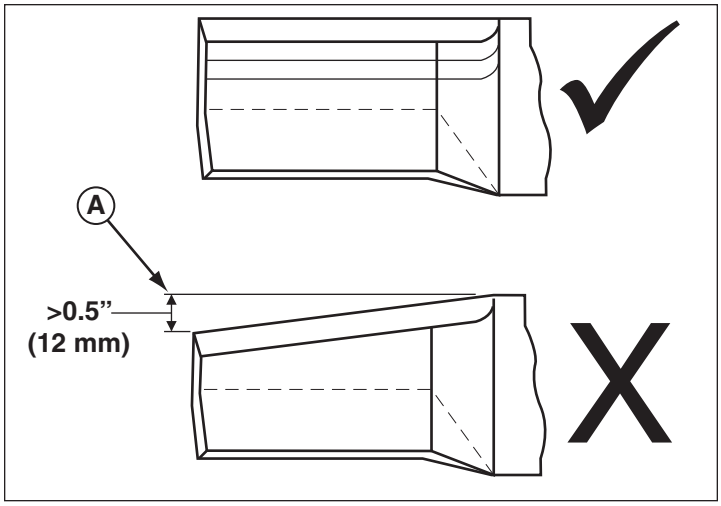


Figure 13. Inspecting the Mower Blade Tips

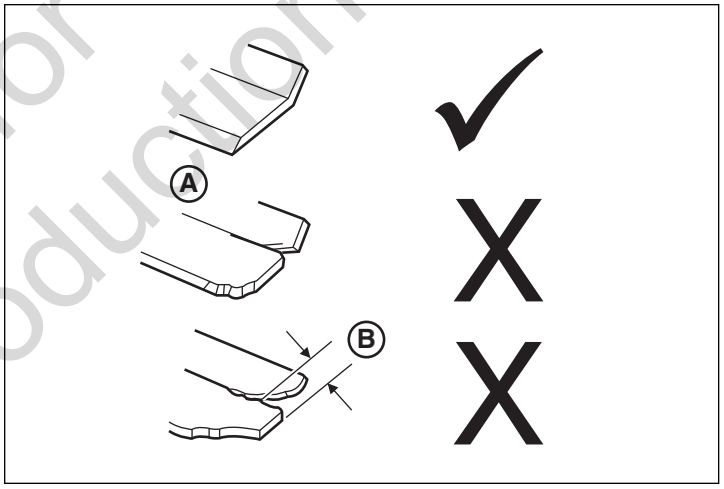


Figure 14. Inspecting the Mower Blade Air Lifts

Sharpening the Mower Blade

⚠CAUTION

Avoid injury! Mower blades are sharp.

- Always wear gloves when handling mower blades or working near 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 15**) 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.

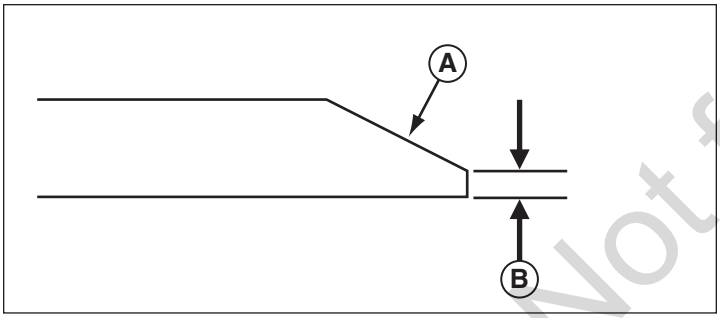


Figure 15. Sharpening the Mower Blade

Balancing the Mower Blades

⚠CAUTION

Avoid injury! Keep mower blades balanced.

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

1. Clean the mower blade to remove any dried grass or other debris.
2. See Figure 16. 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.

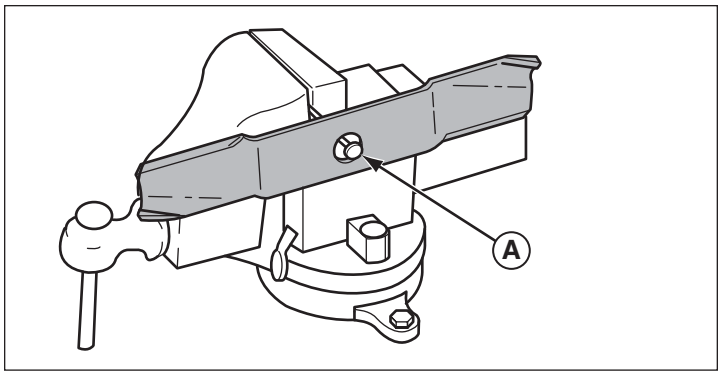


Figure 16. Balancing the Mower Blade

Reinstalling the Mower Blades

1. Reinstall each mower blade with the air lifts pointing up towards the mower deck as shown in Figure 17. The blade spacers, blade, washer and blade bolt must be installed in the same order that they were removed. Torque to 70 ft. lbs (94 Nm).

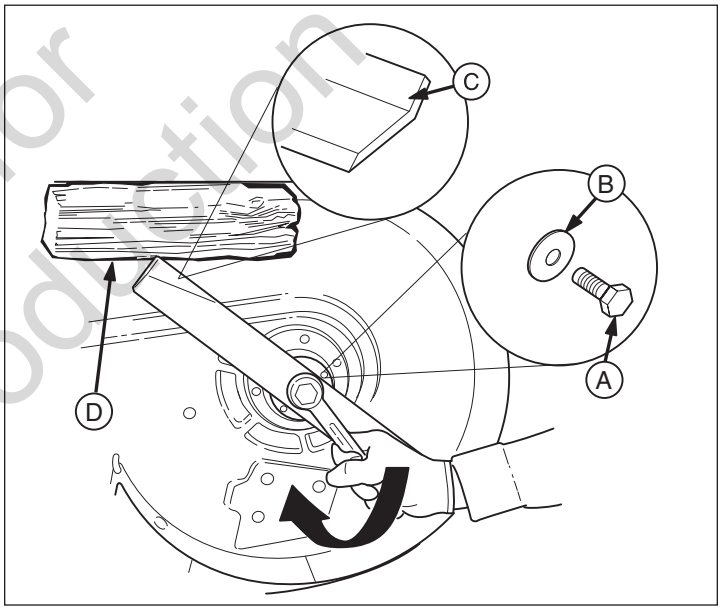


Figure 17. Tightening the Mower Blade for Installation

Steering Lever Adjustment

There should be approximately 2-7/8” (7,3 cm) of clearance in between the handle bars and the steering levers when the lock plates are in the drive position. (see Figure 18).

To adjust:

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the gear selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Chock the front tires of the unit to prevent movement.
3. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forward.
4. Remove the hair pin that retains the barrel nut (**A, Figure 18**) in the pivot plate.
5. Turn the barrel nut up or down the rod and reinstall the barrel nut and hair pin.
6. Remeasure the distance and repeat adjustment until desired measurement is achieved.
7. Repeat adjustment procedure for other side of machine.

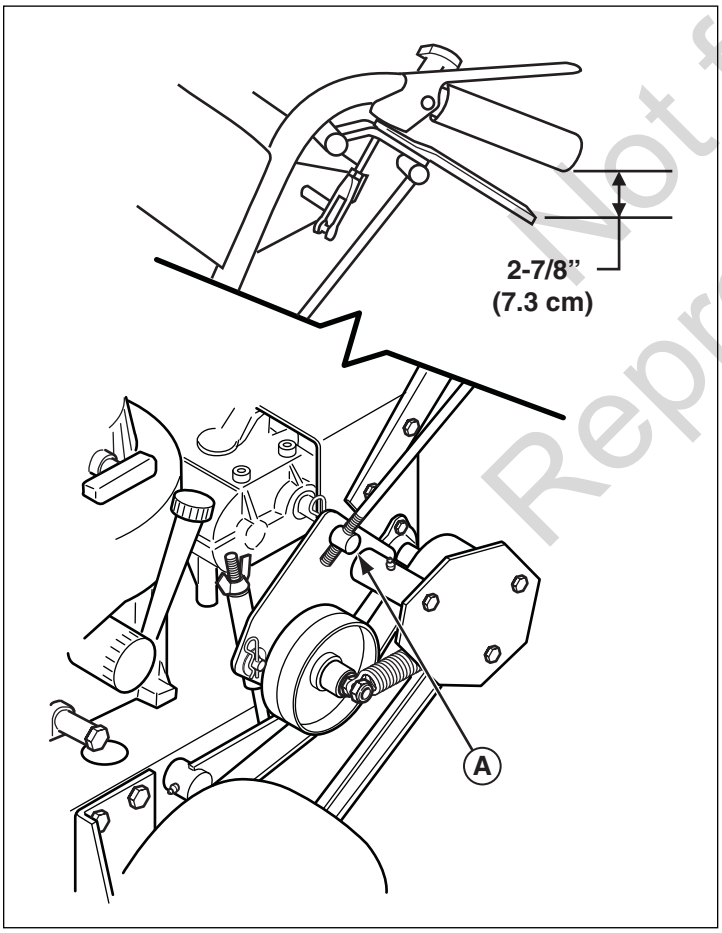


Figure 18. Steering Lever Adjustment

Brake Adjustment

While squeezing the steering levers, there should be 1/4” (0,6 cm) of clearance in between the handle bars and steering levers (see Figure 19).

To adjust:

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the gear selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Turn the wing nut (**A, Figure 19**) to adjust the distance between the handle bars and steering levers.
3. Squeeze the steering levers and remeasure the distance between the handle bars and the steering levers. Repeat adjustment until desired measurement is achieved.
4. Repeat adjustment procedure for other side of machine.

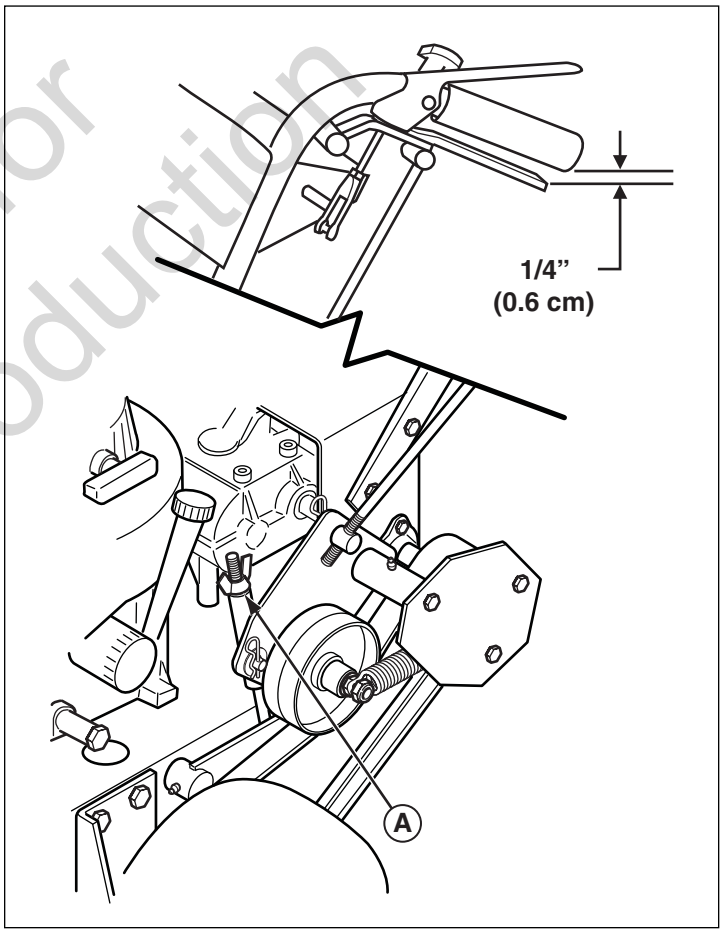


Figure 19. Brake Adjustment

Blade Engagement Belt Service

NOTICE
To avoid damaging belts, **do not pry belts over pulleys.**

Check Belt Tension

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Remove the deck guard.
3. Move the blade engagement lever to the ENGAGED position.
4. Check the blade engagement belt (**A, Figure 20**) tension. The proper belt tension is when a 10 lbs. (13,5 Nm) force is required to deflect the belt 1/2" (1,3 cm) between the spindle pulleys.
4. If the belt tension is not correct, loosen the jam nut (**B**) and turn the turnbuckle (**C**) to adjust the belt tension.
5. Once adjustment is achieved, retighten the jam nut.

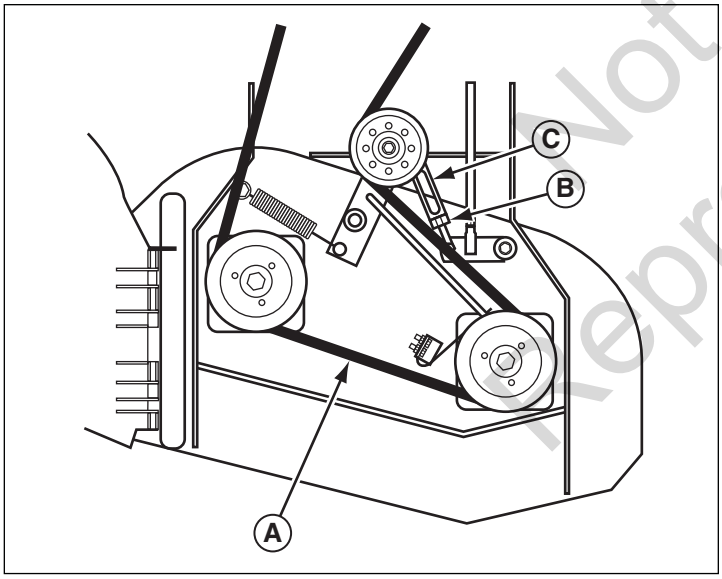


Figure 20. Check Belt Tension

Removal & Replacement

1. Remove the deck guard.
2. Move the blade engagement lever to the DISENGAGED position.
3. Loosen the jam nut (**B, Figure 20**) and rotate the turnbuckle until the belt is slack enough the remove from one of the spindle pulleys.
4. Remove the old belt and replace with a new one. Make sure the V-side of the belt runs in the pulley grooves (see Figure 20).
5. Move the blade engagement lever to the ENGAGED position.
6. Tighten the turnbuckle (**C**) until a 10 lbs. (13,5 Nm) force is required to deflect the belt 1/2" (1,3 cm) between the spindle pulleys (see Figure 20).
7. Tighten the jam nuts.
8. Reinstall the deck guard.
9. Run the mower under no-load condition for about 5 minutes to break-in the new belt and re-check the belt tension.

Blade Brake Adjustment

Checking the Alignment of Blade Brake

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Move the blade engagement lever to the DISENGAGED position.
3. Make sure that the blade brake pad (**A, Figure 21**) rests against the sheave of the pulley (**B**). If the blade brake pad is not properly aligned, loosen the brake spring mounting bolts (**A, Figure 22**) and properly align the blade brake pad.
4. Once proper alignment is achieved, retighten the brake spring mounting bolts.

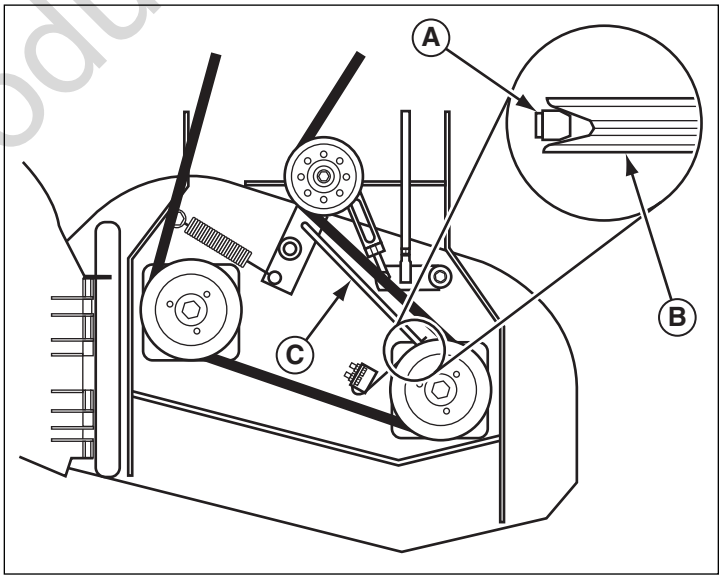


Figure 21. Check Belt Tension

Inspecting the Condition of the Blade Brake

The blade brake is an important safety feature of your mower and must be maintained accordingly. The blade brake is designed to stop the blades from rotating within seven (7) seconds of the blade engagement lever being moved the the DISENGAGED position. If the blades do not stop rotating within seven (7) seconds of the blade engagement lever being moved to the DISENGAGED position the mower should not be operated until it is repaired.

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Start the engine (See *Starting the Engine*).
3. Move the blade engagement lever to the ENGAGED position.
4. Allow the machine to run at full speed for a few moments then move the blade engagement lever to the DISENGAGED position.
5. Record the amount of time that it takes for the blades to completely stop rotating. The blade should stop rotating in under seven (7) seconds. If the blade does not stop rotating under seven (7) seconds continue with step #6.
6. Inspect the blade brake pad for signs of excessive wear. If excessive wear is determined the blade brake pad must be replaced. If excessive wear is not determined, the blade brake must be adjusted.

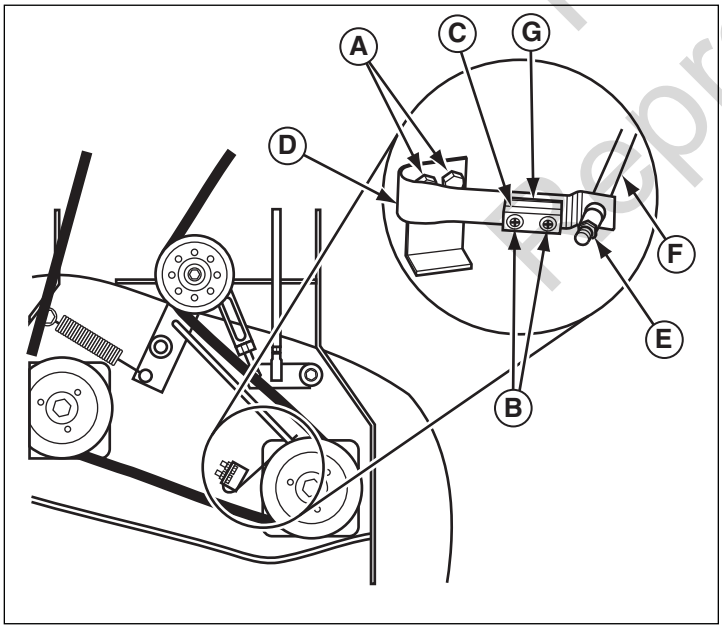


Figure 22. Adjusting the Blade Brake Clearance

Replacing the Blade Brake Pad

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Loosen the two screws (**B, Figure 22**) that secure the blade brake pad (**C**) and plate (**G**) to the blade brake spring (**D**).
3. Remove the blade brake pad and replace with a new one.
4. Reinstall the two screws to secure the blade brake pad and plate to the blade brake spring.

Adjusting the Engagement Blade Brake

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. With the blade engagement lever in the DISENGAGED position, measure the distance between the end of the bushing (**A, Figure 23**) and the nylock nut (**B**). This measurement should be between 1/8" to 3/16" (.32 cm to .48 cm). If the measurement is correct skip to Step # 4. If not, proceed with step # 3

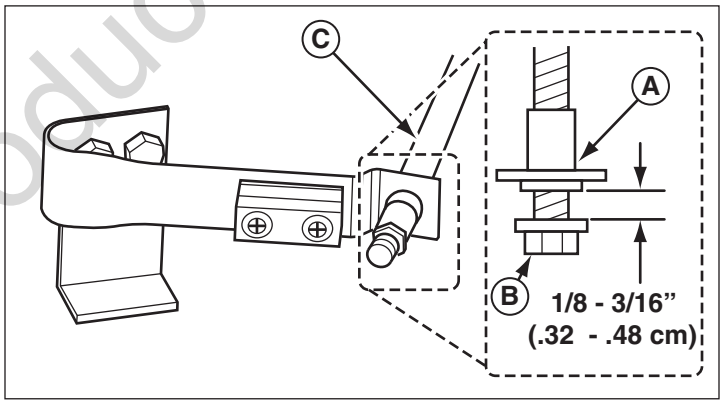


Figure 23. Adjusting the Engagement of the Blade Brake

3. Turn the nylock nut on the blade brake adjustment rod (**C**) to adjust the distance between the bushing an the nylock nut until a measurement between 1/8" (.32 cm) to 3/16" (.48 cm) is achieved.
4. Move the blade engagement lever to the ENGAGED position. Make sure that the blade brake pad does not contact any part of the pulley sheave.
5. Perform the *Inspecting the Condition of the Blade Brake Procedure* to make sure that the blades stop rotating within seven (7) seconds of the blade engagement lever being moved to the DISENGAGED position.

   If the blades does not stop rotating within this set time and the blade brake pad has been replaced and the engagement of the blade brake properly adjusted, see your dealer.

Transmission Drive Belt Service

Adjust Belt Tension

1. First check the belt tension (**A, Figure 24**). A 10 lbs (13,5 Nm) force is required to deflect the belt 3/16" (4,7 mm). See Figure 24.
2. Loosen the idler mount bolt (**B**) and slide the idler pulley (**D**) to adjust the belt tension. Retighten the mount bolt.

Removal & Replacement

1. Remove the blade engagement belt (see *Blade Engagement Belt Service* for instructions).
2. Loosen the idler mount bolt (**B**) to remove the tension on the belt and then remove the belt from the gearbox input pulley (**C**).
5. Completely remove the drive belt and replace with a new one. Make sure the V-side of the belt runs in the pulley grooves.
6. Tighten the idler mount bolt and check the belt tension. A 10 lbs. (13,5 Nm) force is required to deflect the belt 3/16" (4,7 mm). See Figure 24.
7. Reinstall the blade engagement belt (see *Blade Engagement Belt Service* for instructions).

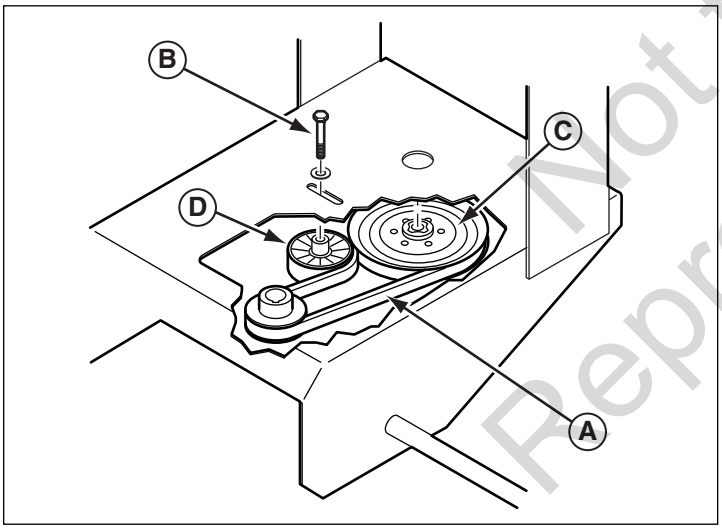


Figure 24. Transmission Drive Belt Adjustment

Drive Wheel Belt Pulley Scrapers

There are two drive wheel belt pulley scrapers (**A, Figure 25**) used on the machine to keep mud and grass from building up in the drive wheel belt pulleys. The pointed part of the scraper should be centered and as deep in the pulley groove as possible without rubbing at any point.

To adjust the position of the scraper:

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Loosen the two (2) jam nuts (**B**) on either side of the scraper.
3. Position the pointed part of the scraper so that it is centered in the pulley groove and as deep in the pulley groove as possible with rubbing at any point.
4. Retighten the jam nuts.

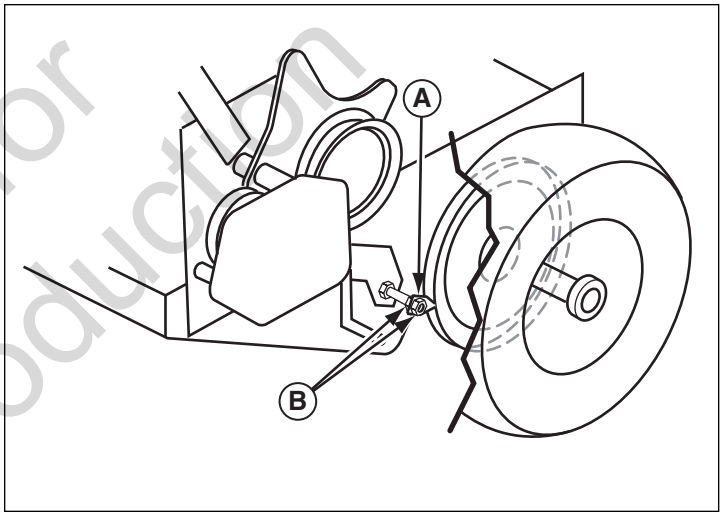


Figure 25. Drive Wheel Belt Pulley Spacers

Belt Guide Adjustment

The adjustable belt guide (**A, Figure 26**) is located on the left front corner of the engine deck of the machine. The proper adjustment of the belt guide will help prevent the belt from falling off the pulleys when the blades are disengaged.

Inspection

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. The adjustable belt guide should contact the edge of the belt. See Figure 26.

Adjustment

1. Loosen the two (2) bolts installed in the adjustable belt guide.
2. Position the belt guide so that the belt guide contacts the edge of the belt with the blades disengaged.
3. Retighten the two (2) bolts to secure the adjustable belt guide in place.
4. Move the blade engagement lever to the ENGAGED position.
5. Make sure that the adjustable belt guide does not contact the belt. The belt guide must contact the belt when the blades are disengaged and clear the belts when the blades are engaged.

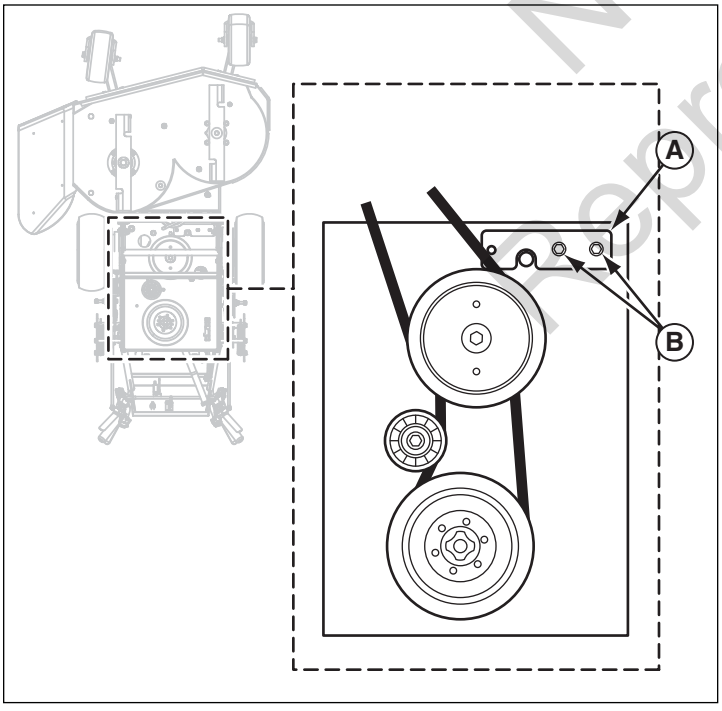


Figure 26. Adjusting the Belt Guides

Belt Traction Adjustment

The amount of belt traction can be adjusted to meet specific mowing conditions by changing the hole that the spring is anchored in.

The belt traction adjustment must be the same for both sides of the unit.

Position A: This position is the factory preset for the normal amount of belt traction and is recommended for flat, level areas.

Position B: This position is for a medium amount of belt traction and is recommended for use on small hills.

Position C: This position is the maximum amount of belt traction and is recommended for use on hills and/or slippery conditions.

Adjustment

1. Park the machine on a flat, level surface such as a concrete floor. Lock the steering levers in the parking brake position, move the speed selector lever to the NEUTRAL position, disengage the blades, turn off the ignition and remove the key.
2. Chock the tires to prevent movement.
3. Disengage the lock plates by squeezing both steering levers and pushing the lock plates forward.
4. Remove the nylock nut (**A, Figure 27**) and spring (**B**) from the spring anchor bolt (**C**).
5. Remove the anchor bolt, washer (**D**) and flange nut (**E**) from the belt guard (**F**).
6. Install the anchor bolt, washer and flange nut in the desired position on the belt guard.
7. Reinstall the spring and secure with nylock nut.
8. Check the *Steering Lever Adjustment* and *Brake Adjustment* and readjust if necessary.

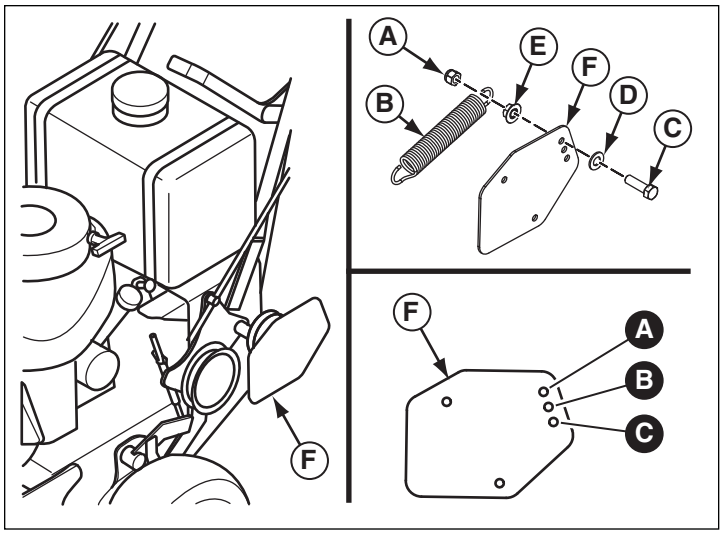


Figure 27. Steering Lever Comfort Adjustment

Troubleshooting

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.

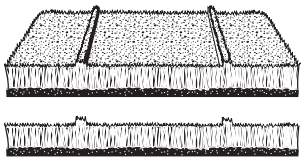
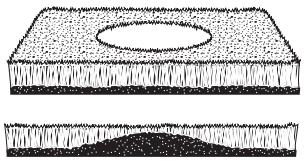
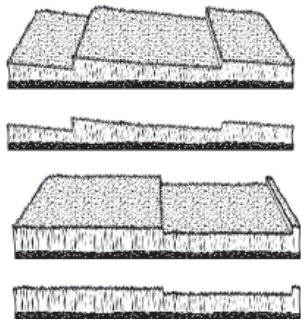
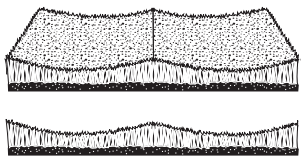
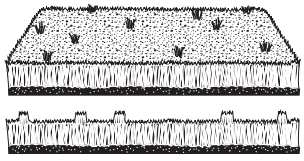
The troubleshooting chart below lists the most common problems, their causes and remedies.

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.

Troubleshooting Chart		
Troubleshooting the Mower		
Problem	**Cause**	**Remedy**
Engine will not turnover or start.	Blade engagement lever in the ENGAGED position.	Move lever to DISENGAGED position.
	Out of fuel.	If engine is hot, allow it to cool, then refill the fuel tank.
	Engine flooded.	Move choke control to closed position.
	Wiring loose or broken.	Visually check wiring & replace broken or frayed wires. Tighten loose connections.
	Safety interlock switch faulty.	Replace as needed. See your dealer.
	Spark plug(s) faulty, fouled or incorrectly gapped.	Clean and gap or replace. See engine manual.
	Water in fuel.	Drain fuel & refill with fresh fuel.
	Gas is old or stale.	Drain fuel & refill with fresh fuel.
	Gear Selector Lever is not in the NEUTRAL position.	Move the Gear Selector Lever to the NEUTRAL position.
	Operator Presence Levers are released.	Depress the Operator Presence Levers.
Engine starts hard or runs poorly.	Fuel mixture too rich.	Clean air filter. Check choke adjustment.
	Spark plug(s) faulty, fouled or incorrectly gapped.	Clean and gap or replace. See engine manual.
Engine knocks.	Low oil level.	Check / add oil as required.
	Using wrong weight oil.	See engine manual.
Excessive oil consumption.	Engine running too hot.	Clean engine fins, blower screen and air cleaner.
	Using wrong weight oil.	See engine manual.
	Too much oil in crankcase.	Drain excess oil.
Engine exhaust is black.	Dirty air filter.	Replace air filter. See engine manual.
	Engine choke control is in closed position.	Open choke control.
Engine runs, but mower will not drive.	Gear Selector Lever not in gear.	Move the Gear Selector Lever to a gear.
	Belt is broken.	See *Transmission Drive Belt Service*.
	Brake is not fully released.	See your dealer.
Brake will not hold.	Brake is incorrectly adjusted.	See your dealer.

Troubleshooting the Mower continued		
Problem	Cause	Remedy
Mower drives or handles poorly (Pulls to the left or the right.)	Steering levers incorrectly adjusted.	Adjust Steering levers. See *Steering Lever Adjustment* and *Brake Adjustment*
	Improper tire inflation.	See *Checking Tire Pressure*.
	Mud or grass buildup in drive wheel pulley sheaves.	Check that scrapers are positioned correctly. See *Drive Wheel Belt Pulley Scrapers*.
	Worn drive belts.	Replace drive belts. IMPORTANT: Wheel drive belts should be replaced as a set.
	Linkages are not pivoting freely.	Lubricate the pivot linkage adjustments. See *Lubrication*.

Troubleshooting the Mower Deck		
Problem	**Cause**	**Remedy**
Mower drive belt slips or fails to drive.	Blade engagement lever linkages are adjusted incorrectly.	See your dealer.
	Pulleys or belt greasy or oily.	Clean as required.
	Belt tension not properly adjusted.	Adjust belt tension.
	Belt stretched or worn.	Replace belt.
	Mower drive belt broken.	Replace belt.
Engine stalls easily with blades engaged.	Engine speed too slow.	Set to full throttle.
	Ground speed too fast.	Decrease the ground speed of the mower.
	Cutting height set too low.	Cut tall grass at maximum cutting height at first pass.
	Discharge chute plugged with cut grass.	Cut grass with discharge pointing towards previously cut area.
Excessive mower vibration.	Blade mounting bolts are loose.	Tighten to 70 ft lbs (94 Nm).
	Mower blades, spindle shafts, or pulleys are bent.	Check and replace as necessary.
	Mower blades are out of balance.	Remove, sharpen and balance blades. See *Maintenance* Section.
	Belt installed incorrectly.	Reinstall correctly.
Excessive belt wear or breakage	Bent or rough pulleys.	Repair or replace.
	Using incorrect belt.	Replace with correct belt.

Troubleshooting Common Cutting Problems		
Problem	**Cause**	**Remedy**
Streaking	Blades are not sharp.	Sharpen your blades.
	Blades are worn down to far.	Replace your blades.
	Engine speed is too slow.	Always mow at full throttle.
	Ground speed is too fast.	Slow down.
	Deck is plugged with grass.	Clean out the mower.
	Not overlapping cutting rows enough.	Overlap your cutting rows.
	Not overlapping enough when turning.	When turning your effective cutting width decreases–overlap more when turning.
Scalping	Lawn is uneven or bumpy.	Roll or level the lawn.
	Mower deck cutting height is set too low.	Raise the cutting height.
	Ground speed is too fast.	Slow down.
	Deck is not leveled correctly.	Correctly level the deck.
	Tire pressure is low or uneven.	Check and inflate the tires.
Stepped Cutting	Deck is not leveled correctly.	Level the deck correctly.
	Tires are not properly inflated.	Check and inflate the tires.
	Blades are damaged.	Replace the blades.
	Deck shell is damaged.	Repair or replace the deck.
	Mower spindle is bent or loose.	Repair or replace the spindle.
	Blades are installed incorrectly.	Reinstall the blades correctly.
Uneven Cutting	Deck is not leveled correctly.	Level the deck correctly.
	Blades are dull or worn.	Sharpen or replace the blades.
	Blades are damaged.	Replace the blades.
	Deck is clogged with grass clippings.	Clean out the deck.
	Deck shell is damaged.	Repair or replace the deck.
	Mower spindle is bent or loose.	Repair or replace the spindle.
	Blades are installed incorrectly.	Reinstall the blades correctly.
	Tires are not properly inflated.	Check and inflate the tires.
Stinger	Blades are not sharp or nicked.	Sharpen your blades.
	Blades are worn down too far.	Replace your blades.
	Engine speed is too slow.	Always mow at full throttle.
	Ground speed is too fast.	Slow down.
	Deck is plugged with grass.	Clean out the mower.

Specifications

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

ENGINE	
15 Gross HP† Kawasaki	
Make	Kawasaki
Model	FS541V-DS01-S
Displacement	36.8 Cu. in (603 cc)
Oil Capacity	1.8 US qt (1.7 L) w/ filter
Electrical System	5A DC rectified clutch coil
16 Gross HP† Kawasaki	
Make	Kawasaki
Model	FS481V-BS01-S
Displacement	36.8 cu. in (603 cc)
Oil Capacity	1.8 US qt. (1.7 L)
Electrical System	5A Clutch Coil
16 Gross HP* Briggs & Stratton	
Make	Briggs & Stratton
Model	305775-0128-E1
Displacement	29.2 cu. in (479 cc)
Oil Capacity	1.8 US qt. (1.7 L)
Electrical System	12 Volt Starter
CHASSIS	
Fuel Tank	Capacity: 5 gal (18.73 L)
Rear Wheels	Size: 13 X 5 - 6; Inflation Pressure: 15 psi (1,72 bar)
Front Wheels	Size: 9 X 3.5 - 4; Inflation Pressure: N/A (Flat free tire)

†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.

***Power Ratings:** The gross power rating for individual gas engine models is labeled in accordance with SAE (Society of Automotive Engineers) code J1940 (Small Engine Power & Torque Rating Procedure), and rating performance has been obtained and corrected in accordance with SAE J1995 (Revision 2002-05). Torque values are derived at 3060 RPM; horsepower values are derived at 3600 RPM. The gross power curves can be viewed at 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-to-engine variability. Given the wide array of products on which engines are placed, the gas 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 Series engine.

TRANSMISSION	
Make	Peerless
Model	700-070A
Drive Speeds	5 forward speeds; 1 reverse
Speed Range	1st: 2.0 mph (3.2 km/h)
	2nd: 2.7 mph (4.4 km/h)
	3rd: 3.5 mph (5.6 km/h)
	4th: 4.1 mph (6.6 km/h)
	5th: 6.2 mph (10 km/h)
	Reverse: 3.1 mph (5 km/h)
DIMENSIONS	
Overall Length	69” (175 cm)
Overall Width	33” (84 cm) deflector up; 42” (107 cm) deflector down
Overall Height	42” (107 cm)
Weight (apx.)	416 lbs (189 kg)
BELTS	
Transmission Belt	5021736
Drive Wheel Belts	5103006
Blade Engagement Belt	5102013
BLADES	
Mower Blade	5020843

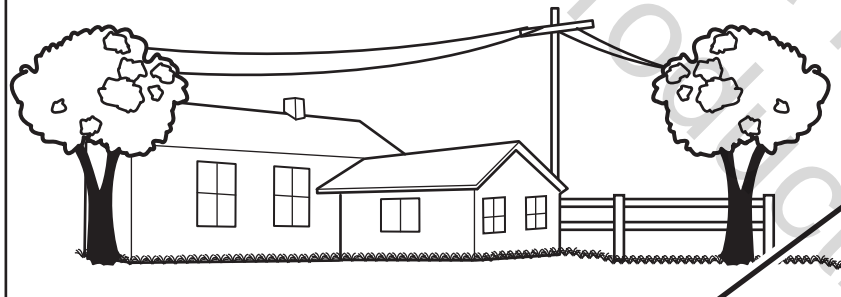
SLOPE INDENTIFICATION GUIDE

❶ FOLD ALONG APPROPRIATE DOTTED LINE

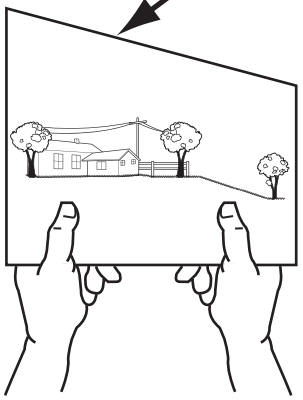
THIS IS A 15 DEGREE SLOPE

THIS IS A 10 DEGREE SLOPE

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



❸ COMPARE THE ANGLE OF THE FOLD TO THE ANGLE OF THE SLOPE



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.

Notes

Notes

Snapper Pro - a division of Briggs & Stratton Power Products Group, LLC.
Owner's Limited Warranty Information

(Effective 08/01/2007)

Thank you for purchasing Snapper Pro commercial mowing equipment. Please take a few minutes to read this limited warranty information. It contains all the information you will need to have your Snapper Pro mower repaired in the unlikely event that a breakdown covered by this limited warranty should occur.

Owner's Responsibilities - As a condition to our obligations under this limited warranty, you shall have read the operator's manual and you shall have completed and submitted to Snapper Pro, within 20 days from the date of purchase, the Snapper Pro Product Registration. You must properly service and maintain your Snapper Pro product as described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense. The Snapper Pro equipment, including any defective part covered by this limited warranty, must be returned to an authorized Snapper Pro dealer within the warranty period for warranty service. This limited warranty extends only to equipment operated under normal conditions and in accordance with Snapper Pro' instructions.

Warranty Start Date - The limited warranty coverage begins on the day you buy your new Snapper Pro commercial mowing equipment. An authorized Snapper Pro dealer will assist you in filling out a Snapper Pro Product Registration with specific information for the model you purchase and your personal information, which must be returned to Snapper Pro.

Limited Warranty - The limited warranty, set forth below, is a written guarantee by Snapper Pro, during the warranty period, to repair or replace parts which have a substantial defect in materials or workmanship. The warranty is "limited" because it is for a specified period of time, applies to the original purchaser only, and is subject to other restrictions.

SNAPPER PRO LIMITED WARRANTY

Snapper Pro warrants, in accordance with the provisions below, to the original purchaser only, for the periods described below that the commercial mower shall be free from substantial defects in material or workmanship under normal use and service. If you wish to file a claim under this limited warranty, you must provide prompt notice of your claim to an authorized Snapper Pro dealer during the warranty period. Snapper Pro' obligation under this limited warranty is, at Snapper Pro' option, to repair or replace any part or parts of the mower, which, in the judgment of Snapper Pro, are found to be defective and covered by this limited warranty. An authorized Snapper Pro dealer will repair or replace the defective part or parts, at the dealer's place of business, at no charge for the labor or parts. This limited warranty applies only to mowers sold in the United States and Canada and is subject to the following limitations.

Covered Parts	**Warranty Period**
All Mowers	2-years (24 months) from date of retail purchase by the original purchaser for parts & labor (90 days for rental mowers) (Except as noted below*)
*Belts, Tires, Brake Pads And Hoses, Battery, Blades	90 days from date of retail purchase by the original purchaser
*Attachments	1 year from date of retail purchase by the original purchaser
*Engine	If the engine manufacturer provides any warranty on the mower's engine, Snapper Pro will assign that warranty to the original purchaser of the mower if such assignment is reasonably practicable. Please refer to the engine manufacturer's warranty statement, if any, that is included in the owner's packet. We are not authoized to handle warranty adjustments or repairs on engines. Snapper Pro offers **NO WARRANTY** on mower engines. Snapper Pro does not guarantee or represent that any engine manufacturer will comply with the terms of its warranty.

Items and Conditions Not Covered

This warranty does not cover, and Snapper Pro makes **NO WARRANTY** regarding, the following:

- Mowers or their parts if a complete and accurate Snapper Pro Product Registration has not been received by Snapper Pro.
- Loss or damage to person or property other than that expressly covered by the terms of this limited warranty.
- Pickup and delivery charges and risk of loss or damage in transit to and from any authorized Snapper Pro dealer.
- Any damage or deterioration due to normal use, wear and tear, or environmental or natural elements, or exposure.
- Cost of regular maintenance service or parts, such as but not limited to, filters, fuel, lubricants, tune-up parts, and adjustments.
- Claims arising due to failure to follow Snapper Pro' written instructions, or improper storage or maintenance.
- Any repairs necessary due to use of parts, accessories or supplies, including gasoline, oil or lubricants, incompatible with the mowing equipment, or other than as recommended in the operator's manual or other written operational instructions provided by Snapper Pro.
- Use of non-Snapper Pro approved parts or accessories.
- Any overtime or other extraordinary repair charges or charges relating to repairs or replacements.
- Rental of like or similar replacement equipment during the period of any warranty, repair or replacement work.
- Loss of revenue, time or use of the mowing equipment.
- Travel, telephone or other communication charges.
- Damage from continued use of defective mowing equipment.
- Freight charges on replacement parts.
- Any mowing equipment or part which, in the judgment of Snapper Pro, has been altered or tampered with in any way or has been subjected to misuse, abuse, abnormal usage, unauthorized repair, neglect or accident, damage in transit, or has had the serial numbers altered, effaced or removed.
- Any equipment, part or item not mentioned under "Covered Parts," above.

General Conditions

Snapper Pro is continually striving to improve its products, and therefore reserves the right to make improvements or changes without incurring any obligation to make changes or additions to products sold previously. Any oral or written description of Snapper Pro products is for the sole purpose of identifying the products and shall not be construed as an express warranty. No warranty claim shall give rise to a right for the purchaser to cancel or rescind any sale. No person is authorized to make any warranty or assume for Snapper Pro any liability not strictly in accordance with this limited warranty. Any assistance Snapper Pro provides to or procures for the purchaser outside the terms, limitations or exclusions of this limited warranty will not constitute a waiver of the terms, limitations or exclusions of this limited warranty, nor will such assistance extend or revive the limited warranty. Snapper Pro will not reimburse the purchaser for any expenses incurred by the purchaser in repairing, correcting or replacing any defective products except for those incurred with Snapper Pro' prior written permission and in accordance with this limited warranty.

Snapper Pro' sole and exclusive liability with respect to this limited warranty, and the purchaser's exclusive remedy, shall be repair or replacement as set forth herein. All warranty work must be performed by an authorized Snapper Pro dealer using only Snapper Pro approved replacement parts. **SNAPPER PRO SHALL HAVE NO LIABILITY FOR ANY OTHER COST, LOSS OR DAMAGE, INCLUDING BUT NOT LIMITED TO, ANY INCIDENTAL, COMPENSATORY, INDIRECT, PUNITIVE, SPECIAL OR CONSEQUENTIAL LOSS OR DAMAGE. SNAPPER PRO' AGGREGATE LIABILITY WITH RESPECT TO A DEFECTIVE PRODUCT OR PART SHALL BE LIMITED TO AN AMOUNT EQUAL TO THE MONIES PAID BY THE PURCHASER FOR THAT DEFECTIVE PRODUCT OR PART. THIS LIMITED WARRANTY, AND SNAPPER PRO' OBLIGATIONS HEREUNDER, ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. SNAPPER PRO SHALL NOT BE LIABLE TO THE PURCHASER, OR TO ANYONE CLAIMING UNDER THE PURCHASER, FOR ANY OTHER OBLIGATIONS OR LIABILITIES, INCLUDING, BUT NOT LIMITED TO, OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR WARRANTY, NEGLIGENCE OR OTHER TORT OR ANY THEORY OF STRICT LIABILITY, WITH RESPECT TO SNAPPER PRO PRODUCTS OR SNAPPER PRO' ACTS OR OMISSIONS OR OTHERWISE.**

It is the express wish of the parties that this agreement and any related documents be drafted in English. Il est la volonté expresse des parties que cette convention et tous les documents s'y rattachent soient rédigés en anglais.

SNAPPER PRO™

Operator's Manual

SW5 Series

Walk-Behind Mowers

BRIGGS & STRATTON POWER PRODUCTS GROUP, LLC
5375 NORTH MAIN STREET
MUNNSVILLE, NY 13409
800 933 6175