

# Print Vendor Instructions

## How to use this file Operator's Manuals

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- Covers:**
- FRONT COVER is present at the beginning of the file.
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# OPERATOR'S MANUAL



## Legacy / 2000 / 2900 Series

### 20HP Tractors

Mfg. No.	Description
1692870	Legacy, 20HP Hydro
1693114	Legacy, 20HP Hydro (Export)
1693124	2020, 20HP Hydro
1693132	2920, 20HP Hydro
1693219	Legacy, 20HP Hydro
1693220	2920, 20HP Hydro
1693221	2020, 20HP Hydro
1693250	Legacy, 20HP Hydro (Export)

### 20HP Liquid Cooled Tractors

Mfg. No.	Description
1692871	Legacy, 20HP LC Hydro
1693118	Legacy, 20HP LC Hydro (Export)
1693128	2020LC, 20HP LC Hydro
1693136	2920LC, 20HP LC Hydro

### 23HP Tractors

Mfg. No.	Description
1693764	Legacy, 23HP Hydro
1693769	2023, 23HP Hydro
1693770	2923, 23HP Hydro
1693771	Legacy, 23HP Hydro (Export)

### 24.5HP Tractors

Mfg. No.	Description
1693112	Legacy 24.5HP Hydro
1693120	Legacy 24.5HP Hydro (Export)
1693130	2024D, 24.5HP Hydro
1693138	2924D, 24.5HP Hydro
1693738	24.5HP Hydro

### 25HP Tractors

Mfg. No.	Description
1692872	Legacy, 25HP Hydro
1693116	Legacy, 25HP Hydro (Export)
1693126	2025, 25HP Hydro
1693134	2925, 25HP Hydro
1693561	Legacy, 25HP w/ Hydraulics
1693562	2025, 25HP Hydro w/ Hydraulics
1693563	2925, 25HP Hydro w/ Hydraulics

### 48" Mower Decks

Mfg. No.	Description
1692863	48" Mower Deck
1693122	48" Mower Deck
1693252	48" Mower Deck (Export)
1694138	48" Mower Deck

### 54" Mower Decks

Mfg. No.	Description
1693630	54" Mower Deck
1693632	54" Mower Deck
1693726	54" Mower Deck (Export)
1693728	54" Mower Deck (Export)
1694071	54" Mower Deck
1694364	54" Mower Deck
1694365	54" Mower Deck

### 60" Mower Decks

Mfg. No.	Description
1692860	60" Mower Deck
1693123	60" Mower Deck
1693253	60" Mower Deck (Export)
1694072	60" Mower Deck

**1717573-15**

(Supercedes 1717574, 1717575, 1718619,  
1718620, 1718621, & 1721025)

Rev. 6/2003

TP-100-2087-15-LG-SMA



# ***Simplicity***

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



## WARNING

Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.



# Safety Rules & Information



Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of unit, severe personal injury or death to you, or bystanders, or damage to property or equipment.

**This mowing deck is capable of amputating hands and feet and throwing objects.**

The triangle  in text signifies important cautions or warnings which must be followed.

## GENERAL OPERATION

- Read, understand, and follow all instructions in the manual and on the unit before starting.
- Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.
- Only allow responsible adults, who are familiar with the instructions, to operate the unit (local regulations can restrict operator age).
- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown by the blade(s).
- Be sure the area is clear of other people before mowing. Stop unit if anyone enters the area.
- Never carry passengers.
- Do not mow in reverse unless absolutely necessary. Always look down and behind before and while traveling in reverse.
- 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.
- Slow down before turning.
- Never leave a running unit unattended. Always disengage the PTO, set parking brake, stop engine, and remove keys before dismounting.
- Turn off the PTO switch to disengage the blades when not mowing.
- Stop engine before removing grass catcher or unclogging chute.
- Mow only in daylight or good artificial light.
- Do not operate the unit while under the influence of alcohol or drugs.
- Watch for traffic when operating near or crossing roadways.
- Use extra care when loading or unloading the unit into a trailer or truck.
- 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 injury.
- Keep in mind the operator is responsible for accidents occurring to other people or property.
- All drivers should seek and obtain professional and practical instruction.
- Always wear substantial footwear and trousers. Never operate when barefoot or wearing sandals.
- Before using, always visually check that the blades and blade hardware are present, intact, and secure. Replace worn or damaged parts.
- Never operate the machine with defective guards, or without safety protective devices in place.
- Disengage attachments before: refueling, removing an attachment, making adjustments (unless the adjustment can be made from the operator's position).
- When the machine is parked, stored, or left unattended, lower the cutting means unless a positive mechanical lock is used.
- Follow the manufacturer's recommendation for wheel weights or counterweights.
- Before leaving the operator's position for any reason, engage the parking brake, disengage the PTO, stop the engine, and remove the key.
- To reduce fire hazard, keep the unit free of grass, leaves, & excess oil. Do not stop or park over dry leaves, grass, or combustible materials.

## TRANSPORTING AND STORAGE

- When transporting the unit on an open trailer, make sure it is facing forward, in the direction of travel. If the unit is facing backwards, wind lift could damage the hood.
- Always observe safe refueling and fuel handling practices when refueling the tractor after transportation or storage.
- Never store the unit (with fuel) in an enclosed poorly ventilated structure. Fuel vapors can travel to an ignition source (such as a furnace, water heater, etc.) and cause an explosion. Fuel vapor is also toxic to humans and animals.
- Always follow the engine manual instructions for storage preparations before storing the tractor for both short and long term periods.
- Always follow the engine manual instructions for proper start-up procedures when returning the unit to service.
- Never store the unit or fuel container inside where there is an open flame or pilot light, such as in a water heater. Allow unit to cool before storing.

## 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 operate on it.

Control of a ride-on machine sliding on a slope will not be regained by the application of the brake. The main reasons for loss of control are: insufficient tire grip on the ground, speed too fast, inadequate braking, the type of machine is unsuitable for its task, lack of awareness of the ground conditions, incorrect hitching and load distribution.

### Do

- See your authorized dealer for recommendations of wheel weights or counterweights to improve stability.
- Mow up and down slopes, not across.
- Remove obstacles such as rocks, tree limbs, etc.
- Watch for holes, ruts, or bumps. Uneven terrain could overturn the unit. Tall grass can hide obstacles.
- Use slow speed. Tires may lose traction on slopes even through the brakes are functioning properly. Choose a low gear so that you will not have to stop or shift while on the slope.
- Use extra care with grass catchers or other attachments. These can change the stability of the unit.
- Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.
- Always keep unit in gear especially when traveling downhill. When clutching, release clutch slowly.

### Do Not

- Do not start or stop on a slope. If tires lose traction, disengage the blade(s) and proceed slowly straight down the slope.
- Do not turn on slopes unless necessary, and then, turn slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches, or embankments. The mower could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not try to stabilize the unit by putting your foot on the ground.
- Do not use grass catchers on steep slopes.
- Do not mow slopes you cannot back up.
- Do not shift to neutral and coast down hill.

## WARNING

Never operate on slopes greater than 17.6 percent (10°) which is a rise of 3-1/2 feet (106 cm) vertically in 20 feet (607 cm) horizontally.

When operating on slopes use additional wheel weights or counterweights. See your dealer to determine which weights are available and appropriate for your unit.

Select slow ground speed before driving onto slope. In addition to front and rear weights, use extra caution when operating on slopes with rear-mounted grass catcher.

Mow UP and DOWN the slope, never across the face, use caution when changing directions and **DO NOT START OR STOP ON SLOPE.**

### 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.

- Keep children out of the mowing area and under the watchful care of another responsible adult.
- Be alert and turn unit off if children enter the area.
- Before and during reverse operation, look behind and down for small children.
- Never carry children. They may fall off and be seriously injured or interfere with safe unit operation.
- Never allow children to operate the unit.
- Use extra care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

## TOWED EQUIPMENT

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

## EMISSIONS

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



# Safety Rules & Information

---

## SERVICE AND MAINTENANCE

- Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
  - a) Use only an approved container.
  - b) Never remove gas cap or add fuel with the engine running. Allow engine to cool before refueling. Do not smoke.
  - c) Never refuel the unit indoors.
- 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.
- Replace all fuel tank caps and fuel container caps securely.
- 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.
- 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.
- Keep nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If fuel is spilled on clothing, change clothing immediately.
- Maintain or replace safety and instruction labels as necessary.
- Never run the unit in an enclosed area where carbon monoxide fumes may collect.
- Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.
- Never tamper with safety devices. Check their proper operation regularly and make necessary repairs if they are not functioning properly.
- Keep unit free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Never make adjustments or repairs with the engine running unless specified otherwise in the engine manufacturer's manual.
- Do not remove the fuel filter when the engine is hot as spilled gasoline may ignite. Do not spread fuel line clamps further than necessary. Ensure clamps grip hoses firmly over the filter after installation.
- Do not use gasoline containing METHANOL, gasohol containing more than 10% ETHANOL, gasoline additives, or white gas because engine/fuel system damage could result.
- If the fuel tank must be drained, it should be drained outdoors.
- Replace faulty silencers/mufflers.
- 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.
- Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
- Check brake operation frequently. Adjust and service as required.
- Use only factory authorized replacement parts when making repairs.
- Always comply with factory specifications on all settings and adjustments.
- Only authorized service locations should be utilized for major service and repair requirements.
- Never attempt to make major repairs on this unit unless you have been properly trained. Improper service procedures can result in hazardous operation, equipment damage and voiding of manufacturer's warranty.
- On multiple blade mowers, take care as rotating one blade can cause other blades to rotate.
- Do not change engine governor settings or over-speed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- Disengage drive attachments, stop the engine, remove the key, and disconnect the spark plug wire(s) before: clearing attachment blockages and chutes, performing service work, striking an object, or if the unit vibrates abnormally. After striking an object, inspect the machine for damage and make repairs before restarting and operating the equipment.
- Never place hands near the hydro pump cooling fan when the tractor is running. Cooling fan is located on top of the transaxle.





# Identification Numbers

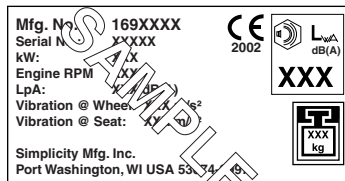


## North American Models



Tractor ID Tag

Mower ID Tag



## CE Models

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

Record your model name/number, manufacturer's identification numbers, and engine serial numbers in the space provided for easy access. These numbers can be found in the locations shown.

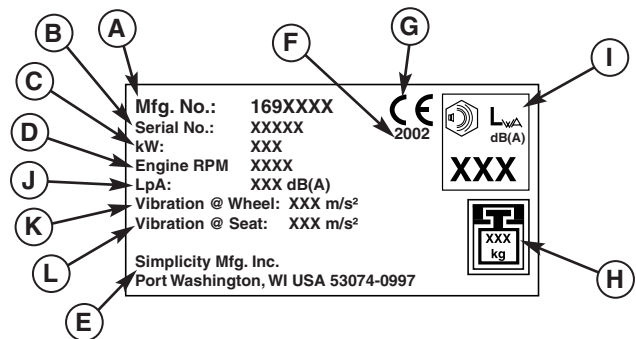
*NOTE: For location of engine identification numbers, refer to the engine owner's manual.*

CE Models: Place the extra copy of the identification tag in the manual

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

## CE IDENTIFICATION TAG MARKINGS

- A. Manufacturer's Identification Number
- B. Manufacturer's Serial Number
- C. Power Rating in Kilowatts
- D. Maximum Engine Speed in Rotations per Minute
- E. Manufacturer's Address
- F. Year of Manufacture
- G. CE Compliance Logo
- H. Mass of Unit in Kilograms
- I. Sound Power in Decibels \*\*\*
- J. Sound Pressure at Operator's Position in Decibels \*\*
- K. Vibration at the Steering Wheel \*
- L. Vibration at the Seat \*



This unit complies with European Harmonized Lawn Mower Standard EN 836, European Machinery Directive 98/37/EC, and European EMC Directive 89/336/EC

\* Tested according to EN 836:1997/A2:2001, EN 1032:1996, EN 1033:1995

\*\* Tested according to EN836:1997/A2:2001

\*\*\* Tested according to 2000/14/EC

*CE Models:  
Place copy of  
Identification Tag here.*

# Safety Rules & Information

## SAFETY DECALS

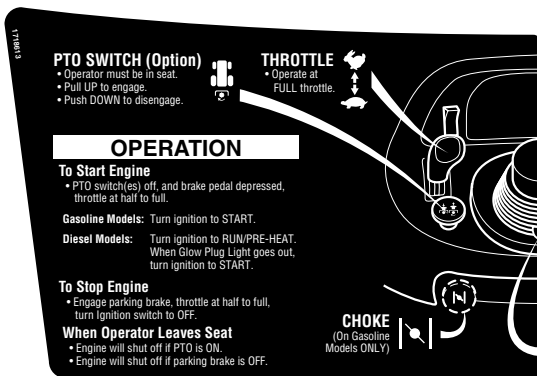
This unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

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.

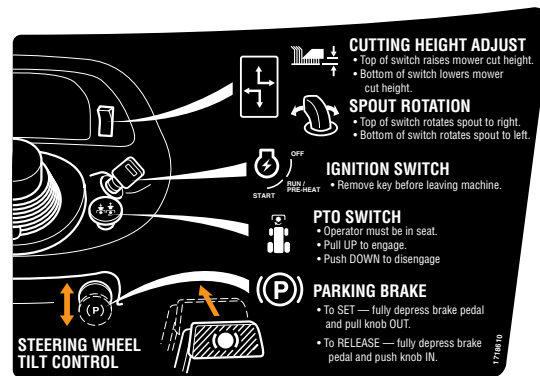
All DANGER, WARNING, CAUTION and instructional messages on your rider and mower should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety and it is important! The safety decals below are on your rider and mower.

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.



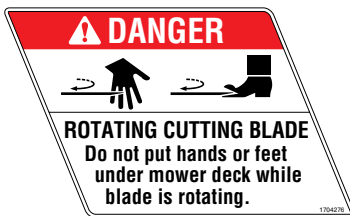
Decal - Operating Instructions Left Panel  
Part No. 1718613



Decal - Operating Instructions Right Panel  
Part No. 1718610



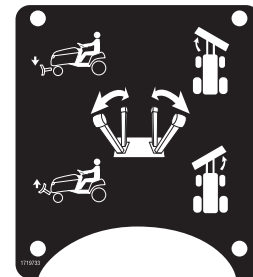
Decal - Operating Instructions Bottom Panel  
Part No. 1718199



Decal - Danger  
Part No. 1704276



Decal - Danger  
Part No. 1704277



Decal - Hydraulics (Optional)  
Part No. 1719733



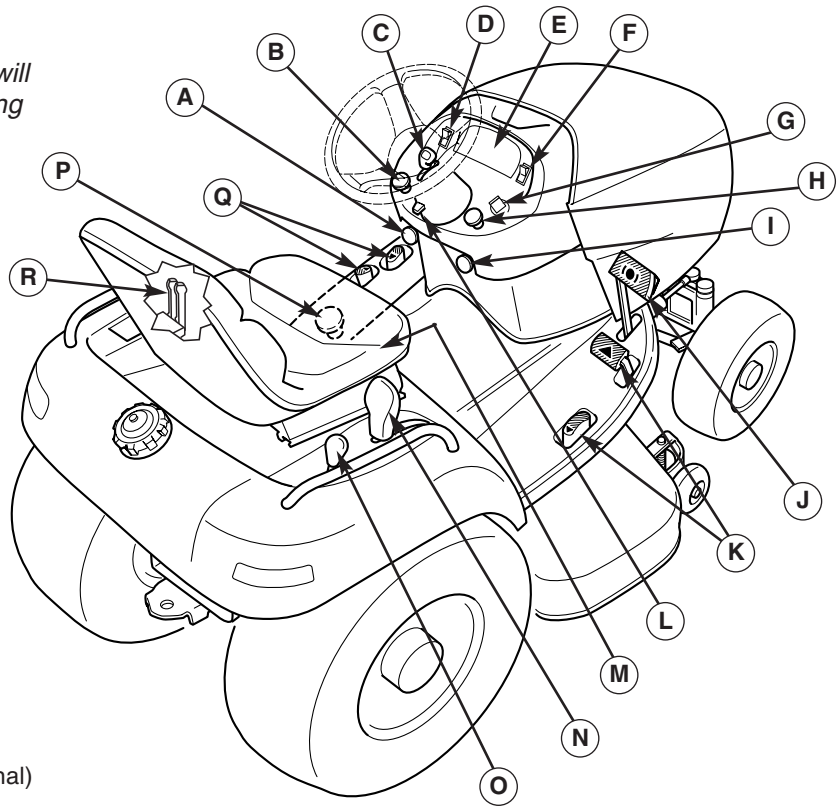
# Features & Controls



*Please take a moment and familiarize yourself with the name, location, and function of these controls so that you will better understand the safety and operating instructions provided in this manual.*

**Figure 1. Tractor & Mower Controls**

- A. Choke
- B. Rear PTO Switch (Optional)
- C. Throttle
- D. Headlight Switch
- E. Dashboard Display
- F. Cutting Height Adjust / Spout Rotation
- G. Ignition Switch
- H. Front PTO Switch
- I. Parking Brake
- J. Brake Pedal
- K. Ground Speed Control Pedals
- L. Steering Wheel Tilt Adjustment
- M. Seat Adjustment Lever
- N. Cruise Control
- O. Two-Speed Control
- P. Differential Lock
- Q. Attachment Lift Pedals
- R. Auxiliary Hydraulic Control Levers (Optional)



## 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.*

### A. Choke

Pulling the choke control OUT engages the choke for cold starting. A warm engine may not require choking.

### B. Rear PTO Switch (Optional)

The PTO (Power Take-Off) switch engages and disengages attachments that use the OPTIONAL rear PTO. To engage the PTO, pull UP on the switch. Push DOWN to disengage. *Note that the operator must be seated firmly in the tractor seat for the PTO to function.*

### C. Throttle

The throttle controls engine speed. Move the throttle forward to increase engine speed, and back to decrease engine speed. Normal operating speed is 3600 RPM.

*Do not run at less than 3000 RPM during normal operation. Always set to full throttle when using attachments.*

### D. Headlight Switch

The light switch turn the tractor lights on and off.

### E. Dashboard Display

The dashboard display shows a variety of engine operation and control status information. *See page 8 for more detailed information.*

### F. Cutting Height Adjust / Spout Rotation

**Cutting Height:** The cutting height switch control the mower cutting height. To set the cutting height, push the TOP or BOTTOM of the switch while observing the cutting height indicator on the left side of the mower deck.

**Spout Rotation:** When a snowthrower attachment is used, the switch rotates the spout (discharge chute) left or right.

*Control Functions continued...*

## G. Ignition Switch

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

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

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

## H. Front PTO Switch

The PTO (Power Take-Off) switch engages and disengages attachments that use the front PTO. To engage the PTO, pull UP on the switch. Push DOWN to disengage. *Note that the operator must be seated firmly in the tractor seat for the PTO to function.*

## I. Parking Brake Knob

The parking brake is applied by fully depressing the brake pedal (J, Figure 1), and then pulling OUT on the parking brake knob (I, Figure 1). To release the parking brake, fully depress the brake pedal, and push the parking brake knob IN.

## J. Brake Pedal

Depressing the brake pedal (I, Figure 1) returns the transmission to neutral, and applies the tractor brake.

## K. Ground Speed Control Pedals

The tractor's ground speed is controlled by the ground speed control pedals (J, Figure 1), and the cruise control (see below).

Depress the FRONT pedal to increase FORWARD ground speed.

Depress the REAR pedal to increase REVERSE ground speed. Note that the further down the pedals are depressed, the faster the tractor will travel.

## L. Steering Wheel Adjustment

The tractor is equipped with a tilt steering wheel. Push DOWN on the tilt adjust tab located on the rear of the steering column, and tilt the steering wheel to the desired position.

## M. Seat Adjustment Lever

The seat can be adjusted forward and back. Move the lever to the LEFT, position the seat as desired, and release the lever to lock the seat into position.

## N. Cruise Control

The cruise control is used to set a constant FORWARD ground speed. This is useful when mowing long rows or traveling long distances.

To engage the cruise control, make certain forward area is clear and slide the cruise control lever forward to the desired ground speed. Move the lever fully back to the NEUTRAL position to disengage. *Note that in the event you need to stop quickly, fully depressing the brake pedal (I, Figure 1) will automatically release the cruise control and stop the tractor.* For normal operation, it is recommended that you manually disengage the cruise control by returning the lever to the NEUTRAL position.

## O. Two-Speed Control

The two-speed control allows the operator to switch the transmission into high-speed or low-speed, and to disengage the transmission into a NEUTRAL (free-wheeling) position.

Select the low-speed for heavy work (mowing, snowthrowing, etc), and high-speed for traveling to and from work areas. **DO NOT SHIFT WHILE MOVING.**

To change gears:

1. Stop the tractor, but DO NOT apply the parking brake or depress the brake pedal.
2. Lift UP on the shift knob.
3. Move the lever to the desired gear.
4. Push DOWN on the knob to lock into gear.

*Note: If necessary, rocking the tractor back and forth slightly makes shifting easier.*

## P. Differential Lock

The differential lock (H, Figure 1) can be used to increase traction by locking the transmission differential (for example when one of the rear wheels starts slipping). To engage, DEPRESS the differential lock pedal located at the rear of the left foot rest.

## Q. Attachment Lift Pedals

The attachment lift pedals (G, Figure 1) raise and lower attachments such as mower decks, snowthrowers, and tillers.

To RAISE an attachment, depress the REAR attachment lift pedal until the desired position is achieved. Releasing the pedal holds the lift cylinder in position.

Depressing and releasing the FRONT pedal lowers the attachment lift cylinder and holds it in position. Depressing the pedal beyond the detent locks it in FLOAT position. In FLOAT mode the attachment can float through the full range of the lift cylinder.

## R. Auxiliary Hydraulic Control Levers (Optional)

The auxiliary hydraulic control levers control the flow of hydraulic oil to the quick connectors located under the left footrest. See pages 14-15 for specific operating information on the auxiliary hydraulic system.

# Features & Controls

## DASHBOARD DISPLAY FUNCTIONS

The dashboard display shows a variety of engine operation and control status information, as explained in the descriptions below.

### A. Rear PTO Light

Indicates that the optional rear PTO switch is in the ON position.

### B. Cruise Control Light

Indicates that the cruise control is engaged.

### C. Hour Meter

Displays number of hours the unit has been operated.

### D. Front PTO Light

Indicates the front PTO switch is in the ON position.

### E. Low Oil Pressure Light

Indicates that the engine oil pressure is low.

### F. Fuel Gauge

Shows the level of fuel in the fuel tank.

### G. Tachometer

Displays the engine RPM. Normal operating speed is 3600 RPM. Do not operate at less than 3000 RPM during normal use.

### H. Voltmeter *(Models with air cooled engines)*

Shows the voltage being produced by the charging circuit and battery.

### I. Coolant Temperature *(Models with liquid cooled engines)*

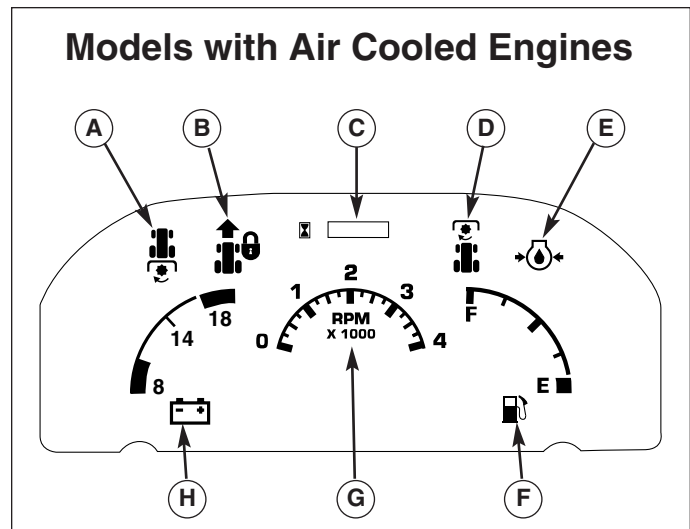
Shows the engine coolant temperature.

### J. Irregular Voltage *(Models with liquid cooled engines)*

Indicates that the voltage being produced by the charging system and the battery is higher or lower than normal levels.

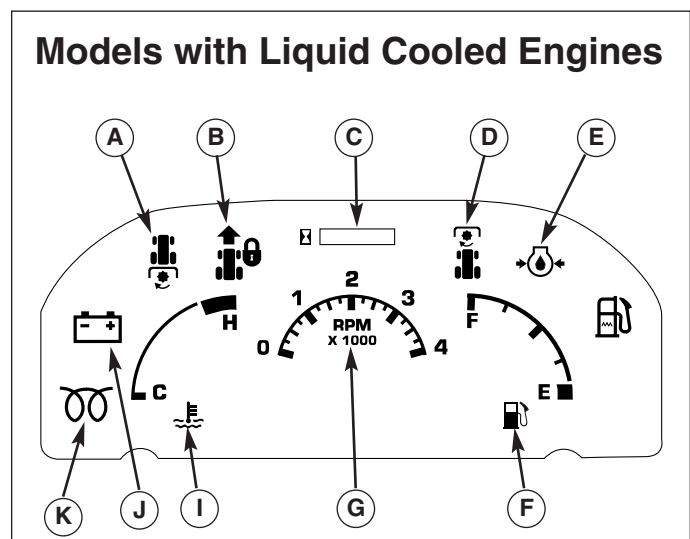
### K. Glow Plug Light *(Models with diesel engines)*

Indicates that the glow plugs are heating. Leave the key in the run position until the light goes out, then turn the key to start.



**Figure 2. Dashboard Display — Models with air cooled engines**

- A. Rear PTO Engaged
- B. Cruise Control Engaged
- C. Hour meter
- D. Front PTO Engaged
- E. Low Oil Pressure
- F. Fuel Gauge
- G. Tachometer
- H. Voltmeter



**Figure 3. Dashboard Display — Models with liquid cooled engines**

- A. Rear PTO Engaged
- B. Cruise Control Engaged
- C. Hour meter
- D. Front PTO Engaged
- E. Low Oil Pressure
- F. Fuel Gauge
- G. Tachometer
- I. Coolant Temperature
- J. Irregular Voltage
- K. Glow Plug Light (Diesel Only)





## SAFETY INTERLOCK SYSTEM

This unit is equipped with safety interlock switches and other safety devices. 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

Your unit is equipped with a seat switch safety system. Check the seat switch operation every fall and spring with the following tests.

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

- PTO switch is engaged, OR
- Brake pedal is not fully depressed (or parking is not engaged), OR
- Cruise control is engaged.

#### Test 2 — Engine SHOULD crank if:

- PTO switch is NOT engaged, AND
- Brake pedal is fully engaged (or parking brake is engaged), AND
- Cruise control is in NEUTRAL position.

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

- Operator rises off seat with PTO engaged, OR
- Operator rises off seat with brake pedal NOT fully depressed (or parking brake disengaged),

#### Test 4 — Blade Brake Check

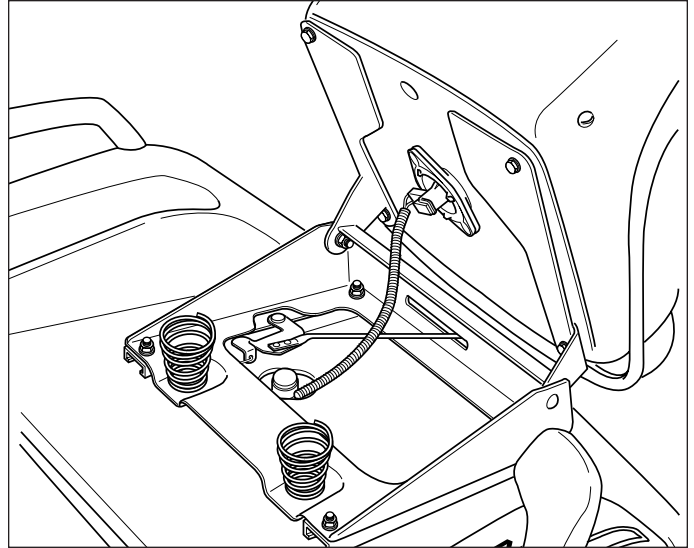
Mower blades and mower drive belt should come to a complete stop within five seconds after electric PTO switch is turned off (or operator rises off seat). If mower drive belt does not stop within five seconds, see your dealer.

*NOTE: Once the engine has stopped, PTO switch must be turned off after operator returns to the seat in order to start the engine.*



## WARNING

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



**Figure 4. Seat Switch Safety System**



# Operating the Tractor



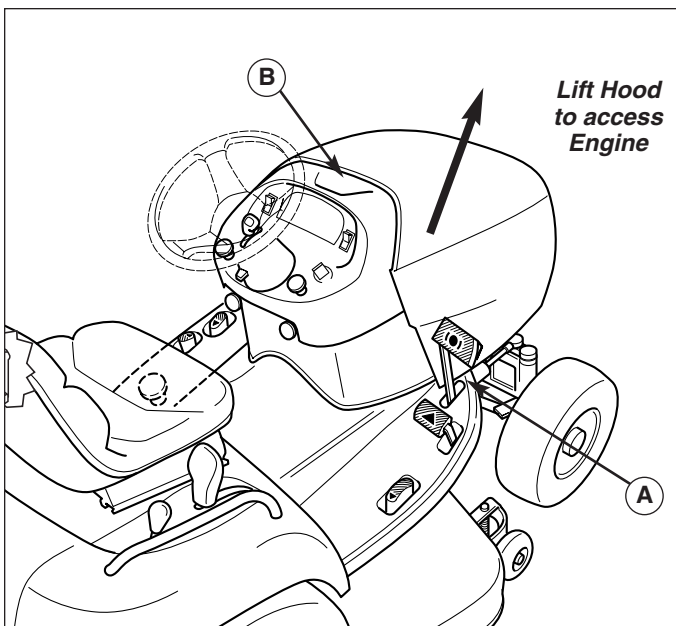
## GENERAL OPERATING SAFETY

Before first time operation:

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

## CHECKS BEFORE STARTING

- Check that crankcase is filled to full mark on dipstick. See the engine Operator's Manual for instructions and oil recommendations.
- Make sure all nuts, bolts, screws and pins are in place and tight.
- Adjust the seat position, and make certain you can reach all controls from operator's position.
- Fill the gasoline tank with fresh gasoline. Refer to engine manual for gasoline recommendations.



**Figure 5. Engine Access**

- A. Hood latch (one on each side)
- B. Hand-hold (use to lift hood & tilt forward)

## WARNING

**Never allow passengers to ride on the unit.**

**Before leaving the operator's position for any reason, engage the parking brake, disengage the PTO, stop the engine and remove the key.**

**To reduce fire hazard, keep the engine, tractor and mower free of grass, leaves and excess grease. Do not stop or park tractor over dry leaves, grass or combustible materials.**

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

## DANGER

### OPERATING ON SLOPES CAN BE DANGEROUS

**Never operate on slopes greater than 17.6% (10°) which is a rise of 3.5 feet vertically in 20 feet horizontally.**

**Operate the unit at a slow ground speed when driving onto slope.**

**When operating on slopes that are greater than 15% (8.5°) but less than 17.6%, use additional wheel weights or counterweights.**

**In addition to counterweights, use extra caution when operating on slopes with rear-mounted grass catcher. Mow UP and DOWN the slope, never across the face, use caution when changing directions and DO NOT START OR STOP ON SLOPE.**



## WARNING

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

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

## STARTING THE ENGINE

### Gas Models

1. While sitting in the operator's seat, fully depress the brake pedal or set the parking brake.
2. Set the cruise control lever in neutral and make sure that your feet are not depressing the ground speed control pedals.
3. Disengage the PTO clutch(s).
4. Set the throttle to FULL.
5. Pull the CHOKE knob out to choke the engine.

*NOTE: A warm engine may not require choking.*

6. Insert the key into the ignition switch and turn it to START.
7. After the engine starts, move the engine throttle control to SLOW. Warm up the engine by running it for at least a minute before engaging the PTO switch or driving the tractor. Push Choke Knob in after engine has warmed.

### Diesel Models

1. While sitting in the operator's seat, fully depress the brake pedal or set the parking brake.
2. Set the cruise control lever in neutral and make sure that your feet are not depressing the ground speed control pedals.
3. Disengage the PTO clutch(s).
4. Set the throttle to middle position (set throttle to FULL when starting in cold weather).
5. Turn the key to the RUN position to activate the glow plugs (the glow plug light in the dashboard display will light).
6. Wait for the glow plug light to turn off, then turn the key to START. If the engine does not start immediately, move the throttle to FULL.
7. After the engine starts, move the engine throttle control to SLOW. Warm up the engine by running it for at least a minute.
8. Move the throttle to FULL before engaging the PTO switch or driving the tractor.

*NOTE: 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 TRACTOR.*

## STOPPING THE TRACTOR & ENGINE

1. Setting the cruise control to neutral and taking your foot off the ground speed control pedals will stop tractor movement. For emergency stopping depress the brake pedal.
2. Engage the parking brake.
3. Disengage the PTO.
4. Throttle the engine down to approximately 2200 RPM and turn the ignition key to OFF. Remove the key.

*NOTE: Stopping the engine at speeds lower than approximately 2000 RPM can cause engine damage. Do not stop the engine with the throttle control in the IDLE position.*

## DRIVING THE TRACTOR

1. Sit in the seat and adjust the seat and steering wheel so that you can comfortably reach all the controls and see the dashboard display.
2. Engage the parking brake.
3. Make sure all PTO switches are disengaged and the cruise control lever is in neutral.
4. Start the engine (see STARTING THE ENGINE).
5. Disengage the parking brake and release the brake pedal.
6. Depress the forward ground speed control pedal to travel forward. Release the pedal to stop. Note that the further down the pedal is depressed the faster the tractor will travel.
7. Stop the tractor by releasing the ground speed control pedal, setting the parking brake, and stopping the engine (see STOPPING THE TRACTOR AND ENGINE).

## MOWING

1. Engage the parking brake. Make sure all PTO switches are disengaged and the cruise control lever is in neutral.
2. Start the engine (see STARTING THE ENGINE).
3. Set the mower cutting height.
4. Lower the attachment lift.
5. Set the throttle to FULL.
6. Engage the front PTO (Mower Deck).
7. Begin mowing. See Section C for tips on mowing patterns, lawn care, and trouble shooting information.
8. When finished, shut off the front PTO and raise the attachment lift.
9. Stop the engine (see STOPPING THE TRACTOR AND ENGINE).

# Operating the Tractor

## PUSHING & TOWING THE TRACTOR

1. Disengage the PTO and turn the engine off.
2. Shift the two speed control into neutral and release the parking brake.

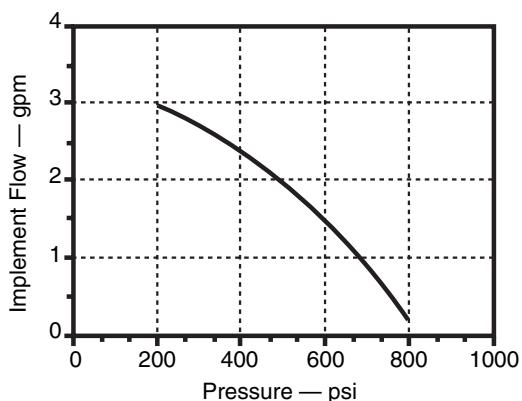
The tractor can now be pushed by hand . **TOWING THE TRACTOR WITH ANOTHER VEHICLE IS NOT RECOMMENDED, AS THE TRANSMISSION WILL BE DAMAGED.**



### IMPORTANT NOTE

Shift two-speed control to NEUTRAL before pushing or towing. Pushing or towing in gear will damage transmission. **Do NOT push or tow at speeds greater than 8 MPH (5KPH).**

Implement Flow @ 3300 RPM and 180° F



## AUXILIARY HYDRAULIC SYSTEM (OPTIONAL)

*NOTE: Some models come with factory-installed auxiliary hydraulics. (For units not equipped with factory installed hydraulics, an Auxiliary Hydraulic Kit is available. See your authorized dealer for information on optional kits and attachments.)*

### General

The optional auxiliary hydraulics can be used to control up to two hydraulic cylinders. Refer to the following chart for hydro pump output data.

The auxiliary hydraulic control levers are located in the control pod to the left of the seat (see Figure 6) and control the flow of hydraulic fluid to the quick connectors located under the left footrest.

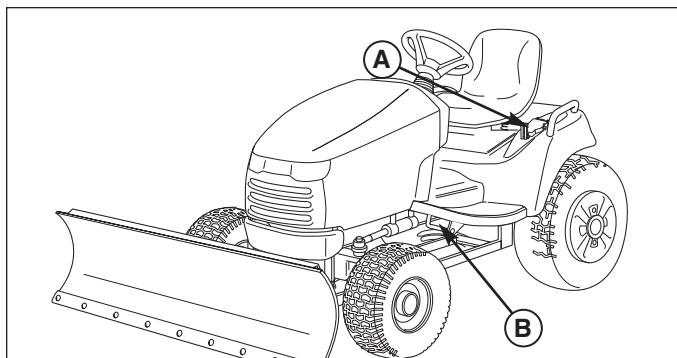
### Control Lever Functions

Moving the left control lever forward (A, Figure 7) will send pressurized hydraulic fluid to the far left quick connector.

Moving the left control lever backward (B, Figure 7) will send pressurized hydraulic fluid to the left middle quick connector.

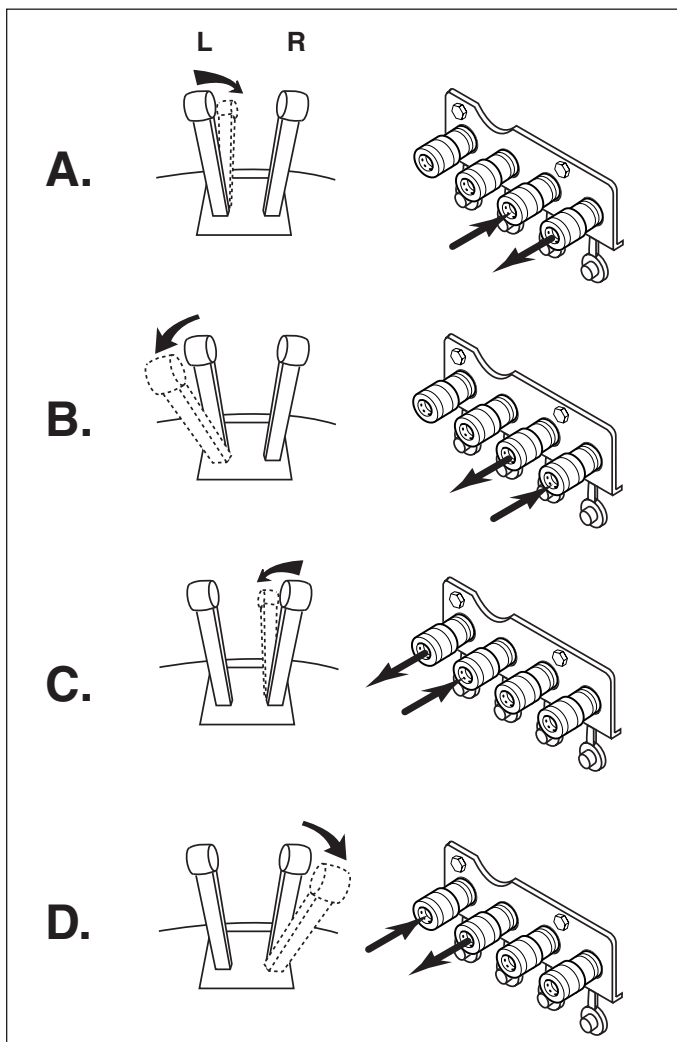
Moving the right control lever forward (C, Figure 7) will send pressurized hydraulic fluid to the far right quick connector.

Moving the right control lever backward (D, Figure 7) will send pressurized hydraulic fluid to the right middle quick connector.

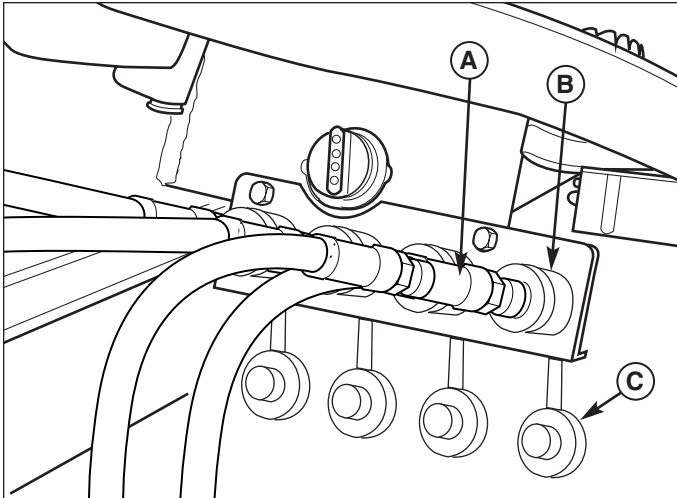


**Figure 6. Auxiliary Hydraulics (shown with Dozer Blade)**

- A. Control Levers
- B. Quick Connector Panel

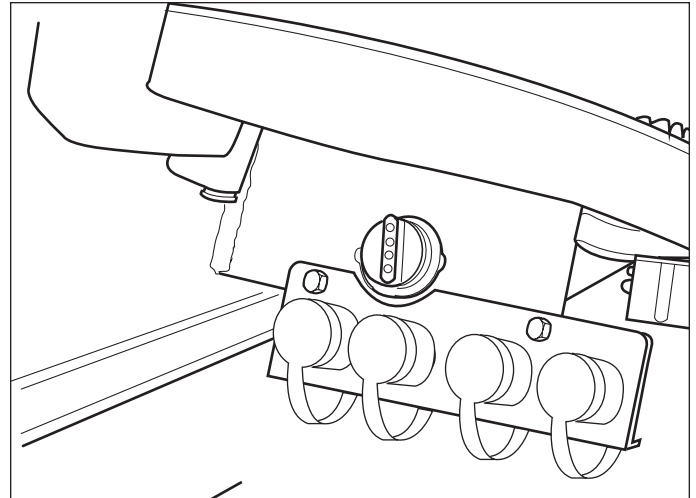


**Figure 7. Auxiliary Hydraulic System Function**  
(Levers shown as viewed from Operator's position when seated on tractor. Quick Connect panel shown as viewed from front of unit.)



**Figure 8. Quick Connectors**

- A. Hoses
- B. Quick Connector
- C. Connector Covers



**Figure 9. Install Quick Connector Covers**

## Connecting Hydraulic Hoses

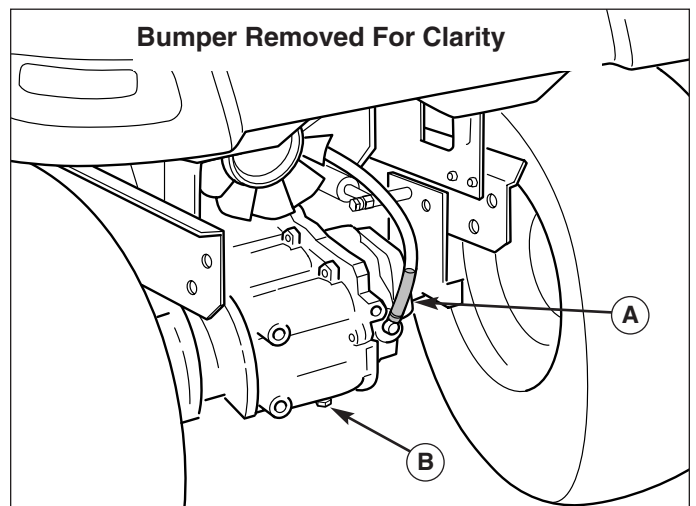
The female quick connectors (B, Figure 8) require a 1/4" male nose piece fitting (part number 173359).

Connect the hoses from the attachment hydraulic cylinders (A, Figure 8) to the quick connectors (B) located under the left foot rest. Refer to the flow diagrams in Figure 6 to determine the correct quick connector to connect to. Be sure to install the quick connector covers (see Figure 9) after disconnecting hydraulic hoses.

## Test Run Attachment & Check Oil

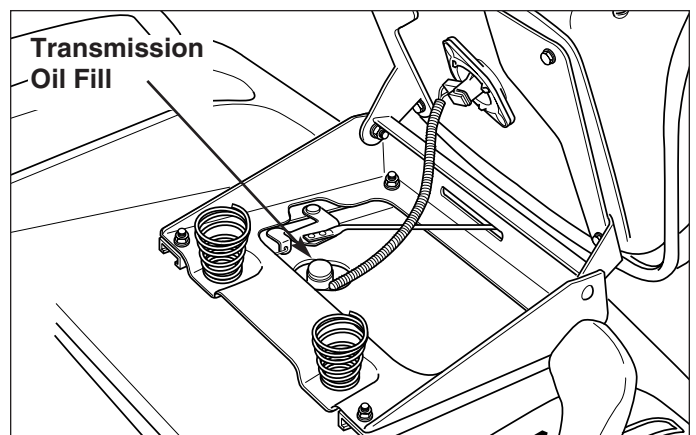
1. Start the engine.
2. Test all controls for proper function.
3. Check all fittings, connections, and hoses for leaks.
4. Run the tractor for at least 10 minutes. Actuate the attachment hydraulic cylinders 10 times to bleed air out of the hydraulic system.
5. Check the oil level. Observe the oil level in the plastic tube (A, Figure 10) at the rear of the unit.

There should be 1" to 1-1/2" of oil in the tube. If there is no oil in the tube add Type-F automatic transmission oil a few ounces at a time. The transmission fill tube is located under the seat (see Figure 11).



**Figure 10. Transmission Fluid Check**

- A. Hydraulic Tube
- B. Drain Plug



**Figure 11. Transmission Oil Fill**

# Operating the Tractor

## MOWER DECK REMOVAL & INSTALLATION

*NOTE: Perform mower removal and installation on a hard, level surface such as a concrete floor.*

### **WARNING**

Engage parking brake, disengage PTO, stop engine and remove key before attempting to install or remove the mower.

### Removing the Mower Deck

1. Start the engine
2. Set the mower cutting height to minimum.
3. Fully raise the attachment lift.
4. Stop the engine.

#### 48" AND 60" MOWERS

5. Pivot the two front gauge wheels from mowing position to sliding position by pushing down on the top of the spindle and pivoting the wheel (see Figure 12).

#### 54" MOWERS

5. Remove the hair pin clip, push down on the top of the spindle, and rotate the gauge wheel into sliding position (see Figure 12). Replace the hair pin clip.

#### ALL MODELS

6. Move the left rear slide wheel into slide position (see Figure 13).
7. Start the engine.
8. Fully lower the attachment lift.
9. Set the cutting height to maximum.
10. Stop the engine.
11. Unhook the two lift chains from the tractor lift arms.
12. Turn the ignition switch to RUN position, and set the mower cutting height to minimum (it is not necessary to start the engine).
13. Turn the ignition switch to the OFF position.
14. Disconnect the electrical connection from the tractor and recap the tractor electrical socket. See Figure 15.
15. Remove the long hitch pin (B, Figure 16) and safety clip connecting the hitch bucket (A) to the mower deck.
16. Remove the two small pins (C, Figure 16) connecting the hitch bucket (A) to the tractor.
17. Remove the hitch bucket (A, Figure 16) from the mower deck.
18. Remove the drive shaft (D, Figure 16) by pulling back the locking collar (A, Figure 17) and pulling the shaft off the PTO.

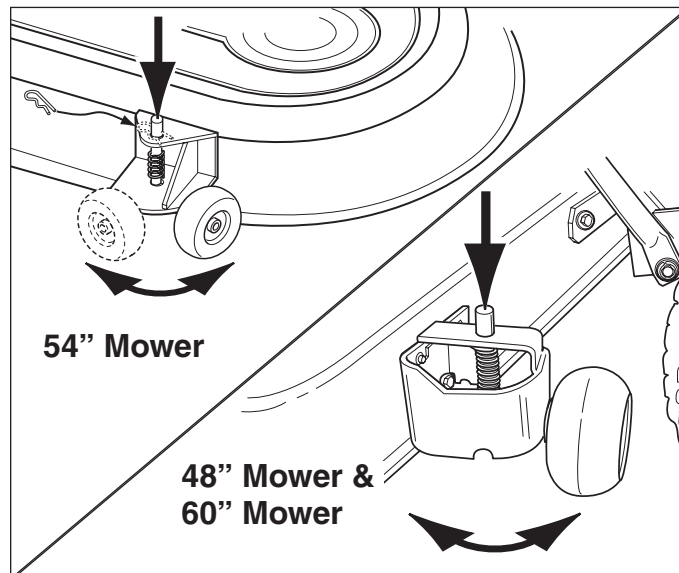


Figure 12. Pivoting the Gauge Wheels

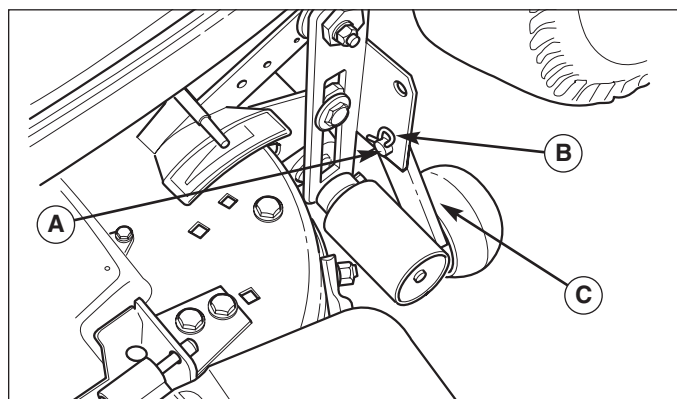


Figure 13. Rear Slide Wheel - 48" & 60" Mowers

- A. Clevis Pin  
B. Hair Pin Clip  
C. Slide Wheel Arm

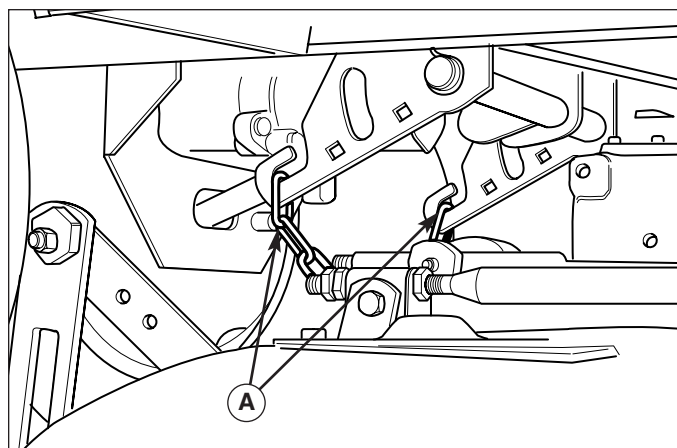


Figure 14. Mower Lift Chains

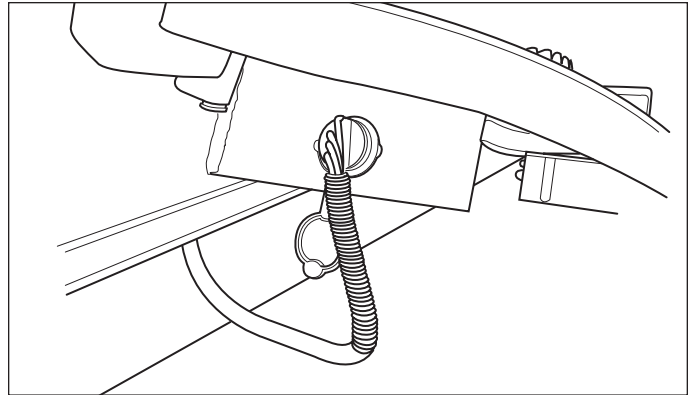
- A. Lift Chains

19. Slide the deck out from under tractor.

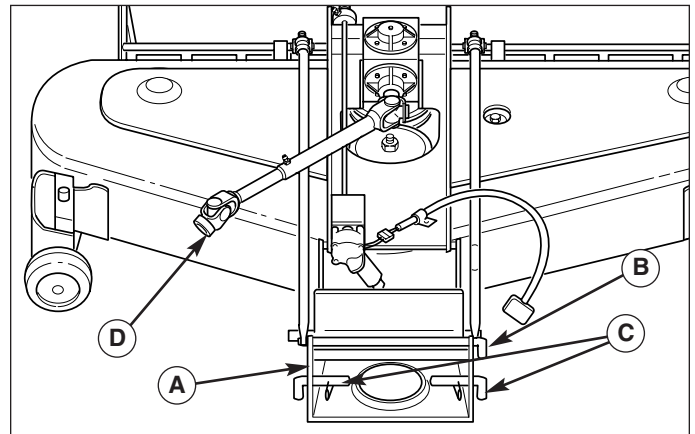


## Installing the Mower Deck

1. Raise the attachment lift and slide the mower under the tractor.
2. Hook up the electrical connection (Figure 15).
3. Start the engine.
4. Set the cutting height to maximum.
5. Fully lower the attachment lift.
6. Shut off the engine.
7. Make sure the mower lift chains are directly below the lift arms. Attach the 2 mower lift chains to the tractor lift arms (Figure 14).
8. Turn the ignition switch to the RUN position, and set the mower cutting height to minimum (it is not necessary to start the engine).
9. Turn the ignition switch to the OFF position.
10. Mount the hitch bucket (A, Figure 16) to the deck.
11. Attach the hitch bucket to the tractor using the two short pins (C, Figure 16) and safety clips.
12. Attach the hitch bucket (A, Figure 16) to the mower deck using the one long pin (B) and safety clip.
13. Start the engine.
14. Fully raise the attachment lift.
15. Shut off the engine.
16. Pivot the two front gauge wheels from sliding position to mowing position by pushing down on the top of the spindle and pivoting the wheel (see Figure 12).
17. *48" & 60" Mower Only:* Move the left rear slide wheel (Figure 13) into mowing position.
18. Pull the drive shaft locking collar (A, Figure 17) back and slide the drive shaft all the way onto the tractor PTO.
19. Release the locking collar and pull the shaft back until the locking collar locks into place on the drive shaft.

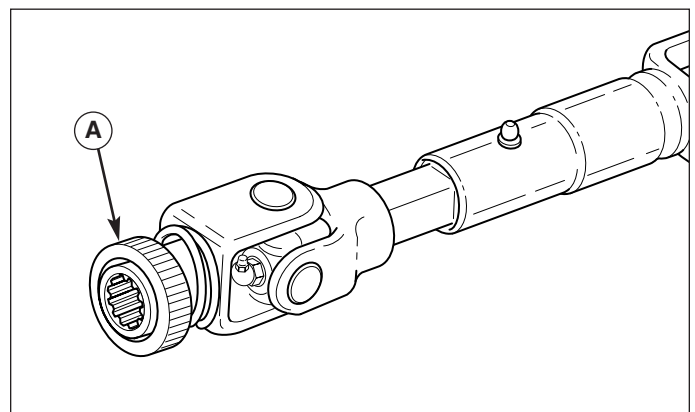


**Figure 15. Mower Electrical Connection**



**Figure 16. Front Hitch Bucket and Pins**

- |                   |                     |
|-------------------|---------------------|
| A. Hitch Bucket   | C. Short Hitch Pins |
| B. Long Hitch Pin | D. Drive Shaft      |



**Figure 17. Mower Drive Shaft**

- A. Locking Collar

## STORAGE

### **WARNING**

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

**Fuel vapor is also toxic to humans and animals.**

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:

- Disengage the PTO, set the parking brake, & remove the key.
- Perform engine maintenance and storage measures listed in the engine owner's manual. This includes draining the fuel system, or adding stabilizer to the fuel (do not store a fueled unit in an enclosed structure - see above).

- Battery life will be increased if it is removed, put in a cool, dry place and fully charged about once a month. If the battery is left in the unit, disconnect the negative cable.

Before starting the unit after it has been stored:

- Check all fluid levels. Check all maintenance items.
- Perform all recommended check and procedures found in the engine owner's manual.
- Allow the engine to warm up for several minutes before use.





# Regular Maintenance

## MAINTENANCE SCHEDULE & PROCEDURES

The following schedule should be followed for normal care of your tractor and mower.

SAFETY ITEMS	Before First Use	Before Each Use	Every 5 Hours	Every 25 Hours	Every 100 Hours	Spring & Fall
Check Safety Interlock System	●					●
Check Tractor Brakes	●					●
Check Mower Blade Stopping Time	●				●	
NORMAL CARE ITEMS	Before First Use	Before Each Use	Every 5 Hours	Every 25 Hours	Every 100 Hours	Spring & Fall
Check Tractor/Mower for loose hardware	●	●	●			
Check Coolant Level (Liquid cooled models)*	●					●
Change Coolant (Liquid cooled models)*					*Every 400 Hours	
Check & Clean Radiator Screen (Liquid cooled models)*			●			
Clean Engine Oil Cooler*				***●		
Check Engine Air Filter*				***●		
Check Engine Oil Level*	●	●				●
Change Engine Oil & Filter*, **			**	***●		
Lubricate Tractor & Mower				***●		
Check Tire Pressure				●		
Check Transmission Fluid		●				
Change Transmission Fluid & Filter					Every 400 Hours***	
Check/Replace Fuel Filter (Gas)# (Diesel)****					#●	****●
Clean Battery & Cables					●	
Clean & Sharpen Mower Blades				●		
Inspect Spark Plug(s)*(Models w/gas engines)					●	

\* See the engine manufacturer's owner's manual.

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

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

\*\*\*\* Drain the fuel filter every spring and fall or when the dashboard display light turns on.  
Replace the fuel filter element every 800 hours or as required.

### CHECK TIRE PRESSURES

Tire Pressure should be checked 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	Pressure
Front	12-15 psi (83-104 kPa)
Rear	6-8 psi (41-55 kPa)

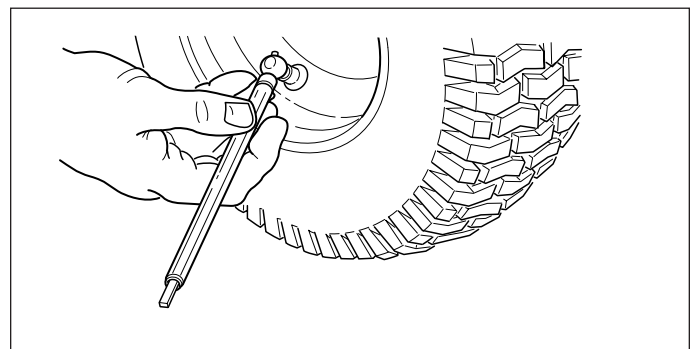


Figure 18. Checking Tire Pressure

# Regular Maintenance

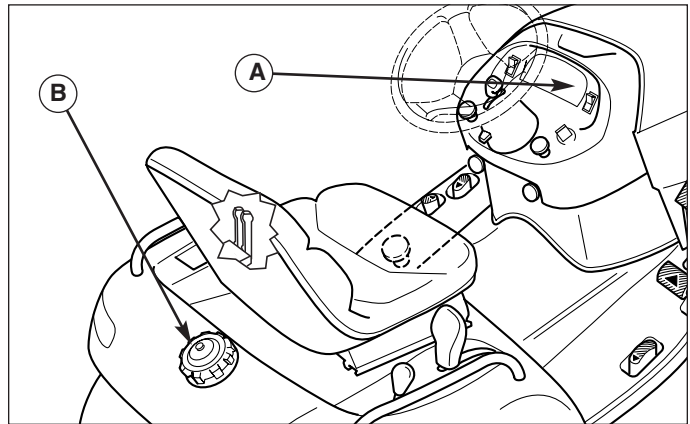
## WARNING

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

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



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



**Figure 19. Fuel Tank Fill**

- A. Fuel Gauge on Dashboard Display
- B. Fuel Tank Cap.

## CHECKING / ADDING FUEL

Check the fuel gauge on the dashboard display (A, Figure 19) to be sure there is enough fuel to complete the job. To add fuel:

1. Remove the fuel cap (see B, Figure 19).
2. Fill the tank.  
Do not overfill. Leave room in the tank for fuel expansion. Refer to your engine manual for specific fuel recommendations.
3. Install and hand tighten the fuel cap.

## FUEL FILTER - GAS MODELS

**Models with Kohler engines:** See Figure 21. The fuel filter is located in the fuel line between the fuel tank and the carburetor.

**Models with Kawasaki engines:** See Figure 20. The fuel filter is located under the left rear seat deck, and is in the fuel line between the fuel tank and the carburetor.

If filter is dirty or clogged, replace as follows:

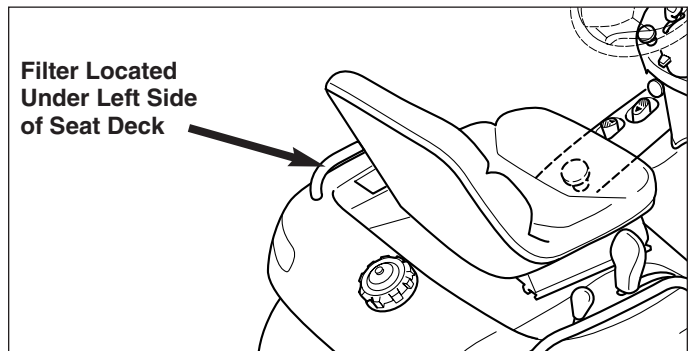
1. Disconnect the negative battery cable.
2. Place a container below the filter to catch spilled fuel.
3. Using a pliers, open and slide hose clamps from fuel filter.
4. Remove hoses from filter.
5. Install new filter in proper flow direction in fuel line.
6. Secure fuel line with hose clamps.
7. Reconnect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

## FUEL FILTER - DIESEL MODELS

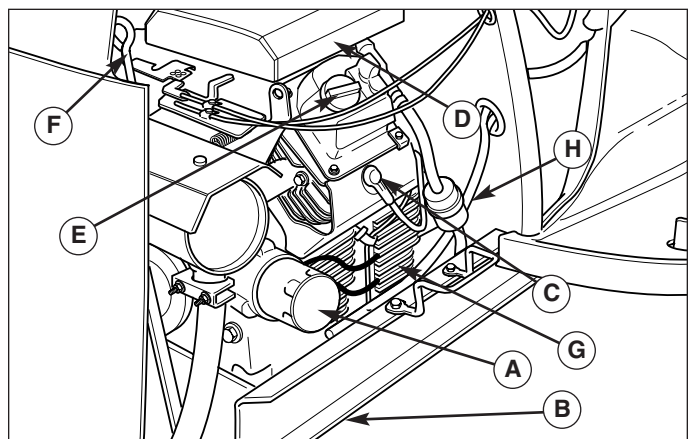
The fuel filter assembly has a built in water separator that should be drained when the indicator light in the dashboard display turns on or once per season. Replace the fuel filter element every 800 hours of operation or as required.

To drain the fuel filter:

1. Turn the engine off, set the parking brake, remove the ignition key, and wait for all moving part to stop.
2. Allow the engine and surrounding areas to cool to room temperature.
3. Place a container under the fuel filter tube and turn the base of the filter assembly (G, Figure 24) approximately 1 turn.



**Figure 20. Fuel Filter Location - Models with Kawasaki engines**



**Figure 21. Kohler Engine - Typical**

- |                    |                |
|--------------------|----------------|
| A. Oil Filter      | E. Oil Fill    |
| B. Oil Drain Valve | F. Dip Stick   |
| C. Spark Plug      | G. Oil Cooler  |
| D. Air Filter      | H. Fuel Filter |

4. Allow the filter to drain until all water and debris have drained out.
5. Turn the base of the filter back to close the fuel filter valve when finished draining.

## OIL & FILTER CHANGE

Refer to Figure 21, 23 & 24 for oil filter and dipstick locations.

To drain the oil:

1. Place a drain pan below the engine oil pan.
2. Remove the oil drain plug and allow the engine to completely drain.
3. Remove and replace the oil filter.
4. Reinstall the oil drain plug.
5. Refill the engine oil. See the engine owners manual for oil recommendations.

## CHECK / CHANGE AIR FILTER

Refer to the engine manual for specific air filter service procedures. Refer to Figures 21 and 24 for air filter locations.

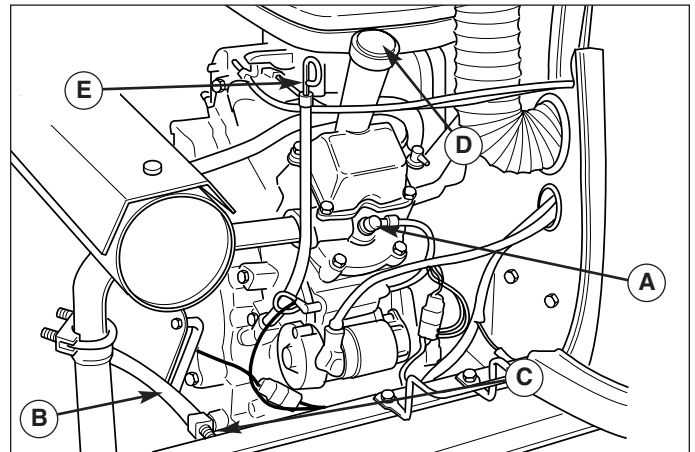
## INSPECT & REPLACE SPARK PLUGS

Refer to the engine manual for specific spark plug replacement procedures. Refer to Figures 22-23 for spark plug locations.

## CHECK ANTIFREEZE LEVEL (LIQUID COOLED MODELS ONLY)

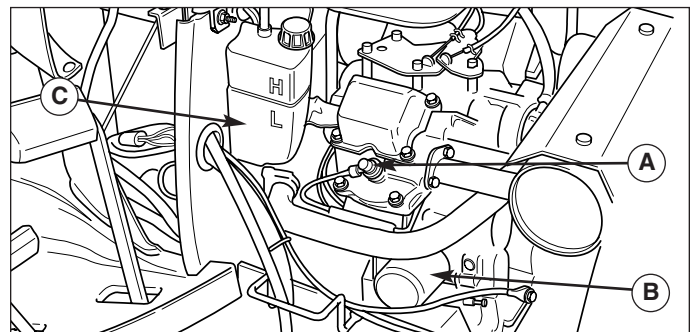
The engine coolant level and quality should be checked before each use, when the engine is off and cool.

1. Check the coolant level in the overflow reservoir (C, Figure 23, & F, Figure 24.). Coolant should be between the "H" and "L" marks on the tank.
2. If the coolant level is below the "L" mark on the overflow reservoir, add coolant by shutting off the engine, allowing the engine to cool, removing the reservoir cap, and adding coolant. Proper coolant mix is a 50/50 mixture of ethylene glycol and distilled water.



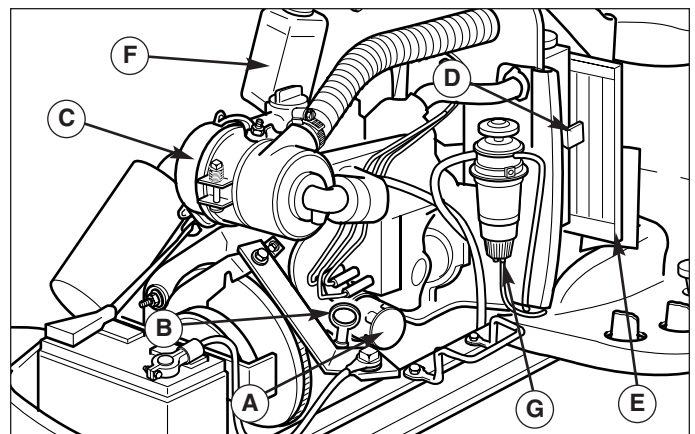
**Figure 22. Kawasaki Engine**

- |                    |              |
|--------------------|--------------|
| A. Spark Plug      | D. Oil Fill  |
| B. Oil Drain Tube  | E. Dip Stick |
| C. Oil Drain Valve |              |



**Figure 23. Kawasaki Engine**

- |               |                      |
|---------------|----------------------|
| A. Spark Plug | C. Coolant Reservoir |
| B. Oil Filter |                      |



**Figure 24. Diesel Engine**

- |               |                      |
|---------------|----------------------|
| A. Oil Filter | E. Screen            |
| B. Dip Stick  | F. Coolant Reservoir |
| C. Air Filter | G. Fuel Filter Base  |
| D. Latch      |                      |

## Regular Maintenance

### CHECK/CLEAN OIL COOLER (23HP MODELS ONLY)

The oil cooler (G, Figure 21) should be cleaned every 25 hours, or as necessary.

### CHANGE ANTIFREEZE (LIQUID COOLED MODELS ONLY)

See Engine Manual for specific antifreeze procedures. On Kawasaki models the antifreeze drain valve is located on the bottom of the radiator. On Diesel the antifreeze drain valve is located at the base of the left hand side of the radiator.

### CHECK TRANSMISSION OIL LEVEL

To check the transmission oil level observe the oil level in the plastic tube at the rear of the unit (see Figure 25).

There should be 1" to 1-1/2" of oil in the tube. If there is no oil in the tube add Type-F automatic transmission oil a few ounces at a time. The transmission fill tube is located under the seat (see Figure 26).

### CHANGING TRANSMISSION FLUID & FILTER

The transmission fluid and filter should be changed only when performing repair work or if fluid has become discolored from overheating or contamination. Perform fluid change every 400 hours of operation if no other transmission service has been done.

Replace the transmission filter whenever changing transmission fluid. Make sure filter base and surrounding area is absolutely clean before removing old filter.

1. Drain hydrostatic system by removing drain plug (B, Figure 25). Drain fluid into a suitable container.
2. Clean the base and replace the filter using an appropriate filter wrench (see Figure 29 for filter location). Reinstall the drain plug.
3. Add Type F transmission fluid through the oil fill (see Figure 26). Capacity is 6 quarts (5.7 L).
4. Run tractor for several minutes until transmission is warm and check fluid level in tube (A, Figure 25).

### CHECK MOWER DECK GEAR BOX OIL

To check the mower deck gear box oil:

1. Remove the plugs from the top and side of the gear box (see Figure 27).
2. Add SAE 85W-90 oil through the top hole until oil comes out the side fill hole. Place a shop towel under the side opening to keep oil off the belt and pulleys.
3. Replace the plugs and wipe up any spilled oil.

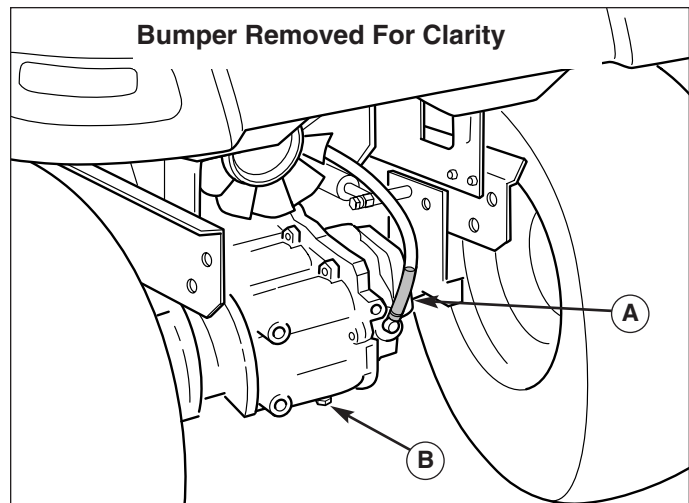


Figure 25. Transmission Fluid Check (Bumper not shown)

- A. Hydraulic Tube
- B. Drain Plug

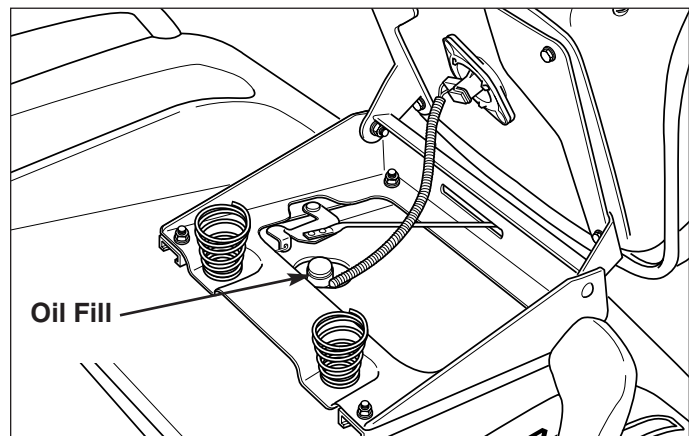


Figure 26. Transmission Oil Fill

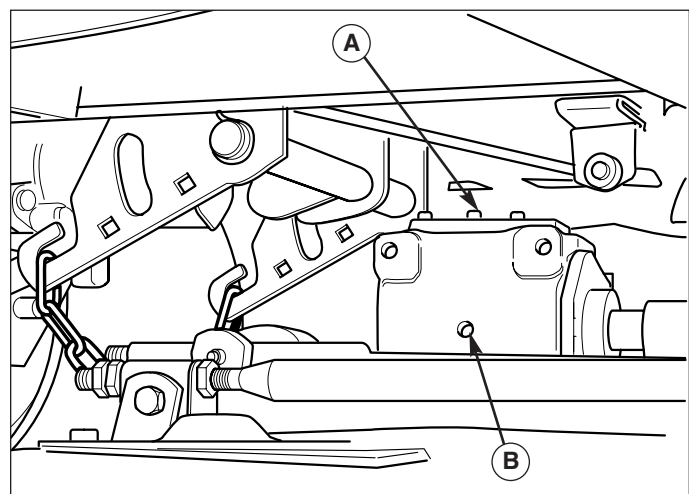


Figure 27. Gear Box Fill Plug Location

- A. Top Fill Plug
- B. Side Fill Plug

## LUBRICATION

Lubricate the unit at the locations shown in Figures 28 through 33 as well as the following lubrication points.

### Grease:



- front axle grease fittings
- steering linkage
- foot pedal
- mower pivots
- mower arbors

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

Not all greases are compatible. Simplicity “Jiffy Lube” Lithium Grease is recommended, automotive-type lithium grease may be used when this is not available.

### Oil:



- rear frame assembly pivot
- hydro linkage
- seat adjustment assembly
- brake linkage
- frame pivot points
- mower deck height adjustment linkage

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.

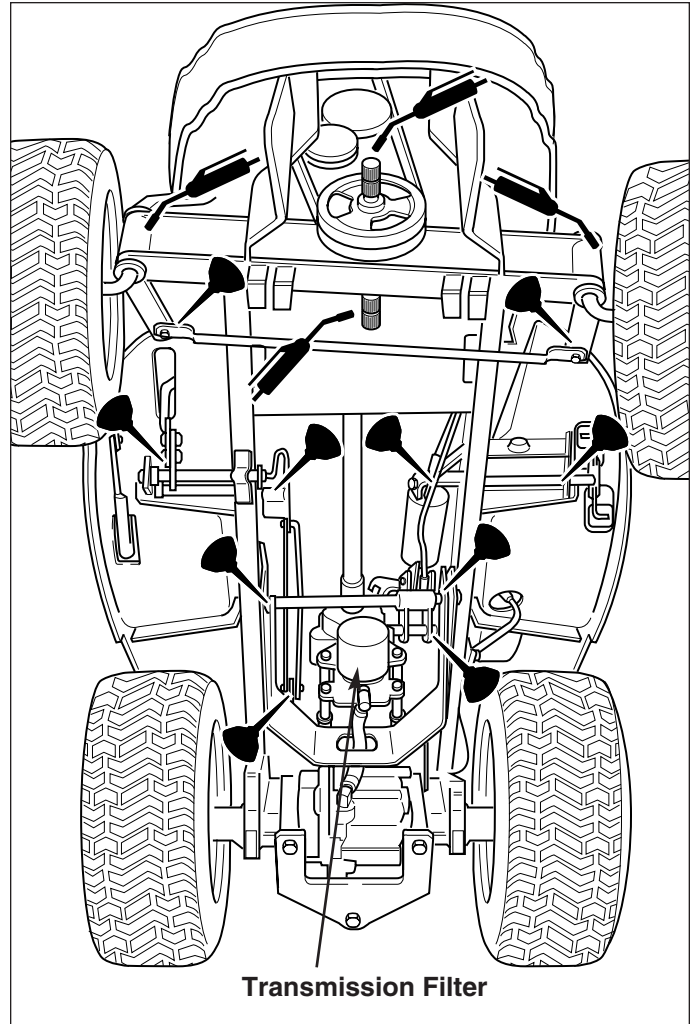


Figure 29. Lubricating the Tractor

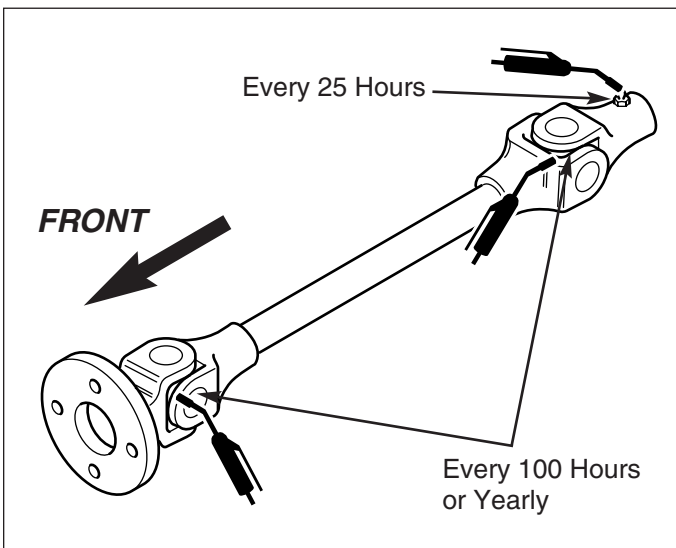


Figure 28. Engine Drive Shaft

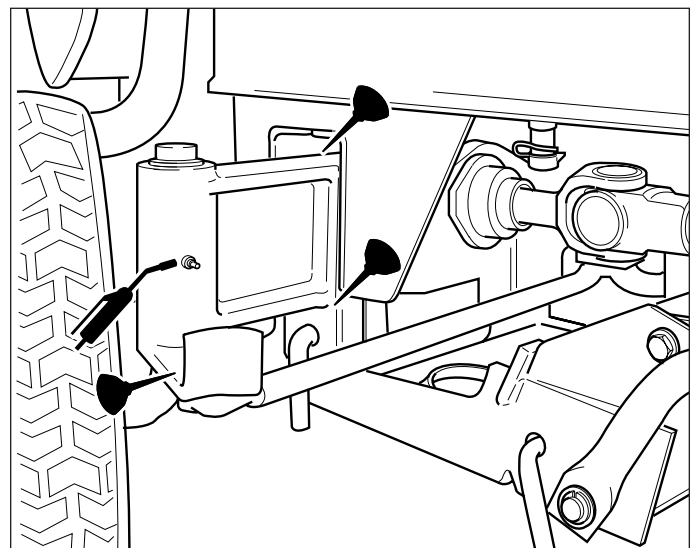


Figure 30. Front Axle Lubrication Points



# Regular Maintenance

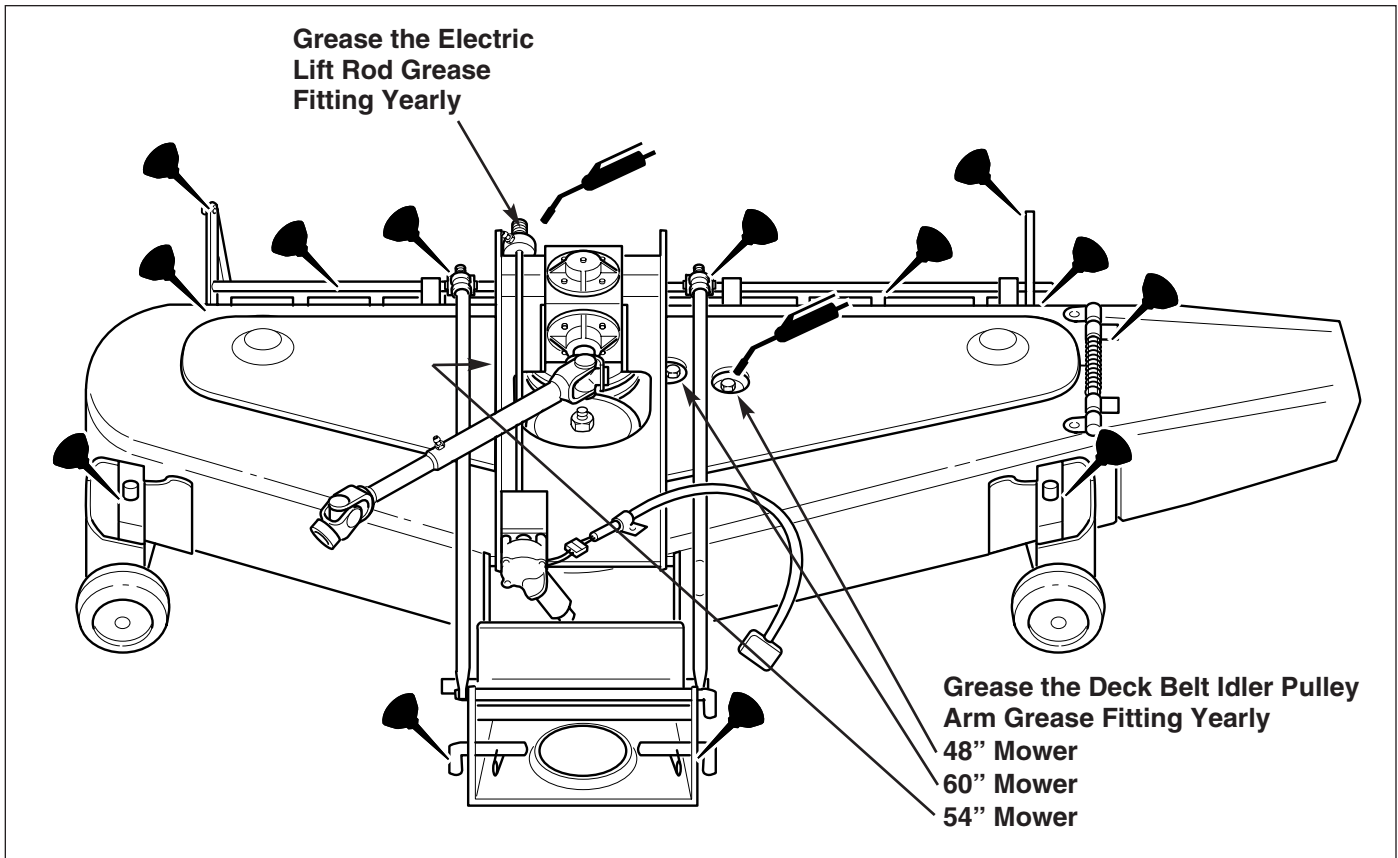


Figure 31. Deck Lubrication

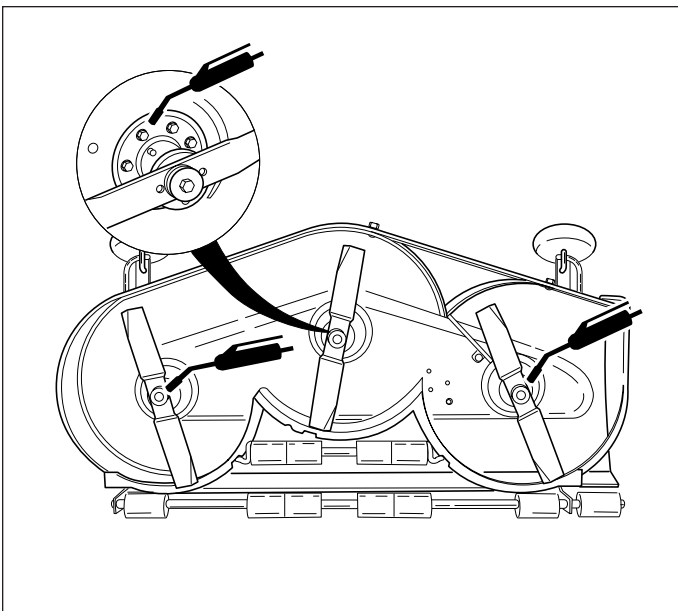


Figure 32. Mower Arbor Lubrication

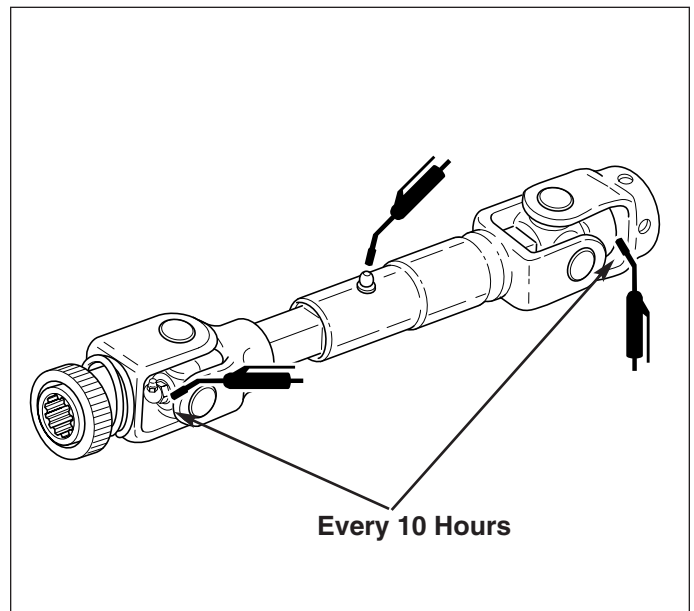


Figure 33. Mower Drive Shaft

## BATTERY MAINTENANCE

### Checking the Battery Fluid

*NOTE: This procedure does not apply to maintenance free batteries.*

1. Raise the hood to access battery.
2. Remove the battery vent caps (C, Figure 34 & 35). Fluid must be even with the split ring full mark (D). If not, add distilled water.
3. Reinstall the vent caps.

### Cleaning the Battery and Cables

1. Disconnect the cables from the battery, negative cable first (B, Figure 34 & 35).
2. Remove the battery hold-down and battery.

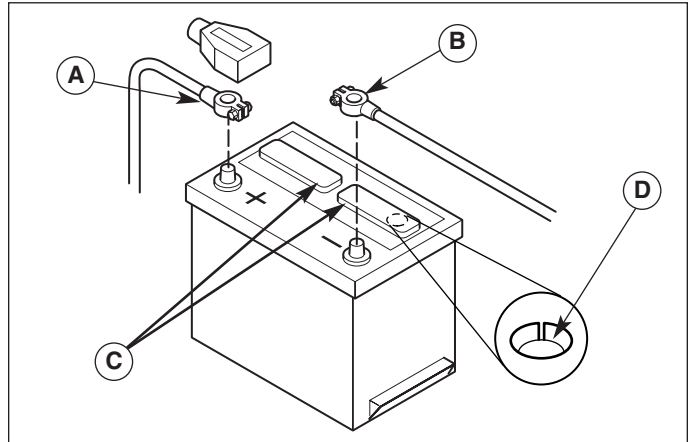
*NOTE: On units with Kawasaki engines, before removing the battery you must remove the radiator air-screen. The battery can then be tilted forward and removed through the gap between the right side of the dashboard and the radiator.*

3. Clean the compartment with a solution of baking soda and water.
4. Clean the battery terminals and cable ends with a wire brush and battery terminal cleaner until shiny.
5. Reinstall the battery in the battery compartment, and secure with the battery hold-down. Set Terminal Guard (D, Figure 35) in place for Diesel Models.
6. Reattach the battery cables, positive cable first (see A, Figure 34 & 35)
7. Coat the cable ends and battery terminals with petroleum jelly or non-conducting grease.

## WARNING

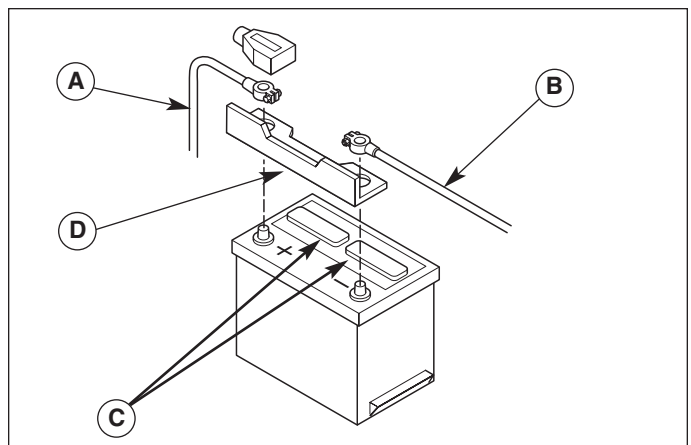
Be careful when handling the battery. Avoid spilling electrolyte. Keep flames and sparks away from the battery.

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



**Figure 34. Battery Terminals - Gas Models**

- A. Positive (+) Cable
- B. Negative (-) Cable
- C. Vent Cap(s)
- D. Split Ring



**Figure 35. Battery Terminals - Diesel Models**

- A. Positive (+) Cable
- B. Negative (-) Cable
- C. Vent Cap(s)
- D. Terminal Guard



## Regular Maintenance

### SERVICING THE MOWER BLADES

#### **⚠ WARNING**

For your personal safety, do not handle the sharp mower blades with bare hands. Careless or improper handling of blades may result in serious injury.

1. Remove mower from the tractor. See Mower Installation & Removal.
2. Blades should be sharp and free of nicks and dents. If not, sharpen blades as described in following steps.
3. To remove blade for sharpening, use a wood block to hold blade while removing the blade mounting cap-screw (Figure 36).
4. Use a file to sharpen blade to fine edge. Remove all nicks and dents in blade edge. If blade is severely damaged, it should be replaced.
5. Balance the blade as shown in Figure 37. Center the blade's hole on a nail lubricated with a drop of oil. A balanced blade will remain level.
6. Reinstall each blade with the tabs pointing up toward deck as shown in Figure 40. Secure with a capscrew (D, Figure 38), spring washer (B), and spline washer (B). Be certain the spline washer is aligned with the shaft splines. Use a wooden block to prevent blade rotation and torque capscrews to 45-55 ft.lbs. (61-75 N.m.).

#### **⚠ WARNING**

For your personal safety, blade mounting capscrews must each be installed with a hex washer and spring washer, then securely tightened. Torque blade mounting capscrew to 45-55 ft. lbs. (61-75 N.m.)

### BLADE BRAKE CHECK

Mower blades and mower drive belt should come to a complete stop within five seconds after electric PTO switch is turned off.

1. With tractor in neutral, PTO disengaged and operator in seat, start the engine.
2. Engage the PTO and wait several seconds. Disengage the PTO and check the amount of time it takes for the mower drive belt to stop.
3. If mower drive belt does not stop within five seconds, see your dealer.

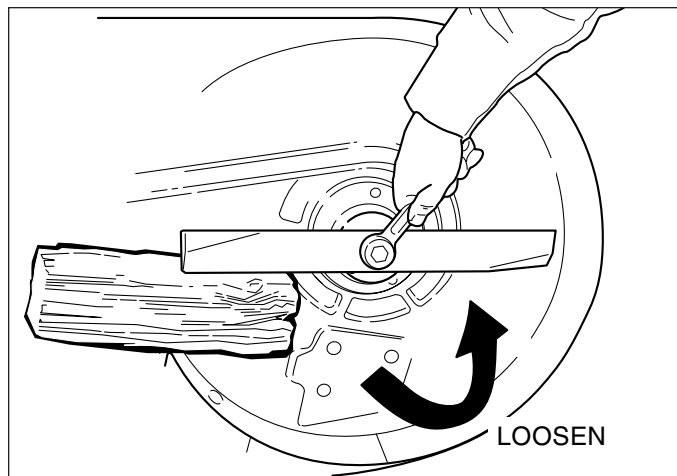


Figure 36. Removing the Blade

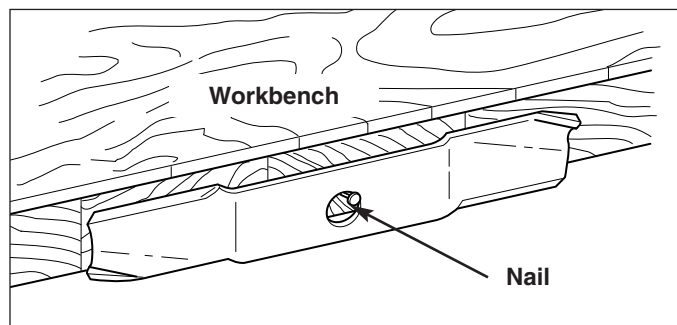


Figure 37. Balancing The Blade

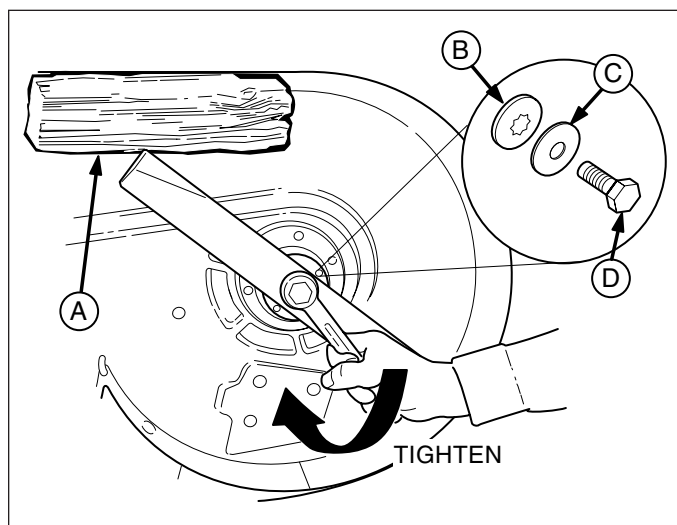


Figure 38. Installing The Blade

- |                  |                  |
|------------------|------------------|
| A. Wood Block    | C. Spring Washer |
| B. Spline Washer | D. Capscrew      |



# Troubleshooting Adjustments & Service

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

See the information on the following pages for instructions on how to perform most of these minor adjustments and service repairs yourself. If you prefer, all of these procedures can be performed for you by your local authorized dealer.

## WARNING

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

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

## Troubleshooting the Tractor

PROBLEM	CAUSE	REMEDY
<b>Engine will not turnover or start.</b>	<ol style="list-style-type: none"> <li>1. Brake pedal not fully depressed or parking brake not set.</li> <li>2. PTO (electric clutch) switch in ON position.</li> <li>3. Out of fuel.</li> <li>4. Engine flooded.</li> <li>5. Circuit breaker tripped.</li> <li>6. Battery terminals require cleaning.</li> <li>7. Battery discharged or dead.</li> <li>8. Safety interlock switch faulty.</li> <li>9. Spark plug(s) faulty, fouled or incorrectly gapped. (Gas models)</li> <li>10. Water in fuel.</li> <li>11. Gas is old or stale.</li> <li>12. Starter Malfunction.</li> <li>13. Engine Seized.</li> </ol>	<p>Fully depress brake pedal.</p> <p>Place in OFF position.</p> <p>If engine is hot, allow it to cool, then refill the fuel tank. Push choke knob in Wait one minute for automatic reset. Replace if defective. See Battery Maintenance.</p> <p>Recharge or replace. See your dealer.</p> <p>Clean and gap or replace. See engine manual.</p> <p>Drain fuel &amp; refill with fresh fuel. Drain fuel &amp; replace with fresh fuel. See you dealer. See your dealer.</p>
<b>Engine starts hard or runs poorly.</b>	<ol style="list-style-type: none"> <li>1. Fuel mixture too rich.</li> <li>2. Using old or stale gas..</li> <li>3. Spark plug(s) faulty, fouled, or incorrectly gapped. (Gas models)</li> </ol>	<p>Open the choke. Drain fuel and refill with fresh fuel. Clean and gap or replace. See engine manual.</p>
<b>Engine knocks.</b>	<ol style="list-style-type: none"> <li>1. Low oil level.</li> <li>2. Using wrong grade oil.</li> </ol>	<p>Check/add oil as required. See engine manual.</p>
<b>Excessive oil consumption.</b>	<ol style="list-style-type: none"> <li>1. Engine running too hot.</li> <li>2. Using wrong weight oil.</li> <li>3. Too much oil in crankcase.</li> </ol>	<p>Clean engine fins, radiator screen, and air cleaner. See engine manual. Drain excess oil.</p>
<b>Engine exhaust is black.</b>	<ol style="list-style-type: none"> <li>1. Dirty air filter.</li> <li>2. Choke closed. (Gas models)</li> </ol>	<p>Replace air filter. See engine manual. Open choke.</p>
<b>Engine runs, but tractor will not drive.</b>	<ol style="list-style-type: none"> <li>1. Parking brake engaged.</li> <li>2. Two speed control in neutral</li> <li>3. Brake is not fully released.</li> </ol>	<p>Disengage parking brake. Move into low or high position. See your dealer.</p>

# Troubleshooting, Adjustment & Service

## TRACTOR TROUBLESHOOTING CONTINUED

PROBLEM	CAUSE	REMEDY
Brake will not hold.	1. Brake is incorrectly adjusted. 2. Brake worn out	See Brake Adjustment. See your dealer
Tractor steers hard.	1. Power steering Malfunction 2. Improper tire inflation. 3. Spindle bearings dry.	See your dealer. Check and correct. Grease spindles. See Lubrication.
Low Oil Pressure Light is On	1. The engine oil pressure light may go on when the engine is first started; this is normal.	Light should go out immediately. If the light stays lit, contact your dealer.
Irregular Voltage Light is On. Or Volt Meter Indicates Irregular Voltage Level	1. Battery discharged. 2. Charging system malfunctioning.	Recharge or replace battery. See you dealer.
Differential Lock Won't Engage	1. Differential lock cable out of adjustment.	See your dealer.
Cruise Control Won't Stay Engaged	1. Cruise lever tension out of adjustment.	See your dealer.
2 Speed Control Won't Shift	1. Operator Error. 2. Transmission Failure.	See Operation Section. See Your Dealer.

## Troubleshooting the Mower

PROBLEM	CAUSE	REMEDY
Mower will not raise.	1. Lift chains not properly attached or damaged.	Attach or repair.
Mower cut is uneven.	1. Mower not leveled properly. 2. Tractor tires not inflated equally or properly. 3. Attachment lift not fully lowered.	See Mower Adjustment. See Maintenance Section. Fully lower attachment lift.
Mower cut is rough looking.	1. Engine speed too slow. 2. Ground speed too fast. 3. Blades are dull. 4. Mower drive belt slipping because it is oily or worn. 5. Check PTO (Electric Clutch) Adjustment. 6. Blades not properly fastened to arbors. 6. Attachment lift not fully lowered.	Set to full throttle. Slow down. Sharpen or replace blades. (See Mower Blade Service.) Clean or replace belt as necessary. See Adjustments Section. See Servicing the Mower Blades. Fully lower attachment lift.
Engine stalls easily with mower engaged.	1. Engine speed too slow. 2. Ground speed too fast. 3. Carburetor improperly adjusted. 4. Cutting height set too low. 5. Discharge chute jamming with cut grass.	Set to full throttle. Slow down. See Engine Manual. Cut tall grass at maximum cutting height during first pass. Cut grass with discharge pointing toward previously cut area. Raise cutting height.
Excessive mower vibration.	1. Blade mounting screws are loose. 2. Mower blades, arbors, or pulleys are bent. 3. Mower blades are out of balance. 4. Belt installed incorrectly.	Tighten to 45-55 ft.lbs. (61-75 N.m.). Check and replace as necessary. Remove, sharpen, and balance blades. See Servicing the Mower Blades. Reinstall Correctly.
Excessive belt wear or breakage.	1. Bent or rough pulleys. 2. Using incorrect belt.	Repair or replace. Replace with correct belt.
Mower drive belt slips or fails to drive.	1. Idler pulley spring broken or not properly attached. 2. Mower drive belt broken.	Repair or replace as needed. Replace drive belt.

## PTO CLUTCH ADJUSTMENT

### Burnishing The Clutch

Before the front PTO clutch is used for the first time, it should be burnished as follows. To burnish the clutch, the mower must be installed.

1. Start the engine and set at full throttle.
2. Pull the front PTO switch out to the on position, leave for 15 seconds, then push in to the off position.
3. Repeat ten times to burnish the clutch.

### PTO Clutch Adjustment

#### **WARNING**

The muffler and surrounding areas can be extremely hot. Allow the engine to cool before performing this procedure.

1. Remove the tractor hood by disconnecting the headlight coupler and then removing two hinge hooks.
2. Use a 0.015" feeler gauge to check front clutch at three slots (A, Figure 39). There should be a slight resistance as gauge is moved in and out of slot. If tight or loose, proceed to step 3.
3. Loosen or tighten one of the nuts (B, Figure 39) to achieve slight drag on feeler gauge. Check the other two slots and adjust accordingly.

*NOTE: Adjustment at one location will change adjustment at the two other slots. Make sure all three locations have proper adjustment.*

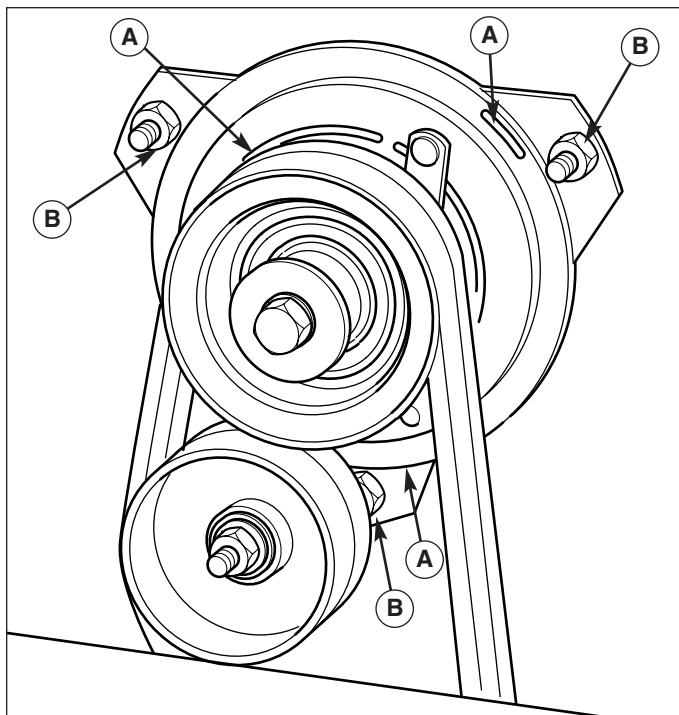
4. With tractor in neutral, PTO disengaged and operator in seat, start the tractor engine.
5. Engage the front PTO and wait several seconds. Disengage the front PTO and check the amount of time it takes for the mower drive belt to stop.
6. If mower drive belt does not stop within five seconds, repeat steps 1-3. If the belt still does not stop within 5 seconds, see your dealer.

## BRAKE LINKAGE ADJUSTMENT

1. Turn off the engine and remove the key from the ignition. **DO NOT** engage the parking brake.
2. Remove the back bumper to gain access to the brake rod adjustment nut (A, Figure 40).
3. Angle the brake assembly arm so that is standing straight up. Hold in place.
4. With the brake assembly arm straight up and the brake pedal at rest, turn the brake rod adjustment nut (A, Figure 40) until the spacer (C) contacts the brake pivot arm (D). Do not over-tighten. Over-tightening will cause the brake to drag.

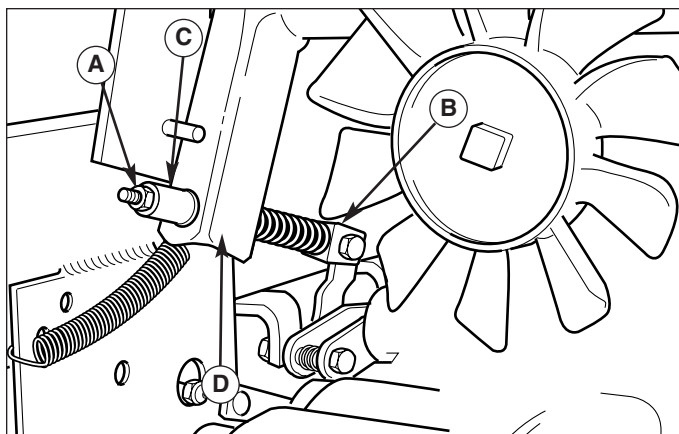
#### **WARNING**

To avoid serious injury, perform adjustments only with engine stopped, key removed and tractor on level ground.



**Figure 39. Front PTO Adjustment**

- A. Slots
- B. Nuts



**Figure 40. Brake Linkage Adjustment**

- A. Brake Rod Adj. Nut
- B. Brake Assy. Arm
- C. Spacer
- D. Brake Pivot Arm

# Troubleshooting, Adjustment & Service

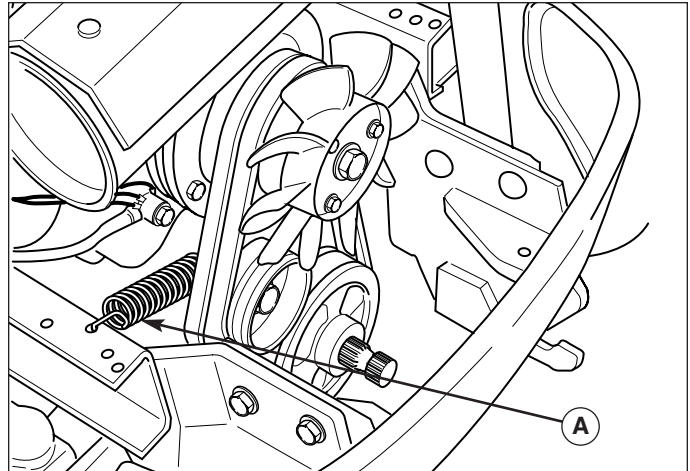


To avoid damaging belts, **DO NOT PRY BELTS OVER PULLEYS.**

## TRACTOR PTO BELT REPLACEMENT

*NOTE: The PTO belts are a matched set and must be replaced as a set. If the belts are being removed for inspection, make sure they are reinstalled in their original pulley groove and rotational orientation.*

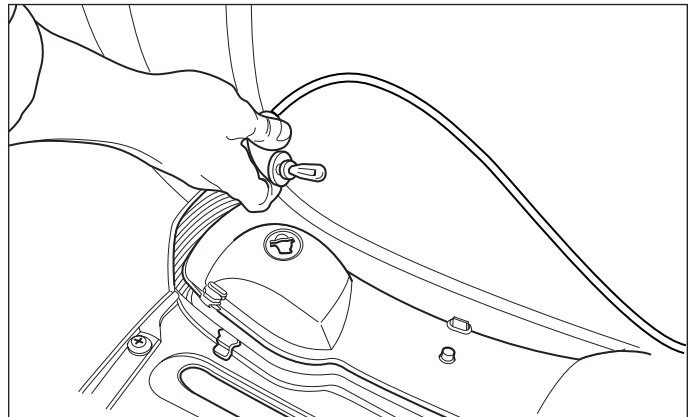
1. Park the tractor on a level surface. Disengage the PTO, turn off the engine and set the parking brake. Remove the key.
2. Tilt the hood forward.
3. Using a spring puller or a small rope loop release the PTO belt idler arm spring (A, Figure 41).
4. One at a time, remove the belts from the lower pulley and upper pulley and fan assembly.
5. Install the new belts on the pulleys and reinstall the idler arm spring.



**Figure 41. PTO Belt Removal**  
A. Idler Arm Spring

## HEADLIGHT REPLACEMENT

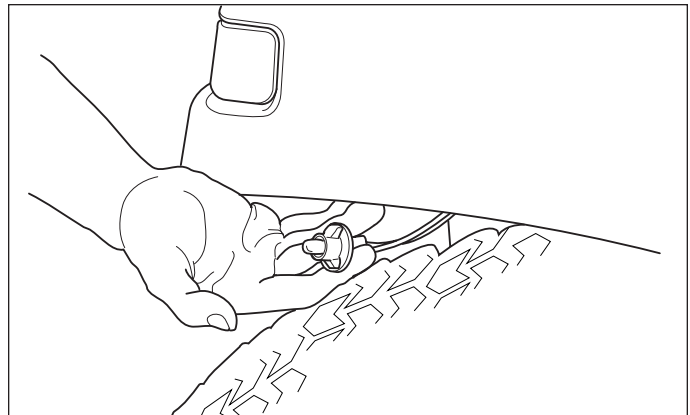
1. Open the hood.
2. Remove the forward heat shield.
3. Remove the light bulb socket from the bezel by twisting it counterclockwise and pulling it out.
4. Use a rag or gloves to remove and replace the light bulb with an identical halogen bulb. **DO NOT TOUCH THE BULB WITH YOUR BARE HANDS.**
5. Reinstall the socket into the bezel.



**Figure 42. Headlight Replacement**

## TAILLIGHT & DASHLIGHT REPLACEMENT

1. Twist the socket counterclockwise and pull out to remove it from the taillight or dashboard display.
2. Remove and replace the old bulb with a new identical bulb.
3. Reinstall the socket into the taillight bezel or dashboard display.



**Figure 43. Taillight Replacement**



## MOWER ADJUSTMENTS

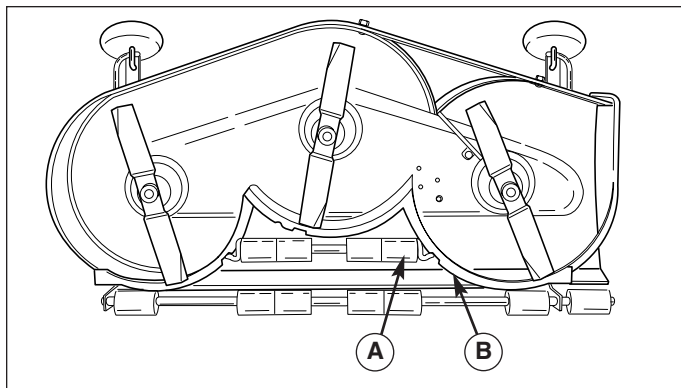
### Roller Bracket Adjustment (60" Mower Only)

The anti-scalping rollers (A, Figure 44) can be adjusted for different cutting heights by positioning roller brackets on the mower baffle (B).

1. Remove bolts, lockwashers and nuts securing roller bracket to baffle.
2. If you typically cut using the lower half of the mower cutting height range, the roller brackets should be positioned in the upper set of holes.
3. Use the lower set of holes if mowing is usually done in the upper half of the cutting height range, or if scalping occurs at lower cutting heights due to uneven terrain.

### WARNING

Before checking mower, shut off PTO and engine. Allow all moving parts to stop. Remove ignition key, then disconnect the spark plug wires and fasten them away from the spark plugs.



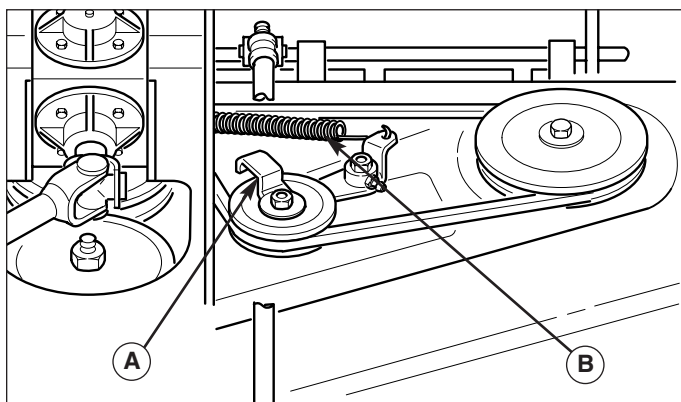
**Figure 44. Anti-Scalping Rollers**

- A. Rollers
- B. Mower Baffle

### Pulley Stop Adjustment (48" Mower Only)

The pulley stop (A, Figure 45) prevents the idler pulley from contacting the idler arm tension spring (B) when the deck is engaged.

1. Remove the mower deck. See MOWER DECK REMOVAL & INSTALLATION.
2. Remove the left side cover.
3. Loosen the idler pulley bolt and orient the pulley stop (A) as shown in Figure 45.



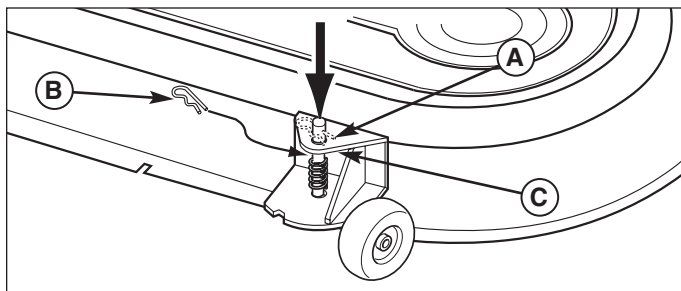
**Figure 45. Pulley Stop Position**

- A. Pulley Stop
- B. Idler Arm Tension Spring

### Gauge Wheel Adjustment (54" Mower Only)

The mower gauge wheels can be placed in two positions depending on the height of cut. When using higher cutting heights, set the wheels in the lower position. When using lower cutting heights, set the wheels in the upper position. To adjust:

1. Remove the hair pin clip (A, B, Figure 46).
2. For upper position, install the pin (A) through the spindle above the bracket (C). For the lower position, push down on the top of the spindle, and install the hair pin clip (B) below the top of the bracket (C).



**Figure 46. Gauge Wheel Adjustment**

- A. Hair Pin (Upper Position)
- B. Hair Pin (Lower Position)
- C. Gauge Wheel Bracket

# Troubleshooting, Adjustment & Service

Mower Adjustments Continued.

## Cutting Height Adjustment

*Note: To operate the electric cutting height motor, it is necessary to insert the ignition key and turn it to the on position. This may be safely done so long as the spark plug wires have been disconnected as noted in the WARNING at right. The key should be turned to off and removed when the step has been completed.*

Press the cutting height adjustment switch while observing the cutting height gauge on the left side of the mower to adjust the cutting height.

## Leveling The Mower

If the cut is uneven, the mower may need leveling. Unequal or improper tire pressure may also cause an uneven cut. Tire pressure should be as follows:

- Front: 12-15 psi
- Rear: 6-8 psi

### SIDE TO SIDE LEVELING

1. With the mower installed, place the tractor on a smooth, level surface such as a concrete floor. Turn the front wheels straight forward.
2. Place the cutting height adjust in high-cut position.
3. Set the parking brake, turn off the ignition, and remove the key.
4. Check for bent blades and replace if necessary.
5. Arrange the mower blades so that they are pointing from side-to-side.
6. Measure the distance between the outside tips of each blade and the ground. If there is more than 1/8" (3mm) difference between the measurements on each side, proceed to step 5. If the difference is 1/8" (3mm) or less, proceed to Front To Back Leveling.
7. See Figure 47. Loosen the outside nut (A) then turn the eccentric nut (B) to raise or lower the left side of the deck. Repeat on the right side of the deck. When the mower deck is level, hold the eccentric nut while tightening the outside nut.

### FRONT TO BACK LEVELING

1. Arrange the blades so they face front-to-back.
2. Measure the distance from the ground to the front and rear tips of each blade. The measurement should be equal for both blades. Front tips should be 1/8" to 1/4" higher than the rear tips. If not, proceed to step 3.
3. Loosen the two rear jam nuts on both both arm assemblies (see Figure 48). Adjust the jam nuts on both arms until the mower deck is level or the front is 1/8" to 1/4" higher.

## WARNING

Before checking mower, shut off PTO and engine. Allow all moving parts to stop. Remove ignition key, then disconnect the spark plug wires and fasten them away from the spark plugs.

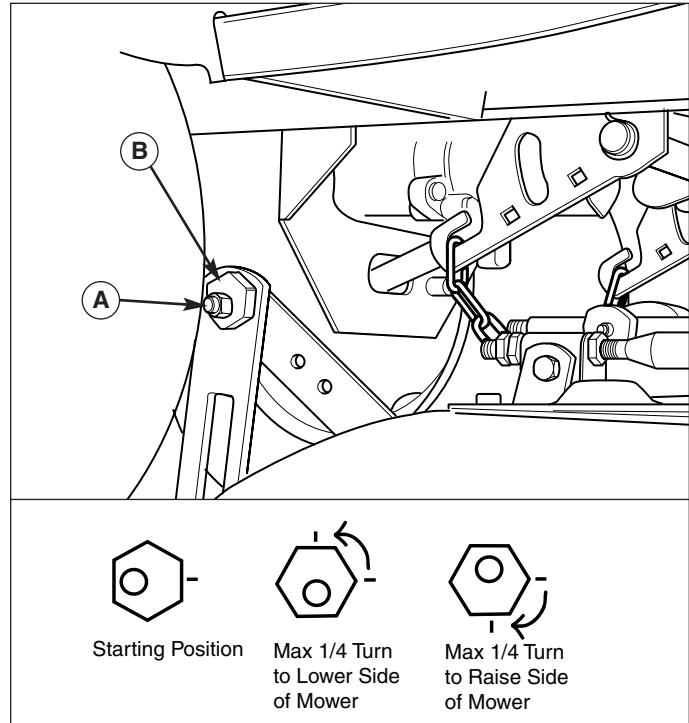


Figure 47. Side-to-Side Adjustment

- A. Outside Nut
- B. Eccentric Nut

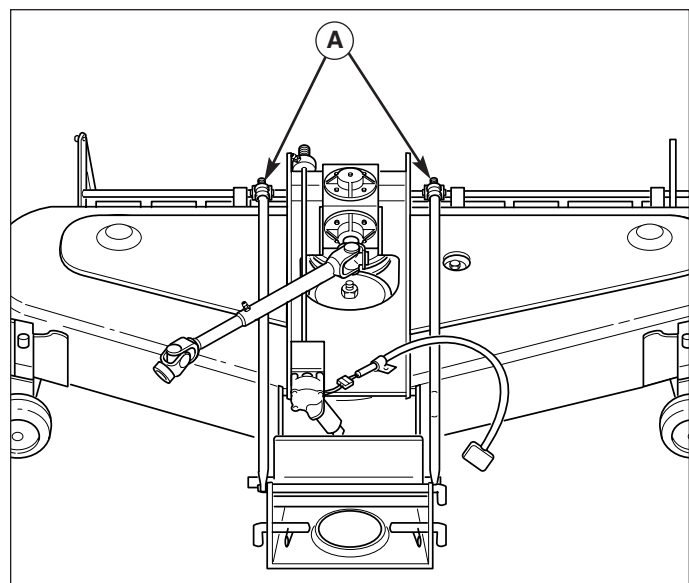


Figure 48. Front to Back Leveling

- A. Jam Nuts



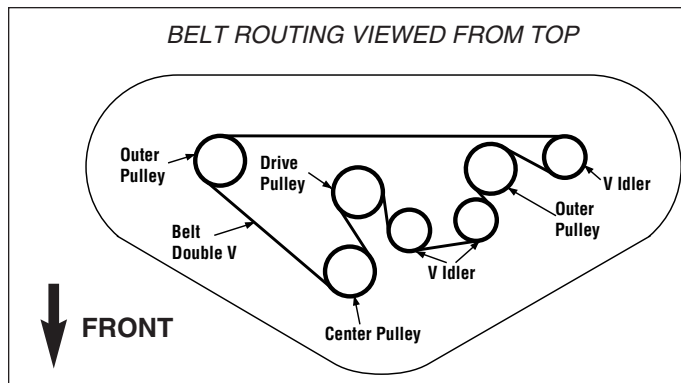


To avoid damaging belts, **DO NOT PRY BELTS OVER PULLEYS.**

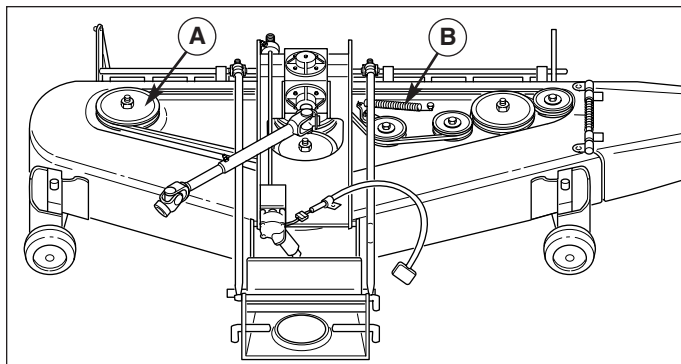
## MOWER BELT REPLACEMENT

### 60" Mower Drive Belt Replacement

1. Remove the mower deck. See Mower Removal and Installation
2. Remove the screws securing both deck covers and remove the covers.
3. Using a spring puller or a small rope loop, release the idler arm tension spring (B, Figure 50).
4. Remove the drive belt from the right side arbor pulley (A, Figure 50). Remove the belt from the other pulleys.
5. Inspect all pulleys for wear or bearing damage.
6. Lubricate the idler arm pivot with multi-purpose lithium grease and check for free movement.
7. Install the new drive belt as shown in the diagram in Figure 49.
8. Complete installation by following steps 3-1 in reverse order.



**Figure 49. 60" Mower Deck Belt Routing**



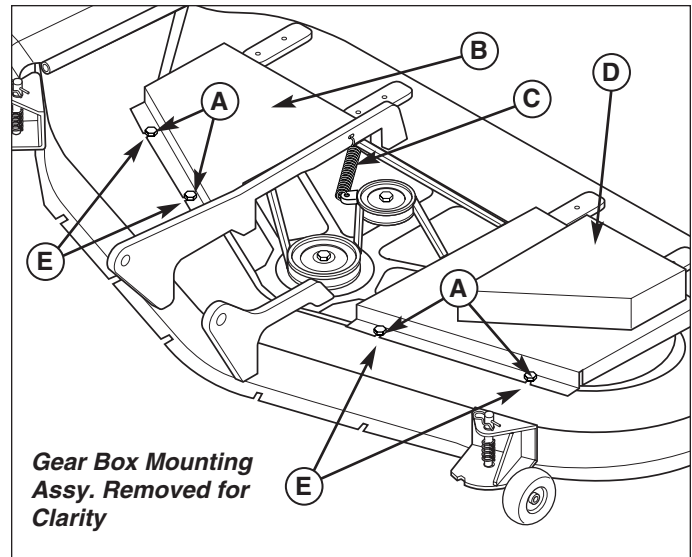
**Figure 50. 60" Mower Deck - Covers Removed**

- A. Right Side Arbor Pulley
- B. Idler Arm Tension Spring

# Troubleshooting, Adjustment & Service

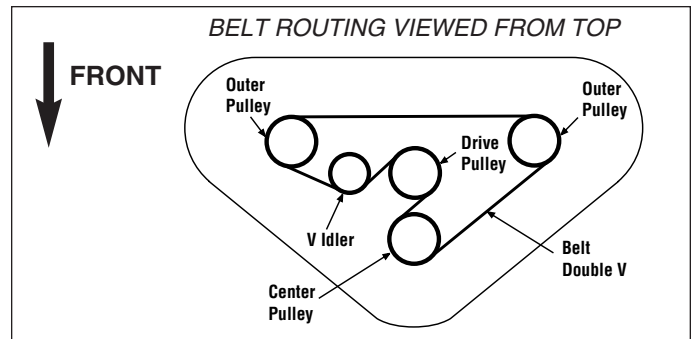
## 54" Mower Drive Belt Replacement

1. Remove the mower deck. See Mower Removal and Installation
2. Remove the taptight screws (A, Figure 51) securing the belt covers and remove the belt covers (B, D).
3. Using a spring puller or a small rope loop, release the idler assembly tension spring (A, Figure 53).
4. Remove the old drive belt.
5. Inspect all pulleys for wear or bearing damage.
6. Lubricate the idler arm pivot with multi-purpose lithium grease and check for free movement.
7. Install the new drive belt as shown in the diagram in Figure 52.
8. Complete installation by following steps 3-1 in reverse order. When reinstalling the belt covers, be sure the alignment notches (E, Figure 51) are centered on the taptight screws (A).

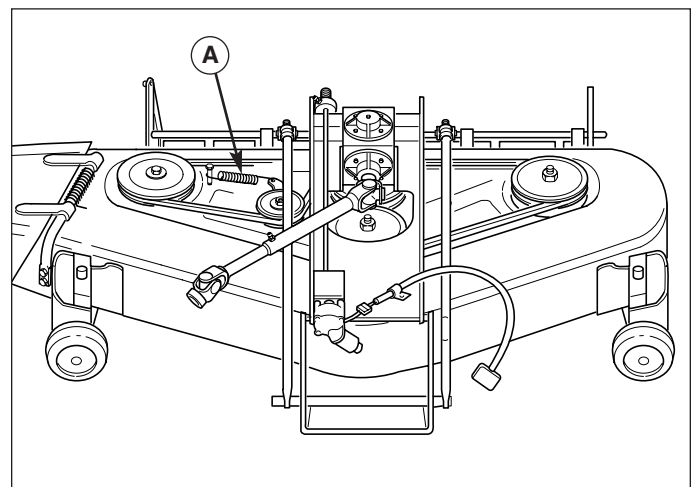


**Figure 51. Mower Deck - 54" Mowers**

- A. Taptight Screws
- B. Right-hand Arbor Cover
- C. Spring
- D. Left-hand Arbor Cover
- E. Alignment Notches



**Figure 52. 54" Mower Belt Routing**



**Figure 53. 54" Mower Deck - Covers Removed**

- A. Idler Assembly Tension Spring

### 48" Mower Drive Belt Replacement

1. Remove the mower deck. See Mower Removal and Installation
2. Remove the screws securing both deck covers and remove the covers.
3. Using a spring puller or a small rope loop, release the idler assembly tension spring (A, Figure 55).
4. Remove the old belt.
5. Inspect all pulleys for wear or bearing damage.
6. Lubricate the idler arm pivot with multi-purpose lithium grease and check for free movement (see LUBRICATION).
7. Install the new drive belt as shown in the diagram in Figure 54.
8. Check that the pulley stop (B, Figure 55) is properly aligned. See PULLEY STOP ADJUSTMENT.
9. Complete installation by following steps 3-1 in reverse order.

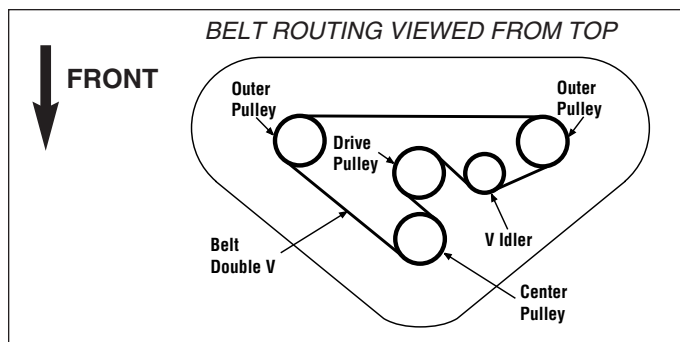


Figure 54. 48" Mower Belt Routing

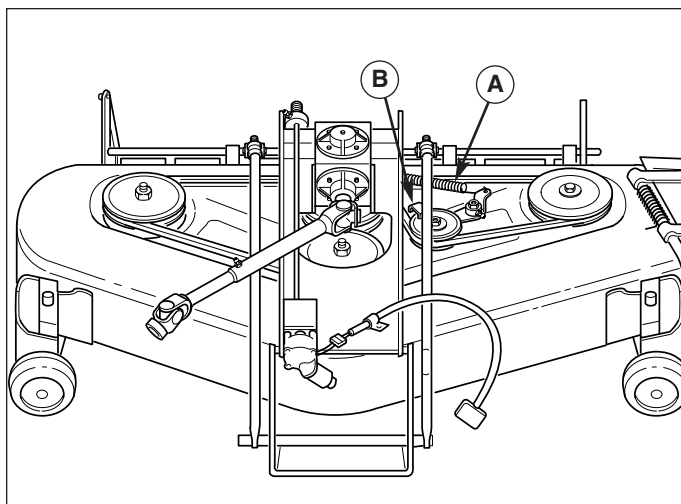


Figure 55. 48" Mower Deck - Covers Removed

- A. Idler Assembly Tension Spring
- B. Pulley Stop

## BATTERY CHARGING

### WARNING

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

A dead battery or one too weak to start the engine may be the result of a defect in the charging system or other electrical component. If there is any doubt about the cause of the problem, see your dealer. If you need to replace the battery, follow the steps under Cleaning the Battery & Cables in the Regular Maintenance Section.

To charge the battery, follow the instructions provided by the battery charger manufacturer as well as all warnings included in the safety rules sections of this book. Charge the battery until fully charged (until the specific gravity of the electrolyte is 1.250 or higher and the electrolyte temperature is at least 60° F). Do not charge at a rate higher than 10 amps.

# Specifications



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

## ENGINE

### 25 HP KOHLER COMMAND

**Make:** Kohler - 4 cycle air cooled  
**Model & Spec:** See engine ID tag  
**Horsepower:** 25 hp @ 3600 rpm  
**Cylinder:** 2 horizontal  
**Bore & Stroke:** 3.27" x 2.64"  
**Displacement:** 725 cc, 44 cu in  
**Construction:** Overhead valve, cast iron sleeve, aluminum crankcase  
**Electrical:** 15 amp. alternator, regulated  
**Battery:** 12 volt, 500 cranking amps, 85 minute reserve capacity  
**Governor:** Mechanical  
**Oil Capacity:** 2.1 qt  
**Ignition:** Electronic  
**Air Cleaner:** Dual Element  
**Fuel Tank:** 6.0 gallons  
**Muffler:** Large, low back pressure, remote canister type  
**Starter:** 12 volt electric gear drive

### 23 HP KOHLER COMMAND

**Make:** Kohler - 4 cycle air cooled  
**Model & Spec:** CH23S (see engine ID tag)  
**Horsepower:** 23 hp @ 3600 rpm  
**Cylinder:** 2 horizontal  
**Bore:** 3.15 in (80 mm)  
**Stroke:** 2.64 in (67 mm)  
**Displacement:** 41.1 Cu. in (674cc)  
**Construction:** Overhead valve, cast iron sleeve, aluminum crankcase  
**Electrical:** 15 amp. alternator, regulated  
**Battery:** 12 volt, 500 cranking amps, 85 minute reserve capacity  
**Governor:** Mechanical  
**Oil Capacity:** 2 qt w/ Filter (1.9L)  
**Ignition:** Electronic  
**Air Cleaner:** Dual Element  
**Fuel Tank:** 6.0 gallons  
**Muffler:** Large, low back pressure, remote canister type  
**Starter:** 12 volt electric gear drive

## ENGINE

### 24.5 HP BRIGGS & STRATTON DIESEL

**Manufacturer:** Briggs & Stratton  
**Model number:** DM 950 D  
**Engine horsepower:** 24.5HP @ 3600 rpm  
**Peak torque:** 32.5 ft. lbs. @ 2400 RPM  
**Engine rated speeds:**  
**Fast idle (no load):** 3600 RPM

**Low idle (no load):** 1700 RPM  
**Displacement:** 952CC (58.1 cu. in.)  
**Crankcase capacity (with filter):** 3.0L (3.2 qt.)  
**Coolant capacity:**  
**Radiator only:** 1 gal.  
**Radiator and block:** 1.5 gal  
**Engine operating temperature:** 190° - 230° F

### 20 HP KOHLER COMMAND

**Make:** Kohler - 4 cycle air cooled  
**Model & Spec:** See engine I.D. plate  
**Horsepower:** 20 HP @ 3600 rpm (Eng. Mfg's. Rating)  
**Cylinder:** 2 Horizontal  
**Bore & Stroke:** 3.03" x 2.64"  
**Displacement:** 624cc 38 cu. in  
**Construction:** Overhead valve, cast iron sleeve, aluminum crankcase  
**Electrical:** 15 amp. alternator, regulated  
**Battery:** 12 volt, 500 cranking amps, 85 minute reserve capacity  
**Governor:** Mechanical  
**Oil Capacity:** 2.0 qt  
**Ignition:** Electronic  
**Air Cleaner:** Ducted paper cartridge and foam pre-cleaner  
**Fuel Tank:** 6.0 gallons  
**Muffler:** Large, low back pressure, remote canister type  
**Starter:** 12 volt electric gear drive

### 20 HP KAWASAKI

**Make:** Kawasaki - 4 cycle liquid cooled  
**Model & Spec:** See engine ID tag  
**Horsepower:** 20 hp @ 3600 rpm  
**Cylinder:** 2 horizontal  
**Bore & Stroke:** 2.99" x 2.66"  
**Displacement:** 617 cc, 37.7 cu in  
**Construction:** Overhead valve, cast iron sleeve, aluminum crankcase  
**Electrical:** 20 amp. alternator, regulated  
**Battery:** 12 volt, 500 cranking amps, 85 minute reserve capacity  
**Governor:** Mechanical  
**Oil Capacity:** 1.6 qt  
**Ignition:** Electronic  
**Air Cleaner:** Dual Element  
**Fuel Tank:** 6.0 gallons  
**Muffler:** Large, low back pressure, remote canister type  
**Starter:** 12 volt electric gear drive

**TRANSMISSION - HYDRO**

**Type** Hydrostatic Sundstrand Model 15U  
**Pump** Variable Displacement Axial Type  
**Motor** Fixed Displacement Reversible Axial Type  
**Hydraulic Fluid** Type F Transmission Fluid  
 Reservoir: 6 Qt. Capacity (5.7 L)  
 Filter: Cartridge w/25 Micron Rating  
**Control** Full Flow w/o Anti-Drain Back  
 Shock Absorber Dampened Pedal  
 w/Brake Return  
 Two Speed Transmission  
 w/Traction Control Hi/Lo Range Control  
**Speeds @3600 RPM** Continuously Variable , Forward & Reverse  
**Differential Speed** Planetary Bevel Gear  
 20 HP Kohler Model:  
     Forward 0-7 MPH-Hi, 0-5.5 MPH-Lo  
     Reverse 0-3.5 MPH-Hi  
     Reverse 0-2.5 MPH-Lo  
 20 HP Kawasaki Model:  
     Forward 0-8 MPH-Hi, 0-6.5 MPH-Lo  
     Reverse 0-4 MPH-Hi  
     Reverse 0-3 MPH-Lo  
 25 HP Kohler Model:  
     Forward 0-8 MPH-Hi, 0-6.5 MPH-Lo  
     Reverse 0-4 MPH-Hi  
     Reverse 0-3 MPH-Lo  
**Final Drive** Hardened Spur Gears  
 Rolling Contact Bearings

**DIMENSIONS**

**25 HP Kohler & 20 HP Kawasaki**  
**Height :** 51"  
**Width:** 44.75"  
**Length:** 78.75"  
**Wheel Base:** 55"  
**Weight with 60" Mower:** 1125 lbs  
**Cutting Width:** 60"  
**Cutting Height:** 1"-5"  
**Front Tires:** 18x8.5-8  
**Rear Tires:** 26x12-12  
**Turning radius:** 26"

**20 HP Kohler**  
**Height :** 49.5"  
**Width:** 40.5"  
**Length:** 77.75"  
**Wheel Base:** 55"  
**Weight with 48" Mower:** 1050 lbs  
**Cutting Width:** 48"  
**Cutting Height:** 1"-5"  
**Front Tires:** 16x7.5-8  
**Rear Tires:** 23x10.5-12  
**Turning radius:** 26"

# Parts & Accessories

## Replacement Parts

Tractor Drive Belt (Models w/Kohler engines)	1716996
Tractor Drive Belt (Models w/Kawasaki engines)	1716995
PTO Drive Belt-Diesel (Qty. 2 Required)	1718602
48" Mower Deck Drive Belt	1675342
48" Mower Blades	1679916
54" Mower Deck Drive Belt	1720402
54" Mower Blade - Center (S/N 00001-59999)	1720680
54" Mower Blade - Center (S/N 60000-Up)	1722090
54" Mower Blade - RH & LH (S/N 00001-59999)	1720679
54" Mower Blade - RH & LH ( S/N 60000-Up)	1722091
60" Mower Deck Drive Belt	1716959
60" Mower Blade - LH	1702366
60" Mower Blade - RH & Center	1702365
Fuel Filter	173206
Battery	1715824
Ignition Key	1717163
Dash Bulb	1717634
Headlight Bulb	1717649
Taillight Bulb	1717650
Interlock Switch - PTO	1716332
Interlock Switch - Cruise Control	1717050
Interlock Switch (w/ Kohler engines) - Seat	1716368
Interlock Switch (w/ Kohler engines) - Brake	1717050
Interlock Switch (w/ Kawasaki & Diesel engines) - Seat	1700636
Interlock Switch (w/ Kawasaki & Diesel engines) - Brake	1701521

## Optional Accessories

Roll-Over Protection Bars
Snow Cabs, Hard and Soft-Side
46" Single Stage Snowthrower
47" Two Stage Snowthrower
60" Dozer/Snow Blade
Front End Loader
Front Weight Kit
Rear Wheel Weights
Rear Weight Box
Tire Chains
Rear Light Kit
Dump Carts; 6.5, 10, and 17cu. ft.
Turbo Three Bag Grass Catcher
Turbo Grass Collection Systems
Three Point Hitch
2000 RPM Rear PTO Kit
540 RPM Rear PTO Kit
50" Tiller
Arm Rest Kit
Gas Cans: 1, 2-1/2, 5-1/4 gal.

## Maintenance Items

Engine Oil	
SAE 5W-30 SF/CD (Cold Weather 30° & under)	1685576
SAE 30W SG/CC (Warm weather 32° & up)	1685659
Touch-Up Paint	
Deep Orange, 13 oz. spray can	1685611
Deep Orange, 1 quart can	1685612
Deep Orange, 1/2 oz. bottle w/brush cap	1685615
Solar Black, 13 oz. spray can	1686779
Red, 13 oz. spray can	1685722
Grease Gun Kit w/8 oz. Grease Tube	1685510
Replacement 8 oz. Grease Tube for above	103077
Tire Sealant	
11 oz. Tube	1685523
Degrimer/Degreaser	
32 oz. Bottle w/Trigger Spray	1685619
1 gallon	1685621
Gas Stabilizer	
8 oz. Bottle	1685748
Case of 12 - 8 oz. Bottles	1685747

## TECHNICAL MANUALS

Additional copies of this manual are available, as well as fully illustrated parts lists. These manuals show all of the product's components in exploded views (3D illustrations which show the relationship of parts and how they go together) as well as part numbers and quantities used. Important assembly notes and torque values are also included.

For applicable manuals currently available for your model, contact our Customer Publications Department at 262-284-8519. Have the information listed in the box below available when phoning in your request.

<b>Model:</b> _____
<b>Mfg. No.:</b> _____
<b>Your Name:</b> _____
<b>Address:</b> _____
<b>City, State, Zip:</b> _____
<b>Visa/Mastercard No.:</b> _____
<b>Card Expiration Date:</b> _____