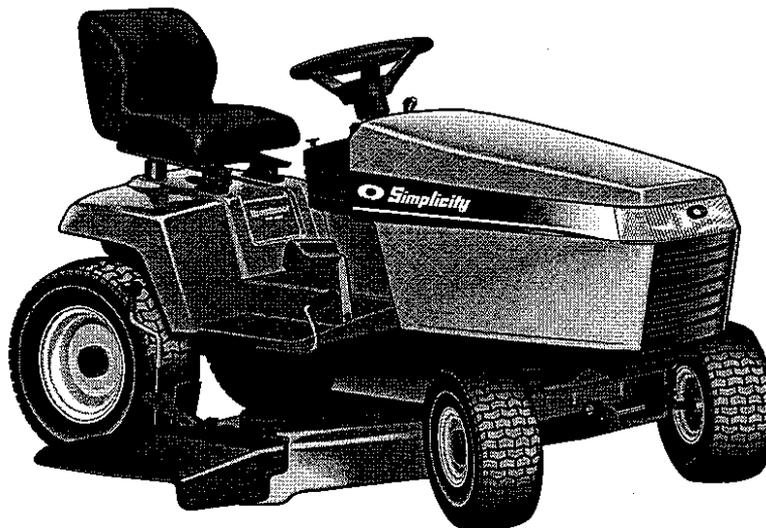




OPERATOR'S MANUAL



Broadmoor Series

14HP Tractors

Mfg. No.	Description
1693052	Broadmoor, 14HP Hydro
1693068	Broadmoor, 14HP Hydro (Export)
1693351	Broadmoor, 14HP Hydro
1693358	Broadmoor, 14HP Hydro (Export)

16HP Tractors

Mfg. No.	Description
1693054	Broadmoor, 16HP Hydro
1693070	Broadmoor, 16HP Hydro (Export)
1693353	Broadmoor, 16HP Hydro
1693360	Broadmoor, 16HP Hydro (Export)

16HP V-Twin Tractors

Mfg. No.	Description
1693056	Broadmoor, 16HP V Hydro
1693072	Broadmoor, 16HP V Hydro (Export)
1693355	Broadmoor, 16HP V Hydro
1693362	Broadmoor, 16HP V Hydro (Export)

16HP V-Twin Tractors

Mfg. No.	Description
1693275	Broadmoor, 18HP V Hydro
1693261	Broadmoor, 18HP V Hydro (Export)

36" Mower Decks

Mfg. No.	Description
1692682	38" Mower Deck
1693170	38" Mower Deck (Export)

44" Mower Decks

Mfg. No.	Description
1692684	44" Mower Deck
1693171	44" Mower Deck (Export)

50" Mower Decks

Mfg. No.	Description
1693267	50" Mower Deck
1693283	50" Mower Deck (Export)

1718210-02

Rev 4/1998
TP-100-2105-02-BM-S



Simplicity

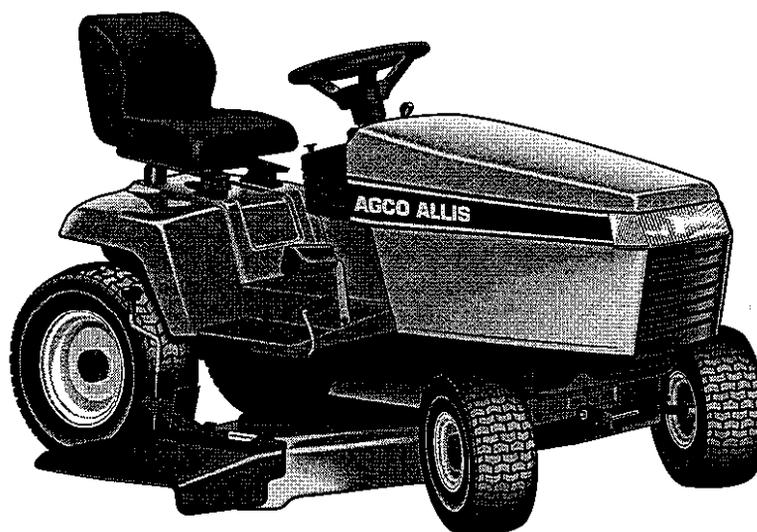
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500 N Spring Street / PO Box 997
Port Washington, WI 53074-0997

www.simplicitymfg.com

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AGCO ALLIS

OPERATOR'S MANUAL



1600 Series

14HP Tractors

Mfg. No.	Description
1693058	1614H, 14HP Hydro
1693365	1614H, 14HP Hydro

16HP Tractors

Mfg. No.	Description
1693060	1616H, 16HP Hydro
1693367	1616H, 16HP Hydro

16HP V-Twin Tractors

Mfg. No.	Description
1693062	1616VH, 16HP V-Twin Hydro
1693369	1616VH, 16HP V-Twin Hydro

18HP V-Twin Tractors

Mfg. No.	Description
1693277	1618H, 18HP V-Twin Hydro

38" Mower Decks

Mfg. No.	Description
1692683	38" Mower Deck

44" Mower Decks

Mfg. No.	Description
1692685	44" Mower Deck

50" Mower Decks

Mfg. No.	Description
1693284	50" Mower Deck

1718211-02

Rev 4/1998
TP-100-2105-02-BM-A

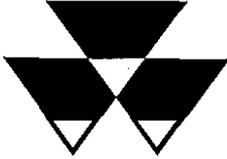
AGCO ALLIS

AGCO-Allis Lawn & Garden Equipment
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Port Washington, WI 53074.0997 USA

www.allislawn.com

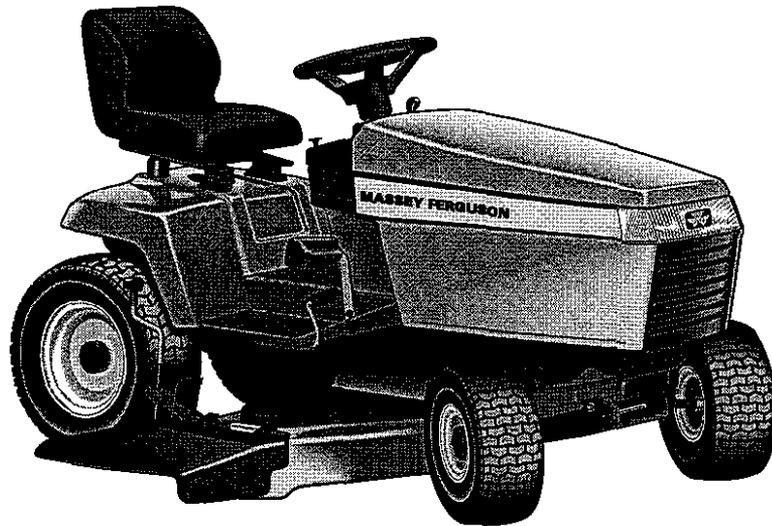
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MASSEY FERGUSON
LAWN & GARDEN EQUIPMENT

OPERATOR'S MANUAL



2600 Series

16HP Tractors

Mfg. No.	Description
1693064	2616H, 16HP Hydro
1693372	2615H, 16HP Hydro

16HP V-Twin Tractors

Mfg. No.	Description
1693066	2616VH, 16HP V-Twin Hydro
1693374	2616VH, 16HP V-Twin Hydro

18HP V-Twin Tractors

Mfg. No.	Description
1693279	2618H, 18HP V-Twin Hydro

38" Mower Decks

Mfg. No.	Description
1692663	38" Mower Deck

44" Mower Decks

Mfg. No.	Description
1692685	44" Mower Deck

50" Mower Decks

Mfg. No.	Description
1693284	50" Mower Deck

1718212-02

Rev 4/1998
TP-100-2105-02-BM-M



MASSEY FERGUSON
LAWN & GARDEN EQUIPMENT

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www.masseylawn.com

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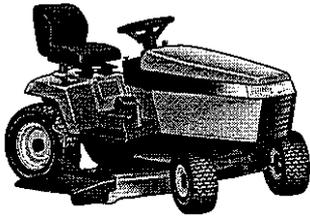


Table of Contents

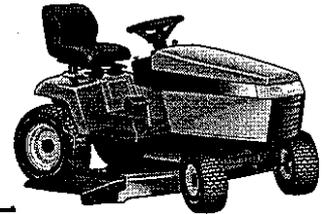
Identification Numbers2	Troubleshooting, Adjustments & Service.....	2 2
Safety Rules & Information .....	.3	Troubleshooting the Tractor.....	.22
Features & Controls .....	.6	Troubleshooting the Mower .....	.23
Control Functions	6	Steering Wheel Adjustment	24
Parking Brake / Cruise Control Knob Functions .....	.	Seat Adjustment.....	24
Dashboard Display Functions .....	.8	Steering Gear Adjustment.....	.24
Safety Interlock System	9	PTO Clutch Adjustment .....	.25
Operating the Tractor.. .....	.10	Blade Brake Check .....	.25
General	10	Brake Adjustment.....	.26
Checks Before Starting.....	10	Mower Adjustments .....	.26
Starting the Engine	11	Cutting Height Adjustment .....	.26
Stopping the Tractor & Engine	11	Leveling the Mower	27
Driving the Tractor	11	Transmission Drive Belt Replacement	28
Mowing.....	11	Mower Belt Replacement.....	.29
Pushing the Tractor by Hand	11	38" Mower Drive Belt Replacement .....	.29
Mower Deck Removal & Installation	12	44" & 50" PTO Belt Replacement .....	.30
Storage	14	44" & 50" Arbor Drive Belt Replacement.....	3 1
Regular Maintenance .....	.15	Battery Service.....	.32
Maintenance Schedule .....	.15	Checking the Battery Voltage .....	.32
Checking Tire Pressures	15	Charging A Discharged Battery .....	.32
Checking/Adding Fuel.....	.16	Jump Starting with an Auxiliary Battery .....	.32
Check / Change Transmission Oil	16	Headlight Replacement.....	.34
Accessing the Engine Compartment.....	17	Dashlight Replacement.....	.34
Fuel Filter Replacement.....	.17	Specifications .....	.35
Oil & Filter Change.....	.17	Common Replacement Parts .....	.36
Check/Change Air Filter.....	17	Lawn Care & Mowing Information..	LC-1
Lubrication	18	International Symbols	LC-8
Lubricate Rear Axes .....	.19	Technical Manuals	LC-8
Battery Maintenance	20		
Checking Battery Fluid	20		
Cleaning the Battery and Cables.....	.20		
Servicing the Mower Blades	21		
Blade Brake Check.....	.21		

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

WARNING

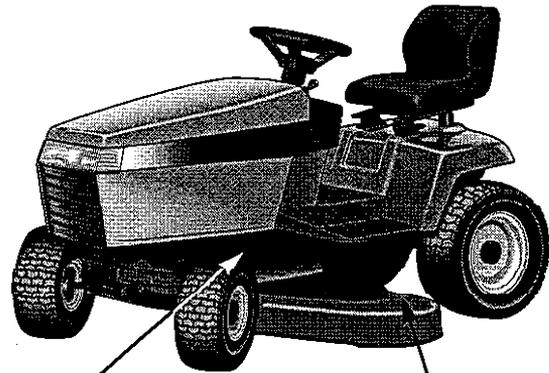
Engine exhaust from this product contains chemicals known, in certain quantities, to cause cancer, birth defects, or other reproductive harm.

Identification Numbers



IDENTIFICATION TAG LOCATIONS

When contacting your Authorized Dealer for replacement parts, service, or information **YOU MUST HAVE THESE NUMBERS.**



Unit Identification Tag

Mower Deck Identification Tag

IDENTIFICATION NUMBERS

Record your model name/number, unit and mower deck manufacturer numbers and engine serial number in the space provided for easy reference.

- The **Unit I.D. tag** is located on the left-side, of the frame, as shown below.
- The **Mower Deck I.D. tag** is also on the left side, on top of the mower deck.
- For location of **Engine Serial Number**, refer to the Engine Owner's Manual.

Be sure to fill out and return the Warranty Registration Card supplied with your unit.

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

A

Safety Rules & Information

A 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 mower 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.
- Only allow responsible adults, who are familiar with the instructions, to operate the unit.
- 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 travelling 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.

SLOPE OPERATION

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

-A WARNING

Never operate on slopes greater than 30 percent (16.7") which is a rise of three feet vertically in 10 feet horizontally.

When operating on slopes that are greater than 15 percent (8.5") but less than 30 percent use additional wheel weights or counterweights when available and applicable (see your dealer to determine which weights -if any-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.

Do

- See your authorized dealer for recommendations of available weights 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. 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.

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 uphill, 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 catcher on steep slopes.

Safety Rules & Information

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.

TRANSPORTING AND STORAGE

- Always observe safe refueling and fuel handling practices when refueling the unit after transportation or storage.
- Always follow the engine manual instructions for storage preparations before storing the unit 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.

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.

- Never run a unit in an enclosed area.
- 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.
- 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.
- 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.

A WARNING

Never place hands near the hydro pump cooling fan when the unit is running. Cooling fan is located on top of transaxle.

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.

THROTTLE

- ALWAYS operate at full throttle.
- Shut OFF at half to full throttle.

CHOKE

- Pull knob OUT to engage.
- Push knob IN to disengage.

IGNITION SWITCH

- Remove key before leaving tractor.

MOWER LIFT LEVER

- Raise lever to lift mower up for transport.
- Lower lever to place mower into cutting position.

TO OPERATE PTO CLUTCH

- Operator must be in seat.
- Pull UP to engage.
- Push DOWN to disengage.

BRAKE PEDAL

- To SET Parking Brake — fully depress brake pedal and pull knob UP.
- To RELEASE Parking Brake — depress brake pedal and push knob DOWN.

GROUND SPEED CONTROL

- Depress front ground speed pedal to increase forward ground speed.
- Depress rear ground speed pedal to increase reverse ground speed.

CUTTING HEIGHT ADJUST

- Turn clockwise to raise cutting height.
- Turn counter-clockwise to lower cutting height.

CRUISE CONTROL

- To SET — depress front ground speed pedal to desired forward speed, then pull knob UP.
- To RELEASE — depress brake pedal or front ground speed pedal.

DO NOT TOW TRACTOR!
Damage may result to hydrostatic transmission

OPERATION

To Start Engine:

- Seat must be occupied, PTO switch off, and brake pedal depressed, throttle at half to full, turn Ignition to START.

To STOP Engine:

- Engage parking brake, throttle at half to full, turn Ignition switch to OFF.

When Operator Leaves Seat:

- Engine will shut off if PTO is ON.
- Engine will shut off if parking brake is OFF.

Before Leaving Machine:

- Turn PTO switch OFF, shut off engine, remove key, and set parking brake.

WARNING

AVOID SERIOUS INJURY OR DEATH

- READ OPERATOR'S MANUAL(S).
- KNOW LOCATION AND FUNCTION OF ALL CONTROLS.
- KEEP SAFETY DEVICES (GUARDS, SHIELDS, & SWITCHES) IN PLACE AND WORKING.
- REMOVE OBJECTS THAT COULD BE THROWN BY THE BLADE.
- DO NOT MOW WHEN CHILDREN OR OTHERS ARE AROUND.
- NEVER CARRY CHILDREN.
- LOOK DOWN AND BEHIND—BEFORE AND WHILE BACKING.
- AVOID SUDDEN TURNS.
- IF YOU CANNOT BACK UP A HILL — DO NOT OPERATE ON IT.
- GO UP AND DOWN SLOPES, NOT ACROSS.
- IF MACHINE STOPS GOING UPHILL, STOP BLADE AND BACK DOWN SLOWLY.
- BE SURE BLADE(S) AND ENGINE ARE STOPPED BEFORE PLACING HANDS OR FEET NEAR BLADE(S).
- WHEN LEAVING MACHINE, SHUT OFF ENGINE, REMOVE KEY, AND SET PARKING BRAKE.

DANGER

ROTATING BLADES CUT OFF ARMS AND LEGS
STOP MOWER WHEN CHILDREN ARE NEAR.
NO RIDERS — THEY FALL OFF.

DANGER

OPERATING ON SLOPES CAN BE DANGEROUS
SEE OPERATOR'S MANUAL.
IF YOU CANNOT BACK-UP A HILL — DO NOT DRIVE ON IT.

Decal - Operating Instructions Bottom Panel
Part No. 1718209

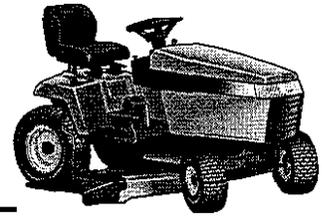


Decal - Danger
Part No. 1704275



Decal - Danger
Part No. 1704277

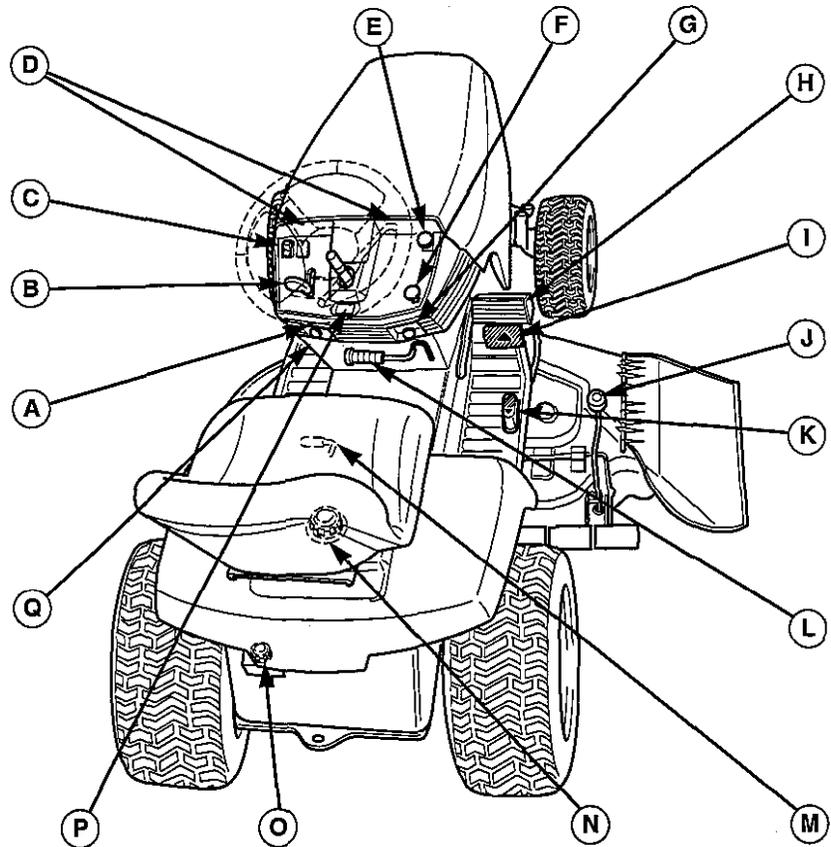
Features & Controls



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 (Twin Cylinder Models Only)
- B. Throttle/Choke
- C. Light Switch
- D. Dashboard Display Lights
- E. PTO Switch
- F. Parking Brake / Cruise Control
- G. Ignition Switch
- H. Brake Pedal
- I. Forward Ground Speed Pedal
- J. Mower Height of Cut Adjust Knob
- K. Reverse Ground Speed Pedal
- L. Mower Lift Lever
- M. Seat Adjustment Lever
- N. Gas Cap / Gas Gauge
- O. Transmission Oil Reservoir
- P. Hour Meter
- Q. Steering Wheel



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 (Twin Cylinder Models Only)

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

B. Throttle / Choke Control

The throttle controls engine speed. Move the throttle forward to increase engine speed, and back to decrease engine speed. Always operate at FULL throttle. On single cylinder models, moving the throttle control fully forward closes the choke. A warm engine may not require choking.

C. Light Switch

The light switch turns the tractor lights on and off.

D. Dashboard Display Lights

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

E. 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.

F. Parking Brake / Cruise Control Knob

The parking brake /cruise control knob is used to lock the parking brake when the tractor is stopped AND to lock the cruise control when the tractor is in motion.

Fully depressing the brake pedal and pulling up on the knob engages the parking brake.

Pulling up on the knob while depressing the forward ground speed pedal engages the cruise control.

Refer to page 8 for a full explanation of parking brake! cruise control functions.

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. Brake Pedal

Depressing the brake pedal applies the tractor brake.

I. Forward Ground Speed Pedal

The tractor's forward ground speed is controlled by the forward ground speed control pedal.

Depress the pedal to increase FORWARD ground speed. Note that the further down the pedal is depressed, the faster the tractor will travel.

J. Mower Cut of Height Adjustment Knob

The cutting height adjustment knob controls the mower cutting height. The cutting height is infinitely adjustable between 1" and 3-5/8."

K. Reverse Ground Speed Pedal

The tractor's reverse ground speed is controlled by the reverse ground speed control pedal (I, Figure 1).

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

L. Mower Lift Lever

The mower lift lever raises the mower deck off the ground for transporting. DO NOT cut with the lift lever in the raised position.

M. Seat Adjustment Lever

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

N. Gas Cap / Gas Gauge

The combination gas cap/gas gauge shows the amount of fuel in the tank. To remove the cap, turn counterclockwise.

O. Transmission Oil Reservoir

The transmission oil reservoir holds "extra" oil for the transmission. The oil level can be checked by looking at the reservoir just beneath the fill cap.

P. Hour Meter

The hour meter shows the number of hours the key has been in the RUN position.

Models equipped with digital hour meters:

Digital hour meters flash maintenance icons at factory-set intervals for lubrication and oil changes.

Q. Adjustable Steering Wheel

The tractor is equipped with a two position steering column. See Adjustments section for adjustment procedure.

PARKING BRAKE / CRUISE CONTROL KNOB FUNCTIONS

Applying the Parking Brake - See Figure 2. To lock the parking brake, release the ground speed pedals (A), fully depress the brake pedal (B), pull UP on the parking brake /cruise control knob (C), and then release brake pedal.

Releasing the Parking Brake - See Figure 2. To release the parking brake, fully depress the brake pedal (B) and push the parking brake /cruise control knob (C) DOWN.

Applying the Cruise Control - See Figure 3. To apply the cruise control, depress the forward ground speed pedal (A) until the desired speed is achieved. Then pull up on the parking brake/cruise control knob (B) and release the forward ground speed pedal (A).

Releasing the Cruise Control - See Figure 3. The cruise control can be released three ways:

1. Tap the forward ground speed pedal (A).
2. Push the parking brake /cruise control knob (C) DOWN.
3. Depress the brake pedal (B).

In the event you need to stop quickly, fully depressing the brake pedal (B, 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 tapping the forward ground speed pedal or pushing the parking brake/cruise control knob down.

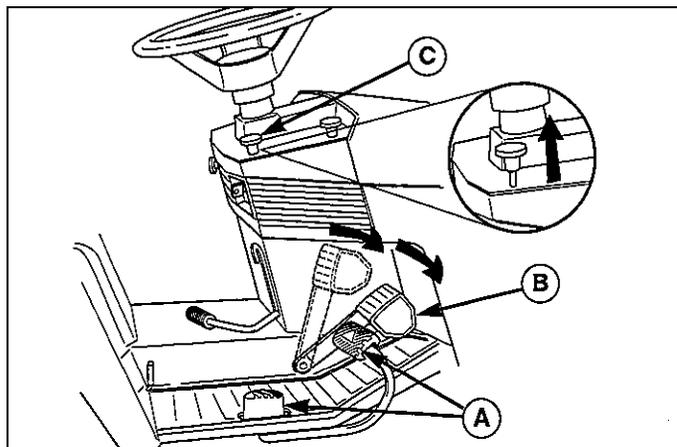


Figure 2. Engaging the Parking Brake
 A. Ground Speed Pedals
 B. Brake Pedal
 C. Parking Brake / Cruise Control Knob

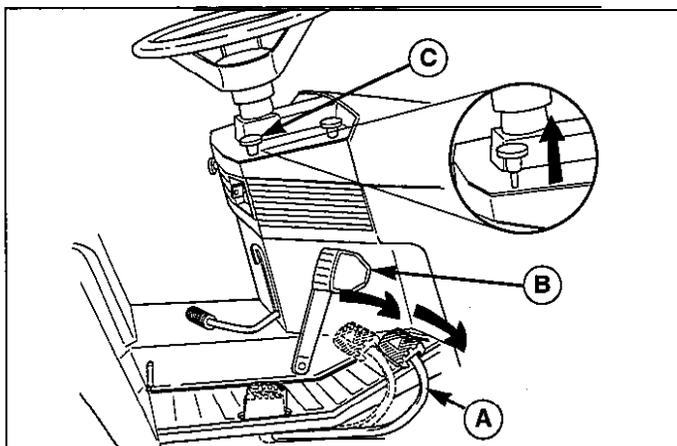


Figure 3. Cruise Control Function
 A. Forward Ground Speed Pedal
 B. Brake Pedal
 C. Parking Brake / Cruise Control Knob

DASHBOARD DISPLAY FUNCTIONS

Refer to Figure 4.

A. Headlight Indicator Light

Indicates that the headlights are on.

B. Low Oil Pressure Light

Indicates that the engine oil pressure is low.

C. Operator Seated Light

-Indicates that the operator present seat switch has been activated. This light must be lit for the engine to start.

D. Parking Brake / Cruise Control Light

Indicates that the parking brake or cruise control is engaged.

E. PTO Light

Indicates the PTO switch is in the ON position.

F. Hour Meter

Shows the number of hours the key has been in the ON position.

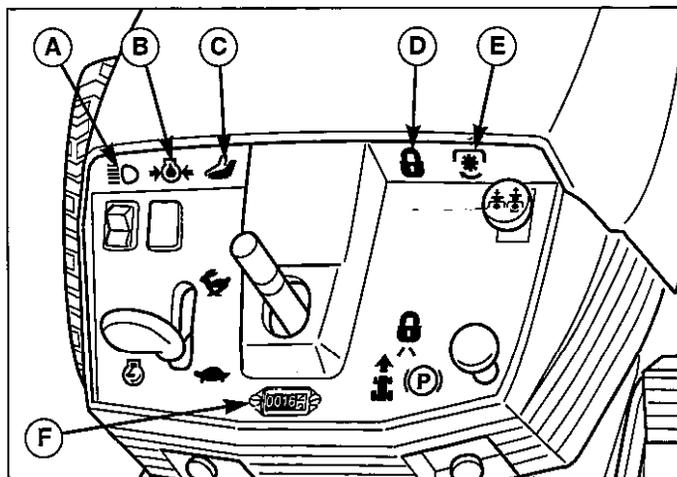


Figure 4. Dashboard Display

A 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 brake is not engaged), OR
- There is no operator in the seat.

Test 2 -Engine SHOULD crank if:

- PTO switch is NOT engaged, AND
- Brake pedal is fully depressed (or parking brake is engaged), AND
- An operator is sitting in the seat.

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

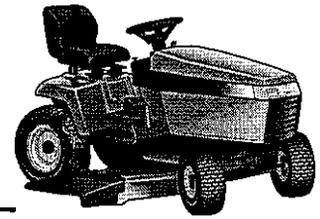
Lower blades and mower drive belt should come to complete stop within five seconds after electric PTO switch is turned off (or operator rises off seat). Mower drive belt does not stop within five seconds, see your dealer.

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

WARNING

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

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 operators position.
- Fill the gasoline tank with fresh gasoline. Refer to engine manual for gasoline recommendations.
- Make certain rear counterweights are installed if you will be operating the unit on sloping ground.

A 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.

A DANGER

OPERATING ON SLOPES CAN BE DANGEROUS

Never operate on slopes greater than 30 percent (16.7") which is a rise of three feet vertically in 10 feet horizontally.

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

When operating on slopes that are greater than 15 percent (8.5") but less than 30 percent, 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.**

STARTING THE ENGINE

1. While sitting in the operator's seat, fully depress the brake pedal or set the parking brake.
2. Make sure that your feet are not depressing the ground speed control pedals.
3. Disengage the PTO clutch.
4. Set the throttle to FULL.
5. Twin Cylinder Models: Pull the Choke knob OUT to choke the engine.

NOTE: A warm engine may not require choking.

6. Insert the ignition key 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.

NOTE: In the event of an emergency the engine can be stopped by simply turning the ignition switch to STOP. Use this method on/y in emergency situations. For normal/ engine shut down follow the procedure given in STOPPING THE TRACTOR.

STOPPING THE TRACTOR & ENGINE

1. Disengaging the cruise control and taking your foot off the ground speed control pedals will stop tractor movement. For emergency stopping depress the clutch / brake pedal.
2. Engage the parking brake.
3. Disengage the PTO.
4. Position the throttle control at half throttle.
5. Turn the ignition switch to STOP. Remove the key.

NOTE: Stopping the engine at speeds lower than half throttle 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 so that you can comfortably reach all the controls and see the dashboard display.
2. Engage the parking brake.
3. Make sure the PTO switch is disengaged.
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 pedals, setting the parking brake, and stopping the engine (see STOPPING THE TRACTOR AND ENGINE).

A 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.

MOWING

1. Engage the parking brake. Make sure the PTO switch is disengaged.
2. Start the engine (see STARTING THE ENGINE).
3. Lower the mower lift lever.
4. Set the mower cutting height to the desired level.
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.
6. When finished, shut off the PTO and raise the mower lift lever.
9. Stop the engine (see STOPPING THE TRACTOR AND ENGINE).

PUSHING THE TRACTOR BY HAND

1. Disengage the PTO and turn the engine off.
2. Move the transmission release lever to PUSH position.

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

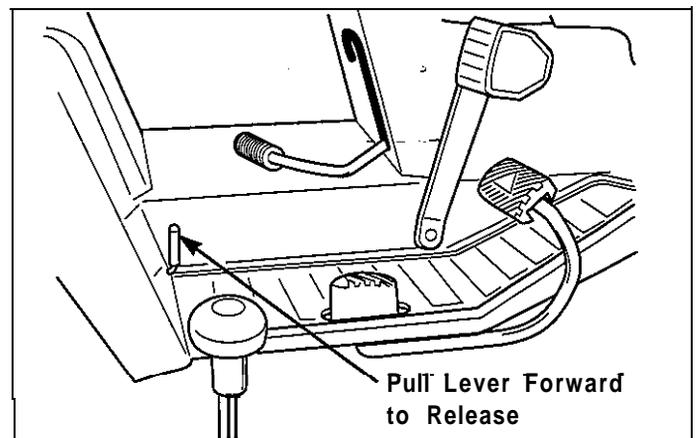


Figure 5. Hydro Release Lever

Operating the Tractor

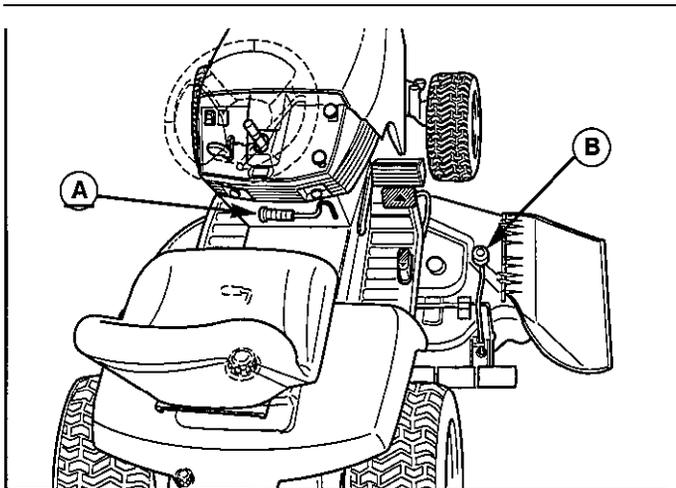


Figure 6. Raising & Lowering Mower
A. Mower Lift Lever B. Mower Height Adjuster

⚠ WARNING

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

MOWER DECK REMOVAL & INSTALLATION

Removing the Mower Deck

1. Park tractor on a hard, level surface such as a concrete floor. Turn off PTO switch and engine, remove the key and apply parking brake.
2. Place mower in the lowest cutting position using the mower height adjuster (B, Figure 6).
3. Place the mower lift lever (A, Figure 6) in the lowest position.
4. Disconnect the mower lift arm from the tractor lift arm (A, Figure 7). Re-install washer and safety clip.
5. Remove belt from PTO pulley (B, Figure 8).

A CAUTION

The muffler and surrounding areas may be hot.

6. Turn wheels straight ahead. Pull back on spring-loaded lever (B, Figure 9) and lift mower hitch off of the tractor brackets.
7. Turn wheels fully left, and slide mower deck out right side of tractor.

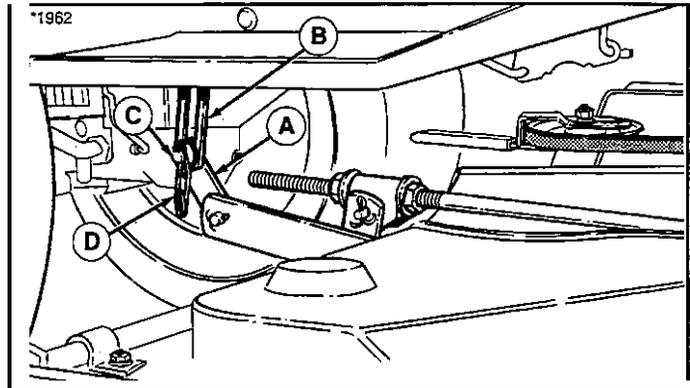


Figure 7. Lift Arms
(Viewed from underneath right side of tractor)
A. Mower Lift Arm C. Flat Washer
B. Tractor Lift Arm D. Safety Clip

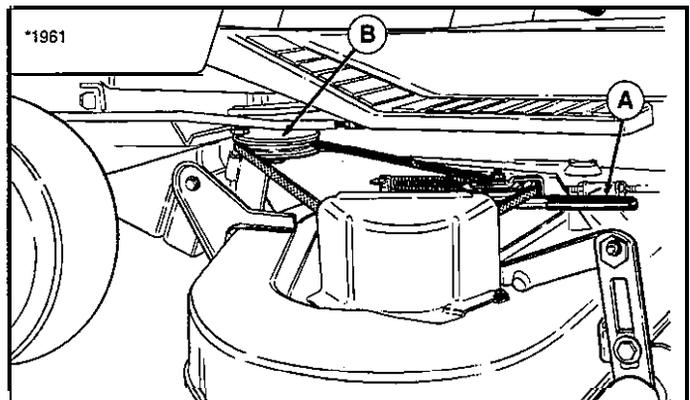


Figure 8. Removing & Installing Belt
A. Idler Arm B. PTO Pulley

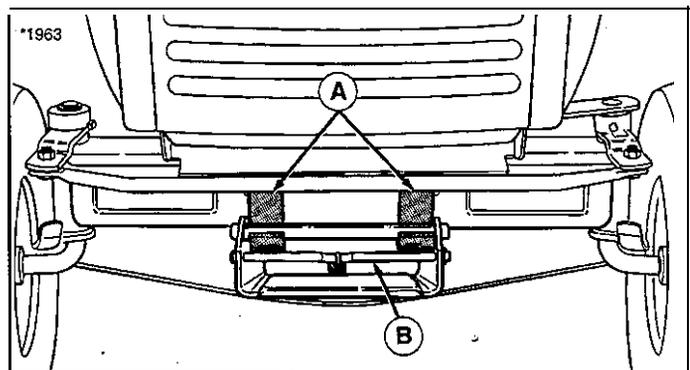


Figure 9. Mower Hitch
A. Tractor Hitch Brackets
B. Spring-Loaded Lever

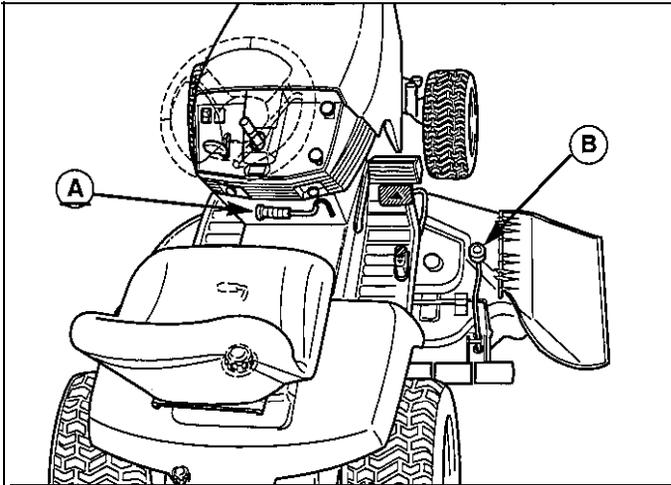


Figure 10. Raising & Lowering Mower
A. Mower Lift Lever B. Mower Height Adjuster

A WARNING

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

Installing the Mower Deck

1. Park tractor, shut off PTO and engine, remove the key and apply parking brake. Turn the wheels fully to the left.
2. Place mower height adjuster (B, Figure 10) in the lowest cutting position. Place the mower lift lever in the lowest position, also. Slide mower deck under right side of tractor so that mower hitch is aligned with front tractor hitch.

⚠ CAUTION

The muffler and surrounding areas may be hot.

3. See Figure 11. Turn wheels straight. Pull back on the spring-loaded lever (B) while lifting up on the mower hitch. Install mower hitch onto tractor hitch brackets (A). When properly installed, the spring-loaded lever should seat fully underneath the brackets.
4. See Figure 12. Connect the mower lift arm (A) to the tractor lift arm (B) using the flat washer (C) and safety clip (D).
5. See Figure 13. Move idler arm (A) to relieve belt tension. Install belt onto the PTO pulley (B).

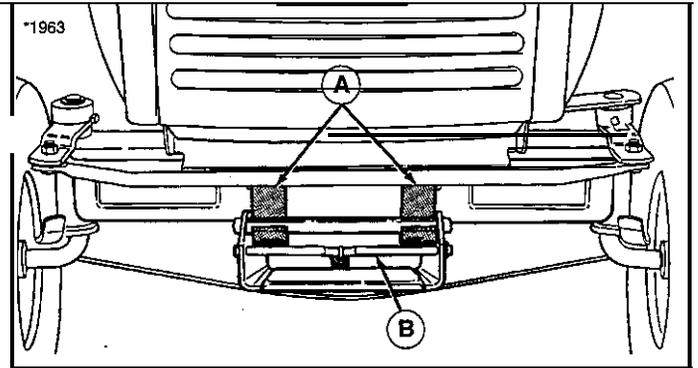


Figure 11. Mower Hitch
A. Tractor Hitch Brackets
B. Spring-Loaded Lever

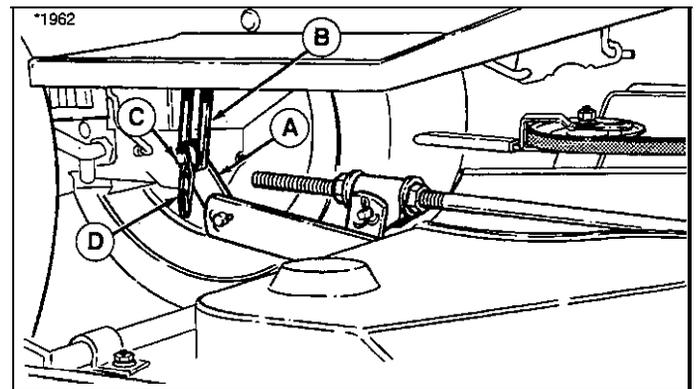


Figure 12. Lift Arms
(Viewed from underneath right side of tractor)
A. Mower Lift Arm C. Flat Washer
B. Tractor Lift Arm D. Safety Clip

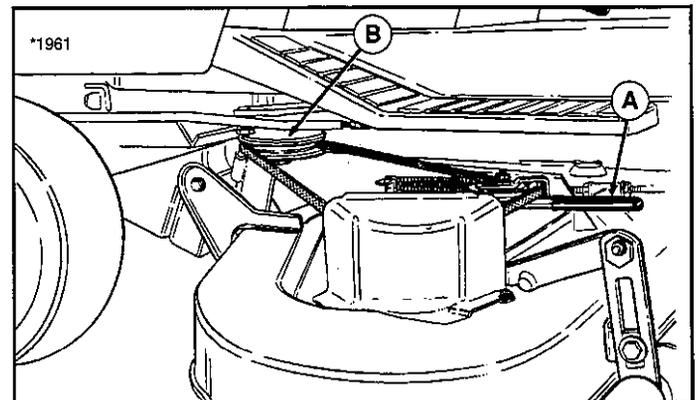


Figure 13. Removing & Installing Belt
A. Idler Arm B. PTO Pulley

STORAGE

Temporary Storage (30 Days Or Less)

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

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

- Keep the unit in an area away from where children may come into contact with it. If there's any chance of unauthorized use, disconnect the spark plug wires.
- If the unit can't be stored on a reasonably level surface, chock the wheels.
- Clean all grass and dirt from the mower.

NOTE: If storing your tractor between winter snow removal jobs in a cold area, we suggest that you fill the fuel tank at the completion of each job to prevent water condensation in the fuel tank. Wait for engine to cool before filling tank.

Long Term Storage (Longer Than 30 Days)

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

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

A WARNING

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

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

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

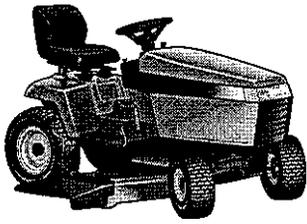
10. Drain fuel system completely or add a gasoline stabilizer to the fuel system. If you have chosen to use a fuel stabilizer and have not drained the fuel system, follow all safety instructions and storage precautions in this manual to prevent the possibility of fire from the ignition of gasoline fumes.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

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

STARTING AFTER LONG TERM STORAGE

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

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



Regular Maintenance

MAINTENANCE SCHEDULE & PROCEDURES

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

SAFETY ITEMS	See Page	Before First Use	Before Each Use	Every 5 Hours	Every 25 Hours	Every 100 Hours	Spring & Fall
Check Safety Interlock System	9	●					●
Check Tractor Brakes	26	●					●
Check Mower Blade Stopping Time	21	●				●	
NORMAL CARE ITEMS	See Page	Before First Use	Before Each Use	Every 5 Hours	Every 25 Hours	Every 100 Hours	Spring & Fall
Check Tractor/Mower for loose hardware	—	●	●	●			
Check Engine Air Filter	17*	●			●		
Check Engine Oil Level	17*	●	●				●
Change Engine Oil & Filter**	17*	●		●	●		
Lubricate Tractor & Mower	18	●			●		
Check Tire Pressure	15	●	●		●		
Check Transmission Fluid	16	●	●				
Change Transmission Fluid	16				****Every	250 Hours	
Check Fuel Filter	17	●				●	
Clean Battery & Cables	20	●				●	
Clean & Sharpen Mower Blades	21	●			●		
Insect Spark Plug(s)	17*	●				●	
Lubricate Rear Axle Shafts	19						●

* 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.

**** Change transmission oil after the first 50 hours of operation, then every 250 hours.

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)

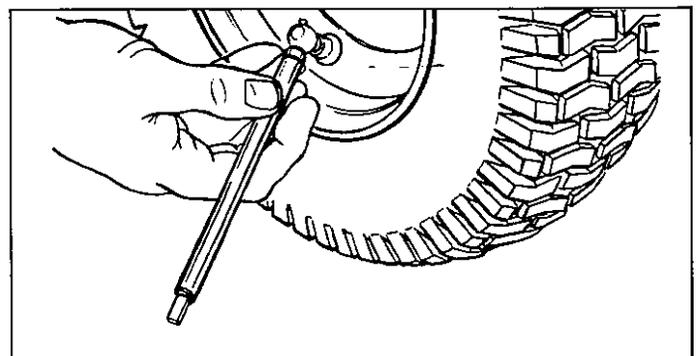


Figure 14. Checking Tire Pressure

A 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.

CHECKING /ADDING FUEL

To add fuel:

1. Remove the fuel cap (see A, Figure 15).
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.

CHECK/ CHANGE TRANSMISSION OIL

The transmission oil should be checked before each use and changed after the first 50 hours of operation. Then change the oil after every 250 hours of operation. The oil should also be checked if it has become discolored from overheating or contamination.

Transmission Oil Capacity: Apx. 3.5 Quarts

Transmission Oil Type: SAE 10W-30 with a minimum API rating of SG/CD.

 Do not allow dirt, water, or other debris to enter the reservoir. Even a small amount of dirt can irreparably damage the transmission

Checking the Oil Level:

1. Locate the reservoir tank on the rear of the unit. Observe the oil level. Oil should be up to the FULL mark (see Figure 16). **DO NOT OVERFILL.** Empty space is required in the reservoir tank for heat expansion.
2. If necessary, clean the area surrounding the reservoir cap, remove the cap, and add oil.

Changing the Transmission Oil:

1. Drain hydrostatic system by removing drain plug (see Figure 17). Drain oil into a suitable container.
2. Reinstall the drain plug.
3. Add oil a few ounces at a time until the reservoir is filled to the FULL mark. **DO NOT OVERFILL.** Empty space is required in the reservoir tank for heat expansion.
4. Run tractor for several minutes and recheck the transmission oil level.

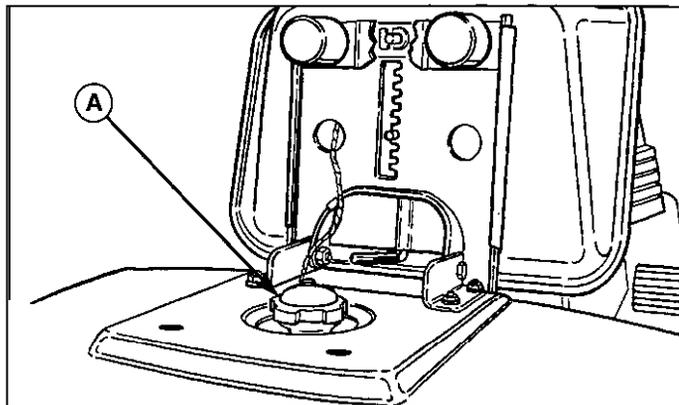


Figure 15. Fuel Tank Fill
A. Fuel Tank Cap.



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

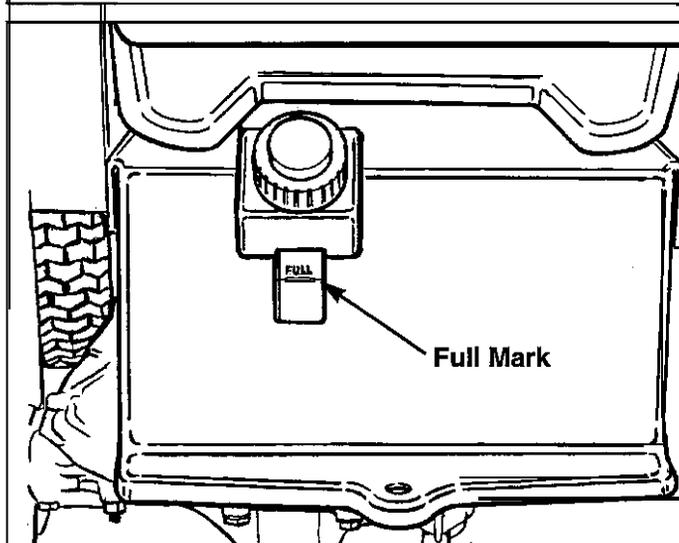


Figure 16. Transmission Oil Reservoir

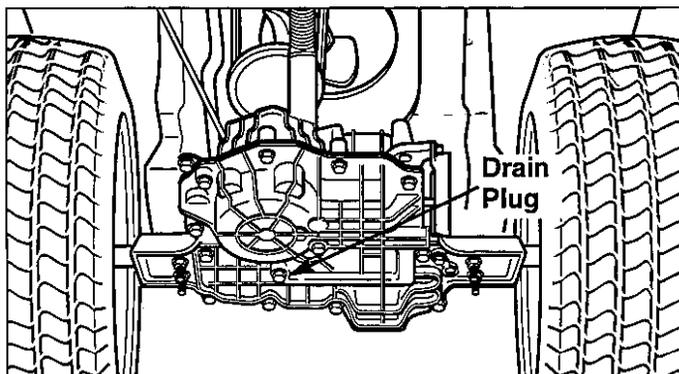


Figure 17. Transmission Drain Plugs

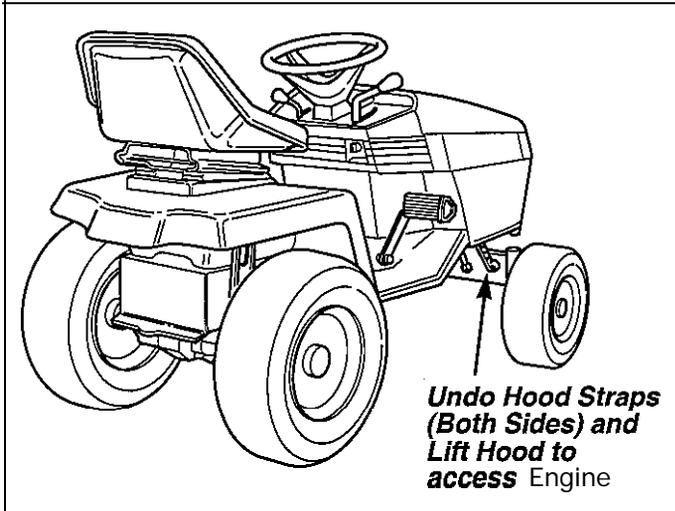


Figure 18. Engine Access

ACCESSING THE ENGINE

To gain access to the engine, unhook the rubber straps (Figure 18) and tip the hood forward.

NOTE: For engine service item locations see Figure 20 for models with Briggs & Stratton engines and Figure 19 for models with Kohler engines

FUEL FILTER REPLACEMENT

The fuel filter (E, Figures 19 and 20) is located 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 with hose clamps.
7. Reconnect the negative battery cable when finished.

OIL & FILTER CHANGE

Refer to engine manual for specific oil and filter recommendations and oil draining procedures.

CHECK / CHANGE AIR FILTER

Refer to the engine manual for specific air filter service procedures.

INSPECT & REPLACE SPARK PLUGS

Refer to the engine manual for specific spark plug replacement procedures.

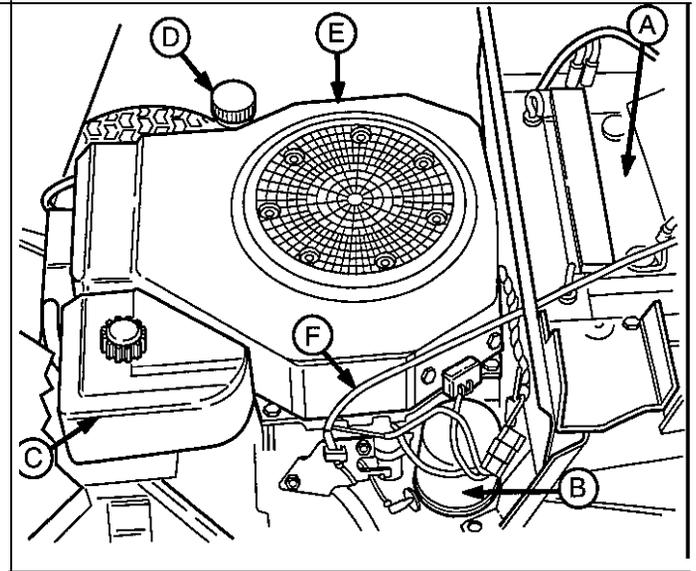


Figure 19. Engine Compartment

• 16 HP Kohler Single Cylinder Engine

- | | |
|---------------|----------------------------|
| A. Battery | D Oil Fill/Dipstick |
| B. Oil Filter | E. Fuel Filter (Not Shown) |
| C. Air Filter | F. Throttle/Choke Cable |

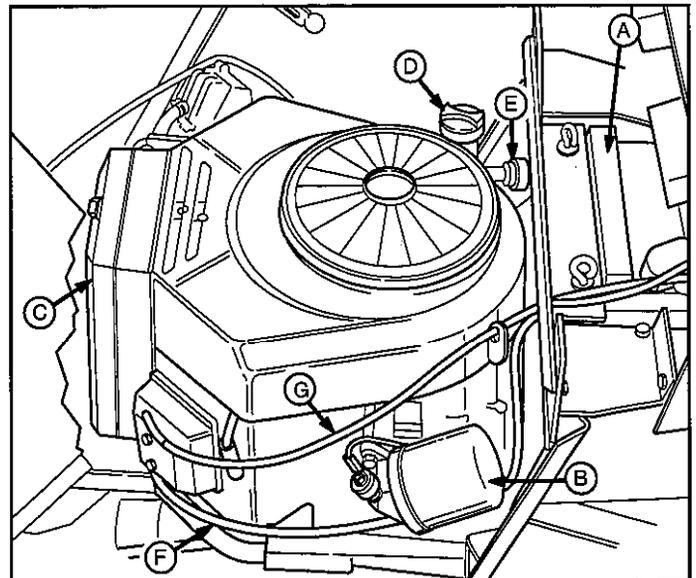


Figure 20. Engine Compartment'

• 14 HP, 16 HP, & 18 HP Briggs & Stratton Twin Cylinder Engine

- | | |
|---------------------|-------------------|
| A. Battery | E. Fuel Filter |
| B. Oil Filter | F. Throttle Cable |
| C. Air Filter | G. Choke Cable |
| D Oil Fill/Dipstick | |

Regular Maintenance

LUBRICATION

Lubricate the unit at the locations shown in Figures 21 through 25 as well as the following lubrication points.

Grease:



- front axle pivot
- front wheel bushings
- front axle grease fittings
- steering linkage
- foot pedal
- mower pivots
- mower arbors
- transmission idler assembly pivot

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

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:



- 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.

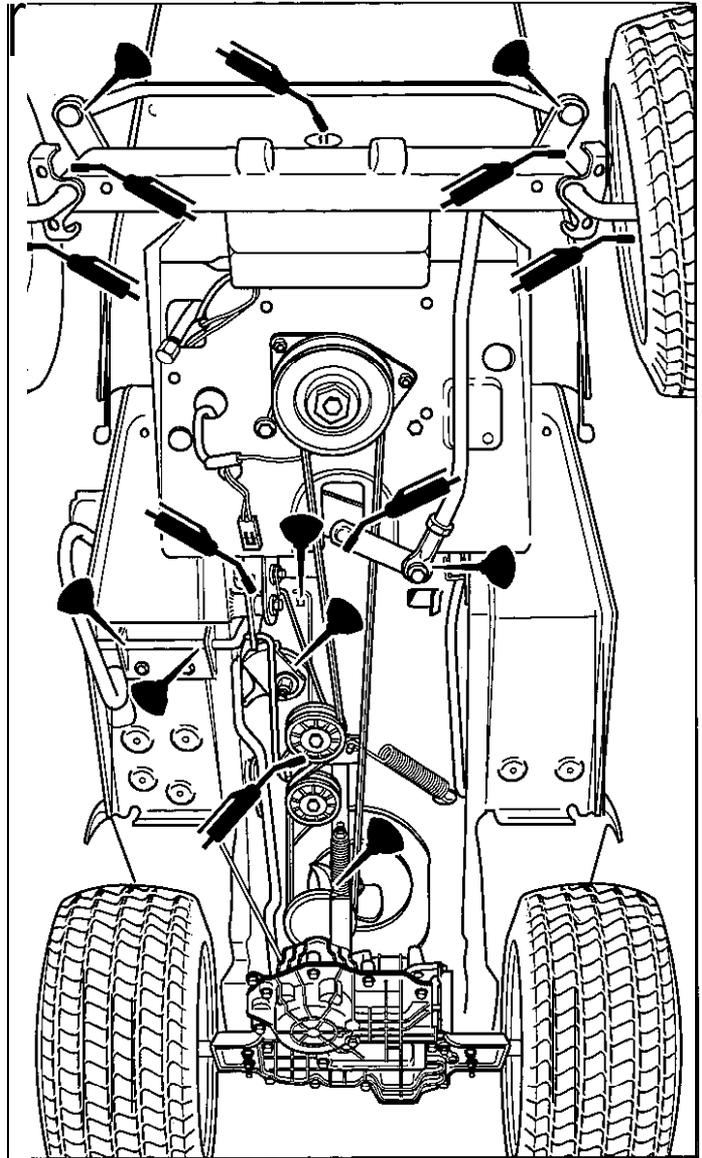


Figure 21. Lubricating the Tractor

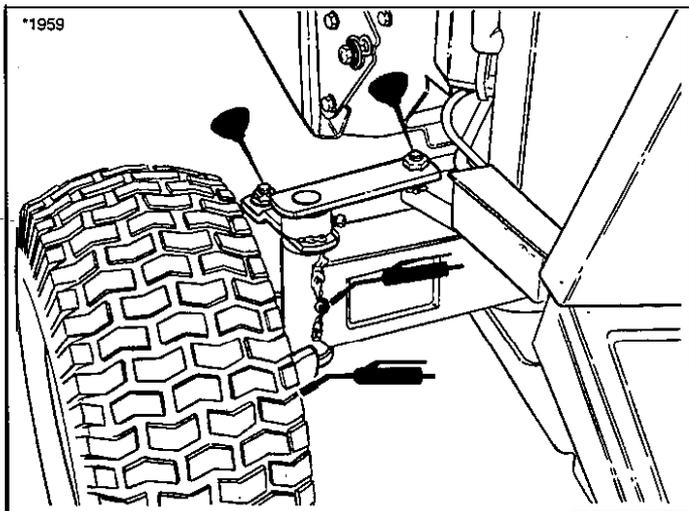


Figure 22. Lubricate Steering Linkage

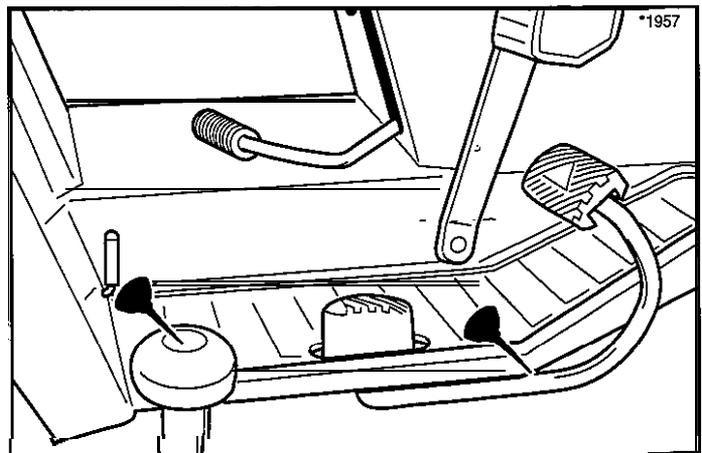


Figure 23. Brake Pedal Pivot Point

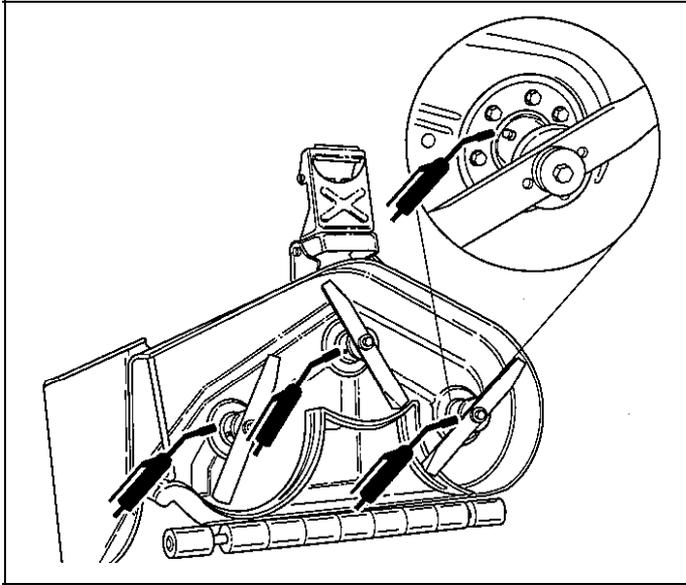


Figure 24. Arbor Lubrication Points

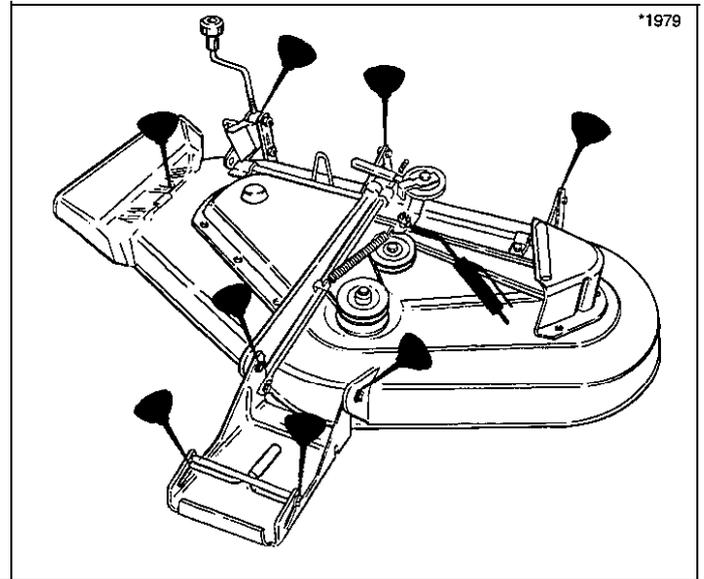


Figure 25. Mower Lubrication Points

LUBRICATE REAR AXLES

We recommend removing the rear wheels and lubricating the axle shafts yearly. This prevents the wheel from seizing onto the axle shaft, making future service easier.

1. Remove the key and disconnect the spark plug wire while working on the unit.
2. Engage the parking brake and block the front wheels.
3. Using a jack or chain hoist positioned at the center of the rear frame, carefully jack the unit up until the rear tires are approximately 1" - 2" off the ground.

NOTE: For overall unit stability during service, do not jack rear end higher than required for wheel removal.

4. Support the rear of the unit on jack stands positioned under the rear frame (see Figure 26).
5. Remove the plastic hub cap (G, Figure 27).
6. Remove e-ring (F, Figure 27) using a screwdriver.
7. Remove the washers (D) and wheel (C).

NOTE: Your axle assembly may differ slightly from the assembly pictured: washer (D, Figure 27) may be missing or doubled. This is adjusted on a tractor by tractor basis during assembly to allow a small amount of axle end-play.

8. Lubricate the axle shaft with anti-seize compound or lithium grease.
9. See Figure 27 for assembly. Reinstall components in reverse order of disassembly and lower the unit. Be sure the key (H) is in place in the axle key-way.

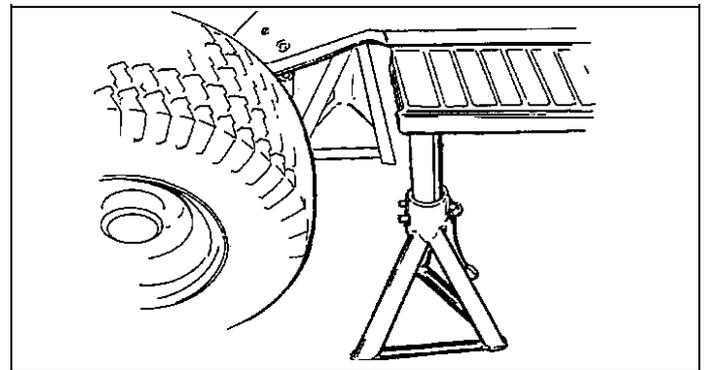


Figure 26. Elevate the Rear End

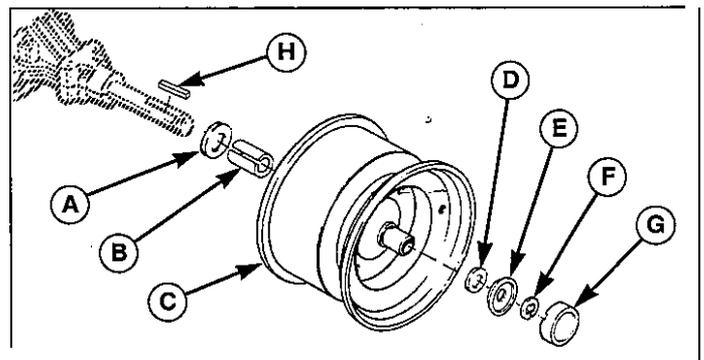


Figure 27. Wheel and Axle Assembly

- | | |
|-----------|---------------------|
| A. Washer | E. Hub Cap Retainer |
| B. Spacer | F. E-Ring |
| C. Wheel | G. Hub Cap |
| D. Washer | H. Key |

Regular Maintenance

BATTERY MAINTENANCE

Checking the Battery Fluid

1. Raise the hood to access battery.
2. Remove the battery filler cap (See Figure 28). Fluid must be even with the split ring full mark. If not, add distilled water.
3. Reinstall the filler cap.

Cleaning the Battery and Cables

1. Disconnect the cables from the battery, negative cable first (B, Figure 28).
2. Remove the battery hold-down rods (C, Figure 28) and battery clamp (D) and battery.
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 rods (C) and battery clamp (D).
6. Reattach the battery cables, positive cable first (see A, Figure 28)
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.

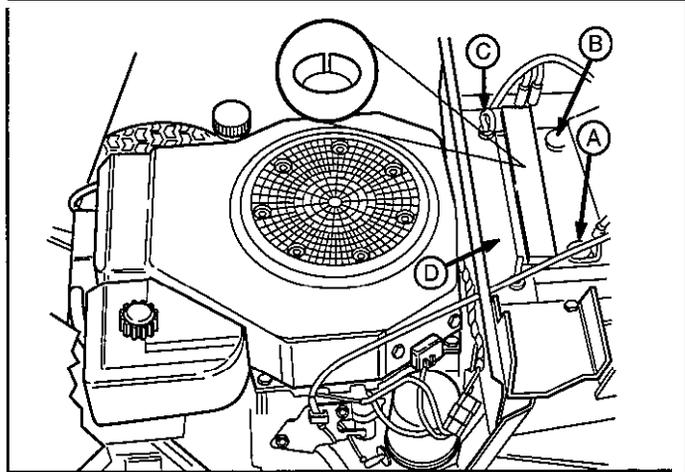


Figure 28. Battery

A. Positive Battery Terminal C. Hold Down Rod
B. Negative Battery Terminal D. Battery Clamp

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 29).
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 30. 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 31. Secure with a capscrew, spring washer and hex washer (be certain the hex washer is aligned with the hex shaft). Use a wooden block to prevent blade rotation and torque capscrews to 45-55 ft.lbs. (61-75 N.m.).

,A 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. Look over the left-hand footrest at the mower drive belt. 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.

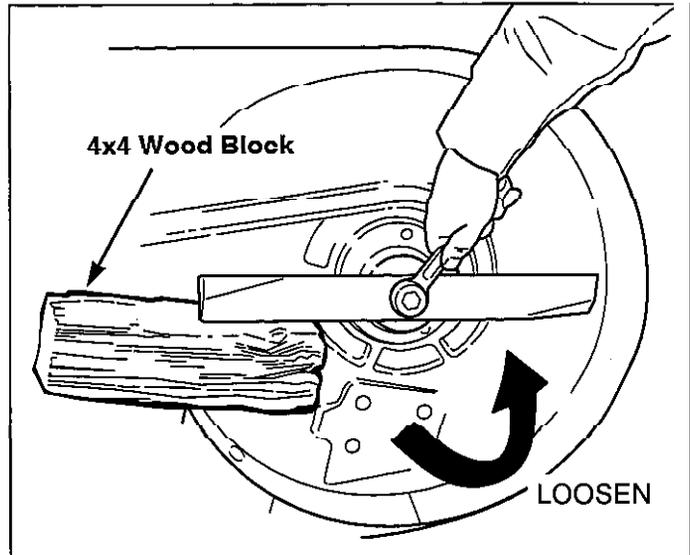


Figure 29. Removing the Blade

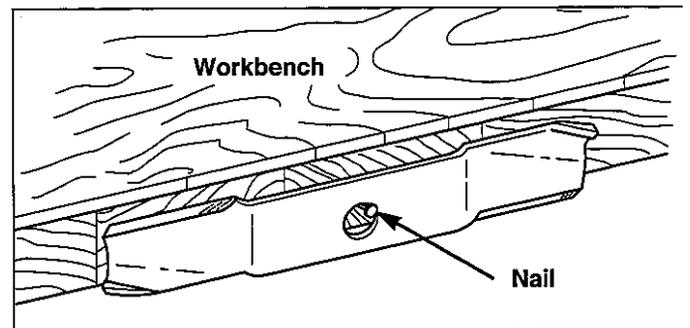


Figure 30. Balancing The Blade

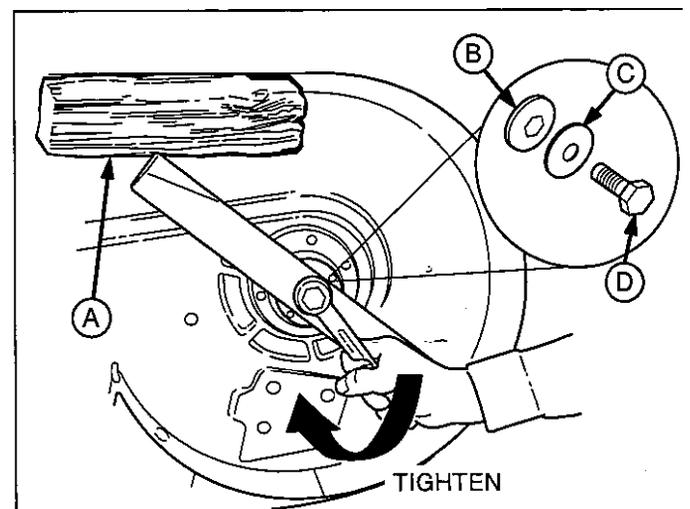
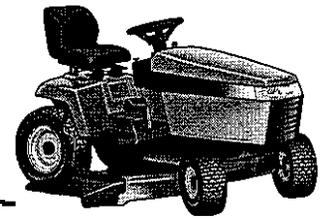


Figure 31. Installing The Blade

- | | |
|-------------------|------------------|
| A. 4x4 Wood Block | C. Spring Washer |
| B. Hex Washer | D. Blade Bolt |

Troubleshooting, Adjustment, & 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.

A 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
Engine will not turnover or start.	<ol style="list-style-type: none"> 1. Brake pedal not depressed. 2. PTO (electric clutch) switch in ON position. 3. Out of fuel. 4. Engine flooded. 5. Circuit breaker tripped. 6. Battery terminals require cleaning. 7. Battery discharged or dead. 8. Wiring loose or broken. 9. Solenoid or starter motor faulty. 10. Safety interlock switch or module faulty. 11. Spark plug(s) faulty, fouled or incorrectly gapped. 12. Water in fuel. 13. Gas is old or stale. 	<p>Fully depress brake pedal. Place in OFF position.</p> <p>If engine is hot, allow it to cool, then refill the fuel tank. Push choke knob in (twin cylinder models) or move throttle control out of CHOKE position (single cylinder models). Wait one minute for automatic reset. Replace if defective. See Battery Maintenance Section.</p> <p>Recharge or replace. Visually check wiring & replace broken or frayed wires. Tighten loose connections. See your dealer. See your dealer.</p> <p>Clean and gap or replace. See engine manual. Drain fuel & refill with fresh fuel. Drain fuel & replace with fresh fuel.</p>
Engine starts hard or runs poorly.	<ol style="list-style-type: none"> 1. Fuel mixture too rich. 2. Spark plug(s) faulty, fouled, or incorrectly gapped. 	<p>Clean air filter. Check choke adjustment (engine speed control). Clean and gap or replace. See engine manual.</p>
Engine knocks.	<ol style="list-style-type: none"> 1. Low oil level. 2. Using wrong grade oil. 	<p>Check/add oil as required. See engine manual.</p>
Excessive oil consumption.	<ol style="list-style-type: none"> 1. Engine running too hot. 2. Using wrong weight oil. 3. Too much oil in crankcase. 	<p>Clean engine fins, blower screen and air cleaner. See engine manual. Drain excess oil.</p>
Engine exhaust is black.	<ol style="list-style-type: none"> 1. Dirty air filter. 2. Choke closed. 	<p>Replace air filter. See engine manual. Open choke.</p>

Tractor **Troubleshooting** Cont.

Engine runs, but tractor will not drive.	<ol style="list-style-type: none"> 1. Ground speed control pedals not depressed. 2. Transmission release lever in "push" position. 3. Drive belt is broken. 4. Drive belt slips. 5. Brake is not fully released. 	<p>Depress pedals.</p> <p>Move into drive position.</p> <p>See Drive Belt Replacement.</p> <p>See cause and remedy below.</p> <p>See Brake Adjustment.</p>
Tractor drive belt slips.	<ol style="list-style-type: none"> 1. Brake is out of adjustment. 2. Pulleys or belt greasy or oily. 3. Belt stretched or worn. 4. Idler pulley pivot bracket "frozen" in declutched position. 	<p>See Adjustments Section.</p> <p>Clean as required.</p> <p>Replace with new belt.</p> <p>Remove idler pulley bracket, clean and lubricate.</p>
Brake will not hold.	<ol style="list-style-type: none"> 1. Brake is incorrectly adjusted. 2. Internal brake worn. 	<p>See Brake Adjustment.</p> <p>See your dealer.</p>
Tractor steers hard or handles poorly.	<ol style="list-style-type: none"> 1. Steering linkage is loose. 2. Improper tire inflation. 3. Front wheel spindle bearings dry. 	<p>Check and tighten any loose connections. See Steering Gear Adjustment.</p> <p>Check and correct.</p> <p>Grease spindles. See Lubricating the Tractor.</p>
Drive belt does not stop when clutch/brake pedal depressed.	<ol style="list-style-type: none"> 1. Belt stops or belt tension out of adjustment. 	<p>See Adjustments Section.</p>

Troubleshooting the Mower

PROBLEM	CAUSE	REMEDY
Mower will not raise.	<ol style="list-style-type: none"> 1. Lift link not properly attached or damaged. 	<p>Attach or repair.</p>
Mower cut is uneven.	<ol style="list-style-type: none"> 1. Mower not leveled properly. 2. Tractor tires not inflated equally or properly. 	<p>See Mower Adjustment.</p> <p>See Maintenance Section.</p>
Mower cut is rough looking.	<ol style="list-style-type: none"> 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. 	<p>Set to full throttle.</p> <p>Slow down.</p> <p>Sharpen or replace blades. See Mower Blade Service.</p> <p>Clean or replace belt as necessary.</p> <p>See Adjustments Section.</p> <p>See Servicing the Mower Blades.</p>
Engine stalls easily with mower engaged.	<ol style="list-style-type: none"> 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. 	<p>Set to full throttle.</p> <p>Slow down.</p> <p>See Engine Manual.</p> <p>Cut tall grass at maximum cutting height during first pass.</p> <p>Cut grass with discharge pointing toward previously cut area.</p>
Excessive mower vibration.	<ol style="list-style-type: none"> 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. 	<p>Tighten to 45-55 ft.lbs. (61-75 N.m.).</p> <p>Check and replace as necessary.</p> <p>Remove, sharpen, and balance blades. See Servicing the Mower Blades. Reinstall Correctly.</p>
Excessive belt wear or breakage.	<ol style="list-style-type: none"> 1. Belt tension too tight. 2. Bent or rough pulleys. 3. Using incorrect belt. 	<p>Adjust belt tension.</p> <p>Repair or replace.</p> <p>Replace with correct belt.</p>
Mower drive belt slips or fails to drive.	<ol style="list-style-type: none"> 1. Idler pulley spring broken or not properly attached. 2. Belt stops out of adjustment. 3. Mower drive belt broken. 	<p>Repair or replace as needed.</p> <p>Check belt stops.</p> <p>Replace drive belt.</p>

STEERING WHEEL ADJUSTMENT

1. Use a suitable drift to remove the roll pin at the base of the steering wheel (see Figure 32).
2. Pull down on the rubber boot to expose the two holes in the steering shaft.
3. Align the hole in the steering wheel with the appropriate steering shaft hole and install the roll pin.

NOTE: Steering wheel is factory installed with the roll pin in the bottom hole.

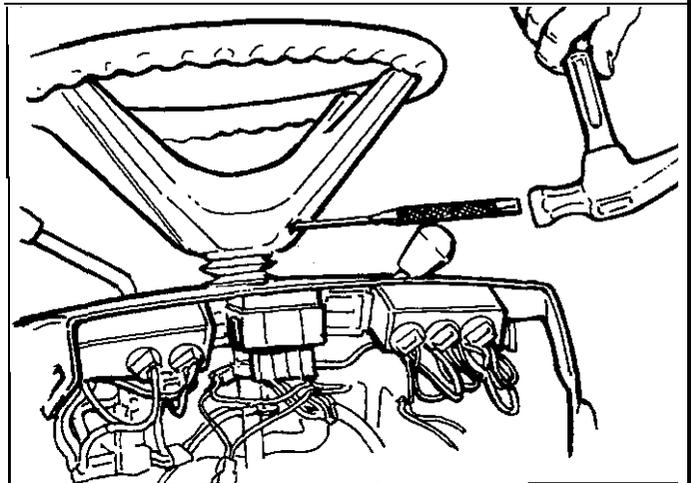


Figure 32. Steering Wheel Removal

SEAT ADJUSTMENT

See Figure 33. The seat can be adjusted forward and back. Move the lever, position the seat as desired, and release the lever to lock the seat into position.

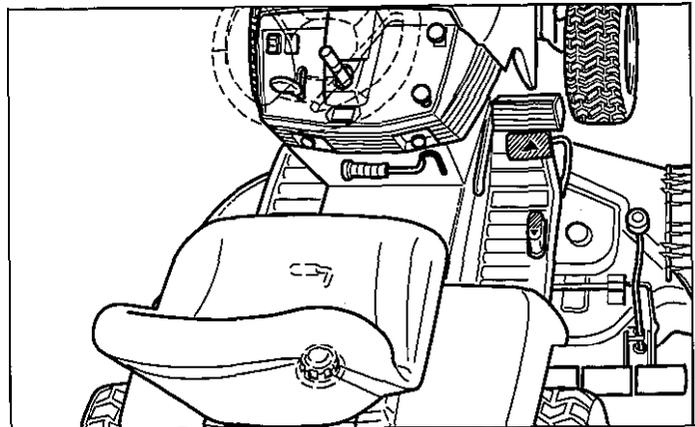


Figure 33. Seat Adjustment

STEERING GEAR ADJUSTMENT

If there is excessive slack in the steering system, the steering gear backlash can be removed.

1. See Figure 34. Loosen the two nuts and adjust the bracket so the gear teeth are closely meshed.
2. Tighten nuts after adjustment.

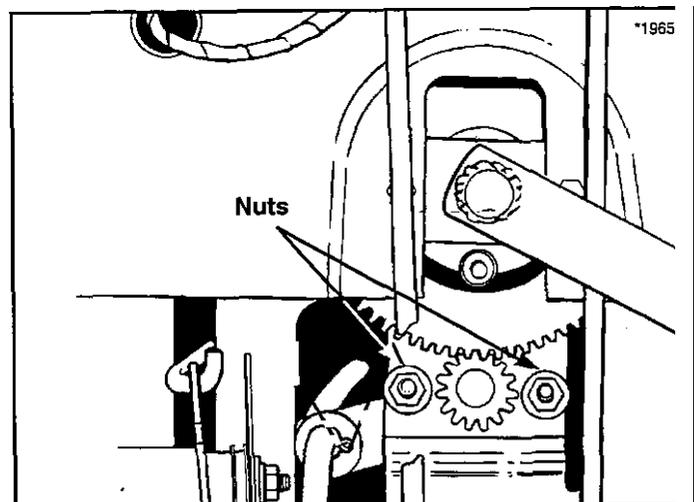


Figure 34. Steering Gear Adjustment

A WARNING

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

PTO CLUTCH ADJUSTMENT

Adjustment of the PTO clutch is usually not necessary on new units.

1. Remove key from ignition switch and disconnect spark plug wires to prevent the possibility of accidental starting while the PTO is being adjusted.
2. See Figure 35. Note the position of the 3 adjustment windows (A) in the side of the brake plate, then rotate the pulley so that each of the three rivet joints (visible inside the gap between the pulley and the brake plate) is positioned approximately midway between the three adjustment windows.
3. Insert a .012" feeler gauge through each window, positioning the gauge between the rotor face and the armature face as shown in Figure 36.
4. Alternately tighten the adjustment nuts (B, Figure 35) until the rotor face and armature face just contacts the gauge.
5. Check the windows for an equal amount of tension when the gauge is inserted and removed, and make any necessary adjustments by tightening or loosening the adjustment nuts.

NOTE: The actual air gap between the rotor and armature may vary even after performing the adjustment procedure. This is due to dimensional variations on component parts, and is an acceptable condition.

6. Check the mower blade stopping time. The mower blades and mower drive belt should come to a complete stop within five seconds after the electric PTO switch is turned off.

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 tractor engine.
2. Look over the left-hand footrest at the mower drive belt. 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, perform the PTO Clutch Adjustment. If the belt still does not stop within 5 seconds, see your dealer.

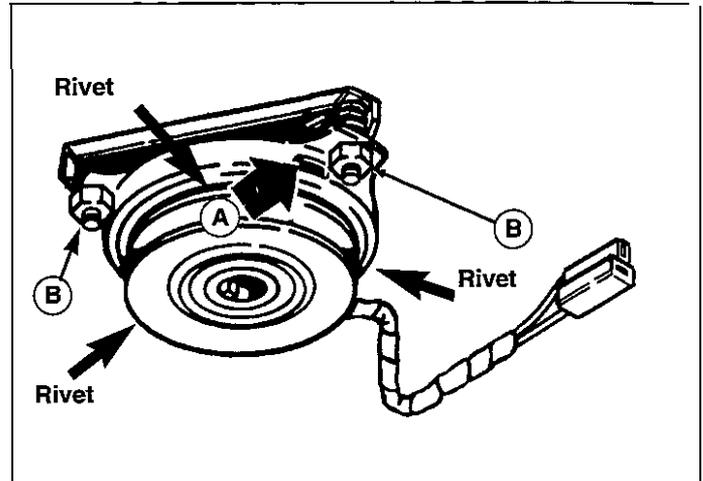


Figure 35. PTO Clutch Adjustment
A. Adjustment Window (Qty. 3, one shown)
B. Adjustment Nut (Qty. 3, two shown)

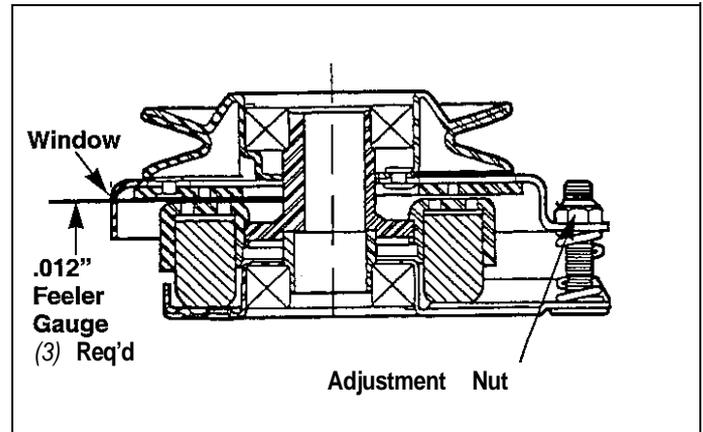


Figure 36. Feeler Gauge Position

BRAKE ADJUSTMENT

1. Disengage the PTO, stop the engine, block the wheels, and remove the ignition key. **DO NOT engage the parking brake.**
2. Remove the mower deck (see Mower Deck Removal).
3. Locate the brake spring (A, Figure 37) and adjustment nut (B).
4. With the parking brake disengaged check the brake spring (A) for movement. The spring should not be loose.

There should be no more than .002" clearance between the spring (A) and the adjustment nut (B)-however, spring must NOT be compressed.

If this adjustment does not correct a braking problem, see your dealer.

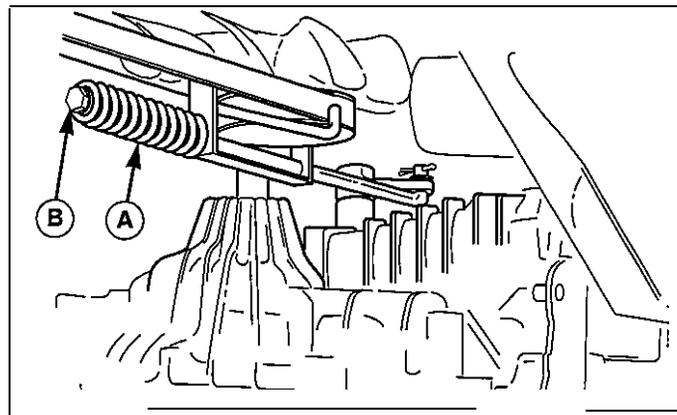


Figure 37. Brake Adjustment Nut
A. Brake Spring B. Adjustment Nut

MOWER ADJUSTMENTS

Cutting Height Adjustment

The cutting height adjustment knob (A, Figure 38) controls the mower cutting height. The cutting height is infinitely adjustable between 1" and 3-5/8". Turn the knob clockwise to raise the deck and counterclockwise to lower it.

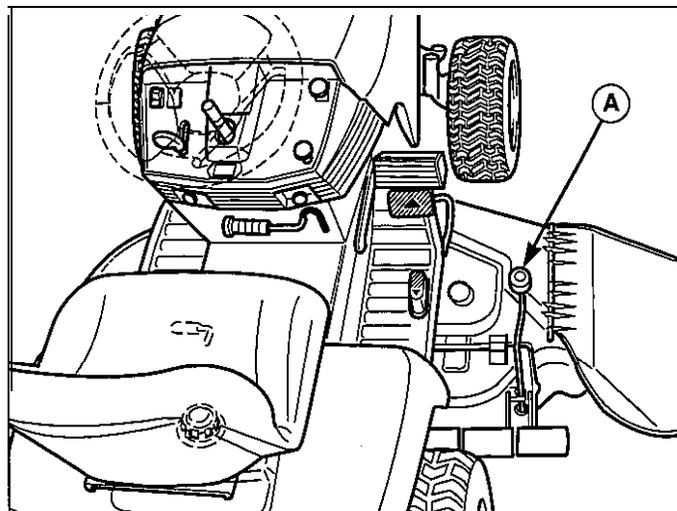


Figure 38. Mower Cutting Height Adjustment
A. Adjustment Knob

A WARNING

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

Leveling The Mower

If the cut is uneven, the mower may need leveling. Unequal or improper tire pressure may also cause an uneven cut. Make sure tire pressure is correct as specified in Checking Tire Pressure.

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. Check for bent blades and replace if necessary.
3. Disengage the PTO. Place the mower in mid-cut position. Arrange the mower blades so that they are pointing from side-to-side.
4. Measure the distance between the outside tips of each blade and the ground. If there is more than $\frac{1}{8}$ " (3mm) difference between the measurements on each side, proceed to step 5. If the difference is $\frac{1}{8}$ " (3mm) or less, proceed to step 6.
5. See Figure 39. Loosen the outside nut (A). Turn the eccentric nut (B) to raise or lower left-hand side of mower. When mower is level, hold the eccentric nut while tightening the outside nut.

*NOTE: When using a turbo collection system, raise the discharge side of the mower approximately $\frac{1}{4}$ " to compensate for turbo assembly weight. Check the level of the cut grass and **adjust** the $\frac{1}{4}$ " measurement as necessary for a smooth, even cut.*

6. Arrange the blades so they face front-to-back.
7. On 38" deck, measure the distance from the ground to front tip and rear tip of the left and right-hand blades.
On 44" and 50" decks, measure the distance from the ground to the front tip of the center blade, and from the ground to rear tips of left-hand and right-hand blades.
Front tips on all decks should be $\frac{1}{4}$ " higher. If not, proceed with steps 8 - 10.
8. See Figure 40. To raise front of mower deck, loosen front nut (A) and turn rear nut (B) against bracket (C).
9. To lower front of mower deck, loosen rear nut (B) and bracket (C) will move backwards to lengthen rod.
10. Re-check measurement before tightening front nut (A) against bracket.

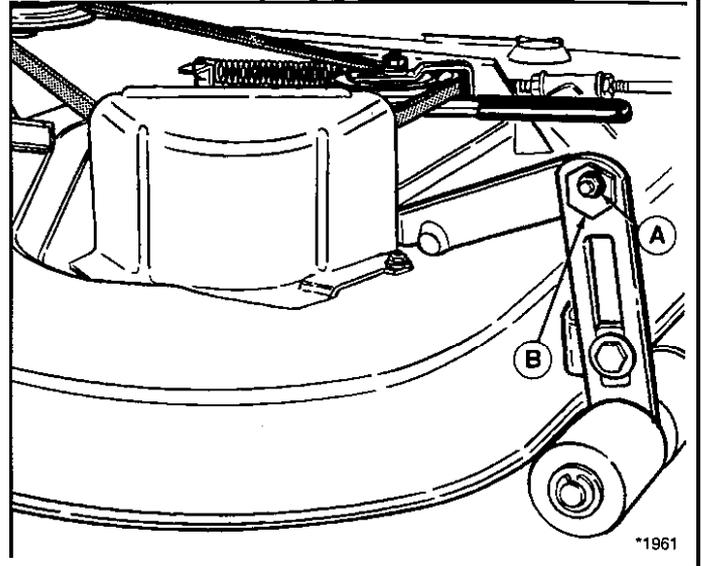


Figure 39. Leveling The Mower Side-to-Side
A. Outside Nut B. Eccentric Nut

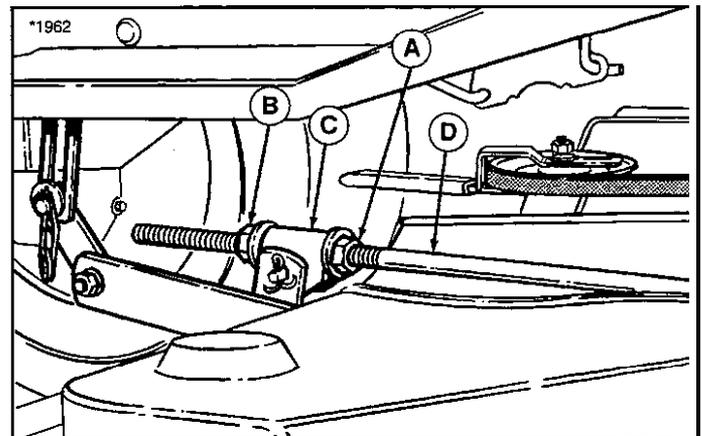


Figure 40. Leveling The Mower Front-To-Back
A. Front Nut C. Mower Bracket
B. Rear Nut D. Adjustment Rod

TRANSMISSION DRIVE BELT REPLACEMENT

NOTE: Be sure to use only genuine Simplicity replacement parts. Check the back of this manual or the decal under the hood for common replacement part numbers.

REMOVE THE OLD BELT

See Figure 41.

1. Turn off the PTO, stop the engine, and block the tires. DO NOT engage the parking brake.
2. Remove the mower deck. See Removing the Mower Deck.
3. Disconnect the idler pulley assembly spring (A).
4. Unplug the PTO clutch plug (B).
5. Remove the crankshaft bolt (C) securing the PTO clutch to the crankshaft.
6. Remove the PTO clutch.
7. Disconnect the steering arm (E).
8. Loosen the idler pulleys (D) and remove the belt from the idler assembly.
9. Remove the belt from the engine drive pulley.
10. See Figure 42. Disconnect the brake rod (A) from the brake lever (B) at the back of the transmission.
11. Rotate the belt through the blades of the input pulley fan and remove the belt from the tractor.

INSTALL THE NEW BELT

12. Rotate the belt through the blades of the input pulley fan and install onto input pulley.
13. See Figure 42. Reattach the brake rod (A) to the brake lever (B) at the back of the transmission.
14. See Figure 41. Install the belt onto the idler pulleys (D) and tighten the idler pulley hardware.
15. Install the belt onto the engine pulley.
16. See Figure 41. Reconnect the steering arm (E).
17. Reinstall the PTO clutch. Torque the crankshaft bolt (C) to 45-50 ft. lbs.
18. Reconnect the PTO clutch plug (C, Figure 41).
19. Reattach the idler assembly spring (A, Figure 41).

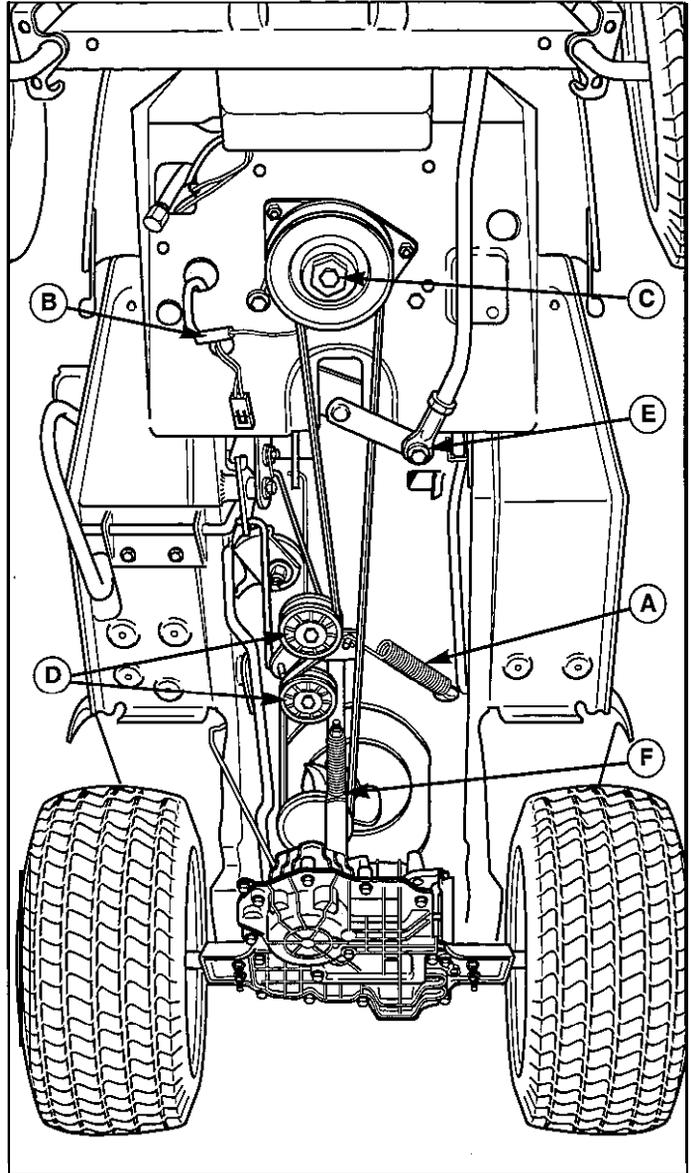


Figure 41. Transmission Drive Belt Replacement

- | | |
|-----------------------|------------------|
| A. Idler Assy. Spring | D. Idler Pulleys |
| B. PTO Clutch Plug | E. Steering Arm |
| C. Crankshaft Bolt | F. Brake Rod |

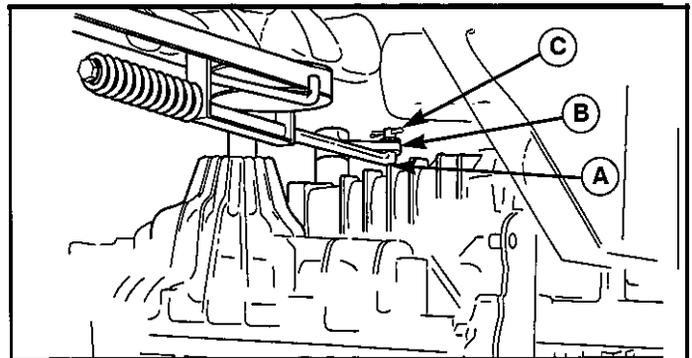


Figure 42. Brake Rod

- | | |
|----------------|---------------|
| A. Brake Rod | C. Cotter Pin |
| B. Brake Lever | |



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

MOWER BELT REPLACEMENT

38" Mower Drive Belt Replacement

NOTE: Be sure to use only genuine Simplicity replacement parts. Check the back of this manual or the decal under the hood for common replacement part numbers.

NOTE: It is not necessary to remove the mower to install a new belt. However, for easier access mower can be removed. See Mower Removal in the Operation section.

Refer to Figure 43.

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, turn off the engine and lock the parking brake. Remove the key.
2. If mower is not removed, lower the mower lift and place the mower in the lowest cutting position.
3. Push the idler arm (A) away from you to relieve belt tension. Drop the belt from the PTO (electric clutch) pulley.

IMPORTANT: Note the position of all belt guides relative to the belt and pulleys before loosening.

4. Loosen the two belt stop brackets (C) and idler pulley belt guide (D).
5. Remove the old belt and replace with a new belt. Make sure V-side of belt runs in arbor pulley grooves and the flat backside runs against the idler pulley.
6. Position the belt stop brackets (C) in their original positions. There must be $\frac{1}{8}$ " clearance between the belt stop and the pulleys.
7. Position the idler pulley belt guide (D) in its original position up against arm (A) so that there is a $\frac{1}{8}$ " gap between the pulley and belt guide.
8. Install mower on tractor if it was removed. See Operation section.
9. Run the mower under no-load condition for about 5 minutes.

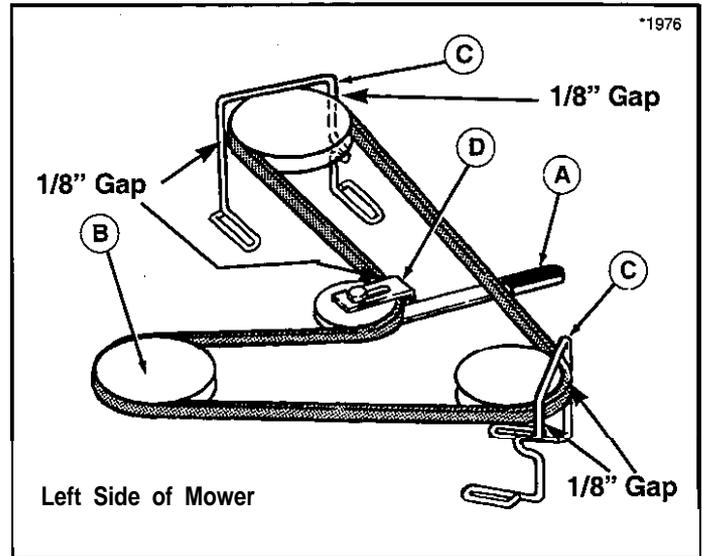


Figure 43. Mower Belt Routing - 38" Mower Deck
 A. Idler Pulley Arm C. Belt Stop Bracket
 B. PTO Pulley D. Idler Pulley Belt Guide



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

44" & 50" PTO Belt Replacement

NOTE: Be sure to use only genuine Simplicity replacement parts. Check the back of this manual or the decal under the hood for common replacement part numbers.

NOTE: It is not necessary to remove the mower to install a new belt. However, for easier access mower can be removed. See Mower Removal in the Operation section.

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, turn off the engine and lock the parking brake. Remove the key.
2. If mower is not removed, place the mower in the lowest cutting position.
3. Push the idler arm (A, Figure 44) away from you to relieve belt tension. Drop the belt from the PTO (electric clutch) pulley.

IMPORTANT: Note the position of *all* belt guides relative to the belt and pulleys before loosening.

4. Loosen the nut and lockwasher securing idler pulley belt guide (C, Figure 44).
5. See Figure 45. Remove three capscrews securing left-hand arbor cover (D).
5. Remove the old belt and replace with a new one. Make sure the V-side of belt runs in the pulley grooves.
7. See Figure 44. Position the idler pulley belt stop (C) in its original position so that there is a 1/8" gap between the pulley and belt stop.
8. See Figure 45. Reinstall the left-hand arbor cover (D).
9. Install mower on tractor if it was removed. See Operation section, Mower Installation. Install belt to PTO pulley.
10. Run the mower under no-load condition for about 5 minutes.

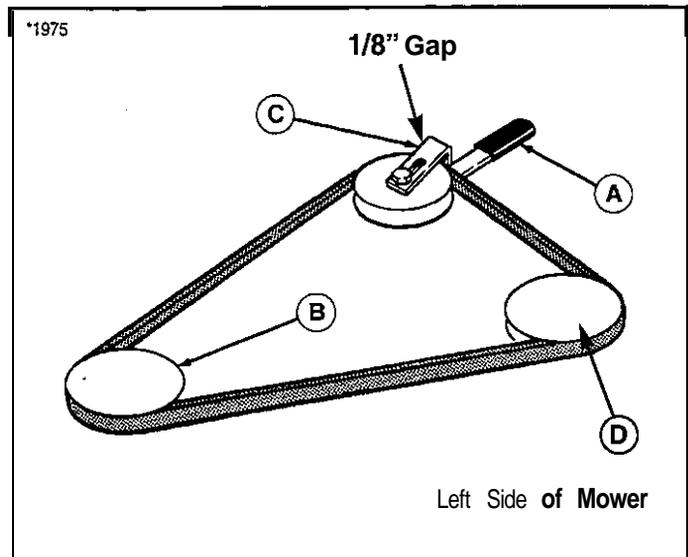


Figure 44. Mower Belt Routing - 44" & 50" Mower Deck
 A. Idler Pulley Arm C. Idler Pulley Belt Guide
 B. PTO Pulley D. Arbor Drive Pulley

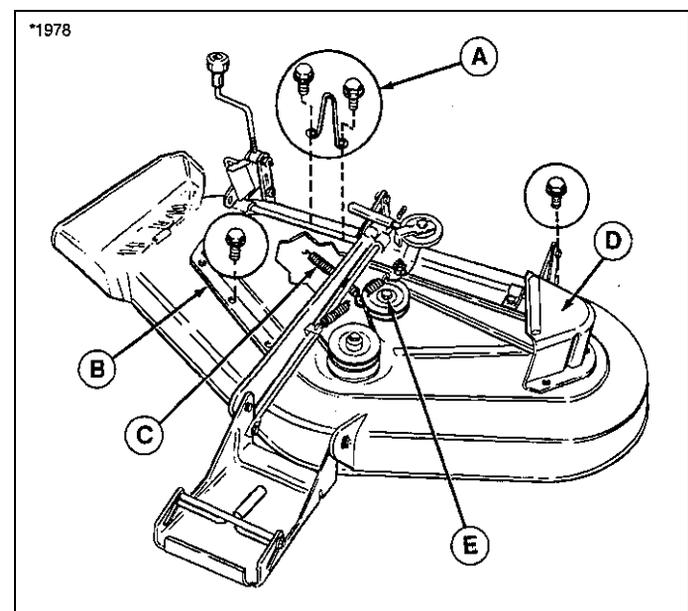


Figure 45. Mower Deck - 44" & 50"
 A . Upstop
 B. Right-hand Arbor Cover
 C. Spring
 D. Left-hand Arbor Cover
 E . Capscrew

44" & 50" Arbor Drive Belt Replacement

NOTE: Be sure to use only genuine Simplicity replacement parts. Check the back of this manual or the decal under the hood for common replacement part numbers.

1. Park the tractor on a smooth, level surface such as a concrete floor. Disengage the PTO, turn off the engine and lock the parking brake. Remove the key.
2. Remove the mower from the tractor. See Mower Removal in the Operation section.
3. See Figure 46. Remove the two capscrews securing upstop (A) and remove the upstop.
4. Remove the four capscrews securing the right-hand arbor cover (B, Figure 46). Remove three capscrews securing left-hand arbor cover (D).
5. Using a pair of locking pliers or a spring puller, remove the idler pulley spring (C, Figure 46) from slot in deck.
6. Loosen capscrew (E, Figure 46) securing the idler pulley to the bracket. The belt can now be slipped between the pulley and idler bracket hub.
7. Install a new belt as shown in Figure 47. Make sure that V-side of belt runs in arbor pulley (A) grooves and flat side of belt runs against idler pulley (B).
8. Tighten the capscrew (E, Figure 46).
9. Reinstall spring (C, Figure 46) into its slot in mower deck.
11. Reinstall the left and right arbor covers (B and D, Figure 46) and upstop (A) using the original hardware.
12. Install the mower onto the tractor.

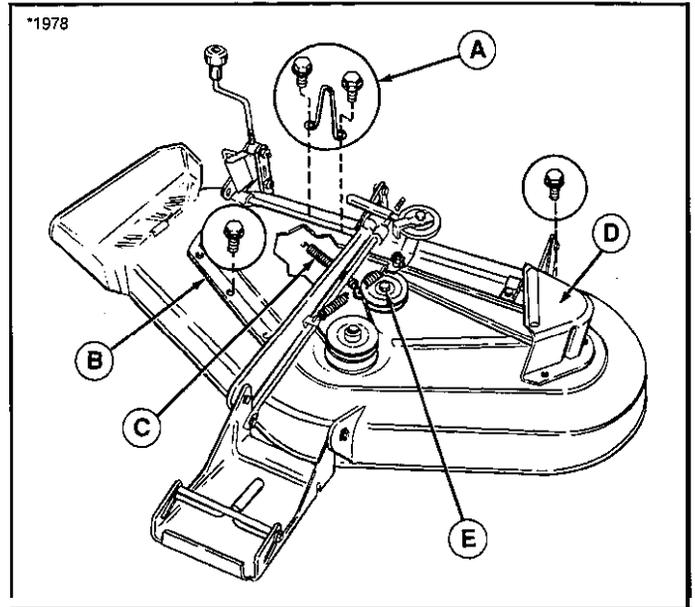


Figure 46. Mower Deck - 44" & 50"
A . Upstop
B. Right-hand Arbor Cover
C. Spring
D. Left-hand Arbor Cover
E . Capscrew

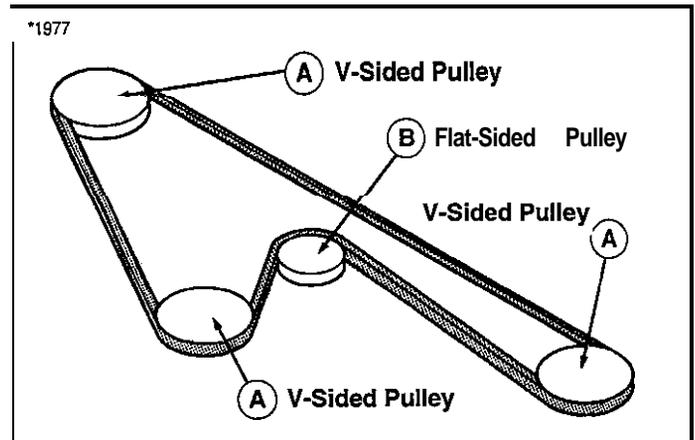


Figure 47. Mower Deck Drive Belt Routing - 44" & 50" Deck
A. Arbor Drive Pulley (V-sided)
B. Idler Pulley (Flat-sided)

BATTERY SERVICE

, **A WARNING** - - - - -

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

Checking Battery Voltage

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

A dead battery or one too weak to start the engine may not mean the battery needs to be replaced. For example, it may mean that the alternator is not charging the battery properly. If there is any doubt about the cause of the problem, see your dealer. If you need to replace the battery, follow the steps under Cleaning the Battery & Cables in the Regular Maintenance Section.

, **A WARNING**

Do not attempt to charge a frozen battery. Allow the battery to warm to 60° F (16.5° C) before placing on charger.

Charging a Completely Discharged Battery

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

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

Jump Starting With an Auxiliary (Booster) Battery

Jump starting is not recommended. However, if it must be done, follow these directions. Both booster and discharged batteries should be treated carefully when using jumper cables. Follow the steps below EXACTLY, being careful not to cause sparks. Refer to Figure 48.

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

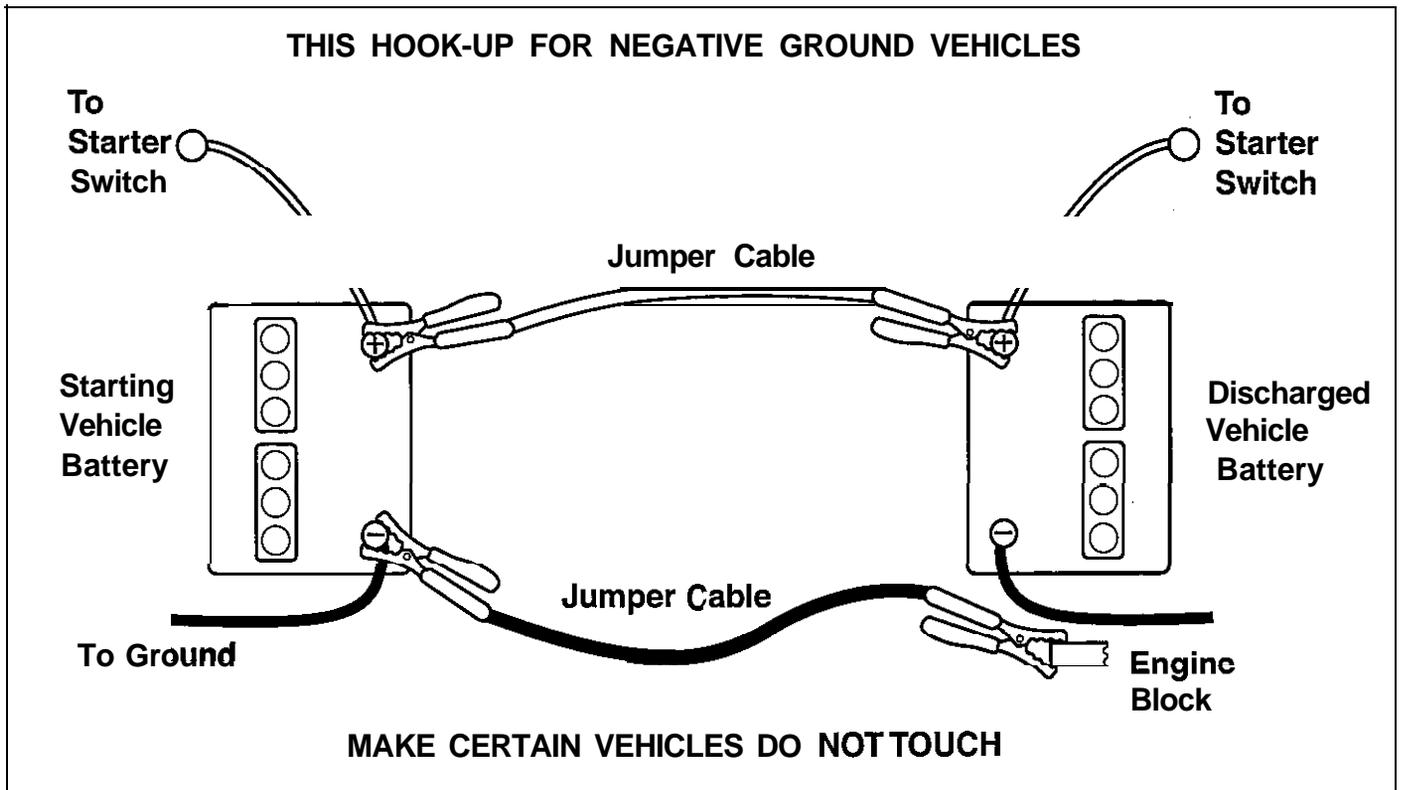


Figure 48. Battery Jump Starting Diagram

⚠ WARNING

Any procedure other than the preceding could result in:

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

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

⚠ WARNING

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

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

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

Troubleshooting, Adjustment, & Service

HEADLIGHT REPLACEMENT

See Figure 49.

1. Open the hood.
2. Remove the light bulb socket from the bezel by twisting it counterclockwise and pulling it out.
3. Remove and replace the light bulb with an identical bulb.
4. Reinstall the socket into the bezel.

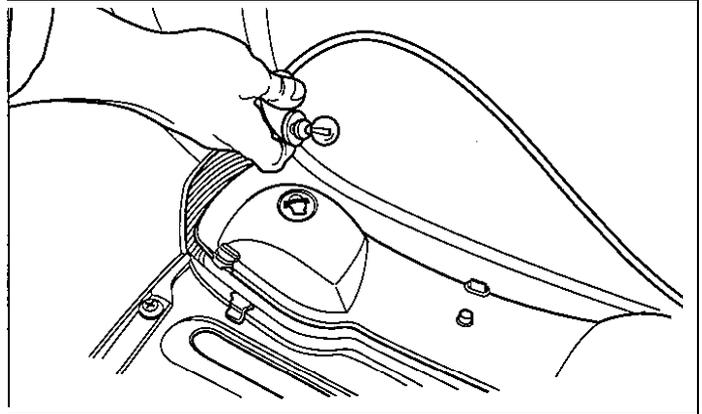


Figure 49. Headlight Replacement

DASHLIGHT REPLACEMENT

See Figure 50.

1. Open the hood.
2. Twist the socket (A) counterclockwise and pull out to remove it from the back of the dashboard display (B).
3. Remove and replace the old bulb with a new identical bulb.
4. Reinstall the socket into the dashboard display.

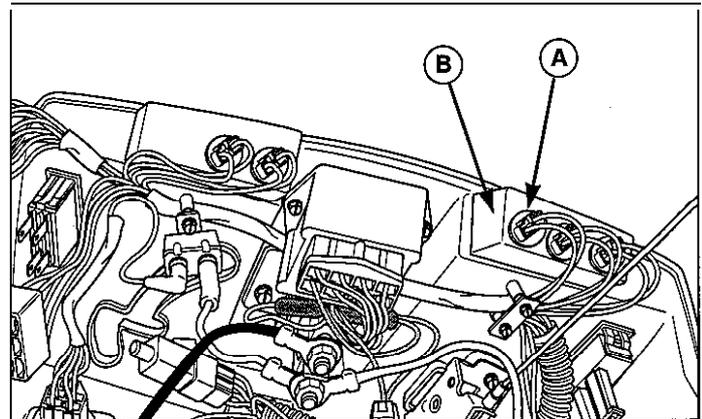
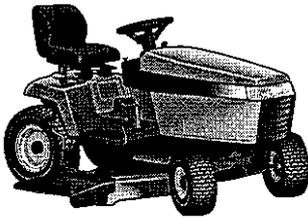


Figure 50. Dashlight Replacement
A. Dashlight Socket B. Dashboard Display



Specifications

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

ENGINE

14 HP & 16 HP Briggs & Stratton

Make	Briggs & Stratton
Model	Vanguard™ V-Twin
Horsepower	16 HP @ 3600 rpm
Cylinder	2
Bore	2.68 in (68 mm)
Stroke	2.60 in (66 mm)
Displacement	29.3 Cu. in (480 cc)
Construction	Overhead Valve, Cast-Iron Sleeves, Aluminum Crankcase
Electrical System	12 Volt, 16 amp Alternator Regulated Battery
Capacity	340 Cold Cranking amps, 41 Min. Reserve Industrial Rated Starter Motor
Ignition	Magnetron Electronic Ignition
Air Cleaner	Ducted Paper Cartridge and Foam Pre-cleaner
Lubrication	Full Pressure Lube w/ Oil Filter
Oil Capacity	56 Oz. w/Filter (1.7 L)
Muffler	Quiet Compact, Low Back Pressure

16 HP Briggs & Stratton

Make	Briggs & Stratton
Model	Vanguard™ V-Twin
Horsepower	18 HP @ 3600 rpm
Cylinder	2
Bore	3.03 in (77 mm)
Stroke	2.64 in (67 mm)
Displacement	38 Cu. in (624 cc)
Construction	Overhead Valve, Cast-Iron Sleeves, Aluminum Crankcase
Electrical System	12 Volt, 16 amp Alternator Regulated Battery
Capacity	340 Cold Cranking amps, 41 Min. Reserve Industrial Rated Starter Motor
Ignition	Magnetron Electronic Ignition
Air Cleaner	Ducted Paper Cartridge and Foam Pre-cleaner
Lubrication	Full Pressure Lube w/ Oil Filter
Oil Capacity	2 Quarts w/Filter (1.9 L)
Muffler	Quiet Compact, Low Back Pressure

16 HP Kohler

Make	Kohler
Model	Command™ CV16S
Horsepower	16 HP @ 3600 rpm
Cylinder	1
Bore	3.55 in (90 mm)
Stroke	2.64 in (67 mm)
Displacement	26.0 Cu. in (426 cc)
Construction	Overhead Valve, Cast- & Sleeve, Aluminum Crankcase
Electrical System	12 Volt, 15 amp Alternator Regulated Battery
	12 Volt, 340 Cold Cranking amps, 41 Min. Reserve Capacity
Ignition	High Energy Electronic Ignition
Air Cleaner	Ducted Paper Cartridge and Foam Pre-cleaner
Lubrication	Full Pressure Lube w/ Oil Filter
Oil Capacity	2 Quarts w/Filter (1.9 L)
Muffler	Quiet Compact, Low Back Pressure

TRANSMISSION:

Type	Tuff Torq K61 Hydrostatic
Pump	Variable Displacement Axial Piston
Motor	Fixed Displacement Reversible Axial Piston
Control	Single Lever Foot Pedal, Free-Wheeling Lever for Manual Tractor Movement
Hydraulic Fluid	10W 30 Premium Engine Oil External Oil Reservoir
Speeds	Forward: 0 - 5.6 MPH (0 - 9.0 km/h)
@ 3400 rpm	Reverse: 0 - 3.2 MPH (0 - 4.8 km/h)
Differential	Bevel Gear with Controlled Traction
Axle Shaft	1 in
Continuous Torque output	188 ft. lbs.
Drawbar Rating	251 lbs.
Maximum Weight on Axle	629 lbs.

CHASSIS:

Frame	Heavy Steel Channel - IO-12 Gauge Power Take-Off Point: Front Engine Mounting: Above Front Axle Pivot Point Location: Front Axle
Rear Wheels	Tire Size: 20 x 8.00-S Turf Type Pneumatic Inflation Pressure: 6-8 psi (41-55 kPa)
Front Axle	i-3/4 in x 3 in 12 Ga. Fabricated Tube
Front Wheels	Tire Size: 15 x 6.00-6 Pneumatic Inflation Pressure: 12-15 psi (82-i 03 kPa)
Accessibility seat	Hood Tips Forward Type: Bucket, High Back w/Quick Adjust, Spring Suspension Adjustable to Suit Different Size Operators
Turning Radius	Inside Rear Tire: 16 in (40.6 cm)
Fuel Tank	Material: Non-Corrosive Polyethylene Fuel Tank Gauge Built Into Filler Cap Capacity: 4 Gallons (15.1 L)

CONTROLS:

Steering	15" (38 cm) Steering Wheel System: Gear and Sector, 1.25 turns Lock to Lock
Clutch/ Brake Pedal	Location: Right Front Combination Clutch/Brake/Parking Brake Pedal
Location	Mower Lift Lever: Right Side PTO Clutch: Electric, Dash Mounted Hydrostatic Control-Single Lever Foot Pedal Ignition Key Switch: On Lower Dash Panel Throttle Lever 0" Dash Panel and Choke Knob On Lower Dash Panel Light Switch: On Dash Panel Separate Indicator Lights for Safety Interlock Switch: Operator Present, PTO Disengaged, Low Oil Pressure Warning Light, Hourmeter

Specifications

DIMENSIONS:

Overall Length	70.25 in (178 cm)
Overall Width	35 in (88.9 cm)
Height	To Top of Steering Wheel: 40 in (101.6 cm) To Top of Engine Cover: 34 in (86.7 cm)
Wheel Base	50.75 in (129 cm)
Weight (apx..)	Net: 424 lbs. (192 kg) w/o mower 536 lbs. (243 kg) w/mower Shipping: 575 lbs. (261 kg) w/o mower 687 lbs. (312 kg) w/mower
Tractor Height w/Snowcab	71.5 in (181 cm)
Tractor Length w/Snowthrower	est. 98 in (249 cm)
Tractor Length w/Dozer Blade	est. 94 in (239 cm)

50" MOWER: 12 GA.

Effective Cutting Width	50 in Mower ■ 50 in (127 cm)
Overall Width with Deflector	50 in Mower ■ 62 in (157.5 cm)
Weight	50 in Mower- 135 lbs. (61.4 kg)
Variable Cutting Ht.	1.0 ■ 3.6 in (3.2 to 8.0 cm)
Blade Arrangement	Three Staggered Blades
Mower Drive	V-Belt From Tractor Engine PTO Electric Clutch
Spindle Bearings	Lubricated and Sealed Ball Bearings Lube Fitting Provided

44" MOWER: 12 GA.

Effective Cutting Width	44 in Mower ■ 44 in (111.8 cm)
Overall Width with Deflector with Turbo	44 in Mower ■ 56 in (142.2 cm) 58" (147 cm)
Weight	44 in Mower ■ 112 lbs. (51 kg)
Variable Cutting Ht.	1.0 ■ 3.6 in (3.2 to 8.0 cm)
Blade Arrangement	Three Staggered Blades
Mower Drive	V-Belt From Tractor Engine PTO Electric Clutch
Spindle Bearings	Lubricated and Sealed Ball Bearings Lube Fitting Provided

38" MOWER: 12 GA.

Effective Cutting Width	36 in Mower ■ 38 in (96.5 cm)
Overall Width with Deflector with Turbo	38 in Mower ■ 49.5 in (125.7 cm) 36 in Mower ■ 61.5 in (131 cm)
Weight	38 in Mower ■ 100 lbs. (45 kg)
Variable Cutting Ht.	Ht. 1.0 ■ 3.6 in (2.5 to 9.1 cm)
Blade Arrangement	Two Blades
Mower Drive	V-Belt From Tractor Engine PTO Electric Clutch
Spindle Bearings	Lubricated and Sealed Ball Bearings Lube Fitting Provided

COMMON REPLACEMENT PARTS

Listed below are the more common replacement parts. Only genuine factory replacement parts will assure optimum performance and safety. Do not attempt repairs or maintenance unless proper procedures and safety precautions are followed. For assistance in any area, see your dealer.

Replacement Parts

QTY.	DESCRIPTION	PART NO.
	Mower Blades	
1	■ 38" Mower, R.H.	1704101
1	■ 38" Mower, L.H.	1704856
3	■ 44" Standard Lift	1704100
3	■ 44" High Lift (Optional)	1704856
3	■ 50" Standard Lift	1708229
3	- 50" High Lift (Optional)	1706094
	Mower Belts	
1	■ 38" Mower Drive	1716854
1	- 44" Mower Drive	167031
1	- 44" Arbor Drive	1601672
1	■ 50" Mower Drive	1707740
1	- 50" Arbor Drive	1707740
1	Tractor Drive Belt	1717932
1	Safety Clip ■ Mower Lift	176012
1	Key, Ignition	1714054
1	Interlock Switch, Brake	1704379
1	Interlock Switch, Seat	1704379
1	Battery	1685215
1	Solenoid	1685290
1	Switch, PTO (Electric Clutch)	1716332
1	Headlamp Bulb	1677371

Maintenance Items

DESCRIPTION	PART NO.
Simplicity Engine Oils	
Case of 12 qts. (Your dealer has 1 qt. cans)	
-SAE 5W-30 SF/CD (Cold Weather 30" & under)	1665576
-SAE 30 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
Charcoal Grey, 13 oz. spray can	1685787
Red, 13 oz. spray can	1685722
• Touch-Up Daubers	
Deep Orange 1/2 oz. w/Brush Cap	1685615
• Grease Gun Kit w/8 oz. Grease Tube	1685510
Replacement 8 oz. Grease Tube for above	103077
• Tire Sealant-Stops Tire Leaks. Prevents Flats.	
11 oz. Tube	1685523
• Gas Can-No Tip Design. Durable Polyethylene.	
1 gallon	1685587
2-1/2 gallon	1685555
5-1/4 gallon	1685556
• Cleaner, Polish, Sealant & Protectant	
8 oz. Bottle	1685696
• Degreaser/Degreaser	
32 oz. Bottle w/Trigger Spray	1685619
1 gallon	1685621



Lawn Care & Mowing Information

GENERAL INFORMATION

Proper mowing is an important part of maintaining your lawn in the best possible condition. A healthy and well maintained lawn is better able to resist drought, weeds, and other stresses. But too much maintenance is as detrimental to your lawn as neglect. Proper care for your lawn involves more than just "cutting the grass." To have a healthy lawn, you need to know:

- X Types of Grass, Climate and Conditions
- X How and When to Water, Fertilize & Aerate
- X How High to Mow the Grass
- X When and How Often to Mow
- X What Mowing Patterns to Use
- X Proper Mowing Methods
- X How to Solve Common Mowing Problems

TYPES OF GRASS, CLIMATE AND CONDITIONS

A variety of grasses are commonly grown in household lawns, but two main groups known as cool-season grasses (varieties of bluegrass, ryegrass, and fescue), and warm-season grasses (typically bermuda, buffalo-grass, and zoysia varieties) are the most common.

The cool-season grasses are better suited to cooler climates, and do not endure hot and dry weather as well as warm-season grasses, but conversely, the warm-season grasses do not grow as well in cooler climates. Most residential lawns are typically seeded with a mixture of these grasses. (A local nursery or lawn center may help you to identify what kind of grass your lawn contains from a sample.)

Knowing your climate and conditions is also important to proper lawn care. Drier climates or conditions will require additional watering, while wetter climates may require more frequent mowing.

HOW AND WHEN TO WATER, FERTILIZE & AERATE

Every lawn's watering needs are unique and are dependent upon the type of grass and soil, the amount of local rainfall, and other conditions. Most lawns are watered too **often, but with too little water**. However too much water can allow development of diseases with your lawn. **It is best to water the lawn only when necessary, and then to water it slowly, evenly, and d&ply-imitating a slow, soaking rain.**

WHEN TO WATER YOUR LAWN

When the lawn begins to wilt, the grass's color dulls, or, footprints stay compressed for more than a few seconds, the lawn is beginning to dry out, and needs additional moisture. The best time to water is early morning to allow the water to soak deeply into the lawn and reduce the amount that evaporates in the hot afternoon sun.



HOW TO WATER YOUR LAWN

The best method of watering a lawn is to imitate a slow, soaking rain, applying about 1 inch of water. A method of verifying the amount that you have watered, is to place several empty tin cans (low shallow cans work best) in various spots around the lawn, and check the depth of water in the can during the watering process.

HOW TO FERTILIZE YOUR LAWN

Fertilizing with a slow-release fertilizer provides missing nutrients which help create slow, even growth. While opinions vary on the need for fertilizing, when and how much to fertilize will be more a factor of the condition of the lawn and soil than any routine. **Remember that over-fertilizing can cause harm, and that most fertilizing should be applied in the spring so that it will release into the lawn through the summer.** For more information, check with a local nursery or lawn care specialist, and read and follow the fertilizer manufacturer's instructions.

AERATING YOUR LAWN

Consider aerating your lawn in spring. Using an aerator to remove cores of soil from the lawn increases the speed of clipping decomposition and encourages deeper root growth by opening **up** the soil and permitting greater movement of water, fertilizer and air.

lawn Care & Mowing Information

HOW HIGH TO MOW THE GRASS

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

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

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

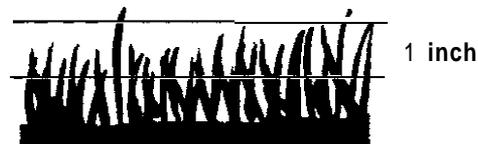
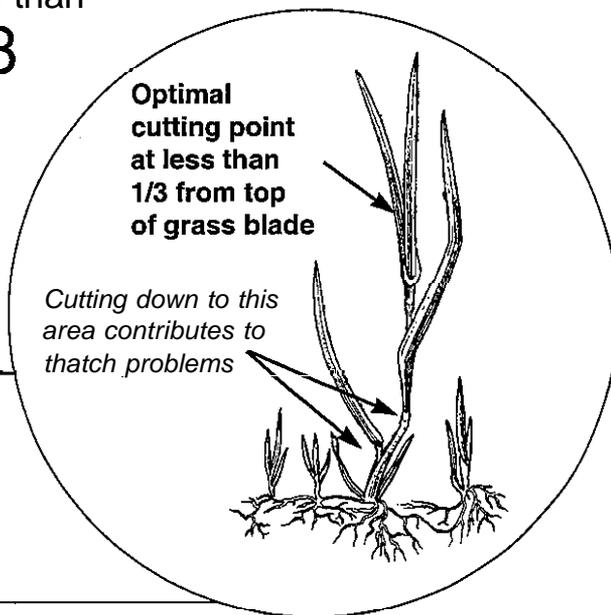
Cutting off too much at one time shocks the plant's growth system and weakens the grass plants. A **good rule of thumb is the 1/3 rule: to cut no more than one third of the grass height, and never more than 1 inch at a time.**

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

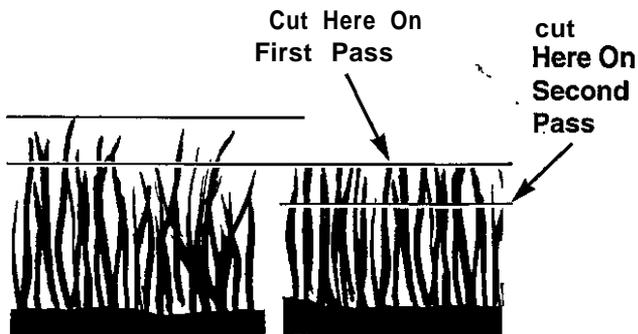
*NOTE: We cover some **specific mowing** instructions for mulching and broadcasting later in this Lawn Care section.*



Cut less than
1/3



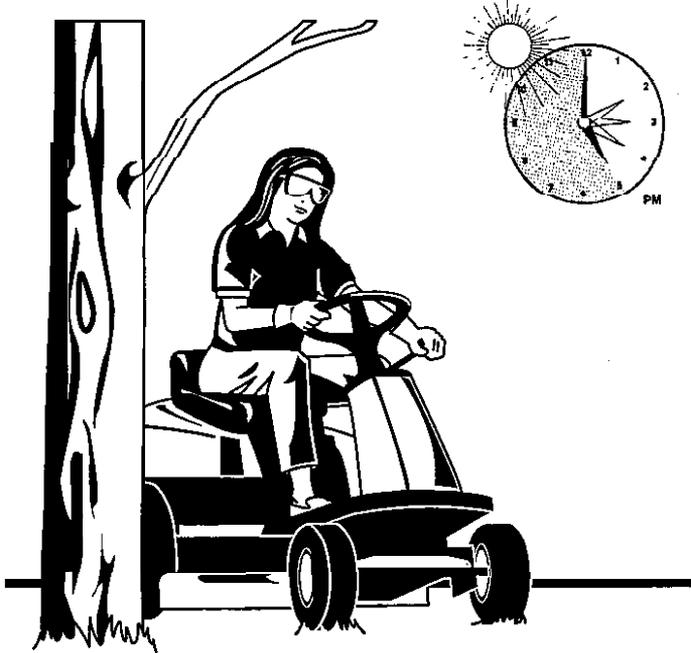
Proper Cutting Height



Tall Grass Requires Incremental Cutting

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

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



WHEN AND HOW OFTEN TO MOW

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

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

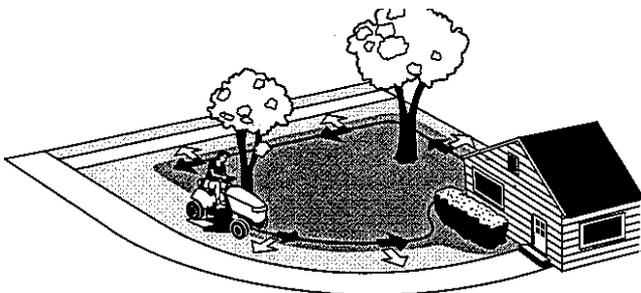
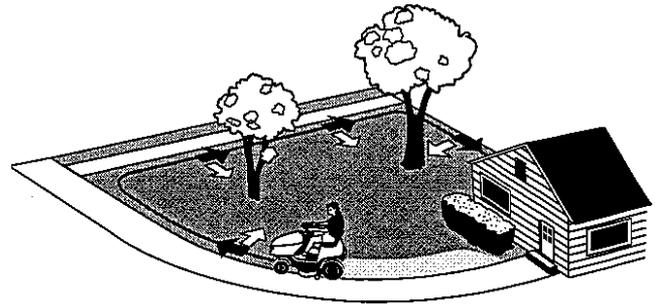
WHAT MOWING PATTERNS TO USE

Always start mowing on a smooth, level area.

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

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

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



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

Note: Always operate the engine at full throttle when mowing.

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

Lawn Care & Mowing Information

MOWING METHODS

Proper Broadcast Mowing

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

ENGINE SPEED & GROUND SPEED FOR BROADCASTING

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

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



slowing down you are mowing too fast, use a slower ground speed.

HOW MUCH GRASS TO CUT OFF WHEN BROADCASTING

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

Proper Mulching

Mulching consists of a mower deck which cuts and recuts clippings into tiny particles and which then blows them down INTO the lawn. These tiny particles decompose rapidly into by-products your lawn can use.

UNDER PROPER CONDITIONS, your mulching mower will virtually eliminate noticeable clippings on the lawn surface.

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

MULCHING REQUIRES EXCELLENT MOWING CONDITIONS

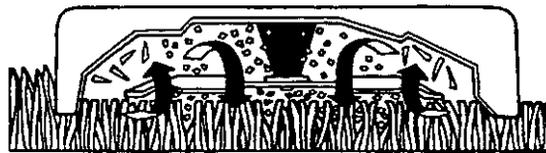
Mulching mowers cannot function properly if the grass is wet, or if the grass is simply too high to cut. Even more than normal mowing, mulching requires that the grass be dry and the appropriate amount is cut.

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

ENGINE SPEED & GROUND SPEED FOR BROADCASTING

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

Mulching, Action



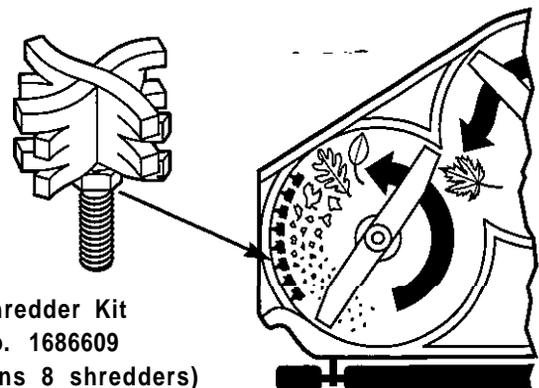
HOW MUCH GRASS TO MULCH

The best mulching action typically results from cutting only the top 1/2 inch to 3/4 inch of grass blade. This provides short clippings which decompose properly (much more quickly than longer clippings). The ideal cutting

height will vary with climate, time of year, and quality of your lawn. We recommend that you experiment with both the cutting height and ground speed until you achieve the best cut. Start with a high cutting height and using progressively lower settings until you find a cutting height that is matched to your mowing conditions and preferences.

LEAF SHREDDING (USE WITH OPTIONAL MULCHER KIT)

Simplicity's patented Shredder Blades virtually eliminate raking leaves. Up to 512 cutting edges pulverize leaves into tiny particles, which quickly and naturally decompose into food for your lawn. The Shredder Blades must be removed when you mulch grass clippings.



Leaf Shredder Kit
Part No. 1686609
(Contains 8 shredders)

TIPS On Dealing With Clippings

Clippings are **beneficial** to your lawn. A common misconception about clippings is that they automatically lead to thatch—this is untrue. Short clippings produced by broadcasting and clippings produced by mulching methods actually **contribute to a healthy lawn** because they:

- ✗ Reduce the evaporation of water from your lawn.
- ✗ Provide a cushioning layer to reduce lawn wear.
- ✗ Moderate soil temperature.
- ✗ Clippings act as a safe, non-polluting and inexpensive fertilizer that nourishes your lawn. Fresh cut grass blades are 85% water, and are a rich source of nitrogen which is essential to lush growth. And one garbage bag of clippings contains about 1/4 lb. of usable organic nitrogen.

COMPOSTING

The best way to recycle excess clippings and leave your lawn looking immaculate is to collect them with an efficient collection system and deposit them in a compost pile. A compost pile is a collection of grass, leaves, and other organic wastes which—when properly **tended**—decompose into an odorless, topsoil material. This material, in turn, acts as an inexpensive fertilizer for your lawn and garden.

How to start a healthy compost pile:

- 1 Build a bin using bricks, fencing, cement blocks, etc. or purchase a prefabricated bin from a garden store. The bin should also have venting on each side and from the bottom to the top.
- 2 Fill the bin with alternating layers of yard waste. Follow this recipe:

First layer: 3-4 inches of chopped brush or other coarse material.

Second layer: 6-8 inches of mixed leaves, grass clippings, sawdust, etc. Materials should be “sponge damp.”

Third layer: 1 inch of soil to add micro-organisms that help break down organic matter.

Fourth layer: 1-2 inches of manure to provide the nitrogen needed by micro-organisms.

Keep adding layers until the bin is almost full. Top off with a 4-6 inch layer of straw and scoop out a “basin” to catch rain water.

- 3 Four or five days later the pile will reach temperatures of **140-160** degrees. At this time you'll **notice** it settling, a good sign your compost is working properly.
- 4 After 5-6 weeks, fork materials into a new pile, turning the outside of the old heap into the center of the new one. Add water if necessary. The compost should be ready to use within three to four months when dark brown, crumbly, and earthy-smelling.



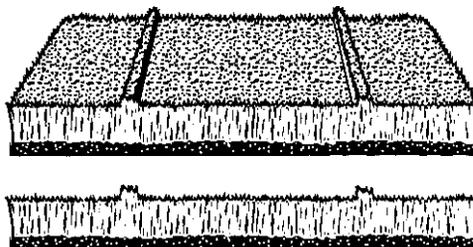
Lawn Care & Mowing Information

SOLUTIONS FOR COMMON MOWING PROBLEMS

Streaking

Streaking is when thin strips of uncut grass are left behind the mower. Streaking is usually caused by operator error or poor blade maintenance.

Streaking



CAUSE

- Blades are not sharp
- Blades are worn down too far
- Engine speed is too slow
- Ground speed is too fast
- Deck is plugged with grass
- Not overlapping cutting rows enough
- Not overlapping enough when turning

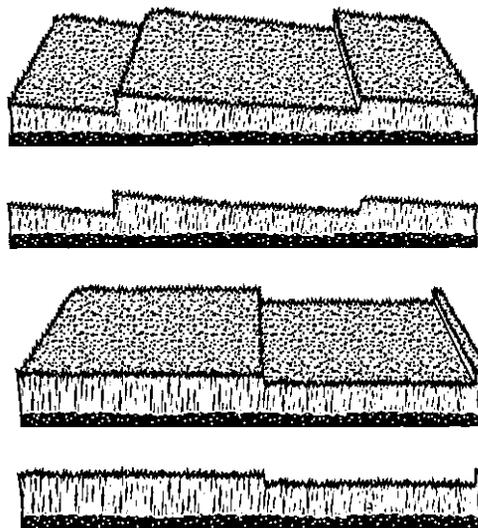
SOLUTION

- Sharpen your blades
- Replace your blades
- Always mow at full throttle
- Slow down
- Clean out the mower
- Overlap your cutting rows
- When turning your effective cutting width decreases-overlap more when turning

Stepped Cutting

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

Stepped Cutting



CAUSE

- Deck is not leveled correctly
- Tires are not properly inflated
- Blades are damaged
- Deck shell is damaged
- Mower spindle is bent or loose
- Blades are installed incorrectly

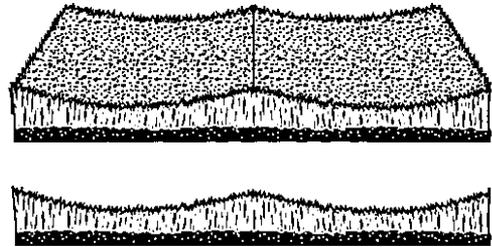
SOLUTION

- Level the deck correctly
- Check and inflate the tires
- Replace the blades
- Repair or replace the deck
- Repair or replace the spindle
- Reinstall the blades correctly

Uneven Cutting

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

Uneven Cutting



CAUSE

- Deck is not leveled correctly
- Blades are dull or worn
- Blades are damaged
- Deck is clogged with grass clippings
- Deck shell is damaged
- Mower spindle is bent or loose
- Blades are installed incorrectly

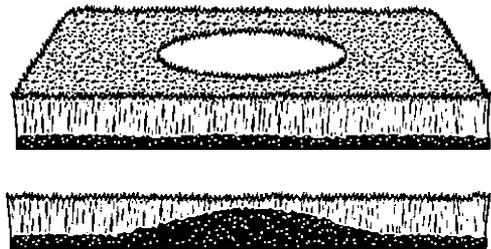
SOLUTION

- Level the deck correctly
- Sharpen or replace the blades
- Replace the blades
- Clean out the deck
- Repair or replace the deck
- Repair or replace the spindle
- Reinstall the blades correctly

Scalping

Scalping is when the mower deck comes close to or hits the ground. Scalping can be caused by the mower deck misadjustment, unevenness in the lawn, or by mower deck bouncing because the ground speed is too fast.

Scalping



CAUSE

- Lawn is uneven or bumpy
- Mower deck cutting height is set too low
- Ground speed is too fast
- Deck is not leveled correctly
- Tire pressure is low or uneven

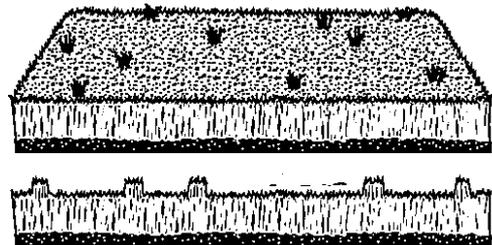
SOLUTION

- Roll or level the lawn
- Raise the cutting height
- Slow down
- Correctly level the deck
- Check and inflate the tires

Stingers

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

Stingers



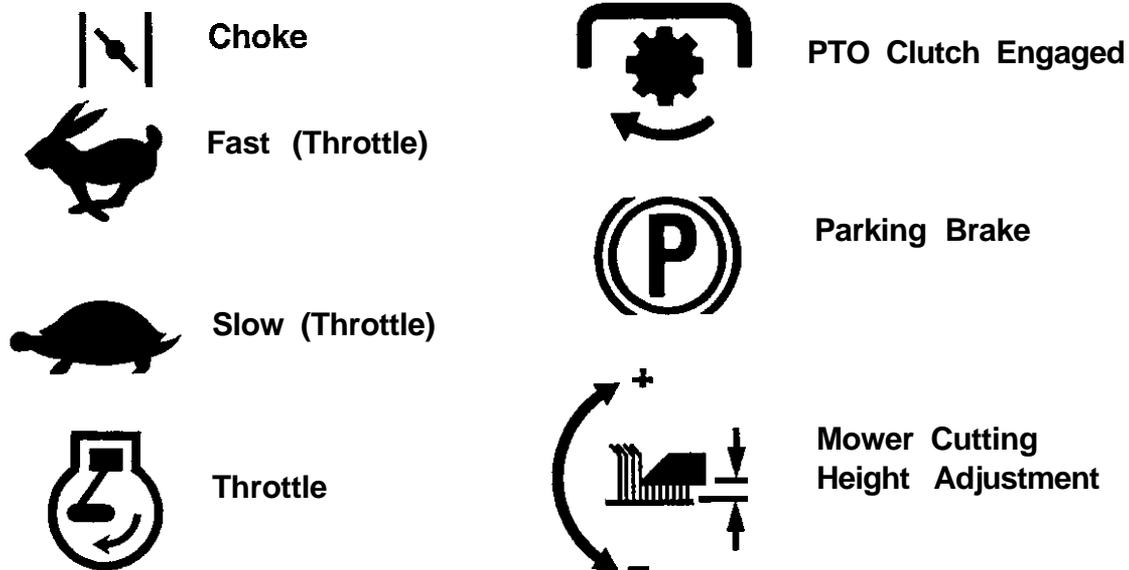
CAUSE

- Blades are not sharp or are nicked
- Blades are worn down too far
- Engine speed is too slow
- Ground speed is too fast
- Deck is plugged with grass

SOLUTION

- Sharpen your blades
- Replace your blades
- Always mow at full throttle
- Slow down
- Clean out the mower

Common International Symbols



Technical Manuals

Additional Technical Literature Available

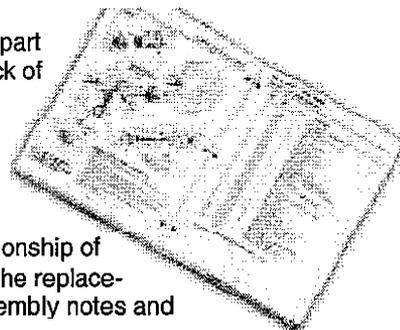


Operators Manuals

Additional copies of this manual are available, (and as part of our product support commitment, we maintain a stock of printed operators manuals going back many years!)

Parts Manuals

Fully illustrated parts manuals are also available — these manuals show all of the product's components in exploded views ("3D" illustrations which show the relationship of the parts and how they go together), as well as giving the replacement part numbers and quantities used. Important assembly notes and special torque values are included in these manuals.



For the applicable manuals currently available for your model, contact our Customer Publications Department at 414-284-8519. Have the information listed in the box at the right available when phoning in your request.

Please allow 3 to 4 weeks for delivery.



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