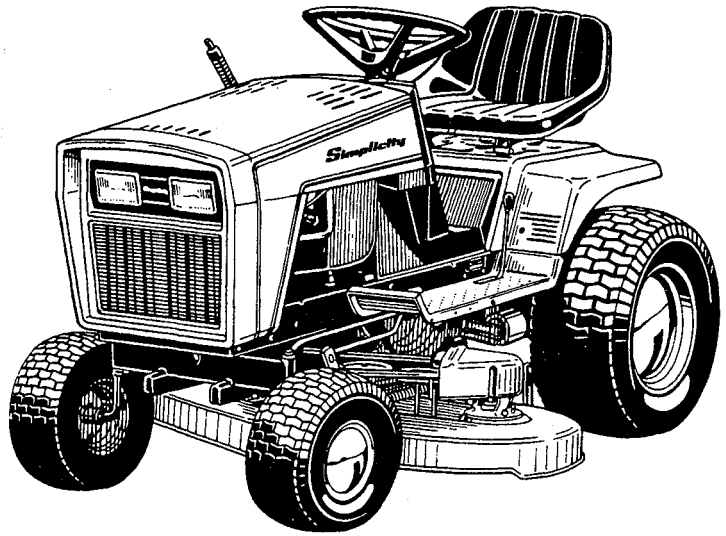


Operator's Manual

6500 SERIES

HYDROSTATIC TRACTOR

12.5 HP TRACTOR
MFG. NO. 1691468
MFG. NO. 1691624

16 HP TRACTOR
MFG. NO. 1691263
MFG. NO. 1691626

17 HP TRACTOR
MFG. NO. 1691732

42" MOWER
MFG. NO. 1691423

48" MOWER
MFG. NO. 1691425
MFG. NO. 1691736

Simplicity

Table of Contents

READ THE ENTIRE MANUAL BEFORE OPERATING

Safety Rules

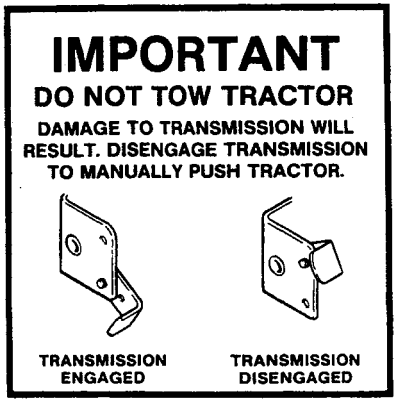
Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of vehicle, severe personal injury to yourself or bystanders, or damage to property or equipment. The triangle ⚠ in the text signifies important cautions or warnings which must be followed.

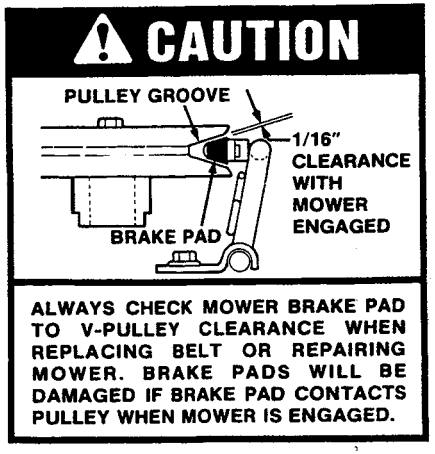
- Know the controls and how to stop quickly. READ THIS OPERATOR'S MANUAL and instructions furnished with attachments.
- Do not attempt to override the safety start circuit. Make sure the seat switch is securely plugged in.
- Do not allow children to operate the machine. Do not allow adults to operate it without proper instruction.
- Do not carry passengers. Do not mow when children and others are around.
- Clear the work area of objects (wire, rocks, etc.) that might be picked up and thrown.
- Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor).
- Disengage power to attachments and stop the engine (motor) before leaving the operator's position.
- Disengage power to attachments and stop the engine (motor) before making any repairs or adjustments.
- Disengage power to attachments when transporting or not in use.
- Take all possible precautions when leaving the vehicle unattended, such as disengaging the power-take-off, lowering the attachments, setting the parking brake, stopping the engine, and removing the key.
- Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of slopes; never across the face. Do not mow on slopes greater than 30 percent (16.7°); use front counterweights and rear wheel weights on slopes greater than 15 percent (8.5°).
- Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.
- Stay alert for holes, rocks, and roots in the terrain and other hidden hazards. Keep away from drop-offs.

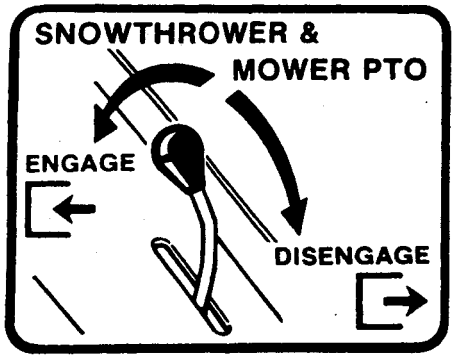
- Use care when pulling loads or using heavy equipment.
  a. Use only approved drawbar hitch points.
  b. Limit loads to those you can safely control.
  c. Do not turn sharply. Use care when backing.
  d. Use counterweights or wheel weights when suggested in this operator's manual.
- Watch out for traffic when crossing or near roadways.
- When using any attachments, never direct discharge of material toward bystanders or allow anyone near the vehicle while in operation.
- Handle gasoline with care — it is highly flammable.
  a. Use approved gasoline container.
  b. Never remove the fuel cap of, or add gasoline to, a running or hot engine or an engine that has not been allowed to cool for several minutes after running. Never fill the tank indoors and always clean up spilled gasoline.
  c. Open doors if the engine is run in the garage — exhaust fumes are dangerous. Do not run the engine indoors.
- Keep the vehicle and attachments in good operating condition, and keep safety devices in place and in working condition.
- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
- To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.
- The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
- Do not change the engine governor settings or overspeed the engine.
- When using the vehicle with mower, proceed as follows:
  a. Mow only in daylight or in good artificial light.
  b. Never make a cutting height adjustment while the engine (motor) is running if the operator must dismount to do so.
  c. Shut the engine (motor) off when removing the grass catcher or unclogging chute.
  d. Check the blade mounting bolts for proper tightness at frequent intervals.
- Under normal usage, the grass catcher bag material is subject to deterioration and wear. Check bag frequently for deterioration and wear and replace worn bags. Check that replacement bags comply with the original manufacturer's recommendations or specifications.
- Disengage power to mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

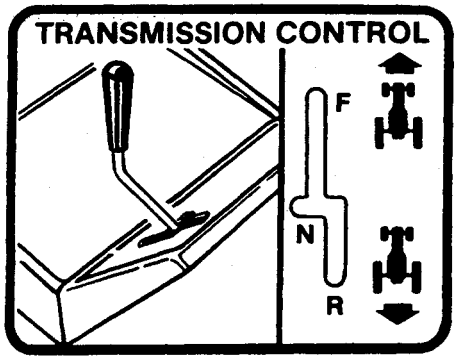
Decals

ALL WARNING, CAUTION, and instructional messages on your tractor and mower should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. Decal information is important for your safe operation of the tractor. The safety messages on this page are on your tractor and mower.





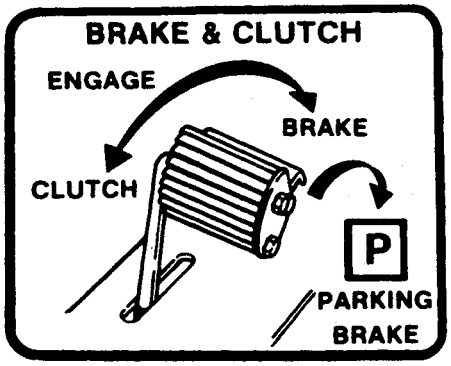


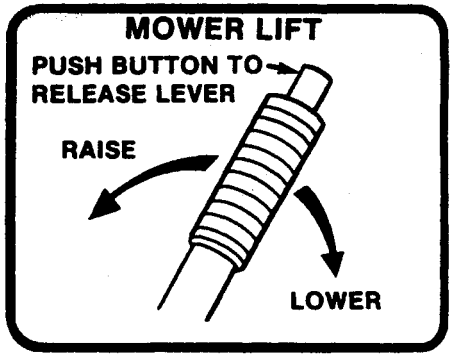


CAUTION

TO AVOID POSSIBLE INJURY

- READ OPERATOR'S MANUAL(S).
- KNOW LOCATION AND FUNCTION OF ALL CONTROLS.
- KEEP SAFETY DEVICES (GUARDS, SHIELDS AND SWITCHES) IN PLACE AND WORKING.
- REMOVE OBJECTS THAT COULD BE THROWN BY BLADE.
- DO NOT MOW WHEN CHILDREN AND OTHERS ARE AROUND.
- NEVER CARRY CHILDREN.
- ALWAYS LOOK BEHIND MACHINE BEFORE BACKING.
- DO NOT MOW WHERE MACHINE COULD TIP OR SLIP.
- IF MACHINE STOPS GOING UPHILL, STOP BLADE AND BACK SLOWLY DOWN.
- BE SURE BLADE AND ENGINE ARE STOPPED BEFORE PLACING HANDS OR FEET NEAR BLADE.
- WHEN LEAVING MACHINE REMOVE KEY AND SET PARKING BRAKE.





Mower Installation & Removal

WARNING

Stop engine, set parking brake, and remove key to prevent accidental starting. Never attempt to install or remove your mower when engine is running.

INSTALLATION

1. Place the tractor and mower on a smooth, hard surface, such as concrete, with the mower on the right side of the tractor, and the hitch toward front of the tractor.
2. Notice that one end of the PTO rod (A, figure 1) does not have a drilled hole. Insert this end into the mower PTO arm (B) and work around until rod (A) appears as in figure 1.
3. Turn the front wheels of the tractor as far as they go to the left.
4. Lower the tractor lift lever. Place the mower in lowest cutting position using the mower height control lever.
5. Slide the mower under the tractor so that the mower lift arm (C, figure 1) is under the tractor lift arm (B, figure 2).
6. Connect the chain (C, figure 2) to the trunnion (D) with clip (E). For electric lift, use only three links of chain.

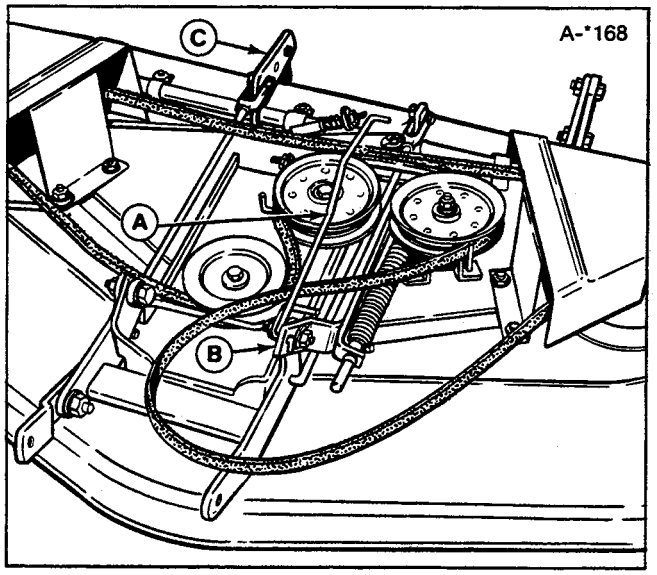


Figure 1. PTO Rod

A. PTO Rod
B. Mower PTO Arm
C. Mower Lift Arm

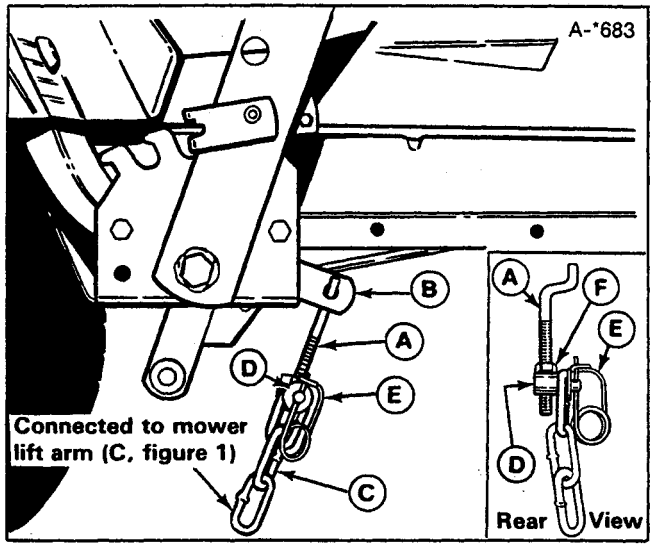


Figure 2. Lift Chain

A. Lift Rod
B. Lift Arm
C. Chain
D. Trunnion
E. Clip
F. Nut

7. Position the mower hitch arms (C, figure 3) so they are underneath the rear holes in tractor hitch (A, figure 4). Lift up one side of mower with both hands and align hole in mower hitch arm with rear hole in tractor hitch. When holes align, insert clevis pin (B) through hitch with pin head on outside as shown in figure 4. Using a 2' x 4' wood block for support may make hole alignment easier. Go to the other side and insert the other pin. Install the two safety clips (C) in the pins.

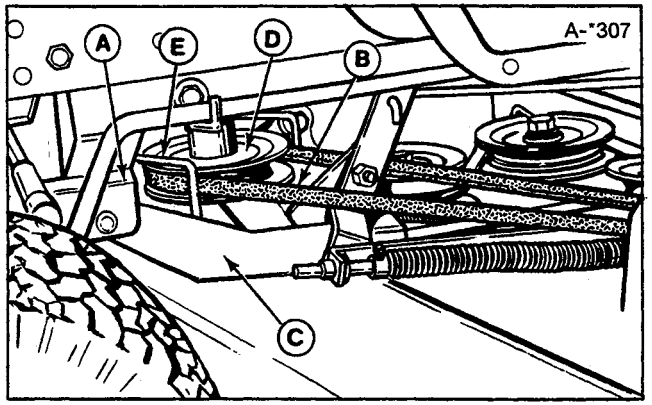


Figure 3. L.H. PTO Pulley Belt Stop

A. Tractor Hitch
B. Belt
C. Mower Hitch Arm
D. PTO Pulley
E. Belt Stop

8. Slip the mower drive belt onto the engine PTO pulley (D, figure 3). Loosen the belt stops if necessary. The left-hand belt stop is item E in figure 3. The right-hand belt stop is item A in figure 5.

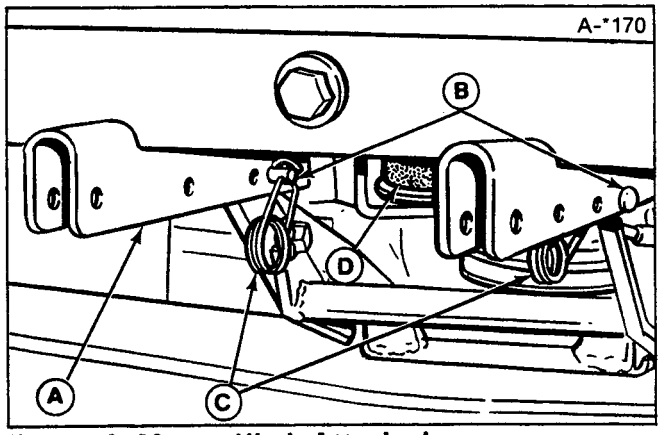


Figure 4. Mower Hitch Attached

A. Tractor Hitch
B. Pins
C. Safety Clips
D. Drive Belt

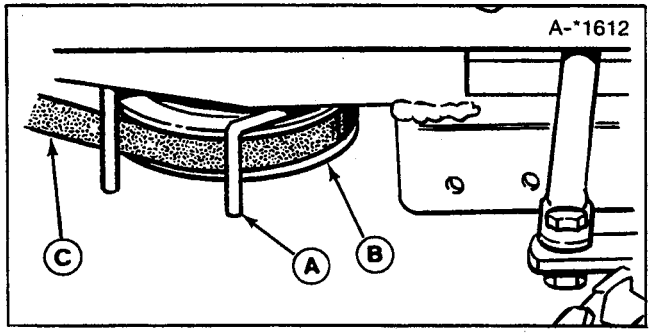


Figure 5. R.H. PTO Pulley Belt Stop

A. Belt Stop
B. PTO Pulley
C. Belt

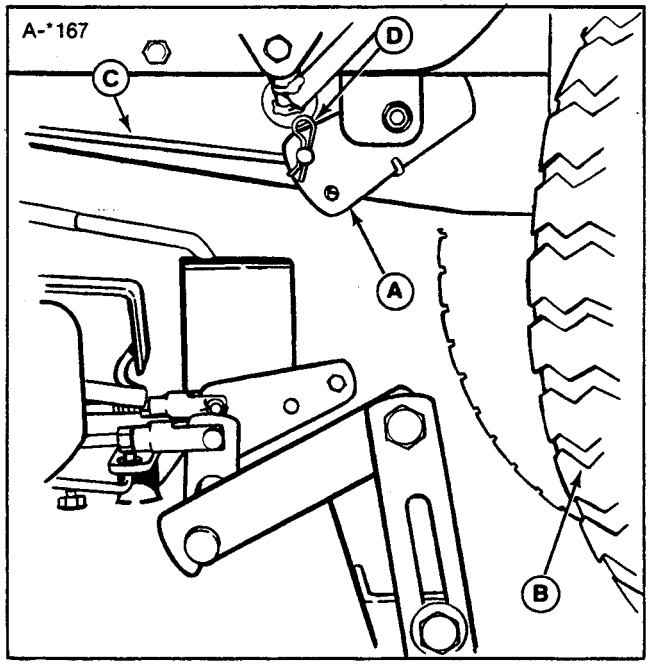


Figure 6. PTO Pulley Rod

A. PTO Lever
B. Left Rear Tire
C. PTO Rod
D. Spring Clip

9. Attach the PTO rod (C, figure 6) to the tractor PTO lever (A) in hole marked "MOW" with the spring clip provided (D).

10. Check Mower Adjustments (page 39. Be sure to check belt stop adjustment if loosened in step 8. If installing for the first time, check Mower Leveling and Lift Lever in Adjustments section.

NOTE

If belt is new, check belt tension adjustment and blade brake adjustment again after two hours of operation.

REMOVAL

Reverse the procedure to remove the mower.

⚠ WARNING

Take special care when working near the engine muffler. If it is hot from recent operation it can cause serious burns.

Operation

CONTROLS

Refer to figure 7A for tractor controls and figure 7B for engine/dash controls.

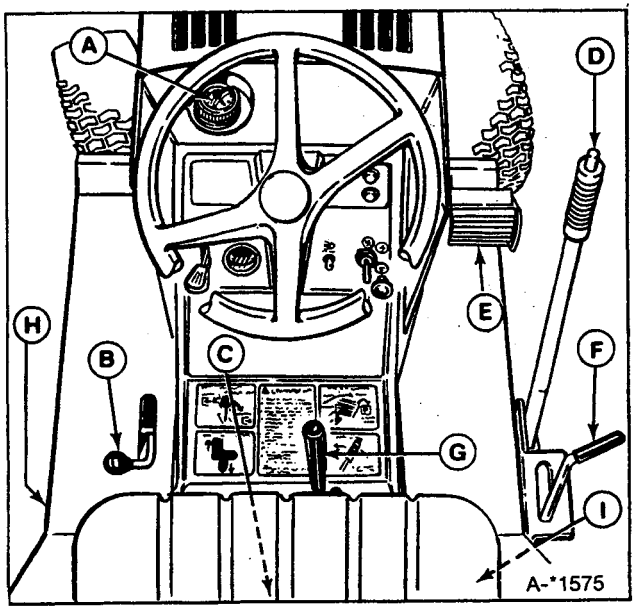
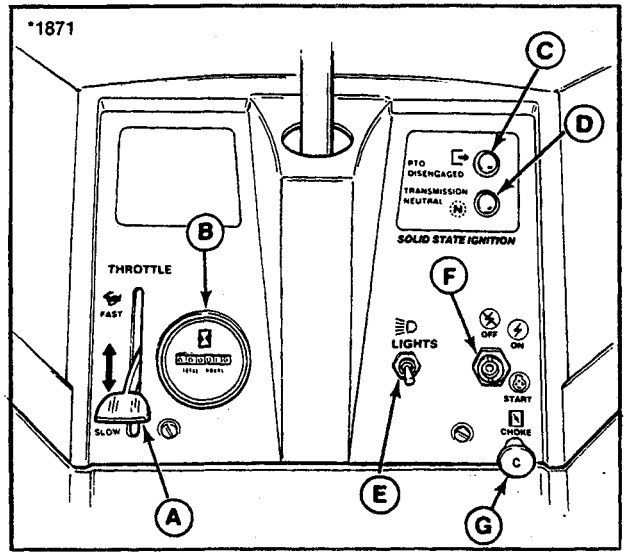


Figure 7A. Tractor Controls

ITEM	NAME	FUNCTION
A	Gas Gauge/Cap	Shows the amount of gasoline in the tank & serves as gas tank cap.
B	PTO (Power Take Off) Lever	Move the lever forward to engage power to the attachment. Move the lever back to disengage.
C	Seat Safety Switch	Shuts off engine if operator leaves seat when PTO is engaged and/or hydrostatic control lever is in forward/reverse slot.
D	Lift Lever	Lifts & holds the mower & other attachments in transport position.
E	Clutch-Brake Pedal/Parking Brake	Disengages tractor drive when pressed down at least halfway. Applies brake when fully depressed. Engages parking brake when latched over footrest.
F	Height Control Lever	Adjusts mower cutting height.
G	Ground Speed Control Lever	Controls ground speed and forward/reverse direction. Ground speed is increased when lever is pushed down (for forward direction) and pulled up (for reverse direction) in slot. Tractor movement begins immediately after lever is pushed out of neutral slot.
H	Seat Deck Latch	Pull down on latch underneath left foot rest while raising seat deck.
I	Hydro Release Lever	Allows tractor to be pushed by hand (located under seat deck).



ITEM	NAME	FUNCTION
A	Throttle Lever	Position from SLOW to FAST to adjust engine speed.
B	Hourmeter	Shows number of hours engine has been operated.
C	PTO Safety Interlock Lamp (Green)	Lights up when ignition switch is turned to ON & PTO is disengaged. (PTO must be disengaged to start engine.) With engine running, lamp will be lit whenever ground speed control lever is in neutral position.
D	Trans. Safety Interlock Lamp (Green)	Lights up when ignition switch is turned to ON position & ground speed control lever is in NEUTRAL position. (Control lever must be in NEUTRAL position to start engine.) With engine running, lamp will be lit whenever PTO is disengaged.
E	Light Switch	Switches headlights on or off (when engine is running).
F	Ignition Switch	Operates with key to start, run or stop the engine.
G	Choke	Aids in starting a cold engine.

Figure 7B. Engine & Dash Controls

CHECKS BEFORE STARTING

Refer to the Normal Care Chart on page 18 and perform any needed care.

SAFETY INTERLOCK SYSTEM

Your tractor is equipped with a seat switch safety system that will automatically shut the engine off when the operator leaves the seat with the PTO engaged or with the transmission lever in gear. The tractor engine will continue to run when the operator leaves the seat if the PTO is disengaged and the transmission is in neutral.

Check the seat switch (A, figure 7C) every fall and spring with the following three tests. Make sure the wiring harness (B) is securely plugged into the switch.

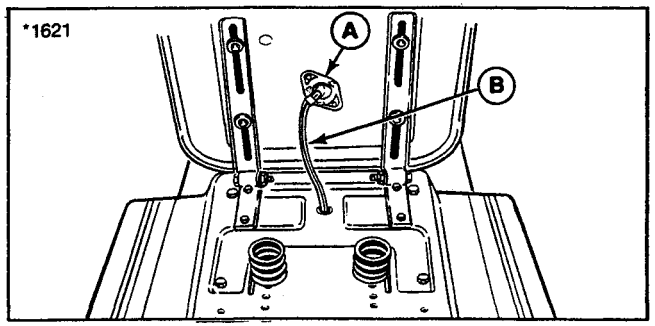


Figure 7C.
A. Seat Switch
B. Wiring Harness

⚠ WARNING

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

Test 1 — Engine should not crank if:

A. Seat not occupied, or;
B. Transmission lever out of neutral, or;
C. PTO engaged.

Test 2 — Engine should crank if:

A. Seat is occupied, and;
B. Transmission lever in neutral, and;
C. PTO disengaged.

Test 3 — Engine should shut off if:

A. Operator rises off seat with transmission in gear or;
B. Operator rises off seat with PTO engaged.

STARTING THE ENGINE

⚠ WARNING

Do not start or run engine in an enclosed area. Exhaust fumes are deadly.

1. Make sure the parking brake is set and the PTO is disengaged.

NOTE

It is very important for cold weather starting that the parking brake is set. This will declutch the transmission drive belt and allow the engine to turn over easier.

2. To start engine, the ground speed control lever must be in NEUTRAL, the PTO disengaged, and operator in tractor seat.
3. For cold starts, pull out the choke knob. It may not be necessary to choke in warm weather.
4. Insert the key into the ignition switch and turn to START position. When the engine starts, release the key.
5. As the engine warms, push in choke.
6. Allow the engine to warm up before engaging the PTO or driving the tractor. Do not idle engine for extended periods - it may cause carbon build-up.

GENERAL INFORMATION

The hydrostatic drive system provides a variable speed range of 0 - 5.5 mph in the forward direction and 0 - 3 mph in the reverse direction.

Speed is controlled by the ground speed control lever. Engine speed also affects ground speed, but is used mainly to control the drive speed of the attachment (mower, snowthrower, etc.). The further the control lever is in the forward or reverse gate, the faster the ground speed.

SELECTING ENGINE SPEED

Most mowing is done with the engine speed control lever set between 3/4 and full throttle. Best results are often obtained at full throttle. If the grass is wet or high, select a slow ground speed, and use full engine speed.

⚠ WARNING

Operation on Slopes

Never operate on slopes greater than 30 percent (16.7°) which is a rise of three feet in a travel distance of ten feet. When operating on slopes that are greater than 15 percent (8.5°) but less than 30 percent use rear wheel weights and front counterweights (available from your dealer). A 15 percent slope is a rise of one and a half feet in a travel distance of ten feet.

Use the ground speed control lever to reduce ground speed before driving onto any slope. Drive UP and DOWN the slope, never across the face. Use caution when changing directions and DO NOT STOP OR START ON SLOPES WHEN OPERATING UPHILL OR DOWNHILL.

⚠ CAUTION

Do not operate the ground speed control lever unless engine is running and parking brake is released.

STARTING AND STOPPING

1. Make sure the PTO is disengaged, transmission is in neutral and parking brake is set. Operator must be in seat.
2. Start the engine.
3. For transporting, use the lift lever to raise the mower. For mowing, lower the lift lever. Select the desired mowing height using the height control lever. When the lift lever is raised and lowered, the mower will return to the height set by the height control lever.
4. If possible, the first motion should be straight forward or backward. Position the front wheels straight ahead.
5. Place the throttle lever at half throttle.
6. Release the brake pedal from the parking brake position (latched to footrest).
7. Use the ground speed control lever to select forward or reverse travel. For forward direction, move lever to right slot and push down; for reverse direction, move lever to the far right and pull up.
8. Use the ground speed control lever to control speed. The further the control lever is in the forward or reverse gate, the faster the ground speed.
9. When you are ready to mow, engage the PTO lever with moderate speed. Engaging too slowly may cause belt wear.
10. Move the engine throttle lever between 3/4 and full for mowing. If necessary, readjust ground speed with the control lever.

11. Select the appropriate ground speed for conditions. If the terrain is rough, hilly or sloping, drive slowly. You should also drive slowly to cut thick grass or blow heavy snow. On level ground, with light grass or snow, adjust your speed accordingly.
12. Use the transmission control lever to slow down for turns or to trim around objects, then increase speed.
13. **To stop,** move the transmission control lever into NEUTRAL position. **For a more rapid stop,** depress the clutch-brake pedal, move control lever to NEUTRAL before releasing pedal.

NOTE

The tractor may creep a small amount forward or backward while in neutral when the parking brake is not locked. Move control lever slightly forward or back in the neutral gate to eliminate creeping. If tractor continues to creep, see Shift Quadrant (Neutral) Adjustment, page 37.

14. Before leaving the operator seat:
    a. Stop tractor motion and engage parking brake.
    b. Disengage the PTO and lower the attachment.
    c. For Kohler engines, set engine speed control to SLOW. For Briggs & Stratton engines, set engine speed control halfway between fast and slow (if tractor backfires when shutting off, move speed control a little higher than halfway). Let engine idle for about a minute. However, do not idle engine for extended period - it may cause carbon buildup.
    d. Turn key to OFF and remove it.

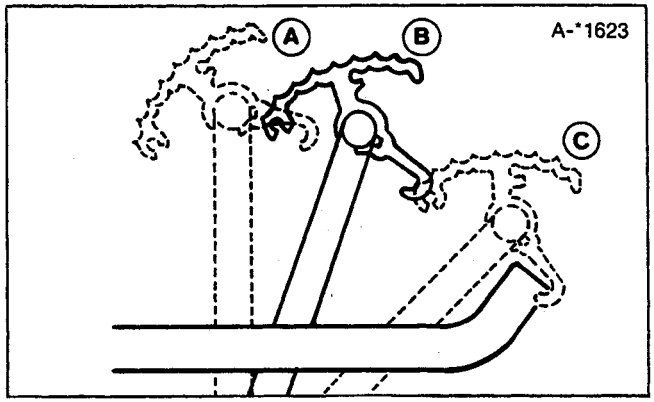


Figure 8. Brake/Clutch Pedal

CLUTCH/BRAKE PEDAL OPERATION

Refer to figure 8. Depressing pedal from position A to B disengages transmission drive. Depressing pedal further from position B to C will also apply tractor brake. Parking brake is applied at position C when pedal is latched over foot rest as shown in figure 8.

WARNING

Never store the tractor where gasoline fumes can reach an open flame or spark. To reduce fire hazard, keep the engine, tractor and mower free of trash, leaves and excess grease.

WARNING

Refer to your attachment Operator's Manual for special requirements. When mowing with a vacuum collector attachment, always use the front counterweight.

PUSHING THE TRACTOR BY HAND

WARNING

Rotating cooling fan is located under battery compartment on top of transaxle. Do not allow hands or dangling objects near the fan blades.

To push the tractor by hand, the transmission must be disengaged by moving the release valve. To release the valve, open seat deck, pull up on the release lever (A, figure 9), and insert screw (B) into upper bracket hole (shown in dotted lines in figure 9). Release valve must be repositioned in the bottom (drive) hole before tractor will move in a forward or reverse direction.

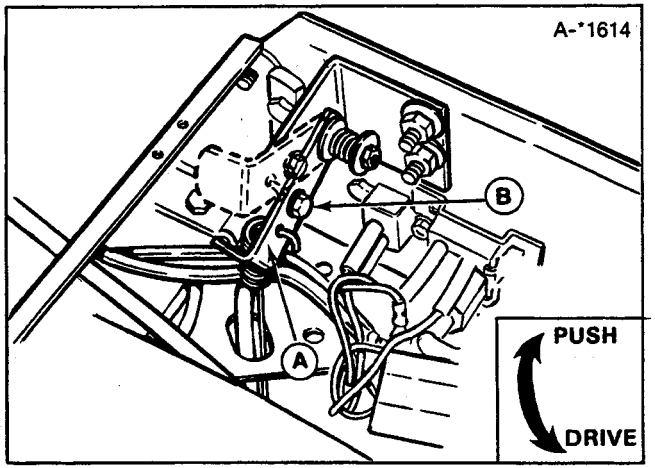


Figure 9. Release Valve

A. Release Lever
B. Screw

MOWING SUGGESTIONS

When mowing for the first time, operate on a level surface at a slow ground speed until you become familiar with the controls and handling of the machine. Make sure mower is properly installed and adjustments are correct.

Set the throttle between 3/4 to full and use hydrostatic control lever to control ground speed.

The size and type of area to be mowed determine the best mowing pattern to use.

Obstructions such as trees, fences and buildings must be considered. Where possible, make one or two passes in a clockwise direction around the outside of the area to keep cut grass off fences and walks. The remainder of the mowing should be done in a counterclockwise direction so the clippings are dispersed on the cut area.

On moderate size, frequently-mowed lawns where grass is light and dry, it is sometimes practical to mow in a clockwise direction so that clippings are thrown toward the center of the lawn and concentrated for pickup and removal.

Where possible, keep the left side of the mower toward trees, posts, or other obstacles on the first pass around the obstacles to keep hand trimming to a minimum.

Most lawns should be mowed to keep the grass approximately two to three inches (50 to 76 mm) high. Best results are obtained by cutting often and not too short. To help keep a green lawn, never mow more than one third off the height of the grass, or a maximum of one inch (25 mm), in one mowing.

On thick, or springy grass or soft ground, the mower rollers may sink into the ground giving too low a cut. Adjust the cutting height as necessary.

For best appearance, grass should be cut in the after or early evening (in daylight) when it is free of external moisture.

Where possible, change mowing patterns occasionally to eliminate matting, graining or a corrugated appearance.

Normal Care

WARNING

Stop engine, disengage PTO, remove key, set parking brake, and wait for moving parts to stop before performing maintenance. Wait for engine to cool before working around engine.

DETERMINING OPERATING TIME

An hourmeter, located on the left side of the control panel, indicates the operating time of the engine. Use this meter to determine proper schedule for checks and service shown in the Normal Care Schedule.

RAISING HOOD & SEAT DECK

To raise the hood, pull out on each side of the hood next to the dash and lift up. To raise the seat deck, pull down on the release (underneath rear left-hand footrest) with your left hand, then lift the seat deck with your right hand. Refer to figure 10.

NORMAL CARE SCHEDULE

A schedule for normal care is provided in the following chart.

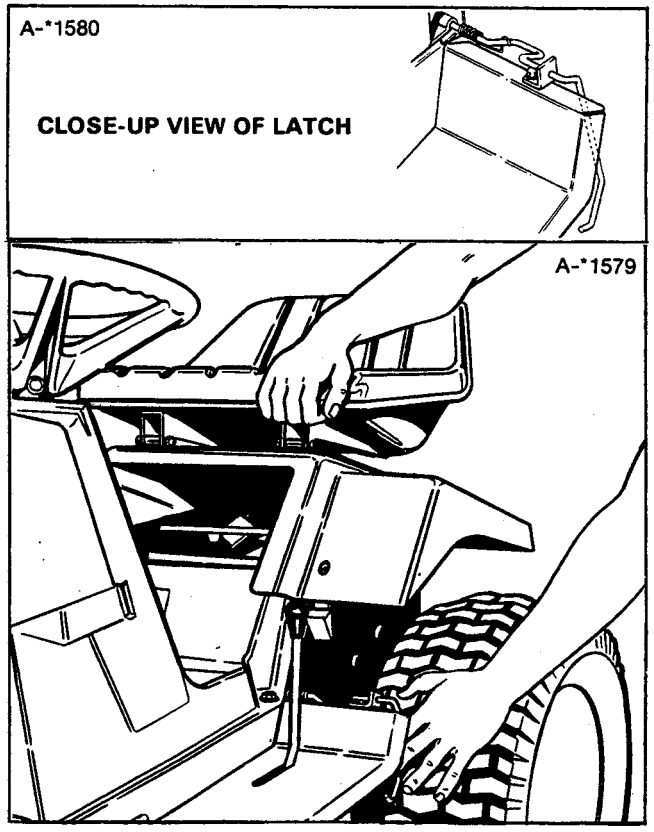


Figure 10. Seat Deck Latch

Safety	See	Before First Use	Before Each Use	Every 5 Hours	Every 25 Hours	Every 100 Hours	Spring & Fall
Check safety interlock system.	pg. 11	•					•
Check tractor brakes.	pg. 14	•					•
Check mower blade brake.	pg. 48	•					•
Normal Care Items							
Check gas gauge.	pg. 9	•	•				
Check tractor & mower for loose nuts, screws, bolts, oil leaks, etc.		•	•	•			
Check engine oil level.	Eng.Mn.	•	•	•			
Check engine & air filter.	" "				**•		
Change engine oil.*	" "				**•		***•
Lubricate tractor & mower.	pg. 19	•			**•		
Check fluid levels & tires.	pg. 22	•	•		**•		
Change transmission fluid & filter.	pg. 23	Every 400 hrs. or for transaxle service only.					
Check fuel filter.	pg. 25					•	
Clean battery & cables.	pg. 25					•	
Clean/sharpen blades.	pg. 26					•	
Inspect spark plugs.	Eng.Mn.					•	
Check mower belt tension.	pg. 43				•		

*Change original engine oil after first 5 hours of operation.
**More often in hot (over 85° F: 30° C) weather or dusty operating conditions.
***Only if tractor is used in both summer (over 40° F) and winter (under 40° F: 4.5° C). Use SAE 5W-30 engine oil for cold weather operation (under 30° F).

Normal Care Schedule

ADDING GASOLINE

Refer to the engine Owner's Manual for gasoline recommendations. Clean the area around the gas gauge/cap before unscrewing. Install hand-tight.

> **WARNING**
>
> **Never add gasoline when the engine is hot or running.**

TRACTOR AND MOWER LUBRICATION

Lubricate the tractor and mower as shown in figures 11 thru 16. Where an oil can is pictured, wipe the area clean, apply a few drops of medium weight (SAE 30) oil and then wipe up any drips or spills. Where a grease gun is pictured, wipe the fitting clean, apply two or three shots of grease, then wipe off excess grease. Keep grease and oil off belts and pulleys.

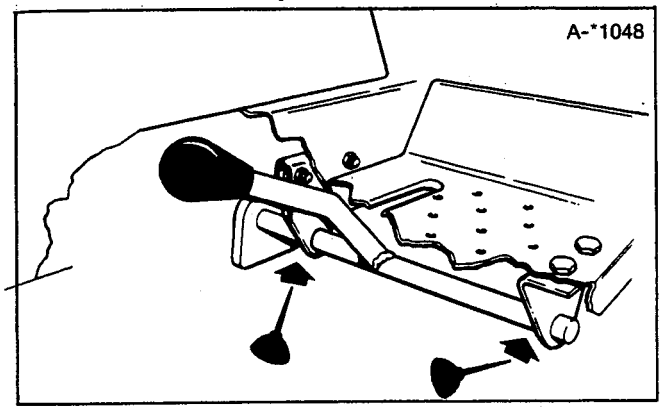


Figure 11. Lubricate Pivot Points of PTO Lever

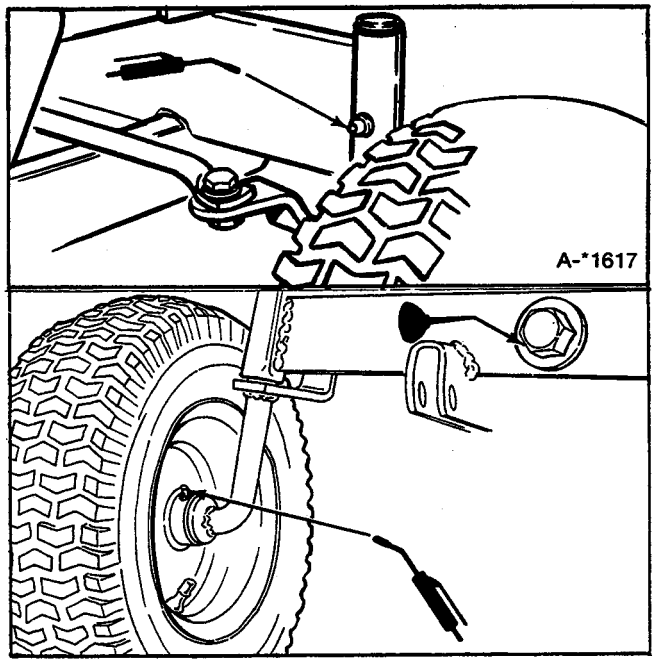


Figure 12. Lubricate Front Axle Grease Fittings

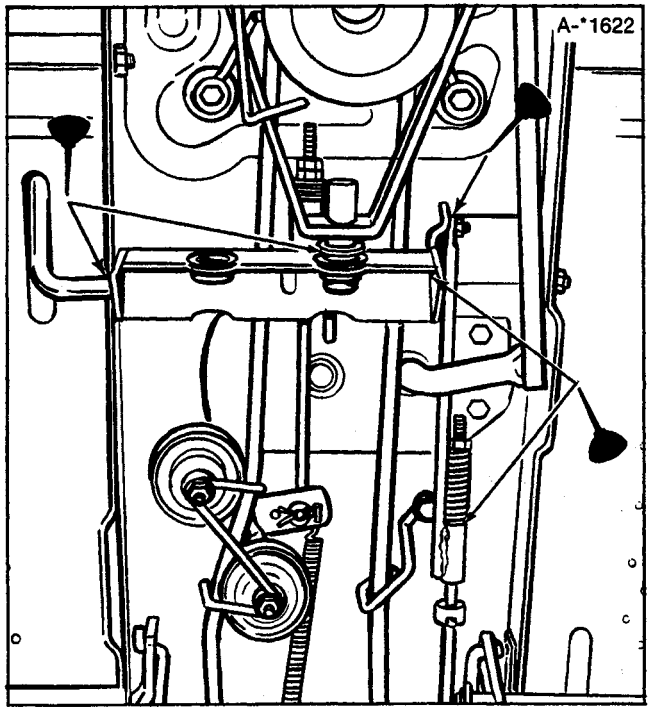


Figure 13. Lubricate Pivot Points of Brake Pedal, Rod and Rear Idler Pulley Bracket

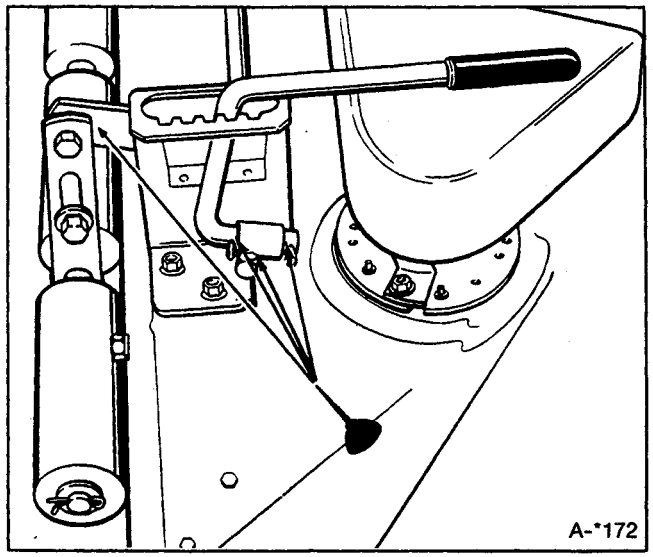


Figure 14. Lubricate Height Control Lever & Point Where Roller Bar Contacts Bracket

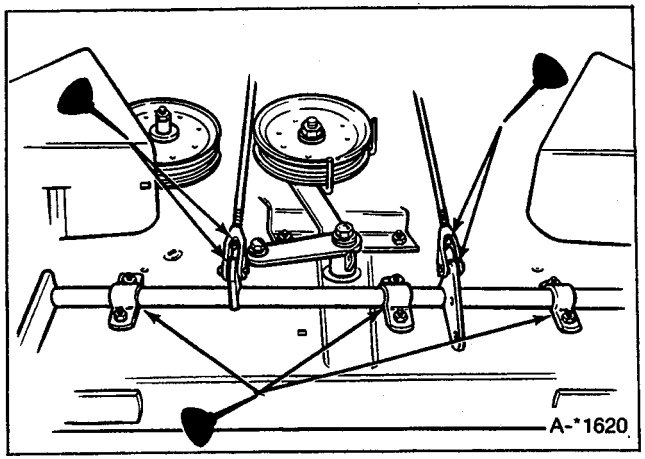


Figure 15. Lubricate Clevises & Three Points Where Roller Bar Contacts Bracket

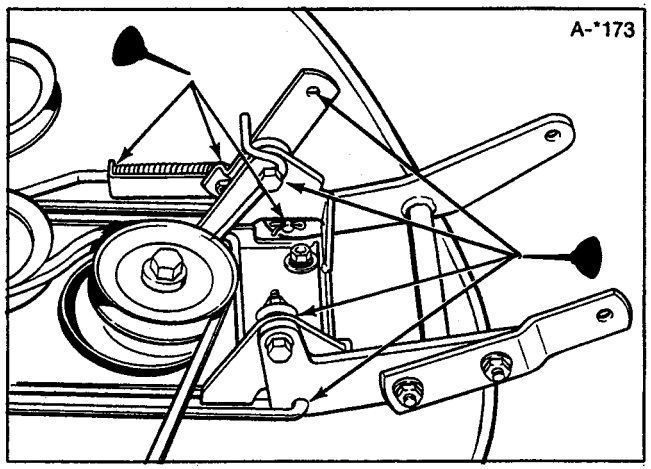


Figure 16. Lubricate Hitch, PTO Rod & PTO Arm

FLUID LEVELS

1. **Check hydrostatic transaxle fluid as follows:**

NOTE

Transaxle fluid level should be checked when tractor is cool or cold. Run engine a few moments before checking fluid.

a. Pull down on seat deck release and raise seat deck.

b. Inspect the fluid level in the reservoir (A, figure 17). Fluid should be even with the "FULL" mark when tractor is cool.

c. Wipe any dirt or debris around filler cap (B) before removing cap. Add SAE 30W premium grade non-detergent oil as necessary.

2. **Check battery fluid level as follows:**

NOTE

Auxiliary battery charging may be required if electric lift is operated continuously for long periods or in the winter when battery efficiency is low and tractor operation infrequent.

a. Pull down on seat deck release and raise seat deck.

b. Remove the filler caps (C), one at a time.

c. Fluid must be even with split ring full mark (figure 17). If not, add distilled water.

d. Reinstall filler caps.

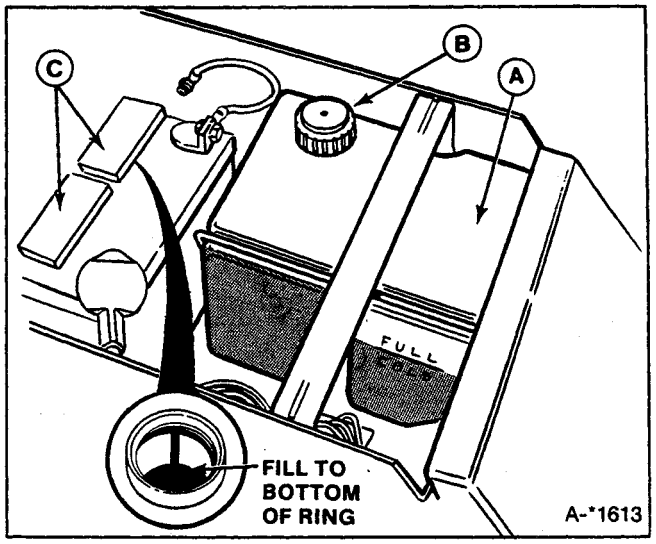


Figure 17. Fluid Level & Battery Check

A. Reservoir
B. Reservoir Cap
C. Battery Cap

TIRE PRESSURE

Check air pressure of all four tires. Front tires should be 12 to 15 psi. Rear tires should be 6 to 8 psi. For an accurate check, use a gauge with one-pound markings.

CHANGING TRANSMISSION FLUID & FILTER

Transmission fluid should be changed only when performing repair work or if fluid has become discolored from overheating or contamination.

Replace the filter (A, figure 17A) whenever changing transmission fluid or every 400 hours of operation. Make sure filter base and surrounding area is absolutely clean before removing old filter.

To drain transmission fluid:

1. Remove magnetic drain plugs (B) from under left and right axle shafts to drain transaxle, return line, and rear reservoir pocket. Replace plugs when transaxle is drained.

Continued on next page.

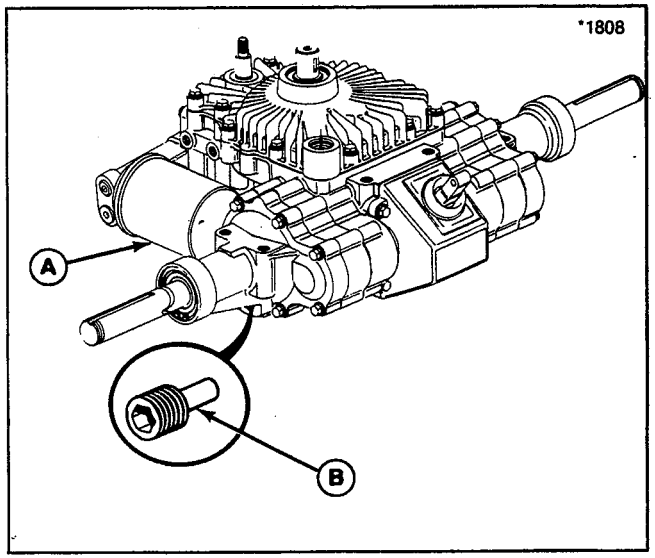


Figure 17A.
A. Filter
B. Magnetic Plug

2. To drain front reservoir pocket and inlet tube (A, figure 17B), loosen fitting (B) that secures 90° elbow (C). Support elbow with a 15/16″ open end wrench while turning fitting with a 1″ wrench.

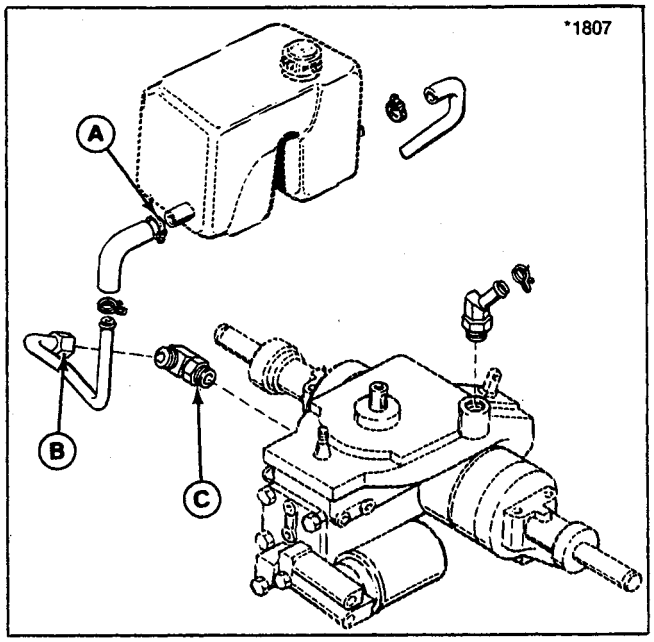


Figure 17B.
A. Inlet Tube
B. Fitting
C. 90° Elbow

FUEL FILTER REPLACEMENT

WARNING

Do not remove fuel filter when engine is hot, as spilled gasoline may ignite. Do not spread hose clamps further than necessary. Make sure that clamps grip hose firmly over filter after installation.

If the filter is dirty or clogged, replace as follows. Place a container below filter to catch gasoline.

1. Using a pliers, open and slide hose clamps from fuel filter.
2. Remove hoses from filter.
3. Install new filter in proper flow direction in hoses. Secure by reclamping with hose clamps.

CLEANING THE BATTERY & CABLES

WARNING

Always disconnect the negative cable FIRST and reconnect it LAST. The positive battery terminal can easily be shorted to the tractor frame by a wrench or other tool if this is not done. Use care not to short across battery terminals with tools.

WARNING

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

1. Disconnect the cables from the battery, negative cable first (A, figure 18).

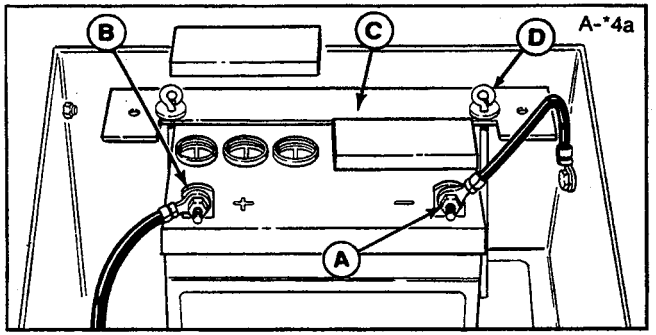


Figure 18. Battery

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

2. Remove the battery clamp, then remove the battery.
3. Scrub the battery, cable, and battery compartment with baking soda and water.

4. Clean the battery terminals and cable clamps with a wire brush.
5. Reinstall battery and clamp.
6. Connect cables, positive cable first.
7. Coat cable clamps and terminals with petroleum jelly.

SHARPENING & BALANCING THE BLADES

⚠ WARNING

Do not handle the sharp mower blades with bare hands. Avoid touching the cutting edge. Improper handling of blades may result in a serious injury. Use a box-end wrench of proper size.

1. Remove the mower from the tractor (see page 5).
2. Position the mower as in figure 19. Secure the mower so it will not fall or slide.
3. Remove any dirt or foreign matter from inside the mower deck and blade. Clean the blade mounting capscrew so that the wrench will seat fully and properly.

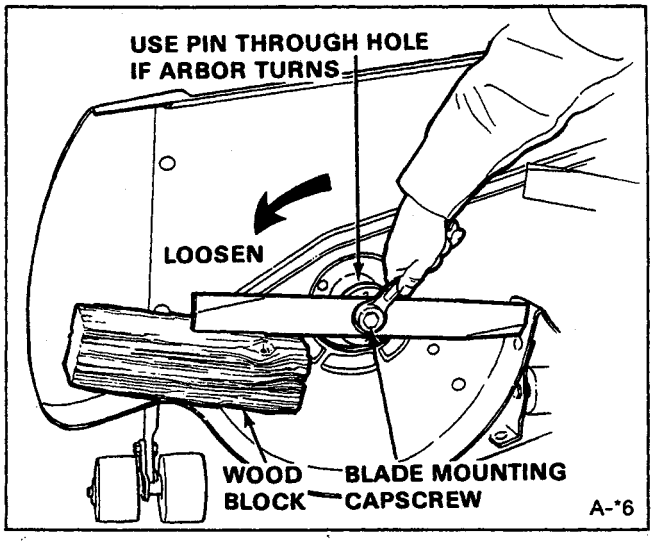


Figure 19. Removing Blade

4. To remove the blade for sharpening, use a wooden block to hold blade while removing the capscrew (figure 19). Position the wrench as shown so that your hand will not fall onto the blade cutting edge if wrench slippage occurs.
5. Use a file to sharpen blade to fine edge. Remove all nicks and dents in blade edge. If blade is severly damaged, it should be replaced.

6. Check and balance blade. Use a balancing machine or the fixture shown in figure 20. File material off heavier end of blade until it is balanced.

⚠ WARNING

Blade mounting capscrews must be installed with the cup washer and spline washer and then securely tightened as described in next step. Torque blade mounting capscrews to 50-70 ft. lbs. (68 to 76 Nm).

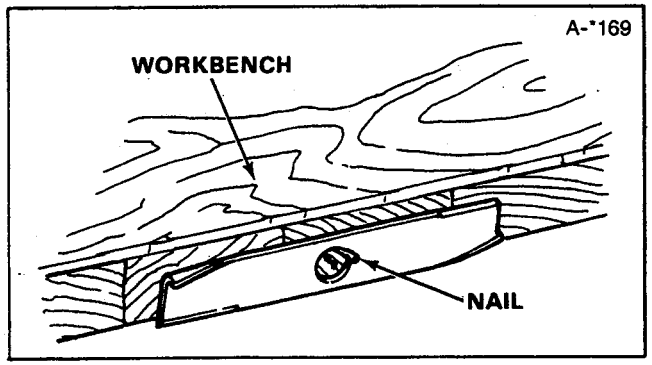


Figure 20. Balancing Blade

7. Reinstall each blade with the tabs pointing up toward deck and secure with a capscrew, cup washer, and spline washer. Be sure the splines on the spline washer are aligned with the shaft and the washer is flush against blade. Be sure cup washer is installed concave side up. Use a wooden block to prevent blade rotation and torque capscrew to 50 to 70 ft. lbs. (68 to 76 N.m) (figure 21).

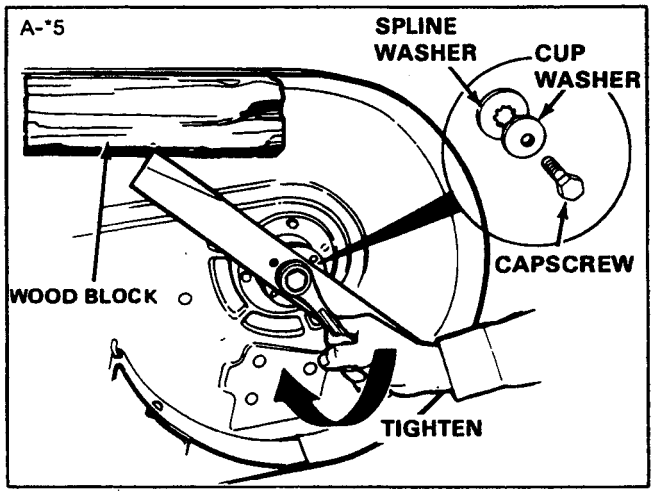


Figure 21. Installing Blade

NORMAL STORAGE

Clean all grass and dirt from the mower. To protect your tractor, store it in an enclosed dry area. Do not store it in an enclosure where fumes from the fuel tank could reach an open flame. Clean the seat with a vinyl cleaner.

To store your tractor in a cold area between winter snow removal jobs, we suggest that you fill the tank at the completion of each job to prevent water condensation in the fuel tank.

TRACTOR OFF-SEASON STORAGE

When the tractor is to be stored for two months or longer, take precautions as follows:

> **WARNING**
>
> **Keep open flames or spark away from flammable gasoline when working near the fuel tank. Never store tractor where gasoline fumes could reach an open flame or spark.**

1. To empty or prepare fuel tank:
   a. Run tractor engine until it stops from lack of fuel, or;
   b. Use a gasoline stabilizer. This additive, available from your dealer, prevents formation of gum and varnish for up to one year. With the additive, fuel may remain in your tank for long periods.
2. Change engine oil while the engine is still warm. Record the type and weight of oil put in crankcase.
3. Remove spark plugs. Pour one ounce (30 ml) of SAE 30 oil into engine through spark plug holes. Crank engine a few times to distribute oil and then reinstall the spark plugs.
4. Lubricate tractor (see page 19).
5. Check battery fluid level (page 25). Battery life will be extended if it is removed and stored in a cool, dry place, fully charged.
6. Clean tractor thoroughly. Coat all exposed bare metal (where paint has been scratched) surfaces with a good quality paint (obtainable from your dealer) or a light film of grease or oil. Keep oil off belts and pulleys.

STARTING AFTER STORAGE

1. Reinstall battery, if removed. Be sure terminals and clamps are clean (see page 25). Make sure battery is fully charged.

2. Remove spark plugs and wipe dry. Crank engine a few times to blow excess oil out of plug holes. Then reinstall the plugs.
3. Fill fuel tank with fresh gasoline (unless a fuel stabilizer was used).
4. Clean engine fins and air filter (see engine manual).
5. Check fluid levels and tire pressure (see page 20).
6. Start the engine outdoors. Do not run engine at high speeds immediately after starting.

MOWER OFF-SEASON STORAGE

To protect your mower, store it in an enclosed dry area. To prepare the mower for off-season storage perform the following.

1. Remove mower from tractor (see page 5).
2. Clean top and underside of mower to remove all grass and dirt.
3. Coat all bare metal surfaces (where paint has been scratched) with a good quality paint (available from your dealer) or a light coat of oil to prevent rusting.
4. Lubricate mower (page 19).
5. Check, sharpen and balance the mower blades (page 26).
6. The belt should be in a cool, dark place away from a heat source or sunlight. It can be left on the mower. If you wish to hang the belt on a wall, hang it from multiple hooks.

Troubleshooting & Repair

CONTENT OF SECTION

This section of the manual provides troubleshooting and repair suggestions for the more common and easily corrected problems. For other problems, it is recommended that you contact your dealer.

> **⚠ WARNING**
>
> **Perform maintenance on the tractor or mower only when the engine is stopped and the parking brake engaged. Always remove the ignition key and disconnect spark plug wires before beginning the maintenance to prevent accidental starting of the engine.**

TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are provided in the Troubleshooting Chart. To use these procedures, first locate the problem description that best describes the trouble that you have encountered. Check the possible causes one at a time in the order that they are listed.

TRACTOR & ENGINE

1. **Engine will not start.**
   - **A.** Ground speed control lever not in neutral-start position. Check safety interlock lights. Shift into neutral.
   - **B.** PTO clutch lever not disengaged. Check safety interlock lights. Disengage fully.
   - **C.** Operator not seated. Operator must be in seat to start and run tractor. Check safety switch.
   - **D.** Out of fuel. Refill fuel tank.
   - **E.** Engine flooded. Push choke knob in.
   - **F.** Circuit breaker tripped. Wait one minute for automatic reset. Replace if defective (see your dealer).
   - **G.** Battery terminals require cleaning. See Normal Care section.
   - **H.** Battery discharged or dead. Recharge or replace.
   - **I.** Wiring loose or broken. Visually check wiring & replace broken or frayed wires. Tighten loose connections.
   - **J.** Solenoid or starter motor faulty. Repair or replace.
   - **K.** Safety interlock switch faulty. Replace if needed (see your dealer).
   - **L.** Spark plugs faulty, fouled or incorrectly gapped Clean & gap or replace.
   - **M.** Water in fuel. Drail fuel & refill with fresh fuel.
   - **N.** Old stale gas. Drain fuel & replace with fresh fuel.

2. Engine starts hard or runs poorly.

- **A.** Fuel mixture too high. Disengage engine CHOKE. If problem still exists, clean air filter.
- **B.** Carburetor adjusted incorrectly (see your engine manual).
- **C.** Spark plugs faulty, fouled, or incorrectly gapped. Clean and gap or replace.

3. Engine knocks.

- **A.** Low oil level. Check/add oil as required (see engine manual).
- **B.** Using wrong grade oil (see Normal Care section).

4. Excessive oil consumption.

- **A.** Engine running too hot. Clean engine fins, blower screen and air cleaner (see Engine Manual).
- **B.** Using wrong weight of oil (see Normal Care section).
- **C.** Too much oil in crankcase. Drain excessive oil.

5. Engine exhaust is black or smokey.

- **A.** Dirty air filter. Clean air filter.
- **B.** Choke does not open when knob is push in.

6. Engine runs, but tractor will not drive or lacks power.

- **A.** Brake pedal locked in parking brake position. Depress pedal and release latch on footrest.
- **B.** Ground speed control lever in neutral position. Move lever right and down for forward travel; far right and up for reverse travel.
- **C.** Transaxle release valve locked in PUSH position. Open seat deck and move transaxle release valve to drive position.
- **D.** Drive belt slips (see problem and cause below).

7. Drive belts slip.

- **A.** Pulleys or belt greasy or oily. Clean as required.
- **B.** Belt stretched or worn. Replace with correct belt.

8. Brake will not hold.

- **A.** Brake is incorrectly adjusted (see Adjustment section).
- **B.** Brake disc worn and requires replacement (see your dealer).

9. Tractor handles poorly.

- **A.** Steering linkage is loose. Check and tighten any loose connections.
- **B.** Improper tire inflation. Check and correct (see Normal Care section.
- **C.** Wheels are spinning and slipping. Use weights to provide additional traction.

MOWER DECK

1. **Mower will not raise.**
   - **A.** Lift chain not attached or broken. Attach or repair.
2. **Mover cut is uneven.**
   - **A.** Mower not leveled properly (see Leveling Adjustment in mower adjustment section).
   - **B.** Tractor tires not inflated equally or properly (see Normal Care section).
3. **Mower cut is rough looking.**
   - **A.** Engine speed too slow. Set throttle for three-fourths to full speed.
   - **B.** Tractor ground speed too fast. Move ground speed control lever to reduce speed.
   - **C.** Blades dull and require sharpening (see Normal Care section).
   - **D.** Mower drive belt slipping. Belt oily or worn. Clean or replace belt as necessary. Readjust belt tension.
4. **Engine stalls easily with mower engaged.**
   - **A.** Tractor ground speed too fast. Move ground speed control lever to reduce speed.
   - **B.** Engine speed too slow. Set for three-fourths to full speed.
   - **C.** Cutting height set too low when mowing tall grass. Cut tall grass at maximum cutting height during first pass.
   - **D.** Discharge chute jamming with cut grass. Cut grass with discharge pointing toward previously cut area.
5. **Excessive mower vibration.**
   - **A.** Blade mounting screws are loose. Torque to 50-70 ft. lbs. (68 to 76 Nm) (see Normal Care section).
   - **B.** Mower blades, arbors, or pulleys are bent. Check and replace as necessary.
   - **C.** Mower blades are out of balance. Remove, sharpen, and balance blades (see Normal Care section).
6. **Excessive belt wear or breakage.**
   - **A.** Bent or rough pulleys. Repair or replace.
   - **B.** Using incorrect belt (see your dealer).
7. **Mower drive belt slips or fails to drive.**
   - **A.** Mower drive belt out of adjustment (see Adjustment section).
   - **B.** Mower drive belt broken. Replace belt.

BATTERY INSPECTION/REPLACEMENT

NOTE

Auxiliary battery charging may be required if electric lift is operated continuously for long periods or in the winter when battery efficiency is low and tractor operating infrequent.

If the battery is too weak to start the engine, it may not need to be replaced. Check the fluid level, and clean the terminals as described in "Cleaning the Battery and Cables" (see page 25). If the battery lost its charge due to prolonged storage, poor connections, or defective charging circuit, have the battery recharged by your dealer (maximum charge rate: 10 amps). If there is any doubt about the cause of the problem, see your dealer. To remove the battery, disconnect the cables (negative cable first, positive cable last) and remove the battery clamp. To install a new battery, connect the cables (positive cable first) and install the battery clamp.

⚠ WARNING

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 injury or property damage.

JUMP STARTING WITH AUXILIARY (BOOSTER) BATTERY

Jump starting is not recommended. Recharging the dead battery is preferred. However, if jump starting must be done, follow these directions. Both booster and discharged batteries should be treated carefully when using jumper cables. Perform the following procedure, being careful not to cause sparks. Refer to figure 22.

1. Set parking brake and place ground speed control lever in "NEUTRAL". Turn off lights and other electrical loads.
2. Remove vent caps from both the booster and the discharged batteries. Lay a cloth over the open vent wells on each battery. These two actions help reduce the explosion hazard always present in either battery when connecting a "live" battery to a "dead" battery.
3. Attach one end of one jumper cable to the positive terminal of the booster battery (identified by a red color, "+" or "P" on the battery case, post or clamp) and the other end of same cable to positive terminal of discharged battery. DO NOT permit vehicles to touch each other, as this could establish a ground connection.
4. Attach one end of the remaining cable to the negative terminal (black color, "—" or "N") of the booster battery, and the other end to a bare metal surface on the

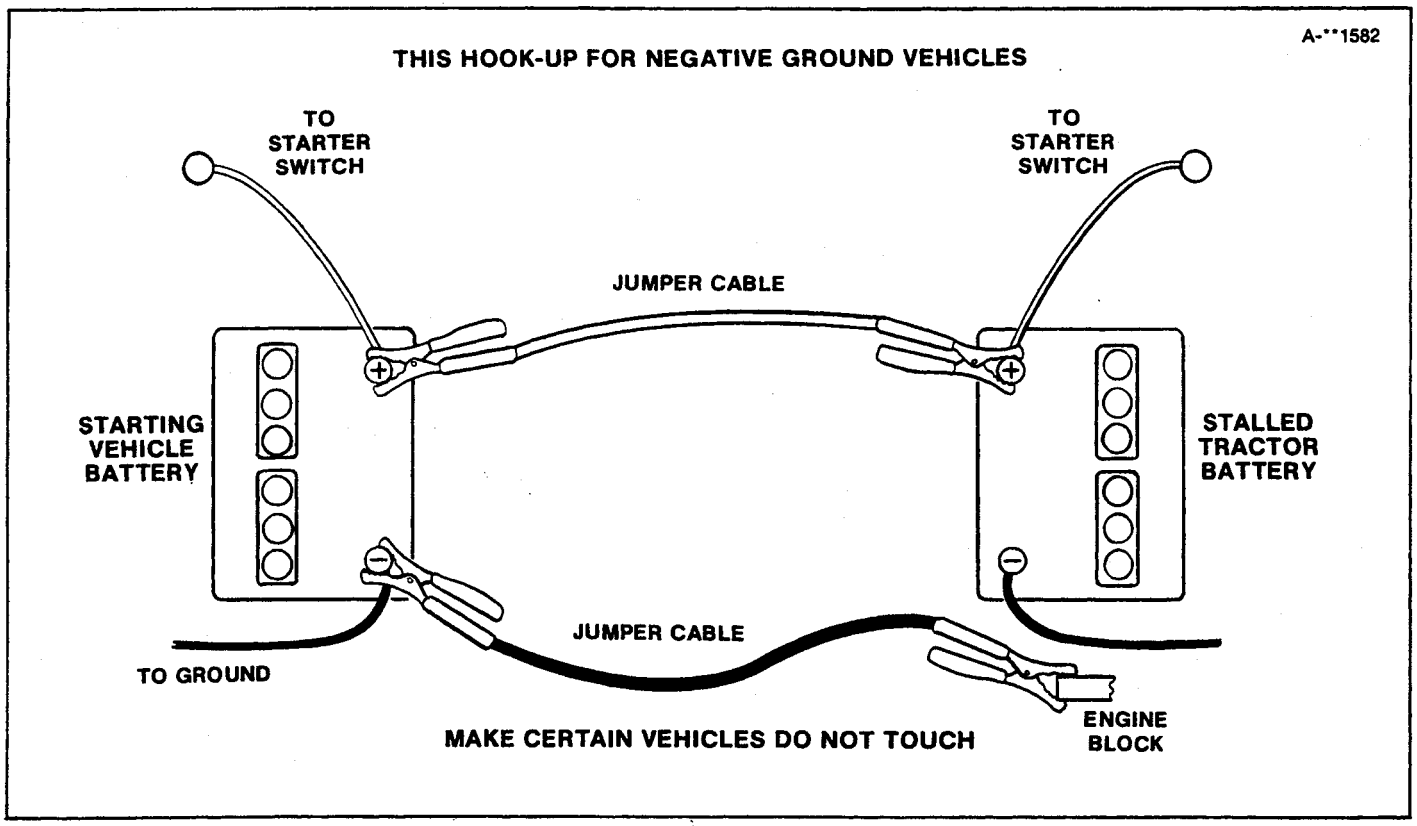


Figure 22. Jump Starting Connections

frame of your tractor AWAY FROM the battery compartment (do not connect directly to negative post of dead battery). Take care that clamps from one cable do not inadvertently touch the clamps on the other cable. Do not lean over the battery when making this connection.

5. The tractor with the discharged battery should now start.

Reverse the jump starting procedure exactly to remove the jumper cables. Then reinstall the vent caps and throw the cloths away as they may have corrosive acid on them.

⚠ WARNING

Any procedure other than the above could result in: (1) personal injury caused by electrolyte squirting out of 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 of 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.

ENGINE DRIVE BELT REPLACEMENT

1. Park tractor on a level surface. Shut off the engine, disengage the PTO, and wait for all moving parts to stop. Block tires to prevent tractor movement.
2. Set parking brake to declutch belt.
3. Remove belt guide (A, figure 23) from idler pulleys (B). Belt will drop from pulley.
4. Loosen, but do not remove, belt guides (C) from engine pulley. Remove belt from upper engine pulley.
5. Open seat deck (see page 17) and loosen belt guide near transaxle cooling fan. Note that belt does not travel through the "U" portion of belt guide.
6. Remove belt from transaxle pulley (D) and walk belt through fan.
7. To clear belt through speed control linkage (E):
   a. Loosen locknut on front ball joint.
   b. Remove rear nut and drop rear ball joint from transmission speed control lever.
8. Release parking brake to relieve clutch rod tension. Remove nut securing clutch rod guide (F) to clutch lever arm. Remove rod guide from lever arm to allow belt to drop.
9. Slip belt over clutch lever arm.

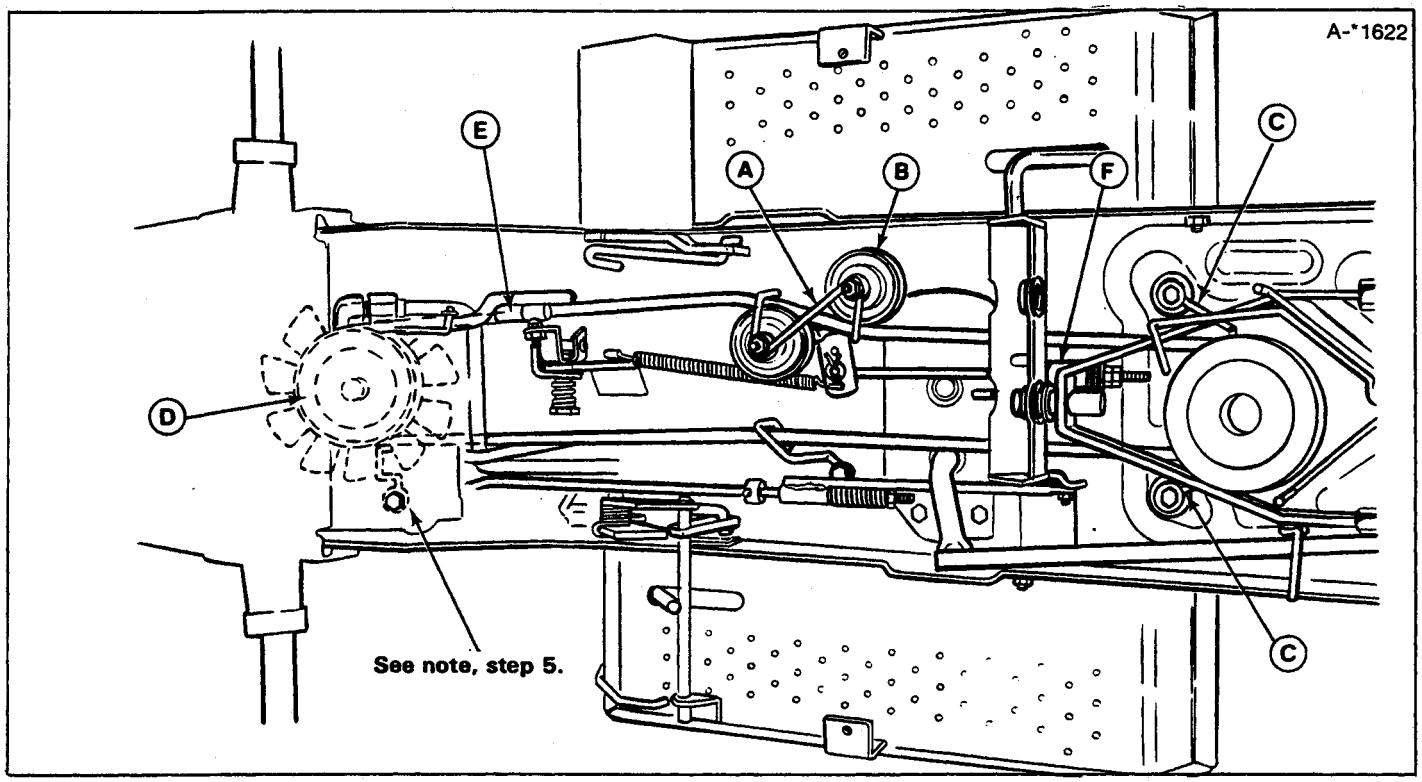


Figure 23. Belt Replacement

A. Idler Pulley Belt Guide
B. Idler Pulley
C. Engine Pulley Belt Guide
D. Transaxle Pulley
E. Speed Control Linkage
F. Clutch Rod Guide

10. Install new belt over clutch lever arm in front. In rear, belt must be placed over transmission coolant lines, transaxle brake, and ground speed control linkage. Refer to figure 24 for belt pattern.
11. Reinstall speed control ball joints (E) at both ends.
12. Walk belt over transaxle fan and install on pulley (D).
13. Install belt over engine PTO pulley.
14. Position belt between idler pulleys (B) and reinstall belt guide (A).
15. Adjust all belt guides so that there is 1/16" clearance between guide and belt (2 - engine pulley guides, 1 - transaxle pulley guide).

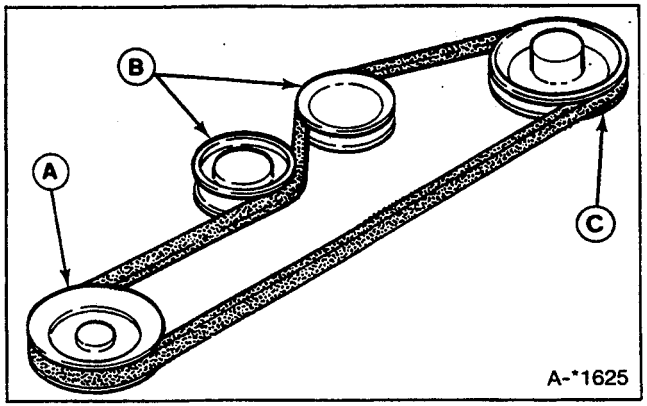


Figure 24. Tractor Belt Pattern
A. Engine Pulley B. Idler Pulley Assembly C. Transaxle Pulley

16. Reinstall clutch rod guide (F) to clutch lever arm and secure with locknut. Do not overtighten locknut. Clutch rod must pivot freely.
17. Check tractor brake spring (page 40) and clutch adjustment (page 41).
18. See note page 14 if any forward or reverse creep is noticed after belt replacement. If creep cannot be eliminated, refer to Shift Quadrant (Neutral) Adjustment, page 41.

MOWER DRIVE BELT REPLACEMENT

42" & 48" Mowers

1. Remove the mower from the tractor (see page 5).
2. Loosen the left belt stop (H, figure 25) enough to slip the belt off the pulley (F). Remove the right belt stop (D).
3. For the 42" mower, go to step 4. For the 48" mower, go to step 5. Before removing the arbor covers take note of which holes in the housing are used for the mounting hardware.
4. **42" mower only.** Remove the right arbor cover (A, figure 26) by removing mounting hardware (B, C, D) on capscrews (F, K). Remove the nut (H) and lockwasher (I) which secure left arbor cover to the idler pulley. Remove the attaching hardware which secure the rear of the left arbor cover.

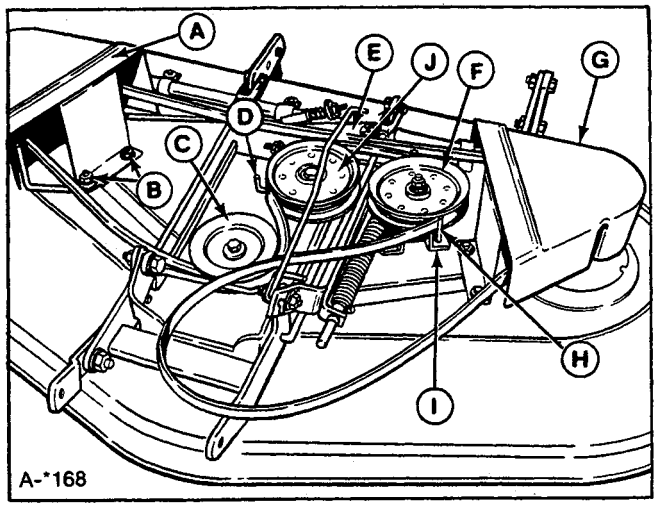


Figure 25. Mower Belt Replacement

A. Right Arbor Cover
B. Nut, Arbor Cover
C. V-Pulley, Front Arbor
D. Right Belt Stop
E. Idler Pivot Bracket
F. Flat-Side Idler Pulley
G. Left Arbor Cover
H. Left Belt Stop
I. Idler Support
J. Flat-Side Idler Pulley

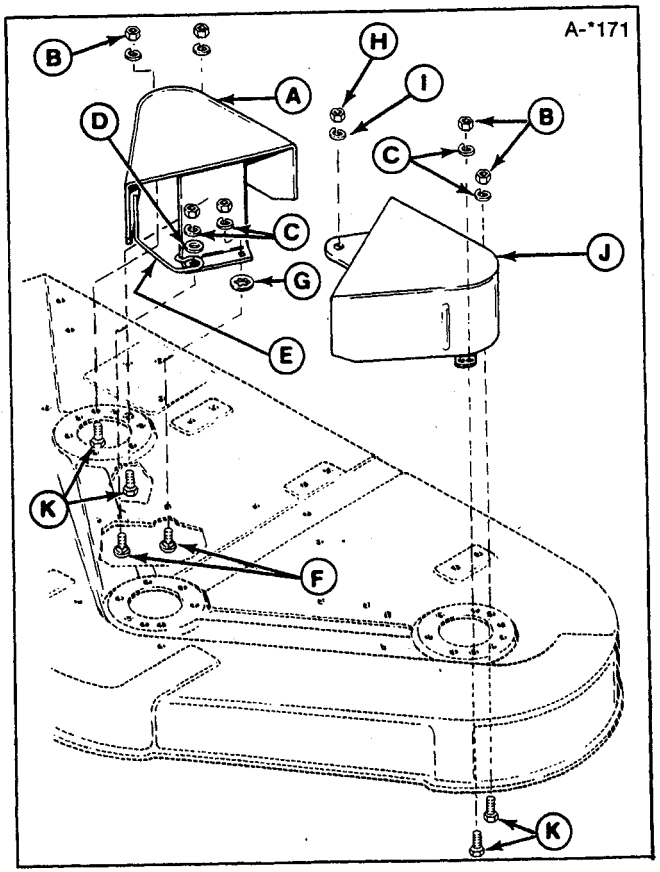


Figure 26. Arbor Covers

A. Arbor Cover, Right
B. Nut
C. Lockwasher
D. Plain Washer
E. Belt Stop
F. Bolt, Carriage
G. Nut, Cage
H. Nut (42" Only)
I. Lockwasher (42" Only)
J. Arbor Cover, Left
K. Capscrew

5. **48" mower only.** Remove both arbor covers by removing mounting hardware (B, C, D) on capscrews (F, K) in front and back.
6. Remove the old belt.
7. Install the new belt on the pulleys. The belt pattern is shown in figure 27. Notice that the "V" side of the belt drives the V-pulleys (A, B, E) and flat side of belt rides on the flat idler pulleys (C, D). Be sure there are no twists in the belt. Reinstall and tighten the belt stops.

NOTE

Make sure that right-hand arbor belt stop (E) is flush with arbor cover as shown in figure 26.

8. Reinstall the mower on the tractor (see page 6). Check mower drive belt tension, belt stop adjustments, and blade brake adjustment as described in Adjustments section. Run the mower for about five minutes and recheck mower drive belt tension adjustment.
9. Reinstall the arbor covers as shown in figure 26.

⚠ WARNING

After replacing belt, make sure all belt adjustments and blade brake adjustment are performed. Engage and disengage the PTO several times (with mower attached) at full engine speed. Mower belt and pulleys must stop in less than five (5) seconds. Refer to Blade Brake Adjustment, page 48.

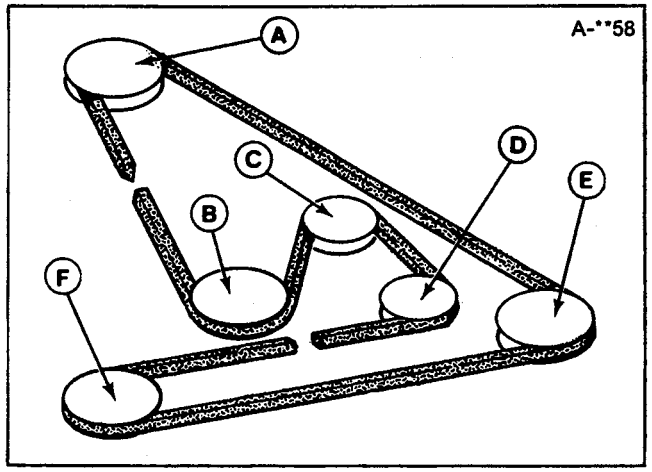


Figure 27. Mower Belt Pattern

A. V-Pulley, Right Arbor
B. V-Pulley, Left Arbor
C. Flat Idler Pulley
D. Flat Idler Pulley
E. V-Pulley, Left Arbor
F. Engine PTO Pulley

Adjustments

TRACTOR BRAKE SPRING ADJUSTMENT

⚠ WARNING

Do not attempt brake spring adjustment without brake pedal being locked down.

1. Place the tractor on a level surface. Turn the engine off and remove the key. **DEPRESS THE BRAKE PEDAL FULLY AND ENGAGE THE PARKING BRAKE LATCH.**
2. Inspect the brake spring (A, figure 28) under the left-hand side of tractor. Spring length should be between 2-3/8 and 2-1/2 inches. Refer to figure 28.
3. If adjustment is needed, loosen setscrew (D) so that collar (E) is free to move.
4. Adjust the spring length as necessary by turning nut (B) to compress or release spring. (Correct length: 2-3/8 to 2-1/2 inches.)

⚠ CAUTION

Do not compress spring smaller than 2-3/8 inches to gain additional adjustment.

Improper adjustment can cause severe damage to the transmission. If the brake adjustment is changed, be sure and check the clutch adjustment.

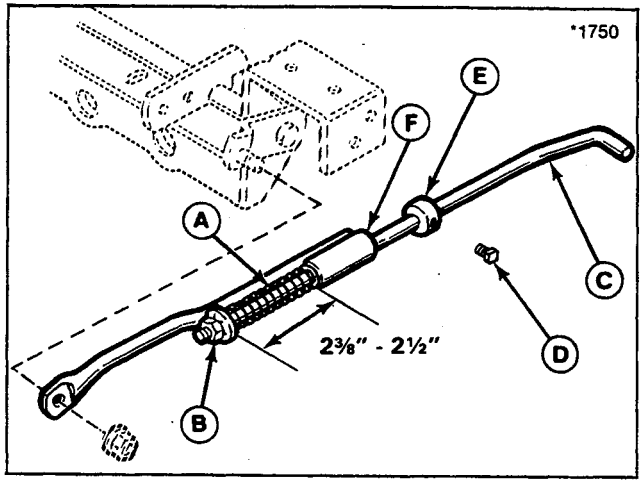


Figure 28. Brake Spring Adjustment
A. Brake Spring
B. Adjusting Nut
C. Brake Rod
D. Setscrew
E. Set Collar
F. Rod Guide

5. Release the parking brake. Make sure the brake rod (C) is fully released by moving rod back and forth.
6. Hold rod (C) as far back as possible. Snug set collar (E) against backside of rod guide (F). Retighten the setscrew (D).

CLUTCH ADJUSTMENT

1. Place the tractor on a level surface. Make sure the brake/clutch pedal is released and fully returned. Block tires to prevent any tractor movement.
2. Inspect the clutch rod spring (A, figure 29). Correct length should be between 7/8 and 1 inch.
3. If adjustment is needed, turn adjusting nut (B) to compress spring to the proper dimension.

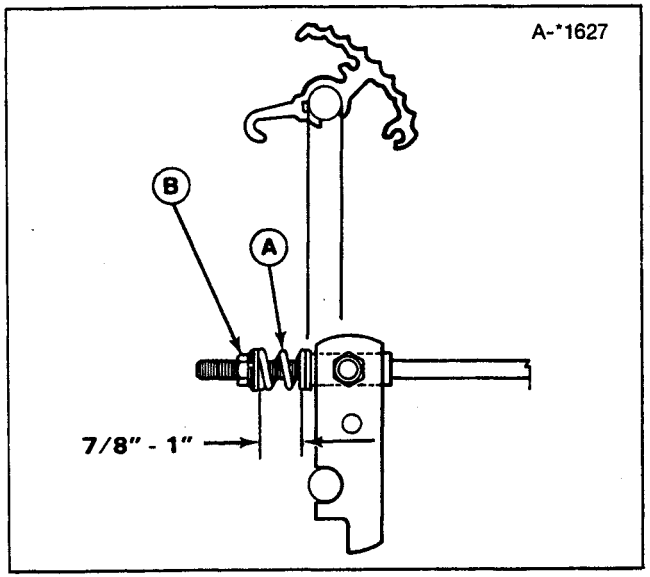


Figure 29. Clutch Adjustment
A. Spring B. Adjustment Nut

CAUTION

Do not compress spring smaller than 7/8 inches to gain additional adjustment.

Improper adjustment can cause severe damage to the transmission. If the clutch adjustment is changed, be sure and check the brake adjustment.

SHIFT QUADRANT (NEUTRAL) ADJUSTMENT

1. Place the tractor on a level surface. Open the seat deck.
2. Remove front access panel by lifting over ground speed control lever (A, figure 30).
3. Loosen, but do not remove, four screws (B) securing quadrant (C). Make sure that quadrant is free to move up and down.
4. Close the seat deck. Sitting in the operator's position, start the tractor and let idle. Move the control lever up or down to find exact neutral (tractor does not creep).
5. Adjust the quadrant (C) so that the control lever is centered from top to bottom in the neutral gate. Refer to figure 31.
6. Tighten quadrant screws (B). Drive tractor a short distance in forward and reverse. Stop tractor and recheck adjustment.
7. Stop tractor and shut off engine. Open seat deck and replace front access panel.

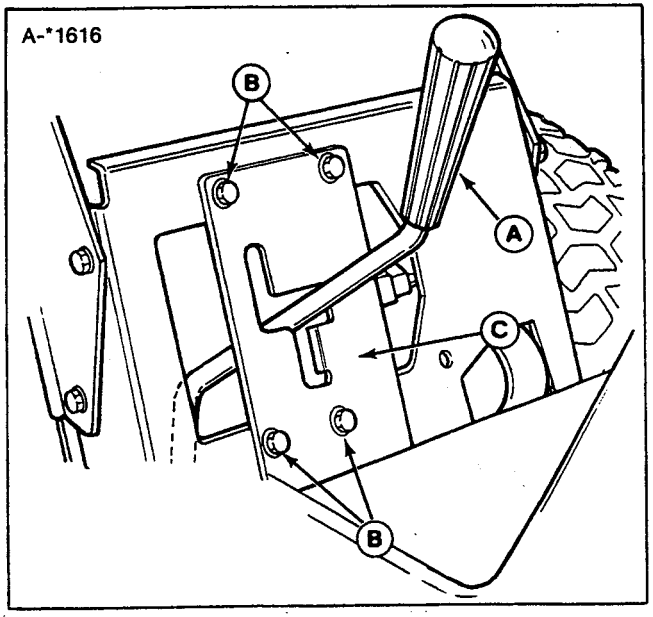


Figure 30. Shift Quadrant

A. Ground Speed Control Lever B. Screws C. Quadrant

8. After making quadrant adjustment, see your dealer if either of the following conditions still exist:
   a. neutral is not found when control lever is in the neutral gate;
   b. neutral position is found when control lever is somewhere in the forward or reverse gates.

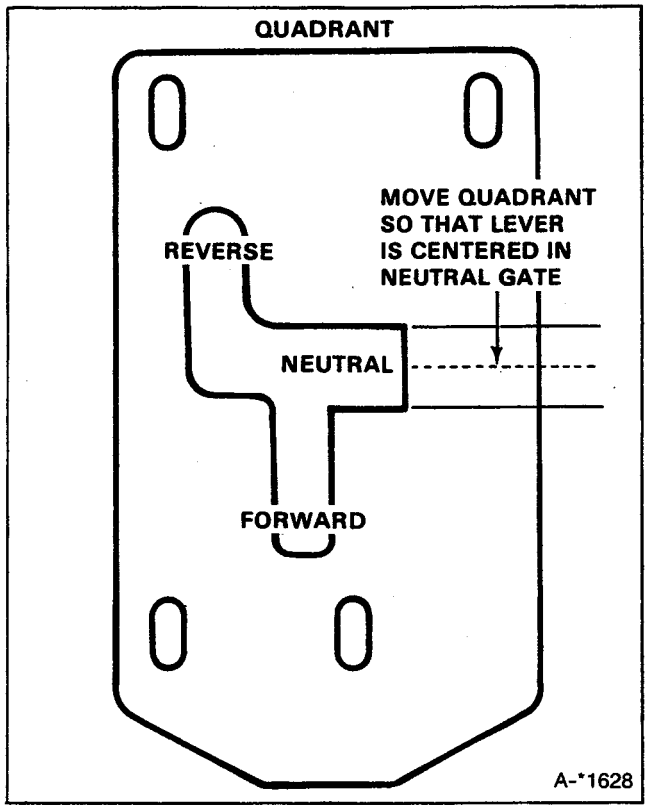


Figure 31. Shift Quadrant Adjustment

MOWER ADJUSTMENTS

Mower Drive Belt Tension Adjustment

If the mower belt slips or fails to drive, the mower belt tension may need adjustment. To check, proceed as follows.

1. Place the mower in high cut, using height control lever. Place the PTO lever in engaged position.

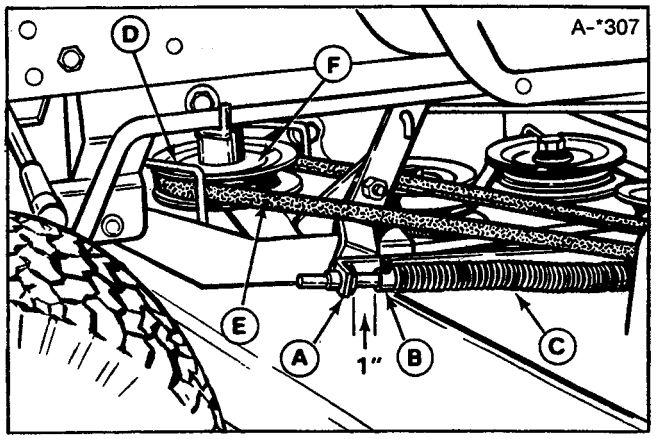


Figure 32. Mower Drive Belt Tension Adjustment

A. PTO Rod Guide	**D. Belt Stop**
B. Set Collar	**E. Drive Belt**
C. Spring	**F. Engine PTO Pulley**

2. Measure the distance between the PTO rod guide (A, figure 32) and the set collar (B). The distance should measure one inch. If not, proceed to step 3.
3. Place the PTO lever in disengaged position.
4. Loosen the setscrew in the set collar (B). Move the rod forward to increase gap, or backward to decrease gap. Retighten the setscrew.
5. Engage the PTO lever and recheck the measurement. Repeat the adjustment as necessary until the distance measures one inch with the PTO lever in engaged position.
6. Check the adjustments of the PTO pulley belt stop and the mower belt stops.

WARNING

After adjusting mower belt tension, make sure all belt adjustments and blade brake adjustment are performed. Engage and disengage the PTO several times (with mower attached) at full engine speed. Mower belt and pulleys must stop in less than five (5) seconds. Refer to Blade Brake Adjustment, page 44.

PTO Pulley Belt Stops Adjustment

There are two belt stops at the PTO pulley; one on the left (D, figure 32) and one on the right (A, figure 33). With the PTO lever engaged, measure the distance between the belt stop and belt. There should be 1/16 inch (1.5 mm) clearance between each belt stop and the belt. To adjust a belt stop, loosen its mounting capscrew, move the belt stop, and retighten the capscrew. Recheck the measurement.

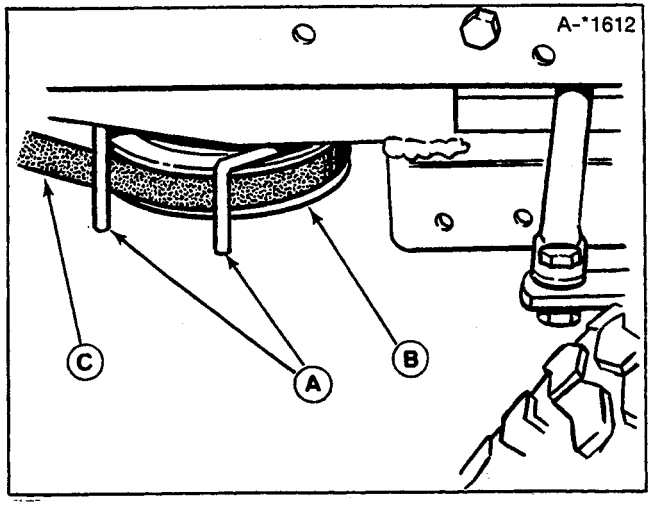


Figure 33. Right-Hand PTO Pulley Belt Stop

A. Belt Stop
B. PTO Pulley

Left Idler Pulley Belt Stop

Make sure the belt stop (D, figure 34) is level with the pulley. If the belt stop is level, each side will be an equal distance from the belt. To reposition the belt stop, loosen the mounting capscrew on the bracket underneath the pulley. Retighten hardware securely.

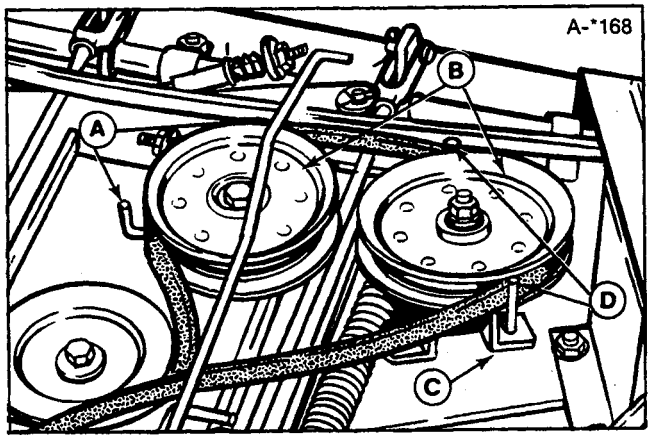


Figure 34. Mower Belt Stops

A. Right Belt Stop
B. Idler Pulleys
C. Idler Pulley Bracket
D. Left Belt Stop

Mower Leveling, Side-To-Side

NOTE

The purpose of leveling the mower is to achieve an even grass cut. Remember that improper or unequal tire pressure will cause an uneven cut. Also, unusual terrains may require different side-to-side adjustments. If you do not achieve an even cut with the mower level, try raising one side slightly higher.

WARNING

To avoid accidental starting during leveling check, remove the ignition key and remove both spark plug wires and fasten them away from the spark plugs.

NOTE

Tractor and mower must be on level surface. The front tires should point straight forward.

1. To check for side-to-side levelness on the mower, disengage the PTO and position the blades so they are pointing side-to-side.
2. Engage the PTO.
3. Measure the distance from the outside tips of the blade to the ground. If the difference between the two measurements is less than 1/8 inch (3 mm), the mower is level. If not, proceed with next steps.
4. Disengage the PTO. Loosen the flange nuts (A, figure 35) on the front hex bolt and rear carriage bolt.
5. Loosen the shoulder bolt (A, figure 36) and raise or lower mower as necessary to level it. Retighten the shoulder bolt and torque to 40 ft. lbs.

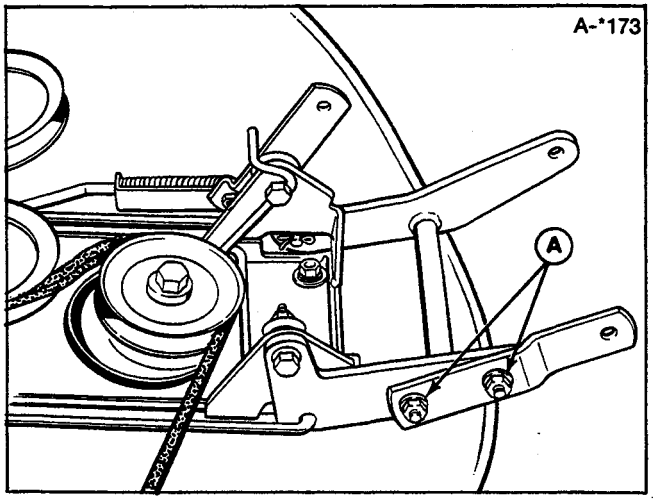


Figure 35. Mower Hitch (shown removed from tractor)
A. Flange Nuts

6. Retighten the flange nuts (A, figure 35). Torque nuts to 65 ft. lbs.
7. Engage the PTO and recheck the measurement. Readjust as necessary.
8. Check "Mower Leveling, Front-To-Back", next paragraph.

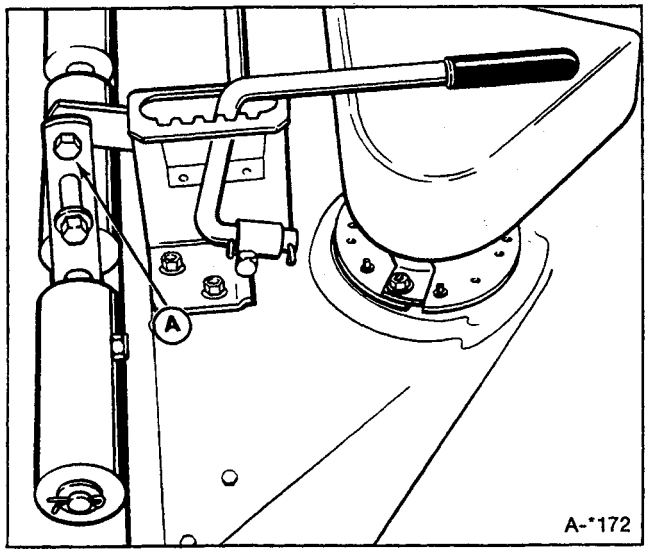


Figure 36. Shoulder Bolt
A. Shoulder Bolt

Mower Leveling, Front-To-Back

WARNING

To avoid accidental starting during levelling check, remove the ignition key and then remove both spark plug wire(s) and fasten them away from the spark plugs.

NOTE

Tractor and mower must be on a level surface. Check side-to-side adjustment first.

For smoothest mowing results, the mower should be adjusted so that the front tip of the center blade is 1/8 to 1/4 inch (3 to 6 mm) higher than the rear tips of the left and right blades. To check, follow these steps.

1. Place the tractor with the mower mounted on a smooth, level surface such as concrete. Place the mower in the highest cutting position, and place the mower lift lever in the lowered position.
2. Arrange the blades so that they are pointing forward and back, parallel with the tractor. Engage the PTO.

3. Measure the distance from the front tip of the center blade to the ground, and note that measurement (see figure 37).
4. Measure the distance to the ground from the rear tips of the left and right blades. Compare these measurements with the measurement from the front tip of the center blade. The front tip of the center blade should be 1/4 inch (6 mm) higher than the rear tips of the side blades (figure 37).

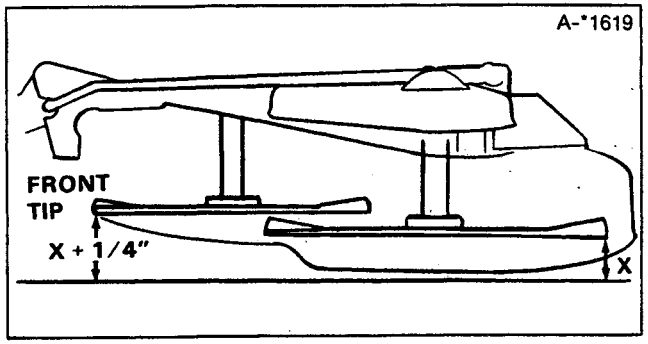


Figure 37. Levelling Mower

5. If adjustment is needed, disengage the PTO and remove the two pins (A, figure 38) by removing the spring clips. Loosen the jam nuts (C).
6. Turn both clevises the same number of turns, shortening the bail arms to raise the front of the mower and lengthening the bail arms to lower the front of the mower. One full turn will equal about 1/8 inch.
7. Replace pins through clevises and height adjustment arm and recheck measurements. When the proper measurement is reached, replace spring clips through the pins and tighten the jam nuts to the turnbuckles.

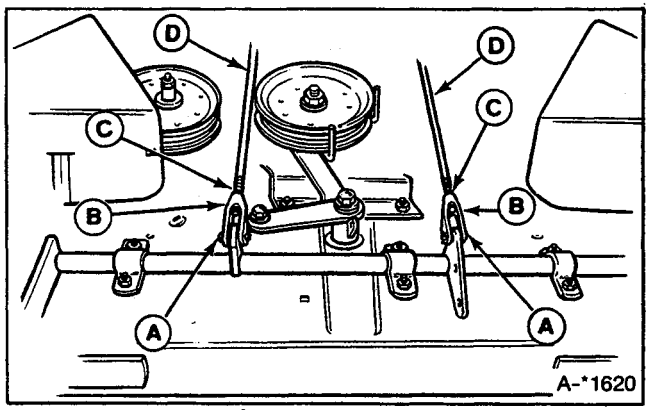


Figure 38. Mower Levelling, Front-To-Back

A. Clevis Pin
B. Clevis
C. Jam Nuts
D. Bail Arms

Blade Brake Adjustment

1. Place tractor on a level surface and engage the parking brake.
2. Remove the left and right arbor housings as described under "Mower Drive Belt Replacement" (see page 33).
3. Engage the PTO.
4. Inspect the brake pad (A, figure 39) to V-pulley (B) clearance. With PTO engaged, clearance should be 1/16 inch as shown in figure 39.

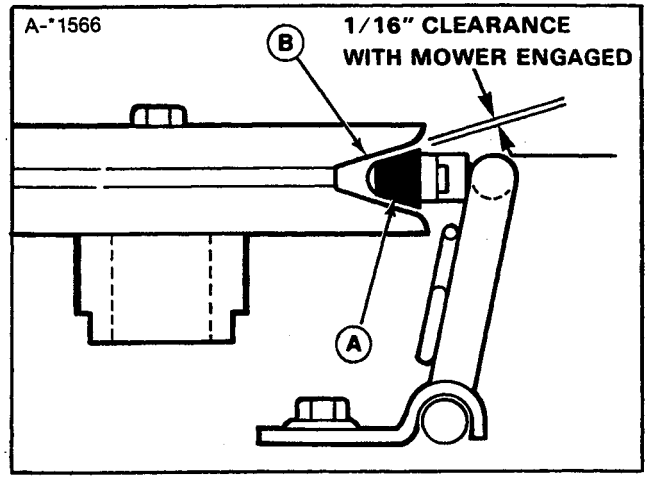


Figure 39. **A. Brake Rod** **B. V-Pulley**

5. If adjustment is required, turn adjusting nuts (A, figure 40) until proper clearance is reached. Tighten jamnuts (B).
6. After adjustment is correct, replace the arbor covers.

WARNING

After adjusting the blade brake, engage and disengage the PTO several times at full engine speed. Mower belt and pulleys must stop in five (5) seconds. If not, disengage PTO and shut off tractor. Recheck Blade Brake Adjustment.

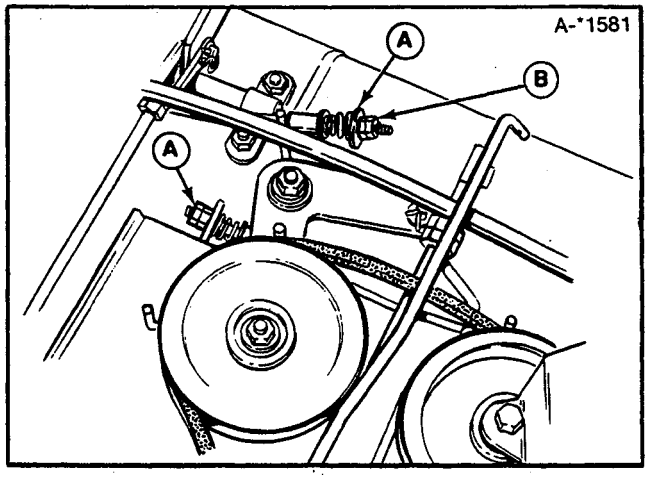


Figure 40.
A. Adjusting Nuts **B. Jamnuts**

Lift Lever Adjustment

1. Place the mower in low cut position. Using the lift lever, raise the mower.
2. Measure the distance between top of pulley cover and bottom of upstop bracket (figure 41).
3. If the manual lift lever is used, the measurement should be 2-13/32 inch. If the optional electric lift is used, the measurement should be 2-3/4 inch. If adjustment is necessary, go to next step.

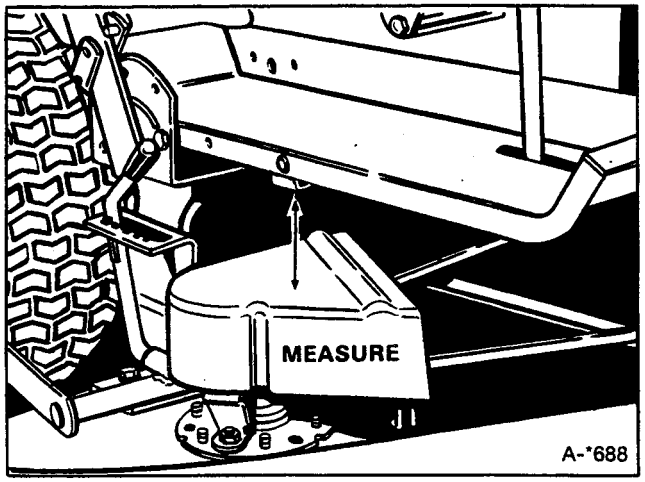


Figure 41. Measurement - Lift Lever

NOTE

With electric lift, use only three links of chain. You may wish to connect chain to mower using second link to help remember.

4. To adjust, disconnect trunnion (C, figure 42) from chain by removing clip (D). Loosen the nut, and turn trunnion to raise or lower mower. Tighten nut when measurement is correct and replace the clip.

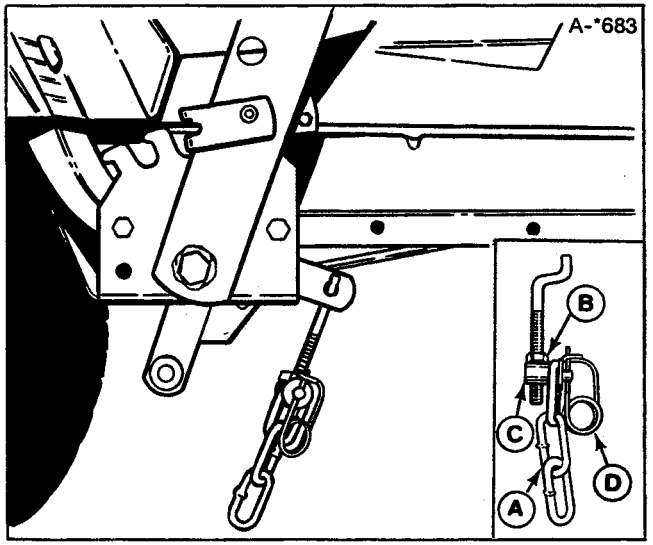


Figure 42. Lift Assembly - Large Lift Lever

A. Chain
B. Nut
C. Trunnion
D. Clip

SEAT ADJUSTMENT

1. Lift up the seat from the rear.
2. Loosen the four nuts under the seat and slide the seat forward or back. Tighten the nuts firmly.
3. The springs can be moved to different holes in the deck for maximum riding comfort. A lighter person will want to move the springs more forward.

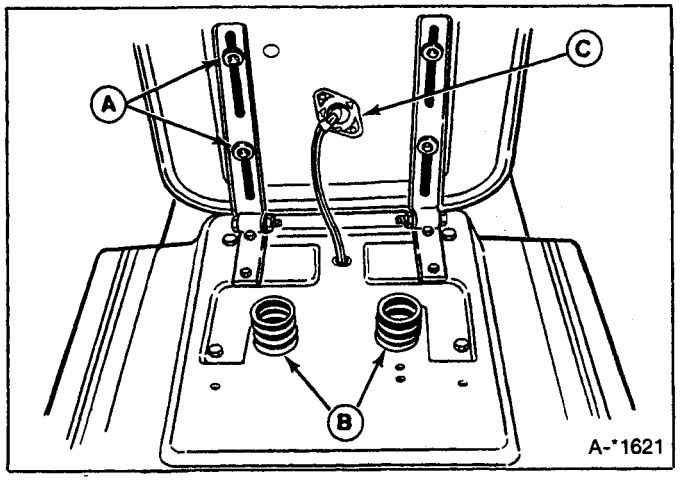


Figure 43. Seat Adjustment
A. Mounting Hardware
B. Seat Spring
C. Safety Switch

Tractor Identification

When ordering replacement parts for your tractor, be prepared to give your dealer the identification numbers found on the tractor and engine identification plates. The identification plate for the tractor is located on the tractor frame above the left-hand foot rest. The engine I.D. plate is a combination decal/stamped number on the front left engine housing. The rotary mower identification plate is located on the rear-center of the mower housing. We suggest that you locate the numbers and record them here for easy reference.

TRACTOR

Mfg. No. 169 _____

Serial No. _____

ENGINE

Model _____

Type _____

Code _____

MOWER

Mfg. No. 169 _____

Serial No. _____

Specifications

ENGINE - 12.5, 16 HP

Make: Briggs & Stratton - 4 cycle, air cooled
Model No.: **12.5:** 404707 (Type 0122-01)
16 HP: 402707 (Type 0145-01)
Horsepower: Engine Mfg. Rating @ 3600 RPM
Cylinders: 2 Horizontally Opposed/Cast Iron Sleeves
Bore: 3.44 Inches (87.4 mm)
Stroke: 2.16 Inches (54.9 mm)
Displacement: 40 Cu. In.
Crankshaft: Vertical
Battery: 12 volt, 39 amp. hr. Auto Battery
Governor: Mechanical, full throttle no load setting 3400 ± 100 rpm, Idle speed setting 1350 ± 100 rpm
Crankcase: 3 pints oil; see Briggs & Stratton Maintenance Instructions for oil recommendations.
Electrical System: Electronic Ignition
Unregulated 3 amps DC Charging Circuit and 60-100 watt AC Lighting Circuit, Key Start
Starter: 12 volt
Fuel Tank: Capacity 2.2 gallons

ENGINE - 17 HP

Make: Kohler
Model No.: MV17
Horsepower: Engine Mfg. Rating @ 3600 RPM
Cylinders: 2 Horizontally Opposed/Cast Iron Sleeves
Bore: 3.12 Inches (78.2 mm)
Stroke: 2.75 Inches (69.8 mm)
Displacement: 42.2 Cu. In.
Crankshaft: Vertical
Battery: 12 volt, 39 amp. hr. Auto Battery
Governor: Mechanical, full throttle no load setting 3400 ± 100 rpm, Idle speed setting 1350 ± 100 rpm
Crankcase: 4 pints oil (w/filter); 3.5 pints (2/0 filter) Refer to Kohler Maintenance Instructions for oil recommendations.
Electrical System: Electronic Ignition
15 AMP Regulated Charging System
60-100 Watt AC Lighting Circuit
Key Start
Starter: 12 Volt
Fuel Tank: Capacity 2.2 gallons

HYDROSTATIC TRANSAXLE

Drive: Belt drive to hydrostatic transaxle
Speeds: (@3400 RPM Engine Speed)
Variable Forward: 0 - 5.5 MPH
Variable Reverse: 0 - 3.1 MPH
Reservoir: 12.5 pints (200 Oz.)

CHASSIS:

Frame: Heavy Gauge Steel Channel
Engine Mounting: Above front axle
Pivot Point Location: Front Axle
Tires: Rear - 23 x 10.50 - 12 (16 & 17 HP)
Rear - 23 x 8.50 - 12 (12.5 HP)
Front - 15 x 6.00 - 6
Tire Pressure: Front: 12-15 psi
Rear: 6-8 psi
Accessibility: Hood tips forward, seat deck tips rearward
Seat: Adjustable
Turning Radius: (To inside rear wheel) 24 In.
Clearance: Front Axle - 11.0"
Transmission - 8.5"

DIMENSIONS & WEIGHT:

Overall Length: 67 Inches
Overall Width: 37 Inches
Height: (To top of steering wheel) - 41.4 Inches
(To top of hood) - 32.6" front, 35.6" rear
Wheel Base: 48.3"
Weight: Tractor Only - 485 lbs. (12.5 & 16 HP)
512 lbs. (17 HP)

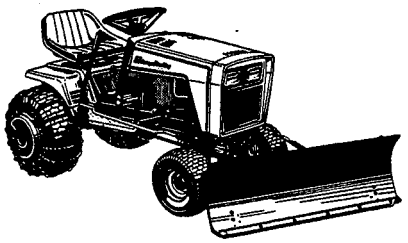
42" MOWER

Effective Cutting Width: 42 Inches (1067 mm)
Overall Width w/Deflector: 57 Inches (1448 mm)
Weight: 114 lbs. (51 kg)
Blade Arrangement: Three Staggered Blades
Mower Drive: V-belt from tractor PTO pulley

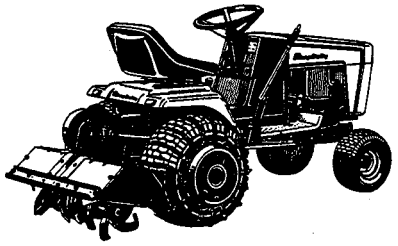
48" MOWER

Effective Cutting Width: 48 Inches (1219 mm)
Overall Width w/Deflector: 63 Inches (1.6 mm)
Weight: 123 lbs. (55 kg)
Cutting Height: Adjustable
Blade Arrangement: Three Staggered Blades
Mower Drive: V-belt from tractor PTO pulley

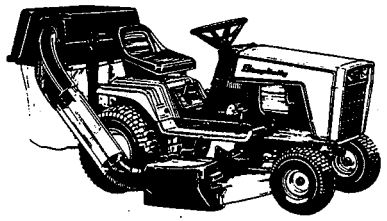
Optional Attachments & Accessories



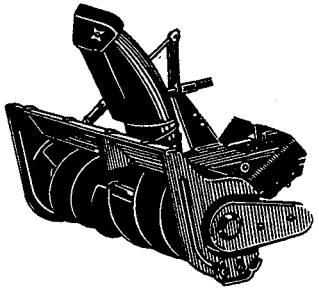
42" Snow Plow/Dozer Blade - For snow removal and light dozing of dirt, gravel, etc. Now with spring-assisted lift.



30" Offset Tiller - Powered by tractor PTO, new offset design eliminates soil compaction by tires.



Turbo Collection Systems - Collect grass clippings, thatch, and leaves with powerful turbo-vac systems. Can be used with 6.5 bu. bag collector (shown above) or 10 bu. dump cart. Engine-driven vac collector available for larger grass and leaf collection jobs.



36" & 42" Snowthrower - Efficient single stage operation to handle the heaviest of snows. Now with spring assisted lift.

NOT ILLUSTRATED

35" Lawn Dethatcher
10" Moldboard Plow
Snow Cab
Electric Lift Kit
Ag Tires 23 x 10.5-12
Front Counterweights
Rear Wheel Weights
Tire Chains
Hub Caps

See your *Simplicity* dealer for a complete line of attachments and accessories.

Common Replacement Parts

Listed below are part numbers for more common replacement parts and must be ordered thru your local authorized Simplicity dealer. Use the order form at the front of the manual to order a complete, illustrated parts manual. Only genuine Simplicity replacement parts will assure optimum performance and safety. Do not attempt repairs or maintenance unless proper procedures and standard shop safety precautions are followed. For assistance in any area or to order repair parts, see your authorized Simplicity dealer.

QTY PER UNIT	DESCRIPTION	NUMBER
1	Drive Belt - Transmission	1656960
1	Drive Belt - 42 Inch Mower	1668066
1	Drive Belt - 48 inch mower (12.5/16 HP)	1665638
1	Drive Belt - 48 Inch Mower (17 HP)	1703466
1	Keys - Ignition (2 keys with ring)	122203
1	Headlamp Bulb	1677371
1	Interlock Switch - PTO	1701521
1	Interlock Switch in Seat	1700636
1	Interlock Switch - Transmission	1701521
3	Blade - 48 Inch Mower	1656146
3	Blade - 42 Inch Mower	1656147
2	Spring Clips - Leveling Clevises	1960074
1	Spring Clip - Mower PTO Rod	1918196
2	Hitch Pin - All Mowers	156306
2	Safety Clips - for Hitch Pins	176012
1	Hydro Filter	1702282
1	39 amp. hr. Battery	1685215

DESCRIPTION	NUMBER
Simplicity Engine Oil	*(Case of 12 Qts.)
5W30 SF/CD Cold Weather Engine Oil	1685576
15W40 SF/CD (Above 32° F)	1685554
Grease Gun Kit	1685510
8 Oz. Tube - for above	103077
Touch-Up Paint	
Orange Spray Paint, 13 Oz. Can	1685558
Powder Orange Spray Paint, 13 Oz. Can	1685589
Powder Orange Spray Paint, 13 Oz. Can, Case of 12	1685590
Powder Orange Paint, 1 Qt.	1685593
White Spray Paint, 13 Oz. Can	103049
Touch-Up Daubers	
Regular Orange	1685562
Powder Orange	1685593
(6 orange & 6 white - see your dealer for individual daubers.)	
Pneumatic Tire Seal - Stops Leaks	
Available in following amounts:	
11 Oz. Tube	1685523
12 Pack of 11 Oz. Tubes	1685537
Case of 24 11 Oz. Tubes	1685525

*See your dealer to buy one-quart cans.

Parts Manual Availability

Parts Manuals are fully illustrated. All of the assemblies are shown in exploded views which show the relationship of the parts and how they go together. Important assembly notes and special torque values are included in the illustrations. For standard hardware, a torque specification chart is included.

For the manual applicable for your model, contact the Simplicity Customer Publications Department at (414) 284-8519. Have the following information available when phoning in your request.

Extend Equipment Life - Use Only Genuine Factory Authorized Repair Parts

Model: _____

Mfg. No.: _____

Your Name: _____

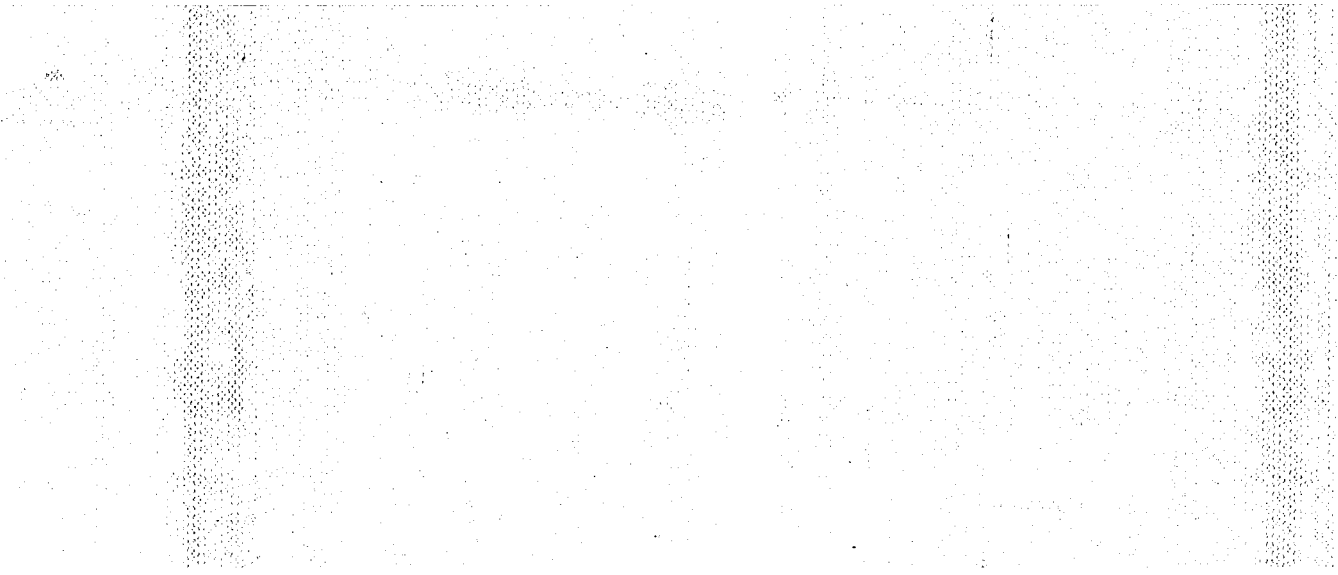
Address: _____

City, State, Zip: _____

Visa/Mastercard No.: _____

Expiration Date: _____

Allow 3-4 weeks for delivery.



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