

Cub Cadet

Owner's Manual

HYDROSTATIC HOME TRACTORS



Important:
**Read Safety Rules and
Instructions Carefully**

Thank you for purchasing
an American-built product.

Model Numbers
1110 (293)
1610 (393)

CUB CADET CORPORATION • P.O. BOX 36930 • CLEVELAND, OHIO 44136

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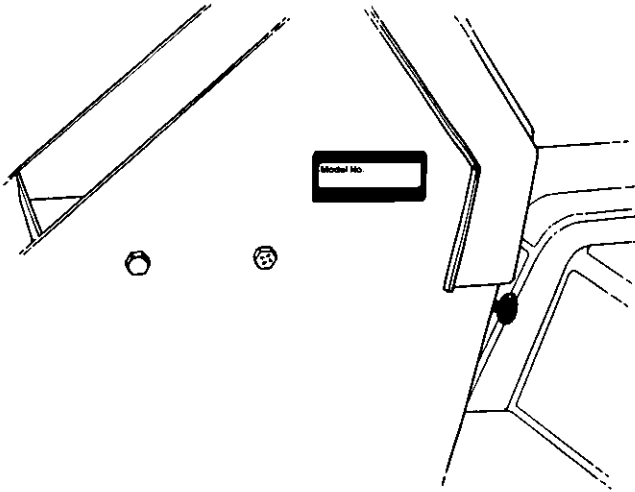
FORM NO. 772-3589

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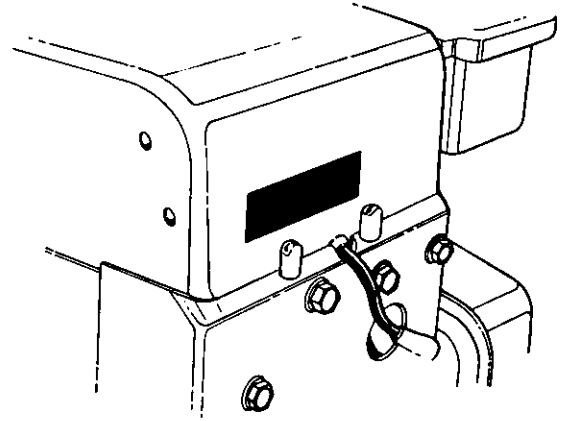
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SERIAL NUMBER LOCATION



Serial number plate is located on left hand side frame.

NOTE: LEFT and RIGHT indicate the left and right sides of the tractor when facing forward in the driver's seat. Reference to FRONT indicates the grille end of the tractor; to REAR the drawbar end.



Engine serial number plate is located on the engine shroud.

NOTE: This manual covers 11 and 16 horse power models. Illustration above shows an 11 horse power engine.

CHASSIS S/N _____

ENGINE S/N _____

MODEL _____

DELIVERY
DATE _____



This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

WORK SAFELY—FOLLOW THESE RULES



Instructions given with this symbol are for personal safety. Be sure you and your workers follow them.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT

1. Read this owner's manual carefully in its entirety before attempting to assemble or operate this unit. Keep this manual in a safe place for future and regular reference.
2. This unit is a precision piece of power equipment, not a plaything. Therefore exercise extreme caution at all times.
3. Know the controls and how to stop quickly—**READ THIS OWNER'S MANUAL.**
4. Do not allow children to operate vehicle. Do not allow adults to operate it without proper instruction. Only persons well acquainted with these rules of safe operation should be allowed to use your tractor.
5. No one should operate this unit while intoxicated or while taking medication that impairs the senses or reactions.
6. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts to avoid entanglement in the moving parts. Never operate a unit in bare feet, sandals, or sneakers.
7. To prevent injury, do not carry passengers or give rides. Keep children, pets and bystanders out of the area while mowing. Only the operator should ride on the unit and only ride in the seat.
8. Check overhead clearance carefully before driving under power lines, guy wires, bridges or low hanging tree branches, before entering or leaving buildings, or in any other situation where the operator may be struck or pulled from the unit, which could result in serious injury.
9. To maintain control of the unit and reduce the possibility of upset or collision, operate the tractor smoothly. Avoid erratic operation and excessive speed.
10. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your tractor. Although the area of operation should be completely cleared of foreign objects, a small object may have been overlooked and could be accidentally thrown by the mower in any direction and cause injury.
11. Clear work area of objects which might be picked up and thrown by the mower in any direction and cause injury.
12. Stop the blade(s) when crossing gravel drives, walks or roads.
13. Disengage all attachment clutches and shift into neutral before attempting to start engine.
14. Disengage power to attachment(s) and stop engine before leaving operating position.
15. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times as the rotating blade(s) can cause injury.
16. Disengage power to attachment(s) and stop engine before making any repairs or adjustments.
17. Before attempting to unclog the mower or discharge chute, stop the engine. The mower blade(s) may continue to rotate for a few seconds after the engine is shut off. Therefore, be sure the blade(s) have stopped completely.
18. Disengage power to attachment(s) when transporting or not in use.
19. Take all possible precautions when leaving vehicle unattended such as disengaging power-take-off, lowering attachments, shifting into neutral, setting parking brake, stopping engine and removing key.
20. Do not stop or start suddenly when going uphill or downhill. Mow up and down face of steep slopes; never across the face. Use extreme caution if it is necessary to drive the tractor up an incline or back the tractor down an incline because the front of the tractor could lift and rapidly flip over backward which could cause serious injury.
21. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Always keep the tractor in gear when going down steep hills to take advantage of engine braking action.
22. Stay alert for holes in terrain and other hidden hazards.
23. 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 counterweight(s) or wheel weights when suggested in owner's manual.
24. Watch out for traffic when crossing or near roadways.
25. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near vehicle while in operation.
26. Handle fuel with care. It is highly flammable.
 - A. Use approved fuel container.
 - B. Never remove cap or add fuel to a running or hot engine or fill fuel tank indoors. Wipe up spilled fuel.
 - C. Open doors if engine is run in garage. Exhaust fumes are dangerous. Do not run engine indoors.
27. Keep the vehicle and attachments in good operating condition, and keep safety devices in place. Use guards as instructed in operator's manual.
28. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
29. Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark. Allow engine to cool before storing in any enclosure.
30. To reduce fire hazard, keep engine free of grass, leaves or excessive grease.

31. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object. The damage should be repaired before restarting and operating the equipment.
32. Do not change the engine governor settings or overspeed the engine.
33. When using the vehicle with mower, proceed as follows:
 - (1) Mow only in daylight or in good artificial light.
 - (2) Never make a cutting height adjustment while engine is running if operator must dismount to do so.
 - (3) Shut the engine off and wait until the blade comes to a complete stop before removing the grass catcher.
 - (4) Check blade mounting bolts for proper tightness at frequent intervals.
34. Look behind to make sure the area is clear before placing the transmission in reverse and continue looking behind while backing up. Disengage blades before shifting into reverse and backing up.
35. This unit **should not** be driven up a ramp onto a trailer or truck under power, because the unit could tip over, causing serious personal injury. The unit must be pushed manually to load properly.

PRODUCT GRAPHICS

Keep safety product graphics (decals) clean. Replace any safety product graphic that is damaged, destroyed, missing, painted over or can no longer be read. Replacement safety product graphics are available through your local dealer.



CAUTION

RECEIVE INSTRUCTION — Read operator's manual. Learn to operate this machine SAFELY. Don't risk INJURY or DEATH.

1. Before starting engine or operation: Be familiar with controls. Be in operator's position with transmission in neutral, PTO turned off, and brake depressed.
2. Keep shields in place. Keep away from moving parts.
3. NO RIDERS! Keep all people and pets a safe distance away.
4. Don't point mower discharge at people.
5. Avoid slopes. Tractors can be rolled over.
6. Before leaving operator's position:
Shut off PTO. Place transmission in neutral. Set parking brake. Shut off engine. Remove ignition key. Wait for all movement to stop before servicing or cleaning.
7. Do not fill gasoline tank when engine is running.
Tighten cap securely.

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CONFORMS TO ANSI B 71.1 1980 SAFETY STANDARDS

192-292 C-3236

GENERAL SAFETY INSTRUCTIONS CAUTION LOCATED ON THE FRAME COVER.



CAUTION

Electrical system is 12 volt negative ground. When using booster with jumper cables, precautions must be taken to prevent personal injury or damage to electrical parts.

1. Attach one end of jumper cable to positive terminal of booster battery and other end to positive terminal of vehicle battery.
2. Attach one end of second cable to negative terminal of booster battery and other end to vehicle frame away from battery.
3. To remove cables, reverse above sequence exactly to avoid sparks. See operator's manual for additional information.

**CAUTION—BOOSTER BATTERY INSTRUCTIONS
LOCATED UNDER THE HOOD.**

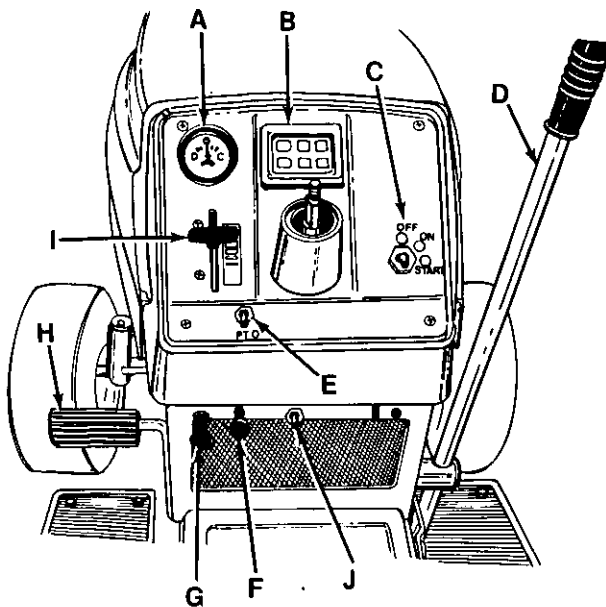


FIGURE 1.

CONTROLS

Your Cub Cadet Tractor has been safety engineered. Thoroughly acquaint yourself with all the instruments and controls before attempting to start or operate the tractor.

- A. Charge Indicator
- B. Electronic Monitor
- C. Ignition Switch
- D. Lift Control Lever
- E. Power Take-Off (PTO)
- F. Parking Brake Lever
- G. Choke Control
- H. Brake Pedal
- I. Throttle Control Lever
- J. Light Switch (16 H.P. Only)

A. CHARGE INDICATOR

This instrument indicates whether the alternator is charging or the battery is discharging. If it shows discharge continuously, investigate the cause to avoid completely discharging the battery and possible damage to the charging circuit. See figure 1.

B. ELECTRONIC MONITOR (See figure 2.)

In reverse gear—will be illuminated when tractor is in reverse. Light **must** be **off** to start tractor.

Do Not engage PTO—will be illuminated if PTO switch is engaged while tractor is in reverse.

NOTE: PTO will not be engaged with tractor in reverse—switch only will engage.

PTO on—light will be illuminated when PTO switch is engaged. Light **must** be **off** to start tractor.

Place in neutral—light will be illuminated when starting tractor and gear shift is not in neutral. Light **must** be **off** to start tractor.

Full throttle required (two indicators)—top light will be illuminated when the PTO is engaged. Bottom light will be illuminated when the light switch is **on** (on units so equipped).

NOTE: The unit should be run at **full throttle** when using PTO operated equipment or when the headlights are **on** (on units so equipped).

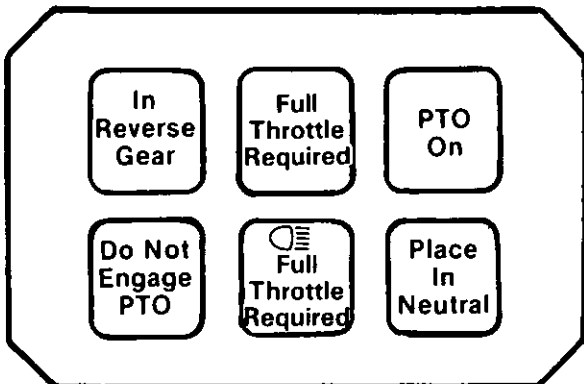


FIGURE 2.

C. IGNITION SWITCH

The ignition switch is a three position switch. Turn key to "START" position when engine starts, then release key. Key will retract to "ON" position. Turn key to "OFF" position to stop engine. See figure 1.



Remove the key from the tractor when the tractor is not in use to prevent accidental starting and battery discharge.

D. LIFT CONTROL LEVER

This control lever is used to raise and lower the cutting deck and other attachments. See figure 1.

E. POWER TAKE-OFF (PTO)

The power take-off is an electric clutch operated by a toggle switch on the left side of the instrument panel. See figure 1. When PTO is engaged, throttle should be in fast position.

F. PARKING BRAKE LEVER

The parking brake lever is located on the left side of the pedestal below the instrument panel. To operate, depress the brake pedal and hold it down while lifting the parking brake lever up and pulling out to lock. To disengage the parking brake, press down on the pedal and lift the lever up. The parking brake lever will retract. Always lock the brake when tractor is parked on a grade. See figure 1.



The hydrostatic transmission will not hold the tractor on a hill. In a short period of time (depending on the hill) the oil pressure will drop in the transmission and allow the tractor to roll down hill. To avoid an accident and/or possible injury, lock the brake.

G. CHOKE CONTROL

The choke control is located on left side of the pedestal below the instrument panel. The choke control is operated manually. Pull knob out to choke engine. Push knob in to open choke. See figure 1.

H. BRAKE PEDAL

The brake pedal is located on the left side of the tractor. See figure 1. When brake pedal is depressed, the speed control lever is automatically moved to the "N" position.



NOTE

If speed control lever does not retract to "N" position when brake pedal is depressed, the linkage must be adjusted.

I. THROTTLE CONTROL LEVER

This lever controls the speed of the engine. When set in a given position, it will maintain a uniform engine speed. See figure 1.

When using power take-off operated equipment, best performance is achieved with the throttle lever in the "FAST" position.



This symbol shows slow position.



This symbol shows fast position.

J. LIGHT SWITCH (16 H.P. units only)

The lights are turned on and off by a toggle switch on the center of instrument panel. See figure 1. Flip switch up for on, down for off. When lights are on, throttle should be in fast position.

INTERLOCKS (See figures 3 and 4.)

Interlock safety switches are located under the right hand fender, the PTO switch and the seat.

The safety starting switches, activated by the speed control lever and the power take-off clutch switch, serve to prevent starting the engine accidentally. The speed control lever must be in neutral and the PTO switch in the "OFF" position before engine will start.

When using PTO operated equipment, the operator must remain in tractor seat at all times. If operator should leave tractor seat without turning off the PTO switch, the engine will automatically shut off. In addition, the PTO switch must be in the "OFF" position when shifting tractor into reverse or the PTO will shut off automatically. To re-engage the PTO, shift unit into neutral. Move PTO switch to the "OFF" position and then reactivate PTO.

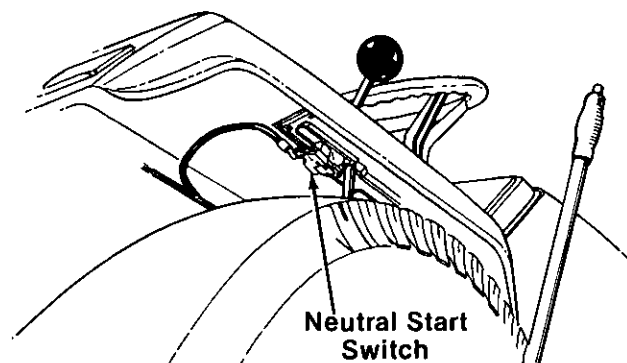


FIGURE 3.

**Reverse Switch
and PTO Indicator
Switch**

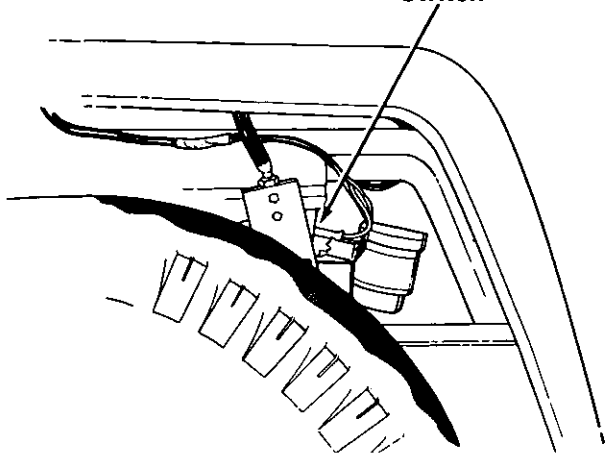


FIGURE 4.

HYDROSTATIC DUMP VALVE LEVER

The hydrostatic dump valve lever is located on the frame cover.

1. To engage the dump valve (making the tractor free-wheeling), push the lever as shown forward and hold in this position. See figure 5.
2. To disengage the dump valve, release the lever. See figure 6.

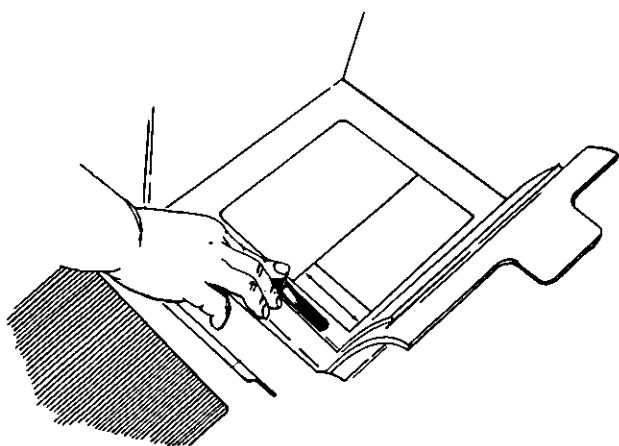


FIGURE 5.

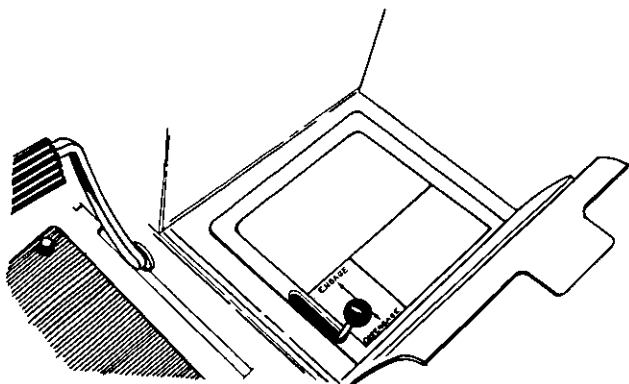


FIGURE 6.

FUEL TANK

The fuel tank is located under the seat. See figure 7.

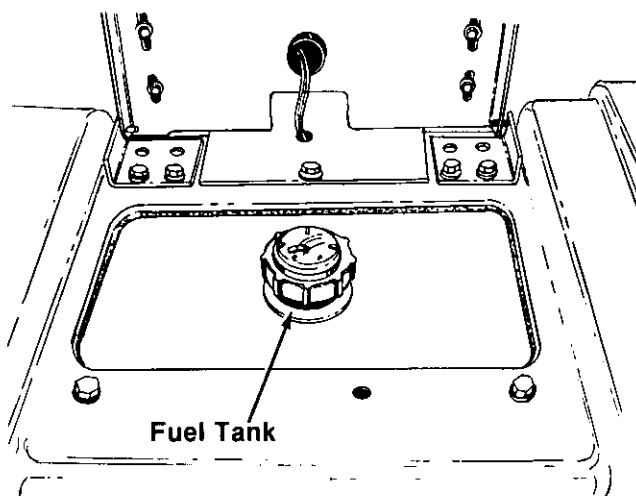


FIGURE 7.

FUEL SHUT-OFF VALVE

The fuel shut-off valve is located under the rear fender. See figure 8.

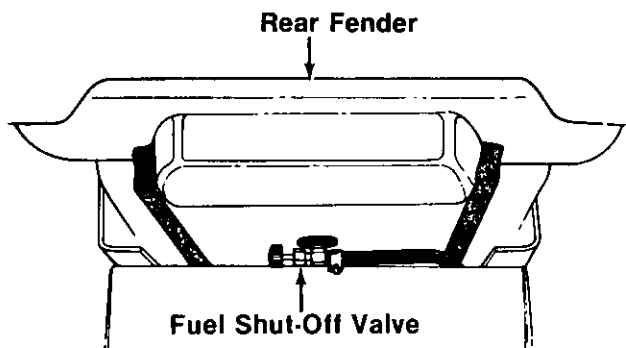


FIGURE 8.

ENGINE OIL

The engine oil fill is located on the side of the engine. Figure 9 shows an 11 H.P. engine.

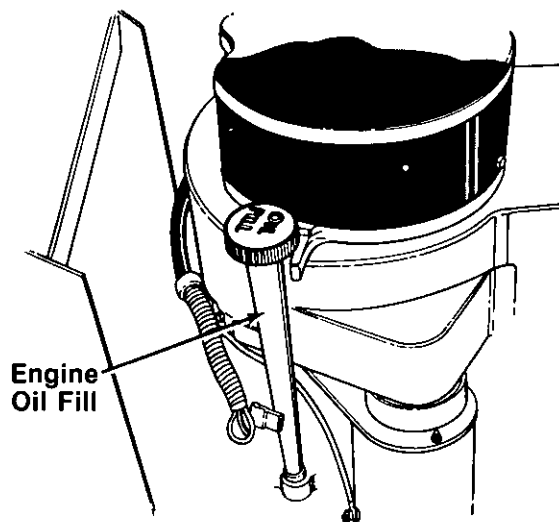


FIGURE 9.

OPERATION

PRE-OPERATION CHECKLIST

1. Check Oil Level
2. Fill Fuel Tank with Regular or Unleaded Gasoline

ENGINE OIL REQUIREMENTS

RECOMMENDED OIL

Ambient Temperature	Viscosity (Grade SF)
Above 40°F	SAE 30
0°F to 100°F	SAE 10W30 or 10W40
Below 20°F	SAE 5W20 or 5W30

DO NOT USE: Synthetic oil, non-detergent oil or other non-recommended oils.

DO NOT MIX different brands of oil.

OIL DIPSTICK CHECKS

Dipstick should be checked before starting the unit **EVERY TIME**.

Dipstick markings indicate upper and lower limits at a cold oil condition.

Never overfill engine oil.

BEFORE OPERATING YOUR TRACTOR

1. Before you operate the tractor, study this manual carefully. It has been prepared to help you operate and maintain your tractor with utmost efficiency.
2. Familiarize yourself with the operation of all the instruments and controls.
3. Fill the fuel tank with clean, fresh, regular or unleaded gasoline. Refer to figure 7. Tank is located under the seat.
4. Check the tire inflation pressures.
5. Adjust the seat for operator's maximum comfort, visibility, and complete control of the tractor.

6. Refer to various sections of the operator's manual for additional information.

STARTING THE ENGINE

NOTE: This unit is equipped with a safety interlock system for your protection. The purpose of the safety interlock system is to prevent the engine from cranking or starting unless the brake pedal is depressed and the PTO switch is in the off position. In addition, the PTO switch must be in the off position when the unit is put into reverse or the PTO will shut off. Operator must remain in the seat when the PTO is on or the engine will shut off.



Do not operate the tractor if the interlock system is malfunctioning because it is a safety device, designed for your protection.

TO START

1. Before starting engine run through pre-operation checklist. Be familiar with controls. Be in operator's position with transmission speed control in neutral, PTO switch off and brake depressed or parking brake locked.
2. Pull choke control button to full choke position. Less choking may be necessary due to variations in temperature, grade of fuel, etc. Little or no choking will be needed when the engine is warm.
3. Move throttle control forward to start position (never start engine at full throttle).
4. Turn key to start position. When engine starts, release key. Key will retract to on position.

CAUTION

RECEIVE INSTRUCTION — Read operator's manual. Learn to operate this machine **SAFELY**. Don't risk **INJURY** or **DEATH**.

1. Before starting engine or operation: Be familiar with controls. Be in operator's position with transmission in neutral, PTO turned off, and brake depressed.
2. Keep shields in place. Keep away from moving parts.
3. **NO RIDERS!** Keep all people and pets a safe distance away.
4. Don't point mower discharge at people.
5. Avoid slopes. Tractors can be rolled over.
6. Before leaving operator's position: Shut off PTO. Place transmission in neutral. Set parking brake. Shut off engine. Remove ignition key. Wait for all movement to stop before servicing or cleaning.
7. Do not fill gasoline tank when engine is running. Tighten cap securely.

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TO SHUT OFF

1. Return speed control lever to neutral, depress brake, engage parking brake and return PTO to off position.
2. Move throttle to slow position.
3. Turn key to off position and remove.



CAUTION

During operation do not run the engine in confined area such as storage building. Immediately move the tractor outside of the building.



WARNING

Exhaust fumes can kill. Never run engine inside buildings.

DRIVING THE TRACTOR

1. Depress the brake pedal, release the parking brake lock, and let the pedal up. See figure 10. Move the throttle lever to the position where the engine operates best for the load to be handled.

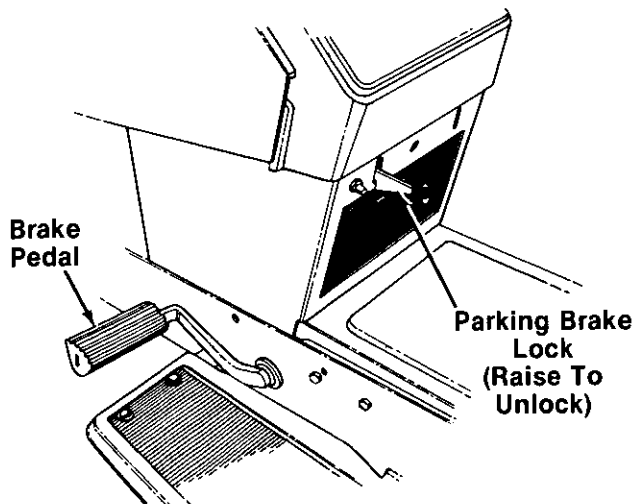


FIGURE 10.

2. Start the tractor in motion by moving the speed control lever slowly forward or rearward to desired speed. See figure 11.

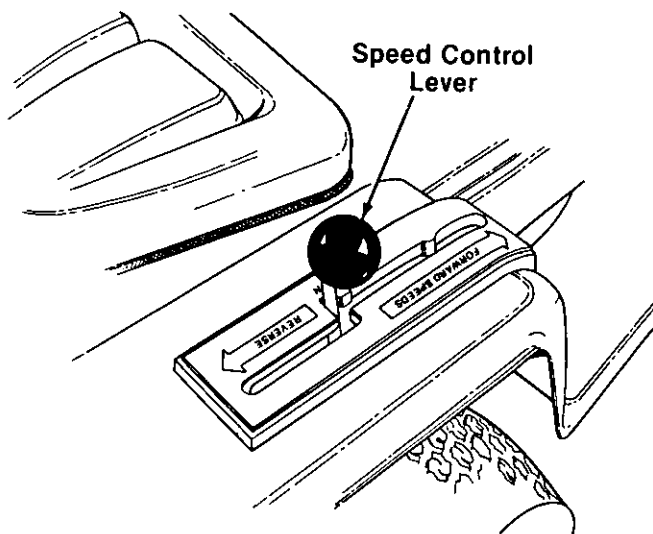


FIGURE 11.



CAUTION

Avoid sudden starts, excessive speed and sudden stops. Keep vehicle in gear when going down hills.

NOTE: When using power take-off operated equipment, best performance is achieved with the throttle lever in the "FAST" position.

Always be sure the rear wheels are free to turn. Under any adverse conditions, do not attempt to free the tractor by speeding up the engine and suddenly moving speed control lever to extreme forward or reverse position. Try backing out instead of going forward.

Do not leave the seat of the tractor without locking the parking brake. If leaving the tractor unattended, stop engine by moving throttle to slow position. Also, turn the ignition key off and remove the key.

DRIVING ON SLOPES

Before operating the tractor on any slope, walk the slope to look for possible hazards such as rocks, mounds, ruts, stumps or other surface irregularities which could cause an upset.

Back the tractor with implement up the steepest portion of each slope you intend to work. If the tractor cannot negotiate the slope in reverse, the slope is too steep to be worked.



CAUTION

Always operate up or down the face of a slope. Do not drive so that the tractor may tip over sideways.

Avoid turns when driving on a slope. If a turn must be made, turn down the slope. Turning up a slope greatly increases the chance of a roll over.

Avoid stopping when driving up a slope. If it is necessary to stop while driving up a slope, start up smoothly and carefully to reduce the possibility of flipping the tractor over backward.

STOPPING THE TRACTOR

Move the speed control lever to the "N" position or depress the brake pedal. Before dismounting always lock the parking brake, disengage PTO switch, move throttle control to slow position and turn ignition off.



CAUTION

Always engage brake pedal lock, lower equipment and shut off engine before dismounting. Never start engine from ground.

OPERATING THE POWER TAKE-OFF CLUTCH (PTO)

1. Move the throttle lever back to the medium or "SLOW" position.
2. Flip the toggle switch to the "RUN" position. See figure 12.

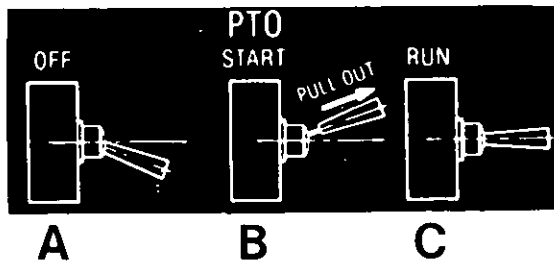


FIGURE 12.

- A. PTO switch must be in off position before starting unit and before shifting tractor into reverse.
 - B. To start the PTO, pull knob out and lift up (Note: Knob will retract into run position).
 - C. Position at which PTO will run if starting procedure has been completed. (Note: If engine is running and unit is shifted into reverse, the PTO will disengage. To reactivate PTO, pull knob out and lift up into start position. If PTO is running and the operator leaves the seat, the engine will shut off. To start engine, follow normal starting procedure.)
3. Advance throttle to operating speed (full speed).
 4. The operator must remain in tractor seat at all times. If operator should leave tractor seat without turning off the power take-off switch, the engine will automatically shut off.

5. PTO switch must be in the "OFF" position when shifting the tractor into reverse or the PTO will shut off automatically. To reactivate the PTO, pull knob out, lift up into start position and release.

ADJUSTMENTS

ADJUSTING THE SEAT

Before starting the tractor, adjust the seat to the most comfortable driving position. Tilt the seat forward over the steering wheel, loosen the four bolts in the seat support, and slide the seat assembly forward or rearward to the position which is most comfortable for the operator. See figure 13.

Retighten the four bolts securely after the seat is repositioned.

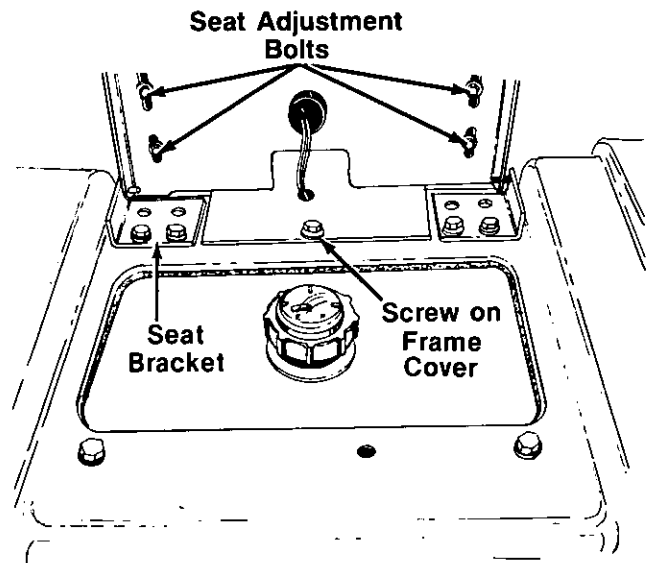


FIGURE 13.

ADJUSTING THE POWER TAKE-OFF CLUTCH

The clutch is factory adjusted and should not require further adjustment under normal operating conditions. However, if the clutch fails to operate properly check as follows:



CAUTION

To avoid possible injury, always disengage all clutches, move speed control lever into neutral, depress the brake, set the brake pedal lock, move throttle to slow position, and turn the ignition "OFF" before working on the machine.

Using a feeler gauge, check the air gap. See figure 15. Insert feeler gauge into one of three access slots located around the outside of the brake plate. The air gap should be .010-.015-inches. Adjust the self-locking nuts to obtain the proper clearance. Repeat the operation in all three access slots.

NOTE: If brake plate drags on clutch at .010-.015 inches air gap, increase air gap to .020-inches. After two hours of use, recheck and set back to .010-.015 inches.

If the above procedure does not work, see your authorized dealer.

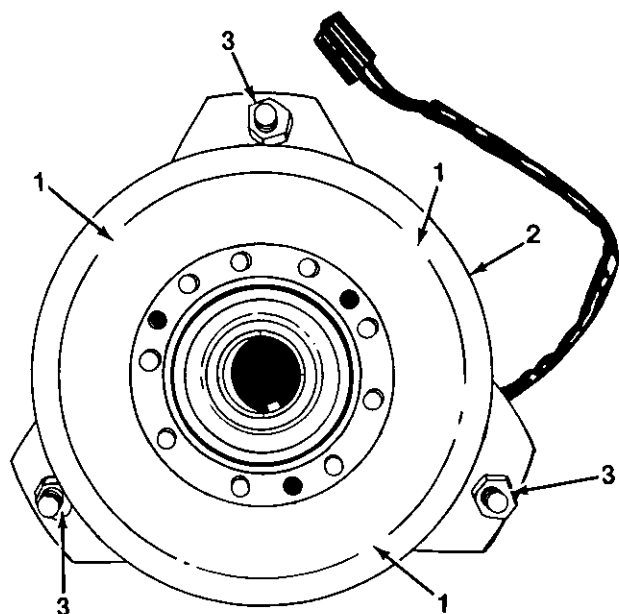


FIGURE 14.

1. Access slots
2. Brake plate
3. Self-locking nuts

ADJUSTING THE BRAKES

During normal operation of this machine, the brakes are subject to wear and will require periodic examination and adjustment.

To check the brake adjustment, engage the hydrostatic dump valve so unit can be pushed. Then lock the parking brake (hydrostatic dump valve is still engaged). You should not be able to push the tractor.

If the tractor can be pushed with the parking brake locked, or if the unit cannot be pushed with the parking brake released, brake adjustment is necessary.

To adjust the brake, adjust the nut on the end of the brake rod until there is approximately 1/8" to 3/16" space between the spacer and cam lever. See figure 15.

Recheck the adjustment, making certain correct adjustment is reached before operating the tractor.

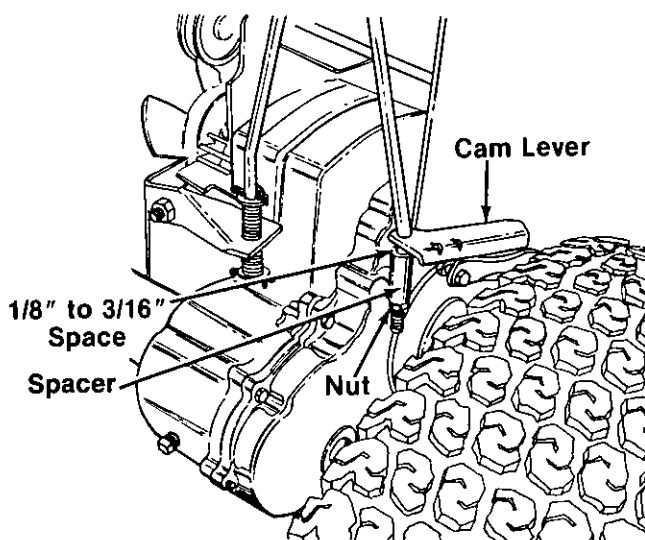


FIGURE 15.

NEUTRAL ADJUSTMENT FOR THE SPEED CONTROL LEVER (See figure 16.)



Spring from pedal assembly to frame strap was removed in figure 16 for clarity only.

If the speed control lever does not return to the neutral notch on the speed control lever guide when the brake pedal is depressed (see figure 11), make the following adjustment:

1. Remove the cotter pin and clevis pin from turnbuckle (A) at actuating arm assembly. See figure 16.
2. Loosen hex nut and thread the turnbuckle inward or outward, so as to move the speed control lever into the neutral position on fender.
3. Retighten hex nut and reassemble the clevis pin and cotter pin and spread. See figure 16.



If the tractor creeps while the speed control lever is in "NEUTRAL," the controls at the hydrostatic transmission must be adjusted.

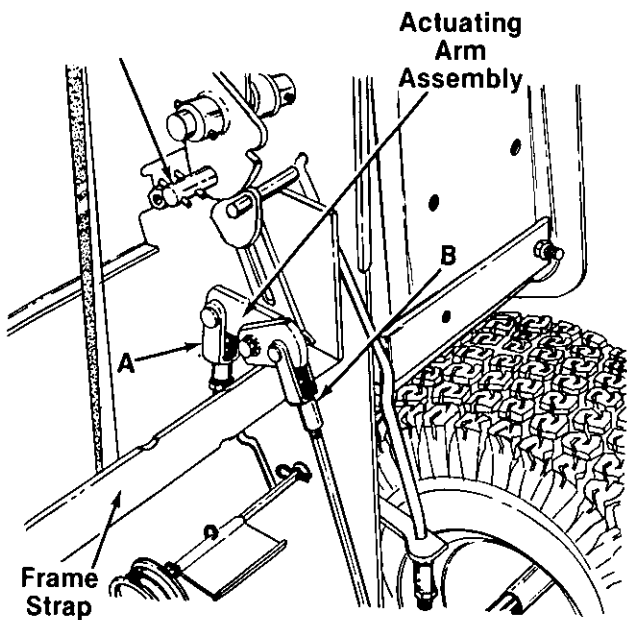


FIGURE 16.

HYDROSTATIC TRANSMISSION CONTROL ADJUSTMENT

1. Block the rear of the tractor up so both rear wheels are off the ground.
2. Remove the cotter pin and clevis pin from turnbuckle (B) at actuating arm assembly. See figure 16.
3. Thread the turnbuckle inward or outward one or two turns.
4. Replace the turnbuckle and clevis pin.
5. Start the engine and run at idle speed.
6. If rear wheels do not turn, turnbuckle (B) is adjusted properly.
7. Shut off the engine.
8. Secure the clevis pin with cotter pin and spread. See figure 16.
9. Remove blocks from under tractor and set the speed control lever in neutral.
10. Start engine, checking to see if tractor creeps. Repeat above adjustment if necessary.

WHEEL ALIGNMENT

The front wheels should toe-in approximately 1/8". Measure the distances A and B on the front wheels. See figure 17.

NOTE: Dimension B should be approximately 1/8 inch less than dimension A.

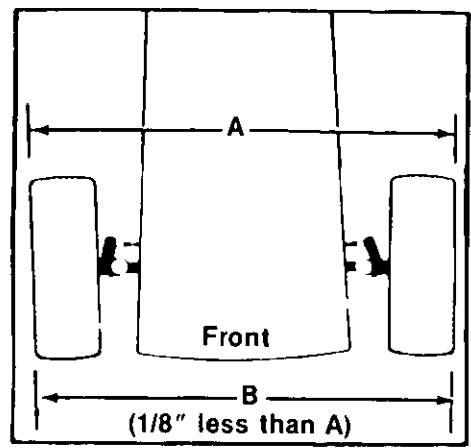


FIGURE 17.

Front wheel adjustments.

To adjust the toe-in remove one ball joint, loosen the lock nut "C" at the ball joint and turn the tie rod ball joint in or out as required.

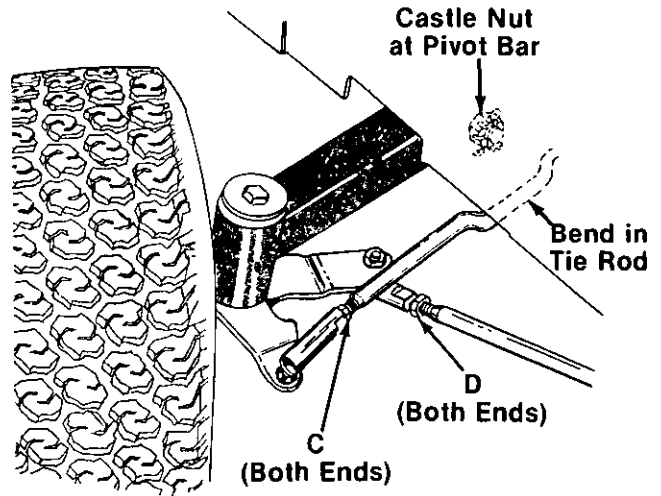


FIGURE 18.



Tie rod has a bend in the center for clearance of castle nut on pivot bar. Bend must remain down as shown in figure 18.

TURNING RADIUS

The front wheels should have an equal angle for left and right turns. If adjustment is necessary, remove ball joint and loosen lock nut "D," turn the drag link ball joint clockwise or counterclockwise as required. See figure 18.



CAUTION

Be sure all parts are tightened securely.

LIFT CONTROL LEVER

The lift control lever is used to lift or lower equipment used with the tractor. The equipment can be set in five positions by depressing the button on the lever and releasing it when the desired position is reached. See figure 19.

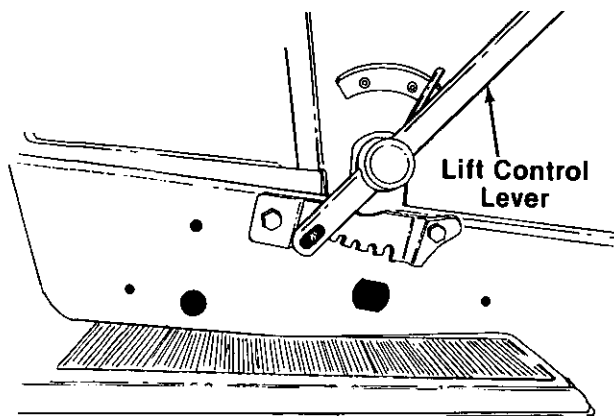


FIGURE 19.

BELT ADJUSTMENT

For belt adjustment information, refer to page 17.

MAINTENANCE

ENGINE OIL

The engine crankcase is filled with ship-away oil. This oil may be used for the first 5 hours of engine operation at temperatures between +90 degrees F. and 0 degrees F. If temperatures are not within this range, drain the oil from the crankcase and replace with new oil as specified in the "LUBRICATION TABLE." The engine oil must be drained and replaced with new oil every 30 hours of engine operation.

To aid starting, the selection of crankcase lubricating oils should be based on the lowest anticipated temperatures until the next drain period. Refer to "LUBRICATION TABLE."

Cub Cadet Low Ash Engine Oil or other oil meeting API Service Classification SF is recommended. For maximum engine life select API SF oils with lowest levels of barium, calcium, or magnesium additives and minimum ash content (approximately 0.5%). Lubricant suppliers will normally furnish this information on their engine oils.

Regularly check the oil level of the engine crankcase to see that it is filled to the correct level.

NOTE: Check the oil level only while the engine is stopped.

Always keep the oil level between the "FULL" and the "LOW" marks on the dipstick. When checking the oil

level the dipstick must be withdrawn and wiped clean, then inserted all the way and withdrawn for a true reading.

Filling the Crankcase

To fill the crankcase with oil, place the tractor on a level surface. Clean the area around oil fill before removing combination oil filler cap and dipstick.

Remove the cap and dipstick and fill to the full mark on the dipstick. **POUR SLOWLY.** Capacity 3 pints. When checking the oil level, push the dipstick assembly firmly but slowly until cap bottoms on tube. **DO NOT OVERFILL.** Dipstick assembly must be pushed fully into tube at all times when engine is operating.

NOTE: Never overfill the engine crankcase. Engine may overheat and/or damage may result if the crankcase is below the "LOW" mark or over the "FULL" mark.

AIR CLEANER (11 H.P. Units)

1. Remove air cleaner stud, screw and cover. See figure 20. Replace cover gasket if damaged.
2. Remove plate screw, washer and plate.
3. Remove cartridge and clean air cleaner body carefully to prevent dirt from entering carburetor. Brush dirt from body through holes into duct.
4. Clean cartridge by tapping gently on flat surface.
 - a. If very dirty, replace cartridge or wash in a low or non-sudsing detergent and warm water solution.
 - b. Rinse thoroughly from outside in until water is clear.
 - c. Cartridge must be allowed to stand and air dry **thoroughly** before using.
5. Reassemble air cleaner.

NOTE: Petroleum solvents, such as kerosene, are not to be used to clean cartridge. They may cause deterioration of the cartridge. **Do not oil cartridge. Do not use pressurized air to clean or dry cartridge.**

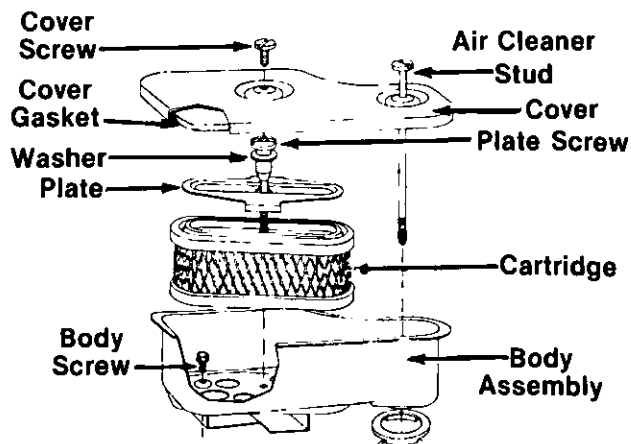


FIGURE 20.—11 H.P. Units

AIR CLEANER (16 H.P. Units)

Servicing Foam Pre-Cleaner Element

Clean and re-oil foam pre-cleaner element at 3 month intervals or every 25 hours, whichever occurs first.

NOTE: Service more often under dusty conditions.

1. Remove knob and cover. See figure 21.
2. Remove foam pre-cleaner element by sliding it up off the paper cartridge.
3. a. Wash pre-cleaner element in liquid detergent and water.
b. Squeeze dry in cloth.
c. Saturate in engine oil. Squeeze to distribute oil evenly.
d. Wrap in shop towel and squeeze to remove excess oil.

Discard used element and replace with new one at least once a year.

Servicing Paper Cartridge

Yearly or every 100 hours, whichever occurs first, remove paper cartridge. Clean by tapping gently on flat surface. If very dirty, replace cartridge, or wash in a low or non-sudsing detergent and warm water solution. Rinse thoroughly with flowing water from inside out, until water is clear. Cartridge must be allowed to stand and air dry **thoroughly** before using. Service more often if necessary.

NOTE: Petroleum solvents, such as kerosene, are not to be used to clean cartridge. They may cause deterioration of the cartridge. **Do not oil cartridge. Do not use pressurized air to clean or dry cartridge.**

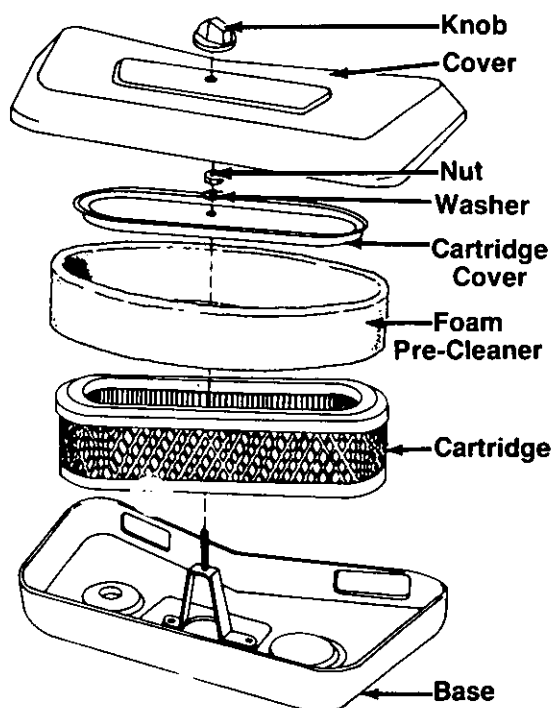


FIGURE 21.—16 H.P. Units

TRANSAXLE

Check the oil level four times a year. Lubricant should be at the point of overflowing. Use SAE E.P. 90 oil. Drain and refill every two years. Capacity 2¾ pints.

HYDROSTATIC OIL LEVEL

The transmission has been filled at the factory and should not require changing for the life of the transmission. The following oils can be used: Texaco 2209, General Motors Dexron B, Ford M2C-33F, Mobile Fluid 300, Cub Cadet hydraulic fluid or a good quality SAE 20 High Detergent oil.



Never use a multi-viscosity oil.

The transmission fluid level should be checked prior to initial use. The level should not be above the COLD mark which is about ¼" from the bottom of the reservoir/expansion tank. See figure 22.



Overfilling reduces the expansion area in the reservoir/expansion tank and fluid will spill at operating temperatures.

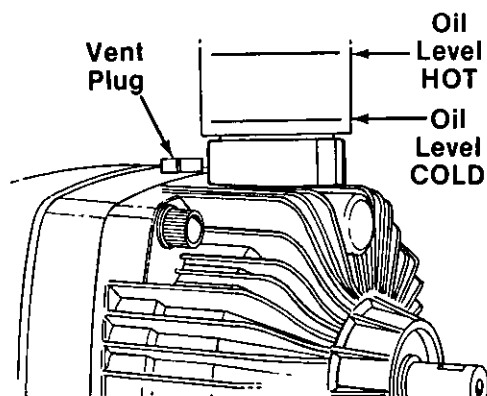


FIGURE 22.

To check or add fluid to the transmission:

1. Remove the seat by tipping the seat forward, removing two screws from one seat bracket, and sliding the seat off the unit. Refer to figure 13.
2. Remove one screw from the back of frame cover (see figure 13), and remove one screw from each side. Lift off frame cover.
3. Check the oil level in the reservoir/expansion tank. See figure 22.
4. If it is necessary to add oil, unscrew the cap on the reservoir/expansion tank and add oil through the hole with a funnel. Do not overfill.
5. Reassemble parts.

If frequent additions are required, locate the leak and correct. Inadequate supply of fluid may result in permanent internal damage.

If contaminant is observed on the reservoir/expansion tank screen, poor maintenance is indicated. Remove the reservoir/expansion tank, wash clean, dry and reinstall. If the screen is pierced, the reservoir/expansion tank should be replaced.

NOTE

The threads on the reservoir/expansion tank are left hand thread.

If the natural color of the transmission fluid has changed, black or milky, overheating and/or water contaminant is indicated. The fluid should be drained and replaced with new transmission fluid.

To drain the hydrostatic transmission, remove the hex plug on the bottom of the hydrostatic transmission.

To fill the hydrostatic transmission, remove the vent plug located next to reservoir/expansion tank to prevent an air lock. Replace vent plug. See figure 22.

Hydrostatic Transmission Cooling

The hydrostatic transmission is cooled by the oil, fan and fins. Normal operating temperature is 180°F. If the hydrostatic transmission runs hot, check to see if the fan is in operating condition, the oil level is correct and the fins are clean.

NOTE

DO NOT use high pressure water spray or steam to clean the hydrostatic transmission.

BELT ADJUSTMENT

If a reduction in speed is noticed, the drive belt may need adjustment. Adjust as follows.

1. Loosen (do not remove) the hex bolt and nut at the stationary idler bracket. Refer to figure 30.
2. Slide the idler pulley upward to tighten the belt. Tighten hex nut and bolt.

When no adjustment is left, replace the belt.

DRIVE BELT REPLACEMENT

1. Unplug the electric clutch which is located on the left hand side of engine at the frame opening. Using a screwdriver, lift up on the tab on the plug and pull plug halves apart. See figures 23 and 24.

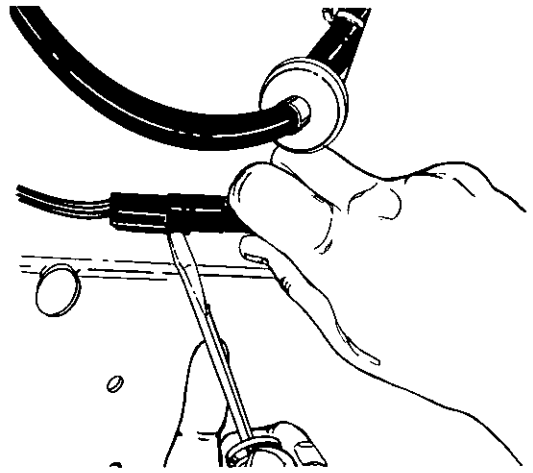


FIGURE 23.

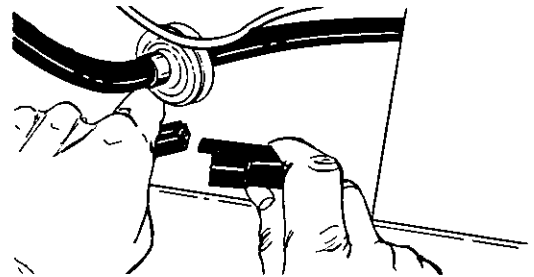


FIGURE 24.

2. Remove the torque bracket assembly by removing two hex bolts and lock washers on the front of frame under the engine. See figure 25.

NOTE

On 16 H.P. units, the muffler deflector must be removed before torque bracket assembly can be removed.

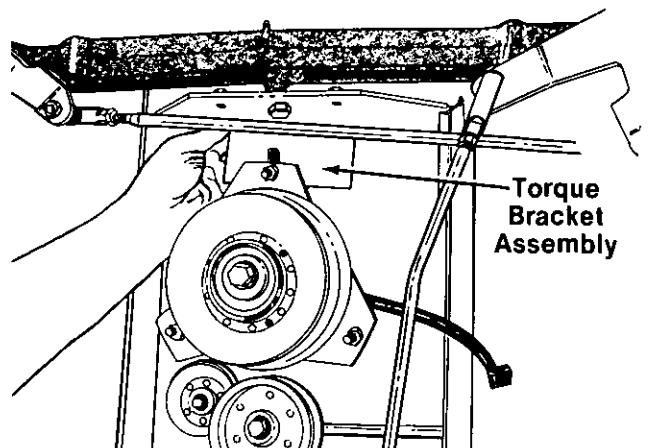


FIGURE 25.

NOTE

When reassembling torque bracket, be certain center of torque bracket is lined up with center of engine shaft.

3. Unhook the spring on the idler pulley from the spring bracket, located near the engine pulley. See figure 26.

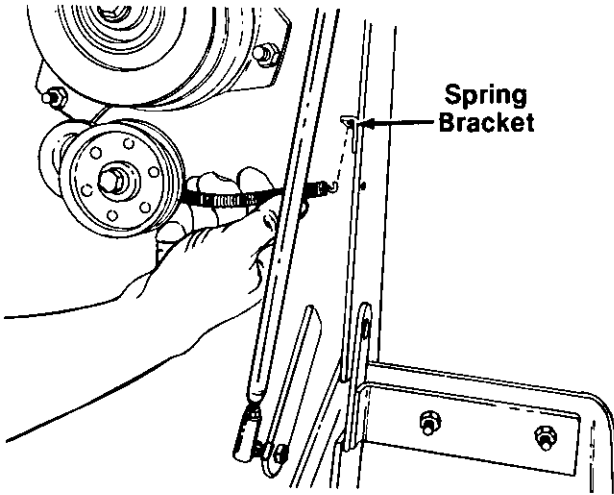


FIGURE 26.

4. Remove the idler pulley at hydrostatic pump by removing 3/8" hex bolt, hex nut, Belleville washer and flat washer. See figure 27.

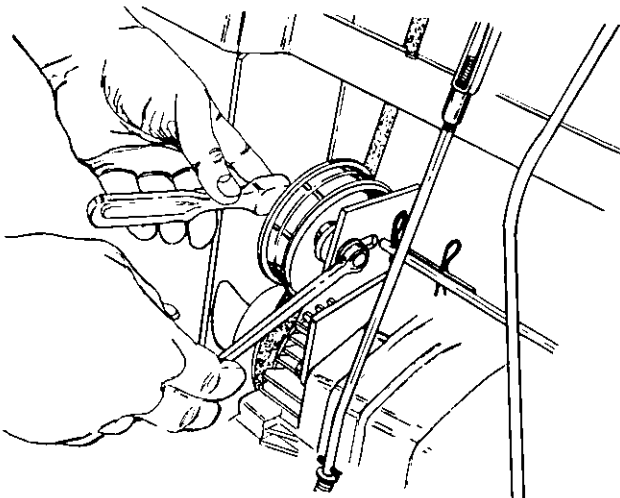


FIGURE 27.

5. Lift belt over small stationary idler pulley on right hand side of engine pulley. See figure 28.

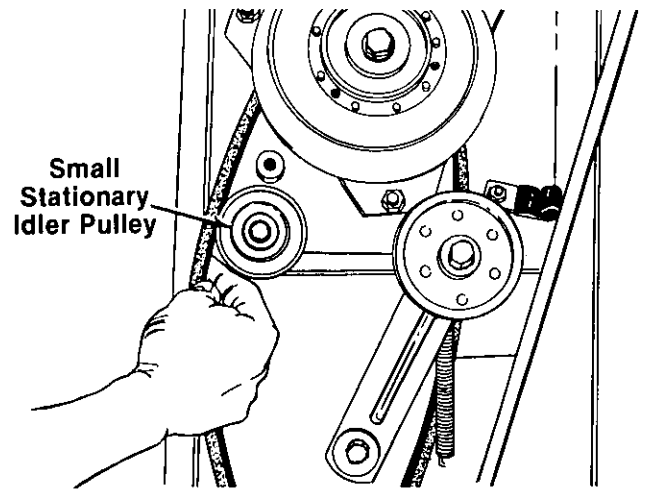


FIGURE 28.

6. Lift belt over pulley on hydrostatic pump. Turn fan at pump by hand to remove belt. See figure 29.

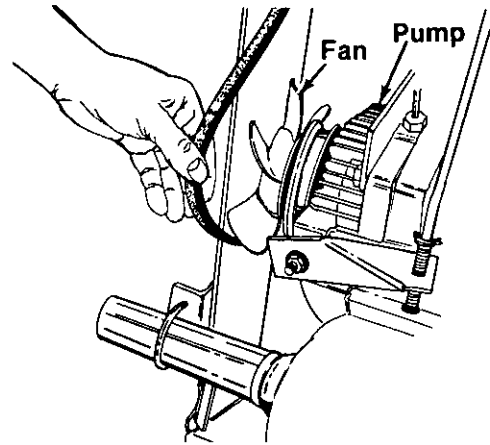


FIGURE 29.

7. Place belt on top (or front edge) of engine pulley and turn pulley to roll belt off pulley.
8. Lift belt over electric clutch and remove.
9. Assemble new belt in reverse order.

NOTE

Upon reassembly of idler pulley at pump, the hub side of idler and flat washer must go against the stationary idler bracket, as shown in figure 30.

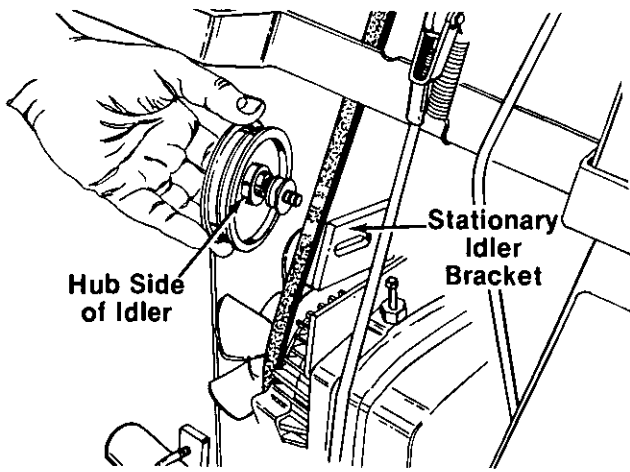


FIGURE 30.

BATTERY INFORMATION



WARNING

- A. Battery acid must be handled with great care as contact with it can burn and blister the skin. It is also advisable to wear protective clothing (goggles, rubber gloves and apron) when working with it.*
- B. Should battery acid accidentally splatter into the eyes or onto the face, rinse the affected area immediately with clean cold water and seek prompt medical attention.
- C. If acid spills on clothing, first dilute it with clean water, then neutralize with a solution of ammonia/water or baking soda/water.
- D. Since battery acid is corrosive, do not pour it into any sink or drain. Before discarding empty electrolyte containers, rinse them with a neutralizing solution.
- E. NEVER connect or disconnect charger clips to battery while charger is turned on as it can cause sparks.
- F. Keep all lighted materials (cigarettes, matches, lighters) away from the battery as the hydrogen gas generated during charging can be combustible.
- G. As a further precaution, only charge the battery in a well-ventilated area.

*Always shield eyes, protect skin and clothing when working near batteries.



DANGER

BATTERIES CONTAIN SULFURIC ACID AND MAY CONTAIN EXPLOSIVE GASES (when electrolyte has been added).

KEEP BATTERIES OUT OF THE REACH OF CHILDREN.

MAINTENANCE OF BATTERY

1. Check electrolyte level periodically. Keep the level to the split rings. Use only distilled water or a good quality drinking water. Never add acid or any other chemicals to the battery after initial activation.
2. The battery should be checked with a hydrometer after every 25 hours of operation. If the specific gravity is less than 1.225, the battery should be recharged. Maximum charge rate 5 AMPS.
3. Coat the terminals and exposed wire with a thin coat of grease or petroleum jelly for longer service and protection against corrosion.
4. The battery should be kept clean. Any deposits of acid should be neutralized with baking soda and water. Be careful not to get this solution in the cells.
5. Avoid tipping the battery. Even a "sealed" battery will leak electrolyte when tipped.

STORAGE OF THE BATTERY

1. When storing battery for extended periods, disconnect battery cables. Removing battery from unit is recommended.
2. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge itself.
3. Check the battery with a hydrometer. The battery must be stored with a full charge. A discharged battery will freeze.

Specific Gravity	Freezing Point
1.265	-71° F.
1.250	-62° F.
1.200	-16° F.
1.150	5° F.
1.100	16° F.



NOTE

All batteries discharge during storage.

4. Recharge battery whenever the specific gravity is less than 1.225, before returning to service or every two months, whichever comes first.

COMMON CAUSES FOR BATTERY FAILURE

1. Overcharging
2. Undercharging
3. Lack of water
4. Loose hold downs and/or corroded connections
5. Excessive loads
6. Battery electrolyte substitutes
7. Freezing of electrolyte

NOTE: These failures do not constitute warranty.

BATTERY REMOVAL OR INSTALLATION



When removing the battery, follow this order of disassembly to prevent your wrench from shorting against the frame.

1. Remove the Negative cable.
2. Remove the Positive cable.

To install a battery:

1. Attach the Positive cable.
2. Attach the Negative cable.

BOOSTER BATTERIES AND CHARGING THE BATTERY



Batteries can explode during boosting or charging. Always wear proper eye protection, such as safety goggles.

If the electric circuit inside the battery is broken, charging or boosting can generate a spark inside the battery which may cause it to explode.

If the battery is discharged, and the reason for the discharge is unknown and if the lights or horn do not indicate some battery voltage, check the battery with a volt meter for an open circuit. Disconnect negative (-) battery cables. Connect the volt meter across battery terminals. If there is no voltage present, an open internal circuit is indicated. Replace the battery. If voltage is present, the battery is OK to charge or boost.

If using a battery charger, be certain the charger is turned off before connecting to the battery.

Charge in a well ventilated area.

Do not attempt to charge a frozen battery.

When required, a booster 12-volt battery may be connected in parallel with the 12-volt system on the tractor.

NOTE: All circuits must be turned "OFF." The electrical system is NEGATIVE (-) ground only. Reversed polarity will result in permanent damage to components of the electrical system.

When using a booster battery with jumper cables, precautions must be taken to prevent personal injury or damage to electrical parts.

JUMP STARTING

If jump starting is necessary use only a 12 volt battery for this purpose.

1. Attach the first jumper cable from the Positive terminal of the good battery to the Positive terminal of the dead battery.
2. Attach the second jumper cable from the Negative terminal of the good battery to the FRAME OF THE UNIT WITH THE DEAD BATTERY.

TIRES

Keep the pneumatic tires properly inflated. Over-inflation will cause operator discomfort. Under-inflation will cause short tire life.

Inflate the front and rear tires for normal or heavy load operations as shown in the following table.

Tire Size	Pounds per square inch
Front Tires 15 x 6-6	12 PSI
Rear Tires 20 x 10-8	10 PSI

Always check that the tire valve caps are in place and tightened securely to prevent loss of air and protect the valve core and stem.

Do not overload the tractor tires by mounting equipment on the tractor which exceeds the load capacity of the size of the tires on the tractor.

Mounting Tires On The Rim

After mounting a new or old tire on the rim, inflate to 20 pounds pressure to seat the tire bead on the rim flange. Then deflate the tire to the correct operating pressure.



Never inflate tires beyond 30 pounds per square inch to seat beads. Allowing air pressure to build within the assembly in an attempt to seat the beads is a dangerous practice. Inflation beyond 30 pounds per square inch pressure before seating bead may break the bead (or even the rim) with explosive force. If beads have not seated by the time pressure reaches 30 pounds per square inch, deflate the assembly, reposition the tire on the rim, re-lubricate then re-inflate. Inspect both sides of tire to be sure beads are evenly seated. If not, completely deflate tire, unseat beads and repeat entire mounting procedure. After seating beads, adjust inflation to recommended pressure.

OFF-SEASON STORAGE

If the machine is to be inoperative for a period longer than 30 days, the following procedures are recommended:

1. Remove dirty engine oil, fill with new oil and run the engine for about 5 minutes to let the oil circulate to all the parts.
2. Always set the throttle lever on "OFF" position.
3. Check all the bolts and nuts, and tighten if necessary.

4. Remove the battery from the tractor recharge it, and adjust the electrolyte level. Store the battery in a dry and dark place. Never set directly on concrete.
5. Clean the engine and the entire tractor thoroughly.
6. Lubricate all lubrication points.
7. Protect tires and seat from sunlight. Inflate tires at regular intervals.

MOWING DECK—ADJUSTMENTS AND OPERATION

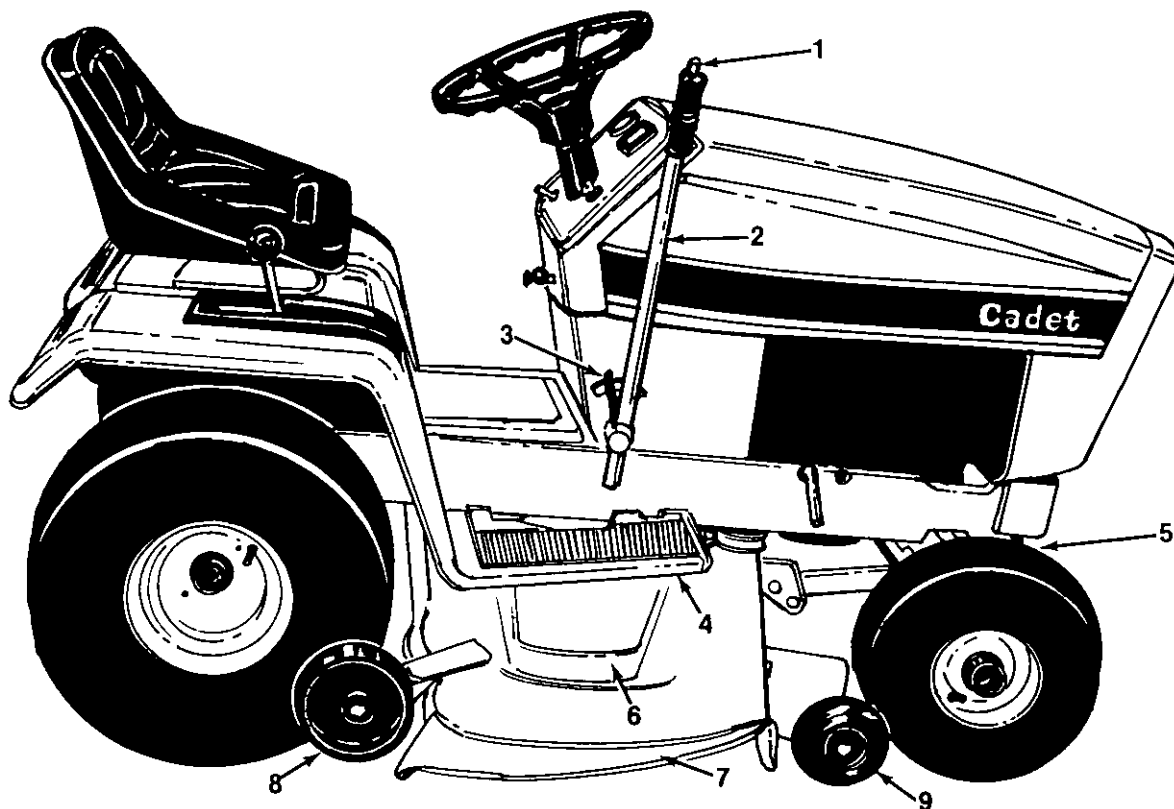


FIGURE 31. 44-inch mower shown—(36-inch mower is similar)

- | | |
|------------------------------|---------------------|
| 1. Lift Lever Release Button | 6. Belt Shield |
| 2. Lift Lever | 7. Deflector Shield |
| 3. Lift Lever Position Decal | 8. Gauge Wheels |
| 4. Mower Support Hangers | 9. Casters |
| 5. Quick Hitch Rod | |

LEVEL ADJUSTMENT



WARNING

Before making any adjustments, turn off the machine, remove the key, and lock the parking brake to avoid accidental starting and injury.



NOTE

Check the tires for proper inflation before making a level and height adjustment. To level the mower, put the tractor on a level surface. A hard surface such as a garage floor or sidewalk is preferable.

Side to Side Leveling

The 36 and 44 inch mowers are equipped with two adjustable lift links. This feature allows the mower to be leveled. See figure 32.

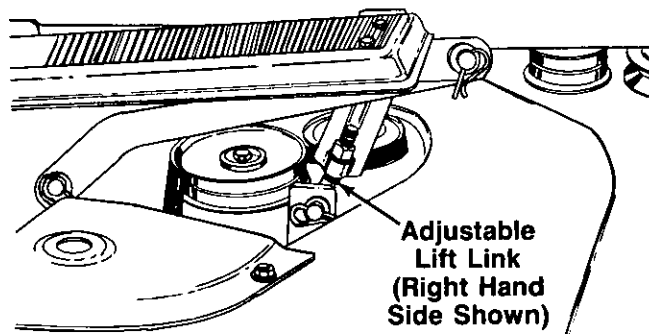


FIGURE 32.

To check the side to side leveling of the deck, place the unit on a hard, level surface. Disconnect the spark plug wire(s). Place the two outer blades parallel to the unit. Measure the distance from the front tip of blade to the surface on each side. If the measurements are not equal, lower the mower deck to the ground. Disconnect one of the adjustable links by removing the hair-pin cotter and flat washer which secure it to the deck. Turn the end of the link to the right or left as needed. Reconnect the adjustable link and raise the deck. Recheck the measurement on each side, and repeat adjustment until distances are equal.

NOTE

If the mower is not level, it will adversely affect the performance.

CUTTING HEIGHT

The mower can be set in multiple positions. Pull the lift handle back slightly and depress button on top of the lift handle. Release the button when the desired mower position is obtained. To return the mower to a specific position, note the position of the lift lever pointer in relation to the lever position decal before raising or lowering the mower.

GAUGE WHEELS AND CASTERS (44-inch Deck)

Set the gauge wheels and casters just off the hard surface by locating in the proper holes. The gauge wheels and casters prevent scalping and are not meant to set the cutting height. See figure 33. Gauge wheels and casters must be set in the same relative hole locations.

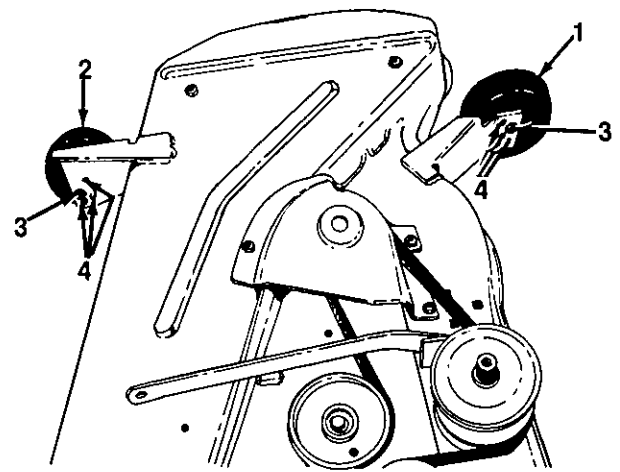


FIGURE 33.

1. Gauge Wheel
2. Caster
3. 3/8-inch Nut and Lock Washer
4. Adjustment Holes

GAUGE WHEELS (36-inch Deck)

Set the gauge wheels just off the hard surface by locating in the proper holes. The gauge wheels prevent scalping and are not meant to set the cutting height. See figure 34.

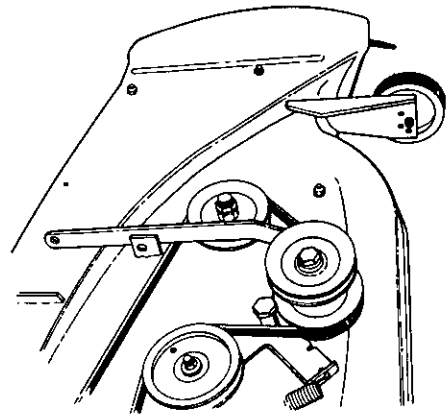


FIGURE 34.

STARTING THE MOWER

With the engine running at idle speed, start the power take-off clutch by moving the switch to "Run." Starting the mower with the engine at idle will reduce wear on the drive belt. Increase engine speed to full throttle.

NOTE

In heavy grass, full throttle may be needed when starting the mowing deck.

STOPPING THE MOWER

Move the power take-off switch to "Off" and reduce the engine speed.

NOTE

When installing a new belt always check the condition of the pulleys and if they are not in satisfactory condition, replace them with new pulleys available at your authorized dealer.

NOTE

Be sure narrow dimension of belt is in bottom of all pulley grooves.

WARNING

Stop the tractor, disengage the power take-off, place all controls in neutral, engage the brake lock and stop the engine before performing any maintenance.

After the first 10 hours of operation check and retighten, if necessary, all nuts and bolts on the machine. Tighten the hex nuts used to attach the blades to the spindles to 50 to 60 lbf. ft. (68 to 81 N-m). Tighten the hex nuts used to attach the pulleys to the spindles to 90 to 110 lbf. ft. (122 to 149 N-m). Check and retighten, if necessary, all nuts and bolts once a year thereafter.

BLADE SPINDLE ASSEMBLY

The blade spindle assembly is a sealed, pre-greased precision pre-set Timken bearing package. Special care must be taken when blade is removed. With blade removed, the shaft and pulley are no longer held and can slip out of spindle housing. If this should occur, bearing spacer (see figure 35) will be free to float since clamping force has been eliminated. To reassemble, insert shaft with pulley into spindle housing, and insert one finger in through the bottom of spindle assembly to line up bearing spacer so that shaft will go through.

NOTE

Never pound or force shaft through spindle housing.

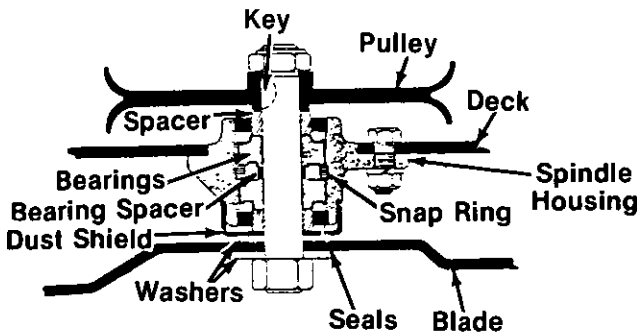


FIGURE 35.

CLEANING AND BLADE CARE

WARNING

Be careful not to cut yourself when sharpening the blades or cleaning the underside of the mower.

Clean the underside of the mower at the end of the mowing season and when the build-up of cut material on the underside is noticed. Also, remove the belt cover and remove any accumulation.

The cutting blades must be kept sharp at all times.

NOTE

Sharpen ends evenly so that the blades remain balanced and the same angle of sharpness is maintained. However, if the cutting edge of a blade has been sharpened to within 3/8-inch of the wind wing, it is recommended that new blades be installed. New blades are available at your authorized dealer.

When removing the outer blades, hold the hex shaped pulley hub with a 1 1/4-inch socket wrench to remove the hex nut holding the blade. A block of wood may be placed between housing and cutting edge of blade to assist in removal of hex nut securing blade. See figure 36.

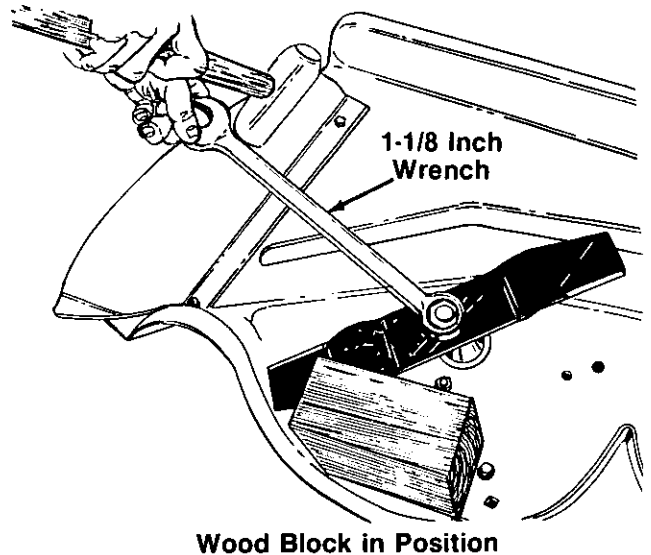


FIGURE 36.

After replacing blades, grease the threaded end of the shaft to prevent rust build-up.

When replacing the blades, be sure they are assembled so the cutting edges are in the direction of rotation with the wind wings pointed upward. Tighten the nuts 50 to 60 lbf. ft. (68 to 81 N-m).

NOTE

If the spindle pulley nuts are removed for any reason, they should be retightened to 90 to 110 lbf. ft. (122 to 149 N-m) torque when replaced.

LUBRICATION

Deck spindles are pre-greased and sealed at the factory. No additional lubrication is required. For winter storage, clean the underside of deck, and apply a light coat of oil to prevent rust. Also, lubricating the tension spring with a few drops of light oil is recommended. See figures 37 and 38.

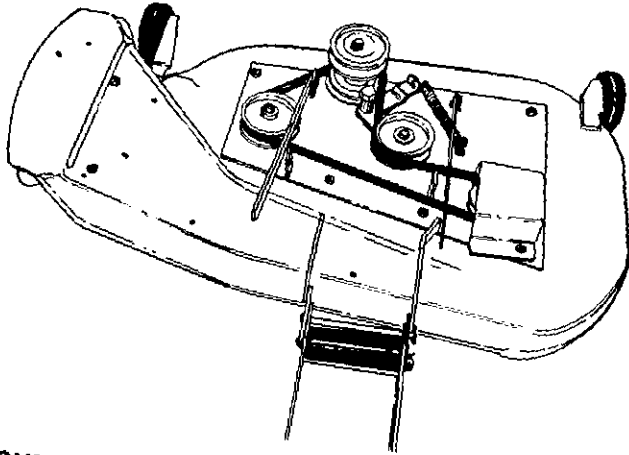


FIGURE 37.—36-inch Deck

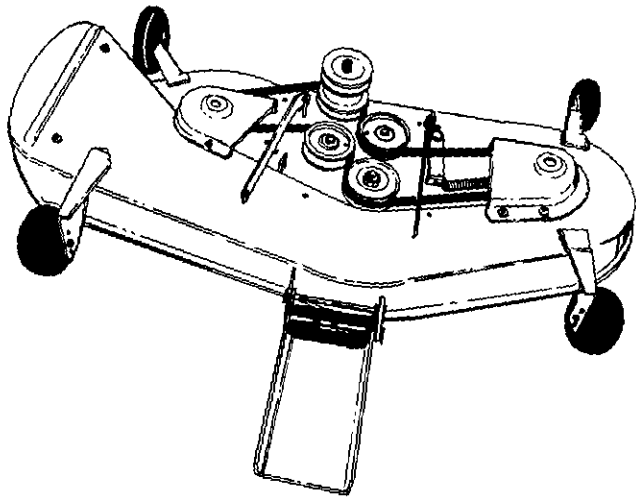


FIGURE 38.—44-inch Deck Spindle Belt—36-inch Mower (See figures 39, 40 and 41.)

To replace spindle drive belt, remove belt cover. Release spring tension. Remove the old belt. Install the new belt around pulleys as shown. Be certain belt is in the lower groove of the center pulley. Reinstall belt cover.

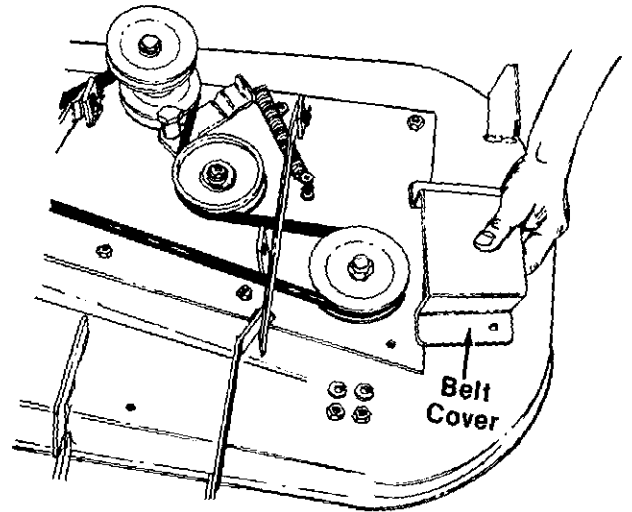


FIGURE 39.

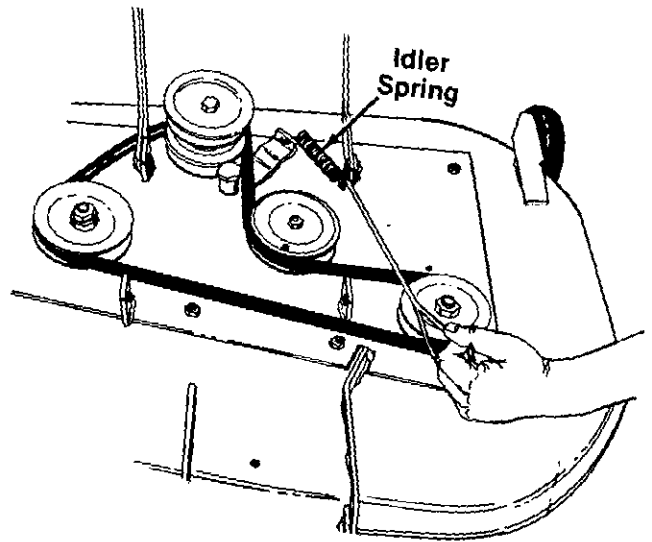


FIGURE 40.

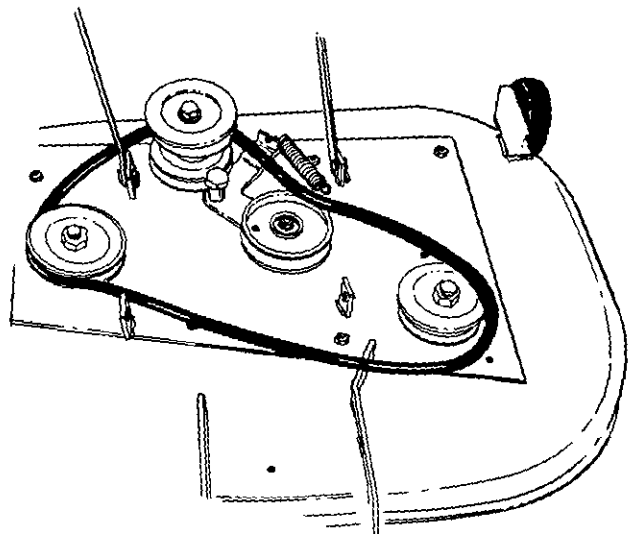


FIGURE 41.

Spindle Belt—44-inch Mower
(See figures 40, 41 and 42.)

To replace spindle drive belt, remove belt covers. Release spring tension. Remove the old belt. Install the new belt around pulleys as shown. Be certain belt is in the lower groove of the center pulley. Reinstall belt covers.

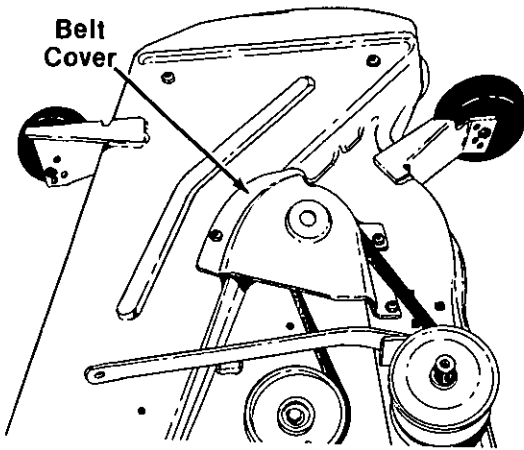


FIGURE 42.

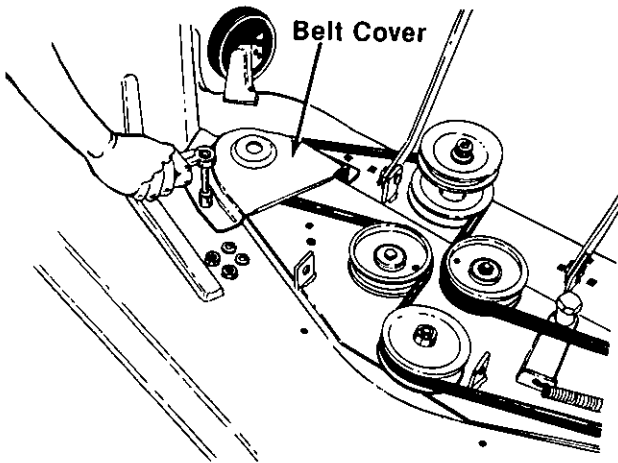


FIGURE 43.

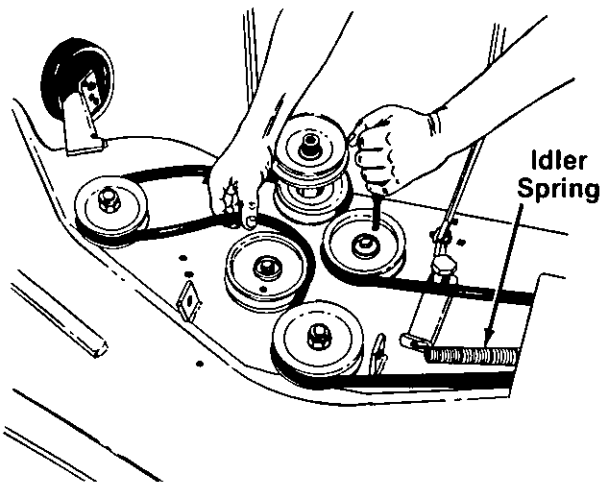


FIGURE 44.

MOWING



WARNING

To avoid possible injury, do not allow anyone in the area opposite the discharge chute while mowing. Although the area has been supposedly cleared of foreign objects, small objects may have been overlooked and may be discharged by the mower.

For best results it is recommended that the first two laps should be cut with the discharge being thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.

Do not cut the grass too short, as the mower will tend to scalp the grass. Short grass invites weed growth, and yellows quickly in dry weather.

Mowing should be done with the engine at full throttle. Do not mow at high ground speed.

During certain times of the year and under some conditions, the mower may leave streaks of uncut material.

Streaking may occur when attempting to mow heavy weeds and tall grass. Under these conditions it may be necessary to go back over the cut area a second time to get a clean cut.

The following practices will help eliminate streaking:

1. Mow the area more often so the grass doesn't get too tall and heavy.
2. Operate the tractor at full throttle and lower forward speeds.
3. Keep the blades sharp and replace blades when worn. Refer to section on blade care on page 23.
4. Follow the mowing procedure shown in figure 45.

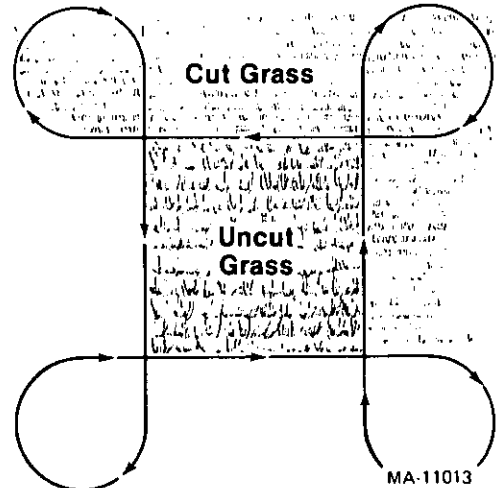


FIGURE 45.



WARNING

Never direct discharge of material toward by-standers nor allow anyone near the machine while in operation.

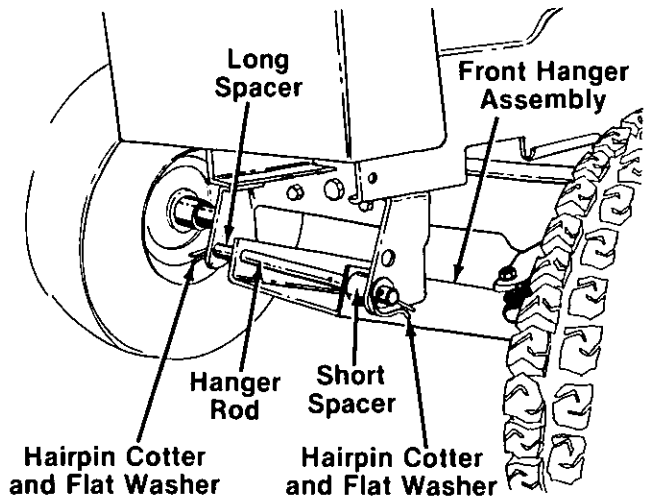


FIGURE 47.

Attach deck hangers using hairpin cotters and flat washers as shown in figures 48 through 50.

ATTACHING MOWER TO TRACTOR

36-inch deck—assemble the front hanger assembly to the tractor as shown in figure 46.

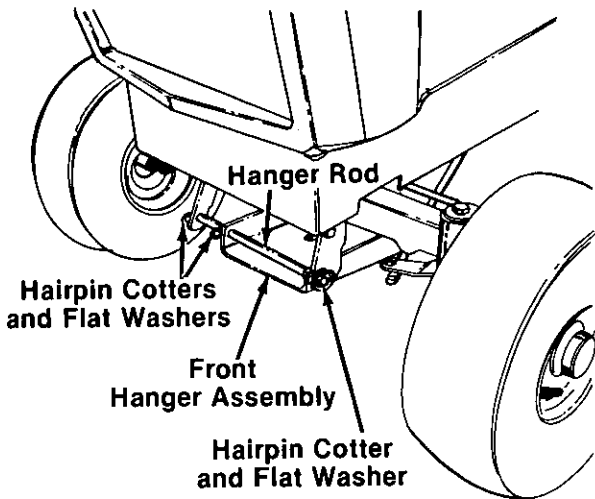


FIGURE 46.

44-inch deck—assemble the front hanger assembly to the tractor as shown in figure 47.

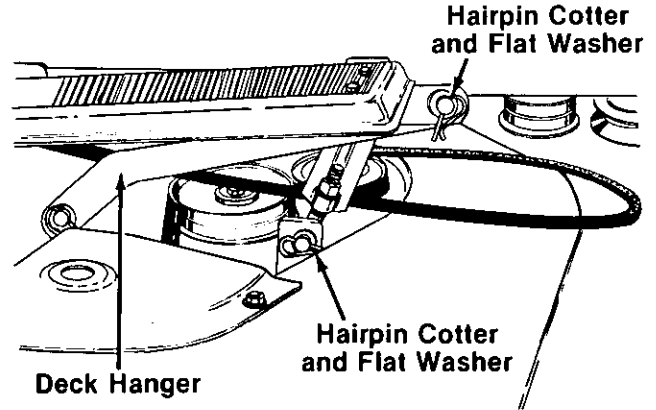


FIGURE 48.—Right Side of Deck

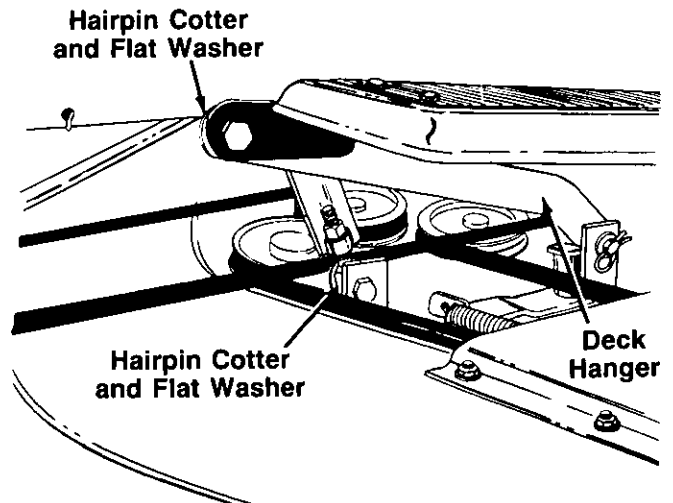


FIGURE 49.—Left Side of 36-inch Deck

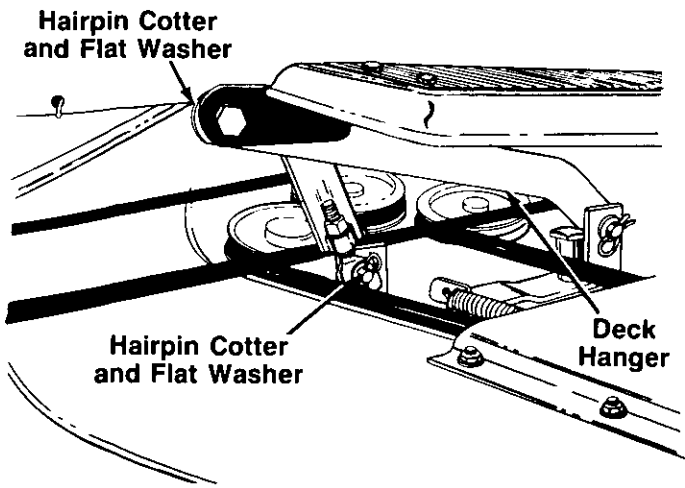


FIGURE 50.—Left Side of 44-inch Deck

Install spindle belt by slipping belt over electric PTO pulley. See figure 51.

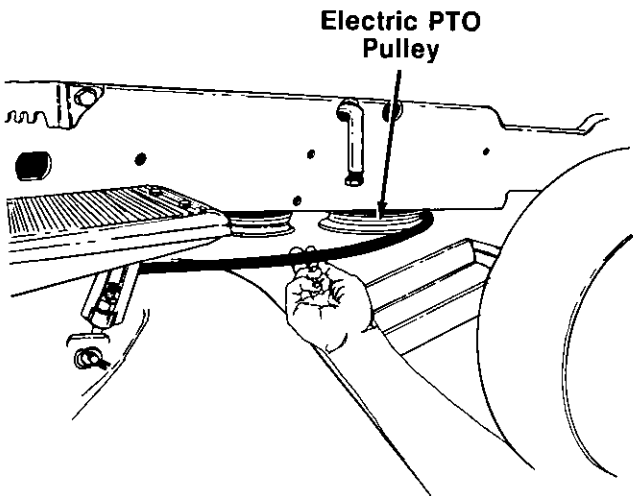


FIGURE 51.

Pull idler pulley on tractor toward the outside of the unit and place belt behind idler pulley. See figure 52.

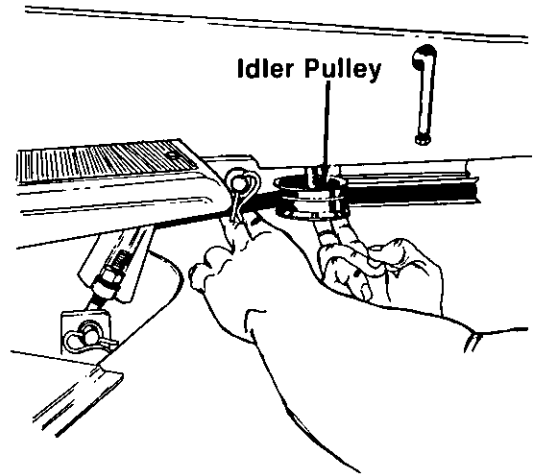


FIGURE 52.

TROUBLE SHOOTING

Possible Cause

Possible Remedy

LACK OF POWER

Choke partially closed	Open choke.
Restricted air filter element	Clean or replace element.
Carburetor improperly adjusted	Adjust carburetor.
Faulty ignition	Check spark plug.*

HARD TO START OR WILL NOT START

No gasoline in fuel tank or carburetor	Fill the fuel tank with non-leaded or regular gasoline and check the carburetor, and fuel shut-off valve.
Engine will not crank	The Lawn Tractor has an interlock safety starting system. The mower clutch control must be fully disengaged and the brake pedal fully depressed. PTO switch must be off. Charge the battery.
Choked improperly, flooded engine	Follow starting instructions.
Water in gasoline	Drain the fuel tank and carburetor. Use new fuel and dry the spark plug(s).
Defective ignition or loose wiring	Check the wiring and spark plug(s).
No spark	Check the high tension wire. Charge the battery.
Spark plug dirty or improper gap	Clean, adjust the gap to .030 inch, or replace the plug.

ENGINE OPERATES IRREGULARLY, KNOCKS, OR SMOKES

Spark plug dirty, wrong gap, or wrong type	Clean, reset the gap to .030 inch, or replace.
Restricted air cleaner	Clean or replace the element.
Running on choke position	Move throttle control to fast position.
Carburetor improperly adjusted	Adjust carburetor.
Poor or weak spark	Check spark plug and wiring.*
Engine smokes	Check combination oil filler cap and oil level gauge and be sure cap is securely tightened.
Engine incorrectly timed	*

ENGINE OVERHEATS

Excessive load on engine	Reduce excessive load.
Lack of lubrication	Fill crankcase to proper level.
Carburetor improperly adjusted	Adjust carburetor.
Engine cooling fins plugged	Clean out trash.
Engine improperly timed	*

FREQUENT BATTERY DISCHARGE

Wiring	Check all wire terminals for looseness.
Battery	Replace battery if necessary.

HYDROSTATIC UNIT OVERHEATS

Fan blades broken	Replace fan.*
Fan blades excessive wear	*

*See your authorized dealer.

SPECIFICATIONS

	1110 (293) Cadet	1610 (393) Cadet
CAPACITIES (Approximate)		
Fuel Tank	3 Gallon	
Crankcase	3 Pints	
Transmission Hydrostatic	1½ Pints	
Transaxle	2¾ Pints	
ENGINE	Briggs and Stratton	Briggs/Stratton
Make and Model	253707	402707
Number of Cylinders	One	Two
Bore	3-7/16-inch	3-7/16-inch
Stroke	2-5/8-inch	2-1/16-inch
Displacement	24.36 cu. in.	40.0 cu. in.
Engine speed (Governed)		
Minimum speed	1800 RPM	
Maximum no load speed (High Idle)	3500	3400
Valve clearance (Engine Cold)		
Intake005-.007-inch	
Exhaust009-.011-inch	
ELECTRICAL SYSTEM		
Ignition	Magneto	
Spark plug gap (Champion RCJ-8 or equivalent)030-inch	
Fuse	20 amp. SLO-BLO	
Battery terminal grounded	Negative	
GENERAL		
Type cutter bar	Suction lift	
Width of cut	36-inch or 44-inch	44-inch
Adjustable cutting height (Approx.)	1½ to 4½-inch	
Mower drive	V-belt with electric clutch	
Tire sizes		
Front—2 ply tubeless	15 x 6-6	
Rear—2 ply tubeless	20 x 10-8	
Tire inflation pressure	12 lbs./sq. inch	
Turning radius	72-inches	
Wheel base	45-inches	
Length overall	68½-inches	
Weight (Approx.)	506 lbs.(36" Deck)/522 lbs. (44" Deck)	553 lbs.

GROUND SPEEDS

Speed: Forward	0 to 5.5 mph
Reverse	0 to 2.35 mph

LUBRICATION TABLE

Point of Lubrication	Check at Hours	Change at Hours	Capacity	Anticipated Air Temperature		
				Above 40°F.	+ 0°F. to 100°F.	Below 20°F.
Engine crankcase	Check before each	Every 30	3 pints	Engine Oil SAE30	Engine Oil SAE10W30 or SAE10W40	Engine Oil SAE5W20 SAE5W30
Hydro-drive unit mounted on transaxle	30	Add as needed.	14 pt. Approx.	Cub Cadet Hydraulic Transmission Fluid Note: Cub Cadet Hydraulic Transmission Fluid meets IH B-6 Specifications. If fluid is used that does not meet these requirements, Cub Cadet will not be responsible for substandard performance. Failure due to use of improper fluid is not covered by warranty. For maximum protection, use Cub Cadet Hydraulic Transmission Fluid.		
Steering gear housing	25		As needed	Two strokes of the lubricator using 251H EP grease or equivalent No. 2 multi-purpose lithium grease.		
Steering knuckles & front axle pivot bolt	10			Use 251H EP grease or equivalent No. 2 multi-purpose lithium grease and apply two or three strokes of the lubricator or sufficient grease to flush out old grease and dirt.		
Front wheel bearings	100 or Yearly			Remove front wheels and pack bearings with 251H EP grease or equivalent No. 2 multi-purpose lithium grease and reinstall wheels.		

LUBRICATION GUIDE

The life of any machine depends upon the care it is given. Proper lubrication is a very important part of that care.

Be certain that all lubrication fittings are assembled in place, using the lubrication illustrations as a guide. Always lubricate the tractor thoroughly before taking it to the field. Use a pressure lubricating gun. Be sure all fittings are free from dirt and paint so the lubricant is certain to enter the bearing. Always force the lubricant through the full length of each bearing until it emerges at the end, carrying with

it the worn lubricant and any dirt that may have entered the bearing.

Miscellaneous working parts not provided with lubrication fittings should be oiled daily with a good grade of lubricating oil.

Lubricant is cheap. Use plenty of it. Worn parts can be expensive to replace.

Keep your supply of lubricating oil and grease stored in clean containers, and covered to protect from dust and dirt.

Keep the lubricating gun nozzle clean and wipe dirt from grease fittings before lubricating.

The symbols in the illustration indicate the method of application and the hourly intervals to apply the lubricant.



Use a pressure lubricating gun and apply 251H EP grease (or equivalent No. 2 multi-purpose lithium grease) sufficient to flush out the old grease and dirt. Lubricate at hourly intervals indicated on symbols.



Dipstick, use to check engine oil before each use.



CAUTION

Prolonged or repeated skin contact with used motor oil may be harmful. Wash skin with soap and water.

STANDARD TORQUE DATA FOR INCH NUTS AND BOLTS— FOOT POUNDS

Recommended torque for all Standard Unplated Nuts and Bolts, provided:

- A. Surface finish is oxide coated, oil quenched or bright.
- B. All thread surfaces are clean and lubricated with SAE-30 engine oil or equivalent (See NOTE).
- C. Joints are rigid, that is, no gaskets or compressible materials are used.
- D. When reusing nuts or bolts use minimum torque values.

NOTE: Multiply the standard torque by:




- .65 when finished jam nuts are used.
- .70 when Molykote, white lead or similar mixtures are used as lubricants.
- .75 when phosphate coated and oiled bolts or nuts are used.
- .85 when cadmium or zinc dichromate bolts or nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head (this applies to standard unplated hardware only).

1 FOOT POUND = 1.355 NEWTON METERS

Bolt or Stud Diameter	Type 1 Studs Only		Type 1 Bolts 6" length or less		Type 1 Bolts longer than 6"		Type 5 (all lengths)		Type 8 (all lengths)			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Only when used† in cast (gray) iron		All other applications	
Inches	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	6	7	4	4	9	10	11	13	13	14
5/16	12	13	11	13	7	8	18	20	22	25	25	28
3/8	21	24	21	24	13	14	33	37	41	46	45	50
7/16	35	38	35	38	20	23	53	60	65	74	75	85
1/2	52	58	52	59	31	35	80	90	100	112	115	130
9/16	70	80	75	85	45	51	115	130	145	160	165	185
5/8	98	110	104	117	62	70	160	180	200	225	225	255
3/4	174	195	185	205	110	125	285	320	355	400	400	450
7/8	280	315	180	200	180	200	460	575	570	640	645	725
1	420	470	265	300	265	300	685	720	855	960	970	1090
1-1/8	595	670	380	425	380	425	850	950	1210	1360	1375	1545
1-1/4	840	945	535	600	535	600	1200	1350	1705	1920	1940	2180
1-3/8	1100	1240	700	785	700	785	1570	1760	2235	2515	2540	2860
1-1/2	1470	1640	925	1045	925	1045	2080	2340	2970	3340	3375	3795

†When bolt penetration is 1-1/2 times the diameter of the bolt.

BOLT TYPE IDENTIFICATION CHART

IH TYPE	S.A.E. GRADE	DESCRIPTION	BOLT HEAD MARKING*
1	1 or 2 <small>EQUIVALENT</small>	WILL HAVE A "S" STANDARD MONOGRAM IN THE CENTER OF THE HEAD Low or Medium Carbon Steel Not Heat Treated	
5	5	WILL HAVE A "5" AND 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
8	8	WILL HAVE A "8" AND 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

*The center marking identifies the bolt manufacturer.

