

Bolens®

Owner/Operator Manual

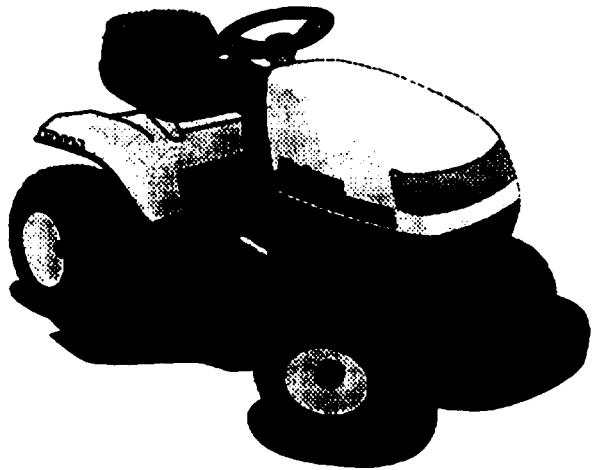
Suburban Tractor

PRODUCT
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- **Safety**
- **Assembly**
- **Operation**
- **Maintenance**

Models

13048	13070
13049	13071
13058	13072
13059	13073
13069	13082



GARDEN WAY, INC.

327073
Part Number 1830529E (5/94)

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This manual contains instructions for safety, assembly, operation, maintenance, adjustments and storage. Read this manual carefully and completely so that you will know proper assembly, use and care for your unit. Fill in and mail the registration card packed with the unit. For service other than covered in this manual, contact an authorized service dealer. A nationwide parts and service organization has been established to provide locally available parts and service. A list of authorized parts distributors has been included in the **Repair Parts** manual.

NOTE

Some tractor models may require different instructions for assembly and/or repair than shown in this manual. The **Repair Parts** manual (supplied with tractor) will contain these instructions if required on your model.



This lawn tractor 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.

References throughout this manual concerning the right or left side are determined as you face forward while seated in operator's seat.

Photographs and illustrations in this manual may not show your model but are for reference. They are based on the latest information.

INTERNATIONAL SYMBOLS -

These symbols may appear on your unit or in literature supplied with the product. Learn and understand their meaning.

ENGINE START	ENGINE RUN	ENGINE OFF	OFF	ON	FAST	SLOW	CHOKE	IGNITION	
ENGINE START	ENGINE START	ENGINE RUN	ENGINE OFF	OIL PRESSURE	FUEL	BATTERY	LIGHTS	HOUR METER	ALL-SYSTEMS-GO
NEUTRAL	FORWARD	REVERSE	CLUTCH	BRAKE	PARKING BRAKE	PTO ENGAGED	PTO DISENGAGED	MOWER BLADE CLUTCH	
MOWER HEIGHT	LOWER	RAISE	ARROW	INCREASE	DECREASE	CAUTION	IGNITION KEY		



SAFETY RULES

THESE INSTRUCTIONS ARE FOR YOUR PROTECTION. PLEASE READ THEM CAREFULLY.



DANGER

THIS CUTTING MACHINE IS CAPABLE OF AMPUTATING HANDS AND FEET AND THROWING OBJECTS. FAILURE TO OBSERVE THE FOLLOWING SAFETY INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

I. GENERAL OPERATION:

- Know controls and how to stop quickly.
- Read, understand, and follow all instructions in the manual and on the machine before starting.
- Only allow responsible adults, who are familiar with instructions, to operate the machine.
- Wear safety glasses or eye shields when assembling or operating the machine.
- Do not operate machine when barefooted. Always wear substantial footwear, preferably steel-toed shoes.
- Do not wear loose fitting clothing that could get caught in moving parts.
- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown by the blade(s).
- Be sure the area is clear of other people before mowing. Stop machine if anyone enters the area.
- Never carry passengers.
- Do not mow in reverse unless absolutely necessary. Always look down and behind before and while backing.
- Be aware of the mower discharge direction and do not point it at anyone. Do not operate the mower without either the entire grass catcher or the guard in place.
- Slow down before turning.
- Never leave a running machine unattended. Always turn off blades, set parking brake, stop engine, and remove keys before dismounting.
- Turn off blade(s) when not mowing.
- Stop engine before removing grass catcher or unclogging chute.
- Mow only in daylight or good artificial light.
- Do not operate the machine while under the influence of alcohol or drugs.
- Watch for traffic when operating near or crossing roadways.
- Use care when mowing around a fixed object to prevent the blade(s) from striking it. Never deliberately run over any foreign object.
- Use extra care when loading or unloading the machine into a trailer or truck.
- Use care when pulling loads or using heavy equipment.
 - a. Use only approved drawbar hitch points.
 - b. Limit loads to those that you can safely control.
 - c. Do not turn sharply. Use care when backing.
 - d. Use counterweight(s), wheel weight or tire chains when suggested in attachment(s) instructions.

II. SLOPE OPERATION:

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

DO

- Mow up and down slopes, not across.
- Remove obstacles such as rocks, tree limbs, etc.
- Watch for holes, ruts, or bumps. Uneven terrain could overturn the machine. *Tall grass can hide obstacles.*
- Use slow speed. Choose a low speed so that you will not have to stop or shift while on the slope.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine.
- Keep all movement on the slopes *slow and gradual*. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If tires lose traction, turn off the blade(s) and proceed slowly *straight* down the slope.

DO NOT

- Do not turn on slopes unless necessary, and then slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches or embankments. The

mower could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.

- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not try to stabilize the machine by putting your foot on the ground.
- Do not use grass catcher on steep slopes.

III. CHILDREN:

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

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

IV. SERVICE:

- Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
 - a. Use only an approved container.
 - b. Never remove gas cap or add fuel with the engine running. Allow engine to cool before refueling. Do not smoke.
 - c. Never refuel the machine indoors.
 - d. Never store the machine or fuel container inside where there is an open flame, such as in a water heater.
- Check fuel supply before each use allowing space for expansion as the heat of the engine and/or sun can cause gasoline to expand and overflow the tank.
- Use extra care when handling battery acid. Acid contact with skin may cause severe burns. Eye contact may cause blindness.
- Use extra care when servicing the battery. Explosive gas is produced in the battery. Do not service the battery while smoking or near an open spark or flame. This may cause the battery to explode causing serious injury.
- Never run a machine inside a closed area. Exhaust fumes contain CARBON MONOXIDE, an ODORLESS and DEADLY GAS.
- Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.
- Never tamper with safety devices. Check their operation regularly.
- Do not change the engine governor settings or overspeed engine.
- Reduce fire hazards. Keep machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow machine to cool before storing.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Never make adjustments or repairs with the engine running.
- Grass catcher components are subject to wear, damage, and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturer's recommended parts, when necessary.
- Mower blade(s) are sharp and can cut. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
- Check brake operation frequently. Adjust and service as required.



LOOK FOR THIS SYMBOL TO POINT OUT IMPORTANT SAFETY PRECAUTIONS. IT MEANS ATTENTION!!! BECOME ALERT!!! YOUR SAFETY IS INVOLVED

ASSEMBLY

Your lawn tractor has a right side and left side as you face forward while seated in operator's seat.

FRONT WHEEL INSTALLATION

For shipping purposes, the front wheels are not installed on your lawn tractor.

To install front wheels, do the following:

1. Remove and discard the metal clamps (A) that hold the front axle spindles (B) to the wood skid (I) (FIG. A-ASSY).
2. Raise the front of the lawn tractor (FIG. A-ASSY).
3. Install the front wheels (C) on the front axle spindles (B) (FIG. B-ASSY) with the mounting hardware (found in parts bag - Flatwasher (D), retainer ring (E), hub cap (F) if so equipped, hub cap (G) if so equipped, Hub cap pin (H)).

FIG. A-ASSY

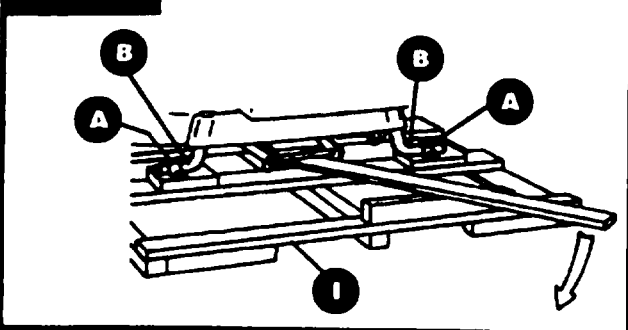
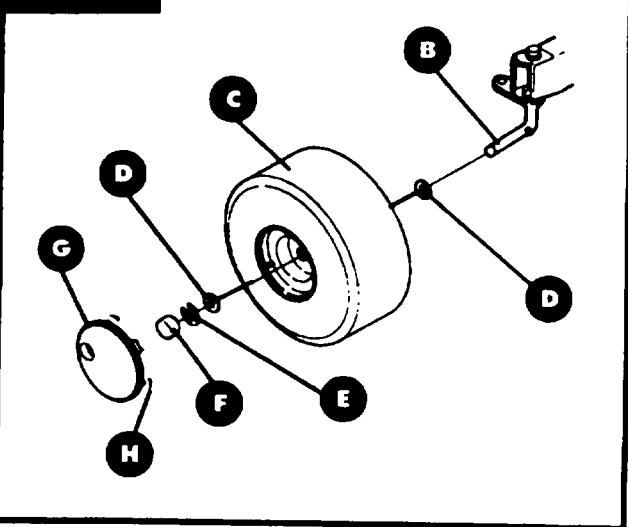


FIG. B-ASSY



DANGER

Lead acid batteries generate explosive gases. Keep sparks, flame, and smoking materials away from batteries. Always wear eye protection when around batteries.

TO ACTIVATE BATTERY

1. Remove battery from lawn tractor (see **Battery Removal** paragraph in **Maintenance** section of this manual) and remove vent caps from all cells.

DANGER

Handle electrolyte with care. It is an acid and poison. Always wear eye shields, and protect skin when handling acid or battery.

POISON - CAUSES SEVERE BURNS

Contains sulfuric acid.

Avoid contact with skin, eyes or clothing.

To prevent accidents, neutralize excess acid with baking soda and rinse empty container with water.

ANTIDOTE:

EXTERNAL - Flush with water.

INTERNAL - Drink large quantities of water or milk. Follow with milk of magnesia, beaten eggs or vegetable oil. Call physician immediately.

EYES - Flush with water for 15 minutes and get prompt medical attention.

KEEP OUT OF THE REACH OF CHILDREN

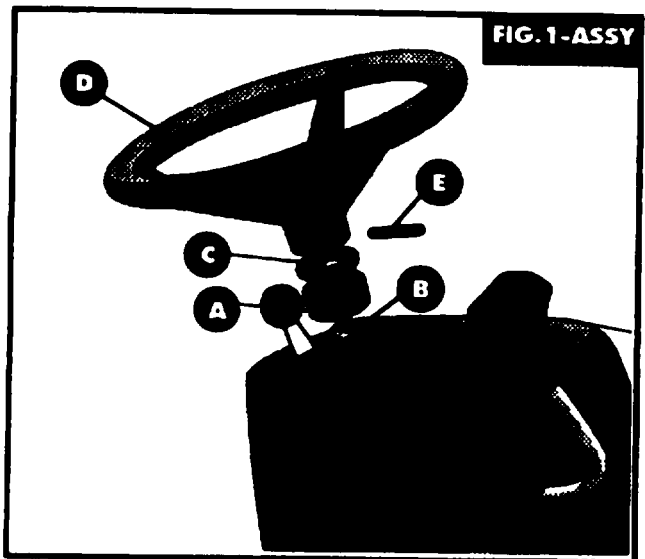
2. Fill battery to indicator ring with electrolyte battery acid (follow instructions outlined on electrolyte package).

3. Reinstall battery (see **Battery Installation** paragraph in **Maintenance** section of this manual). **NOTE:** Before placing battery into lawn tractor, battery should be charged at 6 amps for one (1) hour. While waiting for battery to charge, complete the **Assembly** section.

STEERING WHEEL INSTALLATION (FIG. 1-ASSY)

1. Position front wheels straight forward.
2. Place spacer (A) (if so equipped) on steering shaft (B).
3. Place steering shaft cover (C) (if so equipped) over spacer.
4. Align cross holes in steering wheel (D) and steering shaft. Make sure wheel spokes point down. **NOTE:** Use a small phillips screwdriver with a 1/4 inch shaft to align holes.
5. Drive spring pin (E) through holes with a hammer.

FIG. 1-ASSY



ASSEMBLY

MOWER CLUTCH LEVER KNOB INSTALLATION (FIG. 1-ASSY)

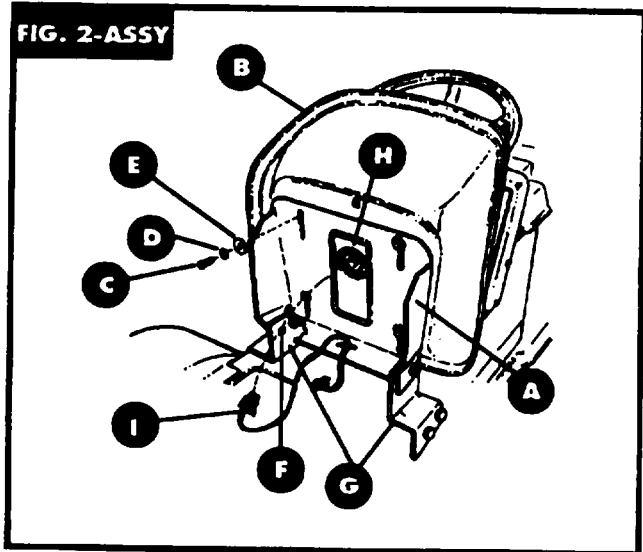
1. Install knob on mower clutch lever.

SEAT INSTALLATION (FIG. 2-ASSY)

1. Raise seat plate (A) and secure seat (B) to plate with four 5/16 x 3/4 inch hex head screws (C), four 5/16 inch split lockwashers (D) and four 11/32 inch flatwashers (E). **NOTE:** Seat may be adjusted by moving seat forward or rearward to desired operator's position. Tighten mounting screws securely. If more adjustment is required, remove seat and seat plate and reinstall seat plate in either the forward or rearward holes (F) of the seat support bracket (G) to desired operator's position. Reinstall seat and tighten mounting screws securely.

2. Connect seat switch (H) to wire harness (I). **NOTE:** If seat switch is not connected to wire harness, engine will stop when mower clutch lever is engaged.

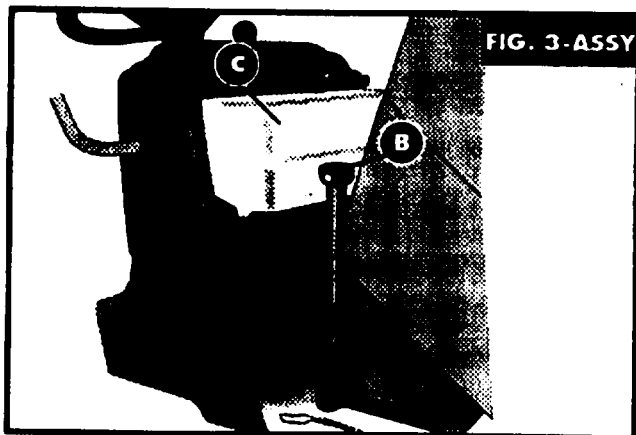
FIG. 2-ASSY



DANGER



Never fill the gas tank while the engine is running or is hot. Immediately wipe off any spilled gasoline before attempting to start engine.



TO SERVICE TRACTOR

1. Check tire pressure. Recommended operating tire pressure is 10 to 14 pounds per square inch. Check side wall of tires for manufacturer's maximum tire pressure. Do not exceed this pressure. Equal tire pressure should be maintained in all tires.

2. Check all nuts and bolts to be sure none are loose.

3. Return to **Battery Installation** paragraph in the **Maintenance** section of this manual and complete battery installation.

TO SERVICE ENGINE (FIG. 3-ASSY)

1. Place tractor so engine is in a level position.

2. Raise hood to gain access to engine. **NOTE:** Raise and lower slowly to avoid personal injury or damage to tractor.

3. Remove oil fill cap/dipstick (B). Clean dipstick with a rag.

4. Check oil level. Use a funnel to add oil to the engine crankcase, if the oil level is below the full mark. See **Engine Operating and Maintenance** manual for proper procedure.

5. Reinstall oil fill cap/dipstick and tighten securely.

6. Check to make sure that spark plug wire(s) is attached to spark plug.

7. Fill gas tank (C) with clean, fresh lead-free gasoline with a minimum rating of 77 octane. Low-lead or regular grade leaded gasolines are acceptable. Do not mix oil with gasoline. Be certain container is clean and free from rust or other foreign particles. Never use gasoline that may be stale from long periods of storage in the container.

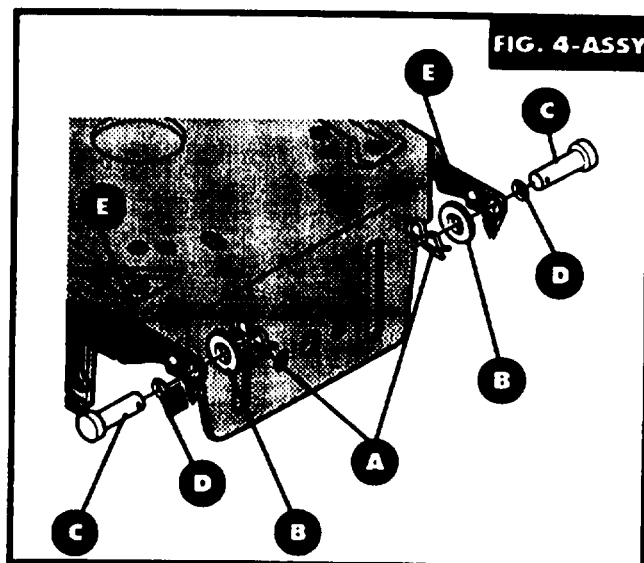
ASSEMBLY

QUICK DISCONNECT HOOD (OPTIONAL)

Some Units are equipped with a Quick-Disconnect Hood for easier access to the engine area. **NOTE:** This does not disconnect the hood completely from the unit. The wire harness and hood lanyard will still be connected. It is optional to remove the hood.

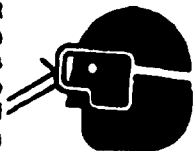
To Remove hood:

1. Remove hair pin (A) and washer (B) from clevis pin (C). Repeat on opposite side.
2. Remove clevis pins from hood (D) and hood brackets (E). Lay hardware aside for use when replacing hood.
3. Move hood up and away from engine. **NOTE:** This does not remove hood completely from unit, be careful not to pull wire harness and hood lanyard.
4. Reassemble hood and hardware.



OPERATION

The operation of this lawn tractor can result in objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields while operating a lawn tractor. We recommend standard safety glasses or a wide vision safety mask for over spectacles.



Get to know your lawn tractor and its controls. Be sure you (or any other operator) have read and understood the Operational Precautions listed on page 3 of this manual.

Your new lawn tractor will give years of service if cared for properly. Never run into trees, curbs, etc. Service regularly and store in a dry area. Operate your lawn tractor at slow speeds until you become familiar with the machine. Avoid sharp turns at high speed and uphill or downhill turns. Operate tractor carefully. Be especially cautious on hills. When riding down inclines, proceed slowly, move the transmission control lever to a slow speed position. This allows the engine to control the speed. Use brake for fast stops on hills.

KEEP MOWER CLEAN. Grass clippings may pack under the mower deck due to the internal moisture content of the grass. This accumulation of cut grass should be removed after each mowing. Remove ignition key and scrape accumulation off with a putty knife or similar tool. Cleaning of the underside is easier if mower deck is removed. See **Mower Deck Removal** paragraph in **Maintenance** section of this manual. Remove dirt and debris from engine area with a brush or cloth.

CONTROLS - Gear shift and Hydro shift models

FIG. 1-OP shows all operating controls. The controls and their functions are as follows:

- **Throttle Control Lever (A)** - Regulates engine and blade speed. Engine should always be run at fast speed for best grass cutting.



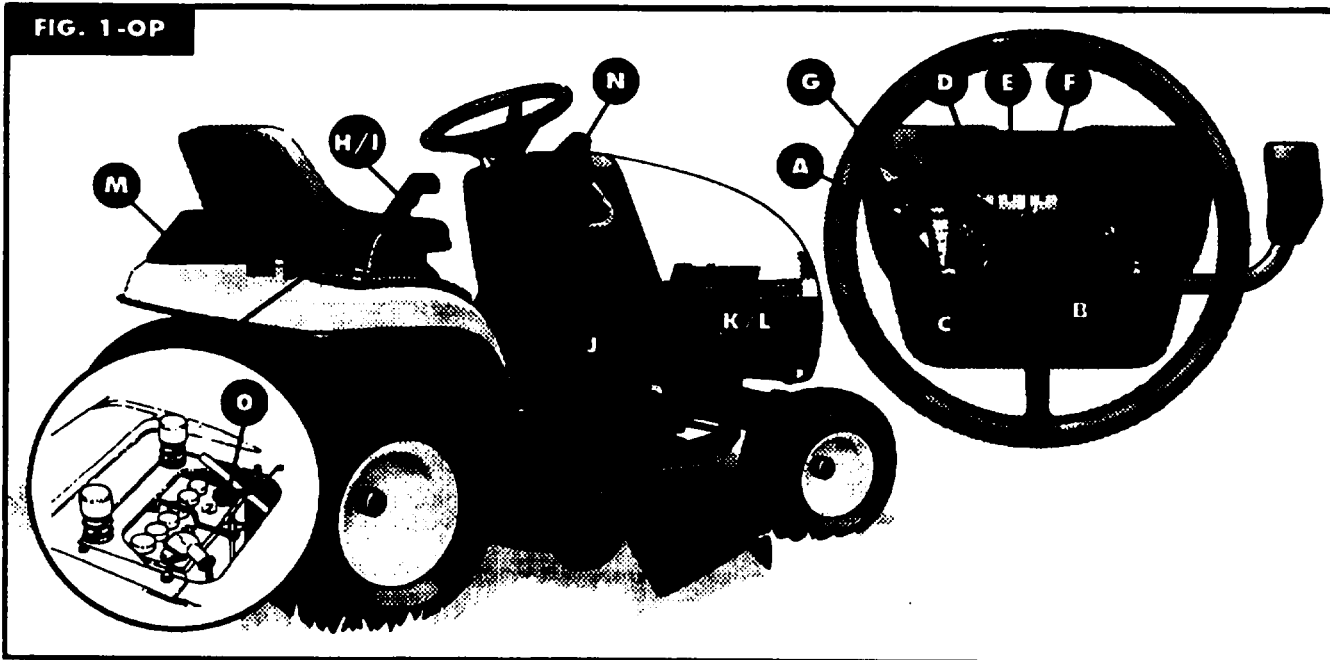
DANGER



Do Not operate this tractor without a chute deflector in place. A lawn tractor can be dangerous to operate if misused. On slopes, be very cautious and avoid sharp turns to prevent tipping or loss of control. NEVER carry passengers.

- **Ignition Switch (B)** - Used to start and stop engine. Turn key all the way right to 3rd position to start engine. When key is released after starting engine it will return to 2nd position. To stop engine, turn key to 1st position. Remove key to lock ignition.
- **Headlight Switch (C)** - Turns headlights on and off. With engine running, push ON end of switch to turn headlights on. To turn headlights off push OFF end of switch.
- **Indicator Lights (if so equipped)** -
 - Charge (D)** - Should be on all the time indicating the battery is charged. If indicator is not on, have battery and/or engine charging system checked by an authorized service dealer.
 - Clutch (E)** - Comes on (during starting only), if the brake-clutch pedal is not depressed.
 - Mower (F)** - Comes on (during starting only), if the mower clutch lever is engaged.
- **Choke Control (G)** (if so equipped) - Used to start cold engine.

FIG. 1-OP



OPERATION

- **Transmission Control Lever (H) Manual Gear Shift Models Only** - Used to select ground speed ranges as well as direction of motion (forward-neutral-reverse). Forward speed ranges are labeled (1-2-3-4-5).

No. 1 range is slowest forward speed, used for traveling up or down steep hills or for snow removal.

No. 2 range is used for cutting tall or heavy grass.

No. 3 range is used for average mowing conditions.

No. 4 range is used for very light mowing on smooth flat surfaces

No. 5 range should be used for transporting unit only.

- **Transmission Control Lever (I) Hydrostatic Transmission Models Only** - Used to select an infinitely variable speed range between zero and maximum, in both forward and reverse. Also, used to select neutral.

The slowest forward speed range is used for traveling up or down steep hills or for snow removal.

The fast forward speed range should be used for transporting tractor only.

The forward speeds between slow and fast are used for cutting tall or heavy grass, average mowing conditions and very light mowing.

NOTE : To push tractor (on Peerless hydrostatic models only) move shift control lever to center of neutral gate. To push AGRI-FAB hydrostatic models see Relief Valve Rod (O) on this page.

CAUTION

Come to a full stop before changing direction of motion.

- **Parking Brake Lever (J)** - Used to lock brake-clutch pedal in brake position. **NOTE:** Check gear shift position and know operating intentions before releasing brake.

1. Depress brake-clutch pedal fully, engaging brake.

2. Push parking brake lever forward and engage notch in parking brake lever against main frame.

3. To release parking brake, apply pressure to pedal and spring will release parking brake lever.

- **Brake-Clutch Pedal (K) Manual Gear Shift Models Only** - This is a dual purpose control. Press pedal halfway down to disengage clutch. It is used for changing speed range or direction of travel (forward or reverse). Release pedal to engage clutch. With pedal completely depressed, brake is applied.

- **Brake-Clutch Pedal (L) Hydrostatic Transmission Models Only** - This is a dual purpose control. Press pedal halfway down to disengage clutch. Release pedal to engage clutch. With pedal completely depressed, brake is applied. Brake-clutch pedal must be depressed in order to apply the parking brake..

- **Cutting Height Adjustment Lever (M)**- Used to change height of cut. The bottom position of lever is the lowest cutting height and the top position is the highest cutting height. Other positions change height of cut approximately 1/2 inch each.

1. Grasp lever (FIG. 1-OP) with left hand and pull upward to raise mower deck. You will hear a click sound as lever passes to next height position.

2. Grasp lever with left hand and pull upward slightly. Depress button on end of lever with thumb to release height adjustment lever latch and lower mower deck to desired height. Release latch button and allow lever to latch in place.

3. If your tractor is equipped with an Air Assist, you will be limited as to how high you can cut.

NOTE: High cut with an Air Assist installed will be 2-1/2 inches. The adjustment lever will be limited to the third position. If adjustment is needed see Deck Height Adjustment in the Adjustment section of this manual

If cutting blades do not cut evenly, check Mower Deck Wheel Adjustment paragraph in Adjustments section of this manual.

- **Mower Clutch Lever (N)** - Used to engage or disengage the power to the mower deck blades at any time while power to the drive wheels is still maintained and controllable. With mower clutch lever moved all the way to **DISENGAGE** (rearward) position, blades should stop in a safe period of time. Use **DISENGAGE** position when using as a tractor for yard jobs such as pulling a roller, seeder, sweeper or other accessories.

1. Move lever slowly (Never "snap" the lever) toward front of lawn tractor to engage power to the blades. It is important to engage mower clutch lever while engine is running at full speed. This prevents excessive strain to belt.

2. Move lever slowly toward rear of lawn tractor to disengage power to blades and to apply blade brakes.

Mower clutch lever must always be in full DISENGAGE position to start engine. Never place lever in ENGAGE position until engine is warmed up and operator is on seat, ready to start mowing. Always return lever to DISENGAGE position before dismounting from tractor.



DANGER



Blades will not stop immediately. Keep hands and feet from under the mower deck and away from the discharge chute.

- **Relief Valve Rod (O) (AGRI-FAB Hydrostatic Models only)** - Allows you to move tractor for short distances at low speeds without starting engine.

1. Push relief valve rod toward front of tractor to push tractor.

2. Push relief valve rod toward rear of tractor during normal operation.

OPERATION

TO START ENGINE (Check Oil Level)

Read **Operation** section in this manual and **Engine Operating and Maintenance** manual before trying to start engine.

NOTE: Be sure oil is full in the engine crankcase. Never run engine unless crankcase is full of oil and dipstick is tightened securely into oil tube.

IMPORTANT: Your tractor has two lockout switches that connect the solenoid to the brake-clutch pedal and mower clutch lever. When starting the engine on manual gear shift models and Hydrostatic transmission models, the brake-clutch pedal must be **FULLY DEPRESSED** and mower clutch lever must be in full **DISENGAGE** position to engage the lockout switches. The All Systems Go light (if so equipped) on dash will glow and engine will not crank unless these conditions are met.

Your lawn tractor is equipped with a seat switch. The engine will stop if operator is not firmly seated in operator's seat when mower clutch lever is engaged. Leaning forward or to one side on the seat may cause the engine to stop.

To start engine proceed as follows:

1. Check to make sure fuel tank contains clean, fresh gasoline, and engine crankcase is full of oil.
 2. Depress and hold brake-clutch pedal all the way down. Place transmission control shift lever in **NEUTRAL** position.
 3. Place mower clutch lever in **DISENGAGE** position.
 4. Place throttle control lever to **FAST** position.
 5. Pull choke control out (if unit is equipped with choke).
- NOTE:** A warm engine will require little or no choking.

6. Turn ignition key to **START** position. Release key when engine has started. **NOTE:** Continuous cranking of more than 15 seconds per minute can cause starter to overheat. Allow starter to cool two minutes after prolonged cranking of more than 15 seconds per minute. When engine starts, open choke gradually.

7. After engine starts, move throttle control lever to desired engine speed and gradually push choke control all the way in.
8. To stop engine, turn ignition key to **OFF** position.

IMPORTANT

Move throttle to slow before turning ignition off to reduce muffler "**POP**".

Failure to do so will result in engine and exhaust system damage.

If engine cranks but fails to start, proceed as follows:

1. Check to make sure fuel tank contains clean, fresh gasoline.
2. Check to make sure spark plug(s) is tightened securely into engine and spark plug wire(s) is attached to spark plug(s).
3. Carburetor adjustment may be necessary (see **Engine Operating and Maintenance** manual).

If engine does not crank, check the following:

1. Be sure brake-clutch pedal is fully depressed and mower clutch lever is in **DISENGAGE** position.
2. Be sure the battery has been serviced and charged.
3. Check fuse in red wire near back of ignition switch.



DANGER



Never run engine indoors or in enclosed, poorly ventilated areas. Engine exhaust contains **CARBON MONOXIDE**, an **ODORLESS** and **DEADLY GAS**.

Keep hands, feet, hair and loose clothing away from any moving parts on engine or lawn tractor.

WARNING - Temperature of muffler and nearby areas may exceed 150° F. Avoid these areas.

LAWN TRACTOR OPERATION

Take a comfortable riding position on seat of lawn tractor and start engine as outlined. After engine warmup, move the transmission control lever slightly forward into a slow speed position to get used to your lawn tractor. After you become familiar with the operation of your tractor, move the transmission control lever further forward to choose a faster ground speed range. With mower blades stopped, make your first run in a large, open, level area. Learn to start, stop, and change direction in this area. Once you learn to maneuver your lawn tractor, move throttle control to **FAST** position. Slowly move mower clutch lever to **ENGAGE** position and start mowing. To stop blades, move lever to **DISENGAGE** position. To stop engine, move throttle control to **SLOW** position, turn ignition key to **OFF** position. **CAUTION:** Disengage mower clutch lever, set parking brake, stop engine, lower mower deck and remove key before leaving operator's position. Always dismount from left side.

Your lawn tractor is equipped with a seat switch. The engine will stop if operator is not firmly seated in operator's seat when mower clutch lever is engaged. Leaning forward or to one side on the seat may cause the engine to stop.

OPERATION



CAUTION

TO AVOID SERIOUS INJURY OR DEATH

- Read Owner's/Operator's Manual(s).
- Know location and function of all controls.
- Keep guards, safety shields and switches in place and working.
- Remove objects that could be thrown by blade(s).
- Do not mow when children and others are around.
- Never carry children or passengers.
- Look down and behind before and while backing.
- Do not mow where machine could tip or slip.
- If machine stops going uphill, disengage blade(s) and back down slowly.
- Remove key when leaving machine.
- Avoid sudden turns.
- Go up and down slopes, not across.

MOWING HINTS

For best mowing results, engine should be run at fast throttle and ground speed controlled by transmission control lever position. Forward speed of the lawn tractor must be controlled in accordance with the type and quantity of grass being mowed. The more grass that must be cut, the slower the speed forward should be. When cutting light grass, the forward speed can be increased. By observing the cutting action of your mower, you can determine how fast you can travel.

Your mower may tend to leave unmowed strips when long and tender grass is being mowed. Tender grass has a high internal moisture content and is easily depressed by the lawn tractor wheels, and may not always spring back in time to be cut. To overcome this condition, we advise mowing the lawn in a counterclockwise direction, overlapping previous cut, which allows the lifting action of the rotating blades to lift the grass into the cutting path.

The rear wheels are driven by a transaxle, similar to an automobile differential. This makes short turns possible and prevents marring of the lawn. It is possible to spin the drive wheels of the lawn tractor under adverse conditions. When one wheel slips, shift your weight over this wheel to obtain more pulling power. Your lawn tractor is very maneuverable and can be reversed to back out of dead ends. **CAUTION: Disengage mower blades before backing up. Carefully check area behind tractor for children or pets before backing up.**

IMPORTANT: Sandy conditions will cause the high-lift blade(s) on your unit to wear out more frequently. When mowing grass in sandy conditions, replace the high-lift blades with low-lift blades (part number 1830531). **NOTE: LOW LIFT BLADES ARE NOT RECOMMENDED FOR BAGGING GRASS.**

MAINTENANCE

The warranty on this lawn tractor does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, operator must maintain lawn tractor as instructed in this manual. The following Main-

tenance Check List is supplied to assist operator to properly maintain lawn tractor. This is a check list only. Adjustments referred to will be found in Adjustments section of this manual.

	BEFORE STORAGE	BEGINNING EACH SEASON	EVERY 100 HOURS	EVERY 50 HOURS	EVERY 25 HOURS	MONTHLY	FREQUENTLY	AFTER FIRST 5 HOURS	BEFORE EACH USE	MAINTENANCE CHECK LIST										
Check Engine Oil Level	●																			
Change Engine Oil		●		● _{1,2}																
Clean Air Filter				● ₂																
Change Spark Plug(s)																				
Replace Air Filter Paper Cartridge																				
Clean Air Screen				● ₂																
Inspect Muffler/Spark Arrestor																				
Replace Fuel Filter																				
Check Battery Fluid Level/Recharge				●																
Clean Battery and Terminals				●																
Adjust Motion Drive Belt Tension																				
Check Brake Operation	●	●																		
Check Transmission Cooling				●																
Check Tire Pressure (10-14 lbs)	●	●																		
Adjust Mower Deck Belt																				
Sharpen or Replace Mower Blades				● ₁																
Check for Loose Fasteners	●																			
Clean Lawn Tractor		●																		
See Lubrication Chart				●																
Check Transmission Fluid (AGRI-FAB Hydrostatic Drives Only)																				

SERVICE RECORD

FILL IN DATES
AS YOU COMPLETE
REGULAR SERVICE

NOTES: 1. Change more often when operating under a heavy load or in HIGH temperatures. (90° and above)
2. Service more often when operating in dirty or dusty conditions. 3. Replace more often when mowing in sandy soil.

CAUTION

At no time during maintenance or adjustments can the lawn tractor be lifted more than 20 inches from level position without taking the following precautions:

1. Remove gasoline from tank and run engine until carburetor is dry.
2. Remove battery (see BATTERY REMOVAL paragraph in MAINTENANCE section).
3. Remove oil from crankcase.

LUBRICATION

For lubrication frequency see Maintenance Check List. For lubrication points and type of lubricant see Lubrication Chart.

The transmission has been lubricated for life on gear drive and Peerless hydrostatic drives. On the AGRI-FAB hydrostatic drives see Lubrication Chart for lubrication points and type of lubricant. See Repair Parts manual for type of transmission.

MAINTENANCE

CLEANING LAWN TRACTOR

Grass clippings may pack under the mower deck due to the internal moisture content of the grass. This accumulation of cut grass should be removed after each mowing. Remove ignition key and scrape accumulation off with a putty knife or similar tool. Cleaning of the underside is easier if mower deck is removed. See paragraph **Mower Deck Removal**. Remove dirt and debris from engine area with a brush or cloth.

ENGINE MAINTENANCE

See **Engine Operating and Maintenance** manual for maintenance instructions.

MAINTAIN THE AIR FILTER

The air filter should be cleaned and/or replaced every 25 hours of operation under normal operating conditions; more often under dusty conditions. To clean the air filter see **Engine Operating and Maintenance** manual.

SPARK PLUG MAINTENANCE

Spark plug should be checked periodically for excessive carbon and gap. The spark plug gap should be checked with a wire feeler gauge and set at .030 inch as shown in the **Engine Operating and Maintenance** manual.

TO CHANGE CRANKCASE OIL (FIG. 1-MAINT)

Change crankcase oil after first 5 hours of operation and every 25 hours thereafter. See **Engine Operating and Maintenance** manual for proper procedure.

Your unit is equipped with an oil drain plug or an oil drain valve. Use procedure that pertains to your unit.

For oil drain plug (A, FIG. 1-MAINT):

1. Place oil drain trough (B) under oil drain plug. Place a flat bottom 2 quart container (C) beneath trough.

NOTE: It may be necessary to raise left side of lawn tractor (with blocks under left wheels) to get proper drainage.

2. Remove oil drain plug (A) to drain oil.

3. Reinstall oil drain plug, remove oil fill cap/dipstick and refill crankcase.

4. Reinstall oil fill cap/dipstick.

For oil drain valve (D, FIG. 1-MAINT):

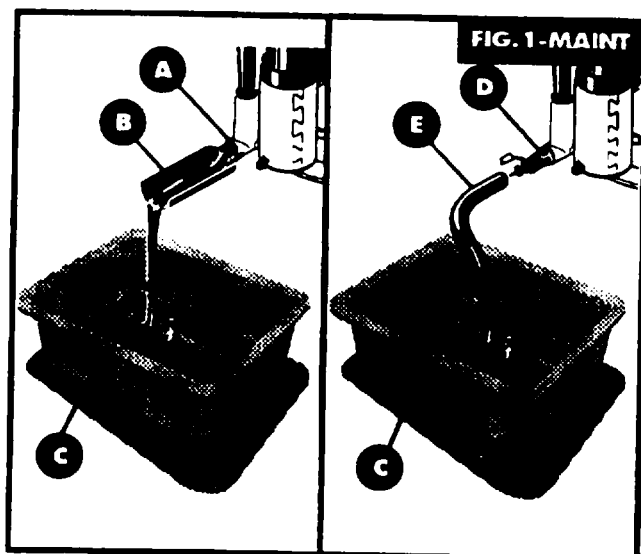
1. Place a flat bottom 2 quart container (C) beneath oil drain valve. **NOTE:** The user has the option of connecting a vinyl hose (E) to port end of valve in order to drain used oil into container for disposal.

NOTE: It may be necessary to raise left side of lawn tractor (with blocks under left wheels) to get proper drainage.

2. Turn oil drain valve counterclockwise and pull to drain oil. **NOTE:** Oil fill cap/dipstick should be loosened to serve as an air vent.

3. To close oil drain valve push and turn clockwise. Remove oil fill cap/dipstick and refill crankcase as outlined in **Engine Operating and Maintenance** manual.

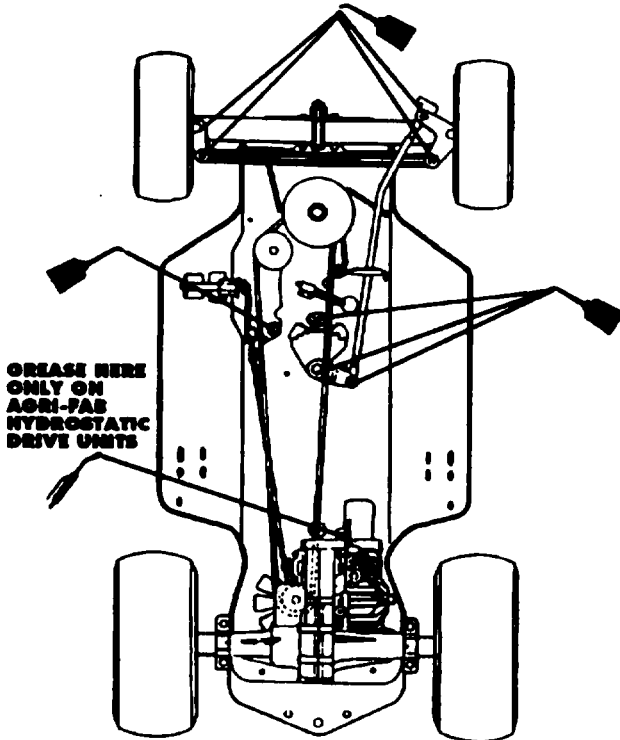
4. Reinstall oil fill cap/dipstick.



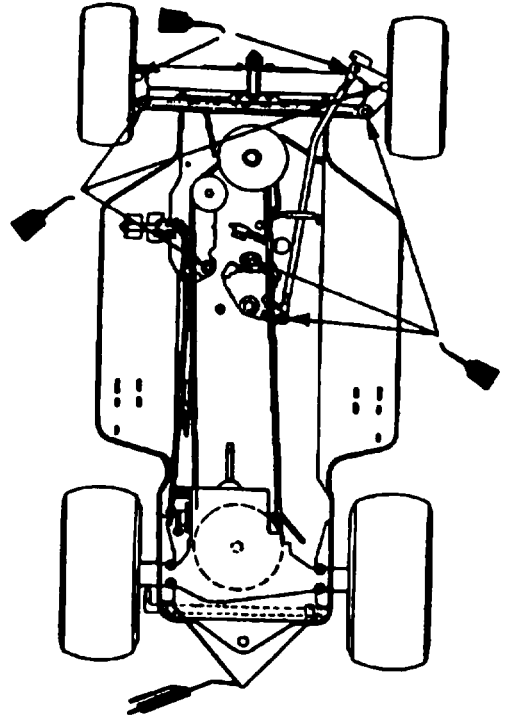
MAINTENANCE

LUBRICATION CHART

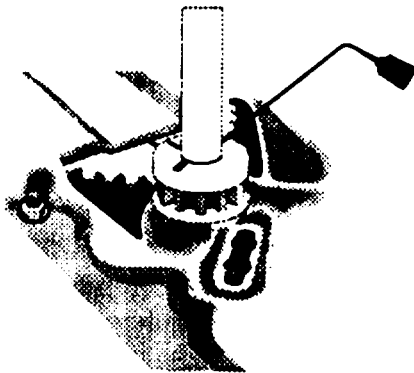
Orientation view only. Do Not stand on end.



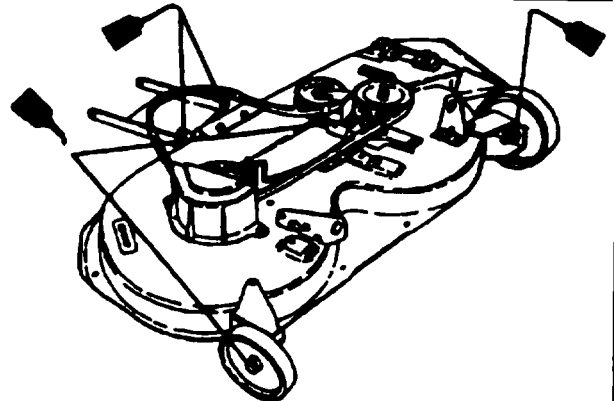
HYDROSTATIC MODELS ONLY



GEAR SHIFT MODELS ONLY



USE A GOOD GRADE OF CUP GREASE

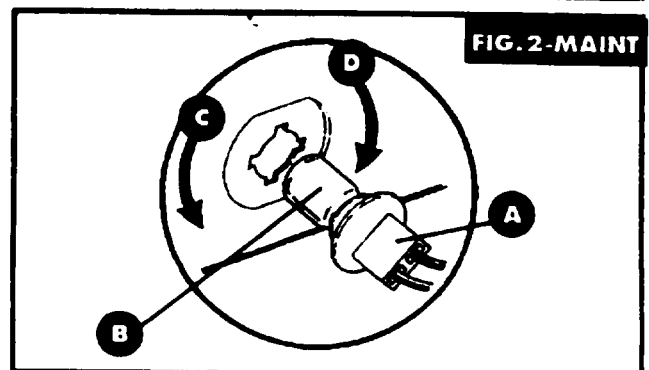


USE SAME TYPE OIL USED IN CRANKCASE EVERY 25 HOURS OF OPERATION

HEADLIGHT BULB REPLACEMENT (FIG. 2-MAINT)

NOTE: Do not remove the plastic headlamp lens when replacing the headlight bulbs.

1. Lift hood.
2. Turn the headlight harness (A) (holding the bulb) 1/4 turn counterclockwise (C) (to the left) and remove.
3. Pull the bulb (B) out (do not unscrew). Push in new bulb.
4. Replace the headlight harness and turn a quarter turn clockwise (D) to the right to lock in place.



MAINTENANCE



DANGER



Lead acid batteries generate explosive gases. Keep sparks, flame, and smoking materials away from batteries. Always wear eye protection when around batteries.

BATTERY MAINTENANCE

Check electrolyte level once a month. If found below indicator ring, add clean water to restore level to indicator ring. NEVER ADD ELECTROLYTE!

If battery needs more than 2 or 3 ounces of water in each cell per month, charging system may be malfunctioning. Have battery and/or engine checked by an authorized service dealer.

When starter operates properly and battery connections are clean and tight but cranking difficulty is experienced, battery may not be charged. Battery should be taken to an authorized service station and tested.

If engine will not start right away under normal cranking speed, continued cranking will run down the battery and may cause damage to starter. Check ignition and fuel systems and correct any faults.

The battery should be kept clean. If the top has an accumulation of dirt or grease, remove the battery from vehicle for cleaning. The battery should be cleaned with a mild solution of baking soda and water. Brush this on, keeping vent plugs tightly in place to prevent any solution from entering the cells. Allow solution to work for a few minutes, then rinse with clean water and wipe battery dry. If battery terminals are corroded, clean with a wire brush and coat terminals with petroleum jelly. Be sure to reinstall battery in the same position and properly reconnect battery cables (red to positive, black to negative).

Proper care will lengthen battery life. When replacement becomes necessary, use battery of same size and type for continued trouble-free service (see Repair Parts section/manual).



DANGER



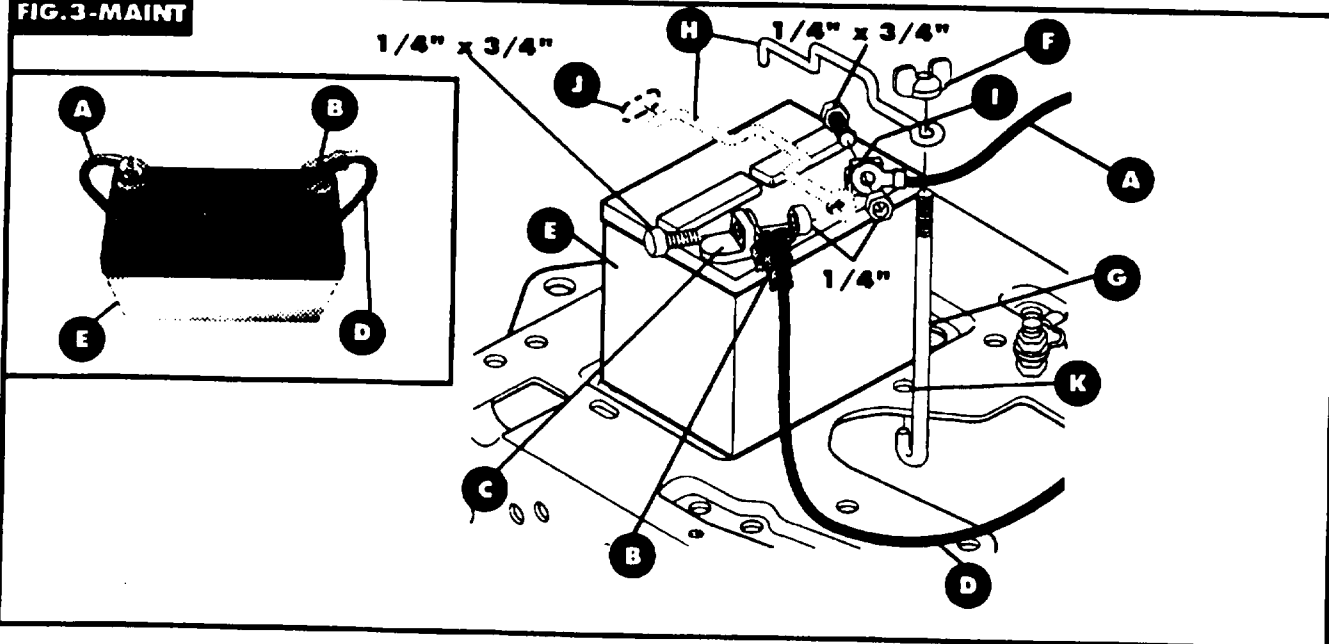
Always disconnect negative (black) cable first. Removing positive cable first can result in sparks if the wrench touches any metal surface. Be sure battery hold-down bracket does not touch battery terminals and cause a spark.

BATTERY REMOVAL

For reference see FIG. 3-MAINT. below, showing a cutaway view from right-hand side of tractor.

1. Raise seat and disconnect negative (black) battery cable (A) (if so attached) and move away from terminal (I).
2. Pull away battery cable boot (B) from positive (+) battery terminal (C). Disconnect positive (red) battery cable (D) (if so attached) from battery (E).
3. Remove plastic wing nut (F) from battery hold-down rod (G).
4. Remove battery hold-down bracket (H) and hold-down rod.
5. Lift battery out of tractor.
6. Reinstall battery (see Battery Installation paragraph).

FIG. 3-MAINT



MAINTENANCE



DANGER



Always connect positive (red) cable first. Connecting negative cable first can result in sparks if the wrench touches any metal surface. Be sure battery hold-down bracket does not touch battery terminals and cause a spark.

BATTERY INSTALLATION (FIG. 3-MAINT)

1. Raise seat plate and place battery back into tractor with positive (C) (+) terminal toward right side of tractor.
2. Place battery hold-down bracket (H) through slot (J) in back of console. **NOTE:** Turn bracket to side, place through slot in console and rotate upright.
3. Place hook end of battery hold-down rod (G) through shift lever hole in main frame and hook into small hole (K) in front of battery.
4. Place threaded end of hold-down rod through loop in bracket and secure with plastic wingnut (F).

NOTE: Tighten with pliers if necessary.

5. Attach positive (red) battery cable (D) to positive (C) (+) terminal on battery with a 1/4 X 3/4 inch hex head screw and a 1/4 inch keps nut.
6. Slide battery boot (B) up cable and over terminal.
7. Attach negative (black) battery cable (A) to negative (-) terminal (I) on battery with a 1/4 X 3/4 inch hex head screw and a 1/4 inch keps nut.

BELT GUIDES

This unit is equipped with belt guides (A,C FIG. 4-MAINT) located next to engine pulley (B, D). These belt guides are angle rods secured to main frame. The guides are moved (by loosening locknuts) before replacing belts (E). When repositioning (after new belt installation) allow 1/16 inch gap between guide and pulley.

LAWN TRACTOR DRIVE BELT REPLACEMENT

Your lawn tractor uses v-belts made of special compounds. If any belt becomes worn or breaks, replace with original equipment belt (see Repair Parts section/manual). **NEVER USE A SUBSTITUTE.** To replace tractor drive belt proceed:

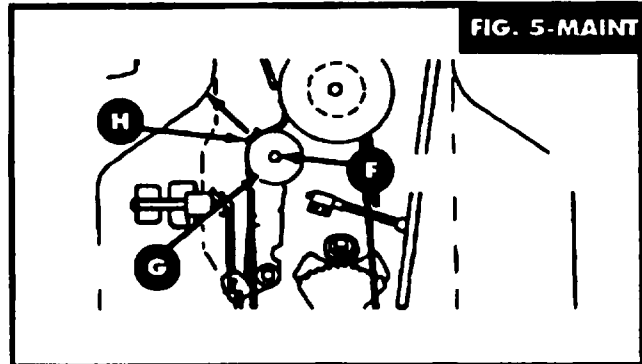
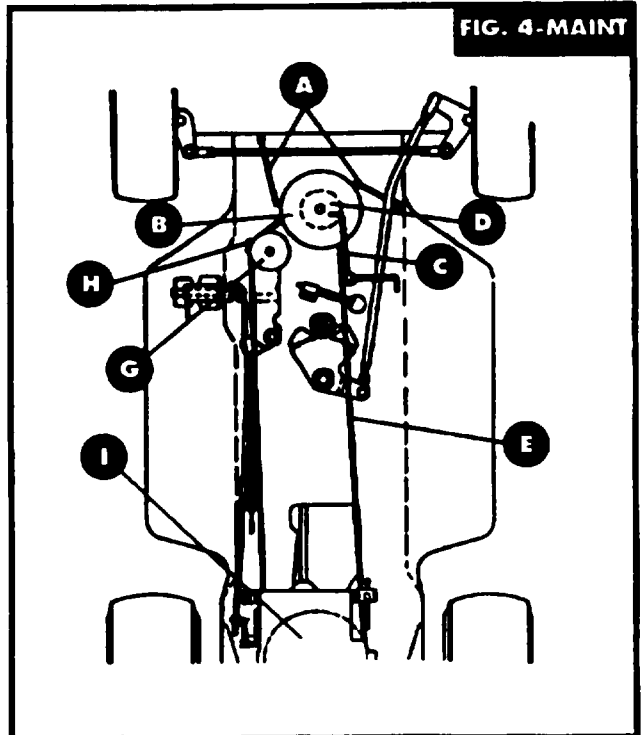
1. Remove mower deck. See **Mower Deck Removal** paragraph.
2. Depress brake clutch pedal and set parking brake.
3. Loosen clutching idler pulley mounting screw (F) enough to allow belt to be removed between pulley (G) and retainer (H) (FIG.5-MAINT).
4. Remove belt from transaxle pulley (I) (roll belt over top of pulley).

5. Replace belt with new original equipment belt in reverse order of removal. **NOTE:** Be sure drive belt (E) is installed to inside of upper engine pulley belt guide (C) and rear belt guide (FIG. 4-MAINT).

6. Before clutching idler pulley (G) and belt retainer (H) are repositioned and tightened, make drive belt adjustment. See **Lawn Tractor Drive Belt Adjustment** paragraph in **Adjustments** section.

7. If blade drive belt needs replacement, do so before reinstalling mower deck assembly.

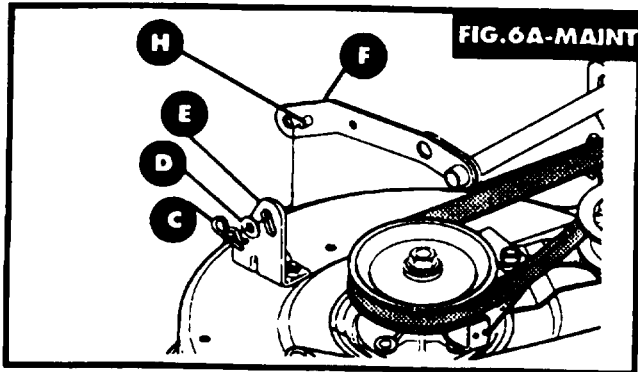
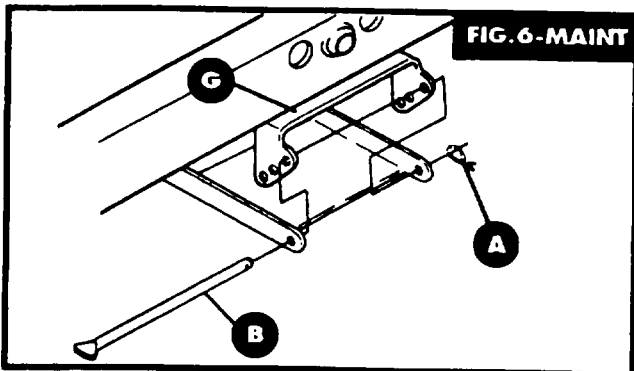
8. Reinstall mower deck in reverse order of removal.



MAINTENANCE

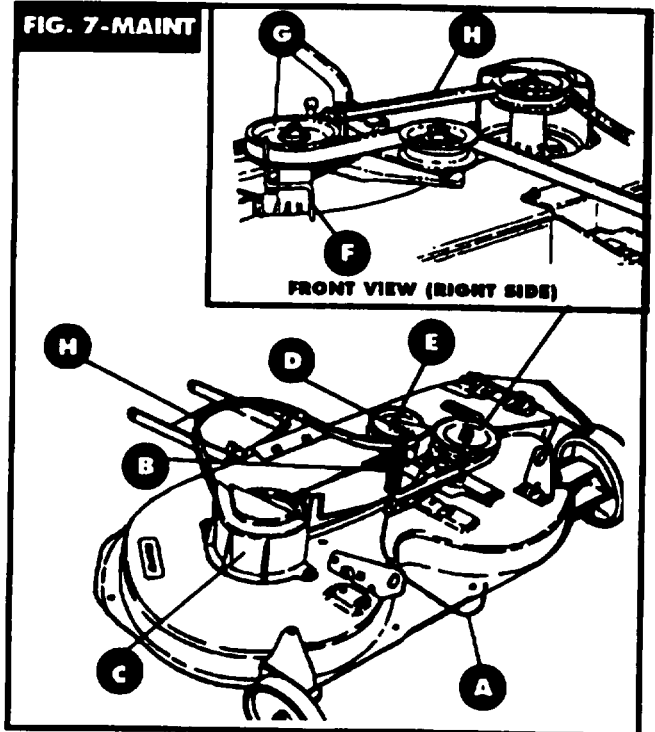
MOWER DECK REMOVAL

1. Set parking brake.
2. Set mower clutch lever to the **DISENGAGE** position. Set cutting height adjustment lever to the lowest cut position.
3. Turn front wheels all the way to left to allow deck hitch to slide past right front wheel.
4. Remove hairpin cotter (A) from mower deck hitch rod (B) at front of deck (G) (**FIG. 6-MAINT**). Remove hitch rod and lower deck hitch.
5. Remove hairpin cotter (C) and flatwasher (D) from right rear lift assembly (**FIG. 6A-MAINT**). Slide right lift bracket (E) off hanger pin (H) on rear lift assembly (F).
6. Remove hairpin cotter and flatwasher from left rear lift assembly. Slide the left lift bracket off of the rear lift assembly.
7. Slide deck toward front of tractor.
8. Flex lower pulley belt guides away from engine pulley and slip mower deck drive belt off lower engine pulley. Note original position of lower engine pulley belt guides (**FIG. 4-MAINT**). Correct distance between guide and pulley is 1/16". Loosen guides and swing away from pulley.
9. Move deck forward and remove the mower deck drive belt from the lower engine pulley.
10. Disconnect mower deck engagement cable (A, **FIG. 7-MAINT**) from mower deck clutch spring (B, **FIG. 7-MAINT**).
11. Deck can now be pulled out from right side of unit.
12. Installation of deck is reverse of removal.



BLADE DRIVE BELT REPLACEMENT (**FIG. 7-MAINT**)

1. Remove mower deck. See **Mower Deck Removal** paragraph.
2. Remove mower deck belt guard (C, **FIG. 7-MAINT**).
3. Note position of belt retainer (D) on idler pulley (E) so that retainer can be repositioned properly after belt installation. Loosen idler pulley.
4. Loosen belt guide (F) near right hand quill assembly (G) (**FIG. 7-MAINT** inset).
5. Remove old belt (H) and replace with a new original equipment belt.
6. Reinstall belt guard.
7. Adjust belt retainer and retighten idler pulley.
8. Adjust belt guide near right hand quill assembly 1/16" from pulley.
9. Reinstall mower deck assembly.
10. Adjust belt as described in paragraph **Blade Drive Belt Adjustment** in **Adjustments** section.



MAINTENANCE

BLADE REPLACEMENT (FIG. 8-MAINT)

The cutting blades should be sharp and well-balanced to run smoothly. Blades should have correct amount of "lift" for proper cutting and discharge of clippings. Lift is created by up-turned bent tip edges of blade ends. As cutting edges of blades wear, the bent tip edges also wear, decreasing blade lift, resulting in decreased cutting ability. It is recommended blades be replaced when upturned ends show signs of wear.

IMPORTANT: Stop engine and inspect blades at once if you strike any solid unyielding object. Check to make sure blade mounting screws are tight. To remove blades:

1. Remove mower deck. See **Mower Deck Removal** paragraph.

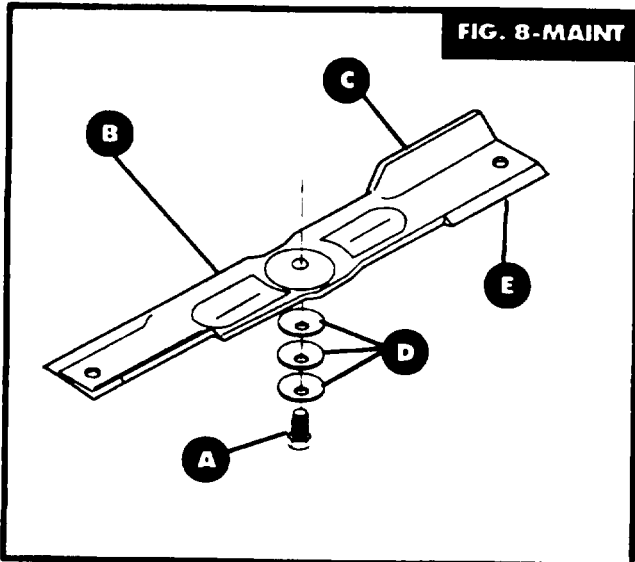


DO NOT handle blades with bare hands. Wear gloves or wrap blade with newspaper or other material while removing or installing blade.

2. With a 9/16 inch wrench, remove blade mounting screws and washers (A, D, FIG. 8-MAINT) by turning screws counterclockwise.

When replacing blades (B), be sure all parts are reassembled in proper order (see **Repair Parts** section/manual) or severe vibration will occur. Bent tip edges (C) of blades must be up toward top of mower deck or blades will not cut. **NOTE:** Make sure blade mounting screws are tightened securely. We recommend using a 10 inch wrench or a torque wrench. If a torque wrench is used, torque blade mounting screws to between 30 and 35 foot pounds. Orientation of sharp edge (E) of blade is shown.

3. Reinstall mower deck.

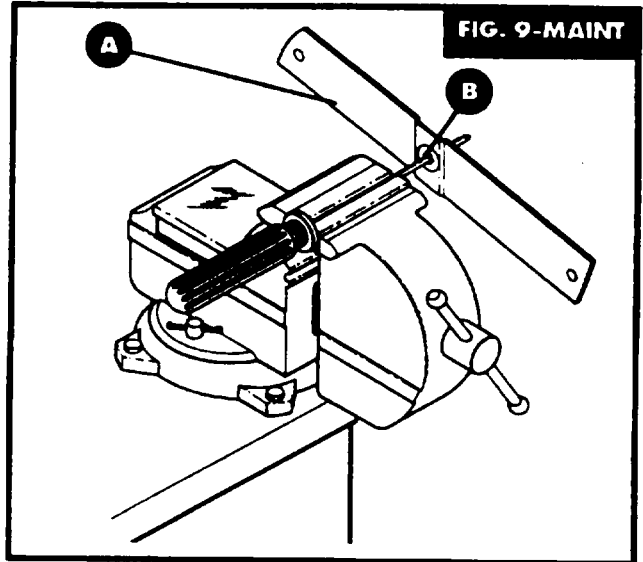


TO SHARPEN BLADE (FIG. 9-MAINT)

Care should be taken to keep blade (A, FIG. 9-MAINT) balanced. An unbalanced blade will cause excessive vibration and eventual damage to mower and engine.

1. Blade can be sharpened with a file or on a grinding wheel. Do not attempt to sharpen while on mower.

2. Place center hole (B) of blade over head of the nail or end of a screwdriver clamped horizontally in a vice. If blade is balanced, it should remain in a horizontal position. If either end of the blade moves downward, sharpen heavy end until the blade is balanced.

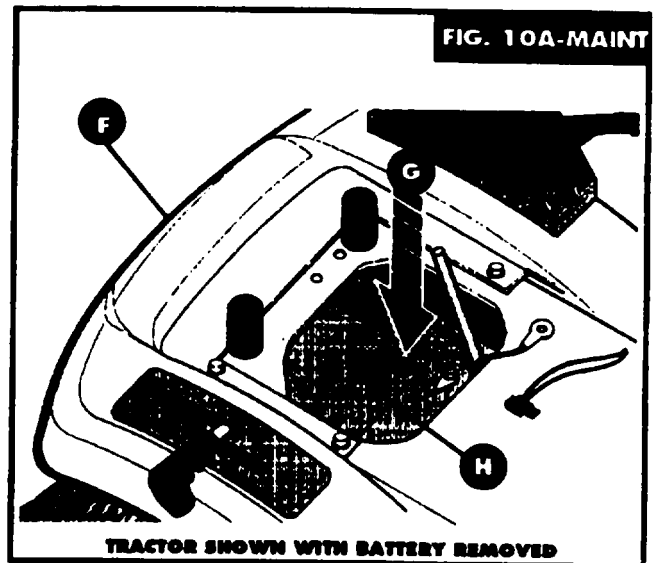
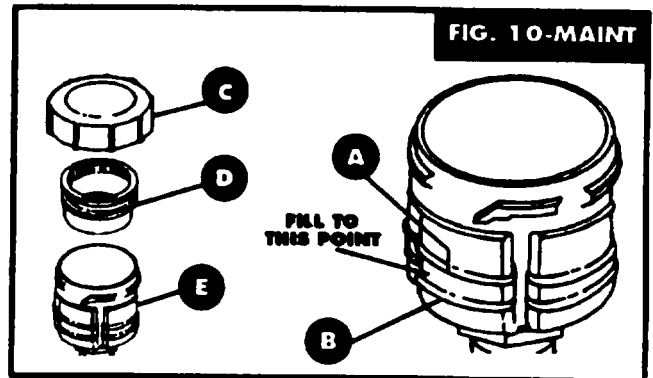


MAINTENANCE

MAINTAIN OIL LEVEL IN TRANSMISSION- For AGRI-FAB hydrostatic models only

Check oil in reservoir (while engine and transmission are cool) after 50 hours of use or if oil is leaking from transmission. **NOTE:** If recently used, transmission will be hot and checking reservoir could result in injury.

1. Stop the tractor on a hard level surface.
 2. From left side of tractor, locate reservoir on top of transmission (E). The oil level should be between two lines on side of reservoir (see "A" and "B" in FIG. 10-MAINT). If oil needs to be added, proceed to next step.
 3. Raise seat.
 4. Remove battery (refer to the **Battery Removal** paragraph in **Maintenance** section of this manual).
 5. **IMPORTANT:** Clean area above and below reservoir access hole (G) in battery compartment (H) (FIG.10A-MAINT). Then clean top (C) and body of reservoir (E). This will prevent dirt and debris from falling into the reservoir (which could damage the hydrostatic pump) when the top is removed. Remove top from reservoir (FIG. 10-MAINT).
 6. Remove the bladder (D) from the reservoir.
 7. Using a funnel through reservoir access hole (G) in battery compartment (H) (see arrow in FIG.10A-MAINT), add 10W-30 engine oil to reservoir. Use only 10W-30 with API classification of SF/CC or SF/CD oil.
 8. **IMPORTANT:** Make sure there is no dirt or contaminants on the bladder (D).
- IMPORTANT:** Make sure there is no oil in top of bladder. Reinstall reservoir bladder.
9. Reinstall reservoir top (C).
 10. Reinstall battery (refer to the **Battery Installation** paragraph in the **Maintenance** section of this manual).



ADJUSTMENTS



DANGER



Keep hands, feet, hair and loose clothing away from any moving parts on engine or lawn tractor when making any adjustments that require engine to be running. **DO NOT** carry passengers.

Located beneath the main frame are two v-belts. One v-belt (lawn tractor drive belt) transmits power to the transaxle which, in turn transmits power to the rear wheels. The other v-belt transmits power to the mower blades.

Located on the mower deck is a clutch that disengages power to the blades and a deck leveling adjustment.

Before any adjustments are made, it is necessary that you understand the function of the brake, mower clutch, and the brake-clutch pedal. The pedal disengages the clutch when partially depressed and applies the brake when fully depressed. Adjustment of the lawn tractor drive belt and brake pedal must be synchronized so brake does not grab. An incorrect adjustment causes brakes to grab or hold while power is being transmitted to the rear wheels. Lawn tractor will try to move with brake applied; this will cause difficulty when shifting from one speed range or direction to another.

To replace drive belt, you must remove mower deck. Removal of deck isn't necessary for other adjustments, but if several adjustments are needed, it will be more convenient if deck is removed.

CAUTION

At no time during the adjustment or repairs can the lawn tractor be lifted more than 20 inches from level position without taking the following precautions:

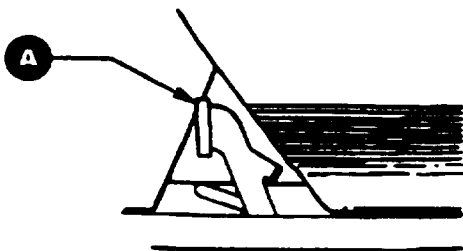
1. Remove gasoline from tank and run engine until carburetor is dry.
2. Remove battery (see **BATTERY REMOVAL** paragraph in **MAINTENANCE** section of this manual).
3. Remove oil from crankcase.

LAWN TRACTOR DRIVE BELT ADJUSTMENT

The drive belt (I, FIG. 2-ADJ) is kept tight by a spring attached to the brake-clutch pedal assembly. When drive belt is properly adjusted, brake-clutch pedal (A, FIG. 1-ADJ) in fully released position should appear as shown below in FIG. 1-ADJ. If drive belt requires adjustment, adjust as follows:

1. Depress brake-clutch pedal far enough to latch parking brake (B) in third notch (C, FIG. 2-ADJ inset).

FIG. 1-ADJ



2. Loosen clutching idler pulley (D, FIG. 2-ADJ) mounting screw (E).

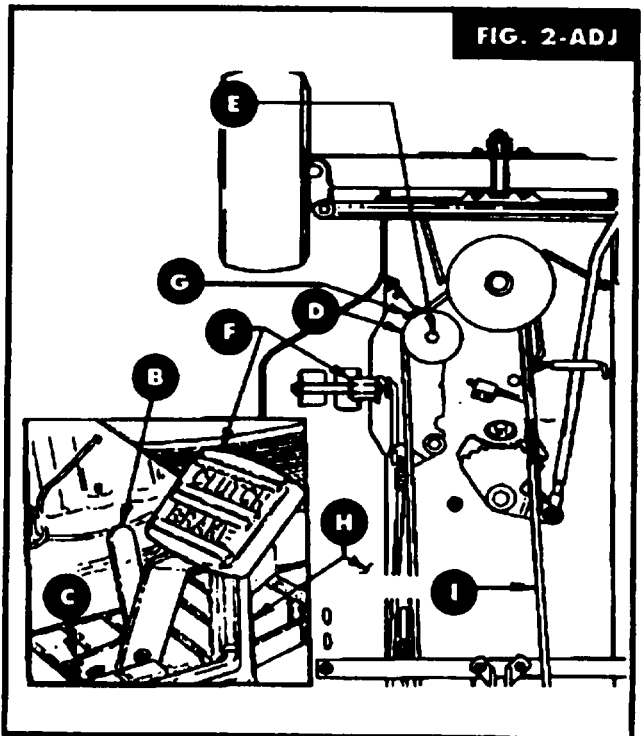
3. If brake-clutch pedal (F) was too far forward slide idler pulley in toward engine pulley. If pedal was too far rearward slide idler pulley out away from engine pulley.

4. Retighten idler pulley mounting screw. **NOTE:** Belt retainer (G) should point toward position where running board meets main frame (H, FIG. 2-ADJ).

5. Release brake-clutch pedal and recheck pedal for proper position. Readjust if necessary.

6. Check lawn tractor brake adjustment as outlined in paragraph **Lawn Tractor Brake Adjustment**.

FIG. 2-ADJ



ADJUSTMENTS

LAWN TRACTOR BRAKE ADJUSTMENT for manual gear shift and Peerless hydrostatic models see FIG.3A-ADJ

Your tractor is equipped with an adjustable disc brake mounted on the transaxle.

To check brake operation:

1. Stop tractor on a hard flat surface and turn off engine.
2. Place shift control lever in **NEUTRAL** position.
3. Depress brake-clutch pedal enough to latch parking brake in 2nd notch (C, FIG. 2-ADJ).
4. Try to push tractor. If you are unable to push tractor, brake is too tight and should be loosened (see **To adjust tight brake**).
5. Depress brake-clutch pedal enough to latch parking brake in 4th notch (C, FIG. 2-ADJ).
6. Try to push tractor. If you are able to push tractor, brake is too loose and should be tightened (see **To adjust loose brake**).

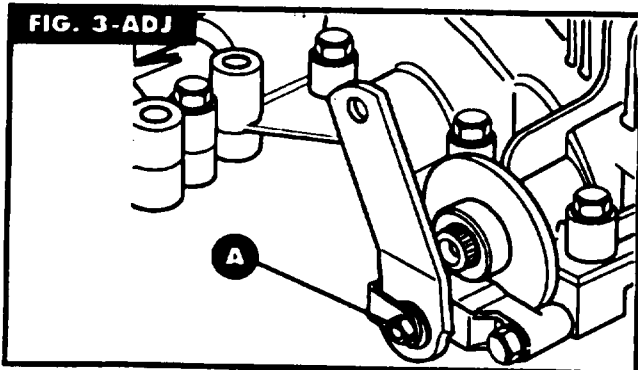
To adjust loose brake:

1. Place shift control lever in **NEUTRAL** position and depress brake-clutch pedal enough to latch parking brake in 4th notch.
2. Turn brake adjusting nut (A) clockwise until you cannot push tractor.
3. Recheck tractor brake adjustment as outlined in **To check brake operation**.

To adjust tight brake:

1. Place shift control lever in **NEUTRAL** position and depress brake-clutch pedal enough to latch parking brake in 2nd notch.
2. Turn brake adjusting nut (A) counter-clockwise until you can push tractor.
3. Recheck tractor brake adjustment as outlined in **To check brake operation**.

During tractor operation, check for stopping distance. If tractor requires more than six (6) feet for stopping distance at high speed in highest gear, the brake must be adjusted (see **Lawn Tractor Brake Adjustment** above)



LAWN TRACTOR BRAKE ADJUSTMENT for AGRI-FAB hydrostatic models see FIG. 3B-ADJ

This lawn tractor is equipped with an adjustable disc brake mounted on the transmission. To check brake adjustment, do the following:

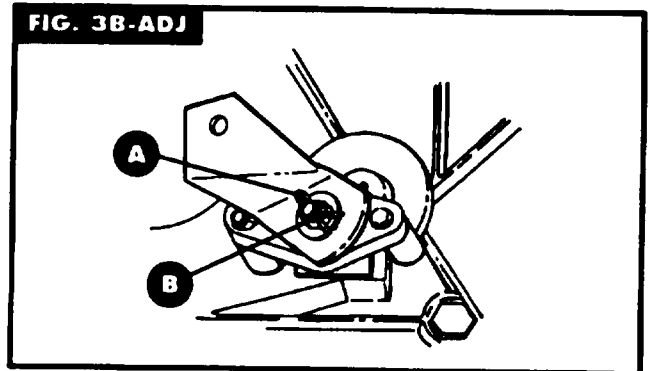
1. Stop tractor on a hard flat surface. Turn off engine.
2. Place transmission control lever in neutral position and place relief valve rod (located under seat) in push position (toward front of tractor).
3. Try to push tractor. If you are unable to push tractor, brake is too tight and should be loosened.
4. Depress brake-clutch pedal enough to latch parking brake lever in fourth notch.
5. Try to push tractor. If you are able to push tractor, brake is too loose and should be tightened.

To adjust brake, do the following:

1. Remove cotter pin (A) from brake adjustment nut.
2. Turn brake adjustment nut (B) (only 1/8 turn at a time) as follows:
 - a. Counterclockwise (loosen) - if brakes worked with brake released.
 - b. Clockwise (tighten) - if brakes did not work with parking brake applied.

When properly adjusted, brake pad should just clear brake disc.

3. Reinstall cotter pin (A).
4. Recheck tractor brake adjustment.



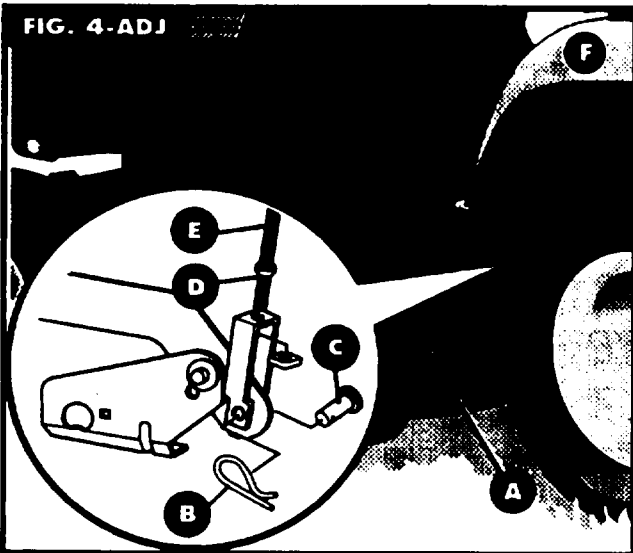
ADJUSTMENTS

MOWER DECK HEIGHT ADJUSTMENT

Before making any mower deck height adjustments, check air pressure in all four tires. All tires must be properly inflated. Recommended air pressure is 10 to 14 pounds per square inch. Check side wall of tire for manufacturer's maximum tire pressure. Do not exceed this pressure. Equal tire pressure should be maintained in all tires.

Main frame on lawn tractor should be level across the front from left side to right side. If main frame will not sit level, the two outside axle mounting screws may be too tight. The two outside mounting screws must be loose enough to allow front axle to pivot. **NOTE: DO NOT loosen center mounting screw.**

1. Park lawn tractor on firm level surface, such as a driveway or garage floor.
2. Place mower deck height adjustment lever in high cut position.
3. Measure height from the bottom of the left hand blade mounting screw to ground. Height should be 3-1/2 inches with mower deck (A) set in high cut. **NOTE:** If your tractor is equipped with an Air Assist, you will be limited to 3rd cut position as high cut. (Approximately 2-1/2 inches.)
4. If adjustment is necessary, block up mower deck with a 2 x 4 and set height adjustment lever to low cut position.
5. Remove hair pin cotter (B, FIG. 4-ADJ) from clevis pin (C). Remove clevis pin. To assist your orientation, FIG. 4-ADJ shows you where the left rear fender (F) is located.



6. Loosen square jam nut (D) on cable (E) above clevis. Turn clevis clockwise to raise mower deck. Turn counterclockwise to lower deck. Each 1-1/2 complete turn of clevis represents approximately 1/8 inch change in the height of mower deck.
7. Reinstall clevis and clevis pin. Return height adjustment lever to high cut position and remove wood block from under deck.

8. Check mower deck height measurement. If measurement is correct reinstall hairpin cotter and tighten jam nut. If more adjustment is necessary repeat preceding instructions.

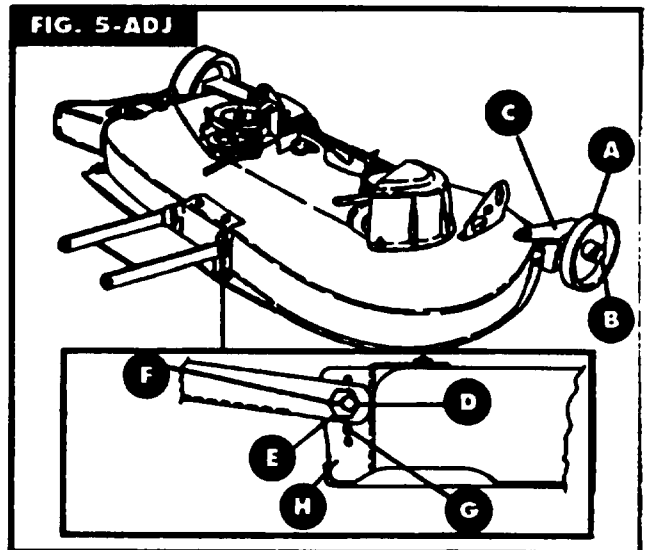
9. Check and adjust level of mower deck as outlined in paragraph Mower Deck Leveling Adjustment.

MOWER DECK WHEEL ADJUSTMENT

Mower deck wheels may be adjusted to four positions. Both wheels must be adjusted to the same position. **NOTE: Do Not** adjust wheels to support mower deck while mowing or uneven cutting will result.

To adjust mower deck wheels proceed:

1. Park lawn tractor on firm level surface, such as a driveway or garage floor.
2. Set cutting height adjustment lever to lowest anticipated cutting height.
3. Adjust wheels (A, FIG. 5-ADJ) to a position 1/4 inch to 1/2 inch above the ground. Change wheel height adjustment by relocating shoulder bolt (B) in one of four positions in wheel mounting bracket (C).



MOWER DECK LEVELING ADJUSTMENT

Before making any mower deck leveling adjustments, check air pressure in all four tires. Recommended air pressure is 10 to 14 pounds per square inch. Check side wall of tires for manufacturer's maximum tire pressure. Do not exceed this pressure. Equal tire pressure should be maintained in all tires.

Main frame on the lawn tractor should be level across the front from left side to right side. If main frame will not sit level, the two outside axle mounting screws may be too tight. The two outside mounting screws must be loose enough to allow front axle to pivot. **NOTE: DO NOT loosen center mounting screw.**

The mower deck level can be adjusted from front to back and from side to side. Always adjust front to back level first.

1. Park tractor on firm level surface, such as a driveway or garage floor.
2. Check and adjust height of mower deck as outlined in Mower Deck Height Adjustment paragraph.

ADJUSTMENTS

MOWER DECK LEVELING ADJUSTMENT (CONT)

3. Place mower deck cutting height adjustment lever in mid cut position. **NOTE:** All adjustments will be made from mid cut position.

To adjust front to back level.

4. Measure height, from level surface, of right side blade tips at front and rear of mower deck (be sure all tires are properly inflated). If distances are equal or not more than 1/8 inch lower in front, no front to back adjustment is necessary.

5. If adjustment is necessary, loosen front eccentric mounting screws (D, FIG. 5-ADJ) and turn front adjustment eccentric (E) clockwise or counterclockwise as required. **NOTE:** When groove on eccentric is pointed straight forward (F, FIG. 5-ADJ inset) front of deck is at the lowest point. Turn both eccentrics so grooves are pointing same direction (upward or downward). Always keep grooves toward front of lawn tractor.

If more adjustment is necessary, front of mower deck may be raised or lowered by relocating eccentric mounting screws in higher or lower hole position (G) on mower deck mounting bracket (H).

6. Hold eccentric with a wrench while tightening eccentric mounting screws securely.

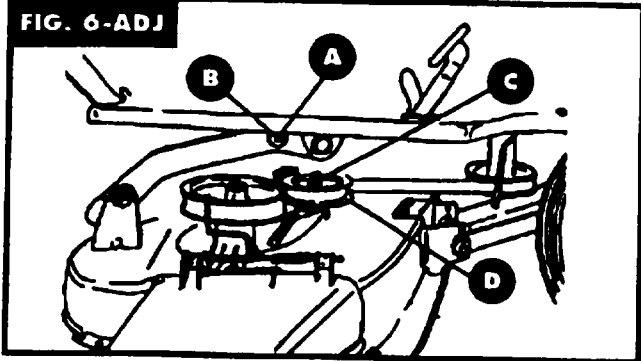
To adjust side to side level.

7. Measure height, from level surface, of left and right blade tips at outside edge of deck. If blades are equal or not more than 1/8 inch different, no side to side adjustment is necessary.

8. If adjustment is necessary, loosen right side eccentric mounting screw (A, FIG. 6-ADJ) and turn eccentric (B) clockwise or counterclockwise as required to level mower deck. **NOTE:** When groove in eccentric is pointing downward, right side of deck is in lowest position. When groove is pointing upward, right side of deck is in highest position.

9. Hold eccentric with a wrench while tightening right side eccentric mounting screw securely.

FIG. 6-ADJ



BLADE DRIVE BELT ADJUSTMENT

When mower blade drive belt slips and blades will not rev to full speed while mowing, the blade drive belt should be tightened.

To adjust:

1. Place mower clutch lever in **DISENGAGE** position.
2. Loosen idler pulley hex nut (C, FIG. 6-ADJ).
3. Slide idler pulley (D) toward center of deck to tighten belt. **NOTE:** Only a small amount of movement should be required.

4. Retighten hex nut on idler pulley.

5. To check adjustment start engine and run engine at **FAST** throttle setting. Engage mower clutch lever and allow sufficient time for blades to run to full speed, then disengage mower clutch lever. Blades should stop within a few seconds and remain stopped. If blades do not stop or tend to creep, adjustment is too tight.

6. To loosen blade drive belt, reverse step 3 above.

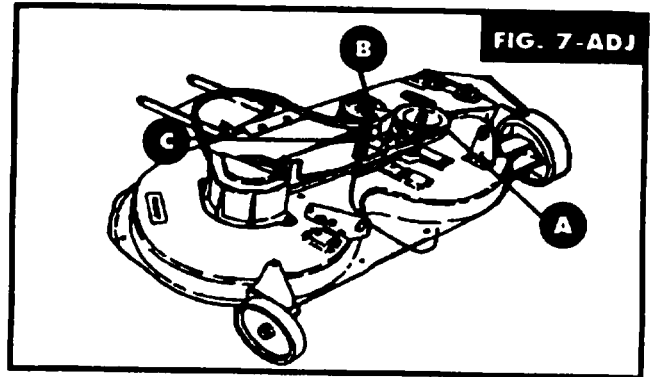


FIG. 7-ADJ

BLADE BRAKE ADJUSTMENT

Brake pad should completely clear quill assembly when mower clutch lever is in **ENGAGE** position.

To adjust:

1. Place height adjustment lever in lowest cut position.
2. Move mower clutch lever back to disengaged position.
3. Check distance mower clutch lever can be moved before brake pad on right hand quill assembly (A) begins to move away from quill pulley (FIG. 7-ADJ). Lever should move forward at least 3/4 inch, but not more than 1 inch, away from rear stop before brake pad moves.

4. If adjustment is necessary, proceed as follows:

a. Note which one of the five holes on front of the idler arm extension (B) is used to attach the mower deck clutch cable spring (C, FIG. 7-ADJ).

b. Moving the spring to a hole toward the front of mower deck will decrease the distance mower clutch lever travels before moving brake pad.

NOTE: Moving the spring one hole will change the mower clutch lever movement about 1/4 inch.

c. Moving the spring to a hole toward the back of mower deck will increase the distance mower clutch lever travels before brake pad moves.

5. Check adjustment on left hand brake pad. Locknut on end of brake rod should be approximately 1/8 inch from brake pad mounting bracket with mower clutch lever disengaged and left hand brake pad against center quill pulley. Adjust locknut if necessary.

ENGINE ADJUSTMENTS

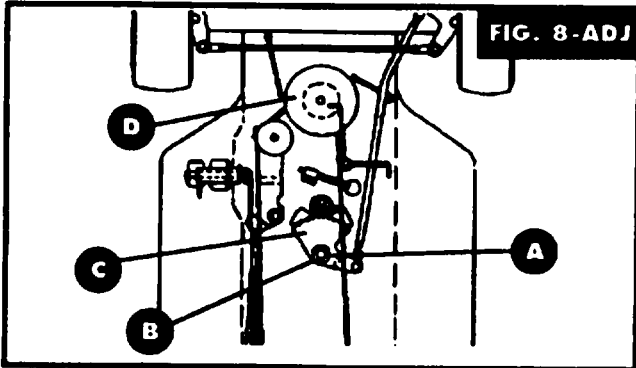
See **Engine Operating and Maintenance** manual for engine adjustment instructions.

ADJUSTMENTS

STEERING GEAR ADJUSTMENT (FIG. 8-ADJ)

If excessive play develops in the steering, adjust pinion and sector gears as follows:

1. Slightly loosen sector gear mounting screw (A) under main frame. Engine pulley (D) is shown for location reference.
2. Turn sector gear eccentric (B) to move sector gear (C) forward or backward as needed.
3. Hold sector gear eccentric with wrench while tightening mounting screw securely.

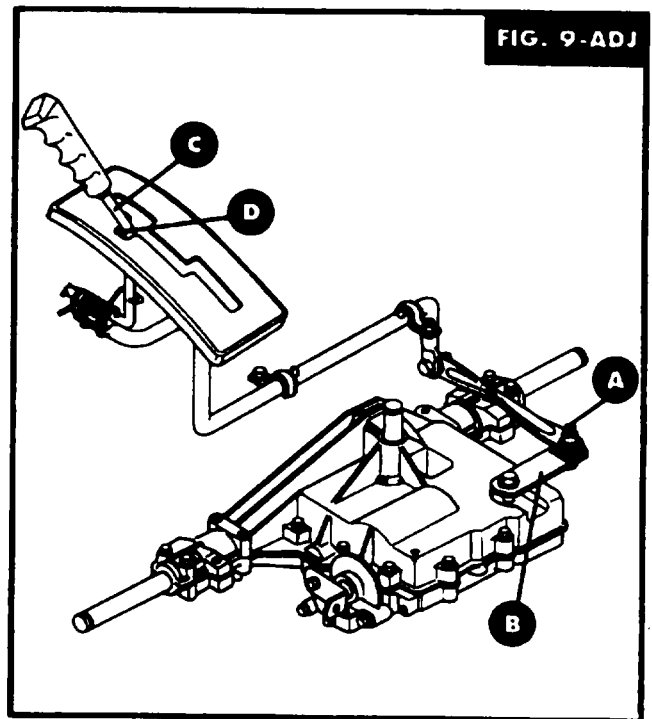


TRANSMISSION CONTROL LEVER ADJUSTMENT-Manual Shift Models (FIG. 9-ADJ)

Should the tractor fail to shift correctly when you shift into a forward, neutral or reverse position, the transmission control lever may need adjusting.

To adjust transmission lever:

1. Locate true neutral by choosing a transmission control lever position and attempting to push the tractor. You should be able to push the tractor when the transmission control lever is in the true neutral position.
2. Loosen the screw (A) on the shift bracket (B) on top of the transaxle.
3. Place the transmission control lever (C) into the center of the neutral slot (D).
4. Tighten screw 'A'.
5. Check the transmission control lever adjustment by pushing the tractor. Put the transmission control lever in neutral slot. You should be able to push the tractor. You should not be able to push the tractor when you shift to forward or reverse.



ADJUSTMENTS

TRANSMISSION CONTROL LEVER ADJUSTMENT - Peerless Hydrostatic Models (FIG. 10-ADJ)

A Hydrostatic Transmission is basically a hydraulic variable displacement pump with a hydraulic motor which drives the rear wheels.

In gear drive transmissions neutral is definite and has no gears engaged. There are no gears in a hydraulic pump. Forward or reverse motion is achieved by changing the flow of oil in the pump and neutral is a narrow band between forward and reverse.

Neutral can be found by placing the shift lever in the neutral gate.

A more positive neutral is to push down the brake-clutch pedal which disengages the belt drive to the hydrostatic transmission. If the operator leaves the tractor seat and the brake-clutch pedal is not pushed all the way down and the parking brake latched the engine will kill.

It may be necessary to make an adjustment to the transmission control lever for true neutral position.

To check for true neutral position:

1. Place transmission control lever (C) in neutral gate. If tractor continues to move, adjustment is required. Move transmission control lever to find the true neutral position. Leave transmission control lever in true neutral position and turn engine off.

To adjust for true neutral position:

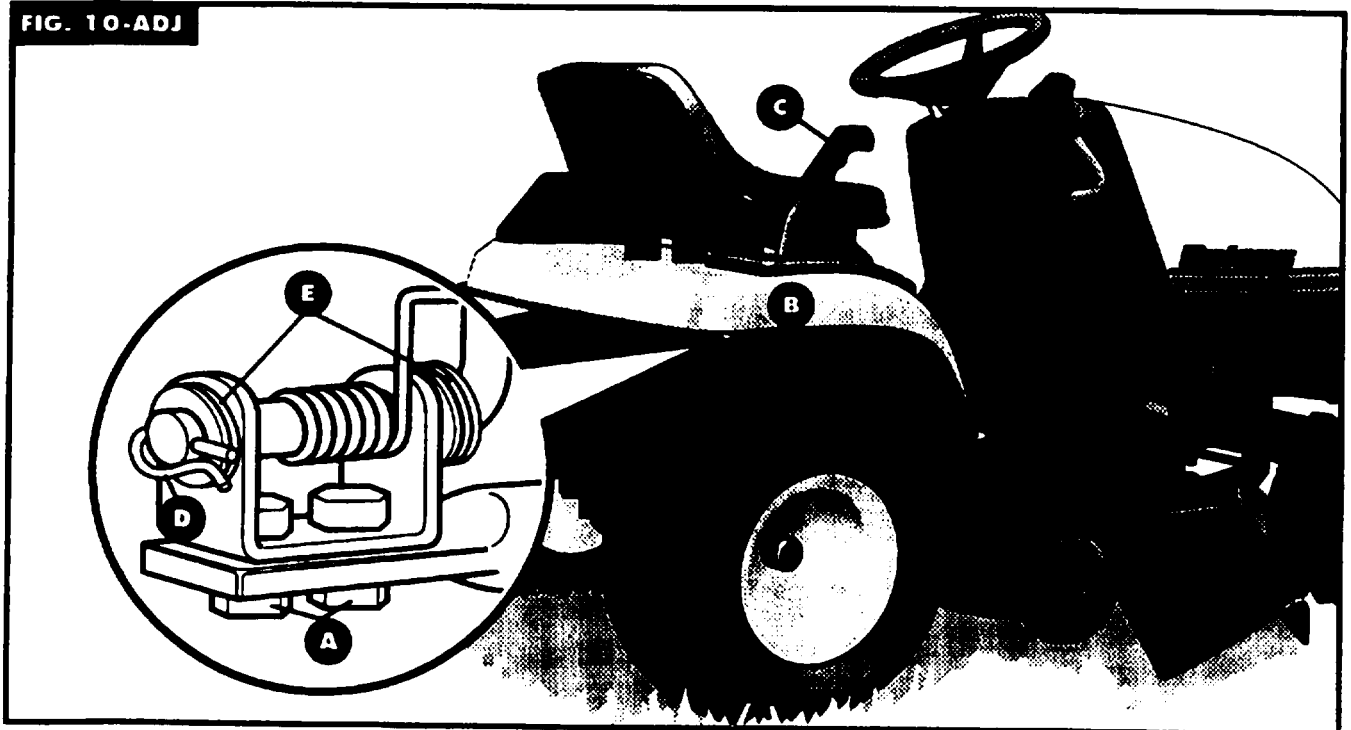
Note the amount of adjustment required to move the transmission control lever from the true neutral position to the neutral gate. Note the location of the five adjustment washers on the transmission control lever. Determine the proper relocation of these washers to center the lever in the neutral gate.

1. Remove hair pin (D) on end of transmission control lever.
2. Note position of spring. Remove transmission control lever and spring.
3. Relocate washers (E) as needed to center transmission control lever in neutral gate.
4. Replace spring, transmission control lever and hair pin.
5. Recheck adjustment for true neutral position.

If sufficient adjustment can not be made by relocating washers proceed with instructions below:

1. Loosen two hex head screws and nuts (A) located under right rear fender (B).
2. Move transmission control lever (C) to center of neutral gate on transmission control lever quadrant.
3. Tighten hex head screws and nuts.
4. Recheck adjustment for true neutral position.

FIG. 10-ADJ



ADJUSTMENTS

TRANSMISSION CONTROL LEVER ADJUSTMENT - AGRI-FAB Hydrostatic Models (FIG. 11-ADJ)

A Hydrostatic Transmission is basically a hydraulic variable displacement pump with a hydraulic motor which drives the rear wheels.

Because it is a hydraulic pump and infinitely variable, it does not have a conventional neutral such as a car transmission or a gear drive tractor. In gear drive transmissions neutral is definite and has no gears engaged. There are no gears in a hydraulic pump. Forward or reverse motion is achieved by changing the flow of oil in the pump and neutral is a very narrow point between forward and reverse.

Because neutral is such a narrow point, it requires some searching within the neutral slot to locate the exact neutral position.

A more positive neutral is to push down the clutch brake pedal which disengages the belt drive to the hydrostatic transmission. If the operator leaves the tractor seat and the clutch brake pedal is not pushed all the way down and latched the engine will kill.

There are two (2) adjustments that may be required on the transmission control lever.

1. Adjustment of transmission control lever for true neutral position.
2. Adjustment of tension on transmission control lever.

To check for true neutral position:

1. Place transmission control lever (A) in neutral slot. If tractor continues to move, adjustment is required. Move transmission control lever to find true neutral position. Leave transmission control lever in true neutral position and turn tractor off.

To adjust for true neutral position:

1. With tractor off.
2. Loosen two (2) hex head screws and nuts (B) located under right rear fender.
3. Move transmission control lever to center of neutral slot on transmission control lever quadrant.
4. Tighten hex head screws and nuts.
5. Recheck adjustment.
6. Recheck neutral position of transmission control lever.

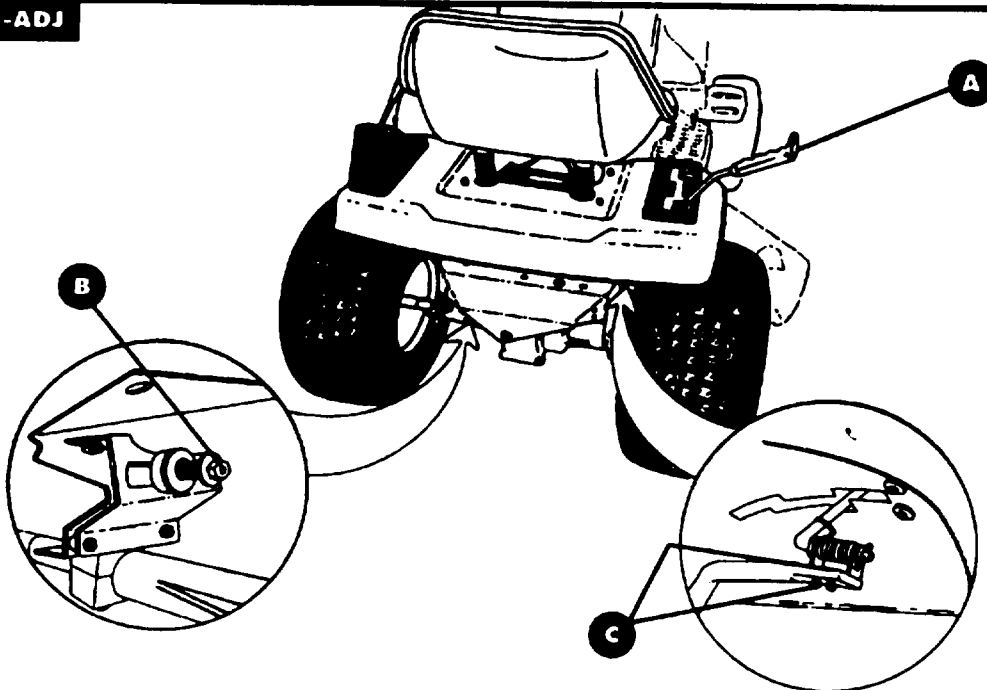
To check tension of transmission control lever:

1. Start tractor and place transmission control lever in any forward speed position. If the lever creeps (moves) out of position when climbing hills or under a load, adjustment is required.

To adjust tension on transmission control lever:

1. Turn tractor off.
2. Located under left rear frame (near end of transmission control lever) is a hex nut (C). This nut is used to adjust tension on transmission control lever.
3. Place wrench on hex nut and another wrench on bolt the nut is on.
4. While holding bolt, tighten hex nut to add tension to transmission control lever.
5. Recheck adjustment.

FIG. 11-ADJ



TROUBLESHOOTING GUIDE

PROBLEM	CORRECTION
Mower Cuts Ragged or Uneven	<ol style="list-style-type: none"> 1. Remove any accumulation of grass clippings from underside of mower deck housing. 2. Make certain blades are sharp and in good condition (not bent or incorrectly mounted). 3. Check blade mounting screw(s). Blade screw(s) must be tight. 4. Check mower deck leveling adjustment per manual. Adjust if necessary. 5. Check blade belt tension per manual. Adjust if necessary. 6. Check quill assembly(s) for damage or wear. Replace if necessary. 7. Check for possible damage to mower deck housing. Repair or replace if necessary. 8. Check pivot tube assembly for damage. If bent or damaged, repair or replace. 9. Check deck wheels being run on ground.
Mower Leaves Unmowed Strip Between Blades	<ol style="list-style-type: none"> 1. Mowing a heavy stand of grass or grass with excessive surface moisture could allow mower to leave an unmowed strip. 2. Forward speed should be adjusted to mowing conditions by transmission lever position. Engine should be run at full throttle. 3. Make certain blades are sharp and in good condition. Replace if necessary. 4. Check blade belt tension. Adjust if necessary. 5. Check quill assembly(s) for damage or wear. Replace if necessary. 6. Check for damage to mower deck housing. Repair or replace if necessary.
Mower Scalps Lawn	<ol style="list-style-type: none"> 1. Check mower height adjustment setting and readjust if needed. Scalping is more likely on rough or uneven lawns. 2. Check for damage to mower deck housing. Repair or replace if necessary. 3. Check for bent blade(s) or quill assembly(s). Replace if necessary. 4. Check mower deck leveling adjustment and adjust if necessary. 5. Check for damaged deck wheels.
Mower Will Not Discharge Clippings	<ol style="list-style-type: none"> 1. Remove any accumulation of grass clippings from underside of mower deck housing. 2. Wet conditions can cause the discharge chute and underside of mower deck to become plugged with clippings. Do not mow wet grass. 3. Forward speed should be adjusted to mowing conditions by transmission lever position. Engine should be run at full throttle. 4. When mowing long grass make first cutting in high position, then re-cut at normal cutting height. 5. Check blade belt tension per manual. Adjust if necessary. 6. If blade(s) have been replaced, make sure they have been correctly mounted.
Blade Drive Belt Comes Off During Use	<ol style="list-style-type: none"> 1. Blade drive belt may suffer internal damage to cords when it comes off during use. If belt still comes off after checking all steps below, replace with a new original equipment belt. 2. Check belt tension per manual. Adjust if necessary. 3. Check belt guide. Correct clearance is 1/16 inch from belt when blade engage lever is engaged. 4. Check mower deck leveling adjustment per manual. Adjust if necessary. 5. Check for and remove any foreign objects interfering with belt travel. 6. Check all pulleys on mower deck. A bent or split pulley could cause problems. Replace if necessary. 7. Check engine drive pulley inner surface. If inner surface is rough or split, pulley should be replaced. 8. Check blade engagement idler assembly for wear. Replace necessary parts.
Blade Drive Belt Slips	<ol style="list-style-type: none"> 1. If grass is too high or wet, belt slippage may occur. 2. Check belt for wear or damage. Replace if necessary. 3. Check blade belt tension per manual. Adjust if necessary. 4. Check blade drive belt tension spring. If spring is stretched or damaged, replace spring.
Blade Drive Belt Wears Excessively	<ol style="list-style-type: none"> 1. Check all belt guides. Correct clearance is 1/16 inch from belt when blade engage lever is engaged. 2. Check for and remove any foreign objects interfering with belt travel. 3. Check pulleys for damage. Replace if necessary. 4. Make certain blade brake is clearing belt when mower clutch lever is engaged. Adjust or replace if necessary. 5. Make certain mower deck leveling adjustment is correct. Adjust if necessary. 6. Check blade belt tension per manual. Adjust if necessary.
Blade(s) Will Not Engage	<ol style="list-style-type: none"> 1. Check belt. If worn or broken, replace. If belt is too loose, make belt adjustment. 2. Check engagement spring on deck engagement idler. If broken or damaged, replace. 3. Check for and remove any foreign objects interfering with engagement idler travel.
Blade(s) Will Not Disengage	<ol style="list-style-type: none"> 1. Check blade belt tension per manual. Adjust if necessary. 2. If blade belt adjustment will not provide enough slack in drive belt, replace with correct Original Equipment Belt. 3. Check for and remove any foreign objects interfering with engagement idler travel.

TROUBLESHOOTING GUIDE (CONT.)

PROBLEM	CORRECTION
<p>Extreme Vibration Occurs When Blade Is Engaged</p>	<ol style="list-style-type: none"> 1. Check blade(s) and make certain they are not bent, out of balance or loose. Replace if necessary. 2. Check belt for burn spots or irregularities that might cause vibration. Replace if necessary. 3. Check quill assembly(s) for damage or wear. Replace if necessary. 4. Check for worn or damaged blade engagement parts. Repair or replace if necessary. 5. Check engine drive pulley inner surface. If inner surface is rough or split, pulley should be replaced. 6. Check under side of mower deck housing for accumulation of clippings. Remove accumulated clippings. 7. Check for loose or damaged engine mounts. Tighten or replace as necessary. 8. Check blade belt tension per manual. Adjust if necessary.
<p>Unit Drive Belt Slips</p>	<ol style="list-style-type: none"> 1. Check unit drive belt adjustment(s). Adjust if necessary. 2. Check for damaged or broken clutching idler spring. Replace if necessary. 3. Check belt(s) for wear or damage. Replace if necessary. 4. Check for and remove any foreign objects obstructing clutching idler mechanism. 5. Check for split engine or transmission pulley. Replace if necessary.
<p>Unit Drive Belt Squeals When Brake Is Applied</p>	<ol style="list-style-type: none"> 1. Check lawn tractor drive belt adjustment and lawn tractor brake adjustment per manual. Adjust if necessary. 2. Check for and remove any foreign objects obstructing clutching idler mechanism.
<p>Unit Drive Belt Comes Off During Use</p>	<ol style="list-style-type: none"> 1. Check belt tension. Adjust if necessary. 2. Check belt guides. Adjust if necessary. 3. Check for split or damaged pulley(s). Replace if necessary. 4. Check clutching idler pulley alignment. If out of alignment, idler bracket may be bent. Replace if necessary.
<p>Unit Will Not Propel Itself When Clutch Is Engaged</p>	<ol style="list-style-type: none"> 1. See Steps 1 through 5 in Unit Drive Belt Slips section of this chart. 2. Check engine, transmission or transaxle pulley(s) for sheared or missing key. Replace if necessary. 3. Check transaxle to make certain it is operable.
<p>Extreme Vibration Occurs When Clutch Is Engaged (Let-Out)</p>	<ol style="list-style-type: none"> 1. Check for split or damaged pulley(s). Replace if necessary. 2. Check belt for irregularities or burned spots. Replace if necessary. 3. Make certain belt tension is correct. Adjust if necessary. 4. Check clutching idler assembly for wear or damage. Replace parts as necessary.
<p>Unit Will Not Shift or Shifts Hard</p>	<ol style="list-style-type: none"> 1. Check shifting procedure. Unit MUST come to a complete stop before shifting. 2. Check lawn tractor drive belt adjustment and lawn tractor brake adjustment per manual. Adjust if necessary. 3. Have transaxle checked by an authorized service dealer.
<p>Steering Slips Or Is Loose</p>	<ol style="list-style-type: none"> 1. Check for steering sector gear and pinion looseness. If gears are loose, make sector gear adjustment. 2. Check ball joints for wear. Replace if necessary.
<p>Engine Will Not Turn Over</p>	<ol style="list-style-type: none"> 1. Check starting procedure. Make sure starting instructions are followed. 2. Check fuse (if so equipped) (See wiring Schematic and diagram in Repair Parts section/manual). 3. Check battery for charge. Make sure battery has been activated and charged (on new units). 4. On new units, remove spark plug and check cylinder for accumulation of oil due to improper handling. 5. Make visual check of electrical system to make sure all connections and lockout switches are secure. (See wiring Schematic and diagram in Repair Parts section/manual). 6. Check engine according to engine manufacturer's instructions. 7. Have electrical system checked by an authorized service dealer. (See wiring Schematic and diagram in Repair Parts section/manual).
<p>Engine Turns Over But Will Not Start</p>	<ol style="list-style-type: none"> 1. Check starting procedure. Make sure starting instructions are followed. 2. Make certain fuel tank is filled with clean, fresh gasoline. 3. Make certain fuel shut-off is open (if so equipped). 4. Make certain that throttle is in start or fast position. 5. Check engine according to engine manufacturer's instructions. 6. Have wiring and lockout switches checked by an authorized service dealer. (See wiring Schematic and diagram in Repair Parts section/manual). 7. Check fuel filter for obstructions.

STORAGE

The tractor should be immediately prepared for storage at the end of the season or if the unit is to be unused for 30 days or more. Gasoline, if permitted to stand unused for extended periods (30 days or more), may develop gummy deposits which can adversely affect the engine carburetor and cause engine malfunction.



DANGER



Never store engine with fuel in tank indoors or poorly ventilated enclosures, where fuel fumes may reach an open flame, spark or pilot light as on a furnace, water heater, clothes dryer, etc.

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

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

To prepare tractor for storage, proceed as follows:

1. Clean the tractor thoroughly.
2. Inspect the tractor for worn or damaged parts and tighten all loose screws and nuts.

3. Prepare engine for storage (see Engine Operating and Maintenance Manual).

4. Lubricate all points shown in Lubrication Chart.

5. Remove battery (see Battery Removal paragraph in Maintenance section of this manual).

6. Clean battery as instructed in Battery Maintenance paragraph in Maintenance section of this manual. Add clean water to raise level to indicator ring and fully charge battery. A discharged battery will freeze and may burst. If possible place battery in a cool, dry area. Charge battery overnight every 30 days.

7. Store the tractor in a clean, dry area and cover for additional protection.

A yearly check-up or a tune-up by an authorized service dealer is a good way of insuring that your tractor will provide maximum performance for the next season.

NOTE: Fuel stabilizer (such as STA-BIL) is an acceptable alternative in minimizing the formation of fuel gum deposits during storage. Add stabilizer to gasoline in fuel tank or storage container. Always follow the mix ratio found in stabilizer container. Run engine at least 10 minutes after adding stabilizer to allow the stabilizer to reach the carburetor. Do not drain the gas tank and carburetor if using stabilizer.

NOTES

NOTES

NOTES

Bolens reserves the right to change specifications, add improvements or discontinue the manufacture of any of its equipment without notice or obligation to purchasers of its equipment.

Bolens' approval of the use of attachments manufactured by allied manufacturers is limited to assurance that such will not void Bolens warranty on the Bolens equipment to which the allied manufacturer attachments are adapted. The responsibility for the design, performance, durability, safety in operation, service repair availability, and warranty obligation remain with the allied manufacturer.

Bolens specifically excludes from its warranty obligation all such allied manufactured attachments.

Bolens warranty will be voided if unapproved attachments are adapted for use with Bolens equipment and are so used.

LIMITED WARRANTY

I. PRODUCTS COVERED

This warranty applies to the Bolens® branded STG 125, STG 150 and STH 125 tractor, to include its attachments and/or accessories sold as non commercial residential, commercial, institutional, industrial, rental or demonstrator application.

II. PRODUCT WARRANTY: NON COMMERCIAL RESIDENTIAL: ONE YEAR LIMITED WARRANTY

All new Bolens® equipment specified above is warranted by Garden Way, Inc. to the original retail purchaser only, to be free from defects in material and workmanship, under normal use and service for a period of one year from date of purchase.

Engines manufactured by Briggs & Stratton, Kohler and Tecumseh or transmissions manufactured by Peerless will be warranted for a two year warranty period through the authorized repair stations of their respective manufacturers.

III. PRODUCT WARRANTY: COMMERCIAL - INDUSTRIAL - RENTAL - DEMONSTRATOR: THIRTY DAYS LIMITED WARRANTY

The Commercial, Institutional, Industrial, Rental and Demonstrator Limited Warranty covering defects on material and workmanship will be for a period of thirty (30) days from date of purchase on all Bolens® units and their manufactured attachments. This warranty applies to the original purchaser only.

Engines manufactured by Briggs & Stratton, Kohler and Tecumseh, and transmissions manufactured by Peerless will also be warranted for this 30 day warranty period through the authorized repair stations of their respective manufacturers.

IV. GENERAL INFORMATION

Garden Way, Inc.'s obligation under this warranty is limited to the repair or replacement, at its option, by an authorized Bolens equipment dealer of any part found to be defective in material or workmanship, without charge for parts and labor.

In order to obtain warranty service, the owner is responsible for:

- 1) Providing proof of purchase documentation, ownership registration or copy of bill of sale.
- 2) Informing any authorized Bolens equipment dealer of the defect and making the product available for repair. (Charges for pick-up, delivery and service calls are not covered by this warranty.)

This warranty does not cover defects, malfunctions or failures caused by:

- 1) Use of unauthorized accessories or attachments.
- 2) Lack of reasonable and necessary maintenance as specified in the "Operation and Safety Instructions".
- 3) Misuse, accidents or normal wear.

Disclaimer of consequential damages: Bolens Corporation shall not be liable under any circumstances for any incidental or consequential damages or expense of any kind, including but not limited to, cost of equipment rental, loss of profits or cost of hiring services to perform tasks normally performed by the equipment.

Limitation of implied warranties: any implied warranties, including without limitation any implied warranty of merchant ability or fitness of a particular purpose, shall be limited in duration to a period of two years (30 days if product is purchased for commercial, institutional, industrial, rental or demonstrator use) from the date of sale.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long implied warranty lasts, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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