

®

# GRAVELY

READ THIS MANUAL BEFORE ATTEMPTING  
TO OPERATE THE EQUIPMENT

## OPERATOR'S MANUAL

Riding  
Mowers

### ▲ SAFETY MESSAGE ▲

The product for which you have requested information or replacement parts is not a current product. The replacement models incorporate product designs, safety features, safety instructions or warnings which represent the latest "State Of The Art" developments. For your safety and those around you please contact your nearest Ariens/Gravely Dealer for a demonstration of the current product safety provisions and features.

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## **OPERATING INSTRUCTIONS FOR RIDING MOWERS, WITH MODEL NUMBERS 830, 830E, AND 1130E ARE IN THIS OPERATOR'S MANUAL**

The mower must be given maintenance and operated according to this Operator's Manual.

It is important that you make a record of the Mower Serial Number, Engine Model Number and Engine Specification Number for your future use. Write the numbers below.

**Mower Serial Number** \_\_\_\_\_

**Engine Model Number** \_\_\_\_\_

**Engine Specification Number** \_\_\_\_\_

### **LEARN ABOUT YOUR MOWER**

Read this book carefully and learn how to operate and do maintenance on your mower before use.

Learning how to use your mower is part of doing the job. Learn how to start, turn, change direction, change speeds and stop. Know what the mower can do.






















It is very important that the Warnings for Safe Operation are read, learned and followed. Use Caution, **SAFETY FIRST!**

### **ABOUT THE WARRANTY**

It is the responsibility of the purchaser to make sure that the mower is operated and the maintenance is done as shown in this book. A failure of the mower caused by bad maintenance or wrong mower use stops the warranty.

Read the Limited Warranty on the inside back cover of this book.

# SAFETY

-  **WHILE THIS MOWER HAS BEEN BUILT TO ANSI SAFETY STANDARDS**, the manufacturer does not mean to imply that this unit is 100% accident proof. **IT MUST BE USED WITH THE SAME CAUTION AND CARE REQUIRED WHEN OPERATING ANY SIMILAR MECHANICAL EQUIPMENT.**
-  **READ THIS MANUAL CAREFULLY BEFORE ACTUAL OPERATION.** Assemble your mower completely and carefully as described in this manual. **Do not use mower without either the chute guard or a complete grass bag.** Keep all safety devices in place and check the grass catcher frequently for signs of wear and deterioration. Replace with new bag as a safety precaution. **NEVER ATTACH OR REMOVE CHUTE OR GRASS BAG, OR UNCLOG A CHUTE, WHILE ENGINE IS RUNNING OR BLADE IS TURNING . . . BE SURE . . . DISCONNECT THE SPARK PLUG WIRE!**
-  **FAMILIARIZE YOURSELF COMPLETELY WITH ALL CONTROLS AND LEARN TO STOP THE ENGINE IN CASE OF EMERGENCY.**
-  **ANY CARBURETOR ADJUSTMENTS SHOULD BE MADE WITH EXTREME CAUTION . . .** Mower mufflers develop extreme heat in operation, be careful not to touch the muffler while engine is running . . . or for a while after engine is shut off. Never change engine governor setting.
-  **DISENGAGE ALL CLUTCHES AND PUT GEAR-SHIFT IN NEUTRAL BEFORE STARTING ENGINE.** Never run the engine in an enclosed area . . . exhaust fumes are dangerous. Never store the mower with gasoline in the tank, inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
-  **KEEP HANDS AND FEET CLEAR OF MOVING PARTS AND THE DISCHARGE CHUTE . . . AT ALL TIMES!**
-  **ALWAYS START MOWER FROM THE SIDE OPPOSITE THE DISCHARGE CHUTE.** Have mower on a level surface. When starting "manual start" mowers, stand firmly on the side opposite the discharge chute.
-  **CLEAR THE AREA TO BE MOWED OF ALL STONES, STICKS, WIRE, TIN CANS AND ALL OTHER DEBRIS BEFORE STARTING TO MOW.** Determine the location of and avoid striking any solid, permanent fixtures, such as curbs, tree roots, stumps, water pipes, shut-off valves, etc.
-  **IF YOU SHOULD STRIKE ANY OBJECT:**
  - **STOP THE MOWER IMMEDIATELY.**
  - **DISCONNECT THE SPARK PLUG WIRE FROM SPARK PLUG AND EXAMINE MOWER FOR DAMAGE.**
  - **REPAIR OR REPLACE ANY DAMAGED PART BEFORE RESUMING OPERATION.**
-  **DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND SECURE THE WIRE AWAY FROM THE SPARK PLUG BEFORE ATTEMPTING ANY ADJUSTMENTS OR REPAIRS.**
-  **THIS RIDING MOWER IS DESIGNED TO CARRY ONLY THE OPERATOR.** In the interest of safety, other passengers, especially children, should never be allowed to ride with the operator.
-  **GIVE COMPLETE AND UNDIVIDED ATTENTION TO THE MOWING JOB.** Operate the mower at the slowest speed that will cut the grass satisfactorily. Use caution when operating on uneven terrain. Disengage the blade drive when transporting.
-  **DO NOT WEAR LOOSE CLOTHING THAT MIGHT GET CAUGHT IN MOVING PARTS.**
-  **STOP THE ENGINE WHENEVER YOU LEAVE THE MOWER OPERATING POSITION.** Never leave the mower running, when you leave it, for any reason. Don't start the mower until you are ready to mow.
-  **DEVELOP THE HABIT OF REMOVING THE KEY EVERY TIME YOU LEAVE THE MACHINE.**
-  **KEEP CHILDREN COMPLETELY AWAY FROM THE MOWER WHILE IT IS IN OPERATION.** Keep all persons and pets away from area to be mowed. Never direct the discharge of the mower toward bystanders or in a direction where thrown objects could cause injury or damage. Avoid directing discharge toward a street, sidewalk or similar traffic area.
-  **DO NOT DRIVE TOO CLOSE TO A CREEK OR A DITCH AND BE WATCHFUL OF HOLES WHICH MIGHT CAUSE THE RIDER TO TIP SIDWAYS.** Be especially careful when making turns, stopping, starting or backing. Never stop or start suddenly.
-  **BE ESPECIALLY CAREFUL WHEN OPERATING THE RIDER ON HILLSIDES OR SLOPES.** As a general rule, if the slope is steep enough to make you feel uncomfortable or uneasy, it is too steep for safe operation of the Rider. Mow up and down the face of a steep slope . . . never across the face.
-  **NEVER OPERATE MOWER IN THE RAIN OR WHEN GRASS IS WET.** Slippery conditions are extremely dangerous.
-  **FILL GAS TANK OUTDOORS, BUT NEVER WHILE ENGINE IS RUNNING OR HOT. NEVER FILL TANK WHILE SMOKING.** Use an approved container to handle and store an inflammable liquid. If you spill gasoline, wipe it up. Keep mower free from accumulations of grass or debris build-up. Replace gas tank cap securely.
-  **TEACH ALL SAFETY RULES AND OPERATING PROCEDURES TO ALL PERSONS OPERATING MOWER.** Never allow children to operate power mower.

# ASSEMBLY

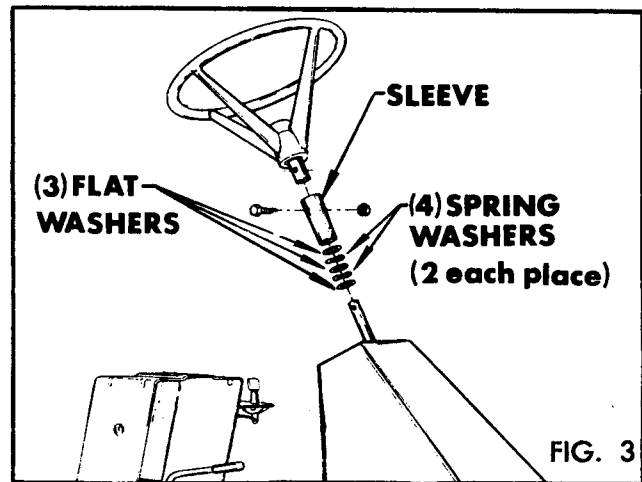
Check the contents of the small carton; it should include:

- Steering Wheel
  - Plastic Fastener Bag
  - Chute Deflector
- (ELECTRIC START MODELS ONLY)**
- Battery Carton
  - Battery Charger (Not included with 11 hp. units)

Remove the two "J" bolts holding the front axle and the bolt through the rear hitch, to free the rider from the carton skid.

## STEERING WHEEL

Slide flat washers and spring washers (included in fastener bag) onto the Steering Shaft as shown in FIG. 3. Align holes in Tubular Sleeve with holes in Steering Wheel hub and secure to Steering Shaft with hex head cap screw and lock nut, (see fastener bag) as shown. Tighten securely.



## SEAT ASSEMBLY

Attach the Seat using parts from fastener bag as indicated in FIG. 4. There are three holes in the Seat Support to allow the operator to position the seat so that he may easily reach the foot pedals.

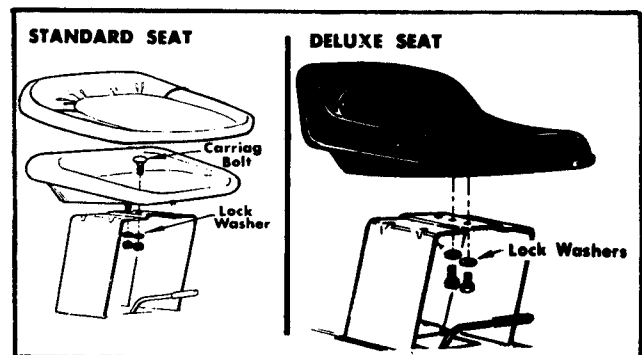


FIG. 4

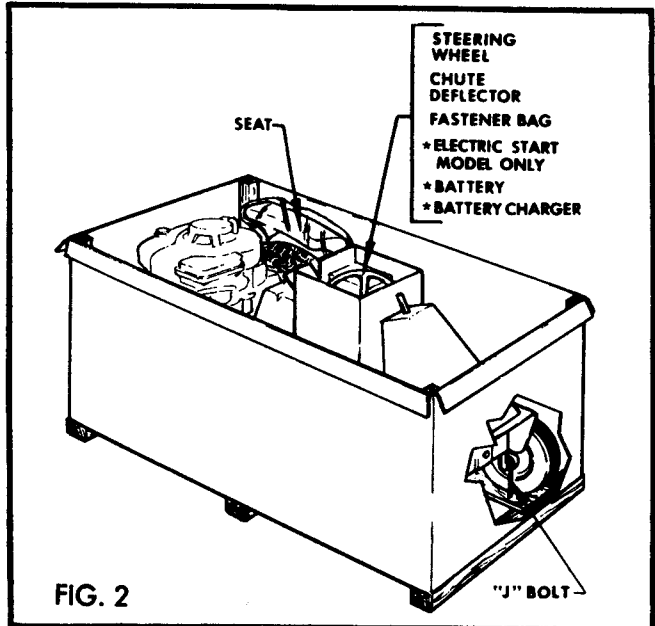


FIG. 2

## CHUTE DEFLECTOR

Assemble the Chute Deflector to the Cutter Housing with hex head cap screws and lock nuts (included in fastener bag) as shown in FIG. 5.

**WARNING: DO NOT OPERATE THE MOWER WITHOUT THE CHUTE DEFLECTOR OR A GRASS BAG INSTALLED!**

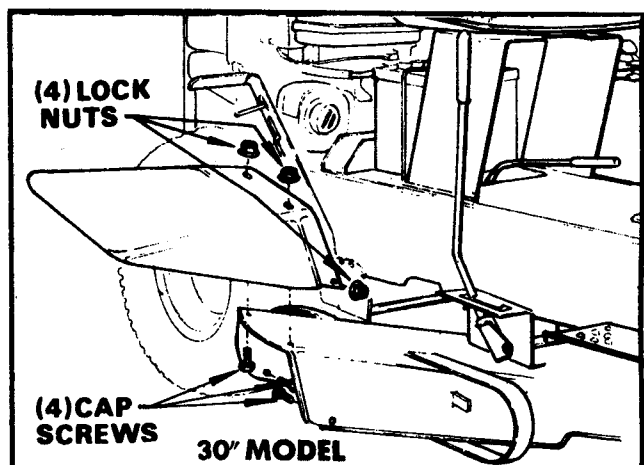


FIG. 5

## ASSEMBLY cont.

### ELECTRIC START MODEL

Carefully remove the Battery from carton and activate the Dry-Charge Battery BEFORE installing it on the rider.

#### POISON/CAUSES SEVERE BURNS

BATTERY ACID IS SULFURIC ACID — AVOID CONTACT WITH SKIN, EYES OR CLOTHING. USE EXTREME CAUTION WHEN FILLING BATTERY! SHOULD ANY ACID BE SPILLED ON YOUR PERSON, CLOTHING OR BATTERY — WASH OFF IMMEDIATELY!! NEUTRALIZE WITH SODA OR AMMONIA SOLUTION. **ANTIDOTE: INTERNAL** — DRINK LARGE QUANTITIES WATER OR MILK. FOLLOW WITH MILK OR MAGNESIA, BEATEN EGG OR VEGETABLE OIL. CALL PHYSICIAN IMMEDIATELY. **EYES:** FLUSH WITH WATER FOR 15 MINUTES AND GET PROMPT MEDICAL ATTENTION.

**FILL:** Carefully fill each cell with acid until it becomes visible at bottom of filling tube. Temperature of acid should be room temperature. Use extreme CAUTION when filling.

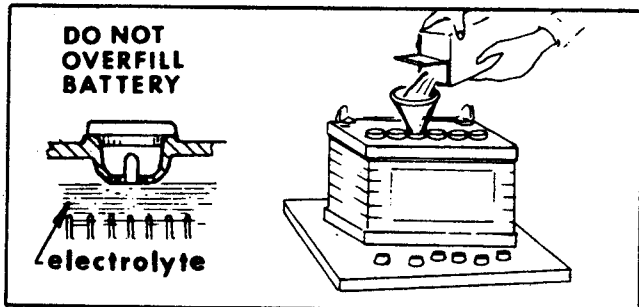


FIG. 6

**CAUTION:** Battery acid is corrosive to metals. Do not pour into any sink or drain. Before discarding, rinse and mutilate electrolyte container.

**CHARGING: (11 H.P. ENGINE).** Loosen or remove the battery filler caps during the charge cycle.

- Always remove battery cable from negative (—) terminal.
- Connect Battery Charger to the Battery as directed by charger manufacturer's instructions.

Leave caps off for approximately twenty minutes after charging to allow gases to escape.

**CHARGING: (8 H.P. ENGINE).** Loosen or remove the battery filler caps during the charge cycle.

Connect the Battery Charger to the Battery as follows, BEFORE plugging into AC outlet:

- Connect Red POSITIVE (+) Charger Clip to POSITIVE (+) Battery Terminal.
- Connect Black NEGATIVE (—) Charger Clip to NEGATIVE (—) Battery Terminal. (If there is any sparking, the clips are not connected to the proper terminal . . . reverse the connection IMMEDIATELY!)
- Make sure all connections are secure.
- Connect the line cord to AC outlet and charge with 1 amp Charger for 24 hours prior to use.

Leave caps off for approximately twenty minutes to allow gases to escape.

#### POISON/DANGER

BATTERIES PRODUCE EXPLOSIVE GASES. KEEP SPARKS, FLAME, CIGARETTES AWAY. VENTILATE WHEN CHARGING OR USING ENCLOSED SPACE. ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES.

#### INSTALLATION:

Fasten the battery to the mower with the hold down rod, the washers, and the wing nuts. Connect the engine ground wire and the wiring harness wires to the battery using carriage bolts, lock washers, and nuts. See FIG. 7.

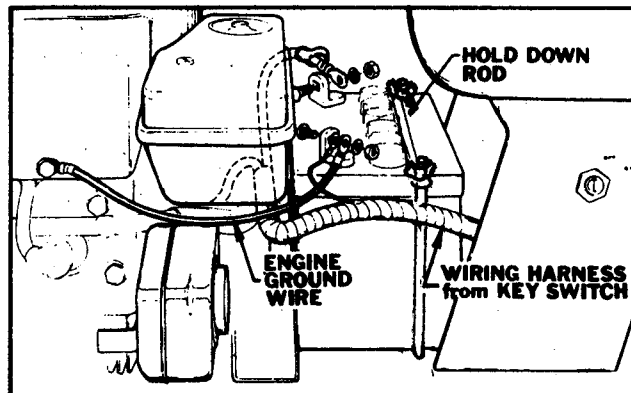


FIG. 7

# CONTROLS

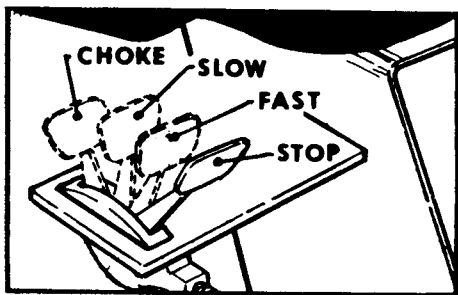


FIG. 9

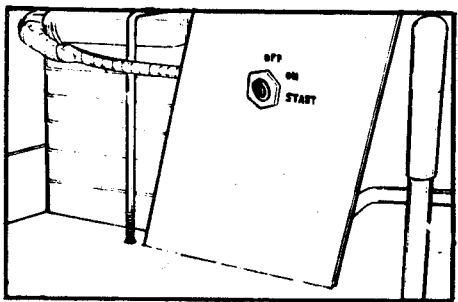


FIG. 10

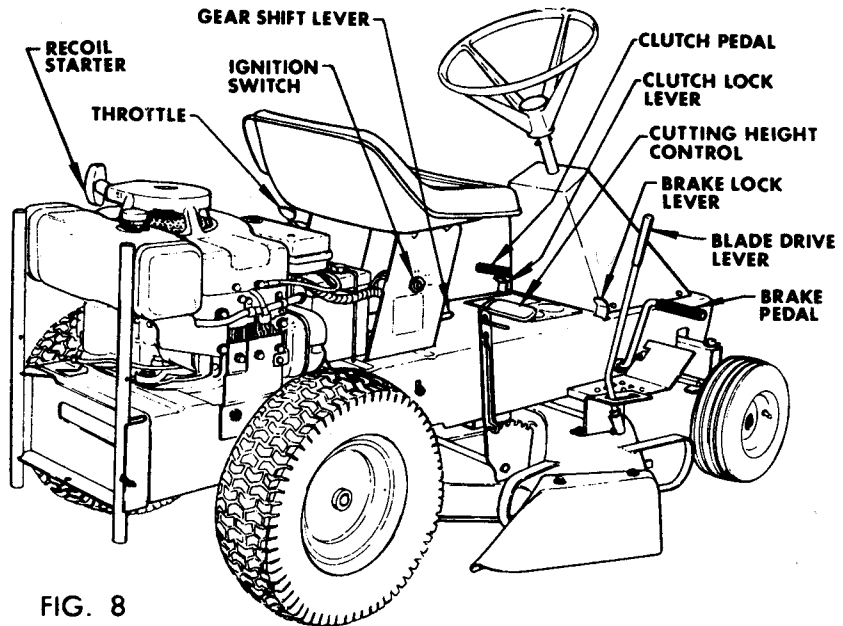


FIG. 8

**THROTTLE CONTROL:** controls the speed of the engine. Pushing the lever forward increases engine speed. Pulling the lever back decreases the engine speed. Pull the lever up and full forward for "choking" to start the engine. **The engine will not start until the Throttle is in "RUN" or "CHOKE."**

**GEAR SHIFT LEVER:** permits a selection of three forward speeds and one reverse, as indicated on the shift panel. Always have gearshift in NEUTRAL position before starting the engine.

**BLADE DRIVE LEVER:** engages and disengages the blade drive mechanism. Moving the lever up to the "RUN" position engages the blade drive mechanism. Moving the lever down to the "NEUTRAL" position disengages the blade drive mechanism. **The engine will not start until the Blade Drive Lever is in "NEUTRAL."**

**CLUTCH PEDAL:** must be depressed before starting the engine or braking to a stop. When pedal is depressed (down position) the clutch is disengaged to permit selection of neutral, reverse or forward gear speed. When pedal is released (up position) the clutch is engaged and rider will move in direction and speed selected. **The engine will not start until the Clutch Pedal is depressed.**

**CLUTCH LOCK LEVER:** locks the Clutch Pedal in a down position to permit starting the engine with the recoil starter. Additional pressure on the Clutch Pedal will release the Clutch Lock Lever.

**IGNITION SWITCH (ELECTRIC START MODEL):** has three positions, "OFF," "ON" and "START." Turning the ignition key to the extreme right cranks the engine. When the key is released it will automatically return to the "ON" position. Key in a straight up and down position is in the "OFF" position and stops the engine. **RECOIL STARTER:** For use when battery is low and engine will not start with ignition key. **The engine can not be started until the ignition key is in the "ON" position.**

**IGNITION SWITCH (MANUAL START MODEL):** has two positions, "OFF" and "ON." It is necessary to have the key in the "ON" position before starting the engine with the recoil starter. Having the key in the "OFF" position prevents accidental starting of the engine by an unauthorized person.

**BRAKE PEDAL:** when the pedal is depressed (down position) the brake is engaged and rider movement is stopped. Depress clutch before braking. When the pedal is released (up position) the brake is disengaged.

**BRAKE LOCK LEVER:** serves as a parking brake. Depress the lever to lock the Brake Pedal in the down position. Additional pressure on the Brake Pedal will release the Brake Lock Lever.

**CUTTING HEIGHT CONTROL:** raises and lowers the mower housing to adjust the cutting height. To change the cutting height, grasp the handle and squeeze the spring loaded lever to free the handle. Move the handle to the desired cutting height, as indicated by the numbered notches, and release the lever into the notch.

# OPERATION

Familiarize yourself with the controls and recommended operating procedures before operating the Rider. This section explains the proper usage of the Rider. By following these procedures you will achieve the efficient operation this Rider was designed to deliver.

## BEFORE STARTING THE ENGINE:

- CHECK THE OIL LEVEL OF THE ENGINE CRANKCASE

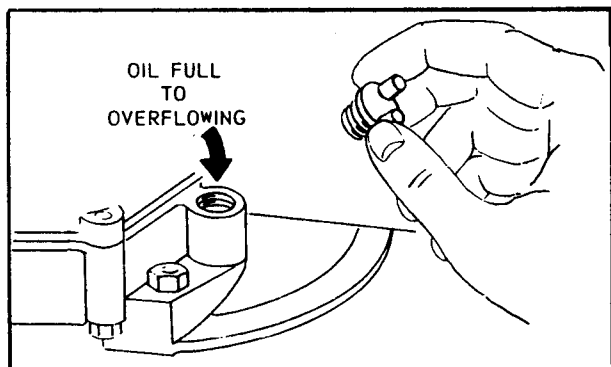


FIG. 11

**IN A NEW ENGINE — CHANGE CRANKCASE OIL AFTER THE FIRST FIVE HOURS OF OPERATION.**

- CHECK THE OIL LEVEL OF THE TRANSAXLE. If lubricant does not run out, fill as described in the lubricants section.

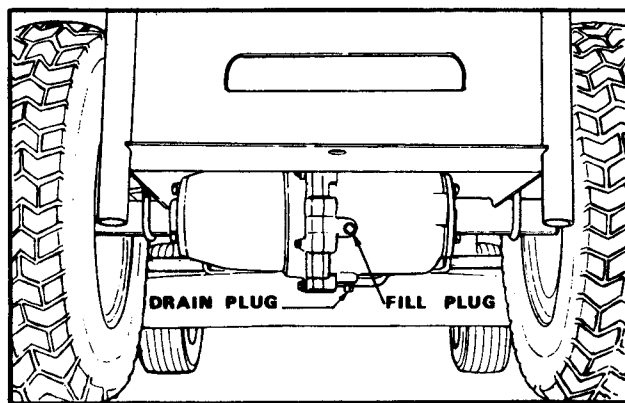


FIG. 12

## STARTING THE ENGINE

### ELECTRIC START MODEL:

- Place the Gearshift Lever in "NEUTRAL."
- Place the Blade Control Lever in "NEUTRAL."
- Pull Throttle Control up and full forward to the "CHOKE" position.
- Depress the Clutch Pedal and lock in down position with Clutch Lock Lever.
- Turn Ignition Key to the extreme forward position. Release the Key as soon as the engine starts. NOTE: Do not hold key in starting position longer than 30 seconds at one time. If the engine does not start, wait a few moments before attempting to start again. Continuous cranking will overheat the starter motor.

If Battery is low and rider will not start by Ignition Key, turn the key to the "ON" position, grasp recoil starter handle and pull out cord rapidly. Return it slowly to the engine. Repeat if necessary.

When the engine starts, set the Throttle Control at "FAST" idle until the engine is warmed.

### MANUAL START MODEL:

- Place the Gearshift Lever in "NEUTRAL."
- Place the Blade Control Lever in "NEUTRAL."
- Pull Throttle Control up and full forward to the "CHOKE" position.
- Depress the Clutch Pedal and lock in down position with Clutch Lock Lever.
- Turn Ignition Key to the "ON" position.
- Grasp recoil starter handle and pull out cord rapidly. Return it slowly to the engine. Repeat if necessary.
- When the engine starts, set the Throttle Control at "FAST" idle until the engine is warm.

**NOTE: AS A SAFETY FEATURE, THE ENGINE WILL NOT START UNTIL . . .**

- **THE BLADE CONTROL LEVER IS IN "NEUTRAL."**
- **THE CLUTCH PEDAL IS DEPRESSED AND LOCKED IN DOWN POSITION.**
- **THE THROTTLE CONTROL IS IN "RUN" or "CHOKE" POSITION.**
- **THE IGNITION SWITCH IS IN "ON" or "START" POSITION.**

## OPERATION cont.

### STOPPING THE RIDER

- Depress the Clutch Pedal and apply Brake.
- Push the Throttle Control all the way to "STOP."
- Turn Ignition Key to the "OFF" position and remove the key from the switch.

**CAUTION: DEVELOP THE HABIT OF REMOVING THE KEY EVERY TIME YOU LEAVE THE RIDER AND LOCK THE PARKING BRAKE.**

### DRIVING THE RIDER

The ground speed of the Rider is controlled by:

- Positioning the Gearshift into one of the three forward speeds or Reverse, as indicated on the shift pattern panel, and . . .
- Moving the Throttle Control through the "SLOW" TO "FAST" positions.

The speed range of each transmission gear with throttle in fast position is:

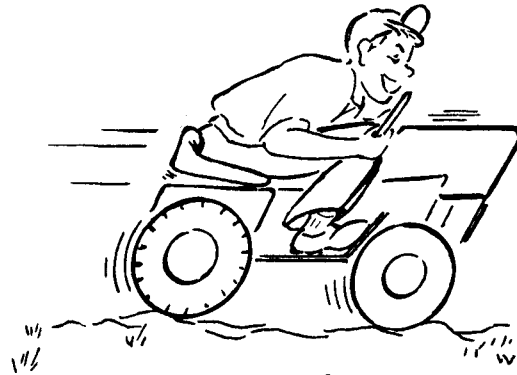
GEAR	GROUND SPEED
1st	1.75 mph
2nd	3.45 mph
3rd	5.37 mph
Reverse	2.41 mph

### OPERATING THE MOWER

**CUTTING HEIGHT LEVER:** raises and lowers the mower housing to provide an adjustment of from 1½ to 3½ inches in the cutting height. To change the cutting height, grasp the handle and squeeze the spring loaded lever to free the handle. Move the handle to the desired cutting height and release the lever into notch.

**CUTTING HEIGHT: (30" Model)** 1½ to 3½ inches.

**NOTE:** If the Rider has been in use for a prolonged period in warm weather, run the engine for a few minutes at idling speed before shutting off the engine. This will extend the life of the engine by providing more even cooling.



**DON'T !!**

For normal operating conditions it is recommended to drive the Rider in first gear with the throttle control lever at ¾ to "FAST" position.

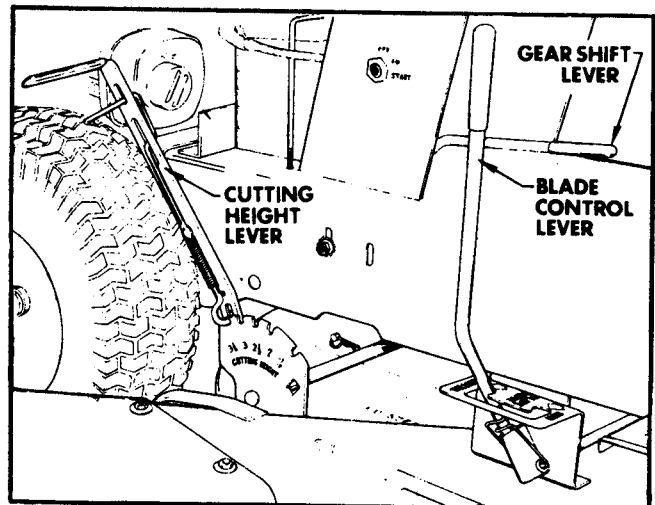


FIG. 13



## OPERATION cont.

### OPERATING TIPS

- Practice driving the RIDER in a level, obstruction-free area until you are familiar with the controls and operations.
- Always slow down when crossing rough or sloping ground. Check the area behind you before backing up.
- Shut off engine and allow it to cool before filling the fuel tank. Use a funnel or can with a screen in the spout for filling. If any gasoline is spilled on the machine wipe it off and allow to dry before starting the engine.

**NEVER ATTACH OR REMOVE CHUTE OR GRASS BAG, OR UNCLOG A CHUTE, WHILE THE ENGINE IS RUNNING OR BLADE IS TURNING. TO BE SURE . . . DISCONNECT THE SPARK PLUG WIRE AND SECURE THE WIRE AWAY FROM THE SPARK PLUG.**

### MOWING TIPS

Always inspect the area before starting to mow. Remove all sticks, bones, rocks or other foreign objects which could cause an injury when thrown or damage the mower.

- Use the inside edge of the mower skids as a guide to indicate the outer cutting edge of the blade.
- Use left side of the mower for trimming close to buildings, fences, etc.

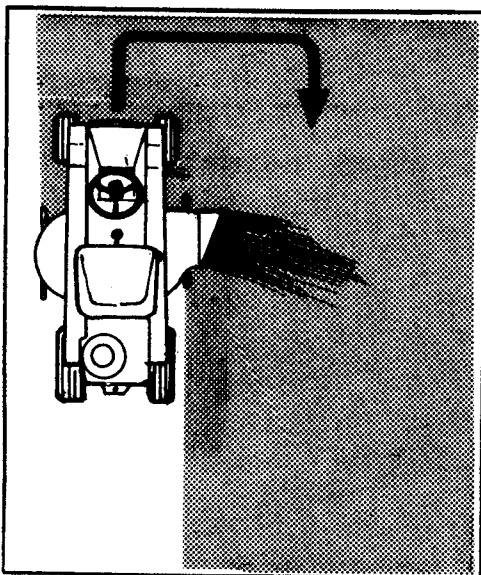
## MOW IN SAFETY BY FOLLOWING THE SIMPLE SAFETY RULES

- Use a funnel to pour oil into engine crankcase. Any oil spilled on belts must be wiped off immediately.
- To move the RIDER without the engine running, position the gearshift in "NEUTRAL."

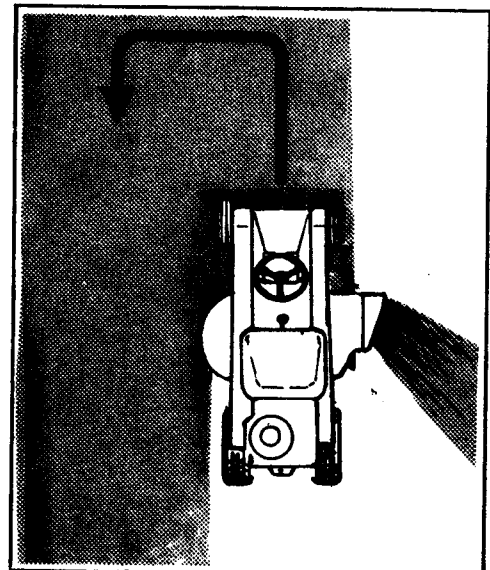
### REAR HITCH:

The Rider is equipped with a Rear Hitch for attaching light-duty equipment, such as dump carts for hauling. Always attach any pull-behind equipment at this point only.

- Normally, the RIDER should be operated in a counter-clockwise direction when mowing, since grass is discharged out of the chute on the right side of the mower. However, if grass is short or mulching is desired, mowing in a clockwise direction will cause the cut grass to be blown into the center of the mowing pattern, for easier pick up.
- If grass is exceptionally high, better results will be achieved if the mower is operated in a position higher than normal for a first cut. Then recut the area with the mower lowered to its normal position.



**MOWING LIGHT GRASS**



**MOWING HEAVY GRASS**

# MAINTENANCE

## FUEL:

Always use clean, fresh "regular" grade gasoline. The use of old or stale gasoline will result in gum deposits, clogging the fuel system and carburetor.

**DO NOT MIX OIL WITH GASOLINE.**

**NEVER FILL TANK WHEN ENGINE IS HOT OR RUNNING.**

Clean area around gas cap before removing, to keep dirt out of tank while filling.

### IMPORTANT!

**NEVER START THE RIDER UNTIL CERTAIN THE ENTIRE MACHINE IS PROPERLY LUBRICATED.**

## ENGINE LUBRICANT:

**ALWAYS CHECK THE OIL LEVEL BEFORE STARTING THE ENGINE.**

Any high quality detergent oil, bearing the American Petroleum Institute Classification "For Service MS" can be used in the engine. Detergent oils keep the engine cleaner and retard the formation of gum and varnish deposits.

CAPACITY: See Specifications

WINTER: (below 40° F.) use S.A.E. 5W-20

SUMMER: (above 40° F.) use S.A.E. 30

**IN A NEW ENGINE — CHANGE CRANKCASE OIL AFTER THE FIRST FIVE HOURS OF OPERATION.**

**CHECK** engine crankcase oil after every five hours.

**CHANGE** engine crankcase oil after every twenty-five hours of operation.

While the engine is warm, drain the crankcase by removing the cap on the oil drain (see FIG. 14). Clean the cap and replace. Refill using a screened funnel.

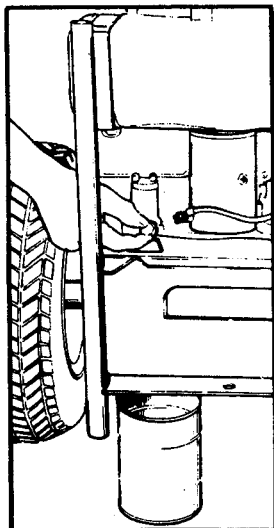


FIG. 14

**IMPORTANT! ALWAYS WIPE AWAY ANY OIL SPILLED ON THE UNIT. OIL CAN CAUSE THE DRIVE BELTS TO "SLIP."**

## CHASSIS LUBRICANTS

Servicing at the recommended intervals and using the lubricants prescribed is essential to trouble-free rider performance.

**AFTER EVERY 10 HOURS OF OPERATION:**

Clean the area around the grease fittings on the wheels, the brake bearings, the clutch pedal bearings, and the axle. Add multi-purpose grease to the grease fittings until grease comes out at the end of the bearings. See FIG. 15.

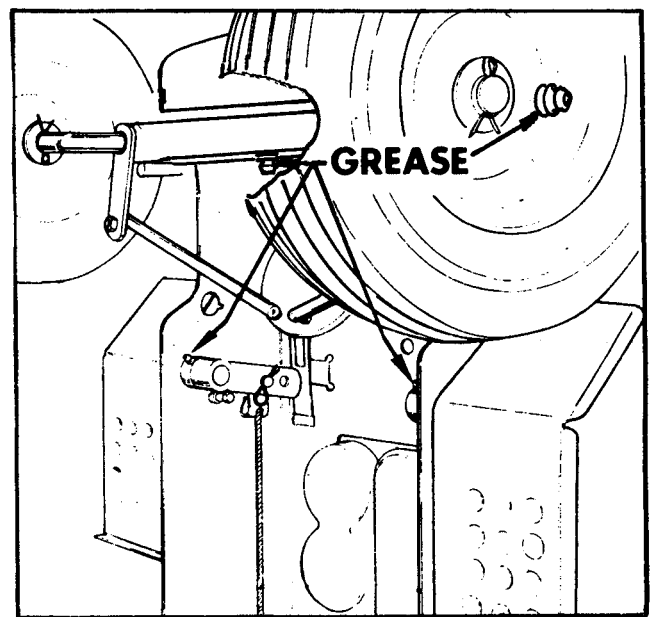


FIG. 15

Clean and oil the Cutter Housing at the points shown in FIG. 16. **NOTE:** Take special care to avoid getting oil on the Belts.

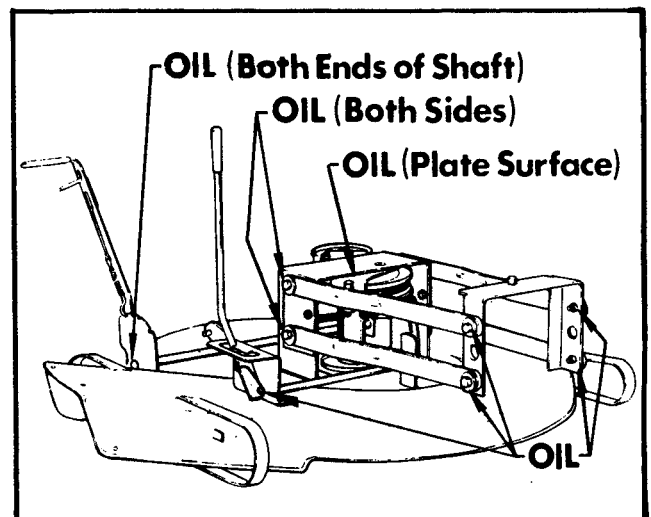


FIG. 16

## MAINTENANCE cont.

### AFTER EVERY 25 HOURS OF OPERATION:

With Rider on a level surface, check rear axle lubricant. Remove fill plug. If lubricant does not run out, add S.A.E. 90 EP transmission oil through fill plug hole until it begins to run out.

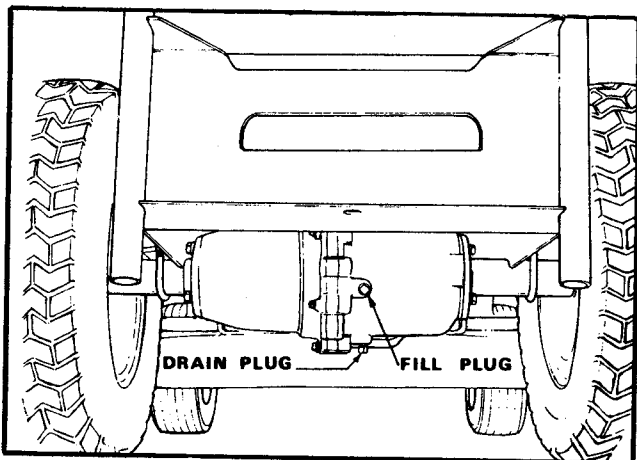


FIG. 17

### AFTER EVERY 100 HOURS OF OPERATION:

Change transaxle lubricant. Remove drain plug from bottom of transaxle housing and allow to drain. Clean and replace drain plug and tighten securely. With tractor on a level surface, remove oil level plug and fill through hole with S.A.E. 90 EP transmission oil until oil begins to run out. Allow all excess oil to run out before replacing oil level plug. **IMPORTANT: DO NOT OVERFILL THE TRANSAXLE.**

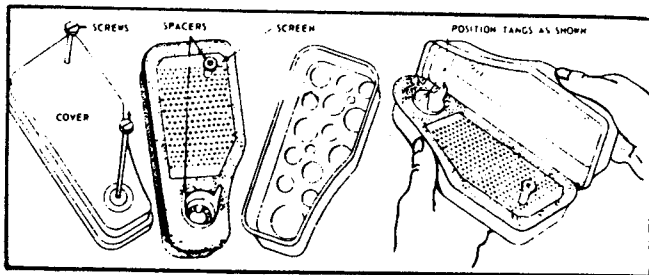


FIG. 18

**CLEAN AIR CLEANER** and re-oil element every 25 hours under normal conditions. Clean every few hours under extremely dusty conditions. Remove the air cleaner carefully to prevent dirt from entering the carburetor.

- WASH foam element in kerosene or a liquid detergent and water to remove dirt.
- DRY foam element completely by wrapping and squeezing in a cloth.

- SOAK foam element with engine oil. Squeeze to distribute and remove excess oil.

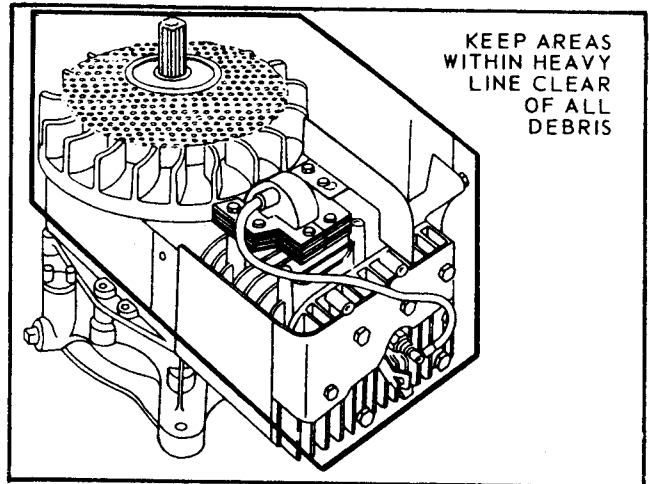


FIG. 19

**CLEAN THE COOLING SYSTEM ON A REGULAR BASIS**, to prevent engine damage from overheating. Remove the blower housing and clean the area shown.

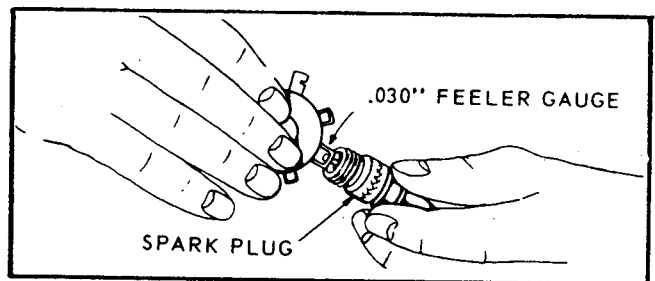


FIG. 20

**CLEAN AND GAP THE SPARK PLUG** after every 100 hours of operation. Clean by scraping or wire-brushing and washing with a commercial solvent or gasoline. Gap to .030 as shown. If spark plug is burned, it is advisable to replace it.

### IMPORTANT!

Rider mowers operated in Canada must use a resistor type spark plug in compliance with Canadian Government regulations. (Resistor Plug, Autolite AR-7N)

## MAINTENANCE cont.

### BATTERY (ELECTRIC START MODEL)

After battery has been in service, add only approved water. **DO NOT ADD ACID.**

Check level of electrolyte after every 30 hours of operation or weekly. Remove caps from each cell and check to see that liquid comes to circular slotted edge in filler tubes. When necessary, refill to proper level with distilled water. When recharging battery, use no more than 5 amps. max. rate.

**IMPORTANT:** In winter or freezing weather, liquid must be kept at proper level and battery fully charged to prevent freezing. **NEVER STORE BATTERY DIRECTLY ON FLOOR.**

#### POISON/DANGER

**BATTERIES PRODUCE EXPLOSIVE GASES. KEEP SPARKS, FLAME, CIGARETTES AWAY. VENTILATE WHEN CHARGING OR USING IN ENCLOSED SPACE. ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES.**

### RECHARGING THE BATTERY: (11 H.P. ENGINE).

Loosen or remove the battery filler caps during the charge cycle.

- Always remove battery cable from negative (—) terminal.
- Connect Battery Charger to the Battery as directed by charger manufacturer's instructions.

**NOTE:** Remove wire from Alternator when operating Engine without Battery.

**DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND SECURE THE WIRE AWAY FROM THE SPARK PLUG BEFORE ATTEMPTING ANY ADJUSTMENTS OR REPAIRS.**

**BLADE:** The blade cutting edge must be kept sharp and balanced. Keep the underside of the cutting housing and the blade clean and free of accumulation of old grass clippings.

**CAUTION: HAVE HANDS PROTECTED WHILE HANDLING BLADE, TO PREVENT INJURY.**

To remove blade, disconnect the spark plug wire from the spark plug, grasp the blade and turn the blade bolt counter-clockwise. Follow the original cutting edge bevel and sharpen both ends evenly to maintain proper balance.

To check for balance place a round rod through the bolt hole in the center of the blade. If one end is heavy, grind or file that end until blade will balance itself on the rod. See FIG. 21.

**BLADE REPLACEMENT:** Reassemble the blade in the exact sequence shown in FIG. 22. Tighten the blade bolt securely and check its tightness frequently.

### RECHARGING THE BATTERY: (8 H.P. ENGINE).

The running time between Battery charging depends on usage. Normal usage requires recharging the battery approximately every 18 running hours. To restore a Battery in good condition to full charge — charge for 11 to 12 hours with a one amp charger. To restore a completely discharged, but otherwise good Battery, will require approximately 23 hours, with a one amp charger, for an 23 amp Battery.

**CAUTION:** When recharging battery, always remove battery cable from negative (—) terminal. Be careful not to touch the battery positive (+) post with gas can or any metal object.

Loosen or remove the battery filler caps during the charge cycle.

Connect the Battery Charger to the Battery as follows, **BEFORE** plugging into AC outlet:

- Connect Red **POSITIVE (+)** Charger Clip to **POSITIVE (+)** Battery Terminal.
- Connect Black **NEGATIVE (—)** Charger Clip to **NEGATIVE (—)** Battery Terminal. (If there is any sparking, the clips are not connected to the right terminal — reverse the connections.)
- Make sure all connections are secure.
- Connect the line cord to AC outlet and charge with one amp Battery Charger as needed, according to condition of Battery.
- Check the level of electrolyte and add distilled water if necessary.

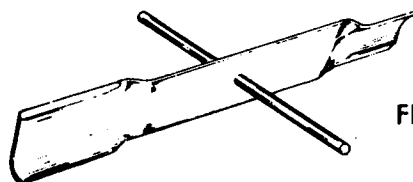


FIG. 21

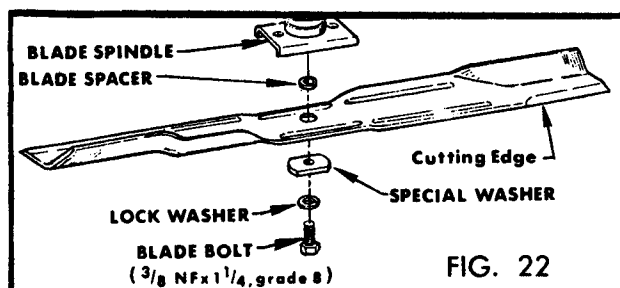
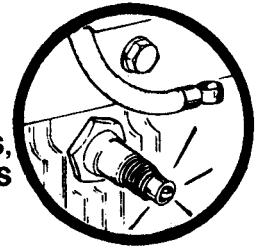


FIG. 22

**NOTE: AS A SAFETY FEATURE, THE ENGINE WILL NOT START UNTIL . . .**

- **THE BLADE CONTROL LEVER IS IN "NEUTRAL."**
- **THE CLUTCH PEDAL IS DEPRESSED AND LOCKED IN DOWN POSITION.**
- **THE THROTTLE CONTROL IS IN "RUN" or "CHOKE" POSITION.**
- **THE IGNITION SWITCH IS IN "ON" or "START" POSITION.**
- **IF THE ENGINE DOES NOT START AFTER CHECKING THE ABOVE, CALL YOUR DEALER.**

# ADJUSTMENT



## CAUTION:

**BE SURE TO DISCONNECT SPARK PLUG WIRE BEFORE ATTEMPTING ADJUSTMENTS, REPAIRS OR THE REMOVAL OF ANY FOREIGN OBJECTS FROM ANY PARTS OF THIS RIDER**

Minor carburetor adjustment may be required to compensate for differences in fuel, temperature, altitude and load. **CAUTION** Carburetor adjustments should be made with extreme caution! **KEEP HANDS AND FEET CLEAR OF MOVING PARTS AND THE DISCHARGE CHUTE . . . AT ALL TIMES!** Mower mufflers develop extreme heat in operation, be careful not to touch the muffler while engine is running . . . or for a while after engine is shut off.

## CARBURETOR

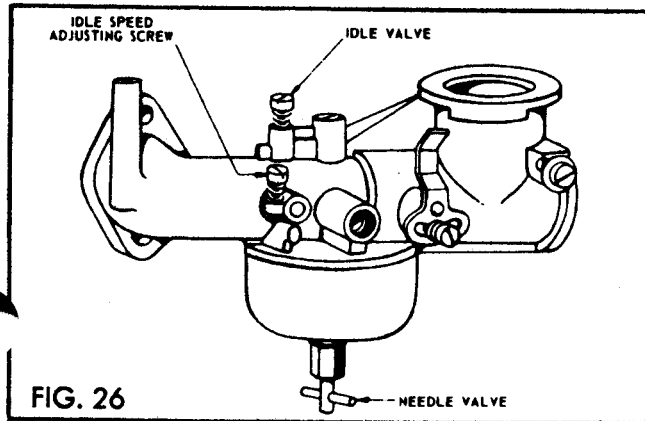


FIG. 26

**INITIAL ADJUSTMENT:** Turn needle valve clockwise until it just closes. **CAUTION:** Valve may be damaged by turning it in too far.

Now open needle valve  $1\frac{1}{2}$  turn counterclockwise. Close idle valve in same manner and open  $1\frac{1}{2}$  turns. This initial adjustment will permit the engine to be started and warmed up prior to final adjustment.

**FINAL ADJUSTMENT:** Turn needle valve in until engine misses (lean mixture). Then turn it out past smooth operating point until engine runs unevenly (rich mixture). Now turn needle valve to the mid-point between rich and lean so the engine runs smoothly. Hold throttle at idle position and set idle speed adjusting screw until fast idle is obtained (1750 RPM). Hold throttle in idle position and turn idle valve in (lean) and out (rich) until engine idles smoothly. Then reset idle speed adjusting screw so that engine idles at 1750 RPM. Release throttle — engine should accelerate without hesitation or chattering. If engine does not accelerate properly, the carburetor should be re-adjusted to a slightly richer mixture.

Proper choke and stop switch operation is dependent upon proper adjustment of remote controls.

## THROTTLE CONTROL ADJUSTMENT

### To Check Operation

- Move remote control lever to "Choke" position. The carburetor choke should be closed.
- Move remote control to "Stop" position. Governor control lever should make full contact with stop switch.

### To Adjust:

Place remote control lever on equipment in FAST (high speed) position. Loosen control casing clamp screw "C." Move control casing "A" and wire until lever "E" lines up with bottom edge of tang "F." Tighten casing clamp screw "C".

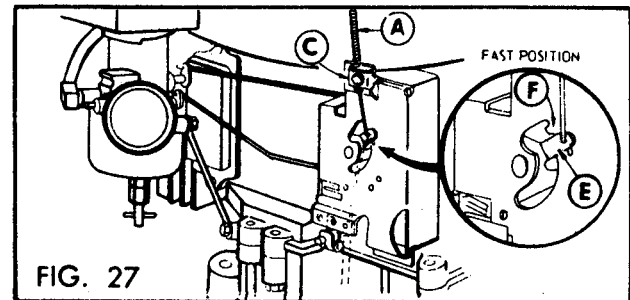


FIG. 27

Recheck operation of controls after adjustment.

## GOVERNOR PERFORMANCE

### IMPORTANT!

Never change the engine's governor settings or overspeed the engine.

	8 H.P.	11 H.P.
Recommended Operating Speed Range (R.P.M.)	1750 to 3600	1750 to 3600
Maximum Speed Range (no load)	3400 to 3600	3400 to 3600
Maximum Speed MUST NOT EXCEED (no load)	3600	3600
Standard Speed Setting (no load)	3500	3500

Surging of engine speeds (with load) is the result of binding in the governor linkage. Check linkage for binding point and lubricate.

## ADJUSTMENT cont.

### MOWING HOUSING ADJUSTMENT

It is important to have the Cutter Housing level to prevent an uneven cut or "corrugated" appearance. Before making adjustments in the Cutter Housing, check to be sure that the tires are inflated properly (See Specifications) and evenly. If further adjustment is necessary, adjust as follows:

- **DISCONNECT THE SPARK PLUG WIRE** and have the Blade Control Level in "NEUTRAL."

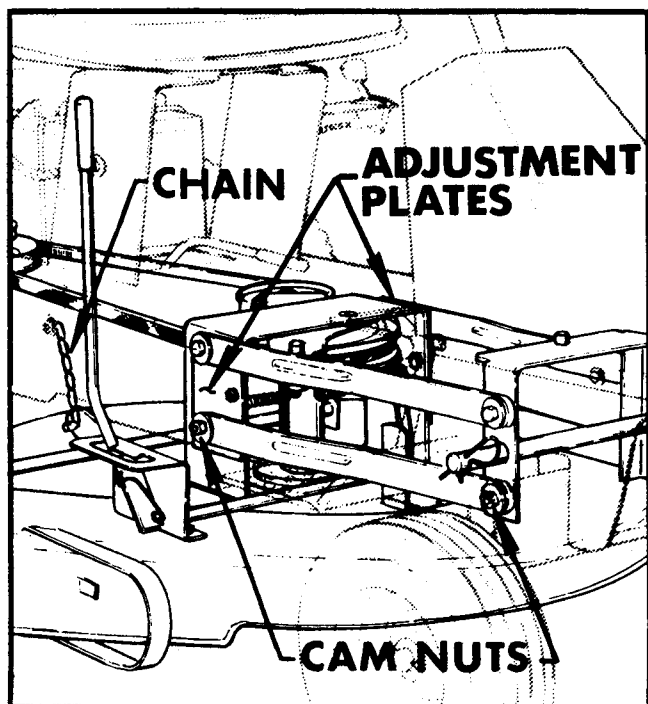


FIG. 28

For best cutting results the Blade should be  $\frac{1}{4}$  inch lower in the front than at the rear. The Cutter Housing height is adjusted from front to rear by rotating the Special Cam Nuts shown in FIG. 28.

- With Rider on a hard level surface and the Cutter Housing in its lowest position, measure the distance between the ground and the cutting edge of the Blade, on each side of the Housing. If the distance is not the same on both sides:

Raise or lower the rear of the Cutter Housing through the slotted holes where the Cutter Housing Chains are attached to the sides of the frame. See FIG 28.

**NEVER MAKE ANY ADJUSTMENTS OR REPAIRS WHILE THE ENGINE IS RUNNING . . . . DISCONNECT THE SPARK PLUG WIRE**

### DISC BRAKE ADJUSTMENT

To increase the braking action of the vehicle brake, tighten the lock nut shown in FIG. 29. Tighten the nut approximately  $\frac{1}{8}$  of a turn and check the braking action. A minimal amount of contact between the brake pads and the disc is desirable. Replace worn brake pads.

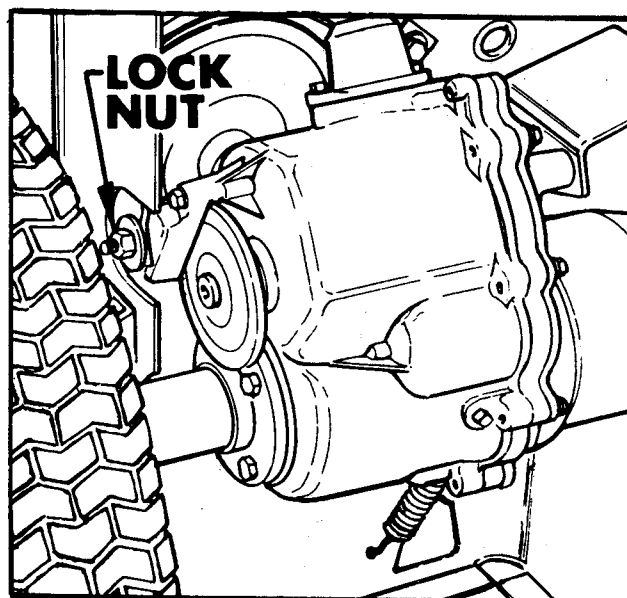


FIG. 29

### BLADE DRIVE BELT ADJUSTMENT:

If the Blade is not engaging with the Blade Drive Lever in the "RUN" position:

- **DISCONNECT THE SPARK PLUG WIRE**
- Have the Blade Control Lever in "NEUTRAL" and the Cutter Housing in its lowest ( $1\frac{1}{2}$ "") position.
- Loosen the three screws on each side of the Adjustment Plates. See FIG. 28.
- Move the Adjustment Plate toward the front of the Rider until there is sufficient tension on the Belt to engage the Blade Drive.
- Re-Tighten the three screws securely on each side of the Adjustment Plate and check to be sure the Cutter Housing is positioned properly. (See MOWER HOUSING ADJUSTMENT).
- **CAUTION!** Make sure the Blade braking action is not slowed by having the Blade Drive Belt too tight! See BLADE BRAKE ADJUSTMENT.

## ADJUSTMENT cont.

DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND SECURE THE WIRE AWAY FROM THE SPARK PLUG BEFORE ATTEMPTING ANY ADJUSTMENTS OR REPAIRS.

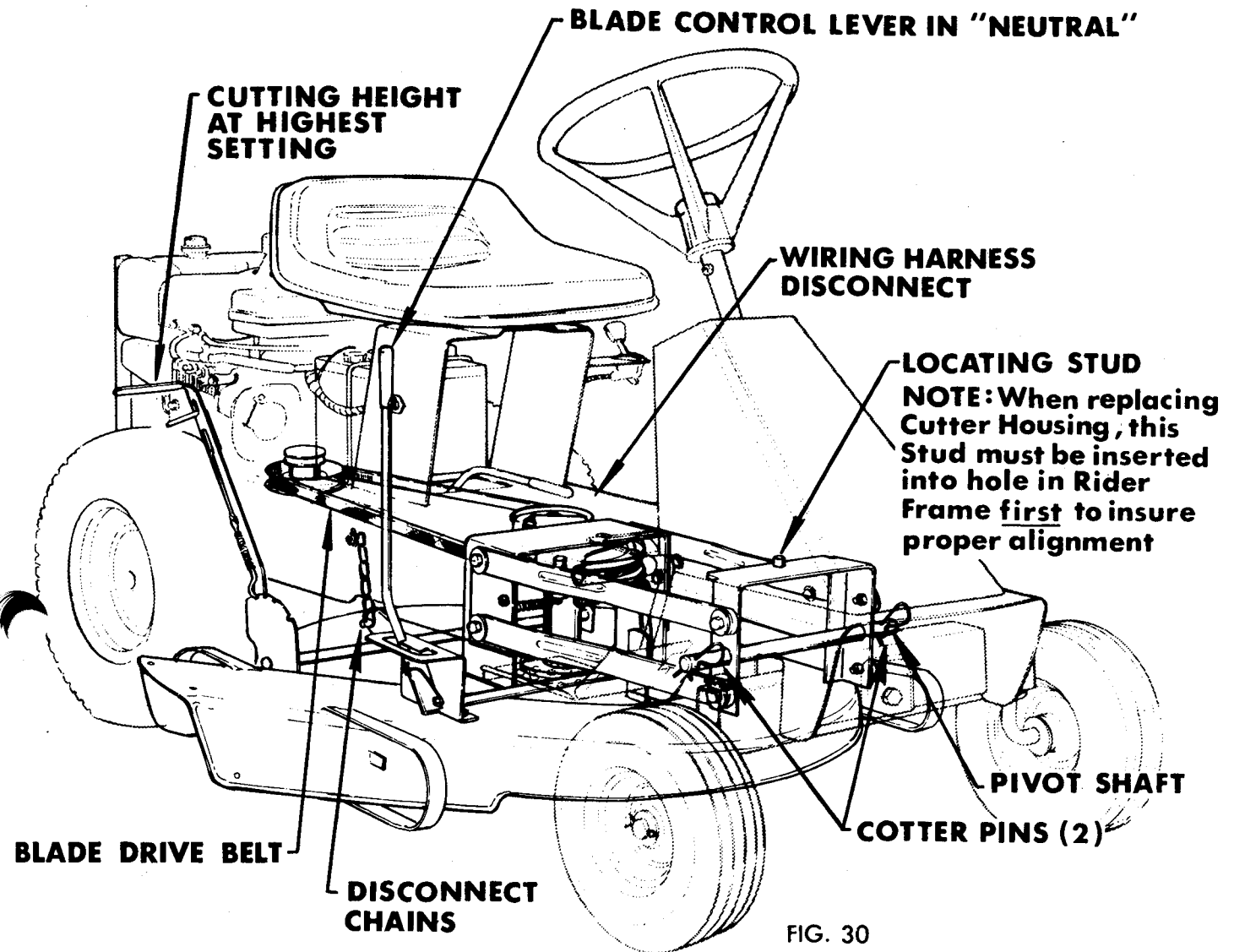


FIG. 30

### CUTTER HOUSING REMOVAL:

- DISCONNECT THE SPARK PLUG WIRE.
- Put Blade Control Lever in "NEUTRAL" and the Height Control Lever in the highest (3½") position.
- Pick up the front of the Rider and stand it on the rear Stand-Up Bars.

**CAUTION: ALWAYS REMOVE BATTERY FROM ELECTRIC START MODELS BEFORE STANDING RIDER ON ITS STAND-UP BARS!**

- Disconnect the Wiring Harness. See FIG. 30
- Remove the two Cotter Pins from the Pivot Shaft.
- Lower the Rider to its operating position.
- Remove the Chains from the rear of the Cutter Housing.
- Drive the Pivot Shaft through the Frame.
- Roll the Rider forward until the Rear Wheels are touching the Cutter Housing and put Blade Control Lever in "RUN".
- Remove the Blade Drive Belt from the Engine Pulley.

## ADJUSTMENT cont.

Mechanical linkages, used to engage the Blade Brake and the Blade Drive, are adjusted at the factory and will not normally require adjustment. However, to compensate for the normal belt wear and stretch, these adjustments may be made:

### BLADE DRIVE BELT REPLACEMENT:

#### DISCONNECT SPARK PLUG WIRE.

- Put Blade Control Lever in "NEUTRAL" and the Height Control Lever in the lowest (1½") position. Remove the Console Tray for access to the Blade Pulley.
- Stand the Rider on the rear Stand-Up Bars.

#### CAUTION: ALWAYS REMOVE BATTERY FROM ELECTRIC START MODELS BEFORE STANDING RIDER ON ITS STAND-UP BARS!

- Slip the Blade Drive Belt off the Engine Pulley.
- Push the Belt toward the front of the Rider and clear of the Engine Pulley Belt Guide.
- Position the Blade Control Level in "RUN" position.
- Remove Belt from Blade Spindle Pulley by pulling Belt between Idler Lever and the Spindle.
- Install the new belt in the reverse order of removal and check for proper tension.

Whenever a **new** Blade Drive Belt is installed, the Adjustment Plates (which are used to adjust the Belt tension) are to be aligned with the gauge lines on the Rear Housing Mounting Bracket to insure the proper Belt tension. See page 13.

### BLADE BRAKE ADJUSTMENT:

To shorten the braking time:

Loosen the three screws on each side of the Adjustment Plate. See FIG. 28 on Page 13.

Move the Adjustment Plate toward the rear of the Rider to **decrease** tension on the Blade Drive Belt and allow the Blade Brake to stop the Blade from turning.

Re-tighten the three screws securely on each side of the Adjustment Plate and check to be sure the Cutter Housing is positioned properly (See Page 13).

**NOTE:** Anytime the Special Cam Nuts are loosened or tightened (as in adjusting the Blade Drive Belt) it is important to check the Cutter Housing position. (See Page 13).

## WHEEL DRIVE BELT REPLACEMENT:

### DISCONNECT SPARK PLUG WIRE.

- Depress the Clutch Pedal and lock in down position with Clutch Lock Lever.
- Put Blade Control Lever in "NEUTRAL".
- Pick up the front of the Rider and stand it on the rear Stand-Up Bars. See FIG. 31.

#### CAUTION: ALWAYS REMOVE BATTERY FROM ELECTRIC START MODELS BEFORE STANDING RIDER ON ITS STAND-UP BARS!

- Slip the Blade Drive Belt off the Engine Pulley.
- Loosen the screws holding the Transmission Belt Guide to the Frame. Slide the Belt Guide away from the Transmission Pulley.
- Remove Idler Pulley.
- Loosen the Idler Lever Nut and swing the Belt Guide Bracket clear of the Wheel Drive Belt.
- Wheel Drive Belt should be free, and may be removed from Transmission Pulley by pulling Belt out between the Pulley and the Frame.
- Install the new Belt in the reverse order of removal and check for proper tension. Adjust the Transmission Belt Guide to provide 1/8 to 1/16 inch clearance between the inside of the Belt Guide and the outer surface of the Belt.

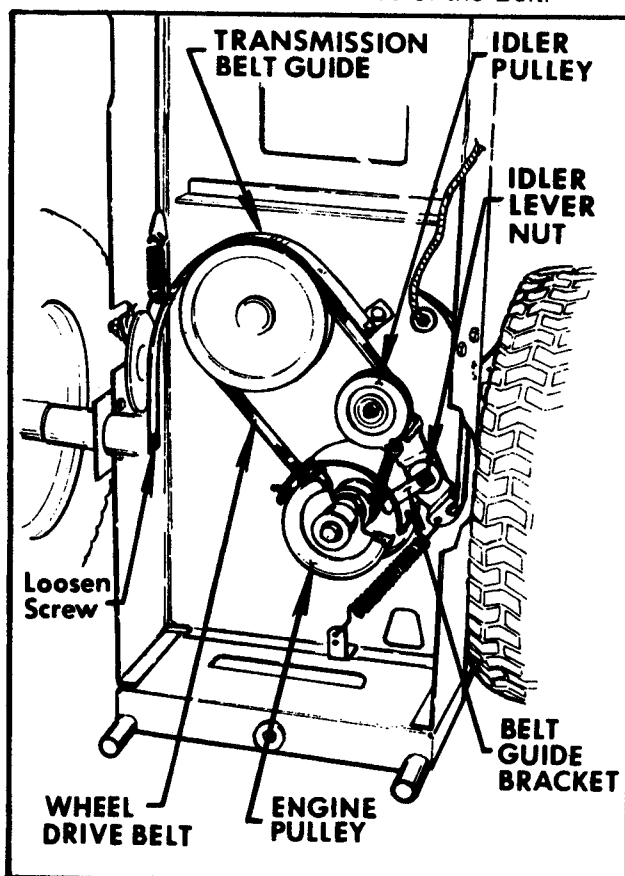


FIG. 31



# TROUBLE SHOOTING

**NOTE: AS A SAFETY FEATURE, THE ENGINE WILL NOT START UNTIL . . .**

- THE BLADE CONTROL LEVER IS IN "NEUTRAL."
- THE CLUTCH PEDAL IS DEPRESSED AND LOCKED IN DOWN POSITION.
- THE THROTTLE CONTROL IS IN "RUN" or "CHOKE" POSITION.
- THE IGNITION SWITCH IS IN "ON" or "START" POSITION.

## **ENGINE WILL NOT START:**

- Gas tank empty.
- Spark Plug wire loose or disconnected.
- Spark plug faulty or improperly gapped.
- Engine flooded; remove and dry the spark plug. Crank the engine with plug removed and throttle lever in "OFF" position. Replace spark plug and start engine as directed on page 5.
- Carburetor improperly adjusted.
- Failure within the interlock system, check as described on page 11.
- Worn or pitted breaker points.

## **ELECTRIC START MODEL:**

- Electrical connections are loose.
- Battery not charged.
- Inoperative starter.

## **DIFFICULT STARTING OR LOSS OF ENGINE POWER:**

- Dirt or water in gasoline tank.
- Vent hole in gas tank cap is plugged.
- Dirty air cleaner.
- Improperly adjusted carburetor.
- Engine overheating.

## **ENGINE WILL NOT IDLE:**

- Spark plug faulty or improperly gapped.
- Carburetor dirty or out of adjustment.
- Air leak between carburetor and manifold.

## **ENGINE MISSING UNDER LOAD:**

- Spark plug faulty or improperly gapped.
- See "DIFFICULT STARTING OR LOSS OF POWER."
- Worn or pitted breaker points.
- Ignition wiring defective.
- Carburetor setting too "lean."

## **ENGINE STARTS . . . BUT DOES NOT CONTINUE RUNNING . . . WHEN THE BLADE LEVER OR CLUTCH PEDAL IS ENGAGED:**

- See "ENGINE MISSING UNDER LOAD."
- If engine stalls as soon as safety interlock switches are opened (Transmission put in gear, Blade Lever and Clutch Pedal engaged) . . . replace the interlock module. Be sure the replacement module has the same identification stamp ("B") as the original module.

## **ENGINE OVERHEATING:**

- Spark plug wire loose.
- Crankcase oil level low, add oil.
- Air flow obstructed, clean engine blower housing, cooling fins and shroud.
- Carburetor setting too "lean."

See the Briggs & Stratton engine manual for more detailed information regarding service of the engine.

## **RIDER WILL NOT MOVE WITH ENGINE RUNNING:**

- Rider is not in gear.
- Drive belt is off of pulley, worn or broken.
- Belt guides not adjusted properly.
- Transmission oil level low.
- Transmission defective.

## **BRAKES INEFFECTIVE:**

- Brake pads need adjustment or replaced.

## **EXCESSIVE VIBRATION:**

- Blade bolt loose.
- Blade out of balance or bent.
- Blade drive belt worn.
- Engine mounting bolt loose.

## **MOWER CUTS GRASS UNEVENLY:**

- Mower not leveled properly.
- Mowing too fast for existing conditions.
- Blade drive belt slipping.
- Blade dull or damaged.

# STORAGE

Check unit thoroughly for any replacement parts required. In the event parts are needed, place your order from your dealer in the fall or winter to avoid any delays caused by the usual spring rush. When ordering parts please specify the MODEL NUMBER and the SERIES NUMBER of the UNIT (not engine).

## ENGINE:

Operate engine until gasoline in the carburetor is completely consumed.

While engine is still warm, drain oil from the crankcase. **IMPORTANT! DO NOT STORE THE RIDER ON ITS STAND-UP BARS WITH OIL IN THE CRANKCASE!**

Remove spark plug, pour one ounce of S.A.E. 30 oil into cylinder and crank slowly to distribute oil. Clean and replace spark plug.

**DISCONNECT SPARK PLUG WIRE FROM SPARK PLUG AND SECURE THE WIRE AWAY FROM THE SPARK PLUG.**

Clean any dirt and chaff from cylinder head fins and blower housing.

**CAUTION: ALWAYS REMOVE BATTERY FROM ELECTRIC START MODELS BEFORE STANDING RIDER ON ITS STAND-UP BARS!**

## BATTERY:

Remove the battery, clean terminals and coat lightly with grease. Check liquid level and add distilled water if necessary. Bring battery to full charge. Store in a cool, dry area where battery will not freeze. Do not allow battery to sit directly on floor.

**KEEP OUT OF REACH OF CHILDREN!**

## POISON/DANGER

BATTERIES PRODUCE EXPLOSIVE GASES. KEEP SPARKS, FLAME, CIGARETTES AWAY. VENTILATE WHEN CHARGING OR USING IN ENCLOSED SPACE. ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES.

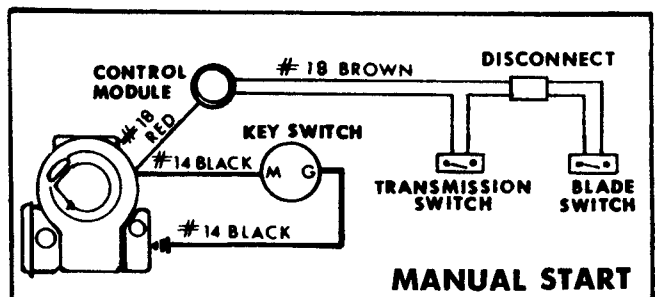
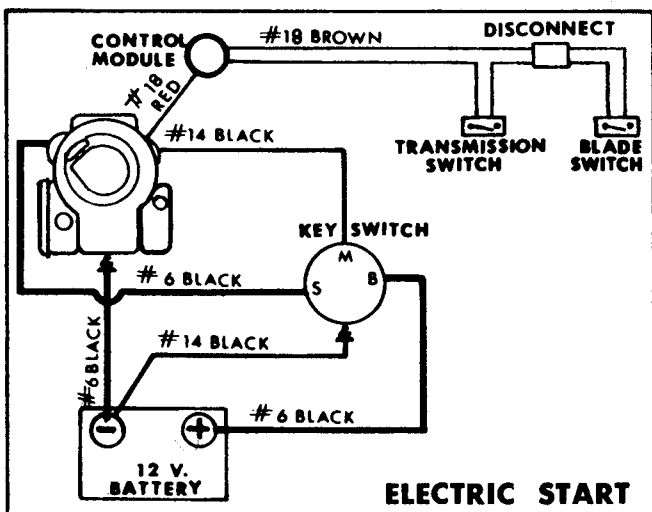
## CHASSIS:

Clean rider exterior thoroughly. Wipe belts clean with a dry cloth.

Lubricate as directed in MAINTENANCE 'Chassis Lubricants.' Position gearshift in 1st gear and the Blade Clutch lever in the "NEUTRAL" position.

Store in a clean, dry place. With proper care your machine will give you prolonged service.

## WIRING DIAGRAM







# SPECIFICATIONS

**NOTE:** The right is reserved to deviate from advertised specifications without recourse to incorporate mechanical improvements and advance design on all models.

	830	830-E	1130-E
<b>ENGINE:</b>			
<b>Manufacturer</b>	Briggs & Stratton	Briggs & Stratton	Briggs & Stratton
<b>Model</b>	190702	190705	252707
<b>Starter</b>	Manual	Electric	Electric
<b>Bore</b>	3 ins.	3 ins.	3 7/16 ins.
<b>Stroke</b>	2 1/4 ins.	2 1/4 ins.	2 5/8 ins.
<b>Displacement</b>	19.44 cu. ins.	19.44 cu. ins.	24.36 cu. ins.
<b>*Horsepower (at 3600 rpm)</b>	8 H.P.	8 H.P.	11 H.P.
<b>Normal Governor Speed (no load)</b>	3500 rpm	3500 rpm	3500 rpm
<b>Spark Plug Gap</b>	.030	.030	.030
<b>Ignition Point Gap</b>	.020	.020	.020
<b>Fuel Tank Capacity</b>	3 U.S. qts.	3 U.S. qts.	3 U.S. qts.
<b>Crankcase Capacity</b>	2 1/4 pts.	2 1/4 pts.	3 pts.
<b>*Engine Manufacturers Rating</b>			
<b>BATTERY:</b>			
		12 volt, 23 amp	12 volt, 23 amp
<b>DIMENSIONS:</b>			
<b>Tire Sizes - Rear</b>	16 x 6.50-8	16 x 6.50-8	16 x 6.50-8
<b>Tire Pressure - Rear</b>	12 psi	12 psi	12 psi
<b>Tire Sizes - Front</b>	4.10 x 3.50-4	4.10 x 3.50-4	4.10 x 3.50-4
<b>Tire Pressure - Front</b>	12-14 psi	12-14 psi	12-14 psi
<b>Rear Tread Dimension</b>	23 3/8 ins.	23 3/8 ins.	23 3/8 ins.
<b>Riders Width</b>	43 3/8 ins.	43 3/8 ins.	43 3/8 ins.
<b>Approx. Net Weight</b>	301 lbs.	320 lbs.	335 lbs.

Wheel Base .....	44 ins.
Front Tread .....	25 1/2 ins.
Rider Length .....	61 1/4 ins.
Height (Top of steering wheel) .....	37 3/4 ins.
Turning Radius .....	35 ins.

## TRANSAXLE

Manufacturer and Model .....	Tecumseh Model No. 663-A
Oil Capacity .....	1 1/2 Pts.
Brake .....	Disc Type

## IGNITION:

<b>Spark Plug Type</b>	<b>AC</b>	<b>Autolite</b>	<b>Champion</b>
Short plug	CS-45	A7N	CJ-8
Long plug	GC-46	A71	J8
Resistor Plug		AR7N	RC-J8

## OPTIONAL ACCESSORIES

- Rear Mounted Grass Catcher
- Snow Blade

## LIMITED WARRANTY

This Limited Warranty is issued by Gravelly Division, Clarke-Gravelly Corporation, and consists of the following terms:

Only the original purchaser of new Gravelly equipment is covered by this Warranty.

2. This Warranty covers repair or replacement of parts manufactured by Gravelly which are defective in material or workmanship. Gravelly will pay for parts and labor only.
3. The Warranty starts the date of purchase and lasts for NINETY (90) DAYS for products used in commercial applications, and TWELVE (12) MONTHS for products used by the owner to maintain his personal residence. Commercial means any use other than to maintain the grounds around the personal residence of the owner of the product.
4. Belts for the equipment are covered by this Limited Warranty for a period of only forty-five (45) days from the date of purchase after which no claim may be made under this Warranty for such items.
5. Some components of Gravelly equipment are not covered by the Gravelly Warranty. These components are covered by the original manufacturer's warranty, they are:
  - a. Engines - Tecumseh and Briggs and Stratton.
  - b. Transaxles - The transaxle carries a two year warranty. The first year is covered by the manufacturer (Peerless); the second year by Gravelly.
6. To obtain warranty service on Gravelly equipment including components not manufactured by Gravelly, use this procedure:
  - a. Notify the Gravelly dealer from whom you purchased the equipment.
  - b. If you have moved and it is not convenient to notify the selling dealer, notify the nearest Gravelly dealer. You should supply this dealer with a copy of the bill of sale as proof of the date of purchase.
  - c. Make arrangements to have the equipment delivered to the dealer (refer to paragraph 7(a) below).
  - d. If you have any questions concerning the Gravelly Warranty, they should be referred to:

Gravelly Division  
Clarke-Gravelly Corporation  
One Gravelly Lane  
Clemmons, North Carolina 27012

Attn: Manager of Customer Services

- e. Warranty service on Gravelly equipment must be performed by an authorized Gravelly dealer or Gravelly factory branch .

7. This Warranty does not cover the following:
    - a. Transportation between owner's home or place of business and the dealership. If the dealer provides the transportation of the equipment, he will charge the owner his usual rate for such service.
    - b. Normal maintenance services and normal replacement of items such as spark plugs, oil, oil filters, air filters, and mower blades.
    - c. Grass bags.
  8. GRAVELLY MAKES NO OTHER EXPRESS WARRANTIES. ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE PERIOD SET OUT IN PARAGRAPH 3 ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE STATEMENT MAY NOT APPLY TO YOU.
  9. GRAVELLY SHALL HAVE NO RESPONSIBILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE BREACH OF ANY WARRANTY, INCLUDING, BUT NOT LIMITED TO, INCONVENIENCE, RENTAL OR PURCHASE OF REPLACEMENT EQUIPMENT, LOSS OF PROFITS OR COMMERCIAL LOSS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.
  10. This Warranty gives you specific legal rights, and you may have other rights which vary from state to state.
  11. A Gravelly equipment registration card is supplied with each Gravelly product. Please complete the card and return it to Gravelly at the address listed on the card. The equipment registration card will be used by Gravelly for:
    - a. Recording date of purchase.
    - b. Notification of owners in compliance with the Consumer Product Safety Act, should any notification be necessary.
- The return of registration card is not required in order to take advantage of this Warranty.
12. This Warranty is not subject to change or modification by anyone, including Gravelly dealers and no Gravelly dealer is authorized to make any representations or promises on Gravelly's behalf.

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