



FMC CORPORATION
OUTDOOR POWER EQUIPMENT DIVISION

MODEL G-14

[1453-01]

SERIAL NUMBERS
0100101 TO 0299999

OWNER MANUAL BOLENS TRACTOR



WITH HH 140 TECUMSEH ENGINE

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TO THE OWNER

This is an operational and general maintenance manual which does not attempt to cover major repairs. All major repair work must be performed by an AUTHORIZED DEALER for the factory warranty to be valid. BOLENS equipment is carefully designed, engineered, and manufactured to give good performance if properly operated and maintained.

THE AUTHORIZED DEALER will repair or replace any parts which fail due to defective material or workmanship during the warranty period. He will also provide continuing repair service and supply factory replacement parts.

CONTACT YOUR DEALER FOR ANY REPLACEMENT PARTS OR SERVICE NEEDED. DO NOT RETURN PARTS DIRECTLY TO THE FACTORY. THE FACTORY REQUIRES PRIOR APPROVAL ON RETURNS, AND APPROVALS ARE ISSUED ONLY TO BOLENS DEALERS OR DISTRIBUTORS.

READ YOUR WARRANTY STATEMENT AND BE SURE THE POSTPAID WARRANTY REGISTRATION CARD IS MAILED TO THE FACTORY.

AVOID ACCIDENTS

BE A SAFE OPERATOR

To read reports from all over the country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it. No power equipment can be safer than the man who is at the controls. If accidents are to be prevented — and they most certainly can be prevented — operators must accept their full measure of responsibility.

It is true that the designer, the manufacturer and the safety engineer can help, but their combined efforts can be wiped out by a single careless act.

It is said that "the best kind of safety device is a careful operator." We ask you to be that kind of person.

NATIONAL SAFETY COUNCIL

GENERAL SAFETY PRECAUTIONS



CAUTION

Preventing accidents is the responsibility of every equipment operator. The following general safety precautions must be fully understood and followed by every operator of this tractor and its attachments. Review them frequently and NEVER TAKE CHANCES. BE CAREFUL BEFORE, DURING AND RIGHT AFTER USE OF ANY POWERED EQUIPMENT. ACCIDENTS CAN BE PREVENTED.

1. Study your manual. Know your tractor before operating it. Take time to operate the unit in the safest manner.
2. Study all attachment manuals thoroughly before using attachments with tractor. By doing so you will be aware of both the tractor and attachment capabilities when used as a unit and also the safest manner in which to operate them.
3. Always follow manufacturer's operational suggestions.
4. Do not fill gasoline tank when engine is running or hot. Add gas (using funnel) only outdoors and when engine is cool. **KEEP SMOKERS AND FLAMES AWAY FROM UNIT WHILE FUELING.** This will help eliminate the possibility of fire and/or explosion from spilled gasoline or fumes.
5. Refuel tractor from the Left side, the side on which the fuel tank is mounted. This is safer and more convenient than reaching over engine with fuel can.
6. Store fuel in approved container out of reach of children. Do not store fuel in the house. Gasoline is highly flammable and the fumes highly explosive.
7. Never wear loose clothing when operating unit. Loose clothing can get caught in moving parts and cause severe injuries.
8. Mount vehicle, place transmission shift lever in NEUTRAL, place P.T.O. lever in OFF position, depress clutch pedal and set parking brake prior to starting electric start engine. This will prevent starting tractor in gear.
9. Do not mount or leave vehicle while it is in motion or in actual operation, nor leave vehicle unattended while engine is running. Injury to the operator or a tractor runaway could occur.
10. Always shut off engine, place transmission lever in NEUTRAL and set parking brake whenever vehicle is to be left unattended. Lower all attachments to the ground with P.T.O. lever in OFF position to prevent injury to bystanders.
11. Never operate tractor with mower, snow caster, or any other attachment having moving parts, when any child or another person is in travel path or discharge area. *Children must not be allowed in or near working areas when equipment is being used.* Items or objects such as wire, stones, small toys and etc. can be ejected at high velocity out of the discharge chute. Clear work area of all objects which might be picked up and thrown.



CAUTION

12. Always look back to be certain no one is in the way before using reverse. This will avoid the possibility of running over any children, other persons or pets who might be in the area in back of the vehicle.
13. Children shall not be allowed to operate vehicle at any time. The average child is not capable of coping with the intricacies of operating a power tool.
14. Do not allow adults to operate vehicle without proper instructions including all safety instructions. In doing so, you will be sure they know how to operate unit properly and also are aware of all the safety precautions.
15. Attachments must be lowered to the ground when storing tractor. This will prevent the attachment from being dropped accidentally and causing injury. Place P.T.O. lever in OFF position.
16. Do not tow vehicle. Damage to the vehicle could occur.
17. Use care when pulling heavy loads. Use only the approved draw bar hitch.
18. Do not carry passengers. The passengers could fall off the vehicle and be injured.
19. Keep tractor and attachments free of excess grease, dirt, and oil. The unit will operate cooler, be easier to maintain, and safer to operate.
20. Engine must be stopped, and P.T.O. disengaged when cleaning, servicing, adjusting, repairing, or installing attachments on tractor. This is necessary to avoid possible injury from moving parts.
21. Always disconnect negative (-) battery cable from battery before doing any work on the electrical system. Reconnect it LAST when work is done. This is to prevent shorting of electrical system and accidental burns.
22. Before starting unit check to be sure all guards and safety devices are in place and in working condition and P.T.O. is in OFF position. This will help assure you against possible injury.
23. Do not drive this unit on a public thoroughfare at any time. The operator is risking injury from passing vehicles. Most local ordinances prohibit operating a unit such as this on a public thoroughfare.
24. Do not drive too close to a creek or ditch, also be alert for holes and other hazards. If you would drive into any of the above you could lose control of the unit.
25. Be careful on slopes, reduce speed and avoid sharp turns to prevent tipping or loss of control. Do not stop or start suddenly when going uphill or downhill.
26. Do not start or operate vehicle in an inside area, unless area is adequately ventilated. Engine exhaust contains carbon monoxide fumes, which are very poisonous.
27. Do not operate attachments when transporting vehicle.

GENERAL SAFETY PRECAUTIONS (Continued)

28. Always wear substantial footwear to provide as much protection as possible.
29. Mow only up and down the face of steep slopes; never across the face.
30. Do not change engine governor settings or overspeed the engine.
31. Keep all nuts, bolts, and screws tight to be sure equipment is in safe working condition. Check blade mounting bolts, for proper tightness, at frequent intervals.

32. Watch out for traffic, when crossing or near roadways, to avoid possible injury from passing vehicles.

33. When using attachments never direct discharge of material toward bystanders or pets.

34. After striking a foreign object stop unit and shut off engine. Inspect for damage and repair the damage before restarting and operating the equipment.

SERIAL NUMBER

To ensure prompt service when repairs or adjustments are required, your Bolens Dealer must have the following information. For your own personal reference, fill in the serial number spaces provided below.

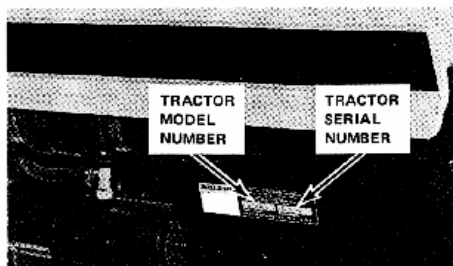


FIGURE 1

1. Model number of tractor. (Fig. 1) 1453
2. Serial number of tractor. (Fig. 1)
3. Model number of engine. (Fig. 2) HH-140
4. Serial number of engine. (Fig. 2)
5. Spec. number of engine. (Fig. 2) 160001

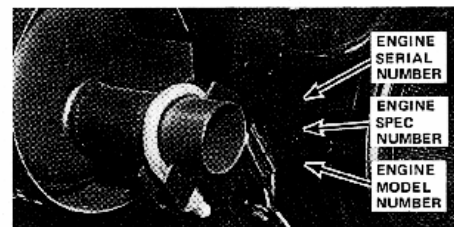


FIGURE 2

SPECIFICATIONS

BOLENS RESERVES THE RIGHT TO MAKE CHANGES OR IMPROVEMENTS TO ITS PRODUCTS WITHOUT OBLIGATION TO INSTALL SAME ON PRODUCTS PREVIOUSLY MANUFACTURED.

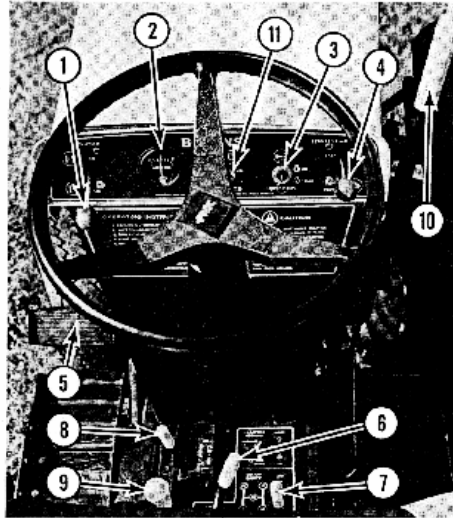
Engine.....Tecumseh 14 HP at 3600 RPM
Governor Setting.....3450 $\pm$ 150 RPM
Engine Type.....4-Cycle, single cylinder, air cooled
Fuel Capacity.....5 quarts
Oil Capacity.....3 pints
Air Cleaner.....Dry type
Drive.....Geared transmission and controlled differential (Transaxle)
Speed.....3 forward and 1 reverse (All speeds are approximate) in two ranges for a total of 6 forward and 2 reverse.
Lowest speed: less than 3/4 mph.
Highest speed: 6 mph.
Power to Attachments.....Farm tractor type (PTO) direct drive with universal joints and splined shaft

Tires.....Extra-wide terra-tires.
Front: 16 x 6.50-8.
Rear: 23 x 9.50-12
With lawn and garden tread.
Height.....40 inches
Width.....34 inches
Length.....63 inches
Wheelbase.....43 inches
Turning Radius.....40 inches
Ground Clearance.....7 inches
Shipping Weight.....675 pounds
Standard equipment.....P.T.O. splined shaft to drive front, center or rear attachments; electric starting; 45 amp battery; controlled differential; two speed ranges; headlights. Interlock switches to prevent tractor from being started with P.T.O. lever in ON position and clutch engaged; solid state ignition; ammeter.

CONTROLS**LOCATION & FUNCTION**

Before operating the tractor, the operator should become familiar with the function and location of each control to ensure proper and efficient operation.

The following listed numbers and accompanying information correspond to those numbers assigned to the controls indicated in Figure 3.

**FIGURE 3**

1. CHOKE.
Choke lever UP towards the "ON" position closes choke for starting. Choke lever DOWN to "OFF" position opens choke for operation.

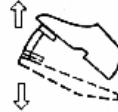


2. AMMETER.
Indicates rate of charge to or discharge from battery.

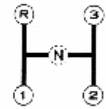
3. IGNITION-STARTER SWITCH
Turn ignition key to the right to start engine. Release when engine starts.



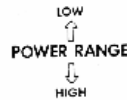
4. THROTTLE.
Move throttle lever "UP" one-half way for starting.



5. CLUTCH/BRAKE PEDAL.
To shift gears, depress clutch pedal fully. This disengages the clutch, and fully applies brake.



6. GEAR SHIFT LEVER.
For selection of 1st, 2nd, 3rd and reverse gear.



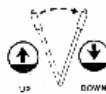
7. TWO SPEED RANGE LEVER.
High and low range. Provides a range of 6 speeds ahead, 2 in reverse.



8. P.T.O. (POWER TAKE OFF) CLUTCH.
Push forward to engage and pull back to disengage power to attachments.



9. PARKING BRAKE.
To apply parking brake, pull knob up and move it to the right. To release pull knob up and move it to the left.



10. ATTACHMENT LIFT LEVER.
When adjusting height of attachments, push thumb button on top of lift lever to unlatch. Six positions available.



11. LIGHT SWITCH.
Push switch up to turn on lights, push down to turn lights off.

**CAUTION**

1. Keep all shields and guards in place.
2. Before leaving operator's position:
 - Shift transmission to **NEUTRAL**;
 - Set parking brake;
 - Disengage attachment clutch;
 - Shut off engine and remove ignition key.
3. Wait for all movement to stop before servicing machine.
4. Keep people and pets a safe distance away from machine.

PRE-OPERATIONAL CHECKS

The operator should become familiar with the following pre-operational check list, and perform each check prior to starting or operating the Bolens tractor. REFER TO PREVENTIVE MAINTENANCE SECTION OF MANUAL, page 9, for details.

1. Check for proper level of engine oil. Fill crankcase through dipstick opening. The oil level is indicated by marks on the dipstick. See Figure 4.
2. Check gasoline tank for sufficient gas supply. Use a good grade of clean regular gasoline.



CAUTION

KEEP SMOKERS AND FLAMES AWAY WHEN REFUELING. BE CAREFUL NOT TO SHORT FUEL CAN ON ELECTRICAL CONNECTIONS.

3. Inspect battery for:
 - A. Proper electrolyte level.
 - B. Clean cables of dirt and corrosion.
 - C. Clean terminals of dirt and corrosion.Refer to Figure 4 for battery and its location.

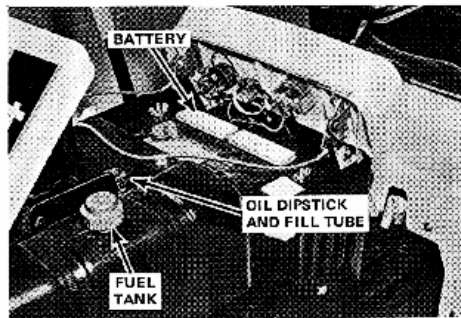


FIGURE 4

4. Check to see that air cleaner element is free of debris. Clean regularly. Refer to Figure 5 and Preventive Maintenance, page 9.
5. Check flywheel screen for debris, and clean regularly. Refer to Figure 5.
6. Visually check for loose or missing nuts, screws, and damaged parts. Replace and tighten before starting engine.
7. Check for even tire inflation. FRONT AND REAR TIRE INFLATION SHOULD NOT BE LESS THAN 8 LBS. NOR MORE THAN 12.

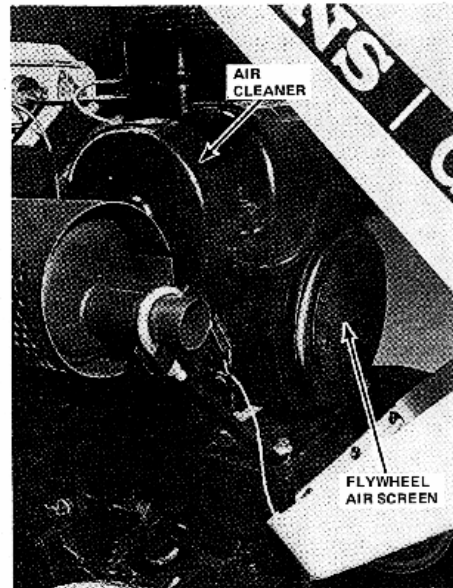


FIGURE 5

BREAK-IN PERIOD

A special "break-in" oil is used by the engine manufacturer during the engine test and run-in period. After "run-in," the special oil is drained. The engine at time of tractor assembly is filled with 10W30 SD grade oil. Further use of "break-in" oil is not required nor recommended for new Tecumseh engines.

NOTE: USE OIL RECOMMENDED IN LUBRICATION CHART. (Page 16.)

The engine should be placed under load, but not over loaded, from the very beginning as this will improve the final seating of the rings. DO NOT operate under light loads for prolonged periods of time during "break-in."

The engine oil level must be maintained in the "safe" operating range at all times. Oil level must be between the L (low) and F (full) marks on the dipstick. Always clean area around dipstick so that dirt does not fall into engine when dipstick is re-

BREAK-IN PERIOD (Continued)

moved. Check daily and add oil as necessary to maintain proper level. **DO NOT OVERFILL.**

On a new engine, change oil after the first 2 hours and thereafter at 25 hour intervals. Drain oil (Figure 6) while it is hot for it will then flow more freely and thus carry away more impurities.

After completely draining oil, reinstall drain plug then remove oil filter cap and add 3 pints of oil. Check the oil level on the dipstick before adding more. Bring the level up in the safe range but do not exceed the full mark.

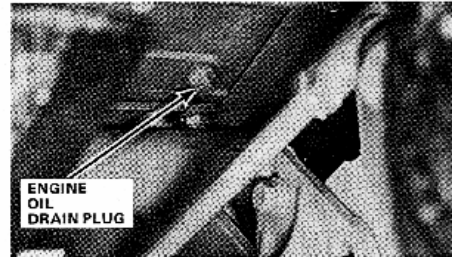


FIGURE 6

STARTING THE ENGINE**NORMAL STARTING**

1. THE STARTER WILL OPERATE ONLY WHEN P.T.O. CONTROL LEVER IS IN "OFF" POSITION AND THE CLUTCH/BRAKE PEDAL IS FULLY DEPRESSED.
2. Move choke lever all the way up (choke on). Experience will indicate need for more or less choking due to variations in temperature, grade of fuel, etc.
3. Move throttle lever up about half-way.
4. Insert ignition key and turn to the right to start engine. Release when engine starts.

**CAUTION**

IN THE EVENT OF A "FALSE START" (ENGINE GETS UP SUFFICIENT SPEED TO DISENGAGE STARTER BUT FAILS TO CONTINUE RUNNING), THE ENGINE MUST BE COMPLETELY STOPPED BEFORE ANOTHER STARTING ATTEMPT IS MADE. IF THE FLYWHEEL IS STILL ROTATING, THE DRIVE PINION AND RING GEAR WILL CLASH, AND BE DAMAGED. LIMIT CRANKING (CONTINUOUS) TO A PERIOD OF 30 SECONDS TO PREVENT OVERHEATING OF THE STARTER. IF CRANKED OVER 30 SECONDS, STARTER SHOULD NOT BE OPERATED AGAIN FOR 60 SECONDS TO ALLOW TIME FOR COOLING.

5. Move choke lever down about half-way as soon as engine starts. Gradually push all the way down as the engine warms up. In normal operation, choke lever should be in off (down) position for best engine efficiency and fuel economy.
6. Move throttle lever up to full speed when operating tractor.
7. To stop the engine, bring engine back to idle, engage parking brake, place P.T.O. lever in "OFF" position and turn ignition switch off. Remove the ignition key when the tractor is not in use, or left unattended. If engine has been working hard let it idle several minutes before shutting it off. This will allow engine temperatures to normalize more rapidly, preventing overheating.

EMERGENCY STARTING

In the event of electrical failure, get in touch with your DEALER for assistance in locating the trouble.

Should the battery be too low on power to start the unit, it is always best to remove it and have it recharged. However, should jumper cables be used the following must be observed.:

1. REMOVE CELL CAPS WHEN USING JUMPER CABLES.
2. BE CERTAIN jumper cables are connected positive to positive and negative from the booster battery to the engine block of the tractor, NOT TO NEGATIVE (-) TERMINAL OF BATTERY.
3. Check P.T.O. clutch (must be in OFF position) and parking brake must be engaged.
4. Follow procedure outlined under Electric Starting.
5. Remove tractor battery and have it fully charged as soon as possible.
6. After the battery is fully recharged and has been checked, reinstall it in the tractor, connecting the ground cable last.

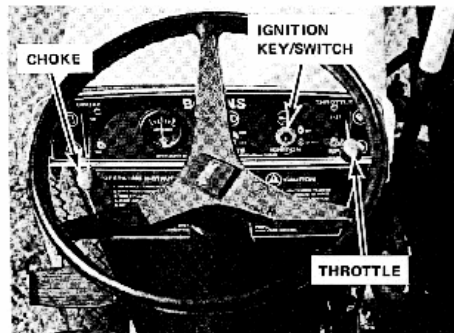


FIGURE 7

OPERATION

BEFORE DRIVING THE BOLENS TRACTOR, THE OPERATOR SHOULD BE FAMILIAR WITH THE LOCATION AND FUNCTIONS OF ALL CONTROLS. REMEMBER: THE STARTER WILL OPERATE ONLY WHEN P.T.O. LEVER IS IN OFF POSITION AND THE CLUTCH/BRAKE PEDAL IS FULLY DEPRESSED.

THREE-SPEED TRANSMISSION

The Bolens tractor features a 3-speed geared transmission plus a second range to give you a wide choice of operating speeds.

NOTE: TO PREVENT DAMAGE TO THE GEARS, DO NOT SHIFT GEARS WHILE THE TRACTOR IS IN MOTION. TRACTOR MUST BE AT A FULL STOP. AVOID CLASHING GEARS WHEN SHIFTING. LOW speed range is best for heavy jobs such as tilling, plowing, snow casting or mowing tall or lush grass.

The High-Low speed range change lever is located on the transmission cover just to the right of the shift lever. To change range, depress the clutch, bring tractor to a FULL STOP and move lever forward to place in low range, back to place in high range — as directed on instruction plate adjacent to lever.

GEAR	LOW SPEED RANGE *	HIGH SPEED RANGE *
1st	3/4 mph	2 mph
2nd	1 1/4 mph	3-1/2 mph
3rd	2 mph	6 mph

*Approximate speed at full throttle adjustment. The ground speed will decrease in each gear as the throttle is adjusted toward idle. Speeds will also vary depending on road or ground condition and load attached to tractor.

NOTE: ALWAYS START OUT IN THE GEAR IN WHICH YOU INTEND TO DRIVE OR OPERATE. IF YOU WISH TO CHANGE GEARS — BRING THE TRACTOR TO A FULL STOP. DO NOT SHIFT GEARS WHILE TRACTOR IS IN MOTION!

CONTROLLED DIFFERENTIAL

By turning the control knob, located on the hub of the left rear wheel as shown in Figure 8, you can vary the degree of differential traction up to nearly straight axle drive. For "heavy" jobs such as plowing or snow casting, turn the knob clockwise (as viewed from left side of tractor, facing end of axle) until desired degree of drive to both wheels is obtained. For mowing or other "light" jobs, be sure to have control knob in standard differential position (that is, turn the control knob counterclockwise until it stops). This is necessary to avoid gouging or scuffing, which would be caused by having both wheels driving on turns.

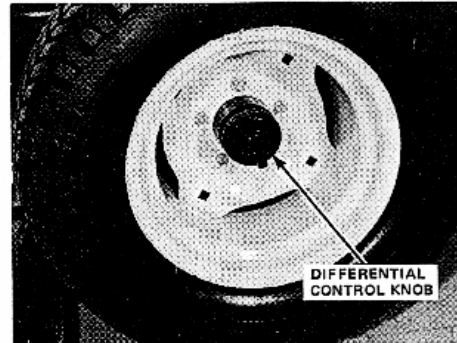


FIGURE 8



DO NOT ADJUST CONTROL KNOB WHILE TRACTOR IS IN MOTION. NEVER TIGHTEN WITH A WRENCH OR HAMMER.

ATTACHMENT LIFT LEVER

Height of attachments can be varied through 6 positions with the attachment lift lever. To unlock lever, push thumb button release knob on top.

Power take-off (P.T.O.) lever move to "ON" to engage and to "OFF" to disengage power to attachments. Always be sure to lock lever in slots provided when P.T.O. is engaged or disengaged.



FIGURE 9

OPERATION (Continued)**POWER TAKE-OFF CLUTCH (P.T.O.)**

The P.T.O. and the geared transmission are separate systems; therefore, the P.T.O. can be engaged or disengaged as desired by the operator.

CAUTION  **DO NOT ENGAGE P.T.O. WITHOUT AN IMPLEMENT ATTACHED. ALWAYS REMOVE UNIVERSAL JOINTS FROM P.T.O. SHAFT AFTER ATTACHMENT IS REMOVED. SERIOUS DAMAGE WILL RESULT IF UNIVERSAL JOINTS ARE LEFT ON, AND P.T.O. IS ENGAGED.**

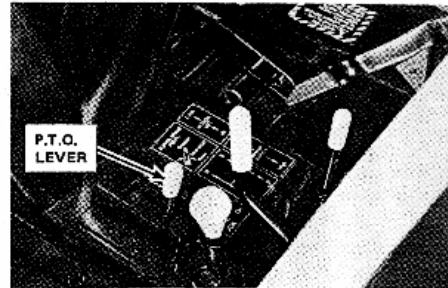


FIGURE 10

PREVENTIVE MAINTENANCE

A little time spent each day by the operator on preventive maintenance will lead to longer operating life of the BOLENS tractor.

The removal of debris, dirt and grease accumulations are considered normal maintenance practices and can help discover minor difficulties before they become troublesome.

LUBRICATION

See Lubrication Chart on page 16.

ENGINE

The engine oil level must be maintained in the "safe" operating range at all times. Oil level must be between the "L" (low) and "F" (full) marks on the dipstick. Clean area around dipstick so dirt does not fall into crankcase when dipstick is removed. Check daily and add oil as necessary to maintain proper level — **DO NOT OVERFILL**. Oil level must not exceed the "F" mark. After completely draining oil, reinstall drain plug then remove oil filler cap and refill with 3 pints of oil — check the oil level on the dipstick before adding more — then bring the level up in the safe range.

Select oil weight and type according to outside temperature. Refer to Lubrication Chart on page 16.

AIR SCREEN

Clean flywheel air screen frequently. A dirty air screen and/or engine will cause the engine to overheat and damage the engine.

AIR CLEANER

Under normal operating conditions, disassemble and service air cleaner components every 10 hours of operation. Do this more frequently if extremely dusty or dirty conditions prevail. The dry type element is cleaned by gently tapping on a flat surface — when doing this, be careful not to damage gasket surfaces on element.

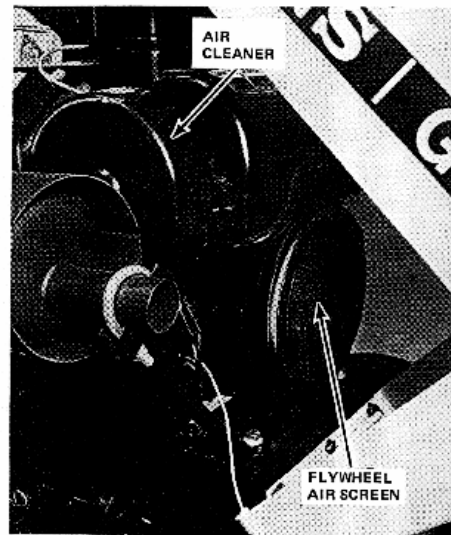


FIGURE 11

NOTE: DO NOT USE GASOLINE, KEROSENE OR SOLVENT — DO NOT OIL ELEMENT. THE PAPER ELEMENT WILL BE MATERIALLY AFFECTED BY THEIR USE.

Wipe dirt or dust accumulation from cover, including base plate. Dry type elements should be replaced when no longer serviceable.

The importance of maintaining an air cleaner in proper condition cannot be overemphasized! Dirt induced through improperly installed, improperly serviced or inadequate elements, wears out more engines than do long hours of operation.

PREVENTIVE MAINTENANCE (Continued)

SPARK PLUG

Every 100 hours remove plug, check condition and reset at .030 inch or replace plug if needed. Good operating conditions are indicated if plug has light coating of gray or tan deposit. A dead white, blistered coating could indicate overheating. A black (carbon) coating may indicate an "over-rich" fuel mixture caused by clogged air cleaner or improper carburetor adjustment. Do not service plug in poor condition — best results are obtained with a new plug.

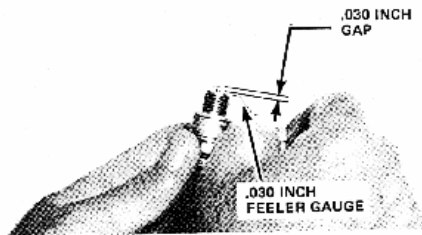


FIGURE 12

NOTE: CLEANING OF SPARK PLUGS IN CLEANING MACHINES THAT USE ABRASIVE GRIT IS NOT RECOMMENDED. SPARK PLUGS SHOULD BE CLEANED BY SCRAPING OR WIRE BRUSHING AND WASHING WITH A COMMERCIAL SOLVENT.

TIMING

No timing adjustment or breaker point setting is necessary. All solid state components are neatly molded into the stator which is mounted to the flywheel end bearing plate. The only mechanically moving part is the magnetic rotor, a component part of the flywheel.



THE ENGINE IS EQUIPPED WITH SOLID STATE IGNITION. ALWAYS CAUTION HAVE ELECTRICAL REPAIRS MADE BY AN AUTHORIZED DEALER TO AVOID POSSIBLE DAMAGE TO IGNITION SYSTEM.

FUEL TANK

Fill with clean fresh gasoline of regular grade. (For cold weather operation use winter blend gasoline.) DO NOT MIX OIL WITH GASOLINE. REFUEL OUTDOORS WITH ENGINE STOPPED AND COOL.

Check to see that vent hole in fuel tank cap is not plugged.

FUEL VALVE

A fuel shut-off valve is in the line from the fuel tank to the carburetor. See Figure 13 for location.

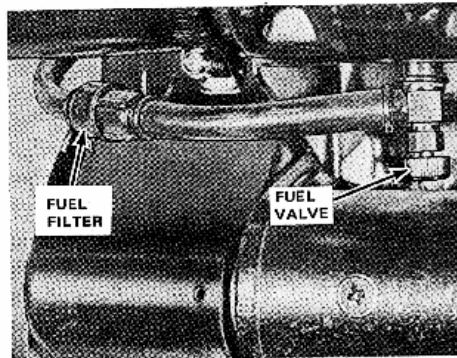


FIGURE 13

FUEL FILTER

There is also a fuel filter in the line from the fuel tank. See Figure 13 for location. If this filter is a two piece filter, it can be opened for cleaning. To open: close fuel shut-off valve. Turn the two halves counterclockwise to open. See Figure 14 for opened filter.

NOTE: To reclose, twist the two halves counterclockwise each about one-half turn before assembling. Then place two halves together and close by turning clockwise until they are securely tightened.

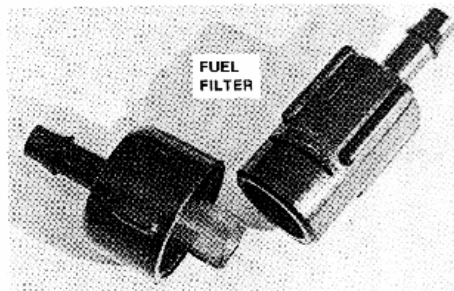


FIGURE 14

BATTERY

Keep cables and terminals clean and apply a light coat of petroleum jelly or oil for protection. Check battery bracket for corrosion and keep clean. Do not over-tighten battery mounting. Reinstall in same position.

PREVENTIVE MAINTENANCE (Continued)



CAUTION

ELECTRIC STORAGE BATTERIES GIVE OFF HIGHLY FLAMMABLE HYDROGEN GAS WHILE CHARGING, AND CONTINUE TO DO SO FOR SOME TIME AFTER RECEIVING A STEADY CHARGE. DO NOT UNDER ANY CIRCUMSTANCES ALLOW AN ELECTRIC SPARK OR AN OPEN FLAME NEAR THE BATTERY. DO NOT LAY TOOLS ACROSS THE BATTERY TERMINALS AS THIS MAY RESULT IN A SPARK OR SHORT CIRCUIT WHICH MAY CAUSE AN EXPLOSION. BE CAREFUL TO AVOID SPILLING ANY ELECTROLYTE ON HANDS OR CLOTHING.

NOTE: WHEN SERVICING THE BATTERY, BE SURE BATTERY CABLES ARE DISCONNECTED BEFORE ATTEMPTING REMOVAL OF THE BATTERY FROM THE TRACTOR. ALWAYS DISCONNECT NEGATIVE (-) CABLE FIRST. WHEN INSTALLING THE BATTERY, ALWAYS CHECK THE POLARITY OF THE BATTERY TERMINALS TO BE SURE THE BATTERY IS NOT REVERSED. THE NEGATIVE TERMINAL (-) IS GROUND. APPLY A LIGHT COAT OF PETROLEUM JELLY OR OIL TO THE INSIDE OF THE CLAMP TERMINALS AND OVER THE BOLT STUD BEFORE CONNECTING TERMINALS. ALWAYS CONNECT THE NEGATIVE TERMINAL (-) LAST. WHEN REINSTALLING THE BATTERY: (1) PLACE HOLD DOWN RODS IN PLACE. (2) TIGHTEN WINGNUTS FINGER TIGHT ONLY, TO AVOID POSSIBLE DAMAGE TO BATTERY CASE.

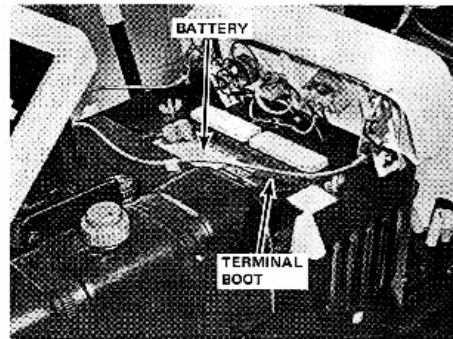


FIGURE 15

The electrolyte (acid and water) in each cell should be at triangle level at all times to prevent battery failure. When the electrolyte is below this level, add pure, distilled water.

UNDER NO CIRCUMSTANCES ADD ANY SPECIAL BATTERY "DOPES," SOLUTIONS, POWDERS OR EXOTIC ADDITIVES: THIS VOIDS WARRANTY.

PNEUMATIC TIRES

Keep both front and rear tires inflated evenly. Under no circumstances should tire inflation be less than 8 pounds, nor more than 12 pounds. Check air pressure regularly with a low pressure gauge. Operating with incorrect pressures may damage tires.

See Trouble Shooting Guide on page 17 for additional information.

ADJUSTMENTS

CARBURETOR

Carburetor is adjusted at the factory and should not have to be reset. If black exhaust smoke is noted, check the air cleaner first. An "overrich" mixture is usually caused by a poorly serviced, clogged air cleaner element, not an improperly adjusted carburetor.

If readjustment becomes necessary, stop the engine. Turn the IDLE fuel adjusting screw all the way in until it bottoms lightly; do not force it closed as this will damage the needle valve. For preliminary setting, turn IDLE fuel screw out (counterclockwise) $1\frac{1}{2}$ turns. For final adjustments, start engine and allow it to warm up, then operate at full throttle and under load if possible. If engine runs rough, turn IDLE fuel screw either direction in $\frac{1}{8}$ th turn increments until engine runs smooth. Allow engine to run a couple of seconds between each setting before adjusting again. Rough idle is often due to the idle speed being set too low — check this also.

NOTE: DO NOT TURN HEX NUT ON BOTTOM OF CARBURETOR BOWL. THIS NUT HOLDS THE BOWL TO THE CARBURETOR AND IS NOT AN ADJUSTMENT SCREW.

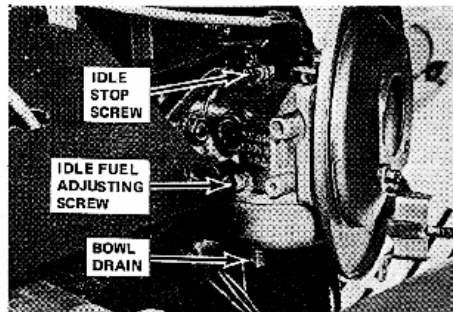


FIGURE 16

ADJUSTMENTS (Continued)

P.T.O. BELT — ADJUSTMENT

The P.T.O. belts can be adjusted by loosening the three capscrews that hold P.T.O. support casting to axle support casting. Raise or lower P.T.O. support casting to obtain proper adjustment.

When P.T.O. lever is $1\frac{1}{4}$ to $1\frac{1}{2}$ inches from the rear of quadrant, the P.T.O. belt should start to tighten.

If belts are properly adjusted (as described above) and still drag, check adjustment of lower belt guide. There should be not more than $\frac{1}{8}$ " clearance between pulley and belt guide all the way around when P.T.O. is engaged but should not rest on the belt at any point when running.

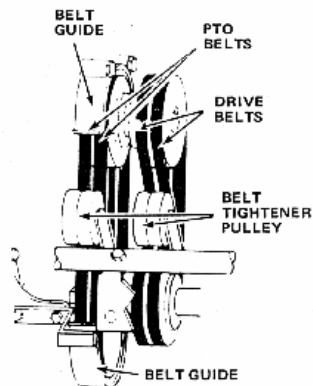


FIGURE 17

P.T.O. BELT — REMOVAL

1. Loosen belt guides from P.T.O. support and remove P.T.O. belts from pulley.
2. Loosen the two capscrews that hold the belt guide to the engine, and remove the guide.
3. Pull the drive belt idler pulley away from the belt, and temporarily secure in this position.
4. Remove the drive belts from the engine pulley.
5. Remove the P.T.O. belts.

To install P.T.O. belts, reverse the above procedure. Be sure all parts removed are replaced in their original position.

DRIVE BELT — ADJUSTMENT

The transmission dual drive belts require no adjustment. There is constant belt tension applied at all times.

DRIVE BELT — REMOVAL

1. Perform step 3 under P.T.O. belt — removal above.
2. Remove nut and washers from front end of the drive shaft. (To keep drive shaft from turning while removing nut, hold it with a wrench across T bar welded to back end of drive shaft.)
3. Remove the four capscrews and washers that hold bearing support to the mounting plate assembly.
4. Remove bearing support by sliding it off front end of drive shaft.
5. Remove drive belts.

To install new belts reverse the above procedure.

INTERLOCK SWITCHES

There are two interlock switches on this unit, one on the clutch brake pedal and one on the power take-off control. If the interlock switch on the power take-off needs adjustment, refer to Figure 18.

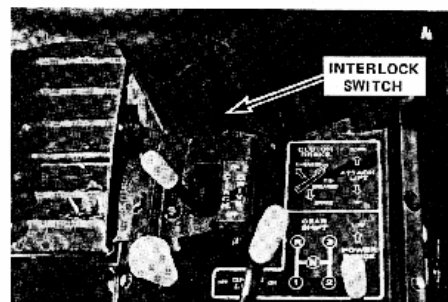
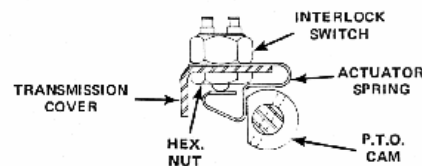


FIGURE 18

With the P.T.O. lever in OFF position, the flat of the P.T.O. cam should be in the vertical position shown in sketch above. Adjust actuator spring so it makes light contact to the interlock switch button. Check switch operation and readjust if necessary. If the interlock switch on the "Clutch-Brake Pedal" needs adjustment, refer to Figure 19. Loosen nuts "A" and move bracket "B" on pedal arm either towards or away from actuating spring to obtain correct adjustment.

ADJUSTMENTS (Continued)

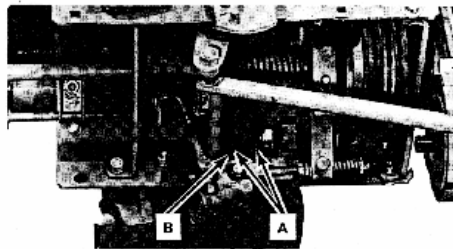
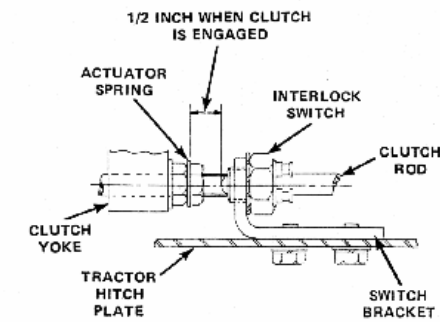


FIGURE 19

There should be 1/2 inch between actuator spring and switch button when the clutch is engaged (pedal released). See sketch above. With the above adjustment the switch should just begin to actuate when clutch pedal is half way down. After correct adjustment is achieved, securely tighten nuts "A" and recheck operation. If adjustment has changed, repeat the above procedure until correct adjustment is achieved.

CLUTCH-BRAKE PEDAL

As you familiarize yourself with the tractor, you will notice that when you depress the Clutch-Brake Pedal approximately two-thirds, the clutch is disengaged. This Clutch-Brake Pedal position also serves as a brake to stop the vehicle when in gear. Pedal adjustment is set at the factory and should not require frequent attention unless the linkage has been disturbed.

However, to prevent the vehicle from moving when transmission is in NEUTRAL or when shifting into another gear, particularly on inclines, it is necessary to further depress the Clutch-Brake Pedal to apply the Main Transmission Brake.

The Transmission Brake, being the MAIN BRAKE, must be checked often and adjusted as follows:

1. Depress CLUTCH-BRAKE pedal approximately two-thirds (until rear clutch flange has moved back to touch stationary plate). At that time the adjusting rod has moved up to top of brake rod slot. (See Figure 20.)
2. Exert additional pressure on pedal to move brake shoe, Figure 20, toward Main Brake drum.

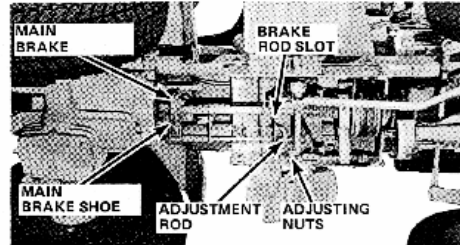


FIGURE 20

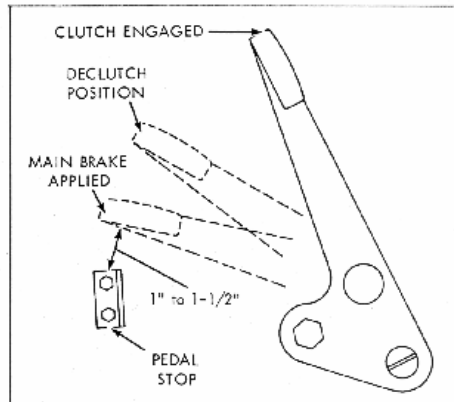


FIGURE 21

3. Brake shoe must contact drum when CLUTCH-BRAKE pedal is approximately 1" to 1 1/2" from pedal stop on frame. (See Figure 21.)
4. Adjust nuts on adjusting rod to insure adequate brake shoe pressure. (See Figure 20.)

CAUTION  **ALWAYS APPLY PARKING BRAKE WHENEVER LEAVING TRACTOR UNATTENDED OR ON INCLINES. OPERATING TRACTOR WITH PARKING BRAKE ON WILL DAMAGE THE BRAKE. ALWAYS USE MAIN BRAKE WHEN SHIFTING ON INCLINES.**

Proper use of brakes will help prevent damage or personal injury.

ADJUSTMENTS (Continued)

REAR AXLE END PLAY

The rear axle may develop end play which should be corrected. Check approximately every 50 hours of operation and adjust if necessary.

With both rear wheels off the ground:

1. Remove cotter pin and loosen R.H. castellated nut several turns.
2. Remove cotter pin from castellated nut on L.H. side (under differential control knob), and turn castellated nut hand tight. Temporarily install cotter pin and turn wheels to determine if differential gears are binding. Continue this procedure on L.H. side until a slight binding is detected. At this point back off castellated nut to first cotter pin hole and lock castellated nut with cotter key.

NOTE: THIS ADJUSTMENT ON L.H. SIDE MUST BE PERFORMED FIRST.

3. Then proceed with R.H. castellated nut adjustment, to eliminate all end-play. Recheck for excessive binding before locking R.H. castellated nut with cotter pin.

NOTE: AXLE NUTS MUST ONLY BE TIGHTENED HAND TIGHT when making the axle end play adjustment. DO NOT USE A WRENCH.

SEAT ADJUSTMENT

To adjust seat, loosen two capscrews beneath tractor seat and reposition seat by sliding either forward or backward. Tighten capscrews to secure seat in new position.

FREE WHEELING

Free wheeling pin is located on the inside hub of the right rear wheel, see Figure 22. Pull pin out for free wheeling or push pin into socket for normal operation, securing pin in either position with spring cotter provided.

In order for the tractor to freewheel controlled differential must also be disengaged. Turn the differential control knob, Figure 8, page 8 counterclockwise as far as it will go. **DO NOT USE A WRENCH.** "Counterclockwise" is as viewed from left of tractor facing the end of the axle.



CAUTION

FREE WHEELING IS PROVIDED SOLELY FOR MANEUVERING TRACTOR BY HAND ON LEVEL GROUND. DO NOT USE FREE WHEELING ON SLOPING GROUND BECAUSE BRAKE IS INOPERABLE WHEN IN FREE WHEELING AND DAMAGE OR PERSONAL INJURY COULD OCCUR. DO NOT TOW VEHICLE.

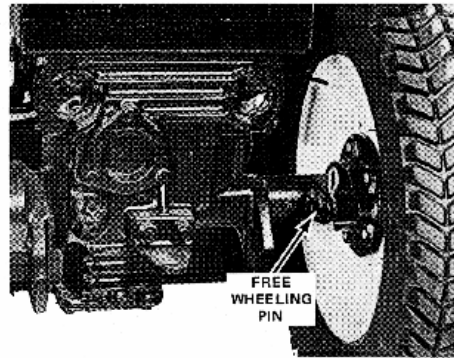


FIGURE 22

POWER TAKE-OFF (P.T.O.)

The P.T.O. (power take-off) drive shaft is located under the front of the tractor frame and is connected to the engine by drive belts. This assembly has a drive shaft which is splined at both ends so that front, center and rear power attachments can be coupled directly to it. Universal joints on the attachments allow you to raise or lower attachments (with lift lever) while the tractor is under full power.

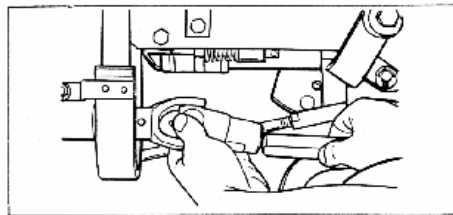


FIGURE 23

Switching powered attachments requires only a short time. Liberally grease P.T.O. shaft. Slide universal joint over end of splined power take-off shaft. Align holes in universal joint and P.T.O. shaft. Secure with special cotter pin.

Liberally grease square drive shaft on attachment.

Slide attachment drive and P.T.O. drive shaft universal joint together, see Figure 23; install pins into hitch points.



ALWAYS REMOVE UNIVERSAL JOINT FROM POWER TAKE-OFF SHAFT WHEN ATTACHMENTS ARE REMOVED FROM THE TRACTOR. IF THE UNIVERSAL JOINT IS NOT REMOVED AND THE POWER TAKE-OFF IS ENGAGED, DAMAGE WILL RESULT FROM WHIPPING ACTION OF THE FREE UNIVERSAL JOINT, AND PERSONAL INJURY COULD OCCUR.

MAINTENANCE CHART

MAINTENANCE REQUIRED	Length of Operation	Type of Maintenance
Engine Cooling Air Screen —	Daily or 8 Hrs.*	Brush Clean
Engine Air Cleaner —	10 Hrs.*	Shake Out Dirt
	When no longer serviceable	Replace
Cooling Fins — (Engine) —	Daily or 8 Hrs.	Clean — Use Air Hose if Available
Spark Plugs —	100 Hrs.	Service or Replace
Fuel Filter —	100 Hrs.	Clean
Battery —	Daily*	Check Water Level — Add As Necessary
Belts —	50 Hrs.*	Check for Wear and Adjust
Tires —	25 Hrs.	Check for Damage and Air Pressure
Brake —	50 Hrs.*	Adjust Linkage
Rear Axle —	50 Hrs.*	Adjust End Play

* More often under extreme conditions

LUBRICATION CHART

LUBRICATION REQUIRED		Length of Operation	Type of Lubrication	Amount Required
1. Engine Crankcase —		Daily & 8 Hrs.	Bolens Engine Oil	Add Oil To Full Mark
Average Temperature	(Spring, Summer, Autumn) (+120° F. to 40° F.)	50 Hrs.*	Bolens 16014 SAE 30 Oil	Replace 3 pints*
	(Winter) (+40° to Below Zero)	50 Hrs.*	Bolens 16015 SAE 10W-30 Oil	Replace 3 pints*
2. Transmission —		Weekly or 25 Hrs.	Bolens 16021 EP 90 Gear Lube	Add To Plug Level
3. Front Wheel Bearings —		8 Hrs.	Grease With Bolens 16020 Multi-Purpose Grease	1-2 Strokes
4. Front Wheel Spindles —		8 Hrs.	Grease With Bolens 16020 Multi-Purpose Grease	1-2 Strokes
5. Brake Linkage —		8 Hrs.	Oil	Small Amount
6. PTO Housing —		8 Hrs.	Grease With Bolens 16020 Multi-Purpose Grease	1-2 Strokes
7. Tie Rod Ends and Drag Links —		8 Hrs.	Oil	Small Amount
8. Steering Shaft —		8 Hrs.	Grease With Bolens 16020 Multi-Purpose Grease	1-2 Strokes

* More often under extreme conditions.

NOTE: A hand type grease gun is recommended when greasing your unit. HI-PRESSURE TYPE GREASE GUNS could cause damage to the fittings and bearing seals. The proper hand grease gun can be purchased from your Bolens dealer. Ask for Bolens Grease Gun No. 16023 with Bolens Grease No. 16020. Lubricate all linkages, levers and pins not equipped with grease fittings with an oil can once a week, or oftener depending on operating conditions.

LUBRICATION

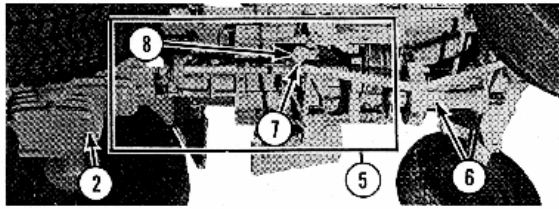


FIGURE 24

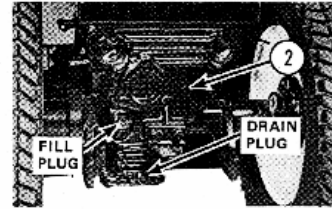


FIGURE 25

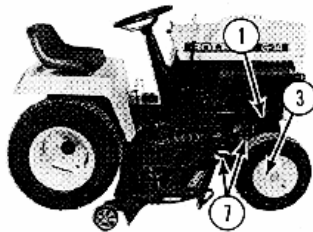


FIGURE 26

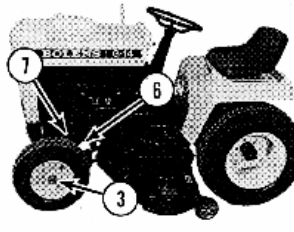


FIGURE 27

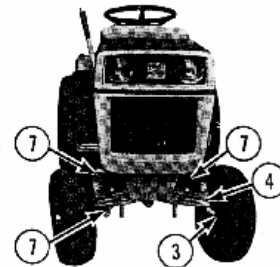


FIGURE 28

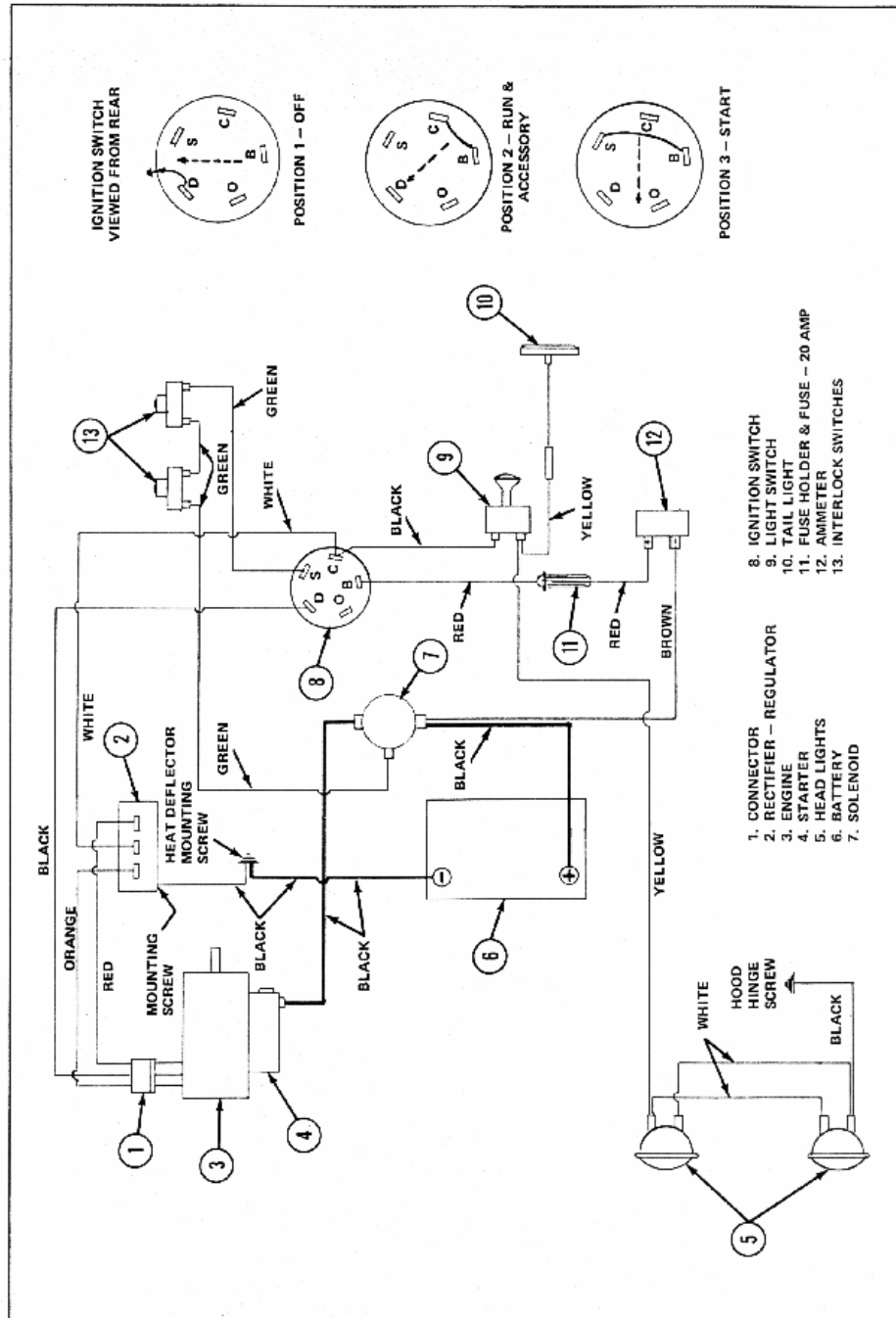
Proper lubrication and regular maintenance will increase the operating life of your BOLENS tractor. It is suggested that lubrication recommendations in this manual be followed. A lubrication schedule prepared by the operator would be beneficial.

The numerically listed locations on the lubrication chart correspond to those numbers shown on Figures 24, 25, 26, 27 and 28.

MINOR TROUBLESHOOTING GUIDE

IF TRACTOR ACTS IN FOLLOWING MANNER:	CHECK FOR POSSIBLE CAUSE										
	CHECK FUSE AND REPLACE	CLEAN BLOWER HOUSING SCREEN	FAULTY IGNITION	FAULTY SPARK PLUG	EMPTY FUEL TANK	BATTERY	CARBURETOR	IDLE ADJUSTMENT	OIL	AIR CLEANER	CHOKES
Engine will turn over but won't start			X	X	X	X	X			X	X
Engine will not turn over	X					X					X
Starts only after repeated tries			X	X			X				X
Stalls in a few seconds					X		X	X			X
Stalls when hot							X	X			X
Idles rough			X	X			X	X		X	X
Engine overheats		X	X	X			X	X	X		X

WIRING DIAGRAM



STORING YOUR BOLENS TRACTOR

Always keep your BOLENS tractor in a dry protected place when not in use to prolong its usefulness and appearance. With year around use, it is not necessary to "store" the tractor; but when it is not to be used for some time, it should be prepared for storage in the following manner:

1. Completely clean all accumulated dirt or trash from all parts, especially hydrostatic fins, engine fins and flywheel screen.
2. Wipe oil or a rust preventive on any parts that may rust. Touch up any area where paint has been chipped or worn off on tractor.
3. Drain gas tank and carburetor.
4. Drain oil from crankcase while engine is still hot and flush with clean, light oil. Refill crankcase.
5. Clean fuel filter.
6. Remove, clean and regap spark plug and put a small amount of oil (SAE 30) into cylinder. Turn the engine over a few times to fully lubricate the cylinder walls, valve seats

and valve stems. This can be done by engaging the key starter briefly. Replace spark plug.

7. Keep tractor covered when stored inside or outside.

8. BATTERY — Keep terminal posts cleaned of corrosion salts and coat with petroleum jelly or grease. Keep cables clean. Stored battery must be kept fully charged and with all cells filled to triangle. Store at cool temperature, 20° to 50°. Check each two months and charge as necessary.

9. The air cleaner should be cleaned and sealed off with a plastic bag or facsimile, for the duration of the storage period.

10. If tractor is stored with an attachment mounted on it, the attachment **MUST** be lowered to the ground, and P.T.O. lever put in OFF position.

11. It is highly recommended that machines be stored inside a building through the winter. If this is not possible, the engine should be protected from snow and ice with a covering of water-proof material.

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 other manufacturers is limited to assurance that such use will not void Bolens warranty on the Bolens equipment to which the outside manufactured attachments are adapted. The responsibility for the design, performance, durability, safety and operation, service repair availability, and warranty obligation remain with the outside manufacturer. Bolens specifically excludes from its warranty obligation all such outside manufactured attachments.

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