FMC

FMC CORPORATION
OUTDOOR POWER EQUIPMENT DIVISION

OWNER MANUAL
BOLENS TRACTOR

MODEL H-14
[1456]

SERIAL NUMBERS
0100101 AND UP

WITH HYDROSTATIC AND HH 140 TECUMSEH ENGINE

TABLE OF CONTENTS

FORM NO. 552729-1 PRINTED AT FMC CORPORATION O.P.E.D. REVISED 7/74

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 (SALMON) STATEMENT AND BE SURE THE POSTPAID WARRANTY REGISTRATION (WHITE) 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 travel pedal in NEUTRAL, set parking brake, and put P.T.O. lever in OFF position prior to starting engine. Engine will not start unless travel pedal is in NEUTRAL, parking brake is set and P.T.O. lever is in OFF position.

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 run-away could occur.

10. Always shut off engine, remove ignition key, place travel pedal in NEUTRAL and set parking brake whenever vehicle is to be left unattended. Also, lower all attachments to the ground and place 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.

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.

CAUTION

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 accidently 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 passenger could fall off the vehicle and be injured.

19. Keep tractor and attachments free of excess grease 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 accidental burns and shorting of electrical system.

22. Before starting unit check to be sure all guards and safety devices are in place and in working condition. This will help assure 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 it is adequately ventilated. Engine exhaust contains carbon monoxide fumes, which are very poisonous.

27. Do not operate attachments when transporting vehicle.

SERIAL NUMBER

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

Model number of Tractor. (Fig. 1) 1456

Serial number of Tractor. (Fig. 1)

Engine Model Number. (Fig. 2) HH-140

Engine Serial Number. (Fig. 2)

Engine Spec. Number. (Fig. 2)

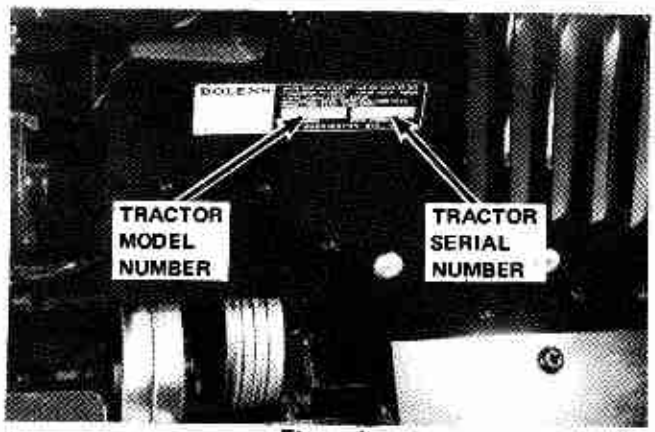

Figure 1

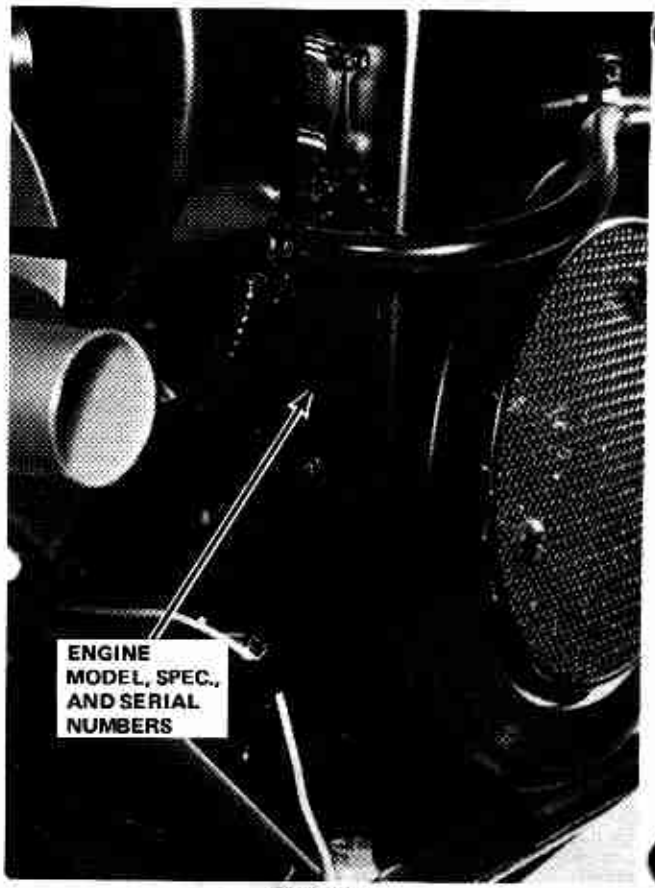

Figure 2

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 + 150 RPM
Type	4 cycle, single cylinder, air cooled
Fuel capacity	5 quarts
Engine oil capacity	3 pints
Air cleaner	Dry type
Drive	Hydrostatic transmission
Speed. Infinitely variable	Forward: Approx. 0–6-3/4 mph Reverse: Approx. 0–3-1/2 mph
Power to attachments	Double belt drive (P.T.O.) with universal joints and splined shaft.
Tires	Front: 16 x 6.50-8 Rear: 23 x 9.50-12
Height	40 inches
Width	34 inches
Length	63 inches
Wheelbase	43 inches
Turning radius	40 inches
Ground clearance	7 inches
Shipping weight	680 lbs.
Standard equipment	P.T.O. splined shaft to drive front, center or rear attachments; hydraulic lift system; electric starting; head lights; full fenders; moulded contour seat; 45 amp battery; interlock switches to prevent tractor from being started with P.T.O. lever ON or TRAVEL PEDAL in DRIVE position; solid state ignition; ammeter.

CONTROLS

LOCATION AND 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.

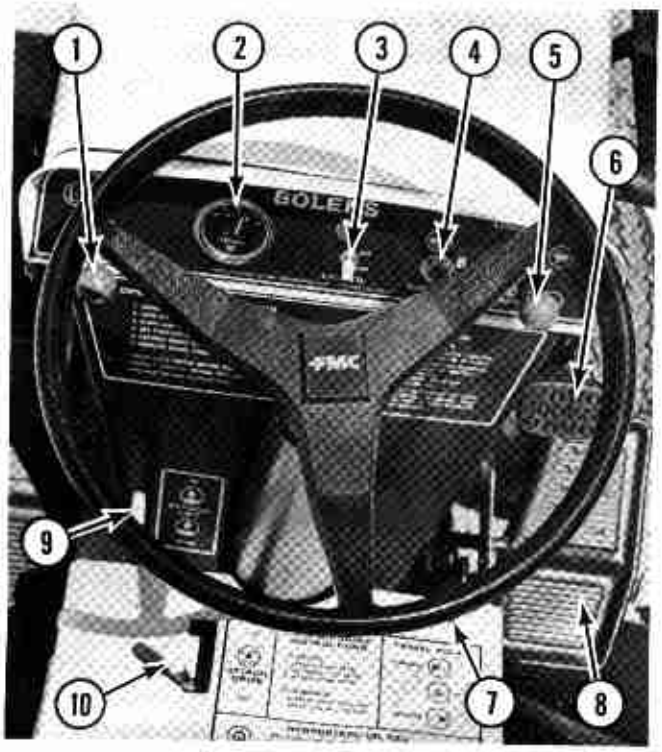

Figure 3

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. LIGHT SWITCH.
Push light switch lever up to turn on lights – push down to turn lights off.

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

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

6. FOOT BRAKE.
Use when vehicle is being moved manually or free-wheeling.

7. PARKING BRAKE.
To engage "Parking Brake" depress foot brake pedal and lift parking brake knob to latch the brake pedal in the park position. To release the "Parking Brake" depress the brake pedal until the latch is released and knob drops downward.

8. TRAVEL PEDAL.
Depress pedal with toe of foot for forward motion. Depress with heel of foot for reverse motion.

9. HYDRAULIC LIFT LEVER.
Pull lever up to raise and push lever down to lower attachments.

10. POWER TAKE-OFF (P.T.O.) LEVER.
Engages and disengages power to attachments.

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 prior to starting or operating the Bolens tractor; REFER TO MAINTENANCE SECTION OF MANUAL, page 10.

1. Check for proper level of engine oil. Fill crankcase thru dipstick opening. The oil level is indicated by marks on the dipstick. See Figure 4.

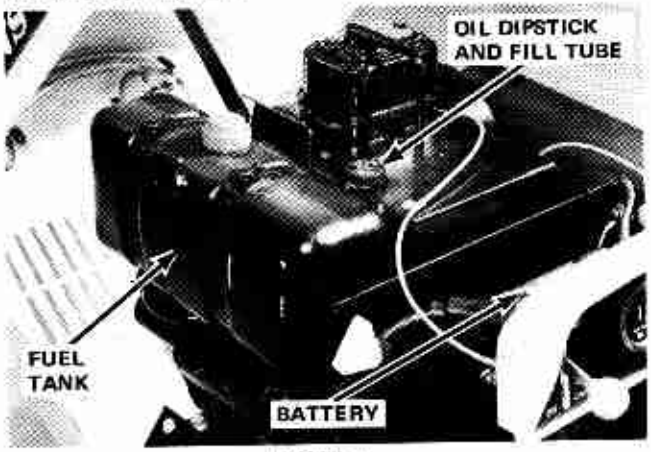

Figure 4

2. Check gasoline tank for sufficient gas supply.

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.

   C. Clean terminals.

Refer to Figure 4 for battery and its location.

4. Check to see that air cleaner element is free of debris. Check and clean regularly. Refer to Figure 5.

5. Clean flywheel screen. Check and clean regularly. Refer to Figure 5.

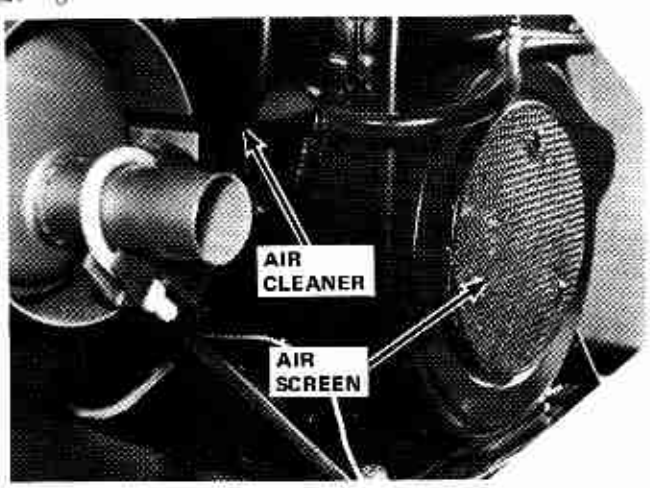

Figure 5

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.

8. Check "Hydrostatic" oil level before operating.

Oil level should be maintained in the safe operating range, Serial numbers 0101000 to 0199999 only. Refer to Figure 6.

Serial numbers 0200101 and up "Hydrostatic" oil level should be maintained to plug level in rear of transaxle housing. Refer to Figure 6A.

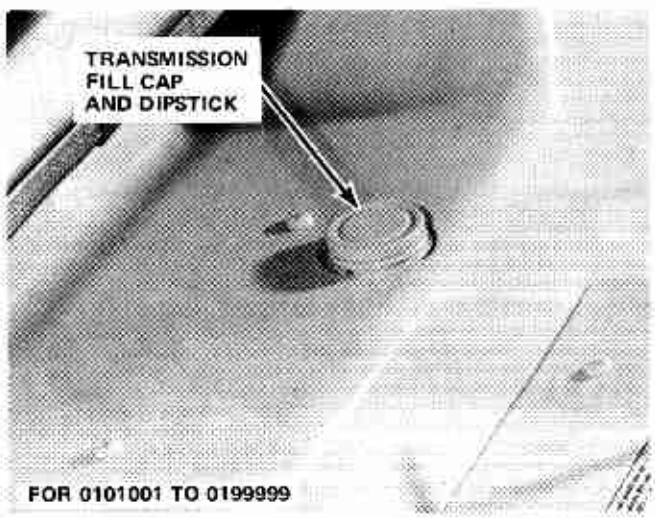

Figure 6

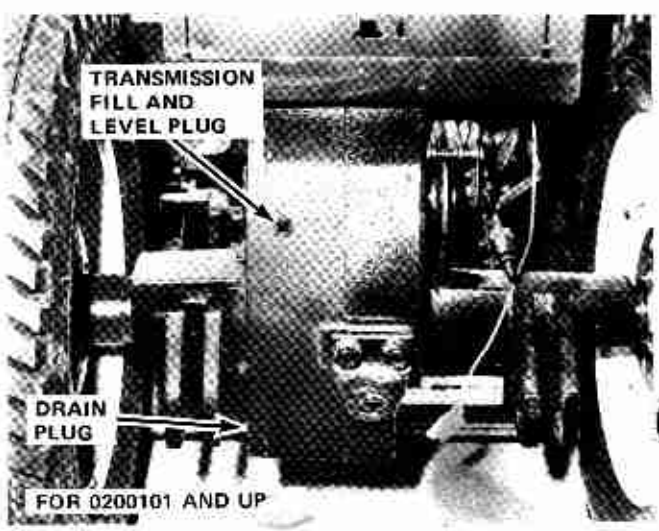

Figure 6A

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 18.)

The engine should be placed under load, but not overloaded, 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 removed. 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 7) 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 filler 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.

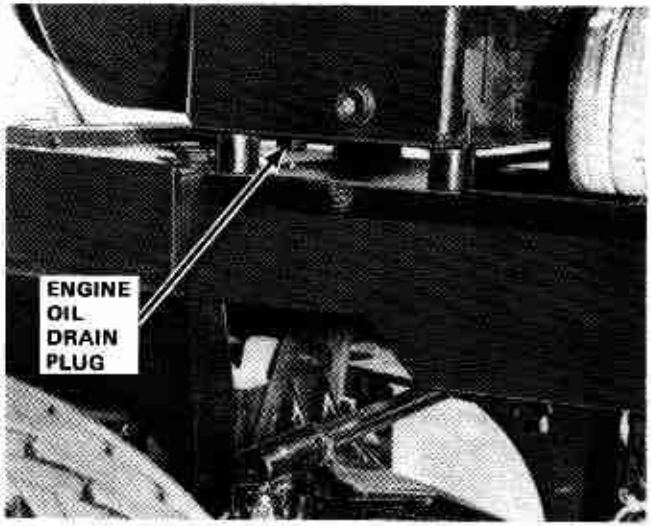

Figure 7

STARTING THE ENGINE

NORMAL STARTING

1. THE STARTER WILL ONLY OPERATE WHEN P.T.O. CONTROL LEVER IS IN "OFF" POSITION AND PARKING BRAKE IS ENGAGED.

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.**

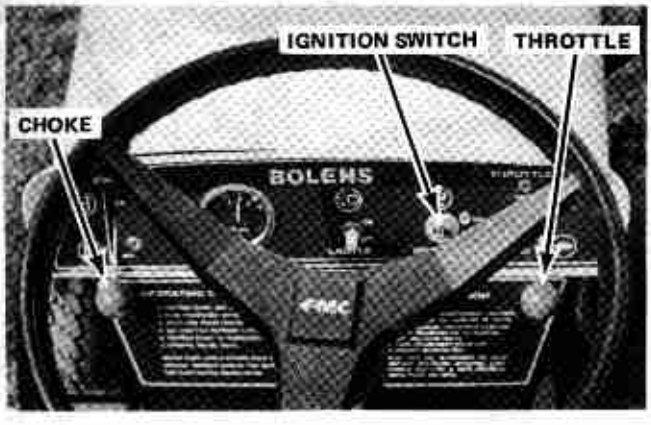

Figure 8

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 Normal 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*.

OPERATION

BEFORE DRIVING THE BOLENS TRACTOR, THE OPERATOR SHOULD BE FAMILIAR WITH THE LOCATION AND FUNCTIONS OF ALL CONTROLS. THE STARTER WILL ONLY OPERATE WHEN P.T.O. LEVER IS IN OFF POSITION AND PARKING BRAKE SET.

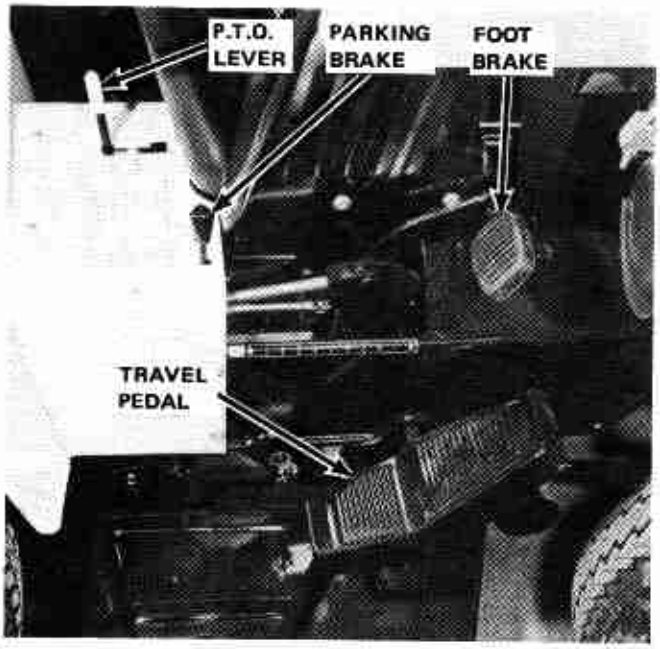

Figure 9

To engage "Parking Brake" depress foot brake pedal and lift parking brake knob to latch the brake pedal in the park position. To release the "Parking Brake" depress the brake pedal until the latch is released and knob drops downward.

HYDROSTATIC TRANSMISSION

The hydrostatic transmission gives the operator a choice of infinitely variable speeds from 0 to 6-3/4 mph forward, and 0 to 3-1/2 mph in reverse. Avoid excessive HIGH travel speed whenever possible. Lower travel speeds are best for most jobs such as snow casting or mowing.

It is required that the tractor operate at FULL THROTTLE. While operating under heavy load conditions, listen to the engine RPM. If the engine begins to labor, *do not advance the travel pedal.* By letting up on the travel pedal, the ground speed will decrease and the engine speed will increase, thereby allowing engine to maintain constant P.T.O. speed.

NOTE: DO NOT DRIVE THE TRACTOR IMMEDIATELY AFTER START UP. LET THE ENGINE RUN A FEW MINUTES TO ALLOW HYDROSTATIC FLUID TO WARM UP FIRST. IN EXTREME COLD WEATHER THE TRACTOR SHOULD NOT BE DRIVEN UNTIL AFTER THE HYDRAULIC LIFT SYSTEM IS OPERATING. LENGTH OF WARM UP WILL BE DETERMINED BY TEMPERATURE.

Figure 10

The travel (control) pedal is generally used for dynamic braking. To slow down or stop the tractor while it is in forward motion, gradually apply pressure to the travel control pedal with heel of right foot until tractor comes to a full stop. To slow down or stop the tractor while it is in reverse motion, apply pressure to travel control pedal with toe of right foot until tractor comes to a full stop.

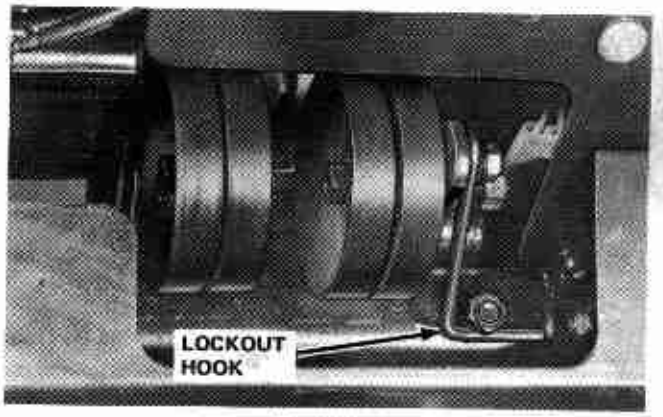

Figure 11

To assist in cold weather starting or when moving tractor manually, an idler lock-out is provided. The lock-out releases the belt tension, thereby disengaging the drive system.

NOTE: IF AT ANY TIME TRACTOR DOES NOT MOVE WHEN PEDAL IS DEPRESSED, MAKE SURE LOCK-OUT IS UNHOOKED.

CONTROLLED DIFFERENTIAL

By turning the control knob, located on the hub of the left rear wheel shown in Figure 12, you can vary the degree of differential traction up to nearly straight axle drive. For 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 lighter 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 the tires, which would be caused by having both wheels driving on turns.

Figure 12

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

HYDRAULIC LIFT

The hydraulic lift valve can be maneuvered while vehicle is at rest or in motion. Lift lever to raise and push down on lever to lower attachments. When released, lever will automatically return to NEUTRAL position and hold.

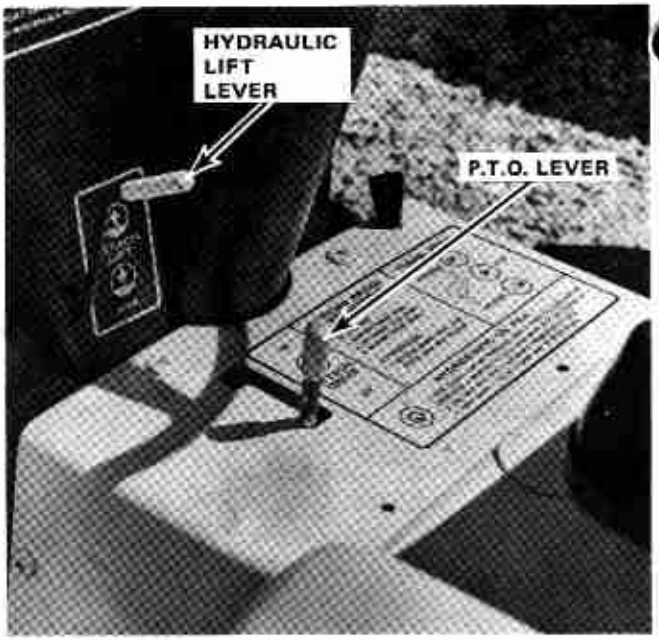

Figure 13

CAUTION BE SURE ATTACHMENT IS COMPLETELY HOOKED UP BEFORE USING HYDRAULIC LIFT. DAMAGE COULD RESULT. MOVE THE ATTACHMENT THROUGH ITS COMPLETE RANGE SLOWLY TO MAKE SURE IT DOES NOT BIND OR HAVE INTERFERENCE. MAKE NECESSARY ADJUSTMENT IF REQUIRED.

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

The P.T.O. and hydrostatic 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.

PREVENTIVE MAINTENANCE

A little time spent by the operator on preventive maintenance each day the unit is used 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 18.

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 18.

AIR SCREEN

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

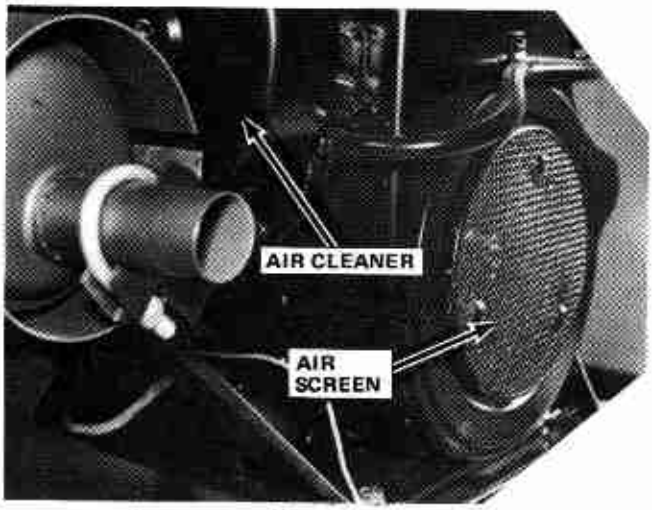

Figure 14

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.

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 *MUST* be replaced when they show signs of excessive dirt.

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.

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 "overrich" 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.

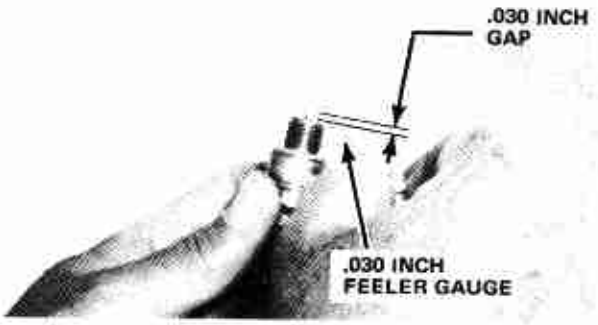

Figure 15

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.

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

PREVENTIVE MAINTENANCE (Continued)

FUEL TANK

Fill with clean fresh regular grade or low lead gasoline. (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 16 for location.

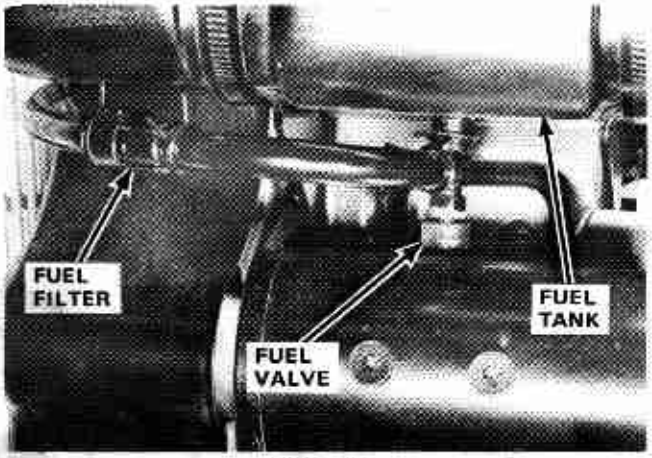

Figure 16

FUEL FILTER

There is also a fuel filter in the line from the fuel tank. See Figure 16 for location. This filter can be opened up for cleaning. To open: close fuel shut-off valve. Turn the two halves counterclockwise to open. See Figure 17 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.

If the filter is one piece it should be replaced when dirty.

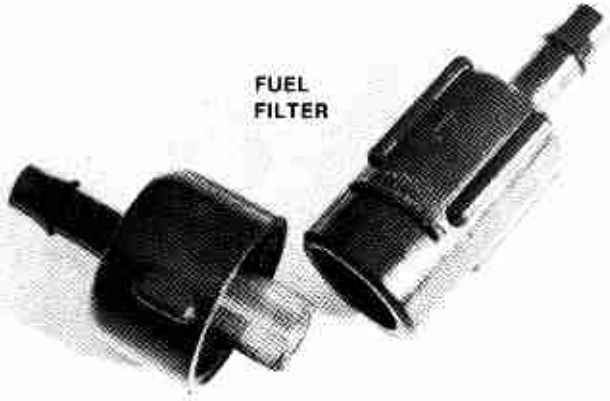

Figure 17

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.

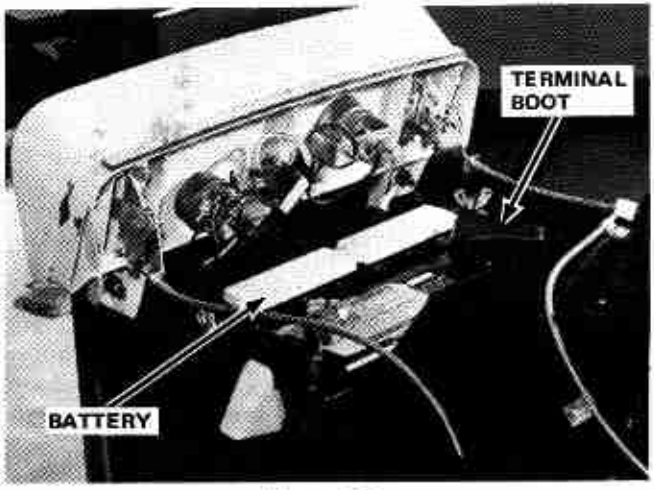

Figure 18

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 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.

PREVENTIVE MAINTENANCE (Continued)

CAUTION 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.

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.

HYDROSTATIC TRANSMISSION

Remove ignition key. *Remove all dirt from around transmission filler plug area and filter. Clean transmission cooling fins periodically.* If tractor is operated in a dusty environment, check and clean cooling fins more frequently. Consult your Bolens dealer for transmission maintenance. (See Figures 19, 19A and 20)

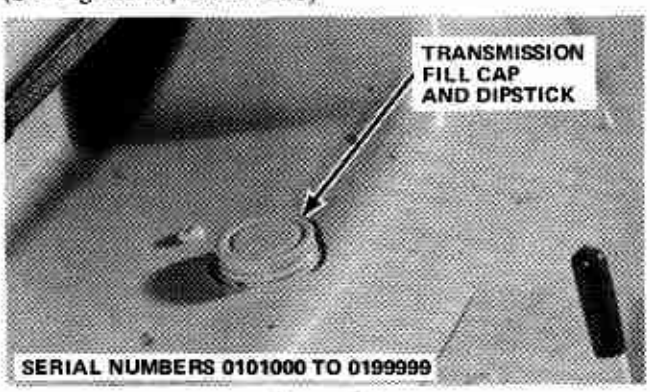

Figure 19

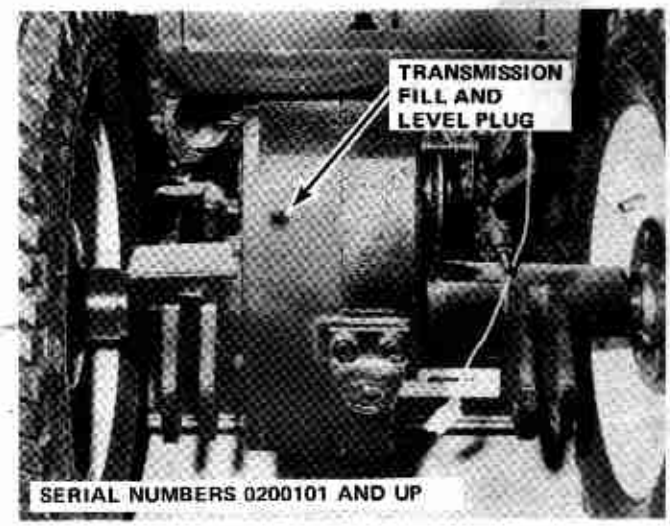

FIGURE 19A

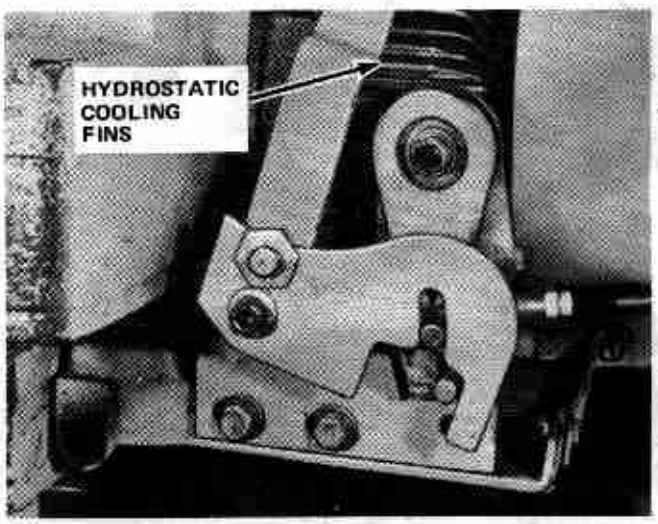

Figure 20

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.

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) 1-1/2 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 1/8th 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.

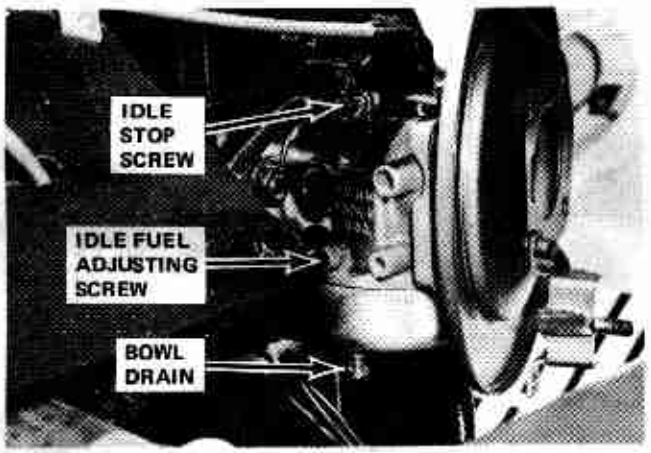

Figure 21

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 the P.T.O. lever is 1-1/8 to 1-1/4 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 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.

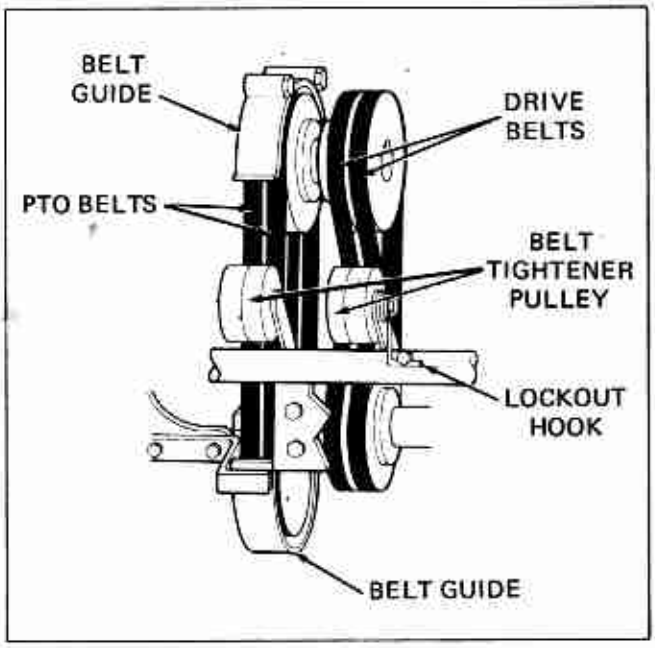

Figure 22

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.

INTERLOCK SWITCHES

There are two interlock switches on this unit, one on the "Brake Linkage" and one on the "Power Take Off" control.

ADJUSTMENTS (Continued)

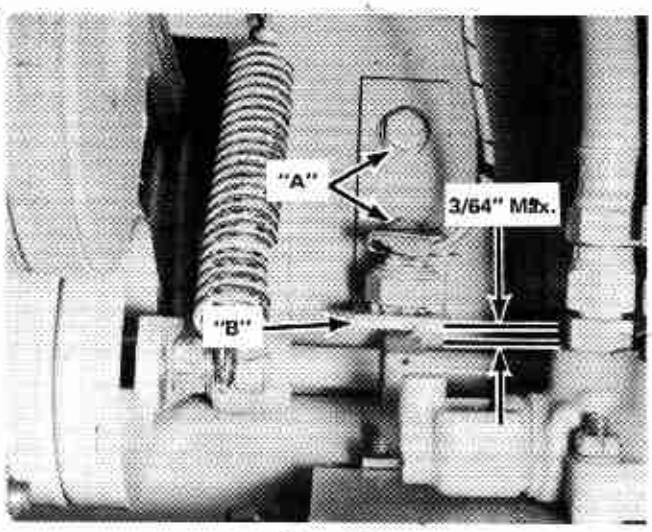

Figure 23

If the interlock switch on the "Power Take Off" needs adjustment refer to Figure 23. With P.T.O. lever in off position, loosen hex capscrews "A" slightly. Then move bracket "B" either towards or away from P.T.O. lever cam to obtain from 3/64" maximum to 1/64" minimum clearance between the switch housing and the cam. After adjustment is made securely tighten capscrews "A" and recheck clearance. If clearance has changed repeat above procedure.

Interlock switch on the "Transmission Linkage" is located as shown in Figure 24.

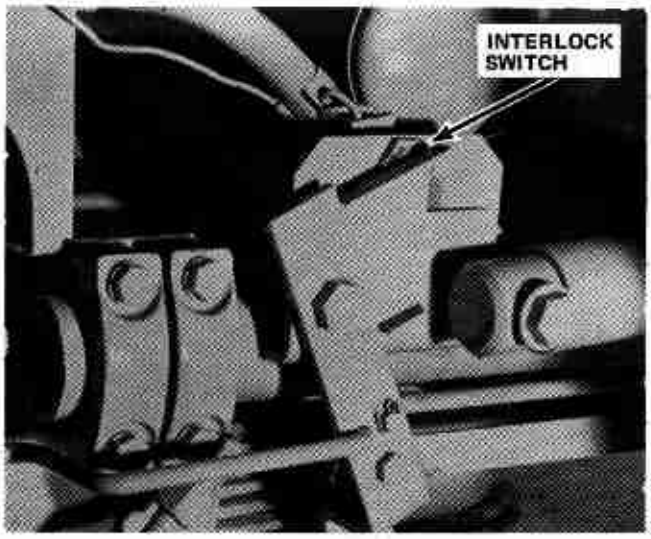

Figure 24

TRAVEL PEDAL

The "Travel Pedal" was adjusted at the factory with tip of the pedal approximately 45° forward of the vertical center line. If the operator would prefer to either increase or decrease this angle for his personal comfort the pedal can be adjusted as follows. Refer to Figure 25. Loosen hex nut "A." Remove cotter pin "B" from trunnion "C." Remove trunnion "C" from lever "D." Turn rod "F" into rod end "E" to increase the pedal angle. Turn rod "F" out of rod end "E" to decrease the pedal angle. After adjustment has been completed, reinstall trunnion "C" and cotter pin "B." Lock hex nut "A" securely against rod end "E."

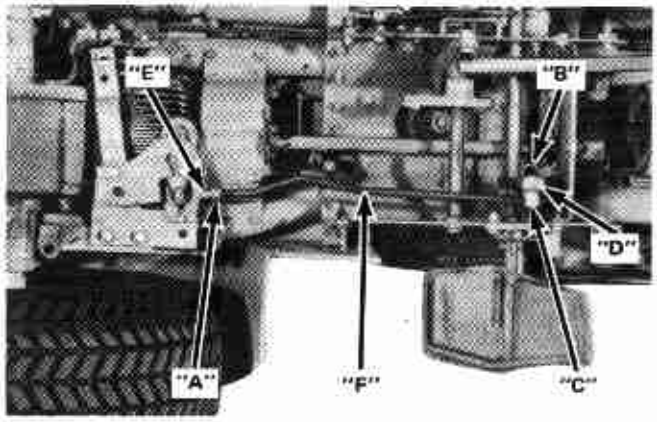

Figure 25

FOOT BRAKE ADJUSTMENT

If it only requires light foot pressure to latch the parking brake, or if the parking brake does not hold the tractor when the brake pedal is latched, the brake system requires adjustment.

With the parking brake released, proceed as follows:

1. Measure the distance between the front of the brake arm and the cutout of the tractor skirt; this should be 1/2 to 5/8 inch when brake is latched. See Figure 26. If this dimension is not 1/2 to 5/8 inch, loosen the two hex head capscrews holding the latch bracket to the tractor frame. Slide bracket either forward or backward to achieve the 1/2 to 5/8 inch dimension. Securely retighten capscrews after adjustment is achieved.

2. Turn hex lock nut "A," Figure 27 clockwise to tighten until 15 to 25 pounds pressure on the foot pedal is required to latch the parking lock.

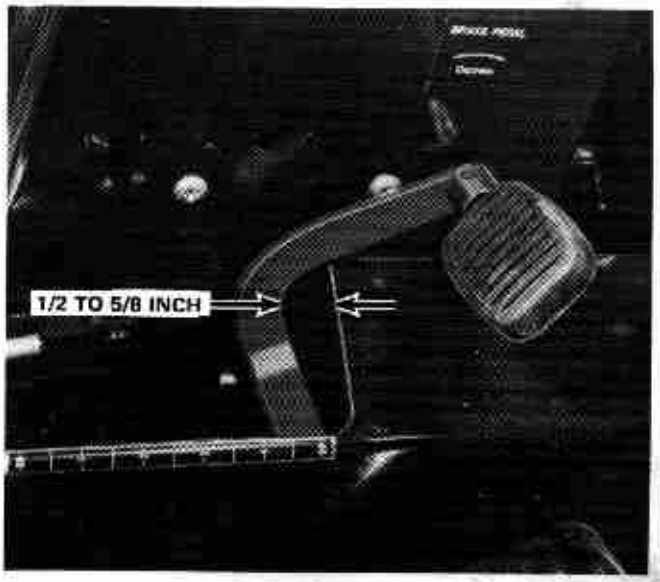

Figure 26

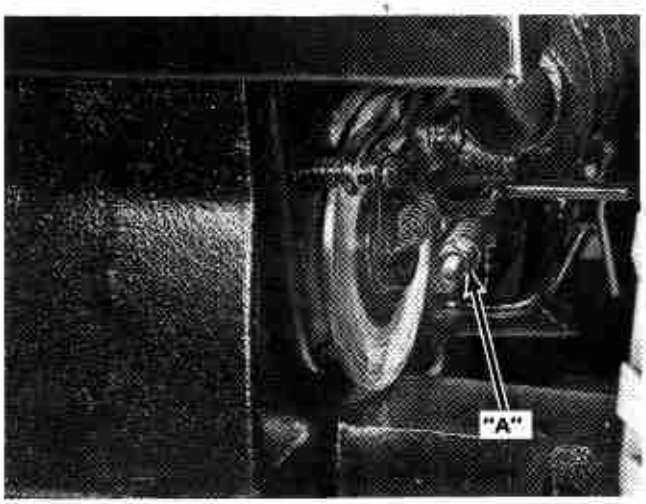

Figure 27

HYDROSTATIC NEUTRAL ADJUSTMENT

The "Hydrostatic" neutral is adjusted at the factory; if the transmission would need adjustment the following procedure should be used.

With the transmission cold and engine off, check the fluid in transmission reservoir. It should be to the level indicated on dipstick.

Refer to Figure 28. Start engine and release parking brake. If the tractor creeps "Forward" or "Backward" the "Neutral" position needs adjustment.

Adjust Neutral as follows:

1. With the engine off, release parking brake and place travel pedal in full reverse position. Pin "A" Figure 28 should be tight in corner "B" of lever "C" Figure 28. If adjustment is necessary loosen capscrew "D" and adjust lever "C." Securely retighten capscrew "D" after adjustment is achieved.

2. Securely block up rear of tractor, just so the rear wheels clear the ground.

3. Start the engine and set throttle to about 1/4 open.

4. Loosen capscrews "E" Figure 28. Hold neutral arms "F" firmly in contact with pin "K," carefully move plate "G" toward front of tractor, if tractor is creeping forward, and toward rear of tractor if tractor is creeping backward, until Hydrostatic noise ceases and wheels no longer creep.

5. Securely tighten capscrews "E" and recheck. Plate "G" must be kept parallel to casting "H."

NOTE: WHEN NEUTRAL IS PROPERLY ADJUSTED PIN "A" MUST ENTER SLOT "J" FREELY WITHOUT HITTING THE SIDES OF SLOT "J." IF PIN HITS THE SIDE OF SLOT "J" LOOSEN CAPSCREW "D" AND READJUST LEVER "C." SECURELY RETIGHTEN CAPSCREW "D" AFTER CORRECT ADJUSTMENT IS ACHIEVED.

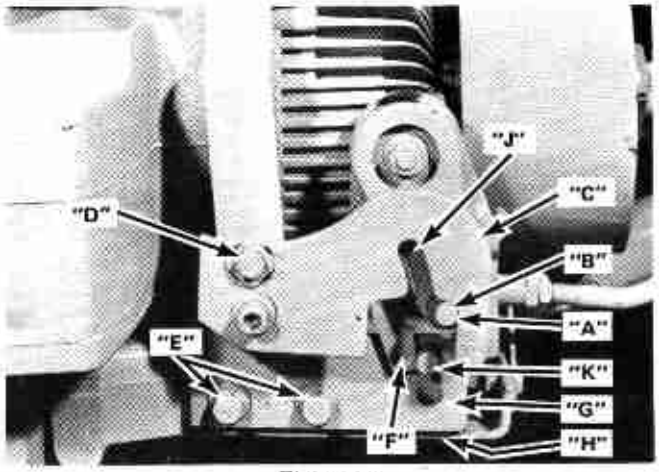

Figure 28

HYDRAULIC LIFT LEVER

When the hydraulic lift lever is moved either to its up or down position, with the engine running at normal speed, the cylinder should move smoothly to the end of its stroke without noting a squeal from the control valve. If the valve squeals when the lever is moved either up or down with the cylinder in motion it should be adjusted as follows. Refer to Figure 29. Loosen screws "B" enough to allow pillow

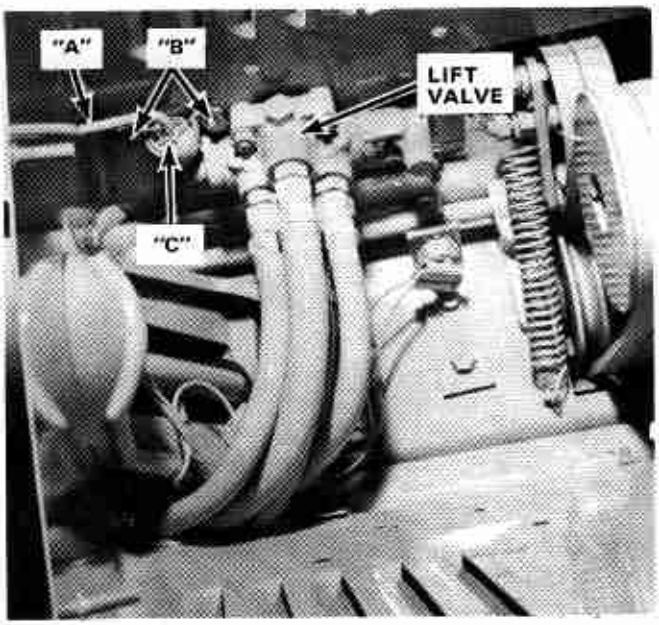

Figure 29

block "C" to be moved slightly. Move pillow block "C" either direction until lift lever "A" is in center of slot, hold lever and tighten screws "B." With engine running move lift lever to move the cylinder through its up and down cycle. If while the cylinder is moving there is a squealing noise the centering adjustment must be rechecked. If a squeal occurs on the up stroke the pillow block must be moved slightly to the rear and if the squeal occurs on the down stroke move the pillow block slightly forward. When the lift lever is

ADJUSTMENTS (Continued)

properly adjusted the lever should reach either end of the slot at the same time that the lift valve spool reaches the end of its stroke.

After proper adjustment has been made, securely tighten capscrews "B." Recheck adjustment.

NOTE: WHEN CYLINDER REACHES THE END OF ITS STROKE IN EITHER DIRECTION AND LIFT LEVER IS NOT RELEASED, THE VALVE WILL ALSO SQUEAL DUE TO THE OIL PASSING THROUGH THE PRESSURE RELIEF VALVE.

POWER TAKE-OFF

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.

If belts are properly adjusted (as described above) and still drag, check adjustment of lower belt guide. There should be approximately 1/8" clearance between pulley and belt guide all the way around.

SEAT

To adjust seat, loosen the two hex nuts securing seat to fender. Slide seat either forward or backward until desired adjustment is achieved. Tighten nuts to secure seat in its new position.

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 two 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. 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 until holes align. Lock with special cotter pin supplied. Liberally grease square drive shaft on attachment. Slide attachment drive and P.T.O. drive shaft universal joint together; install pins into hitch points.

Figure 30

Universal joints on the attachments allow you to raise or lower attachments (with hydraulic lift lever) while the attachment is under full power.

CAUTION **ALWAYS REMOVE UNIVERSAL JOINT FROM POWER TAKE-OFF SHAFT WHEN ATTACHMENTS ARE REMOVED FROM 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.**

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. Hydrostatic Transmission – Serial Numbers 0200101 and Up Only (Capacity 10 qts.)		Check Weekly Or 8 Hrs.	Type "A" Automatic Trans. Fluid	Add to Cold Mark on Dipstick Serial Numbers 0200101 and Up Only Add to Plug Level
		When Oil is Discolored	Drain and refill with Bolens 172-1514 Hydrostatic fluid or Type "A" Automatic Transmission Fluid	
3. Front Wheel Bearings –		8 Hrs.	Grease with Bolens Multi-Purpose 16020	1-2 Strokes
4. Front Wheel Spindles –		8 Hrs.	Grease with Bolens Multi-Purpose 16020	1-2 Strokes
5. Travel Pedal Shaft –		8 Hrs.	Oil	Small Amount
6. PTO Housing –		8 Hrs.	Grease with Bolens Multi-Purpose 16020	1-2 Strokes
7. Tie Rod Ends and Drag Links –		8 Hrs.	Oil	Small Amount
8. Steering Shaft –		8 Hrs.	Grease with Bolens Multi-Purpose 16020	1-2 Strokes
9. Differential - Serial Numbers 0101001 to 0199999 Only For Serial Numbers 0200101 and Up See (2) above		Weekly or 25 Hrs.	Bolens 16021 SAE 90 Gear Lube	Add to Plug Level
10. Brake Linkage –		8 Hrs.	Oil	Small Amount

*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 grease gun can be purchased from your Bolens dealer. Ask for Bolens Grease Gun No. 16023 with Bolens multi-purpose 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

Proper Lubrication and regular maintenance will increase the operating life of your Bolens Tractor and attachments. Negligence on the part of the operator in regard to lubrication or general maintenance can depreciate the durability of this vehicle. It is necessary that the lubrication recommendations in this manual be followed. A lubrication schedule prepared by the operator would be beneficial.

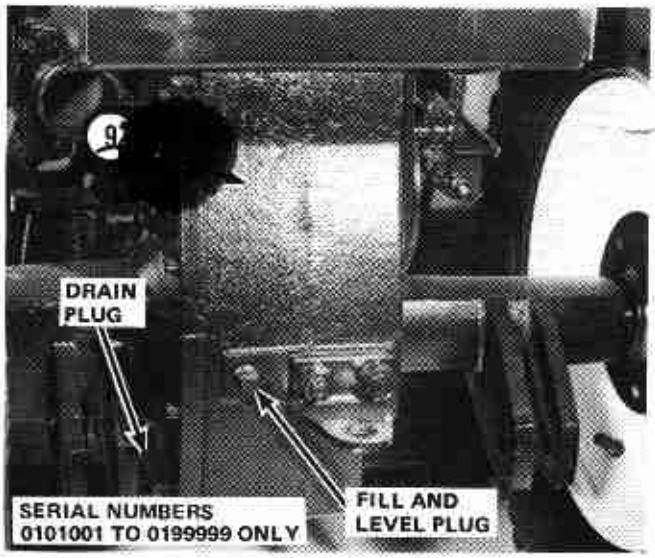

Figure 31

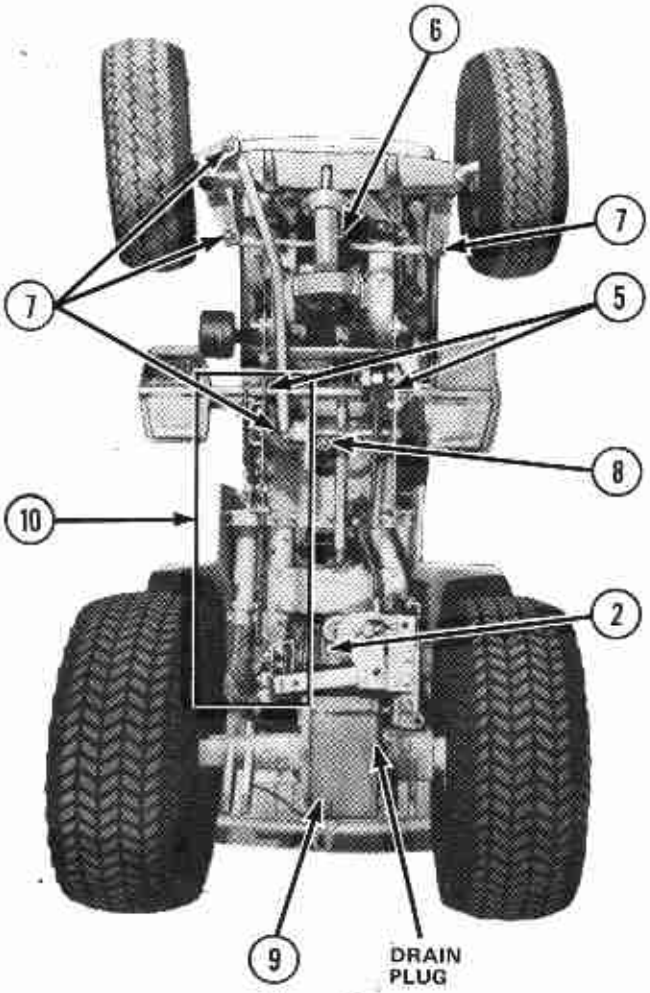

Figure 32

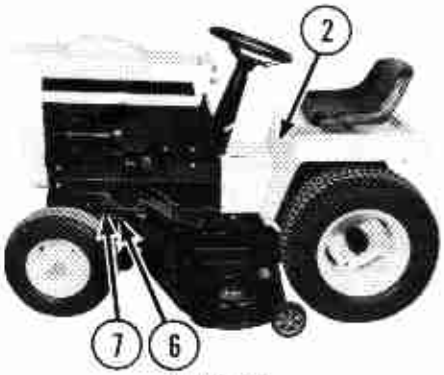

Figure 33

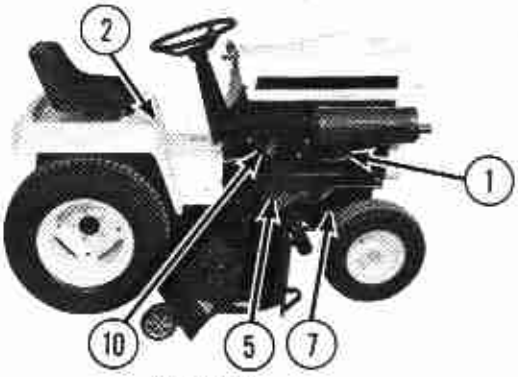

Figure 34

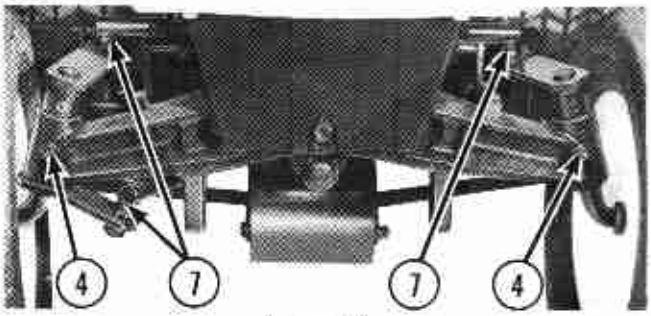

Figure 35

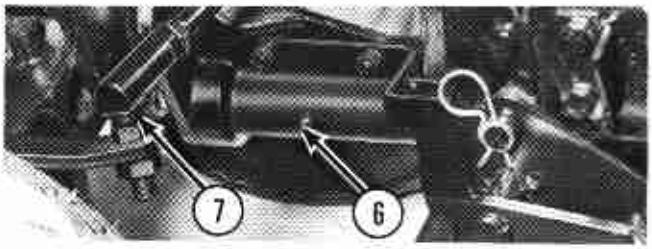

Figure 36

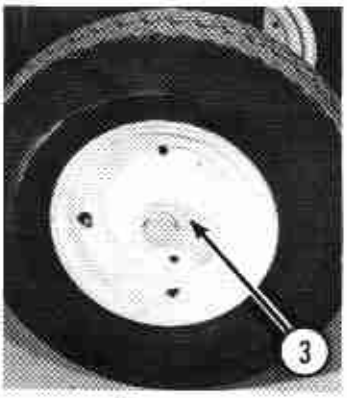

Figure 37

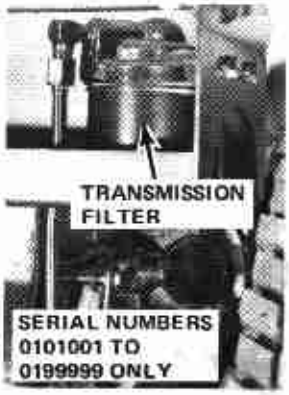

Figure 38

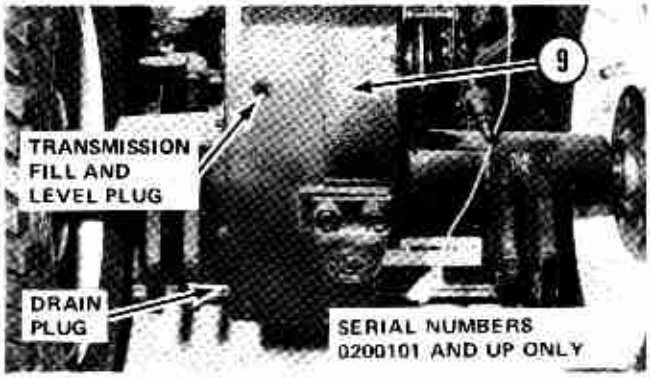

FIGURE 39

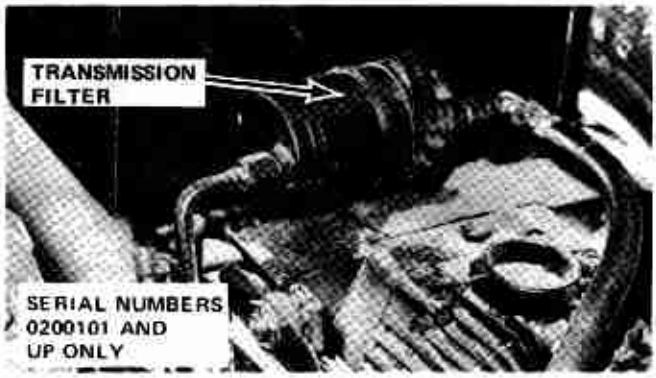

FIGURE 40

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
Cooling Fins – (Hydrostatic) –	Daily or 8 Hrs.	Clean – Use Air Hose if Available
Belts –	50 Hrs.*	Check for Wear and Adjust
Tires –	25 Hrs.	Check for Damage and Air Pressure
Transmission Filter –	After first 10 Hrs. Then after every 200 hrs.	Change

*More often under extreme conditions.