

# BOLENS

# TRACTOR

MODELS H-14 (1456)  
H-16 (1656)



WITH HYDROSTATIC AND HH 140 TECUMSEH ENGINE

## SAFETY AND OPERATION INSTRUCTIONS

**MyTractorForum.com**

## CONGRATULATIONS!

On your purchase of FMC Bolens garden equipment, one of the finest available. Please take a few moments to review this manual to familiarize yourself with the unit, its features and its operation.

This equipment is manufactured by FMC Corporation, Outdoor Power Equipment Division, 215 South Park Street, Port Washington, Wisconsin, 53074, telephone 414-284-5521. If you should have any questions or encounter any problems, which you feel only the factory can solve, write to the above address or phone, attention the Service Department.

This is a safety operation and general maintenance manual which does not attempt to cover major repairs. All major repair work must be performed by an AUTHORIZED FMC BOLENS DEALER for the factory warranty to be valid. FMC 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.

## BE A SAFE OPERATOR

### AVOID ACCIDENTS

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

### NATIONAL SAFETY COUNCIL

## TABLE OF CONTENTS

|                                      |    |                                        |    |
|--------------------------------------|----|----------------------------------------|----|
| General Safety Precautions . . . . . | 3  | Lubrication Chart . . . . .            | 17 |
| Serial Number . . . . .              | 4  | Lubrication . . . . .                  | 18 |
| Specifications . . . . .             | 4  | Maintenance Chart . . . . .            | 19 |
| Controls . . . . .                   | 5  | Wiring Diagram . . . . .               | 20 |
| Pre-Operational Checks . . . . .     | 7  | Storing Your Bolens Tractor . . . . .  | 21 |
| Operation . . . . .                  | 8  | Minor Trouble Shooting Guide . . . . . | 21 |
| Maintenance . . . . .                | 11 |                                        |    |

## 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. Know the controls and how to stop quickly. **READ THE SAFETY AND OPERATION INSTRUCTION.**

2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instructions.

3. Do not carry passengers. Keep children and pets a safe distance away.

4. Clear the work area of objects which might be picked up and thrown.

5. Disengage all attachment clutches and shift into start position before attempting to start the engine(motor).

6. Disengage power to attachment(s) and stop the engine (motor) before leaving the operator's position.

7. Disengage power to attachment(s) and stop the engine (motor) before making any repairs or adjustments.

8. Disengage power to attachment(s) when transporting or not in use.

9. Take all possible precautions when leaving the vehicle unattended, such as disengaging the power-take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine, and removing the key.

10. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.

11. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.

12. Stay alert for holes in the terrain and other hidden hazards.

13. Use care when pulling loads or using heavy equipment.

a. Use only approved drawbar hitch points.

b. Limit loads to those you can safely control.

c. Do not turn sharply. Use care when backing.

d. Use counterweight(s) or wheel weights when suggested in the owner's manual.

14. Watch out for traffic when crossing or near roadways.

15. When using any attachments never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.

16. Handle gasoline with care - it is highly flammable.

a. Use approved gasoline container.

b. Never remove the cap of the fuel tank or add gasoline to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.

c. Open doors if the engine is run in the garage - exhaust fumes are dangerous. Do not run the engine (motor) indoors.

17. Keep the vehicle and attachments in good operating condition, and keep safety devices in place.

18. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

19. Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

20. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.

21. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.

22. Do not change the engine governor settings or overspeed the engine.

23. When using the vehicle with mower, proceed as follows:

(1) Mow only in daylight or in good artificial light.

(2) Never make a cutting height adjustment while the engine (motor) is running if the operator must dismount to do so.

(3) Shut the engine (motor) off when unclogging chute.

(4) Check the blade mounting bolts for proper tightness at frequent intervals.

24. 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.

25. Always follow manufacturer's operational suggestions.

26. Never wear loose clothing when operating unit. Loose clothing can get caught in moving parts and cause severe injuries.

27. Do not tow vehicle. Personal injury or damage to the vehicle could occur.

28. 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.

29. 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.

30. Do not operate attachments when transporting vehicle.

31. Always wear substantial footwear to provide as much protection as

## SERIAL NUMBERS

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.

The tractor Model Number and Serial Number are on a name plate attached to the Left side of the heat shield. See Figure 1. The engine Model Number and Serial Number are on the engine shroud, see Figures 2, 3, 4, and 5.

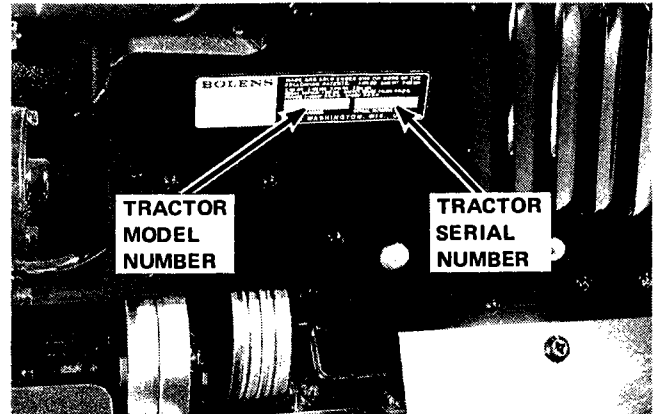


Fig. 1

1. Model number of tractor.

2. Serial number of tractor

3. Model number of engine.

4. Serial number of engine.

5. Spec. number of engine

6. Date of Purchase

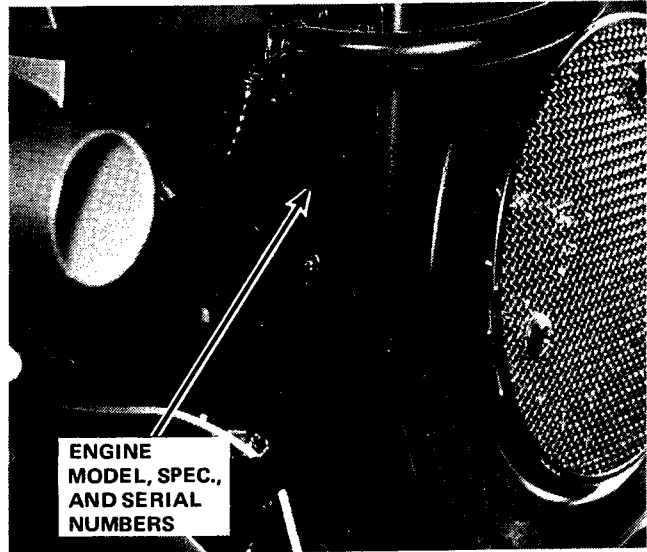


Fig. 2

## SPECIFICATIONS

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

Engine ..... Tecumseh  
 H-14- 14 HP @ 3600 RPM  
 H-16- 16 HP @ 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 sys-  
 tem; 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

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

The symbols used on these pages and on the controls of the tractor are INTERNATIONAL SYMBOLS. These symbols are used all over the World on equipment such as this. These symbols are readily identified in all languages.

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

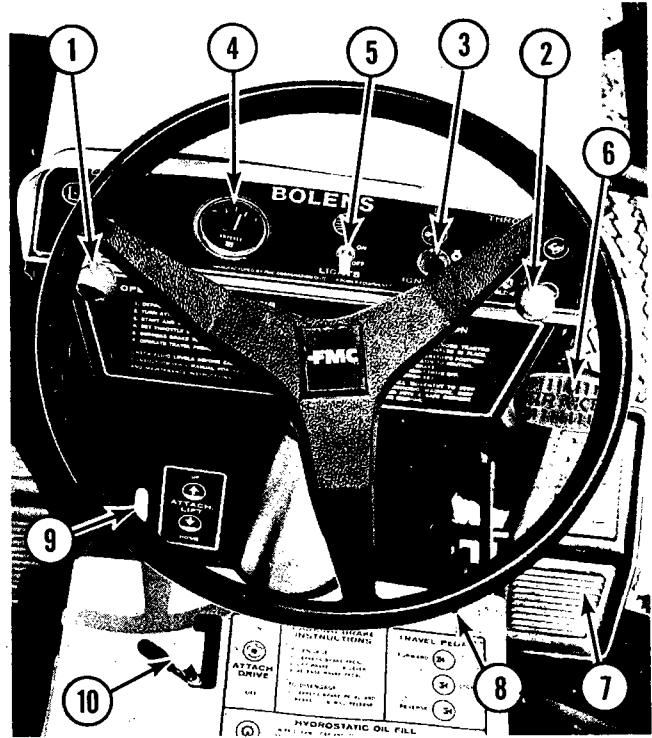
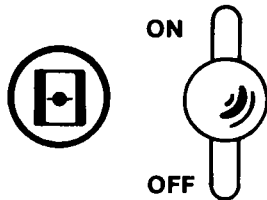
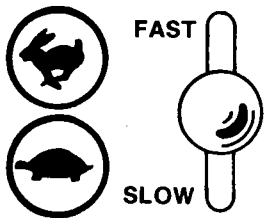


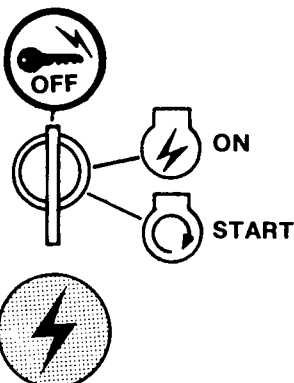
Fig. 3



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



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



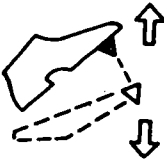
3. IGNITION-STARTER SWITCH - Turn ignition key to the right to start engine. Release when engine starts.

4. AMMETER - Indicates rate of charge to or discharge from battery.

## CONTROLS (Continued)



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



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



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



8. 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.



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.



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 11.

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

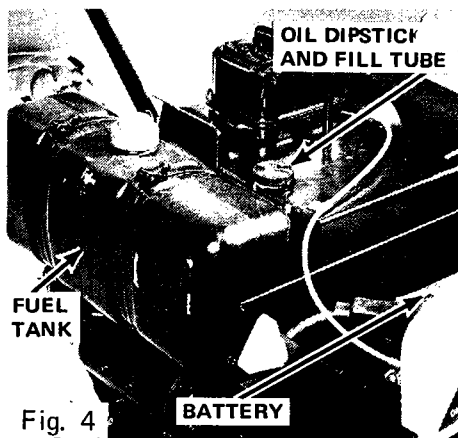


Fig. 4

2. Check gasoline tank for sufficient gas supply. Use a good grade of clean regular gasoline. (For cold weather operation use winter blend gasoline.) DO NOT MIX OIL WITH GASOLINE.

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



**DO NOT REFUEL TRACTOR WHILE ENGINE IS RUNNING OR HOT. 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 and maintenance page 11.

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

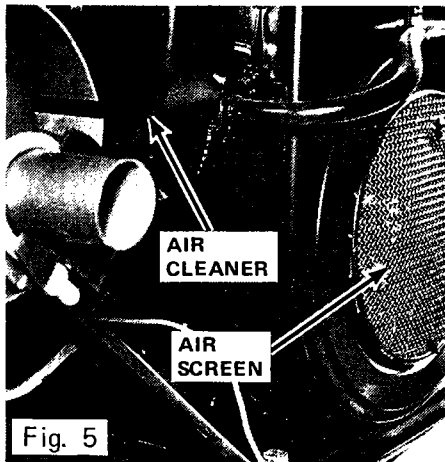


Fig. 5

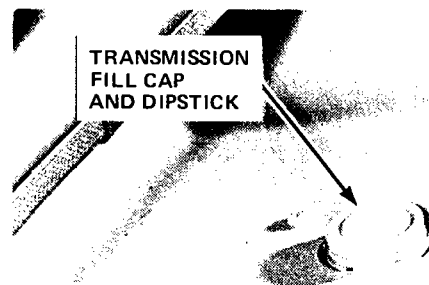
6. Check "Hydrostatic" oil level before operating.

7. Visually check for loose or missing nuts, screws, and damaged parts. Replace and tighten before starting engine.

8. Check for even tire inflation. FRONT AND REAR TIRE INFLATION SHOULD NOT BE LESS THAN 8 LBS. NOR MORE THAN 12 LBS.

6. Check "Hydrostatic" oil level before operating. Oil level should be maintained in the safe operating range, Serial numbers 0100101 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 Fig. 6A.



FOR 0100101 TO 0199999

Fig. 6

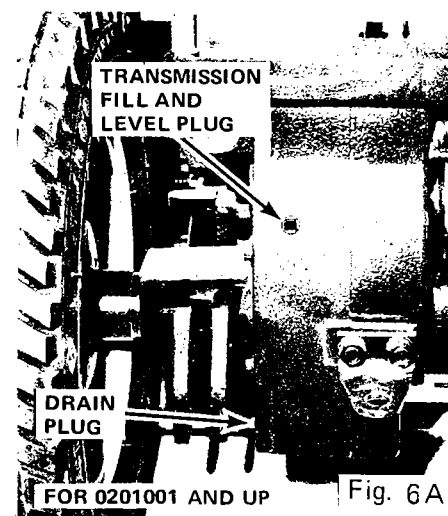


Fig. 6A

## 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. Further use of "break-in" oil is not required nor recommended for new Tecumseh engines.

These tractors are shipped without oil in the engine crankcase. Be sure to fill the crankcase with oil before starting the engine.

**NOTE: USE OIL RECOMMENDED IN LUBRICATION CHART (Page 17).** See page 11 for proper oil level.

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".

## OPERATION

### 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.

**WARNING:**  
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.

**FAILURE TO ALLOW ENGINE TO COME TO A COMPLETE STOP CAN CAUSE DAMAGE TO THE STARTING MECHANISM AND ENGINE. 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 travel pedal in the NEUTRAL position, place P.T.O. lever in "OFF" position. Let engine idle 30 seconds before turning ignition switch off and removing the ignition key.

### EMERGENCY STARTING

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

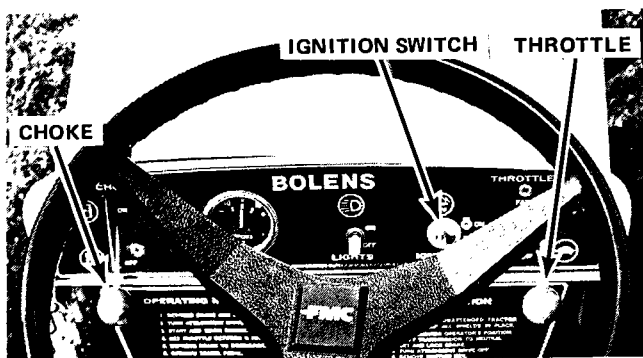
Should the battery be too low on power to start the unit, it is always best to remove it and have it recharged. However, should jumper cables be used, the following must be observed:

1. REMOVE CELL CAPS WHEN USING JUMPER CABLES.



### CAUTION

ELECTRIC STORAGE BATTERIES GIVE OFF HIGHLY FLAMMABLE HYDROGEN GAS WHILE BEING JUMPED, AND CONTINUE TO DO SO FOR SOME TIME. 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 EXI



## OPERATION (Continued)

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. lever (must be in OFF position) and parking brake must be engaged.

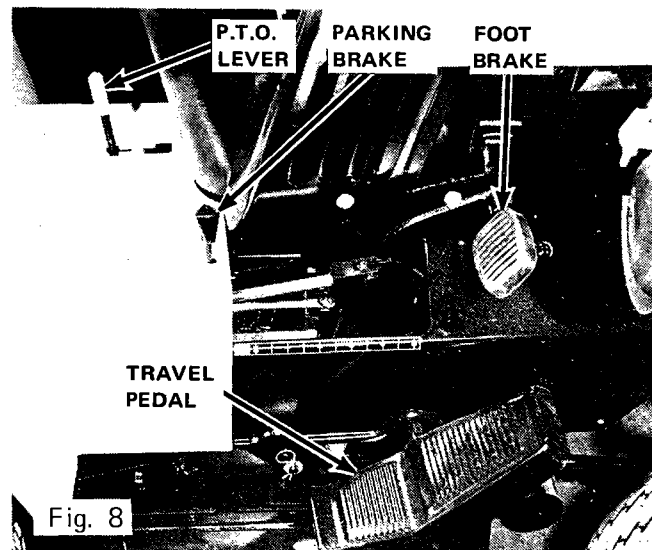
4. Follow procedure outlined under Normal Starting.

5. After unit is started remove jumper cables from booster battery first. Then remove cables from the tractor, replace battery cell caps and boot over positive (+) terminal.

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.

### WARNING:

**CHILDREN SHALL NOT OPERATE THIS TRACTOR BECAUSE AN AVERAGE CHILD IS NOT ABLE TO COPE WITH THE COMPLEXITIES OF THIS POWER TOOL.**



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

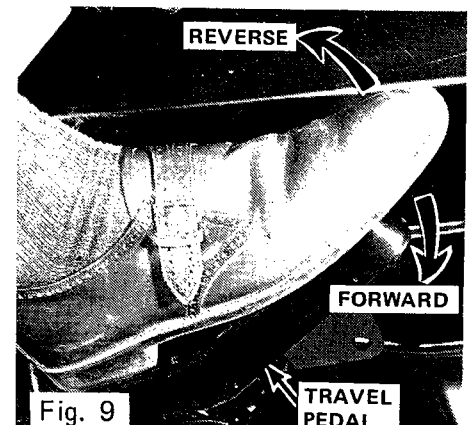
The hydrostatic transmission gives the operator a choice of infinitely variable speeds from 0 to 6-3/4 mph forward, and 0 to 3-1/2 mph in reverse. Avoid excessive HIGH travel speed whenever possible. Lower travel speeds are best for most jobs such as snow casting or mowing tall or lush grass.

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.**

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



## OPERATION (Continued)

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.

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. See Figure 10.

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

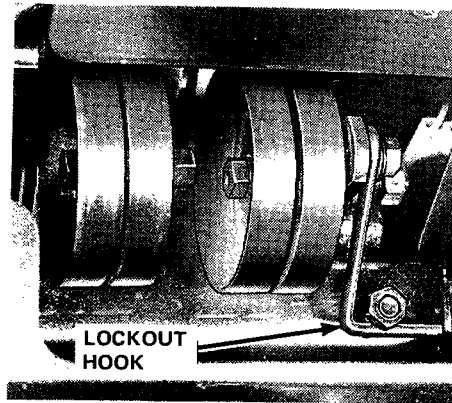


Fig. 10

### CONTROLLED DIFFERENTIAL

By turning the control knob, located on the hub of the left rear wheel shown in Figure 11, 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 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.



Fig. 11



**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.

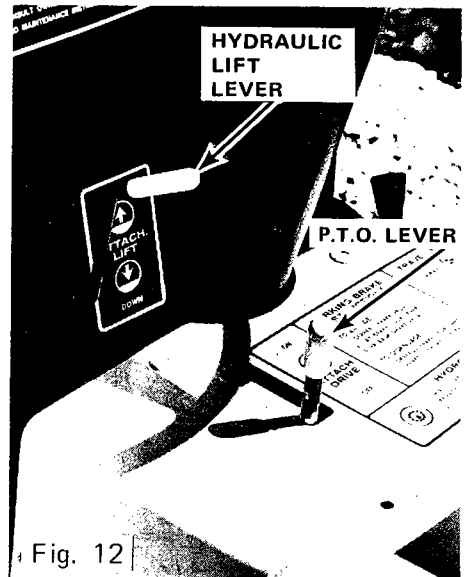


Fig. 12



**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.**

## OPERATION (Continued)

### 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.**

### REAR HITCH

**USE CARE WHEN PULLING LOADS OR USING HEAVY EQUIPMENT. LIMIT LOADS TO THOSE YOU CAN SAFELY CONTROL. DO NOT TURN SHARPLY. USE CARE WHEN BACKING. USE ONLY APPROVED DRAWBAR HITCH POINTS. USE WHEEL WEIGHTS WHEN SUGGESTED IN THE ATTACHMENT INSTRUCTIONS.**

## 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 17.

### 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, see Fig. 4. 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.

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

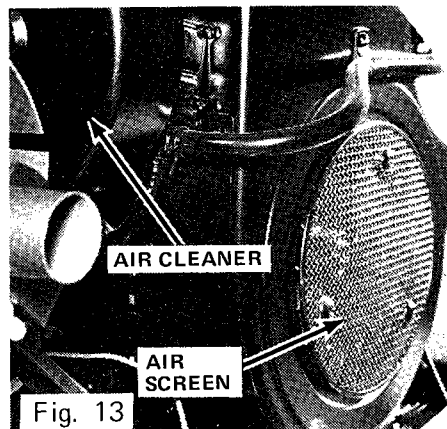
On the Tecumseh engine the drain plug is on the bottom of the engine.

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 but do not exceed the full mark.

Select oil weight and type according to outside temperature. Refer to Lubrication Chart on page 13.

### AIR SCREEN

Clean flywheel air screen, Figure 17, 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 surface 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.

Improper air cleaner maintenance can create engine damage which the engine manufacturer will not warrant

## 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.

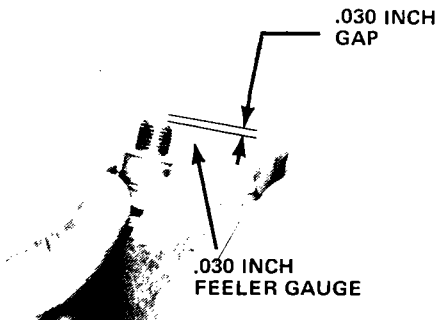


Fig. 14

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

Solid State ignition systems have no breaker points, therefore no timing adjustment is necessary.

### WARNING!

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

### FUEL FILTER

There is a fuel filter in the line from the fuel tank. See Figure 15 for location. This filter is a throw away type.

When it shows excessive dirt in the inside it should be replaced.

When replacing the filter turn off the fuel valve. This valve is located on the underside of the tank.

See Figure 15. Open valve again after filter has been replaced.

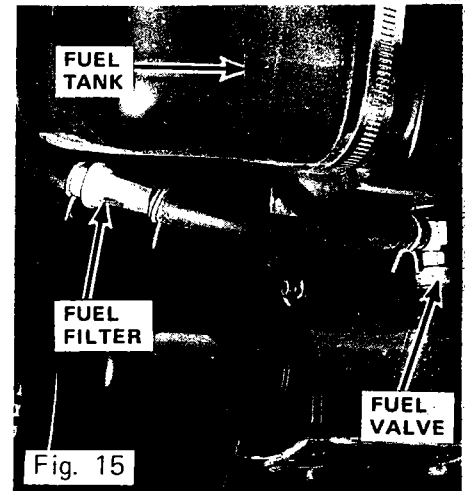


Fig. 15



CAUTION

### BATTERY

See Figure 16. 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. Re-install in same position.

NOTE: BE SURE TO KEEP THE TERMINAL BOOT IN PLACE OVER THE POSITIVE BATTERY TERMINAL. SEE FIGURE 16.

**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.**

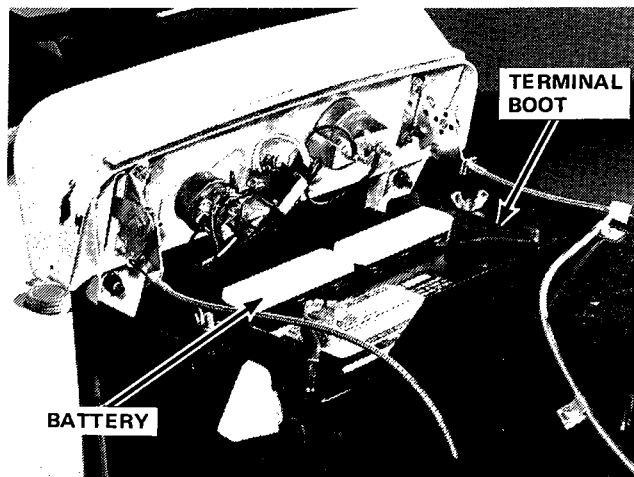


Fig. 16

## MAINTENANCE (Continued)

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 RE-INSTALLING THE BATTERY: (1) PLACE HOLD DOWN RODS IN PLACE. (2) TIGHTEN WING-NUTS 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 17, 18 and 19)

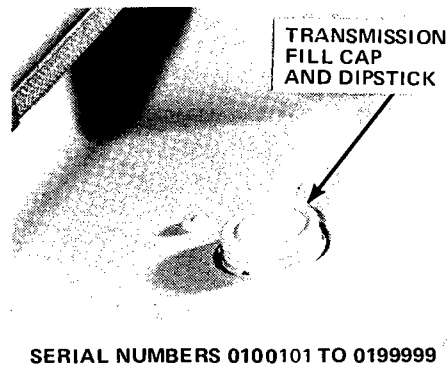


Fig. 17

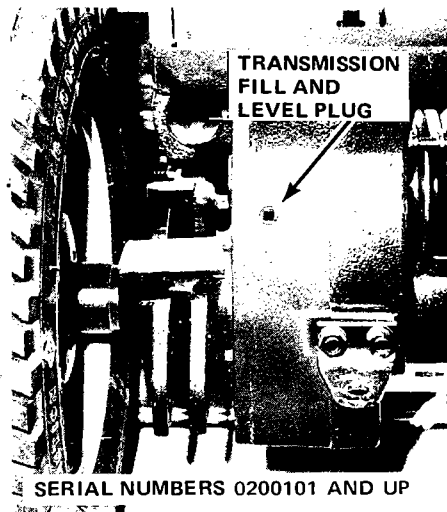


Fig. 18

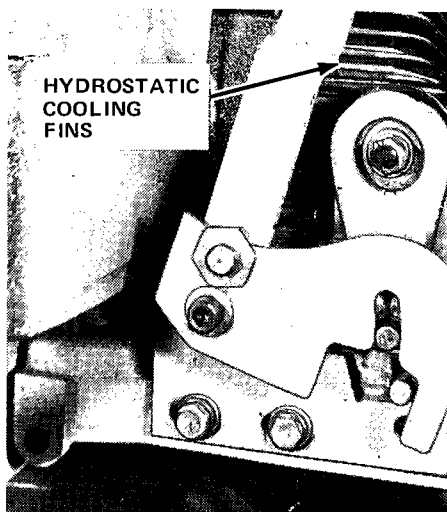


Fig. 19

### 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 pressure may damage tires.

### 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 1/8 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.

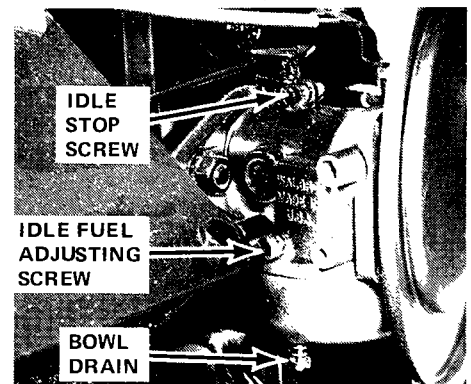


Fig. 20

## MAINTENANCE (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.

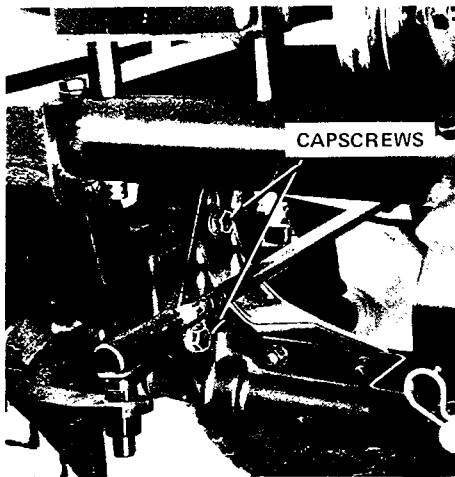


Fig. 21

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.

### 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.

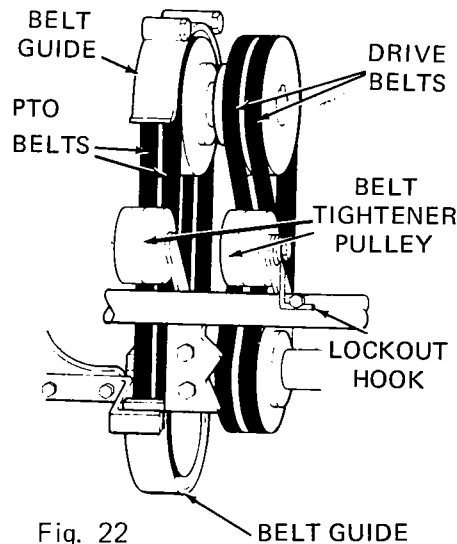


Fig. 22

### INTERLOCK SWITCHES

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

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.

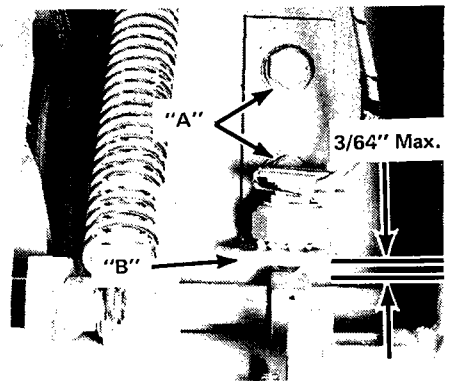


Fig. 23

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

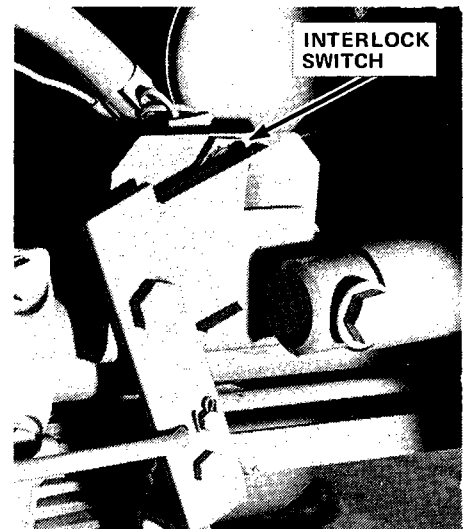


Fig. 24

### 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.

## MAINTENANCE (Continued)

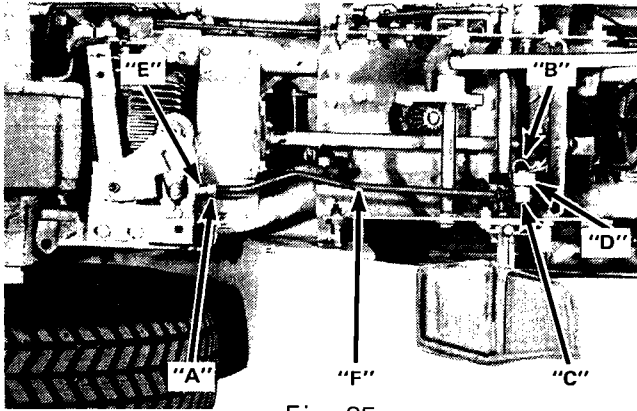


Fig. 25

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".

### FOOT BRAKE AND PARKING 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.

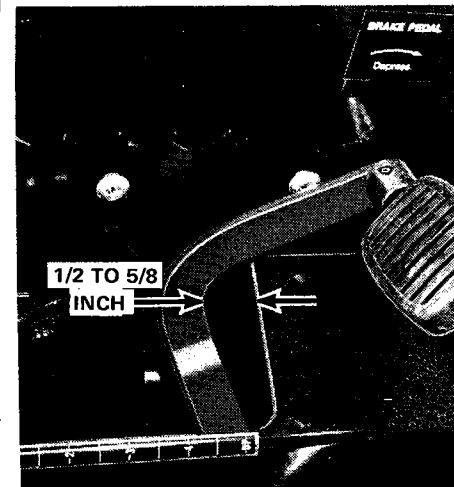


Fig. 26

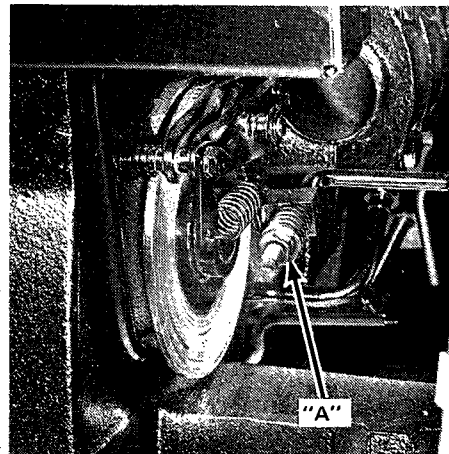


Fig. 27

### HYDROSTATIC NEUTRAL ADJUSTMENT

\* The "Hydrostatic" neutral is adjusted at the factory. If the transmission should 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, or to fill level on later models.

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

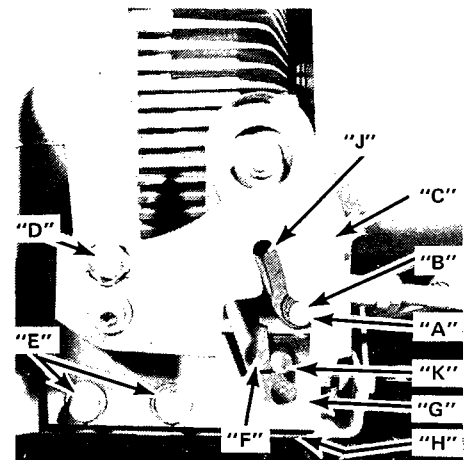


Fig. 28

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 cap screw "D" and adjust lever "C". Securely retighten cap screw "D" after adjustment is achieved.
2. Securely block up rear of tractor, just so the rear wheels clear the ground.

## MAINTENANCE (Continued)

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 RE-ADJUST LEVER "C". SECURELY RE-TIGHTEN CAPSCREW "D" AFTER CORRECT ADJUSTMENT IS ACHIEVED.

### 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 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 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.

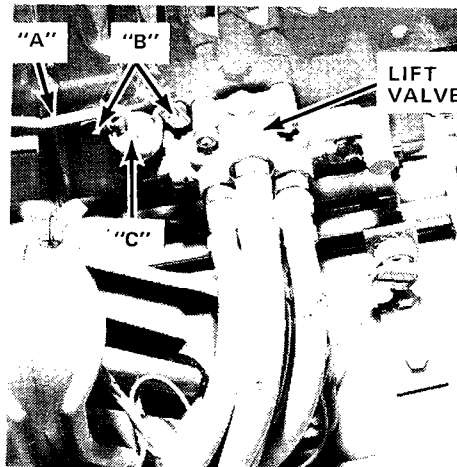


Fig. 29

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.

### SEAT ADJUSTMENT

NOTE: FOR SAFE OPERATION ADJUST THE SEAT FOR COMFORT AND CONTROL.

To adjust seat, loosen two capscrews "A" Figure 30 beneath the tractor seat. Reposition seat by sliding either forward or backward. Tighten capscrews to secure seat in new position.

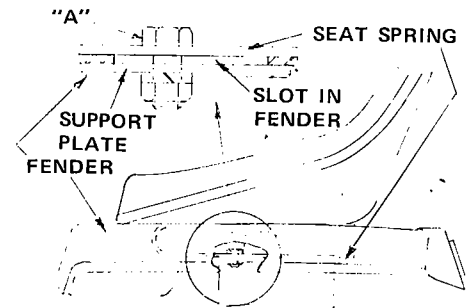


Fig. 30

### 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.

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

MyTractorForum.com

## MAINTENANCE (Continued)

### LUBRICATION CHART

| LUBRICATION REQUIRED                                                                                             | Length of Operation    | Type of Lubrication                                                                              | Amount Required                                                                            |
|------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1. Engine Crankcase –                                                                                            | Daily & 8 Hrs.         | SC, SD or SE Engine Oil                                                                          | Add Oil To Full Mark                                                                       |
| (Spring, Summer, Autumn)<br>(+120° F. to 40° F.)                                                                 | 50 Hrs.*               | SC, SD or SE SAE 30 Oil                                                                          | Replace 3 pints*                                                                           |
| Average Temperature (Winter)<br>(+40° to Below Zero)                                                             | 50 Hrs.*               | SC, SD or SE SAE 10W-30 Oil                                                                      | Replace 3 pints*                                                                           |
| 2. Hydrostatic Transmission –<br>Serial Numbers<br>0201001 And Up Only<br>(Capacity 4 qts.)<br>117345<br>CWL19C  | Check Weekly Or 8 Hrs. | Type "A" Automatic Trans. Fluid                                                                  | Add to Cold Mark on Dipstick<br>Serial Numbers<br>0201001 And Up Only<br>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 1723479                                                         | 1-2 Strokes                                                                                |
| 4. Front Wheel Spindles –                                                                                        | 8 Hrs.                 | Grease with Bolens Multi-Purpose 1723479                                                         | 1-2 Strokes                                                                                |
| 5. Travel Pedal Shaft –                                                                                          | 8 Hrs.                 | Oil                                                                                              | Small Amount                                                                               |
| 6. PTO Housing –                                                                                                 | 8 Hrs.                 | Grease with Bolens Multi-Purpose 1723479                                                         | 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 1723479                                                         | 1-2 Strokes                                                                                |
| 9. Differential - Serial Numbers<br>0100101 to 0199999 Only<br>For Serial Numbers 0201001 And Up, See (2) Above. | Weekly or 25 Hrs.      | Bolens 1723456 SAE 90 Gear Lube                                                                  | Add to Plug Level                                                                          |
| 10. Brake Linkage –                                                                                              | 8 Hrs.                 | Oil                                                                                              | Small Amount                                                                               |

type F  
fuel  
auto  
trans  
fluid

\*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. 1723484 with Bolens multi-purpose Grease No. 1723479. Lub-

ricate 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.

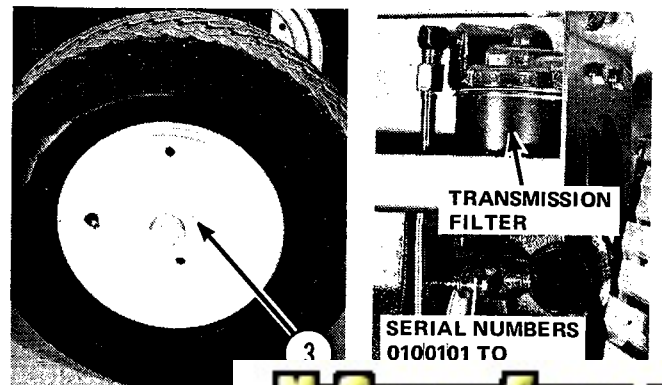
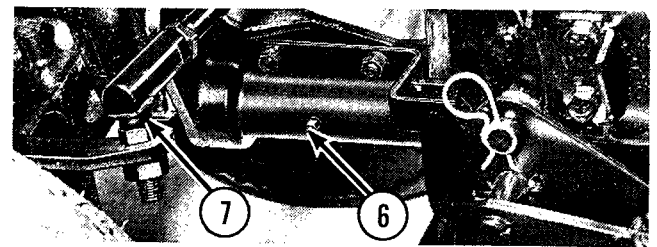
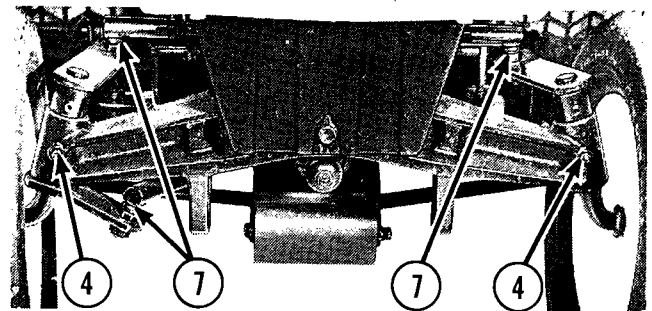
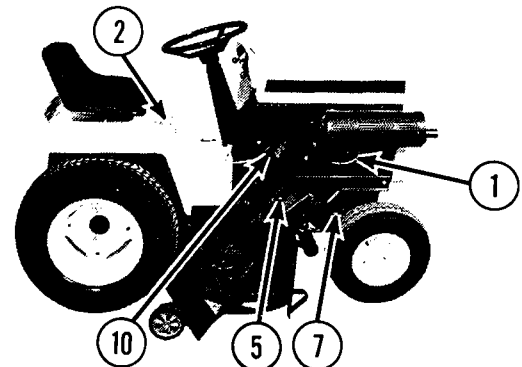
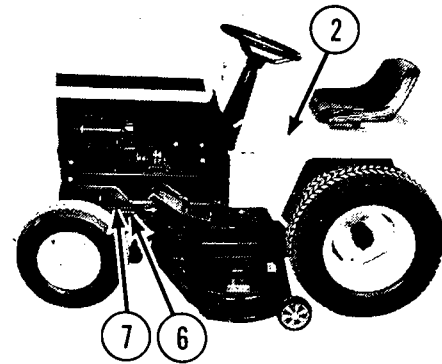
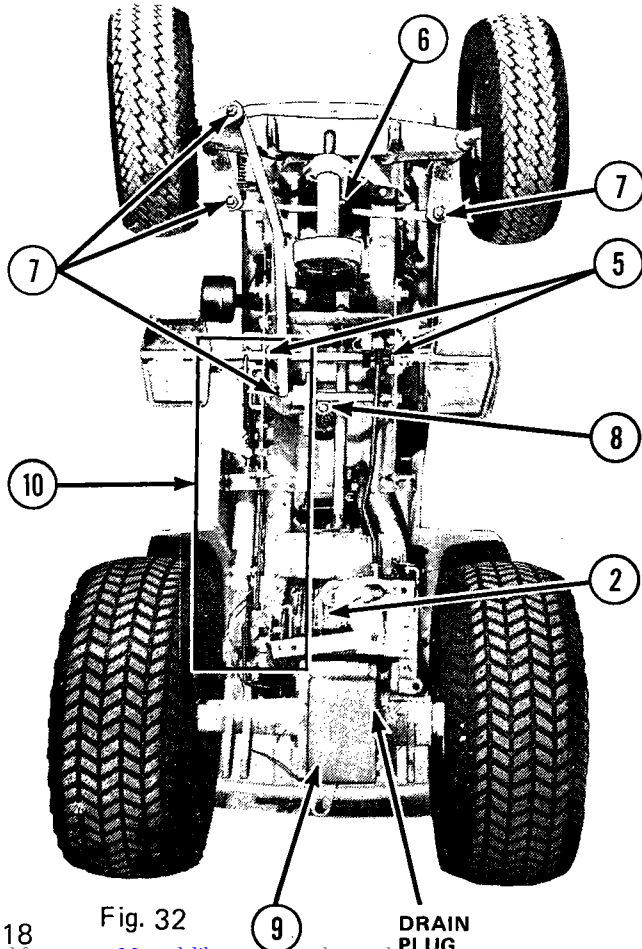
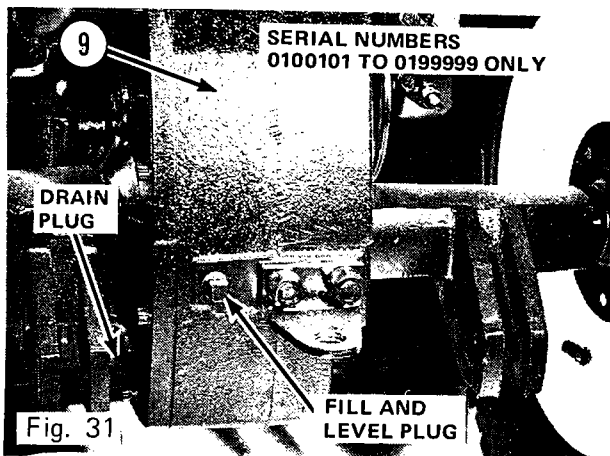


Fig. 37

## MAINTENANCE (Continued)

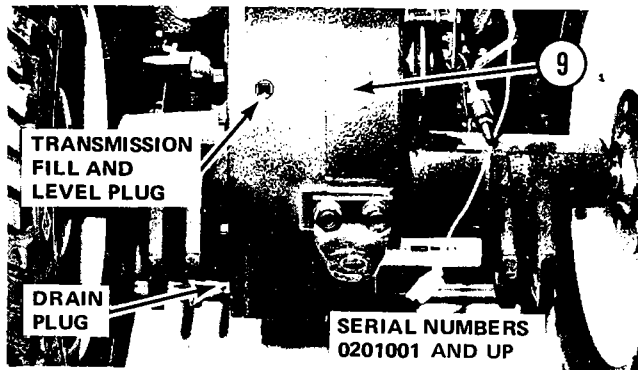


Fig. 39

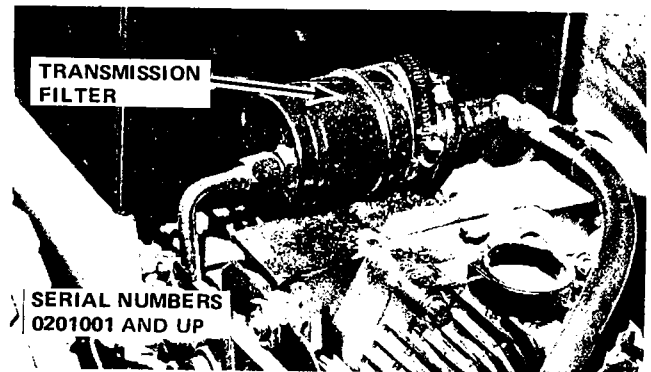


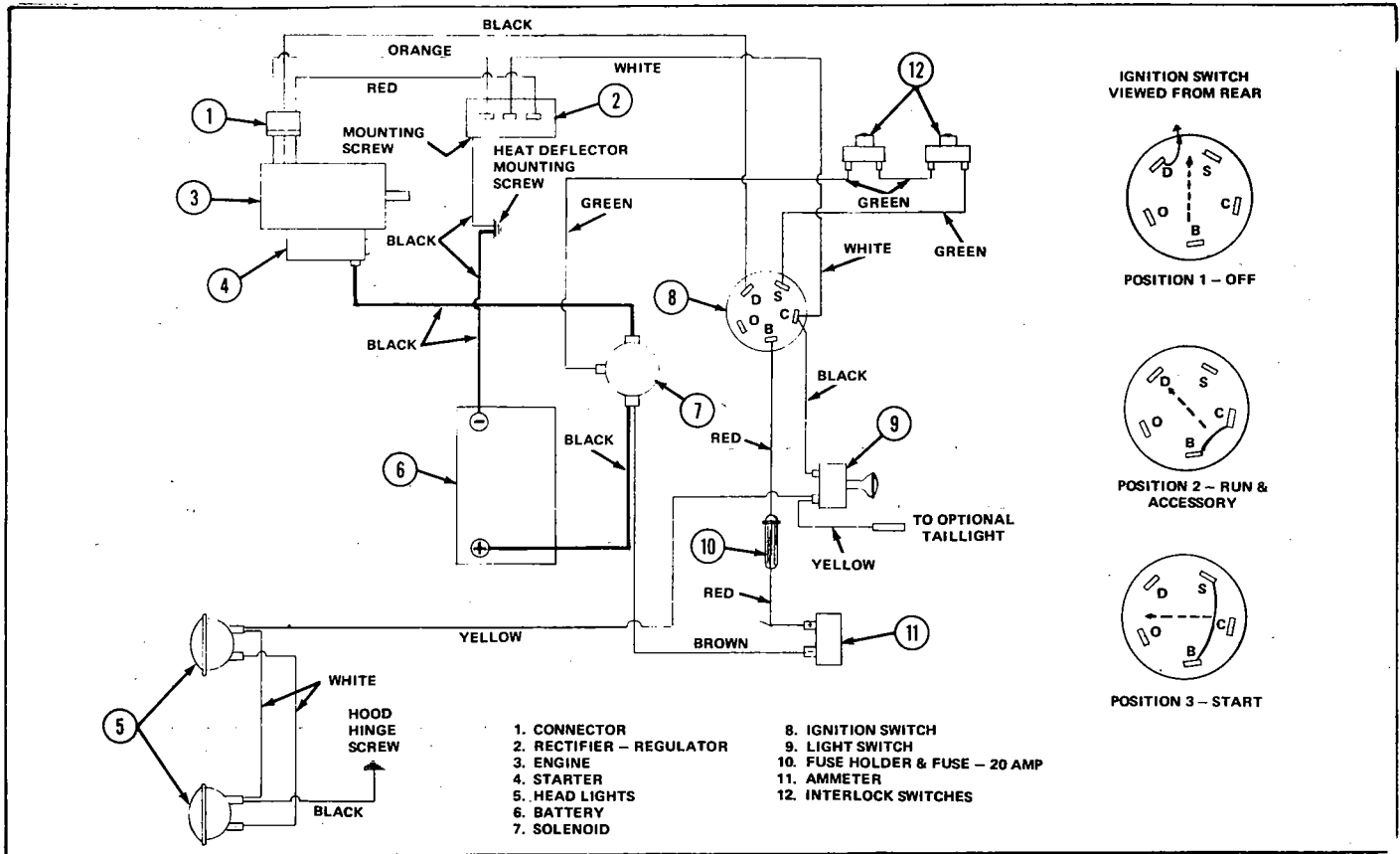
Fig. 40

### MAINTENANCE CHART

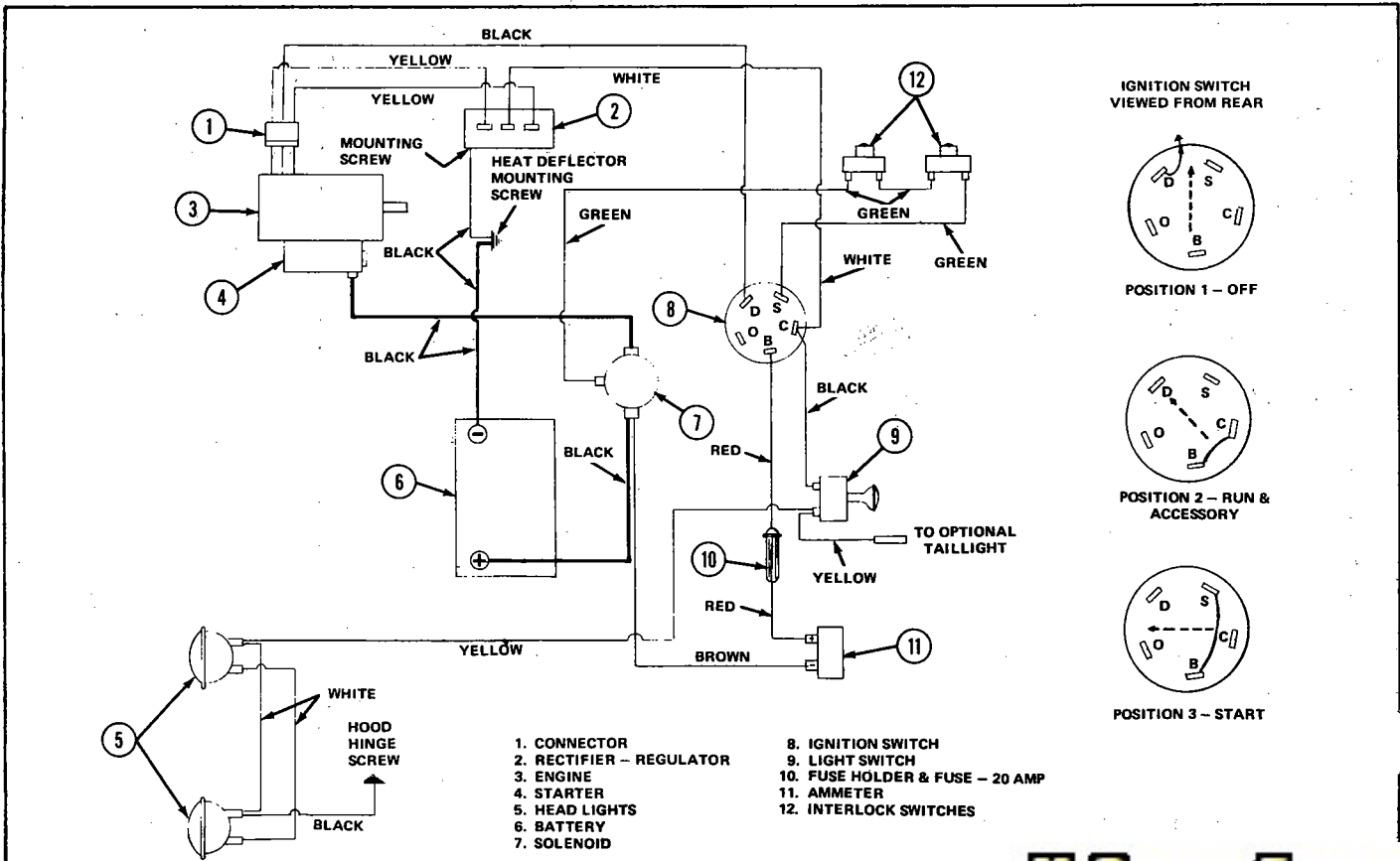
| MAINTENANCE REQUIRED           | Length of Operation                           | Type of Maintenance                  |
|--------------------------------|-----------------------------------------------|--------------------------------------|
| Engine Cooling Air Screen —    | Daily or 8 Hrs.*                              | 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                               |
| Brake —                        | As Required                                   | Adjust Linkage                       |

\*More often under extreme conditions.

# WIRING DIAGRAM



H-14 SERIAL NUMBERS 0100101 to 0299999  
H-16 SERIAL NUMBERS 0100101 to 0199999



# STORING YOUR BOLENS TRACTOR

## STORING YOUR 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 several months, 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 fly-wheel screen.
2. Wipe oil or a rust preventative 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 with the appropriate oil per lubrication chart.

5. Check fuel filter and replace if dirty.

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 engaging the key starter briefly. Replace spark plug.

7. Keep tractor covered when stored inside or outside. A custom fit vinyl cover is available for your tractor through your FMC Bolens Dealer.

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 placed 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 waterproof material.

## MINOR TROUBLESHOOTING CHART

| IF TRACTOR ACTS IN FOLLOWING MANNER:                | CHECK FOR POSSIBLE CAUSE |                       |                         |                  |                   |                 |         |            |     |                     |       |                        |                             |                                  |                          |
|-----------------------------------------------------|--------------------------|-----------------------|-------------------------|------------------|-------------------|-----------------|---------|------------|-----|---------------------|-------|------------------------|-----------------------------|----------------------------------|--------------------------|
|                                                     | CHECK FUSE & REPLACE     | CLEAN OFF ENGINE FINS | FLYWHEEL SCREEN (CLEAN) | FAULTY IGNITION* | FAULTY SPARK PLUG | EMPTY FUEL TANK | BATTERY | CARBURETOR | OIL | AIR CLEANER (CLEAN) | CHOKE | SEE YOUR BOLENS DEALER | CONTROLS ADJUSTED INCORRECT | CONTROLS NOT IN CORRECT POSITION | CHECK INTERLOCK SWITCHES |
| Engine will turn over but won't start               |                          |                       |                         | X                | X                 | X               |         | X          |     |                     | X     | X                      |                             |                                  |                          |
| Engine will not turn over                           | X                        |                       |                         |                  |                   |                 | X       |            |     |                     |       | X                      |                             | X                                | X                        |
| Starts only after repeated tries                    |                          |                       |                         | X                | X                 |                 |         | X          |     |                     | X     | X                      |                             |                                  |                          |
| Stalls in a few seconds                             |                          |                       |                         |                  |                   | X               |         | X          |     |                     |       | X                      |                             |                                  |                          |
| Stalls when hot                                     |                          | X                     | X                       | X                | X                 | X               |         | X          | X   | X                   |       | X                      |                             |                                  |                          |
| Idles rough                                         |                          |                       |                         | X                | X                 |                 |         | X          |     |                     | X     | X                      |                             |                                  |                          |
| Engine overheats                                    |                          | X                     | X                       | X                |                   |                 |         | X          | X   | X                   |       | X                      |                             |                                  |                          |
| Can not put transmission control in neutral or park |                          |                       |                         |                  |                   |                 |         |            |     |                     |       | X                      | X                           | X                                |                          |

\*See Your Authorized Dealer.

FMC 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.

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

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

# **BOLENS**

**. . . A GOOD YARD AHEAD**

**SOLD AND SERVICED BY**