FORM NO. 3317–176

TORO

MODEL NO. 74021 – 590001 & UP
MODEL NO. 74101 – 590001 & UP

OPERATOR'S MANUAL

PROLINE

600-Series Mowing Machine

TABLE OF CONTENTS

CAUTION

This symbol marks important instructions concerning your personal safety. To avoid injury, read and follow these instructions carefully.

When the manual refers to the left or right side of the vehicle, it means your left or right when sitting on the tractor seat.

SAFE OPERATION PRACTICES—RIDING VEHICLES

GENERAL

1. This machine can amputate hands and feet and throw objects that can cause injury and damage. KNOW the controls and how to stop the machine quickly. READ THIS OPERATOR'S MANUAL and obey all safety messages appearing on the machine and in the operator's manual. LEARN from your operator's manual and from CAREFUL EXPERIENCE how to operate your equipment correctly. Know your machine's limitations.

2. Keep hands, feet, hair and loose clothing away from the attachment discharge area, the underside of the mower deck or any moving parts while the engine is running.

3. For your personal safety: Do not operate this machine while taking drugs or medication or while drinking alcoholic beverages.

4. Only responsible persons with mature judgment and proper physical capabilities should be allowed to operate this machine, and only after instruction in the correct use of this equipment.

5. Do not allow children to operate the machine.

6. Do not carry passengers.

7. The purpose of this machine is work. Do not use it for sport or recreation.

8. Do not mow when people or pets are in the area.

9. Clear the work area of objects (wire, rocks, etc.) that might be picked up and thrown.

10. Take all possible precautions when leaving the machine unattended. Disengage the power–take–off, lower attachments, shift into NEUTRAL, set the parking brake, stop the engine and remove the key.

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

12. Stop and inspect the machine and attachments for damage after striking a foreign object. Damage should be repaired before restarting and operating the equipment.

13. Do not change the engine's governor settings or overspeed the engine.

14. Wear appropriate protective clothing when operating equipment. Long pants and substantial footwear, not bare feet or open sandals, are essential.

15. Do not operate the machine unless properly seated with your feet on the footrests or pedals.

16. Keep your eyes and mind on your machine, its attachment and the working area. Do not let other interests distract you.

17. Safety switch(es) stop or prevent engine starting to help prevent accidents. TAKE PRECAUTIONS—DON'T RELY ENTIRELY ON SAFETY SWITCH(ES).

18. Take care not to touch the equipment or attachment parts that may be hot from operation. The muffler and nearby areas may exceed 150° F. Let the engine and other parts cool before attempting to maintain, adjust or service them.

19. Stereo headphones, ear protection or other sound altering/dampening devices may limit your ability to hear warning sounds (horns, shouts, etc.).

FUEL/FIRE PRECAUTIONS

20. Handle gasoline with care—it is highly flammable.

21. Use an approved gas container. Place it out of children's reach.

22. Use gasoline only as a fuel—never as a cleaner.

23. Never remove the fuel cap or add gasoline to a running or hot engine, or an engine that has not cooled for several minutes after running.

24. Never fill the fuel tank indoors. Wipe up spilled gasoline.

25. Open doors if you run the engine in a garage—exhaust fumes are dangerous. Do not run the engine indoors.

26. Do not fill the machine with gasoline while smoking or when near an open flame or sparks.

27. Never store equipment with gasoline in the fuel tank inside a building where fumes may reach an open flame or spark.

SAFE OPERATION PRACTICES—RIDING VEHICLES

28. Allow the engine to cool before storing it in any enclosure.

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

30. Battery acid is a poison and can cause burns. Avoid contact with skin, eyes and clothes and protect your face, eyes and clothing when working around the battery.

31. Battery gases can explode. Keep cigarettes, sparks and flames away from battery.

EQUIPMENT USE AND OPERATION

32. We recommend that you first operate the equipment at a slow speed with any attachment disengaged until you are thoroughly familiar with the controls and have developed operating skills.

33. Disengage all attachment clutches, set the parking brake and shift into NEUTRAL before starting the engine.

34. Disengage power to the attachment(s), set the parking brake and stop the engine before leaving the operator position.

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

36. Disengage power to the attachment(s) when transporting the machine or when it is not in use.

37. Disengage the attachment clutch before removing the mower from a hole or other obstruction.

38. Disengage power to the attachment(s) before backing. Do not mow in reverse unless it is absolutely necessary and then only after careful observation of the entire area behind the machine.

39. LOOK behind the machine to make sure the area is clear before placing the transmission in reverse and continue looking behind while backing.

40. Always back the machine up loading ramps and tilt bed trailers.

41. The parking brake is designed to hold the vehicle in place at rest, with the engine off. *The parking brake will not restrain the vehicle with the engine running and the transmission engaged.*

STABILITY/TIP OVER/TRACTION

42. Know the terrain on which you operate your equipment. There are areas on which you cannot safely operate your equipment.

43. Avoid operating the machine on hillsides, slopes or rough terrain. DO NOT operate the machine on hillsides or slopes exceeding 15°. If safety is in doubt—STAY OFF THE SLOPE.

44. Reduce speed and exercise extreme caution on slopes above 10° to prevent tipping or loss of control. Never mow uphill on these slopes—mow downhill only. If you must climb a steep hill, back the machine up the hill, and drive the machine forward down the hill, keeping the vehicle in gear. If necessary to turn on hill, always turn downhill.

45. Mow up and down the face of slopes greater than 5°, never across the face. Be especially cautious when changing directions on all slopes.

46. Operate your machine smoothly and at a ground speed slow enough to ensure complete control. Avoid erratic operation and excessive speed.

47. Sharp turns on any terrain may cause loss of control. Reduce speed and use caution on sharp turns.

48. Do not stop or start suddenly when going uphill or downhill. Avoid uphill starts. If machine stops when going up a slope, turn the attachment off and back slowly down the slope, keeping the machine in gear. Do not stop or change gears (speed) on slopes.

49. Know the terrain. Find hidden obstacles by walking through and inspecting the area before operating your equipment in that area. Plainly mark obstacles, such as rocks, roots or holes and **stay well clear of these obstacles** when operating.

50. While operating, stay alert for holes, rocks or roots, which may damage equipment or cause it to upset. Keep at least three (3) feet away from drop-offs, ditches, creeks, culverts, washouts and public highways.

51. Exercise care when mowing around a fixed object to prevent the equipment or attachment from striking it. When mowing, never deliberately run over any foreign object.

52. Areas wet with dew, rain or snow will be more slippery than when dry. Areas covered with loose gravel are more slippery than firm, dry ground. Greater stopping distances are required in these slippery areas.

53. Learn to expect changes in operating conditions. Adding or removing attachments or weight to your equipment will make your machine operate differently. Rain, snow, loose gravel, wet grass, etc., change the terrain's tractive conditions. Changing tractive conditions require you to change your operating technique—including deciding not to operate on that terrain sometimes.

SAFE OPERATION PRACTICES—RIDING VEHICLES

54. 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 operator's manual.

ATTACHMENT USE

55. When using attachments, never direct the discharge of material toward bystanders, nor allow anyone near the vehicle while it operates.

56. When using the machine with a mower:

A. Mow only in daylight or in good artificial light.

B. Never adjust cutting–height while the engine is running if you must dismount to do so.

C. Shut off the engine when unclogging the chute.

D. Check the blade mounting bolts for proper tightness at frequent intervals.

57. Keep hands and feet away from rotating blade(s) underneath the mower deck. Never place your foot on the ground when the mower is engaged or in motion.

58. DO NOT operate the mower attachment without the chute deflector or complete bagger in place.

59. Exercise care while maneuvering with the grass catcher. Front–to–rear stability may change.

60. If you use the machine with a snowthrower and the auger becomes plugged or jammed:

A. De-clutch the snowthrower and stop the vehicle engine immediately.

B. Disconnect the spark plug wire(s).

C. Clear snow from the discharge chute if it is plugged.

D. If the auger is jammed, remove the foreign object and repair any damage to the snowthrower before you continue.

E. Reconnect the spark plug wire(s) and resume operation.

61. Never permit anyone to stand near the snowthrower auger or discharge opening. Objects may be present in snow, which when thrown, could cause injury.

62. When using snow/dozer blades:

A. Do not hit solid objects. This can damage blades and injure the operator.

B. Always travel at a safe, slow speed.

63. Keep all persons at safe distance away when operating tillers. Always disengage the PTO, lower the attachment and remove the ignition key before making any adjustments.

64. If the tiller starts to push the vehicle, disengage the PTO clutch immediately.

65. Use chains, counterweight(s) or wheel weights when necessary.

MAINTENANCE

66. Keep all nuts, bolts, fasteners and screws tight to ensure the equipment is in safe working condition and check them frequently. Repair or replace worn, damaged, distorted or broken parts as needed.

67. Keep the vehicle and its attachments in good operating condition and keep safety devices in place and working.

68. Under normal usage, the grass catcher bag's material will wear and deteriorate. Check often to see if the bag needs to be replaced.

69. Use only genuine TORO replacement parts to maintain original standards.

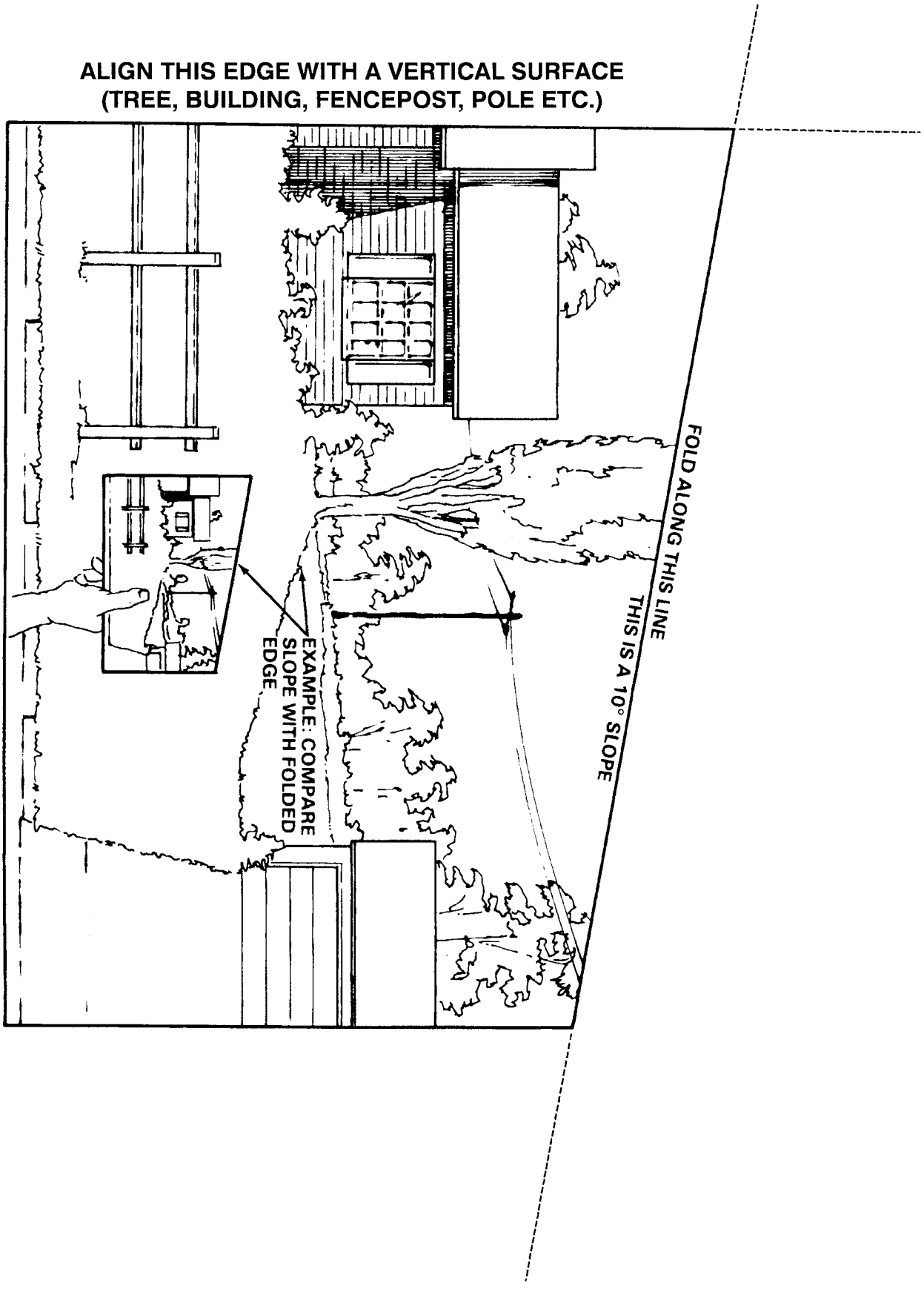
70. Shields, deflectors, switches, blade controls and other safety devices must be in their proper position and functional.

71. Do not operate without a muffler or damper on the exhaust system. Damaged mufflers or spark arresters can create a fire hazard. Periodically inspect and replace whenever necessary.

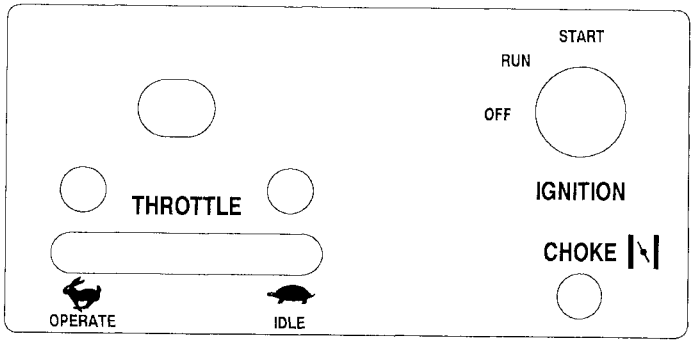
72. If the equipment begins to vibrate abnormally, disengage power to the attachments and stop the engine immediately. Repair any damage before starting or continuing operation.

73. Periodically inspect all shafts, levers, friction devices and other moving parts that are subject to wear. Adjust or replace these parts if they are damaged, distorted or broken, or when wear affects the normal operation of the vehicle or attachment. DO NOT use equipment that is not operating properly.

SLOPE CHART


ALIGN THIS EDGE WITH A VERTICAL SURFACE
(TREE, BUILDING, FENCEPOST, POLE ETC.)
FOLD ALONG THIS LINE
THIS IS A 10° SLOPE
EXAMPLE: COMPARE
SLOPE WITH FOLDED
EDGE

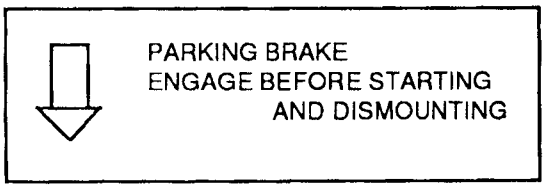
SAFETY AND INSTRUCTION DECALS



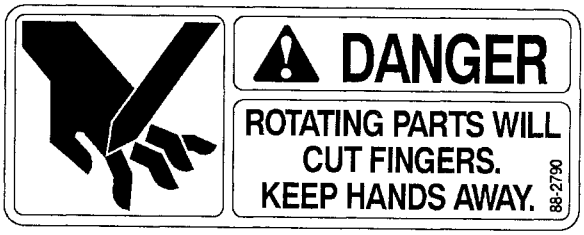
PANEL ON RIGHT SIDE OF SEAT
Part No. 78–2850

BEHIND CONTROL PANEL
Part No. 92–2500

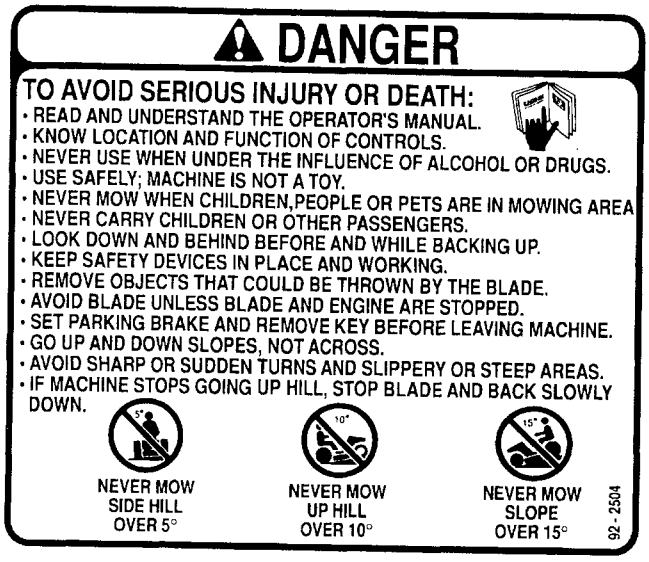
ON PTO SWITCH
Part No. 112845



ON PARKING BRAKE LEVER
Part No. 116393



UNDER SEAT AND BACK PLATE
Part No. 88–2790



BELOW FUEL FILLER
Part No. 92–2504

SPECIFICATIONS

ENGINE:

ENGINE MODEL*	RATED H.P.**	DISPLACEMENT cu. in./cc	BORE in./mm	STROKE in./mm	IGNITION
P–216V–I/11103D	16	43.3/710	3.25/82.6	2.62/66.6	Electronic
P–220V–I/1114040D	20	47.7/782	3.25/82.6	2.88/73	Electronic

* Basic engine model number shown; type and serial numbers from engine I.D. plate are required to completely identify engine.

** Engine manufacturer's rating at 3600 RPM.

TRANSMISSION: APPROXIMATE GROUND SPEEDS (AT FULL THROTTLE)

Type:	Hydrostatic
Forward:	Variable 0–7.2 mph (11.6 kph)
Reverse:	Variable 0–7.2 mph (11.6 kph)

ELECTRICAL SYSTEM:

Type:	12 Volt D.C. Negative Ground
Alternator:	12 Volt, 20 amp. Regulated
Battery:	12 Volt 280 CCA

TIRES:

SIZE—FRONT	SIZE—REAR	PRESSURE/FRONT	PRESSURE/REAR
11 x 4.00–5	18 x 9.50–8	8 psi (57 kg/cm^2)	8 psi (57 kg/cm^2)

PHYSICAL DATA:

HEIGHT	LENGTH	WIDTH	WHEEL BASE	TURNING RADIUS	NET WEIGHT (APPROXIMATE)
41.2 in. (104.9 cm)	71.9 in. (182.1 cm)	40 in. (191.6 cm)	42 in. (106.7 cm)	0 in. (0 cm)	590 lbs. (268 kg)

TUNE–UP/GENERAL MAINTENANCE SPECIFICATIONS:

POINT GAP in./mm	TIMING MARK LOCATION	IGNITION TIMING (BTDC)	SPARK PLUG TYPE*	SPARK PLUG GAP in./mm	DIRECTION OF ROTATION (Fac. DR.P.)	IDLE RPM (No Load)	GOVERNED MAX. RPM (No Load)
N/A	N/A	Fixed	RS14YC*	.025/.64	Counterclockwise	1400	3600

* Or equivalent (Champion number shown)

LUBRICANT/FUEL CAPACITIES:

CRANKCASE	FUEL TANK	CHASSIS
1.7 qts. (1.6 l) without Filter 2.0 qts. (1.9 l) with Filter	3 Gallons (11.2 l)	Grease Fittings: 6

MODEL AND SERIAL NUMBER LOCATIONS

Model and serial numbers identify your new tractor and major attachments. Always refer to these numbers when consulting your dealer or factory about service, parts, or other information. If the plates showing the model and serial numbers are removed during repair operations, they should always be replaced.

The **tractor** vehicle identification number plate is just below the seat on the rear fender. The **engine** identification numbers are on the engine shrouding and show your tractor's model, specification or type number and the serial number of your tractor's engine. Major attachments also have a model and serial number plate attached to them.

For your convenience and ready reference, enter the tractor and engine numbers below.

Tractor Model and Serial Number

Model _____

Serial No. _____

Engine Identification Number

Model _____

Type or Spec. No. _____

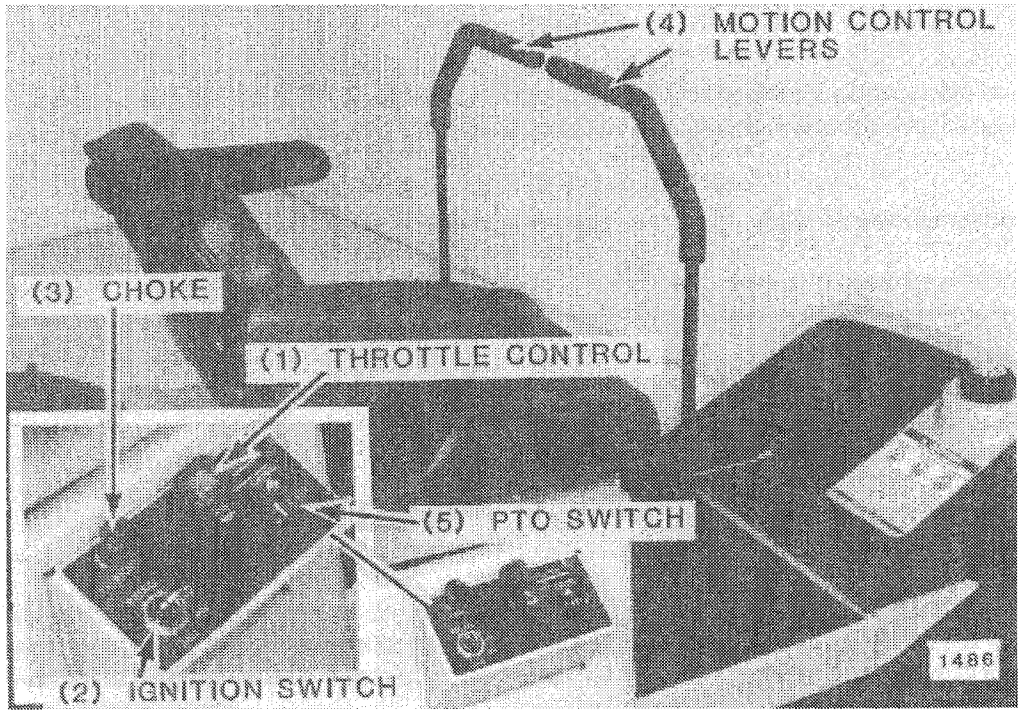
Serial No. _____

OWNER REGISTRATION AND WARRANTY

Service and warranty assurance are as important to TORO as it is to you. To simplify warranty service at an Authorized TORO ProLine Dealer, TORO requires factory registration. We supply a registration card with each new tractor and attachment. **Either you or your dealer must supply the required information and mail the card to TORO .**

The TORO ProLine Limited Warranty Statement is on a "hang tag" attached to each product. This statement describes the items covered by the TORO ProLine Limited Warranty, your rights and obligations, and the procedure for obtaining warranty service. Please familiarize yourself with the warranty statement. **We want you to be satisfied with your TORO ProLine tractor; please don't hesitate to contact us for assistance.**

INSTRUMENTS AND CONTROLS



1. THROTTLE CONTROL

The throttle is on top of the right panel below the seat. Move the throttle forward all the way to the OPERATE position to operate the machine. Move the throttle all the way to rear position before shutting the engine off.

2. IGNITION SWITCH

The ignition switch is on the right panel below the seat. It has three positions: (1) OFF, (2) RUN, (3) START. To start the engine, turn the key all the way to START. Release the key when the engine starts and it will automatically return to the RUN position. Turn the switch to the OFF position to stop the engine.

3. THE CHOKE CONTROL

The choke control is on the right panel next to the ignition switch. Pull the choke knob out when starting the engine. Slowly push the knob in after the engine starts. If the engine is warm and has been running, choking may not be necessary to restart it.

4. RIGHT AND LEFT MOTION CONTROL LEVERS

The lever control levers move right, left, forward, and rearward. To enter the seat, move the levers all the way left and right. Enter the seat and move the levers in toward the center of the machine.

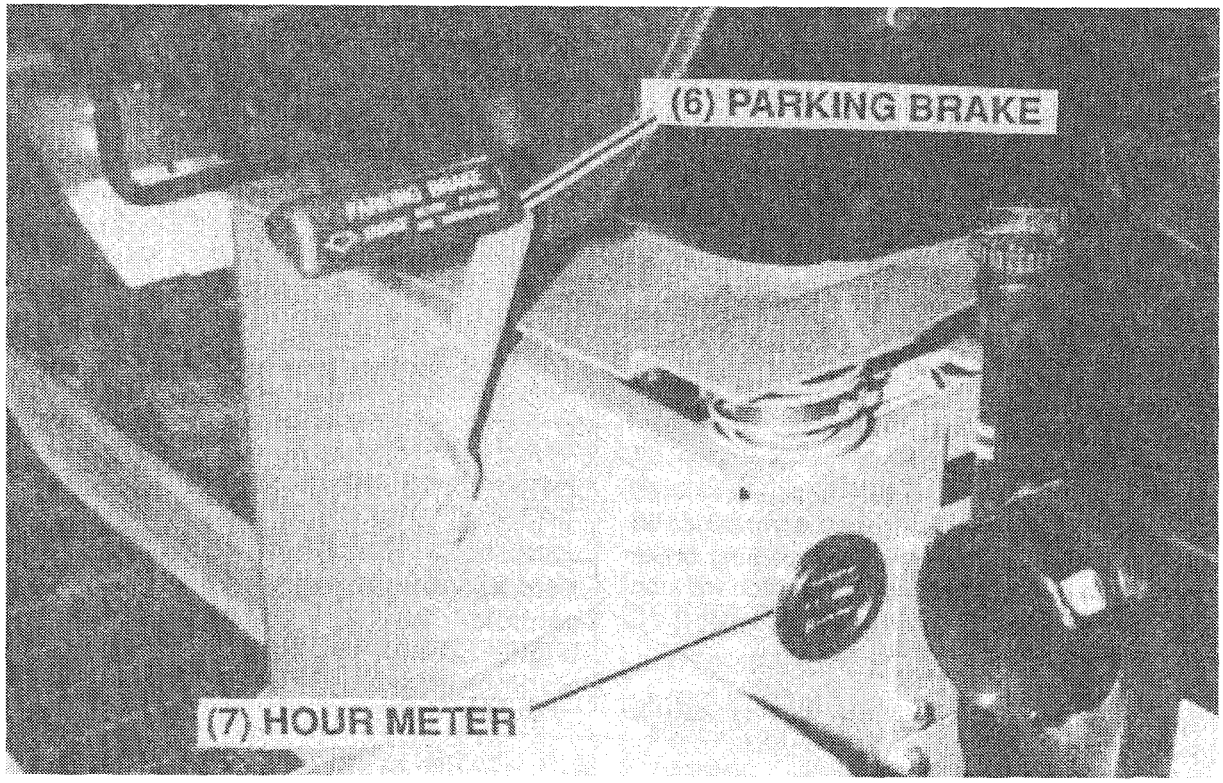
The left lever controls left rear wheel and the right lever controls the right rear wheel. To go forward, push both levers forward evenly; the further you push the levers forward, the faster the machine will travel. To move in reverse, pull both levers to the rear evenly; the further you pull the levers, the faster the machine will travel. To turn, slow the machine and pull one lever back far enough to cause it to rotate backward at the same speed that the opposite wheel is turning forward.

5. PTO (POWER TAKE–OFF) ELECTRIC CLUTCH/BRAKE SWITCH

The PTO switch is on the right panel below the seat. The switch engages and disengages the mower.

To engage the PTO, raise the switch cover and move the switch to the ON position. To disengage the PTO, lower position. The switch must be in the OFF position to start the engine.

INSTRUMENTS AND CONTROLS



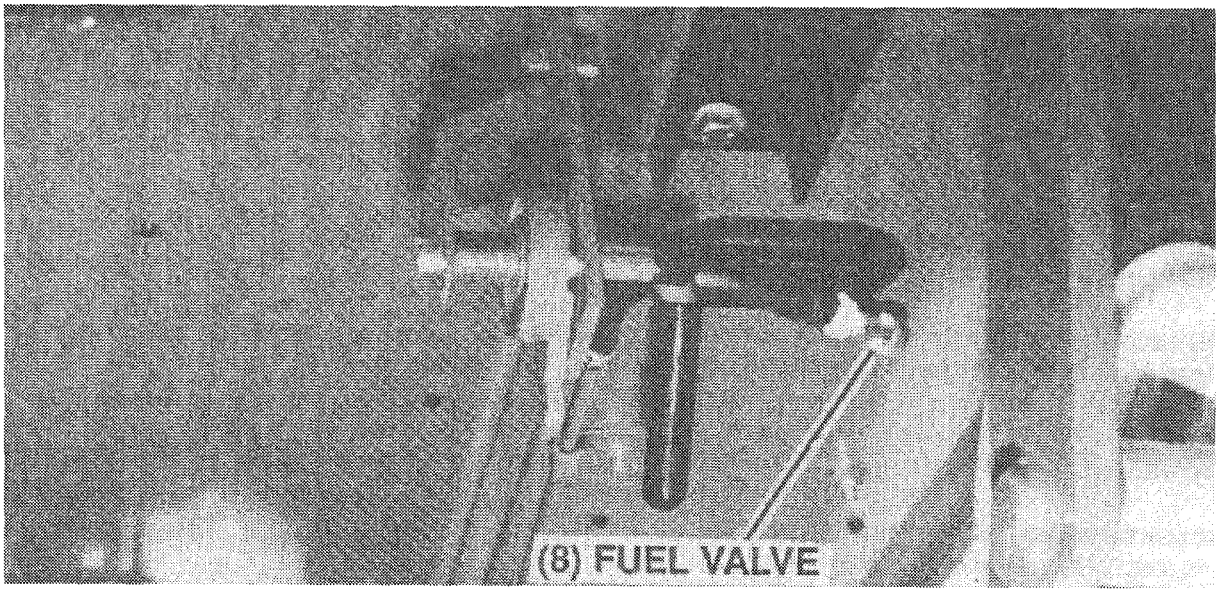
6. THE PARKING BRAKE LEVER

The parking brake lever is on the left side, below the seat. To engage the parking brake, place the motion control levers in the neutral position and move the brake lever back. To disengage the parking brake, move the lever forward.

The parking brake must be engaged to start the engine.

7. THE HOUR METER

An hour meter is on the back of the seat support in front of the engine. The hour meter is a gauge that shows operating hours of tractor.



8. THE FUEL TANK VALVE

The fuel tank valve is at the bottom of the tank. The valve is usually left open unless service on fuel system becomes necessary.

BEFORE OPERATING

CHECK THE FUEL

THE TORO COMPANY STRONGLY RECOMMENDS USING ONLY FRESH, CLEAN UNLEADED REGULAR GRADE GASOLINE. UNLEADED GASOLINE BURNS CLEANER, EXTENDS ENGINE LIFE AND PROMOTES GOOD STARTING BY REDUCING BUILD-UPS OF COMBUSTION CHAMBER DEPOSITS. IF UNLEADED GASOLINE IS NOT AVAILABLE, YOU CAN USE LEADED GAS. NEVER USE METHANOL, GASOLINE CONTAINING METHANOL OR MORE THAN 10% ETHANOL, GASOLINE ADDITIVES, PREMIUM GASOLINE OR WHITE GAS BECAUSE THE ENGINE FUEL SYSTEM MAY BE DAMAGED. ALSO, DO NOT USE GASOLINE DE-ICERS. THEY CAN CAUSE INTERNAL DAMAGE TO CARBURETOR AND FUEL PUMP PARTS.

If you use regular leaded gasoline continually, you should remove carbon and lead deposits from the cylinder heads because of engine power loss. You can safely use unleaded gasoline after lead deposits have been removed.

DANGER

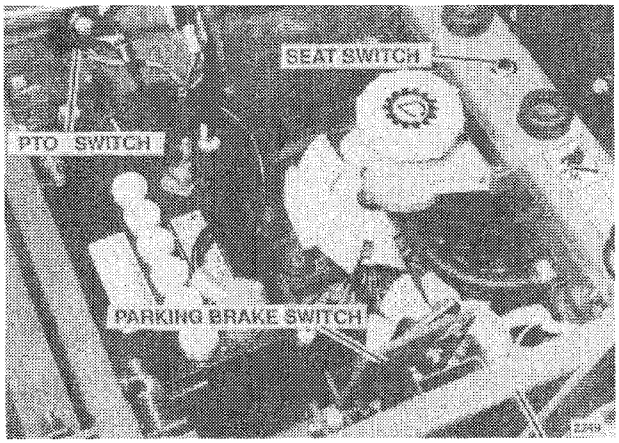
- **Gasoline is highly flammable, use caution when storing or handling it.**
- **Do not fill the fuel tank while the engine is running, hot, or when the machine is in an enclosed area. Vapors may build up and be ignited by a spark or flame source many meters (feet) away.**
- **DO NOT SMOKE while filling the tank.**
- **Always fill the fuel tank outside and wipe up any spilled fuel before starting the engine.**
- **To prevent spilling fuel, use a funnel or spout and fill the tank to about 25 mm (1 in.) below the filler hole. DO NOT OVERFILL.**
- **Use gasoline for the engine only, not for any other purpose.**
- **Store gasoline in a clean, safety approved container and keep the container capped.**
- **Keep gasoline in a cool, well-ventilated place. Never store gasoline in an enclosed area such as a hot storage shed.**
- **Never buy more than 30 days' supply to assure volatility.**
- **Because many children like the smell of gasoline, keep it out of their reach because the fumes are explosive and dangerous to inhale.**

BEFORE OPERATING

CHECK THE OIL

To protect your tractor's engine, check the oil level before each use. Complete information on recommended oils and how to check the oil level is in the Maintenance section of this manual.

CHECK THE SAFETY INTERLOCK SYSTEM



Safety Interlock Switches

The safety interlock system has two switches for safe starting, and a seat switch that shuts off the engine if you rise off the seat with the PTO engaged.

The PTO switch must be "OFF" and the parking brake engaged before the engine will start.

If the machine won't start, make sure the parking brake is engaged and the PTO switch is in the OFF position.

Test the safety interlock system periodically. To test it, observe the following functions. (For your protection, if you do not get the results described, have repairs done immediately by an authorized TORO Wheel Horse Dealer.)

1. The engine should NOT start if:

   A. The parking brake is disengaged.

   B. The PTO switch is ON.

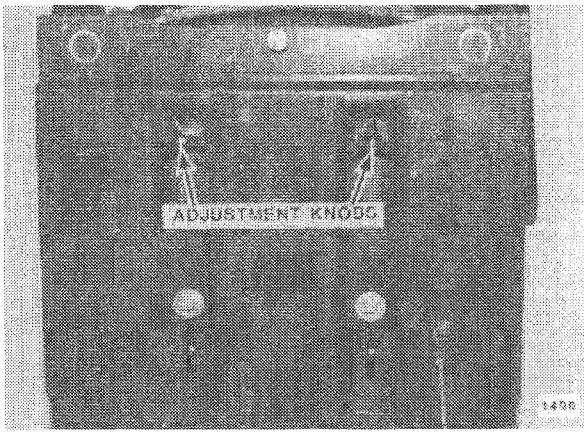
   Test each of the above, one at a time.

2. With the engine running and the PTO switch in the ON position, test the seat switch by rising off the seat. The engine should shut off.

ADJUSTING THE SEAT

The seat can be adjusted for optimum comfort.

1. Loosen the two knobs.
2. Slide the seat to desired position.
3. Tighten the knobs.



CAUTION

Before starting the engine, become familiar with all controls. Read this Operator's Manual thoroughly. Always check oil level before starting the engine.

DANGER

Care should be taken to avoid inhaling exhaust gases as they contain carbon monoxide gas, which is colorless and odorless. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. Do not run the engine in confined areas such as a closed garage.

OPERATING

STARTING THE ENGINE

Because of the safety interlock system, your tractor will not start unless you engage the parking brake and switch the PTO switch OFF.

To start the engine, engage the parking brake. Move the throttle control lever to the LOW idle position. Pull the choke control all the way out to the COLD position. Turn the ignition key to START to engage starter. When the engine starts, release the key. The switch is spring loaded and will return to the RUN position automatically.

IMPORTANT: If the engine fails to start after 10 seconds of continuous cranking, turn the key to OFF and let the starter motor cool. Consult the Troubleshooting Check List.

After the engine has started, raise the throttle to half position and lower the choke. If the engine stalls at LOW, or hesitates during acceleration, apply the choke until the engine reaches its normal operating temperature.

USING THE THROTTLE CONTROL

The throttle control regulates the **engine** speed as measured in RPM (Revolutions Per Minute). This control **should not** be used to regulate the tractor's **ground** speed.

The engine in your new TORO Wheel Horse tractor has a special governor that limits its RPM. This allows the engine to operate most efficiently at a set speed and protects it from damage caused by excessive RPM. Always operate your machine with the throttle control set at full speed.

USING THE CHOKE CONTROL

The choke controls a "butterfly" valve in the carburetor. When the choke is partially or completely closed, less air is admitted to the engine. This results in a higher fuel–to–air (richer) mixture that is easier to ignite when the engine is cold. Warm engines may not need choking.

GOING FORWARD OR BACKWARD

The machine has a separate transmission for each rear wheel. The transmissions are controlled with the motion control levers—one for each wheel.

⚠ CAUTION

Always move the lever control levers slowly when placing the machine into motion. Sudden starts can damage equipment and cause you to lose control. For safe operation, never move the motion control levers too rapidly, especially on grades.

To begin moving, release the parking brake; move the motion control levers inward from their PARK position to place them in front of you. To go forward, push both levers forward evenly. To go in reverse, pull back on both levers evenly.

CHANGING SPEED OR DIRECTION

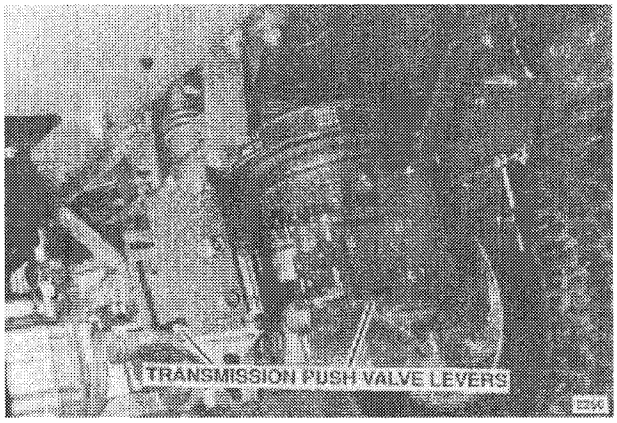
To change the machine's direction, slowly move the levers to NEUTRAL, then move them in the direction you want to go.

The farther the levers are moved away from their NEUTRAL positions, the faster the machine will travel. To turn the machine left or right, pull one lever back far enough to cause it to rotate backward at same speed the opposite wheel is turning forward. Practice turning in a low–visibility hard surface area before trying to turn on a lawn surface.

OPERATING

STOPPING

To stop the machine, return both levers evenly to neutral position. Always engage the parking brake, shut off the engine and remove the ignition key before leaving the machine.



Transmission Push Valve Levers

SHUTTING OFF THE ENGINE

To shut off the engine, return the throttle lever to the Idle position and turn the ignition key to OFF. If the engine has been working hard or is hot, let it idle a short time before turning off the key. This will help cool the engine before stopping.

Note: In an emergency, the engine may be stopped by turning the ignition key to OFF.

CAUTION

Always remove the key and set the parking brake when leaving the tractor unattended, even if just for a few minutes. Prevent accidents; don't give children or unauthorized persons an opportunity to operate this machine.

HAND PUSHING THE MACHINE

Note: Hand push the machine only. Do not tow. Towing can cause severe damage to transmissions.

The machine can be pushed at a slow speed. Transmission push valves are under the main frame in front of rear wheels. To release pressure in each transmission, lift the levers up and to the right into lock positions. To resume operation, release the levers so that they are in lowered position.

USING ATTACHMENTS

CAUTION

Read the manuals provided with attachments before using them. These manuals give a more detailed description of operation and stress other areas of caution. Familiarize yourself thoroughly with equipment before using it.

USING A MOWER

WARNING

Keep all shields and the mower discharge chute in place. Never put your hands or feet under the mower deck. Never try to clear discharge areas or mower blades without disengaging the PTO clutch and removing the ignition key.

IMPORTANT: Each time you install the mower, check for correct operation of the PTO clutch and brake.

For best operation on most lawns, operate the engine at full throttle while controlling your ground speed with the transmission. Excessive ground speed often causes uneven cutting. To get a more even cut, use the transmission to reduce your ground speed.

Mowing Speed

The mower operates most efficiently at maximum blade speeds. The machine's speed should allow the mower blades to maintain this maximum speed while mowing across turf.

Slow the machine for cutting tall grass, grass that is heavy with moisture, or when moving uphill. If the ground speed is too fast, or the blade speed is too slow, mowing will be uneven because the mower blades won't able to lift grass into the cutting position as the mower passes.

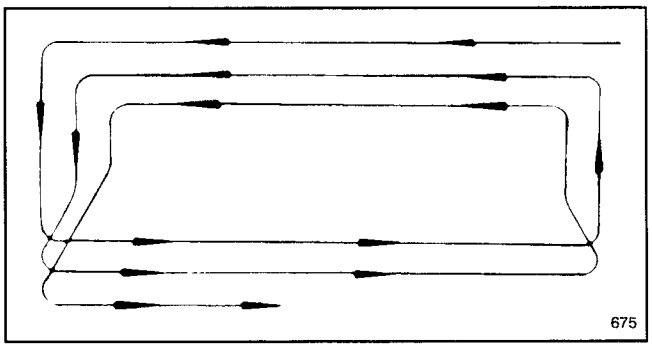
Mowing Height

You probably know the best cutting height for your lawn from previous experience. The first time you mow, set the mower to cut a little higher than you have in the past. This will help you decide the best approach to uneven areas and ensure that a wider cut doesn't result in scalping the high spots.

When cutting very tall or damp grass, set the mower in its highest cutting position and enter the area slowly. If necessary, cut at only a half width, overlapping a previously cut area on each pass. Then, with the mower set to the desired height, make a final cut over the entire area.

Mowing Pattern

The machine will cut an area quickly and efficiently if you plan the mowing pattern to take full advantage of the machine's capabilities. Use a pattern that will permit as much continuous forward motion and long straight runs as possible. Avoid repeated tight turns whenever you can by swinging wide over previously cut areas after each pass. The system illustrated below can be used on most lawns and eliminates tight turn and constant direction changes. Leave tight corners and close trimming until last.



Efficient Mowing Pattern

USING ATTACHMENTS

OPERATING WITH DRAWBAR–TYPE ATTACHMENTS

Many attachments use the machine as a towing vehicle. They are attached or removed from the machine by installing or removing a single drawbar hitch pin.

Some of these attachments are powered by a separate gasoline engine, some are "ground driven" and some are simply towed, such as a lawn sweeper or dump cart.

In any case, all attachments should be approached with the same amount of caution given any mechanical device. Always read each "Operating Instruction Manual" carefully before using an attachment. Keep children and pets away from the machine when it is operating. Never allow any unauthorized personnel to operate your equipment.

DUMP CART LOAD LIMITS

Wheel Horse recommends you observe the following load limits when using the machine with a dump cart. Load limits have been set to provide for safe braking on slopes.

275 lbs (127 kg)

OPERATING WITH A REAR VACUUM

An optional rear–mount vacuum can affect the way the machine operates. Because of the vacuum's added weight, it may be necessary to operate the machine at a slower ground speed.

MAINTENANCE

CAUTION

To minimize chance of injury, do all maintenance and adjustment on your rider with the engine off and the ignition key removed, unless instructed otherwise in this section. Use extreme care when working near operating machinery. Do not wear loose fitting clothing. Remove your watch and any jewelry before beginning work and observe common safety practices when using tools.

MAINTENANCE CHECK LIST

Note: These service intervals are **MAXIMUM** under normal conditions. Increase frequency under extremely dirty or dusty conditions.

Service Operation	Before Each Use	After Each Use	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours/ 1 year (2)	Every 1000 Hours
CHECK:							
Safety Interlock System	X						
Engine Oil Level	X						
Battery Water Level (3)			X				
Automatic Transmission Oil Level	X						
General Unit Condition	X	X					
Parking Brake Adjustment					X		
Tire Pressure (3)			X				
Fasteners Placed & Tight			X				
PTO Electric Clutch & Brake Adjustment					X		
CLEAN:							
Air Filter/Precleaner			X				
Engine Chaff Screen	X						
Engine Exterior & Fins				X			
Breather Valve & Baffle							X
Cylinder Head Deposits							X
REPLACE:							
Engine Oil Filter					X		
Spark Plugs					X		
Air Filter						X	
In–Line Fuel Filter					X		
LUBRICATE:							
Chassis			X				
CHANGE:							
Engine Oil (1)				X			

(1) Refer to text for initial service interval for new tractors.
(2) Whichever occurs first.
(3) Or monthly.

MAINTENANCE

ENGINE

COOLING

Check the chaff screen on the engine each time you use the machine. Restricted air flow through the engine can cause overheating and engine damage.

OIL

For maximum engine protection in all operating conditions, use API Service Classification SH oil. This designation will appear on the oil can.

IMPORTANT: Check oil level of the engine each time you use the rider. An incorrect oil level can cause extensive internal damage to the engine.

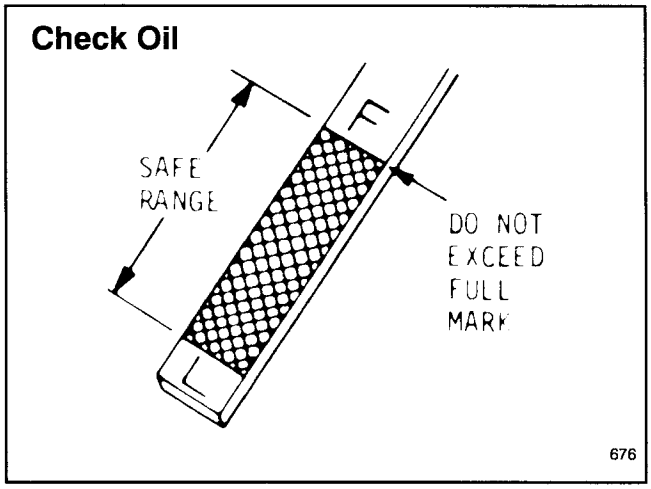
The oil filler dipstick and oil drain for the engine are shown in the following illustrations.

To check the engine oil level, stop the machine where the engine is level. Shut off the engine, set the parking brake, and remove the ignition key.

DANGER

Crankcase pressure can blow out hot oil and cause serious burns. Do NOT check the oil while the engine is operating.

Remove the oil dipstick from the engine.



Correct Oil Level

Wipe the dipstick with a clean, lint–free cloth; reinstall it all the way into the block. Remove the dipstick again and read the scale on the lower portion of the stick.

Add oil through the oil dipstick tube.

IMPORTANT: Do not overfill the crankcase. Excess oil causes high oil consumption and oil accumulation in the air cleaner housing.

Oil Changes

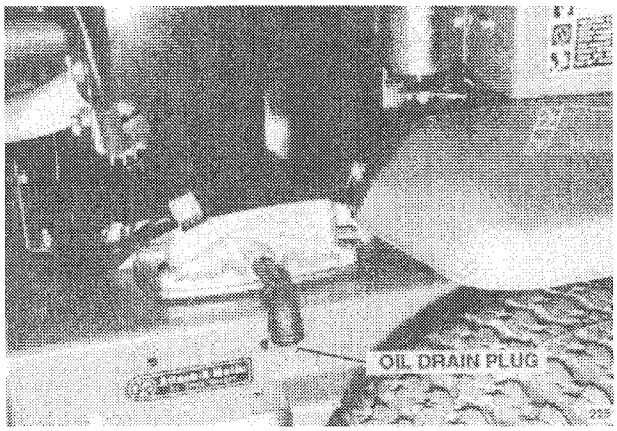
Change the engine oil after the first 25 hours of operation. After that, change the oil at 50–operating–hour intervals. Change the oil filter after every 100 hours. If operating conditions are extremely dusty or dirty, change the oil more often.

IMPORTANT: Failure to change the engine oil at recommended intervals can seriously damage the engine.

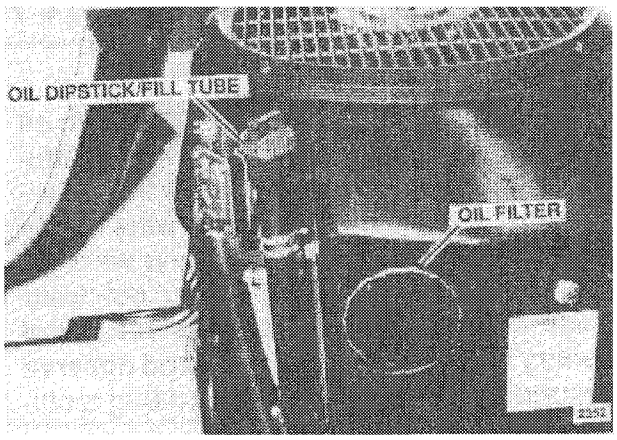
Before changing the oil, start the engine and let it warm up. This will cause the oil to flow easier. Then shut off the engine and remove the key.

To Drain Oil:

Remove the drain plug. After the oil has drained completely, reinstall the drain plug.



Engine Oil Drain



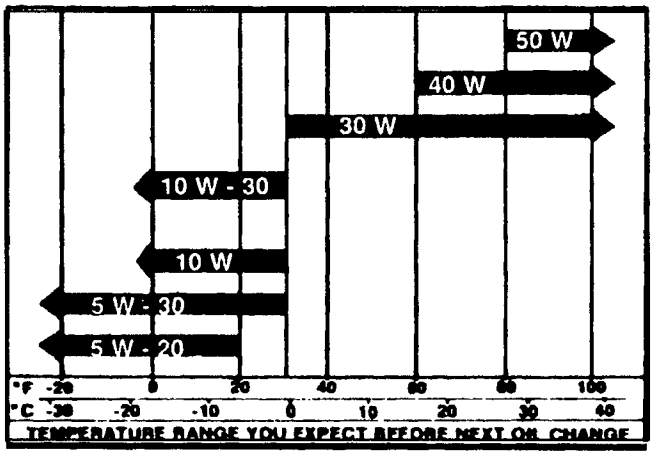
Engine Oil Dipstick/Fill Tube And Filter

MAINTENANCE

When replacing the oil filter, unscrew the used filter and install the new filter on the engine.

Remove the dipstick/oil fill cap and add about 80 percent of the oil specified in following chart. Also use the correct oil type and viscosity. When using the temperature/viscosity chart, select the air temperature you will most likely encounter during the next 50 hours of operation.

Engine Oil Type	Crankcase Oil Capacity
API Service SH, SH/CC or SH/CD	1.75 qts (1.6 l) without Filter 2 qts (1.9 l) with Filter



Engine Oil Temperature–Viscosity Chart

After adding 80 percent of the oil, check the oil level. Add oil as necessary to bring the oil to the "Full" level.

IMPORTANT: Never overfill the engine crankcase with oil. The oil level must not exceed the "F" level on the dipstick.

AIR FILTER

Dirt coming through incorrectly installed, poorly serviced, or inadequate air filter elements is very harmful to the engine. Also, a clogged element causes a richer fuel mixture, which wastes gasoline and may lead to formation of harmful sludge deposits.

Clean the engine air filter after every 25 hours of operation (more often if you operate the machine in extremely dusty conditions).

Replace air filter elements at 200–hour intervals. Replace them more often in dusty operating conditions. To protect your engine, use only the manufacturer's replacement filter or replacement filters with the same specifications.

Check the following when installing a new or serviced element:

1. The base must be securely tightened to the carburetor. Replace the base if it is bent or cracked.

2. Gasket surfaces of the element must be flat against the base and cover to seal effectively.

3. Tighten screws securely.

4. Be sure cover seals and gaskets are in good condition and seal properly. Bad gaskets and seals can let unfiltered air into the carburetor.

IMPORTANT: To prevent any dirt or other contaminants from entering the engine, always cover the carburetor air horn when you remove the air cleaner.

Clean the dry–type air filter element by tapping it lightly on a flat surface to remove loose dirt particles. Replace the element if dirt does not drop off easily. DO NOT wash the elements in liquid. DO NOT try to blow dirt off with compressed air because this can puncture the filter element.

MAINTENANCE

Foam pre–cleaners cover the filter elements on some engines. Clean the pre–cleaner at 25–hour intervals. Wash the pre–cleaner in a solution of liquid dishwashing detergent and water. Squeeze out excess water and let it dry. Coat the pre–cleaner evenly with two tablespoons of SAE 30 oil, kneading the oil into the pre–cleaner. Wring out excess oil from the pre–cleaner, then install the pre–cleaner over the air cleaner element.

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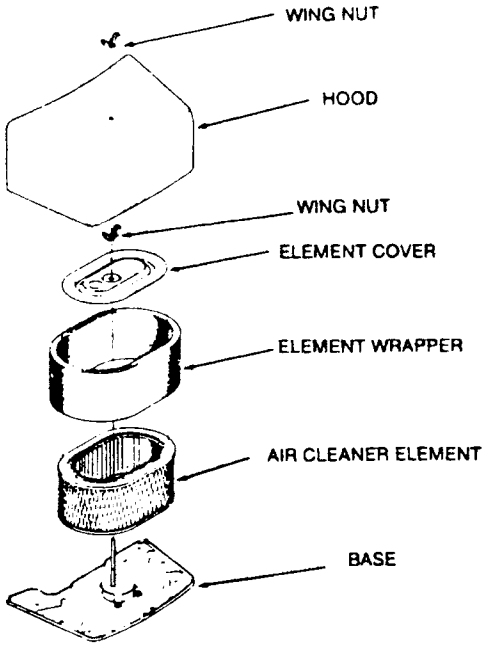
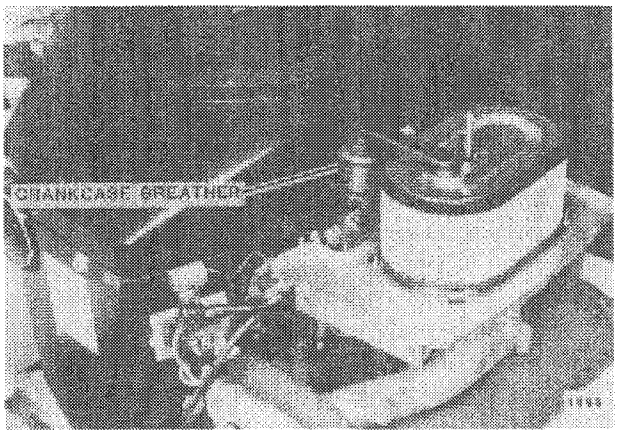
Pre-cleaner service–wash, squeeze dry, coat with oil and wring out



Air Cleaner Assembly

CRANKCASE BREATHER

The engine uses a crankcase breather valve for maintaining crankcase vacuum. If the crankcase becomes pressurized as evidenced by oil leaks at the seals, clean the baffle pack and valve in a solvent. Check and clean the valve and baffle after every 1,000 hours of operation.



Crankcase Breather

SPARK PLUG

A spark plug in poor condition or with an incorrect gap setting often causes engine misfires or generally poor operation. Spark plugs should be checked after each 100 hours of operation. Replace a spark plug if you see fouling or excessive deterioration.

Always clean the area around a spark plug before you remove it to prevent dirt from entering the engine. Use a spark plug wrench to remove and install plugs.

Check the spark plug. Good operating conditions are suggested by a light coating of gray or tan deposit. A dead white, blistered coating could suggest engine overheating. A black coating could suggest an "over–rich" fuel mixture caused by a clogged air cleaner, or incorrect carburetor adjustment.

Replace spark plugs that are in poor condition. **Never sandblast, wire brush, scrape or otherwise service a spark plug in poor condition. New plugs give the best results.**

Always check the spark plug gap before installing a new plug or reinstalling the original plug. Use a spark plug gap gauge to adjust the electrode air gap to specification for the engine.

MAINTENANCE

CARBURETOR ADJUSTMENT

Your tractor's carburetor was adjusted at the factory and should not need to be readjusted. However, if you notice one of the conditions listed below, have the carburetor readjusted immediately. Continued operation with an incorrect setting causes fouled spark plugs, overheating, excessive valve wear or other problems.

Note: If you notice black exhaust smoke, check the air cleaner first—an "over–rich" mixture is usually caused by a poorly serviced, clogged air cleaner element, not an incorrectly adjusted carburetor.

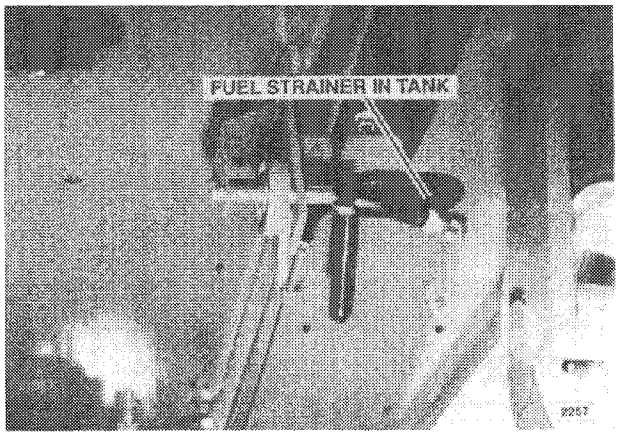
CONDITION
A. Black, sooty exhaust smoke, engine sluggish.
B. The engine misses and backfires at high speed.
C. The engine starts, sputters and dies under cold weather starting.
D. The engine runs rough or stalls at idle speed.
POSSIBLE CAUSE/PROBABLE REMEDY
A. Mixture too rich—readjust main fuel needle.
B. Mixture too lean—readjust main fuel needle.
C. Mixture too lean—readjust main fuel needle.
D. Idle speed too low or incorrect idle adjustment—readjust speed then idle adjustment screw, if needed.

Carburetor Adjustment Chart

Correct carburetor adjustment requires a specialized knowledge and equipment. Also, other adjustments such as governor settings may be necessary after adjusting carburetor. For these reasons, we recommend an authorized TORO Wheel Horse dealer do carburetor adjustments.

FUEL SYSTEM

A fine–mesh, screen–type strainer in the fitting at the bottom of the fuel tank filters foreign matter from gasoline before it reaches the carburetor. This strainer requires service only if the fuel supply becomes contaminated.



Fuel Strainer

Always clean the area around the fuel cap before you remove it to prevent dirt from entering the fuel system. Also make sure your fuel storage container is clean and in good condition.

Keep the fuel tank full during winter. (Cold and damp weather can cause moisture to condense in the tank.)

THE EXHAUST SYSTEM

Make regular visible and audible inspections of the exhaust system throughout the machine's life. Look for leaks in the muffler and piping while the engine is running. For your personal safety, repair all leaks immediately after you find them.

DANGER

Inhaling exhaust gases can cause serious personal injury or death. Inspect the exhaust system for leaks and repair any leaks you find immediately.

THE ELECTRICAL SYSTEM

The Alternator

An alternator charges the battery. This charging system normally needs no service—other than periodic checks that all exposed wiring and electrical connections are clean, tight and in good condition.

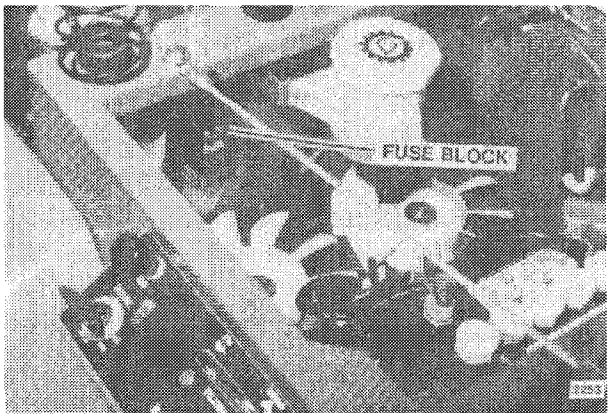
IMPORTANT: Correct polarity is critical with an alternator–type charging system. Always disconnect the battery ground cable (negative) before you work on any part of the electrical system. Make sure all components are connected correctly before reconnecting the ground cable (negative). Otherwise, you may damage the alternator system.

Never run the engine if the battery is removed, or if the battery is not connected to the charging system. Serious damage to charging system components may result.

Fuses

Three fuses protect the machine's electrical system and components from excessive current and short circuits. These fuses are in a fuse holder clipped to the machine's frame under the seat:

- A 10–amp fuse protects the clutch & hour meter.
- A 20–amp fuse protects the switch circuit.
- A 30–amp fuse protects the charging circuit.



Fuse Locations

A "blown" fuse indicates short circuits or current overloads.

Battery

IMPORTANT: When servicing the battery or any other part of the electrical system, or if you must remove the battery for any reason, always disconnect the negative (ground) cable FIRST and reconnect it LAST to avoid electrical shorts.

Keep the electrolyte level above the plates in each cell by adding distilled water. The best time to add water is just before you operate the tractor so the water will mix with the solution. Do not overfill the battery. Electrolyte solution is corrosive; overfilling can damage surrounding metal parts. The battery should be maintained at a 1.265 specific gravity charge.

When the battery has been out of the tractor for servicing, take care to re–connect cables to the battery exactly as they were before removal.

For longest service life, keep the battery clean by wiping it off with a paper towel. Any corrosion around the battery terminals should be removed by applying a solution of one–part baking soda to four–parts water. A light coating of grease or petroleum jelly applied to all exposed terminal surfaces can prevent corrosion.

IMPORTANT: At temperatures below 32° F (0° C), a full charge state must be maintained to prevent cell electrolyte from freezing and causing permanent battery damage.

MAINTENANCE

HYDROSTATIC TRANSMISSION

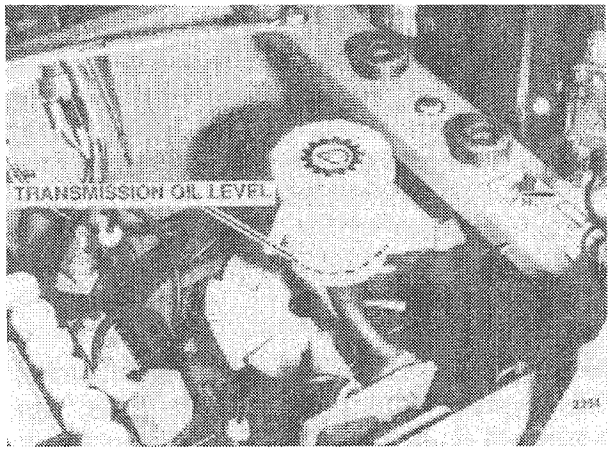
Separate transmissions control each rear wheel. Check the lubricant level in both reservoirs before each use. Check levels when the oil is COLD. The transmission's oil level should be at the line on the reservoirs.

Note: Use care to prevent dirt, clippings or other foreign material from entering the transmission during oil level checks, oil fillings, or oil changes.

Changing oil in transmissions is not recommended except for major service. If you add oil often, a leak is probable and should be corrected immediately.

Oil capacity for each transmission is 1.5 qt. (1.4 l).

Oil specifications are: SAE 20 A.P.I. Service SC, SD, SE, SF, SG OR SH.



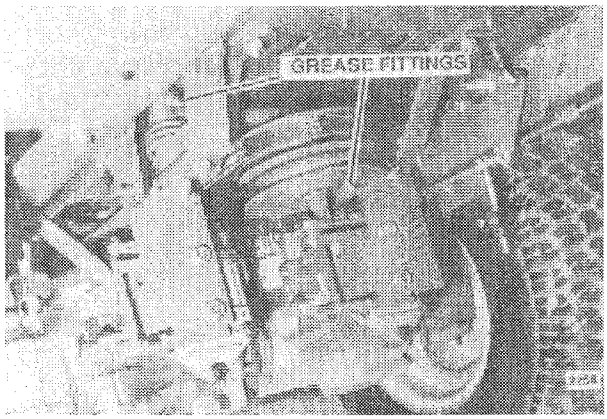
Transmission Oil Level

Transmission Cooling Fans

A cooling fan is bolted to each transmission input shaft. The fan forces air over the transmission cooling fins to cool the transmission oil. Replace a cooling fan if it becomes cracked or broken. Be sure to install it so that maximum airflow is directed across the transmission.

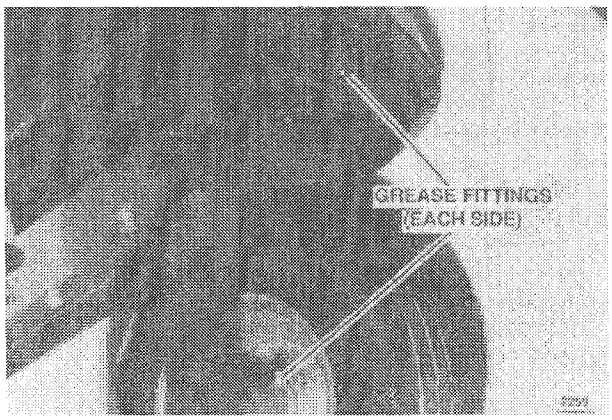
Keep the cooling fins on transmissions clean for best cooling efficiency. Periodically inspect them for dirt build–up, and brush or wash out any accumulated dirt or clippings. If you use pressure–washing equipment, avoid directing the spray at joints and seal areas to prevent forcing water into the reservoir system.

LUBRICATION



Grease Fittings

Lubricate all grease fittings after every 25 hours of operation with #2 multi–purpose lithium base grease. Lubricate other pivoting arms and levers at the same intervals with light machine oil applied directly to wear surfaces. Before using the grease gun, clean zerk fittings carefully to prevent dirt from being forced into them. Wipe off any excess grease.



Front Grease Fittings

MAINTENANCE

PTO ELECTRIC CLUTCH/BRAKE

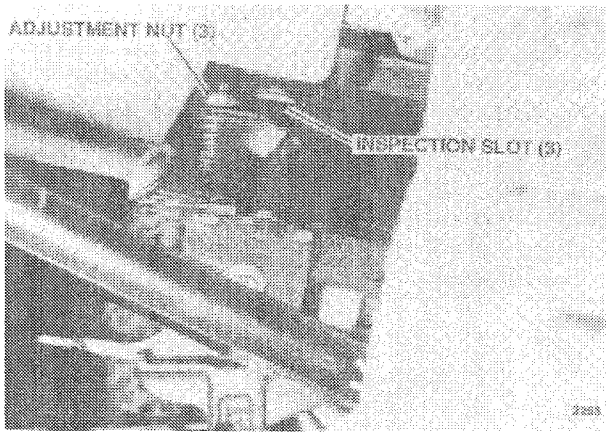
The PTO electric clutch/brake may require periodic adjustment due to normal wear of friction surfaces. Check the PTO electric clutch/brake adjustment every 100 hours.

To adjust the PTO Electric Clutch/Brake:

1. Stop the engine, set the parking brake and remove the ignition key.

2. The clutch has three springs and adjustment nuts. All three must be adjusted equally

3. Insert a .010 in. feeler gauge into the three air gap inspection slots, one at a time, and turn the adjustment nuts until a small amount of resistance is felt on the feeler gauge.



PTO Electric Clutch/Brake Adjustment

THE PARKING BRAKE ADJUSTMENT

Each rear wheel has a separate parking brake. Adjust both sides simultaneously. To adjust the parking brake:

1. Block both rear wheels. Loosen the lock nuts and adjustment bolts.

2. Engage the parking brake.

3. Tighten the adjustment bolts to 10–20 in. lbs (1–1/2 turns after you feel resistance on the bolts).

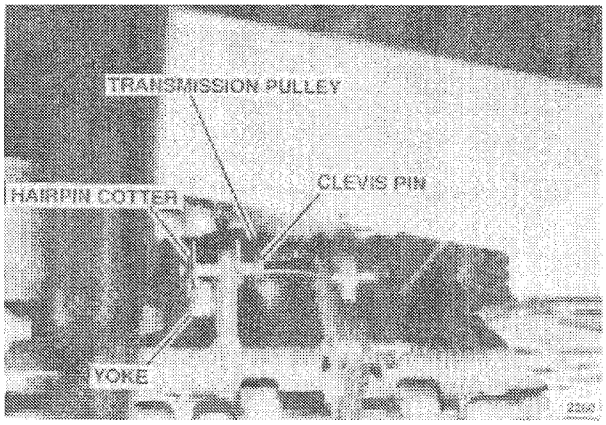
4. Hold the adjustment bolts and tighten the lock nuts.

5. Remove the blocks. Both rear wheels should slide when the machine is pushed.

6. With the parking brake released, the machine should move freely. Engage the transmission push valves.

CLEANING AND STORAGE

After 30 days, wax your rider's painted surfaces to protect the luster of the original finish. Wash the rider regularly with a mild automotive–type detergent and water. Coat exposed bare metal surfaces with oil or a light coating of grease to prevent rust until you can make permanent repairs. Aerosol cans of touch–up paint are available through your authorized TORO Wheel Horse dealer.



Parking Brake Adjustment

When you will not use the tractor for an extended period, take the following steps to ensure minimum difficulty when you return the unit to service:

1. Do the required maintenance steps described in the "Maintenance Check List."

2. Check the tires for correct inflation.

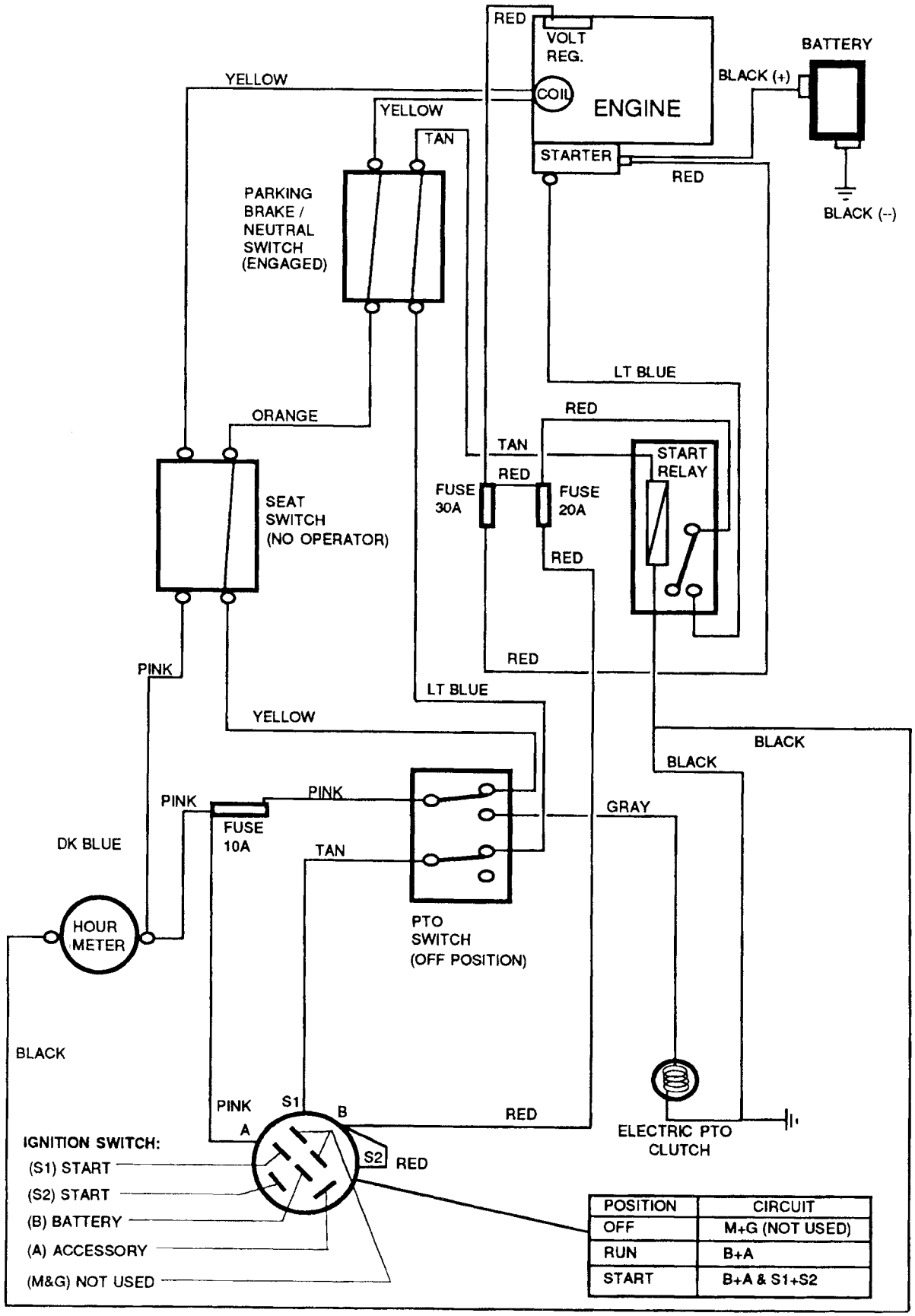
3. Wash the machine and repaint all bare metal surfaces.

4. Start the machine and engage the mower for one (1) minute to remove excess water from belts and pulleys. Let the engine run out of gas. (As gasoline grows old, it becomes less volatile and forms harmful gums and varnish deposits in the carburetor and fuel system.) **DO NOT STORE GASOLINE FOR MORE THAN 2 MONTHS.**

5. Charge the battery. In temperatures lower than 40° F (4° C), a battery will keep a charge for about 60 days. In temperatures above 40° F (4° C), the water level should be checked and the battery "trickle charged" every 30 days (more often in higher temperatures). The battery must be fully charged to prevent freezing and internal damage in weather below 32° F(0° C).

6. Remove the key from the tractor.

WIRING DIAGRAM



TROUBLESHOOTING CHECK LIST

Symptom	Possible Cause	Possible Remedy
The engine will not turn over.	Dead battery.	Charge or replace the battery.
The engine turns over but will not start.	Safety interlock switch.	Be sure the mower is disengaged and the parking brake is engaged.
	Fuse.	Replace the fuse.
	Starter or solenoid.	Consult an authorized dealer.
	Ignition switch.	Consult an authorized dealer.
	Spark plug is not firing.	Check the spark plug condition and reset the gap.
	Ignition system.	Consult an authorized dealer.
	No fuel in tank.	Fill the tank.
	Incorrect carburetor adjustment.	Reset the carburetor adjustment.
The engine is hard to start.	Spark plug wire is grounded or loose.	Check spark plug wires.
	Ignition system.	Consult an authorized dealer.
	Spark plug is faulty or incorrectly gapped.	Check spark plug condition and reset gap.
	Fuel line is clogged.	Clean the fuel line.
	Carburetor dirty or incorrectly adjusted.	Readjust the carburetor. Consult an authorized dealer for carburetor service.
The engine starts, but operates erratically.	Clogged fuel line.	Clean the fuel line.
	Water in the fuel	Drain old fuel and replace it with fresh fuel.
	Vent in fuel cap is closed or plugged.	Check the cap vent.
	Incorrect carburetor adjustment.	Readjust the carburetor.
The engine knocks.	Fuel's octane is too low.	Drain fuel and replace it with a higher octane supply.
	Ignition system.	Consult an authorized dealer.
	Engine overheated.	Shut off the engine and allow to cool.
The engine occasionally "skips" at high speed.	The spark plug is fouled, faulty or its gap is too wide.	Check spark plug condition and gap.
	Ignition system.	Consult an authorized dealer.
	Incorrect carburetor adjustment.	Readjust carburetor.
Engine overheating.	Clogged air intake screen or fins.	Clean intake screen and fins.
	Oil level is too high or too low.	Adjust the oil level as necessary.
	Fuel mixture is too lean.	Readjust the carburetor.
	Ignition system.	Consult an authorized dealer.
	Engine is overloaded.	Reduce the load.
The engine idles poorly.	Incorrect carburetor adjustment.	Readjust the carburetor.
	Incorrect spark plug gap.	Check the condition and gap of the spark plug.
The engine backfires.	Incorrect carburetor adjustment.	Readjust the carburetor.
	Ignition system.	Consult an authorized dealer.
Engine runs fine, but rider will not move.	Faulty transmission/drive belt.	Consult an authorized dealer.
	Transmission push valve is engaged.	Release push valve.

TORO ProLine Products

THE TORO TOTAL COVERAGE GUARANTEE

A One Year Limited Warranty
(A Full Two-Year Warranty for Residential Use)

What Is Covered By This Express Warranty?

The Toro Company promises to repair any TORO ProLine product used for commercial, institutional, or rental purposes if defective in materials or workmanship for a period of one year from the date of purchase. The cost of parts and labor are included as well as transportation within a 15 mile radius of a TORO ProLine Service Dealer.

What Products Are Covered By This Warranty?

ProLine products covered by this warranty include the ProLine 118, 120, 220, 616, 620, 724 riding products and wide area walk behind mowers and their cutting decks and accessories.

How About Residential Use?

TORO ProLine products used for residential use are covered by a full two–year warranty.

How Do You Get Warranty Service?

Should you feel your TORO ProLine product contains a defect in materials or workmanship, contact the dealer who sold you the product or any TORO ProLine Service Dealer. The Yellow Pages of your telephone directory is a good reference source; look under TORO Commercial Service Dealers. The Service Dealer will either arrange service at his/her dealership or recommend another authorized Service Dealer who may be more convenient. You may need proof of purchase (copy of registration card, sales receipt, etc.) for warranty validation.

If for any reason you are dissatisfied with a Service Dealer's analysis of the defect in materials or workmanship or if you need a referral to a TORO ProLine Service Dealer, please feel free to contact us at the following address:

Toro Customer Service Department
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
612-888-8801

What Must You Do To Keep The Warranty In Effect?

You must maintain your TORO Product by following the maintenance procedures described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

What Does This Warranty Not Cover? and How Does Your State Law Relate To This Warranty?

There is no other express warranty except as described above. This express warranty does not cover:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune–up parts, blade sharpening, brake and clutch adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Repairs necessary due to improper fuel, contaminants in the fuel system, or failure to properly prepare the fuel system prior to any period of non–use over three months.
- Pickup and delivery charges for distances beyond a 15 mile radius from a TORO ProLine Service Dealer.

All repairs covered by this warranty must be performed by a TORO Service Dealer using Toro approved replacement parts.

Repair by a TORO Service Dealer is your sole remedy under this warranty.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the TORO Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non–use pending completion of repairs under this warranty. Some states do not allow exclusions of incidental or consequential damages, so the above exclusion may not apply to you.

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

COUNTRIES OTHER THAN THE UNITED STATES OR CANADA

Customers who have purchased TORO products exported from the United States or Canada should contact their TORO Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the TORO importer. If all other remedies fail, you may contact us at The Toro Company.