

TORO®

MODEL NO. R212OE01 - 1000001 & UP
MODEL NO. R212OE02 - 2000001 & UP

**OPERATOR'S
MANUAL**

TORO WHEEL HORSE®
212-H TRACTOR

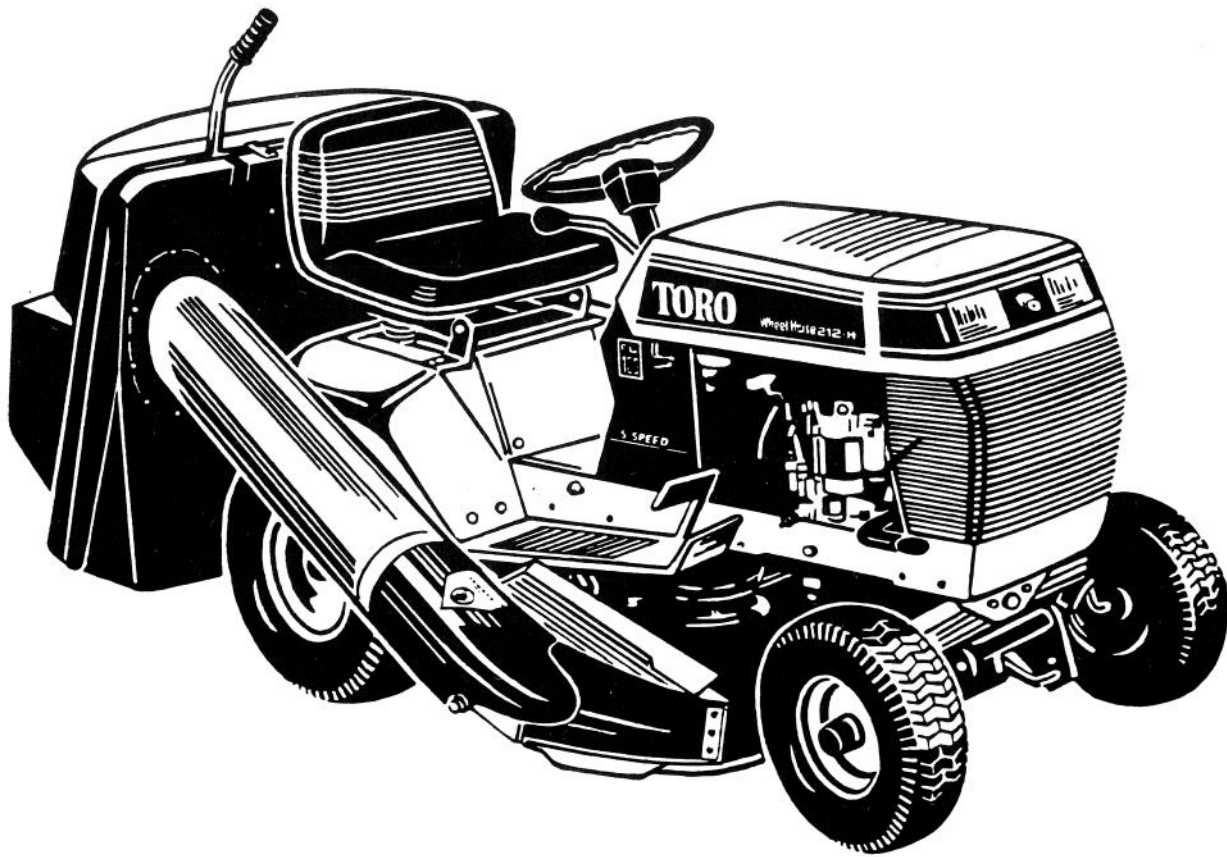


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CAUTION

This symbol marks important instructions relating to your personal safety. To avoid injury, read and follow such instructions carefully.

When the manual refers to the left or right side of the vehicle, it means your left or right when standing in the operating position.

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, such as disengaging the power-take-off, lowering attachments, shifting into **NEUTRAL**, setting the parking brake, stopping the engine and removing 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 (65° C). 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.*
- 43. Avoid operating the machine on hillsides, slopes or rough terrain. DO NOT operate the machine on hillsides or slopes exceeding 15° (27% grade). If safety is in doubt—STAY OFF THE SLOPE.
- 44. Reduce speed and exercise extreme caution on slopes above 10° (18% grade) 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° (9% grade), 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.

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.

- 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. Declutch 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 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.

MAINTENANCE

63. 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.

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

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

66. Use only genuine TORO Wheel Horse replacement parts to maintain original standards.

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

68. 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.

69. 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.

70. 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.

212-H SPECIFICATIONS

ENGINE:

ENGINE MODEL*	RATED H.P.**	DISPLACEMENT	BORE In./mm	STROKE In./mm	IGNITION
		cu.in./cc			
B-281707-0226-01	12.0	28.4/465	3.44/87.3	3.06/77.7	Electronic
E125V-N/10964B	12.5	23.7/389	3.31/84.1	2.76/70.0	Electronic

* Letter prefix: E = TORO POWER PLUS. B = Briggs & Stratton. Basic engine model number shown; type and serial numbers from the engine Identification plate are required to completely identify the engine.

** Engine manufacturer's rating at 3600 rpm.

ELECTRICAL SYSTEM:

Type:	12 Volt, D.C., Negative Ground
Battery:	160 CCA
Alternator:	16-amp regulated circuit

TIRES:

FRONT SIZES	REAR SIZES	PRESSURE
15 x 6.00-6	18 x 9.50-8	Front 12 psi (82.7 kPa)

PHYSICAL DATA:

HEIGHT In./cm	LENGTH In./cm	WIDTH In./cm	WHEEL BASE In./cm	INSIDE TURNING RADIUS In./cm	NET WEIGHT (APPROXIMATE) lbs/kg
36/91.4	63/160	31/78.7 without mower	44.5/113	25/63.5	329/134

TUNE-UP AND MAINTENANCE SPECIFICATIONS:

MODEL	POINT GAP In./mm	TIMING MARK LOCATION	IGNITION TIMING (BTDC)	SPARK PLUG TYPE	SPARK PLUG GAP In./mm	DIRECTION OF ROTATION (Fac, DR.P.)	GOVERNED MAX. RPM (No Load)
B & S	N/A	N/A	Fixed	BPR4HS-10	.035/0.88	Counterclockwise	2800
POWER PLUS	N/A	N/A	Fixed	RJ-19LM	.030/0.76	Counterclockwise	2800

LIQUID CAPACITIES:

CRANKCASE	FUEL TANK	CHASSIS
1.5 qts. (1.42 l) without Filter	6 qts (5.6 l)	Grease Fittings: 5
1.7 qts. (1.61 l) with Filter		

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.



Model and Serial Number Plate Location

1. Model and serial number plate

Tractor Model and Serial Number

MODEL	<input type="text"/>
SERIAL	<input type="text"/>
TORO Wheel Horse 515 WEST IRELAND ROAD SOUTH BEND, INDIANA 46614 USA	

Engine Identification Number

Model

Type or Spec. No.

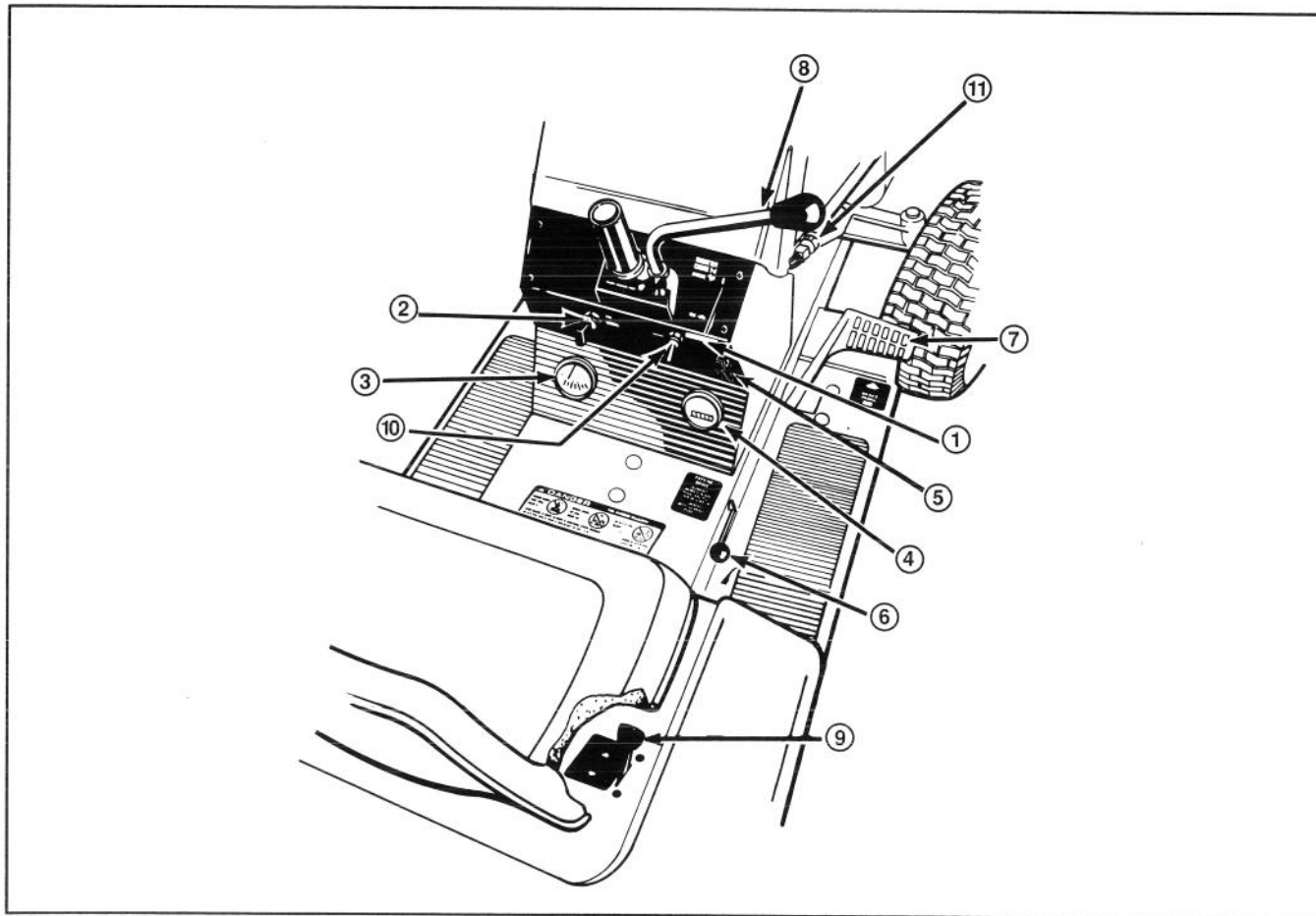
Serial No.

OWNER REGISTRATION AND WARRANTY

Service and warranty assurance are as important to TORO Wheel Horse as it is to you. To simplify warranty service at an Authorized TORO Wheel Horse Dealer, TORO Wheel Horse 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 Wheel Horse.**

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

CONTROLS



1. COMBINED THROTTLE/CHOKE CONTROL

A combined throttle/choke control is on the upper right side of the dash panel. To start the engine, raise the lever all the way up past the detent to the CHOKE position. To operate the tractor, raise the lever to the detent position near the top of the slot. Lower the lever before shutting off the engine. If the engine is warm or has been running, raising the lever to the CHOKE position may not be necessary to restart it.

2. THE IGNITION SWITCH

The ignition switch is on the left center of the dash panel near the steering column. The ignition switch has three positions from left to right: (1) OFF, (2) RUN, (3) START. To start the engine, turn the ignition key all the way right to the START position. Release the key when the engine starts and it will automatically return to the RUN position. When you turn the switch to OFF, the engine stops and all electrical accessories are turned off.

3. PTO (POWER TAKE-OFF) CLUTCH SWITCH

The PTO switch is on the right side of the dash panel below the throttle control. Raise the switch cover and pull up on the toggle switch to engage the PTO. Push down on the switch cover to disengage the PTO. The PTO clutch lever actuates a safety interlock switch in the starter circuit; the tractor will not start unless the lever is in the disengaged position. If you leave the operator's seat while the PTO is engaged, a seat switch will automatically shut off the engine.

4. THE PARKING BRAKE LOCK LEVER

The parking brake lock lever is on the right side of the frame next to the foot platform. To set the parking brake, first apply the foot clutch/brake pedal solidly and then move the parking brake lock lever up and back to lock the brake. To release the parking brake, push down on the brake pedal. The parking brake lock lever is spring loaded and will return to the disengaged position when you press the foot brake pedal.

CONTROLS

5. BRAKE PEDAL

The brake pedal is at the right side of the tractor. It provides dynamic braking to both rear wheels through the automatic transmission. As you depress the pedal, the transmission shifts to neutral. When the pedal is fully depressed, a mechanical brake is also applied for additional braking. The pedal must be depressed when starting the engine because the pedal actuates a safety interlock switch, allowing the starter to operate.

6. MOTION CONTROL LEVER

The motion control lever is just below the steering wheel. Push the lever ahead to move the tractor forward. Push the lever down and pull back to move the tractor in reverse. Move the lever to the neutral position to stop.

The brake pedal moves the control lever to the neutral position for dynamic braking. The control lever varies ground speed and pulling power independently of the engine speed. To increase ground speed, move the lever away from neutral. Increase pulling power by moving the lever toward neutral.

7. TRANSMISSION PUSH VALVE LEVER

The transmission push valve lever is just to the right of the seat on the rear fender. The transmission lever actuates a pressure relief valve inside the transmission. Push the lever forward to release the transmission for operation. Always release the transmission when starting the engine in cold weather.

8. LIGHT SWITCH

The light switch is on the right center of the dash panel. Raise the switch toggle to turn the lights on. Lower the toggle to turn the lights off. Lights will work when the ignition switch is in the RUN position.

9. FUEL SHUT-OFF VALVE

The fuel shut-off valve is at the bottom of the fuel tank. The fuel shut-off valve is normally left open, unless when service on the fuel system becomes necessary.

OPERATING YOUR TRACTOR

BEFORE STARTING



CAUTION

Before starting the engine, become familiar with all controls. Read this Operator's Manual thoroughly. Always check the engine oil level before starting the engine. Always check battery water level and safety interlock system before starting.



CHECK THE FUEL



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.

When the tractor requires refueling, fill the tank with a good grade (85 octane minimum) of regular gasoline. Leaded or unleaded may be used. Do not intermix regular and unleaded gasolines. Do not mix oil with gasoline. Use of gasohol fuel is not recommended.

Unleaded fuel reduces the build-up of combustion deposits in the engine and contributes to long valve life.



CHECK THE OIL

To protect your tractor's engine, check the oil level before each use.

Complete information concerning recommended oils and how to check oil level is in the *Maintenance* section of this manual.

CHECK THE SAFETY INTERLOCK SYSTEM

The safety interlock system includes two switches for safe starting.

Starting switches are actuated by the foot pedal and the PTO clutch control. If the tractor will not start, check whether the PTO clutch is disengaged and the foot pedal is depressed. The engine won't start unless both switches are correctly actuated.

The safety interlock system must be tested periodically. To test it, you should observe the following:

1. The engine should NOT start if:
 - A. The brake pedal is released.
 - B. The PTO is engaged.
 - C. The transmission is not in neutral.

Test each, one at a time.

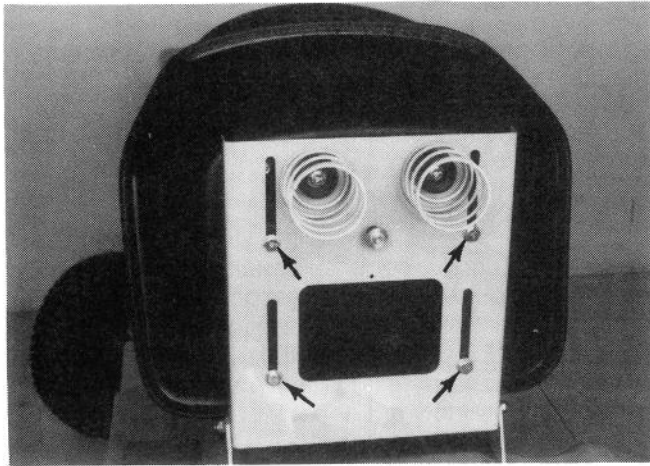
2. With the engine running and the PTO engaged, test the seat switch by rising off the seat. The engine should shut off.

If the safety interlock system doesn't operate as described above, have an authorized TORO Wheel Horse dealer make immediate repairs for your protection.

OPERATING YOUR TRACTOR

ADJUSTING THE SEAT

To move the seat, loosen the bolts under the seat, slide the seat to desired position and retighten the bolts.



Seat Adjustment

1. Seat adjustment bolts

STARTING THE ENGINE



DANGER

Avoid inhaling exhaust gases because they contain carbon monoxide gas, which is colorless and odorless. Carbon monoxide is a dangerous gas that can cause unconsciousness and death. Do NOT run the engine in confined areas such as a closed garage.

Because of the safety interlock system, your tractor will not start until the transmission is in neutral, the seat is occupied and the PTO is disengaged.

To start the engine, occupy the seat, put the transmission in neutral, and disengage the PTO. Move the throttle/choke control lever to the CHOKE position.

Turn the ignition key clockwise until the starter engages. 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 30 seconds of continuous cranking, turn the key to OFF and let the starter motor to cool. Check for the cause of hard starting; consult the Troubleshooting Check List.

Once the engine has started, slowly return the throttle/choke control to the OPERATE position. If the engine stalls or hesitates during operation, apply the choke until the engine reaches normal operating temperature.

THROTTLE AND CHOKE 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. A detent holds the control in full-throttle position for operation.

Always operate the tractor with the throttle control set at full speed. The engine has a special governor that limits maximum rpm. This allows the engine to operate most efficiently at a set speed and protects it from damage caused by excessive rpm.

IMPORTANT: The engine **MUST** operate at full throttle whenever you use the tractor. Operating at less than full throttle may result in poor tractor performance and damage to the transmission.

The choke control operates a "butterfly" valve in the carburetor. When the choke is partially or completely closed, less air is admitted to the engine, resulting in a higher fuel-to-air (richer) mixture that is easier to ignite when you start a cold engine. Warm engines may not need choking.

OPERATING YOUR TRACTOR

TO GO FORWARD OR BACKWARD

During cold weather, start the engine with the parking brake engaged and the transmission pressure released. Run the engine for at least two minutes to allow it to warm up; engage the transmission with the engine at full throttle. For temperatures between 0° and 30° F (18° and -2° C) allow the transmission to run in neutral for 5 minutes before attempting to set the unit in motion. For temperatures below 0° F (-18°) allow the transmission to run in neutral for 10 minutes before trying to set the unit in motion. Failure to do so may result in extensive transmission damage.



CAUTION

Before the tractor will move either forward or backward, the parking brake must be disengaged. ALWAYS depress the brake pedal when disengaging the parking brake.



Motion Control Lever

Your tractor's motion is controlled by a single "motion control lever." To go forward, push the lever forward. The farther you push the lever, the faster the tractor will go.



CAUTION

For safe operation, never move the motion control lever too rapidly, especially on grades.

By adjusting the motion control lever, you can regulate the forward speed of the tractor **without** adjusting the engine throttle control. For heavy pulling, moving the control lever toward neutral reduces the tractor ground speed and increases pulling power.

To go backward, return the motion control lever to the neutral position; push the lever down and pull the lever back. The farther back you pull the lever, the faster the tractor will go in reverse.

STOPPING

Stopping the tractor from either forward or reverse direction can be done one of two ways:

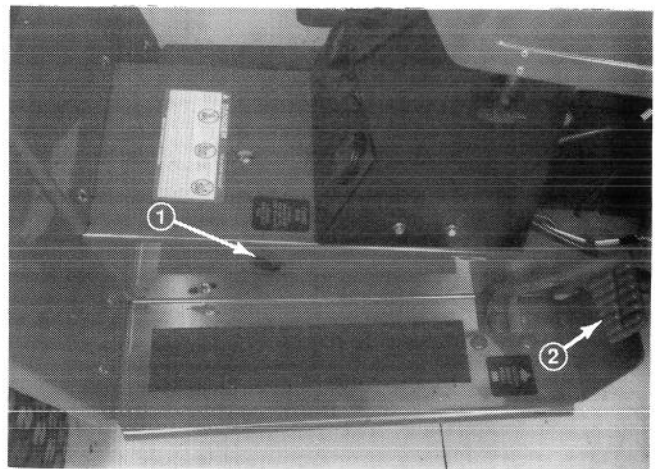
1. Return the motion control lever to its neutral position.
2. Depress the brake pedal.

Activating the brake pedal automatically returns the motion control lever to its neutral position and applies a mechanical brake. The brake pedal will hold the motion control lever in the neutral position. The pedal must be released before the motion control lever can be moved either forward or back.

The tractor is stopped by a "dynamic braking" action inside the hydrostatic transmission and a mechanical brake. Although the tractor will tend to remain stationary in neutral even when the brake is released, we recommend you use the parking brake to avoid accidental movement when stopped.

THE PARKING BRAKE

The parking brake should be set every time you leave the tractor. To set the parking brake, depress the foot pedal and lift up on the parking brake release lever. Hold the release lever up and release the foot pedal to set the parking brake. To release the parking brake, push on the foot pedal and then release it.



Parking Brake

1. Parking Release Lever 2. Foot Pedal

OPERATING YOUR TRACTOR

SHUTTING OFF THE ENGINE

To stop the engine, push the throttle/choke control to the right, move the control 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.



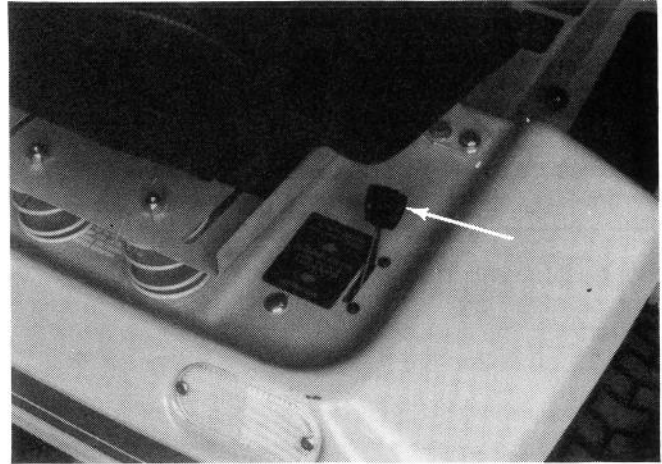
CAUTION

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 TRACTOR

Hand push the tractor only — do not tow. Towing can cause severe damage to the hydrostatic transmission.

Tractors can be pushed at a slow speed. To do this, push the transmission push valve lever forward. Remember to pull back on the push valve control lever to pressurize the transmission.



Transmission Push Valve Lever

USING ATTACHMENTS

Because of your tractor's engine power, you should not have any problems using attachments under normal conditions. On rough, hilly or wet terrain, adding wheel weights and tire chains will minimize rear tire slippage. The front tires may be fluid filled.

USING A MOWER



DANGER

Keep all shields and mower discharge chute in place. Never put 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.

For best operation on average lawns, operate the engine at full throttle while controlling the ground speed with the transmission. Operate the tractor at 2 to 3.5 mph (3.2 to 5.6 kph) while mowing grass.

Note: Average walking speed is 2.5 mph (4 kph).

Excessive ground speed often causes uneven cutting. Correct it by shifting into a lower gear to reduce the ground speed.

Typical lawns are usually cut to a height between 2 and 3 in. (5–7.7 cm). Cut tall grass and weeds with the mower in its highest position, then make a second pass cutting to the height desired. Always keep the mower blade sharp.



CAUTION

Sharp edges of mower blades can cut you during blade maintenance or adjustment. Use suitable covering over the blade's cutting edges to prevent bodily harm.

USING A SNOW THROWER



CAUTION

Thoroughly inspect the area where you will use the snow thrower. Remove all door mats, sleds, boards and other foreign objects. Never make any adjustments while the engine is running. Never try to clear the chute while the engine is running.

Snow removal operation will vary greatly with the condition of each snowfall. Light fluffy snow can be cleared with ease. Clearing heavy wet snow may be more difficult. Coating the auger and chute with a light coat of wax or paraffin will help keep snow from sticking. Best results usually occur when the tractor ground speed is set at 1 to 2 mph (1.6 to 3.2 kph.).

Note: Average walking speed is 2.5 mph (4 kph).

Exercise care whenever using the snow thrower. The auger can pick up sticks, stones and other foreign objects and throw them with great velocity. Always aim the discharge chute away from persons or objects that might be harmed.

Tire chains and wheel weights are recommended when using a snow thrower.

USING A SNOW BLADE

The front-end blade is used for snow removal. Take care and maintain a slow ground speed whenever you use the blade. Striking a solid object could injure you and damage the blade.

Tire chains and wheel weights may be added to improve traction. Reverse the rear tires for chain clearance.

USING ATTACHMENTS

USING OTHER ATTACHMENTS

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

Other 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, approach all attachments with the same caution you should give any mechanical device. Always read each Operating Instruction Guide carefully before using the attachment. Keep children and pets away from the operating vehicle. Never allow unauthorized personnel to operate the equipment.

Your authorized TORO Wheel Horse dealer can help you select attachments for use with your tractor.

DUMP CART LOAD LIMITS

Load limits have been set for safe braking on slopes. We recommend you observe the following load limits when using the rider with a dump cart.

150 lbs (69 kg)

WITH A REAR BAGGER

The optional rear-mount grass bagger can affect tractor operation. Because of the bagger's added weight and the extra power required, operate the tractor at a lower speed.



CAUTION

Exercise care while maneuvering with a grass bagger attached. Front-to-rear stability could be adversely affected.

Under normal usage, the grass bagger bag material is subject to deterioration and wear. Check it often for possible replacement.

MAINTENANCE



CAUTION

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

MAINTENANCE CHECK LIST

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

Service Operation	Before Each Use	After Each Use	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 150-500 Hours
Check:						
PTO Clutch Adjustment					X	
Safety Interlock System	X					
Engine Oil Level	X					
Battery Water level	X					
Tire Pressures			X			
Brake Adjustment				X		
Tightness of all Attaching Hardware			X			
Valve Clearance (2)					X	
Clean Engine Cooling Fins		X				
Clean Air Filter			X			
Lubricate Chassis & Mower			X			
Change Engine Oil (1)			X			
Inspect Spark Plug				X		
Replace:						
Spark Plug						X
Air Filter						X
Fuel Filter (Briggs & Stratton engine only)						X
Oil Filter						X

(1) Refer to the text for the initial service interval for new riders.

(2) TORO POWER PLUS engine only.

MAINTENANCE

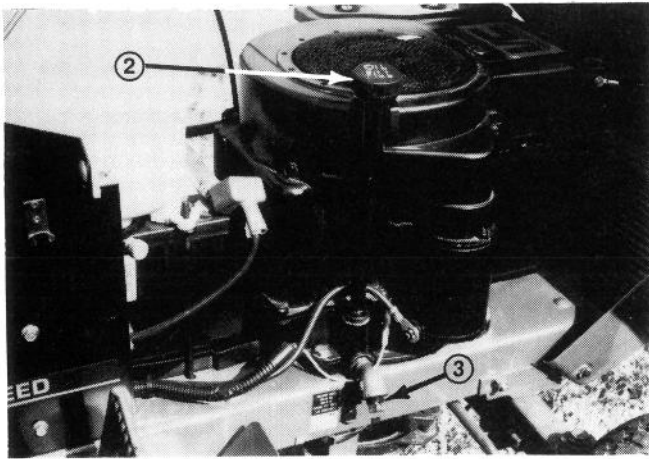
OIL RECOMMENDATIONS

For maximum engine protection under all operating conditions, use API Service Classification (Briggs & Stratton SC, SD, SE or SF) or (TORO POWER PLUS SF, SF/CC, or SF/CD) oil. These letters may appear on oil can singularly or in combination with other letters.

Oil Level

IMPORTANT: Check the engine's oil level every time you use the tractor. An improper oil level can cause extensive damage to the engine.

To check the engine oil level, stop the tractor where the engine is level. Shut off the engine and remove the key.

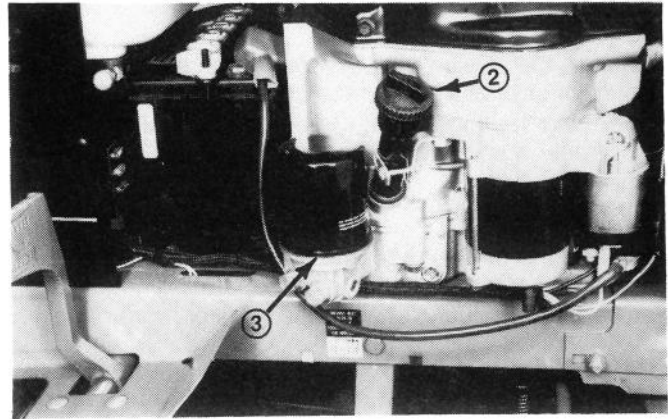


Briggs and Stratton Engine Oil Check, Fill & Drain

1. Dipstick & Fill Tube 2. Oil Drain

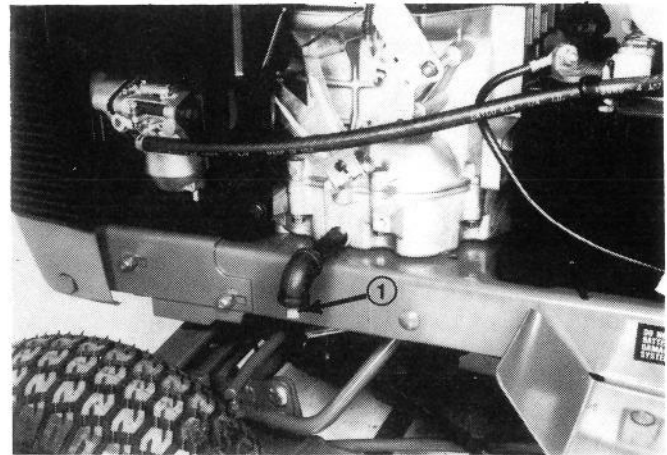
Screw dipstick firmly back into place. Remove the dipstick and check the oil level. If needed, add oil. The dipstick must be firmly assembled when the engine is running. New tractors are shipped with SAE 10W30 in the crankcase.

IMPORTANT: Never overfill the engine crankcase with oil.



TORO POWER PLUS Engine Oil Check, Fill & Filter

1. Dipstick & Fill Tube 2. Oil Filter



TORO POWER PLUS Engine Oil Drain

1. Oil Drain

Be sure to add the same viscosity oil that is presently in the engine. It may be necessary to change the original oil before using the tractor if the tractor will be operated in cold weather.

MAINTENANCE

Oil Changes

Change the engine oil in a new engine after the first 5 hours of operation. After that, change the oil at 25 operating-hour intervals. If operating conditions are extremely dusty or dirty, change the oil more often.

Oil Filter Changes

Change the oil filter after the first 50 hours of operation and every 100 hours after that. If operating conditions are extremely dusty, change the oil filter more often.

IMPORTANT: Failure to change the engine oil or filter at recommended intervals can lead to serious damage to the engine. This is especially true when using detergent oil that is designed to hold impurities in suspension; when the saturation point is reached, the oil may suddenly break down to form a gelatin-like substance that seriously impairs and can even stop the flow of oil. Increase frequency of oil and filter changes if you operate the tractor in extremely dusty conditions.

Before changing the oil, start the engine and allow it to warm up. This will allow the oil to flow more freely. Then shut off the engine and remove the ignition key.

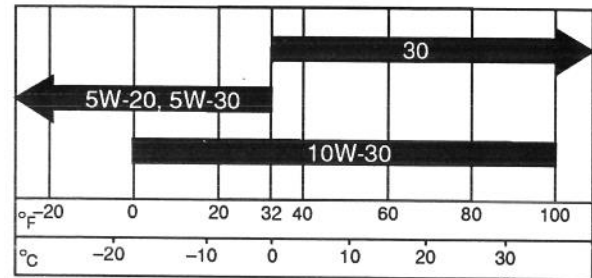
Open the oil drain. After the oil has drained completely, reinstall drain plug or cap.

Remove the oil dipstick and add about 80 percent of amount of oil specified in following chart. Also shown are charts for selecting the correct oil type and oil viscosity. When using temperature-viscosity chart, select air the temperatures you will most likely encounter within the next 25 hours of operation.

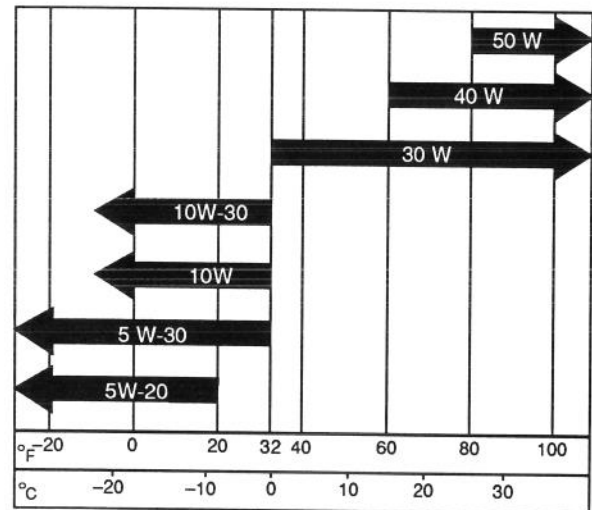
ENGINE OIL CHANGE	
Tractor Model	Crankcase Oil Capacity
212-H	1.5 qts (1.4 l) without filter
ENGINE OIL TYPE	
Engine	Oil Type
TORO POWER PLUS	API SF, SF/CC, or SF/CD
Briggs & Stratton	API SC, SD, SE, or SF

ENGINE OIL TEMPERATURE-VISCOSITY CHART

TEMPERATURE RANGE ANTICIPATED BEFORE THE NEXT OIL CHANGE



Briggs & Stratton Engine



TORO POWER PLUS Engine

After adding 80 percent of the prescribed amount of oil, check the oil level. Add oil as necessary to bring the oil to the FULL level.

MAINTENANCE

CLEANING THE AIR FILTER

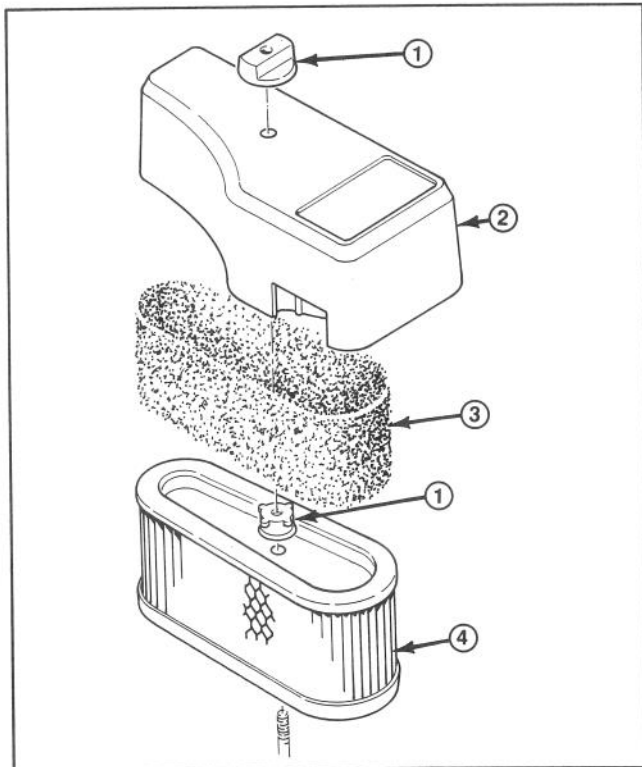
A clogged element also causes a richer fuel mixture that wastes gasoline, and may lead to the formation of harmful sludge deposits.

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

Check the following when installing a new or serviced element:

1. The back plate must be securely tightened to the carburetor. Replace the back plate if it is bent or cracked.
2. Gasket surfaces of the element must be flat against the back plate and cover to seal effectively.
3. Hardware must be finger tight – but don't overtighten.
4. Be sure cover seals and gaskets are in good condition and will seal well. Bad gaskets and seals can let unfiltered air into the carburetor.

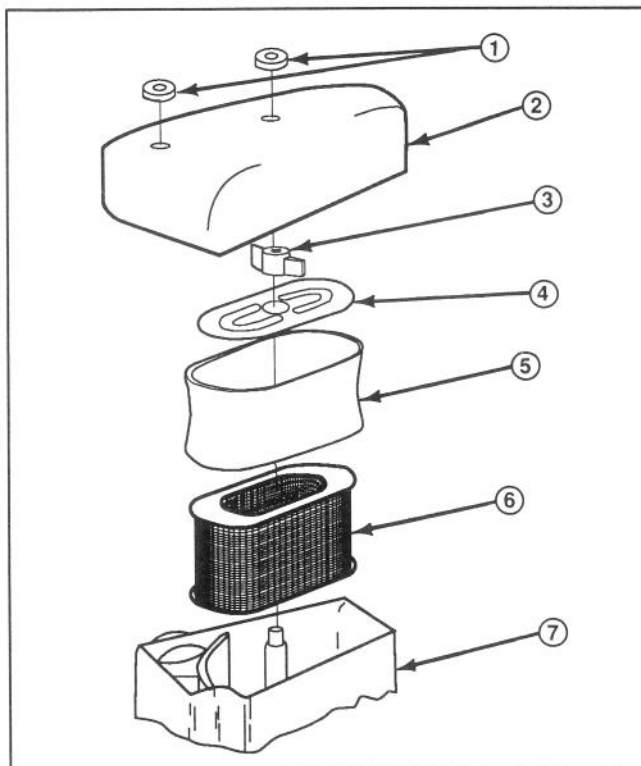
IMPORTANT: To prevent any dirt or other contaminants from entering the engine, always cover the carburetor air horn when you remove the air cleaner.



Briggs & Stratton Air Filter

- | | |
|----------------------|------------------------|
| 1. Knobs | 3. Foam Precleaner |
| 2. Air Cleaner Cover | 4. Air Cleaner Element |

To service the element, wipe off the air cleaner cover and backing plate, taking care to prevent any dirt from entering the carburetor. Clean the dry-type air filter element by tapping it lightly on a flat surface to remove loose dirt particles. If very dirty, replace element or wash it in a low or non-sudsing detergent and warm water solution. Rinse it thoroughly from the **INSIDE OUT** until the water is clear. Let it stand and air dry thoroughly before you use it. Do not try to blow dirt off with compressed air because this can puncture the filter element. Also, do not oil the paper element.



TORO POWER PLUS Air Cleaner

- | | |
|----------------------|------------------------|
| 1. Knobs | 5. Element Wrapper |
| 2. Air Cleaner Cover | 6. Air Cleaner Element |
| 3. Wing Nut | 7. Adapter |
| 4. Element Cover | |

Foam precleaners are used over filter elements. Clean them when you service the air cleaner. Wash the precleaner in a solution of liquid dishwashing detergent and water. Squeeze out excess water and allow it to dry. Saturate the precleaner in engine oil, then squeeze out excess oil and install the precleaner on the element.

MAINTENANCE

CLEANING THE SPARK PLUG

Engine misfires, or generally poor operation, are often caused by a spark plug in poor condition or with an incorrect spark plug gap setting. Check spark plugs after each 50 hours of operation and replace them after 150–200 hours of operation. Also, replace a spark plug if inspection reveals fouling or excessive deterioration.

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

Check the plug's condition. Good operating conditions are indicated by a light coating of gray or tan deposit. A dead white, blistered coating could suggest engine overheating. A black coating could indicate an "overrich" fuel mixture caused by a clogged air cleaner, or improper carburetor adjustment.

Replace a spark plug that is not in good condition. **Never sandblast, wire brush, scrape or otherwise service a spark plug in poor condition. Best results are obtained with a new plug.** Always check the spark plug gap before installing a new plug or reinstalling an original plug. Use a spark-plug gap gauge to adjust the electrode air gap to specification for the engine.

ENGINE MODEL	PLUG GAP
TORO POWER PLUS	0.35 in. (0.88 mm)
Briggs & Stratton	0.30 in. (0.76 mm)
Tighten the spark plugs to: 15 ft lbs (20 Nm)	

ADJUSTING THE CARBURETOR

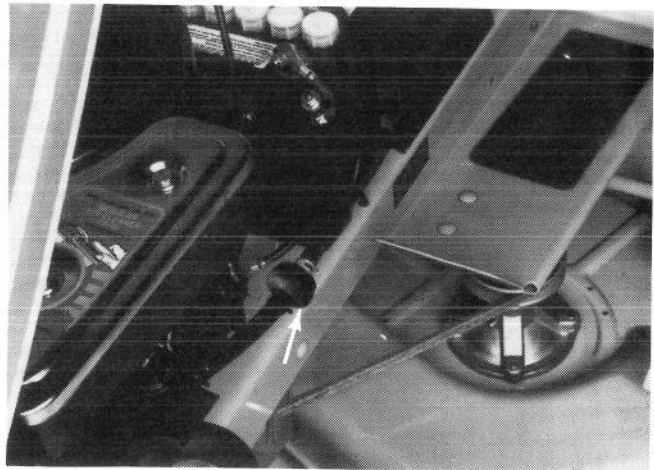
The carburetor is set at the factory and should not have to be reset. However, if you find a condition as outlined in the charts below, have the carburetor readjusted immediately. Continued operation with incorrect carburetor settings can lead to a fouled spark plug, overheating, excessive valve wear or other problems.

CONDITION
A. Black, sooty exhaust smoke, engine sluggish.
B. Engine misses and backfires at high speed.
C. Engine starts, sputters and dies under cold weather starting.
D. Engine runs rough or stalls at idle speed.

One caution: If you see black exhaust, check the air cleaner first—an "overrich" mixture is usually caused by a poorly serviced, clogged air cleaner element, not an improperly adjusted carburetor.

Correct carburetor adjustment requires a significant amount of knowledge and special equipment, such as a good tachometer. Also, other adjustments such as governor settings may also be necessary after adjusting the carburetor. For these reasons, we suggest that carburetor adjustments be done by an authorized dealer.

REPLACING THE FUEL FILTER



Fuel Filter

1. In-Tank Fuel Filter

An in-tank fuel filter is in the bottom of the fuel tank. Service is not required unless fuel becomes contaminated.

An in-line fuel filter (Briggs & Stratton only) is on the side of the engine. This filter strains foreign particles from gasoline before they reach the carburetor. This filter should be replaced after 150 hours of operation or once a year. Use only the manufacturer's filter.

To replace the filter:

1. Allow the exhaust system to cool.
2. Close the fuel shut-off valve.
3. Place a towel or rag on the frame below the filter to catch any spilled fuel.
4. Replace the filter.
5. Open the fuel shut-off and check for leaks.

MAINTENANCE



THE ELECTRICAL SYSTEM

The Alternator

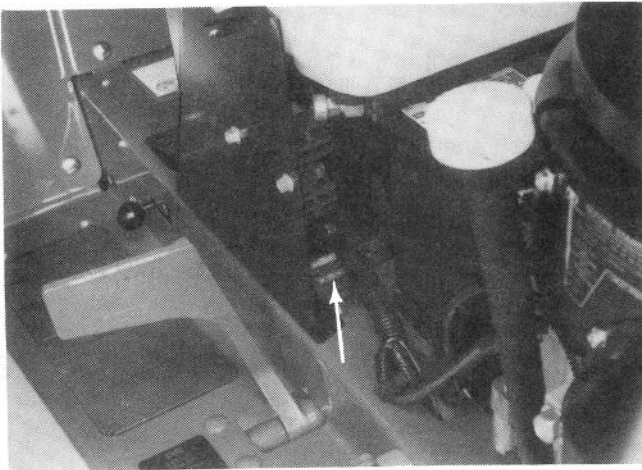
An alternator charges the tractor's battery. The alternator charging system usually needs no service, other than periodically checking that all exposed wiring and electrical connections on the tractor are clean, tight and in good condition.

IMPORTANT: Correct polarity is critical with an alternator charging system. Always disconnect the battery ground cable (negative) before working on any part of electrical system. Make sure to connect all components correctly before reconnecting the ground cable (negative) or you may damage the alternator system.

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

Main Fuse

A 25-amp fuse protects the main circuit. A 15-amp fuse protects the lights and the electrical PTO clutch. A 30-amp fuse protects the battery charging circuit. All fuses are automotive type ATO or ATC.



Fuse Location

- | | |
|----------------------------|---------------------------------|
| 1. 30 Amp-Charging Circuit | 3. 15 Amp-PTO Clutch and Lights |
| 2. 25 Amp-Main Circuit | |

Light Circuit — TORO POWER PLUS Engine

The light circuit is powered by the battery. Lights will operate when the ignition switch is in the RUN position. A 15-amp fuse protects the light circuit.

Battery



WARNING

- When servicing the battery or any other part of the electrical system, or if the battery must be removed for any reason, always disconnect the **NEGATIVE** ground cable **FIRST** and reconnect it **LAST** to avoid electrical shorts.
- Wear safety goggles and rubber gloves when working with electrolyte.
- Charge the battery in a well-ventilated location so that the gasses produced by the charging can escape.
- Because gasses are explosive, keep open flames and electrical sparks away from the battery.
- Do not smoke.
- Nausea may result if you inhale the gasses. Before connecting or disconnecting charger leads from the battery, unplug the charger from the electrical outlet.
- In an accident, flush the affected area immediately with a solution of one part baking soda to four parts water. Notify a physician immediately. If baking soda is not immediately available, flush the affected area with water. Notify a physician immediately.

Maintain the electrolyte level above the plates in each cell by adding distilled water. The best time to add water is just before operating the machine so the water will mix with solution. Do not overfill the battery. Electrolyte solution is corrosive and overfilling the battery can damage surrounding metal parts.

Maintain the battery at a 1.265 specific gravity charge. If you remove the battery for servicing, be sure to reconnect the cables exactly as they were before removal.

For longest service life, keep the battery clean by wiping it with a paper towel. Remove any corrosion around the battery terminals by applying a solution of one part baking soda to four parts water. Also, apply a light coating of grease or petroleum jelly to all exposed terminal surfaces to prevent corrosion.

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

MAINTENANCE

Light Bulb Replacement

Take care when handling bulbs, especially if they are broken.

Replace either headlamp bulb by disconnecting the bulb wires, turning the bulb socket counterclockwise and removing the socket from the hood. Turn the bulb counterclockwise and remove it from the socket. Reverse this procedure to install a bulb.

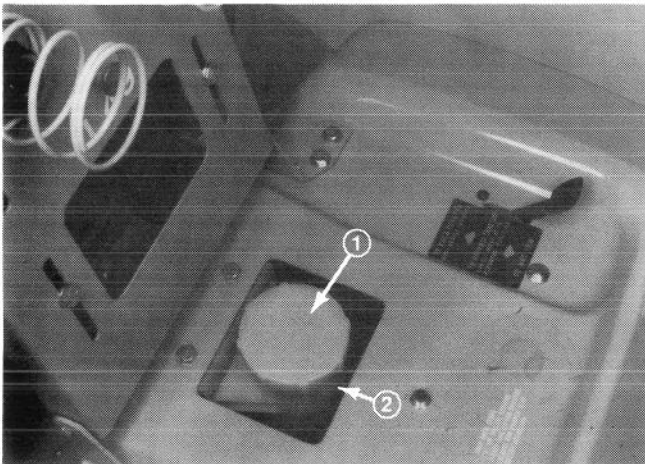
HYDROSTATIC TRANSMISSION

The Hydrostatic transmission in your TORO Wheel Horse requires a straight SAE 20-weight, premium-quality motor oil, API Service Classification SC, SD, SE, or SF.

Check the transmission's lubricant level before each use. You can see the oil reservoir through the hole in the fender under the seat. Flip the seat up to access the reading.

Take oil readings when the oil is cold; if the oil level is not visible through the reservoir or if oil must be added, unscrew the cap from the reservoir and observe or add oil to the reservoir through the hole in the fender under the seat. **DO NOT OVERFILL.** Overheating and transmission damage can result.

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



Transmission Oil Level

1. Reservoir Cap

2. Oil Level Cold

TRANSMISSION OIL CHANGES

Changing lubricant in the hydrostatic transmission is not required except for major service. If you add oil to the transmission often, a leak is indicated, which should be corrected immediately. Hydrostatic transmission oil capacities are:

1-3/4 qt (1.7 l) SAE 20

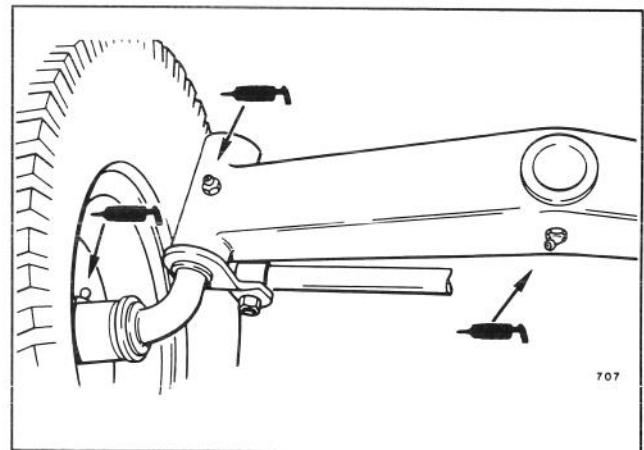
TRANSMISSION COOLING FAN

The transmission's cooling fan is bolted to the transmission input shaft on top of the transmission. The fan forces air over the transmission cooling fins to cool the oil. Replace the cooling fan if it becomes cracked or broken. Be sure to install it so that maximum airflow is directed across the transmission. A significant amount of disassembly is required to replace the fan, so we suggest you have it done by an authorized dealer.

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

CHASSIS LUBRICATION

The spindles, front wheel bearings and front axle pivot have zerk fittings to simplify lubrication with a pressure grease gun. Before using a grease gun, clean the zerk fittings carefully to avoid forcing dirt into them. After greasing, wipe off any excess grease. Use a general purpose grease (lithium base) to lubricate the tractor.



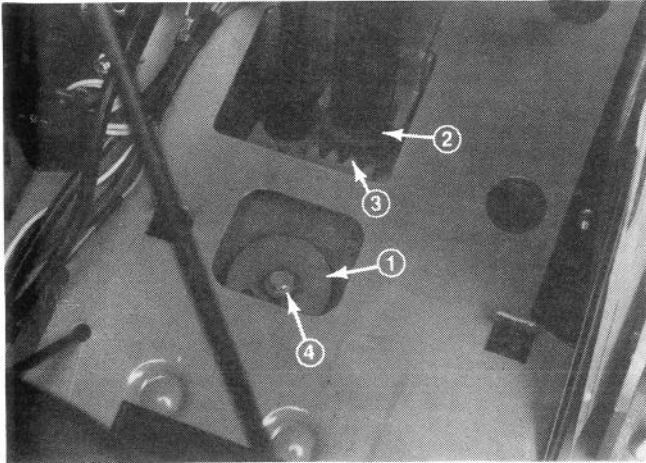
Front Wheel, Spindle and Front-Axle Lube Fittings

Lubricate the chassis after each 25 hours of operation. Lubricate all other pivoting arms and levers at the same intervals with either general purpose grease or machine oil, applied directly to wear surfaces.

MAINTENANCE

STEERING GEAR TOOTH ADJUSTMENT

1. Remove the battery from the tractor.
2. Loosen the nut and position the steering wheel spokes so that they extend outward, from left to right. Tighten the nut until the eccentric turns with a small amount of friction. Turn the eccentric counterclockwise until zero clearance is obtained between the end of the gear tooth and the groove of the steering shaft pinion gear. **DO NOT OVER-TIGHTEN.** Torque the nut to 25–35 ft/lbs (34–48 Nm).



Steering Gear

- | | |
|------------------------|------------------|
| 1. Eccentric | 3. Steering Gear |
| 2. Steering Shaft Gear | 4. Nut |

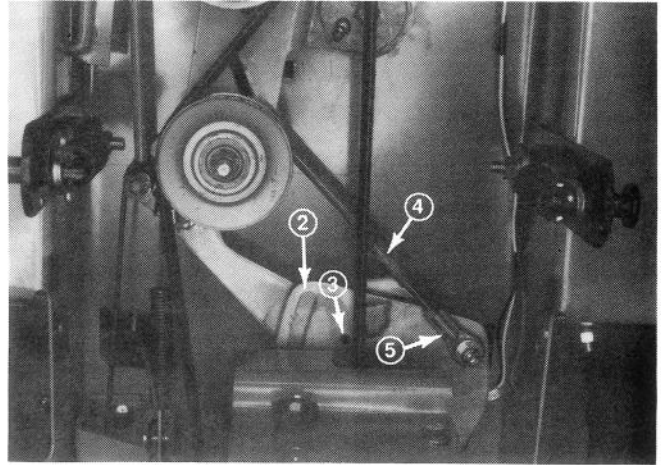
3. Turn the wheels left and right and recheck for zero clearance. Reinstall the battery and gas tank.

HYDROSTATIC TRANSMISSION NEUTRAL ADJUSTMENT

If the tractor "creeps" in either direction when the control lever is in neutral or after depressing and releasing the brake pedal, a neutral adjustment is needed.

1. Support the rear of the tractor with a suitable lifting device. Remove the rod end of the control rod from the cam plate.
2. Depress the brake pedal until the hole in the cam plate is in line with the hole in the neutral return plate. Install a 1/4" (6 mm) diameter clevis or roll pin through the holes.
3. Adjust the rod end of the control rod so its end hole lines up with the carriage bolt in the cam plate. The shift lever roll pin must be against the steering bracket neutral stop when the rod end is adjusted. Install the washer (on top of the rod end), rod end and carriage nut on the control rod.

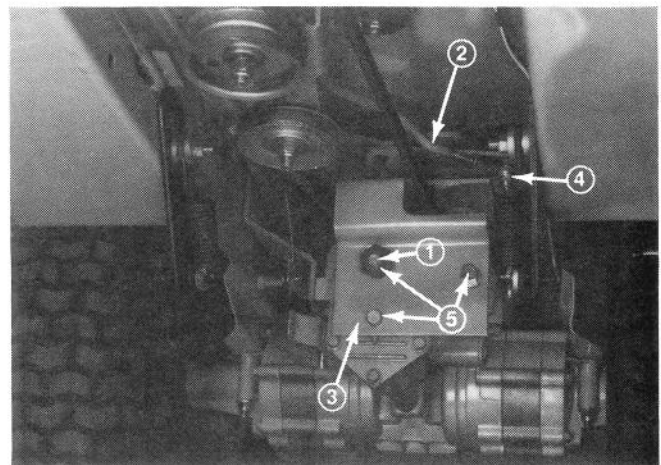
4. Loosen the three mounting bolts on the front of the cam plate/neutral return plate.
5. Loosen the three 5/16" (8 mm) mounting bolts on the front of the transaxle 1/4 turn. These bolts hold the cam support bracket to the front of the transaxle.



Align The Holes In The Cam And Neutral Return Plate

- | | |
|---------------------|----------------|
| 1. Gear Shift Lever | 4. Control Rod |
| 2. Cam Plate | 5. Rod End |
| 3. Align Holes | |

6. Start the engine. The engine should be running between 1/4 and 1/2 of full throttle.
7. Neutralize the transaxle by turning the eccentric cam one way until the wheel stops turning, then turn the eccentric cam in the opposite direction until the wheels just start to rotate. Center the eccentric cam between those two points so that both wheels do not rotate.

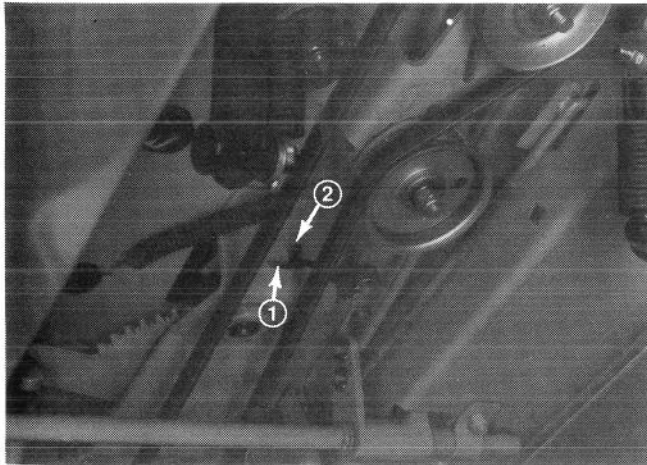


Turn The Eccentric Cam

- | | |
|------------------------|-------------------|
| 1. Eccentric Cam | 4. Rod End |
| 2. Control Rod | 5. Mounting Bolts |
| 3. Cam Support Bracket | |

MAINTENANCE

8. After the transaxle is neutralized, tighten the outboard mounting bolt while keeping the eccentric cam from turning. Next, tighten the bottom mounting bolt, then the mounting bolt in the eccentric cam. The eccentric cam should be held in place while all three mounting bolts are tightened. Tighten all three mounting bolts to 12 ft/lbs (16 Nm) torque.



Neutral Stop

- 1. *Steering Bracket Neutral Stop*
- 2. *Shift Lever Roll Pin*

9. Check neutral:

- A. Move the shift lever to the full forward position, then back to neutral.
- B. Move the shift lever to the full reverse position, then back to neutral.
- C. Move the shift lever to the full forward position, then depress the brake pedal to its full forward (downward) position.
- D. Move the shift lever to the full reverse position then depress the brake pedal to its full forward (downward) position.

In all the procedures described above, the wheels must not rotate when you return the shift lever to neutral.

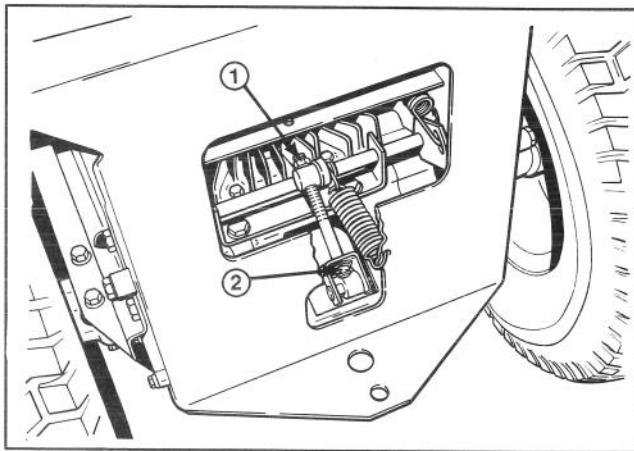
10. Check the friction adjustment. Adjustment is made at the top of the cam plate. Access is through the hole at the rear of the tractor's frame. Tighten the friction adjustment until 3–5 pounds of force is required to move the motion control lever.

11. Lower the rear end of the tractor.

FOOT BRAKE ADJUSTMENT

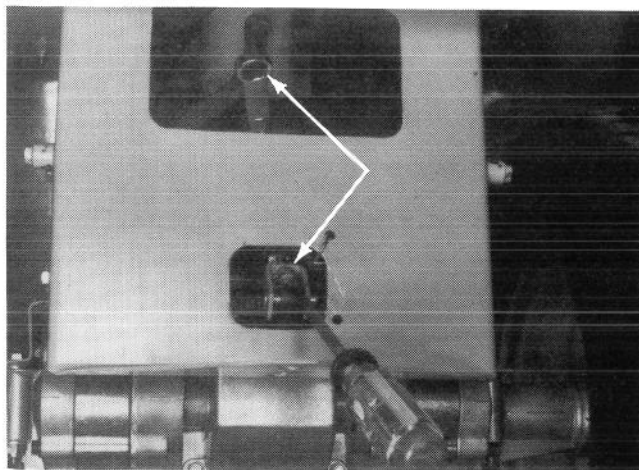
The brake adjustment is made at the rear of the tractor.

- 1. Set the parking brake and loosen the lock nut.
- 2. Release the transmission push valve.
- 3. Tighten the adjusting screw until both the rear tires skid when the tractor is pushed.
- 4. Tighten the brake lock nut while holding the adjustment screw.
- 5. Release the parking brake and make sure the tractor rolls freely.



Brake Adjustment

- 1. *Lock Nut*
- 2. *Adjustment Screw*



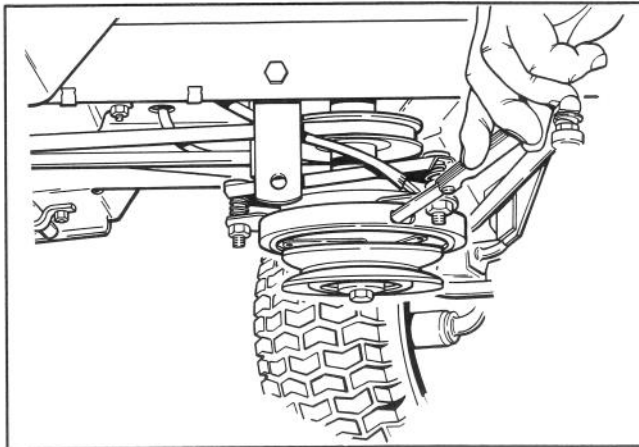
Tighten The Brake Screw Nut

Hold the Adjustment Screw While Tightening the Lock Nut

MAINTENANCE

PTO CLUTCH/BRAKE ADJUSTMENT

The PTO clutch/brake must be adjusted every 100 hours because of normal wear of the friction surfaces.



PTO Clutch Adjustment

1. Windows

2. Nuts (3)

1. Stop the engine and remove the ignition key.
2. The clutch has three springs and adjustment nuts; all three must be adjusted at the same interval. Insert a 0.010 in. (0.254 mm) feeler gauge into the slots next to the adjustment nuts. Turn the nuts until you feel a small amount of resistance on the feeler gauge.

CLEANING AND STORAGE

Wash the tractor regularly with a mild automotive detergent and water. Avoid excessive use of water, especially around the control panel, engine and transmission. Do not pressure wash. Operate the tractor a few minutes after washing. After 30 days, wax painted surfaces to protect the original finish.

You can remove minor paint scratches or abrasions with an automotive cleaning and polishing compound. Rubbing compound is not recommended under normal circumstances because it is highly abrasive. Exposed bare metal surfaces should be given a light coating of oil or grease to prevent rust until permanent repairs can be made. CFC free aerosol cans of TORO Wheel Horse paint are available through your Authorized TORO Wheel Horse Dealer.

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

1. Do the required maintenance steps described in the "Maintenance Check List."
2. Check the tires for proper inflation.
3. Drain all fuel from the fuel tank. Start the tractor and let 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 pump.)
DO NOT STORE GASOLINE FOR MORE THAN 2 MONTHS.
4. Wash the tractor and repaint all bare metal surfaces.
5. Charge the battery. In temperatures lower than 40° F (4° C), a battery will maintain 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 temperature). 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.

TROUBLESHOOTING CHECK LIST

Symptom	Possible Cause	Possible Remedy
The engine will not turn over.	Dead battery. An open safety interlock switch. Starter. Solenoid. Ignition switch.	Charge or replace the battery. Be sure to disengage the PTO and depress the left pedal. Consult an authorized dealer. Consult an authorized dealer. Consult an authorized dealer.
The engine turns over but will not start.	Spark plug not firing. No fuel in tank. Fuel valve closed. Incorrect carburetor adjustment. Ignition switch.	Check spark plug condition and reset its gap. Refuel the tractor. Open the fuel valve. Reset the carburetor adjustment. Consult an authorized dealer.
The engine is hard to start.	Spark plug wire(s) grounded or loose. Spark plug(s) faulty or incorrectly gapped. The magneto is defective. Fuel line clogged. Carburetor dirty or incorrectly adjusted.	Check spark plug wires. Check spark plug condition and reset its gap. Consult an authorized dealer. Clean the fuel line; check the strainer in the fuel tank. Readjust the carburetor. Consult a dealer for authorized carburetor service.
The engine starts, but operates erratically.	Clogged fuel line. Water in fuel. The vent in the fuel cap is plugged. Incorrect carburetor adjustment.	Clean the fuel line, the filter, and check the strainer in fuel tank. Drain old fuel and replace with a fresh supply. Check the vent. Readjust the carburetor.
The engine knocks.	The fuel octane is too low. Faulty ignition system. The engine is overheated.	Drain fuel and replace it with higher octane supply. Consult an authorized dealer. Shut off the engine and allow it to cool.
The engine occasionally "skips" at high speed.	Spark plug fouled, faulty or its gap is too wide. Faulty ignition system.	Check spark plug condition and gap. Consult an authorized dealer. Readjust the carburetor.
The engine is overheating.	Air intake screen or fins are clogged. Oil level too high or too low. The fuel mixture is too lean. Faulty ignition system. The engine overloaded.	Clean the intake screen and fins. Adjust the oil level as necessary. Readjust the carburetor. Consult an authorized dealer. Reduce the load on the tractor.
The engine idles poorly.	Incorrect carburetor adjustment. Incorrect spark plug gap.	Readjust the carburetor. Check the condition and gap of spark plug(s).

TROUBLESHOOTING CHECK LIST (Continued)

Symptom	Possible Cause	Possible Remedy
The engine backfires.	Improper carburetor adjustment. Ignition system.	Readjust the carburetor. Consult an authorized dealer.
The engine runs fine, but the tractor will not move.	No transmission pressure. Faulty transmission.	Engage the transmission lever. Consult an authorized dealer.
The tractor loses power or the transmission overheats.	The transmission oil level is too high or too low. Transmission damage has resulted from operating the engine at low RPM or contamination of oil.	Adjust the oil level as necessary. Consult dealer for authorized service.
The engine stalls whenever the PTO is engaged.	Excessive load on PTO. Faulty interlock system.	Check for jammed attachments. Lessen the load on the attachment. The seat must be occupied to close the interlock system. Consult an authorized dealer.

