ENGLISH FORM NO. 3320-634 Rev. A

TORO®

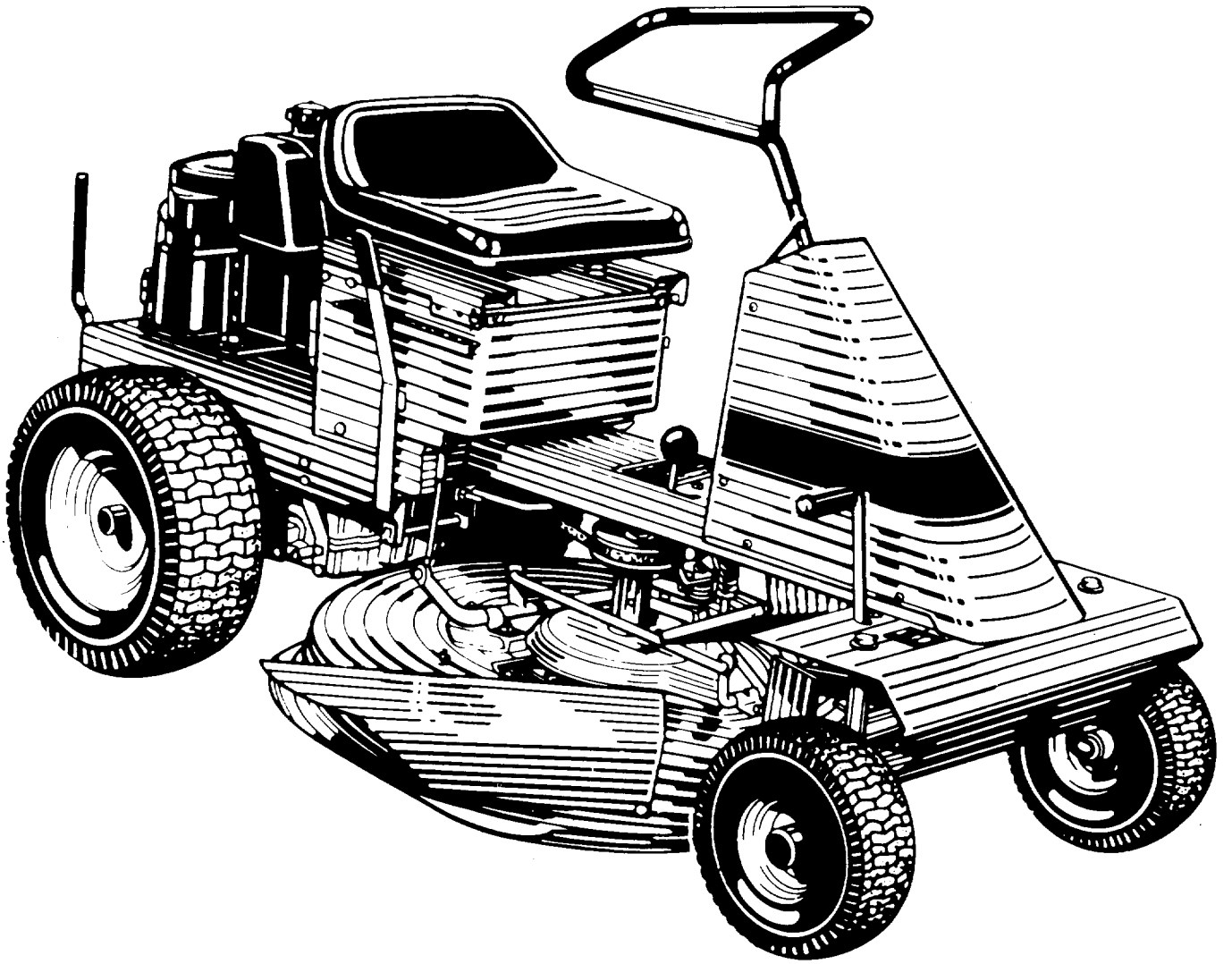
MODEL NO. R310B403 - 1000001 & UP
MODEL NO. R310B404 - 2000001 & UP
MODEL NO. R312B602 - 1000001 & UP

OPERATOR'S MANUAL

110-4 & 112-6 TORO WHEEL HORSE®

RIDING MOWER

ENGLISH



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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. 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.

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

SAFE OPERATION PRACTICES–RIDING VEHICLES

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/TIPOVER/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° (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.

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 make a cutting-height adjustment 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. 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

61. 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.

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

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

64. Use only genuine TORO Wheel Horse replacement parts to assure that original standards are maintained.

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

66. 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.

67. 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.

68. 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.

RIDER SPECIFICATIONS

ENGINE:

Rider Model	Engine Model*	Rated H.P.**	Displacement cu.in./cc	Bore in./mm	Stroke in./mm	Ignition
110-4	B-256707-0117-01	10	24.4/400	3.44/87.3	2.62/66.7	Electronic
112-6	B-286707-0118-01	12.5	28.4/465	3.44/87.3	3.06/77.7	Electronic

* Letter Prefix: B = Briggs & Stratton. Basic engine model number shown; type and serial numbers from the engine I.D. plate are required to identify the engine completely.

** Engine manufacturer's rating at 3600 RPM.

TUNE-UP AND MAINTENANCE SPECIFICATIONS:

Spark Plug Type*	Spark Plug Gap in./mm	Idle RPM (No L)	Governed Max. RPM (No Load)
RJ19LM	030/0.76	1750	2800

* Or equivalent (Champion number shown)

TRANSMISSION: APPROXIMATE GROUND SPEEDS (AT FULL THROTTLE):

4-Speed		6-Speed	
1st	1.1 mph (1.8 kph)	1st	.9 mph (1.4 kph)
2nd	1.4 mph (2.4 kph)	2nd	1.1 mph (2.0 kph)
3rd	2.2 mph (3.7 kph)	3rd	1.8 mph (2.9 kph)
4th	4.3 mph (7.1 kph)	4th	2.7 mph (4.4 kph)
Rev.	1.7 mph (2.8 kph)	5th	3.4 mph (5.5 kph)
		6th	4.0 mph (6.5 kph)
		Rev.	1.3 mph (2.1 kph)

ELECTRICAL SYSTEM:

Type:	12 Volt, D.C., Negative Ground
Alternator:	12 Volt, 3 Amp. Unregulated
Battery:	12 Volt, 14 Amp. Hr., 120 CCA

LUBRICANT/FUEL CAPACITIES:

Crankcase:	1 1/2 quart (1.4 l)	**Chassis:**	Grease Zerk Fittings: 4 Front Wheel End Play: 0 - .015 in. (0,4 mm)
Fuel Tank:	1.25 gallon (4.75 l)	**Mower:**	Grease Fittings: 2

TIRES:

Sizes-Front	Sizes-Rear	Pressure/Front	Pressure/Rear
4.10 x 3.50-4	16 x 6.50-8	12 psi	12 psi
2-Ply w/Tube	2-Ply Tubeless	(.85 kg/cm^2)	(.85 kg/cm^2)

PHYSICAL DATA:

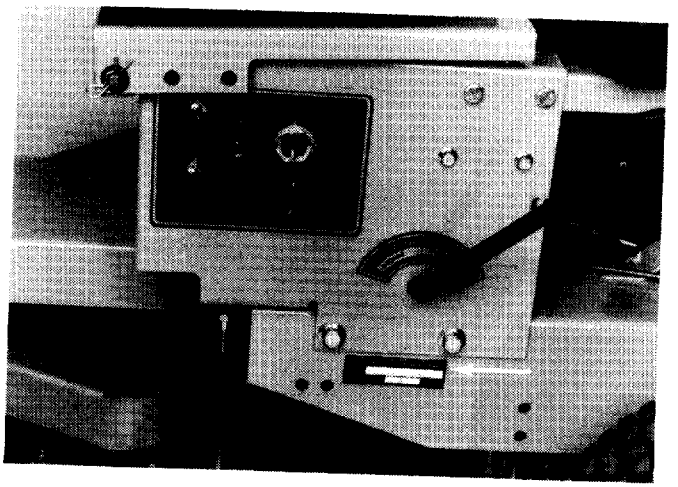
Height	Length	Cutting Width	Wheel Base	Inside Turning Radius	Net Weight (110-4)	Net Weight (112-6)
41 in. (104.1 cm)	64.7 in. (164.3 cm)	29.3 in. (72.9 cm)	46.5 in. (118.1 cm)	24 in. (61 cm)	344 lbs (156 kg)	364 lbs (148 kg)

VEHICLE IDENTIFICATION NUMBER (VIN) LOCATIONS

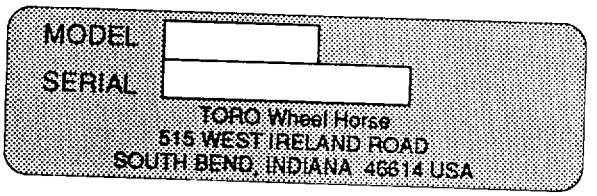
Vehicle identification numbers identify your new riding mower and attachments. Always refer to these numbers when consulting your dealer or factory about service, parts, or other information. If these plates are removed during repair operations, they should always be replaced.

The **rider** vehicle identification number plate is on the left-hand side, below the control panel. This number identifies **both** the riding vehicle and mower. The **engine** identification number is on the engine shrouding and shows your rider engine's model, type number and serial number.

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



Engine Identification Number



Rider & Mower Identification Number

Model _____

Type No. _____

Code No. _____

OWNER REGISTRATION AND WARRANTY

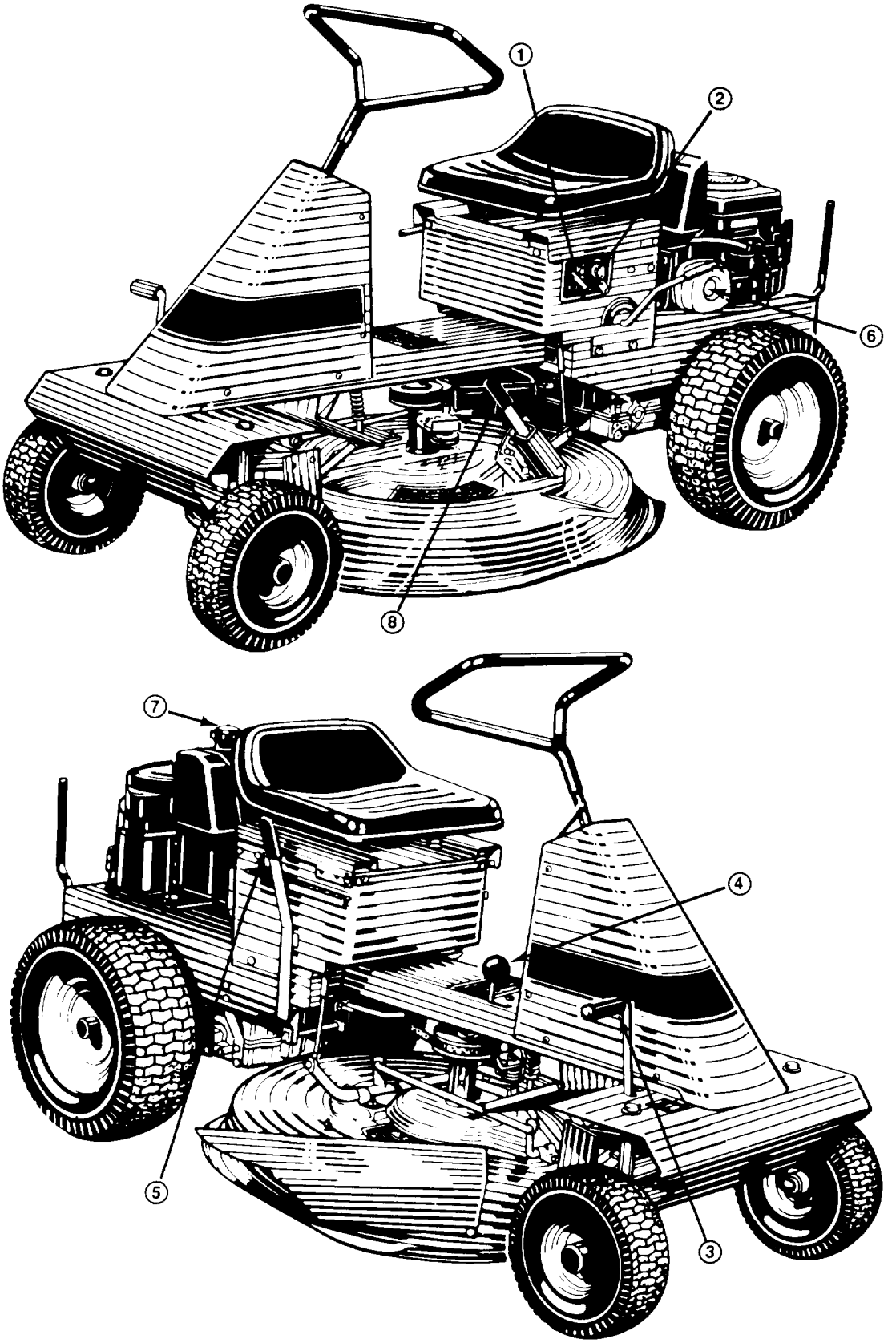
Service and warranty assurance is as important to TORO Wheel Horse as it is to you. To simplify warranty service at an Authorized TORO Wheel Horse Dealer, TORO Wheel Horse requires factory registration. We supply a registration card with each new rider and attachment. **Either you or your dealer must 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 riding mower; please don't hesitate to contact us for assistance.**

PARTS MANUAL

A separate parts manual is available for your TORO Wheel Horse equipment. See your TORO Wheel Horse dealer for more information.

RIDING MOWER CONTROLS



RIDING MOWER CONTROLS

1. Throttle/Choke Control

The throttle/choke control is on the left side on the control panel. Raise the lever to the detent near the top of the slot to operate the rider. Raise the lever all the way up past the detent to start the engine. Lower the lever before shutting the engine off.

2. Ignition Switch (Electric Start)

The ignition switch is on the left side of the rider on the control panel. The ignition switch 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 – it will automatically return to the RUN position.

Turn the switch to the OFF position to stop the engine.

3. Brake Pedal

The brake pedal is at the front of the rider just to the right of the steering console. Pushing the pedal down declutches the drive belt, disconnects the engine from the transmission, and applies the brake. Always release the pedal slowly when engaging the clutch. Also, always depress the pedal when shifting the transmission into or out of gear and when starting the engine.

4. Parking Brake Lever

The parking brake is on the frame in front of the seat. To engage the parking brake lever, first press the foot brake solidly; then move the parking brake lever to the left and into the notch to lock the brake pedal.

To release the parking brake, push down on the foot brake. The parking brake lever will return to the disengaged position when you press the foot brake.

5. Gear Shift Lever

The gear shift lever is on the rider's right side. Select any forward or reverse speeds by moving the lever to the position shown on the shift decal. The shift lever must be in NEUTRAL to start the engine.

6. PTO (Power Take-Off) Clutch Lever

The PTO clutch lever is on the rider's left side on the control panel. It engages and disengages the power-driven attachments. To engage the PTO, move the lever forward. To disengage the PTO, move the lever back. The PTO lever must be in the disengaged position to start the engine. If you leave the seat while the PTO is engaged, a seat switch will automatically shut off the engine.

7. Fuel Tank And Vent Shutoff Valves

A fuel shut-off valve is at the bottom of the fuel tank. A second shut-off valve is in the fuel cap. It closes the vent hole in the cap. Both valves must be closed before standing the rider on end. Refer to instructions in the *Maintaining Your Rider* section of this guide for more information.

8. Mower Height Control Lever

The mower height control lever is at the left rear of the mower. Cutting height is adjustable in 1/2 in. (1.3 cm) steps.

OPERATING YOUR RIDER

SAFETY INTERLOCK SYSTEM

Each rider has four interlock switches. The switches are actuated by the PTO clutch lever, the gear shift lever, and the seat. The PTO and gear shift switches prevent the rider from starting if the mower is engaged or the transmission is in gear. During use, seat switches will shut off the engine if you rise off the seat while the PTO is engaged.

Besides switches, the mower discharge chute (or bagger discharge elbow) has a special stud for attaching a mower interlock wire. This wire must be connected to the stud or the rider will not start. This is to prevent the rider from operating unless the discharge chute or elbow is installed.

If the rider will not start, check that the transmission is in NEUTRAL, the mower is disengaged, and the mower interlock wire is connected. The rider will not start unless these controls are in their correct positions.

The safety interlock system must be tested periodically. To test the safety interlock system, check the following responses. (If your system doesn't respond as described, have an Authorized TORO Wheel Horse Dealer immediately repair the system.)

1. The engine should NOT start if:

   A. The transmission is NOT in NEUTRAL.

   B. The PTO lever is engaged.

   C. The mower interlock wire is disconnected from the discharge chute or elbow.

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

CHECK THE FUEL

Fill the tank with a good grade (85 octane minimum) of regular gasoline. You may use leaded or unleaded regular gasoline. However, DO NOT MIX regular and unleaded gasolines. Also, do **not** mix oil with gasoline. We do not recommend using gasohol fuel.

We recommend leaded regular gasoline for first 25 hours of operation while the piston rings are seating, and unleaded fuel after that. Unleaded fuel will reduce the build-up of combustion deposits in the engine and contribute to long valve life.

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 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.**

OPERATING YOUR RIDER

CHECK THE OIL

To protect your rider's engine, check its oil level before each use. You will find complete information on recommended oils and how to check the oil level in the "Maintaining Your Rider" section.

ENGINE OPERATION

CAUTION

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

WARNING

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 is potentially lethal. Do not run the engine in confined areas such as a closed garage.

STARTING THE ENGINE

Because of a built-in safety interlock system, your rider will not start unless the transmission is in NEUTRAL and the PTO is disengaged. To start the engine, put the transmission in NEUTRAL and disengage the mower.

CAUTION

Always lock the parking brake lever before starting the engine.

Turn the 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.

If the engine fails to start after 30 seconds of continuous cranking, turn the key to OFF and allow the starter motor to cool. Check for the cause of hard starting; consult the troubleshooting check list.

Once the engine starts, lower the throttle to the detented, full-throttle (OPERATE) position.

STOPPING THE ENGINE

To stop the engine, move the throttle lever to the idle position and turn the ignition key to OFF. If the engine has been working hard or is hot, allow it to 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 the OFF position.

CAUTION

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

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 rider's ground speed.

Always operate the rider with the throttle control set at full speed. Your rider's engine was designed with a special governor that limits its RPM. Unlike an automobile, this governor allows the engine to operate most efficiently at a set speed and protects it from damage caused by excessive RPM.

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

OPERATING YOUR RIDER

TO GO FORWARD OR REVERSE

The rider has a reverse "lock out" that helps prevent shifting into reverse accidentally. To shift the rider into reverse, push the lever to the right, then move it back into the reverse position.

With the engine running, depress the brake pedal. Move the gear shift lever to the desired speed forward or to reverse. The shift plate decal identifies various speeds. Slowly release the brake pedal. As you release the brake pedal, the rider will begin to move.

CAUTION

Always release the brake pedal slowly. Sudden starts can damage equipment and cause loss of operator control.

TO CHANGE SPEED OR DIRECTION

When changing ground speed or direction, always bring the rider to a complete stop by depressing the brake pedal.

IMPORTANT: Never try to shift gears with the unit in motion. Severe transmission damage may result.

Change gears as desired. The specification section in the front of this guide shows the ground speed for each gear. It is not necessary or recommended to shift "up" or "down" through gears with the rider in motion. The rider has sufficient power to move out in any gear. However, if the rider will not move out in a selected gear with a heavy load attached, a lower gear should be used.

TO STOP

To stop the rider, press the brake pedal. Always engage the parking brake before leaving the rider.

OPERATING WITH A MOWER

CAUTION

Read the guides provided with attachments before operating. These guides give a more detailed description of operation. Familiarize yourself thoroughly with equipment before using it.

AVOID CONTACT WITH THE ROTATING BLADE:

- **Stop the blade before putting your foot on the ground or leaving the seat.**
- **Be sure the blade has stopped before you try to unclog the discharge or place your hands or feet near the bottom of the blade housing.**
- **Never start the blade unless you are correctly seated on the machine.**
- **Stop the blade and the engine, set the parking brake and remove the key when leaving the machine.**

Keep all shields and the mower discharge chute in place. Never try to clear the discharge areas or the mower blade without disengaging the mower and removing the ignition key.

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

For best operation on normal lawns, operate the engine at full throttle; control the ground speed with the transmission.

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 at 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.

OPERATING YOUR RIDER

Mowing Speed

The mower is designed to operate most efficiently at its maximum blade speed. The gear to use for mowing is the one that will allow the mower blade to maintain maximum speed while mowing across turf. For best cutting results on most lawns, operate the rider in second, third or fourth gear. For cutting tall grass, grass that is heavy with moisture, or when moving uphill, use first or second gear. If the ground speed is too fast, or the blade speed is too slow, mowing will be uneven because the mower blade won't be able to lift the grass blades into cutting position as the mower passes over them. Use first gear for trimming operations.

Mowing Height

You probably know the best cutting height for your lawn from previous experience. The first time you use your new rider, set the mower to cut a little higher than you have cut in the past. This will help you to decide the best approach to uneven areas and to make sure a wider cut does not scalp high spots.

Very tall or wet grass can be cut without difficulty by using a little care. Set the mower in its highest cutting position and enter the area in first gear. If necessary, take a cut one-half the width of the mower, overlapping previously cut area on each pass. Then, with the mower set to the desired height, do a finish cut over entire area. Remember, a sharp blade produces cleaner cuts and uses less power.

To help keep a green lawn, never mow more than one third off the height of the grass, or a maximum of one inch (2.5 cm), in one mowing.

For best appearance, cut the grass in the afternoon or early evening (in daylight) when it is free of external moisture.

Mowing Pattern

The size and type of area determine the best mowing pattern to use. Also consider obstructions such as trees, fences and buildings. Where possible, make one or two passes in a clockwise direction around the outside of the area to keep cut grass off fences and walks. The rest of the mowing should be done in a counter-clockwise direction to disperse the clippings on the cut area.

When possible, keep the mower's left side toward trees, posts, or other obstacles on the first pass around obstacles to minimize hand trimming.

On moderate-sized, frequently mowed lawns where grass is light and dry, it is sometimes practical to mow in a clock-wise direction to throw the clippings toward the lawn's center for easy pickup and removal.

Where possible, change patterns occasionally to eliminate matting, graining or a corrugated appearance.

OPERATING WITH A SNOW BLADE

The front-end snow blade is for snow removal. Be careful and maintain a slow ground speed whenever using a blade.

Striking a solid object may cause injury to you or damage to the blade.

You should add tire chains and wheel weights to improve traction, if necessary.

ATTACHMENTS

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

Some 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.

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.

100-Series - 150 lbs (69 kg)

OPERATING WITH THE REAR BAGGER

The optional rear-mount grass bag can affect the rider's operation. Because of the bagger's added weight and the extra power required, operate the rider in a lower transmission gear.

⚠ CAUTION

Be careful when maneuvering with the grass catcher because it may adversely affect front-to-rear stability. Under normal use, the grass catcher bag material will deteriorate and wear. Check it often for possible replacement.

MAINTAINING YOUR RIDER

CAUTION

To minimize the chance of injury, do all maintenance and adjustments on your rider 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

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

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

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

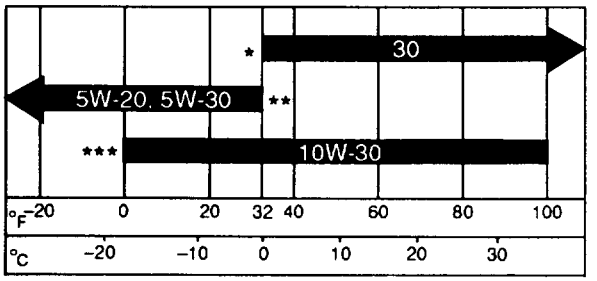
MAINTAINING YOUR RIDER

OIL RECOMMENDATIONS

Use a high-quality detergent oil classified "For Service SC, SC, SE, SF, or SG." Refer to the chart below to select the proper weight oil.

Oil Viscosity

TEMPERATURE RANGE ANTICIPATED BEFORE THE NEXT OIL CHANGE



* Use SAE 30 oil in high-temperature, high-load applications.

** If not available, a synthetic (multi-grade) oil may be used having 5W-20, 5W-30 or 5W-40 viscosity in cold weather.

*** 10W-30 (multi-grade oil) may be substituted if the preferred oil is not available.

Note: Using multi-grade oils (5W-20, 5W-30 or 5W-40 and 10W-30) will increase oil consumption. Check the oil level more frequently when using these types of oils.

How To Check The Oil Level

Your engine was shipped from the factory with oil in the crankcase. However, check the oil level before you first start the engine and every time you use the machine.

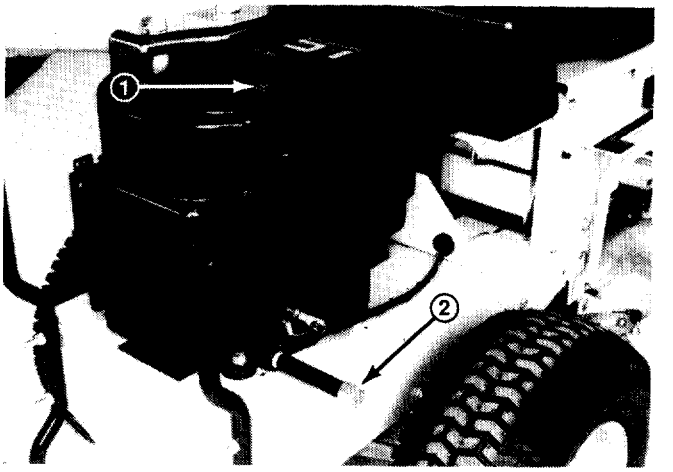
1. Park the machine on a level surface to get an accurate oil-level reading.

2. Shut off the engine and wait for all parts to stop moving.

3. Unscrew and remove the dipstick from the oil fill tube.

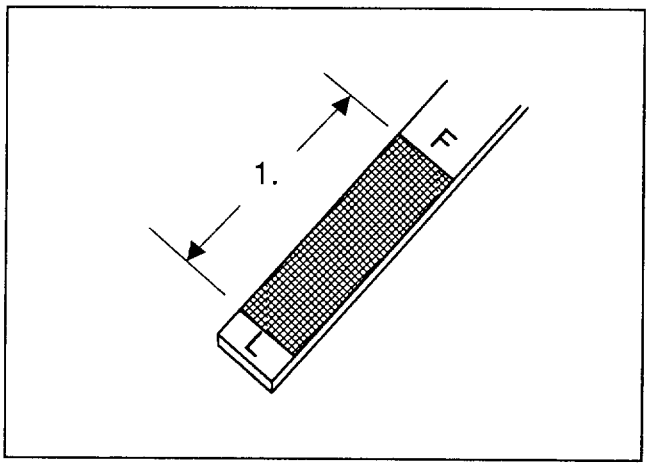
4. Wipe the oil off the end of the dipstick with a clean cloth.

5. Screw the dipstick firmly back into the oil fill tube.



1. Dipstick *2. Drain Plug*

6. Unscrew and remove the dipstick from the oil fill tube. The oil level must be in the safe range below the FULL mark. If the oil level is at the ADD mark, slowly pour enough oil into the fill tube until the level is up to the FULL mark. Refer to the Oil Viscosity Chart for the proper weight of oil.



1. Correct Oil Level

IMPORTANT: Do not overfill with oil because the engine may be damaged.

7. Screw the dipstick firmly back into the oil-fill tube.

MAINTAINING YOUR RIDER

When To Change The Oil

Change the oil after the first five (5) hours of operation; every 50 hours after that. Change oil more frequently when operating conditions are extremely dusty and dirty.

To change oil:

1. Start the engine and run it for two minutes so it gets warm.

2. Park the machine on a level surface, stop the engine and wait for all moving parts to stop.

3. Roll the left rear wheel onto a block of wood to tilt the engine toward the drain plug.

4. Hold a drain pan below the drain plug.

5. Remove the drain plug and allow the oil to flow into the pan.

6. After the oil has drained completely, install the drain plug tightly.

7. Roll the machine off the block of wood.

8. Unscrew the dipstick. Slowly pour enough oil into the fill tube to raise the level to the FULL mark on the dipstick.

IMPORTANT: Although the crankcase capacity is 1-1/2 quarts (1.4 liters), only add about 80 percent of this amount because some oil does not drain from the engine. Refer to the Oil Viscosity Chart for the proper weight oil.

9. Check the oil level before starting the engine.

CLEANING THE AIR FILTER

Wash the foam air cleaner after every 25 hours of engine operation or once a season, whichever occurs first. Clean the air cleaner cartridge after every 100 hours of engine operation or once a season, whichever occurs first. Note: Clean the foam air cleaner and the cartridge more often when conditions are dusty and dirty.

To clean the foam air cleaner:

1. Unscrew the knob and remove the air cleaner cover.

2. Carefully slide the foam air cleaner off the cartridge.

   A. Wash the foam air cleaner in liquid soap and water.

   B. Wrap the foam air cleaner in a clean cloth and squeeze it dry.

   C. Saturate the foam air cleaner in engine oil. Wrap the air cleaner in a clean cloth and squeeze it to remove excess oil.

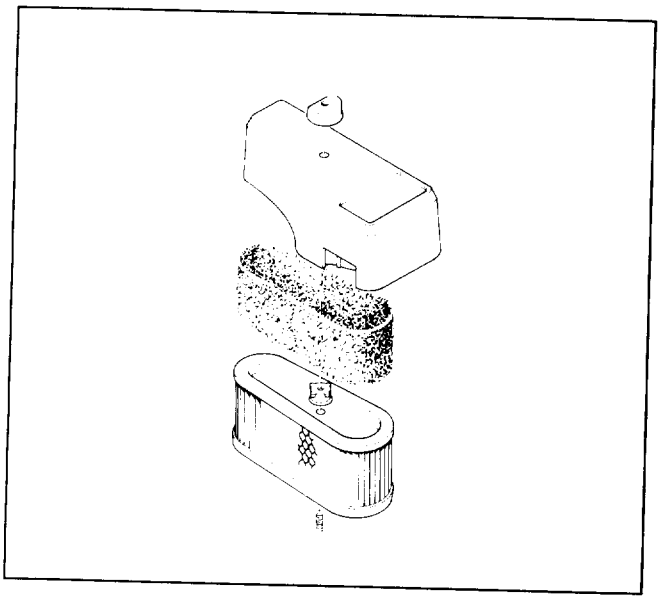
To clean the paper air cleaner cartridge:

3. Unscrew the nut and remove the air cleaner cartridge. Be careful that dirt does not fall into the carburetor and cause engine damage.

4. Clean the cartridge by gently tapping it on a flat surface. If the cartridge remains dirty after tapping, install a new cartridge before operating.

5. Install the cartridge, foam air cleaner, nut, cover and knob. Screw the knob on tightly.

IMPORTANT: To prevent the possibility of engine damage, always operate the engine with the air cleaner installed.

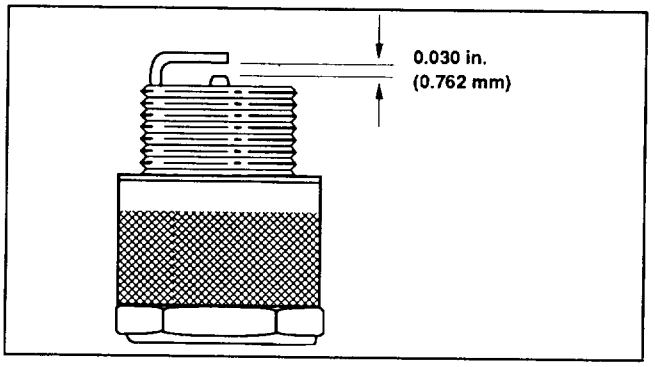


Briggs & Stratton Air Filter

MAINTAINING YOUR RIDER

CLEANING AND ADJUSTING THE SPARK PLUG

The correct spark plug for this vehicle is a Champion RJ17LM and the air gap is 0.030 in. (0.762 mm).



Check the air gap and the color of the electrodes every 100 hours or once a year, whichever occurs first. The electrodes should be a grey or light tan. If the electrodes are oily or dark black, install a new spark plug and clean the air cleaner because it is probably dirty and causing the problem.

To check and change the spark plug:

1. Stop the engine, wait for all parts to stop moving and engage the parking brake.

2. Clean the area around the spark plug so nothing can fall into the hole in the cylinder.

3. Pull the wire off the spark plug.

4. Remove the spark plug and check its condition.

IMPORTANT: A cracked dirty or defective spark plug must be replaced. Do not sand blast, scrape or clean electrodes with a wire brush because dirt may fall into the cylinder and damage the engine.

5. Set the air gap to the correct specification with a feeler gauge.

6. Install the spark plug and gasket seal. Tighten the plug to 15 ft-lb (20.4 Nm). Tighten the plug firmly if you do not use a torque wrench.

7. Push the spark plug wire onto the spark plug.

ADJUSTING THE CARBURETOR

The carburetor is properly set at the factory and rarely needs to be adjusted. The proper setting for the idle mixture screw is one (1) turn open from the closed position. The correct idle speed is 1750 rpm.

Before adjusting the carburetor:

1. Clean the air cleaner.

2. Start the engine to see if it operates properly. Usually what seems like a carburetor problem is really a dirty air cleaner problem, so check and clean the air cleaner first. If the engine still does not operate properly after that, adjust the carburetor.

To adjust the carburetor:

1. Shut the engine off, engage the parking brake and wait for all parts to stop moving.

2. Close the idle mixture screw by gently rotating it clockwise.

IMPORTANT: Do not close the idle mixture screw too tightly because the carburetor may be damaged.

3. Open the idle mixture screw one (1) turn counterclockwise.

4. Start the engine. If it does not operate properly, have the machine inspected by an authorized service dealer.

REPLACING THE FUEL FILTER

Replace the fuel filter located near the carburetor after every 100 hours of operation or once a year, whichever occurs first.

To change the filter:

1. Loosen the hose clamp on the fuel tank side of the filter.

2. Carefully pull the fuel line off the filter and allow the gasoline to drain into a clean gas can.

⚠ CAUTION

Since gasoline is highly flammable, drain it outdoors and only when the engine is cool to prevent a potential fire hazard. Wipe up any gasoline that may have spilled. Do not drain gasoline near any open flame or where gasoline fumes may be ignited by a spark. Do not smoke when you are handling or near gasoline.

3. Remove the hose clamp from the opposite side of the fuel filter.

4. Carefully pull the filter off the fuel line.

5. Use the original hose clamps and install a new fuel filter. Be sure the arrow on the filter points toward the carburetor.

THE ELECTRICAL SYSTEM

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

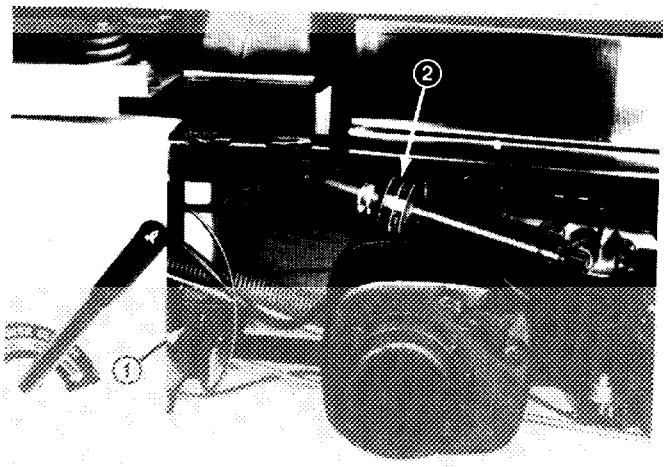
IMPORTANT: Correct polarity is critical with an alternator charging system. Always disconnect the battery ground cable (negative) before working on any part of electrical system. Make sure to connect all components correctly before reconnecting the ground cable (negative) or you may damage the alternator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

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 components may result.

Fuse

A 15-amp automotive ATO or ATC fuse protects the electrical system from excessive current conditions. The fuse is in a fuse holder at the rear of the control panel. If the rider's starter motor fails to operate, check this fuse.

Be sure to check all wiring for shorts or other damage before replacing the fuse.



Fuel Filter and Fuse Location

1. Fuse
2. Fuel Filter

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 the gasses are inhaled. 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 physician immediately. If baking soda is not immediately available, flush the affected area with water. Notify 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 rider so the water will mix with solution. Do not overfill the battery. Electrolyte solution is corrosive and overfilling can damage surrounding metal parts. Maintain the battery at a 1.265 specific gravity charge.

If the battery has been removed from the rider for servicing, take care to connect cables to the battery exactly as they were before removal.

For longest service life, the battery should be kept clean by wiping it 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. 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), a full charge state must be maintained to prevent cell electrolyte from freezing and causing permanent battery damage.

MAINTAINING YOUR RIDER

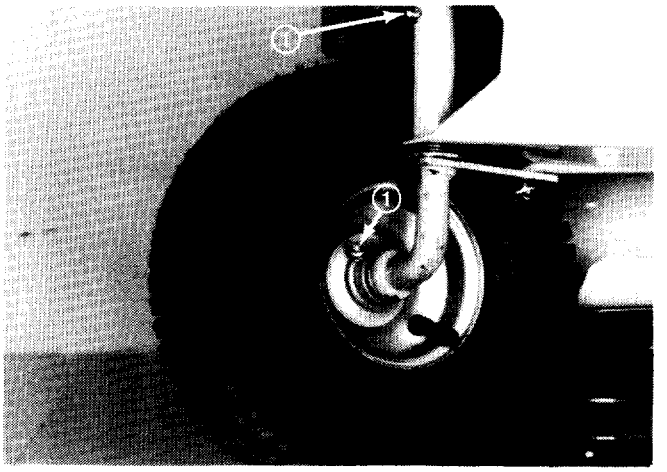
TRANSMISSION

The mechanical transmission is packed with grease and is a sealed unit. No periodic lubricant checks are required; changing the lubricant is not necessary except for major service.

CHASSIS LUBRICATION

The front wheels and front axle spindles have zerk fittings. Before using a grease gun, clean the zerk fittings carefully to avoid forcing dirt into the fitting. After greasing, wipe off any excess grease. Use a general purpose grease (lithium base) to lubricate the rider.

Lubricate the wheel bearings after each 25 hours of operation. Grease the mower-blade spindle and lubricate all other pivoting arms and levers at same time with light machine oil applied directly to wear surfaces.



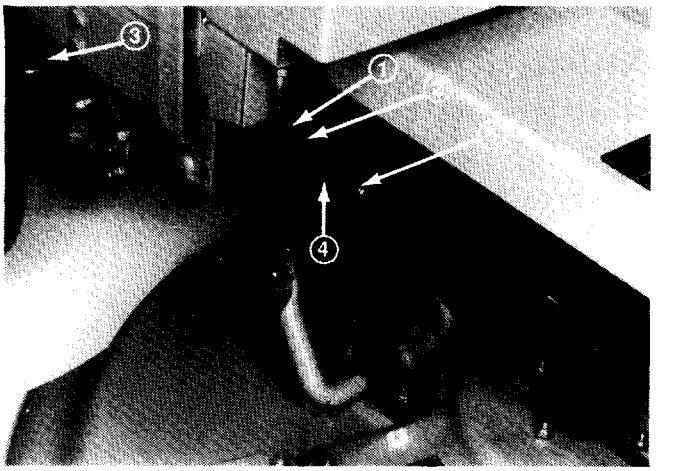
Front Wheel and Spindle Lube Fittings

1. *Grease Fittings*

FOOT BRAKE ADJUSTMENT

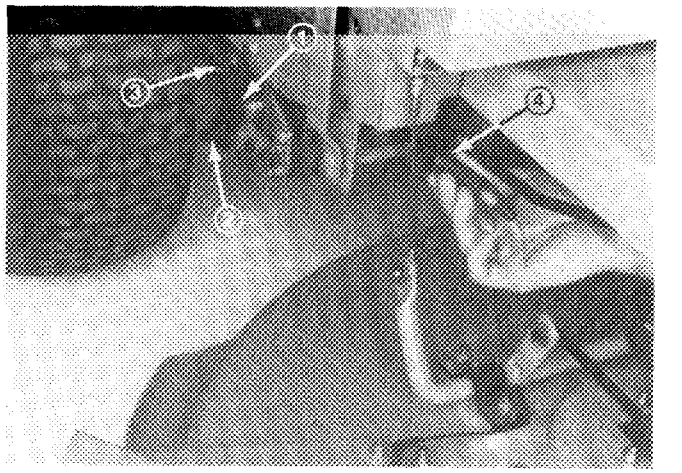
Check the brake rod-spring adjustment before adjusting the brake. This adjusts the force applied to the brake lever.

1. With the brake pedal released, turn the spring adjustment nut to remove space between the spring seat and the washer WITHOUT COMPRESSING THE SPRING.



Brake Rod Spring Adjustment

1. *Spring Seat*
2. *Adjust Snuggly*
3. *Zero Gap*
4. *Brake Rod Spring*
5. *Adjustment Nut*



Brake Adjustment

1. *Brake Caliper*
2. *Adjustment Nut*
3. *Brake Stop Rod*
4. *Gap*

The brake adjustment is done at the brake caliper. Before adjusting, block the wheels to prevent the rider from rolling and shift the transmission to NEUTRAL.

1. Check that the transmission brake lever is contacting the back stop rod when the brake pedal is released. If it does not, the brake pads will drag on the disc during operation, causing premature brake wear.

2. With the brake pedal released, grasp the brake-rod spring and pull it forward. The gap between the rear edge of the spring and the spring seat should be 3/8 to 1/2 in. (9.5/13 mm). Turn the adjustment nut to obtain this gap.

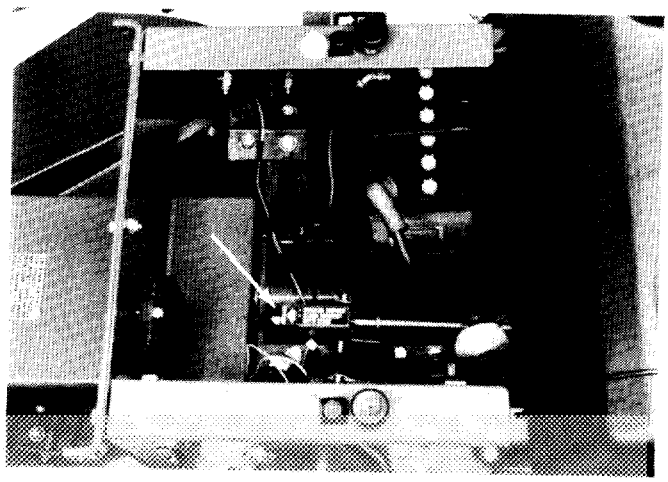
MAINTAINING YOUR RIDER

PTO (MOWER) CLUTCH AND BRAKE ADJUSTMENT

Under normal circumstances, the PTO belt tension will not have to be set. Check the adjustment if you replace the PTO belt or suspect belt slippage. The PTO brake band does not require adjustment.

To adjust the PTO:

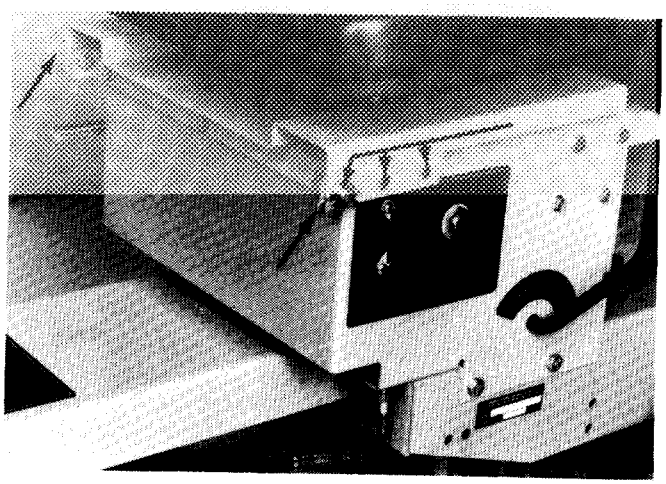
1. Tilt the seat forward; engage the PTO.
2. Turn the adjustment nut until the washer is even with the edge of the decal.
3. Disengage the PTO lever.



PTO Adjustment

THE SEAT ADJUSTMENT

The seat can be moved forward or back for comfort. To adjust the seat, remove the clevis pins at the front corners of the pivot plate.



Seat Adjustment

STANDING THE RIDER ON END

The rider can be rested on its back support rods for convenient underside service, or for space-saving storage. If equipped with a rear-bagger discharge tube, the top and grass bag must be removed.

⚠ CAUTION

1. Before standing the rider on end:

- **A. Close the fuel cap vent and the fuel tank shut-off valve.**
- **B. Run the engine to use up fuel in the carburetor.**
- **C. Set the parking brake.**

2. Have someone help you lift the front of the rider, using the lift handle, to stand it on end. Remember, the front of the rider pivots a few degrees in each direction.

3. Be careful not to tip the rider over while it is on end; be especially careful if the front weight is installed. The rider should be SECURED in an upright position to avoid accidentally tipping it.

4. Store the rider on end only in low-traffic areas. Secure the unit to prevent it from falling.

MAINTAINING YOUR RIDER

CLEANING AND STORAGE

After 30 days, the painted surfaced may be waxed 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 from your Authorized Dealer.

If the rider will not be used for a long time, the following steps will help ensure minimum difficulty when you return the unit to service:

1. Do the maintenance steps listed in the "Maintenance Check List."

2. Check the tires for proper inflation.

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

4. Start the rider and engage the mower for one (1) minute to remove excess water from belts and pulleys

5. Let the engine run out of gas. As gasoline ages, it becomes less volatile and forms harmful gum and varnish deposits in the carburetor and fuel system. DO NOT STORE GASOLINE FOR MORE THAN 2 MONTHS.

6. If applicable, 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), check the water level and the "trickle charge" the battery 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).

7. Remove the key from the rider.

MOWER

MOWER ADJUSTMENTS

Cutting Height

Cutting height is adjustable in 1/2 in. (1.3 cm) steps, using the height control lever at the left rear of the mower. Move the lever down to lower the mower.

Level

The mower must be adjusted so it is level from side to side, and so the front is slightly lower than the rear front to back. For level mowing, adjust this before you first operate the rider, and at least once a season after that.

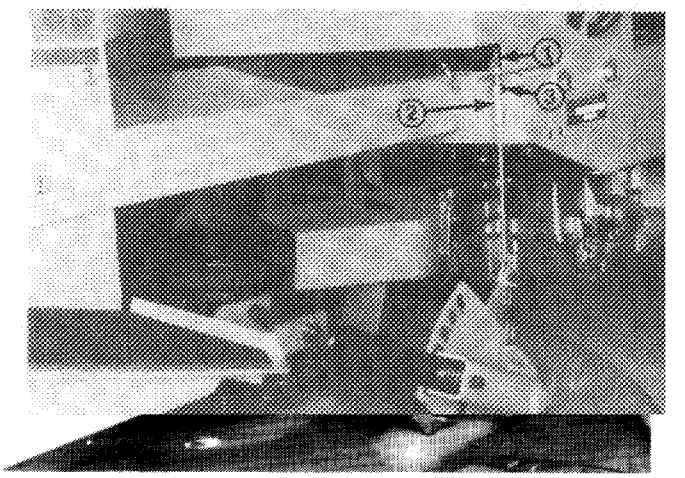
1. Park the rider on a smooth, level surface.

2. Check the tires for proper inflation pressure – 12 PSI (0.85 kg/cm2).

3. Set the mower at a middle-cutting height position.

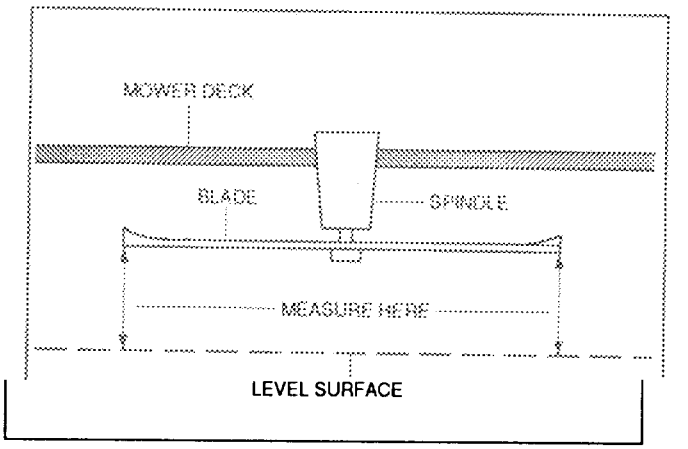
4. Turn the mower blade so it points side to side. Turn the side cable adjustment nuts to make the distance between the blade and the floor the same on both sides of the mower.

5. Turn the mower blade so it points front-to-rear. Turn each side cable or chain adjustment nut AN EQUAL NUMBER OF TURNS to make the distance between the blades and the floor 1/4 in. (6 mm) less at the front of the blade than at the rear.



Mower Belt Routing

1. Adjustment Nut (each side)
2. Hold here with wrench
3. Lower nut should be at bottom of threads



Mower Level Measurement

MOWER

Under some unusual conditions, the mower may leave a ragged cut, which can be caused by any of following conditions:

1. Operating the engine at less than full throttle.

2. Dull blades or the underside of the mower is clogged with matted grass.

3. Ground speed too high for conditions – adjust to 2 mph (3.2 kph), or less if necessary.

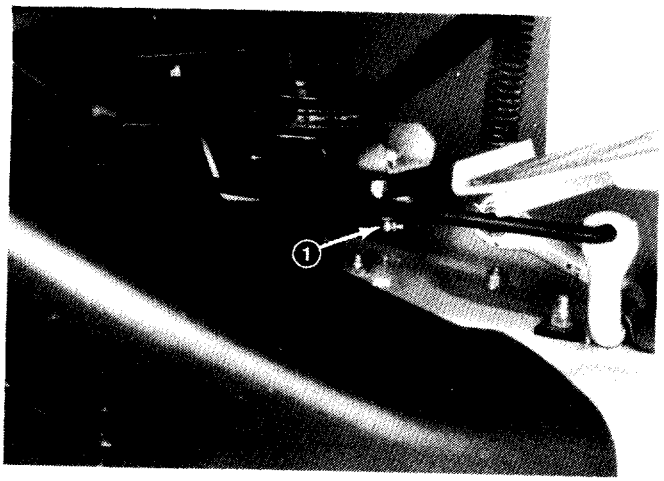
4. Grass that is too long or wet – poor quality of cut will result if you try to remove more than 1/3 to 1/2 of the grass height at one time, or if the grass is wet.

If a ragged cut persists after you have eliminated the possibilities mentioned above, adjust the mower until it is level from front to rear, then adjust (lengthen) the two side cables or chains to make the blade 1/8 in. (3.2 mm) higher at the front than at the rear.

MOWER LUBRICATION

Lubricate the pivoting arms and levers after every 25 hours of operation with light machine oil applied directly to the wear surfaces.

The spindle bearing and idler pivot require lubrication at 25-operating hour intervals. Use number 2 multi-purpose lithium grease.



Spindle Lube Fitting

1. Grease Fitting

MOWER BLADE MAINTENANCE

⚠ CAUTION

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

Keep blades sharp and well balanced for optimum mowing results.

Stand the rider on end as described in this manual. Remove the rider main fuse. Remove the two blade attaching bolts from the spindle bar and remove the blade. A short piece of lumber may be placed between the discharge chute opening and the blade to lock it in position when loosening the attaching hardware.

File or grind the blade evenly. Be careful to retain the angle of the original cutting blade.

Reinstall the blade with the lift area (turned up section) facing the mower deck. Tighten the blade attaching bolts to a torque of 100 ft lbs (140 Nm). Reinstall the rider's main fuse.

UNDERSIDE CLEANING

Clean the underside of the deck often. Accumulation of matted clippings seriously impairs the mower's ability to lift grass blades into cutting position and discharge the clippings evenly. Matted grass clogging the mower's underside is often the cause of uneven cutting.

MOWER DRIVE BELT

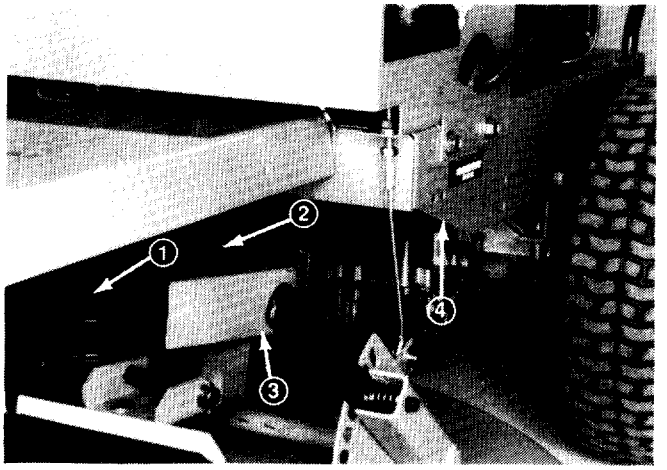
Be sure to purchase genuine TORO Wheel Horse belts for replacement because these belts are designed for each specific application.

To remove the mower drive belt:

1. Place the mower in a middle cutting height position.

2. From the left side of the rider, pull the idler pulley toward you and remove the belt from the idler, spindle and PTO pulleys.

3. Install the belt in reverse order.



Mower Level Adjustment

1. *Spindle Pulley*
2. *Idler Pulley*
3. *Belt Cover*
4. *Drive Pulley*

MOWER REMOVAL & INSTALLATION

1. Remove the drive belt (described above).

2. Raise the mower and place wood blocks under each end of it.

3. Remove the hairpin cotter, washer and clevis pin or bolt from each side cable or chain.

4. Disconnect the interlock wire and route it free of the

5. If equipped with a rear bagger, remove the discharge tube from the discharge elbow.

6. Remove the hairpin cotter, washer and spring rod from the front arm.

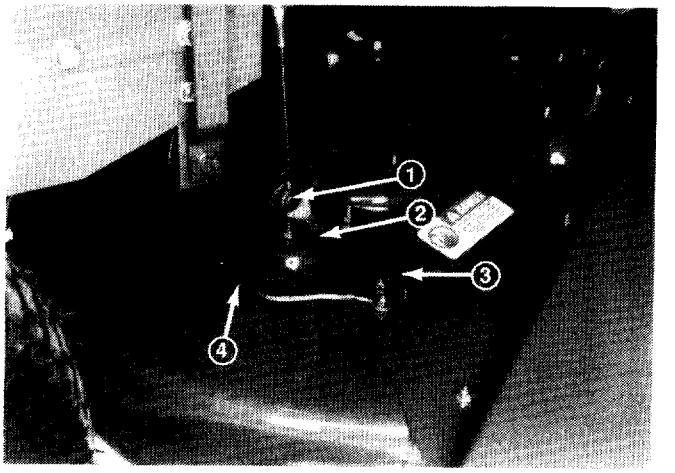
Note: If the spring is compressed, relieve the tension by placing the height control lever in a higher cutting position.

7. Remove the two bolts, washers, spacers and nuts from the front mover mounting brackets.

8. Lift the front of the rider and swing it away from the mower.

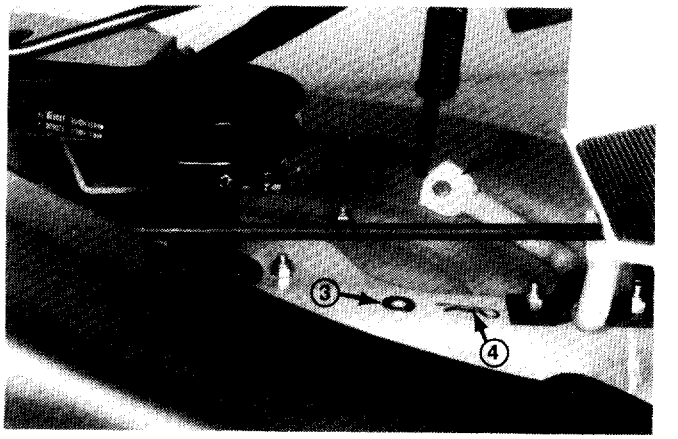
9. To reinstall the mower, support it on wood blocks at the front and rear and reverse the preceding steps.

10. Adjust the mower level.



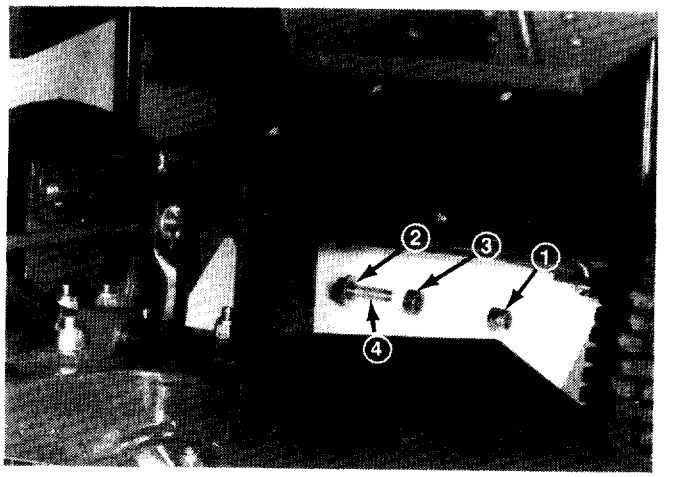
Interlock Wire & Rear Deck Attaching Hardware

1. *Pin*
2. *Lever*
3. *Interlock Wire*
4. *Cable to Chassis Ground*



Front Arm

1. *Rod*
2. *Lever*
3. *Washer*
4. *Hairpin Cotter*



Front Deck Attaching Hardware

1. *Nut*
2. *Washer*
3. *Spacer*
4. *Bolt*

TROUBLESHOOTING CHECK LIST

Symptom	Possible Cause	Possible Remedy
The engine will not turn over.	Dead battery.	Charge or replace the battery.
	Open safety interlock switch.	Be sure the mower is disengaged and the transmission is in neutral.
	Mower interlock wire disconnected/ broken.	Connect/check the wire.
	Starter or Solenoid.	Consult an authorized dealer.
	Faulty ignition switch.	Consult an authorized dealer.
	Fuse.	Replace the fuse.
The engine turns over but will not start.	Faulty ignition switch.	Consult an authorized dealer
	The spark plug is not firing.	Check spark plug condition and reset its gap.
	Ignition system.	Consult an authorized dealer.
	No fuel in the tank.	Refuel the rider.
	Improper carburetor adjustment.	Reset carburetor adjustment.
The engine starts, but operates erratically.	Clogged fuel line.	Clean the fuel line; replace the filter.
	Water in fuel.	Drain the old fuel and replace it with a fresh supply.
	The interlock module is not properly grounded.	Ground the Interlock module.
	The vent in the fuel cap is plugged.	Check the vent.
	Ignition system.	Consult an authorized dealer.
	Improper carburetor adjustment.	Readjust the carburetor.
The engine knocks.	Fuel octane is too low.	Drain the fuel and replace it with higher octane fuel.
	Faulty ignition system.	Consult an authorized dealer.
	Engine overheated.	Shut of the engine and allow it to cool.
The engine occasionally "skips" at high speed.	Spark plug fouled, faulty or its gap is too wide.	Check spark plug condition and gap.
	Faulty ignition system.	Consult an authorized dealer.
	The interlock module is not properly grounded.	Ground the interlock module.
	Incorrect carburetor adjustment.	Readjust the carburetor.
The engine is overheating.	Air intake screen or fins clogged.	Clean intake screen and fins.
	Oil level too high or too low.	Adjust oil level as necessary.
	Fuel mixture too lean.	Readjust carburetor.
	Faulty ignition system.	Consult an authorized dealer.
	The engine is overloaded.	Reduce the load on the rider.
The engine idles poorly.	Improper carburetor adjustment.	Readjust the carburetor.
	Improper spark plug gap.	Check condition and the spark plug's gap.
The engine backfires.	Improper carburetor adjustment.	Readjust the carburetor.
	The interlock module is not properly grounded.	Ground the interlock module.
	Ignition system.	Consult authorized dealer.

TROUBLESHOOTING CHECK LIST

Symptom	Possible Cause	Possible Remedy
The engine runs fine, but the rider will not move	Faulty transmission.	Consult an authorized dealer.
The engine stalls whenever the mower or transmission is engaged.	Excessive load /interlock system (seat must be occupied). Faulty interlock system.	Check for a jammed mower. Raise the mower to lessen the cutting load. Consult an authorized dealer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