FORM NO. 3311-808

TORO®

MODEL NO. 10502 – 1000001 & UP

OPERATOR'S MANUAL

21" (0.53 m) REAR BAGGER

FINGERTIP START, SELF-PROPELLED

SAFETY INSTRUCTIONS

The Rear Bagger was tested and certified by an independent laboratory for compliance with the B71.1 - 1980 specifications of the American National Standards Institute. However, improper use or maintenance by the operator or owner of the mower can still result in injury. To reduce the potential for any injury, comply with the following safety instructions.

This machine is equipped with a Blade Brake/Clutch which is designed to stop the blade when the control lever is released. Check to be sure the control and brake function properly before each use of mower. To further reduce the possibility of injury, always stop the engine before leaving the operators position; behind the handle.

BEFORE OPERATING

1. Operate the mower only after reading this manual. A replacement manual is available by sending complete model and serial number to: The Toro Company 8111 Lyndale Avenue South, Minneapolis, Minnesota 55420; Attn: Publications.

2. Never allow children to operate the mower or adults to operate it without proper instructions.

3. Become familiar with the controls and know how to stop the blade and engine quickly.

4. Keep everyone, especially children and pets, away from the area of operation. Remove sticks, stones, wire and any other debris that might be picked up and thrown by the blade.

5. Keep all shields and safety devices in place. Before operating mower, check it for damage and abnormal wear. If a shield, safety device or decal is defective or damaged, repair or replace it before operation is commenced.

6. Wear long pants and substantial shoes. Do not operate mower while wearing sandals, tennis shoes, sneakers or shorts. Do not wear loose fitting clothing that could get caught in moving parts.

7. If long grass will be cut, set height-of-cut in highest position. After mowing, reinspect the area and remove all debris. Then lower the height-of-cut and mow grass again.

8. Gasoline is highly flammable; handle it carefully.

   A. Use an approved gasoline container.

   B. Do not fill fuel tank when engine is hot or running.

   C. Do not smoke while handling gasoline.

   D. Fill fuel tank outdoors and up to about one-half inch from the top of the tank, not the filler neck.

   E. Wipe up any spilled gasoline.

WHILE OPERATING

9. Cutting grass with a rotary mower demands attention. Always maintain secure footing, balance and control.

10. Cut grass during the daytime or when there is adequate artificial light. Cut grass slopes from side to side. Avoid slopes when grass is wet. If possible, mow when grass is dry for best results.

11. Keep face, hands and feet away from the mower housing and cutter blade when the engine is running. Stay behind the handle until the engine stops.

12. When operating mower without the bag, the chute door must be closed. Whenever grass is being bagged, the engine must be shut off and the chute door closed before the bag is removed and emptied.

13. If the discharge opening is clogged, shut engine off and wait for all moving parts to stop. Disconnect high tension wire from the spark plug and clear the obstruction.

14. Since the blade rotates for a few seconds after the blade control is released, stay behind the handle until all moving parts stop.

15. If a solid object is hit by the blade or if mower vibrates abnormally, shut engine off immediately and wait for all moving parts to stop. Disconnect high tension wire from spark plug and keep wire

SAFETY INSTRUCTIONS

away from plug to prevent possibility of accidental starting. Check mower for possible damage, bent blade, an obstruction, or loose part(s). Make all repairs before using the mower.

16. Stop the engine before adjusting the height-of-cut.

17. If a gravel driveway, road or side walk must be crossed, stop the engine so loose sand and rocks are not thrown.

18. Before leaving the operator's positon – behind the handle – stop the engine and wait for all moving parts to stop. Disconnect high tension wire from spark plug if mower will be unattended.

19. Do not touch any part of the engine while it is running or shortly after it has been stopped because the engine will be hot enough to cause a burn.

20. Before the mower is serviced or adjusted, stop the engine and disconnect high tension wire from spark plug. Keep the wire away from the plug to prevent the possibility of accidental starting.

MAINTENANCE

21. To assure the mower is in safe operating condition, frequently check, and keep all nuts, bolts and screws tight. Assure blade retaining nuts are tightened to 15-25 ft-lb (20-34 N·m) and engine mounting bolts are tightened to 28-40 ft-lb (38-54 N·m).

22. Perform only those maintenance instructions described in this manual. If major repairs are ever needed or if assistance is desired, contact an Authorized TORO Service Dealer.

23. If mower must be tipped when it is serviced or adjusted, drain gasoline from the fuel tank.

24. If a guard, safety device or safety decal is damaged, replace the defective part(s) before operating the mower.

25. To reduce potential fire hazards, assure mower is free of excessive grease, grass, leaves and accumulations of dirt.

26. The grass bag must always be in good condition; therefore, check it before each use to assure the bag is not torn or deteriorated. Replace a defective grass bag.

27. Allow engine to cool before storing mower in any enclosure such as a garage or storage shed. Do not store mower near any open flame or where gasoline fumes may be ignited by a spark.

28. Do not overspeed the engine by changing governor settings. Recommended speed of the engine is 2650 rpm. To assure safety and accuracy, have an Authorized TORO Service Dealer check engine speed, 2650 rpm, with a tachometer.

29. At the time of manufacture the mower conformed to the safety standards in effect for rotary mowers. To assure optimum performance and continued safety certification of the mower, use genuine TORO replacement parts and accessories. Replacement parts and accessories made by other manufacturers may result in non-conformance with the safety standards, and that could be dangerous.

TABLE OF CONTENTS

	Page
Set-Up Instructions	3
Install Handle	3
Assemble Bag to Mower	3
Before Operating	4-5
Fill Crankcase With Oil	4
Fill Fuel Tank With Gasoline	4
Controls	5-6
Operating Instructions	6-10
Adjust Height-of-Cut	6
Starting and Stopping the Engine	6
Mower Operation	7
Operating Characteristics and Tips	8
Bagging	9
Mowing Without the Bag	10
Maintenance	11-16
Servicing Air Cleaner	11
Replacing Spark Plug	11
Draining Gasoline	12
Changing Crankcase Oil	12
Inspecting Cutter Blade For Damage	13
Sharpening or Replacing Cutter Blade	13
Cleaning Mower Housing	14
Adjusting Throttle Control	14
Adjusting Ground Speed Control	14
Adjusting Traction Control Cable	15
Adjusting Carburetor	16
Preparing Mower For Storage	17
Troubleshooting	18-19

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SET-UP INSTRUCTIONS

INSTALL HANDLE

1. Raise upper handle until aligned with lower handle. Tighten handle knobs (Fig. 1).

2. Cut box end open at front of mower, remove bag and carton liners and roll mower out of box.

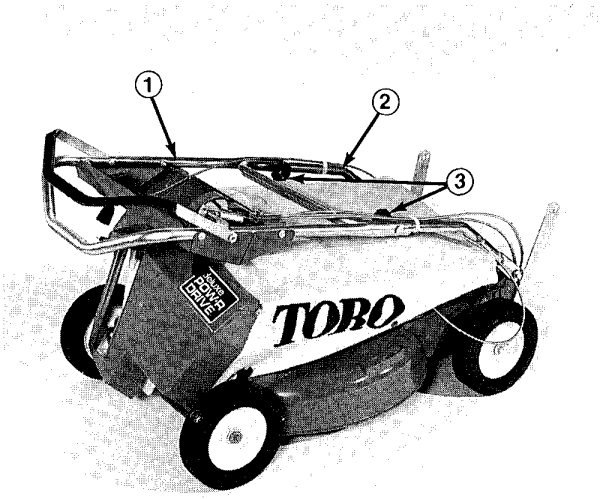


Figure 1

1. Upper handle
2. Lower handle
3. Handle knobs

3. Pivot handle backward until handle studs snap into center holes of handle latches (Fig. 2). Make sure control cables are to the rear and inside of handles.

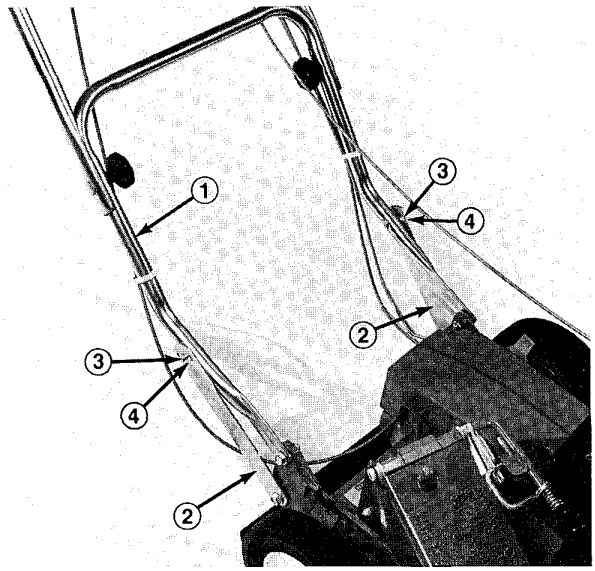


Figure 2

1. Handle
2. Handle latches
3. Handle studs
4. Latch holes

Note: Handle height is adjustable for operator comfort. Stand behind handle to gauge height. Position handle studs into one of the other holes in handle latches to change height.

ASSEMBLE BAG TO MOWER

1. Assure chute door handle is fully forward and locked in place (Fig. 3).

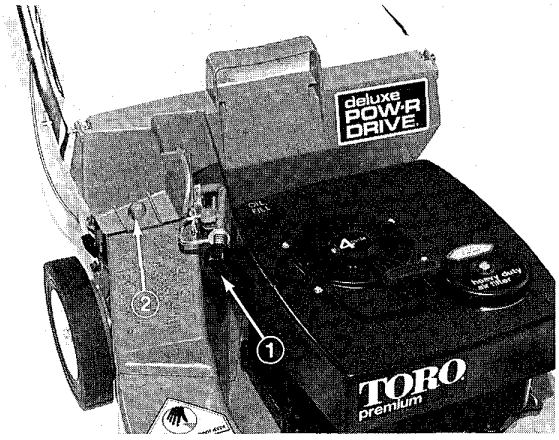


Figure 3

1. Chute door handle fully forward
2. Locating stud

2. Slide guide hole in bag door onto locating stud on mower housing (Fig. 3); then set rear of bag frame onto handle.

3. Squeeze lockout lever until it clears the bag latch (Fig. 4). Then move handle rearward until lockout lever locks in notch at rear of bag latch (Fig. 4). The chute door in mower housing is now open and mower is ready to bag grass clippings.

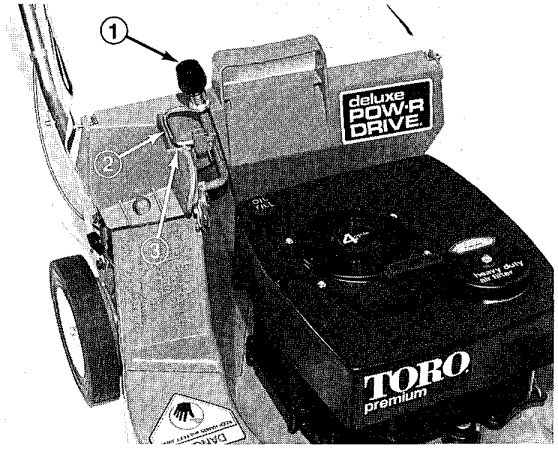


Figure 4

1. Chute door handle
2. Lockout lever
3. Notch

BEFORE OPERATING

FILL CRANKCASE WITH OIL

The engine does not have oil in the crankcase when it is shipped from the factory. If engine is started before oil is added to the crankcase, engine damage could result. Therefore, before engine is started for the first time:

1. Position mower on level surface.

2. Clean area around the oil dipstick to prevent foreign matter from entering the filler hole when dipstick is removed.

3. Remove dipstick by rotating cap counterclockwise (Fig. 5).

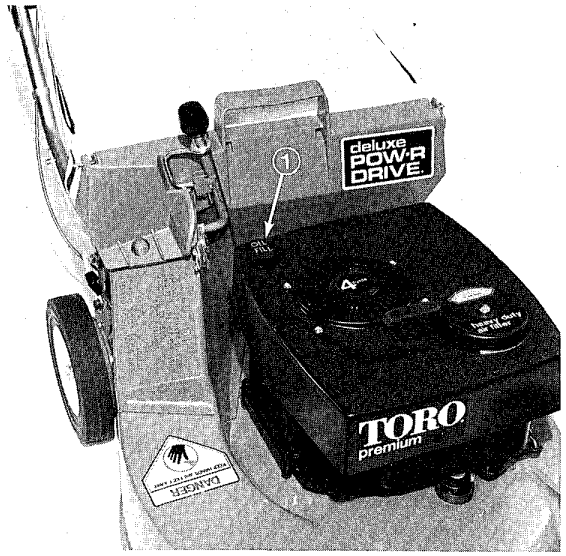


Figure 5

1. Dipstick location

4. Slowly pour approximately 20 ounces (0.591 l) of oil into the filler neck. The engine uses any high quality detergent oil having the American Petroleum Institute – API – "service classification" MS, SC, SD or SE. The recommended oil to use is: SAE 10W-30 or 10W-40.

5. Wipe end of dipstick with clean rag and insert it into filler neck. Rotate cap clockwise. Then remove the dipstick and check level of oil by reading the dipstick (Fig. 6). If level of oil is low, add only enough oil to raise level to FULL mark on dipstick. DO NOT ADD OIL SO LEVEL RISES ABOVE FULL MARK BECAUSE ENGINE COULD BE DAMAGED WHEN IT IS STARTED.

6. Insert dipstick into filler neck and rotate cap clockwise to lock.

Note: Check level of oil after every 5 operating hours or each time the mower is used. Initially, change oil after the first 2 hours of operation; thereafter, when conditions are normal, change oil after every 25 hours of operation. However, change oil more frequently when mower is operated in dusty or dirty conditions.



Figure 6

1. Dipstick
2. Read dipstick here
3. Filler neck

FILL FUEL TANK WITH GASOLINE

1. Lift front cover, clean area around fuel tank cap and remove cap from tank (Fig. 7).

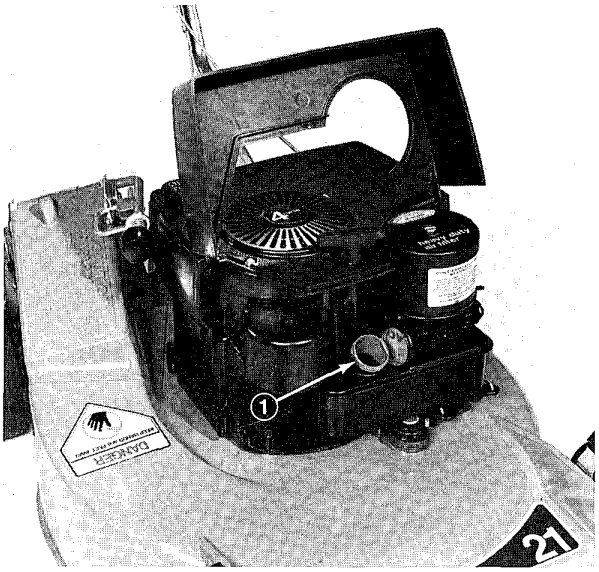


Figure 7

1. Fuel tank cap removed

BEFORE OPERATING

2. Fill fuel tank to within 1/2 inch (12.7 mm) from top of the tank with leaded gasoline. Install fuel tank cap securely.

3. Wipe up spilled gasoline.

IMPORTANT: Leaded gasoline is recommended. Do not mix any oil with the gasoline, and never use premium gasoline, gasohol, gasoline additives or white gas because engine damage could result. If leaded gasoline is not available, low-lead regular gasoline can be used.

DANGER

Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while 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 feet away. DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline, and fill tank to about 1/2 inch (12.7 mm) below the filler neck. Store gasoline in a clean safety-approved container and keep the cap in place on the container. Keep gasoline in a cool well-ventilated place; never in an enclosed area such as a hot storage shed. To assure volatility, do not buy more than a 30 day supply of gasoline. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gas, keep it out of their reach because the fumes are explosive and dangerous to inhale.

CONTROLS

Throttle Control – The throttle control (Fig. 8) has three positions: OFF, SLOW and FAST. Press down on control and move control between SLOW and FAST to operate engine at various speeds. To stop engine, move throttle control to OFF.

Ground Speed Control (Fig. 8) – The ground speed control has four positions: NEUTRAL (N), LOW (1), MEDIUM (2) and HIGH (3). Positioning lever in different speed settings changes ground speeds of mower. Press down on control and move control to desired speed selection.

Control Bar (Fig. 8) – The control bar actuates blade and mower drive. With engine running and ground speed control in one of the ground speed selections, engage blade by moving control bar down and lifting back to middle position. To drive mower, move control bar forward to handle. To drive mower with blade stopped, move control bar forward to handle without moving bar to down position. To stop blade and to stop mower drive, release control bar and allow bar to return to middle position.

Recoil Starter (Fig. 9) – Pull fingertip starter to start the engine.



Figure 8

1. *Throttle control*
2. *Ground speed control*
3. *Control bar*



Figure 9

1. *Recoil starter*

CONTROLS

Height-of-Cut Adjusters (Fig. 10) – Height-of-cut is adjustable to one of five approximate settings: 1 inch (25 mm), 1-1/2 inches (38 mm), 2 inches 51mm), 2-1/2 inches (64 mm), or 3 inches (76 mm). In addition, front wheels have a 1/2 inch (12.7 mm) setting that can be used with the 1 inch (25mm) rear wheel setting. When cutting thatch or heavy, thick grass, raise rear wheel one setting above the front wheel setting to assure optimum power to the blade.

OPERATING INSTRUCTIONS

ADJUST HEIGHT-OF-CUT

The height-of-cut is adjustable from approximately 1 to 3 inches (25 mm to 76 mm), in 1/2 (12.7 mm) increments, and letters cast into the housing represent each graduated increment (Fig. 10).

A = 1 Inch (25 mm)
B = 1-1/2 Inches (38 mm)
C = 2 Inches (51 mm)
D = 2-1/2 Inches (64 mm)
E = 3 Inches (76 mm)

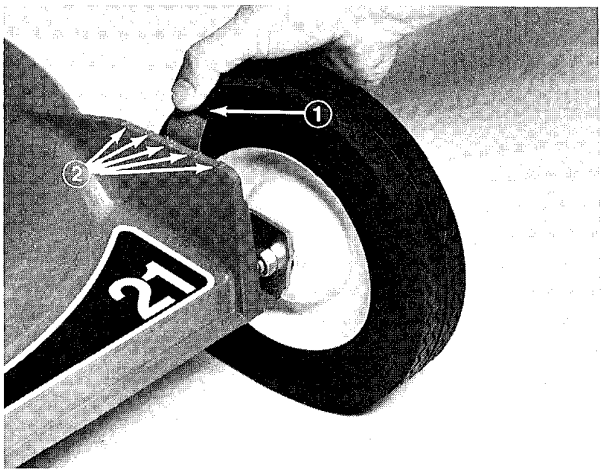


Figure 10

1. Height-of-Cut adjuster
2. Height selection guide letters

1. ⚠ Assure engine is not running before adjusting height-of-cut because contact with the blade will cause personal injury.

2. Place thumb against height-of-cut adjuster and fingers on outside of wheel (Fig. 10).

3. Raise mower housing until wheel is off the ground. Squeeze height-of-cut adjuster toward wheel so its locating pin disengages notch in mower housing. Then pivot the wheel and adjuster to the desired height-of-cut and release adjuster so locating pin engages notch in housing.

4. To adjust to 1/2 inch (12.7 mm) setting on front wheels, rotate height-of-cut adjuster rearward past "A" until pin engages hole in housing.

STARTING/STOPPING THE ENGINE

1. Assure high tension wire is pushed onto spark plug (Fig. 11).

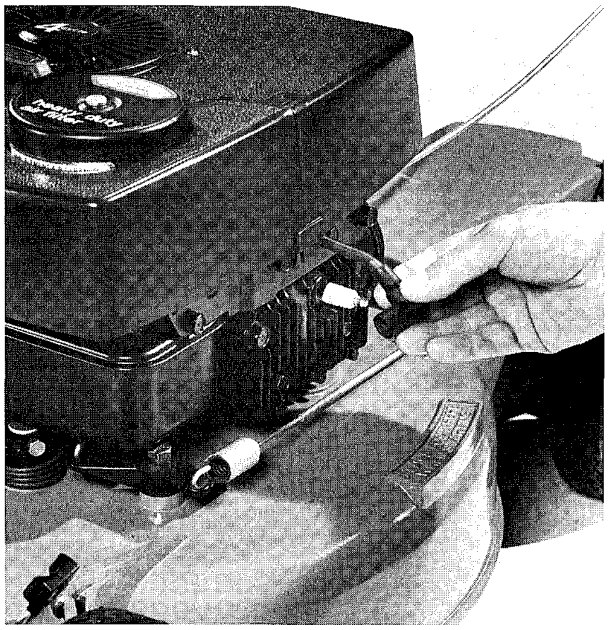


Figure 11

2. Press down on throttle control and move forward to FAST position (Fig. 12).

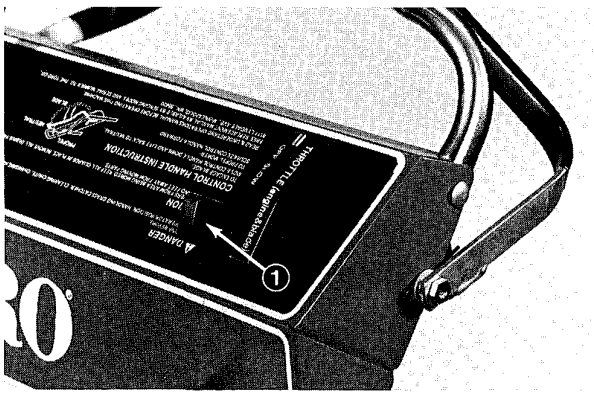


Figure 12

1. Position throttle control in FAST

OPERATING INSTRUCTIONS

3. Place foot on step at left side of mower housing (Fig. 13) and keep other foot from beneath the housing. Pull fingertip starter handle up gently until positive engagement results, and pull handle quickly to start the engine. Do not pull starter rope to its limit or let go of the handle when rope is pulled out because starter mechanism or rope may break.

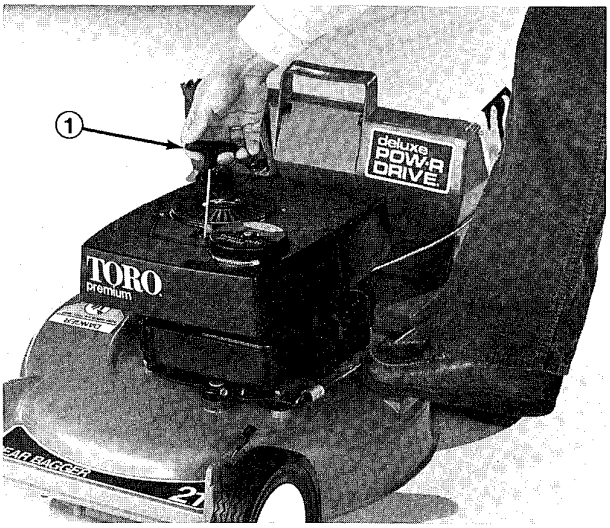


Figure 13

1. Recoil starter

4. To stop engine, press down on throttle control and move to OFF position (Fig. 14).



Figure 14

1. Throttle control in stop position

5. Pull high tension wire off spark plug to prevent possibility of accidental starting when mower is unattended or not used.

MOWER OPERATION

1. Assure ground speed control is in Neutral (N) position and start engine; refer to Starting/Stopping The Engine.

2. Stand behind the handle in the operating position. Press down on ground speed control and shift to the desired ground speed selection (Fig. 15).



Figure 15

1. Ground Speed Control

3. To engage blade, move control bar down until it stops (Fig. 16), then move control bar back to the middle position (Fig. 17). Blade is now fully engaged.

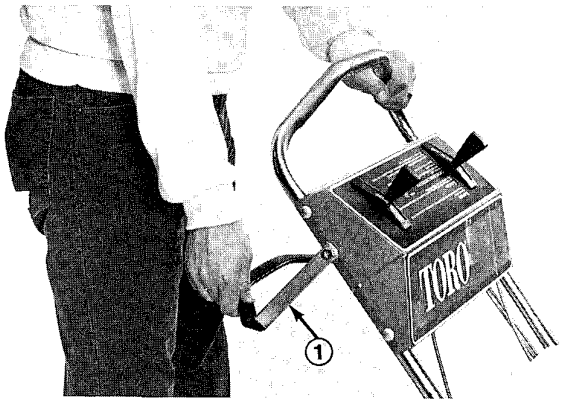


Figure 16

1. Control bar

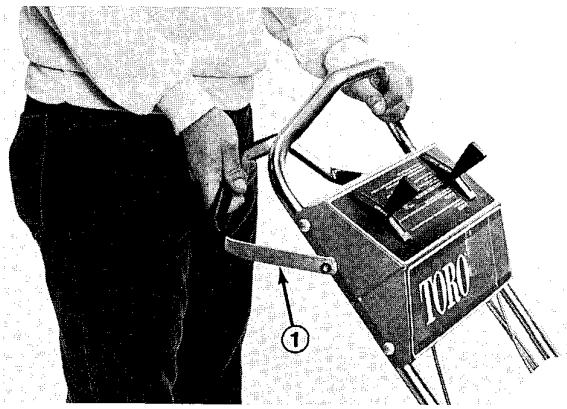


Figure 17

1. Control bar in middle position

OPERATING INSTRUCTIONS

4. To drive mower with blade engaged, move control bar as instructed in previous step to engage blade, then continue moving control bar forward to handle (Fig. 18). Mower can be operated at variable speed in any gear by moving control bar partially forward. Mower ground speed will increase, up to speed allowed by gear selection, as control bar is moved toward handle.

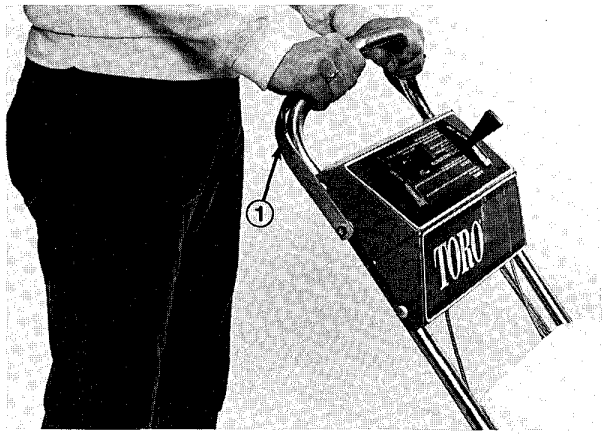


Figure 18

1. Control bar in drive position

5. To stop drive operation, gradually release control bar until traction ceases.

6. To move mower in reverse, gradually release control bar until traction ceases, then pull back on upper handle.

7. To stop drive and blade operation, release control bar which will return to the middle position.

8. To drive mower without blade operating, move control bar forward to the handle, without moving it down to engage blade.

9. If operating on rough turf areas, shift the ground speed control lever to a lower setting and operate the control bar at the full forward position. This will lower the ground speed allowing the mower to follow ground contours, preventing excessive mower bouncing and providing a more acceptable turf appearance.

10. Always shift the ground speed control lever to NEUTRAL (N), when operations are completed.

11. If mower has a tendency to creep (move forward) when control bar is in middle position, drive belt is too tight. If there is slow or no ground speed, even though ground speed control handle is in one of the gear selections and control bar is squeezed fully, drive belt is too loose.

If either of the above two conditions have occurred, traction control cable must be adjusted; refer to Adjusting Traction Control.

OPERATING CHARACTERISTICS AND TIPS

The Rear Bagger has a 11.39 cubic inch (187 cc) engine that delivers the blade turning the force necessary to produce a good quality of cut.

The mower can be used with or without the grass bag: refer to Bagging or Mowing Without the Bag.

To use the mower for bagging grass, install the bag, open the chute door in mower housing and start the engine. Notice that the grass bag expands at the sides and top. This expansion by the bag is caused by the air currents, generated by the blade, flowing through the bag. As grass is cut and discharged into the bag, the air currents through the bag decrease gradually as it is being filled. While the bag is expanded, grass can be cut. Stop the engine and empty the bag when expansion of the bag has discontinued.

The mower is equipped with a rear shield, which helps protect from objects that might be thrown rearward and from possible contact with the blade. Because of its flexible design, maneuverability of the mower is unaffected. Never remove the rear shield because it is a safety device, designed for your protection. If the shield is ever damaged, replace it before operating the mower.

CAUTION

To reduce potential accidents, never perform an adjustment or maintenance procedure while the engine is running. Pull high tension wire off spark plug to prevent an accidental start.

After the mower is used, it should be cleaned and maintained so it is ready for the next cutting. Clean underside of mower housing by spraying with garden hose and scraping out any grass that water will not remove. However, avoid getting water directly onto the engine or electrical connections because damage could result. Frequently check the blade, and assure the blade retaining nuts are tightened to 15-25 ft-lb (20-34 N·m). The oil in the crankcase must be changed after the first 2 hours of operation and after every 25 hours thereafter. Assure level of oil is always in the SAFE range, as shown on the dipstick; however, never fill oil over the FULL mark because engine damage could result. After every 25 hours of engine operation the air cleaner must be cleaned. If mower is used in dusty or dirty conditions, check air cleaner more

OPERATING INSTRUCTIONS

frequently. Whenever the mower is being operated, adjusted or maintained, the safety instructions at the front of this manual must be kept in mind. Safe operation is your responsibility.

BAGGING

The Rear Bagger discharges grass clippings into a large, 2-1/2 bushel (0.088 m^3) bag, and because of the rear bagging feature, both sides of the mower can be used for trimming. Bagging is most effective when engine is running at maximum speed and only about 1/3 of grass blade is being cut. If an excessive amount of grass is being cut off, the mower can plug and cause the engine to stall. If long grass must be cut, adjust mower to the highest height-of-cut; then cut the grass. Follow this by lowering the height-of-cut and cutting the grass again.

⚠ WARNING

The grass bag material will catch and contain the majority of foreign objects, such as small stones and other similar debris. The bag material, however, is subject to normal wear and deterioration. So check the bag frequently, and if it is defective, install a new, genuine TORO replacement bag that has this or similar warning.

To bag the grass with the mower:

1. ⚠ Assure engine has stopped running, cutting blade is not moving and bag is properly mounted.

2. Assure chute door handle is fully forward and lockout lever is released into catch (Fig. 19). The chute door of mower housing is now closed.

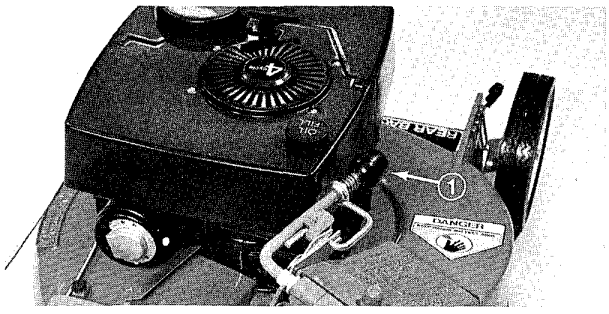


Figure 19

1. Handle forward and door closed

3. Slide guide hole in bag door onto locating stud on mower housing (Fig. 20); then rest rear of bag frame onto handle.

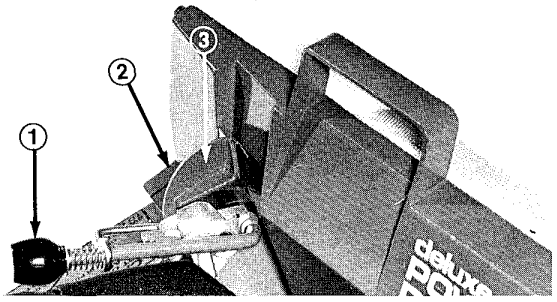


Figure 20

1. Chute door handle fully forward
2. Locating stud
3. Bag latch

4. Squeeze lockout lever until it clears the bag latch. Then move handle rearward until it locks in notch at rear of bag latch (Fig. 21). The chute door in mower housing is now open, and mower is ready to bag grass.

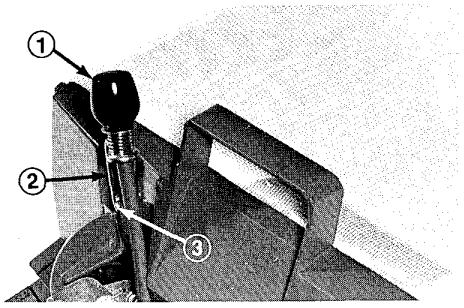


Figure 21

1. Chute door handle
2. Lockout lever
3. Notch

5. ⚠ When bag must be emptied, stop the engine and wait for all parts to stop moving. Move chute door handle forward until it locks in the latch. Then lift bag straight up so clippings stay in the bag rather than falling out the opening.

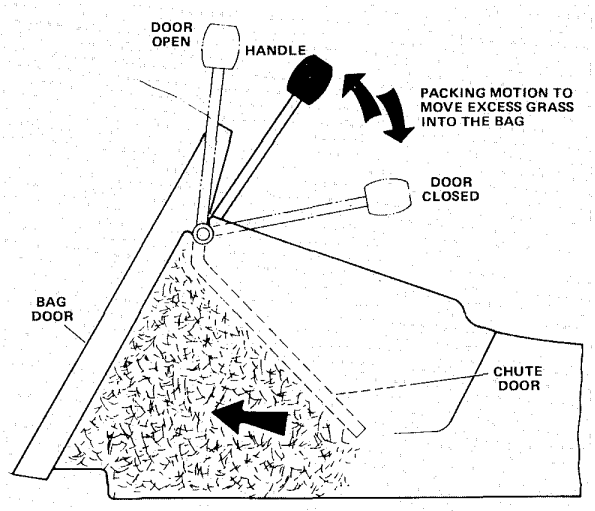


Figure 22

OPERATING INSTRUCTIONS

IMPORTANT: If chute door of mower cannot be closed because grass clippings clog the discharge area, move chute door gently, back and forth. Do this until clippings are pushed into the bag and chute door can be closed completely. DO NOT FORCE THE CHUTE DOOR CLOSED because door or handle may be damaged.

⚠ DANGER

Never open the chute door when grass bag is removed from the mower and blade is turning. Grass clippings and other debris will be discharged with enough force to cause personal injury. Do not operate mower unless complete bag assembly is attached and properly positioned or rear door is completely closed.

6. To dump grass out of bag, grasp handle at rear of bag and open door at front of bag. While shaking the bag, gradually tip it forward so grass sifts out (Fig. 23). Do not try to dump all the grass at once.



Figure 23

Dumping grass out of bag

7. Reinstall bag by repeating steps 3 and 4.

MOWING WITHOUT THE BAG

The Rear Bagger can be used for shredding leaves or dry grass. However, this is most effective when only about 1/4 of the grass blade is cut. During this process, the blade slices the cut pieces of grass again and again, so very fine particles of grass are deposited on the lawn. These fine grass clippings eventually decompose.

To mow without the bag:

1. ⚠ Assure engine is not running and cutter blade is not moving.

2. Squeeze lockout lever, move chute door handle fully forward, and release lever into bag latch (Fig. 24). The chute door in mower housing is now closed, and mower is ready for mowing operation.

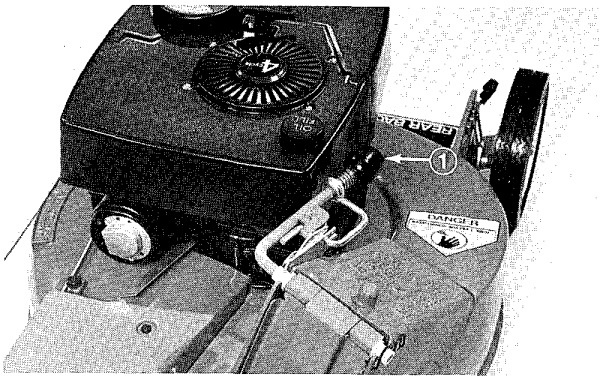


Figure 24

1. Handle forward and door closed

Note: If desired, the grass bag may remain on the mower.

⚠ DANGER

Never open chute door when mowing without bag installed because grass clippings or other debris will be discharged with enough force to cause personal injury.

MAINTENANCE

CAUTION

To prevent personal injury, use extreme caution when an adjustment or maintenance procedure must be performed while the engine is running. Pull high tension wire off spark plug if engine does not have to be running while performing adjustment or maintenance procedures.

SERVICING AIR CLEANER

The air cleaner foam element must be cleaned after every 25 hours of engine operation if the engine is operated in clean air conditions. The element must be cleaned more frequently, however, when mower is operated in dusty or dirty conditions.

1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug.

2. Lift cover, remove screw and cover to expose air cleaner element (Fig. 25).

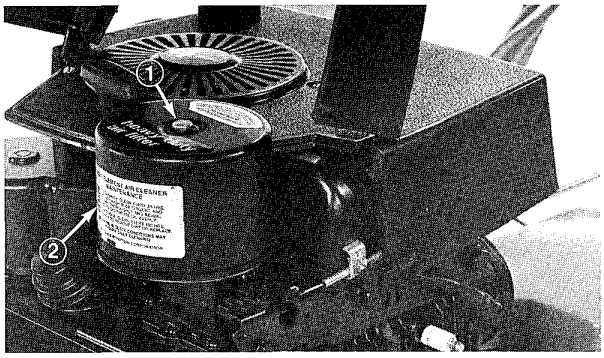


Figure 25
1. *Screw*
2. *Air cleaner cover*

3. Look at foam element around filter. If it is dirty, the element must be removed from air cleaner body and cleaned (Fig. 26).

A. WASH foam element in a solution of liquid soap and warm water. Squeeze the element to remove dirt. Do not twist element because it may tear.

B. DRY the element by wrapping it in a clean rag. Squeeze the rag and element until element is dry.

C. SATURATE element with 5 teaspoons (25 ml) SAE 30 engine oil. Squeeze element to remove excess oil and to distribute oil thoroughly. A damp element is desirable.

D. Place element over filter and install cover (Fig. 26).

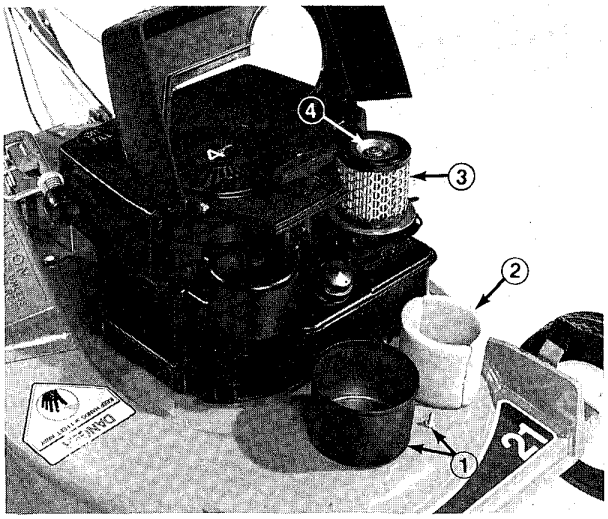


Figure 26
1. *Screw and cover*
2. *Foam element*
3. *Filter*
4. *Mount screw and washer*

4. Remove element from paper filter every 100 hours or more frequently in extremely dirty or dusty conditions and inspect filter. Replace filter if it shows signs of heavy contamination by removing center mount screw and washer (Fig. 26). Assure area around filter mount is clean. Carefully tighten mount screw when installing replacement filter to prevent damage and distortion to the filter mounting components.

Note: Clean and install element on filter per A and B, page 11. Be sure washer is installed.

5. Install cover on air cleaner body and lower cover.

IMPORTANT: Do not operate engine without complete air cleaner because extreme engine wear and damage will likely result.

REPLACING SPARK PLUG

Recommended spark plug to use is a Champion RJ-17LM or equivalent, and correct air gap is 0.030 of an inch (0.762 mm). Since air gap between center and side electrodes of the spark plug increases gradually during normal engine operation, remove plug after every 25 hours of engine operation and check its condition.

1. ⚠ Assure engine is not running. Then pull high tension wire off spark plug.

2. Clean area around spark plug so foreign matter does not fall into cylinder when plug is removed. Remove plug from cylinder head with spark plug socket (Fig. 27).

MAINTENANCE

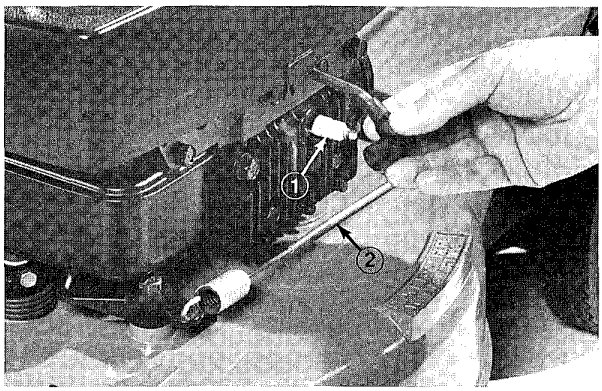


Figure 27

1. Spark plug 2. High tension wire

IMPORTANT: A cracked, fouled or dirty spark plug must be replaced. Do not sand blast, scrape or clean electrodes because grit may eventually release from the plug and fall into the cylinder. The result will likely be engine damage.

3. Set air gap between electrodes at 0.030 of an inch (0.762 mm) with a spark plug gapping tool (Fig. 28). Install the correctly gapped spark plug with gasket seal and tighten plug to 15 ft-lb (20.4 N·m). If torque wrench is not used, tighten plug firmly.

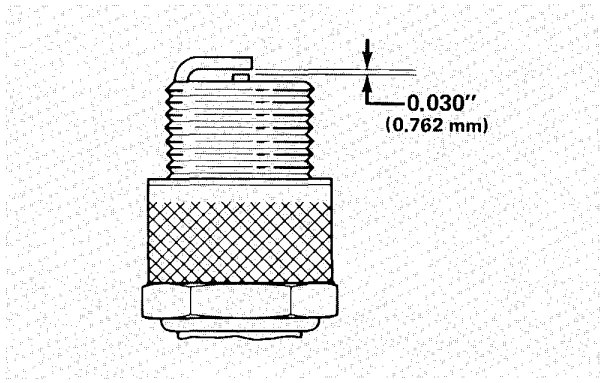


Figure 28

DRAINING GASOLINE FROM FUEL TANK

CAUTION

Since gasoline is highly flammable, drain it outdoors and make sure 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 a cigar, cigarette, or a pipe when handling gasoline.

1. ⚠ Assure engine is not running, and high tension wire is pulled off spark plug.

2. Lift cover and remove cap from fuel tank.

3. Using a pump-type syphon, drain gasoline into a clean gas can. This is the only recommended method of draining gasoline.

CHANGING CRANKCASE OIL

To prevent possible premature engine failure, change oil after the first 2 hours of engine operation and after every 25 hours thereafter. However, change oil more frequently when engine is operated in dusty or sandy conditions. Since warm oil drains better and carries more contaminants than cold oil, run the engine for a minute or so before changing oil.

1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug. Also remove grass bag.

2. ⚠ Drain gasoline from fuel tank to prevent a potential hazard.

3. Clean area around dipstick and remove the dipstick from the filler neck.

4. Tip mower on its right side, so all oil drains out filler neck and into drain pan. (Fig. 29).

Note: Tip down and up again to ensure all oil is drained.

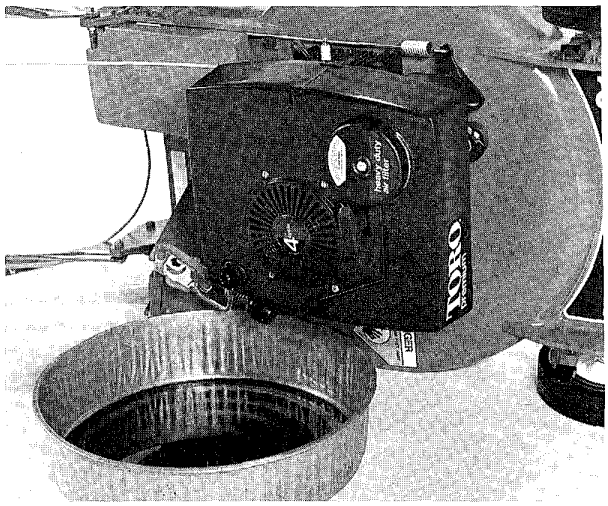


Figure 29

5. Position the mower on a level surface and fill the crankcase with oil to FULL mark on dipstick: refer to Fill Crankcase With Oil.

MAINTENANCE

INSPECTING CUTTER BLADE FOR DAMAGE

1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug.

2. ⚠ Drain gasoline from fuel tank: refer to Draining Gasoline.

3. Tip mower on its right side (Fig. 30), opposite its spark plug side. Avoid rotating the blade when mower is tipped because starting problems may result.

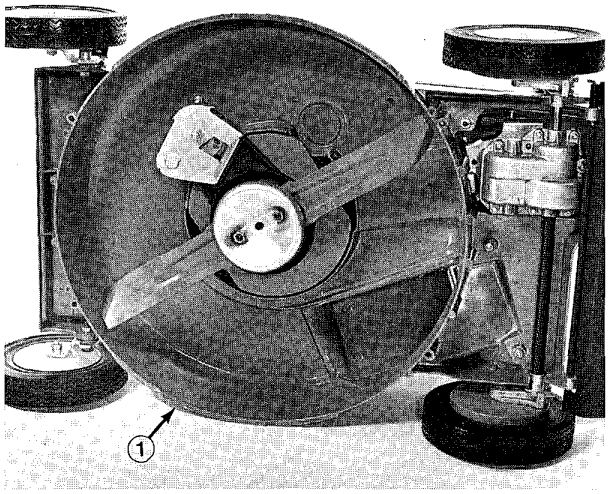


Figure 30

1. Mower tipped on right side

4. Examine cutting ends of the blade carefully, expecially where the flat and curved parts of the blade meet (Fig. 31A). Since sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the mower. If any wear is noticed (Fig. 31B), replace the blade: refer to Sharpening or Replacing Cutter Blade.

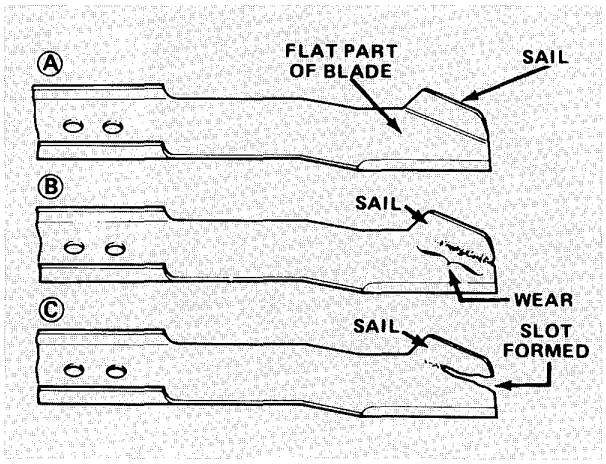


Figure 31

⚠ CAUTION

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 31C). Eventually, a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to yourself or bystander.

SHARPENING OR REPLACING CUTTER BLADE

1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug.

2. ⚠ Drain gasoline from fuel tank: refer to Draining Gasoline.

3. Tip mower on its right side, opposite its spark plug side. Avoid rotating the blade when mower is tipped because starting problems may result.

4. Grasp end of blade using a rag or thickly padded glove. Using a socket or wrench, remove blade nuts and blade.

Note: To assure optimum cutting performance, install a new blade at the start of the cutting season. During the year, file down small nicks to maintain a fine cutting edge.

5. Using a file, sharpen cutting edge at both ends of the blade (Fig. 32).

IMPORTANT: Sharpen top side of blade and maintain original cutting angle to assure a sharp cutting edge (Fig. 32). The blade will remain balanced if same amount of material is removed from both cutting edges.

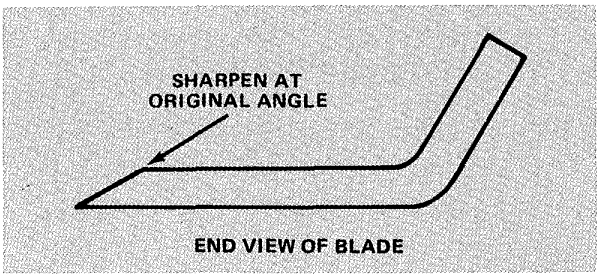


Figure 32

6. Check balance of blade by putting it on a blade balancer. A balanced blade will stay in a horizontal position on the balancer. By contrast, a blade that is not balanced will settle to the heavy side. If blade is not balanced, file more metal off cutting edge on heavy end of the blade. Then check the blade balance again.

Note: An inexpensive blade balancer can be purchased at a hardware store.

7. Install sharp, balanced blade and scalp cup with blade nuts. Sail part of the blade must point toward top of the mower housing to assure correct installation. Tighten blade nuts to 15-25 ft-lb (20-34 N·m).

8. Set mower upright.

CLEANING MOWER HOUSING

To assure a good cut and efficient grass bagging, underside of mower housing and inside of discharge area must be kept clean.

1. ⚠ Assure engine is not running and high tension wire is pulled off the spark plug.

2. ⚠ Drain gasoline from fuel tank: refer to Draining Gasoline.

3. Tip mower on its right side, opposite the spark plug side. Avoid rotating the blade when mower is tipped because starting problems may result.

4. Remove grass clippings and dirt that sticks to the housing by spraying it with a garden hose. Scrape out any grass that water does not remove from housing with a hard wood scraper. Take care to avoid any burrs and sharp edges.

5. Set mower upright.

ADJUSTING THROTTLE CONTROL

An adjustment of the throttle control may be required if the engine does not start or stop. Whenever a new throttle control cable assembly is installed, the throttle must be adjusted.

1. ⚠ Assure engine is not running and high tension wire is pulled off the spark plug.

2. Close door in mower housing and remove bag.

3. Move the throttle control lever to the OFF position.

4. Tip cover up. Loosen clamp screw until throttle cable is free to slide (Fig. 33).

5. Move carburetor control arm to the left until it contacts grounding bracket (Fig. 33). Pull throttle cable slightly to remove any slack and tighten the cable clamp screw to lock the adjustment in place.

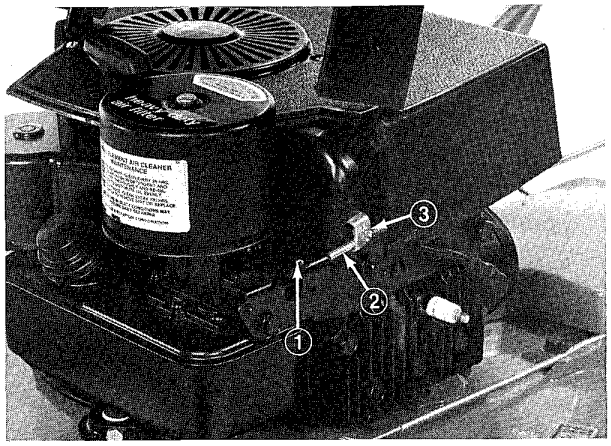


Figure 33

1. Control arm
2. Throttle cable
3. Clamp screw

ADJUSTING GROUND SPEED CONTROL

An adjustment of the ground speed control may be required if the ground speed of the mower is incorrect. Whenever a new ground speed control assembly is installed, the control must be adjusted.

1. Assure engine is not running and high tension wire is pulled off the spark plug.

2. Close door in mower housing and remove bag.

3. Remove two capscrews securing transmission cover and remove cover (Fig. 34).

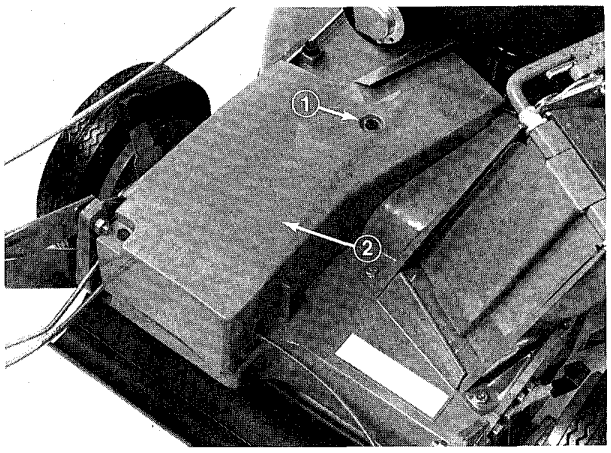


Figure 34

1. Transmission cover mounting capscrews
2. Transmission cover

4. Loosen the capscrew securing the ground speed control cable (Fig. 35, item 1).

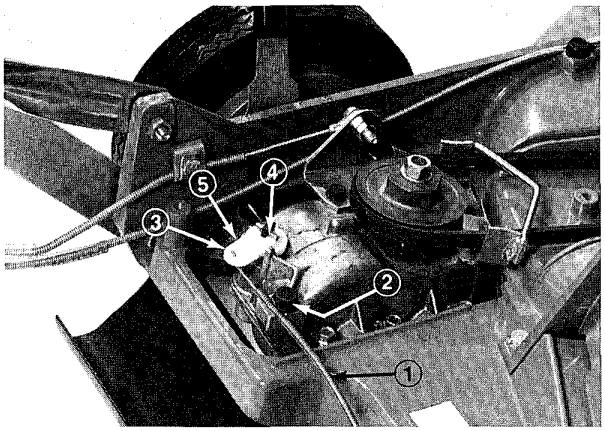


Figure 35

1. *Ground speed control cable*
2. *Capscrew*
3. *Transmission control lever*
4. *Roll pin*
5. *Push towards capscrew*

5. Move the ground speed control lever to NEUTRAL (N).

6. Push transmission control lever to right in direction of cable clamping capscrew as far as possible, hold in position and tighten capscrew (Fig. 35).

7. Pull mower rearward with ground speed control in NEUTRAL. Mower should pull back freely without any rotation of pulley on top of gear case. If rotation of pulley occurs, adjustment for NEUTRAL is incorrect. Repeat steps 4-6.

8. Install transmission cover.

ADJUSTING TRACTION CONTROL CABLE

An adjustment of the traction control cable may be required if the loss of traction occurs, or if mower moves without engaging traction drive.

1. ⚠ Assure engine is not running, pull high tension wire off spark plug and install on V-notch.

2. Close door in mower housing and remove bag.

3. Remove two capscrews securing transmission cover and remove cover (Fig. 34).

4. Loosen capscrew and cable clamp securing traction cable to mower housing. (Fig. 36).

5. Pull traction cable rearward through cable clamp approximately 1/4 inch (6 mm) and retighten capscrew.

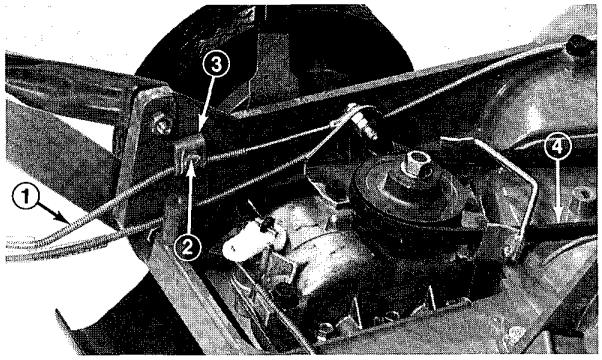


Figure 36

1. *Traction cable*
2. *Capscrew*
3. *Cable clamp*
4. *Belt*

⚠ CAUTION

Over-adjusting cable may cause mower to move without engaging traction drive.

6. Check traction adjustment by slowly squeezing traction control lever toward upper handle. Traction control lever should be approximately 1/2 inch (13 mm) from upper handle when traction drive belt becomes tight (Fig. 37). If loss of traction still occurs after adjustment, repeat steps 4-6.

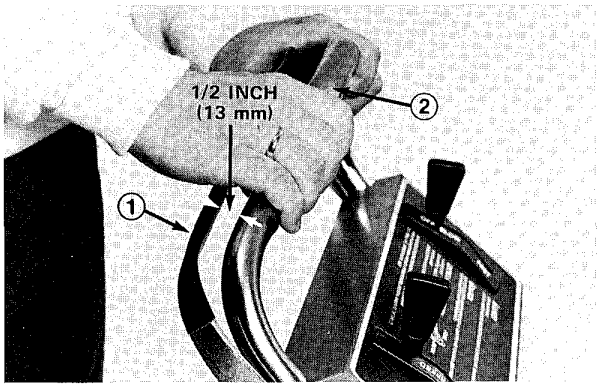


Figure 37

1. *Control bar*
2. *Upper handle*

7. Install transmission cover.

⚠ DANGER

Do not attempt to adjust the control cable for the blade clutch and brake. Improper adjustment could adversely affect the safety, performance or durability of the mower. Contact your Toro service representative for adjustment.

MAINTENANCE

ADJUSTING CARBURETOR

The carburetor has been set at the factory, but an occasional adjustment may be required. However, do not make unnecessary carburetor adjustments, because factory settings are usually correct. An adjustment may be required to compensate for differences in fuel, temperature, and altitude.

IMPORTANT: Air cleaner must be installed on the engine whenever carburetor is being adjusted. The air cleaner mounting screw must also be installed when engine is run. Fuel tank must be half full of gasoline to get best carburetor adjustment. Raise cover to gain access to adjusting screws (Fig. 38).

1. Needle Valve – Close valve by gently rotating it clockwise (Fig. 38).

IMPORTANT: Do not close needle valve too tight, because valve and seat in carburetor may be damaged.

2. Open needle valve by rotating 1-1/2 turns counterclockwise.

Note: The needle valve setting is approximate; however, the setting will allow engine to be started so carburetor can be fine tuned.

3. Start engine and let it warm up for approximately two minutes. Next, move throttle control to FAST.

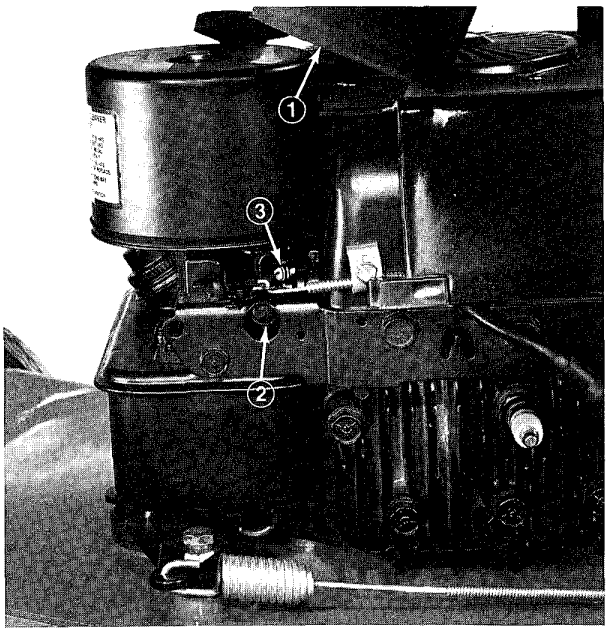


Figure 38

1. Cover
2. Needle valve
3. Idle adjusting screw

CAUTION

Engine must be running so final adjustment of the carburetor can be performed. To guard against possible personal injury, keep hands, feet, face, and other parts of the body away from the cutter blade, underside of the housing, and the discharge chute.

4. Rotate needle valve clockwise 1/8 turn at a time until engine starts to lose speed. Let engine react to each 1/8 turn setting.

5. Rotate needle valve counterclockwise (outward) 1/8 turn at a time until engine first starts to run rough. Let engine react to each 1/8 turn setting.

6. Rotate needle valve clockwise (inward) very slowly until engine starts to run smoothly. This setting, under no load, may be slightly rich; however, the slightly rich setting will assure proper operation when engine is under load.

7. Move throttle control backward so engine idles. If engine stalls, rotate idle adjusting screw until engine speed increases (1750 rpm).

Note: Rotate idle adjusting screw clockwise to increase idle rpm. By contrast, rotate idle adjusting screw counterclockwise to decrease idle rpm.

8. Check carburetor adjustment by quickly moving throttle control from SLOW to FAST. Engine speed should increase without hesitation. If engine tends to stall or die out, rotate needle valve 1/8 turn counterclockwise until engine accelerates smoothly.

9. After carburetor is adjusted, shut engine off and lower cover. If mower will not be used immediately, pull high tension wire off spark plug: Accidental starting will be prevented.

PREPARING MOWER FOR STORAGE

1. Drain gasoline from fuel tank and fuel line: refer to Draining Gasoline. Start the engine and let it run at idle speed until it stops because all gasoline is expended.

Note: All gasoline must be expended to prevent gum-like varnish deposits from forming in the carburetor, fuel line and fuel tank. Such deposits, if allowed to form, will cause starting problems and poor engine operation.

MAINTENANCE

2. Pull high tension wire off spark plug and clean area around the plug so foreign matter cannot fall into cylinder when plug is removed. Remove plug from cylinder head and pour two tablespoons of 10W-40 oil into spark plug hole. Pull recoil starter handle slowly to distribute oil on inside of cylinder. Then install spark plug and tighten it to 15 ft-lb (20.4 N·m). If torque wrench is not used, tighten plug firmly. DO NOT INSTALL HIGH TENSION WIRE ON SPARK PLUG.

3. Drain oil from Crankcase, refer to Changing Crankcase Oil. After all oil is drained, install dipstick but do not fill crankcase with oil until steps 4 through 8 are completed.

4. Clean dirt and chaff from outside of cylinder, cylinder head fins and blower housing. Also, remove grass clippings, dirt and grime from external parts of engine, shrouding and top of mower housing.

5. Clean underside of mower housing: refer to Cleaning Mower Housing.

6. Check condition of blade and blade nuts: refer to Inspecting Cutter Blade For Damage.

7. Check and tighten all capscrews, bolts, screws, nuts and mating parts. If any part is damaged, repair or replace it. Inspect grass bag. Replace it if it is damaged or deteriorated.

8. Wash the air cleaner foam element in a liquid soap detergent and water and add oil to element: refer to Servicing Air Cleaner.

9. Fill crankcase with oil: refer to Fill Crankcase With Oil.

10. Touch up all chipped paint surfaces. Make sure to sand affected area before painting.

Note: TORO Re-Kote "touch-up" paint is available from any Authorized TORO Service Dealer. The spray paint dries in minutes to a glossy, factory-finish.

11. Store the mower in a clean, dry place. For convenience, upper handle can be folded for more compact storage. Make sure control cables are not stretched or kinked when folding handle. Cover the mower to protect it and keep it clean.

Note: Assure upper handle is in proper position and handle knobs are securely tightened before resuming operation.

TROUBLE SHOOTING

Problem	Possible Causes	Corrective Action
Engine does not start.	1. Throttle not in start position.	1. Move throttle to start.
	2. Gas tank is empty.	2. Fill fuel tank with gasoline: refer Fill Fuel Tank With Gasoline.
	3. Air cleaner element is dirty.	3. Clean air cleaner element: refer to Servicing Air Cleaner.
	4. Spark plug loose.	4. Tighten spark plug to 15 ft-lb (20.4 N·m).
	5. High tension wire loose or disconnected from spark plug.	5. Install high tension wire on plug.
	6. Spark plug gap is incorrect.	6. Set gap between electrodes at 0.030 of an inch (0.762 mm).
	7. Spark plug is defective.	7. Install new, correctly gapped plug: refer to Replacing Spark Plug.
	8. Carburetor is flooded with gasoline.	8. Remove air cleaner element and pull starter rope continuously until carburetor clears itself and engine starts. When engine starts, stop it and install air cleaner element.
	9. Blade nuts are loose.	9. Tighten blade nuts 15-25 ft-lb (20-34 N·m).
Engine starts hard or loses power.	1. Dirt or water in gas tank.	1. Drain gas and clean fuel tank. Fill tank with clean, fresh gasoline: refer to Fill Fuel Tank With Gasoline.
	2. Vent hole in fuel tank cap is plugged.	2. Clean or replace fuel tank cap.
	3. Air cleaner is dirty.	3. Clean the air cleaner element: refer to Servicing Air Cleaner.
	4. Blade nuts are loose.	4. Tighten blade nuts to 15-25 ft-lb (20-34 N·m).
Engine operates erratically.	1. Spark plug is defective.	1. Install new, correctly gapped plug: refer to Replacing Spark Plug.
	2. Spark plug gapped incorrectly.	2. Set gap between electrodes at 0.030 of an inch (0.762 mm).
	3. Air cleaner is dirty.	3. Clean the air cleaner element: refer to Servicing Air Cleaner.
Engine idles poorly.	1. Air cleaner is dirty.	1. Clean the air cleaner element: refer to Servicing Air Cleaner.
	2. Oil level in crankcase is low.	2. Add oil to crankcase: refer to Fill Crankcase With Oil.
	3. Air slots in engine shroud are plugged.	3. Remove obstruction from slots.
	4. Cooling fins and air passages under engine blower housing are plugged.	4. Remove obstruction from cooling fins and air passages.
Engine misfires at high speed.	1. Air gap between electrodes of spark plug is too close.	1. Set air gap at 0.030 of an inch (0.762 mm).

TROUBLE SHOOTING

Problem	Possible Causes	Corrective Action
Engine overheats.	1. Cooling air flow is restricted. 2. Oil level in crankcase is low. 3. Incorrect spark plug. **Note:** A Toro Service Dealer may have to be consulted if any of the above causes have occurred.	1. Remove any obstruction from slots in shroud, blower housing, air passages, and cooling fins on engine. 2. Add oil to crankcase: refer to Fill Crankcase With Oil. 3. Install Champion RJ-17LM spark plug that is gapped at 0.030 of an inch (0.762 mm).
Mower vibrates abnormally.	1. Blade nuts are loose. 2. Cutter blade is unbalanced.	1. Tighten blade nuts to 15-25 ft-lb (20-34 N·m). 2. Sharpen cutter blade and check the balance: refer to Sharpening or Replacing Cutter Blade. Replace the blade if it cannot be balanced.
No traction drive.	1. Group speed control maladjusted or broken. 2. Transmission drive belt loose or broken. 3. Traction Control Handle cable maladjusted or broken. 4. Damaged wheel and pinion gear assembly. 5. Malfunction in transmission assembly. **Note:** Your Toro Service Representative may have to be consulted if items 2-5 have occurred. Call 887-8255.	1. Adjust ground speed control: refer to Adjusting Ground Speed Control. 2. Adjust belt tension or replace belt. 3. Adjust or replace cable. 4. Repair as necessary. 5. Repair as necessary.
Mower creeps forward – traction control handle disengaged	1. Debris caught between mower housing and transmission. (Belt under tension). 2. Traction belt over-tensioned, i.e., belt not loose enough when disengaged.	1. Remove transmission cover and clear debris away: refer to Figure 35. 2. Relieve belt tension. Adjust Traction Control Cable: refer to Adjusting Traction Control Cable, or contact your Toro Service Representative at 887-8255.
Blade stalls or does not cut with engine running and blade control engaged.	1. Not engaging blade control properly. 2. Blade clutch control maladjusted. 3. Clutch belt slipping.	1. Refer to Mower Operation, page 7. 2. Contact your Toro Service Representative at 887-8255. 3. May be due to cutting in excessively wet conditions or belt is worn, replace clutch belt. Contact Toro Service Representative at 887-8255.