1977

FORM NO. 3310-918

TORO®

MODEL: 20403-700001 & UP

OPERATOR'S MANUAL

21" GRASSMASTER™

FINGERTIP START



The GRASSMASTER meets or exceeds the Outdoor Power Equipment Institute's safety standards for rotary mowers; thus, Toro proudly displays the OPEI safety seal.

MODEL CONFORMS TO SAFETY STANDARDS PROGRAM SPONSORED BY opei Outdoor Power Equipment Institute MODEL TESTED BY INDEPENDENT LABORATORY

To assure maximum safety, optimum performance, and to gain knowledge of the mower, it is essential that you or any other operator of the mower read and understand the contents of this manual before the engine is started. Pay particular attention to the instructions highlighted by the red, safety symbol. Failure to comply with the safety instructions may result in personal injury.

PRICE $1.00

FOREWORD

The GRASSMASTER, the most innovative walk power mower, provides a new degree of mowing efficiency and convenience. If the mower is set up, operated and maintained properly, it will give long, dependable service.

To familiarize yourself with safety, set-up, operating and maintenance instructions, read this manual thoroughly. The major sections of this manual are:

1. Safety Instructions
2. Set-up Instructions
3. Before Operating
4. Controls
5. Operating Instructions
6. Maintenance

Safety, mechanical, and some general information in this manual is emphasized. DANGER, WARNING, and CAUTION identify the safety messages. Whenever the red safety symbol appears, it is followed by a safety message; therefore, refer to the safety instructions on pages 3 and 4 for complete details. IMPORTANT identifies special mechanical information and NOTE identifies general information worthy of special attention.

If help – concerning safety, set-up, operation and maintenance – is ever needed, contact the local Authorized TORO Service Dealer or Distributor. Refer to the "Yellow Pages" for assistance. In addition to skilled service technicians, the dealer and distributor have other TORO Products, as well as factory approved accessories and replacement parts. Keep your Toro all TORO. Buy genuine TORO replacement parts and accessories.

TABLE OF CONTENTS

	Page
Safety Instructions	3
Specifications	5
Loose Parts	5
Set-Up Instructions	6-7
Install Lower Handle	6
Install Upper Handle and Throttle Control	6
Assemble Bag Frame and Bag	6
Before Operating	7-8
Fill Crankcase With Oil	7
Fill Fuel Tank With Gasoline	8
Controls	9
Operating Instructions	9-13
Adjust Height-of-Cut	9
Operating Characteristics and Tips	10
Bagging	10
Mulching	12
Using Wash-Out Port	13
Maintenance	14-19
Lubrication	14
Servicing Air Cleaner	14
Replacing Spark Plug	15
Draining Gasoline	15
Changing Crankcase Oil	16
Inspecting Cutter Blade For Damage	16
Sharpening or Replacing Cutter Blade	17
Cleaning Mower Housing	18
Adjusting Throttle Control	18
Preparing Mower For Storage	18
Trouble Shooting	19-20
Identification and Ordering	21
The Toro Promise	Back Cover

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MINNEAPOLIS, MINN 55420 U.S.A.

SAFETY INSTRUCTIONS

The GRASSMASTER was tested and certified by an independent laboratory for compliance with the B71.1A 1974 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.

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 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.

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 – mulching – the rear discharge door must be closed. Whenever grass is being bagged, the engine must be shut off and the rear discharge 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 with a stick.

14. Since the blade rotates for a few seconds after throttle control is moved to STOP, 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 and disconnect high tension wire from the spark plug. Keep wire away from the plug to prevent possibility of accidental starting. Then check mower for possible damage, bent blade, an obstruction or loose parts. Repair the mower before using it again.

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 position – behind the handle – stop the engine and wait for all moving parts to stop. Do not walk in front of the mower while the engine is running. 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.

SAFETY INSTRUCTIONS

MAINTENANCE

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.

21. To assure the mower is in safe operating condition, keep all nuts, bolts and screws tight. Assure blade bolt is tightened to 50 ft-lb and engine mounting bolts are tightened to 16 ft-lb.

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.

SPECIFICATIONS

10 Cubic Inch Tecumseh Engine: Model TNT 100, type 10051A, four cycle, air cooled engine with output of 4.5 ft-lb of torque @ 2650 rpm. Fuel tank capacity is 1.3 quarts and crankcase capacity is 21 oz. Air cleaner is removable, serviceable polyurethane type, and recoil starter is an easy-pull fingertip type.

Mower Housing: Die cast aluminum alloy housing has spiral grass chamber with rear bagging or mulching features. Width-of-cut is 21 inches.

Cutter Blade: Blade is 21 inches long and heat treated for hardness.

Blade Tip Speed: Tip speed is 14,570 ft/min @ 2650 engine rpm.

Folding Handles: Two handles are 7/8 inch diameter, 16 gauge welded steel tubing with chrome plating. Handle is adjustable to one of three operating positions. Upper handle can be folded for compact storage.

Throttle Control: Control is mounted on left side of upper handle, and it has two positions: STOP and START.

Wheels: Polypropylene wheels have sintered metal bushings.

Tires: 8" x 1.75" semi-pneumatic tires have diamond tread.

Height-of-Cut: Height-of-cut is adjustable to one of five approximate settings: 1 inch; 1-1/2 inches; 2 inches; 2-1/2 inches; and 3 inches. A 5/8 inch setting is available on front wheels only.

Dimensions:

Overall width is 21-3/4 inches (approx).

Overall length without handle is 33-1/4 inches (approx).

Height without handle and wheels set at 1 inch is 13-1/4 inches (approx).

Weight: Dry weight of mower including bagging attachment is approximately 68 lb.

LOOSE PARTS

Carefully remove mower and other parts from carton. Use chart below to assure all parts have been shipped.

PART	QTY.	WHERE USED
Lower Handle Hair Pin Cotter	1 2	Install Lower Handle, page 6.
Upper Handle Curved Head Handle Bolt Knob Cap Screw Cable Clips	1 2 2 1 2	Install Upper Handle and Throttle Control, page 6.
Bag Upper Bag Frame Cap Screw Lock Nut	1 1 3 3	Assemble Bag Frame and Bag, page 6.
Operator's Manual	1	Read manual before operating mower.
Registration Card	1	Fill out card and send it to The Toro Company.

SET-UP INSTRUCTIONS

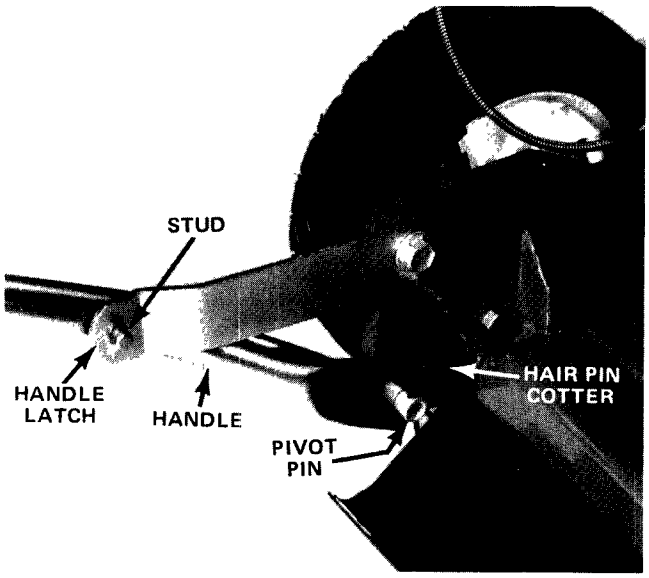
INSTALL LOWER HANDLE

Tools Required: None

1. Push ends of lower handle together and install handle on pivot pins. Slide hair pin cotters through both pivot pins (Fig. 1).

2. Move handle latches backward until handle studs fit into hole at end of latches (Fig. 1).

Note: If latches do not stay engaged with handle studs, bend latches outward until engagement is maintained.

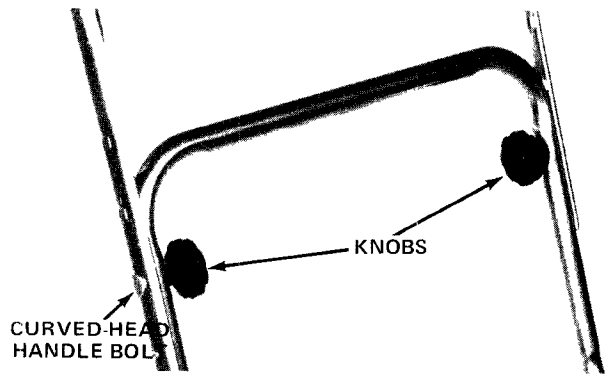


Installing Lower Handle
Figure 1

INSTALL UPPER HANDLE AND THROTTLE

Tools Required: 7/16-Inch Wrench

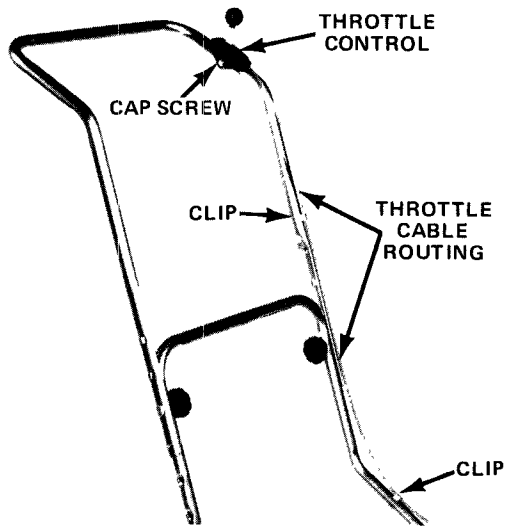
1. The upper handle can be set at different heights for optimum operator comfort. To attach upper handle to lower handle, line up holes in both handles and secure them together with two curved-head handle bolts and knobs (Fig. 2). The knobs must be installed on inside of the handles.



Installing Upper Handle
Figure 2

2. Route throttle control cable along front of the upper and lower handle (Fig. 3). Secure throttle control against inside of upper handle with cap screw. Do not overtighten cap screw because control or handle could be damaged.

3. Install cable clips around throttle cable and handles (Fig. 3).



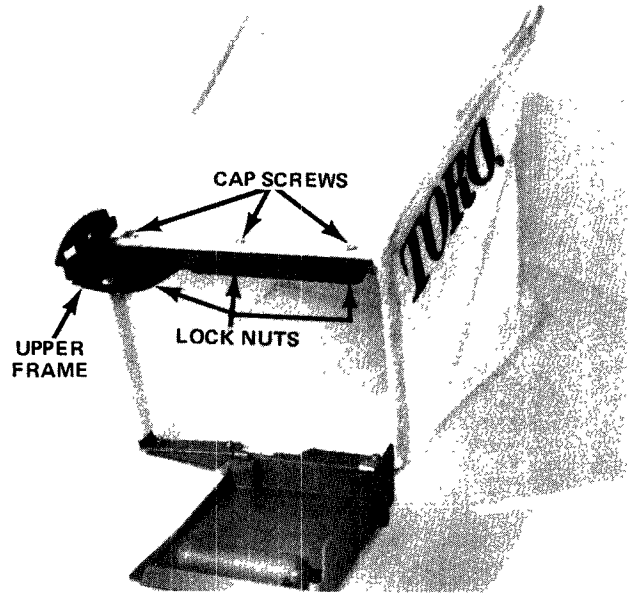
Installing Throttle Control
Figure 3

ASSEMBLE BAG FRAME AND BAG

Tools Required: 3/8-Inch Wrench

1. Lay the bag down so hard bottom contacts the floor.

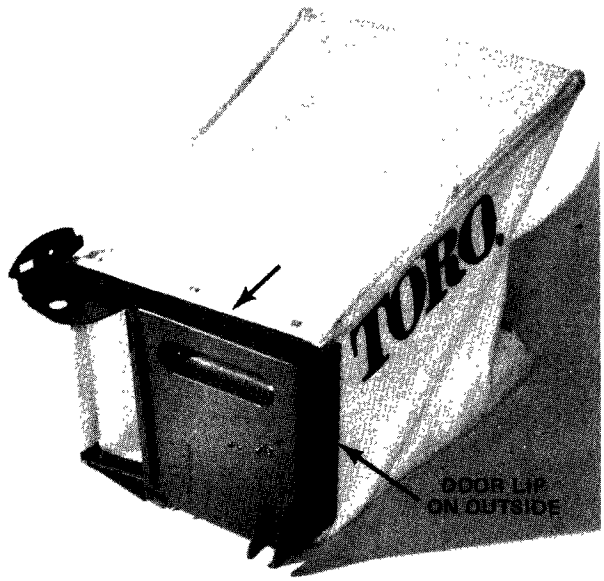
2. Open door of bag. Slide upper frame into bag and secure upper frame against inside of front frame with three cap screws and lock nuts (Fig. 4).



Installing Bag Frame
Figure 4

SET-UP INSTRUCTIONS

Note: When installing the cap screws and lock nuts, tighten the nuts, not the cap screws. Tightening the cap screws will twist the bag and possibly cause it to tear.

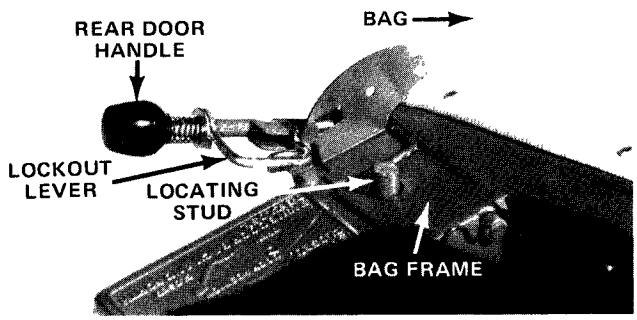


Door Closed, Fitting Outside of Frame
Figure 5

3. Close door of bag. Top and side of door must fit outside the frame (Fig. 5).

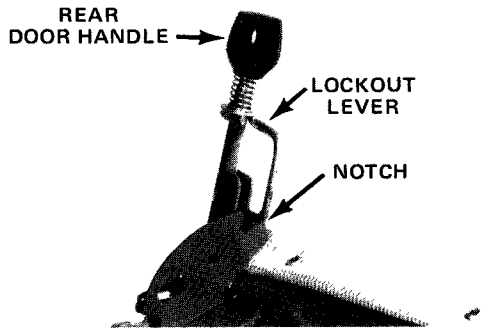
4. Assure rear door handle is fully forward and locked in place (Fig. 6).

5. Slide guide hole in upper bag frame onto locating stud on mower housing (Fig. 6); then set rear of bag frame onto lower handle.



Rear Door Handle Locked Forward
Figure 6

6. Squeeze lockout lever until it disengages the bag catch (Fig. 6). Then move handle backward until lockout lever locks in notch at rear of latch (Fig. 7). The rear door in mower housing is open now.



Rear Door Handle Locked in Rear Notch
Figure 7

BEFORE OPERATING

FILL CRANKCASE WITH OIL

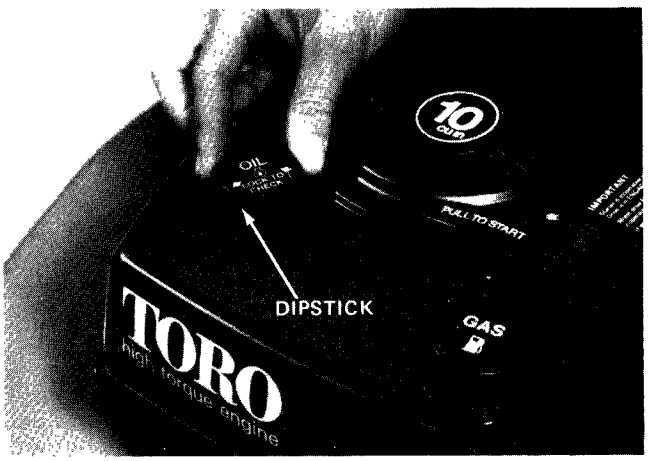
Tools Required: Funnel and Clean Rag

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 will 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 filler hole when dipstick is removed.

3. Remove dipstick by rotating cap counterclockwise 1/4 turn (Fig. 8).



Dipstick Being Rotated ¼ Turn
Figure 8

4. Slowly pour approximately 21 ounces 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 10W-30 or 10W-40.

5. Wipe end of dipstick and insert it into filler neck. Rotate cap clockwise 1/4 turn. Then remove the dipstick and check level of oil by reading the dipstick (Fig. 9). 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.



Reading Oil Level on Dipstick
Figure 9

6. Insert dipstick into filler neck and rotate cap clockwise 1/4 turn.

Note: Check level of oil after every 5 operating hours or each time the mower is used. Initially, change oil after the first two 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.

FILL FUEL TANK WITH GASOLINE

Tools Required: Funnel and Clean Rag

1. Clean area around fuel tank cap and remove cap from tank (Fig. 10).

2. Fill fuel tank to within 1/2 inch from top of the tank with unleaded gasoline. Install fuel tank cap securely.

Note: If unleaded gasoline is not available, leaded-regular gasoline can be used.

3. Wipe up spilled gasoline.

IMPORTANT: The use of unleaded gasoline is recommended. Do not mix any oil with the gasoline, and never use premium gasoline, gasoline additives or white gas because engine damage will likely result.



Fuel Tank Cap Removed
Figure 10

CAUTION

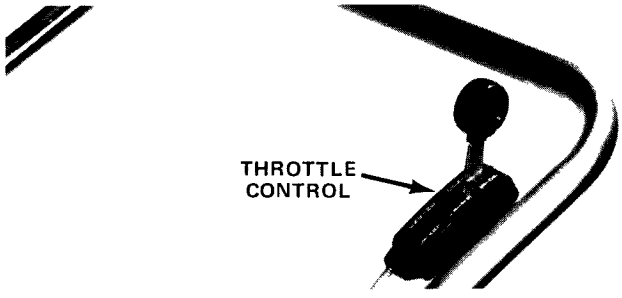
Gasoline is a highly flammable fuel for internal combustion engines, and it is not recommended for any other use. Always handle it carefully. Since many children like the smell of gasoline, keep it out of their reach because the fumes are explosive and dangerous to inhale.

To assure volatility, buy only a 30 day supply of gasoline, and store the gasoline in a cool, well-ventilated place; never in the house or basement. Always use a clean, approved gasoline container, and keep the cap tight to prevent the escape of fumes from the container.

Fill fuel tank outside, use a funnel or spout to prevent spilling, and wipe up any gasoline that does happen to spill. Fill fuel tank only while engine is cool and not running. Fill the tank to about 1/2 inch from the top so there is room for expansion of the gasoline. While filling the fuel tank, stay away from open flame and electrical spark, and do not smoke.

CONTROLS

Throttle Control (Fig. 11) – The throttle control is used to stop the engine. The speed of the blade is also controlled by the movement of the throttle. Moving throttle forward increases engine speed and moving it backward decreases engine speed. When control is in start position, engine will run at maximum rpm.



Throttle Control
Figure 11

Recoil Starter (Fig. 12) – Pull fingertip starter to start the engine.



Recoil Starter
Figure 12

Height-of-Cut Adjusters (Fig. 13) – Height-of-cut is adjustable to one of five approximate settings: 1 inch, 1-1/2 inches, 2 inches, 2-1/2 inches, or 3 inches. In addition, front wheels have a 5/8 inch setting that can be used with the 1 inch 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.



Height-of-Cut Adjuster
Figure 13

OPERATING INSTRUCTIONS

ADJUST HEIGHT-OF-CUT

The height-of-cut is adjustable from approximately 1 to 3 inches, in 1/2 inch increments, and letters cast into the housing represent each graduated increment.

a = 1 Inch
b = 1-1/2 Inches
c = 2 Inches
d = 2-1/2 Inches
e = 3 Inches

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. 13).

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.

OPERATING INSTRUCTIONS

OPERATING CHARACTERISTICS AND TIPS

The GRASSMASTER has a 10 cubic inch, high torque engine that runs at low rpm, yet delivers the blade turning force necessary to produce a good quality-of-cut. The reduced engine speed should result in less engine wear, less noise when compared with other rotary mowers, and better gasoline economy.

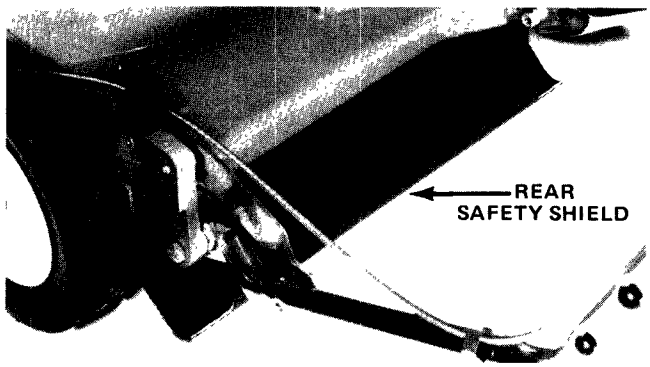
The mower can be used to bag or mulch the grass: refer to bagging, page 10 and mulching, page 12. Bagging can be accomplished by opening the rear door in the mower housing and mulching by closing the door.

To use the mower for bagging grass, install the bag, open the rear 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 2-1/4 bushel bag, the air currents through the bag decrease gradually as it is being filled. While the bag is expanded, grass can be cut. But stop the engine and empty the bag when it is no longer expanded.

Since the mower is equipped with a rear safety shield (Fig. 14), feet are protected 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.

After the mower is used, it must be cleaned and maintained so it is ready for the next cutting. Use the wash-out port to clean the underside of the mower housing. However, avoid getting water directly onto the engine or electrical connections because damage could result. Periodically, check the air cleaner and blade, and assure the blade bolt is tightened to 50 ft-lb. 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.

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.



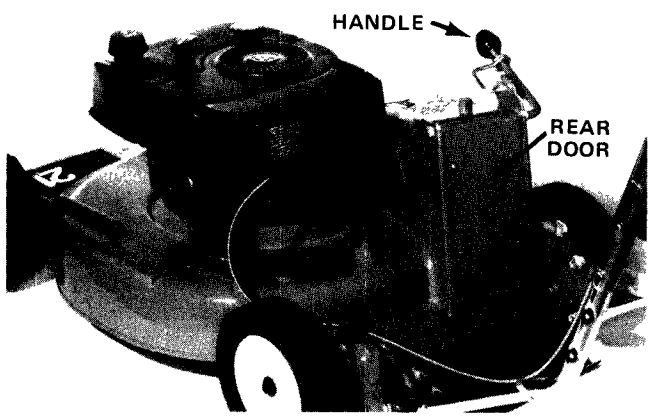
Rear Safety Shield Mounted for Safety
Figure 14

BAGGING

The GRASSMASTER discharges grass clippings into a large, 2-1/4 bushel 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 contain and catch 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 warning or a similar one.



Handle Forward and Door Closed
Figure 15

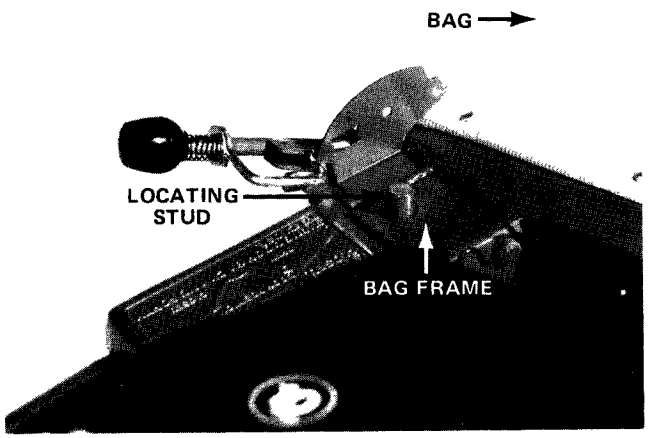
OPERATING INSTRUCTIONS

To bag the grass with the mower:

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

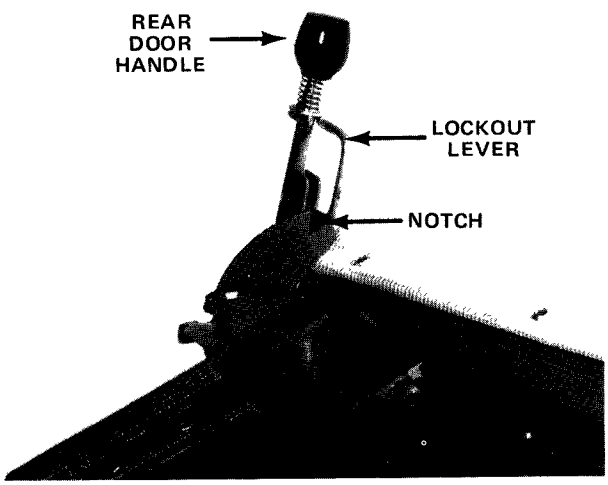
2. Assure rear door handle is fully forward and lockout lever is released into safety catch (Fig. 15). The rear door of mower housing is closed now.

3. Close the grass bag door. Slide guide hole in upper bag frame onto locating stud on mower housing (Fig. 16); then set rear of bag frame onto lower handle (Fig. 18).



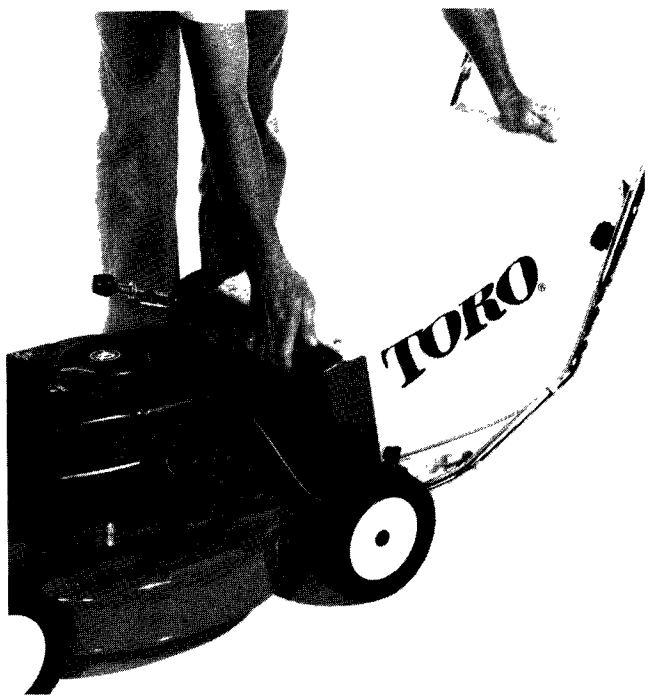
Grass Bag Mounted on Housing
Figure 16

4. Squeeze lockout lever until it disengages the bag catch. Then move handle backward until it locks in notch at rear of bag latch (Fig. 17). The rear door in mower housing is now open, and mower is ready to bag grass.



Handle Locked in Rear Notch – Door Open
Figure 17

5. ⚠ When bag must be emptied, stop the engine and wait for all parts to stop moving. Move rear door handle forward until it locks in the safety catch. Then lift bag straight up so clippings stay in the bag rather than falling out the opening (Fig. 18).



Removing Grass Bag
Figure 18

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

⚠ CAUTION

Never open the rear door when grass bag is removed from the mower and engine is running. Grass clippings and other debris will be discharged with enough force to cause personal injury.

6. To dump grass out of bag, open door at front of bag. While shaking the bag, gradually tip it forward so grass sifts out (Fig. 19). Do not try to dump all the grass at once.

7. Reinstall bag by repeating steps 3 and 4.

OPERATING INSTRUCTIONS



Dumping Grass Out of Bag
Figure 19

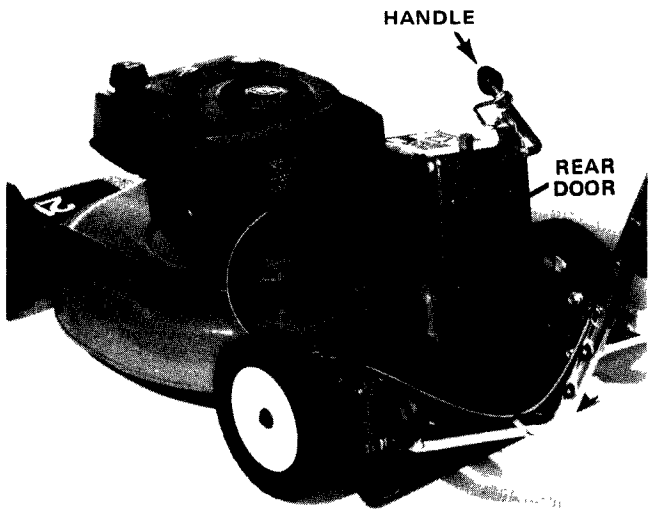
MULCHING

The GRASSMASTER can be used for mulching dry grass. However, mulching is effective when only about 1/4 of the grass blade is cut. During the mulching 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 mulch the grass with the mower:

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

2. Squeeze lockout lever, move rear door handle fully forward, and release lever into safety catch (Fig. 20). The rear door of mower housing is closed now, and mower is ready for mulching.



Handle Forward and Door Closed
Figure 20

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

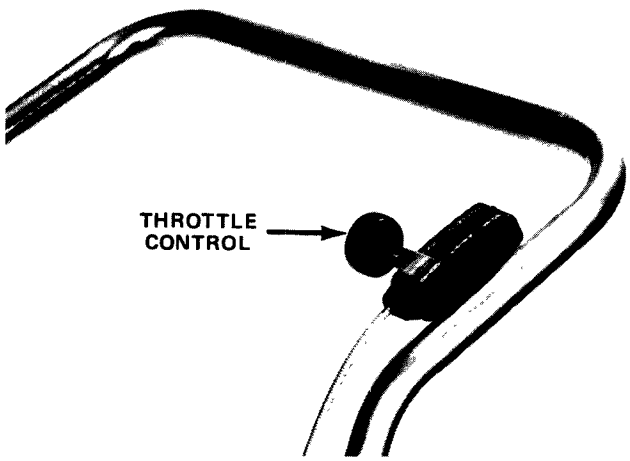
⚠ CAUTION

Never open rear door when mulching because grass clippings or other debris will be discharged with enough force to cause personal injury.

STARTING/STOPPING THE ENGINE

1. Assure high tension wire is pushed onto spark plug.

2. Move throttle control forward to start position (Fig. 21).



Throttle Control Lever in Start Position
Figure 21

OPERATING INSTRUCTIONS

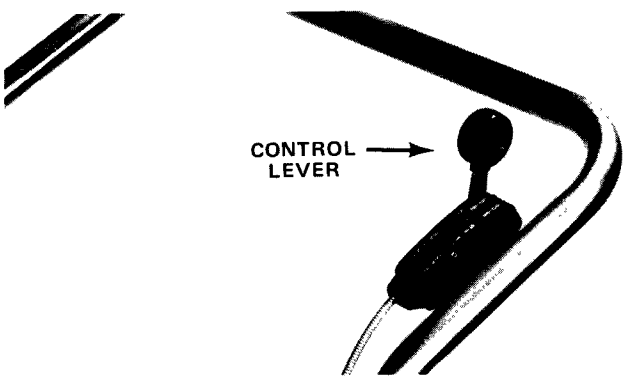
3. Place foot on step at left side of mower housing and keep other foot from beneath the housing. Pull fingertip starter up until positive engagement results (Fig. 22); then pull vigorously to start the engine.



Pulling Recoil Starter
Figure 22

IMPORTANT: Since the carburetor has a prime-well that supplies an extra-rich charge of gasoline for starting the engine, wait about 10 seconds after pulling the starter handle two or three times. If 10 seconds does not elapse between attempted starts, the prime well will not refill and the engine may not start. Also, 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.

4. Move throttle control backward to the STOP position (Fig. 23). ⚠ Stay behind the handle until all parts stop moving.



Throttle Control Lever in Stop Position
Figure 23

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

USING WASH-OUT PORT

After mower is used, underside of mower housing must be cleaned to prevent grass clippings from adhering to the housing. To clean underside of mower housing, use the wash-out port.

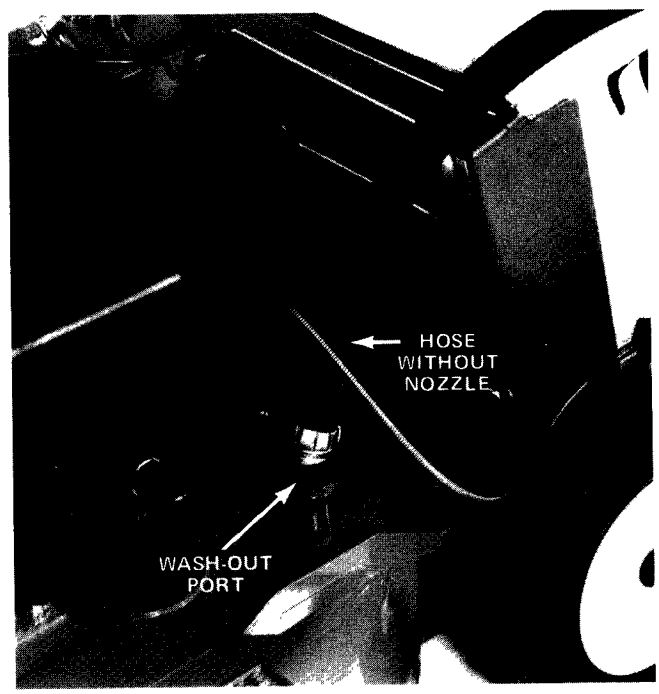
1. ⚠ Stop the engine and wait for all moving parts to stop. Close rear door to prevent discharge of water when wash-out port is used.

2. Set height-of-cut in the "a" position and open the wash-out port.

3. Start the engine. Insert end of hose, without nozzle, into wash-out port opening (Fig. 24). Using moderate water pressure, allow water and engine to run for approximately two minutes. The action created by the rotating blade and water flushes accumulations of grass clippings from underside of mower housing. When grass is no longer discharged and color of discharged water is clear again, stop the engine. Pull high tension wire off spark plug after all parts stop moving.

Note: Dry bulky accumulations of grass clippings must be cleaned with a scraper: refer to Cleaning Mower Housing, page 18.

4. Wipe the mower with a clean rag to remove excess water.

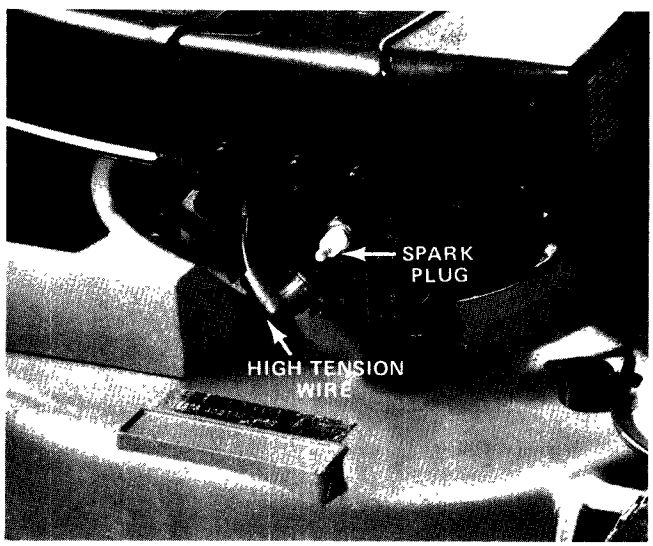


Hose in Wash-Out Port
Figure 24

MAINTENANCE

CAUTION

To reduce potential accidents, never perform an adjustment or maintenance procedure while the engine is running. Pull high tension wire (Fig. 25) off spark plug to prevent an accidental start.

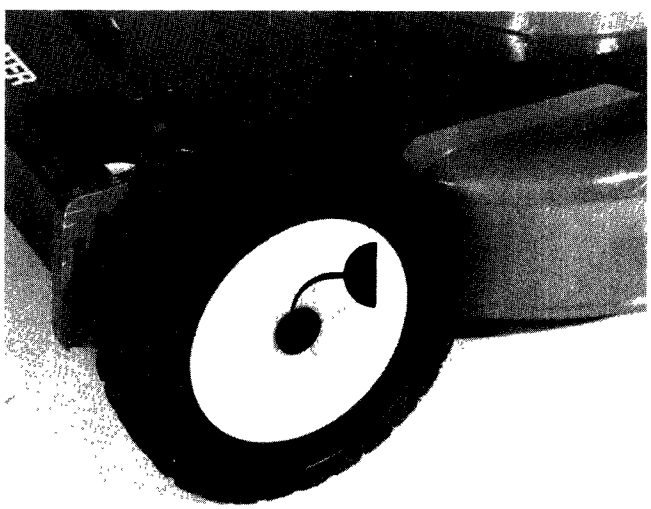


High Tension Wire Removed
Figure 25

LUBRICATION

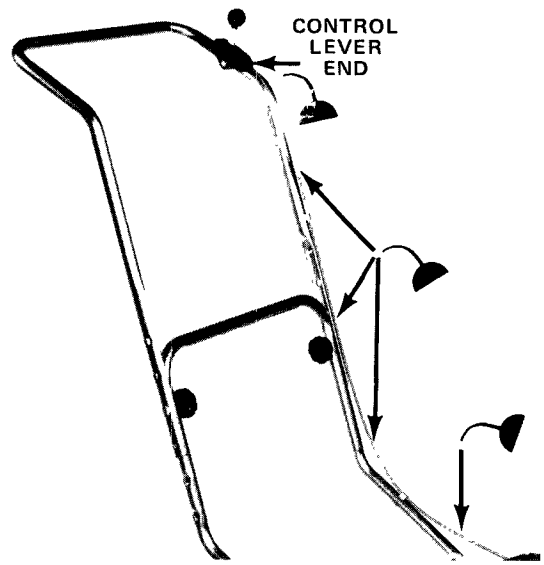
Tools Required: Clean Rag and Light Machine Oil

1. After every 25 hours of operation or at the end of the mowing season, apply 2 or 3 drops of light oil on the inside of all the wheel bolts (Fig. 26). Spin the wheel to distribute oil into the wheel bushings. Wipe up any excess oil.



Lubricating Wheels
Figure 26

2. The throttle cable must be lubricated after every 25 hours of operation or at the end of the mowing season, whichever comes first. Apply light oil onto the cable (Fig. 27), especially where it bends. Also, squirt oil onto the cable where it enters throttle control housing. Operate the control to distribute the oil. Wipe up excess oil.



Lubricating Control and Cable
Figure 27

SERVICING AIR CLEANER

Tools Required: Solution of Liquid Soap Detergent and Water, Clean Rag and Engine Oil

The air cleaner 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. Place fingers under left side of cover and lift it up (Fig. 28). Clean inside and outside of cover if it is dirty.



Removing Air Cleaner Cover
Figure 28

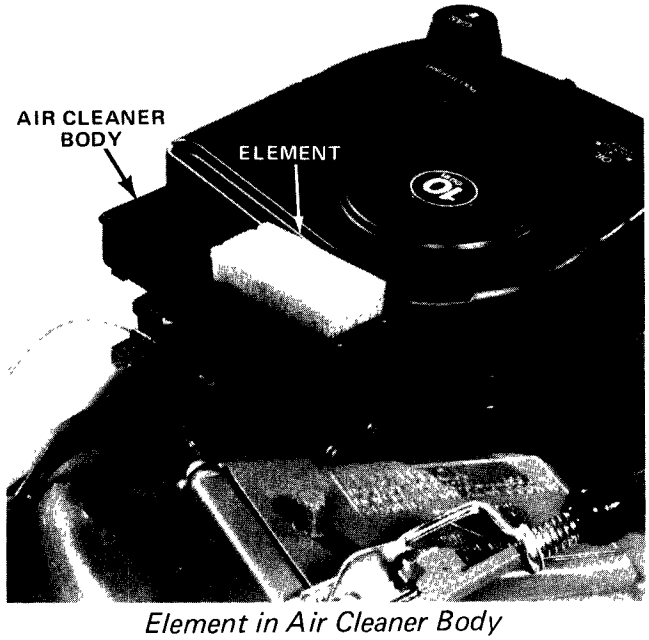
3. Look at top of air cleaner element (Fig. 29). If it is dirty, the element must be removed from air cleaner body (Fig. 29) and cleaned.

   A. WASH element in a solution of liquid soap detergent and 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 the element with 5 teaspoons of 10W-40 oil and squeeze it to distribute the oil thoroughly.

   D. Place element into the air cleaner body (Fig. 29).



Element in Air Cleaner Body
Figure 29

4. Install cover on air cleaner body. Assure cover snaps in place and is seated securely on air cleaner body.

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

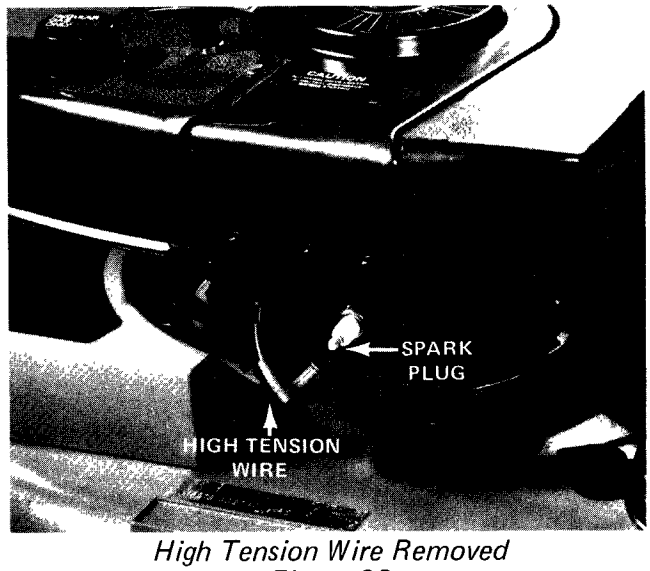
REPLACING SPARK PLUG

Tools Required: 3/4-Inch Spark Plug Socket, Spark Plug Gapping Tool and Clean Rag

Recommended spark plug to use is a Champion CJ-8 or equivalent, and correct air gap is 0.030 of an inch. 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.

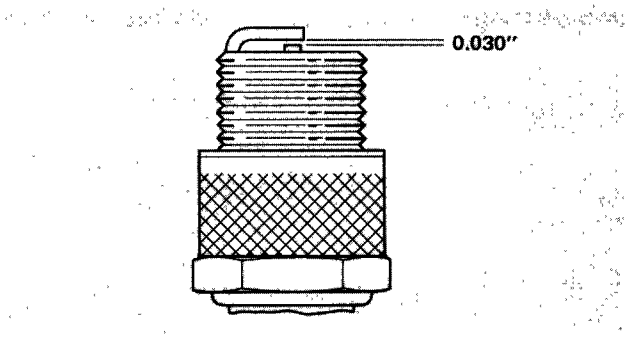
2. Clean area around spark plug so foreign matter does not fall into cylinder when plug is removed. Remove plug from cylinder head (Fig. 30).



High Tension Wire Removed
Figure 30

IMPORTANT: A cracked, fouled or dirty spark plug must be replaced. Do not sand blast, scrape or clean electrodes, using a wire brush, 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 (Fig. 31). Install the correctly gapped spark plug with gasket seal and tighten plug to 15 ft-lb. If torque wrench is not used, tighten plug firmly.



Air Gap Between Electrodes
Figure 31

DRAINING GASOLINE

Tools Required: Pliers, Shallow Drain Pan and Clean Rag

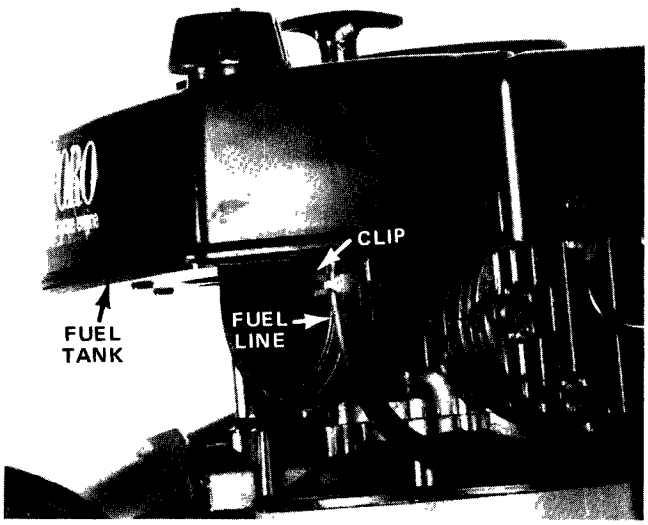
1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug.

2. Place a clean, shallow drain pan below the fuel tank (Fig. 32).

3. Squeeze ends of clip holding fuel line on fuel tank fitting (Fig. 32). Slide clip down fuel line.

4. Carefully pull fuel line off fitting to allow gasoline to flow into drain pan.

5. After gasoline is drained, install fuel line on fuel tank fitting and secure it in place with the clip.



Removing Fuel Line from Fuel Tank
Figure 32

CHANGING CRANKCASE OIL

Tools Required: Clean Rag, Shallow Oil Drain Pan and Small Funnel

Change oil after the first 2 hours of engine operation and after every 25 hours thereafter. Since warm oil drains better and carries more contaminants than cold oil, run the engine for a minute or so before changing oil.

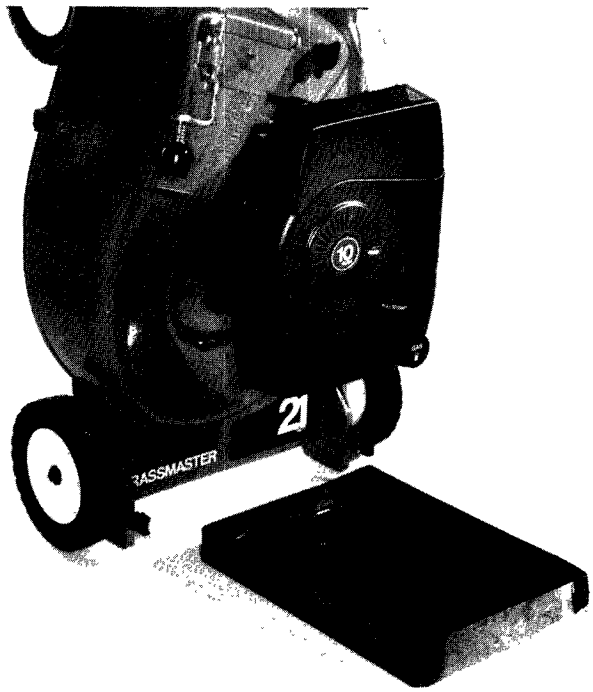
1. ⚠ Assure engine is not running and high tension wire is pulled off spark plug. Also remove grass bag.

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 forward so all oil drains out filler neck and into drain pan (Fig. 33).

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, page 7.



Draining Oil out Filler Neck
Figure 33

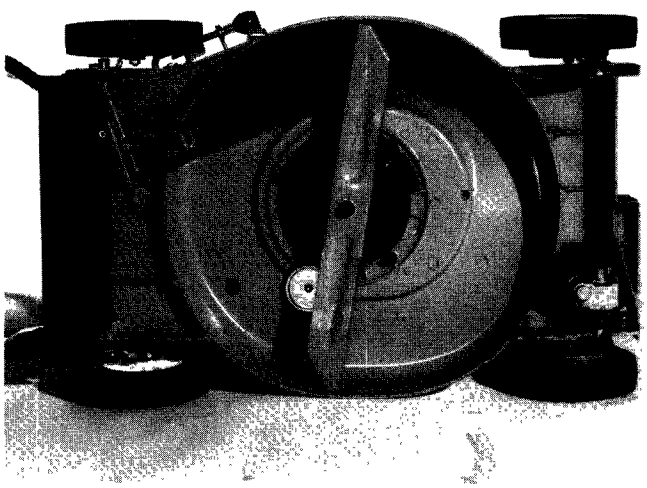
INSPECTING CUTTER BLADE FOR DAMAGE

Tools Required: None

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

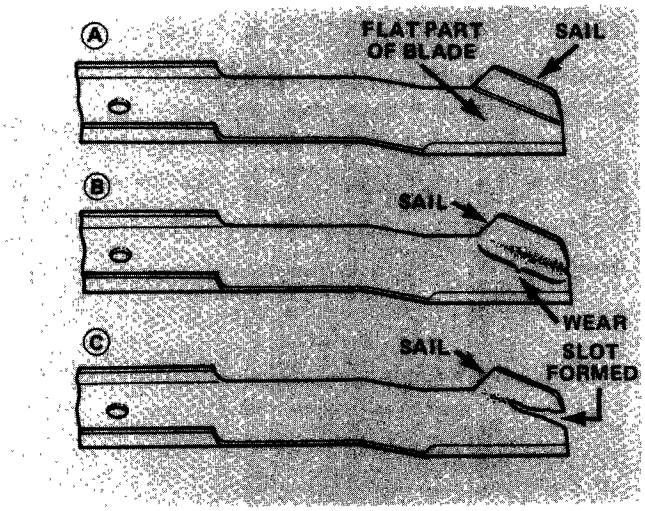
2. ⚠ Drain gasoline from fuel tank: refer to Draining Gasoline, page 15.

3. Tip mower on its left side (Fig. 34), which is its spark plug side, and allow it to remain tipped for a short time. Avoid rotating the blade when mower is tipped because starting problems may result.



Mower on Left Side
Figure 34

4. Examine cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 35A). 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. 35B), replace the blade: refer to Sharpening or Replacing Cutter Blade, page 17.



Examining Blade for Wear
Figure 35

CAUTION

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade. (Fig. 35C). 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.

5. Set mower upright.

SHARPENING OR REPLACING CUTTER BLADE

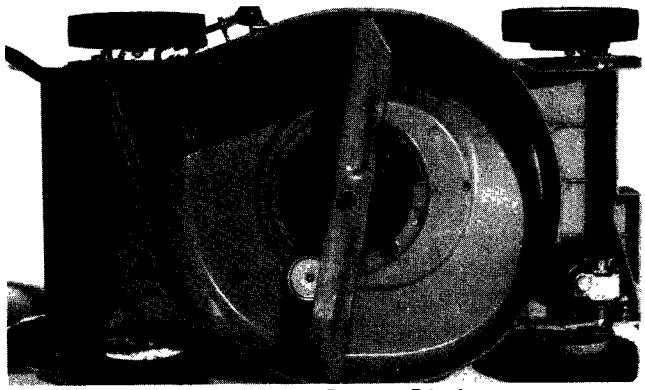
Tools Required: Clean Rag, 5/8-Inch Socket or Wrench, and a File

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, page 15.

3. Tip mower on its left side, which is its spark plug side, and allow it to remain tipped for a short time. 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. Remove cap screw, lock washer and blade (Fig. 36).

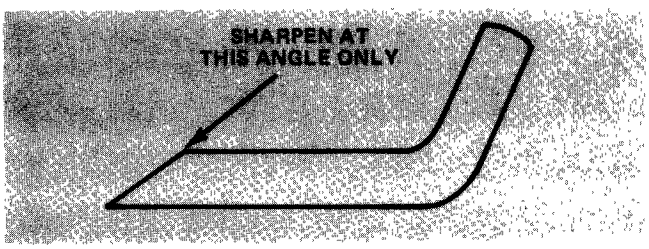


Removing Cutter Blade
Figure 36

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. 37).

IMPORTANT: Sharpen top side of blade and maintain original cutting angle to assure a sharp cutting edge (Fig. 37). The blade will remain balanced if same amount of material is removed from both cutting edges.



Sharpening Cutter Blade
Figure 37

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 some metal off heavy "end" of the blade, not off the cutting edge. Then check the blade balance again.

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

7. Install sharp, balanced blade with lock washer and cap screw. Sail part of the blade must point toward the mower housing to assure correct installation. Tighten cap screw to 50 ft-lb.

8. Set mower upright.

MAINTENANCE

CLEANING MOWER HOUSING

Tools Required: Wooden Scraper

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

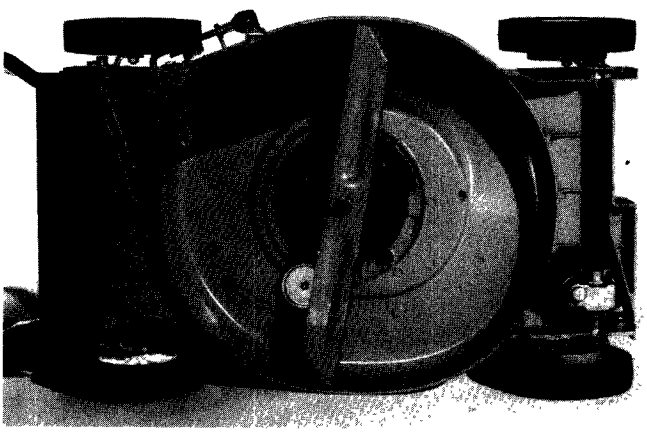
1. ⚠ Assure engine is not running and high tension wire is pulled off the spark plug.

2. ⚠ Drain gasoline from fuel tank: refer to Draining Gasoline, page 15.

3. Tip mower on its left side (Fig. 38) which is the spark plug side, and allow it to remain tipped for only a short time. 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.

5. Set mower upright.



Mower on Left Side
Figure 38

ADJUSTING THROTTLE CONTROL

Tools Required: Screwdriver

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.

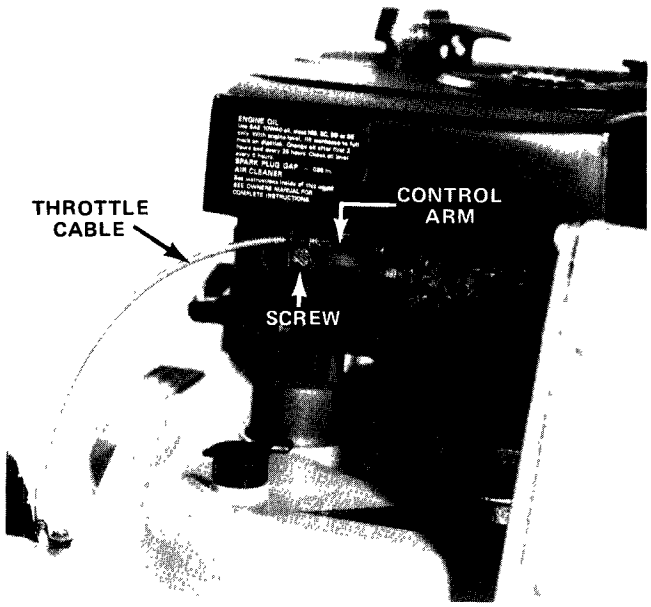
2. Close door in mower housing and remove bag.

3. Move throttle control lever to the STOP position.

4. Loosen cable clamp screw until throttle cable is free to slide (Fig. 39).

5. Move carburetor control arm to the left until it contacts grounding bracket (Fig. 39). Pull throttle cable slightly to remove any slack and tighten the cable clamp screw to lock the adjustment in place.

6. Install the grass bag.



Adjusting Throttle Control
Figure 39

PREPARING MOWER FOR STORAGE

1. Drain gasoline from fuel tank and fuel line: refer to Draining Gasoline, page 15. Next, start engine and let it run at idle speed until it stops because all gasoline is used.

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.

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. If torque wrench is not used, tighten plug firmly. DO NOT INSTALL HIGH TENSION WIRE ON SPARK PLUG.

3. Tip mower on its left side, remove drain plug from bottom of engine and allow oil to flow into drain pan. After all oil is drained, install drain plug but do not fill crankcase with oil at this time.

MAINTENANCE

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, page 18.

6. Check condition of blade and blade cap screw: refer to Inspecting Cutter Blade For Damage, page 16.

7. Check and tighten all cap screws, bolts, screws, nuts and mating parts. If any part is damaged, repair or replace it.

8. Lubricate wheel bushings and throttle cable with oil: refer to Lubrication, page 14.

9. Wash the air cleaner element in a liquid soap detergent and water: refer to Servicing Air Cleaner, page 14.

10. Fill crankcase with oil: refer to Fill Crankcase With Oil, page 7.

11. "Touch up" all rusted or 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.

12. Store the mower in a clean, dry place. For convenience, upper handle can be folded for more compact storage. Cover the mower to protect it and keep it clean.

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 to Fill Fuel Tank With Gasoline, page 8.
	3. Air cleaner element is dirty.	3. Clean air cleaner element: refer to Servicing Air Cleaner, page 14.
	4. Spark plug loose.	4. Tighten spark plug to 15 ft-lb.
	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.
	7. Spark plug is defective.	7. Install new, correctly gapped plug: refer to Replacing Spark Plug, page 15.
	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 bolt is loose.	9. Tighten blade bolt to 50 ft-lb.
	10. Faulty points or condenser.	10. Contact TORO Service Dealer.

TROUBLE SHOOTING

Problem	Possible Causes	Corrective Action
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, page 8.
	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, page 14.
	4. Blade bolt is loose.	4. Tighten blade bolt to 50 ft-lb.
Engine operates erratically.	1. Spark plug is defective.	1. Install new, correctly gapped, plug: refer to Replacing Spark Plug, page 15.
	2. Spark plug gapped incorrectly.	2. Set gap between electrodes at 0.030 of an inch.
	3. Air cleaner is dirty.	3. Clean the air cleaner element: refer to Servicing Air Cleaner, page 14.
Engine idles poorly.	1. Air cleaner is dirty.	1. Clean the air cleaner element: refer to Servicing Air Cleaner, page 14.
	2. Oil level in crankcase is low.	2. Add oil to crankcase: refer to Fill Crankcase With Oil, page 7.
	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 skips at high speed.	1. Air gap between electrodes of spark plug is too close.	1. Set air gap at 0.030 of an inch.
Engine overheats.	1. Cooling air flow is restricted.	1. Remove any obstruction from slots in shroud, blower housing, air passages, and cooling fins on engine.
	2. Oil level in crankcase is low.	2. Add oil to crankcase: refer to Fill Crankcase With Oil, page 7.
	3. Incorrect spark plug.	3. Install Champion CJ-8 spark plug that is gapped at 0.030 of an inch.
Mower vibrates abnormally.	1. Blade bolt is loose.	1. Tighten blade bolt to 50 ft-lb.
	2. Cutter blade is unbalanced.	2. Sharpen cutter blade and check the balance: refer to Sharpening or Replacing Cutter Blade, page 17. Replace the blade if it cannot be balanced.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

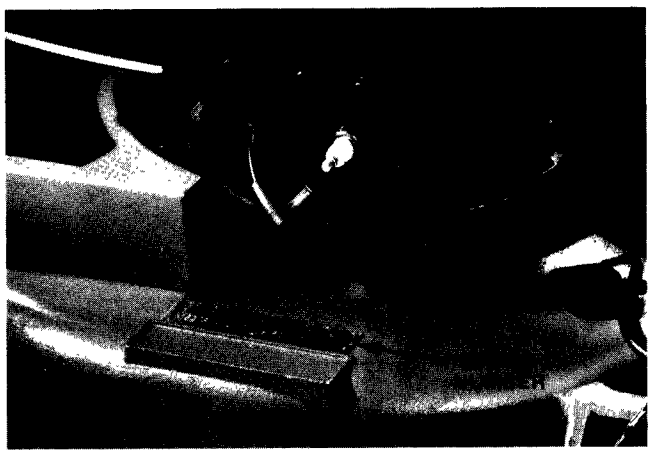
The GRASSMASTER has two identification numbers: a model number and a serial number. The two numbers are stamped into a decal (Fig. 40) located on left side of the mower housing, near the step. In any correspondence concerning the mower, supply model and serial numbers to assure correct information and replacement parts are obtained.

To order replacement parts from an Authorized TORO Service Dealer, supply the following information:

1. Model and serial numbers of the mower.

2. Part number, description and quantity of part(s) desired.

Note: Do not order by reference number if a parts catalog is being used; use the PART NUMBER.



Model and Serial Number Decal
Figure 40

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Sharpen Blade	Winter Storage	Spring Service	Spark Plug

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Sharpen Blade	Winter Storage	Spring Service	Spark Plug

MAINTENANCE RECORD

Date	Hours Used	Oil Change	Air Cleaner Service	Lubrication	Sharpen Blade	Winter Storage	Spring Service	Spark Plug

The Toro Promise

A One Year Limited Warranty

The Toro Company promises to repair any TORO Product if defective in materials or workmanship. The following time periods from the date of purchase apply:

Residential Product . . . . . 1 Year
Residential Products Used Commercially . . . . . 45 Days

The costs of parts and labor are included, but the customer pays the transportation costs. Just return any residential product to an Authorized TORO Service Dealer or TORO Distributor.

Should you feel your TORO is defective and wish to rely on The Toro Promise, the following procedure is recommended

1 Contact any Authorized TORO Service Dealer, TORO Master Service Dealer, or TORO Distributor (the Yellow Pages of your telephone directory is a good reference source).

2 He will either instruct you to return the product to him or recommend another Authorized TORO Service outlet which might be more convenient

3. Bring the product along with your original sales slip, or other evidence of purchase date, to the service dealer.

4. The servicing dealer will inspect the unit, advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

If for any reason you are dissatisfied with the dealer's analysis of the defect or the service performed, you may contact us.

Write

TORO Customer Service Department
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

The above remedy of product defects through repair by an Authorized TORO Service Dealer is the purchaser's sole remedy for any defect.

THERE IS NO OTHER EXPRESS WARRANTY. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY.

Some states do not allow limitation on how long implied warranty lasts, so the above limitation may not apply to you

This Warranty applies only to parts or components which are defective and does not cover repairs necessary due to normal wear, misuse, accidents, or lack of proper maintenance. Regular, routine maintenance of the unit to keep it in proper operating condition is the reponsibility of the owner.

All warranty repairs reimbursable under The Toro Promise must be performed by an Authorized TORO Service Dealer using Toro approved replacement parts

Repairs or attempted repairs by anyone other than an Authorized TORO Service Account are not reimbursable under The Toro Promise. In addition, these unauthorized repair attempts may result in additional malfunctions, the correction of which is not covered by warranty.

The Toro Company is not liable for indirect, incidental or consequential damages in connection with the use of the product including any cost or expense of providing substitute equipment or service during periods of malfunction or non-use.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

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

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