FORM NO. 3318-233 GB

TORO®

MODEL NO. 30384—60001 & OVER

OPERATOR'S MANUAL

GUARDIAN® 84" RECYCLER®

FOR GROUNDSMASTER© 3000 SERIES TRACTION UNITS

Table of Contents

Specifications

Type: 84" (213 cm) width of cut, 5 blades, 3-blade center section, and 2 one-blade wings. Toro Recycler technology.

Mowing Rate: Mows up to 4.4 acres/hr at 8.8 kmh.

Trimming Ability: Deck is centered on tractor with 12.7 cm of over hang on each side. Uncut circle is 61 cm on both left and right with no brakes.

Height Of Cut: 2.5–12.7 cm adjustable in 1.7 cm increments. Front adjustment is with snapper pin and grooves in castor shaft. Rear adjustment is with hanger brackets and pin.

Construction: 12-gauge steel, 10.8 cm deep, welded construction and reinforced with 10-gauge steel channels. Bolt-in 12-gauge steel recycling chambers.

Cutter Drive: Isolation mount PTO driven gearbox with 1:1.35 spiral bevel gears. One "BB" section belt on center section. One "B" section belt on each wing. Fixed idler on main deck with spring adjustment. Self-tensioning idler pulleys on each wing.

3.2 cm diameter spindle shafts, turn on two greaseable tapered roller bearings (greaseable from top of deck). A positive splined connection attaches pulleys to spindle shafts for high-torque capacity.

Blades: Five 48-cm long, 6.3-mm thick, heat-treated steel.

Suspension & Castor Wheels: Two front castors, consisting of 25.4 cm pneumatic wheel and tire assembly with sealed ball bearings. Rear of deck is suspended from lift arms with adjustable deck rake. Hydraulic counter balance and lift system designed integral with deck for maximum flotation.

Deck Covers: High-impact plastic covers.

Quick Attach System: Tapered joint with over center adjustable tensioning latch.

Weight: 233 kg.

Specifications and design subject to change without notice.

Training

1. Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.

2. Never allow children or people unfamiliar with these instructions to use the lawnmower. Local regulations may restrict the age of the operator.

3. Never mow while people, especially children, or pets are nearby.

4. Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

5. Do not carry passengers.

6. All drivers should seek and obtain professional and practical instruction. Such instruction should emphasize:

- the need for care and concentration when working with rideon machines;
- control of a ride on machine sliding on a slope will not be regained by the application of the brake. The main reasons for loss of control are:
  - insufficient wheel grip;
  - being driven too fast;
  - inadequate braking;
  - the type of machine is unsuitable for its task;
  - lack of awareness of the effects of ground conditions, especially slopes;

Preparation

1. While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

2. Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine.

3. **WARNING—Petrol is highly flammable.**

- Store fuel in containers specifically designed for this purpose.
- Refuel outdoors only and do not smoke while refueling.
- Add fuel before starting the engine. Never remove the cap of the fuel tank or add petrol while the engine is running or when the engine is hot.
- If petrol is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until petrol vapors have dissipated.
- Replace all fuel tanks and container caps securely.

4. Replace faulty silencers.

5. Before using, always visually inspect to see that the blades, blade bolts and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.

6. On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

Operation

1. Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

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

3. Before attempting to start the engine, disengage all blade attachment clutches and shift into neutral.

4. Do not use on slopes of more than:

- Never mow side hills over 5°
- Never mow uphill over 10°
- Never mow downhill over 15°

5. Remember there is no such thing as a “safe” slope. Travel on grass9 slopes requires particular care. To guard against overturning:

- do not stop or start suddenly when going up or downhill;
- engage clutch slowly, always keep machine in gear, especially when travailing downhill;
- machine speeds should be kept low on slopes and during tight turns;
- stay alert for bumps and hollows and other hidden hazards;
- never mow across the face of the slope, unless the lawnmower is designed for this purpose.

6. Use care when pulling loads or using heavy equipment.

- Use only approved drawbar hitch points.
- Limit loads to those you can safely control.
- Do not turn sharply. Use care when reversing.
- Use counterweight(s) or wheel weights when suggested in the instruction handbook .

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

8. Stop the blades rotating before crossing surfaces other than grass.

9. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation .

10. Never operate the lawnmower with defective guards, shields or without safety protective devices in place.

11. Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speeds may increase the hazard of personal injury.

12. Before leaving the operator's position:

- disengage the power take-off and lower the attachments;
- change into neutral and set the parking brake;
- stop the engine and remove the key.

13. Disengage drive to attachments, stop the engine, and disconnect the spark plug wire(s)or remove the ignition key

- before cleaning blockages or unclogging chute;
- before checking, cleaning or working on the lawnmower;
- after striking a foreign object. Inspect the lawnmower for damage and make repairs before restarting and operating the equipment;
- if the machine starts to vibrate abnormally (check immediately).

14. Disengage drive to attachments when transporting or not in use.

15. Stop the engine and disengage drive to attachment

- before refueling;
- before removing the grass catcher;
- before making height adjustment unless adjustment can be made from the operator's position.

16. Reduce the throttle setting during engine runout and, if the engine is provided with a shutoff valve, turn the fuel off at the conclusion of mowing.

Maintenance and Storage

1. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.

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

3. Allow the engine to cool before storing in any enclosure.

4. To reduce the fire hazard, keep the engine, silencer, battery compartment and petrol storage area free of grass, leaves, or excessive grease.

5. Check the grass catcher frequently for wear or deterioration.

6. Replace worn or damaged parts for safety.

7. If the fuel tank has to be drained, this should be done outdoors

8. On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

9. When machine is to be parked, stored or left unattended, lower the cutting means unless a

Sound & Vibration Levels

Sound Levels

This unit has an equivalent continuous A-weighted sound pressure at the operator ear of: 88 dB(A), based on measurements of identical machines per 84/538/EEC.

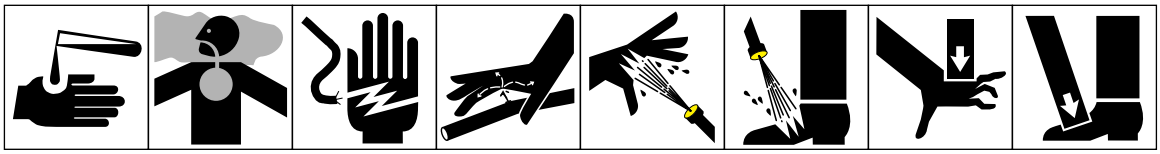
This unit has a sound power level of 104 dB(A)/1pW, based on measurements of identical machines per procedures outlined in Directive 79/113/EEC and amendments.

Vibration Levels

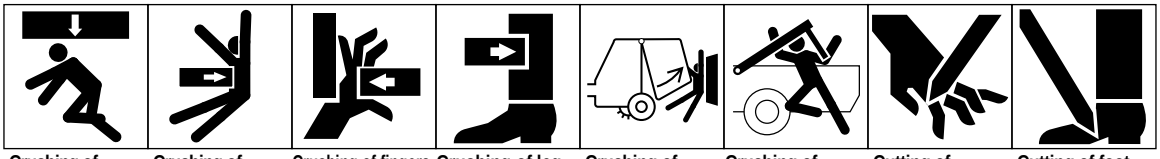
This unit has a vibration level of 2.5 m/s^2 at the posterior, based on measurements of identical machines per ISO 2631 procedures.

This unit does not exceed a vibration level of 0.5 m/s^2 at the posterior based on measurements of identical machines per ISO 2631 procedures.

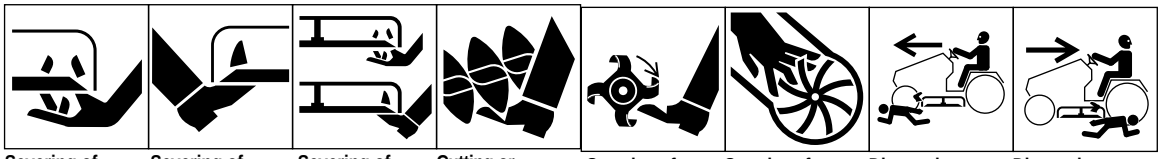
Symbol Glossary



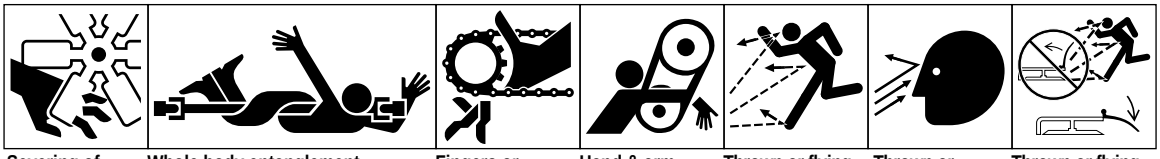
Caustic liquids, chemical burns to fingers or hand | Poisonous fumes or toxic gases, asphyxiation | Electrical shock, electrocution | High pressure fluid, injection into body | High pressure spray, erosion of flesh | High pressure spray, erosion of flesh | Crushing of fingers or hand, force applied from above | Crushing of toes or foot, force applied from above



Crushing of whole body, applied from above | Crushing of torso, force applied from side | Crushing of fingers or hand, force applied from side | Crushing of leg, force applied from side | Crushing of whole body | Crushing of head, torso and arms | Cutting of fingers or hand | Cutting of foot



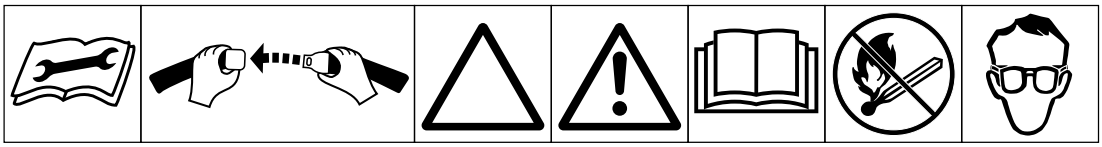
Severing of fingers or hand, mower blade | Severing of toes or foot, mower blade | Severing of toes or fingers, rotary mower blade | Cutting or entanglement of foot, rotating auger | Severing of foot, rotating knives | Severing of fingers or hand, impeller blade | Dismember-ment, front engine mower in forward motion | Dismember-ment, front engine mower in rearward motion



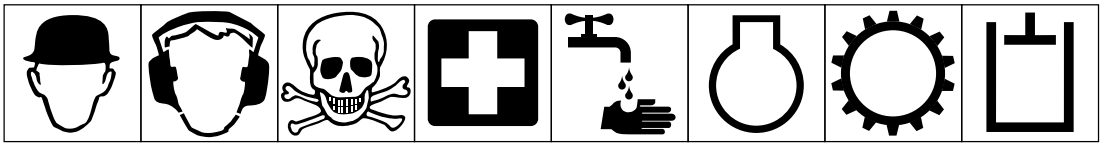
Severing of fingers or hand, engine fan | Whole body entanglement, implement input drive line | Fingers or hand entangle-ment, chain drive | Hand & arm entanglement, belt drive | Thrown or flying objects, whole body exposure | Thrown or flying objects, face exposure | Thrown or flying objects, rotary mover

Runover/back-over, vehicle | Machine tipping, riding mower | Machine rollover, ROPS (rear engine mower) | Stored energy hazard, kickback or upward motion | Hot surfaces, burns to fingers or hands | Explosion | Fire or open flame | Secure lifting cylinder with locking device before getting in hazardous area

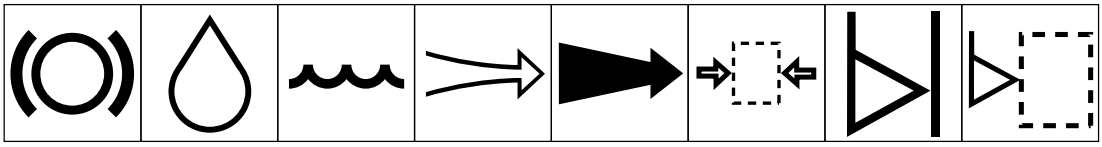
Stay a safe distance from the machine | Stay clear of articulation area while engine is running | Do not open or remove safety shields while engine is running | Do not step on loading platform if PTO is connect-ed to tractor & engine is running | Do not step | Wait until all machine comp-onents have completely stopped before touching them | Shut off engine & remove key before perform-ing maintenance or repair work | Riding on this machine is allowed only on a passen-ger seat & only if the driver's view is not hindered



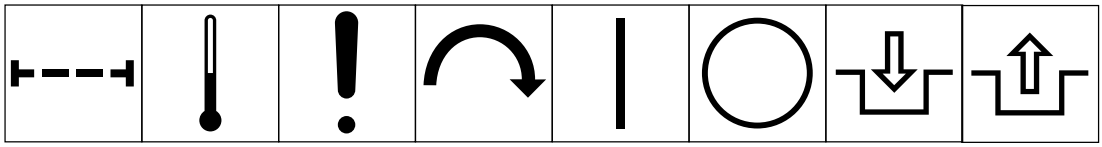
Consult technical manual for proper service procedures | Fasten seat belts | Safety alert triangle | Outline safety alert symbol | Read operator's manual | Fire, open light and smoking prohibited | Eye protection must be worn



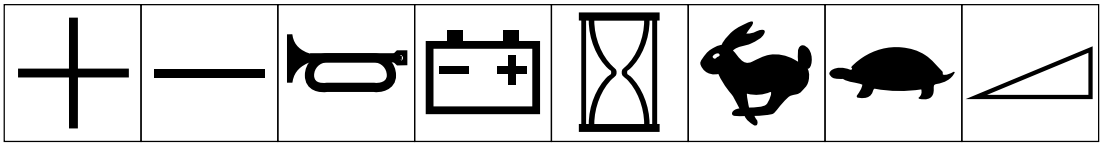
Head protection must be worn | Hearing protection must be worn | Caution, toxic risk | First aid | Flush with water | Engine | Transmission | Hydraulic system



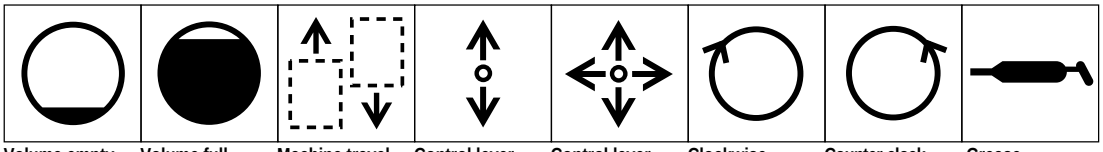
Brake system | Oil | Coolant (water) | Intake air | Exhaust gas | Pressure | Level indicator | Liquid level



Filter | Temperature | Failure/ Malfunction | Start switch/ mechanism | On/start | Off/stop | Engage | Disengage

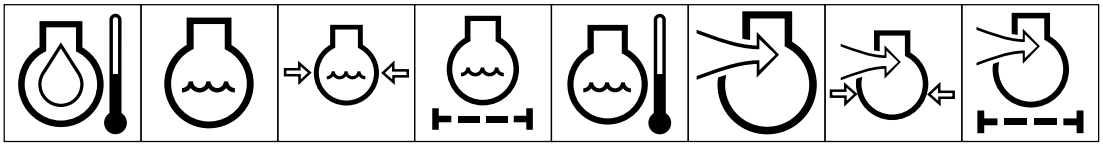


Plus/increase/ positive polarity | Minus/decrease/ negative polarity | Horn | Battery charging condition | Hourmeter/ elapsed operating hours | Fast | Slow | Continuous variable, linear

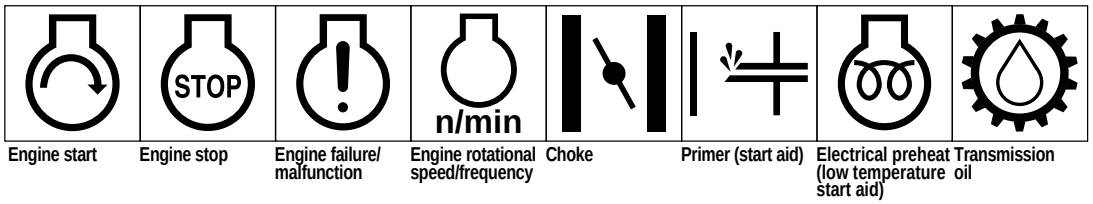


Volume empty | Volume full | Machine travel direction, forward/ rearward | Control lever operating direction, dual direction | Control lever operating direction, multiple direction | Clockwise rotation | Counter-clock-wise rotation | Grease lubrication point

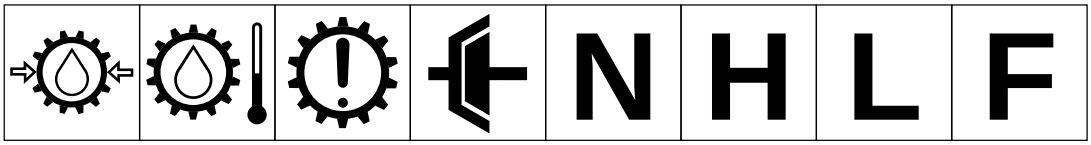
Oil lubrication point | Lift point | Jack or support point | Draining/ emptying | Engine lubricat-ing oil | Engine lubricating oil pressure | Engine lubricating oil level | Engine lubricating oil filter



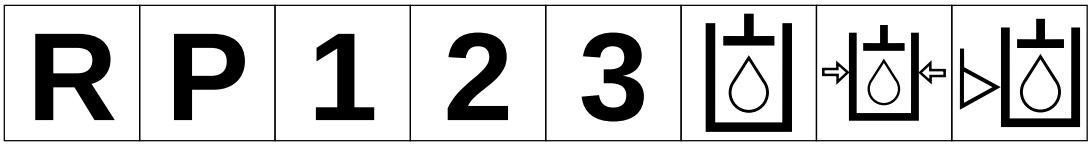
Engine lubricating oil temperature | Engine coolant | Engine coolant pressure | Engine coolant filter | Engine coolant temperature | Engine intake/ combustion air | Engine intake/com-bustion air pressure | Engine intake/air filter



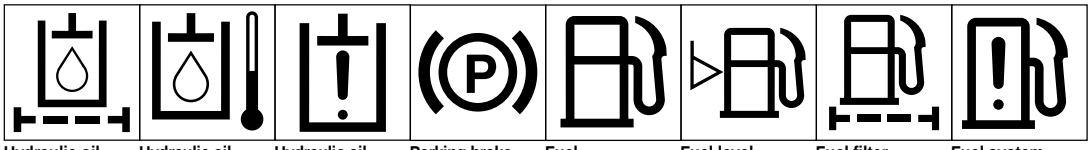
Engine start | Engine stop | Engine failure/ malfunction | Engine rotational speed/frequency | Choke | Primer (start aid) | Electrical preheat (low temperature start aid) | Transmission oil



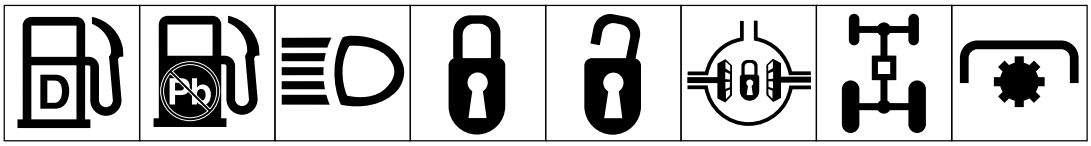
Transmission oil pressure | Transmission oil temperature | Transmission failure/malfunction | Clutch | Neutral | High | Low | Forward



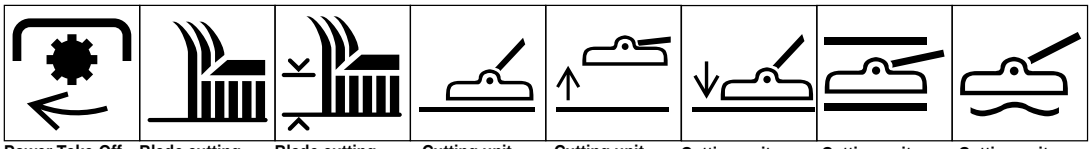
Reverse | Park | First gear | Second gear | Third gear (other #'s may be used until the maximum # of forward gears is reached.) | Hydraulic oil | Hydraulic oil pressure | Hydraulic oil level



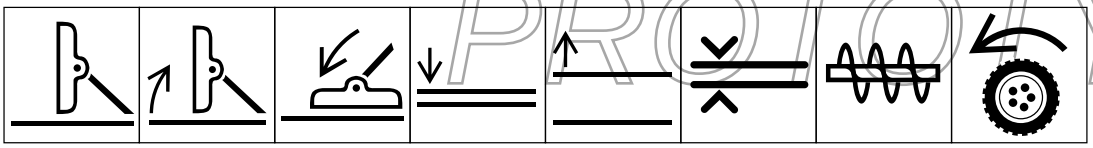
Hydraulic oil filter | Hydraulic oil temperature | Hydraulic oil failure/malfunction | Parking brake | Fuel | Fuel level | Fuel filter | Fuel system failure/malfunction



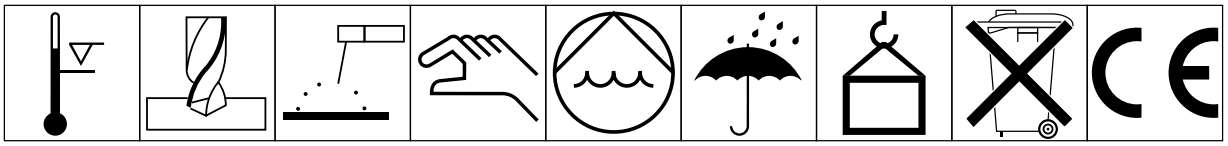
Diesel fuel | Unleaded fuel | Headlights | Lock | Unlock | Differential lock | 4-Wheel drive | Power Take-Off



Power Take-Off, rotational speed | Blade cutting element | Blade cutting element, height adjustment | Cutting unit | Cutting unit, raise | Cutting unit, lower | Cutting unit, hold | Cutting unit, float



Cutting unit, transport position | Cutting unit, raise to transport position | Cutting unit, lower to transport position | Attachment lower | Attachment raise | Spacing distance | Snow thrower, collector auger | Traction



Above working temperature range | Drilling | Manual metal arc welding | Manual | Water pump | Keep dry | Weight | Do not dispose in the garbage | CE logo

Before Operating

CHECK LUBRICANT IN GEAR BOX
(Fig. 1)

The gear box is designed to operate with SAE 80-90 wt. gear lube. Although the gear box is shipped with lubricant from the factory, check the level before operating the cutting unit.

1. Position the machine and cutting unit on a level surface.

2. Remove the check plug from the side of the gear box and make sure the lubricant is up to the bottom of the hole. If the lubricant level is low, remove the fill plug on top of the gear case and add enough lubricant to bring it up to the bottom of the hole in the side.

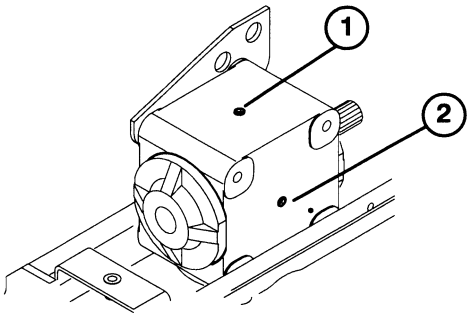


Figure 1

1. Filler Plug
2. Check Plug

ADJUSTING HEIGHT OF CUT (Fig. 2–5)

The height of cut is adjustable from 2.5 to 12.7 cm in 2.5 cm increments.

1 Start the engine and raise the cutting unit. Stop the engine after the cutting unit is raised.

2. Remove front snapper pins from castor arms and slide castor wheel assembly up or down.

3. Insert the snapper pin into the castor arm and through the groove in the castor shaft to get the desired height of cut

4. Remove hair pin cotter and clevis pin securing height-of-cut straps to rear of deck.

5. Mount the height-of-cut straps to desired height-of-cut hole with the clevis pin and hair pin cotter.

6. When using 2.5 cm height of cut, move skids, rollers, and wing wheels to the highest holes.

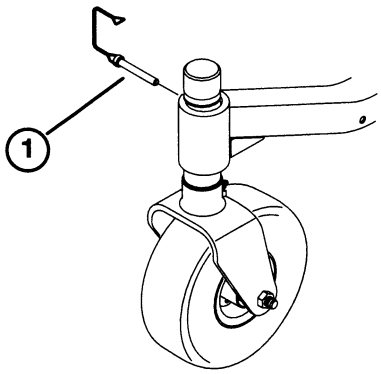


Figure 2

1. Snapper Pin

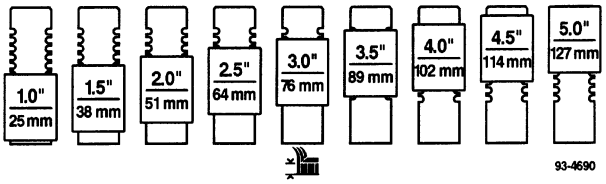


Figure 3

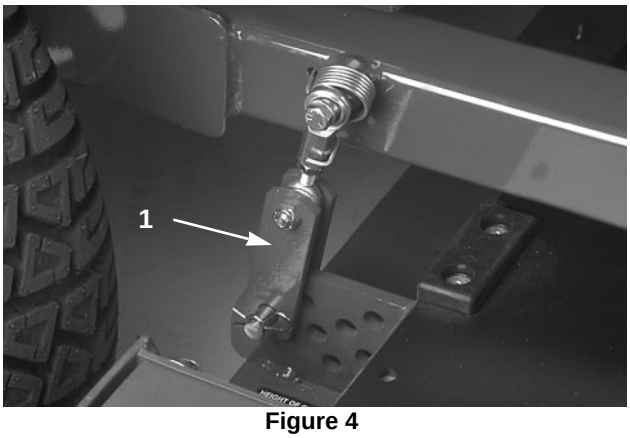


Figure 4

1. Height-of-cut straps

ADJUSTING SKIDS (Fig. 4)

Skids should be located in upper holes for 2.5 and 3.8 cm heights of cut and lower holes for 5 to 12.7 cm heights of cut.

1. Adjust skids by removing flange nuts, positioning as desired and installing the flange nuts.

ADJUSTING ROLLERS (Fig. 6)

Rollers should be located in the upper holes for 2.5 and 3.8 cm heights of cut and lower holes for 5 to 12.7 cm heights of cut. Five rollers are located on the deck, three under the main deck and one on each wing.

1. Adjust the rollers by removing the lock nut and bolt, positioning as desired and then installing the lock nut and bolt.

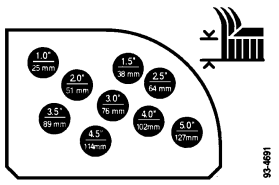


Figure 5

ADJUSTING DECK PITCH (Fig. 7)

Deck pitch is the difference in height of cut from the front of the blade plane to the back of the blade plane. TORO recommends a blade pitch of 6.4 mm ,i.e., the back of the blade plane is .6.4 higher than the front.

1. Position the machine on a level surface on the shop floor.

2. Set the deck to the desired height of cut.

3. Rotate (1) blade so it points straight forward.

4. Using a short ruler, measure from the floor to the front tip of the blade and remember this dimension. Then, measure from the floor to the rear tip of the blade.

5. Subtract the front dimension from rear dimension to calculate the pitch.

6. To adjust pitch, start the tractor and raise the deck to the highest possible position and turn off the engine.

7. Remove the hair pin cotter and clevis pin securing the deck straps to the rear height-of-cut brackets on the deck.

8. Loosen the jam nut on the ball joint.

9. Adjust the ball joint by rotating to the desired length. If there is not enough adjustment, move to the next height-of-cut hole.

10. Tighten the jam nut.

11. Secure the deck straps to the desired hole in the height-of-cut brackets with a clevis pin and a cotter pin.

12. Lower the deck, recheck the pitch and repeat the procedure

Figure 6

1. Skid
2. Roller

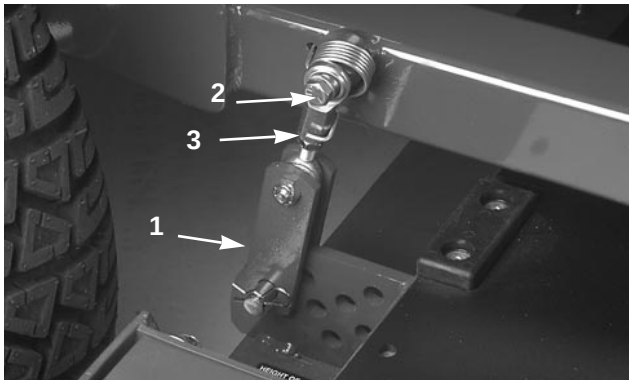


Figure 7

1. Deck Straps
2. Ball Joint
3. Jam Nut

as required.

Operating Instructions

OPERATING TIPS

1. **Mow When Grass Is Dry**—Mow either in the late morning to avoid the dew, which causes grass clumping or in late afternoon to avoid the damage that can be caused by direct sunlight on the sensitive, freshly mowed grass.

2. **Select The Proper Height-of-Cut Setting To Suit Conditions**— Remove one inch or no more than 1/3 of the grass blade when cutting. In exceptionally lush and dense grass you may have to raise your height of cut to the next setting.

3. **Mowing In Extreme Conditions**—Air is required to cut and recut grass clippings in the mower housing, so do not set the height of cut too low or totally surround the housing by uncut grass. Always try to have one side of the mower housing free from uncut grass, allowing air to be drawn into housing. When making an initial cut through the center of uncut area, operate the machine slower and back up if the mower starts to clog.

4. **Mow At Proper Intervals**—Under most normal conditions you'll need to mow every 4–5 days. But remember, grass grows at different rates at different times. This means that to maintain the same height of cut, which is a good practice, you'll need to cut more frequently in early spring; as the grass growth rate slows in mid summer, cut only every 8–10 days. If you are unable to mow for an extended period due to weather conditions or other reasons, mow first with the height of cut at a high level; then mow again 2–3 days later with a lower height setting.

5. **Always Mow With Sharp Blades**—A sharp blade cuts cleanly and without tearing or shredding the grass blades like a dull blade. Tearing and shredding causes the grass to turn brown at the edges which impairs growth and increases susceptibility to diseases.

   CAUTION: This product may exceed noise levels of 85 dB(A) at the operator position. Ear protectors are recommended for prolonged exposure to reduce the potential of permanent hearing damage.

6. **Stopping**—If forward motion has to be stopped while cutting, a clump of grass clippings may be deposited on lawn. Follow this procedure for stopping while cutting:

   A. With the deck engaged, move onto a previously cut area.

   B. Shift to neutral, move the throttle control lever to the SLOW position and turn the ignition key to OFF.

7. **After Operating**—To assure optimum performance, clean the underside of the mower housing, especially around inserts (kickers) after each use. If residue is allowed to build up in the mower housing and on inserts, cutting performance will decrease.

8. **Deck Pitch**—Toro recommends a blade pitch of 6.4 mm. A pitch larger than 6.4 mm will result in less power required, larger clippings and a poorer quality of cut. A pitch less than 6.4 mm will result in more power required, smaller clippings and a better quality of cut.

Maintenance

LUBRICATION

GREASE BEARINGS, BUSHINGS AND GEAR BOX (Fig. 8)

The cutting unit must be lubricated regularly. If the machine is operated under normal conditions, lubricate the castor bearings and bushings with No. 2 general purpose lithium base grease or molybdenum base grease, after every 8 hours of operation or daily, whichever comes first. Lubricate fittings immediately after every washing, regardless of the interval listed.

1. The cutting unit has bearings and bushings that must be lubricated, and these lubrication points are: front castor shaft bushings (2), blade spindle bearings (5), idler arm pivots (2), drive shaft (3), Wing deck pivots (2) and right and left push arm ball joints (Fig. 8).

2. Position the machine and cutting unit on a level surface and lower the cutting unit. Remove the check plug from the side of gear box and make sure lubricant is up to the bottom of the hole. If the level of lubricant is low, remove the fill plug on top of the gear case and add SAE 80-90 wt. gear lube until the level is up to the bottom of hole in side.To prevent accidental starting of the engine while performing maintenance, shut the engine off and remove key from the ignition switch.

Figure 8

1. Filler plug
2. Check/Drain plug

CAUTION

To prevent accidental starting of the engine while performing maintenance, shut of the engine and remove the key from the ignition switch.

DISCONNECTING THE CUTTING UNIT FROM THE TRACTION UNIT (Fig. 9–11)

Note: Implements are heavy and may require two people to handle.

1. Start the tractor and raise the deck to the highest possible position and turn off the engine.

2. Remove the hair pin cotter and clevis pin securing the height-of-cut straps to the rear height-of-cut brackets.

3. Turn the ignition key to the run position and move the lift lever forward to lower the cutting unit.

4. Raise the seat and open the needle valve. This allows the lift arms to float freely.

5. Remove the hair pin cotter and clevis pin securing the latch cover to the lift arm .

6. Loosen the release lever by rotating it counterclockwise.

7. Pivot the release lever upward and remove the shaft latch from the slot in the traction unit lift arm.

8. Pull rearward on the lock collar to release the drive shaft coupler from the tractor.

9. Stay clear of lift arms and move the deck away from the tractor, allowing the lift arms to fall.

10. Secure the hair pin cotter and clevis pin to height-of-cut straps for storage.

11. Close the needle valve

CONNECTING THE CUTTING UNIT TO THE TRACTION UNIT (Fig. 9–11

1. Center the traction unit in front of the cutting unit on any

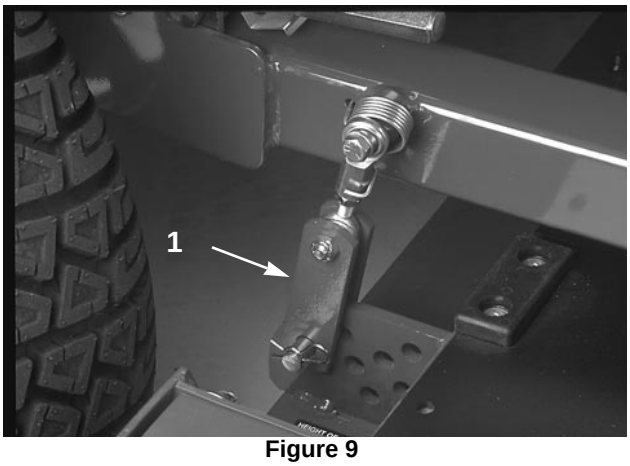


Figure 9

1. Height-of-cut straps

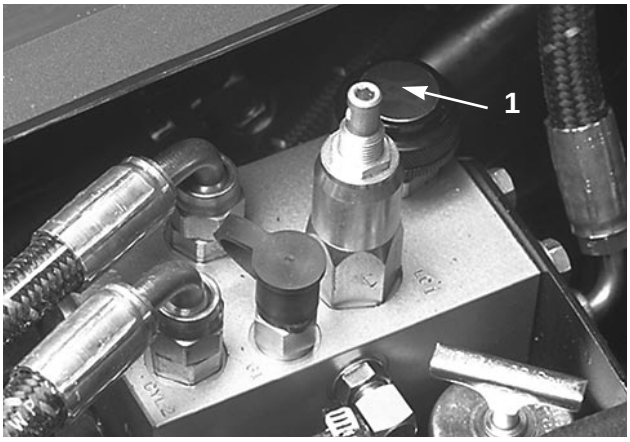


Figure 10

1. Needle Valve

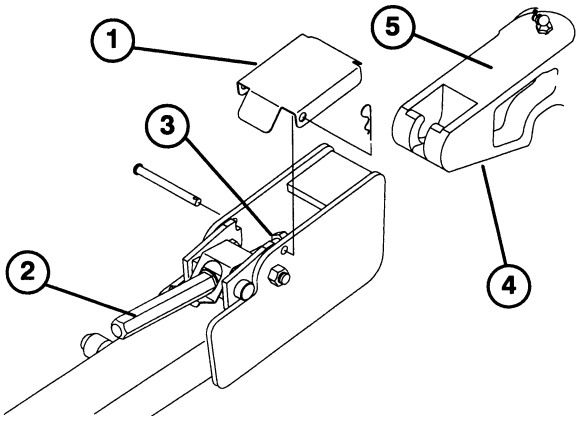


Figure 11

1. Latch Cover
2. Release Lever
3. Shaft latch
4. Traction Unit lift Arm
5. Machined Surface

flat hard surface.

2. Raise the seat and open the needle valve. This allows the lift arms to float freely.

3. Adjust the lift arms heights, making sure that the machined surface on top of each traction unit lift arm is parallel to the ground (Fig. 11). (Raise or lower the lift arm casting by pushing up or down from behind the front tires or by using a wrench in front of the tractor)

4. Check for dirt and debris on mating parts and clean as required.

5. Turn the castor wheels so they point straight forward and the deck moves easily toward the tractor.

6. Secure the first lift arm assembly to the traction unit as follows:

A. Remove the hair pin cotter and clevis pin securing the latch cover to the lift arm.

B. Pivot the release lever upward.

C. Slide the cutting unit lift arm onto the traction unit lift arm, inserting the shaft latch into the slot in the traction unit lift arm.

Note: If the latch does not fall into the slot in the traction unit lift arm, raise or lower the lift arm casting by pushing up or down from behind the front tires.

D. Pivot the release lever downward and tighten securely by rotating clockwise.

7. Install the other lift arm on the tractor by rotating the deck toward tractor, aligning the lift arm to tractor arm and repeating step **5.** If the latch does not fall into the slot in the traction unit lift arm, the arms are not lined up.

A. If the lift arms on the traction unit are not at the correct height for deck arms to slide on, push up or down on the lift arm castings from behind the front tires until deck arms line up and slide on.

B. If lift arms on deck do not line up side to side, rotate the castor wheels side ways so the deck moves easier from side to side. Move the deck side to side until the

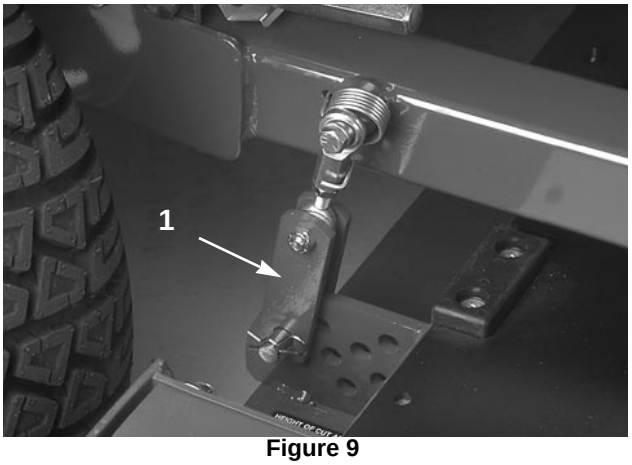


Figure 9

1. Height-of-cut straps

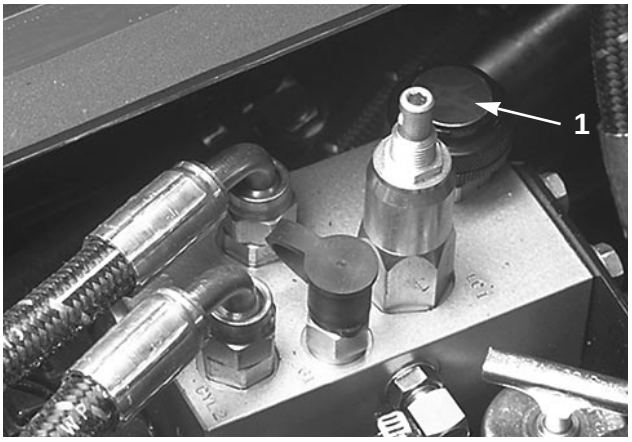


Figure 10

1. Needle Valve

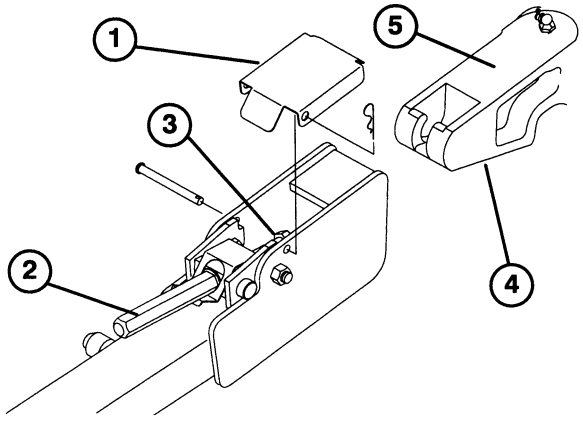


Figure 11

1. Latch Cover
2. Release Lever
3. Shaft latch
4. Traction Unit lift Arm
5. Machined Surface

lift arms line up and slide on.

8. Move the deck from side to side to check for tightness and re-tighten the latches, if required.

9. Install the latch covers to the lift arms and secure them with clevis pins and hair pin cotters.

10. Connect the drive shaft to the traction unit.

11. Close the needle valve and lower the seat.

12. Start the tractor and raise the deck to the highest possible position. Then turn off the engine.

13. Align the height-of-cut straps with the hole for desired height of cut, install the clevis pin and secure it with a hair pin cotter.

REPLACING DRIVE BELTS (Fig. 12–13)

The blade drive consists of three belts—one main drive belt and two wing belts. The main drive belt is tensioned by a fixed idler with a spring adjustment. The wing belts have spring-loaded idlers. All belts are very durable but after many hours of use, the belt will show signs of wear. Signs of a worn belt are: squealing when belt is rotating, blades slipping when cutting grass, frayed edges, burn marks and cracks. Replace any belt if any of these conditions are evident. Adjust belt tension on main belt after 10 hours of operation to assure maximum durability.

1. Lower the cutting unit to the shop floor. Remove the belt covers from the top of the cutting unit and set the covers aside.

2. Pull on the spring loaded idlers and remove the wing belts.

3. Loosen the fixed idler pulley locking nut.

4. Loosen the spring tensioning nut as required and remove the belt.

5. Route new belts around the spindle pulleys and through the idler pulley assemblies as shown in figure 13.

6. Tighten the spring tensioning nut until the spring length is 9.9 cm inside the spring loops.

7. Tighten the idler pulley locking nut.

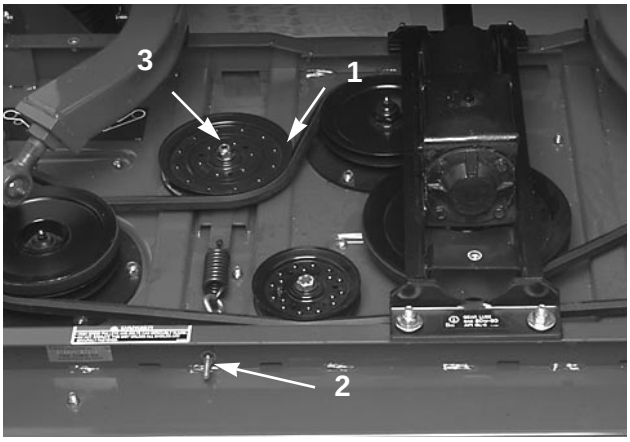


Figure 12

1. Idler pulley
2. Spring tensioning nut
3. Idler pulley locking nut

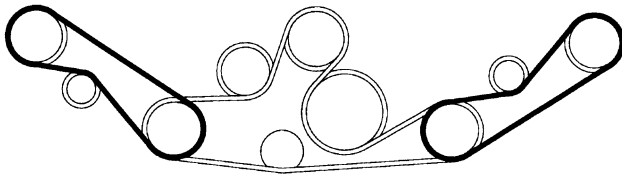


Figure 13

8. Pull on the spring loaded idlers and install wing belts.

9. Install belt covers to top of the cutting unit.

SERVICING THE FRONT BUSHINGS IN THE CASTOR FORKS (Fig. 14)

The castor forks have bushings pressed into the top and bottom of the casting and after many hours of operation, the bushings will wear. To check the bushings, move the castor fork back and forth and from side to side. If castor spindle is loose around the bushings, the bushings are worn and must be replaced.

1. Start the tractor and raise the deck to the highest possible position and turn off the engine.

2. Remove the front snapper pins from the castor arms and slide the castor wheel assembly out of the castor arm tube.

3. Remove the locknut from the capscrew holding the castor wheel assembly between the castor fork. Grasp the castor wheel and slide the capscrew out of the fork.

4. Remove the retaining ring, washer and wavy washer securing the castor shaft to the castor fork. Remove the shaft from the fork.

5. Insert a pin punch into the top or bottom of the castor fork and drive the bushing out of the fork. Repeat for the other bushing. Clean inside of the forks to remove dirt.

6. Apply grease to the inside and outside of the new bushings. Using a hammer and flat plate, drive the bushings into the fork.

7. Inspect the castor shaft and fork for wear and replace if damaged.

8. Push the castor shaft through bushings and fork and secure with wavy washer, washer and retaining ring.

9. Insert snapper pin into the castor arm and through the groove in the castor shaft at the desired height of cut.

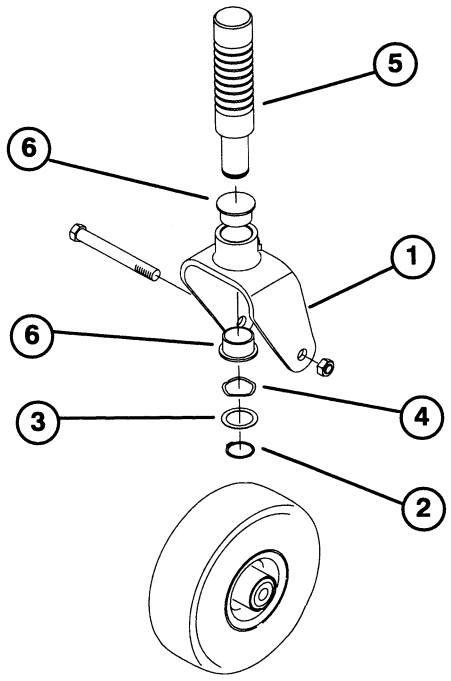


Figure 14

1. Front castor fork
2. Retaining ring
3. Washer
4. Wavy washer
5. Castor shaft
6. Bushings

SERVICING CASTOR WHEELS AND BEARINGS (Fig. 15)

The castor wheel rotates on a high-quality roller bearing. Even after many hours of use, provided that the bearing was kept well-lubricated, bearing wear will be minimal. However, failure to keep the bearing lubricated will cause rapid wear. A wobbly castor wheel usually indicates a worn bearing.

1. Remove the locknut from the capscrew holding the castor wheel assembly between the castor fork. Grasp the castor wheel and slide the capscrew out of the fork.

2. Remove the bearing from the wheel hub and allow the spacer to fall out. Remove the bearing from the opposite side of the wheel hub.

3. Check the bearings, spacer and inside of the wheel hub for wear. Replace defective parts as required.

4. To assemble the castor wheel, push the bearing into the wheel hub. Slide the spacer into the wheel hub. Push the other bearing into open end of the wheel hub to captivate the spacer inside the wheel hub.

5. Install the castor wheel assembly between the castor forks and secure in place with capscrew and locknut.

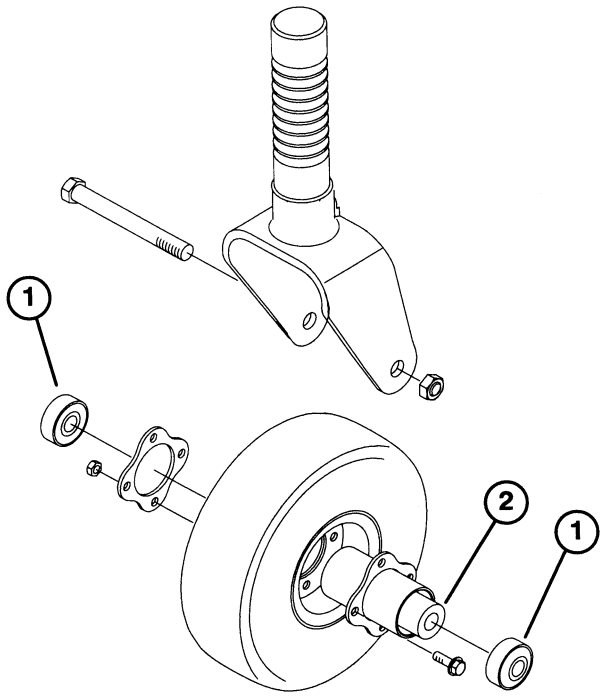


Figure 15

1. Bearing
2. Spacer

REMOVING CUTTER BLADE (Fig. 16)

The blade must be replaced if a solid object is hit, the blade is out of balance or if the blade is bent. Always use genuine TORO replacement blades to be sure of safety and optimum performance. Never use replacement blades made by other manufacturers because they could be dangerous.

1. Raise the cutting unit to the highest position, shut the engine off and engage the parking brake.

2. Remove the hair pin cotters and clevis pins securing the height-of-cut straps to the rear of the deck.

3. Rotate the front of the deck upward and insert the latch rod into the front hole (service position) in the latch plate.

4. Grasp the end of the blade using a rag or thickly padded glove. Remove the blade bolt, cup and blade from the spindle shaft.

5. Install blade sail facing (up) toward the cutting unit with the cup and blade bolt. Tighten the blade bolt to 115–145 Nm.

⚠ WARNING

Do not try to straighten a blade that is bent, and never weld a broken or cracked blade. Always use a new blade to assure continued safety certification of the product.

INSPECTING AND SHARPENING THE BLADE (Flg. 17–18)

1. Raise the cutting unit to the highest position, shut the engine off and engage the parking brake.

2. Remove the hair pin cotters and clevis pins securing the height of-cut straps to the rear of the deck.

3. Rotate the front of the deck upward and insert the latch rod into the front hole (service position) in the latch plate.

4. Examine the cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Fig. 17-A). 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 machine. If wear is noticed (Fig. 17-B), replace the blade: refer to *Removing The Cutter Blade.*

⚠ DANGER

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade (Fig. 17-C). Eventually a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to yourself or a bystander.

5. Inspect the cutting edges of all blades. Sharpen the cutting edges if they are dull or nicked. Sharpen only the top of the cutting edge and maintain the original cutting angle for best performance (Fig. 18). The blade will remain balanced if the same amount of metal is removed from both cutting edges.

6. To check the blade for being straight and parallel, lay the blade on a level surface and check its ends. Ends of the blade must be slightly lower than the center, and the cutting

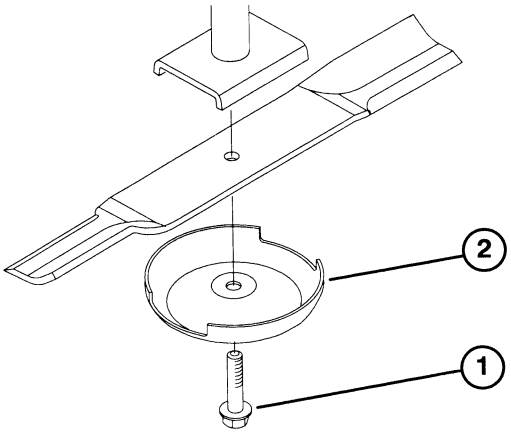


Figure 16

1. Blade bolt
2. Cup

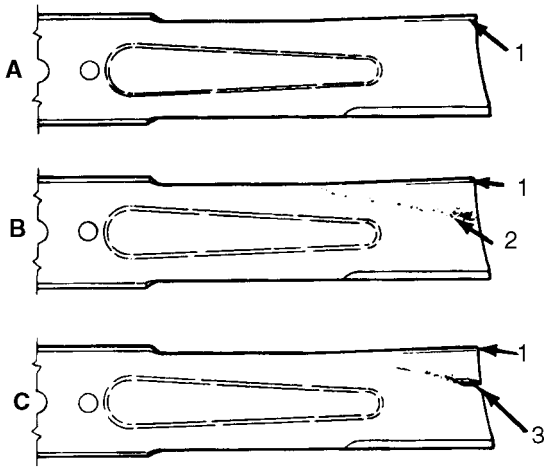


Figure 17

1. Sail
2. Wear
3. Slot formed

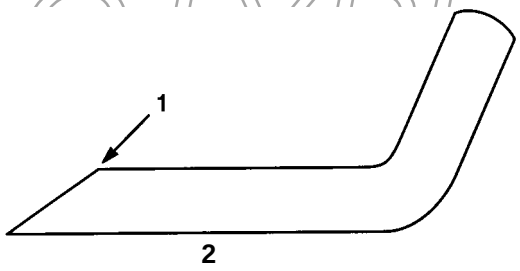


Figure 18

1. Sharpen at this angle only
2. End view

edge must be lower than the heel of the blade. This blade will produce good quality of cut and require minimal power from the engine. By contrast, a blade that is higher at the ends than the center, or that has a cutting edge higher than the heel, is bent or warped and must be replaced.

7. Install the blade sail facing (up) toward the cutting unit with cup and blade bolt. Tighten blade bolt to 115–149Nm.

CORRECTING CUTTING UNIT MISMATCH

If there is mismatch between the blades, the grass will appear streaked when it is cut. This problem can be corrected by making sure the blades are straight and all blades are cutting on the same plane.

1. Position the machine on a level surface on the shop floor.

2. Raise height of cut to the highest position: refer to *Adjusting Height Of Cut.*

3. Lower the cutting unit onto flat surface. Remove the covers from the top of the cutting unit.

4. Release the belt tension on belts.

5. Rotate blades until the ends face forward and backward. Measure from the floor to the front tip of the cutting edge and remember this dimension. Then rotate the same blade so its opposite end is forward and measure again. The difference between dimensions must not exceed 3.2 mm. If dimension exceeds 3.2mm, replace the blade because it is bent. Make sure to measure all blades.

6. Compare measurements of the outer blades with the center blade. The center blade must not be more than 9.5 mm of an inch lower than the outer blades. If the center blade is more than 9.5 mm lower than the outer blades, go to step 7 and add shims between the spindle housing and the bottom of the cutting unit.

7. Remove capscrews, flatwashers, lockwashers and nuts from outer spindle in the area where shims must be added. To raise or lower the blade, add a shim, Part No. 3256-24, between spindle housing and bottom of cutting unit. Continue to check alignment of the blades and add shims until the tips of blades are within the required dimension.

IMPORTANT: Do not use more than three shims at any individual hole location. Use decreasing numbers of shims in adjacent holes if more than one shim is added to a hole location.

8. Retension the belts. Reinstall the belt covers.

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The cutting deck has two identification numbers: a model number and a serial number. The two numbers are stamped into a plate on the front channel of the mower deck, under cover. In any correspondence concerning the mower, supply the model and serial numbers to assure that correct information and replacement parts are obtained.

To order replacement parts from an authorized TORO Distributor, supply the following information:

1. Model and serial numbers of the machine.

2. Part number, description and quantity of parts desired.

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