Form No. 3353-843 Rev A

TORO®

Stump Grinder

for Compact Utility Loaders

Model No. 22429—210000001 and Up

Operator's Manual

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Introduction

Thank you for purchasing a Toro product.

All of us at Toro want you to be completely satisfied with your new product, so feel free to contact your local Authorized Service Dealer for help with service, genuine replacement parts, or other information you may require.

Whenever you contact your Authorized Service Dealer or the factory, always know the model and serial numbers of your product. These numbers will help the Service Dealer or Service Representative provide exact information about your specific product. You will find the model and serial number plate at the location shown in Figure 1.

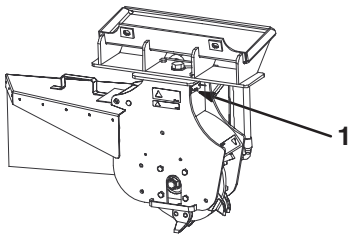


Figure 1

1. Model and serial number plate

For your convenience, write the product model and serial numbers in the space below.

Model No: _____

Serial No. _____

Read this manual carefully to learn how to operate and maintain your product correctly. Reading this manual will help you and others avoid personal injury and damage to the product. Although we design, produce and market safe, state-of-the-art products, you are responsible for using the product properly and safely. You are also responsible for training persons, who you allow to use the product, about safe operation.

The warning system in this manual identifies potential hazards and has special safety messages that help you and others avoid personal injury, even death. ***Danger***, ***Warning***, and ***Caution*** are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

Danger signals an extreme hazard that will cause serious injury or death if the recommended precautions are not followed.

Warning signals a hazard that may cause serious injury or death if the recommended precautions are not followed.

Caution signals a hazard that may cause minor or moderate injury if the recommended precautions are not followed.

Two other words are also used to highlight information. *Important* calls attention to special mechanical information, and *Note* emphasizes general information worthy of special attention.

Safety

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert ⚠ symbol, which means CAUTION, WARNING, or DANGER—"personal safety instruction." Failure to comply with the instruction may result in personal injury or death.

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Danger

The stump grinder is solely designed and tested for use grinding stumps less than 36 in. (91 cm) tall. Any other uses may cause a hazardous situation resulting in injury or death to you or bystanders.

Only use the stump grinder for grinding stumps less than 36 in. (91 m) tall.

Danger

If you grind roots around buried power, gas, and/or telephone lines, you may cut them causing shock or explosion.

Have the property or work area marked for buried lines and do not grind roots in marked areas.

Danger

The moving teeth will severely cut hands, feet, or other body parts.

- **Keep hands, feet, and any other parts of your body or clothing away from moving teeth.**
- **Before adjusting, cleaning, repairing, or inspecting the stump grinder, lower it to the ground, stop the engine, wait for all moving parts to stop, and remove the ignition key.**

Warning

The loader arms may lower when in the raised position after stopping the engine, crushing anyone under them.

Lower the loader arms before stopping the engine.

Warning

During operation, debris will fly in all directions and can cause injury to eyes and other exposed body parts.

- **Never operate the stump grinder without the shield installed on the traction unit and the chip guard on the grinder.**
- **Wear personal protective gear during operation.**
- **Keep all bystanders at least 30 feet (9 m) away from the work area.**

Warning

If you do not fully seat the quick attach pins through the attachment mount plate, the attachment could fall off of the traction unit, crushing you or bystanders.

- **Ensure that your quick attach pins are fully seated in the attachment mounting plate.**
- **Ensure that the attachment mounting plate is free of any dirt or debris that may hinder the connection of the traction unit to the attachment.**
- **Refer to your traction unit *Operator's Manual* for detailed information on safely connecting an attachment to your traction unit.**

Warning

Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

- **Keep your body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks, never use your hands.**

Caution

Hydraulic couplers, hydraulic lines/valves, and hydraulic fluid may be hot. If you contact hot components you may be burned.

- **Wear gloves when operating the hydraulic couplers.**
- **Allow the traction unit to cool before touching hydraulic components.**
- **Do not touch hydraulic fluid spills.**

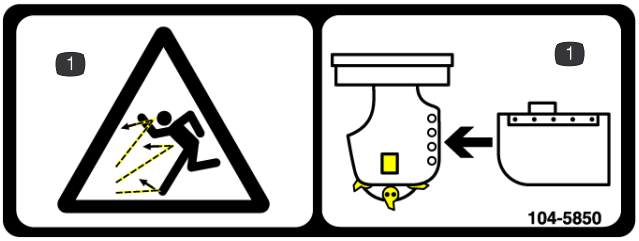
Safety Decals

Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



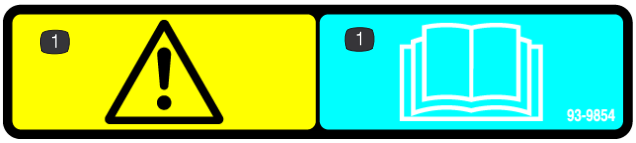
100-4708

1. Thrown object hazard—keep bystanders away



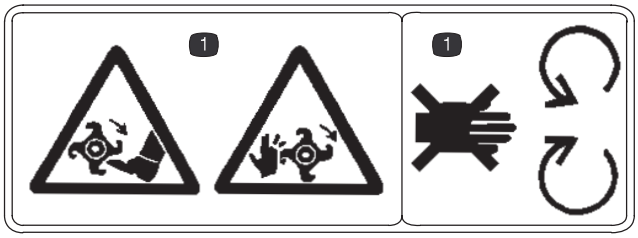
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1. Thrown object hazard—do not operate without the chip guard properly installed



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1. Warning—read the *Operator's Manual* before operating



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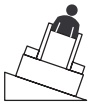
1. Cutting hazard, foot and hand—keep away from moving parts

Specifications

Width with chip guard	44 in. (112 cm)
Width without chip guard	26 in. (66 cm)
Length	20 in. (51 cm)
Height	31 in. (79 cm)
Weight	265 lb. (120 kg)
Wheel speed	2000 RPM
Tooth tip speed	148 ft./s (45 m/s)
Number of teeth	12
Wheel diameter without teeth	13.4 in. (34 cm)
Wheel diameter with teeth	17 in. (43 cm)
Maximum height	36 in. (91 cm)
Maximum depth below grade	21 in. (53 cm)
Wheel index	0 or 30 degrees
Chip guard vertical adjustment	6 in. (15 cm)
Wheel stopping time	Less than 5 seconds

Stability Ratings

To determine the degree of slope you can traverse with the stump grinder installed on a traction unit, find the stability rating for the hill position you want to travel in the following table, then find the degree of slope for the same rating and hill position in the Stability Data section of the traction unit *Operator's Manual*.

Orientation	Stability Rating
Front Uphill 	D
Rear Uphill 	C
Side Uphill 	C

Warning

If you exceed the maximum slope, the traction unit could tip, possibly crushing you or bystanders.

Do not drive the traction unit on a slope steeper than the maximum recommended slope.

Important If you have a traction unit other than the TX compact utility loader, do not use the rear counterweight with the stump grinder. If you use the counterweight, the traction unit will be less stable in the front and side uphill positions.

Installation

Refer to your traction unit *Operator's Manual* for complete instructions on installing attachments onto the traction unit and connecting hydraulic hoses.

Loose Parts

DESCRIPTION	QTY.	USE
Shield bracket, right	1	Assemble the operator shield
Shield bracket, left	1	
Self-tapping screw, 5/16 x 3/4 in. (200/300 series traction units use only two screws)	4	
Shield support	2	
Shield	1	
Skirt	1	
Bolt, 1/4 x 1-1/2 in.	6	
Washer	6	
Locknut, 1/4 in.	6	
TX bracket mounting template	1	
Stump grinder	1	Install the chip guard
Chip guard	1	
Guard pin	1	
Hairpin cotter	1	

Assembling the Operator Shield

Installing the Shield Bracket on a 200 or 300 Series Traction Unit

1. Insert the tab on the shield bracket into the lift point hole on the traction unit, with the hole in the bracket aligning with the small hole in the traction unit frame (Fig. 2).

Note: There is a right and left bracket. Ensure that you install the correct bracket on each side. The tab should be in the lift point hole and the bracket should be on the outside of the frame (Fig. 2).

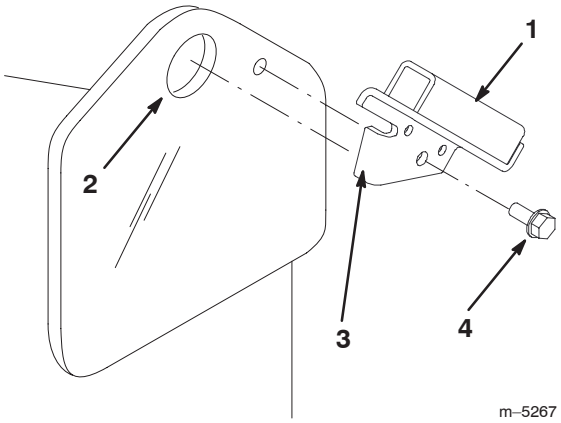


Figure 2

1. Shield bracket
2. Lift point hole
3. Tab
4. Self-tapping screw

2. Secure the bracket to the frame with a self-tapping screw (Fig. 2).

3. Repeat steps 1 and 2 for the other side of the traction unit.

Installing the Shield Bracket on a TX Traction Unit

1. Measure in from the edges of the frame as illustrated in Figure 3 and mark the locations of the holes for mounting the shield bracket.

   Note: If the holes exist, skip to step 3.

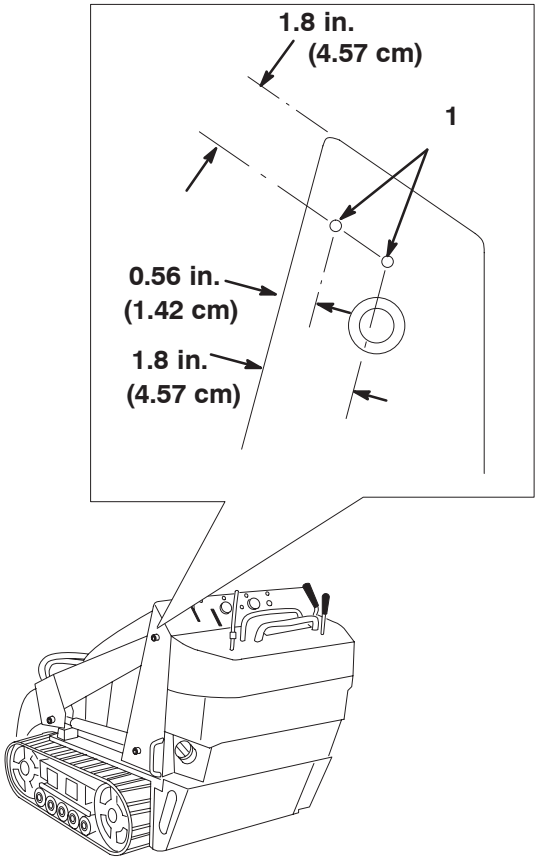


Figure 3

1. Mounting holes

2. Drill a hole (5/16 in. dia.) through the frame at each marked location.

3. Align the tab on the shield bracket with the front edge of the frame with the bracket inside of the loader arm pocket (Fig. 4).

   Note: There is a right and left bracket. Ensure that you install the correct bracket on each side. The tab should be over the frame edge and the bracket should be inside the loader arm pocket with the 2 smaller holes in the bracket lined up with the holes you drilled in the frame (Fig. 4).

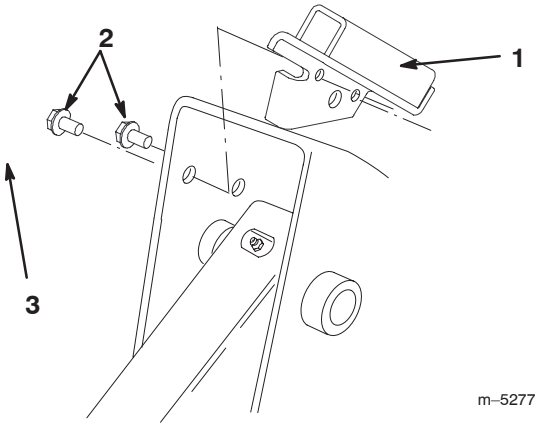


Figure 4

1. Shield bracket
2. Self-tapping screw

4. Secure the bracket to the frame with 2 self-tapping screws as illustrated in Figure 4.

5. Repeat steps 1 through 4 for the other side of the traction unit.

Assembling the Shield

1. Slide the shield supports into the pockets in the shield brackets on the traction unit (Fig. 5).

2. Assemble the shield and flexible skirt to the shield supports as illustrated in Figure 5, using 6 bolts (1/4 x 1-1/2 in.), washers, and locknuts (1/4 in.).

   Note: The skirt should drape over the engine or hood.

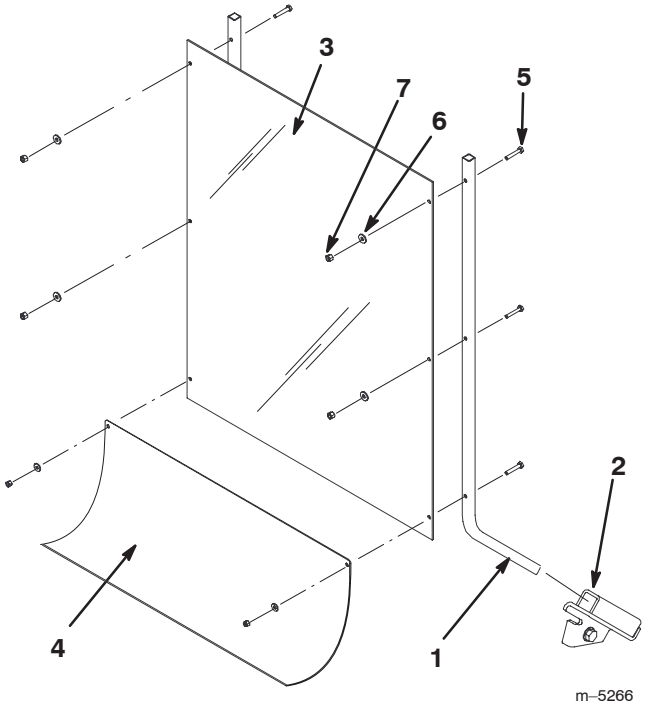


Figure 5

1. Shield support
2. Shield bracket
3. Shield
4. Skirt
5. Bolt, 1/4 x 1-1/2 in.
6. Washer
7. Locknut, 1/4 in.

Note: Install or remove the shield as needed by sliding it into the brackets or pulling it out of the brackets. Do not remove the brackets from the traction unit. You can remove the shield easily by flexing it in the center as you pull it out of the brackets.

Installing the Chip Guard

The stump grinder has 4 sets of mounting holes for positioning the chip guard (Fig. 6). Move the guard up (upper holes) when you are grinding close to the ground and down (lower holes) when you are chipping tall stumps. Install the chip guard as follows:

1. Position the mounting tube on the guard between two holes on the grinder (Fig. 6).

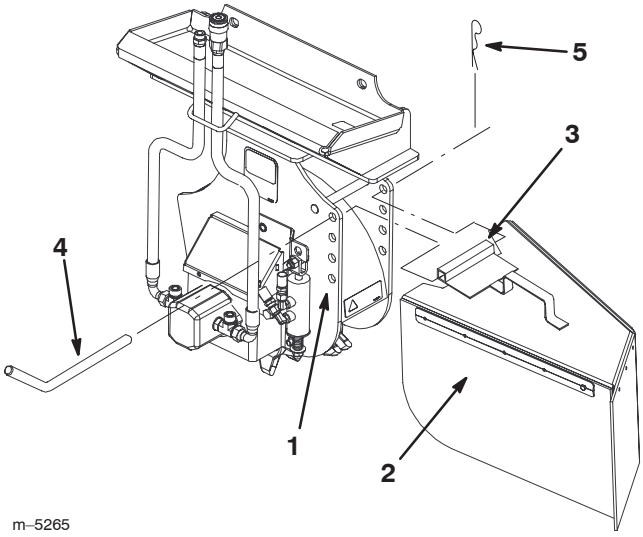


Figure 6

1. Mounting holes
2. Chip guard
3. Mounting tube
4. Guard pin
5. Hairpin cotter

2. Slide the guard pin through the holes in the grinder and the mounting tube (Fig. 6).
3. Secure the pin with a hairpin cotter (Fig. 6).

Operation

Warning

During operation, debris will fly in all directions and can cause injury to eyes and other exposed body parts.

- **Never operate the stump grinder without the shield installed on the traction unit and the chip guard on the grinder.**
- **Wear personal protective gear during operation.**
- **Keep all bystanders at least 30 feet (9 m) away from the work area.**

Important Always use the traction unit to lift and move the attachment.

Grinding Stumps

1. If your traction unit has a speed selector, set it to the slow (turtle position).
2. Start the engine.
3. Pull the auxiliary hydraulics lever to the operator grip to engage the stump grinder.
4. Position the grinder on the left side and behind the stump (Fig. 7).

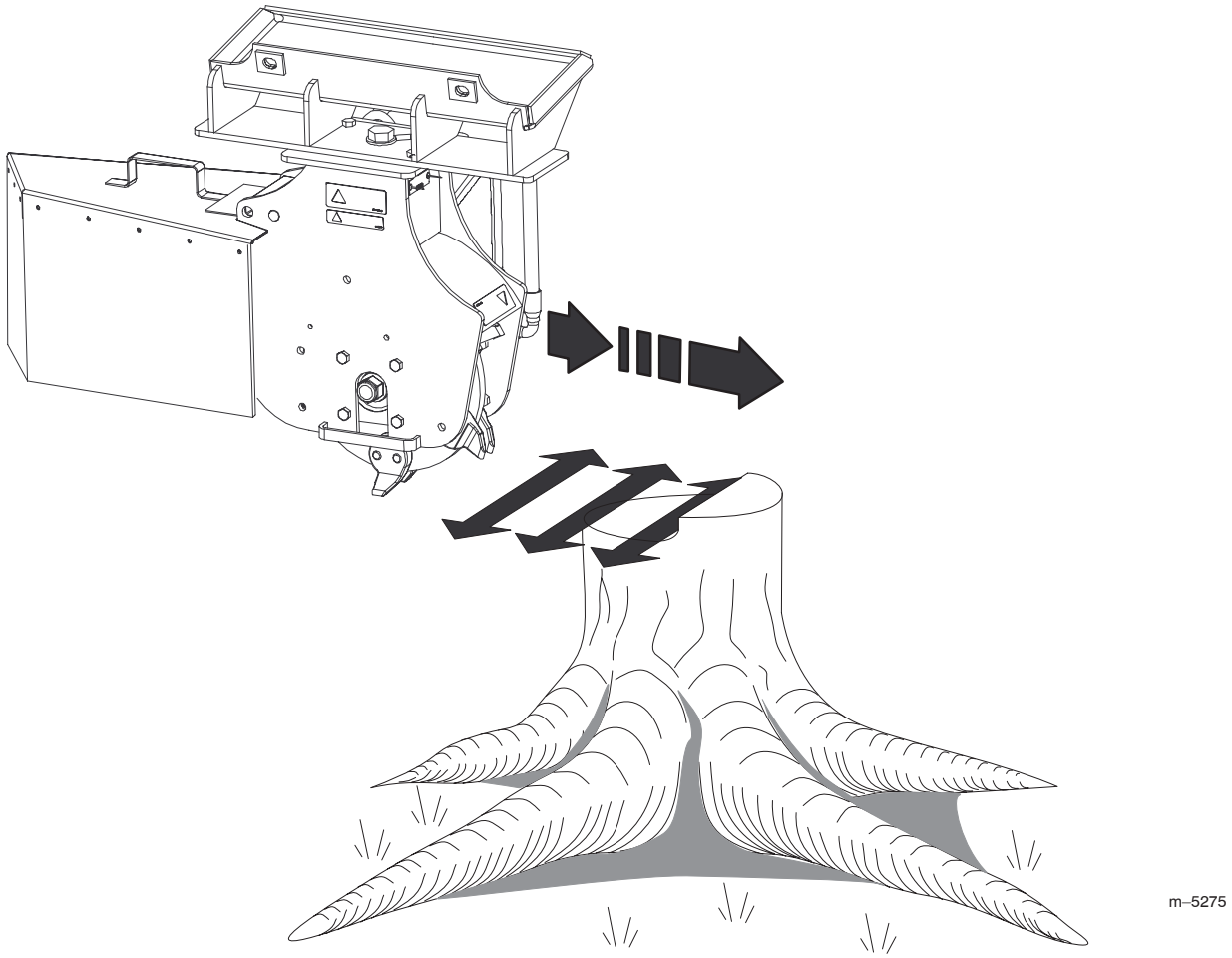


Figure 7

5. Swing the grinder toward you using the attachment tilt lever, grinding at a depth of 1/4 to 2 in. (0.5 to 5 cm), depending on the hardness of the wood (Fig. 7).

Note: If you take too deep of a cut, the grinder will stall. If it stalls, raise it slightly and try again.

6. Swing the grinder back out (Fig. 7), lower it 1/4 to 2 in. (0.5 to 5 cm) and repeat steps 4 through 6 until you have ground down a few inches.
7. Raise the loader arms to the original height.
8. Move the grinder to the right (Fig. 7).
9. Repeat steps 4 through 8 until you reach the right side of the stump.
10. Return the grinder to the left side of the stump, lower it, and repeat steps 3 through 10 until you have ground the stump into the ground.

Note: To contain the chips, you may need to stop the grinder and move the chip guard up as you move the grinder down.

11. When finished, stop the grinder by moving the auxiliary hydraulics lever into neutral.

Grinding Roots

1. Stop the grinder and hang it vertically from the loader arms a few inches off of the ground.
2. Stop the engine and remove the key.

3. Loosen the large bolt on the top of the grinder (Fig. 8).

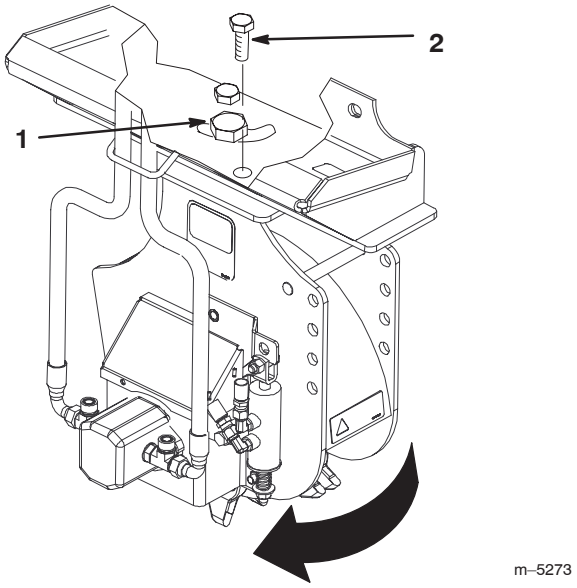


Figure 8

1. Large bolt—loosen
2. Front bolt—remove

4. Remove the front bolt and nut securing the grinder (Fig. 8).
5. Swing the grinder 30 degrees clockwise (Fig. 8).
6. Torque the large bolt on top of the grinder to 300 ft.-lb. (406 N·m) (Fig. 8)
7. Install the bolt and nut in the front hole and torque them to 75 ft.-lb. (101 N·m) (Fig. 8).
8. Start the traction unit and start the grinder.
9. Lower the grinder into the root.
10. Move the grinder along the length of the root by moving the traction unit over the root.
11. When finished, stop the grinder by moving the auxiliary hydraulics lever into neutral.
12. Loosen the large bolt on the top of the grinder (Fig. 8).
13. Remove the front bolt and nut securing the grinder (Fig. 8).
14. Swing the grinder 30 degrees counter-clockwise (Fig. 8).
15. Torque the large bolt on top of the grinder to 300 ft.-lb. (406 N·m) (Fig. 8)
16. Install the bolt and nut in the front hole and torque them to 75 ft.-lb. (101 N·m) (Fig. 8).

Tips for Grinding

- Always use full throttle (maximum engine speed).
- Never transport the stump grinder with the loader arms raised. Keep the arms lowered and the grinder tilted up.
- On 200 and 300 series traction units set the speed selector to the slow (turtle position) and the flow divider to approximately the 10 o'clock position.

Transporting the Stump Grinder on a Trailer

- Place the stump grinder on a trailer or truck capable of carrying it.
- Securely tie the grinder to the trailer or truck using tie straps appropriate for the weight of the grinder and for highway use.
- Remove the operator's shield from the traction unit before transporting the traction unit or the shield may be damaged in transport.

Maintenance

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
8 hours	• Grease all fittings. • Check the teeth and replace any that are worn or damaged. • Ensure that the disk stops within 5 seconds of releasing the auxiliary hydraulics lever. If not, contact your Authorized Toro Dealer for brake service.
Storage Service	• Grease all fittings. • Paint chipped surfaces

Caution

If you leave the key in the ignition switch, someone could accidently start the engine and seriously injure you or other bystanders.

Remove the key from the ignition and disconnect the wire from the spark plug before you do any maintenance. Set the wire aside so that it does not accidentally contact the spark plug.

Greasing the Stump Grinder

Grease all pivot joints every 8 operating hours and immediately after every washing.

Grease Type: General-purpose grease.

1. Clean the grease fittings with a rag.
2. Connect a grease gun to each fitting (Fig 9).

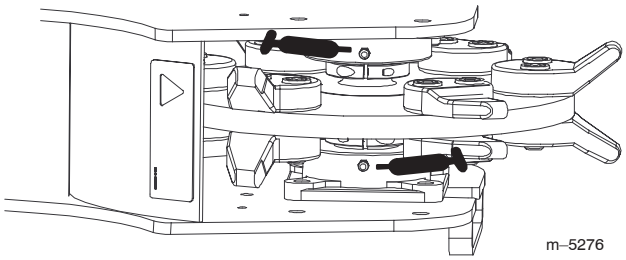


Figure 9

3. Pump grease into the fittings until grease begins to ooze out of the bearings (approximately 3 pumps).
4. Wipe up any excess grease.

Replacing the Teeth

Due to the high amount of wear placed on the teeth, you will need to replace them periodically. There are two types of teeth, curved and straight. The teeth are mounted on the wheel in pairs, alternating between curved and straight. Each pair contains a right and a left version of the tooth. Always replace the teeth in pairs (2 curved or 2 straight together). Always replace teeth with the same type of tooth (curved or straight).

In each pair, one tooth has two counter sunk holes through it; the other has two threaded holes. Mount the teeth facing the same direction as the teeth you removed.

To replace a pair of teeth, complete the following procedure:

1. Disconnect the stump grinder from the traction unit.
2. Connect the stump grinder hydraulic connectors together.
3. Manually rotate the grinding wheel until you can access the teeth you want to replace (Fig. 10).

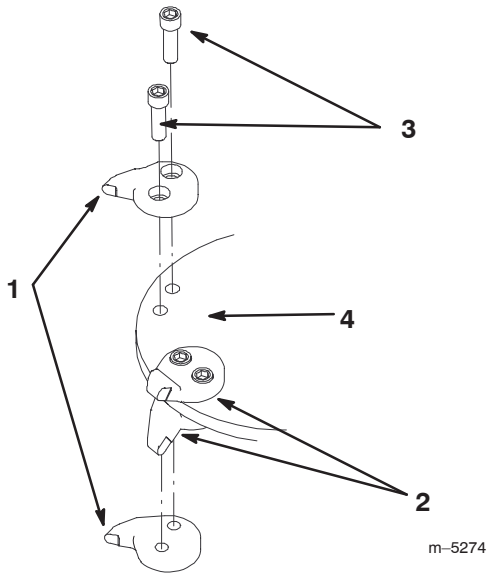


Figure 10

1. Straight teeth
2. Curved teeth
3. Bolt
4. Disk

4. Remove the two bolts securing the teeth and discard the teeth (Fig. 10).
5. Install the new teeth on the disc in the same location and orientation as the teeth you removed using the existing mounting bolts (Fig. 10).

   Note: The location on the disk for curved teeth is marked by an indent ground into the disk between the tooth mounting holes. Straight tooth locations do not have this indent.
6. Torque the bolts securing the teeth to 240 ft.-lb. (325 N·m).

Storage

1. Before long term storage, brush the dirt from the attachment. Do not wash it, because washing will cause rust.
2. Check the condition of the teeth. Replace any worn or damaged teeth.

3. Grease all fittings.
4. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged or worn.
5. Ensure that all hydraulic couplers are connected together to prevent contamination of the hydraulic system.
6. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
7. Store the grinder in a clean, dry garage or storage area.
8. Cover the grinder to protect it and keep it clean.

Troubleshooting

Problem	Possible Causes	Corrective Action
Cutting disk stops during cutting.	1. Too deep of a cut 2. Teeth worn, damaged, or broken.	1. Raise the loader arms 1/2 in. 2. Replace any worn, damaged, or broken teeth.
Cutting disk does not turn.	1. Hydraulic coupler not completely connected 2. Damaged hydraulic coupler 3. A hydraulic hose is kinked, pinched, or obstructed 4. Auxiliary valve on the traction unit is not opening. 5. Hydraulic motor failure	1. Check and tighten all couplers. 2. Check/replace couplers 3. Find and remove the kink, pinch, or obstruction. 4. Repair the valve. 5. Contact Authorized Service Dealer.
Does not cut fast enough.	1. Worn teeth 2. Wrong setting on flow divider and speed lever 3. Quick coupler or hose restriction 4. Hydraulic system too hot 5. Relief valve set below specifications	1. Replace any worn teeth. 2. Set the flow divider to the 10:00 position and the speed lever to the turtle position. 3. Check hoses and couplers and repair any problems found. 4. Shutdown and allow the system to cool. 5. Contact Authorized Service Dealer.
Cutting disk turns in the wrong direction	1. Auxiliary valve lever in wrong position 2. Hydraulic hoses reversed	1. Move auxiliary valve lever to the rearward position. 2. Disconnect hoses and switch connectors.