



Soil Cultivator
for Compact Utility Loaders
Model No. 23101—260000001 & Up

Operator's Manual

Contents

	Page
Introduction	2
Safety	2
Safety Decals	3
Specifications	3
Stability Ratings	4
Installation	4
Installing the Roller	4
Installing the Hydraulic Hoses	4
Operation	5
Setting the Digging Depth	5
Adjusting the Grader Blade	5
Changing the Horizontal Position of the Roller ..	5
Operating the Cultivator	6
Operating Tips	6
Maintenance	6
Service Interval Chart	6
Greasing the Cultivator	7
Changing the Drive Chain Oil	7
Adjusting the Drive Chain Tension	7
Replacing Tines	8
Storage	8
Troubleshooting	9

Introduction

We 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 on a plate located on the product.

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

Model No: _____

Serial No. _____

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.

The left and right side of the machine is determined by standing in the normal operator’s position.

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 those in the traction unit operator’s manual. 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.



DANGER



POTENTIAL HAZARD

- **Contact with rotating tines may cause injury.**

WHAT CAN HAPPEN

- **Rotating tines can cut hands, feet or other body parts.**

HOW TO AVOID THE HAZARD

- **Keep away from the rotating tines while operating the cultivator.**
- **Keep your hands, feet, and any other part of your body or clothing away from rotating parts.**
- **Before adjusting, cleaning, repairing, and inspecting the cultivator, lower the cultivator and loader arms to the ground and stop the engine. Remove the key.**

! **WARNING** !

POTENTIAL HAZARD

- There may be buried power, gas, and/or telephone lines in the work area.

WHAT CAN HAPPEN

- Shock or explosion may occur.

HOW TO AVOID THE HAZARD

- Have the work area marked for buried lines and do not dig in marked areas.

! **WARNING** !

POTENTIAL HAZARD

- Tines can throw dirt, debris, and small rocks.

WHAT CAN HAPPEN

- The operator or bystander could be injured by flying debris.

HOW TO AVOID THE HAZARD

- Keep all bystanders away from the work area.
- Wear eye protection and a hard hat while operating the cultivator.

! **WARNING** !

POTENTIAL HAZARD

- When the engine is off, attachments in the raised position can gradually lower.

WHAT CAN HAPPEN

- Someone nearby may be pinned or injured by the attachment as it lowers.

HOW TO AVOID THE HAZARD

- Always lower the loader arms before you shut off the traction unit.

Safety Decals

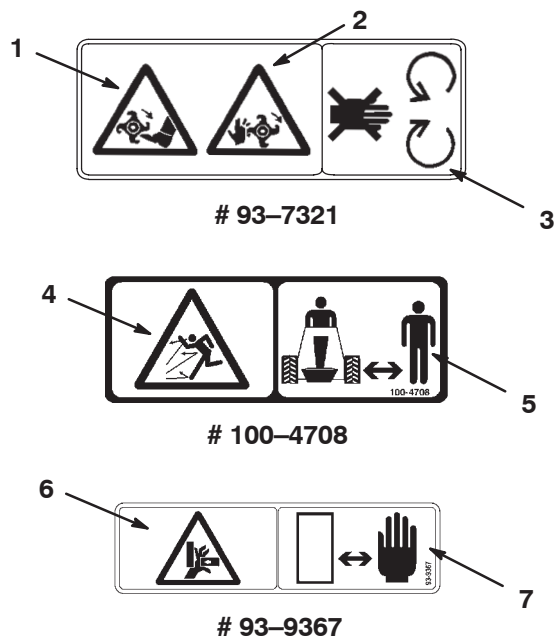


Figure 1

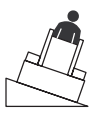
- | | |
|--------------------------------|--------------------------|
| 1. Cutting hazard—foot | 4. Thrown object hazard |
| 2. Cutting hazard—hand | 5. Keep bystanders away |
| 3. Keep away from moving parts | 6. Pinch/crushing hazard |
| | 7. Keep hands away |

Specifications

Overall width	53.16 inches (135 cm)
Working width	36 inches (91.5 cm)
Working depth (maximum)	5.5 inches (14 cm)
Tine diameter	15.75 inches (40 cm)
Number of tines	20
Number of grate fingers	31
Shaft diameter	1.50 inches (3.8 cm)
Weight	430 lbs (195 kg)

Stability Ratings

To determine the degree of slope you can traverse with the cultivator installed on a traction unit, find the stability rating for the hill position you want to travel in the table below, 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 	B
Rear Uphill 	D
Side Uphill 	C

IMPORTANT: If you have a traction unit other than the TX, use the counterweight on the traction unit when using the cultivator, or the traction unit may become unstable.

WARNING

POTENTIAL HAZARD

- Exceeding the maximum slope can cause the traction unit to tip.

WHAT CAN HAPPEN

- If the traction unit tips, you or bystanders could be crushed.

HOW TO AVOID THE HAZARD

- Do not drive the the traction unit on a slope steeper that the maximum slope.

Installation

Installing the Roller

1. Remove the roller from the shipping stand.
2. Install the cultivator on the traction unit and remove it from the shipping stand; refer to your traction unit *Operator's Manual* for more information on installing attachments on your traction unit.
3. Lower the cultivator to the ground.
4. Remove the pins from the arms of the cultivator (Fig. 2).
5. Slide the arms on the roller into the arms on the cultivator and secure them with the pins (Fig. 2).

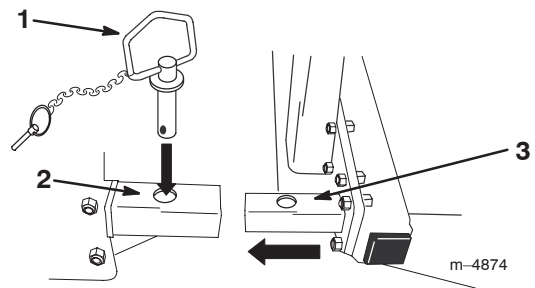


Figure 2

1. Pin
2. Cultivator arm
3. Roller arm

Installing the Hydraulic Hoses

1. Remove the caps over the holes on the hydraulic motor.
2. Thread the female hydraulic hose into the lower/right hole (Fig. 3).
3. Thread the male hydraulic hose into the upper/left hole (Fig. 3).

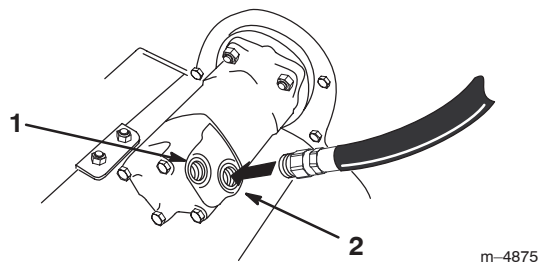


Figure 3

1. Thread male hose here
2. Thread female hose here

4. Torque the hose fittings to 65 ft-lbs (88.1 N·m).

Operation

IMPORTANT: Lift and move the attachment using the traction unit.

Refer to your traction unit *Operator's Manual* for information on installing and removing attachments from your traction unit.

Setting the Digging Depth

You can set the cultivator to dig up to 5.5 in. (13.9 cm) into the ground. Ideally, you should set the depth to the maximum possible for the work you are performing. The depth of cut is determined by the position of the roller. The roller can be moved up and down by changing the mounting location of the arms on the cultivator, as follows:

1. Remove the roller from the cultivator.
2. Remove the bolts securing the arms to the cultivator (Fig. 4).
3. Move the arms to the set of holes corresponding to the desired depth (Fig. 4). Moving the arms up sets the digging depth deeper; moving them down sets it shallower.

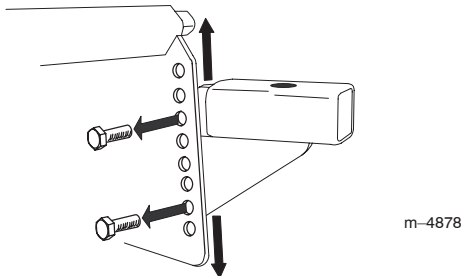


Figure 4

4. Secure the arms using the bolts and nuts removed previously.
5. Install the roller.

Adjusting the Grader Blade

You can adjust the grader blade that sits just behind the roller to give the desired finish. Typically, you should adjust it so that the edge of the blade is just slightly higher than the bottom of the roller.

1. Remove the pins securing the grader crank knobs (Fig. 5).
2. Turn the cranks counterclockwise to lower the blade or clockwise to raise it (Fig. 5).

Note: Set both sides of the grader blade to the same height.

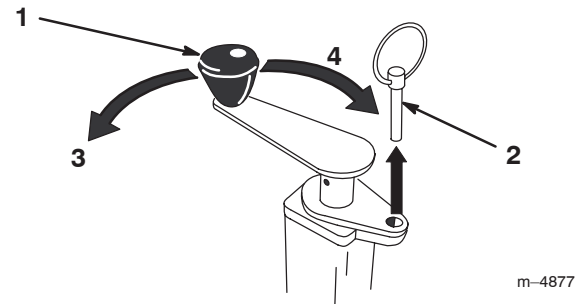


Figure 5

- | | |
|----------|---------|
| 1. Crank | 3. Down |
| 2. Pin | 4. Up |

3. Secure the cranks with the pins removed previously.

Changing the Horizontal Position of the Roller

The roller has two horizontal positions. One position aligns the edges of the roller with the edges of the cultivator. Use this position for cultivating along the edge of the work area. The other position offsets the roller so that about 6 inches of the roller overlaps the last cultivating pass. This allows you to seamlessly cultivate an area with no messy edges between cultivation passes.

1. Remove the pin located in the center of the roller support bar (Fig. 6).
2. Slide the roller to the desired position (Fig. 6).

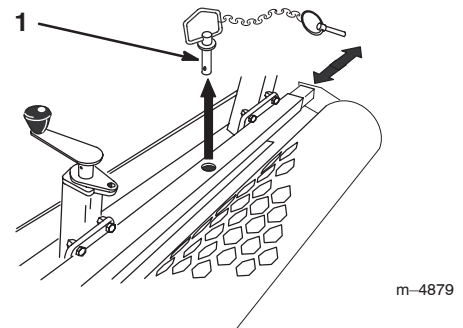


Figure 6

1. Pin
3. Insert the pin through the bar and secure it to secure the roller.

Operating the Cultivator

1. Lower the cultivator to the ground, ensuring that the chain case is perpendicular to the ground (Fig. 7).

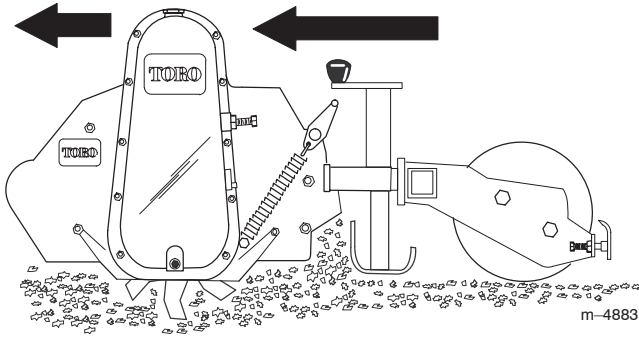


Figure 7

2. Pull the auxiliary hydraulics lever to the operator grip to start the cultivator.
3. Slowly lower the cultivator until the blades dig into the soil and the roller touches the ground.
4. Slowly move rearward.
5. When the pass is finished, stop the hydraulics and raise the cultivator.

Operating Tips

- Clean the area of trash, branches, and rocks before cultivating to prevent equipment damage.
- Always begin cultivating with the slowest ground speed possible. Increase speed if conditions permit.
- Always use full throttle (maximum engine speed).
- Cultivate in long, straight passes. Do not make turns while the cultivator is in the ground, as equipment damage may result.
- If a rock or other obstruction gets into the tines, stop the hydraulics and drive the traction unit forward until the obstruction is dislodged.
- If you are using a traction unit other than the TX, you can use the flow divider to achieve the optimal rotor and ground speed for your soil conditions, as follows:
 - A. Set the flow divider to the 9:00 position and the speed selector to the turtle position.
 - B. Pull the auxiliary hydraulics lever to the operator grip to start the cultivator.
 - C. Move the flow divider lever while moving the traction unit rearward until the cultivation results are ideal.

Maintenance

Service Interval Chart

Service Operation	Each Use	5 Hours	25 Hours	200 Hours	Storage Service	Notes
Tines—check	X					Replace as required
Tine bolts—check/tighten	X					Replace as required
Chain tension—adjust		initial	X			
Shaft bearings—grease			X		X	
Chain—change oil				X		
Chipped surfaces—paint					X	



CAUTION



POTENTIAL HAZARD

- If you leave the key in the ignition switch, someone could start the engine.

WHAT CAN HAPPEN

- Accidental starting of the engine could seriously injure you or other bystanders.

HOW TO AVOID THE HAZARD

- Remove the key from the ignition switch before you do any maintenance.

Greasing the Cultivator

Grease the 2 fittings on the ends of the roller and 2 grader blade crank fittings every 25 operating hours. Grease immediately after every washing.

Grease Type: General-purpose grease.

1. Lower the loader arms and stop the engine. Remove the key.
2. Clean the grease fittings with a rag.
3. Scrape any paint off the front of the fittings.
4. Connect a grease gun to each fitting.
5. Pump grease into the fittings until grease begins to ooze out of the bearings.
6. Wipe up any excess grease.

Changing the Drive Chain Oil

Change the drive chain oil every 200 operating hours.

Oil Type: 85 W 140

1. Park the cultivator on a flat surface and ensure that the drive chain cover is perpendicular to the ground.
2. Lower the loader arms and stop the engine. Remove the key.
3. Open the oil fill hole on top of the drive chain case (Fig. 8).

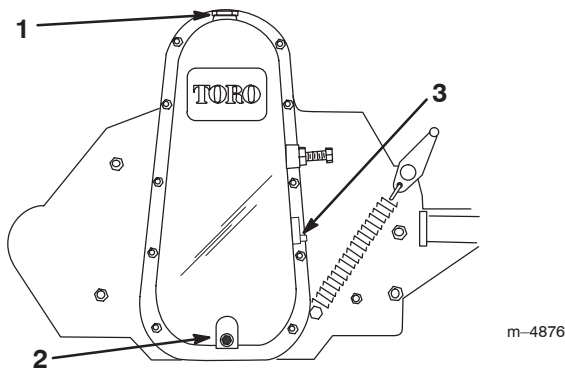


Figure 8

1. Oil fill hole
2. Drain plug
3. Side plug

4. Place a large drip pan under the drive chain case.
5. Remove the drain plug (Fig. 8).
6. When all of the oil has drained from the case, replace and tighten the drain plug.

7. Remove the side plug (Fig. 8).
8. Pour oil into the fill hole slowly until oil runs out of the side plug hole.
9. Replace the side and fill hole plugs and tighten them.
10. Wipe up any spilled oil.

Adjusting the Drive Chain Tension

Adjust the drive chain tension after the initial 5 hours of operation and every 25 operating hours thereafter.

1. Lower the loader arms and stop the engine. Remove the key.
2. Loosen the jam nut on the chain adjusting screw (Fig. 9).

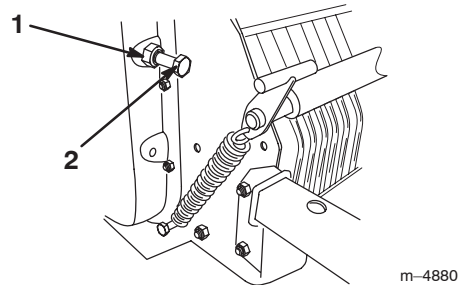


Figure 9

1. Jam nut
2. Chain adjusting screw

3. Turn the screw in by hand until you feel resistance (Fig. 9).
4. Mark the screw with a pencil and then turn it one turn out.
5. Tighten the jam nut.
6. Install the chain drive cover.

Replacing Tines

Check and replace tines when they become worn or dull. Worn or dull tines will degrade the performance of the cultivator.

1. Lower the loader arms and stop the engine. Remove the key.
2. Remove the roller assembly from the cultivator.
3. Lift up and release the spring catch on the side of the cultivator (Fig. 10).

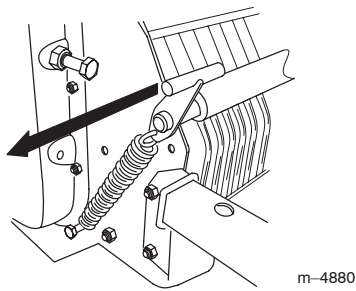


Figure 10

4. Open the tine cover (Fig. 11).

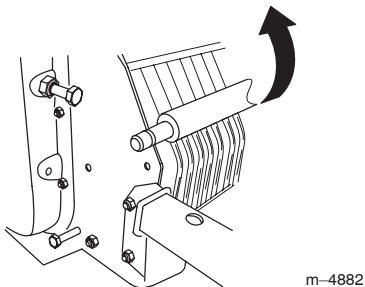


Figure 11

5. Remove old tines one at a time and install the new tines (Fig. 12).

Each center hub has four tines, two right hand and two left hand. The hub on the ends of the shaft each have only two tines. Ensure that you replace each tine with the same type of tine that was installed perviously.

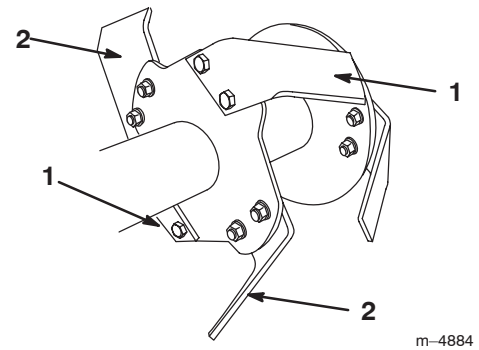


Figure 12

1. Left hand tine
2. Right hand tine

Note: Always replace all of the tines on a hub at the same time to ensure that the balance is maintained.

6. Torque the tine mounting bolts to 86.8 ft-lb (117.6 N·m).
7. Close the tine cover and secure it with the spring latch.
8. Install the roller assembly.

Storage

1. Before long term storage wash the cultivator with mild detergent and water to remove dirt and grime.
2. Check and adjust the tension of the drive chain.
3. Grease all fittings.
4. Check and tighten all bolts, nuts, and screws. Repair or replace any part or tines that are damaged or worn.
5. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
6. Store the cultivator in a clean, dry garage or storage area. Cover the cultivator to protect it and keep it clean.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Cultivator does not operate.	1. Hydraulic coupler not completely connected 2. Damaged hydraulic coupler 3. An obstruction in a hydraulic hose 4. Auxiliary valve on the traction unit is not opening. 5. An obstruction in the cultivator (e.g., rock or root) 6. Broken drive chain 7. Loose drive chain 8. Damaged hydraulic valve 9. Damaged drive motor	1. Check and tighten all couplers. 2. Check couplers and replace any that are damaged. 3. Find and remove the obstruction. 4. Repair the valve. 5. Find and remove the obstruction. 6. Repair or replace the chain. 7. Adjust the chain tension. 8. Replace or repair the valve. 9. Replace or repair the drive motor.

