Form No. 3419-980 Rev A

TORO®

Count on it.

Operator's Manual

ProCore® SR54, SR54-S, SR70, SR70-S, or SR72 Aerator

Model No. 09931—Serial No. 318000001 and Up
Model No. 09932—Serial No. 318000001 and Up
Model No. 09933—Serial No. 318000001 and Up
Model No. 09934—Serial No. 318000001 and Up
Model No. 09935—Serial No. 318000001 and Up

Register at www.Toro.com.
Original Instructions (EN)

CE

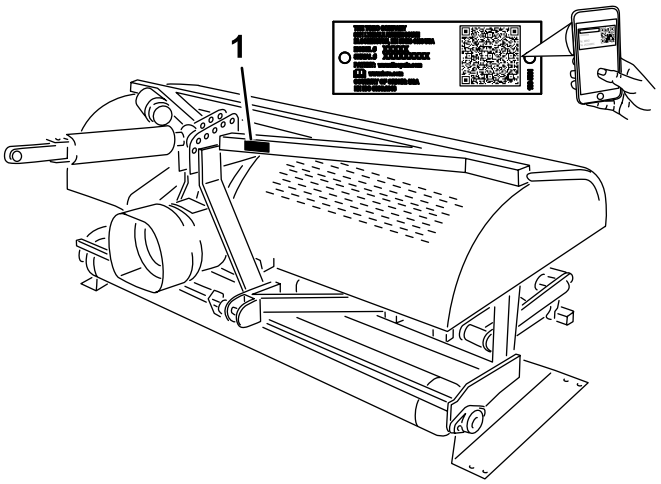
3419-980 A

This product complies with all relevant European directives when all the appropriate setup procedures have been completed; for details, please see the separate product specific Declaration of Conformity (DOC) sheet.

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or reproductive harm.



g235770

Figure 1

1. Model and serial number location

Introduction

This machine is intended to be used by professional, hired operators in commercial applications. It is designed primarily for working large areas on well-maintained lawns in parks, golf courses, sports fields, and on commercial grounds.

Important: **To maximize the safety, performance, and proper operation of this machine, carefully read and fully understand the contents of this *Operator's Manual*. Failing to follow these operating instructions or to receive proper training may result in injury. For more information on safe operating practices, including safety tips and training materials, go to www.Toro.com.**

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Figure 1 identifies the location of the model and serial numbers on the product. Write the numbers in the space provided.

Important: **With your mobile device, you can scan the QR code (if equipped) on the serial number decal to access warranty, parts, and other product information.**

Model No. _____

Serial No. _____

This manual identifies potential hazards and has safety messages identified by the safety-alert symbol (Figure 2), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



g000502

Figure 2

1. Safety-alert symbol

This manual uses 2 words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

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Safety

General Safety

This product is capable of causing personal injury. Always follow all safety instructions to avoid serious personal injury.

Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

- Read and understand the contents of both this *Operator's Manual* and the operator's manual of the tow vehicle before using this machine. Ensure that everyone using this product knows how to use this machine and the tow vehicle and understands the warnings.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and working on the machine.
- Keep the machine a safe distance away from bystanders while it is moving.
- Keep children out of the operating area. Never allow children to operate the machine.
- Stop the machine, shut off the engine, engage the parking brake, remove the key, and wait for all moving parts to stop before servicing, fueling, or unclogging the machine.

Improperly using or maintaining this machine 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 these instructions may result in personal injury or death.

You can find additional safety information where needed throughout this manual.

Safety and Instructional Decals

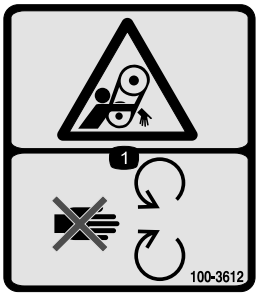
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



decal117-7052

117–7052

1. Read the *Operator's Manual*, do not oil the chain drive.



decal100-3612

100–3612

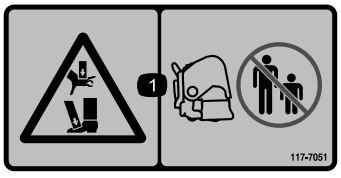
1. Entanglement hazard—stay away from moving parts, keep all guards and shields in place.



decal127-4235

127-4235

1. Entanglement hazard, shaft—stay away from moving parts.
2. Read the *Operator's Manual*; PTO speed and input direction.
3. Use the clip to secure the lash cable when not in use. Use the lash cable to support the shaft when the machine is disconnected from the tow vehicle.



decal117-7051

117–7051

1. Crushing hazard of hand or foot—keep bystanders a safe distance from the machine.



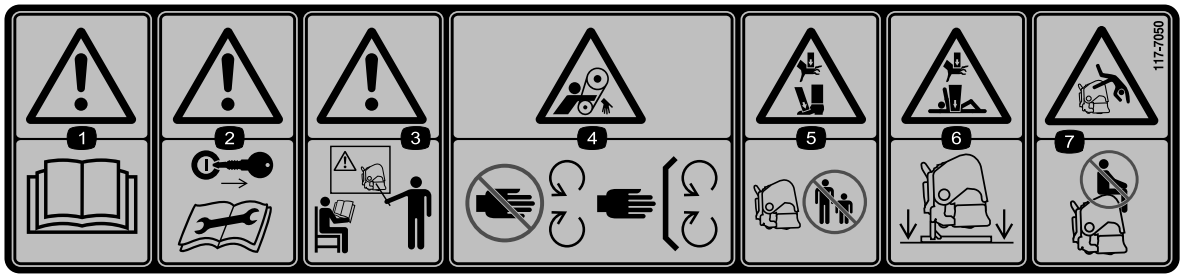
decal92-1581

92–1581



decal92-1582

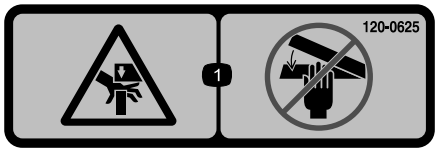
92–1582



decal117-7050

117-7050

1. Warning—read the *Operator's Manual*.
2. Warning—remove the ignition key and read the instructions before servicing or performing maintenance.
3. Warning—do not operate this machine unless you are trained.
4. Entanglement hazard, belt—stay away from moving parts, keep all guards in place.
5. Crushing hazard of hand or foot—keep bystanders a safe distance away from the machine.
6. Crushing hazard of hand and body—support machine on stand when not in use.
7. Falling hazard—do not carry passengers.



decal120-0625

120-0625

1. Pinch point, hand—keep hands away.

Setup

Loose Parts

Use the chart below to verify that all parts have been shipped.

Procedure	Description	Qty.	Use
1	No parts required	–	Remove the aerator from the crating.
2	Hitch pin Lynch pin	2 2	Connect the lower link arms (hitch pins and lynch pins are shipped installed on the SR54 and SR54-S aerators).
3	Hydraulic top link Hydraulic hose (3-1/2 ft) Hydraulic hose (2-1/2 ft) Extension bracket Rotational bracket Hose quick couplings	1 1 1 2 1 2	Connect the hydraulic top link (Models SR54, SR70, and SR72).
4	Depth gauge Slide block Machine screw (#10 x 1/2 inch) Screw (1/4 x 2-1/2 inch) Tube clamp Weld plate Depth decal	1 1 2 2 1 1 1	Install the depth gauge.
5	Spring-loaded top link Link pin Lynch pin	1 3 3	Connect the upper link (Models SR54-S and SR70-S).
6	No parts required	–	Verify the top link setup.
7	No parts required	–	Check the PTO angle.
8	PTO shaft	1	Fit the PTO shaft.
9	PTO shield	1	Install the PTO shield.
10	Pin (supplied with PTO shaft) Nut (supplied with PTO shaft)	1 1	Connect the PTO shaft.
11	No parts required	–	Adjust the sway links.
12	Level (not supplied)	1	Level the aerator side-to-side.
13	Tines (as required)	–	Install the tines.
14	No parts required	–	Set the tine depth.
15	Rear guard Screw (3/8 x 3-1/4 inch) Flat washer (0.438 x 1 inch) Locknut End cap	1 4 12 4 2	Install the rear guard.

Procedure	Description	Qty.	Use
16	No parts required	–	Remove the storage stands.
17	Lock plate Tap bolt Retaining ring	2 2 2	Install the latch lock.
18	CE decal Production year decal	1 1	Apply the CE decal and the production year decal.

Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Read before operating the aerator
Spring wires - SR54 and SR54-S	6	Replacement spring wires
Spring wires - SR70 and SR70-S	8	Replacement spring wires
Spring wires - SR72	4	Replacement spring wires
Spring wires - SR72	2	Replacement spring wires
PTO Operators Manual	1	Read before operating the aerator

1

Removing the Aerator from the Crating

No Parts Required

Procedure

1. Remove the aerator from the crating.
2. Remove the bolts securing the aerator storage stands to the shipping pallet and remove the aerator from the pallet.
3. Remove the storage stands from the aerator. Retain them for storage use.

   Note: The SR54-S and the SR70-S do not have shipping stands.
4. Place the aerator on a flat, level surface with the front roller on the ground and a block of wood positioned under the heads.

2

Connecting the Lower Link Arms

Parts needed for this procedure:

2	Hitch pin
2	Lynch pin

Procedure

1. Back the tractor squarely up to the aerator until the lower link arms are aligned with the mounting brackets.

   Note: The aerator gearbox shaft should be in line with the tractor PTO shaft (centered on the tractor). If they are not in line, adjust the lower link arms, from side to side until the shafts are aligned.
2. Ensure that the PTO is disengaged.
3. Engage the parking brake, shut off the engine, and remove the key. Wait for the engine and all moving parts to stop before leaving the operator's seat on the tractor.

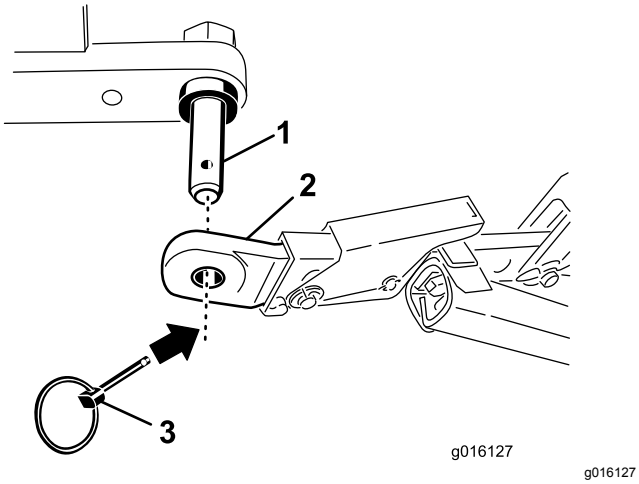
   Note: For maximum ground clearance, the hitch pins should be secured in the aerator lower mounting bracket holes, when so equipped.

To determine when to use the upper mounting holes, refer to 10 Connecting the PTO Shaft (page 14).

SR54 and SR54-S Aerators only

Note: The hitch pins and lynch pins are shipped installed on the SR54 and SR54-S aerators.

4. Secure the lower link arms to the aerator mounting pins with lynch pins (Figure 3).



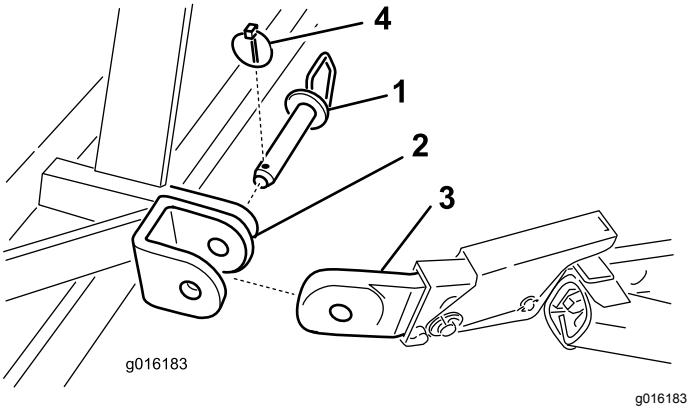
g016127

Figure 3

1. Aerator mounting pin
2. Lower link
3. Lynch pin

SR70, SR70-S, and SR72 Aerators only

5. Secure the lower link arms to the aerator mounting brackets with hitch pins and lynch pins (Figure 4).



g016183

Figure 4

1. Hitch pin
2. Aerator mounting bracket
3. Lower link
4. Lynch pin

3

Connecting the Hydraulic Top Link

Models SR54, SR70, and SR72

Parts needed for this procedure:

1	Hydraulic top link
1	Hydraulic hose (3-1/2 ft)
1	Hydraulic hose (2-1/2 ft)
2	Extension bracket
1	Rotational bracket
2	Hose quick couplings

Procedure

Note: Make sure that the supplied couplings are correct for the tractor. If not, it will be necessary to contact the tractor manufacturer to obtain the correct couplings.

The tractor must be equipped with a double acting spool valve with an operator control lever and two 12.7 mm (1/2 inch) quick-release couplings at the rear of the tractor. The 2 quick couplings have been provided to fit to the hydraulic top link hoses (1/2-14 NPTF hose end thread size).

This section will be used to install the hoses and determine the need for the extension or rotation blocks. This information will help to determine the depth range of the aerator.

1. Secure the connecting link end of the hydraulic top link to the tractor with the pins supplied with the tractor (Figure 5). Position the hydraulic top link so the rod end is toward the aerator. The cylinder ports should be positioned toward the tractor's auxiliary power hydraulics.

   Note: If the hydraulic cylinder must be positioned with the ports facing upward, use the rotational block instead of the standard mounting block to reposition the cylinder (Figure 5). A 90 degree hydraulic fitting may be used instead of the rotational block (fittings are not supplied).

   Install the rotational block as follows:

   A. Remove the cotter pin and pin securing the standard connecting link to the cylinder

(Figure 5). Remove the connecting link from the cylinder.

B. Install the rotational block to the cylinder with the pins previously removed (Figure 5).

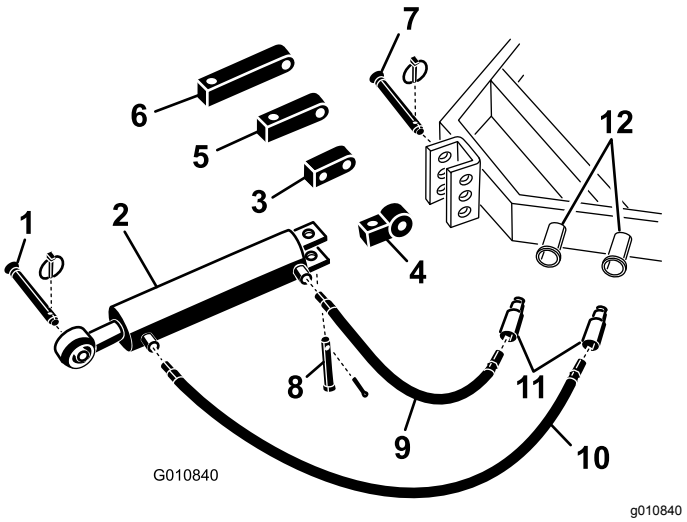


Figure 5

1. Aerator hitch pin
2. Hydraulic top link
3. Rotational block
4. Connecting link
5. 3 inch extension block
6. 5 inch extension block
7. Tractor link pin
8. Clevis and lynch pin
9. 2-1/2 foot hydraulic hose
10. 3-1/2 foot hydraulic hose
11. Hose quick couplings
12. Tractor hydraulic ports

2. Connect the 106 cm (3-1/2 foot) long hydraulic hose to the hydraulic top link port which is closest to the aerator Figure 5. Apply pipe-thread sealing tape or compound to the hose threads to prevent any leaks.
3. Connect the 76 cm (2-1/2 foot) long hydraulic hose to the hydraulic top link port which is closest to the tractor (Figure 5). Apply pipe-thread sealing tape or compound to the hose threads to prevent any leaks.
4. Install quick couplings to the hydraulic hoses (1/2-14 NPTF hose end thread size). Apply pipe-thread sealing tape or compound to the hose threads to prevent any leaks.
5. Connect the 2 hydraulic hose quick couplings to the ports provided on the tractor.
6. Start the tractor engine and operate the tractor spool valve to check the extend and retract motion of the hydraulic top link.

   Note: Reverse the hose connections, at the tractor, if they do not agree with the tractor control operation.
7. Secure the rod end of hydraulic top link to the most forward hole possible in the aerator bracket with link pin and lynch pin (Figure 6 or Figure 7).

Important: **When securing the rod end of the hydraulic link, use the most forward mounting holes in the mounting bracket so that there is enough clearance for the barrel of the cylinder when retracted.**

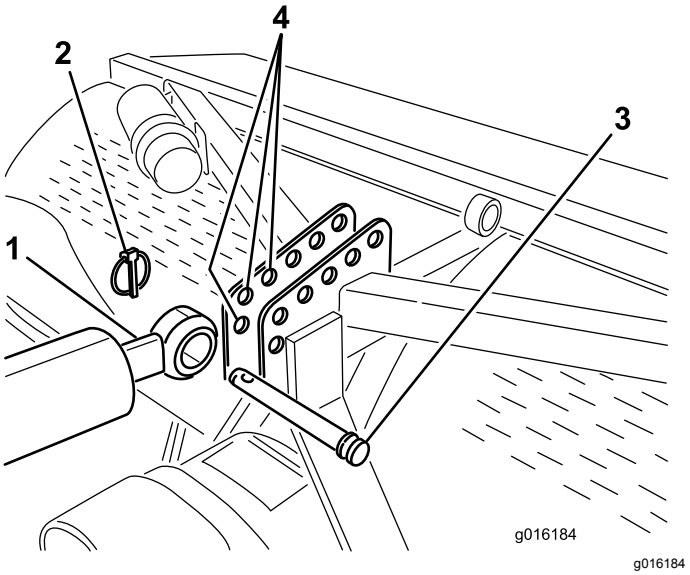


Figure 6

SR54 and SR70 mounting shown

1. Rod end of cylinder
2. Lynch pin
3. Link pin
4. Aerator bracket (forward holes)

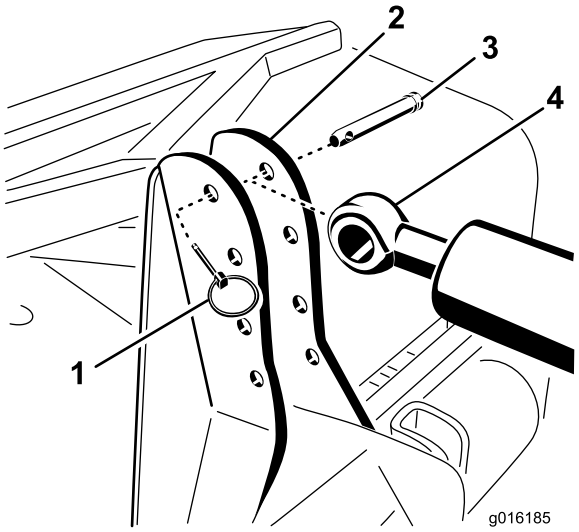


Figure 7

SR72 mounting shown

1. Lynch pin
2. Aerator bracket
3. Link pin
4. Rod end of cylinder

If the hydraulic cylinder does not reach the aerator mounting bracket, use an extension block instead of the standard mounting block to connect the cylinder to the tractor (Figure 5).

Note: If an extension block is installed and the cylinder needs to be retracted to be installed, the aerator tine heads will get closer to the ground.

Install the extension blocks as follows:

A. Remove the cotter pin and pin securing the standard connecting link to the cylinder (Figure 5). Remove the connecting link from the cylinder.

B. Install the required length extension block to the cylinder with the pins previously removed (Figure 5).

4

Installing the Depth Gauge

Models SR54, SR70, and SR72

Parts needed for this procedure:

1	Depth gauge
1	Slide block
2	Machine screw (#10 x 1/2 inch)
2	Screw (1/4 x 2-1/2 inch)
1	Tube clamp
1	Weld plate
1	Depth decal

Procedure

1. Mount the depth gauge to the flat side of the slide block with 2 machine screws (#10 x 1/2 inch), positioning the components as shown in Figure 8.

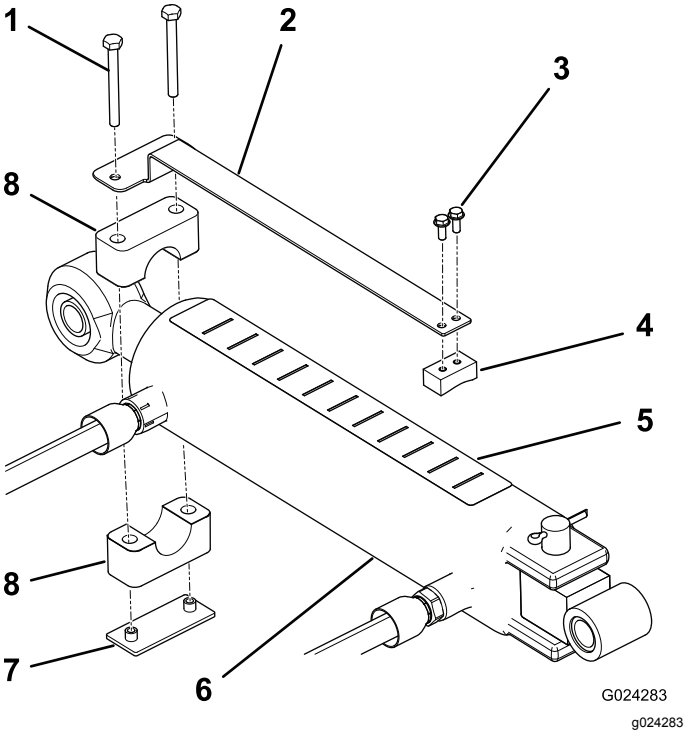


Figure 8

1. Screw
2. Depth gauge
3. Machine screw (2)
4. Slide block
5. Depth decal
6. Cylinder
7. Weld plate
8. Tube clamp

2. Using the tube clamp, weld plate and 2 screws (1/4 x 2-1/2 inches), loosely mount the depth gauge to the rod end of the top link cylinder (Figure 8). Make sure that the clamps are loose enough to allow them to be rotated to the desired position.
3. Make sure that the top of the cylinder is clean enough to except the installation of a decal.
4. Affix the depth decal to the top of the cylinder at a location that is visible from the operating position and does not interfere with hydraulic hoses or other obstructions (Figure 8). The end of the decal with the letter “J” is to be positioned toward the aerator.
5. Check to make sure the cylinder rod can extend and retract fully without interfering with other tractor or aerator components. Then, tighten the depth gauge mounting screws when the desired location is attained.
6. The letters on the decal do not correspond to a particular depth. Run the aerator on a test plot to determine the desired setting and note the corresponding position on the depth indicator. You then can adjust the cylinder while in operation to a deeper setting “J” or shallower setting “A” as desired.

5

Connecting the Tractor Upper Link (Models SR54-S and SR70-S)

Parts needed for this procedure:

1	Spring-loaded top link
3	Link pin
3	Lynch pin

Procedure

1. Mount the spring-loaded top link to the aerator bracket with 2 link pins and lynch pins (Figure 9)
2. Loosen the locknut on the tractor upper link. Adjust the upper link length until it aligns with the clevis on the spring-loaded top link of the aerator (Figure 9).

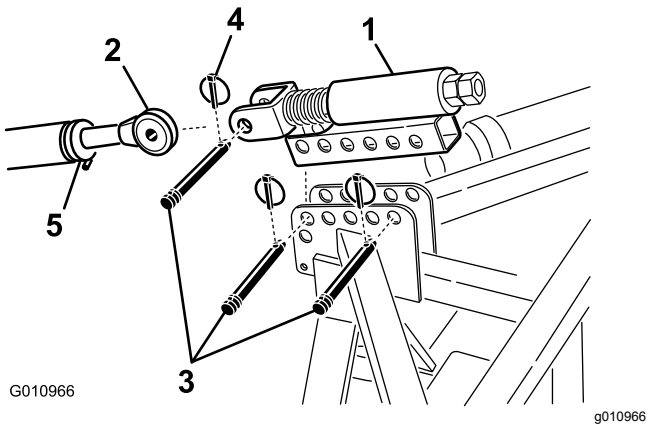


Figure 9

1. Spring-loaded top link
2. Upper link
3. Link pin
4. Lynch pin
5. Locknut

3. Connect the tractor upper link to the clevis on the spring-loaded top link and secure with a link pin and lynch pin (Figure 9).
4. Grease the threaded steel upper link tubes.
5. Measure the length of the spring in the top link.
6. Rotate the upper link until the spring is compressed by about 13 mm (1/2 inch) (Figure 9).
7. Tighten the locknut to secure the upper link into position.

6

Verifying the Hydraulic Top Link Setup

No Parts Required

Procedure

- Extending the hydraulic cylinder increases the tine depth.
- Fully extend the hydraulic cylinder to determine the location of the tine heads and to verify if they contact the ground.

  Note: On undulating turf, the operator can adjust the cylinder to maintain tine depth (cresting a hill) but it will be necessary to have the tine heads set about 5 cm (2 inches) below ground.
- If the tine heads contact the ground, turf damage may occur.

  If the tine heads contact the ground, adjust the location of the cylinder ends to move the top of the aerator closer to the tractor.
- If the tine heads do not contact the ground, extension brackets (included with aerator) can be installed to the top link to move the tine heads closer to the ground.

Important: **When connecting the PTO, be sure that the aerator is not being lifted higher than is necessary. Lifting the machine too high will cause the PTO shaft knuckles to break (Figure 10). Do not leave the PTO turning when the aerator is raised. You can operate the PTO up to an angle of 25°, but do not exceed a 35° angle when the aerator is at its highest position; otherwise, severe shaft damage may occur.**

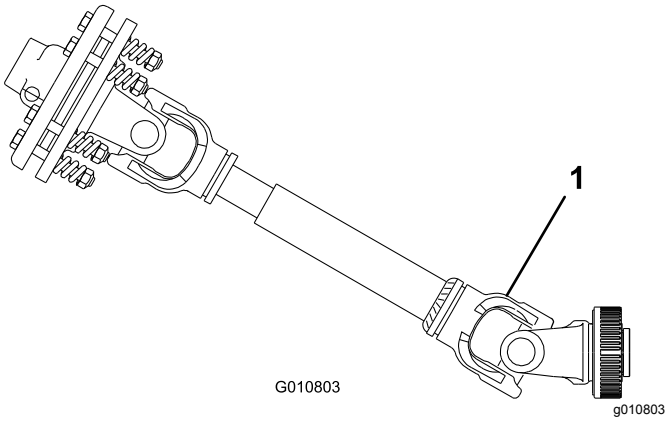


Figure 10

1. Breakage will occur here.

7

Checking the PTO Angle

No Parts Required

Procedure

Important: **Ensure that the tines are removed before performing this operation.**

With the aerator positioned on the ground and lowered to the deepest location, check the angle between the PTO and the aerator.

Lift the aerator and fully retract the hydraulic top link cylinder. Using an angle indictor, check the angle between the PTO and the aerator. If this angle is greater than 35°, adjust the tractor so that the aerator cannot be lifted past 35°. Use the tractor lift stop (if so equipped) or move the lower links to a higher mounting hole (if so equipped).

8

Fitting the PTO Shaft

Parts needed for this procedure:

1	PTO shaft

Procedure

1. Park the tractor and aerator on a level surface.
2. Raise the aerator completely and fully retract the hydraulic top link cylinder or upper link (Figure 11).

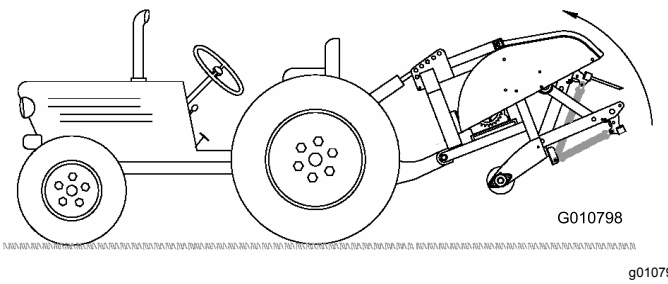


Figure 11

3. Measure the distance from the locking groove on the end of the tractor PTO shaft to the locking groove on the aerator gearbox PTO shaft (Figure 12). Record this distance. Example: 67 cm (26.5 inches).

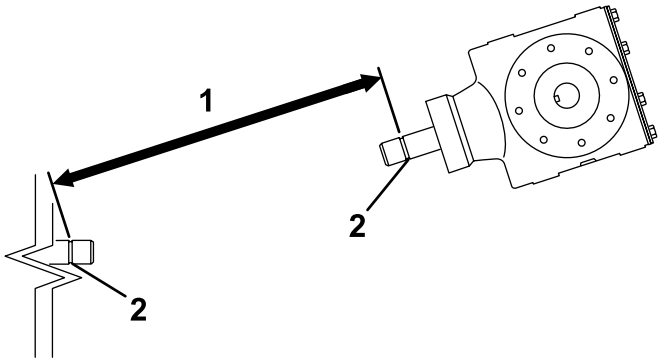
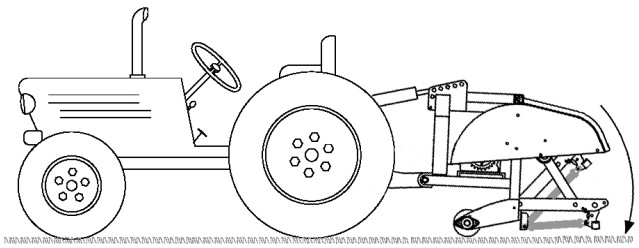


Figure 12

1. Measure here
2. Locking groove

4. Lower the aerator to the ground and fully extend the hydraulic top link cylinder or upper link (Figure 13).

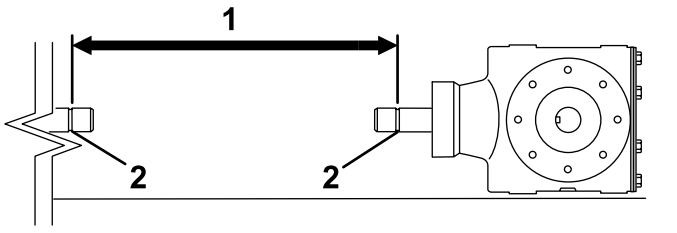


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Figure 13

5. Measure the distance from the locking groove on the end of the tractor PTO shaft to the locking groove on the aerator gearbox PTO shaft (Figure 14). Record this distance. Example: 70 cm (27.5 inches).

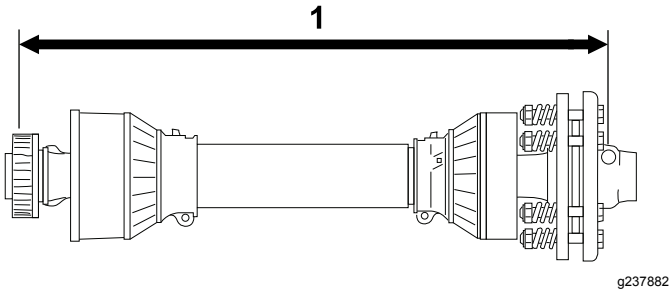


g237883

Figure 14

1. Measure here
2. Locking groove

6. On the PTO shaft, measure the distance from the center of locking pin ball on one end to the center of the locking pin on the other end (Figure 15). Record this distance. Example: 81 cm (32 inches).



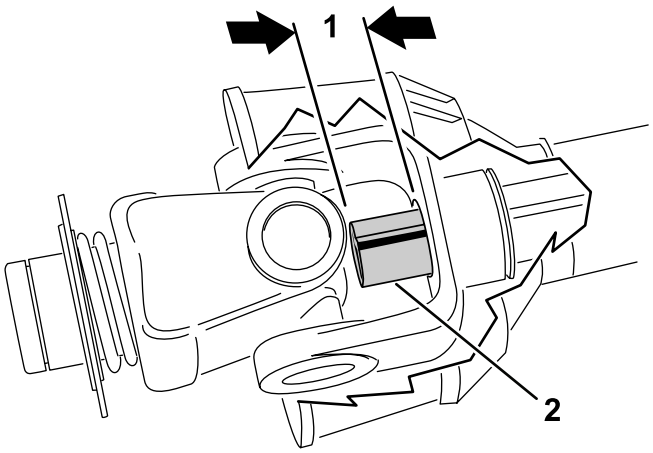
g237882

Figure 15

1. Measure here

7. Using the smaller of the two measurements in Figure 14 and Figure 12, subtract that distance from the distance in Figure 15. Example: 81 cm (32 inches) minus 67 cm (26.5 inches) equals 14 cm (5.5 inches).
8. The example measurements show that the shaft is 14 cm (5.5 inches) too long. Add an extra 1.2 cm (1/2 inch) to be sure that the PTO shaft will not bottom out when the aerator is lifted to its highest position.

   Example: 14 cm (5.50 inches) plus 1.2 cm (1/2 inch) equals 15 cm (6.00 inches).
9. Slide the PTO shaft tubes together until they are fully collapsed. Verify that the **inside** tube does not protrude into the cross and bearing section of the outer tube (Figure 16). If this happens, **more** will have to be cut off the inside tube, to correct the problem. Proceed to next step.
10. Measure the distance the inside tube protrudes into the cross and bearing section of the outer tube (Figure 16). Add this distance to the dimension attained in step 8.

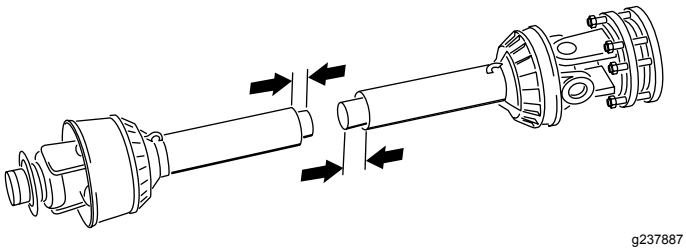


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Figure 16

1. Cut off
2. Inside tube

11. Separate the two halves of the PTO shaft (Figure 17).
12. Measure the distance from the end of each tube to its safety shield (Figure 17). Record the distances.

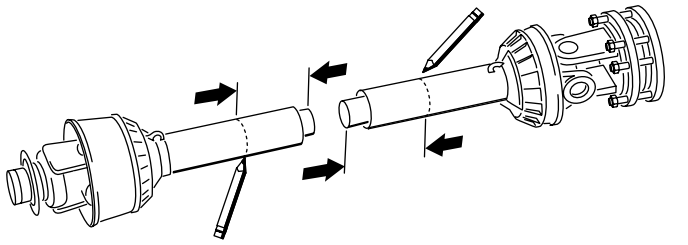


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Figure 17

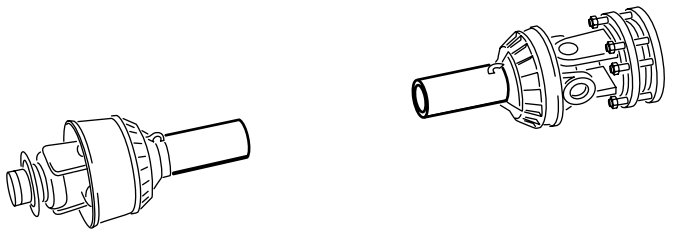
13. Using the dimensions determined in step 8, locate, mark and cut off the shield and tube from each PTO half (Figure 18 and Figure 19).

    Note: More will have to be cut off the inside tube if it was protruding into the cross and bearing section of the outer tube.



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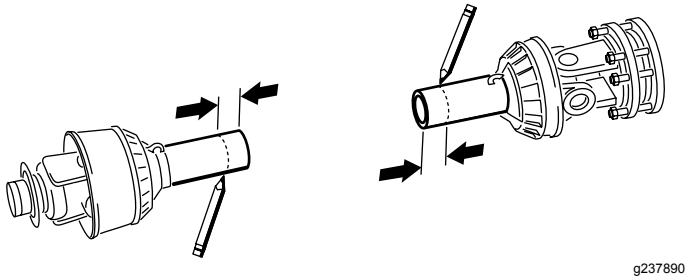
Figure 18



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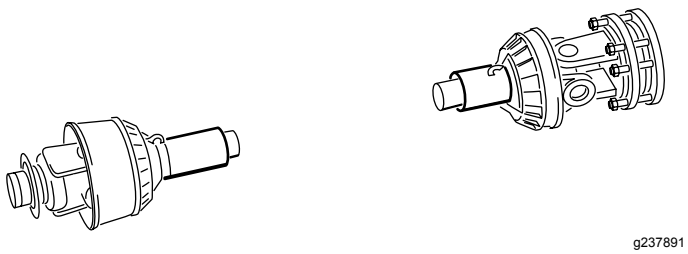
Figure 19

14. Using the dimensions determined in step 11, locate, mark and cut off just the safety shields to expose the tubes (Figure 20 and Figure 21).



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Figure 20



g237891

Figure 21

15. Carefully deburr the ends of the tubes with a file and remove all the filings from the tubes.
16. Grease the inside tube.

    Note: Telescoping tubes must always overlap by 1/2 of their length in normal operation and at least 1/3 of their length in all working conditions. During transport, when the drive line is not rotating, the telescoping tubes must have a suitable overlap to maintain the tubes alignment and allow them to slide freely.

9

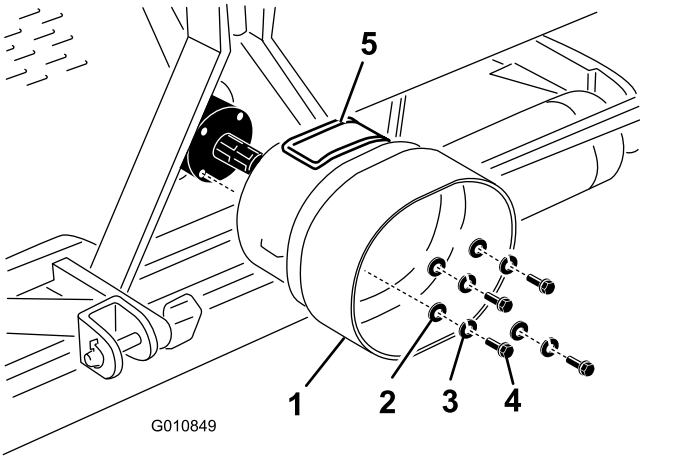
Installing the PTO Shield

Parts needed for this procedure:

1	PTO shield

Procedure

1. Remove the 4 bolts, lock washers, and flat washers secured to the rear of the aerator gearbox (Figure 22).



g010849

Figure 22

1. PTO shield
2. Flat washer
3. Lock washer
4. Bolt
5. Access panel

2. Mount the PTO shield to the aerator gearbox with the fasteners previously removed (Figure 22). When mounting the PTO shield, ensure that the access panel (Figure 22) is positioned to the top or the side depending on the aerator frame configuration.

10

Connecting the PTO Shaft

Parts needed for this procedure:

1	Pin (supplied with PTO shaft)
1	Nut (supplied with PTO shaft)

Procedure

Note: You can open the access panel (Figure 22) to ease the removal and installation of the PTO shaft mounting fasteners.

1. Remove the pin and nut from the PTO shaft (Figure 23).
2. Connect the clutch end of the PTO shaft to the aerator gearbox input shaft with pin and nut previously removed (Figure 23). The pin can be inserted only one way.

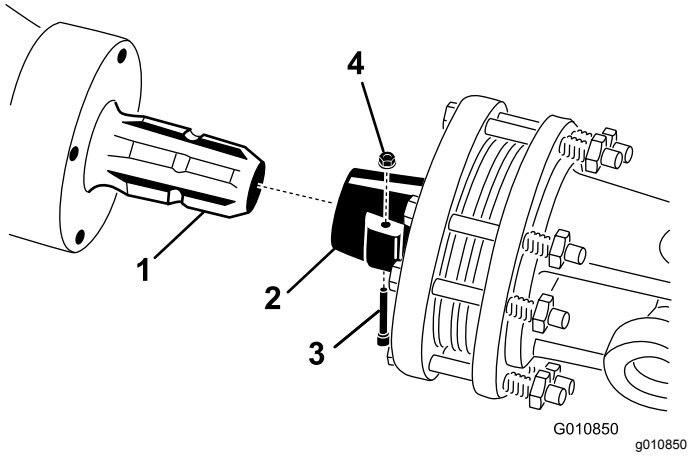


Figure 23

1. Gearbox input shaft
2. PTO shaft coupler
3. Pin
4. Nut

Note: Close and latch the PTO shield access panel if opened.

Note: Ensure that the pin is fully inserted into the yoke of the PTO.

3. Connect the PTO shaft to the tractor PTO shaft (Figure 24).

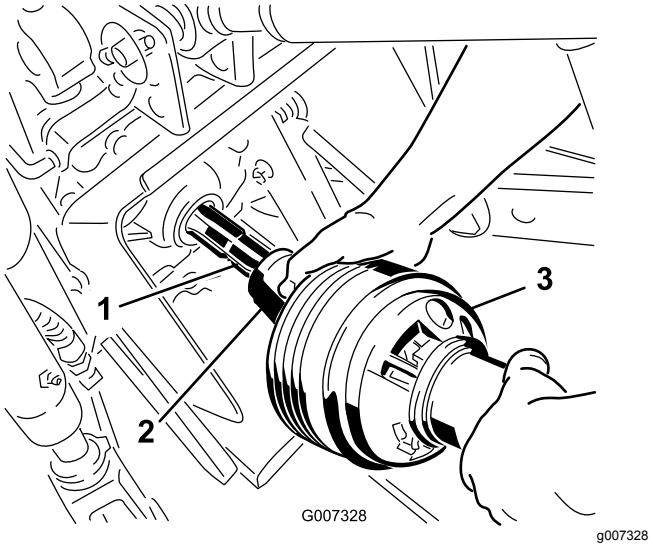


Figure 24

1. Tractor output shaft
2. PTO shaft coupler
3. PTO shaft

4. Slide the PTO shaft forward as far as the tractor allows.
5. Pull back the locking collar to secure the PTO shaft in place. Slide the PTO shaft back and forth to ensure that it is properly locked.
6. Connect the shield safety chains to the PTO shield and the tractor bracket (Figure 25). Ensure that the chains remain slack when the aerator is raised or lowered.

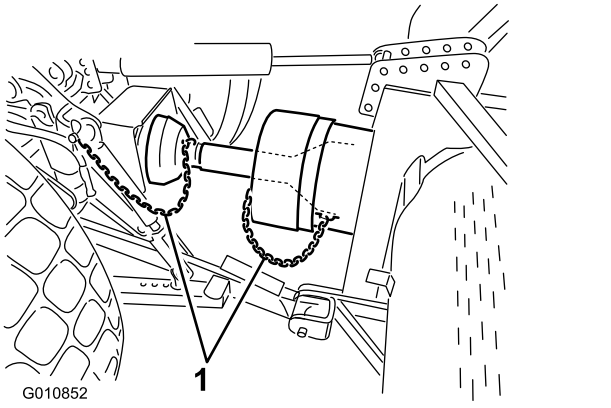


Figure 25

1. Safety chains

Note: To avoid excess lift, connect the lift arms of the tractor into the top holes of the lift bracket, if so equipped (Figure 26). The maximum angle on the PTO shaft is 35°.

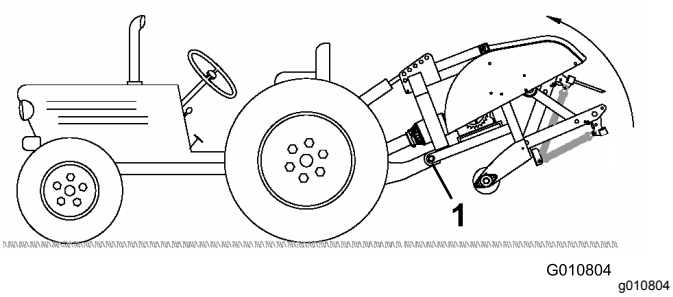


Figure 26

1. Top holes

Important: **When connecting the PTO, be sure that the aerator is not being lifted higher than is necessary. Lifting the machine too high will cause the PTO shaft knuckles to break (Figure 27). Never leave the PTO turning when the aerator is lifted. The PTO can be operated up to an angle of 25°, but can never exceed a 35° angle when the aerator is at its highest position.**

7. Verify that the PTO shield does not interfere with the clutch.

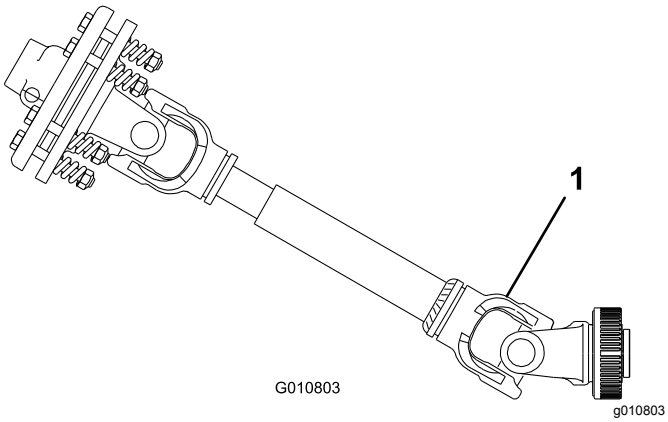


Figure 27

1. Breakage will occur here.

11

Adjusting the Sway Links

No Parts Required

Procedure

The aerator is designed to be centered with the tractor PTO shaft center line. Adjust the sway links as required.

The PTO shaft should be as straight as possible to the tractor PTO shaft.

Adjust the sway links on the lower lift arms to minimize side-to-side sway to a maximum of 25 mm (1 inch) on each side (Figure 28).

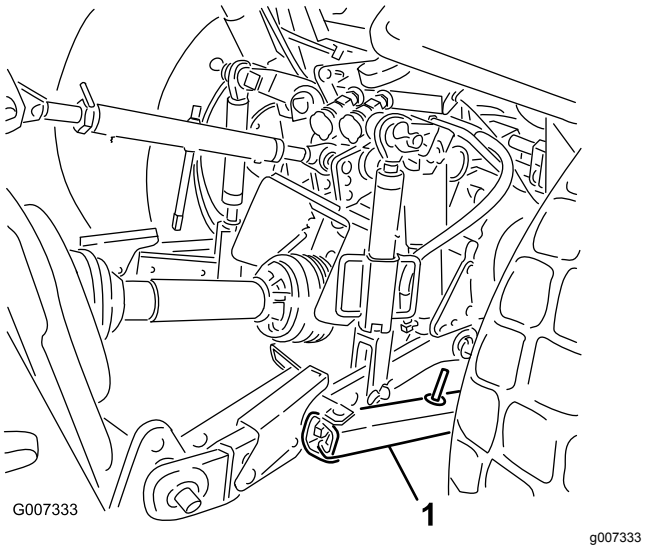


Figure 28

1. Sway link

Adjust the lower links inboard until they contact the aerator mounting plates. This reduces the stress on the pins. If the tractor has sway chains instead of sway links, install washers between the lower link arm and lynch pin to reduce the over hung load on the lift pins.

Note: Refer to the tractor operator's manual for additional installation and adjustment procedures.

12

Leveling the Aerator Side-to-Side

Parts needed for this procedure:

1	Level (not supplied)

Procedure

1. Park the tractor and aerator on a firm, level surface.
2. Place a level on top of the aerator frame to check for level side-to-side (Figure 29).

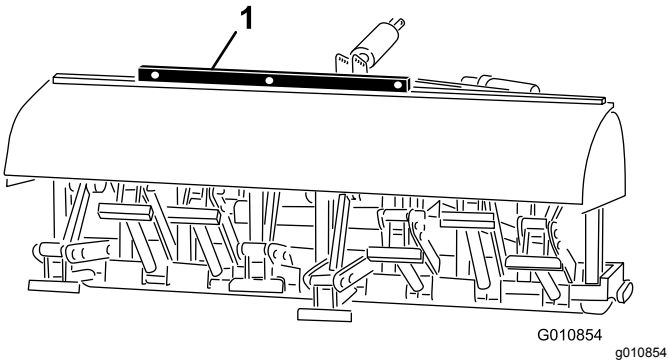


Figure 29

1. Level

3. Turn the adjustable link body (if provided) to raise or lower the link arm until the aerator is leveled side-to-side.

   Note: Refer to the tractor operator's manual for additional adjustment procedures.

13

Installing the Tines

Parts needed for this procedure:

–	Tines (as required)

Procedure

A wide selection of tines are available for the aerator. Choose the tine type, size, and spacings required for the job. Refer to the *Parts Catalog* for the list of accessories.

1. Ensure that the aerator is fully supported on the stands or support blocks.
2. Turn off the tractor engine and remove the key.
3. Loosen the clamping bolts and remove the previously used tines (Figure 30).

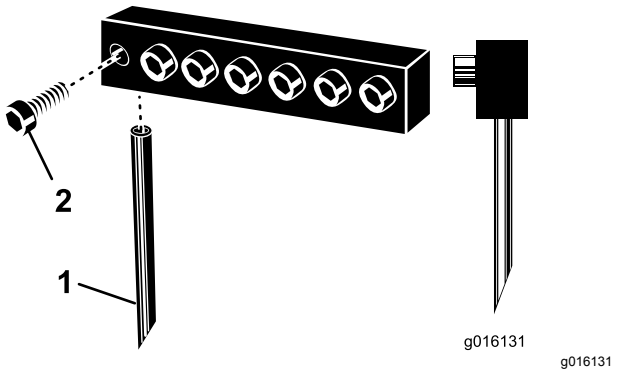


Figure 30

1. Tine
2. Clamping bolt

4. Slide the new tines into the holes sized to fit the tines selected. Never use small diameter tines in the large diameter holes; the tines should fit closely in the hole. Be sure to slide the tine up into the head until it bottoms out.

   Note: Hollow coring tines should be positioned with the ejection slot to the rear while the solid tines should have the tine tip angle facing the machine (Figure 30).
5. Tighten the clamping bolts firmly to secure the tines. **Do not use impact tools.**
6. Set the tine angle for the new tines. Refer to Adjusting the Tine Angle (page 25).
7. Before aerating formal turf for the first time after installing tines, test the aerator on a less important area so that you can try alternative tractor gears and fine tune the adjustment to achieve the hole spacing and turf appearance desired.

14

Setting the Tine Depth (Models SR54-S and SR70-S)

No Parts Required

Procedure

You can change the tine depth by raising or lowering the rear roller. The roller height is adjusted by moving the roller adjusting bolts to the desired position.

Note: The aerator is shipped in Position A.

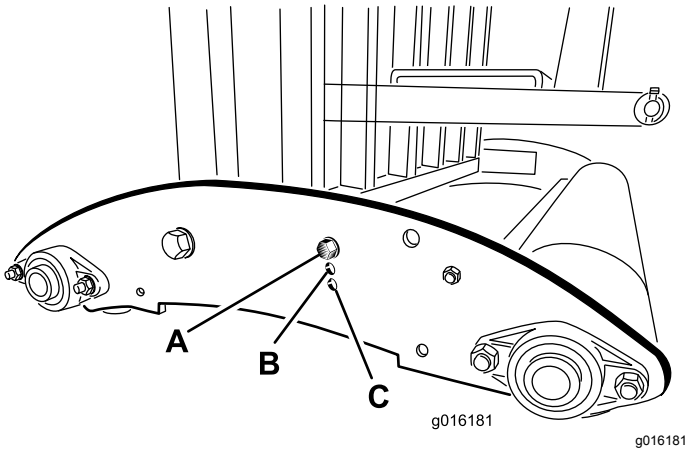


Figure 31

- **Position A** - Maximum depth
- **Position B** - Depth is decreased 38 mm (1-1/2 inches) from Position A
- **Position C** - Depth is decreased 76 mm (3 inches) from Position A

15

Installing the Rear Guard

Parts needed for this procedure:

1	Rear guard
4	Screw (3/8 x 3-1/4 inch)
12	Flat washer (0.438 x 1 inch)
4	Locknut
2	End cap

Procedure

1. Insert the end caps into the ends of the rear guard tubes (Figure 32).

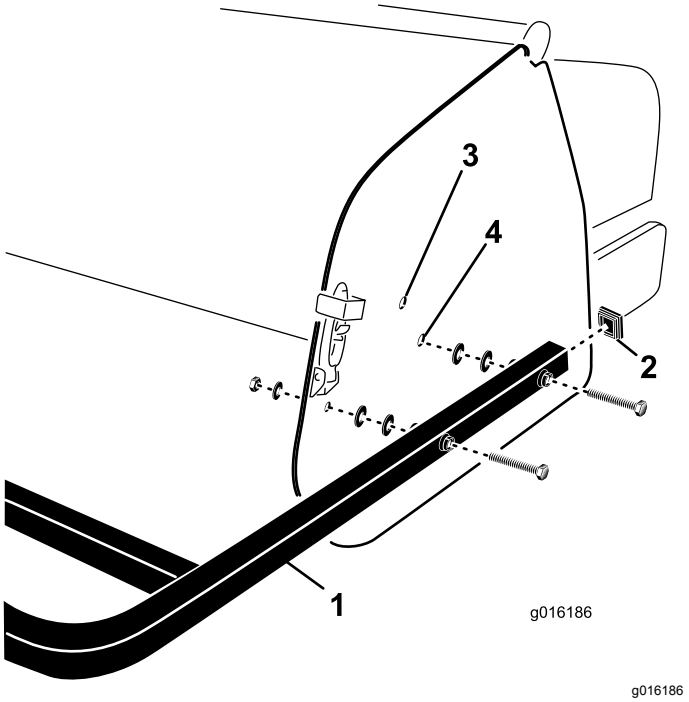


Figure 32

1. Rear guard
2. End cap
3. Upper mounting hole
4. Lower mounting hole

2. Align the holes in the rear guard mounting tubes with the holes in the aerator side plates (Figure 32).

   Note: On SR54-S and SR70-S models, mount the ends of the tubes to the lower side plate mounting holes if the aerator tine depth is set in Position A (Figure 33). Use the upper mounting holes for depth setting Positions B or C.

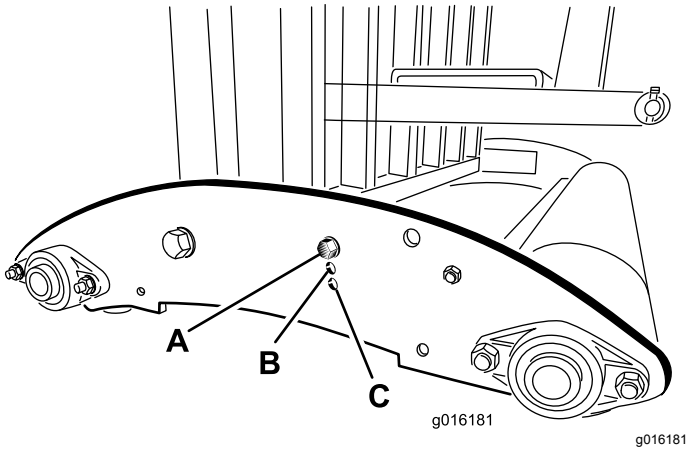


Figure 33

3. Secure the guard mounting tubes to the side plates with 4 screws, flat washers and nuts (Figure 32).

Note: Use the remaining washers, as required, to fill any gap between the tubes and the aerator side plates.

16

Removing the Storage Stands

No Parts Required

Models SR54 and SR70

1. Raise the aerator roller(s) 7.5 to 15 cm (3 to 6 inches) off the ground. Place support blocks under the roller(s).
2. Remove the bolts, lock washers, and nuts securing the storage stands to each end of the aerator (Figure 34).

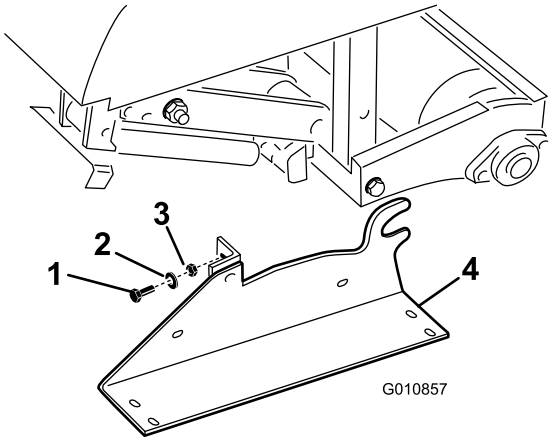


Figure 34

1. Bolts
2. Lock washer
3. Nut
4. Storage stand

3. Remove the storage stands.
4. Use the storage stands whenever the aerator is removed from the tractor.

Model SR72

1. Raise the aerator roller(s) 7.5 to 15 cm (3 to 6 inches) off the ground. Place support blocks under the roller(s).
2. Remove the bolts, lock washers, and nuts securing the storage stands to each end of the aerator (Figure 35).

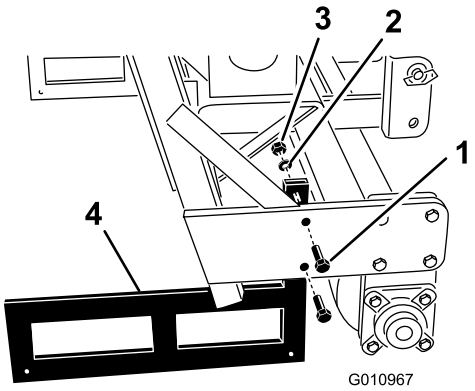


Figure 35

1. Bolts
2. Lock washer
3. Nut
4. Storage stand

3. Remove the storage stands.
4. Use the storage stands whenever the aerator is removed from the tractor.

Note: When installing the storage stands, ensure that they are mounted to the inside of the roller plates so that the lower frame tube rests on the top of the stands.

Note: Models SR54-S and SR70-S do not have storage stands.

17

Installing the Latch Lock

CE Only

Parts needed for this procedure:

2	Lock plate
2	Tap bolt
2	Retaining ring

Procedure

1. Position the latch plate over the hood latch while aligning the mounting hole with the hole in the side plate (Figure 36).

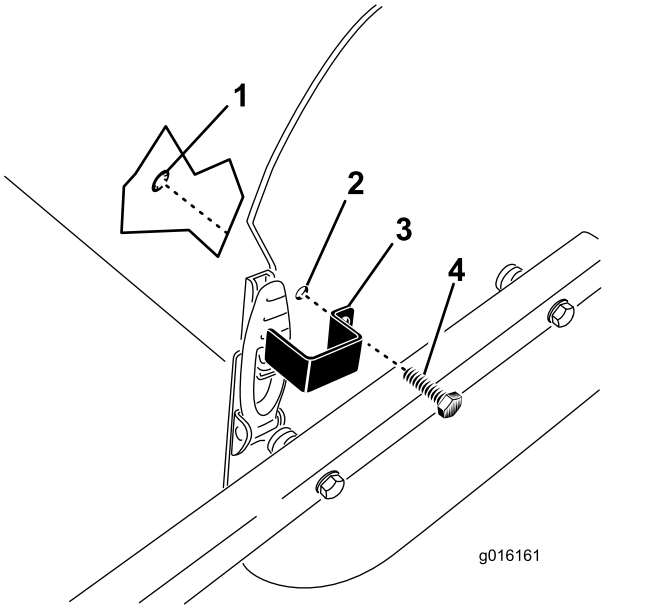


Figure 36

1. Retaining ring
2. Mounting hole
3. Latch plate
4. Tap bolt

2. Secure the latch plate to the side plate with a tap bolt and a retaining ring (Figure 36).
3. Repeat the procedure on the other hood latch.

18

Applying the CE Decal and the Production Year Decal

CE Only

Parts needed for this procedure:

1	CE decal
1	Production year decal

Procedure

After all the necessary CE requirements are met, apply the CE decal and the production year decal next to the serial plate (Figure 37).

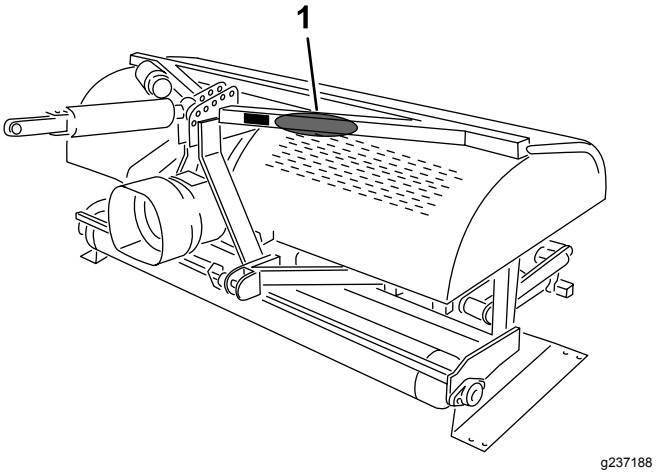


Figure 37

1. Apply the decals here.

Product Overview

Specifications

Note: Specifications and design are subject to change without notice.

	ProCore SR54	ProCore SR54-S	ProCore SR70	ProCore SR70-S	ProCore SR72
Weight with PTO and Top Link	528 kg (1165 lb)	563 kg (1242 lb)	623 kg (1373 lb)	679 kg (1498 lb)	948 kg (2091 lb)
Working Width	1.37 m (54 inches)	1.37 m (54 inches)	1.85 m (73 inches)	1.85 m (73 inches)	1.83 m (72 inches)
Working Depth (Adjustable)	25 to 250 mm (1 to 10 inches)	25 to 250 mm (1 to 10 inches)	25 to 250 mm (1 to 10 inches)	25 to 250 mm (1 to 10 inches)	25 to 400 mm (1 to 16 inches)
Hole Spacing	64 to 102 mm (2.5 to 4 inches)	64 to 102 mm (2.5 to 4 inches)	64 to 102 mm (2.5 to 4 inches)	64 to 102 mm (2.5 to 4 inches)	75 to 150 mm (3 to 6 inches)
Productivity	3,345 m^2/hr (36,000 ft^2/hr)	3,345 m^2/hr (36,000 ft^2/hr)	4,460 m^2/hr (48,000 ft^2/hr)	4,460 m^2/hr (48,000 ft^2/hr)	3,530 m^2/hr (38,000 ft^2/hr)
Recommended Tractor Size	16 to 18 hp	18 hp	25 to 35 hp	25 to 35 hp	45 hp
Recommended Lift Capacity	544 kg (1200 lb)	680 kg (1500 lb)	771 kg (1700 lb)	817 kg (1800 lb)	1,270 kg (2800 lb)
Recommended Counter Weight	70 kg (150 lb)	70 kg (150 lb)	115 kg (250 lb)	115 kg (250 lb)	135–225 kg (300 to 500 lb)
Recommended PTO Speed	400 to 460 rpm	400 to 460 rpm	400 to 460 rpm	400 to 460 rpm	400 to 460 rpm
Actual Working Speed @ 400 PTO rpm (Varies with hole spacing)	1.5 to 2.5 mph	1.5 to 2.5 mph	1.5 to 2.5 mph	1.5 to 2.5 mph	0.8 to 1.5 mph
Lift System	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point	Std. 3-point

Attachments/Accessories

A selection of Toro approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or Distributor or go to www.Toro.com for a list of all approved attachments and accessories.

To best protect your investment and maintain optimal performance of your Toro equipment, count on Toro genuine parts. When it comes to reliability, Toro delivers replacement parts designed to the exact engineering specification of our equipment. For peace of mind, insist on Toro genuine parts.

Operation

Note: Determine the left and right sides of the machine from the normal operating position.

Before Operation Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Know how to stop the machine and shut off the engine quickly.
- Check that operator-presence controls, safety switches, and shields are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Before operating, always inspect the machine to ensure that the tines are in good working condition. Replace worn or damaged tines.
- Inspect the area where you will use the machine and remove all objects that the machine could strike.
- Locate and mark all electrical or communication lines, irrigation components, and other obstructions in the area to be aerated. Remove the hazards, if possible, or plan how to avoid them.
- Ensure that your tractor is suitable for use with an implement of this weight by checking with your tractor supplier or manufacturer.
- Shut off the engine and wait for all moving parts to stop before making any adjustments to the machine.

OutCross Traction Unit Controls

Refer to the OutCross traction unit *Operator's Manual* for information on controls and operation, as well as additional information on setting up the aerator.

Tractor Controls

Become familiar with operating the following tractor controls before you operate the aerator:

- PTO engagement
- Engine/PTO speed
- 3-point hitch (raise/lower)
- Auxiliary valve operation
- Clutch
- Throttle
- Gear selection
- Parking brake

Important: **Refer to the tractor operator's manual for operating instructions.**

Principles of Operation

The 3-point hitch linkage/hydraulic top link on the tractor lifts the aerator for transport and lowers it for operation.

The power takeoff (PTO) power is transmitted via shafts, gearbox, and O-ring drive chains to a crankshaft, which drives the tine holding arms into the turf surface.

As the tractor travels forward with the PTO engaged and the machine lowered, a series of holes are created in the turf surface.

The depth of the tine penetration is determined by extending the hydraulic top link or setting the fixed top link to the desired position.

The distance between the holes created is determined by the gear ratio (or hydrostatic traction pedal position) of the tractor and the number of tines in each tine head. Changing the engine speed does not change the hole spacing.

Tractor PTO Speed

The aerator is designed to operate with a PTO speed of up to 460 rpm depending on the size/weight of the tines. Most tractors indicate a 540 PTO rpm position on the rev counters. Since the engine and PTO speeds are directly proportional, you can determine the engine speed required for a 400 rpm PTO by calculating as follows:

(Engine rpm at 540 PTO speed) x (400÷540) = required engine rpm

For example, if the engine rpm were 2,700 for a PTO speed of 540 rpm, you would get the following:

2,700 x (400÷540) = 2,000 rpm

In this example, running your tractor at 2,000 rpm now provides you with a 400 rpm PTO speed.

If your tractor indicates some other engine rpm at 540 PTO rpm, substitute that number for the 2,700 that was used above.

Note: The recommended PTO speed for 10-inch tines and shorter is 460 rpm and 425 rpm for tines longer than 10 inches.

Training Period

Before using the aerator, find a clear area and practice using the machine. Operate the tractor at recommended gear settings and PTO drive speeds and become thoroughly familiar with machine handling. Practice stopping and starting, raising and lowering the aerator, disengaging the PTO drive and aligning the machine with previous passes. A practice session increases confidence in the performance of the aerator and helps ensure use of proper operating techniques wherever the machine is operated.

If there are sprinkler heads, electrical or communication lines, or other obstructions in the area to be aerated, mark these items to ensure they are not damaged during operation.

⚠ CAUTION

Moving parts can cause personal injury.

To avoid personal injury, do not leave the tractor seat without first disengaging the PTO drive, engaging the parking brake, and shutting off the engine. Do not perform aerator repairs without first lowering the aerator onto the storage stand or appropriate blocking or jacks. Ensure that all safety devices are secured in their proper place before resuming operation.

Before Aerating

Locate and mark all electrical or communication lines, irrigation components, and any other underground hazards.

Inspect the area of operation for hazards that could damage the machine and remove them, if possible, or plan how to avoid them. Carry replacement tines, spring wires, springs and tools in case tines are damaged due to contact with foreign materials.

Important: **Do not operate the aerator in reverse or when it is in the raised position.**

During Operation Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; slip-resistant, substantial footwear; long pants; and hearing protection. Tie back long hair and do not wear dangling jewelry.
- Do not operate the machine when tired, ill, or under the influence of alcohol or drugs.
- Never carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Keep your hands and feet away from the tines.
- Look behind and down before backing up to be sure of a clear path.
- Stop the machine, shut off the engine, wait for all moving parts to stop, and inspect the tines after striking an object or if there is an abnormal vibration in the machine. Make all necessary repairs before resuming operation.
- The aerator is heavy. When attached to a tractor and in the raised position, its weight affects stability, braking and steering. Exercise caution when transporting between working areas.
- Always maintain proper tractor tire pressure.
- Ensure that you comply with all regulations before transporting equipment on the public roads and highways. Make sure that all required reflectors and lights are in place and are clean and visible by overtaking and oncoming traffic.
- Do not allow passengers to ride on the machine.
- Reduce speed on rough roads and surfaces
- Independent wheel brakes should always be locked together when transporting.
- For all PTO shaft steel parts (tubes, bearings, joints, etc.) disassembly or repairs, it is highly advisable to contact your local Toro distributor. Removal of components for repairs and reassembly may damage some parts if not performed with special tools by trained technicians.
- The PTO shaft must not be used without the guards supplied.
- Friction clutches may become hot during use. Do not touch. To avoid the risk of fire, keep the area around the clutch free of flammable material and avoid prolonged slipping of the clutch.

Slope Safety

- Review the tow vehicle specifications to ensure that you do not exceed its slope capabilities.
- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. You are responsible for safe slope operation. Operating the machine on any slope requires extra caution.
- Evaluate the site conditions to determine if the slope is safe for machine operation including

surveying the site. Always use common sense and good judgment when performing this survey.

- Review the slope instructions listed below for operating the machine on slopes and review the conditions to determine whether you can operate the machine in the conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine.
- Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction. Make turns slowly and gradually.
- Do not operate a machine under any conditions where traction, steering, or stability is in question.
- Remove or mark obstructions such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Tall grass can hide obstructions. Uneven terrain could overturn the machine.
- Be aware that operating the machine on wet grass, across slopes, or downhill may cause the machine to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering.
- Use extreme caution when operating the machine near drop offs, ditches, embankments, water hazards, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Establish a safety area between the machine and any hazard.

Aerating Procedures

Important: **If the machine has been stored for an extended period, ensure that the PTO slip is operational. Refer to Adjusting the PTO Clutch (page 32).**

1. Lower the aerator so that the tines are nearly to the ground at the lowest part of their stroke.
2. At a low tractor engine speed, engage the power takeoff (PTO) clutch to start the aerator working.
3. Select a gear that gives a forward speed of approximately 1 to 4 km/h (0.8 to 2.5 mph) at the rated PTO speed of 400 to 460 rpm (refer to the tractor operator's manual).
4. As the clutch is released and the tractor moves forward, lower the aerator fully onto the roller(s) and increase engine speed to give a maximum of 400 to 460 rpm (460 on model SR72) at the PTO.

   Important: **Never operate the tractor PTO in excess of 460 rpm or damage to the aerator could occur.**

   Important: **Make sure that the roller is on the ground at all times when the aerator is operating.**

5. Note the hole pattern. If you require greater hole spacing, increase forward the speed of the tractor by shifting up a gear or with a hydrostatic drive tractor, actuate the hydrostat lever or pedal to give faster speed. For closer hole spacing, decrease tractor forward speed. **Changing engine speed while in the same gear will not change the hole pattern.**

   Important: **Look behind frequently to ensure the machine is operating properly and alignment is maintained with previous passes.**

6. Use the front tractor wheel as a guide to maintain equal lateral hole spacing with the previous pass.
7. At the end of the aeration pass, raise the aerator and quickly disengage the PTO.
8. If you back into a tight area (like a tee box), disengage the PTO and raise the aerator to its highest position. Never attempt to aerate in reverse.
9. Always clear the area of all damaged machine parts, such as broken tines, etc., to prevent anything from being picked up by mowers or other turf maintenance equipment and thrown.
10. Replace broken tines, inspect and correct damage to those still usable. Repair any other machine damage before continuing operation.

Subsoil Cultivation

Subsoil cultivation, fracturing or heave is created by a spading motion of the tine in the soil as the aerator and tractor move forward. Quality of finish on the playing surface after aerating will depend on various factors including turf condition, root growth and moisture content.

Hard Ground

If the ground is too firm to obtain the desired aeration depth, the coring head can get into a bouncing rhythm. This is due to the hard pan that the tines are attempting to penetrate. This condition can be corrected by attempting one or more of the following:

- Best results are obtained after a rain or when turf has been watered the previous day.
- Reduce the number of tines per stomper arm. Attempt to maintain a symmetrical tine configuration to evenly load the stomper arms.
- Reduce aerator penetration (depth setting) if ground is hard packed. Clean up cores, water turf, and aerate again at a deeper penetration.

Aeration of soil types built on top of hard sub soils (i.e. sand/soil cap placed over rocky ground) can cause undesired hole quality. This is caused when the aeration depth is greater than the soil cap and the sub soil is too hard to penetrate. When the tines contact this sub soil the aerator may lift and cause the top of the holes to become elongated. Reduce the aeration depth sufficiently to avoid penetration into the hard sub soil.

Longer/Larger Tines

25 cm (10 inches) or More

Using longer/larger tines can leave the front or rear of the hole tufted or slightly deformed. Hole quality for this configuration generally improves if the coring head speed is reduced 10 to 15% from full operating speed. For PTO powered aerators reduce the engine speed until the PTO speed is around 400 to 420 rpm. The forward spacing is not affected by reducing the engine speed. The pushed hole can also be affected by the position of the camber bracket. Refer to Adjusting the Tine Angle (page 25).

Multi Row Adapter Heads

When using multi-row adapter heads, reduce the engine speed until the PTO speed is around 400 to 420 rpm. The forward spacing is not affected by reducing the engine speed.

Root Zone Lifting

Using multi-tine heads in conjunction with larger coring tines or large diameter solid tines can induce significant stress on the root zone of the turf. This stress can fracture the root zone and cause a lifting action to the turf. If this damage occurs try one or more of the following:

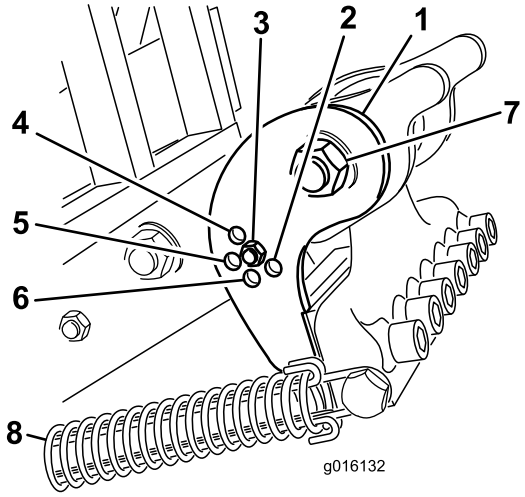
- Reduce tine density (remove some of the tines)
- Decrease coring depth (suggested in 1/2 inch increments)
- Increase forward hole spacing (change tractor transmission up one gear)
- Decrease the tine diameter (solid or coring)

Adjusting the Tine Angle

Model SR72

Set the camber bracket (Figure 38) to the correct position based on the length of tines to be used. The head stop is set to one of five predetermined positions by choosing the hole through which the adjustment rod is bolted. These holes are presets only; for instance, by using a 10-inch tine in the 12-inch position you may achieve a smoother finish; depending on the application.

1. Disengage the PTO and engage the parking brake.
2. Shut off the engine and remove the key.
3. Release the spring tension to the tine head (Figure 38).
4. Remove the nut and bolt in the adjustment holes in the camber bracket (Figure 38).



g016132

Figure 38

1. Camber bracket
2. 16-inch tine
3. 12-inch tine
4. 7-inch tine
5. 10-inch tine
6. 14-inch tine
7. Tine head pivot bolt
8. Spring

5. Rotate the camber bracket until it is aligned with the desired hole in the arm and install the bolt and nut.

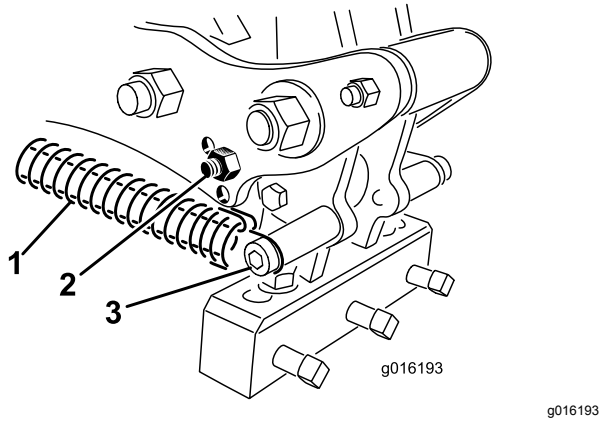
   Note: Make sure that the bolt goes through the camber bracket and plate.
6. Connect the spring tension to the tine head.

Models SR54, SR54-S, SR70 and SR70-S

Set the tine angle according to the tine length by using one of the two adjustment holes in the linkage arm. These holes are presets only. When using 17.77 cm (7-inch) to 25.4 cm (10-inch) tines, the head bumper should be positioned closest to the rear of the tine head. The other position (the hole farthest from the head) may be needed due to variances of soil conditions.

1. Disengage the PTO and engage the parking brake.
2. Shut off the engine and remove the key from ignition switch.

3. Release the spring tension to the tine head (Figure 39).



g016193

Figure 39

1. Spring
2. Bumper bolt
3. Spring pin and clip

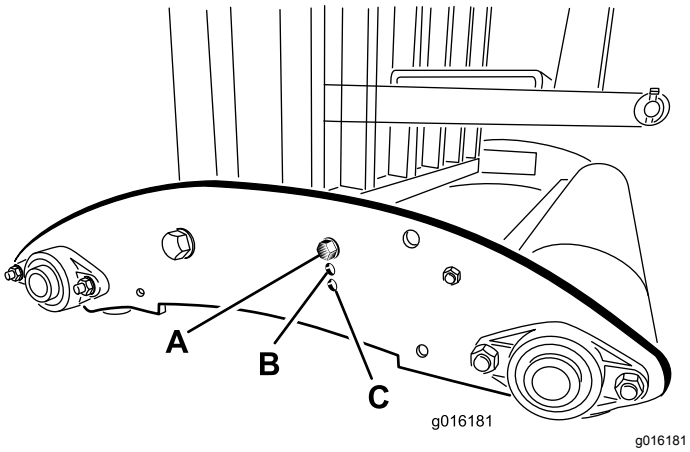
4. Remove the bumper bolt and bumper from the linkage arm and reinsert them into the other adjustment hole (Figure 39).
5. Connect the spring tension to the tine head.

Adjusting the Tine Depth

Models SR54-S and SR70-S

You can change the tine depth by raising or lowering the rear roller. You can adjust the roller height by moving the roller adjusting bolts to the desired position.

Note: The aerator is shipped in Position A.



g016181

Figure 40

- **Position A** - Maximum depth
- **Position B** - Depth is decreased 38 mm (1-1/2 inches) from Position A
- **Position C** - Depth is decreased 76 mm (3 inches) from Position A

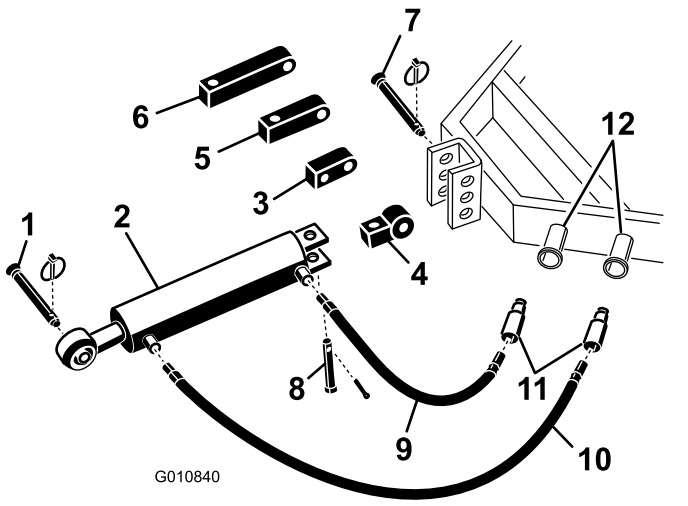
Models SR54, SR70, and SR72

Start the tractor engine and operate the tractor spool valve to check the extend and retract motion of the hydraulic top link.

Note: Reverse the hose connections, at the tractor, if they do not agree with the tractor control operation.

The letters on the decal do not correspond to a particular depth. Run the aerator on a test plot to determine the desired setting and note the corresponding position on the depth indicator. You then can adjust the cylinder while in operation to a deeper setting “J” or shallower setting “A” as desired.

Note: Extending the cylinder makes the aerator penetrate deeper.



g010840

Figure 41

1. Aerator hitch pin
2. Hydraulic top link
3. Rotational block
4. Connecting link
5. 3 inch extension block
6. 5 inch extension block
7. Tractor link pin
8. Clevis and lynch pin
9. 2-1/2 foot hydraulic hose
10. 3-1/2 foot hydraulic hose
11. Hose quick couplings
12. Tractor hydraulic ports

Adjusting the Head Return Springs

You can adjust the head return springs to increase or decrease the tension. Moving the spring toward the front of the aerator increases the spring tension, thus increasing the distance between the spring mounting posts.

1. Disengage the PTO and engage the parking brake.
2. Shut off the engine and remove the key.
3. Release the spring tension to the linkage arm.

4. Remove the nut securing the spring mounting post bolt to the linkage arm (Figure 42 or Figure 43).

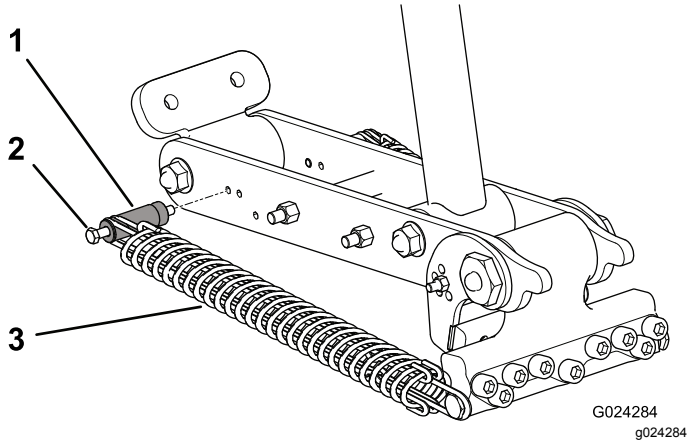


Figure 42
SR72

1. Spring mounting post
2. Bolt
3. Spring

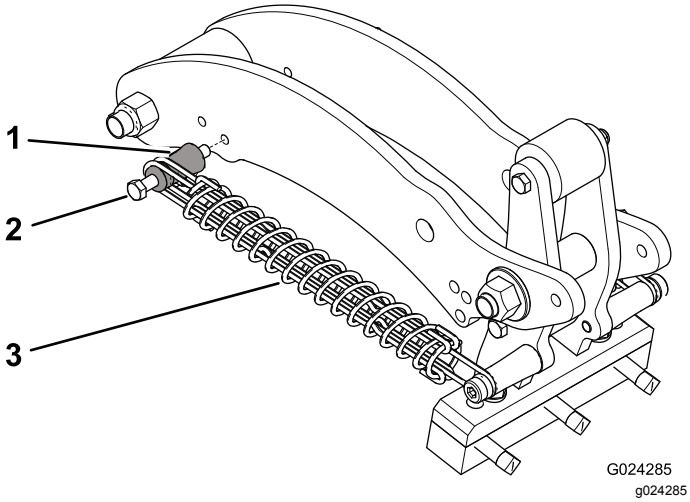


Figure 43
SR54, SR54-S, SR70 and SR70-S

1. Spring mounting post
2. Bolt
3. Spring

5. Remove the mounting post bolt and the mounting post from the linkage arm and reinsert them into the another adjustment hole (Figure 42 or Figure 43).
6. Install the nut securing the spring mounting post bolt to the linkage arm.
7. Reconnect the spring tension to the linkage arm.

Transport Operation

To begin transport operation, raise the aerator and disengage the PTO. To avoid loss of control, traverse steep inclines slowly, approach rough areas at reduced speed and cross severe undulations carefully.

Important: **Do not exceed transport speeds of 24 km/h (15 mph).**

After Operation Safety

- Keep all parts of the machine in good working condition and all hardware tightened.
- Replace all worn, damaged, or missing decals.

Inspection and Cleanup after Use

After daily use, thoroughly wash the machine with a garden hose **without** a nozzle to avoid contamination and seal and bearing damage due to excessive water pressure. You can use a brush to remove accumulated material. Use mild detergent to clean the covers. After cleaning, grease all drive lines and roller bearings, inspect for machine damage, oil leakage, and component and tine wear. **Do not oil the O-ring drive chain.**

Remove, clean, and oil the tines. Spray a light oil mist on the coring head bearings (crank and damper links).

Clean and coat the springs with a dry lubricant like graphite or silicone.

Operating Tips

- Carry replacement tines, spring wires, springs and tools in case tines are damaged due to contact with foreign materials.
- Engage the PTO at low engine speed. Increase the engine speed to achieve the desired PTO speed of 400 to 460 rpm (maximum) and lower the aerator. Operate at an engine speed at which the aerator runs most smoothly.

  Note: Changing the engine/PTO speed in a particular tractor gear (or fixed hydrostatic pedal position on tractors with hydrostatic transmission) does not change the hole spacing.
- Make very gradual turns when aerating. Never make sharp turns with PTO drive engaged. Plan your aeration path before lowering the aerator. Making sharp turns while aerating will damage the aerator and the tines.
- If the tractor bogs down when operating on hard ground or going uphill, raise the aerator slightly until speed is regained, then lower the aerator again.
- Best results are achieved when the tine entry is on a slight incline toward the rear of the machine. Use caution when extending the hydraulic top

link to keep from hammering the turf with the tine heads. In some cases, you may not achieve the best results from using the preset holes in the camber brackets, especially where the grass roots are short or weak. You may want to experiment using another camber setting that will set the tines on more of an incline to keep from pulling soil out of the hole.

- Do not aerate if the ground is too hard or dry. Best results are obtained after a rain or when the turf has been watered the previous day.

  Note: If the roller rides up off the ground while aerating, the ground is too hard to achieve the desired depth; reduce the aeration depth until the roller contacts the ground during operation.

- Raise the aerator penetration if the ground is hard packed. Clean up the cores and aerate again at a deeper penetration, preferably after watering.

⚠ CAUTION

Improperly using or maintaining this machine can result in injury.

To avoid personal injury, never leave the tractor seat without first disengaging the PTO drive, engaging the parking brake, and shutting off the engine. Do not perform aerator adjustments or repairs without first lowering the aerator onto the safety stand. Ensure that all safety devices are secured in their proper place before resuming operation.

- Look behind frequently to ensure the machine is operating properly and alignment is maintained with previous passes. A loss of one line of holes indicates a bent or lost tine. Inspect after each pass.
- Always clear the area of all damaged machine parts, such as broken tines, etc., to prevent them from being picked up and thrown by mowers or other turf maintenance equipment.
- Replace broken tines, inspect and correct damage to those still usable. Repair any other machine damage before resuming operation.

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 50 hours	• Change the gearbox oil.
Before each use or daily	• Inspect the chain tension • Check the springs • Clean and lubricate springs and tine mounting screws. • Inspect the PTO for signs of wear.
Every 50 hours	• Grease the bearings and PTO shaft • Check the gearbox oil. • Inspect the chain tension • Inspect bearings.
Every 500 hours	• Change the gearbox oil. • Inspect bearings and replace as needed.
Before storage	• Oil the tine holder fasteners. • Perform all 50-hour maintenance procedures. • Paint any chipped surfaces. • Loosen the PTO clutch bolts. • Remove and clean tines. • Remove all debris.
Yearly	• Adjust the PTO clutch Before and after storage

Maintenance Safety

- Before servicing or making adjustments to the machine, stop the machine, shut off the engine, engage the parking brake, remove the key, and wait for all moving parts to stop.
- Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an authorized Toro distributor.
- Ensure that the machine is in safe operating condition by keeping nuts, bolts, and screws tight.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- Do not check or adjust the chain tension when the tractor engine is running.
- Carefully release pressure from components with stored energy.
- Support the machine with blocks or storage stands when working beneath it. **Never rely on the hydraulic system to support the machine.**
- Check the tine mounting bolts daily to be sure that they are tightened to specification.
- Ensure that all guards are installed and the hood is secured shut after maintaining or adjusting the machine.

Lifting the Machine

⚠ CAUTION

If the machine is not properly supported, the machine may move or fall, which may result in personal injury.

When changing attachments or performing other service, use correct blocks, hoists, or jacks. Ensure that the machine is parked on a solid level surface such as a concrete floor. Prior to raising the machine, remove any attachments that may interfere with the safe and proper raising of the machine. Always chock or block the wheels of the tow vehicle. Use storage stands or blocks to support the raised machine.

Note: You can use a hoist to lift the aerator. Use the coring head eyelet as a hoist attachment point (Figure 44). Ensure that the hoist has enough lift capacity. Refer to Specifications (page 21).

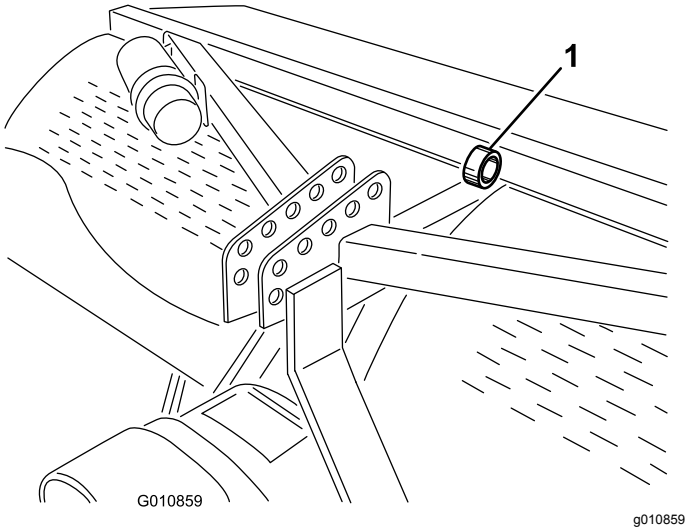


Figure 44

1. Coring head eyelet

Greasing the Bearings

Service Interval: Every 50 hours

The main working bearings of the aerator are sealed and require no maintenance or lubrication. This reduces the maintenance required and eliminates the risk of grease or oil being dropped onto the turf.

There are grease fittings that must be lubricated with an SAE multipurpose, high-temperature grease with high-pressure (EP) performance or SAE multipurpose lithium grease.

The lubrication points are as follows:

PTO shaft (3) (Figure 45)

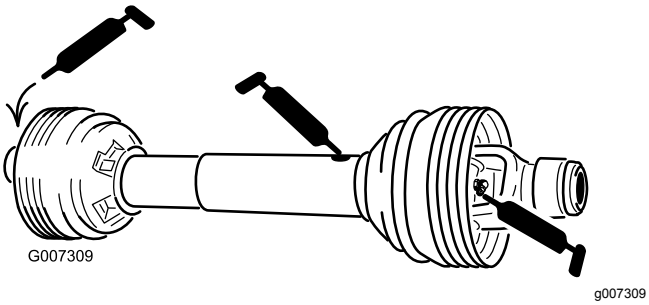


Figure 45

Roller bearings (2 or 4, depending on model) (Figure 46)

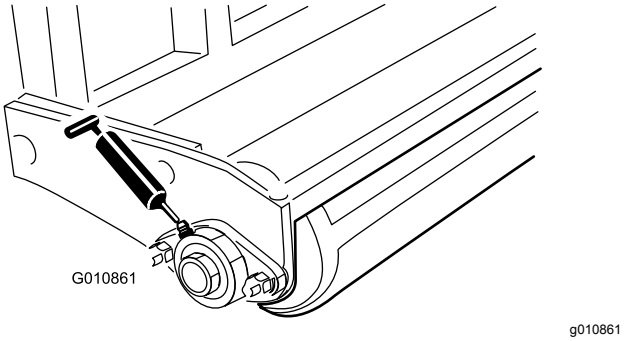


Figure 46

O-ring chain — **Do not lubricate the chain.**

Important: **Bearings rarely fail from defects in materials or workmanship. The most common reason for failure is moisture and contamination working its way past the protective seals. Bearings that are greased rely upon regular maintenance to purge harmful debris from the bearing area. Sealed bearings rely on an initial fill of special grease and a robust integral seal to keep contaminants and moisture out of the rolling elements.**

The sealed bearings require no lubrication or short term maintenance. This minimizes routine service required and reduces the potential of turf damage due to grease contamination. These sealed bearing packages will provide good performance and life under normal use, but periodic inspections of bearing condition and seal integrity should be conducted to avoid downtime. Inspect these bearings seasonally and replace them if they are damaged or worn. Bearings should operate smoothly with no detrimental characteristics such as high heat, noise, looseness or rust weeping.

Due to the operating conditions that these bearing/seal packages are subject to (i.e., sand, turf chemicals, water, impacts, etc.) they are considered normal wear items. Bearings that fail due to other than defects in materials or workmanship are typically not covered under warranty.

Note: Bearing life can be negatively affected by improper wash down procedures. Do not use high-pressure or high volume spray directly at the bearings.

It is common for new bearings to purge some grease out the seals on a new unit. This purged grease turns black in color due to collection of debris and not due to excessive heat. Wipe this excess grease from the seals after the initial 8 hours. There may always appear to be a wet area around the seal lip. This is not detrimental to bearing life, but keeps the seal lip lubricated.

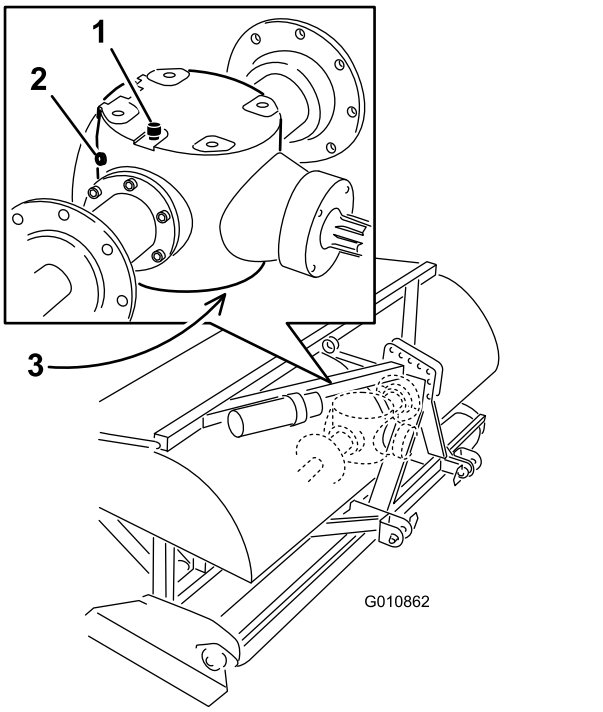
Checking the Gearbox Oil

Service Interval: Every 50 hours

The gearbox is filled with 80W–90 gear oil or equivalent. Allow the gearbox to cool before checking the oil level.

1. Clean debris from the fill plug and check plug to avoid contamination.
2. Remove the check plug from the gearbox (Figure 47).

   Note: If the gearbox has 2 check plugs, use the lower plug.



g010862

Figure 47

1. Vent/Fill plug
2. Check plug
3. Drain plug

3. Ensure that oil is up to the bottom of the check plug hole in the gearbox (Figure 47).
4. If the oil level is low, remove the vent/fill plug from top of the gearbox and replenish the oil as required.
5. Install the plugs.

Changing the Gearbox Oil

Service Interval: After the first 50 hours

Every 500 hours

The gearbox is filled with 80W-90 gear oil or equivalent.

1. Clean debris from vent/fill plug and drain plug to avoid contamination (Figure 47).
2. Remove the vent/fill plug to relieve air draw.
3. Position a drain pan under the drain plug and remove the plug.

   Note: The high viscosity of cool oil will extend the drain time (approximately 30 minutes).
4. After the oil is completely drained, reinstall the drain plug.
5. Fill the gearbox with high quality 80W-90 gear oil. Use the following chart to determine the gearbox oil capacity.

Model	Gear Case Capacity
SR54	1.9 L (2 US qt)
SR54-S	1.9 L (2 US qt)
SR70	1.9 L (2 US qt)
SR70-S	1.9 L (2 US qt)
SR72	3.8 L (4 US qt)

6. Install the vent/fill plug.
7. Check the oil level and replenish as required.

Inspecting/Adjusting the Drive Chain

Service Interval: Before each use or daily

Every 50 hours

Check the drive chain for damage and correct adjustment. The chain should have approximately 13 mm (1/2 inch) of overall deflection (6 mm [1/4 inch] in each direction).

Chain tension can be adjusted by slightly loosening the main jam nut and tightening the jam rod to desired position (Figure 48 or Figure 49). Do not adjust the chain tension when the chain is hot or warm.

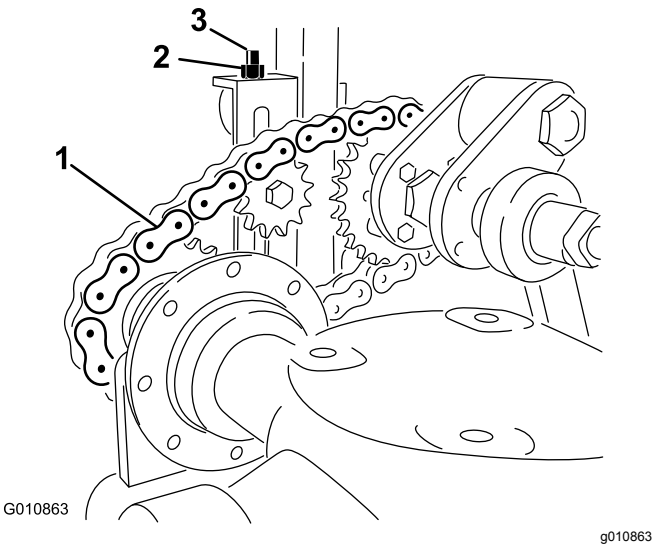


Figure 48
Models SR54, SR54-S, SR70, and SR70-S

1. Drive chain
2. Jam nut
3. Jam rod

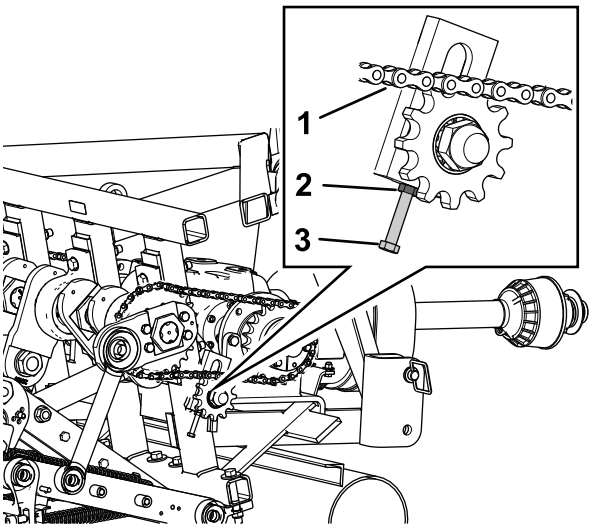


Figure 49
Model SR72

1. Drive chain
2. Jam nut
3. Jam rod

Important: **Do not overtighten the chains; excess tightening of chains can cause gearbox/sprocket damage.**

Adjusting the PTO Clutch

Service Interval: Yearly Before and after storage

⚠ WARNING

Friction clutches may become hot during use.

Do not touch. **To avoid the risk of fire, keep the area around the clutch free of flammable material and avoid prolonged slipping of the clutch.**

1. At the end of the season, back off each of the clutch nuts 2 turns (Figure 50).

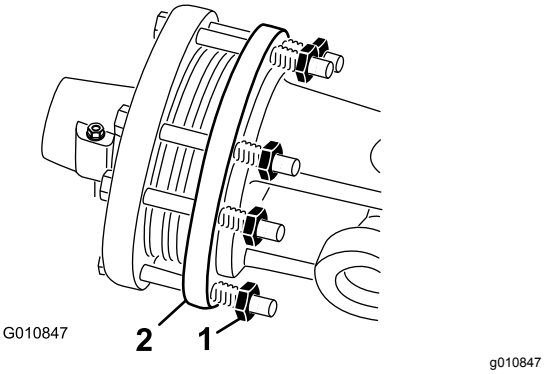


Figure 50

1. Clutch nut
2. Clutch

2. At the start of the new season, start the PTO and allow the clutch to slip for a few seconds before stopping the PTO. Turn back the nuts an additional 2 turns.

   Note: Do not allow the clutch to slip for an extended amount of time.

3. If the clutch continues to slip after turning back the nuts, tighten each nut an additional 1/4 turn until the slipping ceases. Do not overtighten the nuts, as shaft damage may occur.

Fastener Torque Specifications

	Models SR54, SR54-S, SR70, and SR70-S	SR72
Crank shaft nut	1288 N·m (950 ft-lb)	1627 N·m (1200 ft-lb)
Crank pin nut	1288 N·m (950 ft-lb)	1288 N·m (950 ft-lb)
Hinge bolt	359 N·m (265 ft-lb)	407 N·m (300 ft-lb)

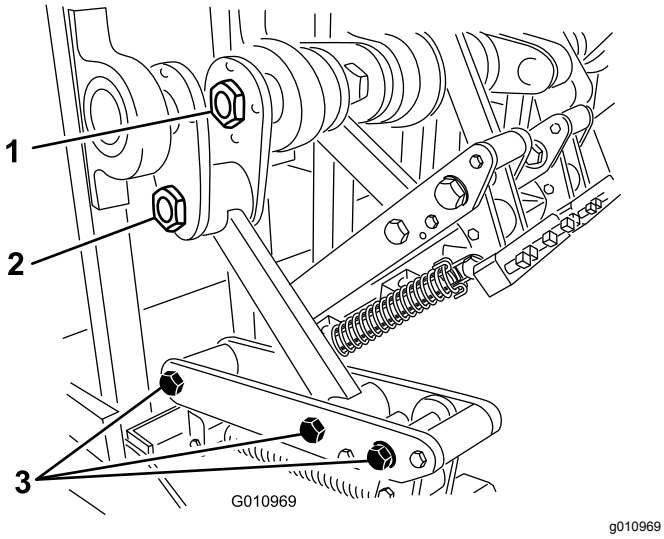


Figure 51

1. Crank shaft nut
2. Crank pin nut
3. Hinge bolts

Checking the Springs

Service Interval: Before each use or daily

Check the springs for crossed or broken wires (Figure 52). Crossed or broken spring wires will cause an erratic hole pattern in the turf.

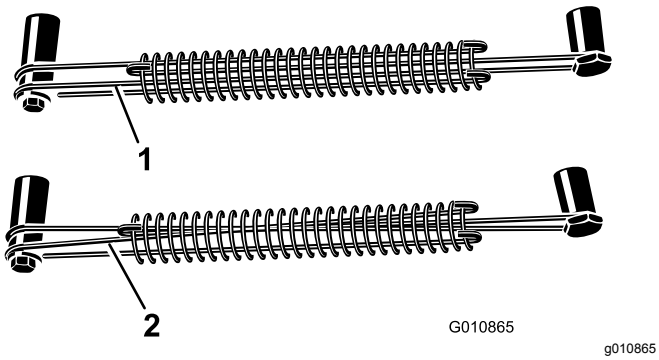


Figure 52

1. Correct spring wires
2. Crossed spring wires

Note: Replacement wires are included with the aerator. The wires are considered a consumable item.

Adjusting the Hole Spacing

The forward hole spacing is determined by the tractor gear ratio (or the hydrostatic traction pedal). Changing the engine speed does not change the forward hole spacing.

The lateral hole spacing is determined by the number of tines in the tine heads.

Removing the Aerator from the Tractor

1. Stop the aerator on a level surface, not on a slope.
2. Disengage the PTO and engage the parking brake.
3. Raise the aerator roller(s) 7.5 to 15 cm (3 to 6 inches) off the ground. Place support blocks under the roller(s).
4. Shut off the engine and remove the key.
5. Before leaving the operator's seat on the tractor, shut off the engine, remove the key, and wait for all moving parts to stop.
6. Remove the tines.
7. Install the storage stand.
8. Slowly lower the aerator until the storage stands contact the ground.
9. Remove the pin securing the top link to the aerator bracket. Retain the pin with the aerator.

   Also, on models with a hydraulic top link, disconnect the hydraulic hoses and the connecting link from the tractor. Cap the hydraulic hoses. Store these components with the aerator.
10. Disconnect the safety shield chains from PTO shaft.
11. Pull back on the lock collar to disconnect the power shaft from the tractor PTO shaft.
12. Slide the PTO shaft back and remove it from the tractor.
13. Connect the PTO safety chain to the aerator to prevent the PTO shaft from contacting the ground.
14. Remove the pins securing the lower link arms to the aerator brackets. Retain the pins with the aerator.

Troubleshooting

Problem	Solution
Springs are breaking or not pulling back the head to normal position.	Slow the PTO speed of the tractor. The longer and heavier the tines, the greater the centrifugal force on the head. Check for crossed or broken spring wires.
Holes are elongated or picking.	Adjust the angle of the tine or change the tractor ground speed. Make sure that the aerator can be lowered at least 5 cm (2 inches) below flat ground level to allow for undulation.
Tines are hitting the ground with an erratic pattern.	• Check for crossed or broken spring wires. • Slow the PTO speed of the tractor.
PTO clutch slips excessively.	Adjust the tines to a shallower depth. Review the clutch adjustment procedure. Replace PTO clutches.
Turf is pulling up with coring tines.	Shallow-rooted turf may require solid tines the first time.
The soil is too hard for full penetration.	Aerate at a depth that the machine can achieve, water overnight, and then increase the depth. Repeat if necessary until soil can be aerated at the desired depth.
Coring tines are breaking.	You are trying to get too much depth for the soil condition. See above and aerate to a shallower depth.
The tines do not stay in the head.	Tighten the tine holder bolts; do not use jam nuts or an impact wrench. If the bolt does not hold the tine, replace it.
Tines pull the soil up when the machine is raised.	Raise the machine part of the way out of the soil before disengaging the PTO.
The machine does not turn.	Ensure that the PTO, driveshaft, and drive chains are working properly.
The tractor has difficulty lifting the aerator.	Move the tractor lift arms 7.5 to 10 cm (3 to 4 inches) closer to the aerator. Ensure that the tractor has the capacity to lift the aerator.
The hydraulic top link cylinder is spongy. (It “gives” and moves in and out a short span when force is applied.	Air is in the cylinder or lines and must be bled out.
The machine is noisy or knocking.	• The crank pin nut has vibrated loose. • The chains are too loose. • The bolts on the bottom of the frame at the rear of the main arm have vibrated loose. • Check the oil level in the gearbox.
The hydraulic top link cylinder can not be fully retracted (PTO shaft jams).	The PTO shaft is too long for your tractor and should be cut to the correct length.
The tractor is difficult to steer when in transport.	• Add weight to the front of the tractor. • Check the tire pressure and adjust it as required.
The camber bracket is damaged.	• Do not store the aerator on the ground with tines installed. • Do not run the coring head at high speed for an extended time when the tines are out of the ground.

Storage

Storage Safety

- Store the machine on the storage stands positioned on a firm, level surface so that it does not sink or tip over.
- Store the machine away from areas of human activity.
- Do not allow children to play on or around the stored machine.

Storing the Machine

At the end of an aerating season or when the aerator will not be used for a long period, it is good practice to carry out the following preventative maintenance.

1. Clean off any dirt or grease that may have accumulated on the machine or any of the moving parts.
2. Remove and clean out the tines. Coat the tines and tine fasteners with oil to prevent rusting during storage.
3. Open the hood and clean out the inside of the machine.
4. Lubricate all grease fittings and tine fastener screw threads.
5. Store the machine on the provided storage stands on a hard, dry surface.
6. Loosen the PTO clutch bolts 2 turns.
7. Connect the PTO safety chain to the aerator in the stored position to prevent damage or remove the PTO and store it under the hood to minimize corrosion.
8. Paint the roller and touch up any other scratches on the painted surfaces.
9. Replace any missing or damaged decals.
10. Store the aerator inside a dry, secure building. Inside storage will reduce maintenance, give a longer working life, and increase the residual value of the machine. If inside storage is not available, cover the machine with a heavy sheet or tarpaulin and secure tightly.

Notes:

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European Privacy Notice

The Information Toro Collects
Toro Warranty Company (Toro) respects your privacy. In order to process your warranty claim and contact you in the event of a product recall, we ask you to share certain personal information with us, either directly or through your local Toro company or dealer.

The Toro warranty system is hosted on servers located within the United States where privacy law may not provide the same protection as applies in your country.

BY SHARING YOUR PERSONAL INFORMATION WITH US, YOU ARE CONSENTING TO THE PROCESSING OF YOUR PERSONAL INFORMATION AS DESCRIBED IN THIS PRIVACY NOTICE.

The Way Toro Uses Information
Toro may use your personal information to process warranty claims, to contact you in the event of a product recall and for any other purpose which we tell you about. Toro may share your information with Toro's affiliates, dealers or other business partners in connection with any of these activities. We will not sell your personal information to any other company. We reserve the right to disclose personal information in order to comply with applicable laws and with requests by the appropriate authorities, to operate our systems properly or for our own protection or that of other users.

Retention of your Personal Information
We will keep your personal information as long as we need it for the purposes for which it was originally collected or for other legitimate purposes (such as regulatory compliance), or as required by applicable law.

Toro's Commitment to Security of Your Personal Information
We take reasonable precautions in order to protect the security of your personal information. We also take steps to maintain the accuracy and current status of personal information.

Access and Correction of your Personal Information
If you would like to review or correct your personal information, please contact us by email at legal@toro.com.

Australian Consumer Law

Australian customers will find details relating to the Australian Consumer Law either inside the box or at your local Toro Dealer.

The Toro Warranty

A two-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Hydroject or ProCore Aerator (“Product”) to be free from defects in materials or workmanship for two years or 500 operational hours*, whichever occurs first. This warranty is applicable to all products (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
952–888–8801 or 800–952–2740
E-mail: commercial.warranty@toro.com

Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your *Operator’s Manual*. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products. A separate warranty may be provided by the manufacturer of these items.
- Product failures which result from failure to perform recommended maintenance and/or adjustments. Failure to properly maintain your Toro product per the recommended maintenance listed in the *Operator’s Manual* can result in claims for warranty being denied.
- Product failures which result from operating the Product in an abusive, negligent or reckless manner.
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brakes pads and linings, clutch linings, blades, reels, bed knives, tines, spark plugs, castor wheels, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants, lubricants, additives, fertilizers, water, or chemicals, etc.
- Normal noise, vibration, wear and tear, and deterioration.
- Normal “wear and tear” includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

Maintenance is at Owner’s Expense

Engine tune-up, lubrication cleaning and polishing, replacement of Items and Conditions Not Covered, filters, coolant, and completing recommended maintenance are some of the normal services Toro products require that are at the owner’s expense.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty.

All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty. Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations 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.

Note regarding engine warranty:

The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement printed in your *Operator’s Manual* or contained in the engine manufacturer’s documentation for details

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.