Form No. 3358-603 Rev C

TORO®

Count on it.

Operator's Manual

ProCore 864 and 1298 Aerator

Model No. 09715—Serial No. 280000001 and Up

Model No. 09716—Serial No. 280000001 and Up

Register at www.Toro.com.

Original Instructions (EN)

Introduction

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

You may contact Toro directly at www.Toro.com for product and accessory information, help finding a dealer, or to register your product.

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.

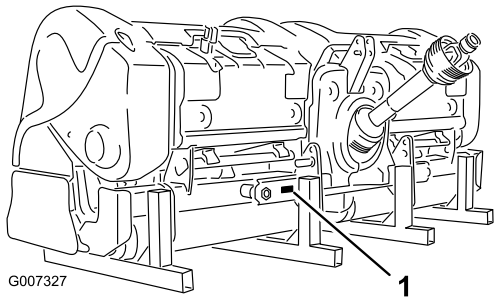


Figure 1

1. Model and serial number location

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.

Figure 2

1. Safety alert symbol

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

Contents

Safety

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

Safe Operating Practices

Before Operating

- Owners of this Aerator must give operators and employees full operation and safety instructions before allowing them to operate this machine and at least annually thereafter. An operator who has not read and fully understood all operating and safety instructions is not qualified to operate this machine. Become familiar with all controls and know how to stop quickly.
- Do not allow children to operate the machine. Do not allow adults to operate the machine without proper instruction.
- Remove all debris or other objects that might interfere with operation. Keep all bystanders away from the work area.
- Locate and mark all under ground obstructions such as irrigation components, electrical or telephone lines.
- Make sure tractor is in neutral and parking brake applied before starting. Refer to Tractor Operator's Manual for safe starting procedures.
- Mounting the ProCore Aerator to the rear of the tractor will decrease the weight on the tractor front axle. To assure adequate steering control and stability it may be necessary to add ballast to the front of the tractor. Refer to Tractor Operator's Manual for ballast requirements.
- Keep all shields and safety devices in place. If a shield, safety device or decal is damaged, repair or replace it before operation is commenced. Also tighten any loose nuts, bolts and screws to ensure machine is in safe operating condition.
- Do not operate machine while wearing sandals, tennis shoes, sneakers or shorts. Also, do not wear loose fitting clothing which could get caught in moving parts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes, hearing protection and a helmet is advisable and may be required by some local ordinances and insurance regulations.

While Operating

- Keep all bystanders and pets away from the work area.
- Using the machine demands attention, and to prevent loss of control:
  - Use only in daylight or when there is good artificial light.
  - Watch for holes or other hidden hazards.
  - Do not transport machine close to a sand trap, ditch, creek or other hazard.
  - Reduce speed on side hills and before making sharp turns to prevent tipping or loss of control.
  - Look behind the aerator before backing up.
- If the tines strike a solid object or the machine vibrates abnormally, disengage the PTO, set the parking brake and shut the engine off. Remove key from ignition switch. Check aerator and traction unit for damage. Repair any damage before restarting the engine and operating the tines. Be sure tines are in good condition and all bolts are tight.
- Before leaving machine unattended, disengage power to aerator, lower aerator and set parking brake. Stop engine.
- Never dismount while tractor is in motion. Never get on or off tractor while engine is running and PTO drive shaft is engaged. Never step over PTO shaft to reach other side of aerator - walk around the machine.
- Park aerator on a hard, level surface, install aerator storage stands before disconnecting from tractor.
- If it is necessary to probe below the soil surface, use a non conductive material to prevent electrical shock in case electrical wires are present.

Transporting

- Be sure you are in compliance with all regulations regarding transporting equipment on the public roads and highways.
- Ensure that all reflectors and lights required are in place and are clean and visible by overtaking and oncoming traffic.
- Never allow anyone to ride on the machine during transport.
- Reduce speed on rough roads and surfaces
- Independent brakes should always be locked together when on the road.

PTO Shaft

- 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 carried out correctly using special tools available in a distributor's workshop.
- The PTO shaft must not be used without the guards supplied, with partial protection or with damaged guard, or on CE machines, without the special anti-rotation chains correctly hooked, so as to permit the maximum angle of the PTO shaft without breaking the chains.

Maintenance

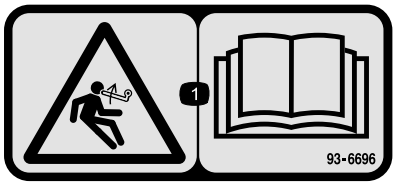
- Before making adjustments or performing maintenance on the aerator, switch off the engine, stop the PTO and apply the parking brake before dismounting from the tractor. Be sure the aerator is on the ground or lowered onto the safety stands.
- Support the machine with the blocks, jacks or on storage stands when working beneath it. Never rely on the tractor's hydraulics to support the machine.
- Place all controls in neutral, stop the engine, apply parking brake and wait for all moving parts to stop before servicing, maintaining, adjusting or unblocking the aerator.
- Be sure machine is in safe operating condition by keeping nuts, bolts and screws tight. Check the tine mounting bolts frequently to be sure they are tightened to specification.
- Do not check or adjust belt tension when the tractor engine is running.
- Be sure all guards are replaced and the hood is secured shut after maintaining or adjusting the machine.
- Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized Toro Distributor. To ensure optimum performance and safety, always purchase genuine Toro replacement parts and accessories to keep the Toro all Toro. Never use "will-fit" replacement parts and accessories made by other manufacturers. Look for the Toro logo to ensure genuineness. Using unapproved replacement parts and accessories could void the warranty of The Toro Company.

Storage Safety

- Store the aerator on a firm level surface.
- Store aerator away from areas of human activity.
- **Do not** allow children to play on or around the stored machine.
- Make sure the aerator is positioned on firm and solid ground so it does not sink or tip over.
- Ensure that the storage stand lynch pins are secured in place.

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 lost.

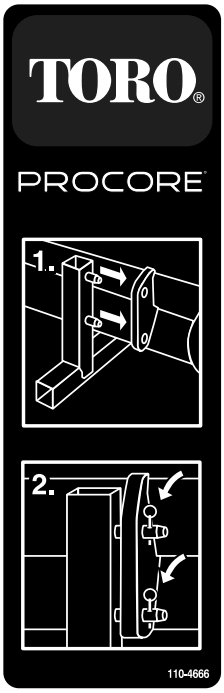


93-6696

1. Stored energy hazard—read the *Operator's Manual*.

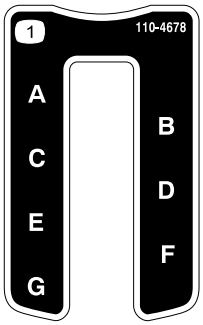
110-4665

1. Read the *Operator's Manual*.



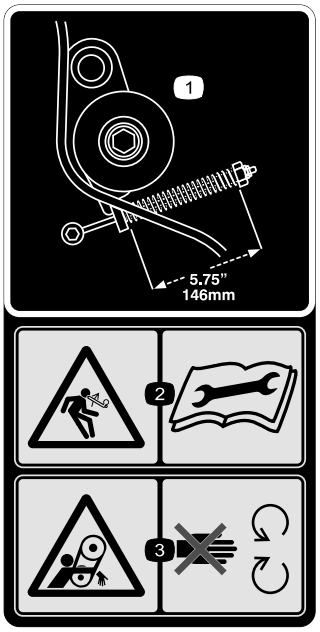
110-4666

1. Install the posts in the stand to the holes in the frame.
2. Use pins to secure the frame to the stand.



110-4678

1. Coring depth

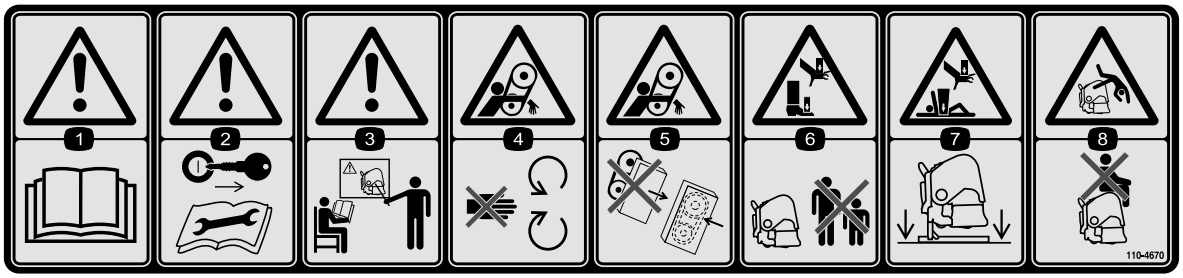


110-4667

1. Spring length
2. Stored energy hazard—read the *Operator's Manual*.
3. Entanglement hazard, belt—stay away from moving parts.

110-4668

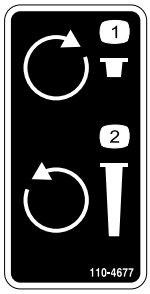
1. Entanglement hazard, shaft—stay away from moving parts.
2. PTO speed and input direction.
3. Use clip to secure lash cable when not in use; use lash cable to support the power take off when the machine is disconnected from tractor.



110-4670

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

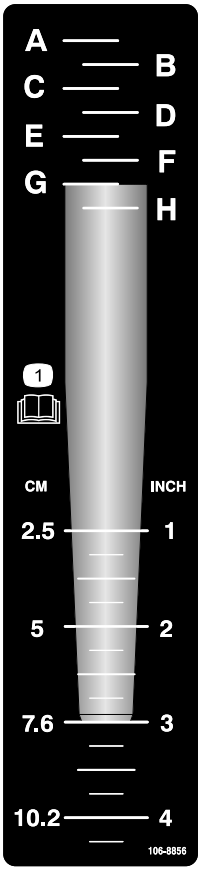
92–1581



110-4677

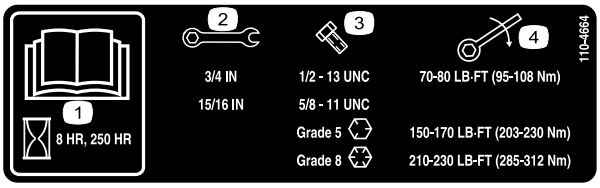
1. Turn clockwise to decrease aeration depth.
2. Turn counterclockwise to increase aeration depth.

92–1582



106–8856

1. Read the *Operator's Manual.*



110-4664

1. Read the *Operator's Manual.*
2. Wrench size
3. Bolt size
4. Torque

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Tractor and ballast Requirements
2	Lynch pin	2	Connect Lower Link Arms
3	Link pin Lynch pin	1 1	Connect the Upper Link
4	Bolt (1/2 x 3 inches) Nut (1/2 inches)	1 1	Connect PTO Shaft
5	No parts required	–	Adjusting Sway Links
6	No parts required	–	Level Aerator Side-to-Side
7	No parts required	–	Adjust Roller Scraper
8	No parts required	–	Install Tine Heads & Tines
9	Turf guards (not included)	A/R	Install Turf Guards
10	CE Compliance Kit, Part No. 110–4693 (not included)	1	Secure Hood Latches (Required for CE only)
11	Lynch pin (ProCore 864) Lynch pin (ProCore 1298)	4 8	Remove Storage Stands

1

Tractor Requirements

No Parts Required

Procedure

ProCore 864

- 30 PTO horsepower minimum when used in light to normal conditions (sandy to sandy/loam soils with average compaction).
- 35 PTO horsepower minimum when used in normal to heavy conditions (heavy loam, clay and rocky soils with above average compaction).
- Category I or II 3 point hitch, rated to lift at least a 1575 lb. (714 Kg) implement.
- 540 rpm tractor PTO.
- Adequate front-end weight (ballast).
- Correct tire pressure.

Do not exceed the maximum or minimum tractor tire inflation pressures as recommended by tire manufacturer.

ProCore 1298

- 45 PTO horsepower minimum when used in light to normal conditions (sandy to sandy/loam soils with average compaction).
- 50 PTO horsepower minimum when used in normal to heavy conditions (heavy loam, clay and rocky soils with above average compaction).
- Category II 3 point hitch, rated to lift at least a 2300 lb. (1043 Kg) implement.
- 540 rpm tractor PTO.
- Adequate front-end weight (ballast).
- Correct tire pressure.

Do not exceed the maximum or minimum tractor tire inflation pressures as recommended by tire manufacturer.

Tractor Components (Figure 3)

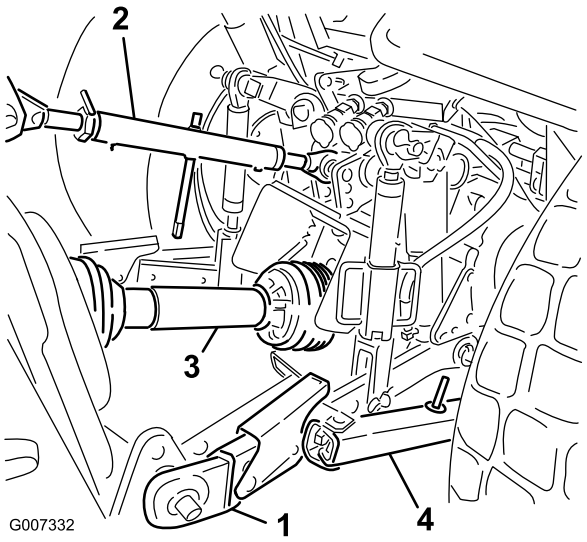


Figure 3

1. Lower link arm
2. Upper link arm
3. PTO shaft
4. Sway link

Ballast Requirements

Mounting the ProCore aerator to the rear of the tractor will decrease the weight on the front axle.

- **To assure adequate steering control and stability it may be necessary to add ballast to the front of the tractor.**
- **Refer to tractor Operator's Manual for ballast requirements.**
- **Failure to add required ballast may result in an accident and severe injury or death.**

2

Connect Lower Link Arms

Parts needed for this procedure:

2	Lynch pin

Procedure

1. Aerator must be positioned on a flat, level surface for installation.
2. Back tractor squarely up to aerator until lower link arms are aligned with hitch pins.

3. Make sure PTO is disengaged.
4. Engage parking brake, STOP engine and remove key from ignition. Wait for engine and all moving parts to STOP before leaving Operator's seat on tractor.

   Note: For maximum ground clearance the hitch pins should be secured in the lower mounting holes. To determine when to use the upper mounting holes, refer to Connecting the PTO Shaft.
5. Insert right and left lower link arms onto hitch pins (Figure 4).

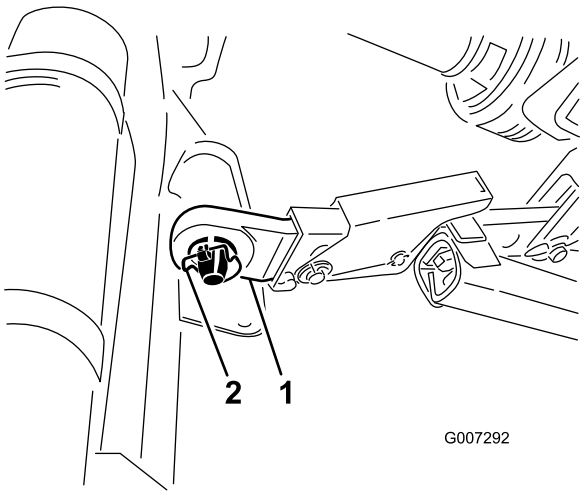


Figure 4

1. Lower link
2. Lynch pin

6. Secure lower link arms to hitch pins with lynch pins (Figure 4).

3

Connect Upper Link

Parts needed for this procedure:

1	Link pin
1	Lynch pin

Procedure

Note: The front of aerator must be vertical while operating for best aeration hole quality (Figure 5). Adjust upper link to control this angle. Refer to Operation for additional information.

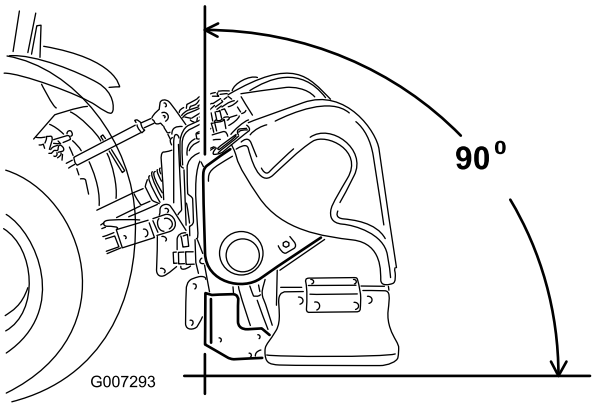


Figure 5

1. Connect upper link to lower hole in bracket and secure with link pin and lynch pin (Figure 6).

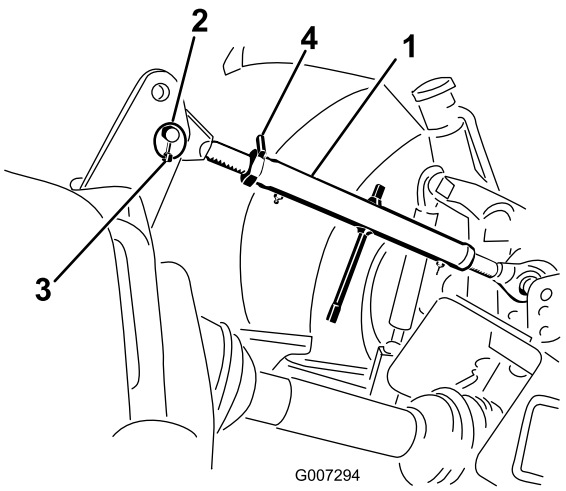


Figure 6

1. Upper link
2. Link pin
3. Lynch pin
4. Locknut

2. Grease the threaded steel upper link tubes.
3. Rotate the upper link to tighten the link. Adjust until front of aerator frame is 90 degrees from horizontal (Figure 6).
4. Tighten lock nut to secure upper link into position.

4

Connect PTO Shaft

Parts needed for this procedure:

1	Bolt (1/2 x 3 inches)
1	Nut (1/2 inches)

Procedure

1. On the ProCore 864 only, remove the lower PTO shield (Figure 7).

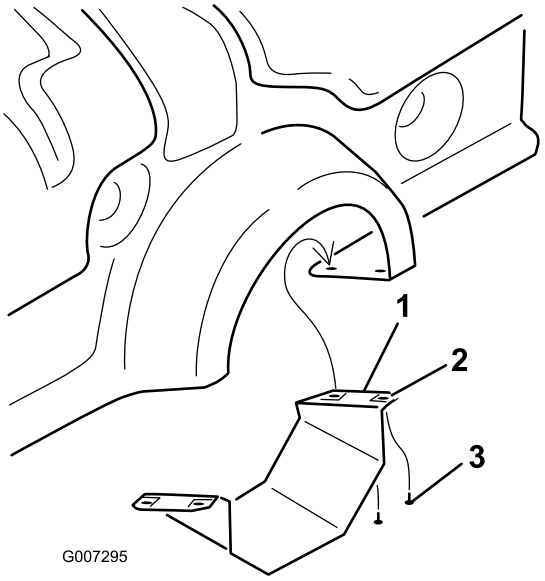


Figure 7

1. Lower PTO shield (ProCore 864 only)
2. Tinnerman nut
3. Screw

2. Connect PTO shaft to gearbox input shaft with a 1/2 x 3.00 inch bolt and 1/2 inch nut (Figure 8).

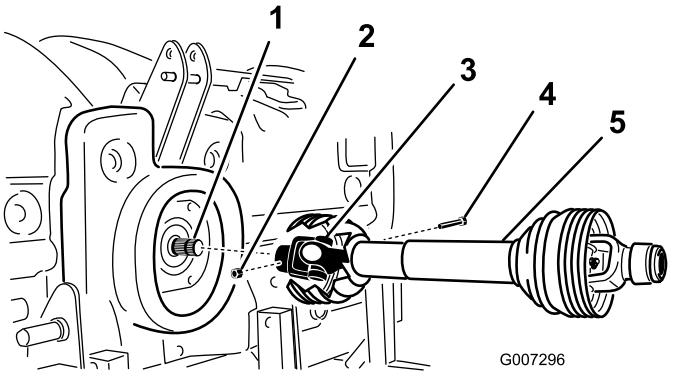


Figure 8

1. Gearbox input shaft
2. Nut
3. PTO shaft coupler
4. Bolt
5. PTO shaft

3. Connect PTO shaft to rear tractor PTO shaft.

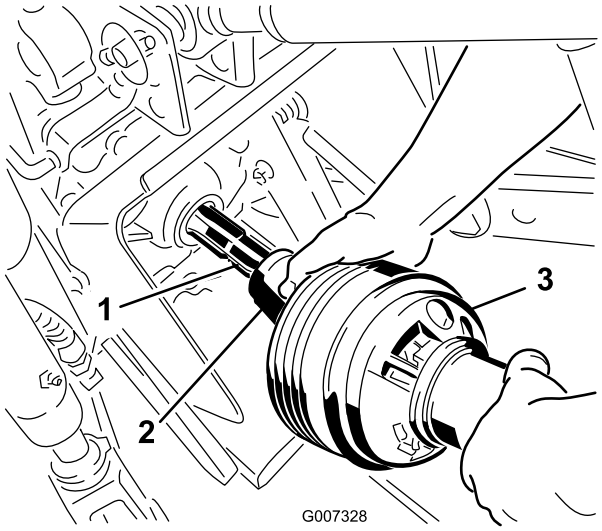


Figure 9

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

4. Slide PTO shaft forward as far as the tractor allows.
5. Pull back on the locking collar to secure the PTO shaft in place. Slide PTO shaft back and forth to make sure it is properly locked.
6. On CE models only, connect the shield safety chains from power shaft sections to welded clips on link arms. Make sure chains remain slack when aerator is raised or lowered.

To help prevent bodily injury, keep all PTO shields in place. On CE models, connect the shield chains to link arms to prevent shields from rotating during operation.

7. On the ProCore 864, install the lower PTO shield to the aerator.
8. Verify that the telescoping tube has a minimum of 3 inches (76 mm) overlap when the aerator is raised to it's maximum height.

   To check the overlap, measure the distance between the end shields, as shown in figure Figure 10. This dimension must not exceed 16.00 inches (406 mm). If so, the lower lift pins MUST be moved to the upper set of holes prior to operation.

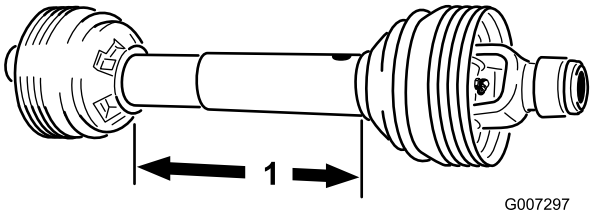


Figure 10

1. 16.00 inches (406 mm)

5

Adjusting Sway Links

No Parts Required

Procedure

The ProCore 864 is designed to be offset from the tractor center line. The PTO shaft is offset 1.57 inches to the left of center and the aerator is offset 5.70 inches to the right of the center line. Adjust the sway links as required.

The ProCore 1298 is designed to be centered with the tractor center line. Adjust the sway links as required.

Adjust sway links on lower draft arms of 3 point hitch to minimize side-to-side sway to a maximum of 1 inch (25 mm) on each side (Figure 11).

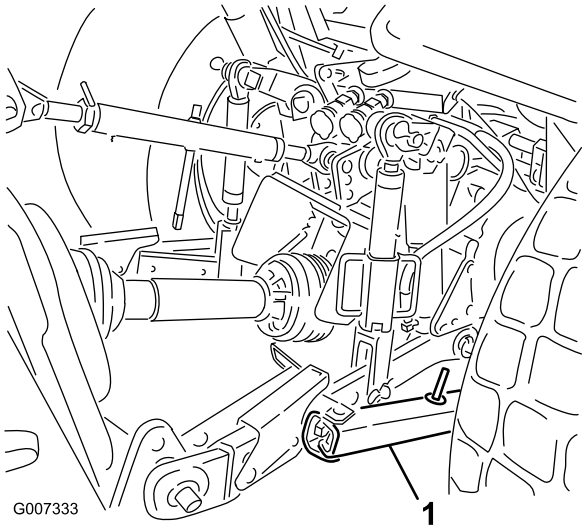


Figure 11

1. Sway link

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

Note: Refer to tractor Operator's Manual for additional installation and adjustment procedures.

6

Level Aerator Side-to-Side

No Parts Required

Procedure

1. Park tractor and aerator on a level, firm surface.
2. Place level on top of aerator frame to check for level side-to-side (Figure 12).

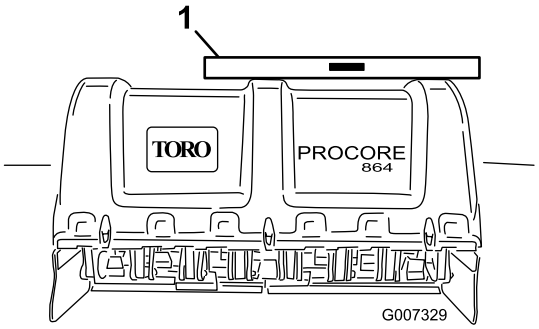


Figure 12

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 tractor Operator's Manual for additional adjustment procedures.

7

Adjust Roller Scraper

No Parts Required

Procedure

The roller scraper should be adjusted so there is a gap of approximately a .06-.09 inches (1-2 mm) between the scraper and roller.

1. Loosen fasteners securing each end of scraper to roller scraper tab (Figure 13).

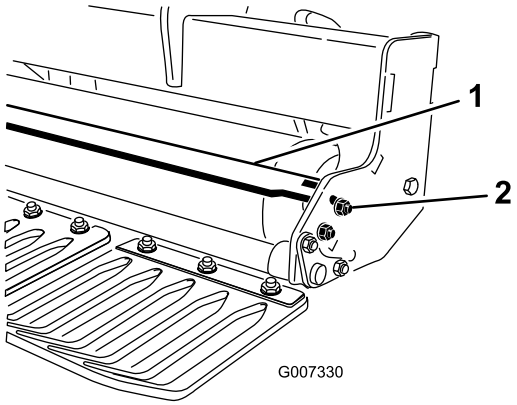


Figure 13

1. Roller scraper 2. Nut

2. Slide the roller scraper in or out until required position is attained and tighten fasteners.
3. On the ProCore 864 only, the stop bolt on the center support may also be adjusted to attain the proper gap.

8

Install Tine Heads & Tines

No Parts Required

Procedure

A wide selection of tines and tine heads are available for the aerator. Choose the tine type, size and spacings required for the job. Install the tine head and tines per Installation Instructions supplied with each tine kit. Refer to the charts on pages 17 & 18 for the accessories.

Important: Never operate the aerator without the tine heads installed. The arms may move excessively and damage the aerator frame.

9

Install Turf Guards

Parts needed for this procedure:

A/R	Turf guards (not included)

Procedure

A wide selection of turf guards are available for the aerator. Use the appropriate turf guards for the selected tine heads.

1. Loosen nuts securing turf guard clamps to turf guard tool bar (Figure 14).

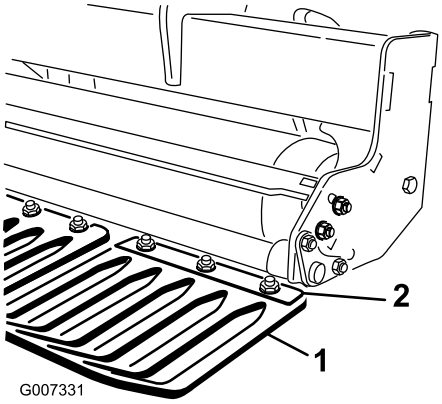


Figure 14

1. Turf guard
2. Turf guard clamp

2. Slide appropriate turf guard under turf guard clamp.
3. Adjust the turf guards, left to right, to maintain equal distance to tines within each slot. Tighten nuts securing turf guard.
4. Mount remaining turf guards and secure turf guard clamps.

   Important: From the rear of the machine, check that the tines line up with the center of the gaps in the turf guards.

10

Secure Hood Latches (CE only)

Parts needed for this procedure:

1	CE Compliance Kit, Part No. 110–4693 (not included)

Procedure

Note: CE Completion Kit, Part No. 110–4693 is required to complete this step.

1. On the ProCore 864 model, install a lock bracket over the left and right rear lower hood and upper hood latches with a tap bolt (four total) (Figure 15).

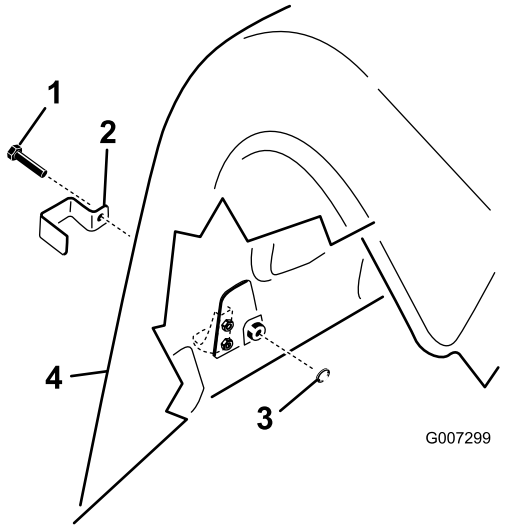


Figure 15

1. Tap bolt
2. Lock bracket
3. Internal lock washer
4. Rear cover

2. On the ProCore 1298 model, install a lock bracket over all the rear lower hood latches and the outside upper hood latch on both right and left rear covers with a tap bolt (three per coring head, six total) (Figure 15).
3. Using a pliers or adjustable wrench, thread an internal lock washer onto each bolt (1-2 threads) to secure latch (Figure 15).

11

Remove Storage Stands

Parts needed for this procedure:

4	Lynch pin (ProCore 864)
8	Lynch pin (ProCore 1298)

Procedure

1. Raise the aerator 3-6 inches off ground.
2. Remove the nuts and lock washers securing the storage stands to the aerator (Figure 16).

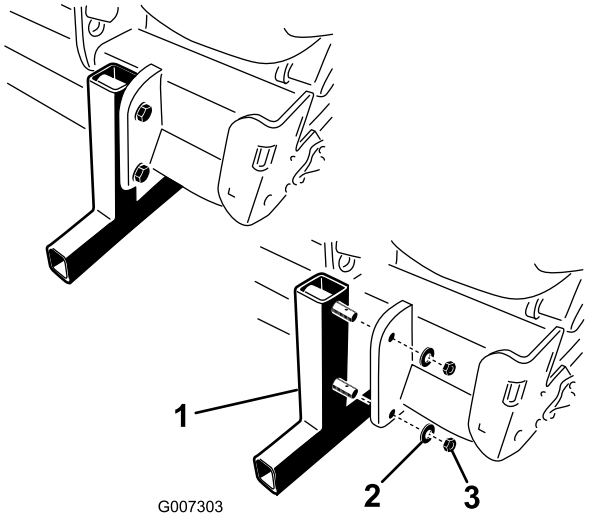


Figure 16

1. Storage stand
2. Lock washer
3. Nut

3. Remove the storage stands.
4. Insert the lynch pins (included in loose parts) into the stand pins for storage (Figure 16).
5. Use the storage stands whenever the aerator is removed from the tractor.

Product Overview

Controls

Depth Adjuster

Rotate the depth adjuster input shaft clockwise (CW) to reduce the aeration depth or rotate counter clockwise (CCW) to increase the aeration depth (Figure 17).

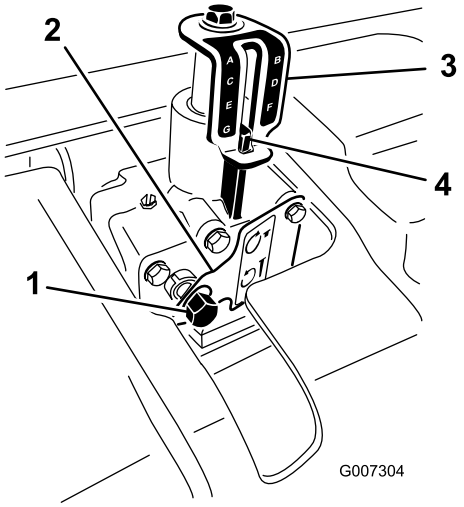


Figure 17

1. Depth adjuster input shaft
2. Locking plate
3. Depth indicator decal
4. Depth alignment mark

Note: Seventeen (17) revolutions of the depth adjuster equals approximately 1/4 inch (6.4 mm) depth change.

Specifications

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

ProCore 864 Aerator

Working Width	64 inches (163 cm)
Overall Width	67 inches (170 cm)
Overall Length	35 inches (89 cm)
Overall Height	38.5 inches (98 cm)
Weight	1,575 pounds (714 Kg)

ProCore 1298 Aerator

Working Width	98 inches (249 cm)
Overall Width	101 inches (257 cm)
Overall Length	35 inches (89 cm)
Overall Height	38.5 inches (98 cm)
Weight	2300 pounds (1043 Kg)

Attachments/Accessories

A selection of Toro approved attachments and accessories are 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.

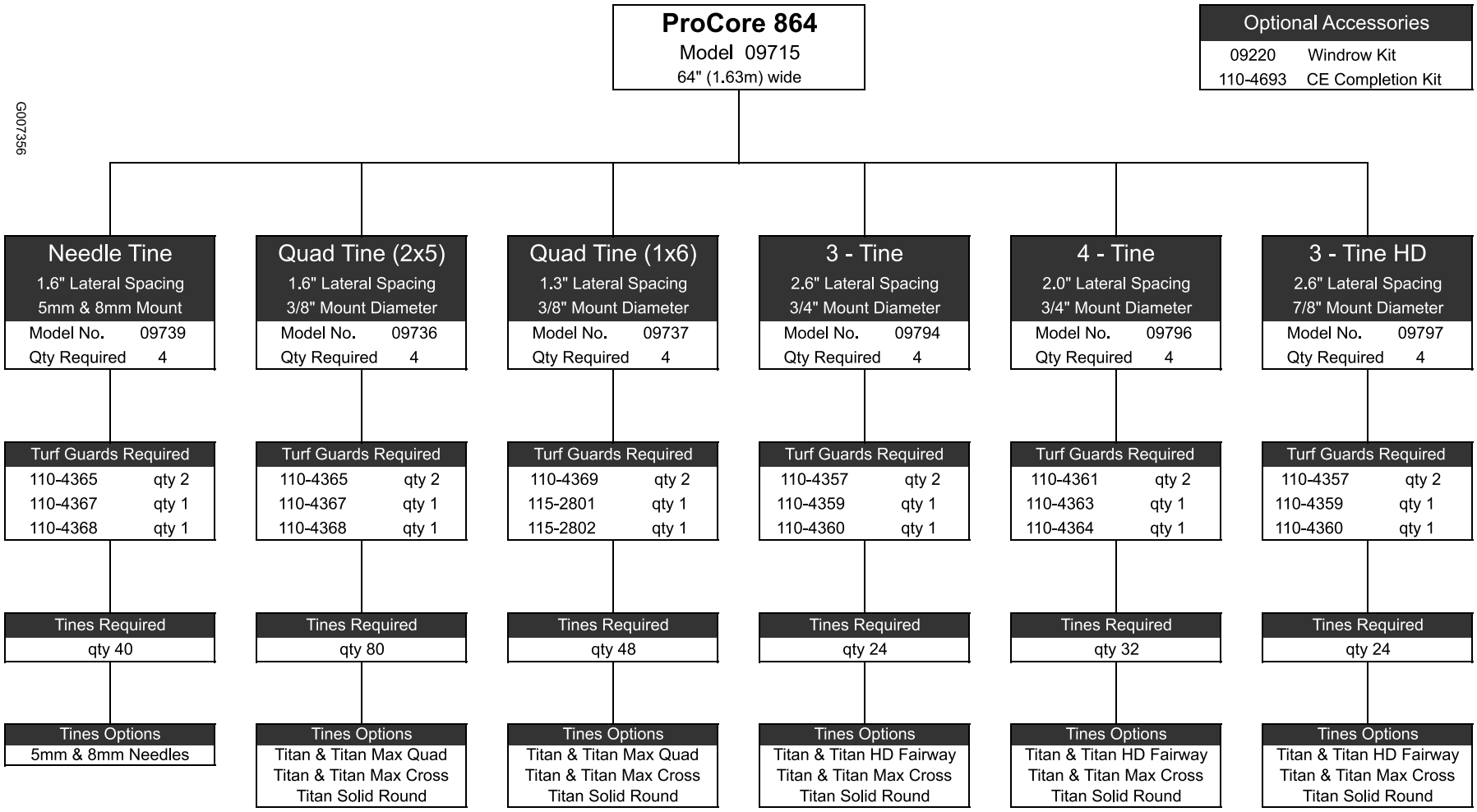

ProCore 864
Model 09715
64" (1.63m) wide
Optional Accessories
09220 Windrow Kit
110-4693 CE Completion Kit
G007356
Needle Tine
1.6" Lateral Spacing
5mm & 8mm Mount
Model No. 09739
Qty Required 4
Turf Guards Required
110-4365 qty 2
110-4367 qty 1
110-4368 qty 1
Tines Required
qty 40
Tines Options
5mm & 8mm Needles
Quad Tine (2x5)
1.6" Lateral Spacing
3/8" Mount Diameter
Model No. 09736
Qty Required 4
Turf Guards Required
110-4365 qty 2
110-4367 qty 1
110-4368 qty 1
Tines Required
qty 80
Tines Options
Titan & Titan Max Quad
Titan & Titan Max Cross
Titan Solid Round
Quad Tine (1x6)
1.3" Lateral Spacing
3/8" Mount Diameter
Model No. 09737
Qty Required 4
Turf Guards Required
110-4369 qty 2
115-2801 qty 1
115-2802 qty 1
Tines Required
qty 48
Tines Options
Titan & Titan Max Quad
Titan & Titan Max Cross
Titan Solid Round
3 - Tine
2.6" Lateral Spacing
3/4" Mount Diameter
Model No. 09794
Qty Required 4
Turf Guards Required
110-4357 qty 2
110-4359 qty 1
110-4360 qty 1
Tines Required
qty 24
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round
4 - Tine
2.0" Lateral Spacing
3/4" Mount Diameter
Model No. 09796
Qty Required 4
Turf Guards Required
110-4361 qty 2
110-4363 qty 1
110-4364 qty 1
Tines Required
qty 32
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round
3 - Tine HD
2.6" Lateral Spacing
7/8" Mount Diameter
Model No. 09797
Qty Required 4
Turf Guards Required
110-4357 qty 2
110-4359 qty 1
110-4360 qty 1
Tines Required
qty 24
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round

Figure 18

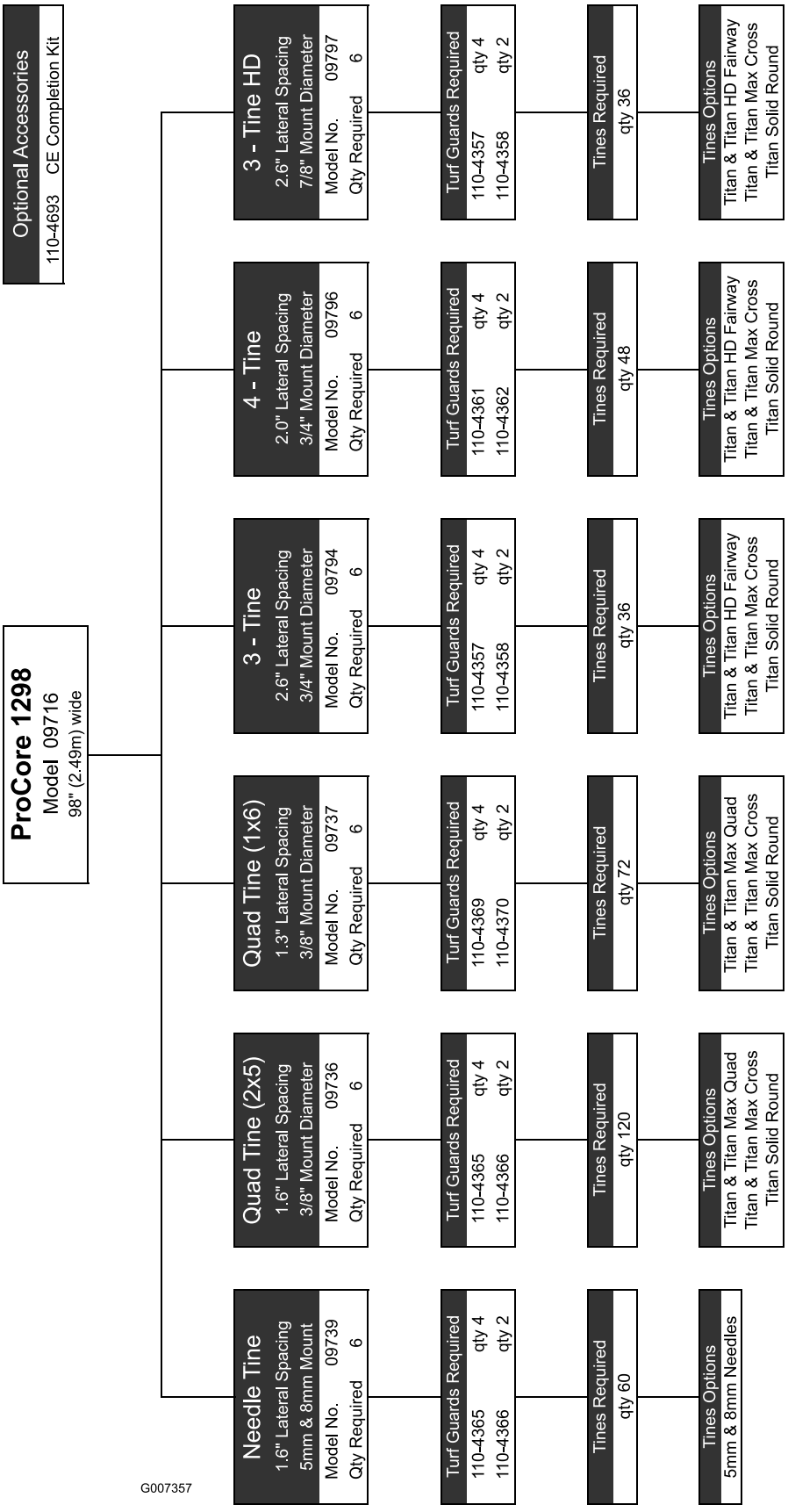

Optional Accessories
110-4693 CE Completion Kit
ProCore 1298
Model 09716
98" (2.49m) wide
Needle Tine
1.6" Lateral Spacing
5mm & 8mm Mount
Model No. 09739
Qty Required 6
Turf Guards Required
110-4365 qty 4
110-4366 qty 2
Tines Required
qty 60
Tines Options
5mm & 8mm Needles
Quad Tine (2x5)
1.6" Lateral Spacing
3/8" Mount Diameter
Model No. 09736
Qty Required 6
Turf Guards Required
110-4365 qty 4
110-4366 qty 2
Tines Required
qty 120
Tines Options
Titan & Titan Max Quad
Titan & Titan Max Cross
Titan Solid Round
Quad Tine (1x6)
1.3" Lateral Spacing
3/8" Mount Diameter
Model No. 09737
Qty Required 6
Turf Guards Required
110-4369 qty 4
110-4370 qty 2
Tines Required
qty 72
Tines Options
Titan & Titan Max Quad
Titan & Titan Max Cross
Titan Solid Round
3 - Tine
2.6" Lateral Spacing
3/4" Mount Diameter
Model No. 09794
Qty Required 6
Turf Guards Required
110-4357 qty 4
110-4358 qty 2
Tines Required
qty 36
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round
4 - Tine
2.0" Lateral Spacing
3/4" Mount Diameter
Model No. 09796
Qty Required 6
Turf Guards Required
110-4361 qty 4
110-4362 qty 2
Tines Required
qty 48
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round
3 - Tine HD
2.6" Lateral Spacing
7/8" Mount Diameter
Model No. 09797
Qty Required 6
Turf Guards Required
110-4357 qty 4
110-4358 qty 2
Tines Required
qty 36
Tines Options
Titan & Titan HD Fairway
Titan & Titan Max Cross
Titan Solid Round
G007357

Figure 19

Operation

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

Adjusting Aeration Depth

Adjust the aeration depth only when the tractor is parked, the parking brake is engaged, the engine is off and the PTO is disengaged.

1. Lay the desired tine onto the depth decal while aligning the tine tip with the desired aeration depth as shown in Figure 20.

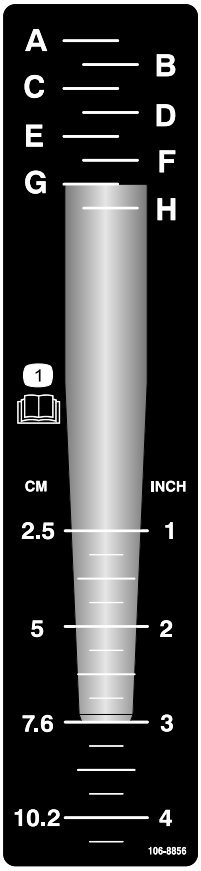


Figure 20

2. Determine the letter setting aligned with the mounting end of tine (Figure 20). Adjust the depth control to the corresponding letter on the decal.
3. Insert a 9/16" socket w/ratchet onto the depth adjuster input shaft (Figure 21).

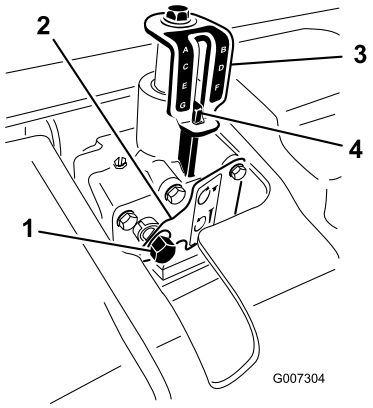


Figure 21

1. Depth adjuster input shaft
2. Locking plate
3. Depth indicator decal
4. Depth alignment mark

4. Push in on the socket or use your hand to depress the locking plate.
5. Rotate the depth adjuster clockwise (CW) to reduce the aeration depth or rotate counter clockwise (CCW) to increase the aeration depth. (Figure 21).
6. Rotate the depth adjuster input shaft until the desired depth is attained as shown on the depth indicator decal (Figure 21).

   Note: Seventeen (17) revolutions of the depth adjuster input shaft equals approximately 1/4 inch (6.4 mm) depth change.

Tractor Controls

It is necessary to familiarize yourself with the operation of the following tractor controls before you are able to operate the aerator:

- PTO Engagement
- 3 Point Hitch (Raise/Lower)
- Clutch
- Throttle
- Gear Selection
- Parking brake

Note: Refer to tractor Operator's Manual for operating instructions.

Principles of Operation

The tractor's three point hitch linkage lifts the aerator for transport and lowers it for operation.

The tractor's power take off (PTO) power is transmitted via shafts, gearbox and drive belts to a number of crankshafts which drive 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's penetration is determined by the height of the depth control.

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

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 assures 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.

To avoid personal injury, never leave the tractor seat without first disengaging the PTO drive, setting the parking brake and stopping the engine. Never perform aerator repairs without first lowering the aerator onto the storage stand or appropriate blocking or jacks. Be sure all safety devices are secured in proper place before resuming operation.

Before Aerating

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 and tools in case tines are damaged due to contact with foreign materials.

Aerating Procedures

Note: When using needle tine heads, make sure to read instructions, included with kit, for unique operating procedure.

1. Lower the aerator on the 3 point linkage so that the tines are nearly to the ground at the lowest part of their stroke.
2. At a low tractor engine rpm, engage the power take off (PTO) clutch to start the aerator working.

   Important: Never operate the aerator without the tine heads installed
3. Select a gear that gives a forward speed of approximately .6 - 2.5 M.P.H. (1 to 4 km/hr.) at the rated PTO speed of 540 (refer to the tractor Operator's Manual).
4. As the clutch is released and the tractor moves forward, lower the machine fully into the turf and increase engine speed to give a maximum of 540 rpm at the PTO.

   Important: Never operate the tractor PTO in excess of 540 rpm or damage to the aerator could occur.

   Note: Make sure that the roller is on the ground.
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, in a particular 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 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. Use caution not to catch the turf guards on the turf.
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 commencing operation.

Operating Tips

1. Engage PTO at low engine speed. Increase engine speed to achieve PTO speed of 540 rpm (maximum) and the lower aerator. Operate at an engine rpm that the aerator runs most smoothly.

   Note: Changing engine/PTO rpm in a particular tractor gear (or fixed hydrostatic pedal position on tractors with hydrostatic transmission) will not change hole spacing.

2. Make very gradual turns when aerating. Never make sharp turns with PTO drive engaged. Plan your aeration path before lowering the aerator.
3. If tractor "bogs" down when operating on hard ground or going uphill, raise aerator slightly until speed is regained, then lower aerator again.
4. Do not aerate if ground is too hard or dry. Best results are obtained after a rain or when 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.

5. Raise aerator penetration, if ground is hard packed. Clean up cores and re-aerate at deeper penetration, preferably after watering.
6. The ProCore 864 aerator is offset to the tractor's right side to allow aerating without driving over the cores with the tractor tires. Whenever possible, aerate with the longer offset towards the previous aeration pass.
7. Always check/adjust top link whenever aeration depth is changed. The front of the aerator should be vertical.

To avoid personal injury, never leave the tractor seat without first disengaging the PTO drive, setting the parking brake and stopping the engine. Never perform aerator adjustments or repairs without first lowering the aerator onto the safety stand. Be sure all safety devices are secured in proper place before resuming operation.

8. Look behind frequently to ensure the machine is operating properly and alignment is maintained with previous passes.
9. Always clear the area of all damaged machine parts, such as broken tines, etc., to prevent them 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 commencing operation.

Hard Ground

If the ground is too firm to obtain the desired coring depth, the coring head can get into a "bouncing" rhythm. This is due to the hard pan 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.

Needle Tines

Long slender tines used in either a needle tine head or mini tine head 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 10-15% from full operating speed. For PTO powered aerators reduced the engine speed until the PTO speed is around 460 – 490 rpm. The forward spacing is not effected by reducing the engine speed. The pushed hole can also be affected by the position of the rotalink damper assembly. Refer to Adjusting the Rotolink Assembly.

Root Zone Lifting

Using the mini-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 Rotolink Assembly

The mounting height of the rotalink damper assembly affects the reactive force applied to the stomper arm and ground engagement during aeration. In the event of the front of the hole being pushed (elongated or dimpled), a "stiffer" position can help resist this push and improve hole quality. In the event of the back of the hole being pushed (elongated or dimpled) a "softer" position can improve the hole quality.

To adjust the rotolink assembly, proceed as follows:

1. Remove the (2) 1/2 inch lock nuts securing the rotolink damper assembly to the underside of coring head frame (Figure 22).
2. Lower the damper assembly to expose the spacers (Figure 22).
3. Move one or two spacers per side from the damper assembly to the top of the coring head frame. Each spacer is equivalent to 1/2 inch. The lower bumper spacer must remain on damper assembly.

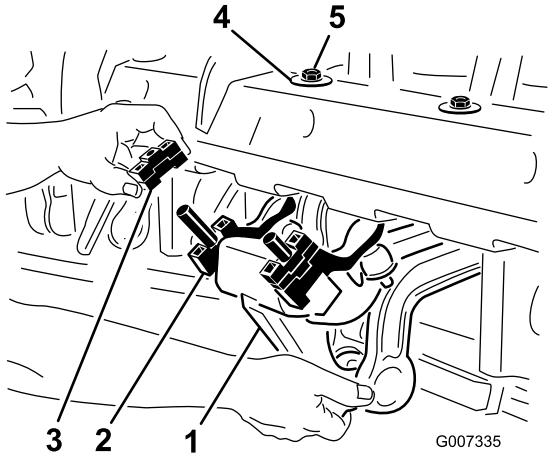


Figure 22

1. Rotolink damper assembly
2. Lower bumper spacer
3. Spacer(s)
4. D washer
5. Lock nut

4. Reassemble the damper assembly to the coring head frame. Ensure the "D" washer is installed against the coring head frame as shown in Figure 22. Secure the (2) lock nuts.

To see the effects of this adjustment, it is suggested that only three to four assemblies be adjusted to compare the original position and the new position on a trial pass. When satisfactory results are achieved, move the remaining assemblies to the same height as the desired arms.

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 15 m.p.h. (24 km/hr.).

Inspection and Cleanup after Use

After daily use, thoroughly wash the machine with a garden hose **without** a nozzle so contamination and seal and bearing damage due to excessive water pressure will be avoided. A brush may be used to remove caked-on material. Use mild detergent to clean the covers. After cleaning, grease all drive lines and roller bearings, inspect for machine damage, oil leakage, component and tine wear.

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

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	• Change the Gearbox Lubrication • Check the torque of the coring head fasteners
Before each use or daily	• Check the belt tension • Check belt tension
Every 50 hours	• Grease bearings and bushings • Inspect bearings
Every 100 hours	• Check gearbox lubrication
Every 250 hours	• Change the Gearbox Lubrication • Check the torque of the coring head fasteners
Every 500 hours	• Inspect bearings and replace as needed
Before storage	• Perform all 50 hour maintenance procedures • Chipped surfaces-Paint • Remove and clean tines • Remove all debris
Yearly	• Inspect the belts

Jacking the Machine

When changing attachments or performing other service, use correct blocks, hoists or jacks. Make sure machine is parked on a solid level surface such as a concrete floor. Prior to raising machine, remove any attachments that may interfere with the safe and proper raising of the machine. Always chock or block tow vehicle wheels. Use jack stands or solid wood blocks to support the raised machine. If the machine is not properly supported by blocks or jack stands, the machine may move or fall, which may result in personal injury.

Note: If available, a hoist can be used to lift the rear of the ProCore Aerator. Use eyelets in coring head bearing housings as hoist attachment points (Figure 23)

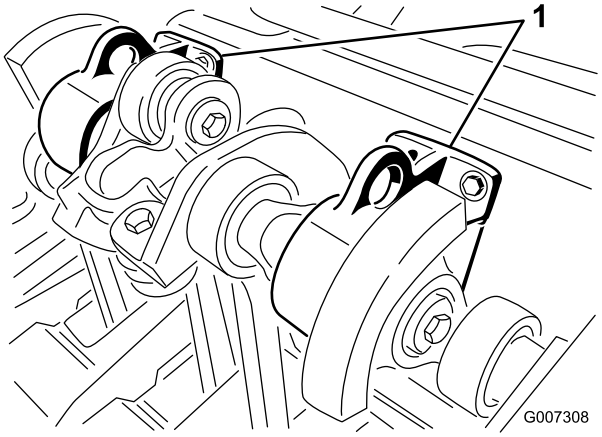


Figure 23

1. Lifting eyelet

Greasing the Bearings and Bushings

Service Interval: Every 50 hours

The main working bearings of the aerator are sealed for life and require no maintenance or lubrication. This drastically 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 multi purpose, high-temperature grease with high pressure (EP) performance or SAE multi purpose lithium base grease.

The lubrication points are:

PTO Shaft (3) (Figure 24)

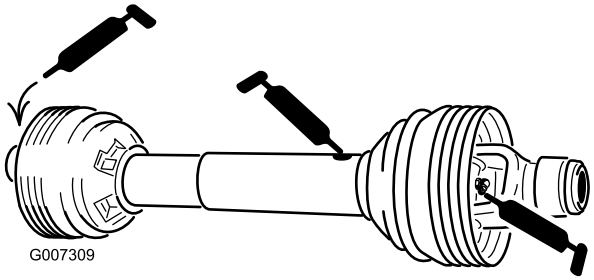


Figure 24

Roller bearings (ProCore 864 qty. 2; ProCore 1298 qty. 4) (Figure 25)

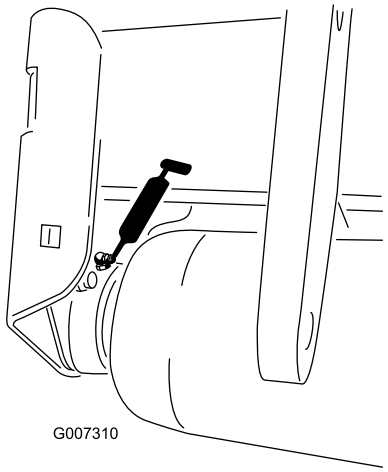


Figure 25

Drive shaft bearings (ProCore 864 qty. 1; ProCore 1298 qty. 2) (Figure 26)

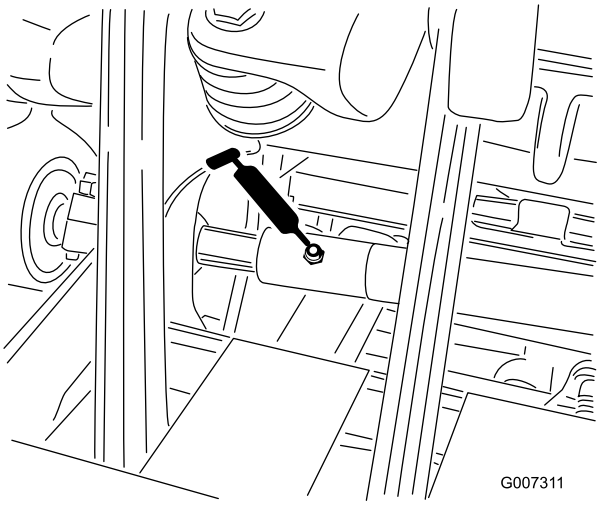


Figure 26

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 will 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. These bearings should be inspected seasonally and replaced if 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 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 wash down the unit when it is still hot and avoid directing high-pressure or high volume spray at the bearings.

It is common for new bearings to purge some grease out the seals on a new unit. This purged grease will turn black in color due to collection of debris and not due to excessive heat. It is good practice to 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 generally not detrimental to bearing life, but keeps the seal lip lubricated.

Coring head bearing replacement is suggested at intervals of 500 hours. A bearing service kit which covers the complete coring head is available from your distributor.

Checking the Gearbox Lubrication

Service Interval: Every 100 hours

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

1. Clean debris from fill plug and check plug to avoid contamination.
2. Remove the check plug from the gearbox (Figure 27).

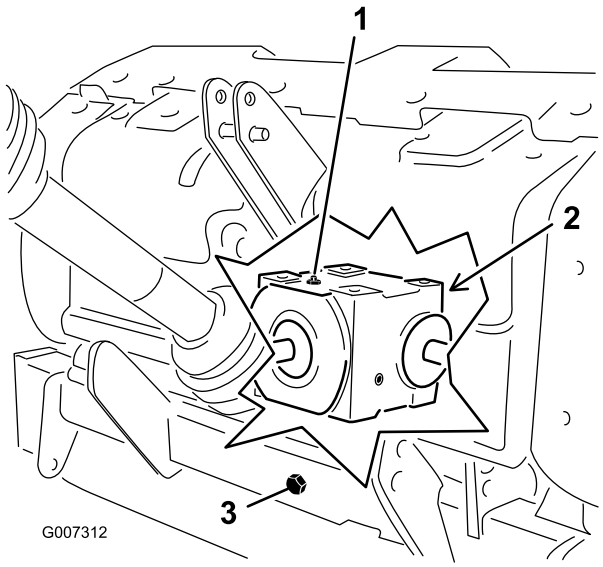


Figure 27

1. Fill plug
2. Check plug (rear of gearbox)
3. Drain plug

3. Make sure oil is up to the bottom of the check plug hole in gearbox (Figure 27).
4. If oil level is low, remove fill plug from gear box and replenish oil as required.
5. Install plugs.

Changing the Gearbox Lubrication

Service Interval: After the first 8 hours
Every 250 hours

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

1. Clean debris from fill plug and drain cap to avoid contamination (Figure 27).
2. Remove the fill plug to relieve air draw.
3. Position a drain pan under the drain tube and remove drain cap.

   Note: The high viscosity of cool oil will extend the drain time. (approximately 30 minutes)
4. After oil is completely drained, reinstall the drain cap.
5. Fill with 56 ounces (1650 ml) of high quality 80W-90 gear lube.
6. Install the fill plug.
7. Check the oil level.

Check Coring Head Fastener Torque

Service Interval: After the first 8 hours
Every 250 hours

After the initial, eight (8) hours of use, check the coring head fasteners to ensure proper torque is maintained. Fastener torque requirements are listed on the reference service decal below and located on the coring head.

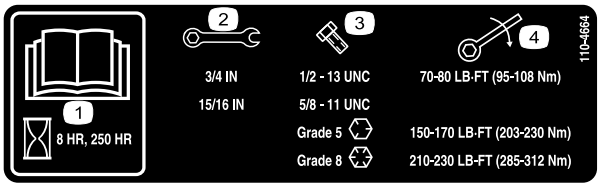


Figure 28

1. Read the *Operator's Manual.*
2. Wrench size
3. Bolt size
4. Torque

Inspecting the Belts

Service Interval: Yearly

The drive belt(s) on the ProCore Aerators have been designed to be very durable. However, the normal exposure to UV radiation, ozone or incidental exposure to chemicals can deteriorate the rubber compounding over time and lead to premature wear or material loss (i.e. chunking).

Annual belt inspection is highly recommended for signs of wear, excessive cushion cracks, or large embedded debris with replacement when needed.

Adjusting the Belt Tension

Service Interval: Before each use or daily

Make sure belts are properly tensioned to ensure correct operation of unit and unnecessary wear.

1. Proper belt tension is attained by compressing idler spring to a length of 5.75 inches (146 mm) (Figure 29).

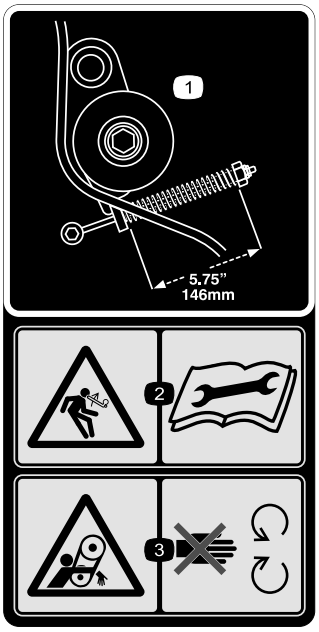


Figure 29

2. To adjust belt tension, proceed as follows:
   A. Remove the rear coring head cover (Figure 30).

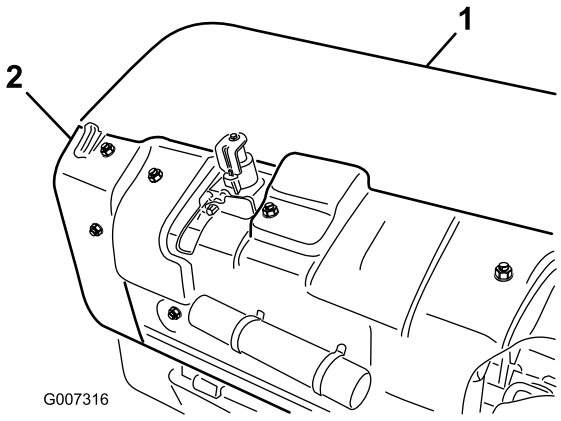


Figure 30

1. Rear coring head cover 2. Pulley shield

   B. Remove the pulley shield mounting bolts and remove the shield (Figure 30).
   C. Loosen the lock nut securing the spring retainer (Figure 31).

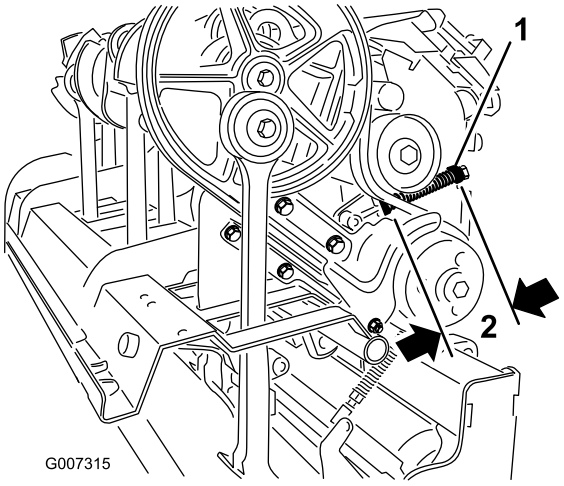


Figure 31

1. Spring retainer 2. 5.75 inches (146 mm)

   D. Adjust the spring retainer to attain required compressed spring length (Figure 31).
   E. Tighten lock nut against spring retainer to lock adjustment.
   F. Reinstall the pulley shield and coring head cover.

Replacing the Drive Belt

Note: The outboard stomper arm **does not** need to be removed to replace the drive belt.

Removing the Belt

1. Remove the rear coring head cover (Figure 32).

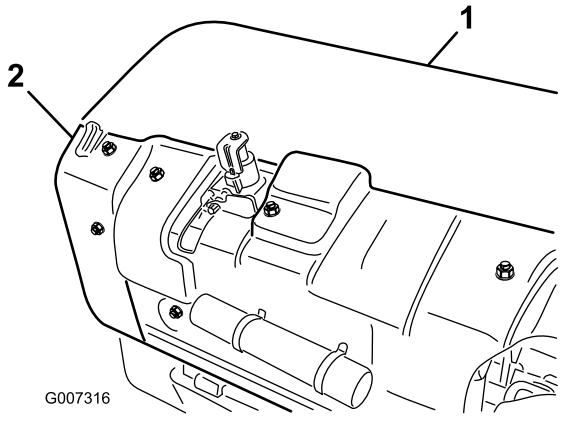


Figure 32

1. Rear coring head cover 2. Pulley shield

2. Remove the pulley shield mounting bolts and remove the shield (Figure 32).
3. Remove the fasteners securing the dirt shield and the lower belt shield (Figure 33) Remove the dirt shield and the lower belt shield.

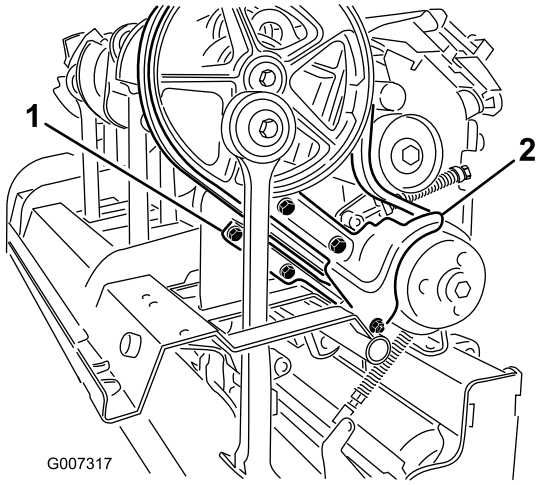


Figure 33

1. Lower belt shield
2. Dirt shield

4. To release the idler spring tension, loosen the lock nut securing the spring retainer (Figure 34) and rotate the spring retainer.

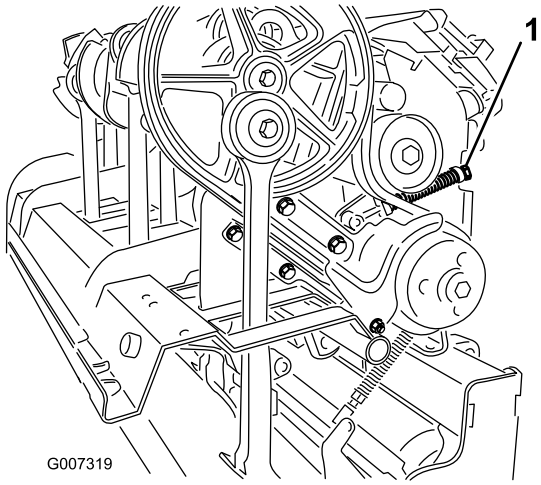


Figure 34

1. Spring retainer locknut

Springs are under tension, use caution when adjusting or removing.

5. Loosen and remove the two (2) lock nuts and washers securing the rotalink damper for the #1 stomper arm (Figure 35).

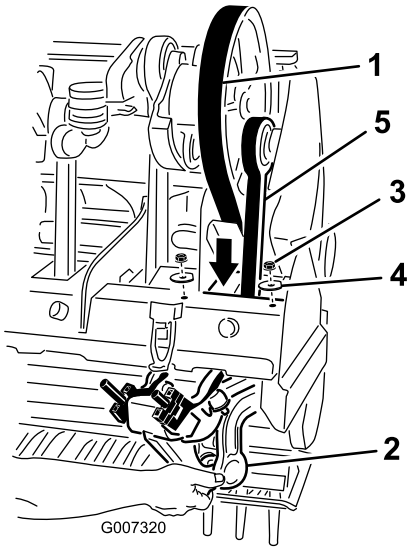


Figure 35

1. Drive belt
2. Rotalink damper
3. Nut
4. Washer
5. #1 Stomper arm

6. Lower the rotalink damper from the coring head frame.
7. Route the drive belt down through the coring head frame and around the lower end of the #1 stomper arm Figure 35

Installing the Belt

1. Route the new drive belt around the lower end of the #1 stomper arm and up through coring head frame.
2. Position the drive belt onto the crank pulley, under the idler assembly and over the drive pulley
3. Raise the rotalink damper for the #1 stomper arm to coring head frame. Ensure that the damper spacers are installed in the same position as in removal.
4. Secure the rotalink damper to the coring head with the two (2) washers and lock nuts previously removed.
5. Install and adjust the belt idler pulley and adjust to the appropriate tension.
6. Install dirt shield and lower belt shield. Adjust lower shield to ensure clearance with belt.
7. Install pulley and coring head covers.

Adjusting the Side Shield

The coring head side shields should be adjusted so the bottom rides between 1 to 1.5 inches from the turf while aerating.

1. Loosen the bolts and nuts securing the side shield to frame (Figure 36).

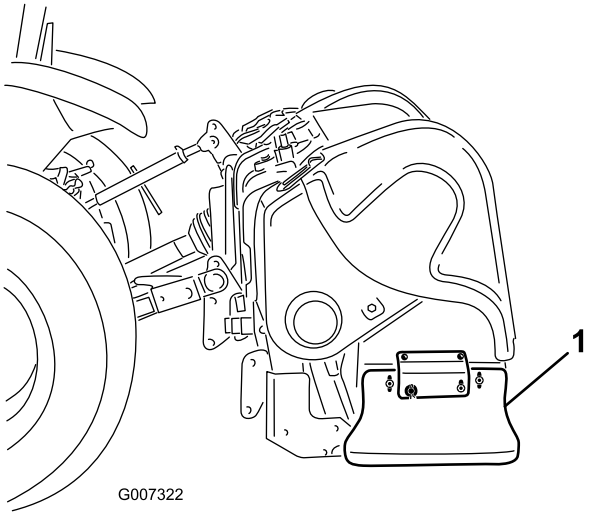


Figure 36

1. Side shield

2. Adjust shield up or down and tighten nuts.

Replacing the Turf Guards

All turf guards (Figure 37) should be replaced if broken or worn to less than 1/4 inch thickness. Broken turf guards can catch and tear turf creating undesirable damage.

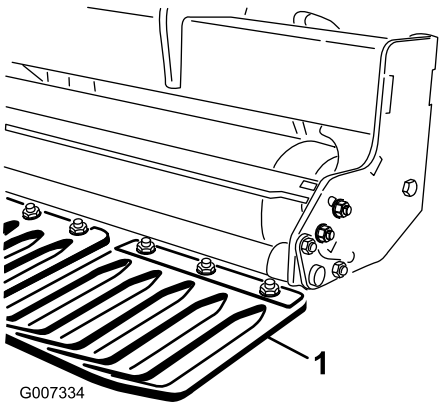


Figure 37

1. Turf guard

Adjusting Hole Spacing

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

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

Coring Head Timing

The unitized coring head design of the ProCore aerators provides industry leading smooth operation while taking out the guesswork of timing.

ProCore 864(Figure 38)

This unit has a patent pending timing configuration that makes use of the ProCore 648 and ProCore 1298 crank arm castings. Each pair of crank arms joined through a bearing housing are timed 180 degrees apart (i.e. arm positions 1-2, 3-4, 5-6, 7-8). The adjacent pairs are all set with the same timing where the later pair lags by 120 degrees. The same pair of coupling castings are used between all adjacent pairs (i.e. coupling positions 2-3, 4-5, 6-7). To further reduce operating vibration, two counter weights are added at the #1 position on the pulley and the #8 position.

Note: The numbers cast into the crank arms will **not** align with the raised indicator mark on the bearing housings for the ProCore 864.

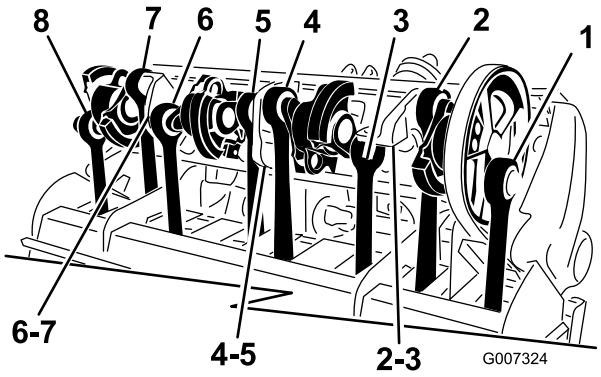


Figure 38

ProCore 1298(Figure 39)

This unit is comprised of two independent coring heads with six arms each. The timing of either coring head is not dependent on the adjacent coring head. The timing marks are easily identified by the numbers cast into the crank arm castings and the raised locator on the bearing housings. The #1 arm always starts with the drive pulley.

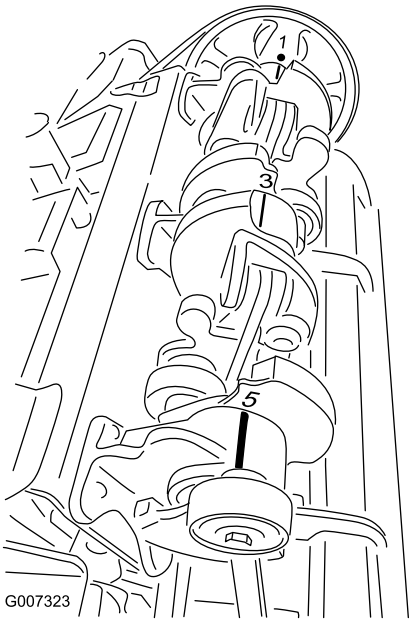


Figure 39

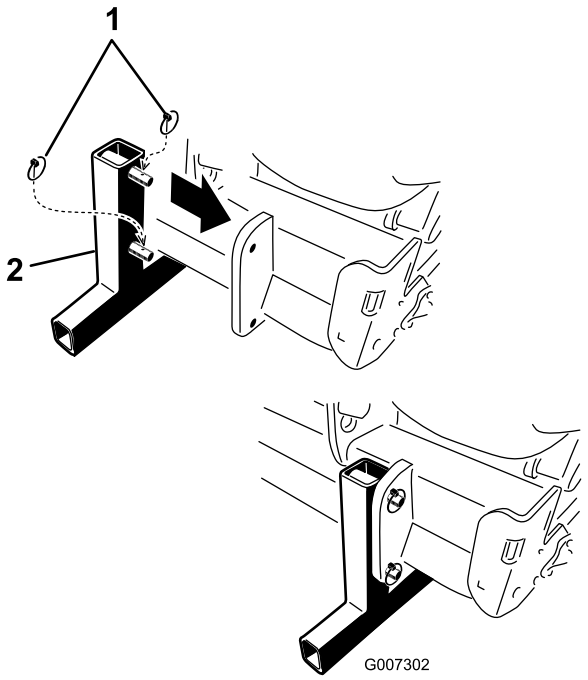


Figure 40

1. Lynch pins
2. Storage stand

Removing the Aerator from the Tractor

1. Stop vehicle on a level surface, not on a slope.
2. Disengage the PTO and engage the parking brake.
3. Stop the engine and remove the key from ignition switch.
4. Before leaving the Operator's seat on tractor, wait for engine and all moving parts to stop.
5. Install the storage stands and secure to the aerator with lynch pins (Figure 40).

Note: The aerator can be stored on its original shipping pallet.

6. Slowly lower aerator until storage stands contact ground.
7. Loosen locking nut and rotate upper adjusting link to release tension between aerator and tractor.
8. Remove lynch pin and top link pin securing center link to bracket. Retain lynch pin and top link pin with aerator.
9. Disconnect safety shield chains from PTO tractor (CE only).
10. Pull back on the lock collar to disconnect the power shaft from the tractor PTO shaft.
11. Slide PTO shaft back and remove from tractor.
12. Connect the PTO tether to the PTO shield to prevent the PTO shaft from contacting the ground (Figure 41).

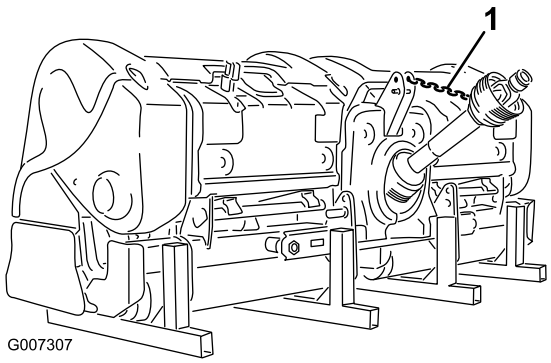


Figure 41

1. PTO tether

13. Remove lynch pins and slide lower link arms off hitch pins. Retain lynch pins with aerator.

Storage

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 aerator or any of the moving parts.
2. Remove and clean out tines. Coat tines with oil to prevent rusting during storage.
3. Open the hood and clean out the inside of the machine.
4. Lubricate all grease fittings.
5. Store the machine on the provided storage stands on a hard, dry surface.
6. Tether the PTO shaft in stored position to prevent damage. or remove the PTO and store under the hood to minimize corrosion.
7. Paint the roller and touch-up any other scratches on the painted surfaces.
8. Replace any missing or damaged decals.
9. 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 with a heavy sheet or tarpaulin and secure tightly.

Notes:

The Toro General Commercial Products 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 Commercial Product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. Where a warrantable condition exists, we will repair the Product at no cost to you including diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

* Product equipped with 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:

Toro Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
952-888-8801 or 800-982-2740
E-mail: commercial.service@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 express 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, modified, or unapproved accessories
- Product failures which result from failure to perform required maintenance and/or adjustments
- 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, blades, reels, bedknives, 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, or chemicals, etc.
- Normal "wear and tear" items. 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 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 factory remanufactured parts rather than new parts for some warranty repairs.

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.

Part No. 374-0031 Rev. C