FORM NO. 3318-400 GB Rev A

TORO®

MODEL NO. 09501—60001 & OVER

OPERATOR'S MANUAL

FAIRWAY AERATOR

Foreword

The Fairway Aerator has advanced concepts in engineering and design, and if properly maintained, will provide excellent service.

This manual emphasizes safety, mechanical and general product information. DANGER, WARNING and CAUTION identify safety messages. Whenever the triangular safety alert symbol appears, understand the safety message that follows. Read the safety instructions beginning on page 3. IMPORTANT highlights special mechanical information and NOTE emphasizes general product information worthy of special attention.

If help concerning operation, maintenance or safety is ever needed, contact the local authorized TORO Distributor. In addition to genuine TORO replacement parts, the distributor also has optional equipment for the complete line of TORO turf care equipment. Keep your TORO all TORO. Buy genuine TORO replacement parts and accessories.

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Safety Instructions

Awareness, concern and proper training of personnel involved in operation, maintenance and storage of this machine are vital to your safety. Improper machine use or maintenance can result in injury or death. To reduce potential for injury or death, comply with all safety instructions.

BEFORE OPERATING

1. Read and understand this guide thoroughly before operating the machine. Become familiar with all controls and know how to stop quickly. Only trained operators, skilled in slope operation who have read this guide should operate this machine.

2. Never allow children to operate the machine or adults to operate it without proper instructions.

3. Remove debris or objects that might interfere with operation. Keep bystanders away from the work area.

4. Keep all shields, grass deflectors and safety devices in place. If a shield or safety device is damaged or malfunctioning, or a decal is illegible, repair or replace it before operating the machine. Be sure all nuts, bolts and screws are tight to assure the machine is in safe operating condition.

5. Do not operate the machine while wearing sandals, tennis shoes, sneakers or shorts. Do not wear loose fitting clothing that could catch in moving parts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes, ear protection and a helmet is advisable.

While Operating

6. Using the machine demands attention. To prevent loss of control:

A. Use only in daylight or when there is good artificial light.

B. Watch for holes or other hidden hazards.

C. Do not transport the machine close to sand traps, ditches, creeks or other hazards.

D. Reduce speed on side hills and before making sharp turns to prevent tipping or loss of control.

E. Look behind the aerator before backing up.

7. If the tines strike a solid object or the machine vibrates abnormally, raise the coring head, disengage power to the aerator, stop the prime mover and engage the parking brake before leaving the operator's position. Lift the safety/transport stands to their full upright position and lower the coring head onto the stands. Stop the engine and disengage power to the aerator before making repairs or adjustments.

Inspect the coring head and other machine parts for damaged or malfunctioning parts and repair or replace before resuming operation. Be sure all parts are in good condition and all fasteners are tight.

8. Before leaving the machine unattended, raise the coring head, disengage power to the aerator and set the parking brake. Lift safety/transport stands to full upright position and lower the coring head onto stands. Stop the engine.

9. Never dismount while the prime mover is in motion. Never get on or off the prime mover while the engine is running and the PTO is engaged. Never step over the PTO shaft to reach the other side of the aerator—walk around the machine.

10. Before transporting the machine from one area to another, raise the coring head, stop the prime mover, shift into neutral and engage the parking brake. Lift the safety/transport stands to their full upright position and lower the coring head onto the stands.

Maintenance

11. Before servicing the machine, raise the coring head, disengage power to the aerator, shift the prime mover to neutral and set the parking brake. Lift the safety/transport stands to their full upright position and lower the coring head onto the stands. Stop the engine. Disconnect the PTO shaft and hydraulic hose connection.

12. Make sure the machine is in safe operating condition. Keep nuts, bolts and screws tight. Check the tine mounting nuts and bolts frequently to ensure they are tightened to specification.

13. Before applying hydraulic pressure to the system, be sure all hydraulic line connectors are tight and hydraulic hoses and lines are in good condition.

14. Keep your body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate your skin and do serious damage. If fluid is injected into your skin, it must be removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

Symbol Glossary

SAFETY ALERT SYMBOL

GENERAL HAZARD SAFETY ALERT

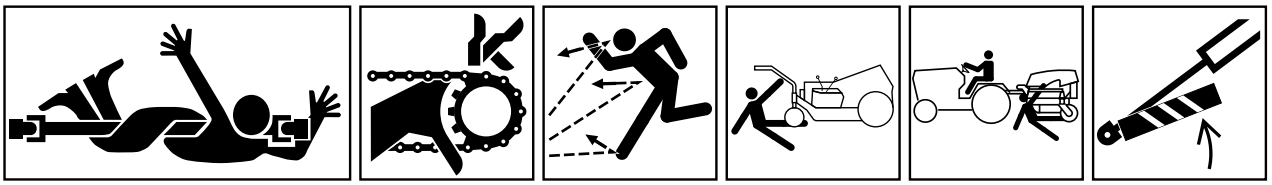
CRUSHING OF WHOLE BODY, APPLIED FROM ABOVE

CRUSHING OF FINGERS OR HAND, FORCE APPLIED FROM SIDE

CUTTING OF FINGERS OR HAND

CUTTING OF FOOT

CRUSHING OR PUNCTURE OF FOOT, CORING HEAD



WHOLE BODY ENTANGLEMENT, IMPLEMENT INPUT DRIVE LINE

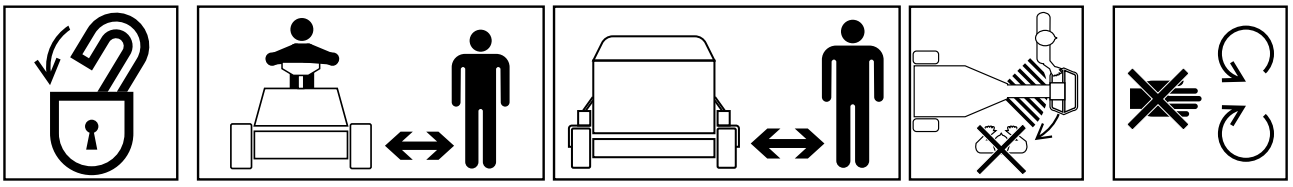
FINGERS OR HAND ENTANGLEMENT, CHAIN DRIVE

THROWN OR FLYING OBJECTS, WHOLE BODY EXPOSURE

RUNOVER/BACKOVER, GREENS AERATOR

RUNOVER/BACKOVER, HC 4000 AERATOR

SECURE LIFTING CYLINDER WITH LOCKING DEVICE BEFORE GETTING IN HAZARDOUS AREA



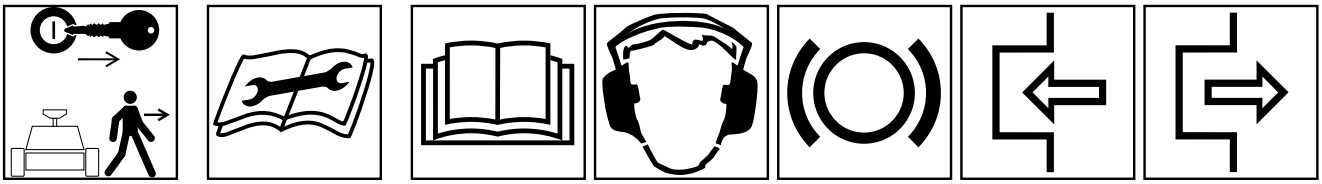
INSERT SAFETY LOCK BEFORE GETTING IN HAZARDOUS AREA

STAY A SAFE DISTANCE FROM MACHINE, GREENS AERATOR

STAY A SAFE DISTANCE FROM MACHINE, HC 4000 AERATOR

STAY CLEAR OF ARTICULATION AREA WHILE ENFINE IS RUNNING, GREENS AERATOR

DO NOT OPEN OR REMOVE SAFETY SHIELDS WHILE ENGINE IS RUNNING



SHUT OFF ENGINE & REMOVE KEY BEFORE LEAVING OPERATOR POSITION, GREENS AERATOR

CONSULT TECHNICAL MANUAL FOR PROPER SERVICE PROCEDURES

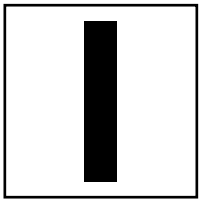
READ OPERATOR'S MANUAL

HEARING PROTECTION MUST BE WORN

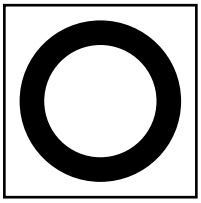
BRAKE SYSTEM

ENGAGE

DISENGAGE

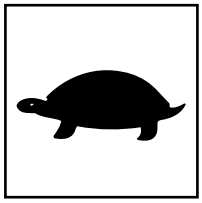


ON/START

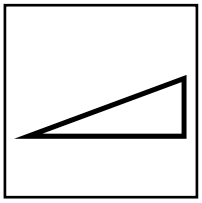


OFF/STOP

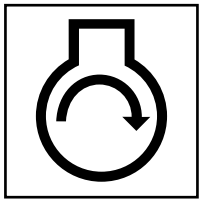
FAST



SLOW

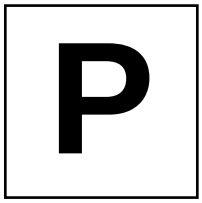


CONTINUOUS VARIABLE, LINEAR



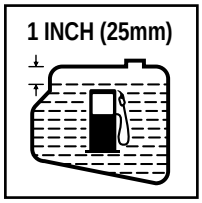
ENGINE START

ENGINE STOP



PARK

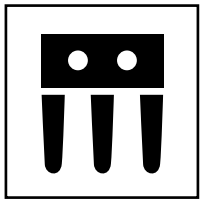
UNLEADED FUEL



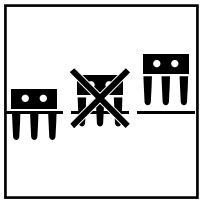
FUEL TANK FILL LINE

LOCK

UNLOCK

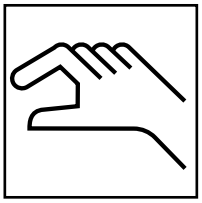


CORING HEAD

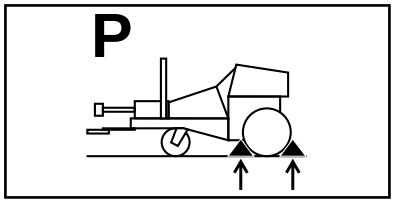


ALWAYS HAVE CORING HI
FULLY UP FOR TRANSPOR
FULLY DOWN FOR CORIN(

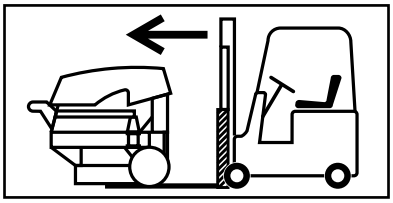
TRACTION DRIVE



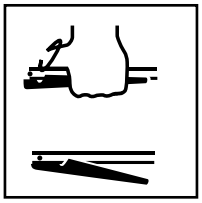
MANUAL



CHOCK WHEELS IN PARKED POSITION, ALWAYS PARK ON LEVEL SURFACE, FAIRWAY AERATOR



ALWAYS FORK FROM FRONT OR REAR OF MACHINE, HC 4000 AERATOR



LEVER OPERATION

Specifications

Types: Three-wheel, PTO-driven, tow-behind deep coring turf/fairway aerator.

Tractor Requirements: 26–33.6 kw (35–45 hp) @ standard power take-off speeds.

Travel Speed: 2.93–5 km/hr (1.8–2.2 mph).

Maximum PTO Speed: 540 rpm.

Maximum Top Crankshaft Speed: 400 rpm.

Construction:
Frame—Welded tubular and structural steel.Coring Head—Welded structural steel bar and plate.
Hitch—Five 89 mm (3 1/2 in.) spacings for various hitch-to-PTO configurations.

Ball Coupler: SAE Class 2, bolt-on for 76 mm (3 in.) channel. 1587 kg (3500 lb) GVW for 51 mm (2 in.) ball.

Ball: 51 mm (2 in.) forged ball with 51 mm (2 in.) long shank, 1 inch 14 UNEF thread. SAE Class 3, 2268 kg (3500 lb) GVW.

Tires: Front—18 x 9.50-8 (4 PR) tubeless.Rear—23 x 8.50-12 (4 PR) tubeless.

Drive Lines:
Front—Ag-type 35R series with plastic safety shield, quik-loc on the tractor end, ball-shear device on implement end. Operating stroke from center of bearing crosses: 92 cm (36-1/4 in.) collapsed minimum to 127 cm (50 in.) extended maximum.

Rear—Ag-type 14R series with plastic safety shield. Quik-loc on both ends.

Gear Cases: PTO shaft-driven front gear case with spur type gears, a right angle gear case with bevel gears and three individual, integral spur gear cases. Integral gear cases lubricated by structural tube reservoir. Reservoir level checked by dipstick in fill port.

Lift Cylinder: Single-acting cylinder. Uses tractor hydraulics to lower and raise the coring head.

Hydraulic Hose: 9.5 mm x 304.8 cm (3/8 x 120 in.), SAE 100R1A.

Quick Coupler: 1/2 - 14 FE NPT ends. Meets ISO, SAE, ASAE, interchangeability requirements.

Hose Stand: Adjusts from 112 - 138 cm (44 - 54 1/2 in.) at three 89 mm (3 1/2 in.) increments (ground to center of hose holder).

Safety/Transport Stands: Swing-up type. Prevents accidental lowering of the coring head during service and/or turf guard conversion. Also used to lock unit up during transport.

Turf Guards: Three; each semi-rigid mounted with compression spring flotation and front mounted rollers.

Rollers: Three each (one per turf guard) mounted independently to front of each turf guard. 11.4 cm (4 1/2 in.) diameter; 27.9 cm (11 in.) long (flat portion).

Covers: Minimum of 4.76 mm (3/16 in.) thick. Black semi-gloss, fiberglass reinforced resin. Secured to unit by flexible draw latches.

PTO Drive line Shield: On front gear case. Shields the PTO drive line. Can be tipped up for drive line service.

Coring Capacity (theoretical) @ 3.5 km/hr (2.2 mph):
Assumes no reduction in total area due to overlap, turning, stops, etc.

Coring Patterns:
2 Tines/Head, 7/8 in. Tines—Effective Coring Width—160 cm (63 in.).Total Tines—1 row = 12 tines.Hole Pattern—13.3 x 15.2 cm (5 1/4 x 6 in.); 2 tines.Depth—To 12.7 cm (5 in.).*Sp m/hr (Sq ft/hr)—5665 sq m/hr (60,984 sq ft/hr).*Hectares/hr (Acres/hr)—0.567 ha/hr (1.4 acres/hr).

6 Tines/Head, 3/4 in. Tines—Effective Coring Width—160 cm (63 in.).Total Tines—2 rows of 18 = 36 tines.Hole Pattern—8.9 x 7.6 cm (3 1/2 x 3 in.); 6 tines.Depth—To 7.6 cm (3 in.).*Sp m/hr (Sq ft/hr)—5665 sq m/hr (60,984 sq ft/hr).*Hectares/hr (Acres/hr)—0.567 ha/hr (1.4 acres/hr).* with optional 30/40 teeth gear set.

Dimensions: Length—279.4 cm (110 in.).Width—228.6 cm (90 in.) [from outside of tires].Height—11.8 cm (44 in.).Weight—1350 kg (2975 lb).Wheel Base—113.03 cm (44 1/2 in.) with 10.8 cm (4 1/4 in.) rearward castor.

Standard Equipment: Equipped with either two 7/8 in. or six 3/4 in. tine turf guards (tines not installed) with other configuration included loose. Included with two 35-tooth gears in front gear case are 32, 33, 34, 36, 37 and 38 tooth gears to match the aerator to user's tractor. Six shear pin sets (bolts & nuts), a 51 mm (2 in.) No. 3 forged hitch ball and female half of quick coupler (1/2–14 FE NPT) are also supplied.

Before Operating

Adjusting Tine Penetration

To adjust equally on both sides:

1. Loosen the capscrews securing both height adjusters (Fig. 1). Raise the adjusters until the bolt bottoms out in the slot.

2. Maximum penetration depth of 12.7 cm (5 in.) for 7/8 in. (2 tine) and 7.6 cm (3 in.) for 3/4 in. (6 tine) configuration. To adjust for less penetration, lower the height adjusters.

3. After adjusting to the desired depth setting, tighten the mounting capscrews to secure the adjustment. Adjust the height adjuster on the opposite side to the same setting.

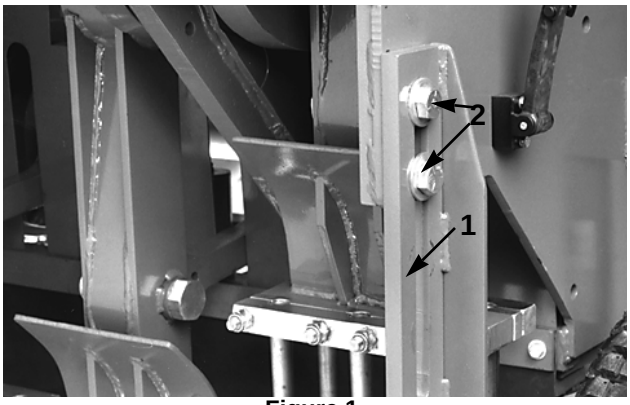


Figure 1

1. Height Adjuster
2. Height adjuster mounting capscrews & flatwasher.

Check the Reservoir & Gear Case Oil Levels

1. With machine on level surface, remove the oil fill/dipstick plug from the right-angle gear case (Fig. 2).

2. The oil level should reach the mark on the dipstick. If oil is needed, add SAE EP 90W gear oil. Install the fill plug.

3. At the rear of the machine, remove the dipstick assembly from the reservoir. The oil level should be between the marks on the dipstick (Fig. 3). If oil is needed, add SAE EP 90W gear oil. Replace the gear case cover.

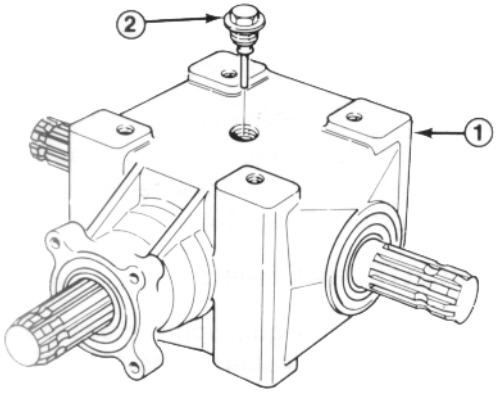


Figure 2

1. Right-angle gear case
2. Gear case fill plug

Timing The Aerator To The Tractor

To operate the aerator correctly, set the tractor as follows:

1. There must be 540 PTO rpm at normal engine operating speed.

2. With the PTO operating at 540 rpm, select a transmission gear that allows the tractor to operate 30.5 m (100 ft) within 30–38 seconds; i.e., 2.9–3.5 km/hr (1.8–2.2 mph).

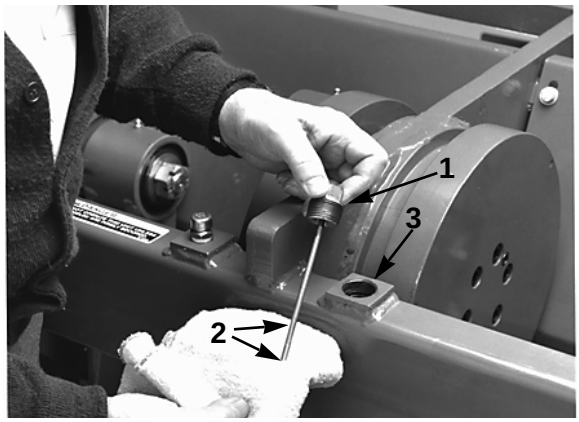


Figure 3

1. Fill plug dipstick
2. Oil level between marks
3. Reservoir fill hole

Tractor Hitch Requirements (Preferred)

A = 14” = End of PTO to hitch pin hole
B = 1” = Horizontal distance from hitch pin to tire
C = 15” = Height of hitch
D = 8” Top of hitch to center line of PTO
E = 4” = Auxiliary hole spacing (not required)
F = .81” diameter =Hitch pin hole (minimum)
G = .68” diameter = Auxiliary hole (not required)

To set the tractor:

1. On a test area, measure and mark off 30.5 m (100 ft).

2. Operate the tractor engine to attain 540 PTO rpm. Select a transmission gear and operate the tractor (with or without the aerator) over the test area. Record the time it takes to travel 30.5 m (100 ft).

Note: If your tractor doesn’t have a tachometer, measure the PTO shaft rpm with a hand tachometer.

3. Make three passes, record the time for each pass, and calculate the average time needed to travel 30.5 m (100 ft). If the average is not within 30–38 seconds, select another transmission gear and recheck until the average time meets the recommended time limits.

Important: Use only established tractor settings when operating the aerator. Never operate the aerator with the tractor in any other gear setting.

To prepare the aerator:

Install proper timing gears in the aerator pick-off gear case. Use the chart on the next page for gear selection.

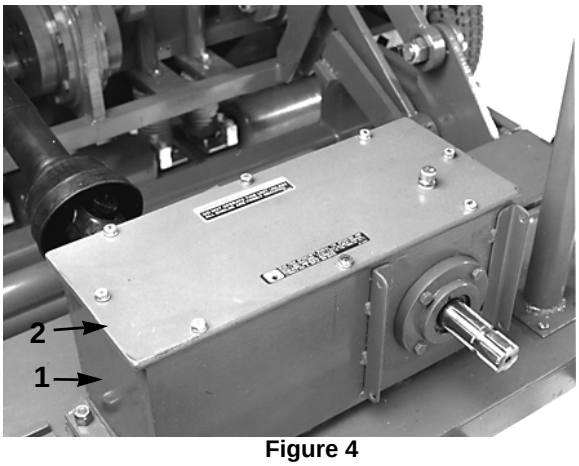


Figure 4

1. Pick-off gear case
2. Gear case fill plug

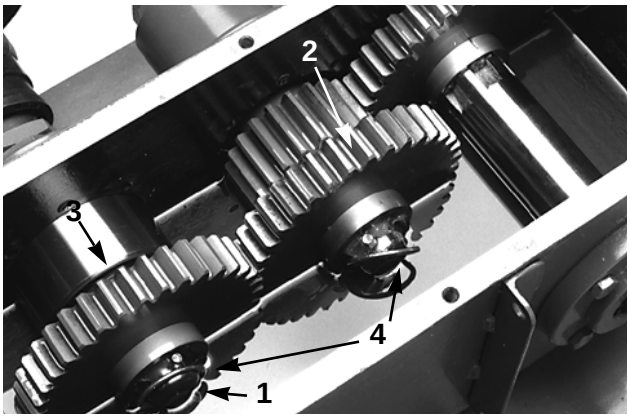


Figure 5

1. Oil level to center of shafts
2. Driver gear
3. Driven gear
4. Lynch pin

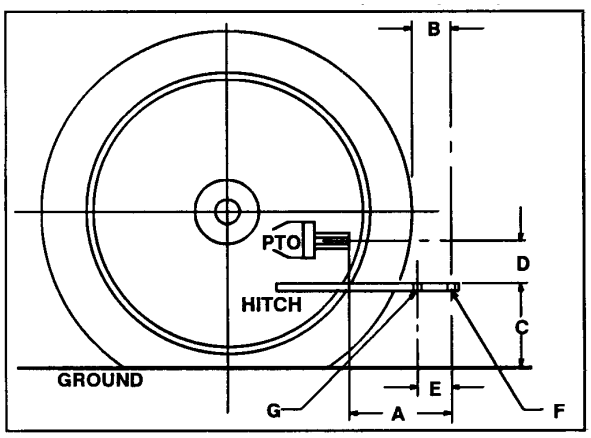


Figure 6

		GEARS	
	Sec./30.5 m	**Driver**	**Driven**
INCREASING HOLE SPACING	42.3	30	40
	39.9	31	39
	37.7	**32**	**38**
Optimum vehicle speed	**35.5**	**33**	**37**
(Bold Print))	**33.6**	**34**	**36**
	31.7	**35**	**35**
DECREASING HOLE SPACING	**30.0**	**36**	**34**
	28.3	37	33
	26.7	38	32
	25.2	39	31
	23.8	40	30

Important: Driver and driven gears selected must combine to add up to 70.

Gear Installation:

1. Remove the pick-off gear case cover (Fig. 4).

2. Remove the lynch pins securing the driver and driven gears and slide the gears off the shafts (Fig. 5).

3. Install the driver and driven gears matching the chart time and secure with lynch pins (Fig. 5).

Note: The number of gear teeth is stamped on each gear.

4. Install the gear case cover. Make sure the machine covers are in place and verify the aerator/tractor timing.

Verifying Timing:

1. Raise the coring head, set the parking brake, stop engine and lower the coring head supports (Fig. 7).

2. With the tractor at proper settings, operate the aerator a short distance, then raise the coring head, disengage the PTO and stop the tractor. Set the parking brake, lower the coring head onto supports (Fig. 7) and stop the engine.

Important: Never exceed 540 tractor PTO rpm or you may damage the aerator.

3. In the direction of travel, measure the distance between tine holes (one tine stroke hole to another). The distance should be:

7/8 in. tines–14.6 to 15.2 mm (5-3/4 to 6 in.).
3/4 in. tines–7.3 to 7.62 mm (2-7/8 to 3 in.).

Note: Turf hold condition can also show how well the tractor and the aerator match. If the rear of the tine holes are torn, the tractor is too slow. By contrast, if front of the tine holes are torn, the tractor speed is too fact.

4. If the hole spacing is short (coring speed too fast), increase spacing: replace driver gear with gear having less teeth and driven gear with gear having more teeth (Fig. 6). If the hole spacing is long (coring speed too slow), increase the driver gear teeth and decrease driven gear teeth quantities; see the gear selection chart.

5. Operate the machine and repeat steps 1–4.

IMPORTANT: Timing can sometimes by fine tuned by gradually regulating the tractor's tire pressure. Lowering tire pressure provides closer spacing and raising tire pressure will increase the spacing.

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

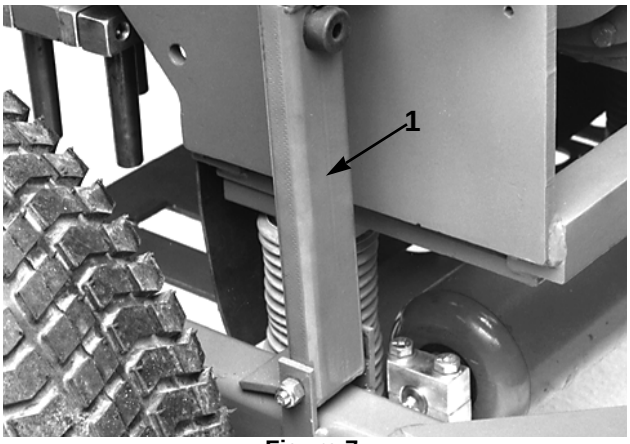


Figure 7

1. Coring head support (2)

Operation

Training Period

Before first using the aerator, use a clear area to practice operation. Operate the tractor at the recommended PTO speeds and gear settings and become thoroughly familiar with the machine's handling. Stop, start, raise and lower the coring head, disengage the PTO and align the machine with previous passes. Practice builds confidence in the Fairway Aerator's performance and helps ensure proper operating techniques wherever the machine is operated.

⚠ CAUTION

To avoid personal injury, never leave the tractor seat without setting the parking brake and disengaging the PTO. Never make repairs or adjustments without first supporting the coring head on support stands. Be sure to secure all safety devices in their correct place before resuming operation.

Before Aerating

To avoid damage, adjust the hydraulic hose extension stand so the hose clears the tractor and the aerator'. Inspect the operating area for hazards that could damage the aerator and either remove them or plan how to avoid them (flags identifying sprinkler heads, distance markets, etc.). Carry replacement shearbolts, the tines and tools to repair damage should the tines contact foreign materials.

Aerating Procedures

Before operating, stop the tractor, raise the coring head and set the parking brake. Leave the tractor seat and lower each coring head support stand. Return to seat, set the PTO to 540 rpm, select proper gear, release the parking brake and begin operation. When the tractor reaches 2.9 to 3.5 km/hr (1.8 to 2.2 mph), lower the coring head. Although the aerator can be operated in slight curves, operate it in a straight line for best results. If the machine must be sharply turned, raise the coring head and disengage the PTO or severe turf damage will result and the machine may be damaged. When turning, be sure the tractor tires clear the hitch, the hydraulic hose clears the tractor and aerator components and the drive line is not compressed below 92 cm (36 1/4 in.), nor extended over 127 cm (50 in.). Otherwise, the hitch hose or drive line could be damaged.

Look behind frequently to be sure the machine is operating properly and is aligned with previous passes.

Should the drive line ratchet during operation:

1. Raise the coring head, disengage the PTO, and stop immediately.

2. Set the parking brake, raise the coring head stands and lower the head on to the stands.

3. Inspect the turf to determine the reason for the ratcheting or tine breakage. Locate where the problem occurred and insert a non-conductive probe into the aerator holes. If foreign material beneath the turf caused the damage, mark the location so the material can be either removed or avoided in the future. If the ratcheting occurred because turf was too hard to penetrate, raise the depth of penetration and try aerating the area again. Be sure all machine damage has been corrected before resuming operation; refer to step 5.

4. Always clear the area of all damaged machine parts, such as broken tines, etc., to prevent their being picked up by mowers or other turf maintenance equipment.

5. Replace broken tines, and inspect and correct damage to those still useable. Repair any other machine damage before commencing operation.

Transport Operation

To transport, raise the coring head, disengage the PTO and set the parking brake. Raise the coring head support stands and lower the coring head onto them. Climb steep inclines slowly. Approach rough areas at reduced speed and cross severe undulations carefully to avoid loss of control. During sharp turns, make sure the rear tractor tires do not contact the aerator hitch assembly.

IMPORTANT: Do not exceed transport speeds of 24 km/hr (15 mph) or the tires may fail.

Inspection and Clean-up After Use

After use, thoroughly wash the machine with a garden hose without a nozzle to avoid seal contamination and bearing damage from excessive pressure. Use a brush to remove caked material and a mild detergent to clean the covers. Periodically wax the cover with auto wax to keep its glossy finish. Inspect the machine for damage, gear for oil leaks and component and tine wear after cleaning.

Changing The Tine Configuration

To change the tine configuration:

1. Lift the coring head, disengage the PTO and set the parking brake. Raise each coring head support and lower the coring head onto the supports (Fig. 7). Remove the coring head cover and disconnect the gearbox drive line.

2. Remove the locknuts (4) securing each finger plate assembly and remove the assemblies (Fig. 8).

3. Remove the tine mounting locknuts and remove the tines (Fig. 3). Remove the rear tine blocks and slide the front tine blocks and studs out of the stomper assembly (Fig. 9).

Note: Manually rotate the right angle gearbox shaft so the stomper assemblies are positioned to allow removal of the front tine block.

4. Install replacement tine blocks and the tines and tighten the locknuts to secure the tines.

5. Mount the proper turf guard assemblies and tighten the locknuts.

6. Connect the gearbox drive line and install the coring head cover.

Stomper Assemblies

IMPORTANT: Within the first five (5) operating hours and every 25 hours operation after that, you must check the stomper assemblies for excessive lateral play. Without this

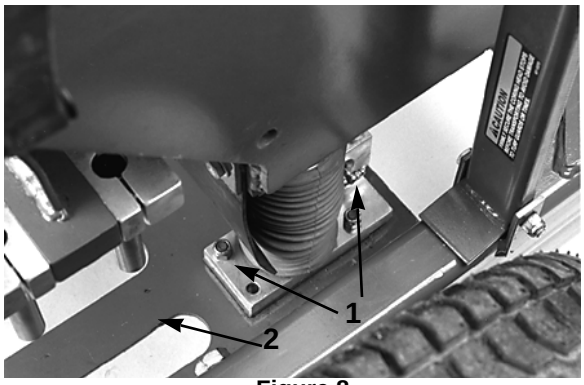


Figure 8

1. Locknuts
2. Finger plate

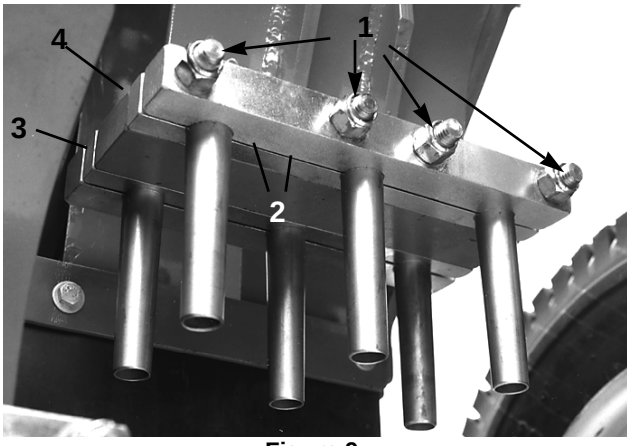


Figure 9

1. Locknuts
2. Rear tine blocks
3. Front tine blocks
4. Stomper assembly

check, major component failure may result. Do not operate the aerator until a mechanic has completed this process.

Operating Tips

1. Gradually engage the PTO at low engine speed and throttle up to 540 RPM before lowering the coring head.

2. Make very gradual turns when aerating. Never make sharp turns with the PTO engaged.

3. If the tractor stalls or slows too much when operating on hard ground or when going uphill, raise the coring head slightly until you regain speed, then lower the head again.

4. 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.

5. Raise the coring head penetration if the ground is hard packed. Clean cores and aerate again at deeper penetration, preferably after watering.

Machine Lubrication

Use No. 2 Lithium base grease on all fittings. Lubricate at times listed or more frequently, if needed. For best results, use a hand grease gun. Do not apply excess pressure or seals may be permanently damaged. To access the center drive line grease fittings, disconnect one end.

NOTE: Lubricate the machine after washing it.

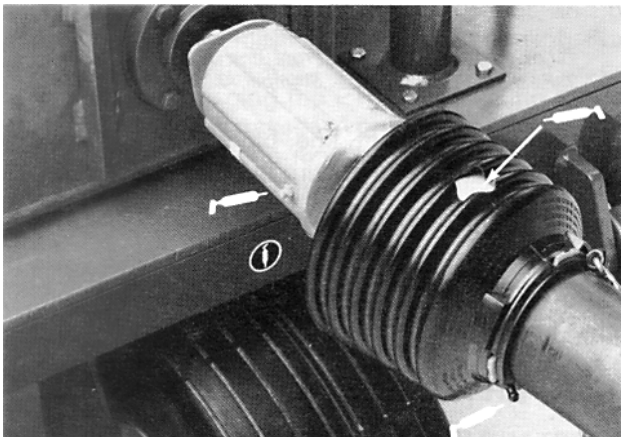


Figure10

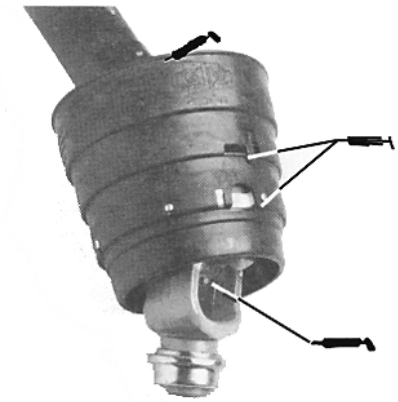


Figure 11

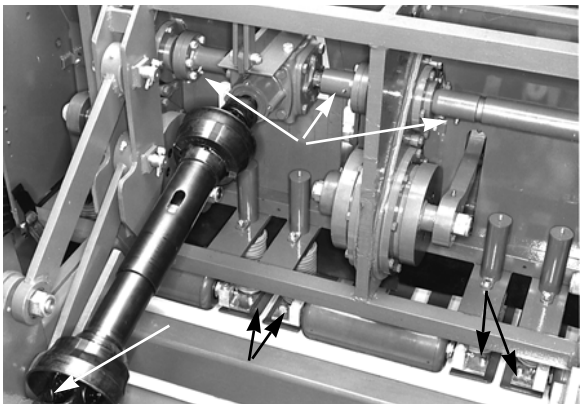


Figure 12

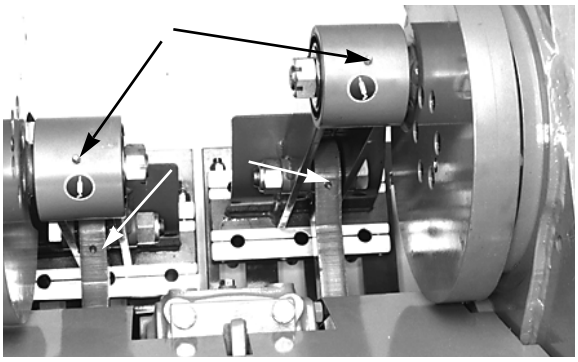


Figure 13

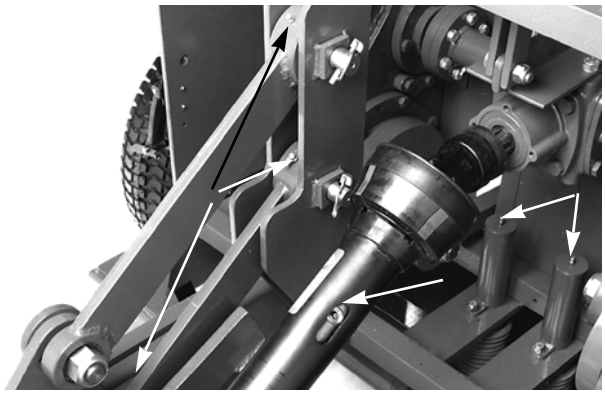


Figure 14

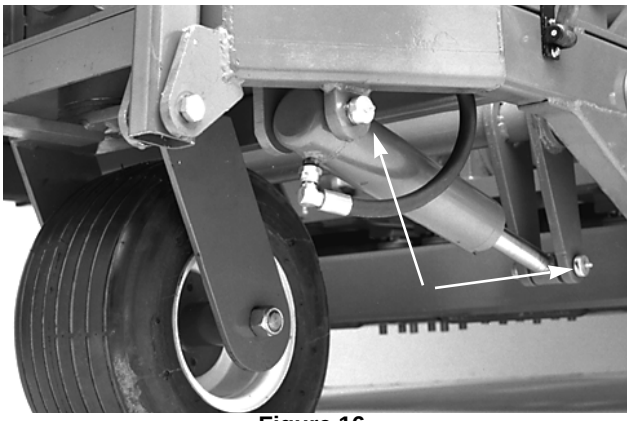


Figure 16

Figure 15

Check the Reservoir Level

After every25 hours of operation, or seasonally, whichever comes first, check the level of in the reservoir.

1. With the machine on a level surface, remove the oil fill plug and dipstick assembly from the reservoir (Fig 17).

2. The oil level should be between the two marks on the dipstick. If the oil level is not between the dipstick marks, add SAE EP 90W gear oil until the oil level is correct.

NOTE: Under normal conditions, the reservoir oil level should not drop. If the oil level is low, check for signs of leakage and correct , as necessary. Should a major failure of the gearbox components occur, drain the gear oil, flush the reservoir and install fresh oil. The reservoir oil drain plug is located at the lower left side of the reservoir (Fig. 18). To refill the reservoir to

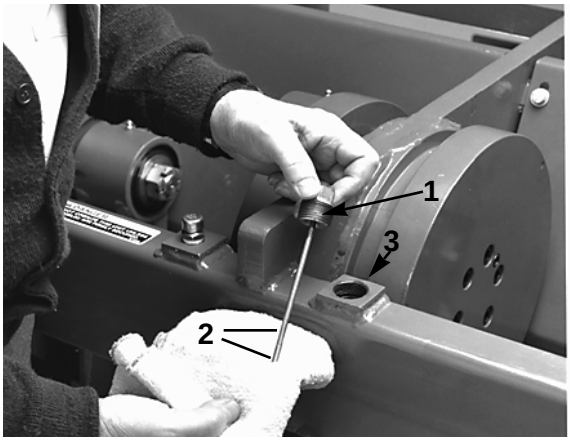


Figure 17

1. Fill plug and dipstick
2. Oil level between marks
3. Reservoir fill hole

operating level, add approximately 9 liters.

NOTE: Drain plugs are also at the bottom of each (3) gear case.

Check the Right-Angle Gear Case Oil Level

After every 25 hours of operation, or seasonally, whichever comes first, check the level in the right-angle gear case (Fig. 19)

1. With the machine on a levels surface, remove the oil fill plug.

2. Add SAE EP 90W gear oil, if needed and install the fill plug.

NOTE: Gear capacity is 750 ml.

Check the Pick-off Gear Case Oil Level

After every25 hours of operation, or seasonally, whichever comes first, check the level in the pick-off gear case.

1. With the machine on a levels surface, remove the gear case cover (Fig 20).

2. The oil level should be to the center of the gear shafts (Fig. 21). If the level is low, add SAE EP 90W gear oil and install the cover.

NOTE: Should major failure of the pick-off gear case components occur, the gear oil will be contaminated and should be drained. Flush the gear case and add fresh oil. The gear case oil drain plug is at the lower left rear side of the case (Fig. 22). Gear case capacity is 5.5 liters.

Figure 18

1. Reservoir Drain Plug

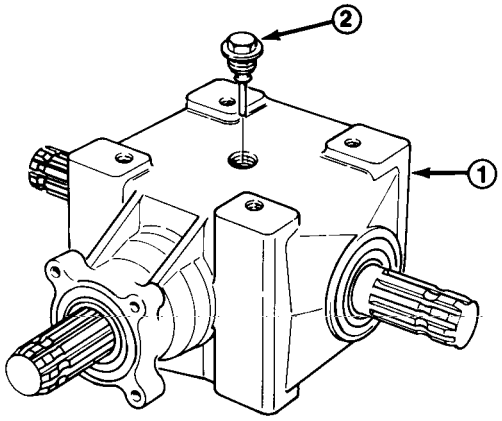


Figure 19

1. Right-angle gear case
2. Gear case fill plug

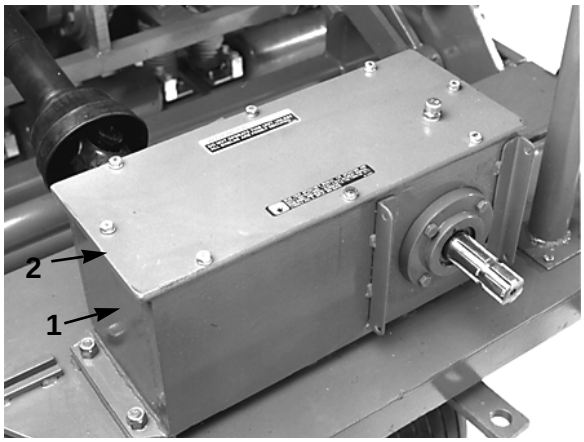


Figure 20

1. Pick-off gear case
2. Gear case cover

Maintenance

Checking Stomper Assemblies

Within the first five hours of initial machine operation, and after every 25 hours of operation thereafter, all stomper assemblies must be checked for excessive lateral play. This must be done or major machine component failure may result.

1. Grasp each stomper assembly at the bottom and try to move the assembly laterally in each direction (Fig 23). Do not move fore and aft. There should be little or no movement of the assembly. If there is movement, go to step 2. If there is little or no movement, check the next assembly.

2. Remove the roll pin securing the castle nut to the top crankshaft (Fig. 21). Check the castle nut for tightness with your fingers. If the nut is very loose, turn it clockwise until it is flush against the outer spacer and you feel resistance (Fig. 24).

3. Using a torque wrench, turn the nut clockwise (to tighten) until a slot in the nut aligns with the shaft hole. Do not exceed 54 Nm. Install the roll pin.

NOTE: The shaft is cross drilled, so only 1/12 turn (max) should be needed to align the roll pin hole.

General Maintenance

After each use of the machine and after clean up, do the following:

1. Examine the tines for damage and sharpness and repair or replace, as necessary.

2. Inspect for signs of leakage, excessive component wear or component damage. Repair or replace, as necessary.

3. Thoroughly wash the machine with a garden hose without a nozzle so that contamination and seal and bearing damage from water pressure will be avoided. A brush may be used to remove caked-on material. Use mild detergent to clean the covers. Applying a coat of auto wax periodically will retain the cover's glossy finish. After cleaning, inspect for machine damage, gear oil leakage, component and tine wear.

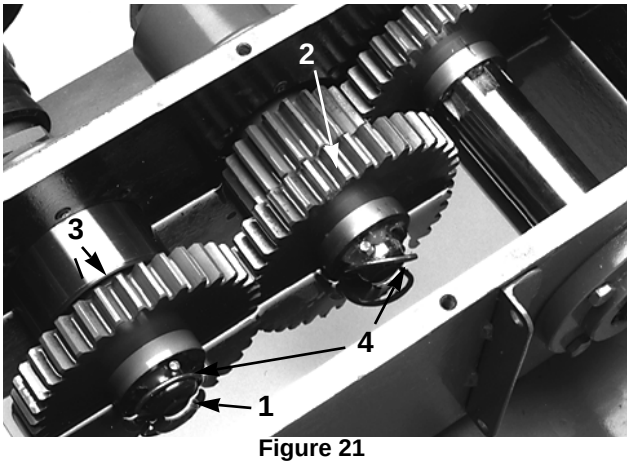


Figure 21

1. Oil level to center of shafts
2. Input shaft
3. Output shaft
4. Driver gear
5. Driven gear

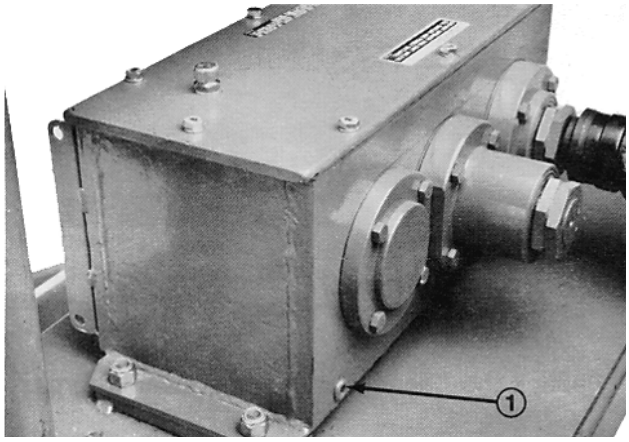


Figure 22

1. Gear case drain plug

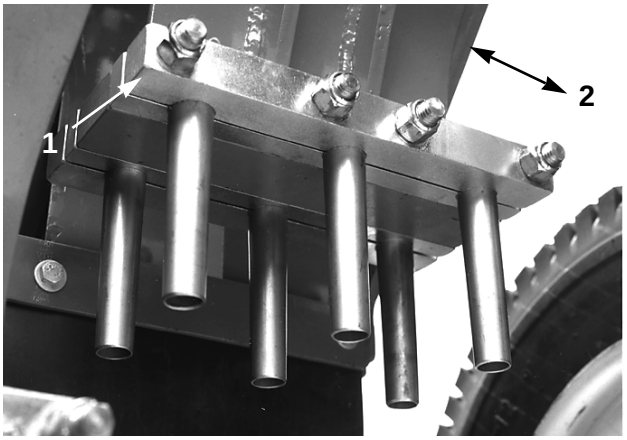


Figure 23

1. Stomper assembly
2. Move laterally—both directions

Aerator Gear Case Timing Tips

If disassembly of the aerator drive system is required for maintenance, the unit will need to be retimed to ensure n balance, equal loading of the tine arms and optimum hole quality. There are two separate procedures to properly tine the aerator gear cases. Use the following tips for each procedure when reassembling the gear case.

Timing the upper and lower crank shafts on each individual gear case

1. The upper and lower crankshaft flywheels for each tine arm must be assembled so the offset shafts are located in the same “clock” position. If the upper offset shaft is positioned at 12 o’clock, then the lower offset shaft must be at the 12 o’clock position.

2. To achieve the proper position for each gear case, install the timing bar (supplied with the machine) to the upper and lower crankshaft by aligning each roll pin and securing the socket head capscrew.

Synchronizing the Gear Cases

1. The tine arms are numbered 1 to 6 from left to right, as viewed from the rear of the machine. Each of the three gear cases must be connected to each other in a proper phase to ensure that only one set of tines will enter the turf at a time.

2. Rotate the number 1 tine arm to the lowest position as a starting point. When viewed from the left side of the coring head, the stamped numbers 2, 3, and 1 should be visible at the top of the first, third and fifth upper crank, respectively.

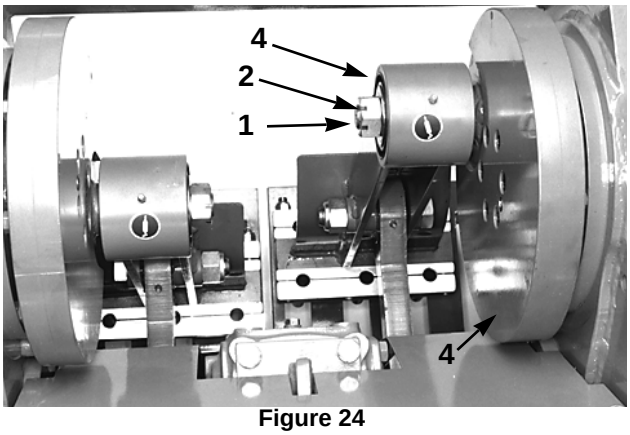


Figure 24

1. Roll pin
2. Castle nut
3. Top crank
4. Outer spacer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