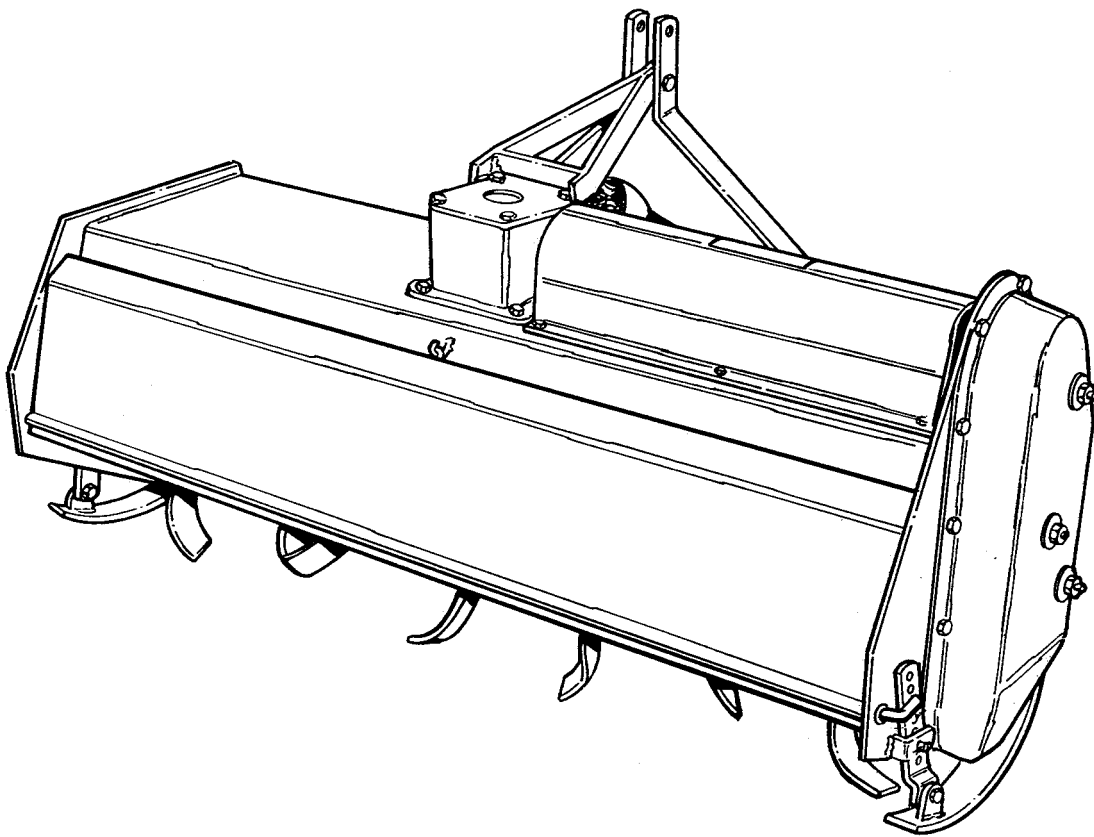


OPERATOR'S MANUAL

48" ROTARY TILLER



48" ROTARY TILLER
MFG. NO. 1600199



**CAUTION: Read Manual Thoroughly
Before Operating**

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SAFETY PRECAUTIONS TO PROTECT YOURSELF AND OTHERS

Read and become familiar with the owners manual for your tractor and the rotary tiller before operating the tiller.

Do not allow anyone to use the rotary tiller unless they have been instructed in how to operate it safely.

Never attempt to adjust, repair or service the tiller while the tractor engine is running.

Do not allow others near the tiller when it is operating.

Stay clear of the power take off shaft and tiller tines when the tractor engine is running.

Be sure the power take off shaft and tiller tines have stopped turning before attempting to adjust, repair or service the rotary tiller. **CAUTION: THE TINES MAY CONTINUE TO**

ROTATE A FEW SECONDS AFTER THE CLUTCH HAS BEEN DISENGAGED AND THE ENGINE SHUT OFF.

Clear the work area of objects which might be picked up and thrown or caught in the tines.

Disengage power to the rotary tiller and stop the engine before leaving the operators position.

Operate the tiller only in daylight or good artificial light.

Always operate the rotary tiller with the hydraulic lift lever and the three point hitch float pins in the FLOAT position to prevent the tiller from jolting the tractor should the tines strike a hard object.

Use caution when operating on sloping surfaces.

REQUIRED ACCESSORIES

Three Point Hitch. Rear Power Take-Off.

RECOMMENDED ACCESSORIES AND OPTIONS

The front weight will give better steering traction at the front tires.

The front bumper is required to mount the front weight.

Rear wheel weights give added traction and stability when operating on slopes.

INSTALLATION

1. See figure 1. Before mounting the rotary tiller to the tractor, set up the 3 point hitch as shown. Attach the draft arms to the upper holes of the lower lift links at (A). Pin the turnbuckle link through the upper holes (B) of the mounting bracket. The eyebolts (C) should be positioned as shown so the chains attach on top of the tractor drawbar. The float lockout pins (D) should be placed in the "float" position as shown by adjusting the pins so the large end is exposed.
2. See figure 2. Back the tractor straight toward the front of the rotary tiller until the swivel sockets (A) are in line with the hitching pins (B). Use the tractor hydraulic lift lever to raise or lower the swivel sockets until they are the same height or slightly lower than the hitch pins.
3. Shut off the tractor engine and set the parking brake.
4. See figure 3. Slide the swivel sockets onto the tiller hitch pins and insert the safety pins (A). The leveling cranks (figure 1, item E) may be turned to aid in getting the swivel sockets lined up with the hitch pins.
5. See figure 4. **CAUTION: INSURE THE TRACTOR ENGINE IS STOPPED BEFORE ATTEMPTING TO ATTACH THE POWER TAKE OFF SHAFT.** After insuring the drive

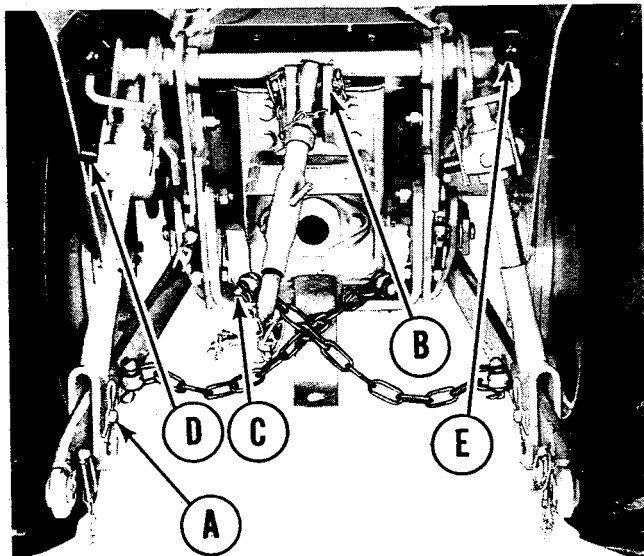


Figure 1. Three-point hitch set up to mount the rotary tiller.

shaft spline (A) is clean, start it in the internally splined power take off. While holding the drive shaft in place with one hand, use the other to release the outer locking ring (B) of the power take off drive and hold it there. Slide

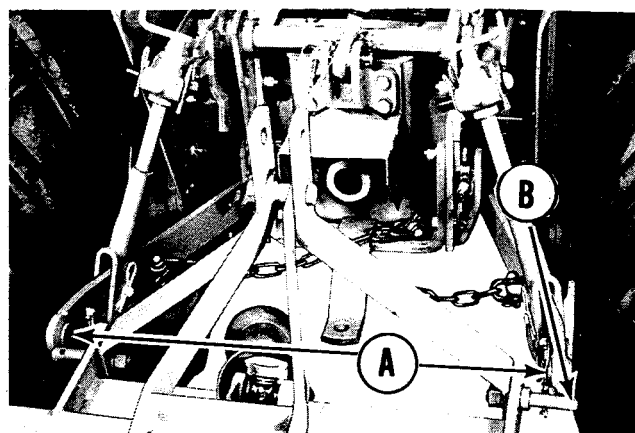


Figure 2. Tractor backed to front of tiller.

the drive shaft into the power take off and release the locking ring. Insure the drive shaft is locked in place by attempting to pull it out of the power take off.

6. See figure 5. Align the swivel (A) with the mounting holes of the rotary tiller tower (B). The turnbuckle may be extended or retracted by rotating the turnbuckle at (C) to aid in lining up the holes. Install the safety pin (E).
7. See figure 1. Turn the leveling cranks (E) clockwise all the way to give the tiller maximum clearance from the ground when in the raised position.

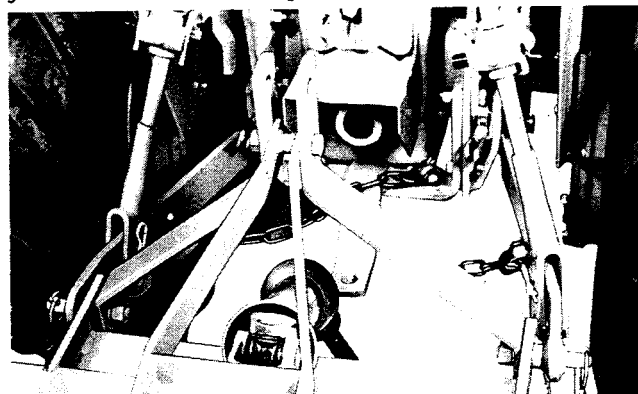


Figure 3. Swivel sockets attached to tiller hitch pins.

8. See figure 5. With the tiller resting on the ground surface, rotate the turnbuckle (C) until the top surface of the tiller (figure 3, item B) is level front to rear. Use a wrench to tighten the locking nut (D) securely against turnbuckle (C) to prevent the turnbuckle from changing position.

REMOVING THE ROTARY TILLER

CAUTION: BEFORE ATTEMPTING TO ADJUST, SERVICE OR REMOVE THE ROTARY TILLER, BE SURE THE ENGINE IS SHUT OFF, THE PARKING BRAKE SET AND THE TILLER TINES HAVE STOPPED TURNING.

1. Position the tractor so its rear wheels and the rotary tiller are on a level surface. Shut off the tractor engine and set the parking brake.
2. Push the tractor hydraulic control lever forward to the **FLOAT** position.
3. See figure 5. Remove the pin at (E) to unfasten the turnbuckle link from the rotary tiller.
4. See figure 4. Remove the tiller drive shaft by releasing the

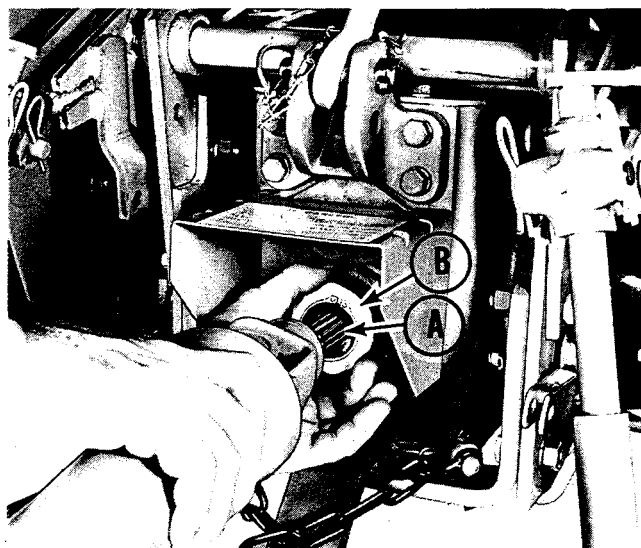


Figure 4. Installing tiller drive shaft in tractor power take off.

locking ring (B) with one hand while using the other to pull the drive shaft out of the power take off.

5. See figure 3. Remove the safety pins (A) from the tiller hitch pins and pull the draft arms off the hitch pins. **CAUTION: BE SURE THE TILLER IS BLOCKED OR POSITIONED SO IT DOES NOT FALL AND CAUSE INJURY AFTER IT HAS BEEN UNFASTENED FROM THE THREE POINT HITCH.**

OPERATION

SOIL CONDITIONS REQUIRED

Moisture content of the soil will affect the quality of seedbed prepared when using the rotary tiller. It is not advisable to till soil which is too moist and forms large clods or balls of mud when tilled. Heavy clay soils tend to stay wet longer and form larger, harder clods when tilled too wet than lighter textured sandy or well developed dark soils which are high in organic material. For this reason, it is more important not to till clay soils too early in the spring or after a rain.

DETERMINING TILLING PATTERN

Before beginning to till any area, the operator should determine the best tilling pattern. The size, shape, terrain, and obstructions of the area to be tilled should be considered. Usually it is best to till the longest direction of the area to minimize turning. Required turns can often be made faster by backing the tractor and tiller since direction of travel can be easily and quickly changed with the hydrostatic transmission speed control. **CAUTION: ALWAYS RAISE THE TILLER BEFORE TURNING OR BACKING TO PREVENT DAMAGE TO THE TRACTOR AND TILLER.** Time can also be saved when turning or crossing the end of a field when the tiller is not in the ground by using the tractor hydrostatic transmission speed control to increase ground speed.

SEEDBED CONDITIONS DESIRED

TILLING DEPTH

The most desirable tilling depth for an area will vary according to its intended use. If seeds are to be planted, consideration should be given to the depth required to kill competing

plant life, mix fertilizer, and prepare a good seedbed. In general, larger seeds should be planted deeper than smaller seeds. For example, corn is often planted two to three inches deep, whereas, the much smaller grass seed may be planted within the top 1/2 inch of soil. A good seedbed for grass seed can often be made by tilling only two to three inches deep. When planting larger seeds such as corn, a tilling depth of five or more inches may be desirable.

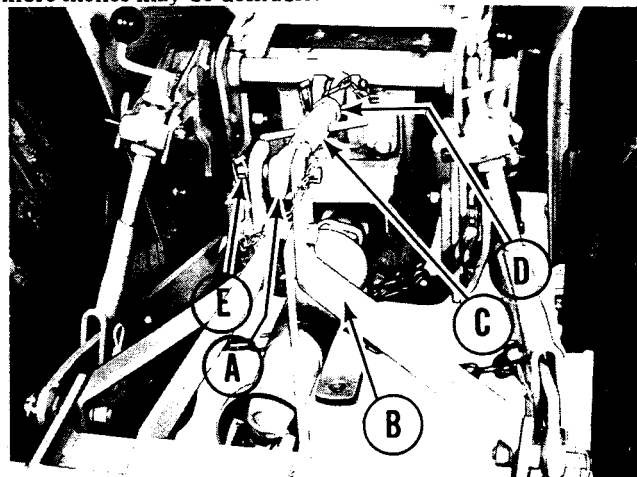


Figure 5. Turnbuckle link attached to tiller.

CLOD SIZE

The seedbed must be fine enough to insure that the planted seed makes good enough contact with the soil to germinate. Smaller seeds usually require a finer seedbed than larger ones. In many cases, more than one pass of the tiller will be required to prepare a seedbed of proper depth and texture.

PREPARING THE TRACTOR AND TILLER

CAUTION: BEFORE ATTEMPTING TO INSPECT, ADJUST, OR SERVICE THE ROTARY TILLER INSURE THE POWER TAKE OFF IS DISENGAGED, THE ENGINE SHUT OFF, AND THE TILLER TINES HAVE STOPPED TURNING.

DO THE FOLLOWING

1. Read this manual and the owners manual for the tractor carefully. Be sure you are familiar with the safety precautions, controls, and operating instructions.
2. Check the tiller carefully to be sure it is properly installed and leveled. See page 2.
3. Check the condition of the tiller tines. Clean the tine shaft of any foreign material and tighten any loose tine mounting bolts according to the Maintenance instructions.
4. Lubricate the tiller according to the Every 25 Hour Maintenance instructions on page 6.
5. Clear the area to be tilled of all wire and other debris which may be caught in or damage the tiller tines.

DUST SHIELD POSITION

See figure 6. For most tilling conditions, to give the smoothest tilling job and prevent rocks from being thrown, the rear of the dust shield (A) should rest on the ground when the tiller is operating in the ground. The height of the dust shield can be adjusted by placing various chain links over the hook (figure 6, item B). If finer adjustment is desired than the chain links provide, the chain can be twisted a few turns to give the height desired.

SKID SHOE POSITION

The Simplicity tiller has adjustable skid shoes which can be set to give various tilling depths. See figure 6. The two skid shoes (C) on either side of the tiller can be held in any of six positions by placing the pin and spring clip at (D) in various adjustment holes. Raise the skid shoes to provide greater tilling depth; lower them to give less depth. Both skid shoes should be positioned in the same adjustment hole to give uniform tilling depth. Other operating settings which influence tilling depth are covered under Controlling Tilling Depth and Clod Size.

OPERATING THE TRACTOR AND TILLER

CAUTION: NEVER BACK UP OR TURN SHARPLY WITHOUT RAISING THE TILLER OUT OF THE GROUND.

TRANSPORTING THE TILLER

Transport the tiller in the raised position with the **REAR CLUTCH** switch **OFF**. Any combination of the three speed transmission, hydrostatic transmission control lever, and the engine speed control may be used in transporting the tiller. Ground speed should be adjusted according to the type and condition of the ground surface. **CAUTION: WHEN THE TILLER IS IN THE RAISED POSITION, WEIGHT ON THE TRACTOR FRONT WHEELS WILL BE SUBSTANTIALLY REDUCED MAKING TURNING DIFFICULT UNDER SOME CONDITIONS. THE FRONT WEIGHT SHOULD BE USED ON THE TRACTOR WHEN THE TILLER IS INSTALLED.**

SELECTING TRANSMISSION GEAR

The tractor three speed transmission can be placed in second gear for most operating conditions and the hydrostatic transmission control lever used to regulate ground speed. When tilling hilly or rough areas, the tractor will be more efficient if first gear is used. It will also be easier to maintain a uniform ground speed in first gear.

ENGINE SPEED

The engine should be operated at 3/4 to full speed when using the rotary tiller. Operate it at full speed when tilling depth and ground conditions require full engine power.

ENGAGING TILLER DRIVE

To minimize wear on the tractor power take off clutch, the tiller should be engaged while it is out of the ground. Engage the tiller by pushing forward on the tractor **REAR CLUTCH** switch located on the instrument panel. **CAUTION: TO PREVENT DAMAGE TO THE TILLER SLIP CLUTCH DISENGAGE THE POWER TAKE OFF CLUTCH IMMEDIATELY IF THE TILLER TINES STOP TURNING DURING OPERATION.**

RAISING AND LOWERING THE TILLER

The tiller should be raised and lowered by using the tractor hydraulic lift control lever. Pull back on the lever to the raise position to lift the tiller. Lower the tiller by pushing the hydraulic lift control lever forward to the **FLOAT** position. **CAUTION: THE HYDRAULIC LIFT CONTROL LEVER MUST BE IN THE FLOAT POSITION WHEN THE TILLER IS BEING OPERATED TO PREVENT THE TRACTOR FROM BEING PROPELLED FORWARD BY THE TILLER.**

CONTROLLING GROUND SPEED

Ground speed can be easily and quickly controlled by using the tractor hydrostatic transmission control lever. The best ground speed will vary greatly with the type of terrain, tilling depth and condition of the soil. Tilling depth and size of soil particles will be affected by ground speed. For most conditions, 1 to 2 miles per hour will be a good starting speed. Refer to the operation chart in the Operation section of the operator's manual for approximate control settings to achieve these speeds.

CONTROLLING TILLING DEPTH AND CLOD SIZE

TILLING DEPTH

Factors which affect tilling depth include the skid shoe setting, type and condition of the soil, engine speed, and ground speed. The skid shoes should be adjusted to control tilling depth as explained under Skid Shoe Position.

The type and condition of soil will affect tilling depth for a particular ground speed and depth shoe adjustment. The tiller will tend to go deeper in light textured or sandy soils than in heavy clay soils. Hard, packed, or dry soils may require more passes of the tiller than soils which have been cultivated recently or are more moist.

The engine should be operated at 3/4 to full speed for most efficient operation, so changing engine speed is not recommended as a method for regulating tilling depth.

Ground speed of the tractor and tiller will affect tilling depth unless the tiller skid shoes are resting on the ground surface. Using the hydrostatic control lever, decrease ground speed to increase tilling depth. More than one pass of the tiller may be required to reach the desired tilling depth.

CLOD SIZE

Ground speed and number of passes over the ground with the tiller can be varied to control clod size (soil texture). To reduce clod size or make a finer seedbed, reduce the tractor ground speed. Making additional passes with the tiller will also help reduce clod size. The tiller dust shield (figure 6, item A) must be in the lowered position so its lower edge rests on the ground surface to give a fine textured seedbed without large clods. If the clods are smaller than desired, increase ground speed and reduce the number of passes.

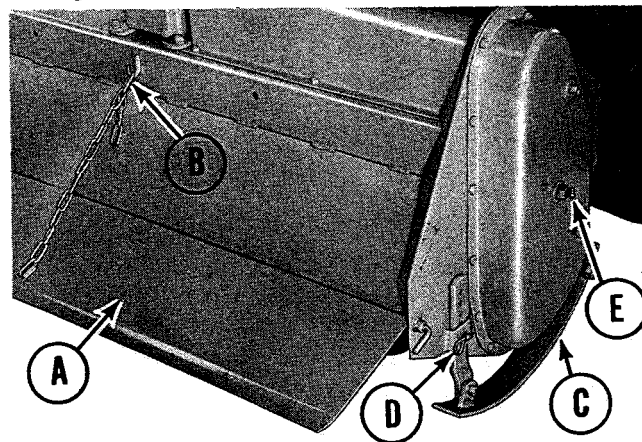


Figure 6. Dust shield and skid shoe adjustment seen from rear of tiller.

ADJUSTMENTS

PROTECTIVE SLIP CLUTCH

See figure 7: The slip clutch may require adjustment if it slips enough when tilling to cause it to get too hot to touch or whenever new linings are installed. It must be adjusted so it will drive the tiller during normal operation, yet slip when ever the tiller tines strike hard object. The slip clutch protects both the tiller drive and the power take off from shock loads which may cause damage. **DO NOT OVERTIGHTEN THE SLIP CLUTCH.** Have your dealer adjust it for you to proceed as follows:

1. See figure 8. Remove the 6 capscrews (A) and the protective cover (B) from the rotary tiller.
2. See figure 7. While holding the bolts (A), tighten the six locknuts (B) by turning them clockwise until the springs (C) are fully compressed. You should be able to tell this by observing the springs and also noting that the nuts will start to turn harder. **CAUTION: TIGHTEN ONLY UNTIL THE SPRINGS ARE COMPRESSED. DO NOT OVER TIGHTEN.**
3. Hold the capscrews (A) with a wrench and loosen each of the six locknuts (B) 1/2 turn by rotating them counter-clockwise.
4. See figure 8. Install the cover (B) and six capscrews (A) removed in step 1.

DRIVE CHAINS

Once a year or oftener if the rotary tiller is used commercially, the drive chains should be tightened as follows:

1. See figure 9. Using two box end wrenches loosen slightly the nut at (A) with one while holding the capscrew (B) with the other.
2. See figure 9. With the two box end wrenches positioned as shown over the nut and capscrew, push rearward on both wrenches to remove slack from the chain. While pushing rearward on the wrenches, turn the wrench on nut (A) clockwise until nut (A) is tightened securely.
3. Repeat steps 1 and 2 to tighten the lower drive chain at nut (C). The capscrew not shown in figure 11 is located under the tiller housing.
4. If the adjusting slots (behind A, B, and C in figure 9) will not allow the chains to be tightened, the chains should be replaced. See Chain Replacement on page 6.

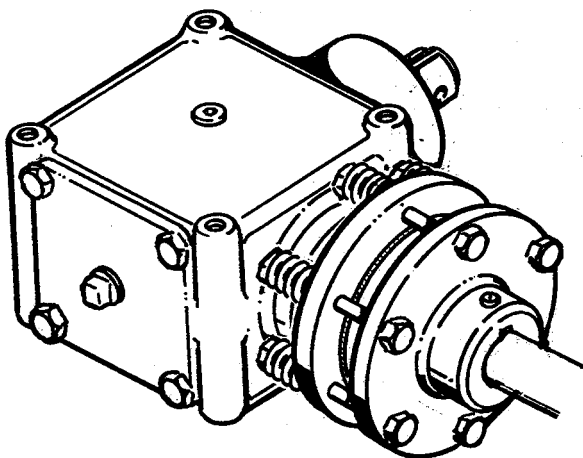


Figure 7. Tiller bevel gear box and protective slip clutch as seen from behind tiller.

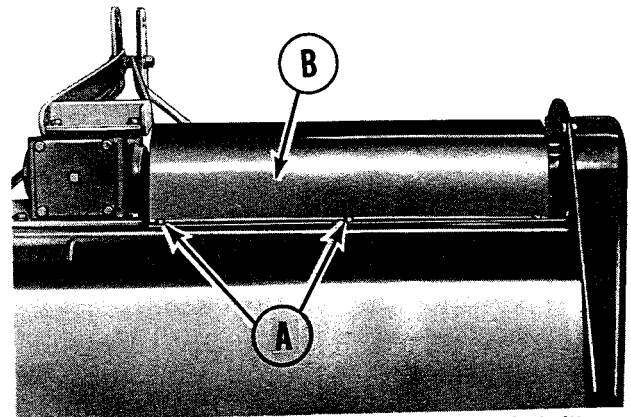


Figure 8. Right side of tiller as seen from behind tiller.

MAINTENANCE

ORDERING REPLACEMENT PARTS

Replacement parts required for performing maintenance services or repair work should be purchased from your dealer. When ordering parts, be prepared to give him the identification number of your rotary tiller. If you have not already recorded this number on the inside front cover of this manual, we suggest that you do so now for convenient future reference.

AFTER EACH USE

Inspect the rotary tiller thoroughly looking for loose or missing bolts, pins or spring clips, oil leaks, worn parts, etc. Check the tine mounting bolts (figure 10, item A) to be sure they are tight. They should be kept torqued to 40 foot pounds. Also check the tine shaft for wire, chain or other foreign material which may interfere with proper tilling or cause damage to the tiller. Clean or repair as needed to insure the tiller is ready to use the next time you need it.

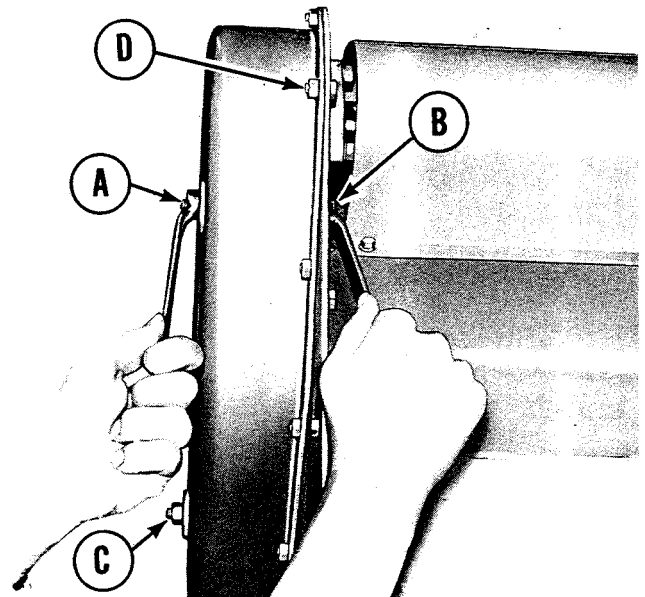


Figure 9. Adjusting drive chain tension.

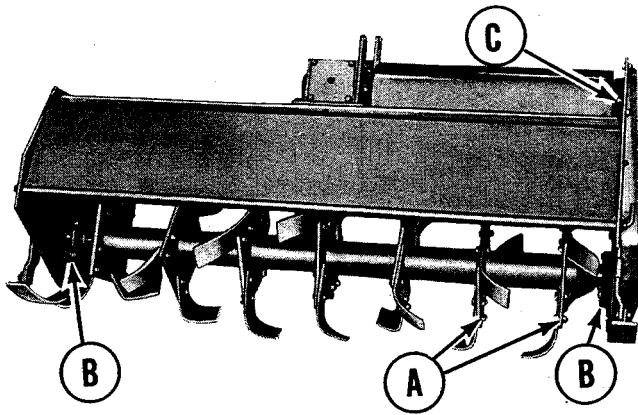


Figure 10. Tine assembly as seen from rear of tiller.

EVERY 25 HOURS

Check Lubricant Level: See figure 7. Remove plug (D). Oil should be level with the threads on the bottom of the plug hole when the tiller is setting level. If lubricant is required, add SAE 90 transmission oil. Plug (E) can be removed for adding oil.

Lubricate Grease Fittings: The rotary tiller has six grease fittings which should be lubricated every 25 hours with general purpose grease. Wipe the grease fittings clean. Lubricate each fitting with 5 shots of grease or less if the grease is seen being forced out of the bearing. The grease fittings are located as follows:

QUANTITY	LOCATION
2	Drive Shaft (figure 11, item A)
2	Tine Shaft (figure 10, item B)
1	Cross Drive Shaft (figure 10, item C)
1	Chain Drive Cover (figure 6, item E)

A thin film of grease on the drive shaft spline (figure 11, item B) will reduce wear and make installing the drive shaft easier.

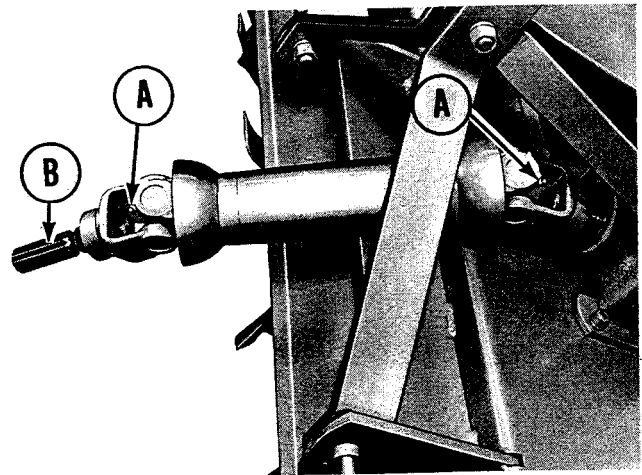


Figure 11. Tiller drive shaft seen from left side.

ONCE EACH YEAR

Once each year or more often if the tiller is used commercially, the tiller drive chains should be adjusted. Follow the instructions given for Drive Chain Adjustment on page 5.

TINE REPLACEMENT

See figure 10. If tine replacement is required due to wear or breakage, be sure the tine blades are installed correctly as shown and the tine bolts (A) are tightened to 40 foot pounds torque. For best performance, **USE ONLY GENUINE REPLACEMENT PARTS.**

CHAIN REPLACEMENT

The tiller drive chains should be replaced when the bolt slots (figure 9, items A, B and C) no longer allow further tightening of the chain. To replace the chains, proceed as follows:

1. See figure 9. Remove the nuts at (A) and (C) and the nuts (D) which hold the chain cover to the tiller frame. Also remove nut (E) shown in figure 6.
2. See figure 12. Remove the chains (A) and (B) noting that they are a different size so the new chains can be installed correctly.

3. Remove the grease from the chain sprockets, tiller housing, and chain cover. Clean with a non-flammable cleaner.
4. Inspect the rollers (C) and gasket (D). Replace with new if they are worn or damaged.
5. Install new drive chains (A) and (B).
6. Coat the two drive chains liberally with general purpose automotive grease. Also put about 2 pounds of grease in the bottom of the chain cover.
7. See figure 9. Replace the chain cover and tighten all nuts (D) securely.
8. Install the washer and nuts at (A) and (C) and tighten finger tight.
9. See figure 6. Install nut (E) and tighten securely.
10. Tighten the two drive chains as explained on page 5 of the Adjustment section of this manual.

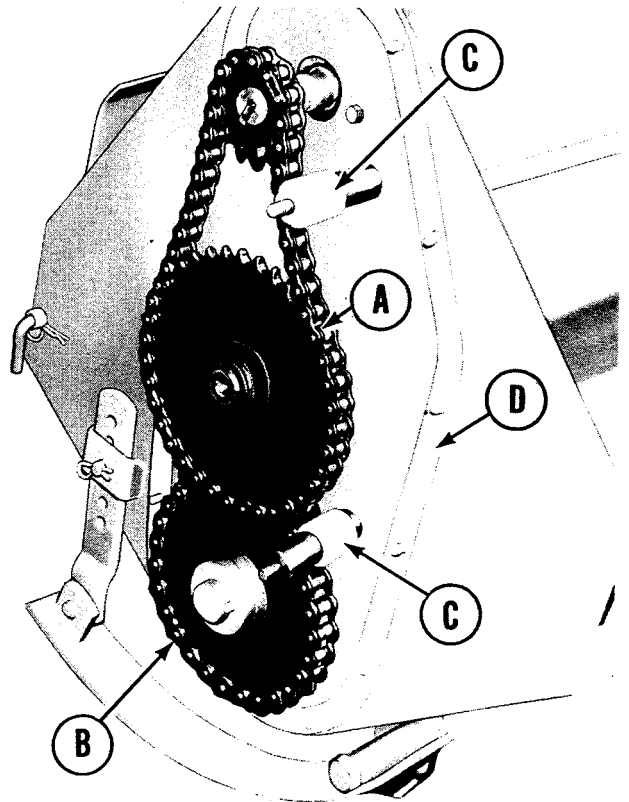


Figure 12. Drive chains as seen with chain cover removed

OUT OF SERVICE PROTECTION (STORAGE)

1. Remove the tiller from tractor. See page 2.
2. Use water pressure or a brush to thoroughly clean the tiller to remove buildup of dirt on or under the tiller housing.
3. Paint or lightly coat with oil any area where paint has been worn or chipped away.
4. Lubricate the tiller according to the Every 25 Hour Maintenance Service.
5. Store the tiller in a dry place.

SPECIFICATIONS

Effective Width	48"
Tilling Depth	Up to 8" (requires multiple passes)
Number of Tine Clusters	7 (4 replaceable tines per cluster)
Tine Circle Diameter	16"
Drive Means	Tractor rear PTO
Drive Train	Double universal joint drive shaft, bevel gears, cross shaft with slip clutch, two stage No. 50 and 60 roller chains with hardened sprockets.
Bearings	Rolling contact bearings with grease fittings.
Tine Shaft Speed	200 rpm at full engine speed.
Weight (Approximate)	305 pounds.

TROUBLE SHOOTING GUIDE

PROBLEM OR SYMPTOM	POSSIBLE CAUSES	CHECKS AND CORRECTIONS
Tiller Tines do not rotate.	<p>Tractor Power Take Off not operating</p> <p>Tiller slip clutch slipping</p> <p>Tiller drive chain broken.</p>	<p>Rear clutch switch must be turned ON. Power take off clutch not working. See your Simplicity dealer.</p> <p>Clean any wire, chain, etc. from tiller tines.</p> <p>Adjust slip clutch. See page 7 of Adjustments.</p> <p>Replace drive chain. See page 8.</p>
Tines rotate, but tiller does not till deeply enough.	<p>Tractor hydraulic lift lever not in FLOAT position.</p> <p>Tiller depth shoes not correctly adjusted</p> <p>Engine speed too low</p> <p>Ground too hard.</p> <p>Ground speed too fast.</p>	<p>Place lift lever in FLOAT position.</p> <p>Adjust depth shoes for tilling depth required. See page 4.</p> <p>Set engine speed control 3/4 to full.</p> <p>Make several passes, setting the tilling depth deeper with each pass.</p> <p>Reduce ground speed.</p>
Tiller leaves ground rough or cloddy.	<p>Ground too wet.</p> <p>Skid shoes set too deep.</p> <p>Ground speed too fast</p> <p>Dust shield not adjusted properly.</p>	<p>Allow ground to dry until ground will not "ball up" when tilling.</p> <p>Adjust depth shoes. See page 4.</p> <p>Reduce ground speed.</p> <p>See Dust Shield Position. Page 4.</p>
Tiller jolts tractor or tends to propel tractor forward.	<p>Tractor hydraulic lift lever not in FLOAT position.</p> <p>Three point hitch float pins not in FLOAT position.</p> <p>Tiller depth shoes set too deep.</p>	<p>Put tractor lift lever in FLOAT position.</p> <p>Place float pins in FLOAT position. See page 2.</p> <p>Adjust depth shoes to till no more than 4 inches of untilled ground in one pass.</p>
Tractor not stable on sloping surfaces.	<p>Ground speed too fast.</p> <p>Tractor not properly weighted.</p> <p>Tire tread too narrow.</p> <p>Tire pressure incorrect.</p>	<p>Slow ground speed. Use care when operating on rough or sloping surfaces.</p> <p>Use rear wheel weights and front weight when operating on slopes.</p> <p>Turf or high flotation tires will increase stability. Turn agricultural tires outward to give wider tread.</p> <p>Inflate tires according to tractor owners manual.</p>
Tractor will not make sharp turns.	<p>Front of tractor not properly weighted.</p> <p>Tractor brakes locked together.</p>	<p>Use front weight.</p> <p>Use tractor brakes individually for making sharp turns at slow ground speed.</p>

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