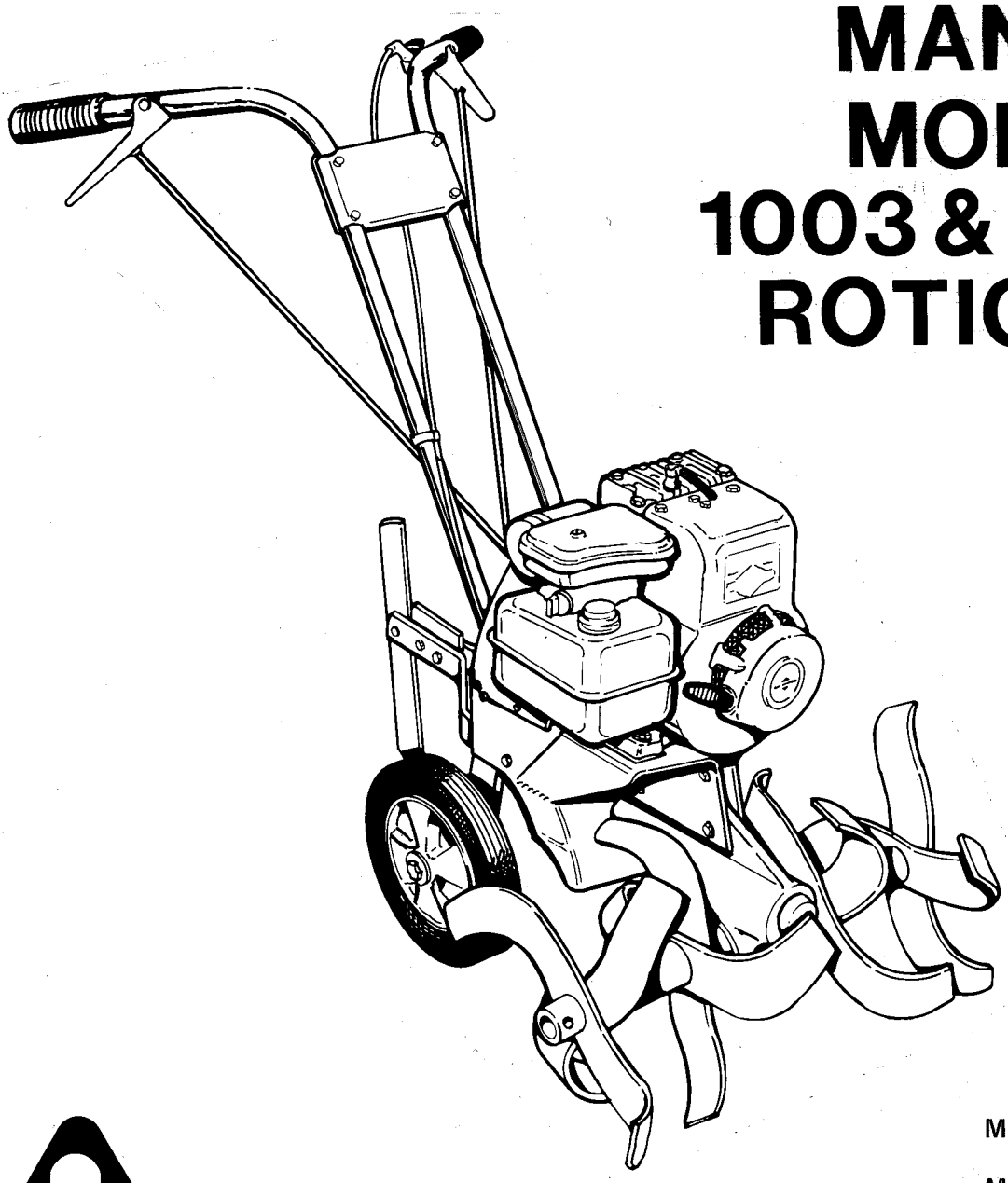
Simplicity®

# OPERATOR'S MANUAL MODELS 1003 & 1005 ROTICULS



3 H.P. TILLER
MFG. NO. 1690237
5 H.P. TILLER
MFG. NO. 1690324

**CAUTION: Read Manual Thoroughly Before Operating**

FORM — 1663128
PRINTED IN U.S.A.
809

Dear Customer,

Congratulations on your selection and purchase of this walk-behind rotary tiller. It has been carefully designed and built to give you years of dependable service. With proper care, it will help you do your tilling jobs efficiently.

To make sure you get the best use from your tiller, read this manual carefully. Make sure that your tiller is assembled properly, and that all adjustments are correct. Be sure that you (and anyone who operates this machine) know how to use the machine safely. Read this manual thoroughly and become familiar with the controls of the machine before operating.

For your own safety as well as that of others, study the safety rules in this manual. Review this information often. It is there for your benefit and it is important.

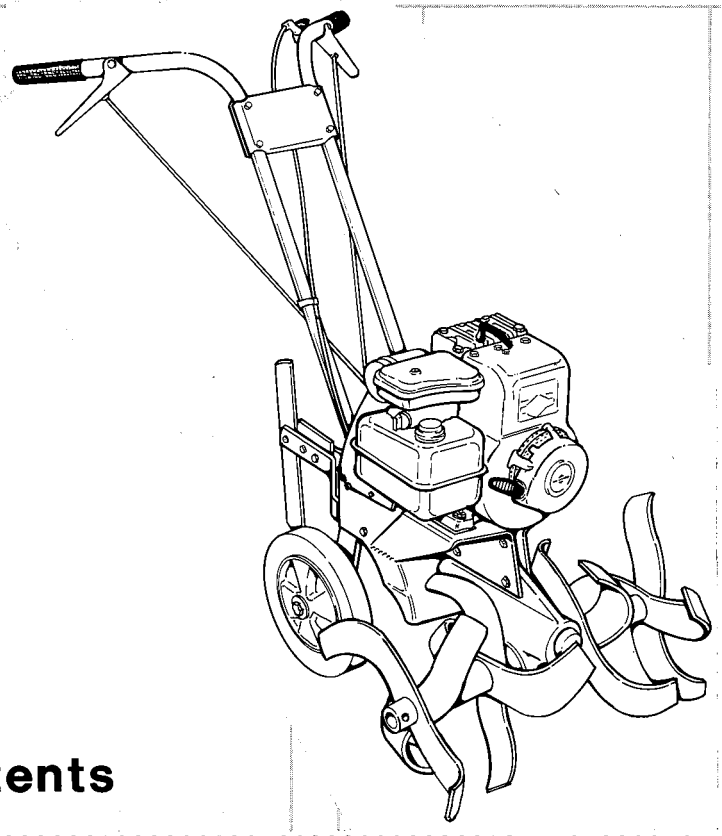
This manual provides step-by-step instructions to assemble, service, operate and adjust your tiller. If any help is needed with any of these procedures, however, your dealer will be happy to help you.

Measurements are given in this manual with metric equivalents in parentheses. For example, behind the measurement 1/8 inch will appear: (3 mm). So, the metric equivalent of 1/8 inch is 3 millimetres.

These metric measurements are provided for your convenience as an aid in converting to the metric system. A list of metric terms and abbreviations used in this manual is provided below.

**LIST OF ABBREVIATIONS OF METRIC TERMS**

| | | | |
|---|---|---|---|
| 1. | cc | = | cubic centimetre |
| 2. | kg | = | kilogram |
| 3. | kPa | = | kiloPascal |
| 4. | km/h | = | kilometres per hour |
| 5. | kW | = | kilowatt |
| 6. | L | = | litre |
| 7. | mm | = | millimetre |
| 8. | N·m | = | newton-metre |
| 9. | ml | = | millilitre |



# Table of Contents

## WARNING

*Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of machine, severe personal injury to yourself or bystanders, or damage to property or equipment affecting safety.*

# Safety Rules

*This notation preceding Cautions and Warnings in the text signifies important precautionary steps which, if not properly followed, could result in personal injury or damage to your equipment affecting safety.*

**General**

- Read the Operator's Manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment.
- Never allow children to operate the machine. Do not allow adults to operate it without proper instruction.
- Use only attachments or accessories designed for your machine. See your dealer for a complete list of recommended attachments or accessories.
- Keep the area of operation clear of all persons, particularly small children, and pets.
- Make sure:
  a. tiller is in good operating condition,
  b. all safety devices or shields are in place and in good working condition, and
  c. all adjustments have been made.

**Preparation**

- Never attempt to make any adjustments while engine is running.
- Thoroughly inspect the area where the tiller is to be used and remove all wires, sticks, and other foreign objects.
- Wear heavy footwear. Do not operate tiller when barefoot or when wearing canvas shoes or open sandals.
- Handle gasoline with care — it is highly flammable.
  a. Use approved gasoline container.
  b. Never remove the cap of the fuel tank or add gasoline to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.
- Do not run the engine indoors. Exhaust fumes are deadly.

**Operation**

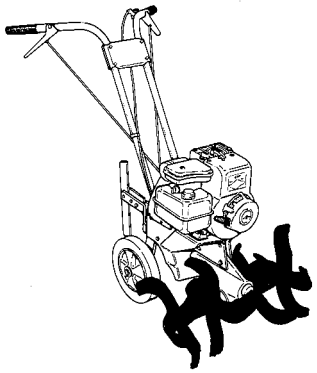
- Release the clutch lever(s) and stop the engine before cleaning tines, removing obstacles, making adjustments, or when leaving the operating position.
- Use caution to avoid slipping or falling, especially when operating tiller in reverse.
- Be especially careful not to touch tiller parts which might be hot from operation. Allow such parts to cool before attempting to maintain, adjust, or service.
- Stay alert for holes in the terrain and other hidden hazards.
- The tiller should be stopped and inspected for damage immediately after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
- Never operate the rotary tiller without good visibility or light.
- Always operate tiller across the face of slopes, and never up and down the face. Use extreme caution when changing direction on slopes. Do not attempt to till steep slopes.

- If the unit should start to vibrate abnormally, disengage the drive, stop the engine, and check immediately for the cause. Vibration is generally a warning of trouble.
- Do not alter or in any way attempt to defeat the safety feature of the deadman type clutch control(s).

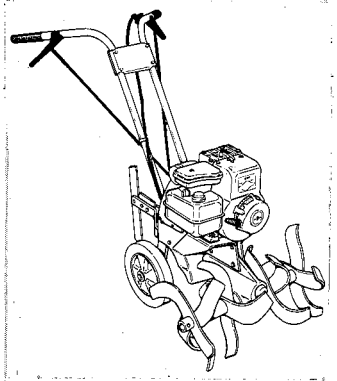
**Maintenance and Storage**

- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Always refer to the operator's manual for important details if rotary tiller is to be stored for an extended period.
- Never store machine with fuel in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
- Do not change the engine governor settings or overspeed the engine.

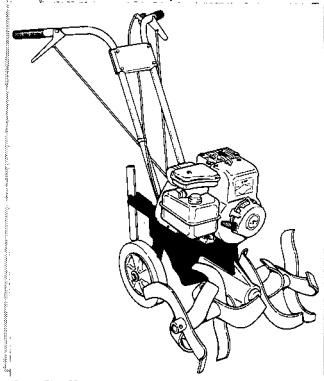
# Owner Benefits



**All welded steel tines** are self-sharpening to break up turf or previously worked soil.

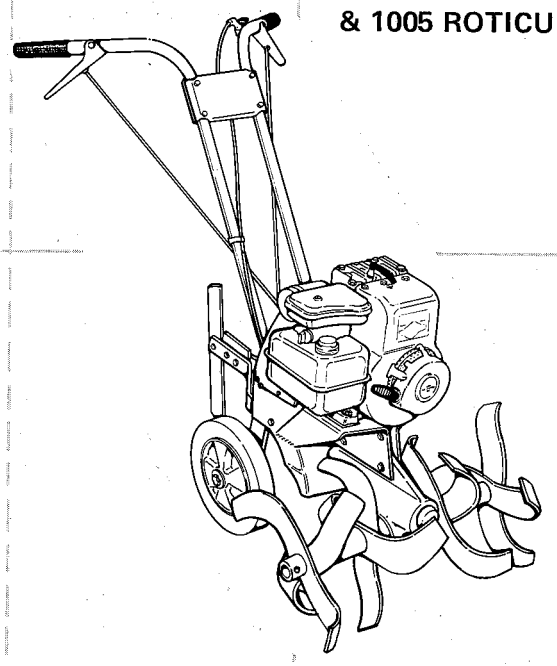


**Touch-O-Matic control(s)** located on handles for easy reach. Stop tilling when released. On model 1005 reverse drive makes it easy to back away from obstacles.



**Heavy guage, welded steel frame** is designed for durability and long life.

**MODELS 1003 & 1005 ROTICUL**

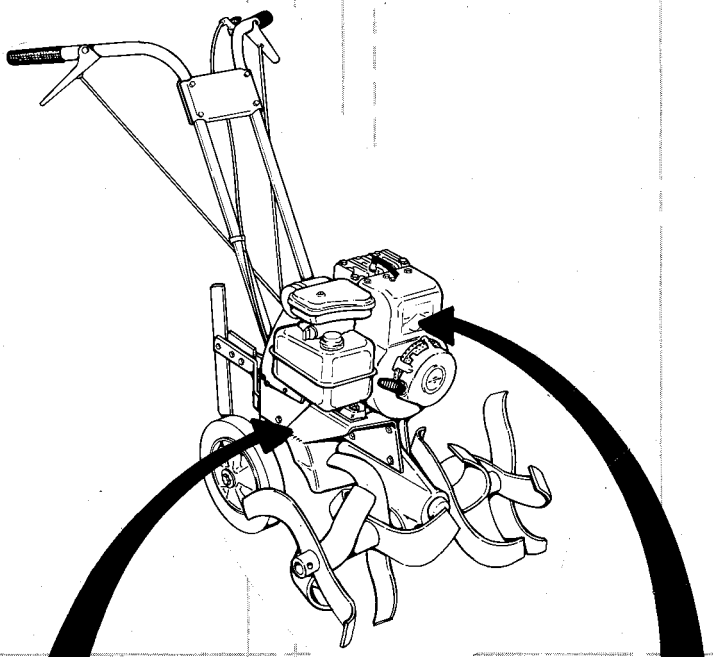


**Dependable, worm and gear type transmission** has roller and needle bearings inside a cast iron housing.

**Briggs & Stratton 3 and 5 horsepower engines** have easy-spin starting. Horizontal crankshaft and upward angled, side pull recoil starter are designed for natural motion. No mixing of oil and gasoline.

# Identification

When requesting information or ordering replacement parts for your rotary tiller, be prepared to give your dealer the identification numbers found on the tiller and engine identification plates shown below. The tiller ID plate is located on the right-hand side of the frame. The engine ID plate is located on the engine housing.



| SIMPLICITY MANUFACTURING CO. |
| --- |
| PORT WASHINGTON, WI U.S.A. |
| Refer to ID no. when writing or ordering parts |
| ID NO. |

TILLER IDENTIFICATION PLATE

| MODEL | TYPE | CODE |
| --- | --- | --- |
| | | |

ENGINE IDENTIFICATION PLATE

# Accessories & Attachments

See your dealer to purchase any accessories or attachments available for your rotary tiller. The following will help make your tilling jobs easier:

**TINE EXTENSION KIT — Increases tilling width 6.5 inches (165 mm) on each side.**

**FURROW OPENER — Opens furrows behind tiller to plant crops in rows.**

**Models illustrated in this manual may vary slightly from the model you have.**

# Operation

## CONTENT OF SECTION

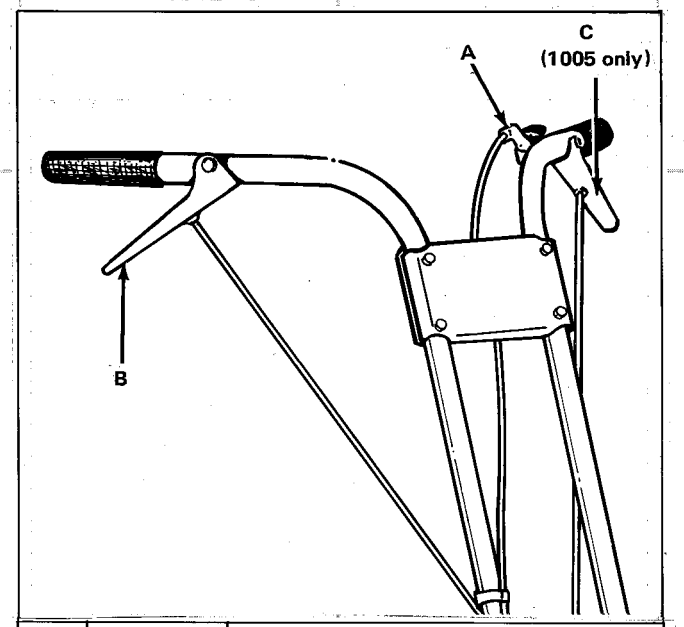
A brief description of the rotary tiller controls, followed by the basic operating procedures, is given in this section to help you get to know your rotary tiller and how to operate it safely and efficiently.

## ROTARY TILLER CONTROLS

The rotary tiller is operated using controls located on the handle bars. Figure 1 shows the location, name and function of these controls. The control names given in figure 1 are used throughout this manual.

**WARNING**

**For your personal safety, either remove spark plug or remove cable from spark plug and insert terminal in V-notch on cylinder cover (see figure 14) before servicing or adjusting your tiller.**




| Item | Name | Function |
|---|---|---|
| A | Throttle Lever | Used to adjust engine speed or stop engine. |
| B | Forward Clutch Lever | Controls forward action of tiller. Squeeze lever to engage drive. Release to stop. |
| C | Reverse Clutch Lever (1005 Only) | Controls reverse action of tiller. Squeeze lever to engage drive. Release to stop. |

Figure 1. Locations and Functions of Controls

## OPERATING PROCEDURES

The rest of this section describes how to operate the rotary tiller. The directions assume that your machine is assembled and working properly. Your dealer has performed all necessary assembly procedures, but proper assembly should still be checked according to the Assembly Section.

If your rotary tiller does not work properly during operation, refer to the Troubleshooting and Adjustments sections of this manual. When operating the tiller for the first time read and become familiar with all operating directions in the order given.

### Checks Before Starting

Read this manual completely before the first use of your rotary tiller, and thereafter as often as necessary to ensure safe and efficient operation.

The checks listed below should be performed before each use of the tiller.

1. Be sure to follow all safety precautions and know the locations and uses of operating controls.
2. Be sure that all safety guards are in place and that all nuts, bolts, and spring clips are secure.
3. Refer to Normal Care section of this manual to determine and perform any needed care. Be sure to check engine crankcase oil.
4. Check both clutch levers (figure 1) for free movement. Any binding must be repaired before starting engine.
5. Check your fuel supply. Be sure that you have enough fuel for the job you intend to do. If more fuel is needed, fill the tank as follows.

**WARNING**

**Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is still hot from recent operation. Do not allow open flame, smoking or matches in the area. Avoid overfilling and wipe up any spills.**

a. Remove fuel cap (see figure 2 on next page).

b. Use a funnel or gas can with telescoping spout when filling tank to prevent fuel spilling.

c. Fill fuel tank with clean, fresh, leaded or lead-free regular grade gasoline.

d. Install and hand tighten fuel cap.

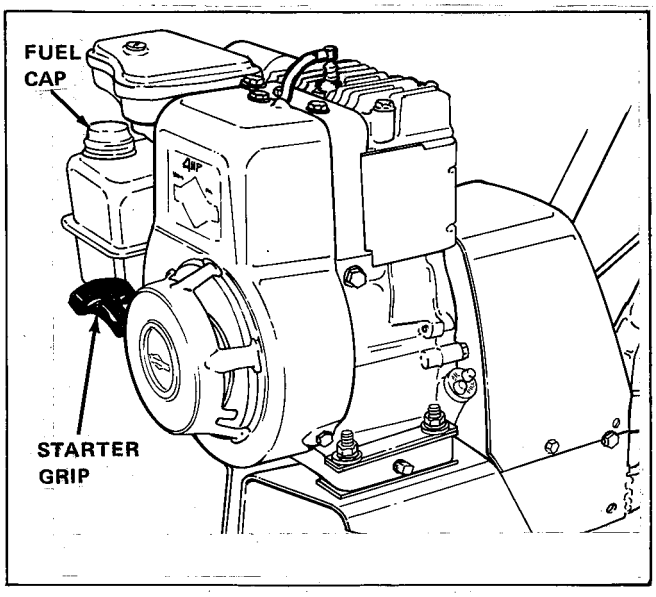



Figure 2. Fuel Tank and Filler Cap

6. Clear the area you intend to till of all wire, sticks, and other items which may get caught in or be thrown by the rotating tines of your machine.

### Stopping the Rotary Tiller

Your rotary tiller is equipped with Touch-O-Matic controls (only Model 1005 has reverse) as a safety feature. All that is necessary to stop the tiller motion is to release the handlebar clutch lever being used. When the Touch-O-Matic control lever is released, all mechanical movement stops except the engine. To stop the engine, move the throttle lever fully back.

### Starting the Rotary Tiller

Complete the "Checks before Starting" procedures, then proceed as follows:

**WARNING**

**For your personal safety, do not start or run the engine in an enclosed area. Exhaust fumes are deadly.**

1. Set the throttle lever halfway between the SLOW and FAST positions.

2. Pull choke fully outward (see figure 3). When engine is warm, it may not be necessary to use choke.

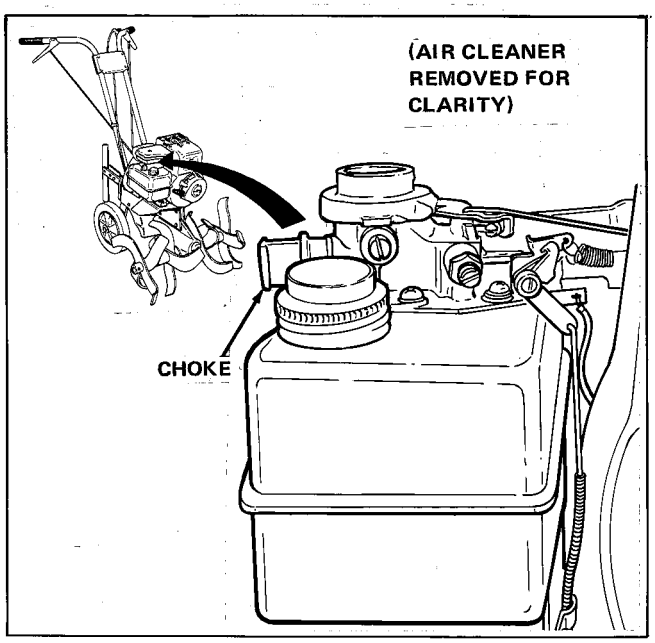



Figure 3. Choke

**WARNING**

**For your personal safety, do not attempt to start engine unless Touch-O-Matic handle levers are disengaged (released). Do not attempt to defeat the safety feature of the Touch-O-Matic controls.**

3. Grasp the starter rope handle and pull outward. The engine should start. If it does not start in three to five pulls, the engine may be flooded. Push the choke fully in and try starting the engine again. Always return starter rope slowly by hand.

4. After the engine has started, push the choke knob fully in. Warm up the engine by running it for a minute before engaging the drive.

### Before Leaving the Rotary Tiller

Perform the following steps before leaving your tiller:

1. Stop tiller motion by releasing the clutch lever.

2. Set the throttle lever at SLOW and idle engine for about one minute. Stopping a hot engine too suddenly can cause engine damage.

3. Move throttle lever fully back to stop engine, and wait for all engine movement to stop before leaving operator's position.

## TILLER OPERATION

To transport the tiller to the work site or from one work site to another without tilling, slow engine speed, raise depth bar to highest position, and engage the forward clutch. The tiller will move across the ground without tilling.

**WARNING**

**For your personal safety, always stop the engine before attempting to adjust, service, or maintain your rotary tiller.**

For tilling, adjust the depth bar for the desired tilling depth (see figure 4). The depth bar is adjusted by removing the spring clip and pin, selecting the desired height, and then reinstalling the pin and spring clip. To till 4 to 6 inches (100 to 150 mm) deep, install the pin in the second or third hole from the top.

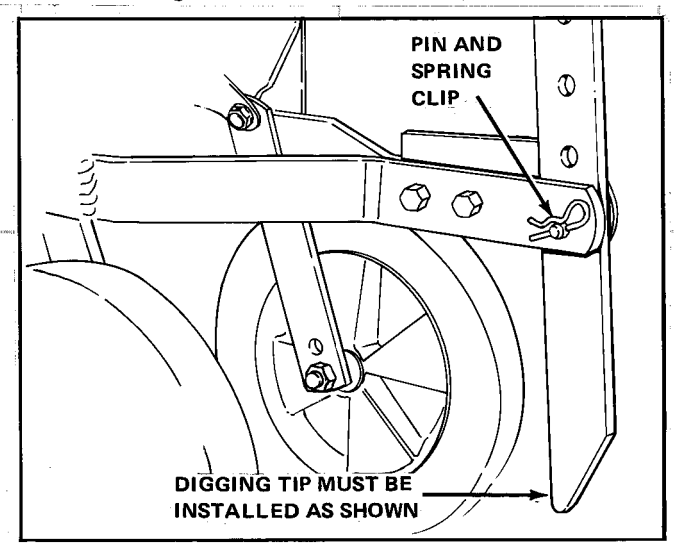



Figure 4. Depth Bar

NOTE

For model 1005, NEVER engage both forward and reverse clutch levers at the same time. Doing so can damage your machine.

Adjust the engine speed to fit the soil conditions, usually from three-quarters to full speed. Then engage the forward clutch by squeezing the lever on right handle. The tines will rotate to till the soil and also to pull the tiller forward.

Forward speed of the tiller and the tilling depth are closely related. When the forward speed is too fast, the tilling depth is shallow. The depth bar controls the tilling depth by creating a drag that slows the forward motion of the tiller. You can vary the drag created by the depth bar with slight upward or downward pressure on the handles. Downward pressure increases the drag to reduce forward speed. Upward pressure produces the opposite results. Note that only slight pressures are required.

Do not attempt to slow the forward speed by pulling back on the handles. Doing so will create upward pressure on the handles, reducing depth bar drag and adding to the original problem. Let the depth bar do its job. If it is properly adjusted and used, you need do little more than guide the machine.

Experience will help you learn the correct use of the depth bar. When you begin, proceed slowly and carefully to get the feel of the machine. Remember that the desired depth will not be reached until the tiller moves forward and the depth bar enters a previously tilled area. As you proceed, experiment with the clutch lever so you learn to gauge the responses needed in close areas.

**WARNING**

**For your personal safety, release the clutch lever immediately when striking a foreign object. Stop the engine and thoroughly inspect the tiller before restarting and operating again.**

### Operating on Slopes

The chances of an operator slipping towards the tiller are greatest when tilling up and down the face of slopes, especially downhill in freshly churned soil. **For your personal safety, always till across the face of slopes, and never up and down the face.** Do not attempt to till steep slopes, and always use extreme caution when changing direction on any slope.

Never attempt to operate your tiller on slopes greater than 20 percent (11.3 degrees) — which is a rise of 2 feet in 10 feet forward — and always operate across the slope.

## TILLING HINTS

One of many tilling considerations is to adjust engine speed to fit both the soil condition and the job. When doing seedbed preparation, you will normally want to use full or nearly full engine power. When cultivating between rows of plants, control is most important and a much slower speed is desired.

You will want to till to a depth that suits the seed you will plant. As a rule, till at least 2 inches (50 mm) deeper than the normal planting depth for the seed. The usual planting depth for corn, as an example, is 2 to 3 inches (50 to 76.2 mm). Using the rule above for this example, till the soil to a depth of 5 inches (127 mm) or more.

Plan ahead and determine the best tilling pattern before you start. Consider the size and shape of the area to be tilled. Keep in mind the hardness of the soil. Under normal conditions, tilling is best done by making long passes alongside previous ones (item A, figure 5). In hard-packed soil, steering problems can be reduced by skipping one tiller width from the previous one (item B).

In places where rows are slightly wider than the tines, it is possible to wiggle the front of the tiller back and forth slightly as the tiller moves forward to enable the tines to pick up the small area that otherwise would be missed.

Turning the tiller around at the end of a row for the next pass in the opposite direction is best learned by experience. One method is to disengage the forward clutch, lift up on the handles and pivot the tiller on the tines. A combination of the forward and reverse clutch together with pivoting of the handles may be used for the model 1005.

Do not till when the soil is very wet. This causes lumps which are difficult to remove. Soil that is moist enough to roll into a ball is too wet. If the soil is extremely hard and dry, it may be desirable to cross-till an area (item C, figure 5) at shallow depth first. Then till deeper in the direction the rows will be planted at desired depth. Soil that is tilled at scheduled intervals is usually much easier to till.

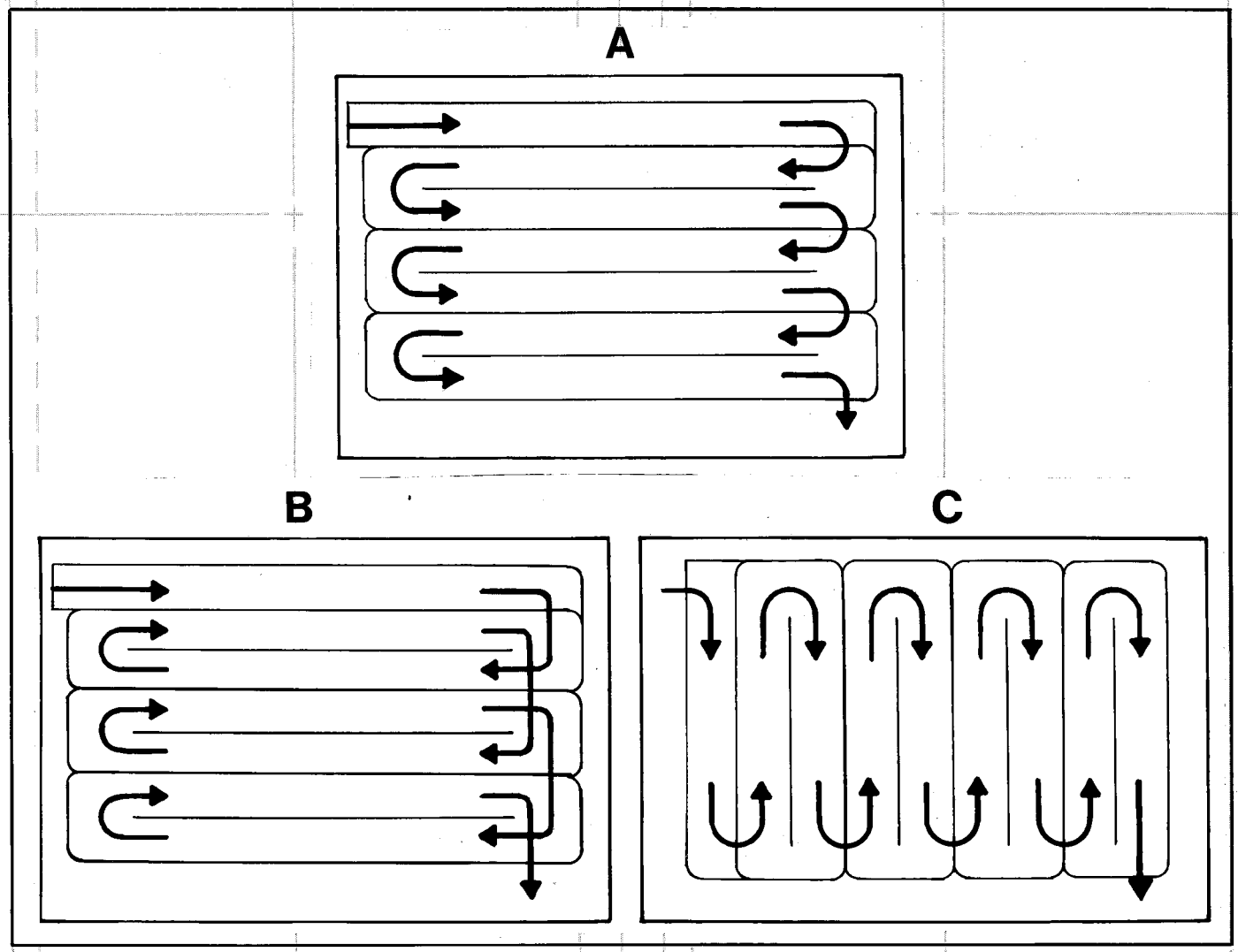



Figure 5. Suggested Tilling Patterns

# Normal Care

## CONTENT OF SECTION

Your rotary tiller was designed and built to provide years of service with only minor care. Certain tasks, however, must be performed to keep the tiller in good operating condition and to avoid costly repairs. This section describes and provides procedures for the necessary care of your rotary tiller.

**WARNING**

**For your personal safety, either remove spark plug or remove cable from spark plug and insert terminal in V-notch on cylinder cover before servicing or adjusting your tiller (see figure 14 if necessary).**

## SCHEDULED CARE

A schedule for routine care is provided in figure 6. Your dealer has performed the tasks required before the first use of the rotary tiller. We suggest that you at least check these items to ensure that the tiller is ready for use. Performing the checks will also help you become familiar with the care of the rotary tiller.

All other scheduled care is performed after operating the rotary tiller for a specific amount of time. See figures 6 through 11. Remember to perform the "every 25-hour check" when you perform the "every 100-hour check."

Because the schedule is based on operating time, it will be necessary to estimate and keep a record of all operating time. A Maintenance Record (figure 29) is provided to help you keep track of all operating hours and maintenance repair actions.

## NORMAL STORAGE

To protect your rotary tiller, store it in an enclosed, dry area. Do not store it in an enclosure where fumes from the fuel tank could reach an open flame without first running the fuel tank dry.

## OFF-SEASON STORAGE

When the tiller is to be stored for thirty days or longer, take precautions as follows:

**WARNING**

**For your personal safety, keep open flame or spark away from flammable gasoline when working near the fuel tank. Never store tiller where gasoline fumes may reach an open flame or spark.**

1. To empty or prepare fuel tank:
   a. Run tiller engine until it stops from lack of fuel, or
   b. Use a gasoline stabilizer. This additive, available from your dealer, prevents formation of gum and varnish for up to one year. With the additive, fuel may remain in your tiller tank for long periods.
2. Change engine oil while the engine is still warm. (See figure 7.)
3. Remove spark plug. Pour one ounce (30 ml) of 10W-30 oil into engine through spark plug hole. Crank engine a few times to distribute oil and then reinstall the spark plug.
4. Lubricate tiller. (See figure 9.)

| Care Required | See Figure | Schedule | | | |
|---|---|---|---|---|---|
| | | Before First Use | Every 5 Hours | Every 25 Hours*** | Every 100 Hours |
| Check Engine Oil Level | 7 | • | • | | |
| Change Engine Oil* | 7 | | | • | |
| Check Worm Gear Oil | 8 | | | • | |
| Lubrication | 9 | | | • | |
| Clean Engine and Air Filter** | 10 | | | • | |
| Clean and Gap Spark Plug | 11 | | | | • |

*Change original oil after first 5 hours of operation.
***Or yearly, whichever occurs first.
**More often under dirty or dusty conditions.

Figure 6. Summary of Scheduled Care

5. Clean dirt and chaff from entire tiller. Coat all exposed metal parts with a good quality paint (available from your dealer) or a light film of grease, oil, or automotive wax.
6. At end of storage period, follow instructions in "Starting After Storage."

Starting After Storage

Before starting the tiller after a period of storage, proceed as follows:

1. Clean engine fins and air cleaner (figure 10).
2. Remove spark plug and wipe dry. Crank engine a few times to blow excess oil out of plug hole. Then reinstall the plug.
3. Fill fuel tank with fresh gasoline (unless a fuel stabilizer was used).
4. Start the engine outdoors. Do not run engine at high speeds immediately after starting.

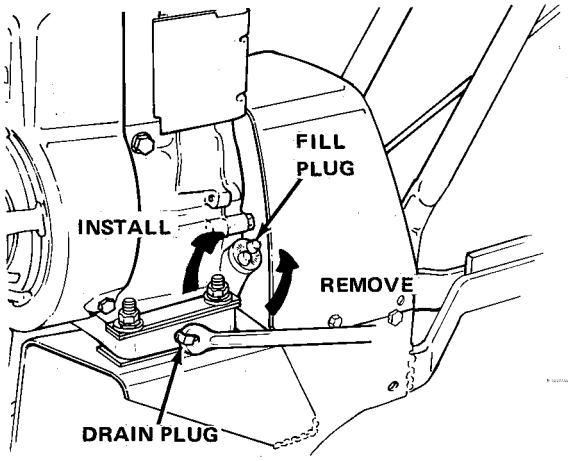
**Check tiller and engine (5-hour care)**

1. Check tiller and engine for loose screws, pins, bolts, oil leaks, etc.
2. Clean area around oil fill plug.

NOTE

Engine must be level.

3. Check/add engine oil as follows:
   A. Remove oil fill plug.
   B. Oil level should be almost to top of fill plug hole. If not, add oil using same weight and grade as used at last oil change.
   C. Reinstall and tighten oil fill plug.




**Change Engine Oil (25-hour care)**

NOTE

Change oil when unit is level and engine is still warm from operation. Don't pollute: dispose of old oil properly.

1. Clean area around oil fill plug.
2. Remove oil drain plug and allow oil to drain from engine. Tip unit if necessary to be sure oil is completly drained.
3. Reinstall oil drain plug.
4. Remove oil fill plug.

NOTE

To avoid engine damage, use only quality detergent oil of the correct grade and weight. The grade (service) marking on the can may be SC, SD, SE, or MS. The correct recommended weight is SAE 30 or, if unavailable, SAE 10W-30.

5. Fill crankcase with new oil to overflowing. Pour slowly. Capacity: about 1-1/4 pints (.6 L) for both 3 and 5 h.p. models.
6. Reinstall and tighten fill plug.

Figure 7. Check/Change Oil

To check or add worm gear oil:

1. Remove fill plug.

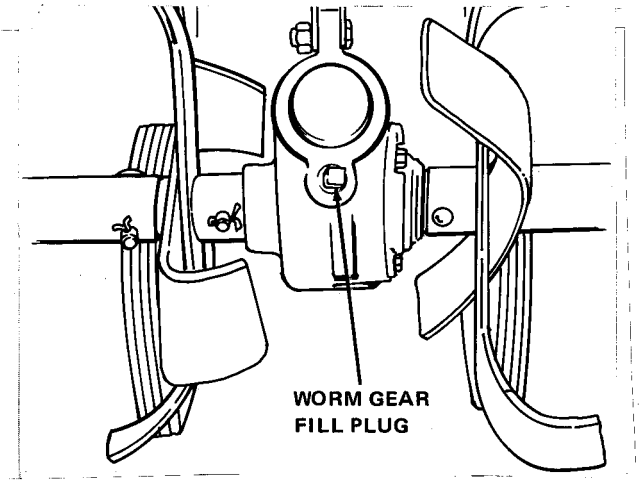
**NOTE**

There is a breather in a vent hole at rear of worm drive housing. Do not remove breather for any reason.

2. Oil should be level with plug hole when tines are resting on ground (housing level). If not, add special worm gear oil (available from your dealer) through plug hole until full. Do not overfill.

**NOTE**

Damage to the worm gear drive which results from use of any lubricant other than special worm gear oil as specificed by the manufacturer, or its equivalent, will automatically invalidate the warranty.

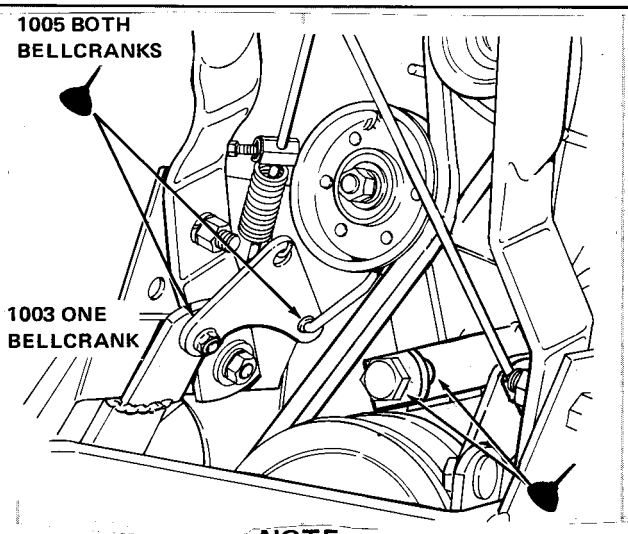



3. Reinstall and tighten fill plug.

**NOTE**

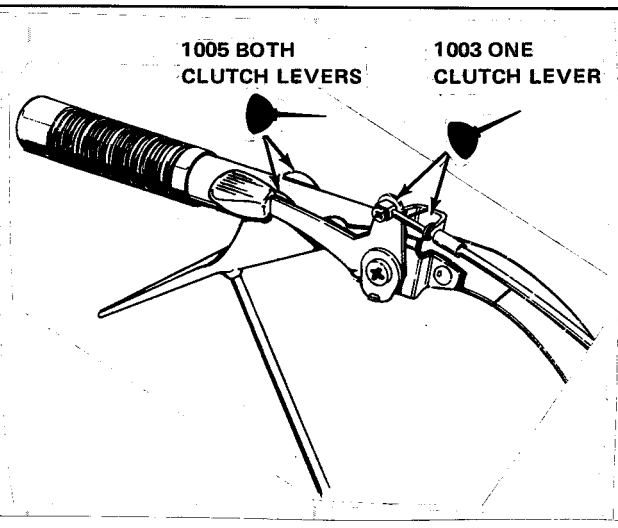
The worm drive housing may become quite warm from operation. This is completely normal and no harm to gears will occur if the housing is kept full as specified with the special worm gear oil.

Figure 8. Check/Add Worm Gear Oil (25-Hour Care)




**NOTE**

Use oil sparingly. Excess oil only collects dirt which causes extra wear.




**NOTE**

Do not oil wheel bearings. Keep oil off pulleys and belts.

| Symbol | Use | Apply With | Procedure |
|---|---|---|---|
| | Medium weight (SAE 30) oil | Oil can | 1. Brush and wipe dirt and grass from area.<br>2. Apply a few drops of oil.<br>3. Wipe up any drips or spills. |

Figure 9. Lubrication (25-Hour Care)

1. Clean all dirt and grass from engine fins.
2. Clean engine air filter.
   - A. Remove screw and lift filter assembly from engine.
   - B. Disassemble filter and wash foam with kerosene or soap and water.
   - C. Wrap foam in cloth and squeeze dry. Dry foam thoroughly.
   - D. Saturate foam with lightweight oil. Squeeze several times to spread oil evenly and to remove excess.
   - E. Reassemble air filter. Be sure foam extends over lip of bottom.
   - F. Reinstall air filter on engine.

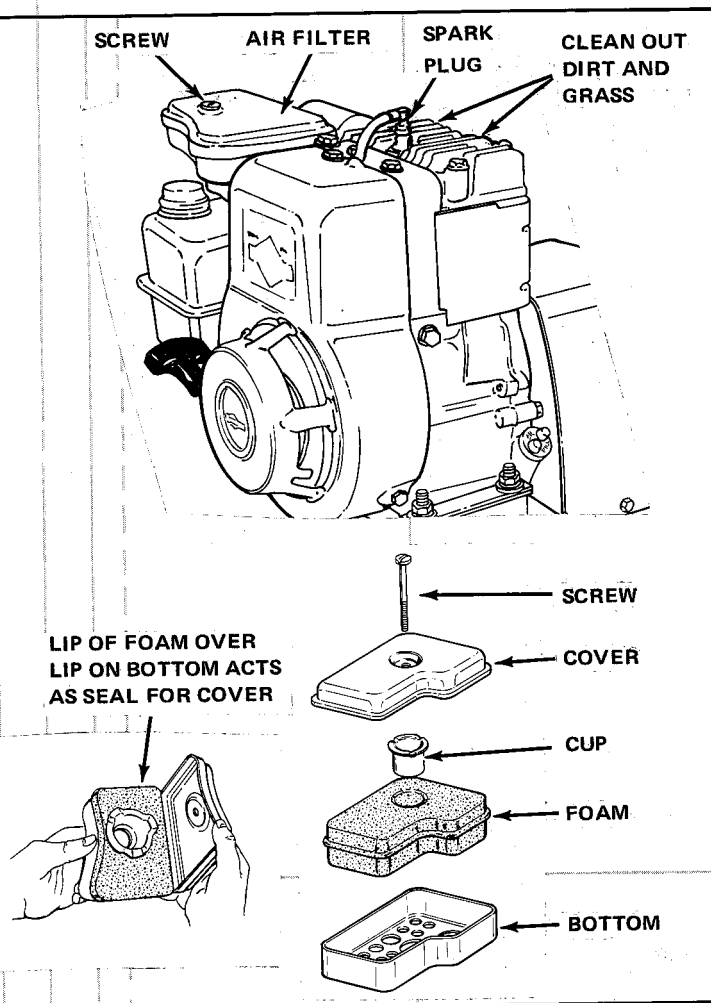



Figure 10. Clean Engine and Air Filter (25-Hour Care or As Required)

1. Disconnect plug wire and fasten it in V-notch on cylinder cover. See figure 14 if necessary.

NOTE

Do not clean spark plug by sandblasting; sand or grit that remains on plug may damage engine.

2. Clean spark plug. If plug shows signs of defects, it should be replaced with a new plug.
3. Set gap at .030 inch (.76 mm).
4. Reinstall spark plug and torque it to 19 Ft. Lbs. (25 N·m). Reconnect plug wire.

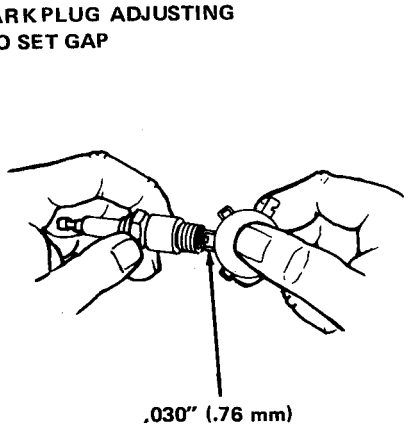



Figure 11. Clean or Replace Spark Plug (100-Hour Care)

# Troubleshooting

CONTENT OF SECTION

This section of the manual provides troubleshooting and repair instructions for the more common and easily corrected rotary tiller problems. For other problems, it is recommended that you contact your dealer.

**WARNING**

**To avoid serious injury, perform maintenance on the tiller only when the engine is stopped. Also, remove the spark plug or remove spark plug wire and insert terminal in V-notch on cylinder cover. (See figure 14 if necessary)**

TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are provided in figure 12. To use these procedures, first locate the problem description that best describes the trouble that you have encountered. Check the possible causes one at a time in the order that they are listed. Correct any problems that are found and try to operate the rotary tiller again to see if you have eliminated the trouble.

| Problem | Cause/Remedy |
|---|---|
| 1. Engine fails to start. | A. Out of fuel. Fill fuel tank.<br>B. Choke not on. Pull choke out fully and set throttle lever at half speed.<br>C. Spark plug wire off or loose. Install fully.<br>D. Engine flooded. Push choke in fully and try starting engine again.<br>E. Spark plug or points faulty, fouled, or incorrectly gapped. See figure 11 and your engine manual.<br>F. Water in fuel. Drain tank and refill with fresh fuel.<br>G. Old, stale gas. Drain tank and refill with fresh fuel. |
| 2. Engine starts hard or runs poorly. | A. Fuel mixture too rich. Be sure choke is off. Clean air filter.<br>B. Spark plug or points faulty, fouled, or incorrectly gapped. See figure 11 and your engine manual.<br>C. Carburetor needs adjustment. See your engine manual. |
| 3. Engine exhaust is black or smoky. | A. Dirty air filter. Clean filter (figure 10).<br>B. Choke not fully open. Be sure choke is in full off position. Check carburetor adjustment. |
| 4. Belt slippage occurs. | A. Belt tension may be too loose. Refer to clutch adjustment in Adjustments Section.<br>B. Belt(s) may be stretched or worn excessively. Replace belt(s).<br>C. Belt(s) may be greasy or oily. Clean belt(s).<br>D. Pulleys may be misaligned. Check according to Adjustments Section. |

Figure 12. Troubleshooting Procedures

| Problem | Cause/Remedy |
|---|---|
| 5. Rotary tiller does not operate. | A. Rotary tiller drive belt broken. Replace.<br>B. Spring for idler pulley loose or broken. Reconnect or replace. |
| 6. Tills too shallow. | A. Ground too hard. Make several passes, tilling deeper on each pass.<br>B. Depth bar set improperly. See Operation Section. |
| 7. Tiller leaves ground rough with large clods. | A. Ground too wet. Wait for dryer conditions.<br>B. Tilling too deep for one pass. Raise depth bar. |

Figure 12. Troubleshooting Procedures (Cont'd)

## DRIVE BELT REPLACEMENT

If a tiller drive belt becomes worn or breaks, replace it as follows:

**WARNING**

**For your personal safety, stop tiller engine. Remove spark plug or remove spark plug wire and insert terminal in V-notch on cylinder cover (see figure 14).**

For model 1003 tiller, remove the belt guard (see figure 15). Then remove the drive belt from the engine pulley first, and then off the machine. Install new belt in reverse order of removal. Check and adjust belt stops and clutch according to the Adjustment Section. Reinstall belt guard.

For model 1005 tillers, proceed as follows:

NOTE

To replace only the reverse (inner) v-belt, the forward (outer) v-belt still has to be removed.

1. Remove belt guard (see figure 15).
2. Remove forward v-belt (item A, figure 13) from engine pulley first and then off machine. If the reverse v-belt (item B) is also to be replaced, proceed to step 3. If not, install new forward v-belt in the reverse order of its removal, and check belt stop and clutch adjustments according to Adjustment Section instructions.
3. With forward v-belt already removed, lift reverse idler pulley (item D, figure 13) by hand and remove cotter pin (item F) to disconnect the link rod from the bellcrank.

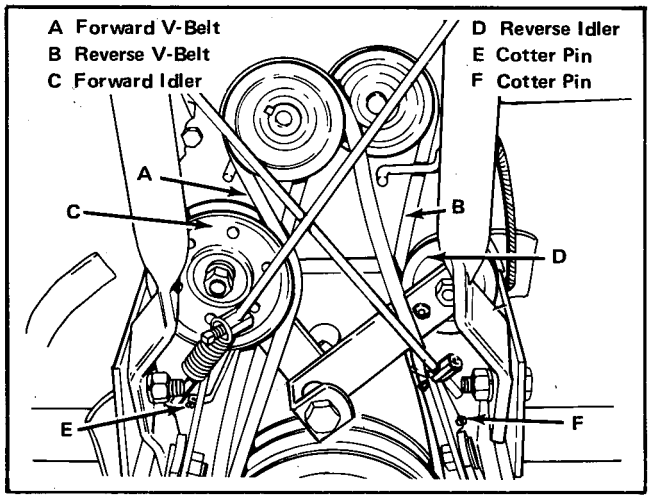



Figure 13. Belt Replacement

4. Lift forward idler pulley (item C) by hand and remove cotter pin (item E) to disconnect the link rod from the bellcrank.
5. Remove reverse v-belt from engine pulley, and then work it out around reverse idler (item D) and over link rod.
6. Work reverse v-belt out around forward idler (item C), over link rod, and off tiller.
7. Install new inner belt in reverse order of its removal.
8. Reinstall both link rods in bellcranks and reinstall cotter pins (items E and F). Be sure rods are in forward bellcrank holes and cotter pin legs are spread.
9. Install forward v-belt. Check to be sure belts are seated in all pulleys.
10. Check belt stop and clutch adjustments according to Adjustment Section instructions.
11. Reinstall belt guard.

# Adjustments

CONTENT OF SECTION

This section contains adjustment procedures for the rotary tiller. These adjustments are made during assembly and thereafter are normally performed only to correct specific problems. Follow all instructions in the order given.

**WARNING**

**To avoid serious injury, perform adjustments on tiller only when the engine is stopped. Always remove spark plug or remove spark plug wire and insert terminal in V-notch on cylinder cover. See figure 14.**

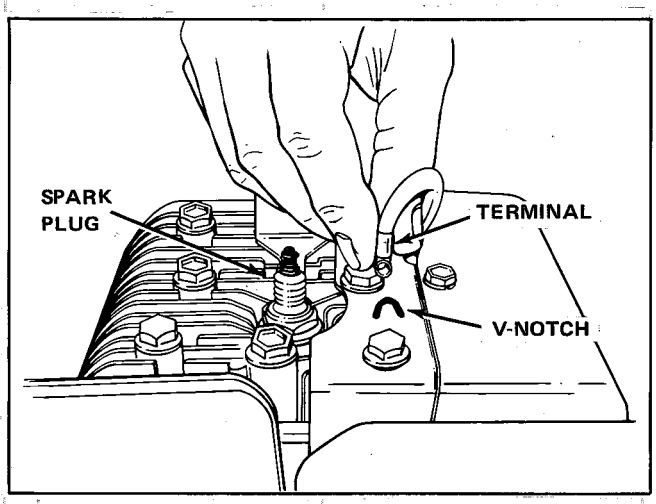



Figure 14. Inserting Terminal In V-Notch

ADJUSTMENT PROCEDURES

For access to some adjustment points, the belt guard (figure 15) must be removed. To remove the belt guard, remove the two screws (one on each side) and loosen (from inside) nut on the washer headed capscrews.

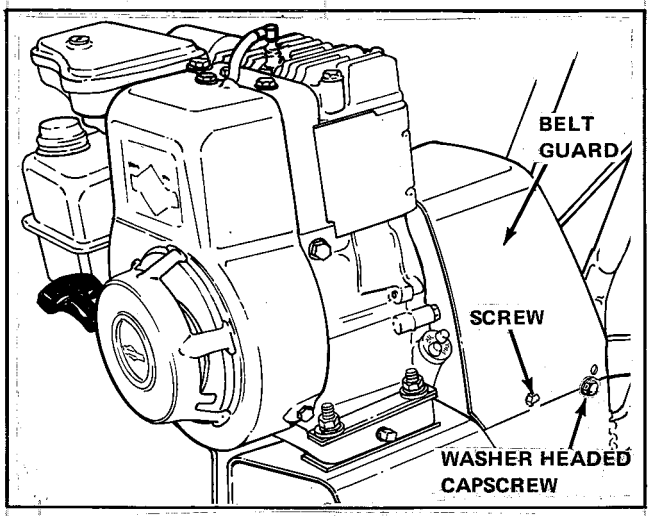



Figure 15. Belt Guard Removal

BELT STOPS

The purpose of the belt stops is to disengage the belts when the clutch lever is released. Incorrectly adjusted belt stops may prevent the drive from disengaging. To adjust the belt stops, remove the belt guard and proceed as follows.

**For the model 1003 tiller,** the belt stops are correctly adjusted when there is a 1/8 inch (3 mm) clearance between belt stop and engaged (tight) v-belt. To check, press the idler pulley tight against the belt and measure the belt stop clearance (see figure 16). If clearance is not 1/8 inch (3 mm), loosen capscrew and adjust belt stop. Tighten capscrew while holding belt stop in position. Recheck and readjust as necessary, and then reinstall belt guard.

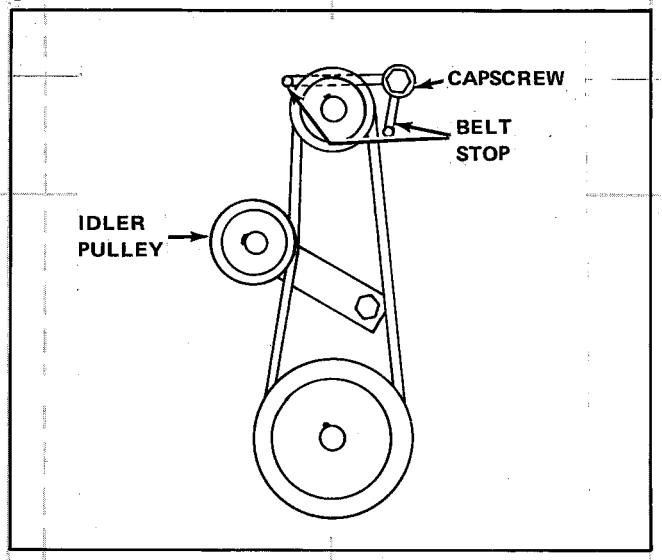



Figure 16. Model 1003 Belt Stops

**For the model 1005 tiller,** proceed as follows:

1. Push both idler pulleys together with one hand to seat belts (see figure 17).

2. Measure gap between belt stops and forward and reverse belts (see figure 17). The clearance should be 1/8 inch (3 mm). If not, loosen capscrew, adjust belt stop for proper clearance, and retighten capscrew while holding belt stop from moving. Repeat check and adjustment as necessary, and be sure to check both belt stops.

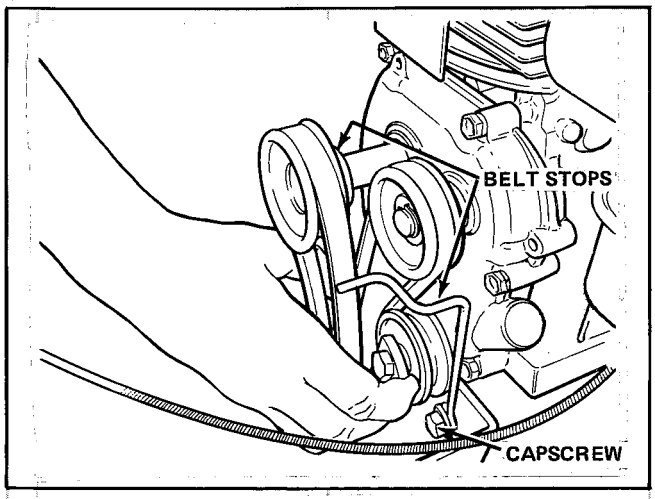



Figure 17. Belt Stops

## CLUTCHES

When a clutch lever is squeezed to engage the clutch, an idler pulley (items A and B, figure 18) moves against and tightens the related belt. Power should then be transferred from the engine pulley to the driven pulley without belt slippage. If a clutch is not disengaging properly or if belt slippage occurs, adjust the clutch as follows:

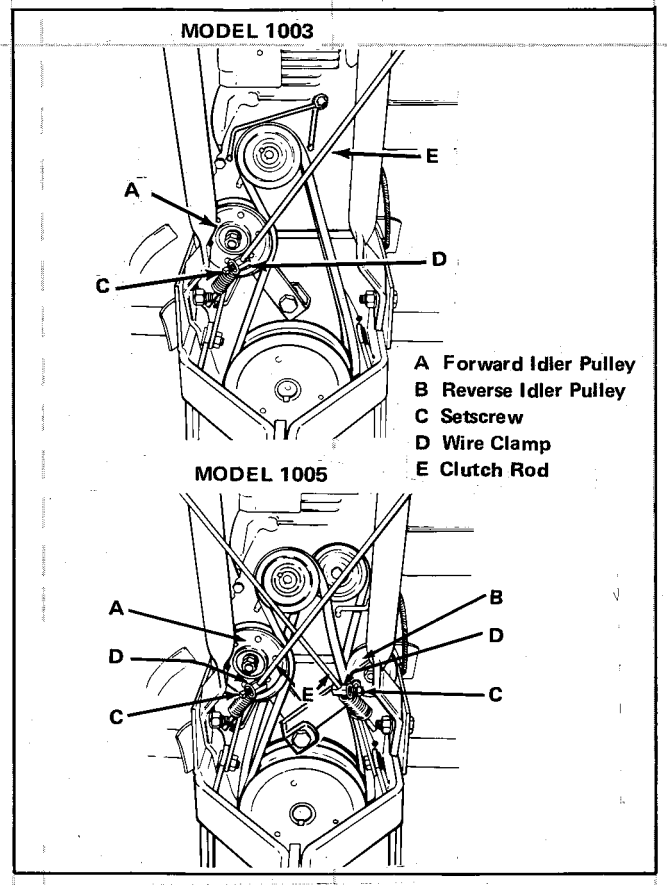



Figure 18. Clutch Adjustment

1. Loosen setscrew (item C, figure 18).
2. Slide wire clamp (item D) up clutch rod (item E) to increase belt tension or down rod to decrease belt tension.
3. Retighten setscrew.
4. Check, and, if necessary, repeat adjustment until clutch operation is satisfactory.

## BELT TENSION

Normally, belt tension can be adjusted by increasing clutch tension (moving wire clamp further up control rod). After some use, however, belts may stretch so that this adjustment cannot be made. If this occurs, loosen the four engine mounting nuts (see figure 19). Slide out one or two of the slotted shims which are stored under the mounting nuts, and insert the shims between the engine and frame as shown in figure 19. Retighten engine mounting nuts and readjust the clutch as necessary.

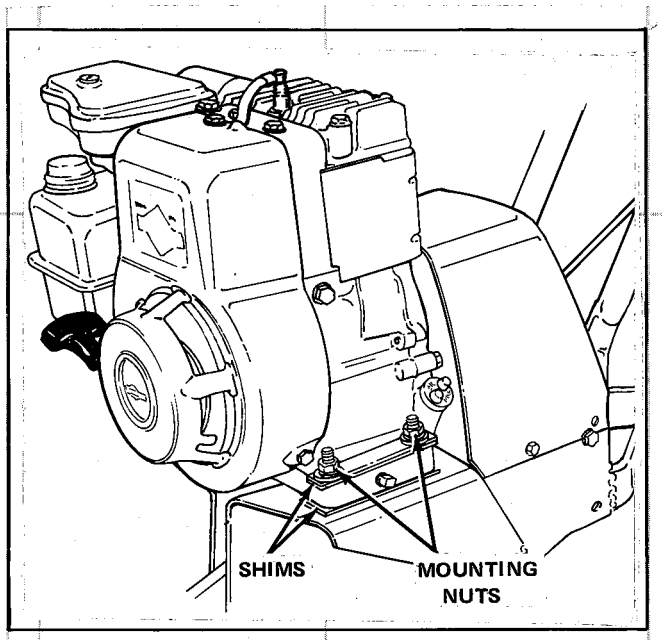



Figure 19. Belt Tension

## PULLEY ALIGNMENT

For model 1003 tillers, the engine drive pulley is properly aligned when it is 0.688 inch, or 11/16 inch (17.4 mm), from the end of engine shaft (see figure 20). If not, loosen engine pulley setscrew and adjust as required. Be sure to retighten setscrew.

Then visually check the alignment of all three pulleys. If the worm gear drive pulley is not aligned with the engine pulley, loosen the setscrew and move pulley as required. Retighten setscrew.

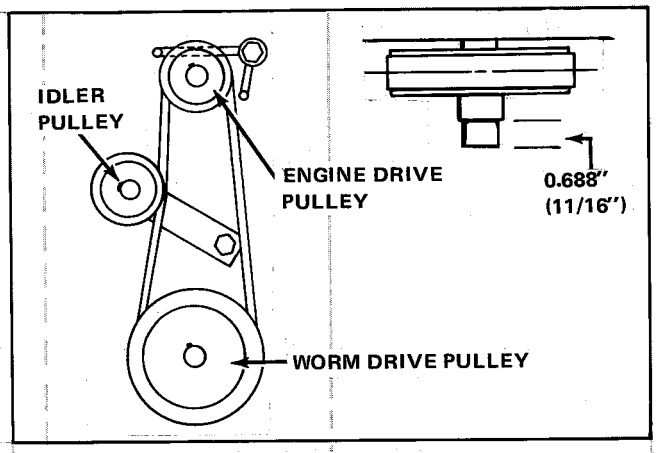



Figure 20. Model 1003 Pulley Alignment

**For model 1005 tillers,** the reverse pulley (item B, figure 21) should be positioned so there is a gap of 0.20 inch, or 13/64 inch (5.2 mm), between pulley face and shaft seal. A distance of 1-1/2 inches (38 mm) from center to center of the two drive pulleys is then correct. Loosen engine pulley setscrews and adjust as required. Be sure setscrews are retightened securely.

Visually check alignment of pulleys (items A, B and D). If pulleys are not aligned properly, loosen setscrew in worm gear drive pulley (item D) and move forward or backward as required. Retighten setscrew securely.

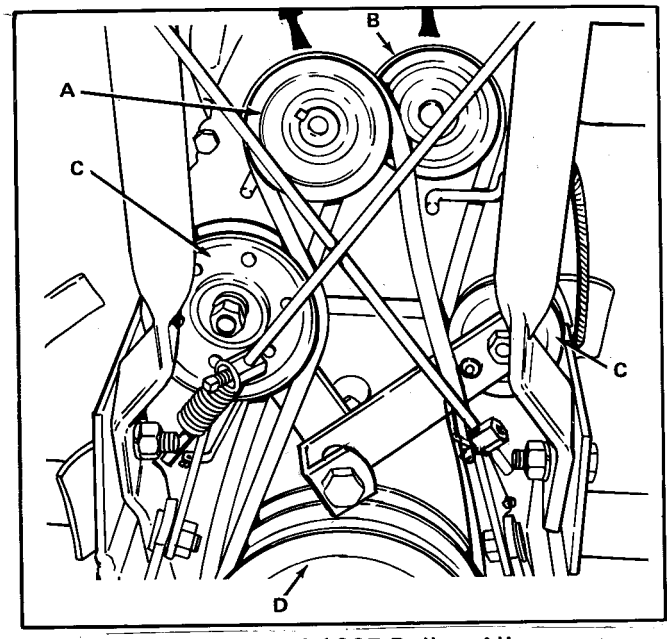



Figure 21. Model 1005 Pulley Alignment

**A Forward Drive Pulley**
**B Reverse Drive Pulley**
**C Idler Pulleys**
**D Worm Drive Pulley**

# Assembly

CONTENT OF SECTION

The rotary tiller is shipped only partially assembled for packaging reasons. This section provides the necessary instructions for assembling the rotary tiller and for preparing it for operation.

TO UNCRATE: Open the top of the shipping carton and remove all loose parts. Then slit the sides of the carton and slide the tiller out of the box on the skid. Cut banding and remove unit from skid.

HANDLE ASSEMBLY

Remove all parts from their containers and arrange all parts by size and type. Remove tape to remove control rods and cable from handles. For access during assembly, remove two captive screws to remove the belt girard (see Figure 15). To install the handle assembly, proceed as follows:

1. Install the left-hand side (the one with the REVERSE decal) of the handlebar assembly first. Align handle slotted hole (item A, figure 22) with frame hole (item B) and insert a plain capscrew (item C) through frame and handlebar. Add a flat washer and lockwasher (items D and E), and install hex nut (item F) finger tight.
2. Insert a special washer headed capscrew (item G) through the frame only at the top hole of left handle. Add two washers (item H) between frame and handle and push capscrew through handle. Add a lockwasher (item I) and finger tighten nut (item J) in place.

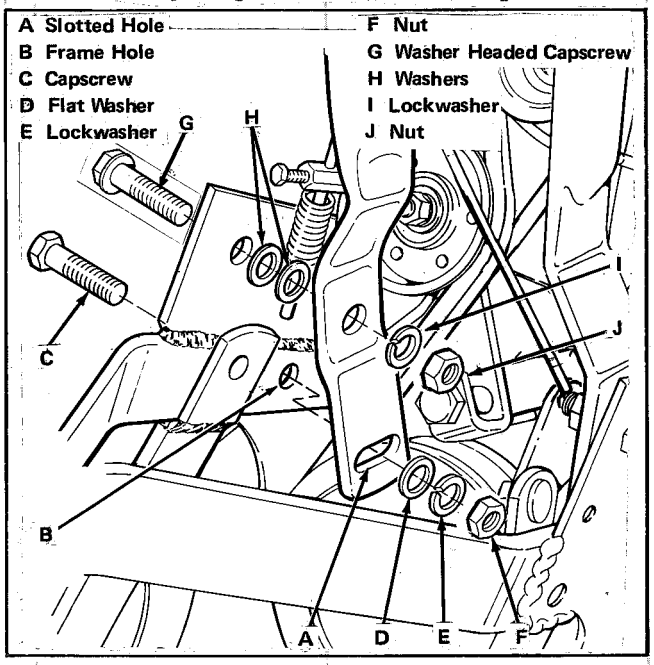



Figure 22. Left Handle Assembly

3. Repeat steps 1 and 2 for the right side of handlebar. Tighten all nuts finger tight.
4. The slotted holes (item A) are for adjusting handlebar height. Select a desired height and then securely tighten all four nuts (handles may need readjusting after tines are installed).
5. Push the throttle control lever on the left handle all the way down to the SLOW position.
6. Run throttle cable between handles and along the right frame to side of engine (for 1005) or to front of engine (for 1003). Hook throttle cable (item A, figure 23) to throttle pivot (item B).
7. Loosen the clamp (item C) and slip the cable under the clamp. Pull the cable back (for model 1005) or down (for model 1003) as far as it will go and tighten the clamp to hold cable in place. Operate throttle lever to be sure pivot moves throughout its full range.
8. Be sure the cable clip (item A, figure 24) is installed as shown to hold the throttle cable on the right handlebar.

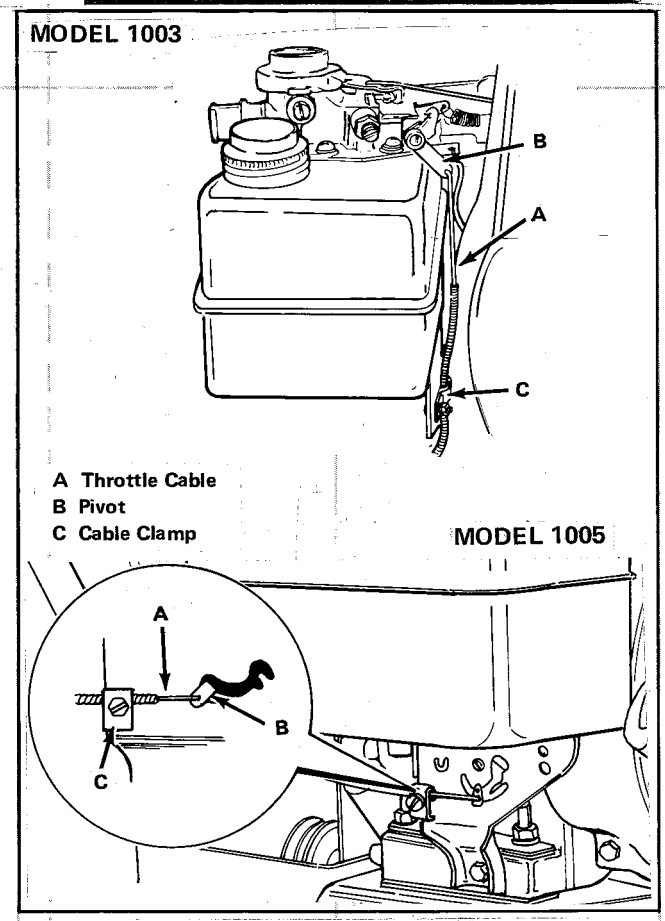



Figure 23. Throttle Cable Assembly

## FORWARD CONTROL ROD ASSEMBLY

FOR BOTH MODELS 1003 AND 1005, PROCEED AS FOLLOWS:

1. Insert control rod (item C, figure 24) through forward control lever (item B).

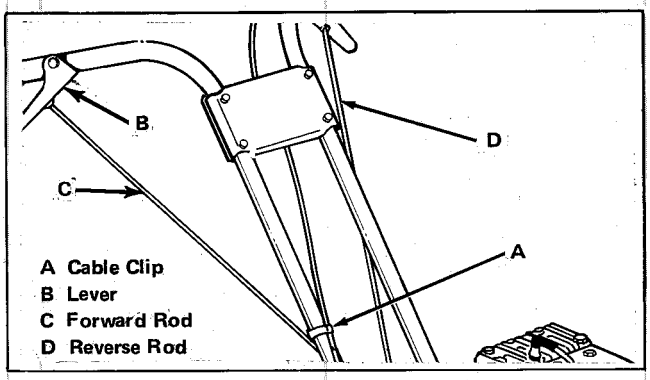



Figure 24. Cable Clip

**NOTE**

Attachment of control rod is different for earlier style bellcrank and later style bellcrank. To determine which bellcrank is installed on tiller, see Figure 25.

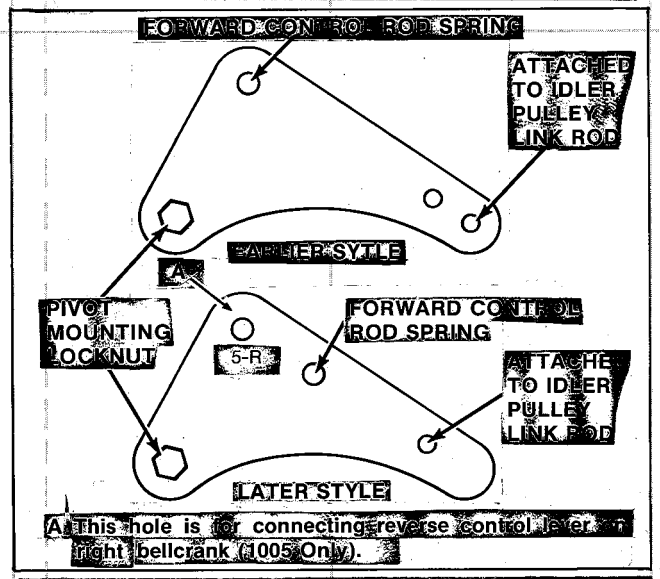



Figure 25. Early Style and Later Style Bellcranks

2. For earlier style bellcrank, insert hook end of spring (item A, Figure 26) in top hole of left bellcrank (item E). For later style bellcrank, insert hook end of spring in hole located one inch forward of top hole (see Figure 25).

3. Slip the wire clamp (item B, figure 26) on the end of the control rod (item C).

4. Feed the control rod through the spring and hook the eyelet end of spring over the setscrew (item D) in the wire clamp. Be sure the control rod is to the inside of the bellcrank (item E).

5. With the control lever (item B, figure 24) completely down, position the forward idler pulley 1/4 inch (6 mm) from the left-hand frame and tighten the setscrew (item D, figure 26).

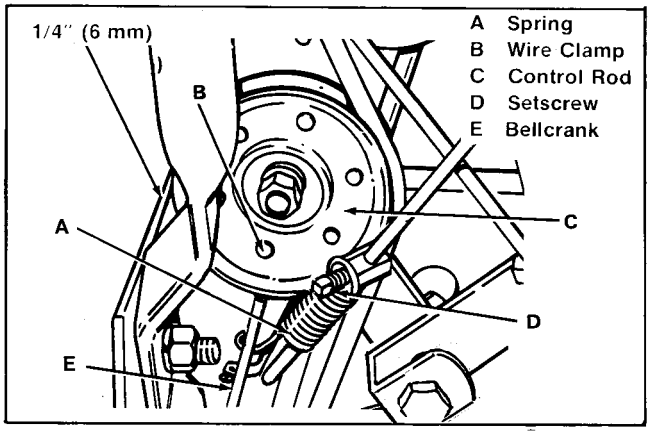



Figure 26. Forward Control Rod Assembley

## REVERSE CONTROL ROD ASSEMBLY

FOR THE MODEL 1005 ONLY, PROCEED AS FOLLOWS:

1. Insert the remaining control rod (item D, figure 24) through the reverse control lever. When installed the reverse control rod should cross under the forward control rod.

2. The setscrew with washer and the wire clamp (items B and C, Figure 27) for the reverse control rod are preassembled on the right bellcrank (item D) in top hole. This hole is stamped 5-R on later style bellcranks. Loosen the setscrew only enough to slip the end of the control rod (item A) through the wire clamp. The control rod must be on the inside of the bellcrank.

3. With the control lever completely down and the reverse idler pulley (item E) resting against the frame, tighten the setscrew to hold the control rod in place.

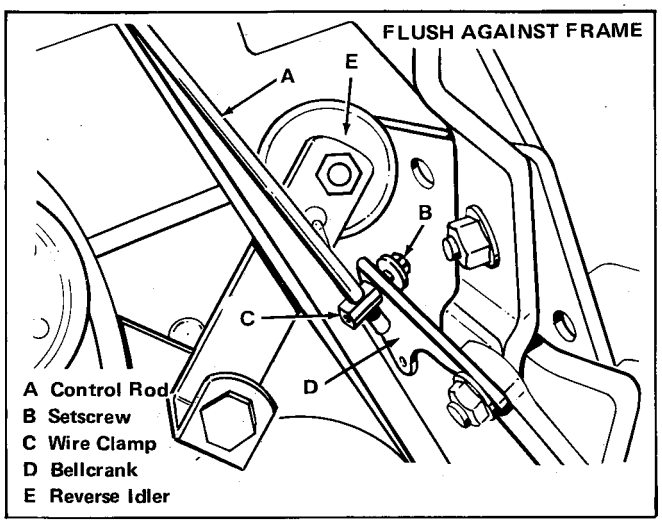



Figure 27. Reverse Control Rod Assembly

## TINE AND DEPTH BAR ASSEMBLY

1. Tip the tiller backward so it rests on the handlebars. Slide the tines on the rotor shaft making sure that the cutting edges of the tines are the forward leading edges as the rotor turns. Secure the tines with pins (items A, figure 28) and cotter pins (item B) (shipped in bag). Tip tiller forward again.
2. Install the depth bar (see figure 29) with a pin and spring clip. The digging tip should be installed as shown.

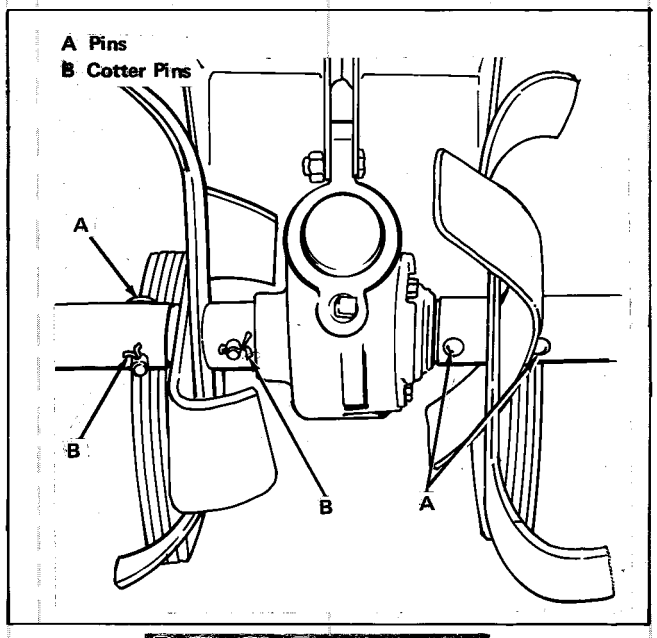



Figure 28. Tine Assembly

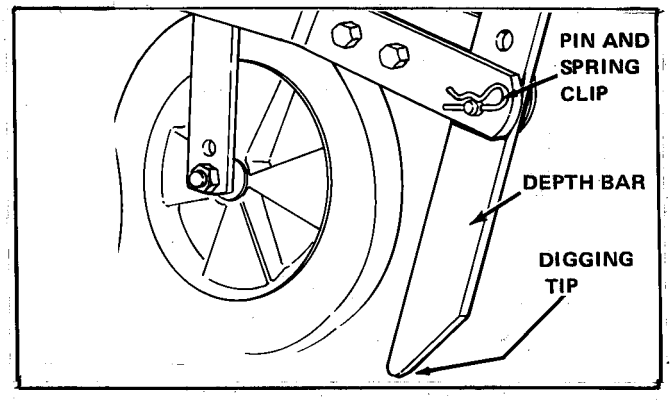



Figure 29. Depth Bar

## FINAL PREPARATION AND ADJUSTMENT

To complete the final, fine adjustment of the clutches and to prepare the tiller for operation, proceed as follows:

1. Check all capscrews, nuts, and other hardware for tightness. Pay particular attention to engine, wheel, and worm gear housing mounting bolts. The worm gear housing bolts are located under the engine mounting plate at the front of the tiller.
2. Check pulley alignment (see figures 20 and 21).
3. The worm gear housing is filled with special oil at the factory, but still should be checked. See figure 8 in Normal Care section to check or add worm gear oil.
4. Fill engine crankcase with SAE 30, grade MS detergent oil. Capacity: about 1 1/4 pints (.6L). See figure 7 in Normal Care section.
5. Fill fuel tank with clean, fresh, leaded or leadfree regular grade gasoline.
6. Start engine to test operate clutch controls. See starting procedures in Operation section if necessary.
7. If a clutch is not disengaging properly or if belt slippage occurs, see the Adjustment section of this manual.
8. Check for oil and gasoline leaks.
9. Reinstall the belt guard. To do this, first install two Taptite screws but do not tighten them fully. Next loosen the special washer headed handle capscrews enough to position the bottom edge of the belt cover between the capscrews and the tiller frame. Press the cover down to seat it fully on the capscrews. Hold each capscrew and tighten the nut to it (turning the capscrew causes the cover to move out of place). Then tighten the Taptite screws.

# Specifications

| | | | |
|---|---|---|---|
| ENGINE | MAKE: BRIGGS & STRATTON | 1003 ROTICUL<br>MODEL NO.: 80202<br>HORSEPOWER: 3 (2.23 kW)<br>CYCLES: 4<br>CYLINDERS: 1<br>BORE: 2-3/8 Inches (60.3 mm)<br>STROKE: 1-3/4 Inches (44.5 mm)<br>DISPLACEMENT: 7.75 Cu.In. (127cc)<br>CRANKSHAFT: Horizontal | 1005 ROTICUL<br>MODEL NO: 130292<br>HORSEPOWER: 5 (3.73 kW)<br>CYCLES: 4<br>CYLINDERS: 1<br>BORE: 2-9/16 In. (65 mm)<br>STROKE: 2-7/16 In. (62 mm)<br>DISPLACEMENT: 12.5 Cu.In. (204.8 cc)<br>CRANKSHAFT: Horizontal |
| | Starter | Manual Rewind, Easy Spin | |
| | Choke | Manual | |
| | Governor | Adjustable Mechanical Type, 1800 - 3400 rpm Range | |
| | Ignition | Magneto | |
| | Lubrication | Gear Impeller System | |
| | | CRANKCASE CAPACITY: 1-1/4 Pints (.6 L) | |
| | Fuel Tank | CAPACITY: 2 Quarts (1.9 L) On 1003: 3 Quarts (2.8 L) On 1005 | |
| | Air Cleaner | Reusable Oiled Foam Element | |
| | Muffler | Quiet, Low Back Pressure Type, Side Discharge | |
| TRANSMISSION | Type | Worm and Gear | |
| | Material | WORM: Steel | |
| | | GEAR: Bronze | |
| | Bearings | Tapered Roller and Needle Anti-Friction Bearings | |
| | Seals | Double Lip – Dirt Excluding | |
| | Lubrication | Special Worm Gear Oil, 7 Ounces (207 ml) | |
| | Housing | Cast Iron | |
| | Speeds | Forward only on 1003: One Forward, One Reverse on 1005 | |
| | Clutch | Touch-O-Matic V-Belt | |
| TINES | Type | Self-Sharpening, Slasher Type | |
| | Material | Forged High Carbon Steel | |
| | Tilling Width | 24 Inches (610 mm) Standard: 35-1/4 Inches (895 mm) with Tine Ext. | |
| | Tilling Depth | 0 to 6-3/4 Inches (171.4 mm), Adjustable | |
| | Attachment | TO SHAFT: Pin and Cotter Pin | |
| | Speed | 75 rpm at Full Engine Speed | |
| DEPTH BAR | Type | Adjustable – Pivots in Reverse | |
| | Attachment | Pin and Spring Clip | |
| CONTROLS | Location | FORWARD CLUTCH: Right Handle | |
| | | REVERSE CLUTCH: Left Handle (Model 1005 Only) | |
| | | THROTTLE: Left Handle | |
| | | REWIND STARTER AND CHOKE: On Engine | |
| | Handles | HEIGHT: Adjustable | |
| CHASSIS | Frame | Heavy Guage, Welded Steel Channel | |
| | Tires (Model 1003) | 1.75 x 8 Inches (44 x 203 mm) Solid Rubber | |
| | Tires (Model 1005) | 1.75 x 10 Inches (44 x 254 mm) Semi-Pneumatic | |
| OVERALL DIMENSIONS | Length | 51 Inches (1.3 m) | |
| | Width | 26 Inches (660 mm) Without Tine Extensions | |
| | Height | TO TOP OF HANDLE: 38-1/4 Inches (972 mm) | |
| | | TO TOP OF ENGINE: 27-3/4 Inches (705 mm) | |
| | Net (Dry) Weight | 113 Lbs. (51.3 kg)for Model 1003: 133 Lbs. (60.3 kg) for Model 1005 | |

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

# Maintenance Record

| Date | Hours Used | Lubrication | Maintenance/Repair |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Figure 20 Maintenance Record

## PARTS MANUAL AVAILABLE FOR MODELS 1003 & 1005 ROTICUL

You can order a parts manual for your **Model 1003 Roticul or Model 1005 Roticul** and accessories. Check the box below for the parts manual, enclose the form in an envelope with a check or money order made out to SIMPLICITY and send them to:

Simplicity Manufacturing Co.
500 N. Spring Street
Port Washington, WI 53074

Parts manual TP-506 contains the **Models 1003 & 1005 Roticul** and all available accessories.

**CUT HERE**

☐ I would like a parts manual (TP-506) for my **Model 1003 or 1005 Roticul and accessories.** I am enclosing a check or money order for $2.00.

Tiller Mfg. No._____

(Allow Two or Three Weeks for Delivery)

Send this form with your check or money order to:

Simplicity Manufacturing Co.
Attn: Customer Publications
500 N. Spring Street
Port Washington, WI 53074

(Print clearly, this will be your mailing label)

NAME_____

STREET OR RFD_____

CITY_____ STATE_____ ZIP_____