



# COLUMBIA

## OWNER'S MANUAL



### MOTOCULTEUR

### 214-390-597

### WALK-BEHIND TILLER



#### IMPORTANT !

Inscrivez ci-dessous le no de modèle et le code du fabricant qui se trouvent sur la machine. Vous devez fournir ces numéros, ainsi que la date d'achat, pour bénéficier de tout service sous garantie.

#### IMPORTANT !

Record the Model No. and Mfg. Code which appear on your unit in the space provided. You must have these numbers, along with the date of purchase, in order to receive warranty or service.



## **IMPORTANT**

### **Safe Operation Practices for Walk-Behind Powered Tillers**

#### **Training**

1. Read the operating and service instruction manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
2. Never allow children to operate the equipment. Never allow adults to operate the equipment without proper instruction.
3. Keep the area of operation clear of all persons, particularly small children, and pets.

#### **Preparation**

1. Thoroughly inspect the area where the equipment is to be used and remove all foreign objects.
2. Disengage all clutches and shift into neutral before starting the engine (motor).
3. Do not operate the equipment without wearing adequate outer garments. Wear footwear that will improve footing on slippery surfaces.
4. Handle fuel with care; it is highly flammable.
  - (a) Use an approved fuel container.
  - (b) Never add fuel to a running engine or hot engine.
  - (c) Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
  - (d) Replace gasoline cap securely and clean up spilled fuel before restarting.
5. Use extension cords and receptacles as specified by the manufacturer for all units with electric drive motors or electric starting motors.
6. Never attempt to make any adjustments while the engine (motor) is running (except where specifically recommended by manufacturer).

#### **Operation**

1. Do not put hands or feet near or under rotating parts.
2. Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic. Do not carry passengers.
3. After striking a foreign object, stop the engine (motor), remove the wire from the spark plug, thoroughly inspect the tiller for any damage, and repair the damage before restarting and operating the tiller.
4. Exercise caution to avoid slipping or falling.
5. If the unit should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.
6. Stop the engine (motor) when leaving the operating position, before unclogging the tines, and when making any repairs, adjustments, and inspections.
7. Take all possible precautions when leaving the machine unattended. Disengage the power take-off, lower the attachment, shift into neutral, stop the engine, and remove the key.
8. Before cleaning, repairing, or inspecting, shut off the engine and make certain all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the plug to prevent accidental starting. Disconnect the cord on electric motors.
9. Do not run the engine indoors; exhaust fumes are dangerous.
10. Never operate the tiller without proper guards, plates, or other safety protective devices in place.
11. Keep children and pets away.
12. Do not overload the machine capacity by attempting to till too deep at too fast a rate.
13. Never operate the machine at high transport speeds on slippery surfaces. Look behind and use care when backing.
14. Never allow bystanders near the unit.
15. Use only attachments and accessories approved by the manufacturer of the tiller (such as wheel weights, counterweights, cabs, and the like).
16. Never operate the tiller without good visibility or light.
17. Be careful when tilling in hard ground. The tines may catch in the ground and propel the tiller forward. If this occurs, let go of the handlebars and do not restrain the machine.

#### **Maintenance and Storage**

1. Keep machine, attachments, and accessories in safe working condition.
2. Check shear bolts, engine mounting bolts, and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
3. Never store the machine with fuel in the fuel tank inside a building where ignition sources are present, such as hot water and space heaters, clothes dryers, and the like. Allow the engine to cool before storing in any enclosure.
4. Always refer to the operator's guide instructions for important details if the tiller is to be stored for an extended period.

# ASSEMBLY INSTRUCTIONS

**IMPORTANT:** This unit is shipped **WITHOUT GASOLINE**. After assembly, see operating section of this manual for proper fuel and engine oil recommendations.

**NOTE:** Reference to left or right side of the tiller is determined from behind the unit in the operating position.

## TOOLS REQUIRED FOR ASSEMBLY:

- (2) 1/2" Wrenches or Sockets
- (1) 5/16" Wrench or Nutdriver
- (1) 3/8" Wrench
- (1) Pair of Pliers

## UNPACKING

Remove the tiller and loose parts from the carton. Make certain all parts and literature have been removed before the carton is discarded.

Extend all control cables and place on the floor. Be careful not to bend or kink control cables.

## Parts in Carton:

- Tiller
- Tailpiece/Depth Stake Assembly
- Handle Assembly
- Handle Brace

All hardware required for assembly has been placed in position on the tiller.

1. Remove loose parts included with tiller (i.e. handles, hardware pack, etc.)
2. Cut down corners on one end of carton and lay end down flat. Remove packing material.
3. Roll tiller out of carton and check carton thoroughly for loose parts.
4. Extend the control cable and place on the floor. Be careful not to bend or kink the cable.

## ATTACHING THE TAILPIECE AND DEPTH STAKE (See figure 1)

Remove the two hex lock nuts and hex bolts which are on the front of the tailpiece. Slide the tailpiece into the frame, with the lower hole in the tailpiece toward the front. Secure with hardware just removed.

## ATTACHING THE HANDLE ASSEMBLY AND BRACE (See figure 2)

1. Remove the hex lock nut and hex bolt from the bottom of the handle assembly.
2. Insert the handle assembly between the two frame halves. Be certain to route the throttle control cable outside the frame halves. Secure with hardware just removed.

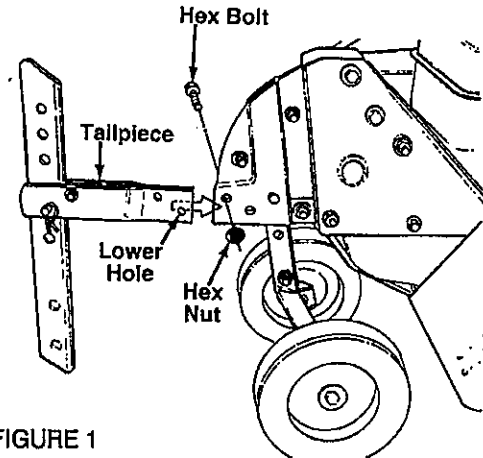


FIGURE 1

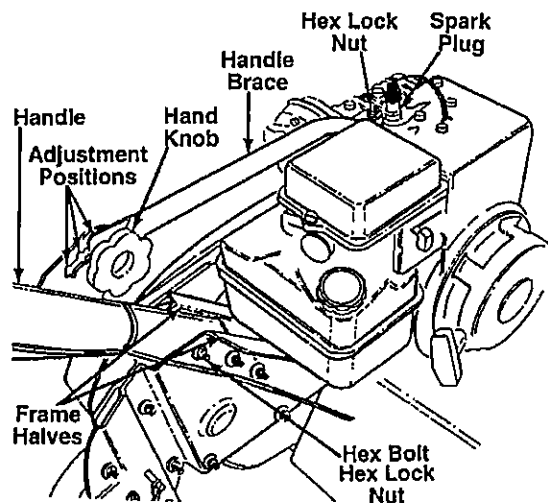


FIGURE 2

3. Remove the hex lock nut from on top of the engine, just behind the spark plug. Do not remove the flat washer. Attach the curved end of the handle brace to the top of the engine, using hex lock nut just removed.
4. Remove the hand knob, cupped washer and carriage bolt from the front of the handle assembly.
5. Attach the handle brace to the handle assembly, selecting one of the three handle height positions (three notches in welded bracket). Secure with hardware removed in step 4 (cupped side of washer goes against the handle brace).

## ATTACHING THE THROTTLE CONTROL CABLE

The throttle control cable is already attached to the upper handle. Attach the cable to the control lever on the engine (located beneath the fuel tank) as follows.

**NOTE:** It is helpful to use a light to illuminate the area beneath the fuel tank.

1. Place the throttle control lever on the handle assembly all the way forward in FAST position.

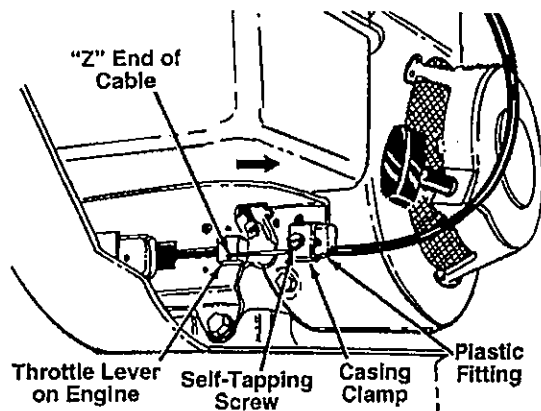


FIGURE 3

2. Remove the cable clamp shown in figure 3 by removing the self-tapping screw.
3. Hook the "Z" end of the throttle control cable into the hole in the control lever on the engine as shown in figure 3.
4. Place the cable clamp over the plastic fitting on the throttle cable. Secure loosely to engine housing by inserting self-tapping screw through the cable clamp and the slot in the plastic fitting on the throttle control cable.
5. Pull the throttle control cable so the throttle lever on the engine is in the full open position (all the way toward the right side of the unit) as shown in figure 3. Tighten the self-tapping screw to secure the cable in this position.

#### ATTACHING THE CLUTCH CONTROL CABLES

##### Forward Cable

The clutch cable is the cable which is attached closer to the rear of the tiller. If the spring has come loose during shipping, reattach as shown in the illustration on page 12, reference numbers 42 and 46.

Attach the end of the cable to the bracket underneath the handle assembly as follows.

1. Loosen the hex nut on the threaded rod near the end of the cable, and move it up the rod as far as it will go. See figure 4.
2. Unthread the rod from the rest of the cable. Hook the "Z" end of the rod into the bracket underneath the handle assembly.
3. Thread the rod back into the cable until the cable is straight. Do not tighten it enough to put any tension on the spring.
4. Thread the hex nut down against the end of cable to lock the rod in this position.

**NOTE:** Do not overtighten control cable. Too much tension may cause it to break when engaged.

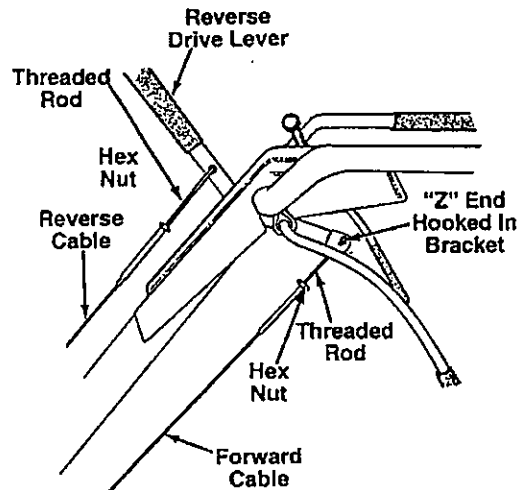


FIGURE 4

##### Reverse Cable

The reverse clutch cable is the cable which is attached closer to the front of the tiller. If the spring has come loose during shipping, reattach as shown in the illustration on page 12, reference numbers 36 and 47.

Attach the end of the reverse cable to the reverse drive lever, above the handle assembly, in the same manner as you attached the forward cable.

#### FINAL CLUTCH ADJUSTMENT

To check the clutch cable adjustment, proceed as follows.

1. Disconnect the spark plug wire from the spark plug to prevent accidental starting.
2. Engage and release first the forward drive clutch lever, then the reverse drive clutch lever. If an excessive noise is heard when releasing either drive clutch lever, the cable may be too loose. Adjust either the forward or reverse clutch cable by loosening the hex nut, threading the rod into the cable one or two turns, then tightening the nut.
2. With both clutch levers in neutral (released), pull the starter rope several times. The tines should not turn. If they turn forward, loosen the hex nut on the forward cable (underneath the handle assembly). Unthread the rod from the cable several turns. Tighten the hex nut, and check again for correct adjustment.

## CONTROLS

#### THROTTLE CONTROL

The throttle control lever is located on the handle panel. It controls the engine speed and stops the engine. See figure 5.

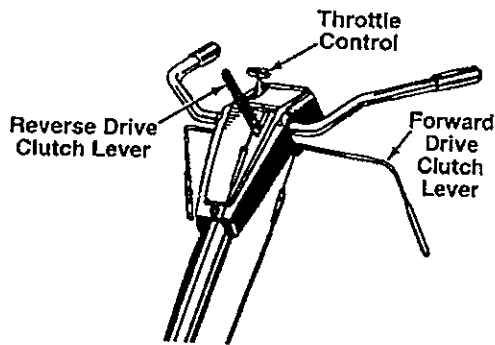


FIGURE 5

### FORWARD DRIVE CLUTCH HANDLE

The forward drive clutch handle is located beneath the tiller handle. See figure 5. Squeezing the handle up against the tiller handle engages the forward drive. Release the handle to stop the forward motion.

### REVERSE DRIVE CLUTCH LEVER (Model 390 Only)

The reverse drive clutch lever is located in front of the handle panel. See figure 5. Pull the lever to the rear to move the tines in reverse. Release the lever to stop the reverse drive.

**NOTE:** *Never engage both the forward and reverse drive at the same time, or the engine will stall.*

### DEPTH STAKE

The depth stake controls the tilling depth. Refer to "How to Use Your Tiller" section on page 6.

## OPERATION

### GAS AND OIL FILL-UP

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your tiller. Read instructions carefully.

**NOTE:** *Your tiller is shipped without oil; however, a small amount of oil may be present from the factory.*

### TO START ENGINE

**WARNING:** *Be sure no one is standing in front of the tiller while the engine is running or being started.*

1. Attach spark plug wire and cover to spark plug.
2. Make certain the forward clutch handle is in the neutral position (released). See figure 6.
3. Place the throttle control lever in FAST position. See figure 6.
4. Move choke lever to CHOKE position (a warm engine requires little or no choking).
5. Grasp starter handle (see figure 6) and pull rope out slowly until engine reaches start of compression

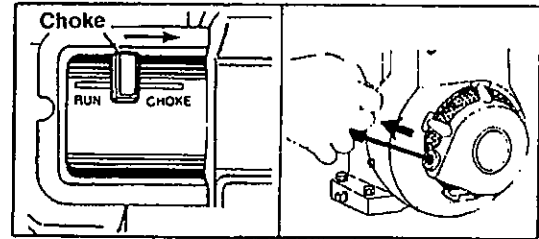


FIGURE 6

cycle (rope will pull slightly harder at this point). Let the rope rewind slowly.

6. Pull rope with a rapid, continuous, full arm stroke. Keep a firm grip on start handle. Let rope rewind slowly. Do not let starter handle snap back against starter.
7. Repeat preceding instructions 4 and 5 until engine fires. When engine starts, move choke lever on engine halfway between CHOKE and RUN.
8. Move throttle control to SLOW position for a few minutes warm-up. Move choke lever to RUN position as engine warms up.

**NOTE:** In order to idle smoothly, a new engine may require 3 to 5 minutes running above slow idle speed. Idle speed has been adjusted to be correct after this break-in period.

### TO STOP ENGINE

1. Move throttle control lever to STOP position. See figure 6.
2. Disconnect spark plug wire from spark plug and ground against the engine to prevent accidental starting while equipment is unattended.

## HOW TO USE YOUR TILLER

The tiller is a precision built machine designed for seed bed preparation cultivating to minimize the hardest work in the vegetable or flower garden, to till the soil for planting and cultivating, and for performing many other useful labour saving tasks in the garden. With the proper amount of care and maintenance this machine will provide the owner with many years of excellent service.

### WHEEL POSITION

The tiller is shipped with the wheels adjusted such that the unit sits level. During tilling as the tines enter the ground and the front of the tiller lowers, the wheels must be raised to level the unit, which is essential for proper engine operation. This adjustment is made by removing the clevis pin and hairpin clip from wheel yoke, raising the wheels to the desired height, and replacing the clevis pin and hairpin clip. See figure 7.

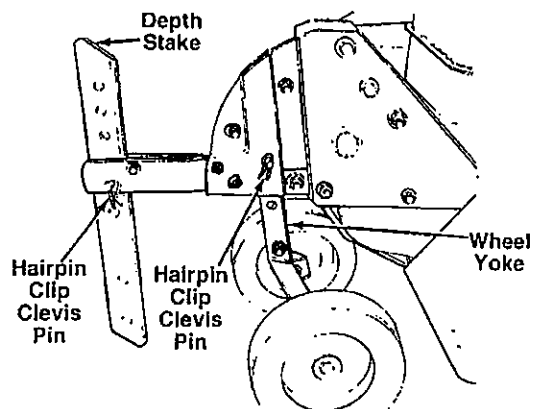


FIGURE 7

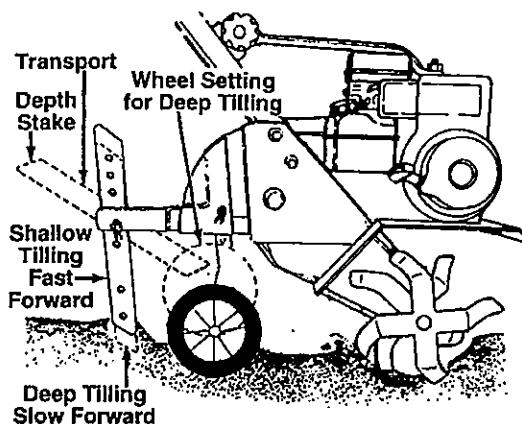


FIGURE 9

**CONTROLLING SPEED AND TILLING DEPTH:**

1. **Wheel Yoke Adjustment:** Place wheel yoke so that the wheels are forward (nearest point between wheels and tines) for shallow tilling, cultivating and transport. The forward speed will increase. Turn yoke around (farthest point between wheels and tines) for deep tilling. Forward speed will decrease. See figure 8.

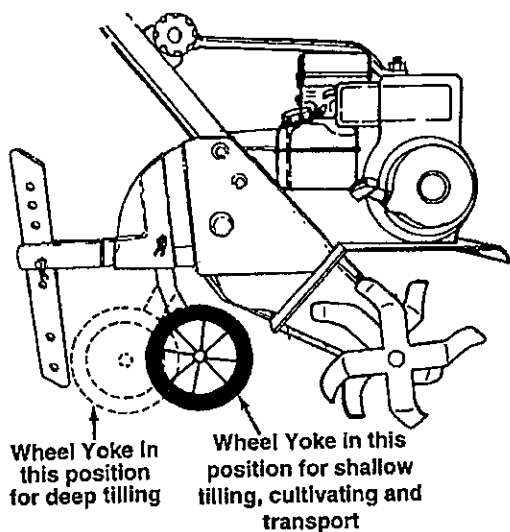


FIGURE 8

2. **Depth Stake Adjustment:** The depth stake acts as a brake for the tiller and controls the depth and speed at which the machine will operate. Remove the clevis pin and hairpin clip to raise or lower depth stake. See figure 7.

By increasing the depth of the depth stake, the forward speed of the machine is reduced, and the working depth is increased. When the depth stake is raised, the working depth of the machine is reduced and the forward speed is increased.

When tilling, leave approximately 8 inches of untilled soil between the first and second tilling paths, then make the third path between the first and second as

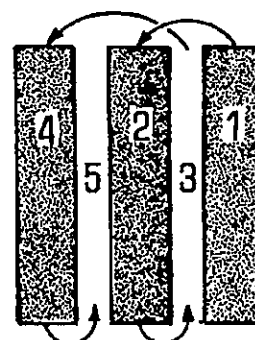


FIGURE 10

whose in figure 10. In some soils, the desired depth is obtained the first time over the garden. In other soils, the desired depth is obtained by going over the garden two or three times. In the latter case, the depth stake should be lowered before each succeeding pass over the garden. Passes should be made across the length and width of the garden alternately. Rocks which are turned up should be removed from the garden area.

- 3. **Handle Pressure:** Further control of tilling depth and travel speed can be obtained by variation of pressure on the handles. A downward pressure on the handles will reduce the working depth and increase the forward speed. An upward pressure on the handles will increase the working depth and reduce the forward speed. The type of soil and working conditions will determine the actual setting of the depth stake and the handle pressure required.
- 4. **Throttle Control:** The throttle control lever adjusts the engine speed and stops the engine. With the throttle control knob pushed completely forward, the carburetor is in START position. Pulling the throttle control back slightly adjusts the engine speed to FAST. Pulling the throttle back further reduces the engine speed to SLOW. Pull the throttle completely back to stop the engine.

Use maximum engine speed for deep tilling. Move the throttle control to slow when transporting the tiller.

### TRANSPORTING THE TILLER

To transport the tiller to or from the garden, pivot the depth stake forward, out of the way. See figure 10. With the throttle control in SLOW position, the unit will "walk" freely on top of the lawn. If the operator does not allow the tiller to move freely, the unit will start to till the surface

### CULTIVATING

For cultivating, a two to three inch depth is desirable. Setting the wheels and depth stake so that the wheels are about two inches above the ground while the tiller is resting on the tines and depth stake will allow the machine to work at cultivating depth. The throttle should be set to control forward movement to a slow walking speed.

With the outer tines installed, the working width of the machine is 22 or 24 inches. For cultivation, this may be reduced to 13 inches by removing the outer tines. Refer to "Tine Width Adjustment" in Adjustment section.

When laying out plant rows, be sure to allow enough width to permit cultivation between the rows. In growing corn or similar crops, check-row planting will permit cross cultivation and practically eliminate hand hoeing. See figure 11.

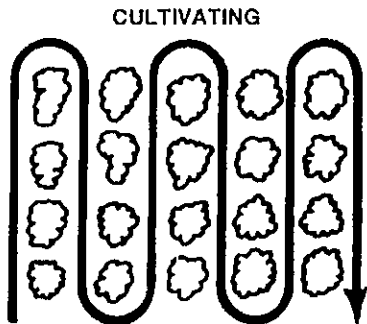


FIGURE 11

The tiller has many uses other than tilling and cultivating a garden. One of these is the preparation of lawn area for seeding. The tiller will prepare a deep seed bed which will be free of hard untilled spots, allowing a better stand of grass to grow. The tiller is very useful for loosening hard soil for excavation with a shovel. NO tedious hand pickwork will be necessary. Your tiller may be used for mixing compost in the pile, or for mixing it with soil in your garden. This should be done after the soil has been broken to the full working depth. The compost should be worked in to a depth of six to eight inches. This may be done by working the length of the garden, and then by making separate passes across its width. The addition of decayed organic matter will substantially increase the fertility of

your garden. For proper decaying action, fertilizer should be applied and worked in with the mulch materials. Breaking up leaves and straw and mixing it with several inches of soil causes the soil to hold moisture longer and allows proper aeration of the plant root system. This also retards the growth of weeds.

## ADJUSTMENTS

### \*\* WARNING \*\*

Disconnect spark plug wire and ground it against the engine before performing any repairs or maintenance.

### WHEEL ADJUSTMENTS

To adjust the wheel yoke and wheel position, refer to "How To Use Your Tiller," on page 7.

### DEPTH STAKE ADJUSTMENT

To adjust the depth stake, refer to "How To Use Your Tiller" on page 6.

### TINE WIDTH ADJUSTMENT

The tilling width of the unit is 22 inches. See figure 12. Tilling width can be increased to 24 inches by removing the clevis pins and hairpin clips, sliding the outer tines out one inch, and securing in this position with the clevis pins and hairpin clips. See figure 13. For cultivation, reduce the tine width to 14 inches by removing the outer tines completely. See figure 14.

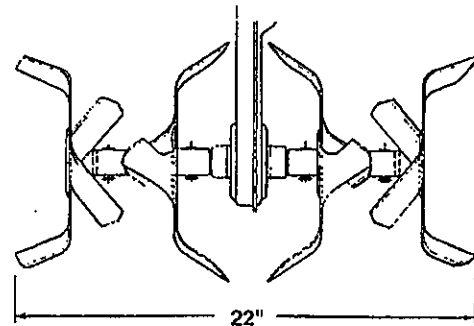


FIGURE 12

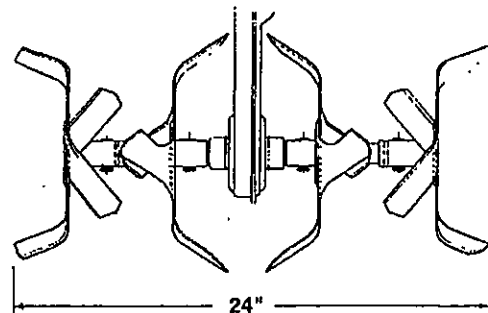


FIGURE 13

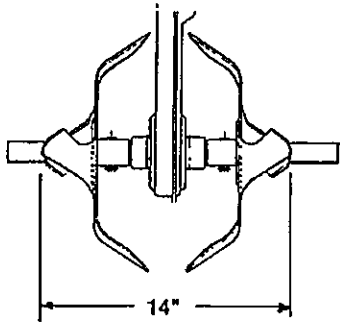


FIGURE 14

### CLUTCH CONTROL ADJUSTMENT

To adjust the clutch control, refer to "Final Clutch Adjustment" section of assembly instructions.

### CARBURETOR ADJUSTMENT

**WARNING:** If any adjustments are made to the engine while the engine is running (e.g. carburetor), disengage all clutches and tines. Keep clear of all moving parts. Be careful of heated surfaces and muffler.

Minor carburetor adjustment may be required to compensate for differences in fuel, temperature, altitude or load. If adjustments are needed, refer to the engine manual packed with the tiller.

### NOTE

A dirty air cleaner will cause engine to run rough. Be certain air cleaner is clean and attached to the carburetor before adjusting carburetor. Do not make unnecessary adjustments. Factory settings are satisfactory for most applications and conditions.

## LUBRICATION

**WARNING:** Always stop engine and disconnect spark plug wire before cleaning, lubricating or doing any kind of work on tiller.

**PIVOT POINTS**—Remove the belt cover and lubricate all moving parts and pivot points at least once a season using SAE 30 engine oil.

**CHAIN DRIVE**—The chain case is pre-lubricated and sealed at the factory. It requires no checking.

## MAINTENANCE

**WARNING:** Disconnect spark plug wire and ground it against the engine before performing any repairs or maintenance.

### ENGINE

Refer to the separate engine manual for engine maintenance instructions.

Maintain **engine oil** as instructed in the separate engine manual packed with your unit. Read and follow instructions carefully.

Service **air cleaner** as per separate engine manual under normal conditions. Clean every few hours under extremely dusty conditions. Poor engine performance and flooding usually indicates that the air cleaner should be serviced. To service the air cleaner, refer to the separate engine manual packed with your unit.

**IMPORTANT:** Never run your engine without air cleaner completely assembled.

The **spark plug** should be cleaned and the gap reset once a season. Spark plug replacement is recommended at the start of each mowing season; check engine manual for correct plug type and gap specifications.

### CLEANING THE TINE AREA

Clean the underside of the tine shield after each use. The dirt washes off the tines easier if washed immediately instead of after it dries.

### BELT REPLACEMENT

**CAUTION:** Do not use an off-the-shelf belt.

Your tiller has been engineered with a belt made of special material (Kevlar Tensile) for longer life and better performance. It should not be replaced with an off-the-shelf.

If belt replacement is required, order belt or belts by part number from your nearest authorized dealer.

**FORWARD DRIVE BELT** — Part No. 754-0428

**REVERSE DRIVE BELT** — Part No. 754-0429

1. Disconnect and ground the spark plug wire against the engine.
2. Remove the belt cover from the left side of the tiller as follows.
  - a. Remove two self-tapping screws and flat washers from the front of belt cover. See figure 15.
  - b. Remove the hex stop nut and flat washer from the side of the belt cover.

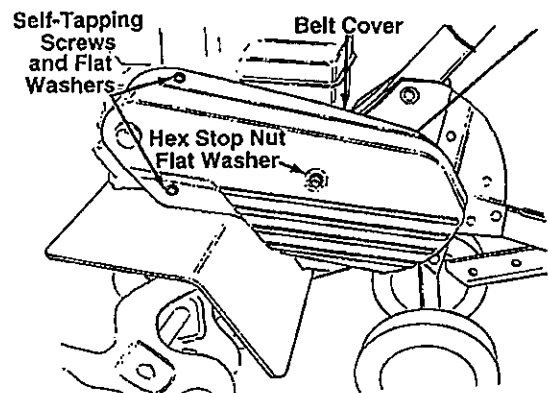


FIGURE 15



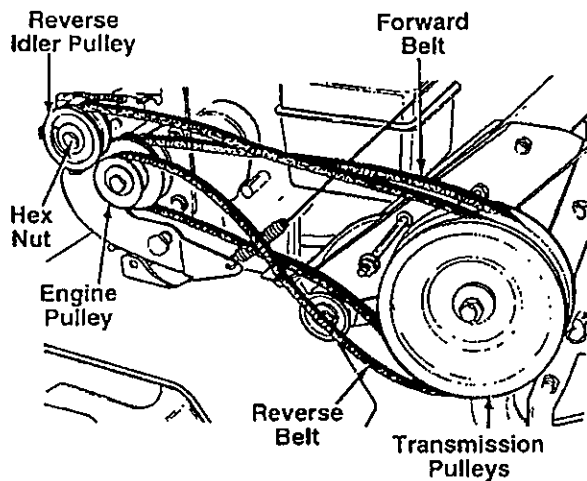


FIGURE 16

3. Lift the belt off the transmission pulley and engine pulley.
4. Remove the hex nut which secures the reverse idler pulley to the idler bracket. See figure 16, Slide idler pulley out and remove the belt.
5. Reassemble the new belt, following instructions in reverse order. Make certain the reverse drive belt is assembled with the wide side of the belt against the transmission and engine pulleys. Be certain to adjust the clutch control as instructed in the final clutch adjustment section of assembly instructions.

**FORWARD DRIVE BELT (Refer to Figure 16)**

1. To remove the forward drive belt first remove the reverse drive belt as instructed in the previous section.
2. Lift belt off the idler pulley and transmission pulley. See figure 17.
3. Using a 9/16" wrench, remove bolt from engine pulley. See figure 17.

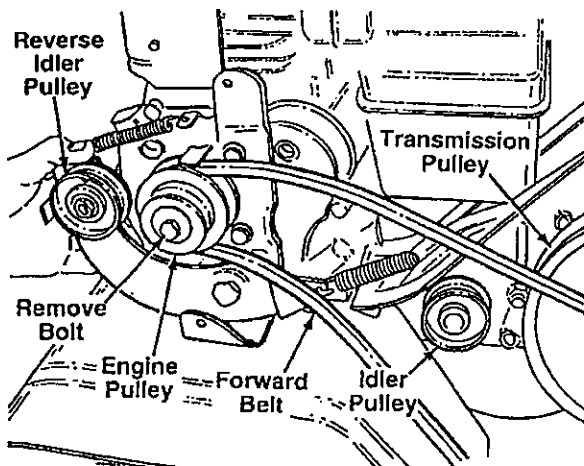


FIGURE 17

4. Push reverse idler pulley bracket forward, and remove engine pulley and belt. See figure 17.
5. Reassemble the new belt, following instructions in reverse order. Make certain the forward drive belt is assembled with the wide side of the belt against the transmission and engine pulleys. Be certain to adjust the clutch control as instructed in the final clutch adjustment section of assembly instructions.

## OFF-SEASON STORAGE

If the tiller is to be inoperative for a period longer than 30 days, the following precautions are recommended.

1. Clean the exterior of engine and the entire tiller thoroughly.
2. Refer to the engine manual for correct engine storage instructions.
3. Wipe tines with oiled rag to prevent rust.
4. Store tiller in a clean, dry area. Do not store next to corrosive materials, such as fertilizer.

**NOTE:** When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rustproof the equipment. Using a light oil or silicone, coat the equipment, especially any springs, bearings and cables.