

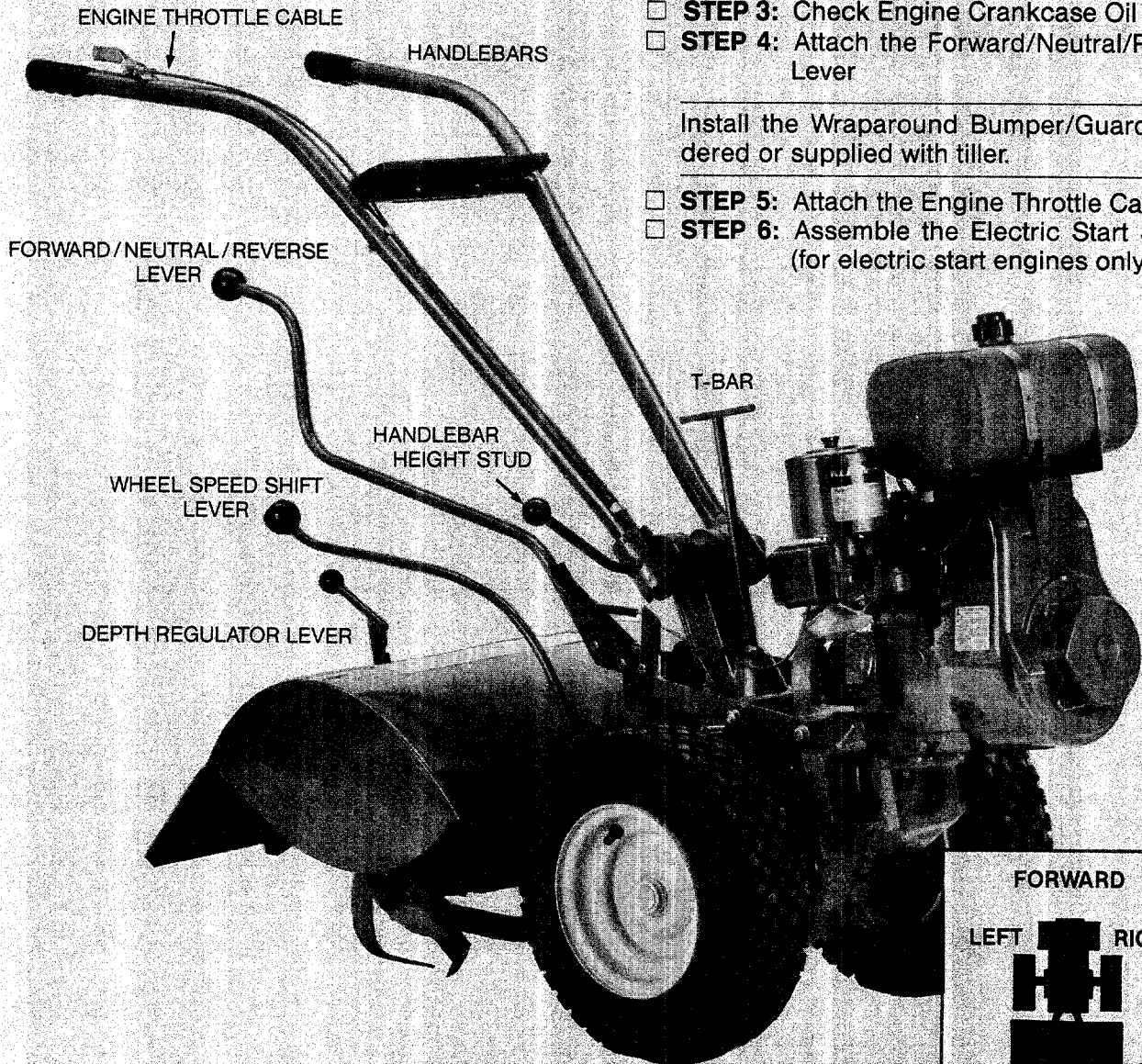
ASSEMBLY

We recommend that you follow the simple steps below for quick, easy and complete tiller and engine preparation. It should only take about 45 minutes (average time) to complete all six steps.

- STEP 1:** Unpacking Tiller
- STEP 2:** Check Transmission Gear Oil Level
- STEP 3:** Check Engine Crankcase Oil Level
- STEP 4:** Attach the Forward/Neutral/Reverse Lever

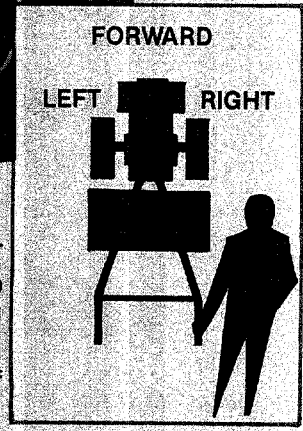
Install the Wraparound Bumper/Guard, if ordered or supplied with tiller.

- STEP 5:** Attach the Engine Throttle Cable
- STEP 6:** Assemble the Electric Start System (for electric start engines only)



TOOLS NEEDED: Flat-blade Screwdriver, Pliers, 3/8-in. Wrench, 9/16-in. Wrench, and two 1/2-in. Wrenches. Note: Adjustable Wrenches may be substituted for open-end wrenches.

NOTE: To determine LEFT HAND and RIGHT HAND sides of your tiller, stand in the operating position and face the direction of forward travel.



Step 1

Unpacking Tiller

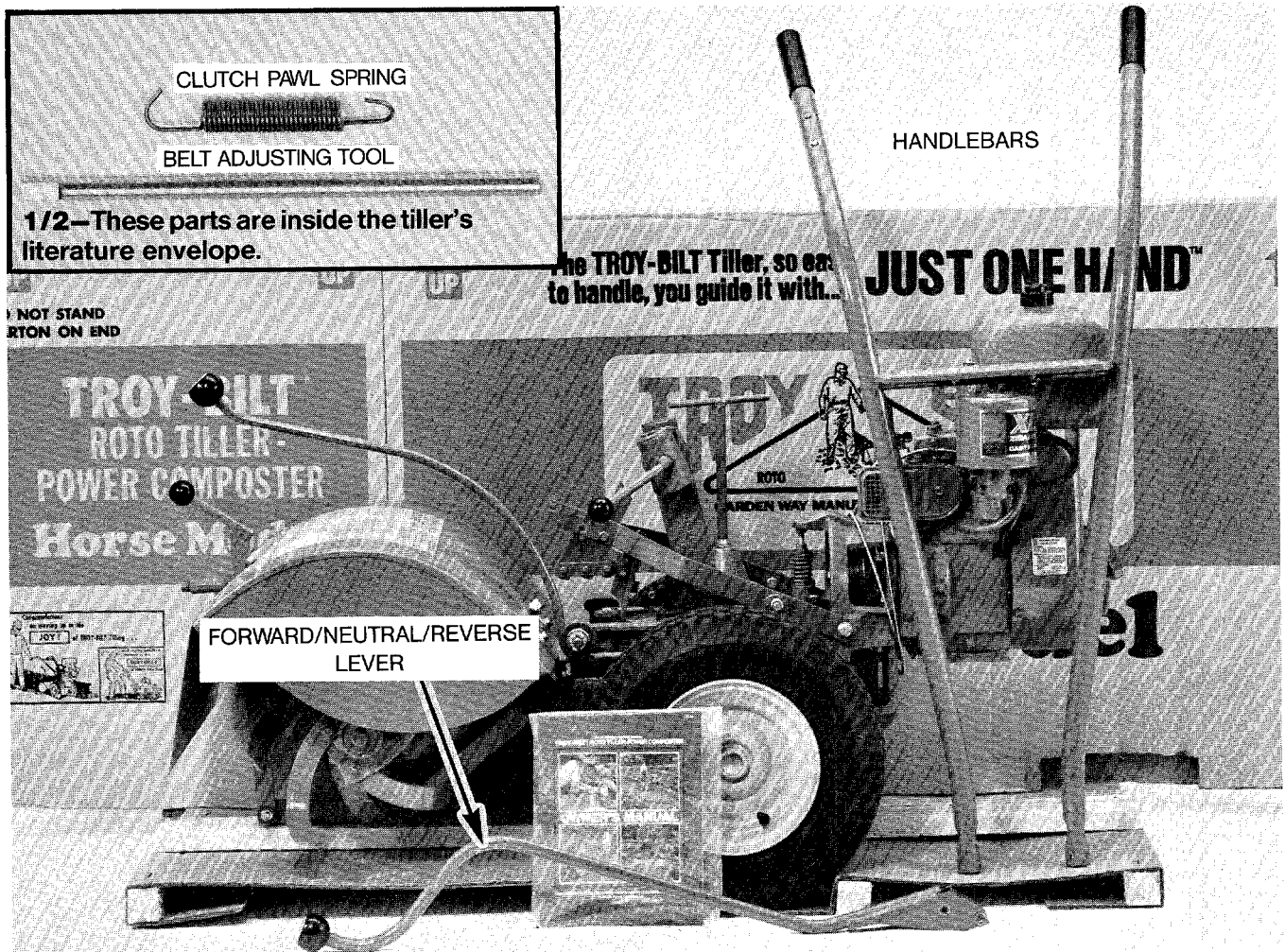
Your tiller is shipped fully assembled except for the items listed below and noted in Photos 1/1 and 1/2. Please do not discard any packing material until you have located each of these items.

CAUTION: For safety's sake, please don't try to lift the tiller off its shipping carton base—it weighs over 260 lbs! Detailed instructions for safely removing the tiller are given in Part B of this Step.

A. Remove Loose Parts

- The Handlebars
- The Forward/Neutral/Reverse Lever. The lever is stapled to the carton base underneath the tiller. To remove it, very gently tilt the tiller forward until the engine is resting on the base. Use a screwdriver or pliers to remove the staples.

- The Engine Throttle Cable is coiled on top of the tiller. Do not uncoil until Step 5.
- A Belt Adjusting Tool and a Clutch Pawl Spring (for the Forward/Neutral/Reverse Lever) are inside the literature package that contained this manual—see photo inset. Please keep these parts with your literature until needed.
- If you ordered any smaller attachments, such as the Hiller/Furrower or Tire Chains, they will be packed with the tiller—if room permits. Otherwise, they will be shipped in separate cartons, as will any larger attachments such as the Dozer/Snow Blade and Wraparound Bumper/Guard.
- If you have an electric start engine, you'll find a plastic bag inside the literature package that contains various battery hook-up parts. Save these parts until you get to Step 6.



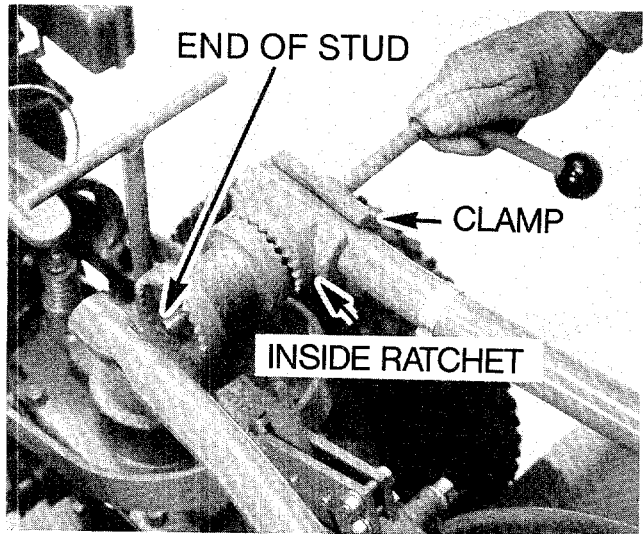
1/1—Look for these parts inside the shipping container.

B. Remove Tiller From Carton Base

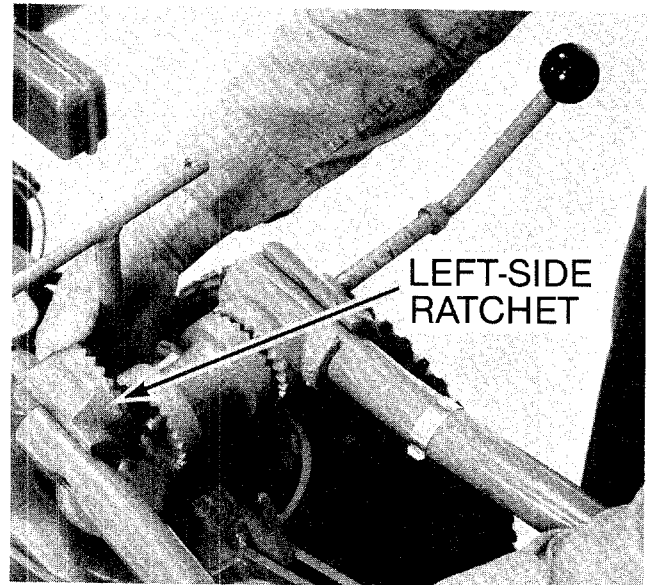
Because the tiller is too heavy to try and lift it off the carton base, we recommend that you first attach the handlebars and then use them as a handy lever to roll the machine up and out of the cardboard wheel wells.

To Attach the Handlebars:

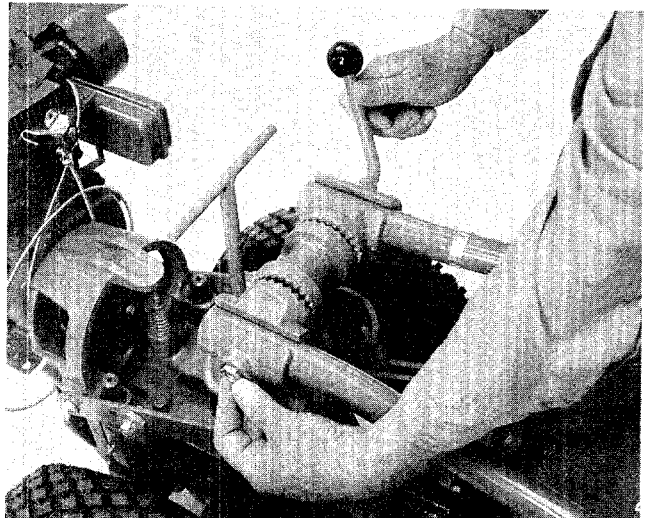
1. Unwind and remove the Height Adjustment Stud from the Handlebar Base, followed by the left and right side Ratchets and Clamps—see Photo 1/3. Keep the left and right side parts separated from each other. NOTE: If the Throttle Cable is in your way, carefully uncoil the cable and lay it along the right side of the tiller. Be careful not to kink or severely bend the cable, or disconnect it from the engine.
2. On the right side of the Handlebar, fit the Ratchet against the inside of the Handlebar (with the teeth facing the handlebar base) and place the Clamp on the outside—see Photo 1/4. Then, push the Height Adjustment Stud through the holes in the Clamp, Handlebar, Ratchet and Handlebar Base. Stop when the threaded end of the Stud just appears on the other side of the base.
3. Force the left side Handlebar away from the Handlebar Base and install the remaining Ratchet, as shown in Photo 1/5.
4. Push the Stud all the way through the left side Ratchet and Handlebar, and then align the outside Clamp (note Nut inside Clamp) with the Stud—see Photo 1/6. Gently wind the Stud a few turns into the Nut. Now raise the Handlebars until they are approximately waist high and then tighten the Stud securely.



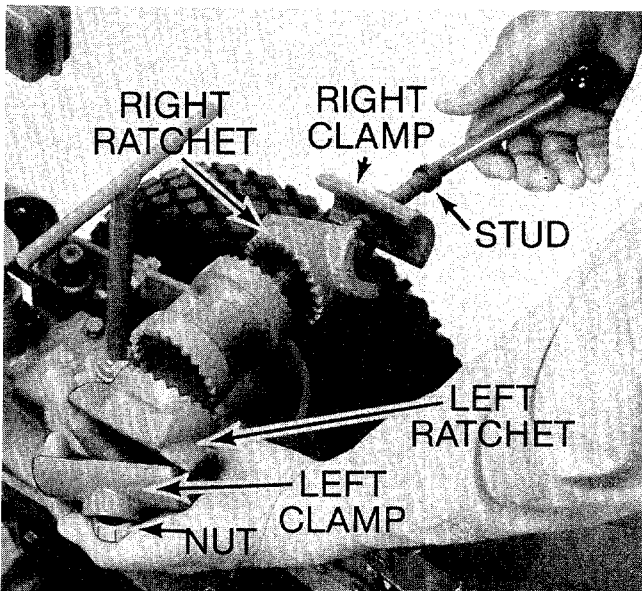
1/4—Insert stud through clamp, handlebar, ratchet and base.



1/5—Install left side ratchet.



1/6—Add outside clamp and thread stud into nut.



1/3—Unwind stud and remove ratchets and clamps.

To Remove the Tiller:

5. Lift the Handlebars until the tines are clear of the container base. Now, in one steady motion, pull the Handlebars back and to one side, until one wheel rolls up and out of its wheel well—see Photo 1/7. You might need a carefully placed foot to keep the base from moving. NOTE: If the wheels won't turn, move the Wheel Speed Shift Lever (shown in photo) a short distance up or down to take the wheels out of gear.



1/7—Lift handlebars and then pull to one side.

6. Keeping a firm grip on the Handlebars, continue to roll the tiller backwards until it is off the base—see Photo 1/8.



1/8—Roll tiller backwards off base.

FREIGHT DAMAGE OR MISSING PARTS

IF YOU NOTICE ANY DAMAGE either at the time of delivery, or later during assembly, here's what to do.

Make sure that you put it in writing within 15 days of delivery that you intend to file a written claim. Tell the driver, or phone the truck terminal and tell them that you intend to file a written claim with them. They will advise you how to proceed from there so that you'll get complete satisfaction with any claim you may have.

But, if you have any problem with this procedure, please let us know so that we can lend a hand. The letter confirming your order also had additional information describing exactly what to do in case of damage.

IF YOU THINK SOMETHING IS MISSING—notify the freight company just the same as above. But, again, if you have any questions about anything that we can be helpful with, please call or write us here at the factory.

Step 2

Check Transmission Gear Oil Level

Your PTO HORSE Model has two separate transmissions, one for the Power Unit and one for the Tine Attachment. For your convenience, each transmission was filled at the factory with SAE #140 GEAR OIL. However, at this time, you should check both transmissions to be sure that their oil levels are still correct.

Please remember that operating the machine when either transmission is low on oil can cause a rapid buildup of excessive heat that can damage internal parts such as gears, bearings and shafts. Therefore, be sure to check the oil levels after every 30 hours of operation, or sooner if you notice any bad leaks.

BREAK-IN PERIOD

After the first 2 hours of new tiller operation check the oil levels again and inspect for any oil leaks.

Use SAE 140 Gear Oil at all times, unless you are operating in temperatures below 32°F. Then, it is best to switch to a lighter-weight SAE 90 Gear Oil, as it will flow better in colder temperatures (for other cold-weather operating information, be sure to read "Off-Season Storage and Wintertime Use" in Section 6). Otherwise, the gear oil never requires changing, unless you know or suspect that it has become contaminated with dirt, sand or metal particles.

A. To Check the Power Unit Transmission:

1. Start with the tiller on level ground. Then, pull the Depth Regulator Lever back and then all the way up until the tines are on the ground—see Photo 1/9.
2. Using a 3/8" wrench, remove the Oil Level Check Plug from the left side of the transmission housing (just above the wheel shaft), as shown in Photo 1/10. Note that it may take some extra effort to loosen the plug, due to paint hardening on the threads.
3. If the oil level is correct, oil should start to seep out of the hole when the plug is removed. If it does, securely replace the plug. The level is correct, and you can go on to Part B of this Step.
4. If oil DOES NOT seep out of the hole, then check the level further by tilting the machine slightly on its side. Do this by running the right-side wheel up on a board about 1" thick. If oil seeps out of the hole while at this slight incline, it indicates that only a small amount of oil will be required in order to "top-off" the oil level. On the other hand, if there is still no sign of oil while the tiller is thus inclined, then the oil level may be dangerously low. In either situation, be sure to add the correct amount of gear oil before operating your machine.

For instructions on how to add gear oil, please refer to Section 6.



1/9—Pull Depth Regulator Lever back and up to lower tines.



1/10—Remove oil level check plug from left side of Power Unit Transmission.

B. To Check the Tine Attachment Transmission:

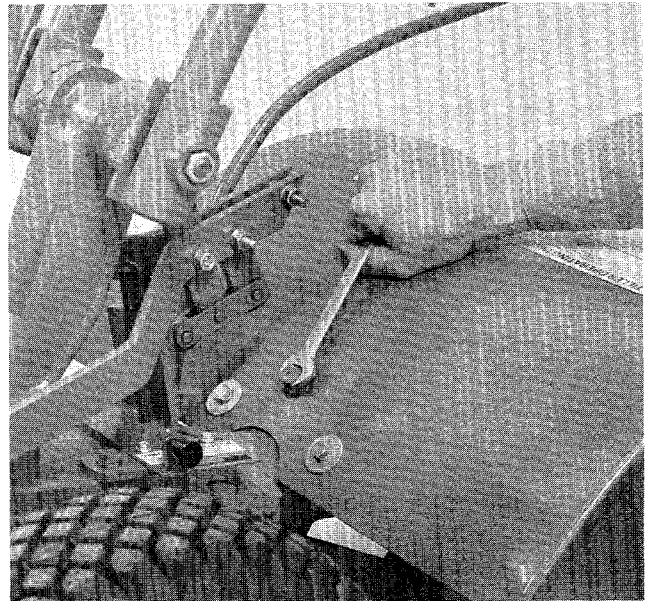
1. With the tiller on level ground, pull the Depth Regulator Lever back and then push it all the way DOWN until it engages the top notch in the lever. The tiller should now be resting on the drag bar that is beneath the tines.
2. When taking a "Cold" reading of the oil level (as with your brand-new tiller), the drag bar must be raised approximately 3½" off the ground. Do this now by propping up the drag bar with a board or brick.
3. Let the tiller rest in this position for at least two minutes (or much longer, if air temperature is below 40°F). This will allow the gear oil in the back of the tiller housing to flow forward.
4. Using a 9/16" open-end wrench, remove the Oil Level Dipstick that is located at the front of the tine hood—see Photo 1/11. Wipe the dipstick with a clean lint-free rag. **IMPORTANT:** Before removing dipstick, always clean off area around plug to prevent dirt from entering transmission.
5. Hold the dipstick so that the side with the MARKINGS on it faces to the REAR of the tiller. Then, while holding it STRAIGHT UP AND DOWN, lower it gently into the oil sump hole until the end touches the drive shaft inside the housing—see Photo 1/12.

IMPORTANT: Do not force, or try to thread the dipstick into the hole. Doing so will bend the dipstick and result in an incorrect reading.

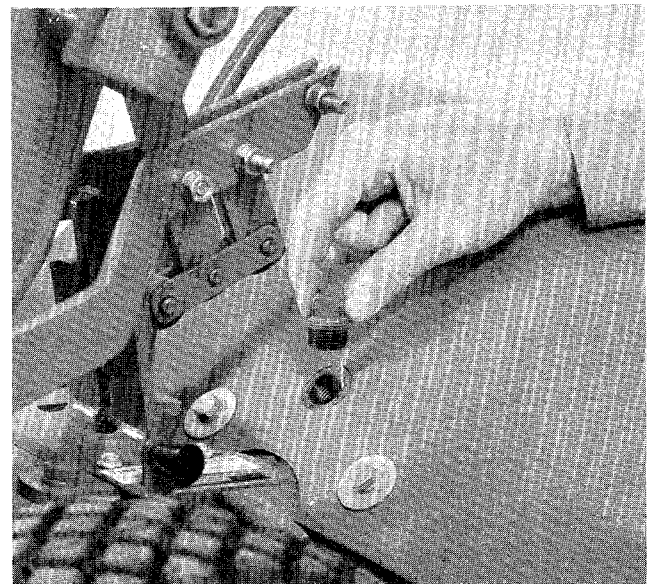
6. After waiting a few seconds, carefully remove the dipstick and look at the markings. The oil level is correct if there is oil showing *anywhere* within, or above, the "Cold" range area—see Sketch 1/13.
7. If there is no oil showing on the dipstick, then the level is low and you must add gear oil to the oil sump hole before operating the tiller. Please see Section 6 for instructions on how to add gear oil.
8. After checking or adding gear oil, replace the dipstick securely.

IMPORTANT

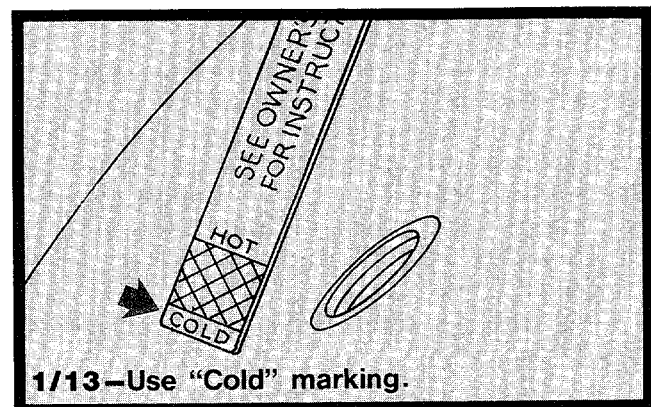
There are two large swing-bolts that hold the Power Unit and Tine Attachment transmissions together. These bolts (see Photo 5/65 on Page 93) must be kept very tight at all times. Failure to do so could cause excessive wear on the locating pin of the Power Unit, and enlargement of the locating hole of the Tine Attachment. Check the bolts for tightness after each 2½ hours of operation.



1/11—Remove oil level dipstick from Tine Attachment transmission.



1/12—Hold dipstick straight up and down, with markings facing rear of machine. Insert into sump hole until end touches drive shaft inside housing.



1/13—Use "Cold" marking.

GT 32⁰²
PINT 16⁰²

Step 3

Check Engine Oil Level

The engine crankcase was filled at the tiller factory with SAE #30 viscosity, SF classified MOTOR OIL. However, before operating your engine the first time, you should check the oil to be sure the level is correct. See the simple checking instructions below, or on Page 12, that apply to your particular engine.

We recommend straight, #30 viscosity oil for 6HP and 7HP engines in outdoor temperatures above 32°F, and for 8HP engines in temperatures above 40°F. For colder temperatures, drain the oil from the crankcase and replace it with new oil as specified in the lubrication table on Page 114.

Always check the oil level prior to starting the engine and after each five hours of operation. **DO NOT RUN THE ENGINE UNLESS THE PROPER OIL LEVEL IS MAINTAINED.**

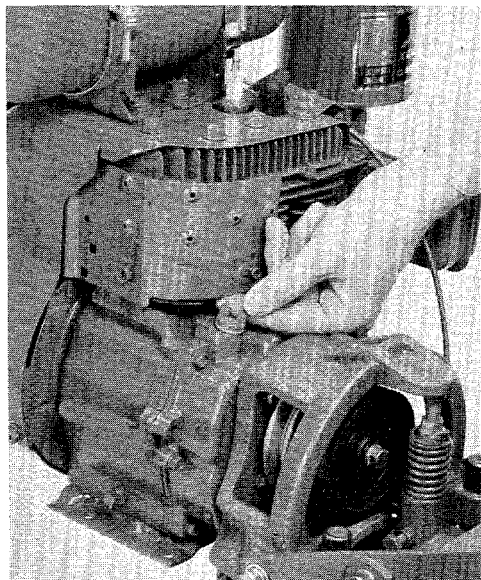
BREAK-IN PERIOD
Change the motor oil after the first two hours (6HP model), or after the first five hours (7HP and 8HP models) of new engine operation. See Page 114.

After the initial break-in oil change, be sure to faithfully change the oil after each 10 hours of operation, or even sooner if operating in extremely dusty, dirty or dry conditions.

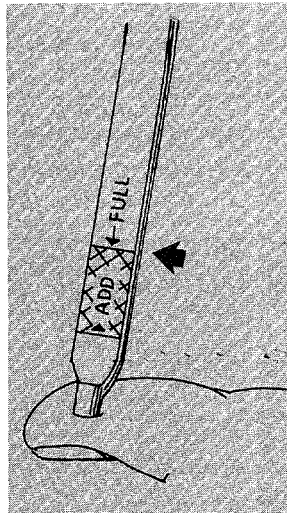
To Check the 6HP Tecumseh Engine:

1. With the machine on level ground, pull the Depth Regulator Lever back and then push it all the way DOWN until it engages the top notch. This action places the base of the engine at a slight incline. Always incline the engine in this manner when checking or adding oil. NOTE: Check or add oil only while the engine is stopped.
2. Unscrew and remove the dipstick from the oil fill hole on the left side of the engine—see Photo 1/14. IMPORTANT: Before checking, clean area around dipstick and oil fill area to keep dirt from entering engine.

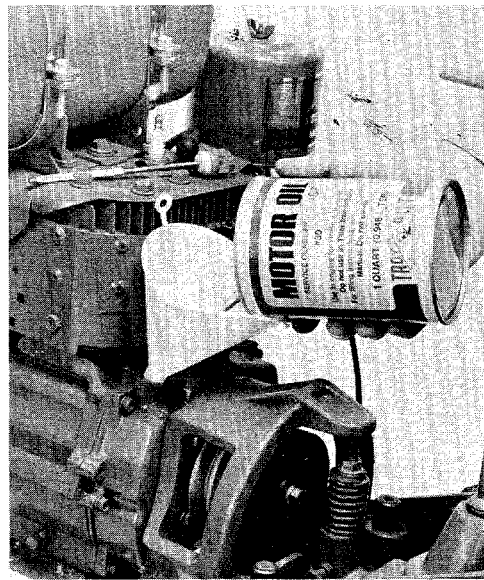
3. Wipe the dipstick with a clean lint-free rag, and screw it slowly back into the fill hole until tight. Wait a few moments, then remove the dipstick again and read the scale at the end of the stick—see Sketch 1/15. The oil level should be up to, but not over, the “Full” line on the stick. ALWAYS MAINTAIN OIL LEVEL AT THE “FULL” LINE.
4. If the oil level is low, add fresh oil to the oil fill hole until it reaches the “Full” line—see Photo 1/16. DO NOT OVERFILL. NOTE: A completely empty crankcase will hold approximately 19 ounces of oil, but always use the dipstick as a final guide.
5. Securely replace the dipstick.



1/14—Remove 6HP engine dipstick.



1/15—Keep oil level up to “Full” line on 6HP engine dipstick.



1/16—Add motor oil if needed.

To Check the 7HP Kohler Engine:

1. Start with the machine on level ground. Then, level the base of the engine by placing a board or similar flat object beneath the tines. Always level the engine base when checking or adding oil. NOTE: Check or add oil only while the engine is stopped.

2. Using a 9/16" wrench, unscrew and remove the dipstick from the oil fill hole on the left side of the engine—see Photo 1/17. IMPORTANT: Before checking, clean area around dipstick and oil fill area to keep dirt from entering engine.

3. Wipe the dipstick with a clean lint-free rag, and insert the dipstick into the fill hole. DO NOT

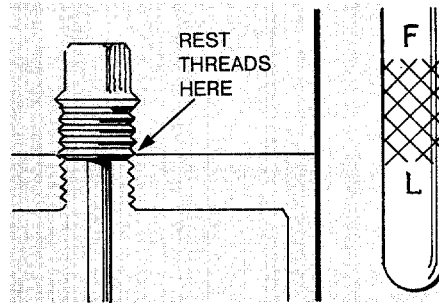
thread the dipstick in. Instead, rest the bottom of the threaded plug on top of the hole, as shown in Sketch 1/18. Wait a few moments, then remove the dipstick and read the scale at the end of the stick—see Sketch 1/18. The oil level should be up to, but not over, the "F" mark on the stick. ALWAYS MAINTAIN OIL LEVEL AT THE "F" MARK.

4. If the oil level is low, add fresh oil to the fill hole until it reaches the "F" mark—see Photo 1/19. DO NOT OVERFILL. NOTE: A completely empty crankcase will hold approximately 2½ pints of oil, but always use the dipstick as a final guide.

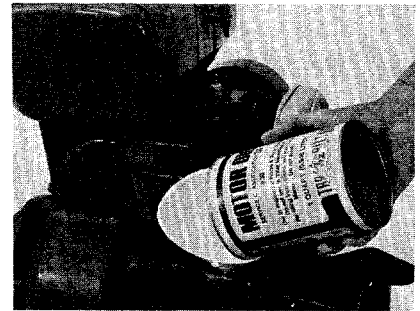
5. Securely replace the dipstick.



1/17—Remove 7HP engine dipstick.



1/18—Correct way to measure oil level of 7HP engine.



1/19—Add motor oil to 7HP engine if needed.

To Check the 8HP Briggs & Stratton Engine:

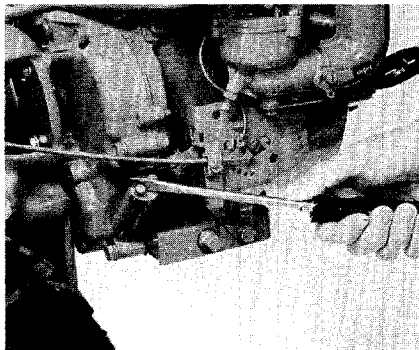
1. Start with the machine on level ground. Then level the base of the engine by placing a board or similar flat object beneath the tines. Always level the engine base when checking or adding oil. NOTE: Check or add oil only while the engine is stopped.

2. Unscrew the oil fill plug on the right side of the engine and place it on a clean surface—see Photo 1/20. There is also an oil fill plug on the left side of the engine, but that should not be used. IMPORTANT: Before checking, clean area around fill plug to keep dirt from entering engine.

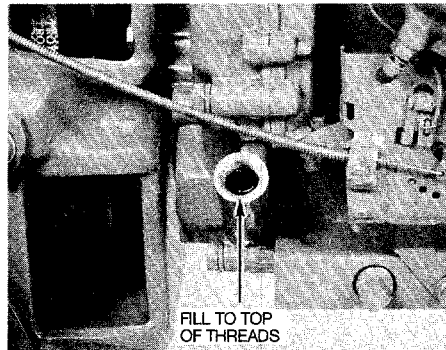
3. Your engine does not have a dipstick. Instead, the oil level is checked by looking into the oil fill tube. The level is correct if it is filled right to the top of the tube, ready to flow over the edge—see Photo 1/21. ALWAYS MAINTAIN OIL LEVEL AT THE POINT OF OVERFLOWING.

4. If the oil level is low, add fresh oil to the fill tube until it reaches the top of the threads—see Photo 1/22. NOTE: A completely empty crankcase will hold approximately 2¾ pints of oil, but always fill to the point of overflowing.

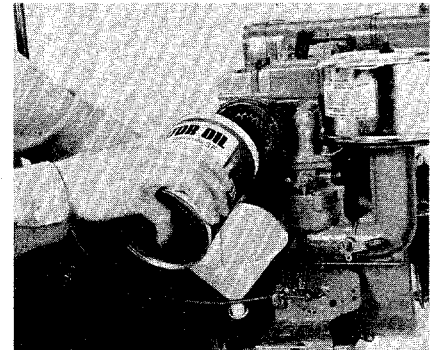
5. Securely replace the oil fill plug. *4402*



1/20—Remove 8HP engine oil fill cap.



1/21—Maintain 8HP oil level at overflow point.



1/22—Add motor oil to 8HP engine if needed.

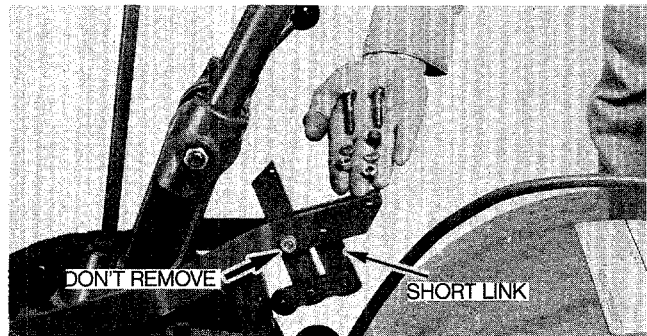
Step 4

Attach the Forward/Neutral/Reverse Lever

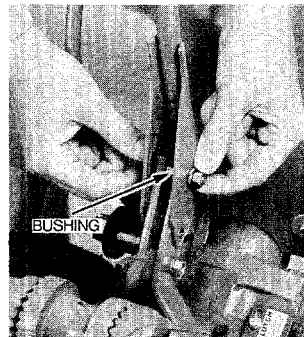
This lever, which was stapled to the bottom of the shipping carton, provides engine power to the tiller transmission when you want to go in Forward or Reverse. It also has a Neutral position that stops the wheels and tines from turning. To attach the lever, you'll need the Clutch Pawl Spring that came in your literature package.

To Attach the Lever:

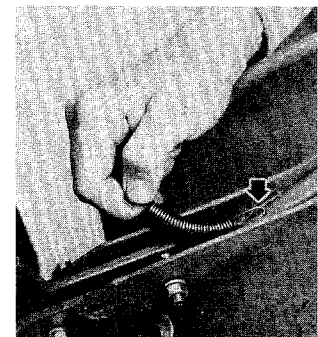
- 1.** Raise the Handlebars up out of the way by loosening the Height Adjustment Stud located to the right of the Handlebar Base. The Handlebars will have to be almost straight up and down to give you ample working room.
- 2.** Using two $\frac{1}{2}$ " wrenches, remove the Nut, Lockwasher, Bushing and Bolt from the hole closest to the rear of the Clutch Yoke Assembly—see Photo 1/23.
- 3.** Now, remove the Nut, Lockwasher and Bolt from the hole in the center of the Yoke (Photo 1/23). Please note the location of the short upright Link that fits between the Yoke. Usually the Link will stay in position when you remove the Bolt. If it doesn't, be sure to replace it (along with its Bushing) inside the Yoke before attaching the Lever.
- 4.** As shown in Photo 1/24, slide the Lever down over the Yoke and align the uppermost hole in the Lever with the hole at the rear of the Yoke. Now insert the Bushing inside the Yoke and push the Bolt through (if necessary, tap the Bolt head gently with a hammer, taking care not to damage the threads as they pass through the assembly). Finally, add the Lockwasher and Nut, threading them on fingertight.
- 5.** Before attaching the Clutch Pawl Spring, note that one of its hooks has a wider opening than the other. Insert the hook having the WIDEST OPENING inside the small hole in the Lever, with the end of the hook going DOWN inside the hole (Photo 1/25).
- 6.** Next, tilt the Lever up towards the handlebars and attach the other hook all the way through the hole in the tall vertical link, as shown in Photo 1/26. You may need pliers to help insert the Spring through the hole.
- 7.** Pull the Lever back down and install the second Bolt through the Lever, Yoke and Link. Add the Lockwasher and Nut.
- 8.** Using two wrenches, tighten the nuts enough to just flatten the lockwashers, as shown in Photo 1/27.



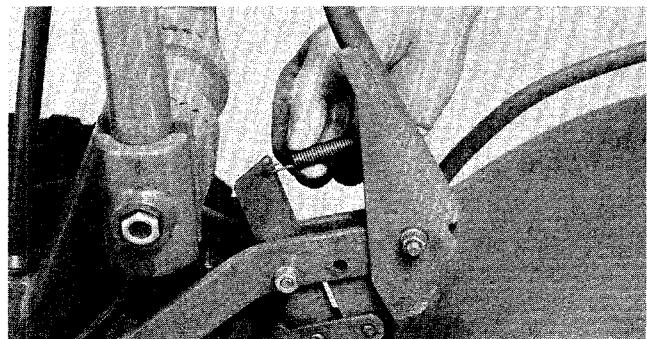
1/23—Remove hardware from yoke assembly.



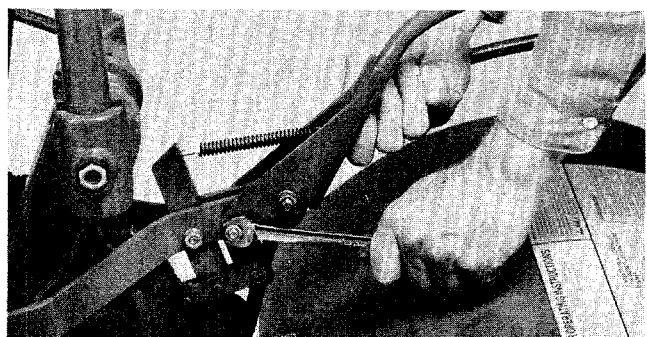
1/24—Insert bolt through lever, yoke and bushing.



1/25—Largest hook on spring goes into lever.



1/26—Lift lever up and hook spring through link.

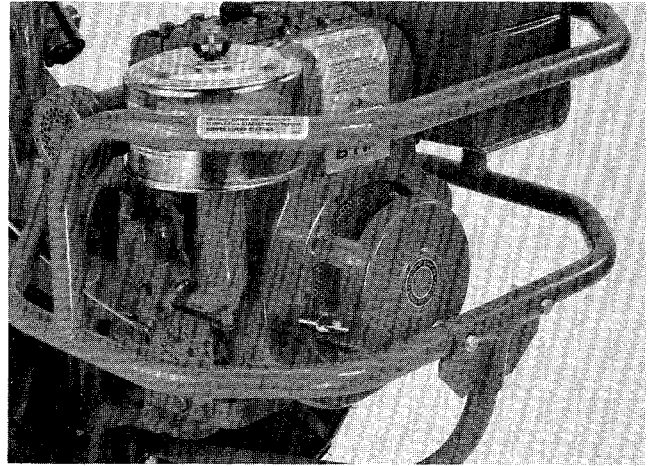


1/27—Add second bolt and tighten both securely.

If You Have a Wraparound Bumper/Guard . . .

If you received a Wraparound Bumper/Guard with your new tiller (supplied with all 8HP Engines; optional with 6HP and 7HP engines), then you should install it now. Detailed instructions for doing so are contained in the separate bumper shipping carton.

After installing the bumper, be sure to return to these Easy Assembly Steps and install the Throttle Cable.



1/28—Install your Bumper/Guard before attaching the throttle cable.

Step 5

Attach the Engine Throttle Cable

The Engine Throttle Cable should be carefully uncoiled from the top of the tiller and laid along the right side of the tiller. Be careful not to kink the cable, or to put undue stress at the engine connection.

We adjust the throttle control settings at the factory and ship it coiled this way to make sure it is properly adjusted once it is attached to the handlebars. All you need to do is attach the throttle lever to the right side handlebar, as described below.

To Attach the Throttle Cable

1. Remove the two Screws from the right side Handlebar. As shown in Photo 1/29, align the holes in the Throttle Lever with the holes in the Handlebar and securely replace the two screws.

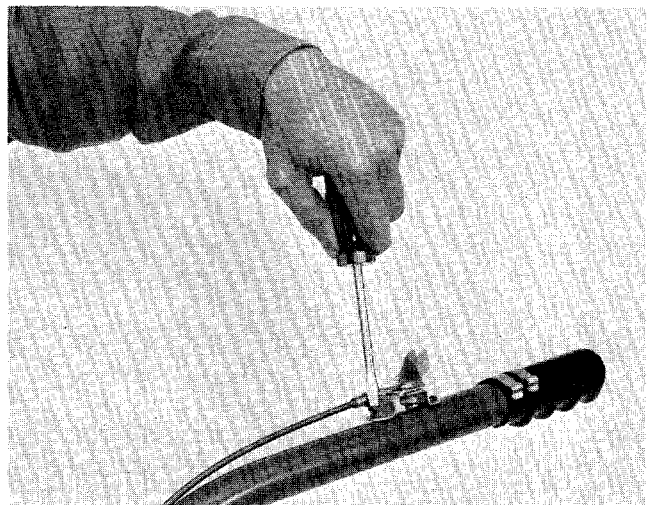
2. The Throttle Cable should be routed down the right Handlebar and directly across to the Engine (Photo 1/30). Note that there should be some slack in the Cable between the bottom end of the Handlebars and the Engine. This slack permits you to swing the Handlebars to either side without putting stress on the Engine connection point.

SPECIAL CAUTION FOR ELECTRIC START TILLERS

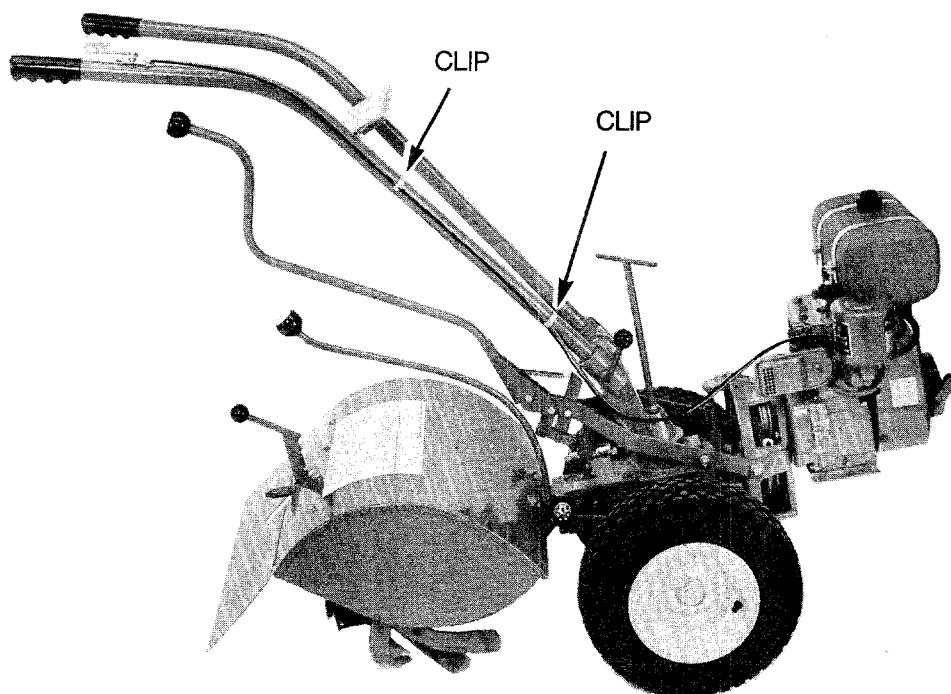
On electric start tillers, make sure that the Throttle Cable doesn't touch any part of the Battery. Doing so could short out and damage the Battery, as well as melt the Throttle Cable. As shown

in Photo 1/31, the Cable should be routed below the battery.

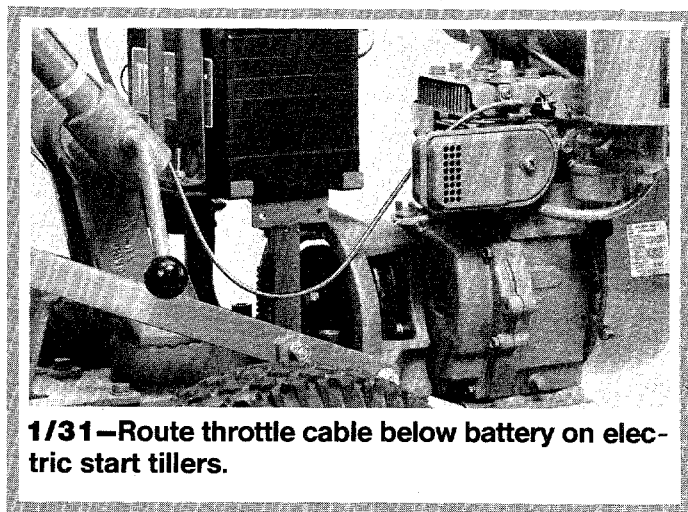
3. To hold the Cable securely in place, use the two metal Clips that are on the right side handlebar grip. Place one Clip about 6" below the Control Panel and the other about 8" above the bottom end of the Handlebars. To install the Clips, lay the Cable under the small raised portion of the Clip and then push the Clip back into place—see Photo 1/32. Note that the Clips are not designed to fit all the way around the Handlebars.



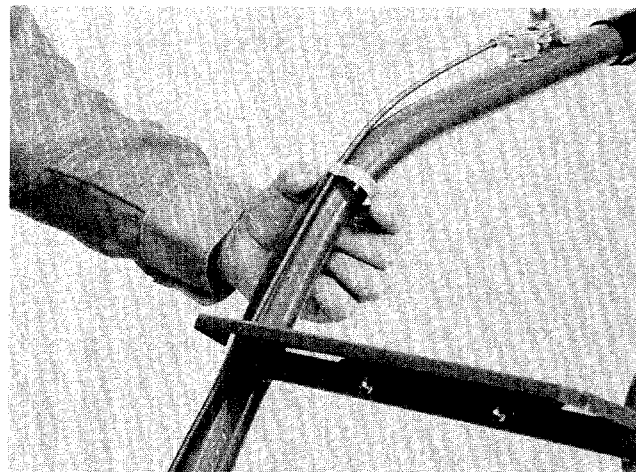
1/29—Attach the throttle lever to the right side handlebar.



1/30—Cable runs down handlebar and over to engine.



1/31—Route throttle cable below battery on electric start tillers.



1/32—Use cable clips to hold the cable in place.

IMPORTANT!

GET TO KNOW YOUR TILLER BEFORE ATTEMPTING TO OPERATE IT.

If you have a manual start (rope recoil) engine, your tiller should be fully assembled now. If you have an electric start engine, then continue with Step 6 of these Easy Assembly Steps.

Please! . . . Before trying to start the engine or operate your tiller, be very certain that you **FIRST**:

- 1.** Read the Safety Precautions in Section 2.
- 2.** Study the photographs in Section 3 locating

the tiller controls and compare the photos with the actual controls on your tiller.

- 3.** Work the tiller controls, without the engine running, until you fully understand what each does.
- 4.** Familiarize yourself with all of the engine controls (see Section 4 of this manual and the engine manufacturer's Owner's Guide).
- 5.** Learn how to operate the tiller, as described in Section 5.

Step 6

Preparing the Electric Start System For Use

Your electric start engine provides you with the convenience of key-switch starting, much like an automobile. A simple turn of the key starts and stops the engine, and when the key is removed there is some additional security against unauthorized use of your tiller (especially by children).

For Safety, always remove the key when you are done tilling for the day, and keep both keys in a secure, but easily remembered place.

Please don't try to start your engine with the key switch until you have read all of the starting and stopping information in Sections 3 and 4 of this manual. If you should encounter any problems with your electrical system either now, or later, you should refer to "Troubleshooting the Electric Start System" in Section 7.

As shown in Photos 1/33 and 1/34, the 6 HP and 8 HP engines share the same battery and bracket assembly, key start system, and solenoid. The only differences between the two systems are: how their recharging lines are connected; the location of shutoff lines (green wire), and only the 6 HP engine has a fuse in its recharging line (not needed on the 8 HP engine).

Your tiller was shipped with the battery installed in its bracket for safe shipment. However, the battery is "dry", and it cannot be used until it has been activated with electrolyte. The following steps

explain how to remove the battery for activation at a qualified service center and how to properly replace it in its bracket. For safety, please follow each step carefully and observe all of the accompanying Cautions and Warnings.

You will need the following open-end wrenches: 1/2" (two), 7/16", 3/8".

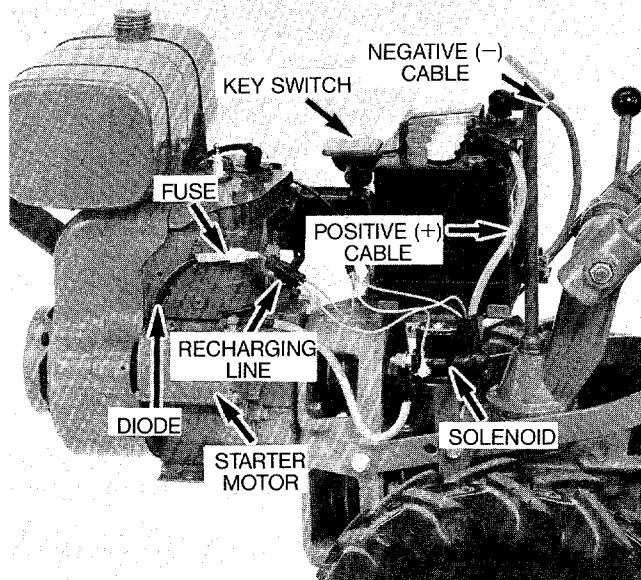
Parts Checklist

Before beginning, make sure that you have the loose electric start parts that came in a plastic bag inside your literature envelope. Those parts are shown in Photo 1/35 and described below:

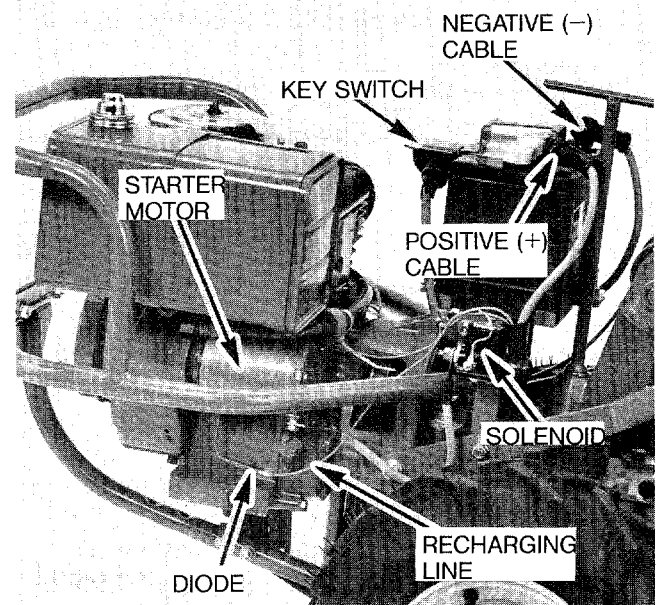
- Negative Battery Cable: for connecting negative battery terminal with ground.
- Rubber Boot: for covering negative battery terminal connection.
- Grounding Screw (self-threading, 1/4"-20 x 1/2"): for connecting negative cable to ground.
- Two Battery Terminal Bolts (hex hd., 5/16"-18 x 3/4") and Nuts (hex, 5/16"-18): for connecting battery cables to battery.

Step A:

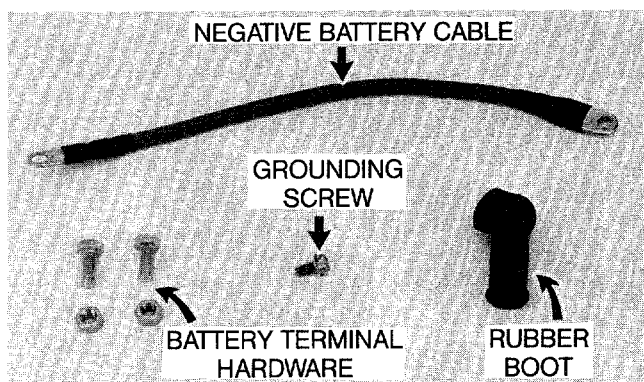
To ready your 12-volt, lead-acid battery for use, each cell must be filled with the correct amount of electrolyte (battery grade acid with a specific gravity of 1.265). Because working with battery acid is dangerous work, we strongly recommend that you remove the battery from the tiller (see Step B) and



1/33—View of 6HP electric start engine.



1/34—View of 8HP electric start engine.



1/35—Electric start assembly parts.

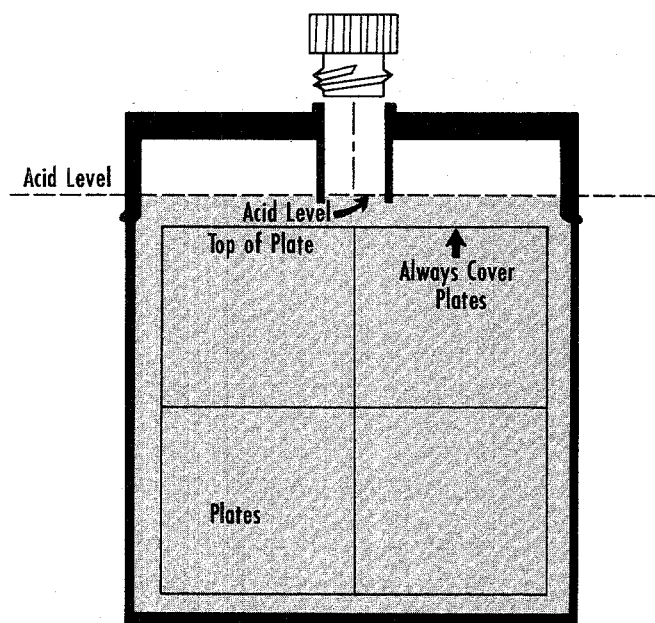
have it activated at a qualified service station, battery store, or farm and garden equipment center. There, you can have the battery safely activated and tested in a very short time. Please do not attempt to activate it yourself unless you are fully experienced in battery service work.

The six cells of the battery hold a total of slightly less than 1¾ quarts (56 ounces) of electrolyte. No water or other liquids should be added during the initial activation (later, distilled water or demineralized water may be added to the battery to replace water that has “boiled off”).

Each cell should be filled until the electrolyte just covers the level indicator ledge, as shown in Sketch 1/36. After filling, wait 30 minutes and recheck the level in each cell. Add more acid, if needed. The acid temperature and the state of charge should then be tested. The temperature

must be at least ^{Battery} the state of charge must be good (specific gravity must be at least 1.250).

It's unlikely that the battery will need a “start-up” charge. However, if testing indicates that the state of charge is not adequate for a new battery, then either a small trickle charge, or a charge not exceeding 4 to 6 amperes can be used. Do not exceed a 6 amperes charging rate as it could permanently damage the battery.



1/36—Always keep plates covered with acid.

BATTERY SAFETY CAUTIONS AND WARNINGS

● **POISON! DANGER!—CAUSES SEVERE BURNS!** Battery contains sulfuric acid. Avoid contact with skin, eyes, or clothing. Always shield eyes when working near battery. Wear safety glasses.

ANTIDOTE: External—Flush with water. **Eyes**—Flush with water for 15 minutes and get prompt medical attention.

ANTIDOTE: Internal—Drink large quantities of water or milk. Follow with Milk of Magnesia, beaten egg, or vegetable oil. Call physician immediately.

BATTERIES PRODUCE EXPLOSIVE GASES. Keep sparks and flames away. Do not smoke. Ventilate when charging or using in enclosed space.

KEEP OUT OF REACH OF CHILDREN.

● Never touch the positive battery post and any other surrounding metal with tools, jewelry, or other metal objects. Doing so could cause a short circuit that could result in elec-

trical burns or an explosion of battery gases.

● Never bring a gasoline can near the battery posts. A short circuit caused by touching the positive post and any metal could cause an explosion of the gasoline or of battery gases.

● An insulated rubber boot fits over each of the two battery posts and on the positive cable connection of the solenoid. Always keep these boots in place in order to prevent the possibility of a short circuit.

● Never attempt to “jump” the tiller battery with an automobile battery or its charging system. Doing so could result in serious personal injury or property damage from such causes as a battery explosion, or acid or electrical burns.

● Before working with the electric start system, always remove the spark plug wire from the spark plug to prevent accidental engine starting.

Step B:

To remove the battery for initial servicing, use a $7/16$ " wrench to remove the two $1\ 1/2$ "-long carriage bolts, $1/4$ " lockwashers, and $1/4$ " hex nuts that secure the legs of the hold-down clamp to the battery bracket (save this hardware for re-use). Lift the clamp off the battery (see Photo 1/37) and set it aside, being careful not to overstretch the wire harness that is plugged into the bottom of the key switch plate. If the key is in the switch, turn it to "OFF" and remove the key.

NOTE: If you received a Bumper/Guard Attachment with your tiller, you should install it at this time, while the battery is removed.

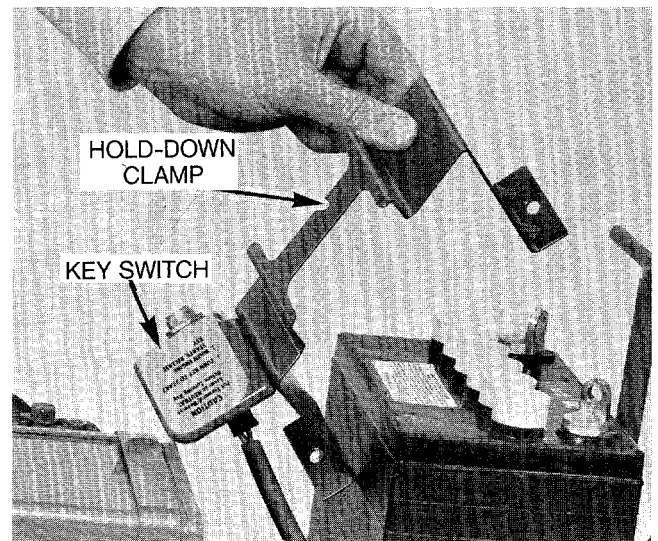
Step C:

Once your battery has been activated, it's simple to hook it up to the electrical system as explained in the following steps. Before beginning, remove any rings, metal watch bands, and other jewelry. Wear eye protection. Then, loosen the T-Bar and remove the handlebars from the tiller, setting them gently aside (don't overstretch the throttle cable) on a clean surface—see Photo 1/38. (The handlebars are removed as a safety precaution so that you will not touch the T-Bar and positive battery post with a metal wrench, which could cause a short circuit.)

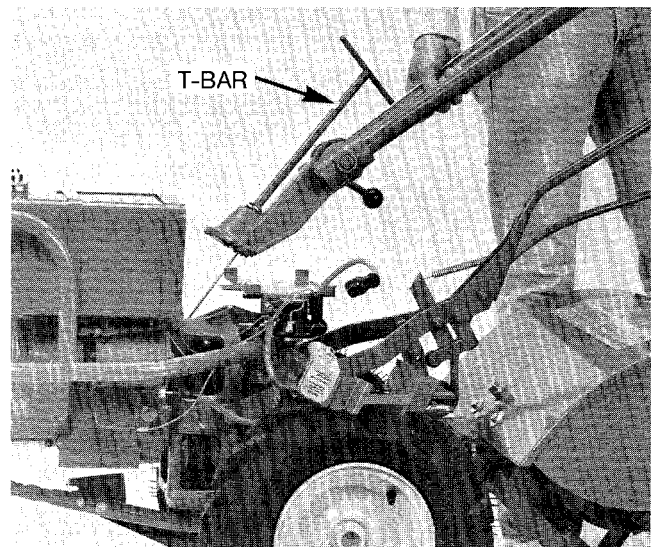
Step D:

Put the battery back on the bracket making sure that the battery posts are facing the rear (tines end) of the tiller—see Photo 1/39. The positive (+) post must be on the left side of the tiller as you view it from the operator's (handlebars) position.

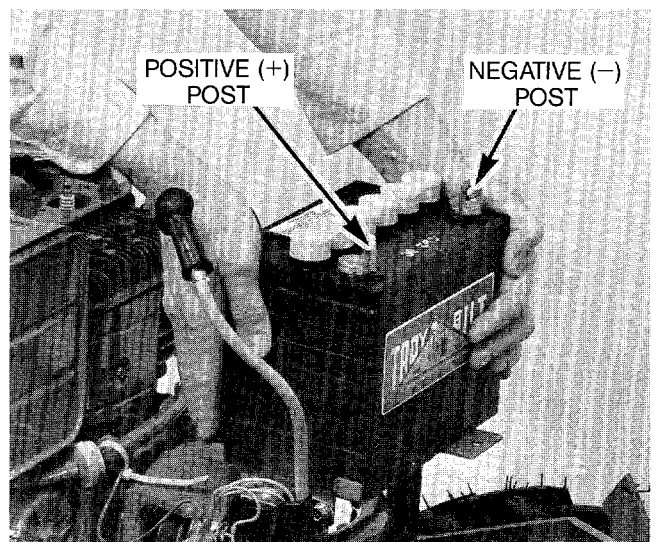
CAUTION: If the battery is installed in reverse, damage can result to the battery and to other parts of the electrical system.



1/37—Remove battery hold-down clamp.



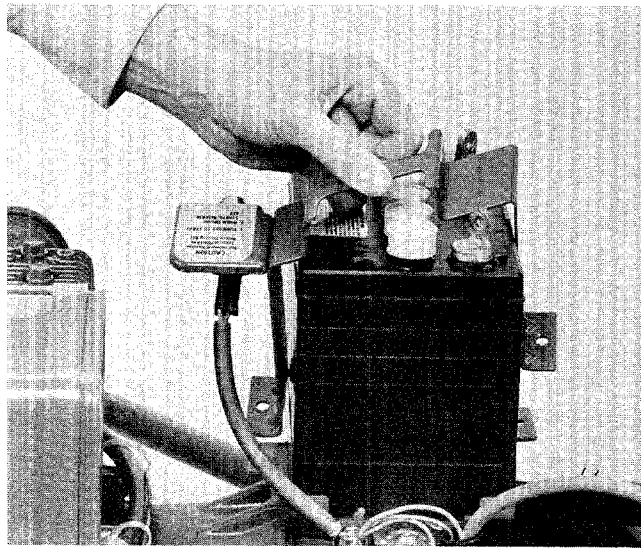
1/38—Loosen T-Bar and remove handlebars.



1/39—Battery posts face to rear of tiller.

Step E:

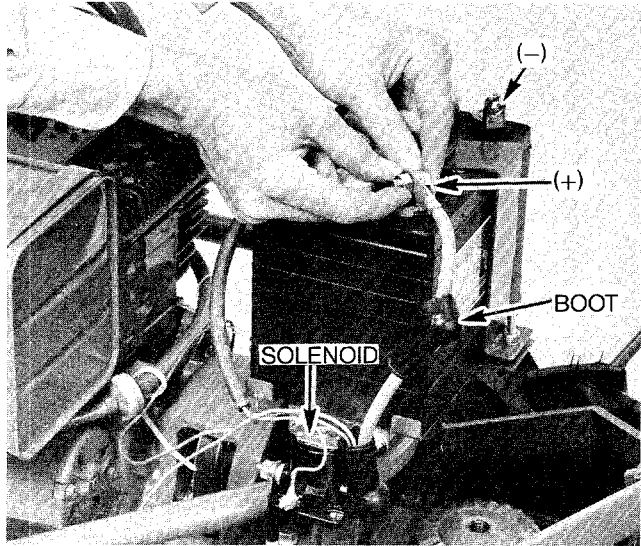
Place the hold-down clamp over the battery, making sure that the Key-Switch Plate faces the front (engine end) of the tiller—see Photo 1/40. Using a $7/16$ " wrench, fasten the front and back of the clamp, using the two $1\ 1/2$ "-long carriage bolts, $1/4$ " lockwashers, and $1/4$ " nuts that you removed in Step B. Insert the bolts UP through the bracket and clamp, and add the lockwashers and nuts. Tighten both sides of the clamp evenly. The clamp should be secure, but do not over-tighten, which would bend the tabs.



1/40—Attach hold-down clamp to bracket.

Step F:

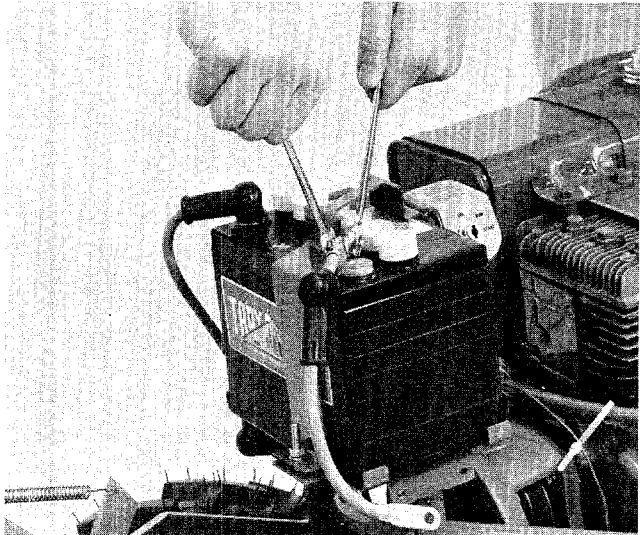
One end of the positive (+) cable is already connected to the solenoid. Connect the loose end of this cable to the positive (+) post on the left side of the battery—see Photo 1/41. Place the cable terminal on the side of the post nearest the battery caps and insert one of the $3/4$ "-long bolts that came in your parts package. The head of the bolt should be facing the operator's (handlebar) position. Add the nut and tighten securely with two $1/2$ " wrenches. Slide the rubber boot (factory installed on cable) over the connection, making sure that it is snug.



1/41—Connect positive cable to positive post.

Step G:

Remove the negative (-) cable and rubber boot from the parts package and insert the cable through the boot. Now, connect one end of the cable to the battery's negative (-) post with the remaining bolt and nut—see Photo 1/42. Again, the cable terminal and the nut should be on the side of the post that is closest to the engine. Tighten the bolt and nut securely and then cover the connection with the rubber boot.



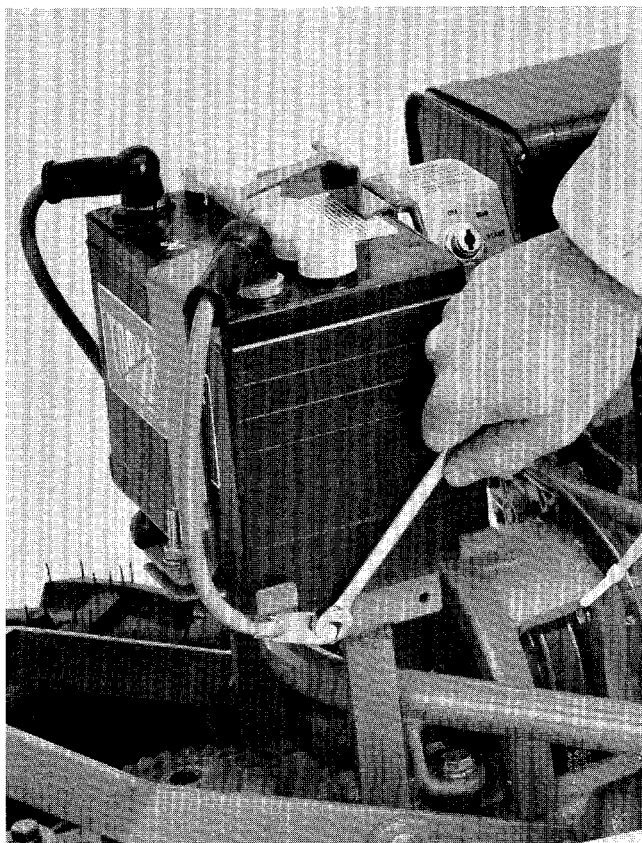
1/42—Connect negative cable to negative post.

Step H:

Connect the lower end of the negative (-) cable to the right side of the battery bracket, using the 1/2"-long self-threading screw (no lockwasher or nut required) from the parts package. First, in order to assure a good ground, scrape away any paint from around the hole in the bracket that is nearer to the rear (tines end) of the bracket. Use a 3/8" wrench to tighten the screw securely—see Photo 1/43. This connection serves as the "ground" for the electrical system.

Step I:

With the battery installed, you can now replace the handlebars on the tiller, being careful not to touch the T-Bar or the handlebars to the battery posts (which should be covered with the rubber boots).

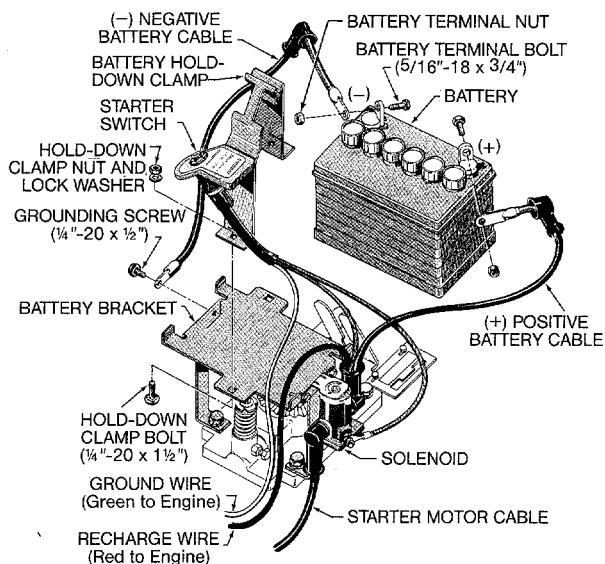


1/43—Connect negative cable to bracket.

CAUTION: Always remove the negative (-) cable before attempting any repairs or maintenance on or near the battery or other parts of the electrical system. Doing so will prevent the possibility of a short circuit from occurring, which might cause an explosion of battery gases, or of carelessly spilled gasoline.

When removing the cable, first disconnect it from the grounding point on the bracket and bend it safely away from the battery and any metal parts of the tiller. Then, disconnect the other end from the battery post.

When replacing the cable, always connect it to the battery post first, and then to the grounding point on the bracket.



1/44—Battery and bracket assembly viewed from front (engine end) of tiller.

DON'T START YOUR ENGINE!

For your safety, do not attempt to start your engine or test the electric start system at this time. Please wait until you have read the Safety Precautions in Section 2, and the Tiller and Engine Operating Information in Sections 3, 4 and 5!