OWNER'S MANUAL 1.6 H.P. 10 INCH TILLER/CULTIVATOR MODEL D1016-080

TWO YEAR LIMITED WARRANTY

For two (2) year from date of purchase by the first consumer for residential use (thirty (30) days commercial use), NOMA Outdoor Products Incorporated warrants that it will replace free of charge, including labor, any original part of any NOMA Outdoor Products Incorporated product found to be defective by any authorized Service Dealer or the factory, except the battery which is warranted for ninety (90) days from date of purchase.

This warranty does not cover engine, transmission, transaxle or differential (these items are covered by their manufacturer's own warranty). This warranty does not cover parts that have failed due to normal wear or parts that have failed subject to misuse or abuse. Transportation of the unit or part to and from an authorized Service Dealer or factory is the responsibility of the owner.

A step by step explanation as to what procedure should be followed for this Warranty is:

- If a part becomes defective, contact the store where the unit was purchased for the name and address of the authorized Service Dealer nearest to you.
- If you cannot locate an authorized Service Dealer, write Service Department of NOMA Outdoor Products Incorporated for the name and address of the authorized Service Dealer in your area or call the Service Department at 1-901-422-1690.
- 3. Return the defective product, along with proof of purchase to such authorized Service Dealer for replacement of any defective part where covered by this warranty.

There is no other express warranty. Implied warranties, including those of merchantability and fitness for a particular purpose are limited to two(2) year from date of purchase. Liability for incidental or consequential damages are excluded.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

NOMA Outdoor Products Incorporated

Caller 8000

Jackson, TN 38308-8000

-UNIT PARTS AND SERVICE

Fill in and mail the registration card packed with the unit. For service other than covered in this manual, contact an authorized service dealer. A nationwide parts and service organization has been established to provide locally available parts and service. A list of authorized parts distributors has been included in this manual. When ordering repair parts, always give the following information: 1. The Part Name; 2. The Part Number; 3. The Quantity desired; 4. The Complete Model Number of the unit. The model number will be found on a plate attached to the unit.



Look for this symbol. It means - ATTENTION! BECOME ALERT! A HAZARD TO OPERATOR, BYSTANDER, PROPERTY OR EQUIPMENT MAY EXIST.

NOMA Outdoor Products Incorporated Caller 8000

Part No. 326364

45/92

Price \$5.00



SAFETY RULES

THESE SAFETY RULES ARE FOR YOUR PROTECTION. READ THEM CAREFULLY



IMPORTANT

SAFETY STANDARDS REQUIRE OPERATOR PRESENCE CONTROLS TO MINIMIZE THE RISK OF INJURY. YOUR TILLER/CULTIVATOR IS EQUIPPED WITH SUCH CONTROLS. DO NOT ATTEMPT TO DEFEAT THE FUNCTION OF THE OPERATOR PRESENCE CONTROL UNDER ANY CIRCUMSTANCES.

BEFORE USE

- Read the owner's manual carefully. Be thoroughly familiar with the controls and the proper use of the tiller/cultivator. Know how to stop the tiller/cultivator and disengage the controls quickly.
- Do not operate the tiller/cultivator without wearing adequate outer garments. Wear footwear that will improve footing on slippery surfaces.
- Keep the area of operation clear of all persons, particularly small children and pets.
- Thoroughly inspect the area where the tiller/ cultivator is to be used and remove all foreign objects.

FUEL SAFETY

- Handle fuel with care; it is highly flammable.
- Use an approved container.
- Check fuel supply before each use, allowing space for expansion as the heat of the engine and/or sun can cause fuel to expand.
- Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors. Replace fuel tank cap securely and wipe up spilled fuel.
- Never remove the fuel tank cap or add fuel to a running or hot engine.
- Never store fuel or tiller/cultivator with fuel in the tank inside a building where fumes may reach an open flame.

OPERATING SAFETY

- Never allow children or young teenagers to operate the tiller/cultivator. Keep them away while it is operating. Never allow adults to operate the tiller/cultivator without proper instruction.
- Always wear safety glasses or eye shields during operation or while performing an adjustment or repair to protect your eyes from foreign objects that may be thrown from the tiller/cultivator.
- Do not put hands or feet near or under rotating parts.
- Exercise extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic.
- Exercise caution to avoid slipping or falling.
- Never operate the tiller/cultivator without proper guards, plates, or other safety protective devices in place.
- Never operate the tiller/cultivator at high transport speeds on slippery surfaces. Look behind and use care wherebacking.

- Never allow bystanders near the tiller/cultivator.
- Keep children and pets away while operating.
- Never operate the tiller/cultivator without good visibility or light.
- Do not run the engine indoors. The exhaust fumes are dangerous (containing CARBON MONOXIDE, an ODORLESS and DEADLY GAS).
- Take all possible precautions when leaving the tiller/cultivator unattended. Stop the engine.
- Do not overload the tiller/cultivator capacity by attempting to till too deep at too fast a rate.

SAFE STORAGE

- Always refer to the owner's manual instructions for important details if the tiller/cultivator is to be stored for an extended period.
- Never store the tiller/cultivator with fuel in the fuel tank inside a building where ignition sources are present such as water and space heaters, clothes dryers, and the like. Allow the engine to cool before storing in any enclosure.
- Keep the tiller/cultivator in safe working condition.
 Check all fasteners at frequent intervals for proper tightness.

FUEL SAFETY

- After striking a foreign object, stop the engine (motor). Remove the wire from the spark plug, and keep the wire away from the plug to prevent accidental starting. Thoroughly inspect the tiller/cultivator for any damage, and repair the damage before restarting and operating the tiller/cultivator.
- If the tiller/cultivator should start to vibrate abnormally, stop the engine (motor) and check immediately for the cause. Vibration is generally a warning of trouble.
- Stop the engine (motor) whenever you leave the operating position. Also, disconnect the spark plug wire before unclogging the tines and when making any repairs, adjustments, or inspections.
- When cleaning, repairing, or inspecting, shutoff the engine and make certain all moving parts have stopped.
- Never attempt to make any adjustments while the engine is running (except when specifically recommended by the manufacturer).



LOOK FOR THIS SYMBOL TO POINT OUT IMPORTANT SAFETY PRECAUTIONS. IT MEANS ATTENTION!!! BECOME ALERT!!! YOUR SAFETY IS INVOLVED.

OWNER'S INFORMATION
Record the following information about your unit so that you will be able to provide it in case of loss or theft.
MODEL NUMBER: ————————————————————————————————————
PURCHASE DATE: / CODE NO.: SERIAL NO.:
DEALER'S NAME AND ADDRESS:
CITY: STATE: TELEPHONE:

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PARTS

CONTENTS OF SHIPPING CARTON

- 1 10 inch Tiller/Cultivator completely assembled except for the handles, throttle control assembly and hand grips
- 1 Upper Handle
- 1 Right Lower Handle
- 1 Left Lower Handle
- 1 Owner's Manual (Not Shown)
- 1 Bag of Assembly Parts (See Page 5)

TOOLS REQUIRED FOR ASSEMBLY

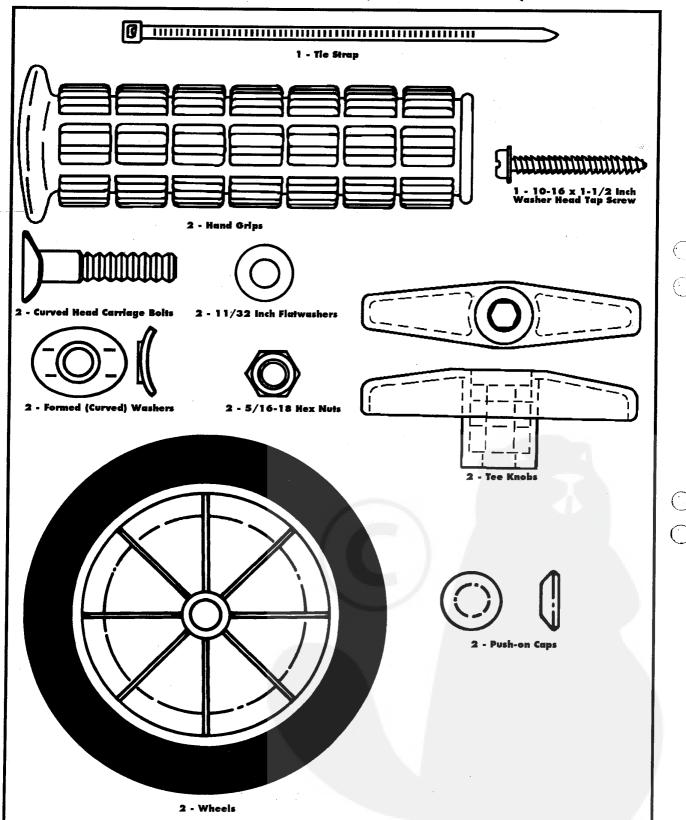
- 1 5/16 inch Wrench (or adjustable wrench)
- 2 7/16 inch Wrenches (or adjustable wrenches)
- 1 Regular Screwdriver
- 1 Pair Scissors
- 1 Hammer

TO REMOVE TILLER/CULTIVATOR FROM CARTON

- Remove plastic parts bag for cultivator from carton.
- Remove handles from the carton.
- Remove remainder of packing material from carton.
- Lift the tiller/cultivator out of carton and place on a hard, level surface.
- Remove packing material from around tines.

PARTS

CONTENTS OF PARTS BAG (shown actual size)



ASSEMBLY



CAUTION: ALWAYS WEAR SAFETY GLASSES OR EYE SHIELDS WHILE ASSEMBLING TILLER/CULTIVATOR.

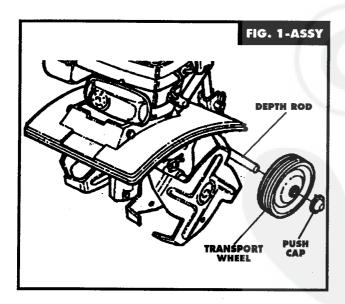
Fig. 1-OP on page 8 shows the tiller/cultivator completely assembled.

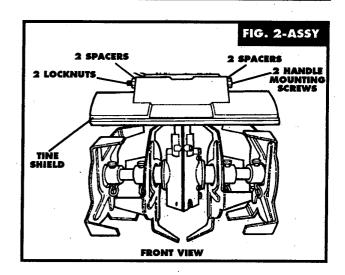
Reference to the right and left hand side of the tiller/cultivator is from the operator's position behind the unit.

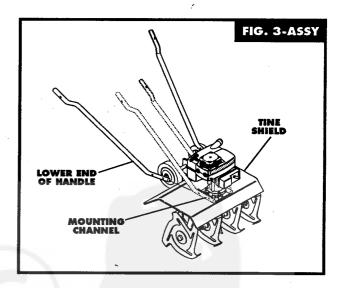
TO INSTALL THE HANDLE ASSEMBLY

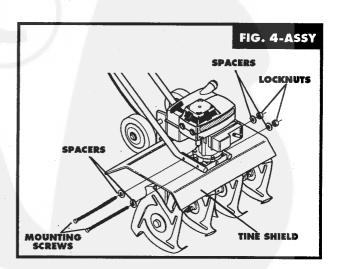
The lower handles have a short bend at the bottom end and are flattened at the top to allow the upper handle to be placed between the lower handles. To assemble the handles, do the following:

- Place a wheel on each side of cross piece on depth rod (See Fig. 1-ASSY). Secure by driving a push nut on cross piece.
- Unwind the throttle control from around the engine and straighten the cable. Be careful you do not kink the cable.
- Remove two locknuts, four spacers and two handle mounting screws from the tine shield (See Fig. 2-ASSY).
- Insert the right side lower handle section into the mounting channel between the tine shield and the engine casting (See Fig. 3-ASSY). Push the mounting screws through the tine shield, handle and approximately half way into the engine casting. Be sure a spacer is on each mounting screw (See Fig. 4-ASSY). It may be necesary to rotate the lower handle to align the mounting holes. To allow proper mounting of the upper handle section be sure the flat portion of the lower handle is facing inward.









ASSEMBLY

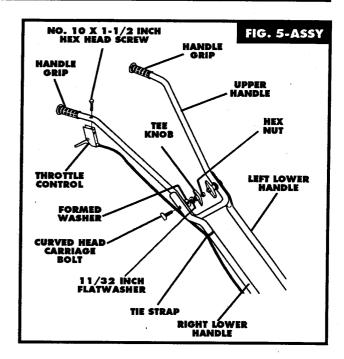
- Position the left side lower handle section into the mounting channel between the tine shield and the engine casting. Align the holes in the handle with the engine casting and the tine shield, then push the mounting screws completely through the engine casting, tine shield and handle. Install a washer onto the mounting screws and secure the lower handle sections using two locknuts previously removed (See Fig. 4-ASSY). Finger tighten the locknuts at this time.
- Place the upper handle between the lower handles (See Fig.5-ASSY) and secure with two curved head carriage bolts, two formed washers, two 11/32 inch flatwashers and two tee knobs on the inside of the handle. You must insert a hex nut into each tee knob. Finger tighten only. Pull back on the tee knob to engage the hex opening with the hex nut. Tighten the tee knob. The nut will be pulled into the cavity and locked. The lower handles have two holes at the top end to allow the upper handle to be positioned at two different heights.
- Using two 7/16 inch wrenches, tighten the locknuts on the screws in the lower ends of the lower handles just enough to hold the lower handles firmly in place.

IMPORTANT: OVERTIGHTENING THE SCREWS ENOUGH TO CHANGE THE SHAPE OF THE HANDLES CAN RESULT IN DAMAGE TO THE ENGINE CASTING.

 Hold the curved head carriage bolt against the outside of the lower handle while tightening the tee knobs securely.

TO INSTALL THE THROTTLE CONTROL ASSEMBLY

- Place a No. 10 x 1-1/2 inch hex head screw down through the hole in the upper handle right side and attach the throttle control to the underside of the handle (See Fig. 5-ASSY).
- Attach the throttle cable to the right lower handle by threading a tie strap through the hole in the lower handle and around the throttle cable on the outside of the handle (See Fig. 5-ASSY).
- Thread the pointed end of the strap through the other (square) end of the strap and pull tight around the throttle cable and lower handle.



NOTE: One side of the tie strap is rough, while the other side is smooth. The rough side must be on the inside of the loop formed when the ends of the tie strap are put together.

- Try to loosen the tie strap. If it will loosen, it is put together with the smooth side to the inside of the loop. Remove the tie strap and reverse the direction.
- Cut off excess strap.

HAND GRIP ASSEMBLY

 Install the hand grips onto the upper handles (See Fig. 5-ASSY). It may be necessary to lubricate the handles with soap and water to aid assembly.

ASSEMBLY

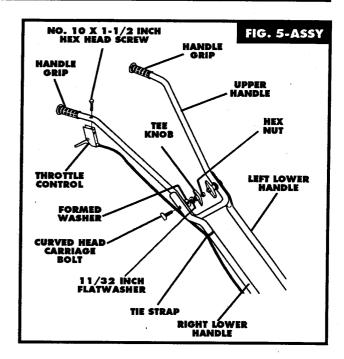
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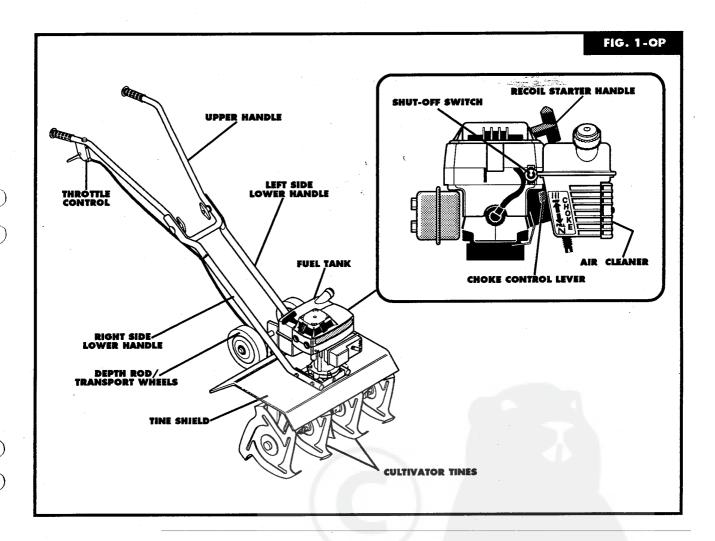
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- Cut off excess strap.

HAND GRIP ASSEMBLY

 Install the hand grips onto the upper handles (See Fig. 5-ASSY). It may be necessary to lubricate the handles with soap and water to aid assembly.

KNOW YOUR TILLER/CULTIVATOR

READ THIS OWNER'S MANUAL AND SAFETY RULES BEFORE OPERATING YOUR TILLER/CULTIVATOR. Compare the illustrations with your tiller/cultivator to familiarize yourself with the location of various controls and adjustments. Save this manual for future reference.



THROTTLE CONTROL - Controls the engine speed and the tine rotation. This tiller/cultivator is equipped with a centrifugal clutch that engages the tine drive system when the engine speed is increased.

CHOKE CONTROL LEVER - Used to assist in starting a cold engine.

SHUT-OFF SWITCH - Used to stop the engine.

STARTER HANDLE - The engine on this tiller/cultivator is equipped with an easy pull recoil starter.

DEPTH ROD/TRANSPORT WHEELS - Used to adjust the depth of the cut. It also acts as a brake to help the operator control the direction and speed of the tiller/cultivator. It is adjusted by removing the hairpin cotter and the clevis pin and moving the depth rod to a different setting. Turn the depth rod with the wheels down to transport the tiller/cultivator.



The operation of this tiller/cultivator can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields while operating the tiller/cultivator.

We recommend standard safety glasses or Wide Vision Safety Mask for over your glasses.



CAUTION: KEEP AWAY FROM THE ROTATING PARTS. ROTATING PARTS CAN CAUSE INJURY.

TO STOP TILLER/CULTIVATOR

- Release the throttle control to stop the tines.
- Move the shut-off switch on the engine to the "OFF" position.

TO OPERATE CULTIVATOR

 Set the depth rod to the desired tilling position as follows:

Remove the hairpin cotter from the clevis pin securing the depth rod (See Fig. 1-OP). Remove the clevis pin and adjust the depth rod upward to dig shallower or downward to dig deeper. Reinstall the clevis pin and hairpin cotter.

- With engine running, tilt the unit back on the depth bar until
 the tines are off the ground and squeeze the throttle
 control all the way up against the hand grip. The engine is
 governor controlled and should be run at full throttle.
- Grasp the handles firmly and slowly tilt the unit forward to begin the tilling action.
- As the tines begin to make contact with the ground, hold back on the handles so that the tines will dig and not ride forward over the ground. Hold back until the tines dig into the soil.
- If the tilled depth is too deep or too shallow, turn off the engine and reset the depth rod.
- If depth rod is not controlling forward action, lower the depth rod. If the unit is not going forward, raise the depth rod.

BEFORE STARTING ENGINE

FILL GAS

The two cycle engine used on this tiller/cultivator requires a mixture of gasoline and oil for lubrication of the bearings and other moving parts. The correct fuel mixture ratio is 24:1 (See Fuel Mixture Chart). Gasoline and oil must be pre-mixed in a clean gasoline container. Always use fresh, clean unleaded gasoline.

CAUTION: GASOLINE IS FLAMMABLE AND CAUTION MUST BE USED WHEN HANDLING OR STORING IT. DO NOT FILL FUEL TANK WHILE TILLER/CULTIVATOR IS RUNNING, HOT, OR WHEN TILLER/CULTIVATOR IS IN AN ENCLOSED AREA. KEEP AWAY FROM OPEN FLAME, ELECTRICAL SPARK, AND DO NOT SMOKE WHILE MIXING FUEL OR FILLING THE FUEL TANK. NEVER FILL FUEL TANK COMPLETELY; BUT FILL THE TANK TO WITHIN 1/2 INCH FROM THE TOP TO PROVIDE SPACE FOR EXPANSION OF FUEL. ALWAYS FILL FUEL TANK OUTDOORS AND USE A FUNNEL OR SPOUT TO PREVENT SPILLING. MAKE SURE TO WIPE UP ANY SPILLED FUEL BEFORE STARTING ENGINE.

STORE GASOLINE IN A CLEAN, APPROVED CONTAINER, AND KEEP THE CAP IN PLACE ON THE CONTAINER. KEEP GASOLINE IN A COOL, WELL VENTILATED PLACE; NEVER IN THE HOUSE. NEVER BUY MORE THAN A 30 DAY SUPPLY OF GASOLINE TO ASSURE VOLATILITY. GASOLINE IS INTENDED TO BE USED AS A FUEL FOR INTERNAL COMBUSTION ENGINES; THEREFORE, DO NOT USE GASOLINE FOR ANY OTHER PURPOSE. SINCE MANY CHILDREN LIKE THE SMELL OF GASOLINE, KEEP IT OUT OF THEIR REACH BECAUSE THE FUMES ARE DANGEROUS TO INHALE, AS WELL AS BEING EXPLOSIVE.

WARNING: Experience indicates that alcohol blended fuels (called gasohol or using ethanol or methanol) can attract moisture which leads to separation and formation of acids during storage. Acidic gas can damage the fuel system of an engine while in storage. To avoid engine problems, the fuel system should be emptied before storage for 30 days or longer. Drain the gas tank, start the engine and let it run until the fuel lines and carburetor are empty. Use fresh fuel next season. See Storage Instructions for additional information. Never use engine or carburetor cleaner products in the fuel tank or permanent damage may occur.

GASOLINE AND OIL MIXTURE

Mix gasoline and oil as follows:

- Pour 1 U.S. quart of fresh, clean, unleaded automotive gasoline into a gallon gasoline container.
- Add (5 oz.) of clean, high quality two-cycle oil into the gasoline container.

IMPORTANT: DO NOT USE OUTBOARD MOTOR OIL OR MULTI-VISCOSITY OILS, SUCH AS 10W-30 OR 10W-40. DISREGARD MIX RATIO INFORMA-TION ON OIL CONTAINTER IF INSTRUCTIONS CONFLICT WITH FUEL MIXTURE CHART BELOW.

- Reinstall the cap on the gasoline container and shake container vigorously so the oil mixes with the gasoline.
- Add an additional 3 U.S. quarts of gasoline to the gallon container and shake the container again.

FUEL MIXTURE CHART (Mixture 24:1)

U.S	U. S.		RIC)
GAS	OIL	GAS	OIL
1 Gal.	5 oz.	4 Liters	.167 L
2 Gal.	11 oz.	8 Liters	.333 L
5 Gal.	27 oz.	20 Liters	.833 L

This completes the special gasoline mixing (24:1) procedure. It can now be poured into the tiller/ cultivator fuel tank.

IMPORTANT: DONOTFILLFUELTANK WITH GASO-LINE THAT DOES NOT HAVE OIL MIXED IN IT. DO NOT USE GASOLINE ADDITIVES BECAUSE THE ENGINE MAY BE DAMAGED. SHAKE THE **GASOLINE CONTAINER BEFORE** EACH FILLING OF THE FUEL TANK.

TO START THE ENGINE

Before starting the engine, be sure you have read and understood all the instructions on the preceding pages.

- Fill the fuel tank (to 1/2 inch below the bottom of the fill neck) with fresh fuel mix and reinstall the fuel tank cap securely. Never use fuel that may be stale from long periods of storage.
- Move the shut-off switch to the ON position.
- Move the choke control (see Fig. 1-OP) to the FULL choke position (all the way down).

NOTE: A warm engine should not require choking.



CAUTION: DO NOT TOUCH THE THROTTLE CONTROL WHILESTARTING THE ENGINE. THE TILLER/CULTIVATOR WILL PROPEL ITSELFIF THE ENGINE SPEED IS ADVANCED FROM IDLE.

- Tilt the tiller/cultivator back on the depth rod or transport wheels to raise the tines off the
- Grasp the upper handle firmly to stabilize the tiller/cultivator and pull the starter handle with short quick pulls. Do not allow the starter handle to snap back, let it rewind slowly while holding the starter rope. It will take a few pulls on the starter handle to feed gas from the fuel tank to the carburetor.
- When engine starts, move the choke control to 1/2 choke position until the engine runs smoothly. Then move choke control to OFF position.
- If engine falters, move choke control to 1/2 choke position until engine runs smoothly. Then move choke control to OFF position.
- If engine fires, but does not continue to run, move choke control to no choke position and repeat starting instructions.

NOTE: If the tines do not stop when the throttle control is released, adjust the carburetor idle speed as instructed in Step 5 of Carburetor Adjustment paragraph in the Service/Adjustments section of this manual.

- To stop the engine, release the throttle control and move the shut-off switch to the OFF position.
- If the engine becomes flooded, see the Spark Plug Maintenance paragraph in the Maintenance section of this manual. Then pull the starter rope with the choke control in the OFF position.



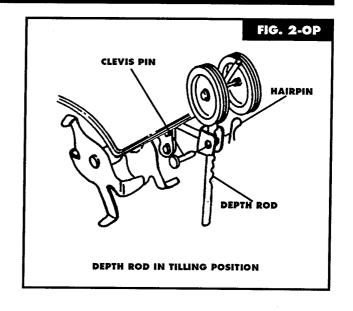
CAUTION: THE MUFFLER AND SURROUND-ING AREAS BECOME HOT AFTER RUNNING THE ENGINE. AVOID THESE AREAS.

TILLING HINTS

- Tilling is digging in, turning over and breaking up packed soil before planting. Loose unpacked soil helps root growth. Best tilling depth is 4 to 6 inches. Tilling will also clear the soil of unwanted vegetation. The decomposition of this vegetation matter enriches the soil. Depending on the climate (rainfall and wind), it may be advisable to till the soil at the end of the growing season to further condition the soil.
- Avoid tilling the soil that is too dry as the soil pulverizes and produces a dust that will not hold water. Also, tilling soil that is too wet will produce unsatisfactory clods besides being hard on the machine.
- Better growth will be obtained in tilled ground if a relatively small area is tilled properly and the tilled ground used soon after tilling to preserve the moisture content.
- The depth rod (on the back of the tiller/cultivator) serves a dual purpose (See Fig. 2-OP). It helps regulate the depth of the cut to a uniform level and also acts as a brake to help the operator control the speed of the tiller/cultivator. Also, with the wheels down, it is used for transporting the unit.
- Lowering the depth rod will slow the tiller/cultivator and make it till deeper. Raising the depth rod will allow the tiller/ cultivator to move faster and till more shallow.
- If the tiller/cultivator stops forward motionand tries to dig deeper than necessary, move the handles from side to side to start forward motion.

CULTIVATING HINTS

- When cultivating (weed killing) it is best to till no deeper than 1-1/2 inches. Tilling deeper will only pull to the surface ungerminated weed seeds. You may want to raise the depth rod to lessen the braking action.
- When cultivating around plants or close areas you may want to remove the outside tines (See Tine Replacement paragraph in the Service/Adjustments section of this manual).



CUSTOMERS RESPONSIBILITIES

GENERAL

The warranty on this tiller/cultivator does not cover items that have been subjected to operator abuse or negligence. To receive full value from the warranty, the operator must maintain the tiller/cultivator as instructed in this manual. The following

Service Recommendations Chart is provided to assist the operator properly maintain the tiller/cultivator.

SERVICE RECOMMENDATIONS CHART

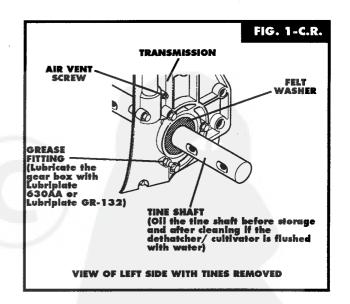
SERVICE RECORDS			SCHI	EDULI	Ē			SE	RVIC	E DA	\TES	
Fill in dates as you complete regular service	Before Each Use	After first 2 Hours	Every 25 Hours	Every 75 Hours	Before Storage							
Tighten All Screws and Nuts	1	1/			<u> </u>		-		1	T	·	П
Lubricate Transmission			1		1	1		ĺ				
Lubricate Tine Shaft			1		1							
Clean and Re-Oil Air Cleaner Filter			1		10							
Check Spark Plug			1		1							
Cylinder Exhaust Ports				1								
Drain Fuel					1							

LUBRICATION

Every 25 hours and/or at the beginning of each season, the gear box should be filled with lubricant. Tubes of gear lubricant are available from most automotive supply stores. Use portable tool grease such as **Lubriplate 630AA** (Product No. 06787 - 1-3/4 oz. tube) or **Lubriplate GR-132** (Product No. 15892 - 10 oz. tube). The tine shaft should have oil applied before storage and after cleaning if the tiller/cultivator is flushed with water. The following illustration is provided to assist the operator properly maintain the tiller/cultivator.

CHECK TRANSMISSION GREASE LEVEL

- Remove both left side tines (See Service and Adjust ments section) in this manual.
- Remove the air vent screw (See Fig. 1-C.R.) from the top left side of the transmission.
- Using a grease gun, fill the transmission through the grease fitting until the new grease begins to come out of the air vent screw hole.
- Reinstall the air vent screw.
- Check the condition of the felt washer in the side of the transmission at the tine shaft (See Fig. 1-C.R.). Replace the felt washer if it is damaged (See Repair Parts section in this manual).
- Clean tine shaft, spread a few drops of oil on shaft in tine replacement areas. Reinstall the tines.
- Remove the right side tines. Check the felt washer for damage, clean and oil the tine shaft. Reinstall the tines.



CUSTOMERS RESPONSIBILITIES

ENGINE AIR CLEANER

The air cleaner filter should be cleaned and reoiled after 3 months or 25 hours of operation. Clean more often under dusty conditions.

IMPORTANT:

The engine can be worn out in a very short period of time if dirt or grit is allowed to enter the engine.

To clean the air filter, do the following:

- Loosen screws on air cleaner cover (See Fig. 2-C.R.) and remove the cover.
- Remove foam element from air cleaner.
- Wipe inside of the air cleaner housing clean.
- Clean the foam element by washing in a strong solution of water and household detergent. Then rinse thoroughly in clean water.
- Wrap foam element in clean cloth and squeeze out (do not twist) all the liquid until dry.
- Cover the ends and side of the foam element with same oil used in fuel mixture. Knead the foam element between fingers to distribute oil and remove excess oil.
- Reinstall foam element in air cleaner housing.
- Service the foam element carefully, inspecting for deterioration or damage. A defective, improperly serviced, or misassembled air filter will allow dirt particles to enter the engine.
- Reassemble the filter (See Fig. 2-C.R.). Place the cover on the air cleaner housing and tighten screws to secure cover to the housing.



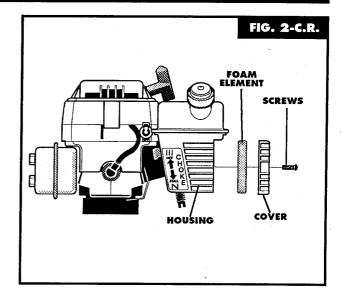
CAUTION: NEVER RUN THE ENGINE WITH-OUTTHE AIR CLEANER ELEMENTINSTALLED. A DEFECTIVE AIR CLEANER CAN RESULT IN LOSS OF ENGINE POWER AND CAN CAUSE EXCESSIVE WEAR OR DAMAGE TO THE ENGINE COMPONENTS IF DIRT OR DUST IS PERMITTED TO ENTER THE ENGINE THROUGH THE CARBURETOR. AN AIR CLEANER THAT IS CLOGGED WITH DUST OR DIRT SHOULD BE CLEANED AND RE-OILED.

SPARK PLUG

If the engine is flooded, clean the area around the spark plug base to prevent foreign material from entering the cylinder(s) when the plug is removed. Remove and dry the spark plug. Regap the electrodes to .030 if necessary. If a new spark plug is needed, refer to the **Engine Operation and Maintenance** manual for the proper replacement spark plug. Tighten the spark plug firmly. If a torque wrench is available, torque the spark plug to 16-22 footpounds.

CYLINDER EXHAUST PORTS

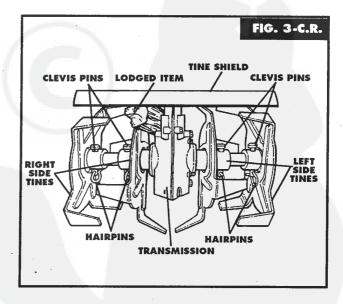
The cylinder exhaust ports should be cleaned after each seventy-five (75) to one hundred (100) hours of operation. For this procedure we recommend that you take your unit to a technician trained to work on two cycle engines.



CLEANING (See Fig. 3-C.R.)

Always remove the dirt and debris from the tiller/clutivator after each use. Remove any string, wire or vegetation that may become lodged in the mechanism and stop the tine rotation. Proceed as follows:

- Release the throttle control and move the shut-off switch to the OFF position, then disconnect the spark plug wire.
- Remove hairpin and clevis pin securing tine(s) assembly to the shaft and remove the tine(s).
- Remove lodged material. Reassemble tine(s) on shaft and secure with a clevis pin and hairpin.
- Reconnect spark plug wire and restart engine.





SERVICE & ADJUSTMENTS

TINE REPLACEMENT

The tiller/cultivator is left hand or right hand as viewed from the operator's position behind the unit.

All four tines on this unit are different and cannot be interchanged. The tines must be properly installed as shown in figures 1 and 2 or the tiller/cultivator will not function properly.

The outside tines may be removed to reduce the tilling width to about 6 inches, for working close around plants or in small areas, if desired. When reinstalling the outside tines see below.



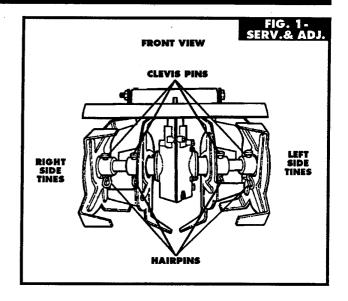
CAUTION: THE TIMES ARE SELF-SHARPEN-ING AND WILL BECOME QUITE SHARP FROM USE. HANDLE CAREFULLY.

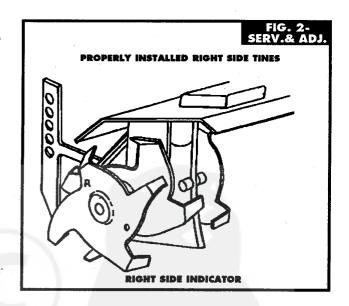
The tines will all wearfairly evenly. If the tines are being replaced because of wear, we recommend that all four tines be replaced at the same time. To replace the tines, do the following:

- Place the shut-off switch to the OFF position and disconnect the spark plug wire.
- Remove the hairpins and the clevis pins from the tines on one side of the unit and remove the tines (See Fig. 1-SERV.&ADJ.).
- Clean the tine shaft and oil the shaft at the tine locations.
- Place the inside tine on the tine shaft and reinstall the clevis pin and hairpin.
- When the tines are properly installed, the letter "R" will be visible on the outside of the right-hand tine (the letter "L" on the left-hand tine). The letter should appear opposite the small hole in the side of the tine.
- Place the outside tine on the tine shaft and reinstall the clevis pin and hairpin cotter.
- The outside tine cutting tips will all bend in toward the inside tine. The letter "R" on the right side or "L" on the left side should be visible from the outside of the unit.
- Repeat steps on the opposite side of the unit.
- Check to make sure the tines are installed on correct side of the unit (See Fig. 2-SERV.&ADJ.).

CARBURETOR ADJUSTMENT

A dirty air cleaner will cause the engine to run improperly





SERVICE & ADJUSTMENTS

and/or smoke excessively. Be sure the air cleaner is clean before adjusting the carburetor. Never make unnecessary adjustments to the carburetor. The carburetor was set at the factory to operate efficiently under most applications. However, if adjustments are required, we recommend you contact a competent repairman. If you feel that you are competent to make carburetor adjustment proceed as follows:

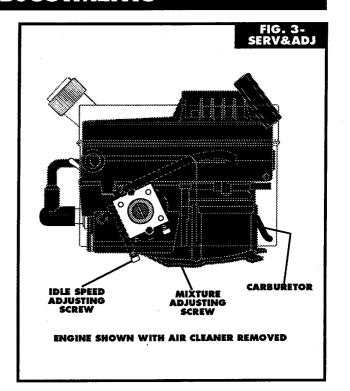
Turn the mixture adjusting screw (See Fig.3-SERV.&ADJ.) clockwise to close.



CAUTION: USE EXTREME CARE WHEN MAKING ADJUSTMENTS THAT REQUIRE THE ENGINE TO BE RUNNING. KEEP HANDS, FEET, HAIR AND LOOSE CLOTHING AWAY FROM ANY MOVING PART.

IMPORTANT: TIGHTEN THE ADJUSTING SCREW WITH YOUR FINGERS TO PREVENT DAMAGE TO THE CARBURETOR OR ADJUSTING SCREW.

- Turn the mixture adjusting screw counterclockwise (open) 1-3/8 turns.
- Start the engine and let it warm up approximately 3 to 5 minutes. Do not adjust the carburetor when the engine is
- If the engine falters or stops after the choke lever is moved to the OFF position, open the mixture adjusting screw an additional 1/8 turn counterclockwise.
- With the engine running, release the throttle control (idle position) to make the mixture adjustments.
- Turn the mixture adjusting screw (See Fig. 3 SERV.&ADJ)slowly clockwise until the engine falters. Note this location.
- Turn the mixture adjusting screw slowly counterclockwise until the engine starts to sputter. Note this location.
- Turn the mixture adjusting screw clockwise until it is halfway between the first position where the engine faltered and the second position where the engine started to sputter.
- The idle speed may need to be adjusted after making the mixture adjustment. If the tines do not turn when the engine is running and the throttle control is released, the idle speed will not need adjusting. If the tines turn when thethrottlecontrol is released, do the following:
- Have someone hold the tiller/cultivator back on the depth bar with the tines off the ground.
- b. Start the engine.
- With the throttle in the released (idle) position, turn the idle speed adjusting screw counter-clockwise until the tines stop rotating.





CAUTION: NEVER TAMPER WITH THE ENGINE **GOVERNOR WHICH IS FACTORY SET FOR** PROPER ENGINE SPEED. OVER-SPEEDING THE ENGINE ABOVE THE FACTORY HIGH SPEED SETTING CAN BE DANGEROUS. IF YOU THINK THE ENGINE GOVERNED HIGH SPEEDS NEEDS ADJUSTING, CONTACT A COMPETENT REPAIRMAN WHICH HAS THE PROPER EQUIPMENT AND EXPERIENCE TO MAKE ANY NECESSARY ADJUSTMENTS.

STORAGE

CAUTION: NEVER STORE ENGINE WITH FUEL IN TANK INDOORS OR IN ENCLOSED, POORLY VENTILATED AREA, WHERE FUEL FUMES MAY REACH AN OPEN FLAME, SPARK OR PILOT LIGHT AS ON A FURNACE, WATER HEATER, CLOTHES DRYER, ETC.

NOTE: The tiller/cultivator should be immediately prepared for storage at the end of the season or if the unit will not be used for 30 days or more.

TILLER/CULTIVATOR

- Thoroughly clean the tiller/cultivator. Remove all dirt and debris from the engine and unit.
- Remove the tines and oil the tine shaft and reinstall the tines (See Service/Adjustments section in thismanual).
- Loosen the tee knobs that secure the upper handle to the lower handle.
- Carefully fold the upper handle down making sure the throttle is not kinked. Tighten the tee knobs.
- The cross piece of the upper handle (between the lower handles) can now be used as a carry handle or can be hooked over a wall hook to store the tiller/cultivator up off the floor out of the way.

NOTE: A yearly checkup or tuneup by a competent repairman is a good way to insure that your tiller/cultivator will provide maximum performance for the next season.

ENGINE

IMPORTANT: IT IS IMPORTANT TO PREVENT GUM
DEPOSITS FROM FORMING IN ESSENTIAL FUEL SYSTEM PARTS
SUCH AS THE CARBURETOR, FUEL
FILTER, FUEL HOSE OR TANK DURINGSTORAGE. ALSO, EXPERIENCE
INDICATE THAT ALCOHOL
BLENDED FUELS (CALLED GASOHOL OR USING ETHANOLOR
METHANOL) CAN ATTRACT MOISTURE WHICH LEADS TO SEPARATION AND FORMATION OF ACIDS
DURING STORAGE. ACIDIC GAS
CAN DAMAGE THE FUEL SYSTEM
OF AN ENGINE WHILE IN STORAGE.

- Drain the fuel from the fuel tank into an approved container outdoors, away from open flame.
- Start and run the engine until it stops due to lack of fuel.
- Pull the starter handle slowly until you feel resistance due to compression pressure, then stop.
- Release the starter tension slowly to prevent the engine from reversing due to compression pressure. This position will close both the intake and exhaust ports to prevent corrosion of the piston and cylinder bore.

OTHER

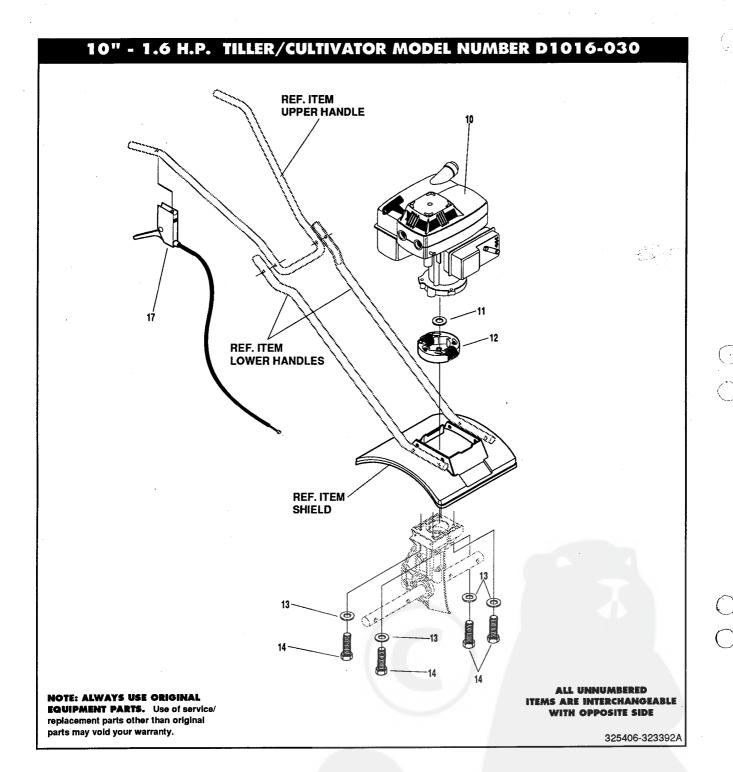
- If possible, store your tiller/cultivator indoors and cover it to give protection from dust and dirt.
- Cover the tiller/cultivator with a suitable protective cover that does not retain moisture. Do not use plastic.

IMPORTANT: NEVER COVER THE TILLER/
CULTIVATOR WHILE THE ENGINE
AND EXHAUST AREAS ARE STILL
WARM.

TROUBLE SHOOTING

TROUBLE	CAUSE	CORRECTION	
Difficult starting	Stale fuel mixture	Drain fuel tank. Fill with fresh mixture.	
	Too much oil in mixture	Check fuel mix chart and mix fresh fuel.	
Engine runs erratically	Dirt in fuel tank or out of fuel	Clean fuel tank. Fuel tank should be half full when starting engine.	
Engine will not run at	Carburetor out of adjustment	See carburetor adjustment section.	
full speed	Fouled spark plug	Clean and re-gap plug.	
	Plugged air cleaner	Clean and re-oil air cleaner.	
Engine speed does not increase properly	Debris interferring with throttle linkage	Blow dirt and debris off top of carburetor.	
Engine smokes	Plugged air cleaner	Clean and re-oil air cleaner.	
excessively	Too much oil in fuel mixture	Check fuel mix chart and mix fresh fuel.	
Tines continue to rotate when throttle control is released	Carburetor out of adjustment	Adjust carburetor idle speed. See Carburetor Adjustment paragraph in Service/Adjustments section of this manual.	
Tines will not turn	Foreign object lodged in tine	Remove lodged item. See Cleaning paragraph in the Maintenance section of this manual.	
Unit does not till properly	Incorrect tine installation	Check the tines for proper installation. See the Tine Replacement paragraph in the Service/Adjustment section of this manual.	

10" - 1.6 H.P. TILLER/CULTIVATOR MODEL NUMBER D1016-030 REPAIR PARTS

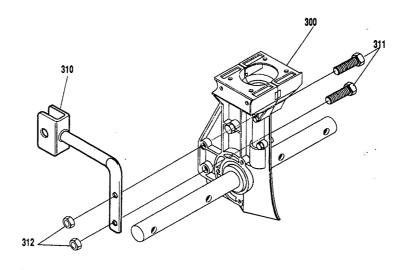


REF. NO.	PART NO.	PART NAME
10 11 12 13	56694 56693 120380	Engine (See Engine Manual) Flatwasher, .378 x 1.25 x .060 Rotor * Lockwasher, Split, .263 x .49 x .07

REF. NO.	PART NO.	PART NAME	
14	180037	* Screw, Hex Hd, 1/4-20 x 1.63 ln.	
17	319306 326364	Cable, Throttle Owner's Manual (Not Illustrated)	

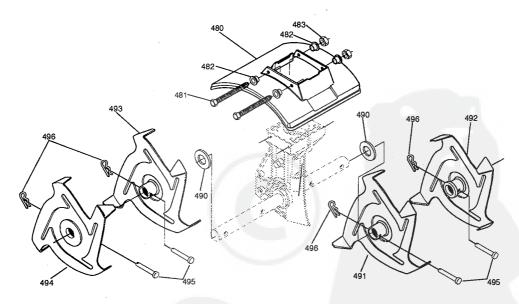
^(*) Standard Hardware Items - May Be Purchased Locally.

10" - 1.6 H.P. TILLER/CULTIVATOR MODEL NUMBER D1016-030



REF. NO.	PART NO.	PART NAME
300	320977	Transmission Assy. (see 22-23)
310	56147-853	Depth Rod Bracket
311	180033	Screw, 1/4-20 x 1.38 hhc
312	1502	Nut, 1/4-20 thd

325407-318848B

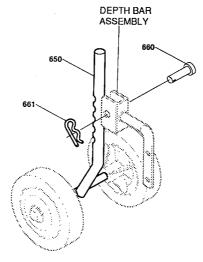


325408-323393C

REF. NO.	PART NO.	PART NAME
480	308563	Tine Shield
481	310056	Screw, Hex Hd., 1/4-20x5-1/2 ln.
482	308571	Spacer, Flange, .261 x .36 x .24
483	1502	Nut, Centerlock, 1/4-20
490	56158	Washer, Felt
491	56157-853	Inner Tine Assy, L. H.
492	56155-853	Outer Tine Assy, L. H.

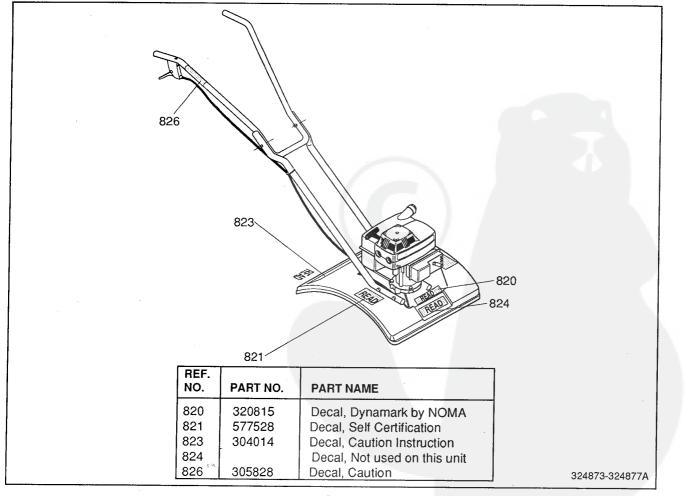
REF. NO.	PART NO.	PART NAME
493 494 495 496	56156-853 56154-853 56123 56180	Inner Tine Assy, R.H. Outer Tine Assy, R.H. Pin, Clevis Pin, Hair

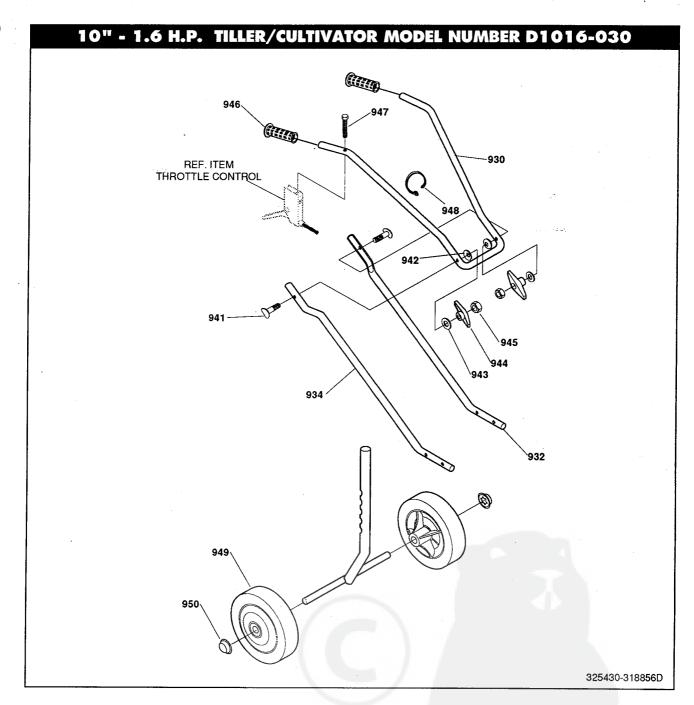
10" - 1.6 H.P. TILLER/CULTIVATOR MODEL NUMBER D1016-030



REF. NO.	PART NO.	PART NAME
650	8507	Depth Rod, Wheel Assembly
660	56123	Pin, Clevis
661	56180	Pin, Hair

325409-323396A

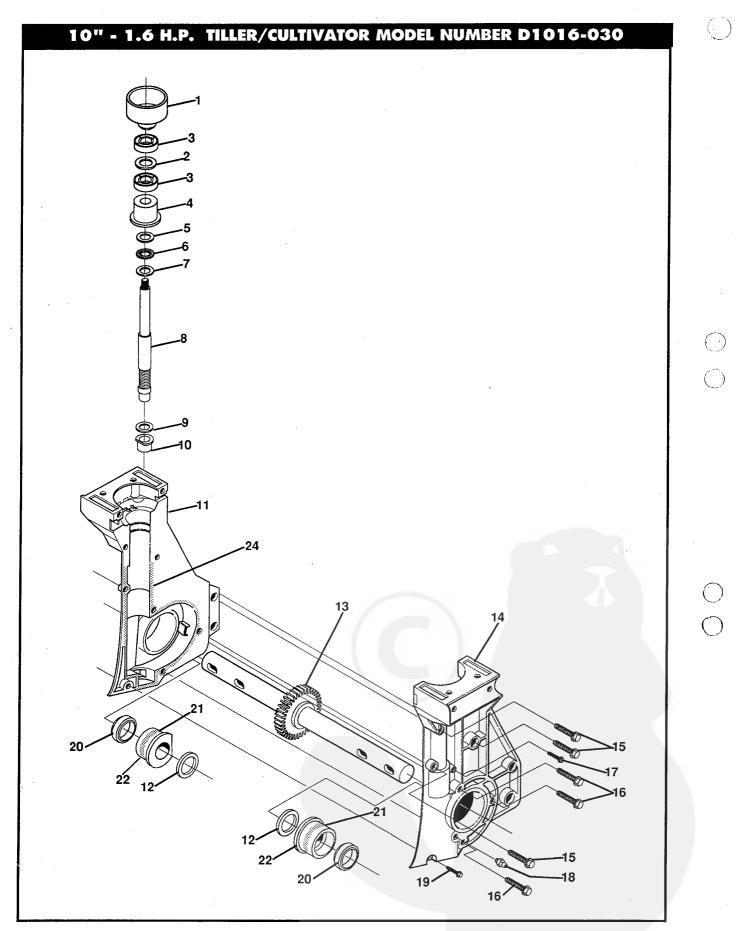




REF. NO.	PART NO.	PART NAME
930	56237-853	Handle, Upper
932	321194-853	Handle, Lower, L. H.
934	321195-853	Handle, Lower, R. H.
941	35475	Bolt, Carr. 5/16-18 x 1-5/8 In.
942	8728	Washer, Formed
943	120393	Flatwasher, .344 x .69 x .065
944	13527	Tee Knob
945	120376	* Nut, Reg. Hex, 5/16 - 18 Thd.

REF. NO.	PART NO.	PART NAME
946	56778	Hand Grip
947	426635	Screw, WaTap 10-16 x 1-1/2 In.
948	57444	Tie, Cable
949	56213	Tire & Rim
950	3535	Nut, Push On Cap

^(*) Standard Hardware Items - May Be Purchased Locally.



10" - 1.6 H.P. TILLER/CULTIVATOR MODEL NUMBER D1016-030

		· · · · · · · · · · · · · · · · · · ·	·	
	REF.		SUPPLIER	
	NO.	PART NO.	PART NO.	PART NAME
	1		56692	Drum
	2		6106	Flatwasher
	3		306791	Oil Seal
	4		312957	Bearing, Flange
	5	1	56125	Washer, Thrust
	6 7		56124	Needle Bearing
	7		312652	Washer, Thrust
	8		306790	Shaft, Worm
	9	ĺ	996418	Flatwasher
	10		50221	Bearing, Flange
	11		306210	Gearcase, R. H.
İ	12		56115	Washer, Flat .76 x 1.25 x .104
ı	13		56159	Tine Shaft and Gear Assy.
	14		306207	Gearcase, L.H.
	15		308231	Screw, Tap,1/4-20 x 1-1/4 ln.
-	16		308232	Screw, Tap,1/4-20 x 1-3/4 ln.
-	17		35258	Screw, Tap,10-24 x 3/8 In.
١	18	ĺ	312737	Fitting, Grease
	19		312292	Screw, Tap, 10-24 x 5/8 ln.
-	20		24274	Oil Seal
	21		311353	Sealant, Retaining Compound
-	22		306793	Bearing, Flange
١	23			Grease, Lubriplate (GR132)
1				(Not Illustrated)(Not Service)
	24		308230	Sealant, Gasket Eliminator

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Rev. 10/20/92

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