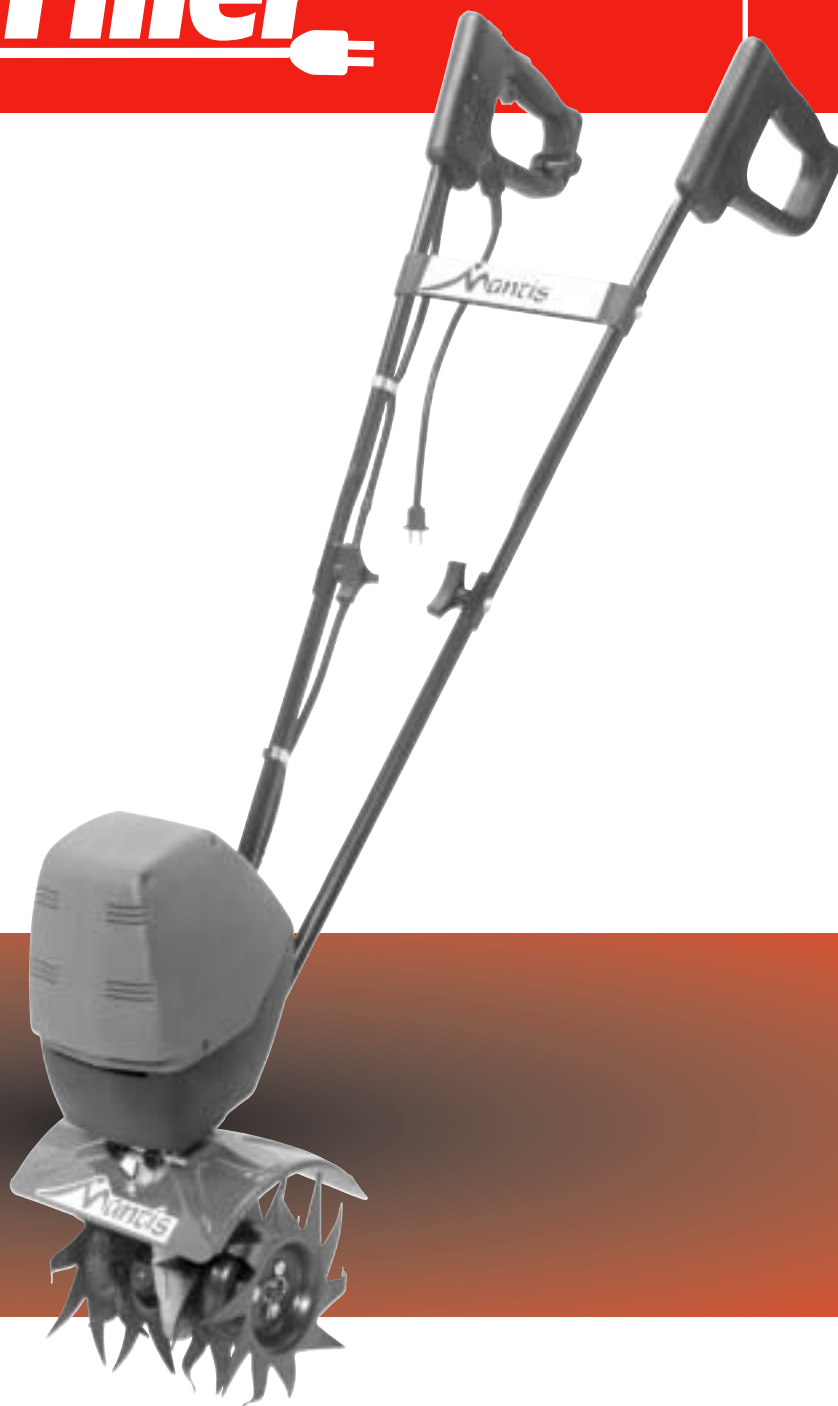


Mantis[®] Electric Tiller



OWNER'S MANUAL

Welcome to the World of Mantis Gardening

Here's your new MANTIS Electric Tiller . . . the lightweight wonder that's "Changing the Way Americans Garden®."

Unlike big tillers, your MANTIS Electric Tiller weighs only 21 pounds. So it lifts easily, handles smoothly, tills and weeds precisely. And, unlike other small tillers, it features serpentine tines that churn soil to ten inches deep. It creates a soft, smooth seed bed, even in problem soil.

Once you know how to use your tiller correctly, we guarantee you'll love it. So first, please read this manual. It shows, step by step, how to use your tiller safely. Plus, it shows how the MANTIS Border Edger can make light work of your edging needs.

If you have questions about any topic in this Manual, or if you wish to order MANTIS Attachments contact your local authorized MANTIS dealer.



Table of Contents

Safety Rules and Warnings . . . . .	.2-4
Assembly . . . . .	.5-8
Before You Begin Tilling . . . . .	.8-9
Tilling . . . . .	.10-11
Tilling/ Cultivating . . . . .	.11-12
Using the Border Edger Attachment . . . . .	.13
Troubleshooting . . . . .	.14
Maintenance . . . . .	.15
Storage . . . . .	.15
Parts Explosion . . . . .	.16
Parts List . . . . .	.17
The Mantis Promise . . . . .	.18

Safety Rules and Warnings



You will notice throughout this owners' manual, Safety Rules and Important Notes. Make sure you understand and obey these warnings for your own protection.

A. Special Safety Information

▲ WARNING ▲ DANGER ▲
ATTENTION: THIS SYMBOL POINTS OUT OUR IMPORTANT SAFETY INSTRUCTIONS.
▲ WHEN YOU SEE THIS SYMBOL ▲
HEED ITS WARNING! STAY ALERT!

▲ WARNING ▲ DANGER ▲
TO REDUCE THE POTENTIAL FOR ACCIDENTS, COMPLY WITH THE SAFETY INSTRUCTIONS IN THIS MANUAL.
FAILURE TO COMPLY MAY RESULT IN SERIOUS PERSONAL INJURY, AND/ OR EQUIPMENT AND PROPERTY DAMAGE.

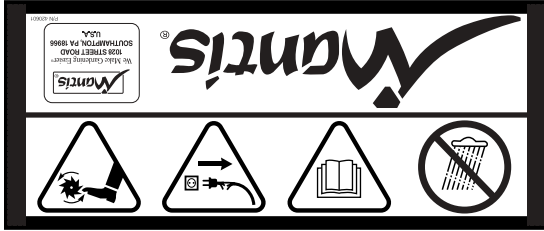
B. Safety and Warnings

▲ WARNING ▲ DANGER ▲
IMPROPER USE OR CARE OF THIS TILLER OR FAILURE TO WEAR PROPER PROTECTION CAN RESULT IN SERIOUS INJURY.
READ AND UNDERSTAND THE RULES FOR SAFE OPERATION AND ALL INSTRUCTIONS IN THIS MANUAL.
WEAR HEARING AND EYE PROTECTION.

▲ WARNING ▲ DANGER ▲
IF THE TILLER IS USED IMPROPERLY OR SAFETY PRECAUTIONS ARE NOT FOLLOWED, THE USERS RISK SERIOUS INJURY TO THEMSELVES AND OTHERS.
READ AND UNDERSTAND THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS TILLER.

C. Safety Decal Information

An important part of the safety system incorporated in this tiller are the warning and information decals found on various parts of the tiller. These decals must be replaced in time due to abrasion, etc. It is your responsibility to replace these decals when they become hard to read. The location and part numbers (P/N) of these decals are illustrated on Page 16 and 17.



P/N 420601



P/N 420600



CUTTING HAZARD: KEEP FEET AND HANDS AWAY FROM ROTATING TINES.



DO NOT USE IF ELECTRICAL CORDS ARE DAMAGED OR BROKEN



READ OWNER'S MANUAL BEFORE USING TILLER, OR PERFORMING ANY REPAIR OR MAINTENANCE. KEEP OWNERS MANUAL IN A SAFE PLACE.



DO NOT USE IF IN RAIN OR WET CONDITIONS



WEAR EAR AND EYE PROTECTION.



CORRECT ASSEMBLY.



INCORRECT ASSEMBLY.



DO NOT CARRY THE TILLER IN THIS POSITION.

D. Important Extension Cord Information

1. Make sure the extension cords are in good condition before use.
2. Based on the total length of cord that you are going to use, check the chart to make sure the cord meets the correct minimum cord gauge (AWG) requirements.

IMPORTANT NOTE:

Using an undersized cord, a larger number cord gauge (AWG) than recommended in the chart, will cause a loss in power and overheating of the tiller.

Using a smaller number cord gauge (AWG), than recommended in the chart, is acceptable.

Extension Cord Chart (minimum cord gauge (AWG))

Length (feet)	1 to 25	26 to 50	51 to 100	101 to 150
Cord gauge (AWG)	18	16	14	12

E. Warnings - Do's

Read and understand the owner's manual. Pay particular attention to all sections regarding safety.

1. **Always** keep a firm grip on both handles while the tines are moving. BE AWARE!! The tines may coast after the triggers are released. Make sure tines have come to a complete stop before letting go of the tiller.

2. **Always** maintain a firm footing and good balance. Do not overreach while operating the tiller. Before you start to use the tiller, check the work area for obstacles that might cause you to lose your footing, balance or control of the machine.

3. **Thoroughly** inspect the area where equipment is to be used and remove all objects, which can be thrown by the machine.

4. **Always** keep area clear of children, pets, and bystanders.

5. **Always** stay alert. Watch what you are doing and use common sense. Do not operate unit when fatigued.

6. **Always** dress properly. Do not wear loose clothing or jewelry, they might get caught in moving parts. Use sturdy gloves. Gloves reduce the transmission of vibration to your hands. Prolonged exposure to vibration can cause numbness and other ailments.

7. **While working**, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

F. Warnings - Don'ts

1. **Don't** use tiller with one hand. Keep both hands on handles with fingers and thumbs encircling the grips when the tines are moving.

2. **Don't** overreach. Keep a good footing at all times.

3. **Don't** run with the machine, walk.

4. **Don't** work on excessively steep slopes.

5. **Don't** attempt to clear tines while they are moving. Never try to remove jammed material before unplugging the cord and making sure the tines have stopped completely.

8. **Always** wear eye protection. Eye protection must meet ANSI Z 87.1.

9. **Start** the tiller carefully, according to the instructions on page 8.

10. **Keep** all nuts, bolts and screws tight to be sure the equipment is in safe working condition.

11. **Use** extreme caution when reversing or pulling the machine towards you.

12. **Work only** in daylight or good artificial light.

13. **Always** be sure of your footing on slopes.

14. **Exercise** extreme caution when changing direction on slopes.

15. **Always** keep a safe distance between two or more people when working together.

16. **Always** inspect your unit before each use and ensure that all handles, guards and fasteners are secure, operating, and in place. Be sure that all electrical cords are not damaged or broken.

17. **Always** maintain and examine your tiller with care. Follow maintenance instructions given in manual.

18. **Always** store tiller in a sheltered area (a dry place), not accessible to children.

6. **Don't** allow children or incapable people to operate this tiller.

7. **Don't** operate while under the influence of alcohol or drugs.

8. **Don't** attempt to repair this tiller. Have repairs made by a qualified dealer or repairman. See that only original MANTIS parts are used.

9. **Don't** run the tiller in rain or wet conditions.

▲ WARNING ▲ DANGER ▲

**IMPROPER ASSEMBLY OF THIS TILLER CAN RESULT IN SERIOUS INJURY.
MAKE SURE TO FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**IF YOU HAVE ANY QUESTIONS CONTACT OUR FACTORY AT
1-800-366-6268 OR AN AUTHORIZED DEALER.**

A. Parts

Your MANTIS Electric Tiller comes partially assembled. You must install only the handlebars, the handle brace, and the tines. This will take just a few minutes if you follow the directions.

First, take all items out of the carton. But do not remove the cardboard from around the tiller's base.

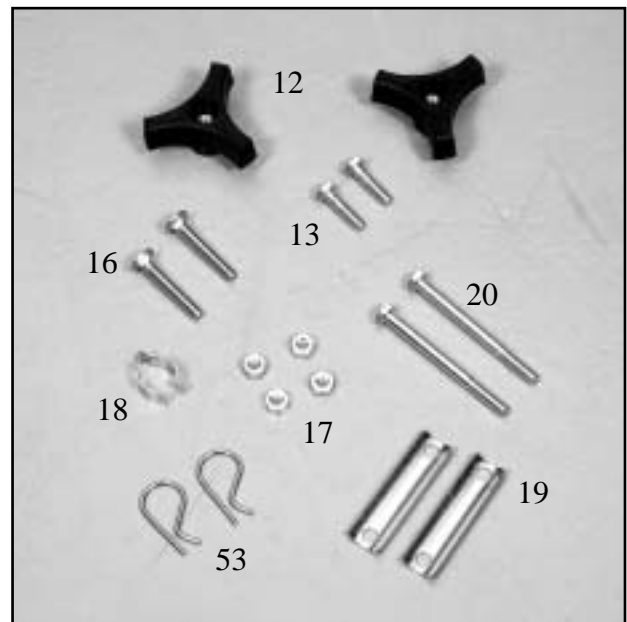
The list below, shows the parts that come with your tiller. Check to make sure you have them.

The bag of hardware is in the plastic bag containing the Owner's Manual and Video.

To assemble your MANTIS Electric Tiller, you'll need two 7/16" wrenches. We suggest that you install all nuts and bolts only "finger tight" — that is, one-half to one full turn — until you've completed assembly. **The nuts are self locking, but you must use a wrench to tighten them completely.**



Qty.	Description	*Key #
1	Upper Handle Assembly	7
1	Upper Handle Trigger Assembly	1
2	Lower Handles	10
1	Pair Tiller/Cultivator Tines	54/55
1	Motor Assembly (includes Fender Guard, WormGear Transmission & Complete Housing)	62**
1	Handle Brace	14
1	Bag of Hardware Containing:	
2	Round Head Square Neck Bolts	16
4	Lock Nuts	17
2	Bolts (3" long)	20
2	Tine Retaining Pins	53
2	Handle Clamps	19
2	Bolts (1" long)	13
2	Knobs	12
2	Cable Clamp	18



*These numbers are the same numbers shown on the Parts Layout on pages 16 and 17.

**This Key # is for assembly purposes only.

B. Lower Handle Assembly

To identify part numbers, see page 5 and 17.

1. Use the protective cardboard sleeve to stabilize your tiller. Stand the motor assembly (#62) up. (Picture 1)

2. Lay the handle parts within easy reach. You'll need one of the handle clamps (#19) and one of the lower handles (#10). Note that the lower handles have a short leg on one end.

3. Fit the handle clamp along the outside of the short leg. Line up the holes on the clamp and the leg.

4. Choose one of the two 3-inch bolts (#20). Slide it through the first set of holes — near the elbow where the lower handle curves. (Picture 2)

5. Now slide the other lower handle onto the 3-inch bolt. Fit the other clamp onto this other handle's short leg. Add a nut and tighten finger tight. (Picture 3)

6. Locate the worm gear housing. It starts just above — and extends down through — the tiller's red fender guard. You'll notice that there's a recessed channel on either side of the housing's top. (Picture 4.)

7. Take the lower handles that you've just put together. Slide them into the two recessed channels. (Picture 5.)

Make sure you insert them from the rear of the tiller - so that the bolt fits along the back of the housing.

8. Slide the second 3-inch bolt through the second set of holes in the short legs and clamps. Add a nut and tighten finger tight.

**NOTE: THE NUTS ARE SELF LOCKING,
BUT YOU MUST USE A WRENCH TO
TIGHTEN THEM COMPLETELY.**



Picture 1



Picture 2



Picture 3



Picture 4



Picture 5

C. Upper Handle Assembly

1. Attach the upper handle assembly (#1) – the handle with the power cord – to the right lower handle (#10) and secure with the handle knob (#12). (Picture 1 and 2)

2. Follow the same steps to install the left upper handle onto the left lower handle. (Picture 3)

3. Use the clip (#18) to secure the power cord in place on the lower handle. (Picture 4)

4. Now install the Handle Brace (#14). Line it up with the holes on the upper handles. Then insert a Bolt (#13) and a Lock Nut (#17) on either side (Picture 5)

5. Use a wrench to tighten Bolt (#13) and Lock Nuts (#17).

6. Now use wrench to tighten all nuts and bolts firmly and securely.



Picture 1



Picture 2



Picture 3



Picture 4



Picture 5

D. Assemble the Tines for Tilling

Assembling the Tines for Tilling

1. Remove the cardboard from around your tiller's base.
2. Slide the tines onto the axle shafts. The "D" hole goes on the outside.
3. Make sure you've installed the tines properly for tilling. Liken the tines to your fingers. When your palm faces the ground, your fingers curl down. Stand behind the tiller and hold your hand next to the tines. Do the tine blades curl down, as your fingers do? If so, they are in the *tilling* position. (To switch to the cultivating position, see page 12.)
4. To secure each tine to the axle, insert a tine retaining pin.



IMPORTANT NOTE:

Before you use your MANTIS Tiller, read the Safety Rules & Warnings on pages 2-4.

Before You Begin Tilling

A. Starting

Starting your MANTIS Electric Tiller is easy.

1. Simply loop your extension cord through the built-in extension cord holder. This is provided to secure the extension cord and help prevent it from becoming detached.
2. Connect the extension cord to the power cord on the tiller. (Picture 1)
3. Plug the extension cord into an outlet.
4. Pick a speed. (Picture 2)

CAUTION: This Tiller is Strong (Powerful). If you are starting the unit for the first time, the Tiller will start quickly. Be sure to start the Tiller in the low speed (#1), until you get used to it.

5. Squeeze the triggers to begin tilling. (Picture 3)



Picture 1



Picture 2



Picture 3

B. Getting Your Tiller to the Garden

Walk it.

Put the tiller in 1st speed; you can “walk” it to your garden. Just squeeze the triggers and let the tiller “tip-toe” across your yard on its tines. It won’t hurt your lawn or driveway. (Picture 1)

Carry It.

Make sure the power cord is unplugged from the extension cord. Then use one hand to grasp the convenient carrying handle. Use the other hand to hold the handlebars. (Picture 2) Then lift your tiller and carry it to your garden. Since it weighs only 21 pounds, it won’t strain your muscles or tire you out!

Take It for a Ride.

You can easily transport your MANTIS Electric Tiller to a friend’s or relative’s house. Simply fold down the handles, then store your tiller in the trunk of your car or truck. It fits easily. And you can put it in and take it out without straining your back. (Picture 3)



Picture 1



Picture 2

▲ WARNING ▲ DANGER ▲

NEVER CARRY YOUR TILLER AS THE PERSON IN PICTURE 4 IS DOING. IF YOU DO, AND THE TINES ENGAGE, YOU COULD SUFFER SERIOUS INJURY.



Picture 3



Picture 4

▲ WARNING ▲ DANGER ▲

THE OPERATOR OF THIS TILLER IS RESPONSIBLE FOR ACCIDENTS OR HAZARDS OCCURRING TO HIMSELF, OTHER PEOPLE OR THEIR PROPERTY.

A. Now You're Ready to Use Your MANTIS Electric Tiller

If you've seen other tillers, your MANTIS Electric Tiller may surprise you. It tills best when you pull it backward! When you pull your MANTIS Electric Tiller backward, you give extra resistance to the tines, so they dig deeper. (Picture 1).

What's more, when you go backward, you erase footprints. So your soil stays light and fluffy. While other tillers, by contrast, you walk right over the soil you've just tilled, packing it down.



Picture 1

B. Run Your MANTIS Electric Tiller Like a Vacuum

Place your tiller at the head of the row or area you want to till. Turn it on. Then use an easy rocking motion. First, pull your tiller backward. Then use an easy rocking motion. Again, pull your tiller backward. Then let it move forward just a little bit. Then pull it backward again. This will help you till deeper.

Keep repeating these steps until you've tilled an entire row. Start again on the next row. It's a lot like running a vacuum. (Picture 2)



Picture 2

C. You Can Even Control Depth

For Deeper Tilling:

Move your tiller slowly back and forth, as you would a vacuum cleaner. Work the same area over and over until you've dug to your desired depth. (Picture 3)

For Shallow Tilling:

Switch the tines to the cultivating position. (See pg. 12 to learn how) Then move you tiller quickly over your soil surface.

For Big Weeds or Tough Roots

Let your tiller rock back and forth over the tough spot, until the tines slice through the weed or root.



Picture 3

D. Your MANTIS Electric Tiller Handles Special Tilling Projects

Want to turn part of your lawn into a colorful flower border?

Your MANTIS Electric Tiller makes it easy! Just run your tiller back and forth until the sod begins to break up. Then continue tilling. Your tiller will chop the clumps of sod until they're fine. Then, it will work them into the soil. Pretty soon, you'll have a soft, fresh planting bed.

Tilling/ Cultivating

▲ WARNING ▲ DANGER ▲

IF YOUR TINES GET JAMMED OR ENTANGLED, TURN OFF THE TILLER AT ONCE. REMOVE THE OBSTRUCTION ONLY WHILE THE TILLER IS UNPLUGGED.

NEVER TRY TO REMOVE AN OBSTRUCTION WHILE THE TILLER IS IN THE ON POSITION OR PLUGGED IN. SERIOUS INJURY CAN RESULT.

A. How About a Family-Size Vegetable Garden?

Nowadays many gardeners prefer small gardens — especially in the suburbs, where space is at a premium. But, if you're fortunate enough to own a large lot, you can create a bigger garden — a half acre or more. Here's how:

1. First, hire someone with a tractor or big tiller to break ground for you. This is a one-time-only investment that's well worth the small cost.

2. Then, use your tiller to break up any remaining clumps of soil or sod. Unlike a tractor or big tiller, your MANTIS Electric Tiller is a precision tool. It will pulverize your soil into a smooth seed bed.

B. Your MANTIS Electric Tiller Makes Weeding a Pleasure!

As a tiller, your MANTIS Tiller works the soil down to 10" (25.4 cm) deep. But, as a cultivator, it gently cultivates the surface, only 2" to 3" (5.09 cm to 7.62 cm) deep.

First, you must switch the tines to the weeding position. This takes less than a minute.

Then, your MANTIS Electric Tiller's sharp "tine teeth" will slice up those pesky weeds, burying them as you go along. And, since the tines in this position won't dig too deep, they won't hurt your plants' precious root systems.

The result? Your tiller will cut your weeding time in half, and turn a tiresome chore into a pleasure.

C. How to Switch From Tilling to Cultivating Position

1. Make sure your tiller is off and unplugged.
2. Remove the retaining pins from the tines.
3. Remove the tines from the axle.
4. Place the right-side tine onto the left-side axle. Place the left side tine onto the right-side axle. The “D” hole should be to the outside.
5. Here is how to make sure you’ve installed the tines properly. Stand behind the tiller and hold your hand, palm up, next to the tines. Do the tine points curl up, as your fingers do? If so, they are in the correct cultivating position. (See photos below)
6. Reinsert the pins.



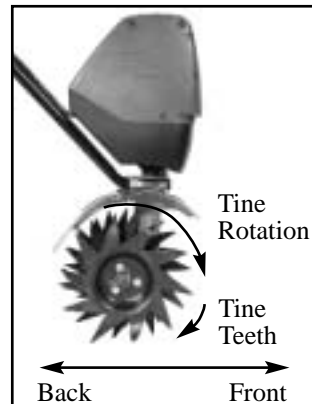
D. Now You’re Ready to cultivate or Weed.

Guide your tiller where you want to weed and start it up. Pull your tiller backward slowly, then let it move forward a bit, in a gentle rocking motion. Watch it slice, shred, and bury those weeds!

Got tough weeds? Select a slower speed to slow your tiller down. Then work back and forth until your tiller chops up the weeds. It’s easy and effective!

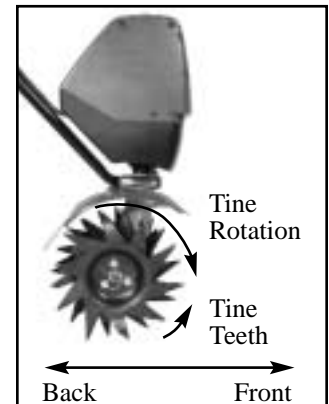
Remember, any tiller will tangle in tall grass, stringy vines, or super-big weeds. So, if you have a “backyard jungle,” first use a knife, pruner, or brush cutter to chop up the overgrowth. If the tines become tangled anyway, turn the motor and unplug the tiller before trying to clear them.

The optional tine Detangler (Item #1322) will clear tines in a jiffy. Contact your local authorized MANTIS dealer.



Tilling Position

Tine teeth point in the same direction as the rotation of the tine; or toward the front of the tiller, away from the operator.



Cultivating Position

Tine teeth point in the opposite direction as the rotation of the tine. Tines point toward the back of the tiller, or toward the operator.

E. Your MANTIS Electric Tiller Will Weed Between Narrow Rows!

Your MANTIS Electric Tiller is a precision weeder that easily fits in tight places. So don’t be afraid to weed anywhere: between plants and shrubs; in corners; against fences; on raised beds; in wide rows; even in very narrow rows. Your MANTIS Electric Tiller weeds six* to nine inches wide. So you can run it in a tightly planted garden without damaging your delicate plants. That’s good news for suburban gardeners, who often have to plant rows close together!

*With optional Planter/ Furrower attachment (Item #6222.)



Using the Border Edger Attachment

Your MANTIS Electric Tiller has been designed and built to accept a wide range of MANTIS Electric Tiller Attachments to increase its usefulness in your lawn and garden. And, all MANTIS Electric Tiller Attachments have been designed for quick and easy attachment to the tiller or Engine.

The Border Edger (Item #3222)

The most popular attachment, the Border Edger can be used to cut clean, neat edges along walkways, or around trees, shrubs, and garden beds.

The Border Edger has two parts: a wheel and a hardened steel blade, with pointed tines.

How to Install the Border Edger

The following instructions refer to “right” and “left” axles. Assume that you’re standing behind your tiller, as you would for tilling and cultivating.



Picture 1

Some areas of your yard may harbor roots and other underground obstructions. In places like this you’ll want to edge your borders shallowly (1" to 2" deep). Here’s how to install the Border Edger for shallow edging:

1. First remove your tilling/cultivating tines.
2. Then slide the edger’s wheel onto the right axle.
3. Now slide the Edger blade onto the left axle. The blade’s angled face should hit the ground when you spin the blade forward. (Picture 2)
4. Insert retaining pins on both left and right axles.

Around walkways and garden beds, you’ll want to edge more deeply (3" to 4" deep). Here’s how to install the Border Edger for that purpose:

1. Remove the tilling/cultivating tines.
2. Slide the Edger’s blade onto the right axle. The

blade’s pointed face should hit the ground when you spin the blade forward. (Picture 1)

3. Slide the wheel onto the left axle.
4. Insert retaining pins on both sides.

How to Use the Border Edger

1. Position your MANTIS Electric Tiller so that the Edger blade is right along the garden edge and the wheel is outside (on the lawn, on the sidewalk, wherever). (Picture 2)

2. Start your tiller and pull your MANTIS backward along the garden edge.

The Border Edger Can Handle Special Projects!

1. Install the Edger for deep edging, as directed above. Then use it to cut sod strips.
2. Edge and weed at the same time! Just attach the Edger blade on one axle and a tiller tine on the other axle, “Mix and match” blades; don’t be afraid to experiment.

IMPORTANT NOTE:

If you do a lot of edging, you’ll appreciate the MANTIS Wheel Set (Item#9222.) It gives you added stability, for even easier handling.

To order the Wheel Set, or any MANTIS Attachment, contact your local authorized MANTIS dealer.



Picture 2



A. What to Do if Your Electric Tiller Stops Running

1. If nothing happens when you squeeze the triggers, make sure the tiller is plugged in or that the cord is not damaged.
2. If it still does not work, unplug the Electric Tiller from the power source.
3. Inspect the tines to make sure your tines are clear of rocks or debris. Clear any debris that may be preventing the tines from spinning.
4. Remove the tines to make sure all of the debris has been cleared.
5. Check the circuit breaker on the Electric Tiller. Make sure the button hasn't popped.
6. If the button has popped, press the button back in. If the circuit breaker button doesn't stay in, wait approximately 30 seconds and retry. (Picture 1)
7. Make sure that the circuit breaker hasn't been tripped at your power source: whether it's your house, a generator, or an outdoor outlet.



Picture 1

B. How to Reseat the Motor Housing

At some point, you may find that the tines won't turn when you squeeze the throttle. This may mean the motor isn't sitting all the way down on the worm gear housing.

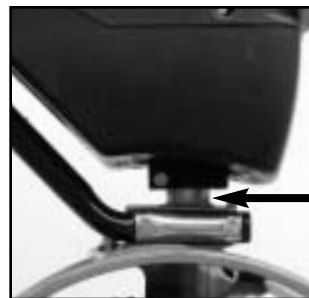
Perhaps you've been using your tiller for several years. The housing screw bolt (Key #22) may have come loose and lifted the motor up.

If this happened you'll notice a gap between the bottom of the bottom housing (Key #24) and the top of the worm gear housing. (Picture 2)

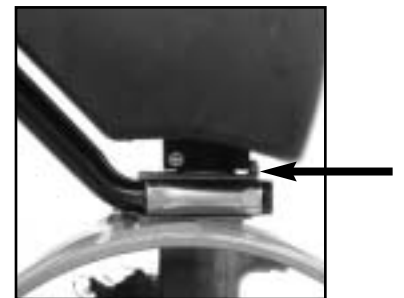
To fix this, loosen the housing screw. Take the motor and housing off the worm gear housing. Notice the hex head on top of the drive shaft (Key #21). Inside the bottom housing, you'll find the coupler driver (Key #26). Make sure the hex head lines up with the coupler driver inside the bottom housing.

Then put the motor back on the worm gear housing.

If you've followed these steps properly, there will be no gap between the bottom housing and the worm gear housing. (Picture 3) Make sure you tighten the housing screws!



Picture 2



Picture 3

C. The Tines Don't Seem to Dig Like They Used To

If the tines are not performing as they did when you first bought the tiller, inspect them for excessive wear.

To order replacement Tines contact your local authorized MANTIS dealer.

IMPORTANT NOTE:

To keep your MANTIS Electric Tiller running as efficiently as possible, always make sure the tines are clear of rocks and debris.

If you continue to experience problems, contact your local authorized MANTIS dealer.

Maintenance

A. How to Check the Grease Level Inside the Worm Gear Housing

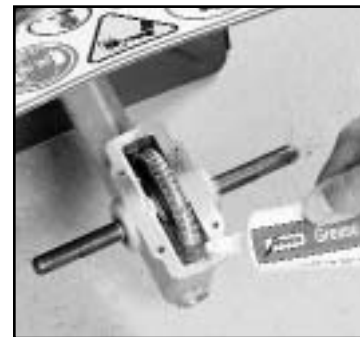
When we built your MANTIS Electric Tiller, we lubricated the worm gear housing thoroughly.

It is imperative that you inspect the grease level once a year. Simply remove the cover plate on the worm gear housing. (Picture 1) Then check to make sure the grease comes almost to the top of the housing. If it doesn't, add lithium #0 grease (Item M9985.) This is the only way to add grease to the worm gear housing. (Picture 2) To purchase MANTIS grease, contact your local authorized MANTIS dealer.

Please do not overfill. Too much grease can create pressure, which could cause seals to fail or the clutch to slip.



Picture 1



Picture 2

Storage

1. Clean dirt, grass and other materials from the entire machine.
2. Wipe the tines with oil or spray them with WD-40, to prevent rusting.
3. Check the grease level in the gear housing, as described on page 13.
4. Order new parts to replace any that are badly worn or broken. Contact your local authorized MANTIS dealer.
5. Store your tiller in a clean, dry place. You can store with the handles in an extended position (Picture 3) or folded down. (Picture 4)
6. To fold down the handles, follow these easy steps: Loosen the handle knobs (#12), fold the handles forward or back. (Picture 4) Tighten knob securely. Your handles are now folded and ready to store in a smaller area.

IMPORTANT NOTE:

Handles can fold back or forward. When folding handles back, as show in picture #4, be careful not to damage the 3-speed switch.

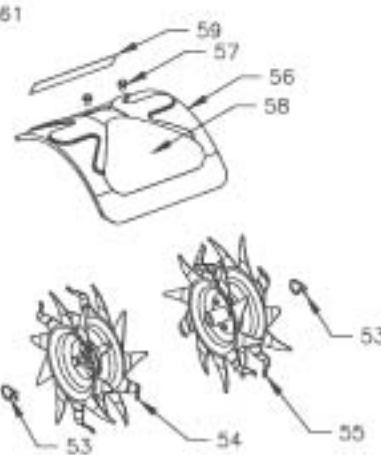
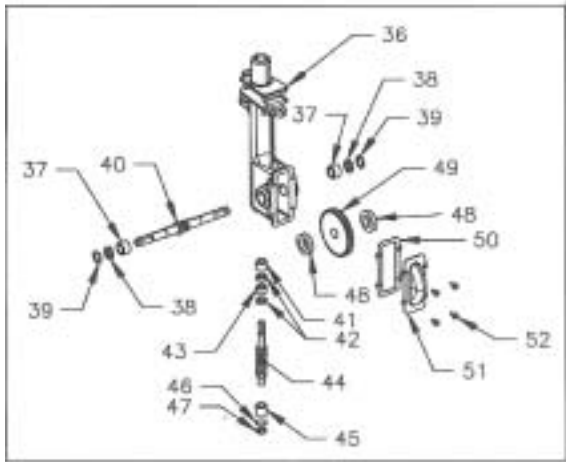
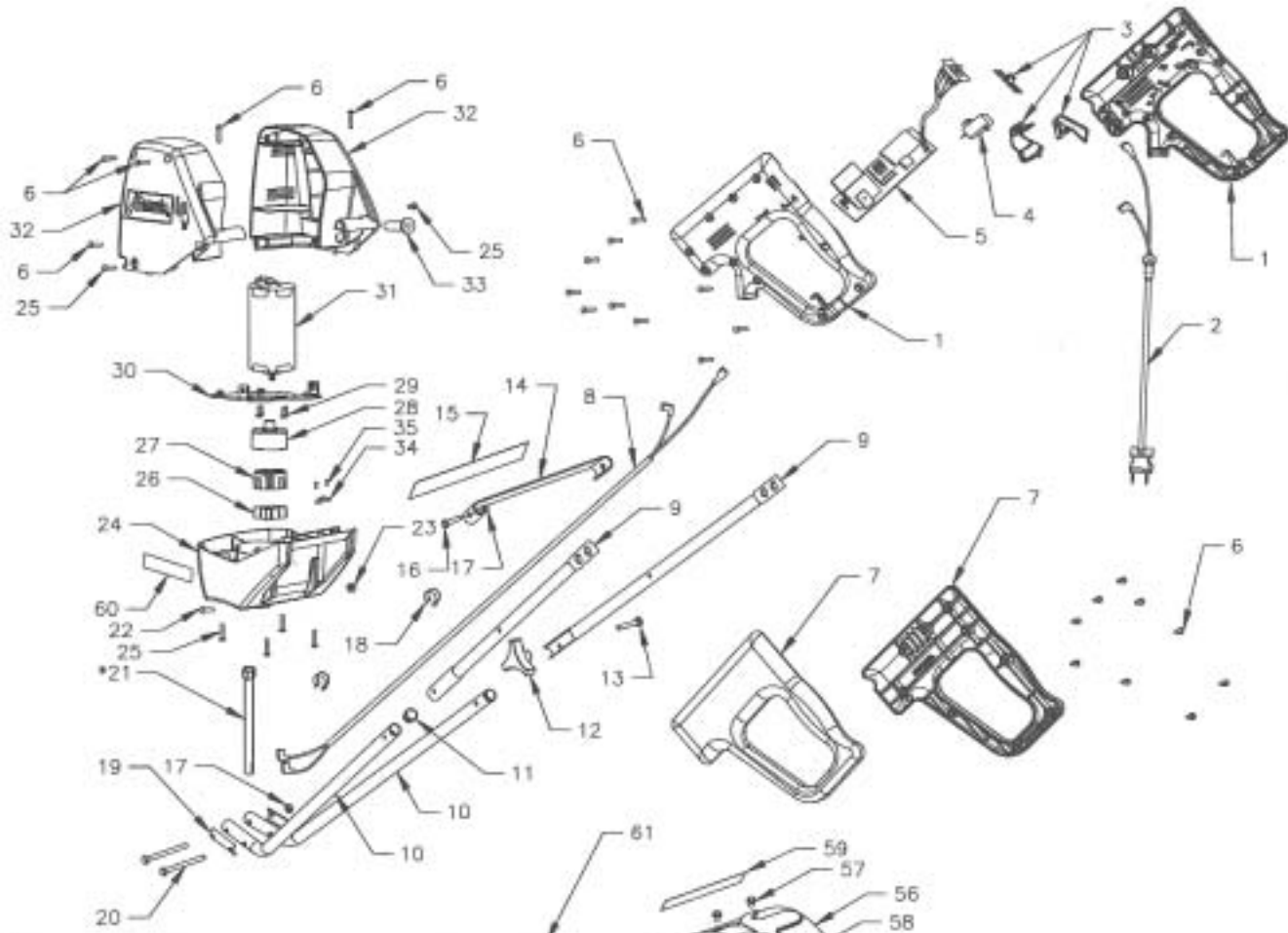


Picture 3



Picture 4

Parts Explosion

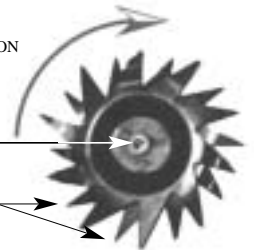


P/N 438LA

DIRECTION

Raised Hub

Teeth point in a Clockwise Direction



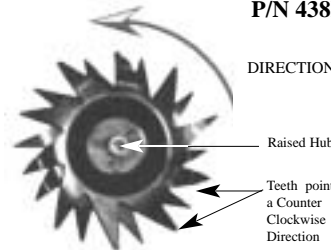
When you look at a Tine with the raised hub facing you and the teeth are pointing in a **CLOCKWISE** rotation, you have a **LEFT HAND TINE**.

P/N 438RA

DIRECTION

Raised Hub

Teeth point in a Counter Clockwise Direction



When you look at Tine with the raised hub facing you and the teeth are pointing in a **COUNTER CLOCKWISE** rotation, you have a **RIGHT HAND TINE**.

Parts List

Key No.	Part No.	Qty.	Description	Key No.	Part No.	Qty.	Description
1	420200	1	Handle, Right Side Assy	30	420107	1	Motor Mounting Plate
2	420206	1	Power Cord	31	420900	1	120V PM Motor
3	420203	1	Trigger, Trigger lock, Button	32	420131	1	Housing Set w/Circuit Breaker
4	3033	1	Switch Normally Open	33	420128	1	Circuit Breaker
5	420123	1	Assembled PC Board w/Switch	34	3016	1	Strain Relief
6	310500	24	#8-11 x 3/4 Combo SI Torx T-20 Pan Steel Plastite 45-1 Case Harden	35	3041	2	3.5 x 13mm Ph Pan Metric Tapping Screw DIN 7981, Steel, Zinc
7	420207	1	Handle, Left Side Assy	36	466	1	Worm Gear Housing
8	420127	1	Motor Cord	37	432	2	Worm Gear Bearing
9	420213	2	Handle Upper FDH- Black	38	434	2	Bearing Seal
10	420214	2	Handle Lower FDH- Black	39	435	2	Bearing Seal Retainer
11	400230	2	Plug Handle	40	431	1	Tine Shaft
12	400510	2	Handle Knob	41	423	1	Roller Bearing
13	400509	2	Bolt	42	425	2	Worm Bearing Race
14	420113	1	Handle Brace	43	424	1	Worm Thrust Bearing
15	420601	1	Label Brace Elec. Tiller	44	400204	1	Worm
16	410	2	Cap Screw 1/4-20 x 1" Lg.	45	458	1	Roller Bearing
17	972	4	Locknut 1/4-20	46	426	1	Worm Disk
18	478	2	Cable Clamp KMC#BW1208H6	47	428	1	Retaining Ring
19	377	2	Handle Clamp	48	430	2	Worm Gear Thrust Washer
20	470	2	1/4-20 x 3" Bolt	49	400205	1	Worm Gear
21	468	1	Drive Shaft (Also in Key #61)	50	436	1	Gasket
22	420513	1	8-32 x 7/8 6-Lobe Torx Equiv Pan M/S, with T-20 Driver Size	51	420150	1	Housing Cover
				52	651	4	Rd. Hd. Self Tapping Screw
23	420514	1	8-32 Hex Machine Screw Nuts, Steel, Zinc	53	418-1	2	Tine Retaining Hair Pin
				54	438LA	1	Tine Assembly (L.H.)
24	420134	1	Bottom Housing	55	438RA	1	Tine Assembly (R.H.)
25	420512	6	10-32 x 1/2 6-Lobe Torx Equiv Pan M/S, with Spec T-20 Driver Size	56	465	1	Fender Guard
				57	140	2	Bolt 1/4-20 x 3/8" Lg.
26	420224	1	Coupler Driver	58	420600	1	Warning Fender Label
27	420222	1	Coupler Shock Absorber	59	4058	1	Mantis Label
28	420223	1	Coupler Housing	60	110637	1	Serial/UPC Label
29	420511	4	1/4-20 x 1/2 Socket Head Cap Screw, Plain Steel	61	400011	1	Electric Tiller Trans w/ drive shaft

MANTIS extends only to the original consumer purchaser a limited warranty against defects in material and workmanship for a period of two years from date of purchase. This warranty covers all portions of the MANTIS Electric Tiller.

MANTIS will repair or, at its option, replace any defective part or parts of the product free of charge. In the event of a defect or malfunction, the purchaser must return the product to an authorized MANTIS dealer.

MANTIS assumes no responsibility in the event that the product was assembled or used in contravention of any assembly, care, safety, or operating instructions contained in the Owner's Manual; was not used with reasonable care; or was used for other than normal and intended purposes.

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