

Mantis™

Flight Manual



megatech®

Worldwide leader in radio control entertainment™

www.megatech.com

If you have questions about operating or assembling your new Megatech product...
Please Call Megatech First!

DO NOT RETURN THIS PRODUCT TO THE STORE

Call our Service Department at:

(201) 662-8500

or email support@megatech.com

10am - 5pm EST Monday through Friday (except holidays)

Technical assistance is also available on the web at www.megatech.com

READ ENTIRE MANUAL FIRST BEFORE ATTEMPTING TO FLY

IMPORTANT NOTE: The warranty covers manufacturer's defects only and does NOT cover damage caused by operator error. Spare parts, batteries, and accessories are available.

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Important! Before you begin, please read all safety precautions and warnings. Failure to comply with any of the following could lead to bodily harm or injury. The Megatech Mantis is not intended for use by those under 8 years of age without proper adult supervision.

SAFETY PRECAUTIONS

TRANSMITTER SAFETY

- Since your Mantis is controlled by an optical link it is very important to always use fresh alkaline batteries in the transmitter. When the red LED light becomes dark, flashes or does not glow on the transmitter, immediately install fresh batteries. Failure to do so could result in the loss of control and (most likely) a crash.
- Never mix old and new batteries. Do not mix Alkaline, standard Carbon-Zinc or rechargeable (Nickel-Cadmium, Nickel-Metal Hydride or Lithium).
- Always remove batteries from the transmitter when you have finished flying for the day. Do not store batteries inside the transmitter.

SAFETY GUIDELINES

- Extreme care must be taken in handling the Mantis. Do not crush, step or sit on your Mantis.
- Although the rotor and tail blades on the Mantis are very small and flexible they should still be treated with respect and caution! Use care when operating your Mantis. Keep your hands, fingers and any article of clothing away from the spinning rotor and tail blades.
- Always fly your Mantis in a wide-open room. Make sure that the flight area is free from obstructions. Your Mantis is extremely lightweight and obstacles can damage the helicopter or cause it to crash.
- Do not fly around people who are unaware that you are flying a Mantis, and never fly over people's heads. Keep spectators behind you when flying.
- Do not attempt to disassemble any of the Mantis's components or allow them to get wet or electrical damage may occur. If the Mantis ever comes in contact with any moisture, dry it carefully and allow it to stand overnight before attempting to use it again.
- Never use solvents or liquid cleaners to clean the Mantis. Doing so may damage the unit or electronics. Only use a dry, soft cloth for cleaning.
- Your Mantis is intended for indoor flight ONLY as it flies slowly and is capable of turning within the confines of an average sized living room or dining room.
- Your Mantis is extremely lightweight and breezes from fans, air conditioning or even a person walking by can affect its performance.
- You must point your controller at the Mantis at all times to maintain accurate control.
- Natural daylight (not light bulb/indoor lighting) can affect the range and controllability of the Mantis.
- Keep the Mantis away from heat or fire. Never leave the Mantis or transmitter in direct sunlight for any length of time

RECHARGEABLE BATTERY WARNINGS AND PRECAUTIONS

- The Lithium Polymer battery is factory installed into your Mantis and provides superior performance, but has specific charging requirements different than that of other battery types such as NiCad, NiMH and other rechargeable batteries. Improper handling of Lithium Polymer batteries could result in the battery drastically overheating, so please follow all warnings and instructions.
- **ALLOW INTERNAL FLIGHT PACK TO COOL FOR 10 MINUTES AFTER EACH FLIGHT BEFORE ATTEMPTING TO RECHARGE.**
- Never leave the Mantis plugged into the charger when it is not in use. Damage to the on-board battery can occur.
- See charging safety under the charging section on page 6 for additional warnings.

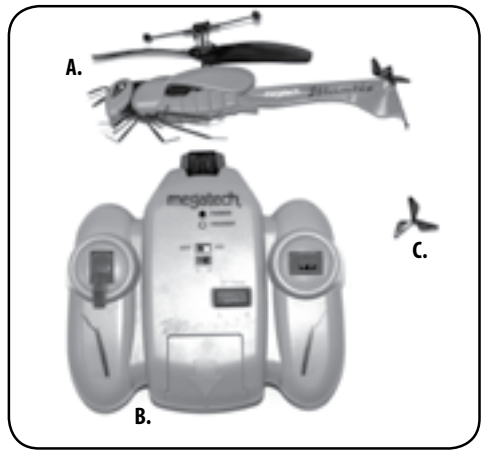
PACKAGE CONTENTS

Before getting started you will need:

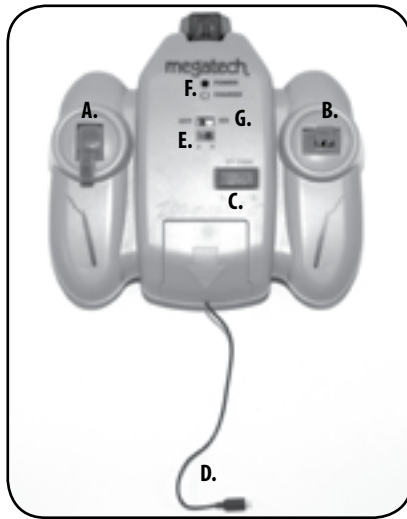
- 6 "AA" 1.5V Alkaline batteries
(sold separately)

First make sure the contents of your package are complete:

- A. Mantis micro helicopter
- B. Transmitter with integrated peak charger
- C. Spare tail rotor blade (1)



RADIO SYSTEM



A 2-channel transmitter featuring Spectra-Link Optical control guides the Mantis.

THE CONTROLS

A. Throttle Control Stick - When it is all the way in the "down" (or pulled back) position, the motor is off. For safety, make sure the throttle control stick is in the "down" position before switching on the Mantis so the rotor blades do not unexpectedly go on.

The rotor blade speed increases as the throttle control stick is moved up (or forward). The Mantis gains altitude as power is increased, and descends as power is decreased.

Full power is reached when the throttle control stick is positioned all the way forward.

- B. Tail Rotor Control Stick** - Will spin the Mantis clockwise or counter clockwise depending on the control input. Note: You can only use the tail rotor control stick when throttle input is given.
- C. Tail Rotor Trim Button** - This adjusts for straight and stable flight when the tail rotor control stick is in the neutral position.
- D. Charging Cord** - Located inside a compartment at the base of the transmitter and used when charging the Mantis.
- E. Channel Switch** - This switch is marked with the letters A and B to indicate the channel that the Mantis is operating on. You must always make sure that the channel switch is set to the correct channel or the Mantis will not operate properly. Please see the Mantis or box for indication of the proper channel.
- F. Power & Charge LEDs** - The bottom most LED illuminates green when the transmitter is in the charging mode. When the top most LED illuminates red, the transmitter power is ON and you have adequate power to control your Mantis. If the red LED light becomes dark, flashes or does not glow on the transmitter, the transmitter batteries are low and must be replaced. Never attempt to fly when the red LED light is dim, flashing or does not glow! This will result in loss of control and a possible crash. Contact our service center at 201-662-8500 if you think there may be a problem with your radio system.
- G. Power Switch** - Turns your controller on and off.

IMPORTANT NOTE: *The transmitter has an auto shutoff feature. If the transmitter power is left ON for 10 minutes without any control input or charger output, the transmitter will turn off. This is to prevent the transmitter batteries from discharging if the transmitter was left ON in error. You will need to flip the power switch OFF and ON to reset the transmitter.*

INSTALLING THE BATTERIES

Transmitter requires 6 "AA" 1.5V alkaline batteries
(sold separately)

- 1) Be sure that both the transmitter and Mantis power switches are in the "OFF" position.
- 2) Using a Philips Head screwdriver, unscrew the battery hatch hold-down screw, and remove the hatch.
- 3) Install 6 fresh AA 1.5V alkaline batteries in the transmitter, paying close attention to the polarity symbols. (+ & -)



IMPORTANT! *If the transmitter batteries are not installed according to proper polarity, the transmitter will not function and electrical damage may occur.*

- 4) Reattach the battery hatch & secure with the hold-down screw. (Do not over tighten)
- 5) Turn the Transmitter ON to make sure that the Red LED illuminates bright and the transmitter powers up and then turn the transmitter OFF. Fresh alkaline batteries will provide about 3-hours or more of power to the transmitter depending on use.

NOTE: If the red LED does not illuminate, flashes or is dim change the transmitter batteries with fresh alkaline batteries. If the transmitter LED still does not illuminate contact the Megatech Service Department at (201)662-8500 for further assistance.

CAUTION

READ THIS SECTION BEFORE CHARGING YOUR BATTERY PACK FOR THE FIRST TIME!

- NEVER CHARGE YOUR MANTIS FOR MORE THAN 30 MINUTES.
- ALLOW INTERNAL BATTERY PACK TO COOL FOR 10 MINUTES AFTER EACH FLIGHT BEFORE ATTEMPTING TO RECHARGE.
- Never use anything but the charging system in the transmitter to charge the Mantis. Using any other charger could result in damage to the battery and a possible fire.
- The battery charger is part of the transmitter and is designed specifically for the built-in battery in your Mantis. It should not be used to charge any other type of battery. Attempting to charge a battery other than the type included with the Mantis will result in damage to both the charger and the battery.
- Never leave the Mantis unattended while charging.

Note: Please be aware that it is normal for the transmitter to become warm during the charging process.

ATTENTION PARENTS: The charging system, wire, and all electrical connections need to be periodically examined for potential conditions that may result in the risk of fire, electrical shock, or injury to persons. In the event of such conditions, the hazardous parts should not be used until properly repaired or replaced.

CHARGING YOUR MANTIS

- 1) The Mantis features an automatic peak-sensing charging circuit built into the transmitter.
- 2) The charging cord is located behind the door on the bottom of the transmitter. Slide the door down and lift in order to open the compartment and access the cord.
- 3) Make sure that the power switch on the Mantis is set to "OFF", and the transmitter power switch is set to "ON". The red LED on the transmitter should illuminate.
- 4) Plug the charging cord into the Mantis charging receptacle located above the on/off switch. Pay close attention to the polarity of the charging connector.
- 5) The green LED on the transmitter will illuminate when charging is in process and will automatically turn off when charging is complete.



Note: Charge time may vary depending on how much power the Mantis's flight pack has and also how much power is left in the transmitter batteries.



NOTE: THE TRANSMITTER IS ALWAYS THE FIRST TO BE SWITCHED ON, AND THE LAST TO BE SWITCHED OFF!

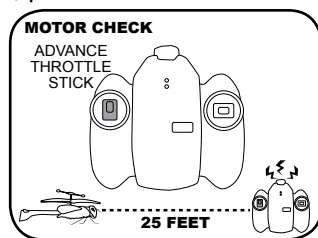
PRE-FLIGHT CHECK

Before you switch ON your Mantis ALWAYS make sure to release the throttle control stick (left) so the rotor blades do not start up unexpectedly when the Mantis is switched ON. Always follow the safe start up procedure.

RADIO RANGE CHECK

Important Tip: Always perform a motor-check and radio-range check with the help of a friend or parent. Doing so alone may cause the Mantis to get away from you and cause damage.

- 1) Make sure both the Mantis and transmitter power are 'OFF'.
- 2) Make sure the throttle control stick is in the "down" (back) position.
- 3) Now turn ON the transmitter, and then turn ON the Mantis.
- 4) Have a friend/parent hold the base of the Mantis's fuselage with the rotors pointing away from him/her and away from their person and loose clothing.
- 5) Walk 25-ft away from Mantis.
- 6) Check the motor and tail rotor controls as follows. Always remember to point the transmitter at the Mantis.



MOTOR CHECK

- Advance the throttle very slowly — The main blades should speed up.
- Move the throttle stick back — The main blades should slow down and then stop when the stick is in the back position.

TAIL ROTOR CHECK

- Advance the throttle $\frac{1}{4}$ forward and hold it there.
- Move the right control stick to the right — The tail motor should speed up. (This will spin the helicopter clockwise when in flight)
- Move the right control stick to the left — The tail motor should slow down. (This will spin the helicopter counter-clockwise when in flight)

NOTE: It might be difficult for you to tell whether the tail motor is speeding up or slowing down. You can also perform this check when you start to fly by moving the control stick and seeing which way the helicopter spins after it has been trimmed correctly by following the directions on page 9.

- 7) Once this is complete turn the Mantis OFF and then turn OFF the transmitter.

If your Mantis does not respond from 25 feet away, do NOT attempt to fly. Contact Megatech at (201)662-8500 for further assistance.

FLIGHT SCHOOL

PRE-FLIGHT NOTES

- The transmitter is always first to be turned ON, and the last to be turned OFF.
- Check to make sure the red power LED on the transmitter is glowing. If it is not, change the transmitter batteries.
- Check to make sure the tail rotor and throttle controls are working properly.
- You **MUST** point your controller at the Mantis at all times to maintain accurate control.
- Natural daylight (not light bulb/indoor lighting) can affect the range and controllability of the Mantis.
- The Mantis should only be flown indoors, in zero-wind conditions. Air displacement from fans, air conditioning or even someone walking by can affect flight performance.

FLYING YOUR MANTIS

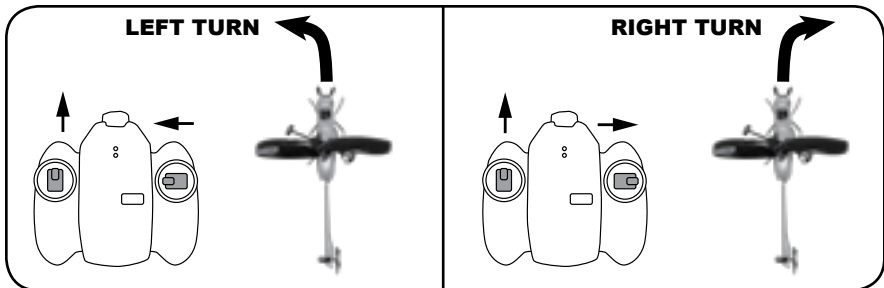
- 1) Turn ON the transmitter first, and then turn ON the Mantis.
- 2) Place the Mantis on the ground approximately 5 feet in front of you.

Important: DO NOT touch any of the control sticks on the transmitter until the Mantis is placed on the ground and is 5 feet from you and any onlookers.

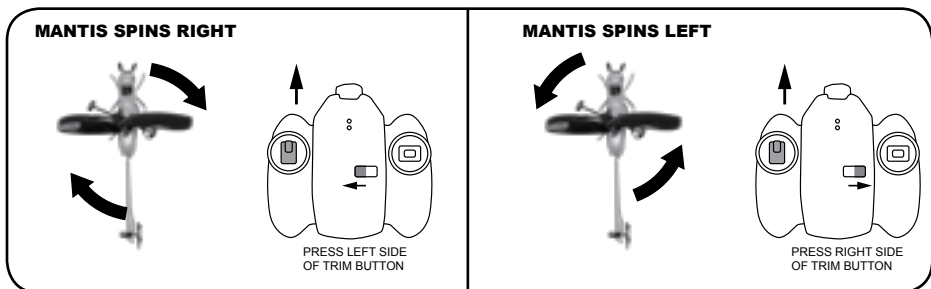
- 3) Gradually increase the throttle speed by pushing the throttle control stick forward. Continue to move the throttle control stick until the Mantis lifts off the ground.
- 4) To reach an altitude you desire you will need to continue to increase throttle speed by pushing the throttle control stick forward.
- 5) To reduce rotor speed and decrease your altitude, decrease the throttle input by pulling the throttle control stick back slowly. When the left control stick is pulled all the way back the rotor blades will stop spinning.

Tip: Always gradually increase or decrease throttle speed. If you increase or decrease the throttle speed too quickly the helicopter may crash.

- 6) Turning the Mantis is simply accomplished by pushing the tail rotor control stick on the transmitter in the appropriate direction. To turn the Mantis to the right, push the tail rotor control stick to the right. To turn the Mantis to the left, push the tail rotor control stick to the left. The Mantis will continue to turn as long as you are holding the control stick. (The Mantis will naturally fly forward slowly so all you will be able to do is lightly redirect the helicopters flight path.)



7) To adjust the Mantis for neutral (no turning), hovering flight, use the tail rotor trim button located to the left of the tail rotor control stick. Press the trim button until the Mantis does not move left or right when no tail rotor control stick input is given. For example: If the Mantis is naturally spinning left when no control input is given then press the right side of the tail rotor trim button until the helicopter stops spinning.



8) Landing is accomplished by pulling the throttle control stick back slowly and letting the Mantis gently land on the ground. Do not reduce the throttle speed too quickly or the Mantis may crash. Once the helicopter has landed, pull the throttle control stick back fully and let the rotor blades stop spinning. Once you are finished flying turn the Mantis OFF first then turn the transmitter OFF.

TIP: Practice your first landings by only raising your Mantis about 12 to 24 inches off the ground so as not to damage the helicopter on rough landings from higher altitudes. Once you feel confident, start taking the Mantis to greater altitudes.

TIPS ON CONTROL STICK MOVEMENTS AND TRIM ADJUSTMENTS

- Keep your control stick movements smooth, not abrupt or "jerky". The Mantis will actually fly all by itself and light control stick movements are all that you need to fly your helicopter. Just remember, smooth and gentle inputs!
- The Mantis will normally hover with only a little more than half throttle.
- Should you over-control your Mantis or lose orientation, it's possible that you'll find yourself in a downward spiral or an uncontrollable large circle. Should this occur, remain calm and simply release the tail rotor control stick! The Mantis will slow down or stop turning by itself. Once the spinning slows down gently add some tail rotor control stick input to stabilize the Mantis. Add some throttle and start flying again. If you see that you're going to crash, immediately cut the throttle to allow the Mantis to land. Doing so will minimize the possibility of damage to the Mantis.
- During your first flight, execute light circles keeping the Mantis in front of you and practice hovering. Remember not to fly over your head as this can be disorienting. This is very important for having a successful first flight.
- Remember that once the Mantis has reached the desired altitude you can ease back on the throttle a bit and enjoy.

REPAIRING YOUR MANTIS

- If the tail rotor disengages or breaks during flight gently pull off the damaged rotor. Press on the new tail rotor included with your kit. Make sure the beveled side of the rotor blades face toward the tail motor. Do not press the new tail rotor onto the motor shaft too far or the motor will bind.
- Use Foam Safe glue to repair cracks or damage to the fuselage assembly.
- If any glued parts come loose, please use foam safe glue to reattach.
- If the stabilizer fly-bar breaks for any reason you can replace it. Start by removing the stabilizer pushrods located on both sides of the fly-bar. Then remove the center steel pin that holds the fly-bar to the main shaft. Install the new fly-bar onto the main shaft. Reinsert the steel pin and make sure it locks into place. Then reattach the two stabilizer pushrods.

TIP: Always use extra care when handling parts on the Mantis. Take your time and be patient. Remember that it is important to use as little additional materials for repair as possible. The Mantis is lightweight and balanced. Make sure to always balance your Mantis after a repair. An example would be if you glue parts on the fuselage and the Mantis seems to lean or go to one side in flight, you can add similar weight to the other side for balance.

SPARE PARTS LIST

Spare, repair and replacement parts are readily available for your Mantis. Should you need parts, visit your local hobby dealer first. If unavailable, you may order directly from Megatech. Use this sheet as a guide

PART#	DESCRIPTION
MTC992002	REPAIR GLUE (½ OUNCE TUBE)
MTC960201	REPLACEMENT TRANSMITTER
MTC960202	TRANSMITTER BATTERY COVER
MTC960203	COMPLETE REPLACEMENT HELICOPTER - CH. A (LIGHT GREEN)
MTC960204	COMPLETE REPLACEMENT HELICOPTER - CH. B (DARK GREEN)
MTC960205	STABILIZER FLY-BAR WITH PUSHRODS
MTC960206	TAIL ROTOR BLADE

Telephone Orders: (201) 662-8500
Fax Orders: (201) 662-1450

Website: www.megatech.com
Email: sales@megatech.com

TROUBLESHOOTING GUIDE

If you are experiencing trouble, please follow these guidelines or call one of our Technicians at (201)662-8500. We will have you up and running in no time!

Always make sure your transmitter batteries are fresh and your Mantis is fully charged, as this can be the cause of many operational issues.

PROBLEM	CAUSE	SOLUTION
Rotors do not spin	Rotors may be binding	Check to make sure both rotor assembly's spin freely
Rotor blades only run for short time before turning off OR Throttle/Tail rotor pulse OR Control signal is lost	Transmitter is not pointed directly at Mantis	Make sure you always point the transmitter at the Mantis at all times.
	Signal path from Transmitter to Mantis is blocked	Make sure there is no obstruction
	Transmitter is too far or too close to the Mantis	Move the transmitter closer or further from the Mantis until you regain signal.
Mantis does not hover, fly straight, or starts to spin	You may have radio interference	Try a different location
	Improper take off	Review take off procedure on page 8
	Mantis is not trimmed correctly	Make sure the tail rotor is trimmed to neutral or for stable flight
	Too much tail rotor control input is being used	Use smaller gentle inputs
Mantis loses altitude rapidly during turns	Tail is not securely mounted on the fuselage	Double check to make sure tail is secure and if needed use foam safe glue to repair
	Too much or too little control input is given	Reduce or increase the amount of control input given until the Mantis flies stable
No power to radio control transmitter and charger or the transmitter RED LED is flashing	Batteries in the transmitter are incorrectly installed	Make sure batteries are installed in the correct direction
	Batteries in the transmitter are exhausted	Replace the batteries with new "AA" 1.5V alkaline batteries
	Power switch is in the "OFF" position	Move power switch to the "ON" position

PROBLEM	CAUSE	SOLUTION
No green light on transmitter when charging or Mantis will not charge	Power switch on the Mantis and/or the transmitter is not in the correct position for charging	Set the Transmitter power switch to "ON" and then make sure the Mantis power switch is set to "OFF". Plug the charge cord into the Mantis and the green LED on the transmitter will come on.
	Charger Cord is not properly plugged into the Mantis charge port	Check Charger Cord's connection
Mantis is not flying high enough	You are not using good throttle control	Increase throttle speed to allow the Mantis to gain altitude or for the helicopter to fly at a desired altitude.
Mantis crashed into the ground while landing	You may have used too much tail rotor control stick input	Reduce the amount of tail rotor control stick input. Only use very little input to keep the Mantis level and stable when landing.
	You may have reduced the throttle speed too quickly or too much	Lower the throttle speed more gradually to allow the Mantis to land softly.

LIMITED WARRANTY

Megatech® International guarantees this item to be free from defects for a period of 30 days from the date of purchase. If any component of this product fails to function properly due to defects in materials or the manufacturing process during this 30 day period, the manufacturer's obligations are limited and the manufacturer can choose to either repair or replace the item.

This warranty is void if the product in question has been altered or repaired by anyone other than Megatech International or an authorized agent. Under no circumstances will Megatech International or any of its representatives be held liable for injury to persons or property damage resulting from assembly or use of the product. Megatech is not liable if any outside radio frequencies interfere with the product's frequency causing loss of control. Megatech International will not be held liable for any injury to persons or property damage resulting from an out-of-control model caused by use or misuse of the product. Megatech International expressly excludes any and all express warranties not specifically stated here and all implied warranties of merchantability and fitness for a particular purpose. There are no warranties which extend beyond the description of the warranties contained herein.

Contact the Megatech International Service Department before returning any item that is defective according to the limitations listed above. **Please be sure to pack the returned item(s) carefully. The customer must return the product along with proof of purchase, a letter describing the problem and the customer's address and telephone number.** At this point in time we will either repair the defective part or replace it and return it to the customer. **Return shipping and handling in the 48 contiguous states is \$10.99. Shipping outside of the 48 states will be quoted by location.**

This warranty does not cover any damage caused by use, misuse, alteration, accident, or neglect, nor does it cover normal wear and tear of the product. Product returned to us which falls under this category will be submitted to our service department for repair. We reserve the right to charge any service and parts fees incurred when repairing the item.

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