MD 500

TWISTER

Instruction Manual

Introduction

Sharing the same revolutionary flight stabilisation system as Twister's highly acclaimed 2020 Ninja 250 – not to mention its celebrated novice and advanced flight modes, auto take-off and land functionality, and altitude hold feature – the new Twister MD500 is everything the Ninja was, and more! Not only does the 'MD' make supreme use of a highly efficient duration-optimised four blade rotor head to deliver an outstanding 12-minute flight duration, it offers the valuable peace of mind that can only be experienced with damage-limiting auto shutdown programming. And as if that's not enough to tempt you, all this ground-breaking technology is cloaked in a beautifully-detailed 1:48-scale MD500 body. To cut a long story short, it looks fantastic, it's rock-solid and easy to fly, and, to cap it all, it's got Ninja durability at its core.

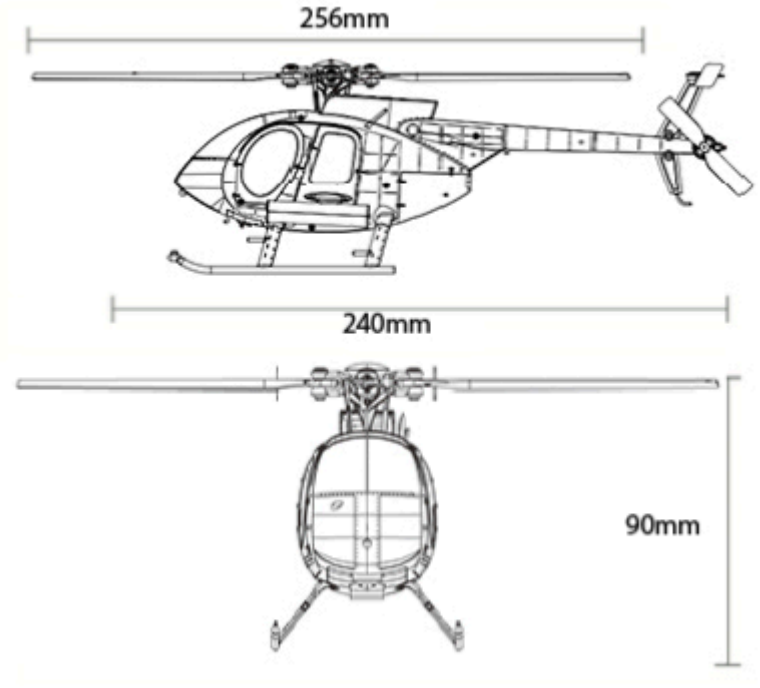
AGE RECOMMENDATION: NOT FOR CHILDREN UNDER 14 YEARS. THIS IS NOT A TOY

Safety Precautions and Warnings

- As the user of this product you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.
- Always keep your model a safe distance from persons and property to avoid collisions or injury.
- This model is controlled by a radio signal that is subject to interference from many sources that are outside your control. Interference can cause loss of control.
- Always operate your model in open spaces well away from full-size vehicles, aircraft, traffic and people.
- Always follow the directions and safety warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- Never expose the electronic parts of this model to water or moisture. Moisture causes damage to electronics.
- Never operate your model with low transmitter batteries.
- Always keep your model in sight and under control.
- Always use fully charged batteries.
- Always keep the transmitter powered ON while the vehicle is powered.
- Always remove batteries before disassembly.
- Always keep moving parts clean.

Specification

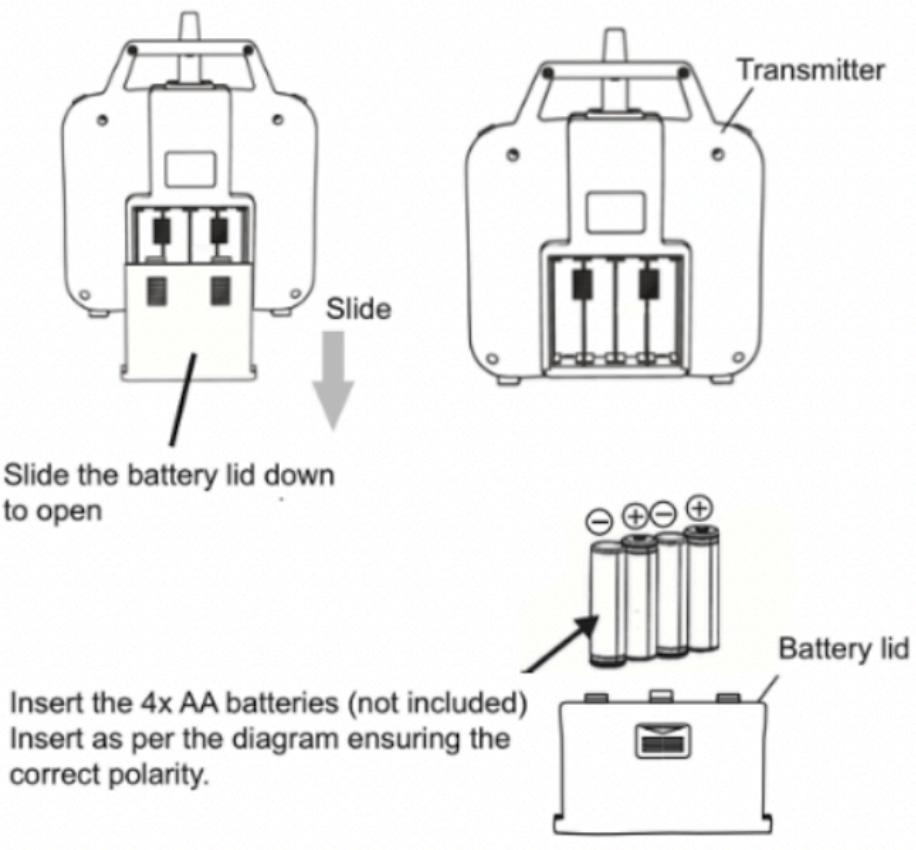
Length	235mm
Height	90mm
Weight	95g
Main rotor diameter	256mm
Tail rotor diameter	37mm
Battery	350mAh
Flight time	15 minutes



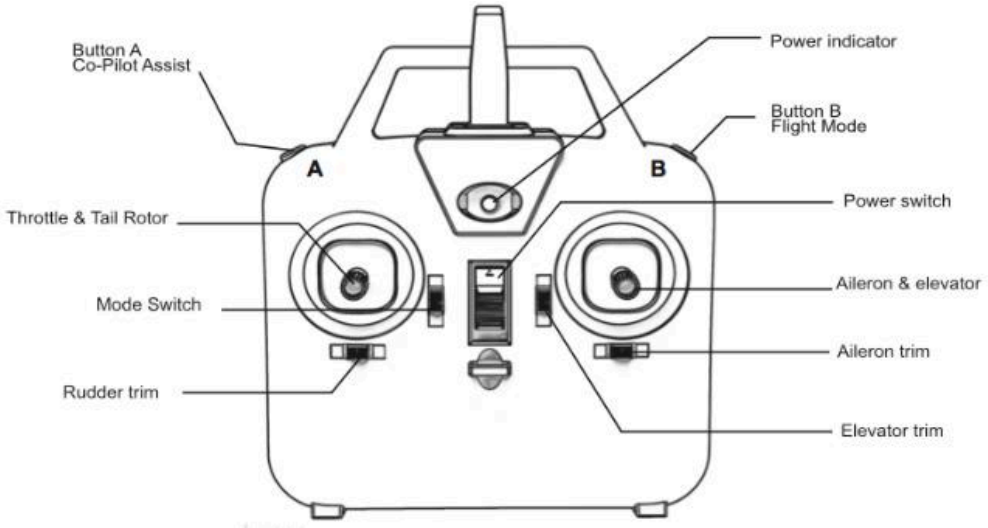
Box Contents

1- Helicopter
2- Main blades & tail blade
3- LiPo battery
4- USB charger
5- Philips Screwdriver & hex wrench
6- Transmitter

Transmitter Battery Installation



Transmitter Switch Identification

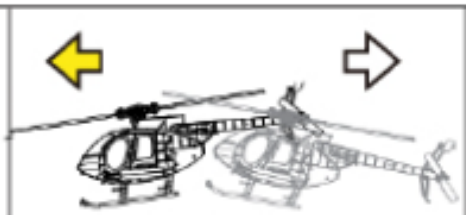
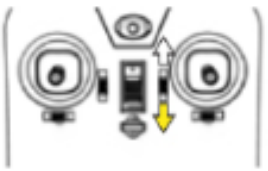
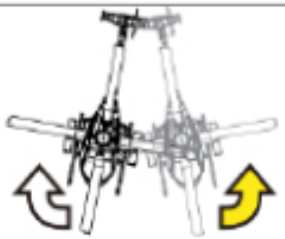
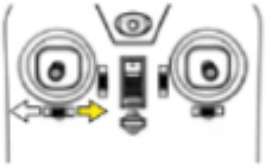
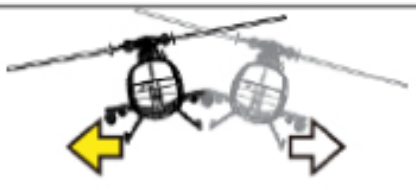
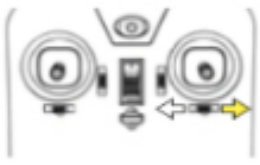


When first switched ON the transmitter will always automatically select Mode 2. If you want to select Mode 1 you must follow the procedure below.

1. Connect the battery to the helicopter and place it on a level surface. The LED on the helicopter will blink slowly.
2. Blip the Mode switch down and hold it in the lower position.
3. Switch the transmitter ON with the Mode switch still held in position and wait for an audible tone and flashing LED on the transmitter. The helicopter LED will now flash at a higher rate. At this point you can release your hold on the Mode switch.
4. Advance the right stick (throttle Mode 1) to 100%. A short audible tone will be emitted and the LED on the transmitter will start to flash faster. Now reduce the throttle to 0%, which in turn will be met by a long audible tone, whereupon the LED on the transmitter will illuminate solid red.

With Mode 1 now selected the LED on the helicopter will illuminate solid red. You are now ready to fly in Mode 1.

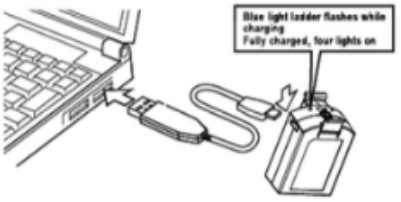
Trim Buttons (Mode 2 example)

Trim adjustment for Forward/Back drift			Match the trim button according to the colors of arrows shown
Trim adjustment for Left/right Yaw drift			Match the trim button according to the colors of arrows shown
Trim adjustment for Side to Side drift			Match the trim button according to the colors of arrows shown

Changing the LiPo battery

Only use the supplied USB charger

1. Connect the USB charger to your USB outlet.
2. Connect the battery to the USB charger.
3. The Red LED on the battery will illuminate.
4. When red LED is off the battery is charged.
5. Charge time can be upto 1hr 30min.



IMPORTANT NOTE – Charging

Although your batteries and charger should include charging information, this reminder highlights key safety points:

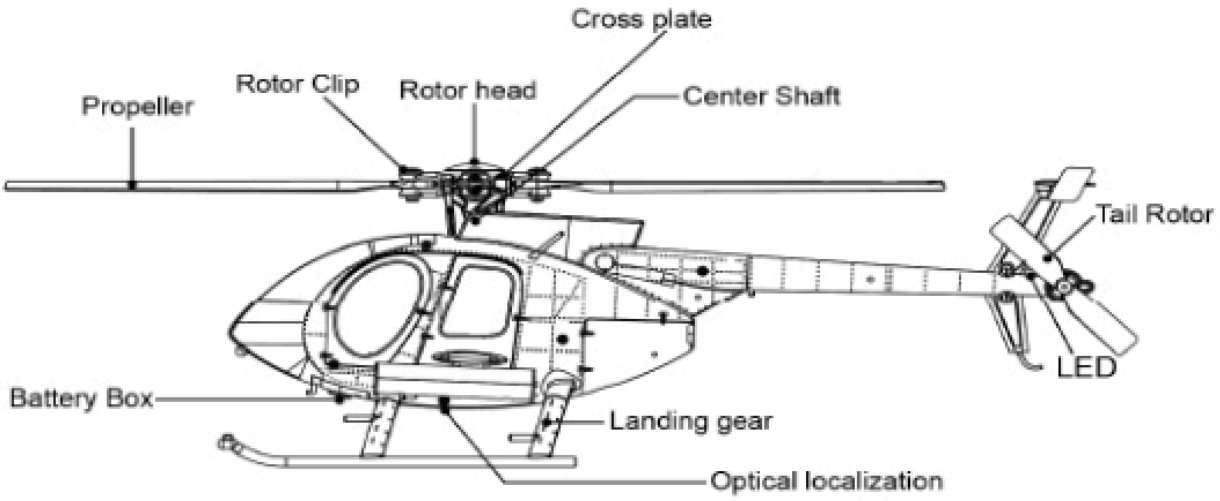
- Never leave a battery unattended while charging, and never operate a charger without adult supervision.
- Do not charge a warm battery. Allow it to cool to room temperature first.
- Always use a fireproof LiPo charge bag when charging or discharging.
- Never drop the charger or battery, and do not charge a damaged battery.
- Inspect the battery and charger before use.
  Do not use them if any wire or connector is damaged or if the battery previously short-circuited.
- Incorrect use of batteries, connections, or charging equipment can cause personal injury or property damage.
- Keep batteries and chargers away from moisture.
- Stop charging immediately if the battery or charger becomes hot or if the battery changes shape during charging.

High-Visibility Warning Section

WARNING:

- Use only the Twister charger designed for use with the supplied LiPo battery.
- Using other chargers or connectors can cause catastrophic failures, permanently damaging the battery or connected equipment.
- This product is not a toy and must only be charged, operated, or maintained with adult supervision.

Get to Know Your MD500



Co-Pilot technology

The MD500 two tier Co-Pilot technology makes it a very clever piece of kit. The first tier of the Co-Pilot software is a flight aid that consistently assists you when the helicopter is airborne and remains active in both Novice and Advanced flight modes (see below). This includes 6-axis gyro stabilisation to smooth the model's flight pattern through manoeuvres and to dampen the effect of turbulence. It also includes altitude hold functionality that works to maintain a constant height through all manoeuvres while the throttle remains untouched. The second tier of the Co-Pilot software (Co-Pilot Assist, activated using Button A) offers Auto Take-off, Auto Land and emergency Shutdown options. For a full explanation of this see 'Button A - Co-Pilot Assist' below.

Button A – Co-Pilot Assist

Button A operates the Co-Pilot function and has three different uses to aid you in your flying experience. With the helicopter and transmitter switched ON and ready for flight the Co-Pilot button works as follows:

1. Press the button momentarily for **Auto Take-off.** This will start the rotor blades of the helicopter and will automatically increase the RPM to the point where the helicopter will take-off. When it reaches a height of around 1.5m it will stop climbing and remain in the hover. Note that you will still have complete control over the helicopter during its ascent, however if you move the throttle stick it will instantly break out of Auto Take-off mode.
2. Making sure that the helicopter is within 10 feet of the ground, press Button A momentarily for **Auto Landing.** This has the reverse effect of Auto Take-off, i.e. as soon as the helicopter has landed the motor will shut down. During the descent you will still have full control of the helicopter but if you touch the throttle you will instantly break out of the Auto Landing sequence.
3. Press and hold Button A for 3 seconds to activate the **emergency shutdown function.** If you lose control of the helicopter this lets you abandon the flight by shutting down the rotor completely, allowing the helicopter to fall to the ground. In most cases the durability of the B0-105 will allow damage-free crash landing, however always check the helicopter for damage when this function has been used.

Button B – Flight Modes

Button B operates the Flight Mode function, of which there are two options: **Novice** and **Advanced**. Novice Mode offers full control of the helicopter but employs reduced control movements to soften the helicopter's response. Advanced Mode offers full control of the helicopter with full control movement, making the MD500 far more reactive to stick input.

1. Momentarily press the button to switch to **Advanced Flight Mode.** This is highlighted by two audible beeps.
2. Momentarily press the button again to switch from Advanced Flight Mode back to **Novice Flight Mode.** This is highlighted by a single audible beep.

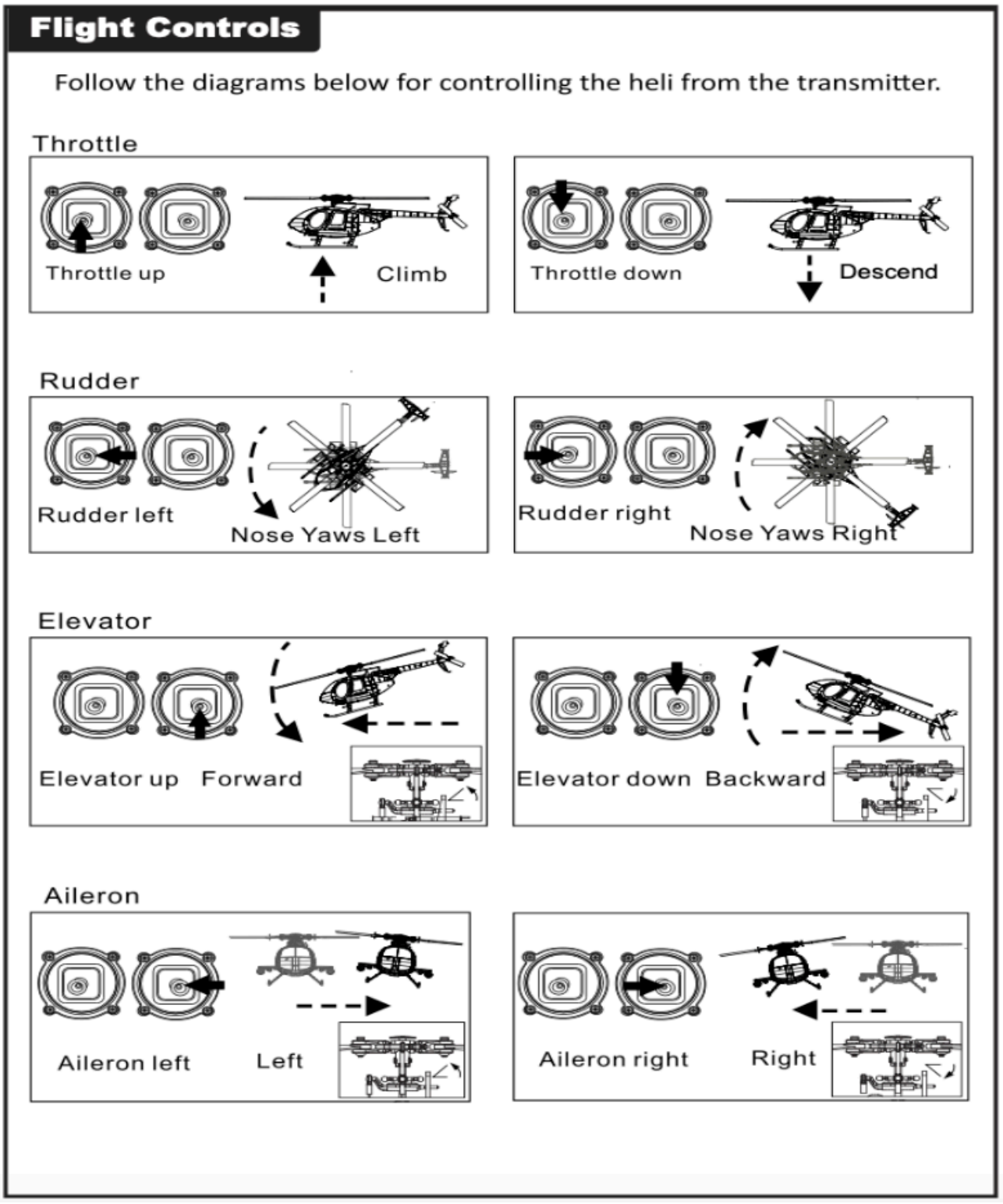
Note: Your MD500 will default to Novice Mode whenever the transmitter is switched ON.

Power switch

Before powering up the transmitter make sure you have inserted 4 AA batteries (not included). To switch it ON, move the Power Switch to the up (ON) position. Note: Always plug the battery into the helicopter before switching the transmitter ON. This allows the transmitter to find the helicopter's signal

Power indicator

The LED power indicator keeps you informed of the battery power in the transmitter.
If the batteries begin to get low the LED will start to flash warning you that the batteries need replacing. This is not to be confused with the power LED acting as a status indicator during some of the power up procedures, as covered here in 'Transmitter mode change'.



Flight Operation Steps

Pre-flight Inspections

Before flight it is your responsibility to ensure you have inspected your MD500 for any damage that might have occurred during previous flights and that it is safe to fly again.
We recommend a safe 2m distance when flying.

Preparing for take-off

1. Slot the battery into the helicopter. Press and hold the power button until the Red LED Illuminate on the battery and the white LED on the front of the helicopter slowly flashes, then place on a level flat surface.

2. Switch on the transmitter and wait for an audible tone. The LED on the front of the transmitter will start to flash slowly and at the same time the LED on the helicopter will start to flash rapidly. Advance the left stick (throttle) to 100% (if your Mode 2). A short audible tone will be emitted and the LED on the transmitter will start to flash rapidly. Now reduce the throttle to 0% which in turn will be met by a long audible tone, then return the stick to centre. The LED on the transmitter and helicopter will be permanently on. This procedure will arm the helicopter and is now ready for take-off.

Take-off

The helicopter has two options for take-off.

1. Press Button A (Co-Pilot) momentarily for Auto Take-off. This will start the rotor blades of the helicopter and will automatically increase the RPM to the point where the helicopter will take-off. When it reaches a height of around 1.5 m it will stop and remain in a hover. During the ascent you will still have full control over the helicopter but if you move the throttle stick it will break out of the Co-Pilot Auto Take-off mode.
2. The second option for taking off is without a Co-Pilot assist. Move both sticks to the bottom, outermost corners. This will start the helicopter motor and allow you to increase the RPM as needed for a fully controlled take-off. We advise this method only for intermediate and advanced pilots.

Manual start up stick command

Flying

Referring to the section entitled 'stick controls' use all your flight controls to guide your MD500 around your flying area. If you've not flown a model before this will take some practice. The helicopter pre-set Novice Mode will help you through your flight, maintaining a constant height whilst using the 6 axis gyro to keep things steady. For the first flight it's good to stay in Novice Mode but as your skill improves you can use the Flight Mode button to switch to Advance Mode which offers more control movement.

Flight trimming If you find the helicopter drifts in any direction, use the trim buttons described in 'Trim buttons' to tune the hover. For best results do this in calm conditions or, better still, indoors.

Gyro calibration If you feel that trimming the helicopter has not suitably honed any in-flight drift you can land and resolve this by calibrating the gyros. Do note, however, that even in flat-calm conditions all helicopters will drift slightly in the hover due to tiny air movements. This is normal.

1. Set the helicopter on a level surface and power it up ready for flight.
2. Move both sticks to the bottom left corners and hold them in position.
3. You will hear an audible tone from the transmitter and the helicopter will confirm the calibration with the LED changing from constant red to flashing red, then back to constant red. The calibration is now complete.

Gyro calibration stick command

Low Battery Warning

The MD500 is equipped with a low battery warning. The LED at the rear of the helicopter and on the bottom will start to flash when the battery is nearing depletion. This allows about 20 seconds to land before the BO-105 engages its low power battery landing mode to protect the battery. If the helicopter enters low battery mode it will slowly descend until it reaches the ground, whereupon it will shut down.

Landing
The helicopter has two options for landing:

1. **Using Button A (Co-Pilot Assist)** you must make sure the helicopter is within 10 feet of the ground. Press Button A momentarily for Auto Landing. This works in reverse of the Auto Take-off function and, as soon as the helicopter lands, it will shut down the motor. During the descent you will still have full control of the model but if you touch the throttle you will break out of the auto landing sequence.
2. **Using the throttle** you can manually land the helicopter by gently reducing height until it's on the ground. Once on the ground hold the throttle at zero until the motor shuts down.

Once the helicopter is safely landed and the rotors have stopped, press and hold the power button on the battery until all LED's are off on the battery and the helicopter. Now the helicopter is off it is safe to turn the transmitter off.

It's good practice to check your helicopter for any damage that might have occurred during flight. If your MD500 has struck any objects pay particular attention to the rotor blades (main or tail) and replace them if any damage is spotted. The performance and safety of the helicopter relies, amongst other things, on perfectly balanced damage-free rotor blades.

If the worst happens, don't worry, a full range of spares are available from your local J Perkins stockist.

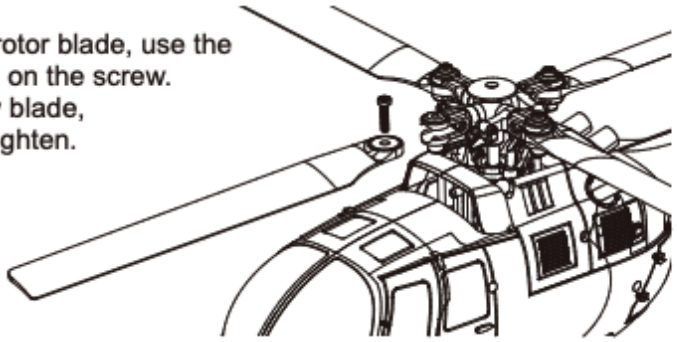
TWST4001203	Blade Grip Set (4pcs) (for MD500)
TWST4001204	Swash Plate Links (3pcs) (for MD500)
TWST4001205	Swash Plate (for MD500)
TWST4001206	Main Shaft and Clamp (for MD500)
TWST4001207	Swash Plate Guide (for MD500)
TWST4001100	Main Shaft Bearing (for MD500)
TWST4001208	Main Frame (for MD500)
TWST4001058	Main Gear (2pcs) (for MD500)
TWST4001209	LiPo 2S 350mAh Battery (for MD500)
TWST4001210	Skid set(for MD500)
TWST4001211	Main Flight Board (for MD500)
TWST4001212	Vertical and Horizontal Fin set Civilian(for MD500)
TWST4001212M	Vertical and Horizontal Fin set Military(for MD500)
TWST4001213	Fuselage Body Civilian (for MD500)
TWST4001213M	Fuselage Body Military (for MD500)
TWST4001214	Bomb set (for MD500)
TWST4001068	Screw set (for MD500)
TWST4001215	Transmitter (for MD500)
TWST4001048	Helicopter Landing Pad
TWST4001049	Plastic Rotor Head Assembly (for MD500)
TWST4001050	Blade Grip Bolts (4pcs) (for MD500)
TWST4001056	Main Motor and Pinion (for MD500)
TWST4001061	Tail Blade (2pcs) (for MD500)
TWST4001062	Tail Motor (for MD500)
TWST4001064	USB Charger (for MD500)
TWST4001065	Main Blade Set (4pcs) (for MD500)
TWST4001072	Servo (for MD500)

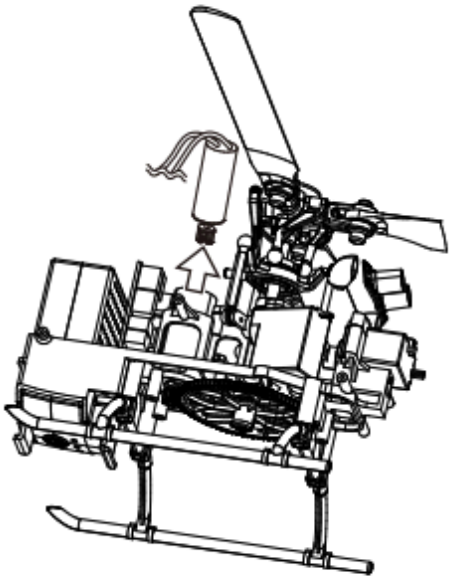
Trouble Shooting Guide

	Problem	Possible Cause	Solution
1	The lights on the aircraft and transmitter continue to blink and the aircraft will not respond to controls.	The aircraft has not been bound to the transmitter.	Review step #2 on page 7 of the manual and repeat the binding process.
2	The lights on either the aircraft or transmitter do not come on.	The aircraft battery either does not have a secure connection or is not charged. For the transmitter, the batteries may not be inserted by the correct polarity or may need to be replaced.	Make sure the aircraft battery is charged and securely installed. Make sure that transmitter batteries are inserted correctly and replace them, if necessary.
3	When you try to take-off, the aircraft lights continue to flash and the unit does not take off.	The aircraft battery is either not connected correctly or needs to be charged.	Reinstall the aircraft battery to make sure it is firmly secured and connected or recharge, if necessary.
4	After binding the transmitter to the aircraft, the main rotor blades will spin, but the aircraft will not take off.	Either the aircraft battery has low voltage or the main shaft and gear are loose.	If low voltage, charge or replace the battery. Make sure the main shaft and gear are a tight fit.
5	The aircraft is flying out of control.	The aircraft may need to be calibrated. Other possible causes include the main rotor blades are damaged, the shaft has been bent, or the blade holder screws are too tight.	First try to calibrate. If that does not solve the issue, inspect the main rotor blades, the shaft, and the screws holding the blades in place. Adjust or replace parts, as necessary.
6	The aircraft spins to the left after taking off.	There is not enough power to the tail rotor motor or parts have been damaged.	Check connections to the tail rotor and replace any damaged or broken parts, including the motor.
7	The aircraft has limited yaw.	The aircraft has not been correctly trimmed from the transmitter.	Retrim the yaw according to the instructions.
8	The aircraft yaws uncontrollable in either direction.	It is likely that either the servo is not working correctly or there is an issue with the swashplate.	Change the servo and/or the swashplate to see if that solves the issue.

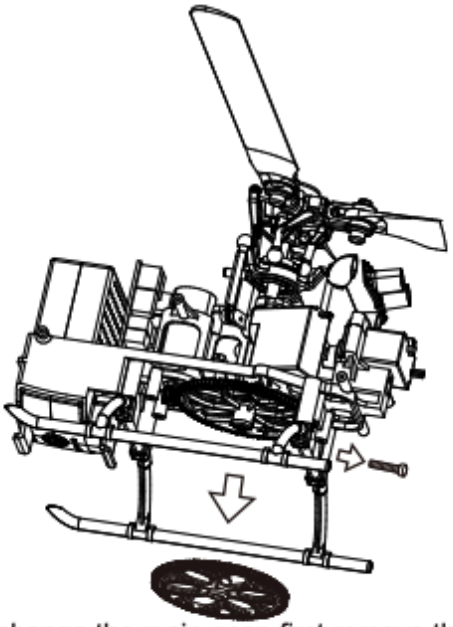
Replacing Basic Parts

To remove a damaged rotor blade, use the correct size hex wrench on the screw. When installing the new blade, make sure not to over-tighten.

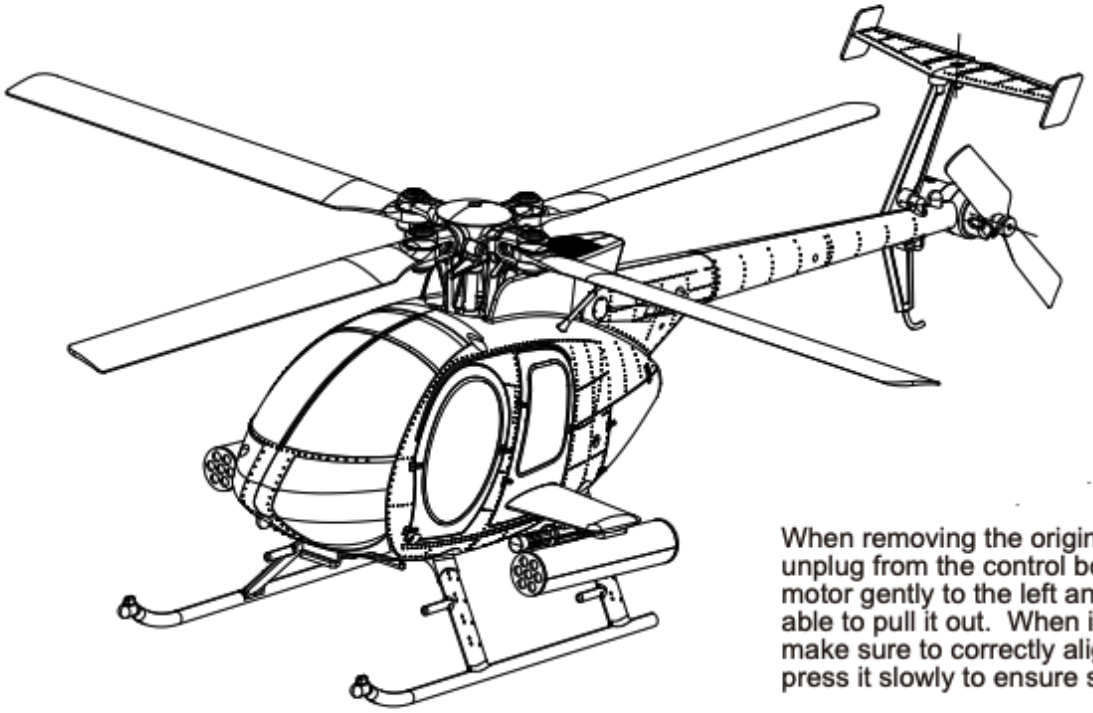




To change the main motor, unplug the original motor from the control board and twist the motor gently to the left and right until you are able to pull it out. Repeat steps in reverse to install the new motor.



To change the main gear, first remove the screw. Next, pull directly down on the main gear to remove. When installing the new gear, make sure that the "key" on the main shaft is aligned correctly with the "key" insert on the inner hole of the new gear.



When removing the original tail motor, unplug from the control board and twist the motor gently to the left and right until you are able to pull it out. When installing the new motor, make sure to correctly align the motor shaft and press it slowly to ensure smooth rotation.

CONFORMITY

Europe

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England

Australia

Model Engines PTY Ltd
Unit 1/32 Bluett Drive
Smeaton Grange
NSW 2567
Austalia

UKCA
CE CONFORMITY

J Perkins (Distribution) confirms this product is in compliance with the relevant harmonised UK and European directives relating to its safe operation.

To see a copy of the relevant Declaration of Conformity visit www.jperkins.com or modelengines.com

WEEE

This appliance is labelled in accordance with European Directive, concerning Waste Electrical and Electronic Equipment (WEEE). The WEEE Directive came into force to reduce the disposal of domestic waste and promote recycling. Any electrical item that carries the crossed out wheelie bin logo must not be disposed of in domestic waste but should be taken to a designated collection facility. J Perkins (Distribution) are a member of an approved compliance scheme to encourage consumers to recycle unwanted items. Your local authority will be able to provide details of your nearest approved waste disposal site.