



### READY-TO-FLY MICRO-ELECTRIC HELICOPTER

EF Helicopters presents a new ready-to-fly helicopter - the Sabre. Big on performance and small in size, this new helicopter fulfills a direct need for those interested in flying model helicopters who want a small, affordable and simple-to-operate machine. The Sabre is supplied factory built and ready to fly right from the box. The integrated receiver, mixer, gyro and twin ESC assembly is pre-installed as are the servos. All you have to do is charge the flight battery with the included 230V AC wall charger and install 8 AA Alkaline batteries (sold separately) into the transmitter and you're ready to fly!

The Sabre features a simple fixed-pitch head and lifting section rotor blades for a low head speed. This makes the Sabre easy to operate and very durable for those inevitable 'rough landings'. For 'seriously rough landings' EF Helicopters support the Sabre with a complete line of replacement parts.

Fly it indoors or fly it outdoors on calm days... the Sabre is fun, tough and a great way to learn to fly and enjoy true R/C helicopter performance.

## FINAL ASSEMBLY and SETUP GUIDE

The EF Helicopters Sabre RTF Micro-Electric Helicopter is distributed in the UK and Europe by:

Ripmax Ltd.,  
241 Green Street, Enfield, EN3 7SJ. England.

**Ripmax**



#### SPECIFICATIONS AND FEATURES:

- Rotor Span: 510mm (20")
  - Length: 469mm (18.5")
  - Weight RTF: 285g (10 Oz)
  - Motor: 370 Electric (Included)
  - Battery: 7 Cell 650mAH NiMH (Included)
- 
- 99% Assembled Out of the Box
  - Lightweight, Strong Airframe
  - Four-Channel 35MHz Transmitter Included
  - Separate Main Rotor Motor and Tail Rotor Motor
  - Integrated Receiver, Mixer, Gyro and Twin ESCs
  - Composite-Moulded Airframe

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## SAFETY WARNINGS

This R/C helicopter is not a toy! If misused or abused, it can cause serious bodily injury and/or damage to property. Fly only in safe areas and preferably at a dedicated R/C flying site. We suggest having a qualified instructor carefully inspect your helicopter before its first flight. Please carefully read and follow all instructions included with this helicopter, your radio control system and any other components purchased separately.

### GENERAL WARNINGS

- Just because the Sabre is powered by an electric motor doesn't mean that you shouldn't exercise caution when flying and operating it. You must use the same amount of caution during use as when flying and operating an IC (Internal Combustion) engine powered helicopter.
- We recommend that when you first begin flying the Sabre that you perform only basic manoeuvres, such as hovering, until you are more familiar with the setup and flight characteristics of the helicopter. This will give you time to feel comfortable with the way the helicopter reacts to control inputs and power.
- You must take care when plugging the flight battery into the helicopter. Unlike an IC engine powered helicopter that uses a clutch assembly to allow the engine to idle without the rotor blades spinning, an electric helicopter does not have such a system. You must therefore be certain that your transmitter is turned on and both the throttle control stick and throttle trim lever are pulled all the way back before plugging in the flight battery. This will prevent any chance of the rotor blades spinning and harming you while connecting the flight battery.
- Do not fly your helicopter if another model is on the same frequency as you. The frequency number is printed on the transmitter and the helicopter.
- Always fly in an open area free of obstructions.
- When flying, make sure any spectators are behind you.
- Always be conscious of the rotor blades. Be careful not to allow loose clothing to be drawn into the rotor blades.
- Because your helicopter is operated by radio control, it is important to make sure you are always using fresh and/or fully charged batteries. Never allow the batteries to run low or you could lose control of the helicopter.

- Do not allow any of the electrical components to get wet or damage may occur.
- You should complete a successful range check of your radio equipment prior to each new day of flying, or prior to the first flight of a new or repaired model.
- If your helicopter gets dirty, do not use any solvents to clean it. Solvents may damage the plastic and composite parts.

### FLIGHT BATTERY WARNINGS

- Never overcharge the flight battery or you may cause permanent damage to it.
- To prevent the flight battery from overheating during the charging process, allow it to cool completely before recharging.
- Always completely discharge the flight battery by running the motor until it stops before recharging it.
- Always remove the flight battery from the helicopter before recharging.

### RADIO SYSTEM WARNINGS

- Always turn on the transmitter before plugging in the flight battery and always unplug the flight battery before turning off the transmitter.
- Always unplug the flight battery when not flying the helicopter.
- Never cut the receiver aerial shorter or you could lose control of the helicopter during flight.
- When flying the helicopter, make sure that the transmitter antenna is completely extended and is pointed up towards the sky, not down towards the ground.
- Never attempt to dismantle or modify any of the radio system

## CUSTOMER SERVICE INFORMATION

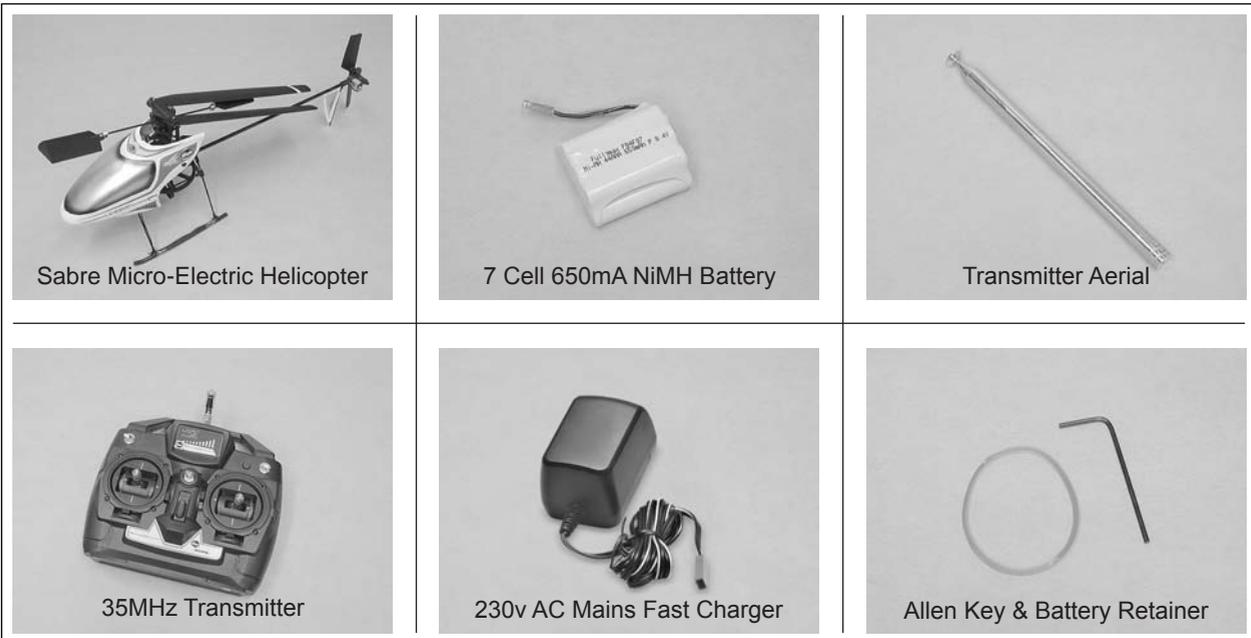
If you should find a part missing or damaged, or have any questions about assembly, please contact us at the address below:



Ripmax Ltd.,  
241 Green Street,  
Enfield,  
EN3 7SJ. ENGLAND.  
Phone: +44 (0)20 8282 7500 Fax: +44 (0)20 8282 7501

## PARTS IDENTIFICATION

Before beginning final assembly, remove the different parts from the box and use the photos below to verify that your kit contains all of the correct parts. If your kit is missing a part, please contact us immediately, using the Customer Service Information above.



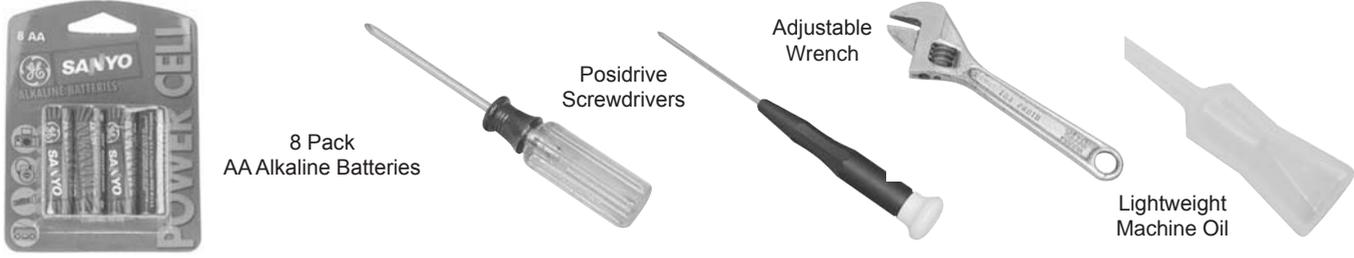
## OUR GUARANTEE

EF Helicopters guarantee this kit to be free from defects in both material and workmanship at the date of purchase. This does not cover any component parts damaged by use, misuse or modification. **In no case shall EF Helicopters' liability exceed the original cost of the purchased kit.**

In that EF Helicopters has no control over the final assembly or material used for final assembly, no liability shall be assumed for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

## RECOMMENDED ITEMS

This section lists the items that are not included in your kit, that you will need to fly and maintain your new Sabre RTF Micro-Electric Helicopter. As you can see, there's not much to it!



8 Pack AA Alkaline Batteries

Posidrive Screwdrivers

Adjustable Wrench

Lightweight Machine Oil

**PRO TIP** The Sabre RTF Micro-Electric Helicopter includes a 7 cell Nickel Metal-Hydride flight battery and a 230V AC 2.5 hour wall charger to charge the flight battery. If you want to, you can purchase a second flight battery (P/N 165070) so you have two. That way, you can take two fully-charged flight batteries with you to fly... meaning twice as much flying fun!

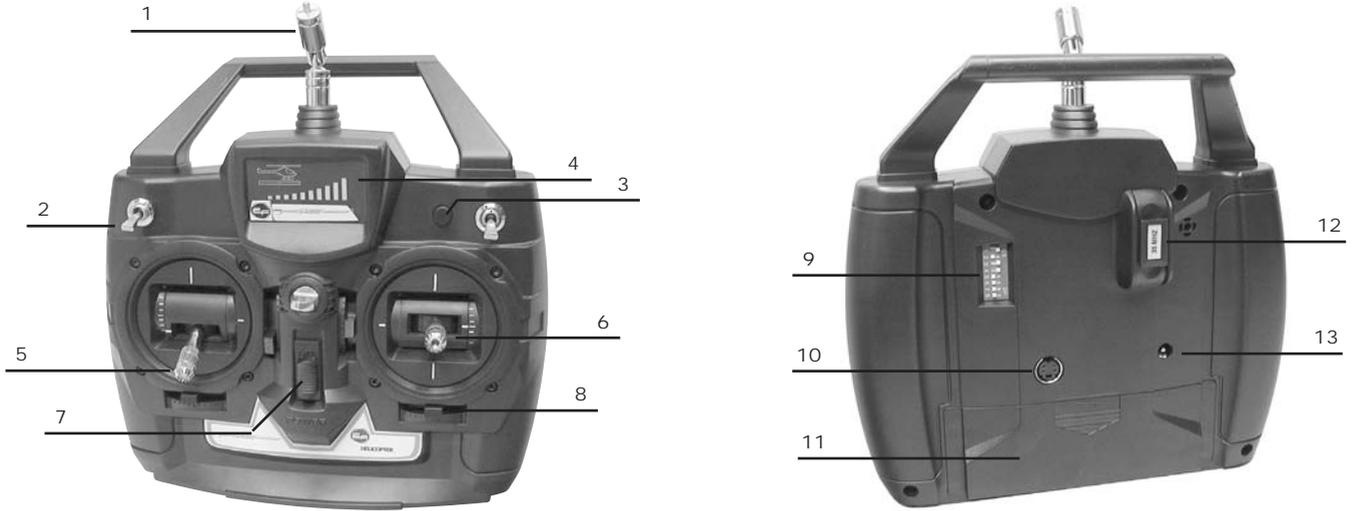
You can also purchase a high-performance quick-charger that can charge the flight battery in about 30 minutes and is powered from your car's 12 volt DC battery or from a 230V AC wall outlet. This enables you to charge the flight battery at the flying field, so you can fly as many times during the day as you want.



## BECOMING FAMILIAR WITH YOUR SABRE RTF MICRO-ELECTRIC HELICOPTER

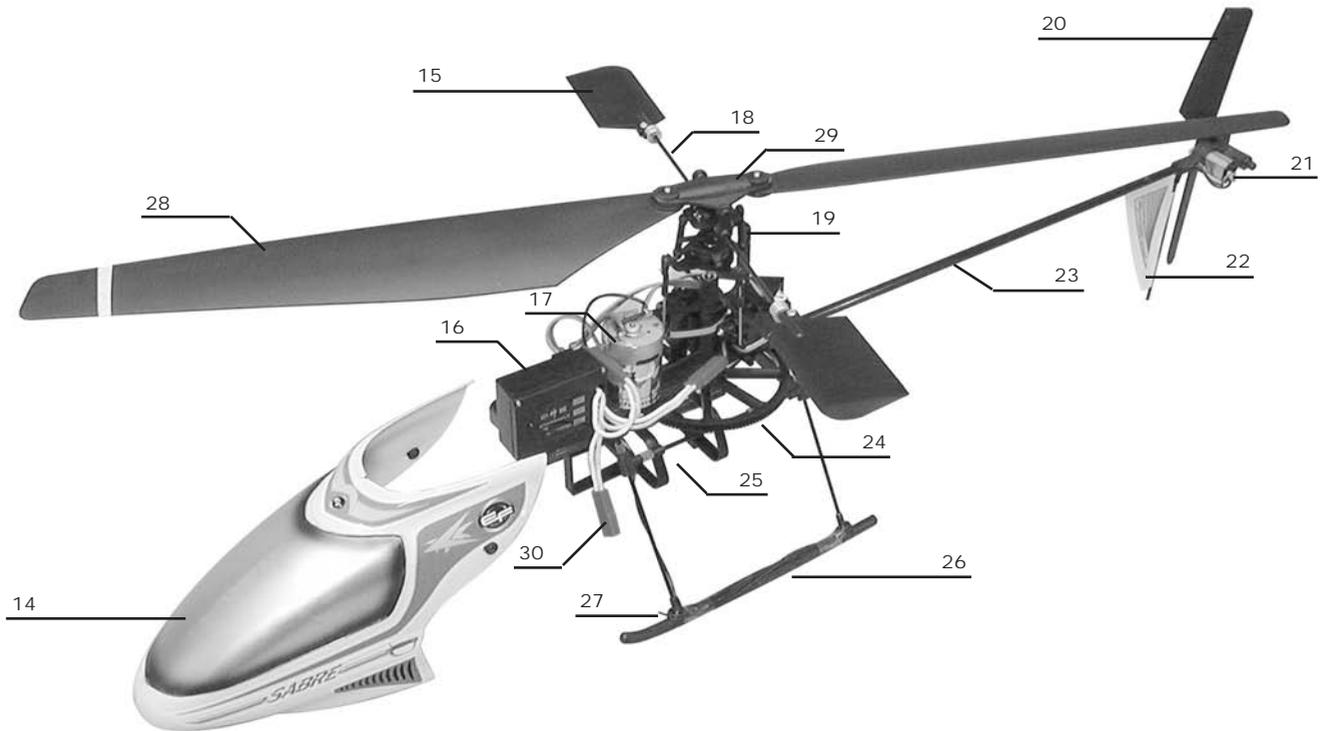
Each transmitter comes with a sticker on the back showing which frequency in the 35MHz band that the radio control system operates on. The 35MHz band is for aircraft and helicopter use only, so it's important to check the frequency if others are in the area before turning on the radio control system. No two models can operate near each other if they are on the same frequency. **If you turn on the transmitter and someone else is flying on the same frequency, their model will lose control and crash.**

If you go to fly at a dedicated R/C flying site, make sure that you understand the frequency control system being used.



- 1 - Aerial Mount
- 2 - Auxiliary Switch (2) - Not Used
- 3 - Auxiliary Button - Not Used
- 4 - Battery Condition LEDs
- 5 - Throttle/Yaw Control Stick
- 6 - Cyclic Control Stick
- 7 - On/Off Switch
- 8 - Trim Tab (4)
- 9 - Servo Reversing Switches
- 10 - DIN Connector for Simulator Adaptor
- 11 - Battery Cover
- 12 - Crystal Mount
- 13 - Charge Jack (for Optional Ni-CD Batteries)

## BECOMING FAMILIAR WITH YOUR SABRE RTF MICRO-ELECTRIC HELICOPTER CONTINUED....

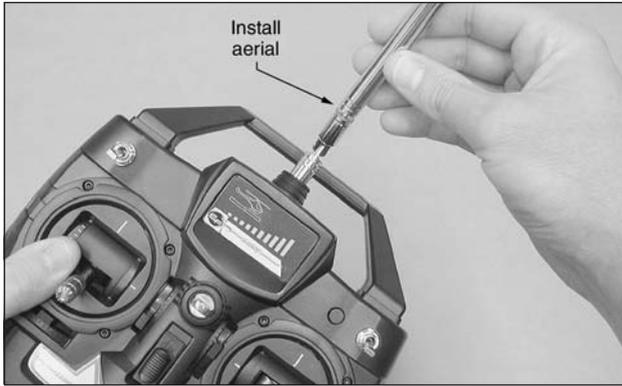


- |                                              |                           |                          |
|----------------------------------------------|---------------------------|--------------------------|
| 14 - Canopy                                  | 20 - Tail Rotor           | 26 - Landing Skid        |
| 15 - Flybar Paddle                           | 21 - Tail Rotor Motor     | 27 - Receiver Aerial     |
| 16 - Integrated Receiver, Gyro, ESCs & Mixer | 22 - Vertical Stabiliser  | 28 - Main Rotor Blade    |
| 17 - Main Motor                              | 23 - Tail Boom            | 29 - Rotor Head          |
| 18 - Flybar                                  | 24 - Main Gear            | 30 - Flight Battery Plug |
| 19 - Swashplate Assembly                     | 25 - Flight Battery Mount |                          |

## HELPFUL HINTS FROM THE PROS

- The servo reversing switches on the back of the transmitter are preset at the factory. For reference, Ch 1 is tail rotor control, Ch 2 is right/left cyclic control, Ch 3 is forward/back cyclic control and Ch 4 is throttle control. The remaining switches are not used. **If the flight battery is plugged in, unplug the motor connector before adjusting the throttle reversing switch. This will prevent the motor from going to full throttle when the reversing switch is moved.**
- You can use your transmitter with a computer-based flight simulator that uses a transmitter adapter with the same DIN-style plug.
- A charge outlet is provided should you wish to use rechargeable Ni-Cd batteries in the transmitter instead of Alkaline cells. Ni-Cd batteries and compatible chargers are available separately.
- The two toggle switches and the push-button switch are not used in this application.
- The tail rotor, main rotor blades and paddles are designed to move during a mishap. This greatly reduces the chance of breaking these and other parts of the helicopter. Because of this, it is important that you double-check that the rotor blade hub screws and paddle clamp screws are tight and that the rubber tail rotor retainer is in place before each flight.
- For smooth operation, it is important that both rotor blades are straight. If they aren't, the helicopter will wobble severely when you open the throttle.
- The paddles should be adjusted so that they are flat when viewed from the ends of the paddles.
- During initial power-up and transition to hover, you will need to hold right cyclic to compensate for the torque of the rotor blades.

## INSTALLING THE AERIAL AND TRANSMITTER BATTERIES

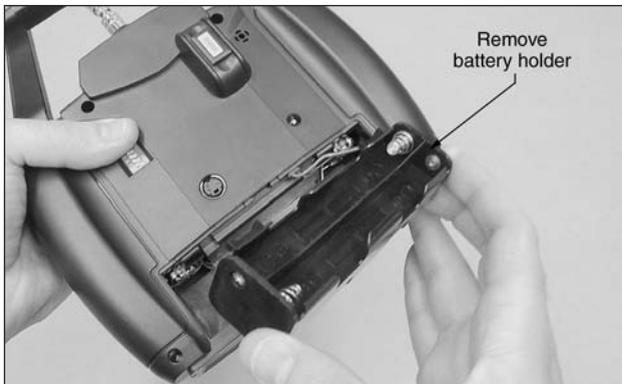


□ Carefully thread the aerial onto the aerial mount & gently tighten it.

👉 Leave the aerial down for now, but always ensure it is fully extended before flying your helicopter. The aerial mount should also be adjusted so that it is always pointing up into the air.



□ Remove the battery cover from the back of the transmitter by pulling down on it with one hand while holding the transmitter with your other hand.



□ Carefully remove the battery holder from the transmitter and unplug the red connector.

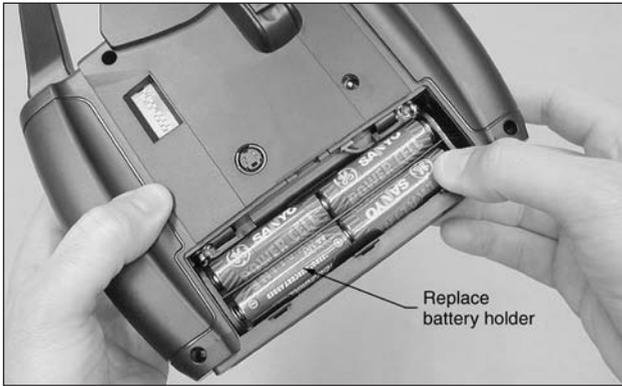


□ Install 8 fresh AA Alkaline batteries into the battery holder, being careful to ensure that the polarity is correct for each battery.

◆**IMPORTANT**◆ If you choose to use rechargeable AA Ni-Cd cells, they can be charged using a standard 230V AC transmitter charger plugged into the back of the transmitter. **Never attempt to charge or recharge Alkaline cells.**

**PRO TIP** Upgrading your transmitter to use rechargeable NiCd cells is easy. All you need to do is purchase 8 AA rechargeable NiCd cells and a 230V AC overnight charger. This will allow you to recharge the battery pack without removing the batteries from the transmitter and it will save you money in the long run, since you won't need to purchase Alkaline batteries when they run low.

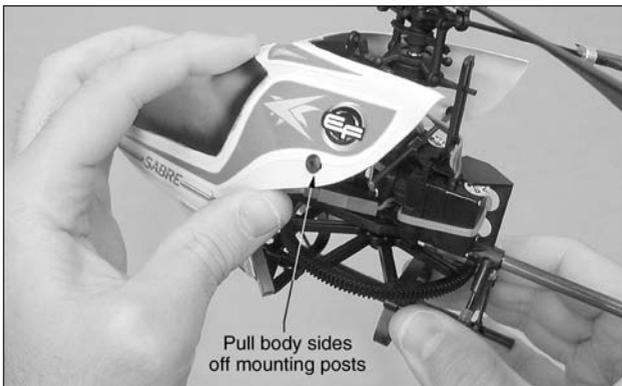




- ❑ Plug the red connector on the battery holder into the transmitter (the connector will fit only one way), then install the battery holder.
- ❑ Refit the battery cover, making sure it is firmly seated into place.

## INSTALLING THE FLIGHT BATTERY

◆**WARNING**◆ Do not charge the flight battery before installing it. Charging will be done later.



- ❑ Remove the canopy from the mainframe by first gently pulling the rear of the canopy off the two mounting posts. Now pull the canopy forward off the mainframe.

**BEFORE INSTALLING THE FLIGHT BATTERY, YOU WILL NEED TO MAKE SURE THAT THE TRANSMITTER IS SWITCHED ON AND THAT BOTH THE THROTTLE CONTROL STICK AND THE THROTTLE TRIM LEVER ARE PULLED ALL THE WAY BACK. IF THEY AREN'T, THE MOTOR COULD TURN ON AND THE ROTOR BLADES WILL SPIN AT HIGH SPEED WHEN YOU PLUG THE FLIGHT BATTERY IN.**

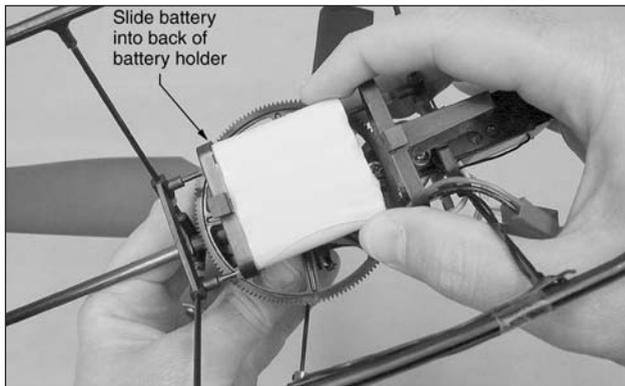
◆**WARNING**◆ Before turning on the transmitter, always check to make sure that nobody else is flying on the same frequency as you. This is particularly important if you are flying at a designated R/C flying site.



- ❑ Make sure that the throttle control stick and the throttle trim lever are pulled all the way back. This will ensure that the motor won't turn on when you plug in the flight battery.
- ❑ Turn on the transmitter. The LEDs should light up in the green 'safe' area. If they don't, replace the batteries with a fresh set.

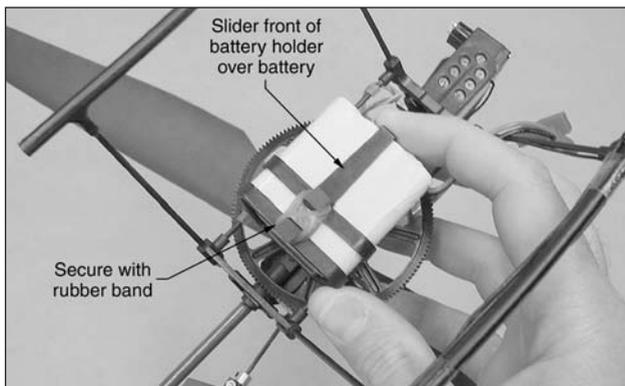
**PRO TIP** Always make sure you turn on the transmitter first, before plugging in the flight battery. After you have finished flying, unplug the flight battery first, then turn off the transmitter. This will prevent unexpected radio signals from interfering with the radio control system.

◆**WARNING**◆ The helicopter does not have an on/off switch. When you connect the flight battery, the receiver and servos will be powered up and the motor will be armed. **Do not move the throttle control stick forward.**



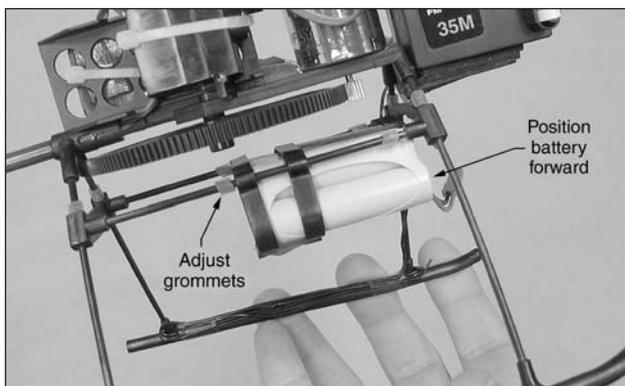
❑ Slide the flight battery holder open, then slide the back of the flight battery into the moulded recess at the rear of the flight battery holder. **The battery wire with the red plug should be towards the front of the helicopter.**

👉 Notice that the flight battery will fit only one way as the flight battery holder is moulded in the same profile as the flight battery.



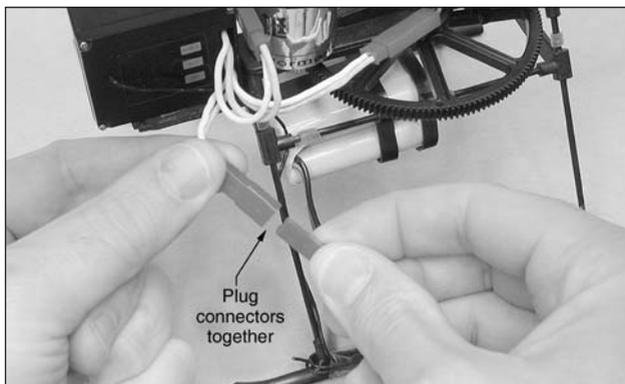
❑ Slide the front of the flight battery holder over the flight battery and secure the flight battery holder together using the rubber band provided.

👉 Loop the rubber band around the moulded tabs on the flight battery holder a couple of times to ensure that the flight battery holder is held securely closed.



❑ Carefully slide the battery holder forward so that the front of the flight battery is level with the front of the landing skid struts. Adjust the position of the rubber grommets to hold the battery holder in position.

◆**IMPORTANT**◆ The flight battery holder can be moved forwards or backwards by adjusting the position of the rubber grommets. This allows you to balance the helicopter to suit your flying style. Initially, we suggest positioning the flight battery as shown above. We will fine-tune the balance of the helicopter later on.



❑ Plug the flight battery's connector into the matching loose connector on the mainframe.

◆**IMPORTANT**◆ As a safety feature, the connectors can only be plugged in one way.

👉 For now, don't replace the canopy just yet as it needs to be removed so you can check and adjust the swashplate assembly.

**PRO TIP** The battery plug is accessible from under the canopy, so it is not necessary to remove the canopy and flight battery

# SETTING UP YOUR SABRE RTF MICRO-ELECTRIC HELICOPTER

## BASIC OPERATION

**Climbing and Hovering:** Climbing is controlled by pushing the throttle control stick on the transmitter (the left-hand stick) forward to turn on the motor. The throttle control is proportional, so motor speed is directly related to the throttle stick's position. To lift off and hover, slowly move the throttle control stick forward until the helicopter lifts off into a stable hover. To continue climbing from hover, move the throttle control stick further forward to increase the speed of the motor.

**Descent:** Descent is also controlled by the throttle control stick. When you pull the throttle control stick back, the motor slows down and the helicopter will descend. Adjust the speed of the motor using the throttle control stick to control the helicopter's rate of descent.

**Right and Left Turns:** Right and left turns are made by moving the cyclic control stick (the right-hand stick) on the transmitter. When you move the stick to the right, the right side of the swashplate tilts down, causing the helicopter to turn right. When you move the control stick to the left, the left side of the swashplate tilts down, causing the helicopter to turn left.

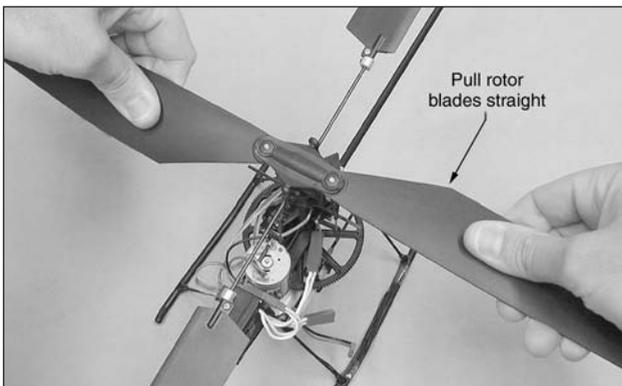
**Forward and Backward Pitch:** Moving the cyclic control stick (the right-hand stick) forward or backward will cause the helicopter to pitch forward or backward. This allows the forward speed, climb and descent angle and hover stability of the helicopter to be maintained. When you move the control stick forward, the front of the swashplate tilts down. When you move the control stick backward, the back of the swashplate tilts down.

**Yaw control:** Yaw is controlled by moving the tail rotor control stick (left-hand control stick) right and left. When you move the control stick to the right, the nose of the helicopter pivots to the right. When you move the control stick to the left, the nose of the helicopter moves to the left. Yaw control is used to stabilise and control the position of the helicopter's nose.

## ROTOR HEAD AND SWASHPLATE SETUP

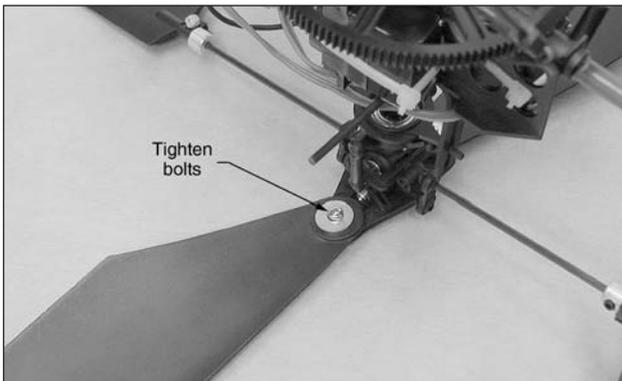
❑ Unplug the flight battery and turn off the transmitter. **When adjusting the rotor blades, we suggest unplugging the flight battery and turning off the transmitter for your safety.**

**THE MAIN ROTOR BLADES ARE DESIGNED TO BE ABLE TO PIVOT UNDER PRESSURE TO REDUCE STRESS AND THE CHANCE OF BREAKING THEM, OR THE SWASHPLATE COMPONENTS, DURING A CRASH OR IF THE HELICOPTER SIMPLY TIPS OVER DURING HOVER. BECAUSE OF THIS, IT IS IMPORTANT TO MAKE SURE BEFORE EVERY FLIGHT THAT THE ROTOR BLADES ARE STRAIGHT AND THAT THE BOLTS THAT HOLD THE ROTOR BLADES TO THE ROTOR HEAD ARE TIGHT.**



❑ Gently grab one rotor blade in each hand, then pull out on the rotor blades to make both of them straight to one another.

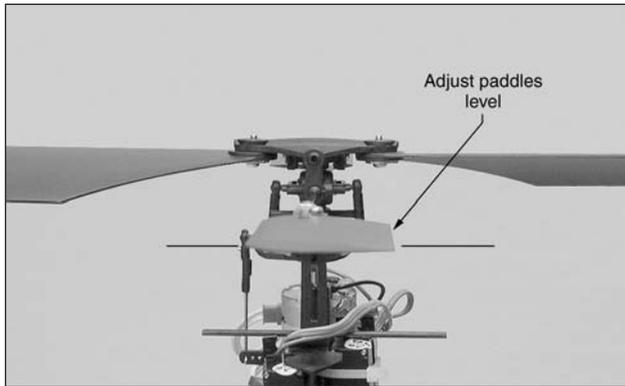
◆**IMPORTANT**◆ If the rotor blades are not straight, the helicopter will vibrate and wobble excessively when throttle is applied.



❑ Using a Posidrive screwdriver, firmly tighten the two bolts that hold the rotor blades to the rotor head.

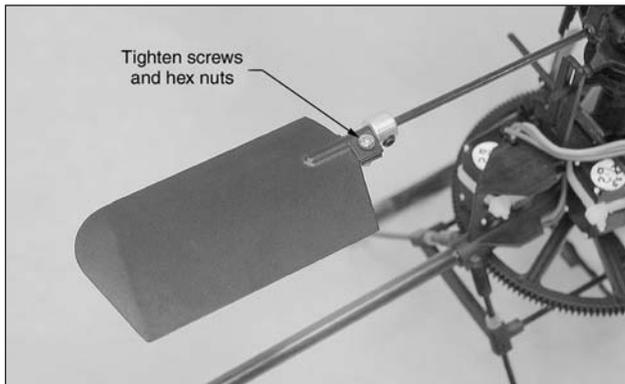
◆**IMPORTANT**◆ Even after tightening the bolts, the rotor blades will still be able to pivot under pressure. This is normal. You just don't want the rotor blades to be loose.

LIKE THE MAIN ROTOR BLADES, THE PADDLES ARE DESIGNED TO BE ABLE TO PIVOT UNDER PRESSURE TO REDUCE STRESS, AND THE CHANCE OF BREAKING DURING A CRASH OR IF THE HELICOPTER SIMPLY TIPS OVER DURING HOVER. BECAUSE OF THIS, IT IS IMPORTANT TO MAKE SURE BEFORE EVERY FLIGHT THAT THE PADDLES ARE FLAT AND THAT THE BOLTS THAT HOLD THE PADDLES TO THE FLYBAR ARE TIGHT.



- ❑ With the swashplate level, view each paddle from the end of the paddle. When they are aligned properly, the paddles should be flat, as shown. They should not be angled up or down.

◆**IMPORTANT**◆ If the paddles are out of alignment, the flying qualities of the helicopter will be compromised and the helicopter will be more difficult to control.



- ❑ Using a Posidrive screwdriver and a small adjustable wrench, firmly tighten the screws that hold the paddles to the flybar.

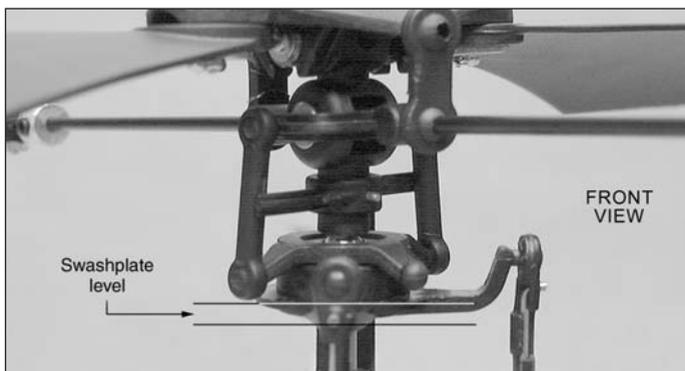
- ❑ Ensure that the throttle control stick and trim lever are pulled all the way back, then turn on the transmitter. Now plug in the flight battery to power up the helicopter.

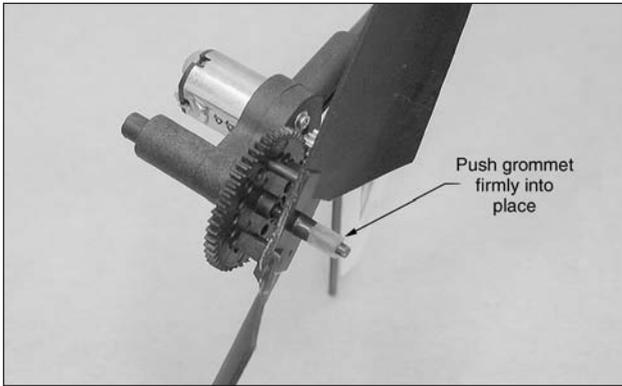


- ❑ Carefully adjust the three control trim tabs on the transmitter so that they are centred, as shown.

◆**WARNING**◆ The throttle trim tab should be pulled back completely, so that the motor will not turn on.

- ❑ Look carefully at the swashplate from both the front and the side. The swashplate should be level in both axes. If when looking from the front, the swashplate is not level, move the roll trim lever right or left until the swashplate is level. If when looking from the side, the swashplate is not level, move the pitch trim lever up or down until the swashplate is level.

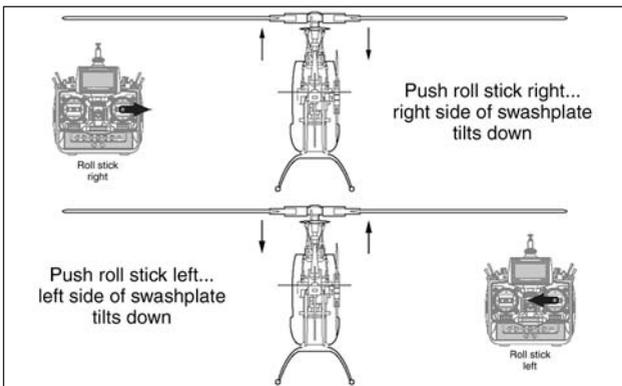




**LIKE THE MAIN ROTOR BLADES AND THE PADDLES, THE TAIL ROTOR IS DESIGNED TO COME OFF DURING A CRASH OR HARD LANDING. YOU SHOULD DOUBLE-CHECK THAT THE RUBBER GROMMET IS PUSHED ON COMPLETELY AND SECURELY HOLDING THE TAIL ROTOR IN PLACE.**

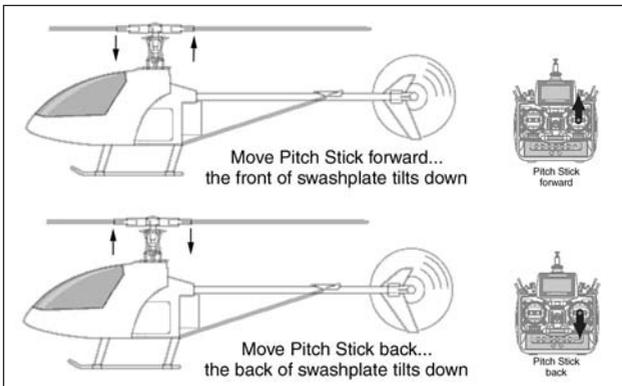
- Double-check that the rubber grommet that holds the tail rotor in place is firmly pushed up against the tail rotor.

## CHECKING CONTROL OPERATION



- Looking from the rear of the helicopter, push the cyclic control stick to the right. The right side of the swashplate should tilt down.
- Looking from the rear of the helicopter, push the cyclic control stick to the left. The left side of the swashplate should tilt down.

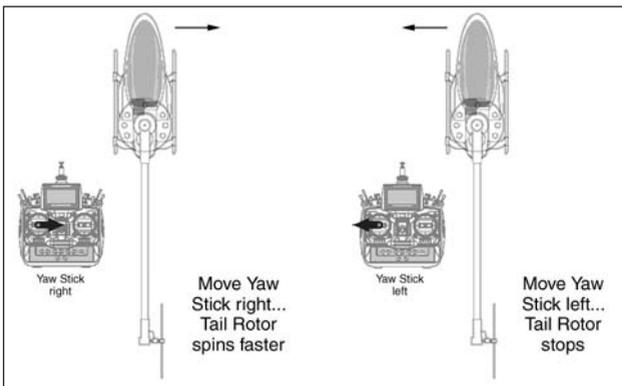
◆**IMPORTANT**◆ If the swashplate is not moving in the correct direction, move the Ch 2 servo reversing switch on the back of the transmitter.



- Looking from the side of the helicopter, push the cyclic control stick forward. The front of the swashplate should tilt down.
- Looking from the side of the helicopter, pull the cyclic control stick back. The rear of the swashplate should tilt down.

◆**IMPORTANT**◆ If the swashplate is not moving in the correct direction, move the Ch 3 servo reversing switch on the back of the transmitter.

- With the helicopter sitting on the ground, push the throttle control stick forward just far enough to turn on the motor. The main rotor blades should begin to spin at a low speed and the tail rotor should also begin to spin.



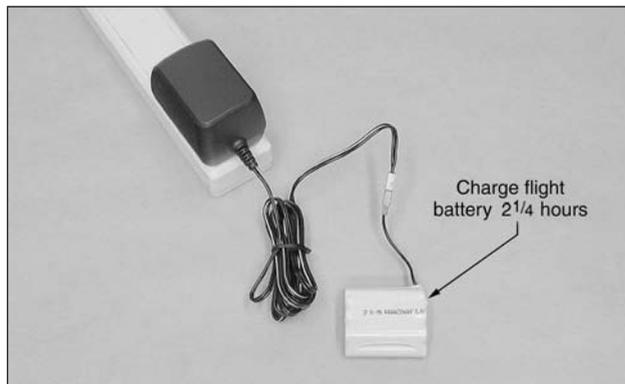
- Apply just enough throttle for the tail rotor to begin spinning. Looking from the rear of the helicopter, push the yaw control stick to the right. The tail rotor should continue to spin and/or spin faster.
- Looking from the rear of the helicopter, push the yaw control stick to the left. The tail rotor should stop spinning.

◆**IMPORTANT**◆ If the tail rotor is not operating correctly, flip the Ch 1 servo reversing switch on the back of the transmitter.

- After you're satisfied that the controls are lined up correctly and operating in the correct direction, unplug the flight battery and turn off the transmitter.

## GETTING READY TO FLY YOUR SABRE RTF MICRO-ELECTRIC HELICOPTER

### CHARGING THE FLIGHT BATTERY



- ❑ Plug the flight battery connector into the flight battery charger connector.

◆**IMPORTANT**◆ As a safety feature, the connectors can only be plugged in one way.

- ❑ Plug the flight battery charger into a 230V AC wall outlet.
- ❑ Charge the flight battery for 2-1/2 hours. **Do not overcharge the flight battery and don't leave the flight battery unattended during the charging process.**
- ❑ If the battery becomes warm to the touch, remove from charge as it is fully charged.

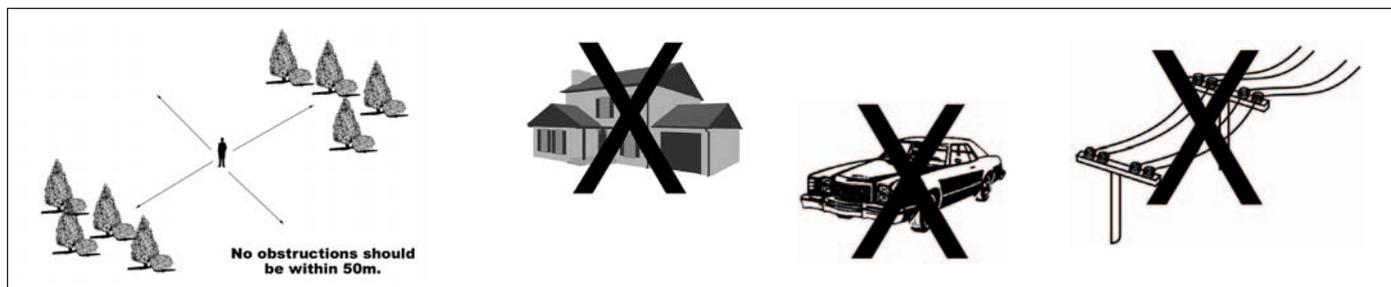
**PRO TIP** The battery plug is accessible from under the canopy, so it is not necessary to remove the canopy and flight battery from the mainframe to charge the flight battery.

### CHOOSING YOUR FLYING FIELD

- ❑ The flying field you choose should be a large, open field with grass and a hard surface to take off from. Close by, there should not be any vehicles, buildings, power lines, trees, large rocks or anything else that your helicopter can crash into.

**Each transmitter comes with a sticker on the back showing which frequency in the 35MHz band that the radio control system operates on. The 35MHz band is for aircraft and helicopter use only, so it is important to check the frequency if others are in the area before turning on the radio control system. No two models can operate near each other if they are on the same frequency. If you turn on the transmitter and someone else is flying on the same frequency, their model will lose control and crash.**

**If you go to fly at a dedicated R/C flying site, make sure that you understand the frequency control system that's being used.**



### RANGE CHECKING THE RADIO CONTROL SYSTEM

After getting out to your flying field - but before you fly for the first time - you must range check the radio control system. This will ensure that the transmitter is 'talking' correctly to the helicopter. You should follow this procedure before the first flight of the day and after you have a hard landing, crash or after a repair.

- ❑ With the throttle control stick and trim pulled back, turn on the transmitter, then plug in the flight battery.
- ❑ Put the helicopter on the ground and double-check that the transmitter's aerial is fully collapsed. Move the right-hand control stick on the transmitter several times to check the controls. They should operate smoothly.
- ❑ Walk approximately 75 feet from the helicopter and move the right-hand control stick on the transmitter once more. Check to make sure that the controls are operating smoothly at this distance.

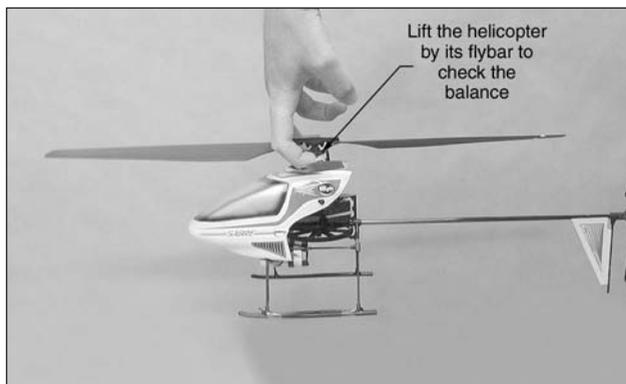
◆**WARNING**◆ If the helicopter does not pass this range check, don't fly! Please refer to the troubleshooting guide on page 15.

## CHOOSING A DAY TO FLY

□ Because of the helicopter's small size, we strongly recommend that you only fly outside when there is little or no wind. Winds above 5 - 10 miles per hour will make the helicopter difficult to control.

## BALANCING THE SABRE RTF MICRO-ELECTRIC HELICOPTER

For smooth, trouble-free flying, you should check the balance of the helicopter before flying it for the first time. Positioning the flight battery in the location described on page 8 should result in the helicopter balancing properly, but double-check the balance just to be sure. It might be necessary to move the flight battery further forward to get the helicopter to balance correctly.



□ Balance the helicopter by carefully lifting it up by the flybar with two fingers, as shown. When balanced correctly, the helicopter should hang level when you lift it. If the nose of the helicopter hangs down, move the flight battery back a little. If the tail of the helicopter hangs down, move the flight battery forward a little.

## SABRE RTF MICRO-ELECTRIC HELICOPTER PRE-FLIGHT RECOMMENDATIONS

- Double-check that the flight battery is fully charged and that the transmitter batteries are fresh. When the transmitter is turned on the green LEDs should light up.
- The flight battery should be charged and/or 'topped up' shortly before flying. The flight battery will lose some of its charge over time, so don't charge the flight battery the day before, then expect it to produce full power when you're ready to fly.
- Double-check that the main rotor blades are straight and that the rotor head screws are tight. Even with the rotor head screws tightened, the rotor blades can still pivot under pressure. This is normal.
- Double-check that the paddles are level and that the screws and hex nuts that hold the paddles in place are tight.
- Double-check that all of the machine screws, hexagon nuts and grub screws are tight.
- Double-check that the trim levers are adjusted so that the swashplate is level in both axes.
- Double-check that the tail rotor is held firmly in place with the rubber grommet.
- Carefully look for any damage to the helicopter, especially the main rotor blades and the tail rotor. If the rotor blades and/or the tail rotor show any signs of damage, they should be replaced before flying.
- Double-check the position of the flight battery and adjust the rubber grommets to hold it in the proper position.
- **The upper hole in the Integrated Receiver is a gyro gain adjustment potentiometer. This is set by the factory and we don't suggest adjusting it or the flying qualities of the helicopter may be compromised.**
- Make sure that the motor and battery wires are out of the way of any moving parts, especially the main gear.
- **Check to make sure that nobody else is flying on the same frequency before turning on the transmitter.**
- Make sure you fully extend the transmitter aerial before flying.

## FLYING THE SABRE RTF MICRO-ELECTRIC HELICOPTER - THE BASICS

Learning to fly any R/C helicopter takes patience, time and practice. If you've never flown an R/C helicopter before, we suggest you find someone in your area or at your local flying field who can help you learn to fly. An experienced helicopter pilot can also test-fly your helicopter to double-check that it is trimmed and set up properly. This will make it a little easier for you to learn to fly. If you don't have someone to help you, a good alternative is to practice with a computer-based R/C helicopter simulator. Depending on the adapter provided with the software you purchase, you may even be able to connect the Sabre's transmitter to your computer.

Below is a list of basic flight tips that should get you well on your way to flying your Sabre helicopter successfully. If you're just starting out, we suggest flying two batteries worth of flight time per day for about 7-10 days. This will get you familiar with the helicopter without overdoing it. When learning something new like this, it's often better to do a little at a time, let it sink in overnight, then come back the next day.

Before continuing, we suggest reading the Basic Operation section on page 9 to familiarise yourself with how the different controls operate and how they affect the helicopter during flight.

- Always fly off of a hard surface. If you try to fly off of grass, the landing skids and tail rotor may catch in the grass and cause the helicopter to tip over easily. Landing in grass is no problem, but you should always take off from a hard surface.
- When first starting out, always keep the helicopter in front of you with the nose pointing away from you (like if you were sitting in the cockpit). This will make orientation much easier.
- Always remember that you should 'fly the nose' of the helicopter, not the tail. Getting used to this concept will really help with orientation and the respective control inputs - especially right and left control inputs.
- When the helicopter's nose is pointing towards you, the roll and pitch controls will seem 'reversed'. This takes some time to get used to until it becomes second nature. Imagining yourself sitting in the cockpit will help you get used to this.
- When you throttle up and begin your take off, the helicopter will have a tendency to move to the left. This is normal and is caused by the torque of the spinning rotor blades. You will need to hold a small amount of right cyclic and right tail rotor to counteract this tendency.
- When you're ready to take off, it is usually more difficult if you slowly advance the throttle and attempt to make many small corrections for a perfectly smooth climb to hover. It is often better to get the helicopter off the ground and out of the wake of the rotor blades as soon as possible.
- Here's our technique for take off: With the helicopter on a hard surface with the nose pointing away from you, advance the throttle to one-quarter to get the main rotors and the tail rotor spinning. Wait a few seconds for the rotor speed to stabilise, then push the throttle to half throttle. At half throttle the helicopter will start to get 'light' and begin to slide to the left. Apply a small amount of right cyclic and right tail rotor as described above to keep the helicopter in one place. Apply a couple of more clicks of throttle and the helicopter will lift off. To achieve a stable hover with the nose pointing away from you, you will need to make minor correction to all of the controls. This takes a lot of practice to learn and get used to. Start by doing just short hovering 'hops' and then progress until you can hover the helicopter in one spot for more than a few seconds. Once you're comfortable with that, practice hovering in one spot for longer periods of time.
- If you're only a few feet off the ground and you start to get into trouble, pull the throttle all the way back and the helicopter will land without damage. Remember that you may need to straighten the rotor blades and paddles if they hit the ground.
- Once you're comfortable hovering the helicopter with the nose pointing away from you, practice hovering the helicopter sideways, then at a 45 degree angle, then finally with the nose pointing toward you.
- After you're comfortable hovering the helicopter, you're ready for forward flight. Keep in mind that this is a fixed-pitch helicopter. Altitude is controlled by throttle, so if you want to climb you need to add more throttle and if you want to descend you need to reduce throttle. Moving the cyclic control stick right and left causes the helicopter to roll right and left. To help keep the helicopter from 'skidding' when you roll right or left, you will need to apply right or left tail rotor depending on the direction you're turning. Moving the cyclic control stick forward or backward will cause the helicopter to fly forward and accelerate or backward and decelerate. The helicopter can fly backwards from a hover by pulling back on the cyclic control.
- Smooth, controlled flight from take off, hover, transition to forward flight, then back to hover and finally landing is a combination of using all of the control inputs at one time. Again, this takes time and a lot of practice, so don't get discouraged if it takes more time than you'd like. Keep at it and soon you'll be flying your Sabre helicopter like a pro!

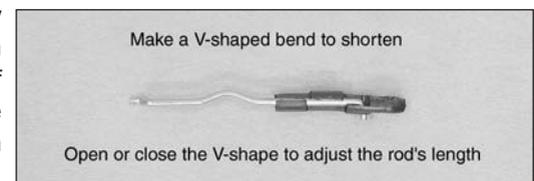
## TROUBLESHOOTING GUIDE

This troubleshooting guide has been provided to help you diagnose and solve most problems that you may encounter with the Sabre RTF Micro-Electric Helicopter. Most problems encountered can be solved by carefully following the problem-cause-solution sections listed below.

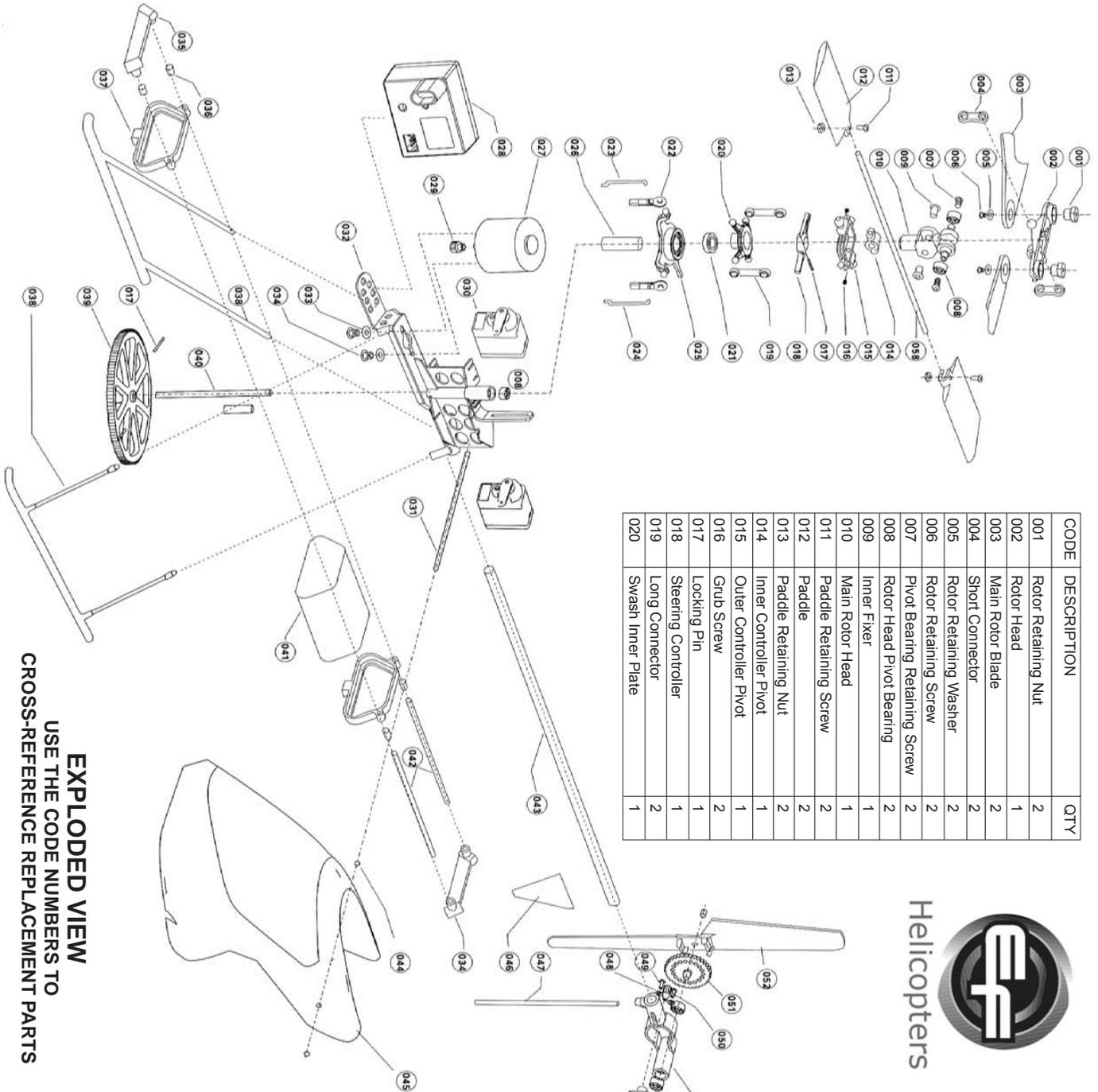
**If you cannot solve the problem using this troubleshooting guide, please feel free to contact us, using the Customer Service Information on page 3.**

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
1) Transmitter does not turn on	A) Transmitter batteries flat B) Transmitter batteries not installed properly C) Battery box not plugged into transmitter	A) Replace batteries with new ones B) Reinstall batteries, double-checking polarity C) Plug battery box into transmitter
2) Motor does not turn on	A) Flight battery flat B) Transmitter batteries flat C) Transmitter not turned on D) Flight battery not plugged in E) Motor wires not plugged in F) A crash has damaged an internal component	A) Recharge flight battery B) Replace batteries with new ones C) Turn on transmitter D) Plug in flight battery E) Plug in motor wires F) Contact Ripmax Ltd.
3) Helicopter is difficult to control	A) You are flying in too much wind B) Transmitter batteries flat C) Flight battery flat D) Transmitter aerial not extended E) Paddles are not level F) Rotor blades are not straight G) Receiver aerial damaged	A) Fly when there is no wind B) Replace batteries with new ones C) Recharge flight battery D) Extend transmitter aerial completely E) Level paddles and make sure they're both even F) Straighten rotor blades and tighten rotor head screws G) Repair receiver aerial or contact Ripmax Ltd.
4) Helicopter vibrates excessively	A) Main rotor blades not straight B) Rotor head screws not tight C) Tail rotor loose	A) Straighten main rotor blades B) Tighten rotor head screws C) Adjust rubber grommet to secure tail rotor
5) Helicopter is difficult to trim	A) Main rotor blades not straight B) Tail rotor loose C) You are flying in too much wind D) Helicopter is out of balance E) Paddles are not level	A) Straighten main rotor blades B) Adjust rubber grommet to secure tail rotor C) Fly when there is little or no wind D) Check and adjust balance E) Level paddles and make sure they're both even
6) Radio system fails range test	A) Transmitter batteries flat B) Flight battery flat C) Receiver aerial damaged D) A crash has damaged an internal component	A) Replace batteries with new ones B) Fully charge flight battery C) Repair receiver aerial or contact Ripmax Ltd. D) Contact Ripmax Ltd.
7) Controls move the wrong way	A) The servo direction is reversed	A) Adjust servo reversing switches
8) Cyclic trim lever(s) out of range	A) More trim required than available from trim lever(s)	A) Adjust pushrod wire(s) and/or servo arm(s) as described below

In some cases, it may not be possible to level the swashplate in one or both axes by adjusting the cyclic trim levers on the transmitter. In this situation, you can shorten the pushrod wires by carefully making a shallow V-shaped bend in the middle of the pushrod wires, using a pair of needle nose pliers. If the pushrod wires are not long enough you can remove the servo arms from the servos, rotate them one tooth on the output shaft, then reinstall them onto the servos.



# SABRE RTF MICRO-ELECTRIC HELICOPTER EXPLODED VIEW



CODE	DESCRIPTION	QTY
001	Rotor Retaining Nut	2
002	Rotor Head	1
003	Main Rotor Blade	2
004	Short Connector	2
005	Rotor Retaining Washer	2
006	Rotor Retaining Screw	2
007	Pivot Bearing Retaining Screw	2
008	Rotor Head Pivot Bearing	2
009	Inner Fixer	1
010	Main Rotor Head	1
011	Paddle Retaining Screw	2
012	Paddle	2
013	Paddle Retaining Nut	2
014	Inner Controller Pivot	1
015	Outer Controller Pivot	1
016	Grub Screw	2
017	Locking Pin	1
018	Steering Controller	1
019	Long Connector	2
020	Swash Inner Plate	1

**EFP**  
Helicopters

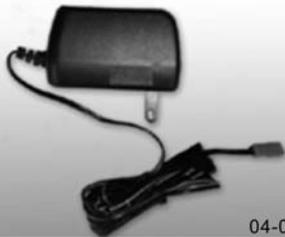
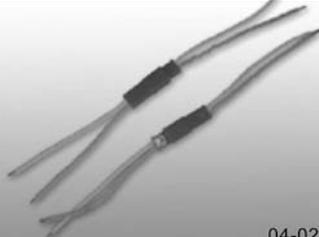
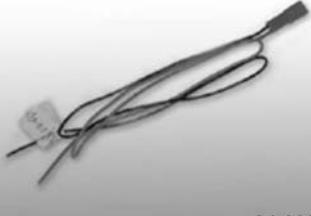
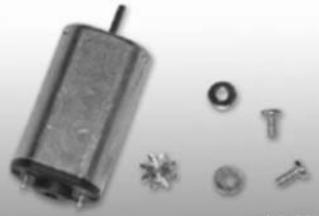
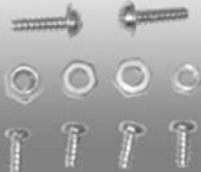
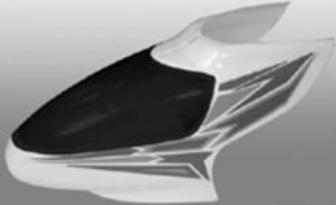
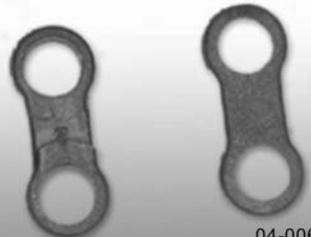
CODE	DESCRIPTION	QTY
021	Swashplate Bearing	1
022	Servo Connector	2
023	Pushrod Wire "A"	1
024	Pushrod Wire "B"	1
025	Swash Outer Plate	1
026	Swashplate Support Tube	1
027	Main Motor	1
028	Circuit Board Set	1
029	Main Motor Pinion Gear	1
030	Servo	2
031	Canopy Support Rod	1
032	Mainframe	1
033	Motor Retaining Washer	2

**EXPLODED VIEW**  
USE THE CODE NUMBERS TO  
CROSS-REFERENCE REPLACEMENT PARTS

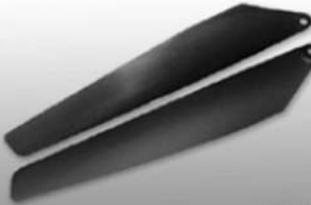
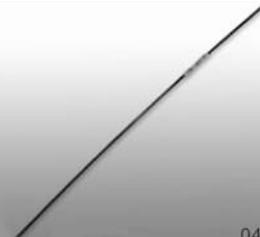
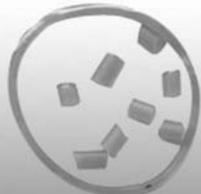
CODE	DESCRIPTION	QTY
034	Motor Retaining Screw	2
035	Battery Retainer	1
036	Rubber Grommet	9
037	Battery Frame	2
038	Landing Skid Assembly	2
039	Main Gear	1
040	Main Gear Shaft	1
041	Flight Battery	1
042	Battery Support Rod	2
043	Tail Boom	1
044	Canopy Retaining Grommet	2
045	Canopy	1
046	Stabilizer Fin	1
047	Tail Skid	1
048	Tail Motor Retaining Washers	2
049	Tail Motor Retaining Screw	2
050	Tail Motor Pinion Gear	1
051	Tail Rotor Gear	1
052	Tail Rotor	1
053	Tail Rotor Bearing	2
054	Tail Rotor Housing	1
055	Tail Rotor Motor	1
056	Tail Rotor Shaft	1
057	Tail Rotor Retainer	1
058	Flybar	1

## SABRE RTF MICRO-ELECTRIC HELICOPTER REPLACEMENT PARTS

A complete line of replacement parts for your EF Helicopters Sabre RTF Micro-Electric Helicopter is available. Listed below are the replacement parts that are available, along with their respective part numbers for easy ordering convenience. We suggest ordering directly from your local EF Helicopters stockist.

 Manual #4	 04-035	 04-ANT	 04-026
<b>165215</b> <i>Instruction Manual</i>	<b>165216</b> <i>Transmitter</i>	<b>165217</b> <i>Transmitter Aerial</i>	<b>165218</b> <i>Servo</i> (030)
 04-034	 04-029	 04-028	 04-032
<b>165219</b> (028) <i>Circuit Board</i>	<b>165220</b> <i>230V AC Charger</i>	<b>165221</b> <i>Motor Connectors</i>	<b>165222</b> <i>Accessory Wires</i>
 04-015	 04-005	 04-027	 04-016
<b>165223</b> (027,029,033,034) <i>Main Rotor Motor</i>	<b>165224</b> (048,049,050,055) <i>Tail Rotor Motor</i>	<b>165225</b> <i>Screw Set</i>	<b>165226</b> (044,045) <i>Fuselage Body Set</i>
 04-030	 04-004	 04-012	 04-021
<b>165227</b> (032) <i>Main Frame</i>	<b>165228</b> (039,040) <i>Main Gear w/Shaft</i>	<b>165229</b> (008) <i>Main Shaft Bearing</i>	<b>165230</b> (020,021,025) <i>Swashplate Assembly</i>
 04-003	 04-001	 04-002	 04-006
<b>165231</b> (017,018) <i>Steering Controller</i>	<b>165232</b> <i>Rotor Head</i>	<b>165233</b> (015,016) <i>Rotor Frame</i>	<b>165234</b> (004) <i>Short Connector</i>

## SABRE RTF MICRO-ELECTRIC HELICOPTER REPLACEMENT PARTS

 <p style="text-align: right;">04-010</p>	 <p style="text-align: right;">04-011</p>	 <p style="text-align: right;">04-009</p>	 <p style="text-align: right;">04-018</p>
<p><b>165235</b> (019) <b>Long Connector</b></p>	<p><b>165236</b> (022,023,024) <b>Servo Linkage</b></p>	<p><b>165237</b> (033) <b>Main Rotor Blades</b></p>	<p><b>165238</b> (058) <b>Flybar</b></p>
 <p style="text-align: right;">04-022</p>	 <p style="text-align: right;">04-014</p>	 <p style="text-align: right;">04-023</p>	 <p style="text-align: right;">04-007</p>
<p><b>165239</b> (011,012,013) <b>Paddles</b></p>	<p><b>165240</b> (007,009,010,014) <b>Head Connector</b></p>	<p><b>165241</b> (035,037,042) <b>Battery Holder</b></p>	<p><b>165242</b> (038) <b>Landing Skids &amp; Gear Legs</b></p>
 <p style="text-align: right;">04-020</p>	 <p style="text-align: right;">04-024</p>	 <p style="text-align: right;">04-019</p>	 <p style="text-align: right;">04-013</p>
<p><b>165243</b> (043) <b>Tail Boom</b></p>	<p><b>165244</b> (046,047) <b>Tail Skid &amp; Fin</b></p>	<p><b>165245</b> (054) <b>Tail Assembly Frame</b></p>	<p><b>165246</b> (053) <b>Tail Bearing</b></p>
 <p style="text-align: right;">04-008</p>	 <p style="text-align: right;">04-017</p>	 <p style="text-align: right;">04-KEEPERS</p>	 <p style="text-align: right;">04-025</p>
<p><b>165247</b> (051,056,057) <b>Tail Rotor Gear</b></p>	<p><b>165248</b> (052) <b>Tail Rotor</b></p>	<p><b>165249</b> (036) <b>Rubber Grommets &amp; Band Set</b></p>	<p><b>165070</b> (041) <b>NiMH Flight Battery</b></p>



**ELECTRONIC TECHNOLOGY SYSTEMS  
DR. GENZ GMBH**

**ACCREDITED TEST HOUSE - LVD, GS-MARK, TOY SAFETY -  
NOTIFIED BODY / GS-CERTIFICATION BODY**

## **EC DECLARATION OF CONFORMITY**

**- SAFETY OF TOYS -  
Page 1 of 2**

This certifies that the following designated product

**SABRE MICRO-ELECTRIC HELICOPTER  
Part No. EF163130**

(Product identification)

complies with the requirements of the European Community Directive 73/23/EEC and 93/68/EEC. This declaration applies to all specimens manufactured in accordance with the attached manufacturing drawings which form part of this declaration. Assessment of compliance of the product with the requirements relating to the Toy and Low Voltage Directive (LVD) was based on the following standards:

**EN 50088:1996 +A1+A2+A31  
EN 71-1 :1998+A1+A2+A5+A6+A7+A8, EN 71-2:1993, EN 71-3:1994 +A1+CO**

(Identification of regulations / standards)

This declaration is the responsibility of the manufacturer / importer  
**RIPMAX LTD., 241 GREEN STREET,  
ENFIELD, EN3 7SJ.  
ENGLAND**

(Name / Address)



THE CERTIFICATION IS ONLY VALID WITH THE TESTREPORT NR. C4M20403-0450-L  
THE CONFIRMATION IS ONLY VALID IF THE NON-CONFIRMATION ITEMS ARE ELIMINATED

**MANUFACTURER / IMPORTER**

**TEST LABORATORY**

This is the result of test, that was carried out from the submitted type-samples of a product in conformity with the specification of the respective standards. The certificate holder has the right to fix the CE-mark for LVD on the product complying with the inspection sample.

(Date)

June 23, 2004

(Date)

(Surname, forename)  
(Company stamp)

Dr. Genz  
Dr. Genz



**ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH**

STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN, GERMANY, PHONE +49-33631-888 00 FAX +49-33631-888 660

## SABRE RTF MICRO-ELECTRIC HELICOPTER WARRANTY/SERVICE INFORMATION

Before returning your Sabre RTF Micro-Electric Helicopter for warranty consideration, the status of the unit must be within the guarantee as stated at the bottom of this page. Do not return your helicopter to the place of purchase as they are not authorized or equipped to perform warranty work on EF Helicopters products. When requesting warranty service, please observe the following:

- Crash damage will not be covered under warranty. Do not request warranty service for a crash-damaged product.
- Always send the helicopter complete with the transmitter. Please unplug and/or remove the batteries from both the transmitter and the helicopter, but include them in the package for testing.
- Include a note detailing the problem or service you are requesting. Service cannot be provided without this information. Include your daytime phone number, postal address and/or email address in the event we need more details to complete the service requested.
- You may request an estimate of the cost at the time you return your helicopter for service. An omission of this request implies permission for EF Helicopters to service your helicopter at our discretion.
- Include a method of payment for any service charges.
- Send your package to:

**Ripmax Ltd.,  
EF Helicopters Repair Department  
241 Green Street,  
Enfield, EN3 7SJ.  
ENGLAND**

**Phone: +44 (0) 20 8282 7500**

**Fax: +44 (0) 20 8282 7501**

## OUR GUARANTEE

EF Helicopters guarantees this kit to be free from defects in both material and workmanship, at the date of purchase. This does not cover any component parts damaged by use, misuse or modification. **In no case shall EF Helicopters' liability exceed the original cost of the purchased kit.**

In that EF Helicopters has no control over the final assembly or material used for final assembly, no liability shall be assumed for any damage resulting from the use by the user of the final user-assembled product. By the act of using the final user-assembled product, the user accepts all resulting liability.

## IMPORTANT WARRANTY INFORMATION

Your EF Helicopters Sabre RTF Micro-Electric Helicopter is warranted against manufacturer defects in materials and workmanship for a period of 12 months from the date of purchase. Warranty service will be provided within 90 days of the date of purchase only if you are able to provide the original or a copy of the original dated sales receipt.

<b>(D)</b> Dieses Produkt ist für den Gebrauch in :-	<b>(I)</b> Questo prodotto é da usare in :-
<b>(GB)</b> This product is for use in :-	<b>(NL)</b> Dit artikel is voor gebruik in :-
<b>(DK)</b> Dette produkt er til brug og benyttelse i :-	<b>(P)</b> Este producto é para uso em :-
<b>(E)</b> Este producto es para su uso en :-	<b>(S)</b> Denna produkt är för användning i:-
<b>(FIN)</b> Tämä tuote on.....markkinoille :-	<b>(N)</b> Dette produkt er til brug og benyttelse i :-
<b>(GR)</b> Αυτό το προϊόν είναι για χρήση στην :-	<b>(GB)</b> <b>(D)</b> <b>(I)</b> <b>(E)</b> <b>(P)</b> <b>(NL)</b> <b>(S)</b> <b>(FIN)</b>
	<b>(IRL)</b> <b>(DK)</b> <b>(B)</b> <b>(A)</b> <b>(GR)</b> <b>(L)</b> <b>(N)</b> <b>(CH)</b>