

# Synapse

## RXR



### INSTRUCTION MANUAL

**Wingspan:** 26.5 in [675mm]  
**Wing Area:** 168 sq in [10.8 dm<sup>2</sup>]  
**Length:** 24 in [610mm]  
**Weight:** 12.5-13.5 oz [350-380g]  
**Wing Loading:** 10.7-11.6 oz/ft<sup>2</sup> [33-35g/dm<sup>2</sup>]  
**Radio:** 3-Channel (minimum) with micro receiver

#### WARRANTY

Great Planes® Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. In no case shall Great Planes' liability exceed the original cost of the purchased kit. Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim send the defective part or item to Hobby Services at the address below:

Hobby Services  
3002 N. Apollo Dr., Suite 1  
Champaign, IL 61822 USA

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.



Champaign, Illinois  
(217) 398-8970, Ext 5  
airsupport@greatplanes.com

## TABLE OF CONTENTS

INTRODUCTION .....	2
AMA .....	2
SAFETY PRECAUTIONS .....	2
LITHIUM BATTERY HANDLING AND USAGE .....	3
RADIO EQUIPMENT .....	3
IMPORTANT BUILDING NOTES .....	3
ORDERING REPLACEMENT PARTS .....	4
KIT INSPECTION .....	4
KIT CONTENTS .....	4
INSTALL THE RECEIVER AND BATTERY .....	5
GET THE MODEL READY TO FLY .....	6
Check the Control Directions .....	6
Set the Control Throws .....	6
Balance the Model (C.G.) .....	6
PREPARE TO RUN THE FAN .....	7
PREFLIGHT .....	8
Identify Your Model .....	8
Charge the Batteries .....	8
Range Check .....	8
AMA SAFETY CODE (Excerpts) .....	8
CHECK LIST .....	9
FLYING .....	9
Launch .....	9
Flight .....	10
Landing .....	10

## INTRODUCTION

Welcome to the exciting world of EDF (Electric Ducted Fan) airplanes! Continuing on the great success of the first pair of planes to use the Great Planes EDF unit, the MiGLET and the XPD-8, comes a sleek new design with a racing paint scheme. Molded in finger grips on the underside of the plane will allow you or a partner to launch the plane into the air, while the thrust of the EDF unit immediately increases airspeed to climb to altitude. After the flight, the magnetic canopy hatch removes easily for a fast battery pack change.

For the latest technical updates or manual corrections to the Synapse Rx-R visit the Great Planes web site at [www.greatplanes.com](http://www.greatplanes.com). Open the "Airplanes" link, then select the Synapse Rx-R. If there is new technical information or changes to this model a "tech notice" box will appear in the upper left corner of the page.

## AMA

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below.



### Academy of Model Aeronautics

5151 East Memorial Drive  
Muncie, IN 47302

Tele: (800) 435-9262

Fax (765) 741-0057

Or via the Internet at:

<http://www.modelaircraft.org>

**IMPORTANT!!!** Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

## PROTECT YOUR MODEL, YOURSELF & OTHERS...FOLLOW THESE IMPORTANT SAFETY PRECAUTIONS

1. Your Synapse Rx-R should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Synapse, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.
2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.
3. You must take time to build **straight, true and strong**.
4. You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.
5. You must check the operation of the model before **every** flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check pushrod connectors or servo arms often and replace them if they show any signs of wear or fatigue.

6. If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

**Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.**

## LITHIUM BATTERY HANDLING & USAGE

**WARNING!!** Read the entire instruction sheet included with the battery. Failure to follow all instructions could cause permanent damage to the battery and its surroundings, and cause bodily harm!

- ONLY use a LiPo approved charger. NEVER use a NiCd/NiMH peak charger!
- NEVER charge in excess of 4.20V per cell.
- ONLY charge through the "charge" lead. NEVER charge through the "discharge" lead.
- NEVER charge at currents greater than 1C.
- ALWAYS set charger's output volts to match battery volts.
- ALWAYS charge in a fireproof location.
- NEVER trickle charge.
- NEVER allow battery temperature to exceed 150° F (65° C).
- NEVER disassemble or modify pack wiring in any way or puncture cells.
- NEVER discharge below 2.5V per cell.
- NEVER place on combustible materials or leave unattended during charge or discharge.
- ALWAYS KEEP OUT OF REACH OF CHILDREN.

## RADIO EQUIPMENT & ELECTRONICS

The Synapse Rx-R requires a transmitter that supports elevon mixing, a micro receiver, and battery with charging equipment. If you already have a transmitter you are going to use to fly the Synapse, you can get the receiver separately:

- Futaba R114F 4-channel FM micro receiver w/o crystal (low band - FUTL0442, high band - FUTL0443)
- Futaba FM single conversion receiver crystal for R114F (low band - FUTL62\*\*, high band - FUTL63\*\*)

Or, you can purchase a complete system (including transmitter) specially packaged for park flyers. If purchasing a complete system, the Futaba 3FR Skysport (FUTJ53\*\*) single-stick radio is suitable. It comes with a micro receiver and two Futaba S3108 micro servos. The transmitter is also equipped with a rechargeable NiCd battery pack.

A lithium-polymer battery pack and suitable charger are required. Although there are different battery packs and chargers available that will work with the Synapse Rx-R, the economical choices recommended by Great Planes are:

- Great Planes 11.1V 910mAh LiPo 20C Discharge (GPMP0605)
- Great Planes ElectriFly DC Lithium Polymer Charger (GPMM3010)
- Great Planes Equinox™ Cell Balancer (GPMM3160)

**Note:** The Great Planes 11.1V 1250mAh 20C LiPo with balance connector (GPMP0609) will also fit inside the radio compartment of the Synapse. The 1250mAh pack will result in a forward C.G. position, and the 910mAh pack will provide a more aft C.G. position.

## IMPORTANT BUILDING NOTES

- When you see the term **test fit** in the instructions, it means that you should first position the part on the assembly **without using any glue**, then slightly modify or *custom fit* the part as necessary for the best fit.
- Whenever the term **glue** is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.
- Whenever just **epoxy** is specified you may use **either** 30-minute (or 45-minute) epoxy **or** 6-minute epoxy. When 30-minute epoxy is specified it is **highly** recommended that you use only 30-minute (or 45-minute) epoxy, because you will need the working time and/or the additional strength.
- **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

## ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Synapse are available using the order numbers in the Replacement Parts List that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Hobbico web site at [www.hobbico.com](http://www.hobbico.com). Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or via facsimile at (217) 398-7721, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax. If ordering via fax, include a Visa® or MasterCard® number and expiration date for payment.

Mail parts orders and payments by personal check to:

**Hobby Services**  
3002 N. Apollo Drive, Suite 1  
Champaign, IL 61822

Be certain to specify the order number exactly as listed in the **Replacement Parts List**. Payment by credit card or personal check only; no C.O.D.

If additional assistance is required for any reason, contact Product Support by telephone at (217) 398-8970, or by e-mail at [productsupport@greatplanes.com](mailto:productsupport@greatplanes.com).

### Replacement Parts List

Order #	Description	How to Purchase
	Missing pieces.....	Contact Product Support
	Instruction manual...	Contact Product Support
	Full-size plans .....	Not Available

Contact your hobby supplier for the following parts:

- GPMA2744 Canopy
- GPMA2745 Duct Cover
- GPMA2746 Rear Duct Ring
- GPMA1820 Silver Series 25A Brushless ESC
- FUTM0414 Futaba S3114 Micro Servo
- GPMA5140 Ammo 20-40-3500 Brushless motor  
(requires Great Planes Bullet Adapter  
3.5mm Male/2mm Female, GPMM3122)
- GPMG3910 HyperFlow Ducted Fan

## KIT INSPECTION

Before starting to build, take an inventory of this kit to make sure it is complete, and inspect the parts to make sure they are of acceptable quality. If any parts are missing or are not of acceptable quality, or if you need assistance with assembly, contact Product Support. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

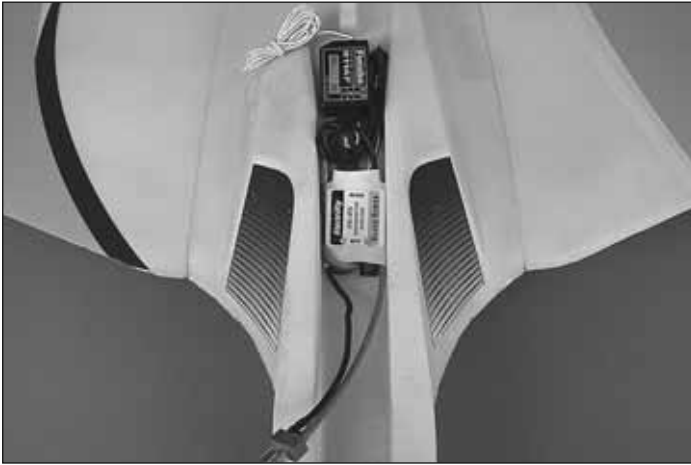
Great Planes Product Support  
3002 N. Apollo Drive, Suite 1  
Champaign, IL 61822  
Telephone: (217) 398-8970, ext. 5, Fax: (217) 398-7721  
E-mail: [airsupport@greatplanes.com](mailto:airsupport@greatplanes.com)

## KIT CONTENTS

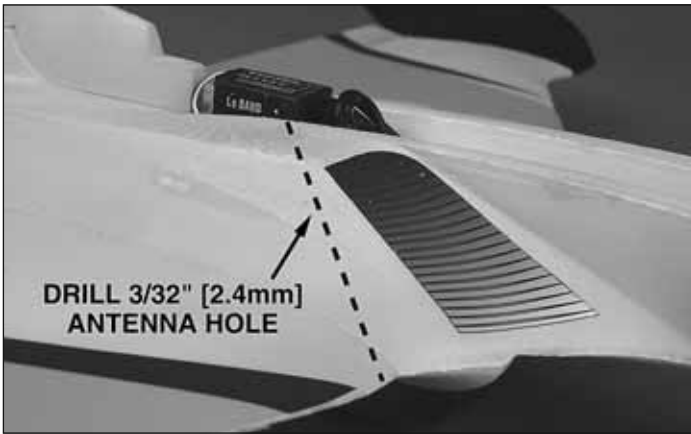


Canopy hatch and fuselage with Ammo Brushless Motor, SS-25 Speed Control, and HyperFlow Ducted Fan installed.

## INSTALL THE RECEIVER & BATTERY



- ❑ 1. Connect the servos and ESC to the receiver. Install the receiver and ESC in the locations shown. They can be secured using small pieces of the included hook and loop material or double-sided foam servo tape (not included).



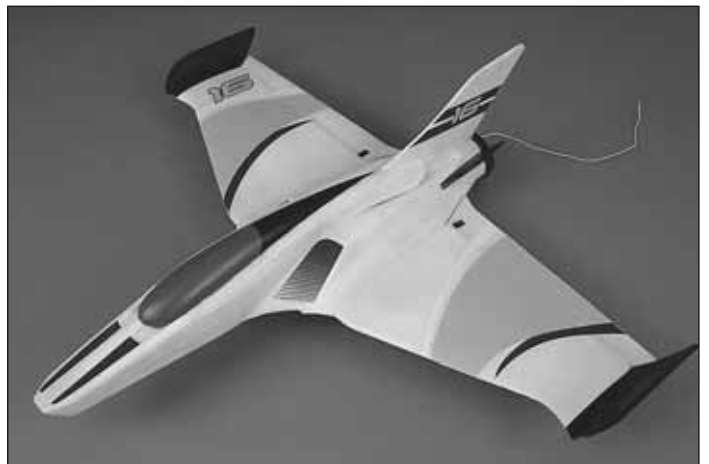
- ❑ 13. The receiver antenna can be taped to the side of the fuselage anywhere that it will not interfere with the duct channel or canopy. For a clean look, we drilled a 3/32" [2.4mm] diameter hole from the front of the lower duct channel where it meets the fuselage up to the radio compartment. Be very careful not to drill into the duct channel. Feed the receiver antenna through the hole and out the bottom of the fuselage. The antenna can then be tucked into the seam between the lower duct channel and the fuselage. A few drops of thick CA glue will prevent the antenna from falling out of the seam.

## EXPERT TIP

### HOW TO CUT HOLES IN FOAM



- ❑ A. Using a brass or aluminum tube with a diameter of the size hole you wish to make. Use a rotary tool with a cutoff wheel to bevel a sharp edge onto one end of the tube. If you do not have a rotary tool, a hobby knife can also be used to carve the inside of the tube until the edge is sharp.
- ❑ B. Press the tube into the foam and twist. The sharp end will cut a clean hole through the foam without tear out.

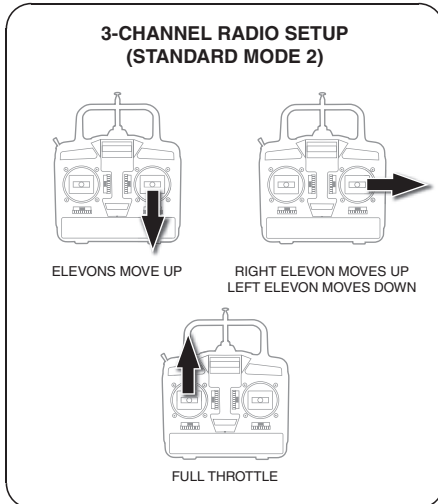


- ❑ 3. Use the included hook and loop material to secure the battery pack in the front of the radio compartment. Test fit the canopy hatch onto the plane and confirm that it fits well. If any of the electric components interfere with the hatch seating properly, move the components or enlarge the inside of the compartment or hatch as necessary until it fits well.

## GET THE MODEL READY TO FLY

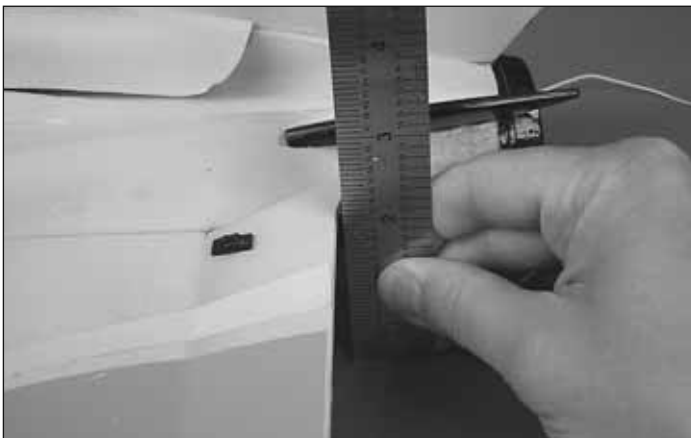
### Check the Control Directions

- ❑ 1. Turn on the transmitter and receiver and center the trims.
- ❑ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the pushrods by the knurled thumb screws in the screw-lock pushrod connectors, repositioning the pushrods, and re-tightening the thumb screws.



- ❑ 3. Make certain that the control surfaces and the throttle respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered. Adjust if necessary.

### Set the Control Throws



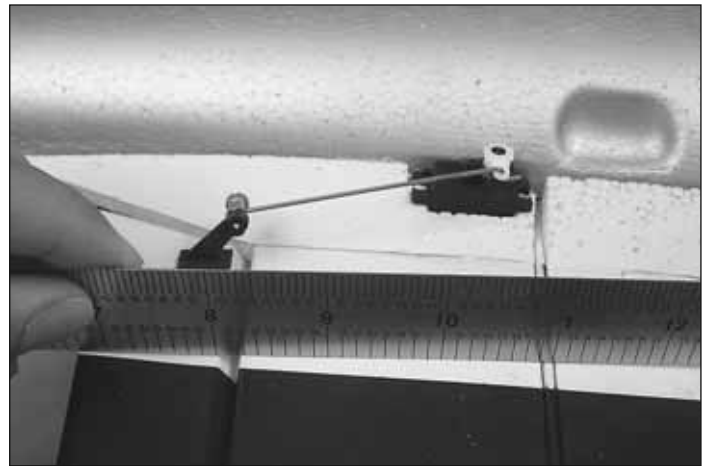
Use a Great Planes AccuThrow (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the **low** rate setting.

**NOTE:** The throws are measured at the **widest part** of the elevons (not including the flared inside tips of the elevons).

**These are the recommended control surface throws:**

	High Rate	Low Rate
<b>ELEVATOR:</b>	1/4" [6mm] up	3/16" [4.8mm] up
	1/4" [6mm] down	3/16" [4.8mm] down
<b>AILERONS:</b>	3/8" [9.5mm] up	1/4" [6mm] up
	3/8" [9.5mm] down	1/4" [6mm] down

**IMPORTANT:** The Synapse ARF has been **extensively** flown and tested to arrive at the throws at which it flies best. Flying your model at these throws will provide you with the greatest chance for successful first flights. If, after you have become accustomed to the way the Synapse flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better."

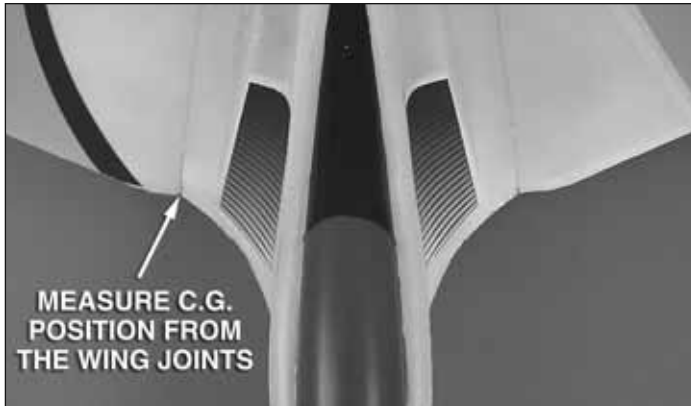


**Note:** When setting the neutral points of the elevons, place a straight edge on the underside of the wings from the carbon tube back to the elevons. For your first few flights, position the neutral points of the elevons level with the wings as shown. The neutral points of the elevons can be adjusted by loosening the thumb screws in the screw-lock connectors, repositioning the pushrod wires in the screw-lock connectors, and then re-tightening the thumb screws.

### Balance the Model (C.G.)

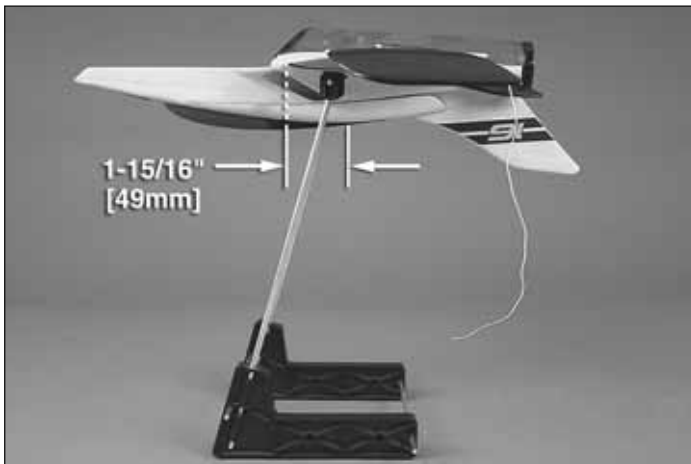
More than any other factor, the **C.G.** (balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be in ready-to-fly condition with all of the systems in place including the receiver, ESC, and battery pack.



❑ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the top of the wing on both sides of the fuselage. **The C.G. is located 1-15/16" [49mm] back from the leading edge of the wing at the fuselage (the seam where the wing panels have been joined to the fuselage).**

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 1/8" [3mm] forward or 1/8" [3mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may be more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. In any case, start at the recommended balance point and do not at any time balance the model outside the specified range.



❑ 2. With all parts of the model installed (ready to fly), place the model upside-down on a Great Planes CG Machine, or lift it upside down at the balance point you marked.

❑ 3. If the tail drops, the model is "tail heavy" and the battery pack and/or receiver must be shifted to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted to balance. This model is very weight sensitive. Do not add any weight to achieve the suggested balance point. Instead, shift the battery pack and receiver forward or aft to alter the C.G.

## PREPARE TO RUN THE FAN

***This is a high performance EDF. We strongly advise checking the EDF fan and motor mounting screws on a regular basis.***



1. Insert a wood dowel through the exhaust duct and through the fan rotor in order to prevent the rotor from turning without damaging it. Remove the rotor screw and washer. Extract the rotor cone and the fan rotor from the plane.



2. Remove the motor mounting screws and washers, apply threadlock (or a drop of CA glue) and replace. Tighten firmly.

3. Apply threadlock on the rotor screw and reinstall the fan assembly.

### **BEFORE YOU RUN THE FAN MAKE SURE THAT:**

- The motor selected is one of the recommended motors.
- An appropriate ESC is being used.
- An appropriate LiPo battery is being used.
- All the screws and set screws are secured with threadlocking compound.
- All the fan parts are properly attached to the fan and to the airframe.
- If any part of this fan should become damaged, replace all parts. Never attempt to repair damaged parts.

- Keep the fan away from objects as it will try to suck them in, which can cause damage to the fan and/or bodily injury.
- Always use eye protection when operating the fan unit.
- **NEVER** look into the fan as it is running.
- Ensure all persons in the immediate area are using eye protection while the fan is in operation.
- **NEVER** point the fan in the direction of anyone.
- Make sure you inspect the fan and all its parts before each run.
- Never use motors larger than those recommended.
- Never run a fan that is damaged in any way.
- Never run the fan while holding it in your hands.
- **NEVER run the fan above 50,000 rpm!**
- Never run the fan rotor on any motor outside of the housing.

This is a device that runs at very high rpm and as such it needs to be handled carefully. There is a very short “break-in” period that needs to be followed to ensure that all parts fit well, everything is tight, and that no excessive vibration is present when running the fan. Also, if the power system chosen has a large power output, the fan blades will expand as rpm are increased to the point of possibly touching the housing. This is expected and it is within the “break-in” procedures. The blades will get shortened slightly to fit the fan housing as they wear on the sides.

***The procedure below must be followed carefully:***

1. If the fan is properly installed on an airframe and everything is ready to be tested, arm the speed controller and advance the throttle slowly to approximately 1/4 power for three minutes. Check for vibration and/or unusual noises. If there is vibration or unusual noise present during the test, do not proceed to step 2 until the problem is resolved. Inspect all moving parts, being sure that motor screws and the rotor adapter screws are tight. Confirm that the fan blades rotate smoothly within the housing and the rotor is not rubbing on the mounting plate (Be sure to unplug the battery from the ESC before handling the fan!).
2. If the fan operates smoothly, move the stick to 1/2 throttle and repeat the test as described in step 1.
3. Slowly advance the throttle to 3/4 power. When using high-power systems, the fan blades may rub a bit on the fan housing. You can see this by powering down the system and checking for marks or grooves in the housing. If this is the case, return to 1/2 throttle and cycle between 1/2 throttle and 3/4 throttle for three to four minutes. Doing so will adjust the length of the fan blades as they slowly wear on the fan housing.
4. Repeat the procedure described in step 3 between 3/4 throttle and full throttle.
5. Unplug the battery from the ESC and check the fan for rubbing, cracks, or missing parts.

**If your fan appears damaged, vibrates excessively, or makes unexpected noises, please return it to Hobby Services for inspection.**

## ***PREFLIGHT***

### ***Identify Your Model***

No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is required at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 9 and place it on or inside your model.

### ***Charge the Batteries***

Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter and motor batteries the night before you go flying, and at other times as recommended by the manufacturer.

**CAUTION:** Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter batteries should be done for 15 hours **using the slow-charger that came with the radio system.** This will “condition” the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

### ***Range Check***

Ground check the operational range of your radio before the first flight of the day. With the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control. Have an assistant stand by your model and, while you work the controls, tell you what the control surfaces are doing. Repeat this test with the motor running at various speeds with an assistant holding the model, using hand signals to show you what is happening. If the control surfaces do not respond correctly, do not fly! Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.



## AMA SAFETY CODE (EXCERPTS)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to Model Aviation magazine, the AMA web site or the Code that came with your AMA license.

### General

- 1) I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.
- 5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.
- 7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

### Radio Control

- 1) I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.
- 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
- 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.
- 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission.
- 5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** [in the complete AMA Safety Code].
- 9) Under no circumstances may a pilot or other person touch a powered model in flight; nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.

## CHECK LIST

During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off as they are completed.

1. Check the C.G. according to the measurements provided in the manual.
2. Be certain the battery and receiver are securely mounted in the fuse.
3. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
4. Check the operation of the ducted fan unit prior to each flight.
5. Make sure that all servo arms are secured to the servos with the screws included with your radio.
6. Place your name, address, AMA number and telephone number on or inside your model.
7. If you wish to photograph your model, do so before your first flight.
8. Range check your radio when you get to the flying field.

## **FLYING**

**IMPORTANT:** If you are an inexperienced modeler we strongly urge you to seek the assistance of a competent, experienced R/C pilot to check your model for airworthiness AND to teach you how to fly. No matter how stable or “forgiving” the Synapse is, attempting to learn to fly on your own is dangerous and may result in destruction of your model or even injury to yourself and others. Therefore, find an instructor and fly only under his or her guidance and supervision until you have acquired the skills necessary for safe and fully controlled operation of your model.

## **Launch**

We recommend flying the Synapse EDF ARF when the wind is no greater than 16 kmph [10 mph]. Less-experienced flyers should fly the Synapse only in calm (less than five mile per hour) conditions. Frequently, winds are calm in the early morning and early evening. Often these are the most enjoyable times to fly anyway!

Until you have the Synapse properly trimmed for level flight, we recommend having an assistant hand-launch the model instead of launching it yourself.

Turn on the transmitter and plug the battery into the speed control. Turn on the receiver by following the instructions that came with your speed control. Secure the canopy hatch in place.

**IMPORTANT:** Confirm that the transmitter operates the controls properly by moving the sticks and watching the surfaces respond.

When ready to launch, the assistant should hold the Synapse by the finger grips in the lower duct channel half, with the model in front of him and pointed into the wind. With the pilot (that would be you!) standing behind the plane, fully advance the throttle to start the motor. When the motor is at full power, the hand launcher should gently give the model a toss into the air with a slightly nose-up attitude. Be certain the model is being launched into the wind and be immediately ready to make corrections to keep the airplane flying straight, level and into the wind.

When the model has gained adequate flying speed under its own power, gently pull the elevator stick back until the airplane starts a gradual climb. Many beginners tend to pull too hard causing the model to stall, so be gentle on the elevator and don't panic. If you do pull too hard and you notice the model losing speed, release the elevator stick and allow the model to regain airspeed.

Continue a gradual climb and establish a gentle turn (away from yourself and others) until the airplane reaches an altitude of 20 to 30 meters [75 to 100 feet].

## **Flight**

The main purpose of the first few flights is to learn how the model behaves and to adjust the trims for level flight. After the model has climbed to a safe altitude, reduce the throttle slightly to slow the model, yet maintain altitude. The Synapse should fly well and maintain adequate airspeed at about 1/2 throttle.

Adjust the elevator trim so the model flies level at the throttle setting you are using. Adjust the aileron trim to level the wings. It may take a few minutes to get the trims adjusted, but this should be your first priority once at a comfortable altitude. Continue to fly around, executing turns and making mental notes (or having your assistant take notes for you) of what additional adjustments or C.G. changes may be required to fine tune the model so it flies the way you like.

## **Landing**

Begin the landing approach by flying downwind at an altitude of approximately 6 meters [20 feet]. When the airplane is approximately 15 to 30 meters [50 to 100 feet] past you, gradually reduce power and make the “final” 180° turn into the wind aligning the airplane with the runway or landing area. Do not dive the airplane, as it will pick up too much speed. Instead, allow the airplane to establish a gradual descent. Concentrate on keeping it heading into the wind toward the runway. When the plane reaches an altitude of about 3 feet [1 meter], gently apply a little “up elevator” to level the plane, but be careful as too much up elevator will cause it to stall. While holding a slight amount of up elevator the airplane will slow and descend as it loses flying speed, thus touching-down on the runway.

Until you are able to accurately judge how far the Synapse can glide, it may be helpful to reserve some battery power to run the motor so the plane can be flown back to the runway.

***Best of luck and happy flying!***

## OTHER ITEMS AVAILABLE FROM GREAT PLANES



### Futaba® 6EX 2.4GHz Computer Radio

*Superior full-range capability comes to 2.4GHz technology.*

Once you've experienced the 6EX 2.4GHz FASST system, you won't want to fly any other way! The secret is the all-in-one R606FS receiver: its compact size and light weight makes it easy to mount and perfect for park flyers — but it's also powerful enough to control any type of R/C aircraft, including electric, gasoline-powered and giant-scale planes as well as helis. You can fly without fear of signal conflict or the need for a frequency pin, because Continuous Channel Shifting makes interference virtually impossible, and Pre-Vision™ scans incoming data and applies corrections in advance. With Easy Link™, your receiver will respond only to your transmitter — and you'll enjoy a strong signal regardless of your plane's attitude because Dual Antenna Diversity seamlessly selects the best reception between two antennas. Equip your model with whatever Futaba servos it requires — the 6EX 2.4GHz FASST system is compatible with them all! **FUTK6900**

### ElectriFly™ Triton™2 Charger

*DC Computerized Peak Charger, Discharger & Cycler*

Like the popular original Triton charger, the Triton2 offers easy programming. But the adjustable charge current has been increased from 5.0A maximum to 7.0A, and the Triton2 can handle LiPo packs with up to 5 cells in series. A cool blue backlight on the 2 x 16 LCD screen makes for easier reading in any conditions, and the rotating dial has been raised for enhanced feel and more precise fingertip control. The Triton2 is more versatile too: you get alligator clips that mate onto the banana plugs, for quick connection to 12V batteries or power supplies. You'll still be able to charge 1-4 cell lithium-ion and lithium-polymer batteries, and peak 1-24 cell NiCd and NiMH packs at rates you set to peak detection values you choose - before discharging them at custom rates and then repeating the cycle up to 10 times. **GPMM3153**



## ElectriFly Equinox™ LiPo 1-5 Cell Balancer



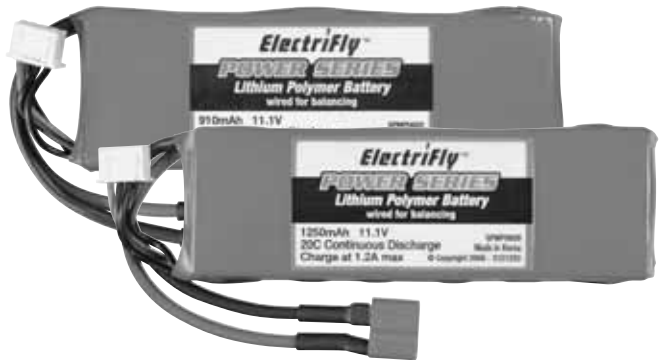
By regulating the voltage levels from 2 to 5 LiPo cells to within a very tight tolerance of each other, the Equinox ensures the fullest possible safe voltage during charging — which means more power and longer lasting packs! It can handle a maximum current of 3 amps during charge or discharge (up to 6 amps with custom connectors), and includes adapters for 2S and 3S (7.4V & 11.1V) batteries and gold-plated banana plugs. Plus, it automatically checks for poor quality cells, and provides a safe platform for charging\*. Choose from two modes for using Equinox: connected directly to the cell in “Quick Balance” mode, or in conjunction with a LiPo-compatible charger/dischARGE in “Interface” mode. **GPMM3160**

\*Equinox cannot be used with LiPo batteries which have built-in charge protection circuits.

## ElectriFly™ Power Series Balanced LiPo Batteries

- Premium LiPo performance on demand!
- Include genuine Deans® Plugs!

Getting maximum performance from a pack requires getting the most power from each cell — and that’s where balanced packs excel. Power Series LiPo packs are your best choice for all-out 3D flying and contest-winning performance. Their huge, 20C continuous discharge rate helps them stay cooler during sustained, high-amp current loads. Both are assembled, shrink-wrapped and wired in series for balancing, with a standard balancing connector and high-efficiency Deans plug.



- GPMP0605**..... 11.1V 910mAh 20C Deans Ultra
- GPMP0609**..... 11.1V 1250mAh 20C Deans Ultra



## ElectriFly™ Compact E-Box™

C: Created specifically for electric flight, the Compact E-Box is factory-finished and factory-built from light, strong, laser-cut 1/8" ply parts. The Compact E-Box is ready for use as soon as the handle is installed. And once the handle is installed, your charger can't fall out, even if the E-Box is tipped on its side. An easy-access compartment below the deep drawer holds most 12V maintenance-free hobby batteries and features a vented faceplate that allows heat to escape and cooler air to enter. **GPMP1006**

This model belongs to:				
	Name			
	Address			
	City, State Zip			
	Phone number			
	AMA number			