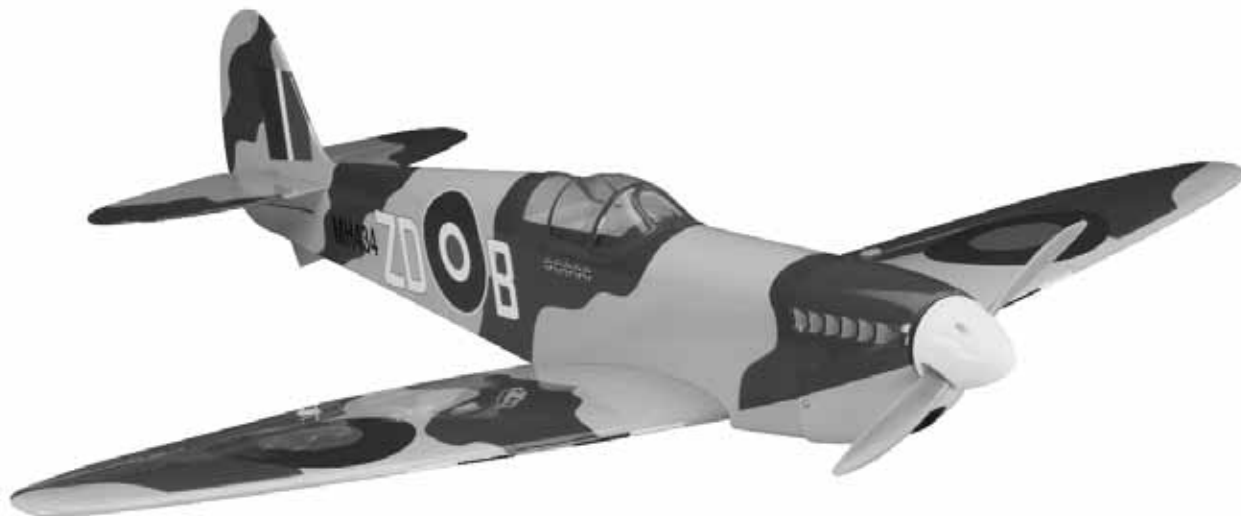


SPITFIRE

INSTRUCTION MANUAL



Wingspan: 39 in [990mm]
Wing Area: 272 in² [17.5dm²]
Weight: 40 – 48 oz [1130 – 1360g]
Wing Loading: 21 – 25 oz/ft² [65 – 78g/dm²]
Length: 35.5 in [895mm]
Radio: 4-channel minimum w/4 to 5 micro servos and standard size receiver
Engine: .25 cu in [4cc] two-stroke, 35-30-1450kV RimFire™ out-runner motor



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

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INTRODUCTION

Congratulations on your purchase of one of the Great Planes Combat Class #2610 Fighters! The Combat Spitfire ARF is a great flying model suitable for combat flying or sport flying. Accommodations have been provided for both a glow engine and a brushless out-runner motor, and optional landing gear gives the sport flyer the comfort of paved runway landings.

For the latest technical updates or manual corrections to the Combat Spitfire ARF visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, then select the Combat Spitfire ARF. 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 Combat Spitfire ARF 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 Combat Spitfire ARF, 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 use an R/C radio system that is in first-class condition, and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.

5. You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.

6. 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 clevises or other connectors often and replace them if they show any signs of wear or fatigue.

7. 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.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, such as racing, or if an engine larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

9. **WARNING:** The cowl included in this kit is made of fiberglass, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into a part to remove fiberglass dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding fiberglass parts. Vacuum the parts and the work area thoroughly after working with fiberglass parts.

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.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Combat Spitfire ARF that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment

The Combat Spitfire ARF requires a minimum 4-channel radio system with four micro servos with a minimum of 35 oz.-in. [2.5 kg-cm] torque. If you are installing a glow engine, an additional micro servo is required for the throttle.

In addition, two 9" [230mm] servo extensions are required for the aileron servos. If you are using a radio system that does not support mixing functions, a Y-harness will also be required to connect the aileron servos to the receiver. Recommended part numbers are provided below:

- Futaba® S3115 Micro Precision Servo (FUTM0415)
- Futaba 9" Servo Extension J (FUTM3910)
- Futaba 6" Dual Servo Extension J (FUTM4130)

Power System Recommendations

The recommended engine/motor size for the Combat Spitfire ARF is a .25 two-stroke engine or a RimFire™ C35-30-1450kV out-runner brushless motor. Engine and motor order numbers are provided below:

- O.S.® .25 FX Non-Ringed w/Muffler (OSMG0525)
- Great Planes RimFire 35-30-1450kV Out-runner Brushless Motor (GPMG4600)

If using the recommended brushless motor, the Great Planes SS-45 brushless ESC is required. Bullet connector adapters are also required. The adapters can be purchased pre-assembled, or the individual components can be purchased to make your own.

- Great Planes Silver Series 45A Brushless ESC 5V/2A BEC (GPMM1840)
- Great Planes 4mm Male to 3.5mm Female Bullet Connector Adapters (GPMM3123)

If you wish to make your own adapters, the following part numbers will be needed:

- Great Planes Gold Plated Bullet Connectors Female 3.5mm (GPMM3113)
- Great Planes Gold Plated Bullet Connectors Male 4mm (GPMM3114)
- W.S. Deans® Racing Silver Solder 1 oz. (WSDC4030)
- Hobbico® Soldering Iron 60 Watt (HCAR0776)

Batteries & Charger

For a brushless motor installation, a 3200mAh 11.1V Lithium-Polymer battery pack or a 2000mAh 9.6V NiMH pack are recommended. Order numbers for the battery packs are provided below:

- Great Planes LiPo 3200mAh 11.1V 20C Discharge w/Balance (GPMP0623)
- Great Planes 8-Cell 9.6V 4/5 SC 2000mAh NiMH Custom (GPMP0352)

Note: A cell balancer is required for the LiPo battery pack listed above.

- Great Planes ElectriFly™ Equinox LiPo 1 to 5 Cell Balancer (GPMM3160)

A suitable charger is also required. The Great Planes PolyCharge4™ is designed for LiPo packs only, but is able to charge four LiPo packs simultaneously. The Great Planes Triton2™ charger will only charge one pack at a time, but is capable of charging NiCd, NiMH, LiPo, and lead acid batteries. Order numbers for both are provided below:

- Great Planes PolyCharge4 DC Only 4 Output LiPo Charger (GPMM3015)

or

- Great Planes ElectriFly Triton2 DC Comp Peak Charger (GPMM3153)

For an economical alternative to charge NiMH packs, we suggest:

- Great Planes ElectriFly Peak 400 DC 1-10C Peak Charger (GPMM3001)

Propeller

If using the O.S. .25 FX glow engine or the Great Planes 35-30-1450kV RimFire out-runner motor, we suggest using a 9" x 6" propeller.

- APC 9" x 6" sport propeller (APCQ0906)

ADDITIONAL ITEMS REQUIRED

Required Hardware & Accessories

This is the list of hardware and accessories required to finish the Combat Spitfire ARF. Order numbers are provided in parentheses:

- R/C foam rubber (1/4" [6mm] – HCAQ1000, or 1/2" [13mm] – HCAQ1050)
- 3' [900mm] Standard silicone fuel tubing (GPMQ4131)

Adhesives & Building Supplies

This is the list of Adhesives and Building Supplies that are required to finish the Combat Spitfire ARF:

- 1/2 oz. [15g] Thin Pro™ CA (GPMR6001)
- 1/2 oz. [15g] Medium Pro CA+ (GPMR6007)
- Pro 30-minute epoxy (GPMR6047)
- Masking tape (TOPR8018)
- Thread-locking compound (GPMR6060)
- Denatured alcohol (for epoxy clean up)
- Drill bits: 1/16" [1.6mm], 5/64" [2mm], 1/8" [3.2mm], 5/32" [4mm]
- Great Planes 10-Piece Metric Tap & Drill Set (GPMR8118, **Note:** 3mm tap & drill is needed for glow engine installation only)
- Tap handle (GPMR8120)
- R/C-56 canopy glue (JOZR5007)
- Small metal file
- #1 Hobby knife (HCAR0105)
- #11 Blades (5-pack, HCAR0211)
- Medium T-pins (100, HCAR5150)
- Top Flite® MonoKote® sealing iron (TOPR2100)
- Top Flite Hot Sock™ iron cover (TOPR2175)
- Liquid dish soap

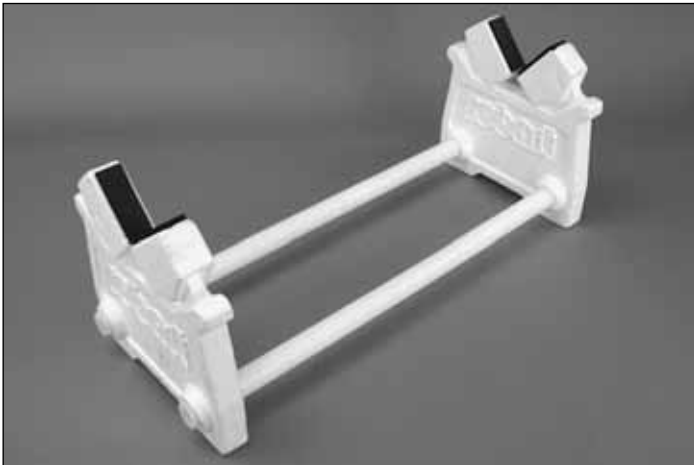
Optional Supplies & Tools

Here is a list of optional tools that will help you build the Combat Spitfire ARF:

- 1/2 oz. [15g] Thick Pro CA- (GPMR6013)
- 2 oz. [57g] spray CA activator (GPMR6035)
- 4 oz. [113g] aerosol CA activator (GPMR6034)
- CA applicator tips (HCAR3780)
- CA debonder (GPMR6039)
- Pro 6-minute epoxy (GPMR6045)
- Epoxy brushes 6, (GPMR8060)
- Mixing sticks (GPMR8055)
- Mixing cups (GPMR8056)
- Pliers with wire cutter (HCAR0630)
- Switch & Charge Jack mounting set (GPMM1000)
- Panel Line Pen (TOPQ2510)

- Rotary tool such as Dremel®
- Rotary tool reinforced cut-off wheel (GPMR8020)
- Servo horn drill (HCAR0698)
- Hobby Heat™ micro torch (HCAR0750)
- Dead Center™ Engine Mount Hole Locator (GPMR8130)
- Precision Magnetic Prop Balancer (TOPQ5700)
- AccuThrow™ deflection gauge (GPMR2405)
- CG Machine™ (GPMR2400)
- Hobbico flexible 18" ruler stainless steel (HCAR0460)
- Top Flite MonoKote trim seal iron (TOPR2200)
- Top Flite MonoKote heat gun (TOPR2000)
- Hobbico Pin Vise 1/16" collet w/6 bits (HCAR0696)
- Hobbico 7-Piece ball tip hex L-wrench Metric (HCAR0521)
- Great Planes clevis installation tool (GPMR8030)
- X-Acto® Extra Hands double clip (XACR4214)

Building Stand



A building stand or cradle comes in handy during the build. We use the Robart Super Stand II (ROBP1402) for all our projects in R&D and it can be seen in pictures throughout this manual.

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.

- The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check these measurements anyway. To view this information visit the web site at www.greatplanes.com and click on "Technical Data." Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Combat Spitfire ARF 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. 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 e-mail at productsupport@greatplanes.com, or by telephone at (217) 398-8970.

Description
Missing parts
Instruction manual
Full-size plans
Kit parts listed below

How to Purchase
Contact Product Support
Contact Product Support
Not available
Hobby Supplier

Replacement Parts List

- GPMA2821Wing Set
- GPMA2822Fuse Kit
- GPMA2823Tail Set
- GPMA2824Cowl
- GPMA2825Canopy
- GPMA2826Landing Gear
- GPMA2827Engine Mount
- GPMA2828Decal Sheet
- GPMQ45152-1/4" White Plastic Spinner

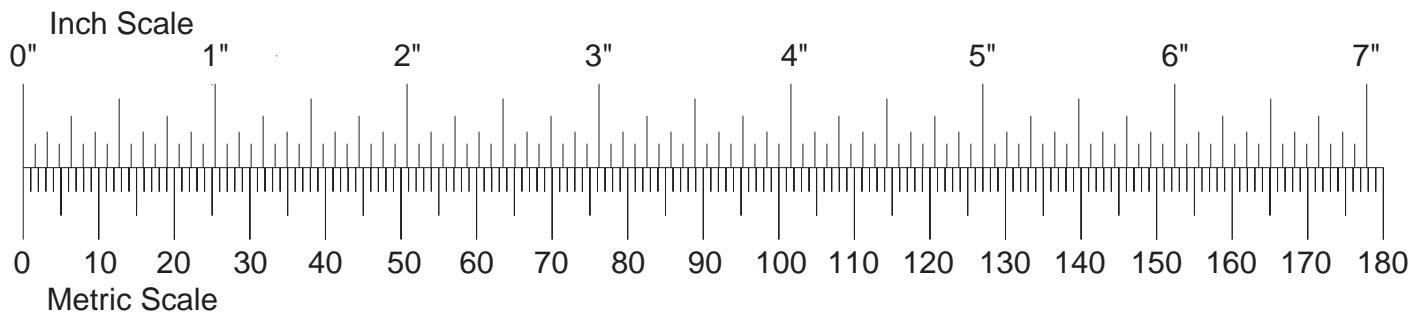
METRIC CONVERSIONS

1" = 25.4mm (conversion factor)

1/64" = .4mm	3/4" = 19.0mm
1/32" = .8mm	1" = 25.4mm
1/16" = 1.6mm	2" = 50.8mm
3/32" = 2.4mm	3" = 76.2mm
1/8" = 3.2mm	6" = 152.4mm
5/32" = 4.0mm	12" = 304.8mm
3/16" = 4.8mm	18" = 457.2mm
1/4" = 6.4mm	21" = 533.4mm
3/8" = 9.5mm	24" = 609.6mm
1/2" = 12.7mm	30" = 762.0mm
5/8" = 15.9mm	36" = 914.4mm

COMMON ABBREVIATIONS

- Fuse = Fuselage
- Stab = Horizontal Stabilizer
- Fin = Vertical Fin
- LE = Leading Edge
- TE = Trailing Edge
- LG = Landing Gear
- Ply = Plywood
- " = Inches
- mm = Millimeters
- SHCS = Socket Head Cap Screw
- ESC = Electronic Speed Control

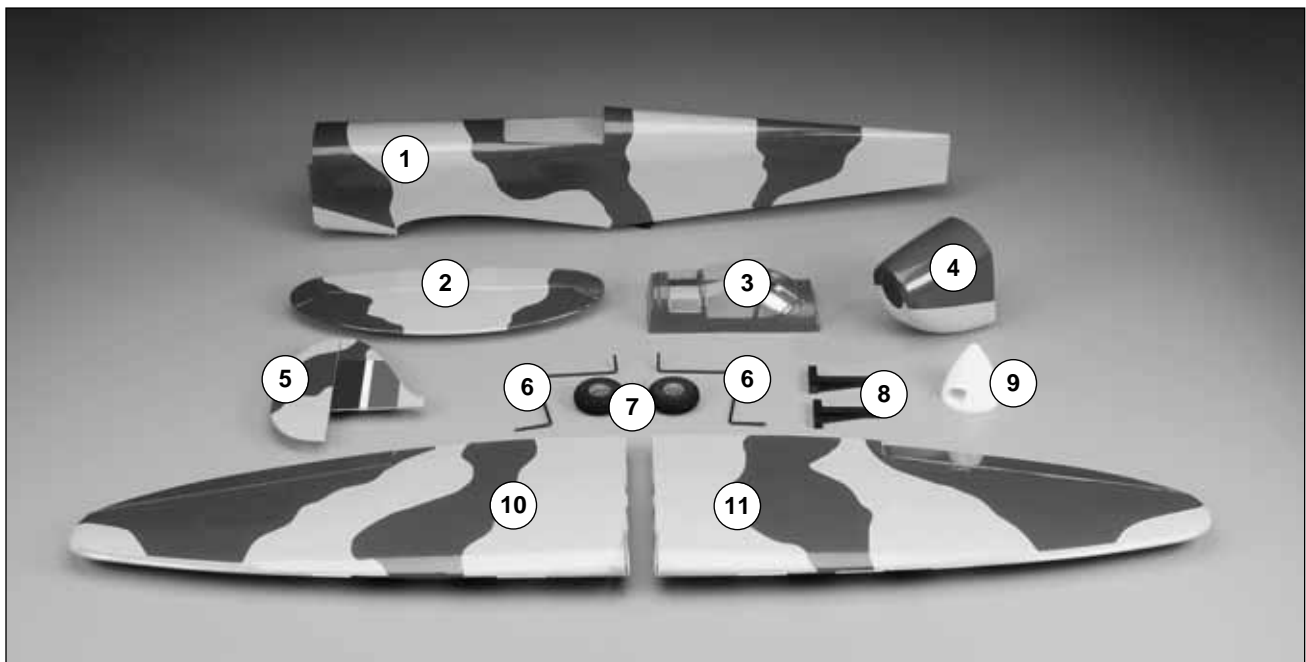


KIT INSPECTION

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

KIT CONTENTS



Kit Contents

- | | |
|---|---------------------------------|
| 1 Fuselage | 8 Engine Mount |
| 2 Horizontal Stabilizer & Elevator Halves (L&R) | 9 Spinner |
| 3 Canopy | 10 Right Wing Panel (w/Aileron) |
| 4 Cowl | 11 Left Wing Panel (w/Aileron) |
| 5 Vertical Fin & Rudder | |
| 6 Landing Gear (L&R) | |
| 7 Main Wheels (2) | |