F6F HELLCAT

INSTRUCTION MANUAL

TOP FLITE®

www.top-flite.com

WARRANTY

Top Flite Models 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 Top Flite's liability exceed the original cost of the purchased kit.** Further, Top Flite reserves the right to change or modify this warranty without notice.

In that Top Flite 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.

For product support contact www.top-flite.com/support

SPECIFICATIONS

Wingspan:	86 in [2184 mm]
Wing Area:	1358 sq in [87.6 dm^2]
Weight:	24.7– 27 lb [11222 – 12247g]
Wing Loading:	42– 46 oz/sq ft [128–140 g/dm^2]
Length:	66.3 in [1683mm]
Radio:	7 channel minimum
Engine:	3.4–3.7 cu in [55–61cc] spark ignition gas
Elec. Motor:	Rimfire .65 (80-85-160) Outrunner Brushless
Flight Battery:	12S (2x6S) 5000 mAh/5500 mAh
ESC:	160A High Voltage

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

WARNING! This product may use a lithium polymer (LiPo) battery. Improper handling may result in FIRE! You are responsible for following all safety precautions as outlined in this instruction manual.

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INTRODUCTION

In the late 1930's the Grumman engineers were looking at ways to improve the performance of the F4F Wildcat. They realized the Wildcat could not be developed any farther and a new, larger plane would need to be designed. The F6F Hellcat was born. It had a larger engine, higher speed, greater rate of climb, increased range and more firepower. We had many requests for a F6F Hellcat so Top Flite developed the Giant F6F Hellcat ARF to get you in the air quickly with a great looking model, without the sanding and covering required to build a kit.

For the latest technical updates or manual corrections to the Giant F6F Hellcat ARF visit the Top Flite web site at www.top-flite.com. Open the "Airplanes" link, then select the Giant F6F Hellcat 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.

Academy of Model Aeronautics

If you are not already a member of the AMA, please join! The AMA is the governing body of model aviation and membership provides liability insurance coverage, protects modelers' rights and interests and is required to fly at most R/C sites.

Academy of Model Aeronautics
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Muncie, IN 47302-9252

Tele. (800) 435-9262
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AMA
SINCE 1936

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.

SCALE COMPETITION

The Top Flite Giant Hellcat is a scale model and is therefore eligible to compete in the *Fun Scale* class in AMA competition. We receive many favorable reports of Top Flite ARFs in scale competition! In Fun Scale, the "builder of the model" rule does not apply. To receive the five points for scale documentation, the only proof required that a full size aircraft of this type in this paint/markings scheme did exist is a single sheet such as a kit box cover from a plastic model, a photo, or a profile painting, etc. If the photo is in black and white, other written documentation of color must be provided. Contact the AMA for a rule book with full details.

SAFETY PRECAUTIONS

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

1. Your Giant F6F Hellcat 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 Giant F6F Hellcat 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 good condition, a correctly sized engine, and other components as specified in this instruction manual. All components must be correctly installed so that the model operates correctly on the ground and in the air. You must check the operation of the model and all components before **every** flight.

5. 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.

6. This model has been flight-tested to exceed normal use. However, the Hellcat should be flown in a scale-like manner. High speed straight down dives should be avoided. It was not designed to be used for extremely high stress flying, such as racing, or if an engine larger than one in the recommended range is used.

WARNING: The cowl and landing gear covers included in this kit are 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.

WARNING: Drilling, sawing, sanding, or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov/wood

ENGINE SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable. Do not smoke near the engine or fuel; and remember that engine exhaust gives off a great deal of deadly carbon monoxide. Therefore **do not run the engine in a closed room or garage**.

Get help from an experienced pilot when learning to operate engines.

Use safety glasses when starting or running engines.

Use a "chicken stick" or electric starter to start the engine. If you do flip the propeller with your fingers, wear a heavy leather glove, such as a welder's glove. When hand starting gas engines, if the engine should backfire, the large prop can cause severe injury to your hand and fingers.

Do not run the engine in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.

Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the engine.

Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.

Stop the engine before making any engine adjustments.

The engine and muffler get hot! Do not touch them during or right after operation. Make sure fuel lines are in good condition so fuel will not leak onto a hot engine, causing a fire.

To stop a gasoline powered engine an on/off switch must be connected to the engine ignition. Do not throw anything into the propeller of a running engine.

ELECTRIC MOTOR SAFETY PRECAUTIONS

WARNING A spinning propeller has the potential to cause serious and permanent injury to yourself and others.

WARNING Once the motor batteries are connected the electric motor can start at any time. Make sure the fail safe is set on your radio to prevent the motor from starting if the transmitter signal is lost.

WARNING: Stand clear of the propeller when handling the aircraft. Make sure the aircraft is held securely until the battery has been disconnected.

A L W A Y S

ALWAYS remove the propeller if the motor batteries will be connected when working on your plane.

ALWAYS remove the motor batteries from the plane when charging.

ALWAYS switch on the transmitter first, then the receiver.

ALWAYS unplug the motor batteries first before switching off the receiver then transmitter.

N E V E R

NEVER touch the motor during or right after operation. The motor gets HOT!

NEVER switch off the transmitter with the motor batteries plugged in.

NEVER reach through the arc of the propeller when plugging the battery into the ESC.

⚠ *LITHIUM BATTERY WARNING!*

This product recommends the use of a lithium polymer (LiPo) battery. Improper handling of a LiPo battery could result in FIRE! A lithium battery fire has the potential to ignite surrounding areas and may cause property damage or cause personal injury.

For safe LiPo handling, follow ALL of these guidelines:

MOST IMPORTANT! Never leave the battery or charger unattended during charging or discharging.

WARNING: Read the entire instruction sheet included with your motor batteries. Failure to follow the instructions could cause permanent damage to the battery and its surroundings and cause bodily harm!

A L W A Y S

ALWAYS follow the charging instructions included with your charger for charging LiPo batteries. LiPo batteries can cause serious damage or fire if misused.

ALWAYS use a LiPo-approved charger.

ALWAYS set the charger's output volts to match the battery volts.

ALWAYS charge a LiPo battery in a fireproof location away from combustible materials.

ALWAYS balance charge the battery.

ALWAYS store and transport LiPo batteries in a fireproof container away from combustible materials.

ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

ALWAYS keep LiPo batteries out of the reach of animals. A punctured battery may cause a fire.

ALWAYS disconnect the battery and unplug the charger after the charge is complete.

ALWAYS keep a supply of sand accessible when charging a LiPo battery. Dumping sand on the battery will assist in extinguishing a LiPo chemical fire.

ALWAYS remove the batteries from the plane after a crash. Set them aside in a safe location for at least 20 minutes. If the batteries are damaged in the crash, they could catch fire. If the battery starts to swell, quickly move the battery to a safe location, preferably outside away from combustible material. Place it in a bucket, covering the battery with sand.

N E V E R

NEVER use water to try and put out a LiPo fire.

NEVER charge or use a battery that is deformed, bent, crushed or has any type of visible damage.

NEVER use a NiCd/NiMH peak charger to charge a LiPo battery.

NEVER charge in excess of 4.20V per cell unless the battery is rated for a higher voltage.

NEVER charge at currents greater than 1C unless the battery is rated for a higher charge rate.

NEVER trickle-charge a LiPo battery.

NEVER allow the battery temperature to exceed 140 degrees F (60 degrees C).

NEVER disassemble or modify the pack wiring in any way or puncture the cells, as this may result in a fire.

NEVER discharge below 2.7V per cell. It is recommended to not discharge below 3.7V per cell.

NEVER charge the battery or set the charger on combustible materials.

NEVER charge the battery inside a vehicle or in a location that could be damaged in the event of a LiPo fire.

NEVER put a LiPo battery in the pocket of any clothing.

NEVER charge the batteries in the plane. Disconnect the batteries and remove them from the plane immediately after landing.

NEVER allow the battery to short circuit by touching exposed wires together. This may cause a fire.

NEVER operate or store batteries below 40˚F or above 110˚F (4-43˚C)

We, as the manufacturer, provide you with a top quality, thoroughly tested ARF 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 Giant F6F Hellcat ARF that may require planning or decision-making before starting to build. Order numbers are provided in parentheses.

Gas Engine Recommendations

The recommended engine size range for the Giant F6F Hellcat ARF is a 55 – 61cc [3.4 – 3.7 ci.] two-stroke gasoline engine. We used the DLE-55, DLE-61 and O.S. GT60 engines. Other engines can also be used but you may need to make modifications for mounting those engines.

- ❍ DLE-55 (DLEG0455)
- ❍ DLE-61 (DLEG0061)
- ❍ O.S. GT60 (OSMG1560)

The stock mufflers for DLE engines can be used.

The OSMG1560 O.S. GT60 requires (4) 2" (51mm) standoffs (OSMG8962)

An aftermarket muffler will also be required for the O.S. GT60 engine.

Electric Motor Recommendations

- ❍ Great Planes RimFire 65 [80-85-160] Outrunner Brushless Motor (GPMG4805)
- ❍ Great Planes ElectriFly Programmable HV 160A ESC (GPMM2260)

OR

Castle Creations Phoenix Edge 160 HV 50 V 160 Amp ESC (CSEM0300)

- ❍ Male Star Plug (HCAM4010) (for the ESC)
- ❍ Great Planes 6 mm Female Bullet Connectors (3) (GPMM3117)
- ❍ Series Connector (GPMM3143)
- ❍ Two Onyx LiPo 50C 5000 mAh 22.2V Batteries (ONXP3612)
- ❍ Great Planes Standoff Brushless Motor Mount XX Large (GPMG1275)
- ❍ Propeller 24 x 12E

Radio Equipment

The radio installation for the Giant F6F Hellcat ARF can be achieved using four different radio set-ups: a Basic Radio Set-up, an Advanced Radio Set-up and the S.Bus System Set-up using S.Bus servos or non S.Bus servos. All control surfaces require the use of a high-quality, metal geared servo of at least 95 oz-in of torque. A servo of 40 oz-in of torque can be used for the throttle and choke. We have included in the back of this manual 4 diagrams showing the different set-ups, what is required for each set-up and where the components are used. Once you have decided on which radio set-up you are going to use, remove the diagram and follow it as you install the radio system. This instruction manual will show the installation of the non S.Bus set-up.

The following list shows the common components required for all set-ups.

Gasoline Set-up

- ❍ (2) Heavy-Duty On/Off Switch (FUTM4390) (TACM2761) (ignition and receiver)
- ❍ (1) 3200mAh LiFe Receiver Battery (HCAM6446)
- ❍ (1) 1300mAh LiFe Ignition Battery (HCAM6411)
- ❍ (1) R/C foam rubber (1/4" [6mm] (HCAQ1000)
- ❍ (2) Optional Ernst Charge Receptacle Futaba J FM (ERNM3001)
- ❍ (2) Dubro #813 1/8” Fuel Line Barb (DUBQ0670)
- ❍ (1) Dubro #800 Large Tygon Fuel Line (DUBQ0493)
- ❍ (1) Propeller Drill Guide (DLEQ0551)
- ❍ (1) Optional: Sullivan CT-1 Fuel Filter (SULQ2387)

Electric Motor Set-up

- ❍ (1) Heavy-Duty On/Off Switch (FUTM4390) (TACM2761) (receiver)
- ❍ (1) 3200mAh LiFe Receiver Battery (HCAM6446)

OR

(1) Castle Creations BEC 2.0 20A BEC (CSEM1540)

- ❍ (1) R/C foam rubber (1/4" [6mm] (HCAQ1000)
- ❍ (1) Optional Ernst Charge Receptacle Futaba J FM (ERNM3001)
- ❍ (1) Spinner Adapter (electric only) (GPMQ4590)
- ❍ (1) 10-32 x 1” Socket Head Cap Screw (electric only)
- ❍ (1) Optional: Schumacher Products ArmSafe Arming Kit w/12AWG (SUDP0304)

Basic Radio Set-up

The Basic Radio Set-up connects the two aileron servos, two flap servos, two elevator servos and the rudder and tail wheel steering servos with Y-harnesses. This method will require a 7-channel receiver.

Note: See the included layout drawing for required servos, servo extensions and Y-harnesses.

Advanced Radio Set-up

The Advanced Set-up has each servo plugged into the receiver on its own channel. The channels can then be mixed together using the transmitter. This method will require an 11-channel receiver for the controls. A 13-channel receiver is required for the optional drop tank and if the lights will be controlled through the receiver.

Note: See the included layout drawing for required servos and servo extensions.

S.Bus System

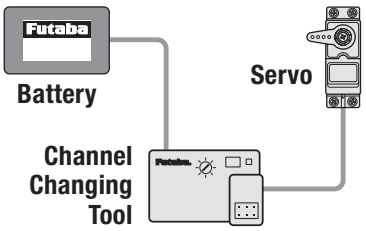
A Cutting-Edge Alternative to Standard Servo Installation!

The innovative Futaba S.Bus system lets you unleash your flight system’s full potential and cut down on cable clutter at the same time. It uses digital serial data communication technology to transmit control signals between your receiver and servos. A single S.Bus cable can carry signals to as many channels as your transmitter can handle. You no longer have to worry about plugging in the wrong servo to the wrong channel, because each servo knows what channel it is dedicated to in advance.

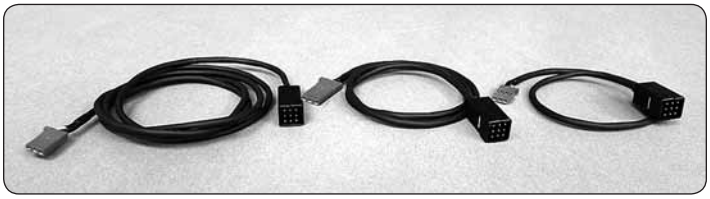
SBD-1 S.Bus Decoder Cables allow the use of existing analog and digital servos, too. By providing today's pilots with tomorrow's technology, the Futaba S.Bus system is nothing short of revolutionary.

Installing the S.Bus System

Installation is actually simplified as compared to your normal system installation. Using the S.Bus system you plug a battery into the SBC-1 channel changing tool, using it to program which channel you want the servo to operate on.



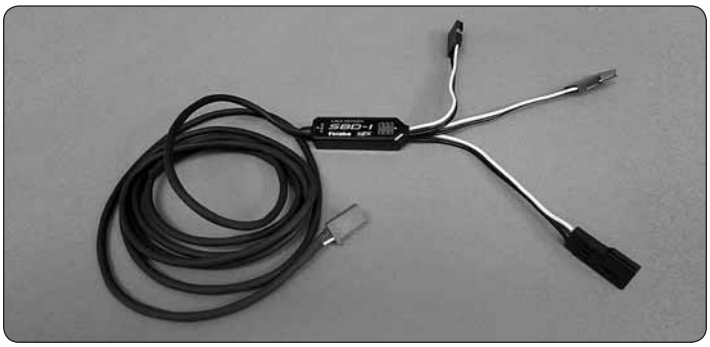
Once programmed, the servo will operate as required, regardless of which lead it is plugged into. Do this for all of the servos that you want to operate on the S.Bus system. Install the servos in the airplane and plug them into the S.Bus lead, piggybacking them one onto another. Once completed, you plug one lead into the receiver for all of the servos and all of the servos will function as programmed. One lead operates up to 16 servos!



S.Bus leads are available in a number of different lengths to accommodate installation into any size airplane, regardless of its complexity.

There are many choices for the S. Bus receivers; some are tiny 3-port receivers with others being up to 18 channels. The 8 PWM outputs can be used as you would normally set up a model, allowing you to split the model and have some of it set up as S.Bus while other servos are not using the S. Bus system. Something else to note is that some of the S. Bus servos and receivers are HV, or High Voltage, meaning that you could run a straight 2S LiPo for your receiver battery.

Many servo choices are available for use in a wide variety of aircraft from micros to the largest models.

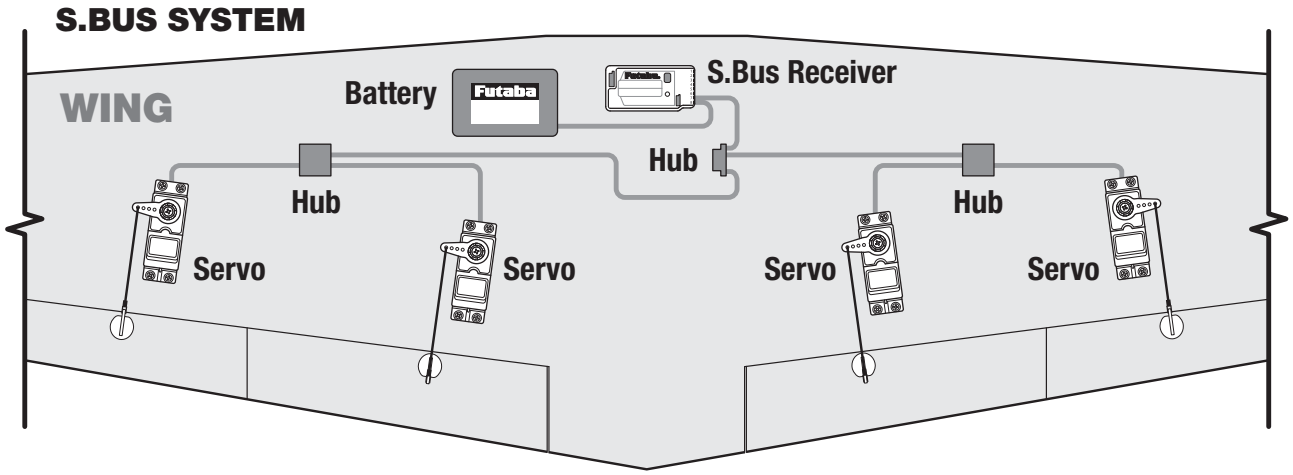


Your system is not limited to programming only through the SBC-1 channel changing tool and your transmitter. Utilizing the USB interface, the CIU-2, you can do all of the programming using your PC. Programming with this interface gives more flexibility and programming options than can be achieved with any other radio system. To utilize standard, non-S.Bus servos, you simply use the S.Bus decoder instead of the S.Bus lead.

S.Bus System Set-up (using standard servos)

This set-up allows the use of non S.Bus servos. The retract servo (or controller for electric retracts), optional drop tank and optional receiver controlled lights are plugged directly into the receiver.

NOTE: See the included layout drawing for required servos, servo extension, S.Bus hubs and S.Bus Decoders. This set-up will also require a SBC-1 S.Bus Channel Setting Tool (FUTM4190) or CIU-3 USB Interface (FUTM0953) to program the S.Bus decoders.



S.Bus System Set-up (using S.Bus servos)

This set-up uses programmable S.Bus servos. The retract servo (or controller for electric retracts), optional drop tank and optional receiver controlled lights are plugged directly into the receiver.

NOTE: See the included layout drawing for required servos, servo extension and S.Bus hubs. The S.Bus servos can be programmed from some of the Futaba transmitters (see the instruction manual included with your transmitter), the SBC-1 S.Bus Channel Setting Tool (FUTM4190) or CIU-3 USB Interface (FUTM0953).

Retractable Landing Gear

The Top Flite Giant F6F Hellcat ARF has been designed for Robart pneumatic and electric main and tail gear retracts. Following is the complete list of items required to install the Robart retracts:

Pneumatic Retracts

- ❍ (1) Robart #150-W 100 Degree Pneumatic Rotating White Main Gear (ROBQ1675)
- ❍ (1) Robart #160WC-W Pneumatic White Fork Tail Wheel Retract (ROBQ1677)
- ❍ (1) Robart #157VRX Large-Scale Deluxe Air Control Kit – includes pressure tank, air line tubing, variable-rate air valve, T-fittings (ROBQ2305)
- ❍ (1) Robart #169 10' [3048mm] red & purple Pressure tubing (ROBQ2369)
- ❍ (1 pkg.) #190 Air Line Quick Disconnects (ROBQ2395)
- ❍ (1) Futaba S3004 Standard Servo (FUTM0004)
- ❍ (1) Robart #164E Rechargeable Electric Air Pump

Electric Retracts

- ❍ (1) Robart #150E-W 100 Degree Electric White Rotating Main Gear (ROBQ1676)
- ❍ (1) Robart #160WCE-W Electric White Fork Tail Wheel Retract (ROBQ1678)
- ❍ (1) Robart #177E12S 12" (305mm) Actuator Extension (ROBM0178)
- ❍ (1) Futaba 8" Servo Extension (FUTM4140) or Tactic 6" Servo Extension (TACM2701)

Retract Options

- ❍ Robart 13850F6F White Aluminum Main Wheel/Hub 5.0" Hellcat (ROBQ1679)
- ❍ Robart 138BF6F316 White Aluminum Tail wheel/Hub 2.0" 3/16" Axle Hellcat (ROBQ1680)
- ❍ Robart TF150F6FCOMBO Main Retracts and Tail Wheel Retract Combo Pneumatic Hellcat (ROBQ1682)
- ❍ Robart TF150F6FCOMBO-E Main Retracts and Tail wheel Retract, (1) 36" (915mm) Extension, (1) 24" (610mm) Extension and (2) 12" (305mm) Extension Combo Electric Hellcat (ROBQ1683)
- ❍ Robart TFF6FWHEELCOMBO White Aluminum Main and Tail wheel Tire and wheel Combo Hellcat (ROBQ1684)
- ❍ Robart TFF6FCOMBO Main and Tail Wheel Retract, White Mains and Tail Wheel and Tires Combo Pneumatic Hellcat ROBQ1685
- ❍ Robart TFF6FCOMBO-E Main and Tail Wheel Retract, White Mains and Tail Wheel and Tires, (1) 36" (915mm) Extension, (1) 24" (610mm) Extension and (2) 12" (305mm) Extension Combo Electric Hellcat (ROBQ1686)

ADDITIONAL ITEMS REQUIRED

Required Hardware and Accessories

In addition to the items listed in the "Decisions You Must Make" section, following is the list of hardware and accessories required to finish the Top Flite Giant F6F Hellcat ARF. Order numbers are provided in parentheses.

- ❍ Optional Black paint for the plywood radial engine frame
- ❍ Propeller and spare propellers suitable for your gas engine or motor
- ❍ Painted Pilot: We used the 1/5 Scale pilot from **Best Pilots** at www. Bestpilots.typepad.com
- ❍ (2) Y-Harness Futaba (FUTM4135)/Tactic (TACM2751) for the lights
- ❍ (1) Optional Futaba CPS-1 Channel Power Switch (FUTM0940) to switch the lights on/off using a switch on your transmitter
- ❍ (1) 10" [254mm] long, 7/64" Ball-end Hex Wrench

OR

(1) 7/64" Ball-end Hex Wrench (GPMR8003) plus (1) 5/32" x .014 Round Brass Tube K&S #8128 (K+SR8128) (See page 38)

Adhesives and Building Supplies

This is the list of Adhesives and Building Supplies that are required to finish the Giant F6F Hellcat ARF.

- ❍ 1/2 oz. [15g] Pro Thin CA (GPMR6001)
- ❍ 1/2 oz. [15g] Pro Medium CA (GPMR6007)
- ❍ Pro 30-minute epoxy (GPMR6047)
- ❍ Pro 6-minute epoxy (GPMR6045)
- ❍ Threadlocker thread locking cement (PAAR2242)
- ❍ Mixing sticks (50, GPMR8055)
- ❍ Mixing cups (GPMR8056)
- ❍ Epoxy brushes (6, GPMR8060)
- ❍ Denatured alcohol (for epoxy clean up)
- ❍ PT-56 canopy glue (PAAR3300)
- ❍ Milled fiberglass (GPMR6165)
- ❍ Masking tape
- ❍ Drill
- ❍ Drill bits: 1/16" [1.5mm], 5/64" [2mm], 3/32" [2.5 mm], 1/8" [3 mm], 3/16" [4.5 mm], 13/64" [5 mm], 5/16 [8mm], 1/2" [13 mm]
- ❍ Small metal file
- ❍ Stick-on segmented lead weights (GPMQ4485)
- ❍ Silver solder w/flux (STAR2000)
- ❍ Hobbico Soldering Iron 60 Watt (HCAR0776)

❍ Revell #1 Light Duty Aluminum Handle Knife w/Blade and Safety Cap (RMXR6903)
❍ Revell #11 Light Duty Blades (5-pack, RMXR6930)
❍ Sanding tools and sandpaper assortment
❍ Curved-tip canopy scissors for trimming plastic parts (HCAR0667)
❍ Hex wrench SAE (HCAR0520)

Covering tools

❍ Top Flite MonoKote sealing iron (TOPR2100)
❍ Top Flite Hot Sock iron cover (TOPR2175)
❍ Top Flite MonoKote trim seal iron (TOPR2200)
❍ Top Flite MonoKote heat gun (TOPR2000)

Optional Supplies and Tools

Here is a list of optional tools mentioned in the manual that will help you build the Giant F6F Hellcat ARF.

❍ 2 oz. [57g] spray CA activator (GPMR6035)
❍ CA applicator tips (HCAR3780)
❍ CA debonder (GPMR6039)
❍ Scale Warbird Template (TOPR2187)
❍ 36" metal ruler
❍ Hobbico High Precision Diagonal Cutter 5" (HCAR0630)
❍ Pliers with wire cutter
❍ Robart Super Stand II (ROBP1402)
❍ Panel Line Pen (TOPQ2510)
❍ Rotary tool such as Dremel
❍ Rotary tool reinforced cut-off wheel (GPMR8200)
❍ Servo horn drill (HCAR0698)
❍ AccuThrow Deflection Gauge (GPMR2405)
❍ CG Machine™ (GPMR2400)
❍ Precision Magnetic Prop Balancer (TOPQ5700)

IMPORTANT BUILDING NOTES

● Anytime a sheet metal screw is installed in wood, first install the screw, remove the screw and apply a couple of drops of thin CA in the hole to harden the threads. After the CA has cured, reinstall the screw.

● **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.

● You will see this symbol anytime cyanoacrylate glue is required.

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● You will see this symbol anytime a threaded screw or nut is installed.

● You will see this symbol anytime epoxy is recommended.

● Anytime a hole needs to be drilled you will see this symbol with the recommended size drill bit.

● Replacement covering for the F6F Hellcat

Flat White	(TOPQ0504)
Flat Insignia Blue	(TOPQ0507)
Flat Medium Blue	(TOPQ0517)

MODEL INSPECTION

Before starting to build, take an inventory of this model 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 instruction manual.

Top Flite Product Support
3002 N Apollo Drive, Suite 1
Champaign, IL 61822

Ph: (217) 398-8970, ext. 5
Fax: (217) 398-7721

E-mail: airsupport@top-flite.com

ORDERING REPLACEMENT PARTS

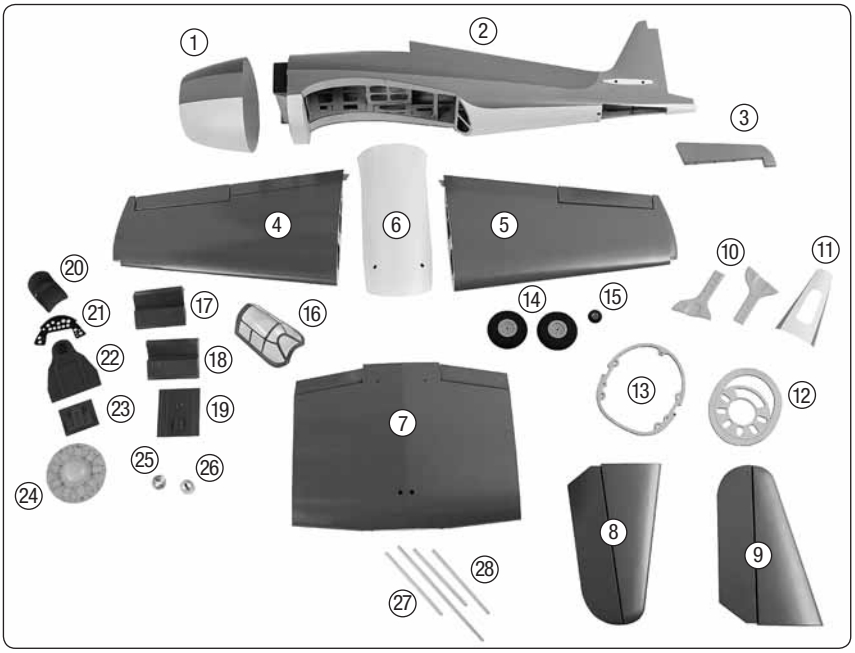
Replacement parts for the Top Flite Giant F6F Hellcat ARF are available using the order numbers in the **Replacement Parts List** that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company. Not all parts are available separately (an aileron cannot be purchased separately, but is only available with the wing kit). Replacement parts are not available from Product Support, but can be purchased from hobby shops or mail order/Internet order firms. Hardware items (screws, nuts, bolts) are also available from these outlets.

To locate a hobby dealer, visit www.top-flite.com and click on “Where to Buy”. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

REPLACEMENT PARTS LIST

Order No.	Description
TOPA1980	Fuselage Parts Set
TOPA1981	Wing Set
TOPA1982	Horizontal Stabilizer Parts Set
TOPA1983	Rudder
TOPA1984	Cowl
TOPA1985	Canopy
TOPA1986	Gear Doors
TOPA1987	Dummy Engine
TOPA1988	Antennas
TOPA1989	Belly Pan
TOPA1990	Tail Gear Cover
TOPA1991	Hatch
TOPA1992	Cockpit Kit
TOPA1993	Drop Tank Complete
TOPA1994	Drop Tank Only
TOPA1995	Drop Tank Release
TOPA1996	Pitot Tube
TOPA1997	Wingtip Lens
TOPA1998	Light Set
TOPA1999	Decals

CONTENTS

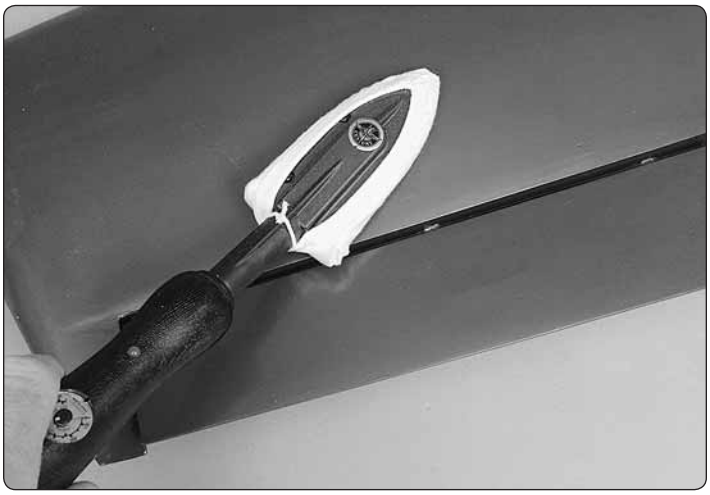


1. Cowl
2. Fuselage
3. Rudder
4. Right Wing Panel
5. Left Wing Panel
6. Belly Pan
7. Center Wing Panel
8. Right Stabilizer
9. Left Stabilizer
10. Landing Gear Covers
11. Tail Gear Cover
12. Dummy Engine Ring
13. Cowl Ring
14. Main Wheels
15. Tail Wheel
16. Canopy
17. Left Cockpit Side
18. Right Cockpit Side
19. Cockpit Floor
20. Seat
21. Instrument Panel
22. Cockpit Armore
23. Rudder Pedals
24. Dummy Engine
25. Spinner Back Plate
26. Spinner Cone
27. Stabilizer Tubes
28. Wing Tube

ASSEMBLE THE WINGS

Important: If you remove all the parts from the plastic bags, save the plastic bag the cowl comes in. This bag will be used later when the cowl is installed.

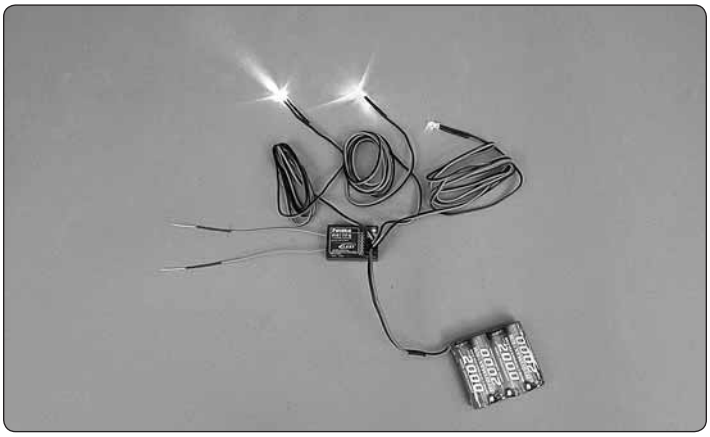
Start with the left wing so the assembly matches the photos the first time through.



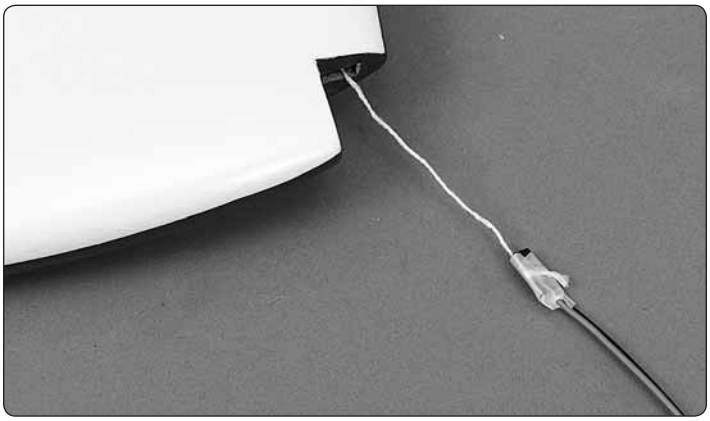
❏ 1. If necessary, use a covering iron with a covering sock to go over the wing, flap and aileron to remove any wrinkles. The best method to remove the wrinkles is to glide the iron over the covering until the wrinkles disappear, then go over the area again, pushing down on the iron to bond the covering to the wood. If the wrinkles don't disappear, the balsa in that area might be flexing inward. If this is happening, don't press down. Simply let the heat of the iron shrink the covering. If the wrinkles momentarily disappear, then immediately reappear, the iron may be too hot, thus causing air bubbles. Lower the temperature of the iron or use a sharp #11 blade or T-pin to puncture several holes in the covering, then reheat. The suggested iron temperature is around 360 degrees F.

The Grumman F6F Hellcat went from test models to combat in less than 18 months. Grumman built a total of 12,275 F6F Hellcats. It first saw combat in August 1943 in an attack on Marcus Island. The F6F Hellcat was credited with destroying 5,223 aircraft. It had a kill-to-loss ratio of 19:1 with the U.S. Navy/Marine Corps. The F6F Hellcat was considered one of the best fighters of WWII.

Install the Wing Tip Light

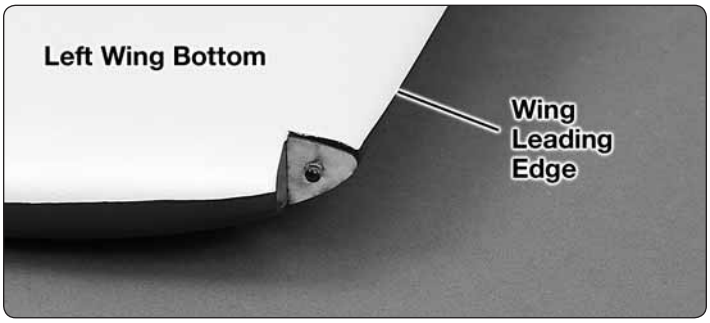


❏ 1. The red LED will be installed in the left outer wing panel. Using a 4.8 volt receiver battery and receiver, plug each LED into the receiver. Plug the receiver battery into the receiver. Use a piece of masking tape to identify the LED color.

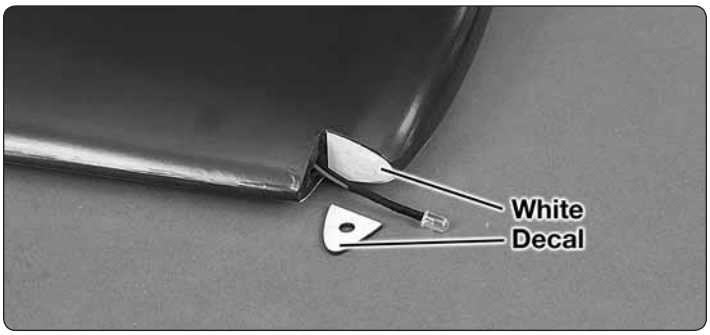


❏ 2. Tie the end of the string from the wing tip light recess to the plug of the red LED. Secure the string with a piece of masking tape.

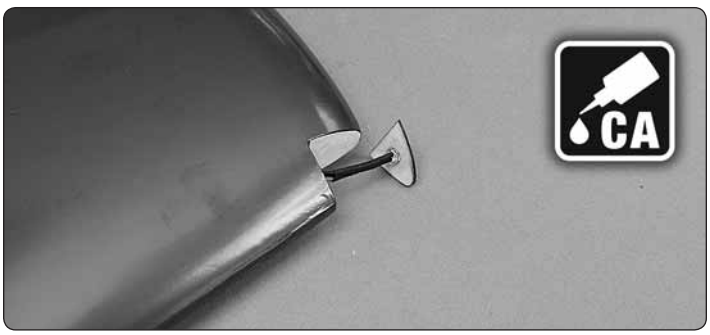
❏ 3. Pull the wire through the wing until the connector exits the root of the wing panel.



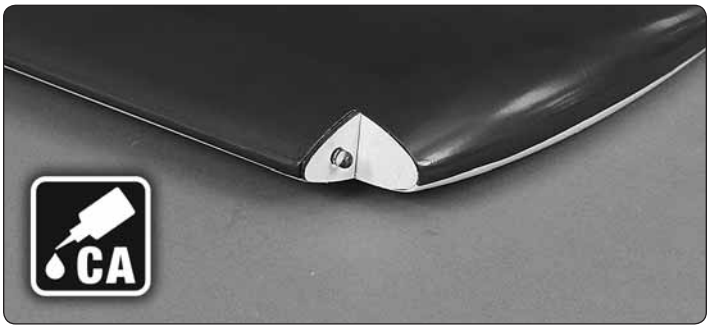
❏ 4. Insert the LED in one of the plywood LED supports. Position the support in the light recess so that it matches the shape of the wing leading edge.



❏ 5. Attach the white wing tip light decal on the front of the LED support and the adjacent side of the wing tip light recess. The LED support can also be painted white.



❏ 6. Glue the red LED in the hole in the plywood LED support.



❏ 7. Glue the LED support in the wing tip.

❏ 8. Last chance to test the red LED to make sure it is working and is the correct color. Position the wing tip lens over the LED and mark the outline of the lens on the wing.

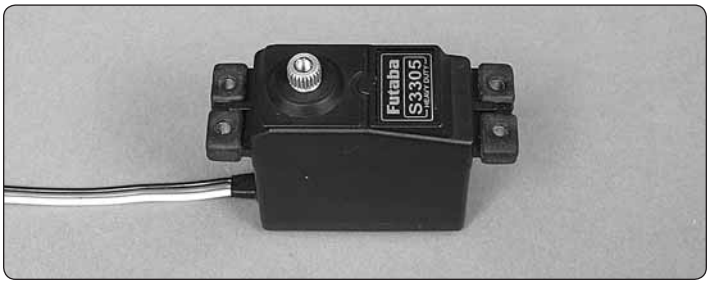
❏ 9. Use a T-pin to poke holes in the covering inside the lens outline.

❏ 10. Wipe off the outline and glue the lens to the wing tip with canopy glue.

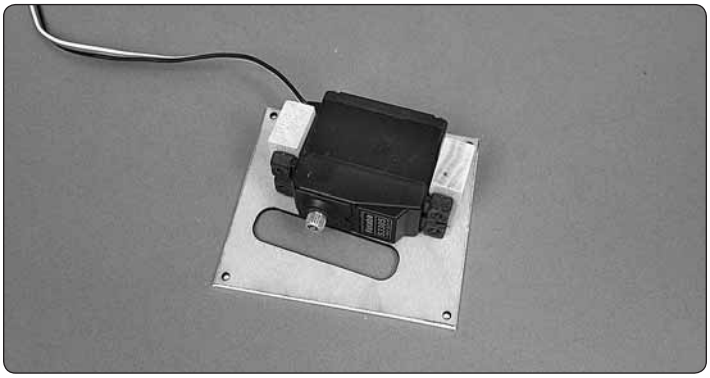
❏ 11. Go back to step 1 and install the green LED in the right outer wing panel.

Install the Flap Servo

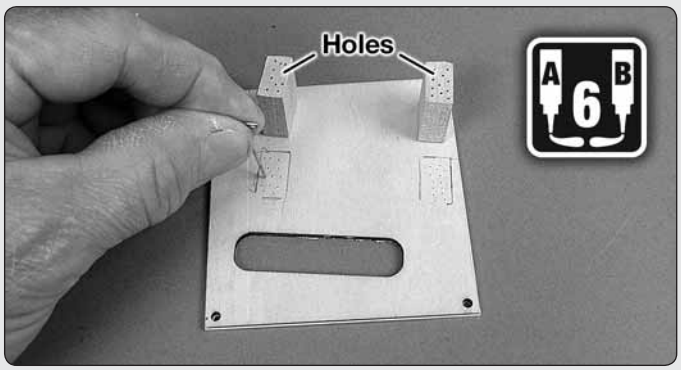
❏ ❏ 1. Carefully remove the left flap servo hatch from the wing by peeling off the masking tape holding the hatch to the wing. Use a paper towel dampened with lighter fluid (**CAUTION:** Very Flammable) or similar solvent to remove any glue left behind from the tape.



❏ ❏ 2. Install the rubber grommets and metal eyelets in the flap servo.

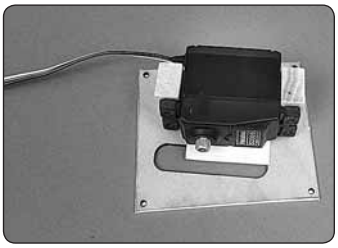


❏ ❏ 3. Center the servo arm spline of the flap servo in the opening of the servo hatch cover. Position the two 7/8" x 5/8" x 3/8" [20 x 15 x 8mm] hardwood blocks as shown and mark the locations on the hatch cover.



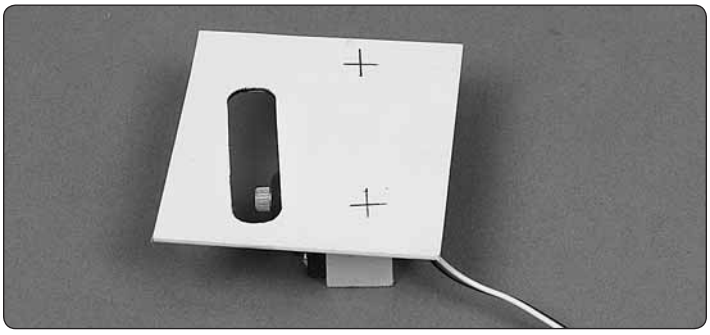
To increase the strength of the glue joint, use a T-pin to prick holes into the gluing surface of the servo blocks and the plywood servo hatch. Be careful to not prick holes completely through the servo hatch and covering.

❏ ❏ 4. Use 6-minute epoxy to glue the two blocks to the bottom of the servo hatch over the servo block locations. Thoroughly coat the end of the blocks and allow them to set for a few seconds to allow the blocks to absorb the epoxy. Then, recoat the blocks. Use clamps to hold the blocks to the servo hatch.

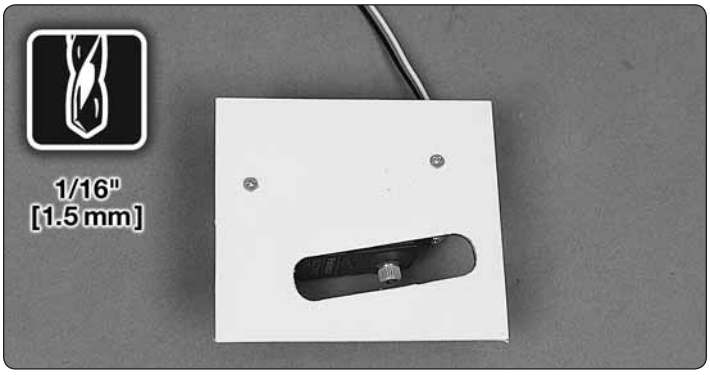


❏ ❏ 5. Once the epoxy has cured, remove the clamps. Place a 1/16" [1.6mm] spacer, such as a piece of cardstock or a piece of paper folded several times, under the servo and between each mounting block to raise the servo off the servo hatch. After the servo is installed the spacer will be removed, providing adequate spacing for vibration isolation.

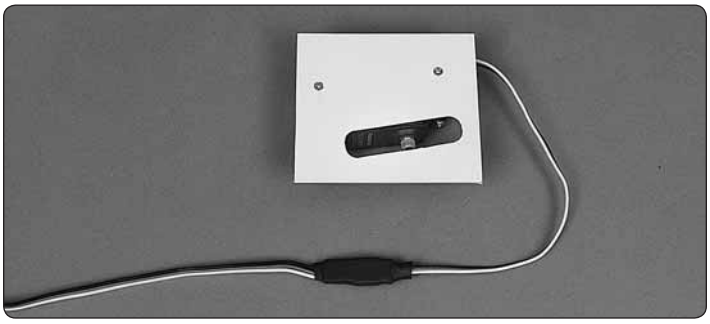
❏ ❏ 6. Drill 1/16" [1.5mm] holes through the blocks for the servo mounting screws. Mount the servo to the blocks with the screws that came with the servo. Remove the servo mounting screws and apply a couple of drops of thin CA in each hole to harden the threads. Allow the CA to fully harden. Then, reinstall the screws and remove the spacer.



❏ ❏ 7. Make two marks on the top of the servo hatch, centered on the two flap servo mounting blocks.



❏ ❏ 8. Drill 1/16" [1.5mm] holes through the servo hatch and into the servo blocks at the two previously made marks. Install two #2 x 3/8" (9.5mm) self-tapping flat head screws to secure the servo mounting blocks to the aileron servo hatch. Use thin CA to harden the screw threads.

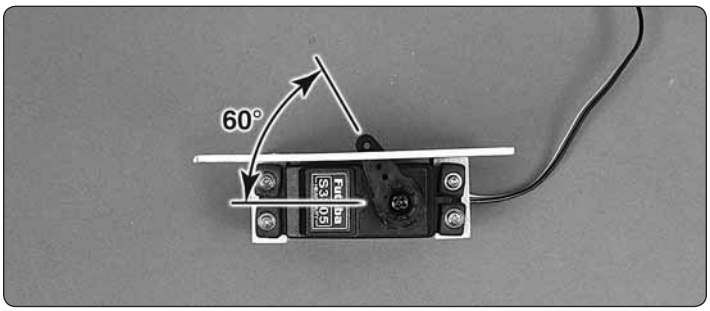


❏ ❏ 9. Following your radio setup diagram, connect the appropriate servo extension to your flap servo. Cut a piece

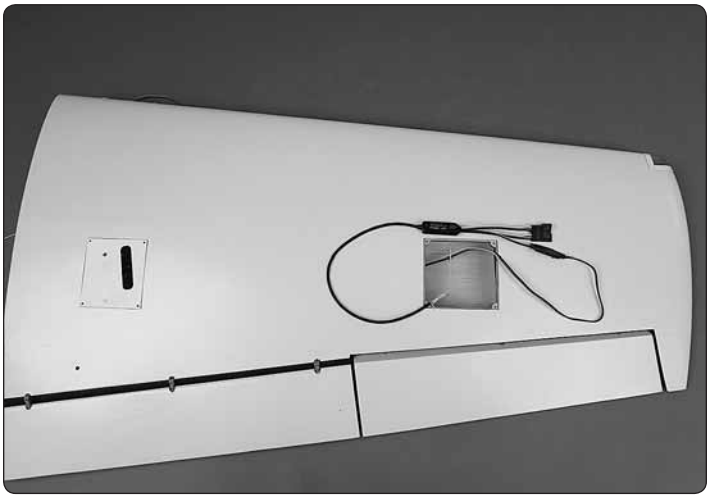
of the supplied heat shrink tubing in half and slide it over the servo connections. Shrink the tubing by applying heat to the tubing.

❑ ❑ 10. If installing the S.Bus setup, connect the S.Bus decoder or S.Bus hub to the flap servo extension. Secure the connection with a piece of heat shrink tubing if installing the S.Bus decoder.

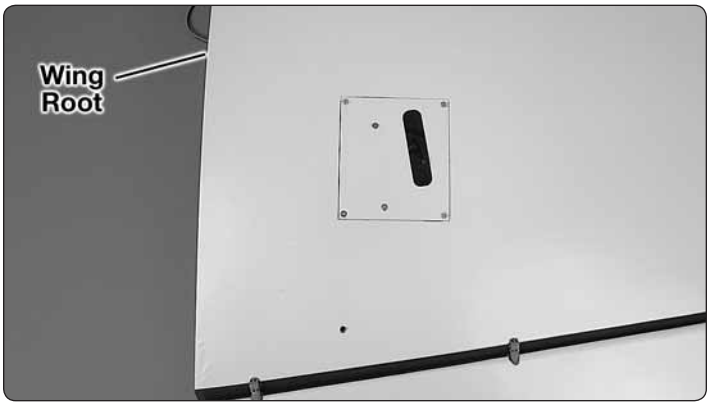
NOTE: If installing the Non S.Bus setup, follow the instructions included with the SBC-1 S.Bus Channel Setting Tool (FUTM4190) or CIU-3 USB Interface (FUTM0953) to program the decoder. We set flap number 1 to channel 7.



❑ ❑ 11. Plug the flap servo and receiver battery into the receiver. Switch on the transmitter and center the servo trims. Temporarily install a servo arm on the flap servo, 60 degrees from the centerline of the servo. Test the movement for the correct direction.

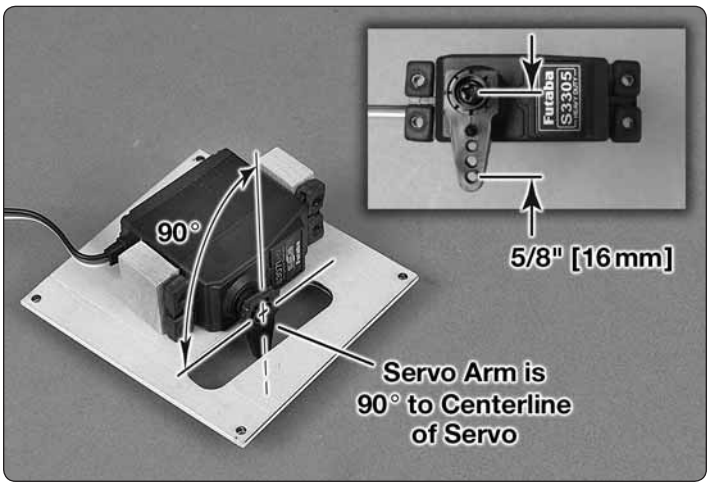


❑ ❑ 12. Use the string in the wing to pull the flap wires through to the aileron servo hatch location.



❑ ❑ 13. Place the flap servo hatch with the servo in the wing. Be certain that the hatch is positioned correctly as shown. Secure the hatch using four #2 x 3/8" [9.5mm] flat head sheet metal screws. Use thin CA to harden the screw threads.

Install the Aileron Servo

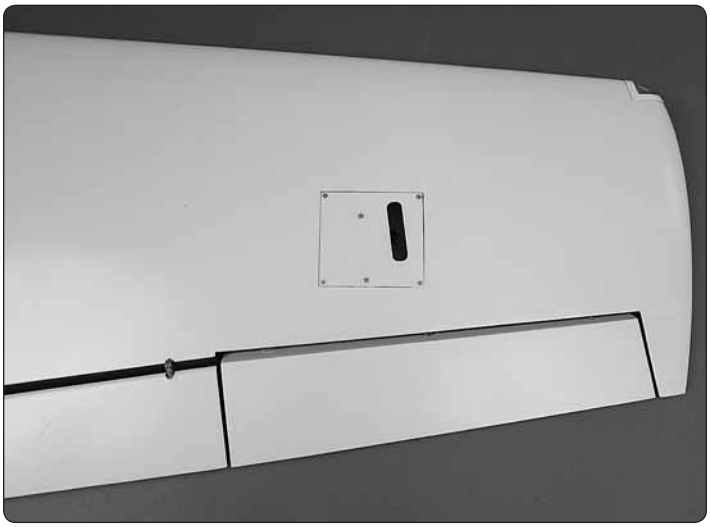


❑ ❑ 1. Install the aileron servo on the aileron servo hatch following the same method used to install the flap servo.

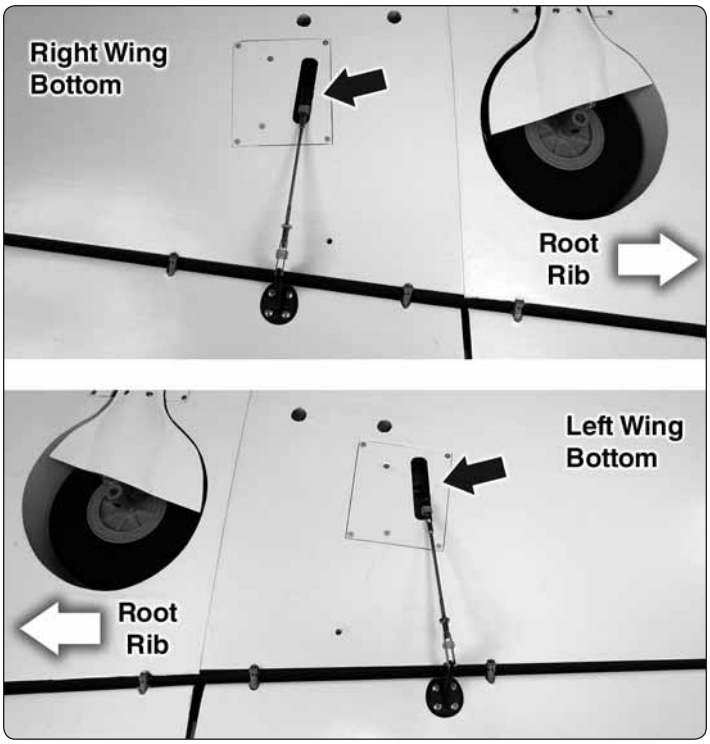
❑ ❑ 2. Following your radio setup diagram, connect the appropriate servo extension to your aileron servo. Or, plug the aileron servo into the S.Bus decoder or hub. Secure the connectors with a piece of heat shrink tubing.

Note: We set aileron number 1 to channel 5 in the S.Bus setup.

❑ ❑ 3. Use the string in the wing to pull the flap and aileron extensions or S.Bus decoder or hub through the wing.



❑ ❑ 4. Secure the aileron hatch to the wing using four #2 x 3/8" [9.5mm] flat head sheet metal screws. Use thin CA to harden the screw threads.

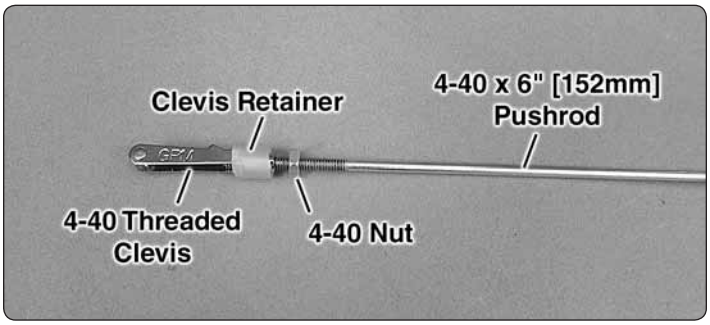


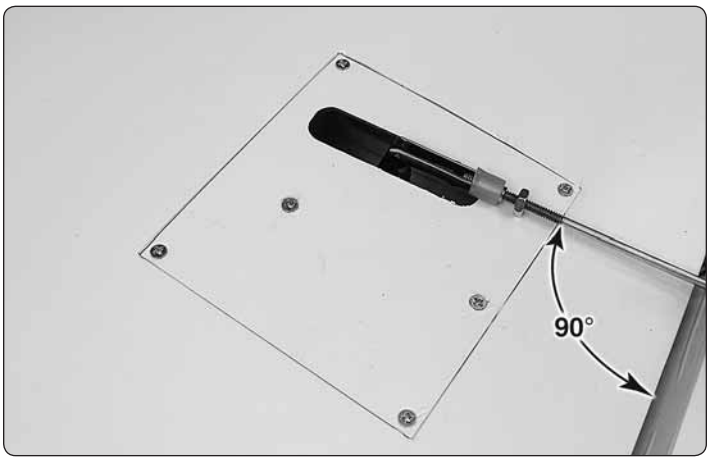
❑ ❑ 5. Go back to step 1 on page 11 and install the right flap and aileron servos following the same procedure. The left and right wing flap servos face the same direction.

NOTE: If installing S.Bus, we put the right wing flap #2 on channel 8 and right aileron #2 on channel 6.

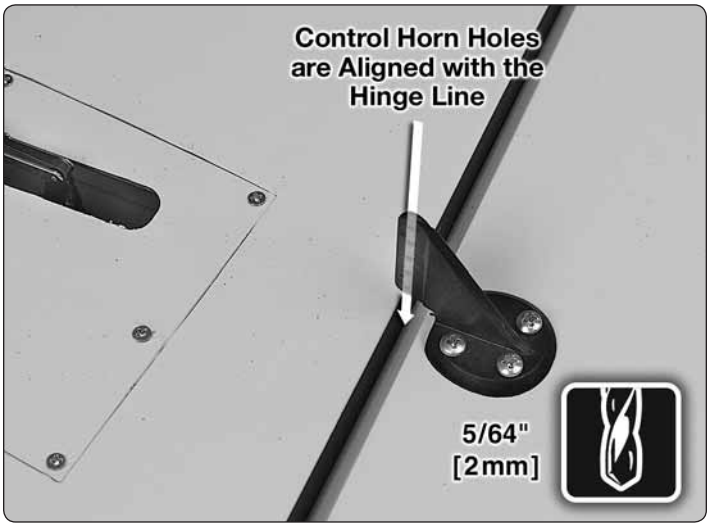
Install the Aileron and Flap Pushrods

Do the left aileron first. Temporarily plug the aileron servo into the receiver. Switch on the transmitter and plug a receiver battery into the receiver. Center the aileron trim and adjust the aileron servo arm so that it is perpendicular to the centerline of the servo.

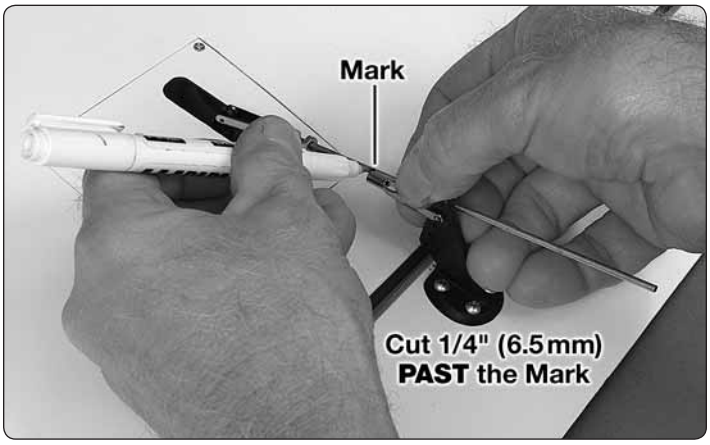




❑ ❑ 1. Slide a silicone clevis retainer over a 4-40 threaded metal clevis. Thread a 4-40 nut followed by the 4-40 metal clevis, threaded 16 turns onto a 4-40 x 6" [152mm] metal pushrod. Attach the clevis to the aileron servo arm 5/8" [16mm] from the center of the arm.



❑ ❑ 2. Position the control horn so that it is in line with the pushrod and over the plywood mounting plate. The holes in the control horn should be aligned with the hinge line of the aileron. On the aileron, mark the four mounting holes. Remove the control horn and drill a 5/64" [2mm] pilot hole at each mark. Do not drill completely through the aileron. Attach the control horn using four #4 x ½" sheet metal screws. Use thin CA to harden the holes.



❏ ❏ 3. Install the metal solder clevis in the 2nd hole from the outer end of the control horn. Center the aileron servo and aileron. Mark the pushrod where it meets the solder clevis. Remove the pushrod and the solder clevis and cut the pushrod 1/4" [6.5 mm] **past** the mark. Solder the solder clevis to the pushrod using the techniques described in the following **Hot Tip**.

HOT TIP

HOW TO SOLDER

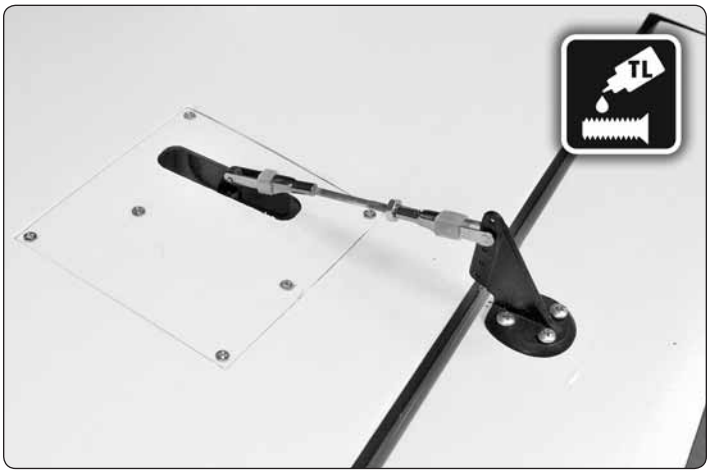
1. Use denatured alcohol or other solvent to thoroughly clean the pushrod. Roughen the end of the pushrod with coarse sandpaper where it is to be soldered.

2. Apply a few drops of soldering flux to the end of the pushrod. Then, use a soldering iron or a torch to heat it. “Tin” the heated area with silver solder by applying the solder to the end. The heat of the pushrod should melt the solder – not the flame of the torch or soldering iron – thus allowing the solder to flow. The end of the wire should be coated with solder all the way around.

3. Place the clevis on the end of the pushrod. Add another drop of flux. Then, heat and add solder. The same as before, the heat of the parts being soldered should melt the solder, thus allowing it to flow. Allow the joint to cool naturally without disturbing. Avoid excess blobs, but make certain the joint is thoroughly soldered. The solder should be shiny, not rough. If necessary, reheat the joint and allow to cool.

4. Immediately after the solder has solidified, but while it is still hot, use a cloth to quickly wipe off the flux before it hardens. **Important:** After the joint cools, coat the joint with oil to prevent rust. **Note:** Do not use the acid flux that comes with silver solder for electrical soldering.

This is what a properly soldered clevis looks like – shiny solder with good flow, no blobs and flux removed.



❏ 4. Slide a silicone clevis retainer over the solder clevis. Reinstall the aileron pushrod with the threaded clevis attached to the control horn. Adjust the threaded clevis so that the aileron is centered. Apply a drop of thread locker to the threads of the pushrod behind the clevis. Tighten the 4-40 nut against the clevis.

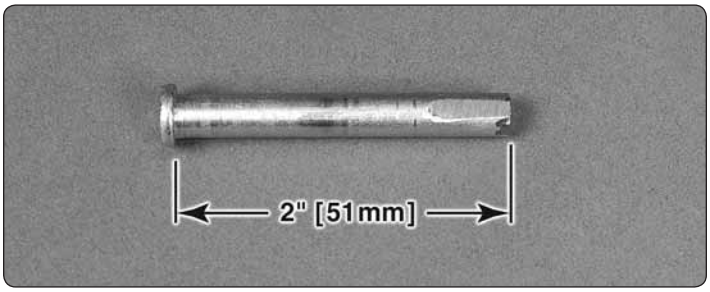
❏ 5. Assemble and connect the flap pushrods following the same procedure. We installed the pushrod in the outer hole of the control horn and the hole 5/8" [16mm] from the center of the servo arm.

❏ 6. Return to step 1 and install the aileron and flap pushrods on the right wing.

The F6F Hellcat was fitted with the 2,100 hp Pratt & Whitney R-2800-10W engine, the same engine used in the Corsair and the P-47 Thunderbolt. It had a gross weight of 15,413 lbs. Its maximum speed was 376 mph at 23,400 ft. It carried six 50-caliber machine guns with 400 rounds of ammunition.

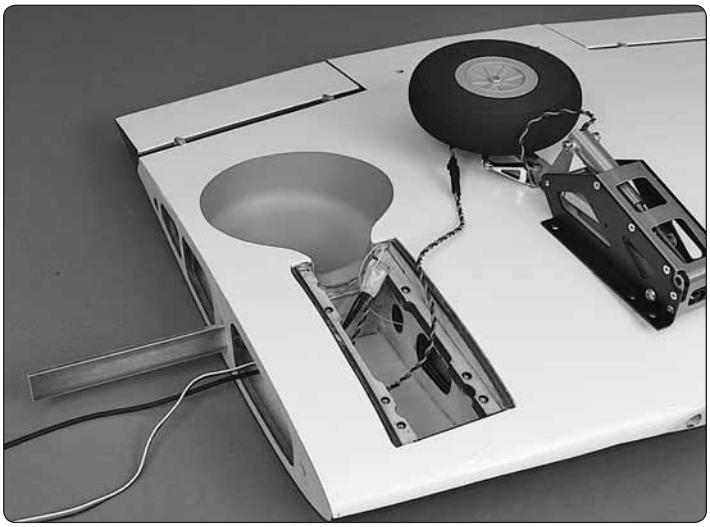
Mount the Retracts

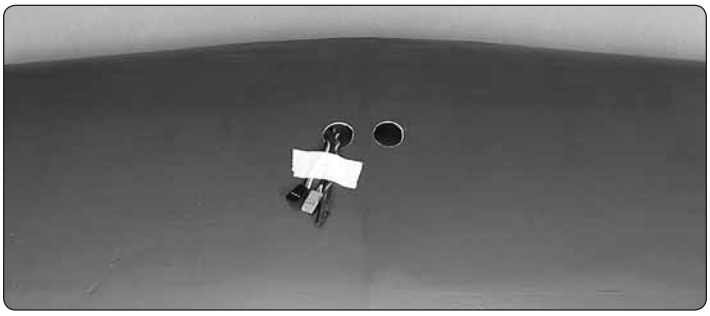
Install the left retract first.



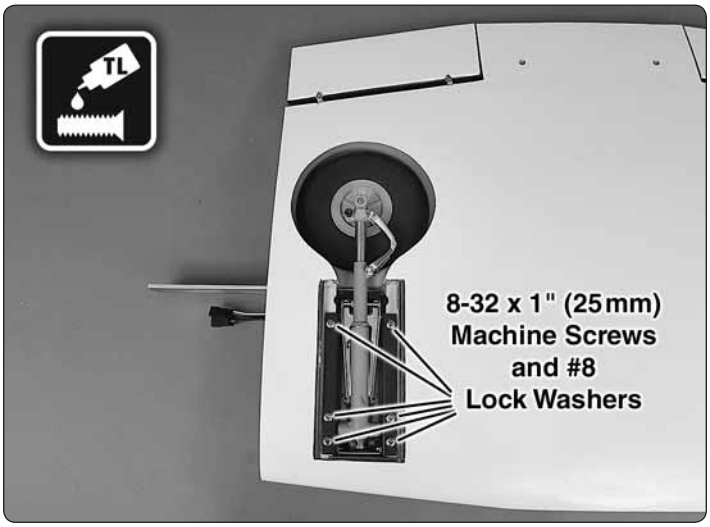
❏ 1. Trim the axle that is included with the Robart retracts to 2" [51mm] long. File a flat spot at the end of the axle. Insert the axle through the included 5" [127mm] wheel. Slide the 6mm thick aluminum wheel spacer onto the axle. Insert the axle into the retract. Apply a drop of threadlocker to the 10-32 x 3/16" [4.8mm] set screw, included with the retract, and tighten the set screw onto the flat of the axle. Make sure that the wheel rotates freely.

❏ 2. Connect a 12"(305mm) Actuator Extension (included with the retracts) to the retract. If installing pneumatic retracts, attach the air lines to the retract.



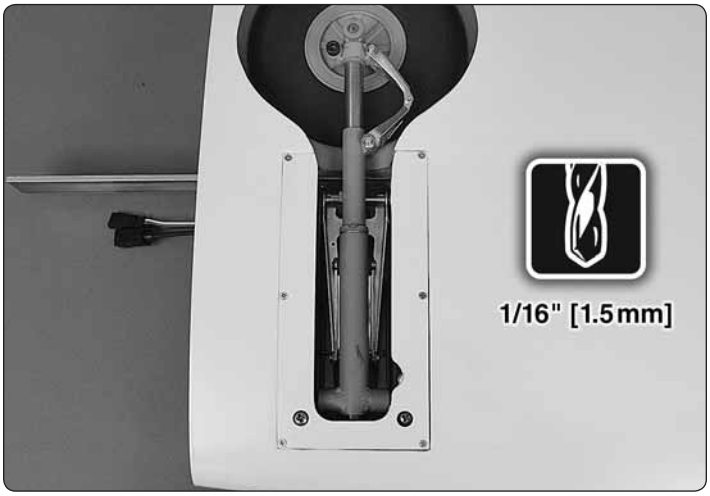


❏ 3. Tie the Actuator extension or pressure lines along with a flap and aileron servo extension or S.Bus hub, depending on your setup, and a 16" (400mm) servo extension for the wing tip lights to the string in the retract bay. Pull the lines out the hole in the top of the wing and tape them to the top of the wing.

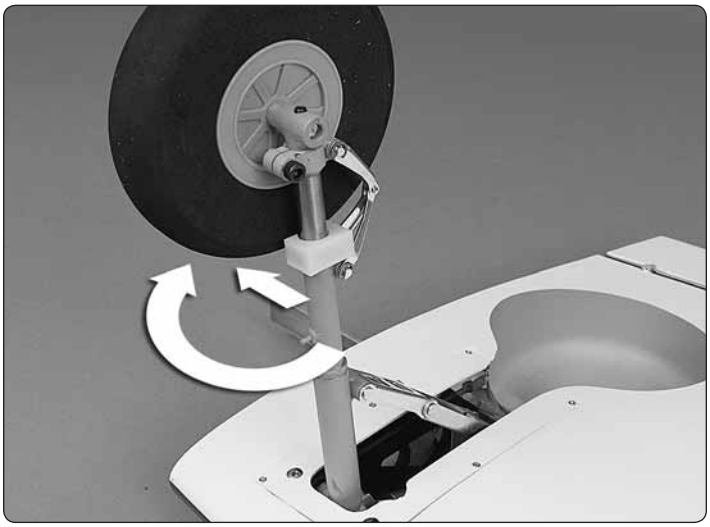


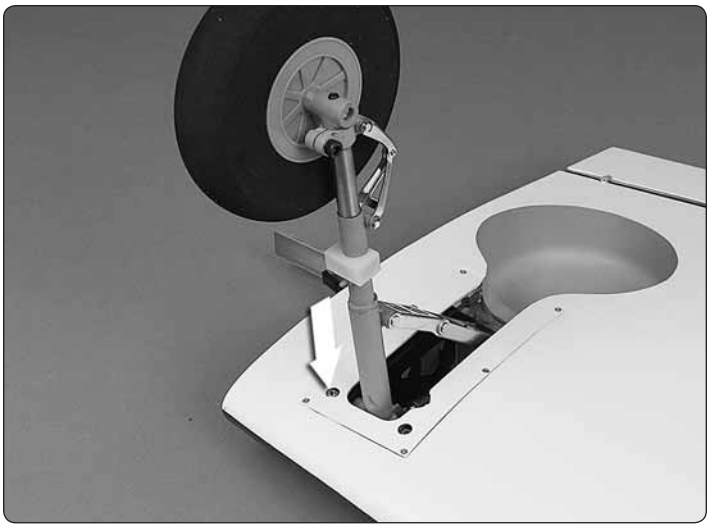
❏ 4. Secure the retract in the wing with six 8-32 x 1" (25mm) machine screws and #8 lock washers. Before installing, apply a drop of thread locker to the threads on the machine screws.

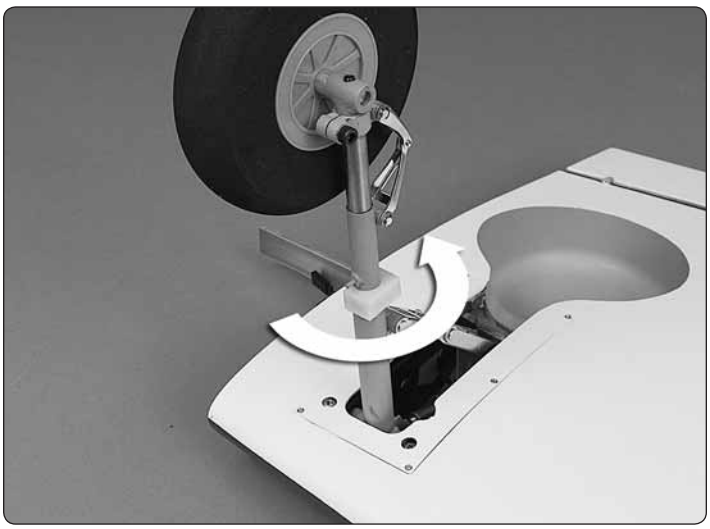
❏ 5. Operate the retract to make sure the wheel does not bind in the wheel well.



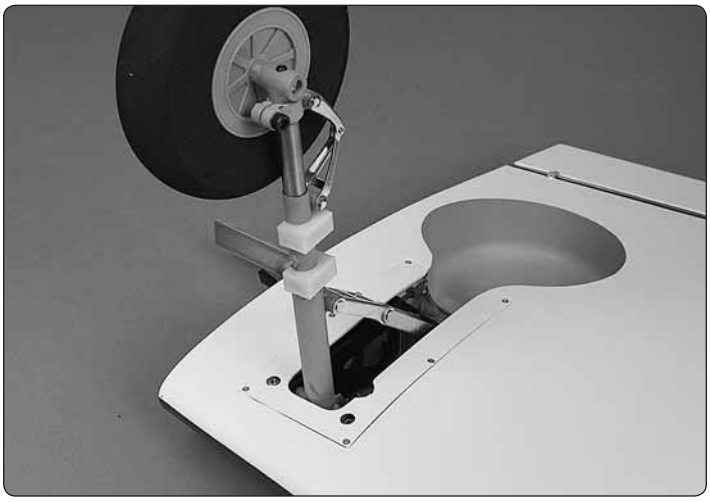
❏ 6. Position the retract cover over the retract and drill 1/16" (1.5mm) pilot holes using the holes in the cover as a guide. Mount the cover to the wing with #2 x 3/8" (9.5mm) flat head screws. Harden the screw holes with thin CA.



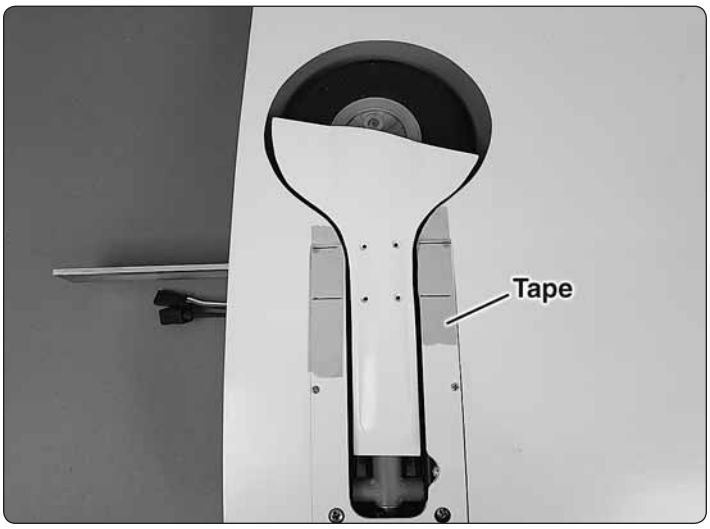




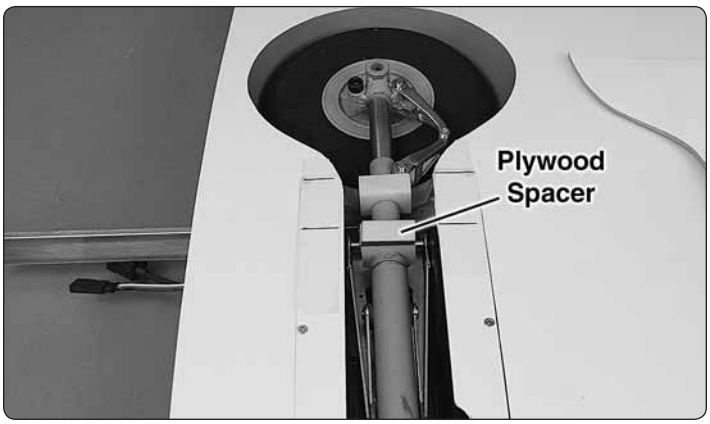
❏ 7. Extend the landing gear and snap one of the landing gear door mounts over the retract. Rotate the mount and slide it up the strut past the pin.



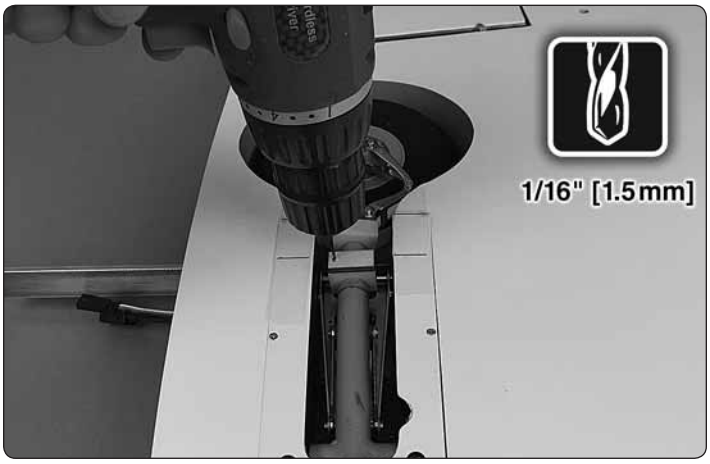
❏ 8. Install the second landing gear door mount and position as shown.



❏ 9. Retract the landing gear and position the landing gear door over the strut. Center the door in the opening. Place a piece of masking tape on each side of the retract. Mark the position of the mounting holes on the tape.



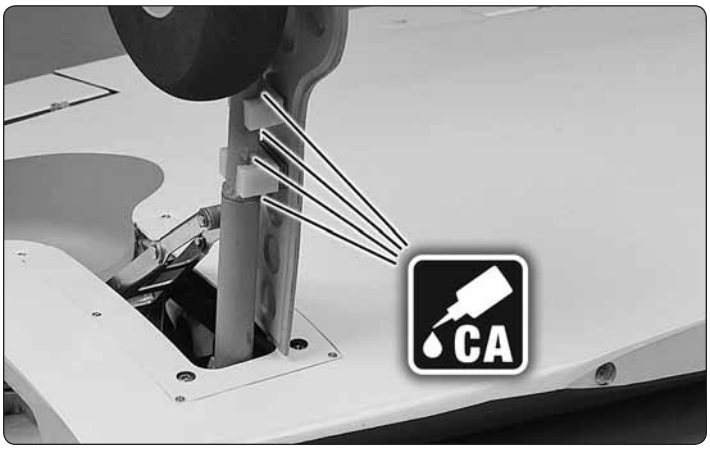
❏ 10. Use the 1/16" (1.5mm) plywood spacers to adjust the height of the gear doors to match the bottom of the wing. If one of the gear door mounts is too high, use 80 grit sandpaper to sand the face of the mount. Once satisfied with the height of the gear doors, glue the plywood spacers to the gear door mounts.



❏ 11. Center the gear door mounts and the mounting holes on the gear doors with the marks on the wing. Using one of the mounting holes as a guide, mark the hole location on the gear door mount. Remove the gear door. Drill a 1/16" (1.5 mm) pilot hole at the mark on the gear door mount.

❏ 12. Temporarily mount the gear door to the gear door mount with a #2 x ½" (12.5 mm) sheet metal screw. Drill the three remaining pilot holes using the holes in the gear door as a guide.

❏ 13. Install the gear door with #2 x ½" (12.5mm) sheet metal screws.

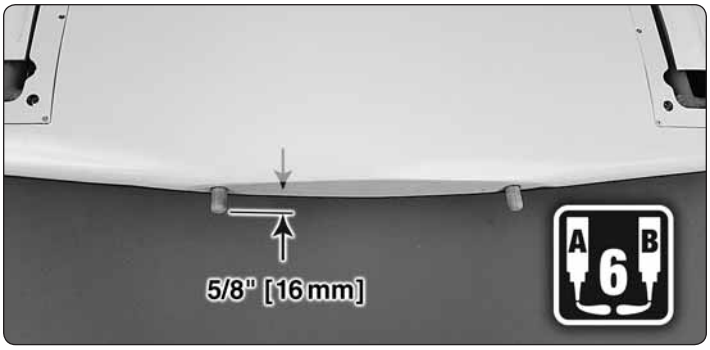


❏ 14. Position the gear door on a strut in the opening and extend the landing gear. Without disturbing the gear door, apply a couple of drops of thin CA between the gear door mount and the landing gear strut.

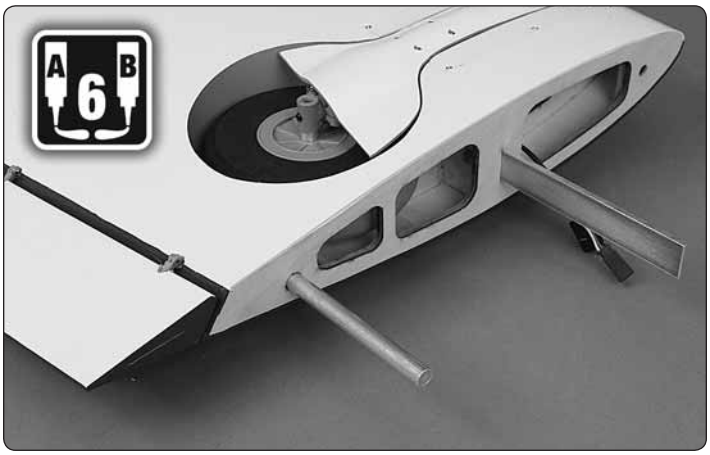
❏ 15. Go back to step 1 on page 15 of **Mount the Retracts** and install the right retract.

Join the Wing Panels

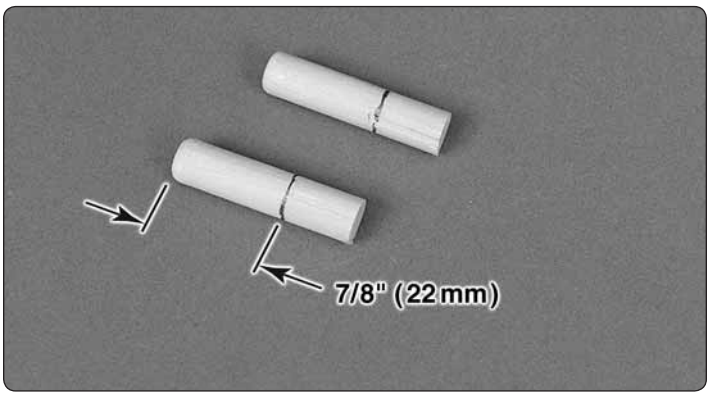
Note: Keep the retracts in the retracted (up) position.



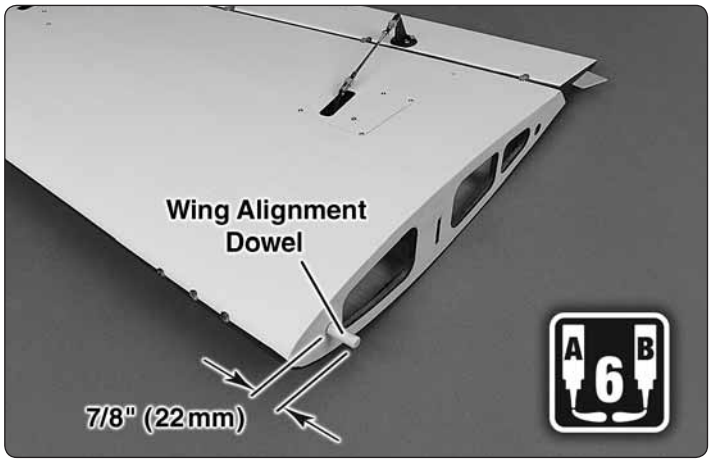
❏ 1. Use 6-minute epoxy to glue the two 3/8 x 2-3/8" [10 x 60mm] diameter forward wing dowels in the leading edge of the wing. The wing dowels should protrude approximately 5/8" [16mm] from the wing.

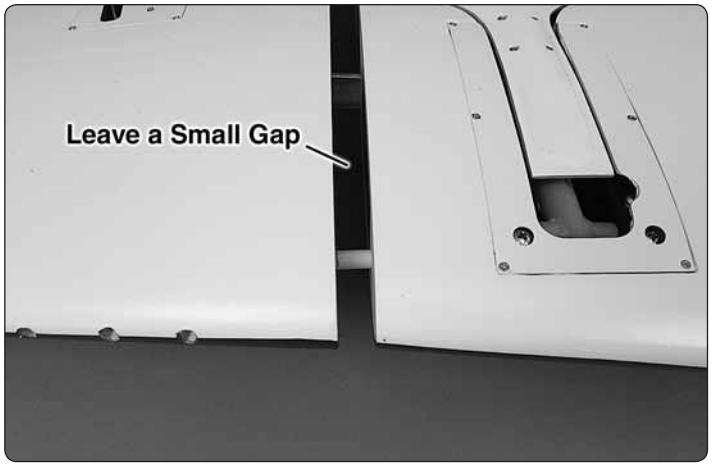


❏ 2. Test fit the aluminum wing tubes in the wing center section. Use medium grit sandpaper to roughen up the part of the tube that will be glued in the center section. Clean the tubes with denatured alcohol. Glue the tubes in the wing center section with 6-minute epoxy. Wipe off any excess epoxy with a paper towel dampened with denatured alcohol.

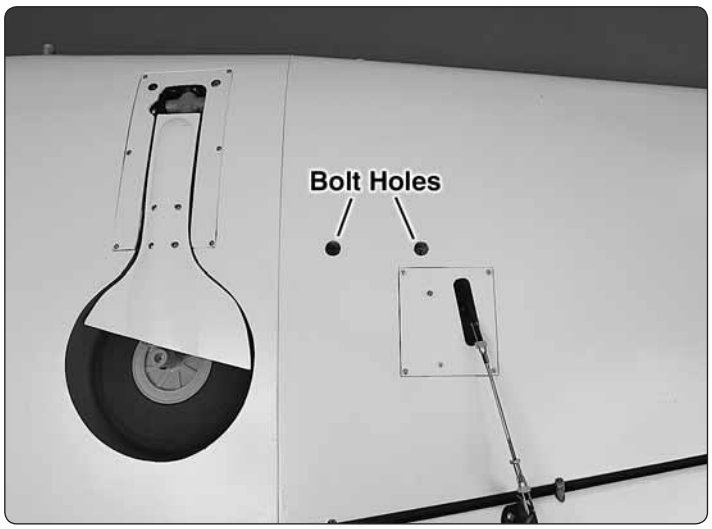


❏ 3. Place a mark 7/8" (22 mm) from the end of the 5/16 x 1-3/8" (8 x 35 mm) wing alignment dowels.



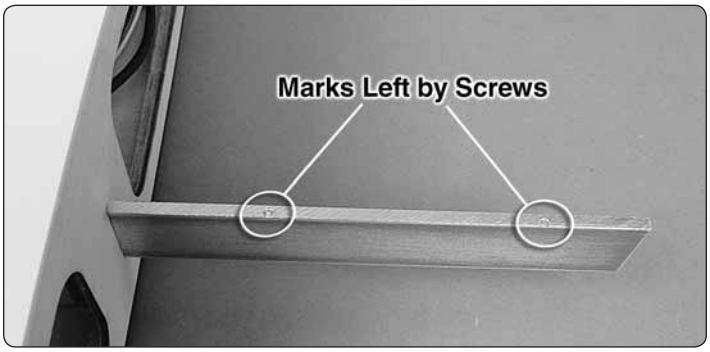


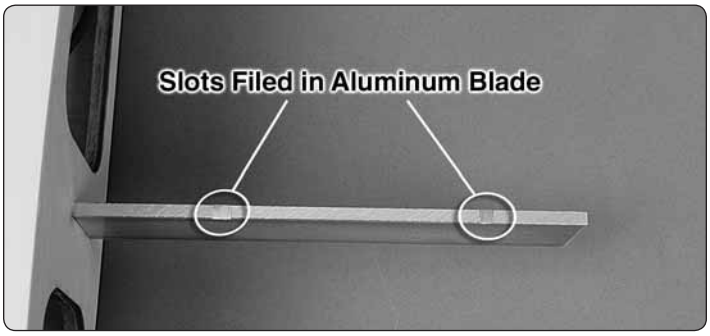
❏ 4. Use 6-minute epoxy to glue the wing alignment dowels in the forward hole of the wing outer panels. Before the epoxy cures, slide the wing outer panel onto the wing center section. Leave a small gap between the wing panels to avoid gluing the wing panels together.



❏ 5. Once the epoxy has cured, slide the wing panels together completely. Locate and cut the covering from over the four outer wing panel bolt holes, two on top and two on bottom.

❏ 6. Apply a drop of thread locker to the threads of four 4-40 x ¼" (6mm) socket head cap screws. Install the screws and #4 lock washers into the C-channel in the outer wing panel. Tighten the screws against the wing joiner blade.

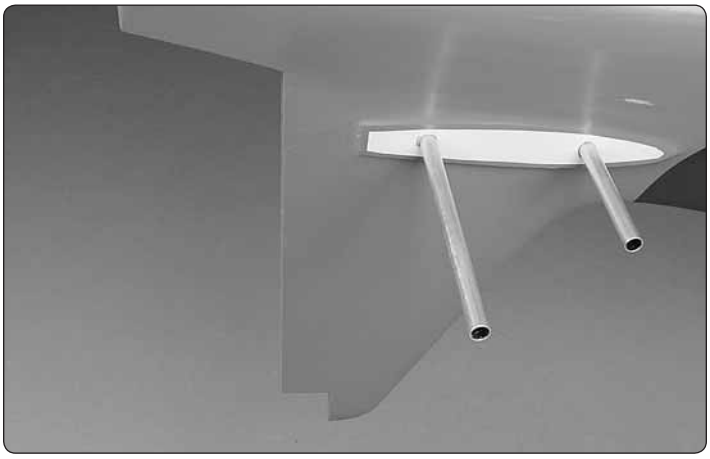




❏ 7. Loosen the screws and remove the outer wing panel. The 4-40 socket head cap screws will have left a mark on the aluminum blade. Use a metal file to cut a shallow 1/32" (0.8mm) slot in the aluminum blade.

ASSEMBLE THE FUSELAGE

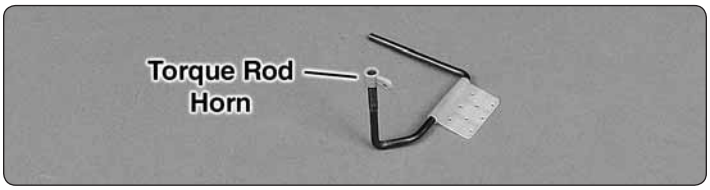
Install the Stabilizer

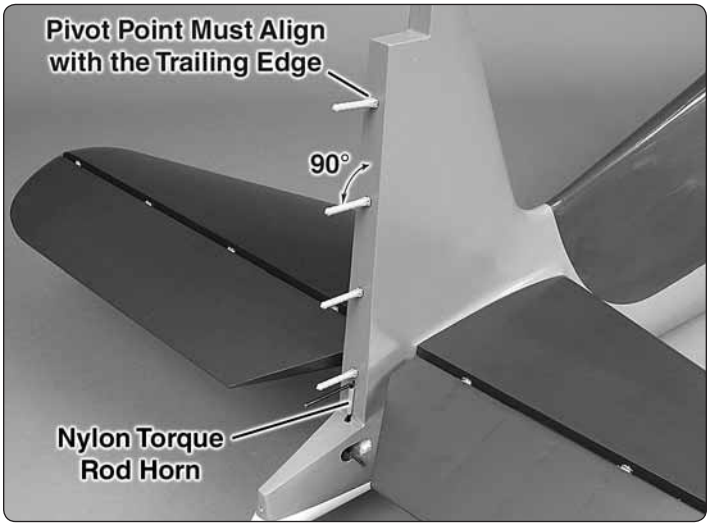


❏ 1. Test fit the two aluminum stabilizer tubes in the fuselage and slide the stabilizers on the tubes. The shorter tube goes in the front hole. If the aluminum tubes are too tight to slide through the holes, take a sharp hobby knife and gently scrape the inside of the holes. During the manufacturing process a small amount of resin or filler may be left behind in the hole.

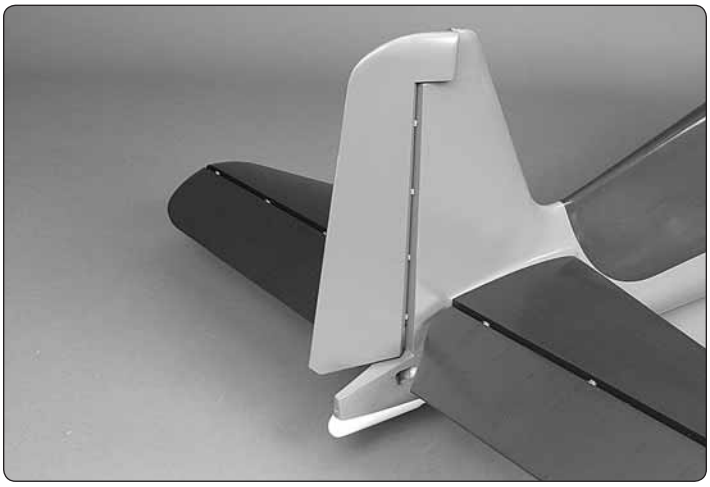
❏ 2. Test fit the stabilizer halves. Once you are satisfied with the fit of the stabilizer halves, remove the stabilizer halves and the joiner tubes. Use medium grit sandpaper to roughen up the aluminum tubes and the gluing surfaces on the fuselage stabilizer roots. Clean the tubes and gluing surfaces with denatured alcohol and insert both tubes back into the fuselage until the end exits on the opposite side by approximately 1" [25mm].

❏ 3. Gather everything required for gluing the stabilizer halves to the fuselage including 30-minute epoxy, mixing sticks, epoxy brush, 12" [304mm] long dowel or wire, masking tape, denatured alcohol and small paper towel squares. Mix up 3/4 oz. [22.1cc] of 30-minute epoxy. Apply a generous amount of epoxy to the long side of the aluminum joiner tubes. Pull the tubes through the fuselage so that they are close to centered. Pour a small amount of epoxy into both holes of one of the stabilizer halves and using a dowel or wire, coat the inside of the holes. Apply epoxy to the root rib of the stabilizer and the fuselage. Insert the end of the aluminum tubes with epoxy on them into the stabilizer and press the stabilizer against the fuselage. Wipe off any excess epoxy that may have squeezed out before it runs down the fuselage. Quickly repeat the process on the other side. Wipe off any excess epoxy with a dampened paper towel and denatured alcohol. Use pieces of masking tape to hold the stabilizer tight against the fuselage until the epoxy cures.

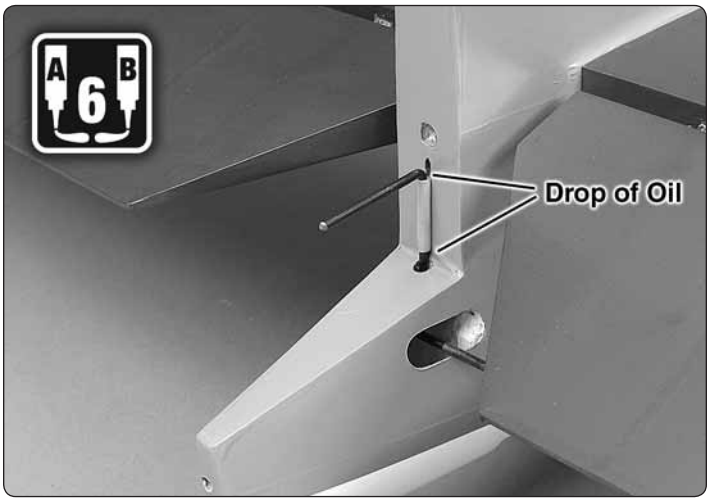




❏ 4. Remove the nylon torque rod horn from the rudder torque rod. Insert the torque rod bearing in the fin. Without using any glue, install four hinges into the fin. Note that the pivot point of each hinge must align with the center of the trailing edge. To achieve this alignment, the hinges will be fairly deep in the fin. Also note that the hinges must be perpendicular to the trailing edge.

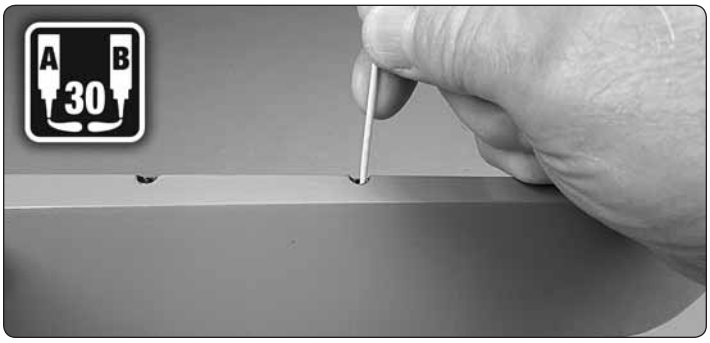


❏ 5. Again without glue, test fit the rudder to the fin. Move it left and right a few times to align the hinges. The rudder doesn't have to move very far, only 1-1/2" [38mm] left and 1-1/2" [38mm] right measured at the widest part of the rudder at the trailing edge. If there is too much resistance, or if you are not able to move the rudder left and right 1-1/2" [38mm], widen the gap slightly between the rudder and fin.

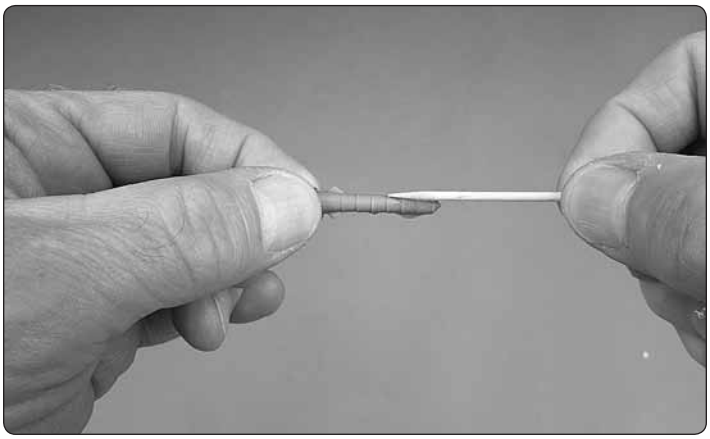


❏ 6. Remove the rudder, hinges and rudder torque rod. Apply a small drop of oil to both ends of the rudder torque rod bearing. This will prevent epoxy from adhering to the rudder torque rod. Use 6-minute epoxy to glue the rudder torque rod bearing in the fin.

❏ 7. Add a small drop of oil to the pivot point on the hinges. This will prevent the epoxy from adhering to the pivot point. Make sure oil does not get on the gluing surface of the hinge. If it does, clean the oil off with a paper towel dampened with denatured alcohol.



❏ 8. Mix up approximately ¼ oz. [7.4cc] of 30-minute epoxy. Use a toothpick to thoroughly apply the epoxy in the holes in the fin and rudder. Use the toothpick to get the epoxy out of the opening of the holes in the rudder and fin so it doesn't get into the hinge pin. Wipe away any excess epoxy around the outside of the holes with a paper towel dampened with denatured alcohol.



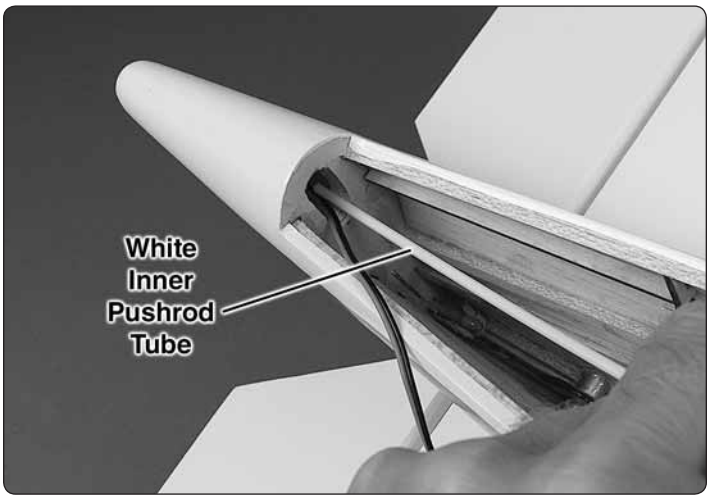
❏ 9. Use the toothpick to apply epoxy to the ends of the rudder hinges that go into the fin. Insert each hinge into the fin and wipe away any excess epoxy that squeezes out of the hole.

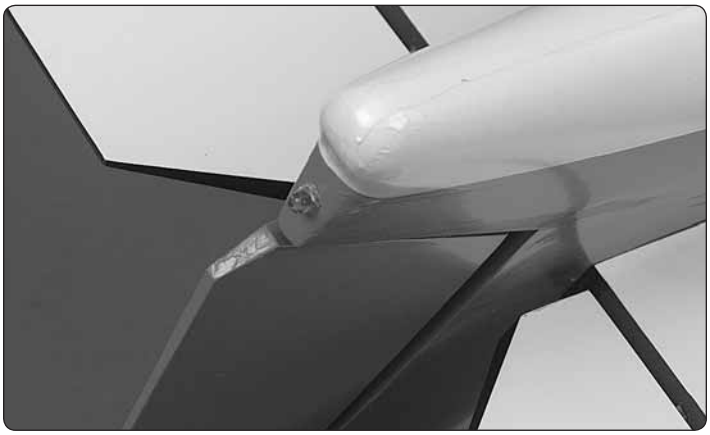
❏ 10. Apply epoxy to the other end of the hinges. Join the rudder to the fin, pushing the hinges only about ¾ of the way into the rudder. Use a paper towel to wipe away any epoxy that squeezes out. Then, fit the rudder the rest of the way on.

❏ 11. Move the rudder left and right a few times to align the hinges and make certain that the rudder deflects left and right the full 1-1/2" [38 mm].

Because of its variety of weapons and equipment the F6F Hellcat was able to perform a broad range of missions. This included fighter versus fighter, strike plane escort, combat air patrol, long range search, ground support, night fighting and photo recon.

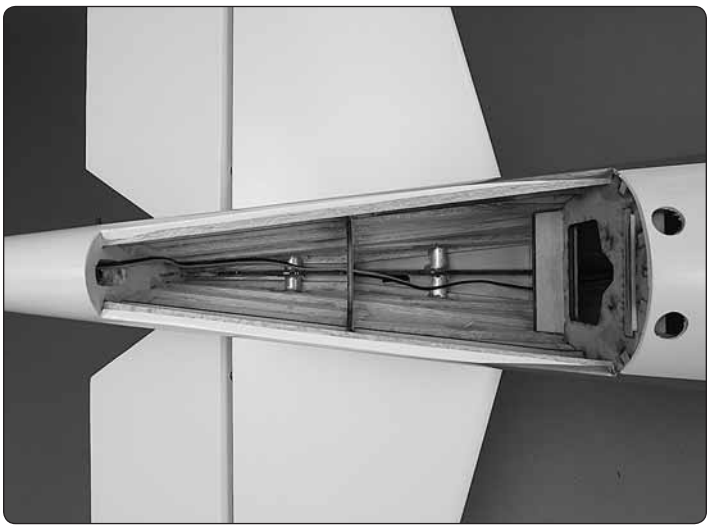
Install the Tail Light





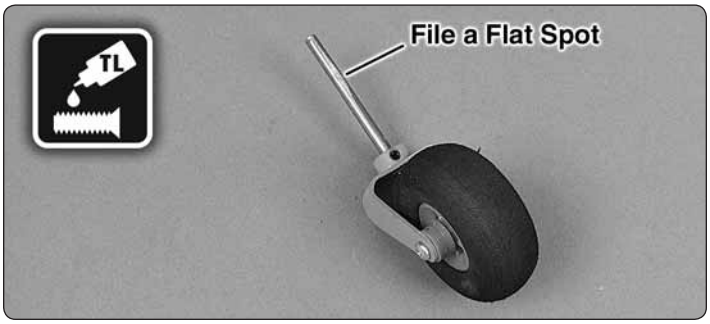
❏ 1. Test fit the tail light in the fuselage. We found that the wire from the LED is stiff enough to guide the LED to the hole. However, it is not stiff enough to push the LED into the hole. Once you have the LED positioned in front of the hole, use the included white inner pushrod tube to push the LED into the hole.

❏ 2. Now that you have the installation method down, apply a couple of drops of 6-minute epoxy to the LED base and reinstall the LED.



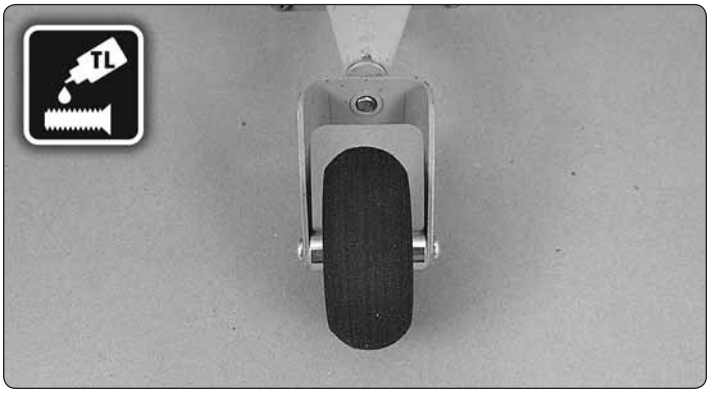
❏ 3. Once the epoxy has cured, route the wires through the fuselage to the servo tray.

Mount the Retractable Tail Gear

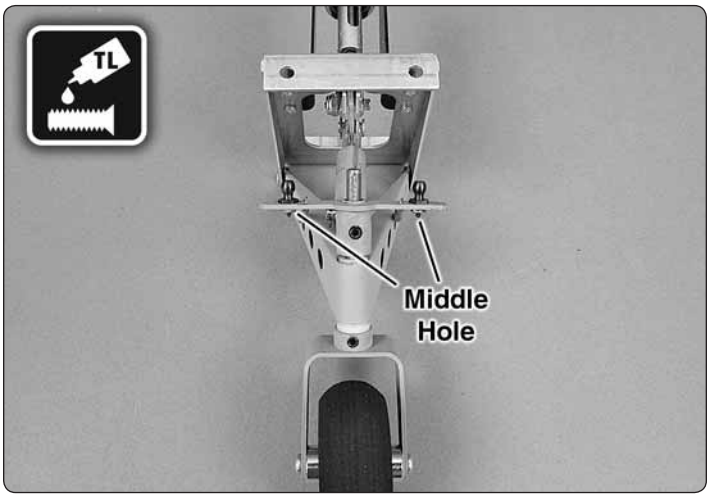


❏ 1. Remove the steering arm from the Robart #160WC retractable tail gear assembly (not included). File a flat spot near the top of the shaft for the set screw, in the steering arm, to seat against. Re-install the steering arm on the shaft. Apply a drop of threadlocker to the set screw and re-install the set screw.

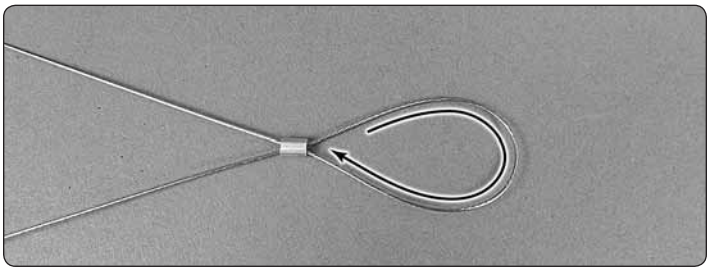
❏ 2. File another flat spot near the bottom of the shaft for the set screw in the fork. Apply threadlocker to the set screw and re-install. Check that the axle in the fork and the steering arm are parallel with each other. Make adjustments to the flat spots if necessary.



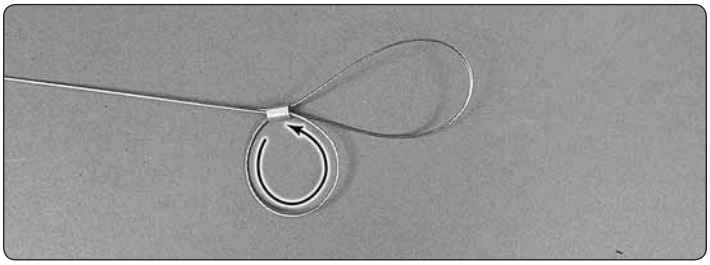
❏ 3. Enlarge the hole through the 1-3/4" (44mm) tail wheel with a #9 [5mm] drill bit. Install a 5mm metal spacer on each side of the wheel. Re-install the tail wheel on the retractable tail gear. Apply a drop of threadlocker to the threads of the mounting screws.



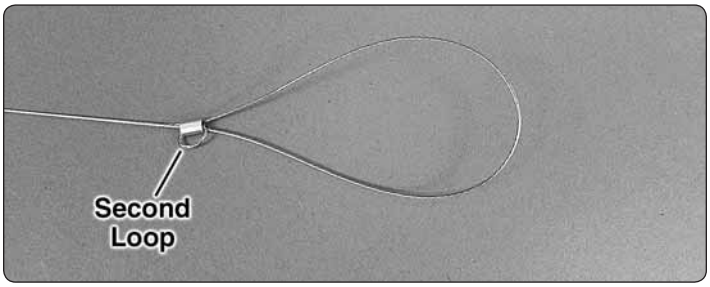
❏ 4. Insert a .080" ball link ball in the middle hole of each arm. Secure each ball with a .080" nut and a drop of threadlocker.



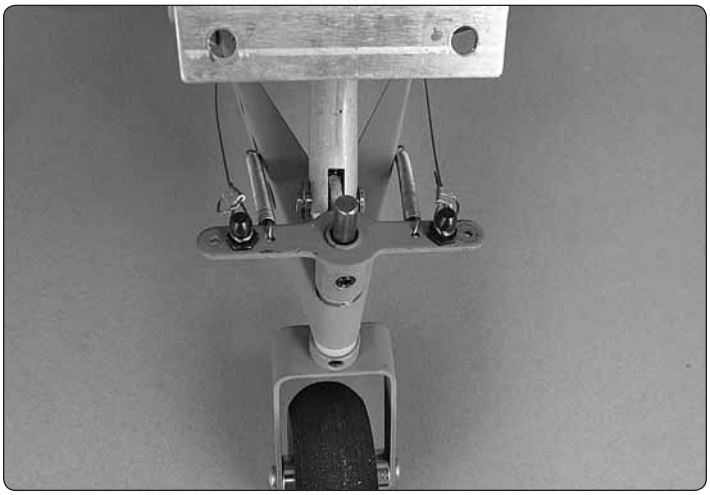
❏ 5. Use wire cutters to cut the supplied braided cable into two equal lengths. Slide a swage (metal tube) over one end of the cables. Then, guide the end of the cable back through.



❏ 6. Wrap the cable back around and through the swage.



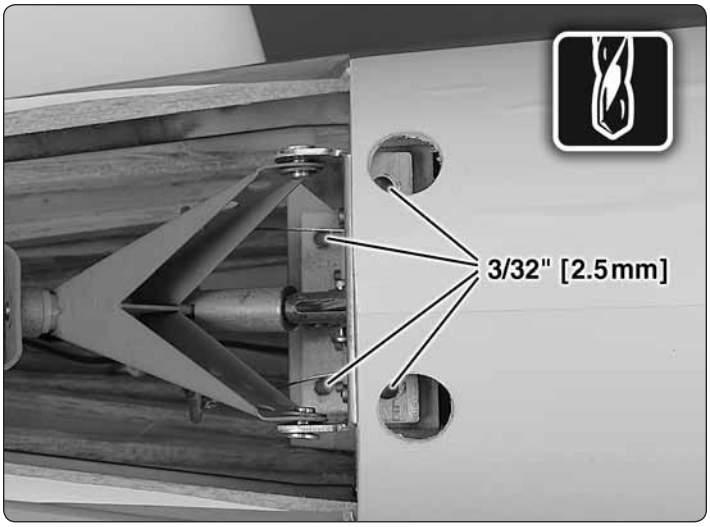
❏ 7. Use pliers to pull the cable from the first loop to reduce the size of the second loop.



❏ 8. Now pull on the long end of the cable to reduce the size of the first loop. Slip the loop over one of the ball link balls on the steering arm. Tighten the loop until it is small enough to remain secure on the ball, yet may still be pried off. Squeeze the swage with pliers. Connect the other cable to the other ball link ball the same way.

❏ 9. Connect a 36" [915 mm] actuator extension (included with retract) to the electric retractable tail gear or air lines to the pneumatic retractable tail gear.

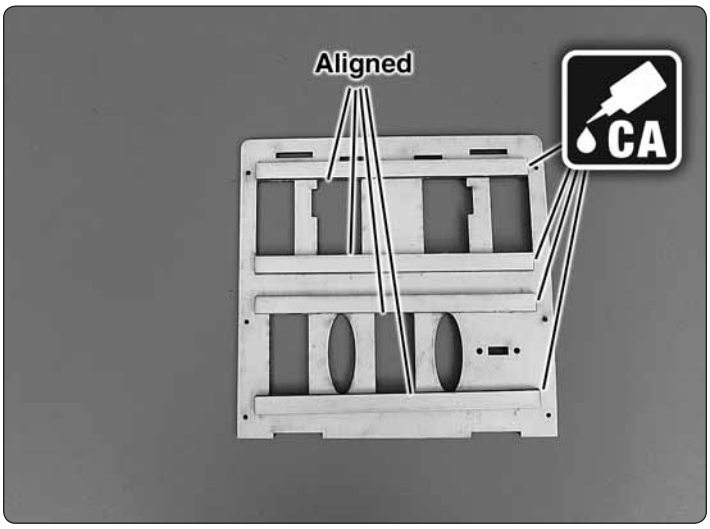
❑ 10. Place the tail gear in the fuselage while simultaneously guiding the pull-pull cable through the white plastic guide tubes. Also route the actuator extensions or air lines through the fuselage.



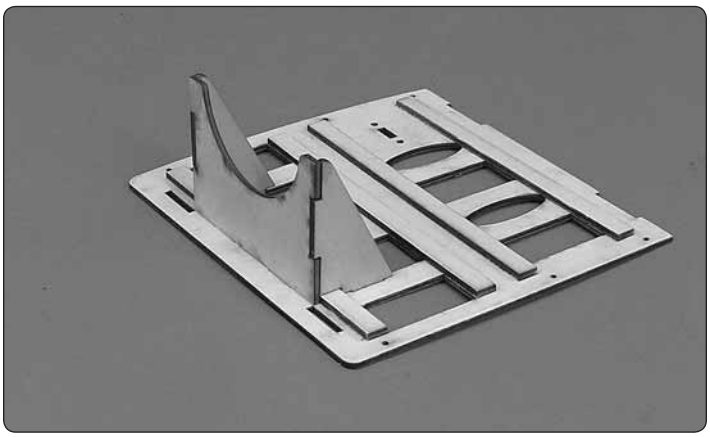
❑ 11. Drill four 3/32" [2.5mm] holes through the rails for mounting the tail gear. If your drill bit is not long enough to reach the rail nearest the top of the fuselage, use medium CA to temporarily glue a 3/32" [2.5mm] drill bit in a 1/8" [3.2mm] brass tube. After drilling the holes, the drill bit can be removed from the tube by heating the tube.

INSTALL THE ELEVATOR AND RUDDER SERVOS

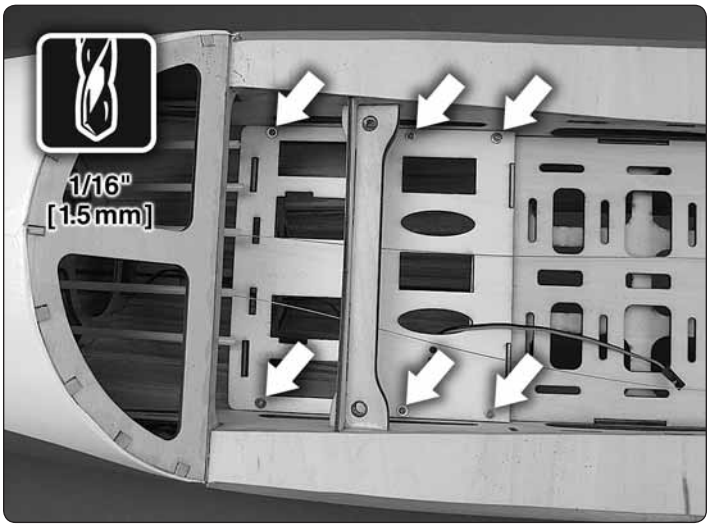
❑ 1. If you are installing pneumatic retracts, insert the pressure tank in the fuselage. Apply a couple of dabs of silicone glue to the joint between the tank and the former.



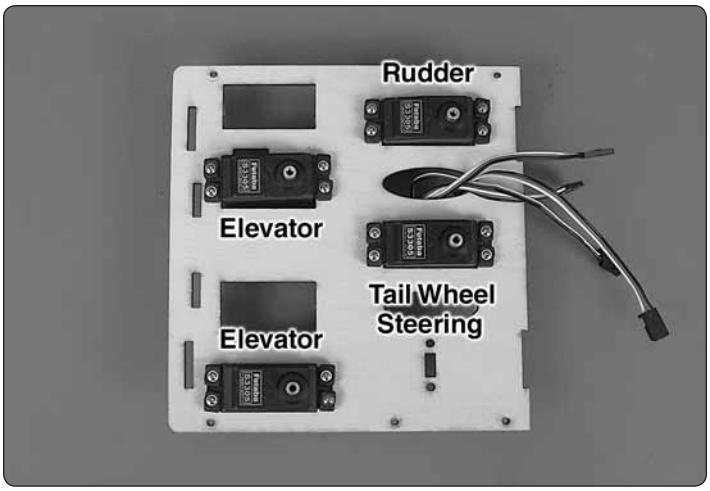
❑ 2. Use thin CA to glue the 1/8" x 3/8" x 5-3/4" [3.2 x 9.5 x 146mm] plywood servo doublers to the bottom of the servo tray.



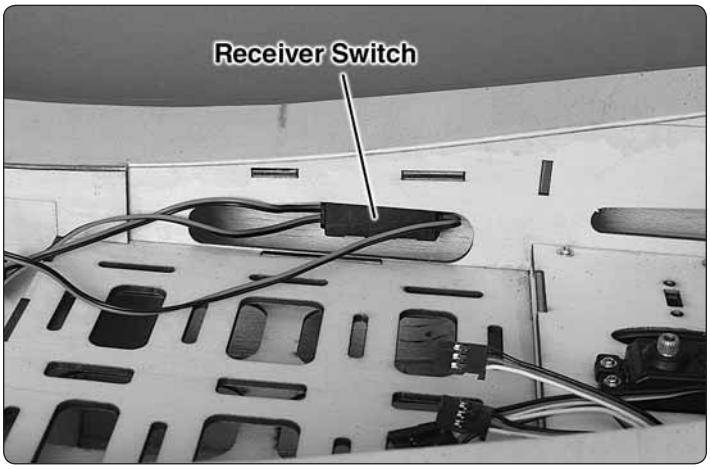
❑ 3. If you are installing pneumatic retracts, glue the pressure tank retainer to the bottom of the servo tray.



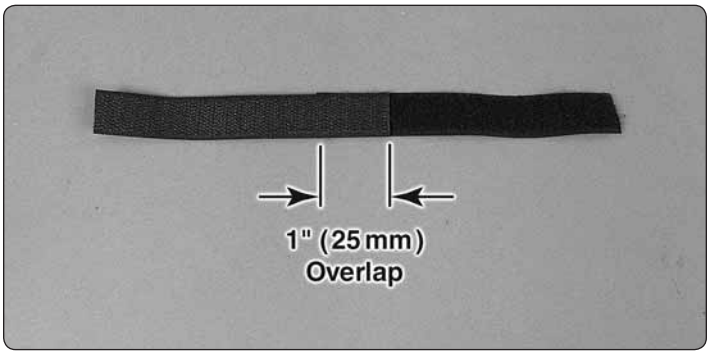
❏ 4. Insert the servo tray. Use the six holes in the servo tray as guides to drill 1/16" [1.5mm] pilot holes into the servo tray frame. Secure the servo tray to the frame with #2 x 3/8 sheet metal screws and #2 flat washers. Harden the screw holes with thin CA.

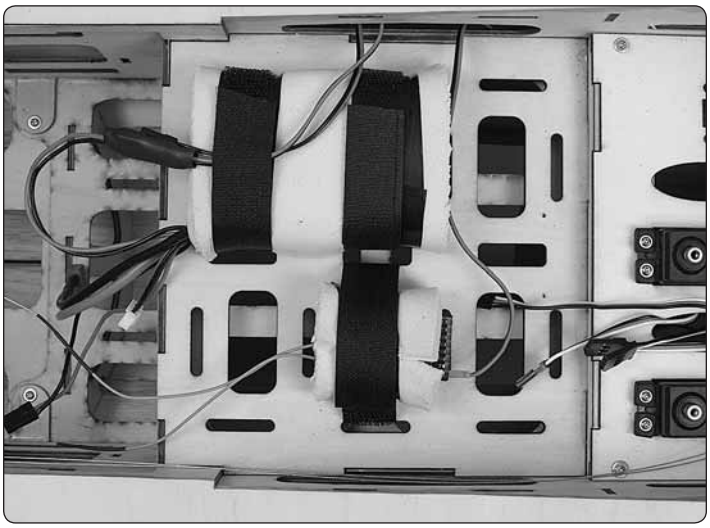


❏ 5. Before reinstalling the servo tray, install the grommets and eyelets on the rudder, elevator and steering servos. Install the servos as shown. Use thin CA to harden the screw holes.

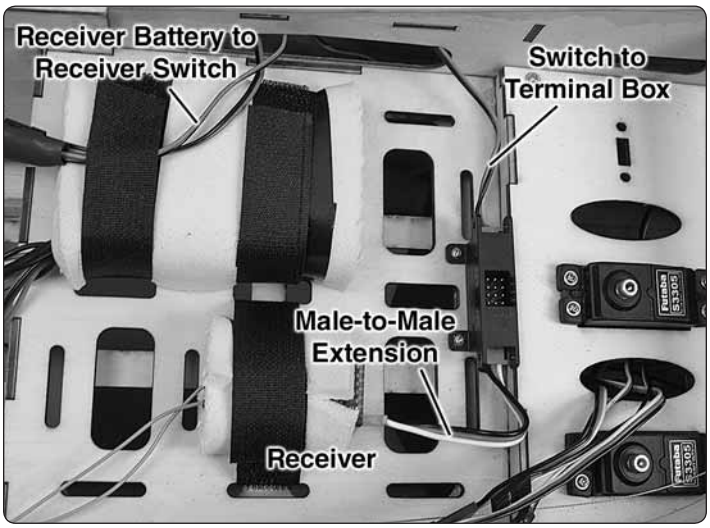


❏ 6. Mount the receiver switch in the opening in the fuselage frame and through the fuselage side or mount the switch in the position of your choice.

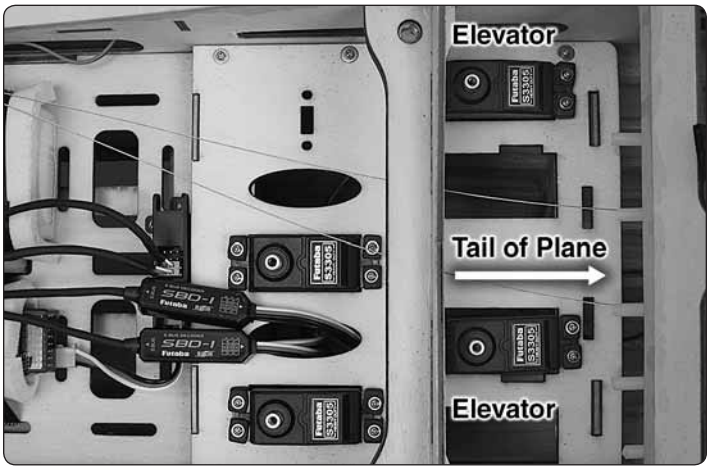




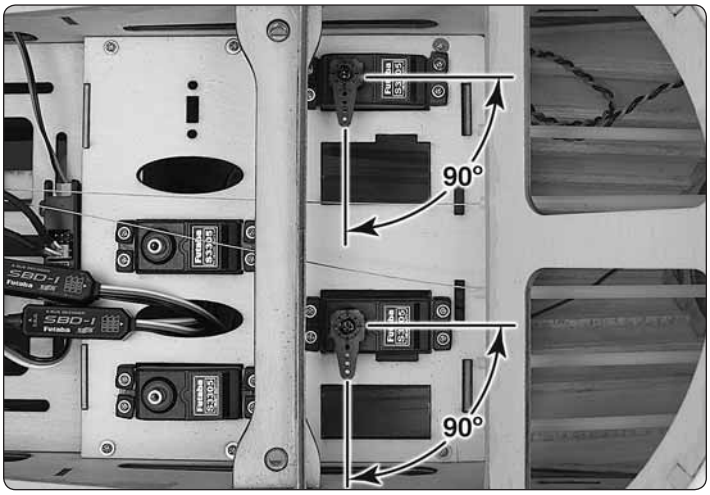
❏ 7. Cut three 5" (127mm) long pieces of hook and loop strip, from one of the 24" (610mm) long hook and loop strips. Overlap the strips by 1" (25mm). Wrap the receiver and receiver battery in foam and secure them to the receiver battery tray. Connect the receiver battery to the receiver switch. **NOTE: If installing S.Bus, skip to the next step.** Connect the switch to the battery port on the receiver. Secure the battery to the switch connection with a piece of heat shrink tubing.



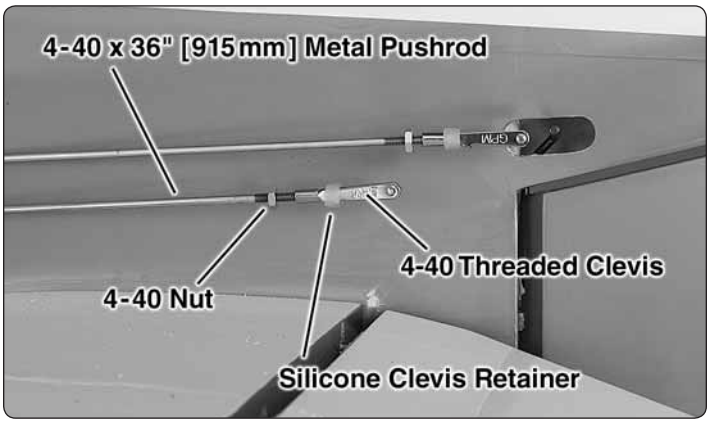
❏ 8. **S.Bus Only:** Install the 6-Way Terminal Box (not included) on the receiver battery tray. Connect the receiver battery to the receiver switch. Plug in the receiver switch to the terminal box. Connect a Male-to-Male extension from the terminal box to the battery port on the receiver.



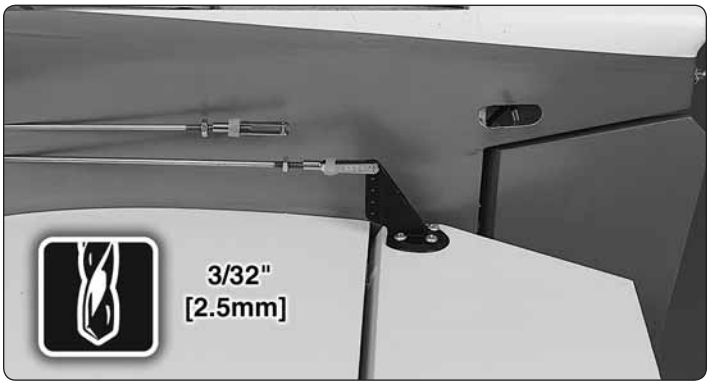
❏ 9. Follow your radio setup diagram to connect the elevator, rudder and tail wheel steering to the receiver. Using S.Bus, we plugged both elevator servos and the rudder servo into one decoder and the tail wheel steering servo into a second decoder. Set one of the elevators on channel 9, the other on channel 10, the rudder on channel 11 and the tail wheel steering on channel 12. Plug both decoders into the terminal box. Secure the servo connections with heat shrink tubing.



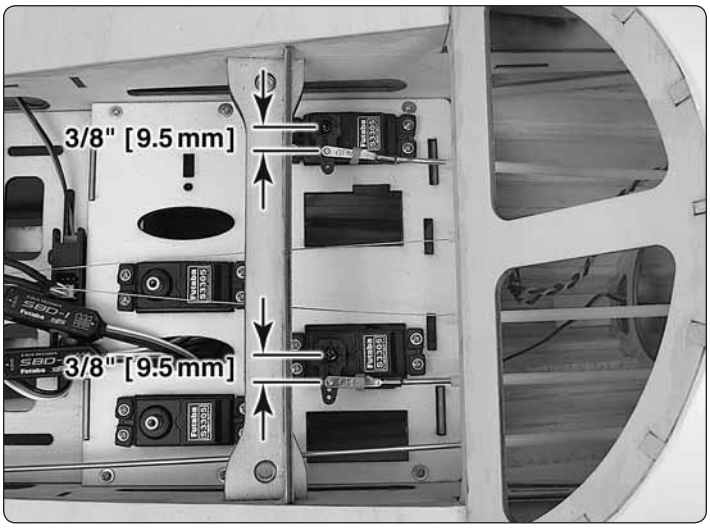
❏ 10. Switch on your transmitter and then the receiver. Center the elevator trims. Install a servo arm on both elevator servos perpendicular to the centerline of the servo.



❏ 11. Insert the three 4-40 x 36" [915mm] metal pushrods in the elevator and rudder pushrod outer pushrod tubes at the aft end of the fuselage. Thread a 4-40 nut, threaded clevis and a silicone clevis retainer, 16 turns, onto both elevator pushrods and the rudder pushrod.

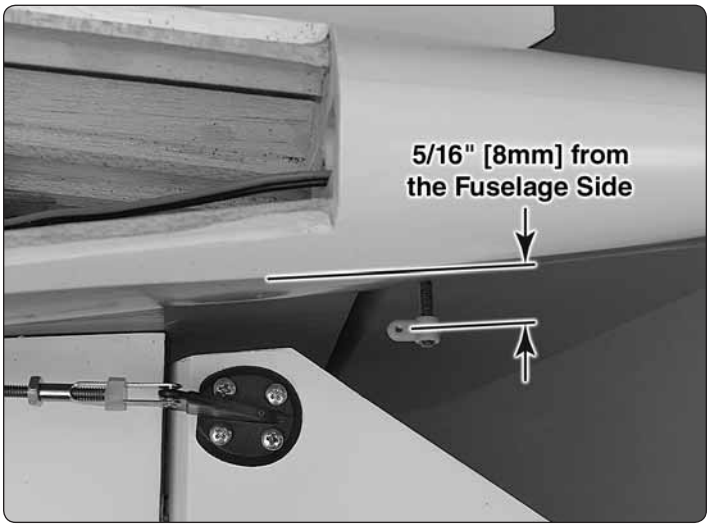


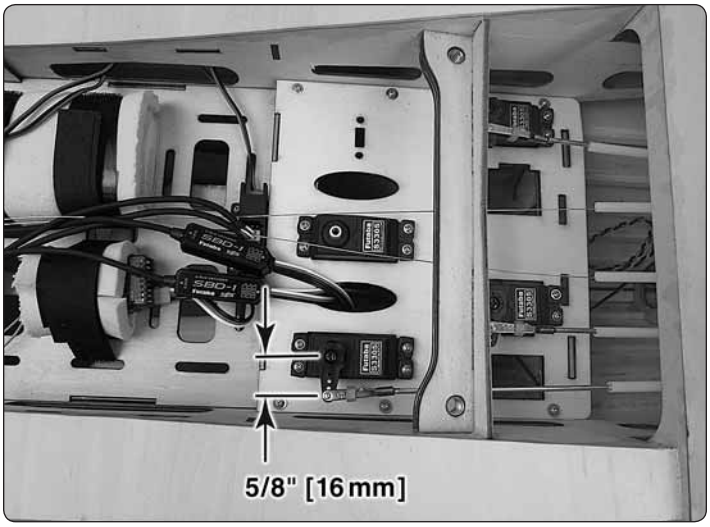
❏ 12. Mount the control horns to the elevators the same way they were mounted on the ailerons, by drilling 3/32" [2.5mm] pilot holes and using #4 x ½" [13mm] sheet metal screws. Use thin CA glue to harden the screw holes. Attach the threaded clevis in the outer hole of the elevator control horn.



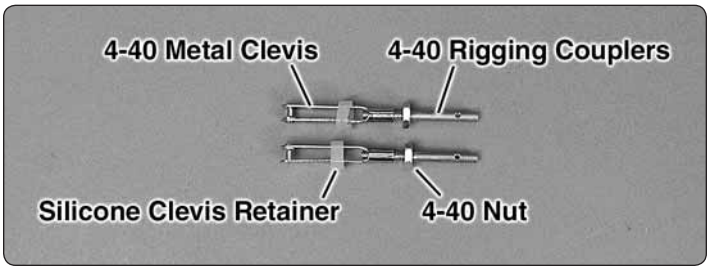
❏ 13. Install solder clevises on the elevator servo arms in the hole 3/8" [9.5mm] from the center of the servo arm. Following the same procedure that was done for the aileron and flap pushrods, center the elevator and mark the elevator pushrods where they are to be cut for the solder clevises. One at a time,

remove the threaded metal clevis and nut from the control horn end, remove the pushrod from the fuselage, cut it to the correct length and solder a metal solder clevis on the end. Reinstall the pushrod from the front and connect the solder clevis to the servo arms. Reinstall the threaded metal clevis and 4-40 nut. Apply a drop of thread locker to the threads and tighten the nut against the clevis. ***Don't forget to use a silicone clevis retainer on all the clevises.***

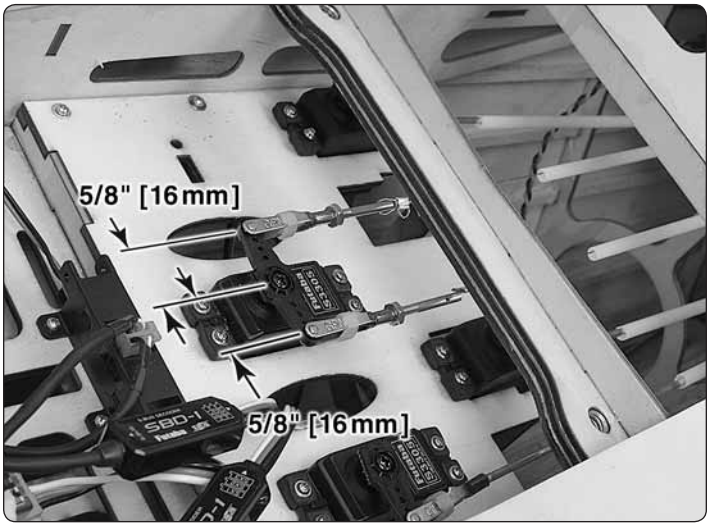




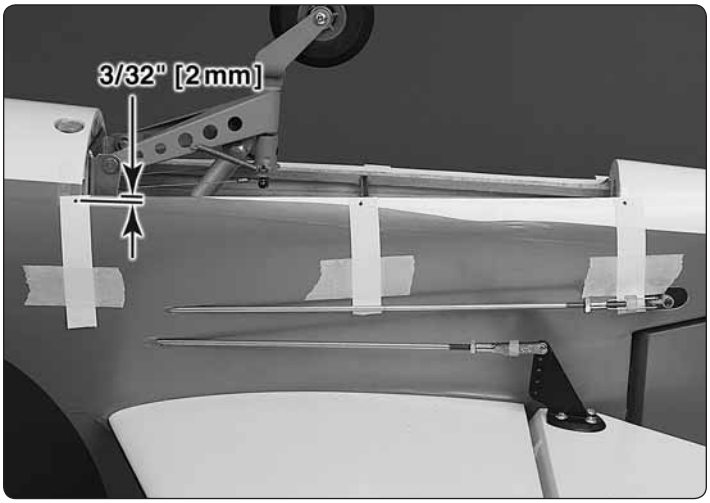
❏ 14. Install solder clevis on the rudder servo arm in the hole 5/8" [16mm] from the center of the servo arm. Thread the nylon torque rod horn onto the rudder torque rod so that it is 5/16" [8mm] from the fuselage side. Attach the clevis to the torque rod horn, center the rudder, and mark the rudder pushrod where it is to be cut for the solder clevis. Remove the threaded metal clevis from the control horn end, remove the pushrod from the fuselage, cut it to the correct length and solder a metal solder clevis on the end. Reinstall the pushrod from the front and connect the solder clevis to the servo arms. Reinstall the threaded metal clevis and 4-40 nut. Apply a drop of thread locker to the threads and tighten the nut against the clevis. ***Again, use a silicone clevis retainer on the clevises.***



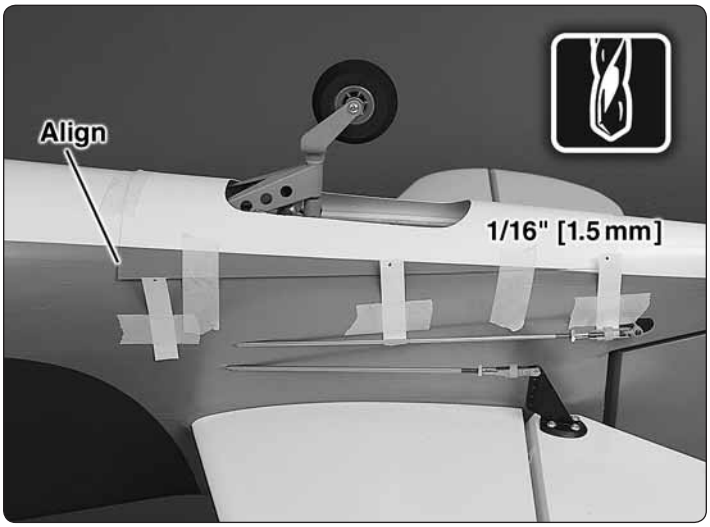
❏ 15. Thread a 4-40 nut and a 4-40 metal clevis, 12 turns, onto each of the 4-40 rigging couplers. Slide a silicone clevis retainer over each clevis. Install the clevises on the steering servo arm in the hole 5/8" [16mm] from the center of the servo arm.

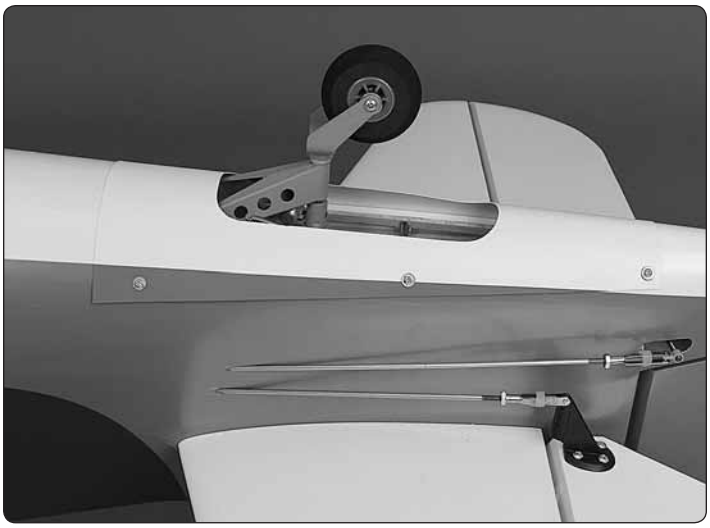


❏ 16. Lower the tail gear. Center the servo arm and the tail gear. Install a swage on each cable, securing it following the same procedure used on the tail gear ball links. Use a pliers to crimp the swage tightly on the cable.



❏ 17. The tail gear retract cover can be permanently installed using CA glue or with screws. If CA glue is used it will be very difficult to remove the cover and access the retracts if needed. To install the cover with screws, tape three pieces of paper on each side of the fuselage. Put one at each end of the tail gear opening and one in the middle. Place marks 3/32" [2mm] from the edge of the opening, centered in the balsa stringer.





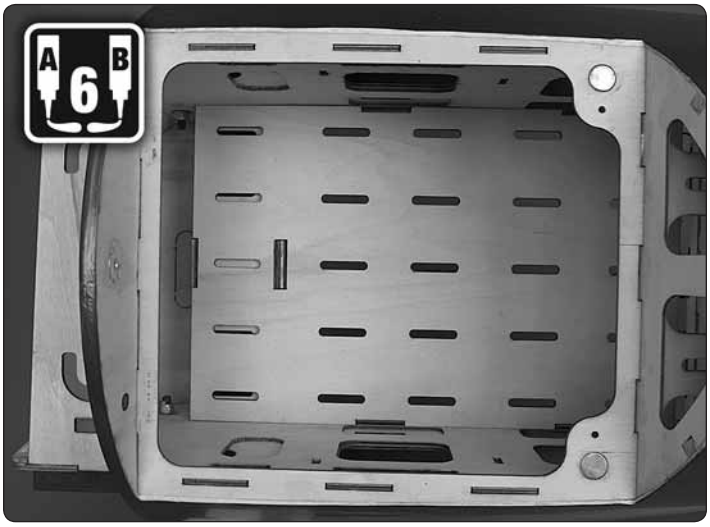
❏ 18. Position the tail gear retract cover over the opening, aligning the seam with the blue and white covering. Tape it in place. Drill 1/16" [1.5 mm] holes through the cover and the fuselage at each mark. Remove the cover and enlarge the holes in the cover only with a 3/32" [2.5 mm] drill bit. Attach the cover to the fuselage with #2 x 3/8" [9.5 mm] sheet metal screws and #2 washers. Harden the screw holes with thin CA glue.

The aircraft maintenance officers liked the F6F Hellcat because it was a simple plane to maintain. It had very little hydraulic system to break. The plane was based on Roy Grumman's motto "build it strong, keep it simple and make it work."

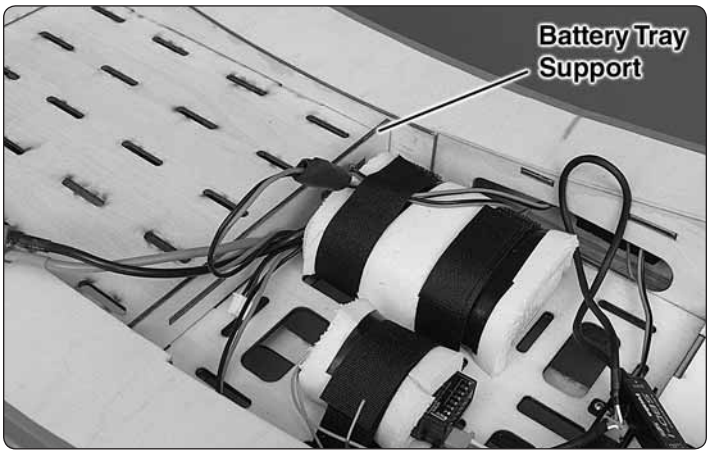
ELECTRIC MOTOR INSTALLATION

If you are powering the F6F Hellcat with a gas engine, skip ahead to **GAS ENGINE INSTALLATION** on page 29.

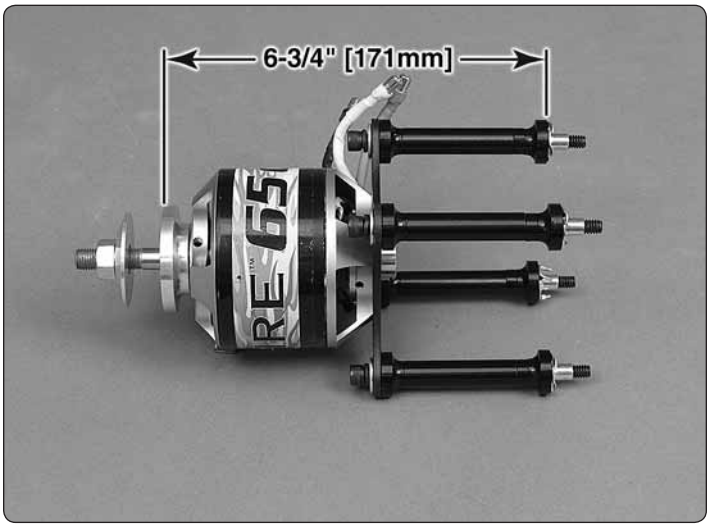
❏ 1. The removable battery hatch is secured at the factory with two #2 x 3/8" [9.5mm] sheet metal screws. Remove the two screws from inside of the fuselage. Using a sharp knife blade, locate and carefully cut the battery hatch from the fuselage. Extra Insignia Blue covering has been provided to cover the edges of the hatch and the fuselage along the cut.



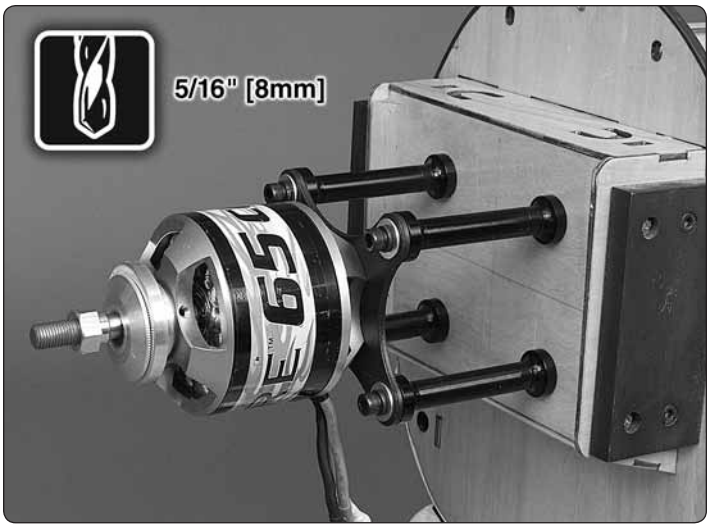
❏ 2. Install the plywood battery tray, aligning the slots and tabs. Check that the tray is seated on the formers and then glue it in the fuselage.



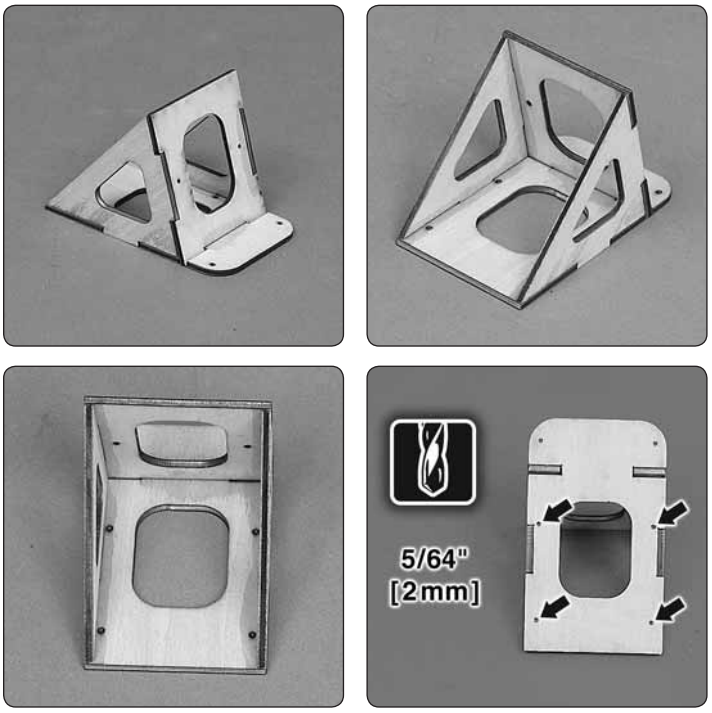
❏ 3. Glue the plywood battery tray support to the aft end of the battery tray.

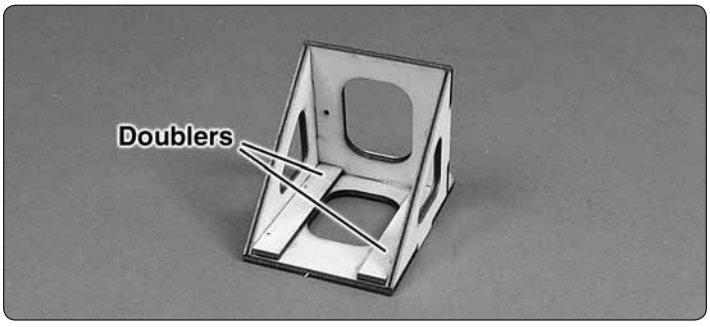


❏ 4. Install the motor mount on the RimFire 65 motor following the instructions included with the XX-Large Stand Off Motor Mount. The front of the drive washer should be 6-3/4" [171mm] from the back of the stand offs.

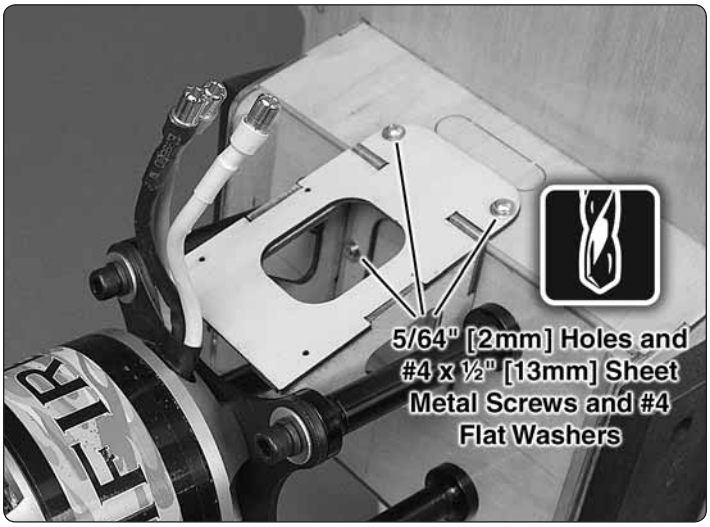


❏ 5. Follow the Stand Off Motor Mount instructions to install the motor on the firewall box. The RimFire 65 motor uses the embossed 'X' pattern on the front of the firewall box. Drill a 5/16" [8mm] hole at each mark.

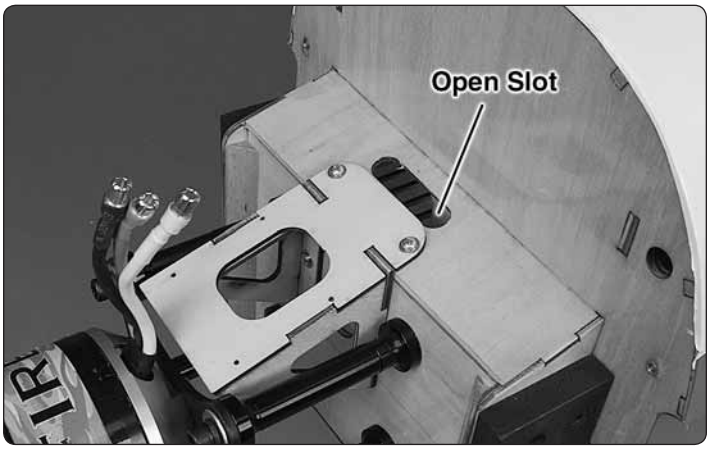




❏ 6. Assemble the ESC mount as shown. Drill 5/64" [2mm] pilot holes through the doubler as shown.



❏ 7. Position the ESC mount on the firewall box and drill four 5/64" [2mm] pilot holes through the firewall box (two on top and two in the front). Attach the ESC mount with #4 x ½" [13mm] sheet metal screws and #4 flat washers. Apply a drop of thin CA to harden the screw holes.



❏ 8. Use a sharp hobby knife to open the slot in the bottom of the firewall box.

❏ 9. Solder the bullet and battery connectors on the ESC. Attach the ESC to the ESC mount with four #4 x ½" [13mm] sheet metal screws and #4 flat washers.

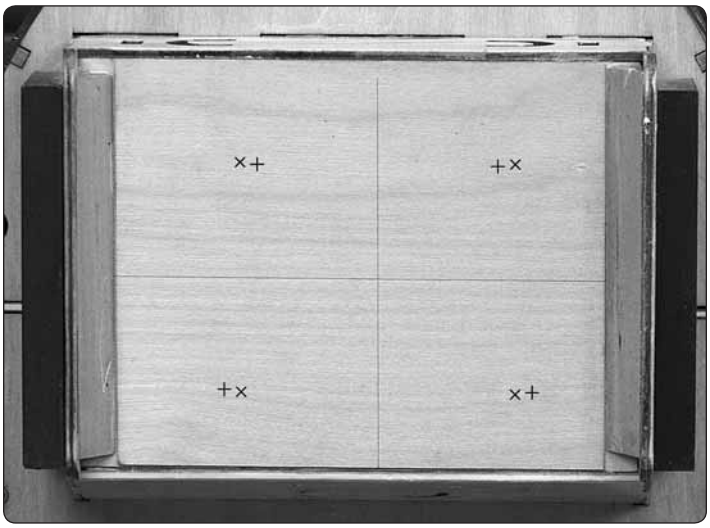
❏ 10. Connect a 6" to 8" [152mm to 203mm] long servo extension to the ESC. Plug the ESC into your receiver. If using S.Bus with non S.Bus servos plug the ESC into a decoder. We put the throttle on channel 13.

❏ 11. Make two battery straps from the second strip of hook and loop material. Insert the straps in the battery tray. The location of the batteries forward or aft will be determined when the plane is balanced.

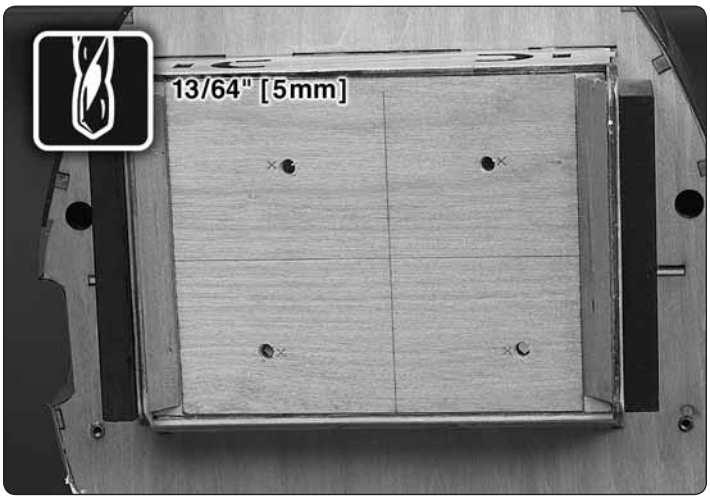
❏ 12. **WITHOUT THE PROPELLER INSTALLED**, check the rotation of the motor. Switch on the transmitter, then receiver. Connect the Great Planes Series Connector to both batteries and plug the Series Connector into the ESC. Advance the throttle and check that the motor is rotating counterclockwise. If it is not, switch two of the three bullet connectors between the motor and ESC. We recommend that an arming plug be installed. The Schumacher Products ArmSafe arming kit works great.

If electric powered, skip to INSTALL THE PNEUMATIC AIR VALVE CONTROLS on page 33.

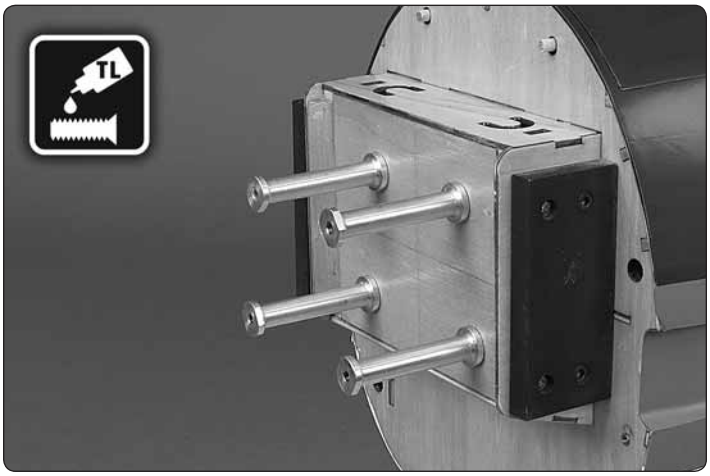
GAS ENGINE INSTALLATION

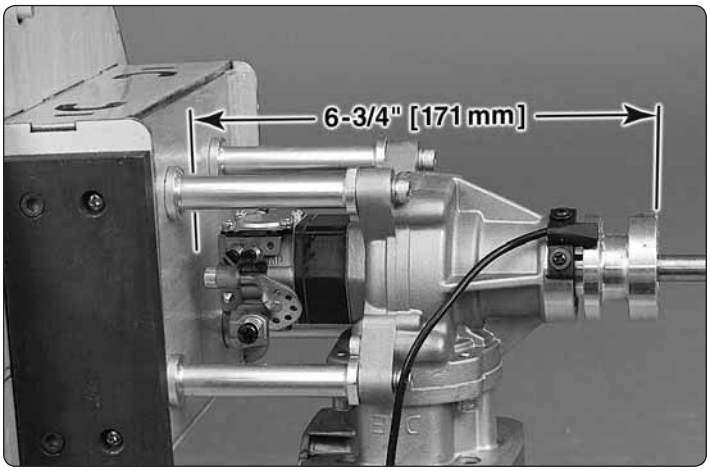


❏ 1. The firewall has two sets of engine mounting bolt patterns embossed on it. The "+" are for the DLE-55 Rear Exhaust and DLE-61 Side Exhaust gas engines and the "X" are for the DLE-55 Side Exhaust gas engines. In the back of this manual we provide a paper template for mounting the O.S. GT 60 gas engine. If you are installing an engine with a different mounting bolt pattern, the firewall also has crosshairs embossed on it to help center the engine.

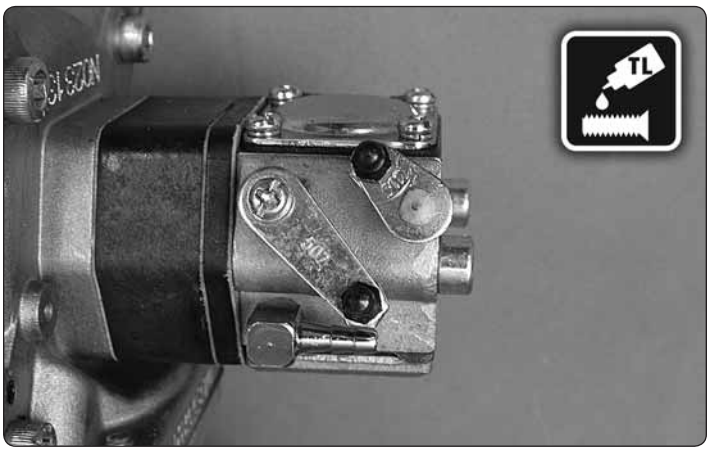


❏ 2. Drill a 13/64" [5mm] hole through the firewall at each of the appropriate locations marked with an "X" or "+".

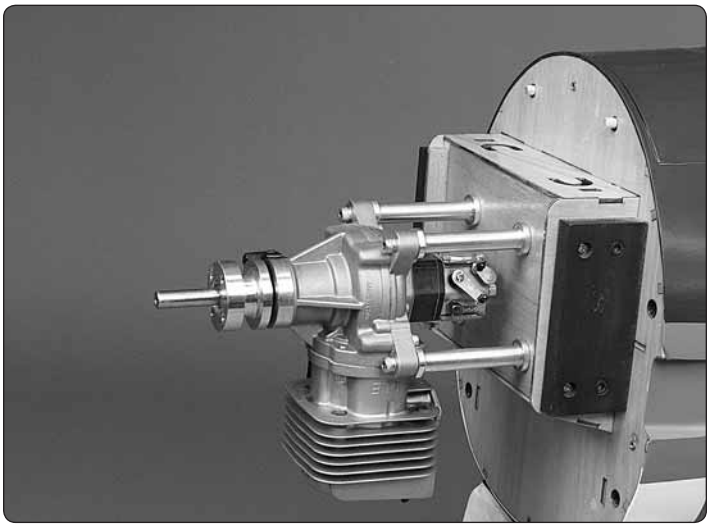




❏ 3. Install the engine mounting bolts and fender washers from the back of the firewall. The engine mounting hardware is not included in the F6F Hellcat. It should be included with the engine. If your engine did not include fender washers, we recommend purchasing them. The larger washers (1/2" [12 mm] or larger) will help distribute the load from the engine. Apply a drop of thread locker to each bolt before installing them in the engine standoffs. For a reference, once the engine is installed, the front of the engine drive washer should be 6-3/4" [171 mm] from the front of the firewall.

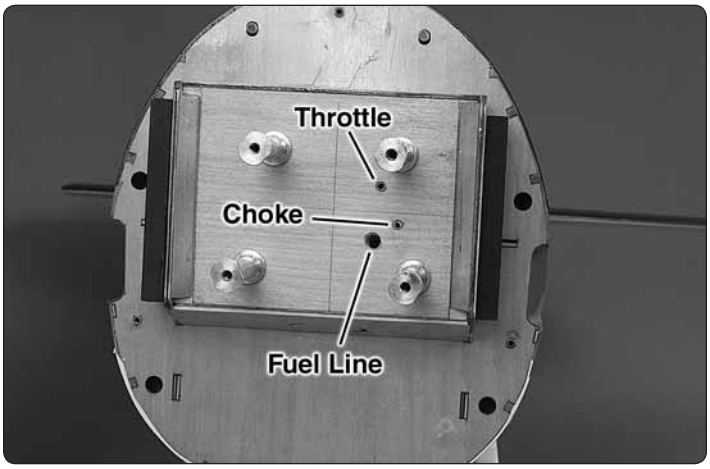


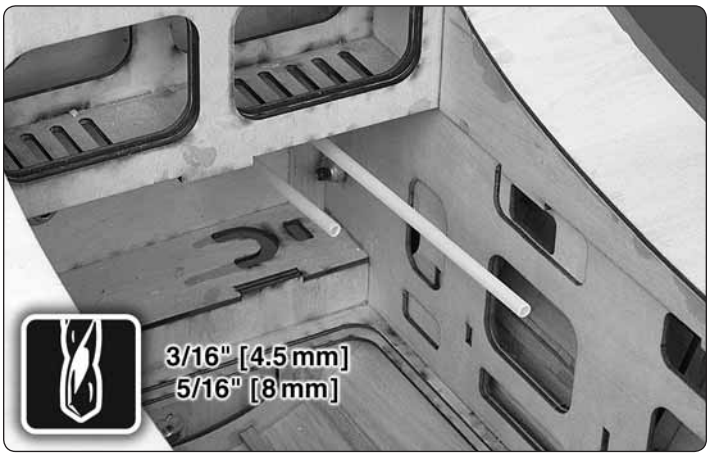
❏ 4. Install a 2-56 ball link ball on the throttle arm and the choke arm and secure them with a 2-56 nylon locknut. Also make sure the throttle arm is positioned as shown. Apply thread locker to the screw before reinstalling the throttle arm.



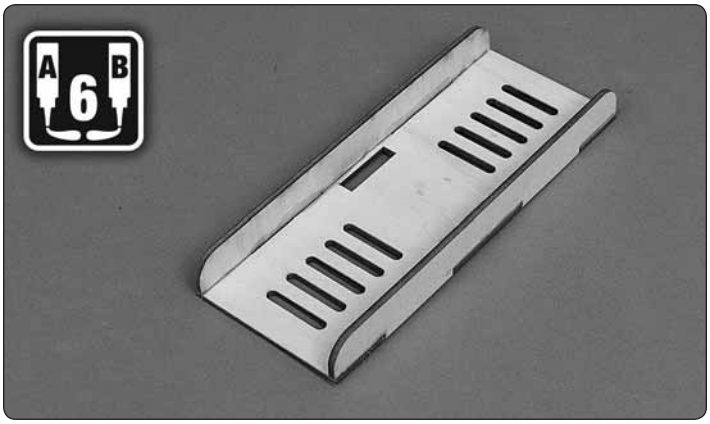
❏ 5. Temporarily install the engine inverted on the aluminum standoffs.

❏ 6. Snap a nylon ball socket onto both pivot balls. Center the choke and throttle arms and mark the firewall where the pushrods will need to pass through. Also mark the location where the fuel line will need to pass through the firewall.

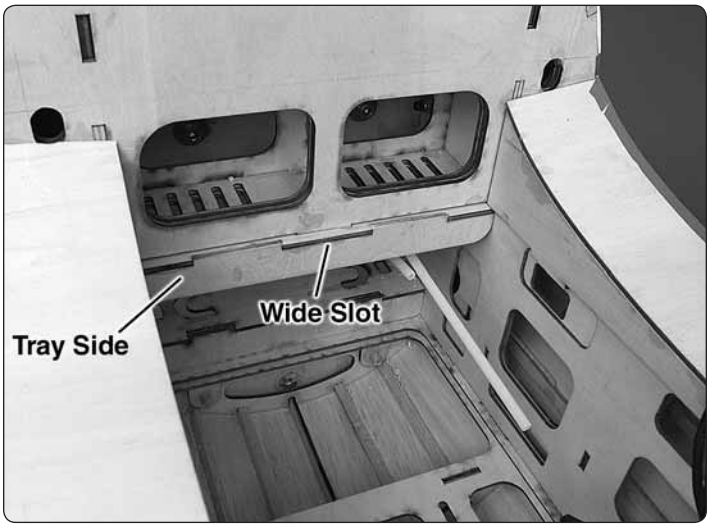




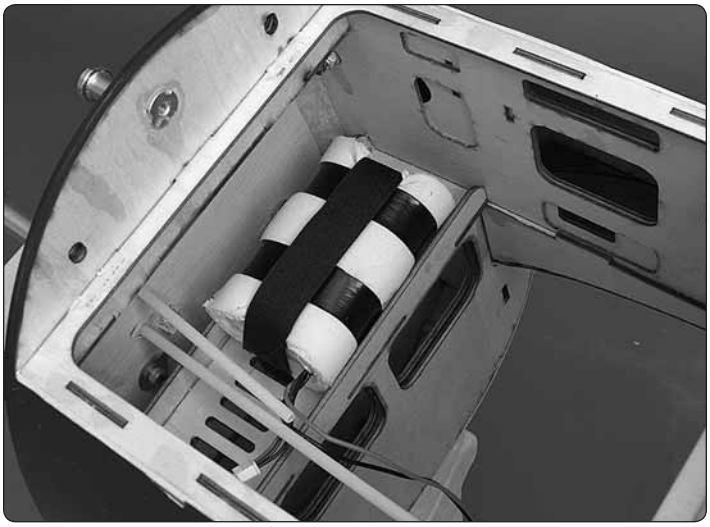
❏ 7. Drill a 3/16" [4.5mm] hole at the marks on the firewall for the throttle and choke outer pushrod tubes. Remove the engine before drilling the holes. From the 24" [610mm] outer pushrod tube, cut a 4-1/4" [108mm] and a 7-1/2" [190mm] long piece. Use medium sandpaper to roughen the outer pushrod tubes. Clean the tubes with denatured alcohol. Insert the 4-1/4" [108mm] tube in the hole for the choke pushrod and the 7-1/2" [190mm] tube in the hole for the throttle pushrod so that they are flush with the front of the firewall. Use thin CA to glue the tubes to the firewall. Also drill a 5/16" [8mm] hole at the location for the fuel line. Once the holes are drilled, install the muffler on the engine and reinstall the engine on the standoffs. Apply a drop of threadlocker to all the mounting bolts as they are installed.



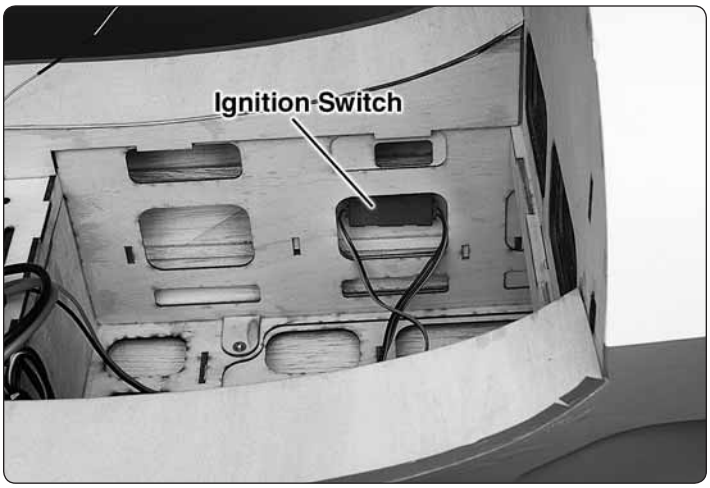
❏ 8. Use 6-minute epoxy to glue the sides to the ignition battery tray.



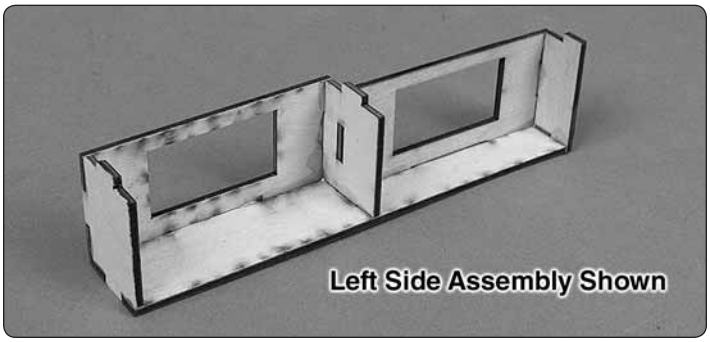
❏ 9. Glue the ignition battery tray in the fuselage. Note that the wider slot is to the back.

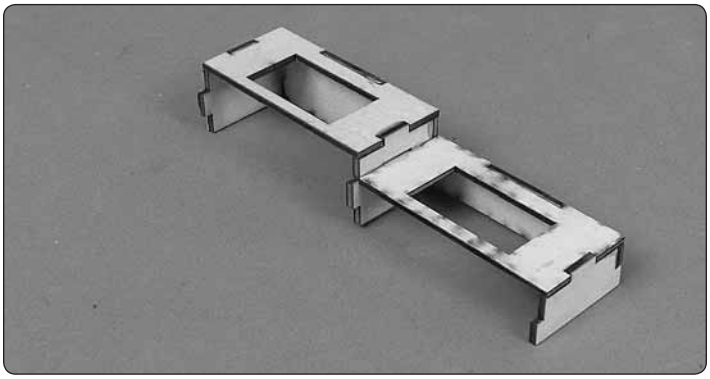


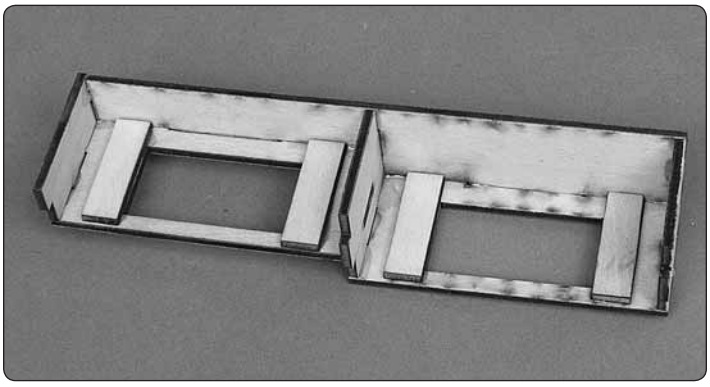
❏ 10. Wrap the ignition battery in foam and secure it to the ignition tray with a hook and loop strap assembled from the remaining hook and loop material used for the receiver and receiver battery straps. **Note:** The battery hatch has been removed for clarity.



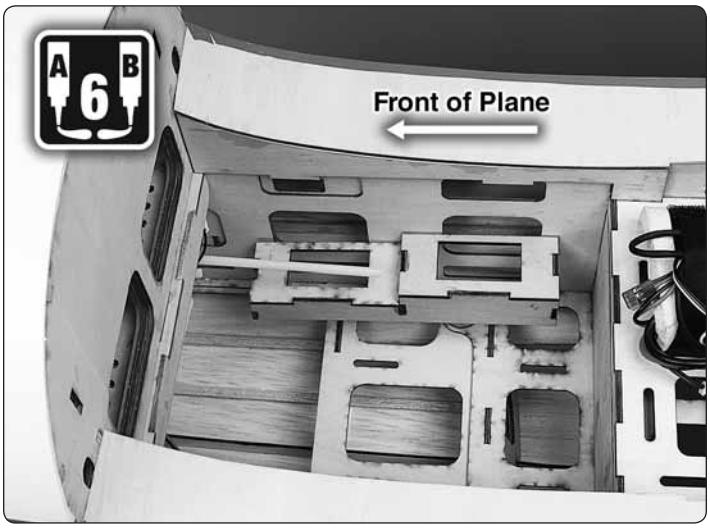
❏ 11. Install the ignition switch and optional charge receptical in the side of the fuselage or in the position of your choice.



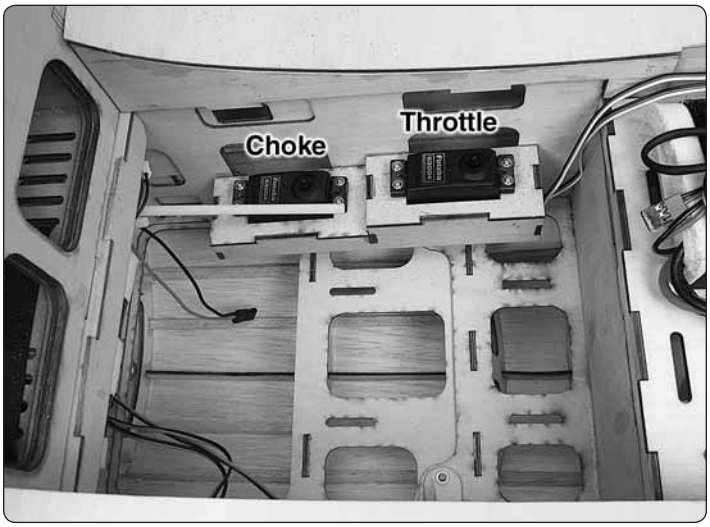




❏ 12. Carefully study the following images and glue the throttle/choke servo tray together as shown. The tray can be assembled to fit on either side of the fuselage, depending on which side the throttle and choke are on.

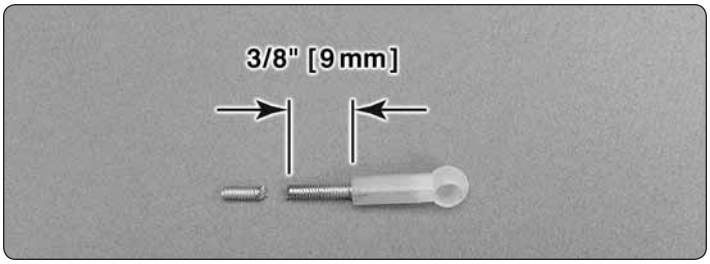


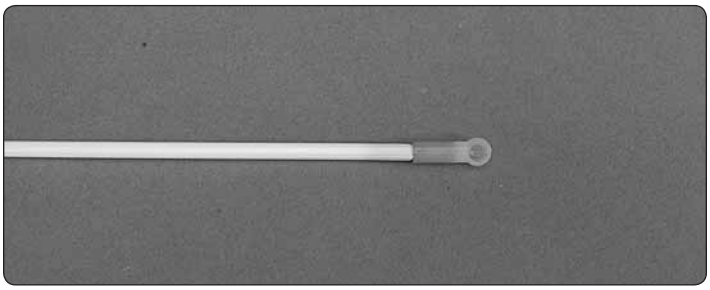
❏ 13. Glue the throttle/choke servo tray in the slots in the side of the fuselage.



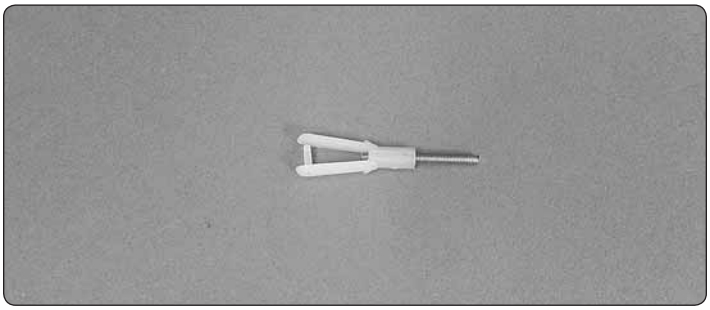
❏ 14. Install the throttle and choke servos in the servo tray. Harden the screw holes with thin CA.

❏ 15. Follow the setup diagram for your installation to connect the throttle and choke to the receiver.

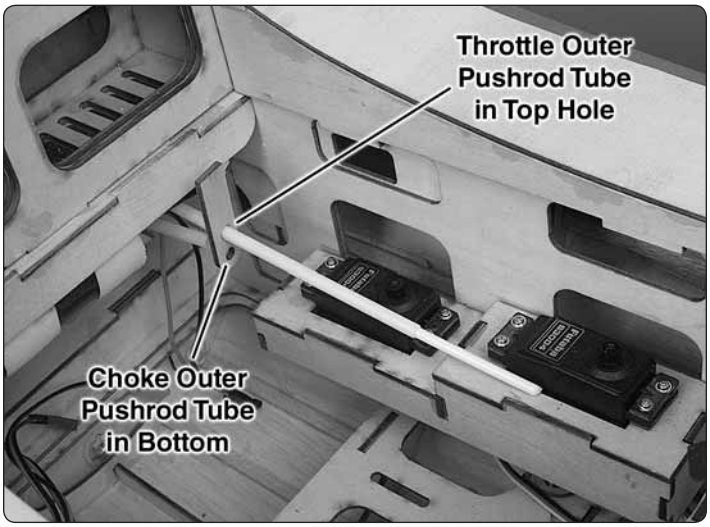




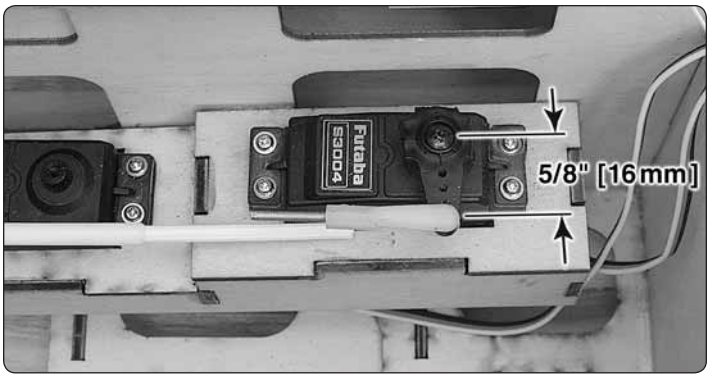
❏ 16. To make a throttle pushrod, thread a 2-56 x 1" [25 mm] threaded rod completely into a nylon ball link socket. Trim the threaded rod so that approximately 3/8" [9 mm] of the threaded rod remains. Thread the ball link socket and threaded rod into the end of the white inner pushrod tube.

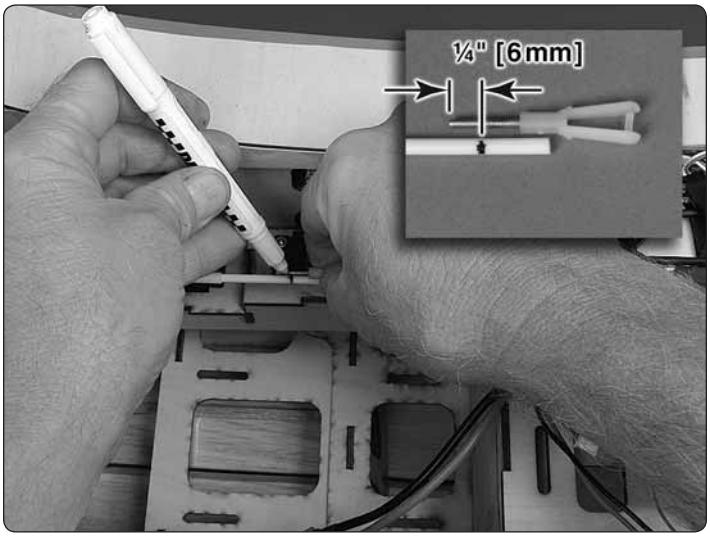


❏ 17. Thread a second 2-56 x 1" [25 mm] threaded rod 20 turns into a nylon clevis.



❏ 18. Insert the inner pushrod and ball link socket into the throttle outer pushrod tube. Insert the throttle outer pushrod tube through the top hole in the plywood pushrod support. Snap the ball link socket onto the throttle pivot ball. Insert the choke outer pushrod tube through the bottom hole.

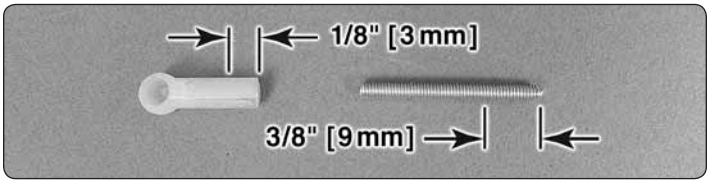




❏ 19. Switch on the transmitter, then receiver. Position the throttle stick so that it is centered on the transmitter. Adjust the throttle servo arm so that it is centered on the throttle servo. Move the throttle arm on the carburetor so that the throttle is open approximately half way. Insert the nylon clevis in the hole 5/8" [16mm] from the center of the servo arm. Mark the throttle pushrod ¼" [6mm] from the end of the threaded rod.

❏ 20. Trim the throttle pushrod at the mark, slide a silicone clevis retainer over the clevis and thread the clevis and threaded rod ¼" [6mm] into the throttle pushrod. Reinstall the clevis on the throttle servo arm and check the operation of the throttle.

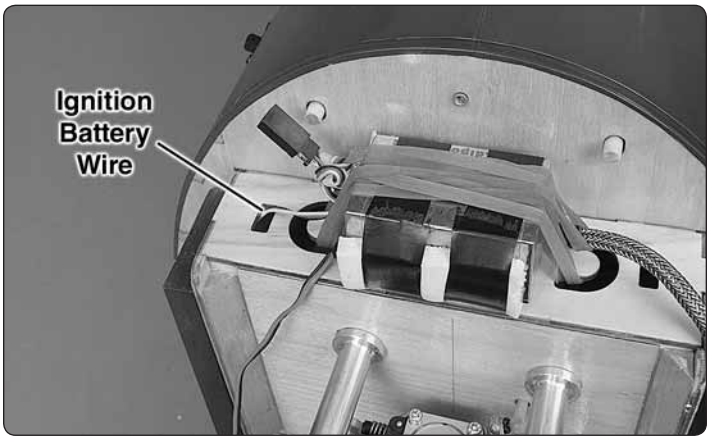
❏ 21. Now it should only require minor adjustments to the throttle endpoints on the transmitter so that the throttle opens and closes completely. Be sure to also set up a switch on your transmitter to close the throttle completely, stopping the engine. The plywood pushrod support will be glued after the choke pushrod has been installed.



❏ 22. Trim approximately 1/8" [3mm] from the end of the nylon ball link socket. Also trim 3/8" [9mm] from the end of the 2-56 x 1" [25mm] threaded rod. Thread the ball link socket onto the threaded rod completely.

❏ 23. Thread the ball link socket and threaded rod into the white inner pushrod tube. Setup the choke linkage the same as the throttle linkage.

❏ 24. Once the choke pushrod is installed, Glue the plywood outer pushrod support to the side of the ignition battery tray. Also glue the outer pushrod tubes to the plywood support.



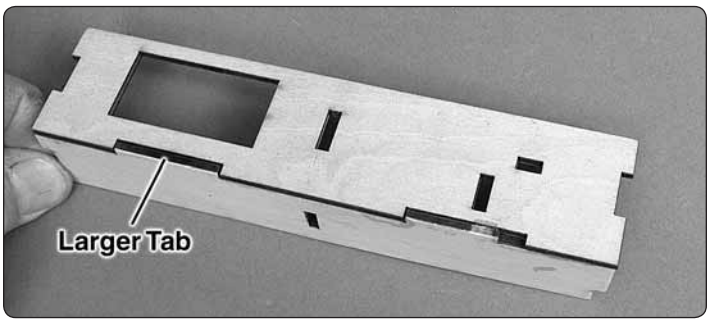
❏ 25. Place the ignition module on a piece of R/C foam rubber (not included) and secure it to the top of the firewall box with the included four rubber bands. Route the ignition battery wire through the hole in the box.

❏ 26. Connect the ignition module to the engine and to the ignition switch. Connect the ignition switch to the ignition battery.

INSTALL THE PNEUMATIC AIR VALVE CONTROLS

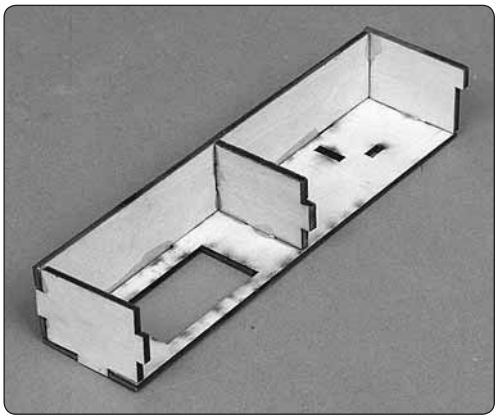
If electric retracts have been installed, skip to ***ASSEMBLE AND INSTALL THE FUEL TANK.***

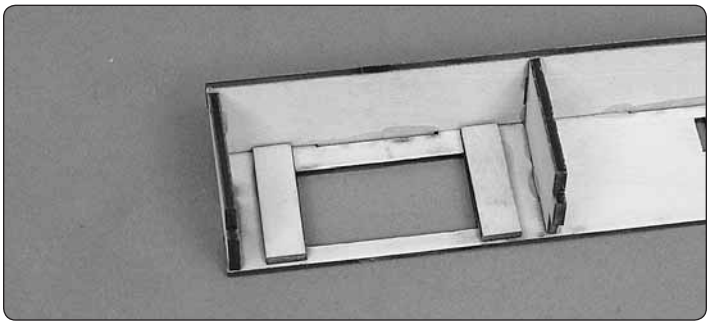
NOTE: If you installed the throttle and choke servos on the right side of the fuselage instead of the left as shown, the control valve servo tray will need to be assembled opposite of what is shown.



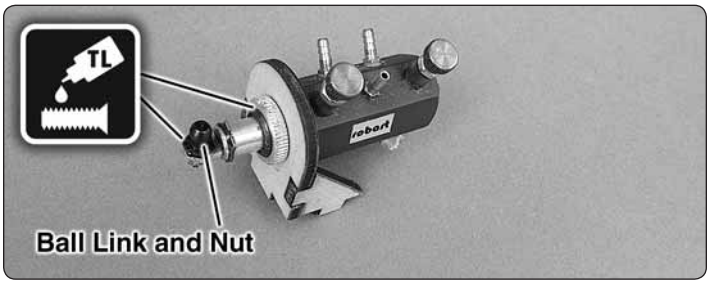
❏ 1. Glue the 3mm plywood control valve servo tray to the servo tray side. Note that the larger tab goes at the servo end.

❏ 2. Glue the three plywood supports to the control valve servo tray and servo tray side.

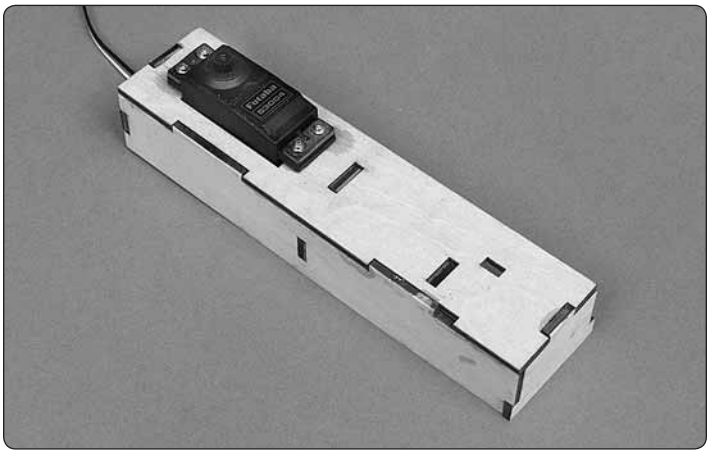




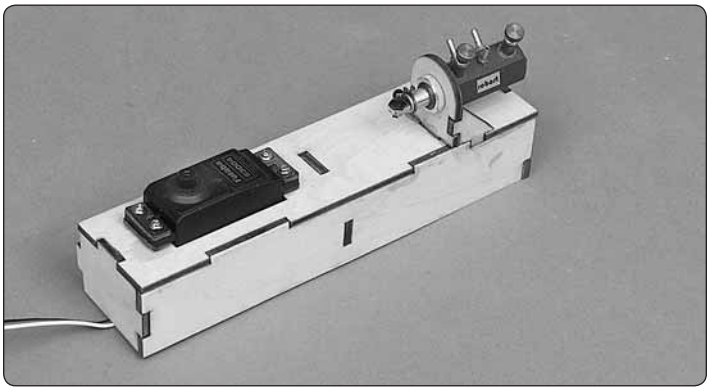
❏ 3. Glue the two plywood servo tray doublers to the bottom of the control valve servo tray.



❏ 4. Glue the two plywood control valve mount supports to the sides of the plywood control valve mount. Install the retract control valve in plywood mount. Install a .080 ball link ball and .080 nut on the valve. Be sure to use a drop of threadlocker on the threads of the ball link ball.



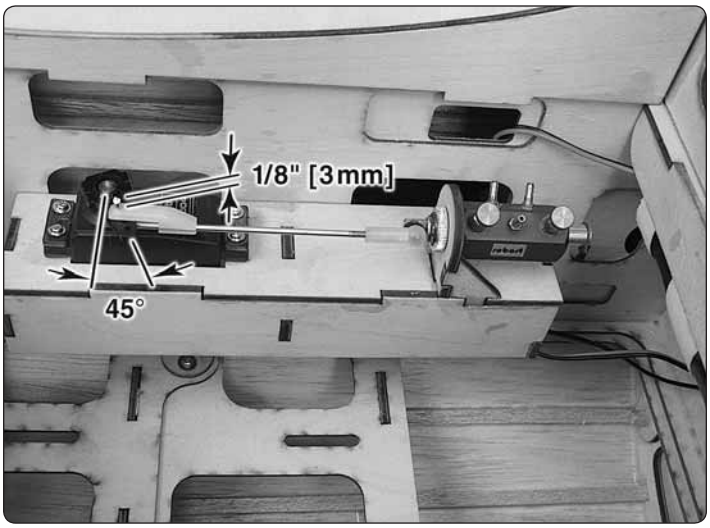
❏ 5. Install the retract control valve servo in the retract servo tray. Use thin CA to harden the screw holes.



❏ 6. Glue the control valve mount to the control valve servo tray.

❏ 7. Glue the control valve servo tray in the fuselage.

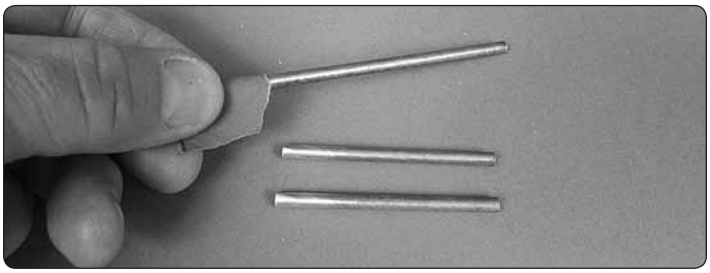
❏ 8. Plug the retract control valve servo into the receiver. We set channel 1 for the retracts for the S.Bus setup.



❏ 9. Thread the nylon ball socket on the pushrod. Snap the ball socket onto the ball link ball on the retract control valve. Install a servo arm 45 degrees from the centerline of the servo. Mark the pushrod where it crosses the servo arm hole 1/4" [6mm] from the center of the arm. Make a 90 degree bend at the mark. Install the pushrod in the servo arm and install a nylon faslink. Cut the pushrod 1/8" [3mm] past the faslink.

❏ 10. Install an air fill valve in the fuselage side in a convenient location. Refer to the air retracts instructions. Connect the pressure tank, fill valve and control valve to a T-fitting. Connect the two air lines coming from the tail gear retract to separate T-fittings. Then, connect the T-fittings to the control valve. Finally connect the quick connectors to the T-fittings. Make sure the quick connectors correspond to the quick connectors installed in the wing. Electrical tape or tie wraps (not included) can be used to wrap the air lines together to clean up the installation.

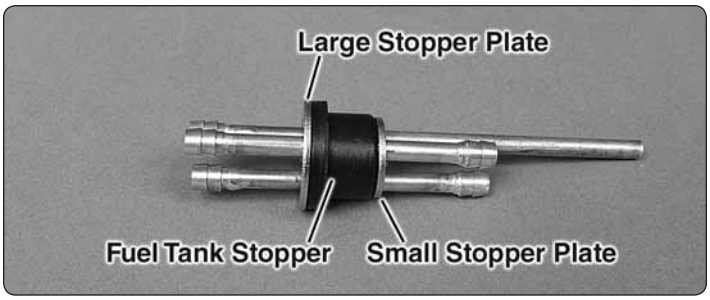
ASSEMBLE AND INSTALL THE FUEL TANK



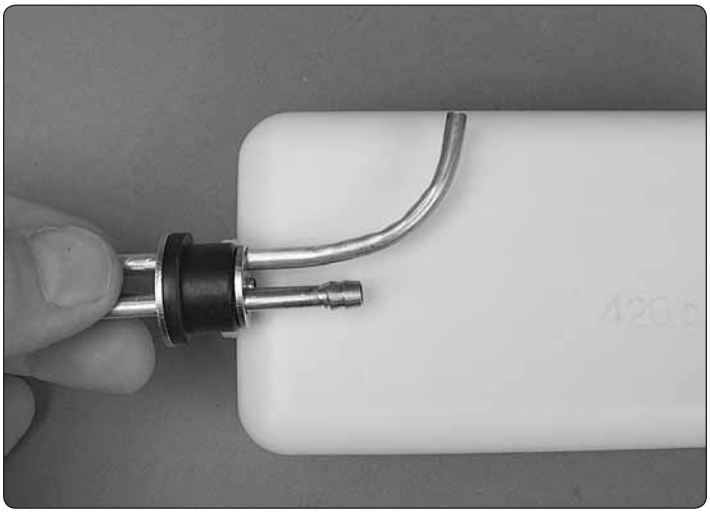
❏ 1. Roughen both ends of the brass tubes with sandpaper.

❏ 2. Solder fuel line barbs onto one end of the brass tubes.

❏ 3. Insert the brass tubes in the fuel tank stopper and stopper plates. Loosely install the fuel tank stopper screw.

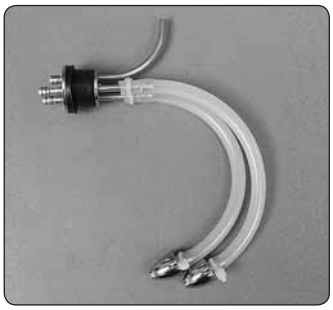


❏ 4. Solder the barbs on the other end of the two shorter brass tubes.

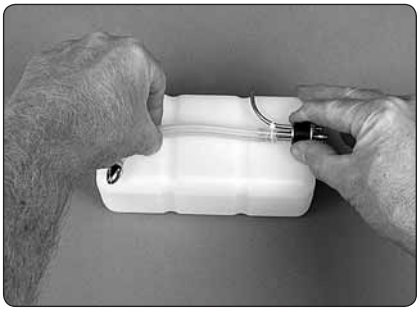


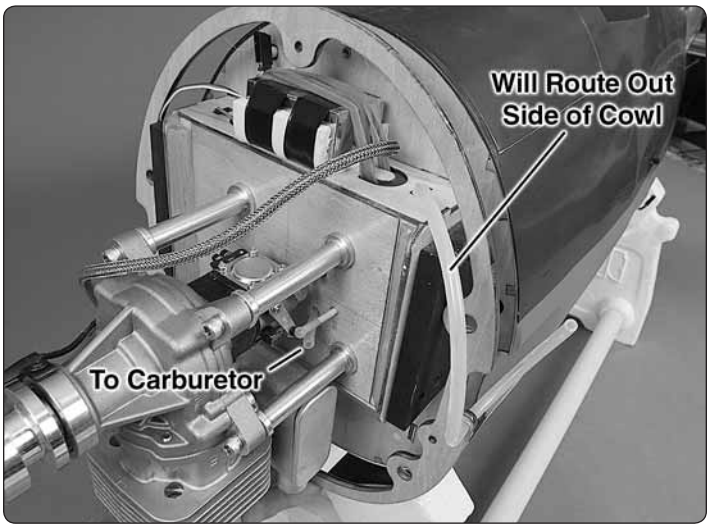
❏ 5. Carefully bend the vent line.

❑ 6. Connect the clunks to the fuel lines and secure the lines to the clunk and brass tubing with the included small tie straps.

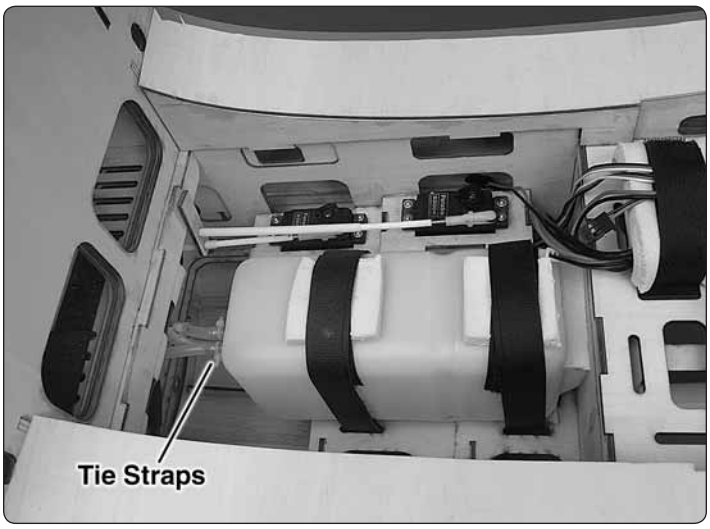


❑ 7. Insert the fuel tank stopper assembly in the fuel tank. Check that the clunks move around freely in the fuel tank. If not, trim the fuel lines. The tall side of the fuel tank will be to the top. Position the vent tube towards the top. Tighten the fuel tank stopper screw. Mark the top of the fuel tank (the side the vent tube is on).





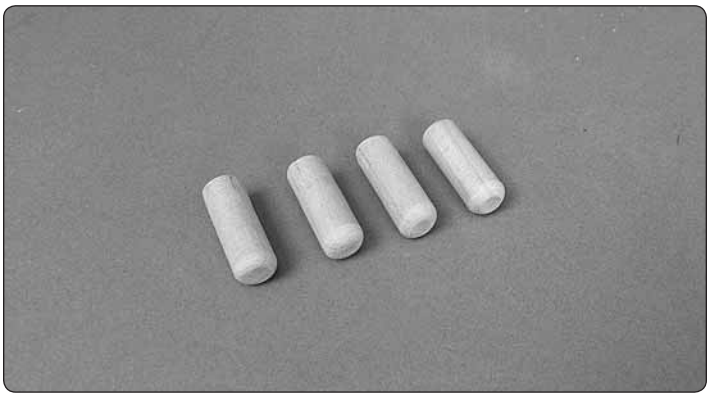
❑ 8. Position the fuel tank in the fuselage to determine how long the three fuel lines will need to be. One fuel line will attach to one of the fuel pickup lines and the carburetor. A second line will attach to the second pickup line and be routed out the side of the cowl. This is the "fill" line. (See page 38, Step 22) The third line will attach to the vent tube and route out the bottom of the cowl. **NOTE:** We installed a fuel filter (Sullivan CT-1 SULQ2387) (not included) in the fuel line between the fuel tank and the carburetor. Drill a hole in the bottom of the firewall box for the vent line. The fill line can be routed through the hole next to the ignition module, through the plywood cowl ring and out the recess in the side of the fuselage. See step 3 on page 36.



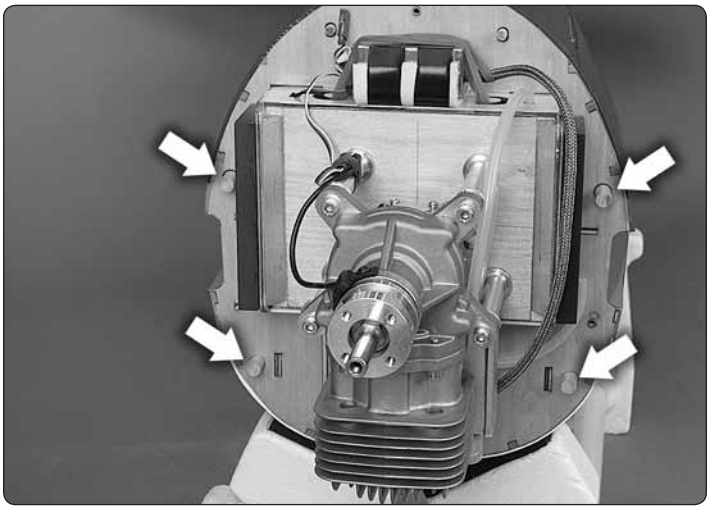
❑ 9. Make two hook and loop straps from the remaining hook and loop material. Route the straps through the slots in the top of the fuselage. Secure the fuel lines to the fuel tank with tie straps. Place the fuel tank on a piece of foam rubber and secure it in the fuselage with the hook and loop straps. We used pieces of foam rubber under the straps and behind the fuel tank to hold it in position. Secure the fuel line to the carburetor with a tie strap.

During its lifetime, the F6F Hellcat went through very few changes or updates. There were only two basic versions, the F6F-3 and F6F-5. The Hellcat flew in combat for 2-years and then disappeared. It never raced after the war unlike the Corsair, Mustang and Bearcat. It did its job well during the war and then retired quietly.

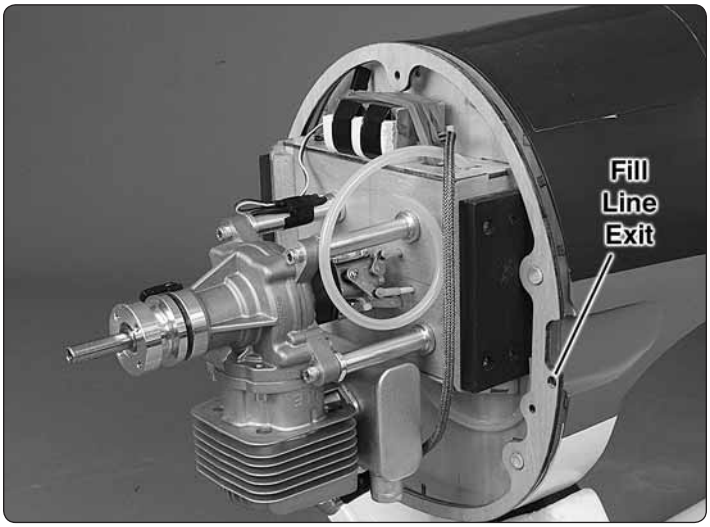
INSTALL THE COWL



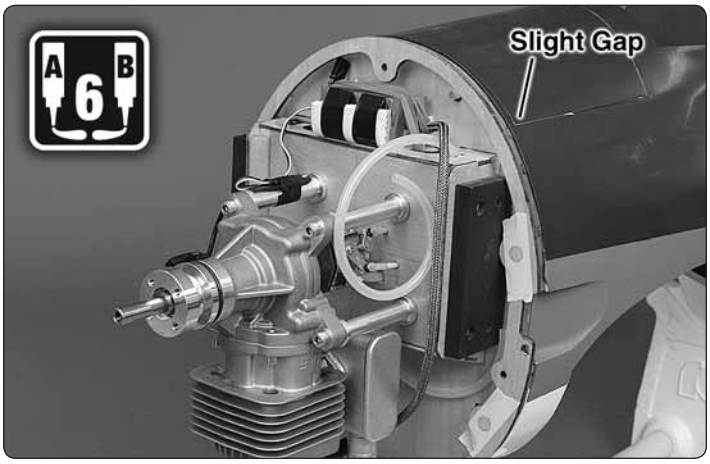
❏ 1. Sand a bevel on one end of each of the four 10 x 25mm cowl ring dowels. We found putting the dowels in a drill and using a sanding bar with coarse sandpaper makes beveling the dowels easy.



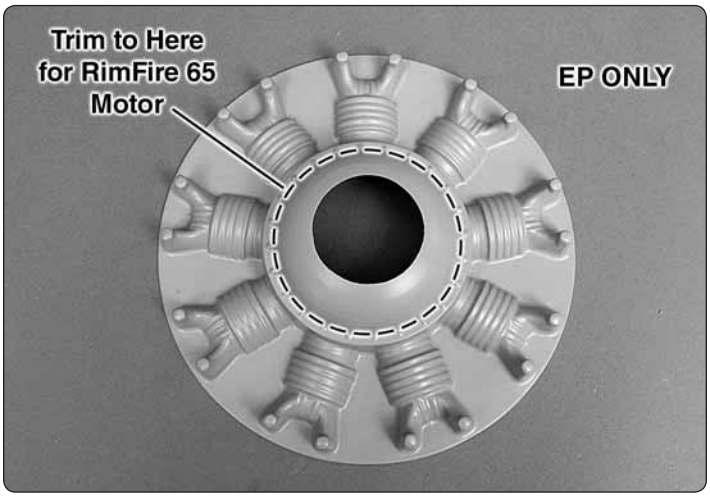
❏ 2. Insert the bevel end of the cowl ring dowels in the front of the fuselage. They should fit well but not be difficult to insert or remove. If they are tight, wrap a piece of sandpaper around the shaft of a screwdriver or brass tube and enlarge the hole slightly.



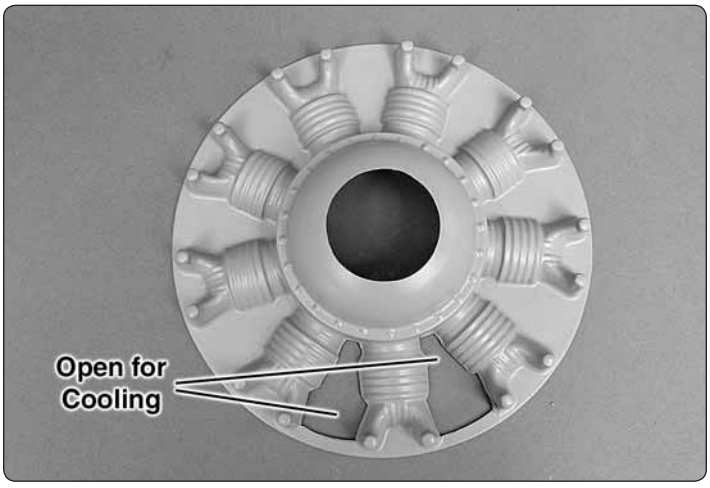
❏ 3. Test fit the plywood cowl ring on the dowels to check alignment.



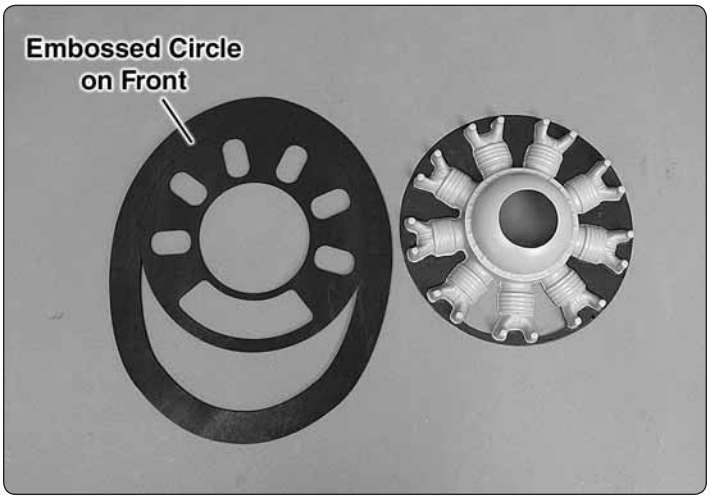
❏ 4. Once satisfied with the fit, use 6-minute epoxy to glue the dowels in the cowl ring. Keep the cowl ring and dowels on the front of the fuselage for proper alignment while the epoxy cures. A piece of masking tape over the holes will keep the dowels flush with the front of the cowl ring. **Caution:** Make sure to leave a slight gap between the cowl ring and the front of the fuselage to avoid gluing them together.



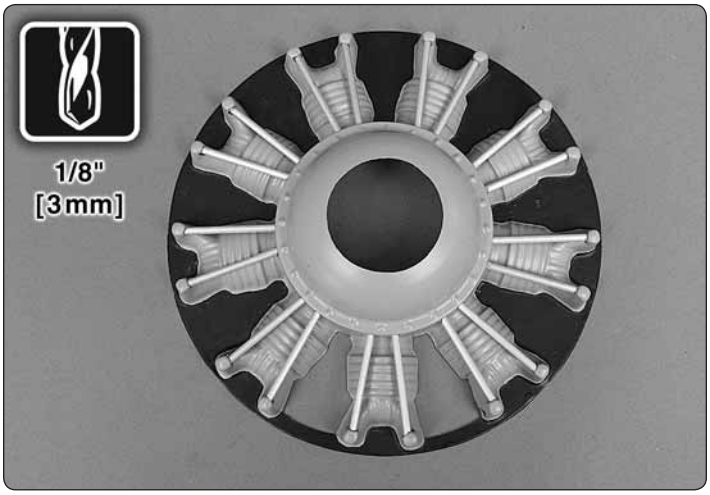
❏ 5. Cut out the center of the dummy engine to clear the drive washer of the gas engine. If the RimFire 65 motor is installed, the hole will need to be enlarged as shown.



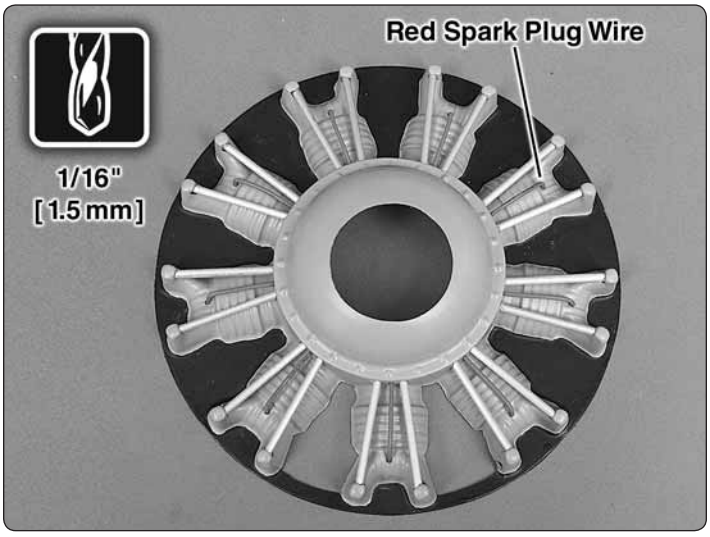
❏ 6. If a gas engine is installed, cut two openings between the cylinders for cooling.



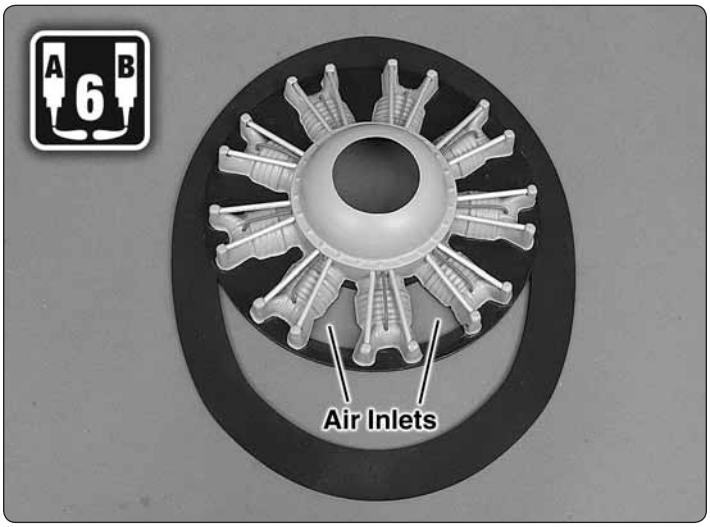
❏ 7. We painted the space between the cylinders and the plywood engine frame flat black. Paint is not included.



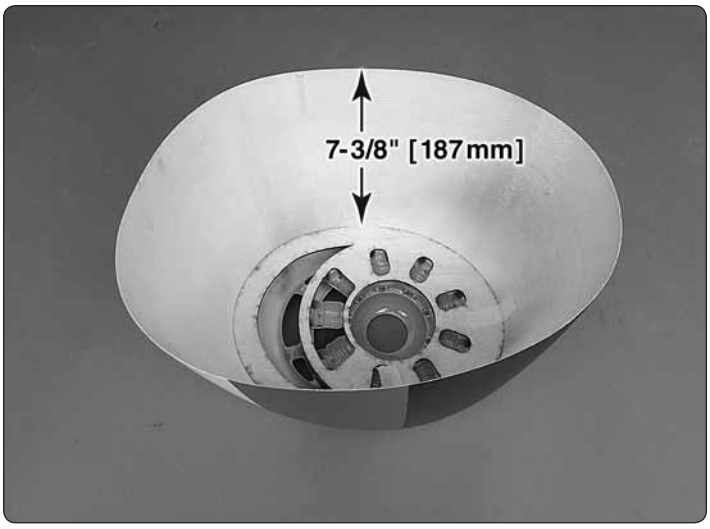
❏ 8. Drill 1/8" [3mm] holes in the bottom of the rocker arms and in the crankcase as shown. Glue the eighteen aluminum tubes in the holes. If the dummy engine will be used with the RimFire 65 motor, the tubes must be flush with the inside surface of the crankcase to avoid rubbing on the motor.



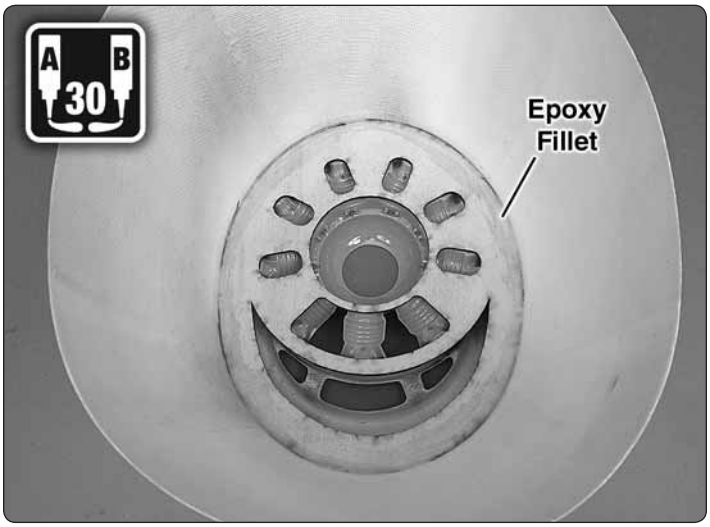
❏ 9. Drill 1/16" [1.5mm] holes in the front of the cylinder head and the crankcase. Glue the red spark plug wire in the holes.



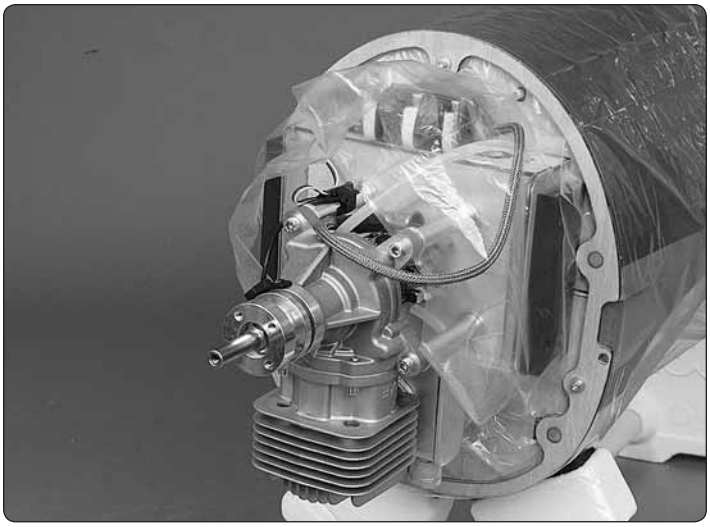
❏ 10. Use 6-minute epoxy to glue the dummy engine to the plywood wood frame. Align the dummy engine with the embossed circle on the plywood frame.



❏ 11. Test fit the dummy engine assembly in the cowl. Use a sanding bar with coarse sandpaper to bevel the edges of the engine frame. The goal is to have the center of the dummy engine centered in the cowl opening. The back of the engine frame should be approximately 7-3/8" [187mm] below the edge of the cowl. Mark the location of the engine frame on the inside of the cowl. This will help in repositioning the engine once epoxy has been applied to the engine assembly. Use masking tape to hold the dummy engine in position and test fit the cowl on the fuselage. Install the propeller and check for clearance. Refer to Step 15.



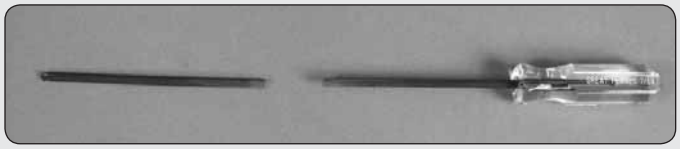
❏ 12. Before gluing, use sandpaper to roughen the gluing area inside the cowl. Clean the area with a paper towel dampened with denatured alcohol. Mix approximately 1/2oz [14.7cc] of 30-minute epoxy. For a stronger joint, add some milled fiberglass to the epoxy. Apply epoxy along the marks you made inside the cowl. Insert the dummy engine in the cowl. Use the remaining epoxy to create a fillet around the joint.



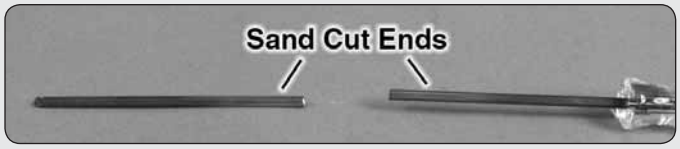
❏ 13. Cut the end from the plastic bag the cowl came in. Slide the bag over the front of the fuselage. Cut openings where the four cowl ring dowels and the three mounting bolts are located. Reinstall the cowl ring and secure it with three 6-32 x ¾" socket head cap screws, #6 lock washers and #6 flat washers. The plastic bag is to prevent glue from getting on the fuselage when the cowl is glued to the cowl ring.

❏ 14. For the next few steps you will need a 10" [254mm] long Ball-end hex wrench. If you do not have one, here is how to make one.

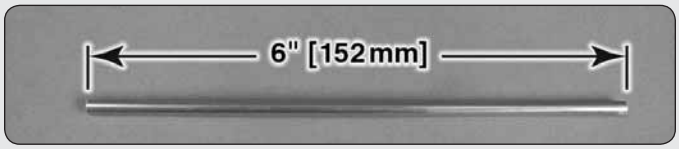
HOW TO MAKE AN EXTENDED 7/64" BALL WRENCH



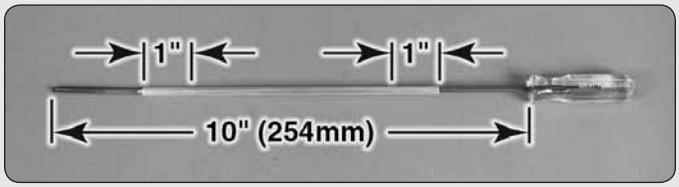
1. Cut the 7/64" ball wrench in approximately equal parts.



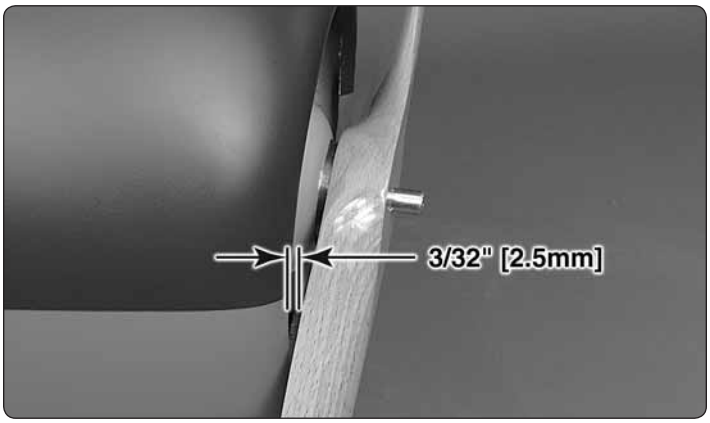
2. Use a piece of sandpaper to remove the coating from the wrench 1-1/2" (38mm) from the cut.



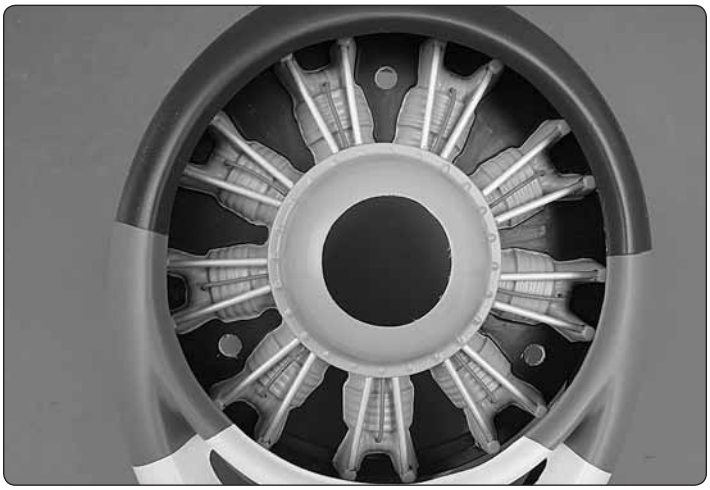
3. Cut a piece of 5/32" x .014 (3.9 x .3mm) round brass tube 6" (152mm) long.



4. Clean the ball wrench with denatured alcohol. Apply silver solder flux to the cut ends of the ball wrench and the inside of the brass tube. Slide the cut ends of the wrench into the brass tube 1" (25.4mm). Heat the tube and the ball wrench and use silver solder to join the pieces together. The length of the wrench needs to be 10" (254mm) long to reach the bolts inside the cowl.



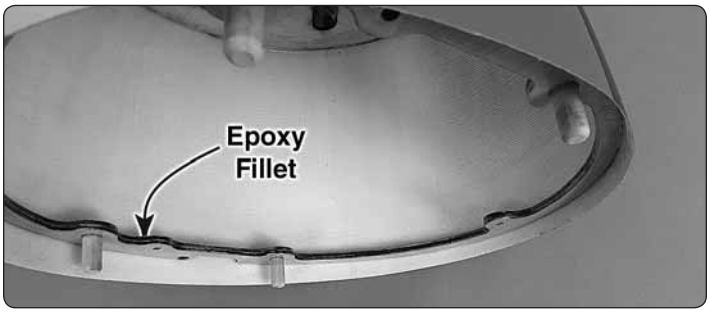
❏ 15. Test fit the cowl on the front of the fuselage. Depending on the engine and muffler used, you may need to trim the bottom of the cowl to fit over the head of the engine. The cowl will fit tight over the plywood cowl ring. Center the hole in the dummy engine on the engine drive washer or RimFire 65 motor. Temporarily install a propeller. The propeller needs to clear the front of the cowl by 3/32" [2.5mm].



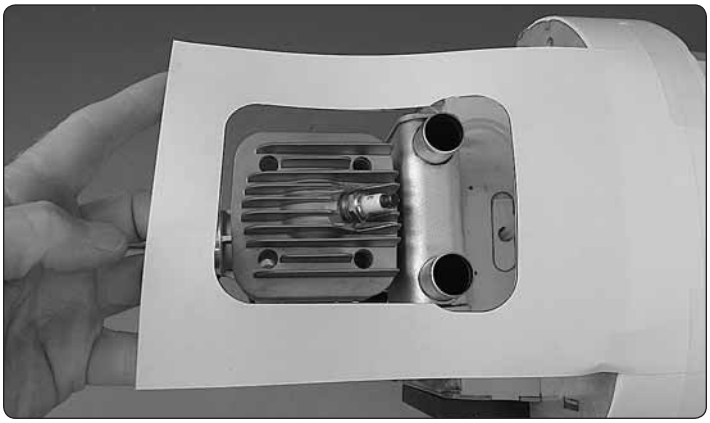
❏ 16. Make three 1/2" [13 mm] holes in the front of the dummy engine for removing and installing the 6-32 socket head cap screws.

❏ 17. Sand the inside of the cowl where the cowl ring contacts the cowl. Then, clean the area with a paper towel dampened with denatured alcohol.

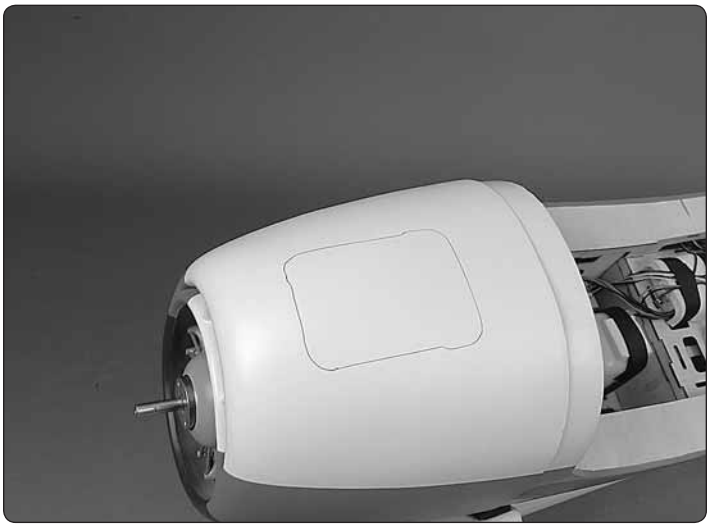
❏ 18. Mix 1/2oz [14.7cc] of 30-minute epoxy. Apply the epoxy to the inside of the cowl where it contacts the cowl ring. Slide the cowl over the cowl ring, centering it over the drive washer on the engine and aligning it correctly on the fuselage. Use masking tape to hold it in position until the epoxy cures.



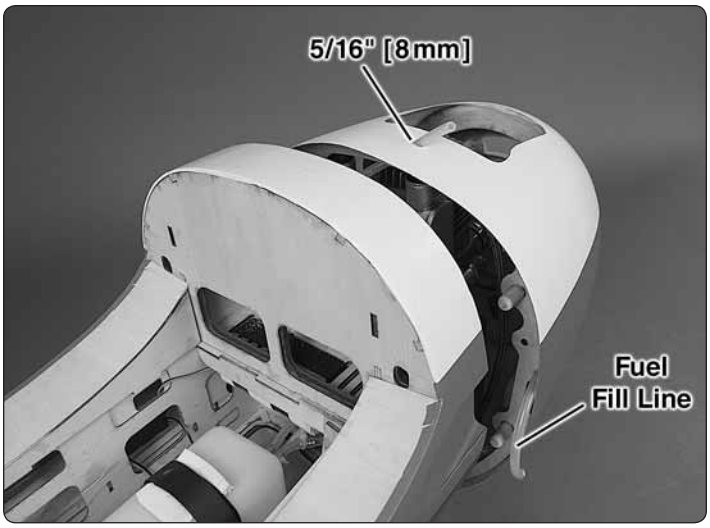
❏ 19. Unbolt and remove the cowl. Use epoxy to make a fillet between the cowl and the front edge of the plywood cowl ring. For a stronger fillet, mix milled fiberglass with the epoxy.



❏ 20. Tape a piece of paper over the engine and muffler and draw the outline of the engine and muffler. Reinstall the cowl and transfer the outline to the bottom of the cowl.

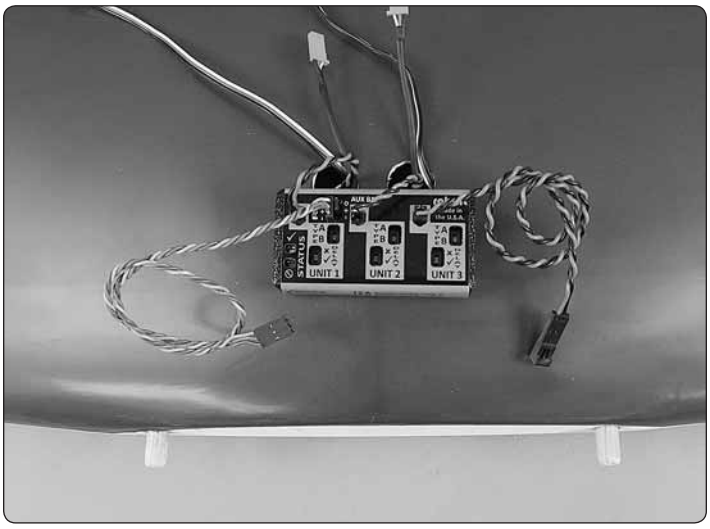


❏ 21. Remove the cowl from the fuselage before cutting to prevent the fiberglass dust from entering the carburetor. Use a high speed rotary tool with a sanding drum to cut the opening. Start with an undersized hole and slowly enlarge the opening while test-fitting the cowl on the fuselage.

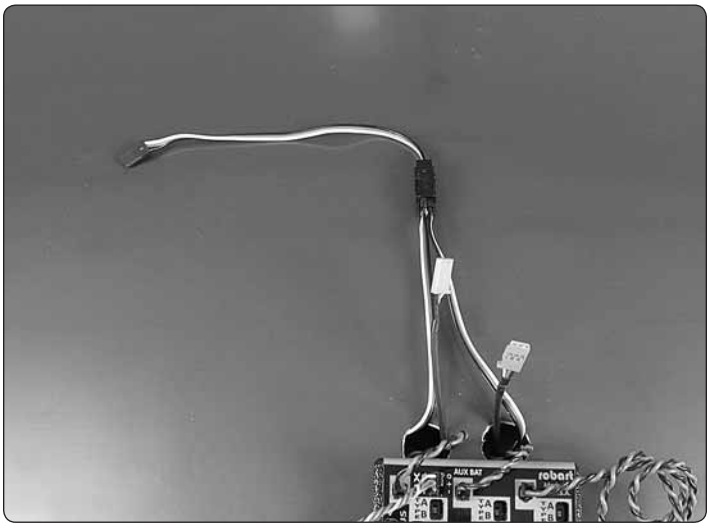


❏ 22. Make a 5/16" [8 mm] hole in the cowl in front of the cowl ring for the vent fuel line. Also route the fill fuel line through the hole in the side of the cowl ring. Insert the aluminum fuel plug in the fill line. Reinstall the cowl. Apply a drop of threadlocker on the threads of the 6-32 x ¾" socket head cap screws before installing them.

FINISH THE WING

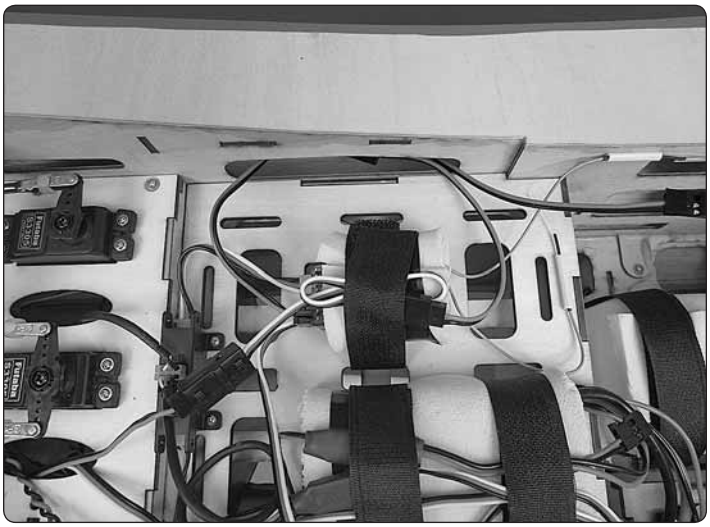


❏ 1. If electric retracts have been installed, use double-sided tape or sticky-backed hook and loop material (not included) to mount the control box on the top of the wing. The two Actuator wires from the main retracts are plugged into the Robart Electric Retract Controller. A 12" [305mm] Actuator Extension (not included) is plugged into the controller to connect to the electric tail gear retract. Also plug the receiver lead (male-to-male) (included with the retracts) into the receiver port on the controller. A 6" to 8" [152mm to 203mm] servo extension is plugged into the retract channel (channel 1 in our setup). This will allow easy connection from the receiver to the controller. The controller can also be plugged into an S.Bus Decoder which is then plugged into the 6-Way Terminal Box.



❏ 2. Plug the two wires from the wing tip lights into a Y-harness.

❏ 3. Controlling the lights:

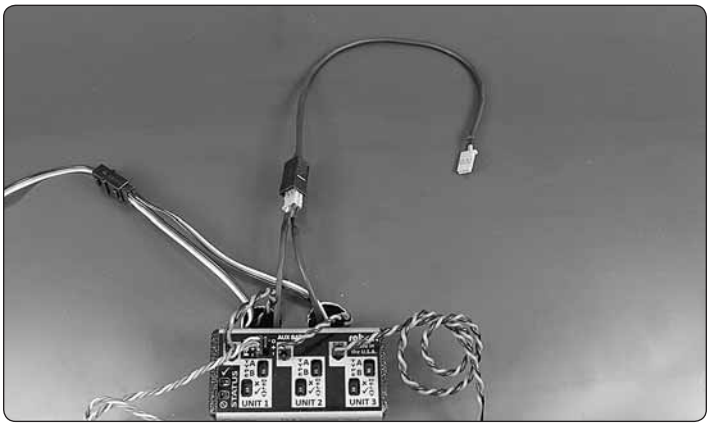


Option 1: This allows the lights to be controlled manually when the receiver is switched on. Install the on/off switch for the lights in the side of the fuselage. Plug the switch into any channel in your receiver (channel 2 in our setup). Connect a Y-harness to the switch. Plug the tail light into the Y-harness. When the wing is attached, the Y-harness from the wing tip lights is plugged into the Y-harness from the switch.

Option 2: Plug the Futaba CPS-1 Channel Power Switch into the receiver (channel 2 in our setup). Set a switch on your transmitter to control channel 2. Connect a Y-harness to the Channel Power Switch. Plug the tail light into the Y-harness. When the wing is attached, the Y-harness from the wing tip lights is plugged into the Y-harness from the Channel Power switch. The lights can now be switched on and off from your transmitter. The Channel Power Switch can also be connected to an S.Bus decoder that can be plugged into the 6-Way Terminal Box.

Installing the Wing

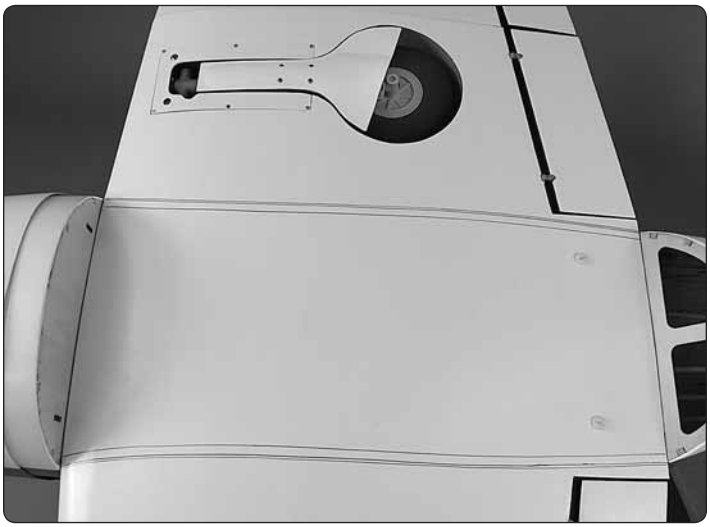
❏ 4. **Basic Setup:** Plug a Y-harness into the aileron and flap ports on the receiver. When the wing is installed, the flap and aileron servo extensions extending from the wing are plugged into the Y-harnesses. It is a good idea to identify these so there is no confusion.



S.Bus Setup: Connect the two 20" [500mm] S.Bus hubs to a 12" [300mm] hub. This hub is plugged into the 6-Way Terminal Box when the wing is installed.

Install the Belly Pan

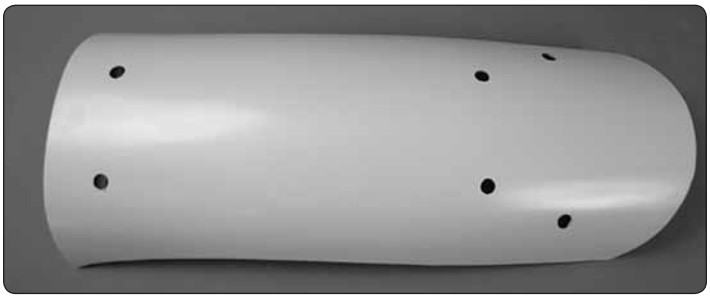
Perform steps 1, 2 and 3 if the optional drop tank will not be installed.



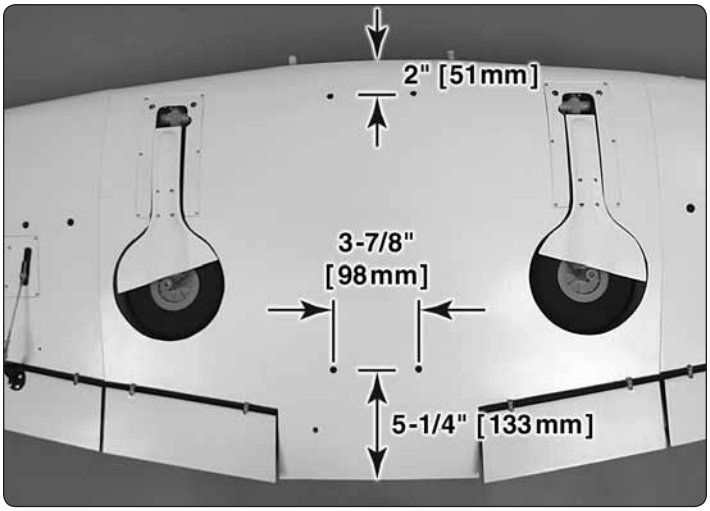
❏ 1. Mount the wing on the fuselage. Make any adjustments required to get a good fit between the wing and fuselage. This may require some light sanding of the wing dowel holes in the front of the fuselage. Position the belly pan on the wing so that it is evenly spaced between the fuselage. Mark the outline of the belly pan on the bottom of the wing. Carefully cut and remove a 1/4" [6mm] wide strip of covering, 1/32" [.8mm] from the inside of the outline.

❏ 2. Remove the wing and place waxed paper between the wing and the fuselage at the leading and trailing edge. This will prevent the wing from becoming glued to the fuselage if the epoxy should run out of the joint. Reinstall the wing.

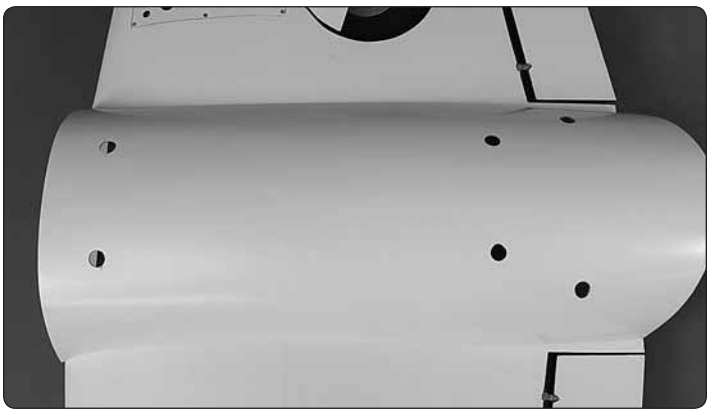
❏ 3. Glue the belly pan to the wing using 30-minute epoxy. Make sure that the belly pan is tight against the bottom of the wing and centered between the fuselage. Wipe off any excess epoxy before it cures.



❏ 4. If you will be installing the optional drop tank, trim the covering from over the four bolt openings on the belly pan.

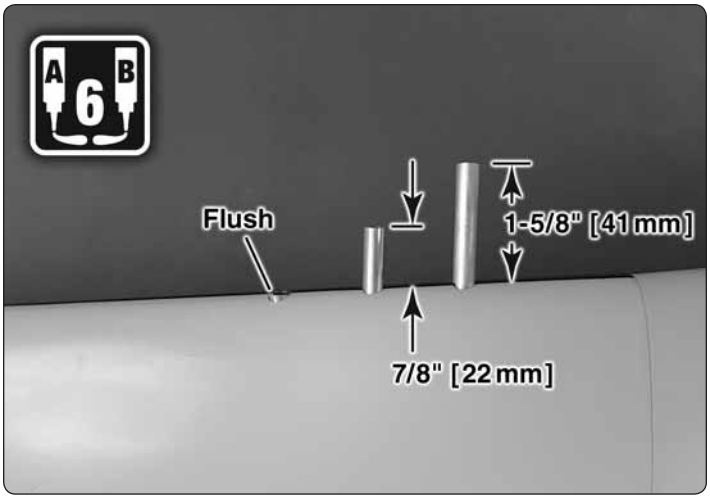


❏ 5. Trim the covering from over the four corresponding holes in the bottom of the wing.

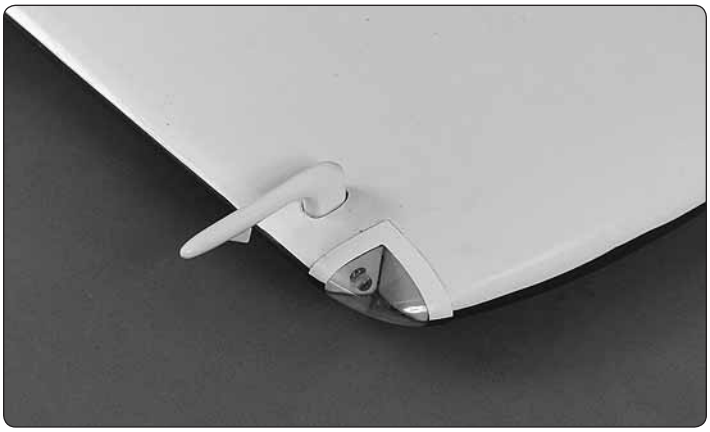


❏ 6. Test fit the belly pan on the wing, attaching it with four ¼" – 20 x 2" [51mm] nylon wing bolts included with the optional drop tank. The instructions for the drop tank installation is included with the drop tank.

❑ 7. Place the wing on the fuselage. Adjust the belly pan and tighten the four nylon bolts.



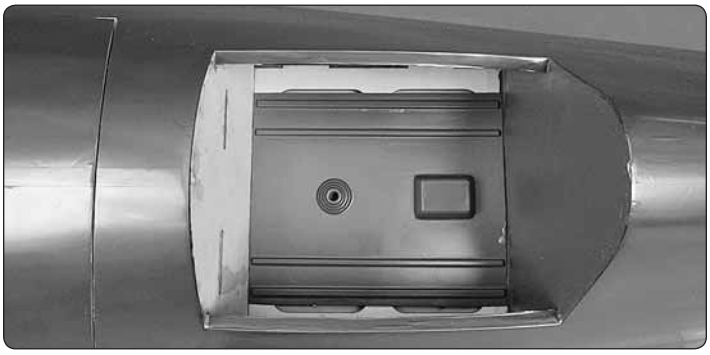
❑ 8. Clean the aluminum tubes with denatured alcohol and glue the gun barrels in the wing with 6-minute epoxy. Note the distance from the leading edge of the wing to the end of each gun barrel.



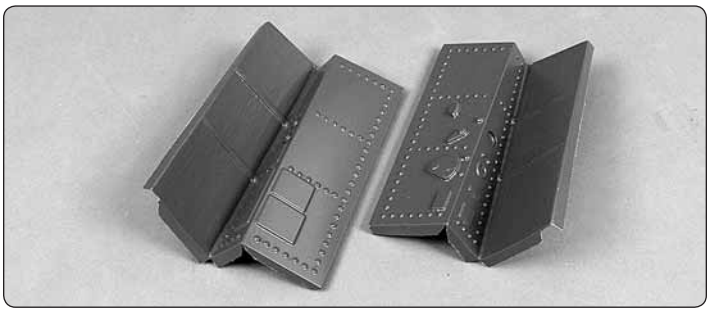
❑ 9. The F6F Hellcat has the option of installing a pitot tube. It is held in place with magnets, allowing it to be removed when transporting the wing to prevent damage. The mounting hole is located on the bottom of the right wing, inboard of the wing tip light.

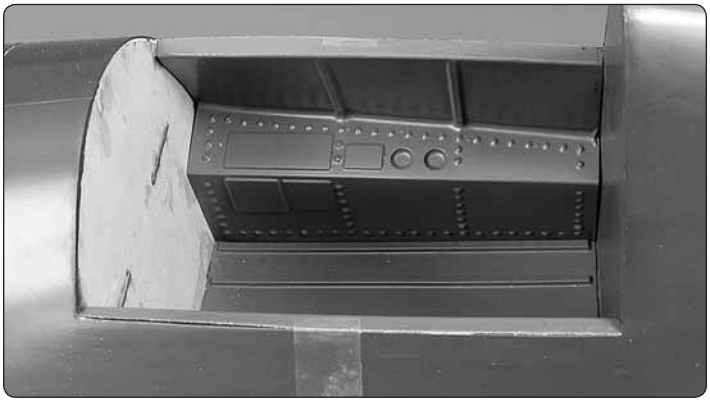
APPLY THE FINAL DETAILS

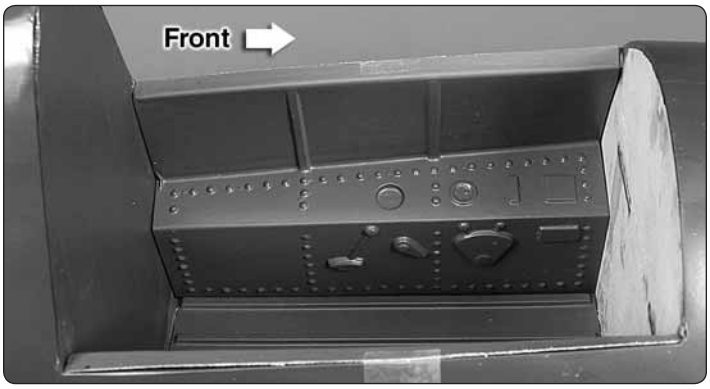
Install the Cockpit Kit



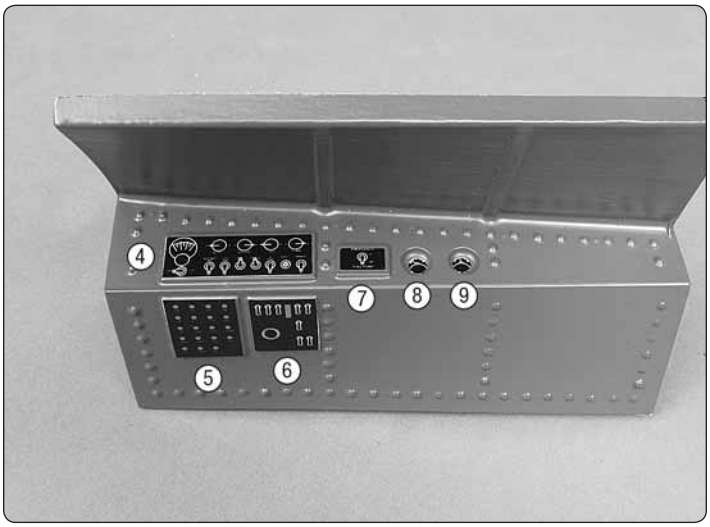
❑ 1. Use medium grit sandpaper to roughen the bottom of the cockpit floor. Wipe off the bottom of the cockpit floor with a paper towel dampened with denatured alcohol. Also roughen the top of the seat pedestal. Use medium CA to glue the cockpit floor, centered in the cockpit.

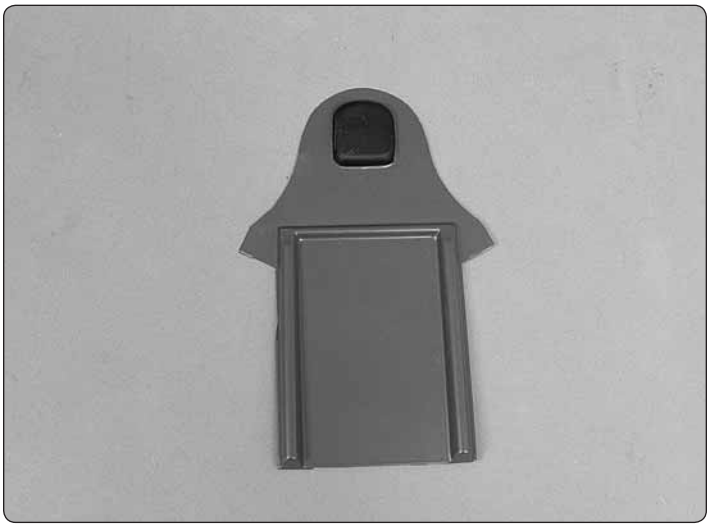


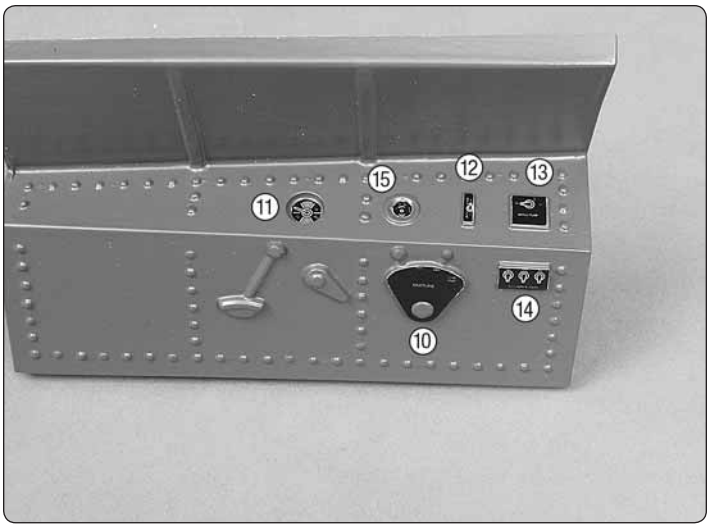




❑ 2. Trim the sides of the cockpit as shown. The width of the tabs on the side is not important. They are used for a gluing surface. Test fit the sides in the cockpit and trim as required to get a good fit.

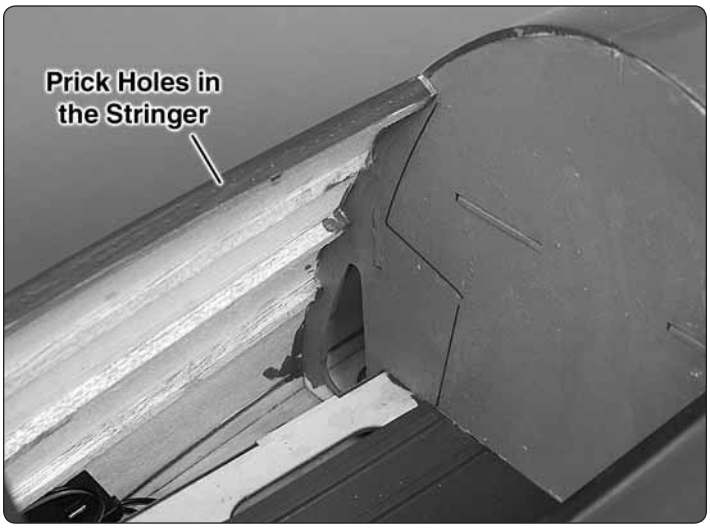




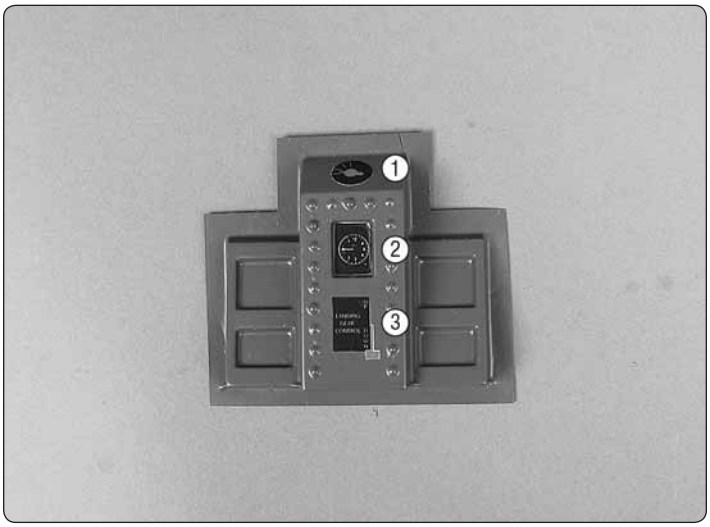


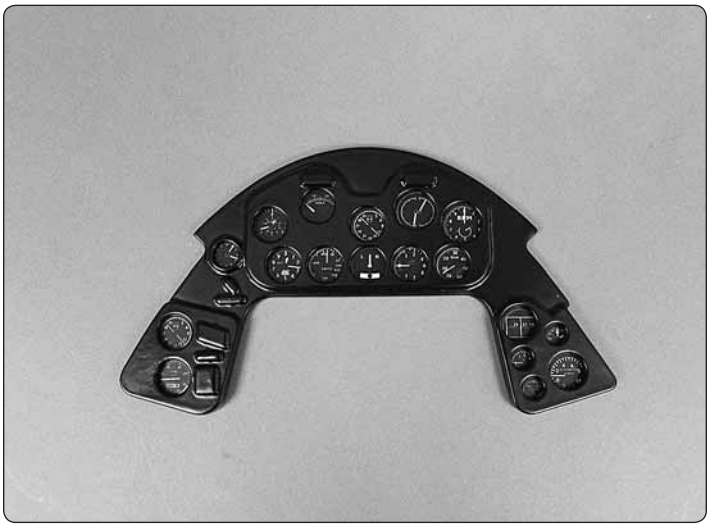
❏ 3. Apply the decals to both of the side panels.

❏ 5. Trim the armor plate/head rest as shown. Test fit the armor plate in the fuselage and trim as needed. Roughen the back of the armor plate and use medium CA to glue the armor plate in the fuselage.



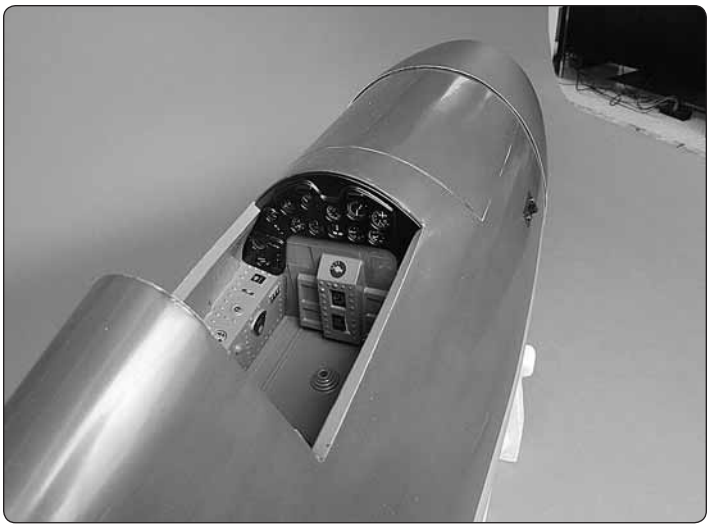
❏ 4. Insert the side panels and mark the outline on the front and back of the cockpit. Remove the side panels. Use a T-pin to prick holes in the top of the stringer. We applied canopy glue to the cockpit floor and the front and back of the cockpit, inside the side panel outlines. This will allow the side panels to be positioned and any excess glue wiped off with a wet paper towel. We then used medium CA to glue the top flange on the stringer.



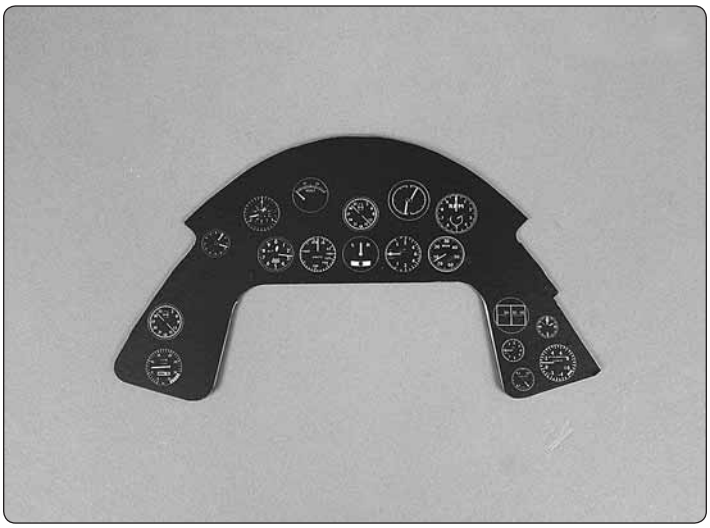


❑ 8. Glue the plywood instrument panel back into the plastic instrument panel.

❑ 6. Trim the front panel as shown and apply the decals. Roughen the back of the panel and glue it to the front of the cockpit, centered at the front of the cockpit floor.

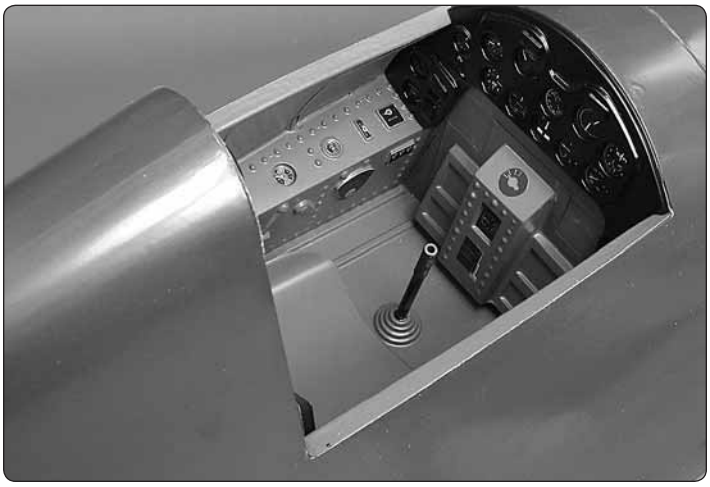


❑ 9. Glue the instrument panel into the cockpit.



❑ 7. Test fit the plywood instrument panel back in the plastic instrument panel. Note that it can only be inserted one way. Attach the instrument panel decal to the front of the plywood instrument panel back.

❑ 10. Use sandpaper to rough up the bottom of the seat. Glue the seat on top of the pedestal. Note: If a pilot will be installed, test fit it in the seat and the cockpit before gluing the seat on the pedestal.



❏ 11. Again, check the pilot position before gluing the control stick in the cockpit floor.

❏ 12. Wash the canopy in warm water, and then, dry it off. Place the canopy on the fuselage. Be certain it is centered from side-to-side and mark the outline on the fuselage. Use a T-pin to prick holes through the covering just inside the outline. Use canopy glue to attach the canopy on the fuselage.

NOTE: If installing a pilot, install it before gluing on the canopy. The pilot we installed is from Best Pilots at www.bestpilots.typepad.com

Apply the decals

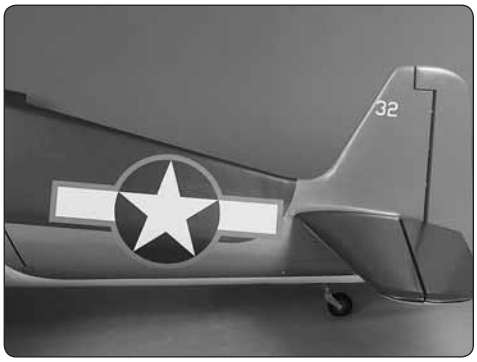
❏ 1. The decals come die-cut.

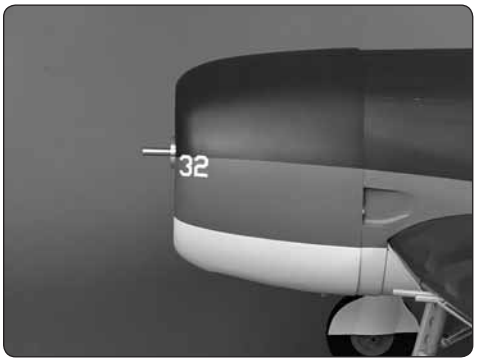
❏ 2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or small bucket with a mixture of liquid dish soap and warm water—about 1/2 teaspoon [2.5 cc] of soap per gallon of water. Submerse one of the decals in the solution and peel off the paper backing. **NOTE:** Even though the decals have a "sticky-back" and are not the water transfer type, submersing them in soap and water allows accurate positioning and reduces air bubbles underneath.

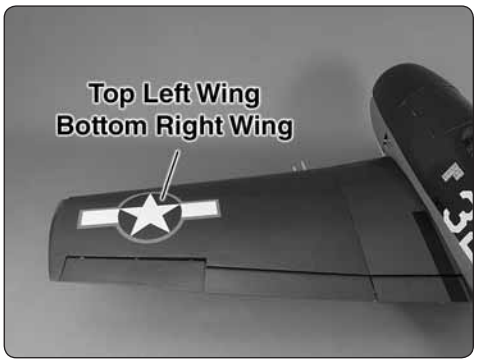
❏ 3. Position decal on the model where desired. Holding the decal down, use a paper towel to wipe most of the water away.

❏ 4. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

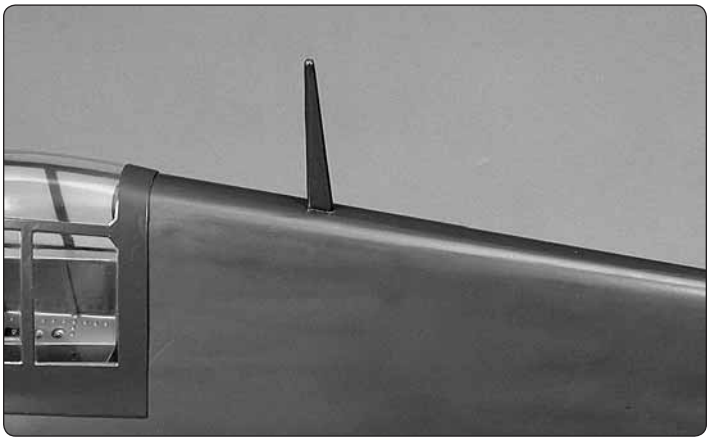
Please use the following pictures as a guide for the decal placement.







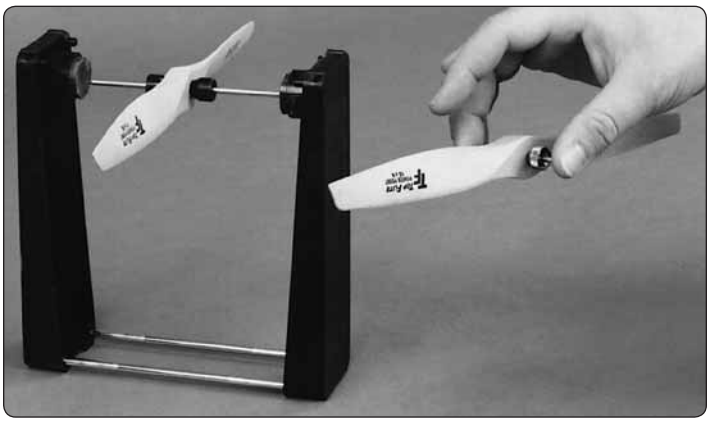
Install the Antenna Mast



❏ 1. Insert the antenna mast in the top of the fin and the fuselage. The masts are held in place with magnets.

GET THE MODEL READY TO FLY

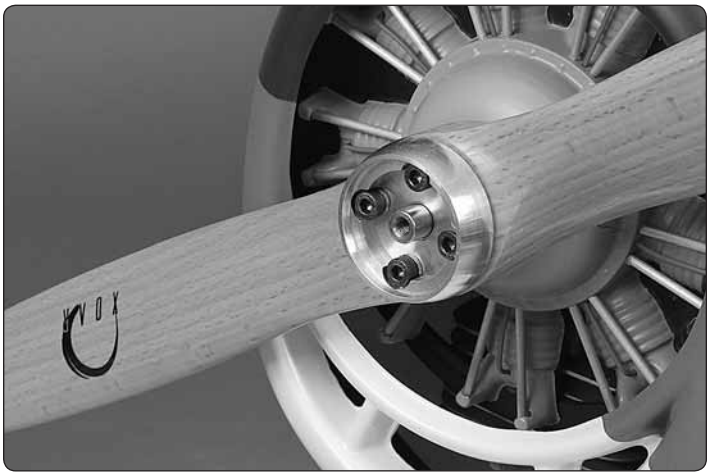
Install the Propeller



❏ 1. Carefully balance the propeller and any spare propellers. An unbalanced propeller can be the single most significant cause of vibration that can damage the model. Not only will engine mounting bolts loosen, possibly with disastrous effect, but vibration may also damage the receiver and receiver batteries. Vibration can also cause the fuel to foam, which will, in turn, cause the engine to run hot and quit.

We use a Top Flite Precision Magnetic Prop Balancer (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

(Gas Engine)

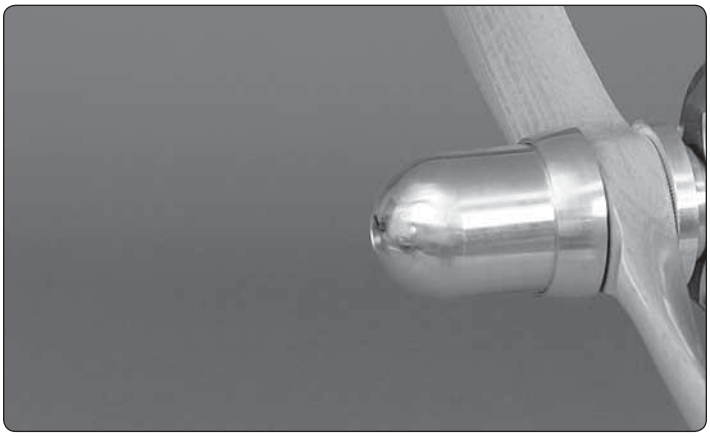


❏ 2. The included aluminum spinner was designed to be used with the DLE-55, DLE-61 and the O.S. GT60 gas engines. Drill the bolt holes through the propeller, slide the propeller and spinner backplate on the engine prop shaft and install the prop bolts.

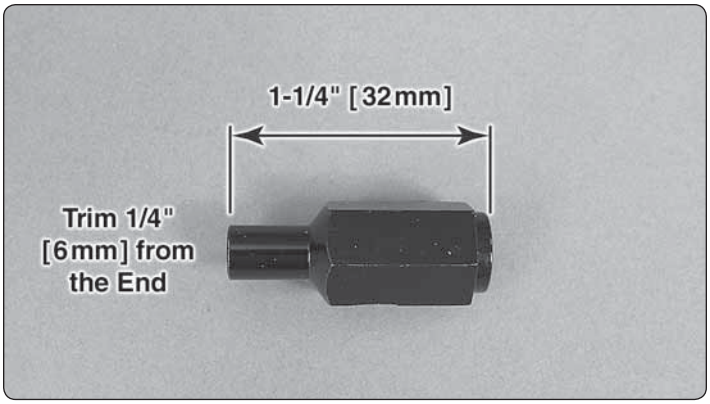
❏ 3. Install the spinner cone on the engine using a M5 x 50mm socket head cap screw. Use a drop of threadlocker on the threads.

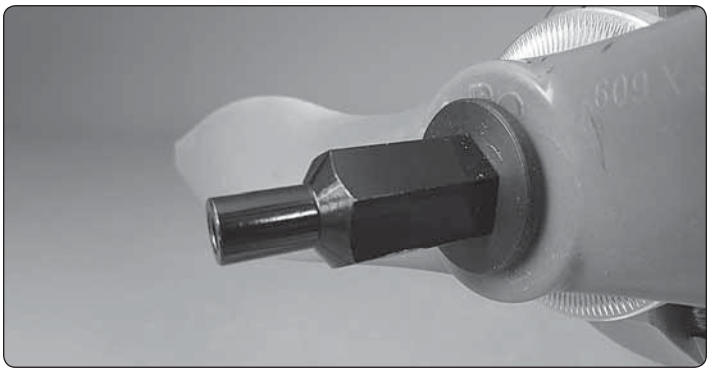
(Electric Motor)

❏ 4. **Xoar Electric Propeller**: Enlarge the propeller shaft hole to 10mm using a metric prop reamer or a letter gauge size X drill bit. Secure the propeller and spinner base with the spinner adapter and washer (GPMQ4590) (not included).



❏ 5. Secure the spinner cone to the spinner adapter with a 10-32 x 3/4" [19mm] socket head cap screw (not included).





❏ 6. **APC Electric Propeller**: Enlarge the propeller shaft hole to 10mm using a metric prop reamer or a letter gauge size X drill bit. Trim ¼" [6mm] from the end of the spinner adapter (GPMQ4590) (not included) so that the adapter is 1-1/4" [32mm] long. Install the propeller on the motor shaft and secure it with the spinner adapter and washer.

❏ 7. Secure the spinner cone to the spinner adapter with a 10-32 x ¾" [19mm] socket head cap screw (not included).

WARNING: NEVER connect the motor battery to the ESC until you are ready to fly. Once the motor battery is connected the motor could start unexpectedly at any time causing serious injury.

Balance the Model Laterally

❏ 1. With the wing level, have an assistant help you lift the model by the engine propeller shaft and the bottom of the fuse under the TE of the fin. Do this several times.

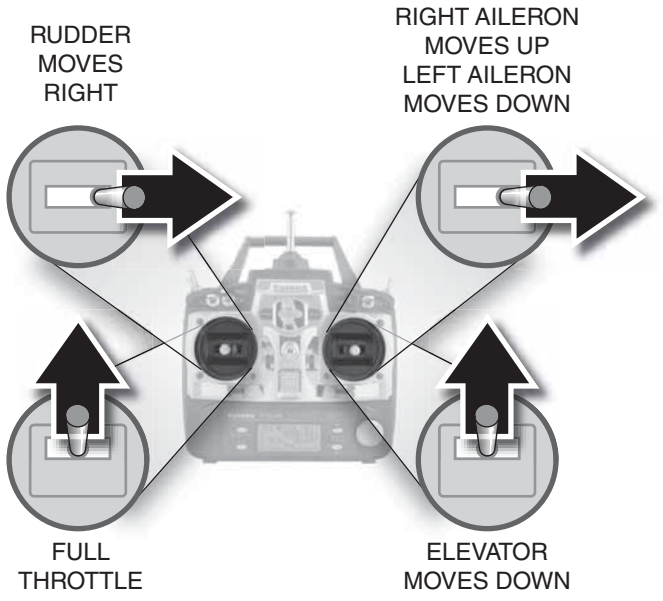
❏ 2. If one wing always drops when you lift the model, it means that side is heavy. Balance the airplane by adding weight to the other wing tip. **An airplane that has been laterally balanced will track better in loops and other maneuvers.**

Check the Control Directions

❏ 1. Switch on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms.

❏ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the clevises on the pushrods to center the control surfaces.

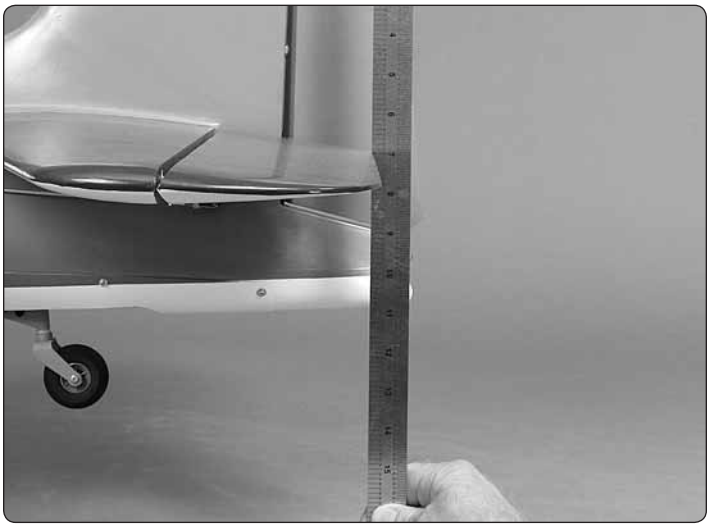
RADIO SET UP (STANDARD MODE 2)



❏ 3. Make certain that the control surfaces and the carburetor 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

To ensure a successful first flight, set up your Giant F6F Hellcat ARF according to the control throws specified in this manual. The throws have been determined through actual flight testing and accurate record-keeping, allowing the model to perform in the manner in which it was intended. If, after you have become accustomed to the way the Giant F6F Hellcat ARF flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model too responsive and difficult to control, so remember, “more is not always better.”



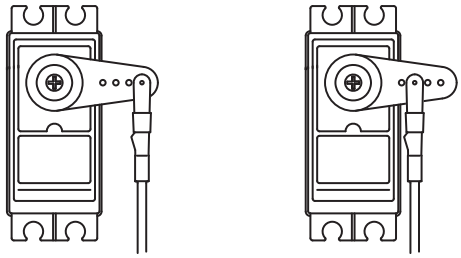
❏ 1. Use a box or something similar to prop up the bottom of the fuselage so the horizontal stabilizer and wing will be level. Hold a ruler vertically on your workbench against the widest part (front to back) of the trailing edge of the elevator. Note the measurement on the ruler.

❏ 2. Measure the high rate elevator throw first. Move the elevator up with your transmitter and move the ruler forward so it will remain contacting the trailing edge. The distance the elevator moves up from center is the “up” elevator throw. Measure the down elevator throw the same way.

At the Servos

The pushrod farther out means **More Throw**

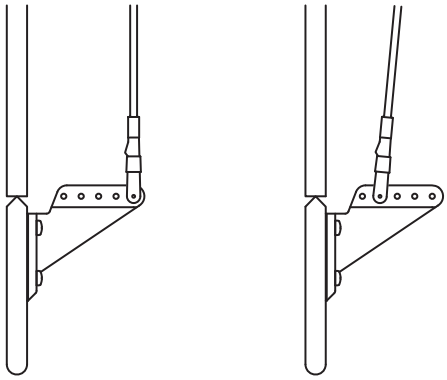
The pushrod closer in means **Less Throw**



At the Control Surfaces

The pushrod farther out means **Less Throw**

The pushrod closer in means **More Throw**



❏ 3. If necessary, adjust the location of the pushrod on the servo arm or on the elevator horn. Once the throws are close, program the servo end points in the transmitter to fine tune the throws according to the measurements in the control throws chart. For the best resolution, adjust the pushrod locations on the servo arm and elevator horns so that the servo endpoints are close to 100% on high rates.

❏ 4. Measure and set the **low rate** elevator throws and the high and low rate throws for the ailerons, rudder and flaps.

If your radio does not have dual rates, we recommend setting the throws at the high rate settings.

NOTE: The throws are measured at the **widest part** of the elevators, rudder, ailerons and flaps.

These are the recommended control surface throws:		
	LOW	**HIGH**
ELEVATOR Up & Down	3/8" [9mm] 5°	5/8" [16mm] 9°
RUDDER Right & Left	7/8" [22mm] 13°	1-1/4" [32mm] 19°
AILERONS Up & Down	3/4" [19mm] 13°	1" [25mm] 18°
FLAPS Down	1-5/8" [41mm] 33° down	

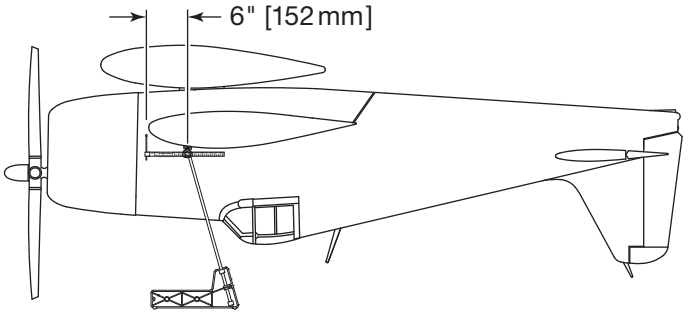
Once the throws are set, apply a drop of threadlocker to the threads on the pushrod and tighten the nuts against the clevises.

IMPORTANT: With the throws set, now is a good time to set the failsafe on the transmitter. The failsafe may save your plane if the signal is lost and prevent the electric motor from accidentally coming on.

Balance the Model (C.G.)

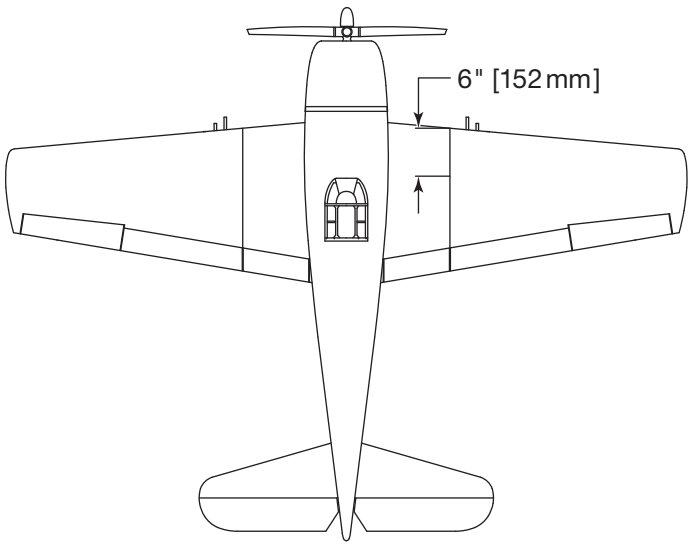
More than any other factor, the C.G. (center of gravity/ balance point) can have the greatest effect on how a model flies and could determine whether or not your first flight will be successful. If you value your model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.**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

At this stage the model should be in ready-to-fly condition with **all** of the components in place including the complete radio system, engine, muffler, propeller, spinner and pilot. The fuel tank should be empty. If electric, the motor battery should be installed, but not connected to the ESC.



❏ 1. If using a Great Planes C.G. Machine, set the rulers to 6" [152mm]. If not using a C.G. Machine, use a fine-point felt tip pen to mark lines on the top of the wing on both sides of the fuselage 6" [152mm] back from the leading edge, at the joint between the wing center section and outer wing panels. Apply narrow (1/16" [2mm]) strips of tape over the lines so you will be able to feel them when lifting the model with your fingers.

This is where your model should balance for the first flights. Later, you may experiment by shifting the C.G. 5/8" [16 mm] forward or 5/8" [16mm] back to change the flying characteristics. Moving the C.G. forward will improve the smoothness and stability, but the model will then be less aerobatic (which may be fine for less-experienced pilots). Moving the C.G. aft makes the model more maneuverable and aerobatic for experienced pilots. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.



❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, 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.” If the nose drops, the model is “nose heavy.” Use Great Planes “stick-on” lead (GPMQ4485) to balance the plane. To find out how much weight is required, place incrementally increasing amounts of weight on the bottom of the fuselage over the location where it would be mounted inside until the model balances. A good place to add stick-on nose weight is to the firewall. Do not attach weight to the cowl—this will cause stress on the cowl and could cause the cowl ring to break loose from the cowl. **Note:** The manufacturer has already installed some weight on the firewall. If the plane is nose heavy, start by removing some of the pre-installed nose weight before adding tail weight. Once you have determined if additional weight needs to be installed, it can be permanently attached.

Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel, vibration and exhaust residue may soften the adhesive and cause the weight to fall off. Instead, permanently attach the weight with glue or screws.

❏ 4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after the weight has been installed.

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 (that's why it's called a *check list!*).

❏ 1. Fuelproof all areas exposed to fuel or exhaust residue such as the cowl ring, wing saddle area, etc.

❏ 2. Check the C.G. according to the measurements provided in the manual.

❏ 3. Be certain the battery and receiver are securely mounted in the fuse. Simply stuffing them into place with foam rubber is not sufficient.

❏ 4. If you still fly on 72MHz, extend your receiver antenna and make sure it has a strain relief inside the fuselage to keep tension off the solder joint inside the receiver.

❏ 5. Balance your model *laterally* as explained in the instructions.

❏ 6. Use threadlocking compound to secure critical fasteners such as the set screws that hold the wheel axles to the struts, screws that hold the carburetor arm (if applicable), engine bolts, etc.

❏ 7. Add a drop of oil to the axles so the wheels will turn freely.

❏ 8. Give the control surfaces a firm tug to make sure all hinges are **securely** glued in place before and after every flight.

❏ 9. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, aileron hatches, etc.).

❏ 10. Confirm that all controls operate in the correct direction and the throws are set up according to the manual. Checking the direction should be performed before every flight. With computer radios it is easy to mistakenly change the model.

❏ 11. Make sure there are silicone retainers on all the clevises and that all servo arms are secured to the servos with the screws included with your radio.

❏ 12. Secure connections between servo wires and Y-connectors or servo extensions, and the connection between your battery pack and the on/off switch with vinyl tape, heat shrink tubing or special clips suitable for that purpose.

❏ 13. Make sure any servo extension cords and air lines you may have used do not interfere with other systems (servo arms, pushrods, etc.).

❏ 14. Make sure the fuel lines are connected and are not kinked.

❏ 15. Balance your propeller (and spare propellers).

❏ 16. Check that the spinner bolt is tight.

❏ 17. Place your name, address, AMA number and telephone number on or inside your model. This is an AMA rule.

❏ 18. Make sure the failsafe is set, to prevent accidents.

❏ 19. Cycle your receiver and ignition battery pack (if necessary) and make sure it is fully charged.

❏ 20. If you wish to photograph your model, do so before your first flight.

❏ 21. Range check your radio when you get to the flying field.

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 59 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 receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter and receiver 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. If you are using LiFe transmitter and receiver batteries, follow the instructions that came with your batteries and be sure to use a charger that is designed to charge LiFe batteries.

Ground Check and Range Check

Run the engine for a few minutes to make sure it idles reliably, transitions smoothly and maintains full power indefinitely. Afterward, shut the engine off and inspect the model closely, making sure all fasteners, pushrods and connections have remained tight and the hinges are secure. Always ground check the operational range of your radio before the first flight of the day following the manufacturer's instructions that came with your radio. This should be done once with the engine off and once with the engine running at various speeds. 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 from a previous crash.

FLYING

The Giant F6F Hellcat ARF is a great-flying model that flies smoothly and predictably. The Giant F6F Hellcat ARF does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

Fuel Mixture Adjustments

A fully cowled engine may run at a higher temperature than an un-cowled engine. For this reason, the fuel mixture should be richened so the engine runs at about 200 rpm below peak speed. By running the engine slightly rich, you will help prevent dead-stick landings caused by overheating.

CAUTION (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice an alarming or unusual sound such as a low-pitched "buzz," this may indicate control surface *flutter.* Flutter occurs when a control surface (such as an aileron or elevator) or a flying surface (such as a wing or stab) rapidly vibrates up and down (thus causing the noise). In extreme cases, if not detected immediately, flutter can actually cause the control surface to detach or the flying surface to fail, thus causing loss of control followed by an impending crash. The best thing to do when flutter is detected is to slow the model **immediately** by reducing power, then land as soon as safely possible. Identify which surface fluttered (so the problem may be resolved) by checking all the servo grommets for deterioration or signs of vibration. Make certain all pushrod linkages are secure and free of play. If it fluttered once, under similar circumstances it will probably flutter again unless the problem is fixed. Some things which can cause flutter are; Excessive hinge gap; Not mounting control horns solidly; Poor fit of clevis pin in horn; Side-play of wire pushrods caused by large bends; Excessive free play in servo gears; Insecure servo mounting; and one of the most prevalent causes of flutter; Flying an over-powered model at excessive speeds.

Takeoff

If you are using the optional air retracts, remember to pump them up before each flight. Before you get ready to takeoff, see how the model handles on the ground by doing a few practice runs at **low speeds** on the runway. Hold "up" elevator to keep the tail wheel on the ground. If necessary, adjust the tail wheel so the model will roll straight down the runway. If you need to calm your nerves before the maiden flight, shut the engine down and bring the model back into the pits. Top off the fuel, then check all fasteners and control linkages for peace of mind.

Remember to takeoff into the wind. When you're ready, point the model straight down the runway, hold a bit of up elevator to keep the tail on the ground to maintain tail wheel steering, then gradually advance the throttle. As the model gains speed, decrease up elevator, allowing the tail to come off the ground. One of the most important things to remember with a tail dragger is to always be ready to apply **right** rudder to counteract engine torque. Gain as much speed as your runway and flying site will practically allow before gently applying up elevator, lifting the model into the air. At this moment it is likely that you will need to apply more right rudder to counteract engine torque. Be smooth on the elevator stick, allowing the model to establish a **gentle** climb to a safe altitude before turning into the traffic pattern.

Flight

For reassurance and to keep an eye on other traffic, it is a good idea to have an assistant on the flight line with you. Tell him to remind you to throttle back once the plane gets to a comfortable altitude. While full throttle is usually desirable for takeoff, most models fly more smoothly at reduced speeds.

Take it easy with the Giant F6F Hellcat ARF for the first few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. After flying around for a while, and while still at a safe altitude with plenty of fuel, practice slow flight and execute practice landing approaches by reducing the throttle and lowering the flaps to see how the model handles at slower speeds. Add power to see how she climbs as well. Continue to fly around, executing various maneuvers and making mental notes (or having your assistant write them down) of what trim

or C.G. changes may be required to fine tune the model so it flies the way you like. Mind your fuel or battery power level, but use this first flight to become familiar with your model before landing. We have found that 6-minute flights are a good place to start when using 5000mAh batteries. After landing, check your battery voltage. If it is above 3.80 volts per cell, the flight time can gradually be increased. Also check the amount the charger puts back into the battery. We recommend that no more than 80% of the battery capacity be used.

Landing

One of the keys to landing a giant-scale model is to maintain sufficient airspeed throughout the landing approach. An unusually high airspeed is not necessary, but those unfamiliar with landing giant-scale models are sometimes deceived by the model's larger size. Larger models often appear to be closer than they actually are. Additionally, most giant-scale models slow down rapidly, thus causing the uninitiated to land short. To avoid this initial illusion, make your landing pattern closer than you normally might for a .40-size sport model. Also, don't pull the throttle all the way back and leave it there the way you normally would. Instead, momentarily pull the throttle all the way back, but then advance it a "click" or two to keep the engine RPM up and maintain airspeed. Once over the runway you can cut the throttle the rest of the way and the model will slow for the landing flare.

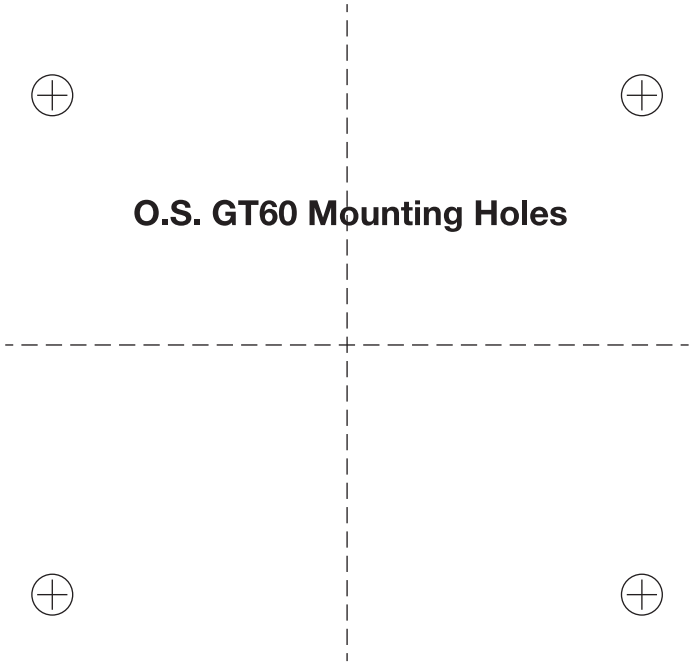
The Giant F6F Hellcat ARF may be landed with or without flaps. Flaps increase lift and drag, so the plane may be landed slower, thus reducing rollout after touchdown (not as much of a factor on grass runways). To initiate a landing approach, lower the throttle while on the downwind leg. If using flaps, allow the model to slow before extending them. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. Make your final turn toward the runway (into the wind) keeping the nose down to maintain airspeed and control. If using flaps, keep a few additional "clicks" of power so the model doesn't slow too much. Level the attitude when the model reaches the runway threshold, modulating the throttle as necessary to maintain your glide path and airspeed. If you are going to overshoot, smoothly advance the throttle (always ready on the right rudder to counteract torque) and retract the flaps when enough airspeed is gained. Climb out to make another attempt. When the model is a foot or so off the deck, smoothly increase up elevator until it gently touches down. Once the model is on the runway and has lost flying speed, hold up elevator to place the tail on the ground, regaining tail wheel control.

Note: If ever the occasion arises when a dead-stick landing must be performed, do not extend the flaps until **certain** the model will be able to reach the landing zone (on dead-stick landings it is common to land with no flaps at all). Without engine power, flaps can unexpectedly reduce the model's range, thus causing you to come up short of the field.

One final note about flying your Giant F6F Hellcat ARF. Have a goal or flight plan in mind for **every** flight. This can be learning a new maneuver(s), improving a maneuver(s) you already know, or learning how the model behaves in certain conditions (such as on high or low rates). This is not necessarily to improve your skills (*though it is never a bad idea!)*, but more importantly so you do not surprise yourself by impulsively attempting a maneuver and suddenly finding that you've run out of time, altitude or airspeed. Every maneuver should be deliberate, not impulsive. For example, if you're going to do a loop, check your altitude, mind the wind direction (anticipating rudder corrections that will be required to maintain heading), remember to throttle back at the top, and make certain you are on the desired rates (high/low rates). A flight plan greatly reduces the chances of crashing your model just because of poor planning and impulsive moves. **Remember to think.**

Have a ball! But always stay in control and fly in a safe manner.

GOOD LUCK AND GREAT FLYING!



O.S. GT60 Mounting Holes

This model belongs to:

Name

Address

City, State, Zip

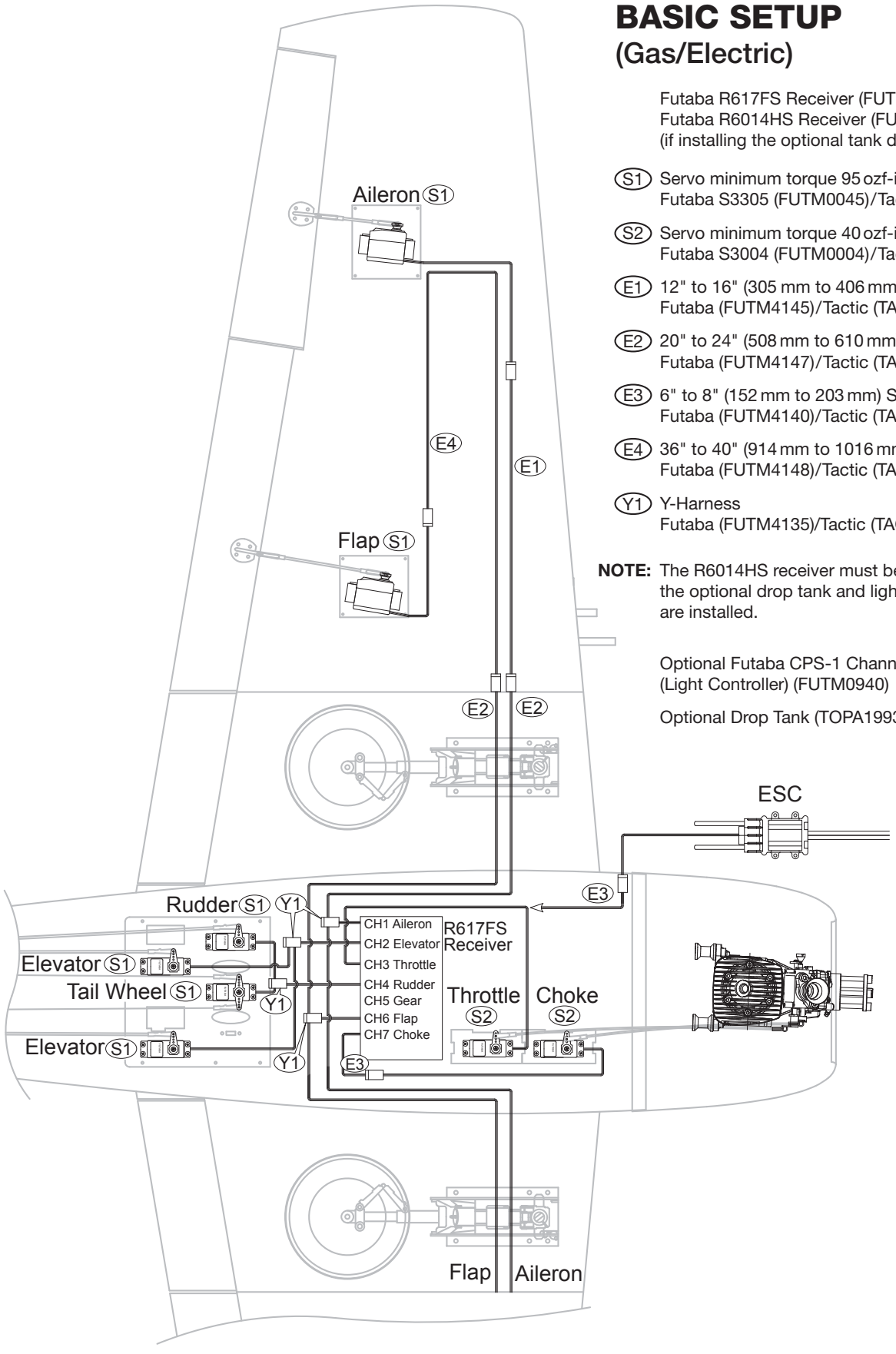
Phone Number

AMA Number

F6F HELLCAT

BASIC SETUP

(Gas/Electric)



Futaba R617FS Receiver (FUTL7627) (1 Req)
Futaba R6014HS Receiver (FUTL7645) (1 Req)
(if installing the optional tank drop and light controller)

(S1) Servo minimum torque 95 ozf-in (6.8 kgf-cm) (8 Req)
Futaba S3305 (FUTM0045)/Tactic TSX47 (TACM0247)

(S2) Servo minimum torque 40 ozf-in (2.8 kgf-cm) (2 Req)
Futaba S3004 (FUTM0004)/Tactic TSX35 (TACM0235)

(E1) 12" to 16" (305 mm to 406 mm) Servo Extension
Futaba (FUTM4145)/Tactic (TACM2093) (2 Req)

(E2) 20" to 24" (508 mm to 610 mm) Servo Extension
Futaba (FUTM4147)/Tactic (TACM2721) (4 Req)

(E3) 6" to 8" (152 mm to 203 mm) Servo Extension
Futaba (FUTM4140)/Tactic (TACM2701) (1 Req)

(E4) 36" to 40" (914 mm to 1016 mm) Servo Extension
Futaba (FUTM4148)/Tactic (TACM2726) (2 Req)

(Y1) Y-Harness
Futaba (FUTM4135)/Tactic (TACM2751) (4 Req)

NOTE: The R6014HS receiver must be used if the optional drop tank and light controller are installed.

Optional Futaba CPS-1 Channel Power Switch (Light Controller) (FUTM0940)

Optional Drop Tank (TOPA1993)

F6F HELLCAT

ADVANCED SETUP

(Gas/Electric)

Futaba R6014HS Receiver (FUTL7645) (1 Req)

(S1) Servo minimum torque 95 ozf-in (6.8 kgf-cm) (8 Req)
Futaba S3305 (FUTM0045)/Tactic TSX47 (TACM0247)

(S2) Servo minimum torque 40 ozf-in (2.8 kgf-cm) (2 Req)
Futaba S3004 (FUTM0004)/Tactic TSX35 (TACM0235)

(E1) 12" to 16" (305 mm to 406 mm) Servo Extension
Futaba (FUTM4145)/Tactic (TACM2093) (2 Req)

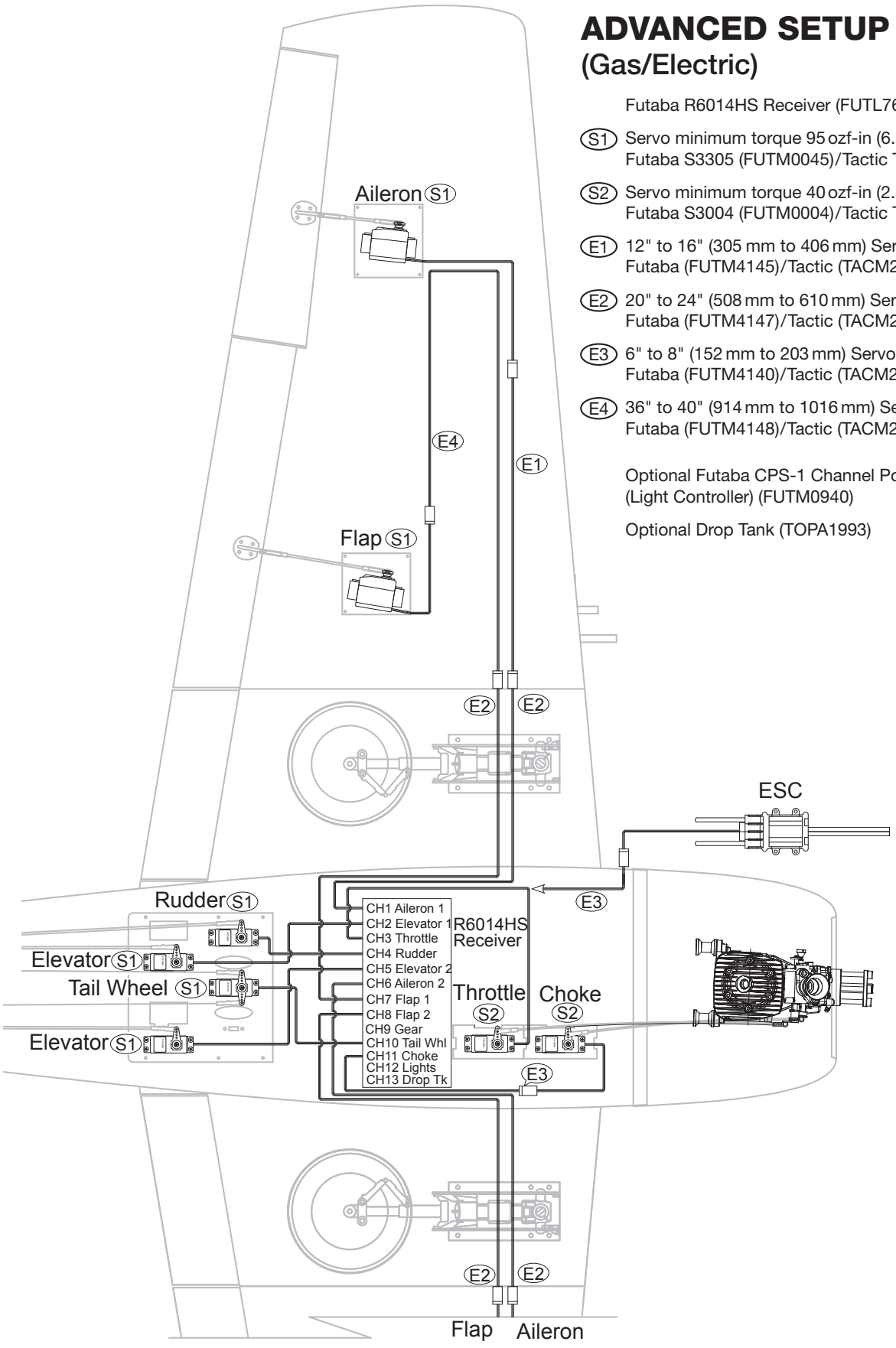
(E2) 20" to 24" (508 mm to 610 mm) Servo Extension
Futaba (FUTM4147)/Tactic (TACM2721) (4 Req)

(E3) 6" to 8" (152 mm to 203 mm) Servo Extension
Futaba (FUTM4140)/Tactic (TACM2701) (1 Req)

(E4) 36" to 40" (914 mm to 1016 mm) Servo Extension
Futaba (FUTM4148)/Tactic (TACM2726) (2 Req)

Optional Futaba CPS-1 Channel Power Switch
(Light Controller) (FUTM0940)

Optional Drop Tank (TOPA1993)



F6F HELLCAT

S.BUS SETUP (Gas/Electric)
(Non S.Bus Servos)

Or { Futaba R6303SB Receiver (FUTL7661) (1 Req)
Futaba R7006SB Receiver (FUTL7673) (1 Req)

(S1) Servo minimum torque 95 ozf-in (6.8 kgf-cm) (8 Req)
Futaba S3305 (FUTM0045)/Tactic TSX47 (TACM0247)

(S2) Servo minimum torque 40 ozf-in (2.8 kgf-cm) (2 Req)
Futaba S3004 (FUTM0004)/Tactic TSX35 (TACM0235)

(D1) SBD-1 S.Bus Decoder 16" (400mm)
(FUTM4193) (4 Req)

(H1) AEC34 S.Bus Hub 20" (500mm)
(FUTM4198) (2 Req)

(H2) AEC33 S.Bus Hub 12" (300mm) (FUTM4195) (1 Req)

(T6) 6-Way Terminal Box (FUTM4199) (1 Req)

(E1) FSH67 Male-to-Male Extension 3" (80mm)
(FUTM4667) (1 Req)

(E2) 12" to 16" (305mm to 406mm) Servo Extension
Futaba (FUTM4145)/Tactic (TACM2093) (2 Req)

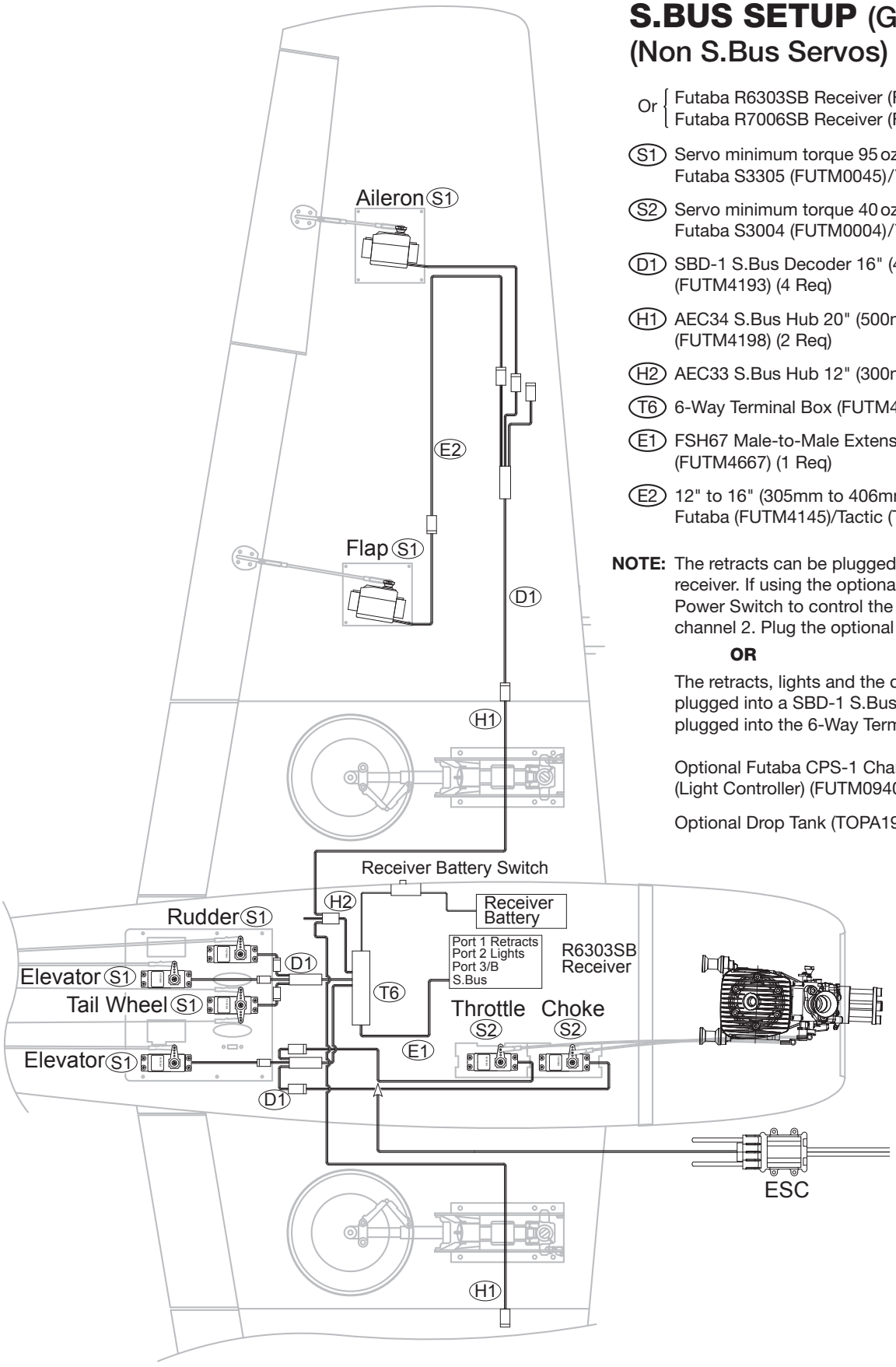
NOTE: The retracts can be plugged into channel 1 in the receiver. If using the optional Futaba CPS-1 Channel Power Switch to control the lights, plug it into channel 2. Plug the optional drop tank into channel 3.

OR

The retracts, lights and the drop tank can also be plugged into a SBD-1 S.Bus decoder. Which is then plugged into the 6-Way Terminal Box.

Optional Futaba CPS-1 Channel Power Switch (Light Controller) (FUTM0940)

Optional Drop Tank (TOPA1993)



F6F HELLCAT

S.BUS SETUP (Gas/Electric)
(S.Bus Servos)

Futaba R7006SB Receiver (FUTL7673) (1 Req)

(S1) Futaba S3071HV Servo (FUTM0717) (8 Req)

(S2) Servo minimum torque 40ozf-in (2.8 kgf-cm) (2 Req)
Futaba S3073HV (FUTM0719)

(E1) 6" to 8" (152mm to 203mm) Servo Extension
Futaba (FUTM4140)/Tactic (TACM2701) (1 Req)

(E2) FSH67 Male-to-Male Extension 3" (80mm)
(FUTM4667) (1 Req)

(E3) Futaba 16" (406mm) Servo Extension
(FUTM4145) (2 Req)

(H1) AEC-33 S.Bus Hub 12" (300mm) (FUTM4195) (3 Req)

(H2) AEC34 S.Bus Hub 20" (500mm) (FUTM4198) (2 Req)

(H3) AEC32 S.Bus Hub 4" (100mm) (FUTM4197) (2 Req)

(T6) 6-Way Terminal Box (FUTM4199) (1 Req)

NOTE: The retracts can be plugged into channel 1 in the receiver. If using the optional Futaba CPS-1 Channel Power Switch to control the lights, plug it into channel 2. Plug the optional drop tank into channel 3. If powering the plane with an electric motor, plug the ESC into channel 4.

Optional Futaba CPS-1 Channel Power Switch
(Light Controller) (FUTM0940)

Optional Drop Tank (TOPA1993)