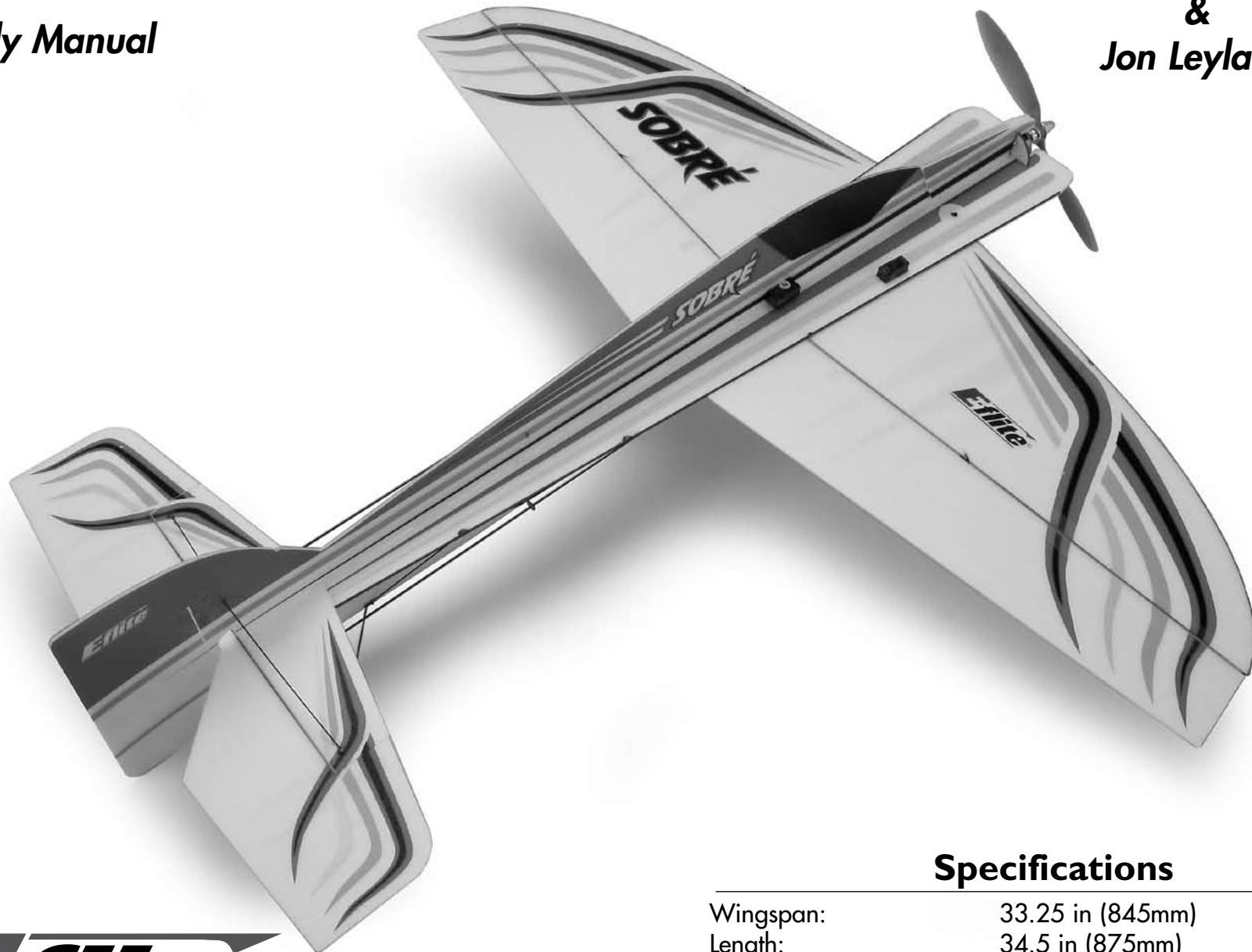


Sobré 3D Profile

Assembly Manual

Designed by:
George Hicks
&
Jon Leyland



Specifications

Wingspan:	33.25 in (845mm)
Length:	34.5 in (875mm)
Wing Area:	260 sq in (16.8 sq dm)
Weight w/o Battery:	6.25-7.5 oz (175-215 g)
Weight w/ Battery:	7.5-9.25 oz (215-260 g)

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Introduction

The Sobré 3D Profile was designed by George Hicks and Jon Leyland, the Sobré 3D ARF has superb slow flight responsiveness so you can fly high-alpha 3D with authority.

Its carbon fiber reinforced Depron foam construction that provides the solid, precise feel of a balsa profile plane without the weight. This allows you to fly the Sobré 3D either inside or outside.

The Sobré is constructed from 3mm laser-cut Depron foam—the standard for durability and quality for pro 3D foamie pilots everywhere. All pieces come with a vibrant screen printed trim scheme.

Carbon Rod Reinforcement

Much of the exceptional flight performance of the Sobré comes from its carbon-reinforced airframe that eliminates flex so control response is crisp and precise. The leading and trailing edges of the wing come out of the box with factory-applied carbon strips. Carbon rods are also included that further strengthen the fuselage and tail.

Using the Manual

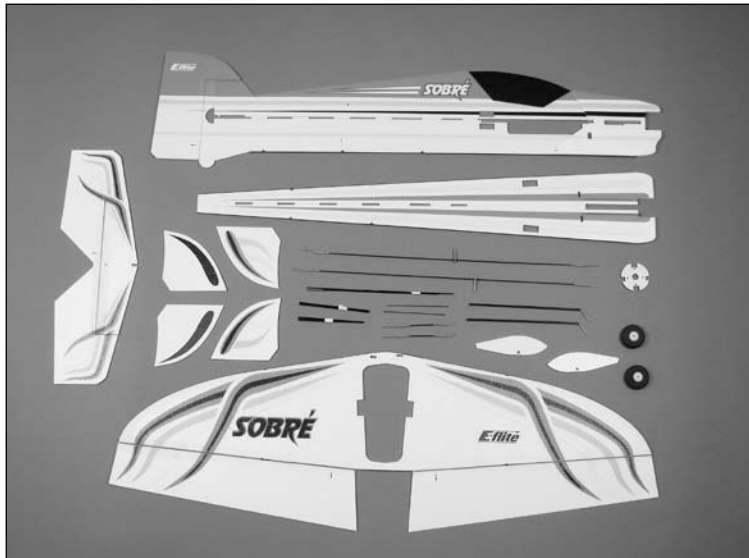
This manual is divided into sections to help make assembly easier to understand, and to provide breaks between each major section. In addition, check boxes have been placed next to each step to keep track of each step completed. Steps with a single circle (○) are performed once, while steps with two circles (○ ○) indicate that the step will require repeating, such as for a right or left wing panel, two servos, etc.

Remember to take your time and follow the directions.

Contents of Kit/Parts Layout

Small Replacement Parts

EFL1101	Pushrods
EFL1102	Carbon Fiber Stiffeners
EFL2305	Wheel Pants
EFL2306	Firewall Mount w/Hardware
EFL2309	Landing Gear
EFLA200	Micro Control Horns
EFLA203	Micro Control Connectors
EFLA221	Foam Park Wheels, 1.5-inch



Required Radio Equipment

You will need a minimum 6-channel transmitter (for proper mixing and dual rate capabilities), crystals, micro receiver, and four sub-micro servos. You can choose to purchase a complete radio system that includes all of these items or, if you are using an existing transmitter, just purchase the other required equipment separately. We recommend the crystal-free, interference-free Spektrum™ DX6 2.4GHz DSM® 6-channel system, which includes a micro receiver and 4 sub-micro 7.5-gram servos. If using your own transmitter, we recommend the use of a JR SPORT™ 6-channel UltraLite receiver and E-flite® S60 Super Sub-Micro servos.

If you own the Spektrum DX7 radio, just add the AR6100 DSM2® 6-channel receiver and four of our E-flite S60 Super 6-gram Sub-Micro servos (EFLRS60).

Complete Radio System

SPM2460 DX6 DSM® 6CH Park Flyer w/4-S75

Or Purchase Separately

JSP30610 6-Channel UltraLite Rx w/o Crystal, Positive Shift
JR/AIR (72MHz)

JSP30615 6-Channel UltraLite Rx w/o Crystal, Negative
Shift Fut/HRC (72MHz)

JRPXFR** FM Receiver Crystal (JR only,
not Spektrum receivers)

Or

SPM6000 AR6000 DSM 6CH Park Flyer Receiver

Or

SPM6100 AR6100 DSM2 6CH Rx (for DX7 only)

And

EFLRS60 6.0-Gram Super Sub-Micro Servo (4)
(5th servo with optional Variable Pitch Propeller,
S75 servo required)

Outrunner Setup

EFLM1150	Park 300 Brushless Outrunner Motor, 1380Kv
EFLA1010	10-Amp Pro Brushless ESC
APC08038SF	8x3.8 Slow Flyer Prop

Or

APC09047SF	9x4.7 Slow Flyer Prop (George Hicks setup)
THP4803SJPL	480mAh 3-Cell 11.1V Li-Po, JST
EFLC3005	Celectra™ 1–3 Cell Li-Po Charger

Note: If you want more power, substitute the recommended Park 300 BL Outrunner, 1380Kv (EFLM1150) with the Park 370 BL Outrunner, 1200Kv with 4mm Hollow Shaft (EFLM1210HS). This motor is not just for variable pitch props, it has great performance for this size model.

Variable Pitch Prop Outrunner Setup

EFLPVPP100	Showstopper Precision Variable Pitch Prop System
EFLM1210HS	Park 370 BL Outrunner, 1200Kv w/4mm Hollow Shaft
EFLA1010	10-Amp Pro Brushless ESC
THP7303SJPL	730mAh 3-Cell 11.1V Li-Po, JST
EFLC3005	Celectra 1–3 Cell Li-Po Charger

Optional Accessories

EFLA110	Power Meter
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Alternative Cyclon Outrunner Setup

CYLCPLR05	CYLCPLR05
EFLM1961	Carbon Fiber Tube, 6", 8mm OD, 1/4" ID
EFLA1010	10-Amp Pro Brushless ESC
APC09038SF	9x3.8 Slow Flyer Prop
THP7303SJPL	730mAh 3-Cell 11.1V Li-Po, JST
EFLC3005	Celectra™ 1–3 Cell Li-Po Charger

Required Tools and Adhesives

Tools & Equipment

EFLA250	Park Flyer Tool Assortment, 5-piece
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Or Purchase Separately

EFLA257	Screwdriver, #0 Phillips (or included with EFLA250)
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Cardstock
Drill
Drill bit: 1/16-inch (1.5mm)
Hobby knife
Felt-tipped pen
Side cutters
Pliers
String
Square
Sandpaper

Adhesives

EFLA209	Foam Compatible CA, Medium
EFLA207	Foam Compatible Activator
	Low Temperature Hot Glue

Note on Lithium Polymer Batteries



Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries used in RC applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of Li-Po batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

Warning

An RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio.

Keep loose items that can get entangled in the propeller away from the prop, including loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the propeller.

Warranty Period

Horizon Hobby, Inc., (Horizon) warrants that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

Safety Precautions

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a service technician.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as **Horizon is not responsible for merchandise until it arrives and is accepted at our facility**. A Service Repair Request is available at www.horizonhobby.com on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. ***Please note: non-warranty repair is only available on electronics and model engines.***

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

Safety, Precautions, and Warnings

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.

This model is controlled by a radio signal that is subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is necessary to always keep a safe distance in all directions around your model, as this margin will help to avoid collisions or injury.

- Always operate your model in an open area away from cars, traffic, or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

Airframe Assembly

Required Parts

Vertical fuselage
Horizontal fuselage
Wing w/aileron
Stabilizer w/elevators
Motor mount

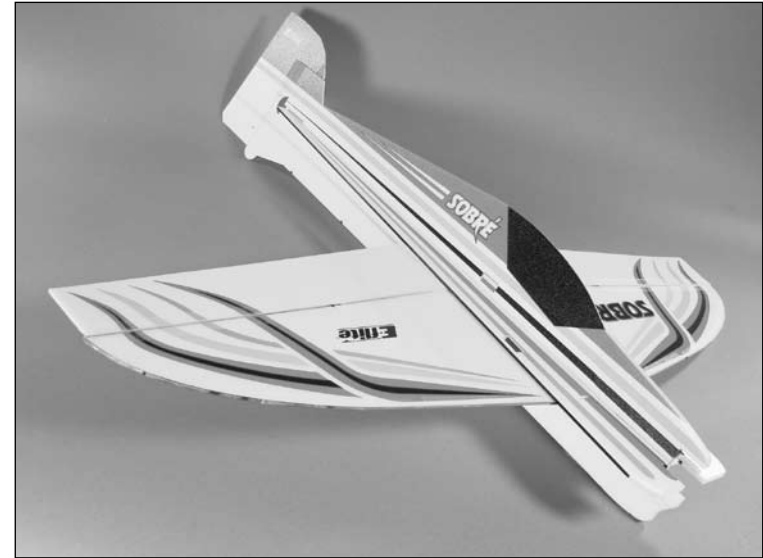
Required Tools and Adhesives

Foam-compatible CA, Medium
Foam-compatible accelerator (can be used to speed up cure time)
Square

- 1. Locate the vertical and horizontal fuselage pieces. Slide the horizontal fuselage into the vertical fuselage starting at the opening for the wing/radio equipment. Use care not to damage any of the alignment tabs on the vertical fuselage.

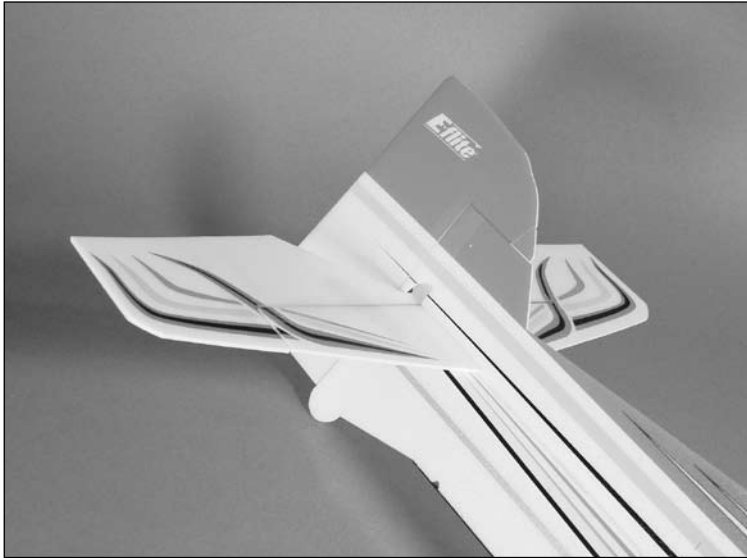


- 2. Locate the wing and slide it into the vertical fuselage underneath the horizontal fuselage. Use care not to damage either the vertical or horizontal fuselage pieces.



Hint: Fold one of the ailerons up and onto the wing to make it a little narrower to install into the fuselage. Push the wing past center to move the aileron back into position, then center the wing.

- 3. Slide the horizontal stabilizer into the fuselage, being careful not to damage any of the alignment tabs. You may need to move the horizontal fuselage out of the vertical fuselage slightly to get the stabilizer into position.



Note: Trim the hinge tape at the rear of the stabilizer to provide clearance of the alignment hole.

- 4. Align the wing with the horizontal fuselage. Use foam-compatible CA to glue the wing to ONLY the horizontal fuselage.

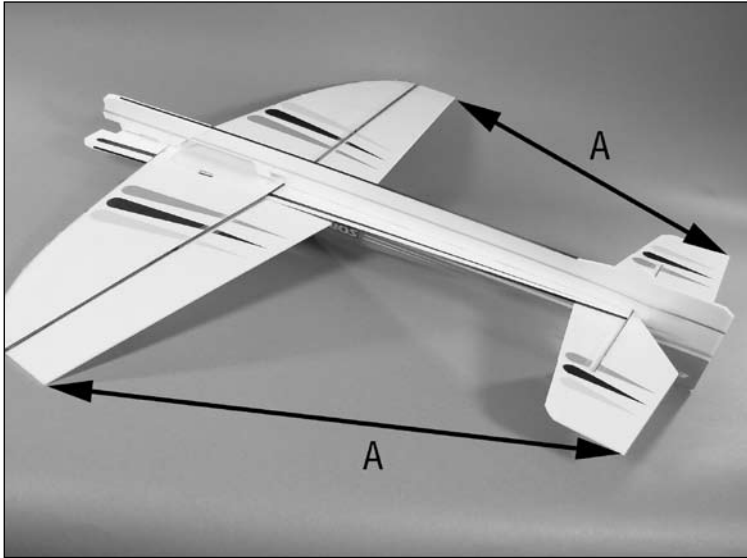


Hint: Use the holes for the aileron servos to aid in the alignment between the horizontal fuselage and wing.

Note: There are slots at the front and rear of the wing. Lightly lift the area and apply CA underneath for a greater gluing area.

Important: If you plan on using CA activator, make sure it is foam compatible. Many accelerators will destroy the foam used on this model.

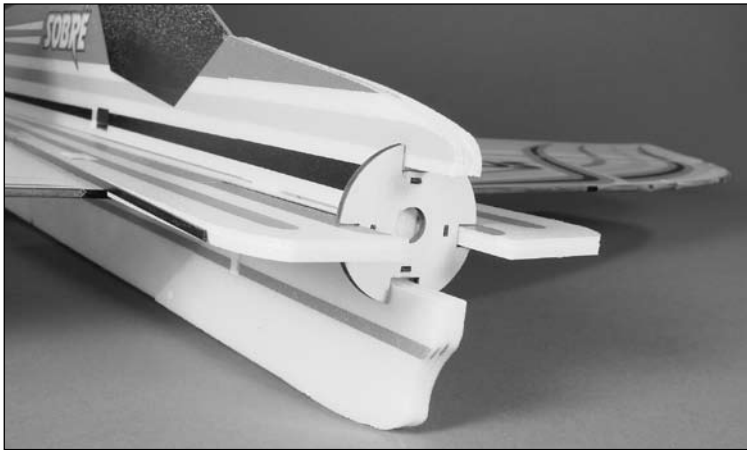
- 5. Measure from the wing tip to the elevator tip on each side of the airframe. The measurements will be the same when the stabilizer/elevator has been aligned with the wing. Use T-pins to hold the stabilizer in position for the next step.



- 6. Use foam-compatible CA to glue the stabilizer to ONLY the horizontal fuselage.



- 7. Place the motor mount in position to aid in the alignment of the vertical and horizontal fuselage pieces. DO NOT glue the mount until instructed to do so. Position the horizontal and vertical fuselage pieces until the mount rests flush against both.



- 8. Apply foam-compatible CA to the joint between the vertical and horizontal fuselage pieces from the leading edge of the wing to the front of the fuselage. Use a square to make sure the two pieces are aligned. Apply CA to both the top and bottom of the vertical fuselage.



- 9. Complete gluing the vertical and horizontal fuselage pieces together. Continue to use a square to keep both pieces in alignment.



Installing the Bracing

Required Parts

Assembled airframe

Carbon rod, 4.6-inch (117mm) (2)

Carbon rod, 5.9-inch (150mm) (2)

Carbon rod, 4.3-inch (110mm) (2)

Carbon rod, 3.9-inch (100mm) (4)

Carbon rod, 3.75-inch (95mm) (4)

Carbon rod, 12.7-inch (323mm) (2)

Carbon rod, 12-inch (305mm) (2)

Required Tools and Adhesives

Foam-compatible CA, Medium

Sandpaper

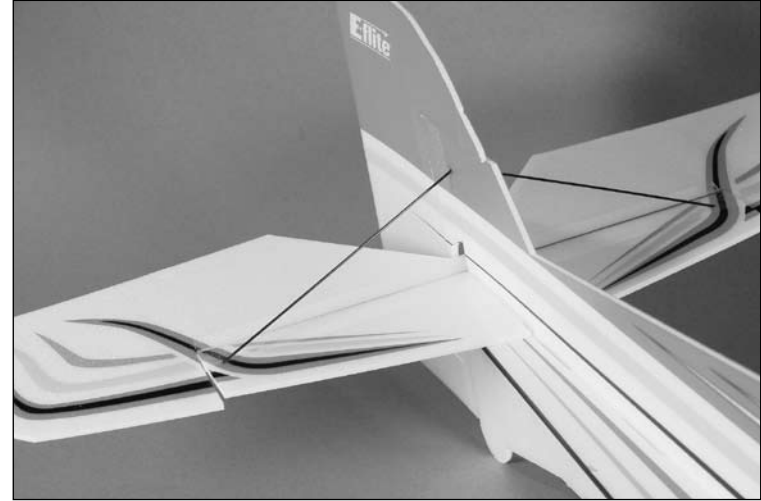
Hobby knife

Side cutters

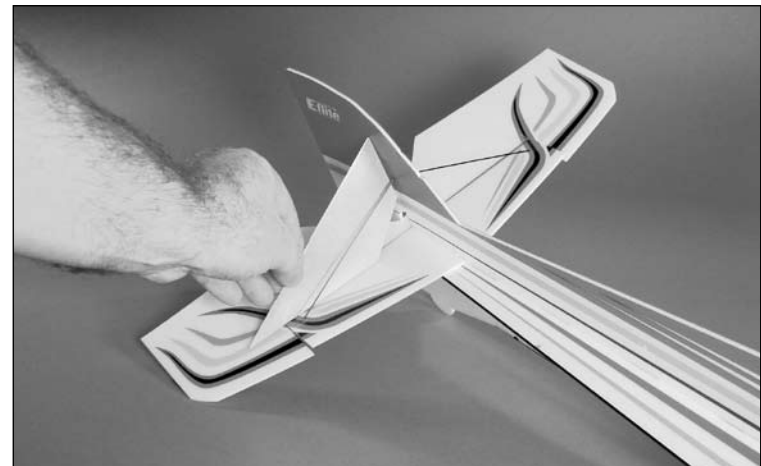
Eye protection

Note: It is important that each carbon rod attaches to the next, and to the carbon blade spars on the edges of the foam. This is necessary to provide the stiffest airframe possible.

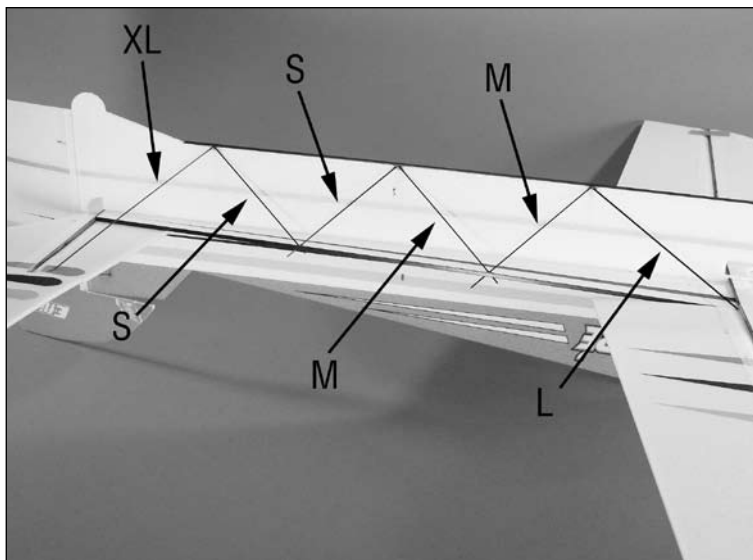
1. Locate the two 4.6-inch (117mm) carbon rods. Pass the rods through the fin and stabilizer. Butt the rods together in the fin and use foam-compatible CA to glue the rods to the fin **ONLY** at this time.



2. Use a square to align the stabilizer with the fin. Once the fin is perpendicular to the stabilizer, use Foam-compatible CA to glue the carbon rod to the stabilizer. Square each side before gluing the rod on that particular side.



- 3. Position the carbon rods in the fuselage, gluing the rods to the vertical fuselage ONLY. This will allow for alignment of the fuselage in the next step.



Note: The length of the rods are:

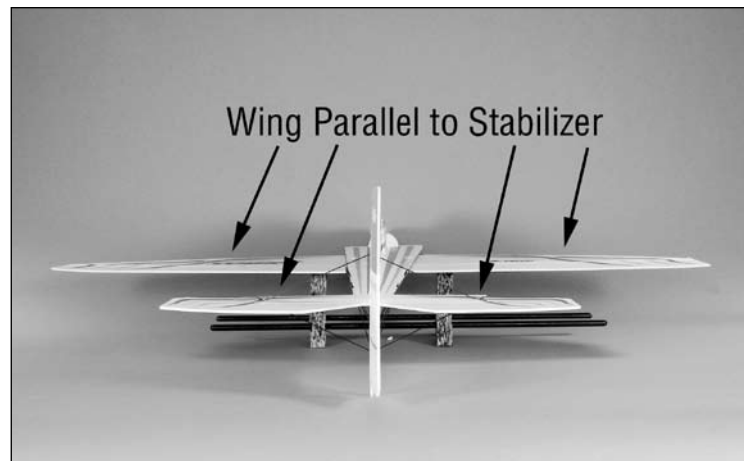
XL = 5.9-inch (150mm)

L = 4.3-inch (110mm)

M = 3.9-inch (100mm)

S = 3.75-inch (95mm)

- 4. With the airframe upright, check that the stabilizer is parallel to the wing. Lightly twist the fuselage as necessary for alignment.

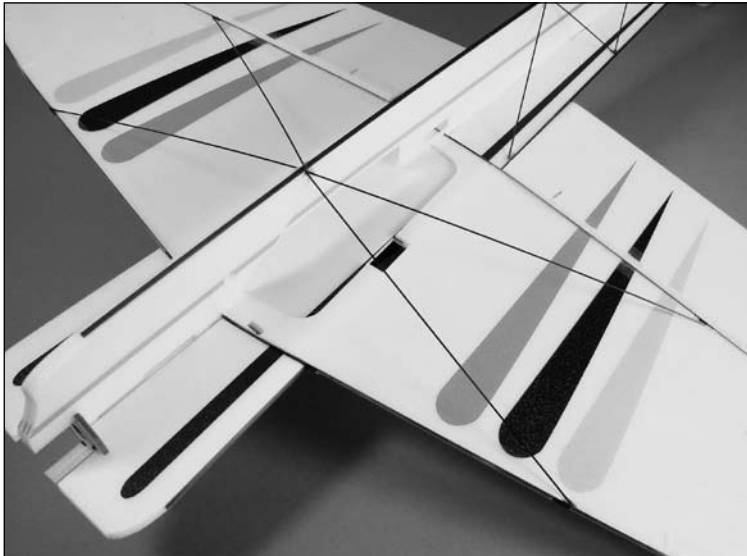


- 5. Use side cutters to trim any excess carbon rods that extend beyond the top of the horizontal fuselage. With the rods resting tightly against the carbon spine and each other, use foam-compatible CA to glue the intersection of the rods to the carbon blade spars.



Important: Make sure to use eye protection when cutting the carbon rods.

- 6. Installing the wing bracing is similar to installing the fuselage bracing, as you want the rods to be glued to the carbon bracing that has been pre-installed on the wing and fuselage. The longer 12.7-inch (323mm) rod is positioned toward the aileron, while the shorter 12-inch (305mm) rod is toward the leading edge. The rods are staggered and fit into notches in the fuselage. Make sure the rods are straight and are not flexing the wing. Use Foam-compatible CA to glue the rods in position. The wing should be flat and parallel to the horizontal stabilizer, while also being perpendicular to the vertical fuselage. Use side cutters to trim away any excess carbon rod.



Radio Installation

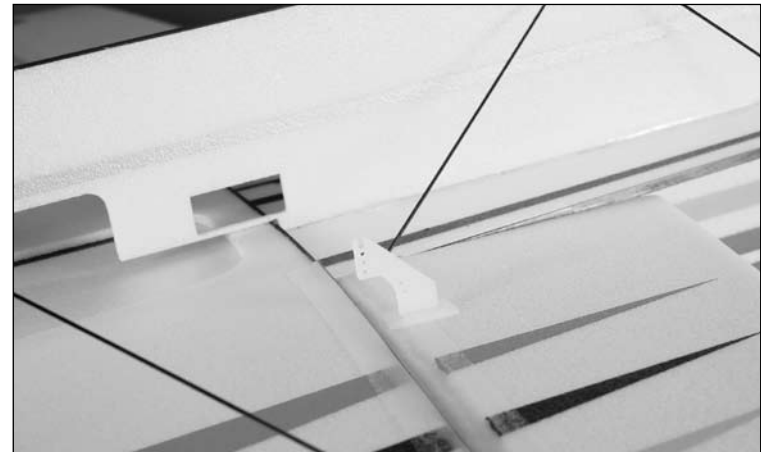
Required Parts

- Airframe
- Servos (4)
- Micro control connector (4)
- Control connector backplate (4)
- Micro control horn (4)
- Control horn backplate (4)
- 2mm x 4mm screw (4)
- Aileron pushrods, 4.5-inch (115mm) (2)
- Rudder pushrod, 19.25-inch (490mm)
- Elevator pushrod, 18.5-inch (470mm)
- Hook and loop material

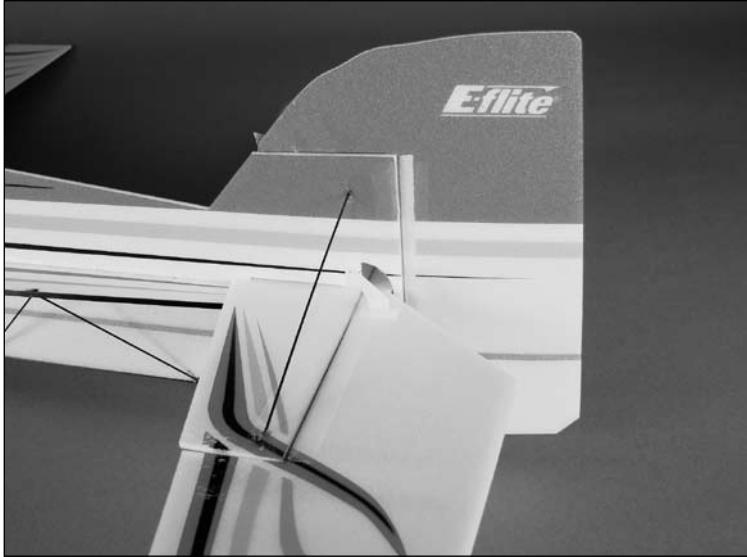
Required Tools and Adhesives

- Foam-compatible CA, Medium
- Low-temperature hot glue
- Drill bit: 1/16-inch (1.5mm)
- Screwdriver, #0 Phillips

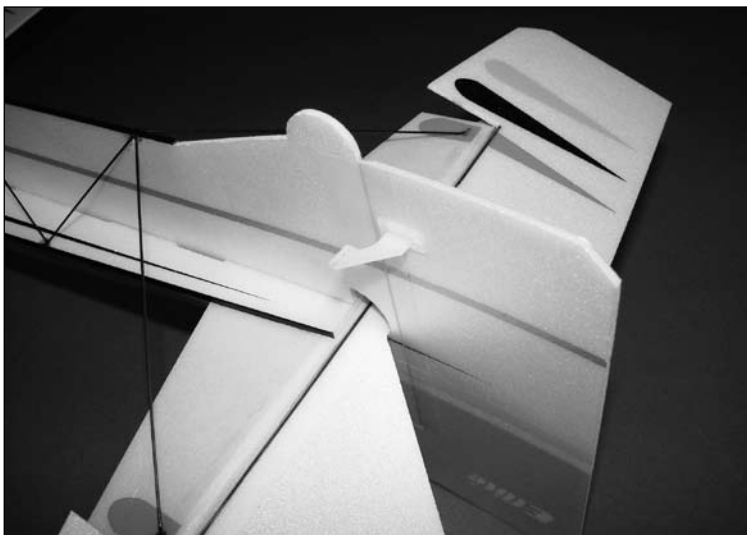
- 1. Install the micro control horn on the aileron using the control horn backplate. Use a couple drops of Foam-compatible CA to keep the backplate in position.



- 2. Install the elevator micro control horns at this time. Make sure the rudder horn extends opposite of the elevator horn.



- 3. Install the rudder micro control horns at this time as well. Make sure the rudder horn extends opposite of the elevator horn.



- 4. Remove the servo arms from the four servos. Drill a $\frac{1}{16}$ -inch (1.5mm) hole in the end of all four of the servo arms.



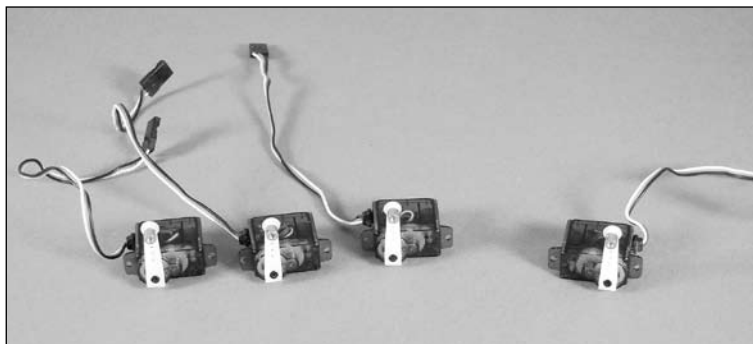
Note: We then suggest using the longest servo arms available for your servo to help achieve maximum control throws for 3D flying.

- 5. Slide a micro control connector into the hole drilled in the previous step. Secure the connector using a control connector backplate from the opposite side of the connector. Repeat for all four servo arms.



Note: The connectors will face out away from the servo when installed. Remove any unused sides or portions of the servo arms.

- 6. Plug the servos into the receiver. Turn on the transmitter and receiver and check the operation of the servos. After centering the trims and sub-trims, attach the servo arms as shown. Note the direction of the arms on the servos.



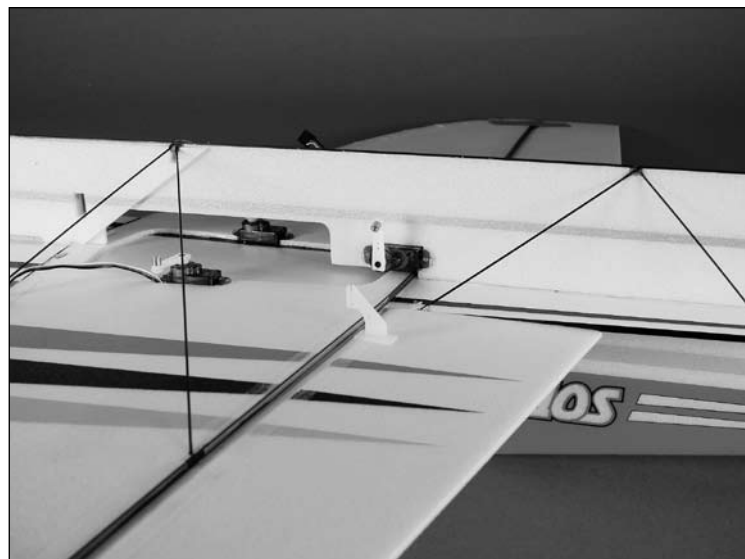
- 7. Use hot glue to install the aileron servos.

Note: The servo arms face toward the tips of the wing and the output shaft of the servo is toward the leading edge of the wing.

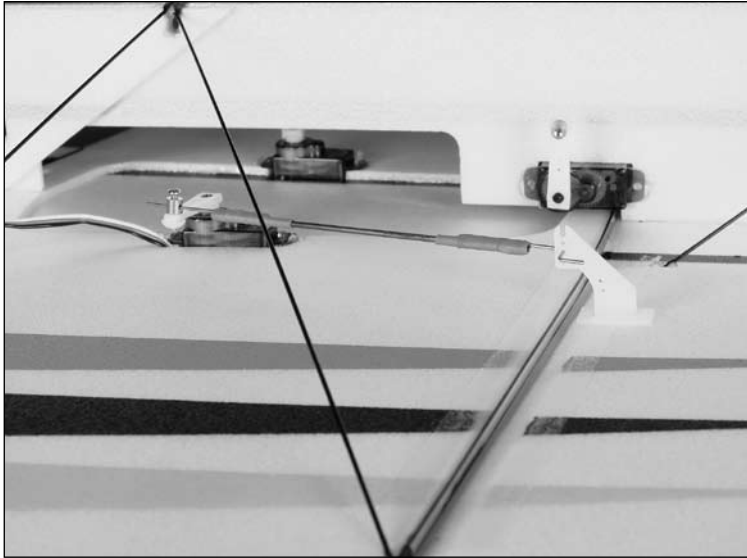


Note: Position the aileron servo arm parallel to the aileron hinge line.

- 8. Install the rudder and elevator servos using hot glue. The output shafts of both servos face the front of the aircraft.

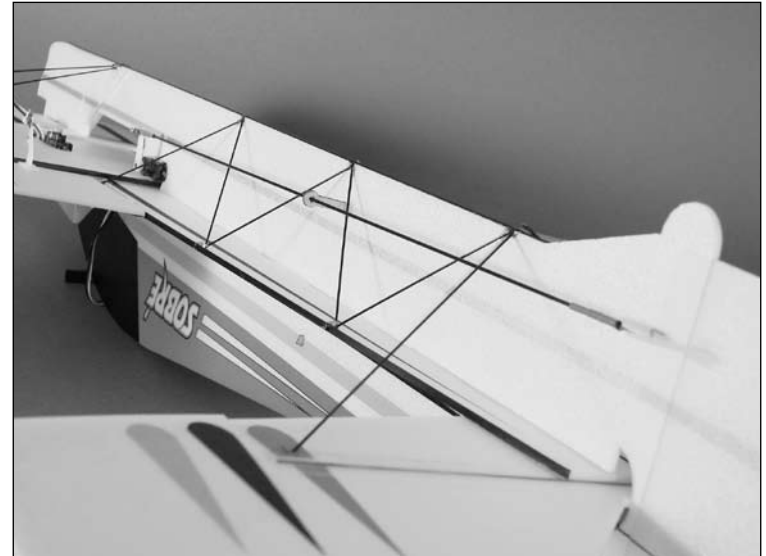


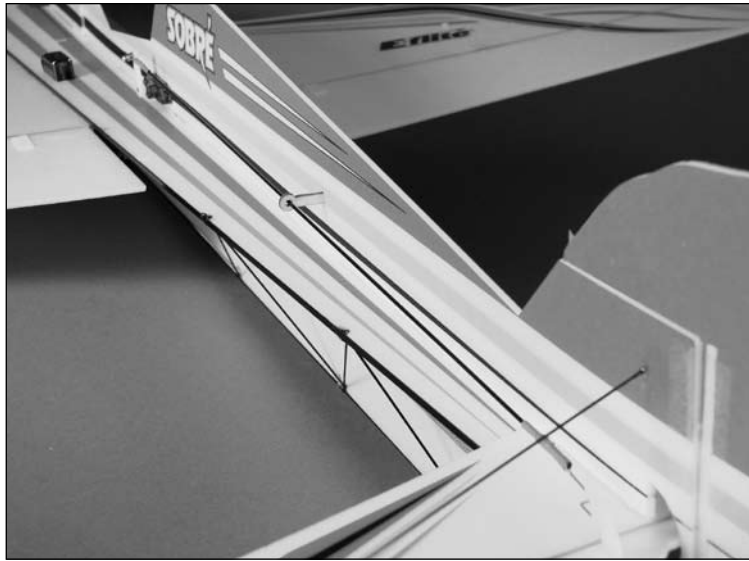
- ○ 9. Locate the 4.5-inch (115mm) pushrod. Install the "Z" bend into the middle hole of the control horn that is one away from the aileron. Pass the pushrod through the connector. Check that the aileron servo is centered using the radio and parallel to the aileron hinge line. Hold the aileron parallel to the wing and use the 2mm x 4mm screw in the connector to secure the pushrod wire. Repeat for the other aileron pushrod.



Note: Use the hole in the control horn closest to the aileron for the greatest amount of throw. Moving the pushrod outward, away from the aileron, will result in gradually decreasing the control throws.

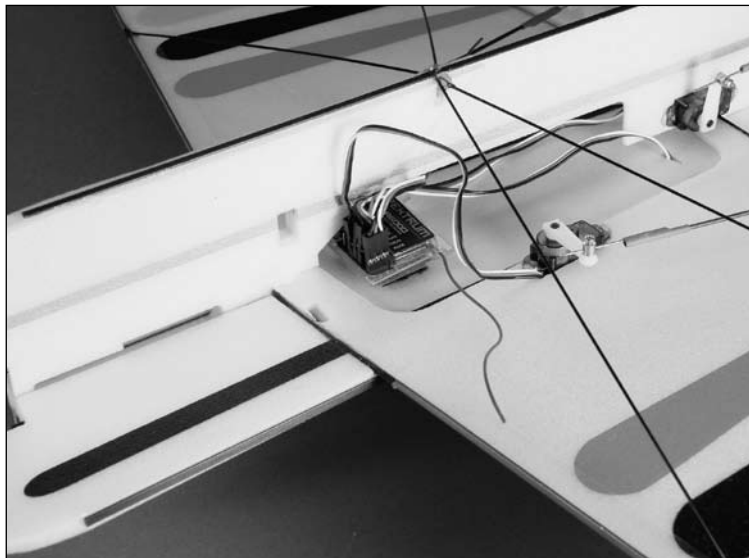
- 10. Install the 19.25-inch (490mm) pushrod for the rudder, and the 18.5-inch (470mm) pushrod for the elevator. The rudder pushrod goes under the stabilizer brace and on the outside of the fuselage bracing. Don't forget to check to make sure the servos and control surfaces are centered before tightening the 2mm x 4mm screws. Slide the pushrod braces into the notches in the fuselage so the pushrods can move freely. Use Foam-compatible CA to glue the pushrod guides to the fuselage.





Note: The rudder and elevator pushrods attach to the inside hole of the control horns.

- 11. Install the receiver using hook and loop material. The exact position of the receiver may change, depending on how your aircraft balances.



Motor and Battery Installation

Required Parts

- Airframe
- Plywood motor mount
- Motor w/hardware
- Electronic speed control
- Propeller
- #2 x 8mm or #3 x 8mm wood screw (included with motor)
- Hook and loop material

Required Tools and Adhesives

- Foam-compatible CA, Medium
- Drill bit: 1/16-inch (1.5mm)
- Cardstock
- Felt-tipped pen
- Hobby knife
- Screwdriver, #0 Phillips

Optional

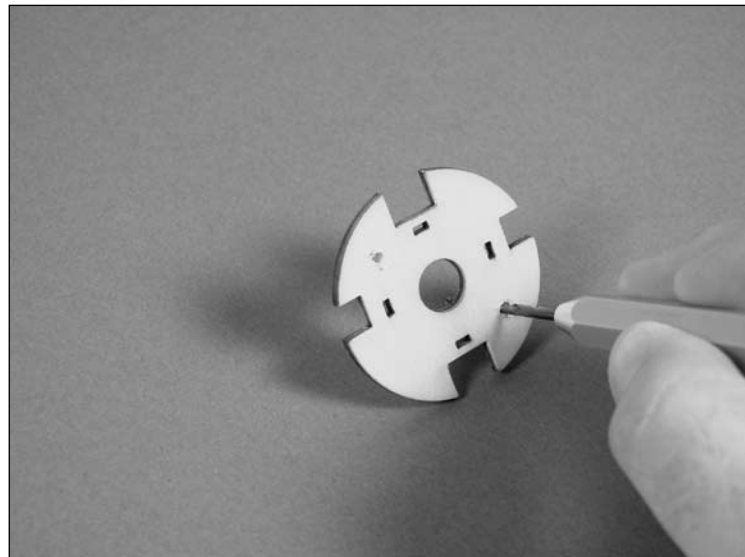
- Variable pitch prop
- Sub-micro servo (1)

- 1. Locate the plywood motor mount and aluminum X-mount for your particular motor. Center the motor mount on the plywood and mark the holes for the mounting screws using a felt-tipped pen making sure the holes you mark do not interfere with the carbon spars the mount will glue into.



Hint: If the hole in your mount matches the diameter of the hole in the plywood mount, use a rolled-up piece of cardstock placed through the two holes to center the motor mount on the plywood mount.

- 2. Drill pilot holes for the mounting holes marked on the plywood mount using a $\frac{1}{16}$ -inch (1.5mm) drill bit.



- 3. Reposition the shaft on the motor as shown to allow the use of the propeller adapter. Make sure to secure the shaft using instructions included with your motor.



- 4. Attach the mount to your particular motor.



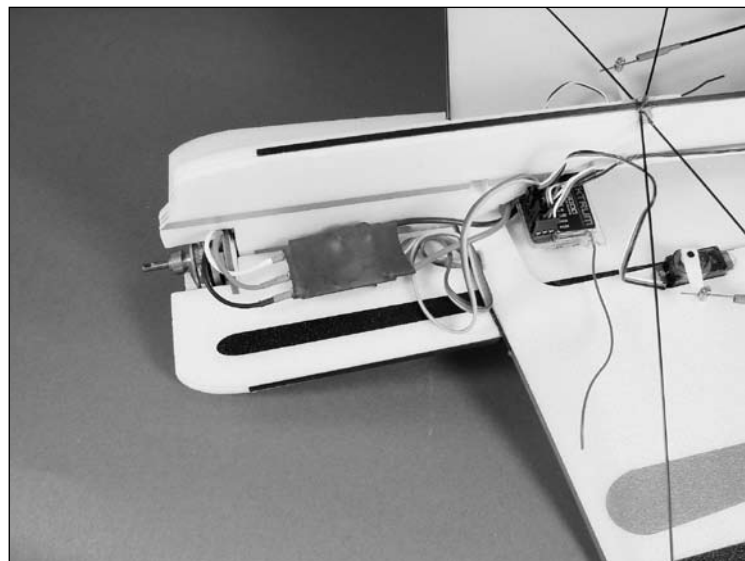
- 5. Attach the motor to the plywood mount using two #2 x 8mm wood screws or two #3 x 8mm wood screws.



- 6. Place the plywood motor mount in position. Make sure the mount is tight against the vertical and horizontal fuselage. Trim the fuselage as necessary to provide clearance for the motor leads. Use Foam-compatible CA to securely glue the mount to the vertical and horizontal fuselage.



- 7. Solder any necessary connectors to your speed control. Plug the speed control into the throttle channel of the receiver and to the motor. Use hook and loop to secure the speed control to the fuselage.



Note: It is suggested to secure the motor wires to the fuselage to prevent them from coming in contact with the propeller or servos when performing extreme maneuvers.

Important Information About Your Brushless ESC

Make sure your ESC brake is programmed to Off. Also, be sure to use an ESC with the proper 9V cutoff when using 3-cell Li-Po packs, or 6V cutoff when using 2-cell Li-Po packs.

- 8. Turn on the transmitter and bring the throttle trim and stick to the low throttle position. Plug the battery into the speed control and check the operation of the motor. It should rotate counterclockwise when viewed from the front of the aircraft. Use the instructions provided with your ESC to make corrections to the direction of rotation of the motor if necessary.



Note: Never check the motor rotation on the bench with the propeller installed. The plane could move and cause serious injury. Always check the motor without the propeller to avoid injury.

- 9. Install the propeller using the instructions provided with your motor or propeller system.



Important Information About Your Propeller

It is very important to check to be sure the propeller is balanced before installing on the propeller shaft. An unbalanced propeller may damage the motor, airframe and other components, or cause poor flight and performance characteristics.

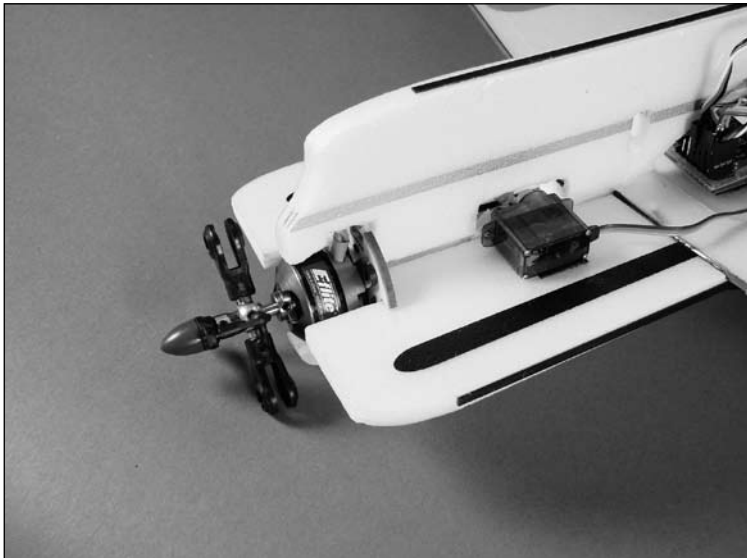
Note: If it is necessary to enlarge the hole in the propeller, make sure to check the balance of the propeller afterwards.

Optional Variable Pitch Prop Installation

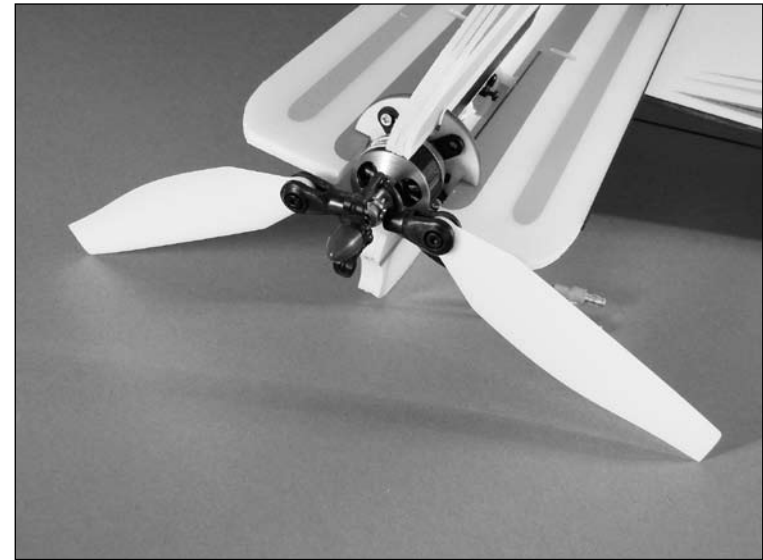
Note: The following outlines the installation of a VPP for your Sobré. Be sure to consult the manual for your chosen variable pitch prop unit before proceeding with installation of the pitch servo and linkage. Due to the variety of VPP systems available, there may be some variation in how the servo and linkage can be installed.

Install the motor and mount as described in the previous section. You will have to trim the fuselage to allow for clearance of the control linkage and servo.

- 1. Install the pitch servo as shown. Take your time to make sure the servo horn and linkage does not bind against the fuselage. Also check that the linkage is not being put under a load when connected. Use a hobby knife to remove any portions of the fuselage that cause binding. Use foam-compatible CA or hot glue to secure the servo to the fuselage.



- 2. Install the propeller using the instructions provided with your motor or propeller system.



Note: If you are using a variable pitch propeller for your Sobré, you should prepare the motor as instructed in the instructions included with your propeller system.

- 3. Check that the linkage for your variable pitch prop unit can move freely without binding on the fuselage. Trim away any material necessary if any binding is noticed.

Landing Gear Installation

Required Parts

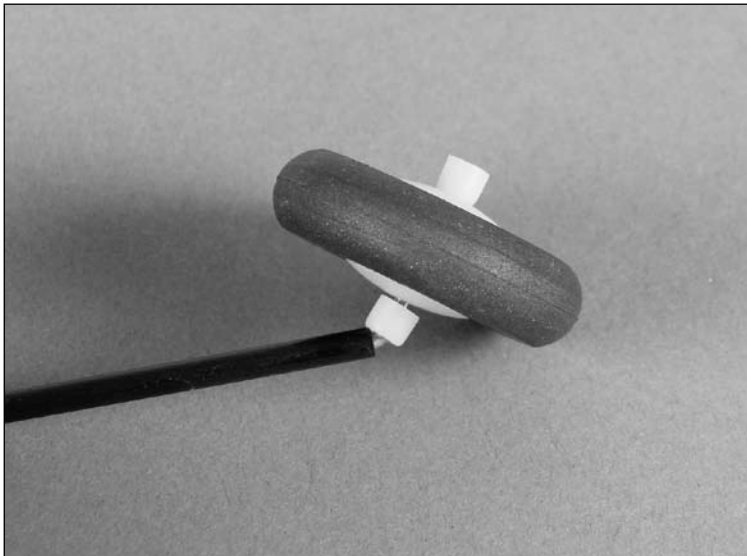
- Airframe
- Landing gear strut (2)
- Wheel retainer (4)
- Wheel pant (2)
- 1.5-inch (38mm) foam wheel (2)
- Landing gear support disk (2)

Required Tools and Adhesives

- Foam-compatible CA

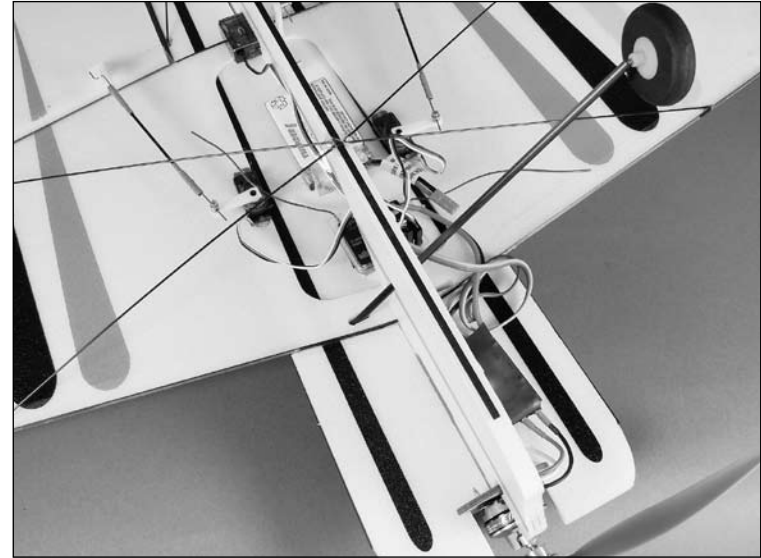
The landing gear is optional. If you plan on saving weight, or flying from very rough surfaces, it is suggested to skip this section.

- ○ 1. Locate the landing gear strut, two wheel retainers and the wheel. Use Foam-compatible CA to install the wheel retainer onto the strut. The retainers will sandwich the wheel in position.



Note: Use care not to get CA on the wheel, preventing it from rotating on the strut.

- ○ 2. Pass the landing gear through the opening in the fuselage and wing. DO NOT use glue until instructed to do so.



- 3. Repeat Steps 1 and 2 for the remaining strut.

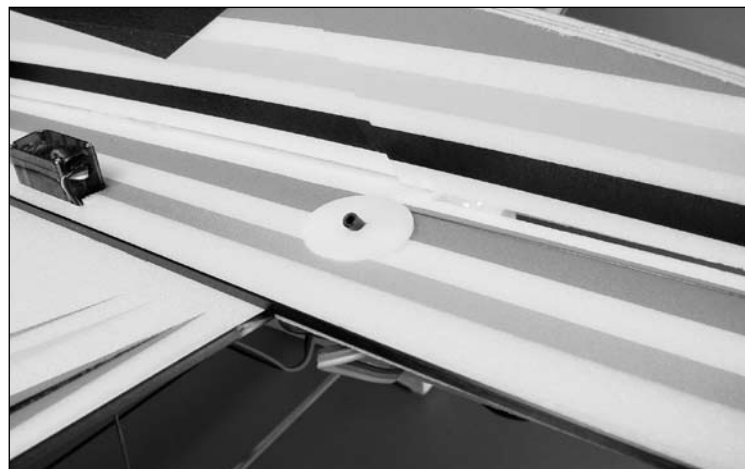
- 4. The struts should extend roughly $\frac{3}{32}$ -inch (2.5mm) through the top of the wing. This will give the landing gear support disks plenty of strut to attach to.



Hint: You can just drop the disks into position and check to make sure the strut extends beyond the disk instead of measuring it.

- 5. Check that the wheels are parallel or have slight toe-in. Use foam-compatible CA to glue the struts to the fuselage and each other. Make sure the wing is sitting parallel to the ground so the wheels are located at the same height.

- 6. Install the landing gear support disks using foam-compatible CA. Make sure to glue the disks securely to both the horizontal fuselage and landing gear struts.



- 7. Use foam-compatible CA to glue the wheel pants to the wheel retainers. Make sure the pants are positioned so they won't drag on the ground during takeoff and landing before applying the CA.



Installing the Optional Side Force Generators

Required Parts

- Side force generator (upper) (2)
- Side force generator (lower) (2)
- Carbon rod, 4.3-inch (110mm) (4)

Required Tools and Adhesives

- Foam-compatible CA
- Square

Note: The side force generator (SFG) installation is optional. If you plan on saving weight, or flying from very rough surfaces, it is suggested to skip this section.

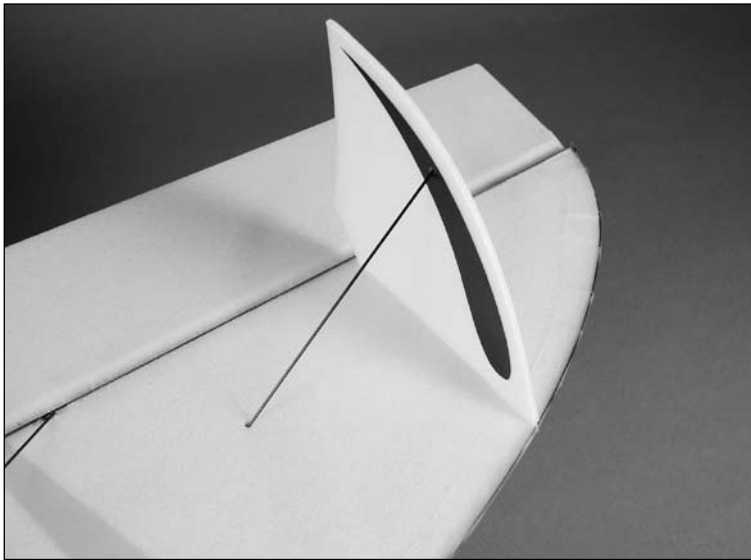
- ○ 1. Locate the upper side force generator. Position the SFG on the wing, aligning it with the two holes that have been pre-drilled in the wing. Use a square to position the SFG perpendicular to the wing. Use Foam-compatible CA to glue the SFG to the wing.



- ○ 2. Locate a 4.3-inch (110mm) carbon rod. Position the rod in the predrilled holes in the SFG and wing. Use foam-compatible CA to glue the carbon rod to the SFG ONLY at this time.



- ○ 3. Glue the bottom SFG into position. Glue the 4.3-inch (110mm) carbon rod to the SFG. Check that the top and bottom SFGs are still perpendicular to the wing. Use Foam-compatible CA to glue the carbon rods to each other and to the wing.



- 4. Repeat Steps 1 through 3 for the remaining upper and lower SFG installation.

Battery Installation

Required Parts

Battery

Hook and loop tape

- 1. Use hook and loop tape to secure the battery to the underside of the wing. The location of the battery can be adjusted to correct for the Center of Gravity described later in this manual.



Control Throws

Turn on the transmitter and receiver of your Sobré. Check the movement of the rudder, elevator and ailerons using the transmitter. Reverse the direction of the servos at the transmitter if necessary.

Use a ruler to adjust the throw of the elevator, ailerons and rudder. Adjust the position of the pushrod at the control horn to achieve the following measurements when moving the sticks to their endpoints.

Measurements are taken at the widest point on the surface.

	Low Rate	High Rate
Ailerons:		
Up	2-inch (51mm)	3-inch (76mm)
Down	2-inch (51mm)	3-inch (76mm)
Elevator:		
Up	1 7/8-inch (32mm)	2 7/8-inch (63mm)
Down	1 7/8-inch (32mm)	2 7/8-inch (63mm)
Rudder:		
Right	1 5/8-inch (41mm)	2 1/4-inch (57mm)
Left	1 5/8-inch (41mm)	2 1/4-inch (57mm)

These are general guidelines measured from our own flight tests and those of Jon Leyland. You can experiment with higher rates to match your preferred style of flying.

The following are the control throws suggested by George Hicks:

Pattern Throws:

Ailerons:

Up	2-inch	(51mm)	(35 degrees)
Down	2 1/4-inch	(57mm)	(40 degrees)
Expo	25%		

Elevator:

Up	1 13/16-inch	(46mm)	(40 degrees)
Down	2-inch	(51mm)	(45 degrees)
Expo	30%		

Rudder:

Right	2-inch	(51mm)	(40 degrees)
Left	2-inch	(51mm)	(40 degrees)
Expo	35%		

3D Throws:

Ailerons:

Up	2 1/2-inch	(63mm)	(45 degrees)
Down	2 7/8-inch	(74mm)	(55 degrees)
Expo	40%		

Elevator:

Up	2 1/2-inch	(63mm)	(65 degrees)
Down	2 5/16-inch	(58mm)	(55 degrees)
Expo	50%		

Rudder:

Right	2 1/4-inch	(57mm)	(45 degrees)
Left	2 1/4-inch	(57mm)	(45 degrees)
Expo	45%		

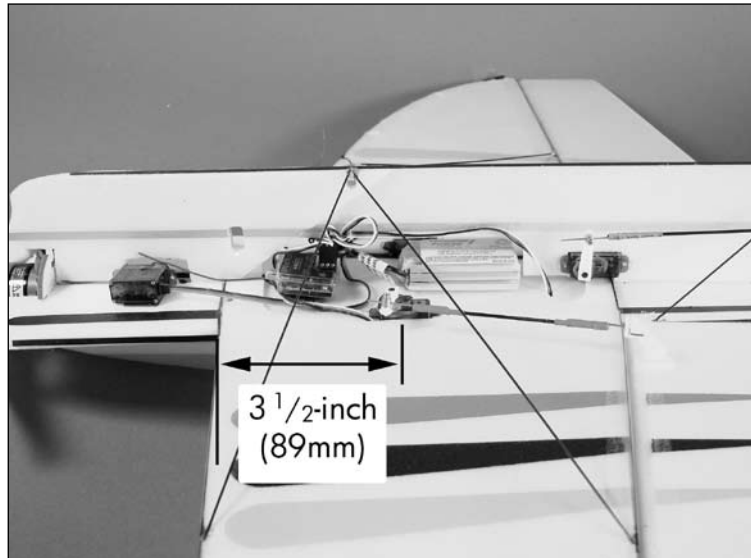
(maximum available throws)

Note: George Hicks' recommended 3D throws should be considered for advanced pilots only. George uses the E-Flite 3D arms with the connector all the way out (last hole-most throw). He uses the lowest hole over the hinge line at the control surface on all surfaces.

Center of Gravity

Caution: Do not inadvertently skip this step!

The recommended Center of Gravity (CG) location for the Sobré is 3 1/2-inch (89mm) behind the center of the leading edge of the wing against the fuselage. After the first flights, the CG position can be adjusted for your personal preference.



Note: George Hicks CG location is 4-inch (100mm)

Range Testing the Radio

- 1. Be sure to range check your radio before each flying session. This is accomplished by turning on your transmitter with the antenna collapsed. Turn on the receiver in your airplane. With your airplane on the ground and the engine running, you should be able to walk 30 paces (approximately 100 feet) away from your airplane and still have complete control of all functions. If not, don't attempt to fly! Have your radio equipment checked out by the manufacturer.
- 2. Double-check that all controls (aileron, elevator, rudder and throttle) move in the correct direction.
- 3. Be sure that your transmitter batteries are fully charged, per the instructions included with your radio.

Preflight

Check Your Radio

Before going to the field, be sure that your batteries are fully charged per the instructions included with your radio. Charge both the transmitter and receiver pack for your airplane. Use the recommended charger supplied with your particular radio system, following the instructions provided with the radio. In most cases, the radio should be charged the night before going out flying.

Before each flying session, be sure to range check your radio. See your radio manual for the recommended range and instructions for your radio system. Each radio manufacturer specifies different procedures for their radio systems. Next, start the motor. With the model securely anchored, check the range again. The range test should not be significantly affected. If it is, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

Note: Keep loose items that can get entangled in the propeller away from the prop. These include loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the propeller.

Double-check that all controls (aileron, elevator, rudder and throttle) move in the correct direction.

Check the radio installation and make sure all the control surfaces are moving correctly (i.e. the correct direction and with the recommended throws). Test run the motor and make sure it transitions smoothly from off to full throttle and back. Also ensure the engine is installed according to the manufacturer's instructions, and it will operate consistently.

Check all the control horns, servo horns, and clevises to make sure they are secure and in good condition. Replace any items that would be considered questionable. Failure of any of these components in flight would mean the loss of your aircraft.

Flying the Sobré

Flying the Sobré is about as fun as it can get at the park. A very light wing loading and extreme control throws make for some exciting 3D flying. Verify that your CG is at the correct location as per the manual and that you have your rates set up to your liking. Verify that all control throws are in the correct direction and the motor spins in the correct direction as well.

Point the model into the wind and add some throttle trim until the motor begins to turn. This will be your flight idle. Now, apply power slowly. You will find the model will become airborne very quickly and at a low speed. This model excels at flying slow and easy, as well as slow and extreme. Trim the model for level flight at half throttle. Only use full throttle for maneuvering. Do not fly this model fast or at full throttle in level flight. Doing this will result in the flight controls fluttering and a potential catastrophic failure of the airframe.

You will find you can adjust the CG to your liking by moving the battery pack fore or aft on the wing.

To land the Sobré just reduce the throttle to idle and feed in up elevator until the model settles into a slightly nose high attitude. Gently fly the model down to the landing spot with a final flair at touchdown. You will find the model will have a very short roll out. We hope you enjoy the Sobré as much as we do.

Happy landings.

2007 Official AMA National Model Aircraft Safety Code

GENERAL

- 1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully or deliberately fly my models in a careless, reckless and/or dangerous manner.
- 4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.
- 5) I will not fly my model unless it is identified with my name and address or AMA number on or in the model. (This does not apply to models while being flown indoors.)
- 6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

RADIO CONTROL

- 1) I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
- 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
- 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in front of the flight line. Intentional flying behind the flight line is prohibited.

- 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)
- 5) Flying sites separated by three miles or more are considered safe from site-to-site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement, which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters.

Documents of agreement and reports may exist between (1) two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.

- 6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.
- 7) At air shows or model flying demonstrations, a single straight line must be established, one side of which is for flying, with the other side for spectators.
- 8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no powered model may be flown closer than 25 feet to any person.
- 9) Under no circumstances may a pilot or other person touch a powered model in flight.



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