

# NexSTAR<sup>TM</sup> ARE

**ALMOST-READY-TO-FLY RADIO CONTROLLED MODEL AIRPLANE**

## INSTRUCTION MANUAL



**Wingspan:** 68-3/4 in [1745mm]    **Length:** 56 in [1420mm]  
**Wing Area:** 722 sq in [46.6 dm<sup>2</sup>]  
**Weight:** 6.25–6.75 lb [2835–3060 g]  
**Wing Loading:** 21 oz/ft<sup>2</sup> [63 g/dm<sup>2</sup>]    **Radio:** 4-5 channel  
**Engine:** .46–.50 cu in [7.5–8.2cc] two-stroke  
.52–.56 cu in [8.5–9.2cc] four-stroke

## WARRANTY

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

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

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

To make a warranty claim, send the defective part or item to Hobby Services at this address.

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

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

**READ THROUGH THIS INSTRUCTION MANUAL FIRST. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.**



Champaign, Illinois  
(217) 398-8970

E-mail: [airsupport@hobbico.com](mailto:airsupport@hobbico.com)

## TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	2
<b>AMA</b> .....	2
<b>SAFETY PRECAUTIONS</b> .....	3
<b>DECISIONS YOU MUST MAKE</b> .....	3
Radio Equipment .....	3
Engine Recommendations .....	3
<b>ADDITIONAL ITEMS REQUIRED</b> .....	4
Hardware and Accessories .....	4
Building Supplies .....	4
Optional Supplies and Tools .....	4
<b>IMPORTANT BUILDING NOTES</b> .....	4
<b>KIT INSPECTION</b> .....	5
<b>ORDERING REPLACEMENT PARTS</b> .....	6
<b>ASSEMBLY</b> .....	9
Assemble the Wing .....	9
Install the Engine .....	11
Alternate Engine Installation .....	13
Landing Gear Installation .....	14
Install the Tail Surfaces .....	16
Radio Installation .....	17
<b>GET THE MODEL READY TO FLY</b> .....	20
Charge the Batteries .....	20
Check the Control Directions .....	20
Check the Control Throws .....	21
Adjust the Throttle .....	21
Balance the Model .....	22
Identify Your Model .....	22
<b>AMA SAFETY CODE</b> .....	23
<b>ENGINE SAFETY PRECAUTIONS</b> .....	23
<b>CHECK LIST</b> .....	24
<b>FINAL PREPARATIONS</b> .....	24
Gather Your Tools .....	24
At the Shop Checklist .....	24
Flight Preparation .....	25
Check the Frequency .....	25
Check the Controls .....	25
Range Check the Radio .....	25
Fueling the Nexstar ARF .....	25
<b>FLYING</b> .....	26
Taxiing .....	26
Takeoff .....	26
Flight .....	26
Landing .....	26
<b>MAINTENANCE TIPS</b> .....	27
<b>AFTER YOU MASTER THE NEXSTAR ARF</b> .....	27
Removing the SpeedBrakes Training Flaps .....	27
Removing the SpinControl Airfoil Extensions .....	27
Installing Dual Aileron Servos .....	27
<b>NEXSTAR SELECT ARF FAQs</b> .....	30
<b>FIN SKETCH</b> .....	31

## INTRODUCTION

Congratulations and thank you for purchasing a Hobbico NexSTAR ARF, the next generation in Radio Control Trainers. You have made the right decision by purchasing a “real” model airplane with the latest in aerodynamic and assembly technologies. Once assembled and set up, the NexSTAR will give you many hours of relaxing easy flying. Under the guidance of an experienced flight instructor, all you have to do is to concentrate on learning to fly. And after you have mastered the NexSTAR, your engine and radio may be transferred to your next model.

For the latest technical updates or manual corrections to the Hobbico NexSTAR ARF, visit the Hobbico web site at [www.hobbico.com](http://www.hobbico.com). Open the “Airplanes” link, and then select the Hobbico NexSTAR ARF. If there is new technical information or changes to this model a “tech notice” box will appear in the upper left corner of the page.

## AMA

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



Academy of Model Aeronautics  
5151 East Memorial Drive  
Muncie, IN 47302-9252  
Tele. (800) 435-9262  
Fax (765) 741-0057

Or via the Internet at: <http://www.modelaircraft.org>

### IMPORTANT!!!

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

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

1. Your Hobbico NexSTAR 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 Hobbico NexSTAR ARF, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.
2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.
3. You must take time to **build straight, true and strong**.
4. You must use an R/C radio system that is in first-class condition, and a correctly sized engine and components (fuel tank, wheels, etc.) throughout the building process.
5. You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.
6. You must check the operation of the model before **every** flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check clevises or other connectors often and replace them if they show any signs of wear or fatigue.
7. If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

**NOTE:** We, as the kit manufacturer, provide you with a top quality kit and great instructions, but ultimately the quality 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 Hobbico NexSTAR ARF that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

### ***Radio Equipment***

There are four different ways you can set up your NexSTAR. The "standard," most economical setup would be to use four servos - three servos in the fuselage (for the throttle, rudder and elevator) and one servo in the wing for the ailerons. This requires only a standard, 4-channel radio. The second option would be to use two servos in the wing (one for each aileron). Using two aileron servos will increase the roll rate (for when you are ready to graduate to slightly more advanced aerobatics). This option will require a Y-harness to connect the servos, but a standard 4-channel radio may still be used. The third option would be to "mix" the two aileron servos electronically so the ailerons can be operated as both ailerons and flaps (flaperons). Doubling the ailerons as flaps adds another dimension to your flying regimen as you will be able to execute super-slow landings and flight. The use of flaperons will require a minimum 5-channel computer radio for mixing the servos electronically. The fifth option is for those who have a 5-channel, non-computer radio, but still desire functional flaps. This will require a sixth servo to operate the flaps separately. Instructions are provided on how to cut the ailerons so the inboard portion can be operated as flaps. All of these options may be done with standard servos and the regular 500mAh-600mAh battery pack that came with your radio (special servos or a larger battery pack are not required).

### ***Engine Recommendations***

The recommended engine size range for the Hobbico NexSTAR ARF is .46 to .50 two-stroke or .52 to .56 four-stroke. If an engine in the upper end of the size range is used, remember that this is a model that is intended to fly at scale-like speeds, so throttle management should be practiced. Any engine in the lower range will be able to fly this model with authority. Therefore, the engines in the high range are only recommended for modelers who fly at high altitude.

## ADDITIONAL ITEMS REQUIRED

In addition to the items listed in the “**Decisions You Must Make**” section, the following is a list of hardware and accessories required to finish the Hobbico NexSTAR ARF. Order numbers are provided in parentheses.

### Hardware & Accessories

- 6" [150mm] Servo extension (HCAM2701 for Futaba®)
- R/C foam rubber (1/4" HCAQ1000, or 1/2" HCAQ1050)
- 3/4" to 1" [19 to 25mm] Heavy duty transparent tape
- Hook & loop material (1" x 6" [25 x 150mm] GPMQ4480)
- Stick-on segmented lead weights (GPMQ4485)

If you decide to install two aileron servos in your wing connected to the same channel, you will also need the following:

- 1 additional standard servo (for a total of 5)
- Y-harness (HCAM2751 for Futaba)
- 12" [300mm] servo extension (HCAM2711 for Futaba)
- 2 Control horns
- 4 2-56 x 3/4" screws
- 2 Nylon clevises
- 2 Nylon faslinks
- 2 Silicone retainers
- 2 2-56 x 6" pushrods

If you decide to install two aileron servos in your wing connected to different channels for flaperons, you will need:

- 1 additional standard servo for a total of 5
- 5-channel computer radio
- (2) 12" [300mm] servo extension (HCAM2711 for Futaba)
- 6" [150mm] servo extension (HCAM2701 for Futaba)
- 2 Control horns
- 4 2-56 x 3/4" screws
- 2 Nylon clevises
- 2 Nylon faslinks
- 2 Silicone retainers       2 2-56 x 6" pushrods

If you decide to install two aileron servos and one flap servo in your wing, you will need:

- All materials listed in one of the options above
- 1 additional standard servo for a total of 6
- 6" [150mm] servo extension (HCAM2701 for Futaba)
- 2 Nylon clevises       2 Nylon faslinks
- 2 Silicone retainers       2 2-56 x 6" pushrods

### Building Supplies

In addition to common household tools and hobby tools, this is the “short list” of the most important items required to build the Hobbico NexSTAR ARF.

- #1 Hobby knife (HCAR0105)
- #11 blades (5-pack, HCAR0211)
- 3/4" to 1" [19mm to 25mm] Heavy duty transparent tape.
- Threadlocker thread locking cement (GPMR6060)
- Small metal file (TAMR4046)

## Optional Supplies & Tools

Here is a list of optional tools mentioned in the manual that will help you build the Hobbico NexSTAR ARF.

- Top Flite® MonoKote® sealing iron (TOPR2100)
- Pliers with wire cutter (HCAR0630)
- Switch & Charge Jack Mounting Set (GPMM1000)
- Servo horn drill (HCAR0698)
- AccuThrow™ Deflection Gauge (GPMR2405)
- CG Machine™ (GPMR2400)
- Precision Magnetic Prop Balancer™ (TOPQ5700)

## IMPORTANT BUILDING NOTES

There are two types of screws used in this kit:

**Socket Head Cap screws** are designated by a number and a length.

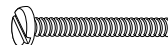
For example #6 x 3/4"



*This is a number six screw that is 3/4" long.*

**Machine screws** are designated by a number, **threads per inch**, and a length.

For example 4-40 x 3/4"



*This is a number four screw that is 3/4" long with forty threads per inch.*

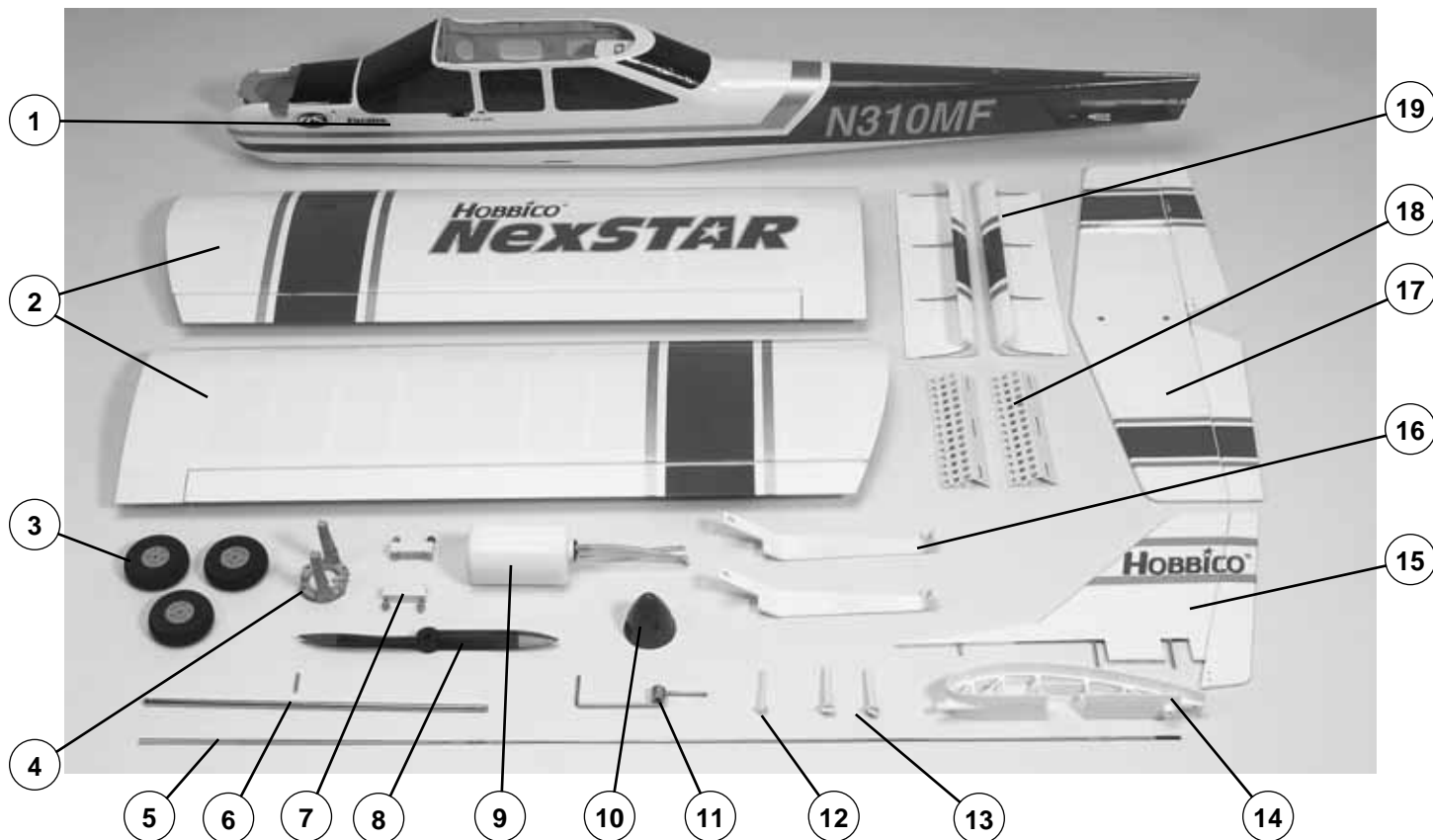
- **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.
- SHCS is the abbreviation for Socket Head Cap Screw which is a machine screw with a socket head.
- The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check these measurements anyway. To view this information visit the web site at **www.hobbico.com** and click on “Technical Data.” Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.
- **To convert inches to millimeters, multiply inches by 25.4 (25.4mm = 1")**

## KIT INSPECTION

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

**Great Planes Product Support**  
**3002 N Apollo Drive, Suite 1**  
**Champaign, IL 61822**

**Telephone: (217) 398-8970, ext. 5**  
**Fax: (217) 398-7721**  
**E-mail: [airsupport@greatplanes.com](mailto:airsupport@greatplanes.com)**



### Parts photographed

1. Fuselage
2. Wings
3. Wheels
4. Engine mount
5. 2mm Control rods
6. Wing joiner rods
7. IsoSmooth engine mount
8. 11" x 5" [280 x 127mm] NexSTAR nylon propeller
9. Assembled fuel tank
10. 2-1/2" [64mm] Spinner
11. Nose landing gear
12. 1/4-20 x 2" [51mm] Nylon wing bolt
13. EasyAlign tail bolts
14. CenterCore wing Joiner
15. Fin/Rudder
16. Aluminum main landing gear
17. Stab/elevator
18. SpeedBrakes training flaps
19. Leading Edge Airfoil Extensions

### Parts not photographed

- 4 Nylon clevis
- 4 Nylon Faslinks
- 4 Silicone retainers
- 2 Nylon Aileron Control Horns
- 4 #4 x 3/4" [19mm] Wood screws
- 6 #4 x 5/16" [8mm] Machine screws
- 4 4mm x 3/4" [19mm] Machine screws
- 4 4mm x 1-1/8" [30mm] Machine screws
- 4 4mm Nuts
- 4 4mm Washers
- 4 4mm Lock washers
- 2 Nylon control horns
- 4 #2 x 1/2" [12mm] Wood screws
- 2 Screw-lock pushrod connector

## ORDERING REPLACEMENT PARTS

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

To locate a hobby dealer, visit the Hobbico web site at [www.hobbico.com](http://www.hobbico.com). Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer. If a hobby shop is not available, replacement parts may also be ordered from Tower Hobbies® at [www.towerhobbies.com](http://www.towerhobbies.com), or by calling toll free (800) 637-6050.

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

Mail parts orders and payments by personal check to:  
 Hobby Services  
 3002 N Apollo Drive, Suite 1  
 Champaign IL 61822

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

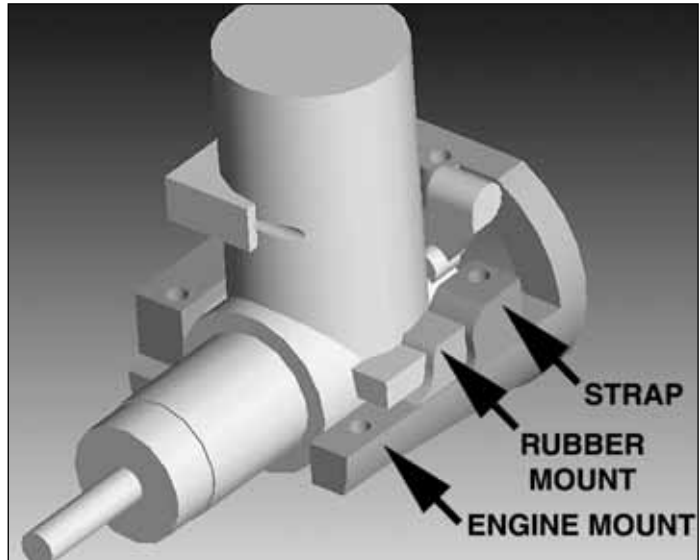
If additional assistance is required for any reason contact Product Support by e-mail at:

[productsupport@greatplanes.com](mailto:productsupport@greatplanes.com)  
 or by telephone at (217) 398-8970.

### REPLACEMENT PARTS LIST

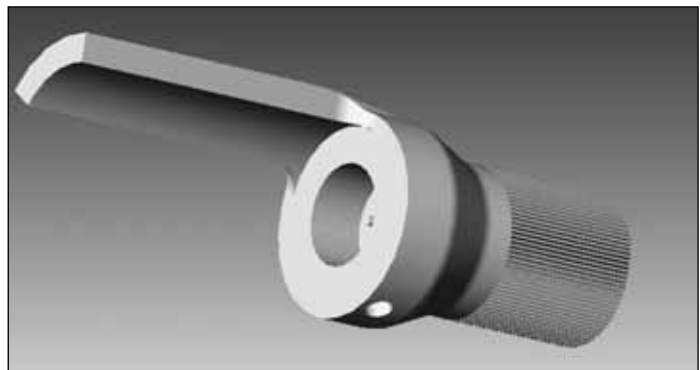
Order Number	Description	How to purchase
HCAA3736	Wing kit . . . . .	Local hobby dealer
HCAA3737	Spin-Control Airfoil Extensions/Speed Brakes . . . . .	Local hobby dealer
HCAA3738	Fuselage kit w/o engine mount . . . . .	Local hobby dealer
HCAA3739	Engine mount . . . . .	Local hobby dealer
HCAA3740	IsoSmooth engine mount . . . . .	Local hobby dealer
HCAA3741	Tail set . . . . .	Local hobby dealer
HCAA3742	Landing gear . . . . .	Local hobby dealer
HCAA3743	Decal set . . . . .	Local hobby dealer
HCAA3744	NexSTAR nylon 11 x 5 prop . . . . .	Local hobby dealer
	Missing pieces . . . . .	Contact Product Support
	Instruction manual . . . . .	Contact Product Support
	Full-size plans . . . . .	Not available

## IsoSmooth™ Engine Mount



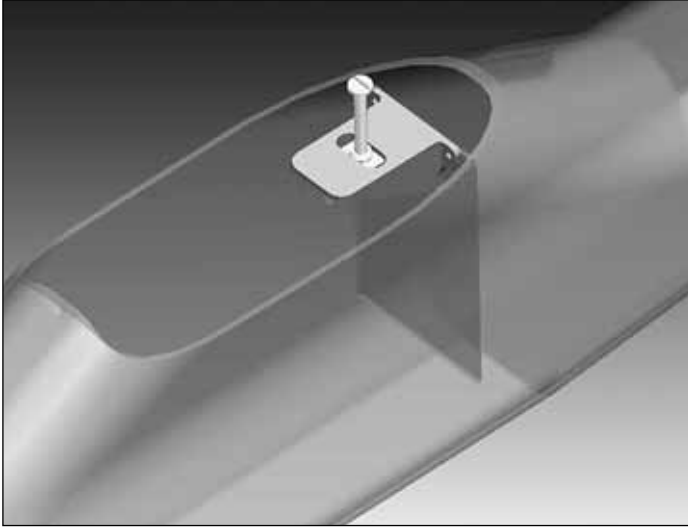
This new mount may look like other aluminum engine mounts, but make no mistake, it is unique. The engine mounting lugs are installed in rubber boots that absorb engine vibration to protect your airframe and radio components, increasing their life span. The IsoSmooth engine mount works so well that you should check your propeller for nicks or cracks, because with this mount, you won't feel a thing.

## Extender/Limiter



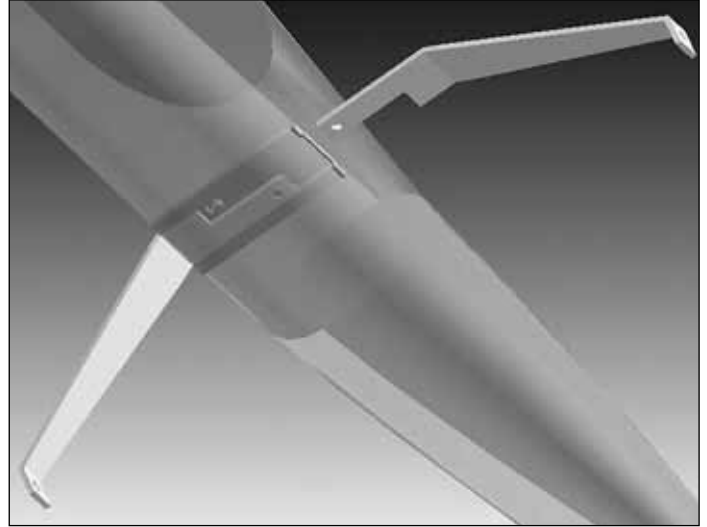
The NexSTAR ARF is equipped with a high speed needle valve extender/limiter to make engine adjustments safer and easier. The extender/limiter has been set at the factory to limit the movement of the high speed needle so that it cannot be adjusted out of the optimum range. This way the engine will always work at its peak performance without the worry of engine damage. The extender/limiter will allow the needle to be set from the leanest desired setting for safe operation (fully clockwise) to the richest desired setting for break in (fully counterclockwise).

## ***PivotFlex™ Wing Mounting System***



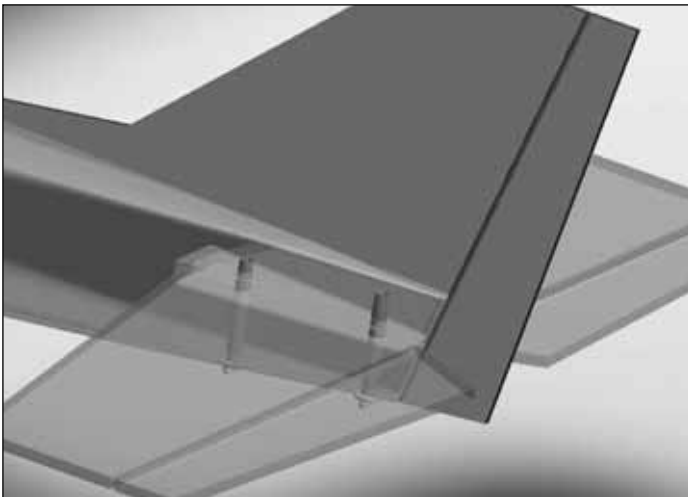
The wings of most trainers are mounted with rubber bands. This allows for some flexibility in case of a hard landing. Rubber bands work well, but they are just plain ugly and a mess. The PivotFlex Wing Mounting System combines the looks of a bolt-on system with the flexibility of rubber bands. The new system allows the wing to move under sudden loads (such as a wing tip hitting the ground) and will release the wing from the airplane under extreme loads such as a crash—all that while looking great.

## ***SnapGear™ Landing Gear***



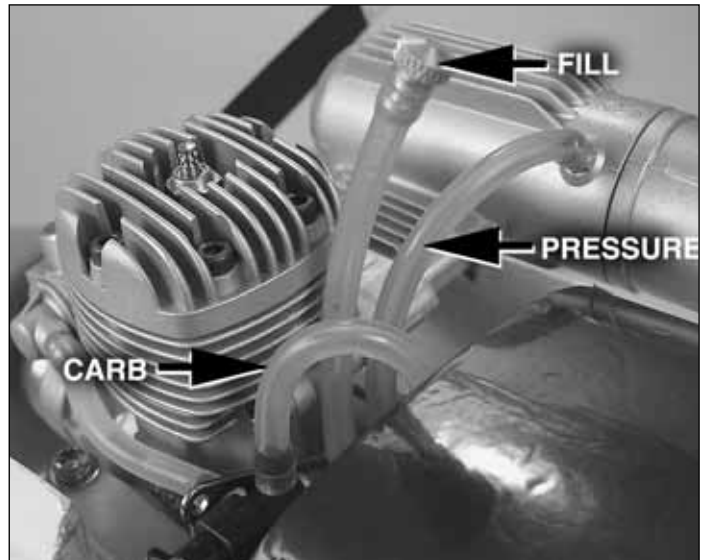
To speed and simplify assembly, the Hobbico NexSTAR ARF comes equipped with the SnapGear Landing Gear. This new gear offers effortless and tool less main landing gear installation. It takes only a few seconds to install the landing gear and it can also be removed from the fuselage in seconds.

## ***EasyAlign™ Tail Mounting System***



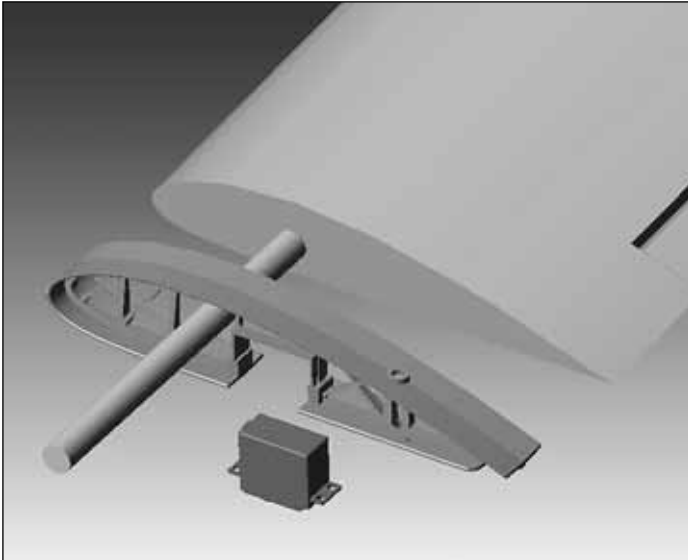
The EasyAlign Tail Mounting System aligns the stabilizer with the fuselage and fin while tightening the tail bolts. The tail bolts slide into blocks in the fuselage under the stabilizer. As the tail bolts are tightened, both the fin and stab are aligned and secured while strengthening the aft area of the fuselage. No tools are necessary for installation.

## ***Three-Line Fuel System***



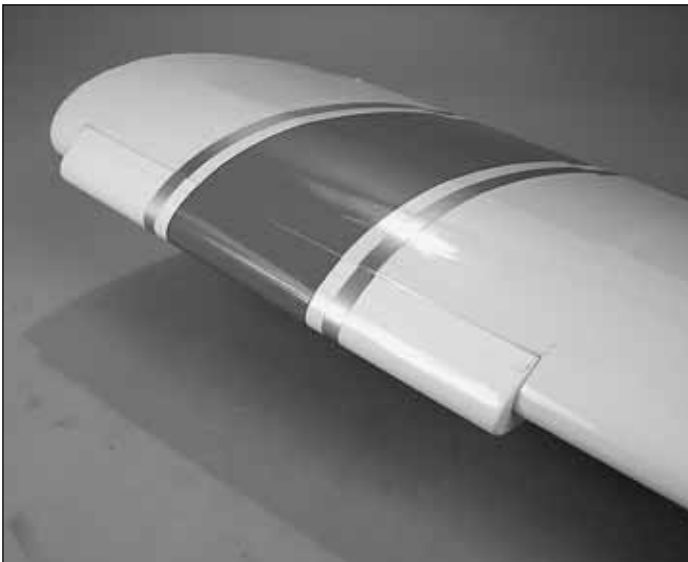
The Hobbico NexSTAR ARF uses a three-line fuel line system to simplify fueling and de-fueling.

## ***CenterCore™ Wing Rib***



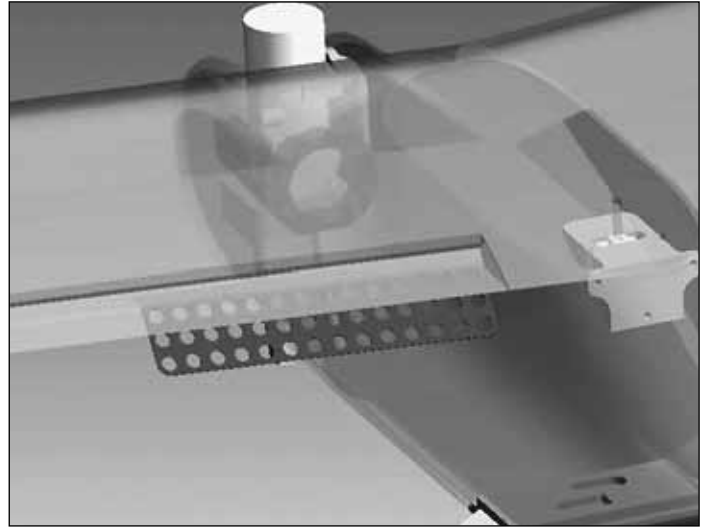
The CenterCore wing rib is a nylon part that comes preinstalled onto one of the wing halves. It performs several functions: it aligns the two wing halves; it is a mount for the aileron servo; the incorporated wing dowel holds the wing in place; and it holds and aligns the wing bolt to the PivotFlex™ Wing Mounting System. Joining the wing halves and wing installation on the fuselage has never been easier.

## ***SpinControl™ Airfoil Extensions***



These are the extensions that are installed at the leading edge near the tips of the wings. These extensions were developed by NASA (National Aeronautics and Space Administration) to help light airplanes prevent stalls and spins during landing approaches. That is exactly what they do for your NexSTAR ARF. They slow down the airplane, increase its stall resistance and prevent it from spinning, all desired characteristics of a trainer airplane. The wing extensions can be removed after you become proficient with the NexSTAR ARF, for faster, more aerobatic performance.

## ***SpeedBrakes™ Training Flaps***



The SpeedBrakes Training Flaps were designed to allow your NexSTAR ARF to fly slower, reduce top speed and shorten the landing approach. Thanks to these flaps, your NexSTAR ARF will bleed off speed quickly when the throttle is reduced so that long landing approaches are not necessary. Additionally, the top speed is considerably reduced to make the airplane easier to handle. These SpeedBrakes can also be removed after acquiring some experience with the airplane for faster, more aerobatic performance.



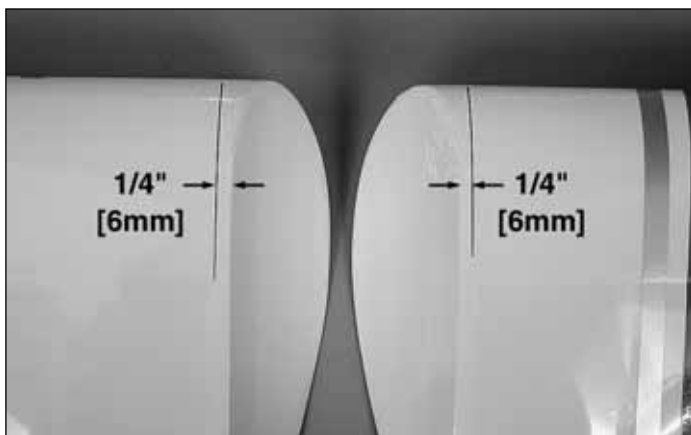
# ASSEMBLY

## Assemble the Wing

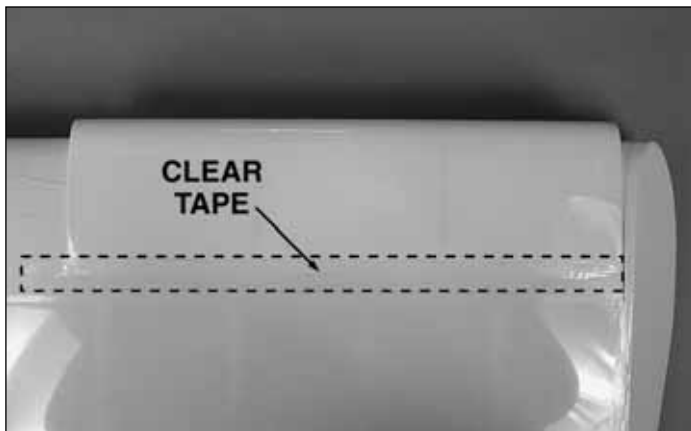
For this section you will need:

- |                              |   |
|------------------------------|---|
| 1 Left wing                  | 2 Nylon horns   |
| 1 Right wing                 | 4 #4 x 3/4" [19mm] Wood screws                        |
| 2 Airfoil extensions         | 6 #4 x 5/16" [8mm] Wood screws                        |
| 2 SpeedBrakes training flaps | 1 Standard servo                                      |
| 1 CenterCore wing rib        | 1 Phillips screwdriver                                |
| 1 Steel wing rod             | 3/4" to 1" [19 to 25mm] Heavy duty clear plastic tape |
| 1 Anti-Rotation steel pin    |   |
| 2 Nylon clevises             |   |
| 2 Nylon faslinks             |   |
| 2 Silicone retainers         |   |
| 2 2-56 X 6" [150mm] pushrods |   |

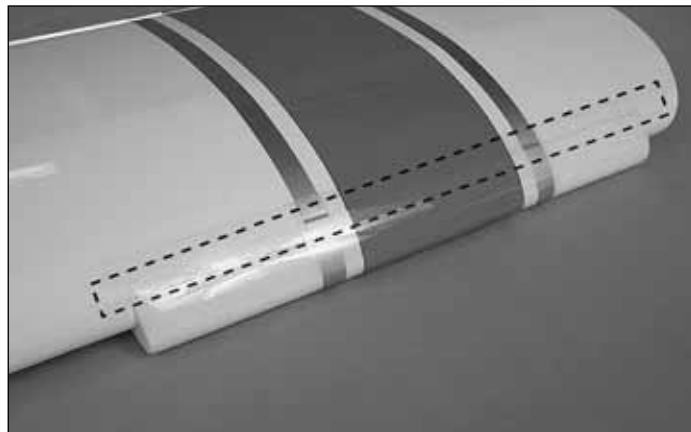
**Note:** The following steps show the assembly of the wing using one aileron servo. For a 2-servo installation, please refer to the section "After You Master the NexSTAR in its Original Form" on page 27.



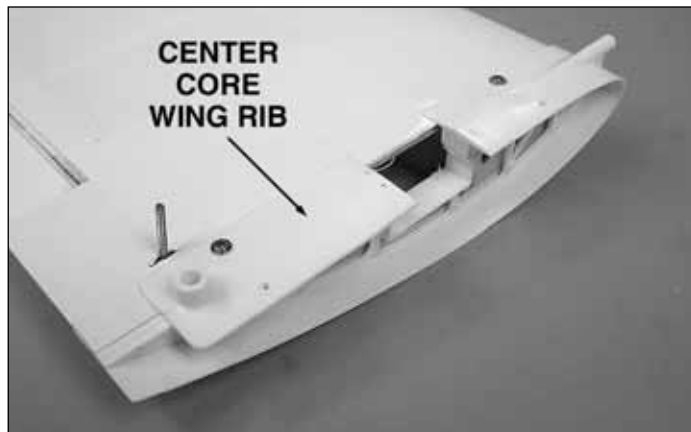
❑ 1. Mark a line on the bottom of the wings 1/4" [6mm] from the end of the tips.



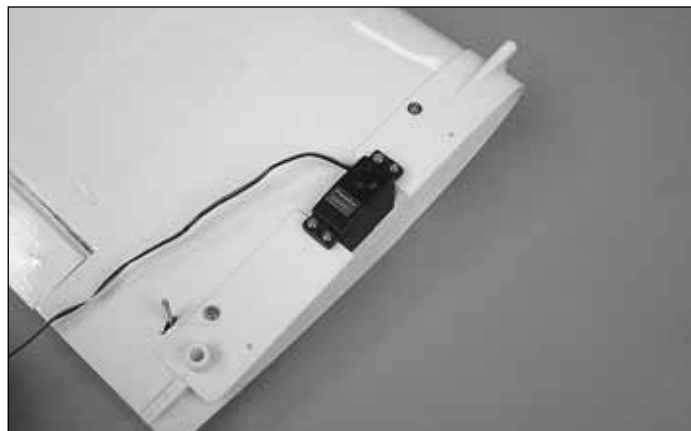
❑ 2. Install the Airfoil Extensions on both wings as shown using 3/4" to 1" [19 to 25mm] heavy duty clear plastic tape.



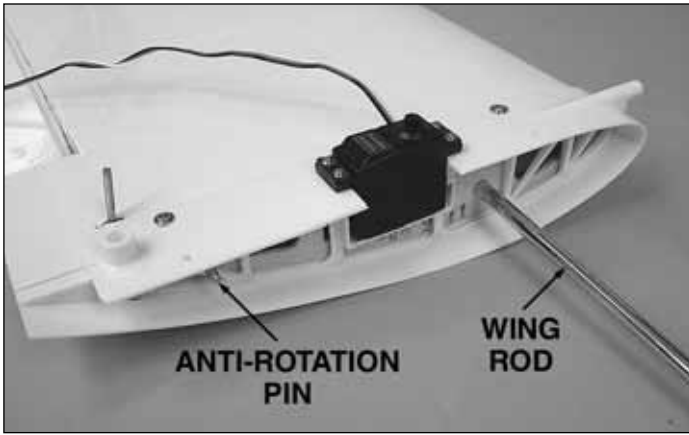
❑ 3. Locate the Spin-Control Airfoil Extension decals on the decal sheet and apply them to both wings following the scheme on the top of both wings. Also apply the NexSTAR decal on the top of the left or right wing.



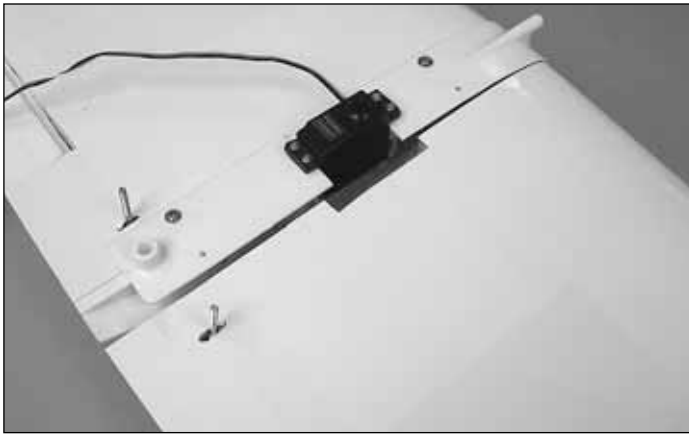
❑ 4. Install the CenterCore wing rib on the right wing using two #4 x 3/4" [19mm] screws.



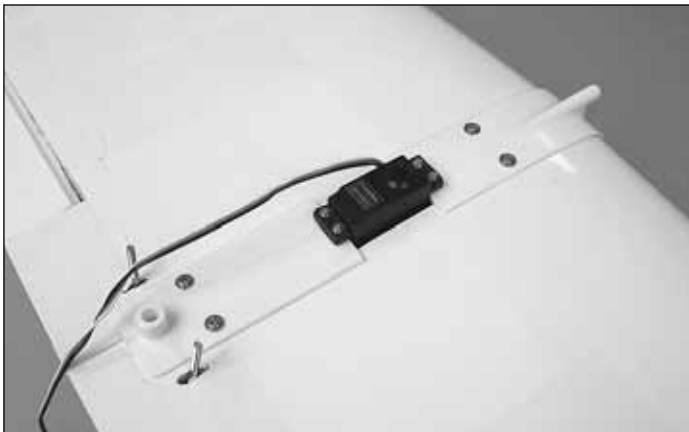
❑ 5. Install the aileron servo as shown using the hardware supplied by the manufacturer.



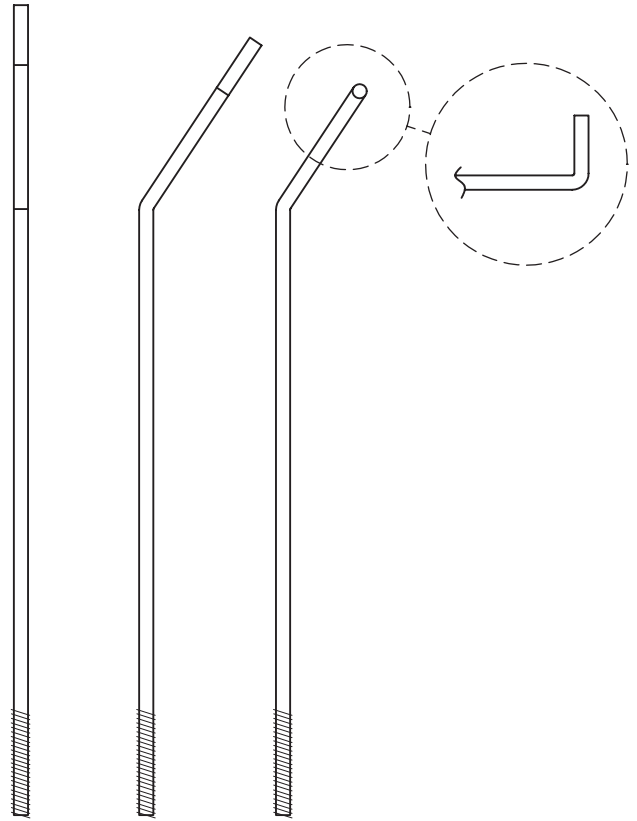
□ 6. Install the wing rod and the anti-rotation pin into the right wing.



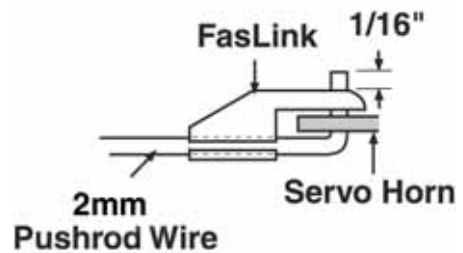
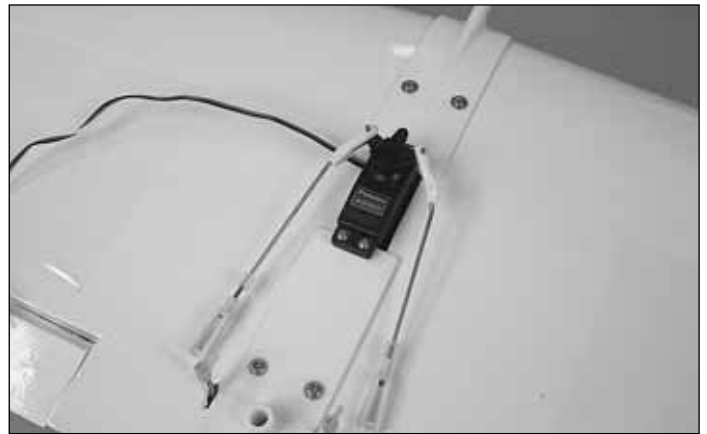
□ 7. Carefully slide the left wing all the way onto the rod and into the CenterCore wing rib until it stops.



□ 8. Use two more #4 x 3/4" [19mm] screws to hold the two wing halves together.



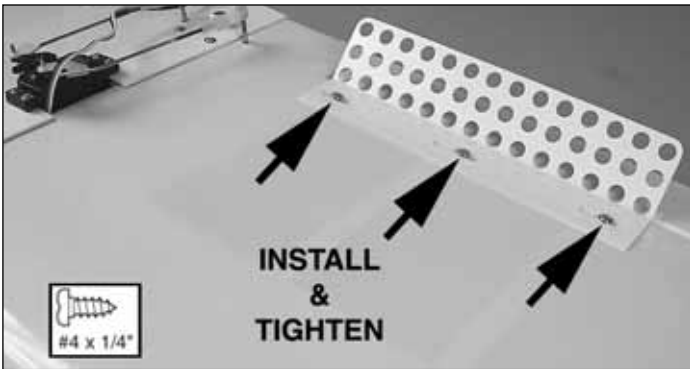
□ 9. Cut and bend a 2mm x 6" [150mm] pushrod to match the sketch above. Make a left and a right pushrod.



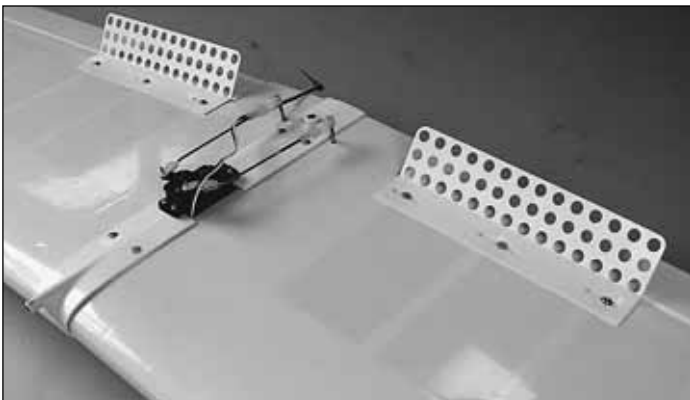
□ 10. Cut a servo arm as shown above and use a Hobbico Servo Horn Drill (or a #48 or 5/64" [2mm] drill bit) to enlarge the servo arm holes. Install the arm on the servo. Install a clevis and a clevis retainer on the threaded end of the pushrods. Slide the unthreaded end of the pushrod into your servo arms and install Faslinks to secure them.



□ 11. Install the nylon horns on the aileron torque rods. Thread them in until the bottom of the horn is about 1/2" [12mm] from the wing surface. Connect the clevises to the horns. Slip the clevis retainers over the clevises.



□ 12. Locate one of the SpeedBrakes Training flaps. There are three small holes drilled into the trailing edge of the wing near the center. Install the flap to the wing using three #4 x 1/4" [6mm] screws. The inner end of the flap should align with the end of the aileron.



□ 13. Install the other flap onto the other wing using three more #4 x 1/4" [6mm] screws. **The wing is now complete.**

**Note: Install the leading edge extensions and the flaps for your initial flights.** The airplane has been designed around them and it performs better as a trainer with them installed. Never attempt to fly the airplane for the first time without them or with just one of the devices as the model will be difficult to trim. Do not let anyone's opinion get in the way. **Install both these devices for your initial flights.** If after a few flights you decide to remove the extensions or flaps, then read the section "After You Master the NexSTAR in its Original Form" on page 27.

## Install the Engine

For this section you will need:

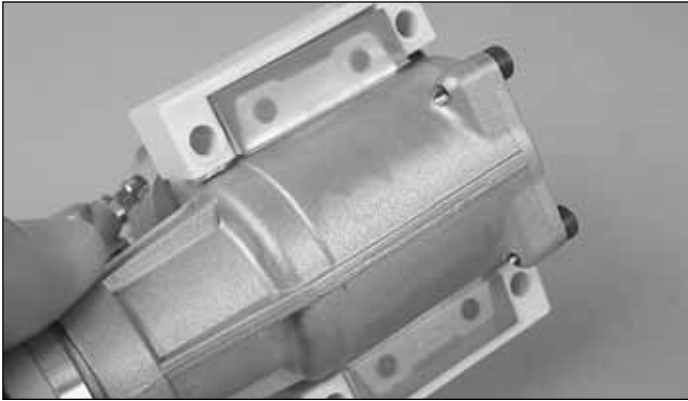
Engine	4	4mm x 30mm IsoSmooth engine
Fuel tank		
Metal engine mount		mount screws
4 4mm x 20mm Engine mount machine screws	4	4mm Nuts
	8	4mm Washers
	4	4mm Lock washers
		2-56 x 17-1/2" IsoSmooth complete engine mount
		[445mm] pushrod.
		Phillips screwdriver



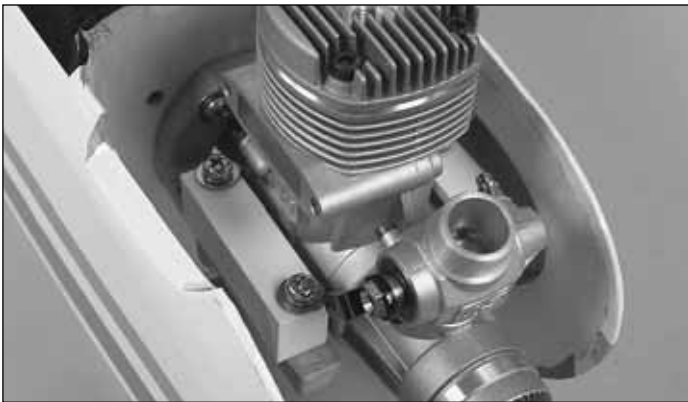
□ 1. Slide the fuel tank into the fuel tank compartment. Make sure the fuel tubing comes out through the hole in the firewall. Slide the fuel tank in until the neck of the fuel tank comes out the firewall as shown above. Use a Phillips screwdriver to tighten the fuel tank screw and secure the tank in place.



□ 2. Use four 4mm x 20mm machine screws and four 4mm washers to install the engine mount as shown above. Use Great Planes Thread Locking Compound on the machine screws before you tighten them.

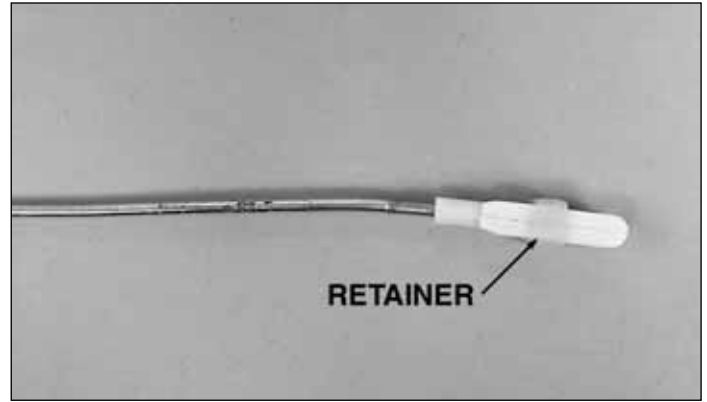


❑ 3. Install the IsoSmooth rubber boots on the engine mounting lugs. The IsoSmooth rubber boots have been designed to fit most .46 size engines. If the boots do not fit your engine, then you will have to use an alternate method to install your engine (see below).



❑ 4. Use four 4mm x 30mm machine screws, four 4mm washers, four 4mm lock washers and four 4mm nuts to secure

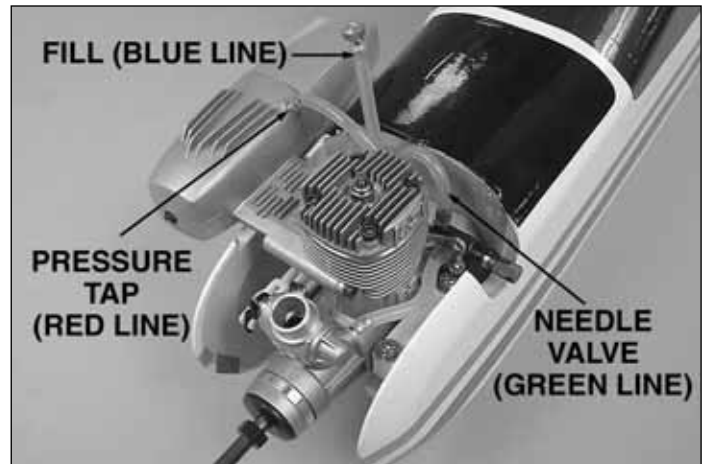
the engine with the IsoSmooth nylon bracket on the engine mount. Use Great Planes Thread Locking Compound on the screws to prevent them from coming loose with vibration.



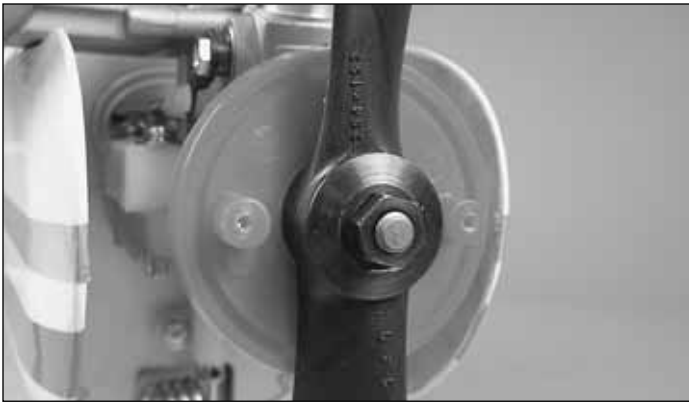
❑ 5. Install a clevis and a clevis retainer on the threaded end of the 17-1/2" [445mm] pushrod. Bend the pushrod slightly as shown above to clear the engine mounting bolts.



❑ 6. Slide the pushrod into the guide tube and then connect the clevis to the carburetor arm as shown above. Slip the clevis retainer onto the clevis.



❑ 7. Mount the muffler on the engine following your engine manufacturer's recommendations. Also, install the glow plug and connect the fuel lines to the engine. The red line goes to the pressure tap on the muffler, the green line goes to the needle valve, and the blue line is the fill line. Cap the fill line with the aluminum plug supplied.



❑ 8. Install the spinner backplate, propeller, propeller washer and propeller nut to the engine. Align the propeller with the marks on the spinner backplate and then tighten the propeller nut securely.



❑ 9. Fit the spinner cone to the back plate. Then, use a Phillips screwdriver to tighten the spinner screws snugly, but not over-tight.

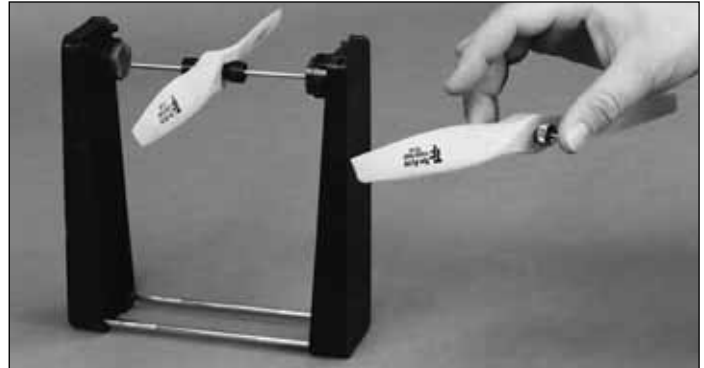


Selecting the correct propeller for an airplane is very important. Your NexSTAR ARF comes equipped with a specially-designed nylon 11x5 propeller (HCAA3744) with painted tips. The painted tips are a safety feature that will help you see the propeller arc as the engine is running.

**Propeller (HCAA3744)**

Keep away from the propeller while the engine is running. The engine size used on the NexSTAR ARF is powerful enough to cause damage if anything (including you) gets in the propeller arc. The propeller is made out of flexible nylon so that it won't break on light contact with the runway or weeds. If the propeller ever gets in contact with anything while the engine is running, inspect it before running it again. Check for cracks, scuffed tips or unbalanced blades. If necessary, replace the propeller. The Hobbico NexSTAR ARF was designed around an 11x5 propeller for best

performance. The 11x5 propeller helps keep the airplane speed down at full throttle; it increases takeoff performance on any surface, including tall grass; and it acts as a brake when the nose is pointed down. Should you ever need to replace the propeller, replace it with the same or similar 11x5 propeller. There is no benefit to using a larger propeller or one with more pitch.

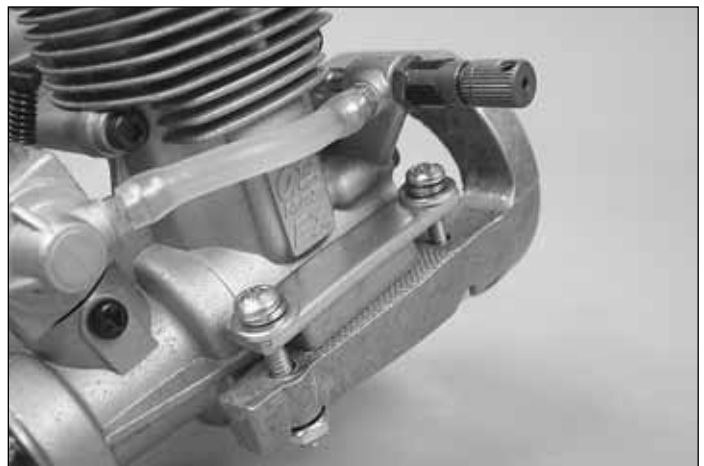


Carefully balance your propeller and spare propellers before you fly. An unbalanced prop can be the single most significant cause of vibration that can damage your model.

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.

**Your engine is now installed.**

### ***Alternate Engine Installation***

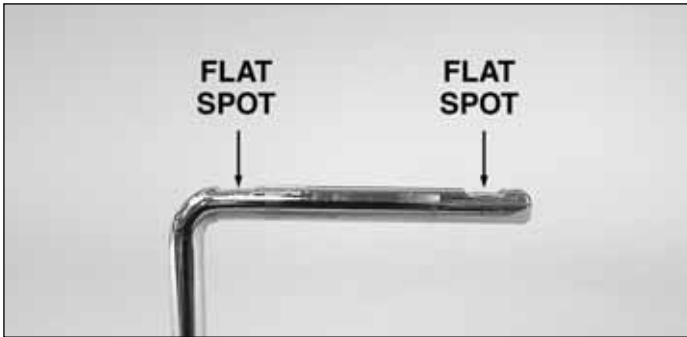


❑ 1. If the engine rubber boots do not fit the engine of your choice, you will have to install the engine as shown above using two metal straps (included), four 4mm x 30mm, four 4mm nuts, four 4mm washers and four 4mm lock washers.

## Landing Gear Installation

For this section you will need:

Nose gear wire	2	4mm Washers	
Aluminum main gear (2 parts)	1	Steering arm	
3	Wheels	5	4mm Wheel collars
2	Landing gear axles	1	Steering pushrod
1	Nylon nose gear bracket		Phillips screwdriver
2	4mm x 19mm Machine screws		Metal file



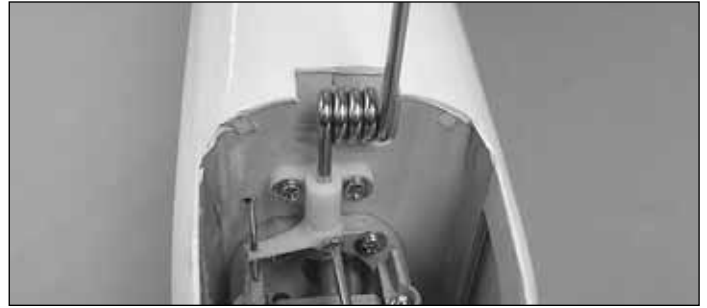
❑ 1. File two flat spots on the nose gear wire as shown above.



❑ 2. Install the nylon nose gear bracket to the firewall using two 4 x 20mm machine screws and two 4mm flat washers. Use Great Planes Thread Locking Compound on the machine screws before tightening them.



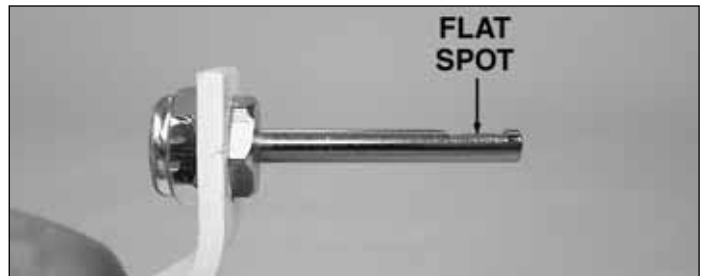
❑ 3. Place a wheel collar in the nylon steering arm as shown. Use the 4 x 6mm [1/4"] machine screw on the wheel collar. Slide the steering pushrod's "Z" bend through the hole in the steering arm.



❑ 4. Slide the steering arm's pushrod into its guide tube. Install the nose landing gear leg through the nylon bracket, the steering arm and then the engine mount. Tighten the screw on the steering arm.



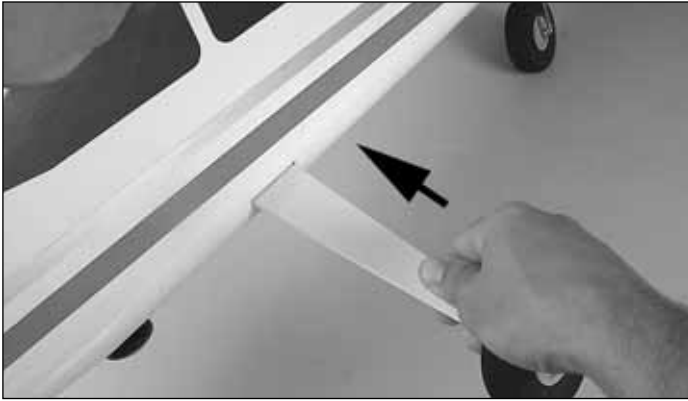
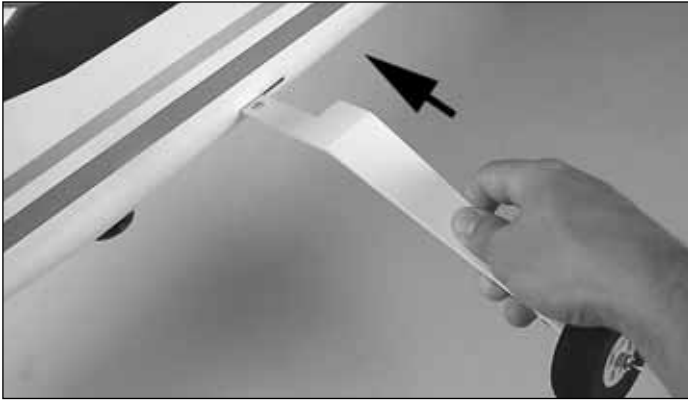
❑ 5. Install the nose wheel on the nose gear wire. Use two wheel collars, one on each side of the wheel, to align it and secure it in place. Apply some Great Planes Thread Locking Compound to the screws.



❑ 6. Install a wheel axle on each aluminum landing gear leg. File a flat spot near the end of the axle.



❑ 7. Install a wheel on each of the axles and then secure them with a wheel collar. Use some Great Planes Thread Locking Compound on the screws.

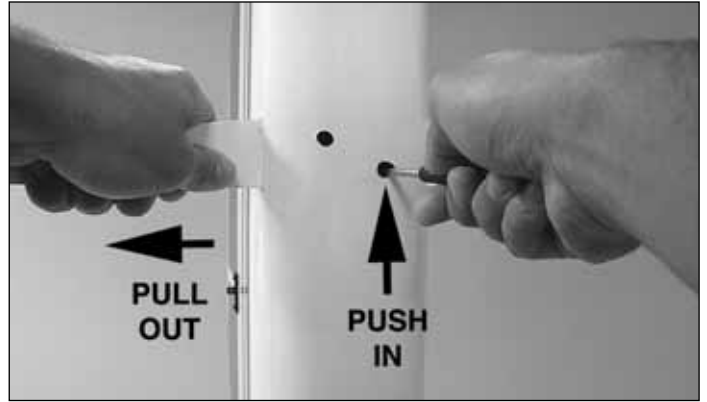


□ 8. Slide one of the main landing gear legs into the landing gear slot as shown above. Push it in until you hear a “click” or until it does not slide in any more. **Note:** The two landing gear legs are identical, so it does not matter which one you install on the left side or right side of the airplane.



□ 9. Install the other landing gear leg on the other side of the fuselage the same way. Once they are both installed, apply a light force to pull them out. You should not be able to pull them out. If they do pull out, then push them back in again until they are secured properly. **Note:** The legs may fit a little loose inside the pocket. This is normal as long as you are not able to pull the landing gear legs out.

**Landing gear installation is complete.**



**Note:** Should you ever need to remove the landing gear from the fuselage, insert a screwdriver into the hole under the fuselage farther from the leg you want to remove. Apply light pressure to the tab inside the hole and pull the landing gear leg out. Once the tab is moved, the screwdriver must be removed to allow the leg to come all the way out. Do the same with the other landing gear leg.

**Note:** If your landing gear does not insert easily in the fuselage or it does not lock in, clean up any glue or paint blobs that may be on the gear or in the mounting mechanism. Insert the gear again and make sure it does lock in.

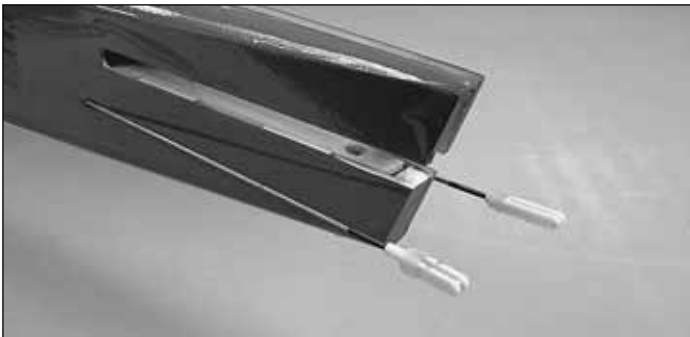
**Note:** If your landing gear legs spread after a hard landing, remove the legs from the airplane and bend them back to the correct position with a vise. Do not try to straighten the legs while installed in the airplane as that may damage the Snap Gear Landing Gear mechanism.

## Install the Tail Surfaces

For this section you will need:

Stabilizer	2	Nylon clevises
Fin	2	Silicone clevis retainers
2 Control horns		
4 #2 x 1/2 [12mm] Screws	2	2mm Steel pushrods
2 Nylon tail bolts		Phillips screwdriver

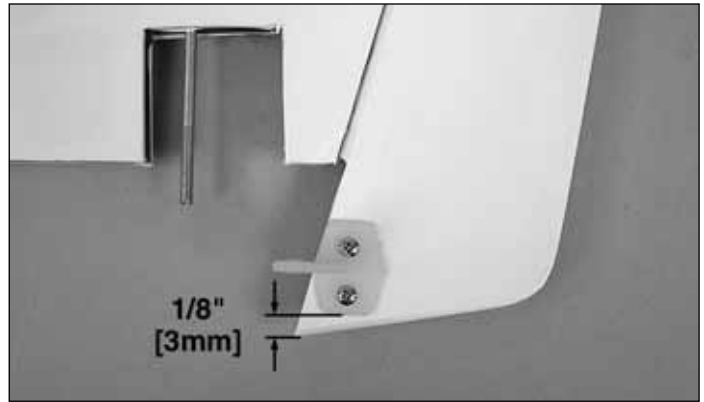
**Note:** It is recommended that you apply the fuselage, stab and fin decals at this point. It is easier to do when the parts are all apart.



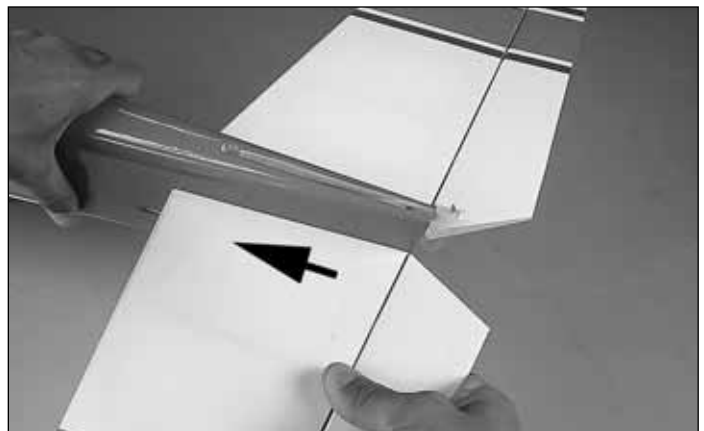
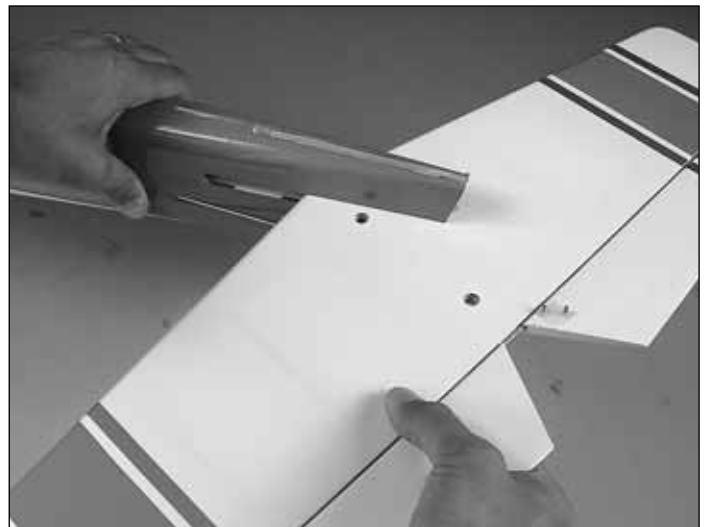
❑ 1. Install a nylon clevis and a clevis retainer on the two steel pushrods. Slide both pushrods into their guide tubes in the tail of the airplane.



❑ 2. Position a nylon control horn on the bottom of the right elevator all the way against its inner edge. Mark the location of the control horn mounting holes. Drill through the marks with a 1/16" [1.6mm] drill bit. Secure the control horn to the elevator using two #2 x 1/2" [12mm] screws.



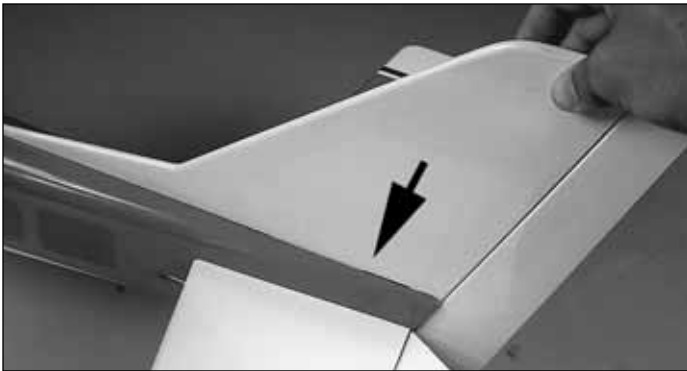
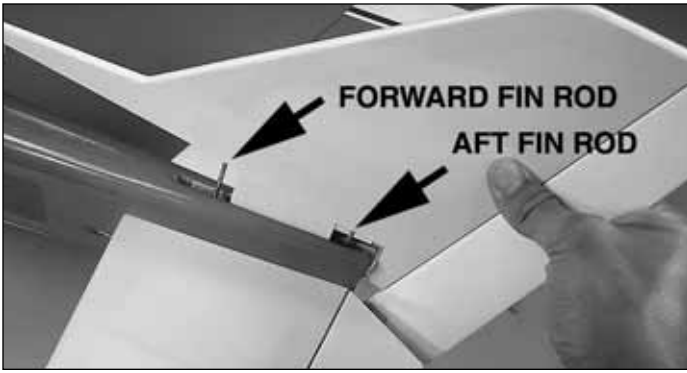
❑ 3. Position a nylon control horn on the rudder as shown about 1/8" [3mm] from the bottom edge. Note that one of the edges of the control horn is aligned with the hinge line of the rudder. Mark the location of the control horn mounting holes. Drill through the marks with a 1/16" [1.6mm] drill bit. Secure the control horn to the rudder using two #2 x 1/2" [12mm] screws.



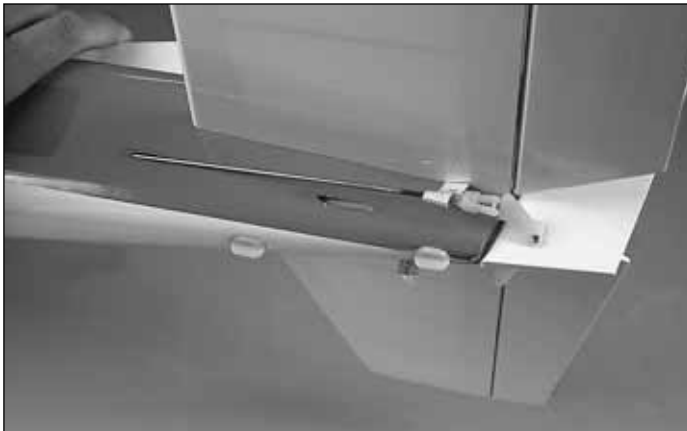
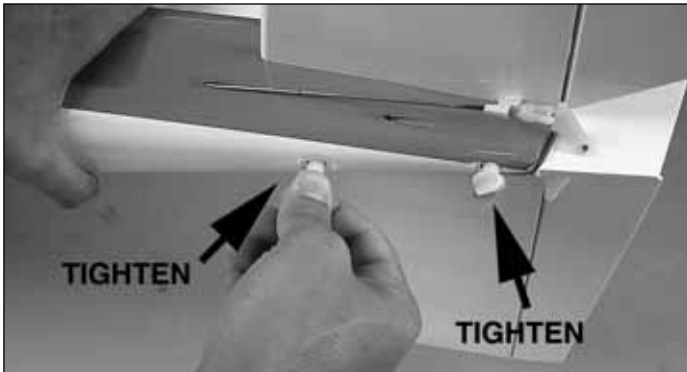
❑ 4. Insert the horizontal stabilizer into the stab slot as shown above. Insert the two nylon fin tail bolts half-way into the bottom fuselage and into the stab to hold it in place.

❑ 5. Place the fin over the sketch found on the last page of the manual and make sure the fin rods are bent at the same angle as the ones shown on the sketch. This step is critical to make the fin installation easier.

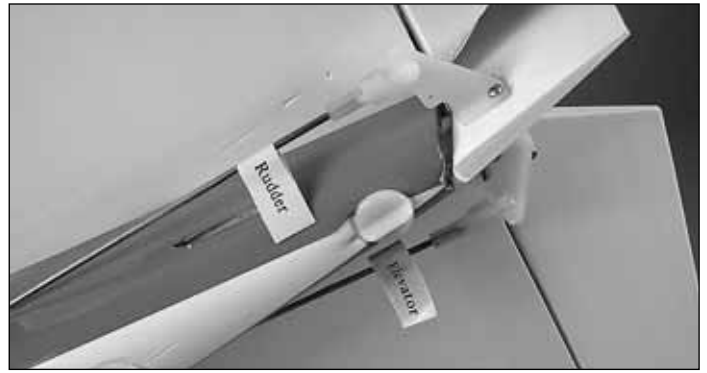




❑ 6. Insert the vertical stabilizer into the fin slot as shown above. During installation, make sure the rudder control horn is below the elevator so that it does not interfere. It may take a little maneuvering to slide the aft fin rod in front of the wood block in the fuselage slot.



❑ 7. Tighten the bolts until they fit snugly against the bottom of the fuselage. **Note:** Over tightening these bolts will damage the nylon threads and may cause in flight failure. Do not over tighten these bolts.



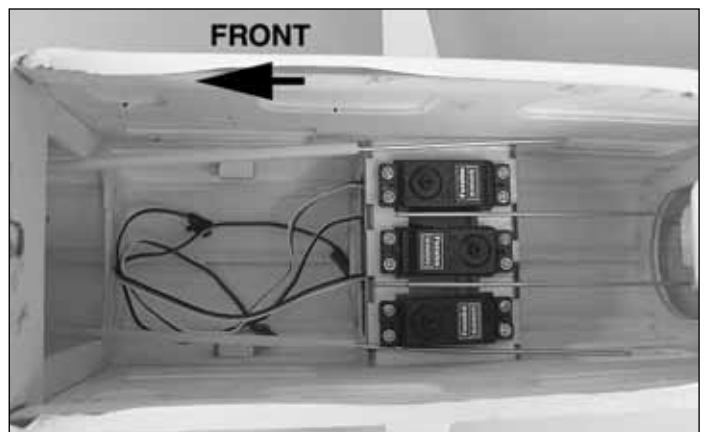
❑ 5. Connect both the elevator and rudder pushrod clevises to their control horns. Use the second hole from the outer tip of the control horn for both of them. This will allow you to obtain the recommended throws. Slide the silicone clevis keeper over the clevis.

**Tail assembly is complete.**

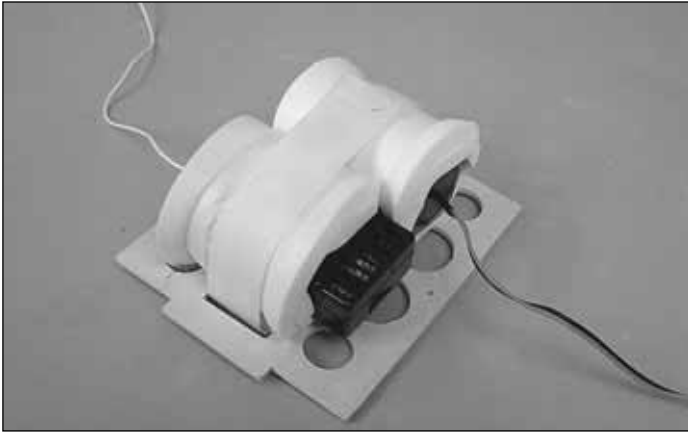
## Radio Installation

For this section you will need:

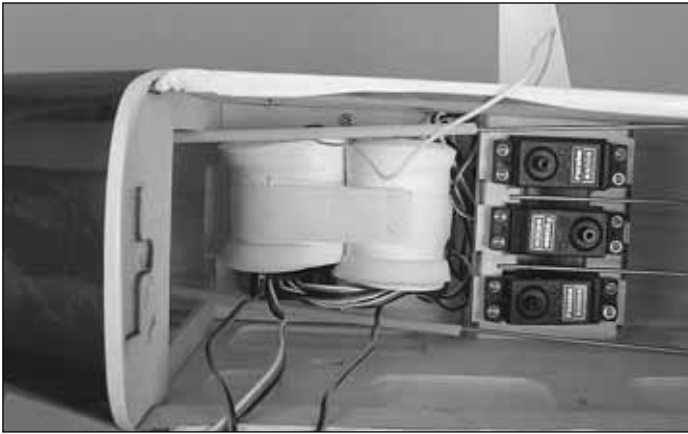
- |  |  |
|--|--|
| 3 Standard size servos                         | 2 Complete screw-lock pushrod connectors |
| 1 6" [150mm] Extension servo mounting Hardware | Foam sheet                               |
| 2 Faslinks                                     | Pliers                                   |
|  | Phillips screwdriver                     |



❑ 1. Install the elevator, rudder and throttle servos in the fuselage servo tray as shown above using the hardware supplied by the radio manufacturer.



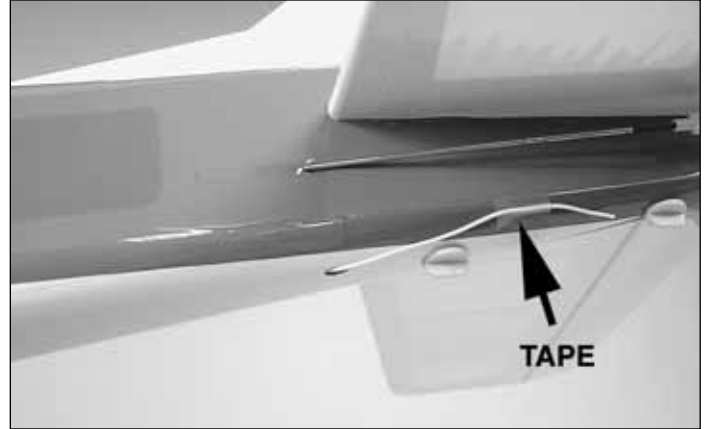
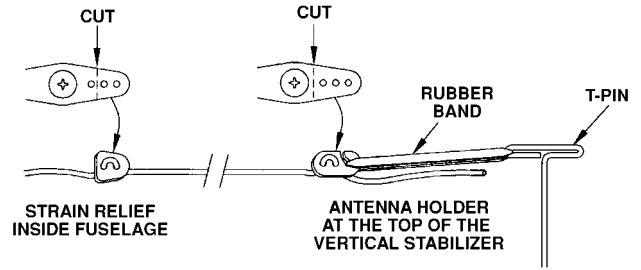
❑ 2. Wrap the receiver and the battery with foam and then install them on the radio tray. Use the hook and loop material supplied to secure them in place.



❑ 3. Install a 6" [150mm] extension on the receiver's aileron channel. Connect the radio switch to the receiver and the battery. Use heat shrink tubing to secure the battery connection. Install the radio tray in the fuselage with two #4 x 3/8" [9mm] wood screws. Connect all the servos to the receiver.



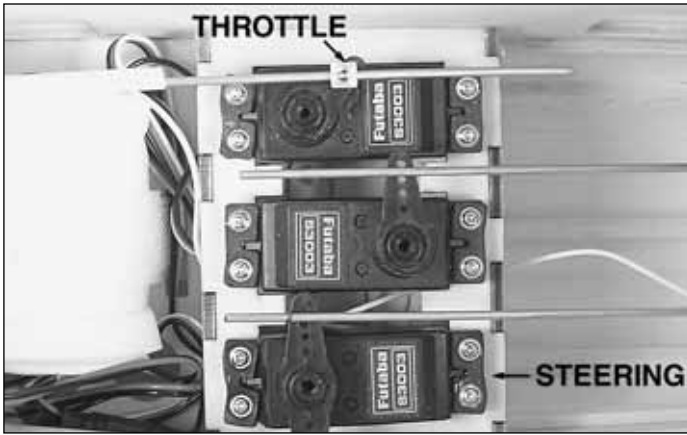
❑ 4. Install the radio switch to the fuselage on the opposite side of the muffler. If you desire, you can also install a charge jack. This will allow you to charge the batteries or check their voltage at the field without taking off the wing. In the instruction manual of the airplane we installed an Ernst charge jack.



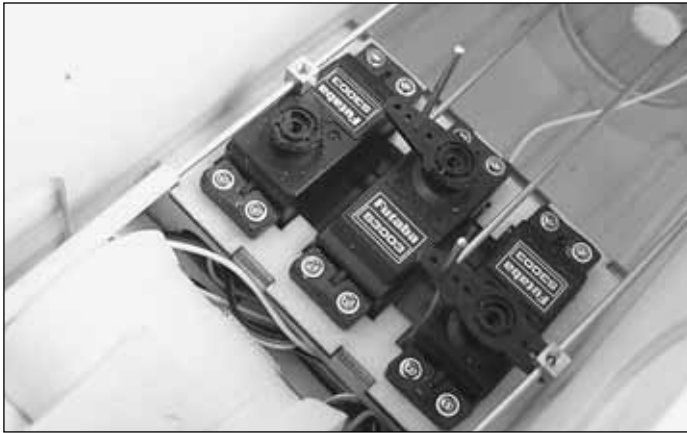
❑ 5. Route the receiver antenna under the servo tray. Install a retainer on it and then slip it through the plastic guide tube in the middle until it exits at the aft end of the airplane. Secure the antenna with tape. Turn on the transmitter and then the receiver and center all the trims on the transmitter.



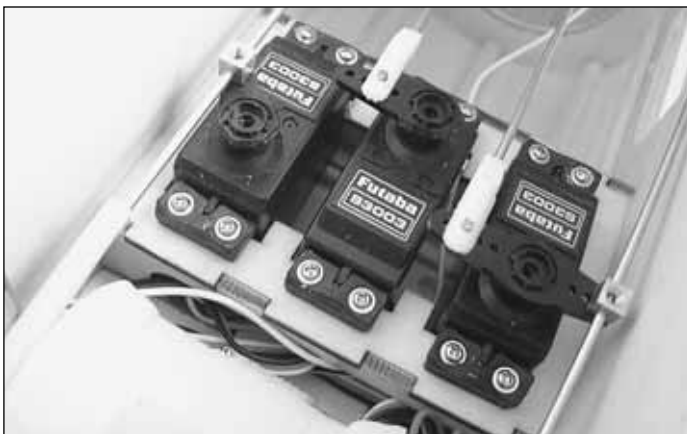
❑ 6. Cut the elevator, throttle and the rudder servo arms as shown. Install a Screw-Lock Pushrod Connector on the throttle and the rudder arm as shown above. Note the holes where the Screw-Lock Pushrod Connectors are connected.



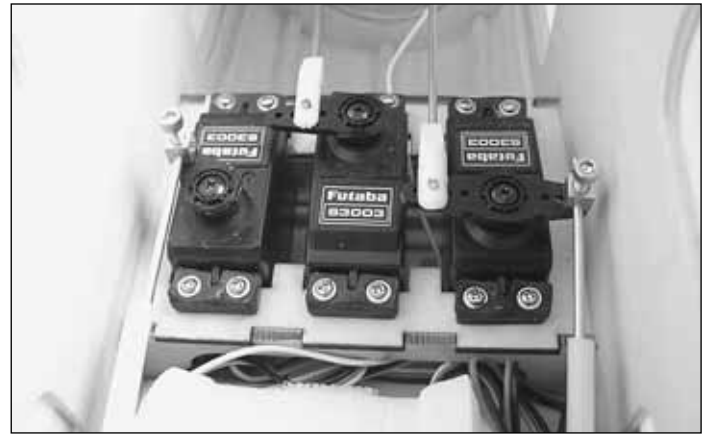
□ 7. Slide the steering pushrod and the throttle pushrod through the Screw-Lock Pushrod Connectors. Install the servo arms centered on the servos and center the rudder and elevators.



□ 8. Mark the elevator and rudder pushrods where they meet with the servo arm holes. Bend the pushrods 90 degrees up at the mark. Enlarge the servo arm holes where the pushrods will be connected with a Hobbico Servo Horn Drill (or a #48 or 5/64" [2mm] drill bit.) Slide pushrods into the servo arms. Note the servo arm holes used to connect the elevator and rudder pushrod.



□ 9. Install a Faslink on the elevator and rudder pushrods to secure them to the servo arms. Cut off the excess wire.



□ 10. Center the nose wheel and tighten the steering's Screw-Lock Pushrod Connector. Move the throttle stick to full power and then fully open the carburetor by pushing on the throttle pushrod. Make sure the throttle servo is working in the correct direction and reverse it if necessary. Install the throttle's servo arm as shown and tighten the Screw-Lock Pushrod Connector. Cut any excess wire and replace the servo arm screws.



□ 11. Remove the aileron servo arm and connect the aileron servo to the receiver aileron servo extension. Center the transmitter trims and reinstall the aileron servo arm making sure it is centered. Replace the servo arm screw. Use thread locking compound on the screws.

**Note:** The control surfaces should be centered when the trims in your transmitter are centered. Minor adjustments can be made by screwing or unscrewing the nylon clevises on the control surfaces.

## GET THE MODEL READY TO FLY

Now the plane is assembled, but there are a few things that must be done before it will be ready to fly. You must carefully perform all of the following Setup procedures. If possible, have your flight instructor assist you.

### Charge the Batteries

If you have not yet charged the batteries, you may still proceed. However, as the batteries have not yet been fully charged, they may not provide enough power to make it all the way through the setup procedures. If the batteries quit working, set your tools aside and charge the batteries as described in the instruction manual for the radio control system that you are using.

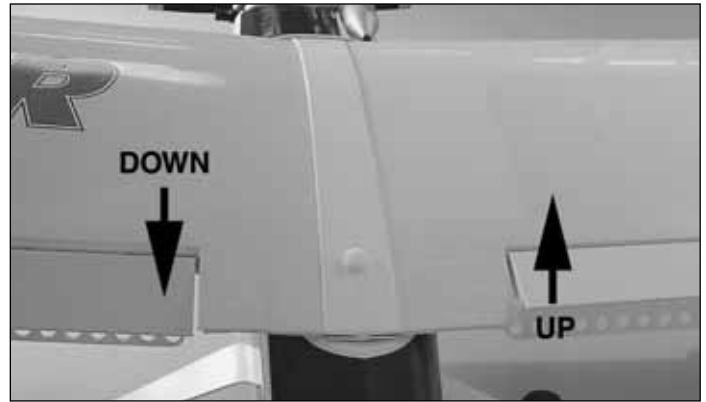
Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

**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.

### Check Control Direction



1. Move the right control stick on the transmitter to the right as shown in the photo. Observe the direction the ailerons move.



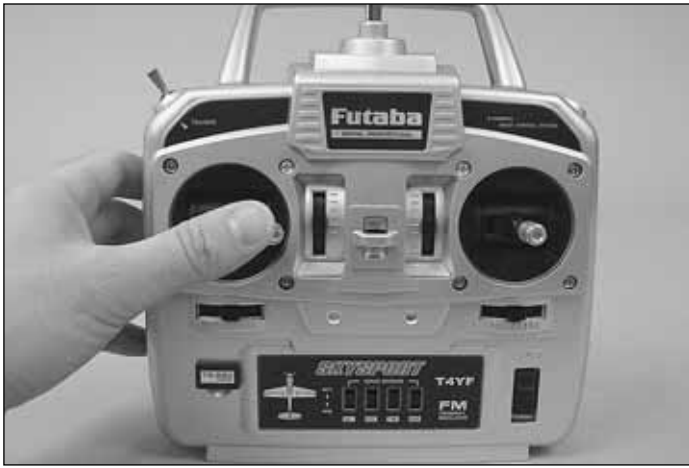
The right aileron should move up and the left aileron should move down. Moving the control stick to the left should make the ailerons move the opposite way. If the ailerons do not respond as described, reverse the direction using the reversing switch for the aileron on the face of the transmitter. If necessary, refer to the instructions in your radio instruction manual to identify and operate the reversing switch.



2. Move the right stick down and observe the direction the elevator moves.



Moving the right stick down should make the elevator move up. Note that moving the elevator stick down moves the elevator up (which, in flight, pushes the tail down, thus increasing the angle of the wing and making the model climb). The best way to keep this in mind is to think in terms of a pilot in an airplane. He pulls the control stick back to “pull up” the nose of the plane.



□ 3. Move the left stick to the right and observe the rudder.



Moving the stick to the right should make the rudder (and the nose wheel) move to the right. If necessary, use the reversing switches on the transmitter to make the rudder respond in the correct direction.

### Check the Control Throws

The next procedure is to make sure the controls move the correct amount. The control throws are a measure of how far the flight controls (ailerons, elevator and rudder) move. If the controls move too much, the plane will respond too quickly and be difficult to control. If the controls do not move enough, it may not be possible to recover from adverse situations or to level out for landing. Due to the great effect the control throws have on the way a model flies, the control throws must be checked.

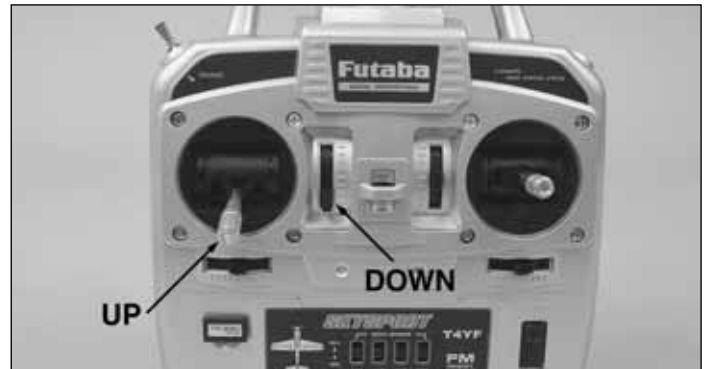
#### Control Throws Chart

	<b>UP</b>	<b>DOWN</b>
<b>Ailerons</b>	1/2" [13mm]	3/8" [9mm]
<b>Elevator</b>	1/2" [13mm]	1/2" [13mm]
	<b>RIGHT</b>	<b>LEFT</b>
<b>Rudder</b>	3/4" [19mm]	3/4" [19mm]

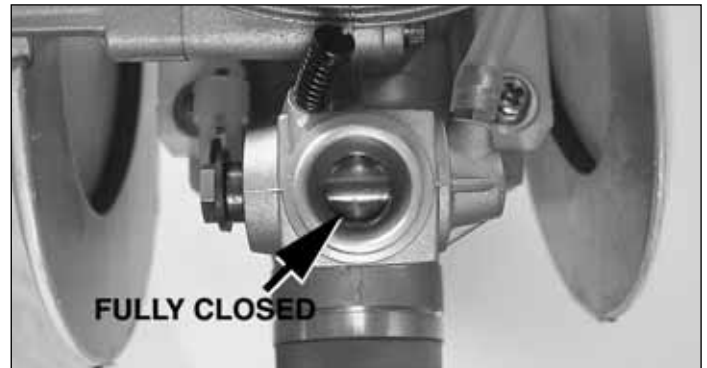
### Adjust the Throttle

The throttle is to be set up so that when the throttle stick is all the way down, and the throttle trim lever is all the way up, the carburetor will be nearly, but not fully closed and the engine will idle at a low RPM. This will keep the engine running when the throttle stick is pulled all the way down (toward you) for landing. When it is time to shut the engine off after landing, move the trim lever down to close the carburetor the rest of the way.

Here's how to set up the carburetor...



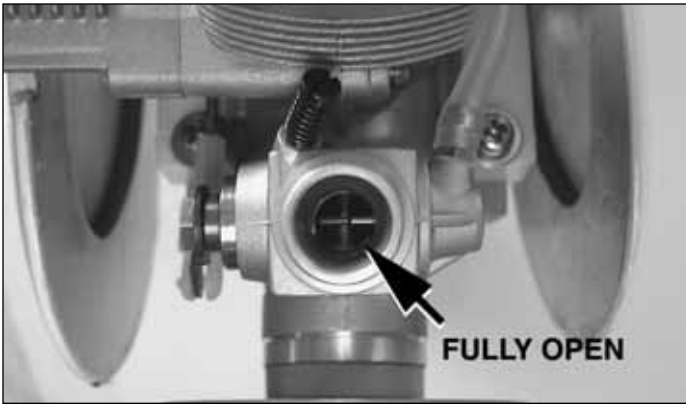
□ 1. With the transmitter and receiver on, move the throttle trim lever and the throttle stick all the way down.



□ 2. Observe the opening in the carburetor. If the carburetor is fully closed, proceed to step 3. If the carburetor is nearly, but not fully closed, loosen the screw on the screw-lock connector on the throttle servo arm and move the pushrod back until the carburetor is closed. Securely tighten the screw.



□ 3. Move the throttle trim lever all the way up, but leave the throttle stick all the way down. Now the carburetor should be partially open (about 1/32" to 1/16" [1 to 1.5mm]).



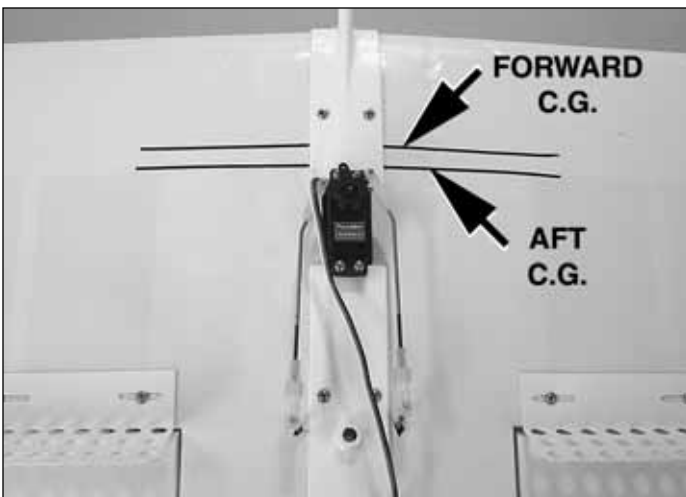
❑ 4. Move the throttle stick on the transmitter all the way up. The carburetor should be fully open.

❑ 5. If you are not able to achieve these settings, more or less movement may be required from the throttle pushrod. The same as the control surface throws, this is done by relocating the clevis on the carburetor arm to the other hole, or by relocating the pushrod connector on the servo arm to another hole.

### ***Balance the Model***

#### **DO NOT DISREGARD THIS STEP!**

This important step is also referred to as “checking the C.G.” (center of gravity). Simply stated, the center of gravity is the point at which the model balances when lifted under the wing. If the C.G. is too far forward, the model will be “nose-heavy” and could be difficult to takeoff and land and lose some of its self-correcting tendencies. If the C.G. is too far aft, the model will be “tail-heavy” and the controls may be too sensitive, making the model too difficult to control—especially for an inexperienced pilot! Follow the instructions to balance the model correctly, thus giving you the greatest chances for success!



❑ 1. There is a decal with two black lines on the underside of the wing. Those mark the forward and aft CG limit for the NexSTAR ARF. The forward CG limit is 3-3/16" [81mm]. The aft CG limit is 3-9/16" [90mm] from the LE.

❑ 2. Make certain the model is in “ready-to-fly” condition with all components mounted and installed (propeller, spinner, landing gear, etc.). **The fuel tank must be empty.**



❑ 3. Mount the wing to the fuselage with the nylon wing bolt. Lift the model on both sides of the fuselage with your fingertips between the two lines on the bottom of the wing.

❑ 4. If the fuselage is level when lifting the model with your fingers anywhere between the lines, the C.G. is correct. Proceed to the checklist in the following section. If you cannot find a spot between the two lines where the airplane balances, then either one of the following will happen: If the tail drops when lifting the model, the plane is tail heavy and will require nose weight to balance. If the nose drops, the plane is nose heavy and will require tail weight. Do not be concerned if your model requires a few ounces of nose or tail weight. Almost all models require additional weight to balance and fly correctly!

If additional weight is required to balance the plane, purchase Great Planes® Self Adhesive Lead Weights (GPMQ4485). The weight is segmented in 1/4 oz. increments and is easy to work with. If adding weight to the tail, attach it to the left side of the fuselage (opposite the muffler) under the stab. If adding weight to the nose, attach it to the inside of the fuselage side next to the engine.

❑ 5. If you found it necessary to add weight, recheck the C.G. after doing so.

### ***Identify your Model***

Whether you fly at an R/C club or somewhere on your own, you should have your name, telephone number, address and AMA number on or in your model so it can be identified and returned in case it lands somewhere away from the flying site. Fill out the I.D. tag found in the back of the manual and use spray adhesive or tape to stick it in the model.

## AMA SAFETY CODE (excerpts)

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

### GENERAL

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

### RADIO CONTROL

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

## 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.

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.

Use a "chicken stick" or electric starter to start the engine. Do not use your fingers to flip the propeller. Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.

Make all engine adjustments from behind the rotating propeller.

The engine gets hot! Do not touch it 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 glow engine, cut off the fuel supply by closing off the fuel line or following the engine manufacturer's recommendations. Do not use hands, fingers or any other body part to try to stop the engine. To stop a gasoline powered engine, an on/off switch should be connected to the engine coil. Do not throw anything into the propeller of a running engine.

## Check List

- 1. Fuel proof all areas exposed to fuel or exhaust residue such as the 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. 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. 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), screw-lock pushrod connectors, etc.
- 6. Add a drop of oil to the axles so the wheels will turn freely.
- 7. Make sure all hinges are **securely** glued in place.
- 8. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, cowl mounting screws, etc.).
- 9. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- 10. 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.
- 11. 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.
- 12. Make sure any servo extension cords you may have used do not interfere with other systems (servo arms, pushrods, etc.).
- 13. Make sure the fuel lines are connected and are not kinked.
- 14. Balance your propeller (and spare propellers).
- 15. Tighten the propeller nut and spinner.
- 16. Place your name, address, AMA number and telephone number on or inside your model.
- 17. Cycle your receiver battery pack (if necessary) and make sure it is fully charged.
- 18. If you wish to photograph your model, do so before your first flight.
- 19. Range check your radio when you get to the flying field.

## FINAL PREPARATIONS

If you haven't already done so, refer to the Futaba instruction manual for the radio control system and charge the batteries in the plane and in the transmitter overnight the night before you go flying.

### Gather your Tools

In addition to the equipment required to fuel and start the engine mentioned near the beginning of the manual, you should start a collection of tools that may be required for adjustments and maintenance at the flying field. The following is a list of the most important items.

1 Medium (#1) Phillips screwdriver	1 5/16" (or 8mm) Socket wrench (for glow plug)
1 Medium (#1) flat screwdriver	1 7/16" (or 11mm) Wrench or crescent wrench (for propeller nut)

### At-the-Shop Checklist

Now it's time to do a final check before taking the model to the field. These checks are best done in the peace and comfort of your own shop, so take the time now to make certain your model is ready.

- 1. Check to see that the screws on the wheel collars that hold on the wheels are fully tightened.
- 2. Be certain the silicone retainers on all the nylon clevises are in position.
- 3. Make certain the elevator, rudder and ailerons respond in the correct directions.
- 4. Make certain the wing is securely joined.
- 5. Check to see that the fin bolts that hold the fin and stab in position are present and secure. These may become slightly loose after the first 10-15 flights.
- 6. Make certain the propeller and spinner are secure.
- 7. Make certain you have balanced the model according to the instructions.
- 8. Check to see that the screws that hold the servo arms to the servos are present and secure.
- 9. Make certain you have filled out the I.D. card and placed it inside the model.



## ***FLIGHT PREPARATION***

Flight preparation is to be done at the flying field.

### ***Check the Frequency***

**IMPORTANT:** Your radio control system transmits a signal on a certain frequency. Be certain you know what the frequency is. This is expressed as a two-digit number (42, 56, etc.), and can be found on the container the transmitter came in and is also located on the transmitter. There are several different frequencies, but there is still a chance that someone else at the flying field may be on the same frequency as you. If you turn on your transmitter while that person is flying, a crash will result. **NEVER** turn on your transmitter until you have permission from your instructor, and until you have possession of the frequency clip used for frequency control at the flying site.

### ***Check the Controls***

Be certain your flight instructor performs these following checks with you.

1. Get the frequency clip from the frequency control board at your flying site.
2. Connect the aileron extension and mount the wing to the fuselage with the nylon wing bolt supplied with this kit.
3. Turn on the transmitter and receiver. One at a time, operate each control on the airplane using the sticks on the transmitter. Make certain each control is responding correctly. This must be done before every flight. There are several types of malfunctions that can be discovered by performing this elementary task, thus saving your model!

### ***Range Check the Radio***

A range check must be performed before the first flight of a new model. It is not necessary to do a range check before every flight (but it is a good idea to perform a range check before the first flight of each day). A range check is the final opportunity to reveal any radio malfunctions, and to be certain the system has adequate operational range.

1. Turn on the transmitter and receiver. Leave the transmitter antenna all the way down. Walk away from the model while simultaneously operating the controls. Have an assistant stand by the model and tell you what the controls are doing to confirm that they operate correctly. You should be able to walk approximately 100 feet from the model and still have control without any "glitching" or inadvertent servo operation.
2. If everything operates correctly, return to the model and start the engine. Perform the range check with your

assistant holding the plane with the engine running at various speeds. If the servos chatter or move inadvertently, there may be a problem. Do not fly the plane! With the assistance of your instructor, look for loose servo connections or binding pushrods. Also be certain you are the only one on your frequency, and that the battery has been fully charged.

### ***Fueling the NexSTAR ARF***

The NexSTAR ARF comes with a three-line fuel line system. To fuel the airplane, remove the fuel line plug from the filling line (green) and connect the fuel pump to it. Disconnect the pink line from the exhaust. Fill the tank until fuel comes out the pink line. Re-connect the pink line to the exhaust nipple. Replace the plug to the fill line. The airplane is now fueled. It is not required but it is highly recommended that the fuel tank be filled all the way up before each flight. A full fuel tank will give you 12 to 15 minutes of flight time.

To remove fuel from the fuel tank, remove the fuel line plug from the filling line (green) and connect the pump to it. Pump out any fuel that may be in the fuel tank. Replace the fuel line plug to the green line. **NOTE:** You may have to lower the nose of the airplane to completely de-fuel the tank.

## FLYING

**Do not attempt to fly by yourself.** The Hobbico NexSTAR ARF has many features that make learning to fly R/C an easier experience, but the help from an instructor is invaluable. An instructor is going to be able to inspect your airplane to make sure everything is working correctly and he will also be able to give you a few tips and comments on how to improve your flying. Also, make sure you fly at an AMA sanctioned flying field.

**IMPORTANT:** Be aware of your proximity to R/C club sites. If there is an R/C site within six miles of where you are flying, and if you are operating your model on the same frequency at the same time as somebody else, there is a strong possibility that one or both models will crash due to radio interference. There is great potential for an out-of-control model to cause property damage and/or severe personal injury. We strongly urge you to fly at an R/C club site where frequency control is in effect so you can be assured you will be the only one flying on your channel.

## Taxiing

Remember, it is assumed that your instructor is operating the model for you.

Before the model is ready for takeoff, it must first be set up to roll straight down the runway. With the engine running at a low idle, place the plane on the runway and, if your flying field permits, stand behind the model. Advance the throttle just enough to allow the model to roll. If the model does not roll straight down the runway, shut the engine off and adjust the nose gear pushrod as necessary. Do not use the rudder trim to correct the nose wheel because this will also affect the rudder. **Note:** Crosswinds may affect the direction the model rolls, so this test should be done in calm conditions, or with the model facing directly into the wind.

## Takeoff

If possible, takeoff directly into the wind. If you are experienced, taking off in a crosswind is permissible (and sometimes necessary—depending upon the prevailing wind conditions and runway heading). Taking off into the wind will help the model roll straight and also reduces ground speed for takeoff. Taxi the model onto the runway or have an assistant carry it out and set it down, pointing down the runway into the wind. When ready, gradually advance the throttle while simultaneously using the left stick (rudder/nose wheel) to steer the model. Gain as much speed as the runway and flying site will practically allow before gently applying up elevator lifting the model into the air. Be ready to make immediate corrections with the ailerons to keep the

wings level, and be smooth on the elevator stick, allowing the model to establish a gentle climb to a safe altitude before making the first turn (away from yourself). Do not “yank” back the elevator stick forcing the plane into too steep of a climb which could cause the model to quit flying and stall.

## Flight

Once airborne, maintain a steady climb and make the initial turn away from the runway. When at a comfortable, safe altitude, throttle back to slow the model, thus giving you time to think and react. The Hobbico NexSTAR ARF should fly well at half or slightly less than half throttle. Adjust the trims so the plane flies straight and level. 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 further to see how the model handles when coming in to land. Add power to see how the model climbs as well. Continue to fly around while learning how the model responds. Mind your fuel level, but use this first flight to become familiar with the model before landing.

## Landing

When ready to land, pull the throttle stick fully back while flying downwind just before making the 180-degree turn toward the runway. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down while turning. Apply up elevator to level the plane when it reaches the end of the runway and is about five to ten feet off the ground. If the model is too far away, carefully add a small amount of power to fly the model closer. If going too fast, smoothly advance the throttle and allow the model to gain airspeed, then apply elevator to climbout and go around to make another attempt. When finally ready to touch down, continue to apply up elevator, but not so much that the airplane will climb. Continue to apply up elevator while the plane descends until it gently touches down.

The NexSTAR ARF has been designed to make steep landing approaches so that the landing approach is short and easy. The Speed Brake Training Flaps excel at maintaining flying speed even in steep dives, and when the airplane is leveled-out, they also help to increase lift. You can also make a long landing approach and use throttle to keep the airplane flying at a very low speed until you reach the runway threshold where you should cut the throttle for the airplane to land.

After you have landed and shut the engine off, adjust the pushrods on the ailerons, elevator and rudder as necessary so the trim levers on the transmitter may be returned to center. This will not be required on any of the controls that did not need trim adjustments.

## MAINTENANCE TIPS

### Clean Up

- ✓ After flying for the day, use your fuel pump to drain excess fuel from the tank.
- ✓ After each day's flying, use spray cleaner and paper towels to thoroughly clean the model. After a complete flight there will be a fair amount of exhaust oil residue sprayed on your fuselage. Do not be concerned with this. It is normal. The oil used in model engines does not completely burn with combustion.
- ✓ The Hobbico NexSTAR ARF is factory-covered with iron-on model covering film. Should repairs ever be required, the covering can be patched with new pieces of iron-on covering. Among several types of covering that will work, Top Flite MonoKote film may be used to make repair patches to this model. MonoKote is packaged in six-foot rolls, but some hobby shops also sell it by the foot. If only a small piece of covering is needed for a minor patch, perhaps a fellow modeler would give you some. The covering is applied with a model airplane covering iron, but in an emergency a regular iron set to a lower temperature could be used.
- ✓ Check all screws that hold the wings together, tail bolts, engine bolts, wheel collars, etc.
- ✓ Check all the high-stress areas for cracks or fatigue such as the landing gear area, the wing mounting area, stab and fin mounting area. Before storing the model until the next fly day, wrap some paper towels around the engine. Some oil may accumulate and drip off of the engine and muffler while the airplane is stored.

## AFTER YOU MASTER THE NEXSTAR ARF IN ITS ORIGINAL FORM

### SpeedBrakes Training Flaps

After you feel comfortable flying the Hobbico NexSTAR ARF and you want to improve its high speed performance, the first thing you can do is to remove the SpeedBrakes Training Flaps. Remove the six screws that hold them in place. The NexSTAR ARF was optimized to fly with the flaps on, so if you remove them, **you will have to retrim the elevator.** Without flaps, the NexSTAR ARF will try to pitch down (nose down) until you re-trim it. Without the SpeedBrakes Training Flaps, the airplane will fly much faster at any throttle setting and longer landing approaches will be needed. Also, the NexSTAR ARF will not slow down as quickly when the nose is pointed down and stall speed will increase slightly.

### SpinControl Airfoil Extensions

The second thing you can do to improve the high speed and aerobatic performance of the Hobbico NexSTAR ARF is to remove the SpinControl Airfoil Extensions. These extensions at the leading edge of the wings are held in place with tape that can be carefully removed. Once you remove these extensions, you will need to re-trim your elevator to align it with the stabilizer. **The SpinControl Airfoil Extensions produce the opposite effect of the SpeedBrakes Training Flaps in pitch, so if you remove both, the net pitch effect would be almost non existent.** After you remove these extensions, the NexSTAR ARF will be faster and able to spin and snap. Also, the stall speed will increase slightly.

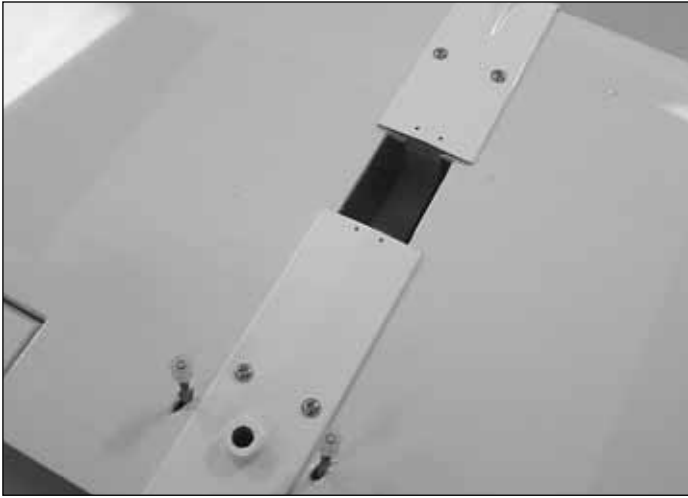
### Dual Aileron Servos

#### Dual Aileron Servos.

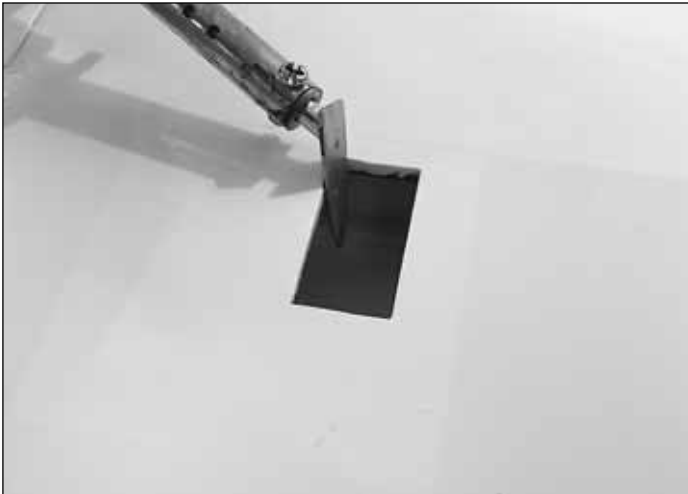
The Hobbico NexSTAR ARF comes equipped with dual aileron servo trays for dual aileron servos. If you wish to use flaperons you will need to upgrade your radio system to 6 channels. To install the dual aileron servos, use the following instructions.

For this section you will need:

- |  |                               |
|--|-------------------------------|
| 1 Additional aileron servo (same type as that already installed in your NexStar) | 2 Faslinks                    |
| 1 "Y" harness  | 1 Servo mounting hardware set |
| 2 2 mm Pushrods  | 1 Screwdriver                 |
| 2 Nylon clevises   | 1 Wire cutter                 |
| 2 Clevis retainers   | 1 Pliers                      |
|  | 1 Thin CA                     |



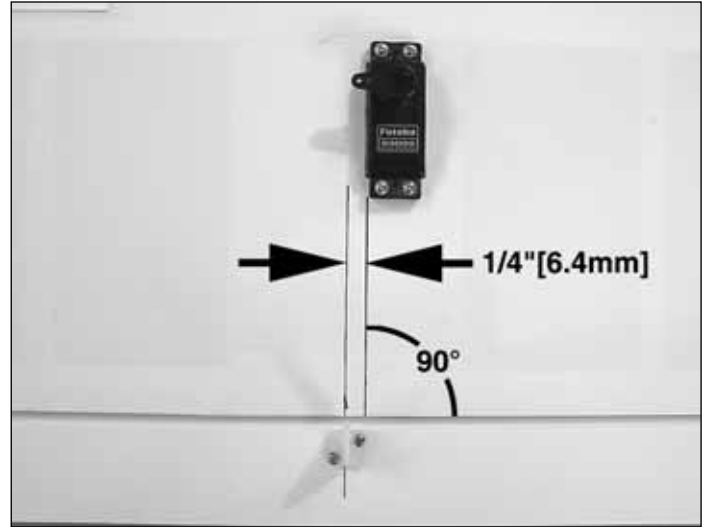
❑ 1. Disconnect the aileron servo pushrods from the aileron horns and remove the original aileron servo.



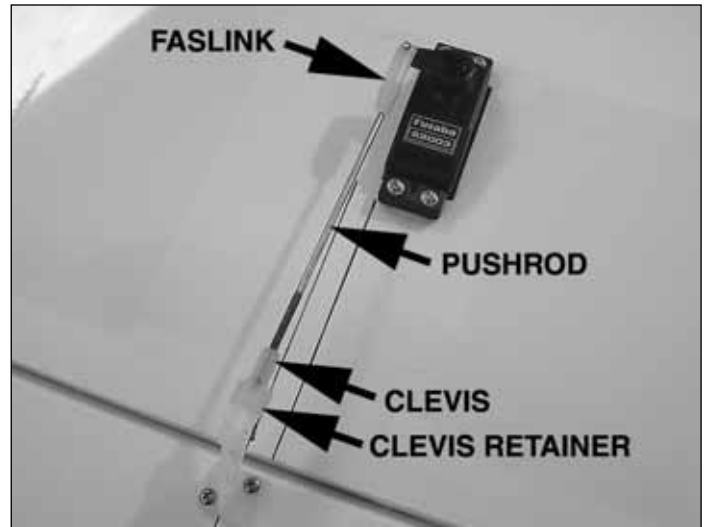
❑ 2. Locate the dual aileron servo trays in the wing. They are located on the underside of the wing at the 6th bay in from the wing tip. Trim the covering over the opening and use a sealing iron to seal the covering to the tray.



❑ 3. Connect both servos to the "Y" harness. Make sure the "Y" harness exits through the hole in the center of the wing. Use the strings pre-installed inside the wings to pull the servo leads. Install the aileron servos into the trays.



❑ 4. Install the aileron control horn (not included) on the aileron as shown above. Make sure you use thin CA to reinforce the holes in the aileron.



❑ 5. Cut the servo arm as shown above. Use a 6" [152mm] pushrod, a clevis, clevis retainer and Faslink to make the necessary aileron pushrod.

❑ 6. Set up your new dual servos on your radio to have the same aileron throw as the original airplane. Center the servo arms and install the servo arm screws on them.

Your dual aileron servo installation is now finished.

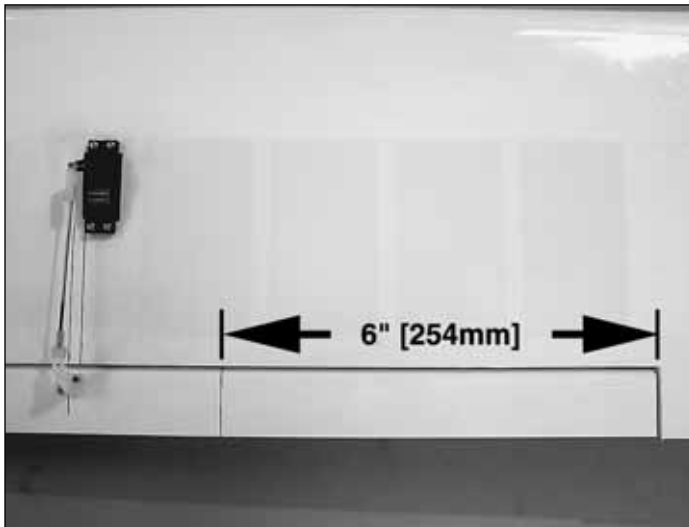
**Note:** To install flaperons, you will need to upgrade to a radio capable of flaperon mixing. In this case, the two aileron servo leads will connect to two different channels in your receiver. Follow your radio manufacturer's instructions to setup the flaperon mixing in your Hobbico NexSTAR ARF.

## Dual Aileron Servos & Flaps

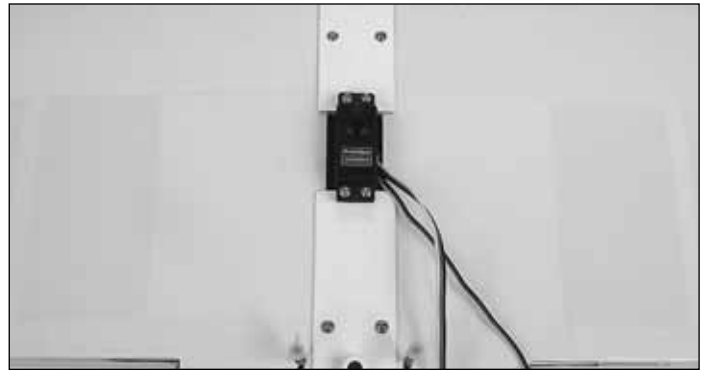
The Hobbico NexSTAR Select can also be equipped with dual aileron servos and flaps. To set up the airplane this way, you need to follow the above instructions for the dual servo installation and then install the flaps as indicated below. The necessary hinges on the wing were located where needed when the wing was built.

For this section you will need :

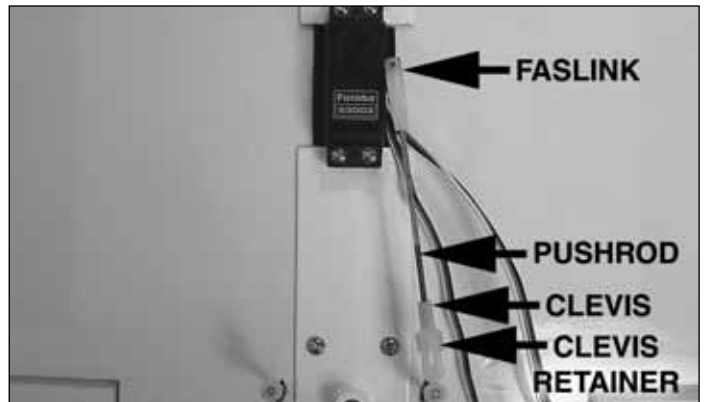
- |  |   |
|--|---|
| 1 Additional servo to be used for flaps. | 2 5/32"[4mm] Wheel collars                  |
| 1 6"[152mm] Servo extension              | 2 6-32x1/4" [6.4mm] Socket head cap screws. |
| 2 2 mm Pushrods                          | 1 Screwdriver                               |
| 2 Nylon clevises                         |   |
| 1 Faslink                                |   |



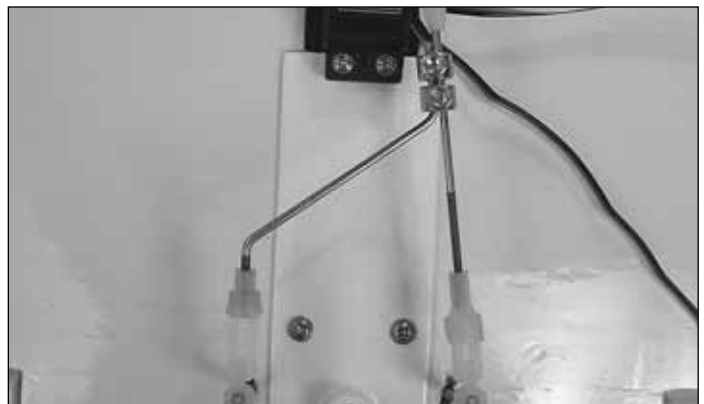
1. Draw a line on the aileron 10" [254mm] away from the aileron end at the root and use a hobby saw to cut the aileron at that line.



2. Install the flap servo in the center of the wing, where the original aileron servo was.



3. Using one of the 6" [152mm] pushrods, a nylon clevis, clevis retainer and a Faslink, make a pushrod and connect it to the flap servo and flap horn as shown above.



4. Bend the second pushrod as shown above and connect it to the first with two 5/32"[4mm] wheel collars. Tighten the two 6-32x1/4" [6.4mm] socket head cap screws to secure the two flap pushrods together as shown above.

5. The flaps should only be able to move down 1/2" [13mm]. There is no up movement for the flaps.

**Flap installation is finished.**

**Note:** To install dual servo and flaps, you will need to upgrade to a 6 Channel radio. In this case, the two aileron servo leads will connect to two different channels in your receiver and then the flap servo to another channel. Follow your radio manufacturer's instructions to set up the aileron mixing and flaps in your Hobbico NexSTAR Select.

## **NEXSTAR SELECT ARF FAQ**

### **Q. What should I do if the SnapGear landing gear legs will not lock in place?**

A. The tolerances for the SnapGear locking mechanism are very tight. Sometimes a little bit of paint or burrs on the inner edges of the landing gear legs may prevent the mechanism from locking. To fix this, clean up the inner edges that are inserted into the fuselage. To do so, use medium-grit sandpaper to smooth the inner edges until the mechanism locks.

### **Q. What should I do if the wing bolt does not line up with the PivotFlex Wing Mount?**

A. By design, the PivotFlex Wing Mount nut should be about 1mm forward from the wing bolt so that when the wing is installed, it is always being pushed forward. To install the bolt, align the wing with the PivotFlex Wing Mount and then carefully push the bolt down into the CenterCore wing rib until you hear a light pop. This means that the bolt is now aligned with the nut and you can tighten it up.

### **Q. What size is the wing bolt?**

A. The wing bolt is a 1/4-20 x 2" nylon bolt (GPMQ4402).

### **Q. Why is the engine pointing to the right and down?**

A. The angles you are seeing are called "Thrust Angles". The engine is pointing to the right (when looking at the airplane from behind) to compensate for the torque the spinning propeller produces. The engine is also pointing down to offset some of the additional lift the airplane generates when it picks up speed. A trainer airplane, such as the NexSTAR will still climb slightly at full power. All airplanes need some right thrust and down thrust. The right thrust angle for the NexSTAR is 3 degrees to the right. The down thrust angle for the NexSTAR is 4 degrees with respect to the wing incidence.

### **Q. Why is it that my airplane does not want to fly straight?**

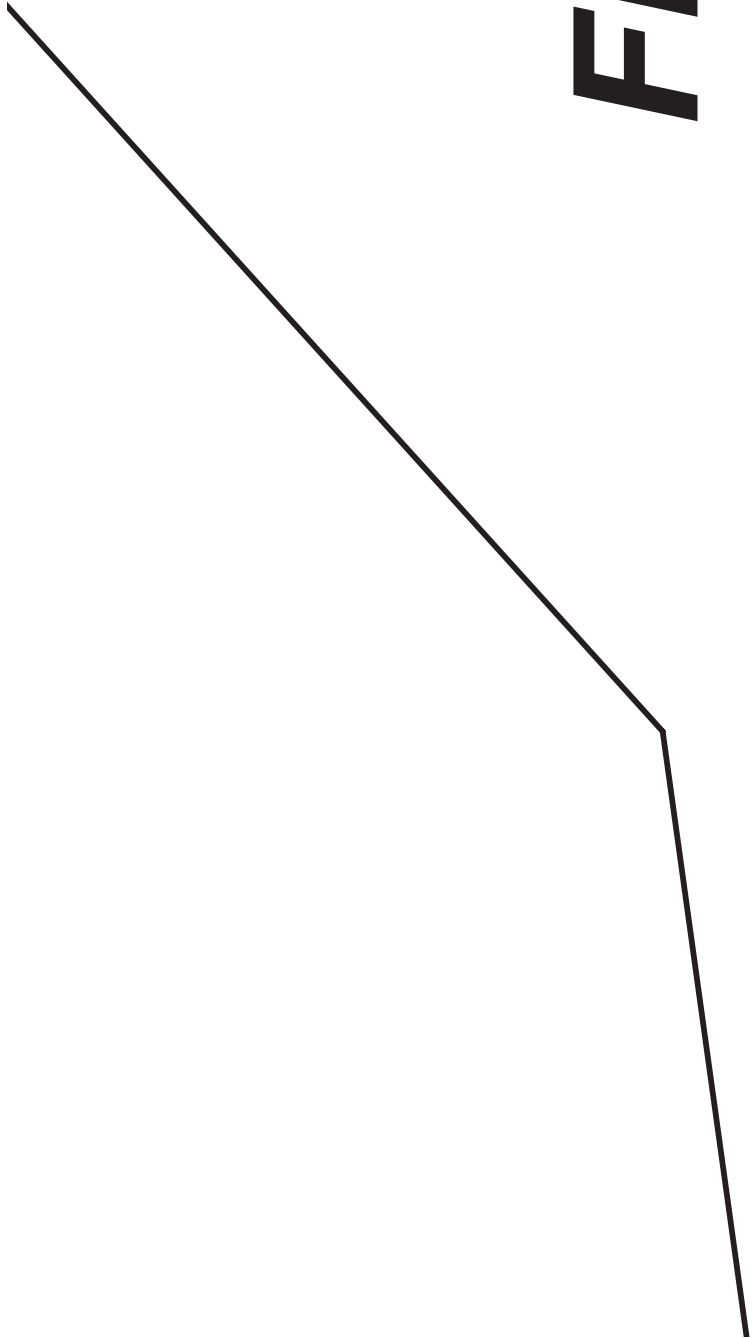
A. If your airplane always wants to turn in one direction or it wants to climb or yaw, then it is likely that the airplane is out of trim. To make the airplane fly straight, adjust the trim levers on your transmitter (see page 18, step 5 for the location of the trim levers). The trim levers adjust the centering point of your control surfaces. Using them, you can adjust your airplane so that it flies straight.

### **Q. What should I do if the fin rods and fin bolts won't align?**

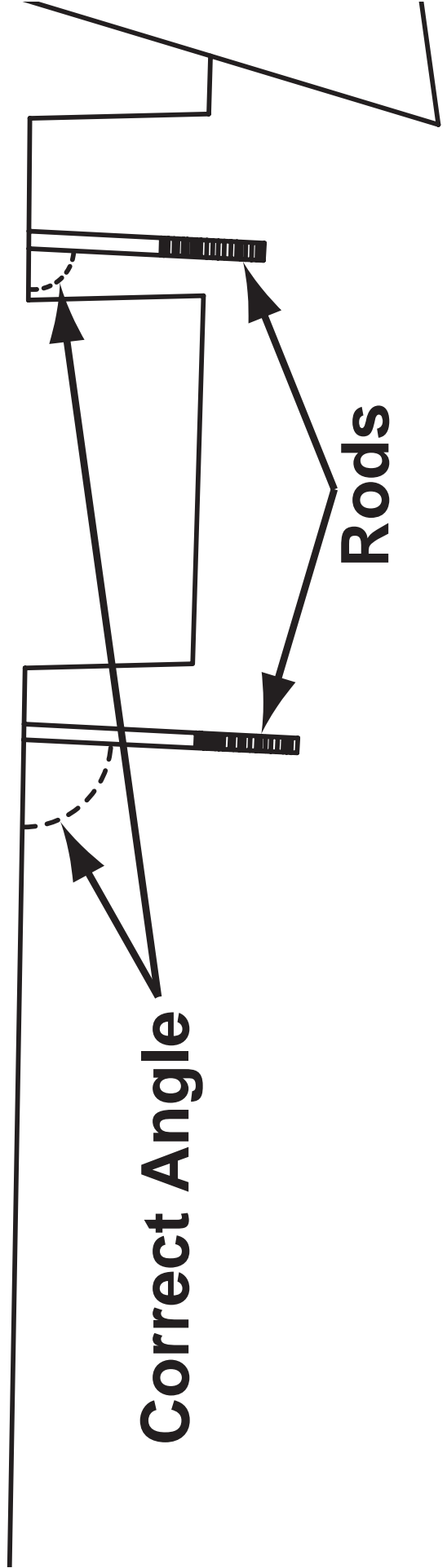
A. Lay your fin over the fin sketch on page 31 of this manual and make sure that the fin rods align properly with the drawing. Bend the rods if necessary.

### **Q. How long can I fly before needing to recharge my TX and RX batteries?**

A. If your battery is in good condition and it is fully charged, you should be able to safely make three 15 minute flights (assuming you are using a standard 600mAh Rx battery). It is always safer to check the battery voltage before each flight to make sure it is above the recommended minimum voltage using a voltmeter (HCAP0351). Also, the best way to charge your receiver and transmitter batteries is to use the manufacturer's charger.



**Fin**



**Correct Angle**

**Rods**

