

Voyager™ 40 ARF

ALMOST READY-TO-FLY RADIO CONTROLLED MODEL AIRPLANE



WINGSPAN: 59.5 in. [1510mm]
WING AREA: 580 in² [37.4 dm²]
WEIGHT: 4 lb. 14 oz. [2210 g]
WING LOADING: 19.4 oz/ft² [59 g/dm²]
LENGTH: 47.5 in. [1210mm]
RADIO: 4-channel (with four standard servos)
ENGINE: .40 – .46 cu. in. [6.5 – 7.5cc] two-stroke

WARRANTY

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

In that Tower Hobbies 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 buyers are not prepared to accept the liability associated with the use of this product, they are advised to return this kit immediately in new and unused condition to the place of purchase.

TABLE OF CONTENTS

	Page
INTRODUCTION	2
PRECAUTIONS	2
SUGGESTED TOOLS & SUPPLIES	2
ACCESSORIES REQUIRED TO COMPLETE YOUR VOYAGER ARF	3
ENGINE SELECTION.....	3
COMMON ABBREVIATIONS	3
ORDERING REPLACEMENT PARTS	3
METRIC/INCH RULER	3
PARTS LIST	4
HARDWARE AND PLASTIC BAG CONTENTS	4
WING ASSEMBLY	5
FUSELAGE ASSEMBLY	9
INSTALL THE LANDING GEAR.....	11
ENGINE INSTALLATION	12
RADIO INSTALLATION	14
FINISHING UP THE AIRPLANE	16
GET THE MODEL READY TO FLY	16
BALANCE YOUR MODEL	17
PREPARING TO FLY YOUR TOWER VOYAGER 40 ARF	17
AMA SAFETY CODE (excerpt)	18
FLYING YOUR TOWER VOYAGER 40 ARF	19

INTRODUCTION

Now that you have mastered the basics of R/C flight with your primary trainer, you are ready to advance to the next higher level...a level that will open the doors to aerobatics. With the experience you've acquired with your trainer, along with the Tower Hobbies Voyager™, you will be able to learn and master the maneuvers that your club hot shots perform.

The Voyager, with its low mounted wing, rugged construction, and heavy duty landing gear, will allow you to practice and perfect any maneuver you desire. But don't let its aerobatic qualities put you off. The Voyager is also an extremely docile flier. Thanks to its semi-symmetrical airfoil and light wing loading, you'll be able to "grease her in" every landing. **Welcome to the world of sport flying.**

PRECAUTIONS

READ THROUGH THIS INSTRUCTION BOOK FIRST. IT CONTAINS IMPORTANT INFORMATION CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

Protect Your Model, Yourself & Others Follow This Important Safety Precaution

Your Tower Voyager is not a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its realistic **performance**, the Tower Voyager, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage property.

To make your R/C modeling experience totally enjoyable, we recommend that you get experienced, knowledgeable help with assembly and during your first flights. You'll learn faster and avoid risking your model before you're truly ready to solo. Your local hobby shop has information about flying clubs in your area whose membership includes qualified instructors.

You can also contact the national Academy of Model Aeronautics (AMA), which has more than 2,500 chartered clubs across the country.

Through any one of them, instructor training programs and insured newcomer training are available.



Academy of Model Aeronautics

5151 East Memorial Drive
Muncie, IN 47302-9252
Office: (765) 287-1256
Toll Free: (800) 435-9262
Fax: (765) 741-0057

or via the internet at: <http://www.modelaircraft.org>

SUGGESTED TOOLS AND SUPPLIES

We recommend Great Planes®, Hobbico® and Tower brand glues and accessories for your modeling needs.

- Great Planes Pro™ Thin CA 2 oz. - GPMR6003
- Great Planes Pro 6-minute Epoxy - GPMR6045
- Great Planes Pro 30-minute Epoxy - GPMR6047
- Hand or Electric Drill
- Drill Bits: (1/16", 3/32", 1/8", 5/32", 11/64", 7/32", 1/4")
[1.5mm, 2.5mm, 3mm, 4mm, 4.5mm, 5.5mm, 6mm]
- Hobby Saw (X-Acto® Razor Saw)
- Hobby Knife, #11 Blades (TOWR1015)
- Pliers
- Screwdrivers (Phillips and Flat Blade) (HCAR1040)
- Flat File (or Similar Tool)
- T-Pins (Short – HCAR5100, Long – HCAR5200)
- String
- Dremel® Multi-Pro or Similar (Optional)

ACCESSORIES REQUIRED TO COMPLETE YOUR VOYAGER ARF

- 4-Channel Radio With 4 Servos
- (1) 6" Aileron Extension (HCAM2000)
- Engine; (See *Engine Selection*)
- Spare Glow Plugs (Tower R/C Long - TOWG1001)
- 3' Medium Fuel Tubing (GPMQ4131)
- 1/4" Latex Foam Rubber Padding (HCAQ1000)

ENGINE SELECTION

A quality brand .40-size engine will be needed. Also a prop will be required for the engine (follow the manufacturer's recommendations for appropriate sizes). We recommend the Top Flite® Power Point® brand of props.

We recommend the following engines:

- Tower Hobbies .40 ABC (TOWG0040)
- Tower Hobbies .46 ABC (TOWG0146)
- O.S.® .40 LA (OSMG0040)
- O.S. .40 FX (OSMG0540)
- SuperTigre® GS-40 (SUPG0122)

COMMON ABBREVIATIONS

Fuse = Fuselage
Stab = Horizontal Stabilizer
Fin = Vertical Fin
LE = Leading Edge
TE = Trailing Edge
LG = Landing Gear
Ply = Plywood
" = Inches

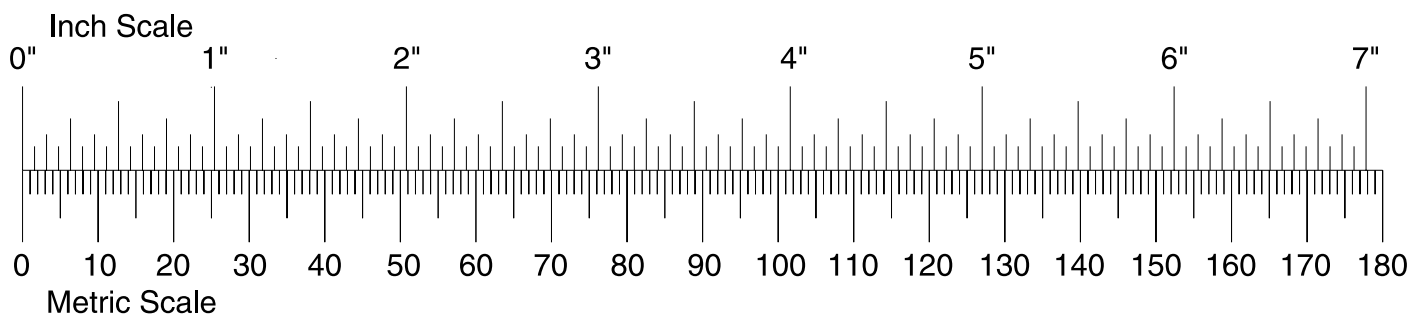
ORDERING REPLACEMENT PARTS

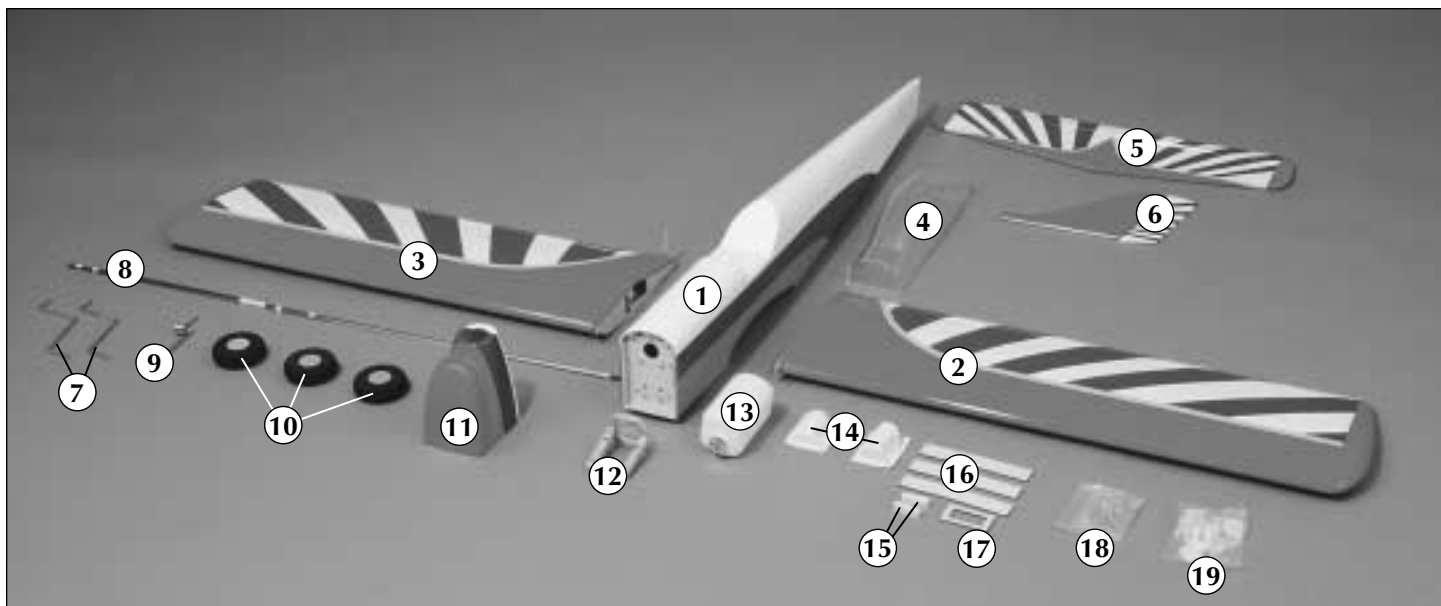
Replacement parts are available from Tower Hobbies for your Tower Voyager. Our order assistance representatives are ready to answer your questions or to place your order. Call us at (800) 637-6050 or see our website at:

www.productsupport@towerhobbies.com

Replacement Parts

Wing Set – TOWA5090
Fuselage Set – TOWA5091
Tail Set – TOWA5092
Landing Gear Set – TOWA5093
Cowl – TOWA5094





PARTS LIST

Before assembly match the parts in the above image to the parts in the kit. Check off each part as it is located. If any parts are missing or damaged, consult Tower Hobbies Order Assistance (see page 19 for phone numbers).

- 1 Fuselage
- 2 Left Wing Panel w/Aileron
- 3 Right Wing Panel w/Aileron
- 4 Transparent Canopy
- 5 Stabilizer/Elevator
- 6 Rudder/Fin
- 7 Main Landing Gear (2 pcs.)
- 8 Pushrods

- 9 Nose Landing Gear
- 10 70mm Foam Wheels (3)
- 11 Fiberglass Cowl
- 12 Adjustable Engine Mount
- 13 Complete 270cc Fuel Tank
- 14 Complete ABS Pilot Bust (2 pcs.)
- 15 Aileron Servo Tray Mounting Block
- 16 Wing Joiners (3 pcs.)
- 17 Aileron Servo Tray
- 18 Hardware Bag
- 19 Plastic Parts Bag

HARDWARE AND PLASTIC BAG CONTENTS

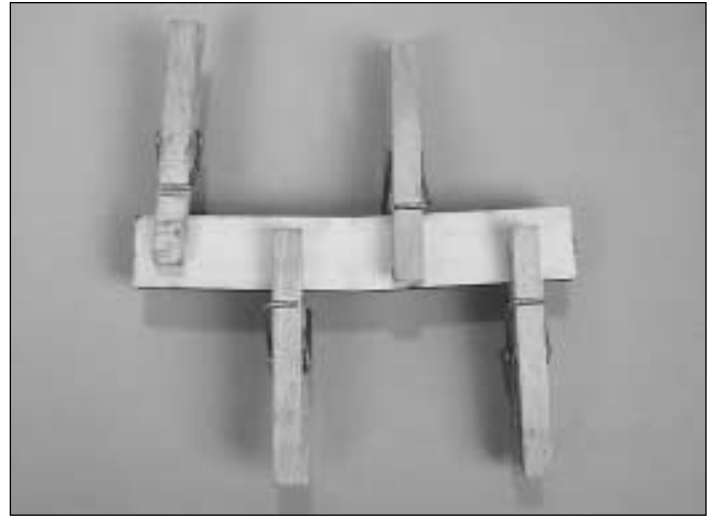
- (2) 6" [152mm] Threaded One End Pushrods
- (2) 36" [914mm] Threaded One End Pushrods
- (2) 36" [914mm] Outer Flexible Pushrod
- (1) Nylon Steering Arm
- (2) Adjustable Metal Engine Mount Parts
- (2) 8mm x 8mm x 35mm Hard Balsa Sticks
- (1) 2" Red Spinner
- (4) Plastic Quick Links
- (5) Plastic Clevises
- (2) Plastic Control Horns
- (2) Plastic Control Horn Backplates
- (4) Nylon Landing Gear Straps
- (5) Silicone Retainers

- (14) Pre-cut Round CA Hinges
- (1) Plastic Front Gear Attachment
- (6) 4mm x 15mm Bolts
- (2) 4mm x 35mm Bolts
- (4) 4mm x 25mm Bolts
- (7) 4mm Wheel Collars
- (2) 4mm Flat Washer
- (4) 2mm x 15mm Bolts
- (4) 4mm Hex Nuts
- (8) 3mm x 5mm Bolts
- (2) Complete "EZ Type" Connectors
- (4) 4mm Lock Washers
- (8) 2mm x 10mm Screws With Built-in Washer

- (8) 2mm x 10mm Screws
- (1) Decal Sheet

Special Note: It is suggested to charge your radio system before starting to build. Following the manufacturer's instructions, connect your transmitter and receiver batteries to the system's charger. This way the radio will be ready when it is time to install and test the radio components.

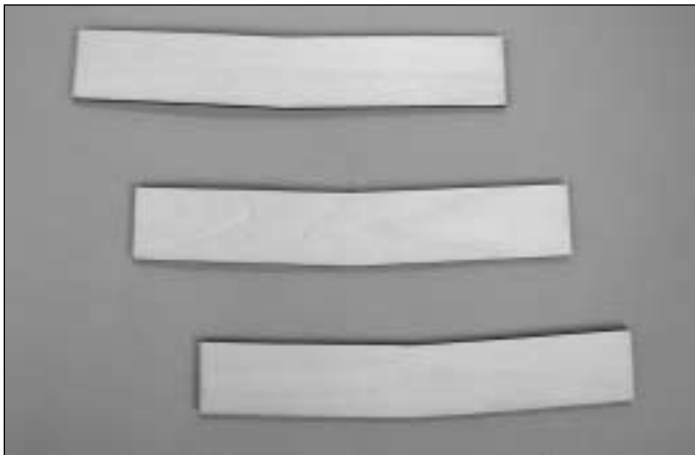
CLAMP THE WING JOINER



○ 3. Use clothespins to clamp the wing joiners firmly together. If any epoxy squeezes out, remove it using a paper towel dampened with denatured alcohol. Make sure the joiners are evenly lined up with each other. Set the joiner assembly aside until the epoxy has fully cured.

WING ASSEMBLY

PREPARE THE WING JOINERS



○ 1. Locate the three 1/8" [3mm] die-cut **wing joiners**. Arrange the joiners in the same orientation as they will be glued together. Sand off any bumps from the edges.

Note: Please read through the following two steps before mixing any epoxy.

GLUE THE WING JOINERS



○ 2. Mix approximately 1/4 oz. [7ml] of 30-minute epoxy using a mixing stick and a cup. Apply an even coat of epoxy on both sides of one joiner using a mixing stick or an epoxy brush. This joiner will be the center joiner of the assembly. Apply a thin coat on one side of each of the other two joiners. These will be on either side of the center joiner. Quickly proceed through the following two steps before the epoxy cures.

MARK THE CENTERLINE OF THE JOINER



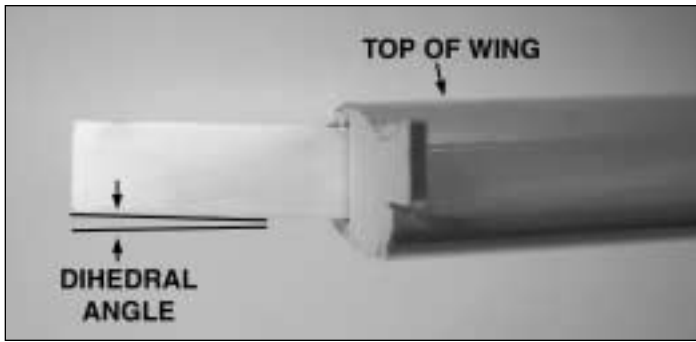
○ 4. After the epoxy has cured, remove the clothespins and draw a centerline on both sides of the plywood wing joiner as shown.

TEST FIT THE WING JOINER



○ 5. Test fit the wing joiner in both **wing panels** by sliding the joiner into the wing joiner pocket. The joiner should slide in with little resistance up to the centerline that was drawn on the joiner. If the fit is too tight, lightly sand the wing joiner to make it fit. **Caution:** A snug fit of the joiner in the wing joiner pockets is desired. Do not sand the joiner excessively.

VIEWING THE WING DIHEDRAL



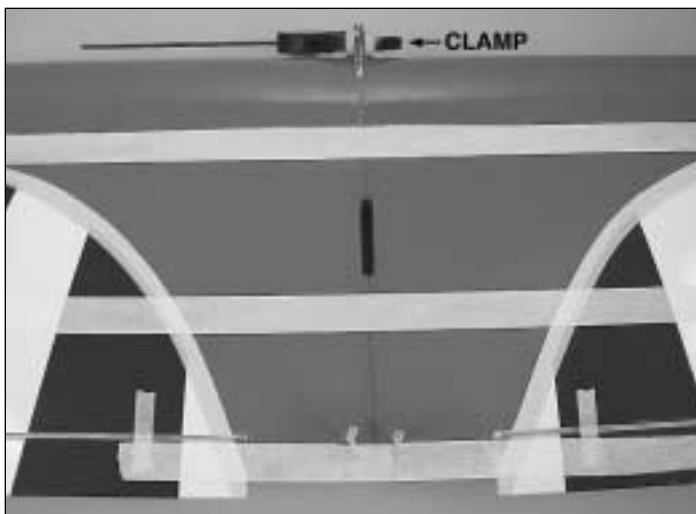
○ 6. Pay close attention to the orientation of the wing joiner in relation to the wing panel, creating the dihedral angle as shown.

TEST THE FIT OF THE WING PANELS



○ 7. Test fit the wing panels together. They should fit flush against each other without any gaps. If the wing panels do not fit together tightly, sand the wing joiner or the wing roots lightly. With one of the wing panels laying flat on a flat surface, the other wing panel's wing tip should be raised between 2" and 2-1/4" [51mm to 57mm].

JOIN THE WING HALVES



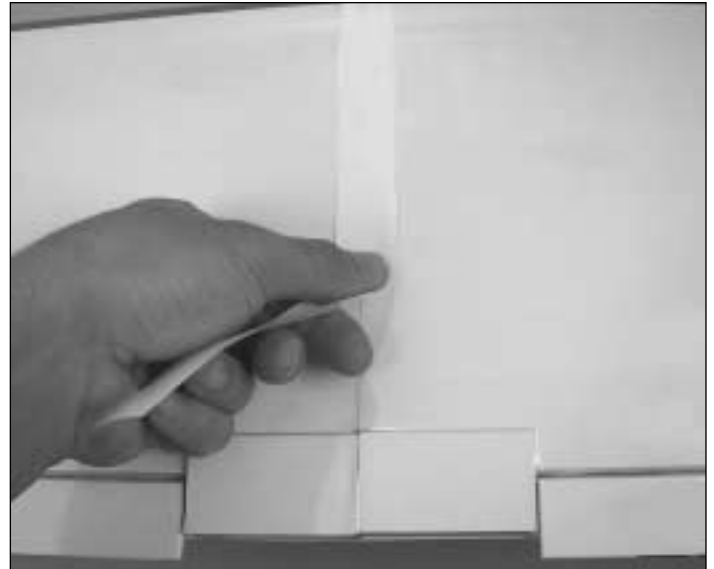
○ 8. Mix 1/2 oz. [14 ml] of 30-minute epoxy. Use a mixing stick or epoxy brush to apply epoxy to both wing roots and to all sides of the wing joiner. Apply the rest of the epoxy inside both wing

joiner pockets. Install the wing joiner in the wing joiner pockets and press the wings together. The fit should be as tight as possible. Use several strips of tape to hold the wing halves together while the epoxy cures. Use a small clamp to clamp the wing mounting tabs together.

REMOVE THE EXCESS EPOXY

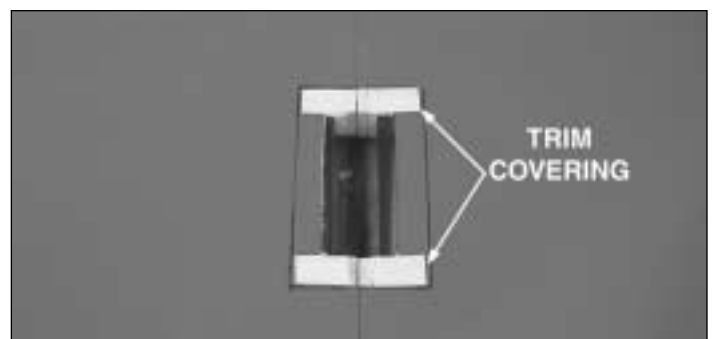
○ 9. Clean up any excess epoxy with paper towels dampened with denatured alcohol. The dihedral angle is established by the wing joiner and the angle of the wing roots. As long as the wing roots fit together tightly, the dihedral angle will be correct.

APPLY THE WING CENTER-SECTION TAPE



○ 10. Starting at the leading edge of the wing, apply the 1/2" x 11" [13 mm x 280 mm] white wing center-section tape on the bottom wing center-section glue joint. A small amount of pressure should be applied to make a smooth seam.

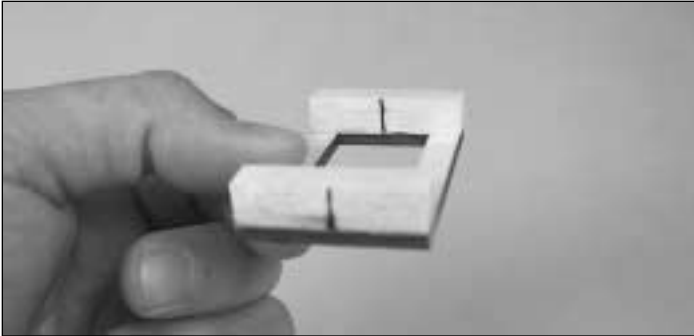
TRIM THE WING COVERING



○ 11. Hold the **aileron servo tray** over the hole in the center section of the wing. Outline the tray. Trim the covering and

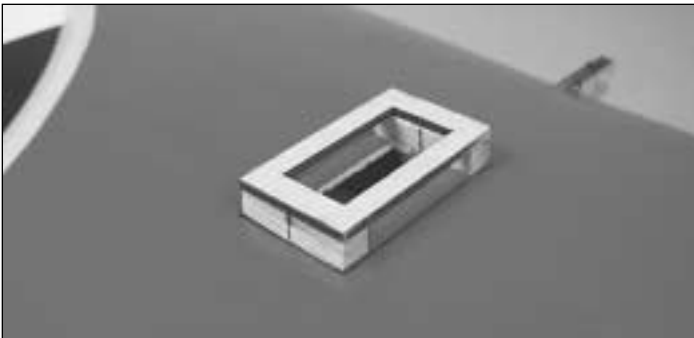
enlarge the opening in the wing skin for the aileron servo. When trimming the covering, be careful not to cut into the wood.

ASSEMBLE THE AILERON SERVO TRAY



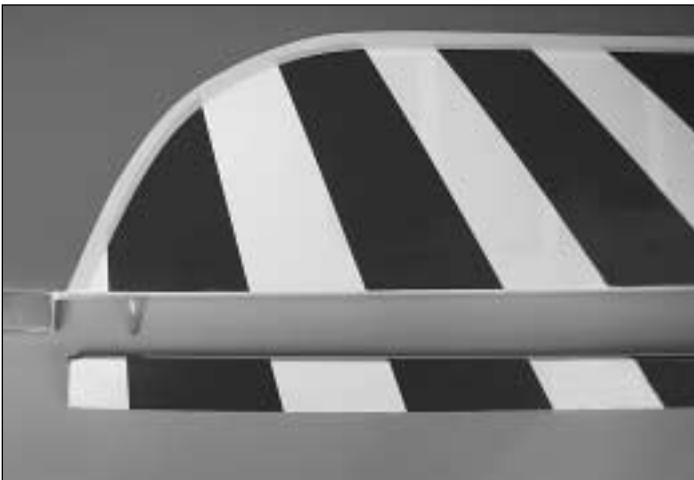
○ 12. Locate the two 5/16" x 5/16" x 1-3/8" [8mm x 8mm x 35mm] balsa aileron servo tray mounting blocks. Draw a centerline on the mounting blocks. Glue the balsa aileron servo mounting blocks onto the aileron servo tray using either 6-minute epoxy or medium CA.

INSTALL THE AILERON SERVO TRAY



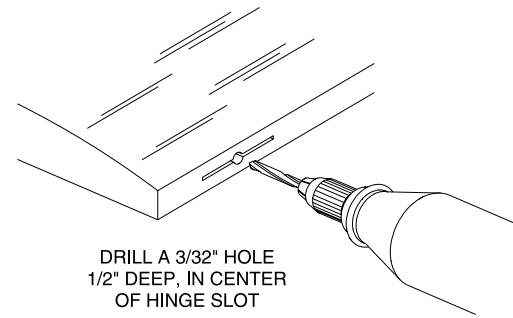
○ 13. Test fit the tray on the wing. Sand the tray mounting blocks until the tray sits flat against the wing. Glue the servo tray to the wing using either medium CA or 6-minute epoxy.

PREPARE TO INSTALL THE AILERONS

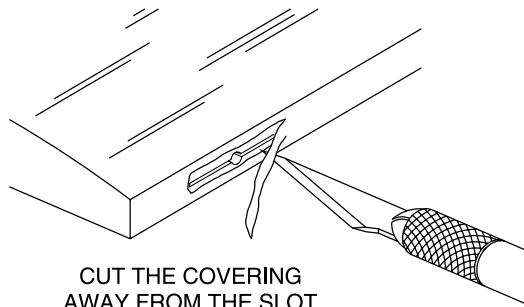


○ 14. Separate the **ailerons** from the wing by removing the tape that holds them together.

PREPARE THE HINGE SLOTS



DRILL A 3/32" HOLE
1/2" DEEP, IN CENTER
OF HINGE SLOT



CUT THE COVERING
AWAY FROM THE SLOT

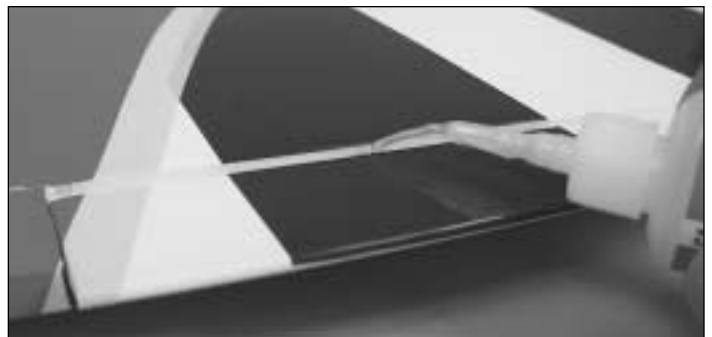
○ 15. Drill a 3/32" [2.4 mm] hole in the center of each hinge slot both in the wing's trailing edge and in the ailerons. Use a sharp #11 blade to clean up the slots and to cut a strip of covering from the slots in the wing and aileron.

INSTALL THE AILERON HINGES



○ 16. Insert the CA hinges in the wing's trailing edge. Note that the direction of the cut in the hinges is perpendicular to the hinge line. Stick a pin through the center of the hinge near the cut. Test fit the ailerons to the wing with the hinges. There should be a small gap between the ailerons and the wing. Remove the ailerons.

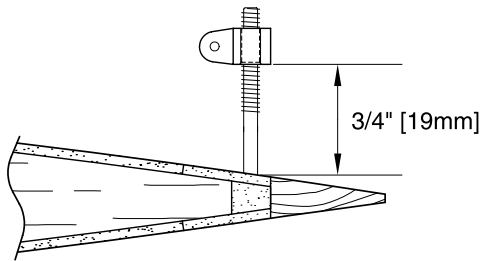
GLUE THE AILERON HINGES



○ 17. Drop a small amount of 30-minute epoxy into the torque rod's holes in the ailerons. Re-install the ailerons and apply six

drops of thin CA to the top and bottom of each CA hinge. Do not use accelerator. Let the CA fully harden and then test the hinges by pulling on the aileron.

INSTALL THE AILERON CONTROL HORNS



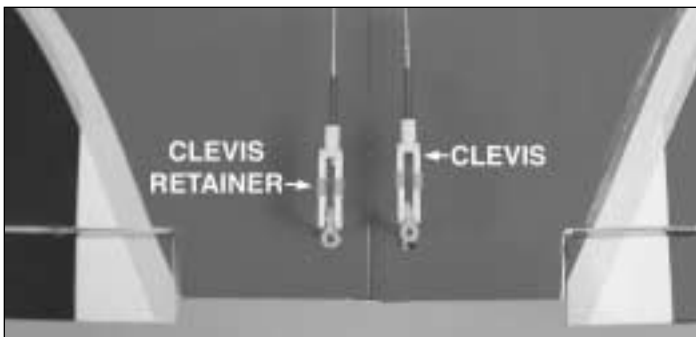
○ 18. Thread the aileron control horns into the torque rods until they are positioned 3/4" [19mm] above the wing's surface.

ASSEMBLE THE AILERON'S PUSHRODS



○ 19. Locate two plastic clevises, two 6" [152mm] threaded one end pushrods and two clevis retainers. Thread a clevis onto each pushrod about 18 full turns. Slide a clevis retainer partially onto each clevis.

INSTALL THE AILERON'S PUSHRODS



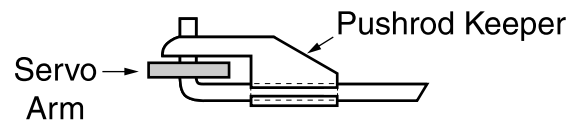
○ 20. Attach the pushrods to the aileron control horns. Press the forks of the clevises together until the pin snaps into the opposite fork. Slide the clevis retainer onto the clevis.

INSTALL THE AILERON SERVO



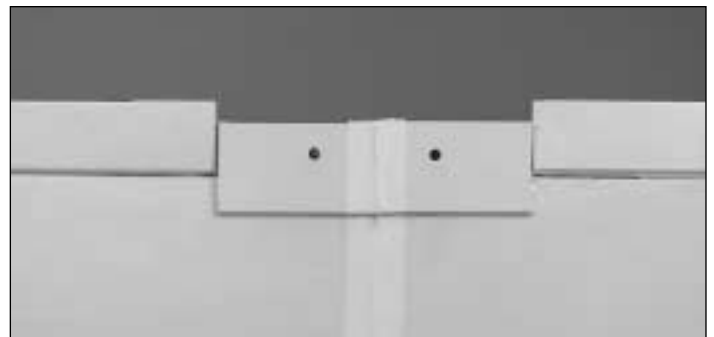
○ 21. Install the aileron servo on the aileron's servo tray with the hardware supplied by the manufacturer. Note the orientation of the servo. Cut up a large servo arm as shown and install it on the servo. Enlarge the servo arm's hole you plan to use with a Hobbico Servo Horn Drill (or a #48 or 5/64" [2 mm] drill bit).

CONNECT THE AILERON PUSHRODS



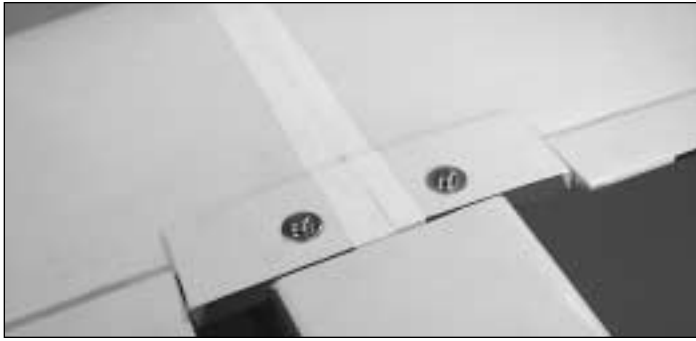
○ 22. Center the aileron servo arm. Center each aileron. Mark where the pushrods meet with the servo arm holes you plan to use. Bend the pushrod 90 degrees up at the mark and install a quick link on the pushrod as shown in the sketch. Cut away any excess wire, leaving 1/16" [1.6 mm] protruding from the quick link.

PREPARE THE WING BOLT HOLES



○ 23. Feel through the covering and find the wing bolt holes. Cut out the covering both on the top and bottom surface of the wing.

INSTALL THE WING TO THE FUSELAGE



○ 24. Install the wing on the **fuselage** using two 4mm x 35 mm bolts and two 4mm wide flat washers.

FUSELAGE ASSEMBLY

PREPARE THE STABILIZER SLOT



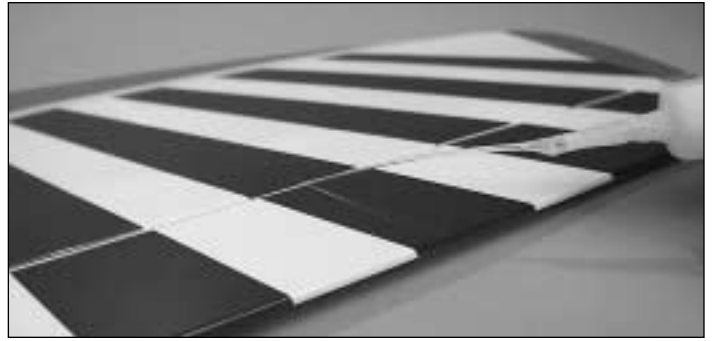
○ 1. Locate the slot for the **horizontal stabilizer** under the covering of the tail section of the fuselage by gently pressing the covering with your finger. Using a sharp hobby knife, carefully remove the covering, exposing the slot on both sides of the fuselage. **Note:** Do not cut into the wood around the slot.

REMOVE THE TAIL POST



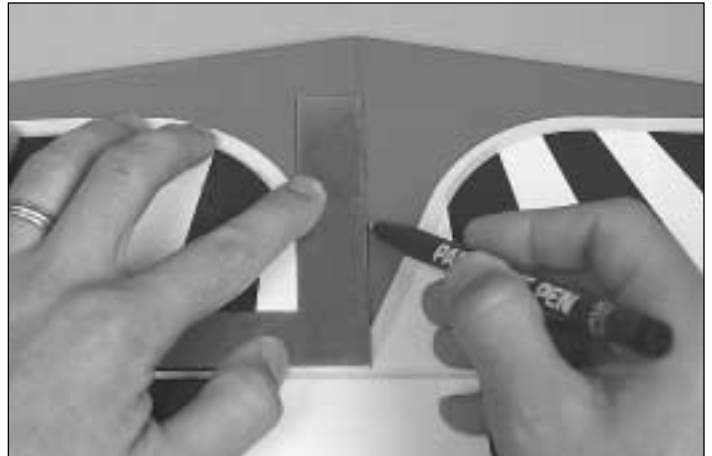
○ 2. Using a razor saw, cut the post even with the slot as shown.

INSTALL THE ELEVATOR HINGES



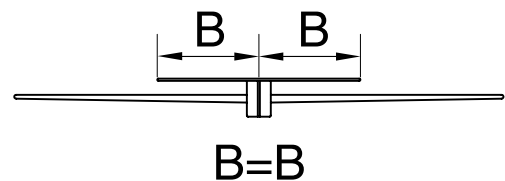
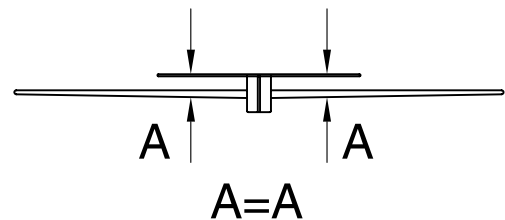
○ 3. Install and glue the elevator hinges using the same technique used for the aileron hinges.

MARK THE CENTERLINE OF THE STABILIZER



○ 4. Find the exact center of the stabilizer. Use a felt-tip pen to draw a centerline on the top side of the stabilizer.

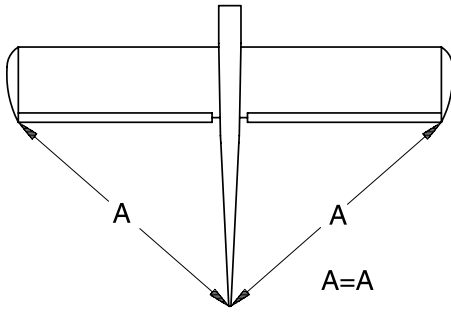
ALIGN THE STABILIZER WITH THE WING



○ 5. Insert the stabilizer into the horizontal stabilizer slot. The centerline you just made will help you center the stab to the fuselage (B). Stand about 10 feet behind the model and check for the stab to wing alignment (A). If the stab is not parallel to the

wing, remove the stab and sand the stab slot on the high side. Replace the stab and check the alignment. Continue this process until the wing and stab are parallel.

ALIGN THE STABILIZER WITH THE WING



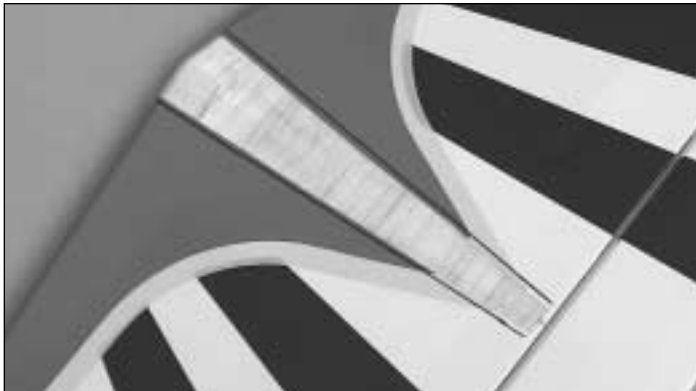
○ 6. Stick a pin through the fin slot into the stabilizer and fuselage at the aft portion to the fin slot. Measure the distance from the tip of one wing to the tip of the stabilizer as shown above. Repeat the same measurement on the other side of the airplane. The two distances should be the same. If they are not, slightly rotate the stabilizer about the pin and measure again. Repeat the procedure until the stab is aligned. Make sure that you still maintain the alignment explained on the previous step.

MARK THE STABILIZER LOCATION



○ 7. Once the stab is properly aligned, mark the fuselage on the top and bottom of the stab using a felt-tip pen.

REMOVE THE CENTER COVERING



○ 8. Remove the stab and cut the covering 1/16" [1.6mm] inside the lines with a sharp hobby knife. Be careful **not to cut into the wood** as that will weaken the stab's structure.

GLUE THE STAB IN PLACE

○ 9. Mix 1/4 oz [7ml] of 30-minute epoxy. Using a mixing stick or an epoxy brush, apply glue to the stabilizer slots and to the center of the stab. Insert the stab into the stab slot and align it.

Clean up any excess epoxy that squeezes out using a paper towel and alcohol. Recheck the alignment before the epoxy cures.

PREPARE THE FIN SLOT



○ 10. Feel through the covering for the fin slot. Use a sharp hobby knife to cut the covering off the fin slot.

INSTALL THE RUDDER HINGES



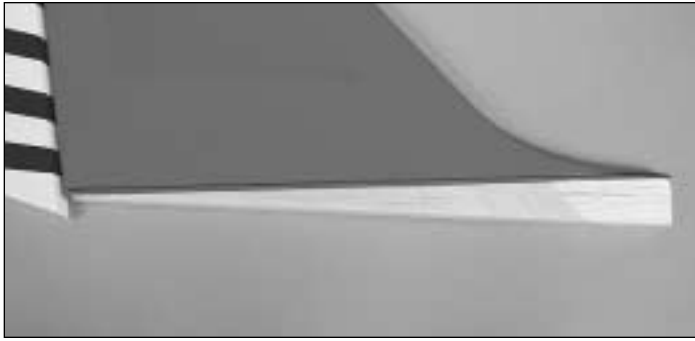
○ 11. Glue the rudder hinges using the same technique used to glue the aileron's hinges.

MARK THE FIN LOCATION



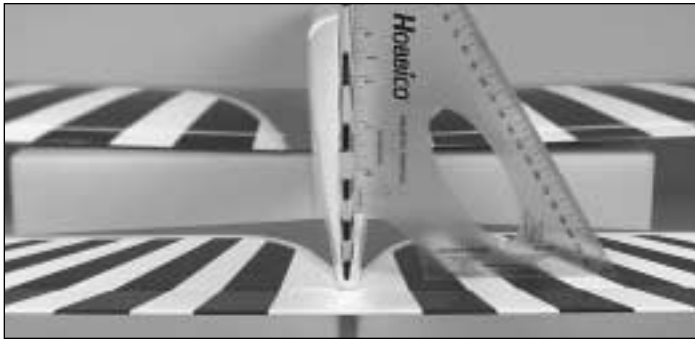
○ 12. Insert the **fin** into its slot in the fuselage. Use a felt-tip pen to outline the fuselage onto the both sides of the fin as shown.

REMOVE THE LOWER FIN COVERING



○ 13. Remove the fin and cut the covering $3/32$ " [2.3mm] below the lines with a sharp hobby knife. Be careful **not to cut into the wood** as that will weaken the fin's structure.

GLUE THE FIN IN POSITION



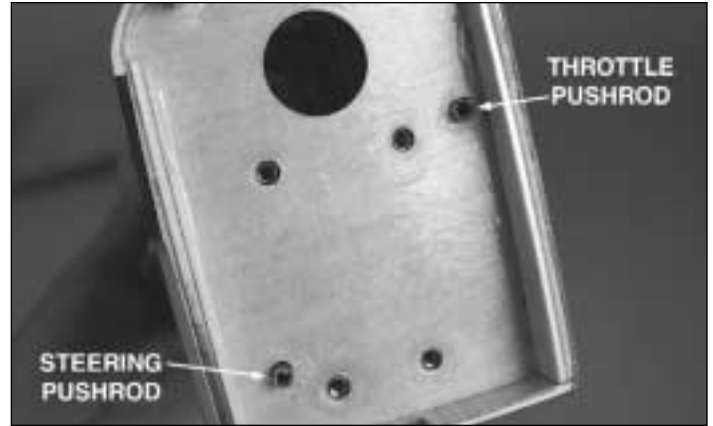
○ 14. Glue the fin into position with 30-minute epoxy using a builder's square to make certain the fin is vertical. If necessary, pull the fin to one side or the other with masking tape until the fin is perpendicular to the stab. Remove the wing after the epoxy has cured.

INSTALL THE NOSE WHEEL PUSHROD TUBE



○ 15. Use a $3/16$ " [4.8mm] drill bit to drill through the second former of the fuselage for the plastic outer pushrod. Using the hole for the steering plastic outer pushrod in the firewall as a guide, try to drill the second former at a location where the steering pushrod will have a straight shot to the rudder servo. Cut the supplied outer pushrod tube in two. Roughen up one of the ends of each of the pushrod tubes and glue one of the halves in place with CA. The tube should stick out about $1/4$ " [6.3mm] from the firewall.

INSTALL THE THROTTLE PUSHROD TUBE



○ 16. Install the second half of the pushrod tube you just cut in the pre-drilled throttle pushrod guide holes. Use CA to glue the tube in place. If you need to enlarge the pre-drilled holes, use a $3/16$ " [4.8mm] drill bit.

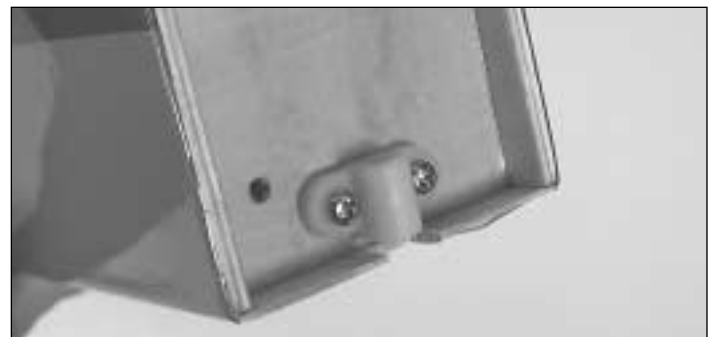
INSTALL THE LANDING GEAR

INSTALL THE ENGINE MOUNT



○ 1. Install the metal engine mount using four 4mm x 15mm bolts into the pre-installed blind nuts. You may have to trim the fuselage's top stringer slightly so that the mount fits well. Make sure you install it in the position shown to accommodate the inverted engine.

INSTALL THE NOSE GEAR ATTACHMENT



○ 2. Install the white plastic nose gear attachment using two 4mm x 15mm bolts into the pre-installed blind nuts. Trim the bottom of the fuselage to accommodate the nose landing gear wire.

INSTALL THE NOSE LANDING GEAR



○ 3. Add a drop of Great Planes Pro Threadlocker to the steering arm's pre-installed wheel collar threads. Install a 3mm x 5mm screw through the steering arm into the wheel collar. Slide the landing gear through the nose gear bracket and the steering arm as shown. Then, add another 4mm wheel collar with screw to the assembly. Insert the end of the nose gear wire into the engine mount. Position the nose gear so that the coil is 1/8" [3mm] below the bottom of the fuselage. Center the nose gear, and rotate the steering arm until the tip is 5/8" [16mm] away from the firewall. Tighten the steering arm's screw and the wheel collar screw.

INSTALL THE MAIN LANDING GEAR



○ 4. Feel through the covering under the wing for the main gear slots. Cut the covering away from the slots. Install each of the main gears as shown using four landing gear straps and eight 2mm x 10mm screws. The screws are fairly easy to screw directly into the wood, but if you prefer, you can use a drill and a 1/16" [1.6mm] drill bit to drill pilot holes. Harden the holes with thin CA.

INSTALL THE WHEELS

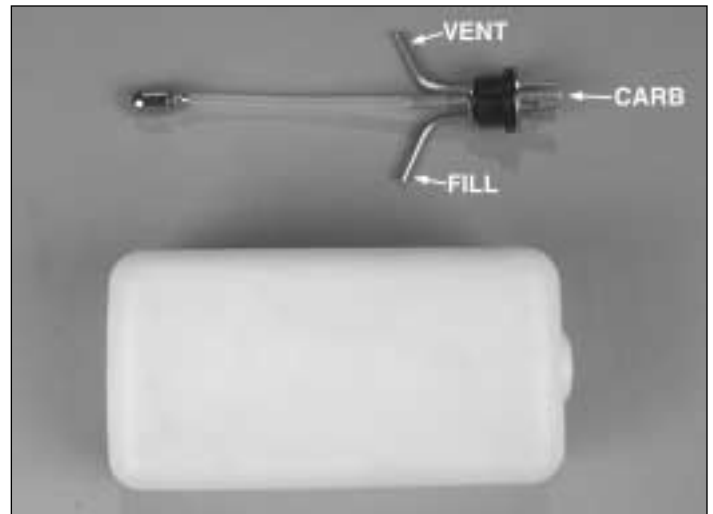


○ 5. Install a 4mm wheel collar on the inside of the landing gear wheel axles. Slide a wheel onto each axle. File a flat spot on the

axles for the outer wheel collars and install a 4mm wheel collar to hold the wheel in place. Use 3mm x 5mm bolts on the wheel collars. Use threadlocker on the bolts. Make sure the wheel spins freely.

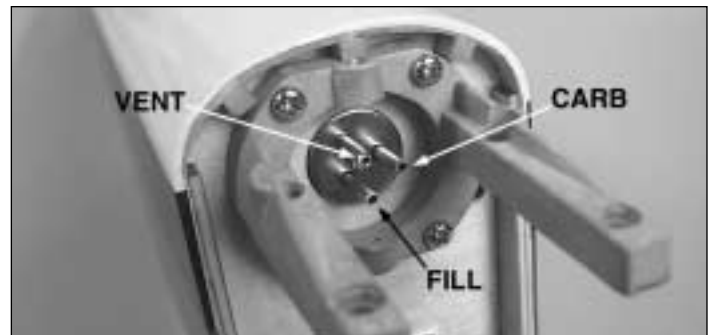
ENGINE INSTALLATION

ASSEMBLE THE FUEL TANK



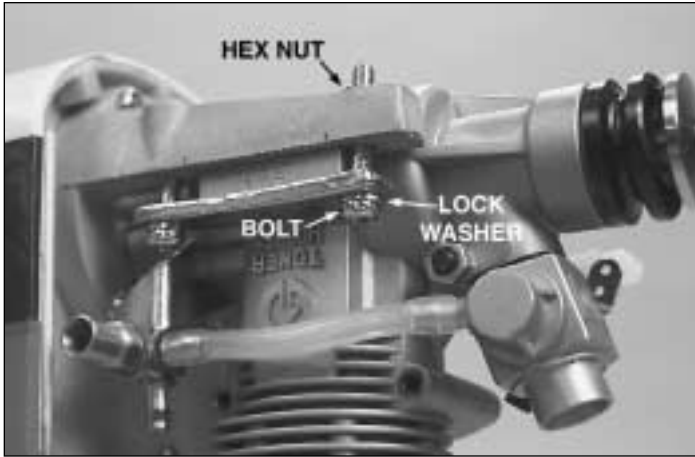
○ 1. Assemble the fuel tank stopper and tubes as shown in the photo and then insert them into the tank. Do not tighten the screw to expand the stopper. You will do that in the next step. Be certain that the fuel line weight (clunk) at the end of the fuel line inside the tank does not contact the rear of the tank. Mark which is the carb line, vent and fill tubes. **Note:** If you choose to install a Filler valve, such as the Great Planes Easy Fueler Fuel Filling Valve, you only need to install two tubes in the fuel tank: the vent tube and the carburetor tube.

INSTALL THE FUEL TANK



○ 2. Install the fuel tank in the fuse. Fit the neck through the hole in the firewall. Be certain you install the fuel tank in the fuselage with the vent tube pointing up and the fill tube down.

INSTALL THE ENGINE



○ 3. Install the engine to the engine mount as shown using four 4mm x 25 mm bolts, four 4mm nuts, four 4mm lock washers and the steel brackets. Use the lock washers between the bolts and the steel brackets. Center the engine on the engine mount and move it forward or aft until the drive washer of the engine is 4" [101mm] from the firewall. Tighten the engine bolts and install the muffler.

TEST FIT THE COWL



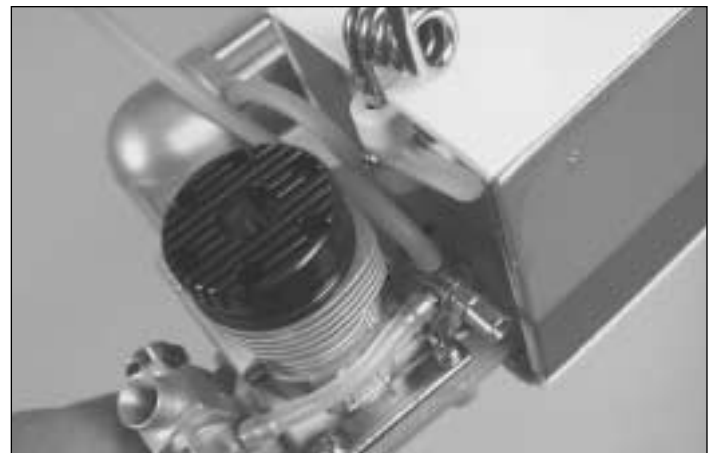
○ 4. Test fit the cowl on the fuselage. Use a high speed rotary tool to make a slot for the front landing gear, the needle valve, the carburetor and the muffler as shown. Fit the cowl until the cowl ring is 1/8" [3mm] behind the engine's drive washer.

INSTALL THE COWL



○ 5. Temporarily attach the spinner to the engine. Center the cowl ring to the spinner's backplate. Slide the cowl until there is about 1/8" [3 mm] clearance between the cowl ring and the spinner's backplate. Tape the cowl in position. Drill four 1/16" [1.6 mm] holes through the cowl and into the fuselage about 3/8" [9.5 mm] away from the cowl's edge. Do not drill into the fuel tank! Remove the cowl and redrill the holes in the cowl with a 1/8" [3 mm] drill bit.

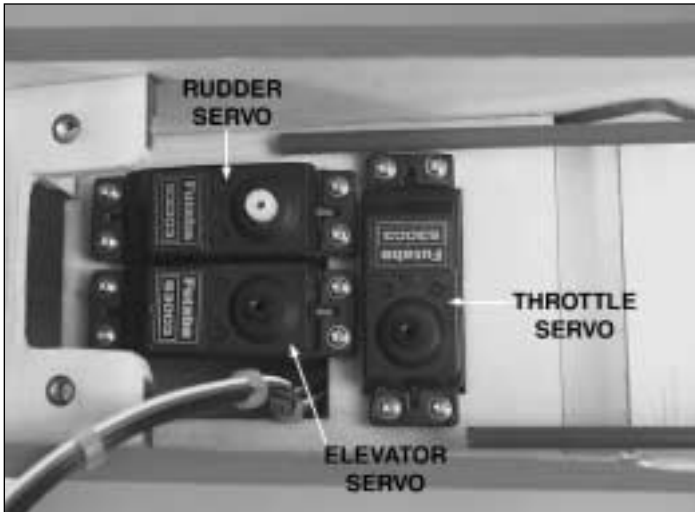
FINISH THE ENGINE INSTALLATION



○ 6. Wick some thin CA into the holes in the fuselage and let dry. Install the carburetor line to the carburetor, the vent line to the muffler and the fill line. Make sure the fill line is long enough that it is easily reachable from the outside of the cowl. Use an aluminum plug to plug the fill line. Install the muffler. **Note:** If you chose to use a Great Planes Easy Fueler™ Fuel Filling Valve, install it in the carburetor fuel line.

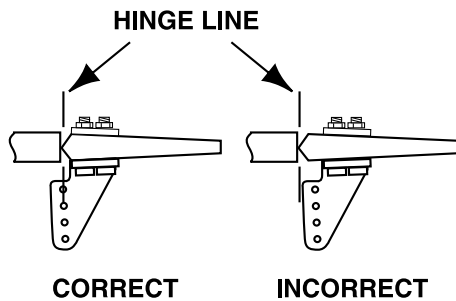
RADIO INSTALLATION

INSTALL THE SERVOS



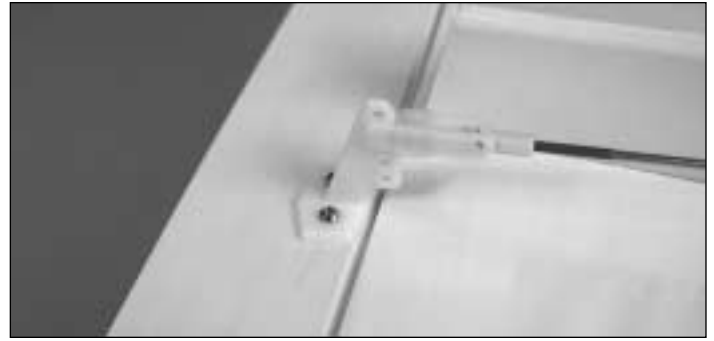
○ 1. Install the servos in the servo tray as shown using the hardware supplied with the servos. Make sure you leave a gap of approximately 3/16" [4.8 mm] of an inch between the rudder and elevator servo for the servo arms.

INSTALL THE ELEVATOR CONTROL ROD



○ 2. Install a clevis onto one of the 36" [914mm] threaded one end pushrods approximately 18 full turns. Connect the clevis to a large control horn. Feel through the covering for the elevator's guide exit hole and cut away the covering. Insert the pushrod into the guide, line up the control horn with the elevator's leading edge as shown and mark the position of the control horn's mounting holes.

INSTALL THE ELEVATOR CONTROL HORN



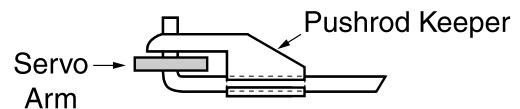
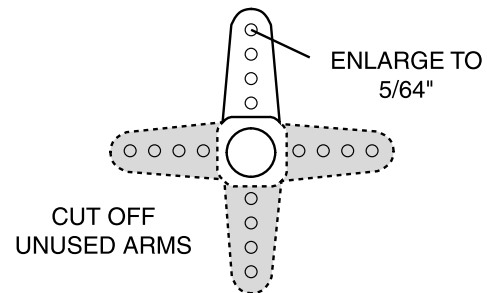
○ 3. Drill through the elevator at the marks using a 1/16" [1.6 mm] drill bit. Wick some thin CA into the holes and install the elevator's control horn using two 2mm x 15mm bolts and the control horn's back plate. Install a clevis retainer onto the clevis.

INSTALL THE RUDDER CONTROL ROD AND CONTROL HORN



○ 4. The procedure to install the rudder's control rod and control horn is the same as the elevator's procedure. Repeat the previous two steps.

CONNECT THE ELEVATOR TO THE SERVO



○ 5. Install and center the elevator's servo arm. Center the elevator and make a mark on the pushrod where it meets with the servo arm's hole you want to use. Bend the pushrod 90 degrees and install a quick link on the elevator's pushrod as shown in the sketch. Cut away any excess wire.

INSTALL THE NOSE WHEEL PUSHROD

○ 6. Find the 36" [914 mm] threaded one end pushrod left. Cut it in half (18" [457 mm]). Use the unthreaded portion as the nose wheel's pushrod. Make a "Z" bend to one of the ends and install

it to the rudder's servo arm at the inner hole. Slide the pushrod through the steering guide. Install the rudder's servo arm and center it.

CONNECT THE RUDDER TO THE SERVO



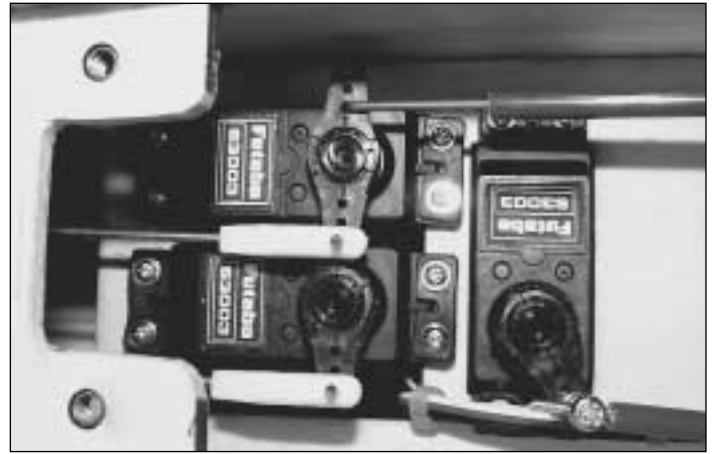
○ 7. Center the rudder and make a mark on the rudder's pushrod where it meets with the servo arm's outer hole. Bend the rudder's pushrod 90 degrees and install a quick link on the rudder's pushrod as shown in the sketch. Cut away any excess wire.

CONNECT THE NOSE WHEEL TO THE SERVO



○ 8. Slide the nose wheel's pushrod through the quick connector body. Install the quick connector body onto the steering arm as shown and hold it on the steering arm using the provided bolt. Center the rudder servo arm and tighten the quick connector bolt. **Note:** The steering arm should be at an angle from the firewall when the front wheel is straight.

INSTALL THE THROTTLE PUSHROD



○ 9. Thread a clevis on the threaded end of the cut-down 36" [914 mm] pushrod approximately 18 turns. Slip a clevis retainer on the base of the clevis and slide the pushrod in the throttle tube. Connect the clevis to the carburetor arm and use a quick connector to connect the throttle pushrod to the throttle servo arm. Before you cut any excess wire, make sure you get the full carburetor rotation with the servo rotation. Once you are done, reinstall the cowl, the spinner and the prop.

INSTALL THE RADIO SWITCH



○ 10. Install the radio switch on the side of the fuselage away from the exhaust. If you choose to install a charge receptacle, now it is the time to do it.

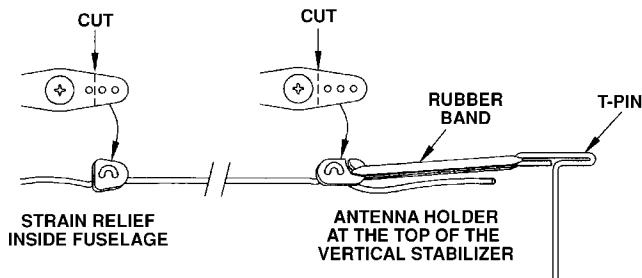
INSTALL THE RECEIVER AND BATTERY



○ 11. Make all the connections between the battery, the radio switch and the receiver and secure them with tape or shrinking tube. Connect the throttle, elevator and rudder servos to the

receiver and connect a 6" [152 mm] extension to the aileron channel. Wrap the receiver and battery in 1/4" [6.4 mm] thick R/C foam. Secure the receiver and battery in place using balsa sticks (not supplied) as shown.

ROUTE THE RECEIVER ANTENNA



○ 12. Route the antenna to the tail of the model. Drill a 1/16" [1.6mm] hole through the fuse side (or bottom) and route the antenna to tail of the airplane. Use a strain relief inside the fuselage (a cut-up servo arm) and another one with a rubber band at the rear fuse to hold the antenna. A T-pin will work well for this. Never cut or shorten the antenna wire.

FINISHING UP THE AIRPLANE

APPLY THE DECALS

○ 1. Use the box photos as a guide to apply the decals on your Tower Voyager 40 ARF.

FINISH THE PILOT

○ 2. Use a hobby knife to trim the two halves of the ABS part that form the pilot. Lightly sand both halves until they mate correctly. Glue the two halves together using thin CA. Sand the joints and paint the pilot as desired.

TRIM THE CANOPY

○ 3. Use curved trim scissors to trim the canopy at the cut lines. Test fit the canopy onto the fuselage.

FINISH THE COCKPIT



○ 4. Glue the pilot in place with CA. Place the canopy in place and hold it in position with tape. Use an electric drill and a 1/16" [1.6mm] drill bit to drill through the canopy and the fuselage for the hold-down screws. Wick some thin CA into the fuselage's holes. Use four 2mm x 6mm screws with built-in washer to hold the canopy in place.

GET THE MODEL READY TO FLY

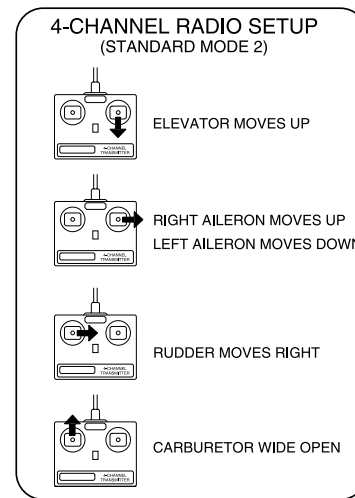
CENTER THE SERVO ARMS

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

CENTER THE CONTROL SURFACES

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

CHECK THE CONTROL THROW DIRECTION



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

ADJUST THE CONTROL THROWS

Use a Great Planes AccuThrow™ (GPMR2405) or a ruler to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws somewhere between the low rate and the high rate setting.

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

These are the recommended control surface throws:

	High Rate	Low Rate
ELEVATOR:	9/16" [14mm] up 9/16" [14mm] down	3/8" [9.5mm] up 3/8" [9.5mm] down
RUDDER:	11/16" [19mm] right 11/16" [19mm] left	1/2" [13mm] right 1/2" [13mm] left
AILERONS:	3/8" [9.5mm] up 3/8" [9.5mm] down	3/16" [5mm] up 3/16" [5mm] down

BALANCE YOUR MODEL

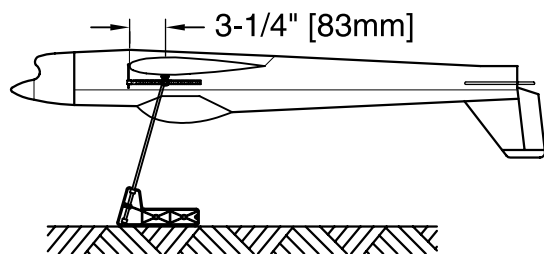
CHECK FORE-AFT BALANCE (C.G.)

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

At this stage the model should be in ready-to-fly condition with all of the systems in place including the engine, landing gear, covering and paint, and the radio system.

○ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the top of the wing on both sides of the fuselage. The recommended C.G. is located 3-1/4" [83mm] back from the leading edge of the wing.

This is where your model should balance for your first flights. Later, you may wish to experiment by shifting the C.G. up to 7/8" [23mm] forward or 1/8" [3mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but it may then require more speed for takeoff and make the airplane more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult for you to control. In any case, start at the location we recommend and do not at any time balance your model outside the recommended range. At the recommended C.G. the model has no roll coupling on knife edge and a very small amount of pitch coupling.



○ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model upside-down on a Great Planes CG Machine™, or lift it upside-down at the balance point you marked.

○ 3. If the tail drops, the model is "tail heavy" and the battery pack and/or receiver must be shifted forward or weight must be added to the nose to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted aft or weight must be added to the tail to balance. If possible, relocate the battery pack and receiver to minimize or eliminate any additional ballast required. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. weight, or GPMQ4646 for the

2 oz. weight). If spinner weight is not practical or is not enough, use Great Planes (GPMQ4485) "stick-on" lead. A good place to add stick-on nose weight is to the firewall (don't attach weight to the cowl-it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the bottom of the fuse over the firewall until the model balances. Once you have determined the amount of weight required, it can be permanently attached. If required, tail weight may be added by cutting open the bottom of the fuse and gluing it permanently inside.

Note: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use #2 sheet metal screws, RTV silicone or epoxy to permanently hold the weight in place.

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

CHECK THE LATERAL BALANCE

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

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

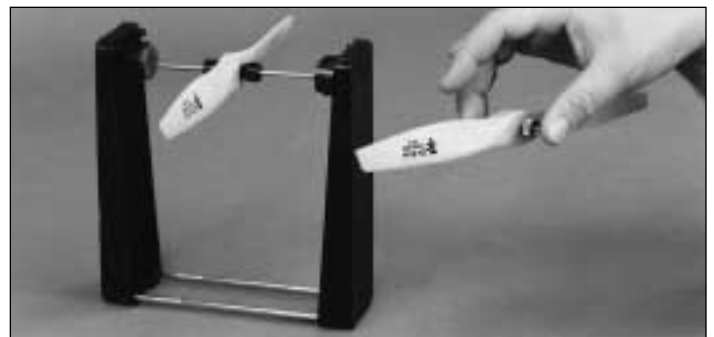
PREPARING TO FLY YOUR TOWER VOYAGER 40 ARF

CHARGE THE BATTERIES

Follow the battery charging procedures in your radio instruction manual. 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.

BALANCE THE PROPELLER

Balance your propellers carefully before flying. An unbalanced prop is the single most significant cause of damaging vibration. Not only will engine mounting screws and bolts vibrate out, possibly with disastrous effect, but vibration will also damage your radio receiver and battery. Vibration will cause your fuel to foam, which will, in turn, cause your engine to run rough or quit.



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

FIND A SAFE PLACE TO FLY

The best place to fly your R/C model is an AMA (Academy of Model Aeronautics) chartered club field. Ask your hobby shop dealer if there is such a club in your area and join. Club fields are set up for R/C flying and that makes your outing safer and more enjoyable. The AMA also can tell you the name of a club in your area. We recommend that you join the AMA and a local club so you can have a safe place to fly and have insurance to cover you in case of a flying accident. (The AMA address and phone numbers are listed on page 2 of this instruction manual).

If a club and its flying site are not available, you need to find a large, grassy area at least 6 miles away from any other R/C radio operation like R/C boats and R/C cars and away from houses, buildings and streets. A schoolyard may look inviting but it is too close to people, power lines and possible radio interference.

GROUND CHECK THE MODEL

If you are not thoroughly familiar with the operation of R/C models, ask an experienced modeler to check to see that you have the radio installed correctly and that all the control surfaces do what they are supposed to. The engine operation also must be checked and the engine "broken-in" on the ground by running the engine for at least two tanks of fuel. Follow the engine manufacturer's recommendations for break-in. Check to make sure all screws remain tight, that the hinges are secure and that the prop is on tight.

RANGE CHECK YOUR RADIO

Wherever you do fly, you need to check the operation of the radio before every time you fly. First, make sure no one else is on your frequency (channel). With the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control. Have someone help you. Have them stand by your model and, while you work the controls, tell you what the various control surfaces are doing.

Repeat this test with the engine running at various speeds with an assistant holding the model. If the control surfaces are not always acting correctly, do not fly! Find and correct the problem first.

ENGINE SAFETY PRECAUTIONS

Note: 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 the 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, as 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 items such as these away from the prop: loose clothing, shirt sleeves, ties, scarves, long hair or loose objects (pencils, screwdrivers) that may fall out of shirt or jacket pockets into the prop.
- Use a "chicken stick" device or electric starter; follow the instructions supplied with the starter or stick. 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 after operation. Make sure fuel lines are in good condition so fuel will not leak onto a hot engine, causing a fire.
- To stop the engine, cut off the fuel supply by closing off the fuel line or follow the engine manufacturer's recommendations. Do not use hands, fingers or any body part to try to stop the engine. Do not throw anything into the prop of a running engine.

AMA SAFETY CODE (excerpt)

Read and abide by the following Academy of Model Aeronautics Official Safety Code excerpt:

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 to, and avoid flying in the proximity of, full-scale aircraft. Where necessary an observer shall be used 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.
7. I will not fly my model unless it is identified with my name and address or AMA number, on or in the model.
9. 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. I will perform my initial turn after takeoff away from the pit or spectator areas, and I will not thereafter fly over pit or spectator areas, unless beyond my control.
4. I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission.

FLYING YOUR TOWER VOYAGER 40 ARF

The Tower Voyager 40 ARF is a great flying sport airplane that flies smoothly and predictably, yet is highly maneuverable. It does not have the self-recovery characteristics of a primary trainer. Therefore, you must either have mastered the basics of R/C flying or seek the assistance of a competent R/C pilot to help you with your first flights.

TAKEOFF

If you have dual rates on your transmitter, set the switches to "high rate" for takeoff, especially when taking off in a crosswind. Although the Tower Voyager 40 ARF has great low speed characteristics, you should always build up as much speed as your runway will permit before lifting off, as this will give you a safety margin in case of a "flame-out." When the plane has sufficient flying speed, lift off by smoothly applying a **little** up elevator (don't "force" it off to a vertical climb!), and climb out gradually.

FLYING

We recommend that you take it easy with your Tower Voyager 40 ARF for the first several flights and gradually "get acquainted" with this fantastic ship. Add and practice one maneuver at a time, learning how she behaves in each one. We particularly enjoy the ease with which the Tower Voyager 40 ARF flies inverted, with very little down elevator required! Spins and inverted spins are also performed with ease. Knife edge and point rolls are possible, but they require some aileron and elevator correction.

LANDING

When it's time to land and you cut the throttle, you'll notice a very slight climbing tendency at first, which bleeds off some speed; then it assumes the normal glide angle, slightly nose down.

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

GOOD LUCK AND GREAT FLYING!

Make a copy of this identification tag and place it on or inside the model.

This model belongs to:

Name

Address

City, State, Zip

Phone number

AMA number

TOWER HOBBIES®

P.O. Box 9078
Champaign, IL 61826-9078

Toll Free Orders Only800 637-4989
Toll Free Order Assistance800 637-6050
Non-Toll Free Ordering217 398-3636
Fax Ordering217 356-6608
Toll Free Fax Ordering800 637-7303

OTHER PRODUCTS AVAILABLE FROM TOWER HOBBIES



Tower Kaos™ .40 ARF

Eager to sink your teeth into the sporty side of R/C flying? Make the 90% prebuilt Tower Kaos 40 ARF your next model. It tracks through maneuvers with precision – while its thick, fully symmetrical airfoil minimizes speed buildup during dives and helps keep your landings slow, smooth and stable. In as little as 10-12 hours, you can have the Kaos 40 ARF ready for flight. The all-wood main sections arrive factory assembled and expertly covered in Top Flite® MonoKote® film. A generous package of high-quality, Great Planes® brand hardware is also included for absolutely reliable performance. **TOWA2052**



Tower Uproar™

Stick construction and a basic, box-style fuselage keeps cost low—while a nearly symmetrical wing gives the Uproar incredible snap! **TOWA2020**

