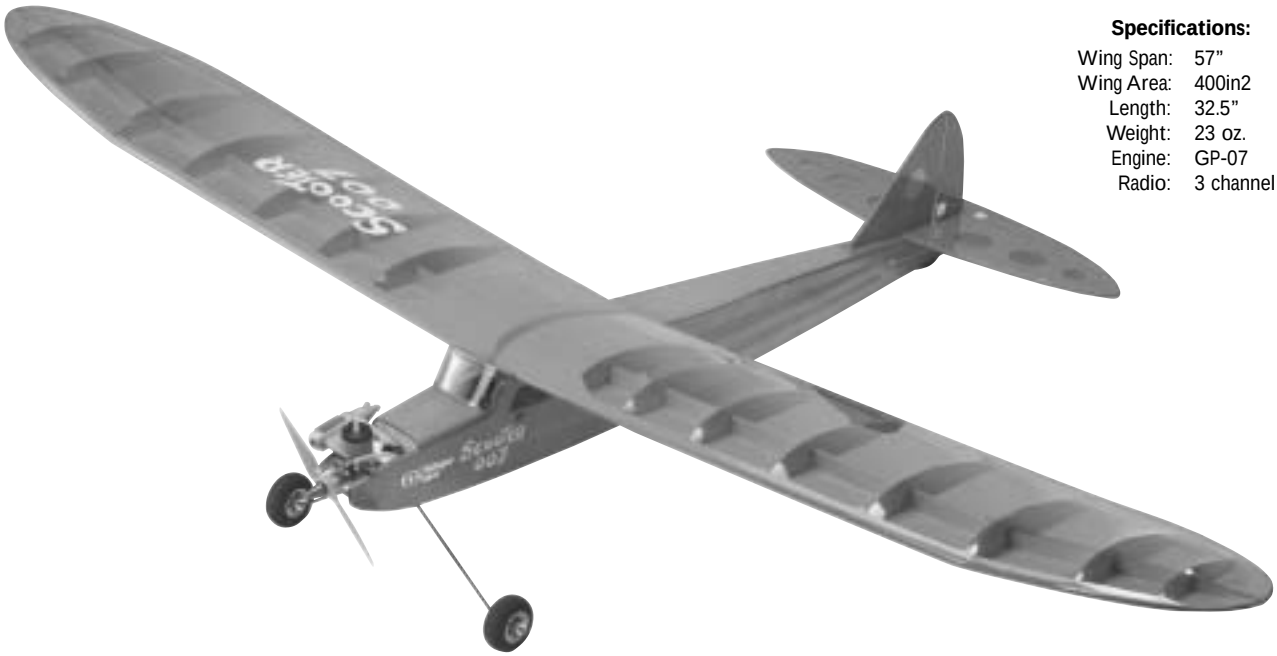
Scooter ARF
Assembly Manual



Specifications:

Wing Span:	57”
Wing Area:	400in2
Length:	32.5”
Weight:	23 oz.
Engine:	GP-07
Radio:	3 channel

Scooter ARF Airplane (TTR4561)

Distributed in North America by Ace Hobby Distributors, Inc. • 116 W 19th ST, Higginsville, MO 64037
Phone: 660-584-7121 • www.acehobby.com • E-mail: service@acehobby.com

Warranty

This kit is guaranteed to be free from defects in material and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost of the kit. By the act of building this user-assembled kit, the user accepts all resulting liability for damage caused by the final product. If the buyer is not prepared to accept this liability, it can be returned new and unused to the place of purchase for a refund.

Notice: Adult Supervision Required

This is not a toy. Assembly and flying of this product requires adult supervision.

Read through this book completely and become familiar with the assembly and flight of this airplane. Inspect all parts for completeness and damage. If you encounter any problems, call 660-584-6724 for help.

Thunder Tiger

JE6453

INTRODUCTION

The Scooter is reminiscent of a time when things were more relaxed and life happened at slower pace; everything was simpler...easier.

Now you can enjoy this "old-timer" feeling with these Almost-Ready-To-Fly planes. A large wing span, high aspect ratio eliptical wing provides ultra-stable and slow flight, perfect for the beginner or an experienced pilot looking for relaxation.

Pre-Assembly Notes

Before beginning the assembly read the instructions thoroughly to give an understanding of the sequence of steps and a general awareness of the recommended assembly procedures.

By following these instructions carefully and referring to the corresponding pictures, the assembly of your model will be both enjoyable and rewarding. The result will be a well built, easy to assemble ARF model, which you will be proud to display and also provide you considerable enjoyment.

If you are not an experienced R/C pilot, plan to have a fully competent pilot check your completed model and help you with your first flights. Even though we have tried to provide you with a very thorough instruction manual, R/C models are rather complicated and an experienced modeler can quickly check over your model to help make sure your first flights are successful.

Before you begin, check the entire contents of your kit against the parts list and photos to make sure that no parts are missing or damaged. This will also help you to become familiar with each component of your plane. If you find that any of the parts are either missing or damaged, please contact Ace Hobby Distributors, Inc., Customer Service (660-584-6704) immediately for replacements.

Trial fit each part before gluing it in place. Make sure you are using the correct part and that it fits well before assembling. No amount of glue can make up for a poor-fitting part.

RECOMMENDED TOOLS & MATERIALS

Adhesives:

Instant setting Cyanoacrylate adhesive (thin CA)
Slow setting Cyanoacrylate adhesive (thick CA)
10 Minute Epoxy (fast)
20-30 Minute Epoxy (slow)
RC-56 Canopy Glue

Tools:

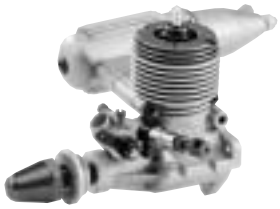
Model knife
T-Pins
Small screwdrivers, Medium screwdrivers
Scissors
Steel straight edge
Long nose pliers and diagonal cutting pliers
Drill and drill bits
Fine felt tip pen and soft lead pencil
Rubbing Alcohol
Masking Tape
Propeller (appropriate for engine type and preferred performance)

Radio - A 3-channel radio with three standard or mini servos is required. The Ace R/C Commander is ideal.

TOOLS & MATERIALS

Adhesives - You will need two types of adhesives for the Scooter - Epoxy and Instant (cyanoacrylate) adhesives. We recommend that you purchase both 10-minute and 30-minute epoxy to cut down on assembly time, but you can get by with only 30-minute epoxy if time is not important. You will also need a small bottle of both "Thick" and "Thin" instant adhesive.

Tools - Model assembly can be much easier if the proper tools are used. Therefore, on the previous page we have included a complete listing of all the tools we used to assemble our prototype models. As you will notice, many household tools can be utilized during construction.



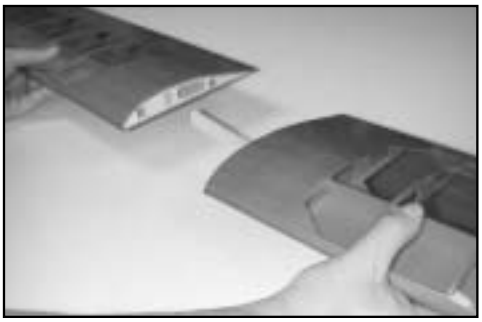
Engine - The Thunder Tiger GP-07 is the ideal engine of choice for this airplane. This quiet-running engine is easy to start, requires no special break-in period, is very easy to maintain and will last for years.

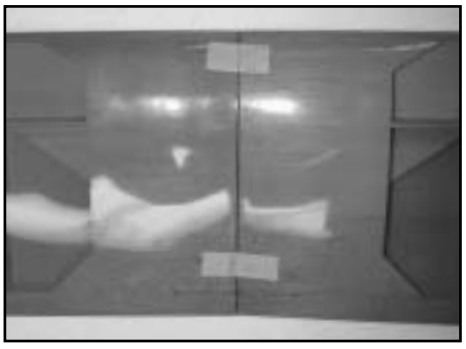
WING ASSEMBLY

I. Wing Assembly

A. Locate both wing halves and the two dihedral braces. Mix a small amount of 5-minute epoxy and glue both dihedral braces together. With the two dihedral braces together trial fit the braces in each wing half. With dihedral brace in one wing panel, trial fit it to the other wing panel, assuring no gaps from leading edge to trailing edge.

B. Mix up a small amount of 30 minute epoxy and apply to both sides of both inner ribs and dihedral brace slot. Insert brace into one wing panel before putting wing panels together. After wings are together, wipe off excess epoxy, tape and set aside to cure.

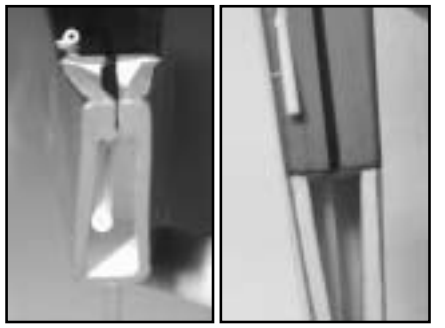




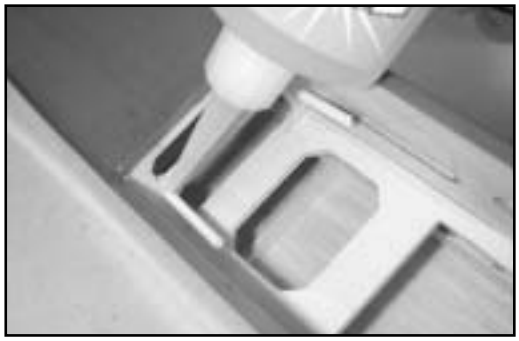
ENGINE

II. Pushrod Housing Installation

A. Locate the three pushrod tubes. Insert the throttle pushrod (the short one) through the pre-drilled hole in the firewall. Fix in place using CA glue, leaving approximately 1 1/8" in front of the firewall.

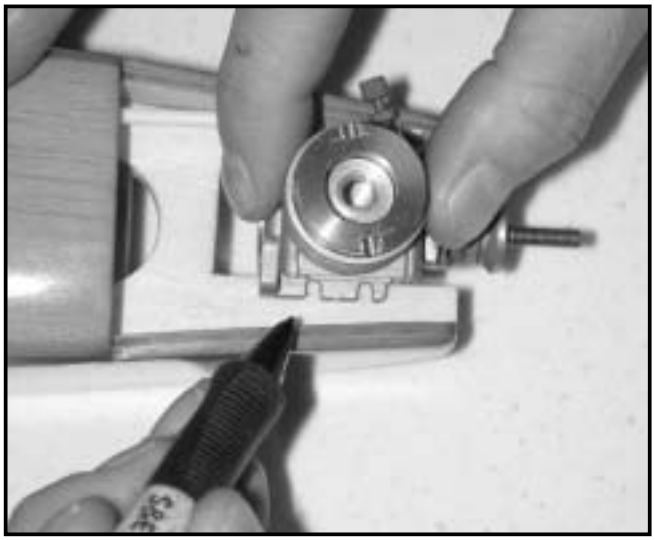


B. Carefully install rudder and pushrod tubes; insert the elevator pushrod tube through the hole in the rear former through the fuselage and out the pre-drilled hole in the right of the rear cabin former.

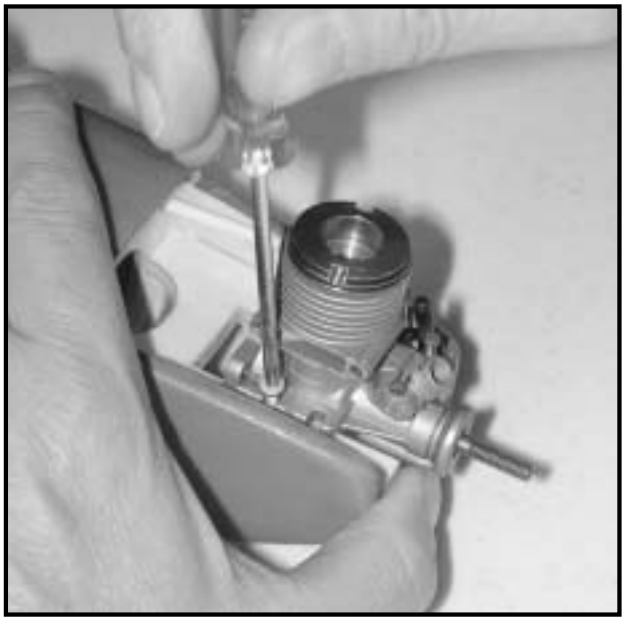


C. With a hobby knife, remove covering from existing slot in top rear of fuselage and insert rudder pushrod tube through fuselage and out pre-drilled hole in left rear cabin former. Use just a dab of CA glue to hold pushrod tubes in place.

III. Engine Installation



A. Place the engine on the engine mounting beam so that the front of the drive hub is 3" from the firewall and mark the engine mounting lug holes with a Sharpie marker.



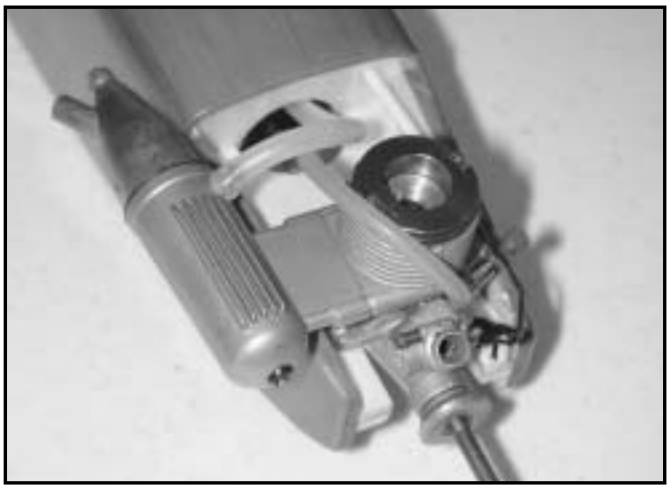
B. Pre-drill holes in the engine mounting beam. Insert the throttle pushrod into the throttle pushrod tube, then insert the Z-bend end into the throttle arm. Then mount the engine using four 3x10mm screws (not included).

FUEL TANK/SERVOS

IV. Fuel Tank Assembly

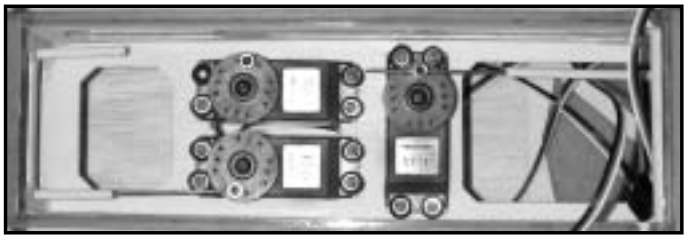
A. Cut a piece of fuel line 1 3/4" long. Install the clunk on one end and fuel tank inlet/stopper on the other end. Put this assembly inside tank. Install screw cap.

B. Check fuel tank for proper flow from clunk to vent, vent to clunk.



C. Attach two six inch lengths of small and/or medium fuel tubing to the fuel tank, then insert fuel tank into fuselage. Pull the tubing through the hole in the firewall, letting the fuel tank rest on the plywood fuel tank tray. Attach fuel lines accordingly.

V. Servo Installation



A. Install servos and EZ connector on throttle servo wheel, reinstall servo wheel onto servo with pushrod in the EZ connector.

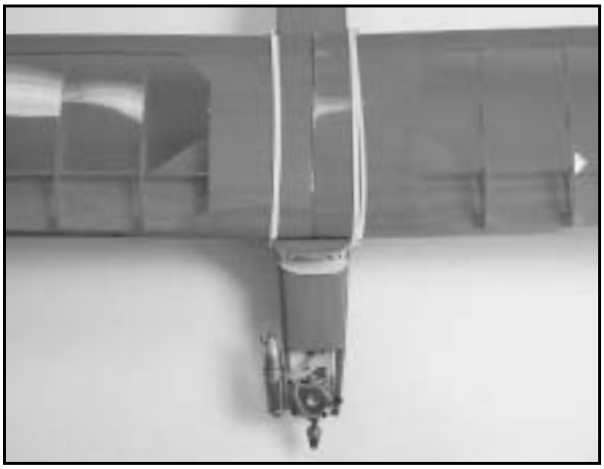
VI. Wing Hold Down Dowel Installation

A. Cut away the covering film from the predrilled holes in the fuselage with a hobby knife.

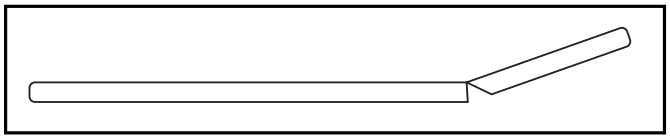
B. Install dowels and place a drop of medium CA to hold dowels in place.

STABILIZER

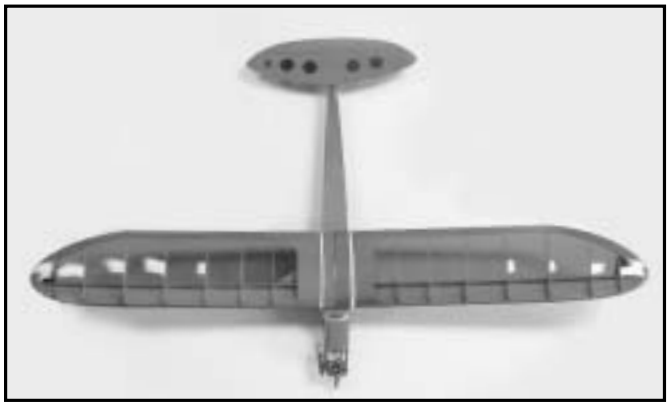
VII. Stab and Rudder Installation

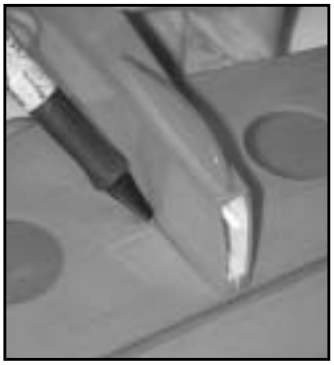


A. Center the main wing on the fuselage and attach using the rubber bands provided.

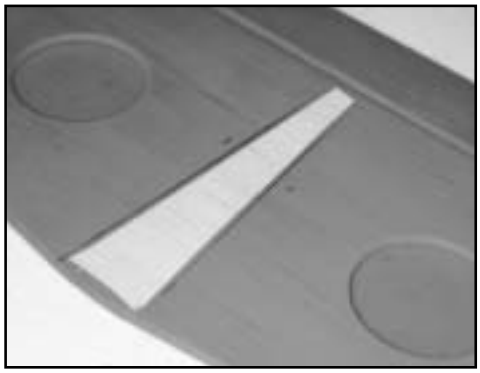


B. Determine the top and bottom of the stab like this: the sealed edge of the elevator should be on top, and the beveled edge be on the bottom.

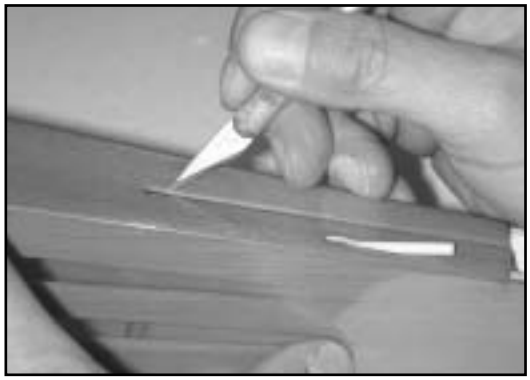




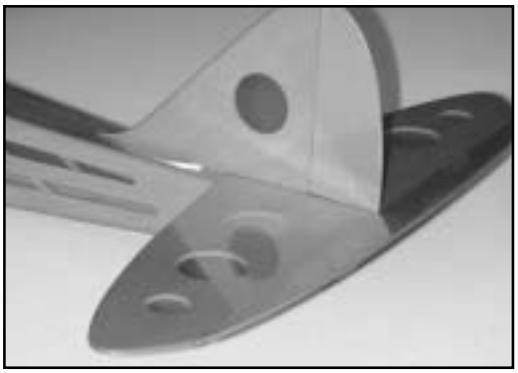
C. Place the stab on the tail of the plane and measure from points shown above. This will square the stab in the saddle. Pin the stab in place with T-pins, and mark the bottom of the stab.



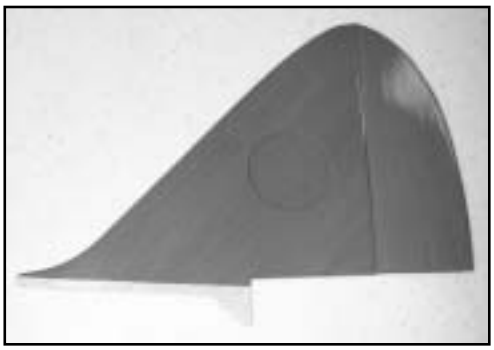
D. Remove the stab and place top-down on a flat surface so you can see the markings you just made. With a small steel rule, place it on the inside of the lines about 1/16". Using an Xacto knife, cut to remove the covering from the stab. BE CAREFUL NOT TO CUT TOO DEEP AS YOU MAY WEAKEN THE STABILIZER. TRY TO CUT ONLY THE COVERING.



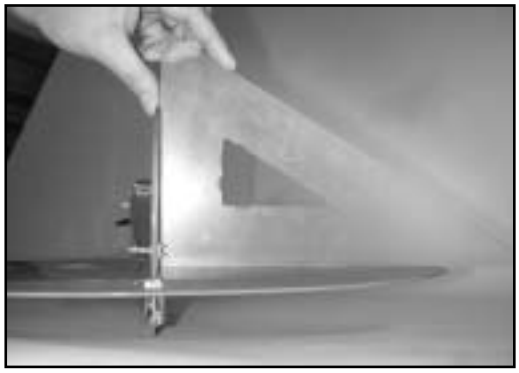
E. Use a hobby knife to remove the covering film from the fin slit in the tail of the plane.



F. Trial fit stab and fin to fuselage before gluing. Mix a small amount of 15 minute epoxy and glue the stabilizer into place, rechecking your alignment marks by remeasuring as shown in previous step to insure proper alignment of stab and wing.



G Insert the fin into the slot in the tail and mark the fin as shown. Remove the fin and use a hobby knife and straightedge to remove the covering film from the bottom of the fin. AGAIN, BE CAREFUL NOT TO CUT TOO DEEP AS YOU MAY WEAKEN THE STABILIZER. TRY TO CUT ONLY THE COVERING.

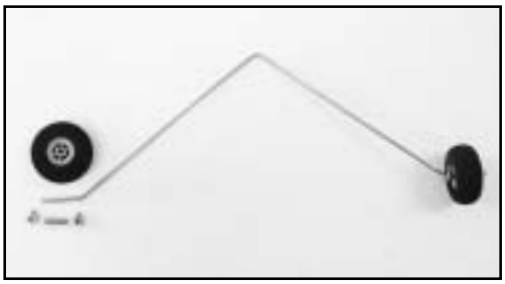


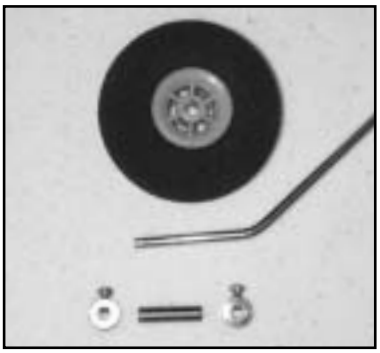
H. Apply some thick CA to the bottom rear of the fin and insert it into the slit. Use a 90 degree triangle to square up the fin with the stabilizer. Next wick some thin CA in the joint where the fin meets the slit.

I. Mount the rear control horns; place the control horn on the bottom center of the elevator in line with the pushrod tube. Mark the holes for the control horn using a felt marker. Attach the control horn using two 2mm screws and backing plate. Attach the rudder control horn in the same manner.

J. Install pushrods and connect to servos using the EZ connectors.

VIII. Landing Gear Installation



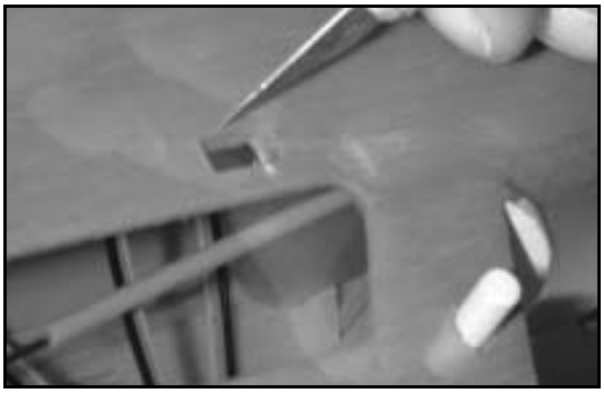


A. Landing gear is assembled with 4 wheel collars, 2 bushing, and 2 wheels. Install one wheel collar on to the landing gear, then slide the brass bushing on, slide the wheel over the bushing, and finally install the second wheel collar. Repeat process for other wheel.

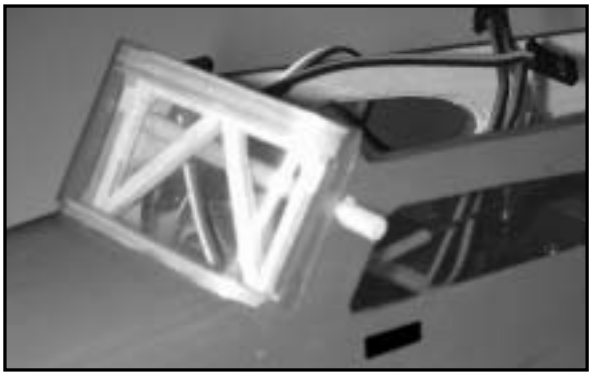
B. Using a hobby knife remove the covering over the landing gear slot. Push the landing gear down into the slot. Apply a few of drops of medium CA into the slot and slide the former into place. WARNING: WHEN YOU INSERT THE FORMER, IT WILL SQUIRT EXCESS CA OUT THE HOLES NEAR THE LANDING GEAR, SO BE CAREFUL!!

CANOPY/SWITCH/RADIO

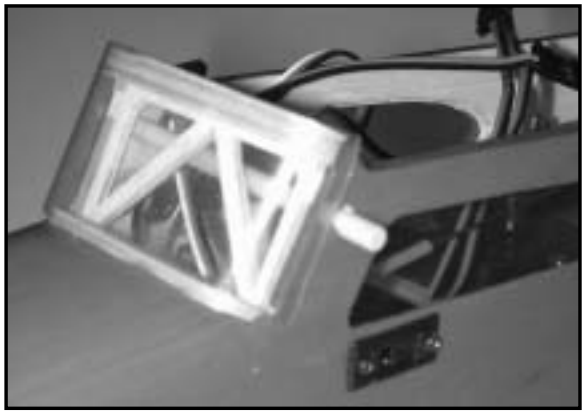
IX. Radio, Battery, & Switch Installation



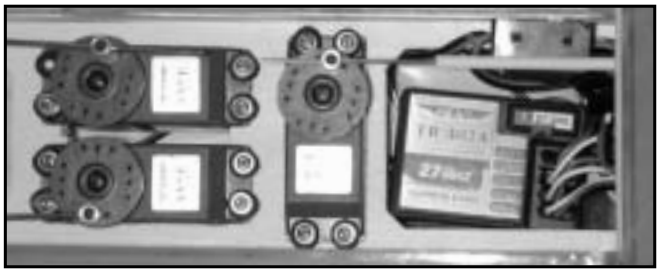
A. Using a hobby knife remove the covering film from the switch cut out on the left side of the fuselage.



B. Use RC-56 Canopy Glue to attach the windshield.

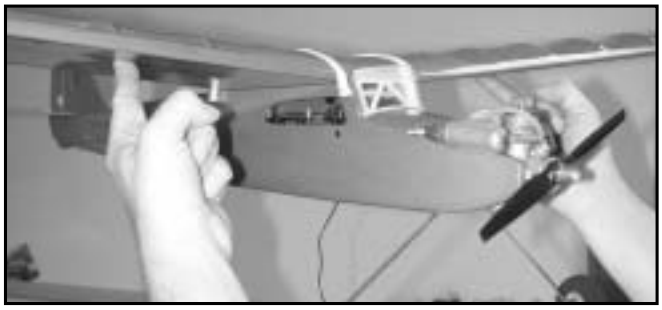


C. Install the switch.



D. Install the receiver and battery pack. Poke a hole in the bottom of the cabin and run the antenna out and down the bottom of the fuselage and attach to the tail using whatever method you prefer.

X. Balancing

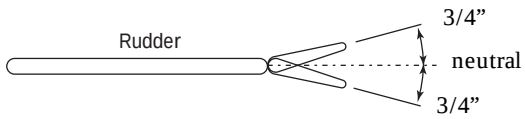


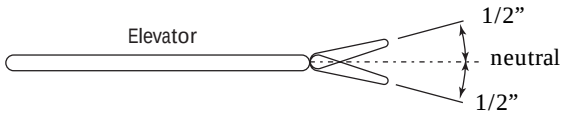
E. Balance the plane. With the wing on the airplane, use your two index fingers to suspend the model in the air. Locate your fingers 1 1/4" back from the leading edge of the wing, about 4" out from the fuselage. At this point, a right angle is formed where the leading edge and the center balsa sheeting ends. You can feel this point with your finger tips.

The plane should hang level or slightly nose down at this point. If the tail drops, you need to redistribute or even add weight to the nose until the plane balances. You can move the receiver battery pack to above the fuel tank if you need to. If the plane's nose drops dramatically, add a little weight to the tail as a remedy. Stick-on weights are available at your hobby shop for this purpose.

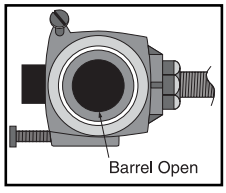
XI. Control Throws

Make sure that all control surfaces move in the proper direction. Set the control surface throws as indicated for the initial flights. These may be altered later for personal preference.

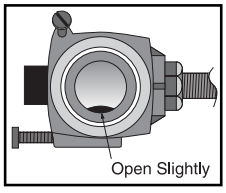




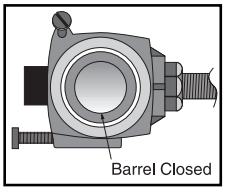
Carburetor: Set your radio throws following examples below.



wide open



idle

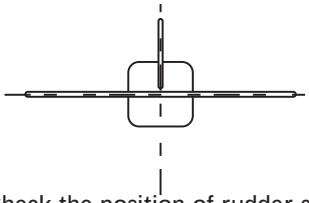


engine off

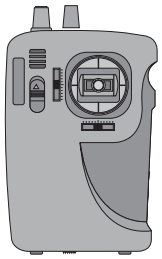
Prior to the first flight ensure that all batteries are properly charged, that controls all move in the proper direction, and that a thorough range check is made with and without the engine running.

THE DIRECTION OF MOVEMENT (RUDDER AND ELEVATOR)

NEUTRAL

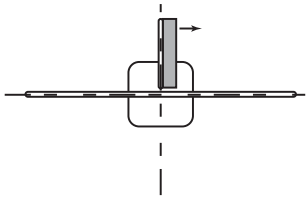


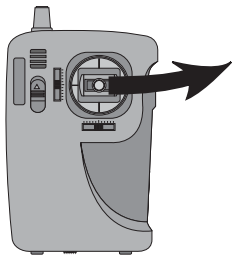
Check the position of rudder and elevator (if these are in neutral).



Set the trim in neutral position.
Set the sticks in neutral position

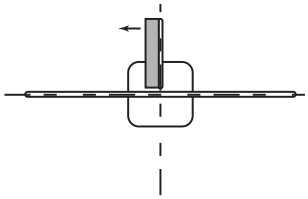
RIGHT TURN

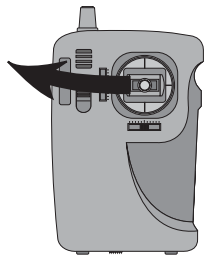




Move the stick to the right.

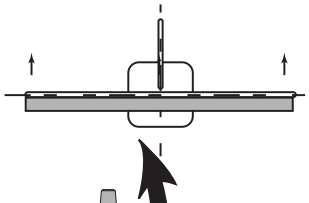
LEFT TURN

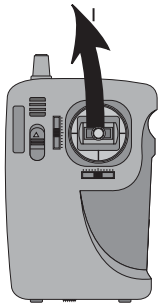




Move the stick to the left.

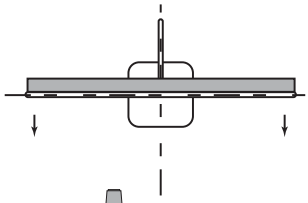
DOWN

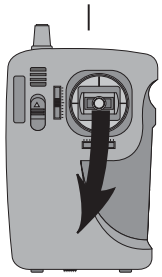




Move the stick up.

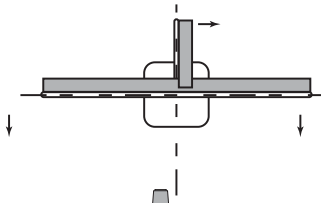
UP

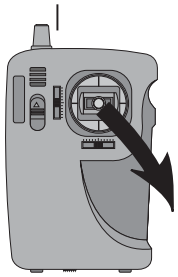




Move the stick down.

RIGHT AND UP





Move the stick down and right.

XI. Pre-Flight

- ❒ Check batteries in transmitter and receiver.
- ❒ Rubber band the wing on using six rubber bands to secure the wing. Use one on both the right and left side, then crisscross two more from the right front to the left rear and crisscross the final two from the left front to the right rear.
- ❒ Choose a calm day for your first flights. Also, choose an open field with no obstacles or people.
- ❒ Make sure there are no other pilots operating on on the same channel (frequency) as you are. If you turn your radio on while he is flying, you will cause him to crash.
- ❒ Check you radio for good range (50 ft. with the antenna collapsed) and proper operation.
- ❒ MAKE SURE NO ONE IS OPERATING ON YOUR FREQUENCY (Channel number). Any flying field has rules to govern frequency usage. Make sure you abide by them.
- ❒ Refer to your radio instruction manual for the proper ground range you can expect from your system. Perform this range check each flying session.
- ❒ Check the engine and engine components; make sure all screws are tight.
- ❒ Remove the fuel line from the engine's carburetor. Plug your fuel pump or bulb into this line. Pump fuel into the tank until you see it coming out the line that is going to the engine's muffler. (You may want to remove this line from the muffler to prevent fuel from getting into the muffler.)
- ❒ Carefully read and understand the Engine Operating Instructions furnished so you are familiar with the operation of a model airplane engine. Simply "choke" the engine, hook up a hot 1.2V-1.5V battery to the glow plug, and flip the prop with a "chicken stick" or an electric starter. Follow the break-in procedures in the Engine Operating Instructions for the first 4 or 5 flights.

GENERAL FLYING

XII. Flying

You should have a flight instructor teach you how to fly the Scooter. Like a real airplane, you must have an understanding of how to fly the model before launch, or you will probably not be successful. Check at your hobby shop or call the AMA (in the front of this book) for flying clubs in your area.

Take-off

A proper hand-launch of the airplane is necessary for flight. It must be launched into the wind with a firm toss. The airplane must be tossed level or even pointed a little down. It should never be thrown upward, or it will stall and crash.

Flight

Steer very gently right and left to keep the wings level. Let the airplane climb out gradually and gently until it reaches a comfortable cruise altitude at full flight speed. Always keep the airplane upwind of yourself and within a reasonable distance so you can see what it is doing. Remember, when the plane is coming toward you, when you move the stick to the right, the aiplane will go to the left from your point of view. This is the hardest thing to learn. Initially, you can keep your body pointed in the same direction as the airplane and look over your shoulder

Usually, only small stick movements are required. Try to keep your flying smooth. You can turn the plane by bumping small amounts of rudder and then return to neutral. Use the elevator to keep the airplane at the desired altitude. After a while, coordinate your turns with the elevator; i.e., bank the plane with a little bit of rudder, then feed in some up elevator to maintain the turn at the same altitude. If the plane tends to turn one way or the other use the trim lever on the control stick to neutralize the flight. Same thing applies if the place wants to climb or dive.

Landing

Set up your landing approach. Always try to land INTO THE WIND. Keep your turns gradual and only use elevator to maintain a gradual glide. Since the motor is off, you can no longer climb and the plane slows down. If you feed in too much up elevator, the plane will stall and may crash.

Just before touchdown, "flare" the plane by adding up elevator. The plane should slow down even more and come in for a gentle landing. Don't add too much elevator, too soon!

Walk over to the plane and turn off the switch on the plane, then the transmitter switch. Check over the plane to make sure nothing loosened up or broke.

In Case of Trouble

If the radio is erratic (glitches), check that the transmitter and receiver antennas are extended to their full length. Make sure the transmitter batteries are fresh. Make sure no one else is operating on your channel (frequency) in the immediate vicinity.

If the plane does not fly properly, make sure you are being gentle with the control inputs. Make sure the plane is balanced properly.
If your trouble persists, call 660-584-6724 for technical help.

Conclusion

To defeat the laws of gravity and take to the wing is both challenging and thrilling. We hope you enjoy your entry into the fascinating world of R/C flight and make it your hobby for a lifetime. Please let Ace R/C and Thunder Tiger be your chosen brand, no matter what direction you progress.

XIII. Post-Flight

Turn off all switches and if you are done for the day, de-fuel the tank. Clean-up your plane with some spray cleaner (such as 409) and paper towels. While you are cleaning the plane up, inspect it for damage...check the prop for dings or chips. Spray some WD40 on and in the engine for protection.

XIV. Safety Precautions

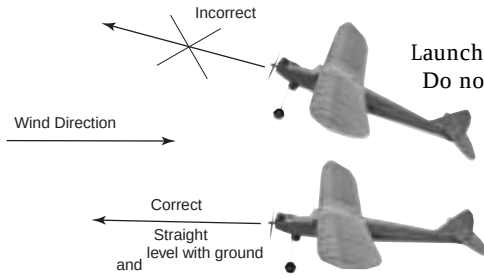
1. Wear safety glasses when starting and running all model engines.
2. Model engine fuel is very flammable and the flame is very dangerous because it is almost invisible! Do not smoke or allow sparks, high heat or other flames near the fuel.
3. Do not run model engines inside a garage or other closed room as they give off large amounts of deadly carbon monoxide gas.
4. Do not run model engines around gravel, sand or other loose debris.These materials will be ingested through the carburetor and can also be kicked up by the prop.
5. Always stay behind the propeller when the engine is running. Make all engine adjustments from behind the engine. Under no circumstances should you allow your face or body near the plane on rotation of the propeller when the engine is running.
6. Do not allow loose clothing or other loose objects close to the prop.
7. To stop an engine, cut off the fuel or air supply to the engine. Do not throw rags or other objects into the prop to stop the engine.
8. Do not touch the engine or muffler during or right after it has been running–It gets very hot!

XV. Repair

In the event of a minor mishap, the Scooter usually can be repaired. Begin by completely cleaning the area being repaired with alcohol to remove any oil residue.

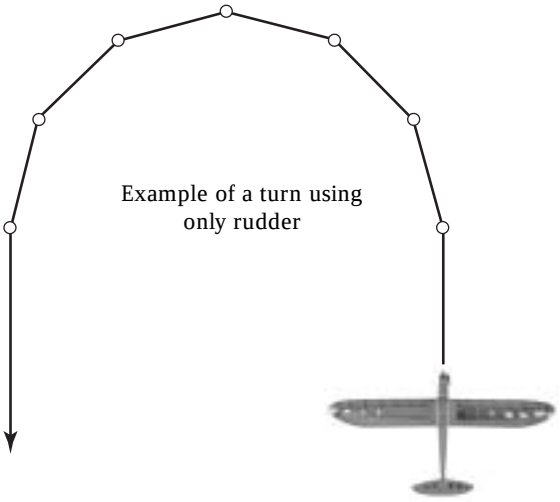
- Balsa components can be glued back together with CA glue.
- If you need to repair around the firewall/engine area, use epoxy.
- The plastic parts can be taped back together, deleted, or rebuilt out of balsa.
- Use Horizon Hobby's Ultracote® to patch the covering film.

FLYING

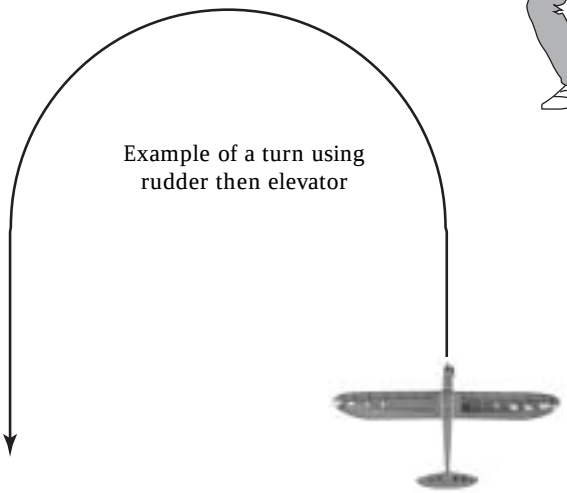


Launch firmly into wind straight and level. Do not throw upwards or the plane will stall and crash!

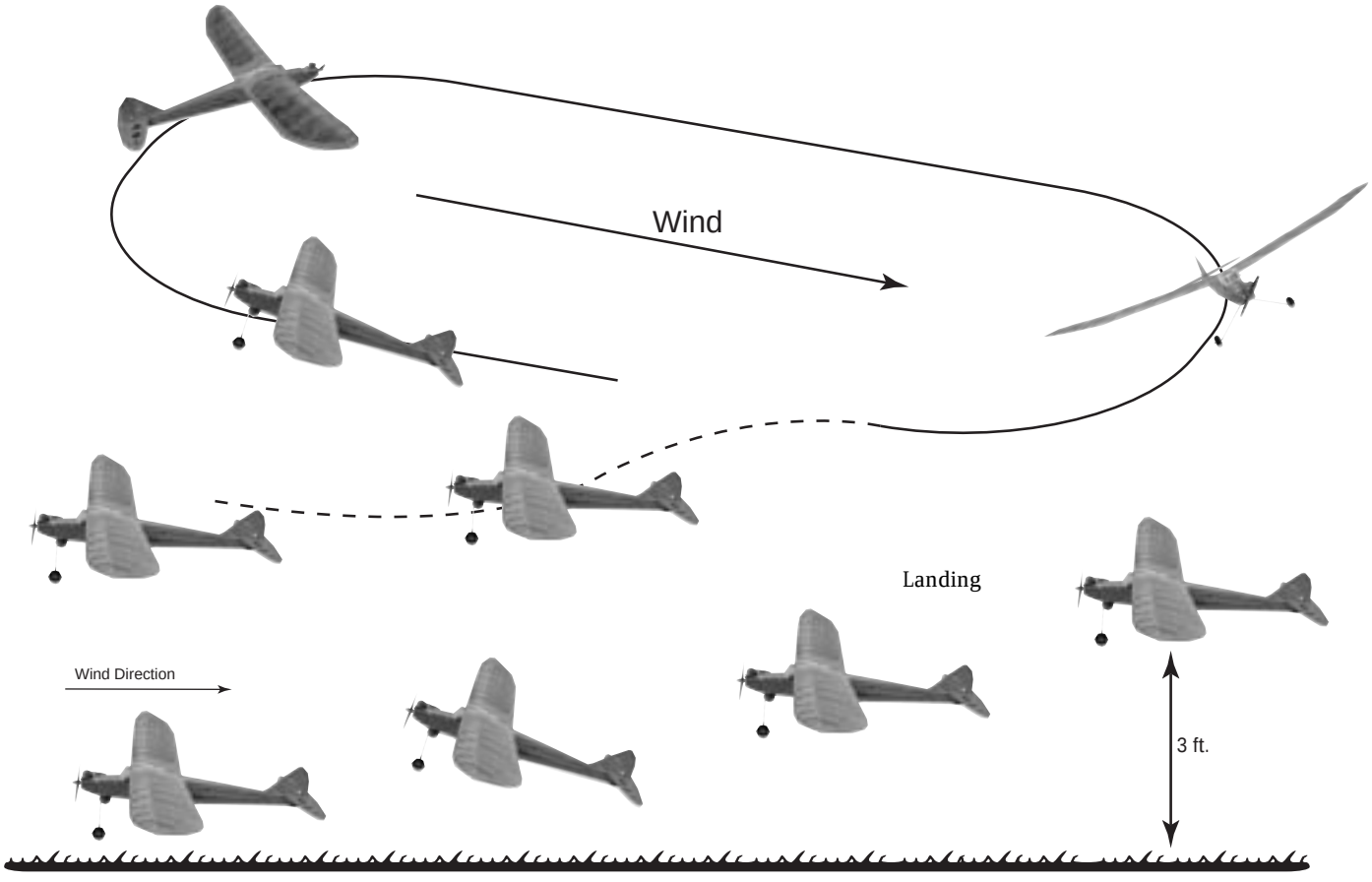
Launch



Example of a turn using only rudder



Example of a turn using rudder then elevator



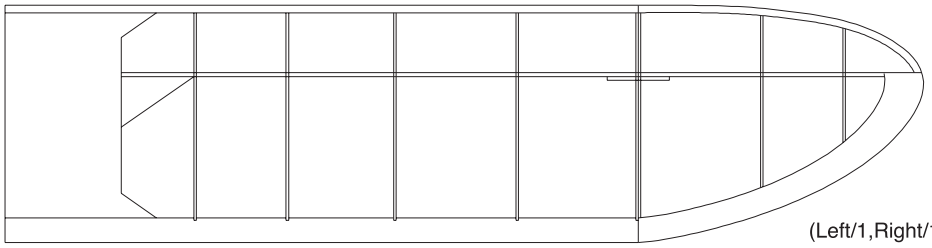
PARTS DRAWINGS

IMPORTANT

Please check the contents of your kit box with these part sketches before beginning construction. This will not only familiarize you with the parts and their names, but it will also give you a head start in the unlikely event that you are missing a part.

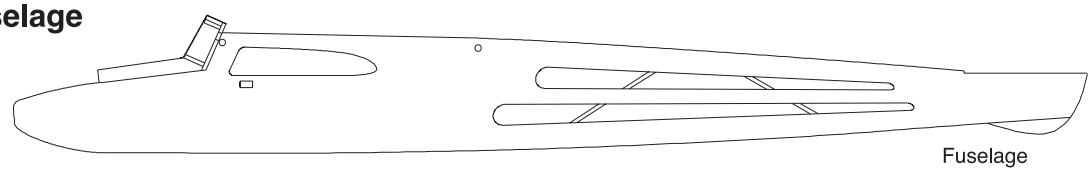
AS6139 Wing Set

Dihedral Brace (2)



(Left/1,Right/1)

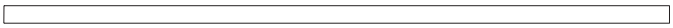
AS6138 Fuselage



Fuselage

AS6143 Pushrod Set

Z Bent Pushrod (3)



Plastic Guide Tube (3)

AS6142 Landing Gear Set

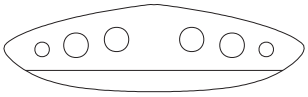
Main Landing Gear (1)

Collar (4)

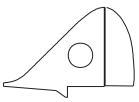
Wheel (2)

3mmx5mm Screw (4)

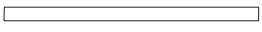
AS6140 Horizontal Tail



AS6141 Vertical Tail



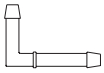
3271 Fuel Tank Set



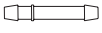
Silicone Tube (1)

Clunk (1)

Rubber Stopper (1)

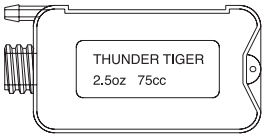


90" Nipple (1)



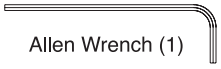
Nipple (1)

Cap (1)



75 c.c. Tank (1)

PE0009 Hardware Set



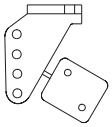
Allen Wrench (1)

Pushrod Connector (2)

3mmx3mm Screw (2)

2mm HEX Nut (2)

AS6023 Control Horn Set



Control Horn Back Plate(2)

2mmx8mm Screw (4)

AS6144 Decal

JE6451

Parts are not necessarily drawn actual size!