HLG01

Hand Launch Glider #1

Span 18 in. / Length 19-3/8 in. / Area 46.5 sq. in. / Typical Flying Weight 25g

WARRANTY

Stevens AeroModel guarantees this short 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 Stevens AeroModel's liability exceed the original cost of the purchased kit. Further, Stevens AeroModel reserves the right to change or modify this warranty without notice.

In that Stevens AeroModel 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.

General Information:

Thank you for purchasing this Free Flight kit by Stevens AeroModel. Please inspect your kit for missing or damaged items. To complete this model you will require basic woodworking tools (a sanding block and sand paper), thin CA glue, clear tape, a water, lacquer, or oil based wood sealant.

Product Features:

- Simple construction with many building aids (jigs included in kit)
- Viscous Timer for Dethermalizer (DT) Included with model
- Ultra reliable pop-up fuselage DT design
- Durable balsa, ply, and hardwood construction with Carbon Fiber boom.
- Ballast pocket integrated into nose of glider.
- Outstanding performance ideal for entry-level competition use.

Kit Contents:

- Illustrated Instruction Manual and Trim Guide
- Laser cut sheet wood bundle.
    - HLG01-0104 1/8” Med. Balsa
    - HLG01-0204 1/32” Ply
    - HLG01-0304 3/16” Med. Balsa
    - HLG01-0404 1/16” Soft. Balsa
    - 13-1/4 in. Length of 1/8 in. diameter carbon tube
- Hardware Bag
    - 1 - Bag of clay ballast (~7g)
    - 1 - Bag of viscous putty for timer (~.07g)
    - 1 - 24in. length of abrasion resistant thread
    - 5 - #0 x 3/16 in. sheet metal screw
    - 3 - T-Pins 1” long
    - 1 - 1/14 in. length of 1/16 in. OD aluminum tubing
    - 1 - 2 mm ID rubber bushing
    - 1 - 1 in. length of .8mm dia. carbon rod
    - 1 - 1/8 in. aluminum pop-rivet body
    - 1 - 1/8 in. dia. hardwood dowel
    - 1 - 1/16 in. laser cut plywood bushing
    - 1 - assorted mini rubber bands
    - 1 - 1/8 in. laser cut hardwood fuselage pivot

Instructions for Assembly:

General Instruction

What follows is a brief overview of the steps taken to complete this model. Begin by shaping the wing and dihedral breaks. Assemble the wing using the jig based construction then set aside while the fuselage is constructed. With the fuselage complete you will assemble the stabilizer components. With the major components built you will wrap the project up by joining the wing and stabilizer to the fuselage add your finger rest and washout wedge then rig the DT line.

Tips for Success:

- Thoroughly read these instructions prior to commencing work on the model.
- To avoid loosing parts only remove a part from the laser cut sheet or parts bag when instructed to use it in assembly.
- The model is bonded almost entirely from thin CA glue we highly recommend using an extra fine glue tip to apply glue in a metered and precise fashion.
- Only commit a part with glue when you are absolutely satisfied that it has been installed properly and you have been instructed to.
- Protect your building surface by using the bag this product came in as a non-stick barrier for glue application.
- We continually make refinements to our product and our instructions. Visit www.stevensaero.com and download the latest instruction manual for this product.

Parts Orientation:

When an instruction details a “right” or “left” side of the model this is always referenced from the perspective of standing behind the aircraft looking at the top of the model with the models nose pointing away from you.

Key terms:

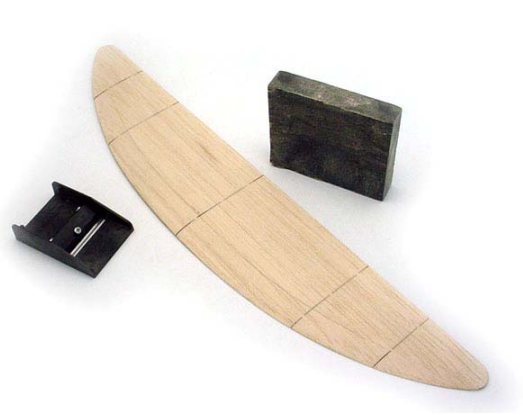
Aft - at, close to, or toward the stern or tail
CG - center of gravity, the balance point of the model.
Dihedral - is the upward angle from horizontal in a fixed-wing aircraft or bird wing from root to tip, as viewed from directly in front or behind the aircraft.
DT - dethermalizer
Fore - situated at or toward the front, as compared with something else.
Laminate - to construct from layers of material bonded together.
Leading Edge - the edge of an airfoil or propeller blade facing the direction of motion.
Polyhedral - Wings with local dihedral angles that change along the span.
Trailing Edge - the rear edge of a propeller blade or airfoil.
Tack Glue - to temporarily bond together using the minimum amount of glue to retain the part.
Wash-In - a warp in an airfoil that gives an increase in the angle of attack toward the tip.
Wash-Out - a warp in an airfoil that gives a decrease in the angle of attack toward the tip.

Special advice for Left-handed throwers:

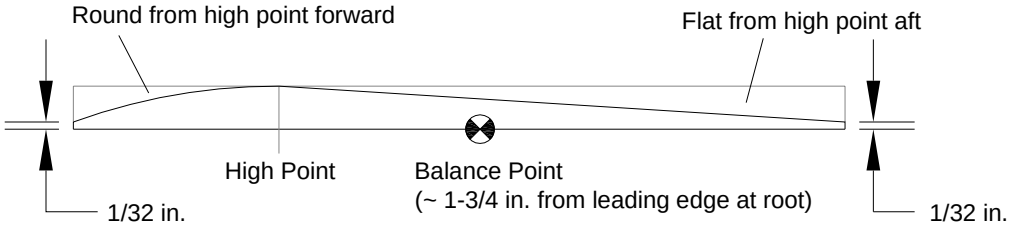
The assembly instructions that follow illustrate building a glider for right-handed throwers. If you are left-handed, or desire to throw left-handed, there will be certain steps where a component should be assembled in reverse order. Please read the instructions carefully and take note where we offer building advice for “***Lefties!***”.

Shaping the Wing

Remove the entire wing core from the 3/16" balsa sheet. The wing features an etched "high point" sanding guide on the top surface and pre cut dihedral breaks. The dihedral breaks are partially cut through and retained with thick skip lines that run across the grain **DO NOT SEPARATE THE WING SECTIONS**. Begin by shaping the wing as one unit using a sanding block and / or a razor plane to produce a flat taper from the etched "high point" aft to the trailing edge. Next round the wing from the high point forward to the leading edge. Use the sanding guide below as a reference. We suggest leaving the trailing edge 1/32" thick for maximum durability.

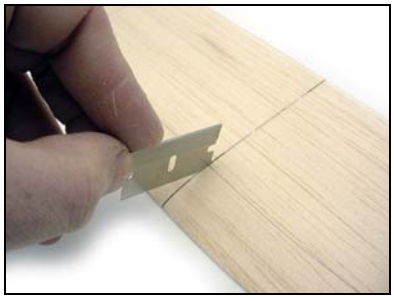


Airfoil Sanding Guide

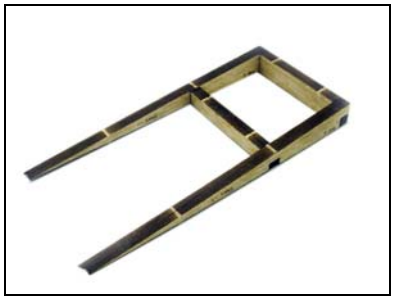


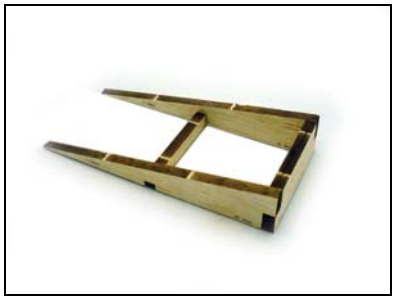
Wing Assembly

1. Using a sharp blade separate the wing core into six total segments (three per side) by cutting skip lines that retain the sections.



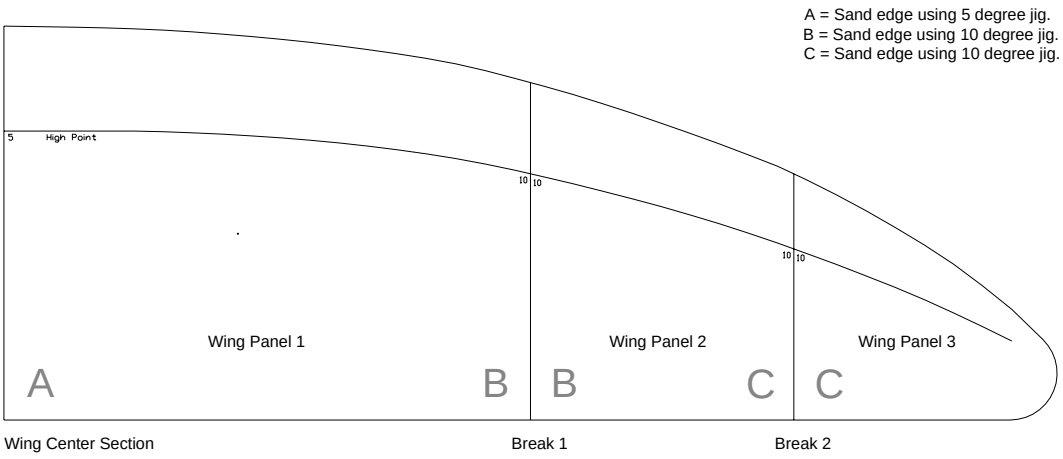
2. Assemble sanding jigs. From the 3/16" balsa stock assemble the parts to create the 5 degree jig (first photo) and two 10 degree jigs (second photo) as illustrated below.





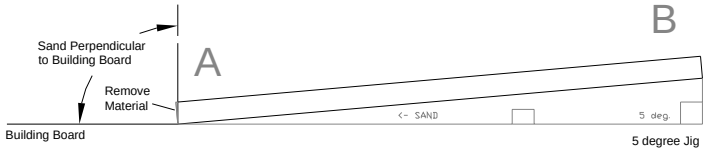
3. Use the guide below to sand the appropriate angles at the wing center section and breaks 1 and 2. An example is given for use of the jigs for sanding wing panel 1. Complete remaining panels in the same fashion.

Polyhedral Break Sanding Guide

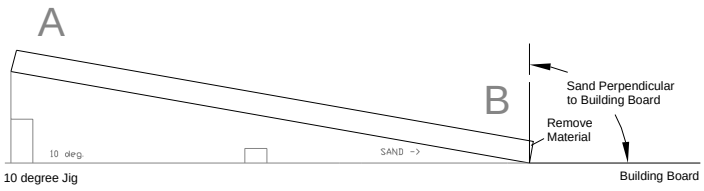


Example (Given to complete panel 1)

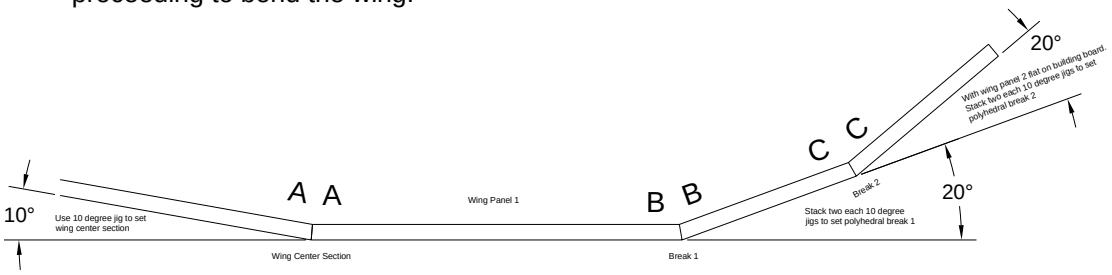
Step 1 Sand "A"



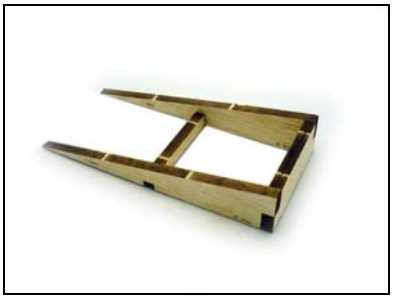
Step 2 Sand "B"

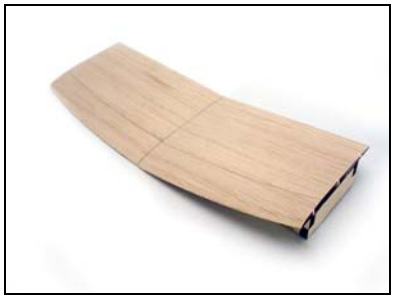


4. Join the wing panels to create the polyhedral wing. Review diagram below before proceeding to bond the wing.



Lay right side wing panel 1 flat on top of building board. Use a 10 degree jig to block left side wing panel 1 up at proper angle. Make certain that wing panels meet flush at wing center section correct fit if required. Once proper fit has been achieved wick thin CA glue along center section joint. Allow time for glue to cure then re-apply CA glue for a strong joint.





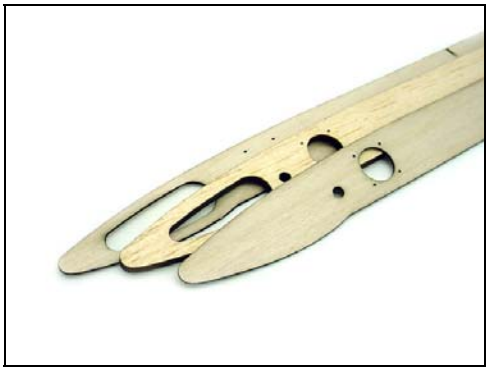
Stack and glue two each of the 10 degree jigs to assemble one 20 degree jig and place under wing panel 1. With wing panel 2 flat on top of building board glue to outer edge of wing panel 1. Allow time for glue to cure then re-apply CA glue for a strong joint. Repeat for opposite side.

Follow same process as above with assembled 20 degree jig under wing panel 2 and wing panel 3 flat on top of building board to complete the polyhedral wing assembly.

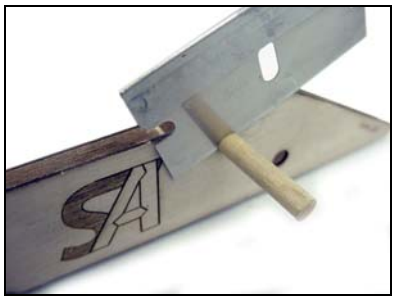
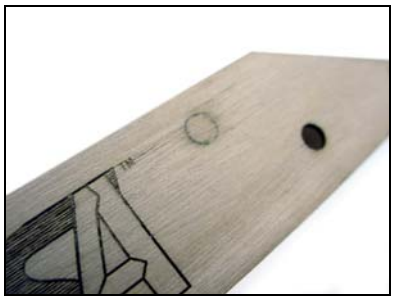
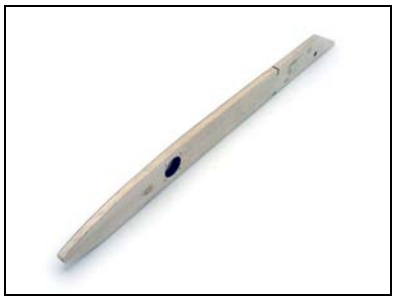
5. Protect wing assembly by spraying a light coat of clear wood finish over wood surface. We suggest any non-water based spray such as Lacquer or Urethane. Water based Acrylic sprays may warp your wing!

Fuselage Assembly

1. Begin assembly by laying out the three major fuselage components we will refer to these from left to right in the photo below. Notice that the major fuselage components assemble to create the following: A pocket for ballast which is left open on the RIGHT side of the glider. A cavity for timer media which is left open on the LEFT side of the glider. ***Lefties!*** *the fuselage parts layout order will need to be reversed to place the timer media cavity on the right side of the glider. To build a left handed fuselage simply swap the top and bottom plywood parts in the first photo set.*

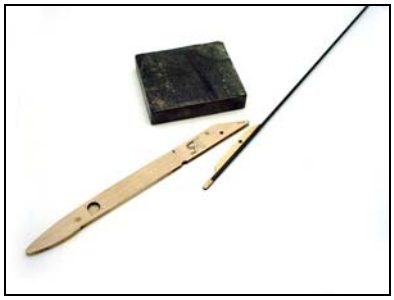
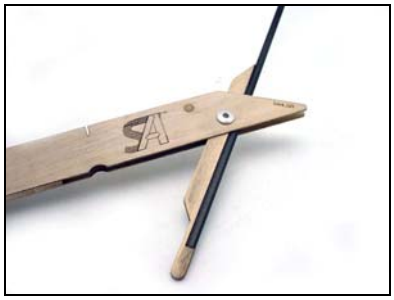


2. You have been given a length of 1/8” dowel, cut this dowel into two equal sections and use to align the fuselage parts as illustrated. Laminate these parts together using thin CA glue. With the fuselage components bonded together glue the 1/8” dowels within the alignment holes then cut and sand flush with outside surface of fuselage.

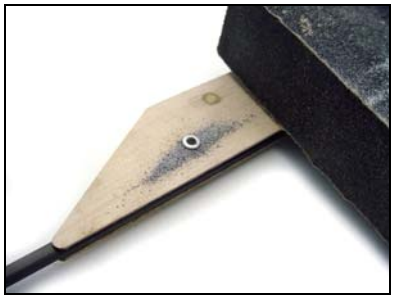





3. Assemble the pop-up tail boom. Locate the 1/8” laser cut hardwood fuselage pivot in your parts bag and 13-1/4” length of 1/8” diameter carbon tube. The carbon tube is keyed to the pivot as illustrated in the first photo below. Lay both the carbon tube and the pivot atop a flat surface and bond these parts using thin CA glue. Make multiple applications of glue between the boom and pivot allowing ample time for the glue to cure between applications.

4. With the pop-up tail boom assembled. Test fit the tail to the main fuselage assembly. Locate the provided 1/8” aluminum rivet body and temporarily install through fuselage and pivot as illustrated below. Note any significant friction that may interfere with the tail smoothly rotating to near vertical within the fuselage and eliminate by evenly removing thickness from the pivot and tail boom. Continue test and fit method until the tail rotates with minimal friction when installed to the fuselage assembly. Caution: we do not want the fit to be loose. Rotation should be free with no tendency to bind or grab yet not at the expense of allowing side-side play in the pop-up tail boom assembly.

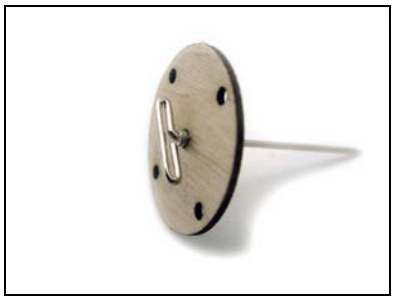
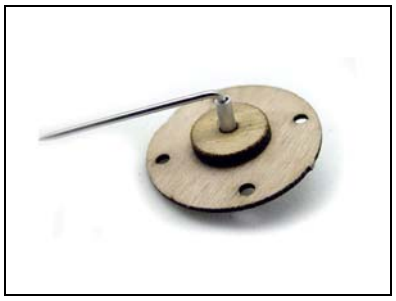



5. Final installation of your properly fit pop-up tail involves installing the 1/8” aluminum rivet through the fuselage sides capturing the pop-up tail block and securing the rivet so that it will not slip out in use. With the rivet head flush against the Left side of the fuselage use your sanding block to reduce the Right side rivet overhang to 1/64” - 1/32” of overhang beyond the ply fuselage side. Support the rivet head against your work table then from the Right side place a #0 Phillips head screw driver centered within the rivet body. Lightly tap the screw driver to flair the rivet body so that it will not slide back out of the assembly. Note: being too aggressive with the flair will result in binding use the minimum amount of force necessary to flair the rivet body. Finally apply a tiny drop of thin CA glue at the to the surface where the outside edge of the rivet body and ply fuselage sides meet.



6. Timer top assembly. Center the 1/16” ply bushing on 1/32” ply timer chamber top. Use the ¼” x 1/16” OD aluminum tube to center the parts (first photo). Allow aluminum tube to protrude beyond back side of 1/32” ply chamber by 1/64” (second photo). Secure tube, ply bushing, and chamber to parts using thin CA glue. DO NOT ALLOW GLUE WITHIN 1/16” aluminum tube.

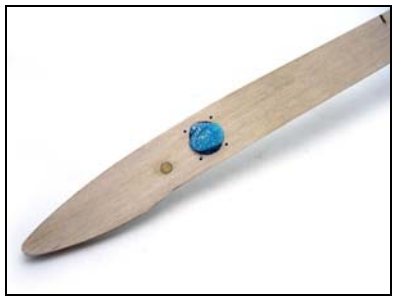
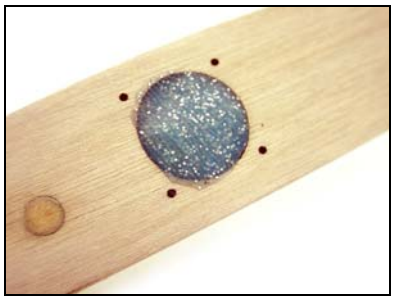

7. Timer mechanism assembly. Insert 1” T-Pin through aluminum tube as illustrated (first photo). With T-Pin bottomed out against back side of timer top assembly, grasp pin just beyond where it extends out top of timer assembly and bend to 90 degrees (second photo). Note: You’ll want your bend to be as close to the point at which pin exits aluminum tube to reduce slop. Check to be certain your pin rotates freely within timer top assembly and adjust to eliminate binding, if required (third photo).

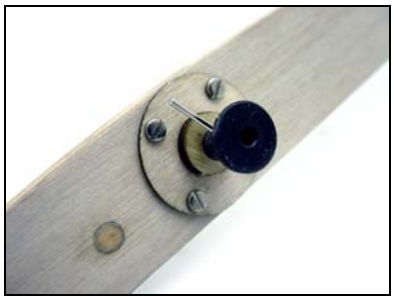
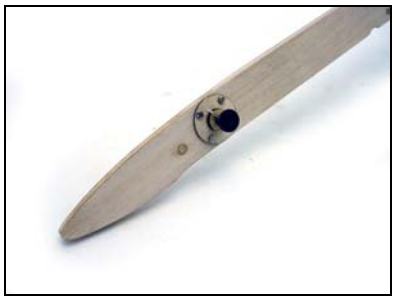

8. Locate the 2mm id rubber bushing this part looks like a “top hat”. Using a 1” T-Pin make a hole that measures 3/32” back from inside edge of rubber hat bushing (first photo). Thread the needle that is installed to the timer top assembly through the hole you made in the rubber bushing from the inside out (second photo). Then, slide bushing down on aluminum shaft as illustrated (third photo). Use wire cutters to clip the remaining length of T-Pin even with the outside edge of the timer top assembly (fourth photo).




9. Locate the 0.07g of viscous putty and load into timer cavity of fuselage assembly. Work the putty in to where there are no air pockets then level with outer edge of fuselage as illustrated.

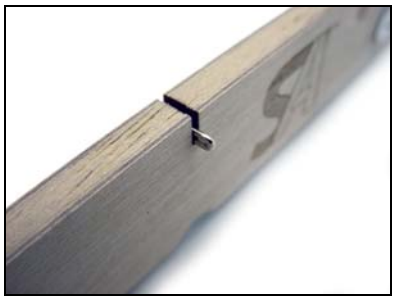



10. With the putty installed within the timer cavity use four of the #0x3/16” sheet-metal screws to secure the timer top assembly to the fuselage as illustrated below.

11. Install incidence adjustment screw. On the bottom of the fuselage assembly there are two scalloped cuts about 3-1/4" forward of the aft most point on the main fuselage assembly. Rotate the pop-up tail out of the fuselage assembly. Now, use a T-Pin to mark the location on the balsa within the fuselage sides that is centered within these two scallops and the fuselage sides. You will install the remaining #0x3/16" sheet metal screw by threading it into the balsa at the point you just marked. Initially, thread this screw into position then back out of hole completely. Place two small drops of thin CA glue to hole/threads cut by the screw within the balsa. Allow CA to cure then re-install screw being careful not to strip the now CA reinforced threaded hole.


12. Install DT string guide. Cut one of your T-Pins 1/8" from base of "T" as illustrated below (save the remnant T-Pin metal for later use). Using a small blade or common-tip screw driver slightly expand the loops that form the "T". Test to make certain that DT thread easily slides through loops in "T". Next, center the "T" pin assembly within the slot provided atop the fuselage assembly. Run this "T" down within slot allowing equal amounts of the "T" to overhang fuselage sides and until seated flush with bottom of cut-out. Secure the "T" within slot using CA glue. **DO NOT ALLOW glue to fill loops of "T" as this will prevent later installation of DT thread.**

13. Pop-Up spring aft lug assembly. Using the remnant T-Pin metal from step 12 bend a bend into "S" shape as illustrated below. Start the "S" about 3/16" from the tip of the pin leaving the bottom of the "S" straight. Make the bends as tight as possible using small needle nose pliers. Trim excess material off the end opposite the tip of the pin. Install completed "S" centered to aft edge of pivot block as illustrated below. Glue.


Horizontal and Vertical Stabilizer

1. From the 1/16" soft balsa sheet remove the vertical stabilizer components and glue together as illustrated (first photo). The top of the horizontal stabilizer has two etch lines scribed down the center of the piece. Sand* the leading edge round for both the horizontal and vertical stabilizers. Next, key the vertical stabilizer to the top of the horizontal as illustrated (second photo). Verify that the vertical stabilizer has been installed perpendicular to the horizontal then glue.

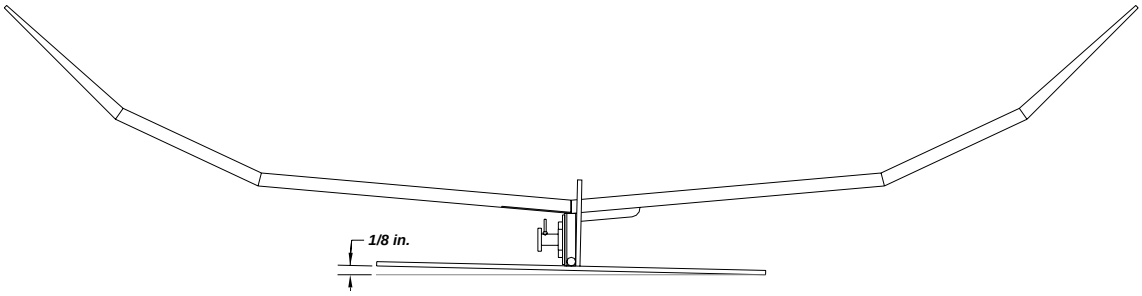
   *(*you are more than welcome to aggressively sand, taper, and otherwise airfoil the stabilizer assembly. Any compromise in thickness will compromise strength if this is your first HLG you may wish to leave the stabilizer thickness at the stock 1/16". For those more experienced we have chosen the 1/16" stock to allow you adequate material to airfoil these parts.)*

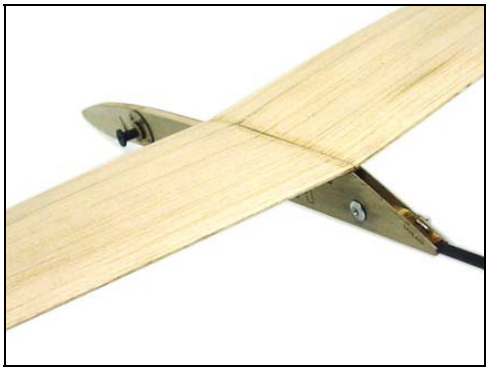
2. Protect completed stabilizer assembly with wood finish spray in the same manner as completed in Step 5 of Wing Assembly.

Final Assembly

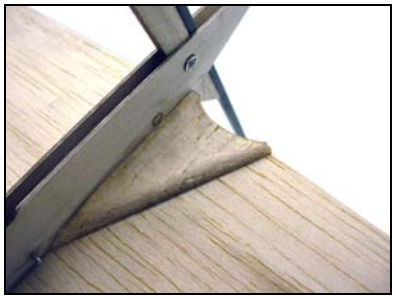
1. Install the stabilizer assembly. Lightly sand the last two inches of the carbon fiber pop-up tail where it will interface with stabilizer assembly. With the fuselage sides held perpendicular to your work surface and the stabilizer assembly flat upon the same surface. Slide the stabilizer under carbon boom using the etch marks in the top of the stabilizer assembly to align boom on appropriate side of stabilizer. The boom should contact both the horizontal and vertical components of the stabilizer assembly and stops flush at the trailing edge of the horizontal stabilizer. Important! Place a scrap piece of 1/8" balsa under the left tip of the horizontal stabilizer to provide initial stabilizer tilt. Secure stabilizer to boom using thin CA glue. ***Lefties!*** *place scrap 1/8" balsa under right tip of stabilizer.*

2. Install main wing to fuselage. With wing inverted lightly sand a flat to underside if center wing joint. Align wing with top trailing edge of fuselage assembly. Align center joint of wing assembly with center line of fuselage. Slide the 3/16" balsa wing jigs up from bottom of fuselage to assist with holding the wing square while you tack glue the wing to hold position. With the wing tack glued in place you will be able to adjust/align how it sits atop the fuselage. Verify that the wing has been installed square relative to the fuselage. Note the slight tilt to the stabilizer assembly in the drawing below as produced in step 1 (as viewed from rear of model). Once satisfied with installation apply liberal amounts of thin CA glue to adjoining surfaces of wing and fuselage. Allow glue to cure then re-apply.

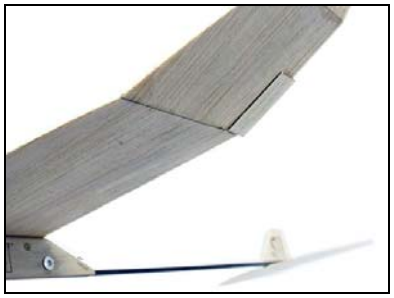




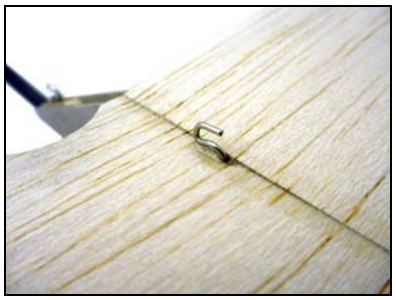
3. Finger rest installation. Locate the 1/8" balsa triangular finger rest slightly round the longest edge of the finger rest as illustrated below. Invert your glider and test-fit the finger rest to the underside of the right wing panel. Lightly sand the inside edge of the finger rest to allow it to seat flush against the fuselage side. Once satisfied with the fit install the finger rest spanning the fuselage side and flush with the wing trailing edge. Glue. Once the glue has cured, curl a length of fine sand paper around your finger and sand a scallop in the trailing edge of the wing to match flush with the scallop cut in the finger rest. ***Lefties!*** *Install your finger rest on to the Left wing panel.*



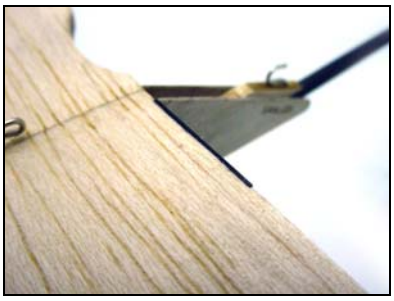
4. Wash-in wedge. Locate the 1/8" balsa "wedge" at this point it looks more like a block than a wedge (first photo). Using a sanding block, taper the wedge evenly along the length of the wedge (second photo). Install this wedge with the thickest point flush with trailing edge of Left wing panel just outside of the first dihedral break (third photo). ***Lefties!*** *You will install wash-in wedge to Right wing panel.*



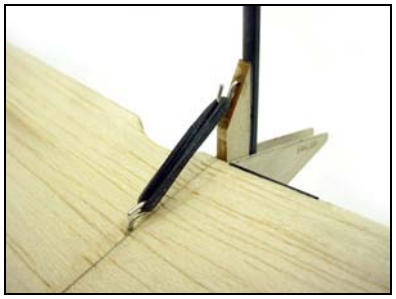
5. Pop-Up spring forward lug assembly. From the remaining t-pin stock bend another "S" hook just as you did in step 13 of the fuselage assembly. Measure 3/4" from wing trailing edge and install this hook along center joint as illustrated. When inserting the hook drive the straight pin portion of the hook at a 45 degree angle into the body of the wing and fuselage. Glue.



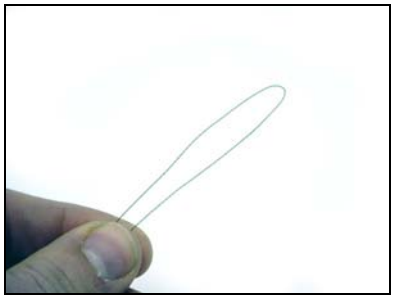
6. Trailing edge DT string reinforcement. Locate the 1 in. length of .8mm dia. carbon rod. Using a sharp razor blade or a small piece of sand paper, trim or sand a recess in the wing trailing edge opposite the finger rest large enough to seat this length of carbon rod flush to the wing trailing edge as illustrated. Glue with thin CA glue.

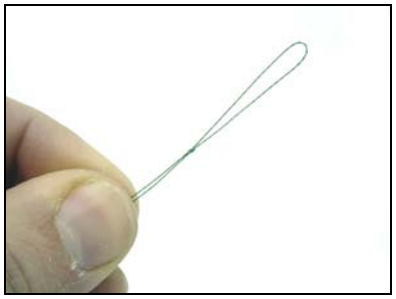


7. Put the “pop” in pop-up. Select two small rubber bands from the included rubber band assortment and stretch over Pop-Up spring lugs as illustrated below.

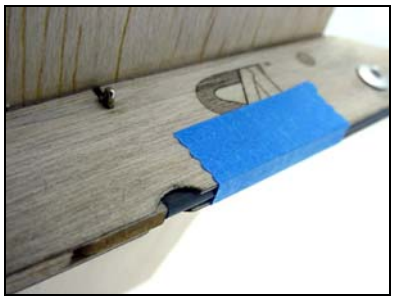
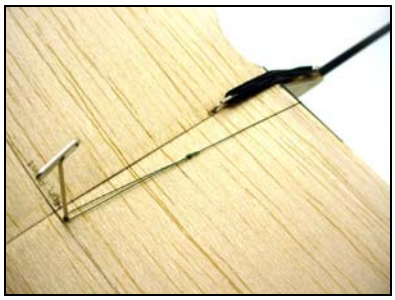


8. Install DT string. Begin by making a large loop in the end of the provided abrasion resistant string. Next, take your loop an tie an overhand knot. Work the knot down to allow for a loop of about ¾” secure the knot with a drop of thin CA glue and remove the short length of remnant thread.



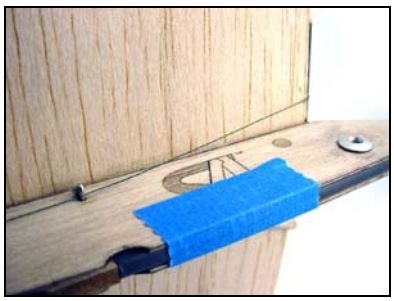
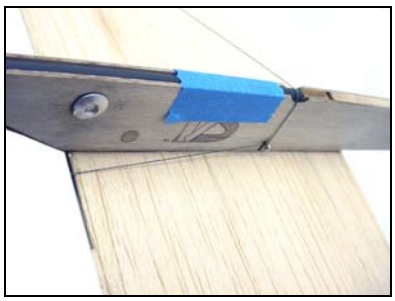
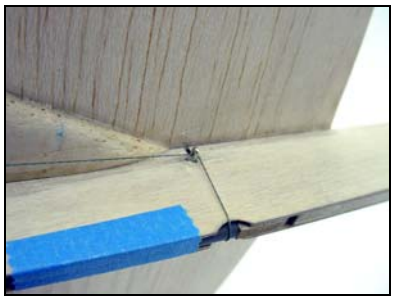
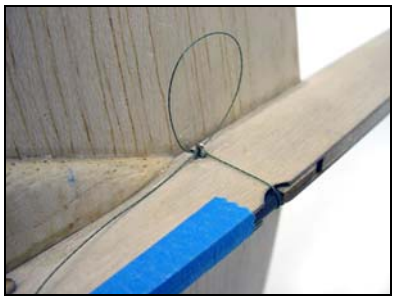


9. Temporarily tape the Pop-Up boom within the fuselage as illustrated. Place a pin in the top of the wing at the marked “high point” and place the looped end of the DT string over the pin as illustrated.

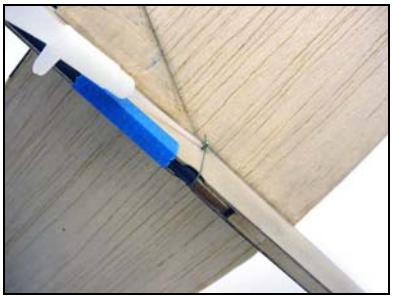



10. ***Lefties!*** *The following steps refer to building a right-handed glider reverse the sides described in the instructions to complete your glider. Remember, the DT line will always tie off on the opposite side of the timer.*

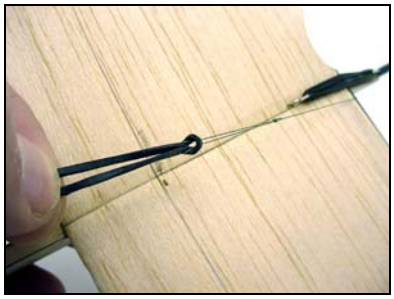
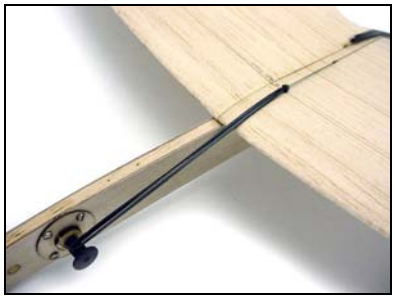
    Wrap the string over the carbon reinforced trailing edge of wing, underneath, and forward to pass through the eye of the Left side DT string guide (first photo). Next, wrap the string over the forward portion of the Pop-Up boom and up the opposite fuselage to pass through the Right side DT string guide (second and third photo). With the DT string still looped around the pin at top of wing remove any slack in the string and loop multiple times through eye of Right side DT string guide (fourth photo).

11. Tie a simple overhand knot to retain string at Right side DT guide. Cut excess string and secure knot with a drop of thin CA glue.

12. Select one of the longer rubber bands from your assortment and place thread through the loop in the end of you DT string. Loop one side of the rubber band back through itself to secure to the end of the DT string. Rotate the pin on the viscous timer to the ten-o-clock position and loop rubber band over pin. You'll notice immediately that the viscous timer begins to rotate clockwise in response to the load placed on the pin. When the timer reaches the two-o-clock position it will release the rubber band.

13. Balance model. Two tiny laser cut holes have been cut central to wing panel 1 approximately 1-3/4" aft of wing leading edge at root. These holes mark your CG location. Balance the model, so that the fuselage hangs level with the horizon when suspended from this point, by filling ballast pocket at nose of glider with clay ballast. Alternatively, lead shot may be mixed with clay to reduce the bulk of ballast used. Optional, cover the ballast pocket with 1/32" plywood plug to create a streamlined


14. You may now remove the tape from step 9 that prevented the operation of the pop-up fuselage and proceed to the Flight Trim Guide for trimming and operation instructions.

Trim Guide

Hand Launch Glider #1

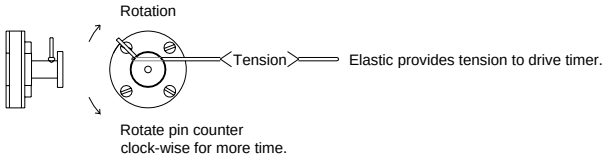
Span 18 in. / Length 19-3/8 in. / Area 46.5 sq. in. / Typical Flying Weight 25g

Basic Instructions for HLG01:

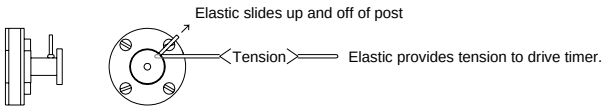
Timer Theory

A loop of elastic thread, spring, or rubber band hooked around the rotating pin assembly will drive the paddles within the timer body through the viscous putty loaded within the timer cavity. As the pin rotates closer to parallel with the elastic thread, the thread slips off the pin assembly and releases creating your trigger. You can increase the amount of time it takes prior to release by rotating the pin and elastic further around the timer body. Temperature will affect the viscosity of the putty so you will need to calibrate your timer in the environment you wish to use it in.

Timer Set



Timer Release Phase



Dethermalizer Function

Rotate the pin of the timer to the nine-o-clock position. Loop your DT string up and over the top of the wing from the trailing edge and hook the elastic band around the rotating pin of the timer. The DT string must capture the leading edge of the pop-up fuselage boom to prevent it from rotating to the vertical position.

Release the pin and your timer will begin to rotate clockwise. Once the timer pin reaches the two-o-clock position it will release the elastic band. When the release occurs the DT string no longer maintains it's mechanical advantage over the rubber bands that drive the Pop-Up tail rotation and the tail is free to rotate to the near vertical position.

Re-arm your timer as above and using a stop watch become familiar with the amount of time it takes to release the Pop-Up tail from your start point on the timer.

To add time - rotate the timer pin counter-clockwise.
To reduce time - rotate the timer pin clockwise.

You should set your timer up so that it will reliably allow for a two minute flight. Two minutes is the maximum amount of time necessary for competitive use. If you find that the timer runs too fast to achieve your two minute duration: Replace the elastic tension band with one that is longer and or thinner.

Disable the Dethermalizer

There's an old saying that goes something like this "but it was just a test flight" which is often followed by your prized HLG bounding skyward on a thermal never to be seen again. You should

only fly without your Dethermalizer armed when there is absolutely no thermal activity at your field or you are making initial incidence adjustments as described in the “Establish Tail Incidence” section.

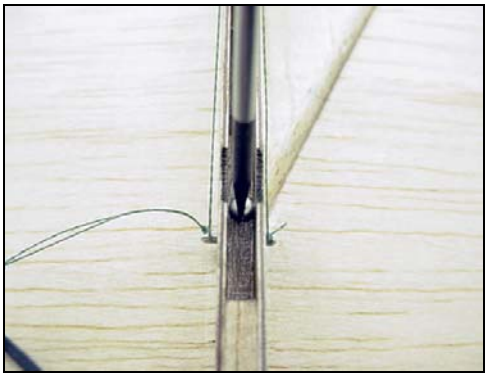
The simplest method to disable the dethermalizer is to loop your DT string up and over the top of the wing from the trailing edge and hook the elastic band around the flange of the rubber bushing on the timer. The DT string must capture the leading edge of the pop-up fuselage boom to prevent it from rotating to the vertical position.

Balance Model

Two tiny laser cut holes have been cut central to wing panel 1 approximately 1-3/4” aft of wing leading edge at root. These holes mark your CG location. Disable the dethermalizer then balance the model, so that the fuselage hangs level with the horizon when suspended from this point. Balance is easily achieved by filling ballast pocket at nose of glider with clay ballast. Alternatively, lead shot may be mixed with clay to reduce the bulk of ballast used. Optional, cover the ballast pocket with 1/32” plywood plug to for a more streamlined fuselage.

Establish Tail Incidence (decalage)

With the model balanced as above you’ll need to establish your starting tail boom incidence. Release the DT string to allow access to the tail boom incidence adjustment screw. Invert the model and gently screw the incidence adjustment screw in until fully seated. Now back the screw out one full turn, this is your starting incidence.



Pick a calm time of the day with no thermal activity for your first trim flight. Mornings and evenings are typically the best time for trimming out your HLG. Follow the steps to disable your dethermalizer. Pick a point on the horizon and give a firm over-hand toss releasing the glider aimed at your distant point on the horizon with wings level to horizon. Observe the models behavior.

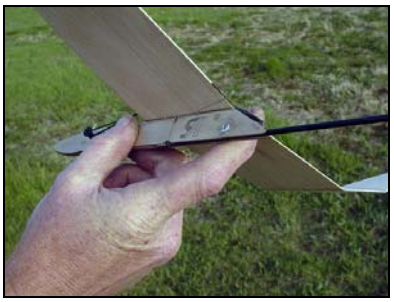
If the model noses down: Release the DT string to gain access to the incidence adjustment screw and rotate screw counter-clockwise increase tail boom incidence.

If the model noses up: Release the DT string to gain access to the incidence adjustment screw and rotate screw clockwise decrease tail boom incidence.

Once you have achieved a level glide with no tendency for the model to dive or stall you are ready for your first throw.

First Throw

Arm the Dethermalizer allowing for no more than 15-20 seconds of time prior to release of DT string. Grasp the model with your thumb and middle finger on either side of the fuselage. Rest you index finger on the finger rest pocket. Release the timer. If a light breeze is present always face the model into the wind and throw just to the right* of the oncoming wind. Give a firm side arm throw up at about a 30-45 degree angle with the model banked away from your body at 45 degrees. Observe the models behavior.

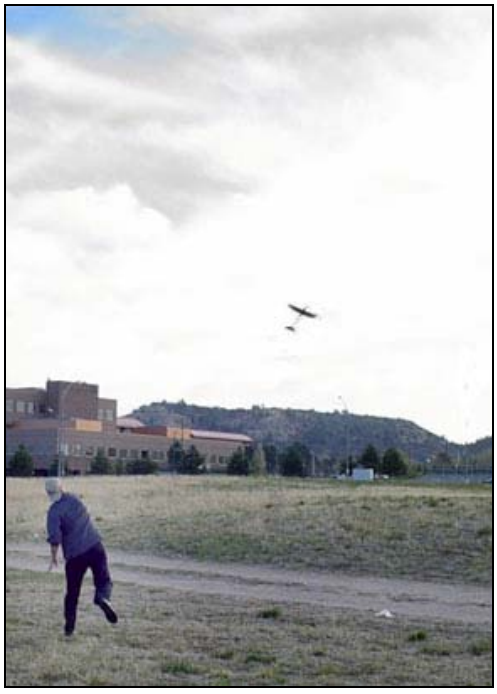


Ideally, the model should climb briskly from the release point then, after gaining approximately 50 ft. of altitude, roll left* and transition into a flat left* turn glide pattern of about 100' in diameter.

Experiment with your throwing. In many cases, problems with the models transition and altitude gain can be attributed to your throwing technique.

Do's and Don'ts of Throwing

- Do give the model a powerful throw however, don't hurt yourself the more you throw the more your power will develop.
- Do throw the model just to the right* of the oncoming wind.
- Do not aim the model too high. Release the model at or below 45 degrees it will climb out briskly from there.
- Do bank the model at 45 degrees away from your body when throwing.
- Do be mindful of what is down-wind from you. Always throw from the up-wind portion of the field.
- Do not continue to throw a model that is out of trim as each crash risks damage to your model. Always use your throws productively making trim changes as described in the chart at the back of this manual to perfect your gliders performance.
- Do not tempt Mr. Murphy – law states that if you show up to the field with only one glider – you'll loose it! Bring at least two HLG01's each flying session or risk being subject to "Murphy's Law".
- Do bring your son and daughter along they will enjoy throwing and retrieving just as much as you!



HLG01 Trim Guide

Points to keep in mind when prior to making trim changes.

- Rudder controls the launch and transition.
- Stabilizer tilt controls the glide circle diameter.
- CG (balance) and Incidence (declage) work together to control the models pitch or glide attitude and air speed. Changes to incidence will often require changes to CG. Incidence has more of an affect on flight performance as the speed increases. Thus you'll change the incidence to solve looping during launch or nose diving after transition. CG changes more subtly affect the aircrafts flying attitude and will often be made to affect flight speed.

Problem	Cause	Solution
Model loops on full power launch and stalls often in glide.	Too much incidence	Decrease incidence by turning adjustment screw clock-wise.
Model pitches up steeply at launch then nose dives into ground.	Too little incidence	Increase incidence by turning adjustment screw counter-clock-wise.
Model launches high with good transition but stalls often in glide.	CG too far back	Add nose-weight until stall disappears.
Model launches high with good transition but is fast in the glide and slightly pitched-down.	CG too far forward	Remove nose-weight until slower glide is obtained.
Model glides nicely from level toss. Launches are high but model fails to consistently roll left* into transition.	Not enough left* rudder.	Increase left* rudder by bending the trailing edge of the fin left until left* roll out is obtained at transition.
Model rolls sharply to left on launch additionally, model does not launch high.	To much left* rudder.	Decrease left rudder by bending the trailing edge of the fin right* until launch is high and followed by a "flip" or roll-out transition to the left*
Model launches high and transitions well but glide circle is tight (less than 100' in diameter).	Too much stabilizer tilt.	Carefully, soften carbon boom by heating with heat gun and decrease stab tilt until the glide circle decreases to about 100' in diameter.
Model launches high and transitions well but glide circle is wide (greater than 100' in diameter).	Too little stabilizer tilt.	Carefully, soften carbon boom by heating with heat gun and increase stab tilt until the glide circle increases to about 100' in diameter.
Model launches high and transitions web but glide tightens up into a tight descending spiral.	Not enough wash-in	Check model for warps and wing misalignment. Add additional wash-in wedge till spiral is reduced.

*Applies to right-handed throwers. Left-handed throwers will typically trim for the opposite direction.

Enjoy your new Stevens AeroModel HLG01!

We hope that you have enjoyed building and flying this Hand Launch Glider kit from Stevens AeroModel we continually make improvements to kit design and instructions based upon your valuable feedback.

This project would not have been possible without the support and mentorship of local free-free flight community and enthusiast Mark Covington who was the driving force behind development of this model.

Please direct photos of your project, comments, or suggestions to:

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