

ESTES ASTRO-BLASTER™ INSTRUCTIONS

Welcome to the world of rocket-boosted, radio-controlled model aircraft. The Estes Astro-Blaster™ is a high performance model designed for the experienced R/C builder/flyer. It requires the use of a mini or micro type R/C system. Model rocketry experience would be helpful but is not necessary as this kit will provide you with some basic instruction in the safe use of Estes rocket engines and accessories.

BEFORE YOU START:

- Use only the rocket engines recommended for use with this kit.
- Follow all safety instructions carefully.
- Read all instructions before you begin building.
- You will need these additional items to construct this kit:

A hobby knife with extra blades

A razor saw

An assortment of sandpaper (from 80 to 300 grit)

A steel straight edge 24" long

A small right triangle

3/4" masking tape

A sanding block or "T" bar sander

A Dremel-type hobby drill with a 1/16" drill bit

- GLUE:** To build this kit, we recommend the use of Cyanoacrylate adhesives (C/A), both the thin and gap filling formulas. Use the appropriate accelerator when required.

WARNING: C/A glue "attacks" styrofoam. It should never be used to adhere anything to your wing cores. Follow all manufacturer's safety instructions with all adhesives.

You will also need a small amount of two part Epoxy-type glue. The 30 minute cure formula is best. Water-based Aliphatic Resin glue such as "Titebond" will be needed as well. We also recommend the use of 3M "77" Spray Adhesive or an equivalent when applying the balsa wing skins to the styrofoam wing cores.

CHOOSING A FINISHING METHOD:

To finish your model we suggest the use of any of the iron-on-type "heat shrink" model aircraft covering materials. **Because of the styrofoam wing cores, the "Low Temperature" type should be used.**

You may wish to paint your model. You must keep in mind, however, that weight is your "enemy". Your finished model, ready to fly, with radio system and rocket engine in place should weigh between 12 and 16 ounces. That's pretty light. Balsa fillers, primers and paint add weight fast. Be careful! Our prototypes used filled, primed, and painted fuselages, with "iron-on" covered wings and stabilizers. Your hobby dealer can recommend the appropriate finishing materials.

If you choose to use one of the many brands of low temperature iron-on covering materials, you will need a tacking iron and heat gun. Follow the manufacturer's instructions and cover the fuselage, hatch, elevators, stabilizers, ailerons and wings separately. Be sure to leave the center 1 1/2" of the wing uncovered.

PARTS IDENTIFICATION

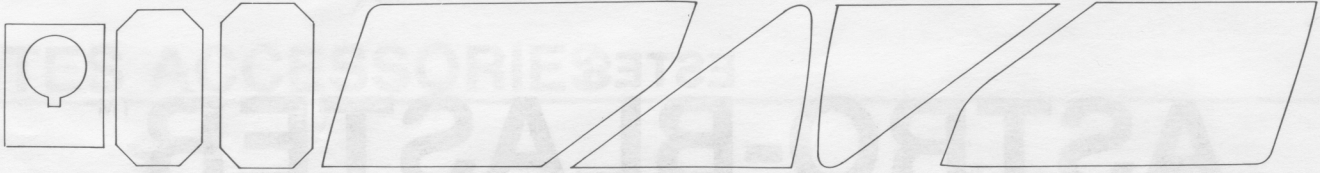
DIE CUT WOOD PARTS



#1 Fuselage Sides (2)



#2 Horizontal Stabilizer/Elevator Set (1)



#3 Vertical Stabilizer and Bulkhead Set (1)

THIS KIT CONTAINS:

- 1. Foam Wing Cores (2)

BALSA —

Die-Cut Parts:

- 2. 1/8" Fuselage Sides (2)
- 3. 1/8" Horizontal Stabilizer/Elevator Set (1)
- 4. 1/8" Vertical Stabilizer and Bulkhead Set (1)
- 5. 1/16" Fuselage Doubler Set (1)

Raw Stock:

- 6. 1/32" x 3" x 22 1/2" Wing Skin (6)
- 7. 3/32" x 3" x 16" Fuselage Sheeting (2)
- 8. 1/4" x 3/8" x 22" Leading Edge and Sub Spar (4)
- 9. 1/4" x 1" x 22" Trailing Edge (2)
- 10. 5/16" x 22" Triangle (4)
- 11. 15/16" diameter Balsa Engine Mount Plug

OTHER WOODS —

- 12. 1/8" x 1/4" x 4" Spruce (1)

ASSEMBLY SUPPLIES —

- 13. 15" x 3/4" Fiberglass Tape

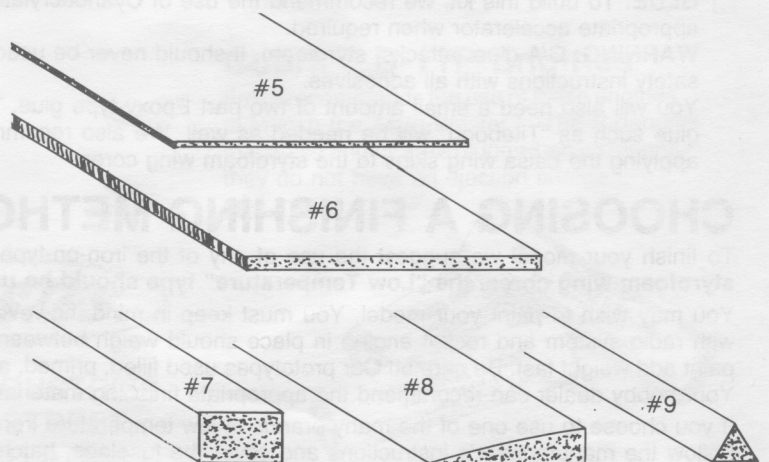
HARDWARE —

- 14. 12" x 2-56 Threaded Push Rods (3)
- 15. Nylon Clevises (3)
- 16. E/Z-Type Connectors (3)
- 17. Nylon Rod Ends for Aileron Torque Rods, 2-56 (2)
- 18. Nylon Rod End for Elevator Torque Rods, 4-40 (1)
- 19. 1/16" Collar with 3/8" x 4-40 Set Screw (1)
- 20. 2" x 2" Hinge Material (1)
- 21. 1/16" x 6" Piano Wire (1)
- 22. 1/16" I.D. X 1 1/2" Brass Tubing
- 23. Aileron Torque Rods (1 set)
- 24. Launch Lugs (2)
- 25. Rocket Engine Mount Assembly (1)

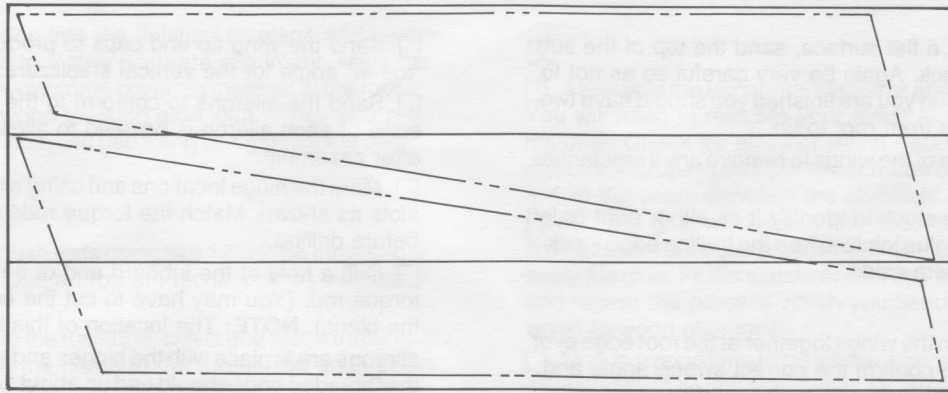


#4 Fuselage Doubler Set (1)

RAW STOCK WOOD PARTS



I. WING CONSTRUCTION



WING SKIN LAYOUT PATTERN

SKINS ———
WING
OUTLINES - - - - -

1.

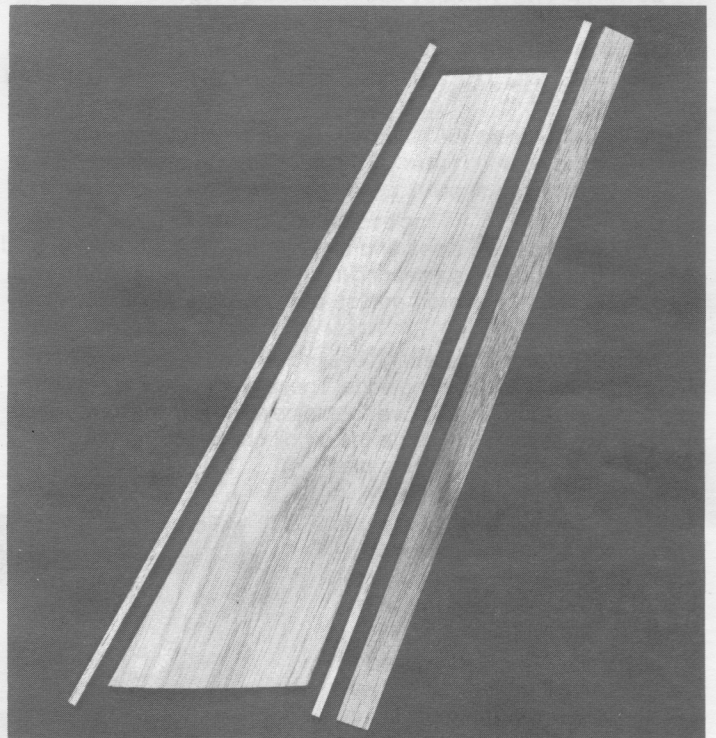
- Locate the six (6) pieces of 1/32" x 3" x 22 1/2" balsa sheet. These will be used to "skin" the wings. Lay them out in two groups of three pieces each. Put them together edge to edge. You may need to straighten the edges using a steel straight edge and a sharp hobby knife.
- Tape the pieces together along the seams on one side only. Turn the taped sets over and use thin C/A to glue them together. After it cures, turn the sets back over and remove the tape.
- Remove the foam wing cores from their bedding. Lay them on the skin sets as shown in the drawing. (**Do not throw the core bedding away!** It will be used later in this wing construction section.) Cut two skins from each set. Leave at least 1/8" margin around each skin. Sand all four skins to remove fuzz and excess glue.
- Lightly** sand the styrofoam wing cores (use 220-280 grit paper) to remove any irregularities that might exist.
- Special Note:** If you choose to run your antenna down the span of the wing as shown on the left wing on the plans, do the following: cut or sand a very small groove on the top surface of one wing core as indicated (about 3/32" x 3/32"). This will provide a channel by which you can retrieve the antenna after your model is completed. **If you allow your antenna to trail behind the model as is commonly done, you run the risk of damaging it during launch from the engine exhaust.**

2.

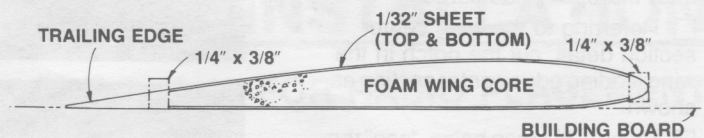
- Glue the wing skins to the styrofoam cores with 3M "77" or an equivalent spray adhesive. **This is a very important step.** Here is the method that we feel works best:
- Lay both wing cores top side down on a flat surface that is protected from overspray with newspaper. Lay the two bottom wing skins face down as well. Spray a light coat of adhesive on all surfaces.

WARNING: Too much adhesive may damage the cores, a complete but light coat works best.

- After spraying, pick up a core, locate it over the correct skin and lay it gently down glue to glue. Repeat for the second wing. Now, spray the top of the cores and the back side (or underside) of the top skins.
- Pick up the cores and locate them over the skins and place them together glue to glue.
- Quickly place each wing and skin assembly back into the styrofoam bedding that protected the wing cores during shipment. Carefully align all the foam edges on all four sides. Place the whole assembly on a flat surface and weight it down with evenly distributed books or other heavy flat objects. Allow to cure for several hours. This method assures flat straight wings with 100% glue to glue contact.



Balsa covered cores with leading edge, subspar, and trailing edge



3.

- Carefully cut and sand the excess balsa wing skins flush to the styrofoam cores on all four edges of both wings.
- Glue the 1/4" x 3/8" x 22" balsa leading edge and sub spar pieces to the wings as shown. Epoxy or aliphatic resin works best here. The sub spar should be glued as flush to the bottom of the wing as possible as shown in the illustration above.
- Spot glue** the 1/4" x 1" x 22" trailing edge stock so that it is flush to the bottom surface of the wing as well. **You will be removing the trailing edge pieces later.**
- Trim all excess wood to match the angle of the wing root and tip at this time. Use a razor saw and sanding block or "T" bar.
- Sand the leading edge to shape, being careful not to damage the upper or lower wing skins.**

I. WING CONSTRUCTION (Continued)

3. (Continued)

- Now with the wing on a flat surface, sand the top of the sub spar and trailing edge stock. Again be very careful so as not to damage the wing skin. When you are finished you should have two wings with uniform airfoils from root to tip.
- Lightly sand the bottom of the wings to remove any irregularities or excess glue.
- Mark the trailing edge stock to identify it as either right or left wing. Snap or cut the spot glue joints to free the trailing edge stock from the sub spar. Set them aside.

4.

- IMPORTANT:** Position the wings together at the root edge over the plans. This is done to confirm the correct sweep angle and span length. Use a sanding block or "T" bar to carefully make any required adjustments.

5.

- JOINING THE WINGS:** Epoxy the wings together top side up on a flat surface. Tape the wings together across the seam to insure proper alignment while the epoxy cures.

- COMPLETING THE WINGS:** Locate the two pieces of trailing edge stock.

- Position them over the plans, mark and cut off the inner end of each as indicated. Also cut away the small area of sub spar at the center of the wing as shown (see wing center section detail on plan).

- Cut the sections of trailing edge which are shown on the plans between the fuselage sides and the ailerons. This section is fixed to the wing and provides a bearing for the aileron torque rod. This leaves you with the aileron portion of the trailing edge stock for each wing.

- Using a razor saw, carefully cut a groove in the upper front face of the fixed sections of trailing edge. These grooves will accept the aileron torque rods. The groove should be as near to the top surface of the wood as possible. Note the airfoil cross section drawing located on the left wing of the plan.

- EXTREMELY IMPORTANT:** Using an ordinary wax candle, rub the surface of the torque rods thoroughly. Make sure to completely coat the long portion of the wire between the bends.

- Use epoxy to glue the fixed section of trailing edge to the wing with the torque rods in place. Insure proper location and tape to hold while the epoxy cures. The wax will allow the torque rods to rotate freely after the epoxy has cured.

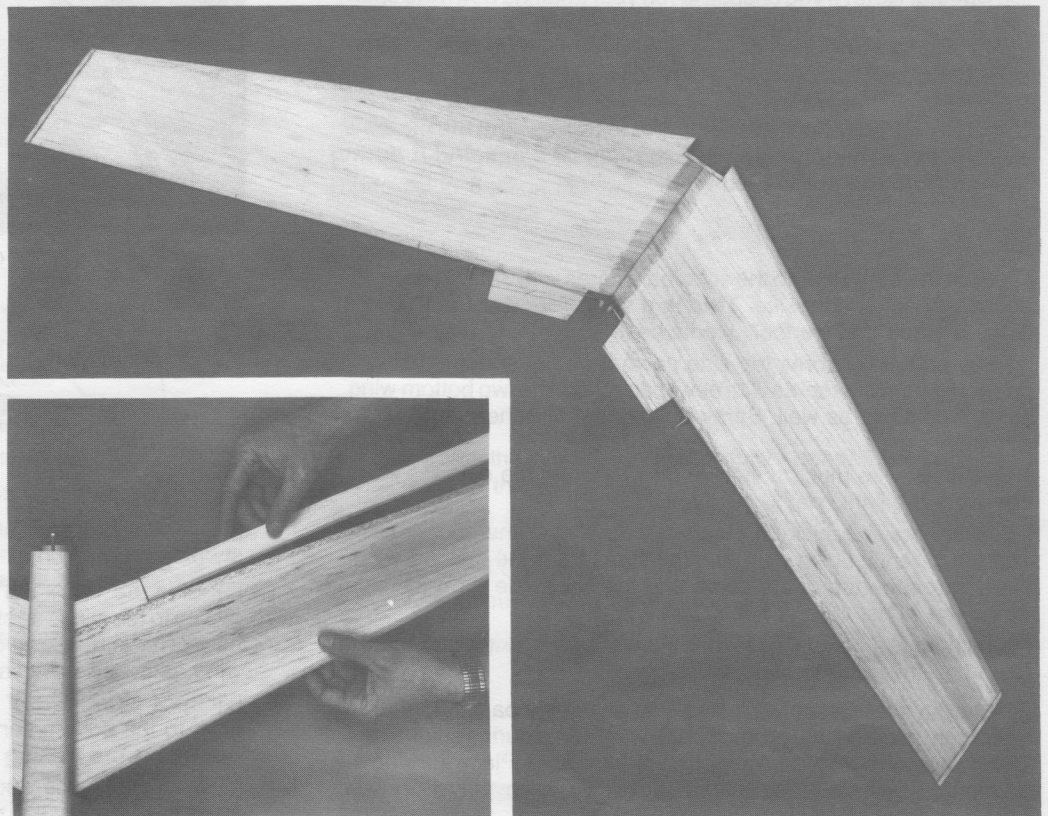
- Referring to the wing center section detail, cut the notch in the wing leading edge center section as shown.

- Using 1/8" scrap balsa, "cap" the exposed foam at the front of the notch as shown. Also cap the exposed foam at each wing tip with scrap balsa as well. Be sure to provide an exit hole for the antenna.

- Use the fiberglass tape and epoxy to reinforce the center section as indicated. It is best to do the top surface first and the bottom surface after the top has cured. Make the tape joint as smooth and flat as possible.

- Sand the joint lightly to remove high spots. This will aid in the wing to fuselage fit.

- Sand the wing tip end caps to produce a one to two degree "toe-in" angle for the vertical stabilizers.
- Sand the ailerons to conform to the plans. Note that the front edge of each aileron is beveled to allow for up and down travel after assembly.
- Mark the hinge locations and using a hobby knife, cut the hinge slots as shown. Match the torque rods and ailerons to the plans before drilling.
- Drill a hole at the inboard end of each aileron to accept the torque rod. (You may have to cut the end of the rod off to match the plans). **NOTE:** The location of this hole is critical. When the ailerons are in place with the hinges and the torque rods installed, the threaded ends should end up about 1/2" apart at the center of the wing. Cut your hinges from the special hinge material provided in the kit. Assemble your wings and ailerons to confirm proper alignment and movement. The ailerons should travel at least 3/8" up and 3/8" down.
- DO NOT GLUE THE HINGES AT THIS TIME.**



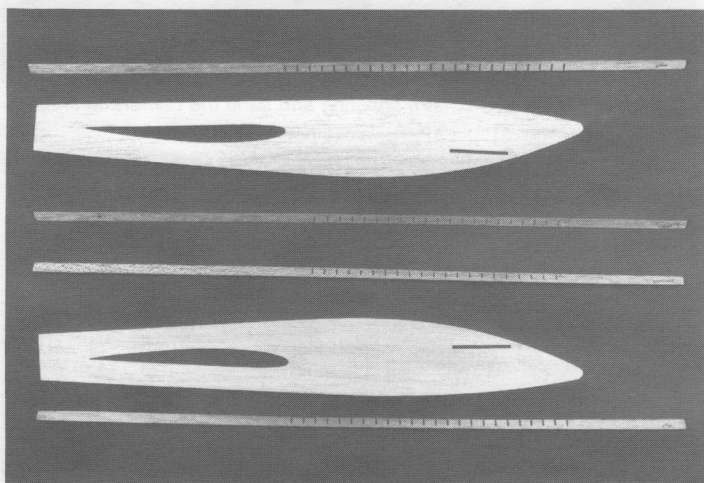
Aileron test assembly

Completed wing ready to cover

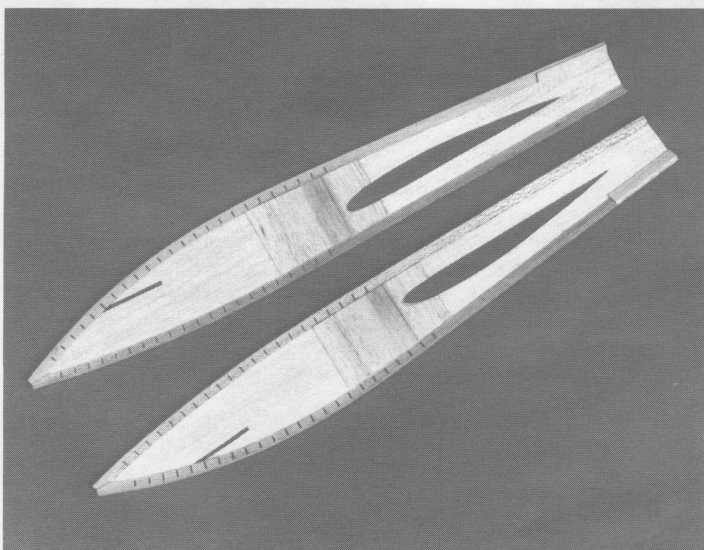
II. FUSELAGE CONSTRUCTION

1.

- Locate the two fuselage sides and the four pieces of 5/16" x 22" balsa triangle stock. Slot the triangle stock as shown. Use a razor saw. Do not cut completely through. These slots allow the triangle to bend and conform to the fuselage contour. **REMEMBER** to cut left and right side pieces (mirror images).
- Glue the triangle to the fuselage sides as indicated. Be careful to accurately align the edges of the triangle to the edges of the fuselage sides.
- Glue the 1/16" balsa fuselage doublers in place, being careful to align the wing root cut-outs.
- Mark the location of the B1 and B2 bulkheads on the inside of the fuselage sides.
- Glue 3/8" x 2 3/4" engine mount spacers (cut from 1/8" scrap balsa) in place as shown.



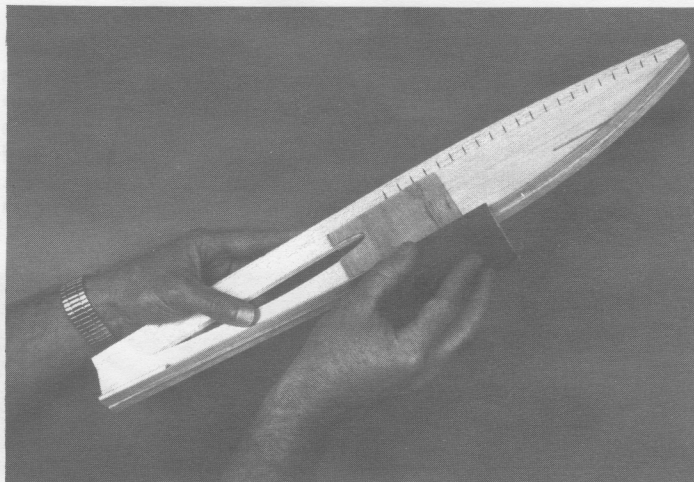
5/16" triangle stock with razor saw cuts - fuselage sides



Fuselage side assemblies - note: 1/16" doublers and engine mount spacers

2.

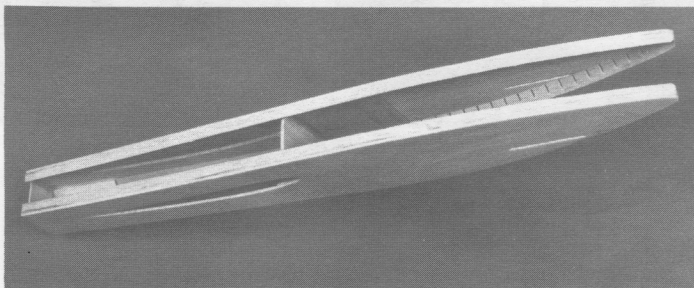
- Carefully align the outer sides of the fuselage together face to face. Be sure that the wing and stabilizer cutouts align perfectly. Now, spot glue the sides together using a tiny drop of C/A glue at each end. Block sand the edges to insure two identical fuselage sides.
- Snap the spot glue joints and separate the fuselage sides.



Sand fuselage sides together to insure symmetry

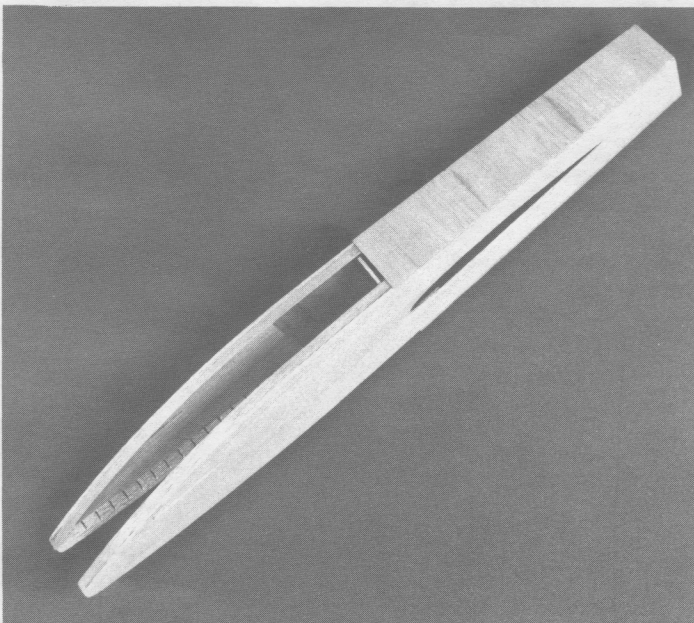
3.

- Locate and spot glue the temporary bulkheads at B2 and B3 as shown. Be sure to only **SPOT** glue these pieces. A couple of tiny C/A spots will do as you will be removing these bulkheads later.
- Do not join the nose halves.



Glue temporary bulkheads B2 and B3

- With the nose left open, position the fuselage over the plans to insure straight and square construction from B2 rearward. Cover the top and bottom of the fuselage with the cross grain oriented 3/32" balsa sheet. Cut and glue this sheeting from the rear of the fuselage forward to B2. (Close to B2 is good).

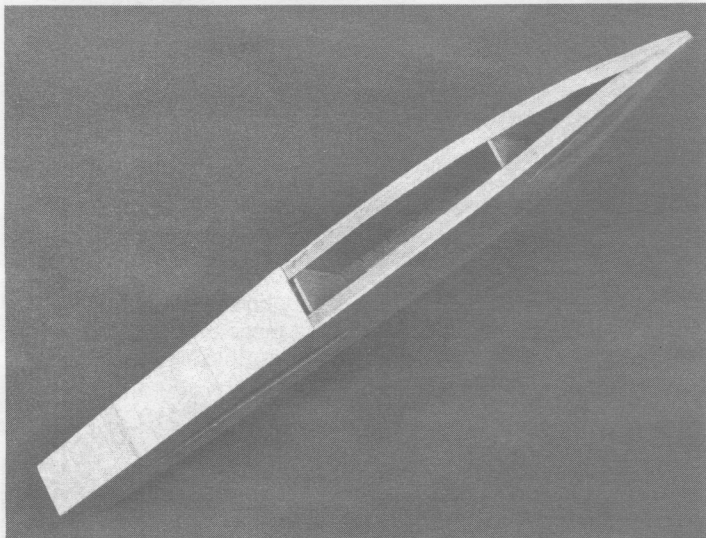


With nose open glue top and bottom sheeting up to B2. Sheeting grain should be oriented perpendicular to the length of the fuselage.

II. FUSELAGE CONSTRUCTION (Continued)

4.

Finish cutting the saw slots through the triangle stock at this time to allow the fuselage sides to bend easier as you pull the nose together. Sand the bevel in the triangle stock on the inside of the nose as shown. Pull the nose together, checking for symmetry, and glue with C/A. Slip the front bulkhead B1 into position and glue. Now complete with the top and bottom 3/32" cross grain balsa sheeting on the fuselage.

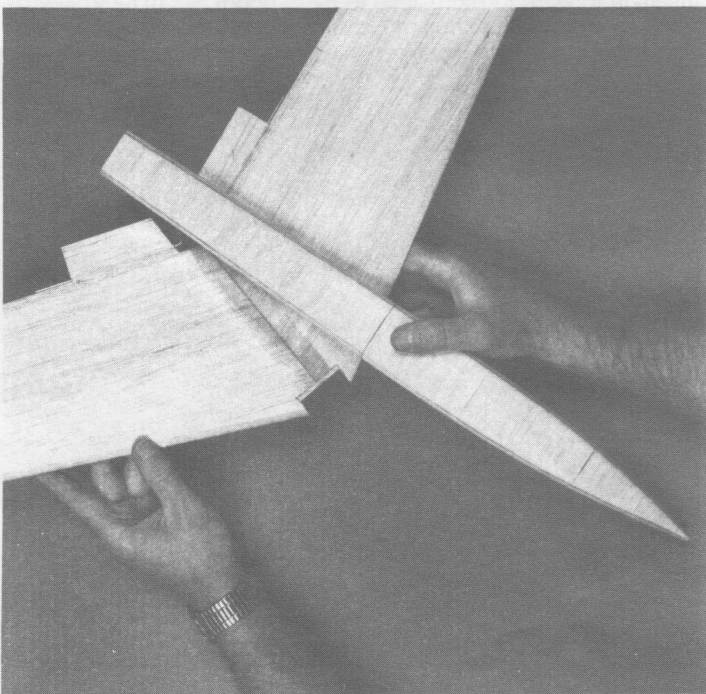


Complete the saw slots. Bring the nose together. Bevel the triangular stock. Glue in B1.

5.

Next sand the top and bottom sheeting flush to the fuselage sides. Then sand all fuselage corners, from front to rear, to a uniform radius. Sand away enough material to just reveal the underlying triangle stock at the corner. (See plans - view A-A)

Test-fit the wing into the fuselage wing cutout at this time. **Do not force the fit.** Sand the wing joint smooth and wing slot cutouts in the fuselage just enough to insure a proper fit. Remove the wing and set it aside.



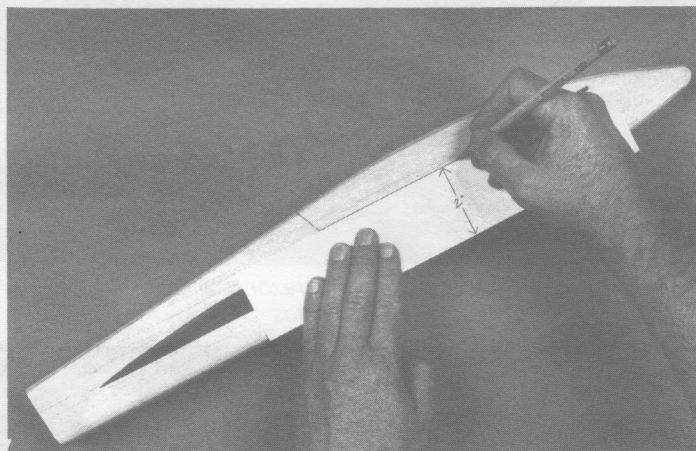
Test fit the wing to fuselage



Complete the top and bottom sheeting and sand the corners to shape

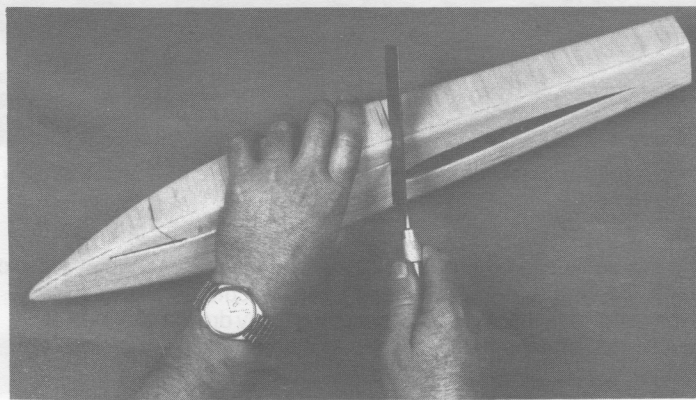
6.

PREPARATIONS FOR CUTTING THE HATCH FREE FROM THE FUSELAGE: Carefully plot the cut line as indicated on the plan.



Mark for hatch

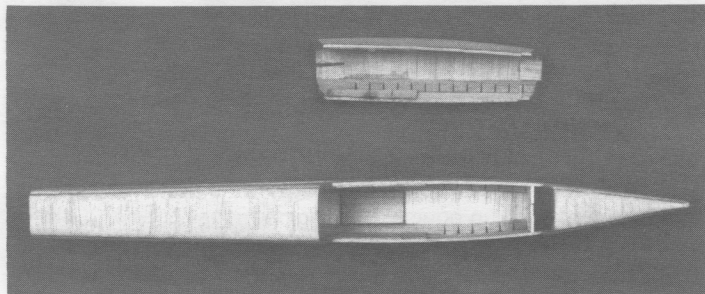
Use a razor saw, hobby knife and straight edge for this operation. As you cut along the bottom line of the hatch, it is necessary to cut through the B1 and B2 bulkheads. When you have completed all your cuts, a gentle pull will fracture any uncut portions of the bulkheads and allow the hatch to separate from the fuselage. Remove the temporary bulkhead B2 from the fuselage and from the hatch. Work slowly and carefully. The aesthetics of your model and the canopy fit will depend on how well this step is accomplished.



Carefully saw free

II. FUSELAGE CONSTRUCTION (Continued)

- You may now position and glue the 1/16" cross grain doubler on the inside bottom of the fuselage. Cut this piece from scrap. You can remove the remnant of the B1 bulkhead in the hatch or you may notch it for elevator push rod clearance later. Complete the hatch by adding the scrap balsa tongue to the front and the latch cover lock mechanism in the rear as shown on the plans.
- The latch is made from a small piece of 1/16" piano wire and a small piece of brass tubing. You should save this step until you have completed the finishing work.
- You may now remove the B3 temporary bulkhead. Leave the rear end open at this time.

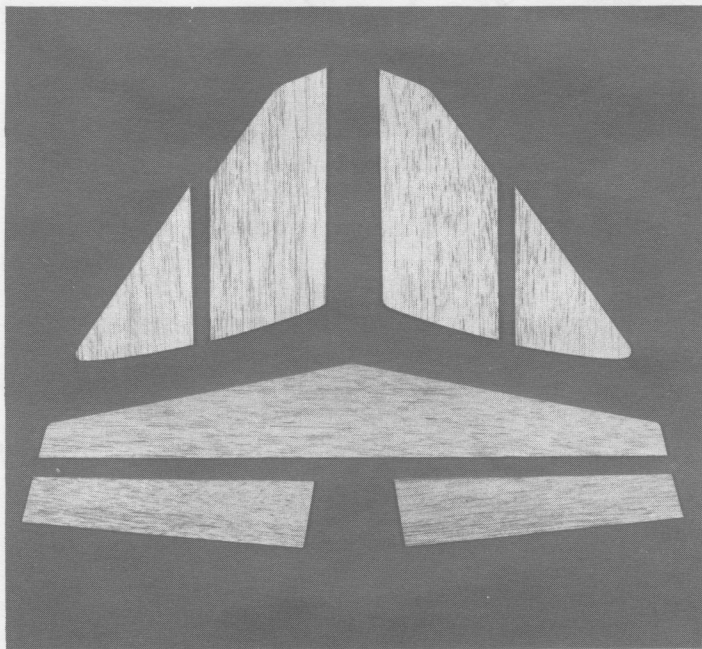


Add 1/16" doubler to the fuselage floor

III. ELEVATOR/STABILIZER CONSTRUCTION

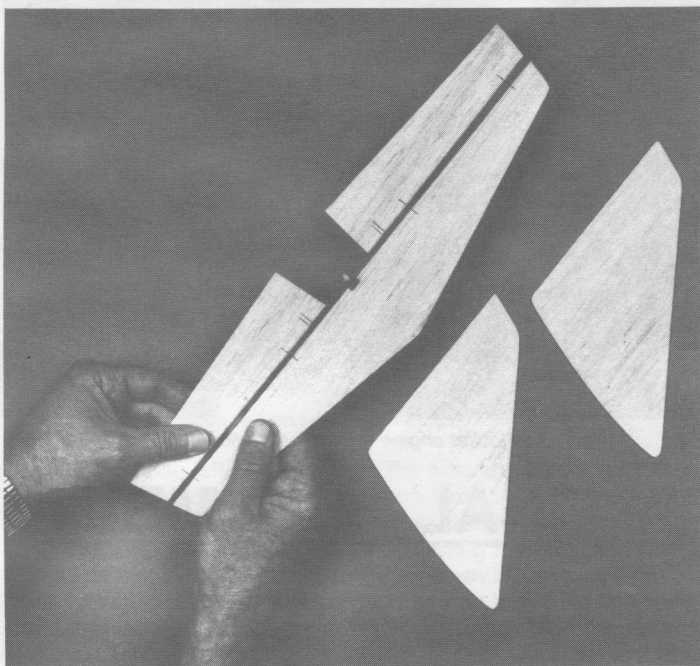
1.

- STABILIZERS:** Locate the die-punched parts needed to construct the horizontal and vertical stabilizers. Each vertical stabilizer consists of two pieces. Glue them together as indicated. Sand to shape the edges of these components as indicated on the plans. **IMPORTANT:** Nicely shaped parts reduce drag and will help your finished model perform efficiently.



Stabilizer pieces

- The horizontal stabilizer and elevator combination consists of three die-punched parts and a torque rod linkage assembly.



Test assemble stabilizer/elevator

2.

- MAKING THE ELEVATOR TORQUE ROD ASSEMBLY**
- Locate the piece of 1/16" piano wire. Cut a 4 1/2" piece. Save the rest for the hatch lock.
- Slip the 1/16" collar over the torque rod wire and bend the ends as indicated on the plans. Center the collar and tighten it on the wire with the 3/8" x 4-40 set screw.
- Position the set screw so that it is 90° to the bends in the wire. You may want to use a drop of C/A glue to set the threads.
- Locate the correct nylon rod end and thread it over the set screw. One nylon rod will accept 4-40 threads, while the other two will accept 2-56 only.
- Use your complete torque rod assembly to mark and drill the 1/16" holes in the elevators.
- Now mark and cut the hinge slots and center notch as shown.
- Test assemble, but do **not** glue the hinges at this time. You should now have all major components shaped sanded and ready for finishing.

IV. ROCKET ENGINE MOUNT ASSEMBLY

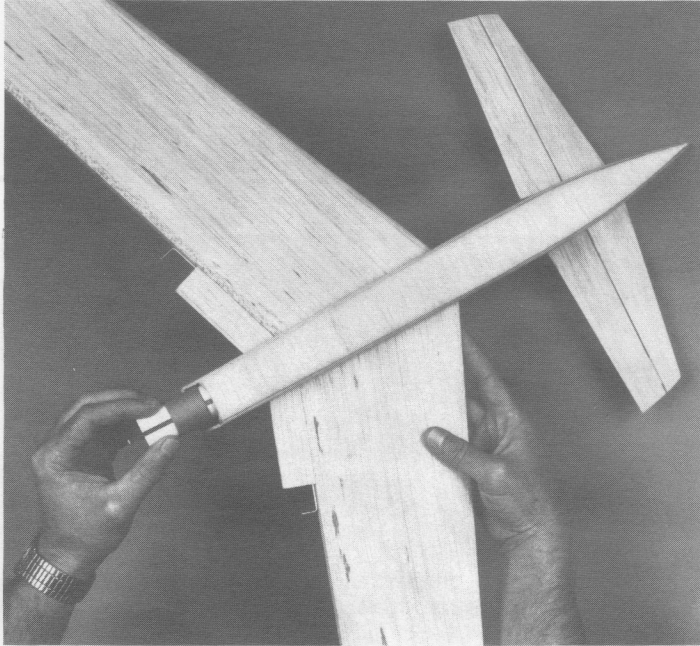
1.

Locate the two cardboard pieces, the 15/16" diameter balsa plug and the metal retainer clip which make up the engine mount assembly.

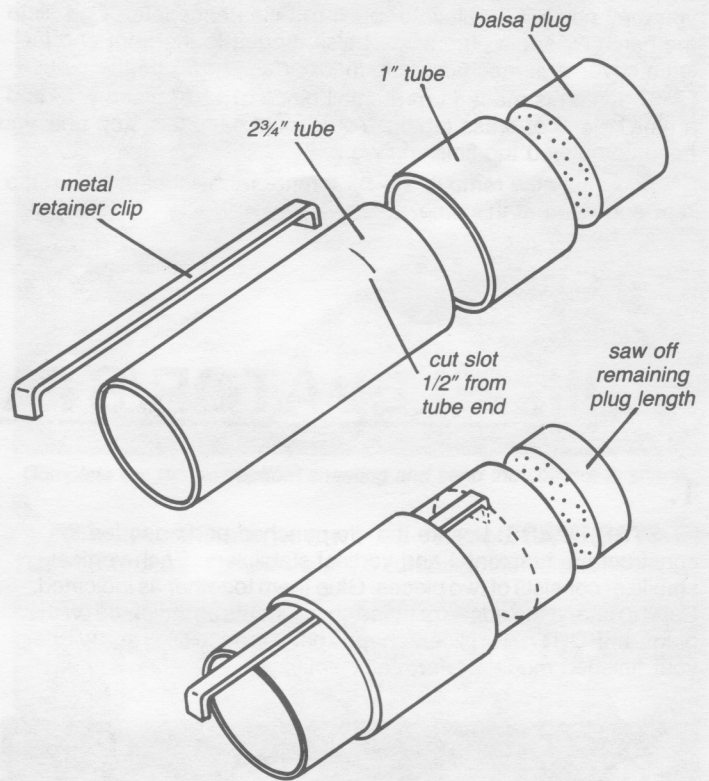
Cut a small slot 1/2" from one end of the 2 3/4" long tube which will accept the end of the retainer clip. Locate the other 1" cardboard tube and glue it in place as shown on the plans.

Insert the 15/16" diameter balsa plug into the slotted end of the engine tube. Push up against the engine mount hook and glue **securely** in place.

DO NOT glue the engine mount into the rear of the glider at this time.



Rocket engine mount installation



V. FINAL ASSEMBLY

To finish your model we suggest the use of any of the iron-on-type "heat shrink" model aircraft covering materials. **Because of the styrofoam wing cores, the "Low Temperature" type should be used.**

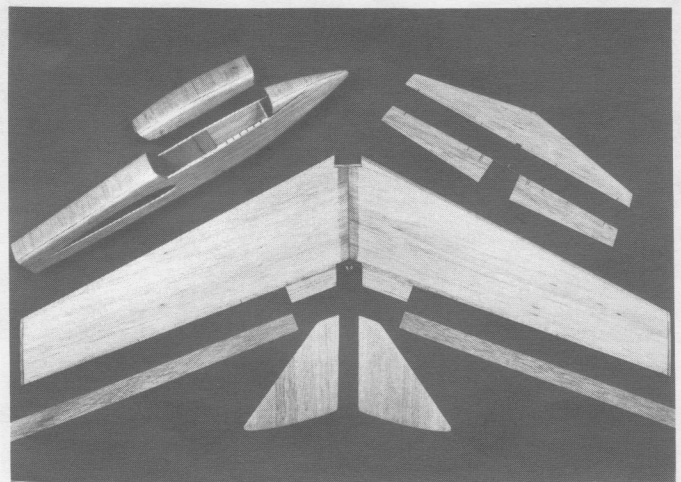
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If you choose to use one of the many brands of low temperature iron-on covering materials, you will need a tacking iron and heat gun. Follow the manufacturer's instructions and cover the fuselage, hatch, elevators, stabilizers, ailerons and wings separately. Be sure to leave the center 1 1/2" of the wing uncovered.

1.

IMPORTANT: You must remove the iron-on covering at each glue joint during final assembly. Wood to wood glue joints are the only acceptable way to assemble your model.

Install the 2-56 nylon rod ends on the threaded end of each aileron torque rod. You may need to cut off a small amount of the threads in order to achieve the correct control arm height. Use a drop of machine oil and thread on the nylon rod ends. They must rotate freely after installation.



All components ready to cover

V. FINAL ASSEMBLY (Continued)

2.

Insert your covered wing into the finished fuselage and center it carefully. Use the plans to insure accurate alignment. Mark the wing so that you can trim away some covering material at the root of the wing for a proper wood-to-wood glue joint. When you are ready to glue the wing in place, use gap filling C/A glue for the best results.

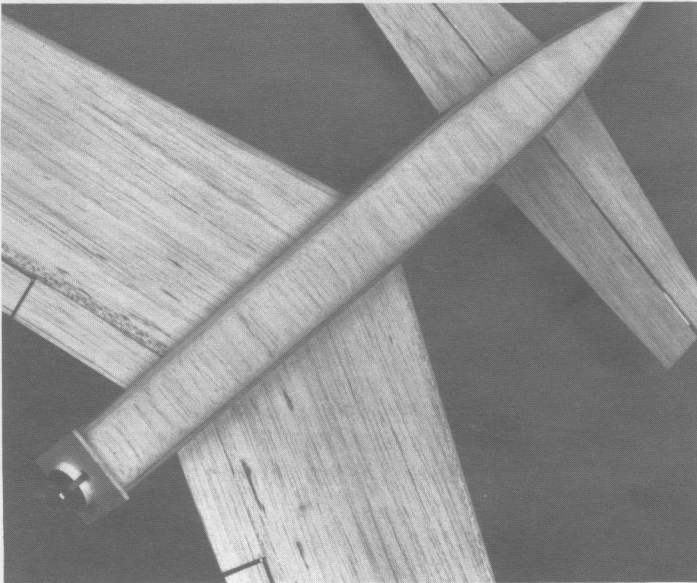
3.

Make a pair of aileron push rods using two 12" x 2-56 threaded rods and nylon clevises. Use a drop of machine oil so that the clevises will rotate freely.

Insert the push rods into the fuselage, clevis end first, through the hatch opening. Attach the clevis to the torque rod ends using a pair of needle nose pliers. You can attach the clevis by using the pliers through the opened rear end of the fuselage. Be very sure the clevises snap closed completely. Once you install the engine mount and rear cover plate, you will not be able to access this linkage.

4.

You may now install the engine mount as indicated, as well as the rear cover plate. Use epoxy along the engine mount spacers to insure a solid glue joint. Shape and cover the rear cover plate as shown.



Fitting cover plate

1.

Radio installation depends largely on the brand of radio you intend to use. We used a FUTABA mini flight pack and mounted it as shown. Use the 1/8" x 1/4" spruce servo mount rails. The battery should be located in the aft end of the fuselage. A small piece of foam rubber cut to fit and installed under the engine mount, and a larger piece inserted between the battery and servos will hold the battery in position.

Follow the same procedure to hold the receiver in place; foam between the servos and receiver, and foam between the receiver and the B1 bulkhead.

In the interest of weight reduction, we plugged our battery directly into the receiver at flight time. If you choose to use a switch harness we suggest that you leave it inside the fuselage.

5.

Assemble the horizontal stabilizer and elevator with torque rod. You will need to relocate your hinge slots through the covering material. Check for elevator travel - about 3/4" up and down. Use one or two drops of thin C/A to each side of each hinge. Apply the C/A in the seam between the stabilizer and elevator at the hinge points. The glue will wick in and secure the hinge permanently. **NOTE:** Make sure you properly position all components before you apply the glue. Fit the stabilizer/elevator assembly to the fuselage and repeat the process which you used on the wing to insure a wood-to-wood glue joint.

Now is a good time to install the ailerons. Use the same hinge gluing method as on the elevator. **DO NOT** glue the torque rods to the ailerons.

Install the vertical stabilizers to the wing tips. Again, use the wood-to-wood glue procedure. The vertical stabilizers are set at 90° to the upper surface of the wing. Don't forget to make an exit hole for the antenna.

6.

Position the launch lugs as shown. Once again, it is important to remove the covering material at these glue joints. Locate the lugs on the fuselage center line. A length of wooden dowel or brass tubing will be useful in lining them up. The triangle stock can be used, wedged against the launch lugs for added strength.

This completes your glider construction. You are now ready for the radio control component installation.

VI. RADIO INSTALLATION

SEE PLANS FOR RADIO PLACEMENT

2.

Now you can connect the elevator push rod. It is assembled in the same way as the aileron push rods. This kit supplies you with three E/Z type connectors. That makes all adjustments possible at the servo end of the push rods.

3.

SPECIAL NOTE: In a canard configuration such as the Astro-Blaster™, the elevator induces the opposite response to that of a conventional aircraft. When the elevator moves down, the nose of the Astro-Blaster™ will rise and as the elevator moves up, the nose goes down. **Do not overlook this important point!**

VI. RADIO INSTALLATION (Continued)

4.

The next step is assuring correct control surface movement. Confirm both correct direction and travel.

Elevator $\pm 3/4"$

Ailerons $\pm 3/8"$

The third point is having a fully-charged and range-checked radio system. Refer to the radio manufacturer's instructions for range testing your radio.

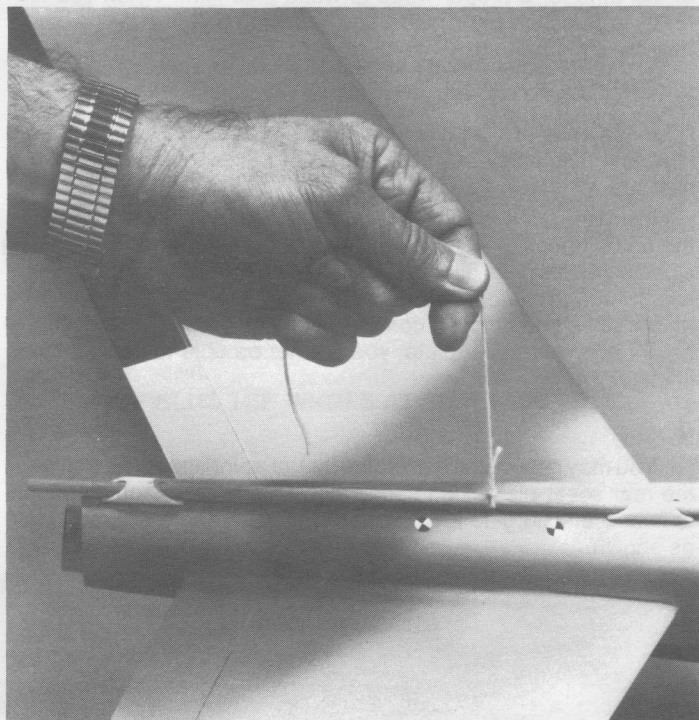
VII. BALANCING

1.

Perhaps the **most important** part of the model assembly is the correct location of the C.G. or center of gravity. This is a point at which your model must balance. You will note from the plans that this point has a very small range. Your model will not perform satisfactorily if it balances outside of this range.

EASY BALANCE METHOD: Turn the finished model upside down. Mark the mid C.G. location.

Extend a small diameter wooden dowel or an equivalent between the launch lugs. With the radio and a rocket engine in place, hang the model with a piece of string tied to the dowel at a point over the C.G. mark. If the model hangs with the bottom of the fuselage in a horizontal attitude, your model is correctly balanced. If not, you will need to relocate your radio components or add some weight to either the front or the rear of the fuselage. This is a critical procedure. If you encounter any problems, call Estes Industries at 1-800-525-7541



Balancing for correct C.G.

VIII. PRELAUNCH TEST GLIDE

1.

A test glide before your first rocket boosted flight is recommended. A straight-ahead throw into a light steady head wind is best. Tall grass or sand is a wise choice for your model's first landing. The throw should be brisk with the controls set at neutral for the ailerons, and about $1/8"$ down position elevator. Remember that means a nose up command at the transmitter. Your model should fly relatively straight with a long descending glide. It should demonstrate immediate control input response. If so, use these

control settings for your first boost launch. If not, make the necessary adjustments to produce a well-controlled glide. Although a glide test is not necessary every time you fly, one should be conducted occasionally, especially after repairs have been made.

To successfully carry out your first test glide, follow the preflight checklist in Section IX.

IX. LAUNCHING

1. PREFLIGHT CHECKLIST

Verify all batteries have been properly charged.

Verify that no one else is transmitting on your frequency. Do this **before** you turn on your transmitter.

Conduct a control check, remember: this is a canard glider! Nose up is elevator down, and nose down is elevator up. Ailerons operate conventionally.

Walk away from your glider (about 150 feet) to conduct a radio range check.

Make sure the airborne antenna is fully extended, the radio gear is secure and the canopy is completely closed.

If you have any doubts about your ability to test fly your Astro-Blaster™, we suggest that you ask for the assistance of an experienced R/C pilot before you go to the next step.

Conduct your glide tests.

IX. LAUNCHING (Continued)

2. BOOST LAUNCHING

Any standard Estes launching system can be used to fly your Astro-Blaster™. In addition to the launch pad and launch controller, your rocket glider requires a 3/16" diameter launch rod, a D-11P rocket engine, an igniter, and an igniter plug.

Set the launch rod at about 20° degrees below vertical. Position the launcher so that the Astro-Blaster™ has its belly to the breeze. For your first flights, launch in calm or still conditions. After you gain some experience in flying your Astro-Blaster™, you can launch in windier conditions. **Never** launch in gusty or high wind conditions.

Load the engine into the Astro-Blaster™ with the igniter installed as per instructions.

See the engine instruction sheet for the NAR safety code. Also see the Estes catalog for Tech Tips and safety information before launching.

Make sure your radio is on, the spectators are safely away from the launch site, and the launch controller indicates "A Go". Give an audible countdown from T-5 seconds, press the launch button and you're off!

Be sure to have someone remove the continuity key and place it on the launch rod while you are flying.

Your launch should be fairly straight up with little to no control input required. As your model reaches apogee, push the nose over into level flight and you're soaring!

If your launch was other than straight up, make very small trim adjustments until straight launches are achieved.

HAPPY BOOST GLIDING!

3. ADDITIONAL SAFETY TIPS

The hybrid nature of the Astro-Blaster™ demands that the pilot be familiar with both the NAR safety code for model rocketry and the AMA model aircraft safety code. Read these before attempting to fly your model.

Condition yourself to accomplish these steps while operating your Astro-Blaster™.

Verify no one else is using your frequency before switching your transmitter on.

Make sure you inform others in the area before launch.

Stand to one side of the Astro-Blaster™ (looking at the side of the glider, 90° to the flight path) during the first few flights until you familiarize yourself with its flight characteristics. This launch position will help you avoid disorientation during vertical boost and will allow you to make more precise corrections.

When flying with "E" engines, be sure to recheck the balance and do a glide test before launch.

After recovery, switch off your receiver and transmitter, check for damage after each flight.

Avoid large control inputs during boost. Allow glider to transition to glide mode before performing aerobatics of any kind.

X. FLIGHT TIPS

1. LAUNCH

Follow the setup diagram at right.

The Astro-Blaster™ will boost without control input. We recommend that you do not attempt to control it under power.

You can expect altitude of 300 feet with a D11-P engine or up to 1000 feet with an E engine.

Acceleration and climbout are quick - so get ready!

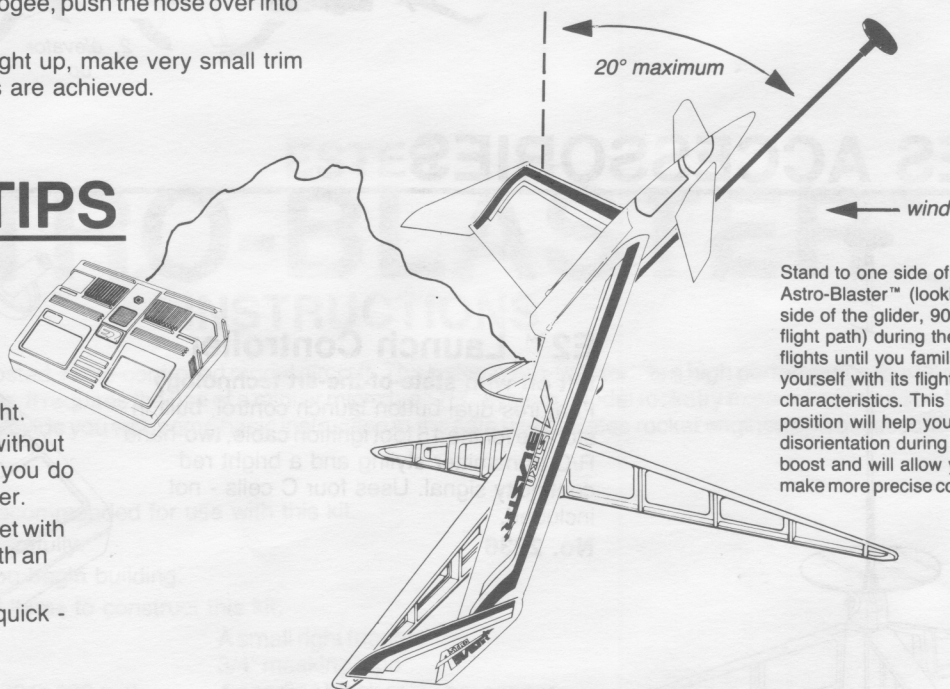
2. FLIGHT

Transition to gliding flight is smooth and requires only a gentle "pushover".

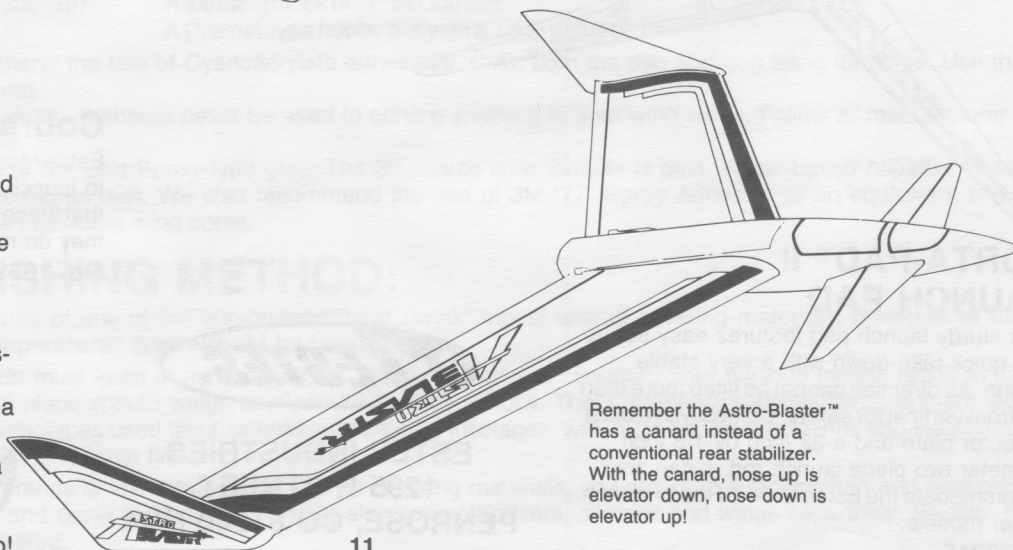
The Astro-Blaster™ behaves much like a conventional aileron slope soarer. It requires precise control inputs from the pilot.

Although fast and agile, the Astro-Blaster™ can also thermal very well, however, its flight characteristics are not those of a gentle floater.

Remember the Astro-Blaster™ has a canard instead of a conventional rear stabilizer. With the canard, nose up is elevator down, nose down is elevator up!



Stand to one side of the Astro-Blaster™ (looking at the side of the glider, 90° to the flight path) during the first few flights until you familiarize yourself with its flight characteristics. This launch position will help you avoid disorientation during vertical boost and will allow you to make more precise corrections.



Remember the Astro-Blaster™ has a canard instead of a conventional rear stabilizer. With the canard, nose up is elevator down, nose down is elevator up!

X. FLIGHT TIPS (Continued)

3. STUNTS

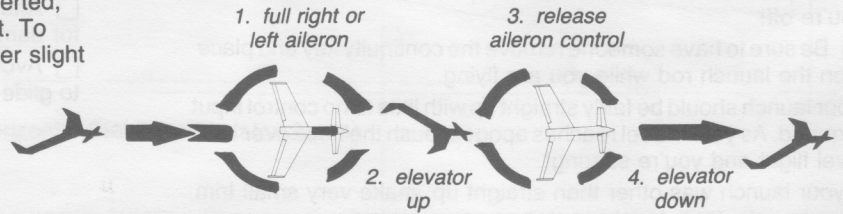
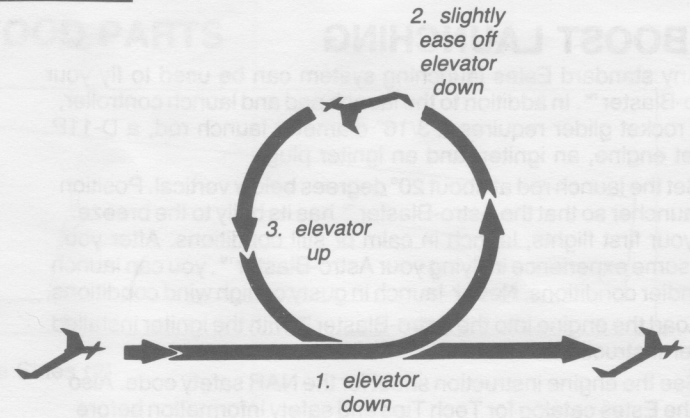
□ Given its light wing loading, aileron/canard configuration and short moments, the Astro-Blaster™ is quite capable of any standard aerobatic flight.

LOOPS

□ The loop is a good stunt to begin with. The Astro-Blaster™ starts the maneuver flying straight and level into the wind. Then it pulls up into a smooth, round loop. It should not fall off to the right or left. Its speed should be constant throughout the loop. As it finishes its loop, it should pull out in a straight and level flight at the same heading and altitude as it entered and fly off for 50 feet.

ROLLS

□ Start this maneuver at the highest altitude possible. Give the glider full right or left aileron. When the glider is inverted, remember that **the elevator control works backward**. That is, elevator down is nose up and elevator up is nose down. When flying inverted, keep slight pressure on elevator up to maintain level flight. To complete the roll, release aileron control and give the glider slight elevator down to bring the nose up.



ESTES ACCESSORIES



PORTA-PAD® II LAUNCH PAD

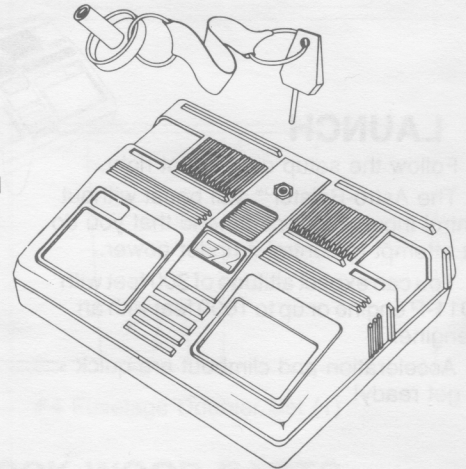
This sturdy launch pad features easy set-up and quick take-down with a very stable design. Air direction cannot be tilted more than 30° from vertical for safety. Comes with a blast deflector plate and a 32 inch by 1/8 inch diameter two piece launch rod. It can also accommodate the Estes Maxi™ Rod to launch larger models.

No. 2215

E2™ Launch Controller

Lift off with state-of-the-art technology. Features dual button launch control, built in storage for the 15 foot ignition cable, two-hand R/C transmitter styling and a bright red continuity signal. Uses four C cells - not included.

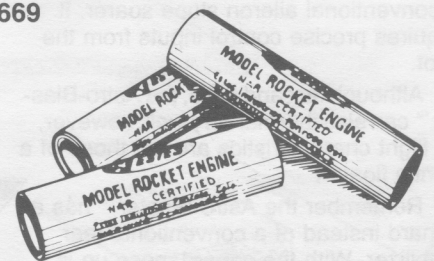
No. 2236



Cobra™ D-11P Engines

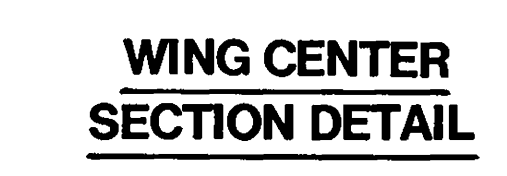
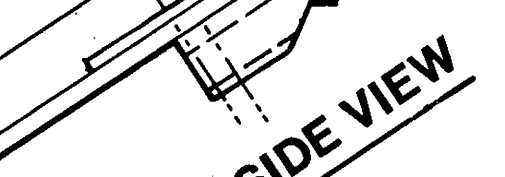
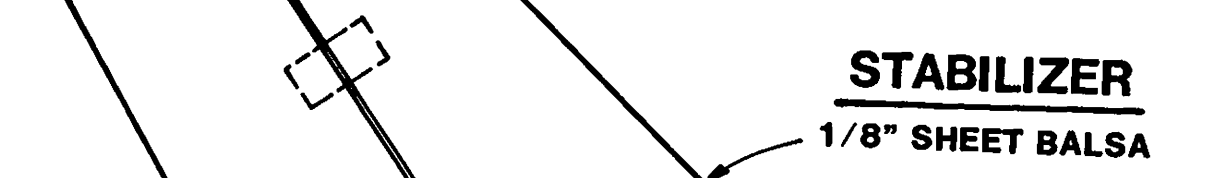
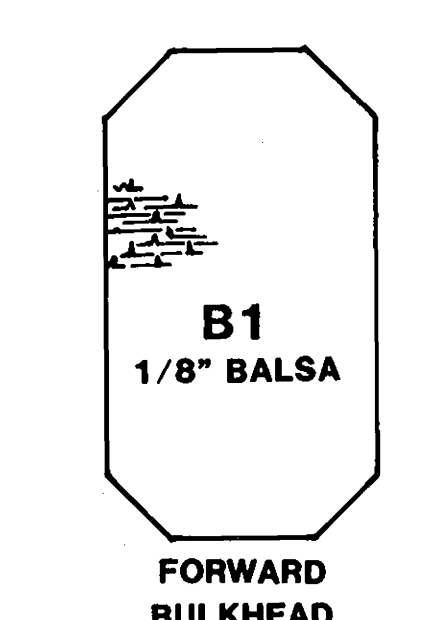
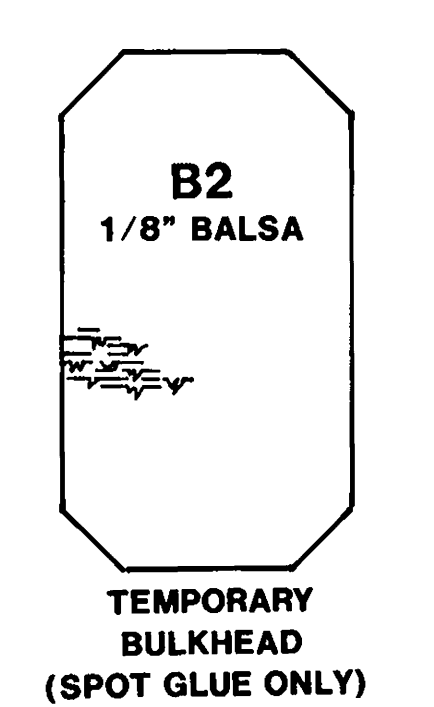
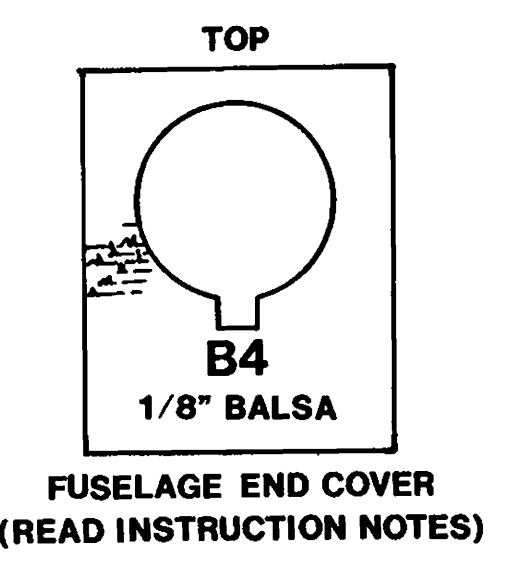
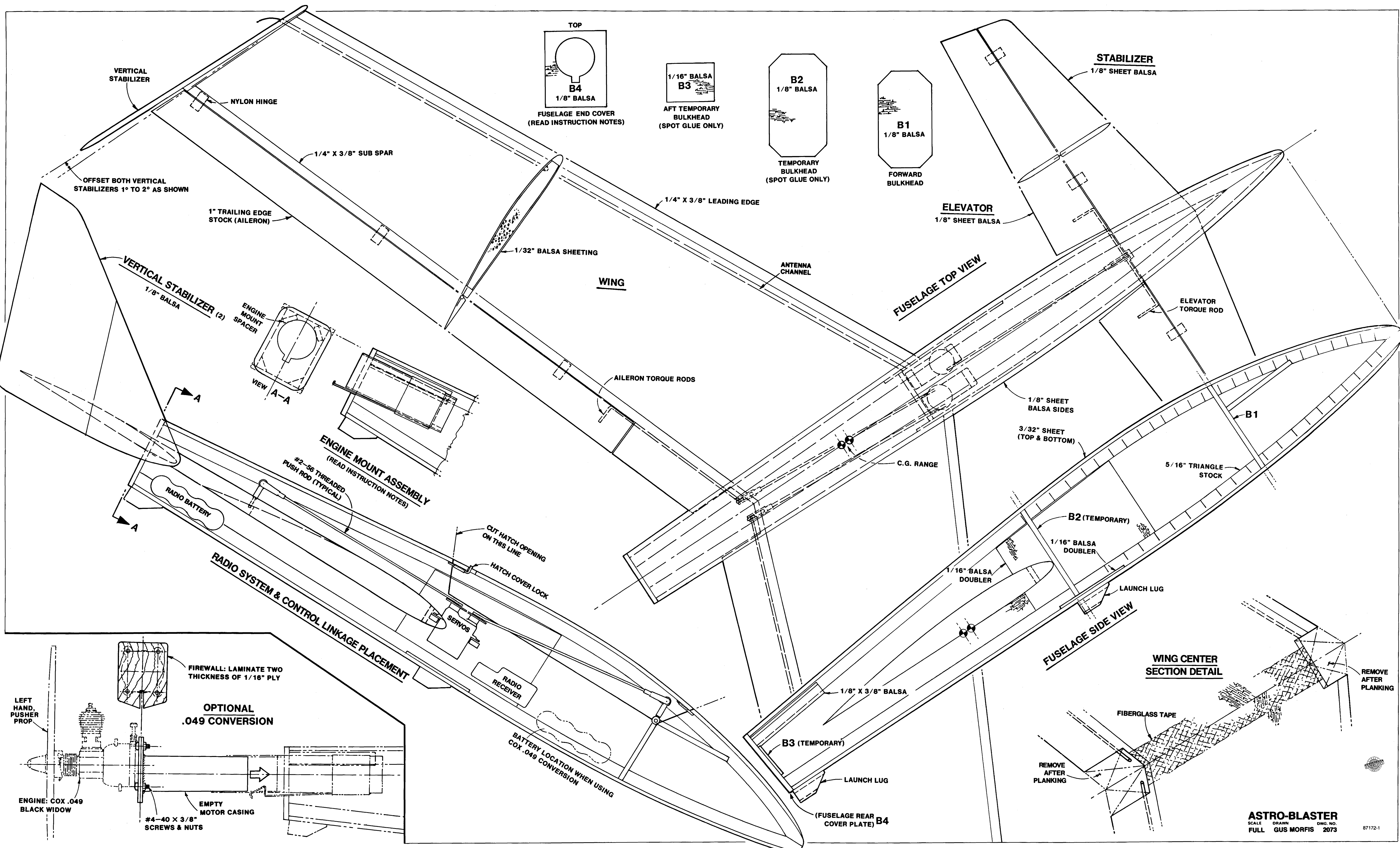
Estes recommends the use of these engines to launch the Astro-Blaster™. The P denotes that these engines are plugged which means they do not have an ejection charge.

No. 1669



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084506



ASTRO-BLASTER
SCALE: FULL DRAWING: GUS MORFIS
DWG. NO. 2073