



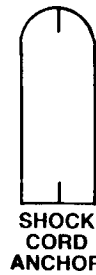


A DAMON COMPANY

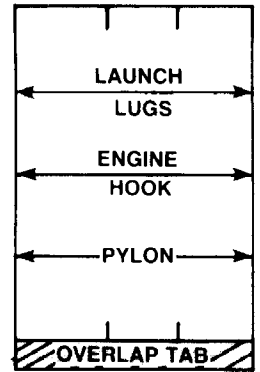
Estes Industries
1295 H Street
Penrose, CO 81240

Dragonfly

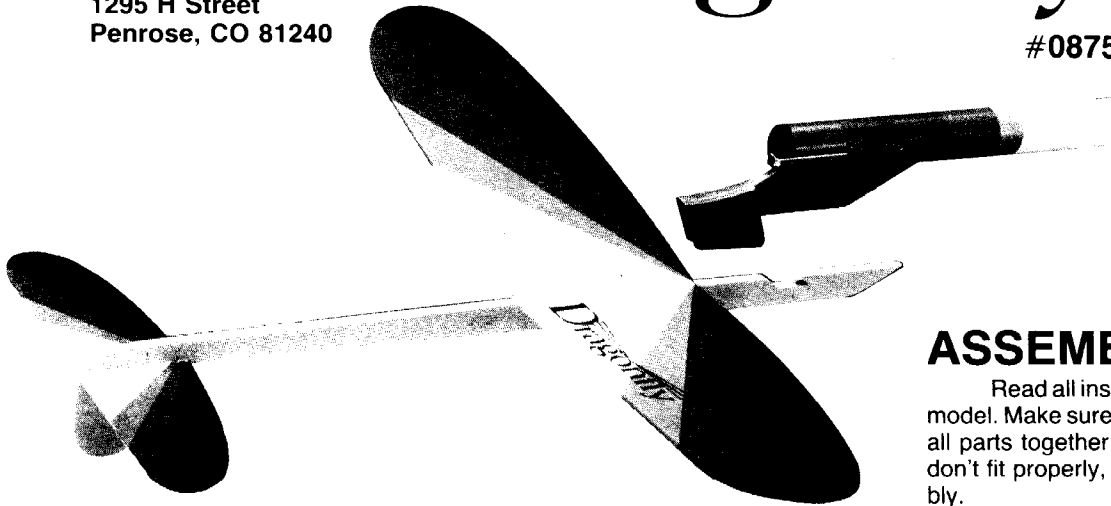
#0875



SHOCK
CORD
ANCHOR



OVERLAP TAB
POD TUBE
MARKING GUIDE

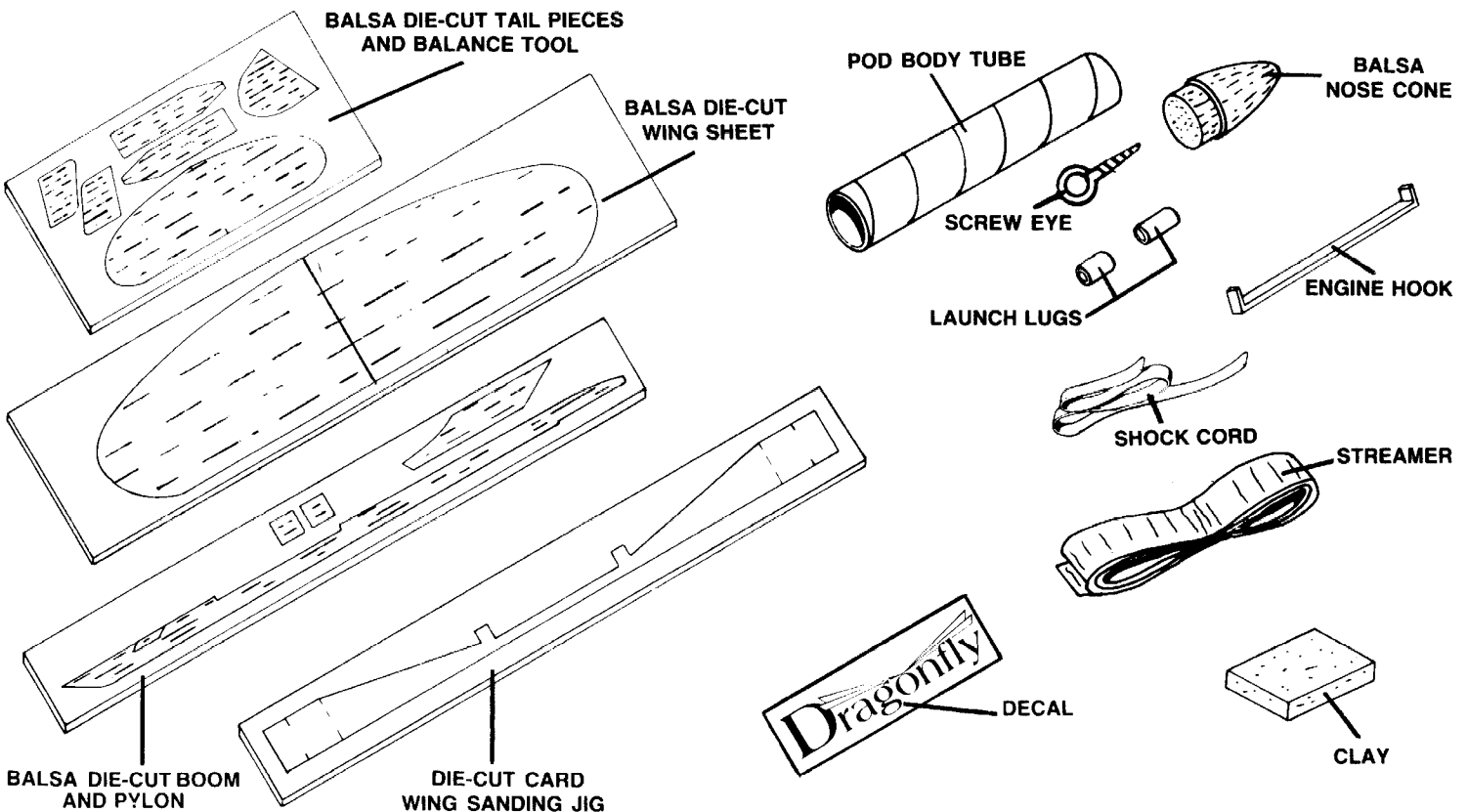
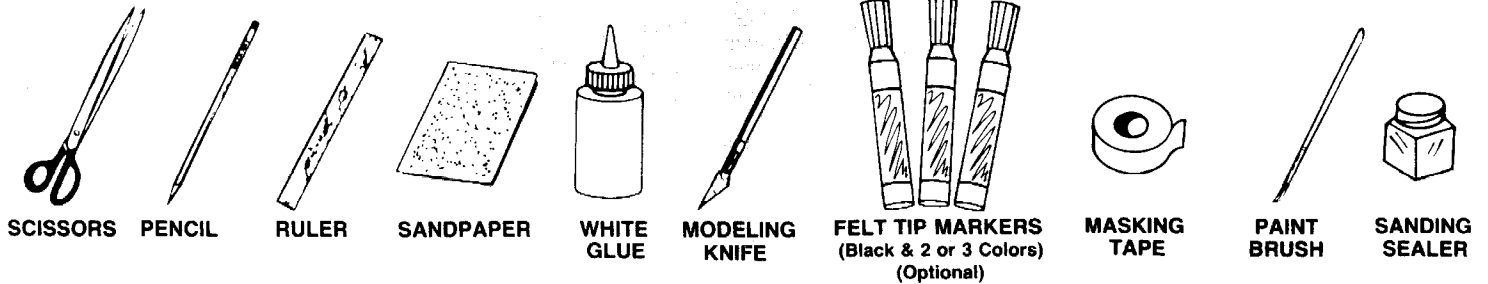


ASSEMBLY TIP

Read all instructions before beginning work on your model. Make sure you have all parts and supplies. Test-fit all parts together before applying any glue. If any parts don't fit properly, sand as required for precision assembly.

PARTS AND SUPPLIES

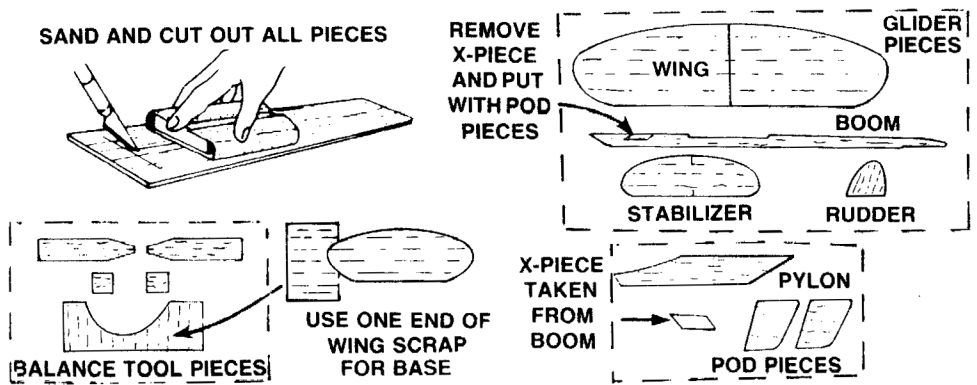
Locate the parts shown below and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:



GLIDER ASSEMBLY

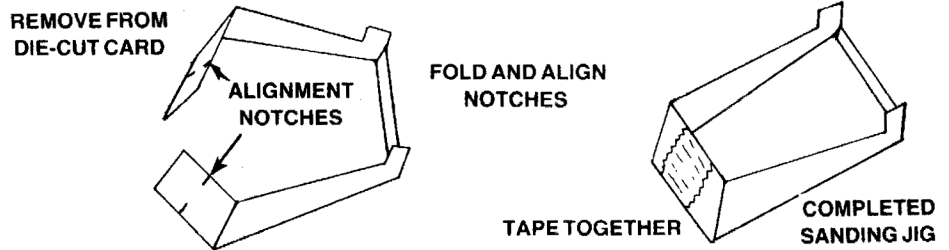
1.

- Fine sand all 3 balsa die-cut sheets. Carefully remove all pieces from each sheet by freeing edges with sharp knife.
- Remove the parts shown at the right from the die-cut sheets. Also cut a piece from the scrap around the wing for your balance tool.
- Put pod pieces and balance tool pieces aside for later use.



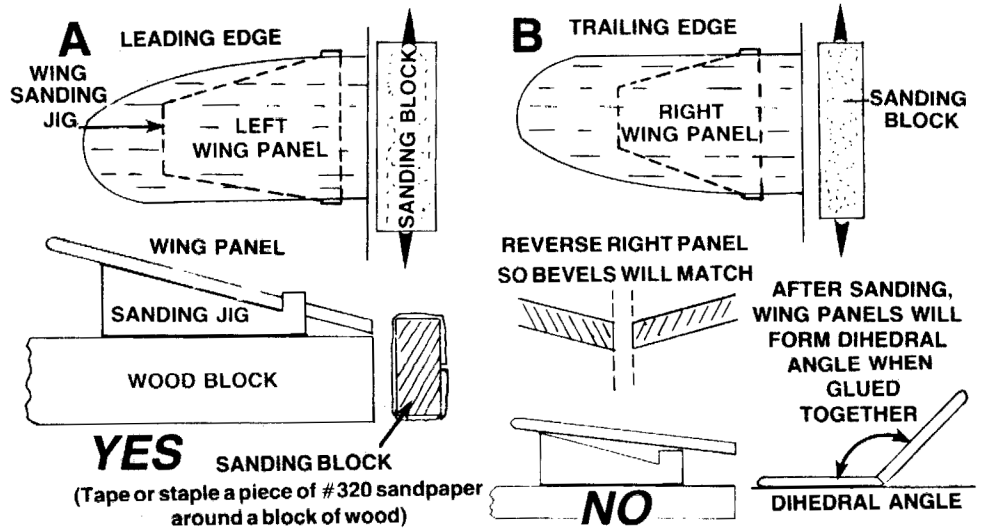
2.

- Remove wing jig from the die-cut card, align the notches as shown, and tape ends together.



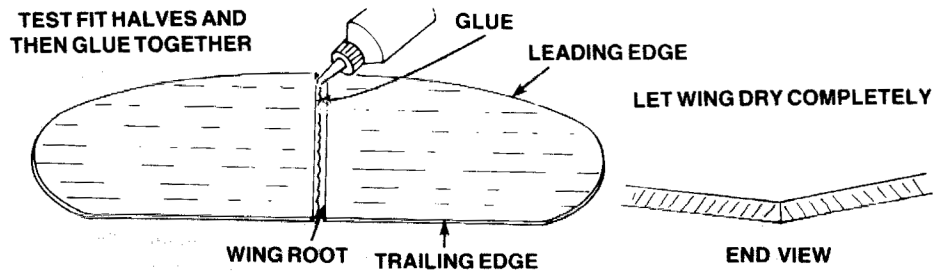
3.

- Separate wing halves and place left wing panel in sanding jig as shown in A. Be sure the panel is lying on the top of the jig upper surface and not at an angle to it. Place on a block with straight edge and carefully sand bevel into edge of panel.
- Repeat operation with right wing panel, but reverse the way it fits in the jig, as shown in B.



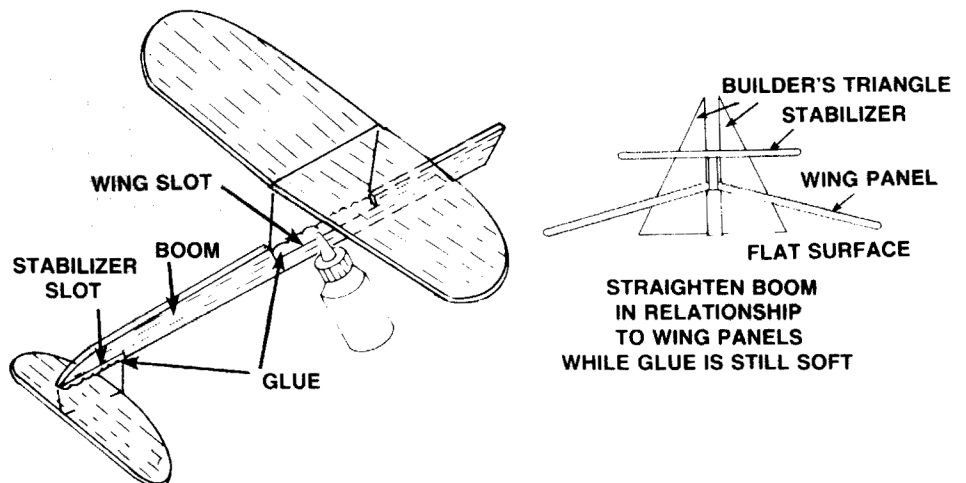
4.

- Run glue along one wing root and attach wing panels. Be sure the joint has no gaps.
- Allow panels to bond together for a minute or so then lay on a flat surface until completely dry.



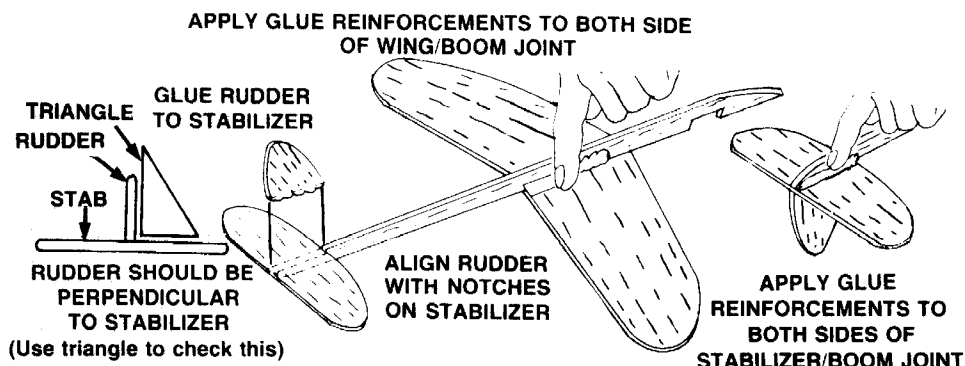
5.

- Cut out Builder's Triangle on panel back.
- Run glue along the wing slot of the boom and place the wing into the slot. Wipe away excess glue.
- Run glue along the stabilizer slot at the back of the boom and place the stabilizer into the slot. Use the notches cut into the stabilizer to center it on the boom.
- While glue is still soft turn glider over and rest on a flat surface on wing tips. Put Builder's Triangle against each side of boom and adjust boom, wings, and stabilizer until alignments are straight as shown in illustration. Take your time and get positions exactly right before glue dries. Let dry.



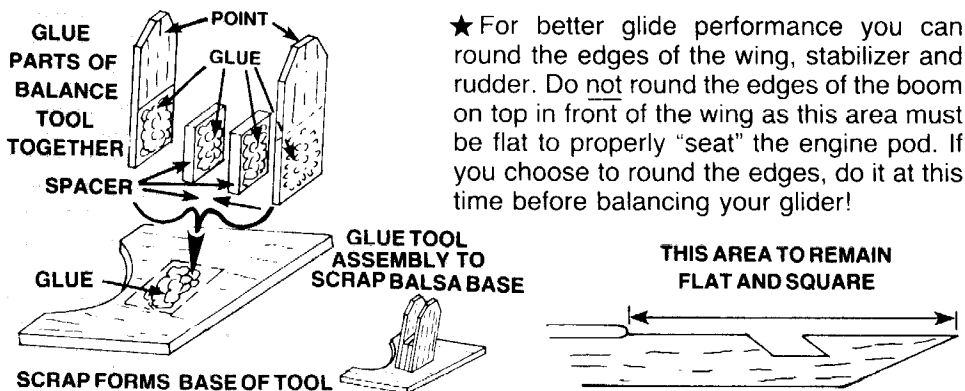
6.

- Glue rudder to bottom of stabilizer using notches on stabilizer to get it straight. Hold until glue sets.
- Check alignment of rudder/stabilizer with Builder's Triangle as shown.
- Apply glue to wing/boom and stabilizer/boom joints and smooth out with finger.
- Apply glue reinforcements to rudder/stabilizer joints and smooth with finger.



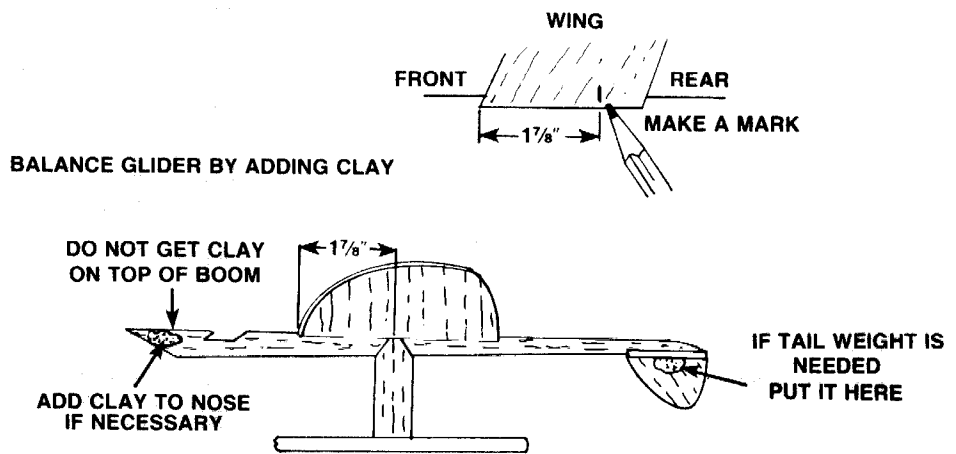
7.

- Locate the five pieces of the Balance Tool. The points are from the sheet with the stabilizer and rudder, and the square spacers are from the boom die-cut sheet.
- Glue the points and spacers together as shown.
- Glue the assembly to the scrap balsa saved from Step # 1.



8.

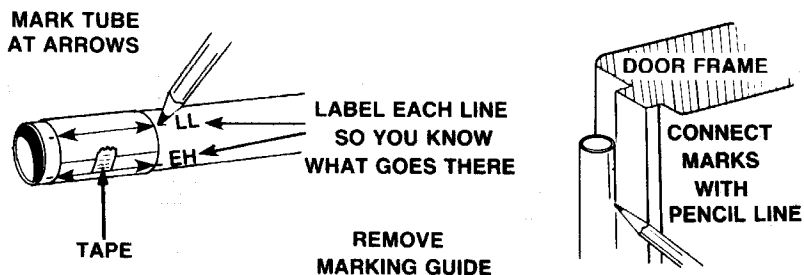
- Measure back $1\frac{7}{8}$ inches from the leading edge (front edge) of the wing and make a mark on the wing bottom.
- Place the glider on the Balance Tool to see where it balances. If it balances in front of the $1\frac{7}{8}$ inch mark add clay to the tail until it balances at the mark. If it balances behind the $1\frac{7}{8}$ inch mark, add clay to the nose until it balances on the mark.
- This trimming (balancing) will be close to a good glide trim and will allow you to fly your glider successfully on the first flight. Minor adjustments will probably be required after the first flight to "tune" the glider for best flight performance. See "Trimming" section for additional information on this subject.



POD ASSEMBLY

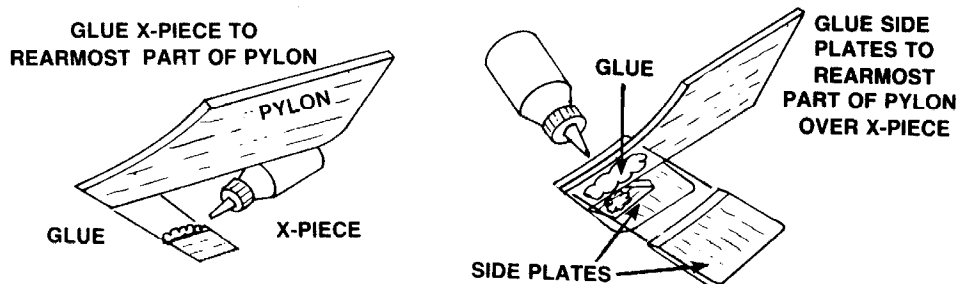
9.

- Cut out pod tube marking guide from front of instructions.
- Wrap guide around the tube and tape. Mark tube at arrows.
- Label launch lug, pylon, and engine hook lines. Remove marking guide.
- Draw straight lines connecting each pair of marks.



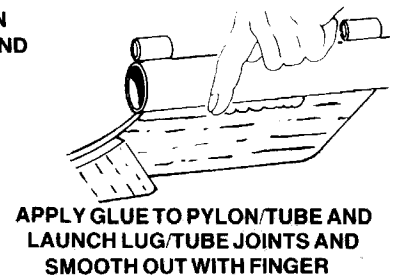
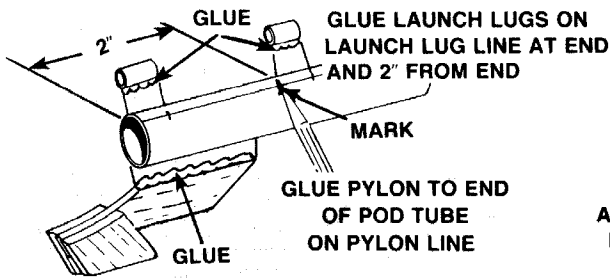
10

- Glue X-piece, removed from boom in Step #1, to rearmost part of pylon as shown.
- Glue side plates to pylon assembly over X-piece. Be careful not to get extra glue around X-piece while doing this step!



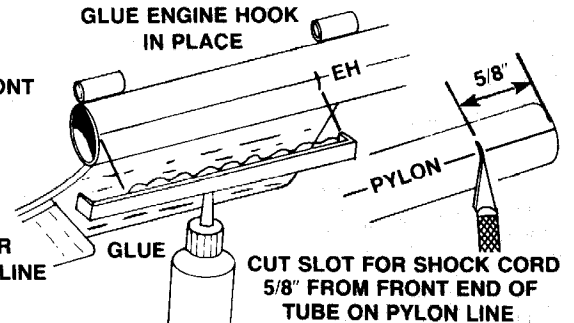
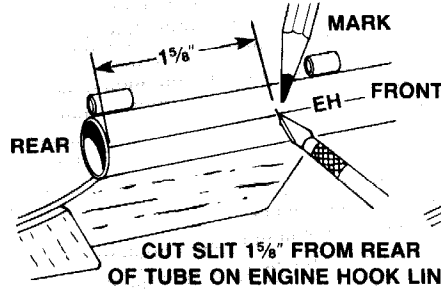
11.

- Glue pylon to end of pod tube on pylon line.
- Make a mark 2 inches from the same end of the tube. Glue one launch lug to the end of the tube and the other one 2 inches from that end. Both should be centered on the launch lug line.
- Apply glue to all joints and smooth out with finger.



12.

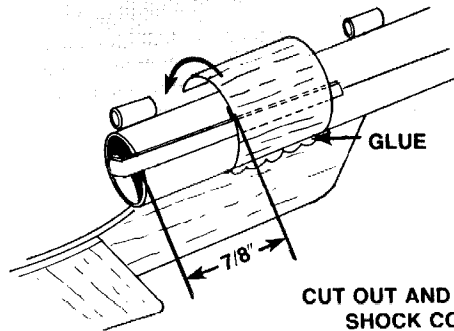
- Measure 1 5/8 inches from rear of tube along engine hook line and make a mark. Cut a 1/8 inch wide slot in tube at this mark.
- Run glue on engine hook and push it into slot. Align hook along engine hook line.
- Measure 5/8 inch from front end of tube on pylon line and make mark. Cut a 1/8 inch slit in tube at this mark for shock cord.



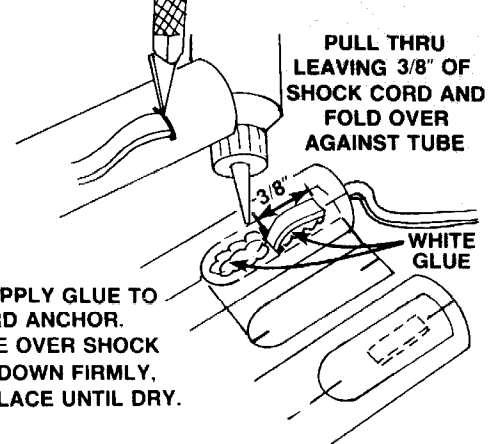
13.

- Cut a 1 5/8 inch piece of 3/4 inch wide masking tape and wrap it tightly around engine hook/pod tube assembly 7/8 inch from rear end of tube. Run a glue reinforcement over each end of tape to hold it securely.
- Feed shock cord thru slot in front end of pod tube. Leave 3/8 inch of shock cord exposed on outside of tube.
- Glue exposed portion of shock cord to tube. Hold in place with fingers until shock cord stays in place.
- Cut out shock cord anchor from front page of instructions. Apply glue to back of anchor and press in place over shock cord end. Line marks up with pylon line on tube. Hold in place until dry.

CUT 1 5/8" PIECE OF 3/4" WIDE MASKING TAPE AND WRAP AROUND ENGINE HOOK/TUBE ASSEMBLY



FEED SHOCK CORD THRU SLOT WITH KNIFE

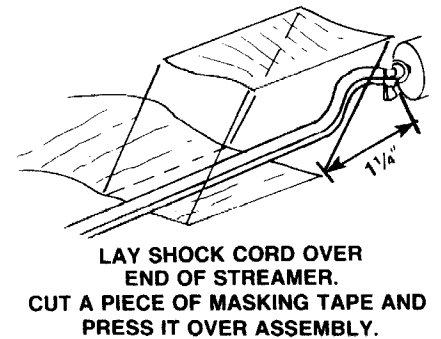
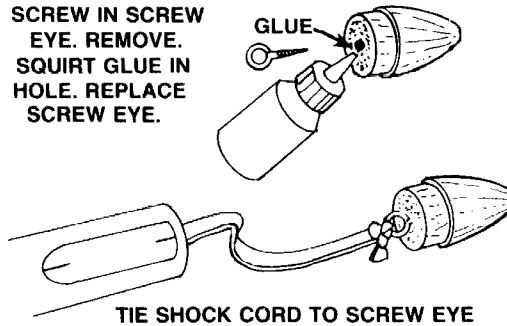


CUT OUT AND APPLY GLUE TO SHOCK CORD ANCHOR. PRESS IN PLACE OVER SHOCK CORD. PRESS DOWN FIRMLY, AND HOLD IN PLACE UNTIL DRY.

14.

- Turn screw eye into center of nose cone base and remove. Squirt glue into hole and replace screw eye.
- Tie shock cord to screw eye with a double knot.
- Lay shock cord over end of streamer 1 1/4 inches from nose cone. Cut a piece of masking tape to cover shock cord and end of streamer. Trim any excess tape after pressing tape over assembly.

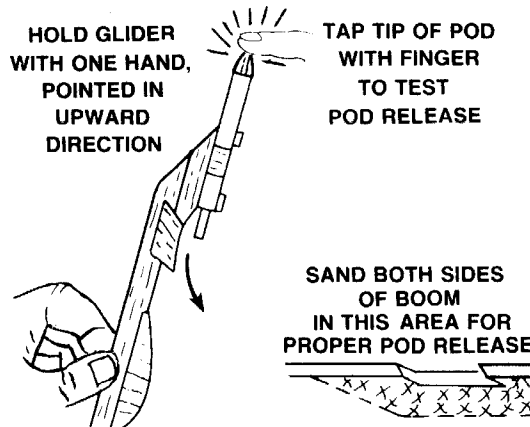
SCREW IN SCREW EYE. REMOVE. SQUIRT GLUE IN HOLE. REPLACE SCREW EYE.



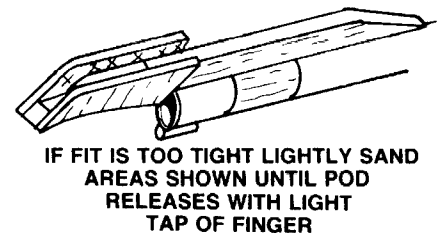
15.

- Attach glider to pod as shown.
- Hold glider with one hand, nose pointing in upward direction. Tap tip of pod nose with finger of other hand. If pod does not fall off of glider, lightly sand locations shown until pod releases easily.
- Be sure clay used to balance glider in Step #8 does not interfere with pod release.

HOLD GLIDER WITH ONE HAND, POINTED IN UPWARD DIRECTION. TAP TIP OF POD WITH FINGER TO TEST POD RELEASE.



SAND INSIDE OF SIDE PLATES IF NECESSARY FOR PROPER POD RELEASE



SAND BOTH SIDES OF BOOM IN THIS AREA FOR PROPER POD RELEASE

Additional Trimming and Flying Tips

After your first flight with your Dragonfly boost glider, you may want to make some adjustments for better performance. Three things you can do are:

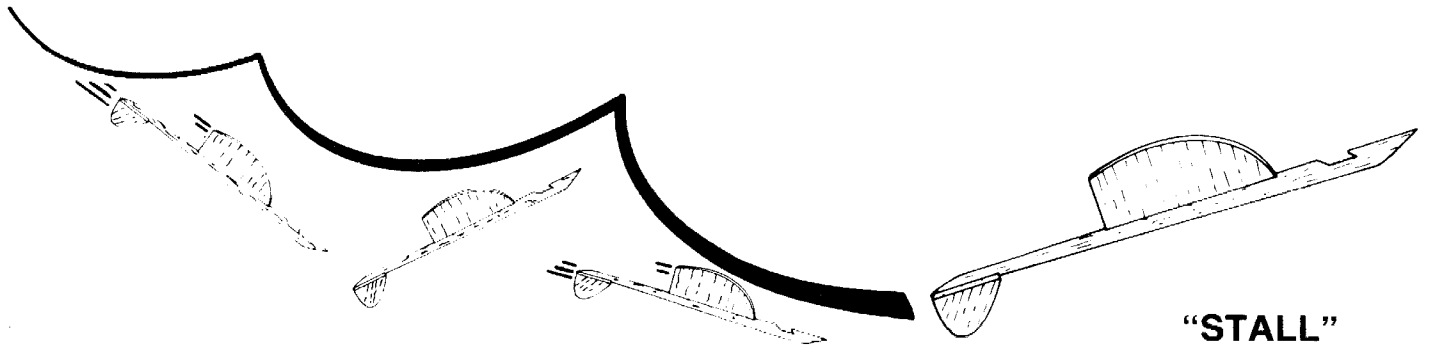
1. Cause the glider to turn to keep it over the launch site longer. This may help the glider to achieve better times.
2. Reduce "stalling" which minimizes flight times and performance.
3. Eliminate "dives" which reduce performance and could destroy your model.

If you built your model properly, it will not turn when gliding. To make it turn, add a small amount of clay to one wing tip. The glider will then turn in the direction of the wing tip with the clay on it. This is a good way to keep your glider over the launch site for easier recovery and longer flight times. Do

this before trimming your glider for best flight performance.

When you flew your glider the first time you probably watched its gliding flight. If you noticed that it "dived", then climbed upwards, and then "dived" again, it was "stalling". A "stall" means that the glider's tail is too heavy causing the glider to try to rise against the force of gravity. This causes the glider to lose airspeed, and then stall and dive again, then try to climb again, etc. You need to add weight to the nose of the glider to correct stalls.

Use small amounts of clay until your glider flies in a flat, smooth glide. The glider should fly straight, as nearly horizontally as possible. It must descend unless it "catches a thermal". A "thermal" can provide an upward force on the entire glider to cause it to rise briefly.

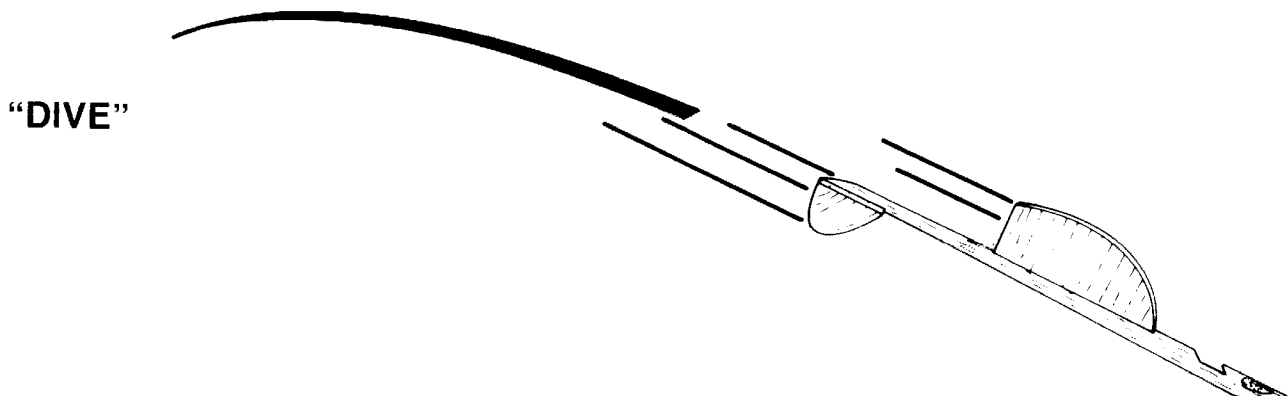


To "hand launch" your glider for trimming, hold the glider by the boom under the wing. Hold it at shoulder level, and gently toss it straight out and slightly downward from you. ALWAYS toss your glider into the wind when test flying. Don't test fly or trim gliders when the wind is strong.

If your glider "dived" straight down or at a steep angle when you flew it, then it is "nose heavy". You need to remove weight (clay) from the nose or add clay to the tail of the glider to compensate for this imbalance. Use the technique for "hand launching" described above to trim for a smooth, flat glide.

Your engine pod must release properly for correct operation of your model. If it "sticks" to the glider when the glider ejection charge fires, it will do what we call a "Red Baron" on your first flight. Return to Step #15 of the instructions and resand and "tap test" your pod/glider again to achieve proper operation

Enjoy flying your boost glider, and try having some "duration" contests with your friends. Time everyone's flight, and see whose glider flies longest and is returned after the flight.



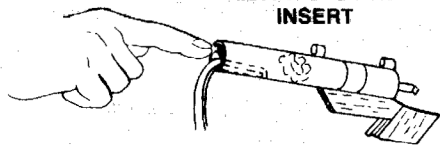
FINISHING YOUR GLIDER

You can finish your glider and pod by using sanding sealer and sandpaper to smooth out all wood grain and then paint with spray paint. However, for best performance, painting is **not** recommended. To reduce weight, finish sand entire model with fine sandpaper. Then choose a color scheme you like and apply it with felt tipped markers.

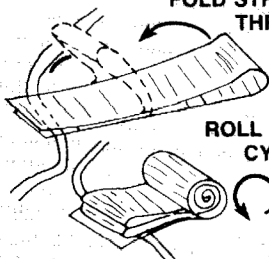
Have fun and decorate your model any way you want. Make your colors bright so the model will stand out when on the ground. For best sighting while in the air, use a black marker on the underside of the wing halves and the stabilizer and rudder.

GLIDER PREFLIGHT

CUT ONE SQUARE OF WADDING INTO QUARTERS AND INSERT

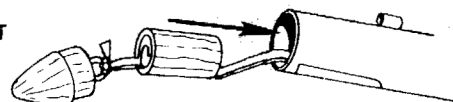


FOLD STREAMER IN HALF THREE TIMES



ROLL INTO TIGHT CYLINDER

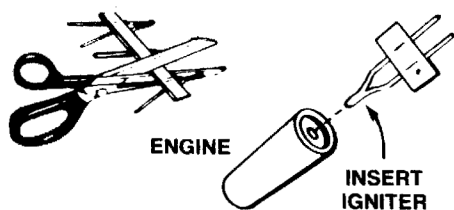
SLIDE ROLLED STREAMER INTO POD TUBE



INSTALL NOSE CONE IN PLACE

PREPARE ENGINE

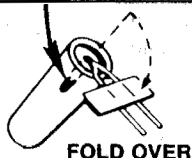
SEPARATE THE IGNITERS



ENGINE

INSERT IGNITER

IGNITER TIP MUST TOUCH PROPELLANT DEEP INSIDE NOZZLE OPENING

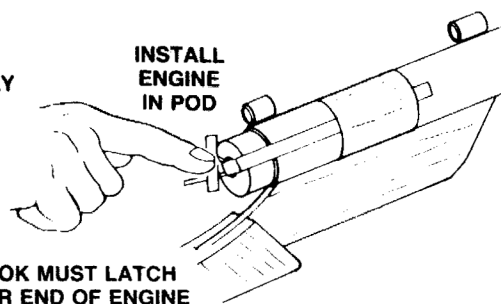


FOLD OVER

APPLY AND FIRMLY PRESS MASKING TAPE IN PLACE



INSTALL ENGINE IN POD



HOOK MUST LATCH OVER END OF ENGINE

LAUNCH SUPPLIES

To launch your glider you will need the following items:

- An Estes model rocket launching system
- Estes Parachute Recovery Wadding (No. 2274)
- Recommended Engine: 1/2A3-2T

FLYING YOUR GLIDER

Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 250 feet square. The larger the launch area, the better your chance of recovering your glider. Football fields and playgrounds are great.

Launch area must be free of dry weeds and brown grass.

Launch only during calm weather with little or no wind and good visibility.

MISFIRES

Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.

FOR YOUR SAFETY AND ENJOYMENT

Always follow the NAR-HIA* MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities.

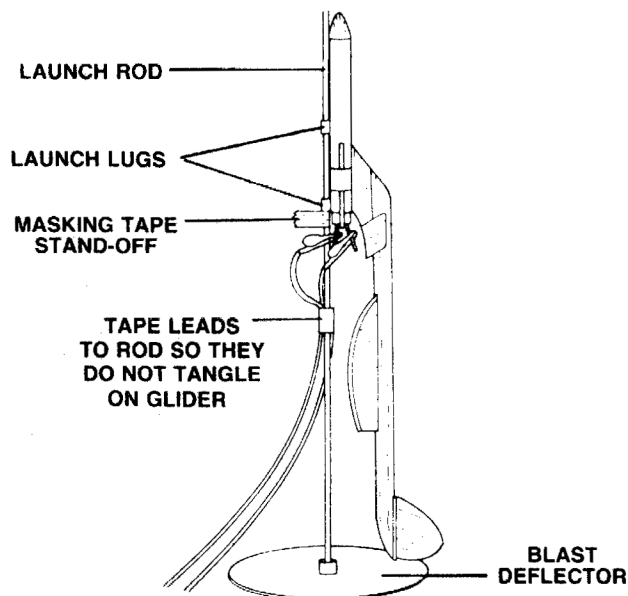
*National Association of Rocketry—The Hobby Industry of America

COUNTDOWN AND LAUNCH

- ⑤ REMOVE SAFETY KEY to disarm the launch controller.
- ④ Remove safety cap and slide launch lugs over launch rod to place glider on launch pad. Make sure the glider slides freely on the launch rod.
- ③ Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other. Attach clips as close to protective tape on igniter as possible.
- ② Move back from your glider as far as launch wire will permit, (at least 15 feet).
- ① INSERT SAFETY KEY to arm the launch controller.

LAUNCH!!! PUSH AND HOLD LAUNCH BUTTON UNTIL ENGINE IGNITES

Remove safety key—Replace cap on rod.



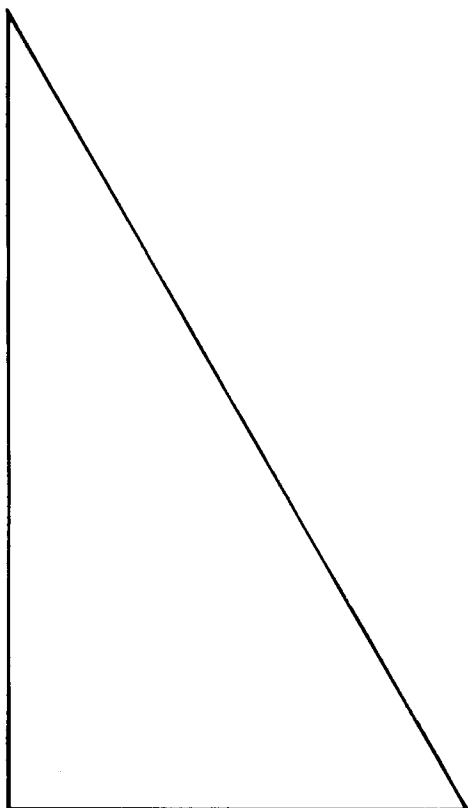


NAR/HIAA Model Rocketry Safety Code

- CONSTRUCTION** — My model rockets will be made of lightweight materials such as paper, wood, plastic and rubber, without any metal as structural parts.
- ENGINES** — I will use only pre-loaded factory made NAR safety certified model rocket engines in the manner recommended by the manufacturer. I will not change in any way nor attempt to reload these engines.
- RECOVERY** — I will always use a recovery system in my model rockets that will return them safely to the ground so that they may be flown again.
- WEIGHT LIMITS** — My model rocket will weigh no more than 453 grams (16 ozs.) at liftoff, and the engines will contain no more than 113 grams (4 ozs.) of propellant.
- STABILITY** — I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
- LAUNCHING SYSTEM** — The system I use to launch my model rockets must be remotely controlled and electrically operated, and will contain a switch that will return to "off" when released. I will remain at least 15 feet away from any rocket that is being launched.
- LAUNCH SAFETY** — I will not let anyone approach a model rocket on a launcher until I have made sure that either the safety interlock key has been removed or the battery has been disconnected from my launcher.
- FLYING CONDITIONS** — I will not launch my model rocket in high winds, near buildings, power lines, tall trees, low flying aircraft, or under any conditions which might be dangerous to people or property.
- LAUNCH AREA** — My model rockets will always be launched from a cleared area, free of any easy to burn materials, and I will only use flame resistant recovery wadding in my rockets.
- JET DEFLECTOR** — My launcher will have a jet deflector device to prevent the engine exhaust from hitting the ground directly.
- LAUNCH ROD** — To prevent accidental eye injury I will always place the launcher so the end of the rod is above eye level or cap the end of the rod with my hand when approaching it. I will never place my head or body over the launching rod. When my launcher is not in use I will always store it so that the launch rod is not in an upright position.
- POWER LINES** — I will never attempt to recover my rocket from a power line or other dangerous place.
- LAUNCH TARGETS & ANGLES** — I will not launch rockets so their flight path will carry them against targets on the ground, and will never use an explosive warhead nor a payload that is intended to be flammable. My launching device will always be pointed within 30 degrees of vertical.
- PRE-LAUNCH TEST** — When conducting research activities with unproven designs or methods, I will when possible, determine their reliability through pre-launch tests. I will conduct launchings of unproven designs in complete isolation from persons not participating in the actual launching.

As a member of the Estes Model Rocketry Program, I promise to faithfully follow all rules of safe conduct as established in the above code.

Signed _____ (Keep this Code in your Range Box.)



BUILDER'S TRIANGLE

IMPORTANT!

PLEASE READ AND BECOME FAMILIAR WITH THE MODEL ROCKETRY SAFETY CODE ON THIS CARD. PLEASE SIGN WHERE INDICATED AND KEEP THIS CODE WITH YOU DURING ALL YOUR MODEL ROCKETRY ACTIVITIES

CAUTION: WARNING: for your safety DO NOT alter, dismantle, or unwrap model rocket engines or their ingredients in any way. Soak unwanted engines in water to destroy.

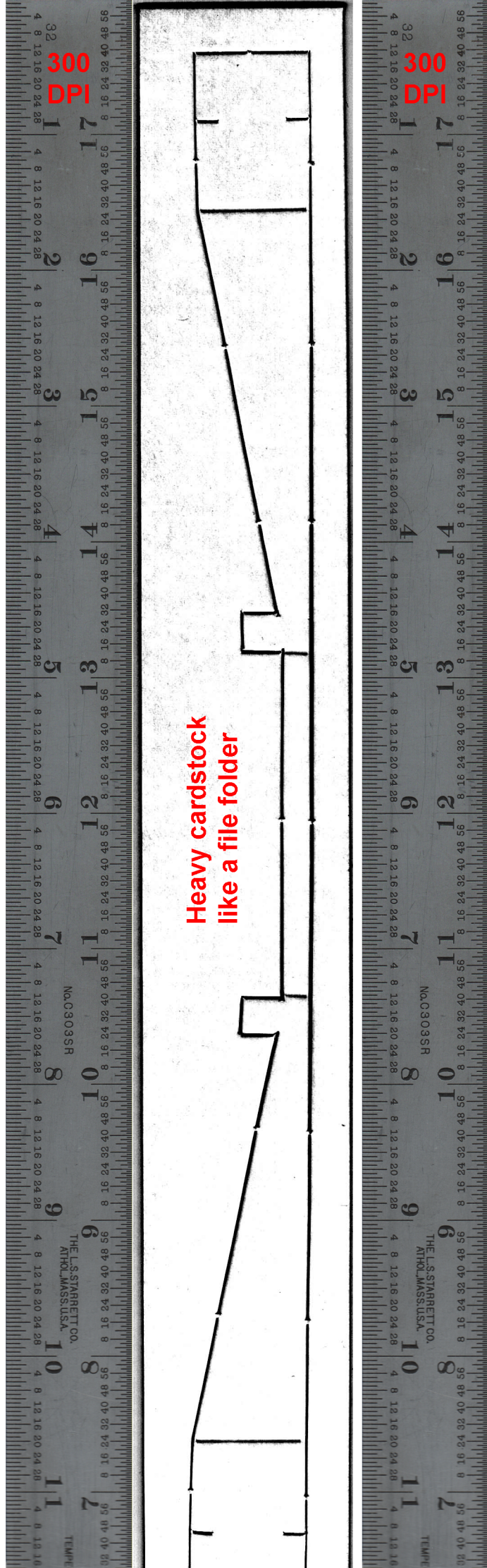
FULL ONE YEAR WARRANTY

Your Estes product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Estes product which, because of a manufacturing mistake, malfunctions or proves to be defective within the one-year warranty period will be repaired or replaced, at Estes' option and at no charge to you, provided it is returned to Estes with proof of purchase.

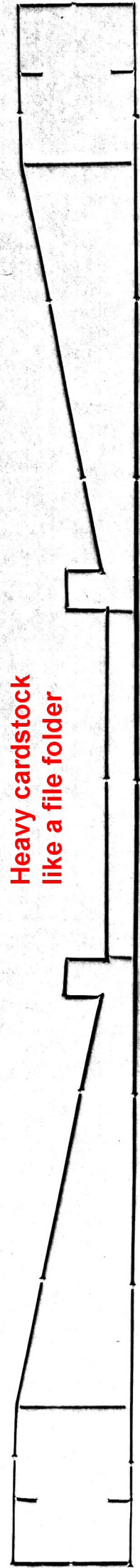
This warranty does not cover incidental or consequential damage including injury or damage to persons or property caused by the use, abuse, misuse, failure to comply with operating instructions or improper storage of the warranted product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

For repair or replacement under this warranty, please return the defective part of your Estes product with proof of purchase to: Estes Industries, Customer Service Department, Penrose, Colorado 81240.



Heavy cardstock
like a file folder



No.0303SR

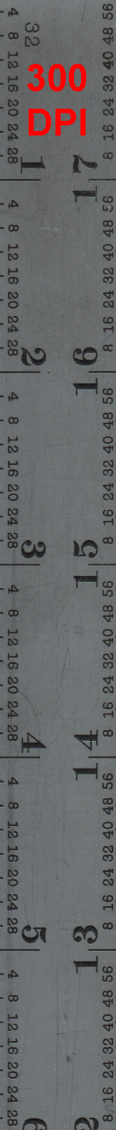
THE L.S. STARRETT CO.
ATHOL, MASS., U.S.A.

No.0303SR

THE L.S. STARRETT CO.
ATHOL, MASS., U.S.A.

1/16"

**Fold cut out pattern
in half to find center.**

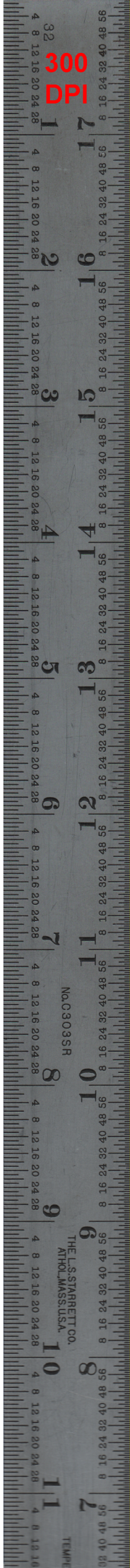


**300
DPI**

Fold printed template
in half to find center



3/32"



32

300
DPI

1

1

2

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3

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4

1

5

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2

No. C303SR

THE L.S. STARETT CO.
ATHOL, MASS., U.S.A.

TEMPER

32
300
DPI

1
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9

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Dragonfly

ESTES IND.

37381

**300
DPI**

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21

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Dragonfly

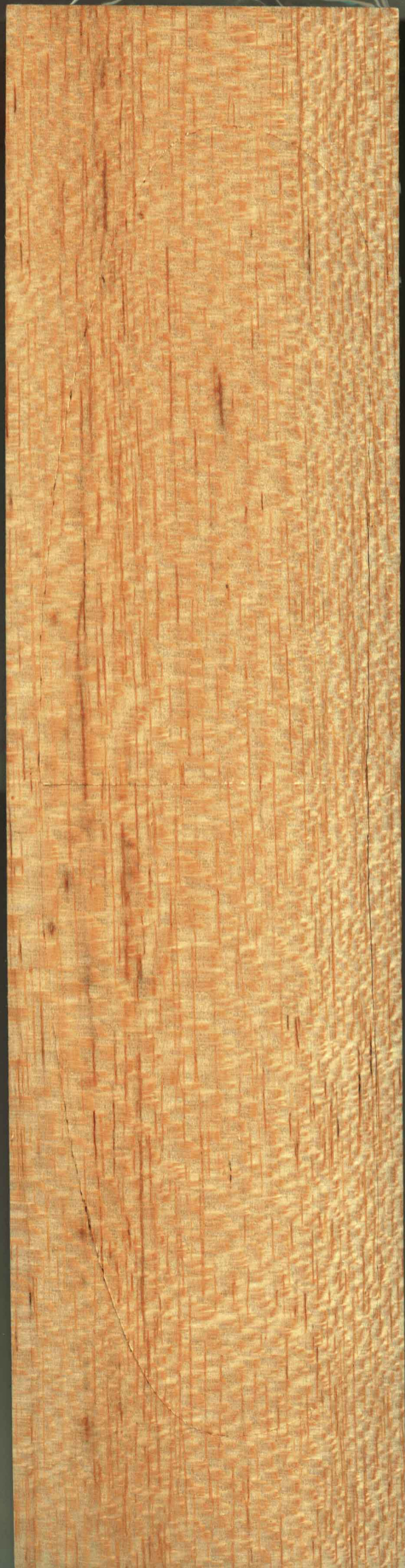
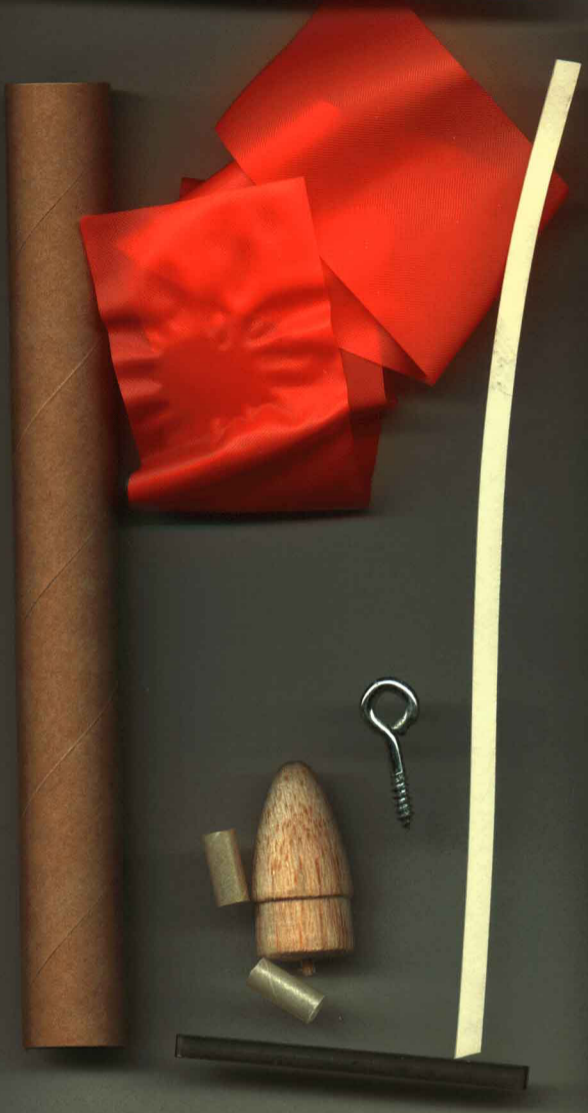
ESTES IND.

37381

Estes Dragonfly #0875

Q	Desc	Stk Num	Size	Other
1	Balsa Fin Stock	BFS-20	1/16" x 3" x 6"	Fins
1	Balsa Fin Stock	BFS-30	3/32" x 3" x 12"	Wing
1	Balsa Fin Stock	BFS-40	1/8" x 1.5 x 12"	Body
1	Sanding Jig		1/16" x 1.5 x 12"	Card Stock
1	Body Tube	BT-5	5" length	
1	Balsa Nose Cone	BNC-5V	3/4" length	
1	Screw Eye	2283	3/4" length	
2	Launch Lug	LL-1	3/8" length	
1	Mini Engine Holder	3143		
1	Shock Cord	2276	1/8"W x 5 1/4"L	
1	Streamer		1 1/4"W x 10 1/2"L	Orange Vinyl
1	Decal			See Scan
1	Clay		5/8" Cube	

Dragonfly
ESTES IND. 37381





Flying Model Rocket

Recommended for Ages 10 through Adult.
Adult Supervision Suggested for Those Under
12 Years of Age When Flying Model Rockets.
1 BOTTLE RECYCLE PRINTING at Callie Ann
Printers.
1 MODEL KIT PARTS and Glue are included.

Dragonfly FLYING MODEL ROCKET

SKILL LEVEL 3
Recommended for the Advanced Modeler

- Die-Cut Balsa Parts
- U.S. Record Setting Model
- Excellent For Competition



Length: 11.6 in. (29.21 cm)
Dia: .541 in. (13.7 mm)
Weight: .47 oz. (13.2 g)
Wing Span: 10 in. (25.4 cm)
Recommended Engine:
1/2A3-2T (First Flight)

60 SECOND GLIDE TIMES

This is a model kit requiring assembly. Glue and finishing supplies, launch system and engine for flight are not included.



A DAMON COMPANY

#0875

ESTES INDUSTRIES
PENROBE, MD 21440, USA



Fly Estes Model Rockets

Plastic bags can be dangerous. To avoid a hazard of suffocation, keep this bag away from babies and children.

Les sacs de plastique peuvent être dangereux. Pour éviter le danger de suffocation, ne laissez pas ce sac à la portée des bébés ni des enfants.



A DAMON COMPANY
ESTES INDUSTRIES
PENROBE, MD 21440 USA
www.estes.com

4 MODEL REACHES PEAK ALTITUDE AND EJECTION CHARGE ACTIVATES RECOVERY SYSTEM

MODEL ROCKET FLIGHT SEQUENCE

This kit has been designed specifically for use only with Estes model rocket engines.

5 RECOVERY DEVICE IS DEPLOYED

RECOMMENDED LAUNCH AREA:
Minimum Launch Site Dimension for Circular Area is Diameter in Feet, and for Rectangular Area is Shortest Side in Feet.



MODEL ROCKETS ARE...

- ...ABLE TO FLY TO ALTITUDES APPROACHING 2,000 FEET (Depending on shape, size, weight and engine used.)
- ...MADE OF VERY LIGHT MATERIALS YET CAN FLY AT SPEEDS UP TO 400 MPH
- ...LAUNCHED BY MORE THAN 1,000,000 PEOPLE EACH YEAR
- ...FUN TO COLLECT, BUILD AND DISPLAY
- ...SAFE, SCIENTIFIC, AND EDUCATIONAL

MODEL ROCKETS USE...

- ...SMALL, POWERFUL, SOLID-PROPELLANT ROCKET ENGINES
- ...REMOTELY CONTROLLED ELECTRONIC LAUNCH SYSTEMS
- ...REAL LAUNCH PADS TO INSURE CORRECT FLIGHT PATTERNS
- ...THE SAME PRINCIPLES CAPE CANAVERAL ROCKETS USE

SOME MODEL ROCKETS ARE...

- ...4 INCHES TO 6 FEET TALL
- ...AERIAL CAMERAS
- ...GLIDERS
- ...SCI-FI SPACESHIPS OR SCALE MODELS
- ...MULTI-STAGED VEHICLES
- ...CARGO SHIPS WITH PAYLOAD BAYS
- ...EASY-TO-BUILD IN MINUTES
- ...CHALLENGING-TO-BUILD (Skill levels are indicated on each package.)

ALL MODEL ROCKETS ARE FUN!

90 DAY WARRANTY AND SAFETY CODE ENCLOSED