



ESTES INDUSTRIES
1295 H Street
Penrose, CO 81240

(10-96) 82147

EST 1474

MEGA MAXX™ STARTER SET INSTRUCTIONS

OPEN AND ASSEMBLE ONLY ONE KIT AT A TIME TO PREVENT MIXING PARTS.
TEST FIT ALL PARTS BEFORE GLUING.

WE RECOMMEND BUILDING YOUR GOLIATH ROCKET FIRST
ALL GLUED AREAS ARE SHADED IN GRAY

GOLIATH™ PARTS LAYOUT

ADHESIVE DECAL SHEET (1) 37711

PLASTIC ENGINE LOCK RING (1) 37944

PLASTIC ENGINE MOUNT PANELS (2) 37944

PLASTIC TUBE COUPLER WITH LAUNCH LUG (1) 37944

PLASTIC FINNS (4) 37924

BODY TUBES 56 (2) 30394

SHROUD LINE 108 (1) 38239

SHOCK CORD 1/4X24 (1) 38383

NOSE CONE 56A (1) 72015

TAPE RINGS (1) 38407

PLASTIC LAUNCH LUG (1) 37944

PARACHUTE 18 (1) 35821

SPITFIRE™ SSI PARTS LAYOUT

DIE CUT BALSA FIN SHEET (1) 32211

ADHESIVE DECAL SHEET (1) 37712

ENGINE HOOK-2A (1) (35021)

ENGINE MOUNT TUBE 20J (1) 30326-1

GREEN ADAPTER RINGS 2050 (2) 30164-2

BODY TUBE 50L 12.7 (1) 30366

SHROUD LINE 72 38237

SHOCK CORD 1/8 X 18 (1) 38374

NOSE CONE 50S (1) 71005

LAUNCH LUG LL2A (1) 38175

TAPE RINGS (1) 38407

PARACHUTE 12 (1) 35820

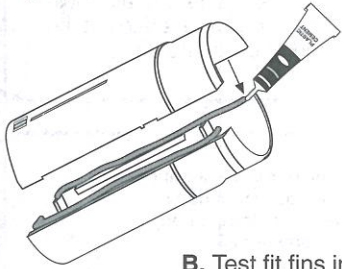
GOLIATH™ FLYING MODEL ROCKET KIT INSTRUCTIONS

EX
SERIES

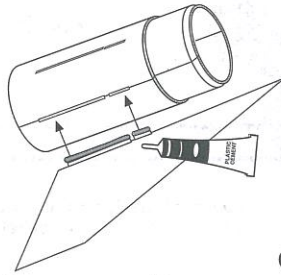
TOOLS REQUIRED: Tube-type plastic cement, white or yellow glue, hobby knife, scissors, and pencil

ALMOST READY TO FLY

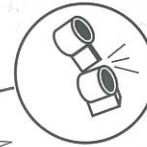
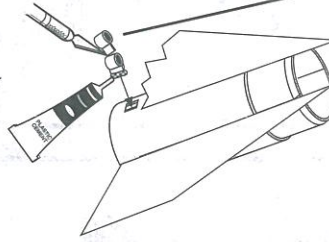
- 1.** A. Cement the two plastic engine mount panel halves together.



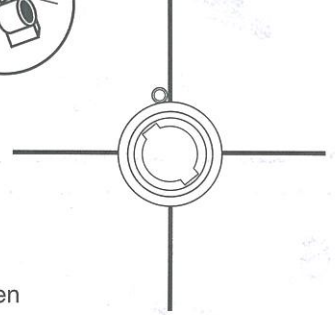
- B. Test fit fins into slots. You may need to scrape any excess plastic [flash] off with a hobby knife. Cement the four fins into the slots. Allow glue to dry.



- C. Use a hobby knife where shown then snap apart to separate the tabbed launch lug. Discard the top. Cement the remaining lug into slot on engine mount as shown.

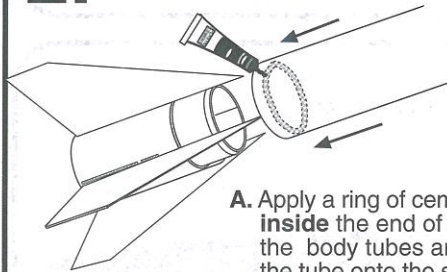


Snap apart and Discard top

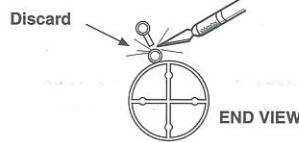


BE SURE THE LUG IS PARALLEL TO THE FIN.

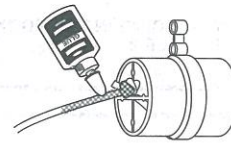
2.



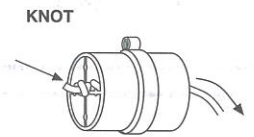
- A. Apply a ring of cement just **inside** the end of one of the body tubes and slide the tube onto the shoulder of the engine mount fin assembly.



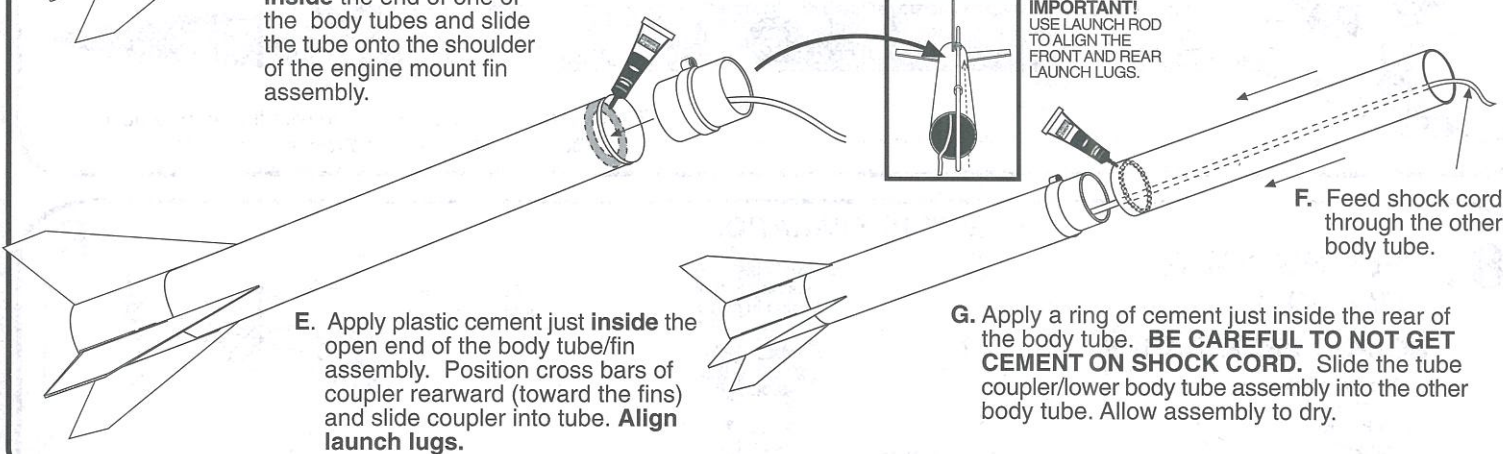
- B. Cut extra lug off the coupler and discard.



- C. Tie one end of shock cord to the cross bars of the tube coupler with a double knot. Apply a thin coating of glue to knot & portion of shock cord as shown.



- D. Feed cord through coupler.



- E. Apply plastic cement just **inside** the open end of the body tube/fin assembly. Position cross bars of coupler rearward (toward the fins) and slide coupler into tube. **Align launch lugs.**



IMPORTANT!
USE LAUNCH ROD TO ALIGN THE FRONT AND REAR LAUNCH LUGS.

- F. Feed shock cord through the other body tube.

- G. Apply a ring of cement just inside the rear of the body tube. **BE CAREFUL TO NOT GET CEMENT ON SHOCK CORD.** Slide the tube coupler/lower body tube assembly into the other body tube. Allow assembly to dry.

3.



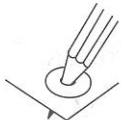
- A. Cut out parachute on dotted line.



- B. Find shroud line material. Remove tape. Fold and cut into three equal lengths.



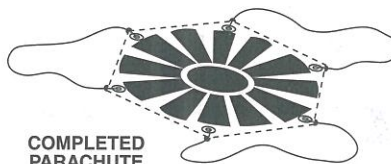
- C. Press tape rings on marks on corners.



- D. Punch holes with sharp pencil.

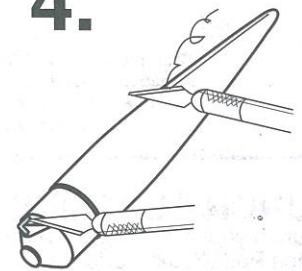


- E. Tie lines off with double knots.



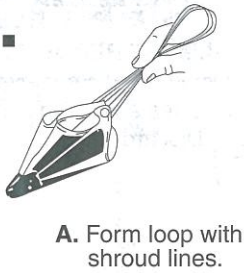
COMPLETED PARACHUTE

4.

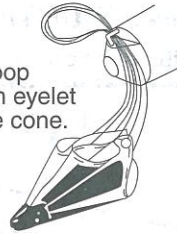


- A. Clean flash from eyelet and nose cone.

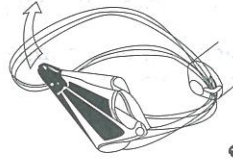
5.



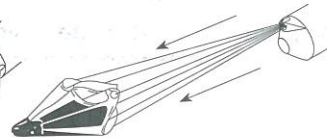
B. Push loop through eyelet of nose cone.



C. Pass parachute through loop.



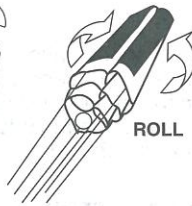
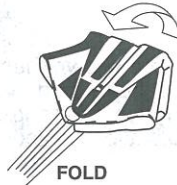
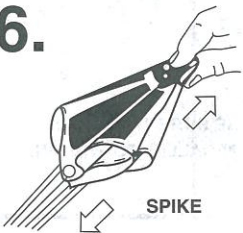
D. Pull tight.



E. Tie shock cord to the eye of the nose cone with a double knot. You will need to cut the end of cord into a point.

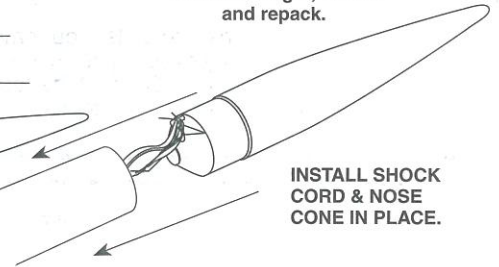
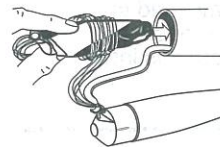


6.



Wrap lines loosely around chute. Insert parachute into rocket.

Recovery device should slide easily into body tube. If too tight, unfold and repack.



DO NOT FORGET TO PACK RECOVERY WADDING IN THE ROCKET BEFORE FLYING - SEE STEP 8

7. APPLYING DECALS

A. Remove decals from backing sheet one at a time and position on rocket as shown on front of package.

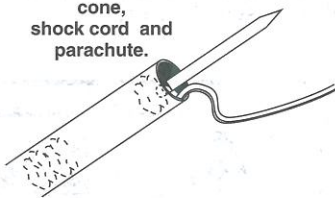


B. Once decal is in position, rub with finger to remove air bubbles and secure to rocket.

8. FLYING YOUR ROCKET

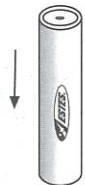
ROCKET PREPARATION

Remove nose cone, shock cord and parachute.

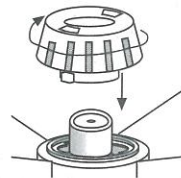


Crumple and insert 3-4 squares of recovery wadding. Repack and insert parachute, shock cord and nose cone.

ENGINE PREPARATION

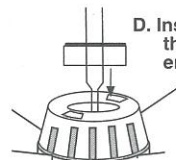


A. Slide engine into engine mount.



B. Twist plastic engine lock ring to hold engine in place.

C. Separate igniter and igniter



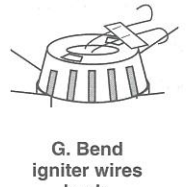
D. Insert igniter all the way into engine.



E. Insert igniter plug.



F. Firmly push all the way in.



G. Bend igniter wires back.

LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: B4-2, B4-4, B6-2, B6-4, or C6-5. Use a B6-2 for your first flight to become familiar with your rocket's flight pattern.
- Recovery Wadding (EST 302274)
- Igniters and Igniter Plugs (included with Estes engines.)
- Use only Estes products to launch this rocket.

PROJECTED ALTITUDES: GOLIATH™

	FEET	METERS
B4-2/B4-4	191	58
B6-2/B6-4	212	65
C6-5	523	160

See page 4 for tips for countdown and launch procedure.

SPITFIRE SSI™ FLYING MODEL ROCKET KIT INSTRUCTIONS

BETA
SERIES 5
SKILL LEVEL 1

TOOLS REQUIRED: White or Yellow Glue, Scissors, Hobby Knife, Pencil, Ruler, Waxed Paper, Masking Tape, 400 Grit Sand paper, Permanent Markers, Spray Enamel Paint, Sanding Sealer (Optional), Automotive Primer (Optional)

1.

A. Mark the engine mount tube at 3/4" (19 mm) and at 2 1/2" (6.4 cm).

B. Using a hobby knife, make a 1/8" (3mm) wide slit at the 2 1/2" (6.4 cm) mark only. Insert the engine hook as shown.

C. Apply a band of glue just above the 3/4" (19mm) mark and slide one of the green adapter rings down over the front of the tube into the glue up to the mark.

D. Apply a band of glue around the front of tube, slide the other green adapter ring down into glue until even with tube and let engine mount assembly dry.

2.

A. Cut the marking guide from the PATTERNS SECTION (below) along its outside edge.

B. Wrap the marking guide around one end of the body tube and tape it in place as shown.

C. Mark tube at all arrows and remove marking guide.

D. Using a door frame as a guide, connect the marks with straight lines. (This is the rear of the tube where your fins attach.)

E. Again use a door frame to draw a straight line all the way down the body tube between two fin marks. This is the launch lug line. Mark the launch lug line at 4" (10.2 cm) from the rear of the tube.

3.

A. Apply a ring of glue inside the rear of the body tube and to the rear adapter ring on the engine mount.

B. Slide the engine mount into the rear of the body tube until their ends are even. Wipe away any excess glue.

C. While glue is still wet, twist the engine mount until the engine hook is aligned with the launch lug line.

PATTERNS SECTION

MARKING GUIDE

SHOCK CORD MOUNT

ESTES

SECTION 1

SECTION 2

SECTION 3

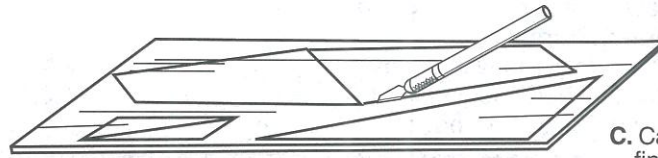
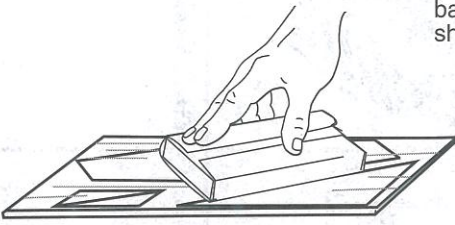
TAB

CUT OUT FOR STEP 2

CUT OUT FOR STEP 8

4.

A. Fine sand balsa fin sheet.



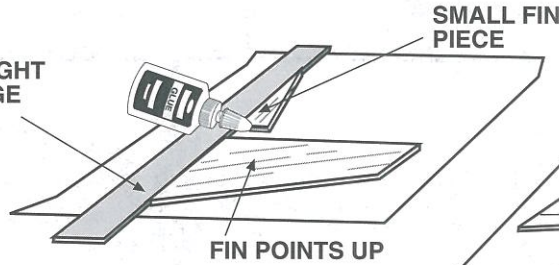
C. Carefully remove fins.

B. Use a hobby knife to carefully complete cuts in balsa fin sheet. Cut away from adjacent fins so you won't damage them. (Be sure cuts go completely through balsa.)

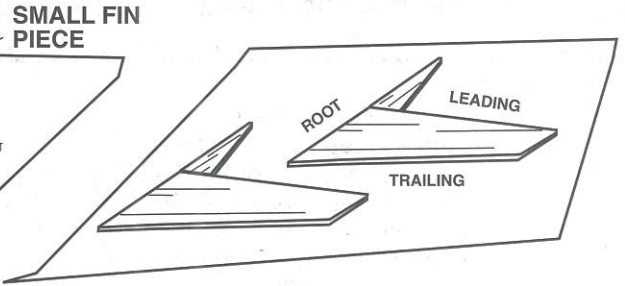
5.

A. Stack like shaped fins together and sand all edges smooth.

STRAIGHT EDGE



FIN POINTS UP



C. Set each fin assembly aside to dry.

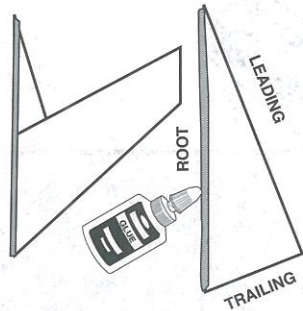
D. Identify root, trailing, & leading edges of fins. Use sandpaper to gently round the leading & trailing edges of all the fins.

B. Lay pieces for two fin assemblies on a sheet of waxed paper. Glue together as shown. Use a straight edge to be sure root edge is straight. (Third fin requires no assembly)

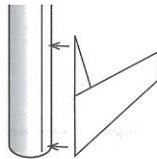
6.

Note: Before gluing the fins to the body tube, identify the root and the leading edges. This will help you attach your fins correctly. Remember: Fins must be attached correctly for stable flight.

A. Rub a thin film of glue onto the root edge of fin. Allow to set until it becomes tacky and apply a second thin coat.



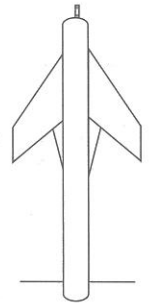
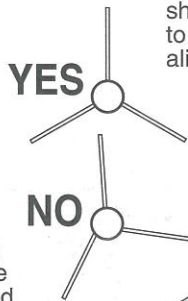
B. Carefully glue root edge of fin to alignment line on body tube so the rear edges are even and the fin projects straight out.



YES

NO

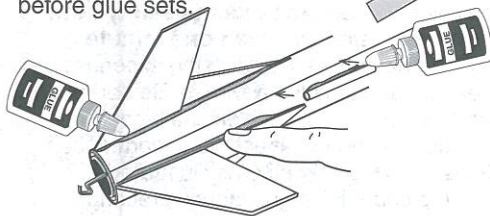
C. Attach remaining fins in the same manner as step B. After all fins are attached, use shaded end view to check for alignment.



D. Stand rocket on table as shown and allow to dry.

7.

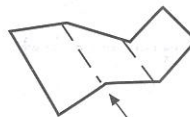
A. Apply glue to launch lug as shown. Apply lug to launch lug line just in front of the 4" (10.2) mm mark. Make sure lug is perfectly aligned before glue sets.



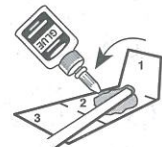
B. After glue is completely dry, apply a glue fillet (reinforcement) to both sides of launch lug and fin joints. Smooth with finger and let dry.

8.

A. Carefully cut shock cord mount from PATTERNS SECTION with scissors and crease on dotted lines by folding.



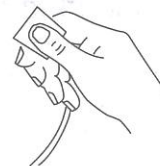
B. Spread glue on section 2 and lay end of shock cord into glue at slight angle as shown. Fold Section 1 over.



C. Spread glue on section 3 and fold section 2 over.

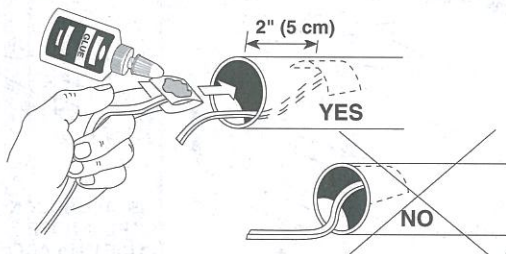


D. Clamp unit together with fingers until glue sets.

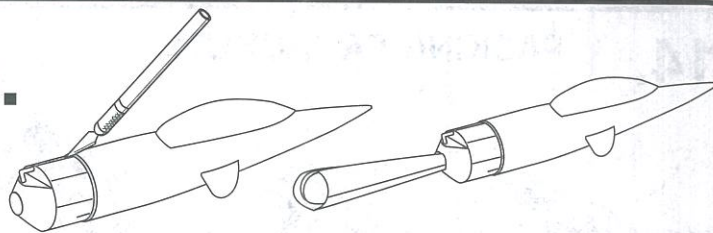


9.

- A. Apply glue to back of shock cord mount.
- B. Press mount into front of tube assembly and hold till glue sets. Insert at least 2" (5 cm) from end.

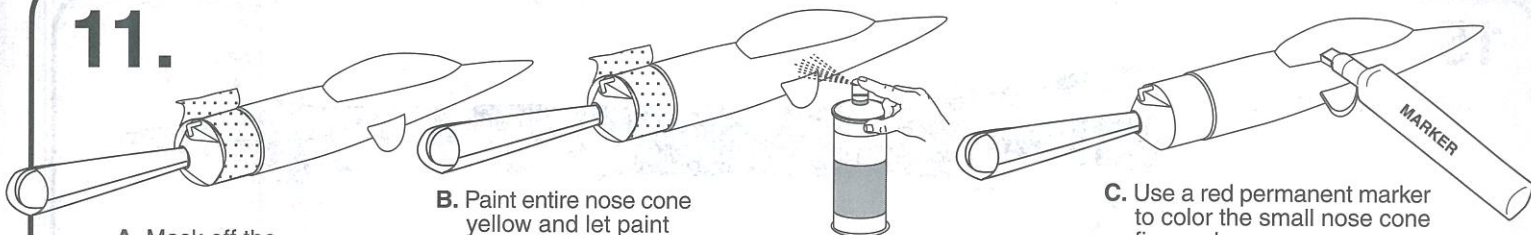


10.



- A. Use a hobby knife to carefully remove any flash (excess plastic) from the nose cone and nose cone eyelet. (Be sure not to cut off eyelet.)
- B. Roll up a piece of paper and insert into the rear of the nose cone.

11.



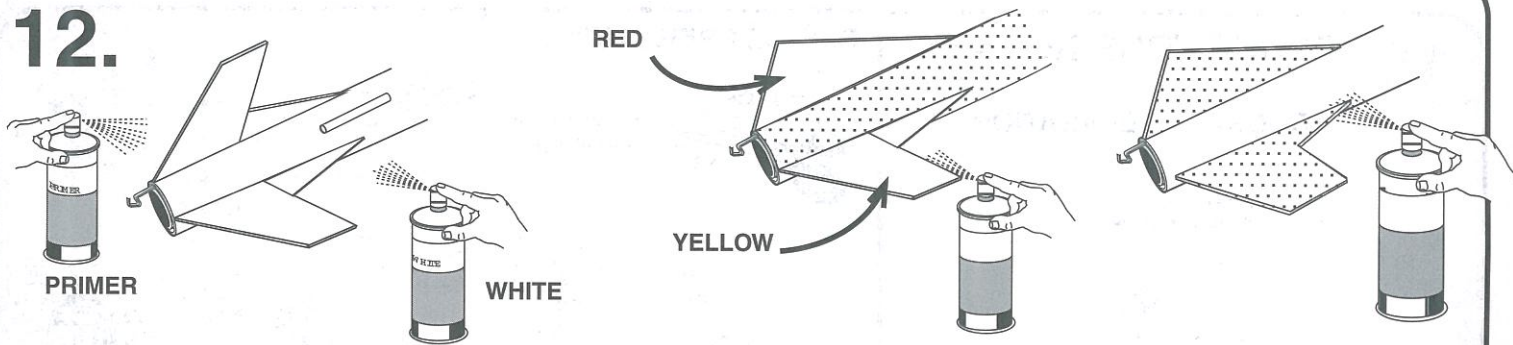
- A. Mask off the shoulder of the nose cone.

- B. Paint entire nose cone yellow and let paint dry completely.

TIP: USE SEVERAL MIST COATS OF PAINT TO AVOID DRIPS AND RUNS

- C. Use a red permanent marker to color the small nose cone fins and an orange permanent marker to color the canopy.

12.



PRIMER

WHITE

RED

YELLOW

- A. Spray entire tube assembly with automotive primer, let dry. Sand smooth then paint entire tube assembly gloss white.

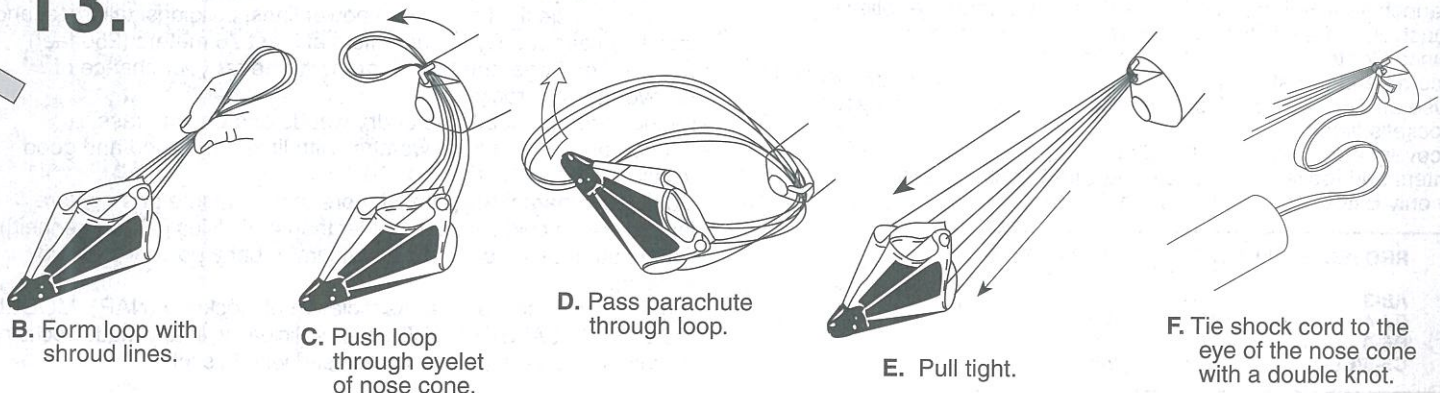
TIP: YOU MAY WANT TO USE SANDING SEALER ON THE BALSA FINS. BEFORE PRIMING & PAINTING

- B. After paint is completely dry, mask off body tube and paint forward pointing fins yellow and rear pointing fin red. (You will need to mask off one fin type, color then paint the other.)

- C. Once paint is completely dry, remove tape from tube, mask off fins, and spray paint body tube black. Allow paint to dry thoroughly and remove tape. Let dry.

A. PLEASE NOTE : FOLLOW STEP 3 FROM PAGE 1 FOR SPITFIRE SSI™ PARACHUTE ASSEMBLY

13.



- B. Form loop with shroud lines.

- C. Push loop through eyelet of nose cone.

- D. Pass parachute through loop.

- E. Pull tight.

- F. Tie shock cord to the eye of the nose cone with a double knot.

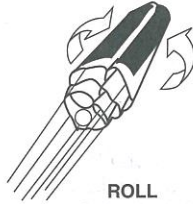
14. PACKING PARACHUTE



SPIKE

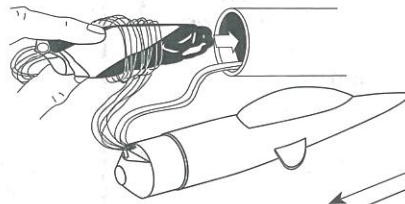


FOLD

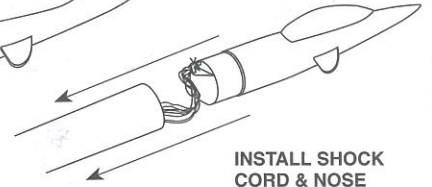


ROLL

Wrap lines loosely around chute. Insert parachute into rocket.



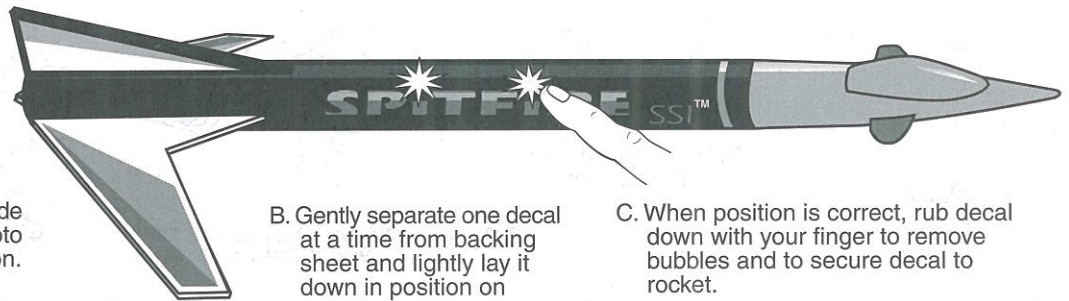
Recovery device should slide easily into body tube. If too tight, unfold and repack.



INSTALL SHOCK CORD & NOSE CONE IN PLACE.

DO NOT FORGET TO PACK RECOVERY WADDING IN THE ROCKET BEFORE FLYING - SEE STEP 16

15. APPLYING DECALS



A. Cut out each decal just inside dotted lines. Refer to photo of rocket for decal location.

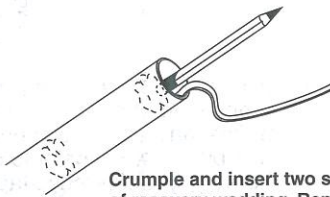
B. Gently separate one decal at a time from backing sheet and lightly lay it down in position on rocket.

C. When position is correct, rub decal down with your finger to remove bubbles and to secure decal to rocket.

16. FLYING YOUR ROCKET

ROCKET PREPARATION

Remove nose cone, shock cord and parachute.



Crumple and insert two squares of recovery wadding. Repack and insert parachute, shock cord and nose cone.

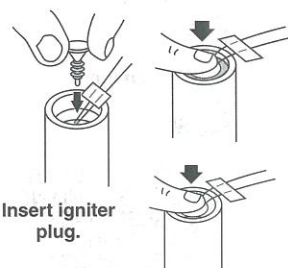
ENGINE PREPARATION



Separate igniter and igniter plug.

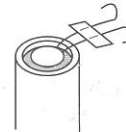


Hold engine upright, drop in igniter. Igniter must touch propellant.

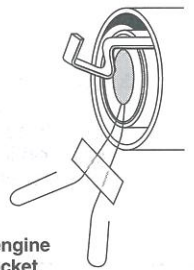


Insert igniter plug.

Firmly push all the way in.



Bend igniter wires back.



Insert engine into rocket.

LAUNCH SUPPLIES

To launch your Spitfire SSI™ rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: A8-3, B4-4, B6-4, C6-5, or C6-7.

Use an A8-3 for your first flight to become familiar with your rocket's flight pattern.

- Recovery Wadding (EST 302274)
 - Igniters and Igniter Plugs (included with Estes engines.)
- Use only Estes products to launch this rocket.

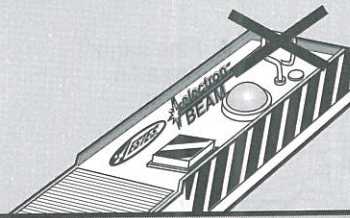
PROJECTED ALTITUDES : SPITFIRE SSI™		
	FEET	METERS
A8-3	170	52
B4-4	423	129
B6-4	452	138
C6-5/C6-7	937	286

TIPS FOR FLYING YOUR ROCKETS

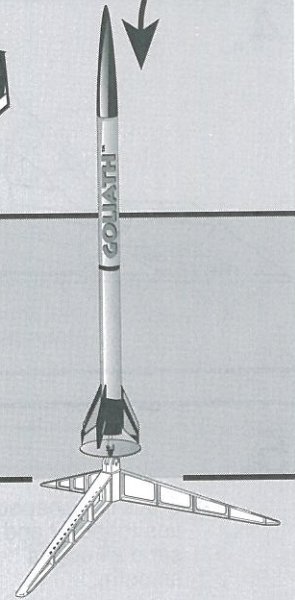
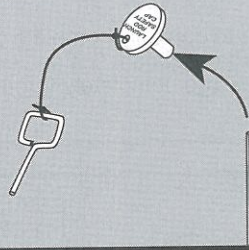
- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 76 meters (250 feet) square. The larger the launch area, the better your chance of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don't leave parachute packed more than a minute or so before launch during cold weather (colder than 4° Celsius [40° Fahrenheit]). Parachute may be dusted with talcum or baby powder to avoid sticking.
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.

COUNTDOWN AND LAUNCH

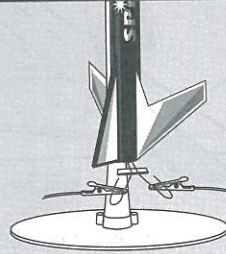
10... Safety key must not be in launch controller. The safety cap with safety key attached should already be on the launch rod.



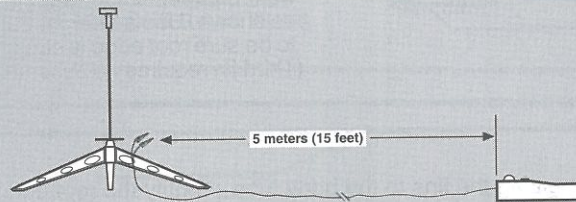
9... Remove safety cap from launch rod, slide launch lugs over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.



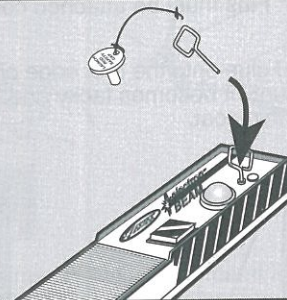
8... Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.



7... Move everyone back from your rocket as far as launch wire will permit (at least 5 meters - 15 feet).

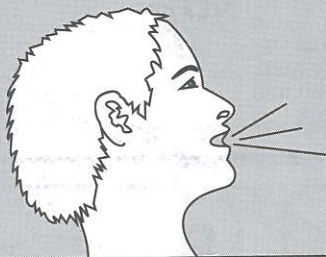


6... Insert safety key to arm the launch controller.



5... Start audible countdown.

4...3...2...1.....



LAUNCH!

Push and hold button until engine ignites.

For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.

MISFIRES

When an ignition failure occurs, **remove the safety key** from the launch control system and **wait one minute before approaching the rocket**. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.