

2x2

High-performance sport rocket.

Includes the revolutionary new **FX System™** with:

- Interchangeable engine mounts.
- Pre-lift-off smoke.

Product No. LS 102

Model kit requires assembly. Recommended for ages 10 to adult. Adult supervision recommended for ages 12 years and under.

TECHNICAL PROFILE

SKILL LEVEL: ONE - Beginner

LENGTH: 27 inches

DIAMETER: 1.75 inches

WEIGHT: 3.1 ounces

RECOMMENDED ENGINES:

C6-3 D12-7

FX (use with C6-3)



0 19571 77102 8

FX System™

The interchangeable engine mounts included in this kit allow you the optimum choice of engine type based on your available flying area, altitude desired, or visual effect you are looking for - with a simple twist of the mount.

All 3 mounts included!



Single TRACKER C Engine



Single D Engine



Single TRACKER C Engine with 2 FX Engines

EXCELLENCE IN PRODUCT ENGINEERING AND DESIGN.

These are just some of the features included in each kit that set Concept II products apart from the rest.



Precision-molded fins that align for accurate alignment and require no filing.



Pre-cut fabric parachute kit. Sewed lines are tied on for maximum strength. High strength Kevlar™ shock cord.



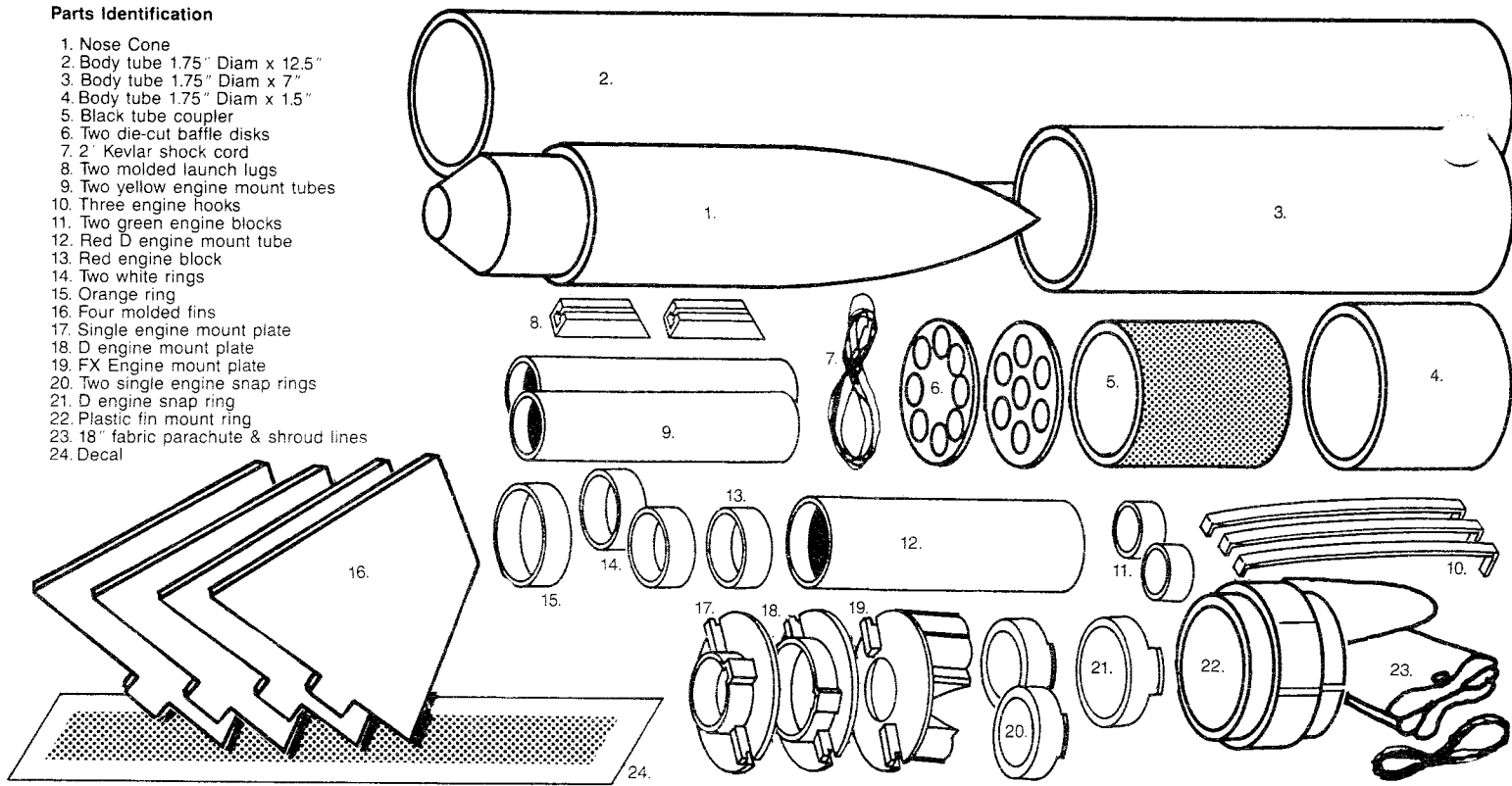
Ejection bath cools hot ejection charge passes and traps burning particles to protect recovery system.



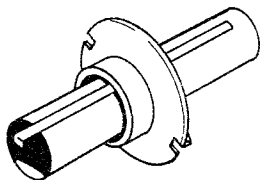
Color-coded ejection charge identification easy and assembly faster.

Parts Identification

1. Nose Cone
2. Body tube 1.75" Diam x 12.5"
3. Body tube 1.75" Diam x 7"
4. Body tube 1.75" Diam x 1.5"
5. Black tube coupler
6. Two die-cut baffle disks
7. 2' Kevlar shock cord
8. Two molded launch lugs
9. Two yellow engine mount tubes
10. Three engine hooks
11. Two green engine blocks
12. Red D engine mount tube
13. Red engine block
14. Two white rings
15. Orange ring
16. Four molded fins
17. Single engine mount plate
18. D engine mount plate
19. FX Engine mount plate
20. Two single engine snap rings
21. D engine snap ring
22. Plastic fin mount ring
23. 18" fabric parachute & shroud lines
24. Decal

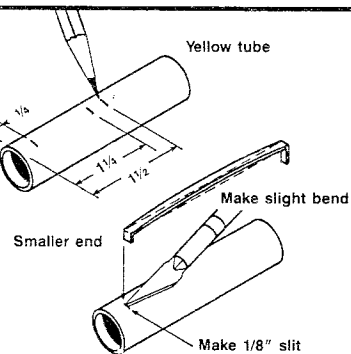


Single TRACKER Engine Mount



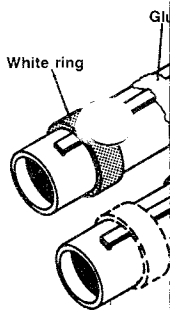
STEP ONE.

- A. Mark one of the yellow engine mount tubes $\frac{1}{4}$ ", $\frac{1}{4}$ ", and $\frac{1}{2}$ " from one end.
- B. Cut a $\frac{1}{8}$ " slit in the tube at the $\frac{1}{4}$ " mark.
- C. Put a slight bend in one of the engine hooks.
- D. Make a note that the engine hook has one end larger than the other. Insert the smaller sized end of the hook into the slit as shown.

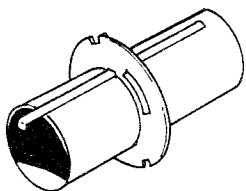


STEP TWO.

- A. Slide one of the white rings onto the yellow tube just far enough to hold the engine hook in place.
- B. Apply a bead of white glue around the yellow tube between the $\frac{1}{4}$ " and $\frac{1}{2}$ " marks.
- C. Slide the white ring into the bead of glue so that it is centered between the two marks. Wipe away any excess glue.

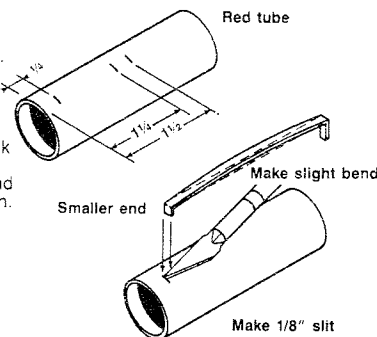


D Size Engine Mount



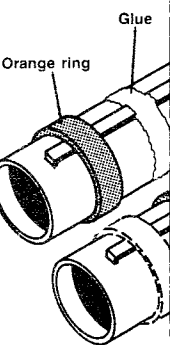
STEP ONE.

- A. Mark the red engine mount tube $\frac{1}{4}$ ", $\frac{1}{4}$ ", and $\frac{1}{2}$ " from one end.
- B. Cut a $\frac{1}{8}$ " slit in the tube at the $\frac{1}{4}$ " mark.
- C. Put a slight bend in one of the engine hooks.
- D. Make a note that the engine hook has one end larger than the other. Insert the smaller sized end of the hook into the slit as shown.

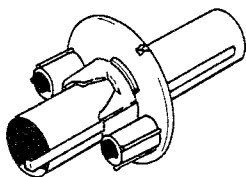


STEP TWO.

- A. Slide the orange ring onto the red tube just far enough to hold the engine hook in place.
- B. Apply a bead of white glue around the red tube between the $\frac{1}{4}$ " and $\frac{1}{2}$ " marks.
- C. Slide the orange ring into the bead of glue so that it is centered between the two marks. Wipe away any excess glue.

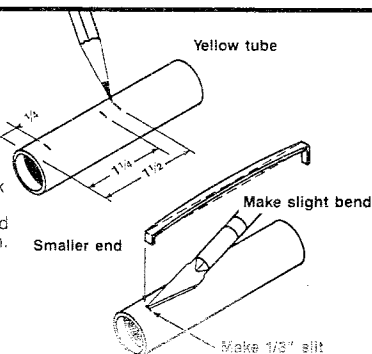


FX Engine Mount



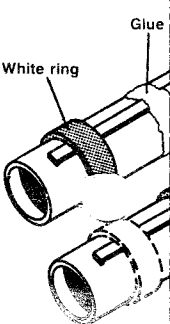
STEP ONE.

- A. Mark one of the yellow engine mount tubes $\frac{1}{4}$ ", $\frac{1}{4}$ ", and $\frac{1}{2}$ " from one end.
- B. Cut a $\frac{1}{8}$ " slit in the tube at the $\frac{1}{4}$ " mark.
- C. Put a slight bend in one of the engine hooks.
- D. Make a note that the engine hook has one end larger than the other. Insert the smaller sized end of the hook into the slit as shown.



STEP TWO.

- A. Slide one of the white rings onto the yellow tube just far enough to hold the engine hook in place.
- B. Apply a bead of white glue around the yellow tube between the $\frac{1}{4}$ " and $\frac{1}{2}$ " marks.
- C. Slide the white ring into the bead of glue so that it is centered between the two marks. Wipe away any excess glue.



SAFETY INSTRUCTIONS

For the safe and reliable performance of your model rocket
PLEASE NOTE:

1. Model rockets are not "toys" - that they are capable of causing personal injury to you and to others as well as property damage.
2. That you and you alone are responsible for the safe operation of your rocket.
3. That you must properly build and operate your rocket with a clear sense of that responsibility; that means taking no chances or risks which might endanger yourself or others.
4. Read and observe the rules of the Model Rocket Safety Code printed on this sheet.

HELPFUL HINTS

Before building this kit gather the necessary tools and materials and read all instructions thoroughly. In addition, keep the following points in mind.

1. Read and understand each step and study the drawings before beginning any part in that step.
2. Always test fit the parts before putting glue on them.

TOOLS REQUIRED

1. Modeling knife
2. 400 grit sandpaper
3. Pencil
4. Ruler

2 x 2

Prod. No LS-102

Skill Level One: Beginner

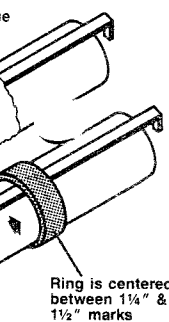
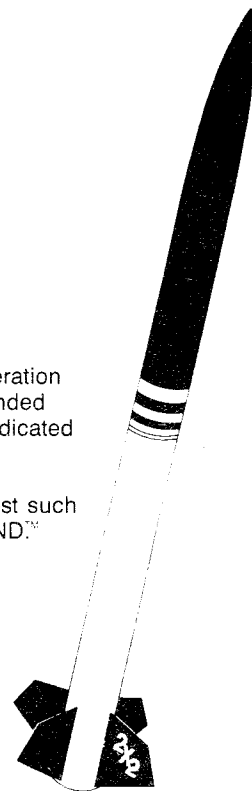
GLUES REQUIRED

Proper glue joints are vital for the safe operation of your model rocket. Use these recommended glues or glues of similar qualities where indicated in these instructions.

White Glue - Aliphatic resin glues work best such as PACTRA TUBE O'PHATIC™ or TITEBOND™

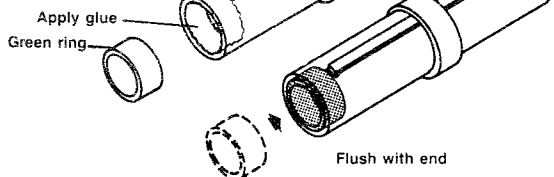
Cyanoacrylate - Medium or slow viscosity.

Liquid Solvent Plastic Cement - Solvent cements that chemically bond the plastic together such as WELD-ON™ Acrylic plastic cement, MICRO-WELD™ or TESTORS™ liquid plastic cement.



STEP THREE.

- A. Apply a small ring of white glue around inside of yellow tube as shown.
- B. Insert one of the green engine block rings until it is flush with the end of the yellow tube. Wipe away any excess glue.

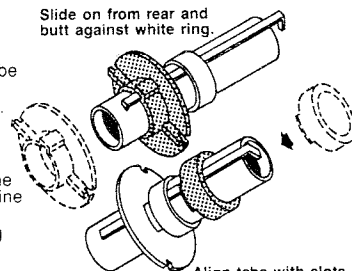


STEP FOUR.

- A. Slide the plastic single engine mount plate onto the yellow tube from the rear as shown until it butts up against the white ring.
- B. Slide one of the plastic single engine snap rings on from the front of the yellow tube.
- C. Align the two snap tabs with the corresponding slots in the engine mount plate and snap the two plastic parts together centering them over the white ring.

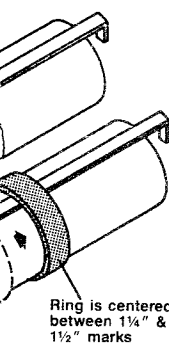
For maximum strength and safety re-inforce all plastic to plastic and plastic to paper joints with Cyanoacrylate type glue.

Slide on from rear and butt against white ring.



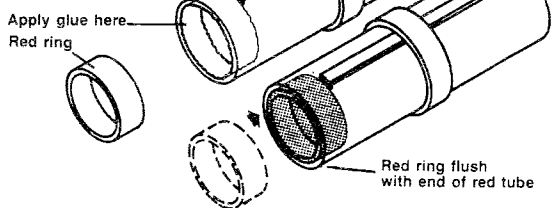
Align tabs with slots and "snap" two parts together

If engine mount plate fits too tight - sand inside edges to loosen fit.



STEP THREE.

- A. Apply a small ring of white glue around inside of red tube as shown.
- B. Insert the red engine block ring until it is flush with the end of red tube. Wipe away any excess glue.

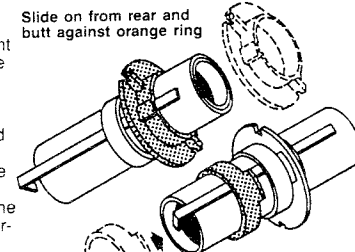


STEP FOUR.

- A. Slide the plastic D engine mount plate onto the red tube from the rear as shown until it butts up against the orange ring.
- B. Slide the plastic D engine snap ring on from the front of the red tube.
- C. Align the two snap tabs with the corresponding slots in the D engine mount plate and snap the two plastic parts together centering them over the orange ring.

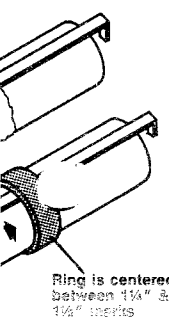
For maximum strength and safety re-inforce all plastic to plastic and plastic to paper joints with Cyanoacrylate.

Slide on from rear and butt against orange ring



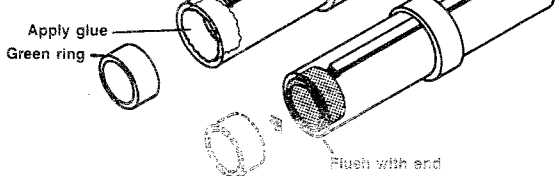
Align tabs with slots and "snap" two parts together

If D engine mount plate fits too tight - sand inside edges to loosen fit



STEP THREE.

- A. Apply a small ring of white glue around inside of yellow tube as shown.
- B. Insert one of the green engine block rings until it is flush with the end of the yellow tube. Wipe away any excess glue.

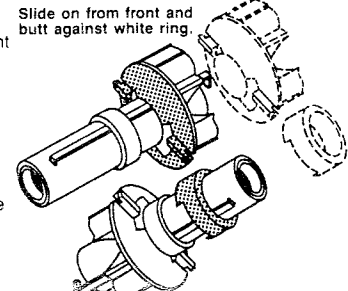


STEP FOUR.

- A. Slide the plastic FX engine mount plate onto the yellow tube from the front as shown until it butts up against the white ring.
- B. Slide one of the plastic single engine snap rings on from the rear of the yellow tube.
- C. Align the two snap tabs with the corresponding slots in the FX engine mount plate and snap the two plastic parts together centering them over the white ring.

For maximum strength and safety re-inforce all plastic to plastic and plastic to paper joints with Cyanoacrylate type glue.

Slide on from front and butt against white ring.



Align tabs with slots and "snap" two parts together

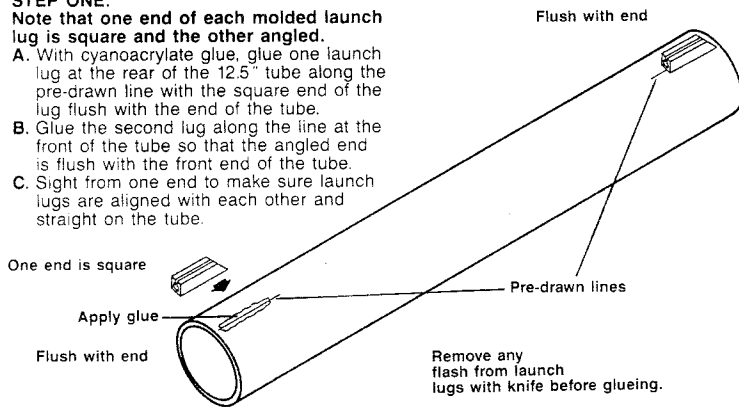
If engine mount plate fits too tight - sand inside edges to loosen fit.

Rocket Assembly Instructions

STEP ONE.

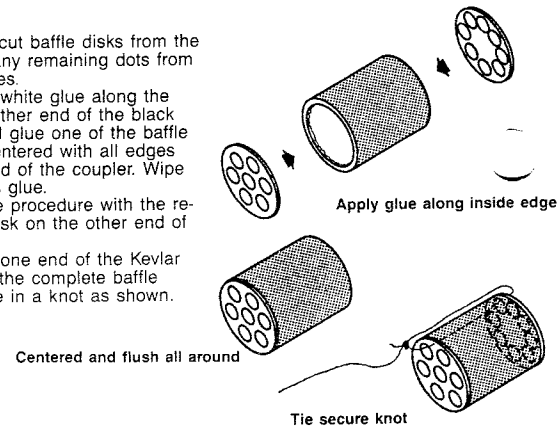
Note that one end of each molded launch lug is square and the other angled.

- With cyanoacrylate glue, glue one launch lug at the rear of the 12.5" tube along the pre-drawn line with the square end of the lug flush with the end of the tube.
- Glue the second lug along the line at the front of the tube so that the angled end is flush with the front end of the tube.
- Sight from one end to make sure launch lugs are aligned with each other and straight on the tube.

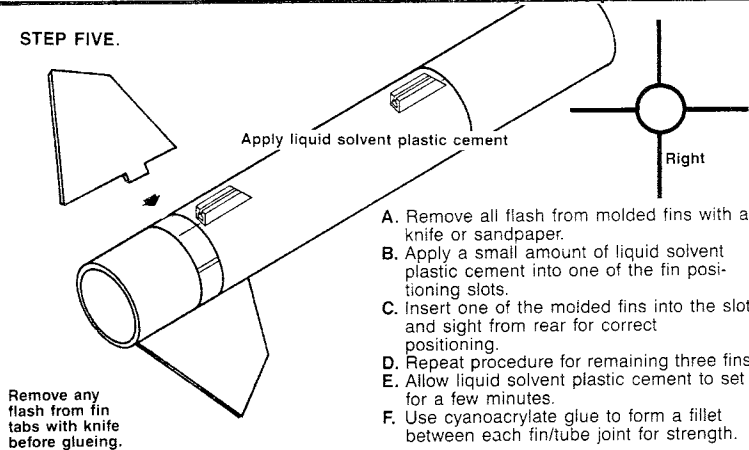


STEP TWO

- Remove the die-cut baffle disks from the sheet. Remove any remaining dots from the punched holes.
- Apply a bead of white glue along the inside edge of either end of the black tube coupler and glue one of the baffle disks in place centered with all edges flush with the end of the coupler. Wipe away any excess glue.
- Repeat the same procedure with the remaining baffle disk on the other end of the coupler.
- Carefully thread one end of the Kevlar shock cord thru the complete baffle assembly and tie in a knot as shown.



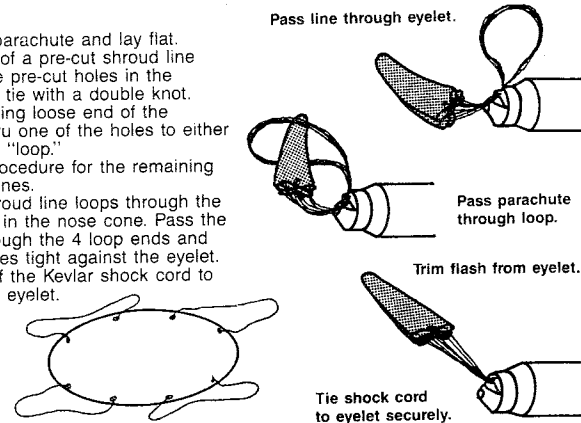
STEP FIVE.



- Remove all flash from molded fins with a knife or sandpaper.
- Apply a small amount of liquid solvent plastic cement into one of the fin positioning slots.
- Insert one of the molded fins into the slot and sight from rear for correct positioning.
- Repeat procedure for remaining three fins.
- Allow liquid solvent plastic cement to set for a few minutes.
- Use cyanoacrylate glue to form a fillet between each fin/tube joint for strength.

STEP SIX

- Unfold fabric parachute and lay flat.
- Pass one end of a pre-cut shroud line thru one of the pre-cut holes in the parachute and tie with a double knot.
- Tie the remaining loose end of the shroud line thru one of the holes to either side forming a "loop."
- Repeat this procedure for the remaining three shroud lines.
- Pass the 4 shroud line loops through the molded eyelet in the nose cone. Pass the parachute through the 4 loop ends and pull shroud lines tight against the eyelet.
- Tie free end of the Kevlar shock cord to the nose cone eyelet.



Flying Your Rocket

Pre-flight preparation

- Always inspect your rocket before each flight for any damage that may have occurred from its previous flight or during storage.
- The ejection baffle system in your rocket eliminates the need to use any recovery wadding.
- Carefully pack the parachute into the rocket and replace the nose cone. Check fit of nose cone to be sure it is loose.

Engine Mount Installation

The three interchangeable engine mounts included in this kit allow you the optimum choice of engine types used based on your available flying area, altitude desired, or visual effect you are looking for.

To insert any of the mounts, make note that there are two molded tabs on each engine mount plate. These tabs lock over two corresponding ridges inside the plastic fin mount ring. The parts may fit very tightly the first few times you attempt installation. Gently work the parts back and forth a few times to loosen them up. For maximum safety do not attempt to alter the fit by sanding or removing any plastic with a knife. The fit should remain fairly tight to prevent the engine's ejection charge from blowing the mount out the rear of the rocket.

To install:

NOTE: The mounts have more strength and are easier to grip with an engine installed. Install an engine without the igniter in place during insertion or removal of mount.

- Simply insert the engine mount with the tabs aligned and twist clockwise firmly. Mount should travel about 1/4" to fully lock.
- Pull on the mount gently to be sure it is seated properly.
- Install the igniter as per the instructions included.

To remove:

- Wait until the engine is cool enough to touch by hand (usually two or three minutes).
- Twist engine mount counter-clockwise and pull.

WARNING: Do not attempt to remove engine mount with pliers while engine is still hot. This can result in permanent damage to your engine mount.

RECOMMENDED ENGINES

First flight: C6-3
Large flying area: D12-7
Special visual effect: 2 FX Engines with C6-3

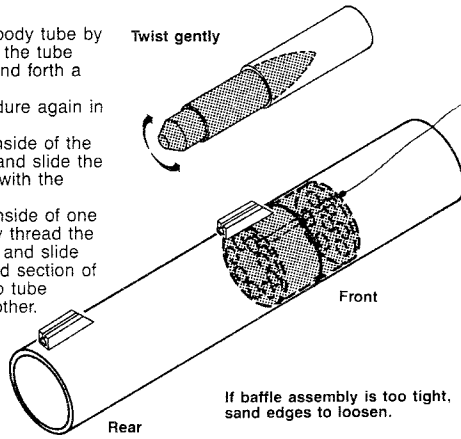
Launch

- Disarm the igniter in your pack.
- Slide the rocket slider into the launch tube.
- Attach the launch tube to the launch rail. Check each other's work.
- Move back to a safe distance.
- Clear the launch area.
- Arm the launch rail.
- Countdown.
- Remove the launch rail.

Always follow the instructions for your rocket.

STEP THREE

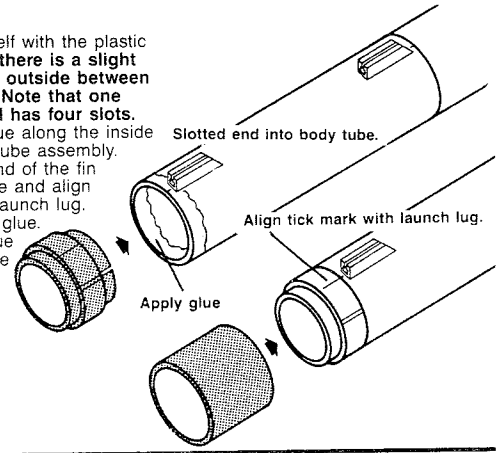
- A. Stretch the front end of the body tube by inserting the nose cone into the tube and gently twisting it back and forth a few times.
- B. Repeat this stretching procedure again in both ends of the 7" tube.
- C. Apply white glue along the inside of the front of the long body tube and slide the baffle assembly half way in with the shock cord facing forward.
- D. Apply white glue along the inside of one end of the 7" tube. Carefully thread the shock cord thru the 7" tube and slide the 7" tube onto the exposed section of baffle assembly until the two tube ends meet flush with each other. Wipe away any excess glue.



STEP FOUR

Carefully familiarize yourself with the plastic fin mount ring. **Note that there is a slight tick mark molded on the outside between two of the fin positions. Note that one end is solid and one end has four slots.**

- A. Apply cyanoacrylate glue along the inside rear edge of the body tube assembly.
- B. Slide the four-slotted end of the fin mount ring into the tube and align the tick mark with the launch lug. Wipe away any excess glue.
- C. Apply cyanoacrylate glue along inside edge of the 1.5" long body tube and glue it in place on rear of plastic fin mount ring.



Painting your rocket

A good paint job on your model will greatly enhance the way it looks and add to the realism of the **FX System** pre-lift-off smoke.

Priming your rocket with a spray primer and then sanding before painting will fill the seams on the body tube and produce a very professional looking finish on your rocket.

The paint pattern for this rocket is body gloss white, upper tube, nose cone and four fins are gloss blue.

We recommend the following colors:

Pactra Astro Color™
Rocket Paint:
AC511 DELTA WHITE
AC515 METALLIC NOVA BLUE
AC524 CLEAR GLOSS
Follow the instructions on each can for best results.

Applying Decals

Let paint dry overnight before applying decals. Refer to the front panel of this package for proper placement. To apply decals, cut each out, dip in lukewarm water for 30 seconds or until it uncurls. Slip decal off backing sheet and onto model. Blot away excess water. For best results, let decals dry overnight and apply a coat of clear gloss paint to protect decals.

NOTE: Extra fin customizing decals are included.

Procedure

Remove the launch system by removing the safety key. Always be sure the key is disengaged when hooking the igniter leads up. Slide the rocket down the guidance rail or rod of your launcher. Make sure the rocket is free to move. Attach the micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Hold the rocket from your rocket as far as the launch wire will permit (at least 15 feet) from the launch area and follow all range safety procedures. Release the launch system by inserting the safety key. Be ready to launch! Remove the safety key from system after successful launch.

Follow the Model Rocket Safety Code when flying your rocket.



National Association of Rocketry MODEL ROCKET SAFETY CODE

1. **Construction**—My model rockets will be made of lightweight materials such as paper, wood, rubber, and plastic, without any metal as structural parts.
2. **Engines**—I will use only pre-loaded factory-made NAR Certified model rocket engines in the manner recommended by the manufacturer. I will not alter or dismantle model rocket engines or their ingredients in any way or attempt to reload these engines.
3. **Recovery**—I will always use a recovery system in my rockets that will return them safely to the ground so that they may be flown again. I will use only flame-resistant recovery wadding in my rockets.
4. **Weight Limits**—My model rocket will weigh no more than 1500 grams (53 ozs.) at lift-off, and the engines will contain no more than 125 grams (4.4 ozs.) of propellant. My model rockets will weigh no more than the engine manufacturer's recommended maximum lift-off weight for the engines used or will use the engines recommended by the manufacturer for my rocket.
5. **Stability**—I will check the stability of my model rockets before their first flight, except when launching models of already proven stability.
6. **Payloads**—My model rockets will never carry live animals or payloads that are intended to be flammable or explosive.
7. **Launch Area**—I will launch my model rockets outdoors in a cleared area, free of tall trees, power lines, and buildings. I will ensure that people in the vicinity are aware of the pending rocket launch and are in a position to see the rocket's lift-off before I begin my audible 5-second countdown.
8. **Launcher**—I will launch my model rockets from a rod or other device which provides rigid guidance until the rocket has reached a speed adequate to ensure a safe flight path. To prevent accidental eye injury, I will always place the launcher so that the end of the rod is above eye level or will cap the end of the launch rod when approaching it. I will cap or disassemble my launch rod when not in use and will never store it in an upright position. The launch device will have a jet deflector to prevent the engine exhaust from hitting the ground directly. I will always clear the area around my launch device of brown grass, dry weeds, and other easy-to-burn materials.
9. **Ignition System**—The system I use to launch my model rockets will be remotely controlled and electrically operated and will contain a switch that will return to "off" when released. The system will contain a removable safety interlock in series with this firing switch. When launching, all persons will remain at least 15 feet away from any model rocket when igniting engines totalling 30 N-sec of total impulse or less and at least 30 feet when igniting engines totalling more than 30N-sec total impulse. I will use only electrical igniters which will ignite my rocket engine within one second of actuation of the launching switch.
10. **Launch Safety**—I will not let anyone approach a model rocket on a launcher until I have made sure that the safety interlock has been removed or the battery has been disconnected from my launcher. In the event of a misfire, I will wait one minute before allowing anyone to approach the launcher.
11. **Flying Conditions**—I will launch my model rocket only when the wind is less than 20 miles per hour, and under conditions where the model will not fly into clouds, fly near aircraft in flight, or be hazardous to people or property.
12. **Launch Area**—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.
13. **Launch Angle**—I will not launch rockets so their flight path will carry them against targets. My launch device will be pointed within 30 degrees of vertical. I will never use model rocket engines to propel any device horizontally.
14. **Recovery Hazards**—If a model rocket becomes entangled in a power line or other dangerous place, I will not attempt to retrieve it.



Model Rectifier Corporation
200 Carter Drive
Edison, New Jersey 08817

Model Rectifier Corporation © 1990

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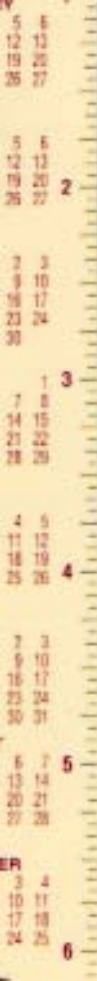
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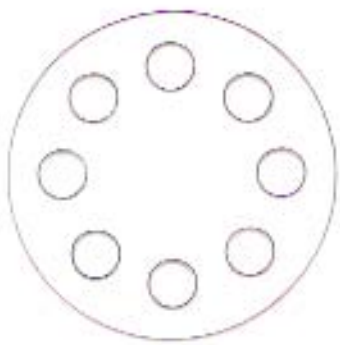
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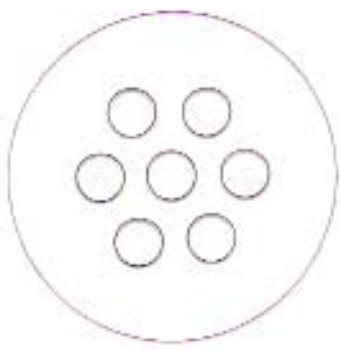




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