



Kevlar Alterations:

During flight of our prototype we noticed that the Kevlar Thread we were using broke after 2-3 flights. We imagine this fact would have you question the meaning of Essence in our name, so we have corrected that situation. In doing so, we have the requirement of this extra page since we can not afford to re-print the entire set of instructions.

PLEASE MAKE ONLY THE FOLLOWING CHANGES:

Step B – Kevlar: “Out of the provided Kevlar cut (if necessary), into (2) two 9” Lengths and (2) two 13” Lengths. **Note:** You may have been provided a kit with all the lengths pre-cut, or in two pieces each 22” long to get a 9” and 13” from each piece.”, should now read, “Out of the provided Kevlar cut (75”), into (2) two 18” Lengths, (1) one 26” Length, and (1) one 13” Length.”

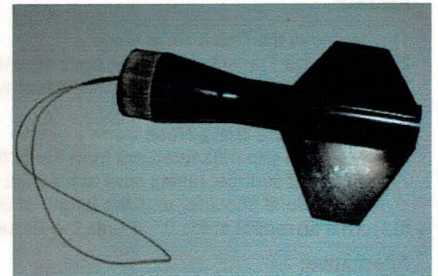
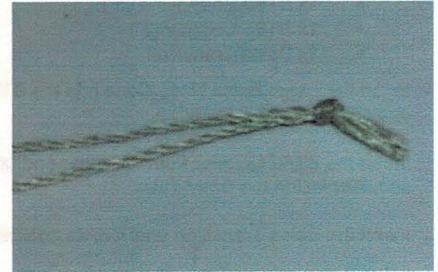
Upper Rocket: Step 1B – Shock Tether and Cord: No changes are necessary. This shock tether is not taking the stress that the Rocket Bottom Tethers are. We have provided a stronger-than-our-prototype Kevlar as well.

Transition: Step 2A – Kevlar Mount: “Thread the Kevlar Shock Tether through the hole and pull out the bottom. Tie it with a two-half hitch knot. Slide it almost tight. Thread the Kevlar through the Transition and pull out at the top. Slide the knot so that it is now even with the inside hole. Pull the knot tight.” Should now read, “Fold a 26” Length of Kevlar Shock Tether exactly in half. Thread the two ends of the Kevlar through the hole and pull them out the bottom. Tie them them with a two-half hitch knot. Slide it almost tight. Thread the newly formed continuous loop of Kevlar through the Transition and pull out at the top. Slide the knot so that it is now even with the inside hole. Pull the knot tight.”

Cluster: Step 3A – Tube Assembly: “Tie a double-knot in one end of the Kevlar Shock Tether (close to the end).” Should now read: “Fold an 18” Length of Kevlar Shock Tether exactly in half. Tie a double-knot at the loose ends (close to the ends), creating a continuous loop.”

Futuristic: Step 4E– Kevlar Mount: “Tie a single-knot in one end of the Kevlar Shock Tether (close to the end).” Should now read: “Fold an 18” Length of Kevlar Shock Tether exactly in half. Tie a double-knot at the loose ends (close to the ends), creating a continuous loop.”

Step C – Kevlar Loops: This step is no longer necessary since each of the Rocket Bottoms now have a loop. This also makes it much easier to thread through the hole in the Parachute Cup.



Kevlar Breaks:

If it does break, all is not loss. Follow the steps below to re-attach:

Transition:

- Use a small file to clean the inside edge of the Balsa transition of ejection blackness to expose the balsa
- Fold a new 18” Length of Kevlar Shock Tether exactly in half
- Tie a double-knot at the loose ends (close to the ends), creating a continuous loop.
- Lay the double-knot about 1” inside the Transition and place a large amount of 5-Minute Epoxy under/over it
- Cover with a square of paper towel so that it is completely covered. Coat the paper towel with 5-Minute Epoxy

Cluster:

- Use a small file to clean the inside edge of one of the 18mm cluster tubes to expose the paper
- Fold a new 18” Length of Kevlar Shock Tether exactly in half
- Tie a double-knot at the loose ends (close to the ends), creating a continuous loop.
- Use some paper, or card stock, to make a 3-fold paper template
- Lay the double-knot into the 3-fold paper template and glue with either Yellow or 5-Minute Epoxy
- Insert and glue the 3-fold paper mount about 1” inside the 18mm tube, so that the Kevlar will naturally come out of the tube where the three tubes are joined (similar to coming out of the center joint)

Futuristic:

- Use a small file to clean the inside edge of one of the 24mm tube
- Repeat Step 4E

Deployment Issues:

If done correctly Step 1H will prevent any Parachute deployment issues, however, if you find that the Parachute Cup is staying in the Rocket Top then repeat Step 1H to get a looser fit.

If you find that the Parachute is staying in the Rocket Top, even after the Parachute Cup has been pulled out. Check the length of your Shroud lines and where the Parachute is attached, Steps D and E.

Tolerance Build-Up:

In the production of this kit we have noticed that some “tolerance build-up” issues may be present in your kit. One of the following adjustments will need to be made for a successful fit of the Upper Rocket to any Bottom Rocket.

Step 1 – Test Fit:

- 1x Large Balsa Nose Cone (6.5")
- 1x BT60 Body Tube (5")
- 1x BT60 Coupler (3")
- 1x Balsa Transition

Insert the Large Balsa Nose Cone into the BT60 Body Tube until the shoulder lip rests against the Body Tube edge.

Insert the BT60 Coupler from the other end until it rests against the Nose Cone shoulder inside the Body Tube.

Insert the Balsa Transition until it rests against the BT60 Coupler.

Is there a 1/16-1/8" gap between the Transition shoulder lip and the BT60 Body Tube?

If yes, this will need to be resolved by one of the following two ways:

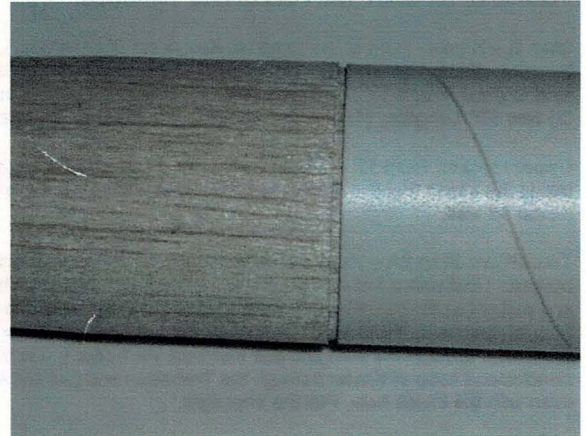
Easiest:

- 1) Remove the Balsa Nose Cone
- 2) Push the Transition in until it rests against the Body Tube edge.
- 3) Insert the Balsa Nose Cone until it rest against the BT60 Coupler.
- 4) Measure the gap
- 5) Remove the Balsa Nose Cone
- 6) Mark the gap measurement from the bottom of the Nose Cone shoulder
- 7) On a flat surface, taking care to hold the nose cone flat, sand the bottom of the Nose Cone shoulder until the length of the gap is removed.
- 8) Test fit, repeat steps 3 – 7 until the should lip rests against the Body Tube edge

Alternative:

When performing step 1D:

- 1) Insert the BT60 Coupler.
- 2) Insert the Transition in until it rests against the Body Tube edge.
- 3) Follow Step 1D to glue the Nose Cone in place until it rests against the Coupler
- 4) Remove Transition and Coupler **immediately!**



Adapters:

- Ruler
- Yellow Glue
- 1x BT20 Body Tube (3") – used for 24mm to 18mm adapter
- 1x 18mm Engine Block – used for 24mm to 18mm adapter
- 3x Centering Rings – used for 24mm to 18mm adapter
- 1x BT50 Coupler (1") – used for C's and D's in 24mm motor mounts
- 1 Estes/Quest 18mm Motor, used or unused

Glue one of the 24/18mm Centering Rings onto one end of the BT20 Body Tube. This is the top.

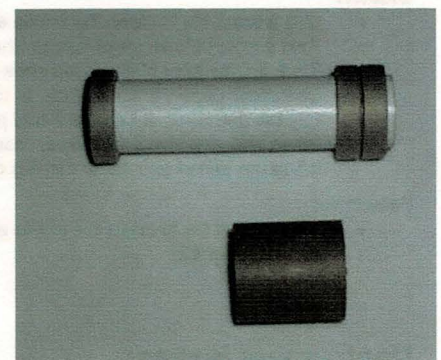
Glue the remaining two 24/18mm Centering Rings onto the opposite end of the BT20 Body Tube, leaving 1/8" exposed. This is the bottom.

Mark the 18mm motor 2 1/2" from the Ejection-end (1/4" from the Nozzle-end).

Using a scrap piece of wood, mark it 2 1/4" from one end.

Place Yellow Glue on the scrap piece of wood, slide into the BT20 Body Tube (bottom) up to the 2 1/4" mark. Apply the glue ensuring it forms a complete circle inside the body tube.

Place the 18mm Engine Blocks into the BT20 Body Tube and then push into position using the marked 18mm motor. Push evenly until the 2 1/2" mark is even with the end of the body tube. In a twisting motion remove the 18mm motor and wipe off any excess glue. Stick back into the BT20 Body Tube until it is at the 2 1/2" mark, twist and remove and wipe off any excess glue.



Recommended Durability Hint: Coat the inside of the 1" BT50 Coupler Tube with 5-Minute epoxy. Avoid getting it on the sides.

Essence Aerospace Technologies (EAT) – Triatomic

Overview:

We hope you enjoy this special release of our Triatomic. This kit is fairly straightforward, however, due to some unique flight preparation and flying options, it requires careful considerations during the build and finishing process. The most important thing to remember is to read the entire instruction set through before starting. Special attention to detail is presented throughout these instructions and we caution any deviation. EAT can not be responsible for any poor performance if built differently than described below.

Other pre-cautions:

- Do not substitute Epoxy for the White/Yellow Glue (except where noted)
- Do not substitute CA (Super Glue) for the White/Yellow Glue (except where noted)
- Do not add an Estes-type Motor Hook
- Do not Fiberglass the Fins
- Do not substitute G10 for the Basswood Fins

We're sure you will enjoy flying this rocket, especially the interchangeability. There will only a small number of them on the field. If you enjoy this kit, please let us know. If you need any assistance, please let us know. If you hated this kit, please let us know.

Tools Needed:

- Pencil
- Ruler
- Scissors
- Small Flat Screw Driver (eye-glass or PCB size)
- Hobby Knife (Sharp is very important - change the blade to start this project)
- Yellow Glue – We **strongly** recommend against substituting any other glue unless noted
- 5-Minute Epoxy
- CA Glue (Super Glue) (*optional*)
- Masking Tape
- Sand Paper (220 and 400 grit)
- Wax Paper
- Filler (Elmers' Fill-n-Finish, Light Spackle, or Bondo Glazing Putty work)
- 1 Estes E-Motor, used or unused
- 1 Estes/Quest 18mm Motor, used or unused

Kit Parts:

COMMON

- 3x 1/16" Basswood Pieces (3" x 11")
- Cardstock Templates and Fin Guides
- Kevlar Shock Tether(s)
- Large Swivel (Black)
- Decals

UPPER ROCKET

- 1x Large Balsa Nose Cone (6.5")
- 1x BT60 Body Tube (5")
- 1x BT60 Coupler (3")
- 1x 3/32" Plywood Bulkhead
- 35-40 BB's (Nose Weight)
- 1x Eye-Screw
- Elastic Shock Cord
- Mylar Parachute with Swivel
- Split Ring
- Washer
- Launch Lug

TRANSITION

- 1x Balsa Transition
- 1x BT50 Body Tube (4")

CLUSTER

- 3x BT20 Body Tube (9")
- 1x Centering Ring (Black Fiber)
- 3x 18mm Engine Blocks
- 1x Screw-Thread and Nut

FUTURISTIC

- 1x Small Balsa Nose Cone
- 1x BT20 Body Tube (7")
- 1x BT50 Body Tube (13")
- 1x BT60 Coupler (0.9")
- 1x 24mm Engine Block
- 2x Centering Rings (Black Fiber)

ADAPTORS

- 1x BT20 Body Tube (3") – used for 24mm to 18mm adaptor
- 1x 18mm Engine Block – used for 24mm to 18mm adaptor
- 3x Centering Rings – used for 24mm to 18mm adaptor
- 1x BT50 Coupler (1") – used for C's and D's in 24mm motor mounts

NOTE: Some pictures may not look exactly like the kit parts. Pictures were taken during prototype building.

Step A – Fins:

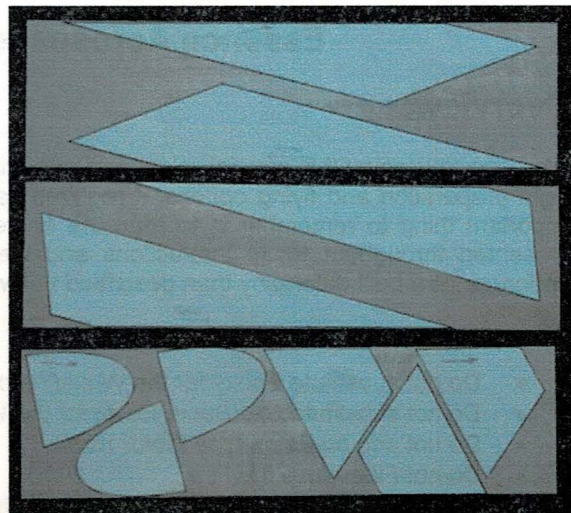
- Pencil, Ruler, Hobby Knife, Scissors
- 3x 1/16" Basswood Pieces (3" x 11")
- Cardstock Templates and Fin Guides

Cut out the fin templates from the Cardstock. Be sure to cut on the outer edge of the line.

Place templates on the base wood and trace them in the quantities printed on the templates. Take special care to orient the grain of the basswood with the grain direction indicated on the template.

Once cut, place all like fins together and sand them all to make them the same shape.

Round non-root edges if desired.



Step B – Kevlar:

- Ruler, Hobby Knife
- Kevlar Shock Tether(s)

Out of the provided Kevlar cut (if necessary), into (2) two 9" Lengths and (2) two 13" Lengths. **Note:** You may have been provided a kit with all the lengths pre-cut, or in two pieces each 22" long to get a 9" and 13" from each piece.

1) Upper Rocket:

Step 1A – Nose Weight:

- 5-Minute Epoxy
- 1x Large Balsa Nose Cone (6.5")
- 35-40 BB's (Nose Weight)
- 1x Eye-Screw

Support the Nose Cone, tip down, for this entire step. You may choose to use the BT60 Coupler or Body Tube for this.

Place all provided BB's into the hole in the Nose Cone.

Fill the hole with 5-minute epoxy.

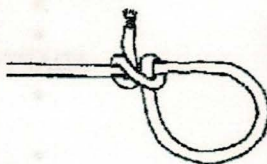
Once the hole is filled, but before the epoxy hardens, push the screw-eye into the epoxy until it makes contact with the Nose Cone shoulder. Press slightly to indent into the balsa so that it stays centered and upright.

Durability Hint: Coat the Nose Cone Shoulder Bottom with 5-Minute epoxy. Avoid getting it on the Shoulder Sides.



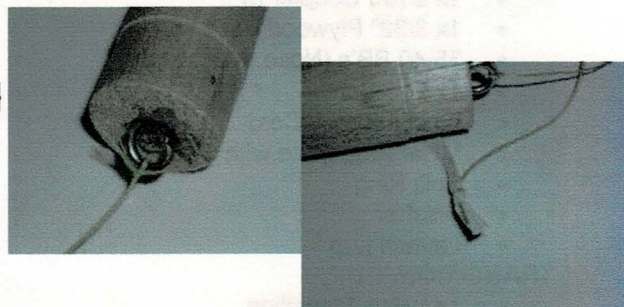
Step 1B – Shock Tether and Cord:

- Yellow Glue
- Large Balsa Nose Cone from Step 1A
- 13" Kevlar Shock Tether
- Elastic Shock Cord
- Split Ring



Thread the Kevlar Shock Tether through the Nose Cone Eye-Screw. Tie it with a two-half hitch knot. Slide tight. Put a spot of Yellow Glue on the knot.

Tie the other end of the Kevlar to the (Black or White) Elastic. Put a spot of Yellow Glue on that knot.



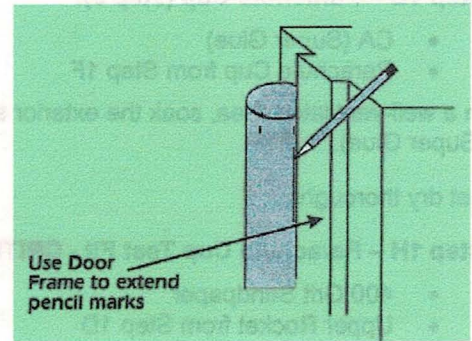
Tie the other end of the Elastic to the Split Ring. Put a spot of Yellow Glue on that knot.

Step 1C – Launch Lug:

- Pencil
- Yellow Glue
- 1x BT60 Body Tube (5")
- Launch Lug

Using the "Door Jam" method, make a single line on the BT60 Body Tube.

Using Yellow Glue, glue the Launch Lug on the line so that it is even with one end of the BT60 Body Tube. This is now the bottom edge.



Step 1D – Nose Cone:

- Yellow Glue
- Nose Cone from Step 1B
- BT60 Body Tube from Step 1C
- 1x BT60 Coupler (3")

STOP! Read Supplemental Page for fit check before continuing.

Apply an even coat of Yellow Glue to the inside upper edge (opposite side of the Launch Lug) of the BT60 Body Tube, covering about $\frac{1}{2}$ " width all away around. Smooth out with finger.

Carefully guide the Elastic and Kevlar Shock Cord through the BT60 Body Tube, avoiding the glue.

Slide the Nose Cone into the Body Tube with a twisting motion until it is all the way in.

Using a scrap piece of Balsa/Basswood, stick it into the Body Tube from the bottom and clean out any excess glue around the Nose Cone edge.

Slide in the BT60 Coupler until it hits the Nose Cone shoulder, immediately remove and wipe off any excess glue. Repeat. Clean off the BT60 Coupler.

Set assembly aside, Nose Cone down, to dry.

Durability Hint: Soak the inside-bottom 1" of the BT60 Body Tube and edge with CA. Doing so may require sanding later with 400 grit paper for a good fit.

Step 1E – Parachute Cup (step 1):

- Hobby Knife, Ruler
- 1x BT60 Coupler (3")

Using your Hobby Knife as a drill, make a small hole in the center of the Bulkhead. This should be about $\frac{1}{8}$ " or less in diameter. (Note: Picture shows hole drilled after glued in place – Step 1F. Your choice.)

Measure $\frac{1}{4}$ " down from the Bulkhead side and cut a $\frac{1}{4}$ " hole. This is the pressure relief hole for the Parachute Cup.



Step 1F – Parachute Cup (step 2):

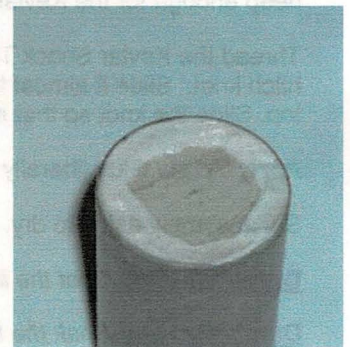
- Yellow Glue
- 1x BT60 Coupler (3")
- 1x $\frac{3}{32}$ " Plywood Bulkhead

Place a ring of Yellow Glue on the inside edge closest to the $\frac{3}{4}$ " hole in the coupler. Insert the plywood bulkhead and push it in until it is recessed by $\frac{1}{16}$ "- $\frac{1}{8}$ ".

Once tacked, then place a liberal amount of Yellow Glue (or 5-Minute Epoxy) around the outside edge of the Bulkhead.

Set assembly aside, Bulkhead up, to dry.

Durability Hint: Coat the entire wood Bulkhead with 5-Minute epoxy.



Step 1G – Parachute Cup (step 3):

- CA (Super Glue)
- Parachute Cup from Step 1F

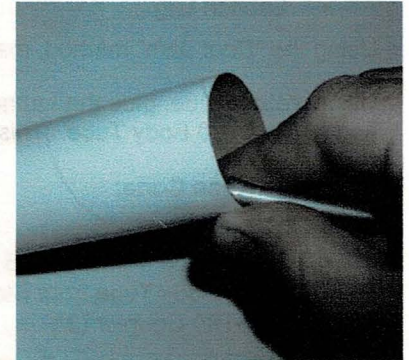
In a well-ventilated area, soak the exterior sides (tube) of the Parachute Cup with CA (Super Glue).

Let dry thoroughly.

Step 1H – Parachute Cup Test Fit - **CRITICAL**:

- 400 Grit Sandpaper
- Upper Rocket from Step 1D
- Parachute Cup from Step 1F

Apply pressure on the open end of the Upper Rocket by placing a Hobby Knife handle or Pencil on the inside and pressing with your finger on the outside of the edge of the BT60 Tube. The objective is to take out any slight inward flare that may have been caused when cutting the BT60 Tube.



Slide the Parachute Cup into the Upper Rocket. When inserted up to the pressure relief hole, the Parachute Cup should fall out easily when the Upper Rocket is swung smoothly while grasping the Nose Cone.

Insert the Parachute Cup, Bulkhead first. The fit should be smooth. Sand as necessary. Looser **IS** better

Insert the Parachute Cup, Bulkhead down, completely into Upper Rocket. The fit should be smooth. A harder swing of your arm should make the Parachute Cup come out. It will be more difficult because it will create a slight vacuum until the pressure relief hole is cleared. If it gets stuck, use a paperclip to get it out and sand the outside a bit more.

2) Transition Body:

Step 2A – Kevlar Mount:

- Ruler, Hobby Knife
- Small Flat Screw Driver
- Yellow Glue
- 13" Kevlar Shock Tether
- 1x Balsa Transition

Inspect the Balsa Transition and identify the thickest part of the narrow shoulder. On this side, use your Hobby Knife to drill a hole through $\frac{1}{4}$ " from the top of the narrow shoulder. The hole should be only big enough to thread the Kevlar Shock Tether through.

Using a small (eye-glass) flat screw driver and holding it at a 45 degree angle, create a channel from the hole to the bottom of the narrow shoulder. Repeat on the other side to make a nice "v-channel". This does not have to be deep. Just deep enough for the Kevlar Shock Tether to sit in.

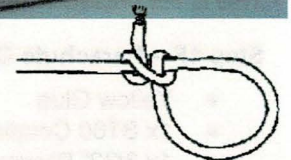
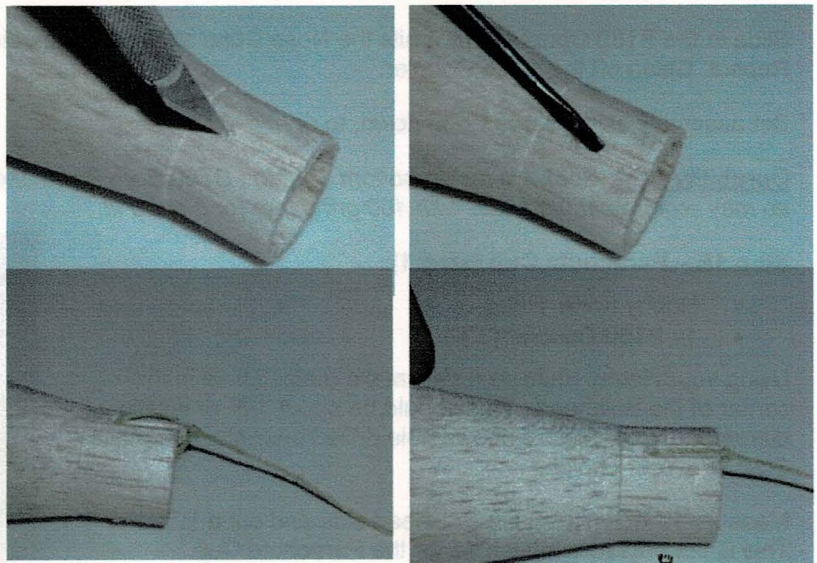
Thread the Kevlar Shock Tether through the hole and pull out the bottom. Tie it with a two-half hitch knot. Slide it almost tight. Thread the Kevlar through the Transition and pull out at the top. Slide the knot so that it is now even with the inside hole. Pull the knot tight.

Apply Yellow Glue liberally to the inside of the Transition where the Kevlar is attached.

Set assembly aside to dry.

Durability Hint: Coat the inside of the Transition with a thin coat of 5-Minute Epoxy.

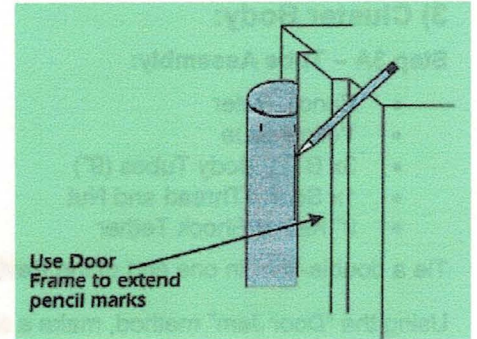
Durability Hint: Soak the Upper Shoulder of the Transition with CA. Doing so may require sanding for a good fit into the Upper Rocket.



Step 2B – Body Tube Attachment:

- Pencil
- Yellow Glue
- Fin Guide
- Transition Assembly from Step 2A
- 1x BT50 Body Tube (4")
- An E-Motor, used or unused

Place the BT50 Body Tube on the Fin Guide and mark the position for the 3 Fins. Use the center of each line on the Guide to place a small dash on the bottom of the BT50 Body Tube.



Extend each of those dash lines using the "Door Jam" method.

Apply enough Yellow Glue to fill the drilled hole and the v-channel on the Transition Assembly.

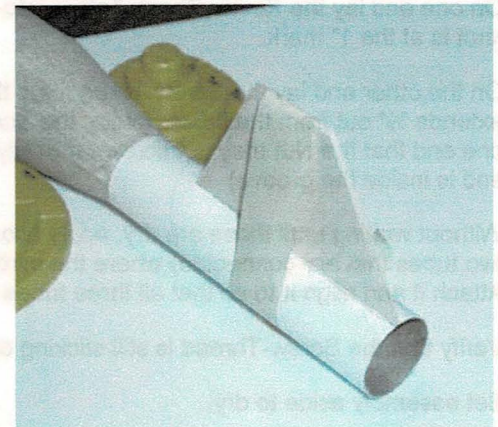
Apply a continuous ring of Yellow Glue on the inside of the BT50 Body Tube. Smooth out with a scrap piece of balsa or basswood. Slide the Transition into the BT50 Body Tube until the shoulder is completely seated. Hold in place while you slide in an E-Motor into the other side of the BT50. Push the E-Motor until it hits the Transition shoulder. Immediately turn and remove. Wipe off any excess glue. Repeat. Leave the E-Motor out.

Set assembly aside, Body Tube up, to dry.

Step 2C – Fin Attachment:

- Yellow Glue
- 5-Minute Epoxy
- Masking Tape
- Lower Transition/Body Tube Assembly from Step 2B
- 3x Trapezoidal Basswood Fins

Using the three lines drawn in Step 2B and Yellow Glue, attach each of the three fins to the BT50 Body Tube so that they are even with the Aft-end of the tube and the basswood grain is parallel to the leading edge. Use Masking Tape to ensure they stay straight.



When complete use 5-Minute Epoxy to make fin fillets.

Durability Hint: Soak the inside-bottom 1" of the BT50 Body Tube and edge with CA. Doing so may require sanding with 400 grit paper for the motor to have a good fit.



3) Cluster Body:

Step 3A – Tube Assembly:

- Pencil, Ruler
- Yellow Glue
- 3x BT20 Body Tubes (9")
- 1x Screw-Thread and Nut
- 9" Kevlar Shock Tether

Tie a double-knot in one end of the Kevlar Shock Tether (close to the end).

Using the "Door Jam" method, make a single line on one of the BT20 Body Tubes.

Run a line of Yellow Glue down the length of that line. Attach another BT20 Body Tube to that glue. Place this on a flat surface (protected with Wax Paper if needed). Align so that the two tubes are even and flat.

Without disturbing the two tubes alignment (Yellow Glue should tack within minutes), place a mark 1" from each end.

Place a liberal bead of Yellow Glue in the joint of the two tubes, at both ends, so that it fills the groove for 1" from each end.

On one end lay the Kevlar Shock Tether into the glue filled groove so that the knot is at the 1" mark.

On the other end lay the Screw-Thread into the glue filled groove so that it extends $\frac{1}{2}$ " out from the tubes. (Note: the Screw-Thread has been cut and has one end that the Nut may not screw on easily and may be sharp, be sure that end is inside the groove)

Without waiting until these are dry, apply two lines of glue (one on each of the two tubes that are connected) where the third BT20 Body Tube will attach. Attach it and align it so that all three tubes are even.

Verify that the Screw-Thread is still sticking out only $\frac{1}{2}$ ". It will slide if needed.

Set assembly aside to dry.

Step 3B – Thrust Ring Installation:

- Pencil, Ruler
- Yellow Glue
- Body Tube Assembly from Step 3A
- 3x 18mm Engine Blocks
- 1 Estes/Quest 18mm Motor, used or unused

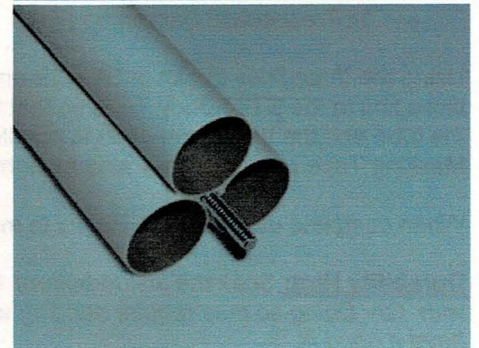
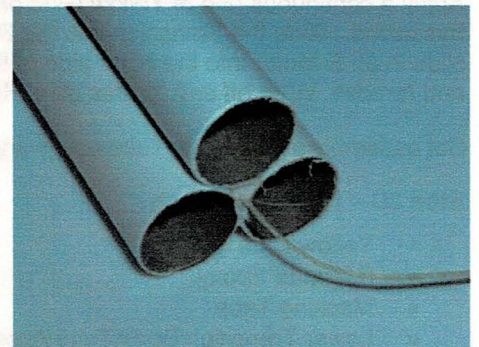
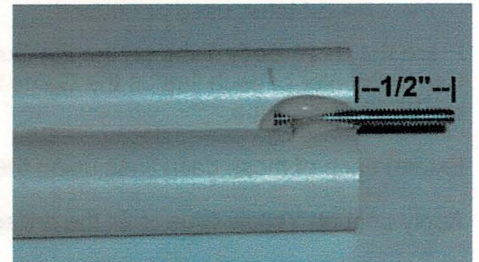
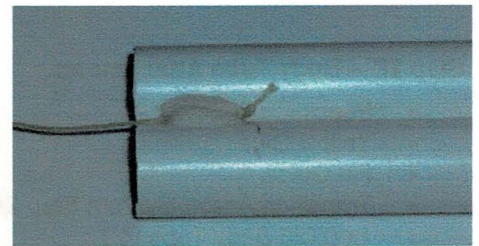
Mark the 18mm motor $2\frac{1}{2}$ " from the Ejection-end ($\frac{1}{4}$ " from the Nozzle-end). *Optional:* Wrap masking tape around the motor, covering the lower $\frac{1}{4}$ ", to create a thrust ring. This will prevent over insertion and will make the placement of the thrust rings identical.

Using a scrap piece of wood, mark it $2\frac{1}{4}$ " from one end.

Place Yellow Glue on the scrap piece of wood, slide into one of the BT20 Body Tubes from the end with the Screw-Thread sticking out, up to the $2\frac{1}{4}$ " mark. Apply the glue ensuring it forms a complete circle inside the body tube.

Place one of the 18mm Engine Blocks into the BT20 Body Tube and then push into position using the marked 18mm motor. Push evenly until the $2\frac{1}{2}$ " mark is even with the end of the body tube. In a twisting motion remove the 18mm motor and wipe off any excess glue. Stick back into the BT20 Body Tube until it is at the $2\frac{1}{2}$ " mark, twist and remove and wipe off any excess glue.

Repeat for the remaining two BT20 Body Tubes.



Step 3C – Upper Centering Ring Attachment (step 1):

- Yellow Glue
- Body Tube Assembly from Step 3B
- Upper Rocket Section and Parachute Cup Assembly from Step 1H
- 1x Centering Ring (Black Fiber)

Holding the Upper Rocket Section Assembly with the nose cone down, ensure the Parachute Cup is in place and pushed up against the nose cone.

Insert the Black Fiber Centering Ring so that it is lying on the Parachute Cup. This should not be a tight fit. If it is, sand the outer edge of the Centering Ring.

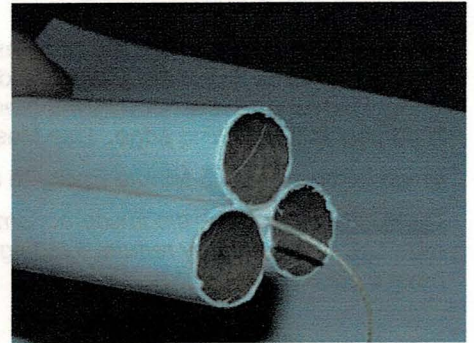
Push the Kevlar Shock Tether into one of the 18mm Body Tubes so that it is out of the way. Place a bead of Yellow Glue around the upper-end edges of the Cluster Body Tube Assembly.

Slide into the Upper Rocket Section and press evenly. Slowly slide the Cluster Body Tube Assembly back out and the Centering Ring should be tacked to it.

Verify that the Centering Ring is even all the way around with reference to each Body Tube on the Cluster Assembly.

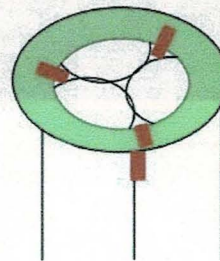
Pull the Kevlar Shock Tether back out of the tube.

Stand on its end on wax paper until dry.



Step 3D – Upper Centering Ring Attachment (step 2):

- Scissors
- Yellow Glue
- Small Flat Screw Driver
- 3x Cluster Support Tabs (From Cardstock)
- Body Tube Assembly from Step 3C



Cut out the Support Tabs from the Cardstock. Fold each of the Support Tabs to form an "L" and then test their fit into the gaps between the Centering Ring and the Body Tubes. (Notice the "L" lays over the Centering Ring Top and through the gap between the Centering Ring and Tube grooves/joint)

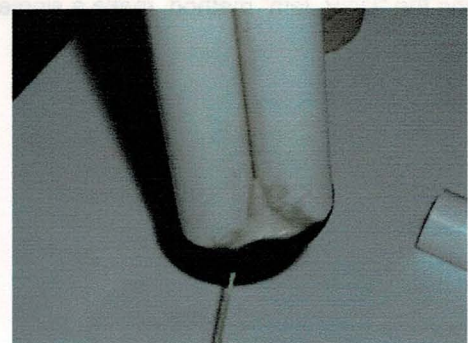
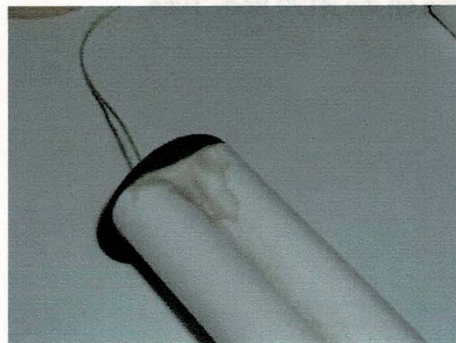
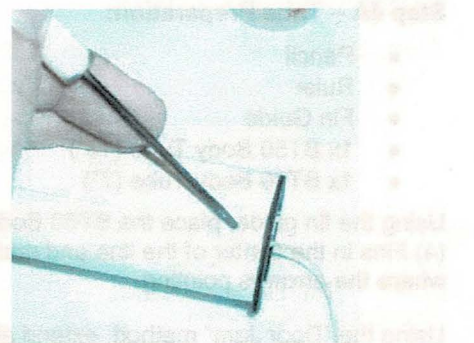
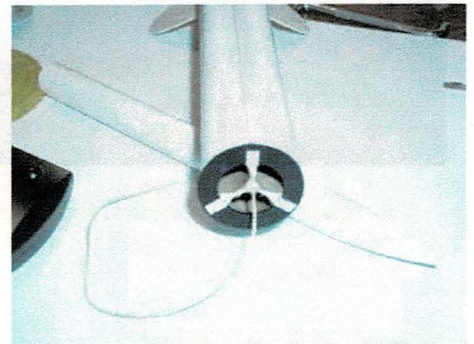
Place Yellow Glue on each Support Tab's Top and glue to the Centering Ring Top.

Once tacked, use a Small Flat Screw Driver to form the bottom portion into the groove between each body tube.

Place glue under each formed bottom section (of the Support Tab) and press in place.

Once tacked, place a large amount of Yellow Glue all around the bottom portion of the Support Tabs, filling the gaps and the holes. Do not extend glue beyond 1" from the top or it will show once finished.

Place on its end on wax paper to dry.



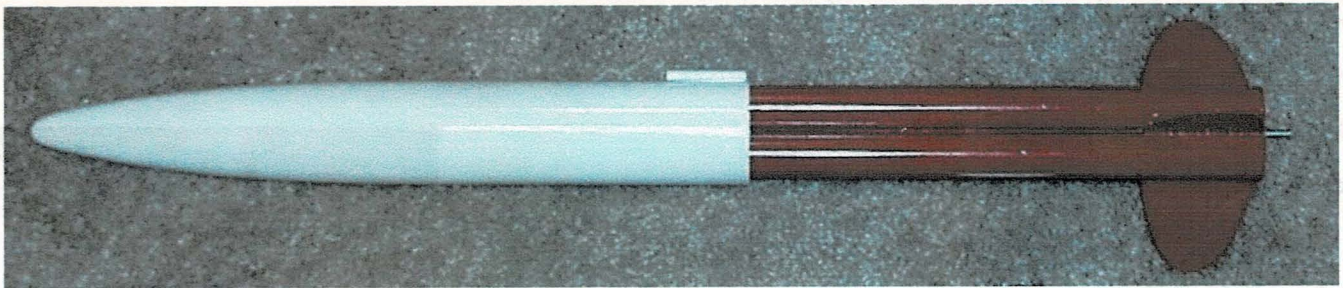
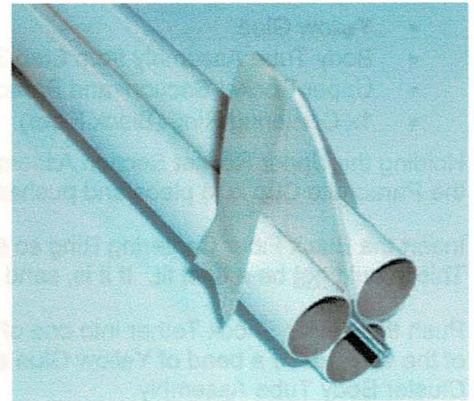
Step 3E – Fin Attachment:

- Yellow Glue
- 5-Minute Epoxy
- Masking Tape
- Lower Cluster/Body Tube Assembly from Step 3C
- 3x Elliptical Basswood Fins

Using the grooves between the tubes as the guide and Yellow Glue, attach each of the three fins to the Cluster Body Tube so that they are even with the Aft-end (where the retainer screw-thread is) of the tube and the basswood grain is parallel to the leading edge. Use Masking Tape to ensure they stay straight.

When complete use 5-Minute Epoxy to make fin fillets.

Durability Hint: Soak the inside-bottom 1" of each BT20 Body Tube and edge with CA. Doing so may require sanding with 400 grit paper for the motor to have a good fit.



4) Futuristic Body:

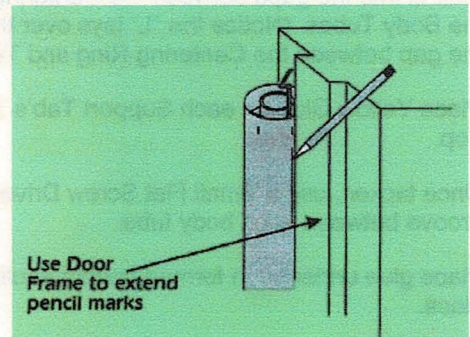
Step 4A – Tube Preparation:

- Pencil
- Ruler
- Fin Guide
- 1x BT50 Body Tube (13")
- 1x BT20 Body Tube (7")

Using the fin guide, place the BT50 Body Tube on the 24mm Circle. Mark the (4) Fins in the center of the line and mark the position of the BT20 Tube where the arrow is pointing.

Using the "Door Jam" method, extend all the lines the entire length of the tube. Label each line.

Using the "Door Jam" method, make a single line on the BT20 Body Tube.



Step 4B – Coupler Assembly:

- Yellow Glue
- Body Tube Assembly from Step 4A
- 1x BT60 Coupler (0.9")
- 2x Centering Rings (Black Fiber)

Test the Centering Rings for fit onto one end of the BT50 Body Tube. They should slide but not be too loose.

Apply a ring of Yellow Glue on the end of the BT50 Body Tube. Slide one of the Black Fiber Centering Rings onto the end of the Body Tube. Invert the Body Tube and place on its end on wax paper. Press down on the back of the Centering Ring so that the Centering Ring is even with the Body Tube End. Let it tack up.

Apply a good fillet of Yellow Glue on the back of the Centering Ring where it meets the Body Tube.

Apply a ring of Yellow Glue on the outside-back edge of the Centering Ring. Slide the BT60 Coupler down the BT50 Body Tube until it rests on the Centering Ring and is even all around.

Apply a ring of Yellow Glue on the second Centering Ring. Slide it down the BT50 Body Tube until it rest on top of the BT60 Coupler. Be sure it is even all around.

Apply a good fillet of Yellow Glue on the back of the second Centering Ring where it meets the Body Tube.

Set aside, coupler down, to dry.

Step 4C – Upper Tube Assembly:

- Yellow Glue
- Body Tube Assembly from Step 4B
- 1x Small Balsa Nose Cone
- 1x BT20 Body Tube (7")

Apply a ring of Yellow Glue to the inside edge on one side of BT20 Body Tube. Slide the Small Balsa Nose Cone, with a twisting motion, into the BT20 Body Tube. (NOTE: You may choose to skip this step until after finishing the rocket.)

Run a line of Yellow Glue down the length of the BT20 Tube line. Attach to the BT50 Body Tube on the line labeled for the BT20 Tube. Align so that the two tubes are even at the rear of the BT50 Body Tube.

Set aside to dry.

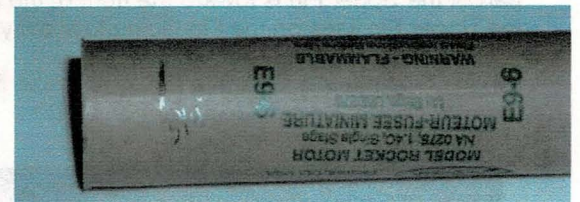
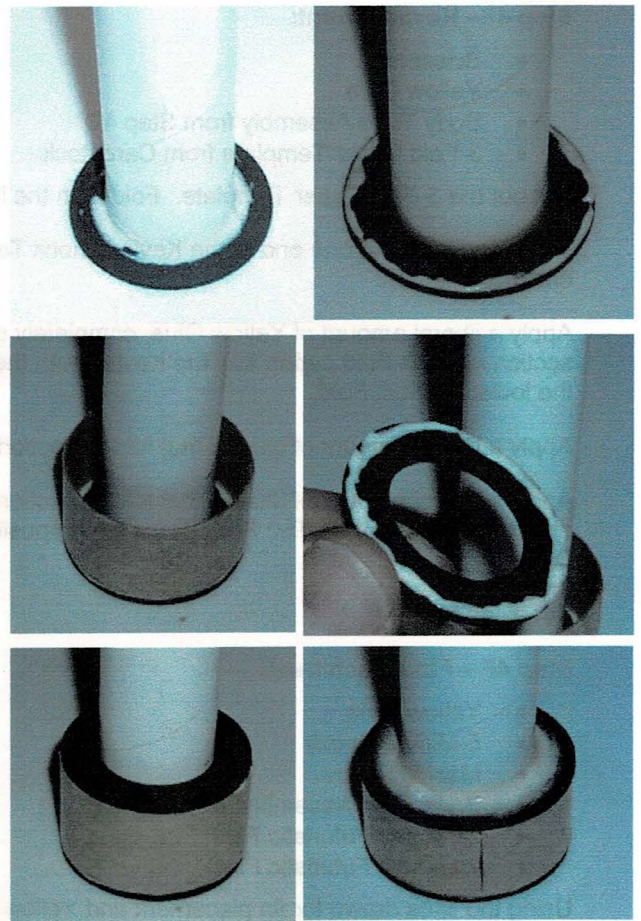
Step 4D – Upper Tube Assembly:

- Pencil, Ruler
- Yellow Glue
- Body Tube Assembly from Step 4C
- 1x 24mm Engine Block
- An E-Motor, used or unused

Mark the 24mm E-motor 3 ¼" from the Ejection-end. *Optional:* Wrap masking tape around the motor, up to the 3 ¼" mark, to create a thrust ring. This will prevent over insertion. of the thrust ring. Using a scrap piece of wood, mark it 3" from one end.

Place Yellow Glue on the scrap piece of wood, slide into the BT50 Body Tube up to the 3" mark. Apply the glue ensuring it forms a complete circle inside the body tube.

Place the 24mm Engine Block into the BT50 Body Tube and then push into position using the marked 24mm E-motor. Push evenly until the 3 ¼" mark is even with the end of the body tube. In a twisting motion remove the 24mm motor and wipe off any excess glue. Stick back into the BT50 Body Tube until it is at the 3 ¼" mark, twist and remove and wipe off any excess glue.



Step 4E– Kevlar Mount:

- Scissors
- Yellow Glue
- Body Tube Assembly from Step 4D
- 3-Fold Paper Template from Cardstock

Cut out the 3-Fold Paper Template. Fold it on the lines.

Tie a single-knot in one end of the Kevlar Shock Tether (close to the end).

Apply a liberal amount of Yellow Glue, completely covering the lower section of the 3-Fold paper. Lay the Kevlar, with the knot in the center of the lower section. Fold.

Apply a liberal amount of glue to that folded section. Fold.

Apply a liberal amount of glue to that folded section and place inside, about 1" down, of the BT50 Body Tube top (opposite of the motor mount).

Set aside to dry.

Step 4F – Fin Attachment:

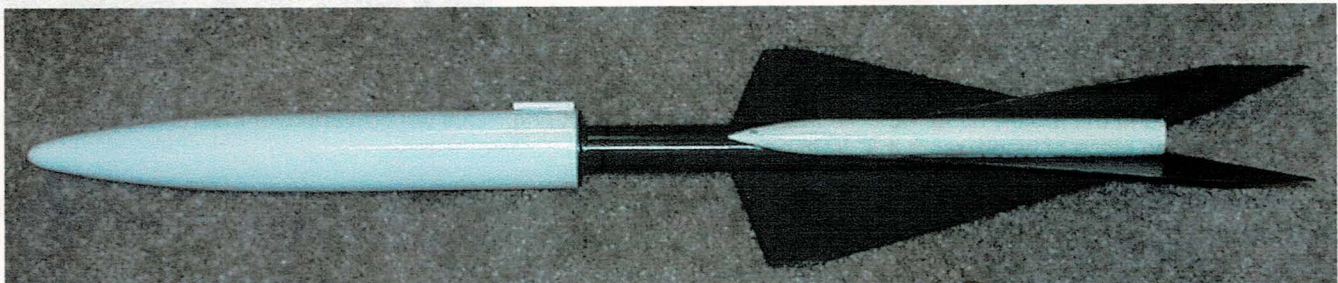
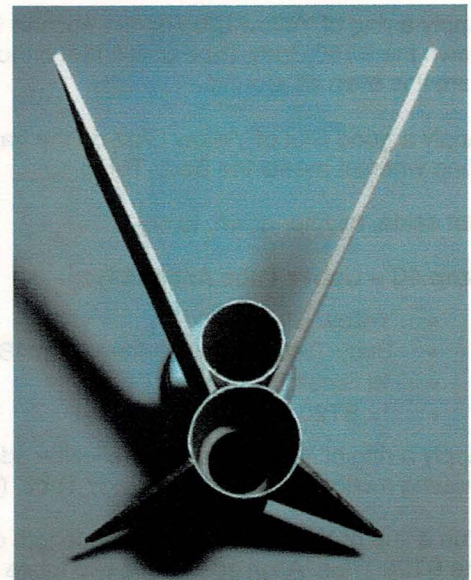
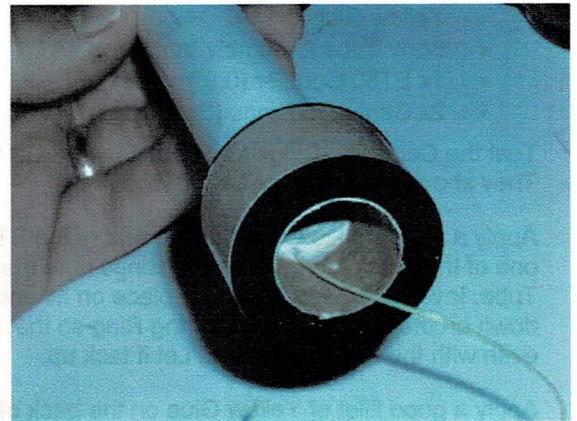
- Yellow Glue
- 5-Minute Epoxy
- Masking Tape
- Body Tube Assembly from Step 4E
- 2x Upper Futuristic Fins
- 2x Lower Futuristic Fins

Using the lines drawn for fin placement and Yellow Glue, attach the two Lower Fins. The thinnest part of the Lower Fin is toward the rear of the rocket. Use the Fin Guide to ensure alignment. Use Masking Tape to ensure the fins stay straight.

Place the Body Tube assembly onto the Futuristic Fin Guide and mark the two contact points of the Upper Fin to the BT20 Tube (these are Red Arrows). Then, without glue, place the Upper Fin in place and mark where the Fin no longer touches the BT20 Tube (toward the front). Use these as a guide.

Using the lines drawn for fin placement, BT20 Tube contact and Yellow Glue, attach the two Upper Fins. Place glue on the root edge of the Upper Fins and a line of glue on the BT20 Tube, about half way up from the rear. The thinnest part of the Upper Fin is toward the front of the rocket. Use the Fin Guide to ensure alignment. (You may choose to cut out the Upper Fin lines on the Fin Guide to allow you to slide them into it). Use Masking Tape to ensure the fins stay straight.

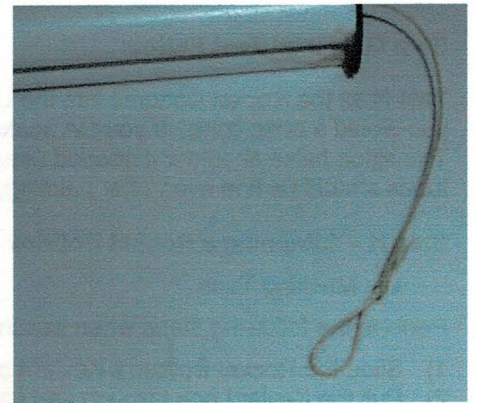
When complete use 5-Minute Epoxy to make fin fillets.



Step C – Kevlar Loops:

- All Three (3) Rocket Bottoms

Tie a 1" loop-knot in end of the Kevlar Shock Tether on each Rocket Bottom. Be sure it is tight. Do NOT make a double-knot. This knot is what must fit into the drilled hole in the center of the Parachute Cup Bulkhead.



Step D – RocketHead Parachute:

- Ruler
- Hobby Knife
- Yellow Glue
- Mylar Parachute

Remove the provided Swivel from the Kevlar Shroud Lines on the RocketHead Parachute.

Measure from the Parachute 12" and cut off the remaining Kevlar Shroud lines. You should now have 12" Shroud lines.

Thread the newly sized Shroud Lines through the Swivel and tie (all together) a double-knot. Put a spot of Yellow Glue on that knot.

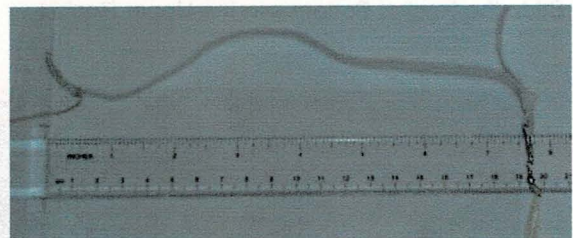
Step E – Parachute Attachment:

- Ruler
- Upper Rocket
- Mylar Parachute

Measure 8" from the Upper Rocket Kevlar to Elastic Knot onto the Elastic. This position is critical: Do not alter.

Tie a small (~1/8") loop in the Elastic.

Attach the Parachute Swivel to that loop.

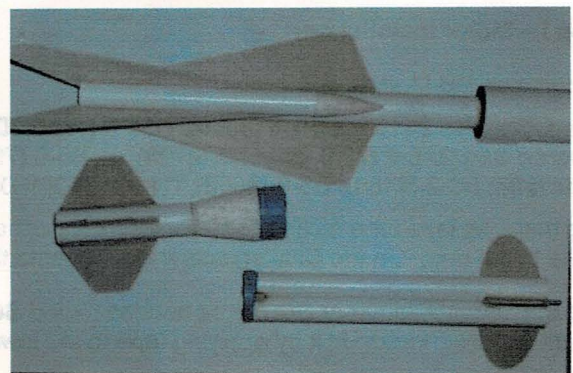


NOTE: You may choose to leave the parachute off until after the rocket is finished.

Step F - Finishing:

Finishing the rocket is really up to you but we do have the following recommendations:

- Transition: Push the Kevlar Shock Tether into the top and use masking tape to protect the sides and top of the Balsa Transition. Finish separate from the Upper Rocket.
- Cluster: Push the Kevlar Shock Tether into the top and use masking tape to protect 1/4" – 1/2" of the sides and centering ring. Use masking tape to protect the top of the centering ring. Use masking tape to protect the Screw-Threads. Finish separate from the Upper Rocket.
- Futuristic: Push the Kevlar Shock Tether into the top. Load the Kevlar/Elastic Shock Cord into the Parachute Cup and insert into the Upper Rocket. Insert the Futuristic Bottom into the Upper Rocket. Finish attached to the Upper Rocket.
- Use Elmer's Fill-n-Finish on the Balsa parts, or seal with a Balsa Sealer
- Plasti-Kote Sandable/Filling Primer is excellent for filling nooks and crannies of Balsa, Basswood, and tube spirals.
- We recommend White for the Upper Rocket, Blue for the Transition, Red for the Cluster, and Green for the Futuristic. But we are kind of plain, so show us what you can do!
- The Decals are water-transfer type and have been coated with "Future" or Microscale coating to protect them. They are thin, so be careful. They need about 15-25 seconds of soaking to transfer



Step G – Final Test Fitting:

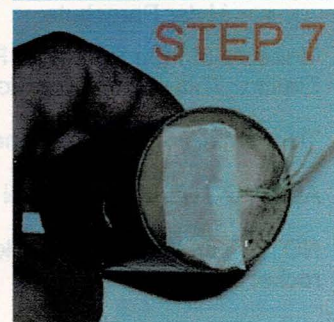
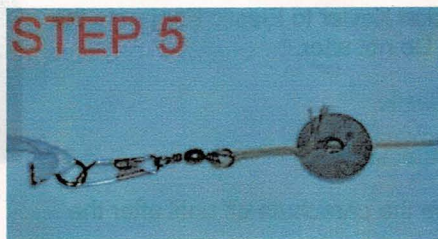
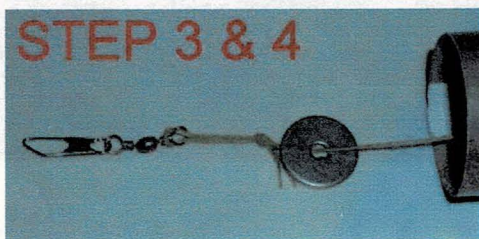
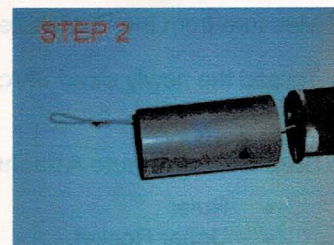
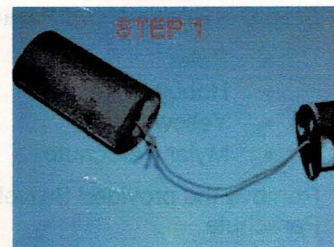
Test fit all the Rocket Bottoms into the Upper Rocket. They should not be too tight. They should fit about the same fit as you would a nose cone. If you CA soaked the inside Upper Rocket tube, then sand with 400 grit paper. Sand the Transition balsa shoulder if needed (least likely unless you CA soaked it). Sand the Cluster upper Centering Ring (the tubes should be fine even after painting; they may need tape). Sand the Futuristic Coupler assembly as needed.

Step H – Attaching a Rocket Bottom/ Preparing for Flight:

- Masking Tape

Perform the following steps when attaching a Rocket Bottom to the Upper Rocket:

- 1) Slide the Rocket Bottom's Kevlar Loop through the hole in the Parachute Cup
- 2) Pull the Kevlar Loop through and slide the Parachute Cup down to the Rocket Bottom
- 3) Thread the Kevlar Loop through the Parachute Cup Washer
- 4) Thread the Kevlar Loop through the **Large Swivel (Black)** and loop it back through
- 5) Attach the Parachute Cup Swivel to the Elastic Shock Cord Ring
- 6) Slide the Parachute Cup up the Kevlar Loop until it rests on the Washer and Swivel
- 7) Fold the Kevlar Loop over and place a piece of masking tape just covering the hole in the Bulkhead
- 8) Tri-fold the parachute and wrap the shroud lines around it
- 9) Load the parachute and Elastic Shock Cord into the Parachute Cup
- 10) Slide Parachute Cup into the Upper Rocket
- 11) Push the remaining Kevlar into the Rocket Bottom body tube
- 12) Slide the Rocket Bottom into the Upper Rocket



Step I – Motor Installation:

Recommended Motors:

Transition: B6-2 (195ft), C6-5 (590ft), C11-5 (565ft), D12-7 (1275ft), E9-8 (2465ft)

Cluster: 3x 1/2A6-2 (73ft), 3x A8-3 (270ft), 3x B6-6 (790ft), 3x C6-7 (1735ft)

Futuristic: B6-2 (115ft), C6-3 (355ft), C11-3 (350ft), D12-5 (840ft), E9-6 (1750ft)

Use masking tape for a friction fit of all motors except on the Cluster Rocket. Push motors up to the thrust ring. On the Cluster, screw the Nut onto the Thread until tight against motors.

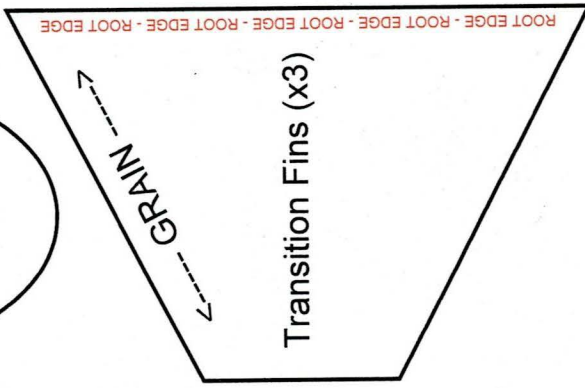
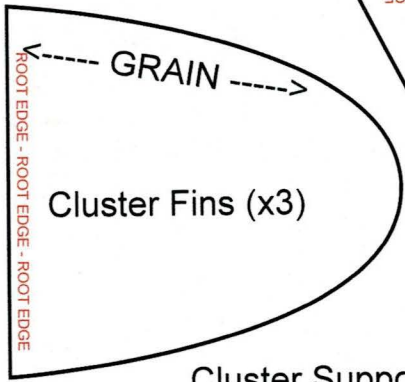
Use the 18mm Adapter or Spacer as needed (**Read Supplemental Page**). If using the 18mm Adapter, friction fit it by applying tape to the lower Centering Ring.

The use of an old motor, clothes pin, or tape may be necessary to keep the rocket off of the deflector plate for launching.

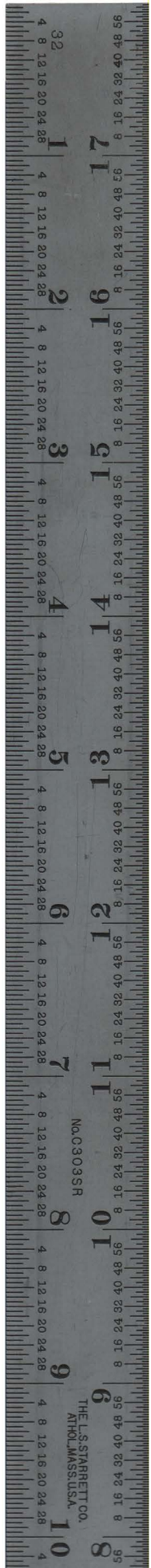
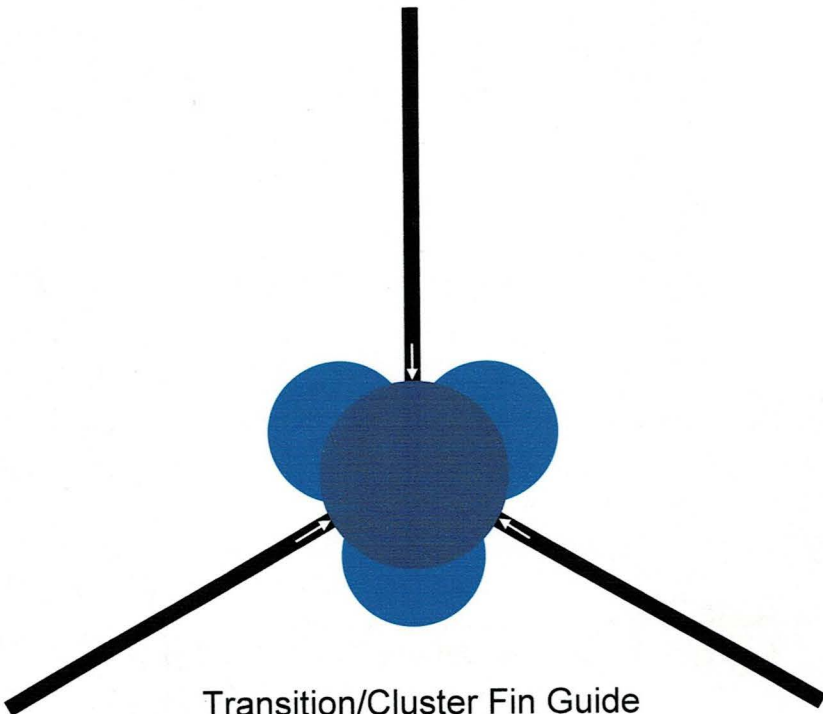
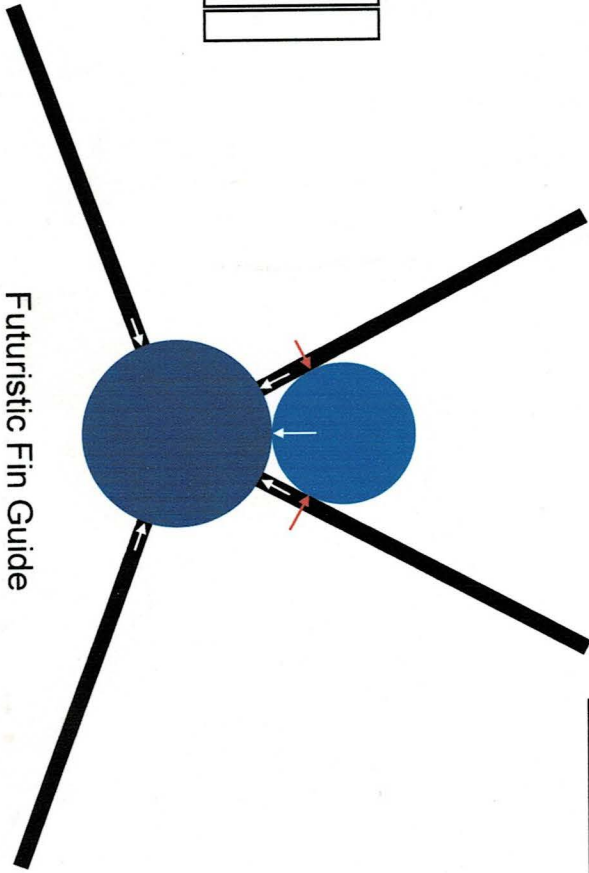
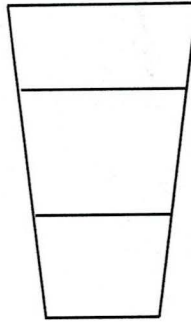
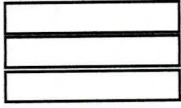
Follow NAR Safety Rules! Avoid windy days! Place on an 1/8" launch rod and let it fly!



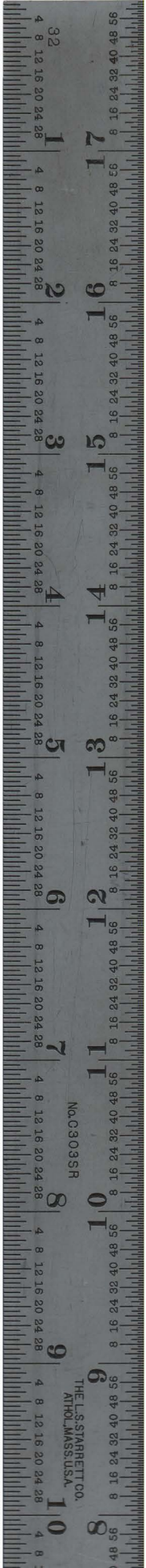
Essence Aerospace Technologies (EAT) has taken reasonable care in the design and manufacture of this product. EAT cannot control the use and storage of this product once sold and cannot assume any responsibility for personal or property injury resulting from the use, storage and/or handling of this product. The buyer assumes all risks and liabilities therefrom and accepts the use of this product on these conditions. No warranty either expressed or implied is made regarding this product.



Cluster Support Tabs

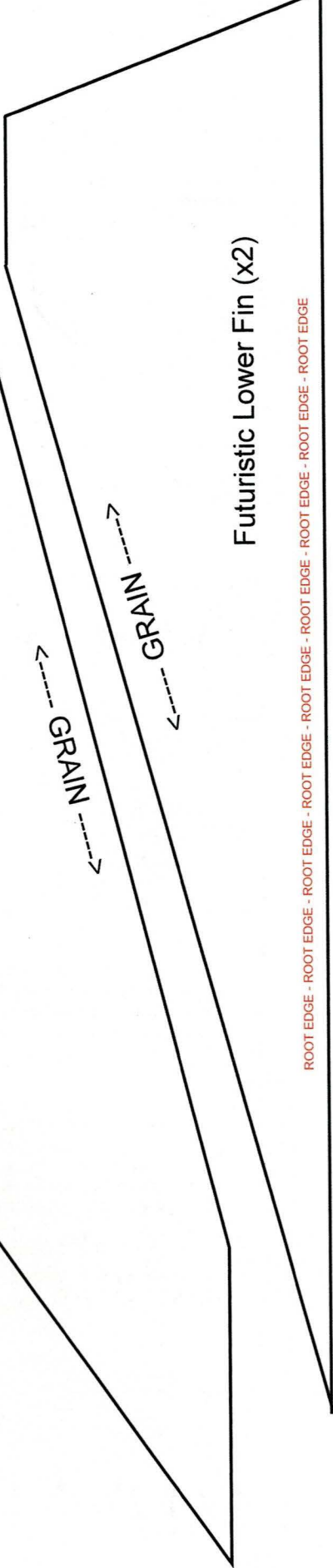


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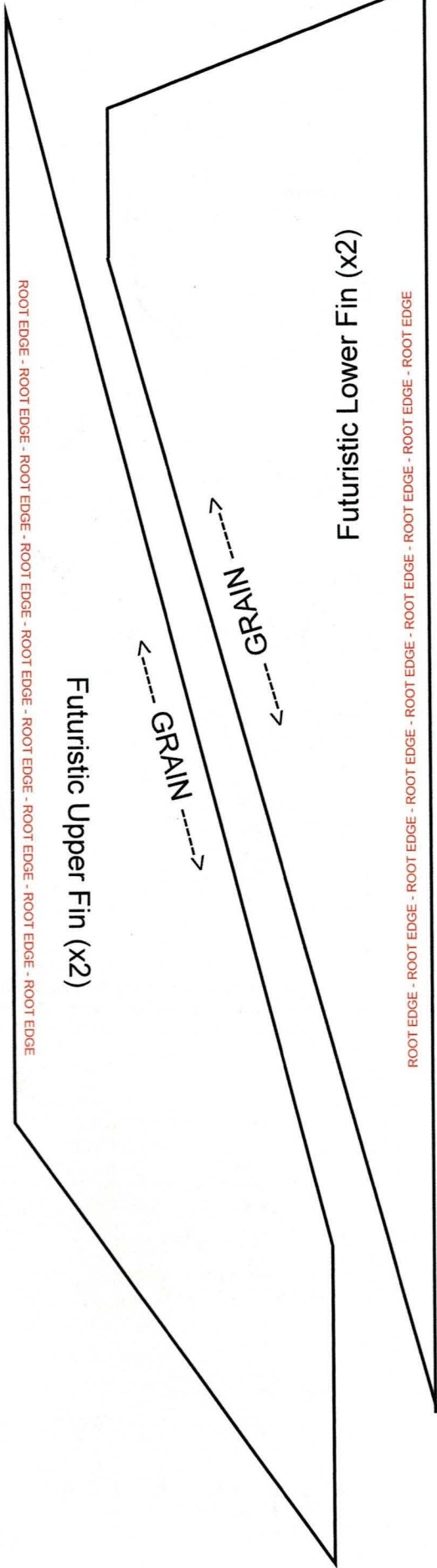
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Futuristic Lower Fin (x2)



Futuristic Upper Fin (x2)

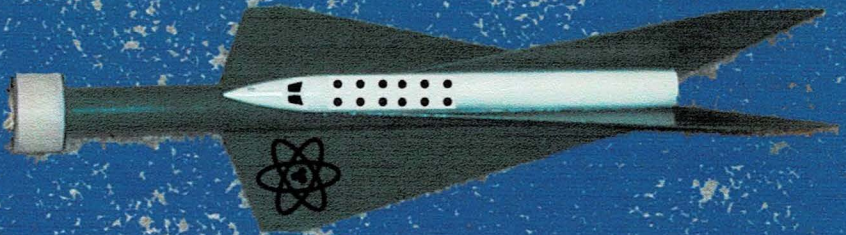
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ESSENCE

AEROSPACE

TECHNOLOGIES

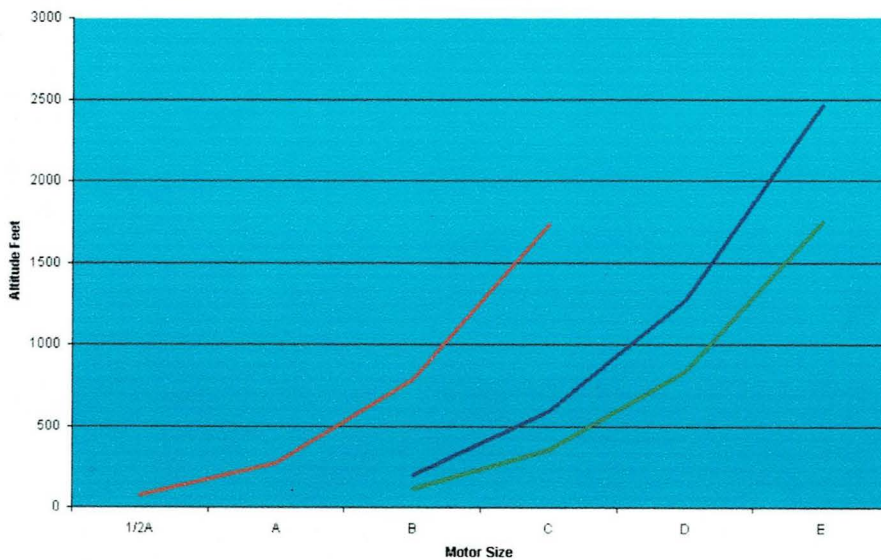


**SKILL
LEVEL
4**

*Decals are simulated in this picture

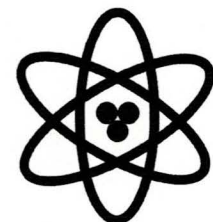
Includes:

- Instructions
- Balsa Sheet (for 3 fins)
- Card Stock Cone
- Tube Marking Guide
- Balsa Nose Cone (Honest John style)
- Nose Weight (washers)
- (1) Eye-Screw
- (2) Body Tubes
- (1) Body Tube Coupler
- (2) 18mm Motor Tubes
- (4) 18mm Centering Rings
- (2) Thrust Rings
- (2) 1/8" Launch Lugs
- Kevlar® + Elastic Shock Cord
- Streamer or Parachute
- Decals (Future Coated)
- Prismatic Paper



Motors:

- Transition: Min motor is B6-2
B6-2 (195ft), C6-5 (590ft), C11-5 (565ft), D12-7 (1275ft), E9-8 (2465ft)
- Cluster: Min motor is 1/2A6-2
3x 1/2A6-2 (73ft), 3x A8-3 (270ft), 3x B6-6 (790ft), 3x C6-7 (1735ft)
- Futuristic: Min motor is B6-2
B6-2 (115ft), C6-3 (355ft), C11-3 (350ft), D12-5 (840ft), E9-6 (1750ft)



Specs:

- Transition: 1.64" x 17.5" - 3.4 oz
- Cluster: 1.64" x 19.5" - 3.8 oz
- Futuristic: 1.64" x 27.3" - 4.6 oz

TRIATOMIC - having three replaceable
- atoms or radicals...
...or Rockets!