



EstesRockets.com

PROSERIES II

9723

BLACK BRANT XII

AGES
18+



Skill Level

EXPERT

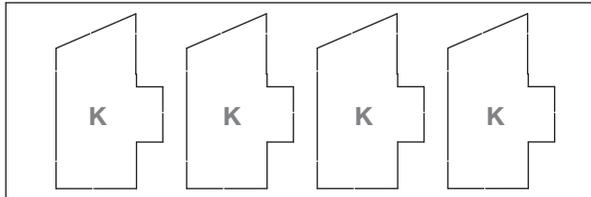
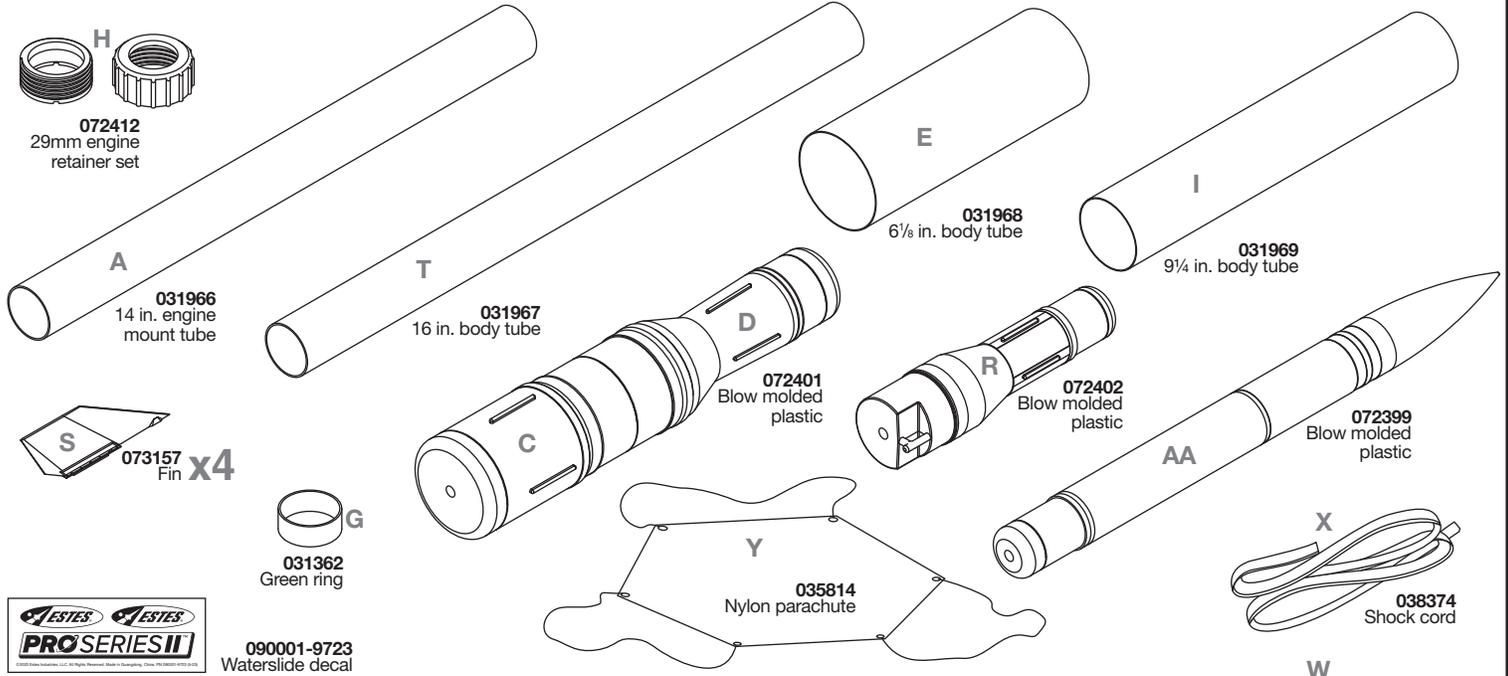
MODEL ROCKET INSTRUCTIONS

KEEP FOR FUTURE REFERENCE

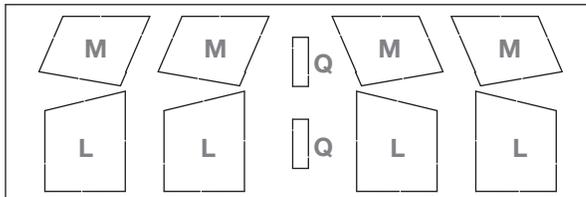
IMPORTANT: Please record date found on decal and keep for future reference. _____

READ ALL INSTRUCTIONS. Make sure you have all parts and supplies. Test fit all parts before applying glue. Refer to your glue manufacturer's dry times during build.

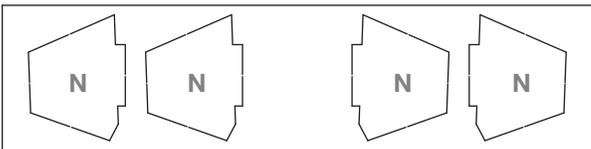
SUPPLIES



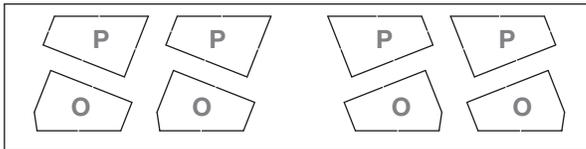
090051A-9723
Laser cut balsa



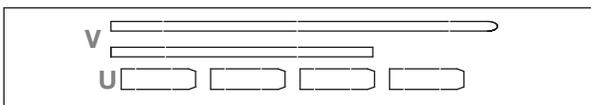
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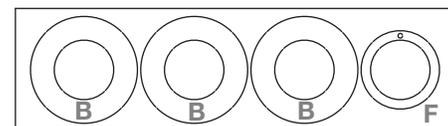
090051C-9723
Laser cut balsa



090051D-9723
Laser cut balsa x2



090051E-9723
Laser cut balsa

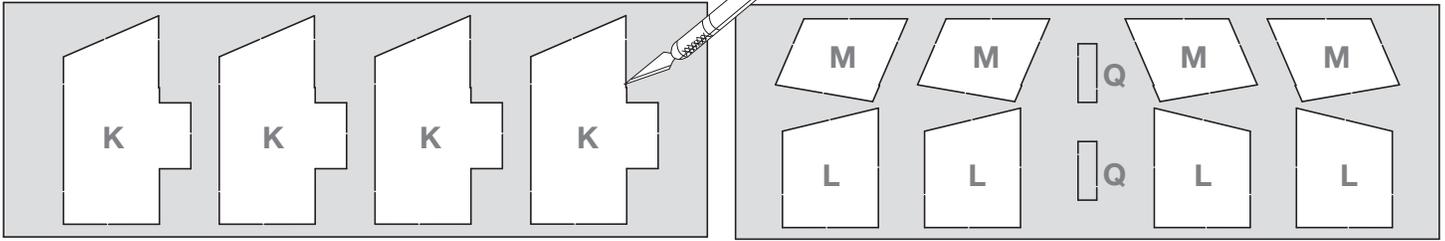


090052-9723
Laser cut card stock

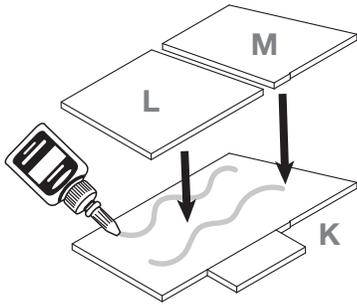
038181
Launch lug x2

FIN PREPARATION

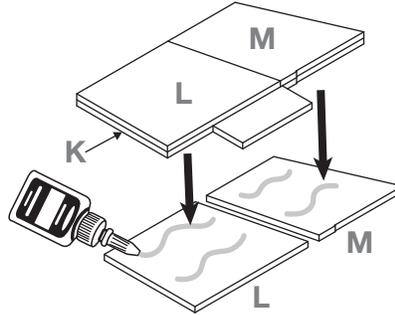
1. Carefully remove all **K**, **L**, and **M** pieces with a hobby knife.



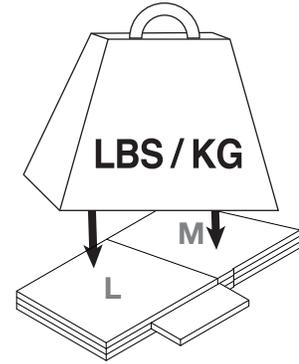
2. Apply yellow glue to **K**. Align **L** and **M** to **K**.



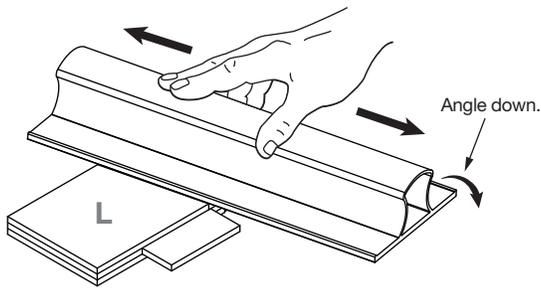
3. Apply yellow glue to another **L** and **M** and align to **K**.



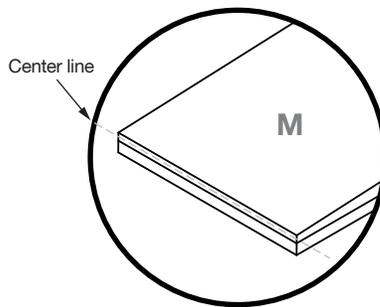
4. Place weight on fin assembly until glue dries.



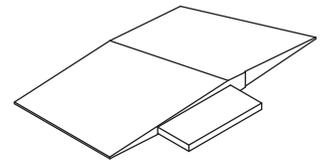
5. Align the edge of the sanding bar on the joint between **L** and **M**. Angle the outer edge of the sanding bar down to create a slant. Move the sanding bar back and forth along joint between **L** and **M**.



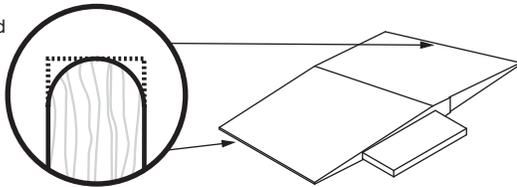
6. Bevel the edge of the fin to almost the center of the three glued pieces of balsa.



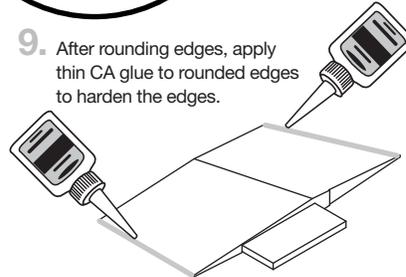
7. Bevel all four edges of the fin.



8. Round the leading and trailing edge of the fin.



9. After rounding edges, apply thin CA glue to rounded edges to harden the edges.



NOTE:

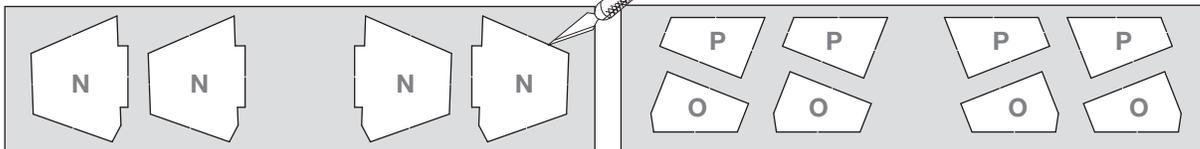
Repeat these steps for all four fins.

CAUTION:

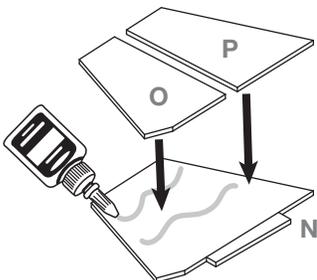
For safe handling of CA glue, see manufacturer's warnings and follow instructions for use.

FIN PREPARATION (continued)

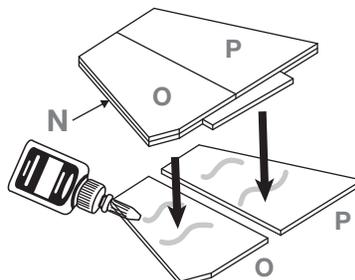
1. Carefully remove all **N**, **O**, and **P** pieces with a hobby knife.



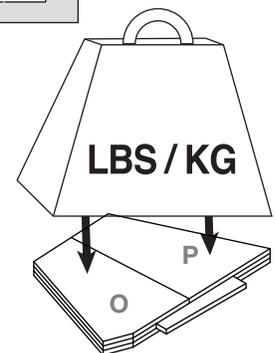
2. Apply yellow glue to **N**. Align **O** and **P** to **N**.



3. Apply yellow glue to another **O** and **P** and align to **N**.

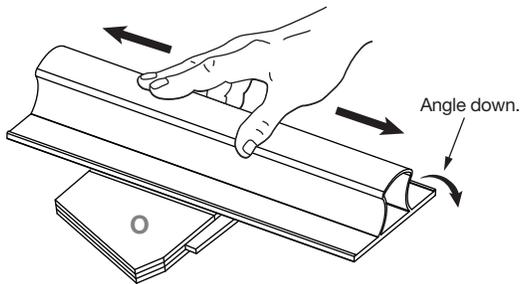


4. Place weight on fin assembly until glue dries.

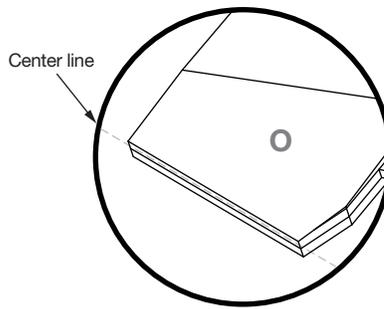


FIN PREPARATION (continued)

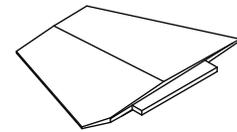
5. Align the edge of the sanding bar on the joint between **O** and **P**. Angle the outer edge of the sanding bar down to create a slant. Move the sanding bar back and forth along joint between **O** and **P**.



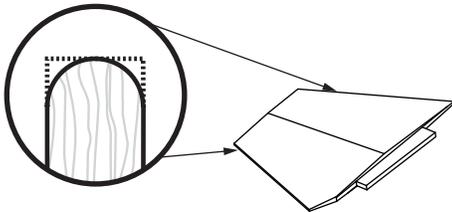
6. Bevel the edge of the fin to almost the center of the three glued pieces of balsa.



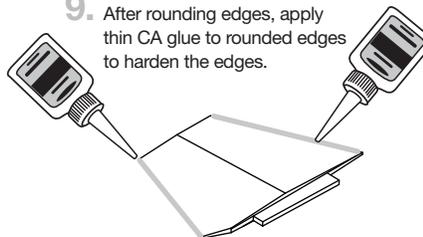
7. Bevel all four edges of the fin.



8. Round the leading and trailing edge of the fin.



9. After rounding edges, apply thin CA glue to rounded edges to harden the edges.



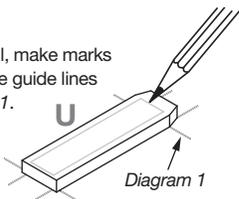
NOTE:
Repeat these steps for all four fins.

SMALL DETAIL PREPARATION

1. Carefully remove all **V** and **U** pieces with a hobby knife.



3. Using a pencil, make marks on **U** using the guide lines from *Diagram 1*.



4. Use a sanding block to bevel all of the top surfaces of **U**.

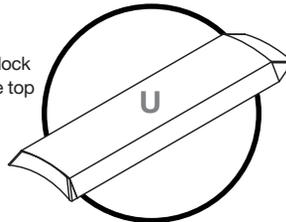
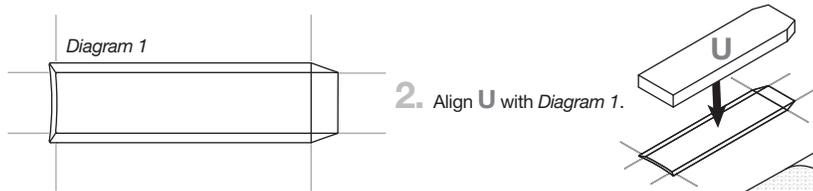
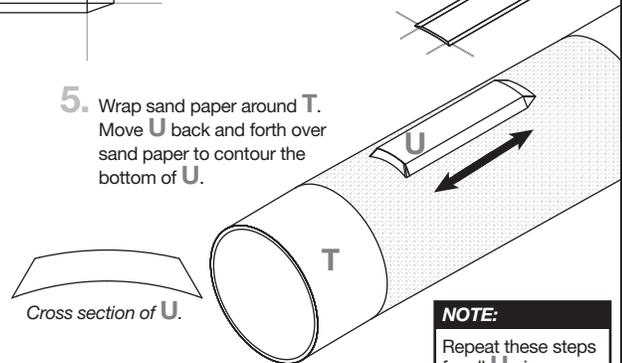


Diagram 1

2. Align **U** with *Diagram 1*.



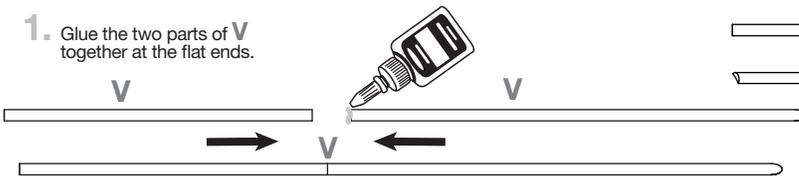
5. Wrap sand paper around **T**. Move **U** back and forth over sand paper to contour the bottom of **U**.



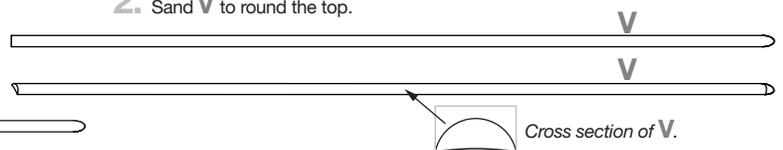
NOTE:
Repeat these steps for all **U** pieces.

SMALL DETAIL PREPARATION (continued)

1. Glue the two parts of **V** together at the flat ends.

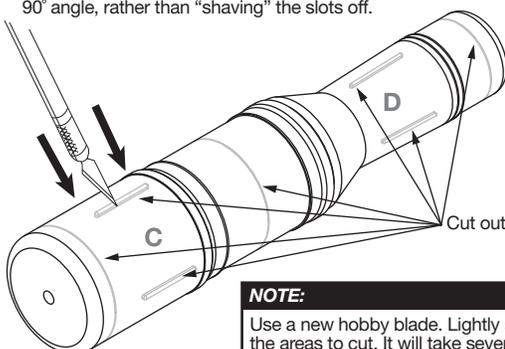


2. Sand **V** to round the top.



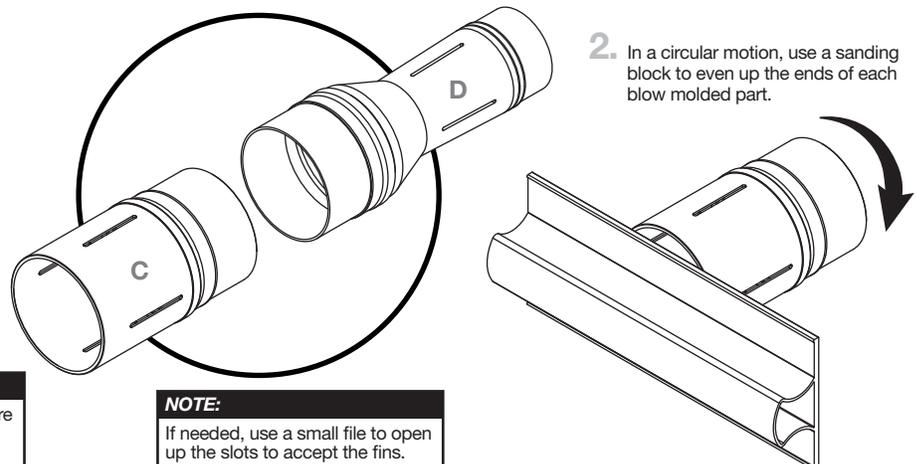
BLOW MOLDED PARTS PREPARATION

1. Using a hobby knife with a new blade, cut out the areas shown on **C** and **D**. Be sure to cut out the side slots by cutting into the blow molded part at a 90° angle, rather than "shaving" the slots off.



NOTE:
Use a new hobby blade. Lightly score the areas to cut. It will take several passes to cut through the plastic.

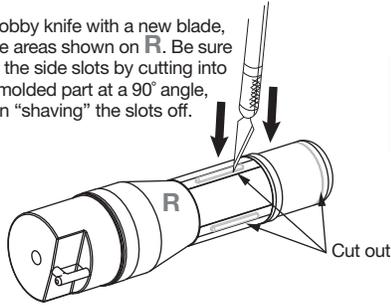
2. In a circular motion, use a sanding block to even up the ends of each blow molded part.



NOTE:
If needed, use a small file to open up the slots to accept the fins.

BLOW MOLDED PARTS PREPARATION (continued)

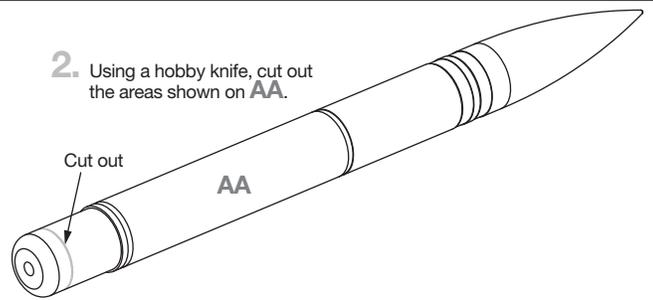
- Using a hobby knife with a new blade, cut out the areas shown on **R**. Be sure to cut out the side slots by cutting into the blow molded part at a 90° angle, rather than "shaving" the slots off.



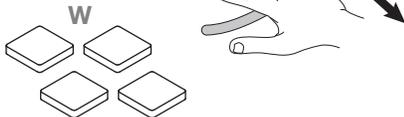
NOTE:

Use a new hobby blade. Lightly score the areas to cut. It will take several passes to cut through the plastic.

- Using a hobby knife, cut out the areas shown on **AA**.



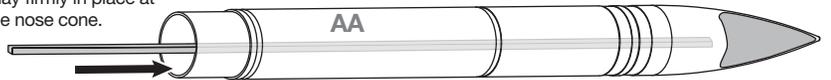
- Roll clay on a flat surface to form into a long, thin piece.



- Guide clay into hole at the bottom of the nose cone.

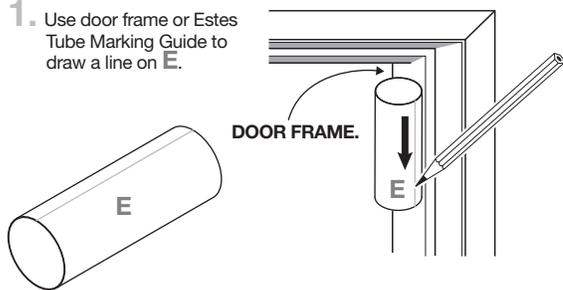


- Use a stick or a strip of scrap balsa to push the clay firmly in place at the front of the nose cone.



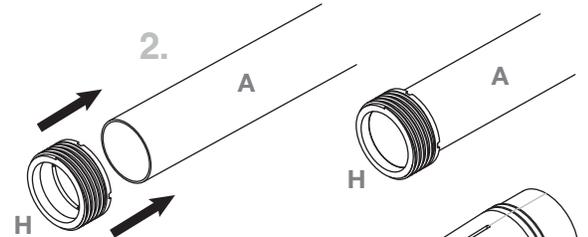
ASSEMBLE ENGINE MOUNT AND LOWER SECTION OF MODEL ROCKET

- Use door frame or Estes Tube Marking Guide to draw a line on **E**.



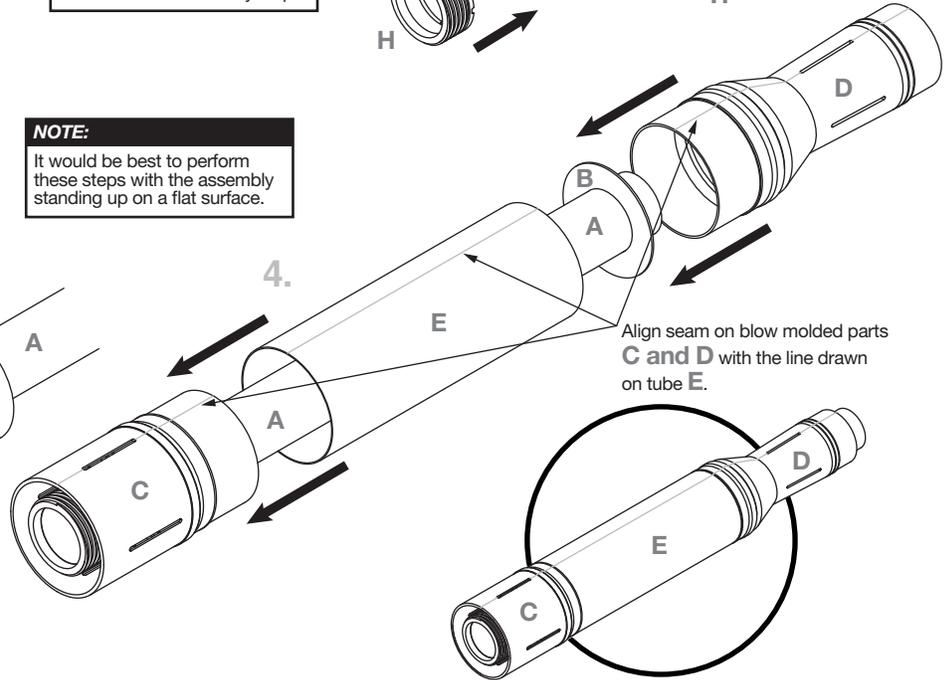
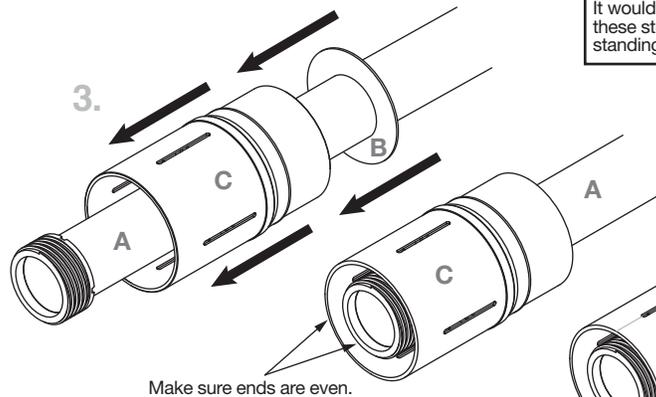
NOTE:

Before gluing any of these parts in place, trial fit all parts to confirm fit and assembly steps.

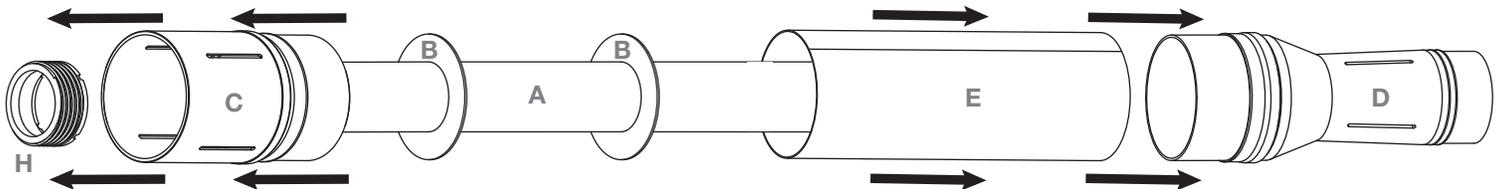


NOTE:

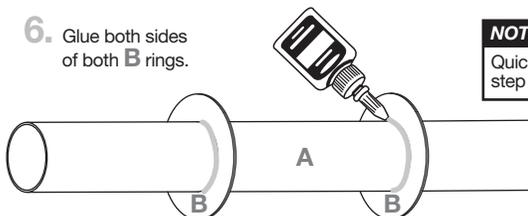
It would be best to perform these steps with the assembly standing up on a flat surface.



- Carefully remove **C**, **D**, **E**, and **H**. Leave both **B** rings in place.



- Glue both sides of both **B** rings.



NOTE:

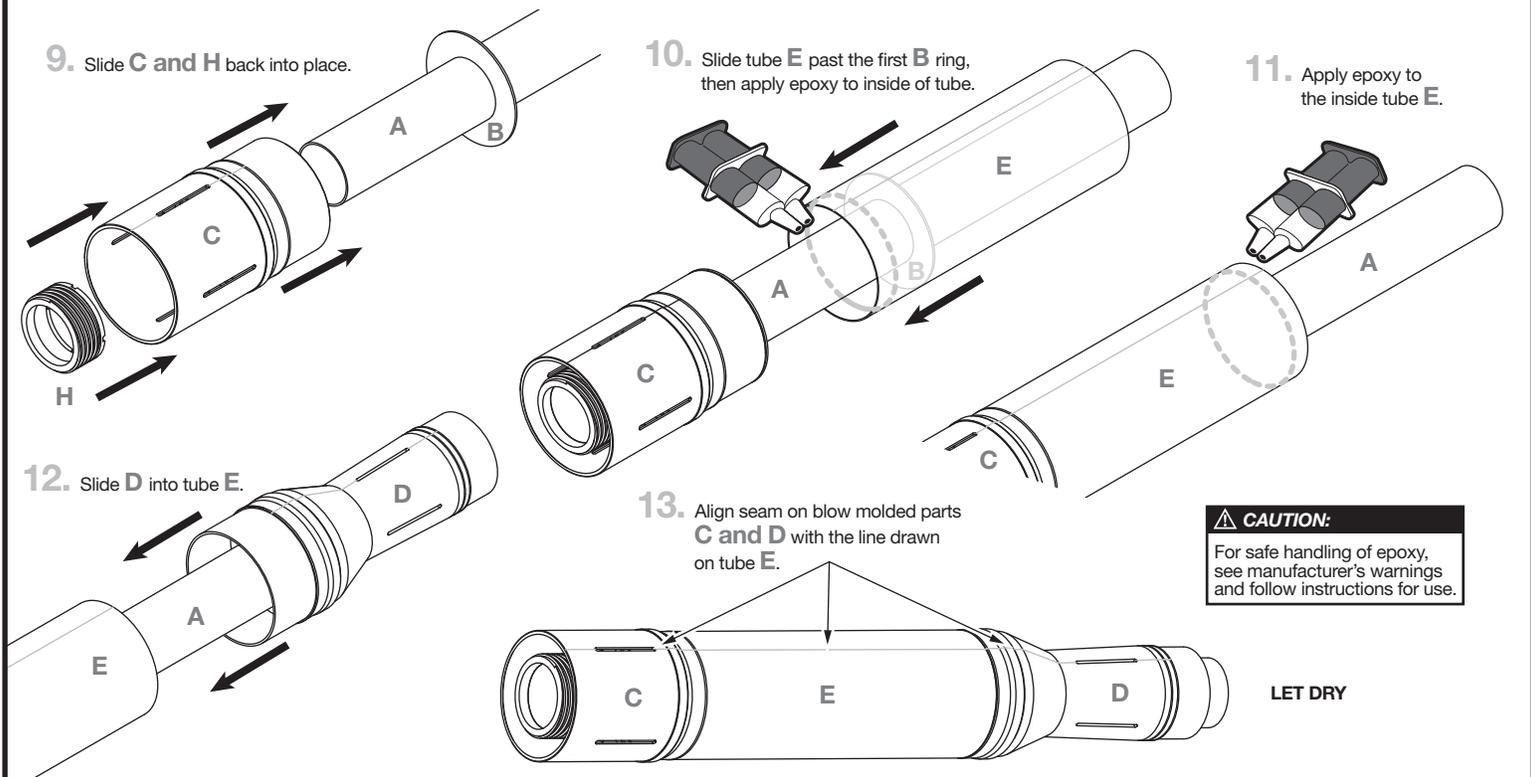
Quickly proceed to next step before glue dries.

- After applying glue to **B** rings, reassemble all the parts. Stand assembly up so the bottom of part **C** is resting on a flat surface. Let glue dry.

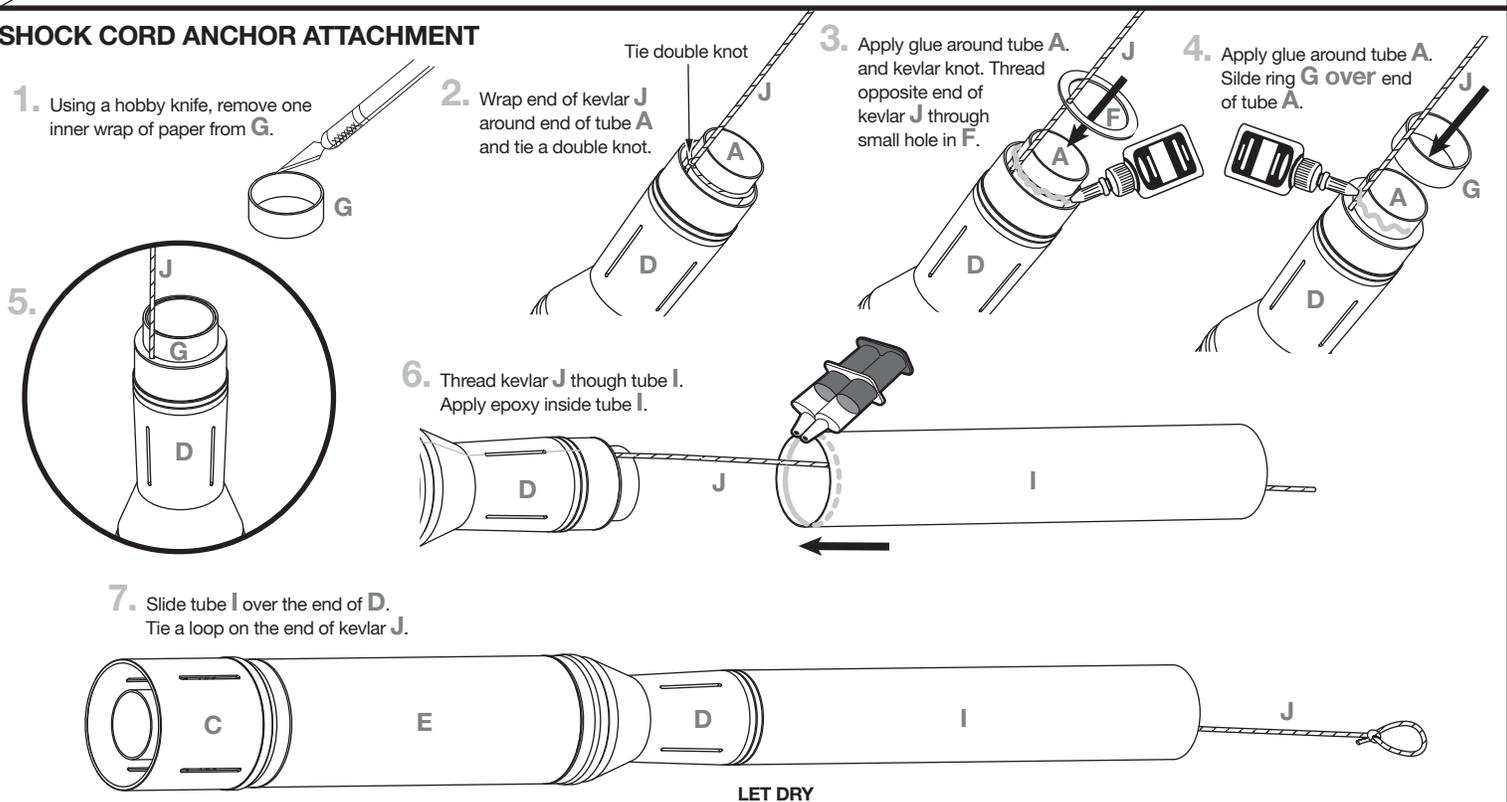


- Once glue dries, remove **C**, **D**, **E**, and **H** again.

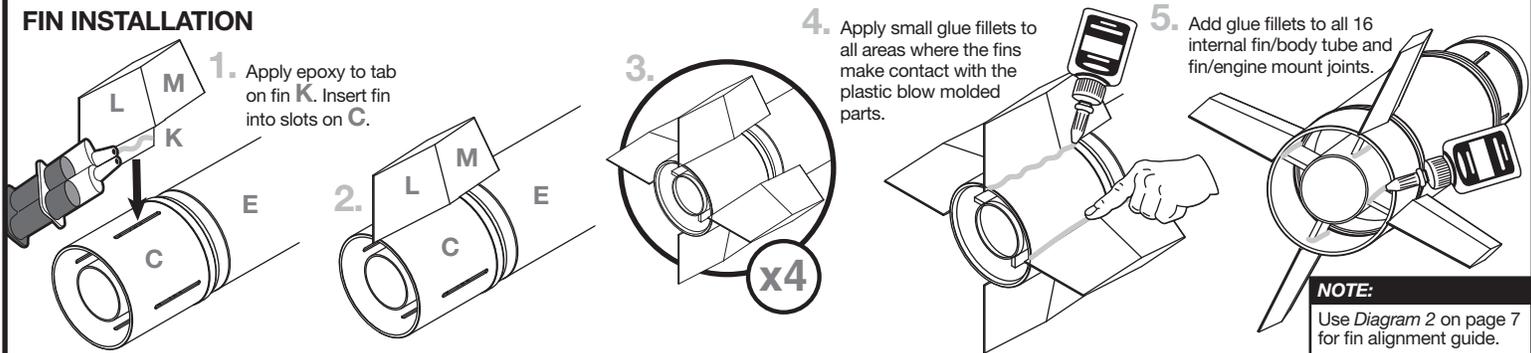
ASSEMBLE ENGINE MOUNT AND LOWER SECTION OF MODEL ROCKET (continued)



SHOCK CORD ANCHOR ATTACHMENT

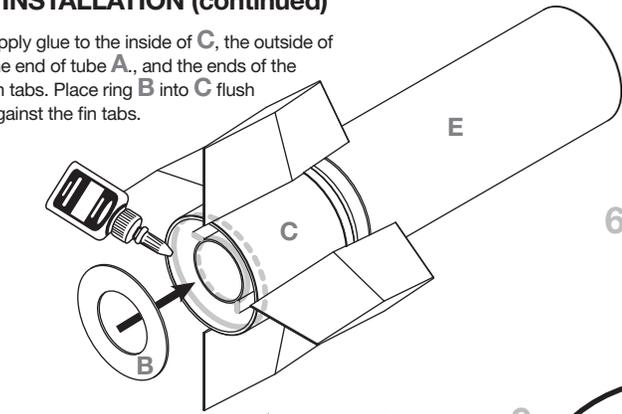


FIN INSTALLATION

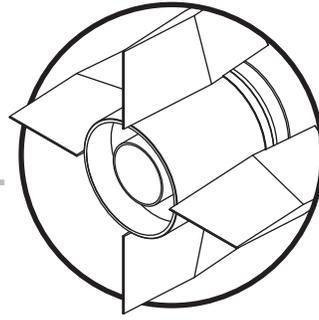


FIN INSTALLATION (continued)

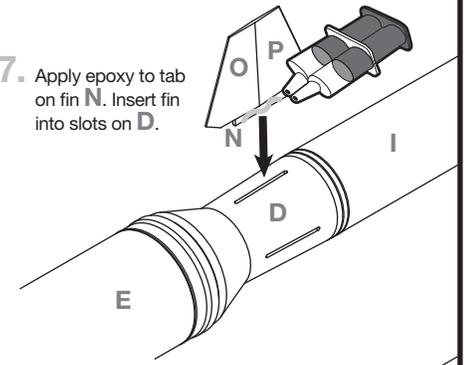
5. Apply glue to the inside of **C**, the outside of the end of tube **A**, and the ends of the fin tabs. Place ring **B** into **C** flush against the fin tabs.



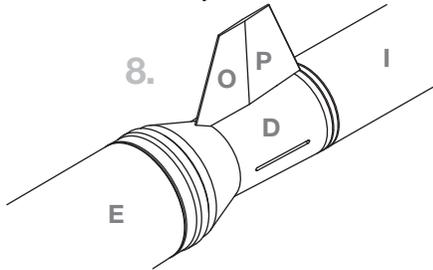
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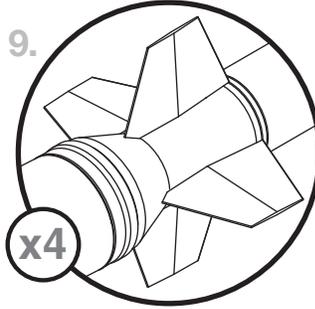
7. Apply epoxy to tab on fin **N**. Insert fin into slots on **D**.



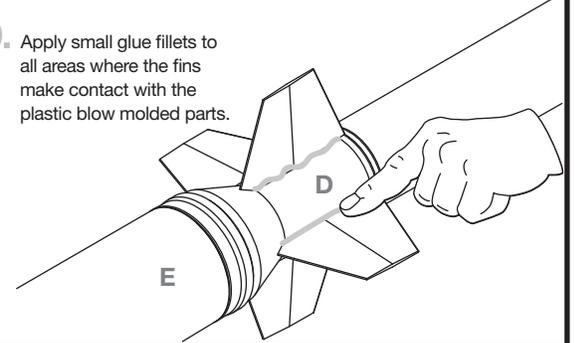
8.



9.

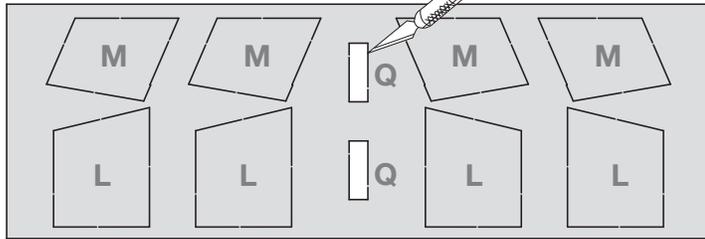


10. Apply small glue fillets to all areas where the fins make contact with the plastic blow molded parts.

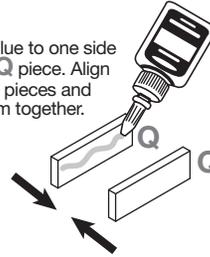


LAUNCH LUG MOUNT ASSEMBLY

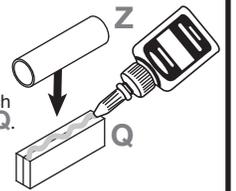
1. Carefully remove all **Q** pieces with a hobby knife.



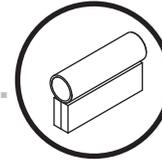
2. Apply glue to one side of one **Q** piece. Align both **Q** pieces and put them together.



3. Apply glue to the edge of **Q** pieces. Place launch lug **Z** on glued edge of **Q**.

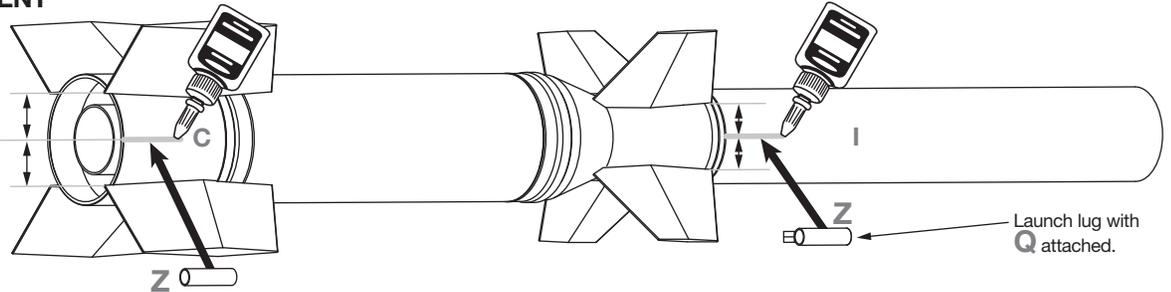


4.

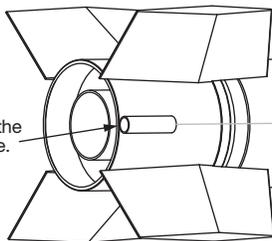


LAUNCH LUG ATTACHMENT

1. Measure the center between the fins on the bottom of **C** and the bottom of tube **I** and apply glue.



Even with the end of tube.



2. Place the launch lugs ensuring that align between the middle of the fins.

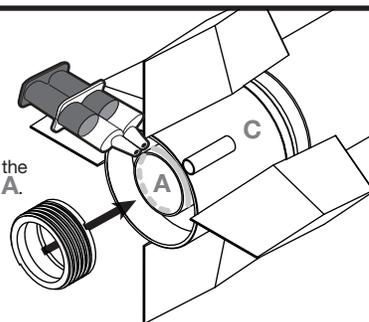
LET DRY

INSTALL ENGINE RETAINER

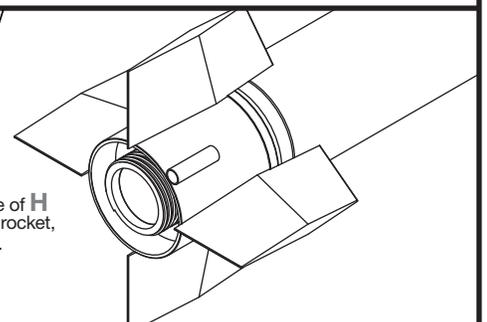
1. Roughen inside of **H** with sandpaper.



2. Apply epoxy to the outside of tube **A**.

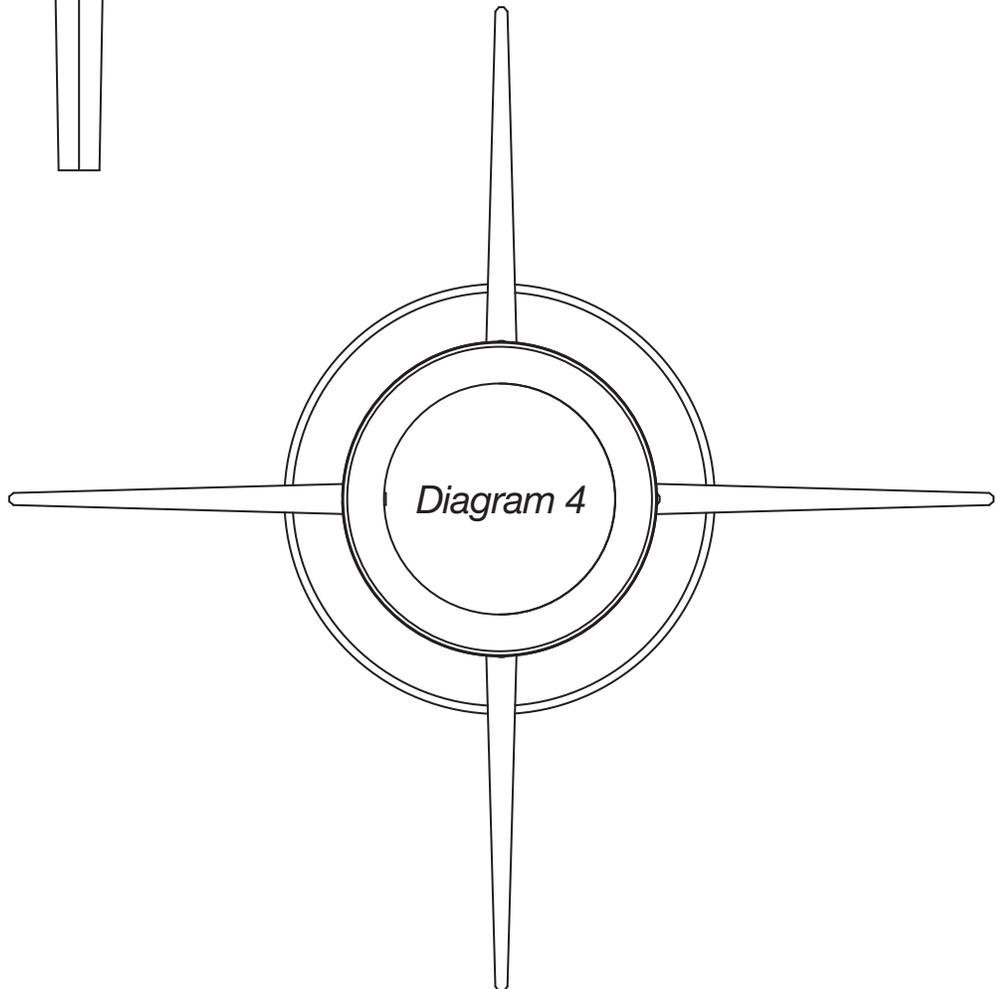
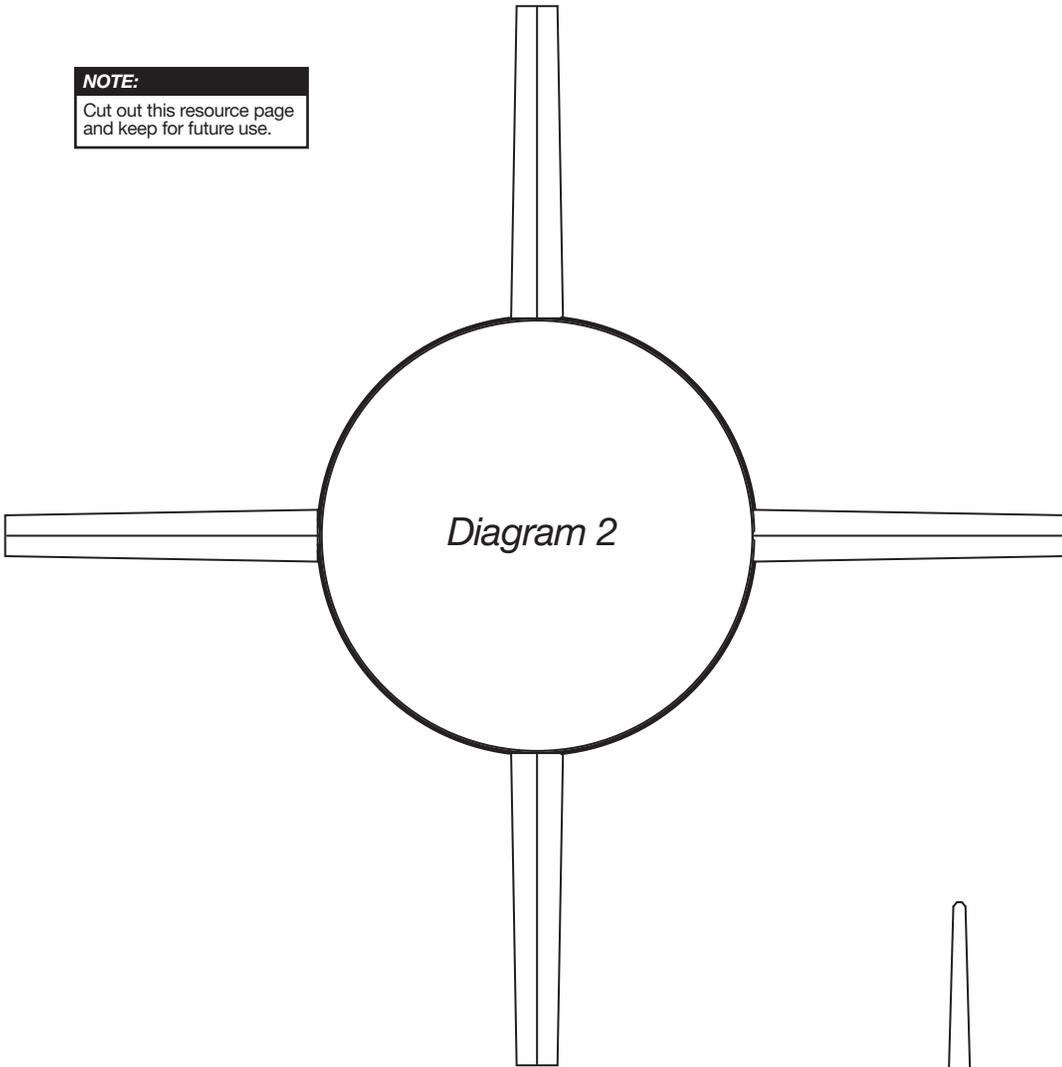


3. With the notched side of **H** facing in towards the rocket, place **H** over tube **A**.



NOTE:

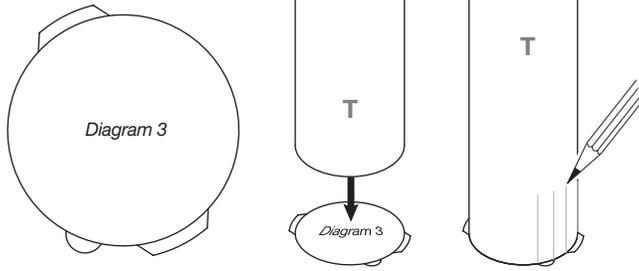
Cut out this resource page
and keep for future use.



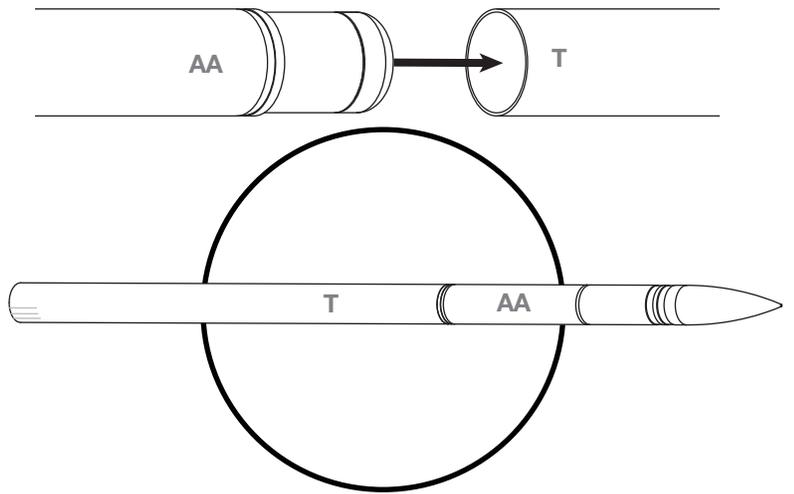
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ATTACH SMALL DETAIL PARTS

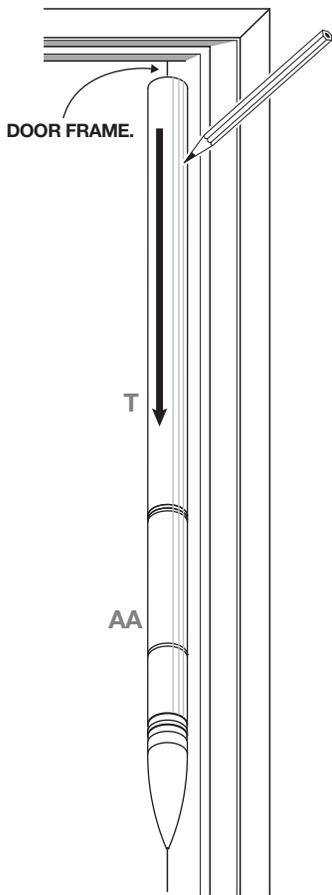
1. Align tube **T** on *Diagram 3* and mark detail placement lines with a pencil.



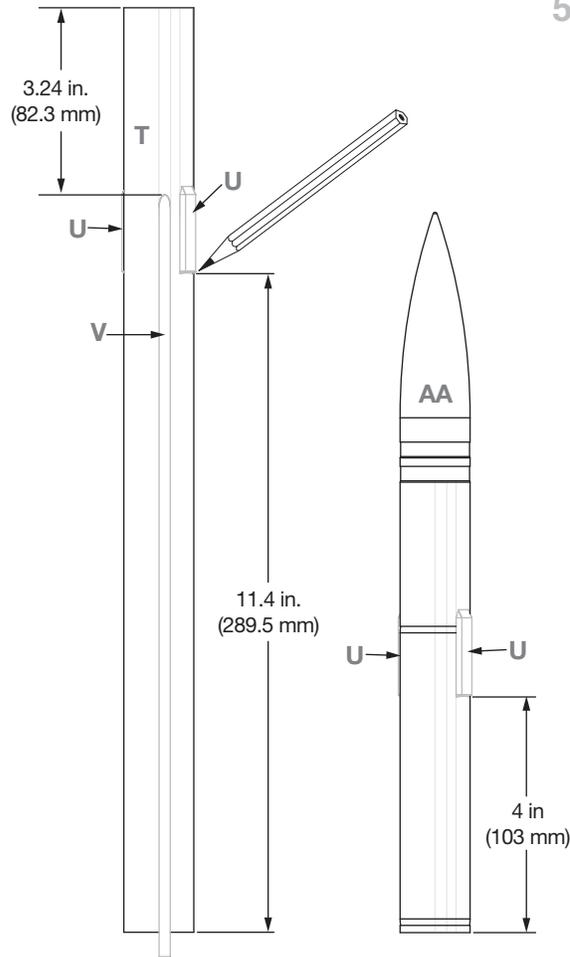
2. Slide the end of blow molded part **AA** into tube **T**.



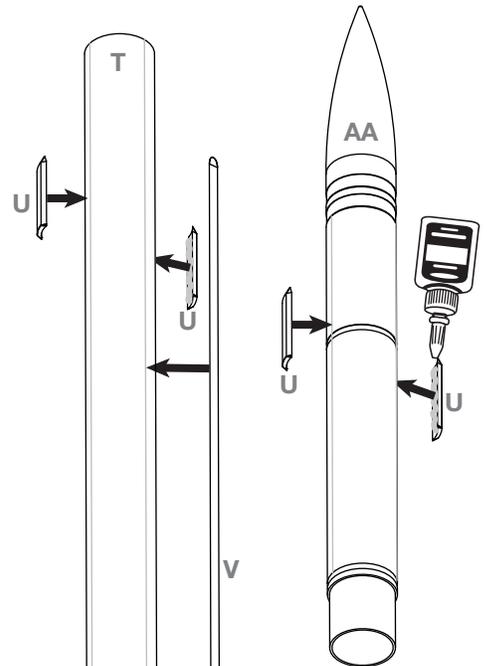
3. Use door frame or Estes Tube Marking Guide to extend the detail placement lines on **T** and **AA**.



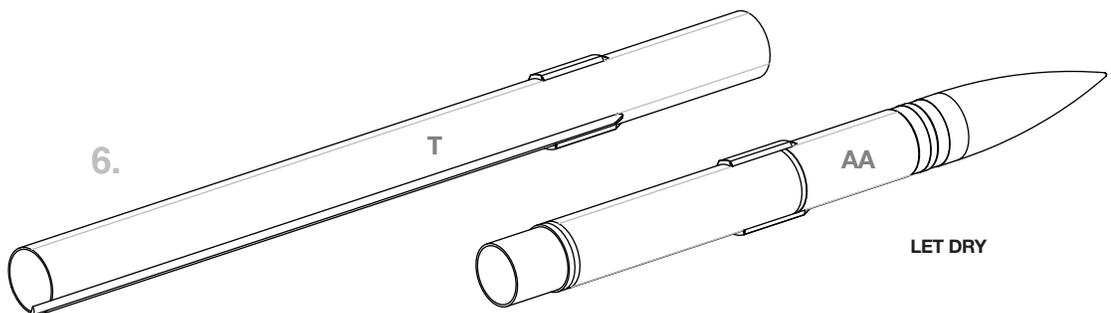
4. Separate **T** and **AA**. Measure and mark the distances shown below for correct placement of small detail parts.



5. Apply glue to the under side of **V** and all four **U** pieces. Align all small detail parts to the guide lines and place them on **T** and **AA** as shown below.



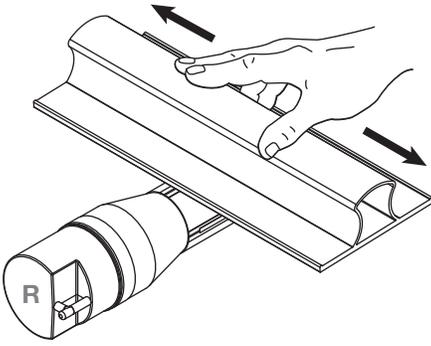
6.



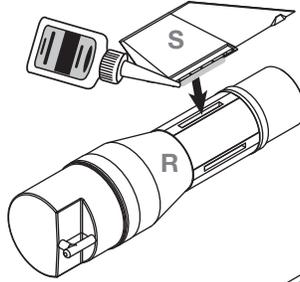
LET DRY

PLASTIC FIN INSTALLATION

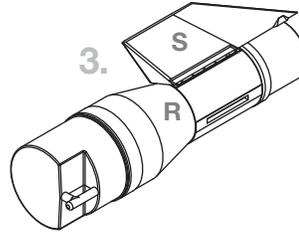
1. Using a sanding bar, sand flat the area around the fin slots on **R**. Repeat for all four fin slots.



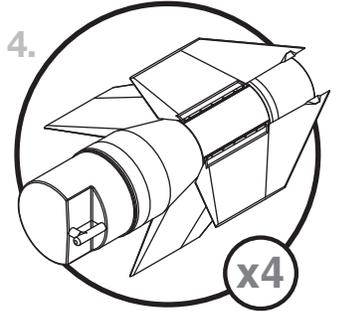
2. Apply CA glue to the bottom of fin **S**. Place fin into fin slot.



3.



4.



NOTE:

Use Diagram 4 on page 7 for fin alignment guide.

5. Apply epoxy to inside of the bottom of tube **T**. Slide plastic fin assembly into tube **T**.

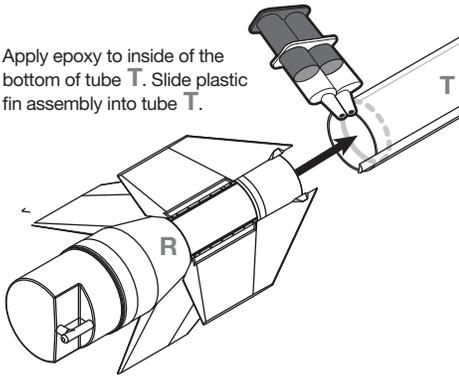
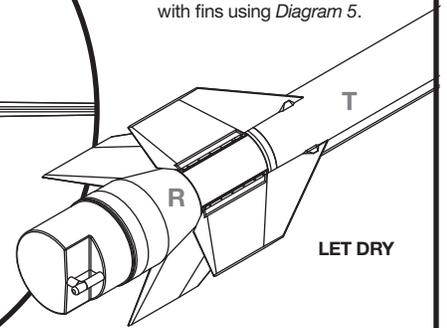
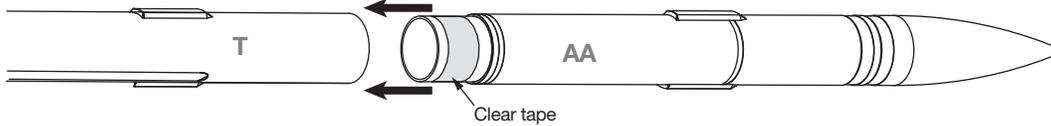


Diagram 5

6. Align small detail parts with fins using Diagram 5.



7. Apply clear tape to the shoulder of **AA** to create snug fit into tube **T**. Insert **AA** into tube **T**.



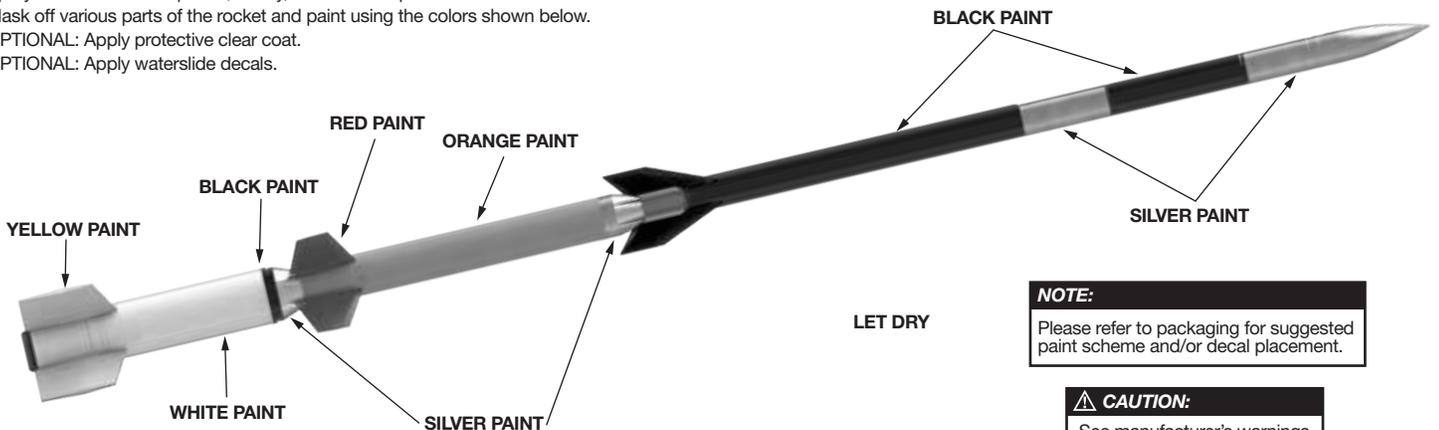
NOTE:

Model needs to be balanced before gluing **AA** into place.



ROCKET FINISHING

1. Spray rocket with white primer, let dry, and sand. Repeat until rocket is smooth.
2. Mask off various parts of the rocket and paint using the colors shown below.
3. OPTIONAL: Apply protective clear coat.
4. OPTIONAL: Apply waterslide decals.



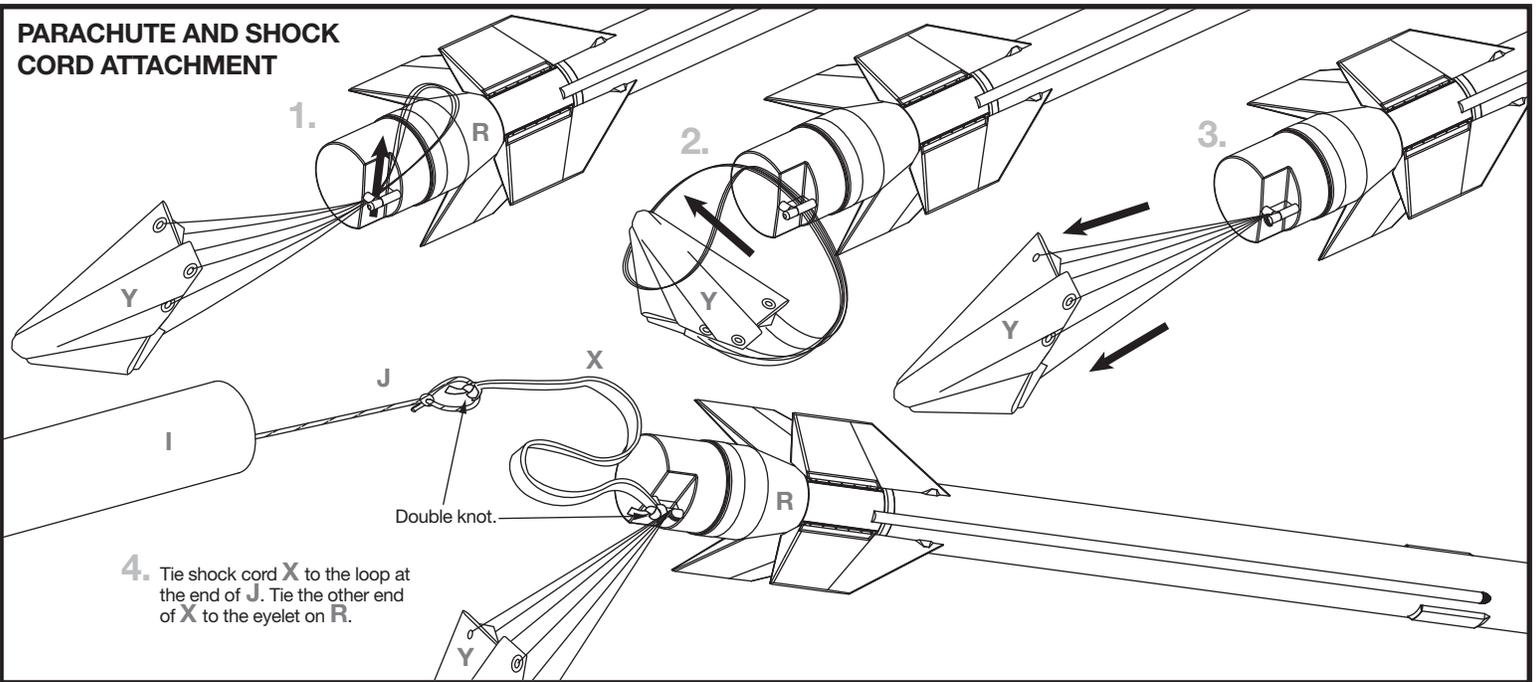
NOTE:

Please refer to packaging for suggested paint scheme and/or decal placement.

CAUTION:

See manufacturer's warnings and instructions before using spray finishing products.

PARACHUTE AND SHOCK CORD ATTACHMENT



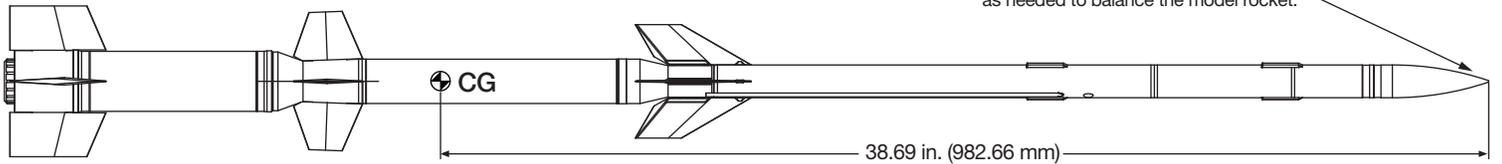
BALANCE MODEL BEFORE FLIGHT

NOTE:

Be sure engine is installed when balancing model.

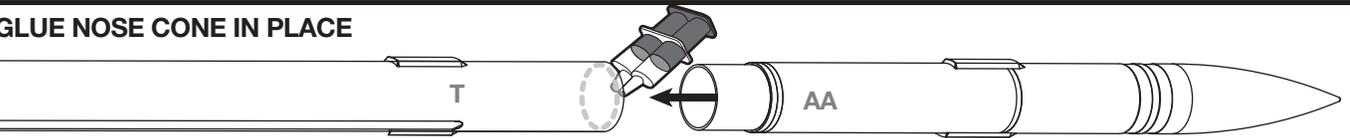
WARNING:

DO NOT fly model rocket with the center of gravity further back than 38.69 in. from the tip of the nose cone.



1. Add additional clay to the inside of the nose cone as needed to balance the model rocket.

GLUE NOSE CONE IN PLACE

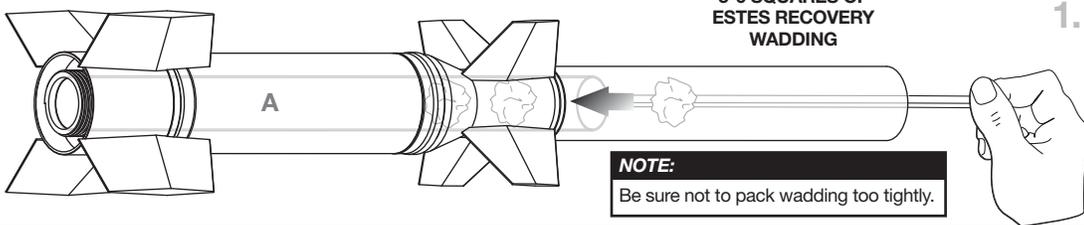


1. Once the rocket is balanced, add epoxy to inside of tube T.

2. Insert AA into T.

LET DRY

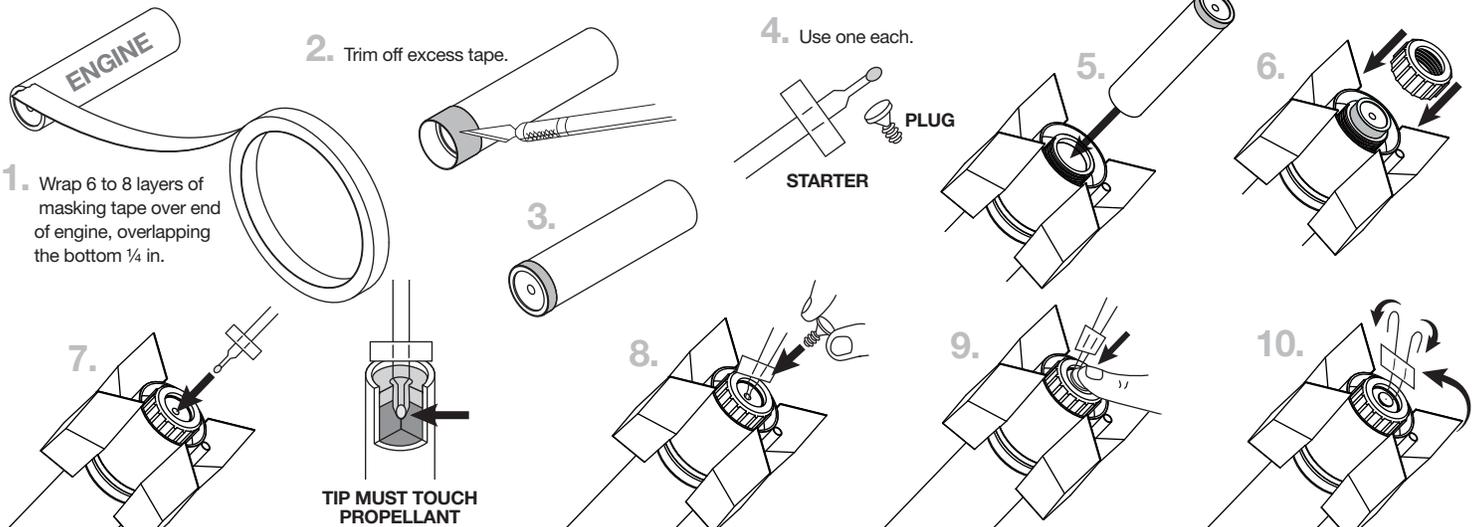
PREPARE RECOVERY WADDING



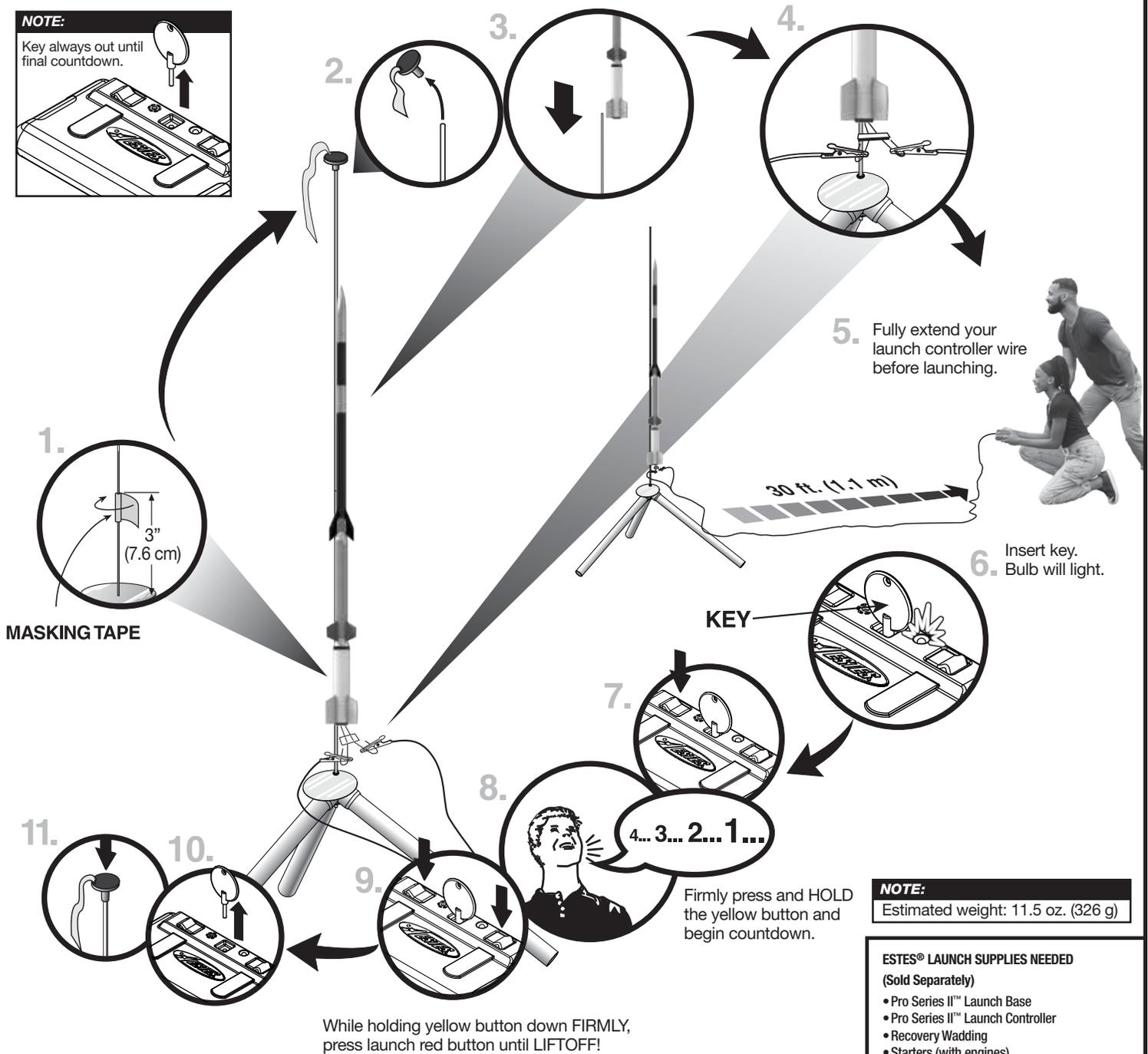
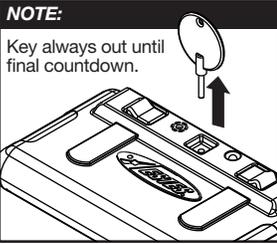
1. Push recovery wadding down towards end of the body tube.

2. Using a stick or a dowel, push the recovery wadding into the engine mount tube A.

PREPARE ENGINE



COUNTDOWN AND LAUNCH



PRECAUTIONS



NAR SAFETY CODE



NO DRY GRASS OR WEEDS

PRE-LAUNCH CHECK For safety, never launch a damaged rocket. Check the rocket's body, nose cone and fins. Also, check the engine mount, recovery system and launch lug(s). Repair any damage before launching the rocket.

FLYING YOUR ROCKET Choose a large field (1000 ft. [305 m] square) free of dry weeds and brown grass. The larger the launch area, the better your chance of recovering your rocket. Launch only with little or no wind and good visibility. Always follow the National Association of Rocketry (NAR) SAFETY CODE (enclosed).

MISFIRES TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET. Disconnect the micro-clips and remove the engine. Take the plug and starter out of the engine. A burned starter means the starter tip was not touching engine propellant. Install a new starter; be sure the tip is touching propellant inside the engine. Push the plug in place. Repeat steps under Countdown and Launch.

