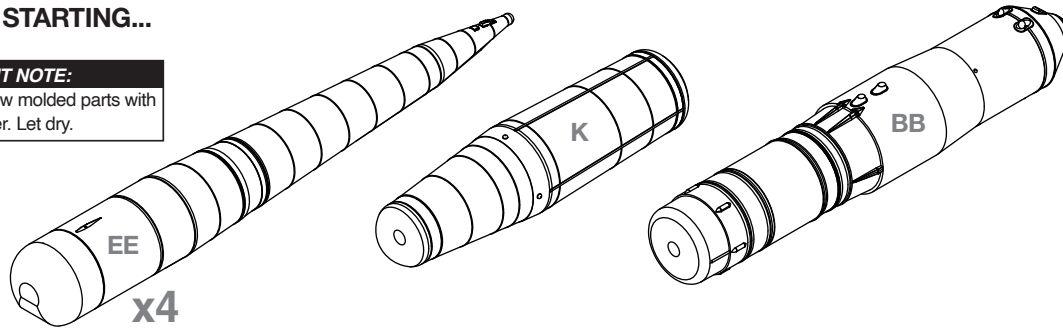


BEFORE STARTING...

IMPORTANT NOTE:

Wash all blow molded parts with soap & water. Let dry.

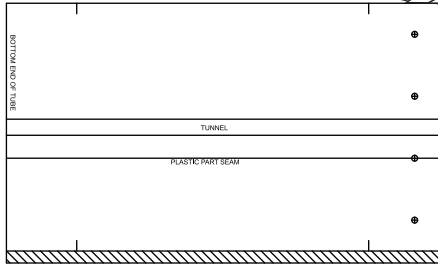


BUILDER TIP:

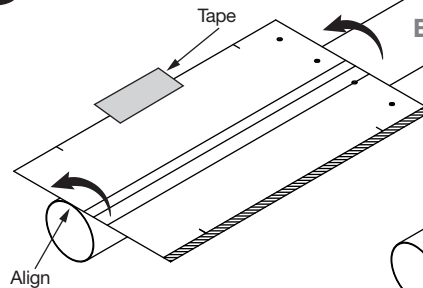
An alternative to using Testors tube plastic glue is to use a brush-on liquid glue. To use this type of glue, apply a small amount in the needed locations. Place the part(s) in place, then apply additional glue around connection areas. Use a small painters brush for this type of glue application.

PREPARE BODY TUBE

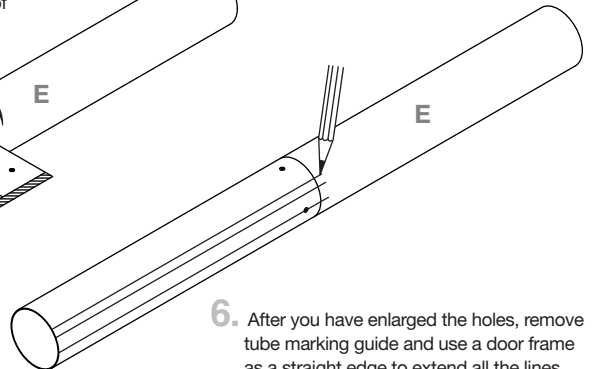
1. Cut out tube marking guide from page 11.



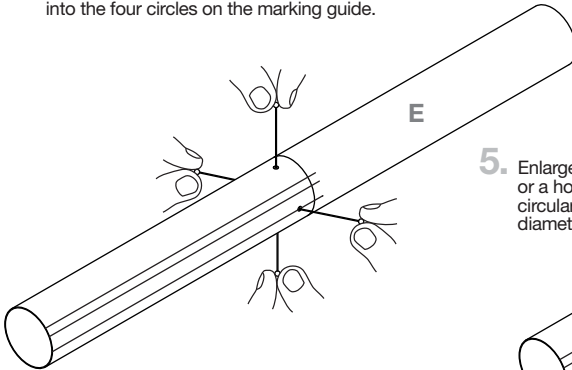
2. Wrap tube marking guide around tube E aligning the guide with the bottom of the tube. Use tape to secure guide.



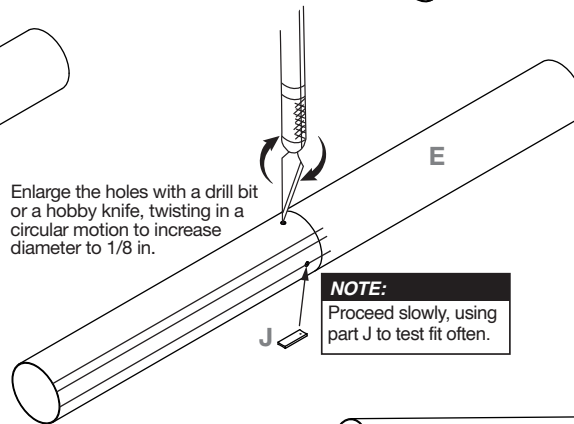
3. Mark the tunnel lines and plastic seam line onto the body tube.



4. Use a pin to center mark and punch a hole into the four circles on the marking guide.

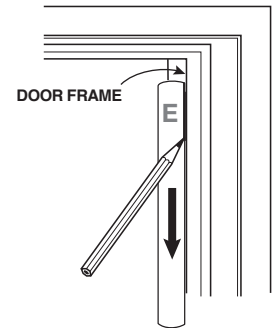


5. Enlarge the holes with a drill bit or a hobby knife, twisting in a circular motion to increase diameter to 1/8 in.



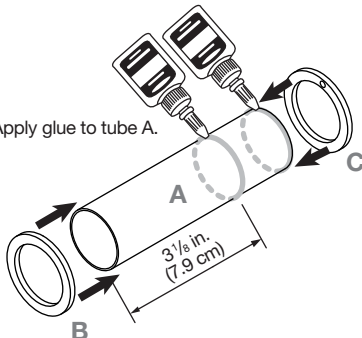
NOTE:
Proceed slowly, using part J to test fit often.

6. After you have enlarged the holes, remove tube marking guide and use a door frame as a straight edge to extend all the lines on body tube E.

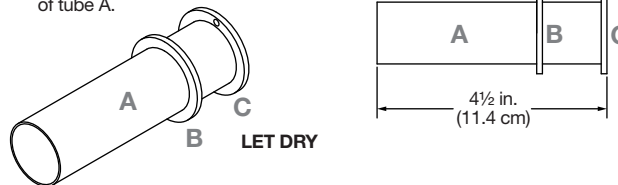


ASSEMBLE ENGINE MOUNT

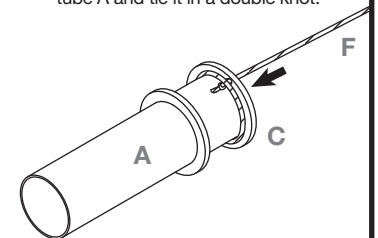
1. Apply glue to tube A.



2. Slide ring B over tube A up to the first glue line. Slide ring C over the end of the tube, flush with the end of tube A.



3. Thread Aramid cord F through hole in ring C. Wrap Aramid cord around tube A and tie it in a double knot.

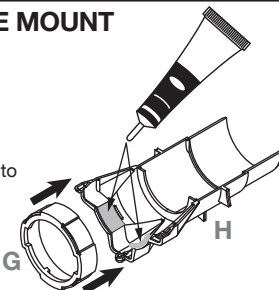


INSTALL ENGINE MOUNT

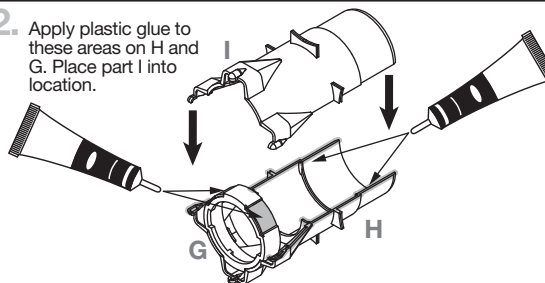
NOTE:

Test fit G, H, and I parts before gluing.

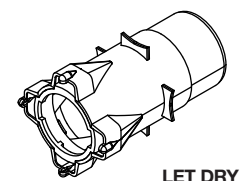
1. Apply plastic glue to these areas on H. Place part G into location.



2. Apply plastic glue to these areas on H and G. Place part I into location.



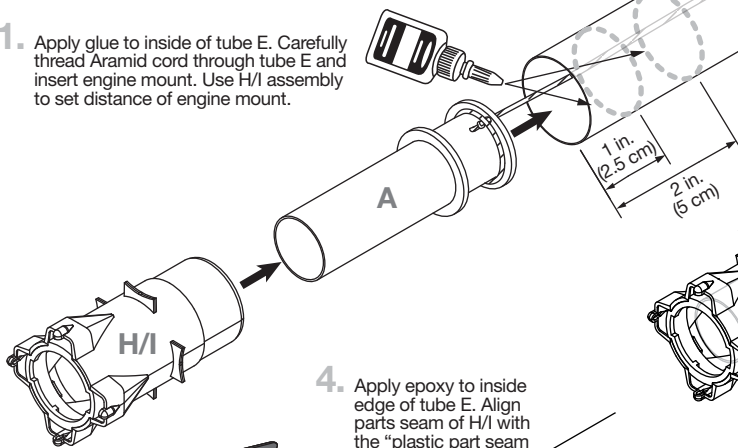
3. Press and hold for 30 seconds until glue sets.



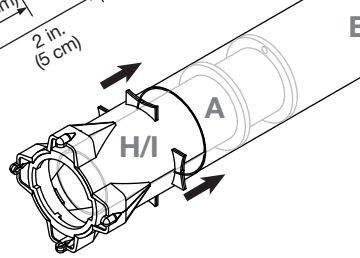
LET DRY

INSTALL ENGINE MOUNT (CONTINUED)

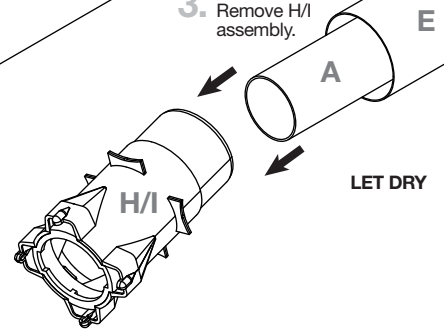
1. Apply glue to inside of tube E. Carefully thread Aramid cord through tube E and insert engine mount. Use H/I assembly to set distance of engine mount.



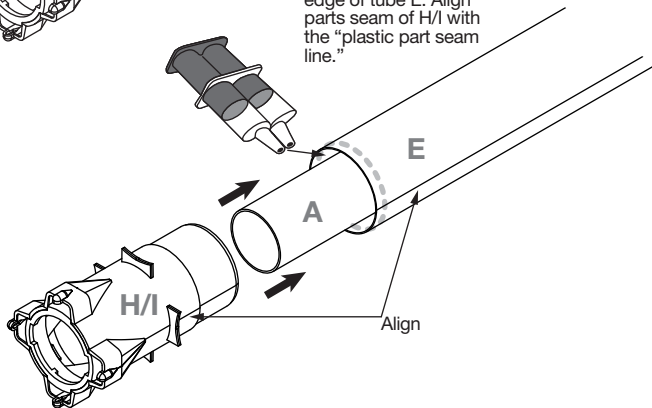
2. Push engine mount into place using H/I assembly to set distance.



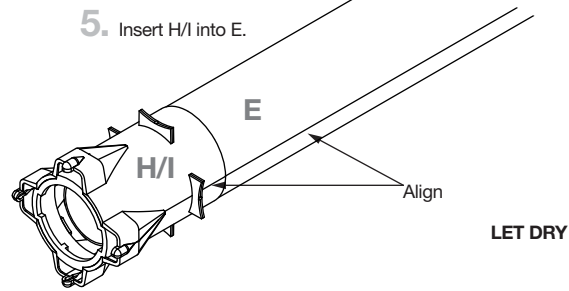
3. Remove H/I assembly.



4. Apply epoxy to inside edge of tube E. Align parts seam of H/I with the "plastic part seam line."

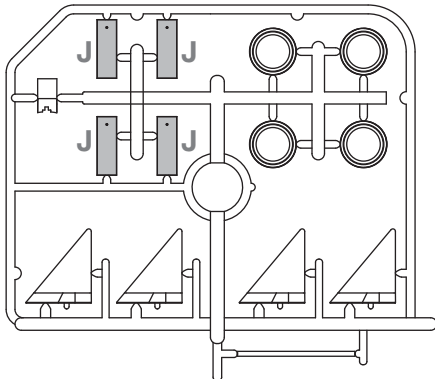


5. Insert H/I into E.

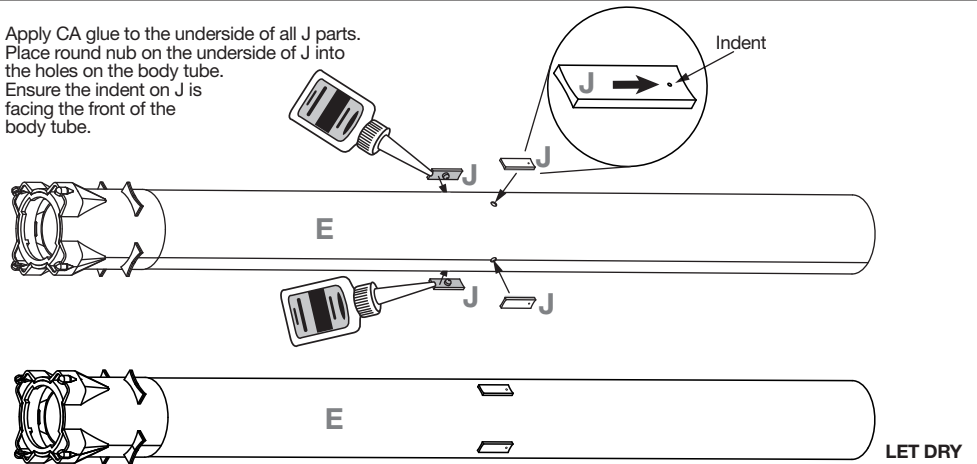


ATTACH BODY TUBE DETAILS

1. Carefully remove J parts.

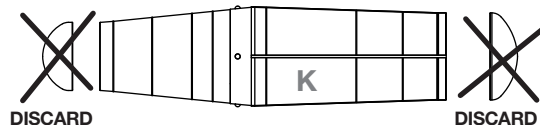
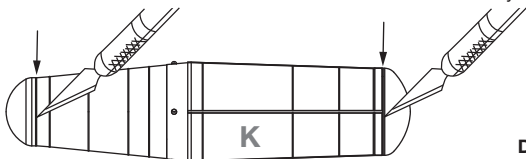


2. Apply CA glue to the underside of all J parts. Place round nub on the underside of J into the holes on the body tube. Ensure the indent on J is facing the front of the body tube.

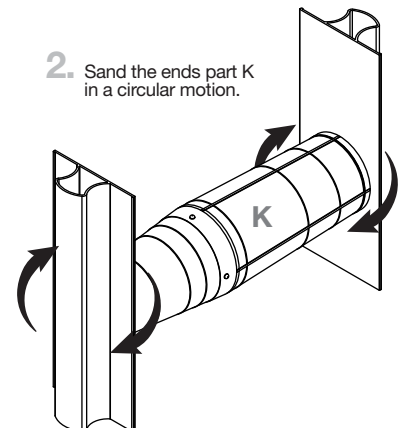


ASSEMBLE CENTER CORE

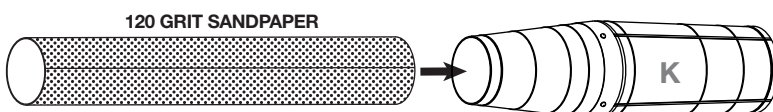
1. Using a sharp hobby knife, lightly score around the parts shown below. Take several light passes rather than trying to cut it at once.



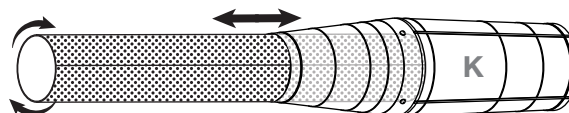
2. Sand the ends part K in a circular motion.



3. Roll 120 grit sandpaper and insert into narrow end of K.



4. Rotate sandpaper left and right as well as pushing it in and out. Proceed slowly. Enlarge the hole just large enough to fit tube E.



ASSEMBLE CENTER CORE (CONTINUED)

5. Slide K over tube E until K is touching J parts. Align molded seam on K with "Plastic Part Seam" line on tube E.

6. Test fit ring D into upper assembly to confirm it fits. Sand both D and K until parts fit together. Apply epoxy to inside end of K and on the end of tube E.

NOTE:
Center marks on edge of ring D should align with molded seam in part K.

7. Slide ring D over the end of tube E. Slide K over ring D.

NOTE:
Make sure the molded seam on K is still aligned with "Plastic Part Seam" line on tube E.

8. Glue top surface of laser cut ring D flush with end of body tube E. The top edge of blow molded part K needs to be $\frac{1}{32}$ in. further forward than the end of body tube E and laser cut ring D.

CROSS SECTION

$\frac{1}{32}$ in.
(0.8mm)

9. Apply thin CA glue to K and E joint.

10.

LET DRY

ATTACH CENTER CORE DETAILS

1. Carefully remove L parts.

2. Apply plastic glue to undersides of L parts.

3. Place L parts onto K as shown.

LET DRY

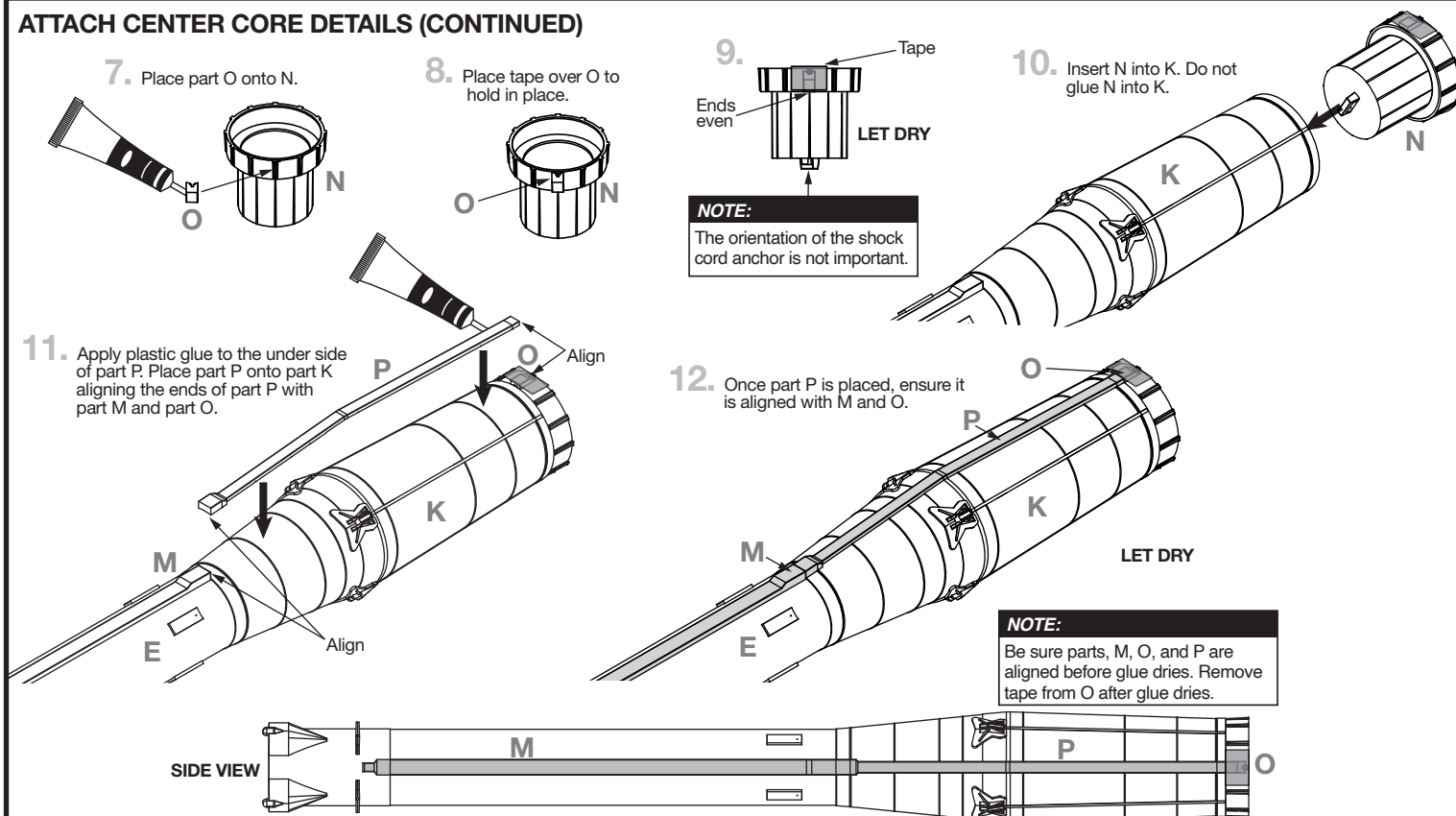
4. Apply CA glue to underside of part M. Align M between the "Tunnel" lines marked on tube E. Align top of M with bottom of K.

5.

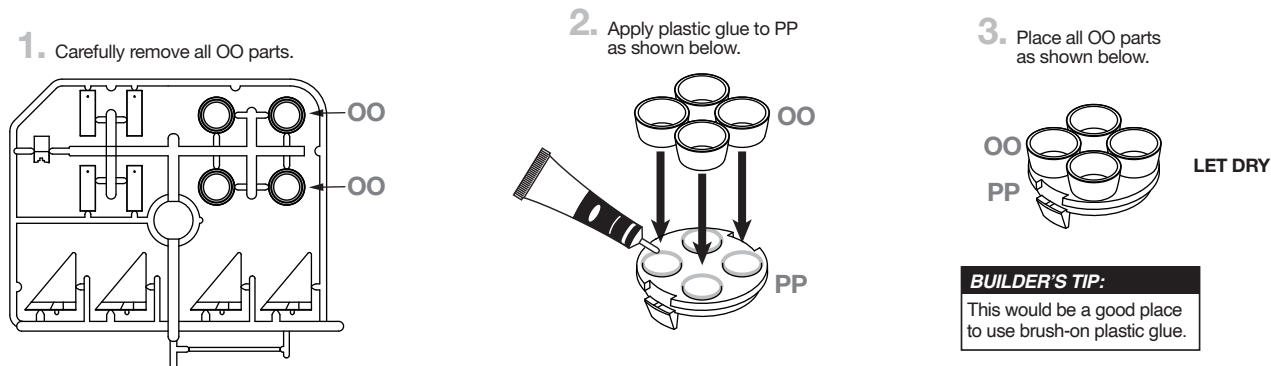
LET DRY

6. Carefully remove part O.

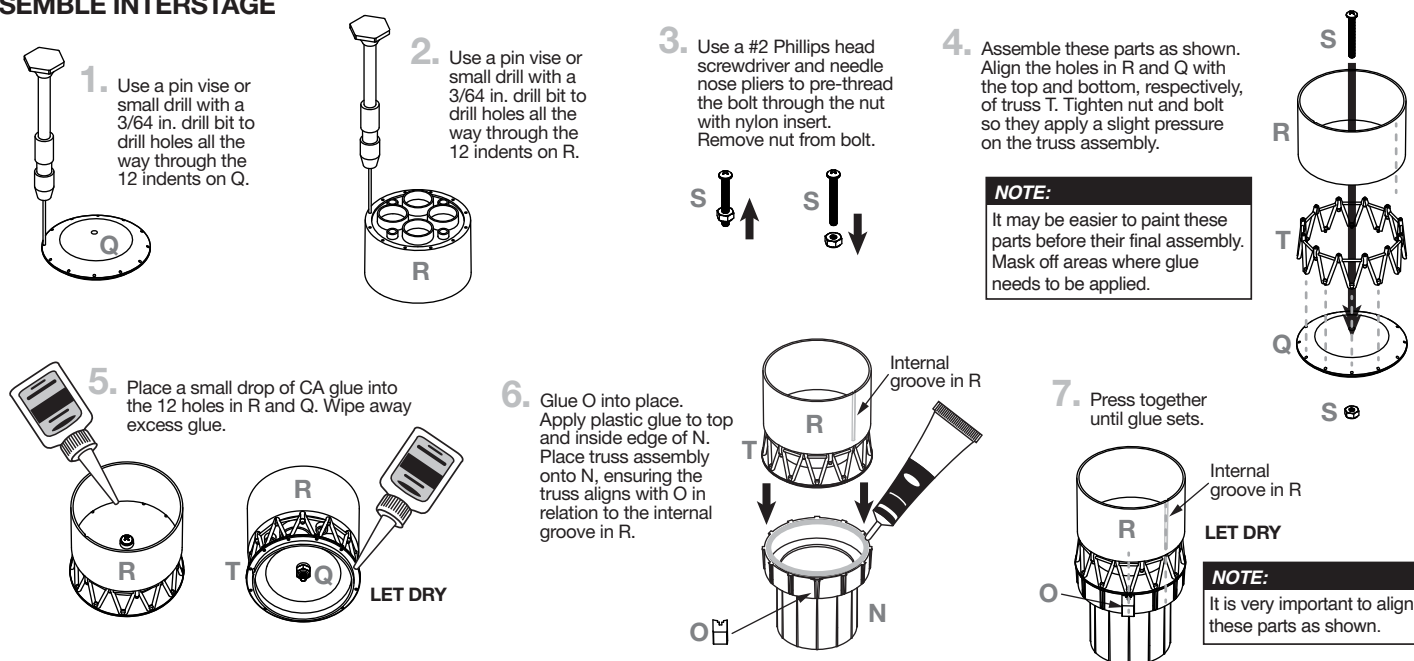
ATTACH CENTER CORE DETAILS (CONTINUED)



ASSEMBLE CENTER CORE DISPLAY NOZZLE

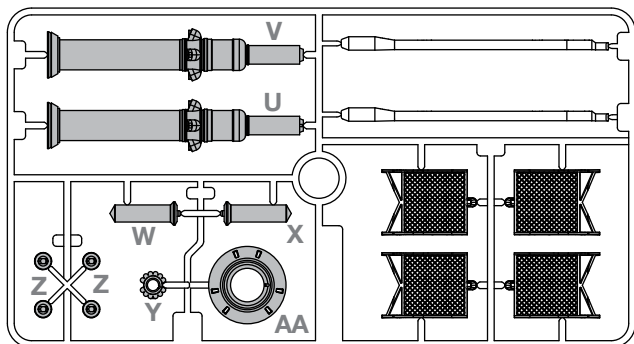


ASSEMBLE INTERSTAGE

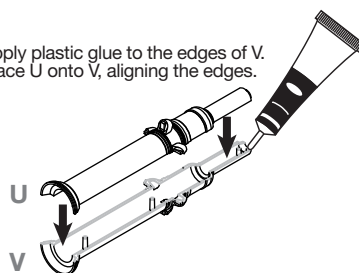


ASSEMBLE ESCAPE TOWER

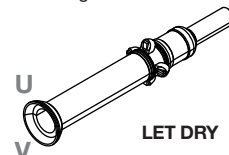
1. Carefully remove parts U, V, W, X, Y, Z, and AA.



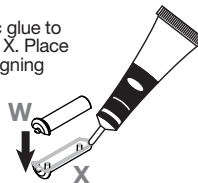
2. Apply plastic glue to the edges of V. Place U onto V, aligning the edges.



3. Press and hold for 30 seconds until glue sets.



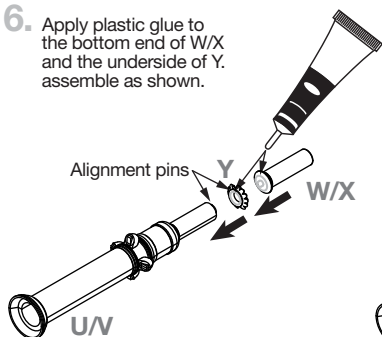
4. Apply plastic glue to the edges of X. Place W onto X, aligning the edges.



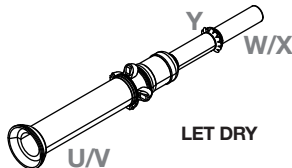
5. Press and hold for 30 seconds until glue sets.



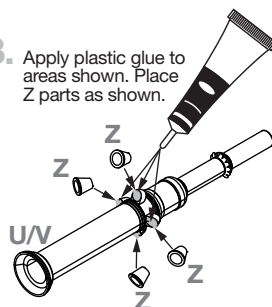
6. Apply plastic glue to the bottom end of W/X and the underside of Y, assemble as shown.



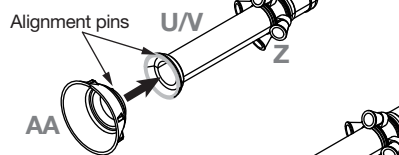
7. Press and hold for 30 seconds until glue sets.



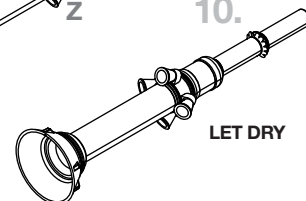
8. Apply plastic glue to areas shown. Place Z parts as shown.



9. Apply plastic glue to bottom edge of U/V. Place AA on bottom of U/V.

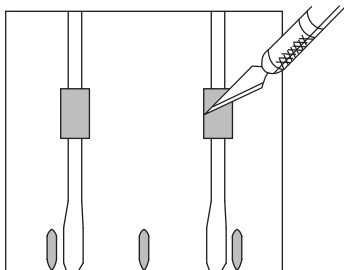


10. Press and hold for 30 seconds until glue sets.

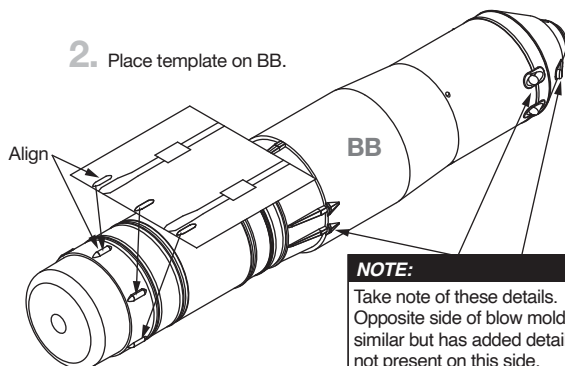


ASSEMBLE UPPER STAGE

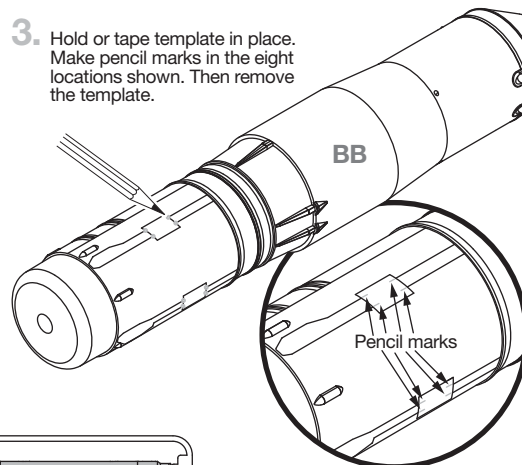
1. Cut out full size template from page 10. Cut out all gray areas with a hobby knife.



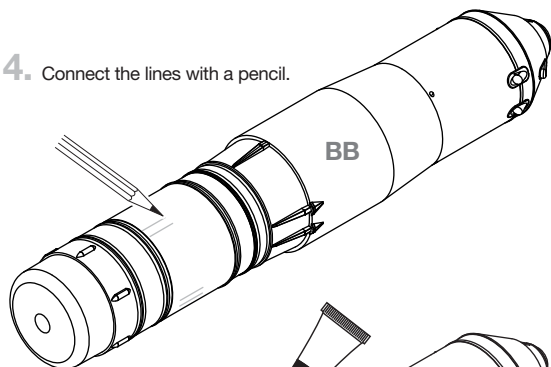
2. Place template on BB.



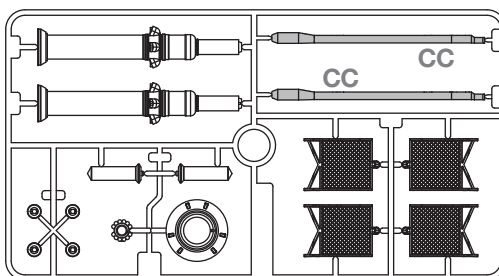
3. Hold or tape template in place. Make pencil marks in the eight locations shown. Then remove the template.



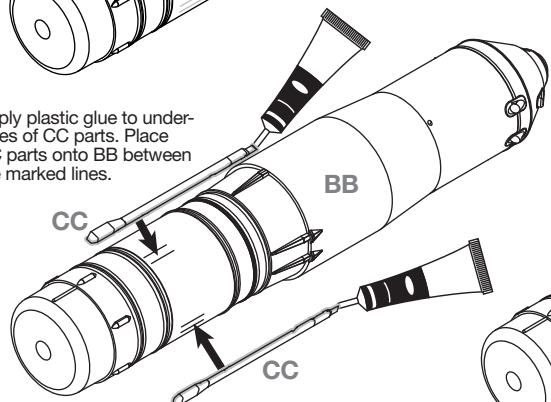
4. Connect the lines with a pencil.



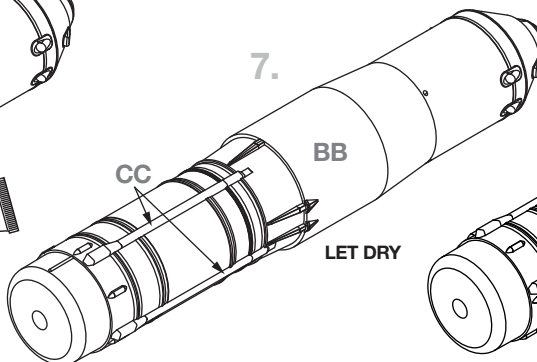
5. Carefully remove CC parts.



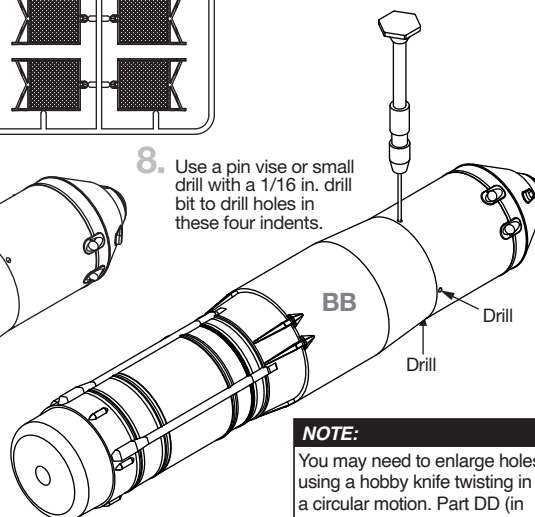
6. Apply plastic glue to undersides of CC parts. Place CC parts onto BB between the marked lines.



7. Press and hold for 30 seconds until glue sets.



8. Use a pin vise or small drill with a 1/16 in. drill bit to drill holes in these four indents.

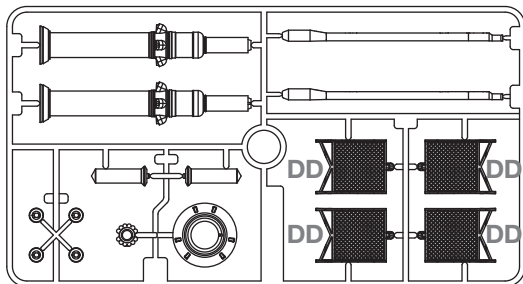


NOTE:

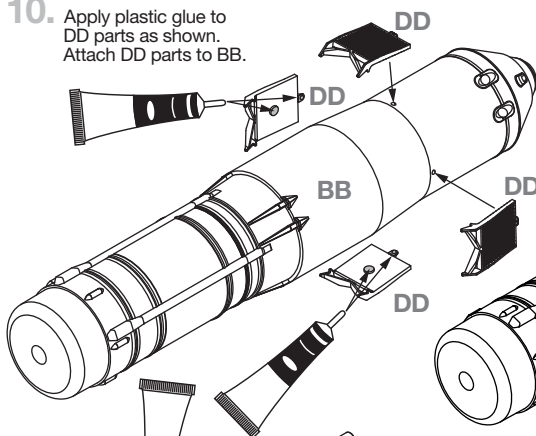
You may need to enlarge holes using a hobby knife twisting in a circular motion. Part DD (in next step) must lay flat on BB.

ASSEMBLE UPPER STAGE (CONTINUED)

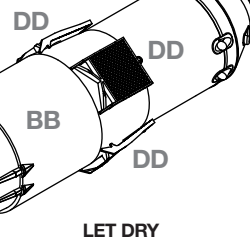
9. Carefully remove DD parts.



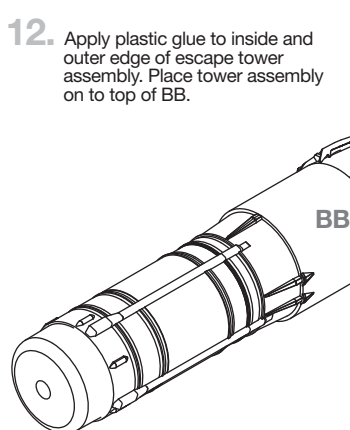
10. Apply plastic glue to DD parts as shown. Attach DD parts to BB.



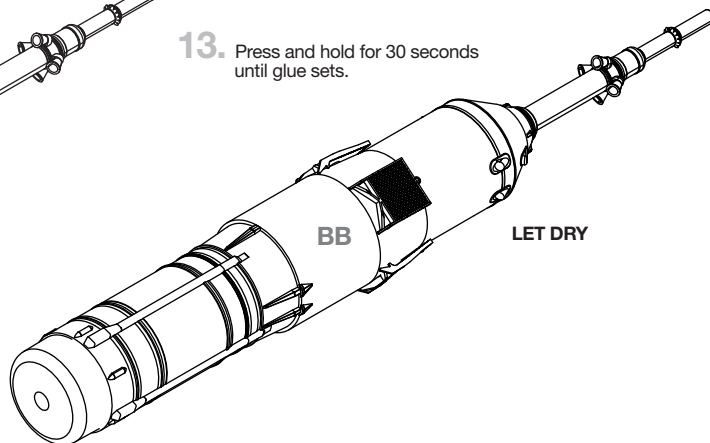
11.



12. Apply plastic glue to inside and outer edge of escape tower assembly. Place tower assembly on top of BB.

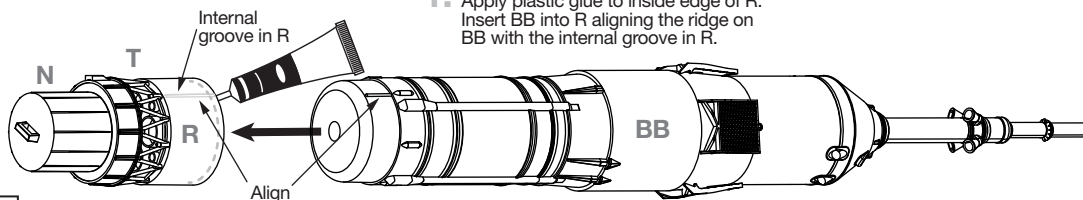


13. Press and hold for 30 seconds until glue sets.

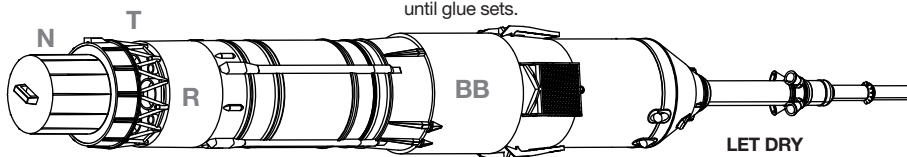


ASSEMBLE UPPER STAGE AND INTERSTAGE

1. Apply plastic glue to inside edge of R. Insert BB into R aligning the ridge on BB with the internal groove in R.



2. Press and hold for 30 seconds until glue sets.

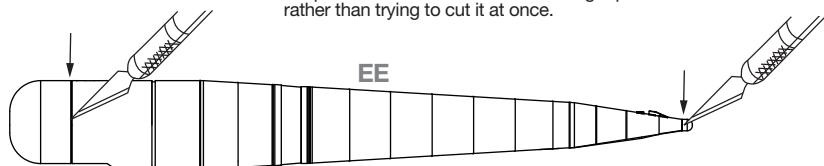


IMPORTANT NOTE:

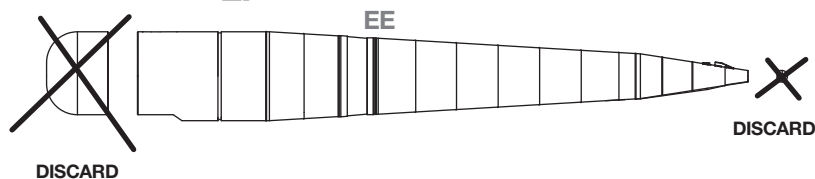
If building this model for flying, this gluing step should be done **after** center of gravity check (page 19) is complete.

PREPARE BOOSTERS

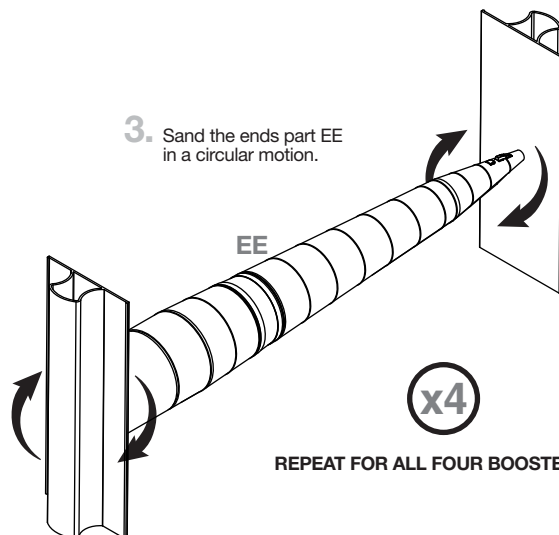
1. Using a sharp hobby knife, lightly score around the parts shown below. Take several light passes rather than trying to cut it at once.



2.

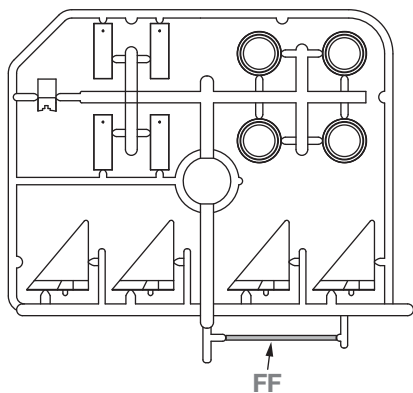


3. Sand the ends part EE in a circular motion.

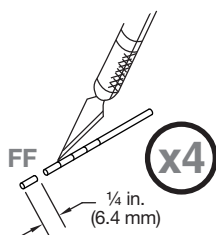


ALIGN CENTER CORE AND BOOSTERS AND PREP FOR PAINTING

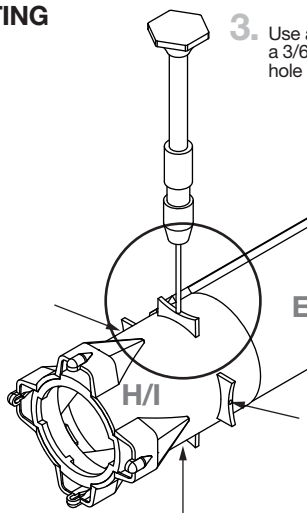
1. Carefully remove part FF.



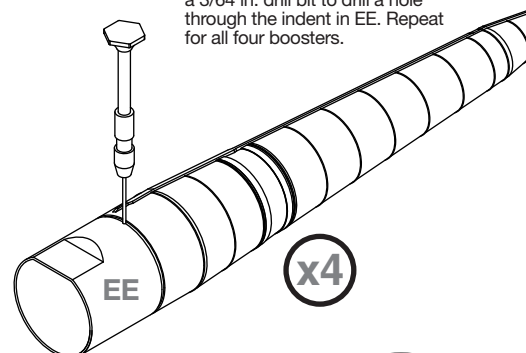
2. Cut four 1/4 in. pieces from FF.



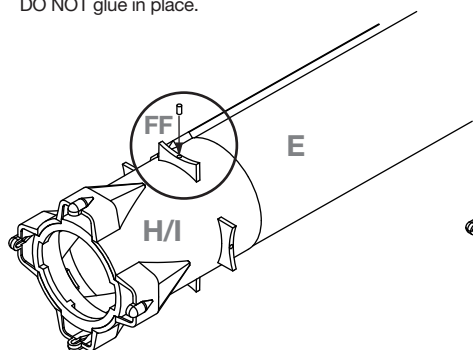
3. Use a pin vise or a small drill with a 3/64 in drill bit to drill a shallow hole in the locations shown.



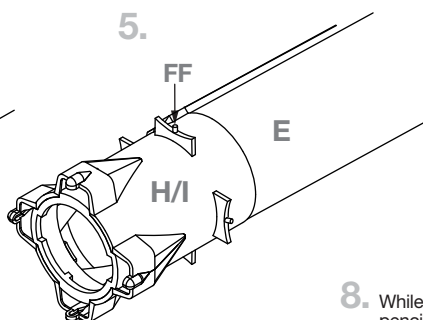
6. Use a pin vise or a small drill with a 3/64 in. drill bit to drill a hole through the indent in EE. Repeat for all four boosters.



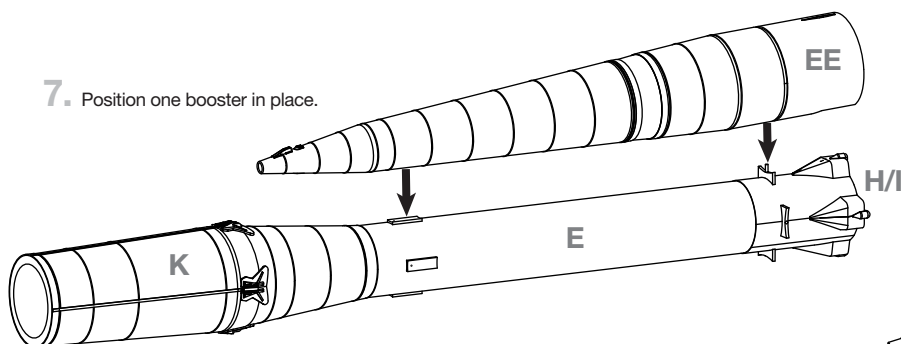
4. Insert one FF piece into hole in H/I. DO NOT glue in place.



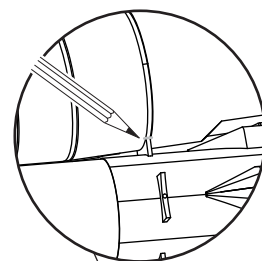
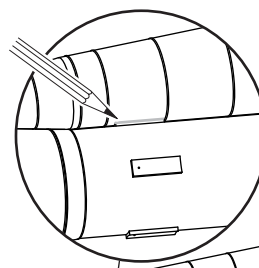
5.



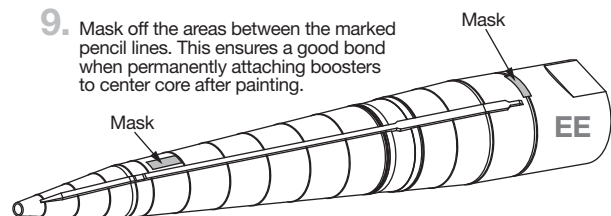
7. Position one booster in place.



8. While holding booster in place, make pencil marks on the both side of the booster where it makes contact with the center core.



9. Mask off the areas between the marked pencil lines. This ensures a good bond when permanently attaching boosters to center core after painting.



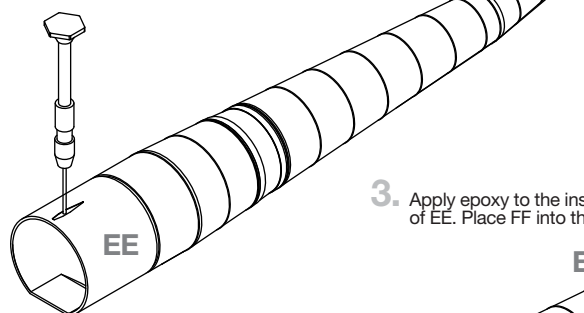
x4 REPEAT FOR ALL FOUR BOOSTERS

NOTE:

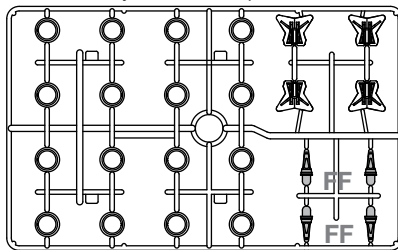
Once you've completed these steps, be sure to remove FF. You will need all 1/4 in. FF pieces after painting. Do not lose them.

ASSEMBLE BOOSTERS

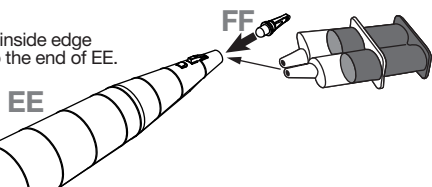
1. Use a pin vise or a small drill with a 1/16 in. drill bit to drill a hole in EE in the location shown.



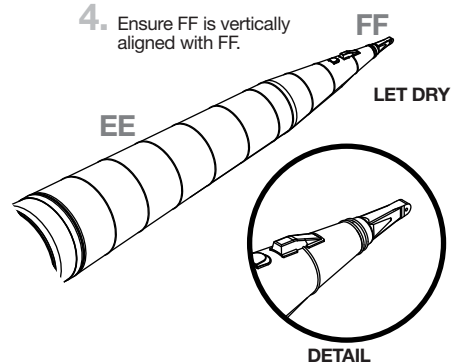
2. Carefully remove all FF parts.



3. Apply epoxy to the inside edge of EE. Place FF into the end of EE.

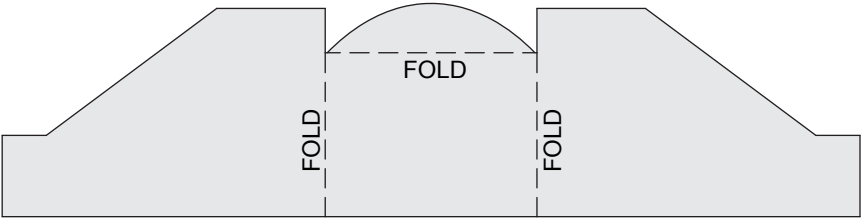
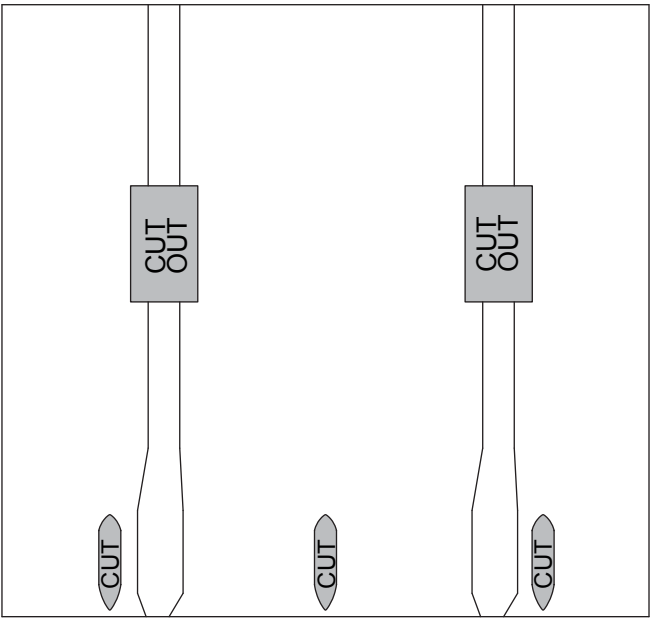


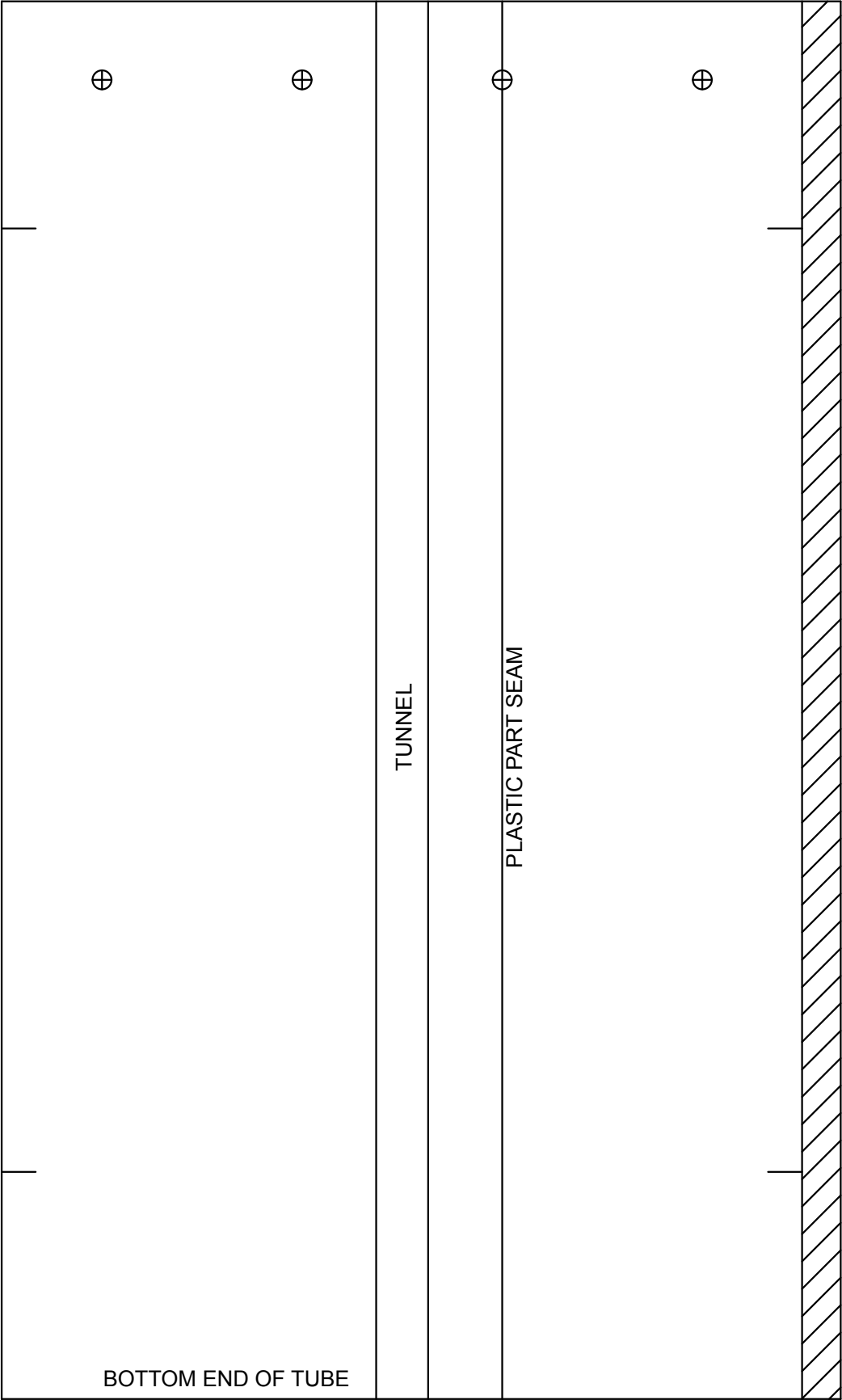
4. Ensure FF is vertically aligned with FF.



x4 REPEAT FOR ALL FOUR BOOSTERS

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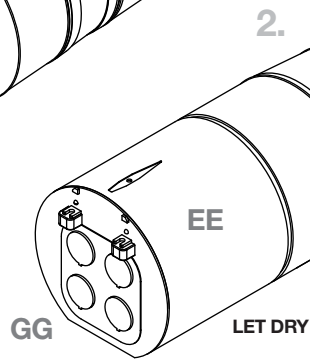
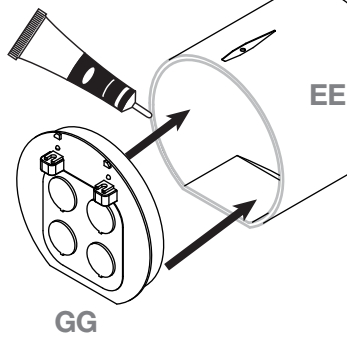




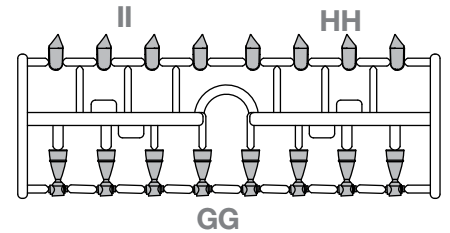
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ASSEMBLE BOOSTERS (CONTINUED)

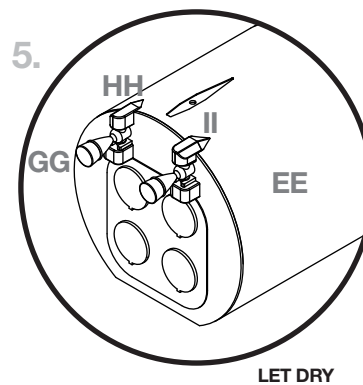
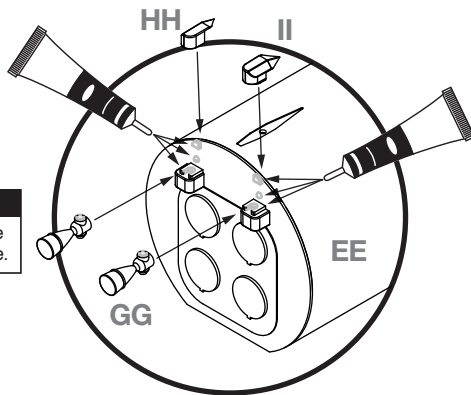
1. Apply plastic glue to inside and edge of EE. Place GG into the end of EE.



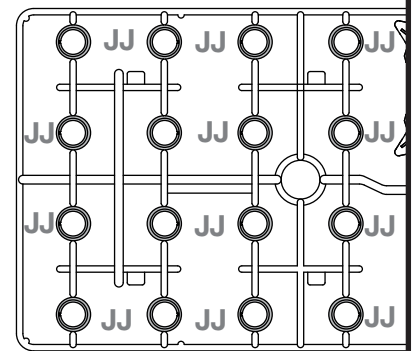
3. Carefully remove all GG, HH, and II parts.



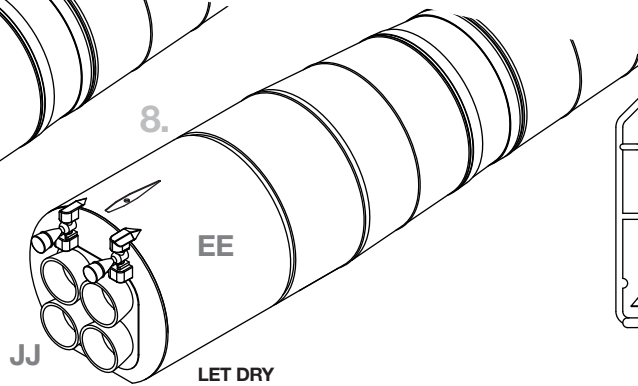
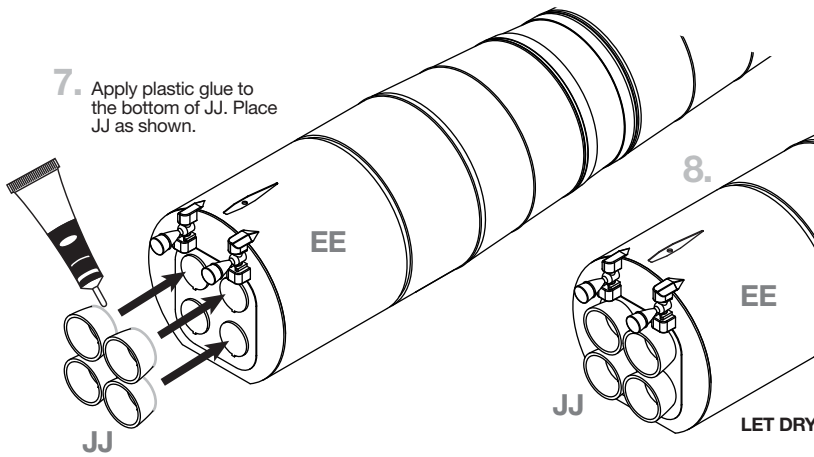
BUILDER'S TIP:
This would be a good place to use brush-on plastic glue.



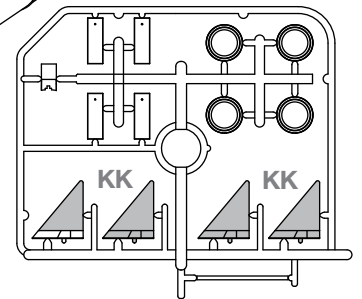
6. Carefully remove all JJ parts.



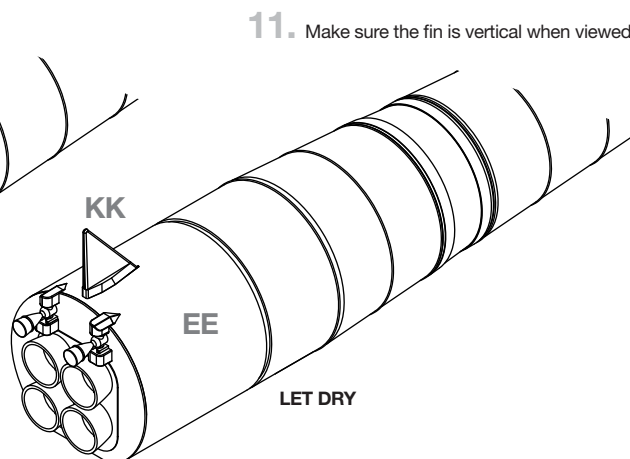
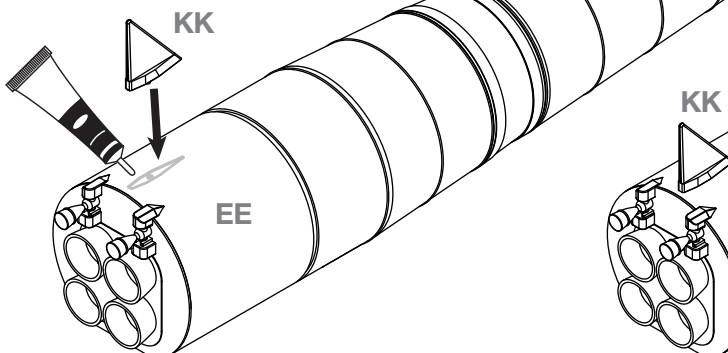
7. Apply plastic glue to the bottom of JJ. Place JJ as shown.



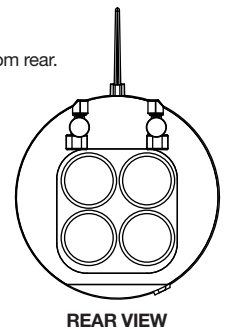
9. Carefully remove all KK parts.



10. Apply glue to EE in the area shown. Place KK onto EE.



11. Make sure the fin is vertical when viewed from rear.



REAR VIEW

x4

REPEAT FOR ALL FOUR BOOSTERS

MASK, PAINT, AND APPLY DECALS

PAINT COLORS

White
Red
Gray-Green
Orange
Silver
Chrome

1. Spray rocket with white primer, let dry, and sand. Repeat until rocket is smooth.
2. Paint entire rocket white.
3. Mask off rocket as needed for red, gray-green, orange, silver, and chrome paint application.
4. Apply decals only after paint is dry.
5. Cut decals from sheet, trimming close to edge.
6. One at a time, place in warm water until decal curls and begins to relax.
7. Remove and position on rocket, sliding decal away from backing material.
8. Blot with clean paper towel. Let set overnight.
9. OPTIONAL: Apply protective clear coat.

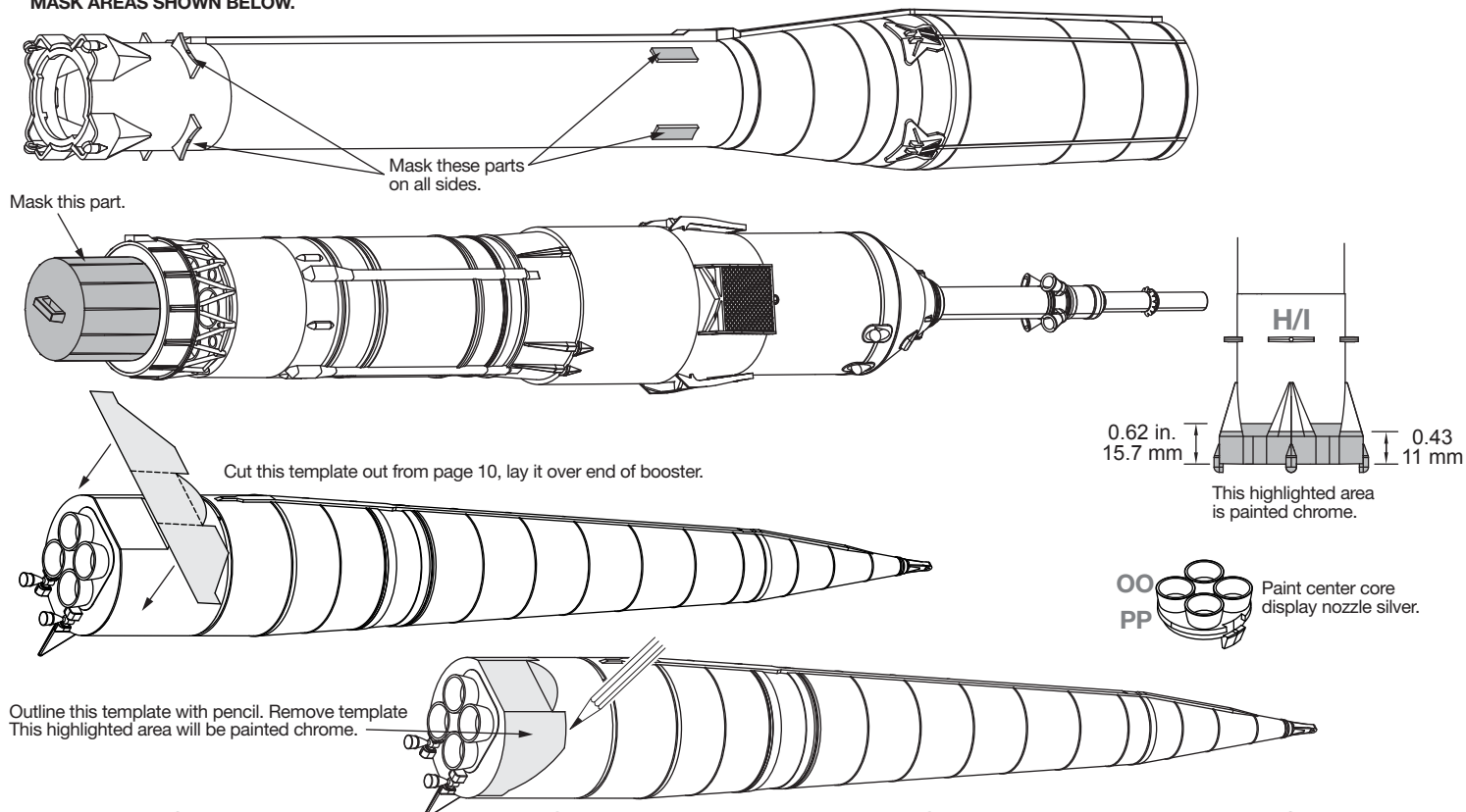
CAUTION:

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

NOTE:

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

MASK AREAS SHOWN BELOW.



0°

90°

180°

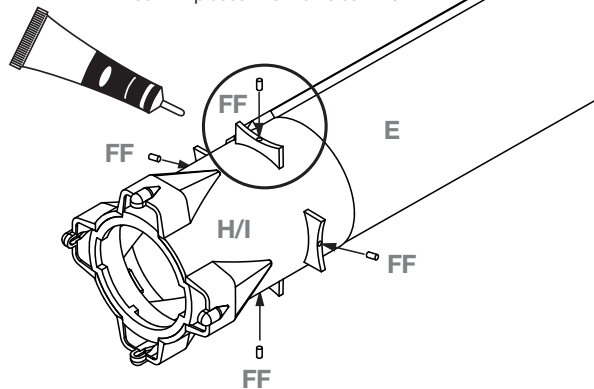
270°

FINAL ASSEMBLY

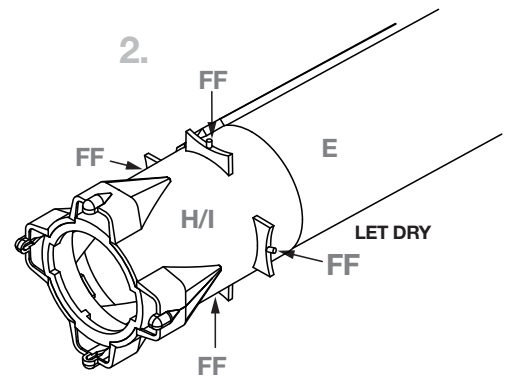
NOTE:

Remove all masking after painting is complete.

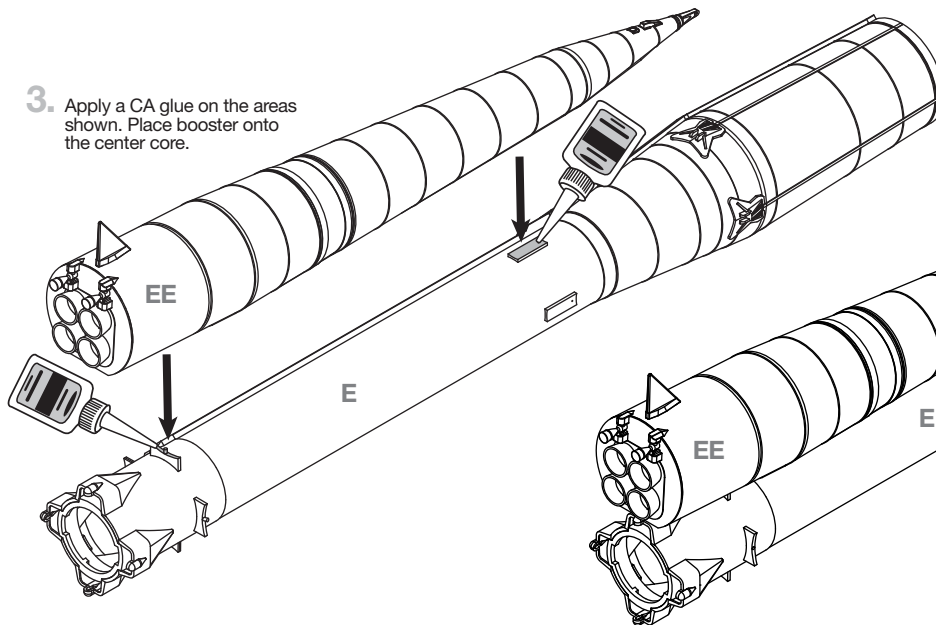
1. Place a drop of plastic glue into the holes. Insert FF pieces into the holes in H/I.



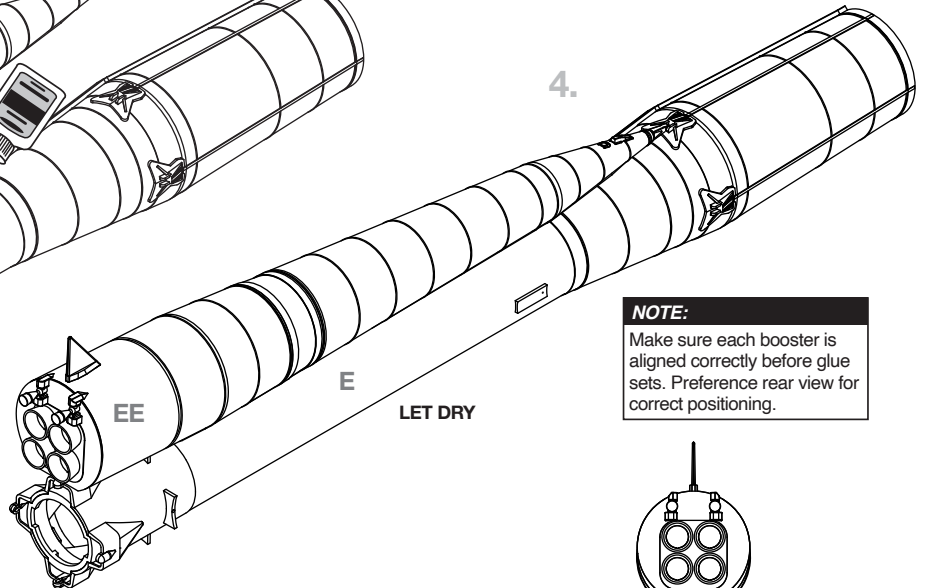
2.



3. Apply a CA glue on the areas shown. Place booster onto the center core.



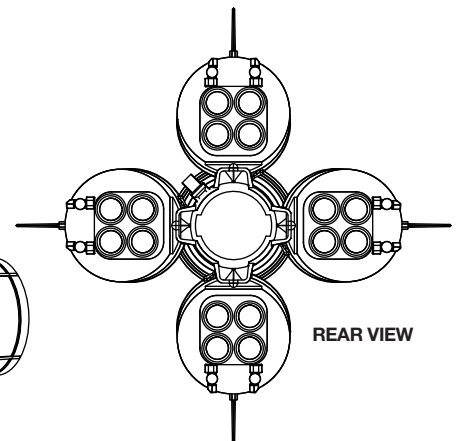
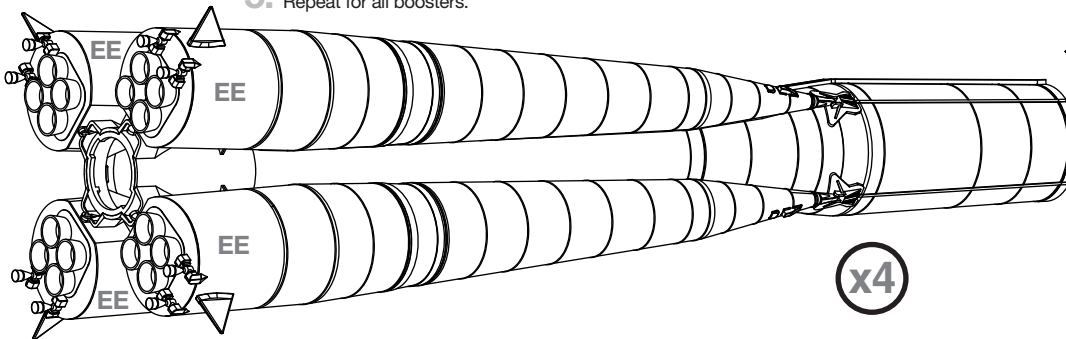
4.



NOTE:

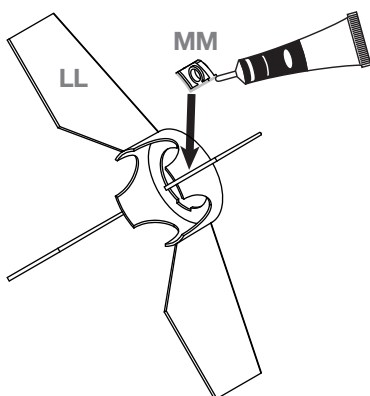
Make sure each booster is aligned correctly before glue sets. Preference rear view for correct positioning.

5. Repeat for all boosters.

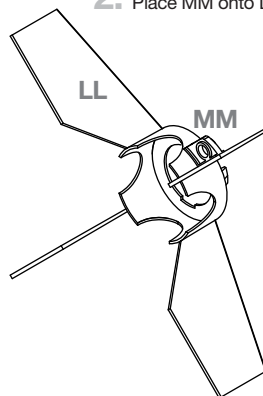


ASSEMBLE FLIGHT FINS

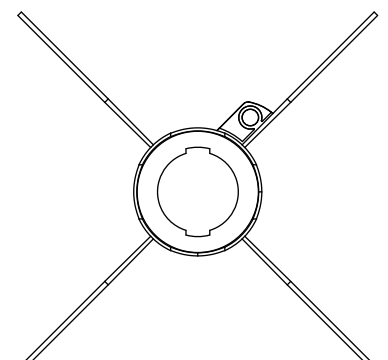
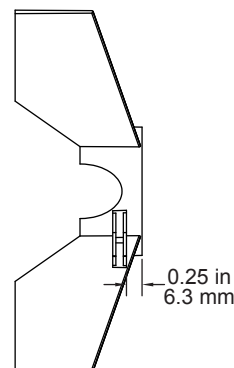
1. Apply plastic glue to the mounting surfaces of MM.



2. Place MM onto LL.

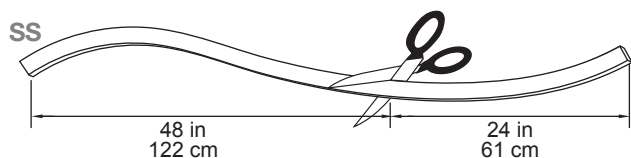


LET DRY

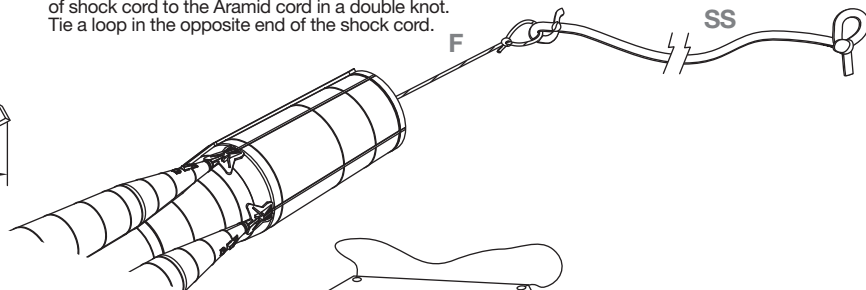


ASSEMBLE RECOVERY SYSTEM

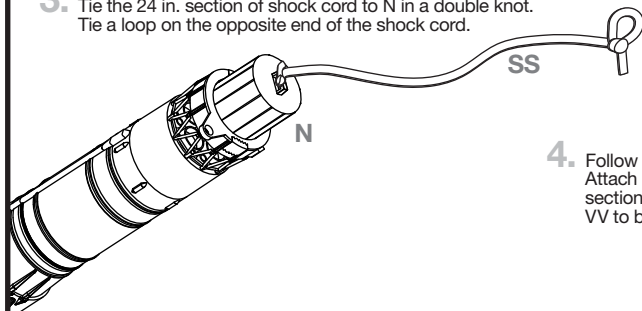
1. Cut shock cord SS into two pieces. A 48 in. piece and a 24 in. piece.



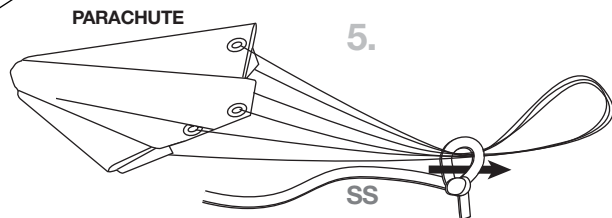
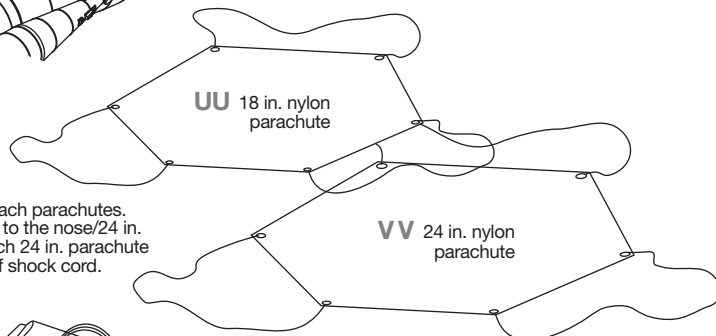
2. Tie a loop into Aramid cord F. Tie the 48 in. section of shock cord to the Aramid cord in a double knot. Tie a loop in the opposite end of the shock cord.



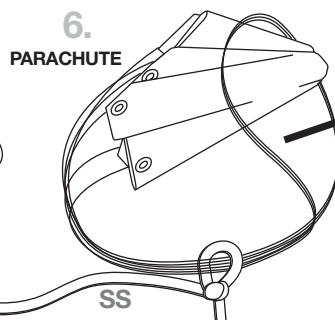
3. Tie the 24 in. section of shock cord to N in a double knot. Tie a loop on the opposite end of the shock cord.



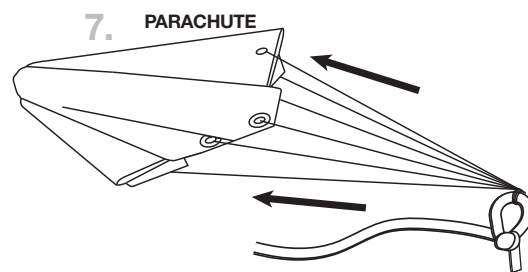
4. Follow the next steps to attach parachutes. Attach 18 in. parachute UU to the nose/24 in. section of shock cord. Attach 24 in. parachute VV to body/48 in. section of shock cord.



5.



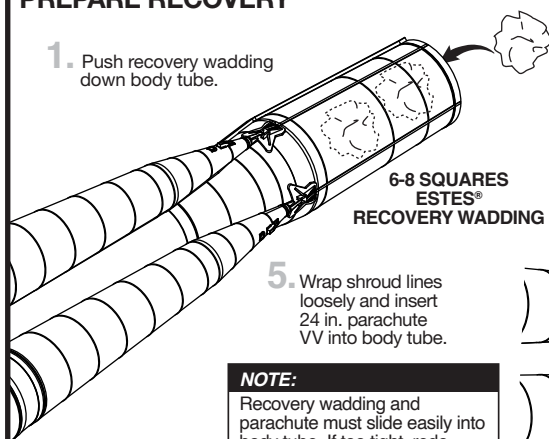
6. PARACHUTE



7. PARACHUTE

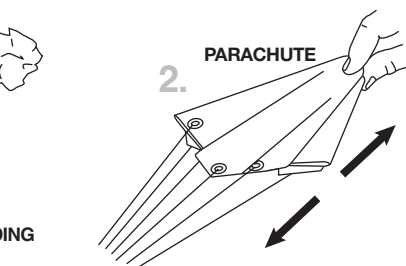
PREPARE RECOVERY

1. Push recovery wadding down body tube.



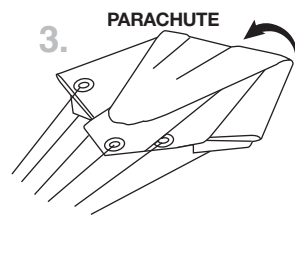
5. Wrap shroud lines loosely and insert 24 in. parachute VV into body tube.

NOTE:
Recovery wadding and parachute must slide easily into body tube. If too tight, redo.



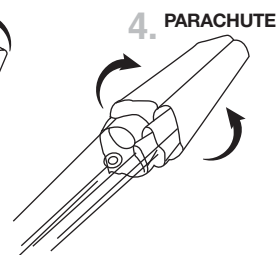
2.

PARACHUTE



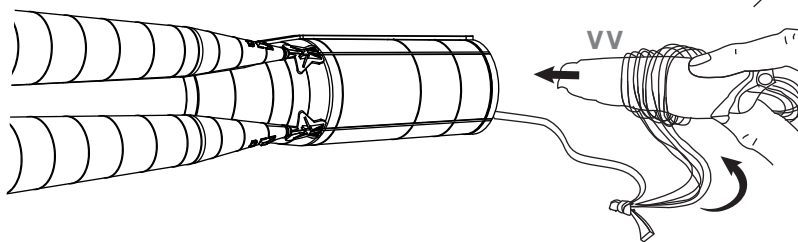
3.

PARACHUTE



4.

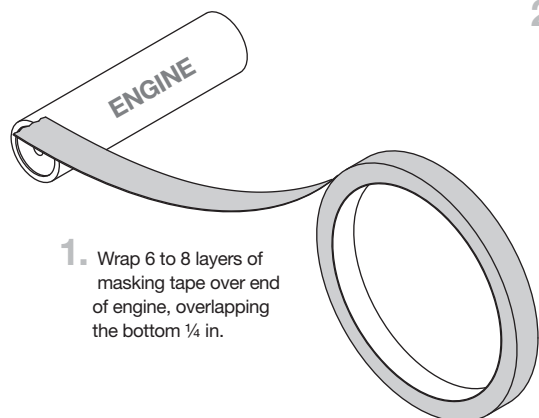
PARACHUTE



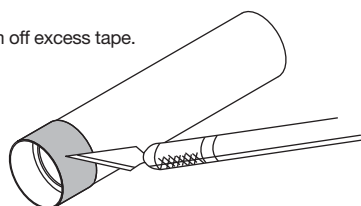
NOTE:
18 in. parachute UU will be inserted into body tube later.

PREPARE ENGINE

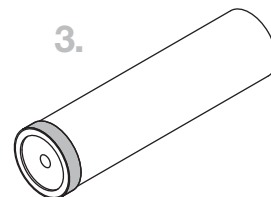
1. Wrap 6 to 8 layers of masking tape over end of engine, overlapping the bottom 1/4 in.



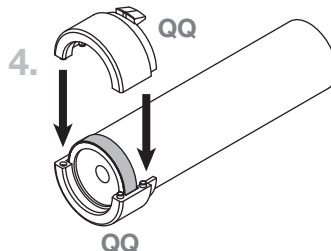
2. Trim off excess tape.



3.



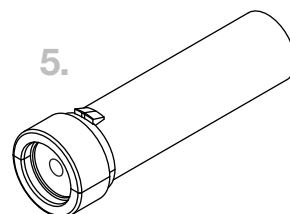
4.



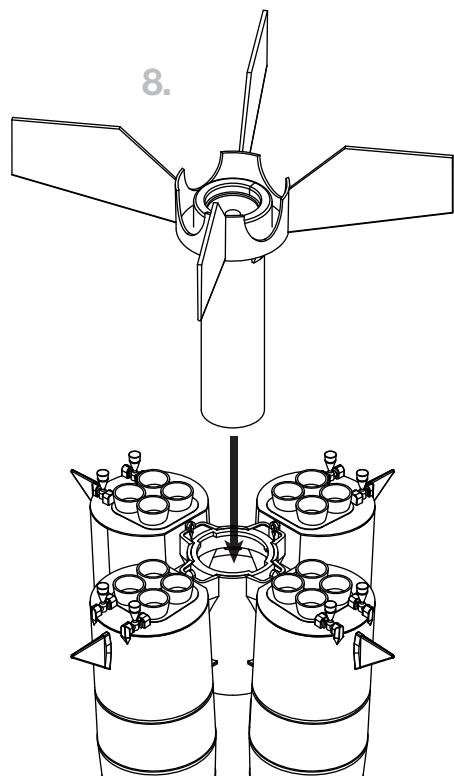
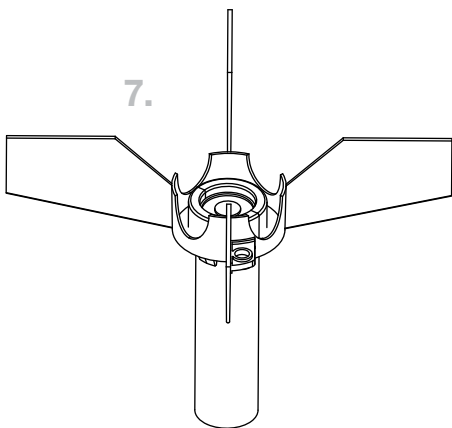
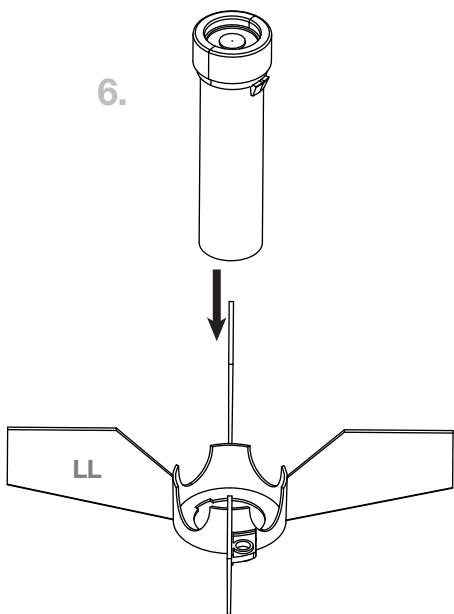
QQ

QQ

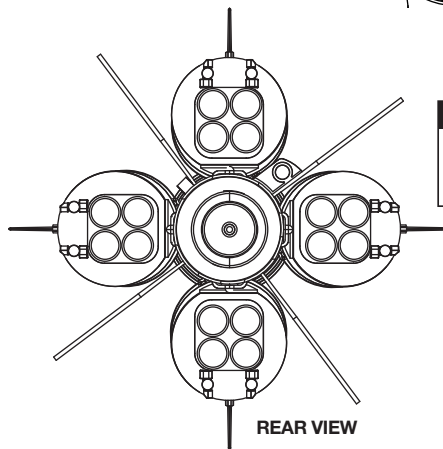
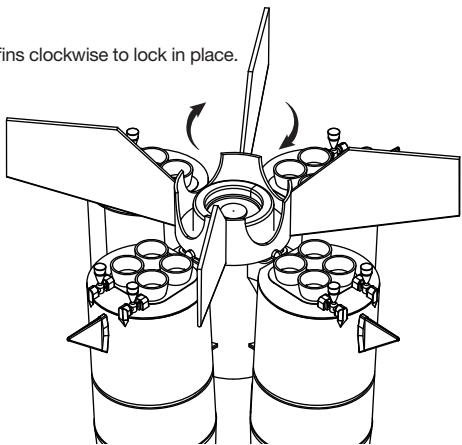
5.



PREPARE ENGINE (CONTINUED)



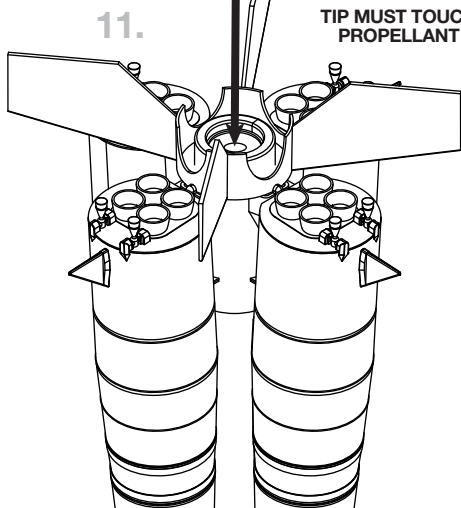
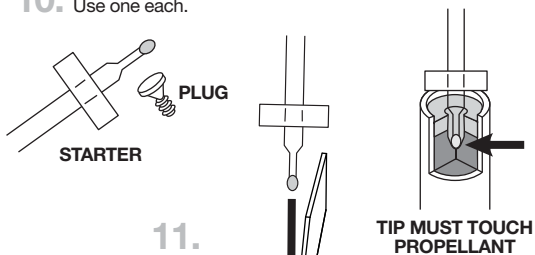
9. Rotate fins clockwise to lock in place.



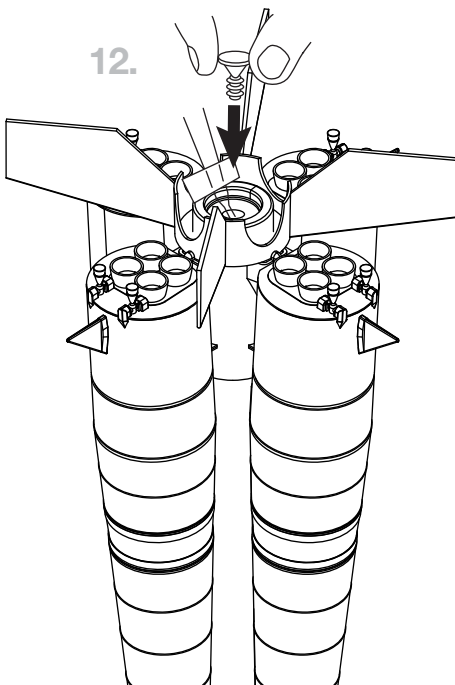
NOTE:

Typical fin alignment.
Launch lug MM should
sit between boosters.

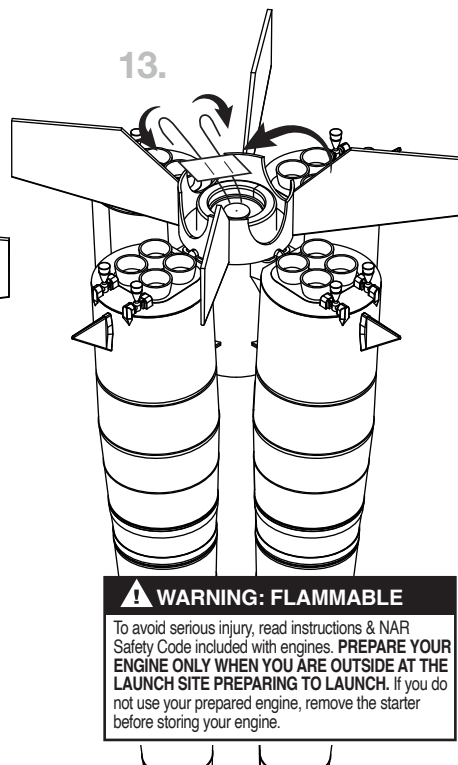
10. Use one each.



12.



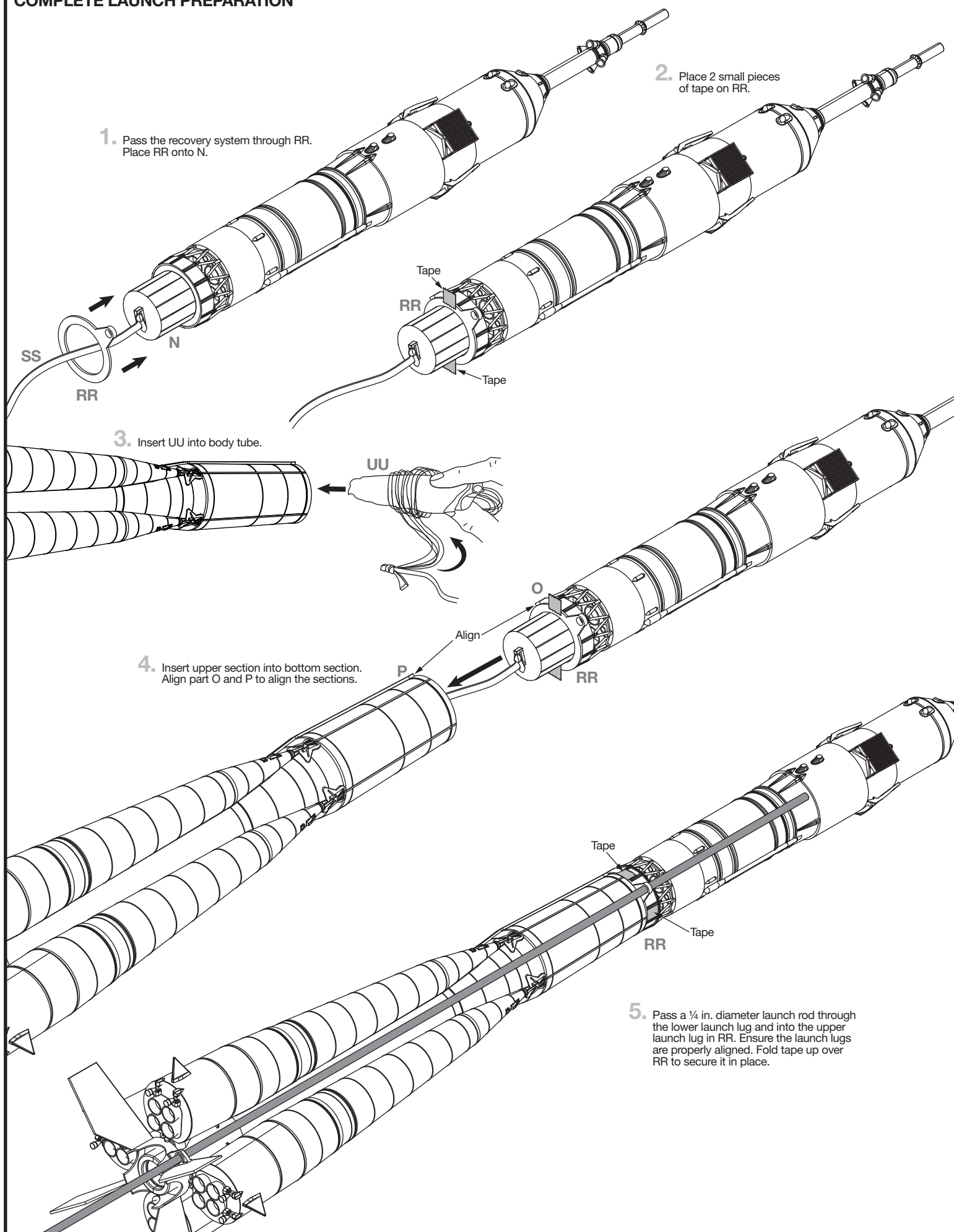
13.



⚠ WARNING: FLAMMABLE

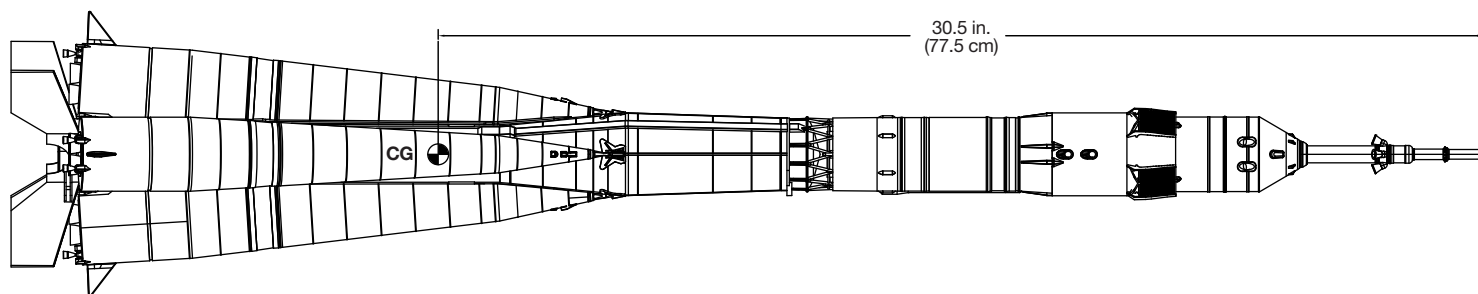
To avoid serious injury, read instructions & NAR Safety Code included with engines. **PREPARE YOUR ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH.** If you do not use your prepared engine, remove the starter before storing your engine.

COMPLETE LAUNCH PREPARATION



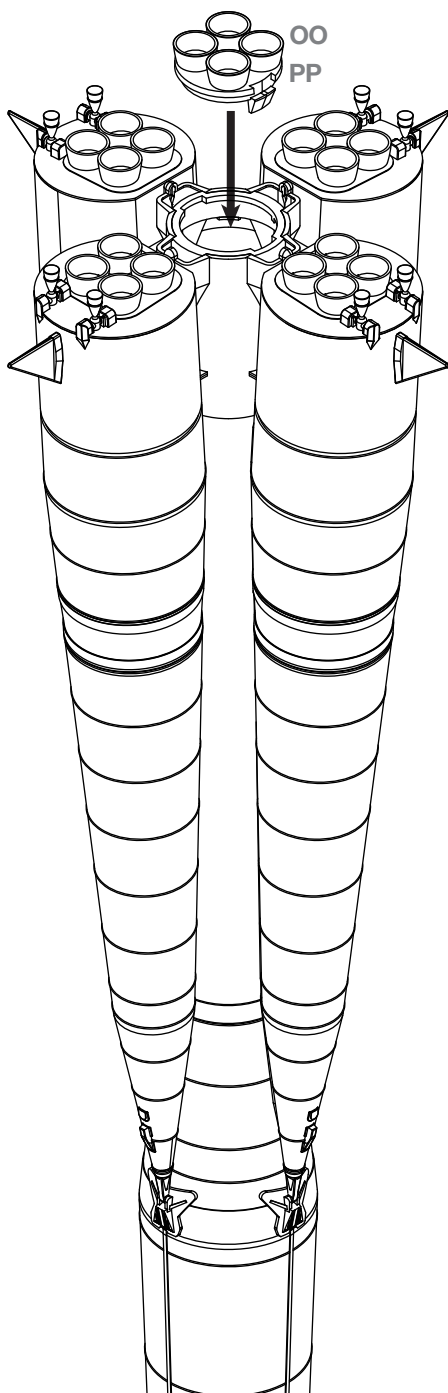
CHECK CENTER OF GRAVITY

After the engine is installed, ensure that the center of gravity is 30.5 in. (77.5 cm) from the front of the rocket. The center of gravity can be further forward of this point, but cannot be further back from this point. If the center of gravity is further back than 30.5 in., add weight to the nose cone to bring the center of gravity forward.

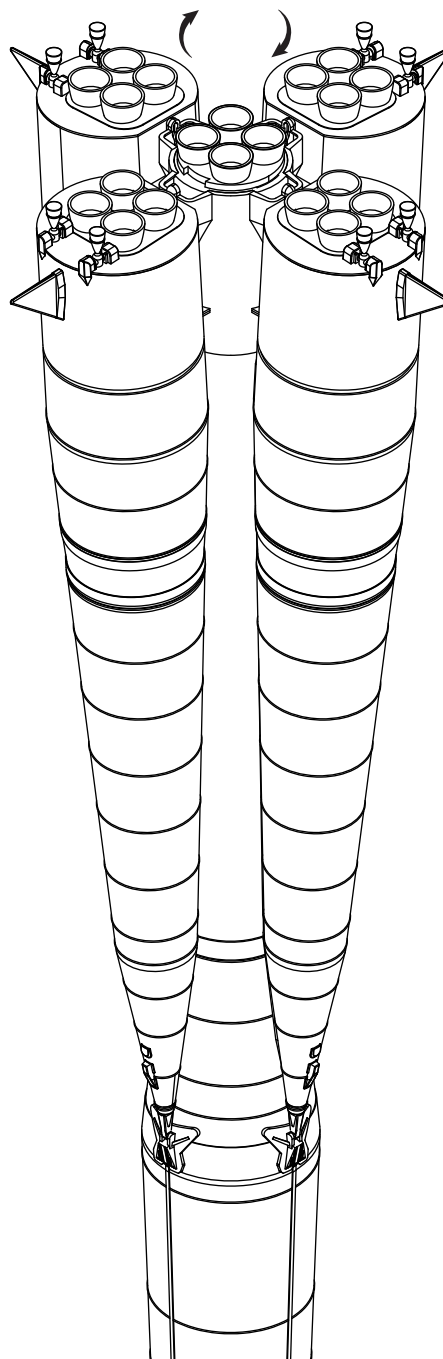


DISPLAY NOZZLE INSTALLATION

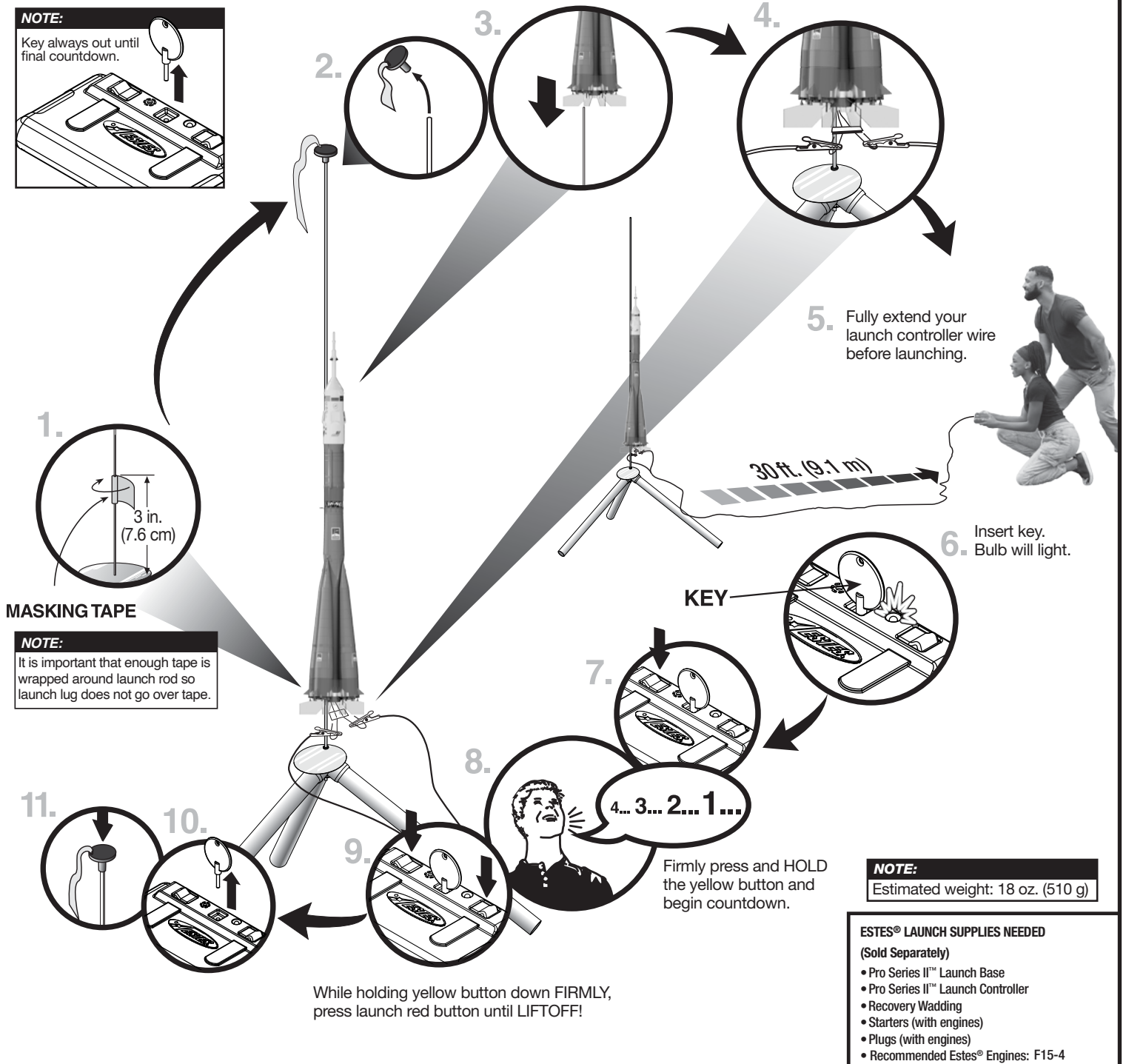
1. For display, remove clear fin unit LL and remove launch lug RR.



2. Rotate nozzle clockwise to lock in place.



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.