ESTES®

EstesRockets.com

MAYHEM™

1320

AGES 10+

Skill Level

ADVANCED

MODEL ROCKET INSTRUCTIONS

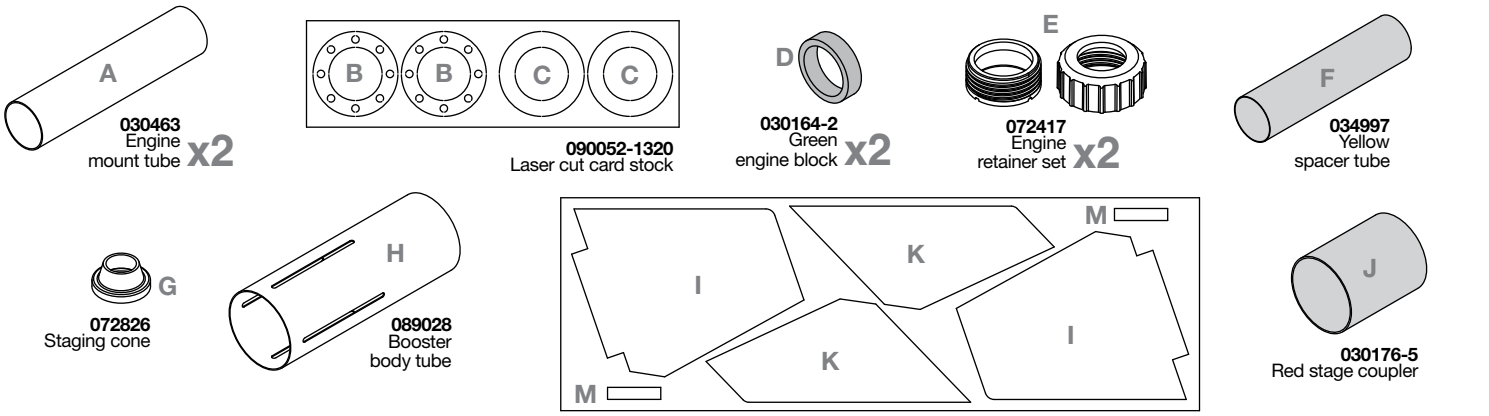
KEEP FOR FUTURE REFERENCE

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.*

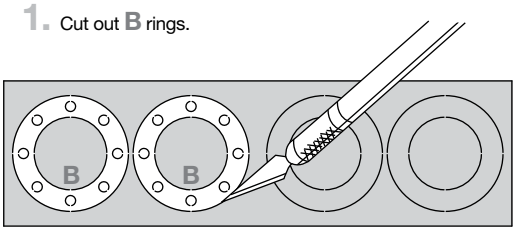
SUPPLIES

YELLOW GLUE | FINE SANDPAPER | HOBBY KNIFE | RULER | SOFT LEAD PENCIL | CLEAR TAPE | PLASTIC CEMENT | EPOXY | WHITE PRIMER | PAINT (Listed on Pg. 4) | CLEAR COAT (OPTIONAL)

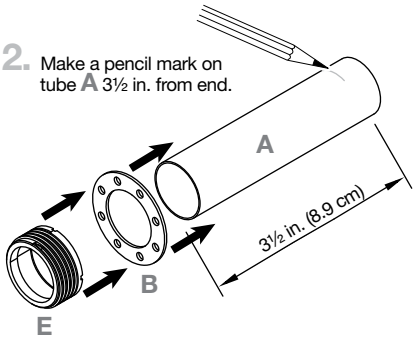


ASSEMBLE BOOSTER ENGINE MOUNT

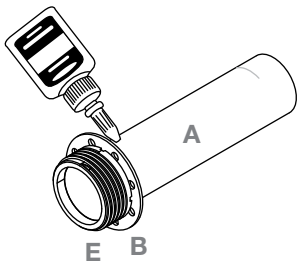
1. Cut out **B** rings.



2. Make a pencil mark on tube **A** 3½ in. from end.

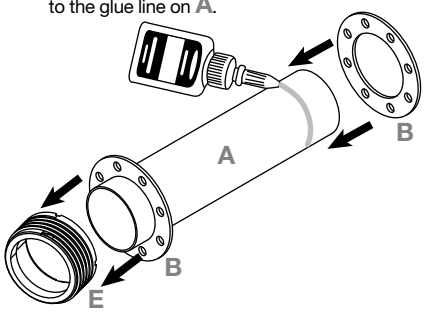


3. Place **B** and **E** on opposite end of tube **A**. Use **E** to set distance for ring **B**. Apply glue to inside of ring **B**.

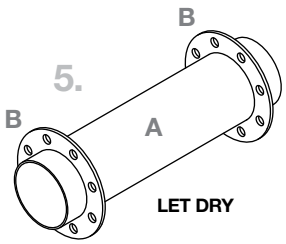


ASSEMBLE BOOSTER ENGINE MOUNT (CONTINUED)

4. Remove **E**. Apply glue around the pencil line. Slide ring **B** up to the glue line on **A**.

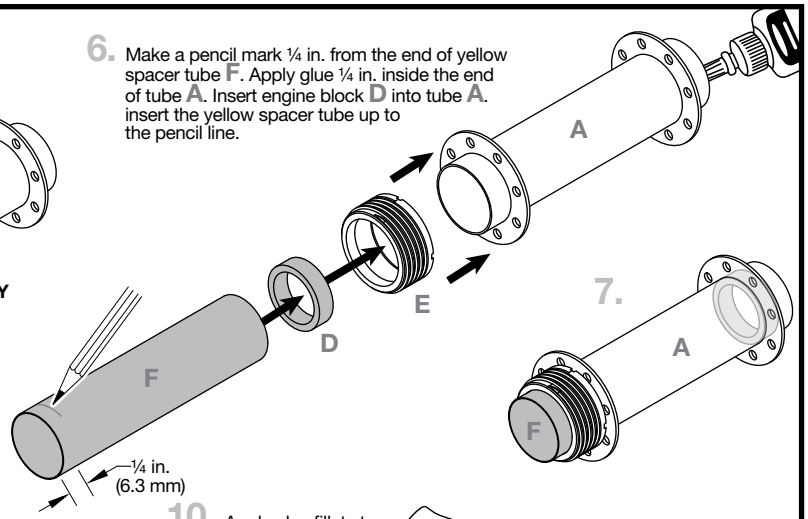


5.



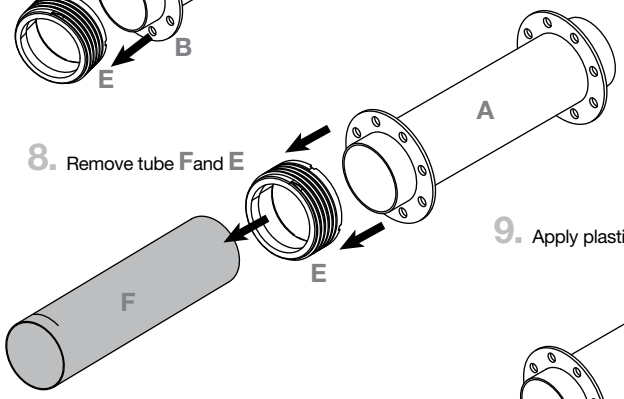
LET DRY

6. Make a pencil mark ¼ in. from the end of yellow spacer tube **F**. Apply glue ¼ in. inside the end of tube **A**. Insert engine block **D** into tube **A**. insert the yellow spacer tube up to the pencil line.

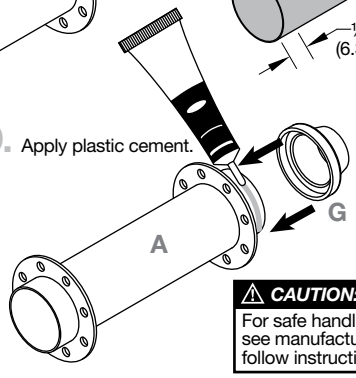


7.

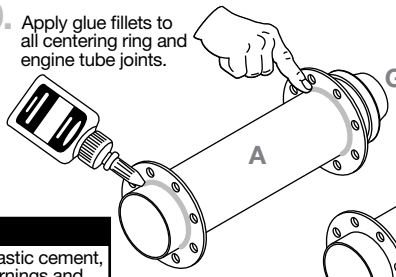
8. Remove tube **F** and **E**



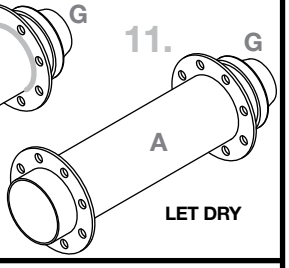
9. Apply plastic cement.



10. Apply glue fillets to all centering ring and engine tube joints.



11.

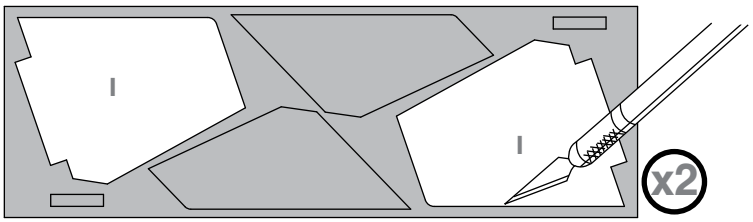


LET DRY

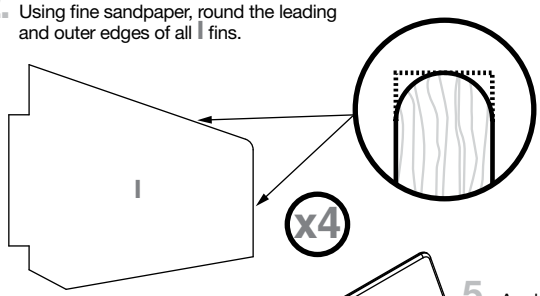
⚠ CAUTION:
For safe handling of plastic cement, see manufacturer's warnings and follow instructions for use.

ASSEMBLE BOOSTER STAGE

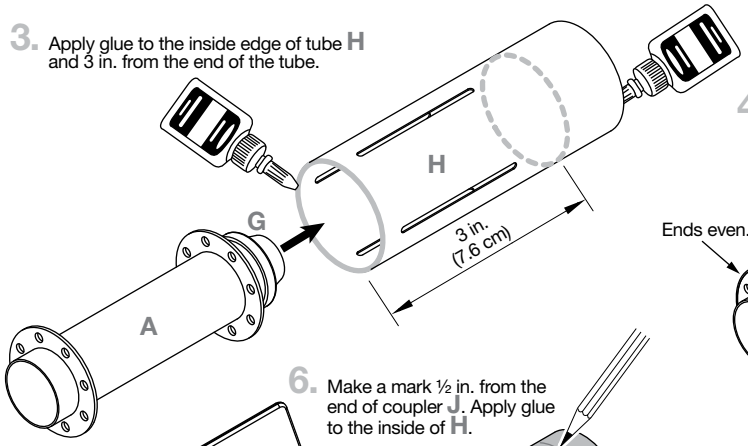
1. Cut out all **I** pieces from laser cut balsa.



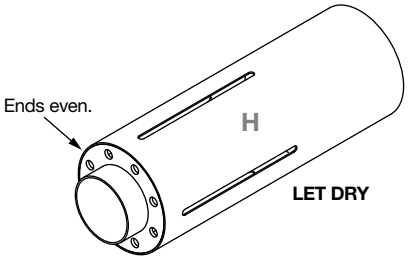
2. Using fine sandpaper, round the leading and outer edges of all **I** fins.



3. Apply glue to the inside edge of tube **H** and 3 in. from the end of the tube.

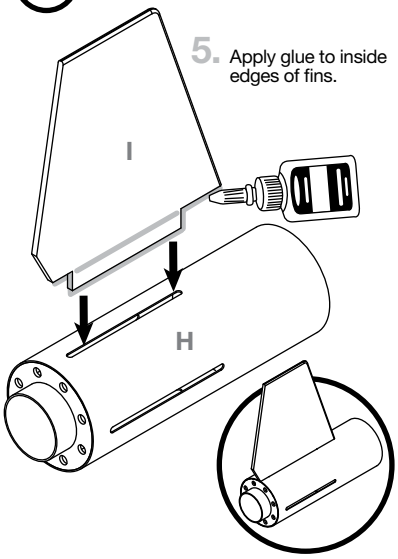


4. Insert booster engine mount.

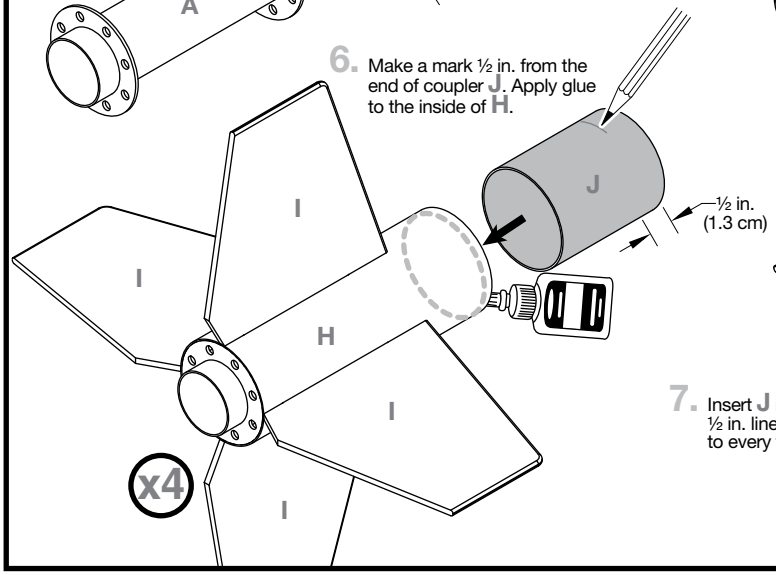


LET DRY

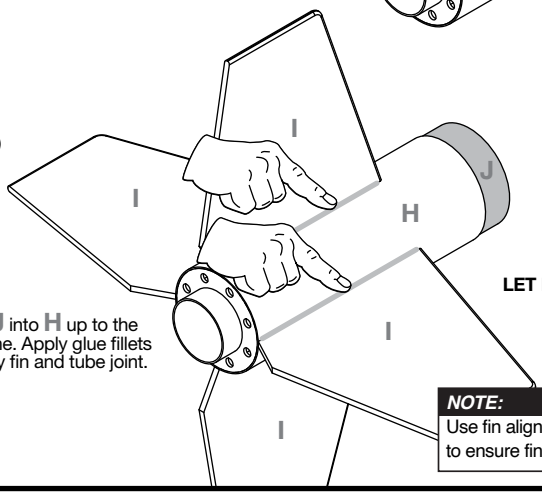
5. Apply glue to inside edges of fins.



6. Make a mark ½ in. from the end of coupler **J**. Apply glue to the inside of **H**.



7. Insert **J** into **H** up to the ½ in. line. Apply glue fillets to every fin and tube joint.

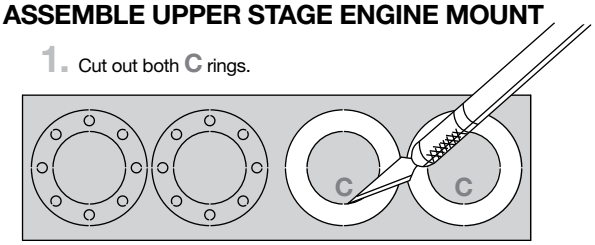


LET DRY

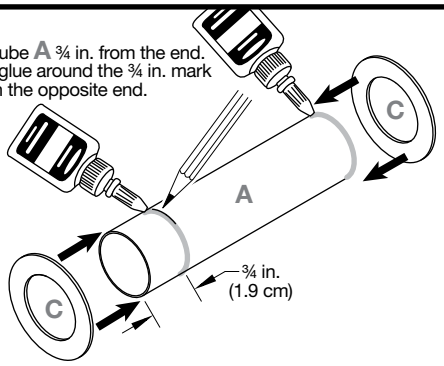
NOTE:
Use fin alignment guide on page 7 to ensure fins are at the correct angle.

ASSEMBLE UPPER STAGE ENGINE MOUNT

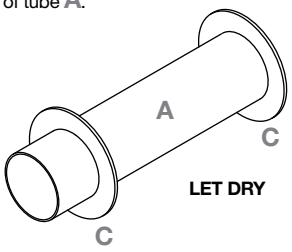
1. Cut out both **C** rings.



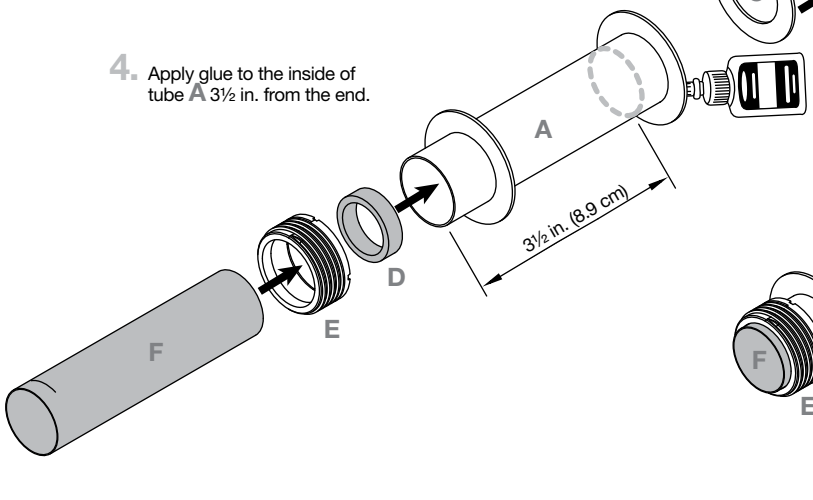
2. Mark tube **A** ¾ in. from the end. Apply glue around the ¾ in. mark and on the opposite end.



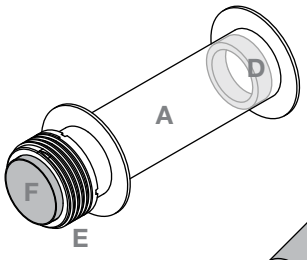
3. Slide ring **C** up to the ¾ in. mark. Slide the other ring around the end of tube **A**.



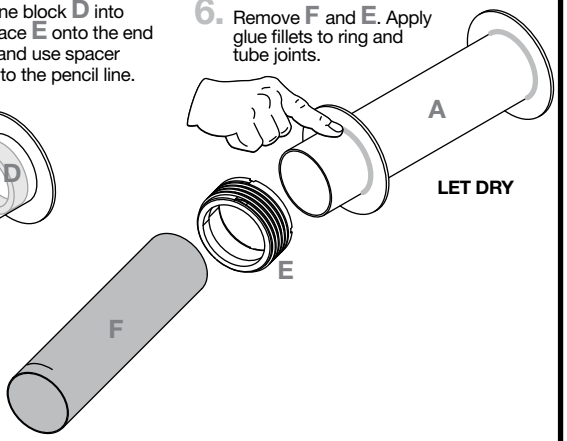
4. Apply glue to the inside of tube **A** 3½ in. from the end.



5. Insert engine block **D** into tube **A**. Place **E** onto the end of tube **E** and use spacer tube **F** up to the pencil line.

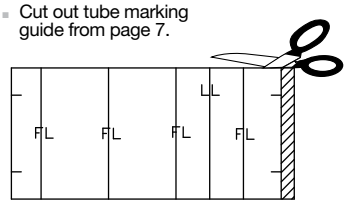


6. Remove **F** and **E**. Apply glue fillets to ring and tube joints.

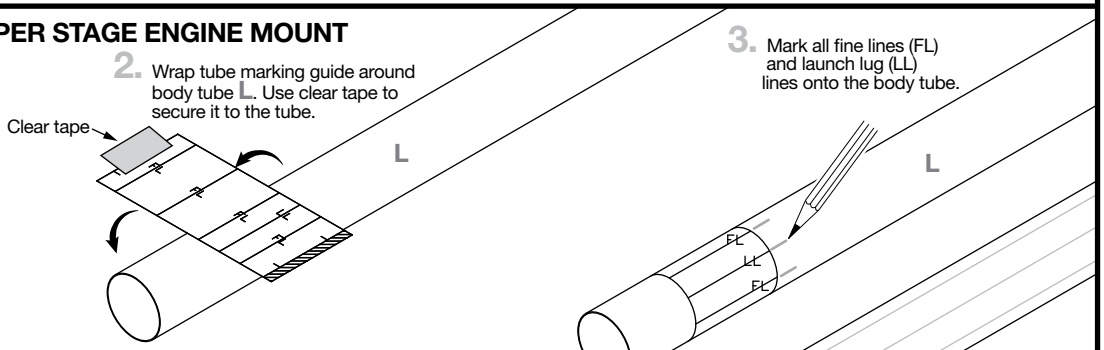


MARK BODY TUBE & INSTALL UPPER STAGE ENGINE MOUNT

1. Cut out tube marking guide from page 7.

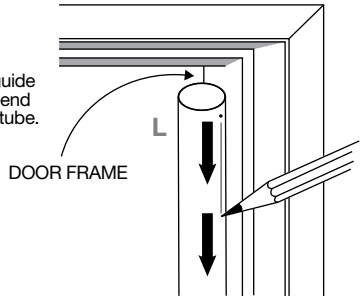


2. Wrap tube marking guide around body tube **L**. Use clear tape to secure it to the tube.

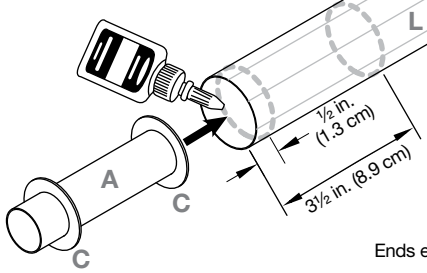


3. Mark all fine lines (FL) and launch lug (LL) lines onto the body tube.

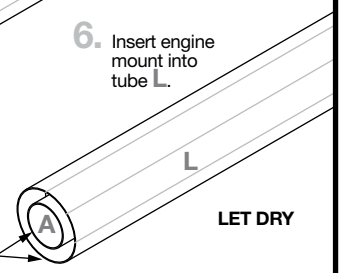
4. Remove the tube marking guide and use a door frame to extend launch lug line on the body tube.



5. Apply glue to the inside of tube **L** at 3½ in. and ½ in.

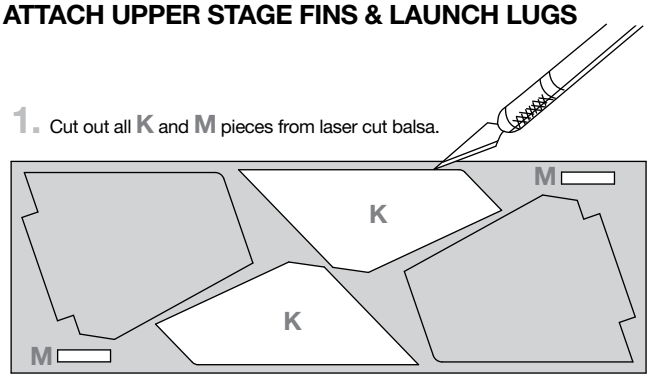


6. Insert engine mount into tube **L**.

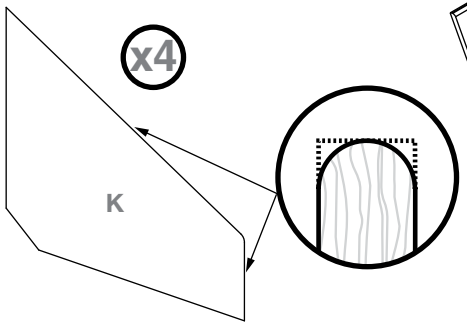


ATTACH UPPER STAGE FINS & LAUNCH LUGS

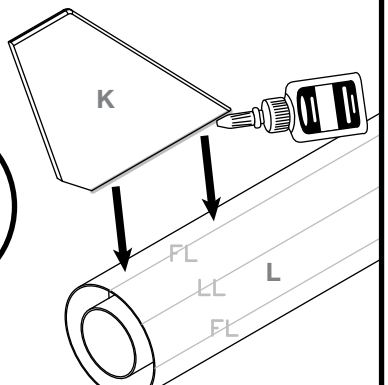
1. Cut out all **K** and **M** pieces from laser cut balsa.



2. Using fine sandpaper, round the leading and outer edges of all **K** fins.

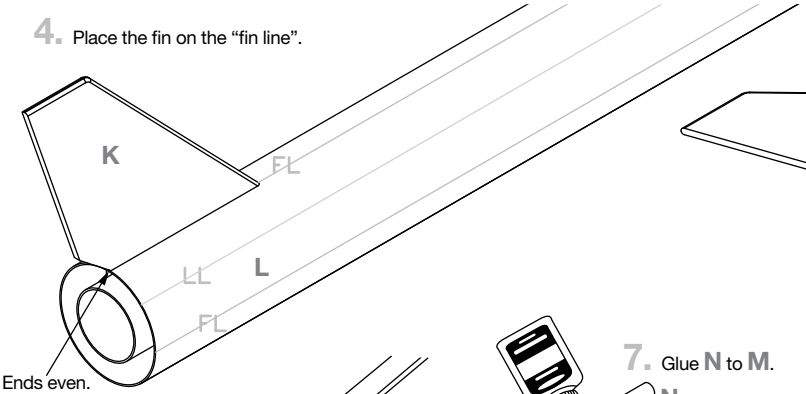


3. Apply glue to inside edge of **K** fin.



ATTACH UPPER STAGE FINS & LAUNCH LUGS (CONTINUED)

4. Place the fin on the "fin line".



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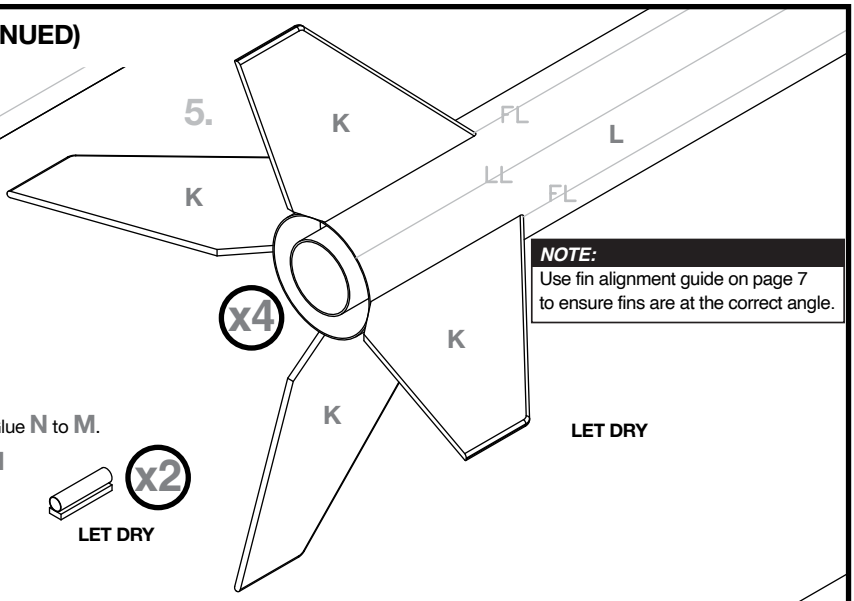
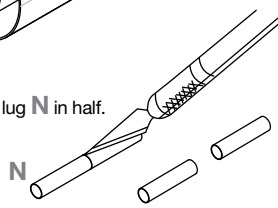


NOTE:
Use fin alignment guide on page 7 to ensure fins are at the correct angle.

LET DRY

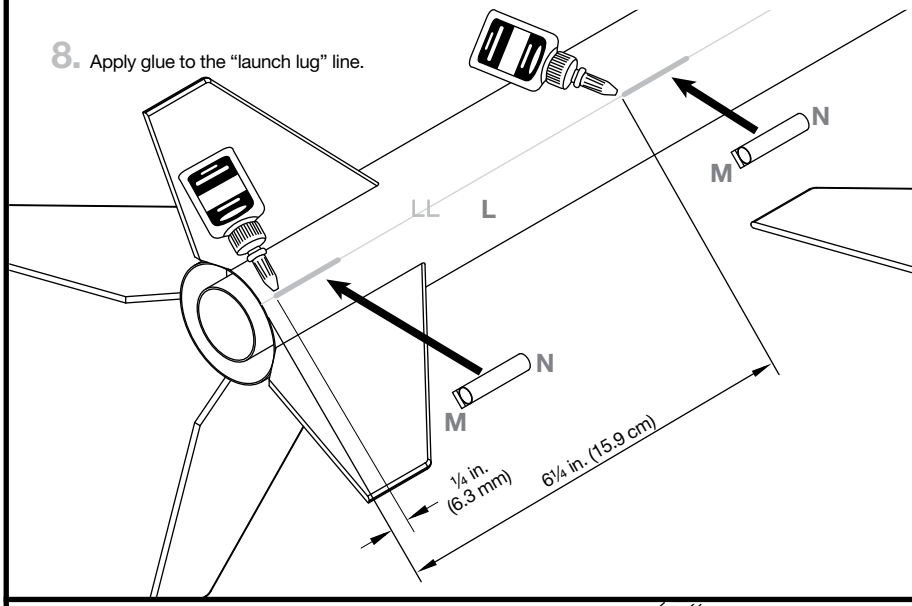
6. Cut launch lug **N** in half.



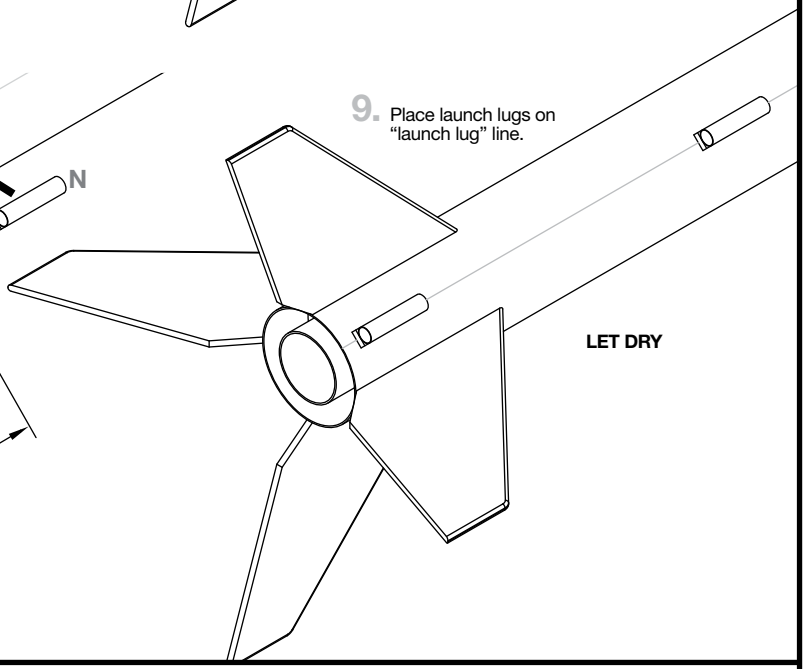
7. Glue **N** to **M**.

LET DRY

8. Apply glue to the "launch lug" line.



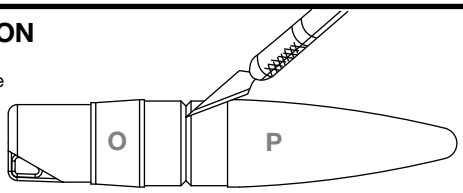
9. Place launch lugs on "launch lug" line.



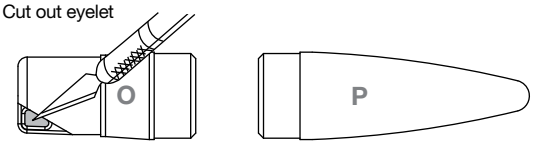
LET DRY

PREPARE PAYLOAD SECTION

1. While applying pressure to the blade tip, slowly rotate cone as many revolutions needed until plastic is fully cut through.



2. Cut out eyelet



PAINT AND APPLY DECALS

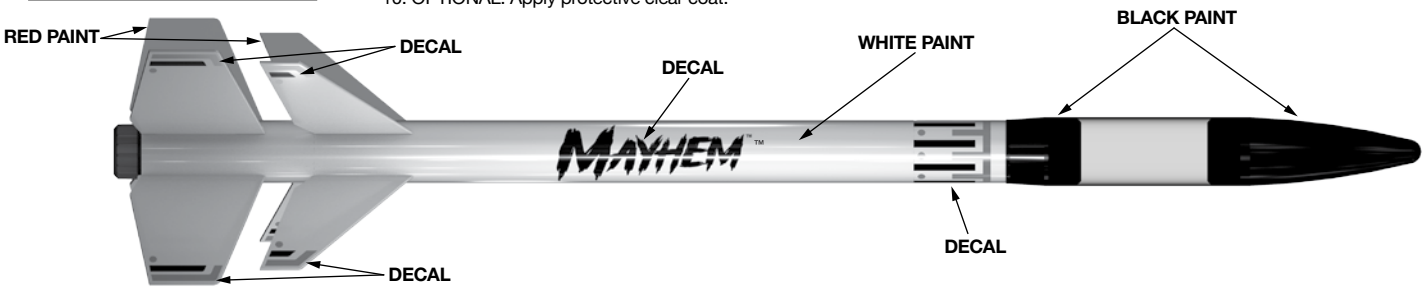
PAINT COLORS

White Paint
Black Paint
Red Paint

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

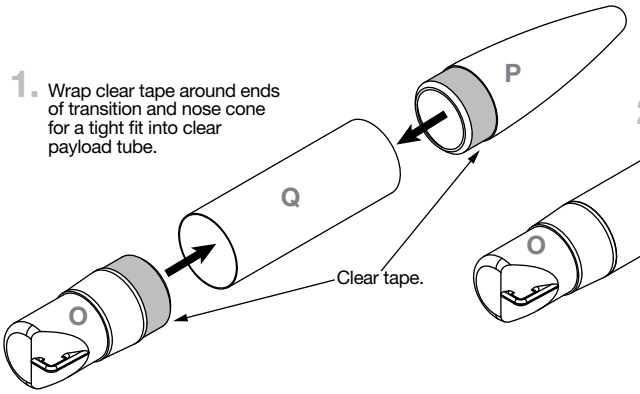
1. Spray rocket with white primer, let dry, and sand. Repeat until rocket is smooth.
2. Paint entire rocket white.
3. Paint nose cone and transition black.
4. Mask off rocket and paint back fins red.
5. Apply decals only after paint is dry.
6. Cut decals from sheet, trimming close to edge.
7. One at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

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

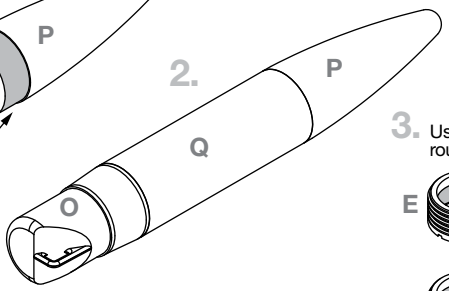


FINAL ASSEMBLY

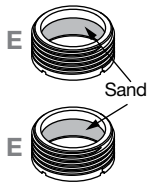
1. Wrap clear tape around ends of transition and nose cone for a tight fit into clear payload tube.



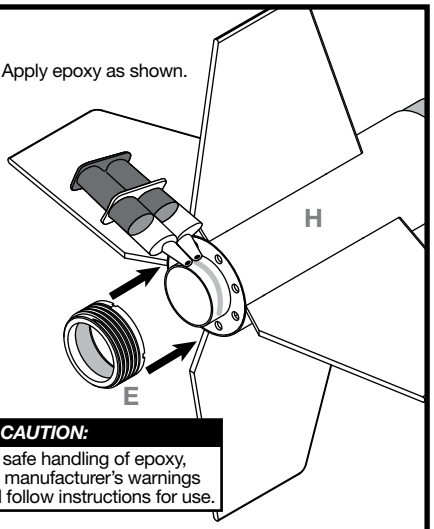
2.



3. Use sandpaper to roughen inner surface.

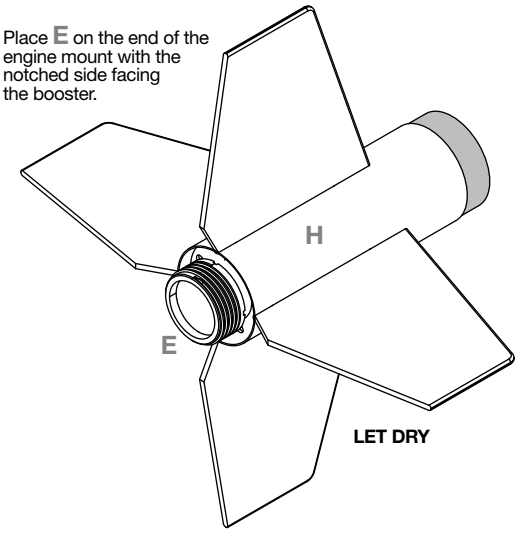


4. Apply epoxy as shown.

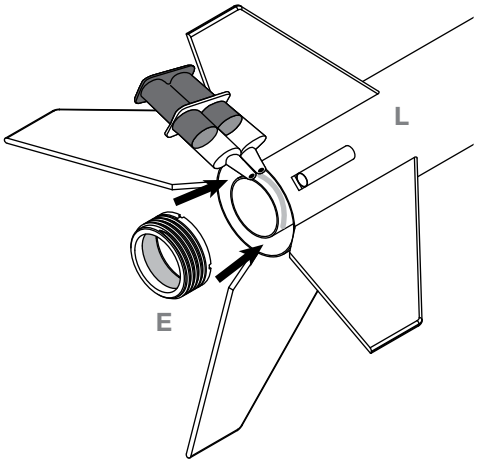


⚠ CAUTION:
For safe handling of epoxy, see manufacturer's warnings and follow instructions for use.

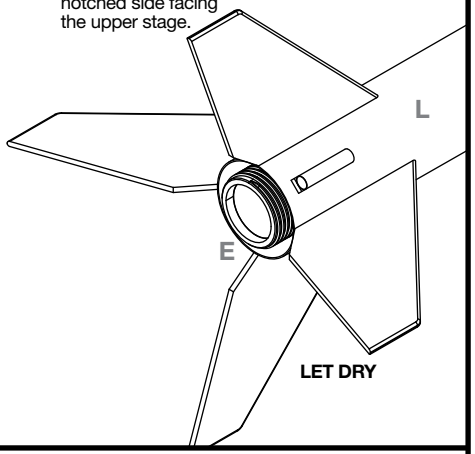
5. Place **E** on the end of the engine mount with the notched side facing the booster.



6. Apply epoxy as shown.

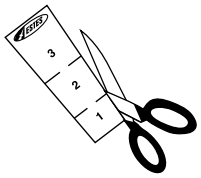


7. Place **E** on the end of the engine mount with the notched side facing the upper stage.

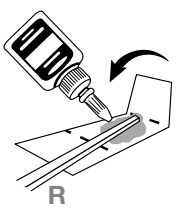


ASSEMBLE RECOVERY SYSTEM

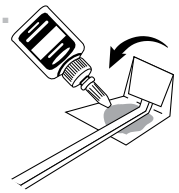
1. Cut out shock cord mount from page 7.



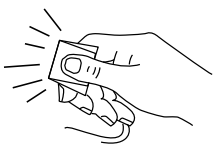
2.



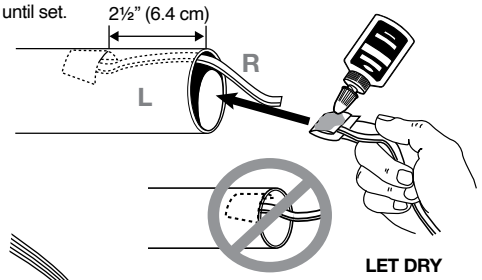
3.



4. Hold until set.



5. Hold until set.



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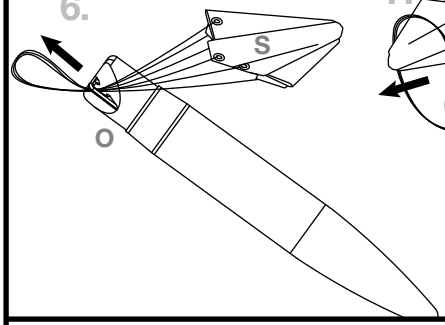

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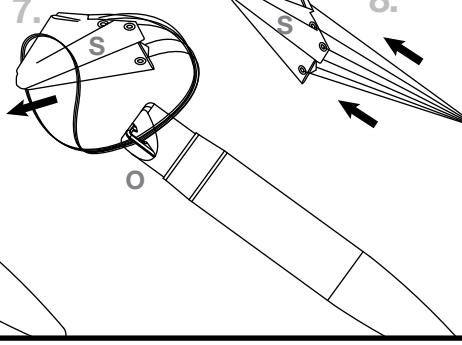
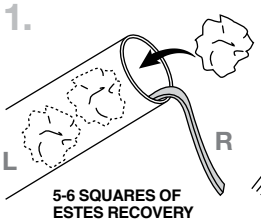


8.

9.

PREPARE RECOVERY SYSTEM

1.



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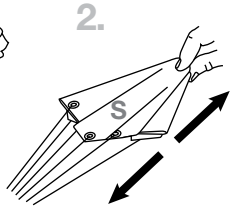

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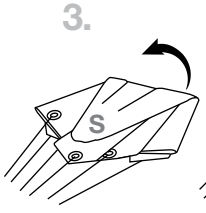
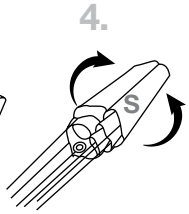
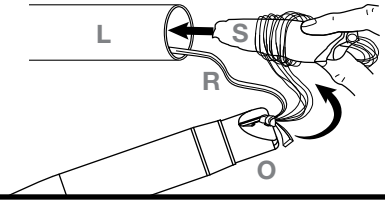


4.

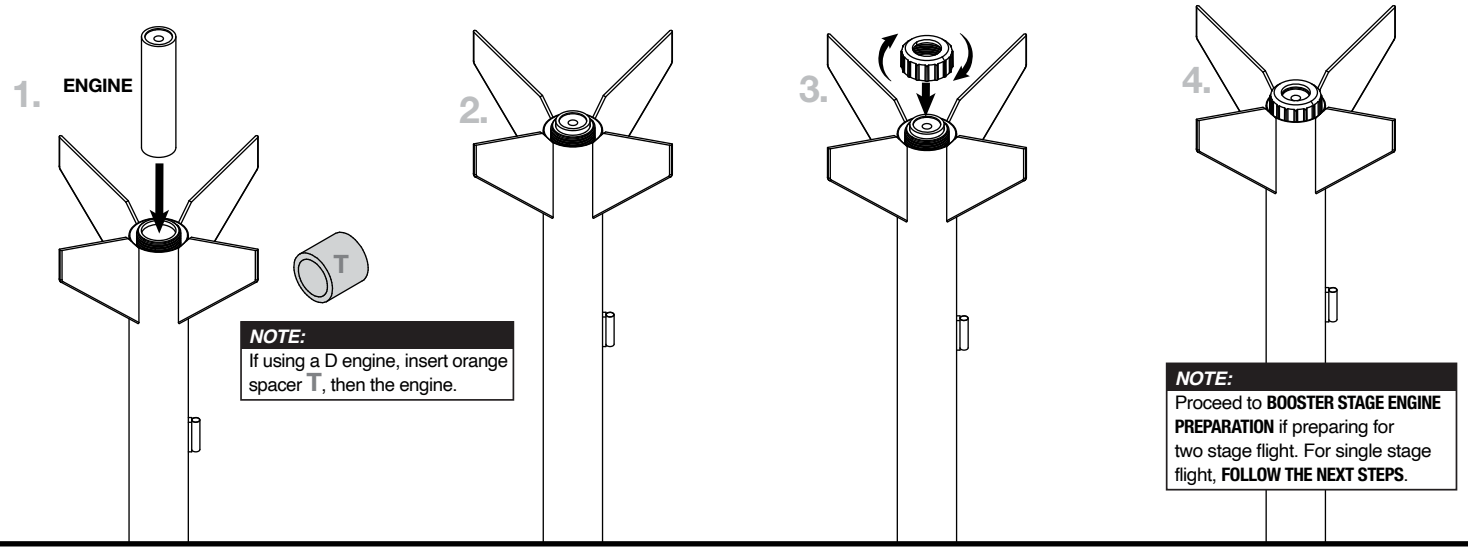


5. Wrap lines loosely around parachute and insert into body tube.

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



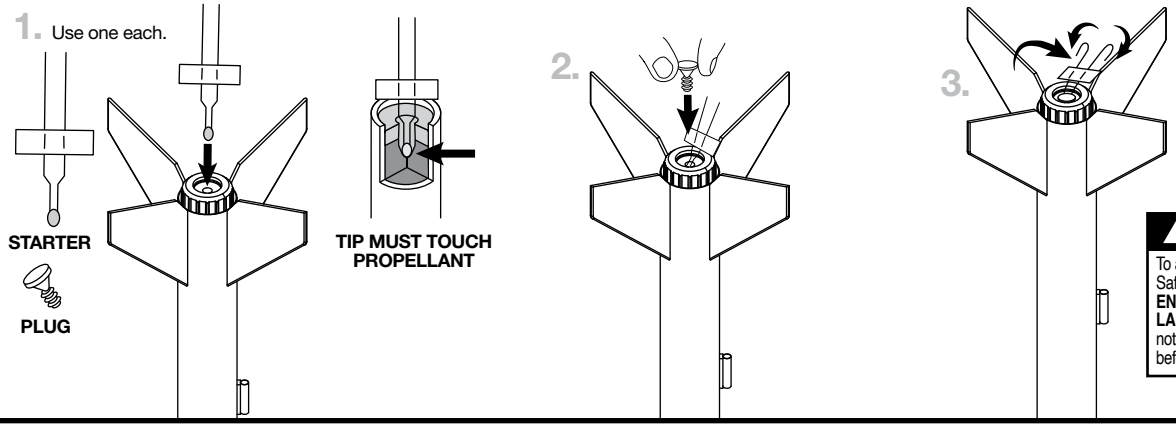
UPPER STAGE ENGINE PREPARATION (FOR TWO STAGE FLIGHT)



NOTE:
If using a D engine, insert orange spacer **T**, then the engine.

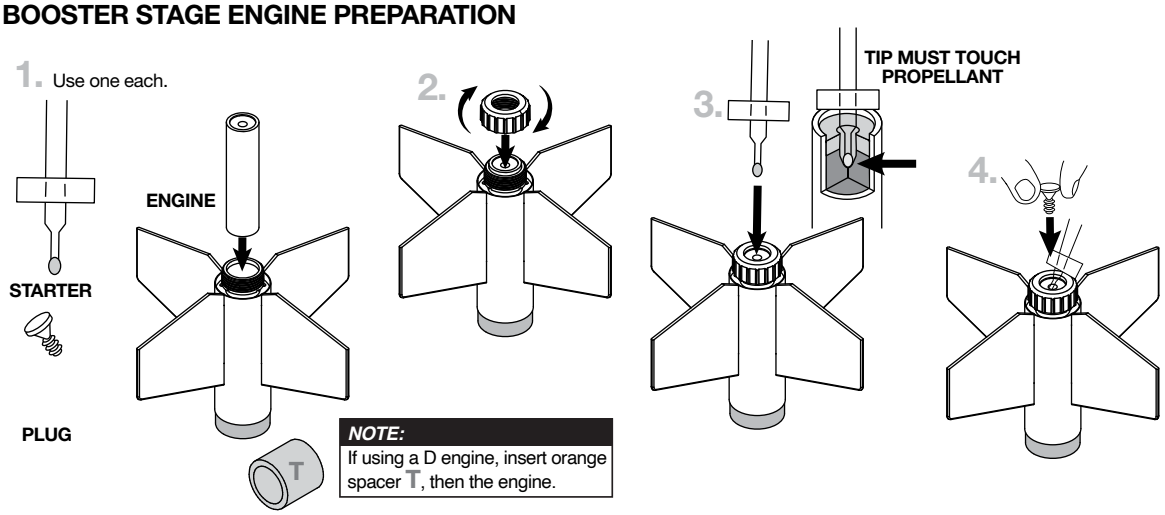
NOTE:
Proceed to **BOOSTER STAGE ENGINE PREPARATION** if preparing for two stage flight. For single stage flight, **FOLLOW THE NEXT STEPS**.

UPPER STAGE ENGINE PREPARATION (FOR SINGLE STAGE FLIGHT)



⚠ 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.

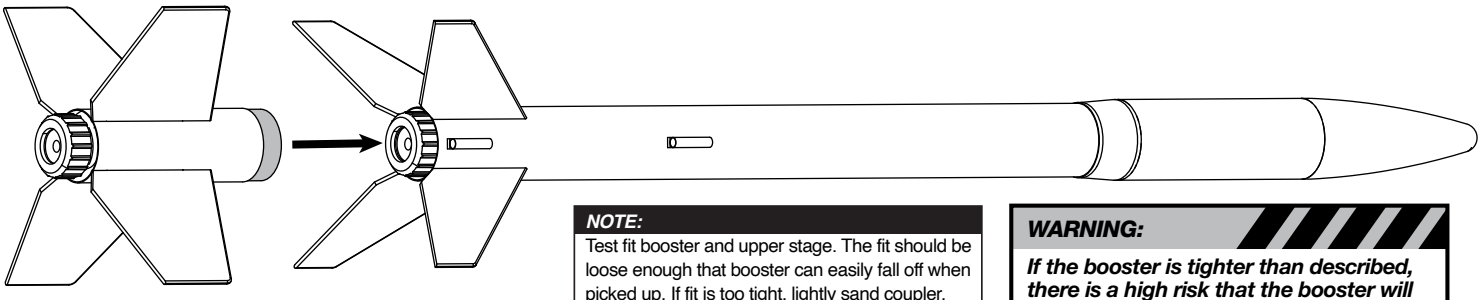
BOOSTER STAGE ENGINE PREPARATION



NOTE:
If using a D engine, insert orange spacer **T**, then the engine.

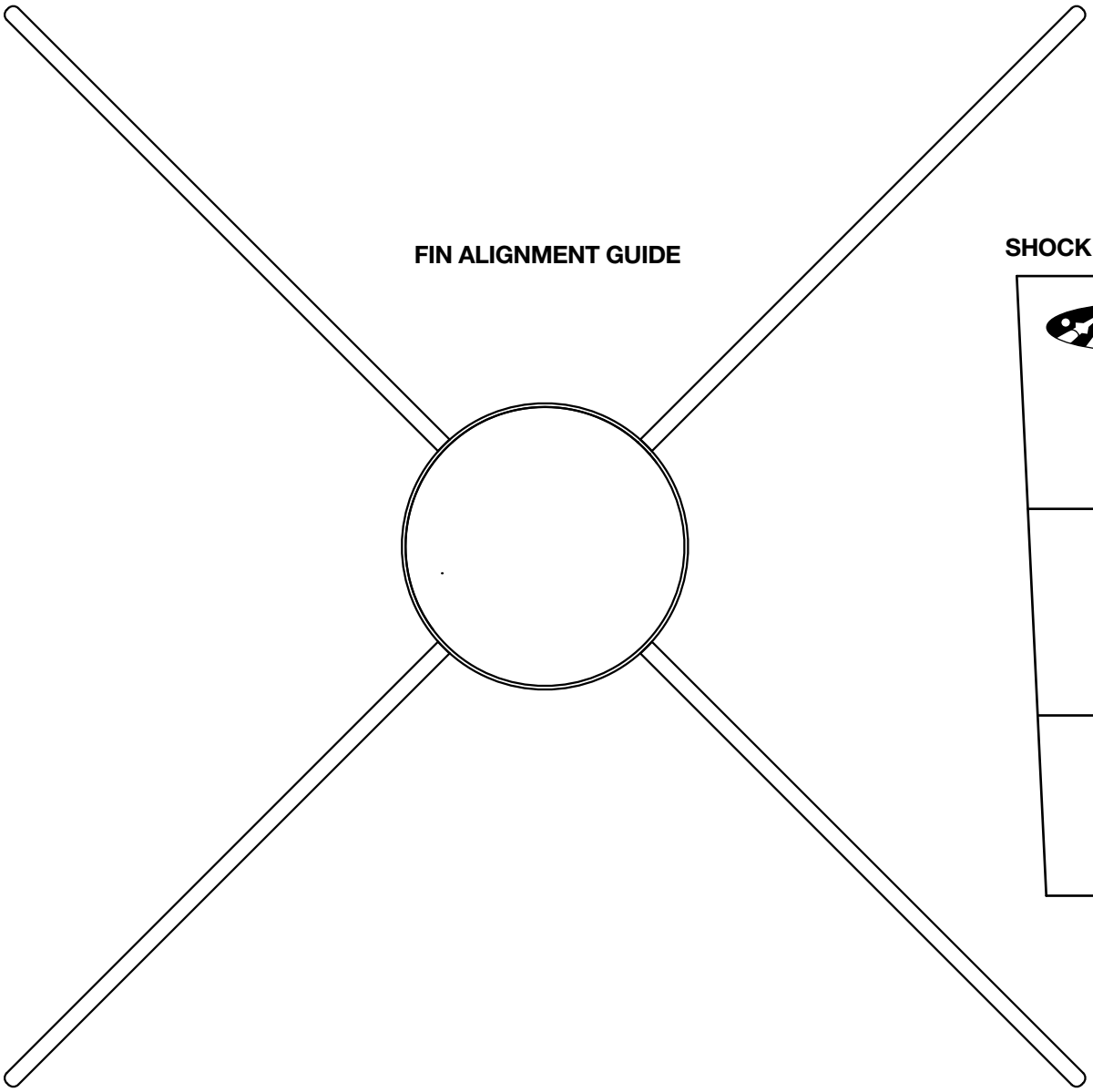
⚠ WARNING: FLAMMABLE
To avoid serious injury, read instructions & NAR Safety Code included with engines. **PREPARE YOUR ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH.** If you do not use your prepared engine, remove the starter before storing your engine.

ASSEMBLE UPPER STAGE AND BOOSTER STAGE



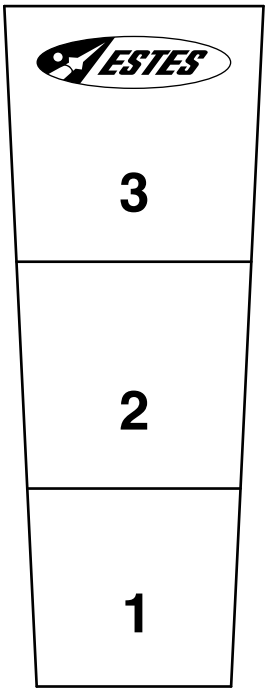
NOTE:
Test fit booster and upper stage. The fit should be loose enough that booster can easily fall off when picked up. If fit is too tight, lightly sand coupler.

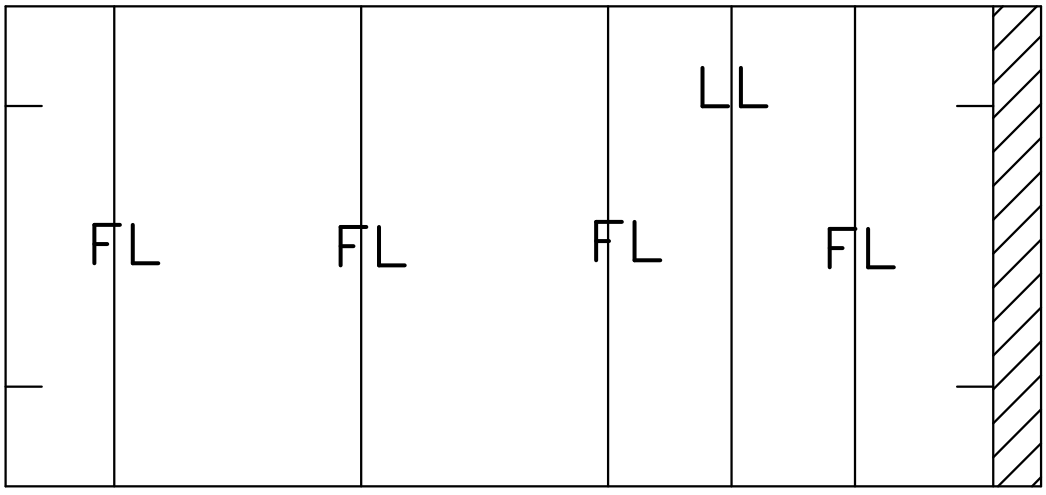
WARNING:
If the booster is tighter than described, there is a high risk that the booster will get damaged and potentially cause a fire.



FIN ALIGNMENT GUIDE

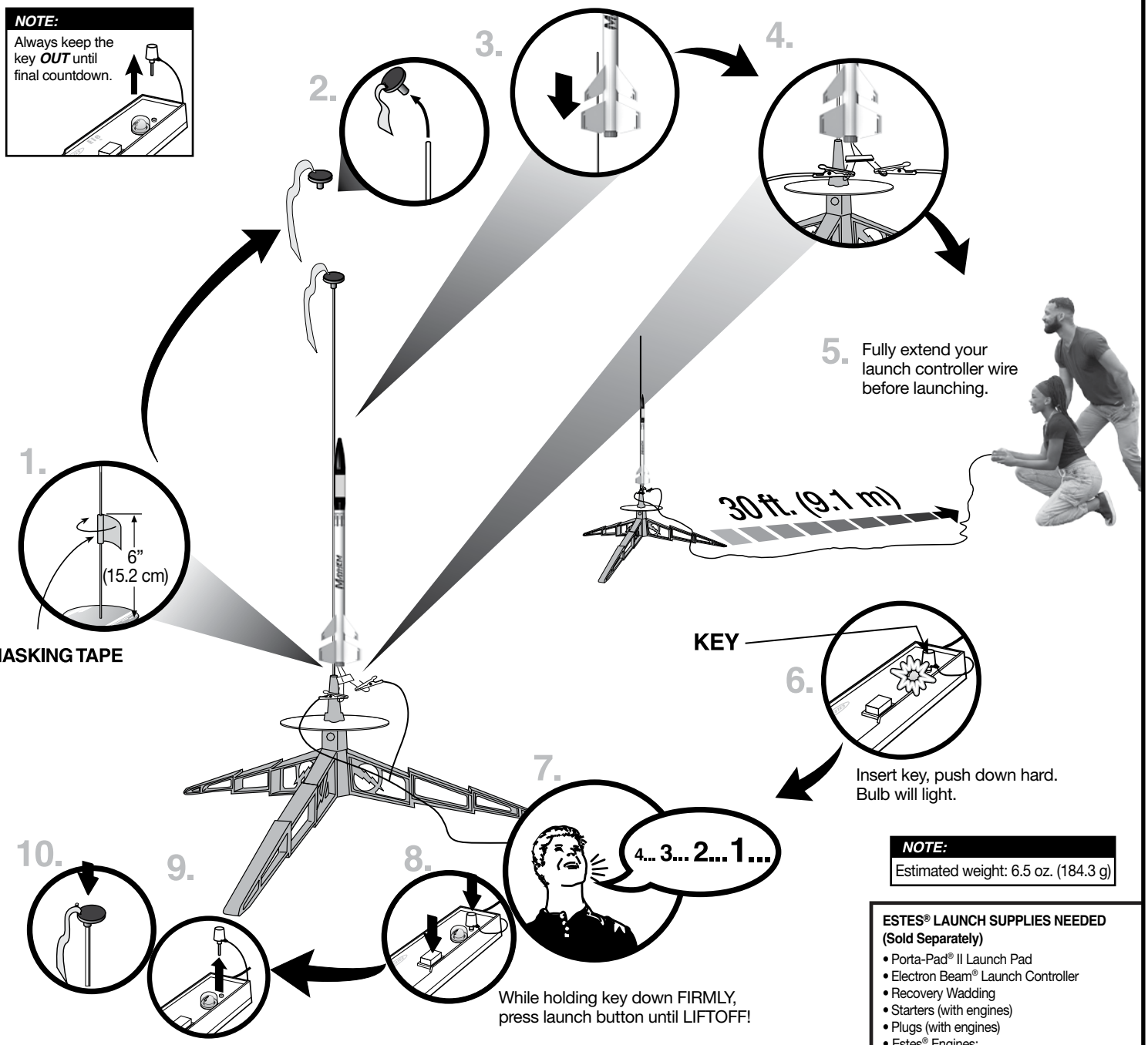
SHOCK CORD MOUNT





TUBE MARKING GUIDE

COUNTDOWN AND LAUNCH

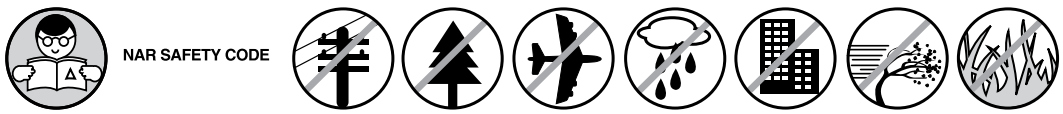


NOTE:
Estimated weight: 6.5 oz. (184.3 g)

ESTES® LAUNCH SUPPLIES NEEDED (Sold Separately)

- Porta-Pad® II Launch Pad
- Electron Beam® Launch Controller
- Recovery Wadding
- Starters (with engines)
- Plugs (with engines)
- Estes® Engines:
  Single Stage: D12-5, E12-6
  2 Stage:
  Booster Stage: D12-0, E12-0
  Upper stage: D12-5, D12-7, E12-6, E12-8

PRECAUTIONS



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.

Estes Industries, LLC • 1295 H Street, Penrose, CO 81240-9698 • Made in Guangdong, China
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