



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



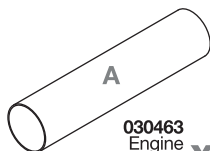
WHITE
PRIMER



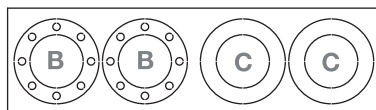
PAINT
(Listed on Pg. 4)



CLEAR COAT
(OPTIONAL)



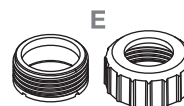
030463
Engine
mount tube **x2**



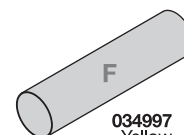
090052-1320
Laser cut card stock



030164-2
Green
engine block **x2**



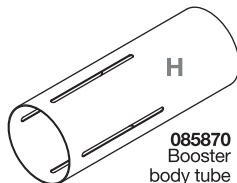
072417
Engine
retainer set **x2**



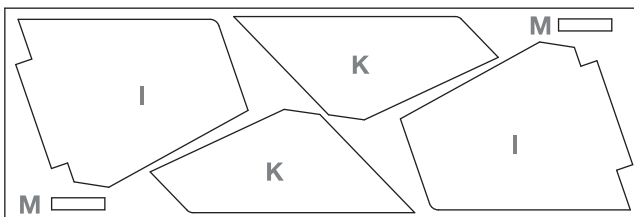
034997
Yellow
spacer tube



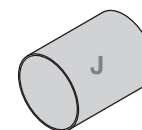
072826
Staging cone



085870
Booster
body tube



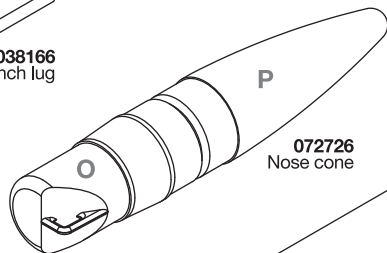
090052-1320
Laser cut
balsa **x2**



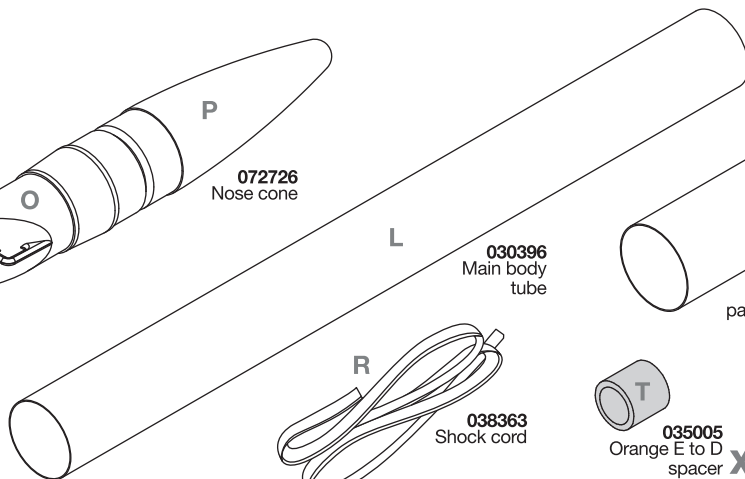
030176-5
Red stage coupler



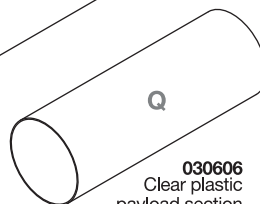
038166
Launch lug



072726
Nose cone



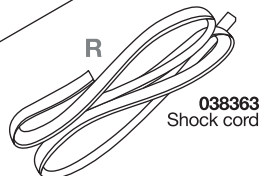
030396
Main body
tube



030606
Clear plastic
payload section



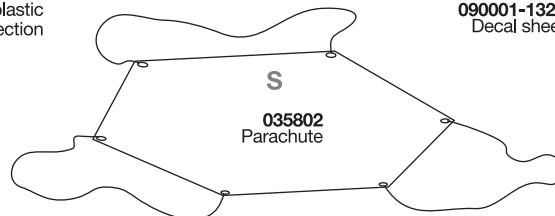
090001-1320
Decal sheet



038363
Shock cord



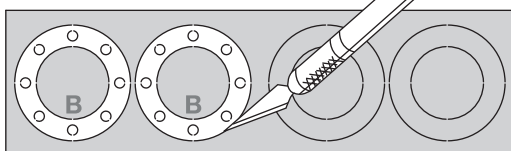
035005
Orange E to D
spacer **x2**



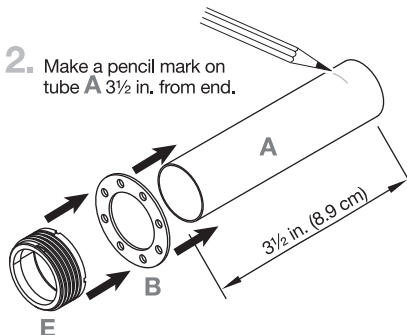
035802
Parachute

ASSEMBLE BOOSTER ENGINE MOUNT

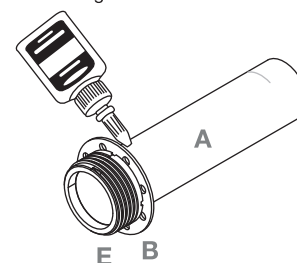
1. Cut out **B** rings.



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

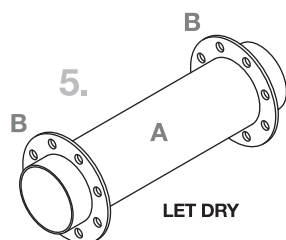
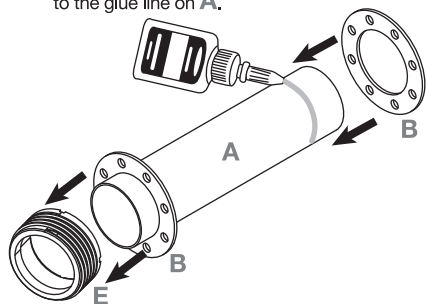


3. Place **B** and **E** on opposite end of tube **A**. Use **E** to set distance for ring **B**. Apply glue to inside of ring **B**.



ASSEMBLE BOOSTER ENGINE MOUNT (CONTINUED)

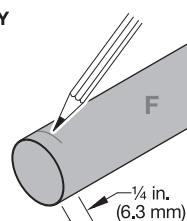
4. Remove **E**. Apply glue around the pencil line. Slide ring **B** up to the glue line on **A**.



5.

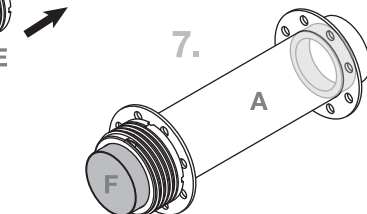
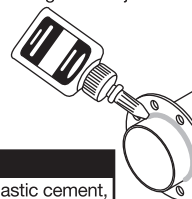
LET DRY

6. Make a pencil mark $\frac{1}{4}$ in. from the end of yellow spacer tube **F**. Apply glue $\frac{1}{4}$ in. inside the end of tube **A**. Insert engine block **D** into tube **A**. Insert the yellow spacer tube up to the pencil line.



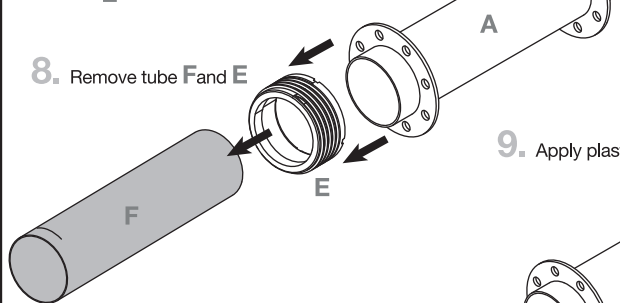
$\frac{1}{4}$ in.
(6.3 mm)

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

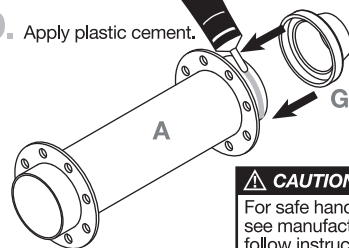


7.

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

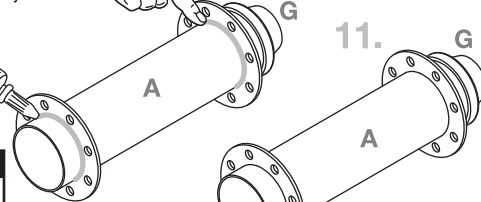


9. Apply plastic cement.



CAUTION:

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

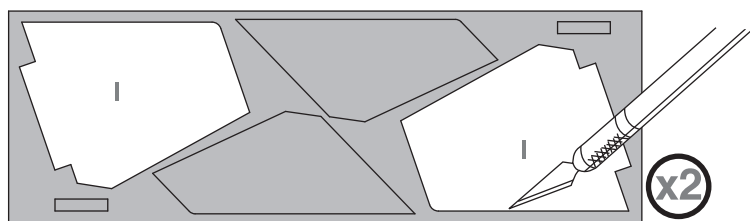


11.

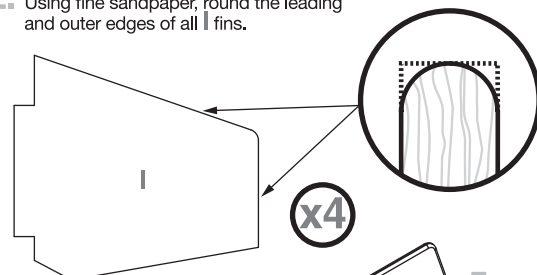
LET DRY

ASSEMBLE BOOSTER STAGE

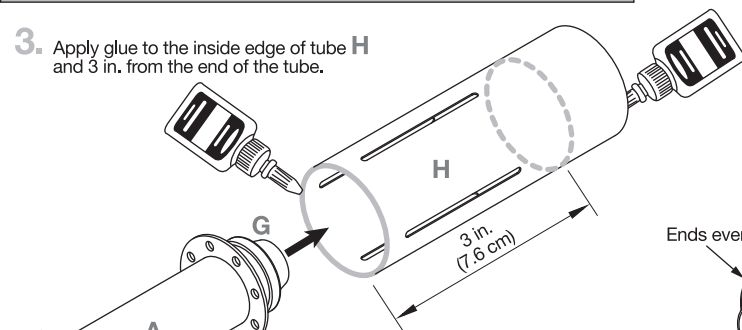
1. Cut out all **I** pieces from laser cut balsa.



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.

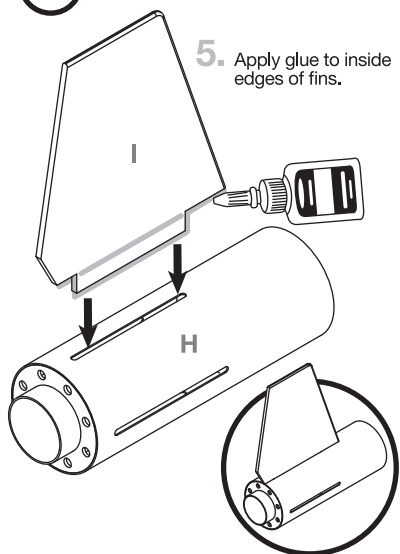


4. Insert booster engine mount.

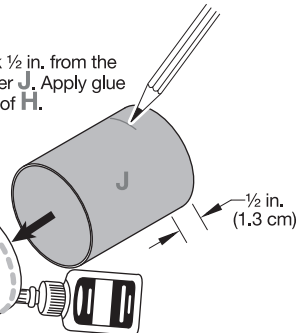
Ends even.

LET DRY

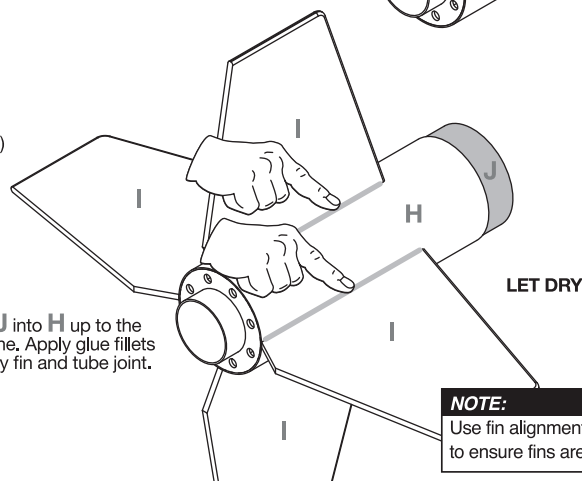
5. Apply glue to inside edges of fins.



6. Make a mark $\frac{1}{2}$ in. from the end of coupler **J**. Apply glue to the inside of **H**.



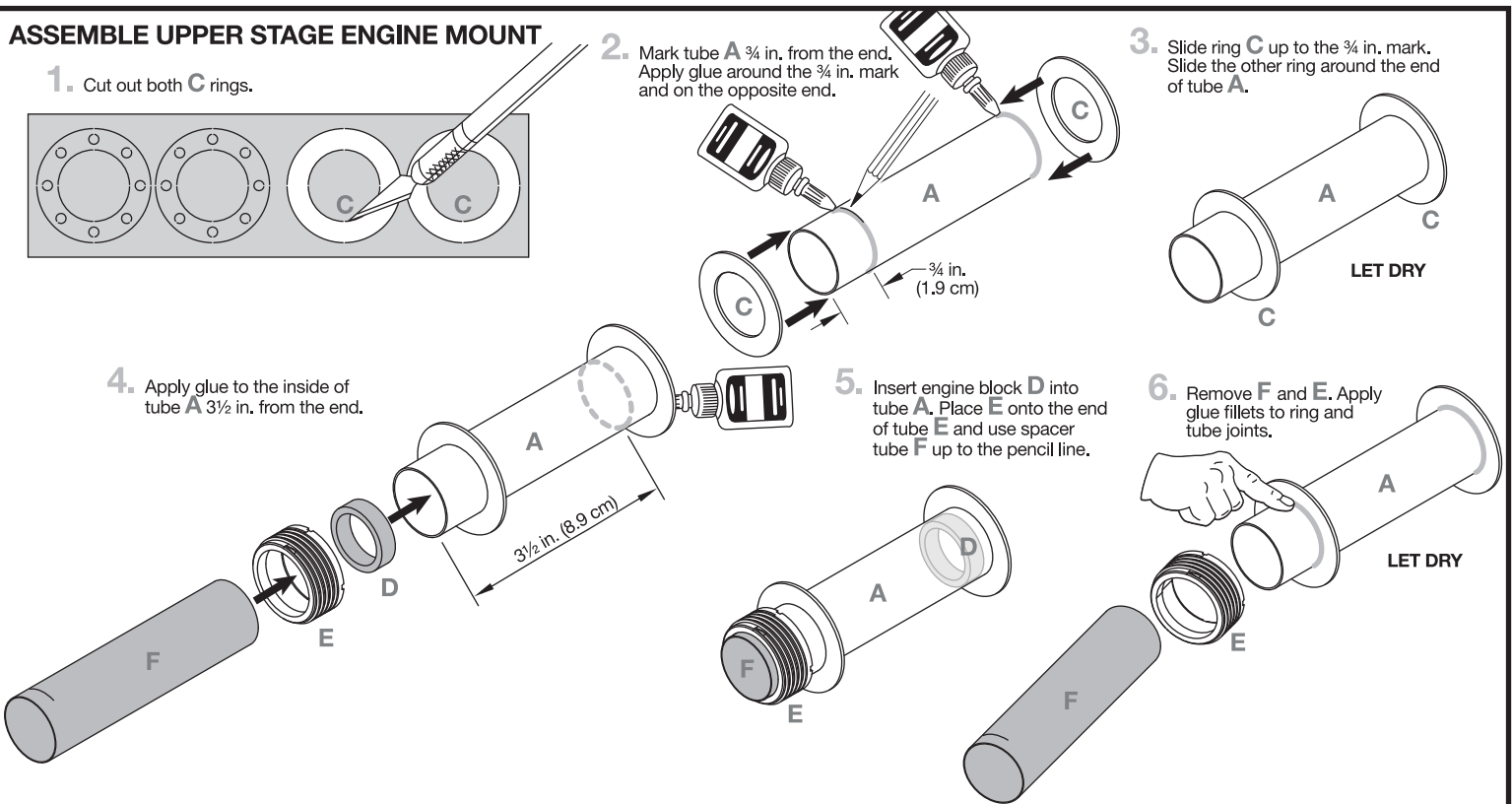
7. Insert **J** into **H** up to the $\frac{1}{2}$ in. line. Apply glue fillets to every fin and tube joint.



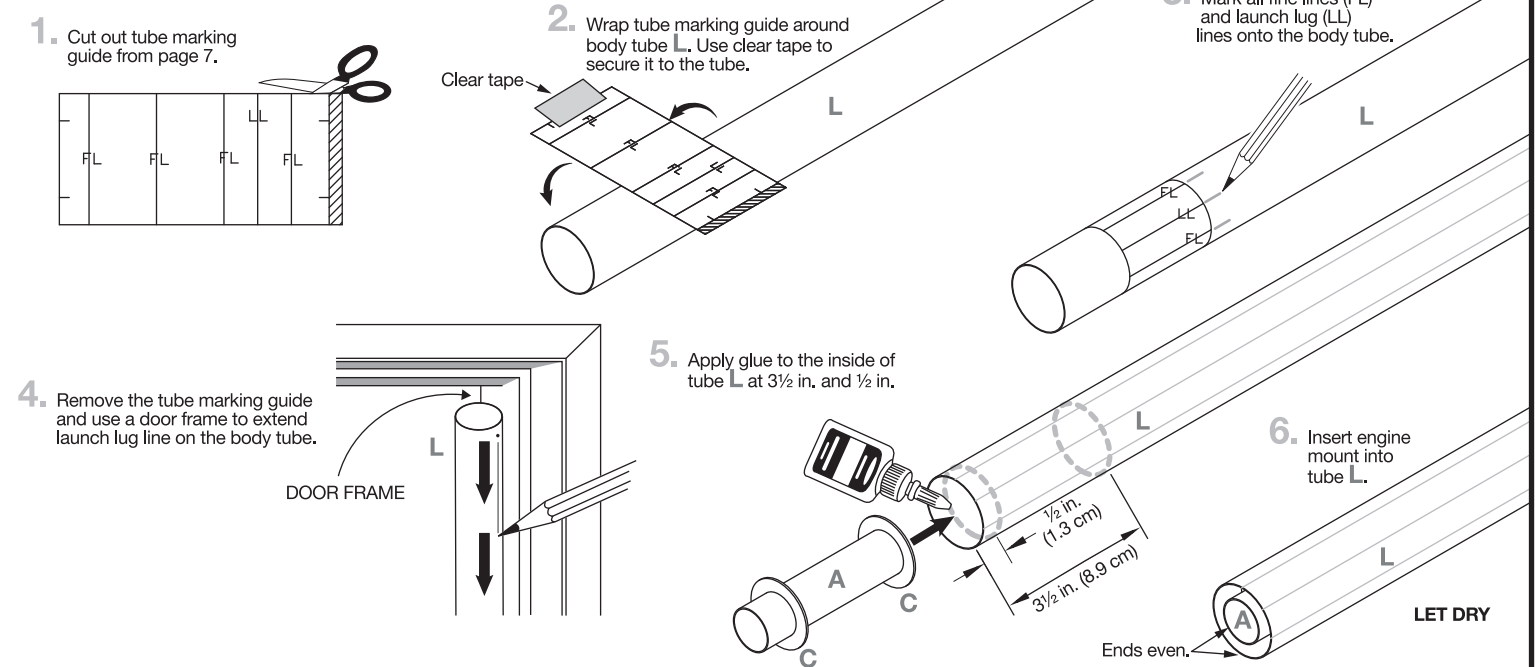
NOTE:

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

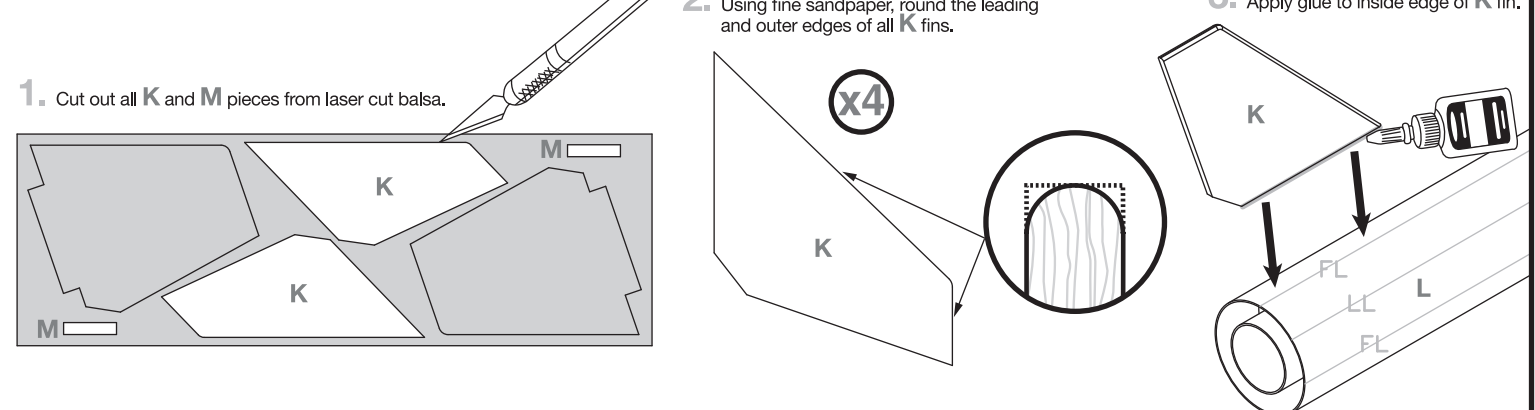
ASSEMBLE UPPER STAGE ENGINE MOUNT



MARK BODY TUBE & INSTALL UPPER STAGE ENGINE MOUNT

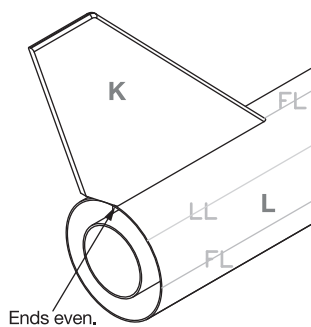


ATTACH UPPER STAGE FINS & LAUNCH LUGS

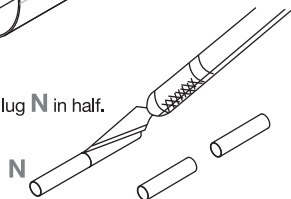


ATTACH UPPER STAGE FINS & LAUNCH LUGS (CONTINUED)

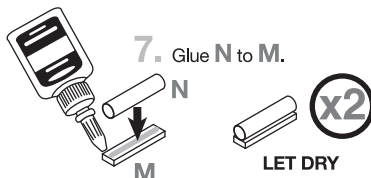
4. Place the fin on the "fin line".



6. Cut launch lug N in half.

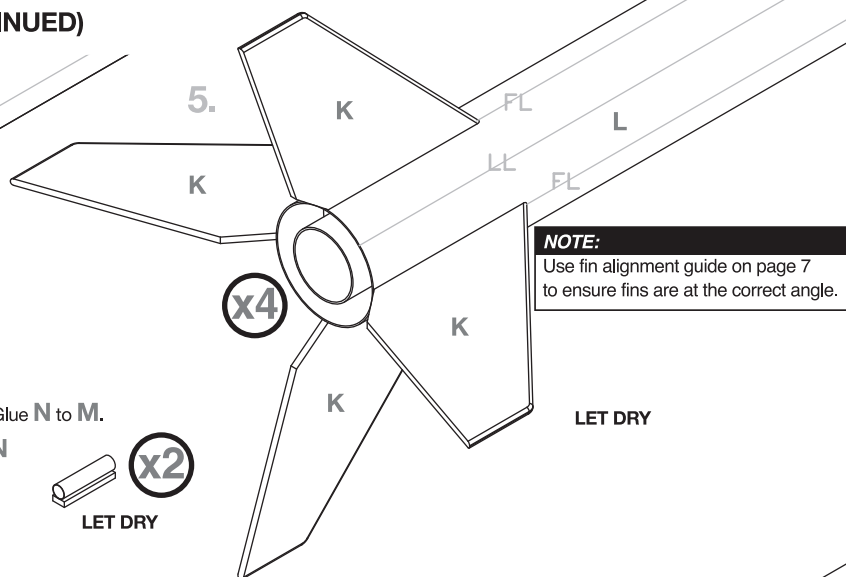


7. Glue N to M.



5.

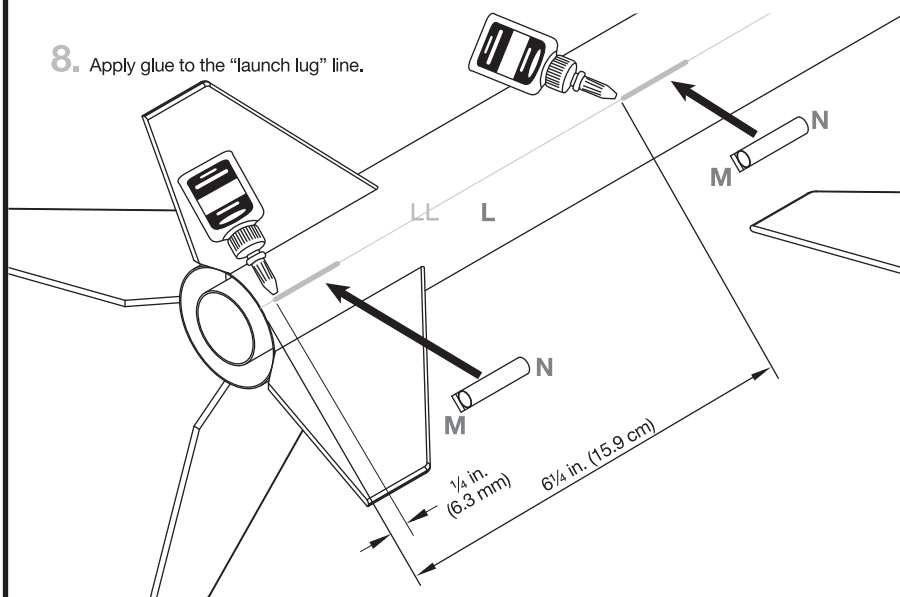
(x4)



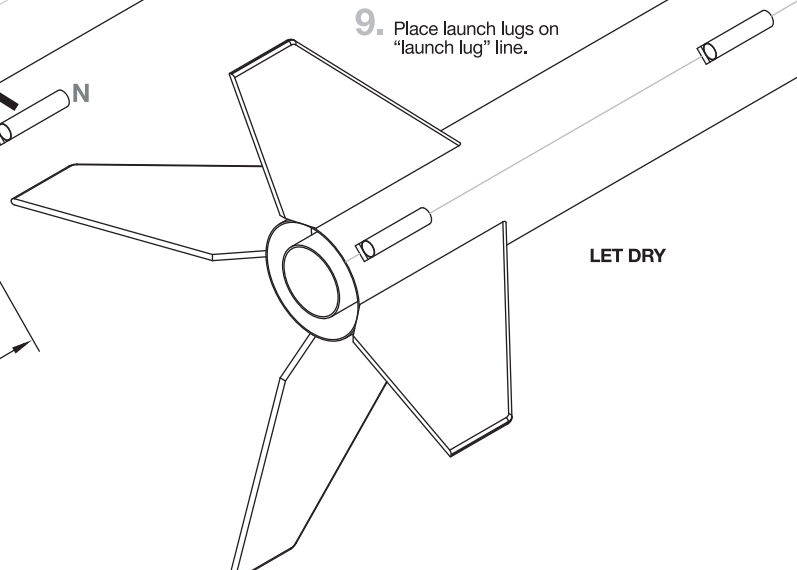
NOTE:

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

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

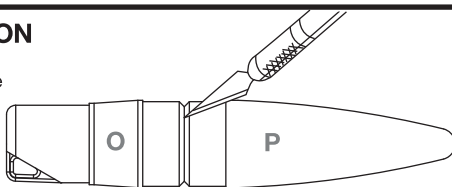


9. Place launch lugs on "launch lug" line.

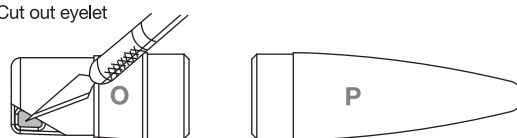


PREPARE PAYLOAD SECTION

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.

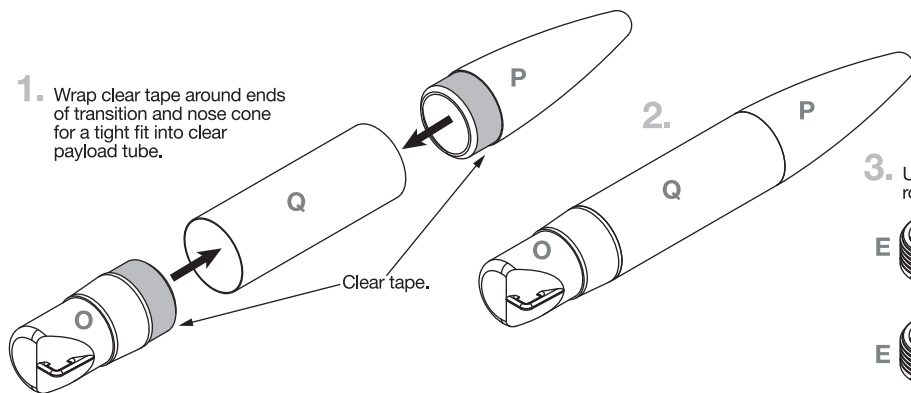
NOTE:

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



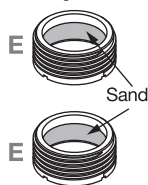
FINAL ASSEMBLY

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

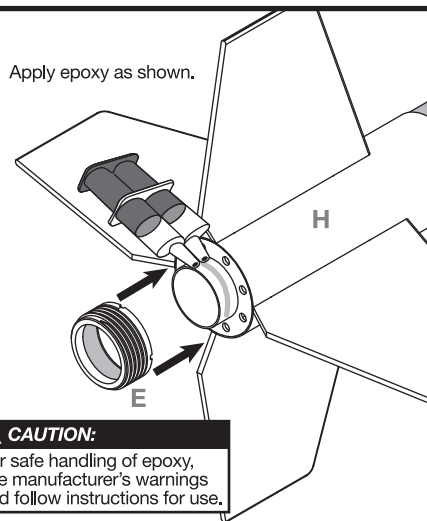


2.

3. Use sandpaper to roughen inner surface.

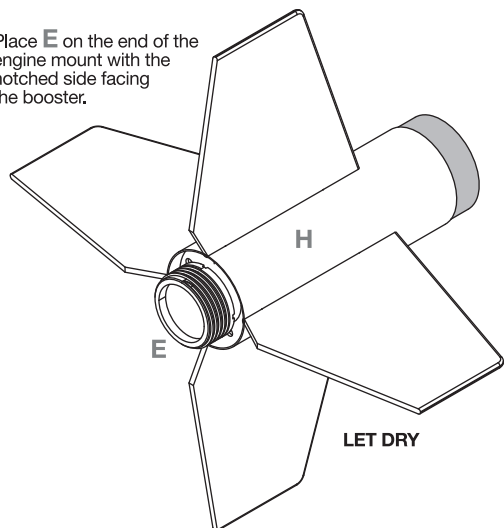


4. Apply epoxy as shown.

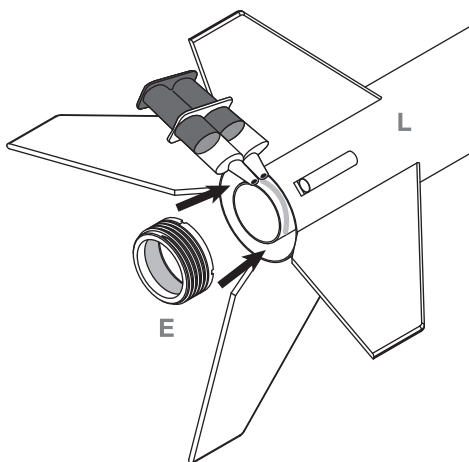


CAUTION:
For safe handling of epoxy, see manufacturer's warnings and follow instructions for use.

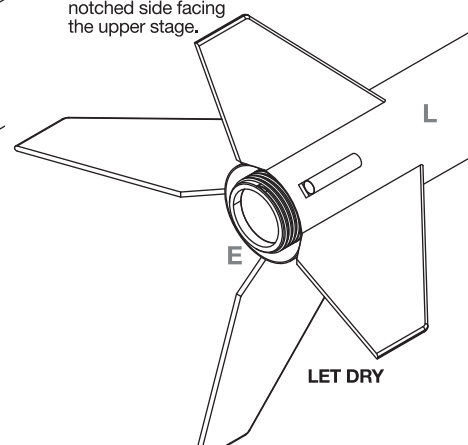
5. Place E on the end of the engine mount with the notched side facing the booster.



6. Apply epoxy as shown.

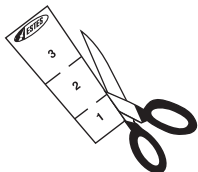


7. Place E on the end of the engine mount with the notched side facing the upper stage.

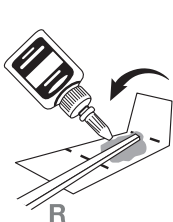


ASSEMBLE RECOVERY SYSTEM

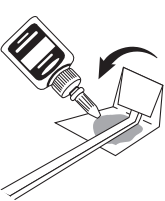
1. Cut out shock cord mount from page 7.



2.



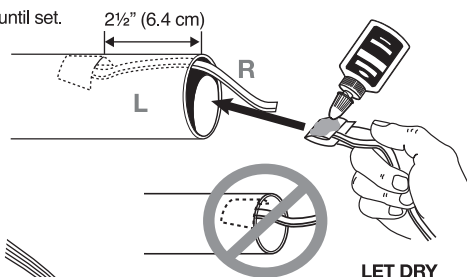
3.



4. Hold until set.

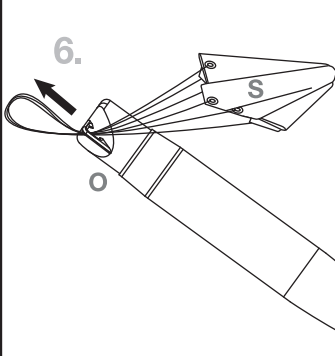


5. Hold until set.

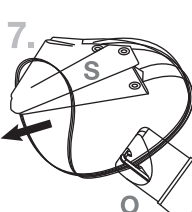


LET DRY

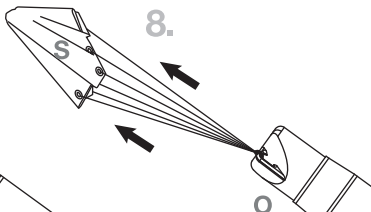
6.



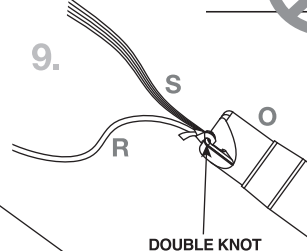
7.



8.

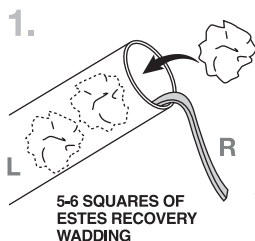


9.

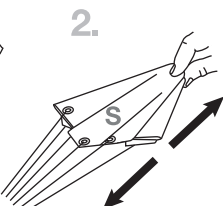


PREPARE RECOVERY SYSTEM

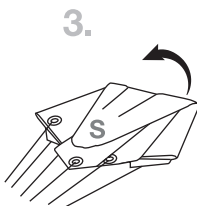
1.



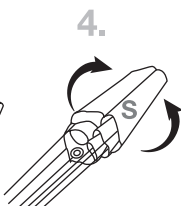
2.



3.

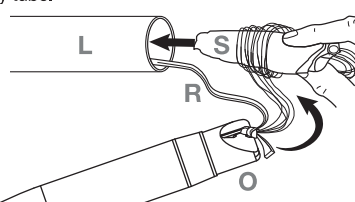


4.



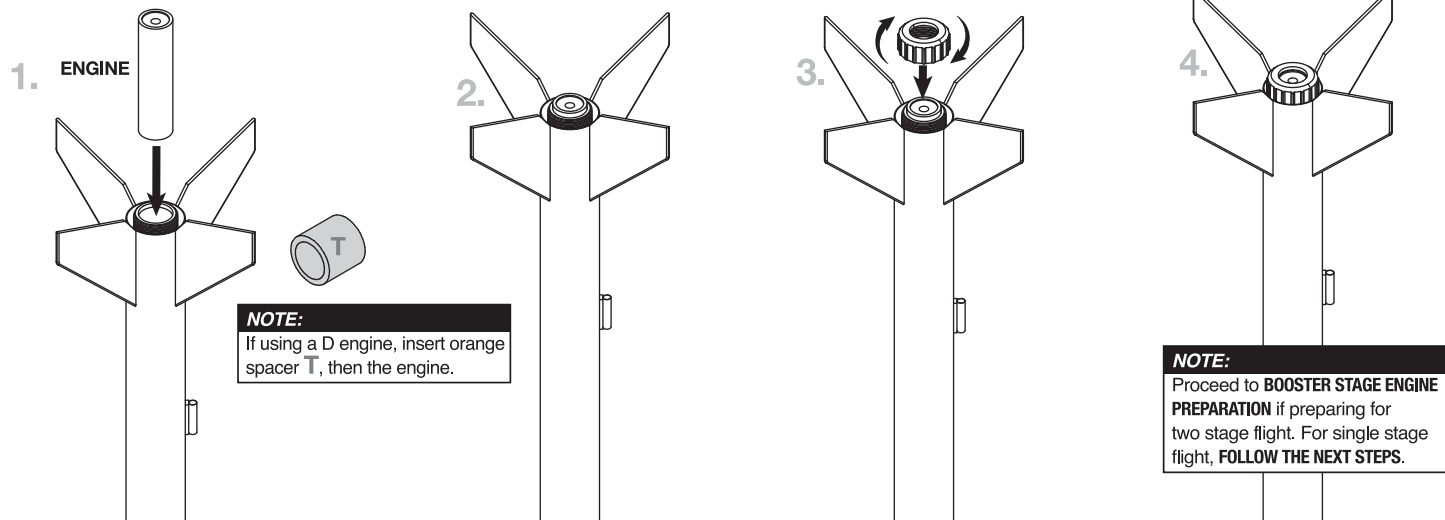
5.

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

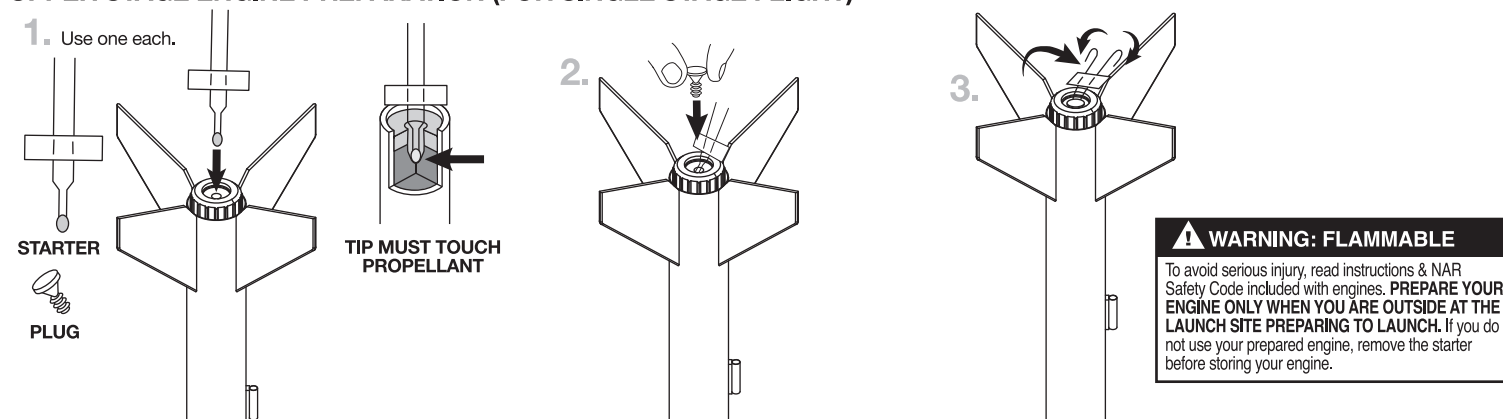


NOTE:
Recovery wadding and parachute must slide easily into body tube. If too tight, redo.

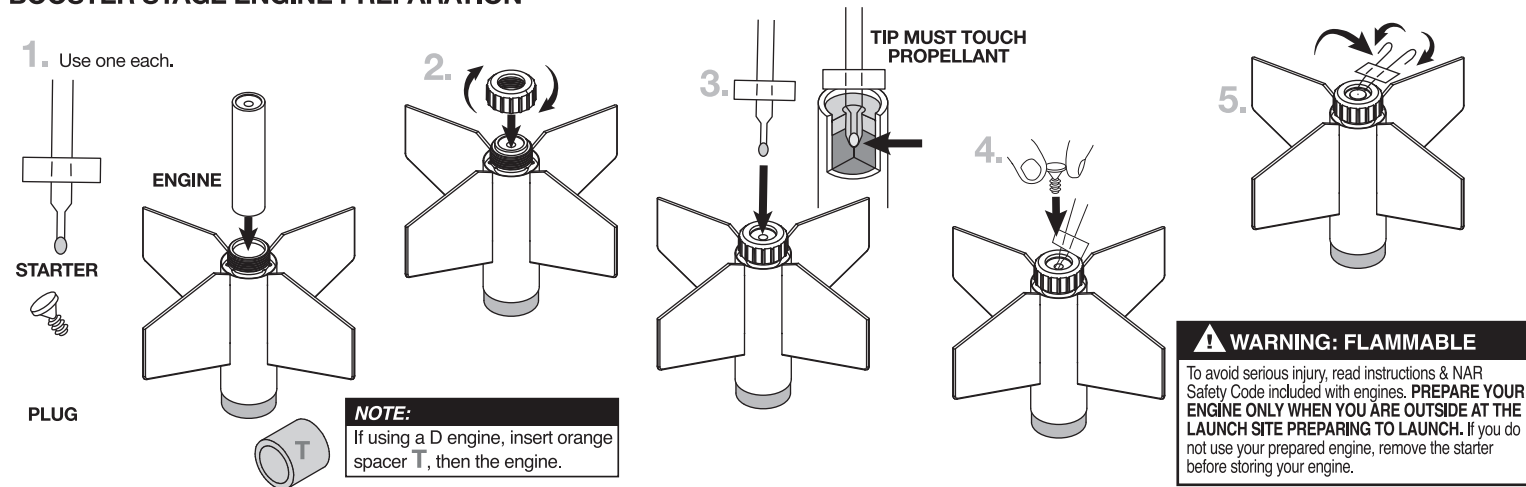
UPPER STAGE ENGINE PREPARATION (FOR TWO STAGE FLIGHT)



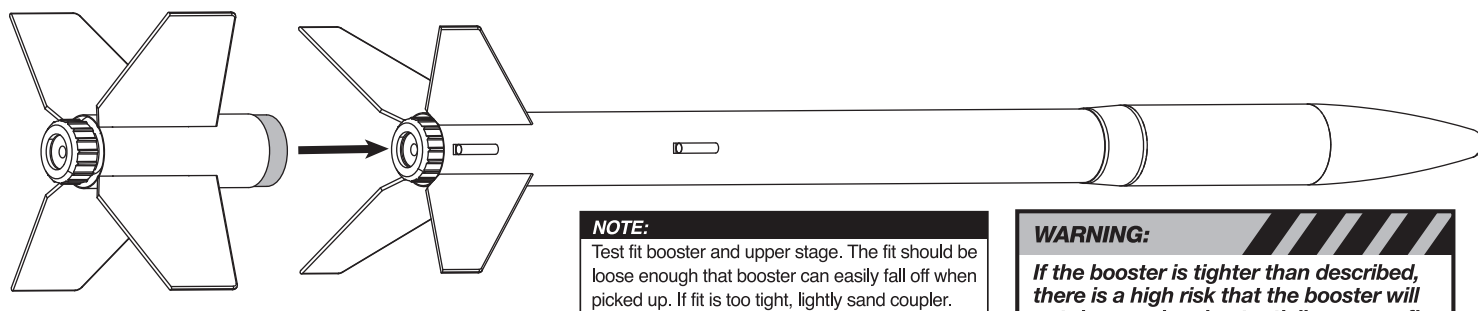
UPPER STAGE ENGINE PREPARATION (FOR SINGLE STAGE FLIGHT)

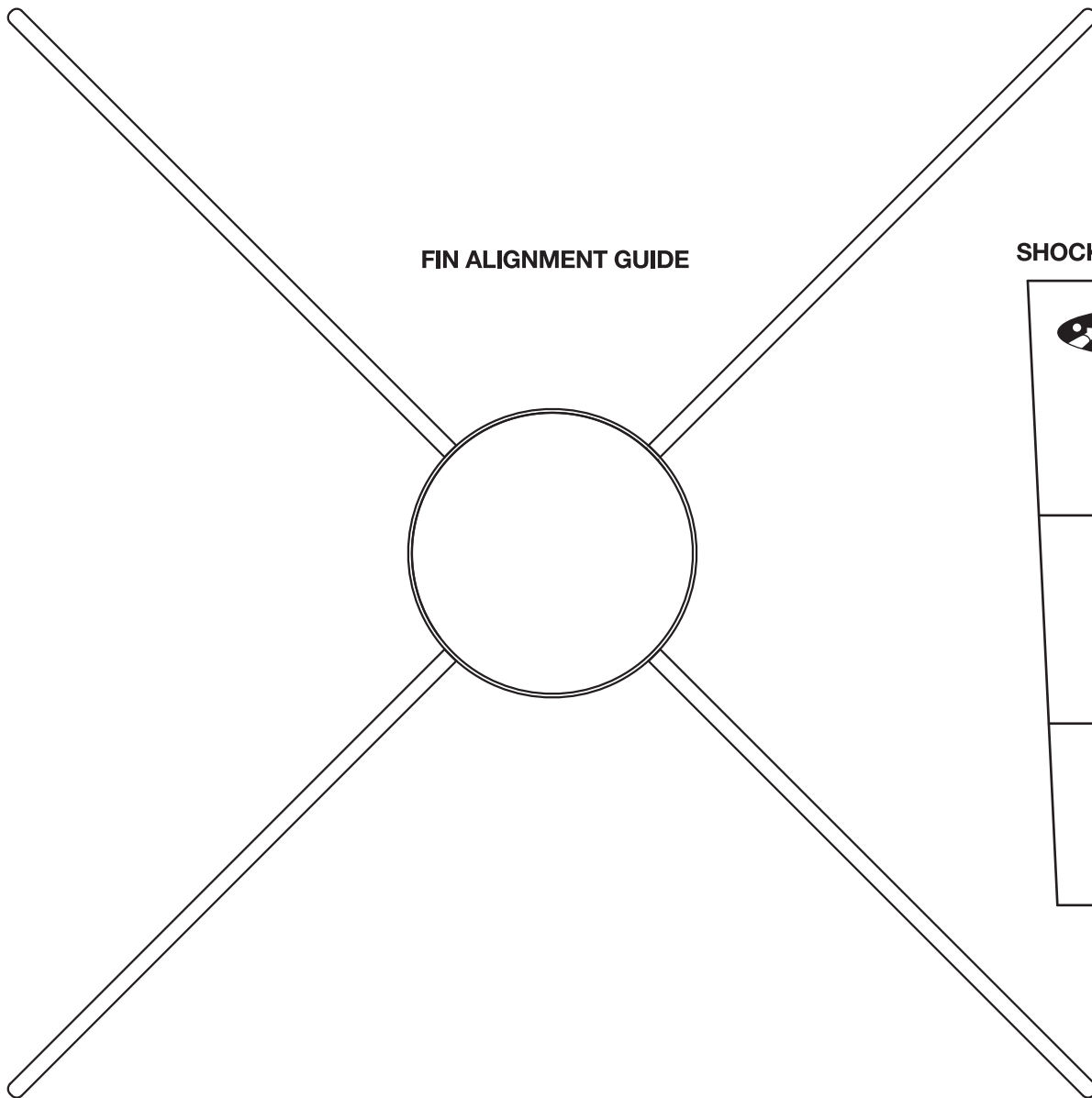


BOOSTER STAGE ENGINE PREPARATION



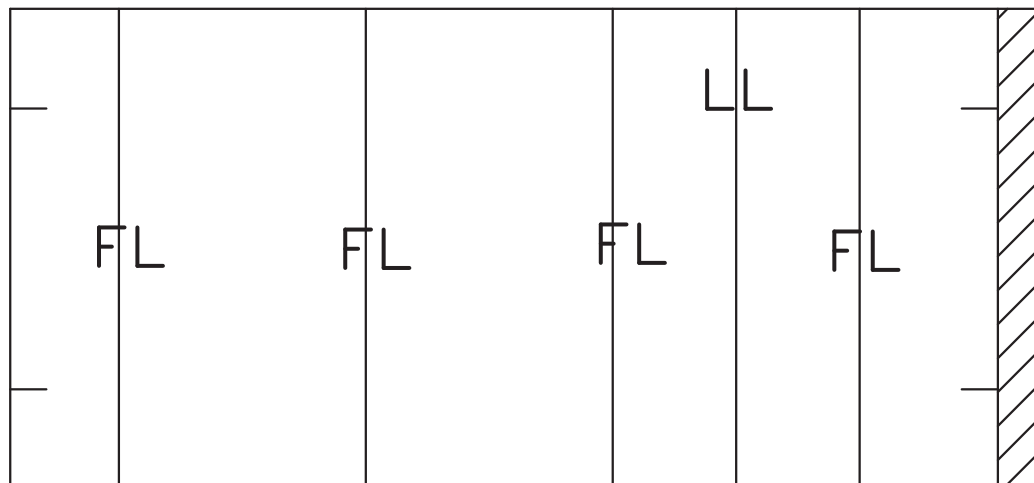
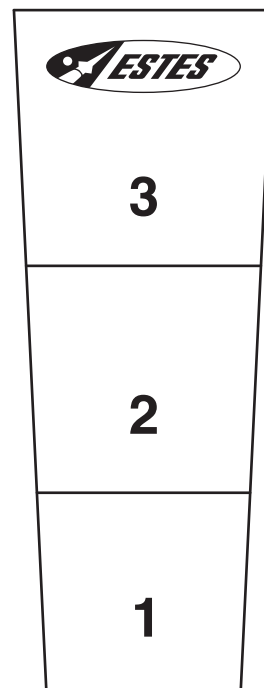
ASSEMBLE UPPER STAGE AND BOOSTER STAGE





FIN ALIGNMENT GUIDE

SHOCK CORD MOUNT

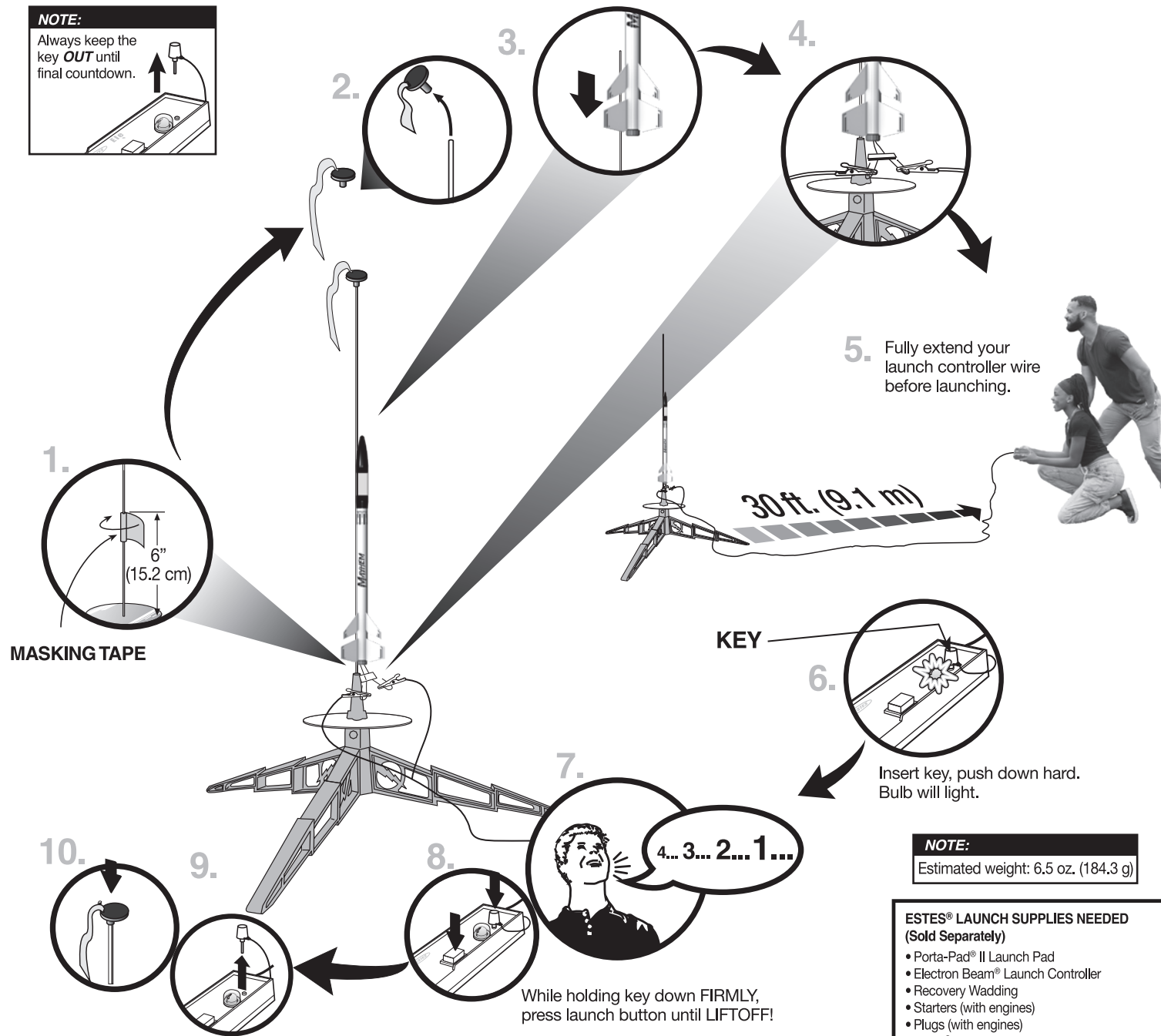


TUBE MARKING GUIDE

COUNTDOWN AND LAUNCH

NOTE:

Always keep the key **OUT** until final countdown.



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



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.