



EstesRockets.com

BELLATRIX

1113/1866

AGES
10+



Skill Level

INTERMEDIATE

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.

DESIGNER RECOMMENDATIONS:

- Wall line count 2-3.
- Infill density 7-10%.
- Position all parts with the top pointed up.
- For the Bellatrix and Rigel rockets, turn on supports from print bed only
- Filament Type: PLA, PETG, or ABS

SUPPLIES



YELLOW GLUE



PENCIL



HOBBY KNIFE



RULER

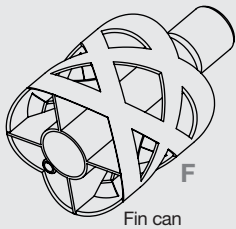


FINE SANDPAPER

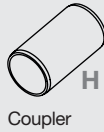


CA GLUE

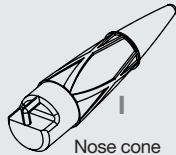
Parts to be 3D printed



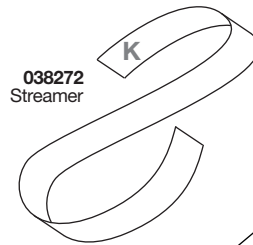
Fin can



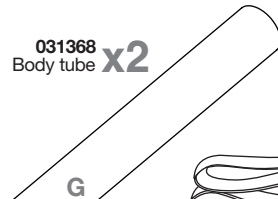
Coupler



Nose cone



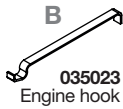
038272
Streamer



031368
Body tube x2



038367
Shock cord



035023
Engine hook



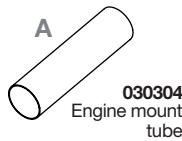
030222-4
Yellow engine block



030162-2
Green ring x2



030167
Mylar ring



030304
Engine mount tube



090001-1866
Self stick decals

ASSEMBLE ENGINE MOUNT

1. Cut an $\frac{1}{8}$ in. slot into **A** $\frac{1}{2}$ in. from the end.
2. Insert engine hook **B** into the slot in **A**.
3. Apply yellow glue around tube **A**.
4. Slide mylar ring **C** over tube **A** and engine hook **B**.
5. Apply yellow glue into the end of tube **A**.
6. Insert engine block **E** into tube **A** until it makes contact with the engine hook.
7. Cut a notch $\frac{1}{4}$ in. wide in ONE of the green rings **D**.

ASSEMBLE ENGINE MOUNT (CONTINUED)

1. Apply yellow glue around tube A.
2. Slide green ring D over tube A until it makes contact with the engine hook.
3. Apply yellow glue around the end of tube A.
4. Slide notched green ring D over tube A making sure the end of tube A and ring D are flush.

LET DRY

ASSEMBLE BODY TUBES

1. With a pencil, make a mark in the middle of tube coupler I. Apply CA glue to the inside end of body tube H.
2. Insert tube coupler I into the glued end of body tube H up to the middle mark. Apply CA glue into the end of the other body tube G.
3. Insert tube coupler I into the glued end of the other body tube H until the two body tubes meet.

LET DRY

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

INSTALL ENGINE MOUNT

1. Apply CA glue to the inside of fin can F.
2. Insert engine mount A into fin can F. Be sure that the end of tube A is flush with the end of fin can F.
3. Apply CA glue to inside of body tube G. Insert fin can F into body tube G.

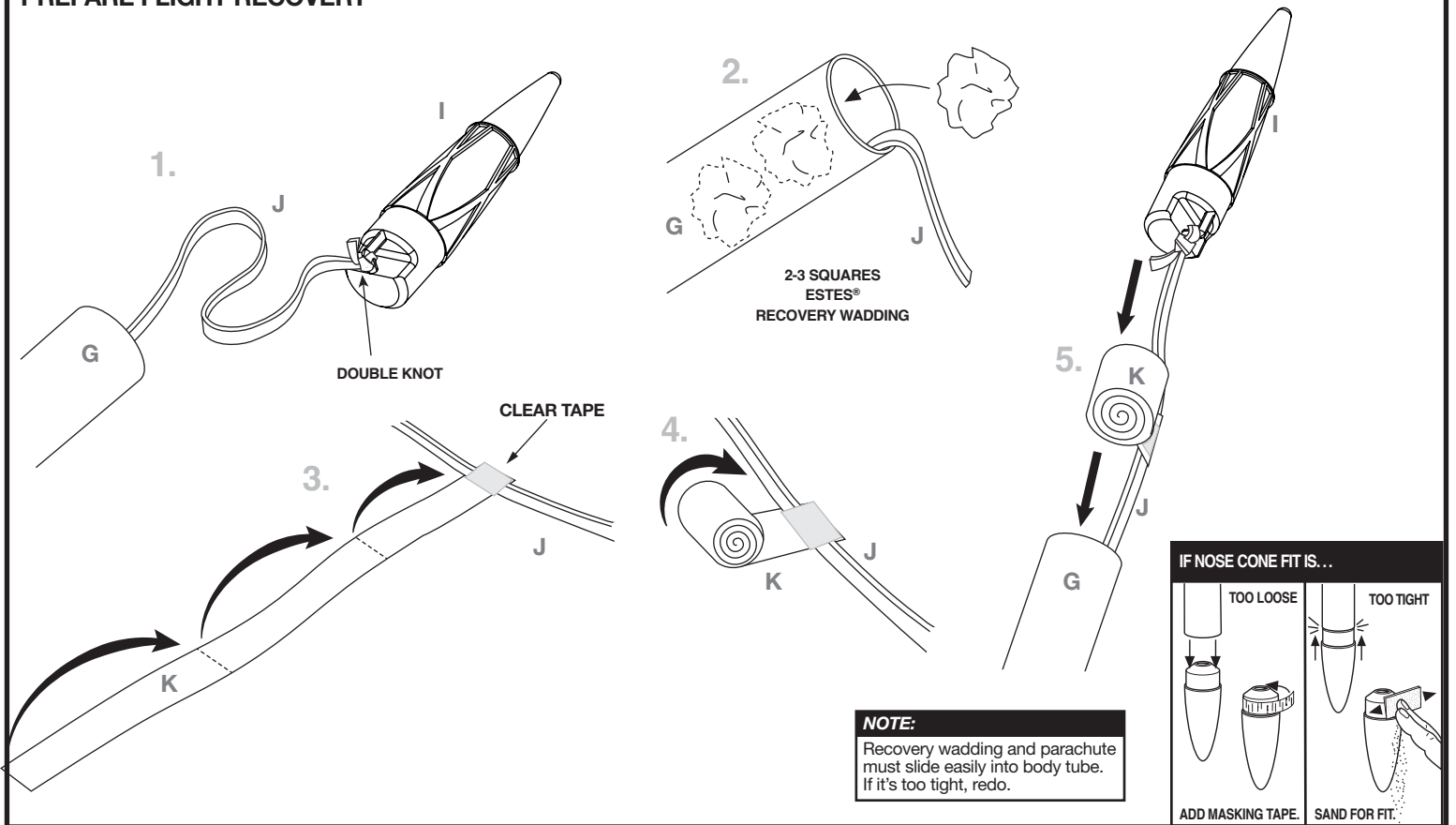
LET DRY

INSTALL SHOCK CORD

1. Cut a piece of shock cord G to 1 1/2" (3.8 cm).
2. Apply CA glue to the end of shock cord G.
3. Apply CA glue to the end of shock cord G.
4. Hold until set.
5. Apply CA glue to the end of shock cord G.

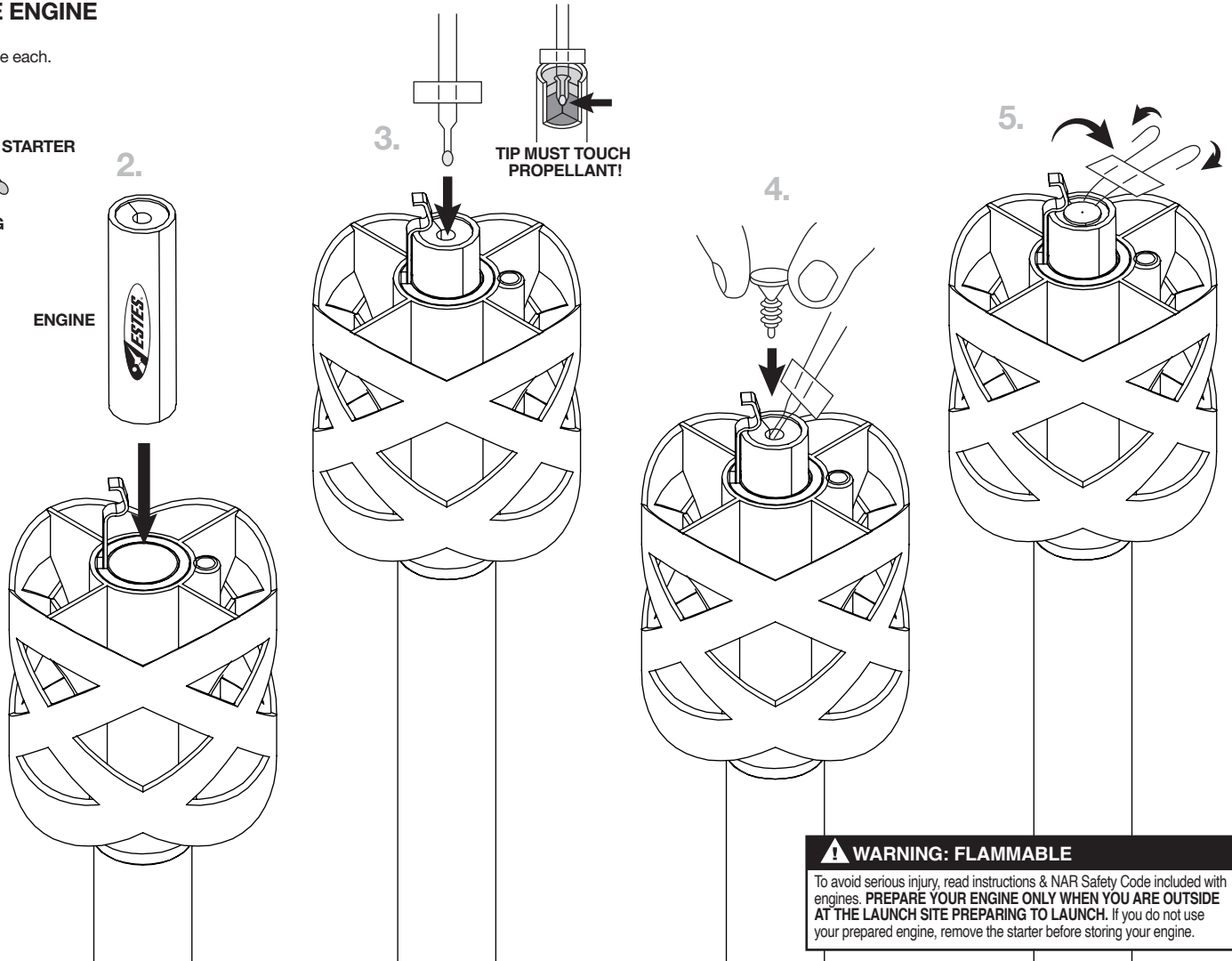
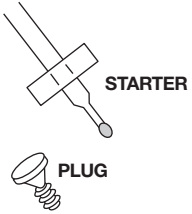
LET DRY

PREPARE FLIGHT RECOVERY



PREPARE ENGINE

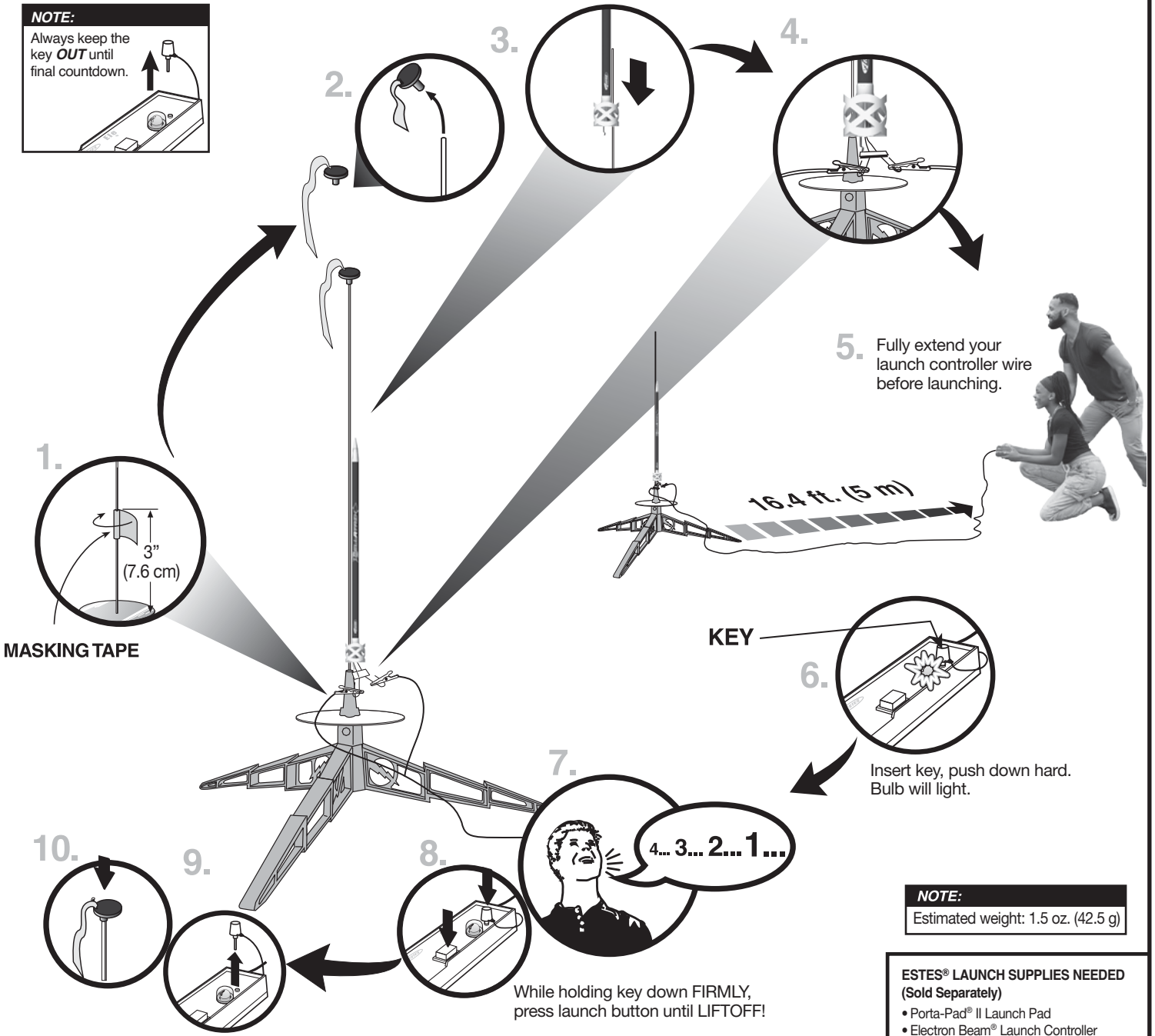
1. Use one each.



COUNTDOWN AND LAUNCH

NOTE:

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



NOTE:
Estimated weight: 1.5 oz. (42.5 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: 1/2A3-2T, A3-4T, A10-3T

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.



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MINTAKA

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Skill Level

INTERMEDIATE

MODEL ROCKET INSTRUCTIONS

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- Infill density 7-10%.
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- For the Bellatrix and Rigel rockets, turn on supports from print bed only
- Filament Type: PLA, PETG, or ABS

SUPPLIES



YELLOW GLUE



PENCIL



HOBBY KNIFE



RULER

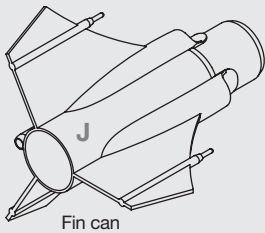


FINE SANDPAPER

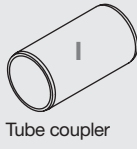


CA GLUE

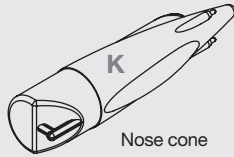
Parts to be 3D printed



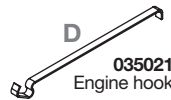
Fin can



Tube coupler



Nose cone



035021
Engine hook



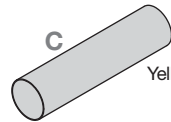
030164-2
Centering ring



080425
Split centering ring



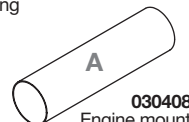
030162-2
Engine block



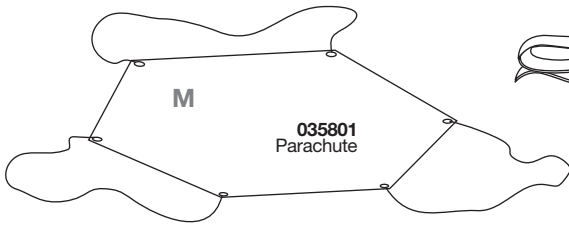
035003
Yellow spacer tube



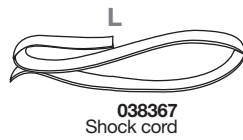
030168
Mylar retainer ring



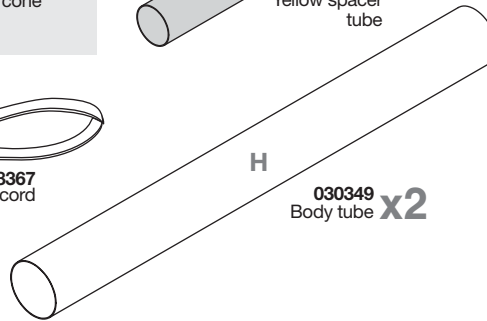
030408
Engine mount



035801
Parachute



038367
Shock cord



030349
Body tube x2



090001-1867
Self stick decals

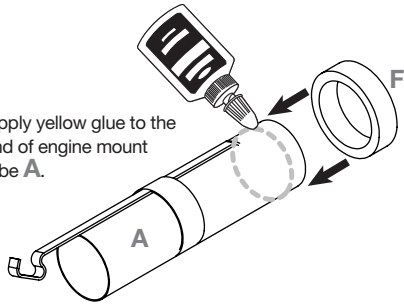
ASSEMBLE ENGINE MOUNT

- With a pencil, make a mark on yellow spacer tube **C** 1/2 in. from end of tube.
- Apply yellow glue to the inside of engine mount tube **A** 2 1/8 in. from the end.
- Insert engine block **B** into engine mount tube **A**. Use yellow spacer tube **C** to push the engine block into the engine mount. Push yellow spacer tube up to 1/2 in. mark.

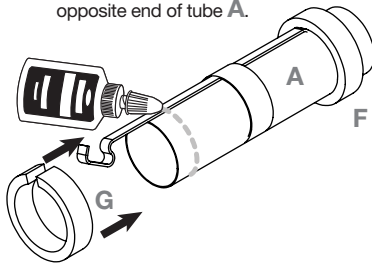
REMOVE YELLOW SPACER TUBE. LET DRY.
- Using a sharp hobby knife, cut a slot 1/8 in. wide 2 1/4 in. from the end of engine mount tube **A**.
- Place engine hook **D** into slot. Apply yellow glue around engine mount **A** 1 1/4 in. from end of tube.
- Slide mylar ring **E** over engine mount **A** and engine hook **D** until it is 1 in. from the end of the tube.

ASSEMBLE ENGINE MOUNT (CONTINUED)

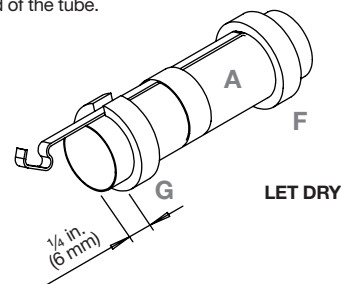
7. Apply yellow glue to the end of engine mount tube A.



8. Slide centering ring F over the end of tube A until it makes contact with engine hook D. Apply yellow glue to opposite end of tube A.

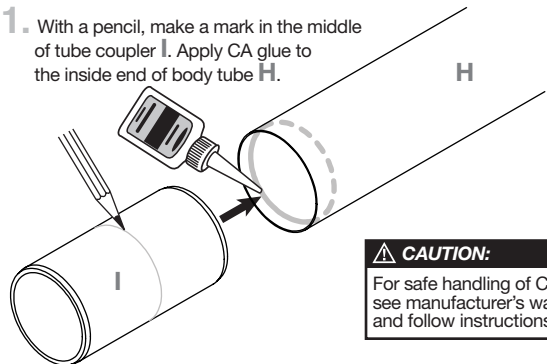


9. Slide split centering ring G over the end of tube A until it is 1/4 in. from the end of the tube.



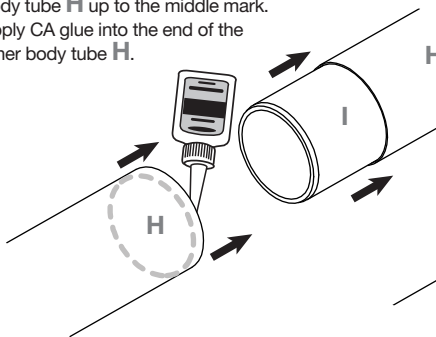
ASSEMBLE BODY TUBES

1. With a pencil, make a mark in the middle of tube coupler I. Apply CA glue to the inside end of body tube H.

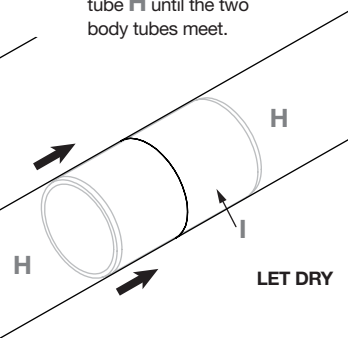


CAUTION:
For safe handling of CA glue, see manufacturer's warnings and follow instructions for use.

2. Insert tube coupler I into the glued end of body tube H up to the middle mark. Apply CA glue into the end of the other body tube H.

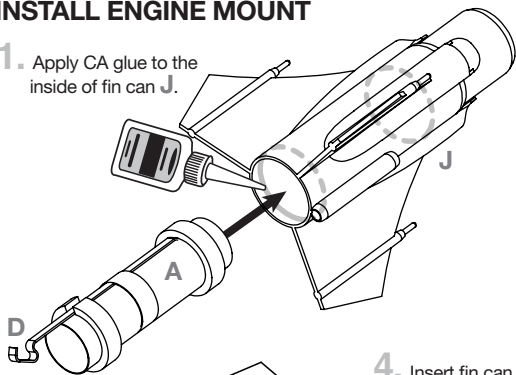


3. Insert tube coupler I into the glued end of the other body tube H until the two body tubes meet.

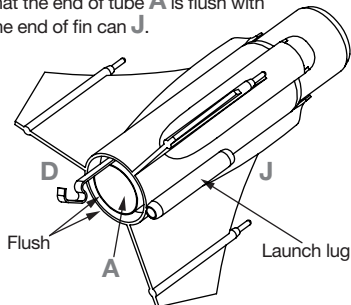


INSTALL ENGINE MOUNT

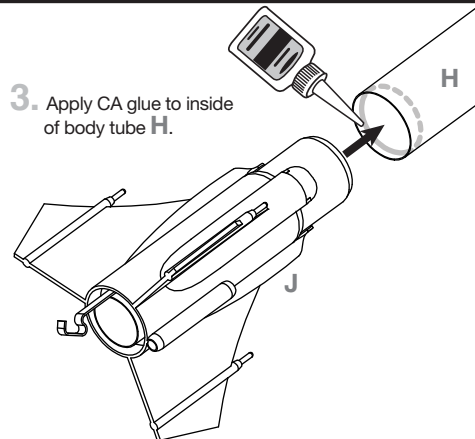
1. Apply CA glue to the inside of fin can J.



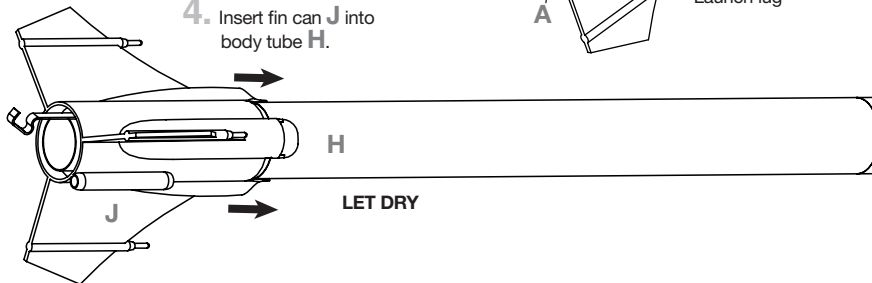
2. Insert engine mount A into fin can J. Make sure engine hook D does NOT align with the launch lug. But be sure that the end of tube A is flush with the end of fin can J.



3. Apply CA glue to inside of body tube H.



4. Insert fin can J into body tube H.



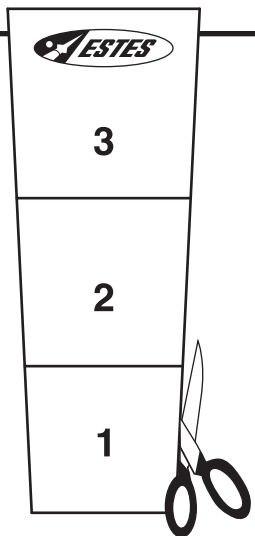
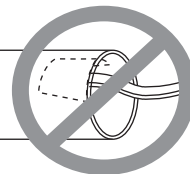
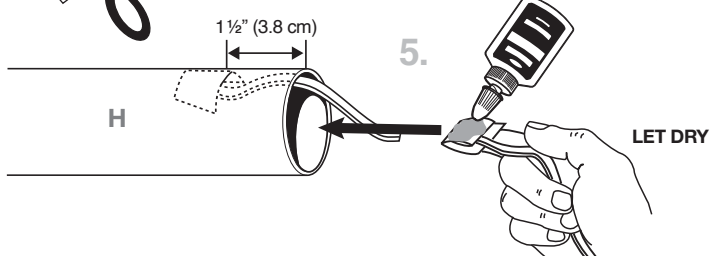
INSTALL SHOCK CORD

1. Cut a piece of shock cord L to 1 1/2" (3.8 cm) long.

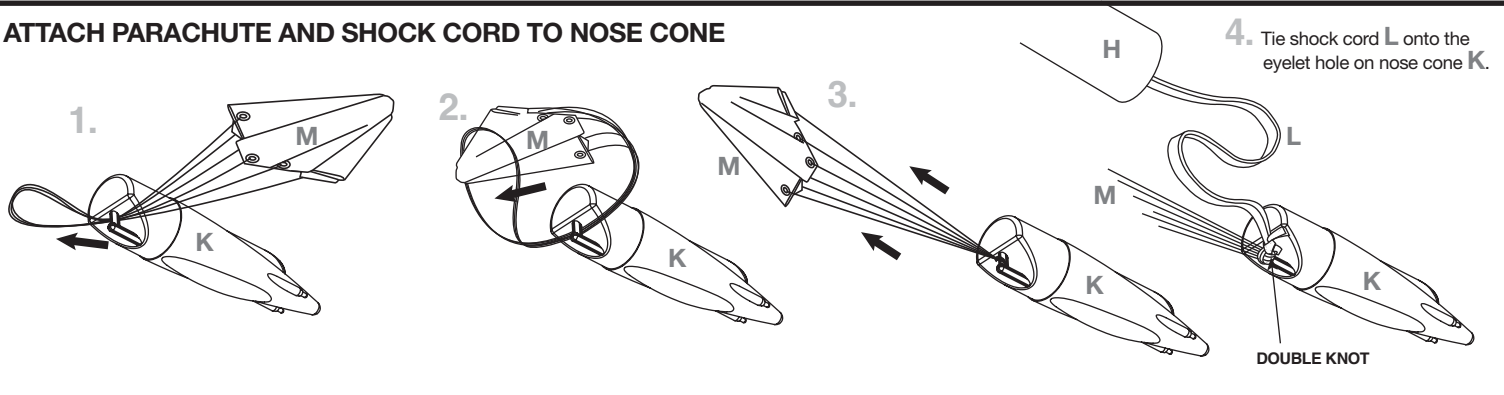
2. Apply CA glue to one end of shock cord L.

3. Apply CA glue to the other end of shock cord L.

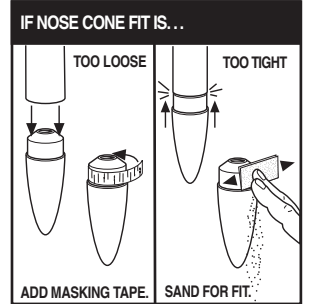
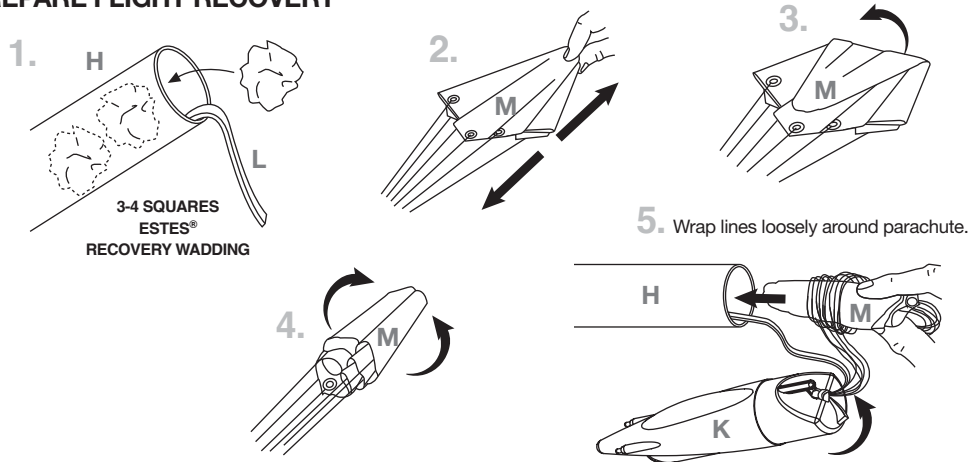
4. Hold until set.



ATTACH PARACHUTE AND SHOCK CORD TO NOSE CONE



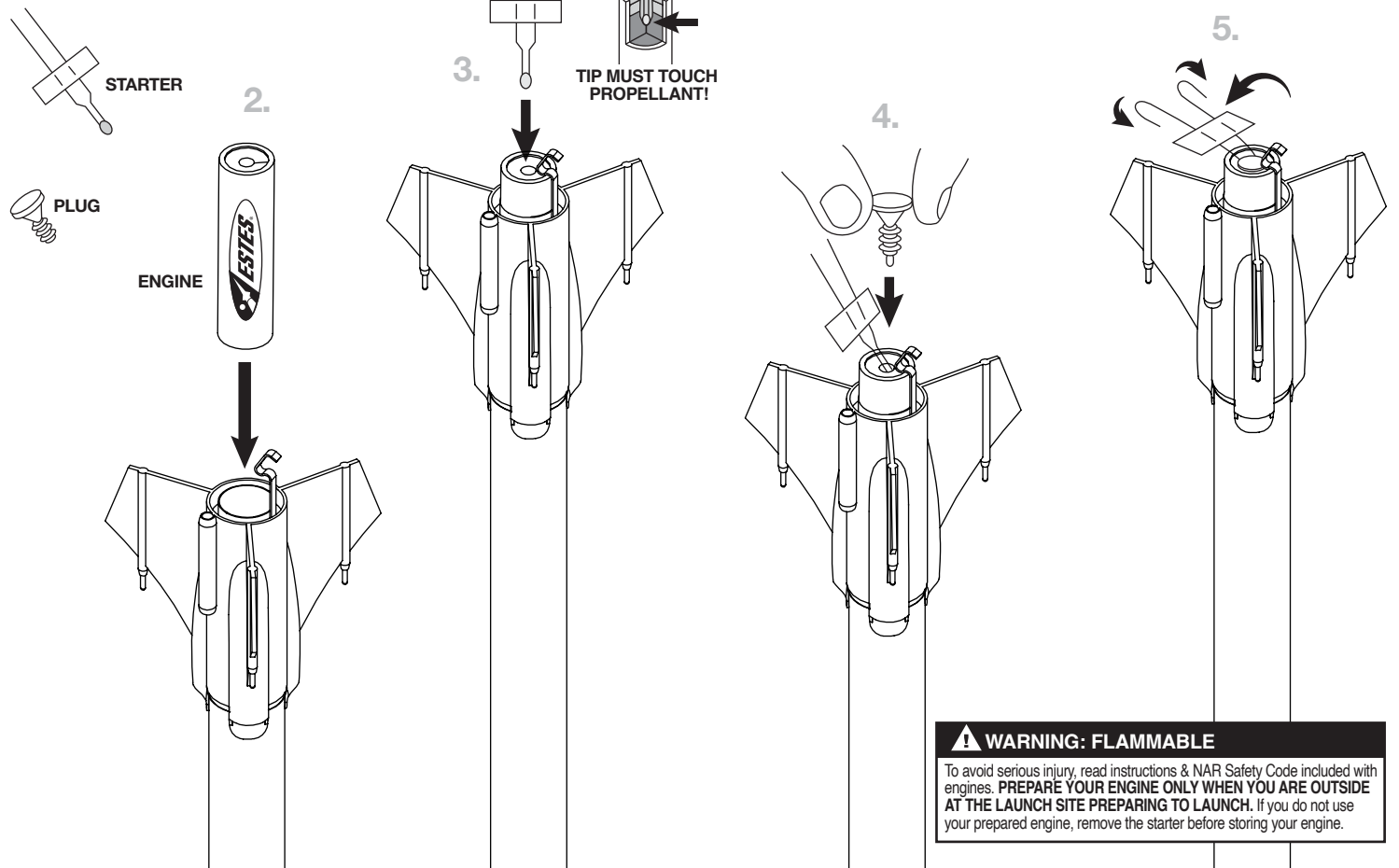
PREPARE FLIGHT RECOVERY



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

PREPARE ENGINE

1. Use one each.

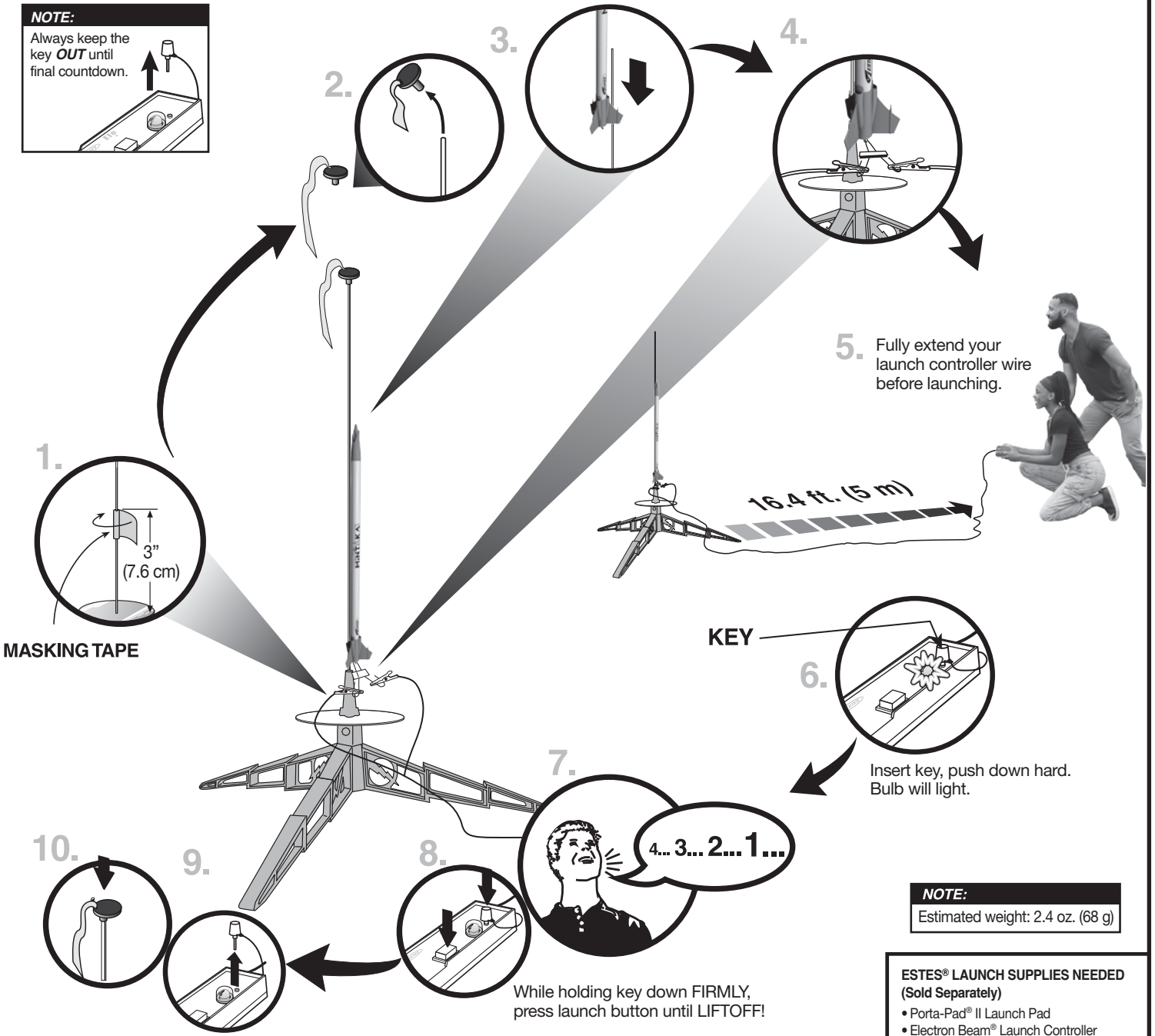


⚠ WARNING: FLAMMABLE
To avoid serious injury, read instructions & NAR Safety Code included with engines. **PREPARE YOUR ENGINE ONLY WHEN YOU ARE OUTSIDE AT THE LAUNCH SITE PREPARING TO LAUNCH.** If you do not use your prepared engine, remove the starter before storing your engine.

COUNTDOWN AND LAUNCH

NOTE:

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



5. Fully extend your launch controller wire before launching.

16.4 ft. (5 m)

NOTE:
Estimated weight: 2.4 oz. (68 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: A8-3, B6-4, C6-5

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.

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RIGEL

1113/1868

AGES
10+



Skill Level

INTERMEDIATE

MODEL ROCKET INSTRUCTIONS

KEEP FOR FUTURE REFERENCE

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- Infill density 7-10%.
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- For the Bellatrix and Rigel rockets, turn on supports from print bed only
- Filament Type: PLA, PETG, or ABS

SUPPLIES



YELLOW GLUE



PENCIL



HOBBY KNIFE



RULER

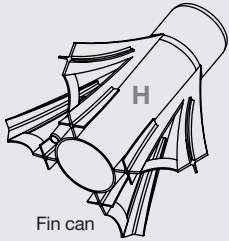


FINE SANDPAPER



CA GLUE

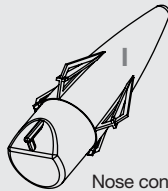
Parts to be 3D printed



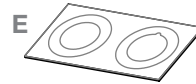
Fin can



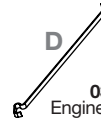
Coupler



Nose cone



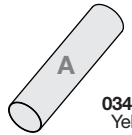
030132
Laser cut
centering rings



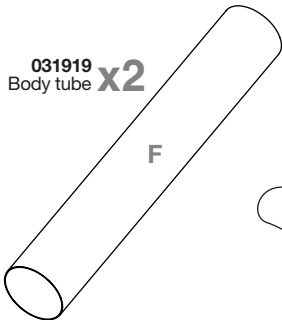
035022
Engine hook



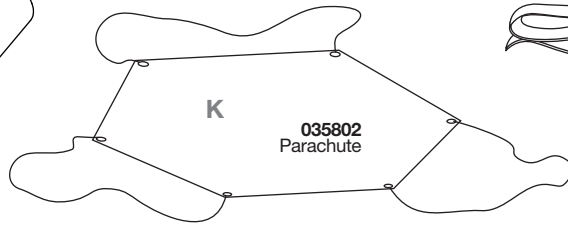
030480
Black
retainer ring



034997
Yellow
space tube



031919
Body tube **x2**



035802
Parachute



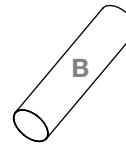
038389
Shock cord



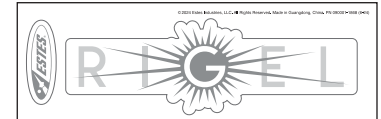
030162-2
Engine block



035005
E to D engine
spacer



030368
Engine mount



090001-1868
Self stick decals

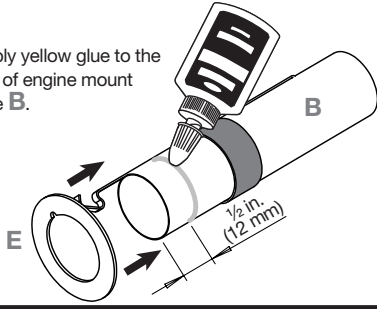
ASSEMBLE ENGINE MOUNT

- With a pencil, make a mark on yellow spacer tube **A** $\frac{1}{2}$ in. from end of tube.
- Apply yellow glue to the inside of engine mount tube **B** 2 in. from the end.
- Insert engine block **C** into engine mount tube **B**. Use yellow spacer tube **A** to push the engine block into the engine mount. Push yellow spacer tube up to $\frac{1}{2}$ in. mark.
- Using a sharp hobby knife, cut a slot $\frac{1}{8}$ in. wide $\frac{3}{4}$ in. from the end of engine mount tube **B**.
- Place engine hook **D** into slot. Apply yellow glue around engine mount **B** $1\frac{1}{2}$ in. from end of tube.
- Slide black retainer ring **M** over engine mount **B** and engine hook **D** until it is $\frac{1}{4}$ in. from the end of the tube.
- Cut out laser cut centering rings **E**.

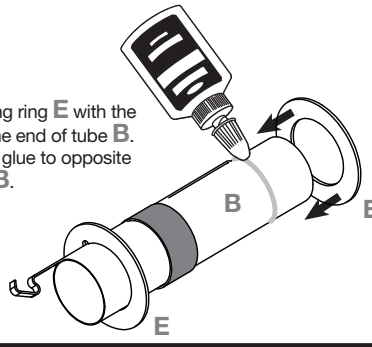
REMOVE YELLOW SPACER TUBE. LET DRY.

ASSEMBLE ENGINE MOUNT (CONTINUED)

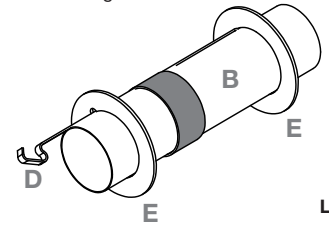
8. Apply yellow glue to the end of engine mount tube B.



9. Slide centering ring E with the notch over the end of tube B. Apply yellow glue to opposite end of tube B.



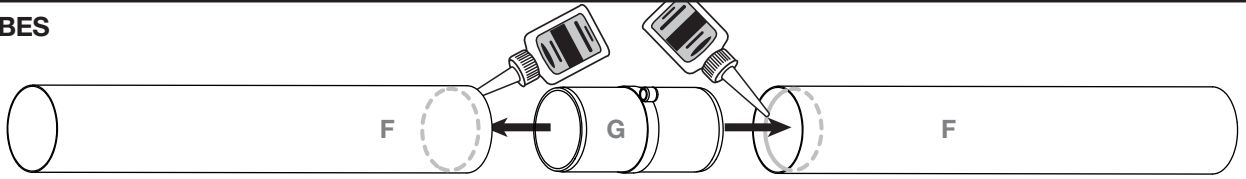
10. Slide centering ring E over the end of tube B until it makes contact with engine hook D.



LET DRY

ASSEMBLE BODY TUBES

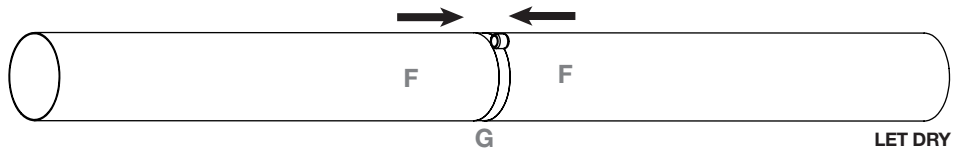
1. Apply CA glue to the inside of one end of both body tubes F.



CAUTION:

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

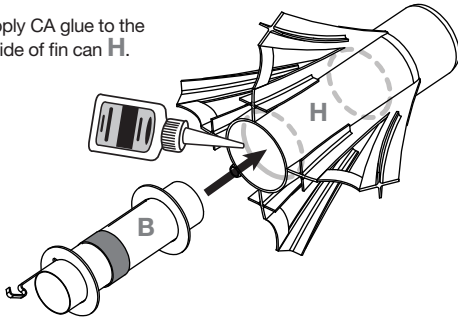
2. Insert coupler G into glued ends of body tubes F.



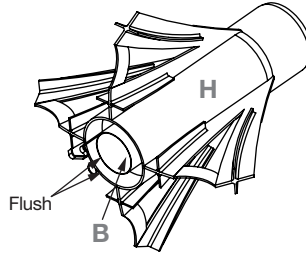
LET DRY

INSTALL ENGINE MOUNT

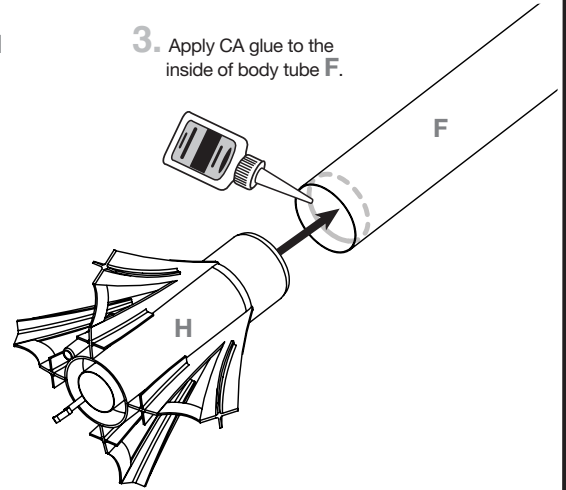
1. Apply CA glue to the inside of fin can H.



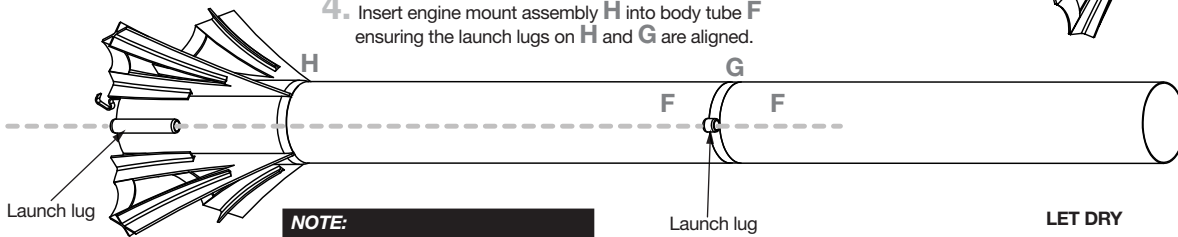
2. Insert engine mount B into fin can H ensuring the ends are flush.



3. Apply CA glue to the inside of body tube F.



4. Insert engine mount assembly H into body tube F ensuring the launch lugs on H and G are aligned.

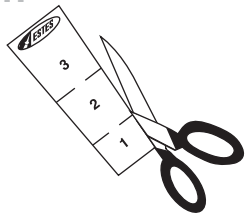


NOTE:

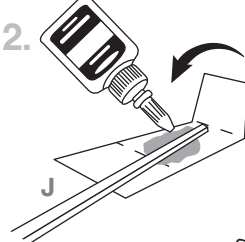
Align launch lugs using a launch rod.

INSTALL SHOCK CORD

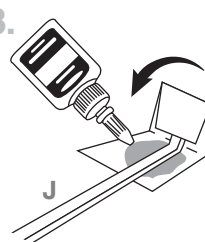
- 1.



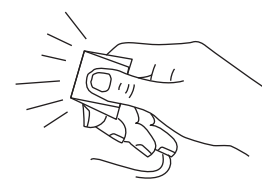
- 2.



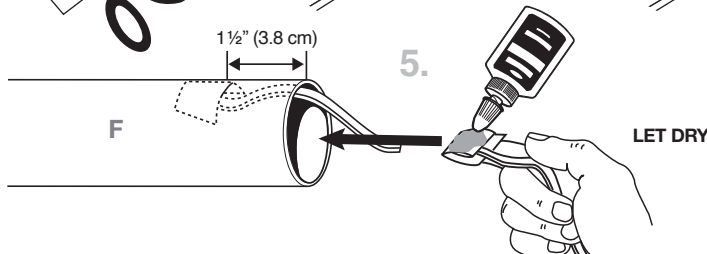
- 3.



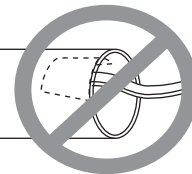
4. Hold until set.



- 5.



LET DRY

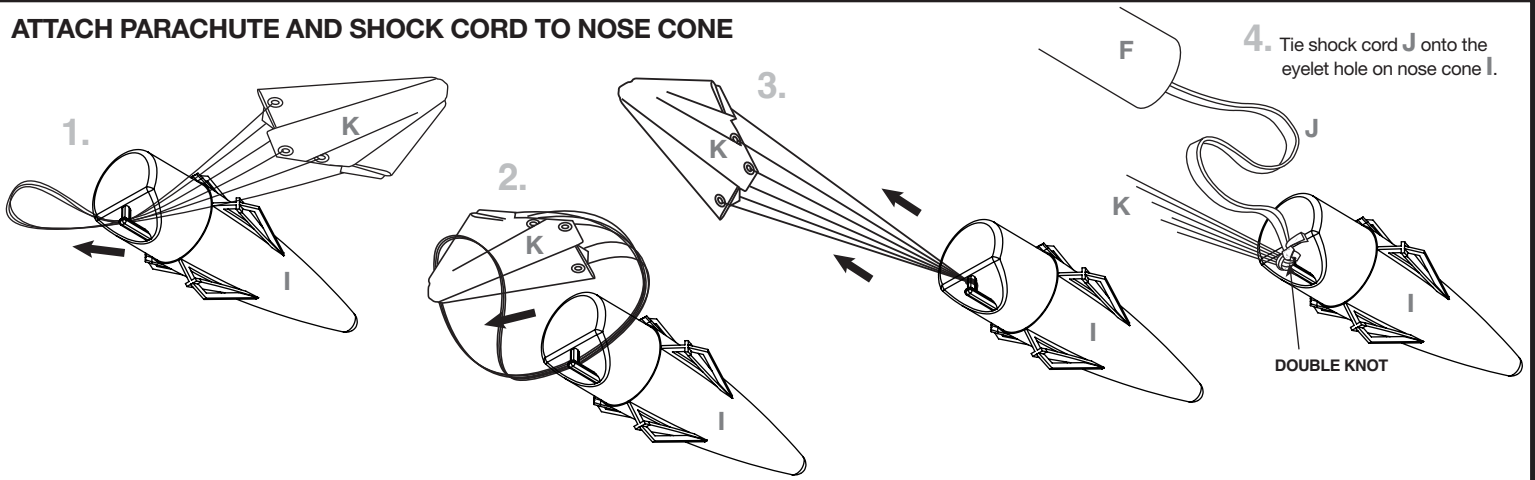


3

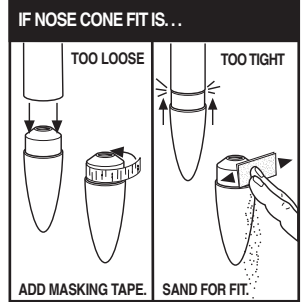
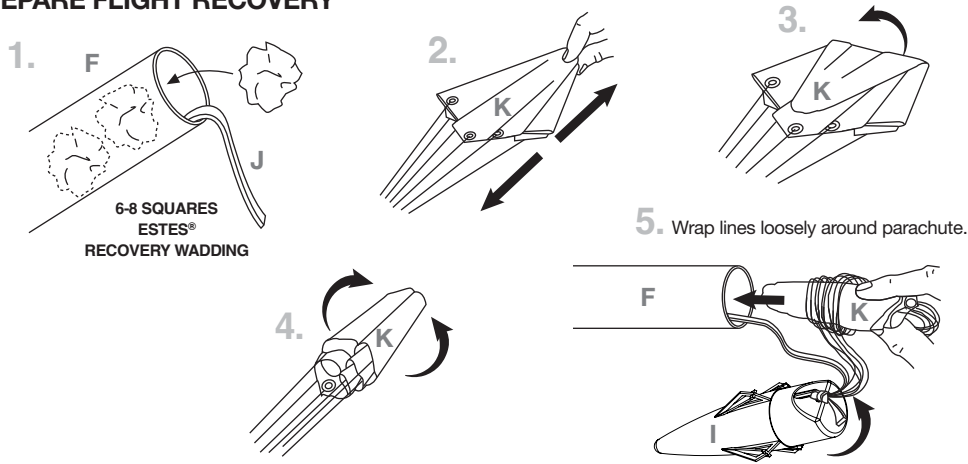
2

1

ATTACH PARACHUTE AND SHOCK CORD TO NOSE CONE



PREPARE FLIGHT RECOVERY

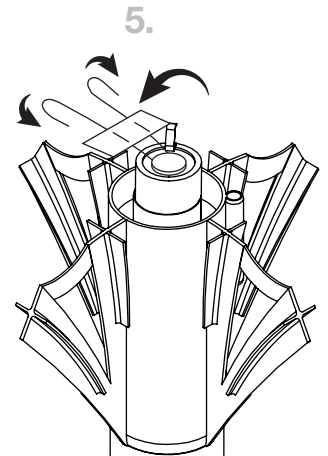
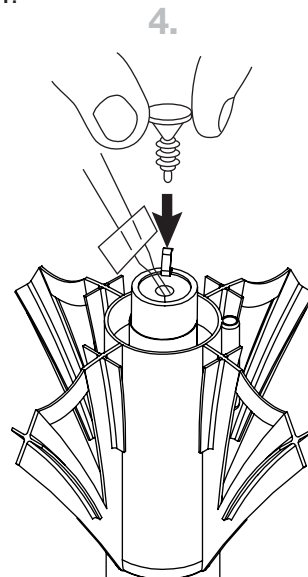
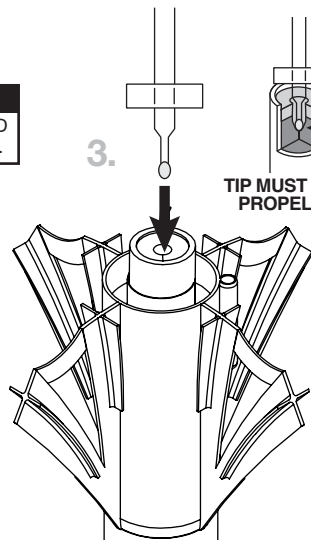
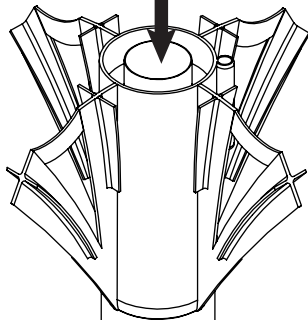
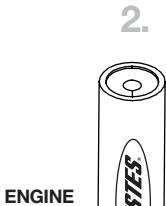
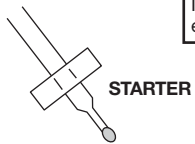


NOTE:
Recovery wadding and parachute must slide easily into body tube. If it's too tight, redo.

PREPARE ENGINE

1. Use one each.

NOTE:
If using a D engine, insert E to D engine spacer L before engine.



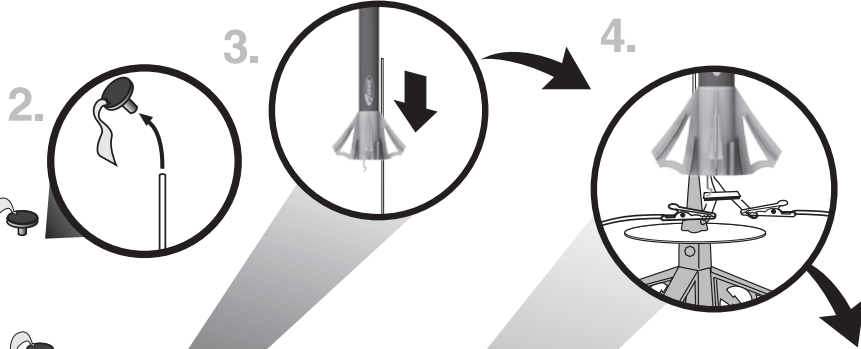
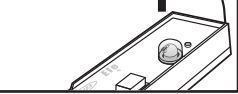
⚠ WARNING: FLAMMABLE

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.

COUNTDOWN AND LAUNCH

NOTE:

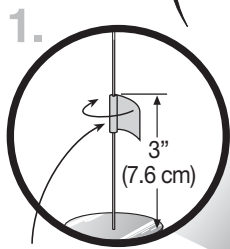
Always keep the key **OUT** until final countdown.



5. Fully extend your launch controller wire before launching.

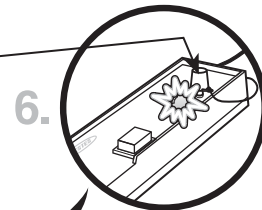


30 ft. (9.1 m)

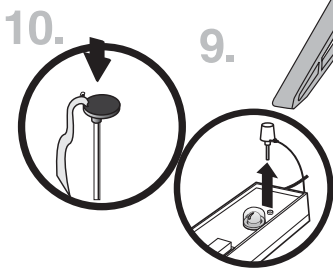


MASKING TAPE

KEY



Insert key, push down hard. Bulb will light.



While holding key down **FIRMLY**, press launch button until **LIFTOFF!**

NOTE:

Estimated weight: 5.7 oz. (162 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: D12-3, E12-4

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.

