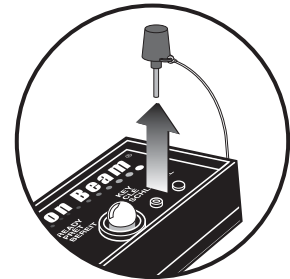
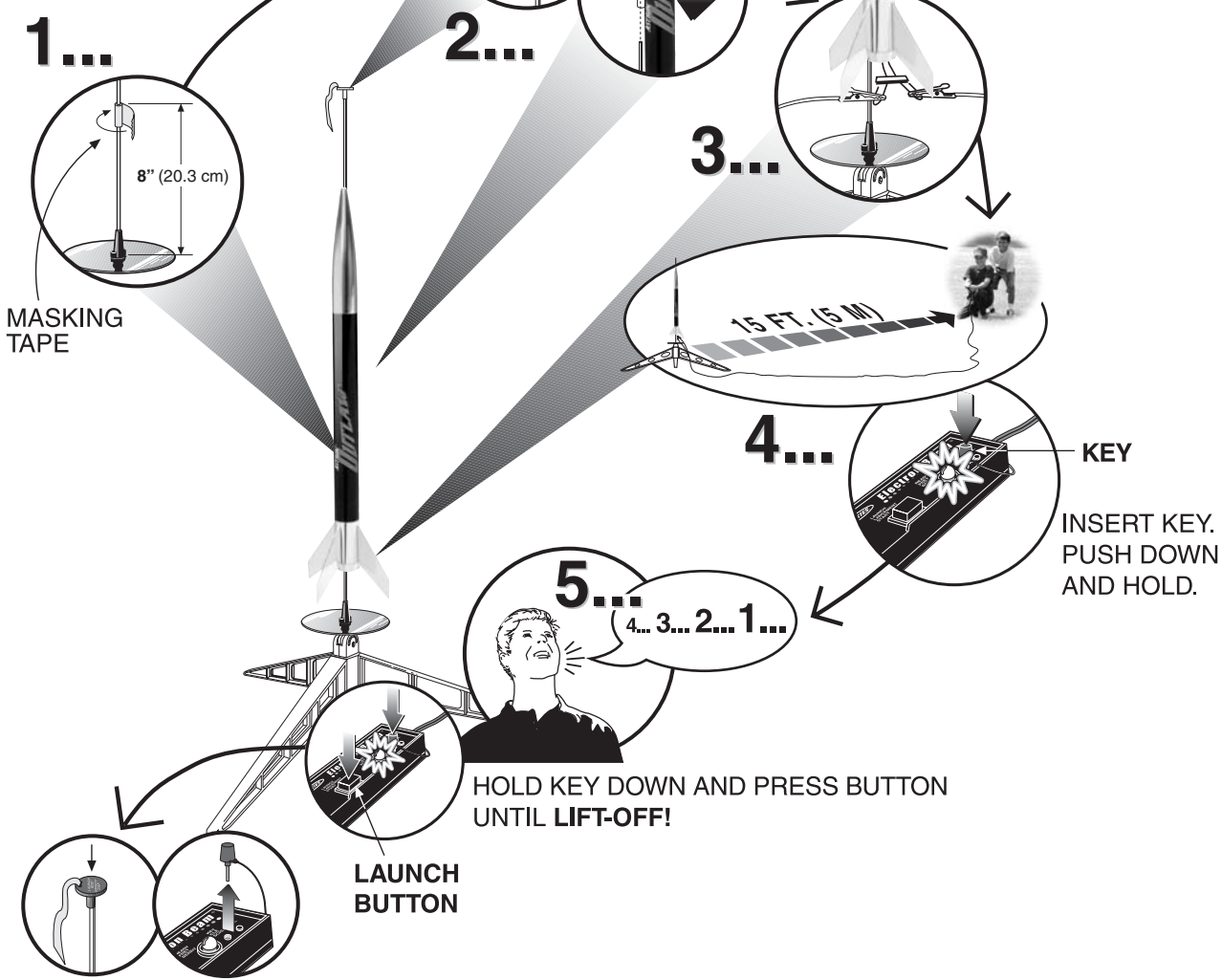


COUNTDOWN AND LAUNCH



KEY ALWAYS OUT UNTIL FINAL COUNTDOWN!



- LAUNCH SUPPLIES**
(Sold Separately)
- Estes Porta-Pad® II Launch Pad and Electron Beam® Controller
 - Recovery Wadding
 - Igniters (with Engines)
 - Igniter Plugs (with Engines)
 - Estes Recommended Engines:
Astron® Outlaw™: A8-3, B4-2, B4-4, B6-4, C6-5
Black Diamond™: 1/2A6-2, A8-3, A8-5, B4-4, B6-6, C6-5, C6-7

PRECAUTIONS



FLYING YOUR ROCKET

Choose a large field (500 ft. [152 m] square) free of dry weeds and brown grass. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great. Launch only with little or no wind and good visibility.

Always follow the National Association of Rocketry (NAR) SAFETY CODE.

MISFIRES
TAKE THE KEY OUT OF THE CONTROLLER. WAIT ONE MINUTE BEFORE GOING NEAR THE ROCKET! Disconnect the igniter clips and remove the engine. Take the plug and igniter out of the engine. If the igniter has burned, it worked but did not ignite the engine because it was not touching the propellant inside the engine. Put a new igniter all the way inside the engine without bending it. Push the plug in place. Repeat the steps under Countdown and Launch.

ESTES
www.estesrockets.com
Estes Industries
1295 H Street
Penrose, CO 81240
Printed in CHINA



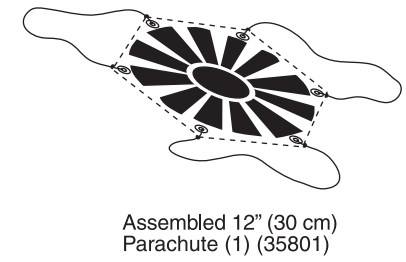
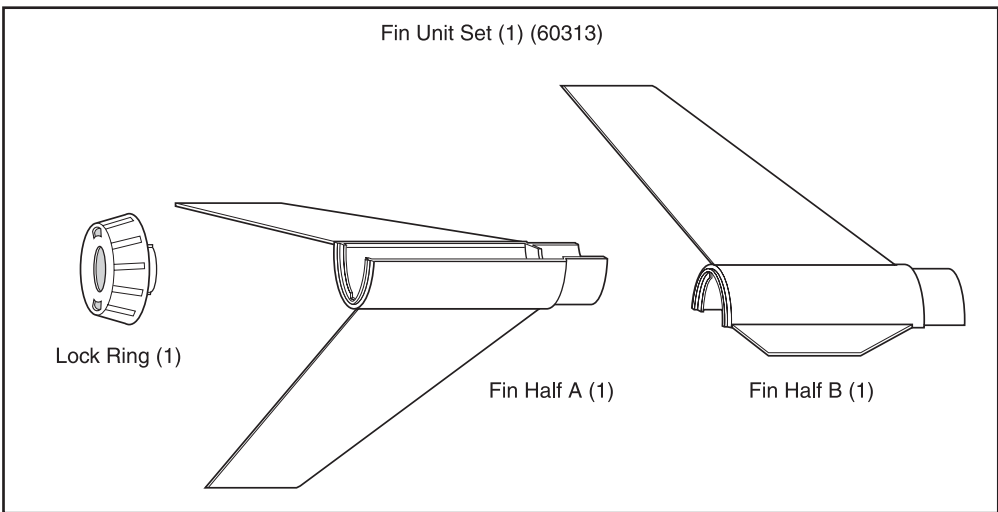
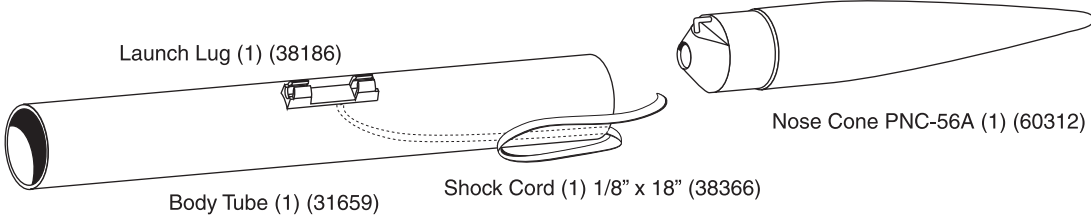
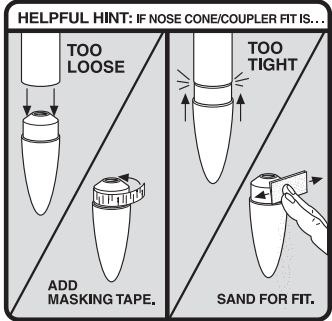
ASSEMBLY TIP

Read all instructions before beginning work on your model. Make sure you have all parts and supplies.

TEST-FIT ALL PARTS TOGETHER BEFORE APPLYING ANY GLUE. If any parts don't fit properly, sand as required for precision assembly.

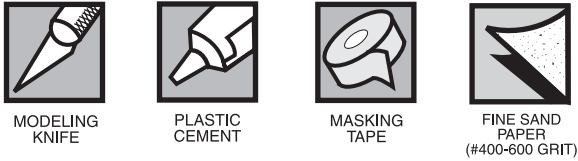
PARTS

Locate the parts shown below and lay them out on the table in front of you. DO NOT USE THIS DRAWING TO ASSEMBLE YOUR ROCKET.



SUPPLIES

In addition to the parts included in the kit you will also need:



1. ASSEMBLE FIN UNIT

A. Scrape chrome flash from edges of fin halves A and B.

SCRAPE EDGES

FIN HALF

B. Apply plastic cement to fin half A.

C. Align pegs with holes and press fin halves together. Hold until cement sets. Let cement dry completely.

FIN HALF B

PEGS

HOLES

FINISHED

2. ATTACH BODY TUBE

A. Apply plastic cement inside rear end of body tube.

SHOCK CORD

LAUNCH LUG

REAR

B. Position and insert fin unit into the body tube so that the launch lug is aligned between two fins.

C. Wipe away excess cement. Let dry.

D. Apply decals.

NOTE: Apply engine sticker from decal sheet to body tube as an easy reference.

ASTRON®
OUTLAW™

9. PAINT SCHEME

A. Before you paint your rocket make sure all of the glue joints are completely dry.

B. Optional: For a smoother and better looking finish, spray a coat of primer on your rocket. Do not apply too much. Lightly sand the rocket with a 400 to 600 grit sandpaper. Apply another coat if needed. Sand between coats. Follow the paint scheme on the package, or design your own. Let dry. Apply decals.

NOTE: Apply engine sticker from decal sheet to body tube as an easy reference.

Optional: After decal placement, spray entire rocket with clear coat. Let dry.

PAINTING HOLDER:
ROLLED PAPER

10. RECOVERY DEVICE ATTACHMENT

A. Cut a 1" (25 mm) long piece of masking tape.

1"
(25 mm)

B. Lay shock cord over end of streamer as shown and tape shock cord and streamer together. Press tape down firmly.

6"
(15 cm)

C. Tie free end of shock cord to nose cone. Use double knot.

DOUBLE KNOT

PREPARE STREAMER FOR FLIGHT

A. Insert 2-3 squares of loosely crumpled recovery wadding into body tube.

B. Fold streamer in half.

C. Roll streamer.

D. Insert streamer, shock cord and nose cone into body tube.

NOTE: Only Estes Wadding (302274) recommended.

PREPARE ENGINE

A. Separate igniter and igniter plug.

Igniter must touch propellant.

B. Hold engine upright, drop in igniter.

C. Insert igniter plug.

F. Insert engine into rocket.

D. Firmly push all the way in.

E. Bend igniter wires back.

WARNING: FLAMMABLE
Before proceeding, 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 igniter before storing your engine.

BLACK DIAMOND™

FLYING MODEL ROCKET KIT INSTRUCTIONS

KEEP FOR FUTURE REFERENCE

Launchables
Starter Set
#1452

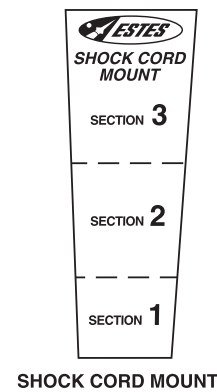
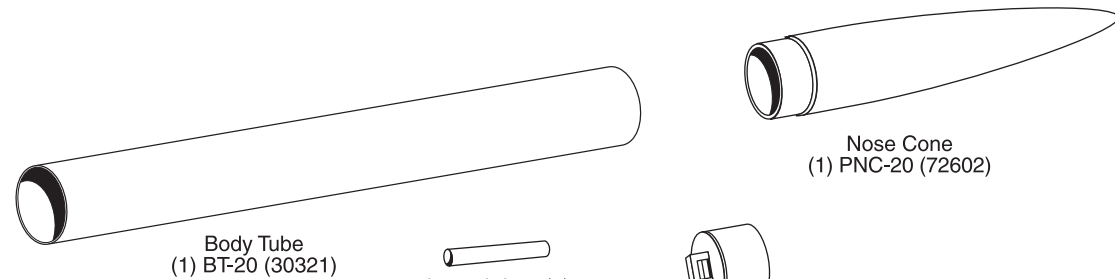
ASSEMBLY TIP

Read all instructions before beginning work on your model. Make sure you have all parts and supplies.

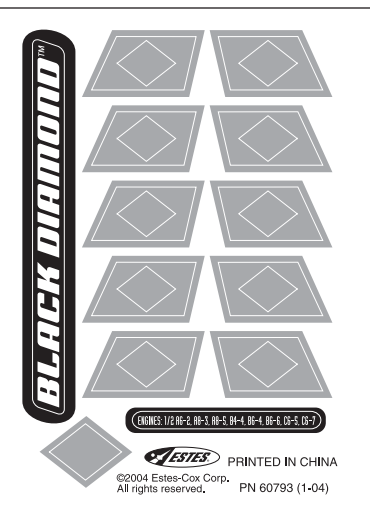
TEST-FIT ALL PARTS TOGETHER BEFORE APPLYING ANY GLUE. If any parts don't fit properly, sand as required for precision assembly.

PARTS:

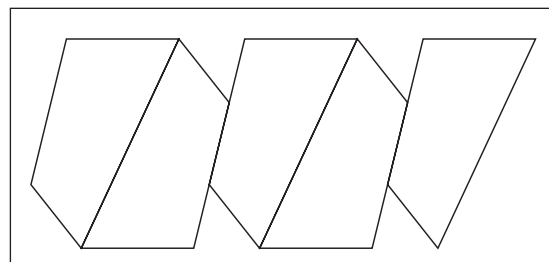
Locate the parts shown below and lay them out on the table in front of you. DO NOT USE THIS DRAWING TO ASSEMBLE YOUR ROCKET.



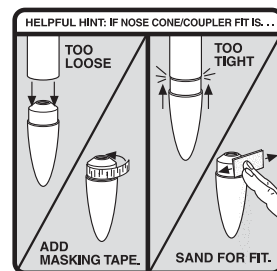
SHOCK CORD MOUNT



Decals (1) (60793)



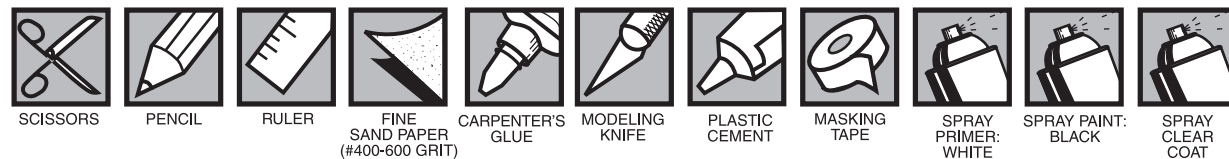
Die Cut Fins (1) (32915)



Streamer (1) (38275)

SUPPLIES

In addition to the parts included in the kit you will also need:



BLACK DIAMOND™ ASSEMBLY

1. NOSE CONE ASSEMBLY

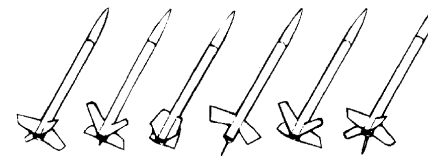
A. Apply plastic cement inside nose cone as shown.

B. Insert nose cone insert into nose cone. Let dry.

NOTE:
Use plastic cement only in this step.

2. THE VERSATILE BLACK DIAMOND™

Your Black Diamond™ allows several different fin configurations from which to choose. Once you have decided on the number of fins you want to use, then select their arrangement. Some arrangements are shown below.



3-FIN GUIDE

4-FIN GUIDE

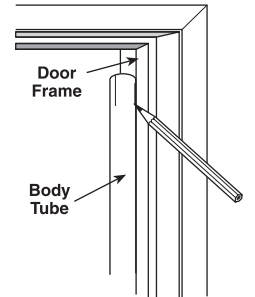
5-FIN GUIDE

TUBE MARKING DETAIL

A. Stand the body tube upright on one of three tube marking guides shown here and make sure the tube is centered on the guide.

B. Mark the tube at the appropriate arrowhead points as shown. Be careful not to move the tube until all locations are properly marked.

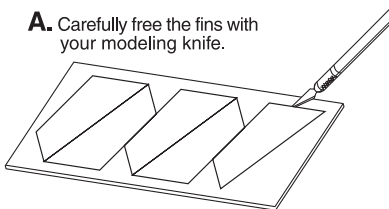
C. Using a door frame as a guide extend the marks approximately 3" (76 mm) down the length of the body tube.



3. FIN PREPARATION

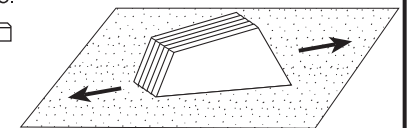
NOTE:

- Read before proceeding with this step.
- Work carefully with your hobby knife to free the fins from the card.
- Be sure to cut completely around each fin outline before attempting to remove fins from the card.
- Check both sides of the card to make sure you cut through.
- Pay close attention to the corner areas where die cutting is not complete.
- As you cut around each fin, cut away from the adjacent fins so you will not damage the other fins on the card.



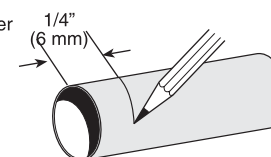
B. Keep a piece of scrap card to use as a glue applicator in step 4C.

C. Stack fins together and lightly sand the edges smooth and flat.

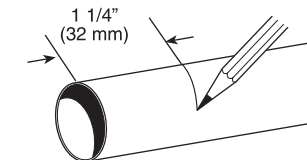


4. ENGINE BLOCK INSTALLATION

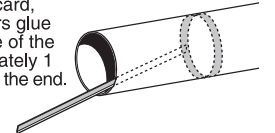
A. Mark yellow spacer tube 1/4" (6 mm) from one end.



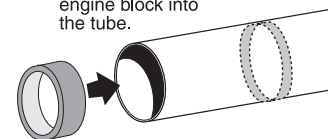
B. Measure body tube approximately 1 1/4" (32 mm) from the rear of the body tube.



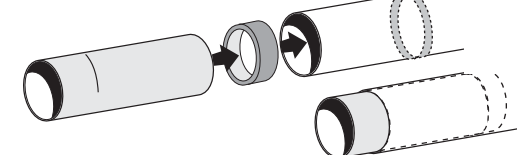
C. Using the scrap card, spread carpenter's glue around the inside of the tube at approximately 1 1/4" (32 mm) from the end.



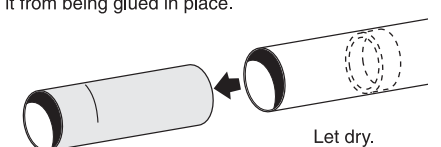
D. Insert the green engine block into the tube.



E. Use the yellow spacer tube to push engine block into the body tube until mark is even with the end of the tube.



F. Immediately remove yellow spacer tube to prevent it from being glued in place.

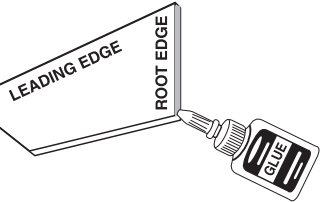


Let dry.

5. FIN ATTACHMENT

A. Apply a thin layer of glue to the root edge of one fin, wait 1 minute. Apply a 2nd thin layer of glue.

C. Attach remaining fins in the same manner. Let dry. Do not set rocket on fins while glue is wet.



B. Set the rear edge of the fin at end of body tube and gently press the root edge along the body tube fin line. Carefully adjust the fin, if needed.

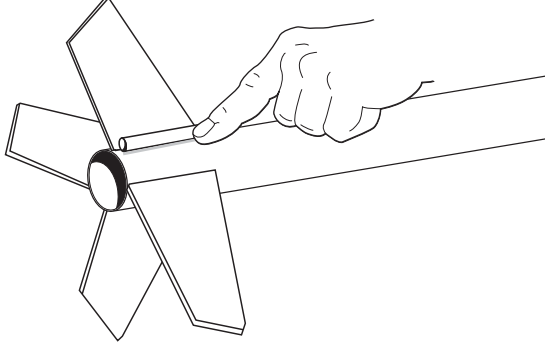
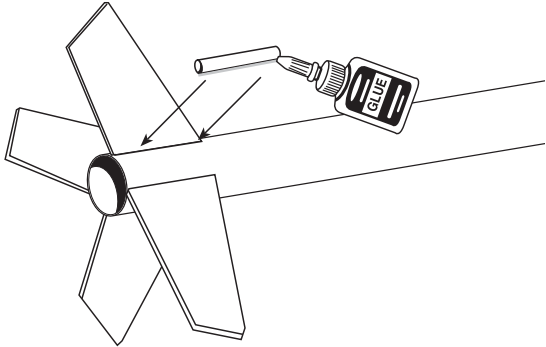
D. Stand rocket on table until glue dries completely.

NOTE: Fins must be attached correctly for a stable flight.

6. LAUNCH LUG ATTACHMENT

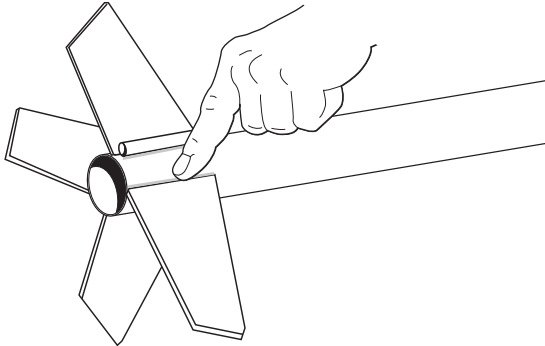
A. Run a line of glue along one side of the launch lug and place the launch lug against any one of the body tube/fin joints.

B. Smooth out the excess glue with finger. Let dry.

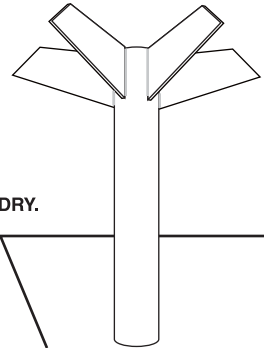


7. APPLY GLUE FILLETS

A. Apply glue fillets to all fin and launch lug/body tube joints. Use your finger to smooth glue fillets. Let dry.



LET DRY.



8. INSTALL SHOCK CORD MOUNT

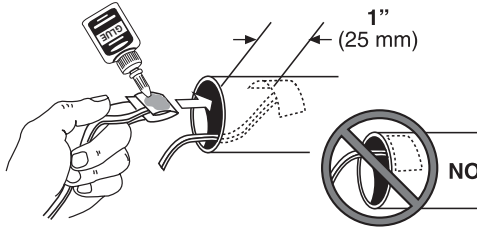
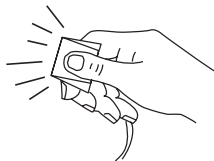
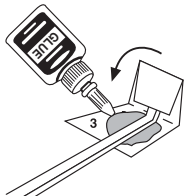
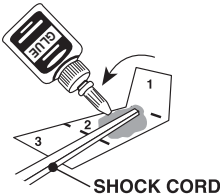
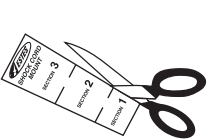
A. Cut out shock cord mount from page 4.

B. Apply glue. Fold forward.

C. Apply glue. Fold forward.

D. Squeeze tightly and hold for one minute.

E. Glue mount 1" (25 mm) inside body tube. Hold until glue sets. Let dry.



3. ATTACH PARACHUTE AND NOSE CONE

A. Clean the eye of the nose cone.

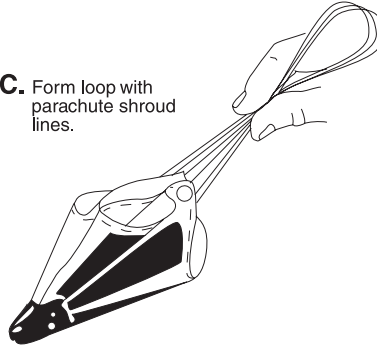
B. Tie shock cord to nose cone.

C. Form loop with parachute shroud lines.

CAUTION: DO NOT CUT EYE OF NOSE CONE OFF!

DOUBLE KNOT.

SHOCK CORD



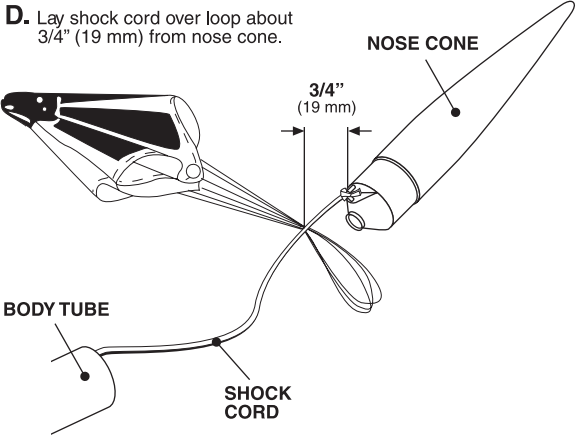
D. Lay shock cord over loop about 3/4" (19 mm) from nose cone.

NOSE CONE

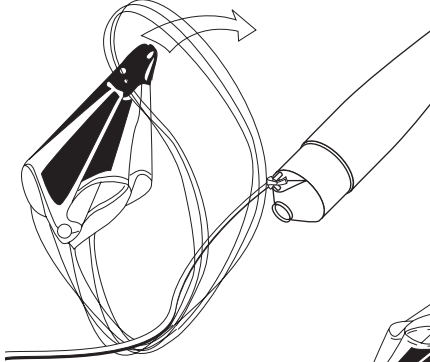
3/4" (19 mm)

BODY TUBE

SHOCK CORD

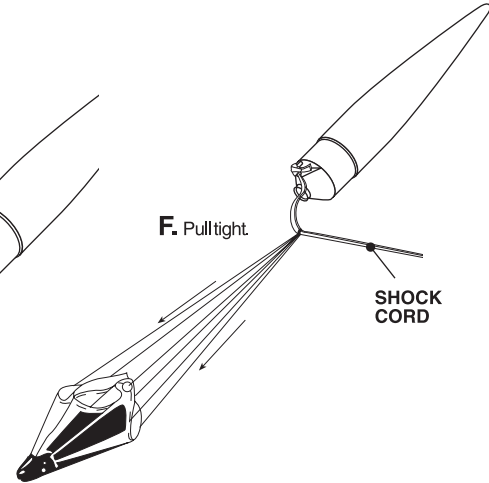


E. Pass parachute through loop.



F. Pull tight.

SHOCK CORD



4. PREPARE PARACHUTE FOR FLIGHT

A. Insert 4-5 squares of loosely crumpled recovery wadding into rocket body tube.

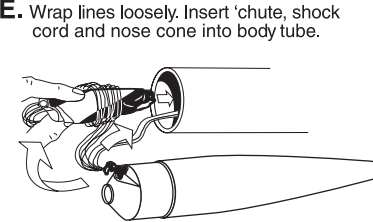
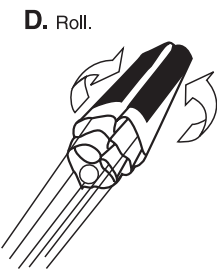
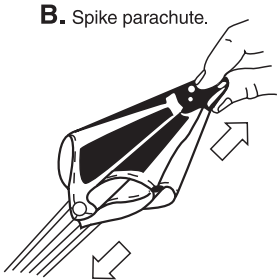
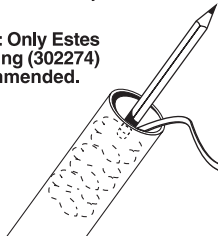
B. Spike parachute.

C. Fold.

D. Roll.

E. Wrap lines loosely. Insert chute, shock cord and nose cone into body tube.

NOTE: Only Estes Wadding (302274) recommended.



5. PREPARE ENGINE

WARNING: FLAMMABLE
Before proceeding, 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 igniter before storing your engine.

NOZZLE END

A. Slide engine into rear of rocket as shown.

B. Twist engine lock ring into locked position to hold engine in place.

C. Separate igniter and igniter plug.

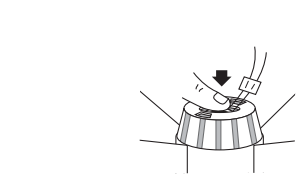
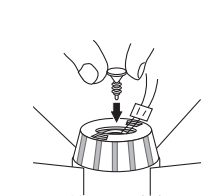
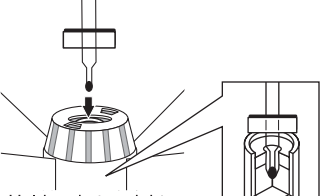
D. Hold rocket upright, drop in igniter.

IGNITER MUST TOUCH PROPELLANT.

E. Insert igniter plug.

F. Firmly push all the way in.

G. Bend igniter wires as shown.



NOTE: Scrape chrome flash and chrome plating from shoulder of engine lock ring.

