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 AND SUPPLIES
Locate the parts shown below and lay them out on the table in front of you. In addition to the parts included in the kit you will also need:

- Scissors
- Pencil
- Ruler
- Sandpaper
- White glue
- Paintbrush
- Knife
- Enamel spray paint (Red)
- Masking tape
- Sanding sealer

NOTE: TUBE MARKING GUIDE ON BACK OF KIT PANEL.

- Nose cone
- Body tube
- Stuffer tube
- Retainer tube
- Spacer tube
- Launch lug
- Shroud line
- Parachute
- Centering rings
- Tape discs
- Decal
- Balsa fins
- Shock cord
- Engine hook
- Engine block
ROCKET ASSEMBLY

1. A. Mark yellow spacer tube 1/2 inch from one end.
   B. Spread glue around inside of stuff tube about 2 inches from one end.
   C. Insert engine block into this end.
   D. Push engine block into place with spacer tube until mark is even with end of tube.
   E. Remove and discard spacer tube immediately!

2. A. Cut 1/8 inch wide slit in stuff tube 2 1/4 inches from rear.
   B. Mark stuff tube 1 inch from rear.
   C. Bow engine hook slightly and glue to stuff tube as shown. Make sure the hook is straight and secure to tube with masking tape.

3. A. Apply glue around stuff tube above 1 inch mark for a distance of about 2 inches.
   B. Slide the retainer tube onto the front of the stuff tube.
   C. Push the retainer tube over the glue and down to the 1 inch mark. Remove excess glue, and remove masking tape.

4. A. Remove centering rings from die-cut card.
   B. Use knife blade to widen slit in one ring.
   C. Insert one end of the shock cord through the slit. Tie a double knot in one end of the shock cord and pull tight against slit.
   D. Apply glue over the knot to secure it to ring.

5. A. Apply a line of glue around rear edge of retainer tube. Push ring without shock cord onto stuff tube and against retainer tube edge.
   B. Position ring with shock cord about 1/4 inch from forward end of stuff tube. Apply glue all around both sides of both rings where they touch stuff tube.
   C. Allow all glue to dry thoroughly.

6. A. Slide engine mount assembly into one end of body tube until tube ends are even.
   B. Apply glue all around rear tube/ring joint as shown.
   C. Use a small dowel or stick to apply glue all around the forward tube/ring joint. Be sure there are no gaps in the glue.
7. Cut out the tube marking guide from back of kit panel.
B. Wrap it around rear of body tube and secure it with tape. Mark tube at each arrow point. Remove tube marking guide.
C. Draw straight lines connecting each matching pair of marks. (A door sill works well for this.) Extend all lines about 8 inches from rear of tube.

8. A. Fine-sand both sides of balsa fin sheet. Carefully cut out fins from sheet. Use a modeling knife to free corners.
B. Stack fins together as shown. Sand fins until all edges are smooth and straight.

9. A. Rub a small amount of glue into the root edge of each fin and allow to dry.
B. Apply glue to the fin root edges (one at a time) again, and position them on the fin alignment lines.
C. Adjust fins so they project straight away from the body tube and are also straight along the tube. Do not set the rocket on its fins while the glue is wet.
D. Cut the launch lug into two 1 inch lengths. Now glue the launch lugs on the body tube at the positions shown. Be sure the launch lugs are straight before the glue sets.

10. A. Apply a glue reinforcement to each fin/body tube joint and each side of launch lug.
B. Support rocket as shown until glue dries.

11. A. Cut out parachute on edge lines.
B. Cut three 35 inch lengths of shroud line.
C. Form small loops with shroud line ends and press onto sticky side of tape discs.
D. Attach tape discs with line ends to top of parachute as shown.
E. Firmly press tape discs into place until both tape discs and parachute material are molded around shroud line loops.
F. Pass shroud line loops through eyelet on nose cone. Pass parachute through loop ends and pull lines against the nose cone.
G. Tie free end of shock cord to nose cone eyelet.
FINISHING YOUR ROCKET
Apply sanding sealer to wood parts. When sealer is dry, lightly sand all sealed surfaces. Repeat sealing and sanding until balsa grain is filled and smooth. When sanding sealer and glue are completely dry, paint model with spray enamel. Follow instructions on spray can for best results.

ROCKET PREFLIGHT
CRUMPLE AND INSERT 6 to 8 SQUARES OF RECOVERY WADDING
FOLD PARACHUTE
WRAP LINES LOOSELY AROUND 'CHUTE
INSTALL NOSE CONE IN ROCKET
INSERT PARACHUTE IN ROCKET

PREPARE ENGINE
SEPARATE THE IGNITERS
ENGINE
INSERT IGNITER
FOLD OVER
BEND LEADS
APPLY AND FIRMLY PRESS TAPE DISC (OR MASKING TAPE) IN PLACE
HOOK MUST LATCH OVER END OF ENGINE
INSTALL ENGINE IN ROCKET

LAUNCH SUPPLIES
To launch your rocket you will need the following items:
—An Estes model rocket launching system with 3/16 inch dia. Maxi-Rod launch rod (No. 2244).
—Estes Parachute Recovery Wadding (No. 2274)
—Recommended Engines: D12-3 or D12-5
Use D12-3 engine for your first flight to become familiar with your rocket's flight pattern.

FLYING YOUR ROCKET
Choose a large field away from power lines, tall trees, and low flying aircraft. Try to find a field at least 500 feet square. The larger the launch area, the better your chance of recovering your rocket. Football fields and playgrounds are great.
Launch area must be free of dry weeds and brown grass.
Launch only during calm weather with little or no wind and good visibility.
Don't leave parachute packed more than a minute or so before launch during cold weather. [Colder than 40° Fahrenheit (4° Celsius)].

MISFIRES
Failure of the rocket engine to function properly is nearly always caused by a failure to install the igniter correctly. This failure permits the igniter to heat and burn into two pieces without igniting the engine.

COUNTDOWN AND LAUNCH
5 REMOVE SAFETY KEY to disarm the launch controller.
4 Remove safety cap and slide launch lugs over launch rod to place rocket on launch pad. Make sure the rocket slides freely on the launch rod.
3 Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.
2 Move back from your rocket as far as launch wire will permit (at least 15 feet).
1 INSERT SAFETY KEY to arm the launch controller.

FOR YOUR SAFETY AND ENJOYMENT
Always follow the NAR-HIA* MODEL ROCKERY SAFETY CODE while participating in any model rocketry activities.

*National Association of Rocketry-The Hobby Industry of America
DER V-3
TUBE MARKING
GUIDE

FIN

LAUNCH LUG

FIN

FIN

OVERLAP TAB
DER CHUTE
COMBINATION

PATCHWORK

KEEPEN DER
MITSOUTEN

DER ENDER
VOTS UPPER
PN 37287

DER LUGSFE LAUNCHEN

DER
FIN WIGGLER

FIN WIGGLER

DER V-3
Estes #1970 Der V-3

Parts and Dimensions:

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<tr>
<th>Quantity</th>
<th>Description</th>
<th>Type</th>
<th>Part #</th>
<th>Size</th>
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<tr>
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<td>Nose Cone</td>
<td>PNC-80K</td>
<td>71035</td>
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<td>1/4&quot;W x 30&quot;L</td>
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