

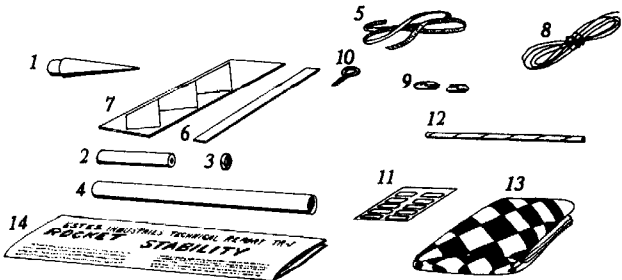


ASSEMBLY INSTRUCTIONS

PARTS LIST

(1) Nose Cone	Part No.	BNC-20R
(2) Engine Casing	#EC-2	
(3) Engine Block	#EB-20A	
(4) Body Tube	#BT-20B	
(5) Shock Cord	#SC-1A	
(6) Balsa Stock	#BFS-10A	
(7) Die-cut Balsa Fins	#BF-11	
(8) Shroud Line Cord	#SLT-12	
(9) 2 Nose Cone Weights	#NCW-1	
(10) Screw Eye	#SE-1	
(11) 10 Tape Strips	#TD-2	
(12) Launching Lug	#LL-1C	
(13) Parachute	#PK-12A	
(14) Stability Report TR-1	#TR-1	

NOTE: The reject engine casing included here is for use as a measuring tool only, and is not suitable for any other purpose.

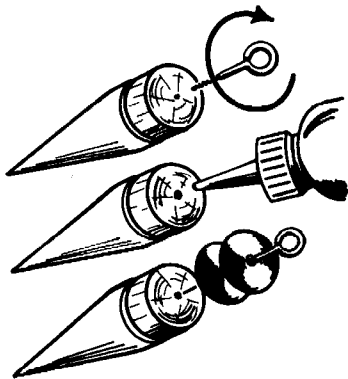


Materials Needed

1. Single edge razor blade or modeling knife.
2. Pencil or ball point pen.
3. White glue.
4. Fine and extra fine grit sandpaper.

1 Nose Cone

- Thread screw eye into nose cone.
- Remove screw eye and apply glue into opening.
- Add 2 nose cone weights and rethread screw eye for snug fit.



2 Engine Block

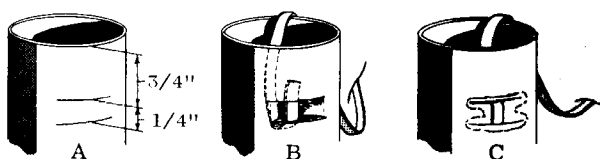


- Place a large dab of glue near the end of your little finger (or use a brush). Reach through the lower end of the body tube and spread the glue around the inside as far up into the tube as your finger will reach.



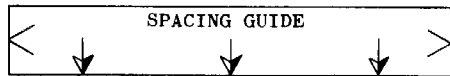
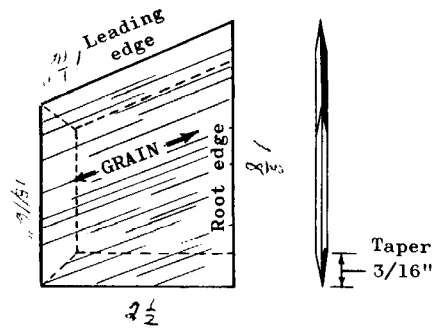
- Place the engine casing against the engine block. Push forward until the rear end of the casing is even with the end of the body tube. DO NOT stop pushing until the block is in place. Some glues set very quickly and stopping even shortly may cause it to "freeze" in the wrong place. Remove the casing as soon as the block is in place.

4 Shock Cord



- Make two small cuts through the wall of the body tube 1/4" apart, the upper one 3/4" from the front end of the body tube.
- Cave in the portion between the cuts. Slide the shock cord through the opening.
- Apply glue under and over the shock cord and along the cut edges of the body tube. Push the caved-in portion outward as near to its original position as possible and set aside to dry.

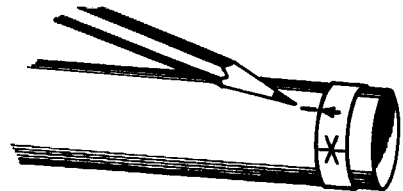
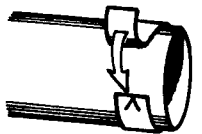
4 Fins



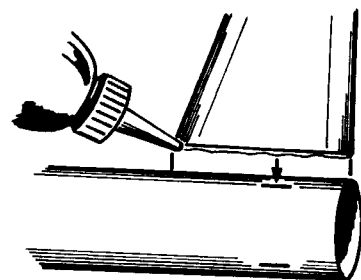
Carefully cut the remaining bits of balsa as required to release all three fins from the stock. Sand the leading, outer, and trailing edges to the tapered shape shown in the side view and cross-section. Use extra fine sand paper to smooth the flat sides of the fins.

5 Attaching Fins

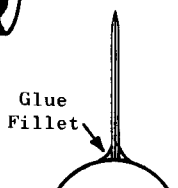
- Cut out the fin spacing guide and wrap it around the rear end of the body tube.
- Mark the tube at each of the three points shown on the guide.



- Apply glue to the proper edge of a fin and place it against the body exactly on one of the marks. Align the fin by sighting along the body and adjusting it until it is perfectly parallel with the body and projects straight away from it. Repeat this step with the other two fins. Do not set the rocket on its fins while the glue is wet.

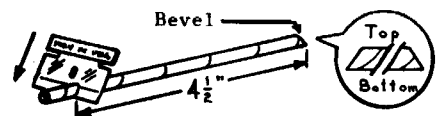


- When the fins have dried, apply a second coat of glue to each corner formed by the body tube and fin. Wipe away any excess glue with your finger.

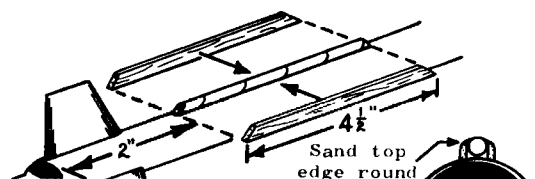


8 Launching Lug

- Cut the launching lug to a length of 4-1/2". Bevel both ends of the lug as shown.



- Glue the launching lug to the body in a position 2" from the lower end of the tube and 1/8" to the right of one of the fins. Align the lug to point exactly forward. Cut two 4-1/2" lengths of BFS-10A and bevel each end to match the ends of the launching lug. Glue one to each side of the lug. When the glue is dry, carefully sand the top edge to match the contour of the launching lug.



WAC FLYING SCALE MODEL CORPORAL

K-11

Easy to Build



Parachute Recovery

Only
\$1.50

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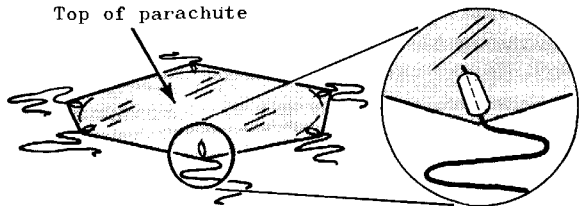
BOX 227

PENROSE, COLO. 81240

⑦ Parachute

A. Cut out the parachute from the plastic sheet. Cut six 12" lengths of shroud line. Attach one line to each corner of the 'chute by laying the end of the cord on the corner of the parachute and pressing a tape strip over it. Tie the free ends of the six cords together.

Top of parachute



B. After the rocket has dried sufficiently to be handled, tie the end of the shroud lines to the screw eye. Tie the free end of the shock cord to the screw eye.



tape until it makes a tight fit in the rocket body. This fit must be tight so the engine will not blow out when the ejection charge is activated.

-9- Insert the engine into the rocket body so the rear of the engine is even with the rear of the rocket. Install a nichrome igniter in the engine as directed in the instructions which came with the engine.

-8- Place the rocket on the launcher. Clean the micro-clips and attach them to the igniter.

-7- Clear the launch area, check for low flying aircraft, alert recovery crew and trackers.

-6- Arm the launch panel.

-5- -4- -3- -2- -1-

LAUNCH!

WAC Corporal History

Your completed WAC Corporal model rocket is an exact scale model of the first sounding (i.e., high altitude exploration) rocket fired in the United States. Work on the WAC Corporal was begun at the Jet Propulsion Laboratory of the California Institute of Technology in 1944. Motor development was carried out by the Aerojet Engineering Company.

On September 26, 1945 the first WAC Corporal was launched with a modified Navy Tiny Tim rocket for a booster. A maximum altitude of 43½ miles was reached on this first flight. Peak altitude for the un-boosted WAC Corporal was 19 miles.

The WAC Corporal was all but forgotten when captured German V2 rockets were made available for high altitude studies, since the Corporal was limited in its altitude and payload capacity (25 pounds). However, when further information on multi-staging was needed, the WAC Corporal was mated to the V2 for the famous Bumper program. The first Bumper was fired on May 15, 1948, and reached an altitude of 79.1 miles. On February 24, 1949 the fifth Bumper was launched, breaking all previous altitude and speed records with a maximum velocity of 5,150 mph and an altitude of 244 miles.

WAC CORPORAL SPECIFICATIONS

Dimensions (in inches)

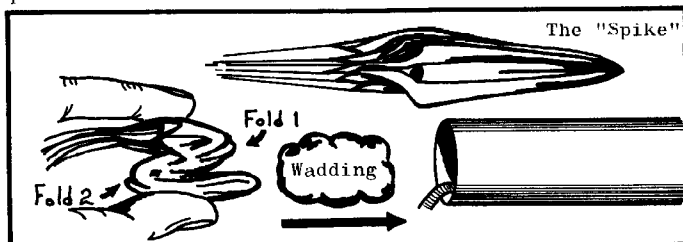
Length 192
Diameter 12
Fin Span (from center of rocket to outermost point on fin) ... 24

Weights (in pounds)

Loaded (at launch) ... 665
Propellants (liquid oxidizer and fuel) ... 565
Payload 25
Empty rocket 275

Countdown Checklist

-11- Pack flameproof recovery wadding or cotton into the body tube of the upper stage from the top. The wadding should rest against the engine block, extend forward in the tube for about 1-1/2", and seal tightly against the sides of the tube. Hold the parachute between two fingers at its center and pass the other hand down it to form a "spike" shape. Fold this spike in three sections as shown in the illustration. Push the folded parachute down into the tube on top of the wadding, and pack the shroud lines and shock cord in on top of the parachute. Slide the payload section into place.



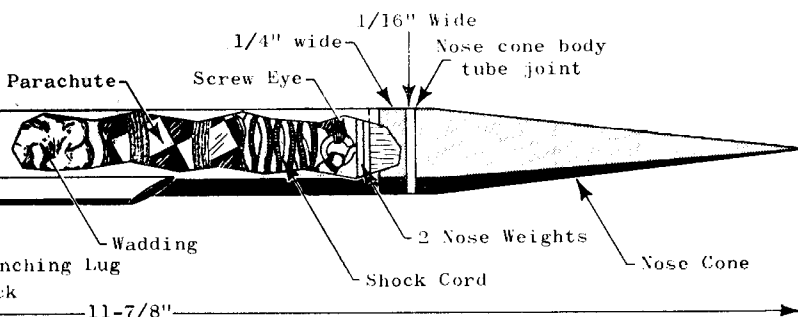
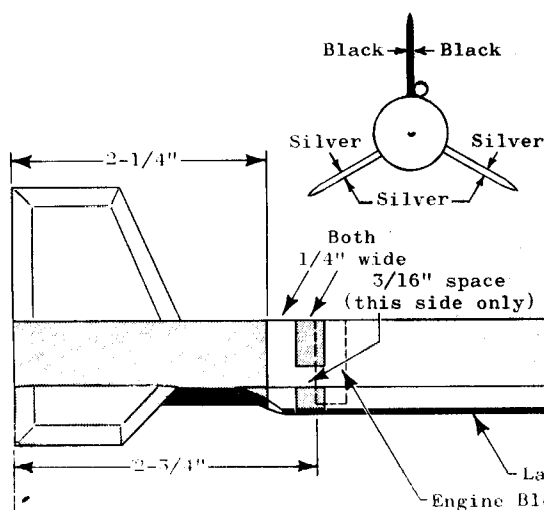
-10- Select an engine. Use a ¼A.8-2 for the first flights. For later flights ¼A.8-2, A.8-3, and B.8-4 engines may also be used. Wrap the engine with masking

FINISHING

A. Sand all balsa surfaces until smooth. Coat them with sanding sealer and sand again with extra fine sandpaper. Repeat as needed for a mirror smooth surface.

B. Paint the fin nearest the launching lug black on both sides. Paint the other two fins silver on both sides. (See front view.) The rocket body is painted white and black as shown below.

Follow the paint pattern carefully to retain scale appearance.



A photograph of a rectangular wooden board, likely made of balsa wood, with a black outline. The board is oriented vertically. The text "1/8\"/>

1/8"
Balsa

1 Inch