

1/14TH
SCALE
MODEL

BOEING A.L.C.M.
**CRUISE
MISSILE**
FLYING MODEL
ROCKET

SKILL LEVEL 4

1. KENNETH H. BRADSHAW & CLARENCE
L. BRADSHAW, N. Y.

The Boeing A.L.C.M. Cruise Missile is America's newest weapon system. Designed to be launched from a large aircraft like the Lockheed C-5A Galaxy or the B-52 bomber, the Cruise Missile was designed to deliver warheads with great payload accuracy to its target. Once launched, the cruise jet engine starts a new jet engine used in providing high speed power to the missile. Sophisticated radar-activated with an onboard on board computer guide the Cruise Missile to its target with great accuracy. The Cruise Missile is now in the hands of a sophisticated missile with many modern power, control, and guidance systems. Also available is a 12" scale model of the 12" scale model of the Cruise Missile, just what you need for display.

Specifications:

Length: 12.9" (33.3 cm)
Wing Span: 1.25" (3.18 cm)
Weight: 0.28 oz. (7.9 g)

Recommended Engine:
A6.1 (504 grains) (1.5 gm)
A6.4 (505 grains) (1.5 gm)

This is a hobby kit requiring assembly. Recommended for ages 10 to adult. Engines, launch stands, glue and finishing supplies are not included. Adult supervision is suggested for those under 12 years of age when flying model rockets. This kit includes one model.



A HOBBI COMPANY

ESTES INDUSTRIES
BRIDGEVILLE, PA 15005 USA



1336

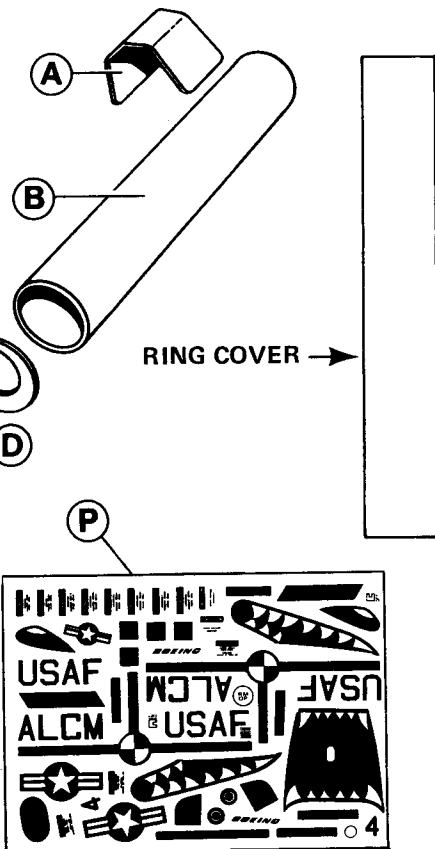
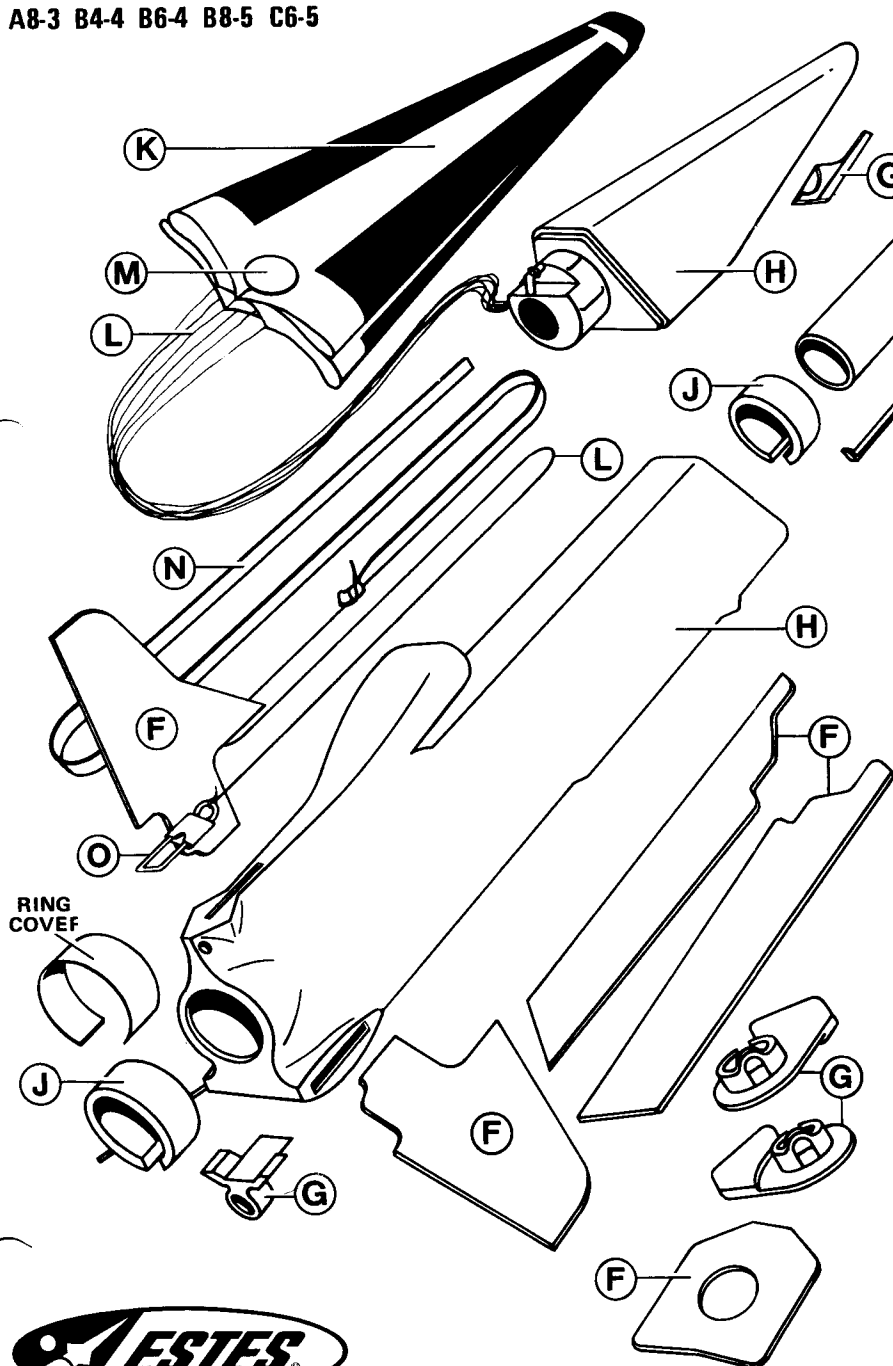
BOEING A.L.C.M. CRUISE MISSILE

SKILL LEVEL 4 – Recommended for Advanced Rocketeers.

RECOMMENDED ENGINES:
A8-3 B4-4 B6-4 B8-5 C6-5

BEFORE YOU START

Read all instructions before beginning work on your model. Make sure you have all parts and materials. When you are thoroughly familiar with the assembly procedure, begin construction. Check off each step as you complete it. In each step test-fit the parts together before applying any glue. If some part doesn't fit properly, sand lightly or build up as required for precision assembly.



KIT NO. 1336 PARTS LIST

A	1 Die-Cut Card (type TA-1336)	32922
B	1 Parachute Tube (type ST-106)	31135
C	1 Engine Tube (type ST-73)	31038
D	1 Engine Block (type TR-7A)	30155
E	1 Engine Hook (type EH-2)	35025
F	1 Die-Cut Plastic Sheet (type PL-1336) ...	33205
G	1 Plastic Hinge/Lug Set	33200
H	1 Molded Missile Body & Nose Cone	33201
I	1 Clay Weight (Not Shown)	85264
J	2 Centering Rings (type CR-78)	30140
K	1 Parachute (type PK-12)	85564
L	1 Shroud Line (type SLT-72)	38237
M	1 Tape Discs (type TD-3F)	38406
N	1 Shock Cord (type SC-1)	85730
O	1 Snap Swivel (type SV-2)	38269
P	1 Decal (type KD-1336)	36842

TOOLS AND MATERIALS

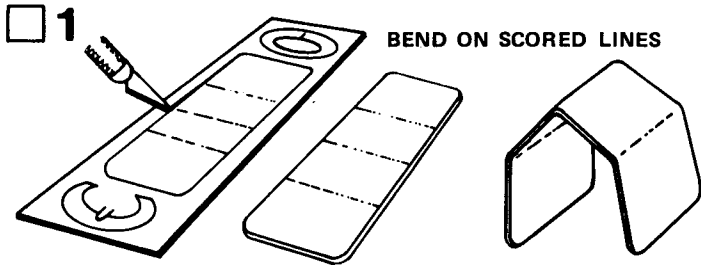
In addition to the parts included in this kit you will need white glue (Titebond, Elmer's, or similar household white glue is recommended.), scissors, pencil, ruler, fine and extra-fine grit sandpaper, masking tape, tube-type plastic cement, contact cement, modeling knife with sharp blade, razor saw, tweezers, rubber bands, wax paper, and white enamel spray paint.



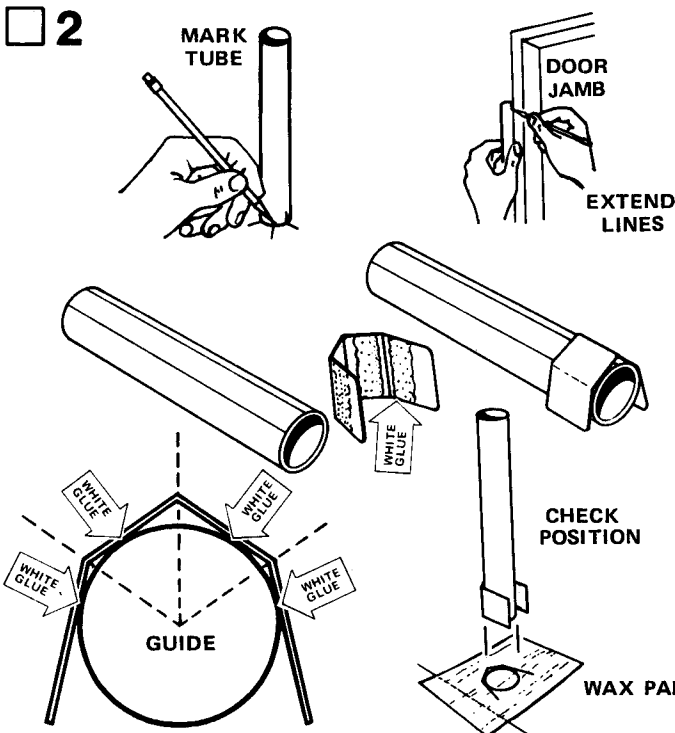
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ESTES INDUSTRIES
PENROSE, CO 81240 USA

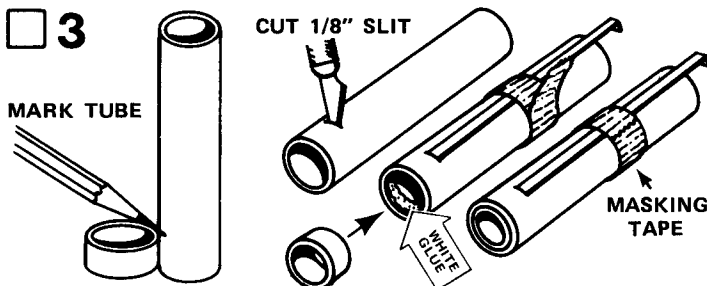
ASSEMBLY INSTRUCTIONS



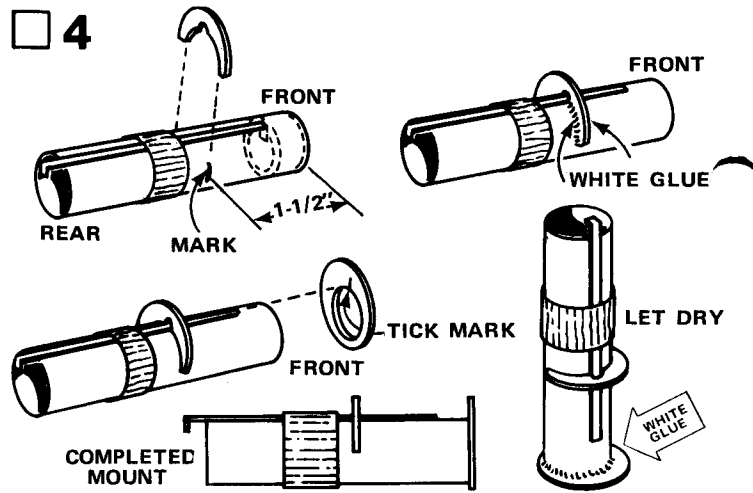
Carefully remove the parachute tube support from the die-cut card (part A). Use a modeling knife to free the part from the sheet. Bend it on the scored lines to the shape shown.



Stand the parachute tube (part B) on the guide shown above and mark the tube where each dotted line intersects the tube outline. Draw a straight line the full length of the tube at each of the three marks by placing the body tube against the inside edge of a door frame as shown. Place a generous amount of glue on the inside of the parachute tube support in the approximate places shown. Position it on one end of the tube, making sure that the support is even with support positioning lines. Place a piece of waxed paper over the guide and stand the parachute tube on the guide to check that the support and tube assembly fits the illustration shown. Hold the support in position until the glue sets. Set the assembly aside to dry completely.

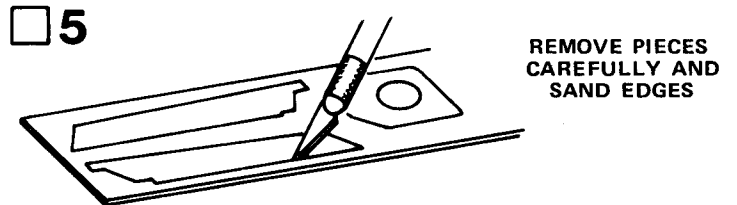


Stand the engine tube (part C) next to the engine block (part D), and mark the engine tube with a pencil as shown. Make a 1/8" slit in the engine tube at the pencil mark. Push the engine hook (part E) into the slit and apply a piece of masking tape to hold hook in place as shown. Run a bead of glue around inside of the slit end of the engine tube. Insert the engine block as shown. Make sure engine block is against engine hook.

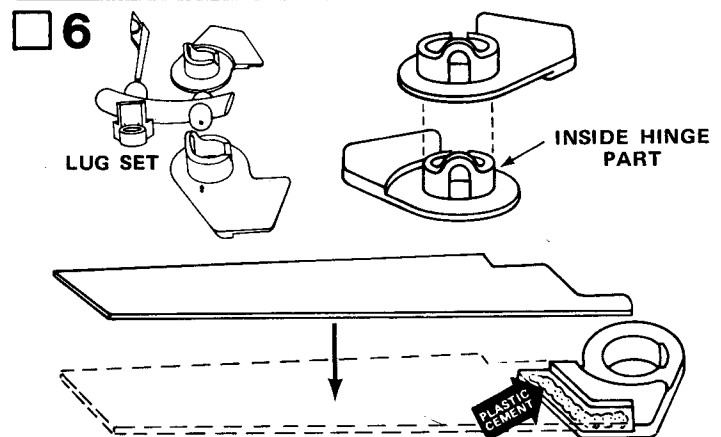


Measure 1-1/2" from the front end (end with engine block) of the engine tube and make a mark on the engine tube at this location. Carefully remove the crescent shaped adapter ring from the die-cut card and glue it into position on the 1-1/2" mark making sure it points straight away from the engine tube as shown and is centered over the engine hook. Carefully remove the last adapter ring from the die-cut card. Glue it into position on the front end of the engine tube assembly. Be sure the tick mark on the adapter ring is aligned with the engine hook. Allow the glue to "set" then apply a glue reinforcement around both sides of the engine tube/adapter ring joints. Set aside to dry thoroughly.

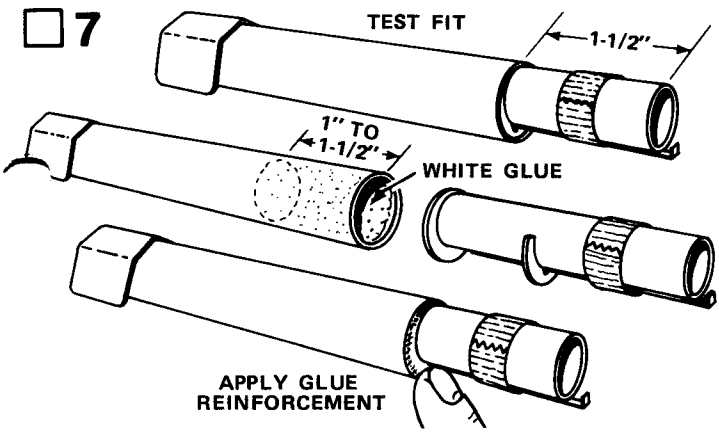
NOTE: The plastic parts in your kit may be covered with a slightly oily substance which was applied to help remove them from the mold in the molding process. To remove this oily substance, wash all plastic parts in warm soapy water, then rinse thoroughly.



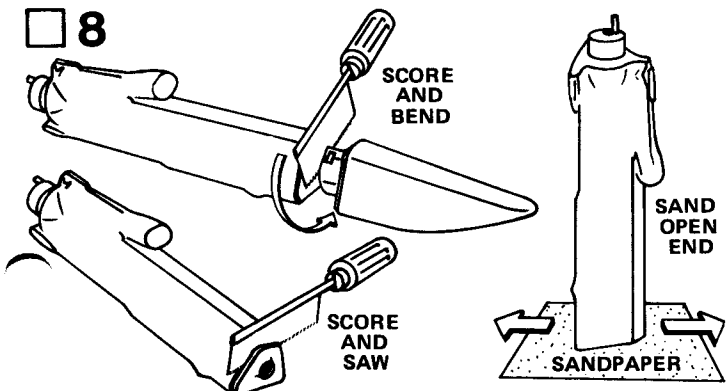
Remove the pre-cut wings, rudder, fins and retaining plate from the die-cut plastic sheet (part F). Use a modeling knife to free each part. Carefully sand the edges of each part with sandpaper to remove any rough edges on the parts.



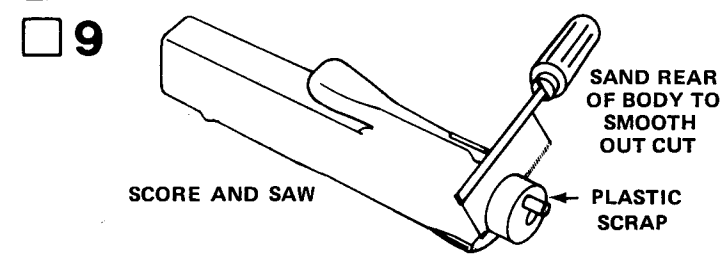
Remove the wing hinge halves from the plastic hinge/lug set (part G). Carefully sand the hinge part that goes inside the other until the assembled parts rotate easily, but do not sand so much as to cause them to be too loose. Pull the two pieces apart and cement a wing hinge half to each wing with tube-type plastic cement, making sure the wing fits correctly into the area provided in the wing hinge half as shown. Allow these parts to dry thoroughly.



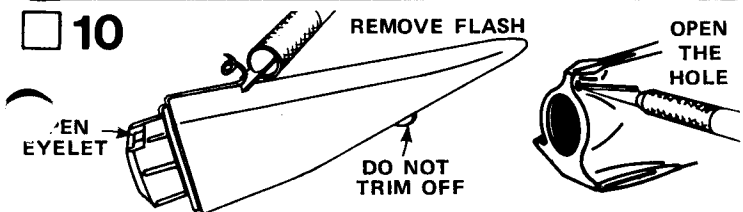
Test-fit the engine mount assembly in the end of the parachute tube (end without the support) as shown. The engine mount should extend 1-1/2" from the end of the parachute tube. Remove engine mount and smear glue with the aid of a stick or dowel inside the tube to cover an area about 1" to 1-1/2" from the end of the tube. Immediately insert the engine mount until the adapter ring is just inside the parachute tube and the engine hook is pointing down as shown. Apply a glue reinforcement at the adapter ring/parachute tube joint by applying a bead of glue along the joint and smoothing it with your finger. Set this aside to dry.



Lightly score around the nose cone/body joint with a razor saw on the Cruise Missile body (part H). Bend body gently so it breaks apart at the scored line. Using the razor saw cut the missile body along the edge of the shoulder and missile body as shown. Lay a sheet of sandpaper flat on your work surface and pass the open end of the body across it to smooth out the edges. Be careful not to sand off too much of the plastic.

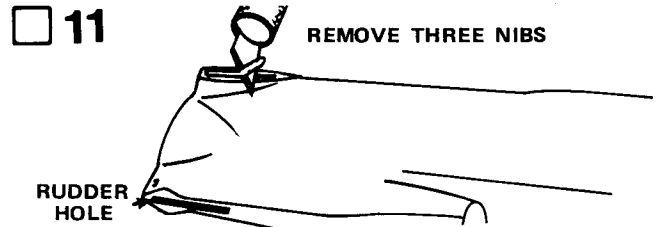


Score around the missile body at the rear of the body with the razor saw and then carefully cut along the scored line with the razor saw to remove the scrap end of plastic. The blow-molded plastic is thicker here, and requires care and patience to cut.

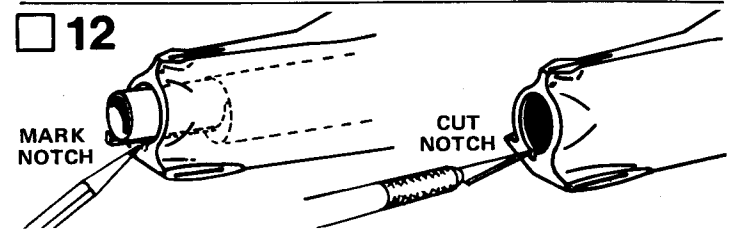


The molded plastic body and nose cone may have excess plastic ("flash") around the plastic parts. Remove this flash from

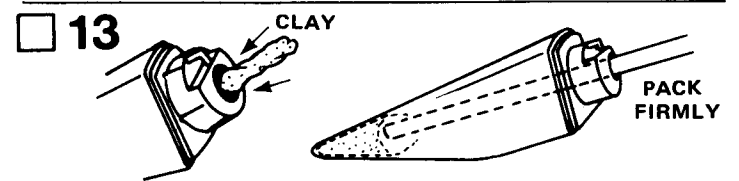
around the plastic parts with a modeling knife. Open the eyelet in the nose cone with extreme care and be sure not to trim off the pitot tube positioning lug. Open the hole in the missile body behind the rudder location using the point of your modeling knife.



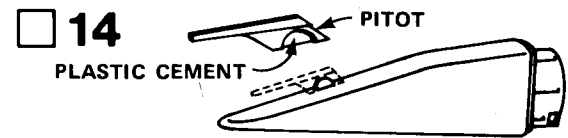
Remove the three nibs that cover the holes for the fins and rudder. Carefully slide knife blade along missile body removing only the small nib as you go. The side fin nibs must be removed very carefully because the plastic is thin in this area and could cut easily or even tear. The rudder nib is in an area where the plastic is thicker and may need to be cut away with a few strokes of the modeling knife. You may need to open the rudder hole a little more once you have removed the nib.



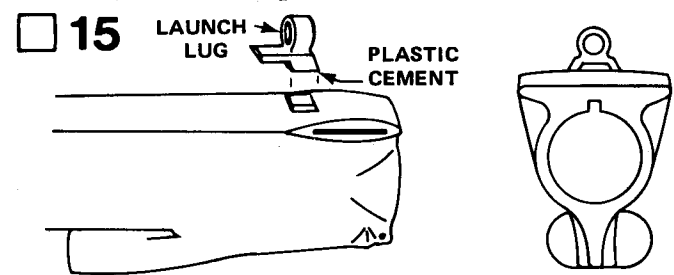
Test-fit the engine mount tube portion of the parachute tube/engine mount assembly into the opening at the rear of the missile body. Using a modeling knife cut around the inside of the opening to enlarge the hole if this is needed. Make a small notch in the missile body as indicated in the illustration to accommodate the engine hook.



Roll clay weight (part I) into a thin "snake". Cut into 1/2" sections and drop through hole in rear of nose cone. Pack the clay firmly into the nose using a small dowel or stick. Use all the clay.

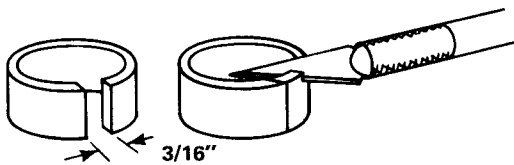


Remove the pitot tube from the plastic hinge/lug set and attach pitot tube to the nose cone with tube-type plastic cement using the positioning lug to align it properly as shown. Make sure the pitot tube extends forward from the positioning lug.



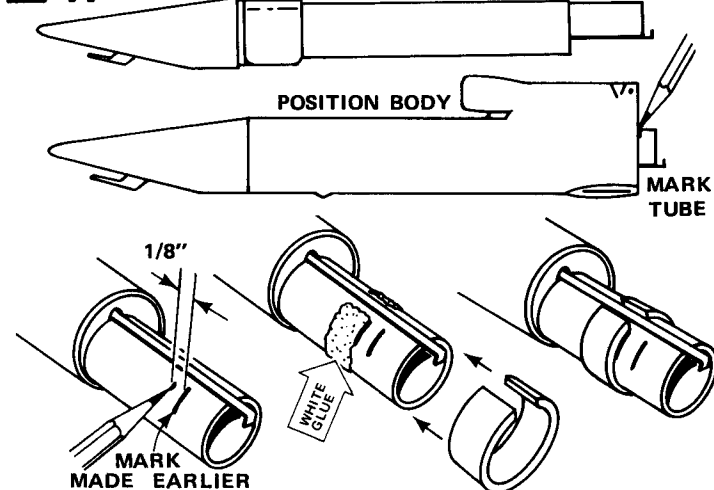
Remove the launch lug from the plastic hinge/lug set. Using tube-type plastic cement smear a small amount on the bottom side of the launch lug. Make sure the hold down tab for the wings is pointing forward as shown. Cement the lug to the rear lug mount on the missile body. Make sure the lug is aligned over the rear lug mount on the missile body.

16

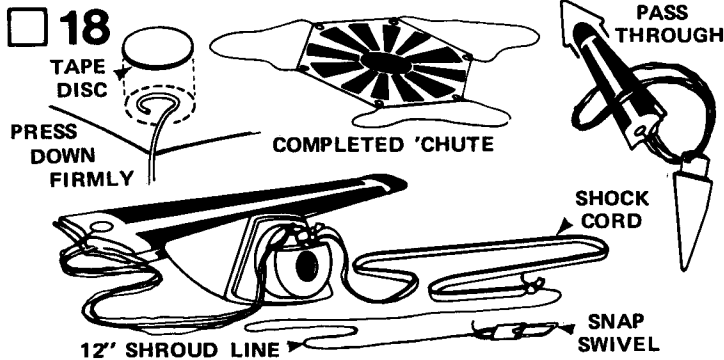


Cut a 3/16" piece out of each of the centering rings (part J) as shown.

17 POSITION NOSE CONE INTO PARACHUTE TUBE

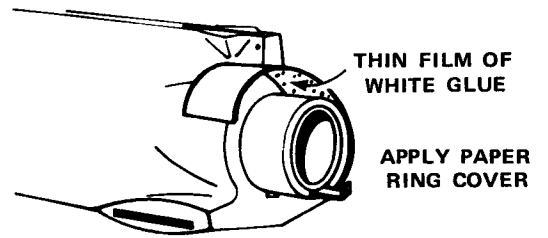
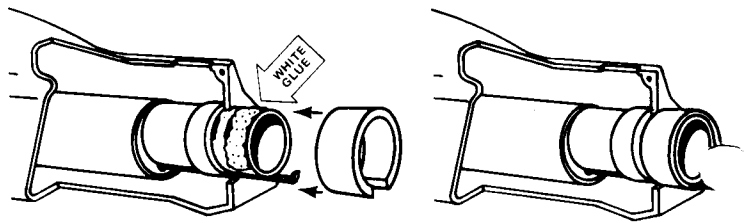
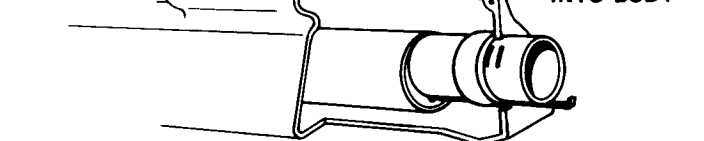


Remove masking tape wrap from engine mount and hook. Slide nose cone into parachute tube/engine mount assembly and slide this assembly into the Cruise Missile body until nose cone seats against missile body. Make a mark on the engine mount tube extending out the rear of the missile body at end of the missile body/engine mount tube joint as shown. Remove parachute tube/engine mount assembly and make another mark 1/8" forward of the mark made earlier. Smear glue around the tube at this new mark and slide one of the notched centering rings from Step 16 onto the tube so the rear of the ring is even with the mark. Align the notch in the ring so the engine hook passes through the notch as shown.



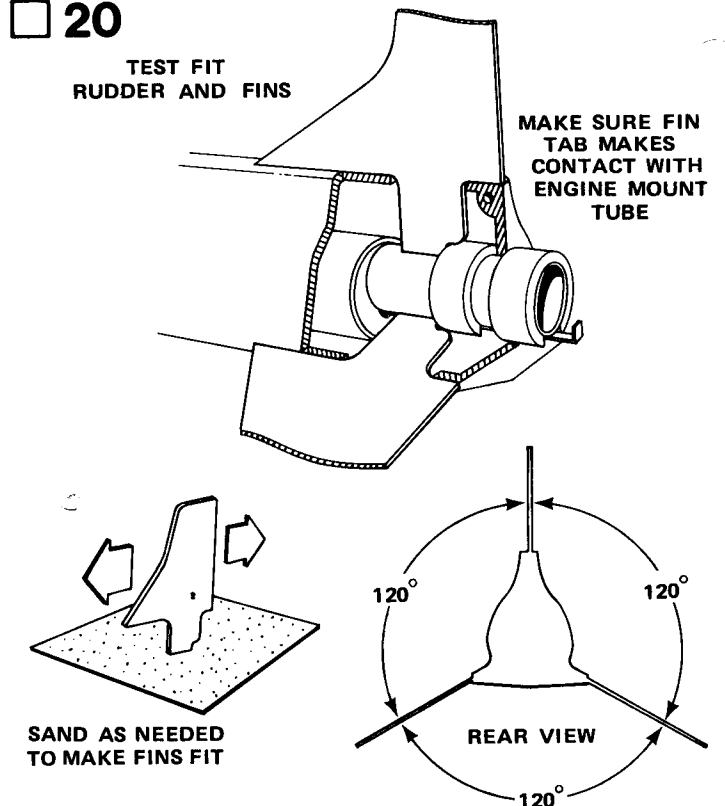
Cut out parachute (part K) on its edge lines. Cut three 20" lengths of shroud line (part L) and save the 12" piece of shroud line to be used later. Attach line ends to the top (printed side) of the parachute with tape discs (part M) as shown. Pass the shroud line loops through the nose cone eyelet. Pass the parachute through the loop ends and pull the lines tight against the eyelet. Tie one end of the shock cord (part N) to eyelet with a double knot, then tie other end of the shock cord to the 12" piece of shroud line. Attach the snap swivel (part O) to other end of shroud line. When flying your model, this snap swivel attaches to the hole in the missile body behind the rudder location.

19 SLIDE ASSEMBLY INTO BODY



After the glue on the parachute tube/engine mount assembly is dry, slide this assembly into the missile body so the engine tube extends out the back and it seats against the inside of the missile body. Make sure the tube support in the front of the body is properly aligned and that the engine hook is positioned in the slot at the rear of the missile body. Smear glue around the engine tube end being careful not to get glue on the engine hook. Then slide the other centering ring onto the tube against the rear of the missile body and even with the rear of the engine tube. Make sure engine hook is centered in the notch in the centering ring. Cut out the ring cover located on the front of the instructions. Check that the cover fits properly around the centering ring. Trim if necessary. Coat the cover with a thin film of glue and wrap it around the centering ring and hold in place until glue sets.

20 TEST FIT RUDDER AND FINS



Test-fit each rudder and fin in its slot. Make sure the root edges touch the engine tube inside the missile body and the fin edges touch the outside surface of the body. Make sure the end view rocket and angles of the fins approximate that of the illustration above. Check the alignment of the fins and their fit again. If they do not fit properly, lightly sand the end of the tab on the fin until you get a good fit. Also, if necessary, slightly enlarge the slot so each fin root edge rests firmly on the outside surface of the body.

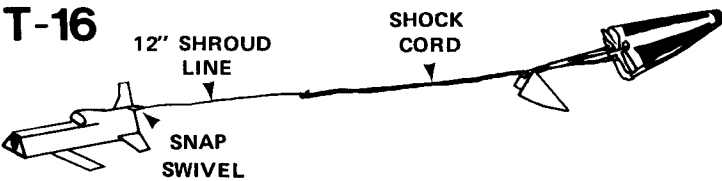
LAUNCHING COMPONENTS

To launch your rocket you will need the following items:
 An Estes model rocket launch system
 Parachute recovery wadding (Estes Cat. No. 2274)
 Recommended engines: A8-3, B4-4 (first flight), B6-4, B8-5, and C6-5.

Be sure to follow the HIAA-NAR* Model Rocketry Safety Code when carrying out your model rocket activities.

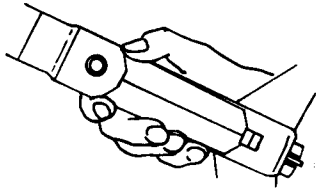
*HIAA -- Hobby Industry Association of America
 NAR -- National Association of Rocketry

COUNTDOWN CHECKLIST



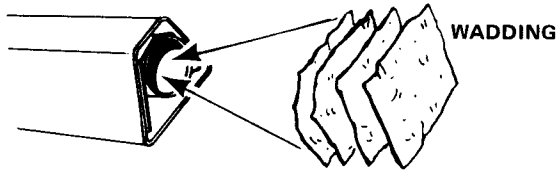
Attach the parachute/nose cone via the snap swivel to the small hole in the missile body behind the rudder as shown.

T-15



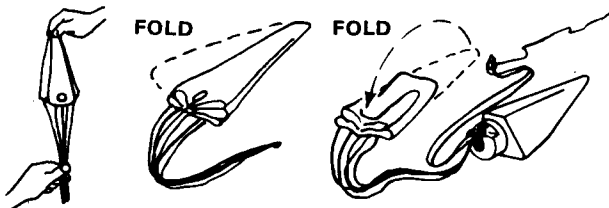
Fold wings back and secure under rear launch lug.

T-14



Pack 4 or 5 squares of loosely crumpled recovery wadding into the parachute tube.

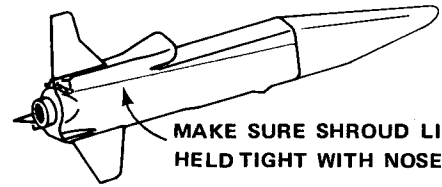
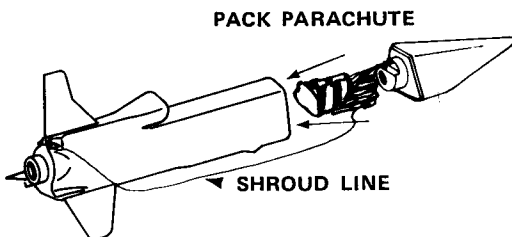
T-13



Gather the parachute as shown, then fold into a triangular shape. Fold again and insert into rocket body.

NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in cold weather.

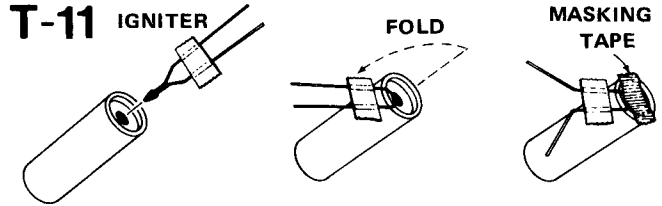
T-12



MAKE SURE SHROUD LINE IS HELD TIGHT WITH NOSE CONE

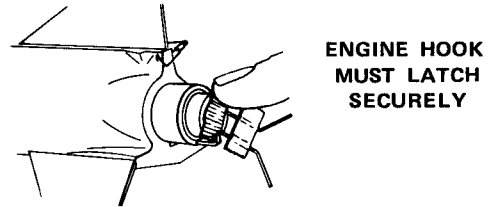
Pack parachute, shroud lines, and shock cord neatly into rocket body. The shroud line attached to the rear of the rocket should pass along outside of rocket and be held tight against the outside of rocket by nose cone as shown.

Nose cone should separate easily from rocket body tube, but should not be extremely loose. If fit is too tight, sand inside of body tube and shoulder of nose cone with fine sandpaper. If fit is too loose, add a wrapping of transparent tape or masking tape to shoulder of nose cone.



Select an engine and install an igniter as directed in the engine instructions. Use a B4-4 engine for your first flight.

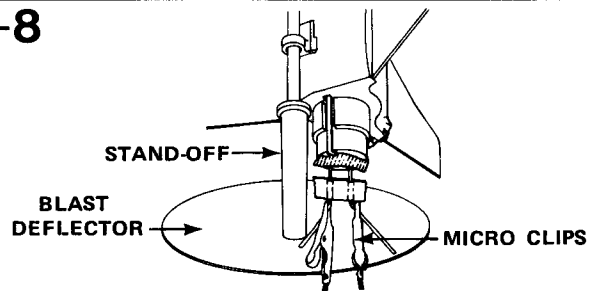
T-10



Insert engine into rocket engine mount. Engine hook must latch securely over end of the engine.

T-9 Disarm the launch panel -- REMOVE SAFETY KEY!

T-8



Slide launch rod through rocket launch lugs and place rocket on launch pad. Make sure the rocket slides freely on launch rod. Clean the micro-clips and attach them to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to engine as possible.

T-7 Clear the launch area, alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in the recovery area.

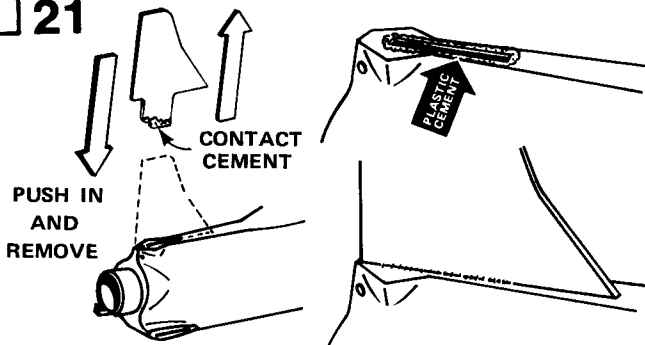
T-6 Arm the launch panel -- INSERT SAFETY KEY!

-5-4-3-2-1-LAUNCH!!

Repeat Countdown Checklist for each flight.

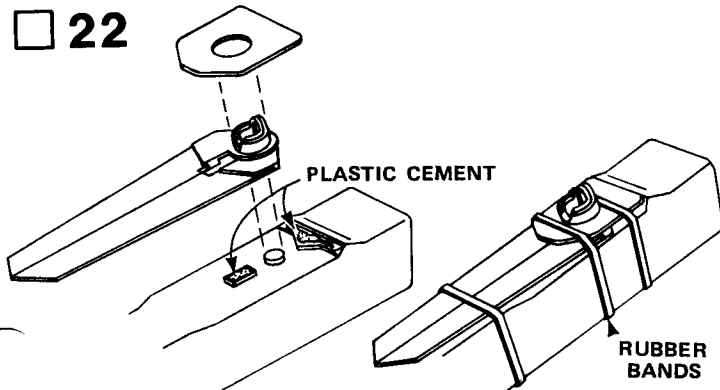
Occasionally the igniter will heat and burn into two pieces without igniting the engine. This is almost always caused by a failure to install it correctly. REMOVE SAFETY KEY from launch panel, remove the model, clean the igniter residue from the engine nozzle, and install a new igniter. Repeat the Countdown Checklist.

21

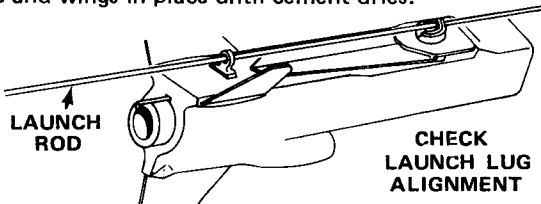


Coat the root edge of the rudder with a generous amount of contact cement. Push the rudder into its slot all the way in until it touches the engine tube, then immediately remove it and allow contact cement to dry. Apply a line of tube-type plastic cement around the rudder slot. Push rudder into slot making sure it is seated against the engine tube and the outside surface of the body. Check alignment so rudder is aligned straight away from missile body. Repeat this same procedure with each fin. After all fins and rudder are in place, make sure they are aligned properly.

22

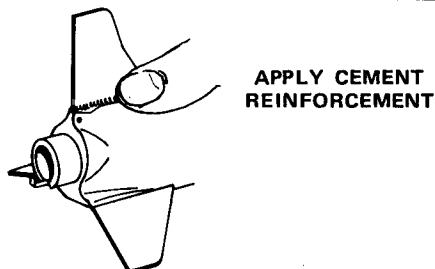


Assemble wing halves and hinge as shown. Place wing assembly on pivot point and place small amounts of tube-type plastic cement on the forward and rear retainer supports. Place plastic retainer plate in position. Make sure the cement doesn't get on hinge or hinge point. Wrap rubber bands around the body to hold the plate and wings in place until cement dries.



NOTE: After tube-type plastic cement is dry, check launch lug portion of hinge and lower launch lug to be sure they are properly aligned. Pass a launch rod through both lugs to do this. You may have to trim a little plastic from the rod channel in hinge.

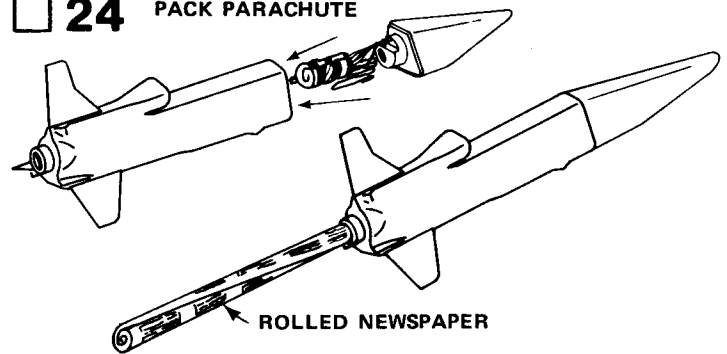
23



After all cement has dried, give each fin and rudder joint a plastic cement reinforcement. Hold model level and apply a line of tube-type plastic cement to both sides of each fin joint. Rub cement into missile body/fin joint and smooth out the cement with your finger. Keep the model level until cement dries.

PAINING AND DETAILING

24 PACK PARACHUTE

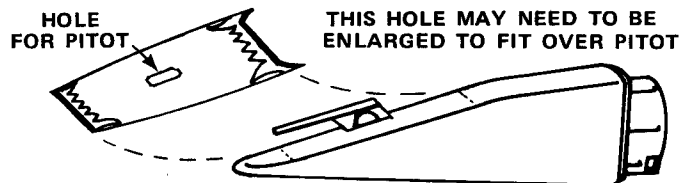


Push parachute and shock cord into parachute tube and slide nose cone into place. Roll up a piece of newspaper tight enough to go into the engine mount and slide it into the engine mount as shown. Using this as a paint handle apply two light coats of gloss white enamel spray paint. Allow each coat of paint to dry completely. Follow paint instructions on spray can for best results.

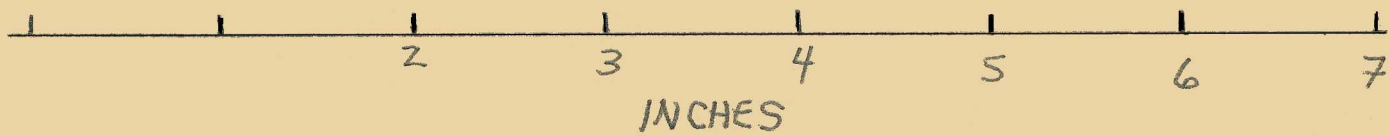
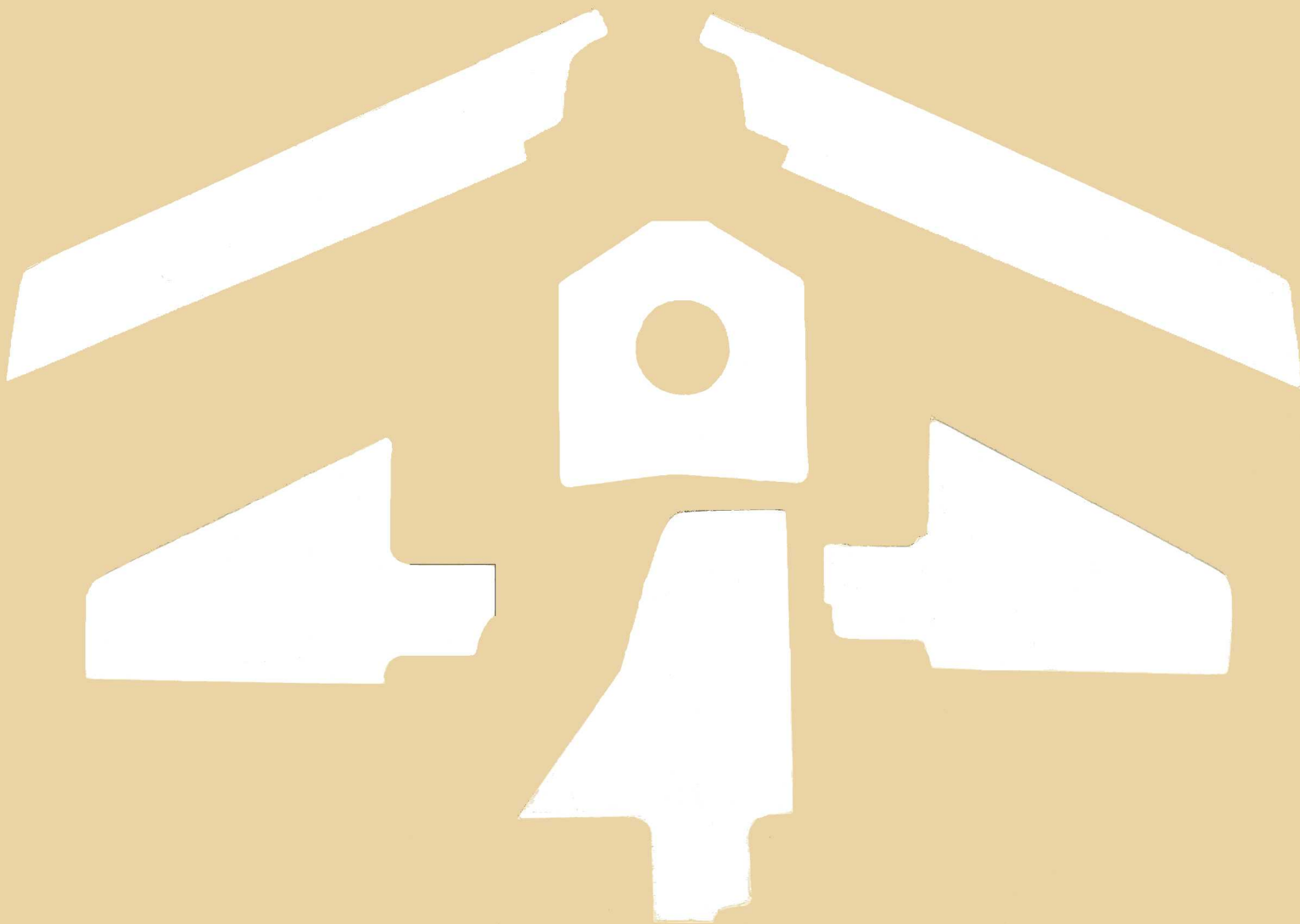
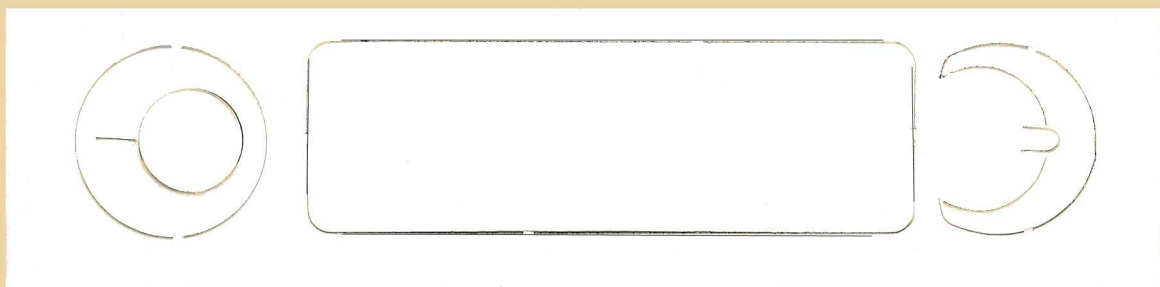
25

When all paint is completely dry, apply decals (part Q). Apply all decals in the locations shown in the illustration and on the full-color package front. Be sure to read all decaling instructions before beginning.

- A Wash hands with soap and water to remove excess skin oil.
- B Wipe model with clean, damp cloth to remove oily fingerprints.
- C Select the particular decal you wish to apply. Cut only that decal from the sheet, trimming as closely as possible to the printed design. Place the remainder of the decal sheet to one side so water will not be accidentally dripped on it.
- D Submerge the decal completely in a pan of lukewarm water until it will slide on the backing material. For larger decals, this may take more time than for smaller decals.
- E Remove decal from water and slide decal off backing material and onto the model. With tweezers, gently move the decal until it is in the desired position. If the decal "grabs" and will not move, do not force it. Use a paint brush to apply a little water to the decal surface. The water will run under the decal so you can move it easily.
- F Let decal set a couple of minutes, then blot gently with a clean cloth to remove excess water and air bubbles. Do not rub the cloth back and forth or you may move or wrinkle the decal. After decal has set for another 3 or 4 minutes, you may gently rub the cloth over it to remove any remaining moisture or trapped air. If you encounter a stubborn air bubble, prick the bubble with the point of a pin, place a drop of water on the area, and press down with the cloth to smooth the decal into place.
- G When applying the rest of the decals, be careful that you do not disturb those decals previously applied.



- H Start with bottom portion of mouth first. Position mouth decal on bottom of nose cone so slot in decal slips over the pitot tube. Apply all other decals as shown on the full-color panel.





DANGER
To avoid injury, do not touch the sharp edges of this part.

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CAUTION
Sharp Edges
Cutting Edge

CAUTION
Sharp Edges
Cutting Edge

DANGER
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USAF

ALCM



BOEING

ALCM

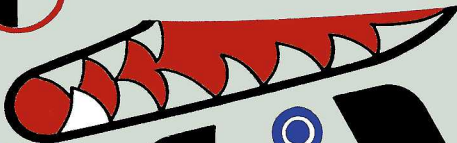
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To avoid injury, do not touch the sharp edges of this part.

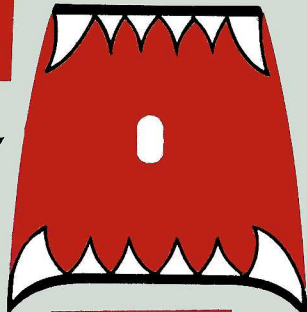
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BOEING



DANGER
To avoid injury, do not touch the sharp edges of this part.



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