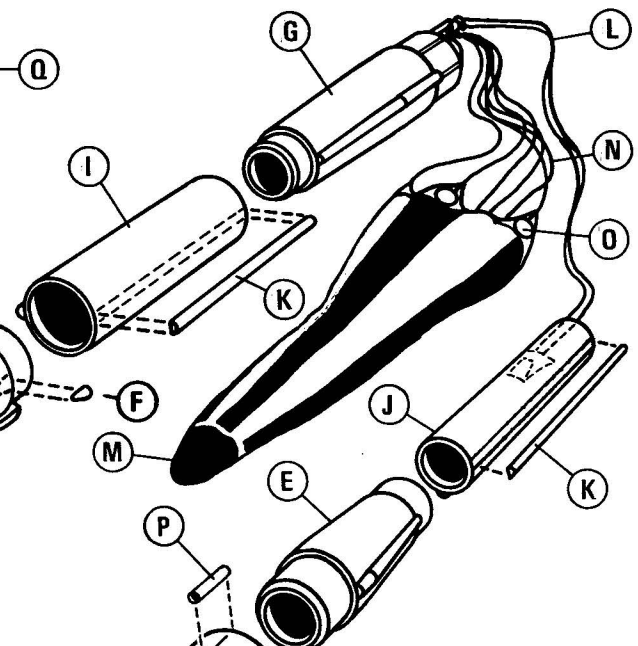
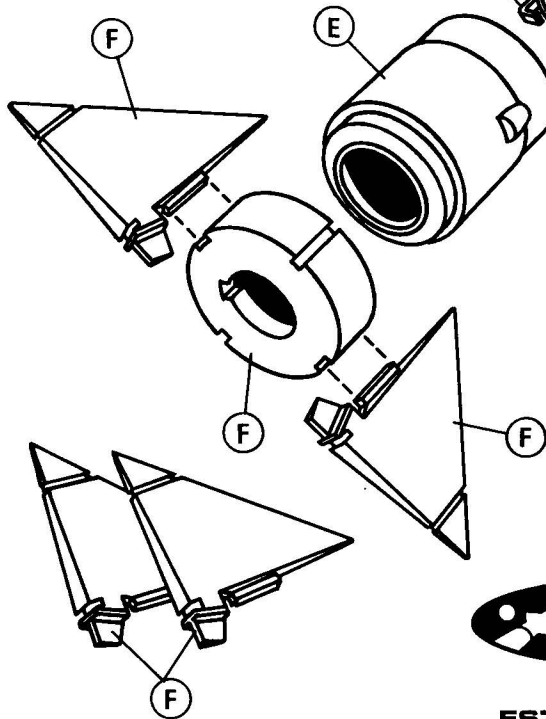


SP-87 ESTES INDUSTRIES 83239



Kit No. 1287

LTV Scout

Skill Level 3 - This kit recommended for Craftsman Rocketeers.

PARTS LIST

Part No.

A)	1	Engine Mount Tube (type BT-20D) 6.5" long	30322
B)	1	Engine Hook (type EH-2)	35025
C)	1	Die-Cut Card Adapter Rings (type RA-2060)	30128
D)	1	First Stage Body Tube (type BT-60KC) 12.84" long	30415
E)	1	Molded Adapter Set (type PTA-1287)	71068
F)	1	Plastic Parts Set (type PRP-1287)	32473
G)	1	Molded Nose Cone Set (type PNC-1287)	71067
H)	1	Payload Body Tube (type SBT-139BJ) 2.00" long	30448
I)	1	Third Stage Body Tube (type SBT-123BE) 2.50" long	30446
J)	1	Second Stage Body Tube (type SBT-127GC) 7.26" long	30447
K)	1	Conduit Strip (type BF-87)	85934
L)	1	Shock Cord (type SC-1)	85730
M)	1	Parachute (type PK-18A)	85566
N)	1	Shroud Line Cord (type SLT-108)	38239
O)	1	Strip of 6 Tape Discs (type TD-3F)	38406
P)	1	Launch Lug (type LL-2A)	38175
Q)	1	Decal (type KD-87)	37093
R)	1	Pattern Sheet (type SP-87, on back of display panel)	
S)	1	Clay Weight	85264
T)	1	Shock Cord Mount (SCM-50) (Not shown)	84444



A DAMON COMPANY

ESTES INDUSTRIES
PENROSE, CO 81240 USA

In addition to the parts included in this kit you will need scissors, a pencil, a metal-edged ruler, white glue, tube-type plastic cement, liquid plastic cement, a sharp model knife (or a single edge razor blade), a razor saw, fine sandpaper, masking tape, sanding sealer, and paint.

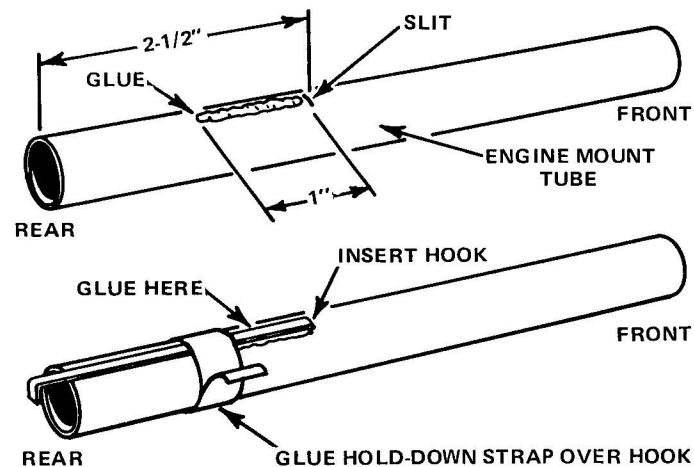
IMPORTANT:

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 order, 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 appropriate for precision assembly.

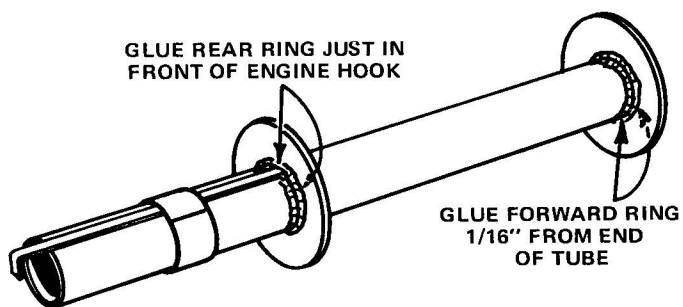
PRE-ASSEMBLY NOTE

It is important to remove any plastic flash from all molded plastic parts. Scrape or lightly sand - do not cut - the flashing from the outside of the long blow-molded adapter and nose cone sections. Cutting will result in surface gouges which are extremely difficult to repair. Once you are satisfied that all surfaces are smooth, wash the parts in soapy water, rinse thoroughly, and allow to dry before assembly.

LTV SCOUT ASSEMBLY INSTRUCTIONS

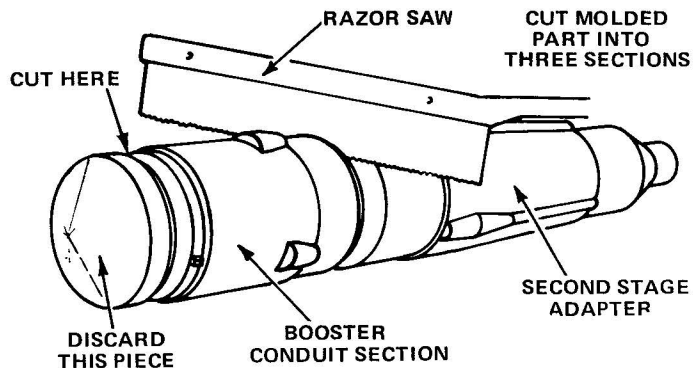


- 1 Mark the engine mount tube (part A) 2-1/2" from one end. Cut a 1/8" long slit in the tube at the mark as shown. Cut out the hold-down strap from the pattern sheet (part R). Apply a 1" long line of glue to the tube as shown. Push one end of the engine hook (part B) into the slit and press the main part of the hook into the glue. Apply glue to one side of the hold-down strap and wrap it tightly around the middle of the tube over the engine hook.

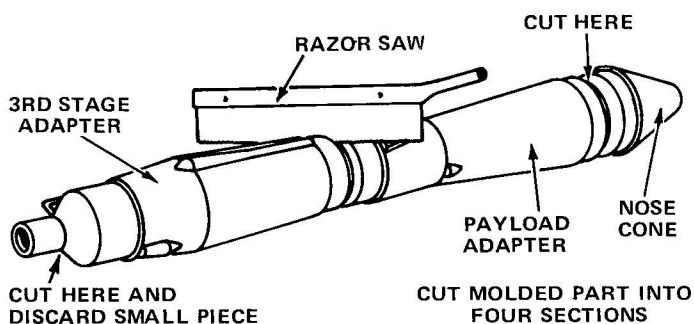


- 2 Separate the adapter rings (part C) from the die-cut card. Slide one ring onto the tube from the forward end. Place it just in front of the engine hook. Slide the other ring into place 1/16" from the forward end of the tube. Apply a line of glue at the ring/tube joint on both sides of each ring. Let the assembly dry completely.

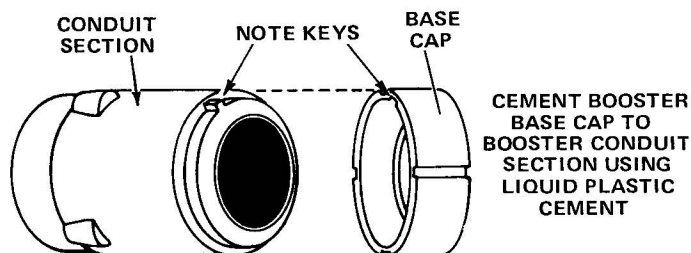
2



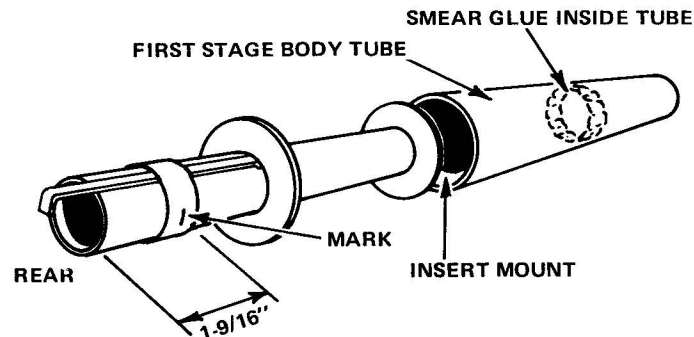
- 3 If you have a razor saw, use it to cut the molded adapter piece (part E) into three parts as shown. If you do not have a razor saw, use a model knife or single edge razor blade. Make very light cuts around the parting lines (bottom of grooves) and repeat until you have cut completely through the plastic. Work carefully to avoid tearing the plastic. One piece is the booster conduit section, one piece is the second stage adapter, and the short conical section is to be discarded.



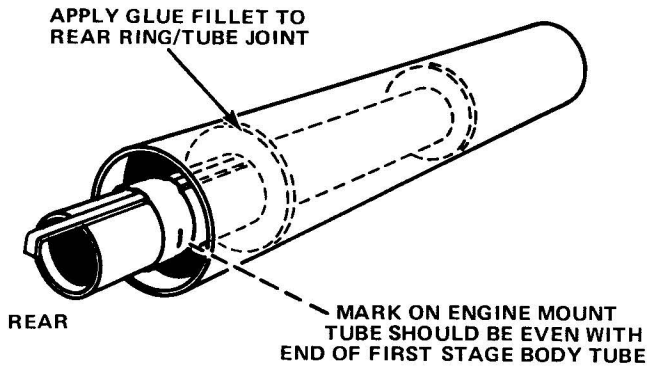
- 4 Cut the molded nose cone piece (part G) into four sections in the same manner as the molded adapter piece. The four pieces are the nose cone, the payload adapter, the 3rd stage adapter, and the end piece which is discarded. Cut off any molding flash from the shock cord eyelet and from the base of the 3rd stage adapter.



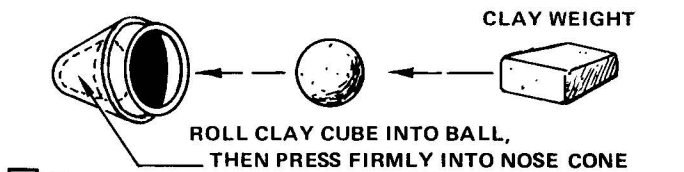
- 5 Remove the booster base cap from the plastic parts set (part F). Using the molded keyways for positioning, glue together the booster conduit section and the base cap. Use liquid plastic cement. Set aside to dry.



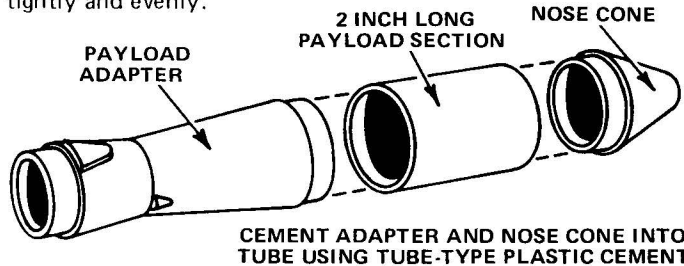
- 6 Mark the engine mount tube 1-9/16" from the engine hook end. Smear glue around the inside of one end of the 1st



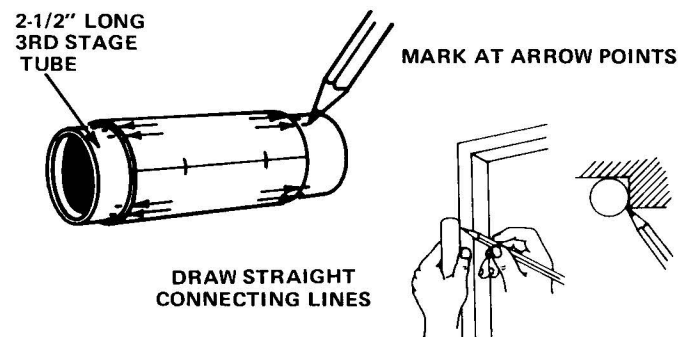
stage body tube (part D) as far in as possible (but not more than 4-1/2"). Immediately insert the engine mount assembly. Push it in with one smooth motion until the mark on the engine mount tube is even with the rear of the tube. Apply a line of glue to the joint between the rear ring and the body tube. Set the tube on its forward end while the glue dries.



Remove the clay (part S) from the small plastic bag and warm it with your hands. Roll the clay into a ball and push it into the nose cone. Use the eraser end of a pencil to pack it tightly and evenly.

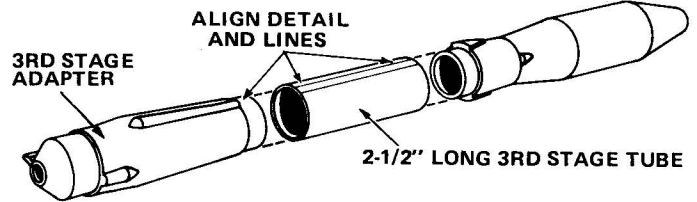


Find the 2.00" long payload tube (part H). Smear tube type plastic cement around the inside of both ends and allow to dry. Smear another layer of plastic cement around the inside of one end and immediately insert the nose cone. Push it in with a twisting motion, making sure the edge of the body tube touches the nose cone all around. Cement the payload adapter into the opposite end of the payload tube in the same way. Set aside to dry.



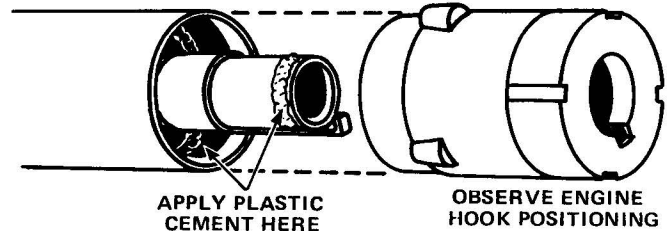
Cut out the 3rd stage marking guide from the pattern sheet. Wrap it around the 2-1/2" long 3rd stage body tube (part I). Mark the tube at each of the arrow points with a pencil. Draw straight lines the length of the tube connecting the matching pairs of conduit marks. Mark the payload end and the 3rd stage adapter end of the tube.

CEMENT COMPONENTS TOGETHER USING TUBE-TYPE PLASTIC CEMENT

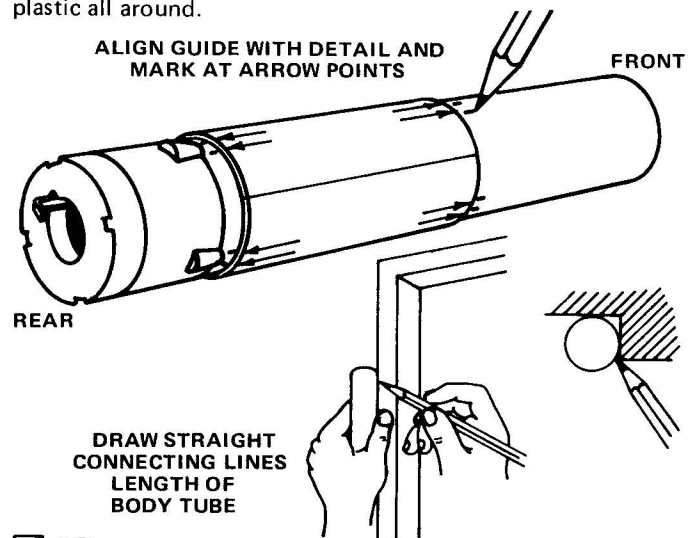


Test fit the 3rd stage adapter in the appropriate end of the 3rd stage tube. Note that as the adapter is rotated, the conduits on the adapter will line up directly between the conduit lines drawn on the tube. Remove the adapter. Smear tube-type plastic cement around the inside of both ends of the tube and allow to dry. Smear another layer of plastic cement around the inside of the 3rd stage adapter end. Immediately re-install the adapter with a smooth twisting motion. Be sure the plastic detail is centered between the lines on the tube as shown. In the same manner, smear another layer of plastic cement around the inside of the opposite end of the tube and install the payload adapter. The antenna covers on this piece must line up with the antenna cover marks drawn on the tube. Use a model knife to drill out the shock cord eyelet.

CEMENT CONDUIT SECTION INTO BOOSTER TUBE USING TUBE-TYPE PLASTIC CEMENT



Smear tube-type plastic cement around the inside of the 1st stage booster tube just behind the rear adapter ring and let it dry. Smear another layer of cement around the inside of the 1st stage tube and a small amount around the outside of the engine mount tube as shown. Immediately install the booster base cap/booster conduit section, locating the engine hook in its slot. Push the unit all the way in making sure the engine hook is centered in the slot and the body tube touches the plastic all around.



Cut out the 1st stage marking guide from the pattern sheet. Wrap it around the first stage booster tube, making sure the set of arrows lines up with the detail on the booster conduit section. Mark the tube at each arrow point. Carefully connect each pair of arrow points with a straight line drawn the length of the tube as shown.

SCOUT LAUNCH VEHICLE FACTS

Scout is NASA's only solid propellant launch vehicle with orbital capability. The first development Scout was launched July 1, 1960. Since the Scout was re-certified in 1963, the vehicle has attained a 94 percent success record.

Scout is a four-stage, solid propellant rocket system manufactured by LTV Aerospace. The launch vehicle is approximately 22 meters (73 feet) long and weighs about 17,000 kilograms (38,000 pounds) at liftoff. The four Scout motors — Algol IIA, Castor II, Antares III, and Altair III — are interlocked with transition sections that contain guidance, control, ignition, and instrumentation systems, separation mechanisms, and the spin motors needed to stabilize the fourth stage. Control is achieved by aerodynamic surfaces, jet vanes, and hydrogen peroxide jets.

Your model is an accurate 1/24th reproduction of vehicle no. 151, launched from the Italian San Marco platform December 12, 1970. The Scout boosted a 142 kilogram satellite, NASA's Explorer 42 (SAS-A) into a circular orbit along the equator some 550 kilometers high. Because the satellite was launched on Kenya's independence day, it was later re-named "UHURA" meaning freedom. This satellite has been given credit for the discovery of "Black Holes" (extreme gravitational concentrations) in outer space.

Estes Industries wishes to acknowledge the tremendous amount of assistance given by the Vought Corporation, Dallas, Texas, in the preparation of this model rocket kit. Their eagerness to help assure the authenticity of scale on the Scout model is greatly appreciated.

PAINTING INSTRUCTIONS

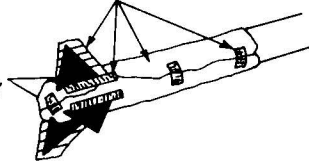
SPRAY PAINT FOR BEST RESULTS. USE STICK OR DOWEL FOR ROCKET HOLDER.

SHAKE CAN BEFORE SPRAYING. HOLD CAN STRAIGHT UP AND SPRAY IN LONG, SMOOTH "STROKES".

FIRST COATS ARE LIGHT, DRY, MIST COATS.

LET DRY COMPLETELY BETWEEN COATS.

MASKING TAPE AND PAPER PROTECT MODEL FROM SECOND COLOR SPRAY.

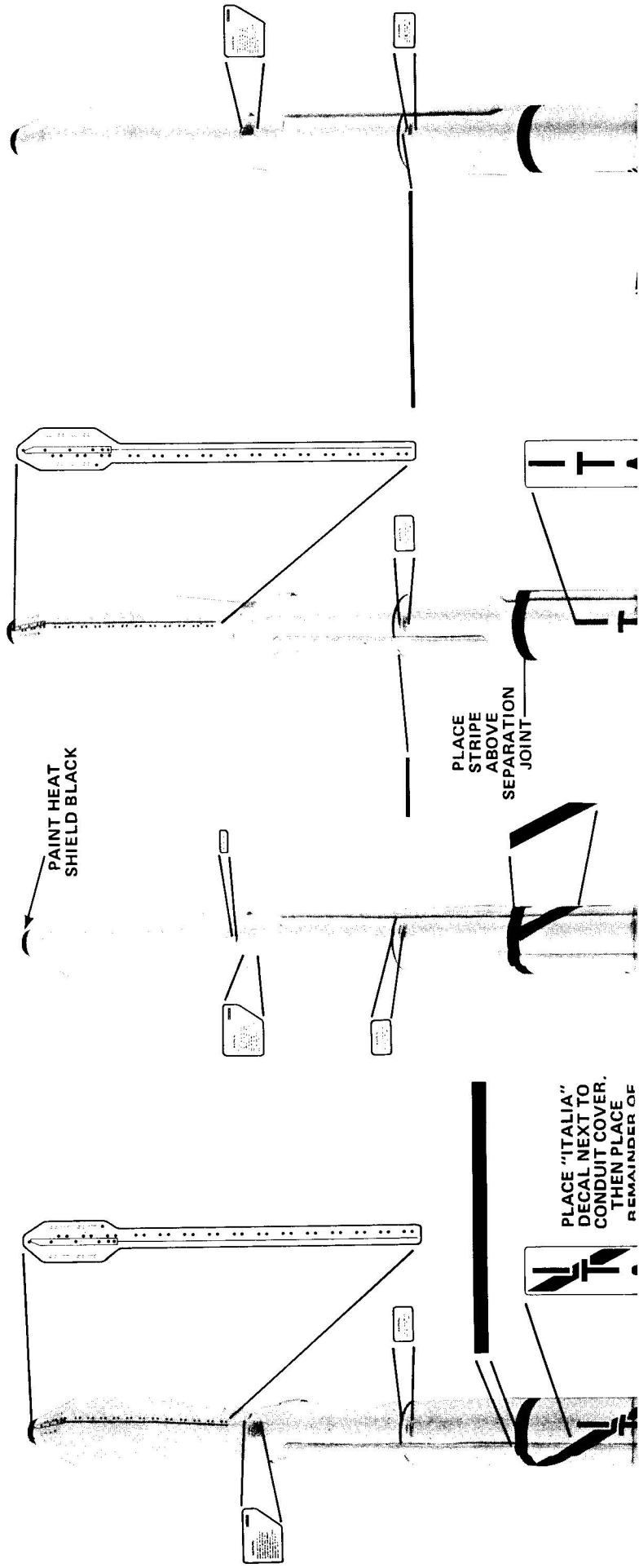


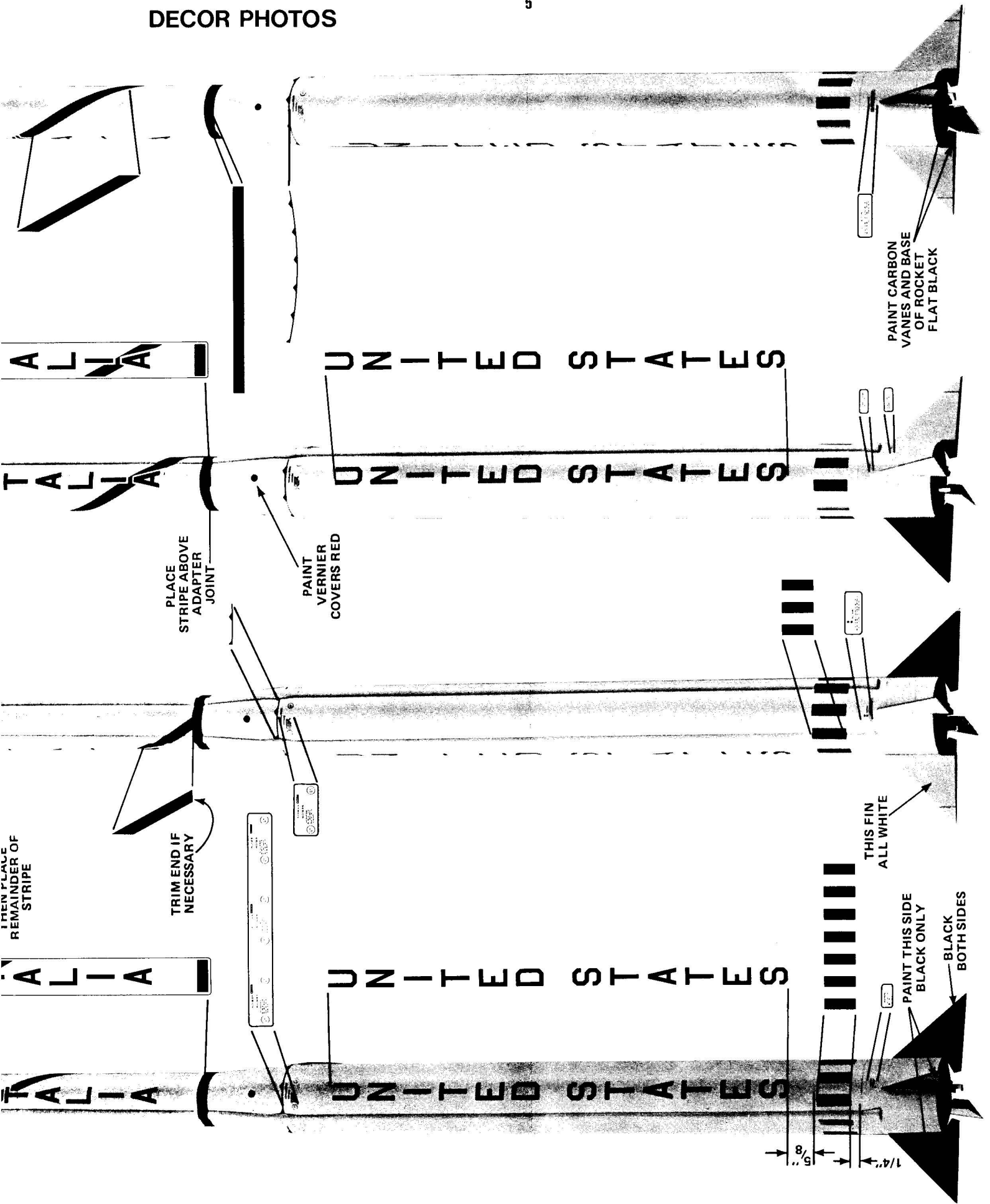
SHAKE CAN PERIODICALLY. TO OBTAIN GLOSS, FINAL COAT SHOULD BE SLIGHTLY HEAVIER.

NOTE: APPLY FINAL COAT WITH "WET" LOOK.

27 After the sanding sealer is completely dry, paint the entire model gloss white. Let the paint dry overnight. Apply masking tape and paper to protect the part of the model which will remain white. (See the Decor Layout illustration.) Paint the proper fin sides gloss black. Carefully remove the masking tape and paper as soon as the paint is dry. Paint the vernier engine covers red with a small brush.

28 When all the paint is dry, apply the decals (part Q) according to the Decor Layout illustration. To apply water transfer decals, cut out an individual section of the decal and dip in lukewarm water for 10 seconds. When the decal slides easily on the backing paper, slip it from the backing sheet onto the model. MASTER MODELER NOTE: Extra care must be taken to trim the decal as close to the printed area as possible in order for the decal to fit in its true scale location. Check the fit of the decal before dipping in water. In areas where two or more decal pieces come together, it is best to allow each decal to "set" before applying the next one. This will prevent shifting and possibly ruining some of your decals.





PAINT CARBON
VANES AND BASE
OF ROCKET
FLAT BLACK

UNITED STATES

UNITED STATES

UNITED STATES

UNITED STATES

PLACE
STRIPE ABOVE
ADAPTER
JOINT

PAIN
VERNIER
COVERS RED

TRIM END IF
NECESSARY

THIS FIN
ALL WHITE

PAINT THIS SIDE
BLACK ONLY

BLACK
BOTH SIDES

1/4"
5/8"
1/8"

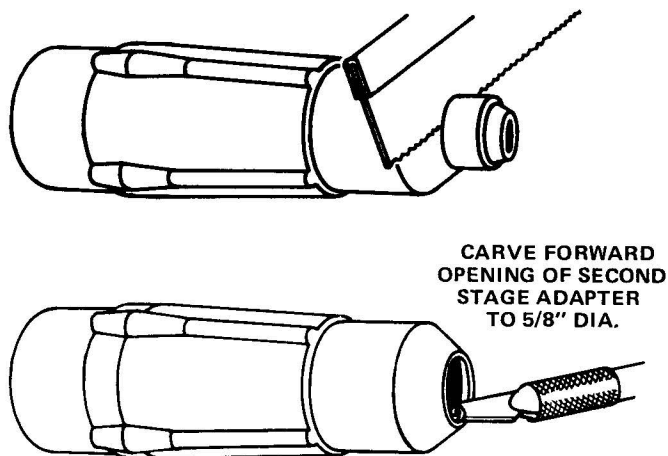
THEN PLACE
REMAINDER OF
STRIPE

ITALIA

ITALIA

ITALIA

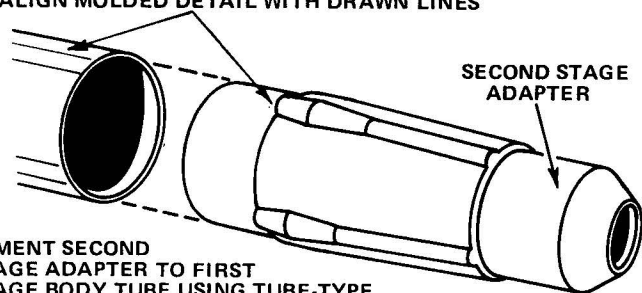
ITALIA



CARVE FORWARD
OPENING OF SECOND
STAGE ADAPTER
TO 5/8" DIA.

- 13 Cut off the tubular section from the forward end of the second stage adapter as shown above. Carve the opening until the inside diameter is 5/8".

ALIGN MOLDED DETAIL WITH DRAWN LINES

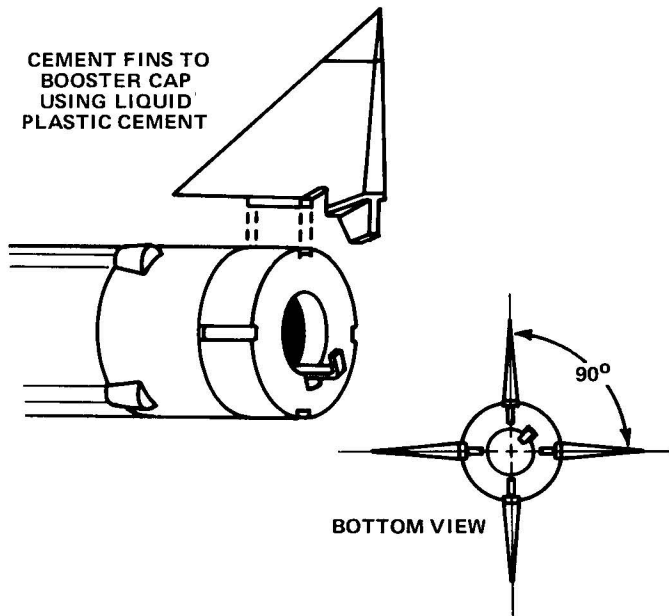


SECOND STAGE
ADAPTER

CEMENT SECOND
STAGE ADAPTER TO FIRST
STAGE BODY TUBE USING TUBE-TYPE
PLASTIC CEMENT

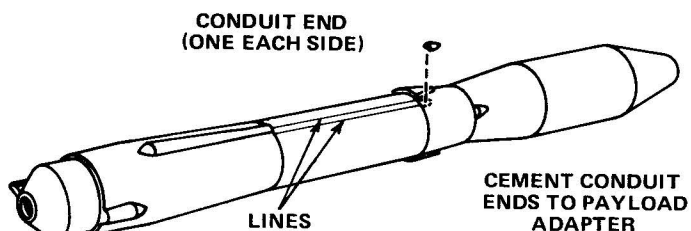
- 14 Smear tube-type plastic cement around the inside of the forward end of the 1st stage booster tube and let dry. Smear another layer of cement around the inside of the tube. Immediately insert the second stage adapter with a twisting motion. Align the plastic detail with the lines drawn on the tube and allow to dry.

CEMENT FINS TO
BOOSTER CAP
USING LIQUID
PLASTIC CEMENT



BOTTOM VIEW

- 15 Cut the fins from the plastic parts set. Carefully trim any flash from their edges. Use liquid plastic cement to cement the fins to the booster base cap. Note that the molded keys on the fins fit into the molded grooves in the booster base cap. Check alignment frequently while the cement is setting.

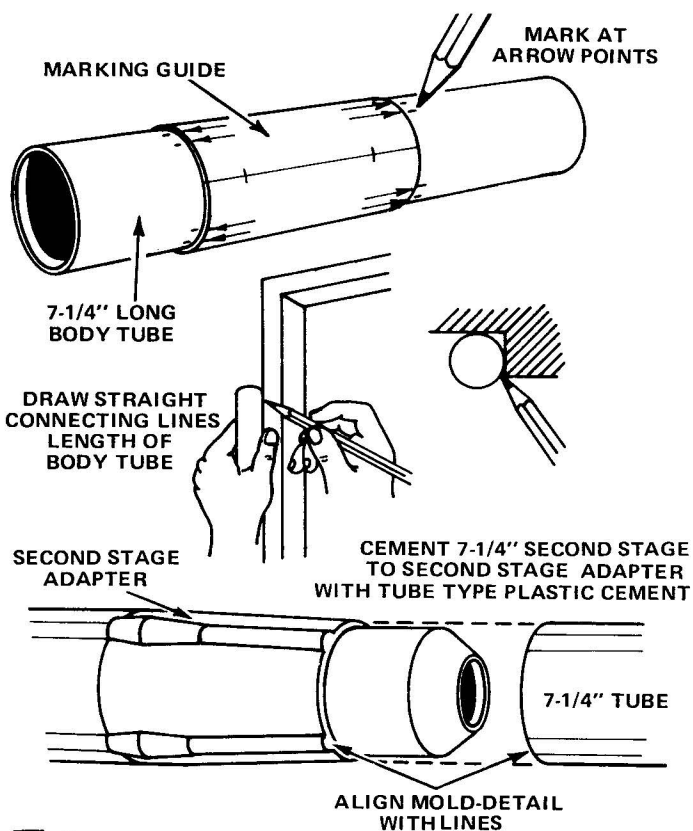


CONDUIT END
(ONE EACH SIDE)

LINES

CEMENT CONDUIT
ENDS TO PAYLOAD
ADAPTER

- 16 Cut the small conduit ends from the plastic parts set. Trim any flash from their edges. Use liquid plastic cement to cement these to the payload adapter as shown. They should be positioned so that they are centered between the conduit lines drawn on the 3rd stage body tube.



MARKING GUIDE

MARK AT
ARROW POINTS

7-1/4" LONG
BODY TUBE

DRAW STRAIGHT
CONNECTING LINES
LENGTH OF
BODY TUBE

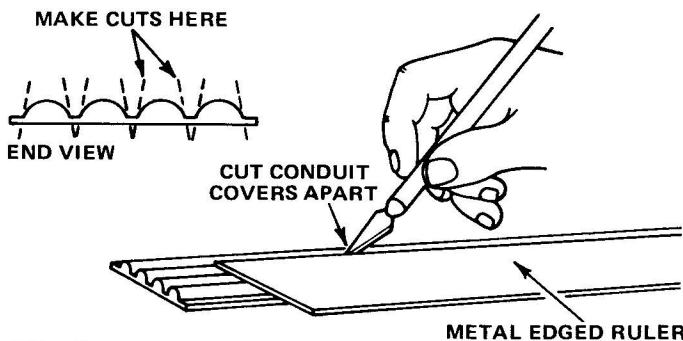
SECOND STAGE
ADAPTER

CEMENT 7-1/4" SECOND STAGE
TO SECOND STAGE ADAPTER
WITH TUBE TYPE PLASTIC CEMENT

7-1/4" TUBE

ALIGN MOLD-DETAIL
WITH LINES

- 17 Cut out the second stage marking guide from the pattern sheet. Wrap it around the 7-1/4" long second stage tube (part J) and mark the tube at each arrow point. Connect each set of matching arrow points with a line drawn the length of the tube. Smear tube-type plastic cement around the inside of one end of the tube, let dry. Smear another layer of cement around the inside of the tube and push this end of the tube over the exposed end of the second stage adapter. Be sure the conduits on the adapter are positioned between the lines drawn on the second stage tube.



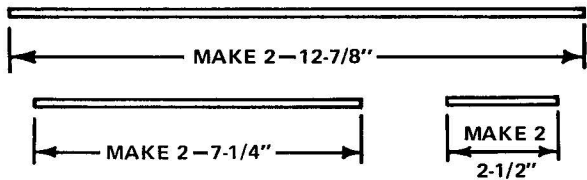
MAKE CUTS HERE

END VIEW

CUT CONDUIT
COVERS APART

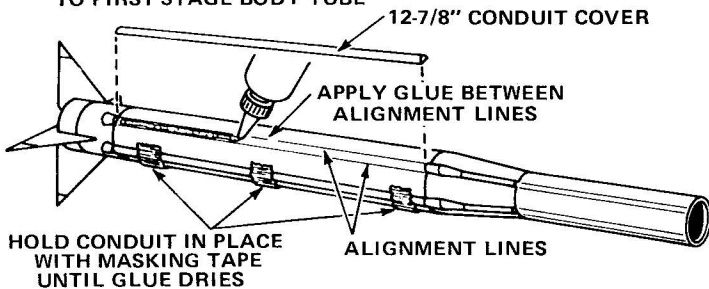
METAL EDGED RULER

- 18 Use a metal edged ruler as a guide to cut the conduit covers (part K) apart as shown. If necessary, sand the edges of

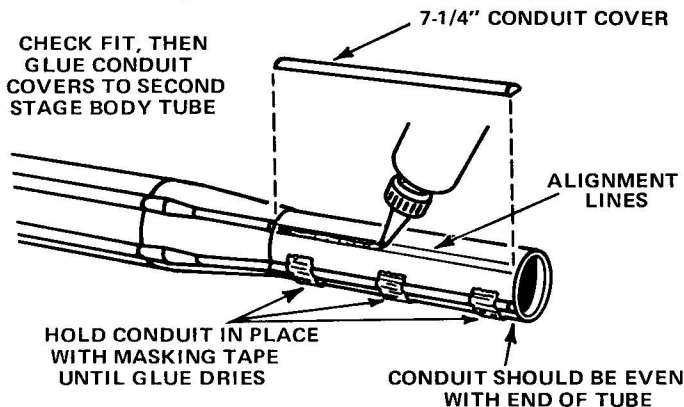


these pieces to be sure that they are straight and smooth. Cut two of the conduit strips to a length of 12-7/8". Cut one 7-1/4" and one 2-1/2" long strip from each of the two remaining conduit strips as shown.

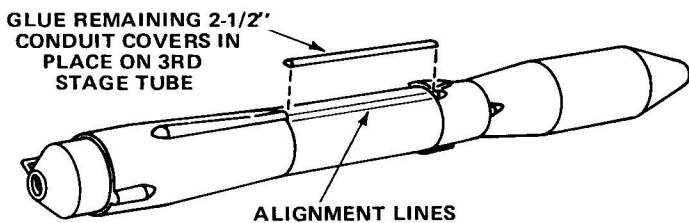
CHECK FIT, THEN GLUE CONDUIT COVERS TO FIRST STAGE BODY TUBE



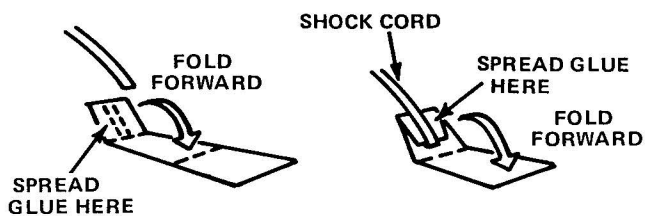
19 Test fit the 12-7/8" long conduit covers on the 1st stage body tube. Position the covers between the lines drawn on the tube and with their ends just touching the molded detail in the plastic pieces on each end of the tube. If necessary, sand the ends of the covers to fit. Apply a thin line of glue along the body tube between one set of lines. Lay one of the conduit covers in place and temporarily secure it to the tube with masking tape as shown. Check the conduit cover for proper alignment while the glue is still wet. Repeat this step for the other 1st stage conduit cover and allow to dry.



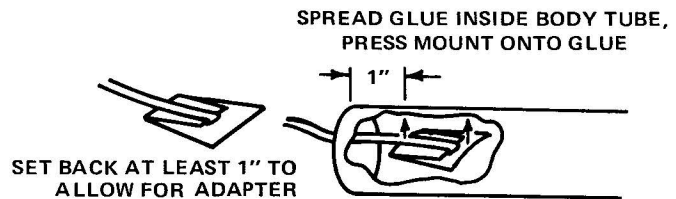
20 Test fit the 7-1/4" long conduit covers on the second stage body tube. Position the covers between the lines drawn on the tube and with one end just touching the molded detail on the second stage adapter. Apply a line of glue along the body tube between one set of lines and press one of the conduit covers in place, checking for proper alignment. Hold it in place with small strips of masking tape as shown. Repeat this with the other 7-1/4" long conduit cover.



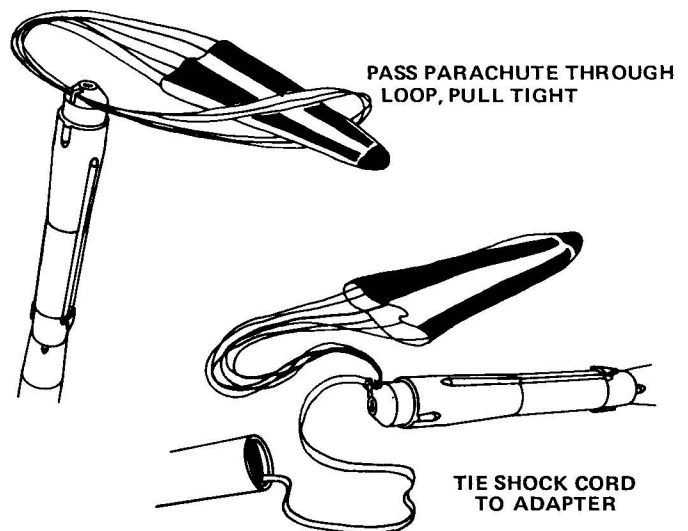
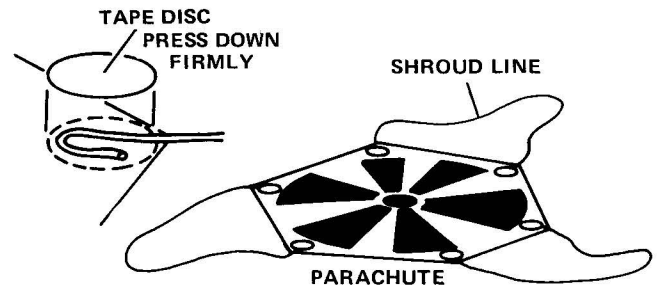
21 Test fit, then glue the remaining conduit covers to the third stage body tube. Make sure they are aligned properly and that the ends just touch the plastic detailing at both ends of the marked lines.



22 Cut out the shock cord mount (part T). Pre-fold it on the dotted lines. Apply glue to section 1 and lay the shock cord (part L) into the glue. Fold over and apply glue to the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets.



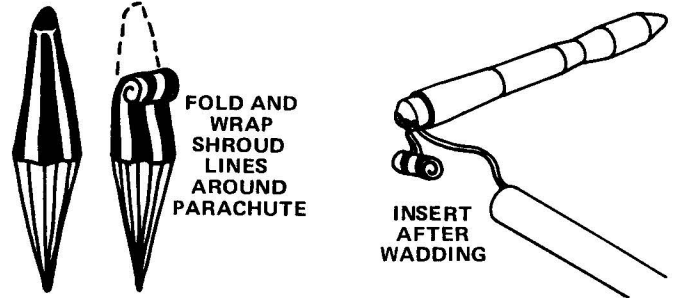
23 Apply glue to the inside of the second stage body tube at the front to cover an area about 1" to 2" from the front. The glued area should be the same size as the shock cord mount. Press the mount into the glue as shown and hold it until the glue sets.



24 Cut out the parachute (part M) on its edge lines. Cut three 36" lengths of shroud line (part N). Attach the line ends to the top of the parachute with tape discs (part O) as shown. Pass the shroud line loops through the molded eyelet in the third stage adapter. Pass the parachute through the loop ends and draw the lines tight against the eyelet. Set the knot with a drop of glue. Tie the free end of the shock cord to the eyelet.

COUNTDOWN CHECKLIST

T-14 Pack four or five squares of loosely crumpled recovery wadding into body tube.



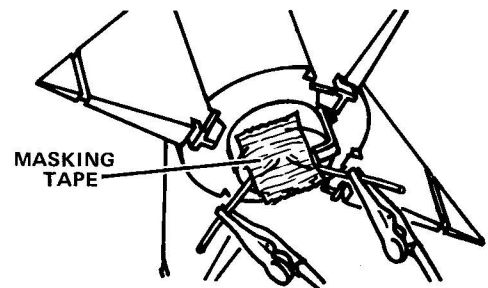
T-13 Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. Slide 'chute into body above wadding. If 'chute is too large, unroll and re-pack until it slides easily into rocket. A fit that is too tight may prevent parachute from ejecting properly.

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

T-12 Pack shock cord neatly into rocket, then slide forward section into place. Forward section should separate easily from rocket body tube, but should not be extremely loose. If it is too tight, sand inside of body tube and ribs on plastic adapter with extra fine sandpaper.

If payload section is too loose, add a wrapping of transparent tape or masking tape to the shoulder of adapter.

T-11 Select an engine and install an igniter as directed in the engine instructions. Engine recommended for use with this rocket is C6-5 only.



T-10 Insert engine into rocket. Engine hook must latch securely over end of engine.

T-9 Disarm launch panel---remove safety key.

T-8 Place rocket on launch pad, making sure rocket slides freely on launch rod. Clean micro-clips and attach them to igniter leads.

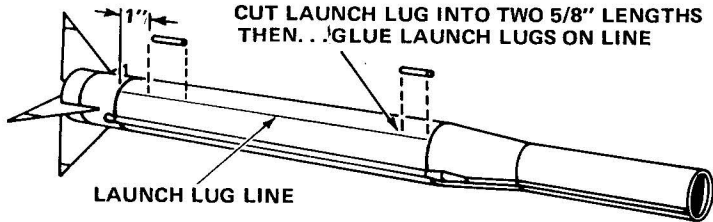
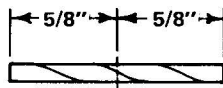
T-7 Clear the launch area, alert recovery crew and trackers. Check for low flying aircraft and unauthorized persons in recovery area.

T-6 Arm launch panel---insert safety key.

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

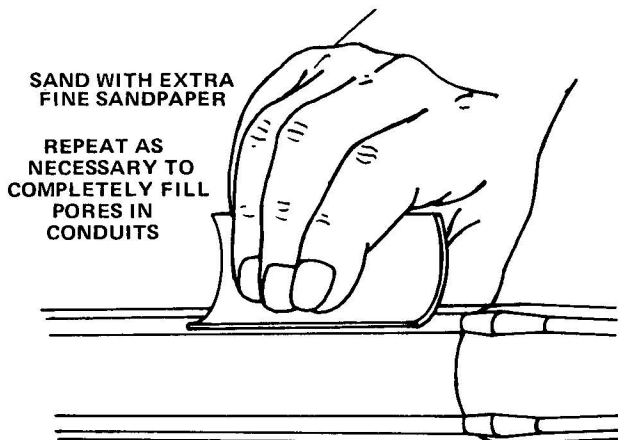
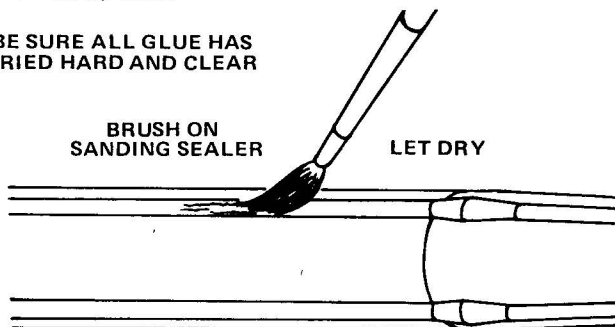
MISFIRE PROCEDURE

Occasionally an igniter will heat and burn into two parts without igniting the engine. This is almost always caused by a failure to install it correctly. Disarm launch panel, remove the model, clean igniter residue from nozzle, and install a new igniter. Follow launching procedure again.



25 Cut the launch lug (part P) into two 5/8" sections. Glue the lugs to the 1st stage body tube on the launch lug guide line. The rear lug should be placed 1" in front of the molded conduit section. The forward lug should be placed just behind the molded second stage adapter. Align them straight on the body tube.

BE SURE ALL GLUE HAS DRIED HARD AND CLEAR



26 Apply two or more coats of sanding sealer to the conduit cover surfaces. Sand lightly with extra fine sandpaper between coats. Repeat until the surfaces look and feel smooth. Apply additional sanding sealer to all conduit edges where they touch the body tubes to seal any gaps that may still exist. Sand smooth.

(SEE PAGES 4 & 5 FOR PAINT SCHEME AND DECAL PLACEMENT)

LAUNCHING COMPONENTS

To launch your rocket you will need the following items:

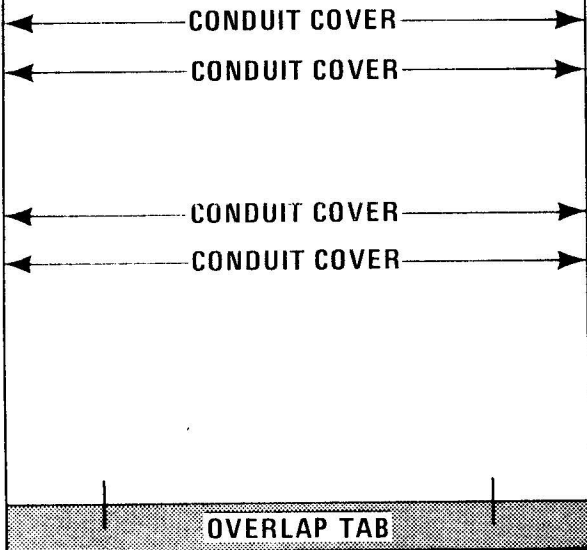
- An Estes model rocket launching system and battery
- Parachute recovery wadding (Estes Catalog No. 2274)
- Estes C6-5 model rocket engines

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

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

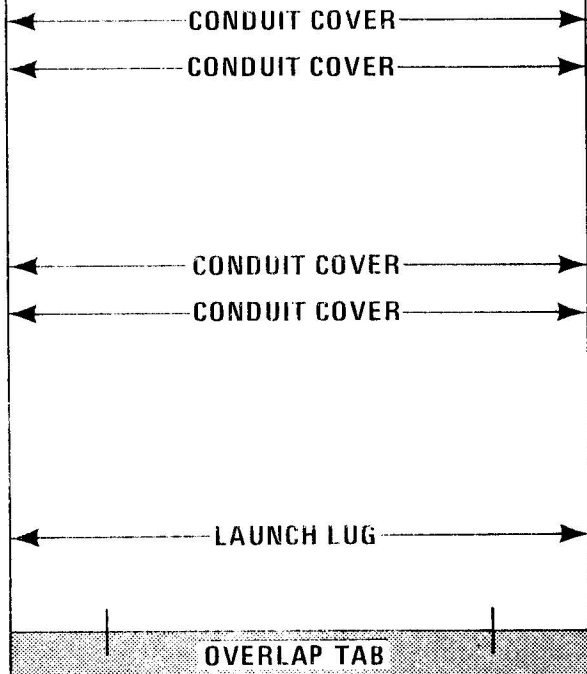
LTV Scout

2nd STAGE TUBE MARKING GUIDE



LTV Scout

1st STAGE TUBE MARKING GUIDE



LTV Scout

← CONDUIT COVER →

← CONDUIT COVER →

← ANTENNA COVER EDGE

PAYLOAD
ADAPTER
THIS END

3rd STAGE
ADAPTER
THIS END

3rd STAGE TUBE
MARKING GUIDE

← CONDUIT COVER →

← CONDUIT COVER →

← ANTENNA COVER EDGE

OVERLAP TAB



A SUBSIDIARY OF DAMON

SEC. 3

PN 84444

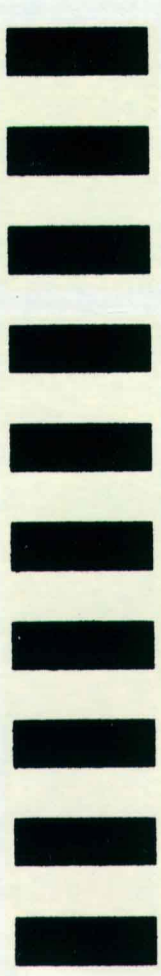
SEC. 2

SEC. 1

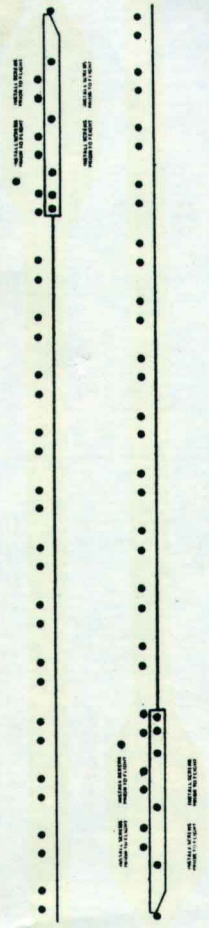
SHOCK CORD
MOUNT
SCM-50

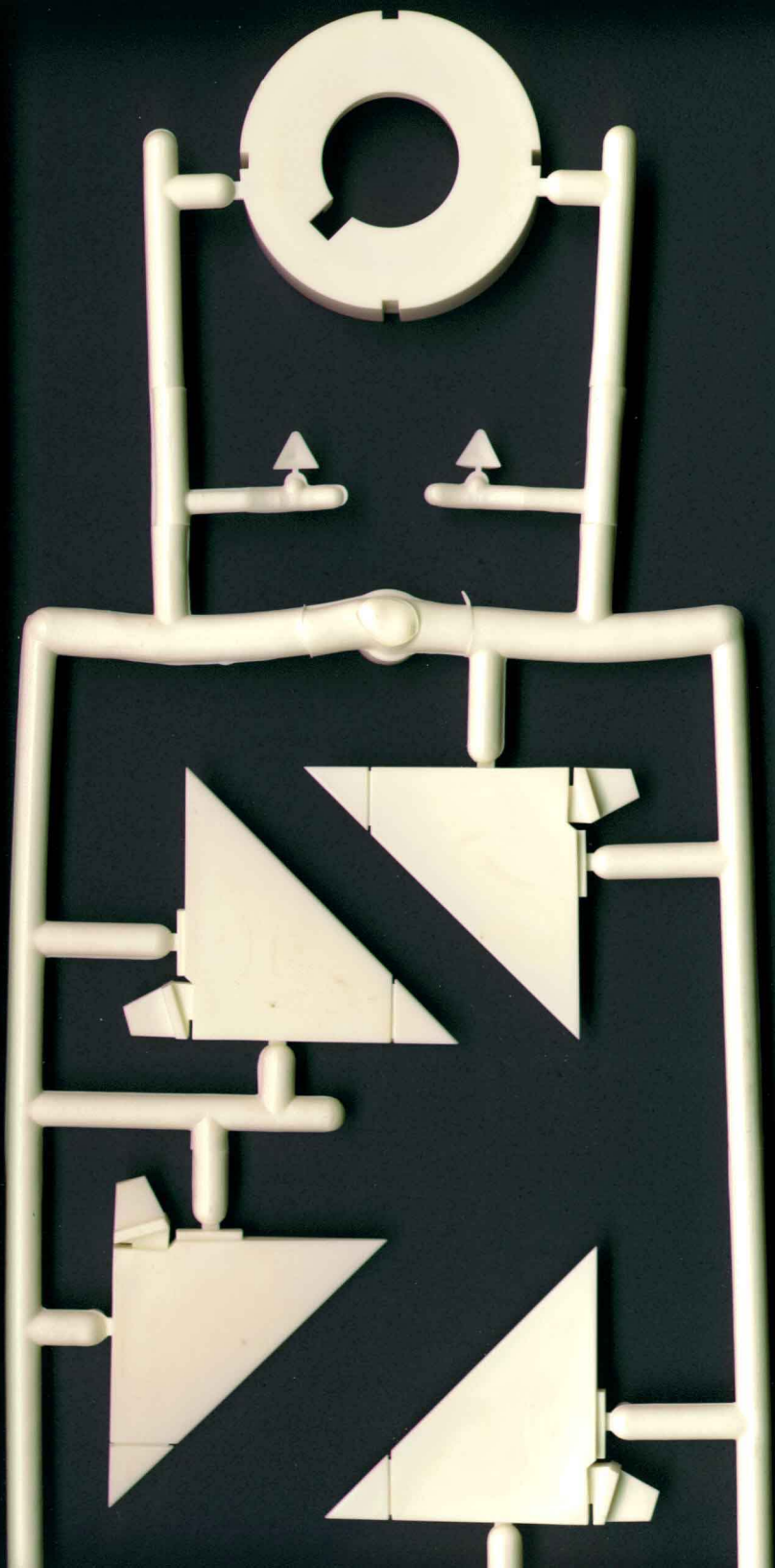
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ACCEPTOR BUSH
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ITALIA ITALIA





ESTES
Model Rocket Engines

LTV SCOUT



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