

WORLD FEDERATION STAR PROBE

SKILL LEVEL 3 — Recommended for Craftsman Rocketeers.

RECOMMENDED ENGINES:

A8-3 B4-2 B4-4 B6-2 B6-4

B8-5 B14-5 C6-5 C6-7

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. 1341

PARTS LIST

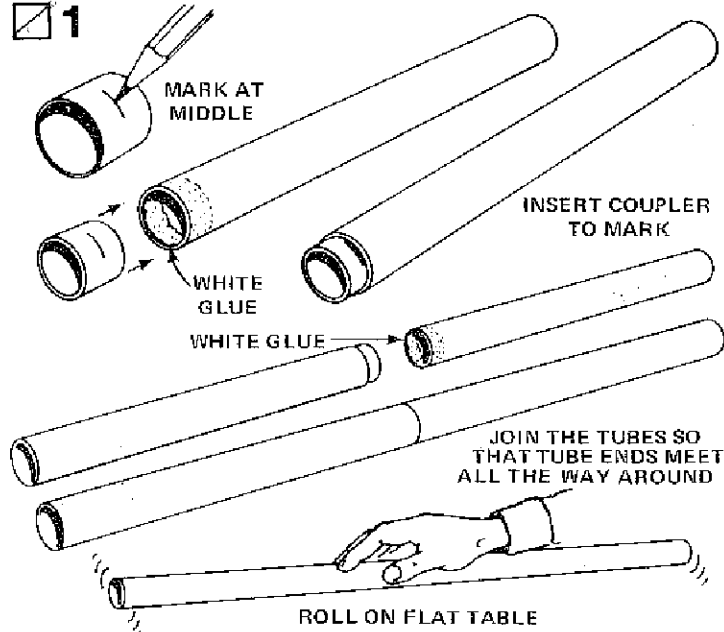
A	2	Body Tubes (type BT-50L)	30366
B	1	Body Tube Coupler (type JT-50C)	30260
C	1	Engine Mount Tube (type BT-20J)	30326
D	1	Engine Hook (type EH-2)	35025
E	1	Hook Retainer Ring (type HR-20)	30168
F	1	Centering Ring (type AR-2050)	30164
G	1	Split Centering Ring (type AR-2050S)	80425
H	1	Die-Cut Balsa Sheet (type BF-1341)	32345
I	1	1/8" Wood Dowel	85903
J	1	1/8" Square Wood Strip	85926
K	1	Balsa Strip	32279
L	1	Launch Lug (type LL-2AM)	38176
M	1	Pattern Sheet (type SP-1341)	84208
N	1	Launch Lug (type LL-2C)	38180
O	1	Stabilizer Ring (type BT-80S)	30427
P	1	Shock Cord (type SC-1)	85730
Q	1	Parachute (type PK-12)	85564
R	1	Shroud Line (type SLT-72)	38237
S	1	Tape Discs (type TD-3F)	38406
T	1	Nose Cone (type PNC-50SP)	71001
U	1	Decal (type KD-1341B)	37572
V	1	Mylar Stick-On Decal (type KD-1341A)	37705

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, ruler, fine and extra-fine grit sandpaper, sanding sealer, masking tape, a medium size modeling paint brush, modeling knife with sharp blade, tweezers, white enamel spray paint, and a bottle of black enamel paint.

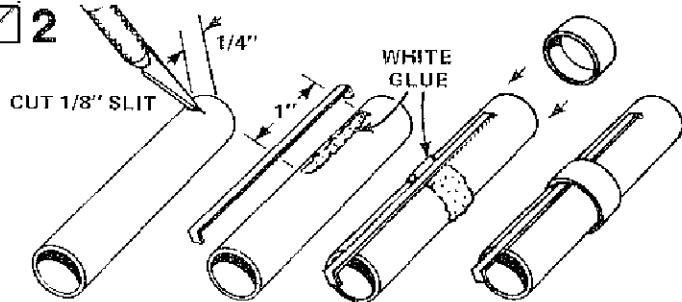
ASSEMBLY INSTRUCTIONS

1



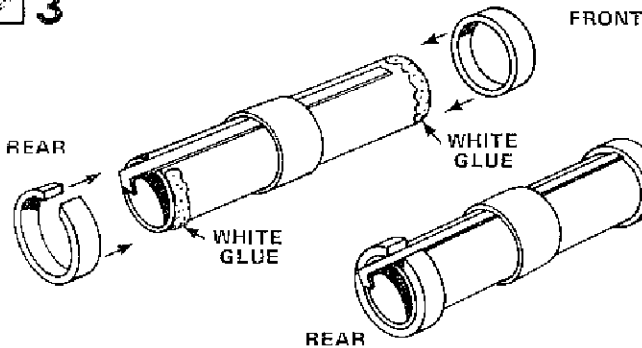
Assemble the main body. Mark the body tube coupler (part B) at its middle. Smear glue around the inside of one end of one body tube (part A). Insert coupler into the glued end so half of the coupler is in the tube. Let glue set, then smear glue inside one end of the other body tube and slide glued end onto the coupler to join the tubes. Lay assembly on a flat table top and roll gently to make sure the tubes are straight.

2



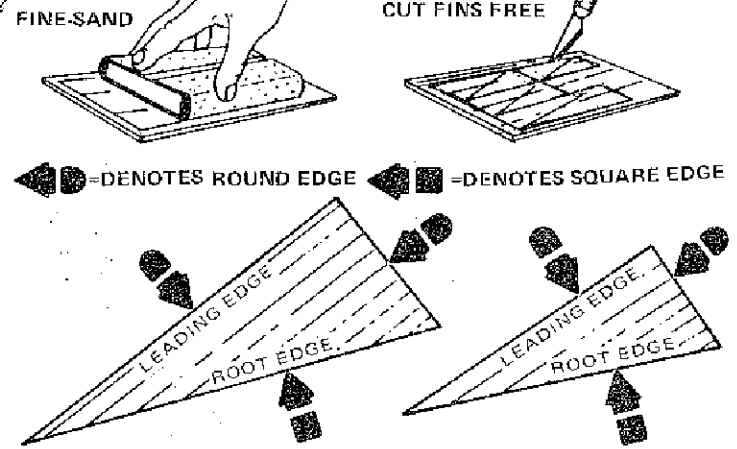
Cut a 1/8" long slit in the engine mount tube (part C), 1/4" from one end as shown. Apply a 1" long line of glue to the tube as shown. Push one end of the engine hook (part D) into the slit and press the main part of the hook into the glue. Apply a line of glue around the middle of the tube and slide the hook retainer ring (part E) over tube and hook and onto the glue.

3



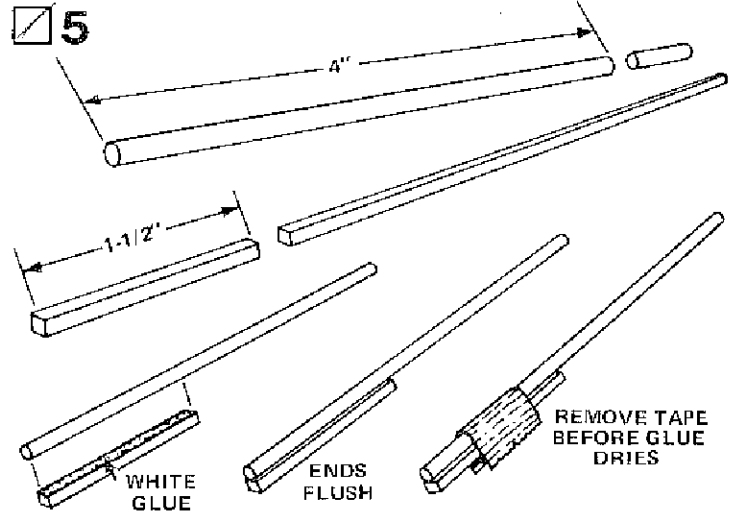
Glue the split centering ring (part G) to the engine mount tube even with the rear end (the end with the over-hanging hook) so the slot is over the hook. Avoid getting glue in the slot. Glue the other ring (part F) to the front of the engine mount against the end of the hook as shown.

4



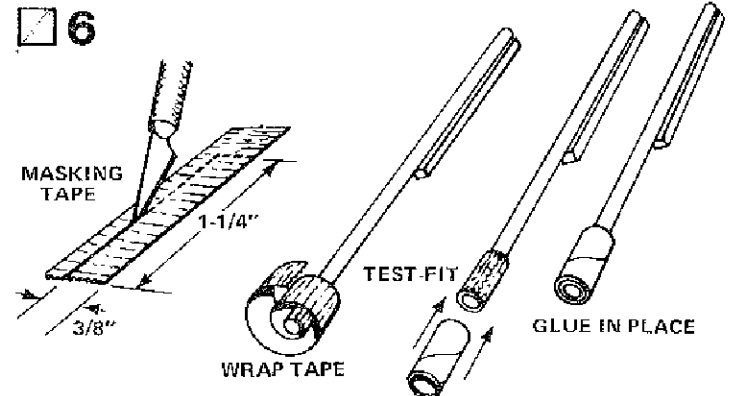
Fine-sand the balsa die-cut sheet (part H), then carefully remove the die-cut fins from the sheet. Free the edges with a sharp knife. Sand the leading and trailing edges of the fins round. Leave the other edges square.

5

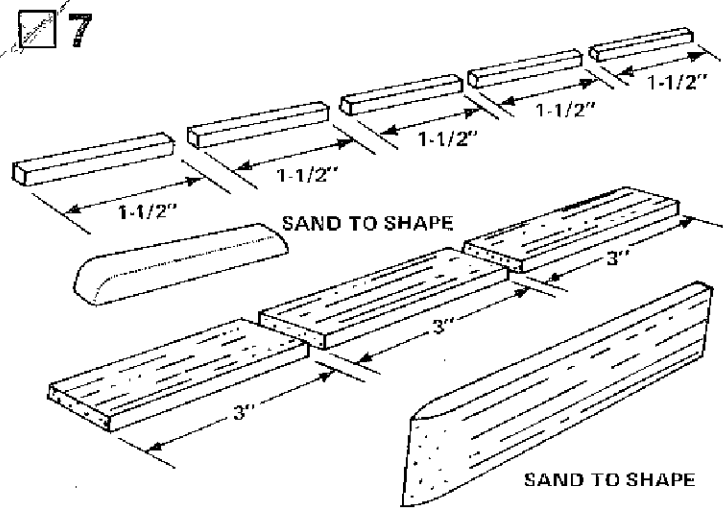


Locate the wood dowel (part I) and cut to 4" length. Next locate 1/8" square wood strip (part J) and cut it to 1-1/2" length. Set aside excess strip to be used in a following step. Apply glue down one side of 1-1/2" wood strip and position 4" dowel onto glue so end of dowel is flush with end of wood strip. Temporarily tape dowel into position. Remove tape as soon as glue sets. Do not wait until glue dries.

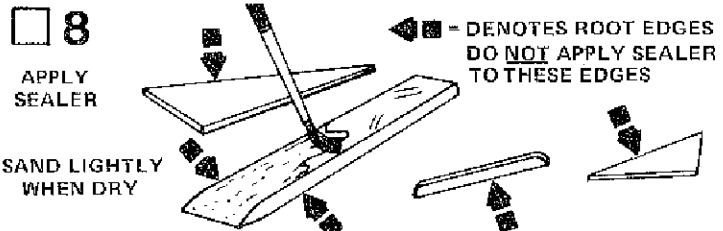
6



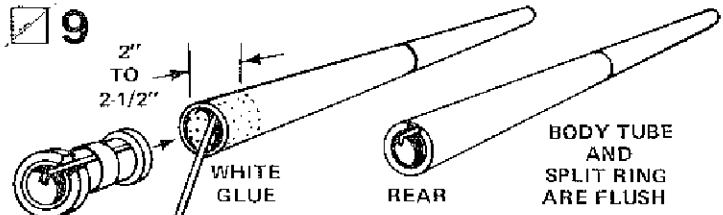
Cut a strip of masking tape 3/8" wide and 1-1/4" long. Wrap tape around the end of the dowel. Test-fit the small launch lug (part L) over tape. If too tight, remove tape 1/16" at a time until the lug fits smoothly on the dowel. Smear glue over tape and slide the lug into place on the dowel.



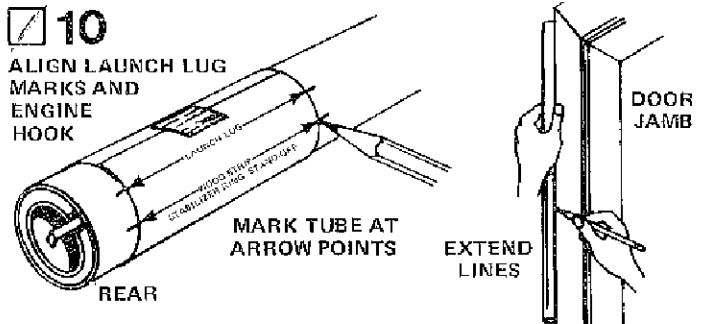
Cut remaining 1/8" square wood strip into five 1-1/2" lengths and sand ends to shape shown. Locate large balsa strip (part K) and cut into three 3" pieces. Sand front end of each piece as shown.



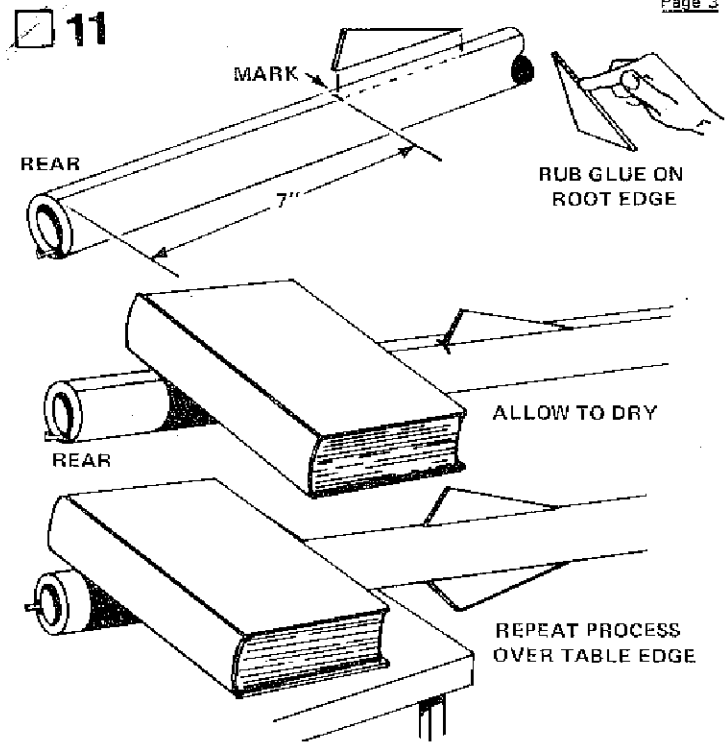
Apply a coat of sanding sealer to one side of all the wood parts, fins, and wood strips. When dry, turn parts over and apply sealer to other side. Apply sealer to all edges except root edge (the edge that glues to the body tube). When sealer is dry, lightly sand all surfaces. Repeat sealing and sanding process a second time. If balsa grain still shows, a third coat of sealer (and sanding) may be necessary.



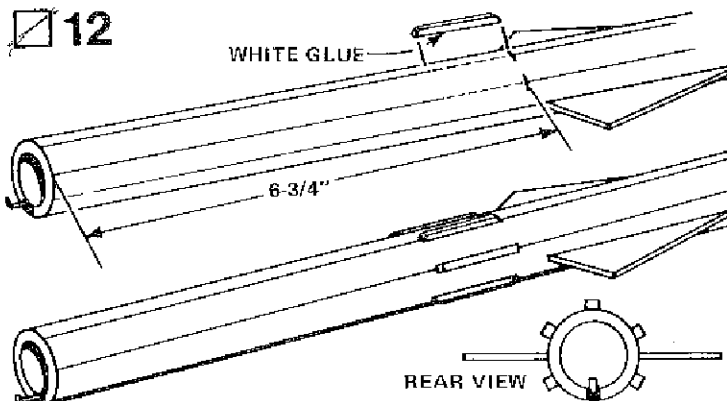
Smear glue around the inside of one end of the assembled body tubes to cover an area about 2" to 2-1/2" from the end of the tube. Use a stick or dowel as shown. Immediately insert the engine mount unit, being careful to position it so the engine hook will stick out of the end of the tube. Push engine mount in with one smooth motion until the ends of the tubes (and split ring) are even.



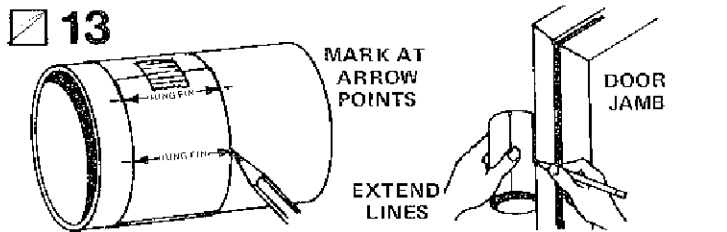
Cut out the body tube marking guide from the pattern sheet (part M). Wrap it around the rear of the body so the arrows labeled launch lug are in line with the engine hook. Mark the tube at each arrow point, front and rear. Draw a straight line connecting each matching front and rear marks by placing the body tube against the inside edge of a door frame as shown. Draw lines only up to the tube joint.



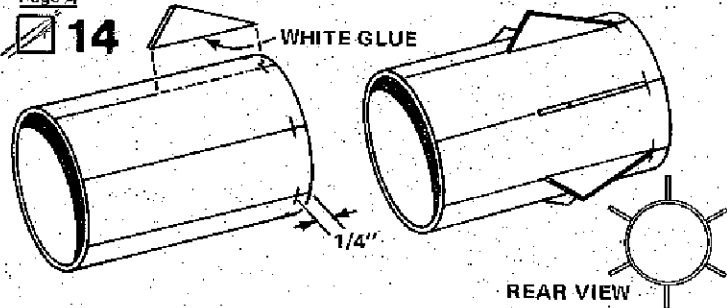
Measuring from the rear of the tube, place a mark at 7" on the two alignment lines labeled "forward fin". Rub a line of glue into the root edge of each forward fin and allow to dry, then apply another line of glue to the fin. Position the fin on the body tube on the fin alignment line so the rear of the fin is on the 7" mark and projects straight away from the tube. With the fin in an upright position, weight the body tube with a small book to hold tube in place. Allow glue to dry. Repeat same procedure for other fin.



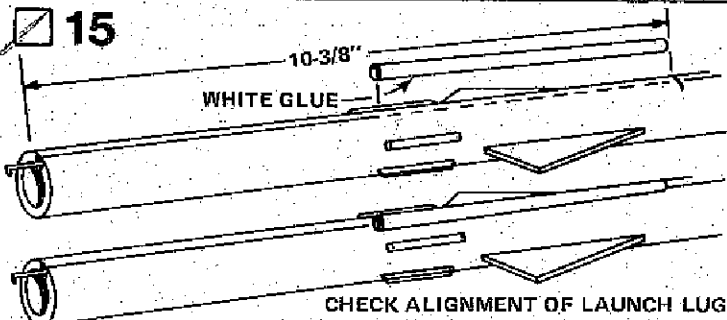
Measure 6-3/4" from the rear of the body tube and make a mark on each of the five 1/8" "wood strip alignment lines". Rub glue into each of the five 1-1/2" long wood strips and allow to dry. Then apply another line of glue to the wood strips and center each strip on one of the five center lines with its front on the 6-3/4" mark. Make sure each strip is centered on an alignment line.



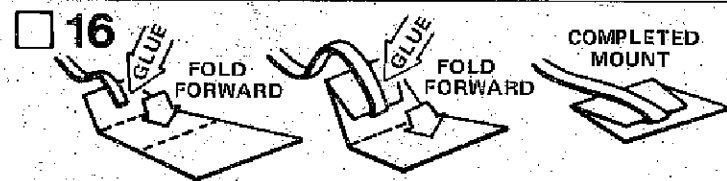
Cut out the stabilizer ring marking guide from the pattern sheet. Wrap it around the stabilizer ring (part O). Mark the ring at each arrow point, front and rear. Place the ring against the inside of a door frame as shown, and draw a straight line the length of the ring connecting each matching front and rear mark.



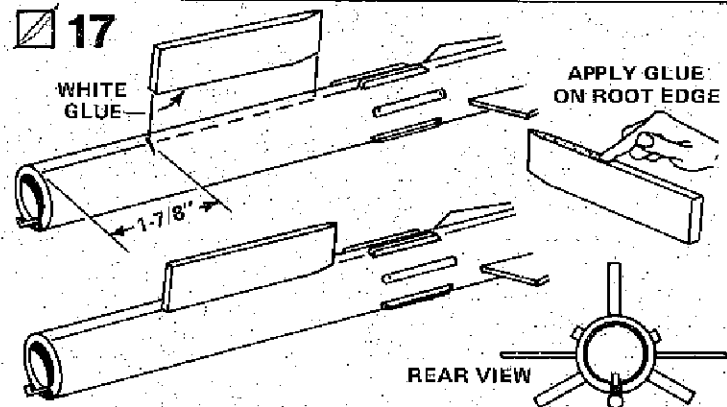
Place a mark 1/4" from one end of the ring at each of the six alignment lines drawn in Step 13 as shown. Find the six small triangular fins, rub glue over each root edge, and allow to dry. Then apply another line of glue on the root edge and center each fin on one of the alignment lines with the front tip of the fin at the 1/4" mark. Make sure each fin projects straight away from the stabilizer ring as shown. Set ring aside to dry.



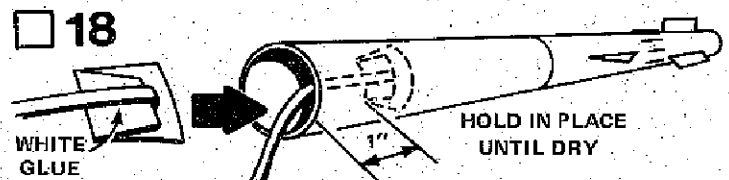
Place a mark 10-3/8" from the rear of the body tube on the launch lug alignment line. Smear glue along one edge of the launch lug (part N). Center launch lug on its alignment line with the front of the lug on the 10-3/8" mark. Make sure launch lug is straight and parallel with the edge of the body tube.



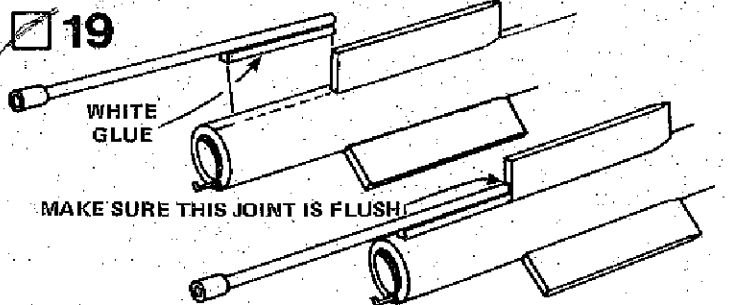
Cut out the shock cord mount from the pattern sheet. Pre-fold it on the dotted lines. Apply glue to section 1 and lay the shock cord (part P) into the glue. Fold over and apply glue to the back of the first section and the exposed part of section 2. Lay the shock cord as shown and fold over again. Clamp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



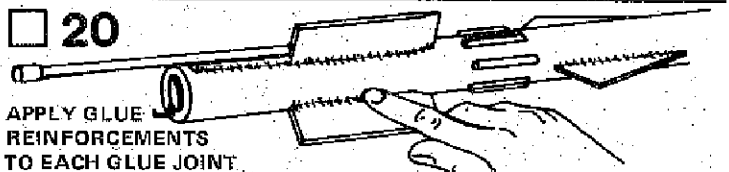
Locate the three stabilizer ring stand-offs from Step 7. Apply glue to root edges of each stand-off and allow to dry. Place a mark on each of the wood strip/stabilizer ring stand-off alignment lines 1-7/8" from the rear of the body tube. Apply another bead of glue to the stand-offs and center each one on its alignment line with the square rear of the stand-off on the 1-7/8" mark as shown. Make sure the stand-offs are centered on the body tube and project straight away from the tube.



Smear glue over the entire back side of the shock cord mount. Hold the mount as shown and press it into place inside front end of the rocket body tube. Make sure the front of the mount is at least 1" from the end of the tube. Hold the mount in place until the glue "sets".



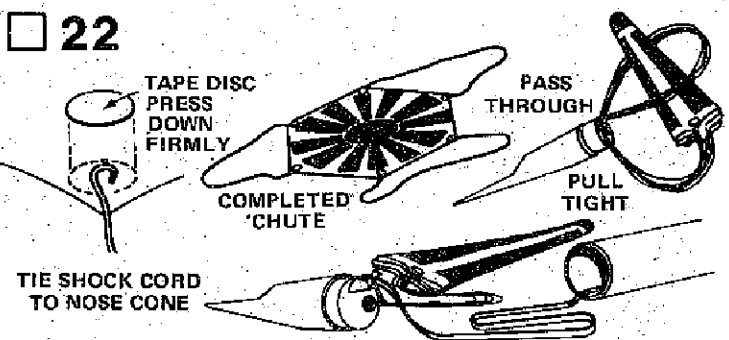
Apply glue to the wooden strip/dowel unit from Step 5 as shown. Glue this strip/dowel to the wood strip/stabilizer ring stand-off alignment line across from engine hook as shown. Make sure strip/dowel is positioned against the stabilizer ring stand-off and centered on the alignment line.



When all glue joints have dried, apply glue reinforcements to each glue joint. Hold model level and apply a line of glue to both sides of each joint. Smooth out the glue with your finger. Keep the model level until the glue dries.

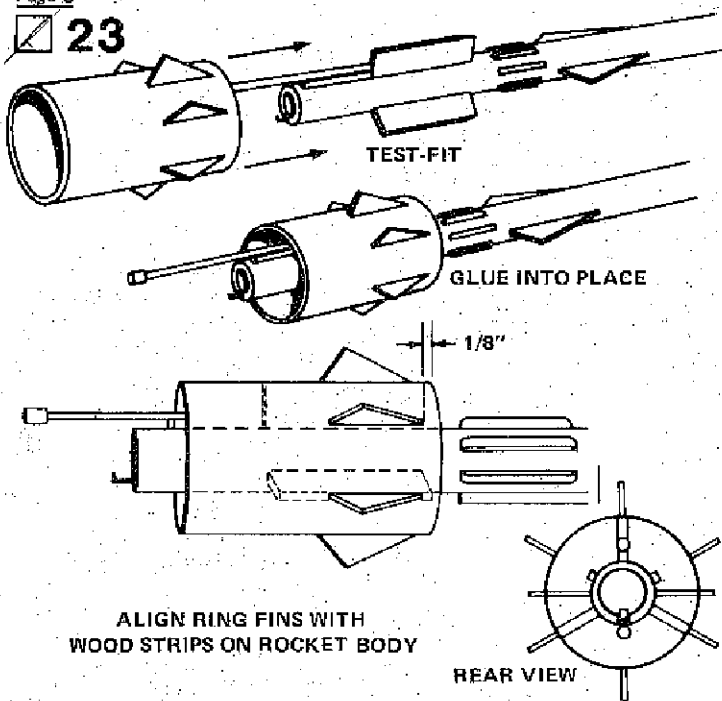


The plastic nose cone (part T) may have excess plastic ("flash") around the part line of the nose cone where the mold halves meet. Remove this flash from the nose cone with a modeling knife. Test-fit the nose cone in the body tube, if nose cone fits too tight, scrape nose cone shoulder section, at the part line for a better fit. Open the eyelet with extreme care.



Cut out the parachute (part Q) on its edge lines. Cut three 24" lengths of shroud line (part R). Attach line ends to the top (printed side) of the parachute with tape discs (part S) as shown. Pass the shroud line loops through the nose cone (part T) eyelet. Pass the parachute through the loop ends and pull the lines tight against the eyelet. Tie the free end of the shock cord to the eyelet with a double knot. Pack chute and shock cord into rocket body. Slide nose cone into place.

23



Test-fit stabilizer ring onto stabilizer ring stand-offs. If ring will not go on or goes out of shape when in place, carefully sand the edges of the stand-offs to get a good fit. Glue ring to stand-offs. Apply a line of glue to each edge of the stand-offs. Slide ring from the rear of the rocket onto the stand-offs as shown. Carefully align the fins on the stabilizer ring with wooden strips on rocket body. Slide ring front up 1/8" past the front of the ring supports as shown.

PAINTING AND DETAILING

24

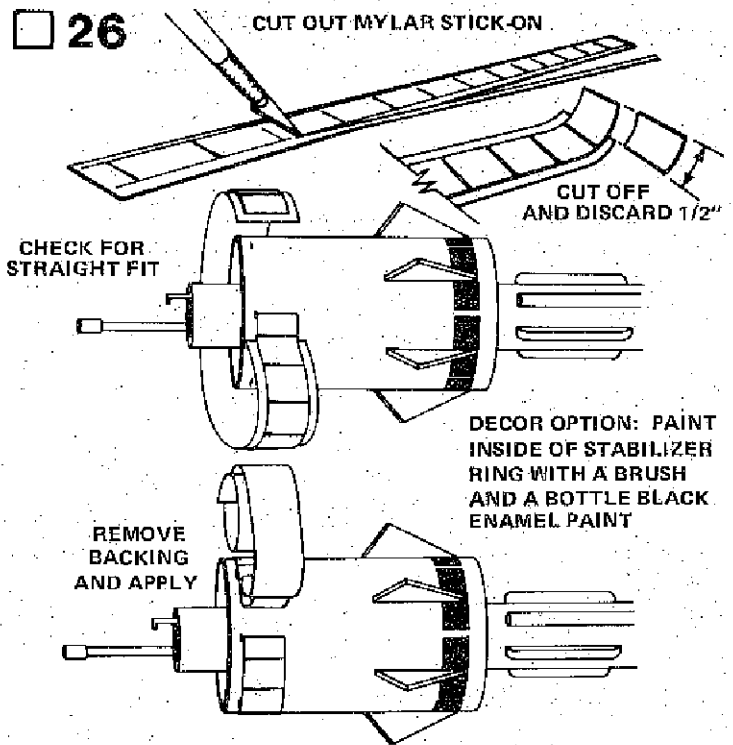
When all glue on the outside of the rocket is dry, paint the entire rocket gloss white. If any other color is used, it should be light so decals will show. Apply at least two light coats of spray paint. Allow the paint to dry thoroughly before proceeding to Step 25.

DECAL PLACEMENT

25 Apply decals (part U) using the following directions. Apply all decals in the locations shown in the illustrations.

1. Wash hands with soap and water to remove excess skin oil.
2. Wipe model with clean, damp cloth to remove oily fingerprints.
3. Select the particular decal you wish to apply. Cut only that decal from the sheet, trimming as closely as possible to the printed design. For designs with straight sides, use a ruler as a cutting guide. Place the remainder of the decal sheet to one side so water will not be accidentally dripped onto it.
4. Submerge the decal completely in a pan of lukewarm water until it will slide on the backing material. For small decals, this may take 15 to 20 seconds. Larger decals may require 30 to 40 seconds.
5. Remove decal from pan and slide decal from backing material and onto 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 the paint brush to apply a little water to the decal surface. The water will run under the decal so you can move it easily.
6. Let the decal set for 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 the 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

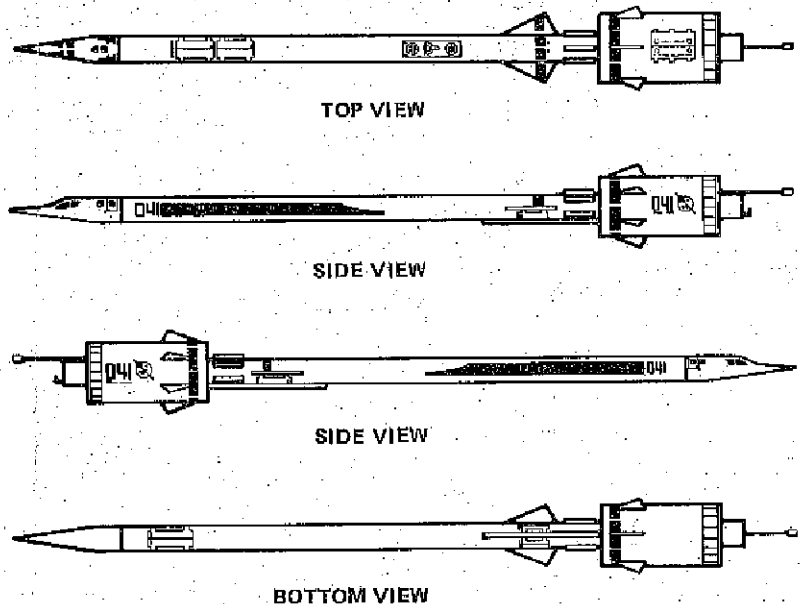
26



Apply mylar stick-on decal after water-transfer decals have dried. Make about six 1/8" marks around the end of the stabilizer ring as shown. Cut out mylar stick-on decal (part V) just outside the black outline. Peel up the decal end from the backing paper for a distance of 1/2". Cut off and discard the end of the backing paper as shown. Beginning on either side of the body tube, position end of decal on one of the 1/8" marks and start the decal on the bottom side of the rocket as shown. Press the exposed sticky end of the decal temporarily to the ring. Temporarily wrap the decal around the tube, checking to be sure that it will go on straight and not extend beyond the 1/8" marks. If it is crooked, pull it carefully off the tube and reposition it until it is straight. When straight, peel back the remainder of the backing paper and press the decal into place. Smooth out any bubbles or wrinkles as you go.

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 film into place.

7. When applying subsequent decals, be careful that you do not disturb those previously applied.



LAUNCHING COMPONENTS

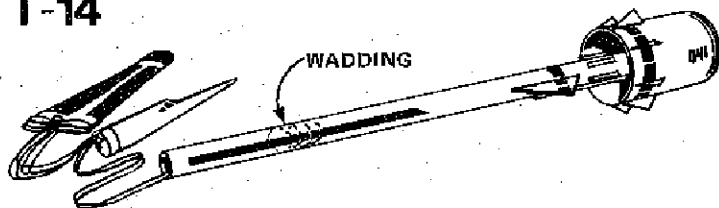
To launch your rocket you will need the following items:
 An Estes model rocket launch system
 Parachute recovery wadding (Estes Cat. No. 2274)
 Recommended engines: A8-3, B4-2, B4-4, B6-2, B6-4 (First Flight), B8-5, B14-5, C6-5 and C6-7.

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

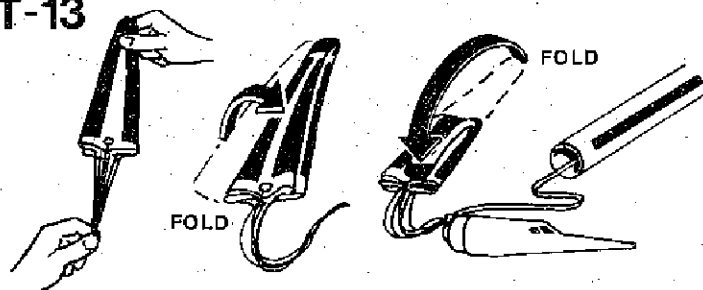
COUNTDOWN CHECKLIST

T-14



Pack 4 or 5 squares of recovery wadding into the body tube.

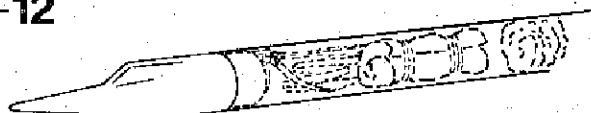
T-13



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.

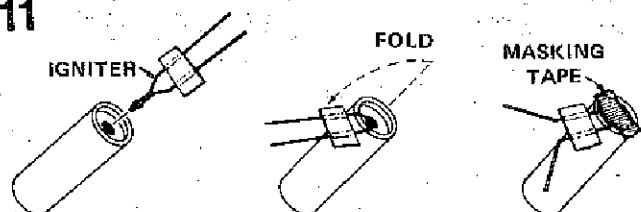
T-12



Pack parachute, shroud lines, and shock cord neatly into rocket body.

NOTE: 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 the shoulder of the nose cone.

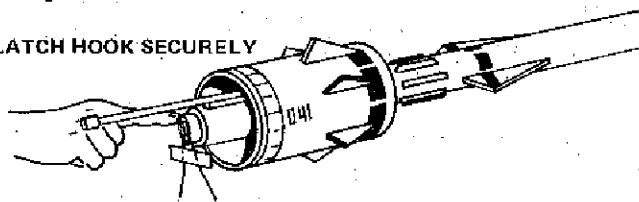
T-11



Select an engine and install an igniter as directed in the engine instructions. Use a B6-4 engine for your first flight.

T-10

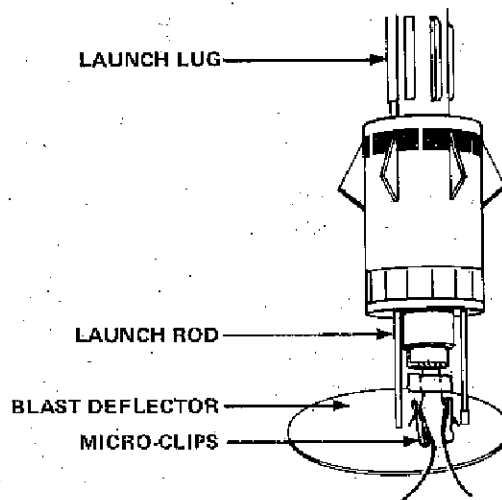
LATCH HOOK SECURELY



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 lug and place rocket on launch pad. Make sure the rocket slides freely on the 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!

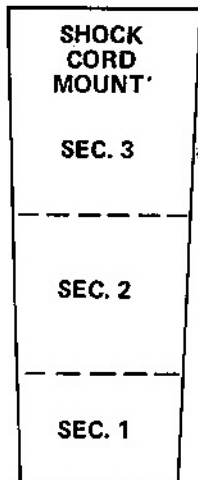
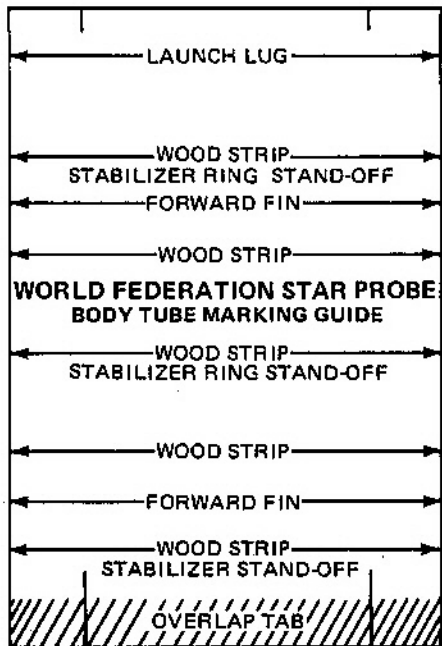
-5-4-3-2-1-LAUNCH!!

Repeat Countdown Checklist for each flight.

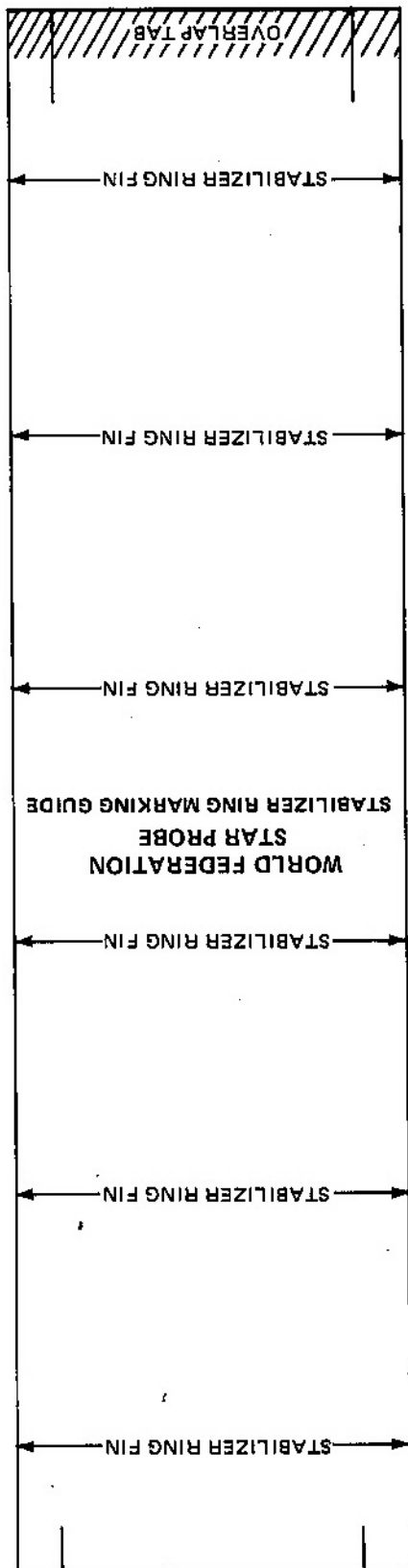
MISFIRE PROCEDURE

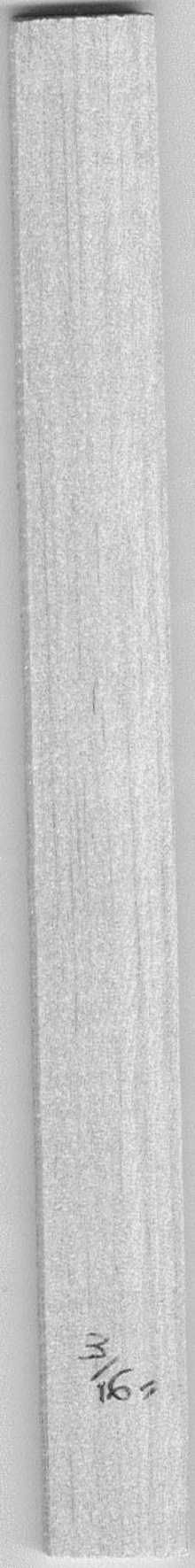
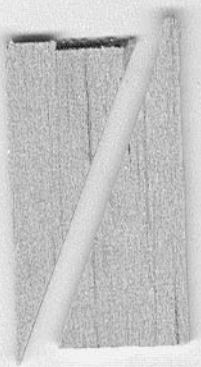
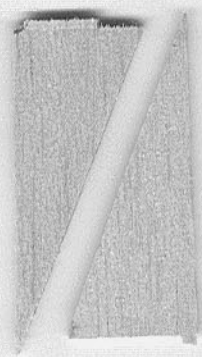
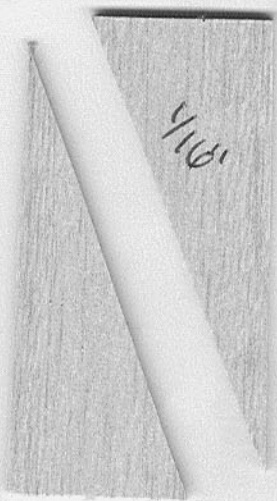
Occasionally the igniter will heat and burn into two pieces without igniting the engine. This is almost always caused by a failure to install it correctly. REMOVE SAFETY KEY from launch panel, remove the model, clean the igniter residue from the engine nozzle, and install a new igniter. Repeat the Countdown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

ESTES INDUSTRIES
PENROSE, CO 81240 USA

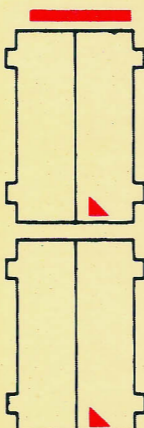
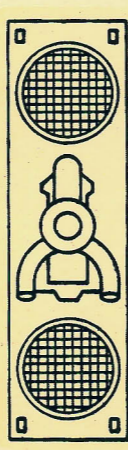
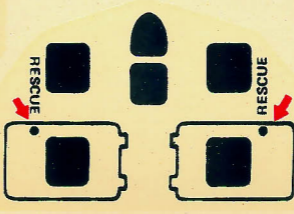
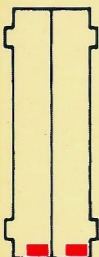


**WORLD FEDERATION STAR PROBE
PATTERN SHEET
PN 84208**





ESTES PN 37572



041



041

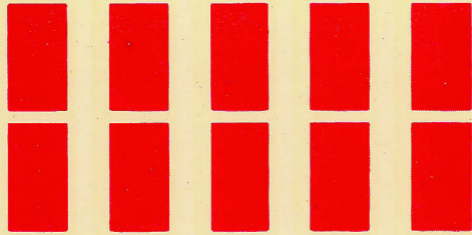


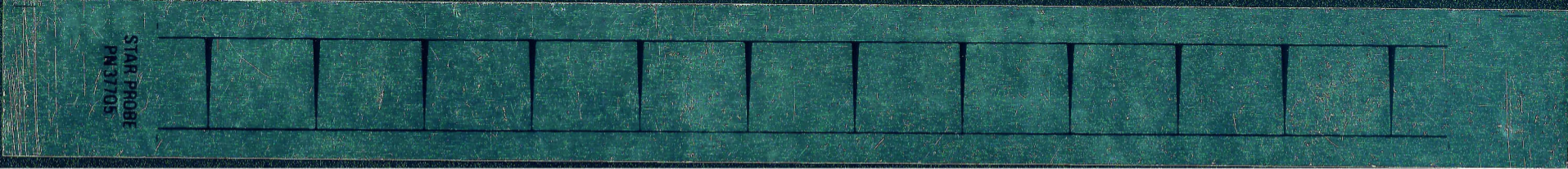
WORLD FEDERATION STAR PROBE

041

WORLD FEDERATION STAR PROBE

041





The True color of this wrap is silver foil. It appears green due to the difficulty in scanning foil decals