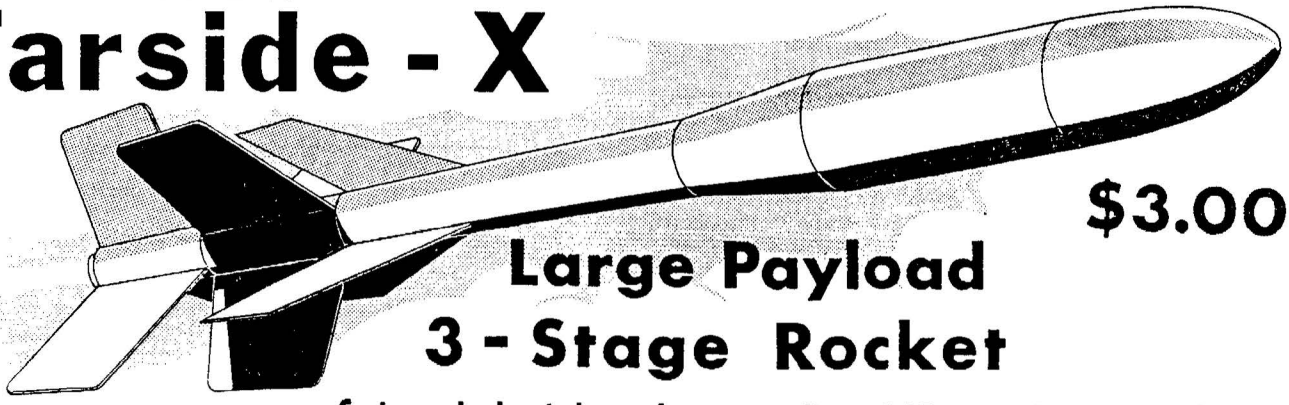

ESTES
ASTRON

Astron Farside - X



$3.00

Large Payload 3 - Stage Rocket

Estes Industries, Inc. Box 227 Penrose, Colo.

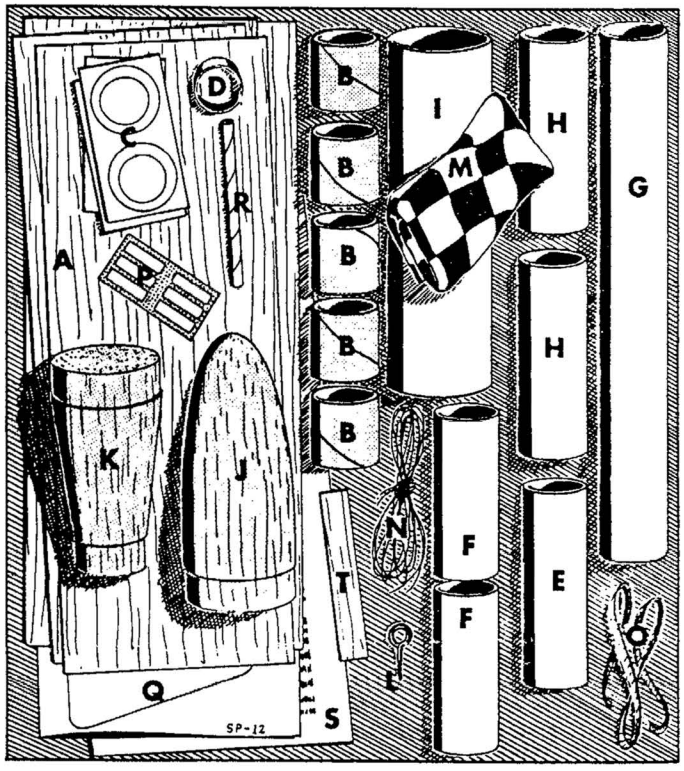
Materials and Tools

Your Astron Farside X rocket kit consists of the following parts as illustrated in the drawing at right:

(A) 4 sheets balsa fin stock--Part #BFS-20
(B) 5 stage couplers--Part #JT-50C
(C) 6 adapter rings--Part #RA-2050
(D) 1 engine block--Part #EB-20A
(E) 1 engine holder tube (2-3/4" long)--Part #BT-20J
(F) 2 engine holder tubes (2-1/4" long)--Part #BT-20M
(G) 1 body tube (7-1/2" long)--Part #BT-50H
(H) 2 booster body tubes (2-3/4" long)--Part #BT-50J
(I) 1 payload section tube (5" long)--Part #BT-60R
(J) 1 nose cone--Part #BNC-60L
(K) 1 balsa adapter--Part #TA-5060
(L) 1 screw eye--Part #SE-2
(M) 1 parachute--Part #PK-12A
(N) 72" shroud line cord--Part #SLT-12
(O) 1 shock cord--Part #SC-2B
(P) 6 tape strips--Part #TD-2
(Q) 1 pattern sheet--Part #SP-12
(R) 1 launching lug--Part #LL-1B
(S) 1 technical report--Part #TR-2
(T) 1 launching lug stand-off--Part #BFS-30E

In addition to the materials included with your kit you will also need the following tools and supplies:

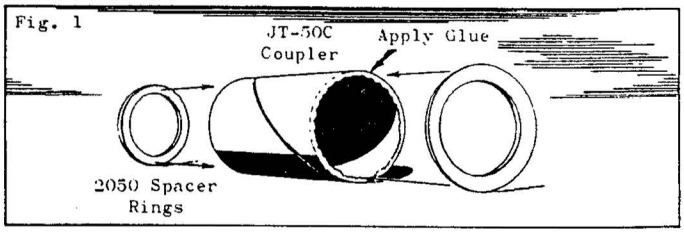
1. Modeling knife or single edge razor blade.
2. Scissors.
3. Extra strong white glue.
4. Ball point pen or pencil.
5. Fine and extra fine grit sandpaper.
6. Paint or dope.



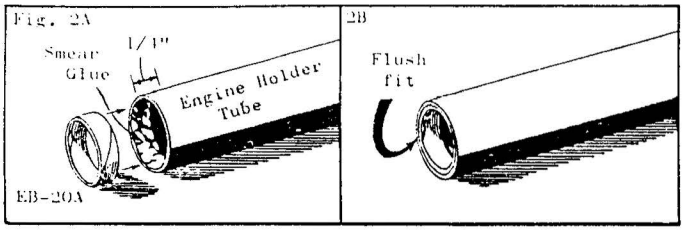
Check to be sure your kit is complete. Then read the entire instructions before beginning to assemble your rocket. Check off each step as you complete it.

ASSEMBLY INSTRUCTIONS

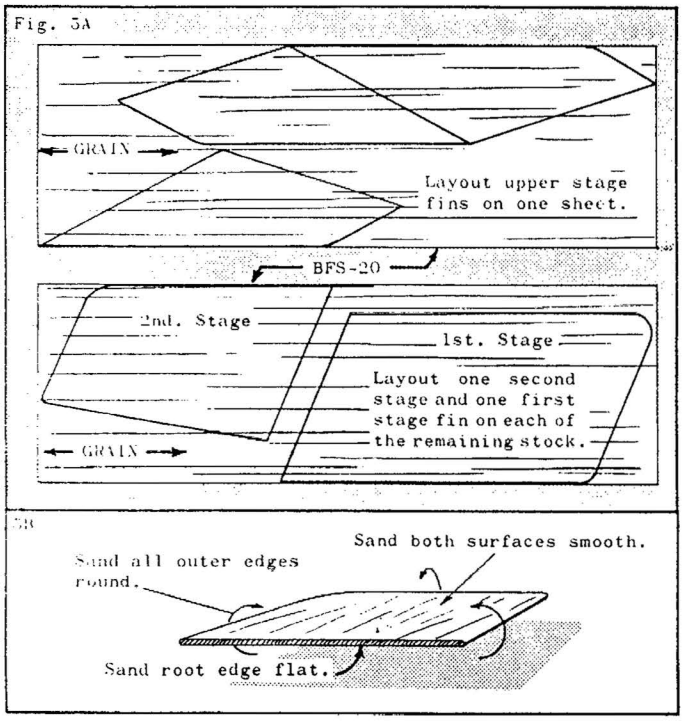
☐ (1) Glue one adapter ring to each end of three of the stage couplers. (Do not glue anything to the other two couplers yet.) Apply glue to the very end of the stage coupler as in fig. 1, then press the ring in place so it is exactly centered. Wipe off excess glue. Do this with all the rings to make 3 ring-coupler units. Let these dry completely before disturbing them.



☐ (2) Glue the engine block in one end of the 2-3/4" long engine holder tube (be sure you use the correct tube). To do this, apply glue to the last 1/4" of the inside of the tube, then slide the engine block into the tube until the end of the block is even with the end of the tube (see fig. 2). ⟶

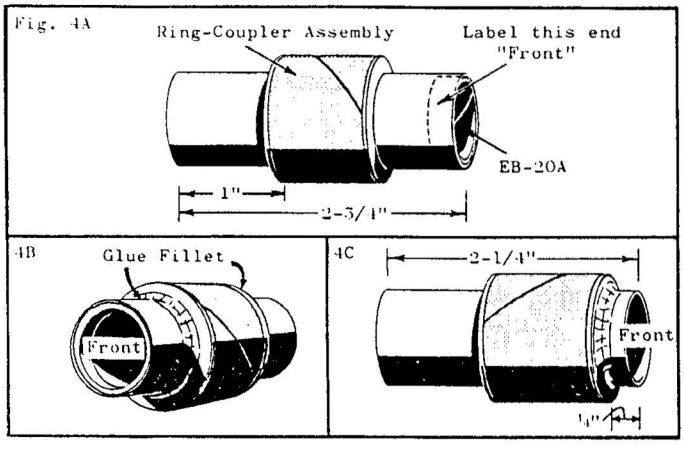


☐ (3) Cut out the fin patterns exactly on the edge lines. The three upper stage fins are cut from one sheet of balsa; one first stage fin and one second stage fin are cut from each of the other three sheets as shown in fig. 3. Position the fin pattern on the balsa sheet with the grain of the balsa matching the grain direction indicated on the pattern. Trace around it with a ball point pen, then repeat until three fins are marked for each stage.



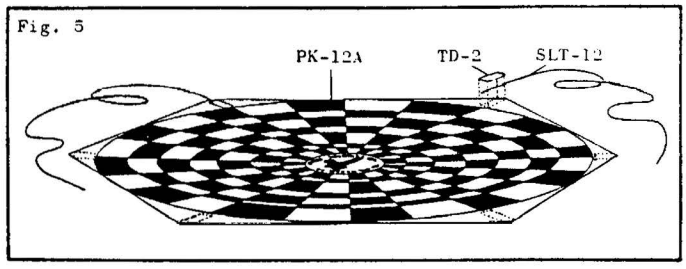
Cut out the fins with a sharp modeling knife or single edge razor blade. Sand the sides of the fins until smooth. Sand until smooth and round all edges except the root edge (the edge which will be attached to the body). Sand the root edge so it is square and flat.

☐ (4) Mark the 2-3/4" long engine holder tube 1" from the end that does not have the engine block. Position one of the coupler-ring units on the engine holder tube as shown in fig. 4A. The rear ring should be exactly on the mark. Spread glue around both ring-tube joints as in fig. 4B. Make sure the entire joint

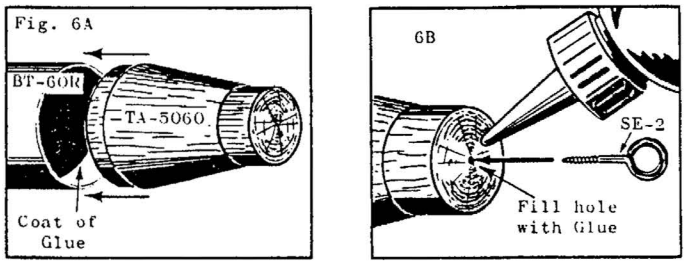


is well covered, wipe off any excess glue with your finger, and set the unit aside to dry completely. Next mark the 2-1/4" long engine holder tubes 1/4" from one end and glue the remaining two adapters in place as shown in fig. 4C. Set these aside to dry completely.

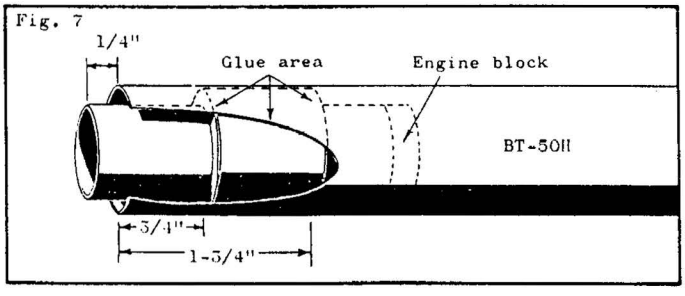
☐ (5) While waiting for the engine mount units to dry assemble the parachute. Cut out the 'chute on the lines indicated on the plastic. Cut six 12" lengths of shroud line cord and attach one shroud line to each point indicated on the 'chute with a tape strip as shown in fig. 5. Tie the free ends of the lines together.



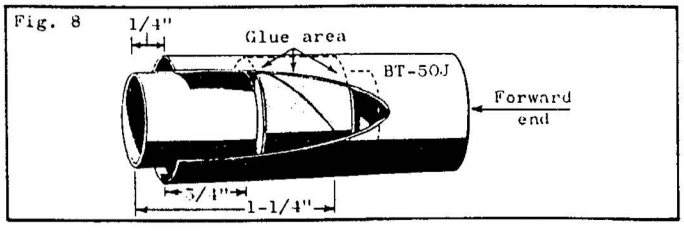
☐ (6) Glue the large end of the balsa adapter into the BT-60R payload section tube as in fig. 6A. Insert the screw eye into the base of the adapter, remove it, squirt glue into the hole as in fig. 6B, and replace the screw eye.



☐ (7) When the engine mount units have dried completely check their fit in the BT-50 body tubes. Sand the edges of the rings until they make a smooth slide fit inside the body tubes. Mark the top stage mount (the one with the longer engine holder tube) 1/4" from the end that does not have the engine block. Smear glue around the inside of the 7-1/2" long upper stage body tube to cover an area extending from 3/4" from the end to 1-3/4" from the end. Insert the engine mount unit, engine block end first, until the mark on the engine holder tube is exactly even with the end of the body tube. The completed assembly must be positioned as shown in fig. 7. Do not pause during this operation or the glue may set with the mount in the wrong position.

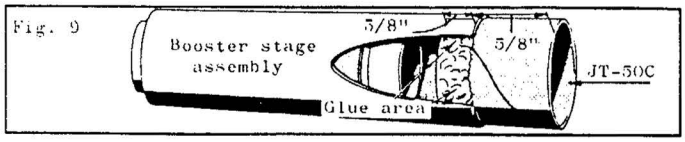


☐ (8) Mark the remaining two engine mounts 1/4" from their ends on the side that projects farthest from the adapter. Apply glue to the inside of one of the 2-3/4" long booster body tubes over an area 3/4" to 1-3/4" from one end and slide an engine mount unit into the tube. Position it as shown in fig. 8, with the

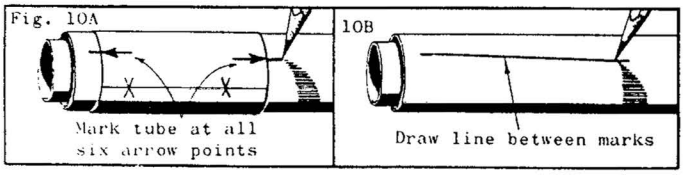


mark on the engine holder tube even with the end of the body. Repeat with the remaining engine mount and booster body tube. (Be especially careful to make these assemblies exactly as the illustrations show. The rocket will not operate properly if any errors are made in positioning.)

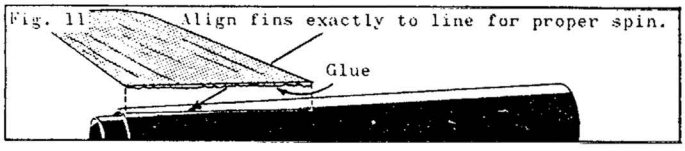
☐ (9) Glue a stage coupler to one of the booster stage body tubes, positioning it in the forward end of the tube exactly as shown in fig. 9. Repeat with the other booster stage.



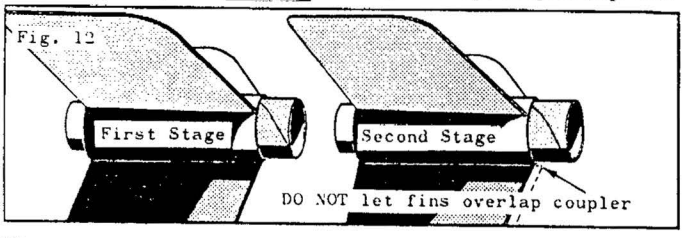
☐ (10) Cut out the body tube marking guide from the pattern sheet. Wrap it around the end of the main body tube at the end with the engine mount as shown. Mark the body tube at each of the six arrows, top and bottom. Draw a straight connecting line between each pair of marks as in fig. 10B. Repeat this with the tubes for the booster sections to get the proper fin positioning and spin angle for straighter flights.



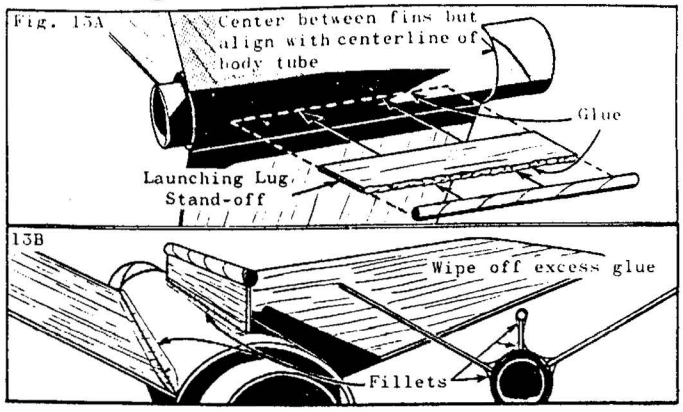
☐ (11) Apply glue to the root edge of one of the upper stage fins. Attach the fin to the upper stage body tube with the edge of the fin along one of the lines drawn in step 10. Align the fin so it projects straight away from the body tube. Following the same procedure, attach the other two upper stage fins. Do not set the rocket on its fins while the glue is wet.



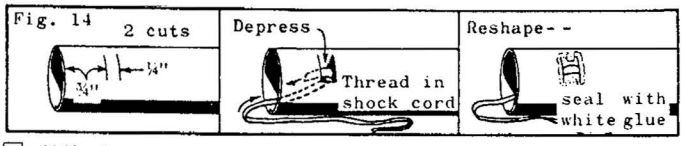
☐ (12) Repeat this operation with the fins for the two booster stages, being certain to glue only first stage fins to the one body section and only second stage fins to the other. When gluing the fins on be sure that the forward edge of the fin is even with the front of the body and does not overlap the stage coupler (fig. 12).



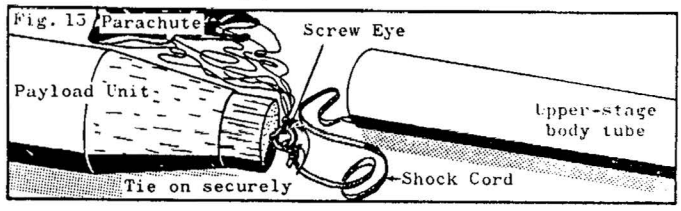
☐ (13) Using the launching lug stand-off pattern, cut and sand to shape the BFS-30E balsa stock. Glue this to the launching lug and attach to the second stage midway between two fins as shown in fig. 13A. Align until perfectly straight. Apply a glue fillet to the launching lug and to the fin-body joints on all stages as shown in fig. 13B. Wipe off all excess glue.



☐ (14) Cut two slits in the forward end of the upper stage body as shown in fig. 14. Cave in the section between the slits and hook the shock cord through the slits as shown. For an extra secure attachment, knot the inside end of the shock cord. Press the caved-in portion of the tube outward until it is round again and apply glue to the cut edges and to the shock cord to anchor it in place.

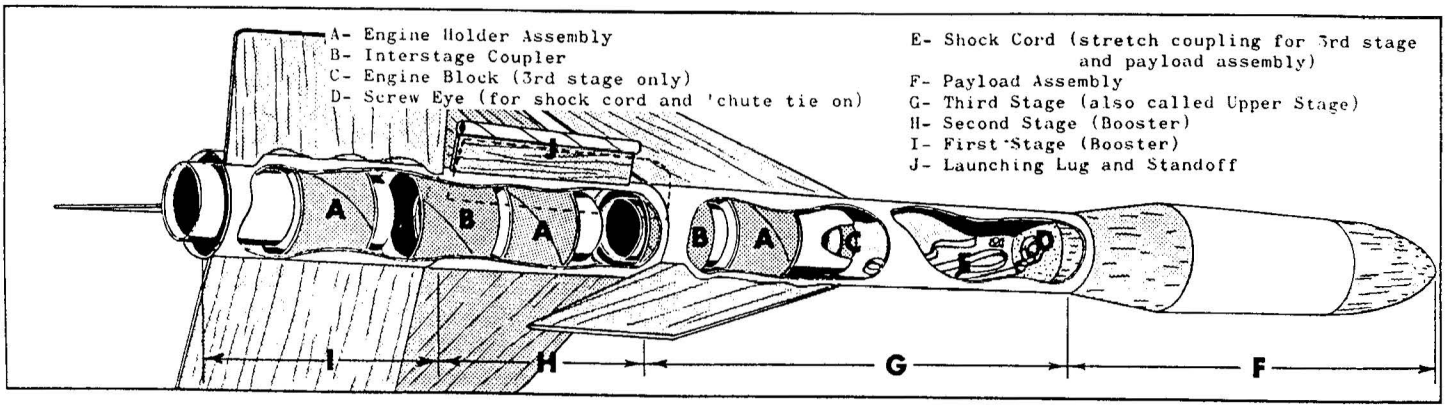


☐ (15) Connect the shock cord, parachute and screw eye as shown in fig. 15. Push the parachute into the body tube, packing the shroud lines and shock cord over it. Push the payload section into place in the upper stage body. Place the nose cone on the forward end of the payload section.



☐ (16) Before finishing let all the glue on the outside of the rocket dry so it is hard and clear. Your Astron Farside X may be finished with either butyrate dope or spray enamel in your favorite colors. For ease of painting spray enamel is recommended. First apply a coat of sanding sealer to all wood surfaces. Let it dry completely and then sand lightly. The mylar backed sanding material is best for this as it will fold and allow close sanding in tight places. Apply a second coat, sand and apply still another coat until all the pores in the balsa are filled and the surfaces look and feel smooth. When the sanding sealer is completely dry brush on the butyrate dope finishing coats or spray on the enamel finish. If you choose enamel give the entire model one or more coats of gloss white to obtain a neutral base for following colors.

NOTE: Spray enamel may be applied over completely dry dope, but never attempt to brush dope over enamel as it will make the enamel crinkle and blister.



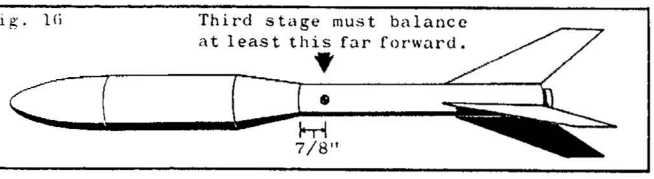
ENGINES

ENGINES: The Astron Farside X is designed for high altitude performance. The proper engine combination for use in the Farside will depend on desired altitude, weather conditions and weight of the payload. Always use an upper stage engine (one with a long delay such as the B. 8-6, A. 8-4, etc.) in the upper stage. Any size booster engine (one with no delay such as the B. 8-0, 1/2A. 8-0, etc.) may be used in the second stage. Use either a 1/4A. 8-0, 1/2A. 8-0 or B 3-0 engine in the first stage unless there is no wind, in which case other booster engines may be used. Even a gentle breeze is enough to make the Farside weathercock, particularly when a heavy payload is aboard. This is especially so when engines other than those listed are used in the first stage. For the first flights a combination of two 1/4A. 8-0 booster engines and a 1/4A. 8-4 upper stage engine is recommended to allow you to become familiar with the Farside's performance without running a risk of losing it.

BALANCE

BALANCE: The Farside X requires a payload for proper performance. The upper stage of the model must balance no more than 7/8" back from the front of the body tube as shown in fig. 16, or it will not be stable in flight. If the payload being flown is not heavy enough to bring the balance point forward to the right place it is necessary to add weights to the nose cone until the model does balance properly. Balance checks must always be made with the upper stage in flight condition--with payload, complete recovery system and a loaded engine aboard.

Fig. 16



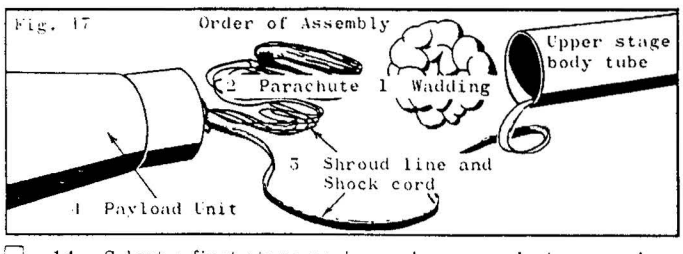
GENERAL INFORMATION: The maximum recommended payload weight for the Astron Farside X is 1-1/2 oz. with Series I first stage engines and 3 oz. with Series II first stage engines. The launching rod used with this model must be at least 36" long. A 48" rod will generally give better flights, and is recommended especially when Series I engines are used in the lower stage. Read Technical Report TR-2 carefully before flying your Astron Farside. Follow the countdown procedure given below when flying to eliminate mistakes and obtain top performance.

COUNTDOWN CHECKLIST

☐ -16- Pack flameproof recovery wadding into the upper stage body tube from the top. The wadding should rest down against the engine holder, extend forward in the tube for 1-1/2" to 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 it into a "spike" shape. Fold this spike in two 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.

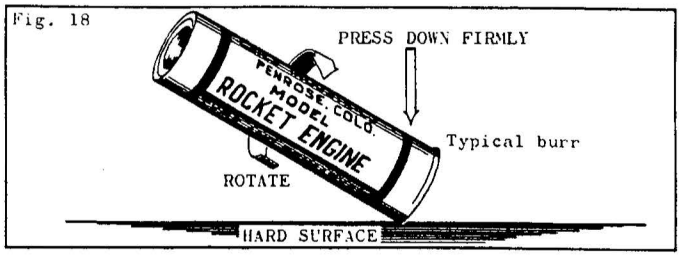
☐ -15- Select an upper stage engine and slide it into the rear of the upper stage. Place the payload in the payload section and check to see where the stage balances. Add weight as needed to bring the balance point forward to 7/8" behind the front of the body tube. Remove the engine.

Fig. 17



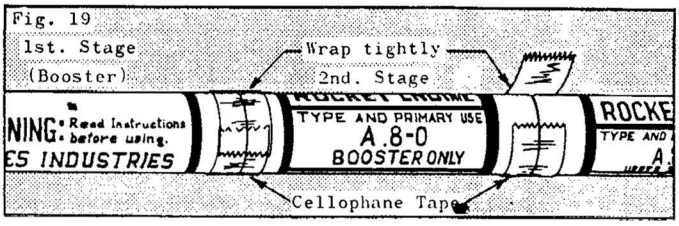
☐ -14- Select a first stage engine and a second stage engine. Remove any burrs from the ends of the three engines by holding them against a smooth surface and turning as in fig. 18.

Fig. 18



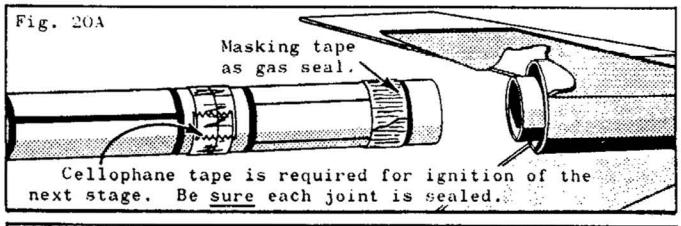
☐ -13- Position the engines with the nozzle of the upper stage engine against the top end of the second stage engine and wrap a layer of cellophane tape tightly around the joint as shown in fig. 19. Check to be sure the engines are in their proper relative positions. Place the top end of the first stage engine against the nozzle of the second stage engine and wrap a layer of cellophane tape tightly around this joint. Check again to be sure the engines are in their proper positions.

Fig. 19

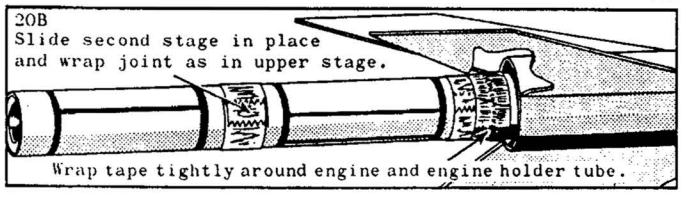


☐ -12- Wrap masking tape around the top of the upper stage engine as in fig. 20A. This engine should make a tight friction fit in the upper stage engine holder. Insert the upper stage end of the engine unit into the upper stage and finish securing it in place by wrapping a layer of masking tape around the end of the engine holder tube and the end of the engine as shown in fig. 20B. Press the tape tight against the engine.

Fig. 20A



20B



☐ -11- Slide the second stage into position on the engine unit from the bottom, positioning it so the stage coupler fits all the way into the upper stage and the launching lug fits into a clear area. Secure the second stage in place by wrapping a layer of masking tape around the end of the engine holder tube and the engine as in fig. 20B.

☐ -10- Slide the first stage into place on the engine unit from the bottom, positioning it so the stage coupler fits all the way into the second stage and the fins on the first stage do not interfere with the launching lug. Secure the first stage in place by wrapping a layer of masking tape around the end of the engine holder tube and the engine as in fig. 20B.

☐ -9- Form an electrical igniter and insert it into the first stage engine nozzle as specified in the instructions which came with the engine.

☐ -8- Place the rocket on the launcher, clean and attach the micro-clips.

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

☐ -6- Arm the launch panel.

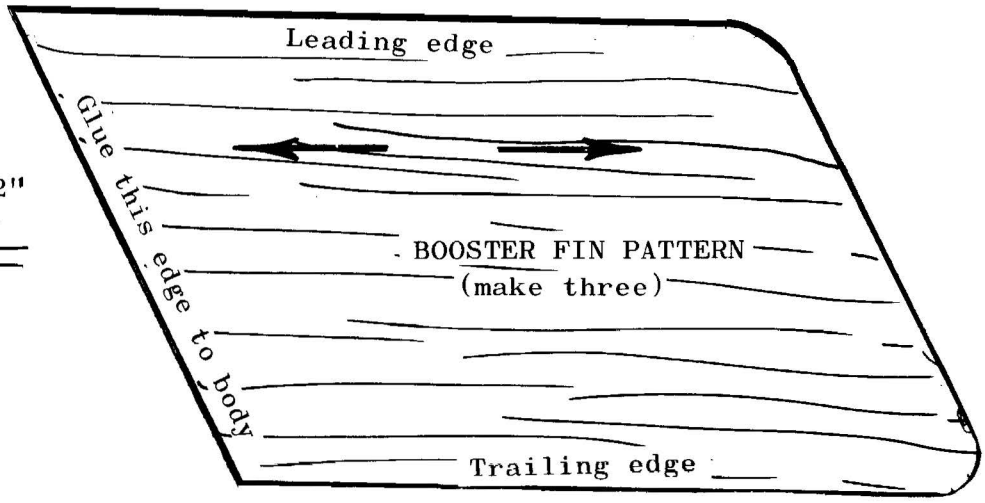
☐ -5- ☐ -4- ☐ -3- ☐ -2- ☐ -1- LAUNCH!

Cross-section of stand-off

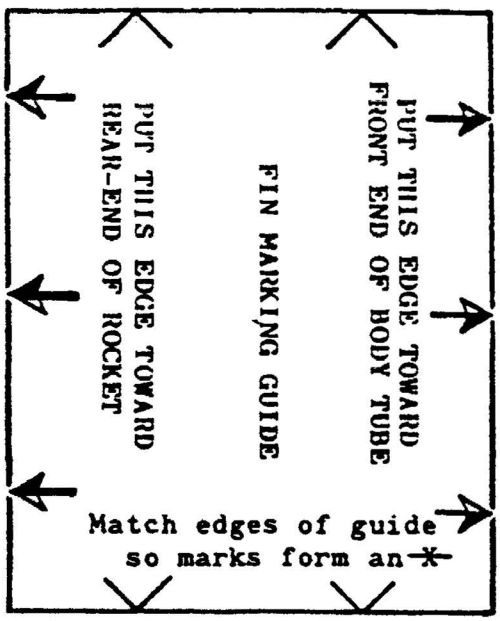
3/32"

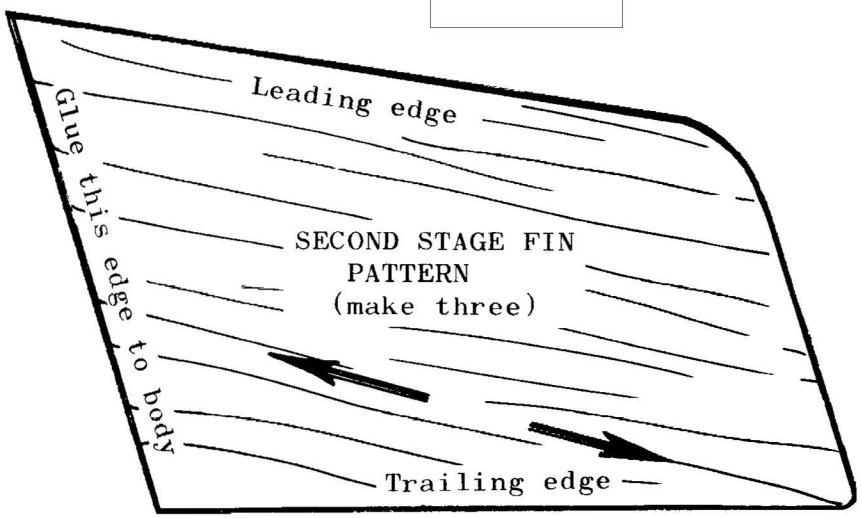
GRAIN

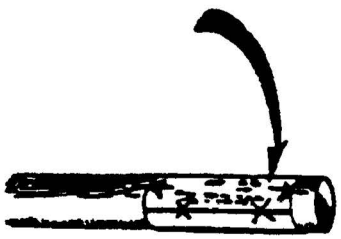
Launching lug stand off
(Used only on FARSIDE "X")



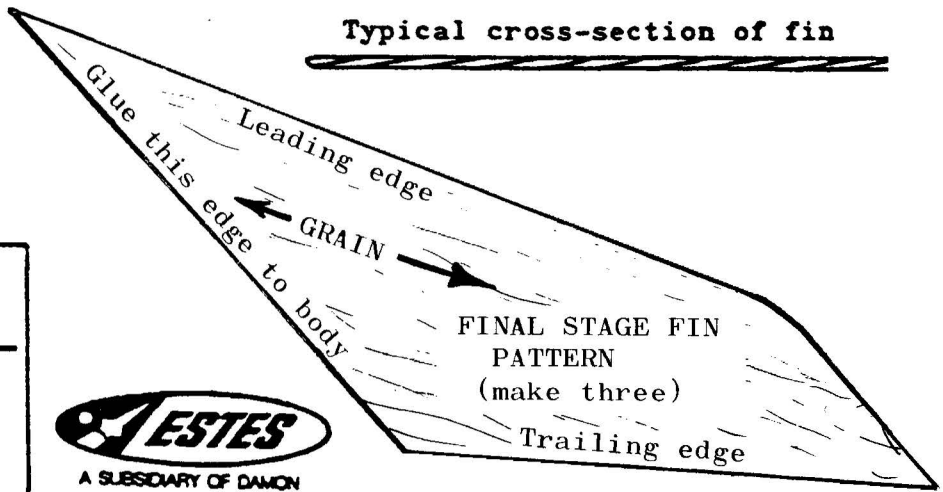
1 Inch







Typical cross-section of fin



FIN PATTERN SHEET FOR ASTRON FARSIDE & FARSIDE "X"

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ESTES
A SUBSIDIARY OF DAMON

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Images by Gerry Fortin