A Shot from Out of Left Field - The Astron Ranger

By R. A. Stott, NAR - 36510

How many of you folks out there in rocketdom have ever had the urge to place more than one engine in the base of one of your more lethargic rockets, just to see if it might just get the old thing off the ground a little faster? Or a little higher?

Anyone own a BIG BERTHA?

Unless you've been into rocketry for over fifteen years, or into model rocket history, you might not realize that the classic old K-23 BIG BERTHA kit by Estes Industries has its roots in an older model, the K-6 Astron RANGER (not to be confused with the current #1955 RANGER). Discontinued in 1971, the A-RANGER was a three engine cluster/payloader rocket. It looked like the BERTHA, was the same length as the BERTHA, but had twice the kick of the BERTHA. It had a huge payload section, requiring two parachutes (one for the body section, one for the payload section). Debuting in 1962, the A-RANGER appeared three years before BERTHA.

For those of you who are interested in trying your hand at clustering, you probably looked at your L O C or North Coast Rocketry catalogs to find they were clustering 'E' and 'F' class engines. They're great to watch take off, but for a beginner in clustering, it might be nice to be able to retrieve the rocket. The old A-RANGER was, and is still a good rocket to start clustering with. The following plans will show what kitbashing is needed to transform an average bag of BIG BERTHA parts into Estes first high power payloader rocket, the K-6 Astron RANGER.

Parts needed

(1) One BIG BERTHA Kit
(2) Two standard engine hooks. The third hook will come from the kit.
(3) One 2 3/4" section of BT-20 for engine mount. The other two engine tubes will be cut from the BERTHA's engine tube.
(4) JT-60 Stage Coupler
(5) Thick Balsa. Should be large enough to cover the JT-60's open end and about 1/2" thick.
(6) One Large Screw Eye
(7) One PK-18 Parachute kit.

If you wish to paint your kit in a catalog prototype scheme, the 1971 kit requires Gloss Red, Gloss Black, Gloss White, and Gloss Yellow.

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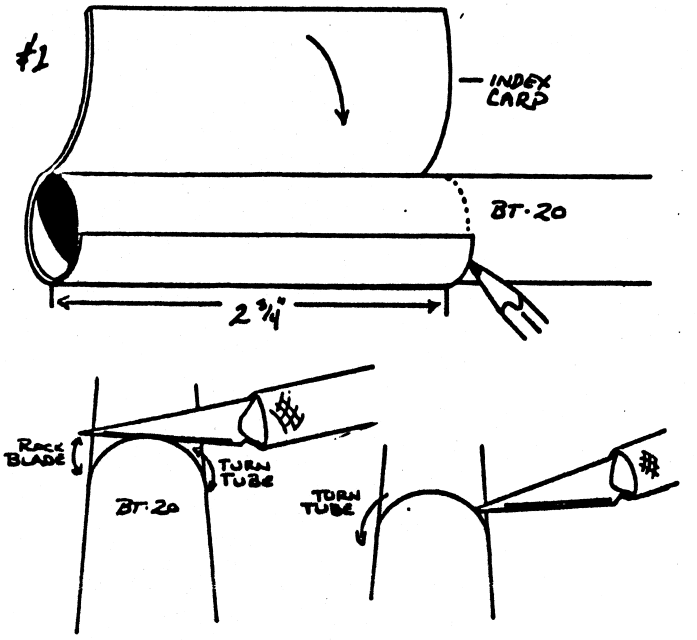
Reference

Flying Rocket Kits 1958 - 1988 A Guide for Spacemodelers
by Richard M. Jungclas

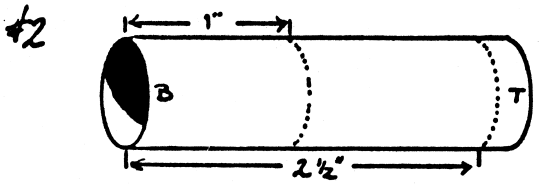
Estes Model Rocketry Catalog #712

ENGINE ASSEMBLY

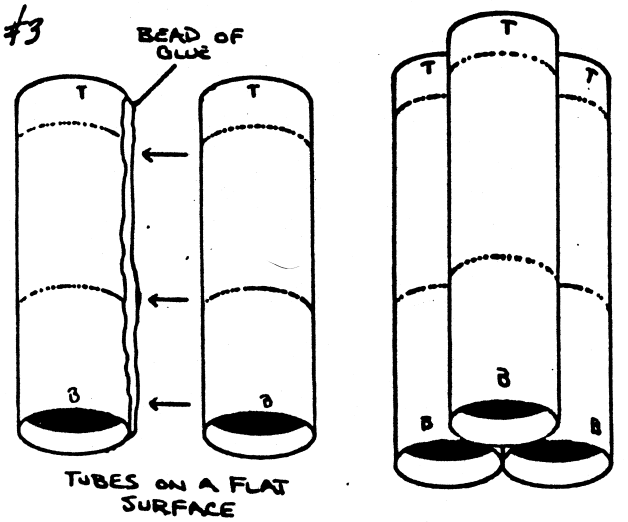
1.( ) You will need three BT-20 tubes at 2 3/4" each. Take the BT-20 tube from the BERTHA kit and mark it from either end at 2 3/4". This will give you a clean end on each engine tube. Wrap the tube with an index card at one of the marks and draw a line around it. Move the card to the next mark and repeat. Insert a dummy engine or a JT-20 stage coupler inside the tube to back up the marks for cutting. Take a hobby knife and scribe along the marks by rocking the blade back and forth over them. Once you have a solid line, place the point of the knife on the line and rotate the tube. Excessive pressure on the knife should not be needed. Separate the tubes.



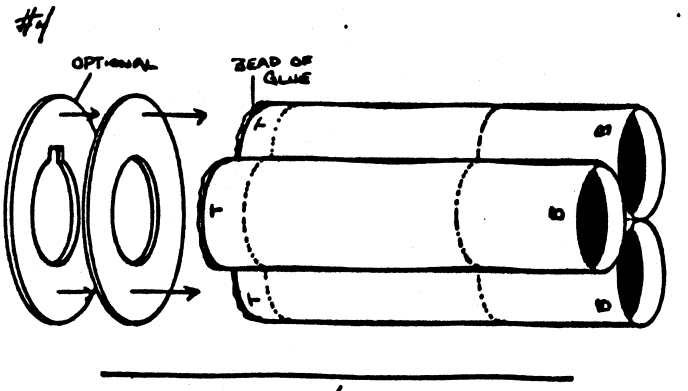
2.( ) Mark the engine tubes at 1" and 2 1/2". Using the index card, continue the marks around the tubes. Mark the tubes with a 'T' and 'B' as shown.



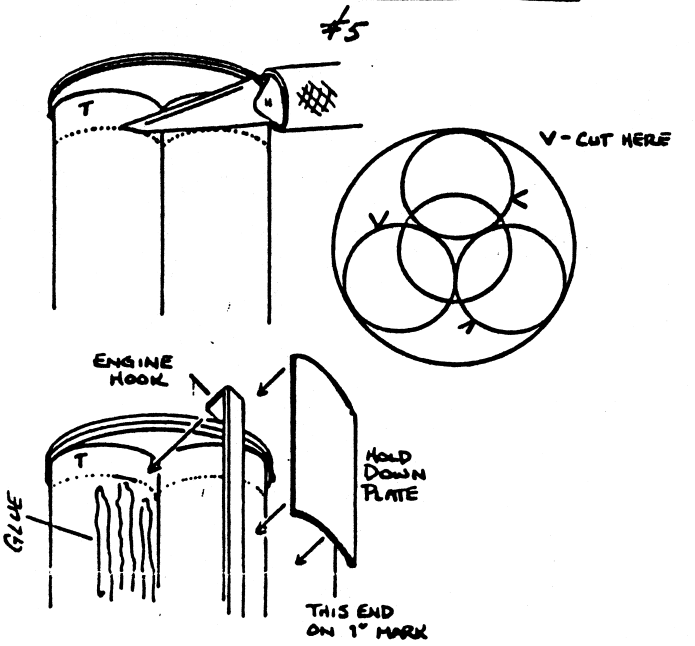
3.( ) Glue the three engine tubes together, making sure that the ends are even and that the tubes are parallel to each other.



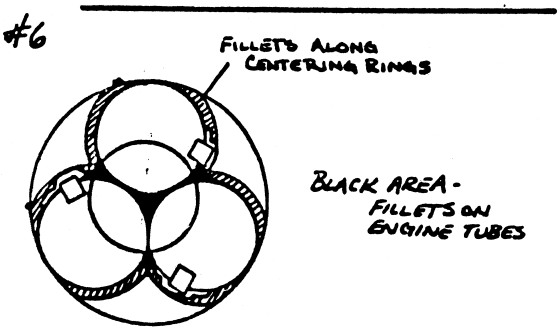
4.( ) Remove the centering rings from their card. Glue the ring without the hook slot to the 'T' end of the engine tubes. Normally the other ring would not have been used, but you may want to glue it to the back of the first ring for added reinforcement.



5.( ) Cut a 1/8" slot at the 2 1/2" mark on each tube as shown. Insert the engine hooks into the slots. Cut out three hold down plates from some bond paper. They should measure 1 1/4" x 1/2". Run a bead of glue along the engine hook between the 1" mark back to the 2 1/2" mark. Place the hold down strap over the hooks. Use a sharp point or your fingernail to form the strap around the hook.

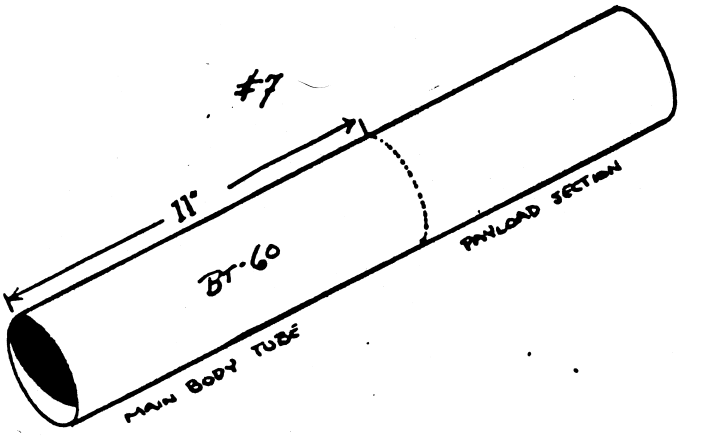


6.( ) Apply glue fillets between the tubes and where they mount to the centering ring. Inject glue down the center gap between the tubes to prevent ejection gases from going out the bottom of the rocket instead of the top. Set aside to dry.

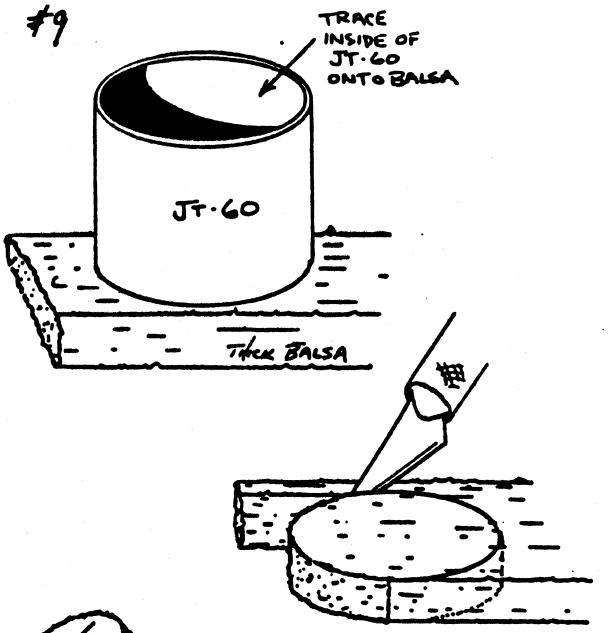


At this point, you could continue to build a BIG BERTHA with an engine identity crisis, or, as we are, continue making the Astron RANGER.

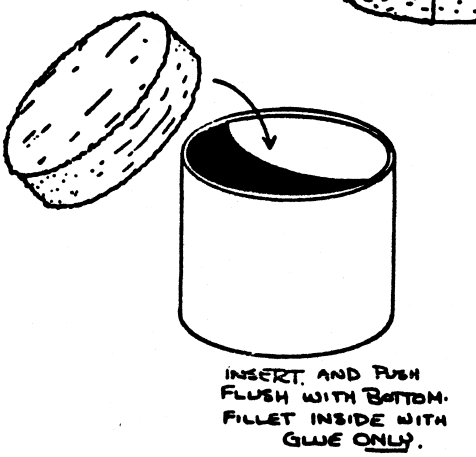
7.( ) Take the BT-60 tube and mark it at 11" from one end. Wrap the index card around it at the mark and continue the line around.



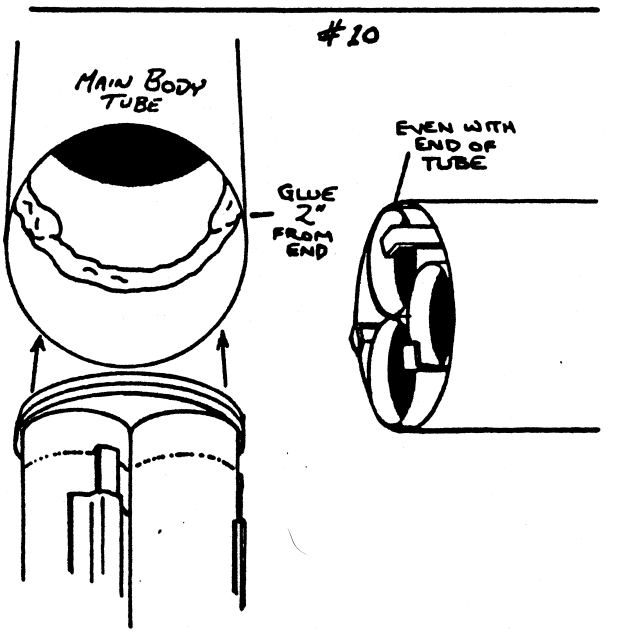
8.( ) Using the JT-60 as a back up for the mark, cut the tube as you did with the BT-20 in step #1. DO NOT CUT THROUGH THE JT-60. The long tube is the main body tube. The short will be the payload.



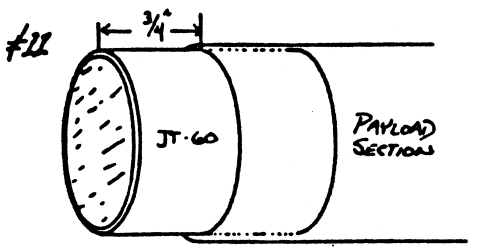
9.( ) Place the JT-60 over the thick balsa. Trace the inside of the JT-60 onto the balsa. Cut out the tracing. This will be the bulkhead. Glue it flush to one end of the JT-60. Fillet the inside to make it air tight. Set aside to dry.



10.( ) Apply a heavy bead of glue inside one end of the main body tube. Insert the engine assembly into the body until the end of the tubes are even with the bottom of the body. Set aside to dry.



11.( ) Mark the JT-60 bulkhead 3/4" from an end. Making sure that the balsa end is down, glue the bulkhead into the payload tube to the mark.



12.( ) Using the BERTHA's marking guide, mark off where the fins and launch lug go on the main body tube. Rather than placing the launch lug mark on an engine hook, place it in the center of one of the engine tubes. Extend the lines up the tube.

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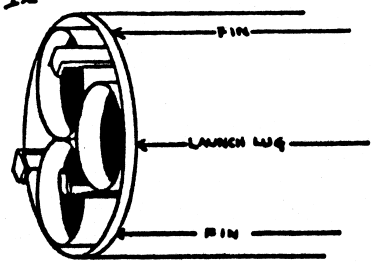
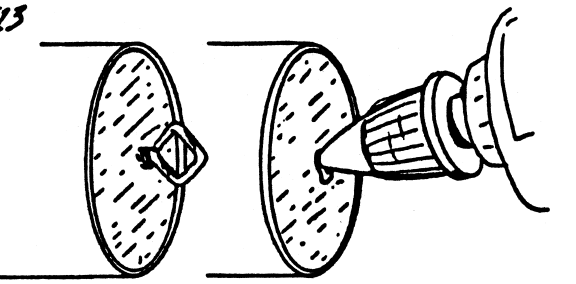


13.( ) Drive the screw eye into the center of the bulkhead. Remove the screw eye and inject glue into the hole. Reinsert the screw eye. The payload section is complete.

#13



The rest of the A-RANGER's plans follow the BERTHA's.

14.( ) Remove the fins from the pattern sheet, sand smooth and make sure that they are square to one another. Rub a small amount of glue into the root edge of the fins and allow to dry. This will allow a better bonding between tube and fin. Lightly sand off roughness on root edge, apply a bead of glue and position on the alignment line on the body tube. Repeat for each fin.

15.( ) Glue the launch lug onto the main body tube on its alignment line even with the top of the fins.

16.( ) Cut out the shock cord mount and install as shown.

17.( ) Fillet the fins and launch lug.

18.( ) Sand and seal the fins.

19.( ) Build and install the parachutes. Only one is needed for flights without any payload loads. Snap swivels can be used to ease the trouble of tying the shock cord on and off between flights.

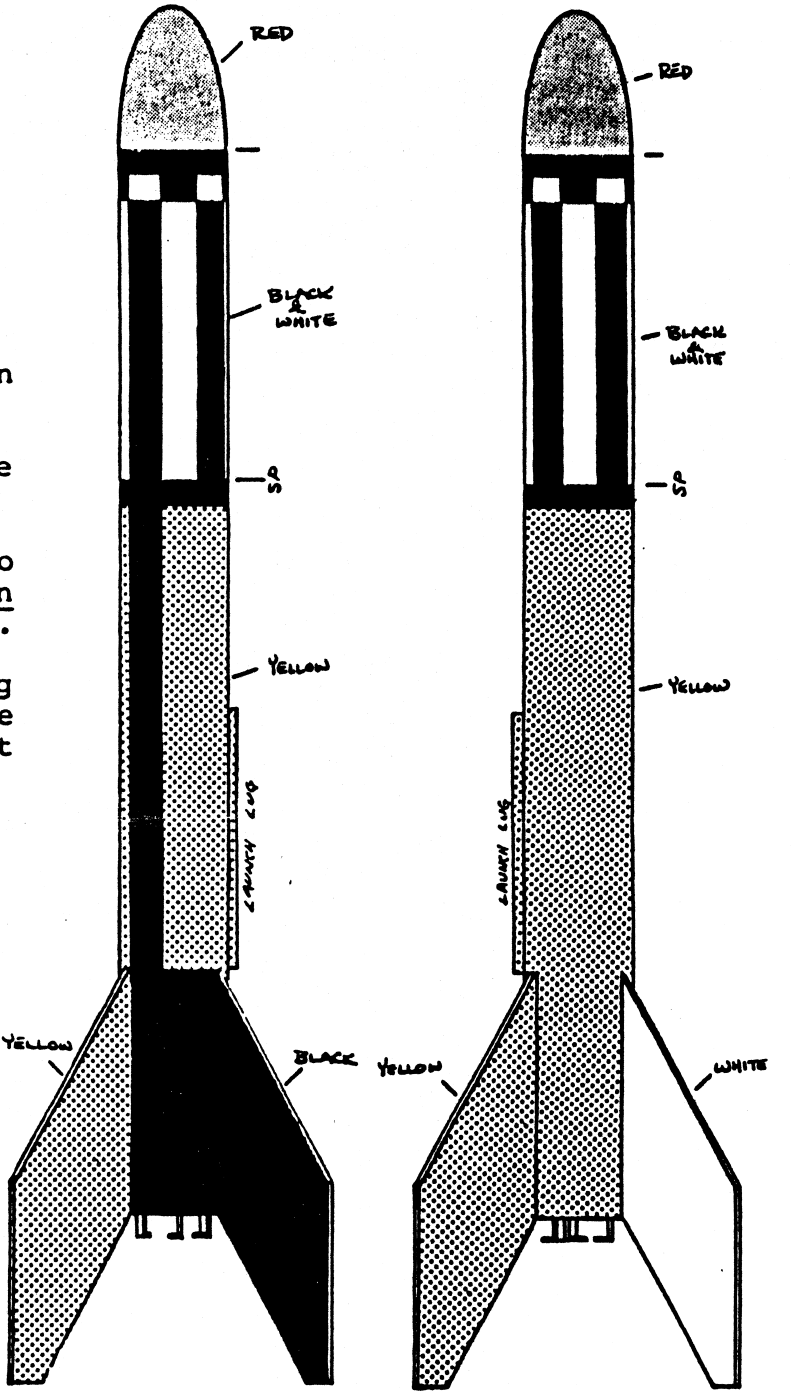
Now, if you want to paint your A-RANGER in catalog prototype colors, the following steps should be followed. 'Hope you've got lots of masking tape!

A.( ) Base coat the rocket in Gloss White.

B.( ) Paint the nose cone Gloss Red.

C.( ) Mask out one fin to remain white. Paint the Main Body Tube only Gloss Yellow.

D.( ) Mask out all remaining body parts that will NOT be painted Gloss Black. Paint the rest Gloss Black.



The roll pattern on the Payload Section might be easier to do if you're skilled with India Ink or a whacked out contraption called a Technical Pen. I have found that Pelikan #50 Black Ink works best, but must be handled gingerly as it has a tendency of chipping. All in all, I have used it on many of my other models, but not on the A-Ranger. Onwards and Upwards!