

## STATIC PROBE ASSEMBLY INSTRUCTIONS

By: James E Pierson

1. Begin with the 18mm engine mount and assemble as per direction. Then set it aside to dry.
2. Starting with a 12" minimum length BT-55 section cut out the BT marking guide on the pattern sheet. Be as accurate as possible and mark the 6 increments out on the BT-55 tube. Next mark the tube in a doorway the full length of the tube. Next mark the lines in order as follows: Fin 1, Dowel 1, Fin 2, Dowel 2, Fin 3, and Dowel 3. Mark all three sections before cutting to length.
3. Cut the BT-5 and BT-55 sections specified in the parts list to length.
4. Cut out fin patterns from the fin pattern sheet. Sand the balsa stock, then make the fins, in the quantities required, using the 3/32" balsa stock. Stack up all like fins and sand edges to equal sizes.
  - \*6 upper fins
  - \*3 lower fins
  - \*3 double fin spacers
5. Fin pre-assembly can be done against a thick ruler. Note root edges and align fins with Fin Side View Drawing on Pattern Sheet. Use a scrap piece of 3/32" balsa under lower bottom fin to keep fin flat and allow to dry.
6. Test fit and then glue in assembled engine mount into one end of the 8" BT-55 tube. This end now becomes the bottom/rear of the rocket. Fillet weld engine mount to BT where possible.
7. Cut out the two Ejection Bulkheads out of cereal box cardstock. Pre-fit bulkheads onto the top of the BT-55 coupler and then glue in place. Set aside to dry. Next fillet weld the inside of the coupler to the bulkhead. Set aside to dry.
8. Test fit the bulkhead end of the coupler into the 2 1/4" BT-55 and sand to fit as necessary. Next glue the bulkhead end of the coupler half way into one end of the BT-55 tube. This end now becomes the bottom of the middle section. Fillet weld the bulkhead to the BT-55 tube on both sides of the bulkhead. Set aside to dry.
9. Next cut the three BT-5 sections. Then glue two sections side by side, with ends even, and set aside to dry. Next glue the third section onto the other two sections previously glued. Set aside to dry. Do Not glue the NC-5 nose cones into the BT-5 tubes as this time. Refer to steps 17, 18, and 19 for this later.

10. Cut out the three Bt-5 spacers out of the 1/16" balsa material. Glue the spacers onto the outer most sides of each of the three BT-5 sections. Refer to the Upper Section End View drawing on the pattern sheet for placement. Also note that the spacers are 1/4" smaller in length than the BT-5 sections. Allow 1/8" spacing on each end to hide the end of the spacers. Set aside to dry.
11. Cut the three 3/16" dowels to length. Choosing one dowel and gather the middle BT section, and the upper BT-55 section by itself.
  - A. Find the line marked D1 on the middle section of BT-55. The dowel will be glued on the inside of the BT-55 tube centered on this line and the end of the dowel touching the bulkhead.
  - B. Next find the line marked D1 on the upper section of BT-55. The dowel will be glued on the inside of this BT-55 tube centered on this line and the end of the dowel even with the end of the BT-55 tube.
  - C. Next spread some glue on the inside of both tubes on the D1 lines and put dowel in place. Move this section to a flat 90 degree corner area (such as a countertop and back splash area) and align dowel parallel to back splash making sure the Bt-55 section are flat against the counter and back splash. Be sure to also check that the dowel is still centered on the D1 line. Let assembly dry.
  - D. Repeat steps A, B, and C for the other two dowels on lines marked D2 and D3.
  - E. Fillet weld each end of all three dowels to the attached body tubes. Set aside to dry.
12. Next test fit the triple BT-5 assembly into the upper section of the BT-55 tube. Sand the BT-5 spacers to fit as needed. Next glue in triple BT-5 assembly into top BT-55 section centering BT-5 section referring to Upper Section End View drawing on pattern sheet as a guide. Also center the triple BT-5 section lengthwise in the shorter BT-55 section. Set aside to dry.
13. Gather the three assembled fins and glue on lower BT-55 section on lines marked F1, F2, and F3. Refer to Fin Side View drawing on the pattern sheet for vertical fin position. Fillet weld each fin and set aside to dry.
14. Gather the 24" shock cord and tie a 3/4" loop knot in it about 6" from one end. Next make two shock cord mounts from the pattern sheet and glue onto both ends of the shock cord. Next glue the end of the shock cord mount nearest the loop knot into the inside of the BT-55 coupler. Next

- glue the other shock cord mount 1 ½ “ down inside the forward end of the lower 8” BT-55 section. Set aside to dry.
15. Next gather the launch lug and glue it 1/8” beside the line marked D1 on the middle section of BT-55 tube. Be sure to check that the launch lug is accurately aligned with the D1 line. Set aside to dry then add fillet welds.
  16. Seal balsa and Paint as desire. Also don't forget the your own decals.
  17. After painting use masking tape and tape on the NC-5 to the BT-5 tubes. Swing test your rocket for stability for the first flight. This particular swing test was completed with an unused B-6-4 motor installed and an 18” parachute installed.
  18. CG should be at 9 ½” from the bottom of the rocket forward. Add clay evenly to the three nose cones if needed. To this particular prototype I added ¼ of 1 ounce of clay nose weight to have a successful swing test.
  19. Only after the successful swing test use plastic cement to glue in the three NC-5 to the BT-5 tubes.
  20. Make or reuse an 18” parachute and attach a medium size clip on fishing swivel to it. Clip the swivel on to the loop knot on the shock cord for recovery
  21. Lock, Load, and Fire if you so Desire.
  22. PS Any flight logs and records would be greatly appreciated. Thanks JP