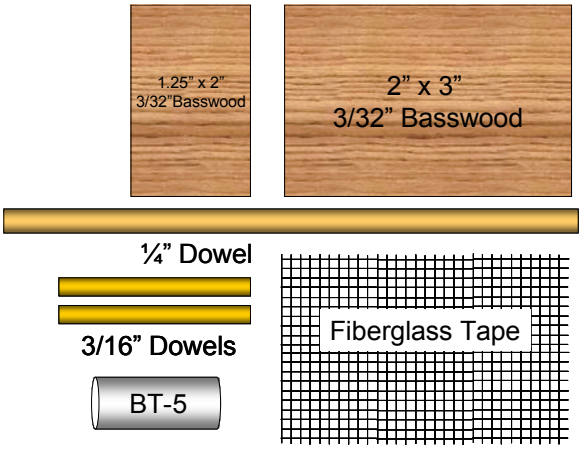
Art Applewhite Rockets
from deep in the heart of Texas

Bumble Bee Monocopter

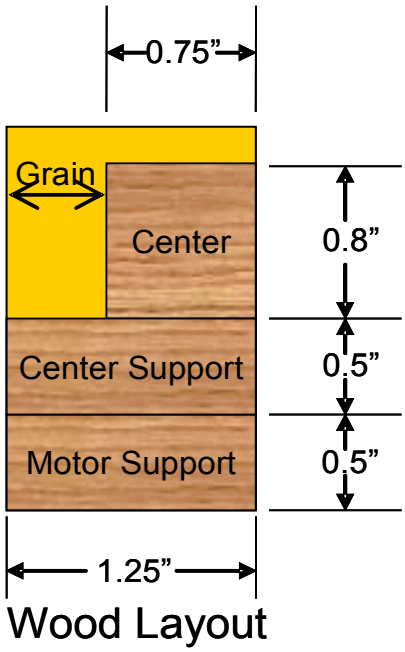
Recommended motors: A3-4T, A10-0T, A10-3T, A10-PT
Parts:
Wing – Basswood
Balance Beam – 1/4” dowel
Support Dowels – 3/16” dowels
Center, Center & Motor Supports – Basswood
Motor Mount Tube – BT-5 tubing
Motor reinforcement – Fiberglass tape



Materials and Tools: Elmer’s Glue-All, #11 X-Acto® knife, scissors, ruler.

Construction Tips:

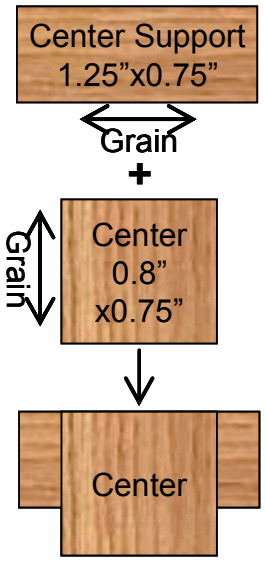
- Read **all** the instructions before starting construction.
- Test fit all parts before gluing them.
- ***Elmer’s Glue-All*** is the only recommended glue for this kit.
- There are at least 2 possible ways to assemble this kit. The order given is the most logical but the following order could be quicker because you can be doing other parts while the glue is drying on the motor mount. Start with Step 1, then 6, 2, 3, 7, 4, 10, 5, 6, 8, 9, 11. The choice is yours but whichever order you decide allow the glue time to dry before using the parts.
- If you have any questions please contact Art Applewhite at rocket877@aol.com



Wood Layout

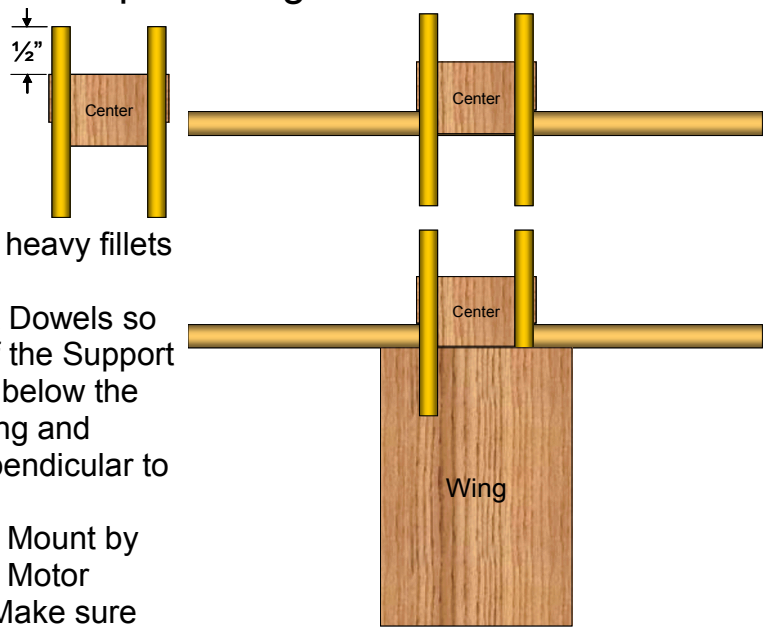
Construction:

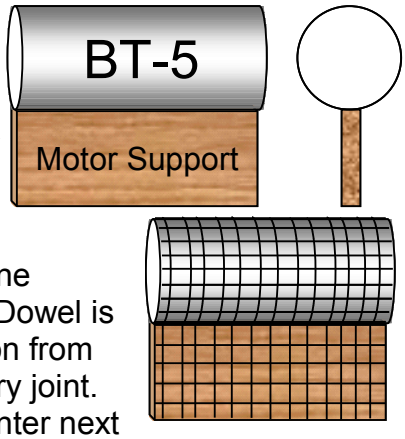
1. Cut out the Center, Center Support and Motor Support. Be careful to follow the grain of the wood.
2. Glue the Center to the top of the Center Support as shown in the picture. Once the glue has dried, run fillets of glue along all the joints.

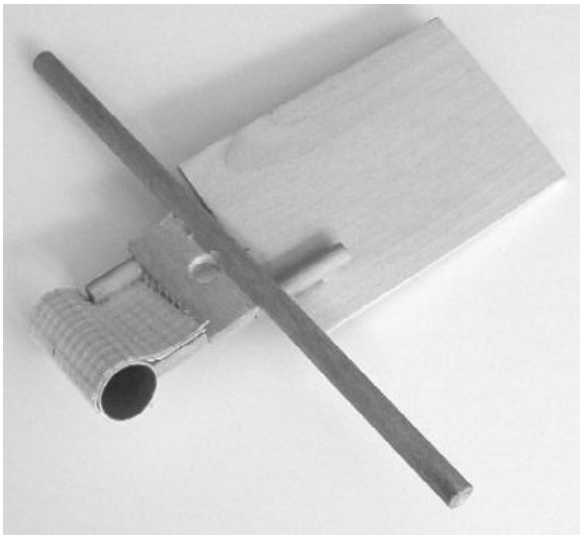


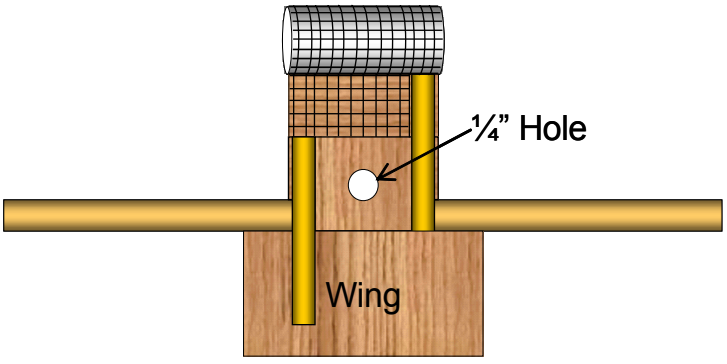
Bumble Bee Monocopter - Page 2

3. Glue the Support dowels to the sides of the Center and on top of the Center Support.
4. Glue the Balance Beam to the underside of the Center. The ends of the Balance Beam should be sticking out evenly on both sides. Once the glue has dried, run heavy fillets of glue along all the joints.
5. Glue the Wing to the Center and Support Dowels so that one side of the Wing is above one of the Support Dowels and the other side of the Wing is below the other Support Dowel. This will tilt the Wing and generate lift. Make sure the Wing is perpendicular to the Balance Beam.
6. Mark a straight line down the BT-5 Motor Mount by holding it against a door frame. Glue the Motor Support to the BT-5 Motor Mount Tube. Make sure the tube is straight with the Motor Support.
7. Wrap the fiberglass tape around the Motor Mount Tube and over the Motor Support. Trim the Fiberglass Tape away from the edges with scissors. Coat the Fiberglass Tape with glue and work the glue into the weave.
8. If necessary, sand the ends of the Support Dowels so that they fit closely to the Motor Mount and Motor Support .
9. Glue the Motor Mount to the Center and Support Dowels so that one Support Dowel is above the Motor Support and the other Support Dowel is below it. The Motor Mount should be tilting in the opposite direction from the Wing. Once the glue is dry run a heavy fillet of glue along every joint.
10. Carefully drill a 1/4" hole for the launch rod in the middle of the Center next to, but not touching the Balance Beam. The hole should be perpendicular to the Center and the Balance Beam.
11. Paint the rocket with two light coats of clear (or any color you like) enamel to protect the wood and glue from moisture and dirt.









Bumble Bee Monocopter - Page 3

Recommended Motors: A3-4T, A10-0T, A10-3T, A10-PT

Flight preparation:

Wrap three layers of masking tape 3/8” inch from the nozzle end of the motor to form a thrust ring. The motor should be centered in the Motor Mount. Trim off any excess tape.

Insert the motor into the Motor Mount with the nozzle tilting downward and the Balance Beam above the Wing. If the motor is too loose, wrap a little masking tape around it until it fits tight enough not to fall out.

Install the igniter and attach the launch controller clips being careful to keep the wires out of the way of the, soon to be, rapidly rotating wing.

Launch the monocopter from a 1/2 inch long, 1/4” diameter launch rod. Do not use a longer or narrower rod because the rod can whip around a great deal and cause the rocket to go off in an unpredictable direction.

The launch pad should be sturdy and fixed firmly to the ground. A suitable launch pad can be constructed from the following materials:
4 - 2x4s, three, 18 inches long and one 36 inches long. The lengths need not be exact.
1 - 3 inch long, ¼-20 carriage bolt and nut
6 -3 inch long wood screws.
Drill a 1/4” hole in the middle of one of the short 2x4s. Insert the carriage bolt into the hole and secure it tightly with the nut. Attach the long 2x4, perpendicular to the short one with two wood screws. Attach the two remaining short 2x4s to the opposite ends of the first short 2x4 with two wood screws each.