

## Instruction Manual for the Marston Micro Pterodactyl

Thank you for purchasing this kit. Everything you need is included except the receiver/esc/servos module, a battery and glue. Take your time, be careful and have fun with the build. You will need medium **Foam Safe CA** to assemble the airframe.

This micro pterodactyl is easy to fly in a large indoor space or outdoors on a calm day. Avoid flying in small indoor spaces or outdoors if the wind is blowing.

**This instruction manual is available as a PDF on line at [http://www.pteroworks.com/ptero\\_micro.htm](http://www.pteroworks.com/ptero_micro.htm)  
 The photos in this manual can be enlarged for greater clarity in the PDF.**

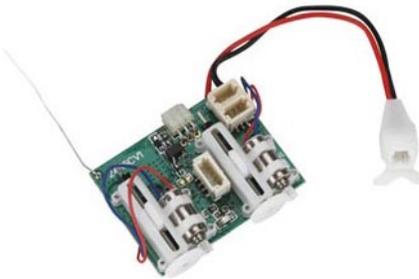
Wingspan 18.4"  
 Length 13.25"  
 wing area 52 square inches (0.36 ft<sup>2</sup>)  
 weight RTF 0.8 oz. (with a 1s 130 mah LiPo battery)  
 wing loading 2.2 oz/square foot

**Included in full kit:** All wood and Depron foam required for two airframes, two sets of 0.050" carbon wing struts, 2 x 0.040" carbon pushrods, 4 x 0.022" L-bend wire, 2 x 3.3 Ohm motors, 2 x 2.25" props, wire for motors, shrink tubing for wire and pushrods, control horns, instructions.

**Additional gear required:** Receiver/esc/servos module - recommended **Spektrum AR6400 DSM2, 1 cell 130 mah LiPo battery**. The Spektrum AR6400 DSM2 receiver is widely available and requires a DSM2 compatible transmitter.



gear included in the full kit



## The Build

There are **two sets** of balsa and depron parts included in the kit. Use the extras for spare parts.

1. **Carefully** lightly sand all balsa pieces to remove laser burn. Contest grade balsa included in this kit is fragile! Round off leading edges and thin down trailing edges to improve aerodynamics. Depron wing pieces can also have their edges rounded.

2. Glue "shoulder" pieces (3/64" ply) to sides of main body, ensuring the strut holes in both parts line up.

3. Slide bottom head piece (the one with the tabs on it) into slot in the main body and glue in place.

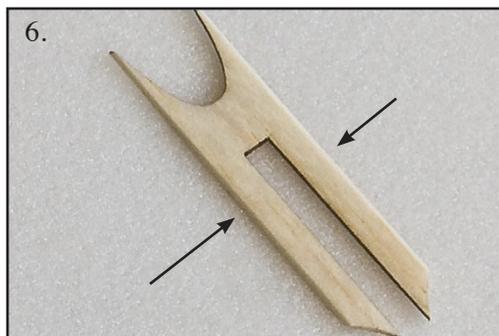
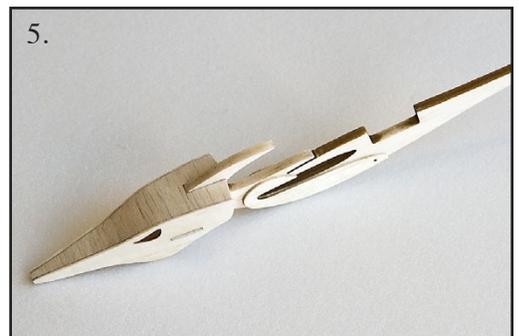
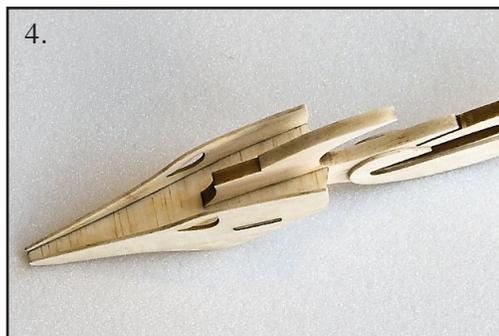
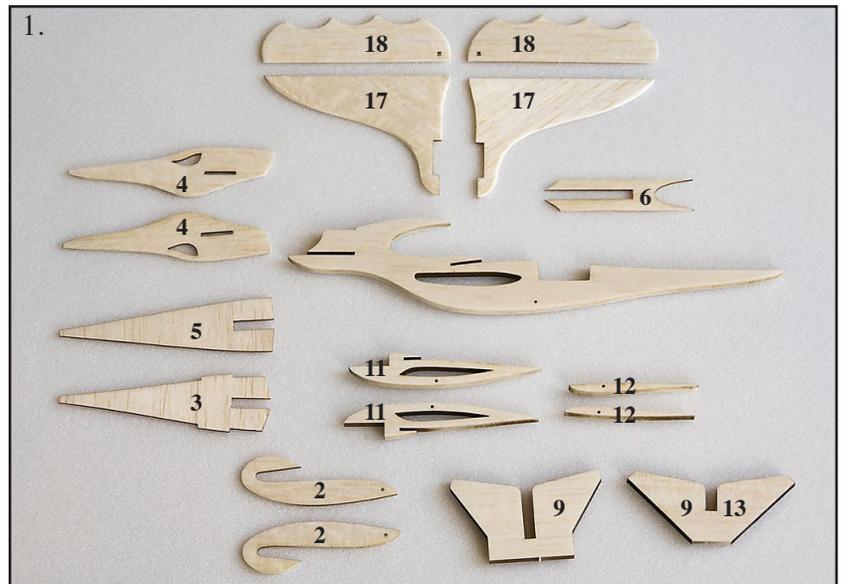
4. Glue left and right head sides to head bottom. Ensure tabs on bottom head piece fit into slots before applying glue.

5. Position and glue upper head piece in place. Sand as required to achieve a nice looking head.

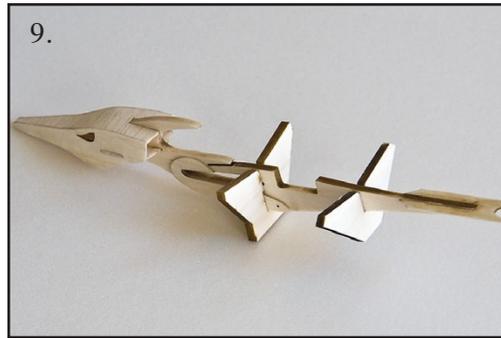
6. Sand a 45 degree bevel into the outer edges of the tail stiffener (at arrows).

7. Glue tail stiffener to rear end of main body, with the bevel facing downward. Top of stiffener should be flush with top edge of main body piece.

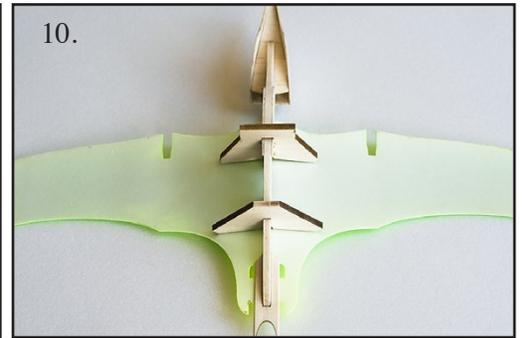
8. If you wish to paint the Depron wings, now is the time. Be aware that some spray paints contain solvents that will melt Depron.



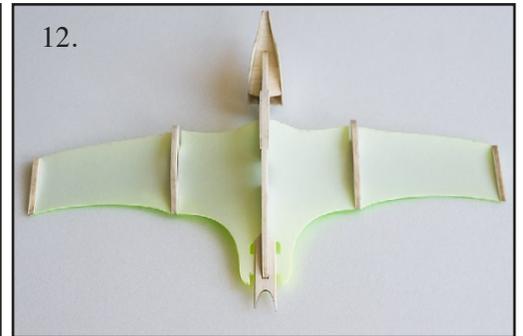
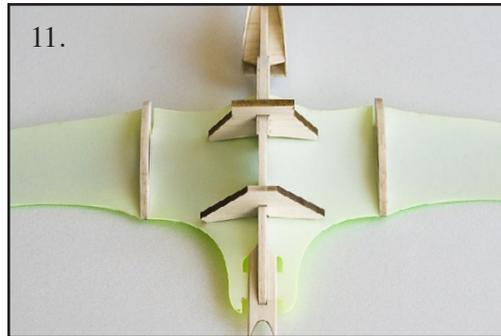
9. Slide the two supplied dihedral jigs onto the body, then glue one half of the Depron wing to the body. Be sure to use foam safe glue!



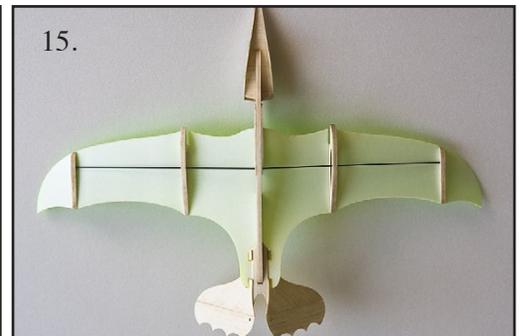
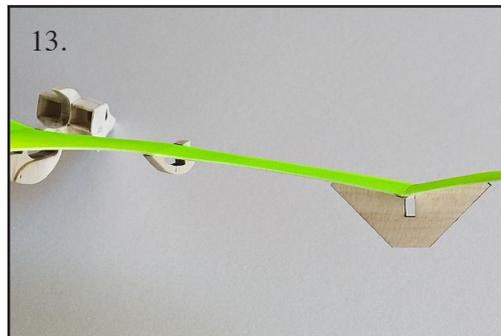
10. Glue other Depron wing half to the body. Ensure both halves of the wing have the same dihedral.



11. Glue left and right balsa motor mounts to bottom side of the Depron wings. Note how slot in wing fits the slot in the motor mount. Be sure to use foam safe glue.



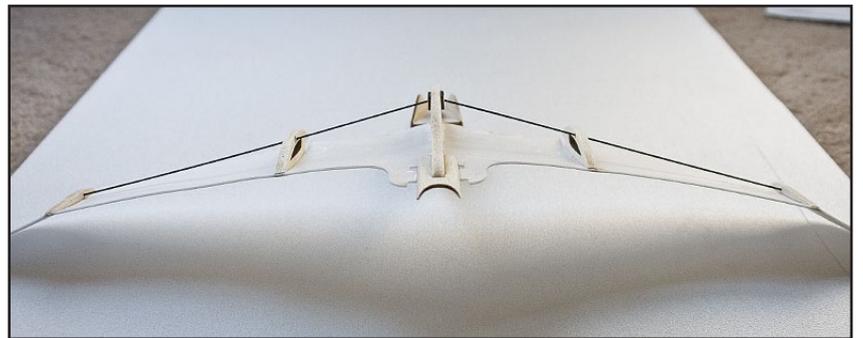
12. Glue left and right outer wing tip balsa joiners to bottom outer edges of Depron wings. Position pieces so half of their thickness extend past the wing edge, to allow a surface for the wing tips to glue to.



13. Position and glue Depron wing tips to balsa outer wing joiners. Use the small dihedral jig to establish a six degree angle for each wing tip.

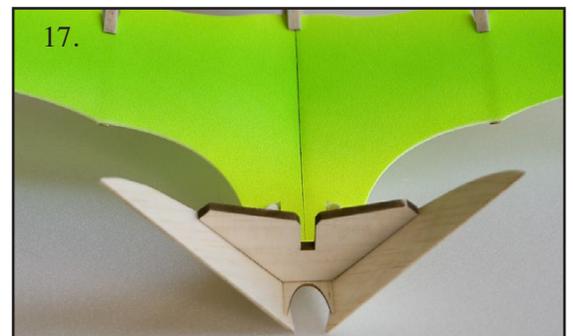
14. Cut two 0.050" carbon wing struts to 7 5/8" in length.

15. Slide carbon wing struts through holes in balsa motor mount and outer wing tip joiner then into the body holes. Glue in place ensuring the wing has no twist.



16. Cut or sand a 45 degree bevel into the slot of the balsa tail pieces (at arrows).

17. Position and glue the tail pieces to the body. Use supplied dihedral jig with the 45 degree outer angle to set the proper angle.



18. Tape elevator/rudder tail control surfaces to the V-tails.

19. Glue control horns to the underside of the tail control surfaces.

20. Solder wires to motors using the supplied #30 wire in a "parallel" configuration, with the 2-pin connector (cut from one of the motors) in the middle.

21. Connect motors to AR6400 DSM2 board and test motors. Confirm proper direction of motors.

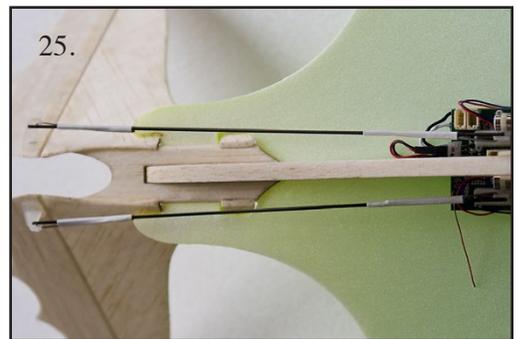
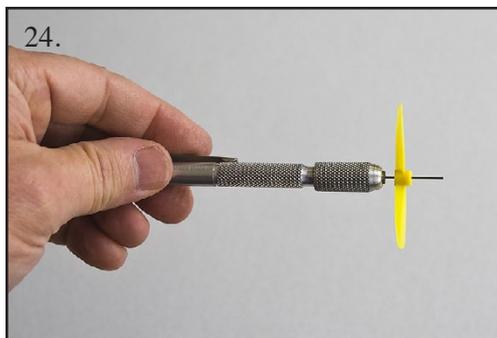
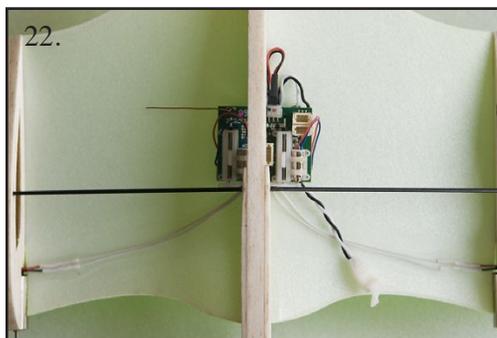
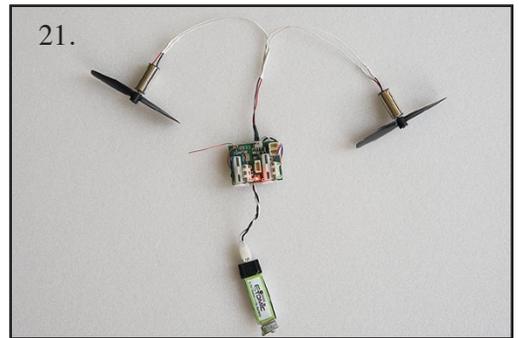
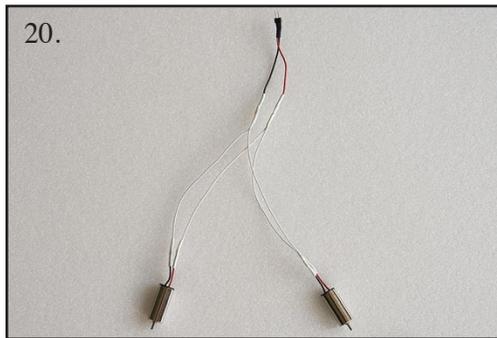
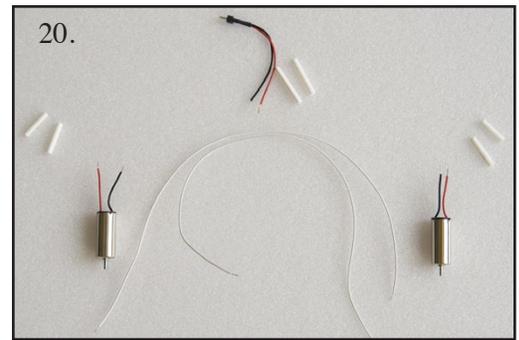
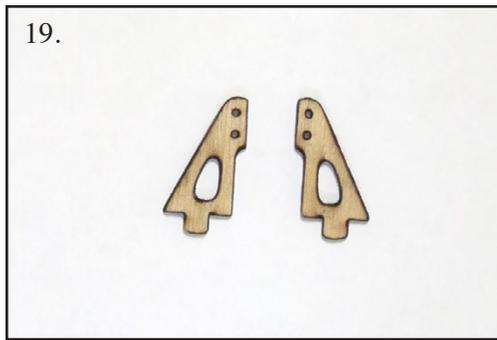
22. Glue motors to the balsa motor mounts. Tape wires down to the wing.

23. Glue the AR6400 DSM2 receiver to the underside of the wing, centered in the body cavity. Orient receiver so the gears of the servos are facing forward. Use scrap balsa to create rails that can be glued to outer edges of receiver to raise it off the wing about 1/8". Route motor wires and battery connector wires under the receiver.

24. Balance supplied props to improve performance by spinning on a .031" drill bit and trimming/sanding until balanced. DO NOT SKIP THIS BALANCING STEP. To increase flight time and lower current draw, trim about 1/8" (3 mm) off of each blade.

25. Create push rods out of the L bends, shrink tubing and the 0.040" carbon rods, and attach servos to the control horns as shown.

26. Fit 130 mah 1 cell LiPo battery into battery slot in



body and check the Center of Gravity, which should be **1 1/8" (29 mm)** behind the wing leading edge where the wing attaches to the body (see drawing).

### Programming the TX

27. The AR6400 comes in different configurations depending on where it came from. In the Vapor for example, (case #1) the 2 on-board servos are controlled by the aileron and elevator input from the TX (both on right stick), and from the Sukhoi and other aileron airplanes, as well as the stand-alone AR6400 receiver (case #2), the on-board servos are controlled by the rudder and elevator input (left stick and right stick).

28. In case #1, a *Delta* or *Elevon* mixing should be used. In case #2, *V-Tail* mixing should be used. Most Spektrum and JR radios (DX6i, DX7, JR9303, etc.) have these mixes available.

29. In both cases, one channel (likely the left tail) will need to be reversed.

30. In case #1, a programmable mix will also be needed to reverse the action of the elevator (it will want to go down when it should go up. Use #ELE - ELE and set the amounts to -100, -100 to fully reverse the elevator action.

31. In case #2, 1 or 2 programmable mixes can be used to mix the rudder control (left stick) to the aileron (right stick). In this case the aileron will be the Master and the rudder will be the Slave (AILE - RUDD) Use +100, -100 for the amounts. This should allow for full control of the tail on the right stick.

32. Additionally, for case #2, a second programmable mix can be used to "disable" the left rudder stick, by mixing RUDD-RUDD and setting the amounts to +100, -100 which will cancel out its effects.

33. Use *Sub Trims* to neutralize the positions of the tail surfaces, and *Travel* or *Dual Rates* to set the surface throws. Set maximum Travels for rudder control to 5/16" (8 mm) each way. Set elevator throws to 3/16" (5 mm) each way. **Very little elevator throw is required.**

34. DO NOT attempt to fly Micro Pterodactyl if the C/G is not correct. Check carefully - **C/G position is critical to performance!**

35. Be sure to do a range test before flying. Choose a large indoor area with few obstacles, or an outdoor venue with NO WIND for your first flight.

36. **Have fun!**

