

# 1/4 Scale P-39 Build.

12

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Jim has finally finished the basic assembly. Everything necessary for the first test run has been installed. Here is a link. <https://www.youtube.com/watch?v=ZFDsxJqGaTg>



The first run was conducted using a 4s battery. Things went smoothly although the thrust bearing retainer nut on the gearbox loosened. We did notice a slight amount of wobble on the shaft coupling on the motor end. The drive tube is bonded to the shaft coupler we may have relook at that. Next, we will secure the Torque Plate to a test fixture and run it

on 6s then 12s. After we complete the full power runs, we will start installing different size propellers and start putting some loads and running time on the system at operational speeds. When we are satisfied with the reliability, we will start capturing propeller data to determine the most effective propeller size, blade number and pitch to give us the desired flight performance.



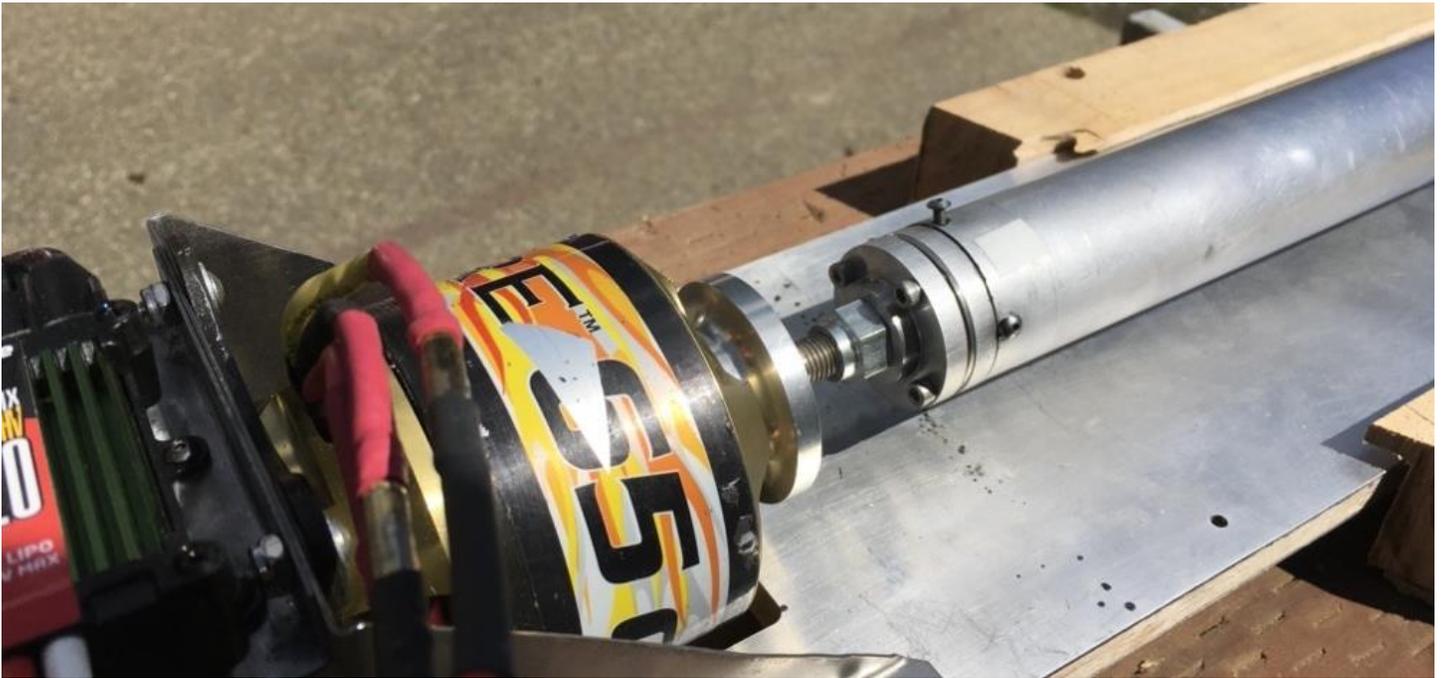
Next, we clamped the unit on the bench and ran it for a while on 6s. We recorded the watts and amps at 25% and 50% throttle. Everything seems fine so lets put a propeller on and do some low speed running.

RPM	W/A	V 49.75
2120	220/2.5	25% 49.20
3840	240/5	50%

We mounted the unit on the test stand. Since we just wanted to get some running time we did not attempt to take any data. We used a 22x10 wood prop to put some load on the system.



We never got past half throttle because we had one of the driveshaft tube screws kept coming loose. After about three minutes it would back out about half way. We couldn't tell if the Loctite failed, or did we forget to apply it. We don't know. We decided let's just go ahead and safety wire all the screws on the rotating parts and get on with the testing. We also decided to add a hard point below the ESC on the motor mount to allow us the attach the strain gauge to the motor centerline.



To allow the Torque Plate to roll slightly forward as thrust is increased, we used  $\frac{1}{2}$  PVC pipe as rollers. Our sliding mount seemed to work fine for simple running. I am certain



We will need a more robust system when we start fullpower tests. Even at low throttle settings we still had to secure a chain to the stand.to keep it from rolling. This project is getting to be real fun.



Soon as we get everything fixed we will send out the next update.

Last entry 4/5/2022

