

## S-21 Progress Report 19

March 30, 2018

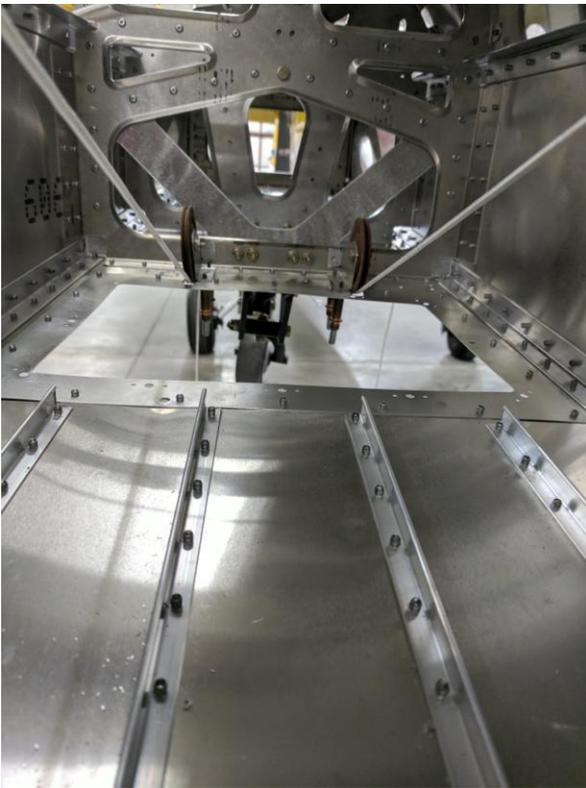
### How much weight does painting add?

It turns out the paint adds about 25 pounds. This will not always be the case, since yellow is heavy, and we painted the wings twice. This 25lbs does not include any internal primer. So paint, especially yellow, will add considerable pounds to your build. Different paint systems may be lighter or heavier. It is something to think about when designing your paint scheme and buying your paint.



## Inching closer to full production

We missed our March window for full kits. This is due to a number of factors. We have been working feverishly to get the S-21 and the S-20LSM ready for Sun n Fun. This included a complete tear down and painting of the S-21 and two engine swaps (new 912 ULS on the S-21, new Titan 340 on the S-20LSM). The fuselage and tail feathers are undergoing one last final assembly check of all the details before entering full production. This includes a revised rudder control system. We added rudder horns at the rudder pedals to omit the need to cross the rudder cables. This greatly simplified the rudder system and significantly reduces the probability of reversed controls due to assembly error. The new rudder system will also provide a more direct feel in taxi and retain the same great feel in the air.



## Performance of the 340 Titan Powered Raven

We have completed some initial flight testing of the Titan powered Raven. The weather and issues with the originally installed Titan 340 forced some unwanted delays. I can tell you it is a delightful handling plane. Like the Outbound, the Raven was originally designed with heavier engines in mind and it shows. So far while flying the S-20LSM, we are seeing 120 MPH at 2000 RPM and 140 MPH at 2400 RPM. This is with a Catto 75x 50 prop. More numbers to come as we conduct more flight testing and can push the new engine a little harder.

With a bit of tuning and a different prop, a customer's S-20 Raven with the 340 and standard



fabric wing cruises at 148 MPH. We gained a little speed with the 141 wing over the fabric wing on our Raven. We gained a little more speed on the S-21 over our 141 winged Raven both with a 100hp 912. These observations lead us to believe our claimed 155mph cruise is very achievable for a Titan 340 powered S-21.

