

S-21 Outbound Progress Report 28

First Owner-Built Outbound Flying!

Congratulations to Brad Goff of Utah for being the first completion of the RANS S-21. Brads plane features a metal constant speed prop, with a Lycoming 360. He reports the flying qualities are excellent and the performance is rocket-like. I had a brief conversation and he was very excited and happy with the outcome. Brad picked up his kit in January. This definitely shows off the fast build aspect of the Outbound. More details and photos to follow in a special report.



Sun-n-Fun

We left a 7:30 AM CST and arrived at 7:30 PM EST. That was a total elapsed time of 11 hours. As a flight of three planes, two Titan 340 powered and one Rotax 912ULS. The two Titan powered planes were well matched, the only real difference was 26" tires compared to 22". The speed loss going with 26" was only 2 MPH. Fuel consumption between the planes was within a gallon to two gallons. Typically the two 340 powered Outbounds cruised at 20 MPH faster burning 1 to 2 GPH more over the Rotax. When we slowed to the same speed we could match the Rotax GPH. The bottom line is, the 340 configured S-21 can get up and go and keep the GPH well under 9 gallons or go full economy at around 6 GPH and cover the ground at 125 to 130 MPH.

The planes were very well received at the show. We flew many demos, impressing even the most discerning pilots. I really do not recall anyone coming away with a bad impression of the Outbound and a surprising number were impressed with the performance of the Rotax powered trike.

SNF Impressions of the Trike Outbound

Speaking of the trike, it was a gas doing demos in this very forgiving plane. I would turn the plane over to the demo rider and watch as they performed excellent take off and landings at the South Lakeland grass strip.

We got a pretty even mix on the trikes looks. Personally, I think it is a sharp looking plane as a trike and would serve many with forgiving and fun operations. Think of it as a highly upgraded trainer topping the C-150 in performance, durability, safety, handling, ergonomics, and fun factor.

The week went by in a flash. Being busy helps and having a great product to show off made it even more fun. Thanks to all who ventured to the outreaches of Paradise City to say hello, take a flight and place an order.

Windshield Install

The run to SNF and back was an excellent field test for the new windshield install. We had the pleasure of testing for water leaks and I am happy to report the install is water tight. We did get some slight water entry, and I mean very slight, coming from the back. A close-out on the underside of the flap gap seal between fuselage and wing could eliminate this minor annoyance and possibly shave off a bit of drag. At some point in the future when things slow down we may develop a close out for this area.

The windshields are coming trimmed to fit. Very little to no trimming will be required. Follow standard Plexi glass procedures for trimming or drilling to avoid possible damage.

A key element of a successful windshield install is to glue the fiberglass windshield hold-down strip to the plexi glass. This makes a water proof seal but, also provides the needed support to prevent movement of the Plexiglas. Please follow the instructions closely on the install and use the correct adhesive.

Bush Trike

The mains are the 22" Tundra's and a 8.50x6 nose wheel. With the Titan 340 and a 70" prop there is 9.5" (estimated) of prop clearance with the wheel forward close to the prop, providing good rough operation. The Rotax powered units also have a confirmed prop clearance of 9.5" with the Whirl Wind 75" three blade prop. With the added height using the main tire for an entry step helps and walking under the wing is less of a head bob. The stance is impressive with a very tough look that is ready for some back country fun. Some are very critical of trikes and tend to relate how they are not well suited for off field work, however a trike does have a number of advantages. Typically they can take off a bit shorter due to no distance wasted getting to



a shallow angle of attack. Likewise in landing, the angle of attack can be higher due to more rotation clearance due to the lack of a tailwheel. And finally, aggressive braking earlier in the roll out on landing helps shorten landings. No matter your preference, adding utility to a plane is never a bad idea!



Rotax 915iS

We should be flying the first S-21 with the 915iS in a few weeks. It may look busy, but it is a matter of bolting up components and following the tech. We will provide a full install kit and possibly video to supplement the written and illustrated technical manual.

The big news is the 915iS can be set up without the oil operated constant speed prop. Our SLSA version will feature a ground adjustable Whirl Wind three blade composite prop. GA-R3B-70 is the exact model.



Rock Guards

One of our clients was concerned about the venerable brake lines connecting the dual calipers and suggested we should be able to come up with a guard of some sort. Indeed we could and did. Thanks to Jason Knight we now can offer the Knight Rock Guard. These are made of .25 thick 606-T6 , powder coated bright red and laser engraved, the pair sells for \$50.00. Order number : KPMG0231



Tailwheel Options

If you are planning on using any tailwheel other than the one we have flight tested, proceed with the knowledge that only our tailwheel has passed shimmy testing. There may not be any issues, especially if a substituted tailwheel never shimmies or has less mass. The issue could be a larger tailwheel may compromise the attachment fittings, due to increase forces if shimmy occurs. The need for a larger tailwheel over the stock offering is very specialized for example: a wider tire for soft surfaces, such as a sandbar. This may only be a problem when man handling the plane since the tail comes up easily. The need for a shock absorber tailwheel seems to be in question as well, with the long tail moment and the larger horizontal tail this reduces the shock loading. Someday we may either develop a larger tailwheel or possibly a shock type, but for now, the only factory approved shimmy tested tailwheel is our stock 8" unit.

Free Tech Advice

We strive to make our technical manuals accurate and clear. However, there will always be misinterpretations of a manuals language or method. What happens when you are confused and it is a weekend? Many will ask the online community and most are willing to share what they have built in the past and can offer some really clever ideas. There is no doubt there will be some very ingenious time-saving ideas and we love to hear about them. You may find your suggestions worked into the manual. It is a progressive process that over time and many builds it becomes better and better. We appreciate that input and welcome it. The only caution I

have is be sure of the source as sometimes free advice can become very expensive. You can email questions 24/7 to actech@rans.com. Pictures along with the questions always helps. The emails are answered as quickly as possible.

Fuel Tank Support

With the tight fit and shape of the fuel tank taking up as much space as possible to create the greatest amount of fuel capacity, we have experienced some deformation issues. The tank expands from solar gain causing the top to sink down about an inch, pulling the gas cap under the profile of the wing. The fix is to install a fuel tank support that nests under the fuel cap. It just so happens that the underside of the fuel cap has a conical shape, perfect for nesting and shape locking a 3" diameter tube in place. The tank support in the photo will be sent to all S-21 builders and ideally should be installed prior to applying pro-seal. If done post pro-seal application re-applying the pro-seal is required. The Tank Support tubes will be sent free of charge to all S-21 kit owners.



Economy Cruise Testing

Recent testing has shown the numbers to remain consistent with past performance measures but, now with the 22" Tundra tires a do over was in order. We took a short cross country on 6-8-19 to Tulsa Oklahoma. Below are the numbers:

Gross Weight: 1670	South	North
TAS	131MPH	136
IAS	110	126
GS	139	135
GPH	6.5	8.5
RPM	2310	2380
ALT	9500	3820
BAR	29.87	29.83
OAT	52 F	69F

Round trip average speed 137 MPH, average fuel burn 7.5.

More to come soon, stay tuned! RJS