

BANK & YANK BY WG GILDERSLAG

RACING SEAGULL ARFs

Goodbye Air Racers,

The Nemesis featured here was purchased secondhand by Byron Simpson for Stephen Green. Thanks to COVID 19 the model sat in Simpson's shed until the planets aligned for the RC pilot network model transport system to it across the New South Wales - Victorian border. It made it to Albury and sat out back of Albury RC Models for a couple of months. Thanks Rob Sargeant. As soon as Melbourneans were allowed out Greeny made a beeline for the border. It's no secret the hobby industry has been kicking goals since men empowered by Government Permission have been scuttling back to their sheds the past two years but there is no truth to the rumour he was worried that Rob would sell it. The model is ready to fly when Melbourne emerges from Lockdown Number 6. Over to you Greeny.

Racing the Nemesis by Stephen Green

Whether you are racing Formula One or Formula 2, a Cassutt in Goodyear or an MSX-R in Formula 3 there are five key components of the airframe that are worth considering upgrading for racing. It has been quite a few years since I reviewed the Nemesis with the OS GT 55 for F1 so some of this may be out of date. Not so if you happen across a second hand model or even new in box that is a few years old. After collecting this particu-



Green mark on back plate makes alignment easier



lar model and giving it the once over I decided to use it to promote Formula 2. Undecided whether to race it may be interesting to see how close to the pointy end I can get with the smaller capacity Zenoah 26cc engine. Hobby Supplies Australia is the Australian Agent for Zenoah and is supporting the club's Speed Weekends. I have a new Nemesis on order for F1.

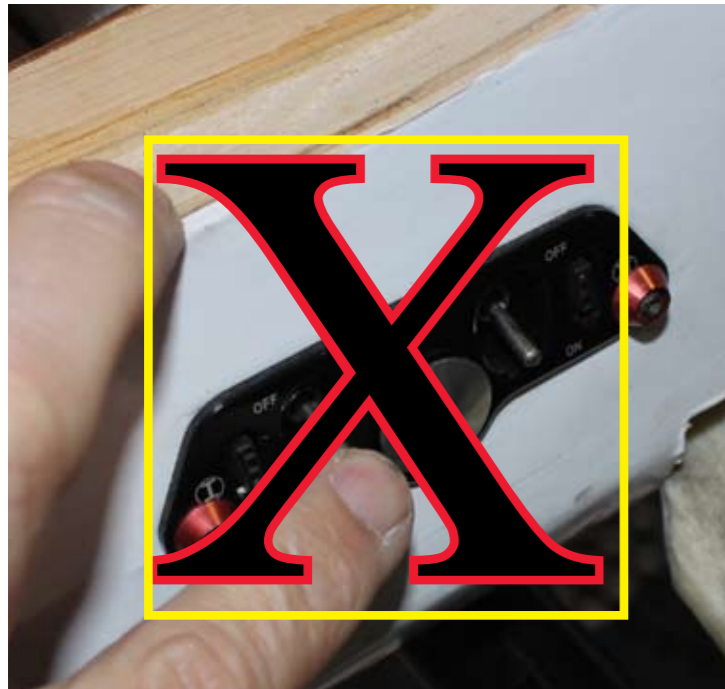
Starting at the front, this model had no spinner. From memory it was originally supplied with a 95mm diameter plastic spinner. I've never been a fan of plastic

backplates but the aluminium backplate spinner manufactured by Phoenix Models is also 95mm. I ordered one from Model Flight which arrived from interstate the next day. Isn't the Internet wonderful? Model Glight

Competition Tip. Note the green mark I put on the backplate. Should the engine kick the propeller nut loose this makes lining up the four bolts easier. A little extra time taken isn't a problem for sport flying. Not so on the startline. If the model is rolling before the count down start you can complete the take off and race.

The somewhat soft plywood in the early production versions was upgraded in latter versions and having checked that upgrade out I would be comfortable competing in Formula 2 as standard. Not sure about Formula One. Until my Nemesis arrives I cannot say if the harder ply is still supplied. Ditto for the wing tube. The standard T6 alloy tube has proven up to the job in F1 and I'm making the assumption this has not changed.

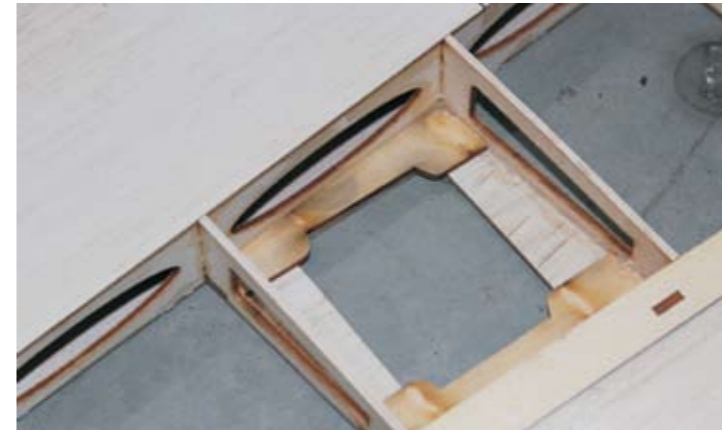
Installed in this model was a twin toggle switch with integral fuel dot. Looks quite fancy to a new modeller but



Ditched the Toggle Switch and went for the manufacturer's model

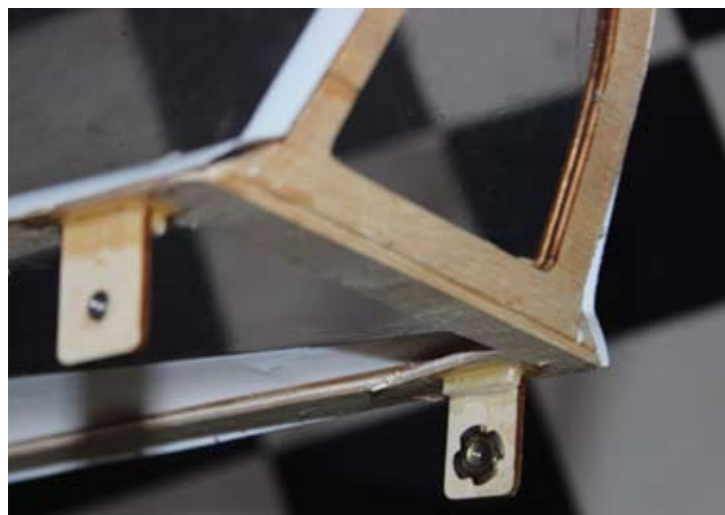


Wicking in thin cyano is the easiest way to prevent this coming loose



Add additional ply in each corner

Thin CA for the Cassutt wing plate too nut



Stiffen the canopy mounting flanges



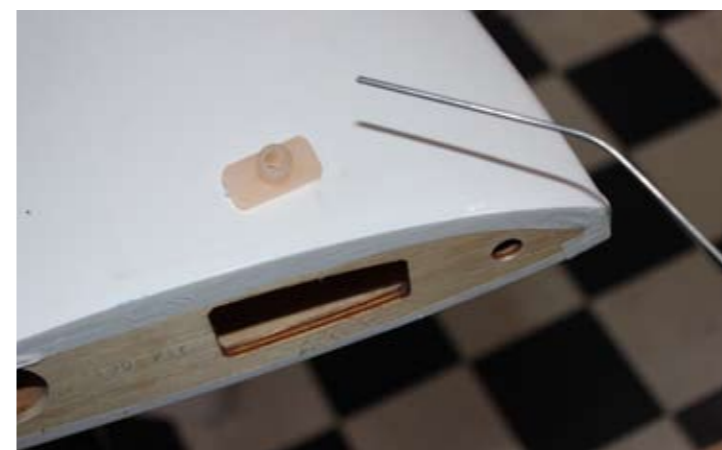
Keep an eye on the wing bolt torque

I ditched that thing straight away. Toggle switches have proved to be notoriously unreliable in piston engine model aircraft. It wouldn't pass scrutineering.

Securing the canopy highlights another subtle difference between sport flying and competing. No significant change in flying characteristics should yours blow off in flight but this will result in a zero score in a heat. The design is such that if the bolts are torqued sufficiently the ply mounting flange bends then the metal thread bolts tend to unwind. Nylon bolts don't really help. Locktite on the metal threads isn't much use either. Even if it dried in time before the first round of racing what if you have to access inside? The ply mount needs to be supported to prevent it bending when the bolts are tightened. It's a simple job. My models have a simple glider type canopy latch. Fiddly to do but worth it.

Each wing panel held in place by two bolts. If you happen to pop the blind nut out during transit it quite easy to fix. The bolts work fine but you should monitor this until you have a few flights on the model. I replaced them with socket head black nylon Dubro bolts to make tightening with a ball tip driver easier. Turned out that nylon is quite soft and the bolts unwound in a race at Cootamundra and I lost one wing at Cootamundra.

Two components that haven't needed attention or modification are the hinges and control linkages. Both survived aileron flutter at 200 plus kph booming the 55cc Nemesis around at the Shepparton Mammoth Scale when one of the aileron servo mount assemblies fell out in flight. It hung off the aileron horn until landing. The ply plate doesn't provide much parent material for the screws to grip. A small ply doubler glued



Loose blind nut fix A

into each corner fixes that. Wicking thin cyano into the servo rail glue joints is the minimum fix but prising the joints apart and gluing with epoxy is better. No problem with those CA hinges. Provided you wick enough thin cyano in.

The standard factory cowl mounting method with the Nemesis will work in the short term but with the bigger engine the holes in the fiberglass flog out rather quickly. I've tried a number of methods and eventually settled on Dubro Cowl mounts in both Nemesis and Cassutt.

These last two items might be out of date because the soft ply fire-wall and undercarriage plate in the early



Loose blind nut fix B



Dubro cowl mounts



Fire-wall replaced with two pieces of 6.5mm aircraft or marine grade plywood with 1.5 mm ply doubler each side of the engine box

production runs was replaced with what appeared to be significantly harder birch ply. Which I can verify if this remains the case when my new Nemesis arrives.

In the meantime should you happen to purchase a second hand model, which has that softer ply, the engine mount bolts remain tight but as the wood compresses over time the engine starts to move slightly. Left unchecked this can lead to a catastrophic failure if the glue joints in the firewall let go. Knocking out the fire-wall is easy. A couple of blows with a 16 ounce hammer will do it. Competitors have used aluminium sheet fibreglass and carbon fibre but laminating two pieces of 6mm aircraft or marine grade ply for a fire-wall and gluing 1.5mm ply doubler each side of the existing engine box has proven reliable with the OS GT 55 Nemesis and GT 60 Cassutt reviewed in RCM News magazine.

Ditto for the ply flange in the wheel spats. If the wood compresses over time the axle will rotate. Which can lead to tripping the model up. Replacing the wood and adding a simple locating pin prevents the assembly rotating. During a heavy landing, load from the two

piece aluminium undercarriage is centered right in the middle of the ply undercarriage plate. I've managed to snap the this plate in half on both my Cassutts and the OS 160 powered Decathlon I raced in Red Bull at Cobram 2012. Removing the wood plate and replacing with higher grade ply is an easy fix.

The Nemesis is not so easy. Being so easy to land I haven't seen anyone having a problem therefore replacing the undercarriage plate is not a major consideration, Nevertheless, applying Murphy's Law one could laminate a doubler over the top. If you manage a dumper and bend the soft aluminium undercarriage legs do not straighten them on the plane. Chances are you will break the glue joints or worse, break the plate in half. If the club doesn't have a vice you can borrow my vice grips and use my tow bar. The one piece .60 size Dubro fibreglass undercarriage worked fine on my 6kg Space-walker and this is now set to be trialled in this F2. A two piece version is on my heavier Cassutt. These modifications have proven over time to produce a reliable airframe. In order to finish first one must first finish is the first requirement for racing enjoyment.



Trialling Dubro's fibreglass undercarriage as a replacement for F1 and F2



Hard ply wheel spat flanges

Understanding the rules is another. For example, final results are tabulated by dropping each competitors worst score. Losing a wheel, the canopy, a control surface or even the spinner in-flight the Jettison Rule applies. Which results in a zero flight score. One pylon cut adds ten percent to your flight score. Two cuts and it's a zero. So, if you get a cut it is wise to fly a little wider. In Formula 2 the twelve inch propeller pitch and the maximum RPM limit even up the playing field to give a first time competitor the same potential as the more experienced.

Knowing how to operate your model is another. In F2 the difference between 10 inches and 12 inches of pitch is around ten kph. Compared to sport flying setting the mixture running higher pitch props takes a little get-



Bolt drilled through undercart leg acts as anti rotation pin

ting used to. Start off rich and slowly lean it out. What you are looking for is the engine to remain on song on the tenth lap. Even though it is widely recognized that petrol engines can often be left once the needle setting has been achieved sometimes a little tweak helps. For example the engine is on song for an early morning first round when it is cold. Later in the day when the air temperature rises significantly burping and coughing indicates it needs to be leaned out slightly. Which is why all my racers can be tuned without having to remove the engine cowling".

Thanks Greeny. Next issue we will cover engine cooling and race craft. But wait. There's more. Greeny's getting old. He's getting a little misty.