

Clear Dope

April 2023



Chichester and District Model Aero Club: Committee 2023

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Club Evening Thursday 13th April
Fun fly in field small models only

Misadventures with a Roller Garage Door

Reasonable weather, so I thought I might put a model in the car - sorry, but that's as far as the modelling interest goes here (and as far as my intentions went on that day, too.) SO - if you are content with your ordinary wooden side-hinged or manual up-and-over doors, then it might be an idea to stick with them. Read-on if you are not, as it could save you from some difficulties in the future.

One memorable day a couple of months ago, my 14-year old electric roller doors refused to open when using the remote. It seemed to have lost its marbles, so how to open it? The door has an emergency winder access on the side of the garage, which is guarded by a security lock. The lock was jammed due to years of disuse, but WD-40 and a 10-minute wait saw it released, and I was able to wind the door half-way up and then crawl into the garage.

Jammed-up at the rear quarter of my car, I viewed the door control unit and pressed the UP button without considering the possible consequences. The door promptly went DOWN and then stopped, not to move again. "Ah! Houston - we have a problem". I couldn't move along the side or the rear of the car, or enter it through a rear door, due to the lack of space. The only way out was to, as it were, "swim" over the top of the car to access a window, but I couldn't find a foothold, neither did I have the strength. In any case, I've cosseted that car for 26 years, and I didn't want to damage it, or myself.

Well, I've been in some tight spots in the distant past, but I had to concede that on this occasion I was trussed-up like a chicken. Close at hand inside the garage is a removable link in the emergency winder mechanism that enables its local operation, but I was not familiar with it, and it's tricky to re-engage, and I dared not do that the dark, for fear of not being able to be rescued from the outside. It's doubtful also that I had sufficient room to operate the handle, jammed-in as I was.

After a short while, my wife appeared and heard my calls. Unfortunately, she has hand problems and couldn't operate the winder, but as we were considering which neighbour to call-in to help, our daughter and grandson suddenly turned-up and I was released. Relief!

OK, the telling of that saga is not the main purpose of this missive, because there exists a underlying and troubling situation worthy of comment, and that is the lack of commitment and competence I found when I needed help in fault-finding these doors, in my case the SWS SeceuroGlide Compact type. I called in three different repairers to sort-out what had gone wrong with the door's operation, and finished-up less than impressed with all of them.

The first visit resulted in the snap diagnosis that the motor had failed, a favourite ploy, apparently. Cost - £400+. usually for a failed capacitor costing £4.75. With that disproved and no repair made, they left merely suggesting that the control unit probably needed replacing, and I was faced with a call-out charge. Fortunately the repairer's young assistant casually asked if I'd changed the batteries in the curtain Safety Edge Transmitter, a crucial comment, as will be shown. (The transmitter is part of the system that halts and reverses the curtain if it meets an obstruction). Batteries? I didn't know there were any, no mention in the manufacturer's instructions, but it turns-out that they have an 8-year life in normal use, and I was pushing 14.

The second visit was from the same company, with different personnel. Again, no success with a repair, but at least a repeat call-out charge was waived (and wouldn't have been paid).

The third visit was from an installer whose main interest seemed to be pushing new business. His focus was only on the occasional jerky closing of the curtain, something his company had failed to completely cure several years earlier. He showed no interest in solving or even exploring the electrical problem, but proposed installing a whole new set-up at a cost of over £2,400.



The door manufacturer's support was unimpressive, their website trouble-shooting page suggesting renewing the Safety Edge batteries, but with no further instructions, and in the event of failure, to contact their approved installers.

So with nowhere else to turn, it was down to me to solve the problems myself, starting with the batteries. That job was relatively simple, just opening the transmitter unit, then unscrewing and lifting the PCB to replace four 2032 lithium cells, costing £4.00. Next was to commission the Safety Edge function, just a matter of pressing a switch inside the control unit. Success? No, fail, because vital set-up information on the procedure in the SeceuroGlide document was missing. Nothing ventured, etc., I nervously pressed the unit's Reset button and found that nothing now worked. One last desperate measure was to remove the mains power and wait an hour or so. This did the trick, and soon the curtain was opening and closing again, but without the Safety Edge feature working.

Searching for other issues that might be causing the problems, I found that the third installer (above) had in their earlier work graunched a curtain guide and reduced the curtain's fully-opened height to match. This had now positioned the upper safety Edge sensing magnet in the wrong position, meaning I had to re-drill the guide to relocate it.

It was at this point I made a chance discovery of the full commissioning procedure on the website of Rollertec Ltd., the control unit's manufacturer, and at last I was ready to try another attempt at recommissioning the Safety Edge. This worked exactly as Rollertec specified, and the door was back to working normally.

The lesson I learned from this is that anything involving electrickery is going to let us down at some point, and in the case of my roller door, little help will be forthcoming. Thus I would recommend to anyone owning or contemplating fitting this type of door -

- 1/ Making sure the external emergency winding handle and the key for its security lock are always to hand. A shot of WD-40 from time-to-time will keep the lock working.
- 2/ Becoming familiar with the use of the internal emergency winding handle by doing a dummy run (helper at hand OUTSIDE), with a vehicle in-place in the garage, and in the dark.
- 3/ If in any doubt over the correct working of the door, making sure you carry a mobile phone if you enter the garage. An escape door is of no use if you can't get to it.
- 4/ Being sure to retain and read the installation notes for the door, not just the operating instructions, but in addition downloading the full instructions for the control unit from its manufacturer.

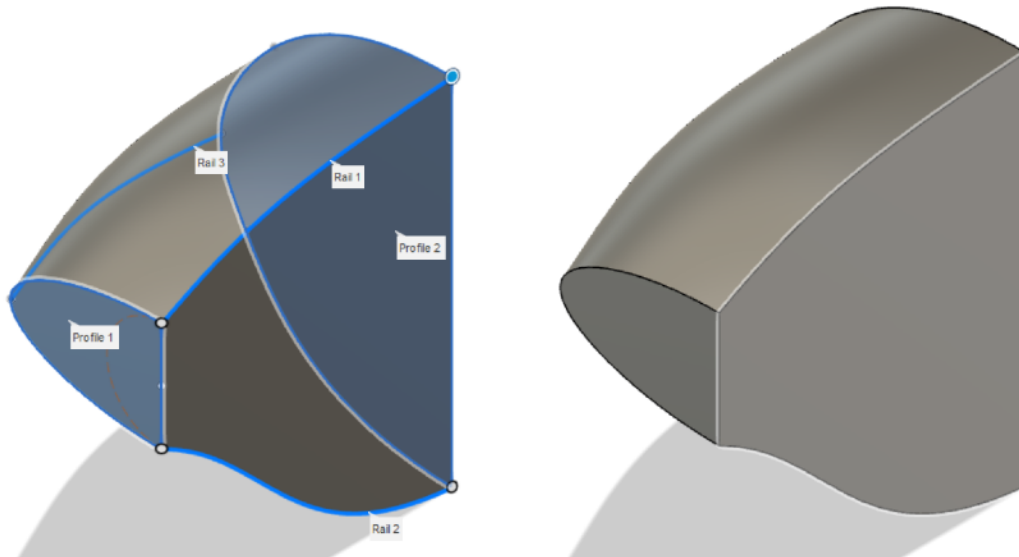
Colin S.



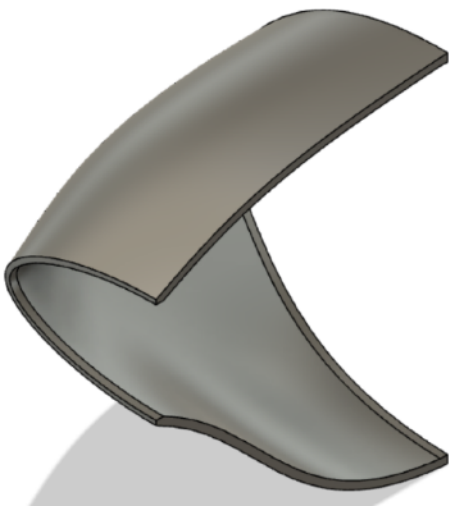
"Now I remember what I wanted to tell you. The safety stop on the garage door doesn't work anymore."

Peter Rieden of the Border Club article on CAD and 3D printing Continued

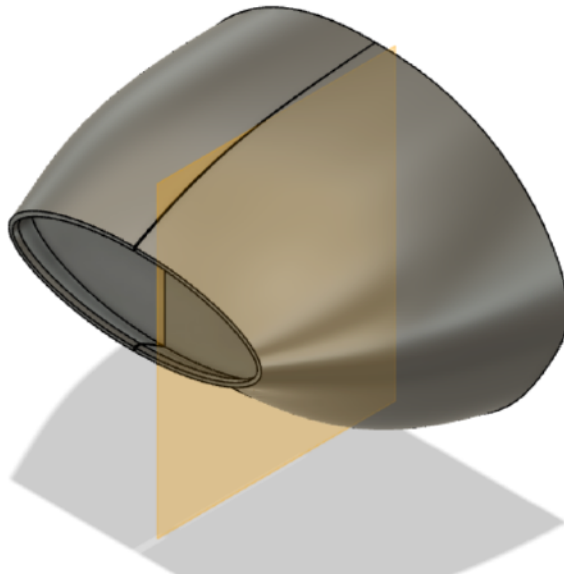
Now we start getting to the "clever stuff". We have a back shape and a front shape, so we loft from one to the other. That's a straight-line loft, but we want it to follow the outline shapes so we use those profiles as "guide curves" to get a much better shape:



Now we can see the basic solid shape which we then "shell" to make the hollow shape of a cowl. When I did this for these pictures I shelled it at 2mm thickness instead of the 1mm I used for the real one. I'd love to say there was a reason for it, but it was just a mistake:

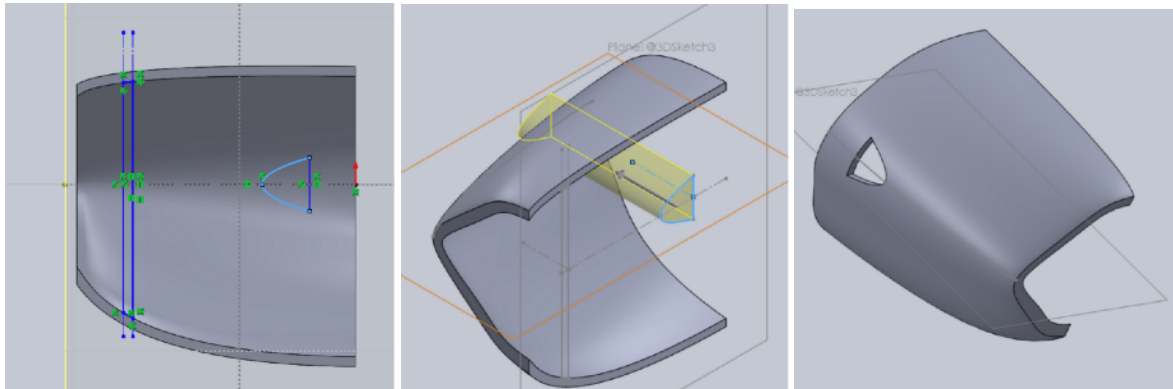


Now if you're doing this for real the next step is to create the whole cowl by mirroring the shell like the one below.

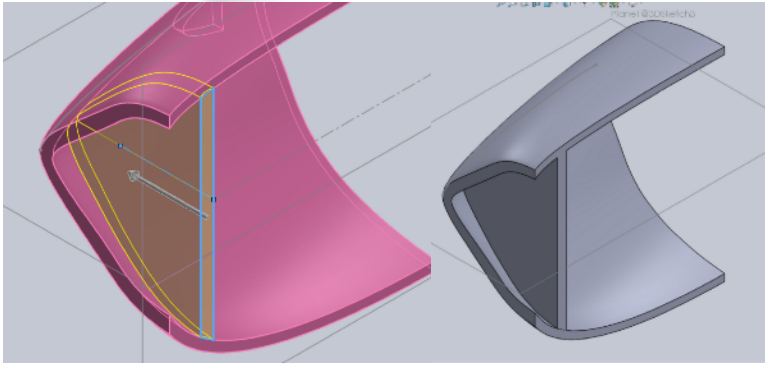


Unfortunately that can make it difficult to see many of the subsequent steps, so I'll carry on with the half shell only so it's easier to follow. But remember that it would be more normal to do all the steps from here on the complete shape rather than the half-shell.

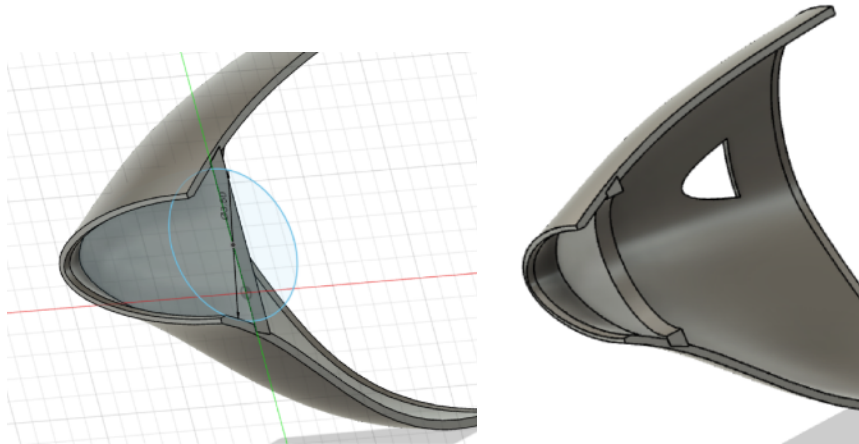
Now my design idea needs some features. I want some holes in the sides as air exhausts, and I want a baffle at the front that blocks airflow so that it goes through the motor rather than around it. So I draw outlines of these features in a side view. Then the holes are done as an extruded cut (in reality this cut goes in both directions to get holes in both sides) I forgot to grab screenshots of this stage in the Fusion version so these pictures are from my original Solidworks version, which is a slightly different shape but still show the point:



The baffle starts off as a simple extrusion of the rectangle using the "extrude up to surface" function (again, this is actually extruded in both directions)



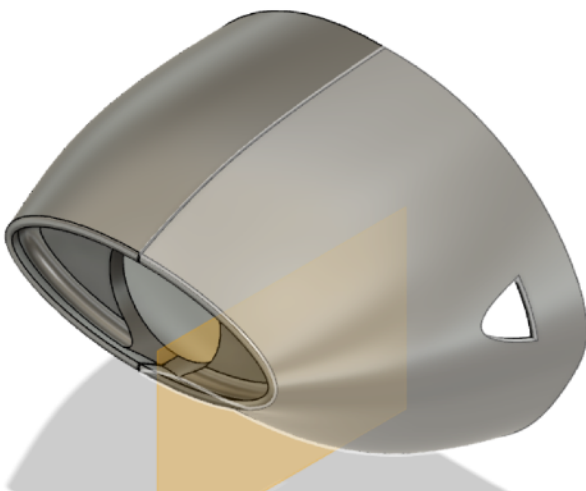
(Back to the Fusion 360 version) we then draw the required size circle on this surface and extrude a cut through it:



Now we come to the detailing, like putting a radiuses fillet on the front lip of the cowl. There are various ways the inlet can be blended into the baffle, but for simplicity here I just did a large radius corner fillet:

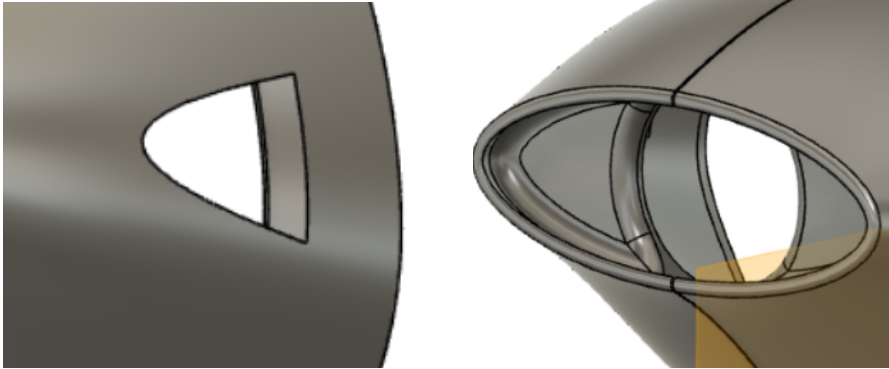
On the real one I added a small radius fillet on the back of the baffle both for some extra strength and to help the printer with this overhanging part, but I didn't bother with this reconstruction - sorry:

Now at this stage I put the whole cowl back together by mirroring this part. I simply told the software what I wanted to mirror (in this case by selecting everything, but you can choose specific features to include or exclude), where the line of symmetry was (the joint face in this case, but you can select any flat datum) and hit the "Mirror" button. The result looked like this:

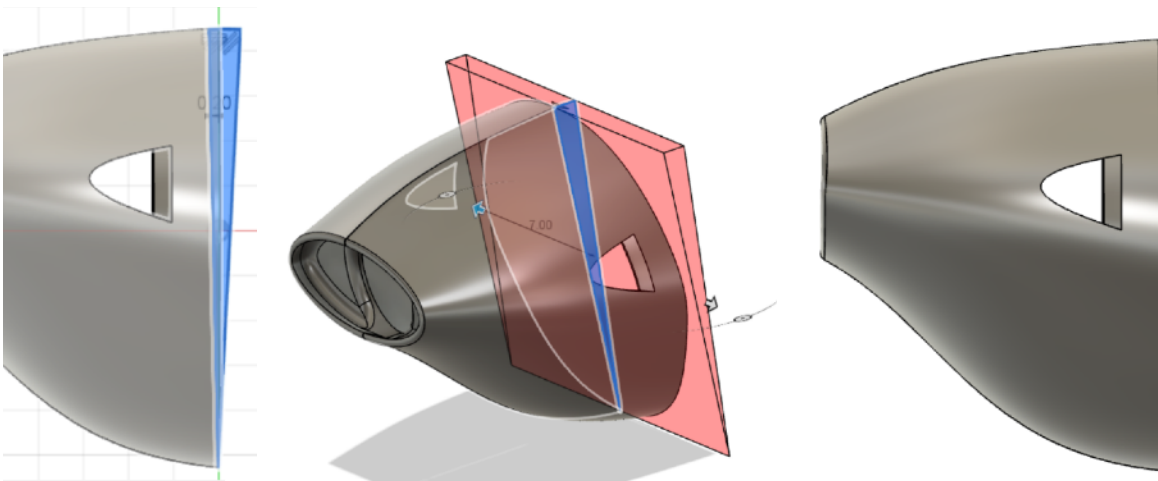


Then I looked at the air exhausts decided they could have some detailing as well. I added a 2-way chamfer to get rid of the step and ease the airflow. The chamfer goes backwards on the straight rear edges but forwards on the curved front

Then I looked at the air exhausts decided they could have some detailing as well. I added a 2-way chamfer to get rid of the step and ease the airflow. The chamfer goes backwards on the straight rear edges but forwards on the curved front faces (you can't see these so you'll have to take my word for it) I also did some refinement on the edges of the baffle to ease the airflow into the front of the motor by putting a radius on it

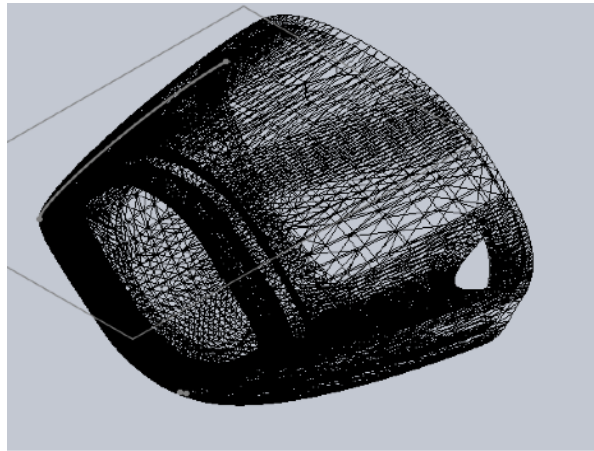


Finally there is the small matter of correcting the shape at the back. All the way through this design I've assumed that the front and back faces are parallel, and at right angles to the shaft axis, because this makes things much easier to design. But if you go right back to the early posts and look carefully you will notice that the back face is actually angled forwards by 2mm. So to complete the design I drew a triangle on the side view that's 2mm wide at the top and then extrude that as a cut along the back face to trim to my required angle:



And that's the design completed, and saved in the CAD system format (you did hit "save" didn't you?). But 3d printing software can't read that - they take various formats, but the most common is "STL" (Standard Tessellation Language) which is a format that basically describes the shape as a mesh made up of huge number of tessellating triangles. The 3d CAD systems create this format with a "save as" or "export to" function. With the free "Home use" version of Fusion 360 it's done using an "Export" function that's a web-service. You hit the button and it sends your file to a remote server that builds the STL file and sends it back. This takes anything from a couple of minutes to half an hour or more depending on how busy the server is, but that's one of the few trade-offs in using this "free" software rather than paying upwards of \$5,000 for the alternatives. The software tells you when it's done and allows you to save the resulting file on your computer.

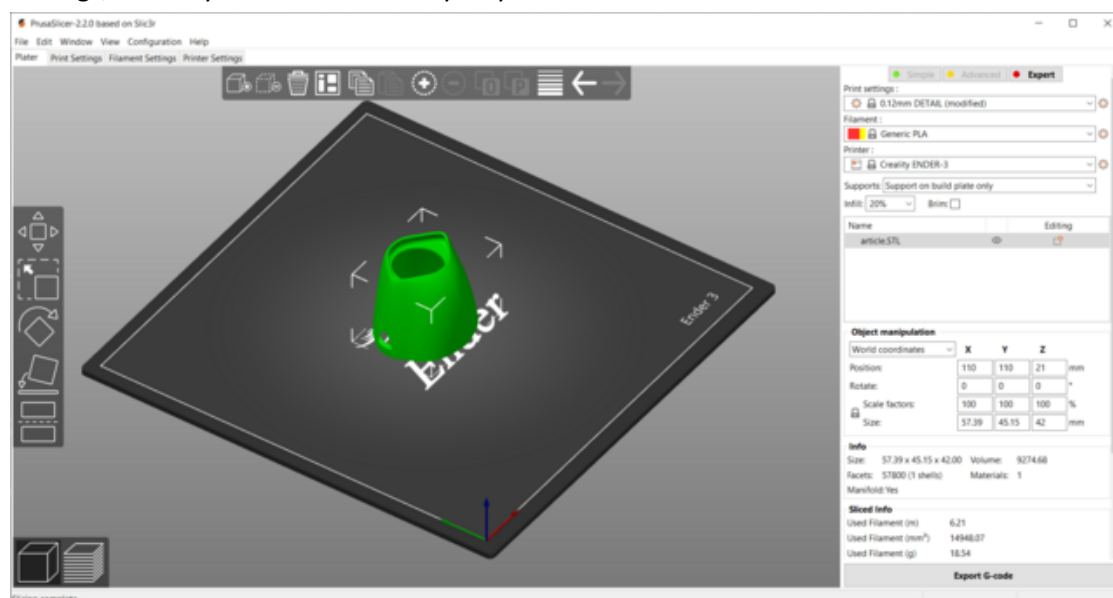
If you're interested the resulting mesh looks like this (you no real need to see this file to use it). From here on we've finished with Fusion so I'm reverting to the original cowl design as developed in Solidworks as it makes no difference:



Now we move to the final steps before actually printing.

3d printers operate by extruding layers of flat strip of plastic along a path. The thickness of the layers can be varied - you typically use 0.1mm to 0.12mm for high resolution and anything up to 0.3mm for "coarse" or "draft resolution". The width of the strip is set by the size of the extruder nozzle. Standard nozzles are nearly all 0.4mm, but sizes from 0.1mm (fine detail) to 1.5mm (industrial-scale large prints) are often available. These parameters are set, along with lots of others, in a piece of software called a "slicer" which takes the STL file, converts it into horizontal layer slices and then generates a whole file of instructions to move the print head (in 3 dimensions) and turn the extruder on/off to "draw" the layers in the plastic in a language called "G-code". The G-code files also include things like extruder temperature, bed temperature, printing speeds etc. There are lots of Slicers available, almost all free for hobby use.

The one I prefer is called "PrusaSlicer" because in "expert mode" it gives easy access to lots of control parameters and settings, but they all work. Essentially all you do is load STL file:



And then hit a button to create the G-Code file which can be saved straight onto an SD card or USB memory stick, or "sent" to your printer (depending on the particular printer and how it's connected). When the slicer software generates the G-code it can also add supporting structures (the green elements below) which are temporary supports that allow the printer to do seemingly impossible things like overhangs. The slicer software has lots of options you can choose and adjust to specify if, how and where to put these supports.

The resulting cowl looks like this. I've loaded the STL files to the free "Thingiverse" website at <https://www.thingiverse.com/thing:4775450> if you have a Skipper and would like a better cowl that accepts a 30mm alloy spinner



That's essentially it for this piece. From here there's a whole different subject on types of 3d printer, slicer options, printing options and types of plastic. If anyone wants another piece of that then let me know.

CML TOP GUN "FELLOWSHIP"

an Article by Colin Stevens

CML TOP GUN "FELLOWSHIP"

[I wrote this many years ago for a different magazine, but since the model is still current and has been appreciated on Thorney, I thought it may be of interest in updated form to some.]

I've drifted in and out of modelling over many years, but somehow nearly all of my models have been high-wing. Consequently, I'm out of my comfort zone with low wing models, maybe in part due to not finding as easy to judge bank angles. For a long time I've felt the need to fly something more amenable to aerobatics than my old Cub. I thought I was there many years ago with a Flair Giles/MVVS 91 that I put lots of extra effort into, turning it into a very nice model. Alas, despite meticulous preparation, it met its end impacting some sea defences straight after its very first take-off, due to a switch problem. It was totally demolished, including that very nice engine. I did enjoy the take-off, however.

Picking myself up and brushing myself off, I put together a Seagull "Harmon Rocket" as a stop-gap replacement, whilst buying another Giles kit to put on the shelf meanwhile. I'm not sure what possessed me in choosing the "Rocket", because with its ASP 52 2-stroke, it is very fast and over-responsive, and not a logical Cub replacement - certainly for someone getting-on a bit. It too benefited from a lot of extra work, especially to defeat tail-flutter problems. Other models came along to create diversions, but eventually I settled on the Top Gun "Fellowship" as making the most sense for me. It comes in 3 colour schemes, and this is how it's shown in the adverts -

The Build:

That title sounds a bit presumptuous, given that most of my colleagues put an ARTF together in a week or two. I always find there's a lot more to do if I want a pleasing long-lasting model, so my builds take months, especially as I make my own radios.

It's not my favourite colour scheme, but they've been off the market for several years in the UK, so I was lucky to find just about the last one in the country at the 2010 Nationals. Clearly, visibility was going to be a problem, so you can see that I've had to adorn it with contrasting trim in dark blue and in additional red. I'm not too sure about the canopy frame in dark blue. It was all I had to hand at the time, but maybe in the future I'll change it to matching yellow, and I'd also like to tint the canopy for better visibility. Here's how it looks after some extra work -





Top Gun have beefed-up the undercarriage after problems with early kits, but that now supplied seemed over-kill, so I replaced it with a carbon fibre alternative - Carbon Copy, Type CCU07. Just in case I need to fly off grass, I've replaced the wheels with slightly larger - those very nice Cermak Super Tire ones with the machined alloy hubs. I also fitted some ex-Spacewalker spats, as they are slightly roomier and came ready-painted.

I'm using an OS 52FS to power the model, largely on the evidence of a review by Dave Boddington, who found the power very adequate for sensible aerobatics. The rear-mounted carb presents some throttle linkage problems if the bulkhead is to be sealed, so I fixed it with a trombone-shaped rod this way - Sorry, not a good picture, but the rod emerges from the bulkhead through a hole drilled right through the middle of a nylon screw, making a neat bush that screws in. The flex in the bend allows for the curved and sideways motion of the throttle arm. It is set-up with the throttle closed so that it does not override the spring in the carb barrel. Hardly rocket science, but it works a treat.



Sorry, not a good picture, but the rod emerges from the bulkhead through a hole drilled right through the middle of a nylon screw, making a neat bush that screws in. The flex in the bend allows for the curved and sideways motion of the throttle arm. It is set-up with the throttle closed so that it does not override the spring in the carb barrel. Hardly rocket science, but it works a treat.

I find that I'm junking most of the metal hardware in ARTF kits, and this model was no exception. The spokes are my first priority, and I find that bike spokes are of much better quality and provide the full available diameter, unlike those with rolled threads. The sprung tail-wheel was very heavy and it's said is prone to snapping, so I re-made it using Dubro parts.

The original design features split elevators driven by a single pushrod having very long and flexible forked spokes. Given the issues with the Rocket elevators, I decided straight-away to join the elevators with a very stiff torque rod, and change both pushrods to 1/2" square light balsa, covered in Polyspan for extra stiffness.

For some unaccountable reason, the canopy was painted silver all-over on the inside, but fortunately this removed easily with petrol and enabled me to fit a plausible instrument panel and a pilot figure, someone to blame when things don't go well.



Here's a shot nearing the end of the build. I only include it because you may spot the binoculars. Needing to wear glasses, I found the binoculars very useful in aligning the tail to the wings, because it meant that I could walk up the hall at greater distance and view all more clearly with a narrower depth of field. Maybe a bit eccentric, but the physics is valid.



Balancing:

I did this with the model inverted, finding the U/C and spats getting in the way when upright

Flying:

This is the model I could have done-with several years ago. I'm feeling my way with it very carefully, and so far only flying it when the winds are along the runway, since we have a restricted flying space, and I'm not happy to make sudden dog-legged landings until I get to know it better. As yet I've not found any vices, and it flew straight off the board without any trim changes at all. It flies very smoothly and grooves nicely, and the landings have been a dream. I've been able to set up landing trim on the Tx with a programmable mix, and the model has been happy to settle-in to a direct approach to the round-out. A floaty approach is best avoided. I have a lot to learn about the model's capabilities, and my own, so I'm sticking to basic aerobatics whilst paying close attention to trim and set-up.

The OS 52FS is well-matched to the model for the kind of flying I want to do. It's pulling just over 10,000 rpm static on the Master Airscrew K-Series 12 x 6 prop that I'm using at this time, and the static thrust comfortably exceeds the model weight of 6lb 3oz. It easily pulls nice round loops from level flight with this set-up, so I'm happy with this prop, at least until I come to better understand the needs of aerobatic flying.

Top Gun have made a pretty good job of the basic build, and the minor hardware issues have not been of any great concern. I think that is mirrored in the reviews I've read. All-in-all a very pleasing model, and probably my favourite.

UPDATE:

I replaced the OS52 FS with an ASP 61FS after persistent difficulties with the OS 52 silencer loosening due to bad machining of the exhaust port. I was very happy with the OS 52 power, but I'm happier still with the extra power of a 61, giving it that extra edge into the climb into big loops. Slightly less weight, too.

Colin Stevens



CAA Registration information,

In the early days, a number of members paid for this through the CAA rather than the now more popular route, the BMFA.

I phoned the BMFA this morning to ask if it was possible to switch, and to my surprise they said yes, everyone can pay the £10 through the BMFA.

The possible advantages are:

1. Country Members won't have to deal with the CAA, only the BMFA.
2. Full Members who up to now pay the CAA themselves can switch membership types and become Senior Member (CAA), so the club pays it all.

Regards.
Jeff

The following dates are booked for Fishbourne Field Flying evenings

Thursday 13th April

Thursday 11th May

Thursday 8th June

Thursday 13th July

Thursday 10th August

Thursday 14th September



Date	Day	Location	Event
To be rescheduled	Sunday	Thorney	Four task novelty competition
18 May 2023	Thursday	Portshole	FunFly Competition
22 April 2023	Saturday	Thorney	Tattiest Model Fly-in ('Hangar queens' & 'Olympic torches' that never go out
24 May 2023	Wednesday	Portshole	Electric Glider Competition
17 June 2023	Saturday	Thorney	Scale Day
15 July 2023	Saturday	Thorney	Pre-2000 Models Day (Replacement for Chris Foss Models Day in 2022)
26 July 2023	Wednesday	Portshole	FunFly & BBQ
05 August 2023	Saturday	Thorney	Gliding Competition

Flying alone on Thorney is now not allowed on the grounds of safety

When driving around Thorney be aware of young children on bikes and 20mph speed limit

Please Try to leave Portshole as tidy as possible, making sure no fuel is left on site & lock the gate.

30 metres from "uninvolved" persons"

15 metres when taking off & landing, subject to mitigations

From 1 Jan 21 BMFA Article 16 is law: know the separation minima!

The Commander at Baker Barracks Thorney and the MOD have decreed that there shall be NO drone flying whatsoever

When flying at Thorney please keep an eye out for traffic(all kinds walkers, horses, bikes, runners, and low flying aircraft) coming from behind the flyers and inform them accordingly

The club Facebook page is now in its fifth year. It has over one hundred members. It contains many contemporary site reports, and has a wealth of photos in its archives.

Administered by Nick Gates. David Hayward & Ken Knox

Here is the link:-

<https://www.facebook.com/groups/Chichesteraeromodellers/>