



Newsletter

No.17: May 2021

COVID-19

Organised model flying activity, in groups of up to 15 people, can take place at club sites which are operating in a COVID secure manner and which is overseen by a COVID officer. See <https://sportscotland.org.uk/media/6446/return-to-sport-and-physical-activity-guidance-120321-final.pdf> (page 7)

The only difference in Covid-19 restrictions this month is that all restrictions on journeys in mainland Scotland are now lifted. The clubhouse is still closed.

Please remember that if you DO visit the field during the current restrictions you must send an email to the following address:

KRMFCtrackandtrace@gmail.com

Contacting the Committee

An email address has been created for members to contact the Committee about Club matters. If you have any questions, suggestions or general comments, then please send them to the following email address:

KRMFCcommittee@gmail.com

Understanding the Stall (part 2) by Douglas Gilmour

The Effect of Load Factor

In S & L flight the load factor is 1. In other words, the total lift required is equal to the weight of the aircraft and the pilot or passenger will “feel” their normal weight.

In a level turn, the load factor increases exponentially with the angle of bank. For example at 60° of bank the load factor is 2g and the pilot or passenger will feel twice their normal weight. (see diagrams) At 30° the increased g is barely noticeable but at 80° its approx. 6g, enough to cause blackout in a few seconds without protection and training!

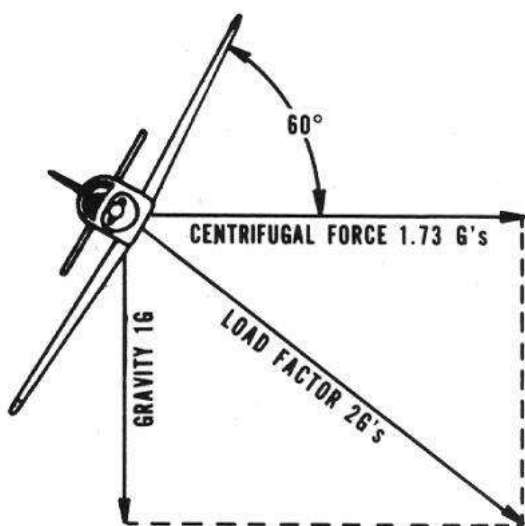
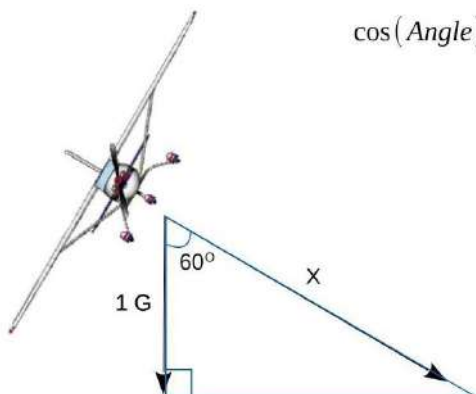


Figure 17-47 Two Forces Cause Load Factor During Turns

Mathematically, for level flight:

$$\text{Load Factor} = 1/\cos(\text{angle of bank})$$

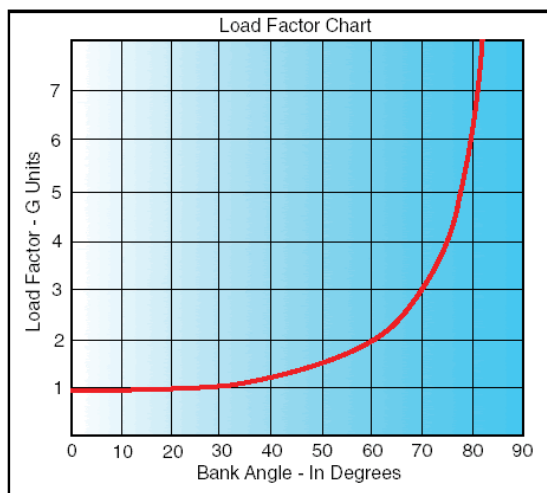


$$\cos(\text{Angle}) = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\cos(60) = \frac{1G}{X}$$

$$X = \frac{1G}{\cos(60)}$$

$$X = 2G$$

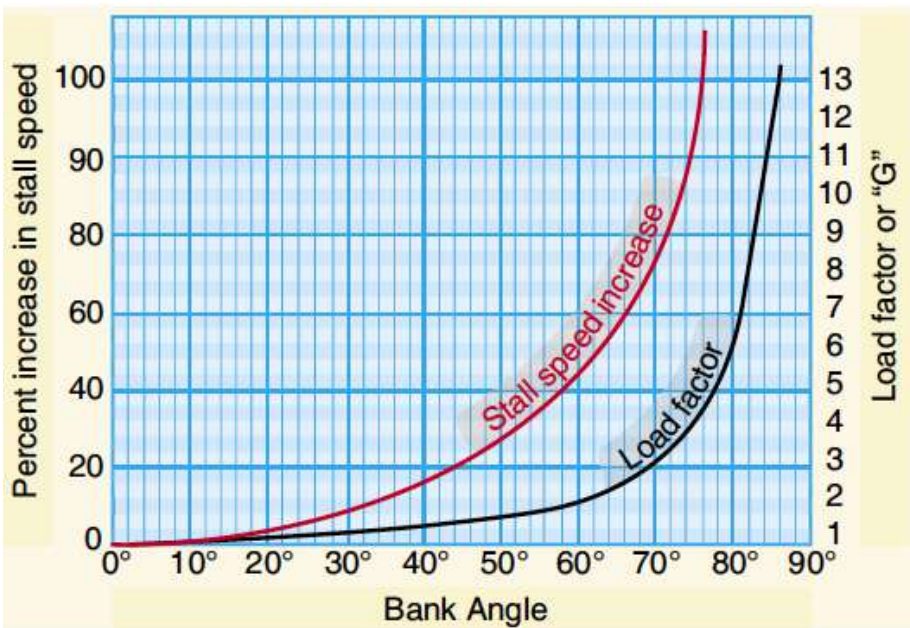


Relationship of Load Factor to stalling speed

Stalling speed is proportional to the square root of the load factor.

Thus in a 60° bank turn at 2g, the stalling speed is increased by a factor of 1.41 ($\sqrt{2}$) or in a 6g 80° bank turn by a factor of 2.45 ($\sqrt{6}$).

For example in my Super Decathlon whose S & L stall speed was 50mph, the stall speed was 70.5mph in a 60° bank level turn and about 87mph at 70° bank. You can see why student pilots are taught not to use high angles of bank when turning onto final approach!



Relationship of stall speed to load factor as bank angle increases in level flight.

Aerobatics

When it comes to aerobatics, the relationship between load factor and stall speed becomes even more interesting and important.

To fly a reasonably round loop in my Super Decathlon required a pull of about 4g at the start and finish of the loop and easing over the top at about 1/4 to 1/2g. (Remember gravity at 1g adds to the total load factor at the bottom of the loop and subtracts from it over the top). Thus at the start and finish of the loop the stall speed would be $50 \times \sqrt{4} = 100\text{mph}$ and over the top would be $50 \times \sqrt{1/4} = 25\text{mph}$. So to fly this loop there would be no risk of stalling provided the speed was kept safely above 100mph at the bottom and 25mph at the top. In practice the likeliest place to stall during a loop is because of pulling too hard around the near vertical phases on the way up or the way back down. We can now see that it is quite possible to fly comfortably at well below the "book" stalling speed if the load factor is less than 1g.

The so called "stall turn" or "hammerhead" as they more accurately call it in the US, is a misnomer in the UK since at no point in the manoeuvre is the aircraft actually stalled.

During the vertical up and down phases and the cartwheel at the top, the wings are at zero angle of attack producing no lift (or at least should be) and thus by definition cannot be stalled. However, it is quite possible to stall the aircraft by pulling too hard up to the vertical line or pulling out too hard from the downward vertical line.

Stick Position and Stalling

One final point worth making is that elevator stick position is closely related to stalling. Essentially, the position of the elevator (and therefore the position of the stick) determines the angle of attack and this is largely independent of speed. If you pull the stick back further than the critical position, the aircraft will stall whether you are flying slowly straight and level or in a high speed dive and entering a loop. Of course in a full size aircraft the force required to pull the stick past the critical point is much greater at high speed due to the faster airflow over the elevator, but this feedback is not present in RC models.

The message here is that if you are pulling up into any manoeuvre from high speed, then do so nice and smoothly. If you jerk the stick back hard (past the critical point) you will cause a high speed stall as well as possibly tearing the wings off due to too high a load factor!

Happy Flying!

Members' Building Projects

Robert Boyd sent in some pictures of his latest project.

I have just recently completed and test flown, the Ripmax Bolero Snake with a 59" span. It is powered with an OS.52.FS. It has had one test flight and I have decided to reduce the aileron throws. I have also changed the wheels to larger 3" foam wheels.



The Bolero was designed by Alan Wood who also designed the successful Ripmax Jive Funfly. My Jive is best flown on a relatively calm day due to it being lightly constructed and has large control surfaces.

The best price for my Bolero Snake was TJD Models at £179.99, this is good value for this model. The recommended EXPO values are elevator 20%, ailerons 40%, Rudder 30%.

The finished weight for the model is 3.52 Kg. All in all it was a good model to put together.

Martin Kaplan sent in some pictures of his 3D printed model and jigs he has printed for constructing his models.

He has a Prusa i3 Mk3 printer and the filament he uses is manufactured by 3DJAKE and is a type called ecoPLA Tough which is much stronger than normal PLA (Polylactic Acid), which is a natural polymer.

Prusa i3 Mk3 3D printer. From the Prusa Research website

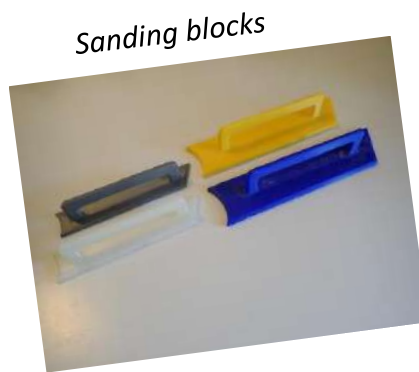
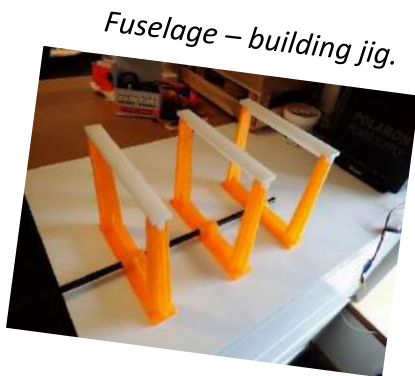


His latest printed model is a Focke-Wulf Ta 152 with a 48.2" wingspan. Servos fitted are 3 x Corona DS-238MG, it is powered by a Turnigy 3536 with a power output of 1150Kv with a 3S Lipo 2200mAh battery. Everything is glued together with super glue and activator. Printing time was approximately 50 hours. The Ta 152 is now finished but hasn't been flown yet as he hasn't had time. The design of the model came from a company called 3D Lab Print at [Home – 3D Lab Print](#)



Currently he is preparing a design of a Fokker D.VII with a metal fuselage with a scale of 1:2.5 or 1:3 dependant on weight calculation.

Martin also uses his 3D printer for printing building jigs and tools for his models, all of which are of his own designs using AutoCAD or Autodesk Inventor.



Martin also uses a CNC milling machine which he has used to make a template for the wing ribs for his historical Carl Goldberg Valkyrie.



Other planes that Martin has 3D printed and owned are shown below. Lets hope we see some of them down the field soon.



Activity at the Field – April 2021

Friday 2nd April 2021

Loads of people at the field today. Alan V, Douglas F, Douglas G, Billy H. Neil flew his Tutor 2 for the first time since repairing it. On trying to fly inverted it was too low and crashed in the south field coming in at full throttle. It was destroyed; wings snapped in two, front end demolished. It will be rebuilt but will take time. Alan V was flying the repaired Arising Star which Douglas G donated to him.





Saturday 3rd April 2021

Bill McDiarmid was flying his Wots Wot biplane. Billy Wilkie flew his T-Rex and SAB Kraken helicopters with more gizmos than you can shake a stick at; GPS, return to home, altitude control etc.. He and Tom W then flew on the buddy box. Mike H had a first flight after lockdown on his T-Rex 700 which flew OK. He then tried his Avant with a new GY611 gyro on a GV-1 governor which also flew well. It flew so well that Tom had him doing large figure 8s and pirouettes. Mike then went back to the T-Rex but had an engine cut and autorotated into the north field with no damage, luckily.

James Kane arrived and had a maiden with a low wing aerobatic model with a Webra 60 and tuned pipe. He had a dead stick and a perfect landing in the south field. He also flew two foam ducted fan jets which may have been a T33 and a Hawk which looked great in the air. Jim McGouldrick had his small drone and took some photos



Wednesday 7th April 2021

The wind was from the NW, then NE, then N, then W, then E. Alan V was at the field on his own and after 5 minutes decided to land but was unsure which was the best approach direction due to the wind changing. The Arising Star was coping okay, but his fingers were so cold that they weren't pushing the sticks very well. By noon he was still alone. He had a cup of coffee and as he sat savouring the last of the warmth of his cup, the sun broke out and the wind sock was hanging limp down the pole. He jumped up, put the Arising Star on the bench and started the engine. A freak gust of wind lifted the plane up turned it over onto its back and slammed it down on the bench. Snapping the engine mount in two. The glow starter still attached between the engine and his equipment box. He turned and the wind sock was still hanging limp down the pole. Then Douglas F. turned up. By the time he had relayed the tale to him the cross wind from the north was back. So another break was taken.



Jim McG arrived and tried flying his drone, but the intense cold got to him quickly so he didn't stay too long.

Douglas G. flew his 1970s trainer with his only near miss being when he clipped the fence when landing across the runway, which was the only way possible to land.

Saturday 10th April 2021

Just Douglas F down the field today. He maidenized his second hand Boomerang V1 which came with a fairly old OS 46 engine. It is his first tricycle undercarriage and it has a faster landing speed than his foamies so he needs more practice. He intends to convert the wing from elastic bands to plastic bolts like the Boomerang V2.

Tom Wilson went along and cut the grass but it was very soggy at the east end, even with the hand mower and suggests we just let the grass grow there and put in another flight box further along.

Sunday 11th April 2021

Good turnout again and a great days flying. Billy Wilkie had a spectacular crash with his Duraflly Tundra foamie smashing in the front end and unseating the electric motor. Jim Kane (Styk) was flying his electric jet.



Monday 12th April 2021

Bert was at the field on his own flying his electric Arising Star. Gusty wind from the North West.

Tuesday 13th April 2021

Wind light from the South East but occasional stronger gusts.

Neil and Douglas Fulton down the field in the afternoon. The shed's door hinges had come loose and it was difficult to shut properly so longer screws were put in the hinges.

Apparently Alan V was down earlier but had to leave as he was with his grandsons. 3 Buzzards circling the field behind. Neil flew his Apprentice and Douglas flew his Acrowot and Riot. Neil left Douglas there on his own at 14:30.

Saturday 17th April 2021

Committee members came down to clear out the mower container to make room for the new mower. It was amazing how much junk had accumulated over the years. Douglas F and Billy H were there flying their planes. Billy H had a superb Seagull Yak 54 which he put through its paces.



Thursday 22nd April 2021

Neil had finally got his new Boomerang V2 put together to replace the Tutor 2 which was smashed up on 2nd April. The first flight went fine and control surfaces were trimmed. On the second flight, after lunch all went well until the engine cut out and it took a nose dive into the wall below the fence to the right of the runway. The fuselage was split all the way down to the tail and the wings were ripped off. The engine has lost a couple of cooling fins on the cylinder head. Both Mike and Neil heard the plane impact the wall and it was a good 500 metres away! Easily fixed, and not to be flown until the engine will idle without cutting out.

Friday 23rd April 2021

Neil G, Alan Veitch, Bill, Douglas Fulton, Bert. Douglas flew his second hand Boomerang V1 with a OS 46. Went like a rocket but he managed a really good landing. Neil flew his Apprentice as he has nothing else to fly. Alan flew his renovated Arising Star from Douglas Gilmour. Bert was flying his electric Arising Star and Bill was flying a high wing IC plane.



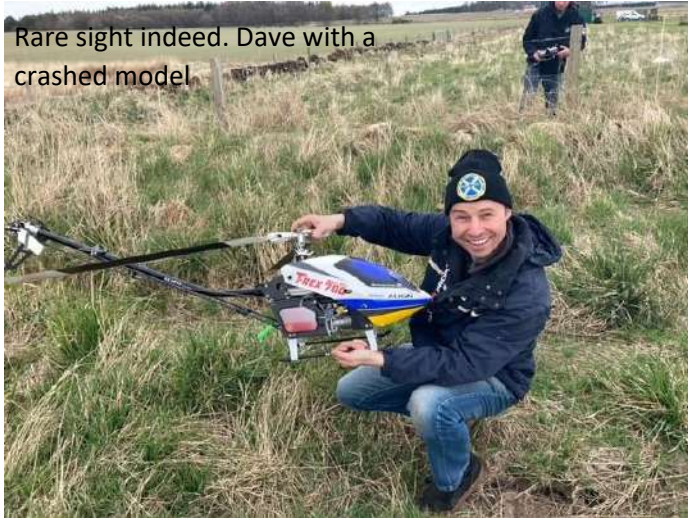
After everyone else had departed, the lonely figure of Alan V remained. He had lunch and as the wind had died to leave the Windssock limp he fired up the Arising Star for a couple of circuits. The engine cut immediately after take-off, and the plane glided to a halt at the end of the runway. Restarted, it made it up to flying height before cutting again, landing in the far corner of the farmer's field.

Any normal person would call it a day, but not Alan. Off again, this time the engine cut high enough to turn it around over the top of the clubhouse, and nearly made the runway width ways, but they just glide on and on don't they. Fortunately it stopped before the fence.

Alan gave up then and put the IC model in his car, and used up the remaining batteries on the Kingfisher. A much safer option.

Saturday 24th April 2021

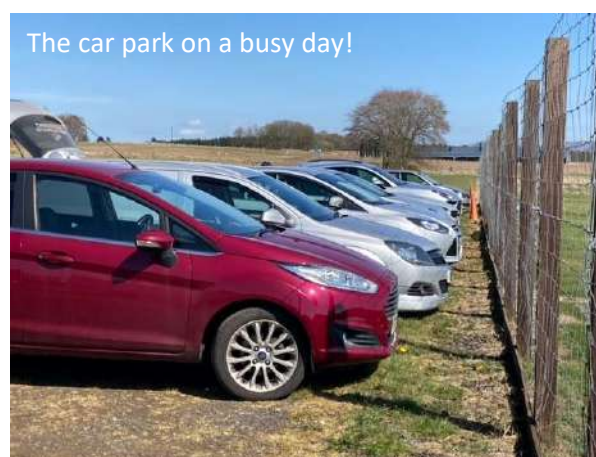
Tom maiden'd Billy Wilkie's new plane and Billy also had a successful flight but on the second flight Billy came down in the field South of the runway and severely damaged the



nose. On Dave Kelly's first visit to the field for some time he ended up in the west field but luckily little damage was sustained.

Sunday 25th April 2021

Loads of people at the field today. Mike Hill, Bob Gadd, Billy Dunn, Billy Wilkie, George Robertson Ulrich, Douglas Fulton, Roy Millar and Tom Wilson. Paul McDade came for a visit and intends re-joining. Roy was helped to get through his CAA registration, which wasn't an easy task on a mobile phone.



Mike's Kosmo (with only Italian build instructions) had its maiden flight. It moved through the sky very quickly but landed OK. Mike had to have a flight with his helicopter to get his heart rate back down and did several loops without too much bother.

Billy Wilkie flew his SAB Kraken on a buddy box with Tom. George hovered his Raptor copy. New member Ulrich flew his T-Rex 550.

All please keep in touch via the members WhatsApp group. If you want to be added to the group contact Alan V.

Newsletter Feedback and Contributions

Please let Neil or Alan know of anything you would like to see included in the Newsletter. Also, any feedback is much appreciated. If anything happens whilst you are there send us an email (with pictures) for the Activities at the Field section. Articles are always needed and are a very popular read. Members are interested in how you got into the hobby, what planes you have owned etc...

We aim to publish the Newsletter monthly around the 1st of each month. Email addresses for articles are: alnvkrmfc@gmail.com or krmfcng@gmail.com.

Items Sought and for Sale?

Is there anything you want or have for sale? Send the details including pictures for inclusion in the next Newsletter.

Web Links and Shops

Model Shop Leeds - www.modelshopleeds.co.uk/

Wheelspin Models - wheelspinmodels.co.uk

Sussex Model Centre - www.sussex-model-centre.co.uk

The Balsa Cabin - www.balsacabin.co.uk

The Vintage Model Company - www.vintagemodelcompany.com

Kings Lynn Model Shop - www.kingslynnmodelshop.co.uk

Scoonies - www.scoonie-hobbies.co.uk. Don't bother with the website. Visit the shop in Kirkcaldy.
87 St Clair St, Kirkcaldy KY1 2NW. Tel No: 01592 651792

Dens Model Supplies - www.densmodelsupplies.co.uk. Excellent for spares for vintage Cox engines.

Hobby King - hobbyking.com/

WestonUK – www.westonuk.co.uk Good value fuel in large quantities. Over 20 Litres (4 Gallons) gives you free postage.

ACCU – www.accu.co.uk. Excellent for bolts, screws and washers. Will take requests for bespoke items.

RCM&E - [RCM&E Home Page](#). The website of the best aeromodelling magazine. If you have a question the forum is bound to have an answer.

RC Thoughts - <https://www.rc-thoughts.com/> Finnish website of Tero Salminen. Phoenix Simulator Downloads and updates.

The committee wishes you all good health

STAY WELL

See you all soon