The Electronic News letter of the Chichester and District Model Aero Club

Clear Dope

July 2018

Chichester and District Model Aero Club: Committee 2018
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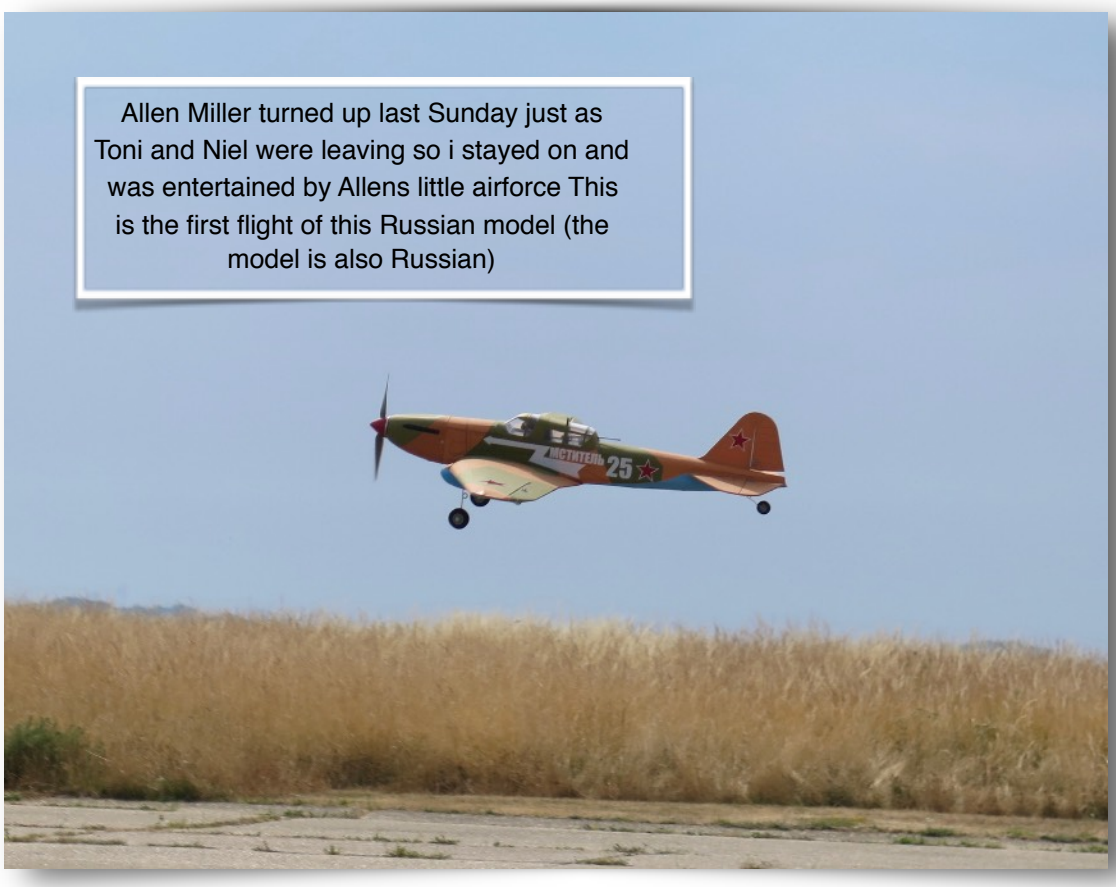
This month we have the Air Cadets on the evening of Thursday 5th July. Followed by Evening flying on the 11th (Electric only) Club night on the 12th is control line and small Electic, on the 19th its I/C and electric followed by electic only on the 25th

The club BBQ is on the 15th and there will be an all up last down completion as well

Allen Miller turned up last Sunday just as Toni and Niel were leaving so i stayed on and was entertained by Allens little airforce This is the first flight of this Russian model (the model is also Russian)



Allen then flew his Bristol Blenheim MkIV Bolingbroke, followed by his Comet which struggled with bumps on the runway so I have added two pictures taken in August last year followed by his Mustang which flew well as all

The club Facebook page is now in its fourth 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. and David Hayward

David Hayward took these pictures of Mike Griffin's Stearman and Toni Reynaud's scratch built Bristol Beaufighter

DRONING ON (03)

from Bruce

What Type of Drone?
For simplicity in this article I'm going to categorise drones into three classes: cheap fun drones, smartphone drones and serious camera drones although there's a mind-boggling overlap.

Keeping it Up (Hovering and flying)

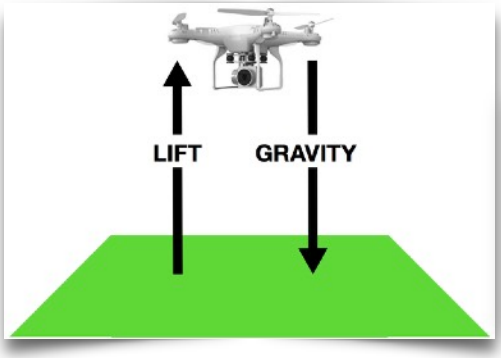


Fig 1 Hovering Forces

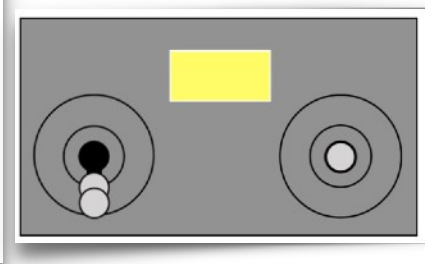


Fig.2 Manual Hovering Tx

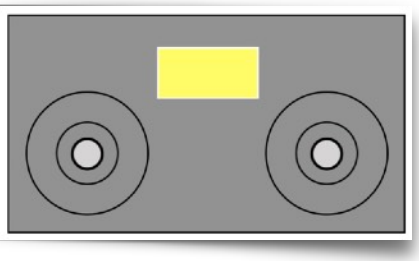


Fig.3 Auto Hovering

As I mentioned last month I'd like to cover different systems employed for hovering and flying since they vary greatly according to the drone type.

Hovering is of course a balance between the forces of lift and gravity (Fig.1) and both cheap fun drones and racing drones will usually employ a transmitter with a variable throttle (lift) gimbal as seen in Fig.2. The first skill you need to learn on a cheap fun drone is to hover and to practice it until it becomes second nature - much like steering a car or balancing on a bicycle.

Smartphone drones and serious camera drones, however, invariably have either on-screen gimbals or dedicated transmitters resembling those seen in Fig.3 where the power (lift) gimbal is sprung-centred. Both of these devices have auto hovering software inbuilt either with distance sensors in the Bluetooth controlled smartphone drone or a barometric unit in the 2.4 GHz controlled serious camera drone. Simply pushing the gimbal up or down results in the climb or descent of the drone and releasing the gimbal causes it to hover at its current height.

Drone Laws (As clear as the Brexit proposals)
Currently much of the new legislation is applicable to fixed wing model aircraft although BMFA are currently negotiating an exemption for fixed wing hobby aircraft types.
According to UK laws regulated by the Civil Aviation Authority, consumer drones (classed as those that weigh under 20kg) must be flown no higher than 400 feet (120 metres), and be kept at least 50 metres away from people and private property, and 150 metres from congested areas and organised open-air assemblies of more than 1,000 people.

From 30 July, it will be illegal to fly your drone within a kilometre of airport boundaries. Anyone who flouts the rules could be charged with "recklessly or negligently acting in a manner likely to endanger an aircraft or any person in an aircraft", and face an unlimited fine, up to five years in prison, or both.

From 30 November 2019, all owners of drones that weigh at least 250g will have to register with the Civil Aviation Authority (CAA) and take an online safety test. Anyone who fails to register or sit the competency tests could face fines of up to £1,000.

Furthermore, there are strict additional regulations regarding the use of any camera drone and particularly those capable of flying FPV (First Person View). An exemption allows FPV flying ONLY with a trained 'spotter' and the drone must remain within line of sight at all times.

FPV - A Different Kind of Flying Experience

First Person View on a model car, boat or aircraft relies on the camera in the vehicle streaming real-time video back to the operator who can view it through a smartphone, a screen or goggles. Unlike many members of our club I've never held a F/S pilots' licence and personally, I suppose, I build and fly model aircraft to compensate. The thought of FPV flying really excites me so much because not only can I compose and take some stunning aerial photographs with the drone but much more exciting, I can feel as if I'm up there in the cockpit flying over the hill and trees - seeing things as only a pilot can see them (and most importantly) flying the craft as a pilot would fly it without regard for my orientation. I can simply drive it forward and steer.

Now although many of the cheap fun drones are equipped with a camera and micro SD Card to record excellent still and video footage, it's only the more expensive drones which will have the facility for FPV since the drone will need to transmit the streamed video and the transmitter will invariably need to receive this along with other telemetry.

Smartphone drones and 'selfie drones' invariably use Bluetooth for this purpose whereas the racing drones and serious camera drones use the 5.8 MHz frequency band.

The Hubsan H7000 transceiver (above right) displays the customary 2.4 GHz antenna to transmit control signals to the drone and a 5.8 GHz 'patch' antenna to receive its video and telemetry.

While smartphone drone pilots will use their phone-screen to view the FPV serious camera drone pilots will usually have a smartphone holder on the transmitter or even a screen built into it. However, in all of these cases the ability to see the screen clearly, outdoors, particularly in bright sunshine really compromises the experience and they all need some form of shade or visor box. Even then they're rarely as clear and bright as shown in the Hubsan Ad. photo above. The only way to truly enjoy the fully immersive experience of FPV flying is by the use of special goggles.

The Totally Immersive FPV Experience

Once you put on a pair of FPV goggles the world around you changes, instantly, as you enter the world of virtual reality. It's a bit unnerving to begin with and I found myself leaning or swaying a bit to compensate for what my eyes - were telling my brain - what my body was doing - which of course it wasn't - if you follow. Once you get used to it, however it's exhilarating and you can soar like an eagle or dive like a Stuka. (If you've got the nerve.)

Smartphone holder types are perhaps the cheapest way to get into FPV and they'll come with dedicated software to give you a split screen experience (half for each eye). Of course while your phone's tied up in the goggles you can't be using it to control the drone so you'll need either a small gimbal controller or a 'wand' which will literally send the drone in any direction you point it. Buttons on the wand will operate various other photographic or orientation operations while a thumb gimbal will send it away or bring it closer.

Dedicated FPV goggles come with a raft of features not available on the smartphone types. Like most things in life, you get what you pay for. You can buy them from as little as about £70 but if you're really serious you'll need to spend £300 - £600 or even more. It depends a lot what you want to do and a fair bit of research before you commit your 'heard earned' is essential.

Good quality goggles will firstly contain two screens which have separation adjustment, like binoculars, slots for diopter lenses and a fan to stop condensation. They'll have multi channel receiver options and a variety of optical choices such as screen-shape configurations and 2D or 3D view. Most will have an inbuilt video recorder (which the racing drones won't have to minimise weight) and they'll have a micro SD card slot. To optimise reception good goggles invariably have the 'Diversity' function. The Aomway goggles shown above have both 'patch' and 'cloverleaf' antenna and their 'Diversity' function compares the strength of the incoming 5.8 GHz signals from each to obtain maximum clarity.

Head Tracking

Head tracking has to be the absolute ultimate FPV / VR experience. Either built in to the goggles or as an add-on, a head tracking device uses built in accelerometers to detect the head movement of the pilot. These movements are then transmitted to the drones 2 axis or 3 axis camera gimbal so that the camera will look up or down, left or right to mimic the pilot's head.....which is possibly why an FPV pilot's spotter shouldn't ask them any questions while they're flying!

NEXT MONTH

We'll consider some of the incredibly clever flying features built into most drones which are now making their way into fixed wing model aircraft and also take a look at the brilliant National Air Traffic Services 'NATS Drone Assist App' which is a free download and seriously useful to all RC model pilots.

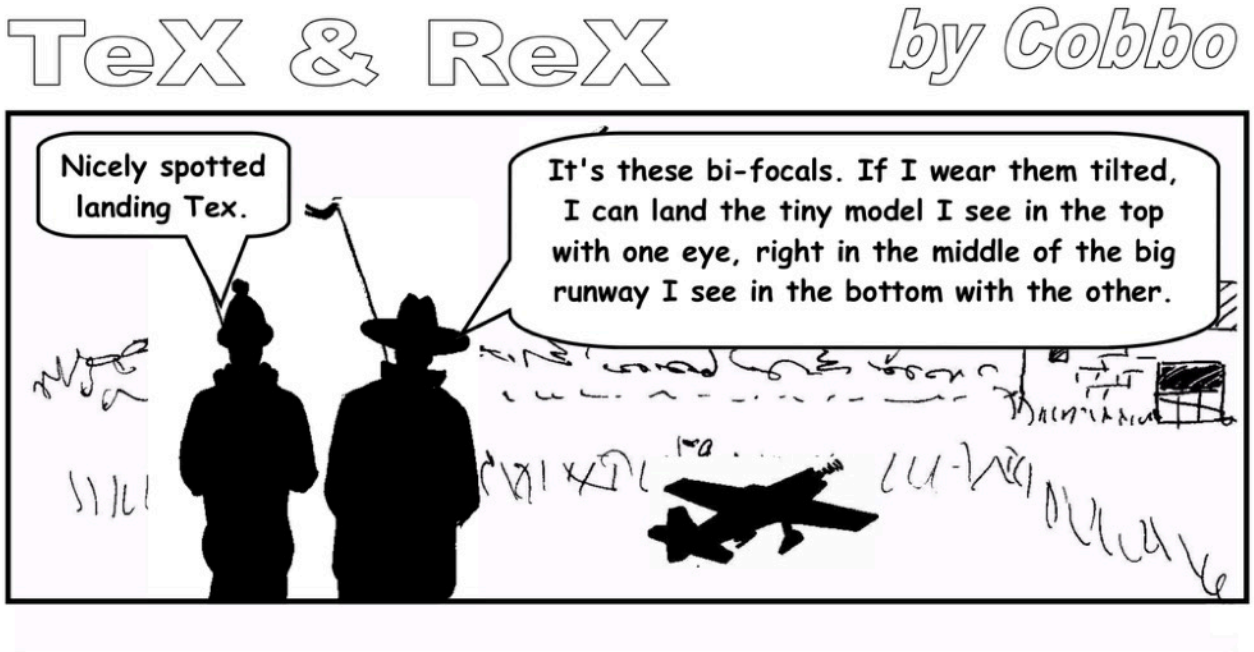
Questions, contradictions, additions please to aerobruce@aol.com

Club Program 2018

3rd July	Committee	
Thurs 5th July Air Cadets	Evening at Thorney	**Electric and I/C. no I/C after 20hrs No Activity before 18hrs finish at 21hrs Please contact Donna or Derek re trainers**
Wed 11th July	Evening at Thorney	**Electric only No Activity before 18hrs finish at 21hrs**
12th July	Club Night	**Light flight and Control Line**
Wed 19th July	Evening at Thorney	**Electric and I/C. no I/C after 20hrs No Activity before 18hrs finish at 21hrs**
Wed 25th July	Evening at Thorney	**Electric only No Activity before 18hrs finish at 21hrs**
Wed 2nd August	Evening at Thorney	**Electric only No Activity before 18hrs finish at 21hrs**
7th August	Committee	
9th August	Club Night	**Light flight and Control Line**
4th September	Committee	
13th September	Club Night	**John Riall - Covering a Model**
2nd October	Committee	
11th October	Club Night	**Andrew Gibbs' Quiz Night**
6th November	Committee	
8th November	Club Night	**AGM**
4th December	Committee	
13th December	Club Night	**Subscription collection and table top sale**

Competition Calendar 2018

Date and time	Competition	Venue
Sunday 15th July	**Electric All-up/last down No Gliders 2200ma limi**	Porthole Farm
Sunday 15th July	**BBQ**	Porthole Farm
Saturday 28th July	**Slope Day including electric powered griders**	Trundle Hill
Saturday 18th August	**Open Glider/open electric**	Thorney
Saturday 25th August	**Open Glider/open electric**	Thorney
Saturday 1st September	**Open Glider/open electric**	Thorney
Saturday 15th September	**Slope or electric duration**	Trundle Hill/ Porthole Farm
Saturday 29th September	**Reserve competition day**	Thorney/Trundle
Saturday 13th October	**Restricted Electric glider 2200ma 3cell limit**	Thorney
Sunday 11th November Remembrance Sunday	**Open Glider/open electric fun day Collection for The Poppy fund and a piece of Alison's cake**	Thorney



The power train can be obtained from HobbyKing

Zoot Suit Flying Days.
All Flying at Porthole

To all Zootsuit Flyers
Just a reminder that the Zootsuit fly-in days start on Friday March 2nd.
Get your model finished!!
Give it a different colour scheme
We don't want too many mix ups in the sky.
These are fly in days, the basic rule are a climb of 15 sec and a max time to make of 5 min per flight.
Each day is independent so the pilots on the day are against each other.
So it does not matter if you miss one,
If a running total is required this can be set later. **Ray Beadle**

Zoot Suit Fly-in Days. 2018
All Flying at Porthole

Sunday **8th July**, Friday **27th July**, Sunday **5th August,** Friday **24th August**, Sunday **1st September**,

Friday **21st September**, Friday **5th October** Sunday **28th October**, Sunday **4th November**

Time from Start, 15sec Climb, to landing or 5 min Max
Sunday Starts from 12 o'clock
Friday Starts 10 o'clock

Could the lock at the

Porthole gate lock you all please ensure gate is left with the and cable positioned bottom of the gate as

For those of you who have not yet discovered it, Nick Gates has set up a group page on Facebook its well worth a look

Here is the link:-
https://www.facebook.com/groups/Chichesteraeromodellers/

Now with 90+ members

Flying alone on Thorney is restricted to lightweight electric or gliders, and pilots are requested to concentrate on flying within the grass area to the west of the runway.

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

When Driving Around Thorney be aware of young children on bikes

Please Try to leave Porthole as tidy as possible, making sure no fuel is left on site