BRISBANE VALLEY FLYER

March - 2022

www.bvsac.com.au

Watts Bridge Memorial Airfield, Cressbrook-Caboonbah Road, Toogoolawah, Q'ld 4313.

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Ian Ratcliff's neat, new, Zenith Zodiac, 19-8712, at the Clubhouse, YWSG.

(Pilot report pending).

Peter Ratcliffe (Pres.)	0418 159 429	Ian Ratcliffe (Treasurer)	0418 728 328
John Innes (Vice Pres.)	0417 643610	Acting Secretary	0418 159 429

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From the Club

Hello all,

Well, we have finally made it to the 100 edition of the Flyer. What an achievement and the committee would like to give a big thanks to the editor Rob Knight for all of his effort that goes into the flyer every addition.

The club has come a long way over the years from its grass roots as the Logan Village Flyers and then a change of name to the QLD Ultra-light Association and we held our meetings in the SAAA meeting rooms located at Archerfield. During this time the club grew very well and it was then decided to build the present club house on our site at Watts Bridge. Initially, the club house was constructed as a bare tin shed and, while a few meetings were held there, the majority of our meetings were still held at Archerfield. Eventually the SAAA building was pulled down by the airport Corp and we had to move our meetings into the main building at a considerable monthly cost so a decision was made to move all of the meetings to Watts. At this time, we started the now normal BBQ lunch for all attendees after the meetings. As a result of our move to Watts, we did lose a few of the older regulars but soon gained new locals to the airfield.

After a while the members decided that the QUA name did not represent the style of aircraft and the area that our members now own and fly in, so the name was changed to the present name of Brisbane Valley Sport Aviation Club. This new name represents the area that we fly in and that we fly all styles of aviation.

Many modifications have been done to the clubhouse with the likes of sheeting the walls and ceilings, constructing a new servery area that is use during events and finally the installation of the air-conditioning system (Well worth it on hot days)

So that brings up to the present and the club is still in a strong position and we hope to continue way into the future.

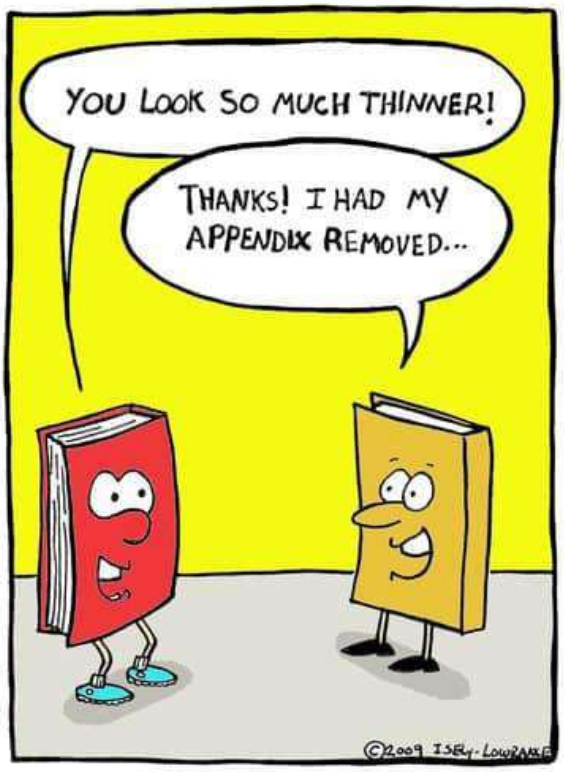
With the help and support of our members this should be a reality.

Our next meeting is scheduled for the second Saturday in March, on the 12th, at 10:00am, and it will be followed with the normal BBQ afterwards. Please note this meeting has been moved back one week due to most of the committee being absent on the first Saturday of the month.

See you all at the meeting.

Peter Ratcliffe

President BVSAC



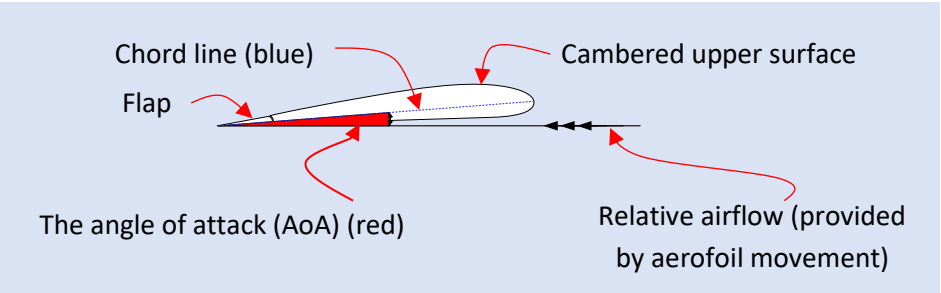
Don't Flunk Flaps

By Rob Knight

Flaps - the Wright brothers didn't have them but now all aeroplanes except the most very basic are fitted with these lift and drag aiding devices. They have become an almost quintessential attachment to aeroplane wings so they must have some purposeful advantage.

Regardless of what specific theory of lift production you subscribe to, they all have one thread in common - it is the camber of the upper surface of an aerofoil that gives the great advantage over a flat plate in providing lift. It is also reasonable, therefore, to assume that the greater the camber (curve of the upper surface) the greater will be the lift produced by any given airflow. How ideal is that – have a nice big fat wing and take-off and land really slowly and in very short distances. But there's a snag (isn't there always) and thick wings produce a lot more drag than thin ones. Drag rises as the square of the airspeed so if we accept an increase in our aerodynamic drag, we must suffer a reduction in achievable airspeed.

Here we are only discussing trailing edge flaps and to better understand them, first let's first look at some basic aerofoil definitions so we know that we are talking about the same things.



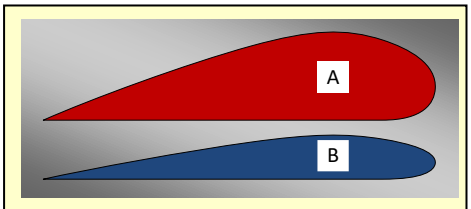
Note that:

1. The upper aerofoil surface is cambered.
2. The lower aerofoil surface is relatively flat.
3. The relative airflow is caused by the aerofoil moving through the air as the aeroplane flies.
4. The angle of attack is the angle between the relative airflow and the aerofoil chord line.

As camber gives us lift, a big fat thick wing will get us off the ground very quickly. BUT when we do so, we ain't gonna go anywhere because the drag from that big fat wing will rise very quickly and limit the speed we can cruise at.

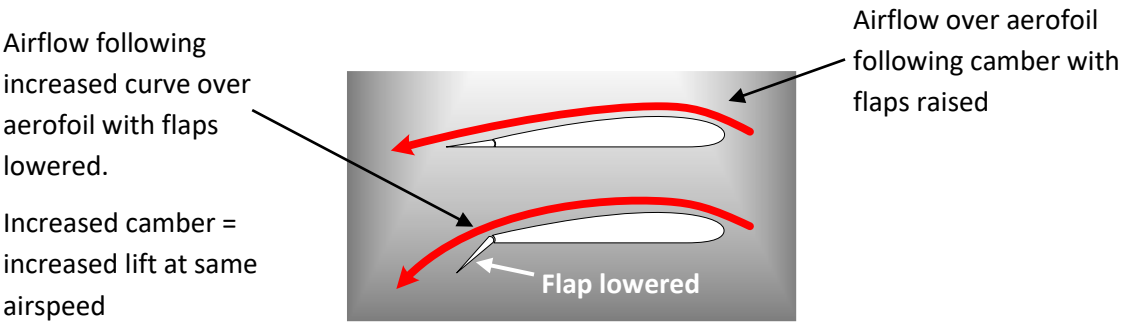
How about, then, we look at making our wing with variable camber? If we do then we can have a fat wing for take-off and a thinner one for cruise; and that, my friends is how flaps came to be.

Flaps, when lowered, increase the C_L, the lift co-efficient – that part of the total lift provided by the wings through the

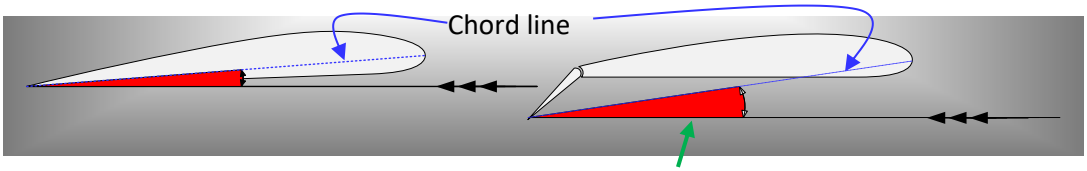


We need aerofoil A for take-off and aerofoil B for cruise. Then, when we want to land, we need aerofoil A again so we can land at a slow speed and use just a short runway distance.

factors of aerofoil shape and angle of attack. In other words, lowering flaps will provide an increase in lift without requiring an increase in airspeed or wing area.



It is easy to see that the greater the camber the thicker the aerofoil section will become to the airflow and the greater will be the lift delivered by that airflow at any given speed. Flaps also increase lift because they increase the angle of attack.

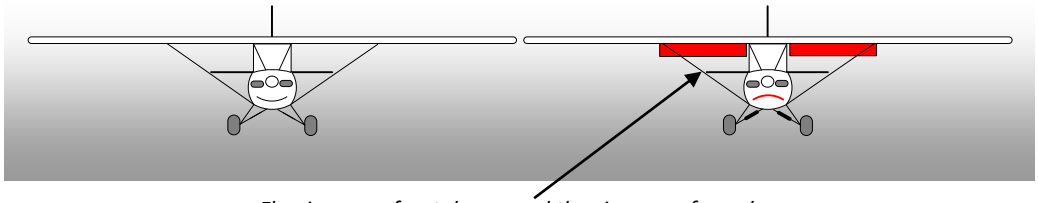


Lowering flaps will increase the angle of attack because of the change in the chord line.

So what's that down side again? If flaps are that good, why don't we just fly around with them down all the time? The down side (pardon the pun) is DRAG, as we said earlier. Flaps cause an increase in both form drag and induced drag at any given airspeed, and, as we all know, drag is the dire enemy of our cruise speed.

FORM DRAG

Form drag is the resistance created whenever the form of the aeroplane is being moved through the air and part of this is obviously the frontal area of the 'form' as presented to the airflow. Check the sketch below and see how lowering flaps increases the frontal area of the aeroplane.



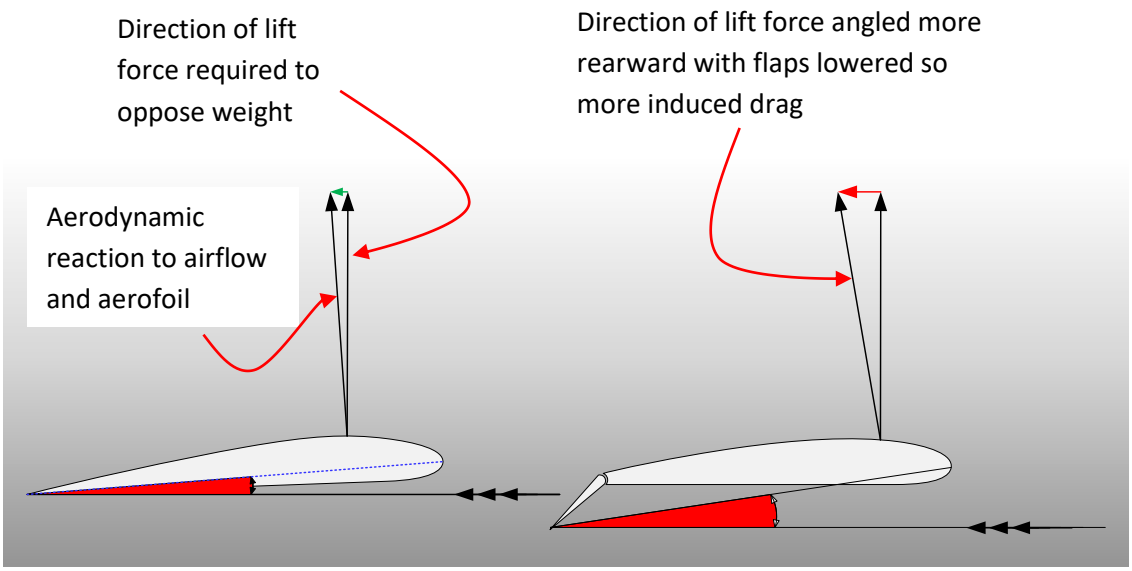
Flap increase frontal area and thus increase form drag

Form drag rises as the square of the airspeed so, as the airspeed rises, the magnitude of the adverse effects of form drag rise exponentially. Thus, the form drag at 20 knots is only ¼ of what it will be at 40 knots. In other words, if the drag at 20 knots was 20 kg, at 40 knots it would have risen to 80 kg.

INDUCED DRAG

Sometimes called the penalty we pay for lift induced drag is caused by the pressure differential between the upper and lower surfaces of the wing – just the very situation our wing camber is designed to enhance. Therefore, fuelled by one of the most basic tenets of nature that higher pressure gas will ALWAYS flow towards lower pressure gas, , the higher-pressure air UNDERNEATH the wing escapes around the tip to merge with the lower pressure air flowing over the wing. This has

the ultimate effect of tilting the total aerodynamic lift force backwards and this rearward tilt provides a force against our direction of motion called *Induced Drag*.



With flap lowered the pressure differential between upper and lower surfaces is increased. This makes the total reaction lean further rearwards and so act against the direction of flight. Not only do we get more lift from the increase angle of attack but we get more form drag AND more induced drag.

The amounts of lift and drag generated by lowering flap depend essentially on two factors – the degrees of flap lowered and the type of flap (split, simple, fowler etc.) that the aeroplane has fitted to its wings. However, in general terms it is considered realistic to assume that lowering up to 15° of flap will increase the value of lift produced more than the value of drag developed in producing this extra lift. However, lowering more than 15° will see the drag rise is considerably more in proportion than the lift rise. This is PERFECT! It means the pilot can use a little bit of flap when they want more lift on take-off and a lot of flap when they want more drag to steepen their approach angle and a lower safe landing speed.

So, what does all this mean to the poor old pilot? It simply means that lowering flaps will allow the wings to generate more lift at any given airspeed so long as they can handle the drag consequences. The Flight Manuals (POH) in most aeroplanes fitted with flaps advise that a small flap setting is advantageous when used for take-off. The use of flaps in this case will tend to shorten the ground run required for take-off and make it safer because of the reduced stall speed.

For landing, flaps add drag so their use will steepen the approach angle, a very desirable trait when approaching over obstacles, especially onto a short runway. In reducing the stall speed, they make the approach a little safer and allow the use of power which will enhance control effectiveness over all control surfaces exposed to the slipstream. With any reduction of power, lowered flaps will see the aeroplane decelerate more quickly so there will tend to be a shorter ground roll.

All in all – flaps are a very useful tool.

THE DANGERS OF USING FLAPS

To summarise what we have discussed so far, flaps, when lowered, decrease stall speed and cause an increase in drag. The only dangers associated with flaps relate to when their advantages work in reverse and become liabilities.

Because the unstalled aerofoil with lowered flap generates more lift at any given airspeed, then it stands to reason that it will generate the same lift at a lower speed. Therefore, it is absolutely logical that lowering flaps will reduce the stall speed. It also stands to simple reasoning that the reverse occurs - **RAISING flaps will INCREASE the stall speed!**

A situation where this can be hazardous is retracting flaps during the take-off roll when doing a touch and go landing. A touch and go is a practice overshoot, simulating the pilot's actions in the event of flaring too far into a runway and being unable to safely land and stop in the remaining distance. Considering this, w*ho in their right mind would raise the flaps and thus decrease their lift and increase their stall speed in the middle of a take-off run?* Some might argue that aeroplanes don't accelerate with full flap but this is nebulous at best and not based on fact because we are not discussing starting our take-off run from a standing start. Nor is it relevant in a touch and go and because the airspeed should not be allowed to fall significantly before full power is applied to return the aeroplane to an airborne state and little acceleration should be necessary. The added claim that aeroplanes are dangerous to fly with full flap extended is also a fallacy – they won't get certified or their design approved if that really is the case. A well-trained pilot should be familiar with all their aeroplane's flight characteristics and competent to fly that aeroplane in all configurations. A failure to ensure this is a complete failure on the part of the flight training instructor and flight examiner.

Flaps should be raised either in a slow and planned retraction at a safe height after take-off, or after leaving the runway following a full stop landing, when the aircraft has been brought to a stop and the after-landing checks carried out correctly with the pilot's full attention. If an instructor wants the student to practice take-offs with the standard take-off flap setting then they should be doing full-stop landings and not touch and goes. Reducing flaps on touch and goes trains a student into a habit of reducing flap at a time when, in a real overshoot situation, it is totally inappropriate.

Flaps are a tool in a pilot's tool box but, like all tools, they should be used correctly. A spanner used as a hammer is ineffective and may result in the spanner being damaged and rendered useless. Flaps mishandled may change from being a great asset to become a nasty liability.

Flaps are friends, but, as in life, if you abuse a friendship it will not last.

Huge queue forms at Palace on news that Prince Andrew is giving away money to people he's never met

Howie Hughes Classic Flying Sports Car

The GA-55 - 912

By Rob Knight

The weather was great, little wind, and I selected runway 22 at Boonah just because the vague wind drift suggested that I should. The horizon was clear with a cloud base at around 3500 feet and visibility to burn. Peter Davies had, indeed, chosen a delightful day to take his GA-55 Lightwing out for a road-test at Boonah.

25-0438 in her element

Take-off was typical; of the Lightwing design: early right rudder input to stop the left nose swing followed by a rapid reduction in that rudder as the airspeed quickly rose. Another small flick of right rudder as 8o horsepower's worth of gyroscopic force pulled the nose left again as the tail came up. Then we were airborne.

0438's clean and tidy instrument panel

0438 has the older, full instrument panel design which provides a slightly higher cowl to the pilot eye, but there was still horizon over the top. With the attitude set to give us our Vx of 65 knots we climbed to 800 feet indicated and turned towards the training area south of Mt French.

The aircraft was trimmed hands free and I needed just the merest touch of right rudder to counter the slipstream effect. The wings remained level as I released the stick so there was no residual roll requiring aileron application. I stop-watched 30 seconds of climb, and, in that time, we rose from 900 feet to 1260 feet so I could calculate the rate of climb as being 720 fpm: an excellent value with two up and half tanks.

We levelled off at 3500 feet and set 4800 RPM and trimmed. When she settled down, she continued to fly hands-off, the ball in the middle, with a steady 77 knots IAS. About the same airspeed that Howie would have boasted of when she left his showroom in Ballina. Again, the nose attitude was just a little higher than other Lightwing models built with Howie's *Helivue* panels, but noticeably lower than, say, a Cherokee 140.

Peter, me, and 0438 at Goondiwindi

After a lookout we entered a medium left turn. The entry was by the book, just a light touch of into-turn rudder to balance the small amount of aileron that was used. In the turn, at about 15° bank, I released the stick and removed my feet from the rudder pedals. The aircraft v e r y slowly rolled further left and the nose started to slowly fall against the horizon. The altimeter began unwinding as we entered a spiral dive. Everything was absolutely normal.

After returning to 3500 feet, I checked a medium, right turn with similar results. Then we did a maximum rate turn to the left. With full power

and about 60° bank, the ASI fell to indicate only 48 knots but that wasn't true, we would have been stalled at that speed with this bank angle. We were seeing the results of pitot tube position error causing the under-read on the ASI. All perfectly normal.

Hasel checks were absolutely normal, and the lookout clearing turns showed no other traffic anywhere. With Mt Alford ahead of the nose to keep straight on, I slowly closed the throttle and maintained height in the time-honoured entry to a basic stall. The stick, always light anyway, grew even lighter as I drew it back to maintain height, and the rudder required just a small amount of increasing input to keep straight as the airspeed reduced. At about 50 KTIAS with a faint shudder to show her revulsion at being so abused, she gave up flying, the nose sagged, and she quietly rolled about 5° left. Recovery was instantaneous as the stick went forward and the rudder stopped the yaw. Recovery was within about 30 feet. Flaps lowered made little difference to stall speed or characteristic except for a slightly higher nose attitude at the break.

The stall with power was exactly the same, albeit with a higher nose attitude as we reached the critical angle and she broke away. The nose pitch down was a little more sudden, and the roll went a little further but her reaction to a stall with some power on was without issue.

A pristine little aeroplane, with clean stall characteristics and good cruise speed for its power

I provoked her with a little rudder at the break, but even with 5000 RPM there was little change in her characteristics except for the increasing rapidity of the stall onset characteristics and the compressing of time in her resulting actions – AS LONG AS I STOPPED YAW with rudder. If I allowed (or provoked) yaw at the point we reached the critical angle, she dropped her left wing very pronto, and showed signs of continuing the ubiquitous spiral pilots are taught to avoid. And spiral it was – the airspeed tended to rise and recovery was again, instantaneous with forward stick and rudder to stop the yaw. Height loss was generally around 350 feet so her performance, even in a provoked stall was rather lady-like and not savage.

Wheelers in the GA are easy with its light and precise controls

Flying back to Boonah, I refreshed my memories of the GA design from a pilot's perspective. The visibility was classic for any side-by-side taildragger with a high wing and no dihedral. The seating was close but not as "intimate" as one experiences in a Cessna 150. The seats were comfortable and there was room to move a little. The harness was comfortable and that's about all one can wish for in such an aeroplane.

The glide is absolutely normal – 65 knots is published as the best glide speed at MAUW and she required just a whiff of rudder to keep straight, and the ball in its place. She trimmed out well and a forced landing in this aircraft would provide no unusual factors to consider. The cockpit layout is completely conventional with fuel taps easy to reach (unlike some very modern ultralights) and all switches and controls within very easy reach.

We joined the circuit for 04 and set up our first approach. The wheel landing went perfectly normally and the wheels rumbled along Boonah's grass for a few feet before we applied power and went around. The 3-pointer, with which we finished the flight, was also totally conventional and we rolled out past Nigel's hangar before taxiing clear.

This is a delightful aeroplane. Light on operating costs with its 80 hp Rotax, but high (relatively speaking) in its cruise speed due to its single strut and tapered wing design, the latter reducing its induced drag, I am surprised that Howie didn't make more of this model.

You may note that a sister ship to Pete's GA-55 is for sale and advertised later in this issue. Registered as 25-374, I have personally seen this aeroplane, both on the ground and flying, and it is possibly the best presented GA Lightwing that I have seen. Its condition now is probably as good as the day Howie pushed it out of his hanger at Ballina to deliver it to its first owners.

Happy Flying

0438 - a visitor to the BVSAC at Watts Bridge

Lightwing for Sale – see page 28

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French Fighter Jet Joy Ride Goes Très, Très Wrong

Ezra Dyer, April, 2020 (article provided by Peter Wilkinson)

Inadequate briefings, supervision, etc and all the 'holes in cheese' lined up perfectly!

- A French defence contractor riding in a Dassault fighter learned the hard way that the grab bar next to his seat was actually the ejection handle.
- French Fighter Jet Joy Ride Goes Très, Très Wrong

A Dassault Rafale B fighter jet

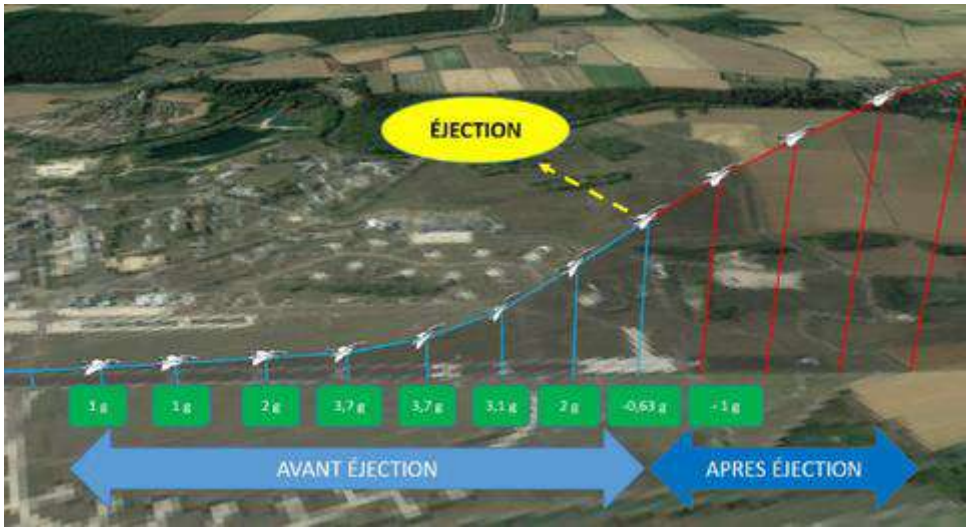
A French defence-industry employee about to retire was gifted something he was extremely reluctant to accept: a ride in a Dassault fighter jet. The 64-year-old was not correctly instructed, to say the least, in passenger etiquette, and to make a long story short, he self-ejected mid-flight. He's okay, according to the government's incident report, but the chance of this gentleman ever repeating the stunt is definitely zero.

Imagine: You work hard your whole life in the French defence industry, and when it's time to retire, your co-workers want to give you something more memorable than a gold watch or a set of golf clubs. Instead, they set up a coveted back-seat ride in a Dassault Rafale B fighter jet, the kind of perk that requires serious connections.

Just one problem: nobody asked this particular 64-year-old civilian whether he ever wanted such a ride, or showed him much about what to expect. Next thing you know, the French Investigation Bureau for State Aviation Safety (BEA-E) is issuing a report explaining how Monsieur Newbie came to experience not only the Dassault, but also its Martin-Baker MK16 ejection seat.

Well, mistakes were made. Lots of them. Since this treat was to be a surprise, the recipient didn't get much of a briefing on what to expect. His g-suit pants weren't on correctly, his seat harness wasn't tight, and his helmet—and oxygen mask—were unbuckled as the plane taxied to the runway at Saint-

Dizier 113 air base. He was so nervous that his heartbeat was around 140 beats per minute just from climbing into the plane. Our reluctant Goose did get medical clearance from a doctor, but only four hours before the flight, and with an important stipulation: no negative g's. The way the rest of this was unfolding, do you want to guess whether there were negative g's? Mais oui.



From the French Government's Incident Report.

FRENCH BUREAU ENQUÊTES ACCIDENTS:

The fighter pilot, being a fighter pilot, probably thought he was taking it easy as he pulled into a 47-degree climb and generated a 3.7-g load. (Which, incidentally, was also beyond the doctor-ordered limit of 3 g's.) On the climb, both pilot and passenger were crushed down into the seat. But when the plane started to level off, things got real panicky in the rear seat, as a negative 0.67-g load caused the ill-buckled passenger to feel like he was about to fly out of the cockpit. Which, shortly thereafter, he did.

Apparently the quick and dirty safety briefing failed to properly emphasize the fact that the black-and-yellow striped loop in the middle of the seat, between his legs, was not a grab handle but the trigger for the ejection seat. The good doctor's g-load recommendations were surely exceeded as pyrotechnics blasted a hole in the canopy and rocket motors fired the seat and its terrified denizen out into the slipstream high above the French countryside.

Around about the time our hero took to the skies in his very own chair-plane, the unbuckled helmet parted ways with the miserable noggin it was pledged to protect.

In a growing cascade of colossal fails, the next one was actually fortuitous: the pilot's own ejection seat malfunctioned. When either the fore or aft seat in a Rafale is triggered, the second one is supposed to follow automatically, on the theory that if one crew member makes an unscheduled departure, there's probably a good reason for the other to promptly join the exodus. And indeed, after the world's unhappiest retiree bid adieu, pyrotechnics blew a hole in the pilot's canopy. But the first ejection damaged the front seat, such that it didn't eject, and the pilot was actually able to land his now al fresco fighter jet, at which point the pilot ran from the aircraft in fear that the dud seat

would, like so many flights, take off late. In fact, nobody was allowed near the plane for 24 hours after it landed, just in case the pilot's seat decided to go all Colonel Stapp and fire the rockets.

As for our unfortunate co-pilot, he made it to the ground with minor injuries and likely a keen desire to never hang out with his old co-workers ever again. Because, as the report notes, he didn't want to ride in a fighter jet in the first place. According to the BEA-E, the passenger "never expressed a desire to carry out this type of flight, and in particular on a Rafale," but his cohorts offered him no chance to bail. Ultimately, he did anyway

------ ooOOoo ------

A Russian Jew named Jacob was finally allowed to emigrate to Israel.

At the Moscow airport, a customs inspector found a statue of Lenin in his luggage and asked, "What is this?"

Jacob replied, "Wrong question, comrade. You should have asked, ´Who is this?´ This is Comrade Lenin. He laid the foundations of Socialism and created the future prosperity of the Russian people. I am taking it with me as a memory of our dear hero."

The Russian customs official sent him on his way.

At Tel Aviv airport, the Israeli customs official also asked, "What is this?"

“Wrong question, sir. You should be asking, ´Who is this?´ This, my friend, is Lenin, the bastard who caused me, a Jew, to leave Russia. I am bringing this statue as a reminder to curse him every day."

The Israeli official sent him on his way.

When he settled in his new home, Jacob placed the statue on a table. The following evening, he invited friends and relatives to dinner. Spotting the statue, one of his cousins asked, "Who is this?"

Jacob replied, "Wrong question. You should have asked, ´What is this?´ This is five kilograms of solid gold that I managed to bring with me from Russia without having to pay any customs duty or tax."

The Moral: "Politics is when you tell the same shit in different ways to fool different people and still come out smelling like a rose.

If Something Goes Wrong, Undo What You Last Did

By Steve Jordan

Early in my career I worked for a university that had a large flight school, and an executive transportation department that consisted of a couple of Cessna 310s, a 402, a 411, and three DC-3s. I was a captain on all the aircraft, which kept things interesting.

An interesting way for a baseball team to travel.

One sunny spring day I had a flight from Carbondale, Illinois, to Tulsa, Oklahoma. The 26-seat DC-3 was to be filled with a collegiate baseball team in the back, and co-pilot Doug Fitz and me in the front. This DC-3 was originally a C-41, complete with Hap Arnold's name plate still attached on a panel in the cockpit. There were some strange issues on that airplane, such as a non-standard hydraulic system, questionable fuel tanks, and a radar that only worked when it was in the mood.

I watched as Doug completed his usual thorough pre-flight of the aircraft. The baseball team had not yet arrived, so all gust locks were removed except for the rudder lock, which was to be removed just prior to closing the passenger door, when everyone was loaded. Doug drained the fuel tanks, using the laundry soap container which would hold almost a gallon of liquid. It was made of clear plastic, which made it easy to check for contaminants such as water, sediment, etc. Doug drained a little over a quart of fuel from each tank, noting that we had a little water in each tank. He sampled another quart out of each tank, to the point that the only liquid being drained was pure 100 octane.

The baseball team arrived, bags and ball bats were loaded, the rudder lock removed, two good engine starts, a normal taxi out, a good run-up, and all systems were go for take-off. We departed and climbed to our cruise altitude of 6000 ft., headed for Tulsa. The weather was good VFR in Tulsa, and other than a few clouds at 4000 ft., beautiful along our route.

We did not have an autopilot, so we would normally take turns flying between VORs. Doug had just taken control of the aircraft and I settled in to enjoy the trees and lakes of Missouri going by my window.

After about 45 minutes, it was time to manage our fuel. There are four tanks on this aircraft, two in each wing. The front tanks were referred to as the "front mains," and the auxiliary tanks were referred to as the "rear tanks." We had departed with full front mains (400 gallons), and 75 gallons in each aux tank.

The fuel tank selectors on this aircraft are located on the pedestal, up near the instrument panel. Although either pilot can reach both fuel selectors with a long reach, our policy was each pilot was responsible for his/her fuel selector.

"We probably ought to get some fuel out of the back, don't you think?" I asked.

A man of very few words, Doug said, “yep.”

Doug reached up, and I watched him rotate the fuel selector to the right rear position. I reached up about two seconds later and switched my fuel selector to the left rear tank position.

After another two seconds, it got quiet. Real quiet. As in no engine noise at all.

“Turn them back!” I yelled, trying not to sound scared to death. Doug and I had flown together many times, and he was already reaching for his fuel selector. I was right behind him on mine. Our philosophy had always been, “if something goes wrong, undo what you last did.” Both engines caught immediately; we had only lost maybe 75 feet of altitude, and we were back on our way. I turned around to look at the baseball players, expecting to see worrisome glances and wide-eyed athletes, but they were all asleep. They had no idea…

We concluded that we had bad fuel in the rear tanks. Our mains seemed OK, but our endurance was now reduced. We diverted to Springfield, Missouri, for an unscheduled stop to check the fuel, and to re-fuel as necessary.

I didn’t even have to ask, as Doug grabbed the laundry soap container and stormed out. “I’m draining the tanks to see what we got!” he growled.

Doug drained what seemed like a couple of gallons of water from the rear tanks. There was no water in the front main tanks, only the rear tanks. We topped off our front mains, which gave us enough fuel to get to Tulsa comfortably. We drained the tanks again after fuelling, got a little bit more water from the rear tanks, and none from the mains. Off we went to Tulsa.

There’s a reason you do this before every flight.

After the baseball team left on the bus, we peered down into the rear tanks, but of course, we could not really see anything. We drained the fuel tanks again, and only got a little bit of water in our fuel sample.

The pre-flight (DI) for our flight the next day included another serious draining of all the fuel tanks.

There was no water detected in our front mains, and barely a quarter cup of water from both rear auxiliary fuel tanks.

After the ballgame, we headed to Wichita. We did not use any fuel from the rear tanks on this leg. We checked for water again in the rear tanks and found hardly enough to get excited about. The next day we headed back to Carbondale. At 7000 feet, while cruising along nicely, we tried utilizing fuel from the rear tanks again. However, this time, we switched to the right aux tank, and waited a couple of minutes to see if the right engine would continue to run. Then we did the same on the left side. Both engines purred like kittens, but for a few minutes, we were on edge to say the least. We were both ready to undo what we did.

It was determined that both aux tank caps had leaky seals that would allow rainwater to drip into the fuel tanks. When the tanks were examined, it was noted that water was adhering to the fuel tank wall. Vibration during flight would cause the moisture to drop into the fuel, and cause contamination to the point where there was more water than fuel going to the engines. The tanks were cleaned,

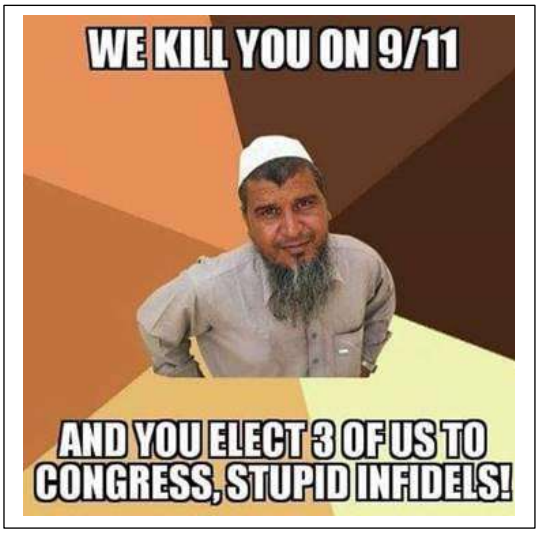
seals were replaced, and the problem was never seen again, although we still drained all the fuel tanks significantly before each flight.

Ever since that day nearly forty years ago, “undo what you just did” is always in my pocket when things don’t go as expected.

------ooOOoo ------

FLY-INS Looming

Murgon (Angelfield) (ALA)	Burnett Flyers Breakfast Fly-in	**See** http://www.burnettflyers.org/?p=508



Some Heavy Thoughts on Light

For years it has been believed that electric bulbs emitted light. However, recent information released by Bell Labs in the USA serves to prove otherwise. According to them, electric bulbs don't emit light, they suck dark hence, they now refer to these bulbs as dark suckers.

The dark sucker theory, according to a Labs spokesperson, proves the existence of dark, that dark has mass heavier than that of light and that dark is faster than light. The basis of the theory is that electric bulbs suck dark. Take for example, the dark suckers in the room where you are. There is less dark right next to them than there is elsewhere. The larger the dark sucker, the greater its capacity to suck dark. Dark suckers in a parking lot have a much greater capacity than the ones in this room.

As with all things, dark suckers don't last forever. Once they are full of dark, they can no longer suck. This is proven by the black spot on a full dark sucker. A candle is a perfect example of a primitive dark sucker. A new candle has a white wick. You will notice that after the first use, the wick turns black, representing all the dark which has been sucked into it. If you hold a pencil next to the wick of an operating candle, the tip will turn black because it got in the path of the dark flowing into the candle.

Unfortunately, these primitive dark sucker have a very limited range. To counter this, there are also portable dark suckers. The bulbs in these can't handle all of the dark by themselves, and must be aided by a dark storage unit. When the dark storage unit is full, it must be either emptied or replaced before the portable dark sucker can operate again.

Dark has mass. When dark goes into a dark sucker, friction from this mass generates heat so it is not wise to touch an operating dark sucker. Candles present a special problem, as the dark must travel in the solid wick instead of through glass. This generates a great amount of heat soi it can be very painful to touch an operating candle.

Dark is also heavier than light. If you swim deeper and deeper, you notice it gets slowly darker and darker. When you reach a depth of approximately fifty feet, you are in total darkness. This is because the heavier dark sinks to the bottom of the lake and the lighter light floats to the top.

The immense power of dark can be utilized to mans' advantage. We can collect the dark that has settled to the bottom of lakes and push it through turbines, which generate electricity and help push it to the ocean where dark may be safely stored. Prior to turbines, it was much more difficult to get dark from the rivers and lakes to the ocean.

Finally, we must prove that dark is faster than light. If you were to stand in an illuminated room in front of a closed, dark closet, then slowly open the closet door, you would see the light slowly enter the closet, but since the dark is so fast, you would not be able to see the dark leave the closet.

------ ooOOoo ------

The DAP Mk21 Beaufighter

The Bristol Type 156 Beaufighter (often called the Beau) first flew in 1939. Developed from the Bristol Blenheim medium bomber, it utilised many airframe parts from the bomber thus making it quicker and less expensive to produce.

Bristol Type 156. Beaufighter

The Beaufighter was originally conceived as a heavy fighter and intended to provide a better delivery platform for torpedoes than the earlier Blenheim models had been, the aircraft proved to be an effective military weapon in other roles as well including its remarkable success as a night fighter under the command of Wing Commander John Cunningham.

The Beaufighter night fighter came into service with the Royal Air Force (RAF) during the Battle of Britain. Its two-seat capability, and its large size, enabled it to carry heavy armament and airborne interception radar without major performance penalties. Other roles in which it achieved notable success were its use as a Rockbeau (rocket-armed ground attack aircraft) and as a Torbeau (torpedo bomber) used against Axis shipping. In later operations, it served mainly as a maritime strike/ground attack aircraft RAF Coastal Command having operated the largest number of Beaufighters amongst all other commands at one point. The Royal Australian Air Force (RAAF) also made extensive use of the type as an anti-shipping aircraft, such as during the Battle of the Bismarck Sea.

Mk V1C "Torpbeau", with an 18inch torpedo

A "Rockbeau". Notice the underwing rockets

The Beaufighter saw extensive service during the war with the RAF (59 squadrons), Fleet Air Arm (15 squadrons), RAAF (seven squadrons), Royal Canadian Air Force (four squadrons), United States Army Air Forces (four squadrons), Royal New Zealand Air Force (two squadrons), South African Air Force (two squadrons) and Polskie Siły Powietrzne (Free Polish Air Force; one squadron). Variants of the Beaufighter were manufactured in Australia by the Department of Aircraft Production (DAP) and such aircraft are sometimes referred to by the name DAP Beaufighters.

In 1942, the British-built Beaufighter began operating with the RAAF under the designation A19. Just as they had in the northern hemisphere, these aircraft proved to be extremely effective in operations, and DAP planned to produce an Australian version when the Beaufort contracts were completed. As a precaution against the unavailability of Hercules engines, a Fairey-built Beaufighter IC, A19-2, was fitted with Wright Double Cyclone engines. Subsequent trials proved quite successful,

but the supply of Hercules never failed, and A19-2 remained a 'one-off' experiment for the Australian Beaufighter.

Following the decision in January 1943 to commence Beaufighter production, the Bristol Company dispatched the drawings by Airgraph and some 55,000 miniature negatives were sent to DAP. Initially it was planned to produce an Australian equivalent of the British Beaufighter Mk VII, but throughout 1943 innovations such as dive-brakes and rocket projectiles began to be introduced. Mk VIII and IX were similarly superseded and finally a version basically similar to the British Beaufighter TF Mk X was produced and designated DAP Bristol Beaufighter Mk 21. Unlike the British version, the ASV radar and dorsal fin were never applied to the DAP model. However, like the Mk Xs used by the RAAF in Europe, all the Hercules XVII engines had their two-speed superchargers made fully operational, thus becoming Hercule XVIIIs.

The first DAP Beaufighter was flown on 26 May 1944 and, five days later, the aircraft was taken over by the RAAF. As production mounted in the Fishermens Bend and Mascot factories, the Australian

DAP Beaufighter Mk21

built Beaufighter began to replace the British manufactured versions. The smooth-running sleeve-valve engine and the devastating fire-power of cannon rockets and machine-guns had already earned the Beaufighter the nickname "Whispering Death" and the Australian version continued to wreak great havoc throughout New Guinea, the Celebes and the Philippines. The aircraft served with No 22, 30, 31, 92 and 93 Squadrons, and when production ceased at the end of 1945, a total of 364 DAP Beaufighters had been built.

In the post-war years, Beaufighters continued to operate with No 30 Squadron, where they were gradually reduced to a target-towing role. Although most of the aircraft were withdrawn from service in 1955–56, two Beaufighters, A8-357 and 363, continued to be used at Woomera for missile aerial recovery duties, and these aircraft operated with kangaroo roundels. The last aircraft, A8-357, was flown to Edinburgh for disposal by Wing Commander Williamson on 9 December 1957.

Aircraft Specs:

Description:	Two-seat strike fighter.
Powerplants:	Two 1725hp Bristol Hercules XVIII radial engines.
Wing Span:	17.63 m (57 ft 10 in).
Length:	12.70 m (44 ft 8 in)
Height:	4.82 m (15 ft 9 in).
Aircraft Weight:	Empty 7076 kg (15 600 lb); loaded 11 521 kg (25 150 lb).
Performance:	Maximum speed 278 kt; Range 1277 nm; Service ceiling 19,000 ft.
Armament:	Four 20mm cannons in fuselage nose and four 0.5in guns in the wings. A single 0.3 in. gun could be mounted in the rear cupola. Eight rockets plus two 112 kg (250 lb) bombs could also be carried.

Bristol Beaufighter MkX1c cockpit.

At Present:

A Mk 21 DAP Beaufighter (A8-328) is complete and on display at the Australian National Aviation Museum at Moorabbin, VIC; A8-186 and the cockpit section of A8-386, have been restored for static display and are on display at the Camden Museum of Aviation at Narellan, NSW.

A Beaufighter Mk 1c A19-43, which was obtained from the Moorabbin Aircraft Museum in 1988, was partially rebuilt in Sydney, NSW using parts from T5049, and is now on display at the USAF Museum at Dayton, Ohio painted as the aircraft flown by Capt Harold Augspurger when he was Commander of No 415 Night Fighter Squadron, USAAC.

The remains of a number of other Beaufighters, including a new centre-section, have been collected from all over Australia and the Pacific Islands by the Historic Aircraft Restoration Society (HARS), are being used at Albion Park, NSW to rebuild a Beaufighter Mk 21 (A19-148) to airworthiness.

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Keeping up with the Play (Test yourself – how good are you, really?)

1. A pilot notices during the pre-flight (DI) inspection that a single static vent is located on the port side of the fuselage and the pitot tube is on the right-side wing strut. During a steep left sideslip, which option below is most likely to depict the ASI indication?

   A. The ASI will read correctly.
   B. The ASI will over-read.
   C. The ASI will under-read.
   D. Either B or C could be correct.

2. In flight, a pilot reduces the angle of attack from 9° to 4°. What effect will this have on the Centre of Pressure (CofP)?

   A. The CofP will move aft along the chord line.
   B. The CofP will move forward along the chord line.
   C. The CofP will move aft along the longitudinal axis.
   D. The CofP will move forward the longitudinal axis.

3. If the OAT on the ground at Toowoomba (elevation 2086ft) is 20´C, and the TAF lists the dew point at 15´C, at which of the altitudes below should you anticipate the cloudbase?

   A. 2400 ft AMSL.
   B. 3600 ft AMSL.
   C. 4100 ft AMSL.
   D. 4500 ft AMSL

4. Will raising flaps change the position of the Centre of Pressure (CofP) on the chord line?

   A. No.
   B. Yes, it will move forward with decreasing angle of attack.
   C. Yes, it will; move aft with decreasing angle of attack.
   D. Yes, but the change in position depends on the C of G position.

5. A 3/8 cloud cover exists over a location. How would this be indicated on a GAF?

   A. FEW.
   B. SCT.
   C. BKN.
   D. OVC.

See answers and explanations overleaf

If you have any problems with these questions, See Notes below or call me (in the evening) and let's discuss them. Rob Knight: 0400 89 3632 (International +64 400 89 3632), or email me at kni.rob@bigpond.com.

1. C is correct. The static vent on the port fuselage will be influenced by the aircraft's movement when on a port sideslip. The apparent increase in static pressure in the static vent caused by the slip, will equate to an apparent decrease in dynamic pressure which the instrument will display as a reduction in airspeed (under-read). The instrument will over-read if the aircraft is slipped to the right.

2. A is correct.
   On an unstalled aerofoil, increasing the angle of attack will see the CofP move forwards, and vice-versa.

3. C is correct. AGL = 2000 ft, plus elevation of 2086 ft = 4086 feet AMSL
   To calculate a cloud base:
   a. Find the difference between the temperature at the surface and the dew point.
   b. Divide the difference by 2.5.
   c. Multiply the result by 1,000.
   d. This will then give you the height above ground level.
   e. Add the elevation of the airfield and this will give height above sea level.

4. C is correct. Lowering flaps whilst unstalled will increase the angle of attack across that portion of the wing influenced by the flaps and cause the C of P to move forward along the chord line Therefore, raising the flaps will cause the reverse – the angle of attack will decrease and the C of P will move aft along the chord line. This is what causes the trim change when applying or removing flaps.

5. B is correct. 3/8 (or 3 octas) equates to the definition of **scattered** cloud cover.
   See GAF User Guide: http://www.bom.gov.au/aviation/gaf/

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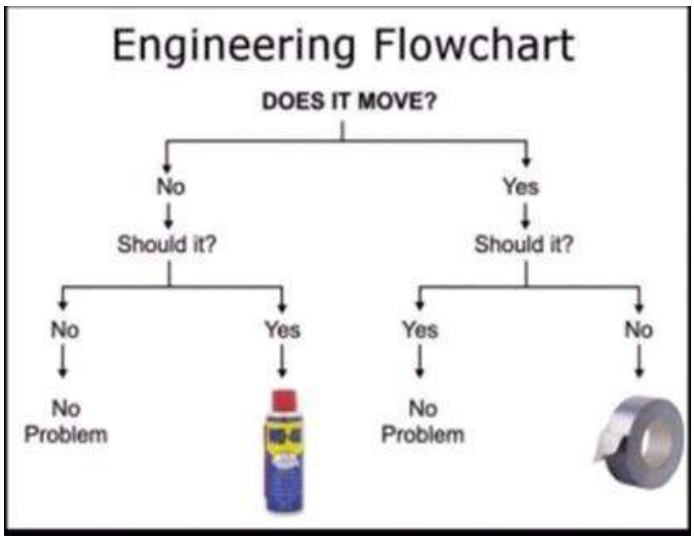

Aircraft Books, Parts, and Tools etc.

Parts and Tools

Item	Condition	Price
VDO Volt Readout instrument	Brand New	**$70.00**
Altimeter. Simple – single hand	As new	**$50.00**
Oil Pressure indicator, (gauge and sender)	New – still in box	**$80.00**

Tow Bars

Tailwheel tow bars. Only two available	Good condition	**$50.00 EA**

Headsets

AvCom headset. Functions perfectly	Excellent	**$150.00**

Propeller Parts

Propeller spacers, Assorted depths, all to fit Rotax 912 UL/ULS propeller flanges	Excellent	**$100.00 each**
Spinner and propeller backing plate to suit a Kiev, 3 blade propeller, on a Rotax 912 engine flange.	Excellent	**100.00**

Contact Rob Knight via either kni.rob@bigpond.com, or **0400 89 3632**.

Altimeter for Sale

This simple altimeter I purchased at Oshkosh is now surplus to my requirements and I am seeking a new home for it.

Its face is absolutely clear, it has never been used, and the subscale is provided in "HG.

It is in as-new condition and certificated. For a copy of the certificate, and/or further details, contact

Colin Thorpe. Tel: LL **(07) 3200 1442**, or

Mob: **0419 758 125**

$120.00

Aircraft for Sale

¾ scale replica Spitfire

$55,000 neg

This aircraft is airworthy, flown regularly, and always hangared. Registered 19-1993, it is powered by a 6-cylinder Jabiru engine (number 33a-23) with 300 hours TTIS. The airframe has logged a mere 320 hours TTIS. This delightful aircraft has recently been fitted with new mounting rubber, a new alternator and regulator, a new fuel pump, and jack stands. It is fully registered and ready to fly away by a lucky new owner

Hangared at Kentville in the Lockyer Valley, parties interested in this lovely and unique aircraft should contact either:

Kev Walters on Tel. **0488540011** or

William Watson on Tel., **0447 186 336**

Aircraft for Sale

$ Make Me an Offer$

Cobham Cobra

An opportunity to buy a unique aircraft.

I now have a Foxbat, and can't to afford to keep 2 aircraft. The Cobra was advertised for about a year in Sport Pilot, with many enquiries, but no resulting sale. Rather than continuing to spend on hangarage and advertising I decided to de-register it, remove the wings, and trailer it home to my shed. I don't intend to ever fly it again so, make me an offer. It provides very cheap and enjoyable flying.

It is a one-off design, a single seater with a fully enclosed cockpit. It has a 24-foot wing-span, and is powered by a VW engine that provides sporty performance and superb handling. The airframe has logged 653 hours and the engine 553 since installation. It is easy to start, but requires hand-propping.

To see it in action, go to
https://www.youtube.com/watch?v=V5Qx4csNw_A&list=PLpBv2A6hk66Tg9DiCsjEtt4o4o8ygcTju&index=1&t=22s

It cruises at around 80 knots at 11-12 litres/hr. The tanks hold 48 litres so it has a very reasonable range. For my approaches I use 50 knots on my initial approach down to 40 knots on short final. You will want a fair bit of tailwheel time.

For further details contact Tony Meggs on (02) 66891009 or tonymeggs@fastmail.fm

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Slipstream Genesis for Sale

$12,000.00 neg

Imported and built 2001. Two seats side by side, powered by 80 hp 912UL Rotax, driving a Warp Drive 3 bladed prop. Cruise 70-75 knots. Empty weight 304kg, MTOW 544 kg, Payload 240 kg. Fuel tanks hold 78 litres. With fuel burn averaging 16 litres/hr, still air endurance (nil reserve) is theoretically 5 hours, or 350 nm. Aircraft always hangared. It has been set up for stock control/ mustering or photography, and is not fitted with doors. Registered until 13 October 2021, currently flying, and ready to fly away.

Total Hours Airframe: 144.6. Current, up-to-date, logbook.

Total Hours Engine: 1673.9. Annuals/100 hourly inspection due 10/09/22. Sprag clutch replaced January 2020, gearbox overhauled January 2020.Just undergone ignition system overhaul. One CDI Ignition unit replaced PLUS brand-new spare unit included in sale. Easy aircraft to maintain - everything is in the open. Comes with spare main undercarriage legs, spare main wheel, and nosewheel with other assorted spare parts included.

Fabric good, seats are good, interior is tidy. Fitted with XCOM radio/intercom. Basic VFR panel with appropriate engine instruments, and compass.

An article on this aircraft was published in Sport Pilot, June 2019 issue. See front cover and pilot report within.

Must sell: two aeroplanes are one too many. Quick sale - Fly it away for $14,000 neg.

Contact **Rob Knight tel. 0400 89 3632**, **or email** kni.rob@bigpond.com for details and POH.

AIRCRAFT for Sale

LIGHTWING GA-55. **$25,000.00 (Neg)**

Registered 25-0374

Engine ROTAX 912, 80HP, 853.3 Hours

Reluctant sale of this great aircraft, I have owned her from June 2004.

Excellent fabric, Red and Yellow, always hangered, and comes with the following extras:

* 2 Radios
* Lowrange GPS
* EPIRB
* Aircraft Dust Covers.
* Manuals – various
* Fuel Pressure Gauge
* Extra Tachometer
* New Headsets
* Paint
* Oil

Work performed at Lightwing Ballina:

* Wings recovered, tanks resealed, new brakes, wheel bearings and hubs, new wing tips.

Other work carried out:

* Windscreen replaced, door panel replaced, choke cables replaced, ignition upgrade.

Rotax:

* Engine modifications, gearbox rebuild.

Currently hangared at Boonah in Queensland.

Contact Kevin or Natalie McDonald on 07 54638285

Aircraft Engine for Sale

ROTAX 582 motor. Ex flying school, TTIS 600 hours, and running faultlessly when removed from aircraft for compulsory replacement.

No gearbox, but one may be negotiated by separate sale if required.

Interested parties should contact…..

Kev Walters on Tel. **0488540011**

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