BRISBANE VALLEY FLYER

October - 2022

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BRISBANE VALLEY SPORT AVIATION CLUB INC

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

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Piper's very own Warbird, the PA-48 Enforcer. – see page 21.

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From the Club

Dear Members,

During the month of September, we held the normal monthly meeting at the clubhouse that was followed by the usual BBQ lunch. The meeting was well attended. We would like to see more of our members at the meeting just to see how you are all going so please feel free to attend, you'll be most welcome.

Club Day

A group of BVSAC Club members paid a call on the Oakey Army Aviation Museum on Saturday the 10th September and a good group of members and guests attended the visit.

The members and guest visiting the Oakey Army Museum.

We were fortunate to get a guided tour through the museum by the Director of the museum. The museum is set up to show case the history of the Army Flying Core and the tour started with the very first Airplane that the core purchased and how they learnt to fly it (2 hours of training before going solo), right through all of the wars and conflicts up to the modern-day craft. It was very interesting to hear about the troubles they had between themselves and the Airforce (The Airforce thought the Army could not handle it).

The Director of the museum that gave us the well guided tour.

Part of the tour inside a Chinook Helicopter Bay.

To the RSL club in Oakey for lunch and a little socialising session

As anticipated, the day was very successful and we hope to have more similar events in the future. If you have any suggestions, please contact the Secretary, Peter Ratcliffe, to discuss your ideas.

We are planning future events like this one and if anyone has any ideas of such outing, please drop the committee a line so we can discuss it.

Next Meeting

Our next meeting will be at club house first week in October. De come along, we'd love to see you there.

With thanks to you all for your support,

The BVSC Club Committee

How To Use Your Aeroplane's Brakes

By Rob Knight

Of course - every pilot thinks they know how to brake. While some of them actually do, the best pilots avoid the necessity for hard braking by using knowledge and skills to make better use of the factors available that will naturally shorten their ground roll.

How hard can it be to bring a landing aeroplane to a stop? The process seems simple enough - Just land it on the runway, push on the brake pedals, and wait while it slows down. If only it was as simple as that, but alas, as with all things aeronautical, there's more to it than that.

Much PPL and RA Certificate pilot training is carried out on operations off grass runways so stopping isn't generally an issue. The grass surfaces provide a certain amount of automatic deceleration, which, added to the low landing speeds of the light training aircraft being used, as well as their low mass and the usual substantial aerodynamic drag of these light aeroplanes working together, limit the braking required to reduce the speed to a taxi to clear the runway.

Grass, even dry, is very different to bitumen for braking

But, after graduating into larger, heavier, faster aircraft, comes the point where the take-off and landing distances quoted in the pilot's handbook begin to equalize. Soon, the total distance required to approach and land over a 50-foot obstacle becomes closer to the length of a typical small-country town runway. No longer can a pilot safely assume all would be fine.

Use brains before brakes. The landing distance will reflect the groundspeed held by the aeroplane at the flare.

My CPL instructor, Lew Day, demonstrated to me that, conceptually, a good landing where braking will be necessary begins well before the wheels reach the runway. And it's true. An adequate slowing-down process begins with a stable approach so the aeroplane will arrive at the flare, with merely a small (but very necessary) airspeed margin above the stall. By not holding excessive airspeed on approach, the float stage of the landing is shortened to a minimum leaving plenty of runway left ahead of, rather than behind, the aeroplane.

Excessive approach speeds = excessive landing distances

For some pilots, two airspeed issues crop up that limit the chances of this happening. One is to habitually use just a single approach airspeed for every landing: for long runways or a short fields, for heavy aircraft weights or light loads, in gusting or calm winds, with no, partial, or full flaps; the list is long. Instead, we should give thought to what approach speed is actually needed and modify it to suit the day's conditions. This way, the airspeed used can be safe and not unnecessarily excessive.

The other issue relates to not knowing even what the POH advises for an approach speed. Some pilots just, "Bring her in at 80 or so," which is absolutely certain to not be appropriate for all conditions. Approach airspeed is definitely not a, "One size fits all", situation. This issue also includes the adage of, “I’ll hold an extra five knots for Mum ’n’ the kids, and another five for luck”, which is also neither a good idea nor necessary for any competent pilot. All the silly statements such as, “Just to be safe”, or “We don’t want to stall it, ya know”, are all absolutely unnecessary. All competent pilots will have read the Normal Procedures section of the aircraft’s POH and will recall the recognised approach airspeed(s) for that aeroplane type.

Correct airspeed is just that – CORRECT, meaning neither inadequate nor inappropriately high.
For certification, the authorities provide 1.3Vs [1] times the stall speed in the landing configuration as being an adequate airspeed to make an easily controllable landing in light aeroplanes. This is quite reasonable as a light aircraft I flew for a time had a listed stall speed of 38 knots. Checking this out, 38 X 1.3 = 49.4, so I used an approach speed from short final of 50 knots, and this worked out just fine. I did check this by doing some stalls at altitude at the POH given MAUW and confirmed that the 38 knots provided was, indeed appropriate.

However, this means of acquiring an approach speed would not be appropriate in aeroplane with an exceptionally low stall speed without further qualification. For example, I owned a Colby, a one-off super-ultra-light aeroplane with an empty weight of just 154kg. It stalled at 18 knots on the ASI and this appeared to be quite reasonable as I flew it backwards in strong winds aloft on several occasions. For this aircraft, I used a minimum approach speed of 45 knots. Not because of stall safety, but because I lost aileron authority at low airspeeds. Approaching at 24 knots (18 X 1.3) would have given me very limited roll control. The excess airspeed at the flare was not the issue it would have been in heavier aircraft because, with such a low mass and mountainously high drag, there was no inertia to combat, and the aircraft’s deceleration rate was quite severe. There was no float at all to speak of.

Keep in mind, of course, that a 1.3Vs_0 approach speed doesn’t mean you’re going to land at that pace, right at the end of the descent. The purpose of flying at 1.3 times the stall is to maintain adequate energy reserves in the aeroplane to carry the slight increase in loading as you flare from descent into the float and to keep a satisfactory margin above the stall during the clean-up if a last-second go-around is required. Gusts and wind shear also have to be accounted for in approach planning but, even so, you need to know what IAS will keep you safe on final approach, and only carry that number across the airfield threshold, no more.

Wind affects landing distances.
Apart from pilot mishandling, headwinds will obviously have the greatest effect of reducing landing distances. Just think on it for a moment. If you have decided on an approach speed of 50 knots, and the headwind component is, at the time of landing, 50 knots, you will have no groundspeed at all and your landing distance will be merely the same as the length of your aeroplane. It’s clear, therefore, that the stronger the headwind component, the shorter the landing roll of the aeroplane is likely to be.

Crosswind conditions will also have an effect on landing and stopping distances, although the effect is relatively minor. Some pilots add extra airspeed for their approach because they think it’s a safety necessity required to maintain adequate control during a crosswind landing but this is pure fallacy: don’t pad the numbers just because a crosswind is present. A more important factor created by crosswind conditions lies in the headwind/tailwind effect that can create difficulty with the base-leg

[1] Vs = the aircraft stall speed, or minimum flight speed, in landing configuration.

and lead to issues of descent slope control. Remember that, the further you land into a runway, the less there is ahead to land on: runway behind you is as useful as a receipt when you're looking for cash. Accurate approach slope control is a given for all approaches: many bad landings start with sloppy slope approach control. Note, though, that in all conditions, especially in windy/gusty situations, awareness of a possible wind gradient must always be in the forefront of a pilot's mind on approach, and the readiness to quickly instigate a go-around if the necessity appears.

Holding the now accurately selected approach speed, a pilot should ensure that they're not high, they're descending toward a spot on the early part of the runway, not halfway or more down it. With a stable approach, there will be a motionless point, expectantly on the nearer part of the runway, toward which they're traveling. Look for that particular point that is staying steady in the windshield as all other bits of the runway and landscape scenery move downward and under the nose, or upwards and toward the top of the windscreen. This motionless point is not the touch down point, it's the flare point where the pilot stops the descent and begins the float part of the landing. A pilot might aim for the numbers (so to speak), but shouldn't expect to land on them.

Down and Rolling
Once the wheels are down and the aircraft is rolling out, to bring the aeroplane to a stop, all kinetic energy carried into the touch-down must be dissipated. To minimise this energy to be dissipated, ensure the throttle is closed. And don't try to "plant" the wheels to get on the brakes quickly, just allow the plane to land normally which will automatically dissipate speed and ensure that weight will immediately begin transferring to the wheels.

From the point of touch down onwards, there are four factors affecting the landing distance, and brakes are just one them. The rest are – the mass of the aeroplane, the remaining aerodynamic drag on the airframe, the headwind, and the runway's slope and surface.

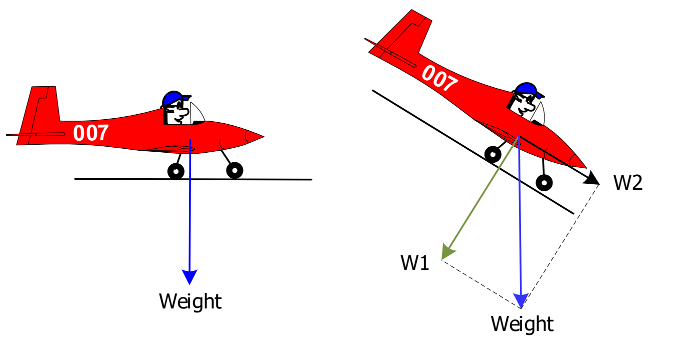
Aeroplane mass
The greater the mass of a body, the greater will be its momentum. Jump off a chair and feel the force necessary from your knees and legs to break your fall when you land. Now jump again, but this time with a 10kg mass in a back pack, and give me a comparison of the force you needed to break your second fall. I'm sure that the results are obvious – after adorning the back pack your mass is greater and you'll need to exert more energy to land and stop your fall. The relevant effect here is that, the greater the mass of an aeroplane, the longer it will take to stop and, as the aeroplane is rolling, it will have time to roll further than if it was lighter. "It's simple, Sergei, heavier aircraft have longer landing rolls (all other things being equal)."

Headwind is an aerodynamic drag.
The headwind effects are twofold: the first relates to the resulting groundspeed that the aeroplane holds at the time of touchdown (the lower the groundspeed the less speed that aeroplane must dissipate to stop) and the second, to the resulting aerodynamic drag on the airframe as the airspeed diminishes. Drag exists as the square of the airspeed, so the drag on an aeroplane at 20 knots is only ¼ of the drag on that same aeroplane at 40 knots. For this reason, unless the wind conditions conditions are somewhat extreme, it's better to leave flaps lowered if they were used for landing, and only retract them after the aircraft has stopped or is at taxi speed where no further decrease in speed is desired. I have been told that retracting the flaps reduces lift and thus there is better traction from there being more weight on the wheels. Whilst good in theory, it becomes a myth

under this application, as the effect is minimal and the retraction of flaps so early in the landing roll is a distraction to the pilot.

The Runway may not be friendly

Slope is the first issue to eliminate. Landings downhill can never be short (and neither can take-offs for that matter). Gravity will always drag you down the slope and add substantially to the distance required to stop. The effect of gravity on a slope is to provide an apparent thrust force that will, in effect, be like landing with some power applied. Gravity will be trying to pull the aeroplane forward so it will require more distance, considerably more distance, actually, to come to a stop. If you need convincing, try a landing with just a trickle of power left on at the flare. But - be ready to go around, thought, even if your runway is long.



On level ground, weight provides no forward force. On a downslope, W2 shows that a vector component of the weight acts forward, and functions as thrust. This will substantially reduce one's ability to STOP the aeroplane

Runway surface can also affect a pilot's stopping ability and therefore the need for braking after landing. It's a matter of traction between the tyres and the underlying runway surface and the concept is as simple as considering the differences between picking up a bar of soap and a brush whilst in the shower.

Bitumen as a runway surface is hard, and designed to give great traction/frictional grip to tyres, so brakes are very effective. A tarmac runway surface is also very even: there is no surface flexing under the tyres of a light aeroplane, and no added resistance to rolling, so landings can seem to roll on forever. However, tarmac runways are very expensive and are therefore long to serve large aircraft, so light aircraft generally need not consider short landings. Taildraggers landing on tarmac will immediately notice the greater grip and can quickly become a bit more of a handful because of the higher friction and less forgiving surface, so braking should be kept to a minimum unless at taxi speed and using carefully applied differential braking for assisting directional control.

If any runway surface, but particularly bitumen, has standing or ponded water on it, hydroplaning is a definite risk; the tyres will "surf" on the layer of water that gathers between the tyre and the runway surface rather than spin up the wheels. It acts like the ubiquitous banana skin, and, whilst "surfing" or slipping, there is no traction – the wheels aren't even rolling. The tyres can provide no braking: they can't even provide steering.

To minimize hydroplaning, touch down firmly, at slow speed, so the contact force will break through the surface water and allow the tyres to contact the tarmac which will allow friction to spin-up the wheels.

Generally, dry grass runways provide a more tolerant surface to tyres. On grassed surfaces, tyres don't grip with such ferocity as they do on tarmac, and the results of rudder inputs for directional control are less aggressive making directional control less savage and thus easier to avoid ground loops, especially for taildraggers. Mind you, that's not to say ground loops don't happen on grass surfaces, far more ground loops occur on grass than tarmac because taildraggers, more prone to ground looping because their centres of gravity are behind the main wheels, inevitably avoid tarmac surfaces for this very reason.

Dry grass runways have a greater coefficient of friction due to small imperfections and grass roots and tufts on their surface. Naturally, the longer the length of the grass the greater will be that coefficient which is very convenient when considering the natural braking effect of the drag from the grass during roll-out after landing.

Wet grass, on the other hand, is the reverse – the equivalent of the aquaplaning problem of tarmac will occur, with the wheels locked and not rolling, just sliding on the wet, or even damp, grass surface. This will cost the pilot all braking ability and the loss of directional control. Wet grass must be treated with caution and braking avoided unless at taxi speed.

Where necessary, apply the brakes

To minimise the ground roll after touching down, on a dry runway, tarmac or grass, flying a nose-wheeled aeroplane, apply maximum available braking as soon as full weight is on the wheels. Again, don't raise the flaps after touchdown to remove residual lift as this carries the risk of inadvertent landing gear retraction for retractables (which certainly slows you down quickly, but requires lots of power to taxi). Rather than retract the flaps, leaving them extended will provide additional drag and thus enhanced aerodynamic braking as discussed earlier. Also hold the stick/yoke back to elevate the nose strut and keep the wings, tail and fuselage at an angle to add even further drag during the rollout.

For a taildragger, braking must be very judiciously applied as it is eminently possible to apply too much braking and have the aeroplane nose-over (makes very expensive noises). This will shorten the ground roll dramatically, but will create the need for substantial assistance to taxi clear of the runway. Heavy braking in a taildragger will add considerably to the always prevalent risk of nosing over, or, of at least suffering a propeller strike. Holding full back stick/yoke on a taildragger also adds weight to the tailwheel improving its authority for better directional control.

When braking after the initial touchdown in a crosswind must also be treated with great care. If you touch, one wing low, beware of immediate braking: make sure the downwind wheel is firmly in contact with the runway. Any braking at that point must be applied to that grounded wheel only, otherwise the aeroplane will touch the other wheel with its brake on and that could easily lead to a loss of directional control.

When applying brakes for any landing, don't brake hard enough to lock up the tyres — tyres are expensive, and that squeak you hear on landing is the sound of money running out of your pocket. Instead, press the brake pedals with only enough pressure to feel the drag firmly slowing the aeroplane. Hold that pressure and let the brakes do the work. Ignore any previously heard comments regarding pumping the brakes, "for cooling". Pumping them will only reduce the overall speed reduction and result in a jerky arrival. Just apply and hold brake pressure, especially early in the rollout, for the most effective stopping. Don't wait until the far end runway boundary appears over the nose and slam on everything you've got to make a panic stop. Brake early and continuously. Seriously, use your judgement - don't be too gentle either. Use the brakes: that's what they're fitted for.

Remember that the best pilots always use whatever factors are available to ensure that minimum braking is necessary. Once down, braking merely finishes the job in hand.

Happy Flying

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Why was this Early Homebuilt so Dangerous?

By Stephan Wilkinson. Originally published in the July 2007 issue of Aviation History*.*

History's first homebuilt entrepreneur named his aircraft after an insect.

By the mid-1920s aviation was no longer solely the province of the professional. The man (and woman) on the street desperately wanted to get in on it. Barnstormers, airmail pilots, adventurers, record-setters, air racers, military aviators: Their airplanes were big, expensive, dangerous and difficult to fly. Most were basically World War I dinosaurs slightly updated.

Henri Mignet, a French electrical engineer whose specialty was vacuum tubes, adored airplanes. "Oh, how beautiful is aviation!" he wrote in 1928. "To fly! To live as airmen live! Like them, ride the skyways from horizon to horizon, across rivers and forests!" Mignet wanted in the worst way to fly.

Henri Mignet

In fact, he did so, logging some 30 hours of instruction in a big Potez biplane owned by a friend who had been a World War I instructor pilot. But he claimed that the Potez terrified him. He found controlling an aeroplane in three axes with ailerons, rudder and elevator to be counterintuitive, and Mignet admitted that he was leery of overbanking. He consequently cross-controlled all his skidding turns, thus risking the dreaded stall/spin. "Today, [the aeroplane] is strong and perfected, but it still falls into a spin. The stall, the origin of the spin, is the Sword of Damocles suspended over the head of all aviators."

Mignet's contemporaries, however, say that he was in fact a good pilot. He also often presented himself as "a man of routine… giddy at the top of a ladder…no wish to risk my neck…a plain ordinary man…an aeroplane frightens me…no pilot…not an engineer…." It was all nonsense. He was a canny innovator, a trained engineer (albeit not in aerodynamics) and a brave test pilot. He was simply doing some smart marketing for the super simple stall- and spin-proof aeroplane that he had invented: the *Pou du Ciel*.

That was indeed the name he gave it—"Louse of the Sky"—for he described it as "a small insect which has made people scratch their heads." He was hinting at the bafflement with which conventional aviators viewed his design principles. Enthusiastic British acolytes at least called the Mignet aeroplane a "Flying Flea," which is what the design and its descendants have been called ever since.

The *Pou* was tiny, hardly bigger than the child's pedal-car that it strongly resembled. It was so simple to build that Mignet claimed, "If you are able to nail together a packing case, you are able to build the Flying Flea." Mignet always intended to manufacture his design by the thousands, but as events worked out, he instead became the world's first successful homebuilt-aeroplane entrepreneur. His book *Le Sport de l'Air*, which was translated into English, included complete construction drawings and how-to details for homebuilding the original *Pou du Ciel*, and hundreds of dreamers in continental Europe, Britain, Australia and New Zealand immediately began construction. In the United States, Powell Crosley, head of the Crosley Radio Corporation, assigned his personal pilot to build the "Crosley Flea," a Mignet HM-14—its official type designation—that survives to this day in the Smithsonian's National Air and Space Museum.

The Flea's fuselage was indeed pretty much an open-topped packing case—it has also been described as a coffin—with a short triangular tail cone, a huge rudder for stability and a pair of simple wings. Its small motorcycle engine sat atop a tripod above the nose, and everything including the pilot was out in the open air. The tiny aeroplane was at the time unique in having a single control—just a stick. There were no rudder pedals, and absolutely no ailerons or elevator for the stick to deflect.

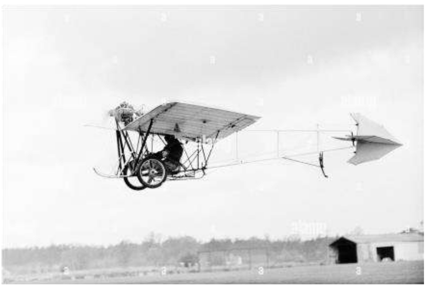
The *Pou* had two wings, like a biplane; the upper one was conventionally located above the cockpit, but the lower wing was way back by the tail, like an enormous horizontal stabilizer. (The empennage otherwise consisted of just the rudder.) The forward wing pivoted, so that its angle of incidence—the angle between the wing's chord-line and the longitudinal centre line of the fuselage—could be changed by moving the stick fore and aft. Pull the stick back a bit and the wing tilted upward, increasing lift and causing the *Pou* to climb, and vice-versa.

To turn the *Pou*, the same stick was pushed left or right, which deflected the rudder. Conventional aeroplanes "skid" uncomfortably in a rudder-only turn, but the *Pou*'s wings were strongly upswept at the tips. Right rudder made the aeroplane skid briefly, but as soon as the now-sidewise airflow got under the left wingtip, it properly banked the *Pou* to the right.

Even in the 1920s, Mignet understood that slotted wings ameliorated an aeroplane's stall tendencies. Air flowing through a leading-edge slot at high angles of attack increases low-speed lift and keeps the airflow attached to the upper surface of the main aerofoil, aft of the slot. Slice a slotted wing from front to back, and the resulting cross-section will reveal two "wings"—a small aerofoil that is the forward part of the slot, and the main aerofoil aft of the slot. Mignet's *Pou du Ciel* configuration was in effect a flying slot: Its upper wing was the forward part of the slot, and the rear wing, only slightly lower than its forward partner, was the aerofoil aft of the slot.

The Flea was not particularly efficient. Slots are slow and draggy, which is why when a modern airliner reveals slots and other leading-edge devices as it is configured for an approach and landing, they unfold from entirely faired-in recesses. But Mignet didn't care about efficiency. "Speed! Always speed!" he grumped. "Do we ordinary men really want to go great distances in the twinkling of an eye? Will our materials always stand up to such folly?"

Mignet died in 1965, by which time he would have admitted that the answer was "Yes and yes." But when he flew the HM-14, his delight was poking around at 500 feet, peering down at the country lane bicyclists who could nearly keep up with him, landing in meadows half the size of a football field. While it was not the world's first ultralight—that distinction is usually afforded Alberto Santos-Dumont's *Demoiselle* monoplane of 1909—the *Pou du Ciel* was arguably the world's first aeroplane made in substantial numbers purely for pleasure, with no thought for efficiency, speed, utility, commerce or anything else more meaningful than carrying a single pilot aloft for the fun of it.



Santos-Dumont's Demoiselle monoplane

There was even a brief *Pou* craze, in England particularly, and it was in many ways equivalent to the sudden popularity of Rogallo-wing hang gliders and then their inevitable descendants, powered ultralights, in the United States in the mid-1970s. Nearly all unlicensed, unregulated hang gliders and ultralights were built by enthusiastic and often unskilled amateurs and were flown by non-pilots. Quite the same could be said of the *Pous du Ciel*.

Henry Ford's Flying Flivver

The dream of Everyman's Aeroplane has been around a long time, and it persists to this day. In the late 1920s, Henry Ford's Flying Flivver, a 35-hp single-seater, was intended to sell for the price of a Model T. Only three were built, and one crashed fatally. Ford then lost interest.

In 1933 the Bureau of Air Commerce, headed by Eugene Vidal, a World War I pilot and the father of writer Gore Vidal, declared that the United States would sponsor a contest to develop a "poor man's aeroplane" to sell for $700 (about $10,800 in 2006 dollars). It produced several light designs and much unrealistic enthusiasm.

In the 1960s, Cessna, even then the world's largest lightplane manufacturer, declared that its new tricycle-gear designs were so easy to fly that all you had to do was "drive them up, drive them back down." Ads depicted Dad in a fedora driving Mom and the kids off to dinner in the big city in their new Skylane.

My own first aeroplane was an Ercoupe, a stall/spinproof, rudder-pedalless little twintail scooter that nonetheless suffered an embarrassing accident rate because it could be made to sink like a dropped anvil during a landing approach, sometimes without enough altitude to recover. Even today, NASA is working on a program to produce the general aviation aeroplane of the future, which will fly almost automatically along "highways in the sky," with a variety of electronic datalinks handling navigation, weather avoidance and IFR flight.

But Henri Mignet was the first to seriously approach the challenge of an Everyman's Aeroplane—and he too ran into a fatal flaw. He persuaded the regulatory bodies in both France and England to exempt the *Pou* from any testing, stress analysis or certification procedures, as long as its pilots carried third-party insurance and stayed out of the way of "real aeroplanes."

But then there were several fatal crashes in France. They were attributed to pilot inexperience. As *Pous* became all the rage in England during the mid-'30s as well, however, a Royal Air Force squadron leader died when his *Pou* dived straight into the ground. Obviously, inexperience wasn't the excuse after all.

Eleven *Pou* pilots died before the reason was discovered: Mignet had designed the original *Pou* with a wing that could achieve a substantially negative angle of incidence, so that airflow hit the top of the aerofoil rather than the leading edge or under-surface, as an aerofoil is intended to operate. "The aircraft [then] tries to assume a stable attitude," one aviation writer pointed out. "This means that it tries to fly inverted." Not good.

Mignet corrected the design error, but it was too late. The *Pou* was banned in both France and Britain. His double-wing, tailless designs would forever be known as killers. Even though dozens are flying to this day, the stigma was permanent.

Mignet's son, Pierre, continued his work designs, including a version that the French army bought in the 1990s as a low-tech, roadable battlefield scout plane; it was also used as a forest-fire spotter. Other homebuilders and innovators made improvements as well, and a variety of modernized *Pous* are still being built and flown in Europe and the United States. Complete construction plans for the original HM-14 (safely modified) and several follow-on versions are still readily available.

The most comprehensive single source of *Pou du Ciel* information in English is the Web site www.flyingflea.org.

A Pou de Ceil on Skis in Canada

An HM14 at MOTAT, in New Zealand

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Fixing that Bad Attitude

By Rob Knight

Pilots must contend with two types of *attitude* when aviating. One is taught during training, it being the relationship between the nose of the aeroplane as seen through the windscreen and the horizon, or the relationship on the artificial horizon instrument between the model aeroplane wings and the horizon bar. The other is a pilot's behavioural actions, their own personal mental behaviour, or set manner of thinking, that institutes actions after thought. The first attitude is visible – right in front of the pilot's eyes, the other is insidious, hidden from sight and only recognised after analysing thoughts and subsequent actions.

It is generally accepted by aviation authorities that five hazardous attitudes of the second type exist. The dangers of these attitudes lie in that they have the power to undermine a pilot's aeronautical decision making leading to catastrophic piloting failures.

Aviation, probably more-so than any almost other human endeavour, requires ongoing assessment of the pilot's and the aeroplane's environments, and constant recognition of discovered issues and subsequent decision making to ensure a safe passage through those recognised issues. A bad attitude becomes a filter through which all the mental processes that result when a perceived issue is recognised, is considered, and a subsequent action to remedy the issue takes place. Such a filter can easily and quickly provide artificial and unnecessary hazards to the safe operation of an aircraft.

These attitudes, aka traits, are named as antiauthority, impulsivity, invulnerability, macho, and resignation. While these terms all have negative connotations, each really represents a trait or characteristic embodied in the psyche of every human mind. The key to maintaining safe attitudes lies in understanding the factors that influence each of these traits and recognizing situations when they may become sufficiently prevalent to compromise our decision-making ability.

The Decision-Making Process

We live in a world of high-speed computing, information access, and electronic communications, but it's still possible that the most enigmatic technical marvel we are aware of is still the human mind itself. With even our current level of understand of the mind, it's practically impossible to understand all the variables affecting it. Therefore, we need to work with models that help us to understand the mind's processes in the making of the decisions that keep us safe.

For the decision-making process in our minds to function, our mind must first be perpetually aware of our situation. With this awareness, our minds evaluate our situation and identify any risks to it or potential risk factors. Once risk factors are identified, the mind then uses prior learning and/or understanding to make judgments to evaluate the level of seriousness of any perceived risk factors. We then select a course of action that our minds predict will provide a desired result to mitigate those risk factors deemed as being necessary to combat.

From observing this process, it is clear that a pilot is called upon to evaluate five important flight elements. These are:

1. Himself or herself,
2. The aircraft,
3. The environment,
4. The type of operation or flight (sightseeing, training, charter, etc.), and
5. The situation as it pertains to the type of operation.

After many millennium of successful human evolution, our decision-making process operates effectively. But when stressors are present, the process can become anxious or even go belly up completely if the pilot fails to properly evaluate any, or all of the above-listed five flight elements.

Able to manipulate our perceptions relating to these elements, there are three categories of stressors.

- Broadly categorized as physical, physiological, and psychological, physical stressors attuned to our environment and include such factors as cockpit temperature, noise, vibration and turbulence, hypoxia, and carbon monoxide.

- Physiological stressors, being those that affect the functioning of our bodies and minds. They include such common factors as fatigue and proper nutrition.

- Psychological stressors which include a myriad of factors such as peer pressure, self-image, get-home-itis and the hurry-up syndrome to name just a few. These are all extremely powerful, and when they arise are likely to severely alter our perception of the five elements of flight decision making.

Any of these stressors are easily powerful enough to vary our perceptions to the point that we are no longer able to make the realistic evaluations of our flight's circumstances so necessary for the safe conclusion of the operation. Any pilot unable to appropriately assess and evaluate his/her surroundings is hardly an asset to themselves, to any passengers carried, or even the successful conclusion of any flight.

As stressors mount, the attitudes that we normally keep in check may initiate an adverse influence our decision-making ability. This is potentially super disastrous as our judgment becomes compromised, and we begin to slide down a slippery slope toward catastrophe. What's vitally important is that we distinguish such traits within us, appreciate how these traits can develop into hazardous attitudes, and develop mechanisms to readjust our thought processes as we enter the zone of hazardous attitudes and dangerous decision making. In other words, being unaware of the potential for stressors to cause our mental process to fail, we are our own worst enemies. An all-too-frequent example of this situation are the regular fatal accidents that result from attempting to continue VFR flight into IMC.

The five hazardous attitudes all pilots should be aware of and avoid at all costs

Safe flying depends on more than just a pilot's experience and ability. Pilots also need to be aware of the attitudes that may influence their judgment and decision-making abilities to avoid dangerous outcomes.

Aviation Authorities outline five hazardous attitudes that can compromise a pilot's decision-making. These are

1. Anti-authority,
2. Impulsivity,
3. Invulnerability,
4. Macho, and
5. Resignation.

An understanding of each of these hazardous attitudes can only help pilots at all skill and experience levels manage risk and make safer decisions when they are aviating.

Anti-Authority (or, don't tell me)	Pilots demonstrating this attitude towards authority tend to believe entirely that rules, regulations, and safety procedures don't apply to them. For example, an anti-authority pilot may neglect their checklists or refuse to take advice from instructors or ATC. Note that , having an anti-authority attitude is different from simply questioning authority. Pilots have always had the prerogative to speak up to authority if they believe a mistake has been made.
Impulsivity: "Do something quickly!"	An attitude of impulsivity is found in pilots who "feel the need to do something, anything, immediately." Instead of taking a moment to think things through or select the best alternative, a pilot with an impulsive attitude does the first thing that comes to mind. Reacting too quickly can lead to irrational decisions, such as skipping a pre-flight, or rushing to get home despite inclement weather. Pilots must take time to evaluate their options before choosing a course of action.
Invulnerability: "It won't happen to me!"	This, unfortunately, is the attitude of many people, not just pilots. They develop a pattern of thinking that accidents only happen to others, never to them. This attitude of invulnerability can become a safety concern when pilots fail to consider the risks of their actions.
Macho: "I can do it!"	Pilots with a macho attitude are forever trying to impress others and prove themselves by taking flagrant and unnecessary risks. Both genders, men and women, are susceptible to macho attitudes, and are led to foolish and often dangerous behaviour. While pilots must have a high level of confidence in their abilities, it's important to avoid becoming overconfident and adopting a macho attitude.
Resignation: "What's the use?"	Pilots displaying this final attitude of resignation will demonstrate a lack of confidence and conviction to believe they can make a difference in what happens to them. These pilots tend to give up easily when faced with challenges and don't take criticism well. This "whatever will be will be", attitude is particularly dangerous for pilots facing emergencies because they may believe they are helpless and resign themselves and their passengers to their fate instead of taking action.

In truth, absolutely anyone can descend into one or more of these hazardous attitudes. They are a normal part of human nature. However, understanding these attitudes, and recognizing when they occur, will help pilots make better decisions and avoid unnecessary danger.

Changing Bad Attitudes

Once a pilot becomes aware of the human propensity for compromised decision-making to which we are all prone, they can apply a corrective mechanism to their thinking. When the antiauthority attitude is recognised, they need to remind themselves that the rules are almost inevitably usually right. The regulations under which we operate have been written in blood, literally, and exist for our protection.

If they find themselves tempted to react impulsively, they can prompt themselves to think first. By reflecting briefly on a situation, they can often choose to follow a better course of action than simple reaction. With practice, this can become a habit and the attitude will have been corrected

If they ever find themselves thinking that they are invulnerable, they need to take a deep breath step back, and think again. In such a case, taking a mental note of all the factors influencing the safety of the flight and writing up a pseudo accident report, may assist in making more objective evaluations of their situation.

The same goes for the macho attitude. Finding themselves about to take a chance, they need to reflect carefully on the significance of their decision to fly. They need to ask themselves how important this flight will be in five days or five years from now. It’s highly unlikely that it will be important, and their bad attitude will begin to change.

Finally, they need to watch out for those times when their mental acumen become compromised by tunnel vision. When the resignation attitude develops, they must realize that they are not helpless, and force themselves to continue thinking and flying the aeroplane. All this was covered in every pilot’s basic pre qualifying training and reverting to those principles and procedures will help to “snap out of it”.

Nobody wants an accident, but they happen all the time. We must constantly make the painstakingly difficult assessment of our own mental condition in order to operate under the best circumstances possible to avoid them.

Happy Flying

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

Does it Help Your Airplane Climb if you Lower the flap a little bit?

From an article by Gavon Petit

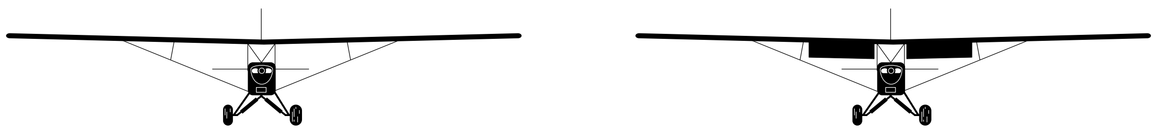
For both the Rate of Climb AND the Angle of Climb, in a word, no!

Intuitively, people tend to think that climbing involves “more lift,” and so lowering flaps, which generally increases lift, might improve climb rate. Actually, flight lift of one G is always roughly equal to weight; it’s surplus horsepower power that makes an airplane climb, not excess lift. Surplus horsepower is defined as the horsepower left over AFTER the drag value is subtracted.

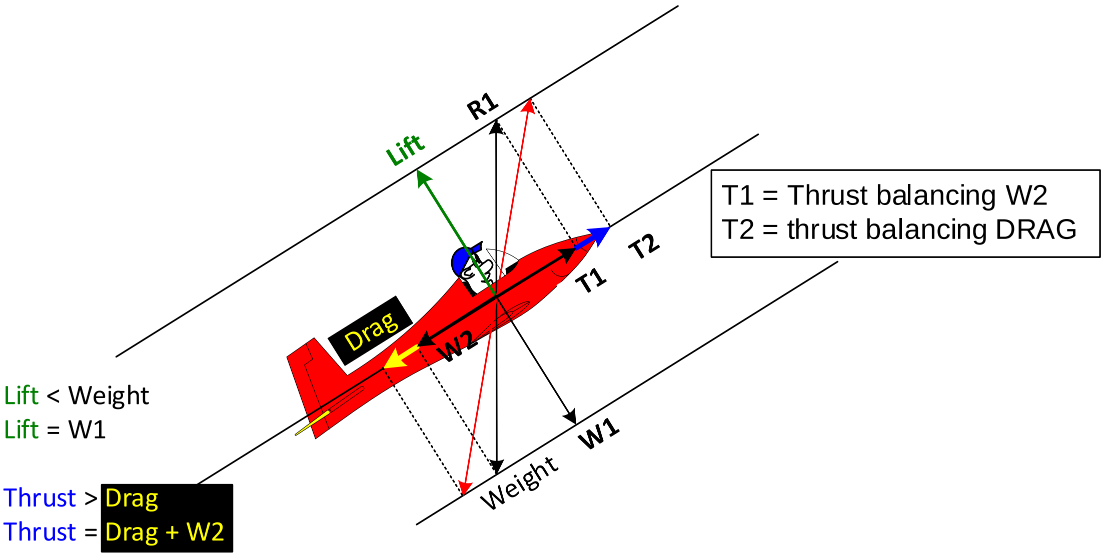
Because flap deflection increases the effective thickness of a wing insofar as the airflow is concerned, lowering flaps will ALWAYS increase the drag generated by that wing. As drag is opposed by thrust, the additional drag must reduce the horsepower that is surplus after the DRAG value is removed and therefore the climb rate will suffer accordingly.

The main effect of a small amount of flap deflection is to slightly lower the stalling speed. This has no bearing on climbing because the speed for best rate of climb is quite distant from the stalling speed.

On the other hand, the speed for the best angle of climb is closer to the stalling speed, and so a little bit of flap deflection gives a little bit of extra margin of safety. The same applies to a minimum-radius turn. The gain in performance, however, will be imperceptible.



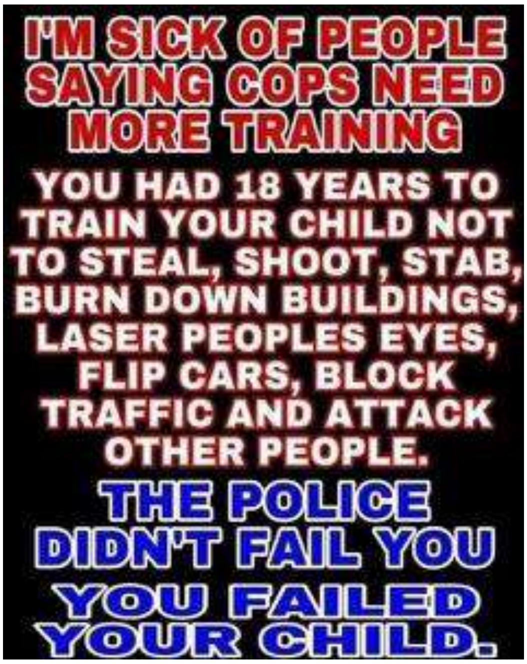
Flaps down = greater frontal area = more drag = lower rate of climb

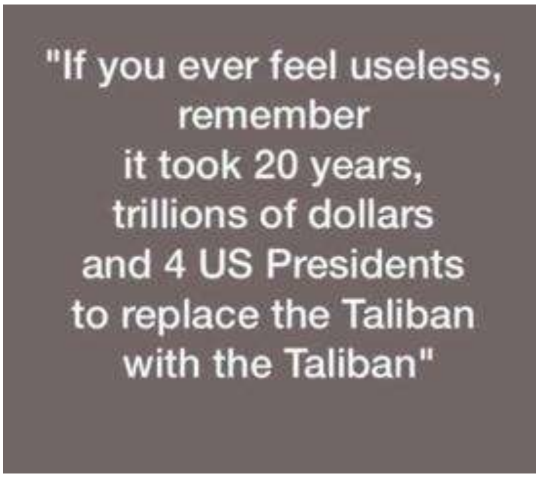


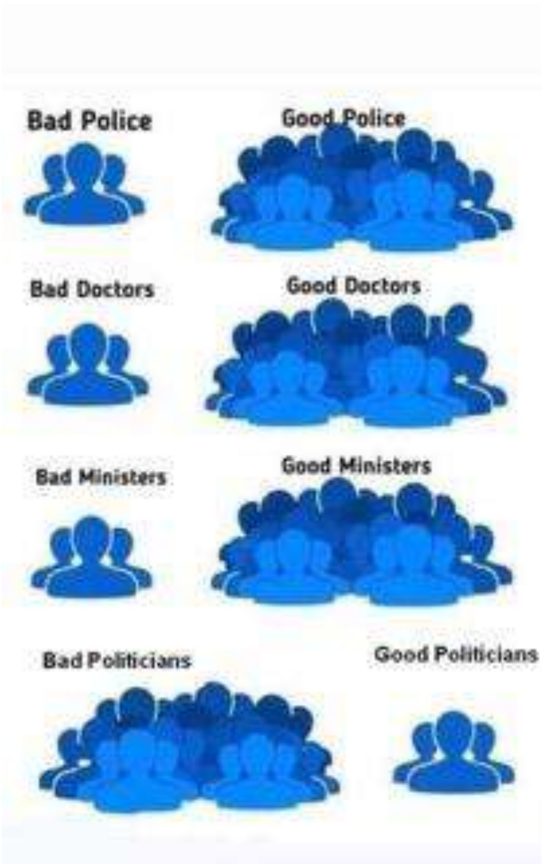
However:
The resultant of all upward forces = the resultant of all downward forces
So equilibrium is established

FLY-INS Looming

WHERE	EVENT	WHEN
Murgon (Angelfield) (YMRG)	Burnett Flyers Breakfast Fly-in	**Find Next Planned EVENT AT** **http://www.burnettflyers.org/?p=508**
Shute Harbour (YSHR)	Fly-In and Runway Dinner	**Whitsunday Airport 10/09/2022**







When Piper Built a Warbird

By Jason McDowell, July 5, 2022

The Piper PA-48 Enforcer was the meanest turboprop the company ever built.

Over the years, many aircraft types have evolved into far more capable machines by having their existing piston engines replaced with turboprop powerplants. The Piper Malibu, for example, gained better performance and reliability when the turboprop variant was introduced as the Mirage. Similarly, the Beechcraft Queen Air, de-Havilland Beaver, and Douglas DC-3 all saw corresponding performance gains as turbine-powered derivatives.

Piper PA48 Enforcer – Mustang on steroids

Decidedly less common is the initiative to reimagine a World War II-era fighter as a modernized, turboprop attack aircraft and market it to the government. This, however, is precisely what happened in the form of the Piper PA-48 Enforcer. First flown in 1971, a total of four prototypes were built and demonstrated until their retirement in 1984.

The concept of modifying and remanufacturing P-51s began in the 1950s. At that time, the National Guard retired the last of the active-duty examples, making them available for purchase on the open market at bargain prices. A company called Trans Florida Aviation saw a business opportunity.

Their strategy targeted two potential customers. First, they'd offer civilian versions with the military equipment stripped out and replaced with additional fuel tanks and luxurious interiors. Second, they would modify existing military Mustangs with new avionics and weapons systems, optimizing them for ground attack, close air support, and counter-insurgency missions.

These Mustangs were renamed the Cavalier Mustangs, and a total of 19 were produced for a variety of civilian and military customers. In the late 1960s, the owner of the company became interested in a turboprop variant and fitted a military Cavalier Mustang with a 1,630 shp Rolls-Royce Dart 510. No sales resulted, however, and ultimately, only one entity could be convinced of the airplane's potential.

Piper went on to construct two clean-sheet versions of the aircraft, and named all four examples the PA-48 Enforcer. Each was fitted with a modified Douglas Skyraider propeller and each airframe was enlarged, as were the wings and tails. To ease manoeuvring at high speeds and low altitudes, the ailerons were equipped with a boost system from a Lockheed T-33 jet, and the rudder was equipped with a yaw damper. Despite being visually similar to the original P-51, the modified aircraft were said to have less than 10 percent parts commonality with the old fighter. With six underwing hardpoints capable of carrying nearly three tons of armament, the recipe seemed perfect for the ground attack and counter insurgency

roles. Unfortunately, even after successfully performing test flights and demonstrations in the early 1980s, the military did not agree. Both PA-48s were ultimately retired and placed on display in museums. N482PE has been restored and is on display at the Air Force Flight Test Museum at Edwards Air Force Base in California. For many years, N481PE was on display at the National Museum of the U.S. Air Force in Dayton, Ohio. More recently, however, it has been transferred to the Pima Air & Space Museum, where it sits outdoors in the Arizona sun.

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

A Boeing 737 Max flight attendant walks into a bar and orders a martini.

“You’re here later than usual,” the bartender comments. “Problems at work?

Yes, just as our flight was about to take off, we had to turn around and wait at the gate for an hour.

What was the problem?” the bartender asks.

“The pilot was bothered by a noise in the engine,” she replies. “It took us a whole hour to find another pilot.”

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

1. When does the law require you to obtain a weather forecast before flight?
   A. Only for flights exceeding 50nm from the aerodrome of departure.
   B. When the cloud cover exceeds 4/8 for more than 50% of the flight distance.
   C. For all flights.
   D. When the pilot deems it necessary after viewing the ambient conditions.

2. When a weather forecast is obtained, what minimum documents are required by law?
   A. GAF and GPW&T.
   B. GAF and GPW&T and a GAMET.
   C. GAF and GPW&T, or a GAMET, or a flight forecast.
   D. GAF, GPW&T, all relevant TAF, and appropriate METAR.

3. If lowering flaps increases lift, then why is the best rate of climb (Vy) achieved when the flaps are raised?
   A. The drag increase with flaps lowered reduces the effective surplus horse power.
   B. Lowering flaps causes a trim change which increases drag.
   C. With flaps down the aircraft has a lower nose attitude so the rate of climb reduces.
   D. Because extended flaps blanket the slipstream so impeding thrust and reducing the rate of climb.

4. A pilot arrives at an airfield and begins her flight planning. If the QNH at the field is 1010,her pressure altitude will be?
   A. Sea level.
   B. Lower than the airfield elevation.
   C. The same as the airfield elevation
   D. Higher than the airfield elevation.

5. Which of the following will cause the stall speed in an aeroplane to increase?
   A. Turning, either level of climbing.
   B. A straight steep climb with a high nose attitude.
   C. A spiral dive.
   D. Applying excessive aileron at low airspeeds.
   E. A, B, and C, are correct.
   F. A, C, and D, are correct.

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.
   A forecast is required for all flights
   See Part91 (Plain English Guide) V2.0, 10: Pre-flight planning and preparation, page 76.

2. C is correct.
   The required documents are listed as GAF and GPW&T, or a GAMET, or a flight forecast
   See Part91 (Plain English Guide) V2.0, 10: Pre-flight planning and preparation, page 76.

3. A is correct.
   The drag increase with flaps lowered reduces the surplus horse power. Rate of climb depends on surplus horse power i.e., the power remaining after the value of drag has been deducted.
   See: https://en.wikipedia.org/wiki/Rate_of_climb

4. D is correct.
   A QNH setting of 1013 (or 1013.25, to be exact) is set in the Kollman window of an altimeter, assuming no instrument errors or faults, the hands on that instrument will read the pressure altitude of the aircraft. Therefore, if the QNH is lower than 1013 at any airfield, the ambient pressure conditions provide a pressure altitude higher than the airfield elevation. The standard correct is 30 feet per hPa, so, in this case, 1013-1010 = 3 hPa., 3 X 30 = 90 feet, the actual pressure altitude will be 90 feet higher than the airfield elevation. Note that had the QNH been on the other side of 1013 (perhaps 1016 hPa), the difference would cause the pressure altitude to be lower than the elevation because higher atmospheric pressures are found at lower heights.

5. F is correct.
   Options A and C both provide an increase in loading so will increase the stall speed. With option B, having a high nose attitude will not, in itself, have any effect on the speed at which the aeroplane will stall. Option D, applying excessive aileron at low airspeeds, can cause the angle of attack to be exceeded at a higher speed than the normal stall airspeed and induce a stall on the wing with the down-going aileron. Therefore, F is the correct option.

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

Aircraft Books, Parts, and Tools etc.

Books (Aviation)

NEW Item	Condition	Price
Flight Briefing for Pilots (Birch & Bramson)	Excellent	**$55.00**
Mechanics of Flight (A. C. Kermode)	Like new	**$25.00**

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 bar.	Good condition	**$50.00**

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**.

Kitset Aircraft for Sale

Build it Yourself

$1,980.00 neg

DESCRIPTION

All of the major components needed to build your own aircraft similar to a Thruster, Cricket or MW5.

- Basic plans are included, also
- Hard to obtain 4" x 3" box section, 2 @ 4.5 metres long.
- Wing spar & lift strut material - 6 tubes of 28 dia. x 2 wall.
- 20 fibreglass ribs plus the moulds,
- 16 spar webs plus the moulds,
- 2 fibreglass flat sheets for the leading edges - 4 metres long x 1.1 metres wide.
- All instruments including,
- A Navman flow meter,
- A Powermate rectifier regulator,
- A ballistic parachute,
- A 4-point harness,
- Set fibreglass wheel pants, and
- More.

Box sections and tubes

Flow Meter, Navman, Ballistic Chute, etc

A very comprehensive kit of materials

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

Or Mob: 0419 758 125

Ribs, tubes, spats, etc

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**

Single Seat T84 Thruster, disassembled and ready for rebuild.

I have a T84 single seat Thruster project in my hanger at Watts bridge.

The fuselage is on its undercarriage, the wing assemblies are folded up and the skins are with them.

Included is a fully rebuilt Rotax 503 dual ignition engine and propeller.

And, most importantly – the aircraft logbook!

Asking price $5000.00

Contact John Innes on **0417 643 610**

More Aircraft for Sale

$ 2000 ONO $

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 kts at 11-12 litres/hr. The tanks hold 48 litres so it has a very reasonable range. For my approaches I use 50 kts on my initial approach down to 40 kts 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

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

AIRCRAFT for Sale - LIGHTWING GA-55.

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 McDonald on 0419 607 637

Aircraft Engines for Sale

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

The World is MAD

To all the green people with green cars..
This is an electric charging station, powered by a diesel motor. 😂🤦

This is a picture of a Electric car charging station that are popping up everywhere. Here's an interesting fact.... That 350kw generator uses 12 gallons of diesel fuel per hour, and it takes 3 hours to fully charge a car to get 200 miles. That's 36 GALLONS for 200 MILES!!! 5.6 mpg.
Proof you can't fix stupid...

This is a CAT 994H. It burns 1800 gallons of fuel in a 12 hour shift. This machine is required to move 500,000 pounds of earth in order to get the minerals needed for ONE SINGLE Telsa car battery. In whose world does this type of math and green new deal make sense?

A gas powered van, towing a diesel generator, charging an electric car.
The future is stupid.

Q. What does a man with diarrhoea have in common with an electric car owner?

A. They both hope to make it home!