BRISBANE VALLEY FLYER

April 2025

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

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The Vought F4U Corsair – Whispering Death in WWII.

See page 5.

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Our website - **bvsac.com.au**

Greetings Members,

The March meeting was again well attended, most members stayed for the BBQ afterwards and it was a good time to socialize.

John Inness gave a small presentation on behalf of our Social Director Jacque Arnold relating to the upcoming visit to the Caloundra Air Museum.

The club will be visiting the museum on Saturday the 17th May, we will then go and find somewhere for a casual lunch. looks like it will be a great day. Come along for a great day out. It

The next meeting is scheduled for Saturday the 5th April starting at 10:30am in the club house.

Best wishes

Peter Ratcliffe
President BVSAC

Weight in Balance – Why?

By Rob Knight

Weight and Balance is a subject discussed too often in hushed whispers, as if an out loud discussion might mobilise gremlins and smite one of the group out of the sky. Yet it is so simple that children play in perfect safety using its concept on see saws.

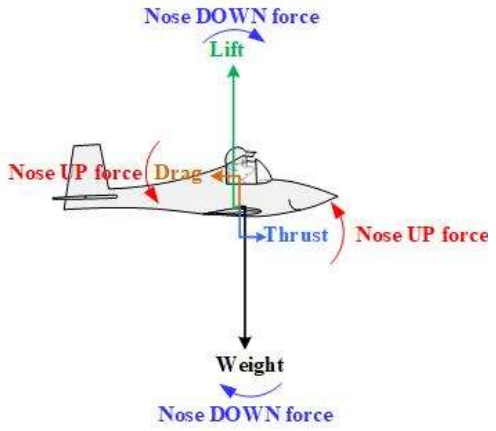
So what's the big problem with aeroplanes? Over-weight is pretty obvious but not so the balance part. An aircraft today, looking exactly as it did yesterday, rears up after take-off, rolls, pitches down, and dives into the ground. To the uninitiated, it could seem that the occupants must have got on the wrong side of the supernatural.

But black magic it certainly is not. Centre of Gravity issues are both very simple and potentially very deadly, yet, in almost all circumstances, very easily remedied. The problem is that for these dangerous issues, the remedial action must occur BEFORE the flight commences. After lift-off, it is already too late.

Centre of Gravity issues relate directly to the forces acting on an aircraft in flight. An incorrect Centre of Gravity position can create forces the controls cannot overcome so pilot control over the aircraft is irretrievably lost.

First – just what is the Centre of Gravity? It is the pivot point on which a see-saw balances. In an aircraft; it is the point on which the whole aircraft will balance, or, it is the point through which all the aircraft's weight may be considered to act. Its effect on the aircraft in flight lies in that it determines the point about which the aircraft moves.

All aircraft movement takes place about the Centre of Gravity as is depicted on the left side illustration below. It remains stationary and the aircraft moves about it.



The location of the Centre of Gravity is fixed except for the minor changes (in most light aircraft) as payload may be dropped (cropdusting) or fuel is consumed. For this reason, designers try to keep the fuel and payload centres of an aircraft as close as possible to the Centre of Gravity.

Now let's look at the forces acting on the aeroplane in flight. They comprise the lift which supports the weight, and thrust which counters the drag, but they are arranged in a very special manner – in couples. A couple is a situation where two equal forces act in opposite directions about a point. Below left is a depiction of a couple – two forces acting about a point and causing the arrangement to rotate. Opposing a couple relies on another couple, as shown on the right where the blue couple acts clockwise opposed by the red couple acting opposite. Because they equal each other and there is no residual imbalance, we say that they are in equilibrium.

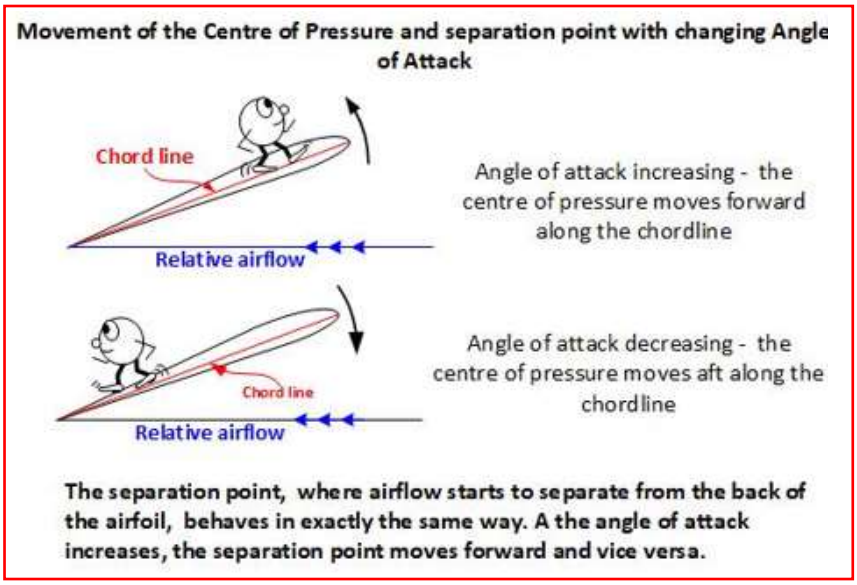
Similarly, the four forces acting on the aeroplane are paired and set up as two couples. Lift and weigh are coupled to act about the Centre of Gravity and pitch the nose down, while thrust and drag are paired as couple two to pitch the nose up. As previously stated, if they can be arranged so they oppose each other equally, the aeroplane will require no further force to maintain its attitude. This is a designer's dream because it minimizes drag and so maximises speed which, in turn enhances the range and endurance of the aeroplane design.

For these couples to function correctly, the weight must always be forward of the lift which is represented by the Centre of Pressure, and the thrust line must be lower than the drag line as shown in the image on the left. This sketch presents a state of equilibrium.

What we are doing when we calculate the position of the Centre of Gravity, is identifying the point where the weight line is acting. It is presented as a distance from the datum, or as a percentage of the MAC (mean aerodynamic cord). Where MAC is used, details should be provided in the Flight Manual. In definition, MAC is simply the average chord length along the span of a wing.

Now let's consider the interaction of these four forces and their couples as the aeroplane is manoeuvered in flight. If we lower flaps in flight in a high-winged aeroplane, the drag line will rise and increase the power of the thrust/drag couple. This is likely to cause a nose pitch up. In a low winged aeroplane, the reverse may occur. A decrease in thrust in either a high-winged or low-winged aeroplane will decrease the power of the thrust/drag couple and cause the nose to pitch down – a highly desirable trait as an aid to maintaining airspeed if an engine failure occurs.

Of greater consequence is movement of the Centre of Pressure. As mentioned earlier, the Centre of Pressure is the point on the aerofoil chord through which all the lift forces act. It is the equivalent of the Centre of Gravity insofar as the aeroplane's lift is concerned. Also as mentioned earlier, the lift upwards and the weight downwards are arranged as a couple with the effective arm between being the linear distance between the Centre of Gravity and the Centre of Pressure. And herein lies the problem – as the angle of attack changes so does the location of the Centre of Pressure. With an increase in angle of attack, the Centre of Pressure moves forward along the chord. This is unstable and effectively reduces the arm and thus the strength of the lift/weight couple. This means there is less natural force to hold the nose down and the elevator must be used for attitude control.



Before the stalling angle is reached, any increase in angle of attach will cause the Centre of Pressure to move forward along the chord, and ALWAYS closer to the Centre of Gravity. If the Centre of Gravity is already too far back, catastrophe is waiting with bated breath.

So what's the message here? The message is as simple as it is dramatic, and just in case you missed it, the point is that operating an aeroplane with a Centre of Gravity position aft of aft limit stated in the flight manual for that aircraft is extremely dangerous. Follow me through one more time – an aeroplane is improperly loaded and its Centre of Gravity is aft of its aft limit. This means that the arm between the Centre of Gravity and the Centre of Pressure is diminished which reduces the strength of the nose-down lift/weight couple. At some stage of flight, the thrust/drag couple may overpower it or the arm may reverse and control of the aeroplane will be inevitably and irretrievably lost. Flying ana aeroplane with its Centre of Gravity aft of its design limit is tantamount to driving at 120 KPH down the motorway with loose wheel nuts on all four wheels!

So, also again, how does this catastrophe develop? If the Centre of Gravity is only slightly aft of the limit and the aeroplane's angles of attack during the flight remain low, maybe nothing at all. Perhaps, at most, the lucky pilot might be surprised at how easily the aircraft flares and settles onto the ground at the end of a short flight. However, on a longer flight, in an aeroplane whose Centre of Gravity moves aft with fuel burned, the outcome could be entirely different. In an accident report in New Zealand, a Piper Seneca took-off from Auckland International on an IFR flight south. It was overloaded but, worse, it had an excessive baggage weight in the aft baggage locker. The flight was uneventful until the aircraft was slowed down to enter the holding pattern at 7000 feet a little north of Wanganui. The accident report indicated that, as the pilot slowed the aircraft and raised the nose to maintain height, the lift/weight arm had diminished almost to zero. The aircraft stalled and entered a spin from which there was inadequate elevator authority to effect a recovery. All on board were killed.

Perhaps a more typical stall/spin caused by an aft Centre of Gravity position is where and aircraft takes off and at about 50 feet above the runway suddenly rears up, rolls and dives into the ground. Here, the aft Centre of Gravity position causes a slower response and is aided by the increasing lift with increasing airspeed. As the pilot eases the controls back to establish the correct attitude for the climb, he increases the angle of attack and the Centre of Pressure moves forward diminishing the power of the lift/weight couple. The Centre of Pressure might actually move ahead of the Centre of Gravity in which case a complete reversal of the couple's force takes place and it changes from being a nose down to a nose up couple. Now two nose-up couples are in force and there is no hope of ever recovering control of the aeroplane.

In conclusion, we should also note the effects of a Centre of Gravity forward of the forward limit. Here the pitch control is also lacking but, because this error makes the aeroplane effectively nose heavy, the issue is in raising the nose to the correct attitude after take-off and raising the nose with falling airspeed when landing. This may lead to landing with excessive speed which can cause a runway over-run. Whilst this has obvious dangers of its own, it is not nearly as potentially lethal as an uncontrollable stall/spin after take-off which can ruin one's WHOLE day!

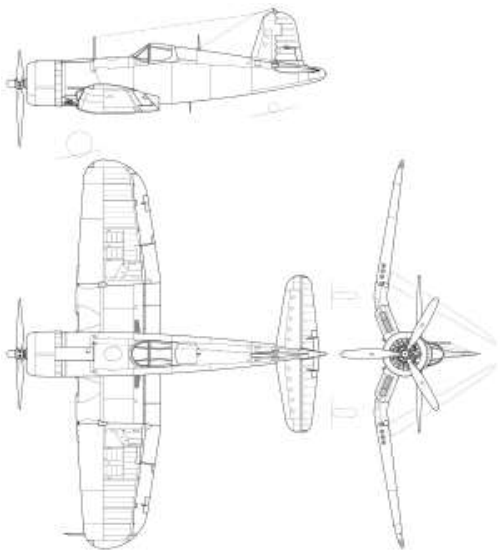
Prudent pilots NEVER operate their aeroplanes outside of any flight manual stated limitations or limits.

The Centre of Gravity must ALWAYS be located ahead of the Centre of Pressure. The aft Centre of Gravity limit can NEVER be exceeded without serious danger.

The Vought F4 Corsair

By Rob Knight

The Vought F4U Corsair was a WWII American aircraft designed and primarily operated as a carrier-based fighter aircraft. and entered service in prolific numbers with the U.S. Navy and Marines from 1940 onwards in World War II. It quickly developed into one of the most capable carrier-based fighter-bombers of the war. Some Japanese pilots reputedly regarded it as the most formidable American fighter they encountered, and U.S. naval-aviator's claims achieved an 11:1 kill ratio. Early problems with carrier landings and logistics led to re-design and modifications but these were successful and the type developed into a very impressive success story.



Vought F4U Corfsair

Powered by Pratt & Whitney's R-2800 Double Wasp, twin-row, 18-cylinder, 2,800 cu in (air-cooled radial engine, with a displacement of 2,800 cu in (45,920 cc or 46 L), the F4 Corsair's initial deployment was to land-based squadrons of the U.S. Marine Corps and U.S. Navy.

The Corsair was soon in such great demand that, to increase production rates, additional production contracts were given to other companies, specifically *Goodyear* (whose Corsairs were designated FG**)**, and *Brewster* (aircraft designated F3A).

Korean War F4U, taxiing with wings folded. Note the poor pilot visibility ahead requiring "S" turns to see ahead.

The Corsair service in the Korean War was almost exclusively as a fighter-bomber, and this role continued during the French colonial wars in Indochina and Algeria. In addition to its use by the U.S. and British, the Corsair was also used by the Royal New Zealand Air Force, the French Naval Aviation Service, and other air forces until the 1960s.

From the first prototype delivery to the U.S. Navy in 1940, to final delivery in 1953 to the French, 12,571 F4U Corsairs were manufactured, in 16 separate models. Its 1942–1953 production run was the longest of any U.S. piston-engined fighter.

Engines grow in power with development, but a major war demands the utmost performance from engines fitted to aircraft whose life in front-line service was unlikely to exceed 50 hours flying, over a period of only a month or two. However, in peacetime, the primary consideration was for longer term reliability, perhaps over a period of a dozen years or so. A reason for this longevity of this type was the reliability of its airframe and the R-2800's reliability commended its use for long-range patrol aircraft where it was used in the Douglas DC-6, Martin 4-0-4, and the Convair 240 transports.

The Double Wasp engine still flies in restored vintage warbird aircraft displayed at air shows, and sees service worldwide on aircraft such as the Canadair CL-215 water-bomber. In addition, R-2800s continue to power Douglas DC-6 cargo and fuel-carrying aircraft in locations such as Alaska. A total of 125,334 R-2800 engines were produced between 1939 and 1960.[1]

Flying, an F4U Corsair was an interesting aircraft. Its distinctive gull-wing, designed, at least in part, to increase propeller tip clearance for runways, and its powerful engine, made it both a challenging and rewarding experience. Pilots needed to master its unique handling characteristics, including tricky low-speed manoeuvres, and a tendency to roll during take-off (caused by the powerful propeller torque, harder to control at low airspeed), and losing directional control during landings and subsequent roll-outs.

It's key characteristics and challenges could be listed as follows:

Engine Power:

The F4U Corsair, note the two radiators built into its gull wings.

The Corsair, powered by the powerful 2400 hp Pratt & Whitney R-2800 Double Wasp engine, which generated significant torque, required great care when applying power for take-off. Initially, the only counter to the savage and severe nose swing on take-off as power was added was individual wheel braking, as there was insufficient airflow across the keel surface to aid in directional stability of control. Also, on approach, or, when going around from a balked landing, power had to be increased with great care so the available airflow-provided control wasn't exceeded by the torque issues.

Low-Speed Handling:

The Corsair was considered difficult in its low-speed handling. It had a strong tendency for the port wing to stall before the starboard, and savage wing-drop stalls, especially when slow and at low altitudes, do not enhance pilot longevity.

With the radial engine protruding far in front of the cockpit, visibility over the nose was virtually non-existent, a factor that made carrier operations particularly difficult.

Specifications (F4U-4)

(Data from F4U-4 Detail Specification; F4U-4 Airplane Characteristics and Performance)

General characteristics

Crew: One

Length: 33 ft 8 in (10.26 m)

Wingspan: 41 ft 0 in (12.50 m)

Height: 14 ft 9 in (4.50 m)

Wing area: 314 sq ft (29.17 m^2)

Empty weight: 9,205 lb (4,238 kg)

Gross weight: 14,670 lb (6,654 kg)

Max take-off weight: 14,533 lb (6,592 kg)

Powerplant: 1 × Pratt & Whitney R-2800-18W radial engine, 2,380 hp (1,770 kW)

Propellers: 4-bladed.

Performance

Maximum speed: 446 mph (717 km/h, 385 kn)

Cruise speed: 215 mph (346 km/h, 187 kn)

Stall speed: 89 mph (143 km/h, 77 kn)

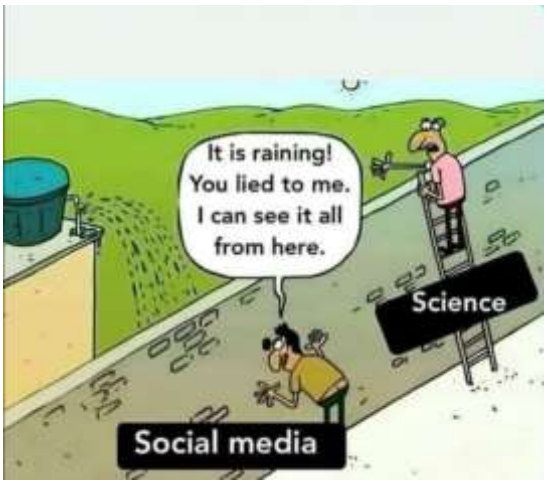
Range: 1,005 mi (1,617 km, 873 nmi)

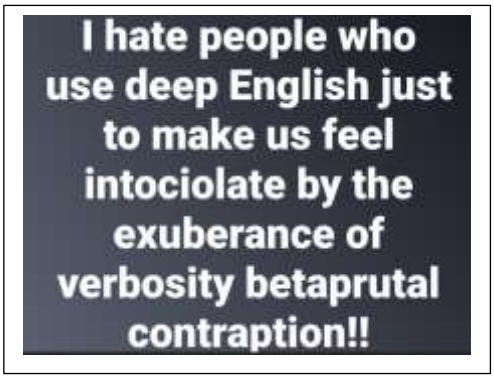
Armament

Guns: 6 × 0.50 in (12.7 mm) M2 Browning machine guns 375-400 rounds per gun

Rockets: 8 × 5 in (12.7 cm) high velocity aircraft rockets *and/or*

Bombs: 4,000 lb (1,800 kg)





Flying the Maule M4 Rocket

By Rob Knight

The drawing boards of Belford D. (B.D.) Maule formed the conception of the M4 Rocket. It began as a family aeroplane concept that received its first FAA type certificate in 1961. The first production model, known as the M-4 Jetasen, was delivered in April 1962. Then, and continuing today, all Maules are constructed in Moutrie, Georgia. Comprising a classic welded steel-tube fuselage covered by fiberglass with an all-metal short-span wing, its thick, high-lift aerofoil gives it remarkable STOL performance. To aid this are fitted two-position flaps of an unusually high-lift capability but no elaborate spoilers, slots, and other items normally associated with a STOL design.

The first M-4 was powered by a 145-hp Continental engine, and in 1965, the Rocket entered production with a 210-hp Continental powerplant and a constant-speed propeller. The Astro-Rocket, a deluxe version of the Jetasen, housed a 180-hp Franklin. Then, in 1967, the Strata-Rocket was introduced into the line. Basically, it was similar to the Rocket, but powered by a 220-hp Franklin. All aircraft mentioned thus far shared the same M-4 designation.

I first flew DON in December 1974. Owned by Waitemata Aero Club member, David Lilico, it was the first Maule imported into New Zealand. It came in with a sister ship which was lost on its delivery flight.

ZK-DON, Maule M4 Rocket, with 210 hp Continental engine.

The M4 was very reminiscent of a fat, chunky, Cub, to which its resemblance was not by chance. Developed from the basic Piper Pa22 Pacer design, the similarities were very obvious and it, naturally, carried many of the pleasant points of its Piper ancestry into its flight characteristics.

Don's doors (one on each side) served both front and rear seats. Entry was easier than any Cub and the seats folded well forward to access the rear seats. Behind the rear seats was a large luggage area which could also form a trap for inexperienced pilots. The luggage area was accessed through a separate door on the starboard side.

DON, with its classic Pacer tail. In later models, its profile was changed and enlarged by some 30%, along with the tailplane and elevator.

The panel was standard VFR, no frills, except it had an artificial horizon and an ADF. Its control yoke was well placed and seats were comfortable.

Toe-brakes were a big improvement on the Piper heel actuated pedals, and made taxiing as simple as any other tail dragger. The central push-pull throttle knob was within comfortable reach as were the prop pitch and mixture controls. With the 210 hp Continental up front, its high power-to-

weight ratio gave an excellent response to throttle inputs during taxi as well as when the taps were opened for take-off.

The run-up was conventional, 1800 RPM in full fine pitch with a drop not exceeding 125 RPM with no rough running. And checking the pitch-change mechanism was just as simple, merely cycle the system three times on the first flight of the day and twice thereafter.

As mentioned, acceleration on take-off was rapid. Care was needed to not raise the tail too early; airflow, comprising both slipstream and airflow from airspeed, was necessary to combat swing left on the take-off roll, especially when the tail was lifted. The gyroscopic force on the prop came in suddenly and many quick instructor-input corrections were needed to keep students on the centre-line.

At MTOW, a normal take-off distance to 15 metres AGL was only about 900 feet (320m), and the normal climb out at 70 knots IAS gave a rate of climb of around 1150 fpm. It really performed well. However, a short take-ofF, holding it against the brakes with the yoke held fully aft, and maintaining Va, the best angle of climb speed of 50 knots, gave an angle of climb that could reach the circuit height of 1100 ft AMSL before crossing the end of the 1411 metre runway.

In flight, the M4 was pleasant to fly. Its control pressures were light but responsive, and its nose relatively low for its design origins making forward visibility unusually good. Side to side and down carried all the restrictions of aircraft and high winged aircraft at that. It was cruised at 23/24 (23" Hg/2400 RPM) which gave us a cruise speed of around 120 knots with two up, 113 knots at MTOW.

Turns were easy. The controls worked well together and the yoke felt good in one's hand. The amount of back-pressure to maintain height seemed obvious and no-one converting to type had any troubles with the aircraft turning characteristics. The aileron drag was easy to counter and the longish nose made adverse yaw easy to spot as one rolled into the turn. With plenty of power, and a thick, low-speed wing, maximum rate turns were a joy and the aircraft could be spun around its wing tip

Stalls were totally straight forward. The aircraft wings were fitted with turn-downs to the wing tip trailing edges, and its deceleration was not particularly rapid. Basic stall (no power, no flap) have a gentle break and nose sag followed by a forward mush with a notable rate of descent. Power and flap stalls made the break more abrupt but there was little or no tendency to drop a wing as long as the ball was centred. I never spun the aircraft so those characteristics I cannot relate.

It certainly glided better than a planked-wing PA-28-140. Gliding was not encouraged, to prevent thermal stresses on the engine crankcase and cylinders, so approaches were all power assisted. Full flap was 35 degrees on DON and, with power to assist, we regularly taught short field approaches at 50 knots IAS on short finals. As most pilots intended to use DON to fly into and out of Claris Airfield on Great Barrier Island, with its short runway and downdraughts from the surrounding hills, such techniques were important. Even at this low speed, controls were powerful, and control was not inhibited in any way. Go-arounds were perfectly controllable, with no issues relating to roll from propeller torque such as were experienced in the A36 Bonanza, Cessna 206/207, or Piper Pa32 Cherokee 6 or Lance models.

As soon as the tail was on the ground maximum braking could be applied, using care to prevent a nose-over. Using full flaps and slip, a landing from 15 metres could be achieved in about 200 metres at MTOW on dry grass or bitumen. This aircraft really was STOL!

However……
The worst limitation of the M4 type I found to be the ease with which the aft limit on the centre of gravity position could be exceeded. Great care was needed to ensure that one remained within the limits. Such was the concern over this issue, that pilots authorised to fly this type within the Aero Club operations were required to complete a weight and balance calculation for both the departure AND the intended/estimated landing times. I once flew DON doing a two student MAUW check. The aircraft had four on board and we flew from Ardmore to Thames airfield where we did a couple of circuits before changing pilots. The flight down to Thames was fine, the heavier of the two pilots was in the front on the left, but after we changed over at Thames, the take-off and climb out were spectacular with the pitch axis over-control. I took over and it wasn't the pilot, the C of G had moved aft and now the aircraft was incredibly twitchy in pitch. So much so that I flew it back to Ardmore where I literally flew the aircraft onto the grass runway to avoid a low-speed approach. A calculation was a great warning as to this unusual characteristic. All later model Maule aircraft, M5 to the still available M7, were re-designed and the tail empennage was increased in size by 30% to counter this issue.

ZK-DON remains on the New Zealand Civil register, based at Bridge Pa airfield (NZHN), near Hastings, in New Zealand's North Island.

Basic Stats:
Model: Maul M4 Rocket. **Seats:** 4 **Empty Wt:** 1190 lb (540 kg)
MTOW: 2100 lb (952.5 kg) **Max Fuel**: 42 US Gals (159 litres) **Stall Speed**: 35 knots
Engine: Continental IO-360, 210 hp.

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

In the cemetery I saw a group of men carrying around a coffin. Three hours later, I saw the same men, carrying the same coffin, still looking around.

I though to myself, "They've lost f**cking plot"!

I Learned so Much from Them – my Mentors

By Rob Knight

It is often misunderstood how much knowledge, understanding, and aviation lore is passed along to younger pilots by the old, grey-haired pilots and instructors who flew over the preceding decades. In my day, the 1960s and 70s, some flew in the war, others were agricultural pilot pioneers that had survived, and others yet were simply retired airline pilots that had served their time in command of Handley Page HP-42 Hanniballs, DC-2s and 3s, up to Douglass DC9s. One of them had learned to fly in the USA in a Jenny, and the Hannibal pilot had done his first solo in an Avro 505. The were people that had learned to fly in what some might have then called – the good old days, in cloth and string biplanes, with no radios or ATC, in aircraft that had no flight manuals. Today, those pilots are all gone, the last one I knew went AWOL last February aged 101. While there are still some of us around who were trained by these and others of their ilk, we are now the fading lights and my generation of instructors is dwindling as fast as my predecessors did. In light of this I cannot help but look at today's flight training environment and conclude that it is sorely lacking in overall experience and the current philosophy seems to be that the sooner we dinosaurs die off the better for the industry; we are all past our use-by dates.

During my years as an instructor, I taught my students to fly to the very best of my ability, passing on as much knowledge and flight lore as I could. Some of this came from the instructors and other mentors I had flown with over the years, other parts from my own learning and considerations achieved by looking at my own successes and failures. Like many others who were CFIs when we were younger, I have ex-students who are now ex captains, they have retired from major airlines. So, whatever i taught them, it must have been adequate as they have made their own careers founded on the base knowledge that I was able to pass to them when they didn't know a propeller from a rudder pedal. But I didn't just pass on to them a bit of myself, I passed on to them the same lessons and knowledge that my seniors had passed on to me, those benefits of older instructors and mentors who, as it is so often said, had probably forgotten more about aviation than I will ever know.

Whatever generation you are from, we are all human and have dreams of their future. I always wanted to fly, to the extent that "aeroplane" was the first word I ever wrote; on an old envelope that my mother kept for years. This dream never faltered and now, from the downslope side of old age, I look back at my situation when I first qualified as a PPL at 17 and my progression through to commercial pilot at 20 to fly Fletchers, and later, as an instructor.

By 1971, at age 22, I had 1600 plus hours flying Fletchers for James Aviation but resigned when my mentor (more of him later) was killed on operations. At the time of his death he had over 17000 hours logged, just on ag ops in Fletchers. As I was engaged to be married at the time, I decided that if he couldn't survive, what chance had I, so, deciding I wanted a wife rather than a widow, I resigned and joined the ranks of the unemployed pilots in New Zealand looking for work.

My first mentor was Bruce Matthews. I have known him as a small boy – his family and ours were farming neighbours and my father had actually introduced Bruce to the local aero club as a new student. Now he had 12000 hours and I was a 205-hour CPL sitting in the oldest, most beaten and battered Fletcher the company had. At that time, there being no agricultural rating as such, I was paired with Bruce as my mentor until the next change. I was wet, green, with nothing except my enthusiasm and my ego, and was a serious danger to myself as I didn't know what I was doing.

We were topdressing (crop dusting) the "Paua Block", a large New Zealand Government-owned property just a few miles south of the North Cape. Amongst its other attributes, this place was about as far away from the Civil Aviation Authority as one could get in New Zealand. I had been issued the aircraft by Peter Chinn, the Northern Area Operations Manager and given it for an hour the previous day to try some turns and stalls and a couple of circuits at Kaitaia Airfield where we were based. That ended my conversion to type and now, here I was, having flown about 40 nm and landed on this

wide, gently sloping green, hard grass strip to start my new career. It was not long after daylight that we had landed and, out of normal timing, and, to the dismay of Hans, our Dutch born loader driver, instead of starting work immediately, Bruce ordered a cuppa. With the Fletchers parked and the loader ready for use at the opened bins, we got out the prepared thermoses and Bruce started talk. He asked about what I had covered in my CPL training in regard to low flying and short take-offs and landings, and my opinion on various aerodynamic aspects of turning at low level and stalling. I answered in accordance with my training and his frown deepened as we conversed. Then he stopped asking questions and we sat slurping and sipping the hot tea. Then he told me how he intended to operate as my mentor and how I would be expected to respond to his instructions before he signalled me to his aircraft and we walked to it where he opened the rear passenger compartment door and extracted some wooden items.

The FU-24 300 hp Fletchers we were flying had a single central seat in the large cockpit so we improvised with the craftily trimmed apple-box boards he had removed from the rear. One end of the boards was placed on and to the right of the central seat (Bruces seat) and the other jammed up and on the central longeron running down the starboard side of the airframe. Bruce sat on his seat and did up his harness and then I squeezed into the gap on his right, sitting on the boards. He put on his helmet and started the engine. Still warm, it was only a few minutes before the temp gauge needles were in their greens and he closed the cockpit canopy (it had no fitted latch. He looked quizzically at me and at my nod, started to taxi onto the runway. I had no harness, but jammed with my neck kinked tightly to the left, my tilted head jammed hard against the closed canopy, and my butt jammed on the boards, there was nowhere for me to go anyway. A quick mag-check before completing the abbreviated DVAs[1], a flick on the lever to zero the trip meter (from habit) and he opened the throttle.

As he had explained over the cuppa, he would do a dry run as if we had a load on board. This would be exact, even to his opening of the gates to start distributing, and closing them at the ed of the run. Even shaking the gates with the lever to ensure that all possible superphosphate was gone from the hopper before we turned back towards the strip and home. After landing, the loader ambled ungainly towards us and the aircraft jerkily settled on its oleos as Bruce did his abbreviated DVAs. Even over the idling engine, without ear muffs I could hear the whine of the differential as it reversed away. Bruces checked over his shoulder, the loader was clear and we were off again.

We did several loads in this fashion with Bruce pointing to things he wanted me to note. There was no prospect of us talking, the noise was immense and any verbal communication was absolutely out of the question. As the fourth load was pouring into the hopper, he looked at the loader and drew his left index finger across his throat indicating to Ivan that he didn't want another load for now. We did that last run and stopped for another cuppa and a talk after we landed.

He ran over what he had been doing and what I should have taken from it. Then we did the next session in my Fletcher, after transferring the apple-box boards to my aircraft for Bruce to sit on.

Again, the first run was dry. We returned and Ivan put a tiny load in to the hopper. I guess it was only about 2CWT[2]. I followed Bruce's hand gestures to set the line to begin my first run and, when the hopper quickly emptied, returned to the strip for our next load.

After half a dozen such runs, Bruce again signalled a stop. Drenched with sweat in the hot, cramped cockpit, I opened the canopy and pulled the mixture, closing the throttle as I did so. Bruce climbed out and stood on the wing, stretched and swearing in his common vernacular," Thank f**ken Christ that's over", before jumping down.

We topped up both aircraft from the loader avgas tank before Bruce ordered me loaded with 4 CWT, and walked over to his own aircraft. I was to sow; he was to fly beside me and watch, and we'd stop

[1] *DVAs – Drill of vital actions, or pre-take-off checks.*
[2] *CWT – hundredweight = 112 lbs. or 50.8 kg.*

and de-brief after three trips. If I saw him ever pull in front of me, I was to dump whatever load I had left and follow him back to the strip and land after him.

Without issue, we did the three runs and stopped for lunch and the de-brief. Ivan was very unhappy as we made most of our income on tonnage-sown-per-hour bonuses and, with my training needs, there was little tonnage being spread. Bruce, tired of Ivan's whinging, abruptly told him to shut up. Ivan said he'd complain to Peter Chinn so Bruce, glaring at him, suggested that, in that case, he'd have to tell Peter also that he'd seen Ivan filling the petrol tank on his Ford V8 pick-up from the loader's gas tank. That was enough, and Bruce continued talking about the operation issues that needed discussion.

The whole point of this treatise now comes out. As part of the brief, Bruce asked me what I would do if I found that I was too high to land. When I said that I'd go around, Bruce immediately smiled and agreed, before asking me exactly how I would do it. As trained by my CPL instructor, I told him that I'd apply full power, checking pitch was fully fine as I established a climb and then retract the flaps as soon as I had a positive rate of climb. Bruce glared at me and said that he'd then have the unenviable task of scraping me off the hillside and explaining to Civil Aviation and Peter Chinn why I'd wrecked myself and the aircraft through stupidity. Why retract the flaps when I wanted angle of climb? It was a question that I couldn't answer because, put practicably, why would I? Wanting to clear the air, I then put a question to him. When I was training, a new procedure when carrying out overshoots/go arounds was being quietly implemented. It was to retract flaps to the flight manual take-off setting when on the runway before applying full power. I put the question to Bruce and he erupted. Who but the craziest f***ken fool reduces lift AND increases the stall speed in the middle of a f**ken emergency take-off when the speed is already off the f***en clock and there's no f**ken runway left. Put in such simple and earthy terms, how could I not clearly understand his point, and not discard the discussion immediately.

This illustrates why a mentor has a very special place beside a qualified instructor. The instructor gives you the technical explanation, the mentor tells you the same, but in more simple terms that leave no misunderstandings. You never forget a good mentor.

Bruce was the primary of two primary mentors I experienced when working for James Aviation. David, my second one after I was posted to Kaipara Flats Airfield near Warkworth, swore less, but used words better and was just as effective.

I remember him telling me that I'd improve my income and increase my production bonus if I gave away my meticulous setting up of my Fletcher for every approach. I should be watching the end of the runway from about a ¼ mile out and doing my setting up without removing my eyes from that point. I was to consider maintain my airspeed of around 90 MPH until very short finals when, with full flap, closing the throttle and a quick wag of the rudder pedals would drag my speed back to the 60 mph I wanted to cross the fence. Literally to fly the aircraft to the flare maintaining the best practical airspeed and flying the shortest possible distance. It worked, and my flight time/tonnage sheets quickly showed a decline in my flight time/tonnage spread figures.

The third and possibly the most significant mentor is my last individual. Lew Day was a Kiwi that went to war in 1943, flying for the RAF as a colonial member. After acquiring his wings, he was posted to fly Saunders-Roe Lerwicks on anti-submarine patrols around the west coast of the UK and Scotland, and around Ireland. However, the shortcomings of the aircraft design, and inadequate performance soon had his squadron transferred to fly Short Sunderlands, a larger aircraft with much longer patrol ranges possible.

In his own words, "After scaring the shite out of a number of U-Boats with his depth charges and bombs", the war ended, but Lew wasn't demobbe. Instead, he was retained in the post war RAF as a Squadron Leader and posted as CO to RAF Cranwell, the centre for all RAF flight training. You could say that Lew was the CFI of the RAF, and few, but the very best, get to be offered that posting.

Lew retired to New Zealand after his time at Cranwell was served where he became the CFI at the Auckland Aero Club at Ardmore. There, he was my Principles of Flight, Aircraft Technical Knowledge, and Aviation Law theory tutor for my CPL in 1969. After passing the theory exams, Lew became the hurdle to get an approval for that magical CPL flight test. Without his signature, you'd be a PPL forever.

Lew's approach to every adverse issue in flight training was to ignore the apparent problem, and focus instead on the desired outcome and find why that outcome was not being achieved. At the time this approach was unique in my experience and when I later did my initial instructor training with him, he reinforced it as a technique used during briefings as well as remedying inflight issues. I recall sitting in the back of a Mooney watching Lew teaching an instrument rating student doing NDB training in IMC. The student got the leans and ended up with his head on Lew's lap when Lew mentioned that, although he liked the student, he wasn't quite that fond of him. It broke the ice and the student sat bolt upright, red-faced and embarrassed. But Lew just continued on without hesitation, as if nothing had happened, and asked what he wanted the aircraft to do next. He brought the student back to flying the aircraft instead of thinking about his actions which were now history. Observing a master in such circumstances gives one a great advantage in the future when they play the role of instructor.

Another episode demonstrating Lew's low-key and down-to earth attitude I recall was when I was doing the flight training with him for my initial "C" Category instructor training. We were flying ZK-CWN, an early Cessna 172A, and I was in the right seat. We were pressed for time and were flying in very gusty and squally conditions. We had finished practicing constant radius turns in the low-flying area and making our way back to Ardmore, passing an adjacent developing Cb. The Aircraft was suddenly tossed onto its back and Lew's voice came through, soft and clear, "I hope the engineer that screwed the wings on got his torque settings right". The humour was perfect, and helped me fly so much better that I always have endeavoured to implement those early lessons for the benefit of my own students.

I learned from all my mentors. I respected both them and their experience, and could take from them lessons that I didn't have to learn for myself. This is far cheaper in all ways than only learning from my own mistakes and my imagination.

There have also been thousands of other mentors in my life – my students. I have to admit that my students probably taught me more lessons than all my instructors ever did.

Collectively, my mentors taught me to be pragmatic, and to view problems from the other end – to look towards the outcome I wanted then look for the simplest, quickest and, hopefully, the most effective mean s of achieving that end.

So next time you're at an airfield and you see a gaggle of balding old men with checked shirts and trucker hats, sitting around jawing, talk to these guys. Better yet, take them flying. You might just be amazed at what you can learn from "the old breed".

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**

Socializing: Club Trip to the Caboolture Air Museum

At the Club meeting in March, the BVSAC members and friends were invited to visit the Caloundra Air Museum.

The museum visit is planned for Saturday morning the 17th of May, and the cost of admission will be $25.00 per person. If the BVSAC can get 12 or more people to attend, the museum will provide a private tour. This will allow visits to some places and some aircraft that the public cannot normally access.

After the tour, the BVSAC members and friends will likely go to a local venue (EG: RSL) for an informal lunch. All members and friends will be welcome to come along to lunch as well.

Please RSVP with your names and numbers so we can arrange the booking and make the arrangements.

Peter Ratcliffe, Secretary BVSAC

Sign of the times:

Ted lives in Melbourne. Sick of the world, of Covid-19, Chinese belligerence, Global warming logic, species extinction, racial tension, and Donald Trump issues, he drove his car into his garage at home, carefully sealed up around the windows and doorways of his garage, selected his favourite radio station left his car at a slow idle and went to sleep.

Two days later, his neighbour, realizing she had seen no sign of Ted for a while, peered through the garage window to see Ted, head down and very still, bent over the wheel of his car. Immediately she phoned emergency services. Police, fire, and the ambulance arrived promptly.

But after pulling Ted from his car and giving him a sip of water, he seemed as good as gold. However, his Tesla now has a flat battery.

The Days of Our Lives (Feedback from a Flying Instructor).

By Rob Knight

Allan was a member of the New Zealand Police Force when I first met him. A newly qualified PPL at the Waitemata Aero Club at Ardmore New Zealand, he had done his training with another Club instructor so I only knew him socially at that time.

Allan was sent to Antarctica for several months as part of the NZ Police contingent that attended the crash of Air New Zealand's DC10, on the side of Mount Erebus in late November 1979. On his return he was very disillusioned with his occupation and was seeking a radical sea-change, only, for him, an air-change instead.

On his return, he decided he'd like to continue training for a role in an airline as a pilot. He discussed with his instructor about doing a CPL and instrument rating, and looking for work as an airline pilot, but was actively discouraged, being advised that, at 31 years, he was too old and that no airline would look at him. Despondent, Allan joined me and a group of my students in the bar after flying closed that afternoon and we discussed his future.

Allan continued with me. He attained his CPL and, initially, an instructor rating, as he needed hours in his logbook to apply for his airline job. With the discipline of his past profession supporting him, Allan was an exemplary student and progressed as rapidly through his instructor training syllabus as he had his CPL, and quickly passed his flight test. He then worked all the hours the Club could give him, whilst he continued with his instrument rating training. With the hat-trick in hand, logged hours, CPL and Instrument Rating, he applied to TAL Air in PNG and was immediately appointed to a position on their line as a pilot.

After about 5 years of service in PNG, Allan returned to New Zealand to take a position with Albatross Air, flying Metroliners from Wellington mainly to the South Island airports of Nelson and Christchurch. Then Albatross went belly up and suddenly he was without a job. I gave him a little work as a charter pilot for the Wellington Aero Club but he was amply qualified and able to join QANTAS when it had a New Zealand branch in the mid-1980s.

Allan went on to become a senior captain with QANTAS– he had reached the level he had wished for when we first met and had enjoyed the journey he had had to make.

If you want a career in aviation, the first thing you must achieve is the qualification. Without it you can't even apply and expect a polite response. With the already arrived pilot shortage, your opportunities for employment should be good and you can enjoy the choice in career that you have made.

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

1. The adjective for metal is metallic, but not so for iron, which is ironic.
2. Together, I can beat schizophrenia.
3. "DO NOT TOUCH" must be one of the most terrifying things to read in braille.
4. My wife asked me to put ketchup on the shopping list that I was making and now, I can't read anything.
5. If there's one thing that makes me throw up, it's a dart board on a ceiling.
6. I don't like people who take drugs, for example: airport security.
7. I think the Discovery Channel should be on a different channel every day.
8. The thief who stole my iPhone could face time.

WTF - The World's Worst Aircraft –
The Messerschmitt Me 210 - 1939

By Rob Knight

Disaster struck in 1939, on its first test flight. It immediately became apparent that, despite its impressive specification on paper, the new Me 210 aircraft flew like a brick.

The overall design of the 210 was a re-vamp of the Bf 110. It still had two engines, a mid-wing and twin vertical control surfaces in the tail. In common with the 110 it retained the two-man crew housed under the same type of glazed "greenhouse" canopy. However, the new aircraft would also feature some notable changes over its predecessor, the three primary ones being the cockpit being placed further forward in the fuselage to give the pilot improved visibility, new engines - a pair of 1,300 hp Daimler-Benz DB 601F engines to replace the 1,150 hp DB 601B engines in the Bf 110, and a small enclosed bomb bay capable of holding a pair of 500 kg bombs instead of the external bomb racks on the Bf 110. The new aircraft would have a top speed of around 340 knots, a useful improvement on the top speed of the Bf 110 and equivalent to the top speed of many current single-engine fighters. In eager but flawed anticipation, an order for 1,000 new Me 210s was placed before the prototype had even flown.

The first prototype flew with DB 601B engines in September 1939, and the test pilot's reports were damning. The reports gave that the aircraft, in its prototype state, was completely inadequate. The design was now unstable in yaw when turning, and it was inclined to wander in pitch, even while flying level. Initially, the designers focussed on the twin-rudder arrangement that had been taken from the 110, and replaced it with a new and much larger single vertical stabilizer. But this effected almost no improvement, and the aircraft continued to "snake".

The Messerschmitt Me 210. Note the twin fins have been replaced by a single vertical unit.

The Me 210 also suffered from appallingly bad stalling characteristics fuelled by its most serious flaw – its centre of gravity was, by design, too far aft, and serious longitudinal instability ensued. Fitted with automatic leading-edge slats triggered by the angle of attack, with the nose up or in a turn, with the C of G so far aft, stalls whipped into instant fast and steep rotating spins when the automatic slats became deployed. The second prototype, the Me 210 V2, was lost this way in September 1940, when the pilot could not get out of the resulting spin and had to jump and use his parachute to survive. The chief test pilot commented that the Me 210 had "all the least desirable attributes an aeroplane could possess".

Even after 16 prototypes and 94 preproduction examples, not all the issues had been resolved. But the German authorities, desperate to replace the now obsolete Bf 110s currently in service, ordered full production in early 1941. However, the 210-type continued to exhibit grossly inadequate handling characteristics, and as a result, several elements of the airframe were further redesigned, including lengthening the rear section of the fuselage by 92 cm, the aircraft so modified being designated as lang ("long"). The Me 210C was built with DB 605 engines, as well as incorporating the substantial changes to the airframe.

The Me 210 was eventually abandoned by the Luftwaffe and the design was developed into the Messerschmitt Me 410, with DB 603 engines.

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

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

1. From the list following, select the potential issues resulting from taking off with a big difference in main-wheel tire pressures.
   A. Potential for a burst tire.
   B. Potential for aggravating left swing on take-off.
   C. Potential for increasing take-off distance required
   D. All the above are correct.

2. Two aircraft, one 100 nm south of the other, are tracking due east (090°T). Will their tracks be parallel to each other if their compasses are without error?
   A. It depends on the amount of drift each aircraft is experiencing.
   B. Yes, their tracks will be parallel because they are both tracking 090°T. which is a parallel.
   C. No, because they are both flying a meridian which diverges to the equator and converges from the equator to the true pole.
   E. Yes, but ONLY if their destinations are less than 100 nm apart.

3. The compass of an aircraft on the ground indicated exactly north. What does this indication represent?
   A. True north.
   B. Magnetic north.
   C. Compass north.
   F. Geographic north.

4. At what stages of flight can an aeroplane's lift be less than the aeroplane's weight?
   A. Pulling out of a dive.
   B. When in a banked turn.
   C. When in a steady climb.
   D. When in a steady glide.
   G. A and B are both correct.
   H. C and D are both correct

5. Do the propellers' gyroscopic forces promote yaw at any other times in flight other than take-off?
   A. Yes, they will affect the aeroplane at any time it has high thrust and low airspeed, and is not moving in the direction in which the nose is pointing.
   B. No, it is only an issue on take-off.
   C. Yes, propeller gyroscopic forces will occur at any time the aircraft is yawed or pitched, and
   D. A and C are both 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 +61 4 0089 3632), or email me at kni.rob@hotmail.com.

1. D is correct.
2. B is correct.

North/south meridians diverge from poles to equator, and converge equator towards the poles. , Parallels are just that – parallels. So all aircraft flying due east or due west will be flying either in line astern or in parallel.

3. C is correct.

Compass north is what the compass indicates. The angular difference between this and true north will be determined after taking into account all compass variation factors and compass deviation values.

4. H is correct (both C and D).

Option "C": when an aeroplane is in a steady climb,a portion of its weight is supported by engine thrust, because the direction of motion inclined.
Option "D": when an aeroplane is in a steady glide, a portion of its weight is supported by the aerodynamic drag, because the direction of motion is inclined.

5. C is correct.

Any pitch or yaw will cause gyroscopic forces to be generated by the propeller's spinning mass.
Note that option A is appropriate only for asymmetric blade effect (or "P" factor) so can not be applied as an answer to the question asked

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Aircraft Books, Parts, and Tools etc.

Contact Rob on mobile – 0400 89 3632

Books

Title	Condition	Price
PPL Navigation, by Trevor Thom	Good condition	**$15.00**
PPL Basic Aircraft Technical Knowledge, by Trevor Thom	Excellent	**$15.00**
Manual of Aviation Meteorology, by the BOM	Excellent	**$15.00**
Human Factors in Flight, by Frank Hawkins	Excellent	**$15.00**
Aviation Medicine and Other Bhuman Factors, by Dr Ross L. Ewing	Excellent	**$15.00**

Aircraft Magnetic Compass (Selling on behalf)

Item		Price
Magnetic compass: Top panel mount, needs topping up with baby oil.		**$45.00**

Propeller Parts

Item	Condition	Price
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**

For all items, Contact me - on mobile – 0400 89 3632

Or email me at:

kni.rob@hotmail.com

Aircraft for Sale

Kitset - Build it Yourself

Reduced Price
$1,480.00 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.
- A ballistic parachute,
- A 4-point harness,
- Set fibreglass wheel pants, and
- More.

Box sections and tubes

Support parts – Harness etc.

A very comprehensive kit of materials

Ribs, tubes, spats, etc

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

Or Mob: 0419 758 125

Aircraft Grade Bolts for Sale

Aircraft AN Bolts - $500

AN3, AN4 & AN5 bolts, all bagged
- 500 bolts in total.

Today's cost – approximately **$5,500**

A list can be supplied if required

Contact Colin Thorpe –

0419 758 125

Sky Dart Single Seat Ultralight for Sale.

$4,500.00 NEG

A single seat, ultralight, Taildragger. Built in 1987, this aircraft has had a single owner for the past 18 years, and is only now I am regretfully releasing it again for sale. I also have a Teenie II and am building another ultralight so I need the space.

The landed Sky Dart III rolling through at YFRH Forest Hill

TTIS airframe is 311 hours, and the engine, TTIS 312 – is just 1 hour more. Up-to-date logbooks available. 2 X 20 litres tank capacity. To be sold with new annuals completed.

It is easy to fly (for a taildragger), and a great way to accumulate cheap flying hours.

Call me to view, Bob Hyam, Telephone mobile 0418 786 496 or Landline – 07 5426 8983, or Email: bobhyam@gmail.com

Landed at McMaster Field after my flight back from Cooma just West of Canberra. In the cockpit with me is GeeBee, my dog

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**

Jodel D9 (Bébé) for Sale

Registered 28-3503 (formerly VH-IVB)

With great reluctance I'm parting with the little Jodel as I'm simply not able to fly it often enough due to living overseas and the need to finish my Auster restoration.

Completed in 1964 by LAME Vic Bartinetti at Tumut this Jodel has around 700 hours total time on the airframe and about 300 hours on a-new-at-installation VW 1680cc Hapi conversion engine. It will be sold with a new propeller (currently in build) and current maintenance release. Currently the aircraft resides at YGYM (Gympie). Note that specific hours will be available when I return to Australia early in the New Year and can access the logbooks.

I have much history with the plane, having it bought it for the first time in 1979, then sold it, then bought it back in 2015. Email me and I will fill your inbox with stories.

I'm asking $8,000, which would include the new propeller but no radio.

Contact me by email only at kerryskyring@gmail.com

S

2000 Parker Teenie Two for sale

$10,000.

- ✓ TTIS 70 hours airframe
- ✓ Engine: 1835 cc Volkswagen with dual ignition and dual spark plugs, Slick mag, and 12-volt electronic ignition.
- ✓ Built by original L.A.M.E. owner.
- ✓ Price includes weatherproof storage/transport trailer so no hangarage required.

I purchased the aircraft in 2020 intending to enter Recreational flying, but due to work and study commitments, it never eventuated.

The aircraft last flew in 2017. I start the engine every three months and have serviced it yearly. It really needs to go to someone who can enjoy her.

Contact me, Jared Tucker, at jaredtucker1998@gmail.com,

or call me on **0450 233 263**.

See you next month