BRISBANE VALLEY FLYER

November - 2021

www.bvsac.com.au

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

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The all-electric, RR, Spirit of Innovation. *See page 15*

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From the Club

Hello all,

Another month gone: now just two left until the end of the year.

It has been a very trying year. From a social standpoint, it has been impossible to organise anything due to Covid-19. But still – we are getting through and the future is looking brighter.

At our last meeting we also held the AGM, and during the elections all the sitting board members were returned to the positions they previously held.

A new constitution was presented to the members and a vote was taken and passed to adopt the new constitution. This is a big step forward as the old constitution still had the name, “Logan City Fliers”, on it. This new one replaces the old one and brings us right up to date. The committee will get it registered and then we will put it up on our web site for reference.

The Christmas party is coming up very fast and will be in early December so please join with us for a great day and I hope we have a better year in 2022.

Looking forward to see you and your families at the Christmas party.

Peter Ratcliffe
President BVSAC

The Altimeter – a Barometer? In Your Plane?

By Rob Knight

As the Grand Old Duke of York might have said, “When you’re up, you’re up, and when you’re down, you’re down”, he wouldn’t have been talking about altitude in aeroplanes. Here, it’s not enough to just know that you’re up or down but it’s important to know by how much, and which way.

In light aircraft, altitude is usually indicated by a pressure altimeter. Whilst more sophisticated airliners often also use radar altimeters. Pressure altimeters are merely barometers, modified to work by taking the atmospheric pressure and presenting it with a needle against a dial that reads in feet (or metres if you’re in Europe). It’s not perfect by any means, but is a very simple and cost-effective means of providing adequate information to operate aircraft safely.

If you dive to the bottom of a diving pool, you’ll notice that, the deeper you descend, the greater is the pressure that you experience, pressing against your body: go deep enough in the sea and it will crush you until life is extinct, that’s how powerful it is in water. Like water, air is also a fluid and the deeper that you descend in the atmosphere the greater the pressure that will be experienced. The pressure change will not be anywhere near as potent as in water, but, nevertheless, quite sufficient to be measured and utilized in an altimeter. Obviously, the greatest pressure will be at the earth’s surface, the bottom of the atmosphere and this is the region where most light aircraft operate.

The general aviation term used to discuss atmospheric pressure in altimetry in aviation is the hectopascal (hPa), but to older folk, like me, we still think of it as a millibar (mb, the same thing, just a naming issue). The greatest hectopascal value will be found at the earth’s surface and will reduce we climb up from that surface. The rate it reduces does diminish, but in the reaches where we operate, we consider the standard rate is 30 feet of height change per hectopascal, and our altimeters are calibrated at this value.

An example: if the atmospheric pressure at sea level (QNH) is 1020 hPa, then, using the specified rate of 30 feet per hPa, if our altimeter in flight registers the ambient air pressure of 980 hPa, the altimeter hands will read 1200 feet against the instrument face (1020 – 980 = 40, and 40 X 30 = 1200). However, this will only work whilst the QNH is 1020. As the atmospheric pressure changes constantly, we compensate for changes by setting the current QNH value on the altimeter subscale using the re-set knob to set the correct datum that the instrument is using as its base data.

The altimeter face.

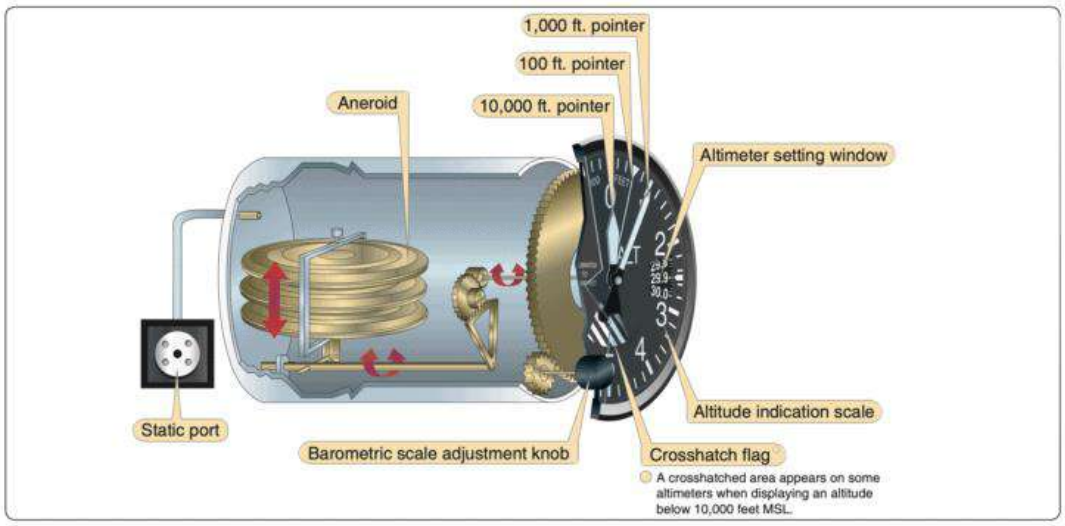
The altimeter in the image on the left is indicating 1200 feet. The QNH subscale has been set to 1014 hPa. In theory, and excluding any air temperature corrections made automatically by the instrument, the outside air pressure is about 1014 – 40 = 974 hPa. In reality, we never consider what the actual ambient air pressure is – I only mention it to assist in understanding the instrument’s function.

The temperature of the ambient air has a modifying effect on the air pressure but this is compensated for by a mechanism, within the instrument so the indication is always as accurate as possible.

The atmospheric pressure that we are discussing is the static air pressure and, like the ASI last month, this pressure reading is gathered by the static vent. Any blockage in the static vent or its associated piping will cause the instrument to simply not indicate any height change. Of course, a jamming, or freezing, of the mechanism can also produce the same symptoms so a failure to indicate is not necessarily a static pressure issue. However, these instruments are pretty reliable mechanically so it's a good indication that the static needs checking first.

The instrument is simplicity, indeed. They actually indicate changes in atmospheric pressure as the aeroplane climbs or descends. The instrument has no physical reference to the earth's surface but, correctly set, the altimeter reads height above mean sea level (AMSL)

The type of pressure altimeters found in aircraft are barometric sensitive altimeters. They are simple devices that are sensitive to changes in air pressure. As they cannot reference the ground in any way, it's impossible for them to accurately indicate height without the pilot setting the subscale to provide a datum for the instrument to use as a basis for its indications which can then be interpreted as being above the pressure datum set, usually QNH which means the instrument will indicate height above mean sea-level (AMSL).



The Workings of the Pressure Altimeter.

To function, the altimeter's case is connected to the aircraft's static pressure vent so it is exposed to the outside air pressure. Inside the case, a stack of evacuated sealed aneroid chambers (aka wafers) tries to expand, while air pressure tries to compress them. As the height of the stack of aneroid chambers changes size, by very tiny amounts, with changing air pressure, an intricate system of levers and gears is used to amplify its movements and make a pointer rotate on a dial marked with height measurements. Hey presto, tiny changes in air pressure are transformed, by a correctly set altimeter, into useable indications of altitude.

Pressure altimeters indicate height by comparing the ambient air pressure to sea-level. However, air pressure is constantly fluctuating across Earth's surface due to changes in the weather—so temperature and pressure differences both have to be allowed for if pressure-based altimeters are to work accurately. Temperature and pressure issues are corrected as mentioned above – the temperature internally in the instrument, and the pressure by re-setting the subscale to the corrected QNH.

Obviously, the altimeter needs to read accurately (within appropriate limits) to be of use, so how can we know if the altimeter is accurate? Details for altimeter serviceability checks for aircraft operating under VFR, but not operating in controlled airspace, are listed in the RA-Aus Technical Manual in Section 12.4, Instrument and Transponder Check. *(TECHNICAL MANUAL ISSUE 4.1 - MARCH 2021 © RAAus Ltd).* For myself, owning/operating recreational aircraft, I use a GPS as is permitted and ensure that I log the results as evidence of compliance.

For GA aircraft, the instructions and requirements relating to pitot/static instruments and systems are contained in CAO 100.5 appendix 1, B.

Again, these instruments are delicate and are designed to function with the tiny fluctuations in atmospheric pressure as we ascend or descend in the atmosphere. Blowing into the static vent may see your credit card venting, also

Next month it will be the turn of the Vertical Speed Indicator (the VSI) to be stripped and examined. See you then!

Happy Flying

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Short Final: Alphabet Soup

September 20, 2021 (from AVwebFlash)

Pre-pandemic, a group of Windsor Flying Club members based at CYQG (Windsor International Airport, Ontario, Canada) made an annual excursion to the Bahama Islands from Canada. Our experience with the U.S. controllers is that the further south you go the more trouble the controllers have with our Canadian call signs: more letters than they are used to. We fly VFR and use flight following.

Charlie Golf Charlie Alpha Golf (C-GCAG).

On one occasion, I was handed off to Jacksonville, which was very busy at the time. I waited for a brief break in the chatter and dutifully dropped in my call sign, Charlie Golf Charlie Alpha Golf and waited. Moments later at the next break came my response from the controller, “would the alphabet soup out there say again.”

Neil Arnold

Restoring Chippie

In the USA

by Mark Meredith

We had a program for it, of course, with formatted official reporting under the header *TFOA*. Too often it was reporting little blue practice bombs that went astray (oops), or canopies that blew off at 40,000 feet and became someone's backyard greenhouse. But that was then and this is now: Who should I report this to? My Super Chipmunk right cheek cowling is now in a Maryland farmer's field, somewhere over yonder. The cowling departed while rolling upright from a half-Cuban, tumbling down over our heads. It missed the tail and my brother, exposed in the front cockpit, but pretty much ruined a golden fall afternoon of gentleman aerobatics. So began my education as the new owner of a very tired air show bird.

But we skipped TFOA reporting. Embarrassed by my negligence in losing a big piece of an airplane that everyone told me not to buy, my brother, Chris, and I flew home at low power, landed, and hightailed it for the hangar. I had maybe 20 hours in the logbook including the ferry home from Florida, all of it flown with trepidation because this was clearly a project plane. The intent had been to fly it some, restore it some, then fly it some more. Okay, time for a new plan.

Above, Chipmunk BF370 began life in the RAF (1951-55), attached to the No. 4 Basic Flying Training School (BFTS), Sywell, Northampton. There are no pics of BF370, so this is a different squadron aircraft.

Plan B evolved into a five-year, 5,000-hour rebuild that changed my life and the life of Super Chipmunk N7DW in some pivotal ways. During the first three years, Chippy increasingly dominated resources and time after work and on Saturdays. But now it was time to finish.

I left secure, reasonable work—a Navy career, then nine years as a Navy contractor—to devote fulltime to finish this unreasonable, seemingly endless project. I figured I could swing the loss of income for a year or so, and surprisingly my dear wife, Martha, went along.

The reality was 18 more months and all the money I had set aside for it! Rebuilding brought self-inflicted pain and expense, but also the pleasure of challenges surmounted; the restoration of a classic whose beauty shined through all the dents and chipping paint.

A modern-ish airplane with the look of a golden age racer. Flying once again in the spring of 2014, we now have two AirVentures and two Sportsman aerobatic contests behind us (Wildwood and Warrenton).

Chippy in its initial livery as a Super Chipmunk (1974-1988), certificated in the United States as N7DW. This photo was taken in 1984 in Texas. It flew the airshow circuit with Doug Warren and Howard Davenport (the latter flew Chippy partnered with Duane Cole). The hopper is still up-front serving as a ferry tank; many of the other Spraymaster mods are still in place, but the wings are clipped and it has an IO-540 engine.

At Oshkosh 2015, Chippy won a Bronze Lindy as Champion Custom Classic. What is the allure of an old Super Chipmunk when there are so many cheaper, far more capable, ready-to fly aerobatic birds? Any story about a de Havilland DHC-1 should begin with Art Scholl and his spectacular part in making a sweet little trainer famous. His part-Canadian Chipmunk was so much more than de Havilland ever imagined when it developed it in 1945 to replace the woefully obsolete Tiger Moth biplane. Sporting modifications designed by renowned aerobatic pilot and manufacturer "Pappy" Spinks, Art Scholl flew one of his three Super Chippies before an estimated audience of 80 million people over a 20-plus year career. He also competed as a member of the U.S. team in international competition from 1963 through 1972. His N13Y now hangs (inverted, of course) from the overhead of the Smithsonian Udvar-Hazy Center, and his similarly modified N1114V hangs in the EAA Air-Venture Museum in Oshkosh.

Art Scholl added grace to his flying and style to his showmanship that made him a crowd favourite—like when he stepped out on the wing during a low pass, or flew with his little black dog, Aileron. He was the first modern pilot to fly night shows with pyrotechnics. And he was a pro: a Ph.D. aeronautics professor, CFI, and A&P who ran an FBO and aerobatic school and produced his own flying films. Art had more than 200 movies to his credit, flying in pilot favourites such as *The Right Stuff, The Great Waldo Pepper,* and *Top Gun*. In the words of ICAS in describing the Art Scholl Showmanship Award, "His exacting, exciting and entertaining performances were a reflection of the best in our industry. He was a dedicated professional who practiced tirelessly to get the most from himself and his airplane without sacrificing safety." Recipients of the award are a who's who of aerobatic performers and announcers since 1986, the year after he died while filming Top Gun. Art Scholl is arguably the most famous air show pilot of all time…or at least to those of us of a certain age.

In 1971 when he was flying his red, white, and blue Chipmunks, I was a 13-year-old kid on a red bike. On Saturdays I would pedal miles across Riverside, California, around Mount Rubidoux to dusty Flabob Airport where Art was based at the time. Flabob was a dream airport for a young wannabe pilot (and still is), especially one enamoured of the romance and design of airplanes.

Flabob was and is a grassroots airport, full of characters who have contributed hugely to the history of aerobatic, experimental, and sport aviation. In my favourite photos of my dad, Roy, he was a steely-eyed 19-year-old in a leather flying helmet in his war-surplus PT-22.

In family lore he was usually upside down, terrorizing the jack rabbits around Flabob. He never really grew up, but the Air Force still let him fly tankers and Phantoms. He instilled in me a love for the old planes and for that special airport.

I recall many a solitary summer day walking the lines of Wacos, Texans, Ryans, and big-wing Stinsons. The airplanes I could see were not pristine show-planes but ragged and weedy. Eventually I dared to venture back to the hangars, where I discovered another side of Flabob—the birthplace of the Stits and the Starduster (we bought the plans), EAA Chapter 1, and many a racer, replica, or restored beauty. The community of pilots, builders, and educators at Flabob have preserved that spirit through the decades—witness the recently completed art deco beauty, the Waco Sky Siren.

The Flabob hangars are where I first discovered Art Scholl. Not at an air show—I never saw him perform! But by shyly hanging around while he tinkered or dragged out a Chipmunk to practice his routine. I never forgot those Chipmunks. Though I've always been "bent" as a builder, it never occurred to me I would ever rebuild and fly a Chipmunk myself. I had a 25-year Navy career as first an A-6 Intruder bombardier-navigator and then an aircraft maintenance officer aboard aircraft carriers, keeping the jets flying. It was a career devoted to achieving mission-capable airplanes ready to launch off the pointy end; an exciting, fulfilling life, though far removed from the old classics. Then as a 47-year-old, I regretfully took off the uniform and compensated for the loss by finally becoming a pilot! After just a few years of flying very nice spamcans, my Flabob roots took hold, and I went on the hunt for an interesting project. So many airplanes, so little time! A casual browse of the online listings stopped me cold. There was Chippy, red, black, and stunning, looking as much like a Ryan as a Chipmunk. He was for sale by Bruce Moore, EAA's photo-ship pilot. So, I sold the family Bonanza. Feigning due diligence, I made an exploratory trip to Florida. A knowledgeable friend and A&P also inspected him for me, but I ignored his caution and wrote the check. To the most casual observer, it was obvious I was nuts.

So began a journey that was so much more than I bargained for: a journey of discovery, meeting great airplane people at every turn. As I suppose all rebuilds do, it began with years of deconstruction. It more resembled archaeology: unearthing mods on top of mods; extracting and labelling nasty-looking bundles and wires to nowhere; painstakingly removing paint layer by layer: white, red, blue, black, green, gold, grey. Way too much of my life passed alone in a dark hangar, breathing through a fresh air respirator hose, lying in the belly across a spar carry-though with a can of stripper and a toothbrush, working the crevices to remove paint that was like sedimentary rock. Reskinning the fuselage, from the bones outward, would have been better. But shiny metal finally revealed itself inside and out… along with cracks and corrosion to add to the fix list. No way out of this hole but to keep digging (…wait, that's not how it goes!). Eventually a friend tipped me off to the wonder of water-based stripper, a garden nozzle, and a Shop-Vac to suck out the bilge water. Life was good again. With bare metal came rebuilding and new skills. To rebuild Chippy, I needed a whole new skill set. I didn't know what I didn't know. There was no kit or plan, but lots of example airplanes and best of all, homebuilder web logs. If you dial the phone number of most small airplane part vendors, the company president or other expert picks up the phone, ready to educate or even point you to the competition for a better solution.

Chippy taught me about aluminium fabrication and riveting, fabric recovering, plumbing, and electrical systems. The wind screen fairings, tail-cone, strakes, and many complex wing/ empennage fairings needed replacement. So, I watched videos, built a scrap pile, and finally made friends with the English wheel and other forming tools. Bill Finagin's Pitts S-2C in the hangar next door became the firewall forward model. The missing right cheek cowling launched a five-year saga. Super Chipmunk cowling moulds were lost over the years so it started with making a male mould over the top of the engine, then having a professional and new friend, John Hogansen, fabricate female moulds for the whole front end (they've now been used on two other Chippy rebuilds).

A new nose-bowl presented a chance to update a clunky snout to improve cooling and drag. The racer crowd—MXs, RVs, and F-1 Rockets—offered many lessons about how to build high-performance induction and cooling systems, as did Ken Paser's terrific book, *Speed with Economy*. Through their knowledge and John's skill, the beat-up glass cowling transformed into carbon fibre artwork almost too lovely to paint. Plus, it delivers a little ram kick, perfect oil temps, and 300-degree CHTs! When I consider the extent of the "major repairs and alterations" I performed as a non-certified mechanic, I cannot take for granted the amazing freedom we have with experimental aviation in the United States. With support from the Baltimore FSDO, Chippy now sports a new experimental exhibition airworthiness certificate with minimal limitations. We successfully completed first flight and a five-hour (!) test period. Next came paint, just in the nick of time to depart for AirVenture 2014.

Chippy flew again thanks to the help of EAA Chapter 571, friends and mechanics at Lee Airport in Annapolis, especially Larry Donaldson, expert Chipmunk restorer Jesse Schneider in Tulsa, and Tom Schwietz of Aero Engines, who gave me confidence the prop would keep spinning. Kevin Burns at Scheme Designers worked patiently with me for four years as I evolved the vintage paint job, and Ken Reese of KD Aviation in Trenton worked magic with final prep and paint—no small feat with tape lines over hundreds of round-headed rivets.

The vicious chipmunk on the rudder is a reimagining of the leaping beast on the tails on my old A-6 squadron, the VA-35 Black Panthers. If anyone is interested, the rebuild is documented in photos on Chippy's Facebook page, Super Chipmunk Restoration.

Chipmunk BF370 left the RAF for Australia in 1957. It was certificated as VH-BSQ and served as a civil/military trainer for the Tasmanian Aero Club, Launceston, until 1965. Below are members of the club gathered around Chippy in the late 1950s.

A Working Life

Throughout the years of building, in conversations with an extensive Chipmunk appreciation society around the globe, I slowly uncovered stories of N7DW's flying adventures. Like all good British- built Chippies, it began life in the Royal Air Force in 1951. It then immigrated to Australia in 1956 to join the Tasmanian Aero Club, registered as VH-BSQ. With surplus Chipmunks in easy supply, by 1965 both Britain and Australia began converting a handful of them to crop sprayers. Chippy earned a new moniker as an SA-29 Spraymaster, registered VH-GEB. The experiment quickly fizzled; purpose-built Cessna Agtrucks and Piper Pawnees easily outperformed 145-hp Chipmunks. But ever the working plane, Chippy now became a glider tug, in the process suffering multiple landing accidents, including replacement of one wing.

In 1965 Chippy was converted as third SA-29 Spraymaster at Bankstown, Australia, and recertificated as VH-GEB. Mods include forward part of fuselage interior and front seat removed to install a hopper, rear seat raised, and single seat bubble canopy installed. It also received a dorsal fin, Scott-style tailwheel, and attachments for spray equipment and controls (skin holes and doublers still very much in evidence today!) It still had the stock 145-hp Gipsy Major engine. It flew out of Tintinara, Southern Australia, landed in a field and was badly damaged. Once repaired, it continued to operate as a Spraymaster until 1969.

Chippy in 1969 after it was sold to the Adelaide Soaring Club, Gawler, South Australia. Note the tow rope attached. It began its conversion to a Super Chipmunk soon afterward, completed in Texas in 1974.

After its last accident in Australia, it was disassembled and stored, starting in May 1970. This was the heyday of Art Scholl's Super Chipmunks, so in April 1971 (I was on my red bike at the time) work began at Bankstown near Sydney to similarly convert it. Work stalled. Dean Whitaker of Marrero, Louisiana, rescued it along with two other Aussie Chippies that he imported to the United States in May 1972, eventually certificated N7DW, N8DW, and N13DW (all still flying today). Dean immediately sold N7DW and N8DW to Doug Warren in Big Spring, Texas.

Over the next two years Doug completed N7DW's Super Chipmunk mods that were finally signed off by Emile Bryson in June 1974. Modelled on Pappy Spinks' design, they clipped the wings 19 inches on each side, enlarged and beefed up the rudder, extended the ailerons by stealing from the flaps, sheeted the wings with 0.020 aluminium, and installed a single-place bubble canopy and O-435 engine with inverted oil.

Chippy N7DW in 2008, owned and flown by Bruce Moore, EAA photoship pilot. This is the configuration when I bought it in 2009.

The N7DW stories kept coming, especially after we got back in the air and could begin getting out and about. After flying it in shows for a few years, in June 1978 Doug Warren made a trade with Howard Davenport: Chippy for a Decathlon and some cash. Howard had been flying air shows with Duane Cole starting when he was 17 years old in 1973. With Chippy as his new mount, he added an inverted ribbon cut to his routine, similar to Art Scholl's. But not for long! In 1979 he and Duane were in loose formation, returning to Houston after a show in Silver City, New Mexico, when the oil pressure plummeted and temperature spiked. Howard could smell oil fumes.

With the closest airport 30 miles away, he signalled to Duane and they landed together at a rest stop on Interstate 10 near El Paso. They parked Chippy, then after a little chat with the highway patrol, took off again in Duane's Decathlon.

Howard later returned with a truck and a mechanic. Back in the hangar, they could see that the crankshaft bearings were demolished, but Howard had no prospects for paying for a new engine. Doug Warren came to the rescue by taking Chippy back, swapping a Super Taylorcraft for the disassembled pieces.

After installing an IO-540, he continued air show flying until he sold it again in 1987 to Iranian-American pilot Nadir Fahn. Nadir and his air show partner Chuck Stockdale modified N7DW to an open cockpit in 1988. They removed the chemical hopper after a dozen years of service as an air show ferry tank and built new front controls. Together with Chuck's father and brother, they also modified Chipmunk N66RP to the same open-cockpit configuration and then flew them as a two-ship team.

Over the next 12 years, they flew the circuit with support of several sponsors including TAG Heuer, developing a formation routine that included a tailslide to an inverted ribbon cut by sister ship N66RP. Search YouTube and you'll find lots of fun videos, including TV news stories of their performances. Chipmunk 66RP carries on today, still wearing Stockdale's red and black Mystery Ship scheme, now owned and flown by Bob Rosen of East Hampton, Long Island.

Retired from performances in 2000, Chippy N7DW eventually made it into the capable hands of Bruce Moore in 2003, who began breathing new life into him by replacing the engine, fuel bladders, and engine mount before I took the baton in 2009.

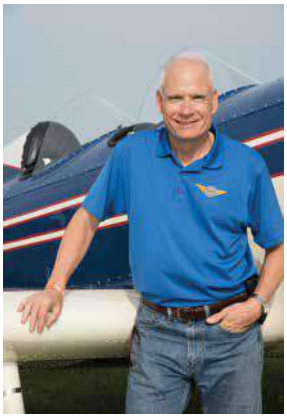
Colourful Scars

We all keep our scars, and every piece of this Chippy has a story to tell. The 1965 ag mods were of everlasting consequence to N7DW's future life: Chippy will be forever "unique" for good or ill. To make room for the hopper, the ag company mechanics ripped out the fuselage guts, including many parts of the flight control system such as the rudder bars and much of the support structure. The pilot was moved to the rear, in a seat jacked up under a high ag-style bubble canopy. Hopper controls and spray bars sprouted from the fuselage side and wings.

Fifty years after its ag mods, I found myself patching the scars, removing corroded doublers, and fabricating structural and flight control parts more closely resembling de Havilland originals.

Why does Chippy have open cockpits today, when Doug Warren's little Mustang bubble would feel so cozy on a cold winter day? Well, it does look like the Skiles Skystreak in the Great Waldo Pepper movie, but that's not the real reason. Chuck Stockdale wanted to fly the press up front, but the de Havilland two-seat canopy and rails were long gone, transplanted to some needy Aussie Chipmunk. Open cockpit just made sense. (Though a few in the Chipmunk Inquisition loathe the look—"That's just wrong!") Why the big turtledeck aft of the rear seat? My neighbour, Mike Barron, and I formed it to hide a new steel rollover bar/harness mount, a stand-in for the beefy head protection once provided by the stock de Havilland windscreen. Yeah, and it gives Chippy the look of a 1930s racer when the front cockpit is covered!

Early in the rebuild, I discovered steel fin spar doublers from tip to base of the aft fuselage bulkhead. I wondered, is this a typical Super Chipmunk mod? Chuck filled me in; the fin spar mounting broke…he tiptoed home with the whole vertical stabilizer flopping!



Mark Meridith

I've learned to be curious—and cautious—as Chippy reveals his secrets. I've now added a few chapters of my own to Chippy's adventures with many more to come…though no more disastrophies, please! With a fourth rebuild completed, retirement is nowhere in sight for this hard-workin' Chippy. Or for me either. I now instruct full-time at Navy Annapolis Flight Center and take my students up for a fun flight every now and then in Chippy. He's readily convertible between the single-seat racer look I prefer and a tandem we can share with friends. I've been careful and incremental about opening up the envelope, both the plane's and my own. With a bit of expert coaching from Bill Finagin, Chippy and I are improving our Sportsman performances. One day he may even get to relive some of his old glory in local shows. Gently, though; Chippy is an old bird.

The cockpit

Note: De Havilland Canada's DHC-1 Chipmunk first took to the skies in May 1946. Its Ontario plant needed to fill the void after wartime production of Mosquito, a project to retain some of its 7,000 highly skilled employees. Even with the shrinking demand for military aircraft, it was obvious the British Commonwealth nations needed a new primary, aerobatic trainer to replace the obsolete de Havilland Tiger Moth biplane. Despite no contracts or outside funding, it gambled on a clean sheet design. It was a gamble that richly paid off! From the same fertile minds would soon spring the DHC-2 Beaver, DHC-3 Otter, and many other iconic north country critters still in great demand today.

The lead design engineer was Wsiewolod J. Jakimiuk (sounds a bit like "Chipmunk"), a Polish émigré who fled his homeland at the start of the war after designing two successful World War II Polish fighters. With war's end, he and de Havilland management adopted the idea of "build it and they will come." With no military specs or negotiations to slow them down, they worked fast through design and prototyping. In seven months, they created a rugged, all-metal aerobatic monoplane trainer suitable to the demands of northern flying. The design team built it around the same 145-hp Gipsy Major engine used in the Tiger Moth because they were durable and available, with all the needed squadron maintenance skills already in place. They also economized by using Tiger Moth cockpit fittings and flight controls.

The Chippy became a graceful blending of the past and the present: tandem taildragger meets modern metal construction; fabric control surfaces and Mosquito-like DH tail meets cantilevered wing and semi-monocoque oval fuselage. Because it was a trainer, the new Chipmunk also took a "wide stance," with rugged landing gear and a long tail to protect against ground loops.

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A 200-hp Turboprop for Homebuilts

All the way from Australia

By Jeremy King, Isabel Goyer 2021

Turb
brings the strengths…and weaknesses…of turboprops to homebuilders.

Looking for a little more ramp appeal in your homebuilt? Is AvGas hard to come by at your home field? Or have you just always longed to be the one throwing the fuel to a turbine instead of just listening to the whine from afar as a turboprop comes to life? TurbAero is on site at AirVenture with a turboprop in development that might just give popular four- and six-cylinder homebuilt engines a run for their money.

The TurbAero Talon TA200TP, which debuted this past summer at AirVenture 2021, aims to fill a niche that's a little less businesslike and maybe a little more weekend-warrior-ish. Rated at 200 shp for take-off, and 190 horsepower maximum continuous, it's looking like a turboprop could well decorate the nose of many common designs. Imagine the popular designs out there that could burn Jet-A and make power at altitudes above their current ceilings with normally aspirated engines.

Looking to the future, burning AvGas is problematic. Logistically, leaded fuels can't be transported in pipelines also used for unleaded fuel, and trying to distribute 100LL via truck is a tough proposition at best—and when the COVID-19 pandemic hit, we saw logistical resources directed, rightfully, to essentials for keeping people fed and warm. While the challenges of distributing AvGas domestically are a nuisance, internationally they're a downright nightmare. It's also a tiny segment of petroleum production that some argue is more trouble than it is worth. Throw in the environmental optics of leaded fuels and we recognize that the days of leaded aviation fuel may be numbered—and that number may be a lot lower than any of us realize. When you add in the growingly popular choice of biofuels, the options long-term look even more appealing.

On the downside, the engine, at around $80,000, itself will cost more than twice as much as a brand new, comparably powered Lycoming or Continental powerplant.

Another problem with turboprops is that in most general aviation designs, the benefits just aren't there. The specific fuel consumption involved up till now has relegated small aircraft powered by turboprops to a niche market of STC conversions that created a mission-specific aircraft. Loafing in the weeds or a Saturday in the pattern shooting landings just wasn't in their job description. They were designed to be loaded up and pointed in a straight line, at a proper altitude that usually involved oxygen, for a cross-country sprint.

On their website, TurbAero touts a fuel flow of 12.6 GPH while making 150 hp at 10,000 feet – an altitude where a 200 hp, normally-aspirated engine would struggle to put out 100 hp. And with an installed weight that's about 20-40 pounds lighter than Lycoming's IO-360, you'd enjoy some weight reduction, but hopefully won't need to draw out a Pinocchio nose to make the weight and balance work, either. Expected TBO is set at 3,000 hours, which is a credible claim given turboprops simpler design and greater reliability compared with gas piston engines.

The company's website, www.turb.aero, has more information.

After we were wed my wife said to me, 'Now that we're married, you can give up playing that silly guitar'.
I said, 'You're beginning to sound like my ex-wife'. She said, 'You didn't tell me you were previously married!'
'I said, I'm not, yet'.

Following some recent tests at the hospital I got a letter from my doctor. I read it and said to my wife the doctor says that I need to have daily sex....
She gasped and took the letter, read it and said, "You idiot, he says you're a dyslexic!

Why is it when someone goes into a baby changing room with a baby, they always come out with the same one.

The Rolls Royce "Spirit of Innovation" Flies

Supplied by Rolls Royce

We are pleased to announce the completion of the first flight of our all-electric 'Spirit of Innovation' aircraft. At 14:56 (BST) the plane took to the skies propelled by its powerful 400kW (500+hp) electric powertrain with the most power-dense battery pack ever assembled for an aircraft. This is another step towards the plane's world-record attempt and another milestone on the aviation industry's journey towards decarbonisation.

Warren East, CEO, Rolls-Royce, said: "The first flight of the 'Spirit of Innovation' is a great achievement for the ACCEL team and Rolls-Royce. We are focused on producing the technology breakthroughs society needs to decarbonise transport across air, land and sea, and capture the economic opportunity of the transition to net zero. This is not only about breaking a world record; the advanced battery and propulsion technology developed for this programme has exciting applications for the Urban Air Mobility market and can help make 'jet zero' a reality."

Business Secretary Kwasi Kwarteng said: "The first flight of Rolls-Royce's revolutionary Spirit of Innovation aircraft signals a huge step forward in the global transition to cleaner forms of flight. This achievement, and the records we hope will follow, shows the UK remains right at the forefront of aerospace innovation.

"By backing projects like this one, the Government is helping to drive forward the boundary pushing technologies that will leverage investment and unlock the cleaner, greener aircraft required to end our contribution to climate change."

The aircraft took off from the UK Ministry of Defence's Boscombe Down site, which is managed by QinetiQ and flew for approximately 15 minutes. The site has a long heritage of experimental flights and the first flight marks the beginning of an intense flight-testing phase in which we will be collecting valuable performance data on the aircraft's electrical power and propulsion system. The ACCEL programme, short for 'Accelerating the Electrification of Flight' includes key partners YASA, the electric motor and controller manufacturer, and

aviation start-up Electroflight. The ACCEL team have continued to innovate while adhering to the UK Government's social distancing and other health guidelines.

Half of the project's funding is provided by the Aerospace Technology Institute (ATI), in partnership with the Department for Business, Energy & Industrial Strategy and Innovate UK. In the run up to COP26, the ACCEL programme is further evidence of the UK's position at the forefront of the zero-emission aircraft revolution.

"The first flight of the Spirit of Innovation demonstrates how innovative technology can provide solutions to some of the world's biggest challenges," said Gary Elliott, CEO, Aerospace Technology Institute. "The ATI is funding projects like ACCEL to help UK develop new capabilities and secure a lead in the technologies that will decarbonise aviation. We congratulate everyone who has worked on the ACCEL project to make the first flight a reality and look forward to the world speed record attempt which will capture the imagination of the public in the year that the UK hosts COP26."

Rolls-Royce is offering our customers a complete electric propulsion system for their platform, whether that is an electric vertical take-off and landing (eVTOL) or commuter aircraft. We will be using the technology from the ACCEL project and applying it to products for these exciting new markets. The characteristics that 'air-taxis' require from batteries are very similar to what is being developed for the 'Spirit of Innovation' so that it can reach speeds of 300+ MPH (480+ KMH) – which we are targeting in our world record attempt. In addition, Rolls-Royce and airframer Tecnam are currently working with Widerøe, the largest regional airline in Scandinavia, to deliver an all-electric passenger aircraft for the commuter market, which is planned to be ready for revenue service in 2026.

In June, we announced our pathway to net zero carbon emissions – a year on from joining the UN Race to Zero campaign – and the 'Spirit of Innovation' is one way in which we are helping decarbonise the critical parts of the global economy in which we operate. We are committed to ensuring our new products will be compatible with net zero operation by 2030 and all our products will be compatible with net zero by 2050.

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

What's in a Pre-Flight /Daily Inspection

By Rob knight

Most pilots bridle when it is suggested that they don't know how to do a good Pre-Flight Inspection aka Daily Inspection: you know, that walk-around check on the aeroplane that is supposed to precede every flight.

Too many pilots throw a cursory glance at their aircraft, covering the standard items such as might be enough fuel, the tires have air in them, and the wings aren't falling off, but it really should have more attention paid to it than that. A pre-flight is the chance to find a reason not to go. Not just to not fly, but to involve other consideration that could have a serious effect on the chance of the flight being unsuccessful. Perhaps, a good question might be, "Do you understand how to pre-flight your aeroplane?"

A student once told me the propeller on the Victa 100 we were about to fly could be moved safely, and with ease, because he'd checked the mags were "OFF". I told him that props should ALWAYS be treated as though the mags were live and thus always take precautions to avoid injury should the engine run, or even merely fire a single cylinder. That day all was fine, but to his great consternation, on a later date, the same aircraft had lost its left mag earth wire and the engine coughed and flicked the prop around when he pulled it through. That earned me several beers after flying finished over the following several months. However, the point is that not only did the aeroplane have a serious fault and shouldn't fly, but the student's casual approach to the exercise was, in its-self, a danger to him.

In my experience, inadequate pre-flight inspections are the result of either inadequate training or complacency—pilots may not have absorbed the finer details of a good a good pre-flight, or they may have acquired the knowledge but happily, or unwittingly, ignore it.

As an instructor, sometimes I knew that a particular aircraft had a snag, not a serious one, but one that should be noted. These became tests for my students and if they did not identify, or report to me, that snag, I firmly asked them, "Why"? If I found an issue after the student had completed the pre-flight and reported the aircraft as serviceable, then I really did make a point of it. A case in question would be a student called "Lawrie". He pre-flighted ZK-CEQ, in readiness for a cross-country lesson to Tauranga then Rotorua and return to Ardmore. He already held a restricted PPL and had done some P in C time carrying his friends and family around the local area. Whilst I checked his flight plan, he did the pre-flight inspection and re-fuelled the PA-28 140. We filed the plan with ATC by phone and climbed in. At the holding point, as he did the pre-take-off checks I was listening and watching without comment until I saw the starboard aileron went fully down but never came fully up when the control was reversed. I took control repeated this, confirmed we had an aileron issue so I cancelled the plan and returned to the club. When checked, we found that the aluminium bracket that held the aileron crank inside the starboard wing had broken. I was pretty blunt when I pointed out the shortcomings in his pre-flight. But this could have killed us!

The key to any effective pre-flight inspection is in understanding what is being checked, and why it is being checked. The training MUST ensure that the student, and later, the pilot, must know what is normal and what is not. What is airworthy, and what is not. In this piece I cannot give a all-inclusive guide to all pre-flight inspections, that is the prerogative of that aircraft's pilot operating handbook (POH) or approved flight manual (AFM). I can only cover pre-flight details in general and illustrate some shortcomings.

As you approach the aircraft, give it an "over-all look" from a distance. As you walk towards it you can see the whole aeroplane as a single entity and thus check for such things as wing symmetry (no

wing or strut damage), the aircraft sitting square (no flat tires), and the tail feathers are in symmetry with the fuselage and mainplanes.

When reaching the cockpit, check for the presence of the necessary documents—CASA says no aeroplane may legally fly without them and provides a list. Note that for ultralight and recreational aircraft, the list doesn't exist.

For GA aircraft, documentation on operating limitations including cockpit placards, colour coding on instruments, and the AFM or POH should be present

The AFM or POH should contain all necessary weight and balance information for that specific aircraft. Note that substitute information from another aircraft of the same make/type/model can be used. Note again that many recreational aircraft have no such documentation

If the aeroplane is hired, the operator is required to ensure the aircraft's logbook(s) and its inspection programme(s) is up to

After the paperwork check, look all around the cockpit, ensure all the switches are correct positioned. Make sure valves, such as fuel selectors, turn and hold their settings). Turn on the MASTER/battery switch and note the fuel quantities so you can compare them with your visual inspection later. Turn off the MASTER/battery switch. Ensure that the magnetos are OFF, if key activated, remove key.

Check all fuses or circuit breakers (as fitted). Any already "popped" circuit breakers may indicate a problem that likely should be investigated/remedied before flight. In the case of fuses, note the location and quantity of spares.

Check the instruments. Set the altimeter subscale to the airfield altitude and compare the subscale reading to the QNH if known. Check the ASI reads zero, and the VSI likewise. Check the magnetic compass, it's bowl should be filled with liquid that is clean and the card wobbles if the aeroplane is rocked on its wheels. The compass card/heading indicator should indicate it's approximate heading. If the compass has been "swung", a completed compass deviation card should be present for use in flight.

In regard to the cockpit interior, ensure that any/all visible control or trim cables or pulleys are in good condition. Remove any control lock and check the aileron and elevator controls for full and free movement and are not binding in any way. Inspect all seatbelt and seatbelt fasteners for condition and integrity – absolutely no frayed sections or loose or sloppy fastenings. Remember that, in the event of an incident, these harnesses may be the only things that stop you becoming an integral part of the airframe. Lower the flaps before leaving the cockpit so they can be inspected during the external check of the airframe. If this requires the use of electricity, ensure the MASTER is returned to the "OFF" position afterwards, before departing the cockpit. Remove any/all rubbish and loose objects. Even a pen, rolling around on the floor can jam the controls and potentially ruin your whole day.

For the airframe, you can't get a better guide that the manufacturer's pre-flight checklist in the AFM or POH (where available) so follow that list. Pay particular attention to loose, or "smoking", rivets (which have a residue around them), the security of all bolts and nuts, and safety-wired devices.

When inspecting wheels, if wheel spats are fitted, little can be seen of the wheels to check. However, ensure spats are securely attached and check the tires beneath them as best you can. Rolling the aircraft to and fro might be necessary to carry this inspection out. If no spats fitted, the wheels are visible so ensure that tires are in good condition and inflated appropriately. Ensure there are no flat spots. Check the brake pads if they are visible. If brakes are hydraulic, ensure no fluid leaks are present.

For spring type undercarriage legs, check for cracks and correct wheel assembly attachment. For air-oil oleo type legs, leaking struts will usually be dark and oily. Assure that oleo struts are not over, or under, inflated; the AFM or POH (where available) should give the measurement for gauging this.

Walking around the aeroplane, check that the flight controls are properly rigged and move freely. On most aircraft you can check for proper rigging by moving the control surface (aileron or elevator) and seeing which way the column or yoke moves (you did remember to remove the control lock, didn't you)? If you move any control surface UP, the control column or yoke should move towards you.

Whilst moving the control surface, check for rubbing metal by looking for wear or chafing marks on the paint. Feel for any hesitation or binding as you move it, and listen for rubbing sounds. Any unusual indications require further investigation before flight.

Check the security and integrity of control hinge fasteners, especially on piano type hinges. Piano hinges have been known to fail because the centre wire has slipped out

Many flight controls are mass balanced to provide safe and predictable flight characteristics. On some aircraft, even a new coat of paint can change the mass balance and may induce "flutter". If you notice that any repairs or alterations have been made to a flight control, you might be wise to confirm that everything is in order. If the aeroplane being checked is fitted with differential ailerons, ensure that the aileron goes up MORE than it goes down.

Check the whole propeller, hub (or spinner if fitted) and blades for overall condition. Blade nicks can cause stress points that lead to blade failure. Check constant-speed props for oil leaks around the hub and for excessive blade movement (grab the blade and try to change its pitch). Both are signs of problems. Never push on the spinner, up, down, sideways, or longitudinally. Spinner back-plates crack easily and are expensive to replace—and losing a spinner in flight will surprise the pilot and is not recommended.

WARNING!!!! Moving any propeller can start the engine if the magneto or CDI switch is ON—or OFF and faulty. Never assume you are safe in moving a prop. The AFM of POH will advise on whether the compressions should be checked on a pre-flight. However, Rotax engines require, "Burping:" prior to start. This is to ensure that all engine and gearbox oil has been returned to the oil tank so a correct oil level reading can be ascertained on the dip stick. As cylinder blow-by is used by Rotax for this purpose, engines with worn rings that have more blow-by will "burp" after being pulled through less compressions than engine with better piston ring sealing. After "burping", check the oil level in the oil tank is as required. Also, always check, in all aircraft, that the oil cap is correctly replaced and secured before moving on to the next checklist item

When inspecting the engine bay, after cowls are opened or removed as the case may be, check the engine's overall condition. Air filters or intakes should be open and free from excess oil, grease, dirt, bugs, and other contamination. Dripping oil (some aircraft may drip oil from the crankcase breather on shutdown) and excessive soot behind the exhaust pipes could indicate problems. For liquid cooled engines, check coolant hoses and coolant level in reservoir. It's also a good practice to check the level in the spider (or distribution) tank atop the engine is full. Check the spider tank cap is correctly replaced and secured.

As an ag pilot, I was taught to "sniff" the engine. Leaked or oil smells, and loose exhaust fumes linger, and the "sniff test" can often assist in identifying faults in hard-to-see places.

Look up the exhaust pipe. Normally it should be a dull grey or light tan or brown. If it's wet and oily, the compression rings may be worn. If the build-up is black and sooty, the mixture may not be adjusted correctly.

Visually check the fuel for quantity using a dip-stick or visual fuel level indicators (floating ball type) and compare these indications with the previous readings of the fuel gauges. Check all contamination

traps and drains, and gascolators (where fitted), for any contamination present. The most common form of contamination is water, from condensation or aircraft exposed to rain. However, anything visible that is not fuel is contamination and should be eliminated from the location it's found before flight commences. Ensure than no fuel is leaking/dripping from contamination drain taps after samples are taken. After checking the fuel, ENSURE FUEL CAPS ARE REPLACED AND SECURED CORRECTLY.

Note that many light aeroplanes are manufactured with a fuel selector system that allows the fuel tanks to be both connected. If the aeroplane is on a level surface, the fuel levels will even out if one tank is fuller than another. This can happen even while the airplane is being fuelled—the first-filled tank feeds the other while it is being filled. If you check the tanks after both are filled, chances are they will take a gallon or two more. Also, if the aeroplane has been parked on an angle, one tank may contain considerably more fuel that the other. Then, if one single tank is selected for flight, a sizeable weight imbalance may ensue which will affect the stall speed of the aeroplane.

Very importantly - don't forget to check the fuel tank vents. A blocked vent is likely to create a vacuum which will stop the fuel flowing to the engine. The AFM or POH should advise the details of the venting system.

The last action of prudent pilots on a pre-flight should be cleaning all the windows inside and out. Eyes tend to focus on something close so spots, dirt and bugs on the windscreen can lead to failures to see things in traffic scans.

The last part of a pre-flight is cerebral rather than physical. Now is the time to run over the aeroplane's equipment necessary for the specific operation. Are lifejackets required for this operation? Were they in the aeroplane and are they secured correctly? Are maps required for the area in which the aeroplane is to operate. Are the required maps in the aeroplane. If passengers are to be carried, is their footwear suitable? Stiletto heeled shoes damage wing skins on entry/exit, and seats, on low winged aeroplanes, and the floors on high-winged ones. Thongs are not suitable for emergency exits or survival so should be replaced with more sturdy footwear. Are you, as the pilot, required to carry a spare set of spectacles? If so, do you have them? Are you expecting to take-off or land into the sun? Do you have appropriate sun-glasses? Do you have air-sick bags in the aeroplane, and are they located where you can reach and deliver them? But wait – there's more! Every aircraft operation may be different so every aircraft operation must be specifically assessed to ensure these requirements are satisfactorily met.

In addition to the above, also to be checked is the aeroplane's expected performance data to ensure that the performance is adequate for the intended operation Now the pilot can compute the aircraft's weight and balance, take-off runway requirements, density altitude, fuel burn, and other essential items from details gathered during the pre-flight. Now can be a good time to review the aeroplane's important speeds, such as best rate of climb/best angle of climb speeds, and best emergency glide-speed. If necessary, also review the appropriate emergency checklists: engine fire on engine start, aborted take-off, and engine failure after take-off. Many pilots have this information committed to memory, but reviewing it before departure will put it into the short-term memory banks for quicker recall.

In time, some pilots start to consider the pre-flight inspection a waste of time and become complacent. This state of mind will likely change when they experience an in-flight problem that they should have discovered on the ground. This is the essential purpose of the pre-flight inspection, to leave identifiable problems behind, on the ground when they can be most easily, and safely, remedied.

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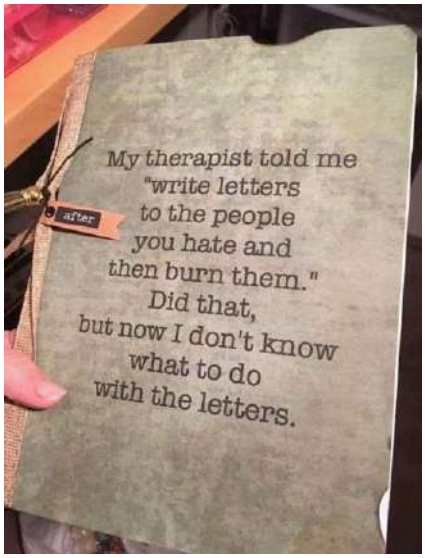
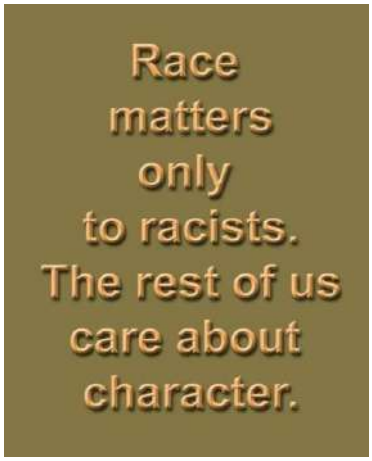
FLY-INS Looming

12 December 2021	Murgon (Angelfield) (ALA)	Burnett Flyers Breakfast Fly-in

Note that I anticipate that more fly-ins will appear as Covid restriction end





The Doctor told me if I had a vasectomy I wouldn't have kids, so I went for it.

I was so disappointed when I got home and they were still there.

The Chrislea Super Ace

A 1940s British four-seat light aircraft built by Chrislea Aircraft Limited in the UK.

The Super Ace was developed from the earlier Chrislea C.H.3 Series 1 Ace, a high-wing four seat cabin monoplane built with a tricycle undercarriage and twin tail fins. The Ace was fitted with a unique 'steering wheel' control arrangement, designed to eliminated the conventional rudder bar. The wheel was mounted on a universal joint; turning it applied aileron, moving it vertically applied elevator and sideways the rudder. The lone C.H.3 Series 1 Ace first flew in September 1946.[1]

Soon after the company moved to Exeter, the first production aircraft, the C.H.3 Series 2 Super Ace flew in February 1948. This model was powered by a de Havilland Gipsy Major 10, inline piston engine. Wing and tailplane were now manufactured from metal, the span was increased by 2ft compared with the Ace, and the fins were smaller and rounder. As the control system of the first Super Ace was not well received, this aircraft and all other Series 3 machines had a rudder bar and dispensed with the sideways movement of the control wheel for rudder applications.

Cockpit detail showing the unusual twin "steering wheel" controls jutting out from the instrument panel.

Construction was initiated on a production run of 32 aircraft, but only 18 Super Aces were completed and flown. Only 3 of these stayed in the UK; 12 were immediately exported and 2 were exported after time in the UK. 1 worked abroad under British registration in the Near East. Super Aces flew in Europe (Switzerland) Africa (Gold Coast, South Africa), Asia (Japan, British Malaya, Pakistan), South America (Argentina, Brazil) and New Zealand).

The final variant, taken from the Super Ace production run, was the C.H.3 Series 4 Skyjeep, first flown in August 1949. The Skyjeep had a tailwheel landing gear, a conventional control stick instead of the wheel and removable top decking on the rear fuselage. A fuselage stretch of 8.5 inches improved the legroom and, combined with the accessible rear fuselage, provided a more flexible internal space. It was powered by a 155 hp Blackburn Cirrus Major 3 engine.

In all, three Skyjeeps were built and sold in Uruguay, Indochina and Australia. The Australian machine flew there with a 200 hp de Havilland Gipsy Six engine for a time, but has since been refitted with the Cirrus and has now returned to the UK where it continues to fly.

Sales of the two types were disappointing and 11 of the 32 planned were either not completed (6) or built but not flown (5). These were scrapped in 1952 when the company assets were bought by C.E. Harper Aircraft Limited.

General characteristics:

- **Crew:** 1
- **Capacity:** up to 3 pax with up to 37 kg of baggage
- **Length:** 6.55m
- **Wingspan:** 10.97m
- **Height:** 2.21m
- **Wing area:** 177sq ft (16.4m^2)
- **Airfoil:** NACA 23012
- **Empty weight:** 647kg

- **Max take-off weight:** 1,089 kg
- **Fuel capacity:** 160l
- **Powerplant:** 1 × de Havilland Gipsy Major 10, 4-cylinder inverted air-cooled in-line piston engine, 145hp (108kW)
- **Propellers:** 2-bladed Weybridge wooden fixed pitch propeller, 2.08m diameter

Performance

- **Maximum speed:** 109kn 1,100 kg) weight and 2,000ft altitude
- **Cruise speed:** 97kn) economical cruise at 2,000ft
- **Stall speed:** 41 kn with flaps down
- **Range:** 350 nm
- **Rate of climb:** 750ft/min
- **Take-off run to 50 ft (15 m):** 230m
- **Landing run from 50 ft (15 m):** 180 m)

VH-BAE, one of the two second-hand Super-Aces imported into Australia.

Australian Chrislea Sales

Brown & Dureau Ltd, an established Melbourne aviation agency specialising in importing aircraft, engines and spare parts, was appointed Australian agent for Chrislea. They immediately ordered a Super Ace, and requested the registration VH-BRO to signify the company name. An advertising campaign resulted in this first Super Ace being sold to a Queensland grazier before it arrived at Port Melbourne and assembled at Essendon Airport in March 1949. VH-BRO is now owned by the Queensland Air Museum in Caloundra.

Brown & Dureau Ltd ordered a second Super Ace, accepting the prototype after it was fitted with conventional flying controls. It was allocated the registration VH-BRP but was destroyed in a deck cargo fire while the ship was docked at Port Said, Egypt. It was replaced with an order for a tail wheel Skyjeep and the registration VH-BRP was transferred to the Skjeep, which was assembled at Brisbane-Archerfield in January 1952 for a Queensland outback property owner.

Two other Australia Super Aces were second-hand imports later in the 1950s.

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

1. How often are GAF forecasts issued?
   A. Once daily.
   B. Twice daily.
   C. Three times daily.
   D. Four times daily.

2. An aeroplane will achieve its best rate of climb under which circumstances?
   A. When operating with a headwind.
   B. When operating with a tailwind.
   C. When operating with a crosswind.
   D. Any of the above provide it is operated at its correct Vy.

3. The stalling speed of an aeroplane increases in a turn. Which of the following provides the correct change in stall speed?
   A. In proportion to the square root of the induced drag factor.
   B. At a rate of two times the increase in G loading.
   C. In proportion to the square root of the load factor.
   D. In inverse proportion to the secant of the bank angle.

4. If power is reduced and level flight maintained, most aeroplanes will suffer a change in trim. Why?
   A. The power reduction changes the balance of four forces acting on the aeroplane in flight.
   B. Downwash from the slipstream changes the Centre of Gravity position.
   C. The reduced speed changes the angle of attack and thus the position of the of the centre of pressure, which, in turn, changes the trim.
   D. The changes to the thrust/drag couple are no longer in equilibrium.
   E. A and C are both correct.

5. Which of the following most correctly defines an isohyet?
   A. A line on a weather map linking all point with the same pressure altitude.
   B. A line on a weather map linking points with the same rainfall.
   C. A line on a weather map linking all points with the density altitude.
   D. A line on a weather map linking all points with the cloud-base.

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. D is correct. Low level GPWT forecasts are issued four times a day.
   See: Graphical Area Forecast User Guide.

2. D is correct. As wind gradient effects or wave effects are not mentioned, the best rate of climb will be achieved when flying at the correct Vy (best **rate** of climb speed) regardless of the wind strength or direction.

3. C is correct. The rise in stall speed is proportional to the square root of the load factor. The load factor, sometimes called apparent weight, must be supported by the wings. As the load the wings must support in a level turn is therefore increased, the angle of attack in a level turn must therefore increase. Thus, the stall angle will be reached at a higher airspeed
   See https://www.experimentalaircraft.info/flight-planning/aircraft-stall-speed-1.php

4. E is correct. Reducing the power does, indeed change the disposition of the four forces will require use of the elevator to hold the new attitude. Also, the reduced speed requires an increased angle of attack to maintain height. This increase in angle of attack will cause a change in the position along the chord line of the centre of pressure. This will cause a trim change

5. B is correct. An isohyet is a line on a weather map linking points of the same rainfall.
   See https://www.merriam-webster.com/dictionary/isohyet

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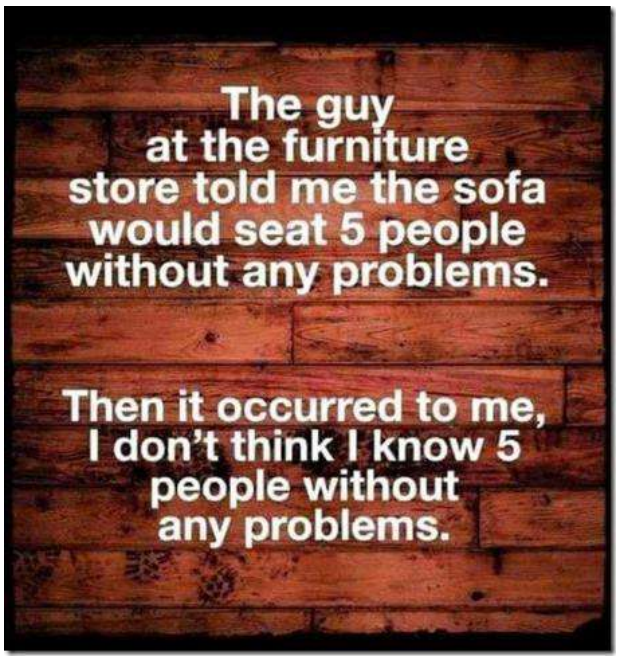


Aircraft Books, Parts, and Tools etc.

Parts and Tools

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

Tow Bars

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

Headsets

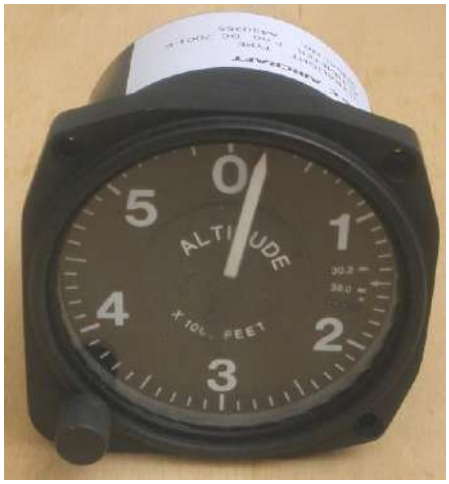
AvCom headset. Functions perfectly	Excellent	**$150.00**

Propeller Parts

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

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

Altimeter for Sale



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

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

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

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

Mob: **0419 758 125**

$120.00

Aircraft for Sale

¾ scale replica Spitfire

$55,000 neg

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

It handles superbly and is available for immediate collection or delivery by arrangement.

Kept at Kentville in the Lockyer Valley, interested parties should contact either:

Kev Walters on Tel. **0488540011** or

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

Aircraft for Sale

$ Make Me an Offer$

Cobham Cobra

An opportunity to buy a unique aircraft.

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

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

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

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

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

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Slipstream Genesis for Sale **$14,000.00**

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

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

Total Hours Engine: 1673.9. Annuals/100 hourly inspection done 01/09/20. Sprag clutch replaced January 2020, gearbox overhauled January 2020.Just undergone ignition system overhaul. One CDI Ignition unit replaced PLUS brand-new spare unit included in sale. Easy aircraft to maintain - everything is in the open. Comes with spare main undercarriage legs, spare main wheel, and nosewheel with other assorted spare parts included.

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

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

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

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

Aircraft Engine for Sale

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

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

Interested parties should call…..

Kev Walters on Tel. **0488540011**

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