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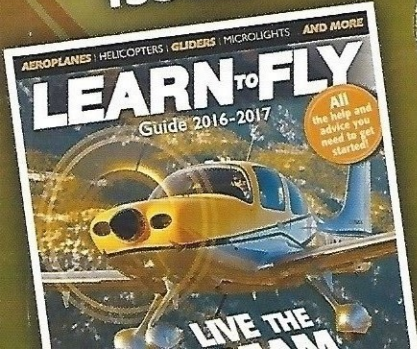
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Chipmunk reinvented



Trainer, crop-duster, aerobat, award winner.
Dave Hirschman of AOPA Pilot magazine meets
a very special, very modified de Havilland

Chipmunk. Photos: Chris Rose (unless credited)

Their considered professional opinion was clear and direct: Don't buy this airplane. But Mark Meredith, a retired United States Navy A-6 Intruder bombardier/navigator, disregarded the conclusion of the pre-purchase inspection and bought the airplane anyway. He flew it with an instructor from Florida to his home in Maryland and earned a tailwheel endorsement along the way.

The 1951 de Havilland Super Chipmunk in question had been involved in at least two landing mishaps over the years. It had served as a military trainer, crop-duster, glider tow, and airshow performer, and it had been extensively altered. The airplane had flown on three continents (Europe, Australia and North America), had seven coats of paint, and – although airworthy – was ragged and worn.



"The mechanics that inspected the airplane all told the same scary stories," said Meredith, a 1979 U.S. Naval Academy graduate. "This was an airplane that had worked hard its whole life, and now it needed a thorough restoration. I wasn't deterred by that. I was looking for a project, and now I had one."

When Meredith got back to his Lee Airport home base in Annapolis in 2009, he started what would become a five-year restoration. The one-of-a-kind finished product has since won prestigious aircraft workmanship awards.

"I had been an aircraft maintenance officer for most of my Navy career, and I'm a hands-on guy," Meredith said. "But I'm not an A&P mechanic, and I'd never personally worked on airplanes. I was really no different from any other first-time airplane builder."

Meredith sent the airplane's Lycoming IO-540 engine out for disassembly and inspection. Under the supervision of A&P mechanics, he fabricated new windshields and rebuilt the top skins. He built moulds for a carbon-fibre cowling of his own design. Other work included extensive structural repairs and modifications to the wings, fuselage and control systems. He reinforced the longerons; added floor supports; replaced parts of the wing leading-edges; shaped new fairings; and added new brake, pitot-static and electrical systems.

When the airplane emerged from Meredith's hangar, it was a gleaming, open-cockpit aerobat that easily converts (88 screws) between single- and two-seat configurations. Although it still resembled the classic de Havilland military trainer, you had to look for the specific similarities. The engine and cowling are almost identical to those of a Pitts S-2C, and the open cockpit and turtle deck are reminiscent of a Ryan STA or a Golden Age racer.

"The most common question I get is, 'What is it?'" Meredith said.

Time and effort

Meredith's father, a U.S. Air Force pilot, made sure he introduced his son to General Aviation early. As a youth, Meredith would ride his bicycle to Flabob Airport in Southern California where legendary air show and movie pilot Art Scholl kept his famous Super Chipmunk and operated an aerobatic flying school.

While Meredith began his military career as a crewmember in Navy combat jets, he didn't learn to fly himself until he was set to retire 25 years later. "Flying was my sanity during a time of big changes in my professional life," he said. "When I started flying, I figured I had to make up for lost time, so I really devoted a lot of time and effort."

Meredith obtained private, instrument, commercial, and flight instructor certificates and ratings. But it was aerobatic flying that he was particularly drawn to, and took lessons from Bill Finagin, also a former Navy officer, in Annapolis. Meredith said he had the advantage of many hours in the right seat of military jets, but he struggled to learn the more subtle, intuitive aspects of stick-and-rudder flying.

Super Chipmunk N7DW History

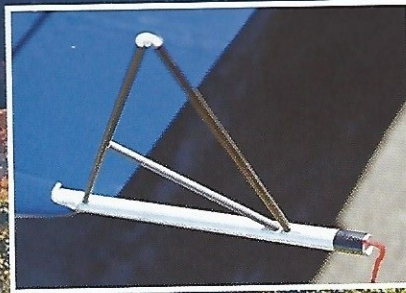
- Manufactured by de Havilland in 1951
- 17.10.51 Issued to No 4 Basic Flying Training School (BFTS) Sywell, Northampton, as WG427
- 10.03.53 Transferred to No 10 Maintenance Unit (MU), Hullavington, Wiltshire, upon closure of 4 BFTS
- 20.03.53 Repair on site by de Havilland working party
- 11.08.53 Issued to Communications Squadron. RAF Coleme, Wiltshire
- 20.09.55 Transferred to non-effective stock
- 25.06.56 Sold to W S Shackleton Ltd and shipped from 20 MU to Australia.
- 01.57 Registered as VH-BSQ
- 03.07.57 Assigned to Tasmanian Aero Club,

Launceston, Tasmania

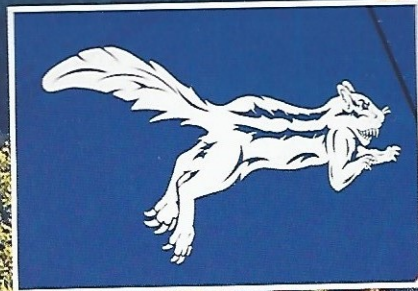
- 12.08.65 Converted as third SA-29 Spraymaster based on Tasmanian Aero Club Chipmunk
- 09.09.66 First flight in Spraymaster configuration. Forward part of fuselage interior and front seat removed to install a hopper; rear seat raised, installed bubble canopy, dorsal fin, Scott-style tail wheel, and attachments for spray equipment and controls.
- 19.12.66 Landed in a field near Tintinara and badly damaged
- 67 Rebuilt by RACSA at Parafield, still in SA-29 Spraymaster configuration
- 26.05.69 Sold to Adelaide Soaring Club, Gawler, SA. Converted it to a glider tug.



- 29.03.70 Damaged in an accident at Templers, SA. Struck a power line and crashed during landing.
- 25.05.70 Stored at Parafield until taken to Bankstown in April 1971 and work commenced to convert to 260hp Super Chipmunk aerobatic aircraft with larger fin and clipped wings. Work not completed.
- Stored at Sydney until sold and shipped to Texas, USA, in 1973, along with two other Chipmunks modified for agricultural work. Hopper removed and aircraft completed as single-seater with 260hp engine and retaining the dorsal fin of the SA-29 Spraymaster
- 1973 registered as N7DW.



Wingtip sighting devices help perfect those vertical up, and 45° down lines



'Like a regular Chipmunk, just with a bit more bite'



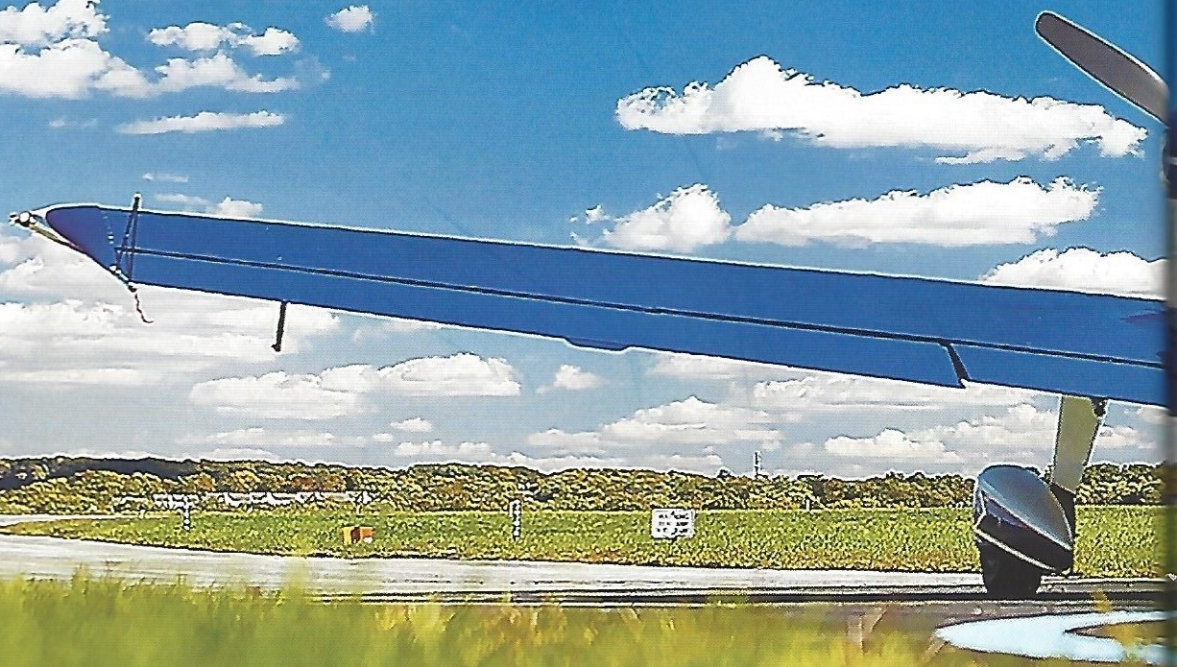
Like many things on this particular Chipmunk, the roswood instrument panel isn't standard de Havilland...



Open cockpits with twin screens reminiscent of Ryan STA or golden-age racer



You can see more photos from this feature on the iPad and Android edition of *FLYER* and on the Editorial Extras section of the *FLYER* forum at forums.flyer.co.uk



“Loops are particularly graceful, and the sounds and sensations of coming over the top in an open-cockpit airplane on a crisp cold day are sublime”

“Navigating with a GPS in a 172 is a lot easier than trying to find a target at 360 knots and 500 feet above the ground as we used to do in A6s,” he said. “But becoming a pilot was very much a transition. It’s not like everything came easily for me.”

Now Meredith is a full-time flight instructor at Navy Annapolis Flight Center, a Part 141 school, and he has ten private, instrument and commercial students. “I’m the old guy among the instructors, so I often get the students who, like me, are learning to fly later in life,” he said. “But I love teaching young pilots, too.”

He also participates in International Aerobatic

Sportsman level. “I try to be easy on the airplane by not pulling more than four g,” he said. “It’s an active flyer, not just a showpiece.”

Knees apart

There’s a reason for each change Meredith made to the Super Chipmunk. The turtle deck, for example, does more than look good. It’s got a beefy rollover structure inside, as well as a baggage area. The fuselage is all metal, as are the wings; only the control surfaces are fabric. The wings have been shortened and the ailerons extended for a higher roll rate. The flaps have been shortened to make room for the larger

otherwise, the wide main landing-gear is one of the few things that hasn’t been altered.

The carbon-fibre cowl covers a Lycoming AEIO-540 engine, and a two-blade Hartzell constant-speed prop provides the thrust.

“It’s basically a Pitts S-2C from the firewall forward,” Meredith said.

Two wing tanks hold just 22 gallons of avgas, so this Super Chipmunk’s range and endurance are limited. The engine consumes 24 gallons of fuel an hour at full power and 12.5 at economy cruise, so most flights are no more than one hour from take-off to landing. High-speed cruise at 135 knots consumes 17 gallons an hour.

The airplane weighs about 1,600 pounds



No passenger? Then remove the front screen and add a canopy for that single-seater look.

FLIGHT TEST

Chipmunk reinvented

empty; its aerobatic weight is 1,800 pounds, a max gross is 2,100. Each seat has a ratcheting, four-point Hooker harness system with double lap-belts. The rosewood instrument panels contain VFR gauges, and a fuel totalizer.

Start-up is standard for a fuel-injected engine; taxi requires S-turns to clear the area ahead, and the wide landing-gear provides lots of stability. Take-off is in about 600ft, and acceleration is brisk and invigorating. The authoritative rudder keeps the airplane tracking straight with minimal input, and control harmony is delightful, just like stock Chipmunks.

The roll rate with full aileron deflection is about 100° per second, so it takes about 3.5 seconds to complete an aileron roll entered at 130kt. The relatively short stick has lots of throw, so getting full deflection requires keeping your knees wide apart.

The airplane has positive dynamic stability and stick forces are moderate. There's very little elevator trim change from stall speed to Vne on the airspeed indicator.

Loops are particularly graceful, and the sounds and sensations of coming over the top in an open-cockpit airplane on a crisp cold day are sublime. We didn't do any spins, but Meredith performs them regularly as part of his aerobatic routine; he says the airplane accomplishes them with grace and consistency.

We approach at 60kt with full flaps; the airplane touches down smoothly on the forgiving main landing-gear. The oversized rudder provides lots of control down to taxi speed. Meredith says crosswinds are no problem, but the airplane weathervanes and requires constant differential braking while taxiing in strong winds.

More to do

Meredith has done a great deal of research into the history of N7DW, and he said it's put him in touch with a variety of characters connected to it from England, Tasmania, Texas, Louisiana and Florida. He even set up a Facebook page, Super Chipmunk Restoration, that tells its story.

N7DW was built in England in 1951 and was a primary trainer for the Royal Air Force from 1951 until Chipmunks were phased out, beginning in 1955. At that time, it was shipped to Australia, where it was used as a trainer by the Royal Tasmanian Aero Club.

In 1965 it was converted to an agricultural Spraymaster, and the front seat was removed and replaced with a chemical hopper. The airplane was involved in a landing accident, and when it was repaired began a new life as a glider towplane.

It was involved in another landing mishap that required totally replacing one wing. During the repair, it next was converted to a clipped-wing

aerobatic airplane. The conversion hadn't been completed when a Texan bought the project, along with two other Chipmunks, and brought them to the United States.

The three were assembled in Texas and N7DW was flown on the U.S. airshow circuit by several pilots, including legendary showman Duane Cole. Doug Warren and Howard Davenport also flew it in a two-Chipmunk aerobatic routine developed by Chuck Stockdale.

In 1988, it was converted to a two-seat, open-cockpit configuration for media and VIP rides on the airshow circuit. The airplane had logged about 3,500 eventful hours when Meredith bought it and it was overdue for some tender loving care.

"It had been a working airplane its entire life," he said. "It was never a Sunday cruiser. It was always making money for someone, or trying to."

The FAA registry shows a total of 38 de Havilland Chipmunks in the United States; Meredith's airplane has become well known in vintage circles since its restoration. But Meredith says he knows little about how it compares to other airplanes with the same heritage. "This is the first and only Chipmunk I've ever flown, so I really don't know how its flying characteristics compare to others," he said. "I enjoyed every bit of the renovation. It's never perfect, so I'll always have something more to do." ■

During its time in Australia, the Chipmunk was converted into a single-seat SA-29 Spraymaster



(Photo: Mark Meredith)



With 115 more horsepower than the original Gipsy Major 1C and a constant-speed prop, take-off performance is spirited

Photo: Bill Dougherty

TECH SPEC

Super Chipmunk



DIMENSIONS

Wingspan.....32ft
Length.....25ft 5in
Height.....7ft 6in

WEIGHTS & LOADING

Empty weight.....1,620lb
Gross weight.....2,200lb
Fuel capacity (optional 15usg front seat ferry tank).....22usg

PERFORMANCE

Cruise @ 12.5gph.....120kt
Max cruise.....135kt
Stall.....46kt
Max rate of climb.....3,000fpm

ENGINE

Lycoming IO-540-D4A5 260hp

PROPELLER

Hartzell HC-C2YR-4CF 78" Constant speed

CONTACT

www.facebook.com/Super-Chipmunk-Restoration-450209565060746/

