

My Other Plane is a Daytona Cub

by MATTHEW McDANIEL



N381BK: Mark Hein's award-winning Daytona Cub.

As I slowed, the leading edge slats began to open, keeping the wing flying at an unnaturally slow speed. I pulled the stick into my lap and held it there. The airspeed indicator was well below 30 mph and still the wing was flying; no buffeting and no sink. Had I added power (of which there was still plenty in reserve), we could have flown steadily at that speed. In fact, we could have slowed to near 20 mph while maintaining altitude, but at such slow speeds, engine cooling quickly becomes the limiting factor. Instead, I pulled the power to idle and kept the stick in my lap. The altimeter began to drop, but the stall never happened. There was never any significant aerodynamic buffet and no stall break, whatsoever. We just descended in a controlled, falling leaf maneuver – incredible.

Slow Plane in the Fast Lane

The irony of the situation was not lost on me. The voice encouraging me to fly his plane as slowly as possible belonged to a man who has spent most of his life pushing race cars to their performance and endurance limits, yet there is some level of continuity in play as well. Whether coaxing every last ounce of lift from his Cub's wings, or accelerating into the corners on a world-renown race course, Mark Hein has an affinity for transforming mundane modes of transport into extreme machines ... and operating them accordingly.

Mr. Hein is a self-confessed gearhead. An automotive nut who's been obsessed with cars and car racing for as long as he can remember. He makes his living in the world of high finance, and by all accounts, possesses a special skill set in that area, but if you spend even a day with him, it quickly becomes obvious that his job is also a



Builder and pilot Mark Hein with his highly customized Daytona Cub.

means to an end. It has afforded him the opportunity to pursue his passions for building and racing ... and flying.

A few minutes in Hein's backyard garage will convince you that he's no "hobbyist," at least not in the purest sense of the word. The shop is not huge or flashy, but the work happening inside is high-tech, tight-tolerance and carefully engineered. While the scale is small, this is a true fabrication/customization shop of the highest order. One of the current projects is a great example. On a lift, sits a recreation of a 1959 Porsche Roadster (picture James Dean's famous silver Porsche and see sidebar). Elsewhere sit various examples of street legal production cars that he and his team have transformed into championship road and track racers. In a back corner,

are a couple of collector race cars that, much to my delight, Hein can't resist telling me all about!

Mark's accomplishments in the garage and behind the wheel are far too extensive to detail here. Suffice it to say, he and the teams he's put together have had significant success in Grand Am style racing, both internationally and here in the United States. The highlights of which include no less than five International Motor Sports Association (IMSA) Endurance Series National Championships, First in Class at the 2003 Miles of Francorchamps, and Winner of the King's Cup at the 2000 24-Hours of Spa at Francorchamps, Belgium. At the 24-Hours of Spa, Hein's SpeedStar Team was the first American team to ever compete at the prestigious European endurance race. They drove an Acura Type-R that he purchased as a shell from a theft-recovery, then customized it to the exacting standards required at Spa (all without major sponsorships, in order to keep his project off the radar of the competition).

Garage or Hangar?

The thought of flying had crossed Mark's mind many times, but he'd always resisted the urge to do so, believing he wouldn't have the time to both fly and race cars at equally high skill levels. Mark's an all-in sort of guy. Doing anything partway is not his style! By the early 2000s, the huge efforts required to build and manage racing teams, plus being directly involved in the wrenching and driving of the cars, began to wear on him. It was costly and time-consuming, and Mark's wife, Vicki, was encouraging him to consider scaling back the racing. Around the same time, a long-time friend suggested that Mark should learn to fly and own a Cub. While exploring that possibility, it became apparent that it would take at least a standard Super Cub to accommodate Mark's six-foot, four-inch height. After a visit to Sun 'n Fun, Mark was inspired to begin researching the options for a Super Cub he could build himself (of which there are many). In short order, he'd turned his auto shop/

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Personal Data

Name: Mark Hein

Age: 56

Born: Clearwater, Fla.

Living: Clearwater, Fla.

Status: Married to Vicki for 32 years, no children.

Education: Attended the University of South Florida, studying Economics. Left during his senior year (1981) to take over his Dad's business after he passed away at age 61. Thus, he became the president of Classic Chrome, Inc. at age 23!

Occupation: Executive Director, Senior Investment Management Consultant, Financial Advisor

Employer: Morgan Stanley. He began with Shearson American Express and stayed with the same company for 32 years through eight mergers and 14 name changes. At the time, he was the youngest financial advisor (hired at age 25).

Hobbies: Auto racing, vintage and custom car fabrication

Aviation Data

Earliest Aviation Memory/First Flight: At age 10, he took his first GA flight in an experimental plane powered by a Corvair engine. The pilot was a friend of his dad's and they thought it would be a good experience for him.

Aviation Mentors: Jay Wisler is a long-time friend that Hein knows from the car racing world. He formed War

Bird Parts, an aviation company specializing in P-51 and warbird parts. In 2014, Jay was inducted into the EAA Hall of Fame for the part he's played in saving so many warbirds. He is the one who suggested that Hein should own a Cub.

First solo: February 6, 2005 in C-172 at St. Pete-Clearwater Int'l Airport (KPIE)

Initial Training: All at KPIE. First in a poorly maintained 172 that he soloed in. He eventually became fed up with that situation and moved to a more reputable school where he completed his Private certificate.

Private Certificate: August 6, 2005

Instrument Training: August 6, 2006, exactly one year after his PPL checkride, with the same examiner. All instrument training was done in his first Cirrus.

Aircraft Owned: 2005 Cirrus SR22 G2, with one partner (2005-2010, until his partner bought him out); 2007 Cirrus SR22 G2 GTS (2010-present); Daytona Cub Super 18-180-EXP (Began construction in 2004, competed in 2014, converted to amphibian 2015).

Proudest accomplishments in aviation: Flying to Alaska and back in his Cirrus (55 hours logged, across 14 states, in three weeks of flying).

All-time favorite flight: Four days of flying through the Hawaiian Islands. He ended up landing at every public airport in Hawaii, including the Space Shuttle backup strip on the Big Island.

Total time: ~1,400 Hours

garage into an aircraft shop/hangar and invited all his race team mechanics to stay on and help with the Cub build. Unfortunately, the enthusiasm for building an airplane among such die-hard car guys soon began to wane. Within a year, all but one of the mechanics had left the project. Over the course of the next decade, Hein and his sole remaining mechanic, Richard Sparks, built the award-winning Dakota/Smith/Daytona Cub you see pictured (on page 28).

The Good, the Bad and the Ugly

The Good: Three inches wider than the classic Piper PA-18 Super Cub, the Daytona Cub fits Mark's stature. It also incorporates many features that PA-18 owners either wish they had, or wish they'd incorporated via various STCs and Field Approved modifications. Things like clamshell doors on both sides, a 180-hp engine, longer gear, and leading edge slats, give the Daytona Cub performance and comfort no standard PA-18 could hope to achieve. Super 18 LLC builds a fully FAA-certified version of this Cub, known as the "Super 18-180," but it was the kit version (Super 18-180-EXP) from Dakota Cub Aircraft that began arriving in shipments to Mark's shop. The collection of modifications transformed it further into what he prefers to refer to as a Daytona Cub.

The Bad: Daytona Cub was the exclusive importer for Smith Cubs in Canada. That deal quickly fell apart after only seven kits were delivered; Mark's was the sixth.



The Cub's leading edge slats, in the fully extended position, help give it uncommonly slow speed flight capabilities

Those kits were incomplete and problematic, requiring extra patience and creativity to complete. Imperfections in aircraft kits are common and many builders accept them as being "within tolerance" and compensate for them through rigging adjustments at the end of the build. The race car building perfectionist in Mark could not tolerate that and correcting such issues during the build proved both challenging and time-consuming. ▶



The composite amphibious floats wait patiently in the back of Hein's shop (watched over by some of his prized race cars) for their installation on the Daytona Cub.

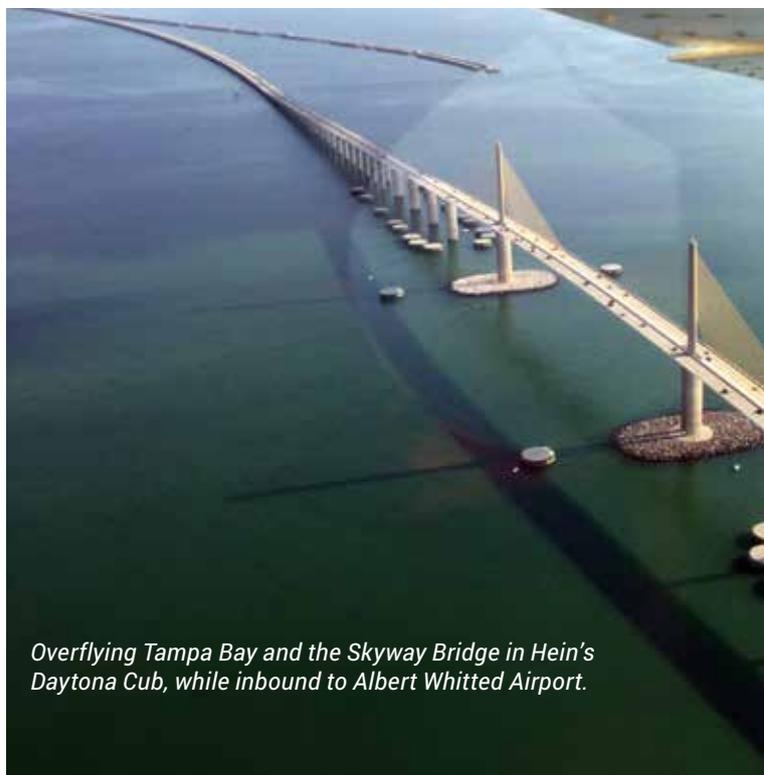
The Ugly: Even if they'd been willing to accept some minor imperfections in the kit or in their own work (which they weren't), Mark and Richard eventually found some things in the kit so out of alignment that no amount of re-rigging could have corrected them. Major surgery was required to correct them, and each one created a domino-effect of other corrections to keep everything square and to minimize drag. Along the way, many parts of the Cub were rebuilt several times, until Mark's exacting standards were achieved. Such challenges added years to the build.

DATA CHART – Hein Daytona Cub (TIR-1) All Speeds in MPH, IAS

Engine	Lycoming IO-360, 180 HP
Propeller	McCaughey Fixed-Pitch (metal)
Seats	Two in tandem. Solo flight from front seat only.
Wingspan	35 feet, 4.5 inches
Length	22 feet, 7 inches
Height	6 feet, 11 inches
Wing Area	175 sq. ft.
Max Gross Weight	2,300 lbs.
Useful Load	1,000 lbs.
Wing Loading (1g)	13 lbs./sq. ft.
Power Loading (@MGW)	12.8 lb./hp.
Baggage Capacity	Extended baggage areas, subject to W&B limitations
Fuel Capacity (usable)	46.0 gal.
Brakes	Toe brakes (front seat) Heel brakes (rear seat)
Landing Gear	Conventional (as tested) Amphibious Floats (currently)
Cockpit Flight Controls	Dual sticks with PTT
Minimum Controllable Airspeed	~30 mph (at Max Gross Weight)
Typical Climb	700 fpm
Cruise Climb	500 fpm
Typical Cruise	100 mph
Never Exceed (V_{ne})	148 mph
Final Approach (V_{ref})-Full Flaps	50-60 mph (depending on weight)
Takeoff Distance (@MGW)	580 feet
Landing Distance (@MGW)	580 feet

“Cirrus-izing” His Life (and His Cub)

Hein was fully two years into the Cub construction before he'd taken a single flying lesson. While it would steal precious building hours, the time had come to begin



Overflying Tampa Bay and the Skyway Bridge in Hein's Daytona Cub, while inbound to Albert Whitted Airport.



The "Cirrus-ized" panel of the Daytona Cub features carbon fiber structure, large glass displays and an autopilot.

working on adding a pilot's certificate to his resume. A few days prior to completing his PPL checkride, Mark purchased a 2005 SR22. Within a year, he'd added an Instrument rating and was soon spreading his wings and discovering the joys of Cirrus travel and adventures with Vicki. The Cub build continued, but slowed.

The Cub's panel was initially completed in the classic round-dial layout. The more Mark flew the Cirrus, the more he felt the Cub's panel just wasn't right. Eventually,



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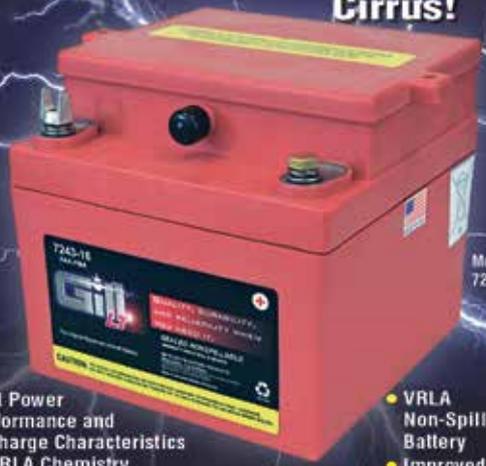
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“Franken-Porsche”

Since completing his Daytona Cub, Mark Hein’s workshop/hangar has reverted back to its workshop/garage status, but it remains a hub of activity. While there are always multiple projects within its walls, the current focal point is a recreation of the classic 1959 Porsche 356 Roadster made famous by James Dean. Hein purchased the coach (body, paint, upholstery, electrical) from Intermeccanica in Vancouver, BC, who prefers to call their product a recreation rather than a replica due to their close attention to original detailing. Hein wanted to do a customized installation of all the mechanical details in order to make the car everything he wanted it to be, in both looks and performance. Specifically, he wanted a car that looked, smelled and sounded like a Porsche, but started and ran like a Honda!

The recreation was designed to accept the engine, transmission, steering, brakes and suspension of a 1981 Porsche 911. Hein purchased a 911 and promptly turned it into a parts donor, but before installing anything in the 356 coach, he remanufactured each donor component to his exacting standards. He even tracked down and installed an original 356 steering wheel and steering column, to give the interior an even more authentic look and feel.



The coach of Hein’s 1959 Porsche 356 Roadster recreation early in the build. The car should be road-worthy sometime in 2015.



The highly modified and customized Porsche 911 engine destined for Hein’s 1959 Porsche 356 Roadster recreation.

Add some period-correct, custom Rudge knock-off wheels, and this 2015 Roadster will be very hard to distinguish from a mint condition 1959 version until you get close enough to see how much better it is in every way.

Mark’s 356 will house a rebuilt and thoroughly customized 250-hp, six-cylinder engine in the space designed for a simple 75-hp, four-cylinder engine. Most of his engineering efforts are going into making everything fit. As he says, “It’s like stuffing 10 pounds of stuff into a five-pound bag. Every time you address a fitment issue in one area, it causes problems in five other components.”

The point of the 356 project is to have an eye-popping, custom car that is meant to be driven, enjoyed and admired in its natural environment – on the road. As Vicki reminded Mark, he already has plenty of cars that are too rare or too collectable to really be driven. By the time you read this, the 356 will be nearing completion and the plans for it are tightly connected to his SR22. The Hein’s plan to enjoy the 356 while sightseeing in areas they’ve always wanted to tour by car. This will likely include many car rallies and special auto-club tours, but many such areas and events are thousands of miles from their south Florida home. The solution? They will ship the 356 to those places and use the Cirrus to cover the vast distances in between. An elegant solution, to be sure.

he told Richard he wanted to completely redesign it ... to "Cirrus-ize" it! Before it ever flew, the Cub was retrofitted with a carbon fiber panel, a huge Dynon glass panel display, and an autopilot. The Dynon is a single screen with multiple split-screen functionality for displaying PFD and MFD information, as well as full engine monitoring of the Cub's 180 horses. This is not your grandfather's Super Cub!

In 2010, Hein upgraded to a 2007 SR22 GTS (G2), on which he later added a Tornado Alley Turbo-normalizing system. Now with over 1,200 hours Cirrus time logged, Mark is enjoying life with a traveling airplane and a local, fun airplane, stored in adjacent/connecting T-hangars at St. Petersburg's picturesque Albert Whitted Airport.

Getting His Feet Wet

By the time you read this, Hein's Cub will be sitting high atop new amphibious floats, at which point Mark will begin working on his Seaplane rating. Thereafter, he doubts he'll ever return N381BK to taildragger configuration. She'll also get a set of vortex generators (VGs) behind the leading edge slats and on the underside of the horizontal stabilizers, which will further enhance its already prolific lift-production and likely give it water takeoff performance as impressive as its current runway capability.

After a beautiful scenic flight over the beaches and bridges of the Tampa/St. Pete area, Mark and I headed back in for some landings. They proved to be predictably short ... very short! Curious about logging the flight, I asked Mark what the designation for his Super-Duper Cub was. He informed me that due to the many corrections and modifications made to the kit, the completed plane was rebranded "TIR-1." The first aircraft produced by Two Idiots Racing, Inc! When considering Mark's copious building talents (he's built countless racing and classic cars, nearly every square inch of his house and workshop, and the TIR-1), one is left to wonder what sort of aircraft will carry the designation TIR-2. Mark assures me, the TIR-2 has been narrowed down to a couple of unique choices and is a matter of when, not if. ⊕

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Matthew McDaniel is a Master and Gold Seal CFII, ATP, MEI, AGI, and IGI and Platinum CSIP. In 25 years of flying, he has logged over 15,000 hours total, over 5,500 hours of instruction-given, and over 5,000 hours in all models of the Cirrus. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he also flies the Airbus A-320 series for an international airline and holds six turbine aircraft type ratings. Matt is one of less than three dozen instructors in the world to have earned the Master CFI designation for six consecutive two-year terms. He can be reached at: matt@progaviation.com or (414) 339-4990.



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