



# RVator's Log

Newsletter of the Twin Cities RV Builder's Group

## December 2022

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### Upcoming Events

**TC RV Builders December Meetings. Doug and Paul's hangar, Lake Elmo Airport**

**Saturday, December 10 at 10 am. Details on page 9**

\* \* \* \* \*

**Minnesota Wing  
Van's Air Force**

**Pres: Doug Weiler, 651-398-1184, [dcw@mnwing.org](mailto:dcw@mnwing.org)**

**Sec/Treas: Bernie Weiss  
612-845-6178**

<mailto:treasurer@mnwing.org>

[www.mnwing.org](http://www.mnwing.org)

## Shop Notes

- Doug

59 years ago last spring, I laid out a hard earned \$8.50 for my first flying lesson. The trainer was a faded red 1947 Aeronca Champ N2475E. The fabric was patched, the plexiglas windows rattled and the cabin reaked of avgas. I spent the next 15 hours in the front seat trying my best to understand my instructor Lefty McGran's commands shouted over the din of the 65-horsepower Continental. 75E was probably the ideal plane to learn in. Nothing happened fast. The climb rate was anemic, cruise might push 80 mph and you had better keep your feet moving chasing that errant needle and ball.



A while back I was digging through the internet wondering if N2475E was still flying. Sadly I found this:

Date: 02-JUN-1982  
Time: 18:20



Type: [Aeronca 7AC Champion](#)  
 Owner/operator: private  
 Registration: N2475E  
 MSN: 7AC6054  
 Fatalities: Fatalities: 1 / Occupants: 2  
 Other fatalities: 0  
 Aircraft damage: Written off (damaged beyond repair)  
 Category: Accident  
 Location: Cedartown, GA - [United States of America](#)  
 Phase: Take off  
 Nature: Private  
 Departure airport: Cedartown, GA  
 Destination airport: Cedartown, GA  
 Investigating agency: NTSB  
 Confidence Rating:  Accident investigation report completed and information captured

**Narrative:**

THE ACFT STALLED & CRASHED INTO TREES FROM AN ALTITUDE OF APPROXIMATELY 60 FEET AGL. THE ELEVATOR TRIM TAB CONTROL WAS FOUND IN THE FULL NOSE UP POSITION. CAUSE:

The trim control is a sliding lever on the ceiling of the cabin. Obviously the pilot did not notice the trim position before takeoff and lost control.

Share 0

Tweet

2018 saw the first of two tragic accidents of Boeing 737 Max airliners later attributed to a fatally flawed software program controlling the aircraft's elevator trim system. MCAS (Maneuvering Characteristics Augmentation System) supposedly provided an automated stall prevention method which was designed to work in the background unknown to the crew. When the software malfunctioned, the trim system began to runaway to the confusion of the pilots. If they had recognized the runaway quick enough, the system could have been shutdown with the Stab Trim cutout switches. But that did not happen. Lastly, a recently soloed student pilot was lost in the fatal accident of a nearly new Cirrus SR20 in San Diego. The pilot was doing touch and goes and during his last approach declared an emergency about a trim issue. The pilot lost control after erratic maneuvering and crashed on the airport. Runaway trim?



As RV builders and pilots, it's easy to overlook the potential issues with a malfunctioning trim system. Most new RVs use the tried and true Ray Allen electric trim system. There is no manual backup. I have not heard of an accident or incident in an RV attributed to a runaway trim but that is always a possibility.

RV's are generally quite controllable with an out-of-trim condition but what if you are taken by surprise with your electric trim going bonkers at some inopportune time.

As a builder consider this: You MUST have a method to quickly cut power to the trim system (RV guru and supreme pre-buy inspector Tom Berge has seen RVs with no apparent method to quickly cut off power to the trim system. A no-no!!).

Design your instrument panel such that there is an easily recognized switch that you can disconnect trim power. A red collared circuit breaker might be an alternative, but I really like a switch that I can kill power NOW.

Pilots: Sit in your cockpit and "chair-fly" what you would do in light of a runaway trim. The trim rate in our RVs is quite slow so you should be able to recognize what is happening before things get out of hand. Think this through: 1. Trim power off. 2. If that doesn't work, pull the trim circuit breaker. 3. If that doesn't work, turn off avionics master switch. 4. Last resort, turn off master switch. AND FLY THE AIRPLANE.



One last thing: your autopilot needs a similar "quick disconnect" switch as well. A quick story.... years ago I was flying a Beech King Air which developed a rather disturbing glitch. When you transmitted on the radio and the autopilot was on, the airplane would either pitch up or pitch down (kind of disturbing to the passengers in the back!). I never knew if it would want to do an inside loop, or an outside loop!! You can bet I knew where the autopilot disconnect was! The shop found a poor ground in the transmitter wiring circuit caused some crazy voltage surge.

\* \* \* \* \*

## Celebrating my RV-6A

- Dale Field

As you know, I am selling my baby, RV6A N565DM, after flying her since June of 2003. There have been many memorable trips logged over the years beginning with my first west coast trip where we ended up a half mile off the coast over Pacific Ocean on a group trip to Van's Aircraft. We toured the factory and visited the Tillamook blimp hangar led by Jerry VanGrunsven, Dick's brother. We also made a side trip to McMinnville to see the storied Spruce Goose in all its glory. They were still reassembling it after moving it from California.

In 2004, we flew with a gaggle of RVs to Las Cruces, New Mexico, headed up by our leader, none other than Capt. Doug Weiler. The Land of Enchantment RV Fly-In encompassing well over 100 RVs which was very exciting for a newbie -6A driver. I got to land at El Paso while procuring a rental car to drive to the White Sands National Park and stare at a huge sand pile. Showed Alex Peterson what it would be like after crawling thru the desert on your hands and knees. Flew over the large array of radar telescopes on the return trip

For several miles near the Plains of San Agustin, and while taking photos, I found out that a RV-6A left to its own divergence, does take on unusual attitudes. I am sure those of you that fly with the autopilot off soon discover.... just let go of the stick for a minute, relax and let the ship do the work.... fun stuff!

My good friend, and co-builder of N565DM, Tim Mahoney, and I zoomed down to Sun & Fun in our fun machines, me grinning all the way. Got to tour the Space Center, and finally flew south to Florida to see the mentor of many of our RV drivers, the late Tom Irlbeck at his winter home in Cape Coral. Tom cooked just caught ocean fish for Tim, Alex Peterson, and me, and then took us for a cruise around the canals and ocean in his 38' boat. We all miss Tom and his many stories.

I had the fortunate chance to attend Larry Vetterman's South Dakota fly-ins twice. On a bathroom break en route to one of those fly-ins in 95-degree heat, my wife Mabel was not happy when the soles of her shoes stuck to the freshly tarred ramp exiting the plane. The 8x10 foot office at the airport where we stopped, had air conditioning, and we pondered whether we should just stay there. But off we went on climb out, cylinders temps hovering at 400+ degrees, I am throttling back and using full rich mixture, the airport being surrounded by rising terrain, Mabel commenting on the nice view of horses so close below us. Me, trying to keep up with upslope and not landing on them, while trying to keep the nose down

to cool the engine, was really sweating now. Looking back, just some memories embedded in my mind.

I was privileged to accompany several of EAA Chapter 551 members, on a flight to Colorado Springs, Colorado, being hosted by the local EAA chapter. A loosely strung-out formation of different type of aircraft, arrived with a flare at a Meadowlake airport just northeast of the main Colorado Springs airport. KIFLY is home to many RVs mostly owned by retired military officers. Also got to fly to Leadville and received my certificate for the highest public airport in the USA.

The most fun that I had with N565DM was flying Young Eagles for EAA Chapter 551. N565DM and I almost reached 200 YE. The final count was 198. All but 2 kids got to fly my plane. The excitement of the kids after controlling the stick and upon jumping down from the wing, shouting to their parents, "Mom and Dad, I flew the plane!!" The kids were still a foot off the ground! I felt a great deal of enjoyment to be able to show those young people what it is like to soar above the Earth in my little bird.



Selling my plane is a bitter-sweet feeling. Knowing someone else will enjoy the journey gives me good vibes, however saying goodbye is hard to do.

We all reach this stage in life if we live long enough, but it is hard to put it in words for me. Thank you for all the friends and fellow RVer's that made my life richer thru the Minnesota Wing of Vans Airforce. Especially Tim Mahoney, Tom Irlbeck, Doug Weiler, Alex Peterson, Tom Berge, and Bernie Weiss. Forgive me forgetting the many others... senior moments... what a ride!!

## **Aero Sport Power Build School October 18-20, 2022 Kamloops, BC, Canada**

*-Nancy Burkholder*

I had the opportunity to build my engine at Aero Sport Power. I wanted an IO-320 fitted for a constant speed prop for my RV-9 project. I ran my wish list by Tom Berge and he provided excellent guidance for selecting the various options. I contacted Darren in sales and he guided me through the process of selecting my options and explaining the order process.

Aero Sport Power provided all essential accessories; fuel injection, dual Lightspeed ignition, alternator, starter, engine preheat kit, oil filter adapter, and prop governor pad. Darren had one new Superior IO-320 in stock and I placed my order.



All the pieces ready to go!

Day 1. All engine parts were arrayed on tiered shelving and the essential parts were weighed to designate their location during assembly. With supervision I installed the prop seal by stretching it over the prop flange. I have never seen that done before. Now I'm a believer.

Then I assembled and torqued connecting rods to the crankshaft, lubed crankshaft bearings and laid the crankshaft and camshaft in the crankcase. I let the instructor place the double row of silk thread around the crankcase perimeter. From there

I assisted closing the crankcase and assembling the accessory housing. Next I installed pistons to connecting rods, placed the ring compression collar on the pistons, installed the cylinders and lifters, and torqued the assembled crankcase and cylinders.

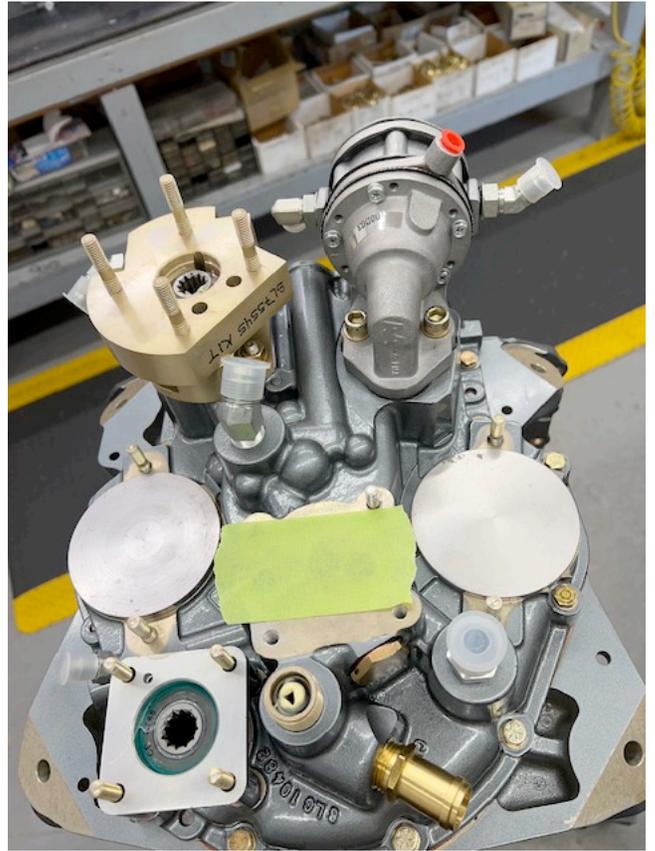


Crank and camshaft in place. Ready to bolt case together

Day 2. Installed push rods and tubes, rocker arms and valve covers, and fuel injection spider and lines. By noon the engine was ready to install on the test stand. The test stand consists of a mount and supporting artifacts mounted on the back of a truck. I observed the installation. A metal fixed pitch prop was used for a load.



All buttoned up



Accessory case outside



Accessory case inside



Attaching pistons and cylinders



End of day 1

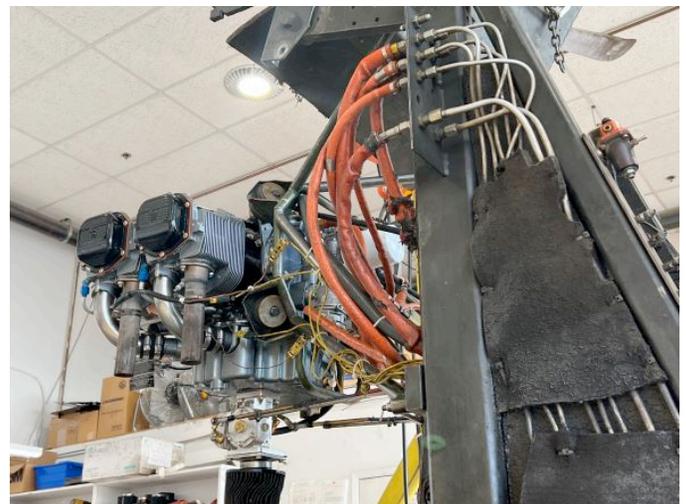


Not many parts left!

Day 3. Completed connecting ignition, oil and fuel lines, and instrumentation cabling by about noon. Then the test technician drove to a location on the airport to perform the first engine start. I observed the entire 2.5-hour engine test from about 75 feet away.



Noon on day 2. Engine ready for test





Test stand rigging

would have liked to have gotten a log like that produced by an EFIS but Aero Sport doesn't have that capability yet. I received a test summary showing key parameters. The engine was tested at 70-100% full power for a majority of the time.

While assembling my engine I asked various questions related to maintenance and assembly of my current RV-6 IO-360. I am using a reusable oil filter that does not have an internal pressure relief valve. I made sure my IO-320 has the valve.

My flight to Kamloops via commercial aviation was my first flight since COVID. There were no delays, just the usual aggravation of flying commercially and internationally. The engine was shipped out and it will be delivered this week.

This is a factory new Superior engine. I received my RV-9 empennage kit in May 2022 and quick build wings in fuselage in early October. I'm still a ways away from actually mounting the engine.

Assembling an engine for me is a once in a lifetime experience. I've owned my RV-6 since 2001 and have never seen a detailed engine build, much less put hands on wrenches and made it happen. I have a greater appreciation of the knowledge and experience that goes into assembling an engine. I want to send my appreciation to all the staff at Aero Sport Power for their hospitality and sharing.



At every step the instructor checked my work and at other intervals another technician also checked our work. When running the engine, the technician ran the first two 1-hour tests and a second technician ran a half-hour verification test. I

## RV-12 Update & Tool Crib

-Bob Collins

The RV-12iS project is in the home stretch now that the avionics kit arrived in May. I had all summer to race to get it installed and, hopefully, have enough summer heat left to tackle at last the back window if not the canopy.



And for a time, it looked like it would hold. In September, my wife Carolie, who never goes to the hangar, agreed to be the block-of-wood holder while I drilled the acrylic. The temperature was about 92 degrees. I decided to read Section 5 of the KIS one more time just to refresh my memory since it's been more than 10 years since I'd drilled the canopy for the RV-7A.

That's when a sentence or two that I hadn't seen before made its appearance. "Do not attempt to enlarge holes with the Plexiglas bits. It will result in cracks," it said. On an RV-12iS, the initial #40 holes into the rollbar are tapped, screwed down, and then each hole is drilled to #36. Additionally, the #30 holes are enlarged to #27.

Van's suggested a step drill or a reamer for this process but I don't like the idea of step drills for precision drilling. Long

story short: I aborted the mission and lost the heat of summer, but at least now I own some hard-to-find reamers.

While I wait for summer's return, I'm finishing up avionics, slowed by the near endless parade of Van's service bulletins, and I'm going back to finish things I either missed the first time, or just plain bugged. There are two AMP connector housing assemblies on each wing root that connect with two on the side of each side of the fuselage. Their "male parts" are easily broken and so it is that I broke them on the initial wing fitting. Also, I screwed up one of the 8 chambers when I first installed the connectors. "No problem," I thought at the time, I'll just be sure I move the corresponding wire when it's time to build the fuselage wiring.

I didn't calculate at the time that I'd get the harness nicely built with all connectors perfectly installed by the good folks at SteinAir. So, I ordered new shells but I still had to get the AMP pins out. How hard could that be? Hard. There are two prongs on each side and all you've got to do is insert a strong piece of something on each side to compress the prongs and then you just pull the wire out.

Amazon sells a series of extraction "tools" for about \$12 and all you have to do is fumble through one of the 40 or 50 gizmos until you find one that fits. It works great as long as your mission is to throw \$12 away, not removing AMP pins. For that, actually, SteinAir uses a tool from DigiKey (which Stein doesn't sell) that goes for \$157. Ridiculous.

So, I continued to look for other options. Tony Kirk at Van's suggested a "tool" he made which involved cutting the top of a soup can, trimming it to the twice the length of the pin (.791), fold it over, and then trim the height to the height of the pin (.146). If you're seeing a lot of blood in this description, you've probably built an airplane before. Basically, you're making a very tiny razor blade.



Long story short: I now own a \$157 pin extractor. And, for the record, it works great and doesn't draw blood.

RV building is full of tool building for things you might use once or twice. Also, on the RV-12iS there are a series of very expensive CherryMax rivets used in the center section – something like 48 holes for which Van's, being Van's, sends you exactly 48 CherryMax rivets, half of which are going to break off too early with your regular pull riveter. Even though Section 5 says "you don't need the fancy CherryMax puller", you need the fancy CherryMax rivet puller.

Guess who owns one? Me. And over the years it has been shipped all over the country to people who didn't want to spend \$100 to set 48 rivets.

And that is what was behind my idea to goose up the Twin Cities RV Builders Tool crib, which he mentioned in a newsletter earlier in the year and in response to which I got exactly [checks notes] no response.

True, we love our tools but unless we're building multiple airplanes on an ongoing basis, many are of the "use once" variety.

Why not lend them out to other members? Personally, I'd like to find someone who has a set of scales I can borrow. Maybe you've found yourself in the situations I described above and caved and bought the tool.

If you have, send me a list of what you've got and let's provide some new value for members coming along who are building RVs. [Bcollinsrv7a@centurylink.net](mailto:bcollinsrv7a@centurylink.net).

Or you can drop it off when you swing by to pick up my engine hoist!!!

## Chuck Jasicki's RV-7

- Frank Huber

Chuck has been making great progress on his RV-7 project at his hangar at the Anoka County Airport.



He has all the structures completed, the canopy fitted, engine mounted and everything hooked up, Vertical Power electrical system is 99% complete, all electronic boxes mounted and hooked up to the completed instrument panel. He has to finish the baffle and mount it before he can put the Molex ends on the wiring for the injectors and top mounted coil.



The prop and spinner have been mounted and the top cowl is fit. He is working on the bottom cowl and the rest of the fiberglass work. Chuck is hoping to mount the wings in early January, before his tax season starts up, as he runs his tax and finance business and gets very busy during tax season.



Chuck is running the IO-360-A1B6, 200 hp angle valve. He changed the sump over to the Superior cold air sump so it should provide slightly higher than 200hp. He is using the SDS electronic ignition and fuel injection system on his engine. He has two alternators powering his electrical system for redundancy for the SDS system. He had dual Advanced Flight Systems AF-5600 Displays with a Garmin G-5 backup EFIS, a Garmin 650, a Dynon backup radio and autopilot. Chuck really enjoyed doing all the wiring for his project. As you can see from the pictures, his work is impeccable. He plans to paint his aircraft in a portable paint booth he has at his hangar. He is working towards having the aircraft completed and flying next year. With the high level of craftsmanship of his project, Chuck will likely be a contender for an award at Air Venture



## ***NEWS FLASH!!!!***

*As we go to press, Nancy Burkholder's brand new Aerosport engine just arrived. It looks SO nice!!!!*



## **Twin Cities RV Builders December Meeting**

**Saturday, December 10, 2022, 10:00 am - noonish**  
**Doug and Paul's hangar, 41C Mooney Lane, Lake Elmo Airport**

Do you know it has been three years since our last "RV Roundtable?" It's time to kick around some ideas, ask some questions, and learn from two of our most knowledgeable RV gurus!



**Pete Howell** first flew his RV-9A in 2006 and is coming up on 2700 hours total time (and on the original engine!) Pete will discuss his 16 years of RV traveling (all VFR by the way) and his plan to keep that Lycoming humming along.



**Tom Berge** needs no introduction. Tom has been our resident tech counselor, CFI, and all around RV expert for many, many years. For you new folks, Tom's full-time job is conducting inspections, ferrying RVs all over the country and introducing new pilots to the fun of RV flying. Tom will discuss a recent pre-buy inspection (with lots of "issues") plus answer any of your questions. For starters topics like: construction issues, paint, avionics, props, canopies, cowlings, ... you name it!!

Coffee, juice, "low-cal" goodies as usual.

AND.... door prizes!!!!

**Directions:** From I-94 go north on Manning Avenue (County Road 15) about 3 miles. Turn right at the second entrance to Lake Elmo airport just before the railroad tracks. Go east past Lake Elmo Aero and follow the road to the left. Go just past the old Civil Air Patrol hangar on the right. Then turn right on Mooney Lane. We are the fourth hangar on the left (41C.) **Call Doug if lost: 651-398-1184.**

See you there!!!!!! **BTW, please park on the hard surface!!!** (Restrooms are at Lake Elmo Aero)