The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

April 2019

Editors

Phil Corman & Jim Price

Contributors

Bruce Jaeger | Bob Kromer | Tom Rouch | Paul Loewen | Geoff Lee | Linda Corman

Departments

Features

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From the Editor

Phil Corman

Spring Cleaning

Except for those of us who live in places that don't suffer too much from harsh winters, most owners have done less flying over the winter than they do the rest of the year. For this reason, we recommend an "extra special" preflight walk around after the long hard winter.

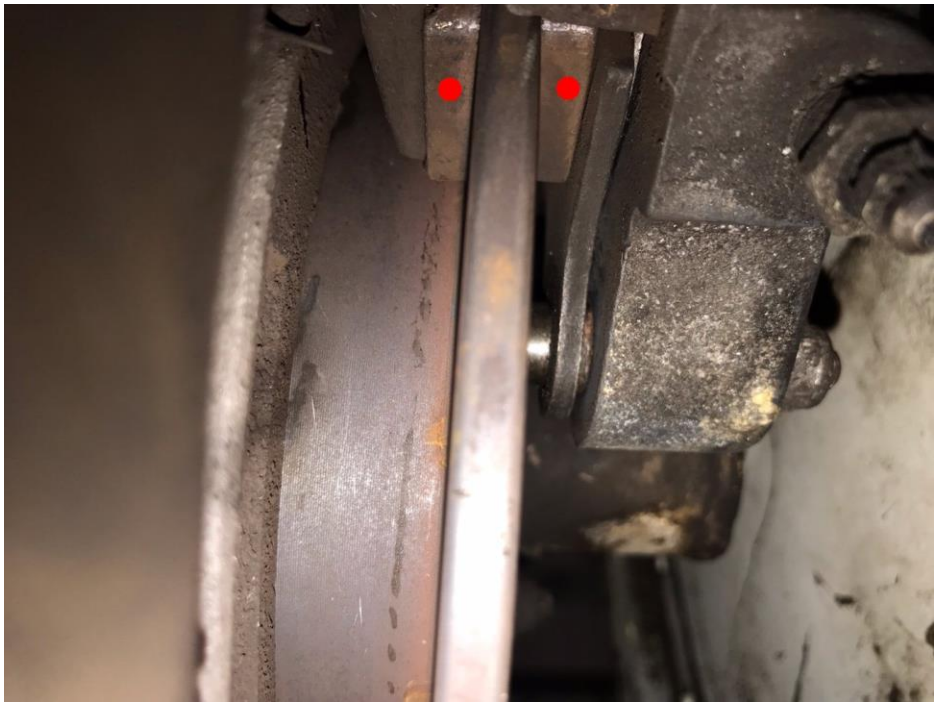
Tires

Check and inflate your tires to a few pounds over the recommended PSI. It's better to be slightly higher on the PSI than slightly lower. While you are at it, inspect the tread and overall condition of the rubber on your tires. If any fabric is showing, your tires are not airworthy. If you have bald spots, now is probably a good time to replace those.

Johnson Bar

Check the condition of the latches on your Johnson Bar. Over time, they become "ovoid" (I had all winter to learn many new words), and your J-Bar could slip out. This is a common wear problem and is easily addressed. If you need one, LASAR sells a replacement that will outlast your original.

Brakes



Check the wear on your brake pads. You may need a flashlight and will definitely need to get down on your knees to inspect for wear. While you are at it, check the health and level of your brake fluid. The brake fluid in my Eagle was so old, it congealed and became somewhat ineffective.

Rodents & Birds

Your Mooney may have been sitting for a while and accumulated some “fauna squatters”. By this we mean mice or birds. The two most obvious places are up front in your cooling air intakes and in your tail cone. We once had a bird nest after only 2 days parked on the ramp at Prescott, Arizona. Therefore, a winter in a hangar or on the ramp is plenty of time for those nesters. The other place to investigate is in the tail cone. You will need a flashlight to thoroughly inspect here, but it’s worth it. Mice love this location.

Undiscovered nests can result in serious damage by blocking cooling airflow to the cylinders or the oil cooler. Also, nesting materials can trap water and debris in the wing or fuselage structures, and possibly promote corrosion. Starlings are known as particularly untidy nesters and will use all sorts of debris to build their nests.

Tom Rouch of Top Gun Aviation in Stockton, California says that birds usually go as far back into the cowl as possible when building a nest. "On many engines, it puts the nest right at the oil cooler...and the nest cuts the airflow through the fins, causing high oil temperatures." Rouch has

seen nests removed from Mooney tail cones that contained so much material that they would fill a grocery bag.

"While we frequently remove eggs and even slightly cooked chicks," says Rouch. "I think the most bizarre [bird incident] was when my mechanics were pulling an airplane in that had come from the Bay Area, and we all could hear a chirping sound. We found four live chicks in the tail cone."

So much for that pilot's preflight inspection.

Oil

If you have not flown much over the winter, your crankcase probably developed moisture which developed oxide. This tends to make your oil acidic. You already know you should be changing your oil regularly, based on the hours flown, but this Spring Check is for oil that may be calendar old. If it's more than 3 calendar months, consider changing your oil. It's probably the cheapest and best thing you can do for your engine after a long, less used winter.

Rod Ends and Flight Control Hinges

Since your Mooney has been sitting in the cold and damp, consider using Tri-Flow Lubricant on all rod ends and light 3-in-1 oil on flight control hinges. While you are down on your knees, why not put some grease on those Zerk Fittings. This is all easy and full of good Zen and Mooney Maintenace Therapy. Your Mooney will thank you.

Battery

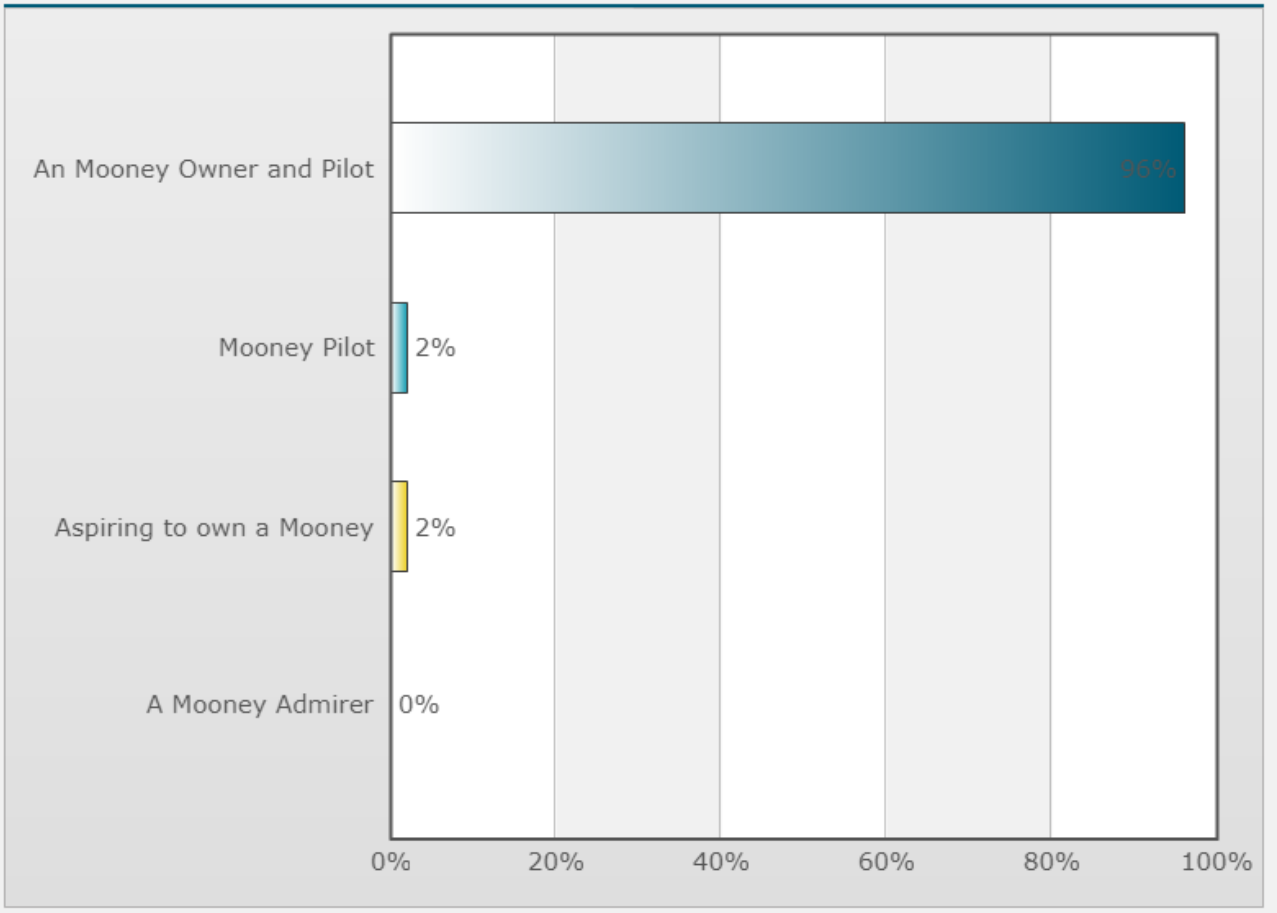
Got a lead acid battery? Use a hydrometer battery tester to check on the cells. If you have a sealed battery, then it's a little more complicated. Follow the Battery POH for the test, but it is essentially to put a known load on the battery and see if you are getting close to the number of aHours expected. If these tests are not satisfactory, now would be a good time to replace those worn down cells.

Note: You can prolong battery life with a BatteryMinder. It's a great investment. Ensure that you get one for airplanes, not cars, and for the specific type of battery you have. This is crucial.

As a Reader of The Mooney Flyer, I am:

Poll created by Phil Corman on 02/01/2019

Poll Results



Next month's poll:"My Mooney Flying Techniques are:" **CLICK HERE** to vote.

PROP SUPER CENTER

RAM AIRCRAFT, LP

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Mooney Props

TOP PROP

BUILT ON HONOR

HARTZELL

PERFORMANCE CONVERSIONS

Airplane Eligibility	Prop Style	STC #
M20A-J	2 bladed Scimitar	SA0241CH-D
M20C, D, E, F, G	3 bladed	SA4529NM
M20J	3 bladed	SA4529NM
M20K	3 bladed	SA1505GL
M20R	3 bladed Scimitar	SA02004CH
M20R, S, TN	3 bladed Scimitar	SA03024CH
M20R, S, TN	3 bladed Composite	SA02482CH

McCAULEY

BLACKMAC

Airplane Eligibility	Prop Style	Part #
M20A-G	3 bladed Scimitar	PL60152
M20C, D, G	3 bladed Scimitar	PL60154
M20E, F	3 bladed Scimitar	PL60149
M20J	3 bladed Scimitar	PL60136
M20K	3 bladed Scimitar	PL60199
M20R	2 bladed	M20R241-01
M20R	3 bladed	M20R418-01
M20S	2 bladed	M20S239-01

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We asked Bob Kromer about prohibited Slipping in some Mooneys. Here's his fantastic response: On the original long body (the TLS/Bravo), development and certification flight test program demonstrated occasional aerodynamic buffeting from the horizontal tail and elevator during near and full rudder deflection sideslip maneuvers. This characteristic was most pronounced with the gear down and flaps full down. The buffeting was felt in the control wheel during the maneuver. Our opinion was the buffeting was generated from airflow behind the trailing edge of the flaps impinging on the horizontal tail. We did not feel this was indicative of an actual tail stall, but the conservative and correct decision was made to prohibit sideslips in the long bodies due to the possibility of aerodynamic buffeting from the horizontal tail. Mooney did not want a customer to be startled by it on approach. So the decision was reached to prohibit sideslips, thus avoiding the buffeting issue.

Hope all is well with you. Your publication continues to amaze with its content and professionalism. Excellent work. You can tell it comes from a real passion inside you.

Great issue as always.

Here's a bit of support to add to what Tom wrote on restarting a stored engine. I rather recently did that.

Tom,

First, that "Mooney Miser" Aero Seal job you did for me still works, no blue bottoms of the wings. Has anyone lately tried to get that STC or duplicate the effort? I had a medical problem. Well, I still have with the paperwork, but I, my doctors and Reno AME agree. I am fit to fly. Even if I am a UFO. Too long a story to go into. But I'm wearing a 24 hour monitor as I Write, to prove it to OK City. The last thing they want me to send in.

I had a temporary medical last fall, now gone. But while had that I got an Annual on my M-20D that had been resting a few years. It was oiled up and pretty well stored.

First, it was not dust I should have kept off of the plane, it was the pigeon droppings. Good thing they used Imron when I had it painted. A water hose and brush and a little fingernail scraping took

those off and restored the finish to like new after some Meguires. It's resting in a Beckwourth hangar now for a little while longer; Visquene all over it. I have Decon or the equivalent under the area of the gear now as well as an electronic mouse scare device. At the Annual all of the wing plates had to come off to get the mouse nests out. Something to warn about. I have two words to reveal depending on geography. If the plane to be stored is in Southern California that word is "Barstow." If North, try “Reno”, but “Beckwourth” is good, too. That all depends on hangar availability, but a dry climate sure is kind to engines. Even if you lived in Boston, I'd suggest Barstow, or maybe Tucson. I had no perceptible cylinder rust.

That was not enough. A friend had converted an automotive pressure brake bleeder into an engine pre-oiler. Ray Craft - I bought the Mooney from him. He was a Sports Car and race mechanic who built Merlins for Packard during the war. We lost him last week on his 95th Birthday. A near 60 year friendship. I borrowed it and washed it out thoroughly with solvent, letting it hang upside down to dry for a week. Then, hooking it to the oil pressure gauge line, ran a quart of Aero Shell 15W50 through the engine before turning the prop. Some spray into the cylinders and crankcase followed by hand rotation without the plugs was next. Fresh fuel and it started quickly and ran smoothly. After it was warm a compression test had all four reading equal and where they were before storage. This is a 500 hour Factory Reman engine. A few hours of flight and it still seems very good.

I had a temporary problem getting the gear to lock UP! It is likely that the leather boot in the gear became stiff. It got better after some workout on jacks. I'm going to put some Neatsfoot oil on it if it persists at all.

My DME display went out. It's a Narco 890 orphan. I found an outfit in PA with parts who are now fixing it. If it were not bedtime, I'd pass the data along, but will later.

A friend uses a vacuum cleaner on his oil filler after every flight to remove water vapor. Luscombe and a Bonanza. That may be a bit excessive.

Hope to visit in the Mooney when it warms up. The FAA is slow. It will take them about a month to get me an approval if they decide I'm OK.

Lin M

Another Great Issue. Loved the Mooney Historical story especially.
Craig H

You gentlemen, do a great job with our magazine. I know, from personal experience, how hard it is to put something together each and every month. (And mine was only a club newsletter). I wish we could get a thousand readers to donate five dollars every month. As I said, you do a great job, and The Mooney Flyer is my favorite magazine.

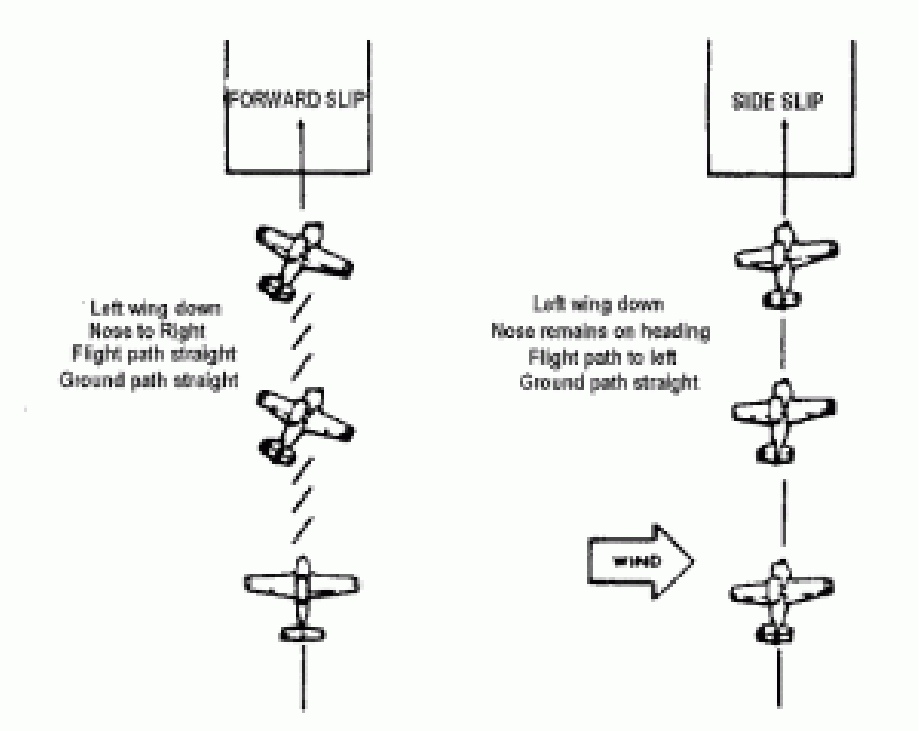
Sincerely, John P

Bob
Kromer

Slipping a Mooney

I went up to the attic last night and dug through my old flight test data sheets from my Engineering Flight Test days at the factory. There, I found the observed data for the slip tests that I did. I looked over the data, and from those test results, here is some additional information that might help answer some of the questions that have been raised.

1. The data shows that it's the airplanes that require lots of nose up trim for landing that are the most prone to experiencing the tail buffeting condition we talked about earlier when aggressively slipping at or below 85 KIAS. We simply could not get the M20J prototype to buffet in a full rudder sideslip at any CG and flap condition tested, down to 1.1 Vstall. From those test results, I think it is safe to say that the Pre-J models and the J model itself, will not experience any tail buffeting/partial airflow separation over the horizontal tail in an aggressive sideslip maneuver. So, the J and Pre-J models should be okay for slipping on approach.
It's not comfortable, and in my humble opinion, it's not the way to fly a high performance airplane like a Mooney, but it's safe.



2. It's the K models (and variations thereof), and the "long body" models that showed the possibility of inducing a partial horizontal tail airflow separation in an aggressive sideslip condition. Buffeting was experienced in both the Mooney/Porsche and the M20K model prototypes in the landing approach configuration. These are the airplanes that require almost full (if not full) nose up trim for a hands off, trimmed condition on final approach. (Sometime, try running your pitch trim to the full nose up position on the ground and look at the negative angle of attack of the horizontal tail. It's quite impressive). It's this high negative angle of attack with full nose up trim that puts the airflow over the horizontal tail at a fairly extreme condition.

3. Extending the flaps adds to the downwash angle over the horizontal tail, making the negative angle of attack over the horizontal tail even greater. Mooneys spend a lot of their time at or near forward CG. As the CG moves forward the need for more nose up trim on the approach is required

for trimmed flight. Lower airspeed also requires more nose up trim. So the worse condition for aggressive slipping in the K and up models is slow, forward CG, full flaps – just like we are when configured for landing. Remember, anything that requires the need for more nose up trim, adds to the possibility of experiencing horizontal tail buffeting when aggressively slipping on the approach.

4. Aggressive slipping does strange things to the local airflow over the horizontal tail. The bottom line is this: The horizontal tail will see a greater negative angle of attack in the slip maneuver. So, if you add an aggressive slip to the conditions noted in #3 above, you can experience the partial airflow separation over the horizontal tail and the resulting buffeting that we found in the flight tests. The Mooney is such a good design that there is no danger here – just a buffet in the control wheel from the elevator, a slight nose down pitching moment and a little loss of elevator effectiveness. However, I want to emphasize that THIS IS NO PLACE TO BE FLYING. If you add a little ice to the leading edge of the horizontal tail, or a gusty crosswind which requires heavy elevator input, then look out! That minor buffeting and airflow separation can get worse.

5. Someone asked, “What would happen to an airplane if the horizontal tail completely stalled?” The answer is, bad news. A sharp nose down pitching moment and a loss of elevator control would result. With increased airspeed as a result of the nose down pitch, the tail might start flying again and elevator effectiveness might be restored. But, we're talking a loss of aircraft control here; a pilot's worst nightmare. How much altitude might be lost in this loss of control experience? It’s just a guess, but it’s around 2,000 feet.

6. Incidentally, ground effect helps the condition. That’s because the downwash angle over the horizontal tail is slightly reduced with the wing flaps in ground effect. This reduces the local negative angle of attack of the air flowing over the horizontal tail. That’s a good thing when it comes to stalling the horizontal tail.

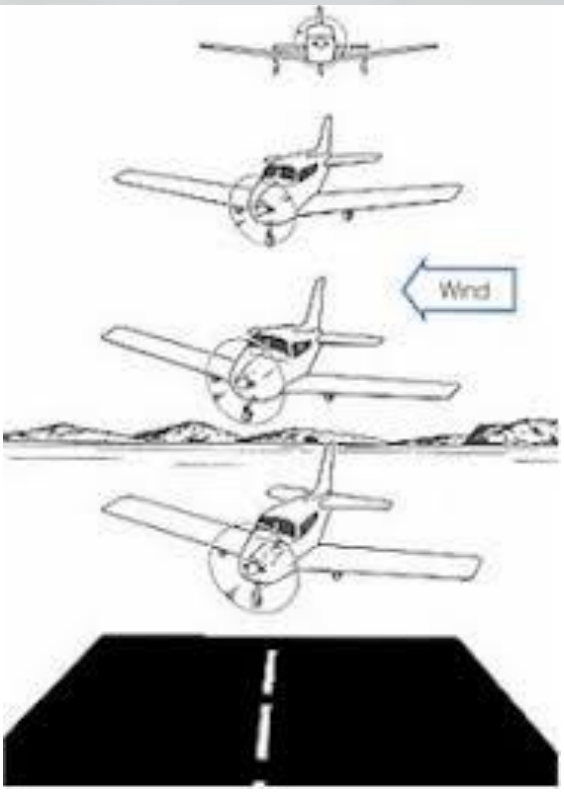
The bottom line: Aggressive slips in your Pre-J or J should be okay from a safety of flight viewpoint. K models and up, the margins here are thinner. Chances are you might experience some tail buffeting in the K models and up when aggressively slipping and that’s not a place to be. From my flight test experience, I would avoid aggressive slips on approach in the K's and up. The Mooney is a wonderful design, but all designs have their limits.

I certainly don't have all the answers and would never claim to be an "expert" or tell anyone how they need to fly their airplanes. However, maybe some of my engineering flight test experiences at Mooney will help you better understand your airplanes. I've got lots of good data in my attic. Hope to share more of it with you in the future.

Phil Corman

Co-Editor

SPEED BRAKES



Mooneys are inherently fast machines. We love this for cruise, but have developed some techniques for slowing them down or losing altitude without gaining excessive airspeed.

When I owned my M20C, it was easy to lose excess altitude on final without gaining airspeed. A forward slip did the trick every time.

To do the forward slip, put your Mooney into a bank with the ailerons. Then hold the runway with opposite rudder. The steeper your bank, the higher your descent rate. To recover, simply release the rudder and level with aileron control.

The trouble with slips in Mooneys begins with the longer body Mooneys. It can cause a separation of the airflow over the horizontal stabilizer so slips aren't as applicable in those models [See Bob Kromer's article in this issue on this topic].

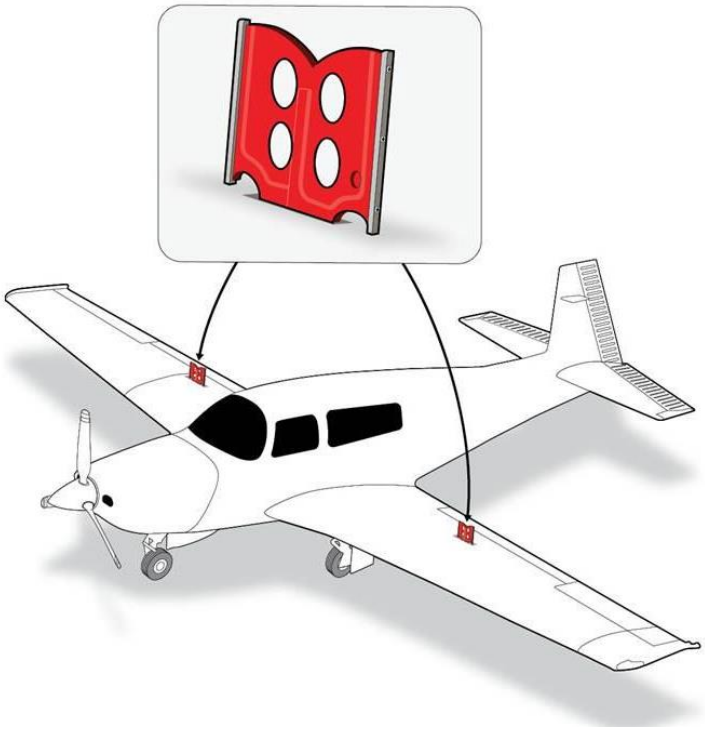
When else should you use your Speed Brakes? "Never", says Don.

An alternative to losing altitude without gaining excessive airspeed is to deploy your Speed brakes, if your Mooney is so equipped. These things are simple to operate and can be deployed at any airspeed. If you are high and/or slightly fast on final, you can deploy the speed brakes to remedy your situation. If you are within 200' AGL, we don't recommend deploying them as your rate of descent will increase and it may be difficult to remedy the situation in time. In that case, a go-around is always advised.

Speed Brakes are useful in many situations. Master CFII, Don Kaye, suggests the following situations where they make sense.

1. Slam dunks given by ATC

2. When asked by ATC to "keep your speed up", no sooner nor later than 5 miles from the airport



3. For a steep approach to an airport with an obstacle, for better slope control without speed increase

4. To make a quick correction to an approach that has become unstabilized for any reason

5. To slow down to gear speed in choppy conditions before lowering the gear which is to be used as a rudder to smooth the ride

6. To assist in slowing down the plane when necessary at other times

7. On a "dive and drive" instrument non precision approach when not in icing conditions. For the TLS the configuration for descent is 15" MP, Speed Brakes and Gear for a performance of 105 knots and 1000 ft/ min on the descent

8. Immediately AFTER touchdown on a normal landing, but only if the switch is located on the yoke.

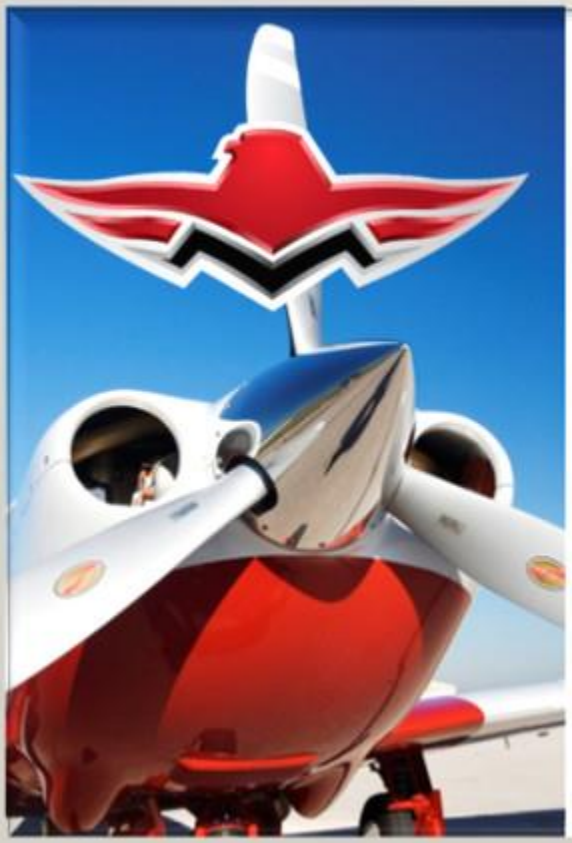
Lately, we have been flying into busy Class C airports such as San Jose, CA (KSJC). There are 2 parallel runways that are swarming with Boeing and Airbus machines. Often, the tower will ask us to give them our best speed to the runway. We are typically above pattern and don't have a lot of time, so the first thing we do is deploy the Speed Brakes and as soon as we reach "Gear Transition Down" speed, 140kts, we drop the gear. Once the gear is down and locked, we can increase our airspeed up to maximum gear extended speed (166kts), which gives us plenty of "best rate to the

runway". On short final, we deploy the Speed Brakes again and touch down so that we can quickly exit the runway.

Mooniacs tell us they utilize their speed brakes after touchdown to slow their Mooney and keep it stuck to the runway. First, the #1 way to have your Mooney stick to the runway when landing is to hear the stall warning. Deploying your speedbrakes may help slow your bird down for about the first 10kts of speed reduction. Others retract their flaps to keep it on the runway. Just don't retract your gear by mistake!

Another undocumented feature of Speed Brakes is that if you deploy them in turbulence, it actually reduces the effects in the cabin. Try it next time you find yourself in moderate turbulence. It helps.

Slips and Speed Brakes are great tools in your pilot handbag, but should be used as just that, "tools". Don't consistently rely upon or use these tools to correct for sloppy flying or not planning in advance the descent to land. The best choice is to fly her properly and use these tools when necessary.



The Mooney Flyer has a comprehensive list of Mooney Service Centers, plus shops and mechanics that are great when it comes to the Mooney. You can find these at themooneyflyer.com by clicking on the "MOONEY FLYER STUFF" drop down menu and selecting "TECH-MECH".

If you would like your favorite shop or mechanic added to the list, send us an email at themooneyflyer@gmail.com

Hearing Loss & Dementia

Hearing loss, if ignored and untreated, can lead to a decline in the ability to think, reason or remember.

Jim Price
Co-Editor

From 1970 – 71, I attended USAF pilot training. The Flight Surgeons and instructor pilots warned us that we needed to protect our hearing. One trip to the ramp, which was filled with the constant shrill of jet engines, and we knew this warning was serious.

The first six months of pilot training were spent training in the T-37 or "The Tweet". Its unique high-pitched engine noise earned it the dubious nickname, "The 6,000-pound dog whistle", and it did a number on many an ear. The Air Force provided ear muff type ear protection to wear on the ramp while performing the preflight. Before we put on our helmets, we inserted foam ear plugs.

The second half of my pilot training experience was in the T-38, and then it was on to Vietnam in the C-7A Caribou. I tried my best to protect my hearing with foam ear plugs, but I guess my best wasn't enough. Upon returning from Vietnam, I underwent my annual Air Force flight physical. I did well until the hearing test. As the tones approached 4,000 dB and higher, the technician said, "Come on. Can't you hear that?"

I replied, "I can't tell if it's the test tone or the dang ringing in my ears."

After just two years of flying, the cilia in my inner ear, (the little hairs that detect sounds), were slowly dying an ignominious death, never to be regenerated again.

Hearing Loss, Untreated

Some may think that hearing loss is a relatively inconsequential part of aging. However, regardless of your age, hearing loss, if ignored and untreated, can lead to a decline in the ability to think, reason or remember.

Some may think that hearing loss is a relatively inconsequential part of aging. However, regardless of your age, hearing loss, if ignored and untreated, can lead to a decline in the ability to think, reason or remember.

Those witmild hearing impairmentsnt are nearly twice as likely to develop dementia or Alzheimer's disease, compared with those with typical hearing. The risk increases threefold for those with moderate hearing loss, and fivefold for those with a severe impairment.

Why is that? It may have something to do with “cognitive overload”. When you put a lot of effort into comprehending what is taking place around you, it puts more and more stress on the brain. This process employs brain resources that would otherwise be available for encoding what you hear into your memory.

In addition, those who are hard of hearing are less likely to want to socialize in groups or eat in restaurants. “Social isolation” has long been recognized as a risk factor for cognitive decline and dementia.

Am I Doomed?

Just because you have a hearing loss, that doesn’t mean that you’re going to have dementia or Alzheimer’s. There are people with severe hearing loss that are sharp as a tack well into their nineties. You might beat the odds and become the envy of all Senior Citizens, or you could end up in a memory care facility.

Hearing Aids

After 27 years of professional flying, I retired from the Reserves and the Airlines. Soon thereafter, I noticed an audiologist’s full-page ad that my wife had strategically left on the kitchen counter. “What’s this?”, I asked.

“You ask me to repeat myself . . . a lot. Let’s visit the audiologist.”

I made an appointment, was fitted with hearing aids, and discovered sounds that I had not heard for many years. I no longer felt isolated when in a noisy environment like a restaurant, and I annoy my wife just a little bit less.

Mitigating the Risk

Repeated exposure to noise that's more than 85 decibels can lead to permanent hearing loss. To put noise in perspective, a Mooney in climb power generates around 114 dB.

Passive headsets typically reduce noise levels by 10-20 dB. They utilize gel ear seals and clamp force to prevent noise from penetrating the headset. ANR Headsets like those from Bose, Lightspeed, and David Clark can dramatically reduce the noise level by 30 dB or more.

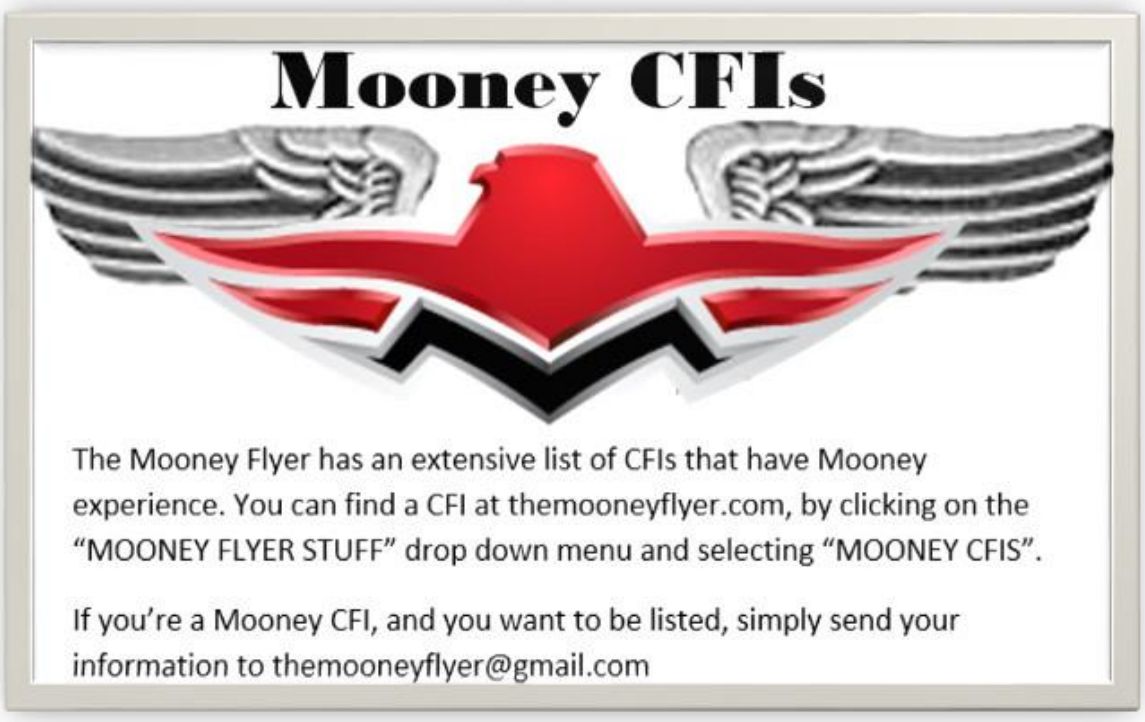
To protect your hearing, and the hearing of your passengers, buy the best headset you can afford and wear it on every flight. It will make flying safer and more comfortable, but it's also an important investment in your long-term health.

Hearing Loss?

If you already have hearing loss, get a hearing evaluation. If you need hearing aids, bite the bullet, save your cognitive skills and improve your life.

You can learn more about Hearing Loss and Dementia / Alzheimer's at:

Hearing Health Foundation Beltone AARP NCBI WebMD



Ceiling and Visibility

Whether you're an IFR or VFR pilot, if you don't understand weather, a low ceiling or dismal visibility can get you into some serious trouble.

The development of the airplane in World War I, encouraged the development of the Air Mail Service. It started with Army pilots in May 1918.

By August 1918, the Post Office Department had taken over the entire operation, furnishing its own equipment and personnel.

Just like today's FedEx and UPS pilots, the early airmail flights were flown at night, so that the packages could be delivered the next day. Many of these early airmail pilots were WWI aviators. Although few had seen combat, flying mail could sometimes be just as deadly. According to one pilot, the fledgling U.S. Airmail Service was "pretty much a suicide club" because between 1918-1927, 35 Post Office pilots would die because of unpredictable weather, inexperience, or unreliable equipment.

To fight off disorientation, Wesley Smith used a half-empty whiskey bottle as an attitude indicator. The tilt of the whiskey would show whether his wings were level or not.

J. Dean Hill, crossed the Alleghenies by first lighting a long cigar, then climbing above the cloud deck. Hill leisurely puffed the stogie until only two unburned inches remained. By that time, he calculated that it was safe to descend to the landing field in Bellefonte, PA. Hill jokingly claimed his cigar was the first instrument to aid commercial fliers.

William E. Kline poses next to an airmail route beacon equipped with a cut off sun valve on October 17, 1924.

To navigate, these pilots followed a network of federally operated acetylene powered rotating beacon towers. These were visible for up to 9 miles and were installed every 3 miles between landing fields, from Chicago to Cheyenne. Most of these lights had sun valves which automatically turned the lights on at night and extinguished them at sunrise.

The pilots avoided weather by flying at low altitudes and illuminated diversion fields were strategically placed along the routes. When the weather deteriorated, the pilot could be safely on the ground in less than ten minutes.

As the airline industry emerged, the airmail low-level method didn't work. The airlines flew higher and by the 1930's the airlines had their own meteorological departments with advances in weather observation, weather data dissemination, and forecasting.

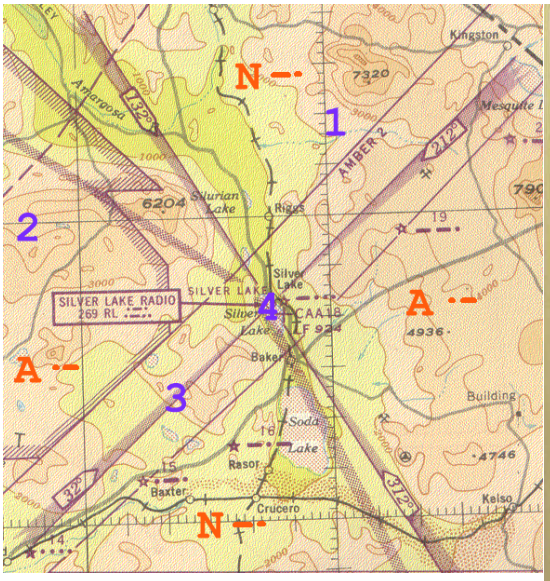
Instrument Flight

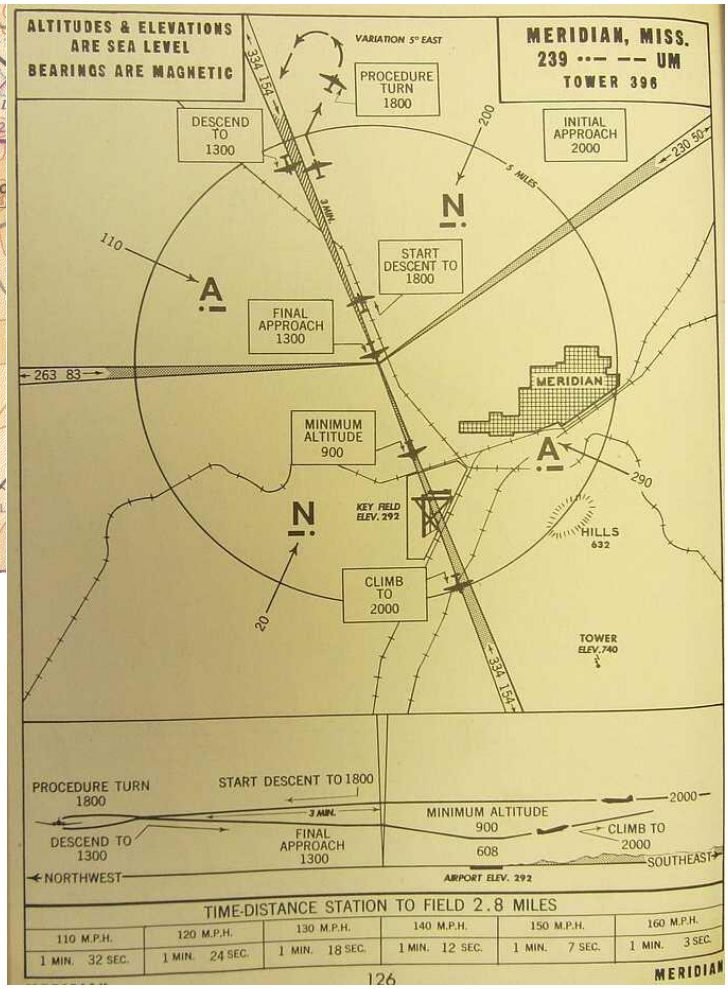
On 24 September 1929, the first blind takeoff and landing occurred at Mitchel Field, Garden City, NY in a Consolidated NY-2 biplane piloted by Lt. James Doolittle. Lt Benjamin Kelsey was the safety pilot.

Doolittle explained, "We both got into the plane, and the hood over my cockpit was tightly closed. I taxied out and took off toward the west in a gradual climb. At about 1,000 feet, I leveled off and made a 180-degree turn to the left, flew several miles, then made another left turn. The airplane was now properly lined up on the west leg of the Mitchel range, so I started a gradual descent, I leveled off at 200 feet and flew level until I passed the fan marker at the east end of the field. From this point I flew the plane down to the ground using the instrument landing procedure we had developed. The whole flight lasted only 15 minutes.

So far as I know, this was the first time an airplane had taken off, flown over a set course, and landed by instruments alone."

In the mid-1930s, the Low-Frequency Radio Range (LFR) system was established, approaches were developed, and instrument flight grew rapidly as a practical reality.





On the down side, the LFR had only four course directions per station, was sensitive to atmospheric and other types of interference and aberrations, and required pilots to listen for hours to an annoying monotonous beep, or a faint stream of Morse codes, often embedded in background "static". Its eventual replacement was the VHF band VOR in the 1950s.

Standards

The increase in instrument flying led to the standardization of ceiling and visibility measurements. Those measurements are still in use today.

Visibility: The maximum distance in a specific direction at with objects can be seen and identified.

Prevailing Visibility: This is what we see in METAR reports. It's the maximum visibility figure valid for half of all directions around an observer. Automated stations like ASOS estimate prevailing visibility with a spot check of a one-meter volume of air at the sensors. In much of the world, prevailing visibility is taken the old-fashioned way, by looking all around at the horizon.

Ceiling: The lowest height above ground level, at which a cloud layer covers more than half the sky. This is defined by the base (the undersurface) of each cloud layer. However, if the sky is half covered with stratus at 500 feet, and a higher 1/8 layer is at 2,000 feet, they consider the ceiling to

be 2,000 feet AGL. In this example, the clouds are considered to cover 5/8 of the sky, even though it can't be observed.

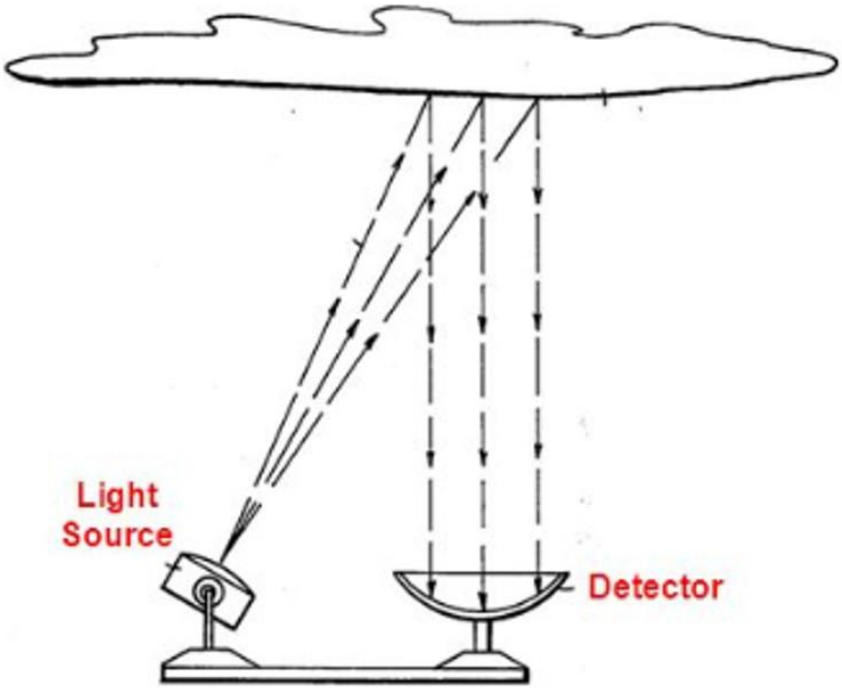
METAR clouds are reported in AGL, but in area forecasts and most PIREPs, cloud heights are in MSL.

Vertical visibility: When the sky is blocked by fog, snow, or rain, it's "zero zero", or zero ceiling and zero visibility. This was formerly referred to as W0X0F and pronounced "wocks-off". Now, it's encoded as "0SM FG VV000". I still like "wocks-off".

How Ceiling is Measured

Until the 1950s, pilot balloons with a known ascent rate, were released and timed with a stopwatch. This technology was replaced by the rotating beam ceilometer.

AerM 2c Julia Murray launches a weather balloon (1945)

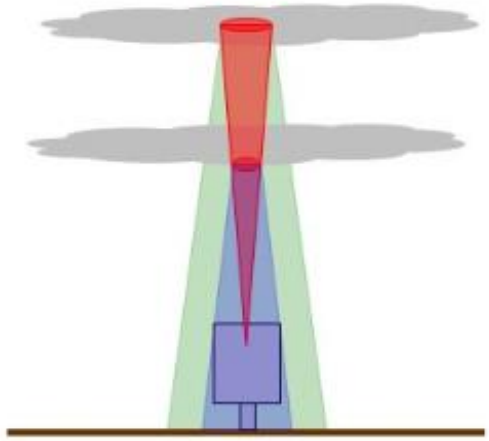


Rotating Beam Ceilometer

The rotating beam ceilometer, which is still used in underdeveloped countries and smaller airports, was replaced in the early 1990s with the laser beam ceilometer.

Both the rotating beam ceilometer and the laser beam ceilometer only measure the ceiling that exists within a vertical beam directly above the sensor. Before 2000, many stations had a human observer. He or she could assemble the spot measurements and piece together an accurate report. Now, with automated stations like ASOS, just the spot reading and its trend over the past hour are reported.

Laser Beam Ceilometer



Because the ceilometer can pick up any particle in the air, such as dust, precipitation, smoke, etc., it will give occasional false readings. As an example, depending on the threshold used, falling diamond dust (ice crystals), may cause the ceilometer to report a cloud height of zero, even though the sky is clear.

The range of the ceilometer is up to 25,000 feet (7,600 m) depending on the model. Clouds above that height are not detectable by automated stations.

Airports with ATIS get their information from the ASOS system. So, an airport can technically have an ATIS and an ASOS.

The ASOS systems provide continuous observations necessary to generate a routine weather report (METAR). They're more sophisticated than AWOS and designed to provide the necessary information to generate weather forecasts (TAF). ASOS is composed of a standard suite of weather sensors.

ASOS can determine the type and intensity of precipitation (rain, snow, freezing rain), thunderstorms and obstructions to visibility such as fog and haze.

Almost all AWOS stations are automated and transmit a 20- to 30-second weather message, which is updated each minute. These stations consist of a suite of weather sensors of many different configurations and capabilities:

- AWOS-A — Only reports the altimeter setting.
- AWOS-AV — Altimeter and visibility.
- AWOS-1 — Altimeter, wind data (referenced to magnetic north), temperature, dew point and density altitude.
- AWOS-2 — Information provided by AWOS-1 plus visibility.
- AWOS-3 — Information provided by AWOS-2 plus cloud/ceiling data.
- AWOS-3P — Same as AWOS-3 and adds a precipitation type identification sensor.
- AWOS-3P/T — Same as AWOS-3P and adds thunderstorm/lightning reporting.
- AWOS-3T — Same as AWOS-3 and adds thunderstorm/lightning reporting.
- AWOS-4 — Contains all the AWOS-3 system sensors, plus precipitation occurrence, type and accumulation, freezing rain, thunderstorm/lightning and runway surface condition sensors.

Rules of Thumb

When the ceiling drops below 3,000 feet AGL, the visibility often diminishes. When fog sets in, a low ceiling almost always follows.
However, a strong, dry air advection or cold air being strongly modified by a warm dry surface will cause a reduction of relative humidity close to the ground. Therefore, even with a low overcast that's caused by residual moisture, you can still have excellent visibility on the ground.

Inversely, low visibility with a lack of a ceiling happens in conditions that favor radiation fog, (damp ground and clear night skies). This is a cloud that forms from the ground up and visibility is the first thing to disappear.

The worst pattern for instrument conditions is a warm, humid air mass being cooled from below. When the warm air passes over the cool ground, it's chilled to its dewpoint and ceilings and visibilities drop.

A favorable pattern for visual conditions is a cold air mass being warmed from below. This increases the temperature-dew point spread, decreases relative humidity, and encourages evaporation of any fog or cloud.

What are the tools that can help you "make the call"?

The Terminal Area Forecast (TAF) is one of the highest quality forecasts. Where a TAF is not available, or if you want to get a second guess, look at the Model Output Statistics (MOS) forecast data. The MOS's visibility and ceiling numbers can be hit or miss, but you can look at the trends across the hours of interest. When filing IFR, you cannot use the MOS forecast to determine if you need to file an alternate. For the time being, MOS is a great tool that can help you make a Fly or No Fly decision.

Unfortunately, many pilots don't understand how to properly make the initial contact with a controller. Sometimes, we can forget that we're not the only pilot in the world and think the controller needs to jump to our service when we call. Controllers are sometimes busy, monitoring several discrete radio frequencies. If we have an understanding of what's happening in the tower cab or the radar room, our initial contacts will be well received.

Welcome to Controller Empathy 101

How To Call A Tower Controller

Most tower controllers have their radar zoomed out to about 12 miles, so a good distance to call is when you're about 8 – 12 miles out.

Not a Busy Tower

Generally, if you tune in the tower frequency and it's quiet, you should make the initial call with everything; your call sign, position and your request. For instance, "Metro Tower, Mooney 201 Alpha Bravo, 10 miles north, landing with Delta [ATIS code]". That way, the controller can avoid asking a lot of follow-up questions.

Busy Tower

How can you tell if the controller is busy? The Oshkosh tower controllers post a sign on the tower. However, if you can't see a sign, just listen. If you can't get a word in edgewise, they're busy.

When a tower controller is busy, simply say, "Metro Tower, Mooney 21530". This tells the controller that you want something and he or she can write down your call sign and call you back when things calm down. When the controller finally gets back to you, give him or her your location, the ATIS code, and your request, (landing, transition, etc.).

By the way, tower controllers don't care about your altitude. You can stop adding that . . . please.

How To Call An Approach Controller (TRACON)

Requesting VFR Flight Following

A Phoenix Approach controller said, "Some controllers want pilots to say it all, but I personally want someone to just say 'Phoenix approach, Mooney 12345 VFR request'. I prefer this because if on the initial call, you give me all the information, I may not be ready to type it in, and more importantly, I might have a higher priority coming up and I need to make sure the radio is clear".

This is especially important in satellite sectors where the controller is running multiple approaches to multiple airports. If you call the controller with your request and block his or her frequency, chances are, the controller is not listening to a word you're saying and he or she can't wait for you to stop talking so that the controller can make a transmission to the higher priority aircraft.

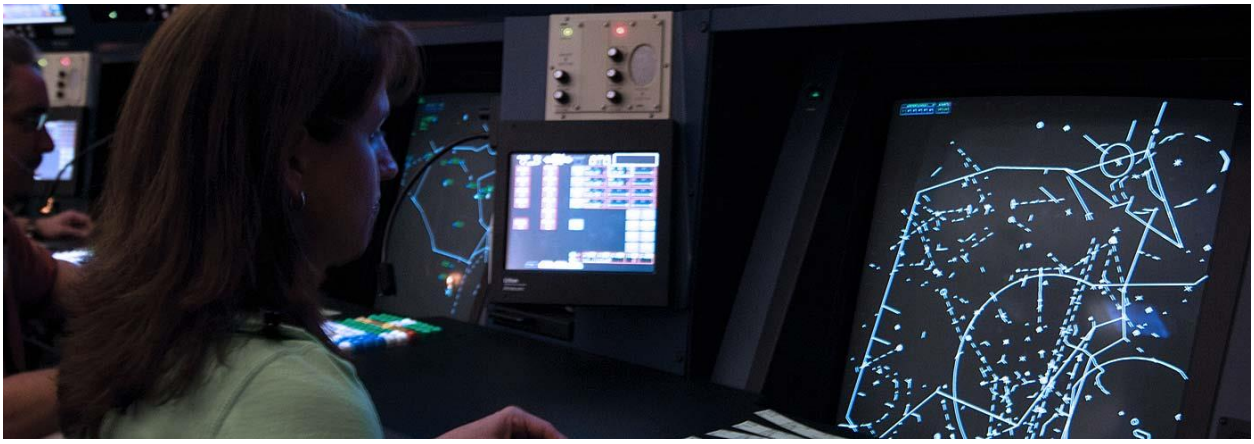
Contacting Approach in the Climb

If after takeoff, the tower controller tells you to contact Approach or Departure Control, you should check in with approach, using your full call sign. If you're in the climb, tell the controller the altitude you're passing, followed by the altitude you're climbing to – either assigned or desired, such as, "Phoenix Departure, Mooney 257 Kilo Whiskey, 2,300, climbing 6,000".

Calling an Approach Controller No-No: If you're flying out of an American airport to another American airport, you don't have to include the "K" in the airport identifier when you ask for VFR flight following. If the controller asks for your destination and you say, "Oscar Uniform November," he or she can be pretty sure you mean the airport in Norman, Oklahoma.

Similarly, you don't need to include the "N" in your aircraft's call-sign. "Mooney 12345," is fine. The controllers will assume the "N" since you're in the US. Of course, if you're flying a Canadian or Mexican registered aircraft, including the "Charlie" or the "X-ray" is perfectly appropriate.

How To Call A Center Controller (ARTCC)



If you're a VFR Pilot requesting VFR Flight Following

If you call with everything; call sign, type plane, destination and route of flight along with your position, most controllers can't remember all of that. Just give the controller your call sign and state that you have a VFR request along with your position and destination. For instance, "Mooney 987 Mike Mike, St Johns, VFR request."The position is extremely helpful, because the controller can then determine if he or she is the right person to provide the service you need.

If you're an IFR Pilot

If you're 50 to 100 miles from your destination airport, then an initial call should include your altitude. If they're going to a towered airport, include the ATIS code. If you're going to a non-towered airport, tell the controller that you have the weather, NOTAMs, and the type of approach you're requesting. If you received the weather from the airport's AWOS or ASOS, you should tell the controller that you have "the one-minute weather".

If the weather at the airport is VFR and you don't ask for an instrument approach, many controllers will just assign a visual approach. If the weather is known to be IFR, then it's extremely helpful that you check in with the type of approach you're requesting.

Calling a Center Controller No-no: Whether you're IFR or VFR, on the initial contact call, don't say, "With you". Just give your call sign and altitude. They've already gotten the hand-off from the previous ATC facility and they know you're coming their way. Keep it short.

Abbreviated Call Signs

Are you unsure when you're welcome to abbreviate your call sign to the last three characters? A good rule of thumb is to abbreviate after you notice that the controller is using the last three. The controller may be working with someone with a similar call sign — even if you haven't heard them. Just follow his or her lead.

How To Call Flight Service

Start with the call sign, approximate location, altitude, and, if calling on 122.1, which VOR you're listening over. For instance, "Cleveland Flight Service, Mooney 201 Foxtrot Uniform, listening Jefferson VOR".

If you're at high altitude, it's helpful to address which radio sector you're trying to reach. If you're over northwest Nebraska, for instance, you should say "Columbus Radio", because Denver, Casper, and Huron are all hearing you as well. Flight Service will ask for the rest of the information once they establish contact with you.

Controller Empathy 101 – Course Complete

You should now have a better idea of what the controllersdealg with every day. Hopefully, you will be a pleasure to assist each time you fly.

As you work at it, you'll be a pilot who has a greater understanding and empathy – a pilot who just might put a smile on a controller's face.

There is a big inventory of serviceable airframe parts, including wings for M20C, E, F, G, J, K & R models, empennage assemblies, fuselages, rebuilt controls, rudders, elevators, ailerons, flaps, cowls, engine mounts, landing gear and small parts.

Paul Loewen is offering them online, or by phone. The website is www.LoewensMooneySalvage.com, and he can be contacted in Lakeport, California at **707 263-0462** or by cell at **707 272-8638.** Email is PaulLoewen98@gmail.com. The used inventory is also still available through LASAR Parts at 707. 263-0581

Ask the Top Gun

Tom Rouch

Founder of Top Gun Aviation, Stockton, CA

Send your questions for Tom to TheMooneyFlyer@gmail.com

Question: Many pilots sing the praises of Lean of Peak (LOP) operations. I have a M20K 252 and I accomplished the Gami Lean test and submitted the results to Gami. Gami declared that my aircraft passed and that all cylinders were balanced within the tolerances required. On my next flight I tried operating LOP. To my dismay, the engine ran rough. What are your thoughts about Lean of Peak?

Answer: I am basically against LOP unless the manufacturer approves it. Some engines, like the TSIO-520-BE on the early Malibu, were designed for LOP. The engine could really be damaged if the engine was operated at rich of peak (ROP).

The old saying, "Run 50 Rich of Peak", has worked for years. There are engines that can run LOP, but you need to first go to the GAMI Injectors website and download the procedures so you can test your engine.

GAMIjectors®

Aspirated or Turbo?

LOP works better on aspirated engines, but not so goodwithn a lot of Turbo Charged Engines. I have seen extensive damage to the exhaust system on the TLS (Bravo) because of LOP operations. The lean mixture can cause high temps out the exhaust, causing bulges in the tubes. The problem is, you can't tell if there's any damage until you accomplish a visual inspection. The tube can crack and dump hazardous exhaust fumes in the cowling.

My best advice, if you're determined to operate LOP, **Follow the test procedures that GAMI provides**. I personally prefer to stay with whatever the manufacturer says.

Note: GAMI is in the business of marketing their tuned injectors, which are very good, if needed.

PS Engineering audio controller updated

PS Engineering has updated its FAA TSO'd special mission audio controller MultiTalker, introducing the PAC45A.

The PAC45A accommodates up to four individual control heads, interfaces to eight Com radios and eight switched receiver inputs, has nine customizable audio alerts, and incorporates two built-in speaker amplifiers, all with a single interface hub. It also has dual CVR outputs.

The nine-place hi-fi stereo intercom has IntelliVox (AutoVOX) and PTT-ICS. Bluetooth interface for wireless telephone and music streaming is available. An external Bluetooth antenna is provided to assure plenty of signal strength in the cabin.

The audio panel has both individual and master radio volume controls. Offside Com allows monitoring other Coms when transmitting.

The PAC45A ($9,995 list price) also includes a Radio Receive Indicator (RXI) and comes standard with Remote ICS and Swap switch capabilities.

WingX app updated: New moving map and Stratus 3 support

WingX released a new version of the app recently, adding a new, faster moving-map, improved chart downloads and AHRS support for Stratus 3. The app also changed names, losing the Pro7 title, and is now simply called WingX. Here's a quick look at the new features.

Faster Moving Map

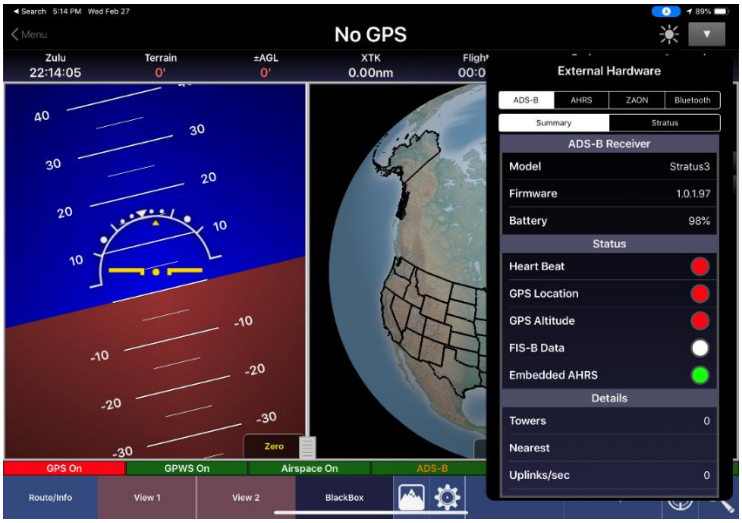
The moving map in WingX is all new in Version 9 and is much more responsive. The maps pan and fluidly zoom and weather layers load quickly and animate without much delay. While you won't notice any major new features here yet, this lays the groundwork for additional improvements down the road.

Improved Chart Downloads

In previous versions of WingX you had limited control over the regions to download for VFR Sectionals and IFR En Route charts. The latest update allows you to choose specific regions, reducing download times and storage requirements.

Dual Data-Cycle Handling

A new option in the Databases section of the app allows you to store two database cycles (one current and one future), which can really be helpful if you'll be out on a multi-day trip with limited access to the internet. There's just one button to tap here to switch between databases.



Stratus 3 AHRS Support

The Stratus 3 ADS-B receiver added support for several apps last summer, including WingX. The latest WingX update allows the app to take advantage of the Stratus AHRS to drive the attitude indicator in both the regular instrument mode and when flying with synthetic vision.

Flight Enhancements, LLC

Auto-Step, Electric Conversion KIT For Vintage Mooney Retractable Steps

New

Flight Enhancements introduces the new, FAA-PMA, electric, linear actuator conversion kit for your Mooney retractable step. Flight Enhancements developed the kit to be lighter weight than your existing retraction mechanism. The kit is beneficial for those having difficulty sourcing a new pneumatic actuator or for those going all-electric and removing the vacuum system. It is also a great alternative for those tired of forgetting to crank up their manual mechanical step.

Installation Kit

The kit comes complete with actuator, cable, balance spring and most hardware, requiring only some miscellaneous hardware. Installation can be completed in as little as three hours. The kit is FAA-PMA approved as a Minor Alteration for Mooney M20 A, B, C, D, E, F and G.

Over 25 Mooneys are now flying with the Auto-Step. It's lighter than the old step and for those who are unable to find a replacement bellows, it's a great alternative.

Easy Installation

Auto-Step replaces your vacuum actuator with easy, three screw, installation. Connect wires to power, ground and the rotating beacon power, for automatic retraction when the beacon is on. The step automatically comes down when power is removed.

Contact Information

Call your local service center or
Flight Enhancements @
912-257-0440
flightenhancements@yahoo.com

Web

www.flightenhancements.com
47 Oakcrest Rd.
Oxford, CT 06478

Made in USA!!

The Aviation Home and Hangar Map

This Community is a huge success. Over the past year, this new and innovative way to search for and view aviation real estate has taken off beyond our expectations. We are a single community working to expose the amenities of aviation real estate.

How to open the Aviation Home And Hangar Map.

1. www.AviationHomeAndHangarMap.com Scroll down.. The map is embedded.
2. Open the map in a large format. Link - Opens on your device in google or default map.

Sun' N Fun - Fly in Expo.
We have a huge presence at Sun' n Fun Fly In and Exposition and this creates a way for your property to stand out and be seen by the Sun n Fun attendees. (We will be speaking at the forum six times).

Show Special.
We created a package just for those looking to get maximum exposure. Store Link

Please take the time to check out our video. We are much more than a place to put a classified advertisement.. we are one singular community fighting for aviation real estate values. https://youtu.be/nTyORfqqkMA

Visit the Aviation Home and Hangar Creative Agency.
Airpark Websites - Link
Airpark - Custom Maps - Link

Please reach out if you have any questions.

Erik McCormick
Aviation Home and Hangar Map - Publisher - Founder
480-888-6380
Map@AviationHomeAndHangarMap.com

ACR Electronics' new Next-Gen ResQLink PLB

The new ResQLink 400 and ResQLink View PLBs introduce user-friendly design innovations and add enhanced functionality. The new design changes were suggested by members of the ACR Electronics SurvivorClub free beacon replacement program.

The ResQLink View with Optical Display Technology screen displays all the beacon's operational activities, including GPS coordinates, operating instructions, usage tips, transmission bursts, as well as battery power.

Compact, lightweight and easy to carry, the new ResQLink beacons feature a protected activation button located away from the test button, multiple wearable mounting options, including a belt clip and oral inflation clip for easy access in an emergency, and an easier-to-release antenna enclosure. They also include a new infra-red strobe light in addition to the ultra-bright strobe light, to assist rescue crews using night vision goggles.

The new PLBs operate on the three Cospas-Sarsat satellite systems, ensuring they offer near instantaneous signal detection and transmission enabled by the global MEOSAR satellites and upgraded ground-station components. ResQLink PLBs utilize three integrated signal technologies — GPS positioning (Galileo and GPS GNSS), a 406 MHz signal, and 121.5 MHz homing capability — to relay the user's position to a worldwide network of search and rescue satellites at the push of a button.

The ResQLink series does not require a subscription, but must be registered with the country's national authority. Optional subscriptions for testing are available via ACR's 406Link.com technology.

The new ACR ResQLink 400 PLB is available for **$299.99**. The ACR ResQLink View PLB is available at **$349.99.**

Gleaming Metal without Elbow Grease

Iosso Metal Polish leaves a protective shine that lasts for months.

The polish removes oxidation, tarnish, surface rust, oil, and water spots and works on stainless steel, chrome, bronze, brass, and aluminum. Aircraft owners use it by rubbing the polish on with a soft cloth and buffing it off by hand or machine.

A three-ounce tube costs $9; one pound is $23; and five pounds are $88. A USDA-certified bio-based version is available that complies with California Air Resources Board (CARB) regulations.

New FAA Certified Multi-Function Instrument for GA aircraft

AeroVonics, a startup aerospace company with operations in Albuquerque, New Mexico, has received FAA certification of its initial launch product, the AV-20. With 12 functions, the AV-20 incorporates an array of

capabilities packed into a single, 2" instrument.

Approved for installation in CFR Part 23, Class I and Class II, non-pressurized aircraft, the AV-20 provides legacy aircraft advanced functionality for under $1,000.

The AV-20 provides standby attitude, probeless angle-of-attack, slip/skid, G-meter, clock, outside air temperature, bus voltage, dual user timers, engine-run timer, flight timer, density altitude display, true airspeed, and audio alerting. Its internal battery provides 30 minutes of automatic emergency full-function backup in the event of power loss, company officials report.

The AV-20-S Certified, which connects to the pitot and static systems of the aircraft, costs $895, with an introductory price of $795. The AV-20, which does not connect to the pitot and static systems of the aircraft, sells for $499. Read MORE HERE

Robust Mounting Systems

Mobile Grip Phone Mount – Available at Sporty's

This simple, expandable cradle fits virtually any smartphone, from smaller iPhone SE models to the largest iPhone XS Max. The holder consists of two fingers that grab the phone in the middle.

Slim iPad/Tablet Mount – Available at Sporty's

It is not often that you find a universal mount that works as well as a custom-fitting mount, but this mount breaks the mold. It includes ten fingers (three sizes) that allow you to customize for your mounting situation.

Future Proof

The universal nature of the Robust Mounts means you won't have to buy a new mount the next time you update your phone or tablet.

Affordable

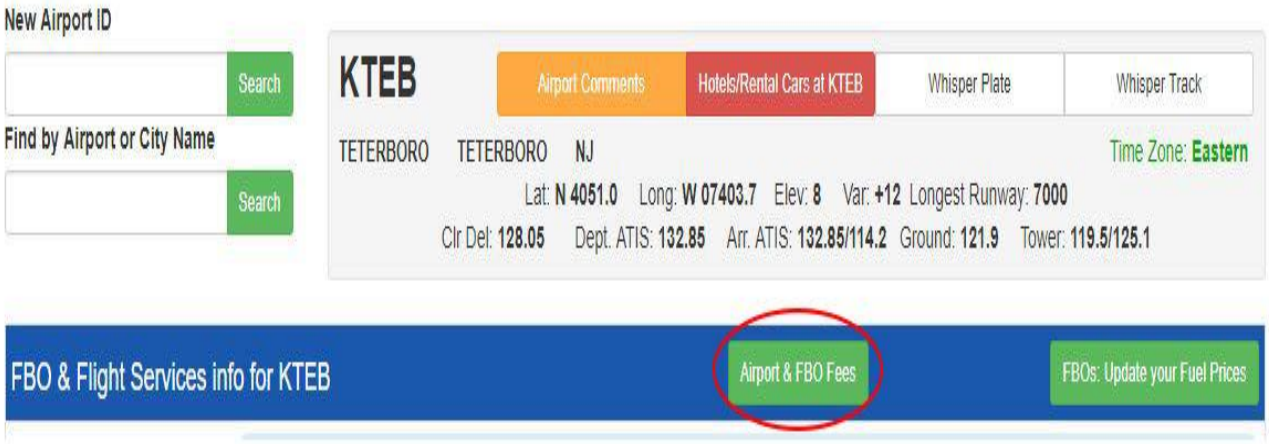
While super functional and extremely durable, you won't have to spend an arm and a leg to buy one of these systems. Individual pieces start at under $10 and complete kits start at around $30. The Tablet Suction Cup Mount is available for $39.95 and the Phone Suction Cup Mount is available for $29.95.

READ MORE BY CLICKING HERE

FltPlan, FltPlanGo and Garmin Pilot Now List Airport & FBO Fees

FltPlan has added airport and FBO fee information from the AOPA database to many of their airport listings
Click on **Airport/FBO Info Page** and then click on **the green Airport & FBO Fees Button**.

Accessible through FltPlan.com, FltPlan Go, and Garmin Pilot, this free listing provides users with a concise, comprehensive overview of the different fees they may encounter. Pilots looking to be prepared for these fees on their next flight can take advantage of this feature on thousands of different airports that report them.



Airport and FBO Fees are also available at AOPA

Pilot Resources >> Airport Directory

M, R & S Owners – Garmin GFC 500 Autopilot is Here!

M20M, M20R, and M20S are approved for Garmin's GFC 500 autopilot

The GFC 500 autopilot, intended for single-engine airplanes, integrates with the G5 electronic flight instrument or a combination of both the G5 electronic flight instrument and the G500 TXi or G500 flight displays to provide pilots with an economical and modern autopilot solution.

As a standard feature on both the GFC 500 and GFC 600 autopilots, pilots receive Garmin Electronic Stability and Protection (ESP), which works to assist the pilot in maintaining the aircraft in a stable flight condition. ESP functions independently of the autopilot and works in the background to help pilots avoid inadvertent flight attitudes or bank angles and provides airspeed protection while the pilot is hand-flying the aircraft.

For customers who already have a G5 electronic flight instrument, the GFC 500 starts at a suggested retail price of $6,995 for a 2-axis autopilot.

Aspen Avionics: New Software Addresses FAA AD

The FAA issued Airworthiness Directive 2019-01-02 in February 2019 to address a safety-of-flight-issue with many Aspen Avionics Evolution flight displays, and the company this week announced a fix with a new software modification.

The AD affected Aspen Evolution Flight Displays (EFD1000/500) loaded with software version 2.9 because of the potential for uncommanded inflight resetting of the display. **This anomaly affects Aspen displays interfaced with ADS-B FIS-B-equipped transceivers and transponders, and the condition can occur when certain ADS-B data is received.**

The fix is accomplished through Aspen's Service Bulletin SB-2019-01, which includes **loading Aspen software version 2.9.0.1. The software is free of charge and can be accomplished at authorized Aspen Avionics dealerships.** Visit www.aspenavionics.com for more.

Garmin's New GPS 175 and GNX 375

Garmin just added a pair of new WAAS GPS navigators to its lineup, the GPS 175 and the GNX 375, which will allow pilots to use WAAS or SBAS to fly LPV instrument approaches. The GPS 175, a standalone certified IFR navigator, offers a color touchscreen display with advanced features and capabilities, while the GNX 375 has all the capabilities of the GPS 175 but adds Automatic Dependent Surveillance-Broadcast (ADS-B) Out, as well as dual-link ADS-B In via a built-in transponder. These two new units are perfect replacements for earlier-generation products like the GPS 150/155 series, the GX 50/55, as well as the KLN 89/90/94 series.

The GPS 175 and GNX 375 are expected to be available in April and can be purchased through the Garmin Authorized Dealer network starting at a **suggested list price of $4,995 and $7,995** respectively. A free Garmin GPS 175/GNX 375 trainer app is available for download to Apple mobile devices, to allow customers to experience the feature set of these navigators.

CLICK HERE TO READ MORE

Garmin Certifies G3X

Garmin has achieved FAA certification for installations of its highly acclaimed G3X Touch system, originally designed for the experimental market, in Part 23 aircraft. The company also achieved TSO authorization for two new ADS-B transponders: the GTX 335D and GTX 345D.

The G3X Touch is a mainstay in the experimental segment and will now be installable under an approved model list for some 500 aircraft at $7995 for a 7-inch display version and $9995 for a 10-inch version.

GARMIN's new Diversity ADS-B Transponders

SUITABLE FOR SATELLITE ADS-B MANDATES

The GTX 335D and GTX 345D are intended for aircraft that may require a **diversity solution**, **meaning transponder antennas on both the bottom and top of the fuselage**. Like the products on which they are based, the GTX 335D is a Mode S transponder that provides ADS-B Out,

while the GTX 345D adds ADS-B In traffic and weather that can be displayed on compatible avionics and mobile devices. Remote-mount versions of both also are available.

Interest in ADS-B antenna diversity shot up when Nav Canada indicated in January that it wanted to mandate ADS-B Out with antenna diversity. Nav Canada is the lead air navigation service provider in Aireon, a space-based ADS-B joint venture between Iridium Communications and a number of governmental and regional air navigation service providers. Aireon ADS-B payloads aboard each of the 75 Iridium NEXT satellites in low earth orbit receive ADS-B broadcasts and relay them to air traffic controllers on the ground.

The GTX 335D and GTX 345D list for $6,495 and $7,995, respectively; the **non-diversity GTX 335 and GTX 345 list for $2,995 and $4,995.**

READ MORE

Charge your electronics faster with new high-power digital clock/USB charger

Mid-Continent Instruments and Avionics has introduced the MD93H Digital Clock/USB Charger. This USB charger delivers 3 amps per port to simultaneously charge electronic flight bags, cell phones, tablets, and other electronic devices at full power, according to company officials. The unit's 2" design allows it to fit in any standard panel cutout and it has five modes: Local Time, UTC/Zulu Time, Countdown Timer, and Stopwatch.

An internal battery has a life expectancy of more than 10 years.

Additional features include external lighting control and built-in photocell for automatic dimming. The MD93H protects itself and the charging device from short circuit, power surges, and over-current potential. Price: $684.

Continental Motors is now Continental Technologies

CONTINENTAL™
AEROSPACE TECHNOLOGIES

March 28, 2019, US engine manufacturer Continental Motors was re-branded as Continental Aerospace Technologies.

"Continental Aerospace Technologies is evolving rapidly," said Christopher Kuehn, VP of Sales, Marketing, and Customer Support. "We are adding more products to our portfolio, and covering all the needs of general aviation with both gasoline and Jet-A fuel engines.

"While we continue to innovate and bring new technologies to the market, we are also working to enhance our service, support and manufacturing. This is one of the key components to offer superior performance to our customers. Bringing our brand into the 21st century is only the first step in 2019". **Read More**

Florida Mooney Lunch Group	***Contact Dave at daveanruth@aol.com or (352) 343-3196, before coming to the restaurant, so we can have an accurate count. Events begin at 11:30*** April 13: Flagler (FIN) May 11: Sebring (SEB) June 8: Vero Beach (VRB)
MOONEY CARAVAN	April 5-7: San Marcos, TX (KHYI) May 3 – 5: Newton, KS (KEWK) May 31- June 2: Northern Flights Formation Clinic (KBJI) June 14 – 16: Hickory, NC (KHKY) July (TBD): Chino, CA (KCNO) July 20, 2019: AirVenture Caravan (KMSN)
MAPA Safety Foundation MooneySafety.com Mooney Pilot Proficiency Program	April 5-7: Santa Maria, CA June 7-9: Oklahoma City, OK September 6-8: Atlantic City, NJ October 4-6: Ogden, UT
Mooney Summit	September 27-29, 2019: Mooney Summit VII, Panama City www.mooneysummit.com
Australian Mooney Pilots Association	
European Mooney Pilots & Owners Association	
Other Mooney Fly-Ins	June 7-9: Walla Walla, WA (ALW) – Wine, Parties, Hangin' Out Contact: Henry Hochberg, aeroncadoc@comcast.net

CRYSTAL CONFORMA

Aveo Engineering announced the release to EASA MOD Certification pending status of its paradigm-shifting Conforma™ lighting technology.

It's now being used by so many of the world's famous aircraft manufacturers. You too can have the sleekest, brightest, safest aircraft in the sky while decreasing drag at the same time. Replace your factory wingtips with the coolest wingtips on the planet, if not the galaxy. Aveo introduces Crystal Conforma™ for the Mooney™ M20J, M20K, M20L and M20S. The Crystal Conforma™ provides Navigation (Red and Green) and Strobe (White) function.

It's available in Kevlar/Carbon or Fiberglass Fabric.

CLICK HERE to see the full announcement.

Parts for Sale

I have several Mooney parts for sale from a 1969 G model. Brand new voltage regulator (never used). Instrument light rheostat controller, cowling plugs and like new fuselage/cockpit and tail feather covers. G model POH. Contact me at Wilson Brown, located in Georgia, 678-469-6182

Wanted

Time on your Mooney. Hangar available. I only need 20-30 hours yearly. I have an empty hangar in Cartersville, GA for your Mooney or Cirrus @KVPC. 3500 hours, 3000 Mooney INST CML no accidents. Please email to: mooney201@gmail.com


Whether you're a Rusty pilot, dreaming of becoming active again . . .
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