The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

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Editors

Phil Corman | Jim Price

Contributors

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Departments

Features

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The views expressed in each author's article are their own.
The Mooney Flyer's goal is to educate, inform, and entertain Mooniacs.

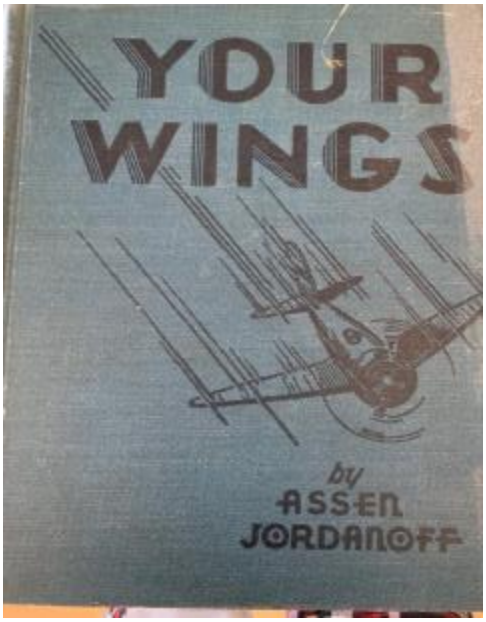
From the Editor

Phil Corman FTE

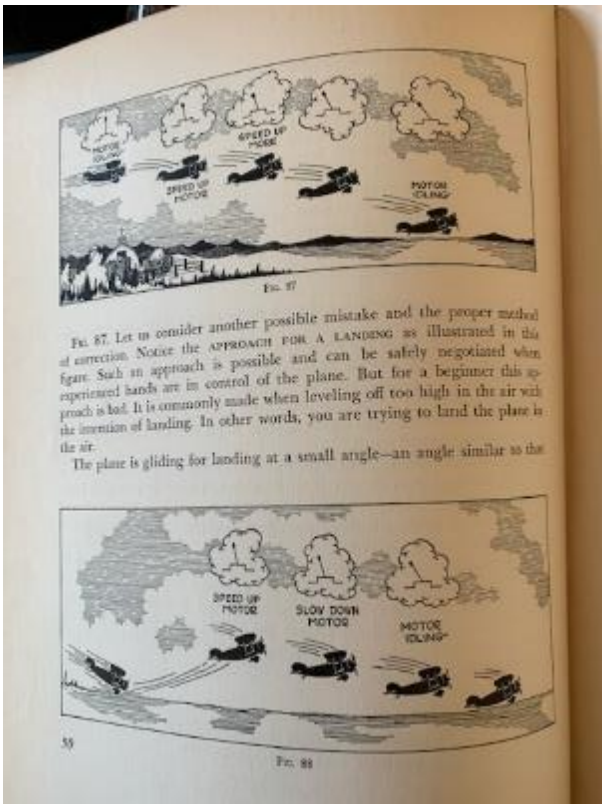
Why We Fly

This question has been asked and answered forever, but I was thinking about it again this month and wanted to write about it.

Because We Wanted to from the Beginning



We were blessed with the strong desire to learn to fly and the means to do so. I have wanted to fly since before I could read. I read the book "Your Wings", which was published in 1938. There were no pictures, but a lot of drawings like those shown to the left. My imagination went wild, and that was when I decided my life must include flying. I think an early decision and desire to fly was the driving factor in many of us.



Just Me and My Mooney

In my career, I worked with large teams of people, all doing different parts of a large project. It was amazing and rewarding, but flying is different. In that Mooney cockpit, it is me and my Mooney. I make all the decisions. It is liberating and challenging… it's easy… then it's hard… but it's me and my Mooney; every departure, cruise, approach and landing. There are new challenges on most flights, and I enjoy all of them.

The Zen of it All

I have my Mooney so we can fly and fly and fly again. But when she is grounded in the hangar, I also find challenges and peace of mind. I enjoy cleaning her – the belly, the windscreen, the gear, etc. I like fixing things that aren't right. I can lose hours and hours in the hangar attending to things large and small and forget what time it is. I also find some satisfaction in knowing how she has been taken care of, during and between flights.

The Camaraderie

Somehow, I managed a group called The Vintage Mooney Group (VMG) and oversaw 70-80 fly-ins over 8-9 years. I was inspired by Paul & Sherry Loewen who ran the West Coast Mooney Club for a long time. The VMG encouraged Mooniacs to fly to destinations each month; often a destination that they might not have considered. Through it, we flew farther and more often, while visiting new places.

For me, the best part was making new friends and meeting old friends. There is a deepness to making a friend of another Mooniac. Most of my friendships have lasted a lifetime.

I love sharing our love of flying Mooneys on the ramp, as we listen to the pride of ownership and the challenges and mistakes that have made us better flyers.

The Freedom

When I see any airplane depart or fly over me, or if I am piloting at the time, I am overwhelmed by the feeling of great freedom. I can jump into my Mooney 24x7 and fly pretty much anywhere I choose. No speed limits (mostly), and no traffic jams. Often, I say to myself, “I cannot believe I can do all of this.”

Have you ever noticed when at lower altitudes, even ugly places on the ground appear beautiful from a Mooney? The size of the Earth shrinks in a Mooney. We can visit the Sierra Nevada mountains, the Mojave Desert, Islands in the Pacific, San Francisco and much more within an hour. Because we have a Mooney, we will fly for hundreds of miles for breakfast, lunch, or an overnight.

We do what only a tiny, tiny fraction of humans have done since the beginning of time, and we think nothing of it. We have seen places that many people will never see. And, as my wife likes to tease, “We can bring guns, knives and shampoo with us on our flights”.

Next month's poll: "The best Price/Performance Mooney is" **CLICK HERE** to vote.

Letters to the EDITOR

TheMooneyFlyer@gmail.com

Thanks to you and everyone else that puts the Mooney Flyer together each month. I look forward to it every month!
Mike

The content really is amazing. Not sure how you do it all??? It seems like just yesterday that the last one came in;-). It is lots of work, but you really do a great job with it. It is, by far, the best Mooney publication. And thank you very much Phil for what you do for me !!!
Richard S

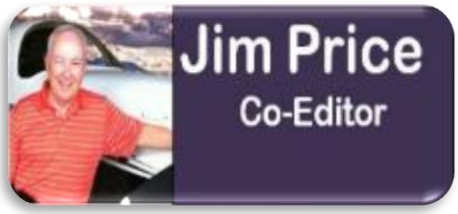
Regarding Richard Browns article "What about a nervous flyer."

I just finished reading the Mooney Flyer for the month of February and was impressed by the article by Richard Brown. I love his articles.

First, I want to say Richard is right on when he talks about the ways to help a nervous flyer. I am not a pilot, but I have logged about 1200 hours in our Mooney plus about 50 hours on my previous job, working for the Sheriff's Office flight unit. When Richard says the best thing to do for your passenger is to have "no surprises", that is the best lesson to learn. I worked through a lot of my concerns with pilot (husband) and the flights just got better the more I learned from him. So, I tell the new or nervous passenger to get more involved with the plane and to ask questions, lots of questions. I am not a pilot, and I don't want to be responsible for the plane, but I do love to fly. At first, I sat quietly and just gazed out the window enjoying the view. However, slowly I became curious why this or that gauge was important and what it did. Over time we became partners in the plane. I became good at plane spotting with the help of ADS-B. I got good at finding airports 7 miles out and on the return back home, I helped clean and polish the plane for its next flight. You are probably saying to yourself, really clean and polish. Well getting to know the plane has helped. I have found something in or around the plane that needed attention, such as low tires, loose screws, and unusual oil streaks; things my pilot might need to know. So, I agree with Richard on all his points for helping a nervous passenger. I think I am lucky that my pilot is so understanding that I needed to be part of the experience. I think Richard's wife is another lucky co-pilot. I wish more pilots were as thoughtful. Too many of our flying friends ignore the learning time and the fun of sharing the flight experience. Yay for our pilots who love us and are willing and patient to teach us.
Linda C

Carbon Monoxide (CO) Poisoning

Mandatory Interactive Carbon Monoxide Detectors



In January, 2022, the National Transportation Safety Board (NTSB) urged the Federal Aviation Administration (FAA) to make

interactive carbon monoxide detectors a requirement in general aviation aircraft. Interactive means that the CO detectors will provide both an auditory and visual warning when CO is present.

The NTSB is asking the Aircraft Owners and Pilots Association (AOPA) along with the Experimental Aircraft Association (EAA) to reach out to their membership about the dangers of CO poisoning and to encourage them to invest in the interactive CO detectors, while making inspection of the aircraft exhaust system a priority during maintenance.

How common is CO poisoning?
This odorless, colorless, and tasteless gas is a byproduct of combustion—and it is deadly. According to the NTSB, "**Between 1982 and 2020** there were 31 accidents attributed to CO poisoning. Twenty-three of those accidents were fatal, killing 42 people and seriously injuring four more."

The incidence of CO poisoning is more frequent in the winter as cabin heat is used more than it is other times of the year. In many GA aircraft, cabin heat is produced by ducting outside air flow over the exhaust manifold to warm it, then opening a mechanical door to the cabin to bring the warm air inside. If there's a crack in the manifold or duct work, carbon monoxide can enter the cabin.

One of the first signs of CO poisoning is sleepiness. Other symptoms include a headache, dizziness, nausea, shortness of breath, weakness, and confusion. As these symptoms can be attributed to other

causes—such as a cardiac event or dehydration—the pilot can become incapacitated before he or she realizes what is happening.

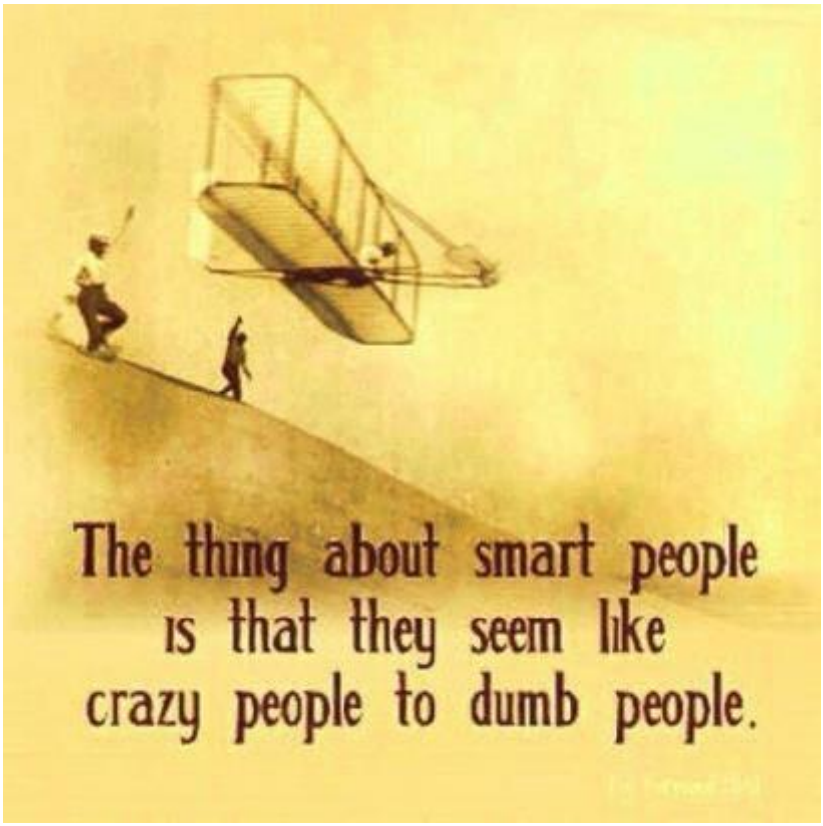
Carbon Monoxide Detection

There are many carbon monoxide detectors on the market. Among them are one-time-use, cardboard, easy-to-install devices that cost less than $10. These devices attach to the instrument panel or sidewall with adhesive. However, they are not interactive.

The device uses a chemically activated sensor that darkens when carbon monoxide is present. In theory, the pilot would notice the color change, shut off the cabin heat, open the vents to get fresh air, and land the aircraft as soon as possible. However, sometimes the pilot doesn't notice the color change.

The interactive CO detectors that the NTSB would like General Aviation aircraft to have, features an auditory alarm as well as a light to warn the pilot. These units are often battery powered and are reusable. They are more expensive than the one-time-use devices. They're available at pilot supply stores, and they're also easy to install or use as a portable device.

To assist in your research, on the next few pages, we feature several CO detectors, both portable and panel mounted.



Portable Cockpit Carbon Monoxide Detector

MyPilotStore.com

It features the industry's most stable and longest life sensor. The sensors never require re-calibration and have a 10 year life-span.

$75

Forensics Carbon Monoxide Detector

$99

Sporty's

Aithre Shield Carbon Monoxide Detector (gen 2)

Sporty's

10 years no recalibration, fidelity to 1ppm, response time under 30 seconds, rechargeability, and iOS app integration.

$150

TOCSIN 3 Carbon Monoxide Cockpit Monitor

Sporty's,

Sensor will last for approximately 2 years, and it is replaceable by the factory. Uses one 3.6V 1/2 AA size battery (included).

$170

AV8 Inspector Pro - Portable Carbon Monoxide Monitor for Aviation

Pilotmall.com

$169

$450

Aithre Shield eDot 5.0 Certified Panel CO Detector

MyPilotStore.com

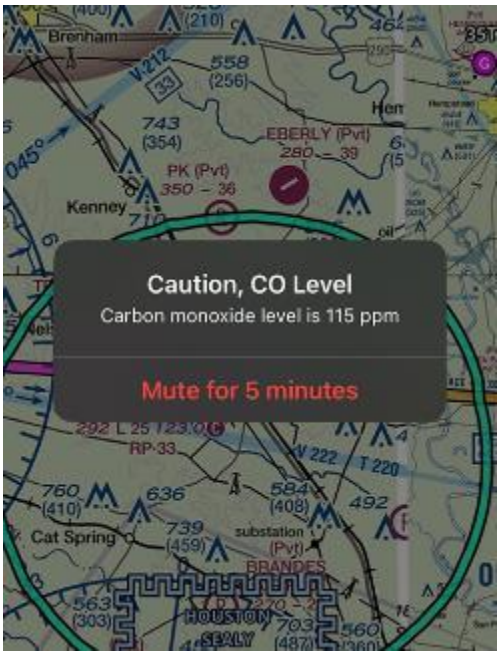
FAA approved for Certified Aircraft: The Aithre Shield eDot 5.0 is the first behind-the-panel device that puts carbon monoxide readings output to panel mounted LED light and to iOS device.

Features a simple wiring installation, a small footprint, iOS app, WatchOS app, and 10 years without recalibration for the CO ppm.

ForeFlight's Sentry ADS-B receiver **$500**

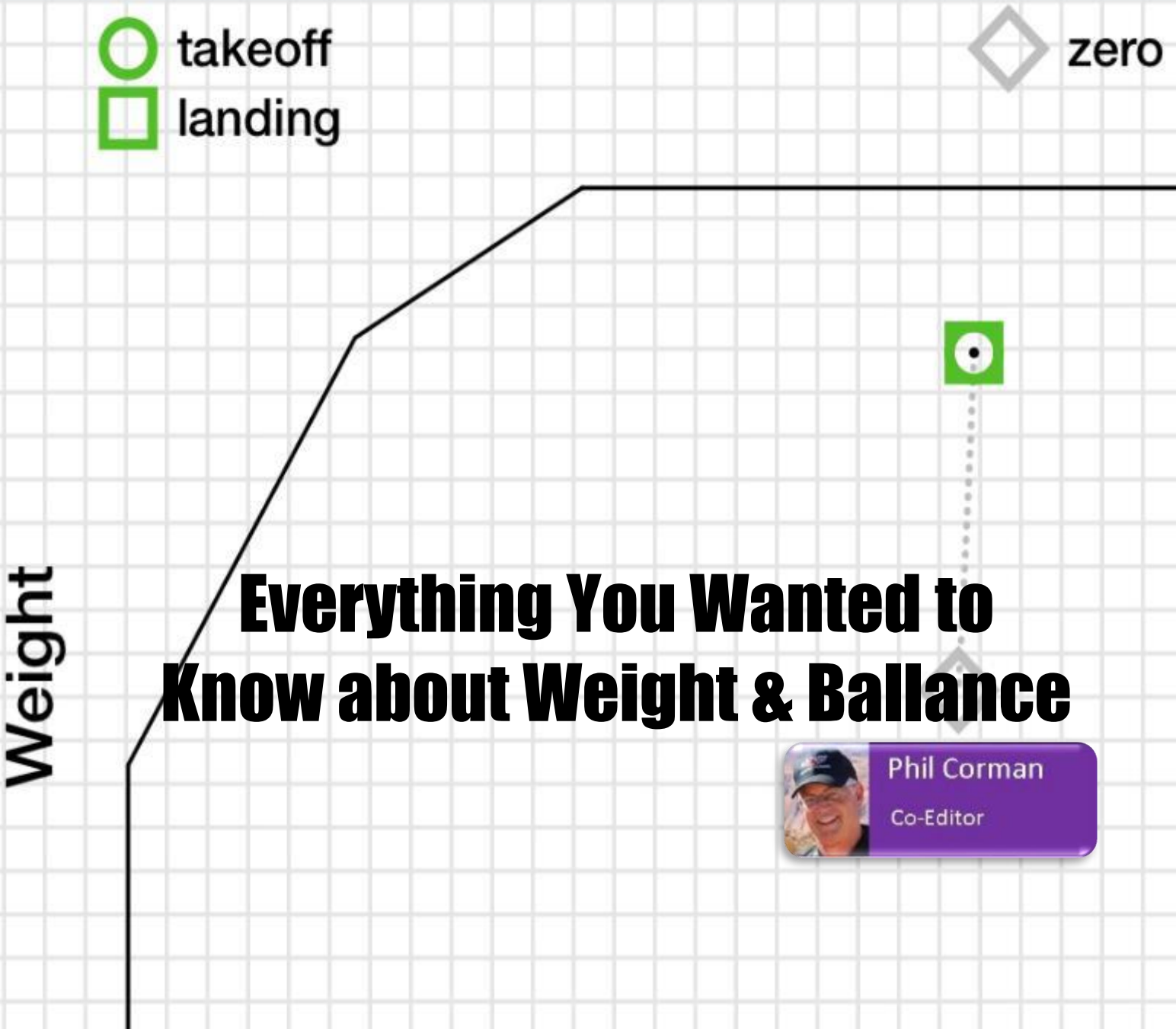
This meets the recommendation and provides a simple solution to protecting you and your passengers from this invisible danger with a built-in carbon monoxide sensor. When using Sentry in conjunction with the **ForeFlight** app, an audio alert is delivered through compatible headsets, and an alert message is displayed on the screen. In addition, the middle LED indicator on Sentry also provides a visual indication when CO levels in the cabin are dangerously high.

Sentry also delivers additional safety benefits such as ADS-B weather and traffic and WAAS GPS.



Sentry CO Detection Testimonial:

*"@ForeFlight, #Sentry **Thank you, you might have saved our lives**. As soon as we saw the notification on our iPad and the light change on Sentry, we immediately opened the window until the alarm turned off. We figured out that when we closed the cowl flaps, exhaust entered the cabin."*
- Frank Bagheri, Twitter



Everything You Wanted to Know about Weight & Ballance

When it comes to Weight & Balance, there is a lot to understand, especially in our high performance, laminar flow winged Mooneys. Let's begin by understanding the various definitions and then the impact these have on the flight characteristics based on your actual weight & balance for a flight.

The **Standard Empty Weight** is defined as the weight of an empty airplane including unusable fuel, full operating fluids (hydraulic fluids) and full engine oil.

The **Basic Empty Weight** is the Standard Empty Weight plus optional equipment. This is the starting point of weight and balance calculations.

Next comes **Useful Load** which is total usable fuel, cargo, passengers, and drainable fuel. Equation: Maximum Ramp Weight - Basic Empty Weight = Useful Load.

Think of **Payload** as what's "paying" for the flight: passengers, bags, and cargo. It's how much weight you can carry besides basic empty weight and fuel.

Last is **Maximum Landing Weight.** It is usually based on a structural limit, but may include missed approach performance issues.

The Center of Gravity (CG) is an important datum. It is important to understand the effects of forward and aft CGs.

My M20S Eagle is nose heavy in most "in the envelope" situations. Hence, I must roll in a fair amount of up trim in cruise. A heavy nose also comes into play during the flare at landing. I crank in almost full up trim to more easily manage the flare. But, I have to remember this if I decide to perform a touch-and-go or go-around and adjust the trim before applying too much power.

Forward Center of Gravity:

- Stable feeling
- Nose Heavy
- Longer takeoff distance (more airflow required to provide more force to lift heavy nose)
- Increased induced drag
- High stall speeds (more airflow deflection of the elevator required to maintain altitude at slower airspeeds resulting in high Angles of Attack (AoA)

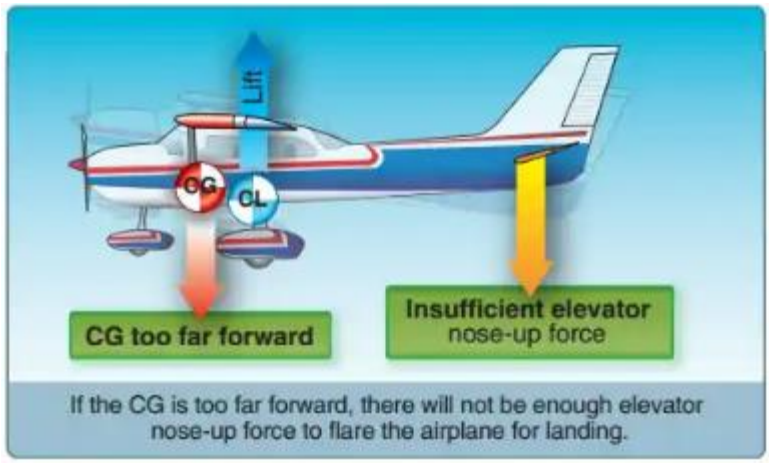
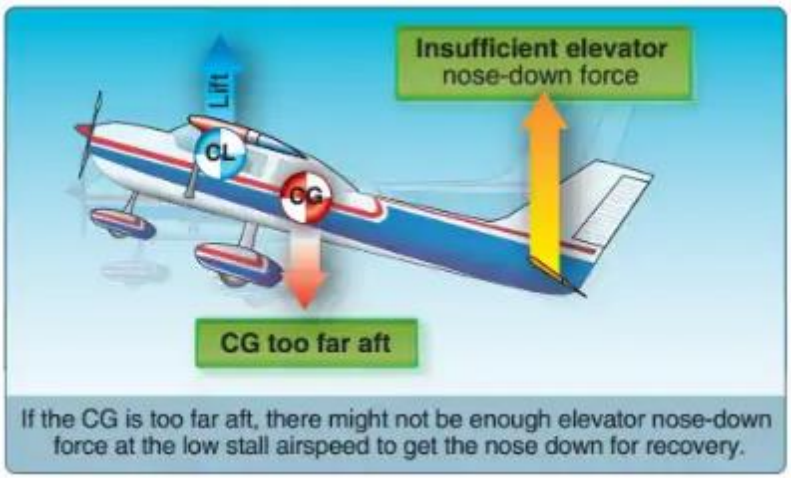


Figure 1: Pilot Handbook of Aeronautical Knowledge
Forward Center of Gravity

Aft Center of Gravity is a whole different story:

- As the C.G. moves rearward (towards the tail), the arm between the center of gravity and the tail (downforce) decreases, thus the aircraft becomes more and more dynamically unstable [Figure 3]
- The tail will feel heavy to compensate, which requires additional nose down-force
- Should the aircraft stall or spin, it will be much more difficult, if not impossible, to recover



- Decreased induced drag
- Higher true airspeed due to lower angle of attack
- Longitudinal stability decreases
- Performance impacts are due to lift/drag changes

You will see an improved airspeed/performance with an aft CG. It reduces the down lift required on the trim, reduces your longitudinal stability, but increases your cruise speed. As long as you are in the envelope and understand the different flight characteristics. you should be just fine.

Overweight Aircraft

This happens when we carry too many or passengers that are too heavy. It happens with too much luggage or too much fuel. Some pilots think that the gross weight has a fudge factor of up to 50% and therefore push the weight for a flight above maximum gross weight. Ouch… not advised.

Symptoms include:

- Most aircraft will never be too light to fly, however overweight aircraft pose very serious safety threats
- People like R&B singer Aaliyah have died when pilots neglect to complete a proper preflight
- Limitations:
    - Longer takeoff run
    - Higher takeoff speed
    - Reduced angle and rate of climb
    - Reduced cruising speed
    - Shorter range
    - Higher stalling speed
    - Longer landing roll

When compounded by higher Density Altitude, this encourages a premature liftoff. Ouch…. Not good!

The easiest way to compute your W&B is to utilize an EFB like ForeFlight or Garmin Pilot. It's effortless and takes only a few minutes. Your IA must update your W&B everytime something is added or removed from your airplane. Many times this includes new avionics or equipment in the engine compartment of the fuselage. Revise your data before flying again.

Pagosa Springs & Winter Flying

By Richard Brown

A few weeks ago, we were fortunate to fly from Southern California to our place in Pagosa Springs, Colorado for a few days of skiing at Wolf Creek Ski resort. That flight got me thinking about tips for winter destinations and decision-making surrounding flights in the winter. I know, a lot of you live where it actually gets cold, so feel free to click to the next article. It won't hurt my feelings and I'll do my crying where nobody can see.

It is either a 13-hour drive or a 4 ½ hour flight, so I was eagerly watching the weather for the few weeks leading up to our trip, hoping the weather gods would smile down on us. As we all know, a forecast two weeks out is anything but reliable. However, watching how it changes shows where it is trending and as the departure date approaches, it provides a much clearer picture of what to expect. Looking at the forecast a couple days before the flight and seeing that there is a possible storm, is not as helpful as comparing what was forecast two days ago to what is forecast today. Trends matter.

Do you do a weight and balance before every flight? I'll be honest, if it is just my wife and I and typical bags on trips we have made numerous times, I don't re-weigh and calculate everything. I've run the numbers numerous times and know I am well inside the envelope. However, a curveball was thrown at us on this trip. A week prior, we learned that my son's jazz band trip was cancelled, and he would be coming with us. So, I added a 140 lb. 17-year-old to the back seat, along with some ski gear. Everyone and everything was weighed to make sure we were good. We did have to limit some luggage. We have a washer and dryer at our place there so that just meant packing less and doing some laundry in the evenings.

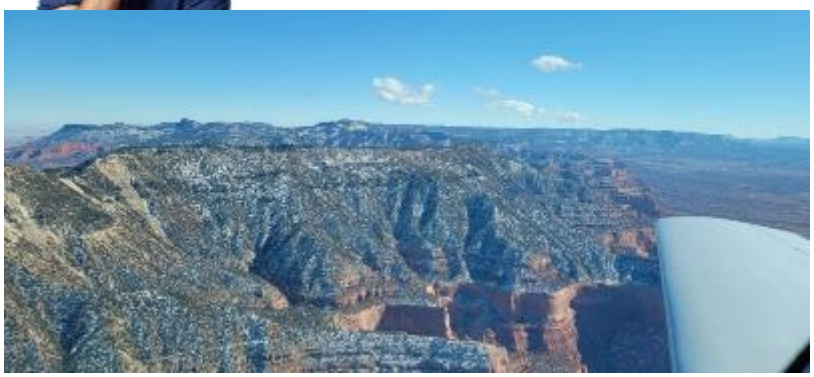
I will make a plug for https://ezwxbrief.com/. It is an excellent site founded by Scott Dennstaedt. It is the best one stop shop for weather as it relates to flight forecasting. It has a bit of a learning curve. I also frequent https://aviationweather.gov/gfa, but for an easy way to see weather along your route EzWxBrief is great.

The evening before the flight the weather still looked favorable. There was a chance of snow in the late afternoon and the field was forecast to possibly go MVFR. I decided that in the morning I would look again and decide if we were flying or driving. With the temperature forecast aloft, there was no way I would be going in the clouds, so I had filed VFR flight plans and received my weather briefings. Again, it looked like we wouldn't have any problems getting into Stevens Field, Pagosa Springs, Colorado (KPSO).

With favorable winds I can make the flight in one hop in my M20D. On this day, I could have made it with the required VFR reserves, but my personal minimum is to be on the ground with at least 10 gallons in a tank and that meant a fuel stop on the way. We opted for Lake Havasu, Arizona (KHII) which is on the route with reasonable fuel costs. It promised to be a warmer stop than H A Clark Memorial Field, Williams, Arizona (KCMR).

We decided to try the new FBO at the north end of the field. Their full-service fuel was the same price as the self-service at mid-field and we would be taking on enough to waive their ramp fee, so why not? It is one of the nicest FBO's I've been in, but note-to-self, when trying to make a quick fuel turn, the full-service FBO might not be the way to go. For a normal fuel stop, it is usually 30 minutes from landing to take off. It took them 30 minutes just to get the fuel truck to the plane.

I wouldn't typically be in a hurry for a fuel stop, but when I checked the KPSO weather, it was not MVFR. Instead, it was trending to IFR, and it would require an approach that starts at 12,100' – in the mountains where it is snowing. Nope, there was no way that would ever happen in my plane. It looked like if I was on the ground by 3 pm, I would be ahead of the snow, despite the forecast. I established my decision points prior to taking off and determined what my "outs" would be in the event the snow arrived early. I think of it the same way as having an abort point on the runway. I have already made the decision ahead of time, so in the moment, I don't let get-there-itis get me in trouble.



KPSO sits about 20 miles up a wide canyon with 12-13,000' peaks that are about five miles past the field. The sides of the canyon are around 8,500-10,000'. I knew that if I could see the mountains past KPHO before I entered the canyon, that I would be able to land at the field. If the snow arrived earlier than forecast, I would turn around and land at either Durango, CO (KDRO) or Farmington, NM (KFMN). The flight was beautiful, with excellent visibility and as we flew closer to our destination, we could see the snow showers off to the north. As we approached the mouth of the canyon, I could see the snow a few miles north of the field, but below the overcast skies it was clear to our destination.

View up the Canyon – My final decision point.

Snow 6 miles to the north. Pagosa Springs is 1 mile ahead.

We landed uneventfully and true to the forecast, about 30 minutes after our arrival, the snow started falling and the field went IFR. The next evening after a perfect day on the slopes, we stopped by the airport for two reasons. Reason Number One: I had forgotten to turn the prop vertical to ensure that any snow that got inside the spinner and might melt during the warmer part of the day, would run out instead of freezing into a block of ice inside the spinner. Reason Number Two: I carry a small hand brush just so I can brush the snow off the plane, and I wanted to do that. If you don't brush it off, it can melt and re-freeze under the snow, leaving a layer of ice on the plane.

The temps at night were in the single digits, but during the day it was in the upper 30's. The plane was tied down facing west, so when we arrived at KPSO, the left side where the sun hit was completely clear of snow. However, where the right wing and horizontal stabilizer were shaded by the fuselage, there was snow and about a half inch of ice. We brushed off what we could, and then pushed the plane into a new tie-down so our Mooney would face east. We hoped that when we departed in two days, it would be clean – free of snow, frost and ice.

The night before leaving, I plugged in the Reiff heater. Like many ramps, the tie-downs are in recessed concrete holes in the ramp, and I had to break the ice in them to get my tie-downs out. However, the plane was clear of ice, and when I turned on the Master Switch, the EDM900 showed the cylinders and oil temperatures right at 80°F, even though it had been 8°F that night. It was cold enough that although the field is at 7,600', we were able to take full fuel. With favorable winds, we made the 571 nm trip to our home base in California (KFUL), non-stop in 4:15.

My tips for the winter flying?

- Stay out of the clouds.
- Just like other long trips, start watching the forecast a couple weeks ahead to see where it is trending.
- Always have an **"out"** planned. It is better to have decision points set in your mind before launching, just like your personal minimums for launching a flight. If it is *blank* when I get to whatever location, I am not pushing ahead. When you are 30 miles from your destination and things aren't looking like you had hoped, that is a terrible time to start a debate with yourself about what you will do.
- Always leave your prop vertical if you think there will be any precipitation and the temps will drop below freezing.
- If your plane is snowed upon, even less than an inch, take the time to brush off as much as you can. This will help prevent a layer of ice from forming under it.

Oh, and one last thing I learned the hard way on this trip: If you leave your Plexus in the plane and it gets cold enough, it freezes in the can, and you can't clean your windshield. We ended up letting it sit in the car with the defroster blowing on it, shaking it, (feeling the chunk of frozen whatever inside), putting it back over the warm defrost, shaking some more, over, and over until it was all liquid again. Finally, I could clean the windshield. Next time I will just take the can to the house with us instead of leaving it in the plane.

As always, thank you for taking the time to read. If there are things you would like me to write about (or not write about), or if you just want to say hello, drop me an email at richard@intothesky.com.

Hot Starts

Like many Mooney pilots, I have found that successful hot starts are challenging. I have always dreaded stopping for fuel because I knew, to continue to our next destination, I would be facing a hot start.

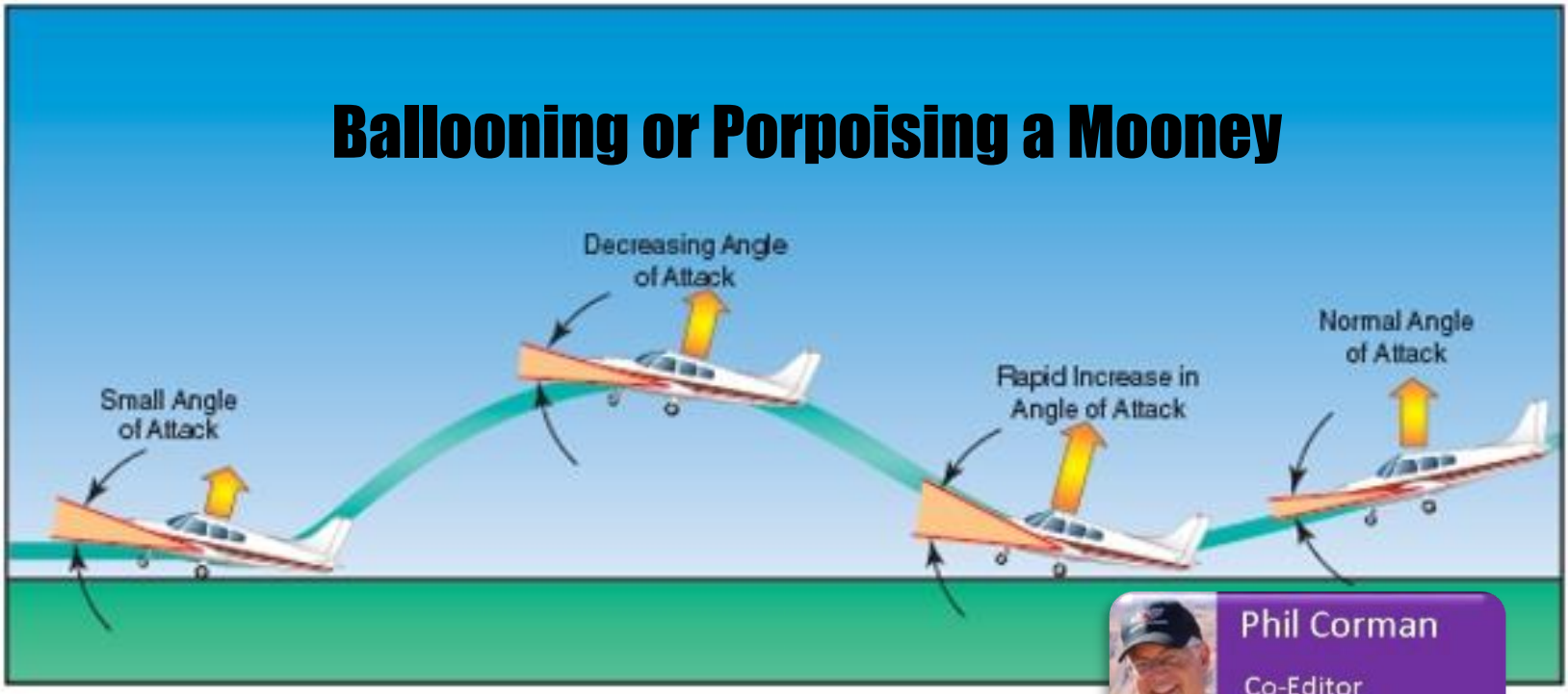
I have tried the hot start procedure published in my M20K 252 Pilot Operating Handbook and that failed to relieve my anxiety. Several pilot and mechanic friends have provided all kinds of sure fire Hot Start procedures. Most of these included flooding the engine and then using the POH's flooded engine start procedure.

My life changed a few months ago, when I stumbled upon a YouTube video that featured Don Maxwell, of Don Maxwell Aviation in Longview, Texas https://www.donmaxwell.com/ .

I watched Don demonstrate a hot start using a Lycoming engine M20J, this video changed my life and gave me hope. My M20K 252 has a Continental engine, but nevertheless, I decided that I would try Don's procedure. As I experimented, I learned that for my aircraft, this procedure works better if I first prime the engine for one second, then set the throttle for a normal start and pull the Mixture to "Cutoff". When the engine starts, simply advance the Mixture to "Rich".

Watch the M20J Hot Start at https://www.youtube.com/watch?v=jbRYqS-fRo0

Ballooning or Porpoising a Mooney



Porpoises are cute and balloons are festive. However, when those words are associated with landing your Mooney, there is nothing cute or festive about them. You do not want to Balloon or Porpoise because there just isn't a lot of time or space to fix these mistakes in a timely and correct way.

Porpoising

If you are a new Mooney pilot, please practice the go-around maneuver until you are extremely comfortable handling your Mooney in this situation. Add power slowly, but surely. Once you have a positive rate of climb and proper airspeed, start cleaning up your flaps and then your gear.
When you porpoise, it is probably due to landing on your nose gear first, or nearly first. Your nose will rise rapidly and if you don't lower the nose/angle of attack, you will stall too high above the runway… Ouch!

We recommend lowering the nose gently to avoid any chance of a stall while adding a little power. Lowering a Mooney nose in the runway environment without some power addition will not end nicely. Therefore, lower the nose and add a twist or so of power so that your Mooney will gently return to the runway.

Ballooning

Ballooning occurs when you either have excess airspeed and/or you pull back too much on the yoke as you initiate your round-out or flare. Often, it's a little of both. Ballooning during the flare, your Mooney will climb instead of settling toward the runway. This is bad since you risk flaring to high if you don't make the adjustment. Lower the nose a bit and give it a twist of power to gently re-enter a flare and make gentle touchdown. Just lowering the nose is not advisable. Do not add too much power unless you want to execute a go-around.

Wisconsin Aviation Expands Aircraft Interiors Service with the Acquisition of Jaeger Aviation & Its Spatial Interior

Wisconsin Aviation, Inc., announces the expansion of its aircraft interiors department with the acquisition of Jaeger Aviation, based in Willmar, Minnesota.

With its roots stemming back to 1945, Jaeger Aviation's sixty-four years of specializing in Mooney Aircraft sales and service made a new interior design for the vintage Mooney a natural. The "Spatial Interior," as this new design was labeled, allows for a simpler and better way to increase cabin space and expedite service while giving the Mooney a look it deserves. The Spatial Interior, now 15 years in the making, is recognized worldwide.

For more details, visit:

www.WisconsinAviation.com or www.JaegerAviation.com

Wisconsin Aviation's aircraft interiors department, located in Watertown, Wisconsin (RYV), accommodates all types of general aviation aircraft. Its services include minor repairs to complete customized interior replacements. The Jaeger Aviation products and experience will help continue to grow this department.

Wisconsin Aviation offers a complete line of general aviation services including air charter, aircraft maintenance, avionics repair and installation, flight training and aircraft rental, aircraft management, aircraft brokerage, and fueling services. The corporation has locations in Madison, Watertown, and Juneau, Wisconsin.

For more information about Wisconsin Aviation, send email to Interiors@WisAv.com or call 920-261-4567.

V_X or V_Y, Oh My!

Twenty First in the series by Ron Blum

I'll start this article by saying, "Oh my! I should have known better with all the different entities that have owned "Mooney" over the years, that each would calculate takeoff and landing performance differently!" For most of my career, I have written Owner's Manuals (OMs), Pilot Operating Handbooks (POHs), Airplane Fight Manuals (AFMs), etc. So, I'll try to read between the lines and "average out" what these Mooney manuals are really trying to say and why.

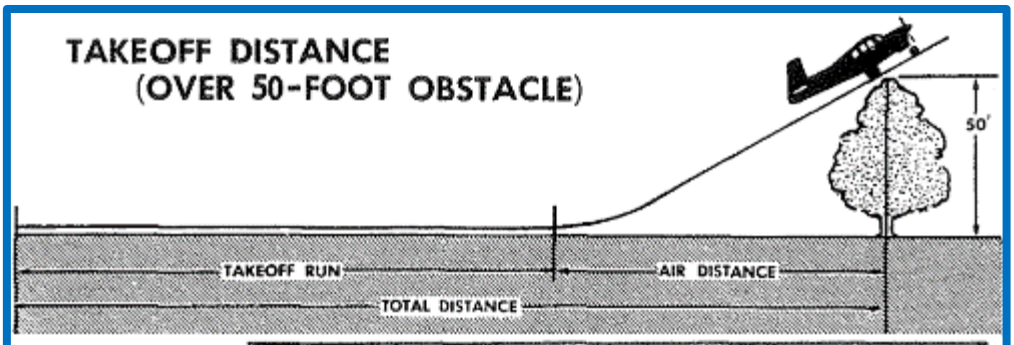
Let's start with knowing YOUR takeoff performance, including both your airplane and you. What do I mean by this? Many of us could be taught to fly a P-51. Few, if any, including me, could get the airplane to do what Bob Hoover could get out of his P-51, "Ole Yeller". As we go through this exercise, think about what you're comfortable doing and what those performance implications will make on your takeoff and landing distances.

> ... All data has been compiled from test flights with the aircraft and engine in good operating condition while using average piloting techniques ...
>
> ... After making a flight plan based on estimates taken from the data in this section, you should check your actual performance and note the difference between your forecast conditions and actual flight performance so that your future estimates may be more accurate.

Figure 1 - Owner's Manual Quote

As we can see from **Figure 1**, even Mooney wanted owners to fly the airplane to get their personal performance numbers. I believe this quote is in all the short-body manuals. In addition, rotation speed(s) and climb speed(s) were not publish as such … especially early on. Some of the manuals have "Maximum Performance" and "Normal" takeoff charts. How would we do this today?

Before we take the runway, we should know our takeoff performance numbers. These could be book numbers or book numbers times a safety factor. We should know where we will put the airplane down if the engine fails. This varies with each airport, weather/wind conditions at the time of departure and height above the ground. After taking the centerline of the runway as close to the beginning as possible, a maximum performance takeoff will begin with holding the brakes and slowly applying maximum takeoff power. Release brakes and accelerate to



STANDARD ALTITUDE FEET	TEMP. °F	TAKEOFF WEIGHT OF 2300 LBS. TAKEOFF RUN FEET	AIR DISTANCE FEET	TOTAL DISTANCE FEET	TAKEOFF WEIGHT OF 2740 LBS. TAKEOFF RUN FEET	AIR DISTANCE FEET	TOTAL DISTANCE FEET
SEA LEVEL	100	665	535	1200	1000	640	1640
	59	597	425	1022	834	550	1384
	20	521	386	907	766	460	1226

Figure 2 – Example Owner's Manual Takeoff Data

MOONEY EXECUTIVE OPERATORS MANUAL

CLIMB PERFORMANCE

STANDARD ALTITUDE (THOUSANDS OF FEET)	RATE OF CLIMB (FPM AT 2740 LBS)	RATE OF CLIMB (FPM AT 2300 LBS)	BEST ANGLE OF CLIMB SPEED (MPH/KTS) CAS	BEST RATE OF CLIMB SPEED (MPH/KTS) CAS
16	100	250	94/82	96/83
15	160	315	94/82	97/84
14	220	380	94/82	98/85
13	280	450	94/82	99/86
12	340	515	94/82	100/87
11	400	585	94/82	101/88
10	460	650	94/82	103/89
9	520	720	94/82	104/90
8	575	785	94/82	105/91
7	635	855	94/82	106/92
6	695	920	94/82	107/93
5	760	990	94/82	108/94
4	815	1060	94/82	109/95
3	875	1130	94/82	110/96
2	935	1195	94/82	111/96
1	995	1260	94/82	112/97
SL	1055	1330	94/82	113/98

CONDITIONS:
1. GEAR UP
2. FLAPS UP
3. COWL FLAPS OPEN
4. FULL RICH MIXTURE
5. FULL THROTTLE--2700 RPM
6. RAM AIR ON

Figure 3 – V_X and V_Y Climb Data

V_R (rotation speed). Rapidly rotate (5°-6°/sec.) to an attitude that will achieve V_X shortly after liftoff. Maintain V_X and takeoff configuration to 50'. That is maximum performance!

Do you feel comfortable flying that profile? It is okay if you don't. Most of us don't always fly out of runways that require maximum performance!

As **Figure 1** implies, and if you fly the takeoff procedure the way Mooney did, you will get similar results to **Figure 2.** Yes, you can make book performance numbers!

If the engine fails during takeoff roll, try to stop on the runway. Going off the end of the runway or through a fence is better at the slowest possible speed. Note: Immovable objects are bad. If airborne, PUSH! Not stalling the airplane will increase the odds of survivability. 😊

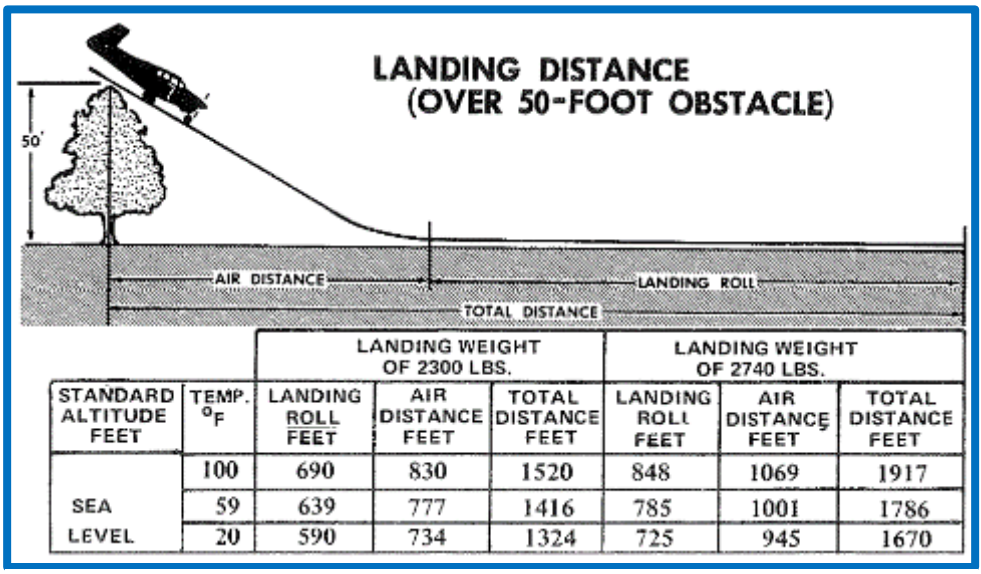
Here is the specific question that inspired me to write this article. Should normal takeoffs be performed at V_X or V_Y? The correct answer differs depending on the pilot, the airport and wind conditions. Ironically, some Mooney manuals have runway surface factors, runway slope factors and wind corrections; some don't. In those cases, it's up to the pilot.

Looking back at **Figure 2,** on a standard day, 2,740 lbs. gross weight, no wind, level, hard surface 1,500' runway, and 50' trees at the end, do you go? If flown perfectly at V_X (and practiced often), one will clear the trees. If flown poorly or at V_Y, the trees will play a factor. A headwind will allow the airplane to clear the trees more easily, however, a tailwind will put the airplane into the trees.

With V_X (best angle of climb airspeed) and a maximum performance takeoff (minimum distance), how different is V_Y? Looking at **Figure 3** at sea level. The airplane needs to accelerate an additional 16 knots (82 to 98 knots). If the airplane is accelerating at 4 knots per second, it will take an additional 4 seconds to accelerate to 98 knots. At 90 knots (250 feet/sec.) times 4 seconds, this will add ~1,000' to the ground roll. In addition, once airborne, the airplane will be climbing at a shallower angle. This will add significantly more distance. This is a case where angle of climb is more important than rate of climb.

Normal climb data (V_Y or cruise-climb) and cruise information is completely up to the OEM to produce.

Landing data, as opposed to takeoff data, depends purely on true airspeed and tire and brake quality. Looking at (**Figure 4**), the airplane clears the 50' obstacle at $1.3V_{SO}$ (1.3 times the stall speed in the landing configuration) with idle thrust. The airplane impacts the runway surface at up to 5-6 feet/second. Firm braking is applied (no skidding) to bring the airplane to a stop as soon as possible.



STANDARD ALTITUDE FEET	TEMP. °F	LANDING WEIGHT OF 2300 LBS. LANDING ROLL FEET	AIR DISTANCE FEET	TOTAL DISTANCE FEET	LANDING WEIGHT OF 2740 LBS. LANDING ROLL FEET	AIR DISTANCE FEET	TOTAL DISTANCE FEET
SEA LEVEL	100	690	830	1520	848	1069	1917
	59	639	777	1416	785	1001	1786
	20	590	734	1324	725	945	1670

Figure 4 – Example Owner's Manual Landing Data

Here is the same question for landing performance that I asked for takeoff performance: **Do you feel comfortable flying that profile?**

It is okay if you don't feel comfortable. Most of us don't take off and land at airports that require maximum performance! Again, as **Figure 1** implies and if you fly the landing procedure the way Mooney did, you will get similar results to **Figure 4**. Yes, you can make book performance numbers!

In the landing case, most pilots would opt to not do a Navy Carrier Landing. Instead, most would flare the landing for a softer touchdown which would be easier on the gear. In addition, most pilots like to hold the airplane off the runway as long as possible and then let the airplane roll before applying gentle braking. These are all easier on the landing gear and brakes/tires, but compared to the book values, they extend the landing distance significantly.

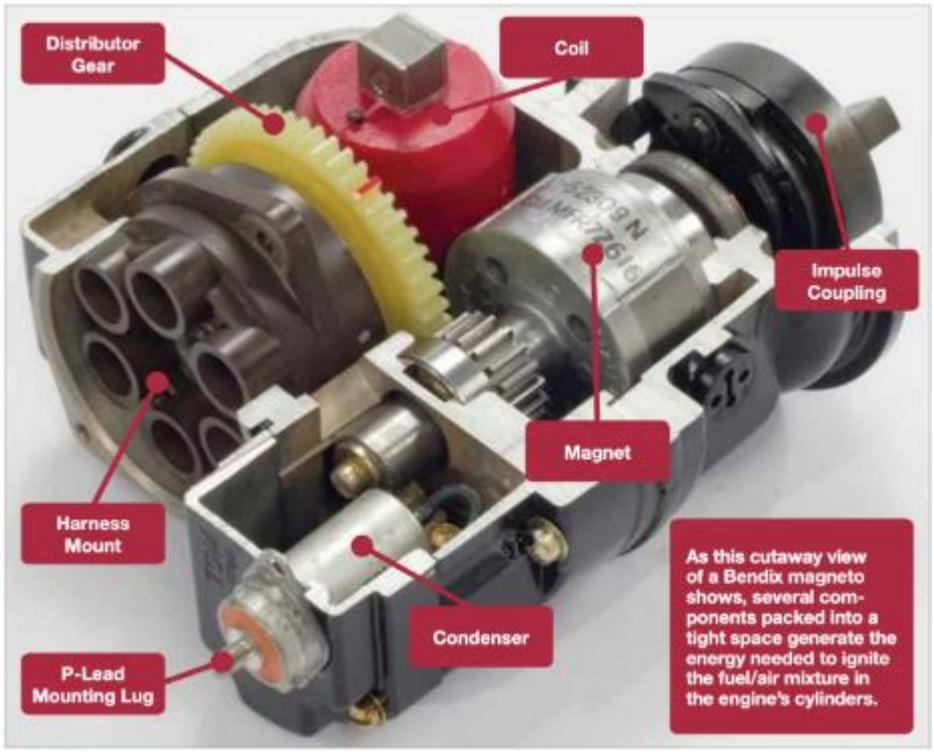
Got a topic? Email me at solutions@blueontop.com. Until next time keep the blue on top.

Blue on Top

Ron Blum is an aeronautical/astronautical engineer with a 35+ year career managing general aviation Flight Test and Aerodynamics departments from shore to shore and border to border. He was Chief Engineer of the Mooney M-10 in Chino, CA. He founded Blue on Top LLC, providing engineering and management consulting, Flight Analyst DER services and keynote speaking.

Magnetos

Jim Price
Co-Editor



Aircraft Magnetos are quite reliable, but those who have had a magneto issue, can testify that removing them every 500 hours for inspection is essential. Sometimes they won't pass the inspection and will need to be overhauled, but that is rare. Mags will almost always operate 500 hours without problems. If you fly right by the 500 hour inspection, you are asking for trouble. When Mags fail, it's usually without warning and catastrophic engine damage and failure can happen within a matter of seconds.

A magneto makes its own electricity when a rotating magnet generates an alternating current in a coil of wire called the Primary Coil. A second coil, with many more turns of wire, is wrapped around this Primary coil, which allows a greater increase in voltage generation. In fact, our Mags produce 20,000 to 30,000 volts to light up the spark plugs.

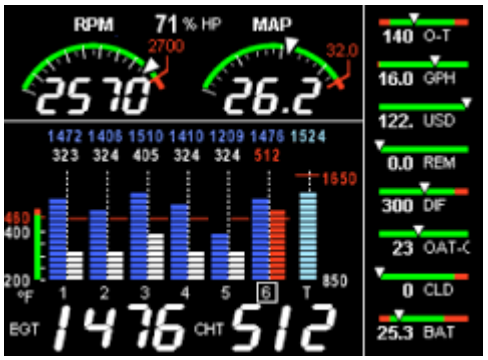
Mag Components are not Eternal

A Permanent Magnet is rotated by a drive on the engine's accessory case and over time, it loses its magnetism. During the 500 hour Mag inspection, it is re-magnetized. Over time, as the Permanent Magnet losses its power, the amount of electric current diminishes, and less voltage is sent to the spark plugs. Less voltage results in difficult engine starts and slight power loss.

In addition, many other things can and will fail. For instance, arcing (which is a natural function in the magneto), causes the **breaker points** to pit and erode. Then, the **internal timing** can deteriorate, so it is reset during the 500 hour magneto inspection.

Mag Check

Before each flight, pilots should check the Magnetos to ensure that the RPM drops meet the standards specified in the Pilot Operating Handbook. However, it is also essential that during this check, you focus your attention on the Engine Monitor. When changing from Both Mags to Left and Right, you should see all the EGT bars rise; none should fall. The rise should be between 50 and 100 degrees F, remain stable, and the engine should run smoothly.



A faulty Spark Plug or Ignition Lead only affects one Cylinder and one EGT bar. A faulty Magneto affects all Cylinders and EGT bars.

If an EGT bar falls or is erratic, this means you should not fly until the ignition system is examined.

If a Spark Plug doesn't fire, it is most likely caused by oil fouling. You can rectify the problem with a 15 to 30 second runup at a high RPM – then perform the Mag check again. If that does not correct the problem, a Spark Plug is probably lead-fouled or damaged. It should be inspected and cleaned / replaced before flying.

Good Mags = Great Engine Starts

Last year, I learned by sad experience, that when the magnetos approach the end of their useful lives, engine starts are harder and harder. My OCD personality could not tolerate such poor start performance, so I had the Magnetos removed and sent to the Engine Shop for inspection. After all, it had been 450 hours since the last inspection, and they were nearing the time for their 500 hour inspection. The Engine Shop declared that they were "toast" and not worthy of service. Our local Mooney Service Center, Chandler Aviation, was able to find two overhauled Magnetos and both bad boys were replaced. My engine starts were once again delightful!

What Can You Learn from a Pair of Socks? (Sox as I call them)

by Jerry Proctor

You are probably wondering, "What in the world do sox have to do with safely flying a Mooney?" Well, please hang in there and I'll explain.

I am sure all of us, from childhood to a few years ago, only paid attention that their sox were matching, without holes and maybe even if they were appropriate for the clothes, we were to wear. What's the big deal? Well, somehow in some secret socially changing organization, they decided we were discriminating against our own feet! In order to right this century's old wrong, they decided that each foot yes, the left or right, deserve their own unique and purposely designed sock. All of us were confused when we saw our first pair that had either a L or a R on the sock. Whattha…..?

I suspect at first, we complied, but then often said the heck with it and put the left sock on the right foot! That will show them, whoever THEM are! However, for good or evil, we now look at every sock, each morning and make sure we put L on Mr. Left Foot, R on Mr. Right Foot. We probably have older socks without the letters. Yet, I still examine the sock.

Changing Habits

So, now my slide to Mooney flying. How long did it take for you to change your habit of blindly putting on a pair of socks to now, taking the time to properly place them on the designated foot? How long, please think about it.

This may give you a solid clue as to how long it will take you to change a Mooney habit, that you believe needs to be modified.

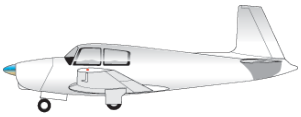
Case in point: I have a pretty good flow for my before landing check. Previously, I wrote about it, but I'm sure not anyone read it. It was about GUMPFFLB. However, this flow neglected a minor point of making sure my rudder trim is centered. Now, this is far from a big deal, but it still is a deal. So, I now am working on modifying my flow to include a quick push of the rudder trim rocker switch. How long will it take me to modify my well-established pattern? About six – eight flights. Equate this to how long it took you to start obeying the sock letters. For me, it was about the six or eight times.

So, if there is a pattern or practice you wish to modify, remember this highly scientific and likely to be acclaimed article. Focus on that habit you want to change and by six – eight times, you will have solidified the change. So, safe flying out there and only put on two left socks when you plan to go dancing!

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

Mooney Maintenance



Search Mooney's new website for Service Bulletins (SBs) and Service Instructions applicable to your Mooney

Click here

Download and search LASAR's Airworthiness Directive (AD) Log – all models

Click here

LASAR
Fanatically Mooney. Exceptionally Fast.

Ask the Top Gun

Tom Rouch
Founder of Top Gun Aviation, Stockton, California

Send your questions for Tom to TheMooneyFlyer@gmail.com

QUESTION

During these hard times, it has become increasingly more difficult to get parts for my Mooney. Can you list the parts that have long lead times?
Also, can you identify places to go to for hard to get parts?

Thanks for all you are doing Mr. Rouch!

Tom's Answer

To say that parts are hard to get, that's the understatement of the century. We work on about anything that flies, but of course we specialize in Mooneys, so that narrows it down to about 60 production years and a full alphabet of models. The older the model, the harder it is to find parts.

Gear actuators come to mind as one of the hardest to support, but keep in mind that cost is not material, since there are very few options. The first place to look are salvage businesses, like Paul Loewen's. He has quite a few airframe parts. Then you can call the few Mooney shops around the country as a possible source. All this takes a large amount of time, so don't blame your local mechanic, since time is money in any business. You asked about lead times, and I just can't answer that. I know that getting engines rebuilt takes forever and it is not just parts. Everyone is having a very hard time hiring mechanics to do the work and that is our biggest problem.

Owning your own plane is becoming a very difficult and expensive proposition. It also requires a lot of patience.

If you can, try to buy something in production because you know that it will be supported.

Avionics Repair and Installation Services now available on site thru J&R Electronics

"We wrung it out... ...But good!"

Reliability? Performance? The MU-2's got it and we proved it! Two Mooney MU-2's have just completed a three and one-half month tour of the United States, Canada, and Mexico. We visited over fifty cities, flew in sub-freezing and tropical climates, flew off icy runways, sod fields, and dirt strips. We tached nearly 400 hours, and made over 700 take-offs and landings and demonstrated to over 400 corporate pilots and businessmen. Demonstrations included a tough 18 hour evaluation by the RCAF in Canada with day and night operations in all conditions, including icing. We tried short field performance, single engine, high altitude, low altitude, maximum climb, slow flight, stalls — you name it, we did it! We wrung it out but good! And all of it without significant maintenance.

Surprised? We weren't. The MU-2 is one of the most tested new planes ever to be introduced to general aviation. Tests like 75,000 pressurization cycles, and 10,000 landing and take-off cycles are part of the proven heritage of this rugged aircraft.

This is the kind of reliability you have a right to expect in a corporate aircraft.

For complete details on the 300 mph Mooney MU-2, the turboprop that offers more performance, speed, and versatility write Mooney Aircraft, Inc., Kerrville, Texas.

MOONEY MU-2

MOONEY AIRCRAFT, INC. KERRVILLE, TEXAS

FAA Tests to Integrate Drones into National Airspace, Spring 2022

The FAA will begin field-testing new drone-traffic-management capabilities to integrate unmanned aerial systems (UAS) into the National Airspace System.

The **Unmanned Aircraft System Traffic Management** (UTM) Field Test, which will start in the spring of 2022, will allow the government and the drone community to continue improving standards, data-exchange methods, and cybersecurity capabilities, according to FAA officials.

UTM includes a set of services that are complementary to, but separate from, Air Traffic Management services for manned aircraft. It is targeted toward small, unmanned aircraft operations, generally flying below 400 feet, FAA officials said, noting it builds on rules and capabilities that enable airspace access and authorization.

The FAA and its industry partners will conduct multiple drone flights in realistic test scenarios to learn more about how to manage drone traffic in varying environments.

“The flight tests will examine how the latest technology and standards will work to support the operations in the real world,” FAA officials said.

The test outcomes will provide the FAA “with critical information to support the development of new policies and for industry development of updated standards to allow drones to routinely fly beyond visual line of sight of the operators,” FAA officials added.

Sporty's Free Webinars, 2022

Sporty's 2022 aviation webinars are live, multimedia presentations that are interactive and free for anyone who registers. All webinars are archived so they may be viewed or re-viewed whenever time permits.

Webinars begin at 3 p.m. ET.

- Feb. 23: Flying the Garmin GFC 600 Autopilot with Garmin's Matt Clark
- March 16: Sporty's Flight Instructor Portal Hands on Demo
- May 4: Introduction to Home Flight Simulators
- June 15: Ask an Air Traffic Controller with Roland Ratliff, Cincinnati Approach
- June 29: Flying with Datalink Weather – ADS-B and SiriusXM Tips

To view the latest schedule and to register for the webinars, go to **Sportys.com/Webinars**.

A Letter from the FAA concerning Unleaded Fuel

February 23, 2022, the FAA and our industry partners announced a safe path toward an unleaded general aviation future. You probably have many questions on what this means for your aircraft, what the timing is, and how the FAA will support the diverse group of piston engines operating today.

Here are the facts:

WHAT WAS ANNOUNCED?

A new initiative that outlines how the FAA and our aviation stakeholders can safely eliminate the use of leaded aviation fuel by the end of 2030 without adversely affecting the existing piston-engine fleet. This isn't a mandate. It's a way that we can safely make this transition.

HOW WE WILL ACHIEVE THIS

There are four pillars to this partnership between government and industry:

- **Develop Unleaded Fuels Infrastructure and Assess Commercial Viability:** Industry stakeholders will coordinate the production of commercially viable unleaded fuels and create the necessary infrastructure and distribution channels to support widespread usage of these fuels.

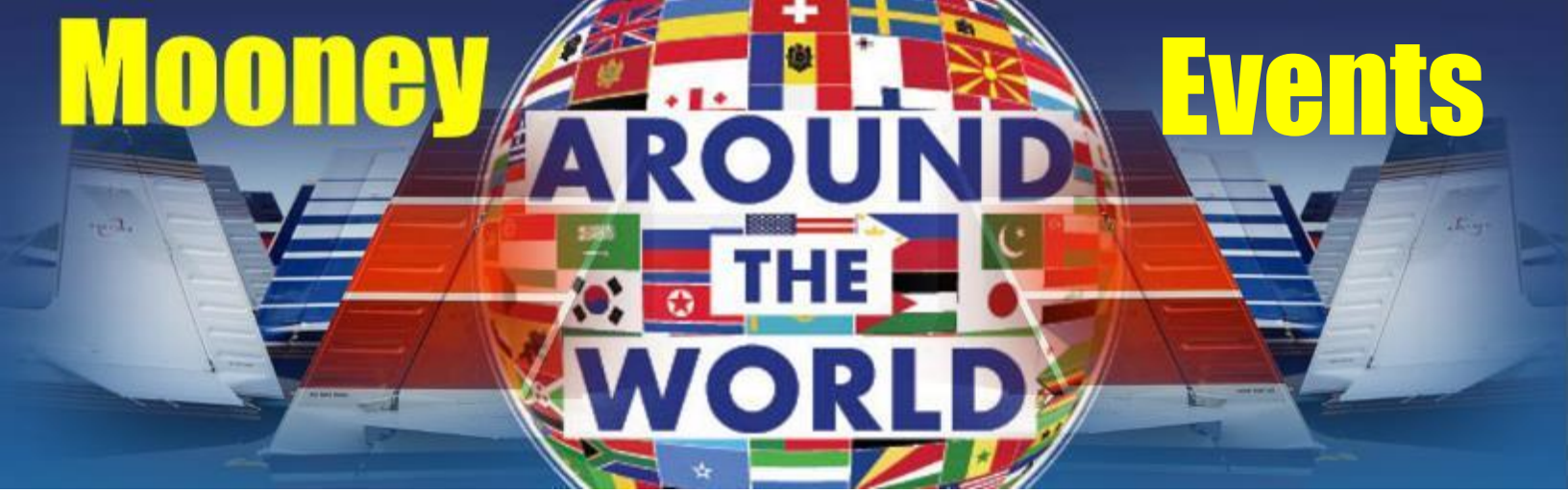
- **Support Research & Development and Technology Innovations:** The FAA and industry stakeholders will support research and testing of piston engine modifications and/or engine retrofits that may be necessary for unleaded fuel operations.
- **Continue to Evaluate and Authorize Safe Unleaded Fuels:** The FAA will address fleet-wide authorization of unleaded aviation fuels of different octane levels. The Piston Aviation Fuel Initiative will continue to evaluate, test and qualify high-octane aviation unleaded fuels with the objective to ultimately transition the fleet to unleaded aviation fuel. Learn more at faa.gov/sustainability.
- **Establish Any Necessary Policies:** The EPA is evaluating whether emissions from piston-engine aircraft operating with leaded fuel contribute to air pollution that endangers public health. The EPA plans to issue a proposal for public review and comment in 2022 and take final action in 2023, which can lead to EPA regulation of lead emissions from piston-engine aircraft. The FAA will subsequently publish regulations that certify piston engine modifications, new piston engines that do not require leaded aviation fuel, and regulate fuel components for aviation fuels.

WHAT HAPPENS NEXT

As our work progresses, we will keep you and your pilot associations informed about key issues such as unleaded fuel evaluations, infrastructure development, decisions about engine modifications and retrofits, and changes in regulations. We will work on getting every member of the GA community involved so that the transition away from leaded fuel will keep you flying safely.

If you have comments, you can email the FAA at EAGLE@FAA.gov.
Eliminate Aviation Gasoline Lead Emissions (EAGLE) Initiative

Sincerely,
The FAA



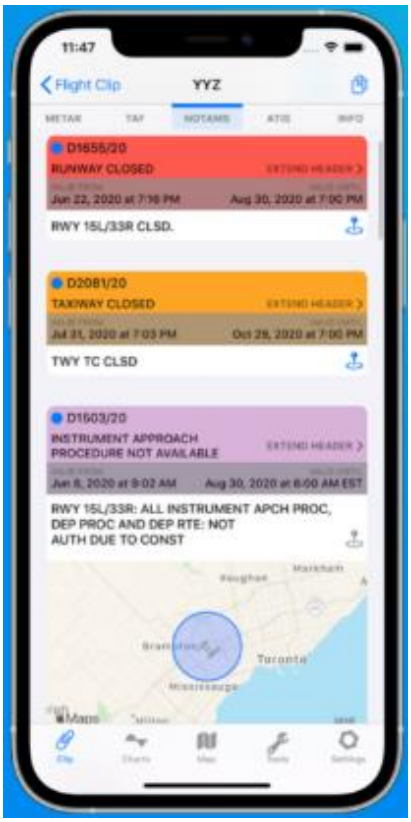
Florida Mooney Lunch Group	*Contact Dave at daveanruth@aol.com or (352) 343-3196, before coming to the restaurant, to have an accurate count. Events begin at 11:30* March 12: Vero Beach (VRB) April 9: Flagler (FIN)
MOONEY SAFETY.COM	**2022 Events** Apr 22-24: Santa Maria, CA (SMX) Jun 3-5: Denver, CO Sep 16-18: Oshkosh, WI (OSH) Oct 21-23: Redding, PA Sign Up at https://www.mooneysafety.com/ppp-registration/
MOONEYSUMMIT	**Learn more at** https://www.mooneysummit.com/
Australian Mooney Pilots Association	March 17-21, 2022: Annual Gathering of Mooneys - You will be able to visit the Coonawarra wine region (where life is a cabernet), Princess Margaret Rose caves, Dingley Dell (former home of Adam Lindsay Gordon), Piccaninnie Ponds, the Nelson Aeroplane Company and lots more. September 9-12: Spring Fly-In to Merimbula – More details later **Learn more at** https://www.mooney.org.au/
EMPOA	**Learn more at** https://www.empoa.eu/index.php/en/
Other Mooney Events	June 3-5: Walla Walla Fly-In by Henry Hochberg. Wine, Food and Fun. Hotel room block at Whitman, 866-826-9422. Contact Henry if you need any additional info at aeroncadoc@comcast.net. **CLICK HERE** to register for free

TMF PRODUCT REVIEW

StationWeather App

We just discovered this App. It gives a cool, nice and clean representation of the weather at reporting airports.

It reports METARs, TAFs, NOTAMs, & lots of Weather Charts. Live digital ATIS (D-ATIS) is available with the Pro Subscription ($4.99 per year).



The METAR clip clearly shows the wind per runway graphically. This makes it simple and easy to determine everything.

I particularly like the ability to slide the bar on the TAFs to see the forecast at any specific time.

You can find this app on the Apple App Store or CLICK HERE for more information.

Parts for Sale

Sun Visor set for 1968-1999 Mooney (my is a 1966) never used, in original packaging asking what I paid

Purchased From Chief Aircraft Search results for: 'Mooney sun visor' - Chief Aircraft Inc. $459.00

Sunvisor Mooney, 1968-1999 Models, Rosen 13" x 7"

The Rosen "NSA" Sun Visor system is fully FAA PMA'd and STC'd for many single and light twins. Distortion free dark gray lens tint reduces 94% of the glare, filters out most harmful UV light, and reduces 70-80% of the infra-red heat rays. Visors have multimotion capability and follow early morning or late afternoon sun.

Brackets are machined aluminum and are anodized black. Oversized visors also increase safety margin while in close proximity to airports and heavy traffic areas.

Contact: dingramkc@icloud.com

This Cowling was removed from a M20E and replaced with a M20J (201) cowling. The cowling is located at Fullerton Airport (KFUL) and is in excellent condition. Offers accepted.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

P/N 310309-501
P/N 310309-502

These fairings are new and priced @ $280.00 each or $525.00 for both. Priced elsewhere @ $362.69 each.

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Bushing P/N 914007-003 - 2- Bushings in the original package @ $35.00 each. Priced elsewhere @ $45.00 each.

Bushing P/N 914007-005
1-Bushing in the original package @ $59.00
1-Bushing loose @ $50.00
Priced elsewhere @ $69.00 each

Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Access Covers P/N 3000-901 (2-available) - 1-without nuts attached.
Make offer. Contact: Bernard Lee – leebern@msn.com (562-865-2547)

Items for Sale

Call Tom 303-332-9822

New Hartzell Propeller Hub HC-C2Y (K, R)-1 Serial CH41782B
This hub will comply with AD2006-18-15 and superseded by AD2009-22-03
This AD affects many IO-360 aircraft.
Current Hartzell price is $4,275.

Price $3,999

Brand new, never used, two-person portable oxygen system
Bottle, carry case, two masks, two nasal cannulas, and all associated tubing, flow indicators, and regulators

Price is $400

New never used aircraft wheel stand
Used when tire and rim assembly is removed. This stand slides onto the bare axle to hold up the aircraft for safety and to avoid damage to bare axle. This stand is adjustable for different heights.

Price $75

1990 M20M Mooney Bravo N756TB 27-0047 for sale

• Garmin G600 • Garmin GTN750 (with PTC Switch) • Garmin GTN650 • Garmin GTX33ES • Garmin GMA35 • Garmin GDL69A • Garmin GDL88 • STEC 55X Autopilot with optional remote annunciator • EDM930 • L3 Avionics ESI2000 • L3 Communications SKY497 • P2 Audio Advisory System TTAF: 2874 TSNEW:1291	• Davtron M803 • CO Guardian model 452 • Precise Flight Pulselite • LoPresti Boom Beam for both Landing and Taxi Lights • Gami Injectors • ACK Technologies E-04 ELT • Monroy Extended Fuel Tanks • Painted 4/2008 • AeroDynamics Vortex generators • Prop Overhauled 9/2016 • Turbo Overhauled 2/2014

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