The Mooney Flyer

The Official Online Magazine for the Mooney Community

www.TheMooneyFlyer.com

February 2019

Editors

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Departments

Features

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From the Editor

Phil Corman

Technology Advancement

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How things have progressed in a short period of time! In the past 15 years, so much has changed when it comes to our panels. Although not related to aviation, none of the products listed on the right existed then. We couldn't plan our flights with ForeFlight, and the Garmin GNS 430 and 530 were introduced in 1998, so they were pretty new.

Perhaps you have already noticed, that as technology advances, if we're not careful, it can become a major disruption in our lives.

We always read about talking on your cell phone while driving or worse, texting with it. It's a distraction. But how about that new G500 Txi, or GTN 650/750? I remember what it was like when I first picked up my GTN 750/GDL88 pair. I tried to cram the basics into my head while waiting for the install. When I picked up the Eagle and was turning crosswind to depart, my GDL88 flashed on the GTN 750 with an imminent aircraft in my proximity. The klaxons were clanging and I was distracted because I hadn't prepared for that. On my flight home, I was dying to tinker with my new toys. It was a major distraction and I had to will myself to simply concentrate on a safe VFR flight with my eyes outside the cockpit and not on the toys.

I wonder if we are willing to venture out into more challenging weather with our Mooneys that are equipped with sophisticated XM or ADS-B Weather.

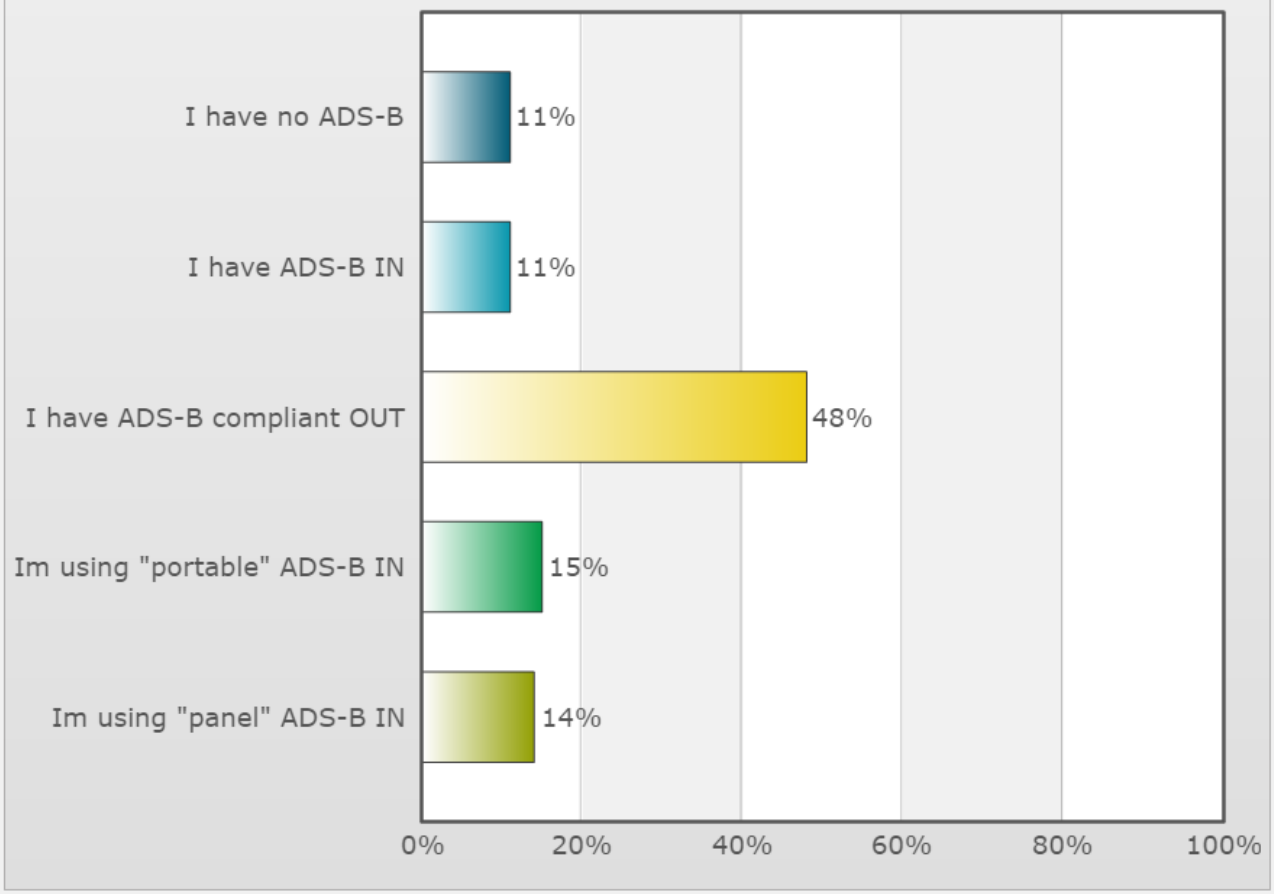
Remember how it was a little more challenging finding that new airport before you had a bright magenta line guiding you to the threshold?

Are we better pilots with all this technology, or are we safer? I think the answer is YES, but it's not black and white. It can make us a little lazy on a thorough briefing, knowing that we can get it constantly in our cockpits. Have you threaded the needle in rainstorms with NexRad and are you thoroughly aware of its limitations? Ditto for traffic systems. ADS-B and Mode C traffic is still spotty depending on your altitude. Like Sgt. Phil Esterhaus used to say on Hill Street Blues, "Let's be careful out there!"

Regarding ADS-B

Poll created by Phil Corman on 12/01/2018

Poll Results



Next month's poll:"Regarding Annuals:" **CLICK HERE** to vote.

Great article on the seven deadly sins. Here are a couple more that populate the CTAF world. "You got a" Mooney on downwind. Last call"
Thanks for what you do for the community.
Wally M

For some reason, I can't get the PDF to download. I tested it on a random PDF download from Google and it worked fine. Could you check and see if there is a problem on your end. Thanks so much. I don't want to miss my favorite magazine. Have a great New Year
Sincerely,
John P

RE: Help with Remote Switch for Engine Heater - Thank you for the feedback. I have seen this unit on several sites, but none had a serious review. I did find good commentary and user reviews on the Vans Air Force discussion page sent by a friend suggesting the Switchbox is the best for function, monthly cost and service.

Again, it is folks like those at The Mooney Flyer, who keep folks like us in the air… Winter and Summer.
Bud

HI DE HO…. Always look forward to the Mooney Flyer…. Lots of great information, education, and activities.. Thank you very much for your effort and passion ….
Fred L ☺ 777LU

Glad to be able to share these historic Mooney documents with The Mooney Flyer. I bought them on EBay about a year ago. My dad bought a Mooney in 1961. It was a 1957 M20 with a 150hp engine. Later in the 60's he put on the metal tail and rebuilt the wood wings. I made my solo in that airplane in 1976. So when I saw these on EBay, I placed a bid and was surprised that nobody else bid on them. Enjoy your read, there is a lot of good information on Mooney's history.
Albert D
Editor Note: *We plan to write a few articles based on these amazing Mooney documents*


ADS-B
EQUIP NOW!
DON'T GET LEFT IN THE HANGAR
January 2020
Su Mo Tu We Th Fr Sa
1 2 3 4
LEARN MORE AT faa.gov/go/equipadsb


Going to go and do my pre-flights
just incase it clears up

A lot happened in 2018. Here's a quick review that might affect you.

The 25 year old traffic pattern was updated

The guidance from the 1990s indicated that non-towered traffic patterns were to be flown between 800 and 1,000 feet above ground level (AGL).
Now, unless terrain or obstacles require another altitude, 1,000 feet AGL is the standard for **non-towered** pattern altitudes. Large or turbine-powered airplanes should enter the traffic pattern at an altitude of 1,500 feet AGL, or 500 feet above the established pattern altitude. Ultralight aircraft are to operate no higher than 500 feet below the powered aircraft pattern altitude.

1,500 feet AGL for large and turbine powered aircraft or 500 feet above the established pattern altitude.

1,000 feet AGL

Ultralights operate 500 feet below the light powered aircraft altitude

Maintaining IFR currency is easier, but the Home Sims are Pricey

The Redbird TD is one of several home based simulators that can help you stay IFR current. ($7,000)

The FAA adopted new regulations related to instrument currency. The biggest changes are:

- Pilots can maintain instrument currency using an approved flight simulator at home without needing to have a flight instructor present,
- Pilots can maintain currency for six months instead of the previous two months.
  - The extended currency interval allows instrument-rated pilots to use any combination of aircraft and aviation training device to accomplish the flight experience required for currency.

IFR vs. VFR Traffic Priority

Imagine a day when there's a layer of overcast clouds above the airport at 2,000 feet AGL and VFR aircraft in the pattern flying well below the clouds. If an IFR aircraft on an instrument approach (final approach) pops out of the clouds, they do not get automatic priority or right-of-way ahead of VFR traffic that might be on downwind, base, or final. Instead, they need to sequence themselves with the flow of other traffic.

Pilots were also reminded that circling approaches require left-hand turns unless the approach procedure explicitly states otherwise.

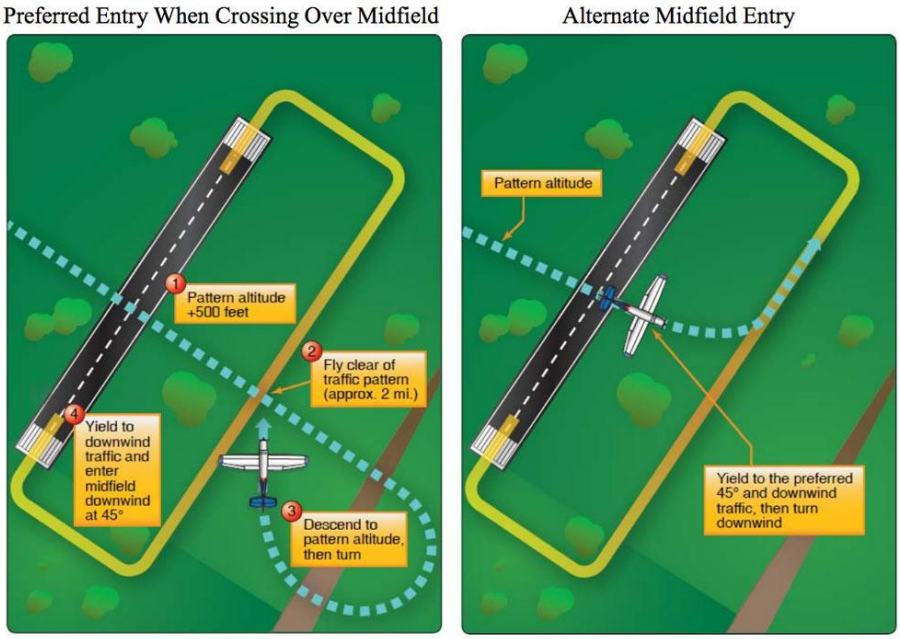
ADS-B REBATE it's back!

Pilots can claim the $500 rebate until Oct. 12, 2019, or until all 10,000 remaining rebates are claimed.

ATC Privatization Bill Eliminated

More than 300 aviation organizations, state and local officials, airports, manufacturers, labor unions, businesses, management associations, and consumer groups stood united against the so-called 'privatization' of ATC. Thanks to a relentless group of pilots, more than 200,000 phone calls, emails, and messages were sent to lawmakers, and the bill never made it to the floor of the House.

VFR traffic pattern entries updated



When you're crossing over midfield. The preferred method is the "midfield overhead teardrop entry". If you're crossing midfield to get to the downwind leg, the FAA recommends that you cross at 500+ above pattern, fly clear of the traffic pattern (approx 2 miles), and then descend to pattern altitude and make a teardrop entry to the midfield downwind.

The second option is the "alternate midfield entry"

New guidance for CFIs giving Flight Reviews

From 2001 through 2010, Loss Of Control (LOC) was the number one cause of GA fatalities. In an effort to improve safety, the FAA has identified three primary areas for pilots and flight instructors to focus on during the flight review:

TRAFFIC PATTERN emphasis:

- **Departure stalls**
- **Attempting a return to the field after an engine failure (the Impossible Turn)**
- **Base-to-final turn**

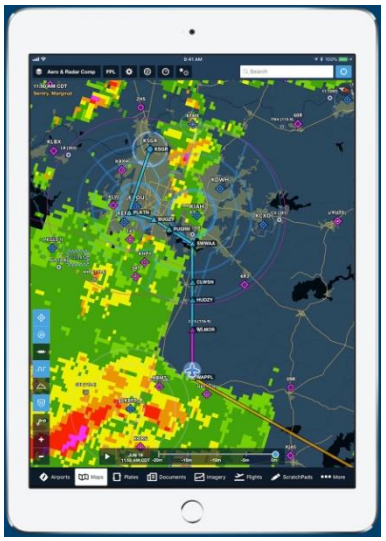
STABILIZED APPROACH emphasis. This includes:

- **On the correct Glidepath,** typically 3 degrees to the runway touchdown zone (TDZ) (obstructions permitting).
- **Tracking the extended centerline** to the runway with only minor heading/pitch changes necessary to correct for wind or turbulence to maintain alignment. Bank angle should not exceed 15 degrees on final approach.
- **Airspeed** within +10/-5 knots indicated airspeed (KIAS), which is usually at, but no lower than, the recommended landing speed specified in the pilot's operating handbook (POH)/Airplane Flight Manual (AFM), approved placards/markings, or 1.3 times the stall speed or minimum steady flight speed at which the airplane is controllable in the landing configuration (VSO), if not specified.
- **Landing Configuration** with flaps as required, landing gear extended, and the airplane in trim.
- **Descent rate is a constant** and generally no greater than 500 feet per minute (fpm). If a descent greater than 500 fpm is required due to approach considerations, it should be reduced prior to 300 feet above ground level (AGL) and well before the landing flare and touchdown phase.
- **Power setting is appropriate** for the airplane configuration and is not below the minimum power for approach as defined by the POH/AFM.
- **All briefings and checklists** (except the landing checklist) are completed prior to initiating the approach.

FLIGHT THROUGH IMC emphasis:

Vertigo or spatial disorientation has been a significant factor in many aircraft accidents. The common result when a non-instrument-rated pilot inadvertently continues flight into IMC is spatial disorientation of the pilot and LOC. Pilots who are instrument rated, but not instrument proficient, are also susceptible. Recovery from LOC in IMC can be nearly impossible without skills and competency. Additionally, instrument-rated pilots maneuvering in IMC who fail to prioritize pilot workload properly and use Crew Resource Management (CRM) or Single Pilot Resource Management (SRM) may become inattentive or distracted and lose situational awareness (SA), which too often can lead to LOC. The GAJSC determined that pilots and flight instructors need to emphasize effective preflight planning and pilot proficiency to reduce the risk of LOC in IMC.

Five major weather forecast improvements added to ADS-B FIS-B (Weather Broadcast)



Using ADS-B for free in-flight weather updates got a whole lot better this past June! If you have an ADS-B receiver like the Stratus, here are the new Flight Information Services Broadcast (FIS-B) additions you can now see on your iPad/Tablet:

- Lightning Strikes
- Turbulence
- Icing Forecasts
- Cloud Tops
- Center Weather Advisories (CWA)

FAA halted the Unleaded Fuel Testing Program

In early September 2018, the FAA said some final testing of a 100LL AvGas replacement for the nation's GA aircraft would be postponed until the middle of 2020 from its original December 2018 date. Officially known as the piston aviation fuels initiative, the agency said, "Phase 1 and 2 testing of fuels from Shell and Swift (the two finalists in the program) revealed unique issues with each fuel that needed to be addressed. In response, the PAFI Steering Group (PSG) notified each of the fuel producers and provided a list of issues that needed to be better understood and mitigated in order for their fuel to move forward in the program.

DEFINE AIRSPEED

The speed of an airplane. Deduct 25% when listening to a Mooney pilot.

STEP BY STEP GUIDE: HOW YOUR NON-FLYING FAMILY CAN SELL YOUR MOONEY – ASSUMING YOU ARE NOT AROUND

Even though your surviving family member or friend may not be an airplane owner or pilot, this article will give them a step-by-step guide on how to sell your airplane. It is also probably useful for any Mooney owner to review when selling their Mooney. You simply do not want to leave your family/friend attempting to sell your Mooney with little or no knowledge of the process.

Step 1:

Long before you think you might have to have a family/friend sell your plane, you need to give them the legal right to transfer ownership and sell your Mooney. First, you could make them a co-owner. In a Will, you can bequeath your Mooney to a person or entity, or the Executor has the ability to sell it. You should consult with a Probate Lawyer for details. In a Trust, the person(s) you name as Trustee would have the power to sell it, if properly spelled out in the Trust. Putting your Mooney in a Trust is a good way to accomplish this and it avoids probate and the ensuing delays. It's relatively easy to put your Mooney ownership in a Trust, but the FAA requires a copy of your Trust to do so. Anyway, this is a step you should consider now, before it becomes a necessity.

Step 2:

You should create a document that gives all the information and pictures needed to sell the plane and be sure to keep it up to date. A good listing includes all of the following:

- Year and Model – Example: 2007 MOONEY M20R OVATION 3 GX
- Total Time on Aircraft (TTAF) and Time Since Major Overhaul (SMOH) or Time Since Factory Reman
- Date of Last Annual
- A list of the Avionics in your Panel

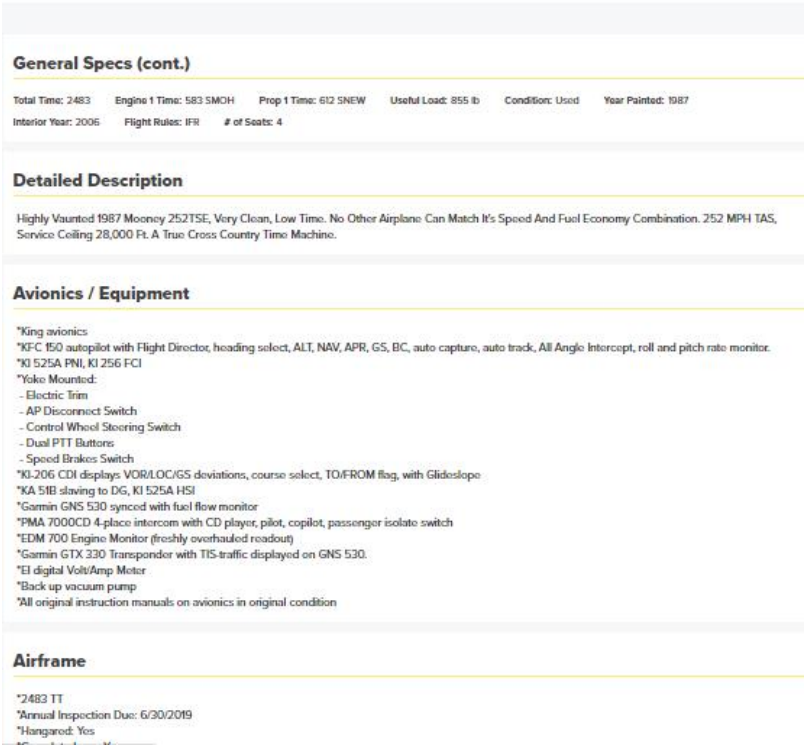
- Any other equipment (non-panel) such as de-icing, etc.
- Pictures
  - At least 3 Exterior shots of your Mooney
  - At least 2-3 of your panel (complete, close up of left side, close up of right side)
  - 3-4 pictures of your Interior, including front seats/back seats, cargo area, and headliner
- Evaluation of Exterior and Interior Condition on a scale of 0-10, or one of {Poor, Satisfactory, Good, Excellent} – This is a subjective decision
- Any Damage History – If there is a history, then identify the cause. Example: Gear Up in 2003, repaired by [place]
- Set an asking price

Go to www.Trade-A-Plane for good examples of Airplane Listings. Note: You will need to revise this document, perhaps every 3 to 6 months to keep it current. Print a copy and place it in your Will or Trust and give it to your family/friend.

Write down the names/phone/email of a few CFIs and/or Mooney pilots that your friend/family can rely upon to "demo" fly your Mooney to prospective buyers. Add these pilots names to your Insurance.

Note: Consider scanning and making PDFs of your Aircraft, Powerplant, and Propeller Logbooks. This is easy, but takes time. It is extremely important that you don't relinquish control of your Logbooks. If your logbooks were lost or stolen by a buyer, the value of your Mooney would be significantly reduced. If you have PDFs, then you can email them to solid prospective buyers.

This is probably as good a time as any to remove all your stuff from the plane. Check the hat rack and the cargo bay for tools, oxygen tanks, etc.. Also, check the seat backs for all sorts of valuable items such as CO detectors, Oximeters, Oxygen lines, cannulas, etc.



Step 3: (How to Sell Decision)

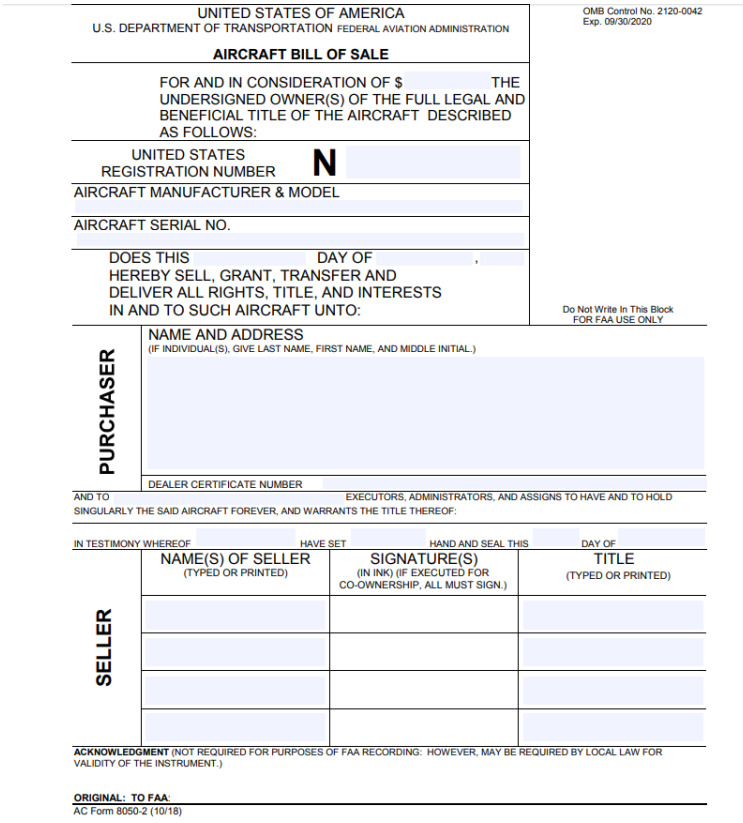
There are 2 paths to initiate the process, either step 4 or step 5.

Step 4a: (List Your Mooney)

There are dozens of places to do this and you can certainly do all of them, but we recommend your list include these websites:

- www.Trade-A-Plane.com
- www.Barnstormers.com
- www.ASO.com
- www.controller.com

They all charge a nominal fee for a complete listing and these will give you maximum exposure. You can also, for NO COST, place your listing on MooneySpace under the forum "Aircraft Classifieds" (https://mooneyspace.com/forum/10-aircraft-classifieds/)



UNITED STATES OF AMERICA
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

OMB Control No. 2120-0042
Exp. 09/30/2020

AIRCRAFT BILL OF SALE

FOR AND IN CONSIDERATION OF $ THE UNDERSIGNED OWNER(S) OF THE FULL LEGAL AND BENEFICIAL TITLE OF THE AIRCRAFT DESCRIBED AS FOLLOWS:

UNITED STATES REGISTRATION NUMBER **N**

AIRCRAFT MANUFACTURER & MODEL

AIRCRAFT SERIAL NO.

DOES THIS DAY OF , HEREBY SELL, GRANT, TRANSFER AND DELIVER ALL RIGHTS, TITLE, AND INTERESTS IN AND TO SUCH AIRCRAFT UNTO:

Do Not Write In This Block
FOR FAA USE ONLY

PURCHASER

NAME AND ADDRESS
(IF INDIVIDUAL(S), GIVE LAST NAME, FIRST NAME, AND MIDDLE INITIAL.)

DEALER CERTIFICATE NUMBER

AND TO EXECUTORS, ADMINISTRATORS, AND ASSIGNS TO HAVE AND TO HOLD SINGULARLY THE SAID AIRCRAFT FOREVER, AND WARRANTS THE TITLE THEREOF:

IN TESTIMONY WHEREOF HAVE SET HAND AND SEAL THIS DAY OF

SELLER

NAME(S) OF SELLER (TYPED OR PRINTED)	SIGNATURE(S) (IN INK) (IF EXECUTED FOR CO-OWNERSHIP, ALL MUST SIGN.)	TITLE (TYPED OR PRINTED)

ACKNOWLEDGMENT (NOT REQUIRED FOR PURPOSES OF FAA RECORDING: HOWEVER, MAY BE REQUIRED BY LOCAL LAW FOR VALIDITY OF THE INSTRUMENT.)

ORIGINAL: TO FAA
AC Form 8050-2 (10/18)

Step 4b:

Now your family/friend waits for phone calls and/or emails. Here's where patience reigns supreme. You may get lucky and have only "real" buyers call. But in practice, you will likely receive a significant number of "gear kickers" (i.e., airplane speak for "tire kickers"). Buyers will ask a lot of questions. If you don't have all the answers, write them down and inform them you'll get back to them. Then get the answers from the Mooney pilot(s) or CFIs that you listed in Step 2, or your Mooney's mechanic (A&P). Keep a record of all questions and answers for future callers.

If the buyer wants to see the logbooks, you can email the PDF files that were prepared. The easiest way to do this is to upload them to the cloud and then send the link(s) to the buyer. This is best, because the PDF files of the logbooks tend to be big files and not email friendly.

Step 4c:

What if the buyer seems real and asks if they can come to see and fly the plane? We recommend that they are only permitted to fly "right seat" with your named pilots/CFI. Never let a buyer fly your plane solo.

Step 4d: (The Purchase Agreement)

If the buyer wants to make an offer, your family/friend has your asking price and also your negotiation price (the value you could accept). If you agree, then here are the details for a Purchase Agreement that we recommend:

- Agreed upon Price
- Deposit of $5000-$20000 (maybe more if aircraft selling price is above $200K
- Subject to a Pre-Purchase Inspection
- The price will only be adjusted for any Airworthiness Issues. Airworthiness issues can be resolved by your family/friend having those issues remedied, or by adjusting the price to compensate the buyer to have them fixed. The key point here is, that except for Airworthiness Issues, the agreed upon price is not negotiable after the Pre-Purchase Inspection is completed.

Click Here for a sample Purchase Agreement.

Note: We strongly recommend that you do NOT let the buyer fly the airplane to another airport for a pre-purchase inspection. Either your CFI or some other designated pilot can fly the plane to the pre-purchase inspection location. If it's more than a short flight, the buyer should pay for fuel and pilot expenses.

The pre-purchase inspection should be limited only to those items found in the Annual Inspection procedure. No other work is authorized during a pre-purchase. This is to prevent an intrusive inspection of the engine, etc..

Step 4e: (The Actual Purchase)

If the Mooney's Pre-Purchase Inspection is acceptable, here are the final steps:

- Complete the Aircraft Bill of Sale (FAA Form 8050) located at: https://www.faa.gov/documentlibrary/media/form/ac8050-2.pdf
- The Transfer includes:
  - Remove the original aircraft registration certificate from the aircraft. This should have the owner's name on it. Complete the sale information on the back of that certificate and mail it to the FAA registry in Oklahoma City. This protects you.
  - Remove any FCC radio station license with your name on it (if there is one).
  - Provide all logbooks and records on the aircraft (as agreed upon) to the buyer.
  - If you know the buyer is a foreign national and the N number cannot be maintained, you are required by the FARs to remove the N number (FAR 45.33). You can paint it over or strip it off; just as long as it is removed.

Then final payment should be made by "wire transfer" to your bank account. Remember that personal checks and cashier's checks can be cancelled. Therefore, only a wire transfer is guaranteed. Of course, cash is acceptable.

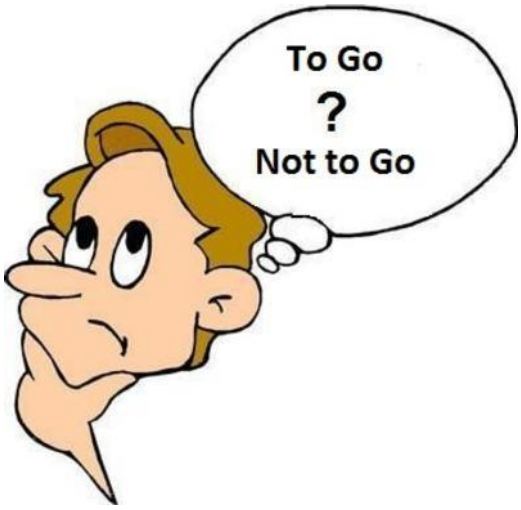
You can also work with AIC Title Service in Oklahoma City. They handle the release from the Lien Holder, the Bill of Sale, the Application for Registration, and the FAA filing. Go to Summary.

Step 5:

The second option is to simply call Jimmy Garrison at All American Aircraft in San Antonio at 830-261-4147. All American Aircraft is the largest and most reputable seller of used Mooneys in the world. Jimmy will essentially do everything on your behalf to sell your Mooney. All you need to do is send him your listing document. All American will suggest a selling price with your family/friend, pick up your Mooney and fly it to their place in Texas. This relieves your family/friend of the entire drudgery of the selling process. The cost is All American's fee. Before All American flys your Mooney off to Texas to be sold, ensure you have a signed Agreement on the terms and prices/costs. This is the no fuss… no muss option to sell.

Summary

It'll be a sad day for my wife if she has to sell the plane, but at least she'll have a roadmap to do so. There are so many wonderful memories that our Mooney has provided us over the years. Our Mooney has become an integral part of our lives and of our family. I hope this article provides a guide for your family/friend to sell your Mooney if you leave us. Perhaps the article has a few valuable tidbits for anyone wanting to sell.



Weight & Balance in the EFB Era

Is Technology Out of Sync?

by Damon Trimble

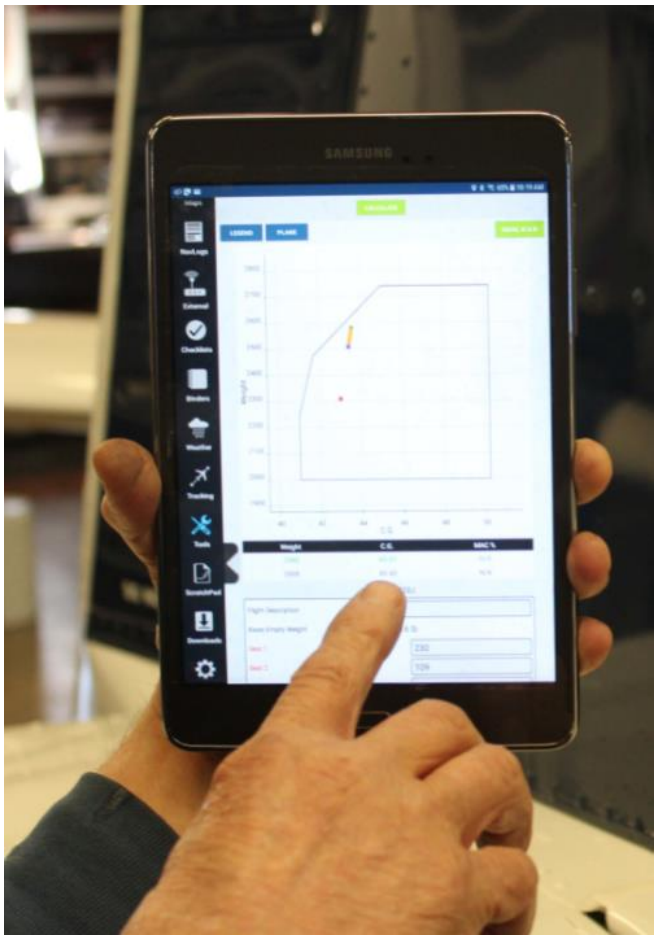
When your Mooney first flew away from Kerrville, Texas, some three, four, or more decades ago, it carried with it a standardized Pilot Operating Handbook (POH), including an equipment list, weight & balance (W&B) figures, and numerous related performance charts. These were standardized, because long production runs of aircraft were configured with the same equipment to ease certification and assembly-line control. Have you considered that over time, it is likely your Mooney has had radios and other equipment added or removed, making the original data out-of-date? Ideally, the paper version of that information has been kept current in your POH and aircraft logbooks.

Enter the Electronic Flight Bag (EFB). Most EFBs also contain a handy and easy-to-use W&B tool. When that tool was created, it was populated with several sample aircraft of various makes and models. Each aircraft in the tool was programmed with a default set of values, e.g., empty weight, fuel loading, moment-arms, etc. These values were likely set to those original factory numbers for an unmodified aircraft. Are you sure they are correct for your situation?

I recently consulted as an expert witness on a Mooney incident. I observed the incident pilot's use of an EFB for W&B calculations without cross-checking the EFB data with the POH or aircraft logbooks. If an aircraft is loaded close to the edges of the Center of Gravity envelope, the error might cause the pilot to think the aircraft is okay, when it is actually too heavy or misloaded for the conditions.

The computer adage ***Garbage In = Garbage Out*** applies here. When used in flying, this simply means that those factory default values for your aircraft's unique W&B are surely incorrect.

I suspect that this is an underlying and nearly universal problem with EFB W&B Apps. The default numbers for my M20J (201) on my tablet were wrong ... by over 150 pounds.



Newer aircraft could also have these same problems, namely modifications that impact the aircraft performance data. The newer ones just have not had as much time to drift from the factory standards.

In summary, to be useful and accurate, a computerized App must contain the correct and up-to-date information.

Quite simply, I want to urge folks to edit, or even add a "new aircraft," to their App for their exact airplane with the up-to-date and correct data.

Updating your tablet is one service that is not normally provided by your Mooney Service Center.

The Mooney M20K 252 TSE

A Brief History

In the mid-1980s, Mooney set out to improve upon the M20K 231 with an eye towards more speed, cooler cylinders, improved systems, and redundancy.
To meet these goals, they chose the 210 HP Continental (TCM) TSIO-360-MB. It featured a tuned induction system, which meant a more even airflow to the cylinders. It came with a larger turbocharger and a manifold pressure controlling system that allowed pilots to add full throttle and not exceed the maximum allowed MAP. A new Intercooler cooled the induction air temperatures by as much as 100^{o}F and a new side mounted duct and filter would prove to prevent ice crystals from clogging the air filter.

The 252 evolved into a 28-volt aircraft. To improve redundancy, Mooney added a second alternator. The primary alternator is engine driven, while the standby/backup is a conventional belt driven alternator. Additionally, an electric standby/backup vacuum pump was placed in the tail cone.

The 231 was named for its top speed of **231** MPH (200 knots). To improve upon this, the 252 was certified for 28,000 feet so that Mooney could claim a top cruise speed of **252** MPH (210 knots). Hence the name M20K **252** TSE (**T**urbo **S**pecial **E**dition).

Marketing

Sales of the 252 began in 1986. In 1989, the M20M TLS (**T**urbocharged **L**ycoming **S**abre) Bravo was introduced, so Mooney now had two great turbocharged aircraft. Not wanting to compete with themselves, in 1990 they decided to concentrate on just one Turbo Charged model. From 1986 to 1990, Mooney sold 231 M20K 252s.

Useful Load

The 252 is not a perfect airplane, but it comes close. It has an empty weight of around 2,080 pounds and a max gross weight of 2,900 pounds. Although it has seating for four, if you have a full fuel load (75 gallons), this leaves room for another 370 pounds; basically a pilot, passenger, and luggage.

Removing and Attaching the Cowlings

Mooneys are notorious for being time consuming when it comes to removing the cowling and the 252 continues in this time-honored tradition, and then some. You can expect to spend 10 – 15 minutes just removing and reinstalling the upper cowling. It will take you 30 – 40 minutes to remove and reinstall both the upper and lower, and, unless you have four hands, you'll need help with the lower cowling.

Cabin Comfort

If you're looking for Bonanza spaciousness, I'm sorry, especially if the rear seat passengers are tall or if the occupants are rather robust in size. Last year, I was flying some Boy Scouts so they could complete their Aviation Merit Badge. Many of the leaders and fathers wanted to fly, too. I completed my weight and balance calculations and loaded the men for our last flight of the day. I noticed that one of the leaders in the back seat was so tall that he had to tilt his head inboard. I asked if he wanted to fly in another airplane, but he insisted that he wanted to fly with me. Fortunately, this was a short, 40-minute flight.

Both front seats are articulating, moving forward/aft and up/down. In order to reach the rudder pedals, the pilot will most likely need to move the seat near the most forward position. Make sure you feel the seat lock into position before you taxi and especially before you take off. When you rotate, if the seat pins are not securely in the rail, you'll slide all the way aft and that can cause real problems!

- Prop Control – Full forward
- Mixture – Full rich
- Prime

°F	°C	Prime Time
90	32	4 – 5
80	26	4 – 5
70	21	4 – 5
60	15	4 – 6
50	10	6 – 7
40	5	8 – 9
30	-1	10 – 12
20	-7	12 – 16

- **Hot Start – Prime 3 seconds**

The prop will turn several times and then start. If it's not "catching", add more throttle.

Because the 252 has a tuned induction system, all the cylinders receive the same amount of air and this means you can expect a more even initial combustion. When the prop has turned less than ½ a rotation, you'll have a start.

If the engine sounds like it's about to shut down, that means that you probably should have primed the engine for another second or so. Just give the Primer a quick "shot" and you'll be back in business. (Lesson learned for the next start).

Once the engine is smoothly running, aggressively lean the mixture for the ground operations. This will help ensure that a plug or plugs will not fowl, which will result in a rough mag check. If you have a fowled plug, you'll need to "burn it out". Just run the engine at 2,500 RPM for 20 – 25 seconds, and try the mag check again.

Taxi

Turn radius is adequate. I've been in some tight spots, and knock on wood, I haven't bent any aluminum . . . yet. The ride quality is typical of any Mooney. Hey, we're depending on not-the-softest rubber shock discs to dampen out the ruts and bumps and folks, that's not going to happen. It's important that you replace the shock discs when they fail to expand when the airplane is inspected on jacks. Discs that fail to expand will not only give you a poor ride on the ground, but during landings, the hard discs will not absorb the shock. Over time, this will damage the wing tanks and precipitate fuel leaks. You can change the discs when needed, or shell out $10,000 or more for a tank reseal.

Run up

Enrichen the fuel before the doing the run up. I first set 1,500 RPM and check the operation of the belt driven alternator and the prop, I then increase enrichen the mixture and increase the RPM to 1,700 to check the mags. Trying to do the mag check with the mixture still leaned, will result in a higher than normal RPM drop.

Takeoff

Trim. If you don't have passengers in the rear seats, set the trim about 1/8" above the takeoff position. If you have rear seat passengers, you might try setting the trim indicator in the middle of the Take Off "box". Leave the mixture rich in anticipation of the takeoff. Experiment and find the trim setting that works best for you. You want your Mooney to takeoff with very little back pressure on the yoke. It's such a great feeling!

Flaps. I love taking off with flaps. It's what I do, even if I'm not faced with a takeoff obstacle or short/soft runway. It's up to you. If you use flaps for takeoff, when you retract them, the nose will pitch up and you'll need to apply nose down trim, as needed.

Cleared for Takeoff

Push the throttle smoothly to full open and let the controlling system regulate the manifold pressure to a maximum of 36" (± 1"). Some pilots rapidly twist the Vernier instead of smoothly pushing the throttle to full open. Twisting takes a bit more time, but unless you are faced with a short runway or imminent obstacle, the "throttle twisting" technique should be just fine. Once at full throttle, you should now have 2,700 RPM, 1400 – 1500 degrees of Turbine Inlet Temperature (TIT), and an indicated fuel flow of 22 – 24 gallons per hour.
Depending on the takeoff gross weight, the 252 will lift off around 65 – 70 KIAS.

The 252 is powerful. How powerful, you ask? Even when taking off from Flagstaff, AZ (KFLG), elevation 7,015' MSL, with a density altitude of 9,000', my takeoff run has always been 2,200' or less.

After getting safely airborne, raise the gear. If flaps were used for takeoff, retract them at 80 – 85 KIAS. When the OATs are cold, I close the Cowl Flaps ¼ - ½ open. During the summer, I close the Cowl Flaps to ¾ open. If the CHT is getting too high, open the cowl flaps further, as required.

Climb Power and Speeds, Two Opinions

1 - The POH recommends 32" MAP, 2,500 RPM and 95 – 115 KIAS. You can expect a 600 – 750 FPM rate of climb and a fuel flow of 18 – 19 GPH.

2 - Former Mooney test pilot Bob Kromer, Mooney specialist Kerry McIntire, and the TCM (Continental) engineers, all assert that climbing at 32" Manifold Pressure and 2,500 RPM is a waste of time. Kromer contends that TBO is not magically increased by climbing at at a reduced power setting.

Kromer, McIntire and TCM recommend 36" ± 1-inch MP, 2,700 RPM and 120 KIAS. The TIT should be in the 1450 – 1500 range while the fuel flow will be the same as takeoff, 22.0 – 24.0 GPH. TCM rates the TSIO-360-MB engine for continuous takeoff power, so why not? If, during the climb, the fuel flow is greater than 24 GPH, lean the engine to the 22 – 24 range.

The higher climb airspeed (120 KIAS) aids in cooling during the climb. At 36" and 2,700 RPM, you can reasonably expect the following climb rates:

To 10,000' MSL	To 14,000' MSL	To 16,000' MSL	To FL 180
900 FPM	800 FPM	700 FPM	600 FPM

Best rate of climb speed is 96 KIAS. Best angle is 71 KIAS at sea level, increasing 1.5 knots for each 5,000 feet of altitude.

Cruise Power, Two opinions

Option #1 – Mooney suggests 28" and 2,500 RPM, with a mixture setting of 50° rich of peak TIT. That equates to 75% power. Once at cruise altitude, you'll burn 14 – 14.5 GPH. 28" and 2,500 is where the tuned induction system was designed to give the optimum air distribution to the cylinders. Also, the prop was designed to be the most efficient at 2,500 RPM.

50 degrees rich of peak is a compromise setting between the best economy (peak) and the best power (125° rich of peak) TIT.

Option #2 – Mooney expert Kerry McIntire contends that operating at 65% power will give your engine longer life, while providing a quieter environment at cruise.

65% Power is about 26", 2,400 RPM, 1,500 TIT and 11.5 – 12.8 GPH.

At 65% Horsepower, you can expect the following TAS:

3,500' – 5,500' MSL	10,500' MSL	14,500' MSL	17,500' MSL
150 TAS	160 TAS	65 TAS	170 TAS

At 75% power, you can expect an additional 10 knots TAS.

Comparing ETEs at 65% and 75% power settings

Distance	Altitude	% Power	KTAS	ETE
171nm (18 kt headwind)	10,000' MSL	75%	170 KTAS	1 hour 13 min
171nm (18 kt headwind)	10,000' MSL	65%	160 KTAS	1 hour 17 min
454nm (4 kt headwind)	FL180	75%	180 KTAS	2 hours 47 min
454nm (4 kt headwind)	FL180	65%	170 KTAS	2 hours 54 min

If you're interested in flying above FL180, here's the TAS performance you can expect:

65%			
FL190	**FL210**	**FL230**	**FL250**
175	178	180	185
75%			
185	190	195	200

Most Mooney pilots do not feel comfortable flying a single engine, unpressurized airplane at FL280, (the max certified altitude). The USAF, even with their elaborate oxygen regulators and masks, prohibits unpressurized aircraft from flying above FL250. Flying above FL250 increases the risk of Decompression sickness (DCS), also known as "the bends", or divers' disease.

Perhaps a lower personal limit?

Time of Useful Consciousness				
Altitude (feet)	Flight Level	Pressure (hpa)	Temperature (C) (ISA)	Consciousness
15,000	150	571.8	-14.7	30 minutes or more
18,000	180			20-30 minutes
22,000	220			5-10 minutes
25,000	250	376.0	-34.5	3-5 minutes
28,000	280			2.5-3 minutes

The Time of Useful Consciousness (TUC) is the period of elapsed time from the exposure to an oxygen-poor environment, until the time when the ability to function usefully is likely to be lost. At which point, an affected individual would no longer be capable of taking normal corrective or protective action. Note that above FL180, the TUC decreases drastically.

CHT

460°F is the max allowable CHT. **The CHTs in cruise should be maintained between 375° and 410°F.** Even when flying in the hot Arizona summers, I have experienced CHTs of 410°F. But, if I crack the Cowl Flap ever so slightly, I can reduce the hottest CHT to 390°F or below.

Cruise, Rich of Peak

If you don't have an engine analyzer, you can still set 50^{o} rich of peak.

- Lean the engine until you notice a drop in Manifold Pressure.
- Note the TIT.
- Enrich the mixture until the TIT is 50^{o} cooler.

Descent Power and Shock Cooling

Set 20" MAP and leave your RPM at the cruise setting. Descend at 700 FPM and this will maintain your cruise TAS or slightly greater. You can lower the MAP to 20" quite quickly without worrying about shock cooling.
NOTE: If you set less than 15" MAP, the propeller will begin to drive the engine and that's when shock cooling begins. Bear in mind that the Speed Brakes are a great tool and will double your descent rate.

Landing

I try to remember that I'm probably entering a pattern full of slower airplanes, so I too, need to slow down!

Downwind Approach to Landing

For a pattern entry, I like to be at pattern altitude and slowing below the max gear extension speed (140 KIAS) at 4 – 5 miles from the field and as I approach 115 KIAS, I'll extend the flaps to the takeoff setting. I try to be at 100 – 110 knots on downwind. I do my first of three GUMP checks (Gas, Undercarriage, Mixture, Prop). When abeam the touchdown point, I'll reduce the power to about 15" MAP and begin a 400 – 500 FPM descent, maintaining between 100 and 90 KIAS. Turning base, I do my second GUMP check and extend full flaps, while adding nose up trim as required to counteract the flaps pulling the nose down. As I begin the turn to final, I'll start a speed reduction to the POH approach speed of 75 KIAS. On final, I do my third and final GUMP check and check that the flaps are full.

Straight-In Approach to Landing

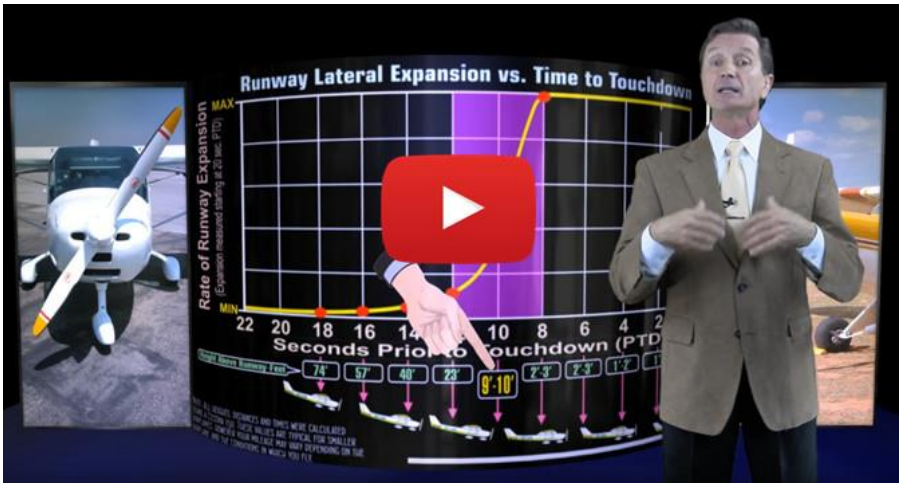
I strive to be at pattern altitude when 5 miles from the runway. At 4 miles from the runway, I lower the gear and extend the flaps to the takeoff position, while slowing to about 100 – 110 KIAS. I do my first of two GUMP checks (Gas, Undercarriage, Mixture, Prop). At 3 miles from the runway, it's time to begin my 400 FPM descent to the runway, extend landing flaps while applying up trim as required to counteract the nose down pull of the flaps, and continue to slow to the POH approach speed of 75 KIAS. Now, I do my final GUMP**F** check, (adding full flaps).

Landing and Flare

Be exact in your approach speed of 75 KIAS. Too fast and you're setting yourself up for a floater. As you float and float, you might panic and try to force your Mooney on the ground and that results in a porpoise and possibly a prop strike.

Approaching the threshold, reduce the throttle to idle. Continue descent and look all the way to the end of the runway. The runway width will soon expand 10 times. When you see this, begin a gentle flare and continue to look all the way to the end of the runway. Maintain the flare and add back pressure as necessary to maintain a height just slightly above the runway. Hold it, hold it and squeak, squeak.

Watch Rod Machado as he explains the runway expansion effect. It just might change your life!



Taxi and Engine Shutdown

After clearing the runway, to save your plugs from fouling, you should lean the mixture.

The POH recommends that you operate below 1,500 RPM for 5 minutes before you shut down the engine. This is because the turbocharger bearings need to cool down and if they don't, the oil in the TC will "coke". You can tell if you have "coked" the TC oil because you'll see some black oil on the floor under your exhaust.

It usually takes me 5 minutes from power reduction on final to the front of my hangar.

Maintenance Considerations

TBO

The TSIO-360-MB is an 1,800-hour TBO engine. At about 900 hours since overhaul, I noticed an increase in oil usage from the comfortable 10 hours per quart. The oil analysis began to show an increase in iron, indicating that the cylinder wall was wearing. Gradually, I reached a point where I needed to add a quart of oil after two hours of flight. That's when I cried "Uncle" and elected to have a top overhaul with all new cylinders. A top OH, midway to 1,800 hours is typical.

Alternator

The gear driven alternator tends to run hot because it is located at the bottom of the accessory case on the back of the engine. They generally last between 500 - 1,000 hours. The second, conventional belt driven alternator should easily last 800 hours.

Mags

These are pressurized and must be inspected at 500 hours.

Vacuum Pump

You should replace it every 500 – 800 hours, especially if you use your Mooney for IFR flight. My 252 has a glass cockpit, but I still need the Vac Pump to operate the Century 2000 Autopilot attitude indicator and the speed brakes.

Main and Nose Gear Shock Disks

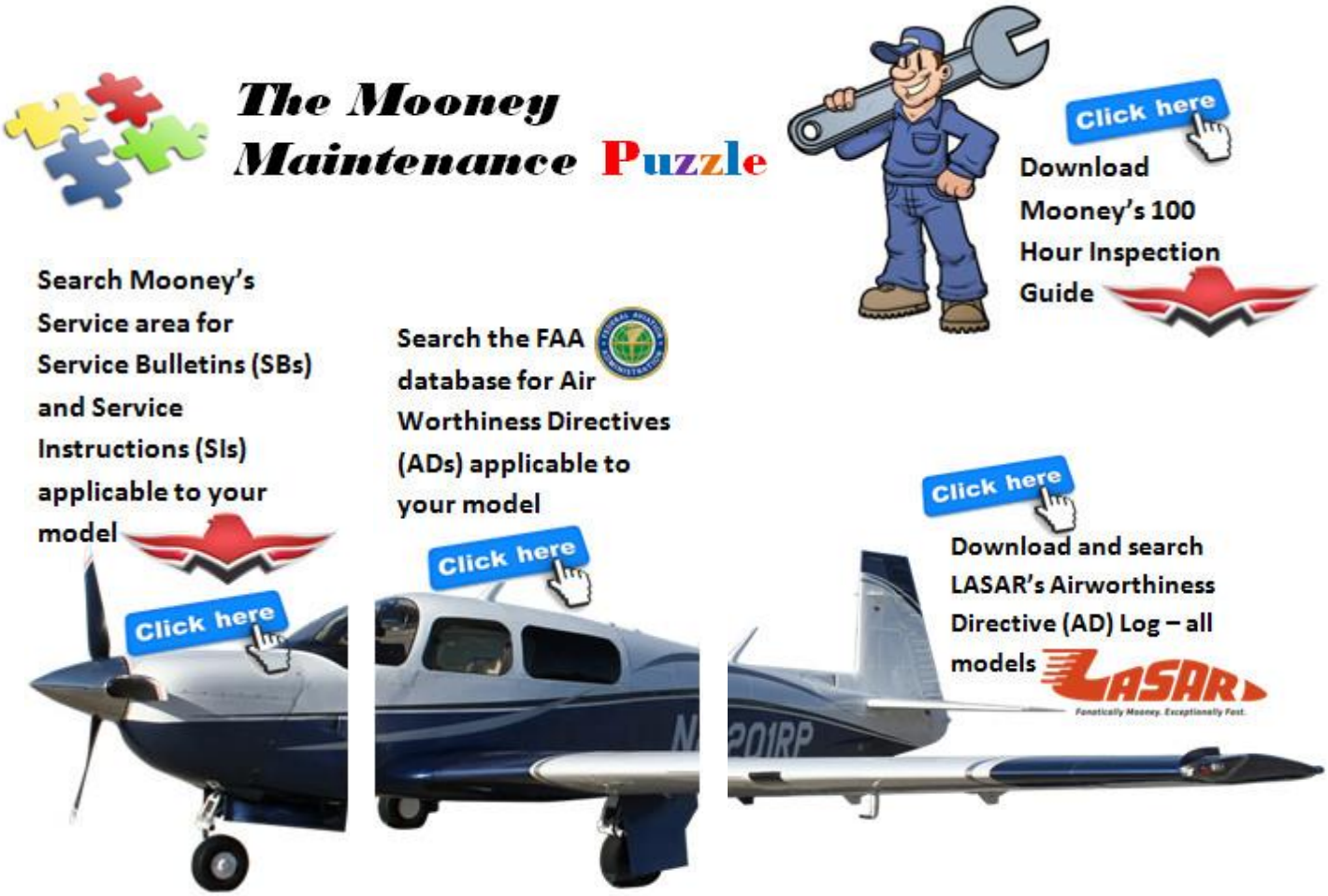
These usually need to be replaced at 5 – 12 years. However, if, during the annual inspection, your Mooney Service Center feels they are still serviceable, carry on.

Turbo Charger

During flight, the turbine wheel rotates at over 90,000 RPM and is subject to exhaust inlet temperatures of 1,500° F, or more. It's no wonder that it can survive about 1,000 hours between overhauls.

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: Thank you so much for providing great information each month for us Mooniacs.

My question is this. Clearly, low compressions are an indication of a problem in the cylinder(s). However, I don't think it's the only thing that determines the state of the engine. From your experience, what else should be checked before pulling a cylinder? I'd be interested if you have different thoughts on this for Lycoming vs Continental.

A second question would be, when you see engine issues, are they usually due to pilots running their engines incorrectly or some other cause?

Answer: When discussing cylinder problems you must first understand the big difference between a TCM (Continental) or Lycoming compression test. A perfect Lycoming compression is 80/80, but generally we consider 60/80 the lowest acceptable compression. TCM has a different approach using a special tool that measures your available shop air with the tool and setting an acceptable low for your shop. In my shop it usually measures about 42, so if we have a cylinder that is 42/80, that's acceptable. I would advise reading the manufacturer's service bulletins for their procedures. TCM has done extensive testing and found that their cylinders produce the required power at those " low" compressions. I have found no reason to doubt TCM. It is interesting that many of the "big" block TCM engines with compressoins in the 60+ over 80 range, go a long time without much change in the compression ratio, and still go to TBO. Of all the TCM engines, the 360 series seems to have the most compression problems, but since most are turbo charged, that is probably to be expected.

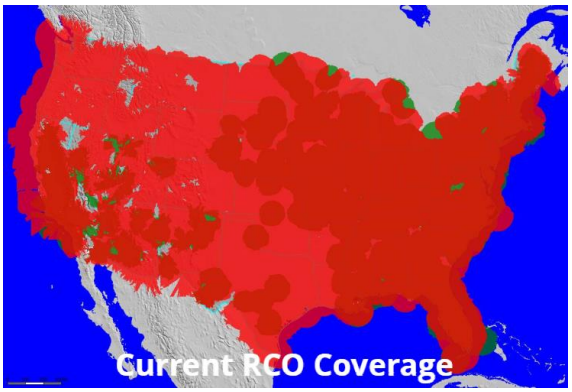
Now, if you have a low cylinder, the first thing you do is try to determine the cause. It could be a leaking valve, worn or stuck rings, a crack in the cylinder, worn lifter or a worn pushrod that's causing low compression, because they don't open the valve enough. With air pressure on the piston, you listen to the exhaust tailpipe or intake and see if you can hear airflow. Obviously, if you hear airflow you have either a leaking exhaust or intake valve. If it's exhaust, which is most likely, we can try an old method called "staking" to try and break loose carbon which may be holding the valve open. That's usually found on high time engines. Another clue for this is oily spark plugs. Sometimes staking doesn't work, but it's worth a try. If the intake valve is leaking, it is pull cylinder time. If it's leaking past the rings, you may hear the airflow out the oil fill tube, since the air bleeds into the crankcase. Not much else to do but remove the cylinder. If it's a stuck ring, you should be able to see that the ring (usually the oil ring) is not rotating due to carbon buildup. We can then either clean or replace the ring, then put the plugs in, and power some solvent in the cylinder to see if there is also a valve leak. Because of the man-hours involved in removing a

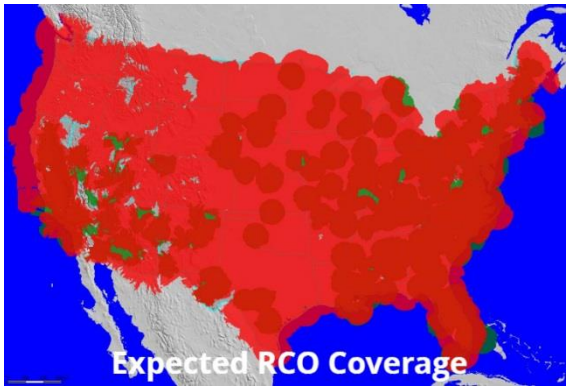
cylinder, it is prudent to send the cyl to an engine shop for repair as needed. If we didn't find a problem, before removing a cylinder, the last thing is to check for cracks using a soapy water spray to check for a leak. Most times, these are around the spark plug holes or where the head screws onto the barrel. It's pretty rare. One other thing to remember is that on turbocharged engines, the turbo will compensate for low compression until it runs out of the boost range. We had a TSIO 360 come in that was running very smooth, but on compression check, it had two zero compression cylinders, which by luck were #2 and #4. So, being opposite cylinders, the low power was balanced. The owner never flew at higher altitudes, so the turbo made everything seem normal. The engine would probably peak out at about 130 HP at approximately 10,000 feet.

The other question was about pilot effect. It is very simple. Understand how your engine works, follow operation guidelines in the book, and you will be OK. If you overboost, overtemp, run low on oil, etc., you may think everything is ok, but the engine remembers, and stress can accumulate. Change oil frequently and watch temps closely. Maintain good baffling and the engine will give you good performance. Keep the engine temps up in cruise, because the engines are designed to give the best performance at a given temp.

The RCO decommissioning project is scheduled to end late this year

The FAA expects to retain at least 90% of the Flight Service Station voice coverage for pilots at 1,000 feet AGL. In the maps below, the darker red areas indicate overlapping coverage, which will be reduced by the time the project is complete. As VORs continue to be phased out, the number of overlapping RCO sites will also be reduced.





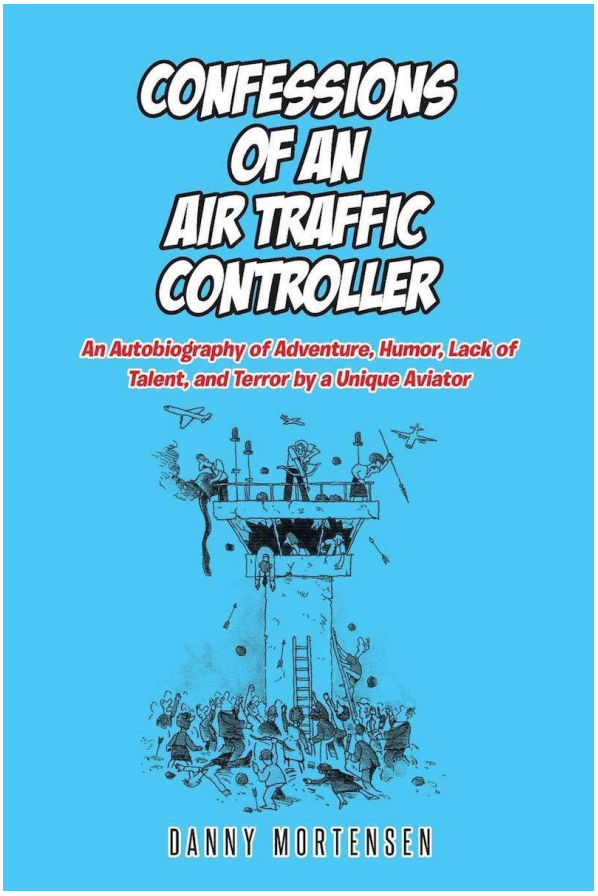
Flight Outfitters introduces larger flight bags

The new Lift XL and Lift XL Pro flight bags add more room for storage (including two headsets) and more organization options.

The Lift XL features the classic Flight Outfitters color scheme of black, gray, and orange.

The Lift XL Pro is black with the signature orange interior, so items are easy to find in the dark.

The Lift XL and Lift XL Pro are now available at **Flight Outfitters** ($149.95).



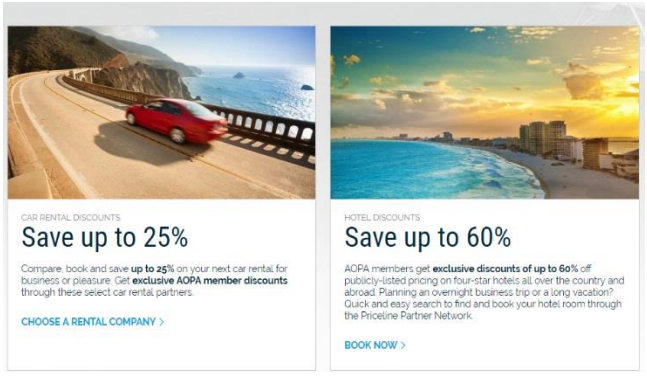
"Confessions of an Air Traffic Controller" is an autobiography of adventure, humor, lack of talent, and terror by a unique aviator.

Danny Mortensen is the retired president of Airline Ground Schools, survivor of the PATCO strike of 1981, and former world speed record holder in the AMSOIL Rutan Racer.

He was an instructor for DHL Airways/ASTAR Air Cargo for 14 years until retiring in 2010. He also was an FAA Aircraft Dispatcher Examiner for 14 years and conducted more than 1,000 checkrides.

The book is available at Amazon.com and Barnes and Noble, includes a foreword by Rod Machado.

AOPA members-only travel discounts and booking services for car rentals and hotels



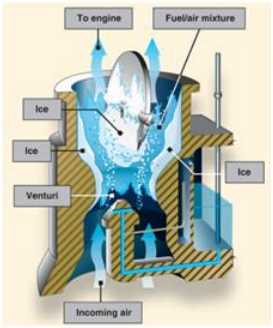
Go to https://www.aopa.org/travel/travel-discounts

BasicMed and your Insurance

There's a rumor going around the general aviation community that insurance companies are not covering pilots who are flying under BasicMed.
And it's just not true, according to several aviation insurance insiders. But, like anything, there are a few exceptions, when the type of aircraft, the age of the pilot, and limits of liability.

For instance, if a pilot is 70 or older, insurance companies may still want an FAA medical. Also, pilots who fly high performance aircraft, or those who want higher liability limits, may also find that BasicMed will just not cut it for the insurance company.

Each carrier has different requirements, with some carriers requiring more of pilots who are 75, while for others it's 80. Some may require an annual flight review, which is more important to them than a medical certificate or they may want the pilot to get a BasicMed physician exam every year, instead of every four years.



DEFINE CARBURETOR ICING

A phenomenon reported to the FAA by pilots immediately after they run out of gas.

Spatial Interior for your vintage Mooney

Simple, quick and effective repair methods add new life to cracked and discolored plastics. Optional STC approved lower side panels add space and elegance. Installed without screws will please any mechanic.

For details, visit:

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Jaeger Aviation

Email: bruce@jaegeraviation.com

320-444-3042

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*** February 9: Fort Pierce (FPR) Tiki Restaurant March 9: Winter Haven (GIF) April 13: Flagler (FIN)
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 5-8: Atlantic City, NJ (Tentative) October 4-6: Ogden, UT
Mooney Summit	September 27-29, 2019: Mooney Summit VII, Panama City www.mooneysummit.com
Australian Mooney Pilots Association	March 28-April 1, 2019: 2019 AGM in Ararat, Victoria, Australia
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

INFLIGHT ELECTRONIC PIREP SUBMISSION

Leidos announced their new capability for inflight electronic PIREP submissions. They recently partnered with equipment manufacturers and service providers to give pilots a simple way to prepare and send PIREPS from their cockpit device without having to change frequencies or contact Leidos Flight Service.

Inflight PIREP submission is the most recent component of a Flight Services Data Link strategy, building on the cockpit to ground communications capability that was put in place for Adverse Condition Alerting Service (ACAS) and Surveillance-Enhanced Search and Rescue (SE-SAR) service. Every pilot knows the value of PIREPs. PIREP submission infrastructure lets you submit PIREPs without contacting Flight Service via radio, while your vendor's equipment provides a simple, easy to use, interface for preparing and sending a PIREP. Urgent PIREPs are immediately uplinked to other pilots registered for ACAS and flying in the same area.

Several companies are working to add support for electronic PIREP submission, so if your provider doesn't yet offer this feature, look for it to be added in the near future

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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