

Ditching a Mooney

BY PAUL BERTORELLI



As low-wing aircraft, Mooneys inevitably get tangled up in an argument that seems impossible to settle: If you have to ditch an airplane, is it better to be in a high-wing model, such as a Cessna, or a low winger, such as any Mooney ever made.

The short answer is that it really doesn't matter much. If you review the NTSB's accident records on ditching, as I have in depth, the inevitable conclusion you'll draw is that pilots ditch low-wing Mooneys just as successfully as they ditch high-wing Cessnas. That said, however, there really aren't enough ditchings on the records to construct any airtight rules about ditching and water landings but there is enough data to make some general observations.

In general, Mooneys have some advantages and disadvantages when it comes to unscheduled water landings. But overall, because of the airframe's exceptional strength and crashworthiness, you're as well off

in a Mooney as any airplane if you have to dump it into the water.

A look at the big picture gives a sense of how survivable water landings really are. And at the outset, let's clarify the difference between a water landing or ditching and an uncontrolled descent into the water. In a ditching, the aircraft impacts the water under some degree of control and remains on the surface long enough for the occupants to abandon it safely.


A water crash, on the other hand, implies an out-of-control impact with the water that is seldom survivable. In reading accident summaries, it's usually apparent which is which. Water crashes tend to leave little evidence on the surface and no survivors while ditchings are usually survived by everyone in the airplane.

What does "usually" mean? In more than 90 percent of ditchings, all the occupants get out of the airplane unscathed or with minor injuries. Some 88 percent survive the experience to fly another day. That latter figure can be thought of

as the ditching survival rate. Bottom line: In more than eight out of 10 ditchings, everyone survives, often whether they have survival equipment aboard or not.

There are between 20 and 30 ditchings of various sorts in an average year in the U.S., some into lakes and rivers, some into inshore bays and inlets and some in the open ocean. Lakes, rivers and bays account for most ditchings. Obviously, a certain number of these involve Mooneys but there are too few and too little detailed information to compare Mooney ditching results to say Cessnas or Pipers.

It's more instructive to lump all types together into broad categories and attempt to draw the most basic conclusions from this admittedly sketchy data. First, the high-wing versus low-wing controversy. The standard hangar wisdom seems to suggest that a high-wing fixed-gear airplane such as a Cessna 172 is more apt to catch the landing gear and pitch pole upon contact with the water while a low-wing retractable-a Mooney-will skip once



or twice then come to rest gently floating on the surface.

Frankly, there's simply no reliable data to support either point of view. Accident reports are often sketchy about how the aircraft impacted the water and in many cases, survivors simply don't remember what happened, other than the airplane landed on the water and they managed to get out of it alive.

The important thing to remember is this: Whether the airplane flips or not seems to have little bearing on egress and survival. For the sake of argument, assume that half the high-wing airplanes flip. The occupants still get out of them and survive at a rate exceeding 80 percent. In fact, the accident data seems to suggest that the high-wing survival rate is actually a bit better than the low-wing survival rate, but there's simply too little information from survivors to draw any useful conclusions. The same is true of speeds used for ditching, aircraft configuration-flaps up, gear down and so on-and attention to such details as wind direction and sea swell. Pilots are often too panicky to consider such things or, if they do, they don't always recall what the specifics were when they set up for the water landing.

Which leads to what to do with the gear when putting a Mooney into the water. Should it be left in the wells or extended, as in a normal landing. Common sense says it should remain retracted, the accepted wisdom being that extended landing gear will act as an anchor, catching the water and flipping the aircraft on contact with the water.

Yet there's absolutely no reliable data to support this view. And if it were true, then fixed gear aircraft such as Cessna 172s and 182s would have a high incidence of pitching during ditchings. Again, if this is true, the accident records don't reflect it. Ditching survivors tend not to remember how the aircraft was configured for the water landing and it's not uncommon for them to be unable to say if the aircraft flipped over or not.

Even if aircraft frequently flip on contact with the water-and this doesn't appear to be the case-in more than nine of 10 circumstances, the occupants emerge unscathed or with only minor injuries.

Speaking of injuries, the most common is a bumped noggin or minor cuts from striking something in the aircraft upon touchdown. The single best way to avoid this is to have the crew and passengers cinch down their seatbelts to the point of discomfort and brace for impact. Second, the slower the touchdown speed, the lower the energy to be dissipated upon impact, just as with any unplanned landing.

Once again, back to the gear. With the gear down, deceleration will probably be faster than with the gear up, since the gear legs create both more air and water drag. Ditching survivors report that impact with the water can be surprisingly violent so the slower you're going, the better. And the longer interval between water contact and coming to rest, the better, since G forces will be distributed more gently.

The best configuration, then, may be full flaps, gear up, approach speed as slow as practical for the

conditions, land parallel to any swell and as into the wind as possible. If the swell consists of nothing but small waves-such as on an open lake or inland water body with minimal fetch--land upwind and don't worry about the waves.

The Aeronautical Information Manual provides some suggestions on judging sea state and wind direction from the air. Good luck figuring this out. I've flown with experienced sailors who couldn't judge swell angle or wind direction after many minutes of examining the wave pattern, so the chances of a non-sailor doing it correctly under duress are probably zero. I can't do it and have given up trying.

If you have no clue about wind direction, the best way of judging it may be to fly a box pattern and observe your GPS groundspeed on each leg, assuming you have enough altitude to burn. When you see the slowest groundspeed, you're upwind and that's roughly the heading to use when touching down on the water. Make minor adjustments when and if you can determine the swell direction.

If boats or vessels are in sight, ditch as close as practical directly in front of the vessel, where you're most likely to get the attention of the person at the helm. I know of at least one ditching where the pilot landed in the water off a boat's beam and watched it cruise serenely over the horizon.

Many pilots have heard and ask about "the shoe trick." This involves removing a shoe and stuffing it into the open door to prevent the door from jamming. If this appeals to you, be my guest. But there is very little evidence that doors tend to jam



after a water impact and no reason to suspect that you'll be trapped inside the airplane. If this does happen, there's simply no data to support it.

Personally, I want to get out of the aircraft with my shoes on, both to offer some protection against sharp object injuries and have something to walk on if I have to swim ashore somewhere.

Generally speaking, in low-wing Mooneys, the aircraft seem to come to rest in such a way as to make opening the door straightforward. You may have to allow a little flooding to equalize the pressure on the door but probably you won't. Don't forget to brief passengers on how to open the baggage door from inside the airplane on those models equipped with inside latch releases.

The aircraft is likely to float long enough to exit without panic. Just how long it will continue to float is another unknown. Survivors report float times from as few a two or three minutes to several days, although the former is more likely than the latter. There's no evidence that aircraft strike the water and head for the bottom like a scene from *Das Boot*. This has happened in extreme conditions such as night ditchings into 30 foot seas in the North Atlantic, but not off the beach at Atlantic City or in a river or bay, where most GA ditchings occur.

The variables that make one airplane float while another sinks are little understood. Logically, empty fuel tanks provide more buoyancy than full tanks, even though gasoline is lighter than water. Mooney wings are filled with air-trapping cavities and one theory is that fresh paint will better seal the wing against filling with water. True?

Sounds good but again, no data to support it.

Similarly, since the wings' openings are toward the rear, lowering the tail to trap any air in the forward part of the wings may make sense. Whether it has any outcome on float time is debatable. In any case, stay well clear of the tail if the airplane begins to sink. Survivors report that airplanes go under nose first, due no doubt to the weight of the engine, and the final plunge can be rapid enough to turn the tail surfaces into a club that could whack you as the airplane sinks. (It has happened.)

The longer the airplane floats the better, since having it bobbing on the surface greatly improves your POD or "probability of detection" from the air or sea, but especially the air. Coast Guard pilots like to point out that searching for a survivor is like trying to find a coconut in the water from 500 feet. It can be done, but it's not easy.

Which is but one reason for carrying survival and signal gear. Unless you're flying the North Atlantic or remote Caribbean islands, basic survival and signaling gear is all you need. What should that be? At a minimum, personal floatation devices for each seat should be standard equipment in any owner-flown Mooney. For \$30 to \$50 each, these are cheap insurance that will be sorely missed if you find yourself treading 55 degree water after a surprise water landing.

A small raft of some sort is also a good idea but hardly mandatory equipment. If you fly the Florida or Gulf Coast, off the West Coast or over wide rivers and bays at low-altitudes, you probably incur

significant overwater risk frequently, but for brief periods. A decent raft-such as Winslow's RescueRaft-will cost about \$1500 and is small enough to carry without making a major dent in either baggage space or payload.

I carry one in our 201 at all times, along with four PFDs, signaling devices such as mirrors, flares and sea dye and a simple survival kit with basic medical supplies. I don't carry food but I do carry water, at least a gallon when a serious overwater leg is planned, such as the Cayman Caravan trip from Key West to Grand Cayman, with a maximum overwater leg of 170 miles.

The raft does two things: First, it gets the survivors out of the water, thus reducing the risk of hypothermia, a major hazard in all but the warmest water. Even in water as warm as 75 degrees-typical Florida coast temperatures during the summer-hypothermia will be an issue after a few hours in the water. A raft also vastly improves the probability of detection from the air, which is really the chief concern here; you want to be seen and extracted from the water, not gird yourself for a three-day sea cruise in a rubber dinghy.

For this reason, I don't think it practical or necessary to always carry 60 pounds of survival equipment in the airplane, for the simple reason that the number of accident cases in which having this much gear aboard is determinative in survival is sparse indeed. If even that risk exposure alarms you, you may feel differently. And it's your airplane, not mine.

What is determinative in survival is having the search and

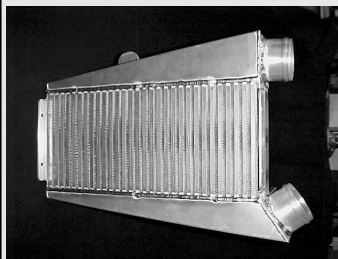
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rescue machine cranked up and ready when you need it. With GPS, search and rescue is increasingly becoming just rescue and the quicker you get these assets moving in your direction, the better.

The best way to do this is to file and fly an IFR flightplan for overwater legs. In the event you make a water landing, SAR will be underway within 30 minutes and probably a lot sooner. If you prefer VFR, flying with radar advisories is nearly as good as being under IFR in terms of SAR availability. The worst place to be is 1500 feet above the water, beyond gliding distance of land and not talking to anyone. If you splash, you're on your own. Unless you are exceedingly lucky, no one will come looking.

If you're squawking and talking, ATC will have real-time information on your status and an emergency will be moved immediately to the front burner. If you have GPS-and these days, most of us do-know how to immediately pull up the lat/long page so you can give ATC an accurate position datum if you have to ditch. This will likely do more than any other single factor in assuring survival. Once a SAR helo or boat is on the way, the key task will be to get the crew's attention with signaling devices such as mirrors, flares and the like.

Summing it up then, if you have to ditch your Mooney-any model, any year-getting out of it alive is all but a lead-pipe cinch. It's highly unlikely to sink rapidly, no matter how badly or how well you do the water landing. Basic survival gear-PFDs and mirrors-is cheap and simple to carry. If you don't have these items, get them. If your overwater risk is somewhat greater-frequent forays out to the Bahamas



Airflow Systems offers “High Efficiency” no painting, no external modification, intercooler kits for M20K/231’s.

The benefits of “intercooling” (also known as charge air cooling or aftercooling) for turbo-supercharged aircraft have been well known since WWII. Improved high altitude performance, longer engine life and improved fuel efficiency are all advantages gained from installation of a properly designed intercooler, and by the end of the war all supercharged aircraft had some form of charge air cooling. Intercoolers are perhaps THE most popular aftermarket modification for 231’s and are well received by buyers as well as listed in The AIRCRAFT PRICE DIGEST.

For the installer, the Airflow Systems Intercoolers are by far the easiest to install of any of the current available STC’d kits. The Mooney 231, installation takes less than 10 hours and requires no modifications to the engine cowling. Once installed, the intercooler may be removed easily in five minutes for engine maintenance.

The Airflow Intercooler Kit is usually markedly less expensive than its prime competitor and the installation time can be as much as one half the man hours. Another advantage for the M20K/231 is that it requires no painting or external cowl mods. Also, the Airflow Kits unitizes the pressure relief valve ahead of the intercooler which is generally considered to be superior. Airflow’s power tables were developed empirically (with actual test, not just paperwork estimates), using heir proprietary BMEP gauge and are most accurate.

The extra effort expended in the design phase to control costs and keep the parts count to a minimum has paid off for both the manufacturer and the customer. Despite its superior in-flight efficiency and ease of installation, at \$3,995, the Airflow Systems Intercooler has always been the least expensive FAA approved kit for the Mooney 231.

For more information contact Coy Jacob’s Mod Squad/Mooney Mart Complex at www.mooneymart.com or (941) 484-0801 or your local Mooney shop. To order your Airflow Kit or schedule your installation, contact Coy Jacob’s Mod Squad/Mooney Mart Complex at (800) AC4-SALE or email coy@mooneymart.com

or over the Great Lakes, invest in and carry a liferaft. Odds are, you'll never need it. But if and when you

do need it, you'll need it badly. At that point, it will be too late to reconsider.

