

# THE LANDING DOCTOR

## THE CODE FOR PILOTS

### PREAMBLE

Developed over thousands of hours of flying, instruction, and with decades of refinement, the Landing Doctor Code was created with one goal in mind: to create a safer pilot. The time-tested procedures and principles presented within this Code are designed to supplement any pilot's training, for a pilot that stops learning can never grow. The Landing Doctor firmly believes that any pilot, from the green to the 10,000-hour Captain, can always improve and refine their skills. We all strive for a safer industry, and The Landing Doctor Code is just one tool to help achieve that lofty goal. It is more than a Code, it is a way of thinking, a technique of flying, and a guide to every pilot.



## FLY THE PLANE

“Fly the Plane,” it’s a curious phrase, but it’s far more important than most pilots realize. Flying the plane is what we’re doing, but in moments of stress, such as training, maneuvers, or emergencies, it’s all too easy to forget. Many pilots remember the popular phrase “aviate, navigate, communicate,” and that is the essence of our “Fly the Plane” mentality. At all moments, of all flights, it’s not just enough to sit back on autopilot, a safe pilot rather, needs to be engaged, actively involved with the plane to ensure we are safe at all times. Fly the Plane is the core of The Landing Doctor Code, because once we stop flying the plane, we stop being safe.

## PERSONAL LIMITATIONS

It’s absolutely vital that every pilot, young and old, has a Personal Limitations Checklist, or PLC. This Checklist should be established on an individual basis, as every pilot is unique and requires their own judgement. Establishing a PLC is the first step towards creating a safer attitude and flight. As a general rule, a pilots’ PLC should account for several factors, some of which are outlined below:

- Experience: Are you current? When’s the last time you flew this airplane?
- Comfort: Just because you can take off with a 20kt crosswind, will it be comfortable?
- Stress: Why are you flying today? Do you feel pressured to go?
- Emotions: Are you in the right headspace to make this flight?

By no means is this a comprehensive PLC list, but it’s a good place to start. When you sit down to create your own PLC, remember that it’s better to be safe than sorry. As pilots, it’s natural to want to show off a bit and push the envelope, but everyone will be much more impressed with a greased landing in calm winds than a hard landing in gusting winds. It’s also important to remember that just because some test pilot, with thousands of hours of experience, could land the plane and give it XYZ crosswind ratings, climb ratings, ceilings, and more, that doesn’t mean you can. We aren’t test pilots, and so our PLC should reflect that, a good PLC has limitations far more restrictive than legal or manufacturer limits.

## MASTER AND COMMANDER

To become the master and commander of your aircraft requires time, dedication, perseverance, patience, and practice. Very few pilots will ever be able to hop into an unfamiliar airplane and nail their landing the first time around. Just like how every pilot is unique, so is every plane, and so it becomes important to familiarize yourself with each and every aircraft you fly, and one of the best ways to do so is to utilize a ground proximity awareness technique. The goal of our ground proximity awareness (GPA) training is to produce a pilot who knows the feel characteristics of their airplane so well that they can consistently land safely in gusty crosswind conditions. The basics of GPA training are rather simple, and before you go fly your fancy new aeroplane with your loved ones, consider completing a few laps using GPA first.

At its core, GPA is exactly as it sounds, being aware of your proximity to the ground, simple, right? In essence, yes, but in practice, it can be a bit more of challenge than one would assume. To help develop a good sense of GPA, you should fly low approaches over the runway, but before landing, try and hold the plane 10 or so feet off the ground and track centerline using ailerons to control your drift, and rudder to control your heading. Ideally, this will look like you're flying straight down the runway with  $2^{\circ} - 5^{\circ}$  of bank into the crosswind. Once you can consistently track centerline and maintain 10 feet above the runway, lower yourself to about 5 feet above the runway, and repeat. If you can master this skill, you will be ready for a smooth crosswind touchdown. The last step to becoming the master and commander of your aeroplane is to have the discipline to wait. The ultimate component of a great crosswind landing on a gusty day is to not land until the gust subsides. Once you feel the gust subside, simply release a small amount of back pressure on the stick, keep your crosswind correction in, and touch down softly on your upwind main gear first, then the downwind gear, and finally, the nose gear. Once you can do this, you will have become the master and commander of your airplane.

## THE ESCAPE PLAN

Having an escape plan is more than just “what do I do when the engine quits.” It’s your Plan B, your Golden Out, whatever you may like to call it, for any situation that may arise while flying. An escape plan is important to all aspects of a flight, from the moment you turn the engine on to the moment you shut it down. What do you do in the event of a fire or engine failure? Where do you go when the weather turns bad unexpectedly? What about when your fuel flow is twice the rate that you calculated? Every moment of every flight, you, the pilot, should be ready with some sort of an escape plan in the event that something goes wrong. It may sound taxing and like a lot of work, but it could be the difference between a nice relaxing flight or a white knuckle “thrill” ride.

## THE TRAFFIC PATTERN

The good old traffic pattern, maker and breaker of landing gear, spines, and nerves. By far the most dangerous aspect of any flight is conducted within the traffic pattern, and this is where The Landing Doctor Code really comes into its own. By some estimates, the takeoff and landing phases of flight account for over 60% of all fatal aviation accidents. It’s a sobering statistic, one that we as an industry must do our best to minimize. Through education and practice, The Landing Doctor Code has become a tool through which any pilot can use to improve themselves and help create a safer environment. That practice then starts where every flight does, on the ground.

## PREFLIGHT

Preflighting an aircraft can seem like a chore at times, especially when the weather is cold, hot, or rainy, but none of those are excuses for cutting corners. A thorough preflight is the start to a safe, well thought out flight. Special attention however should be paid to aircraft that have just recently been serviced. Aeroplanes are large, complex machines, and things slip through the cracks. Forgetting to retighten an oil cap after an oil change, or properly inflating your

tires after replacing the brake pads are just some examples of things that get missed after a service has been performed. Paying special attention to some of these areas is an important step of The Landing Doctor Code, and can make a big difference.

Another key aspect of properly preparing yourself for your flight is fuel. While the FAR-AIM only requires 30 minutes of reserve fuel for day time flights, and 45 for night time, that doesn't necessarily mean that's a great idea. The Landing Doctor thus recommends having at least 90 minutes of fuel reserve onboard for every flight, because fuel left on the ground does you no good. Far too often pilots have had to divert, go around, or simply miscalculated their fuel burn, and it has far too often cost them their lives. Take the extra fuel just in case, you never know when you might need it and it could easily save your life in a moment of crisis.

When it comes to weather, few pilots consider the effect of dew point spread. To put it simply, your dewpoint spread is a measure of relative humidity, which directly corresponds to fog and cloud layers. Ideally, your dewpoint spread should be as large as possible, however, The Landing Doctor Code requires a spread of at least 5°C. Anything lower runs too much risk of ceilings and low visibility forming out of thin air before the pilot has time to get back onto the ground safely.

## TAKEOFF

While most pilots consider the takeoff portion of their flight to be less fraught with danger than the landing phase, that doesn't mean there aren't valuable lessons to learn to be even safer. Pilots like to go, get up to cruise as fast as possible, where the air is cooler and the views are nicer, and to do so, many pilots will choose to climb out not a knot slower than  $V_y$  if they can help it. However, climbing out at  $V_y$  itself can have its disadvantages. The higher pitch attitude required to maintain that  $V_y$  speed also reduces forward visibility, as well as reducing the amount of air flowing over the engine, and more importantly, brings you closer to stall speed. That's all to say nothing about the disadvantages

of climbing out at  $V_x$ , which only magnifies all of those problems. In the thousands of hours accumulated by The Landing Doctor team, not once has  $V_x$  been used, and if you're flying out of an airfield that absolutely requires  $V_x$ , you probably are in violation of your own PLC, and shouldn't have gone in the first place. Of course, certain situations may arise that could require a  $V_x$  departure, but it is always going to be best to avoid those scenarios until you are extremely experienced and familiar with your airplane. It's just too dangerous and hold no real practicality for the vast majority of pilots out there.

As a result, though, The Landing Doctor created a new speed, Maneuvering Climb Speed ( $V_y+10$ ), which is as simple as it seems. Take your published  $V_y$  speed, add 10kts, and that's it! The beauty of  $V_y+10$  is that it solves three issues at once. Your lower angle of attack means you have a better sight picture of where you're going, which is crucial to help spot and avoid other traffic; you have more headroom for climbing turns without worrying about an inadvertent stall; and you have more airflow over the engine to keep it humming along happily. To help achieve  $V_y+10$  then, we recommend remaining in ground effect to build speed to  $V_y+10$ , and then departing. Be mindful of runway lengths however when remaining in ground effect. For maximum safety, follow the AIM, which states you must climb to within 300 feet of the traffic pattern altitude before turning crosswind to assure you will be in a level flight attitude when turning downwind so you can see planes entering the pattern in a standard pattern entry.

## THE PATTERN

With our takeoff successfully completed, we can now turn our attention to flying in the pattern. The pattern can be tricky for all pilots, and the need to get back onto the ground can push some pilots to take unnecessary risks. One of the biggest dangers when flying the pattern is overbanking your aircraft. The pattern is already an area for slower than usual flight, which means you're flying closer to stall speed, add on top of that the bank angles needed to fly the pattern and you have all the right conditions for a stall. In general, then, The Landing Doctor Code prohibits banks of more than  $20^\circ$  within the pattern. If you overshoot your turn, it is always better to go around, reset yourself, and try again. The most dangerous

place, and most common, to exceed that 20° bank limit is on your base-to-final turn. All too often both green and experienced pilots accidentally overshoot their last turn, pull up and bank hard to try and salvage the approach, and in doing so, stall their aircraft with too little altitude to recover. This is most likely to occur with a left crosswind in a left-hand pattern. The left crosswind results in two things: a tendency for the pilot to allow the plane to get pushed closer to the runway than intended, and in a high ground speed on base with frequent overshoots of the final. When this happens, go-around. **DO NOT TRY TO FLY BACK TO THE RUNWAY.** We've all felt the temptation to "salvage" our approach and just get back on the ground, and it's extremely easy to do just that, but the peril of entering a stall to spin in such a situation cannot be overstated. The final overshoot can be avoided by flying a slightly wider downwind leg, and using a crab to track parallel to the runway, and slowing the plane down immediately after turning base leg.

The importance of flying a clean, squared off pattern becomes apparent when you consider the dangers of letting yourself drift because of uncorrected crosswind. By keeping your pattern square, you eliminate any drifting tendencies, and you also eliminate any need for tight turns. You should always crab into the wind, doing so on all four legs should result in a less than 90° turn on the critical upwind to crosswind turn, keeps you from drifting on your downwind leg, and crabbing on base again results in a less than 90° turn on the other critical turn, base to final.

## LANDING

Perhaps the hardest part of all flying is the landing for most pilots. It's a moment of high stress, excitement, and a lot of things all happening at once. Whenever you are making your final approach to land, you should have some sort of stabilized approach criteria. For the Landing Doctor, that criteria is defined at the Defined Go-Around Point (DFGAP), and is no lower than 200' AGL. At the DFGAP, the plane must be at proper airspeed, tracking centerline, on glideslope, and with the plane in landing configuration. If even one of these criteria is not met, a go-around must be executed, no exceptions. So many times, a pilot, any

pilot, will exhibit the Macho man hazardous attitude here and try to correct something at the last minute to save the approach. Instead of saving the approach though, most times the pilot overcorrects, and becomes even more unstable than they just were.

Having a DFGAP is undoubtedly crucial to a strong, safe landing, but it's not the only part. Many pilots are taught to use as much runway as possible on their landings, but this can be dangerous. Landing prior to the numbers leaves little to no room for error, and if you come in just a little shallow, you risk coming up short or taking out threshold lights and your landing gear. Due to the vast differences of runway markings across the country, there is no hard and fast rule to decide where your aiming point should be. So, to that extent, The Landing Doctor Code specifies that you should land within the first third, but no shorter than the first 500 feet of the runway. We first recommend aiming abeam any PAPI or VASI that the runway may have. Doing so will provide sufficient distance from the threshold while also providing the benefit of ensuring you maintain proper glideslope throughout the approach. Another great spot to aim for is at the 1,000' marker, which are the big solid white bars on either side of the runway, 1,000' past the threshold. If your runway has neither glideslope guides nor 1,000' markers, don't fret. Another great choice for an aiming point is the beginning of a centerline stripe. The 2<sup>nd</sup> and 3<sup>rd</sup> stripes are solid choices, and will also ensure you have ample runway both behind and ahead of you.

Now that we have a stabilized approach and a safe aiming point, it's time for the landing itself. When making your final flare, it's vital to slowly raise the nose, but to not cover the horizon. If you are pitching up so much that you can no longer see the end of the runway, how do you know if you're on centerline? You don't, and that's dangerous to everyone in the vicinity. As you make your flare to touchdown, continue to look down towards the end of the runway. If you look at the immediate runway ahead of you, the ground may look as if it's rushing up at an extremely high rate, or rather that you are descending way too fast, and therefore correct by pitching back up. This then leads to a ballooning condition. If you do find yourself in a balloon during landing, The Code simply mandates one thing: go-around. A ballooning flare is no longer stable, and often is so slow that it



leads to an imminent stall, which if you try to land with, will almost always result in the plane free falling the last 20' – 30' to the ground, potentially damaging the aircraft and your spine, or much worse. Even if you have an instructor on board, there are simply no landings attempts after a balloon, Remember, always go-around.

## STALLS

Stalls are one of the most dangerous maneuvers a pilot trains for, but the training is necessary to produce a more capable and safer pilot. Many schools teach full stalls and may even allow students to practice their own stalls on solo flights; however, The Landing Doctor believes that can be dangerous. Practicing full stalls inherently introduces unnecessary risk, and while many CFI's may feel confident in their student's ability to recover from a stall, all it takes is for one mistake to snowball into a fatal accident. We therefore only recommend practicing impending stalls, whenever practical, as this reduces the risk of inadvertent spins and accidents. Another benefit to only practicing impending stalls is that it teaches students to recover immediately, instead of playing around with different "levels" of stalls. What we mean by this is that by practicing full stalls, students may learn that when stall indicators are set off, that everything is okay, and no immediate action is required. This leads them to not recover right away and instead push the boundaries of the stall, which can be fatal. It's much better for a student to recognize the stall, hear the alarm, and reflexively recover that instant. The Landing Doctor understands however that it is also necessary to be prepared in the event of a full stall, so instructors should continue to have their students practice full stalls, ideally only here and there and just before their check ride, but overall should focus their bulk of training on preventing stalls in the first place. In addition to only practicing impending stalls, we also believe that all stall practice should be conducted **WITH** a CFI onboard. No student pilot should practice stalls solo, no matter how confident you are in your ability. As mentioned earlier, all it takes is just one slip up for a disaster to occur, so it's best to not take the risk at all. The Landing Doctor has a great article further detailing the dangers of stalls, called "If You Do Not Stall, You Will Not Spin."

## EMPENNAGE

The Landing Doctor Code is by no means a comprehensive guide to flying safer, but if you adopt these teachings, you will have taken the first steps to helping transform our beloved industry into something safer for all of us. We are all driven by our love for the open sky, and it is important to experience that unique freedom it offers, but to also return safely at the end of the trip. With that in mind, always remember, Fly the Plane. All of the Landing Doctor principles are available to all flight schools for free. Just visit [www.bristellpro.com](http://www.bristellpro.com)

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