



**Stan/Eval Newsletter
CIVIL AIR PATROL
UNITED STATES AIR FORCE AUXILIARY
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Advanced Preflight After Maintenance (LtCol P. Holt TNWG)

A recent FAA FASS Team publication regarding maintenance-related problems observed that, one of the deadliest causes of accidents in general aviation is a lack of knowledge and improper techniques during the preflight inspection of aircraft coming out of maintenance. We need to pay special attention on the preflight after maintenance.

In the USAF, aircraft coming out of maintenance for major items such as engine changes or flight control issues are required to have a Functional Check Flight (FCF). These flights are performed by highly experienced pilots in the particular aircraft. Flights may involve checking rapid throttle movements at different flight levels or flight control responses for pitch and roll inputs.



For general aviation aircraft, the FAA allows the pilot to remove the engine cowling (see FAR Part 43, appendix A) for preflight inspections. However, for CAP pilots, you do not have that luxury. CAPP 130-2 and CAPR 130-2, para 11.3 will not permit you to remove the engine cowling during an aircraft preflight.

A few years ago in the Tennessee Wing, an aircraft coming out of maintenance at KMQY was pre-flighted by the pilot and flown to KTYS where it was based. During the one-hour flight the aircraft engine lost 5 quarts of oil. It was determined that the engine lost the oil because a particular part on the engine was not properly reinstalled on the engine by the maintenance facility. It was determined that the maintenance facility did not do a leak check per standard practice.

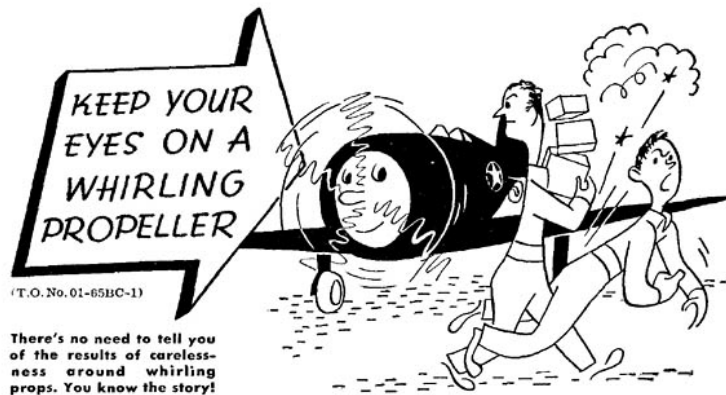
When flying an aircraft just out of maintenance, it is important that you know exactly what maintenance was done as you preflight the aircraft. Pay particular attention to those components involved in the maintenance. In addition, if any maintenance is done on the engine, have the maintenance facility remove the engine cowling for you to do a complete inspection of that compartment. That could be a problem if someone is picking up an aircraft after hours but might encourage you to pick up aircraft while the A&P is still around.

Be sure to check your aircraft seats for proper functioning because a lot of aircraft maintenance requires removal of the aircraft seats.

(Ed note: See the October 2021 edition article “Picking up aircraft from MX” for additional insights.)

Propeller Safety

An NTSB report (CEN12LA125) on the propeller accident (that left 23-year-old model Lauren Scruggs seriously injured) provides a chilling reminder of the dangers of leaving the engine running when loading passengers, unloading passengers or any time anyone is near a running aircraft. A spinning propeller is invisible and can be deadly for the unwary. Even experienced aircrews have been victims of propeller strikes and such accidents are usually fatal. A recent accident at Washington Dulles (KIAD) left the victim (a lineman) dead as she was removing a chock from a running turbo prop aircraft. We need to be especially careful in operations that involve cadets whether it is orientation rides or missions where cadets assist with aircraft marshalling. In missions involving spinning propellers, be sure propeller safety is discussed in the safety brief.



AIR FORCE, May, 1943

A best practice is to shut the engine down before disembarking/embarking crew or anytime someone approaches the aircraft. This is especially important in any operation involving cadets or individuals unfamiliar with aircraft operations. There are very few instances where it makes sense to keep the engine running. If an operational need exists and we must keep the engine running, make sure that anyone leaving the aircraft or approaching the aircraft stays behind the strut and goes behind the airplane. Even then, there is the possible threat of prop wash tossing FOD and injuring the individual.

A CAP flight or sortie is defined (with a few exceptions) as ending with engine stop (CAPR 70-1 Attachment 2). This definition may have the unintended consequence of encouragement in keeping the engine running when an aircrew needs to make an unscheduled stop (due to biological necessities or other reasons). If you find yourself in this situation, just shut the engine down and get another release. It's not worth the risk as your observer goes and takes care of business.

You can read AC 91-42 on propeller safety or AOPA's informative web page on propeller safety [here](#).

Pilot's Role in Collision Avoidance (FAA AC 90-48E)

The FAA has published a new Advisory Circular (AC) on Collision Avoidance. This comprehensive look at the factors involved in avoiding collisions covers a lot of ground and is well worth reading. Although it contains a lot of useful information on how to avoid collisions, it looks at factors that can make “see and avoid” ineffective. It also contains a lot of useful references. You can find it on the FAA website [here](#).



Back to Basics – Performing a Go Around

As recently reported, there was a fatal crash of a Beech Baron apparently attempting a go around maneuver at Shannon Airport (KEZF) killing all six occupants (NTSB ERA16FA288). This accident demonstrates the need to do a proper go-around. One of the maneuvers required on a Form 5 check ride is a go-around. We learned this basic maneuver before we ever soloed as it is such an important one. A go-around is basic to safety as it provides a “get out of jail” card to a pilot when an approach and or landing starts to go bad (or the tower tells you to go around). The following is extracted from the NTSB report on the Shannon fatal accident:

“The private pilot, who was seated in the left front seat, was making a cross-country flight in the twin-engine airplane with five passengers on board; the passenger seated in the right front seat was a commercial pilot. Shortly after departing, the pilot contacted air traffic control and requested visual flight rules flight following services to the destination airport. A variable quartering headwind prevailed about the time the airplane approached the destination airport's 2,999-ft-long runway, with an approximate headwind component of about 8 knots. Given the airplane's estimated landing weight and the prevailing weather conditions, the airplane's calculated landing distance was between 1,280 and 1,850 feet. Review of recorded data showed that the airplane crossed the runway threshold for landing at an altitude about 40 ft above the ground and at an estimated airspeed of 95 knots, about 9 knots faster than the airframe manufacturer's recommended final approach speed for its estimated weight.

Witness interviews, surveillance video, and recorded data showed that the airplane touched down and bounced several times near the mid-point of the runway. The airplane then started to climb at an estimated airspeed of 68 knots, which was well below the balked landing climb speed of 90 knots, and near the published stall speed of 73 knots with the landing gear and flaps extended. The airplane made a shallow left turn and climbed to an altitude of about 100 ft above ground level. During the climbing turn the airplane's speed further decreased to an estimated 62 knots before it entered an aerodynamic stall and descended to impact terrain.

Examination of the airframe and engines did not reveal any evidence of pre-impact mechanical malfunctions that would have precluded normal operation. Post-accident weight and balance calculations indicated that the airplane was below its maximum gross landing weight and that the center of gravity was within limits.”

Go-arounds usually happen quickly, so your first reaction should not be to reach for the checklist. But the actions you take depend on the aircraft you are flying and the configuration it is in at the time of the go around. In most cases, you will have configured the aircraft for landing which means you already have the prop at high RPM, mixture is rich, flaps are full, carb heat is on, gear is down, and cowl flaps are closed.

For our C172 aircraft, going around means applying full power smoothly and promptly, raising the flaps to 20 degrees (or if they are established an appropriate climb, it's time for the checklist; if already at 20 or less, leave them alone), getting the carb heat off if it has been applied, and re-trimming as necessary. These actions allow you to achieve full power and full performance.

Balked Landing

1. Throttle..... Full Open
2. Carb Heat..... Cold
3. Wing Flaps..... 20° (Immediately)
4. Climb Speed.... 60 KIAS
5. Wing Flaps..... 10° (Until Obstacles are Cleared)
6. Wing Flaps..... Retract (After reaching a safe altitude and 65 KIAS)

For our C182 and GA8 aircraft it's similar but slightly different. You apply full power smoothly and promptly, raise the flaps to the second notch for the C182 and first notch for the GA8 (or leave them alone if the C182 is at the second notch or less), open the cowl flaps and re-trim as necessary. Once you've established an appropriate climb, it's time for the check list.

Balked Landing

7. Power..... Full Throttle & 2400 RPM
8. Wing Flaps..... Retract to 20°
9. Climb Speed.... 55 KIAS
10. Flaps..... Retract Slowly (above 70 KIAS)
11. Cowl Flaps..... Open

Or for the GA8:

Balked Landing

1. Power: Full throttle 2700 RPM
2. Wing Flaps..... Retract slowly (Approx. 3 sec per setting)
3. Airspeed..... Est. normal climb speed (initially 71 KIAS)

Although the pilot should start the immediate actions right away sans checklist, an observer who is on the ball will be pulling out the checklist and reading the immediate actions to the pilot, then cross checking to make sure all items are completed. That can be a big help to a pilot in a stressful situation.

Although each aircraft type is slightly different, the approach is the same. Use all your power (full throttle, carb heat off, mixture enrich), establish the appropriate climb attitude, apply RIGHT rudder as appropriate, get rid of any excess drag (e.g. flaps should be in the takeoff, not landing, configuration) and re-trim as necessary. Easy, right? Yes, but because go arounds can be a time of stress, pilots sometimes botch it.



Mistakes observed on recent Form 5s include the following:

- The pilot applies power correctly but forgets to set the flaps. This results in a slower climb. A C172 with full flaps even at high power can barely climb. A C182 or GA8 does better but not great.
- The pilot forgets to set the carb heat to cold. The engine won't develop full power with carb heat on.
- Pilot had not completed the before landing checklist and has the prop at less than high RPM. Applying full throttle will not develop full power and if the RPM is too low, the pilot may damage the engine (high manifold pressure and low RPM are not good for engines).
- The pilot had not completed the before landing checklist, so the mixture is still lean. Running full power at lean settings means you won't get full power and the engine might start complaining rather menacingly. An engine will run at low power at very lean settings quite happily, but high power requires a richer setting. Running full power excessively lean will stop the engine or do damage or both. This is not a good outcome on a go around. That being said, it's important to enrich the mixture but not necessarily go full rich. You want full power and at high density altitudes full power will be at less than full rich.
- The pilot does everything right but forgets to open the cowl flaps. Of all the mistakes to make this is the least. The engine will start running hot after some time, but you should be well on your way by then and there's plenty of time to correct the setting.
- On the go around the aircraft pitches to an excessively high attitude and yaws LEFT after full power is applied, risking a power-on stall. Pilots should be ready for the pitch up and LEFT turning tendency (press hard on the RIGHT footrest!) when they apply full power. In

the Maule MT7, it can be quite exciting if you are not ready for it. This is caused by the airplane being configured for landing with more and more up trim applied as you slow the aircraft for landing. If you quickly apply power, the nose can pitch up and yaw LEFT quite suddenly – be ready for that and get the a/c re-trimmed as quickly as possible.

A caution for those flying retractable gear aircraft: A go-around is often the precursor to gear up landings. A go-around is usually unexpected and puts the pilot off balance. The pilot will get the gear up but forgets to put the gear back down for the landing as it's not a normal approach. Always check Red (mixture enrich), Blue (prop full), and Green (gear down) on short final. Don't wait for your next Form 5 to do this maneuver, practice it. You WILL need it.

Another caution, especially with the Maule MT7-235, applying full power immediately can cause an excessive nose up attitude. If you are not ready for that you risk a power on stall. A better technique is to apply sufficient power to start a climb but wait until the climb is stabilized to add the remaining power.

The Heat is On – Cold Weather Flying Tips (FAA Safety Briefing)

As winter draws near, bundling up for cold weather flying will soon be a reality for many pilots. Besides breaking out the gloves and winter jacket, you'll also want to consider how the cold can affect your performance in flight. In the article, "The Heat is On" in the Sep/Oct 2022 issue of FAA Safety Briefing, author Dr. Leo Hattrup explores some impairments caused by the cold, and offers advice and tips on how to be prepared and fly warm. Read the article here: <https://medium.com/faa/the-heat-is-on-the-importance-of-staying-warm-2b3c8b710691>.

Checking the spinner

As part of the preflight, we should carefully check the spinner for any damage including cracks. Sometimes these cracks can be very small and hard to see especially if it's on the underside of the spinner. We should also ensure that all the mounting nuts are in place. None should be missing. If a spinner is damaged or missing some mounting nuts, it can break apart in flight causing damage to the propeller and a lot of vibration due to the imbalance. We need to pay attention. A cracked or damaged spinner is a no-fly item.



Basic Med Update

Currently, a pilot using Basic Med cannot act as a safety pilot. Because a safety pilot is a “required crew member” they must have a medical certificate. Basic Med pilots have been able to get around this by simply acting as the PIC vice safety pilot. However, after some intense lobbying, the FAA is going to modify the regulations to allow a pilot on Basic Med to act as safety pilot without acting as the PIC. Not done yet but should be implemented soon (“soon” as in FAA “soon”).

Articles for the National Stan Eval Newsletter:

These articles have been written to present ideas, techniques, and concepts of interest to CAP aircrews rather than provide any direction. The articles in this newsletter should in no way be considered CAP policy. We are always looking for brief articles of interest to CAP aircrews to include in this newsletter. CAP has many very experienced pilots and aircrew who have useful techniques, experiences, and tips to share. Please send your contribution to stephen.hertz@vawg.cap.gov . You can view past issues [here](#).