**Before Takeoff Checklist**

**Understanding the benefits of segmented checklists**

**By Ralph Butcher**

All pilots have been taught the importance of using written checklists, but a few ignore this flight safety resource. The FAA's practical test standards clearly state that pilots must use appropriate written checklists, yet the accident record shows that some pilots don't. Such actions can yield dire results.

Pilots who believe in checklists usually use flow patterns and mental checklists to prepare an airplane for a specific task; they then back up those actions with the appropriate written checklist. If I see a pilot ignore the written checklist, I always ask why. The answer is usually related to aircraft familiarity, inconvenience, or workload. No matter the reason, failing to use the checklist is a mistake. Fortunately, there is a solution.

Traditionally, written checklists are designed to be carried out from beginning to end all at once. Segmented checklists, however, are constructed so that specific segments are completed at appropriate times. This yields operational flexibility, making it more convenient to use the checklist. The before-takeoff and before-landing checklists adapt well to this concept.

The segmented checklists included here were derived from a Beech Bonanza V35 pilot's operating handbook (POH). I added "compass alignment," "engine idle," and "lights, camera, action" to the existing list. Pilots who operate under Part 91 of the federal aviation regulations (that includes most noncommercial operations) can create their own checklists, providing that they contain each element that is published in the POH checklist. Notice that each checklist is divided into two sections.

The before-takeoff checklist is meant to be completed down to "final items" after you conduct the engine runup and systems checks. This stopping point is convenient when there are takeoff delays or when the runup area is not located at the end of the active runway. You go on to complete the final items when you are number one for takeoff, with the exception of lights, camera, action. These items are executed when you are cleared onto the runway for takeoff.

To help make sure that you've followed each step and you don't forget where you left off, make a few announcements out loud, even if you're alone in the airplane. After the runup, you announce, "Before-takeoff checklist complete down to final items." When you are number one for takeoff, announce, "Before-takeoff checklist complete — lights, camera, action to go."

The before-landing checklist works much the same way. It should be completed to "final items" just before you leave cruise altitude, because these items are a distraction if you attempt to execute them and read the checklist while descending or entering the traffic pattern. You complete the final items after the landing gear, propeller(s), and flaps are positioned for landing.

Your verbal responses are as follows: When the airplane is prepared for arrival, you announce, "Before-landing checklist complete down to final items — gear, prop(s), and flaps to go." When these remaining items have been accomplished, you announce, "Before-landing checklist complete."

The segmented checklist enhances your ability to manage the cockpit and comply with standard operating procedures. Many a pilot has avoided embarrassment, not to mention a possible accident, because he or she used the written checklist properly.

Before-Takeoff Checklist

* Auxiliary fuel pump — Off
* Flight controls — Free and correct
* Instruments and radios — Checked and set
* Landing gear position lights — Checked
* Altimeter — Set
* Directional gyro — Set
* Fuel gauges — Checked
* Trim — Set
* Propeller — Exercise
* Magnetos — Checked
* Engine idle — checked
* Flaps — As required
* Seat belts/shoulder harnesses — Fastened
* Parking brake — Off

Final items

* Doors and windows — Locked
* Mixture — Full rich unless above 3,000 feet msl
* Lights — Landing, taxi, strobes on
* Camera — Transponder on
* Action — Engine instruments checked

Before-Landing Checklist

* Fuel selector — Fullest tank
* Directional gyro — Aligned with magnetic compass
* Seat belts/shoulder harnesses — secure
* Mixture — Full rich unless airport above 3,000 feet msl
* Cowl flaps — As required

Final items

* Landing gear — Down
* Propeller — High rpm
* Flaps — As required