



Glider Flying 101 – the Positive Control Check, Pre-launch checklist, and Take-off
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This month we start a series discussing basic training and flight maneuvers in gliders. We'll start with the glider on the ground getting ready for a launch and end several months from now with a post-flight debrief. We'll assume that you have completed the daily inspection or glider pre-flight inspection per the flight manual and that the glider is airworthy and you are mentally and physically ready for the flight as well.

We have the glider out next to the flight line and we'll start with a Positive Control Check. You all know that the PCC is designed to help you ensure that ALL the gliders flight controls are connected and that everything moves in the proper direction. This can only be done when two people (pilot and helper) verbally communicate while performing the checks. I can't tell you how many times I've resorted to my clipboard instruction technique when watching a pilot try and perform a PCC without talking to the helper.

Why is verbal communication so important? Let's take the case of the rudder. Now you might think that since you seldom remove the rudder you don't need to check it. However, there have been several accidents where the glider came back from maintenance with the rudder cables reversed. Because a proper PCC wasn't conducted, the pilot didn't notice that the rudder was moving in the wrong direction and correcting for this in flight is almost impossible.

Thus in order for the check to be Positive, both the pilot and the helper must verbally agree that the control surface is moving in the proper direction when the flight control is moved in the cockpit. The flight control should be moved through its full range of motion, with the helper applying a slight resistance and verbally communicating with the pilot on the direction of deflection and stating how the control is moving.

Once a PCC is completed the pilot can put the glider on the flight line and prepare for the tow.

Now it's time to think about the pre-launch checklist. The question is, are you running a State-Do list or a Check-Verify list. What's the difference you might ask?

In a State-Do list you pull out the written checklist (ABBCCCDDE, CBSIFTCBE, or a glider specific checklist) and go through the list item by item doing everything it says when you get to that checklist item. For example, you set the Altimeter when you reach A on the ABC list or I on the CBSIFT list).

In a Check-Verify list you first set/check everything in the cockpit to the position you want for this launch. For example, you start on the left sidewall and set flaps, spoilers, and trim to the take-off position. Then move your hand up and go across the instrument panel throwing every switch, button, and knob to the proper position, continue to the right sidewall and back over your lap ending where you started. Then you pull out your written checklist and as you read each item you verify that it is set correctly.

The important point is that you use your written checklist and complete every item in order. If you have to stop or you get interrupted, you start over from the beginning. Reading accident reports you will often find that the pilot was interrupted during the checklist and that is why the canopy came open during the launch.

You will also notice that all the checklists end with the letter E, for Emergency Plans. You need to have a plan in mind for what to do if you want/need to abort the launch. There will be several decision points, both aircraft still on the ground, glider airborne while the towplane is still on the ground, 10 Ft and beginning to climb, 50 ft and climbing well, 150 ft and still climbing, 300 ft and so on.

Now it's time to signal the wing runner, you've already been hooked up, to level the wing, remove the slack, and begin the launch.

The towplane adds power and you begin to accelerate down the runway. Using the ailerons you keep the wings level, the elevator gets the glider up on the main wheel, and the rudder keeps you rolling straight down the runway centerline. Then you wait for the towplane to get you going fast enough so the glider becomes airborne. Notice that you don't have to pull the glider off the ground by adding back pressure to the stick. The glider becomes airborne when it reaches the proper airspeed.



Here's a question you can use to amaze your friends. What will a Total Energy compensated vario do while you are accelerating down the runway with the wheel still on the ground? Show a descent, remain pointing at zero, or show a climb rate?

Once the glider is airborne you will notice that it will tend to climb unless you add a little forward pressure to the stick. This is because the airspeed is continuing to increase while the Angle of Attack is remaining constant. That means the wings are producing more lift, so the glider climbs. Adding forward pressure to the stick decreases the AOA, reducing the lift being produced, preventing the glider from climbing. A few seconds later the towplane gains sufficient speed so that it also becomes airborne. The tow pilot establishes a pitch attitude that will allow the towplane to climb at the proper speed, and your job becomes one of station keeping in this formation flight. Next month we'll discuss a simple way to fly tow.

Oh, and to answer the vario question, a TE compensated vario will show a climb rate while accelerating down the runway. The TE vario measures a combination of speed (kinetic energy) and height (potential energy). If you add energy (kinetic or potential) the vario will show a climb.