

Flight details – Zenith 750

Our flight prep started at around 8am with entry of flight plan into both iPad iFly and Dynon Skyview. All systems on board appeared to be working correctly and the evening prior I reviewed the condition inspection and commentary from Viking that reported “everything was perfect”. The external preflight inspection did not reveal any issues with both Walter and I doing our own independent preflight checks and all seemed safe for our flight. We observed one alarming issue that we discussed and agreed to proceed. That issue was that Viking had agreed with the owner to convert the aircraft back from “Disabled Pilot” controls to “normal controls” and while that appeared to have been done correctly at the time, components had been taken from the right seat to build the left and no right seat throttle or brakes were present and hence the intention of having a second “safety pilot” on board only at this point extended to navigational issues and not flight. We agreed to continue in the face of this increased risk.

Immediately on engine start, the onboard systems appeared fully functional with only one issue with throttle sensitivity. 1/2 inch of throttle movement appeared to be full power with RPM raising very quickly to over 4000 rpm and the throttle was immediately pulled back. I increased the resistance on the turn lock to make it manageable and throttle up again for taxi and the throttle was still scary but did not leap without control to high RPM. We taxied to the taxi way and down to the end of runway testing brakes and throttle response along the way. It was obvious that the throttle response was excessively sensitive but was manageable. I was thinking I needed to increase the arm of the throttle body to allow less rotational input for greater travel and would do this after return to Greeneville.

I started a slow initial roll with ¼ power and progressively increased power to approx. 75% for rotation at approx. 60. I had been told that rotation as low as 40 was safe but had planned an acceptable power setting, gradual roll and gentle climb out. The aircraft came alive at approx. 40mph and I had to apply 50% rudder to maintain centerline as we accelerated and we lifted off at approx. 58 when the aircraft lunged to the left. I applied 100% right rudder, pitched the nose down a little and applied a little right aileron and the aircraft leveled to a gradual climb on runway heading. I accelerated in climb out to approx. 80 with best climb at approx. 75 where I could let some right rudder go and we climbed the rest of the length of the runway at approx. 50% rudder. The balance of the climb out was uneventful until we turned on course to our first leg destination. Immediately upon initiating a gradual turn west, we heard a very large boom over the top of the busy airport traffic calls on the radio and the aircraft jolted nose down and to the left with equal velocity and energy as hitting moderate turbulence yet the wind was dead calm and the sun was only just risen, we pitched down and lost approx. 50 ft of altitude and aileron control was extremely stiff. I levelled out, dropped a little power to gain some time to understand what happened, we looked for the rudder having been lost off the aircraft and or bird strike and we found no evidence of the cause. We then noticed that the magnetic compass and the Dynon heading were divergent by 45%. I attempted two small turns to check the compass setting and it was noted that the magnetic compass was stuck at 240 and did not move. Until this point, we had only primary flight controls and engine management active on the display to help with first flight focus. I turned on the moving maps to help with directional understanding and the Dynon moving map was inverted with

south up. I immediately disregarded all direction information to return back to the airport and while Walter continued to focus on navigational indicators my focus was on a 180 to the airport. The moment I initiated the left turn back to Massey we heard the same boom from the rear and the aircraft pitched down and to the left and the controls froze again. I was able to force them straight into level flight against resistance and levelled out for a 45 intercept with downwind. The right turn on downwind was normal. I turned left on base and it was uneventful. I turned left onto final and again boom and the controls locked. I managed to straighten and add a little power but was too high and I called of that approach and went around. The turn on crosswind and the turn onto downwind were uneventful but again on the turn on base the same boom and control failure. By this point the tension was high and I carried too much power and was descending slowly. I dropped the power and descended like a rock and the controls were very stiff. I added a little power and could not maintain runway heading and was too high for an early field landing and so called in an abort to rejoin downwind mid field. I turned left onto midfield downwind and called in that we had issues and I was going to extend my downwind to get better control on final. We turned on final and again control locked up yet I was able to get control and a "semi normal approach". We entered the field with a final approach speed of 73 mph at approx. fifty feet about the runway I dropped the rest of the power and we slowed and descended and we both felt we had the landing made. The aircraft then lunged down and to the left, I added power which had helped to regain control previously and the aircraft lunged hard left and wing dropped and controls total froze and I could not regain level flight. The left-wing tip hit first followed by landing gear and then nose wheel which collapsed and planted the nose into the berm around the drainage channel. We flipped over and landed in the water upside down.

After getting out of the aircraft emergency services arrived and we realized that the Emergency beacon had not worked and the services responded to only a 911 call by a person that saw the crash.