

THE PROP STOPS **HERE**

What happens when a propeller breaks in-flight? Hope you never find out. Name withheld



I've always thought the great strength of the What Went Wrong feature is its power to make you ask, "What would I do if I were in that situation?" The following incident occurred a few years ago, and in sharing it I hope other pilots can learn something from my experience.

I was fortunate to be flying a Beech Baron 58 and gaining valuable experience in multi-engine aircraft. Another local Baron operator asked if I could fill in for a week or so while their pilot went on holidays. This suited me fine as the Baron I usually flew was getting a new paint job and would be out of action for a while.

This particular Baron was slightly different to the model I was used to. It had a two-blade prop as opposed to three, but still handled like all Barons – very nicely.

The trip plan was to be away for a couple of days, leaving from Brisbane and visiting various towns and properties in western Queensland and then returning to the capital.

On the second day we refuelled in Charleville and took off for Dalby. The weather was CAVOK and the south westerly delivered a healthy ground speed.

At top-of-descent I pulled the throttles back and started the descent into Dalby. My two passengers in the back were seasoned Baron travellers and a quick glance was all that was needed to check they were strapped in for the landing.

We had barely started the descent when the aircraft yawed ever so slightly,

as if the right engine had surged. As I moved my hand up to the throttle quadrant, the right-hand RPM increased by around 50 RPM. Suddenly, there was an almighty bang followed by an enormous vibration shuddering through the entire aircraft.

"Yep, that's a real engine failure," I remember thinking as I turned my attention to the engine-failure drills I had practised in training.

I hit my first snag after I confirmed that it was indeed the right engine that was the source of the problem. I pulled the mixture back to idle-cut-off but the engine didn't seem to respond; it was still running with the prop in a semi-feathered position and the vibrations continuing.

I momentarily glanced across to the left and then back to the throttle quadrant. The right-hand pitch and throttle levers were moving up and down by themselves, as if the engine was possessed.

I knew that I had done the appropriate checks and identified the correct engine, yet I still had a problem. Oil was cascading all over the cowls and the plane was still shuddering violently.

Fortunately we were on a gentle descent and still had some height between us and the circuit in Dalby.

The only way I could think to shut the engine down was to take my left hand off the control column and use my forearm to keep the throttle and pitch levers retarded while I used my right hand to switch the right-hand fuel cock and magnetos off.

This was easier said than done but

it worked and I was relieved when the engine finally came to a stop.

With the prop stopped in the feathered position, the cause of the problem was suddenly clear. Approximately one third of the propeller blade was missing, along with half the spinner.

At this point I remembered my passengers. I could see the shock in their eyes but I couldn't begin to describe what had happened or why. I did pass on a thumbs-up, and they later told me that that simple gesture had been reassuring as up until then they could see I had my hands full.

I looked forward and could see a piece of metal shard protruding from the nose locker. The departing prop section had clearly exited through the nose locker. "Is that the only damage?" I wondered.

I called flight service to let them know what had happened. They were extremely helpful, providing information about Oakey and its fire services should I wish to divert there.

I decided to proceed to Dalby, which was just 10 nm away and in sight. The right engine appeared to be sagging just a fraction and I was concerned that the engine mounts could be broken. If that were the case, the best option would be to land as soon as possible.

I flew a wider circuit to give myself some space and time to make sure there weren't going to be any other problems.

The gear came down when selected and the rest of the arrival and landing were uneventful.

It was later discovered that the counterweight had failed due to a manufacturing fault and this had broken

through the hub and struck the rotating prop causing the big bang.

The mixture cable had stretched when the counterweight failed and that's why it was impossible to shut the engine down with the mixture lever – idle cut-off was no longer idle cut-off.

ANALYSIS:

The actions following the failure of an engine in a light piston twin are probably the most rehearsed drills for pilots of these aircraft. But despite all the training, the regular practice, and the best efforts of multi-engine instructors and examiners to provide unexpected and realistic simulations, nothing can quite prepare a pilot for the real thing. As this pilot discovered, when a piston engine fails for real, it is usually not the gentle loss of power an instructor initiates, but rather an event accompanied by much fanfare with noise, vibration streaming oil and other assorted unpleasanties.

In this case, the pilot did everything he should have done to identify the problem engine and to initiate its shut-down. When the engine refused to come to a complete stop he realised the likely cause was with the engine controls and that depriving the engine of fuel or spark was what was needed.

Knowing what was needed and actually performing the task with a shuddering aircraft and “possessed” engine

controls were quite different matters, likely not rehearsed in training, and adding to the stress of a real engine failure.

With the engine secured, the pilot could turn his attention to the next considerations. The pilot thought of his passengers and turned to reassure them that things were under control, the simple ‘thumbs up’ gesture is all that was needed to ease some of their anxiety but again, reassuring our passengers is not a part of the usual engine failure drill.

Looking for other ‘collateral damage’ and thinking about what problems it might cause are also very important considerations once the immediate actions of securing the engine and flying the aircraft are taken care of.

There are many benefits with letting ATC (or Flight Service in this case) know that you have a problem. They are trained to provide appropriate assistance and to respect and help with whatever decisions you make. The simple act of acknowledging you have a problem can in itself ease some of the stress of this type of situation. In this case, with Dalby in sight and the closest airport, the pilot elected to land and not to divert to Oakey. I expect in the circumstances I'd have done likewise.

Designers and manufacturers go to great lengths to ensure the types of failure that occurred in this story are very rare events and it is very unlikely that the required regime of mainte-

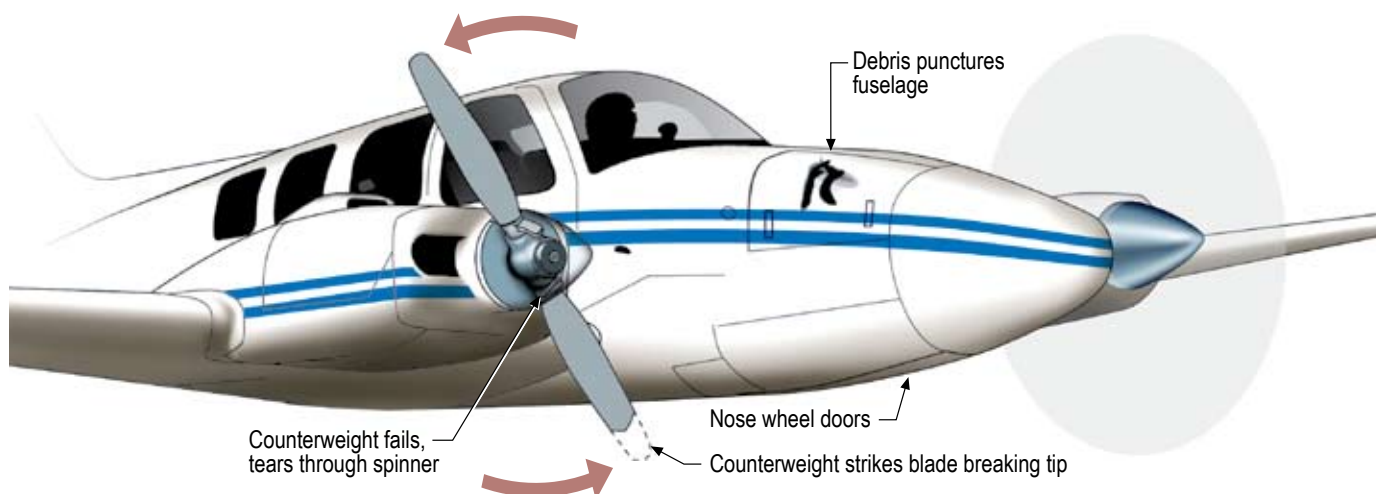
THE RIGHT-HAND PITCH AND THROTTLE LEVERS WERE MOVING UP AND DOWN BY THEMSELVES, AS IF THE ENGINE WAS POSSESSED.

nance, tests and inspections could have discovered the manufacturing flaw that led to the loss of the counterweight. No matter how well maintained and how carefully flown, any piston twin can suffer a catastrophic engine failure.

It is vital that pilots of these aircraft are always as well prepared as this pilot was and understand that noise, vibration and the knowledge that this time there's not an instructor there to restore the power if things get out of hand, all add considerably to the stress of a real in-flight engine emergency.

Do you fly light piston twins? Pause for a moment and consider how you would have reacted. What if this happened to you just after takeoff or in IMC?

–Mike Smith



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Previous What Went Wrong submissions will still be considered for publication.

Articles should be between 600 and 2,400 words. If preferred, your identity will be kept confidential. Please do not submit articles regarding events that are the subject of a current official investigation. Submissions may be edited for clarity and length.