

## A Toggle Switch Lock

Paul Fiebich  
EAA # 577724

My AirBike is often displayed at air shows where spectators sometimes touch things they shouldn't. Like many homebuilt aircraft its ignition system uses a toggle switch as its master switch. Now toggle switches are wonderfully versatile. They are easy to install and convenient to use, but they are also vulnerable to the unknowing or the unscrupulous. As anyone who works on aircraft knows, an accidentally "hot" ignition is an invitation to disaster. Being able to lock my master switch in the off position would safety it from both and gives me peace of mind, too

I was unable to find a manufactured switch protector that would lock the Air Bike's master switch in the off position. Like most homebuilders, I have more time than money so I did what I usually do, I made my own. Obviously, this lock will not stop a thief with a bolt cutter and determination, but it will stop the casual opportunist from starting the plane and flying away with it. The material list for this project:

- A keyed padlock
- A snap ring
- A toggle switch that fits your electrical requirements
- Two one-way screws
- A piece of .032 2024T3 or T4 aluminum



First make a paper template to suit the switch and accommodate the shaft of the snap ring. Make the holes that will accept the snap ring shaft off center but in line. This will prevent the toggle switch from being locked in the ON position. Not having a sheet metal brake bar I found the blade of my table saw's protractor head was just the right size to use as a form tool. It is nice when things work out like this! Several well-aimed taps with a hammer brought the sheet metal into shape.



To avoid cracking the metal, provide a bend radius at least equal to its thickness. A few strokes with a file and some 200 grit auto body sandpaper or emery cloth will remove the rough edges. Drill and deburr the two mounting holes, toggle switch attach hole and two inline snap ring shaft holes in the formed sheet metal. Position the locking plate (be sure the off-center holes allow the locking pin to lock the switch in the OFF position), then mark and drill the panel for the toggle switch attach hole and the two mounting holes.

Before committing to installing the formed sheet metal



guard on the panel's panel, test fit everything and adjust if necessary. Mount the guard using the two one way screws, insert the toggle switch and tighten its lock nut then insert the shaft of the snap ring through the holes and flip the loop into the position shown. Snake the bail of the padlock as shown and snap it closed.

Done deal, my plane is secure from tampering and I had a little fun making stuff.

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*Paul is an active member of EAA Chapter 88.*

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