Mounting a Gear Warning Magnetic Switch on a Drive Tube

Gear Warning systems are effective in preventing gear up landings but they are not trivial to install. Generally these systems require a switch on the gear drive and another on the dive brake drive. The switch choices boil down to micro-switches which make a physical contact with a portion of the drive and non-contact magnetic switches. This note pertains to a method of installing a magnetic switch on a round steel drive tube.

It is preferred to have the magnet on the drive tube while the wired switch is affixed to non-moving parts of the glider. However, when the magnet is placed in close physical contact with a steel drive tube, the magnet's flux is shunted through the steel rendering less range and effectiveness for the magnet's influence on the sensor switch. So, the mechanical challenge is to provide a secure mounting for the magnet with a bit of standoff distance to preserve the magnet's effectiveness. Pictured here is one solution to the problem.

The mounting is machined from black delrin plastic. The concave surface is cut using an endmill matching the curvature of the drive tube. A cylindrical magnet is pressed into the hole along the part's length.

The cylindrical magnet is matched to a magnetic sensor switch offered by Hamlin. The normally closed switch and the magnet are available at www.digikey.com as part numbers: 59140-040 and 57025-000 respectively.

The magnet mount is affixed to the steel drive tube using 10 mm Tessa transfer tape – the same double sided tape that is commonly used to hold mylar seals in place on glider control surfaces. The back of the sensor switch is flat and is therefore amenable to attachment to a flat surface on the glider using the same transfer tape.

Steve Koerner
www.wingrigger.com