

Installation Issues

A lot of EFIS and ADHRS-magnetometer malfunctions are a direct result of installation issues. Some magnetometers are actually three-dimensional sensors (such as those in the MGL EFIS line). And all of them must be aligned precisely with the ADHRS computers in order to work properly. Garmin G1000s with wingtip-mounted magnetometers had issues for a while because of interference from steel counterweights in the ailerons of some Diamond DA40s, for instance. Mounting hardware must be nylon or brass, just as with a compass, to avoid interference. And wiring should be degaussed, as well as carefully located well away (eight to 12 or more inches) from the magnetometers. Even the cables for seatbelt attachments found in some RV aircraft could cause problems if not degaussed. The firewall and the instrument bay behind the panel are both awful places to put magnetometers. Think electronic tachometers, autopilots, and more, all in close proximity. They will wreak havoc with a magnetometer. Have you seen what they can do to a simple kerosene compass?

Magnetometer manufacturers recommend mapping the magnetism in your aircraft before installing your equipment, to be sure that transient or permanent errors won't crop up. The process can be done with a compass, or, yeah, a magnetometer designed for the purpose.

Most magnetometers need to be calibrated in place by turning on and off various electronic equipment in the airplane, with the engine running, and also by moving the airplane through known compass directions. Some



units, including the Garmin units, can use software for calibration assistance (the magnetometer does have to be directly connected to the computer running the software). A few small units (the kind you might find in your iPad, for instance) can be calibrated by a direct connect to a computer running proper software before installation. Re-calibration after service is key.

We had no ungrounded wiring, and we'd neither installed nor removed equipment. We did worry that perhaps one of our EFIS' ADHRS computers might be acting up, however, the diagnostics didn't pan out there, either. None of this explained the issue discussed in this article's main text.