



SUBJ: Cabin Altitude Encoder – Installation Evaluation

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts you, owners and operators of **all airplanes with cabin altitude encoder Sandia SAE5-35 or Garmin GAE 43 installed**, of an airworthiness concern on certain installation configurations of the encoder. The encoder provides altitude information to avionics displays. We are recommending you evaluate the configuration of your installation of the encoder.

At this time, this airworthiness concern has not been determined to be an unsafe condition that would warrant AD action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

Background

As discussed in AD 2015-13-09, we received a report of an airplane that experienced a pitch control system problem resulting in a limited ability to control the elevator. The investigation revealed that an avionics box installed behind the instrument panel had fallen into the elevator control sector and jammed the primary pitch control.

The AD was issued to address the specific location and installation configuration on certain Piper airplanes. We have continued to investigate other installations of the cabin altitude encoder that might have a similar configuration. The encoder is supplied as either SAE5-35 from Sandia under technical standard order (TSO) C88a, or as GAE 43 from Garmin under a parts manufacturer approval (PMA). See Figure 1 for a view of the encoder and Figure 2 for a diagram of the mounting assembly.



Figure 1

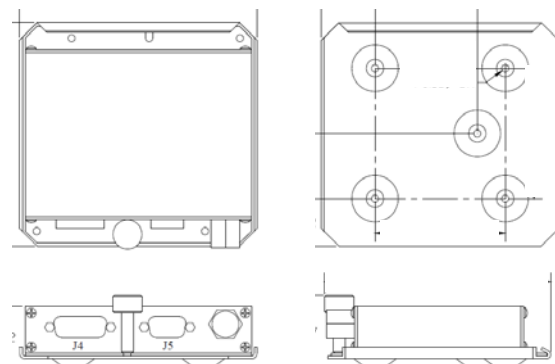


Figure 2

Other installations of the encoder could have occurred through several means such as part of a type certificate (TC), supplemental type certificate (STC), or field approval. The typical installation of the cabin altitude encoder would be “right side up” (as shown in Figure 2). In that configuration, gravity

would retain the encoder if the retaining fastener fails. Also, the encoder should be installed away from any systems that would have a direct impact on safety of flight. For instance, a typical location would be on a rack in an avionics shelf or bay. Prior to the AD, no adverse service history had been reported.

For reference, the TSO and PMA installation manual states that the encoder can be mounted in any axis. This is true as far as operation of the encoder itself is concerned, since a TSO only focuses on the performance requirements of the article itself. Airplane product safety, however, depends not only on the components installed, but the details of the installation. In the case of the AD, the encoder was installed:

- Upside down
- Directly above a critical flight control system
- Behind the instrument panel
- Lacking additional locking features on the retaining fastener

As demonstrated in the AD, the typical installation assumptions can be changed to create an improper configuration with increased risk. Sandia has revised the encoder installation manual to include a caution addressing the location and configuration of the installation. They have also designed an alternate mount assembly to address such configurations and referenced the new mount assembly in the manual.

Recommendations

The FAA recommends that owners and operators of airplanes with cabin altitude encoder SAE5-35 (Sandia) or GAE 43 (Garmin) installed, evaluate the configuration of your installation. You may use the background information provided above as a reference for considerations that could lead to an improper installation. We also recommend you evaluate use of the alternate mount assembly referenced in the revised Sandia installation manual to mitigate improper configurations.

For Further Information Contact

Gregory K. (“Keith”) Noles, Aerospace Engineer, Atlanta ACO, 1701 Columbia Ave., College Park, GA 30337; phone: (404) 474-5551; fax: (404) 474-5606; email: gregory.noles@faa.gov

For Related Service Information Contact

Sandia Aerospace, 3700 Osuna Rd. NE, Suite 711, Albuquerque, NM 87109;
website: <http://sandia.aero/>