STC SA12195SE

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TITLE:	Instructions for continued airworthiness for PA-28 Gear Warning upgrade
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Log of Revisions

Revision Level	Revision Date	Reason
IR	7/2/2024	Initial Revision

G23.1 General

This section constitutes the required Instructions for Continued Airworthiness.

This document can be obtained by via download at absoluteAVsolutions.net

G23.2 Format

This manual section forms the Absolute Solutions LLC Gear Warning upgrade Instructions for continued airworthiness.

G23.3 Content

The contents of this manual is presented in the English language.

(a) Airplane maintenance manual or section

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Introduction

This is a modification to the aircraft gear warning system. The Absolute Solutions Gear Warning Upgrade incorporates existing aircraft wiring, a vacuum switch and a relay to alert the operator via an audible horn when:

- In flight, engine manifold pressure is reduced to approximately 14”HG or below and the gear selector is not in the DOWN position.
- On the ground, when master switch is ON and gear selector is in the UP position

Due to the sole use of factory aircraft wiring at low throttle switch, all other operation of factory gear warning systems options such as backup extender remain undisturbed.

Revisions and Amendments

All Instructions for Continued Airworthiness (ICA) changes will be submitted to the FAA for review and acceptance by the Aircraft Certification Office and the Airplane Evaluation Group prior to issuance to the field. Revisions to this ICA may not be distributed without prior FAA acceptance. Once an ICA revision is accepted by FAA it shall be distributed to all registered owners by either U.S. mail or via internet email at the election of the Absolute Solutions LLC. Absolute Solutions LLC maintains a list of all registered owners. This list shall be made available to the FAA for any Continued Operational Safety issues (Airworthiness Directive, etc.) that arise concerning this STC.

System Components and Description

The Absolute Solutions Gear Warning Upgrade is comprised of the following components, the components do not require a particular order of removal, and are secured using general aviation grade screws and securing methods such as ty-wraps. Reference installation manual Doc. GWUPA28-IM-000 for installation and removal information.

- **Vacuum switch assembly PN AS-MPSBA-1 –Mounted behind engine firewall in cabin**
- **In-line filter PN AS-IF-00 - Located under instrument panel near manifold pressure line (ensure proper orientation)**
- **Solid-state Relay PN DC60S3 – Mounted behind engine firewall in cabin**
- **Gear horn assembly PN AS-GHBA-1 – Located under instrument console**

The system utilizes a vacuum switch to sense manifold pressure and provide a trigger signal to a relay, which in turn powers the gear warning horn to alert the operator of an unsafe gear condition.

The vacuum switch internal contacts are protected from contaminants by utilizing an in-line filter to keep residual fuel vapor and other contaminants from reaching the switches. The inline filters can be cleaned with isopropyl alcohol as required to remove obstructions to airflow.

Caution:

Care should be taken not to damage the AS-MPSBA-1 vacuum switch and AS-IF-1 inline filters when disconnecting vacuum hose from the in-line filter or switch for any service. They are fragile and do not hold up to side loading, which may result in leaks and faulty system operation.

System Operation

The vacuum switch is powered through a relay from the existing gear-up/power reduced switch wires when the gear selector is in the UP position, or when the gear is not down and locked. The vacuum switch is normally open, closing when manifold pressure decreases to 14”HG. When this happens, the switch completes the trigger circuit back to the relay which will power the gear horn. Once manifold pressure is increased past 14”HG, the switches open again cutting power to the relay and subsequently the horn.

The vacuum switch can be accessed under the instrument panel on the engine firewall. The vacuum switch wire harness connecting to the vacuum switch is equipped with a two-pin jumper connector for easily checking gear horn operation during scheduled inspections and for troubleshooting.

The gear horn is mounted under the instrument panel on a bracket utilizing existing mounting holes of original gear horn.

The Relay is located under the instrument panel on the engine firewall.

Maintenance instructions

Scheduled maintenance

Every 100hrs or Annually

- Visually inspect vacuum switch, relay, gear horn and attach wires for security
- Place airplane on jacks IAW with applicable manufacturer maintenance manual. Operationally check gear warning horn and light. To simulate closing the vacuum switch (reduced throttle), insert jumper into jumper plug on vacuum switch harness (Refer to Doc. GWUPA28-IM-000 latest revision. **Remove jumper from test plug after completion.**

Service Information

Refer to the latest revision of the installation manual Doc. GWUPA28-IM-000 for information regarding system installation.

Troubleshooting

*Procedural instructions- Aircraft must be on Jacks to troubleshoot gear warning system issues.

Troubleshooting

Trouble	Cause	Remedy
Gear horn fails to operate	**Faulty Vacuum Switch**	**Place AC on jacks per AC mfr. maintenance manual. Retract landing gear. Check for battery voltage at one vacuum switch post. If present, jump switch. If horn operates replace switch.**
	Clogged in-line filter	**Clean or replace.**
	Faulty relay	**Troubleshoot Relay per applicable wiring diagram located in GWUPA28-IM-000 and replace if defective.**
	Faulty horn	**Place AC on jacks per AC mfr. maintenance manual. Retract landing gear. Jump vacuum switch with fabricated test plug or test plug PN AS-GHTP-1. If voltage is present at gear horn, replace gear horn.**
	Faulty wiring	**Inspect wiring connections and correct any broken or damaged wires/connections.**

Airworthiness Limitations

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Secs. 43.16 and 91.403 of Title 14 of the Code of Federal Regulations unless an alternative program has been FAA approved. Airworthiness limitations associated with this type design change listed below.

- None