



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Passenger/Crew DC Power Outlet installations

Purpose: This SAFO alerts owners, operators, and certificated repair stations that passenger and/or crew DC power outlets on retrofitted aircraft may be improperly installed and may present a potential airworthiness hazard.

Discussion: Inspections of some aircraft which have been altered to include DC power outlets have resulted in finding improper installations of the DC power outlets for passenger/crew use. Some installations require the installer to provide an adapter cable (see example picture below) consisting of an amp style connector on one end and a cigarette lighter-type receptacle on the other. These adapters can then be used by the passengers/crew to connect portable electronic devices (PED) to the aircraft power system. Even though these adapters are supplied as part of the installation, they may not have been certificated as part of the aircraft alteration. In some cases, inspections have shown that the wiring used on the supplied adapter is not sufficient to meet circuit current carrying requirements. This could expose the adapter cable to excessive current and overheat, resulting in an unsafe condition and potential fire hazard.

Airworthiness concerns are:

- Incorrect circuit breaker selection for protecting the aircraft wiring.
- Potential for excessive current draw through the adapter cables.
- Lack of appropriate identification placards and/or limitations.
- Inappropriate approval basis of the aircraft alteration.

Owners/operators are cautioned that alterations that installed these DC outlets may not meet the applicable airworthiness standard. Owners/Operators of aircraft that use these passenger/crew DC power adapter cables should use extreme caution as the risk of excessive current draw can cause a severe flight safety hazard.



Recommended Action: Owners/operators of aircraft with retrofitted DC power outlet installations should discontinue use of these installations and or disable them until an evaluation by an appropriately FAA-certified mechanic or designee has determined that the adapters can be safely used and all airworthiness requirements are met. This determination should confirm that the documented installation conforms to the aircraft's properly altered condition and that other airworthiness considerations have been met in accordance with Title 14 of the Code of Federal Regulations (14 CFR) parts 21, 23, 25, 27, 29 and/or 43 as applicable.

In particular, the evaluation of the installation should ensure the following:

- The aircraft installation has the proper wiring and circuit protection.
- For adapter cables that contain built-in circuit protection (e.g. a fuse in the adapter connector), ensure that the adapter cable wiring is of sufficient size to be protected by that circuit protection device.
- For adapter cables without built-in circuit protection, ensure that the adapter cable wiring is of sufficient size to be protected by the aircraft's installed system circuit protection device.
- Ensure the outlet or supplied adapter is placarded with the voltage and current rating of the cable/system.
- Ensure that the adapter cable and outlet are designed so that the risk of electrical shock to crew, passengers, and ground personnel is reduced to a minimum.

Note: One acceptable method of determining the proper selection of wiring and circuit protection is provided in Advisory Circular (AC) 43.13-1B, chapter 11, sections 4 and 5. Additionally, the Original Equipment Manufacturers (OEM) Standard Wiring Practices Manual for wire selection should be followed since the selected wiring also needs to comply with Airworthiness standards for flammability

If this equipment was not properly installed and documented, owners/operators should immediately disable/discontinue the use of these outlets until corrections are made, approvals obtained (if applicable), or permanently deactivate or remove the improperly installed DC outlets.

Contact: Questions or comments regarding this SAFO should be directed to your local Flight Standards District Office.