

## LOW COST GADGET

In the January '87 ABS Newsletter, I had an article published entitled "Light Plane DC Electrical Systems" which detailed some of the operational characteristics and shortcomings of such equipment. Interestingly enough, I received many phone calls with questions about the "real need" of some of the additional equipment suggested in the article. Well, I wouldn't think of being an "I told you so", but....!

Although this particular occurrence was not with a Beech airplane, the components involved are the same type used on all light, single and twin engined airplanes.

This Service Difficulty Report (SDR) is reprinted from Aviation Mechanic's Journal:

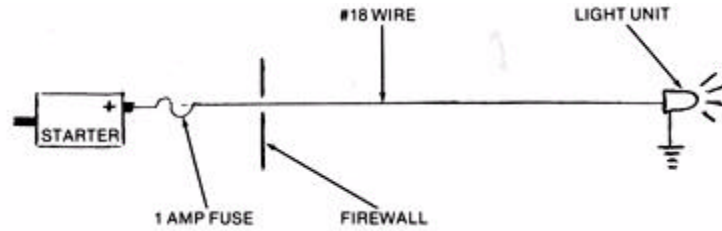
### *"CESSNA T310Q ELECTRICAL PROBLEMS*

The aircraft experienced a total inflight electrical failure. Investigation revealed that the starter had stayed engaged after start causing the starter and master relays to weld themselves closed. The starter became hot and grounded, causing all electrical output to be directly grounded with no circuit protection. The batteries were ruined from boiling dry. It could not be determined if the starter had a high current draw on start and welded the relay then, or if the solenoid failed closed leaving the starter engaged. The pilot noticed a high current draw but dismissed it as a low battery condition. The submitter advised that pilots should monitor the ammeter after start of both engines and have abnormally high current readings checked immediately.'

Although this type failure is not an everyday happening, neither is it uncommon. Many of these failures are never reported due to the pilot interrupting the process, either by choice or by chance, before it progresses to an incident or accident.

The usual starter motor relay failure is one in which the relay fails to close, resulting in the starter not being energized. Occasionally, the failure is one, such as the quoted SDR, wherein the starter motor remains energized. This type failure can lead to loss of life or airplane or both. Engine failure, insight fire and other nasty stuff might result from such a situation.

As outlined in the prior ABS article, a very simple, low cost annunciator light can be installed to alert the pilot of a "starter motor run on" after starter switch release problem. I have been told that Beech now has an approved kit to serve this propose, or one could be put together by the owner/ mechanic and field approved by the FAA-GADO. It would consist of a suitable light bulb fixture (similar to landing gear indicator light units) located on the instrument panel, a wire leading from the light to the starter motor positive pole and an inline one amp. fuse at the starter motor to protect the installed system (see diagram).



The operation of the system would be:

When cranking the engine, expect to see the light on. At starter release, the light should extinguish indicating power cut off to the starter motor. Light on after starter switch release indicates a serious, abnormal condition requiring IMMEDIATE shutdown of electrical system via the master switch.

What does it cost if you do all this? Beech's kit, I don't know. The components listed for the "You Build It" kit are less than \$20 and about two to three hours installation time.

The cost if you do not do all this is – if you like to bet odds – zero. However, as with most additional safety equipment, if you need it but don't have it, the expense can be great – something like your fire extinguisher.

I know this hasn't happened to you yet. It hasn't happened to me yet either, but both of my own airplanes have this low cost gadget installed.

Keep your "juices" flowing, but only when you want 'em.

Lew Gage

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