

# Batteries not included

Aircraft batteries can't be treated like car batteries. Be aware of the safety implications of flat batteries in the air.

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MOST PEOPLE are familiar with the hazards of hand-swinging aircraft propellers. However, most people are not aware of the hazards of flying with a flat battery.

Consider the scenario of attempting to start an aircraft, either by hand or with an external power source, in poor visibility at night. The aircraft takes off, and 10 to 15 minutes later there is a sudden deathly silence.

The engine has failed, and you cannot even begin to locate any viable place to land.

The aircraft's electrical systems have been drawing power from the generating system, resulting in a reduced charge to the battery.

Any attempt to restart the engines under these circumstances will most likely fail as the battery has not had time to charge to a sufficient level. In fact, the pilot may not even have enough power to lower the undercarriage, flaps or turn on the landing lights.

**Guidelines:** According to General Aviation Manufacturers Association and International Civil Aviation Organization guidelines for the preparation of flight manuals there are currently no requirements to include specific details on battery charging, beyond basic information on electrical

systems in general. But it is worth taking the time to familiarise yourself with some of the problems associated with flat batteries.



While it is a simple process to start an aircraft when the battery is flat, just as it is with a car, the outcome can be significantly different. When charging a fully discharged battery from an aircraft generating system it is possible to damage the battery as they are generally not designed to be deep cycled, as in a complete discharge.

In this case, rapid charging can result in boiling the battery, producing flammable and

poisonous gases and even an explosion.

It is also important to consider that the battery may be of indeterminate age, it may

capacity increases, the charge rate decreases, as indicated by the ammeter pegging out on the stops.

Aircraft electrical systems are designed and built to a minimum standard. The electrical load analysis will determine the minimum battery capacity that is required to meet design standards and emergency operating conditions. These are minimum conditions based on known battery conditions, with little or no excess capacity for any kind of emergency.

**Take a test:** Testing is the only way to determine whether a battery is serviceable. There are many factors that determine serviceability, including the ability to hold a charge. However, none of these criteria applies to a battery that has been allowed to go flat. Generally, pilots will only recognise a battery as unserviceable if they smell fumes, or if the battery hasn't held sufficient charge to start an engine at the next attempt.

There is nothing in the flight manual to ensure pilots report flat batteries, or that a battery is deemed unserviceable if it is discovered to be flat, but this should be incorporated into operators' general safety awareness practices.

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