



Concorde Battery Corporation

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# TECHNICAL BULLETIN

**Subject: Turbine Starting vs. General Aviation Batteries**

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The question frequently asked is, "Why can't I use one of the General Aviation batteries for a Turbine Engine Starting application?"

1. The Turbine Engine Starting batteries have many features designed in to meet aircraft certification requirements that have generally not been required of piston engine aircraft.
  - a. The battery is generally equipped with a quick disconnect connector to ensure proper mating with the aircraft – proper polarity and good electrical connection.
  - b. Frequently the battery is contained in a metal housing which meets current flammability requirements.
  - c. Battery hold down points are designed into the battery housing and thoroughly tested to ensure the assembly meets the higher shock and crash safety requirements associated with turbojet installations.
  - d. Internal elements of the battery cells are reinforced to provide protection against higher levels of vibration and fatigue required for turbine engine applications.
  - e. Internal connections between the cells of the battery and terminal connections are sized to carry the higher current normally required for turbine engine starting on a repetitive basis.
2. The General Aviation batteries were originally designed for light duty applications and to meet the lower engine starting requirements for piston engines.
  - a. The cell elements may not be sufficiently robust to handle – on a continuing basis – the higher currents required for turbine engine starting.
  - b. The terminals and terminal hardware may not have a sufficiently high current carrying capacity for repetitive high current starts.
  - c. They are not equipped with quick disconnect connectors that ensure proper mating of

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the aircraft to the battery. Therefore, they may require frequent user service to ensure proper electrical connections are maintained. Historically, this has been a problem even with piston applications as the maintenance checks are not made frequently.

- d. They are not reinforced internally to meet the increased fatigue stresses due to higher vibration and shock required for turbine applications.
  - e. They are not tested and qualified to the higher level environmental requirements of DO-160 and DO-293 that are necessary for certification in turbojet or turbofan applications.
3. The net effect of these design differences is that the General Aviation battery may not provide the customer with the high reliability and long life that is desired in a turbine aircraft application. Therefore, Concorde does not warrant General Aviation Batteries in turbine applications.