

Subject: **Non-Aeronautical Lead Acid  
Batteries**

Date: 3 March 1997

**AC43-12**

Author: Chris Lamain

Authorised: Peter Blackler  
Assistant Director  
Rules & Standards

**1. GENERAL.** Civil Aviation Authority Advisory Circulars (AC) contain information about standards, practices and procedures that the Authority has found to be acceptable for compliance with the associated rule.

Consideration will be given to other methods of compliance which may be presented to the Authority.

When new standards, practices or procedures are found to be acceptable they will be added to the appropriate AC.

In addressing a subject the use of the imperative *must* or *is to*, terms not normally welcome in an AC, is because it is associated with mandatory provisions of the Rule itself.

Each reference to a number in this AC, such as 43.15, is a reference to a specific rule within Part 43.

**2. PURPOSE.** This AC provides methods acceptable to the Authority for showing compliance with the general maintenance rules in Part 43.

**3. CANCELLATION.** There was no previous issue, so there is no cancellation.

**4. FOCUS.** This material is intended to provide guidance for persons intending to modify aircraft to incorporate non-aeronautical lead acid batteries.

**5. RELATED CAR.** This AC relates specifically to Part 43 General Maintenance Rules and Part 21 Certification of Products and Parts.

Published by  
Civil Aviation Authority  
PO Box 31441  
Lower Hutt  
ISBN 0-478-06989-8  
©New Zealand Government  
Printed by:

**Intentionally blank**



## Table of Contents

<b>Use of Non-Aeronautical Lead Acid Batteries in Aircraft</b>	
General .....	1
Acceptable standards.....	1
Modification information .....	1



## Use of Non-Aeronautical Lead Acid Batteries in Aircraft

### General

Under Part 91 operators are required to ensure that their aircraft is maintained in an airworthy condition. Part 43 contains requirements for maintenance that must be complied with to assure this airworthiness. Part 43 includes the requirement that approved parts be used and that an aircraft remain in its original or properly modified condition.

Non-aeronautical lead acid batteries may be approved for installation in the following aircraft types:

- Non-aerobatic aircraft operating under VFR only
- Gliders

The conditions for fitting a non-aeronautical lead acid battery include:

- Only new batteries should be used. Rebuilt, re-plated, or reconditioned batteries will not be considered acceptable
- Batteries should comply with the standards in this advisory circular
- A modification for the fitment of the battery must be raised for approval in accordance with Part 21

### Acceptable standards

The following standards are acceptable for the development of modifications to utilise non-aeronautical batteries:

- Australian/New Zealand Standard;  
AS/NZS 2176
- British Standards;  
BS 3911  
BS 6475
- Society of Aeromotive Engineers;  
SAE J537
- International Electrotechnical Commission:  
IEC 95-1  
IEC 95-2  
IEC 952-1  
IEC 952-2  
IEC 952-3

Batteries in the YUASA NP series are also acceptable.

### Modification information

The following factors shall be addressed in the modification package submitted for approval in accordance with Part 21:

- Installation
  - Mounting and restraint should be provided appropriate for the aircraft's type of operation
  - There should be clear and permanent identification of battery lead polarity
  - Suitable insulation should be fitted to either the battery or surrounding aircraft structure to prevent any exposed terminal or inter-cell connector coming into contact with the aircraft structure
  - A load analysis should be provided to check that the battery provides adequate capacity for the anticipated electrical loads
  - Appropriate aircraft weight and balance should be calculated
- Maintenance
  - Terminals, preferably non-interchangeable terminals, should provide good continuing contact with the battery terminals
  - Suitable access should be provided to allow maintenance tasks to be carried out in-situ or the battery should be readily removable for inspection or servicing
- Operation
  - There should be adequate venting, draining, and acid proofing provided for the battery compartment

*When the battery being used is of the lead acid paste or gel cell type, there is no requirement for a battery compartment drain.*