

# Electrical Installations Standard (AS/NZS 3001.2:2022)

## Batteries

### Background

**AS/NZS 3001.2:2022 Electrical installations – Connectable electrical installations and supply arrangements; Part 2: Connectable electrical Installations** is a key Australian Standard, covering electrical installations in recreational vehicles (as well as other connectable installations used for accommodation, habitation or commercial purposes). This Standard has recently undergone a major revision and was published on 18 November 2022.

Caravan Industry Association of Australia holds a seat on the AS/NZS 3001 Standards Australia committee (through Jason Arter) and has worked in collaboration with Caravan Trade & Industries Association of Queensland (CTIAQ) and industry throughout this standard revision project.

Recently a Technical Bulletin was distributed about the Electrical Installations Standard (AS/NZS 3001.2:2022) being published and this can be found [HERE](#).

**One of the key areas of change in the revised standard is the introduction of requirements for the safe storage of on-board batteries. This technical bulletin provides details of the battery storage requirements.**

## Batteries – Installation requirements

### Definitions & Scope

AS/NZS 3001.2 includes requirements for “connectable electrical installation batteries”. This is a defined term in the standard, covering any battery that is installed with the primary purpose of supplying the living/accommodation features of the recreational vehicle. These are sometimes referred to as House batteries or service batteries.

This standard provides no requirements for batteries supplying circuits and equipment related to vehicle propulsion or compliance with road vehicle regulations (eg vehicle starting batteries or auxiliary vehicle batteries).

Details of the battery definitions can be found at clause 1.4.5 (including sub-clauses).

### General Requirements

Details of the minimum requirements for connectable electrical installation batteries are found in section 5.4 of the standard.

Batteries should be rechargeable and have a minimum battery capacity of 40Ah at a 20h discharge rate.

Battery terminals must be clearly identified with either durable +/- markings or colour coding. Connections to battery terminals must be securely clamped or bolted to ensure continuous contact and must be insulated.

A battery must be secured to prevent movement. Restraints must prevent any movement in excess of 25mm in any direction under a pulling force of twice the battery weight. This force is applied through the centre of gravity of the battery vertically and horizontally.

Each battery bank must be protected from short circuit or overload by the installation of fuses or circuit breakers in each unearthed pole. Such protection devices must be accessible, but protected against accidental damage, and located close to the battery terminals as specified in clause 5.4.7.2.

Conductors connecting to the battery terminals must only be connected at the terminals provided by the battery manufacturer, and there can be no more than four conductors connected to a single battery terminal.

If a recreational vehicle has provision for a battery, full instructions for the position and correct installation of the battery and compartment must be provided with the instructions for use. These instructions must include a directive that installation work needs to be completed by an appropriate person (eg licensed electrician) according to the electrical legislation of your state/territory jurisdiction.

Where there is no provision for a battery in a recreational vehicle, the instructions for use must include the following statement: "This vehicle has not been designed to accommodate a vehicle battery. Do not fit one."

Any metallic service lines located near the battery (eg gas, diesel, water) must be at least 300mm clear of the battery surface containing the terminals or must be shielded with dielectric material to prevent against short circuits. However, this area may be reduced by the sides of a suitable battery box or compartment. Details of the clearance areas are found in clause 5.4.10.2 and Figure 5.2.

## Lead-Acid Batteries

The following requirements apply to **all types** of lead-acid batteries and apply in addition to the general requirements above.

The location of the battery must allow for easy access for maintenance or removal.

A spill tray must be installed under the battery(ies) that can hold a minimum 20% of the electrolyte held by the battery(ies)

### 1. External locations

External locations are defined as being open to the environment or outside the enclosed, habitable area of the recreational vehicle.

Batteries located externally must be either in a ventilated battery compartment or on a spill tray and open to the environment.

The location must provide sufficient mechanical/structural protection against damage from rocks and debris during recreational vehicle travel.

If located in a battery compartment, ventilation must be provided that prevents any vented gases entering the habitable area of the recreational vehicle.

## 2. Internal locations

A battery located internally in the recreational vehicle must be located in a battery compartment that is vented to the outside of the vehicle. Any opening into the interior (habitable area) must be provided with an air seal.

The battery compartment must be ventilated by one of the following methods:

- Installing a battery that incorporates an external ventilation kit that opens to the exterior of the vehicle and ensuring that it is installed in line with the battery manufacturer's instructions.
- Providing tube ventilation above the battery and a lower vent opening in the compartment
- Providing upper and lower vent openings within 50mm of the top/bottom of the compartment, eg vents in the compartment door.

For full details refer clause 5.4.11.4 and Figures 5.3-5.5.

Battery ventilation openings have a minimum vent area requirement, which is calculated based on the ratings of the battery. The calculation formula and an example can be found in clause 5.4.11.5.

## Lithium-Ion Batteries

The following requirements apply to **all types** of lithium-ion batteries and apply in addition to the general requirements above.

Batteries must be located externally – ie behind a wall, compartment or barrier that prevents any vented gases entering the habitable area of the recreational vehicle.

The installer is required to consult with the battery manufacturer and supplier to confirm a compartment and venting design that is appropriate for the type of battery.

The location must be appropriate to ensure that the battery operates within the manufacturer's defined operating temperatures and IP rating.

If the battery manufacturer has not provided encapsulated cells, the battery must be installed in a suitable container.

Lithium-ion batteries must comply with AS IEC 62619.

Note: this standard is available through Caravan Industry Association of Australia and the i2i platform. See access details at the end of this bulletin.

## Battery Management Safety System

Each lithium-ion battery must be provided with a battery management safety system, either integrated into the battery pack or as a separate component.

- Located within or adjacent to the battery – no greater than 600mm from the battery
- Continuously monitor and protect against
  - Over and under voltage

- Over and under temperature
- Over current
- Must be supplied by the same manufacturer as the battery cells or be in line with their recommendations.

#### Battery Monitoring Device

Each lithium-ion battery (or bank of batteries) must be monitored by a suitable battery monitor – designed for monitoring lithium ion batteries.

The monitor must display the state of charge and may display battery voltage.

Communications between the battery management safety system and the battery monitor/display may be either a wired or wireless connection.

## Implementation

It is understood that some of the changes outlined in this bulletin may require investigation, design changes and potentially significant lead times to implement, especially in the current business climate. **In recognition of this, a 12-month transition period has been written into the preface, with AS/NZS 3001:2008 remaining current for 12 months after the date of publication of the new standard. After this time, it will be superseded by AS/NZS 3001.1:2022 and AS/NZS 3001.2:2022.**

This transition period is welcomed as a practical way to achieve any significant product changes. However, it is expected that businesses will take steps to adopt the requirements of the new standard as soon as is practicable (and in any case, within the transition period).

## Accessing AS/NZS 3001.2:2022

For accredited businesses already accessing Standards through Caravan Industry Association of Australia and the i2i Platform, AS/NZS 3001.2:2022 is now available to view and download.

For other businesses to access the standards they are available for purchase from SAI Global and for purchase click [here](#)

Again, it is important to note that this bulletin does not provide an exhaustive list of changes to the standard. It is strongly recommended that industry businesses make their own investigations and explore the changes to AS/NZS 3001.2:2022 with regard to the recreational vehicles they are producing. It is also important to ensure that the relevant personnel (e.g. contract or staff electricians, vehicle designers etc.) within your business are up to date with these changes.

Any questions in relation to the Standard itself can be emailed to the Caravan Industry Association of Australia Technical Team: [rvm@caravanindustry.com.au](mailto:rvm@caravanindustry.com.au).

Any questions with regards to the implementation (and enforcement) of this Standard, please contact CTIAQ on 07 3862 1833.

We recognise the significant changes within the Standard relative to some existing practices, and CTIAQ are working closely with Caravan Industry Association of Australia to make sure industry businesses are fully informed of the changes during the transitional period.

## Disclaimer:

The information provided in this document is general and is provided in good faith. Readers must make their own investigations or seek specific advice on their particular individual circumstances. Caravan Industry Association of Australia Limited, its employees, contractors and agents are not liable in any way including, without limitation, for negligence, in connection with this document or for any errors in or omissions from this document, or any new understanding of the law whether arising from any legislative instruments or the decision of any court or tribunal, whether before or after this document was prepared, first published, distributed or used.