



## POWERHOUSE CARBON+ BATTERY INSTALLATION AND MAINTENANCE GUIDELINES

MPower values your investment in PowerHouse Carbon+ Battery.

PowerHouse Carbon+ Battery is an AGM lead acid technology adopting negative lead carbon plate material. PowerHouse Carbon+ Battery is rated at C20 hour.

i.e. PH+C12/100, 12V 100Ah C20 = The battery delivers a total energy of 100Ah under constant load of 5A over 20hours before it cuts off at 10.5V. The bigger the load is, the lower the battery capacity, vice versa.

### Installation:

- Batteries are normally installed vertically on the base or on one of the longer sides.
- Batteries must be connected to the correct polarity, terminals and connectors must be clean and firmly seated.
- With the charger off and loads isolated, connect the Battery/string end terminals to the D.C. load observing the correct polarity.
- Torque setting: 11.3 NM

Installation in the engine bay and next to direct source of heat will void the warranty.

Each time you discharge PowerHouse Carbon+ Battery, it is important to bring it back up to full capacity adhering the following charging regime:

<b>Charging volume:</b> Full recharge is approx. 108% of the discharged Ah.	<b>Float charge:</b> 13.5V at 25°C
<b>Maximum current:</b> 30% of rated Ah C20 capacity. Recommended optimal charging current is 15% of rated Ah C20 capacity.	<b>Bulk charge:</b> 14.4V at 25°C
	<b>Absorption charge:</b> 14.4V at 25°C – up to 6 hours max.
<b>Temperature compensation:</b> -3mv/°C	<b>Equalization charge:</b> 14.1V at 25°C

### Open Circuit Voltage vs State of Charge Estimation

100%	75%	50%	25%	0%
12.8-13	12.6	12.3	12	11.8

For leisure application, we recommend to recharge PowerHouse Carbon+ Battery from a main 4-stage charger being the minimum, to ensure full battery capacity. For extended period of storage, a regular charge cycles every three months is recommended to avoid sulfation to maintain battery capacity and longevity.

For solar application, it is imperative to recharge battery using external charger or generator input at least once a month to its full capacity. This will reduce the risk of premature failure due to sulfation and prolong battery service life.

Whilst we do not recommend discharging PowerHouse Carbon+ Battery beyond 10.5V, in such circumstances, your battery charger may not be able to detect and charge the battery due to the charger minimum Voltage requirement to commence charging. We recommend your PowerHouse Carbon+ Battery is fitted and the charger set up by an auto electrician or seek advice from your closest PowerHouse Carbon+ Battery stockist.



# WARRANTY CONDITIONS

Mpower Product Pty Ltd warrants to the original user that PowerHouse Carbon+ Battery will be free of defects in material and workmanship for a period of 36 months from date of invoice when installed in leisure application, operated and maintained as per PowerHouse Carbon+ Battery Installation and Maintenance Guidelines. For solar application, PowerHouse Carbon+ Battery is warranted for 24 months.

**Definition of leisure application:** the battery is used as an auxiliary power source (i.e. caravan, boat, 4WD) that is used infrequently for high discharge cycles and is normally maintained in a float state of charge.

**Definition of solar application:** the battery is used in a hybrid or standalone power system that is predominantly charged through a solar array and connected to generator backup for periods of low solar insolation.

This warranty is provided in addition to other rights and remedies held by a consumer at Australian Consumer Law.

The warranty period is not renewed or extended as a result of a warranty repair or replacement. The sales receipt for the battery must be provided as proof of purchase when a claim is made under this warranty. The warranty is not transferable and is only offered to the original end user of the purchased battery.

PowerHouse Carbon+ Battery will not be considered defective unless it fails to deliver 60% or less of its quoted capacity during the guarantee period. Astratec tester or equivalent discharge tester must be used to determine the capacity of the battery.

Guarantee & Warranty is void should the battery becomes unserviceable due to fire, accidents, freezing, improper installation, misapplication, loose wiring, corroded terminal connections, neglect, abuse, any other act of God, and parts of the battery are tampered with or modified.

This warranty does not cover PowerHouse Carbon+ Battery that failed within the warranty period due to extreme usage. PowerHouse Carbon+ Battery will deliver 1,500 cycles at 50% depth of discharge (DoD). Usage beyond this rating will not be covered under warranty. This warranty does not cover batteries that are not charged properly or batteries that are left uncharged for extended periods of time. Batteries must be fully charged after every discharge and the charge cycle must be completed.

## Limitations on Warranty:

Mpower Product disclaims all implied warranties of merchantability and fitness. In no event shall Mpower Product be liable, except to the extent that this limitation is found to be unenforceable under the Australian law.