Why choose a deep cycle battery?

Deep cycle batteries provide sustained power over extended periods of time and are designed to be repeatedly discharged and recharged.

Choose a deep cycle battery when you require long-running power and the peace of mind that your battery will last - charge after charge.

Car batteries vs Deep Cycle batteries

Car batteries

To understand why a deep cycle battery should be used in certain applications, we can compare a deep cycle battery with a standard car battery.

A car battery could be called “shallow cycle”, providing a high burst of power for a short time, just long enough to start a car’s engine. Only a small portion of the battery’s power is used, and this is restored over time by the car’s alternator.

Standard car batteries have thinner lead grids and porous active material (lead oxide based paste coated onto the battery grids) to maximise the surface area of grid exposed to the acid.

Maximising the surface area provides greater current flow and as a result, greater starting power. However, because car batteries have thinner grids and more active material, they are not as reliable in providing long periods of power.

Deep cycle batteries

Unlike standard car batteries, deep cycle batteries are constructed with thicker grids of antimony lead alloy and a denser paste of active material to withstand discharge and recharge cycles.

This construction allows the deep cycle battery to deliver sustained power with low current drain for extended periods of time. Repeated cycling (discharge and recharge) does not cause the same level of damage that a car battery would sustain from the same process.

The ability to deliver steady power with long cycle life makes the deep cycle battery an ideal solution for a range of both recreational and industrial applications.

In recreational applications, deep cycle batteries may be found in golf buggies, caravans, electric scooters, four wheel drive vehicles, boats and electric wheelchairs.

Deep cycle batteries are also ideal for solar devices and industrial applications such as auxiliary power supplies, pallet movers and scissor lifts.

Types of deep cycle battery

There are several different types of deep cycle batteries available, each with specific features you will need to consider when determining the best battery for your application.

Flooded Batteries
These are the most basic widely used type of lead acid battery. Lead plates are suspended in wet acid which means electrolyte levels require periodic topping up. Flooded batteries are fairly tolerant of a range of charging rates and depths of discharge. However, leaving flooded lead acid batteries to stand in a discharged state can cause irreparable damage.

Gel Batteries
The electrolyte of a gel battery is held in a jelly-like state, usually within a sealed case. Gel batteries can be left discharged for longer periods of time without affecting their ability to recover. However, the batteries require very strict monitoring of the charger voltage and a rest period is necessary after rapid charging to ensure the true charge state is known.

Absorbed Glass Mat (AGM) Batteries
AGM batteries consist of acid suspended in a special glass mat separator. This is state-of-the-art technology. AGM batteries have a higher charge acceptance rate than other types and they are not as susceptible as gel batteries to damage caused by lack of charge voltage control. These batteries are sealed and do not leak if the battery case is fractured.

Spiral Batteries
These are a variety of AGM battery. Lead plates are in spiral configurations with acid saturated glass mat separators. They have a sealed case to eliminate acid spillage.

Sizing the right battery

Deep cycle batteries are available in a range of sizes to suit a range of applications. Whatever type of deep cycle battery you choose, it is important you have adequate battery capacity (amp hours) to suit your application.

The correct battery can easily be calculated by establishing the total power consumption of the application, the number of hours of usage and the operating voltage.

FOR EXAMPLE:

Equipment	Loading (Watts)		Est. Usage (Hours)		Watt Hours
Winch	90	x	0.2	=	18
Fridge	40	x	10.0	=	400
Lights	20	x	4.0	=	80
TOTAL WATT HOURS				=	498

Now divide total Watt Hours by Voltage to obtain the required Amp Hours.

FOR EXAMPLE:

498 Watt Hours ÷ 12 Volts	=	41.5 Amp Hours

Because vehicle electrical systems may not always be perfect, we must always allow a little extra power in reserve by factoring in at least a 30% safety margin.

FOR EXAMPLE:

Estimated Amp Hours		41.5
+ 30% safety margin		12.45
TOTAL AMP HOURS	=	53.95

Simply compare your Total Amp Hour figure with the 20hr capacity figures shown in the product specifications to select the correct deep cycle battery for your needs.

Keeping your battery charged

When repeatedly using a deep cycle battery, it is important to ensure the battery is charged to full capacity after use. Not only does this mean your battery will be ready for use when you need it most, but you will also maximise the life of your battery.

If the battery is not maintained by an alternator (such as in a vehicle) the battery charger recommended would be of a “constant current” type.

Four simple rules for maximum battery performance:

1. Keep a record of the times you have used your battery and which applications you have used the battery for.
2. The further the battery is discharged, the longer the recharging time necessary to return it to full capacity.
3. When recharging your battery, add a 20% safety margin to the calculated recharging time to ensure full battery capacity is maintained.
4. Follow the instructions on your battery charger for the correct procedure to follow to maintain optimum charge levels.