

motorcycle

batteries

Reliable Starting Power



Getting the most from your motorcycle battery...

Motorcycle batteries are designed to provide reliable starting power in a diverse range of riding environments, from street to extreme off road conditions.

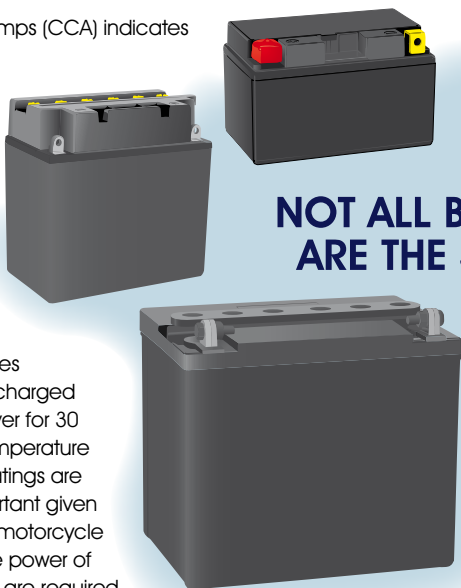
Whether riding occasionally or on a daily basis, it pays to consider all the issues when selecting a motorcycle battery.

Battery Rating

Motorcycle batteries are rated by Ampere-hour (Ah) and Cold Cranking Amps (CCA.).

Ampere hour (Ah) measures accessory power and indicates the current or amps the battery can continuously deliver over a period of time. The industry standard measures this over a 10 hour period, however be aware that some batteries are measured according to a 20 hour period to give the impression of providing a higher Ah rating.

Cold Cranking Amps (CCA) indicates the cold start rating and represents the battery's starting power, the higher the CCA the greater the starting power. It refers to the current in amperes that a new, fully charged battery can deliver for 30 seconds at a temperature of -18°C. CCA ratings are particularly important given the small size of motorcycle batteries and the power of the engines they are required to start.



NOT ALL BATTERIES ARE THE SAME...

Types of Motorcycle Battery

Conventional Batteries

Identifiable by raised vent caps and protruding exhaust vent, conventional batteries are constructed from lead-alloy plates with specialist separators for vibration resistance and improved cranking power. Generally supplied dry they require acid to be added to activate, and due their wet nature are fitted in vertical applications to avoid acid leakage. Raised refilling caps enable access to acid reservoirs as conventional batteries require regular ongoing maintenance.

Sealed Maintenance Free (MF) Batteries

This latest generation of motorcycle batteries are generally smaller, lighter and more volume efficient. They incorporate advanced grid design technology and are manufactured using the latest production processes specified by leading motorcycle manufacturers.

Internal components and plates are produced from premium grade raw materials, enhanced with specialist active materials to maximise performance and starting power. External casings are constructed from poly-propylene material to resist corrosion from fuel or oil spillage, help prevent case puncture or shattering and then heat sealed to prevent acid leakage in multi-angle fitsments.

Once activated these batteries will remain maintenance free for the life of the battery and have reduced self discharge, ideal for bikes left in storage or used only occasionally.

There are two types of sealed maintenance free battery; Wet Flooded and the Sealed VRLA (Valve Regulated Lead Acid) type. Wet flooded maintenance free batteries initially require electrolyte to be added at the time of activation and then sealed with a snap-fit cap to prevent leakage.

Choosing the Right Battery

Motorcycle batteries are available in a range of sizes and designs, each with unique features accounting for differences in price and performance which make them correct for a particular motorbike.

Be wary of choosing a battery on price and appearance alone.

A bike engine and battery have been designed to complement each other and although some may look similar, not all batteries are equal. It is the unseen, internal components which make premium quality batteries stand out from the rest.

CONTINUED OVERLEAF >



TYPES OF MOTORCYCLE BATTERY CONTINUED >

Supplied factory activated (filled, sealed and charged at the factory) or with separate acid pack, sealed VRLA batteries utilise Absorbed Glass Mat (AGM) plate separators which absorb the acid electrolyte. This enables the plates to hold their charge for longer, maximising battery life. As the electrolyte is immobilised, these batteries are virtually spill proof and will not leak.

Upgrading Your Battery

In some situations it is possible to upgrade to a sealed maintenance free battery that did not come as Original Equipment (OE) spec, as long as the vehicle utilises a charging system with a regulated output of between 14.0 – 14.8V.

Although possibly more economical, replacing an OE sealed maintenance free battery with a conventional type is not recommended due to performance, size and fitment limitations.

Batteries with Sensors

Be aware when replacing a battery equipped with a sensor you must replace both battery and sensor at the same time. Even if the sensor is Original Equipment (OE) it does not mean it is okay to use with an alternative battery. Sensor plugs vary in length, size and diameter and a plug that is the wrong size can short out a battery and damage the bike's electrical system.

Battery Activation

Batteries are traditionally supplied inactive and once unsealed they should be activated, charged and installed. The plates of an unsealed, uncharged battery will begin to oxidise and prove much harder to charge, similarly if charged and left sitting around, a battery will start to self-discharge and sulphate, eventually leading to battery failure.

When activating motorcycle batteries it is important to follow the manufacturers filling instructions, paying particular attention to recommended standing times. After adding electrolyte it is advised to allow the battery to stand for a minimum of 1 hour prior to charging.

Never top up a battery with acid. After initial activation, electrolyte levels in conventional batteries should be topped up using de-ionised or de-mineralised water.

Maximising Battery Life

Regular testing and inspection is the key to maximising battery life with a routine inspection of once a month recommended.

HANDY HINT:

If you do not intend to use your bike for more than a month, disconnect the battery cable as this will eliminate the parasitic drain from on-board accessories such as security devices and clocks.

Use the following checklist as a guide to help maximise battery life.

Maintenance Checklist	
✓	Ensure battery top is dry and free of dirt or grime.
✓	Inspect battery terminals, cables & clamps for damage or loose connections. They should be tight, clean and free of corrosion.
✓	Inspect battery case for signs of physical damage or warpage. This usually indicates the battery was overcharged or over heated.
✓	Test battery using hydrometer or volt-meter and keep it charged at 100%.
✓	Where applicable check electrolyte levels and top up using de-ionised or de-mineralised water.

If regular maintenance isn't appealing, sealed maintenance free batteries could be the solution.

Self Discharge

Motorcycle batteries will lose approximately 1% of their charge per day doing nothing. All batteries self-discharge when left in an idle state; this is where a battery loses a certain percentage of its performance capacity when left unused. The rate of self discharge is dependent on temperature, the higher the temperature the greater the rate of discharge.

Testing

Testing should form part of a regular maintenance routine. Bikes with accessories such as clocks, and navigation systems require power to maintain their "Keep Alive Memories" which preserve clock and radio presets.

Voltage (V) and Specific Gravity (SG) are measurements used to determine a battery's state of charge. Voltage is a quick and easy way of measuring charge levels, performed on both types of battery by connecting a multi-meter or volt-meter and obtaining a DC reading.

A more in-depth method is to measure the specific gravity of the electrolyte using a hydrometer. This shows the concentration of sulphuric acid present in the electrolyte to determine the level of charge. As this requires access to electrolyte reservoirs it is only suitable for conventional batteries.



The following table shows the measured charge level using the different testing devices.

STATE OF CHARGE	SYRINGE HYDROMETER	DIGITAL VOLTMETER	5-BALL HYDROMETER
100% Charged	1.280	12.60V	4 Balls Floating
80% Charged	1.250	12.40V	3 Balls Floating
60% Charged	1.215	12.10V	2 Balls Floating
40% Charged	1.190	11.90V	1 Ball Floating
20% Charged	1.110 <	11.80V <	0 Balls Floating

A COMMON MYTH!

A battery will not discharge faster if left on a concrete surface, batteries discharge at the same rate irrespective of the surface they are stored on. Always ensure batteries are stored on a smooth flat surface.

Testing Methods

Unloaded tests are performed without discharging current and conducted using either testing device. A specific gravity reading of 1.265 to 1.280 shows a full charge whereas a reading of 1.210 to 1.260 indicates the battery should be charged. If the stabilised open circuit voltage of a sealed maintenance free battery is below 12.5V it requires charging.

Low-load tests are conducted using a multi-meter or volt-meter whilst running an on-board accessory, such as the headlights, and taking a voltage reading. The battery in a 12V system should have at least 11.5V DC with the lights on and a 6V system should have at least 5.75V DC. If the voltage drops below these levels the battery needs charging.

If you are concerned about your battery's state of charge, take it to your local battery retailer and ask for a professional battery test.

Keeping your Battery Charged

After activation batteries are only approximately 80% charged, they should be charged to 100% before use and kept at this level throughout their life. Be careful not to over charge or 'cook' a battery as this decreases the volume of electrolyte and may lead to serious damage.

Be aware it can take days to bring a fully discharged battery back to 100% and avoid using a quick charge, this only charges the surface of the battery plates, can cause over heating and may lead to permanent battery damage.

Constant current chargers are ideal for both conventional and sealed maintenance free batteries, maintaining a constant current during the charging process. As the battery voltage increases with the amount of charge; the charger automatically increases the charging voltage to maintain current output.

Trickle or Taper chargers deliver a low rate of charge over time, ideal for motorbikes fitted with conventional batteries and used only occasionally. They are designed to be connected to the battery for extended periods of time to maintain their charge levels and combat the effects of self-discharge. Due to the low charge levels delivered by these chargers they are not recommended for use with sealed maintenance free batteries, use a constant current charger instead.

Motorcycle batteries should be charged at 1/10 of the battery's rated 10 hour ampere-hour capacity. To calculate this value, divide the battery amp hour capacity rating by 10.

i.e. 14 Ah / 10 = 1.4 amp current.

Charging times may vary depending on the type of charger, always follow the instructions on your charger for the correct charging procedure.

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