

# **Battery Charging Information.**

## **General Care**

Motorcycle batteries like being used. They do not like being neglected, unused or uncharged.

If left for any length of time without being charged, even if they are not connected, all lead-acid batteries will go through a natural process of self-discharging. If the battery has reached the stage of being deeply discharged it is often impossible to recover, even if the battery itself is relatively new. If the battery is connected to the bike and the bike has an alarm or immobiliser fitted the time it takes a battery to reach a deeply discharged state can be short, often a matter of days.

Regular charging is the **only** way to ensure a long life from your battery and work against the natural process of self-discharge. Most intelligent motorcycle battery chargers come with leads, which can be permanently fixed, to your battery with the battery connector neatly hidden away in the bike. Charging is then a easy matter of plugging the connector in to the charger.

It's worth noting that weather and temperature can affect the rate of discharge and functionality of the battery. Hotter temperatures rapidly accelerate the self-discharging process. However you should be careful not to let the battery go too cold as a discharged battery is less resistant to freezing. A fully charged battery would freeze around  $-59^{\circ}\text{C}$  whereas a severely discharged battery can freeze at  $-1^{\circ}\text{C}$ .

## **Cleaning**

Sulphation occurs when the lead sulphate (a white substance) is allowed to build up on the plates. It can eventually destroy your battery. To keep the battery from sulphating it's vital to check your bike is working properly, and to keep the battery terminals clean and disconnected when the bike is in storage or not being used for a long period of time. It is important that the battery is regularly charged when not in use.

## **Electrolyte**

The fluid in the battery is called electrolyte. It is a mixture of water and sulphuric acid that causes the chemical reaction which produces electricity. Conventional and Yumicron type batteries need to have their electrolyte checked and topped up with distilled water at regular intervals.

As part of the normal electrochemical processes of a lead acid battery water in the dilute acid is turned into gas and escapes from the cell. This needs to be replaced with either distilled or de-ionised water. Do not use tap water as this has elements, which will permanently damage the battery. Once the battery has been commissioned you should never add any further acid as this will seriously degrade the life of a battery.

It is important to maintain the level of fluid as low levels can cause the acid within the battery to become too strong. This can lead to corrosion of the battery's internal components and the battery shorting itself. Maintenance free batteries use processes that quickly re-absorb the gas into the electrolyte and therefore never need topping up.

## Charging

**Never use a normal car battery charger to charge a motorcycle battery**, even for a short time. Car chargers supply far more current than a motorcycle battery can cope with and can very quickly damage the battery plates beyond repair.

Charging is best done with the battery removed from the bike. Conventional and Yumicron batteries should have the plugs carefully removed from top of each cell. When you have removed the battery from the bike and placed it on a level surface it's probably worth giving it a clean, paying particular attention to the terminals and the area between them as any build up of conductive material between the terminals could lead to current leakage. Bicarbonate of soda and water applied with a toothbrush can be quite effective, but make sure you leave the battery perfectly dry when you're finished cleaning.

When charging the battery you should make sure the area is well ventilated to prevent the build-up of explosive gases. When connecting the battery and charger make sure the charger is turned off to reduce the chance of any sparks. Connect the battery positive-to-positive and negative-to-negative. Charge the battery according to the manufacturers recommendations. Practice caution if the battery becomes hot to the touch, as hot batteries can explode. If the battery does become hot, disconnect the charger and let the battery cool down before recharging.

Always wear safety goggles when working with batteries. Clean away any electrolyte on the outside of the battery. If you come to contact with the electrolyte, wash the effected areas for several minutes. If you get any in your eyes wash them immediately and contact a doctor.

The absolute maximum charge you should use on a motorcycle battery is about 1 amp. Use a voltmeter to test if a battery is fully charged by connecting the positive-to-positive and negative-to-negative, putting a low load (turning on the light and ignition) and taking a reading at the battery. With a 12-volt battery you should expect at least 11.5 volts DC, a 6 volt system at least 5.75 volts.

## **Types Of Charger**

There are many battery chargers available. You should be sure to use a battery charger, which is designed for motorcycles; a car charger will deliver too much charge.

**Trickle chargers** charge the battery continually at a fixed rate. However, they require a watchful eye, as they do not have a way of responding when a battery is fully charged. Leaving them to charge excessively can damage the battery.

**Taper chargers** decrease the amount of current delivered through the battery as the voltage rises. As with trickle chargers they require a watchful eye to avoid overcharging. Both taper and trickle chargers are slow.

**Pulse or intelligent chargers** monitor and collect feedback from the battery's voltage during the charging process and drop into a standby mode once the battery is fully charged. When the battery naturally discharges to a certain level the charger will go into charging mode and restore the battery to its normal charge. A pulse charger can be left unattended for long periods of time, but you should still carry out periodic fluid level checks.