

TECH TALK: **Electrical Systems**

Sooner or later you will need to find a failing component, a broken wire, or a short in your motorcycle's electrical system. Or, you will attempt to add a new device to your motorcycle and have to do some wiring.

Here are a few basic guidelines that seem not to be taught anywhere except by experience:

Just because the motorcycle uses a 12 Volt battery does not mean that LETHAL voltages don't exist. Spark plug leads carry many thousands of Volts! Stay away from them. (Lethal currents can kill.)

The vast majority of 'failures' can be fixed with the simple replacement of a fuse - particularly on older bikes that use old-style fuses. If the failing fuse is not visibly burnt it is often just fractured as a result of age.

Crimp connectors are a NO-NO on motorcycles. Vibration and weathering will eventually make them fail. Solder all wire joints you make and use a piece of shrink-wrap tubing to finish the job.

Solid wires are a NO-NO on motorcycles. Vibration tends to fracture them. Always use stranded wire. (You should carry a length of stranded wire as part of your 'tools'.)

Many circuits in modern motorcycles contain solid state devices (transistors). These can be damaged if you use a test light on them. Instead, use a high impedance (10-meg or greater) digital multi-meter to test voltage levels in these circuits.

Any connector that you can pull apart should be packed with dielectric grease when you have put it back together again! Dielectric grease is NON-CONDUCTIVE. It is used to keep contacts within the connectors clean and to protect them from corrosion. Connectors in a motorcycle's charging system will melt and fail easily if those contacts are not perfectly maintained because the slightest increase in resistance will cause a huge amount of heat based on their large current loads.

Even with the master fuse pulled there is one great danger that continues to exist in a motorcycle's electrical system - the starter solenoid. Since the current load necessary to turn the starter motor is so great, that circuit is NOT fused. Thus, if you happen to short the solenoid your bike's starter motor will engage!

Whenever adding a component use a separate fuse and circuit for it. Do not simply piggy-back on an existing circuit.

Whenever removing your battery always disconnect the NEGATIVE terminal first. This insures that there will not be a disaster should your screwdriver happen to slip while disconnecting the positive terminal and it hits any bare metal.

If you smell fuel, do NOT work on electrical systems!!!!!!!

