

Polarity?

Firstly a consideration, when running electricity around a vehicle it is very convenient to have one side of your battery connected to the body-Earth of the vehicle. With the traditional car/bike you then need only supply one wire to make things work! The electricity runs back to the battery via the chassis/frame. Then whichever end of your battery you connect to the Earth is apparently purely optional, until we come to modern vehicles, heavy with electronics, which pin you down to Negative earth. But some time in the 50s, I think, the manufacturers found that vehicles with the **positive** terminal of the battery connected to earth had a corrosion problem with the copper radiator. This is due to electrolytic corrosion-galvanic action. The rainwater and road salt act as an electrolyte i.e. conductive liquid between two metals, and copper's position in the galvanic table ensures that it corrodes readily as positive earth. Easy answer to this was making the vehicles **Negative** earth. For some reason this movement from the car world leaked over to the motorcycle world and a lot of manufacturers started to go Negative earth. At the same time a lot of BSA and NORTON had gone from Negative to Positive earlier in the 50s but didn't want to change again. If any one knows of the reasons please let me know, Al at A O Services. Anyway, as we come into the modern era 1960s we find the Japanese and continentals favouring **Negative** earth with regard to new manufacture as of course standardisation within the industry is quite useful. (Perhaps someone who knows why negative can enlighten me?)

So much for some of the history, where are we? In practical terms the working of lights from the battery is not polarity important. Coil ignition **is** polarity important but it is readily sorted by changing the connections to the coil. (The coil markings + - follow the battery polarity.)

Alternator Motorcycles

These have rectifiers, which are polarity important, as are electronic ignitions, and electronic rev counters. In fact just about all electronic parts are polarity important so must be treated with the right respect, get it wrong and there is expensive smoke! Although the rectifier is polarity important it often has a central bolt to enable bolting down AND to enable an earth connection. To reverse the polarity of earth of such machines you have to find the 'other polarity' rectifier. In the case of the black Lucas 1 1/2" Dia. **Silicon** rectifier used since the early 60s, just get the other polarity. In the case of the earlier **Selenium** khaki/green 3" round/square or even smaller red square things (throw them away!) All of these **selenium** rectifiers were poor from manufacture and need to be replaced by the modern very reliable 1 1/4" square rectifier from the electronic world, which at the point of fitting has to have an earth wire fitted as appropriate. (The answer to the 'originality' freaks

amongst us is-selenium rectifiers need to be in a museum, [or bin] silicon rectifiers are for using!)

Dynamo motorcycles

Let us now deal with the dynamo on our motorcycles. The mechanical regulator can work either polarity, as can the dynamo, **BUT** as the dynamo generates DC it must have polarity to work i.e. the output must be **Positive** or **Negative** with respect to its body (earth). This is achieved very easily by **polarising** the dynamo. With the battery earth connected as you would use it, take a few feet of wire from the battery **live** to the field coil on the dynamo (no connections to D or F) for a few moments. Disconnecting the wire causes a modest spark 'splash' from this you know your battery was connected to the Field coil and now the dynamo is polarised, i.e. the dynamo now has its remnant magnetism lined up for the polarity you want. At this point every thing should work, the dynamo should give an output provided the regulator is powering the field. If the regulator is correctly set up it should also be giving a volt or two above your battery voltage to charge it. (by the way a dynamo does NOT give out 'charge' it gives out electricity measured in amps-[quantity in time]at some voltage [pressure], while if some of the amps get into the battery, this **is** the charge.)

Now if you just happen to have one of these new fandango electronic regulators then these are very much polarity important. Once you have a particular polarity regulator then you have to keep the dynamo, the bike and the battery the same or again there could be expensive smoke depending how good your regulator is or at least you will have blown fuses!

Polarity to use?

If you have restored a bike then chances are you know what polarity it was made with and you will probably follow it. **BUT** if there is doubt or you decide to do it otherwise for any good reason then the following points are worth bearing in mind.

IF/when the bike is sold what would the new owner expect it to be? (50s BSA positive earth!) What colour is the earth wire? (Although the wire colour does NOT affect the good working of the machine, it very much affects the confusion stakes/good working **or not** when the colours are casual and things get swapped!)

Positive earth has a RED wire for earth.

Negative earth has a BLACK wire for earth!!

If by some means you have more than one bike keeping them all the same polarity might be useful to you-but the new owner?