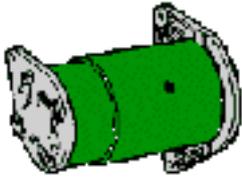
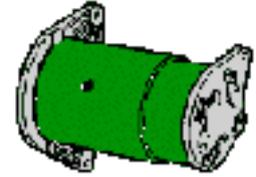


## Negative Earth Conversion



*Converting your early car positive earth car to negative earth is easy and allows a wider choice of radios to be fitted. However, there is*

*also a lesser known benefit: In the electrolytic process that goes on as rust starts attack the bodywork of a car positively charged metal comes off the worst, so by converting to negative earth it actually helps to impede the development of rust on the car's bodywork. This process is reversible so by following the reverse of these instructions you can convert your car from negative back to positive earth if required for "originality".*



Firstly you will need to swap the battery terminals as the +ve is larger than the -ve and obviously you want the markings to be right after the conversion. It may be best to replace them with new ones if they are a bit old try to do this with out shortening the cables. The original "factory" Lucas terminals were moulded lead items, these can be melted off with a propane torch. Then turn the battery round (or better still get the correct -ve earth battery with the reversed connections). If you use the +ve earth battery be careful when refitting the clamp bar that it doesn't short out the terminals, if it looks like its going to then leave it off; it doesn't do much on the Sprite anyway as the heater unit will hold the battery in place.

Now move onto the coil: the white wire should now be connected to the "+" (CB), terminal and the white/black wire should now be connected to the "-" (SW), terminal.

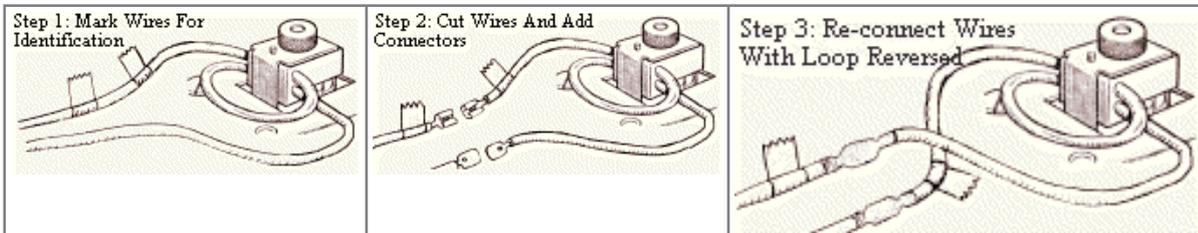
Then to the dynamo (generator), this requires polarising for -ve earth, this can be accomplished as follows: Remove the brown/green wire from the small "F" (field) spade terminal. Find a suitable jumper wire and make a momentary connection between this spade terminal and the live post of the battery, a spark should be seen as the connection is made (you can do this a few times to be sure it worked if you like). Reconnect the brown/green wire and start the engine. The ignition light should act as before: On with the ignition on, off above around 1000 rpm and off when the ignition is off. If the light does not go out above 1000 rpm then try re-polarising the dynamo again. If the ignition light is on when the ignition is off then IMMEDIATELY disconnect the battery and check your work!

On to the heater blower motor, in theory the connections should be swapped but it is possible that they may have swapped at some point in the car's life anyway: Try the heater and note the airflow to the foot-wells, then swap the connections over at the bullet connectors and re-check. Use the arrangement which provides the greatest flow of air.

Next comes the most fiddly bit, the re-polarisation of the tachometer, (this procedure is un-necessary on the early Sprites which used a mechanical tachometer). Remove the tachometer by undoing the two knurled nuts and taking off the lock washers etc. and pull it out of the dash. The wire loop that runs through the post on the back of the tachometer needs its direction reversing; mark one side of the loop twice a few inches from the tachometer and then cut the wire between these marks. Cut the wire on the other side of

the post, again a few inches from the tacho' and attach connectors to all four exposed wire ends. This allows the connections to be swapped over thereby reversing the direction of the wire loop. The point of making the two marks is that when connected correctly for negative earth you should have one mark on the wire loop on either side of the terminal post.

### Reversing The Tachometer Loop



Disconnect the tacho' and remove it from the car. Carefully loosen the chrome bezel of the tacho' around its circumference with a small screwdriver. Once loosened, grip the bezel and turn it until the lugs on the bezel line up with the cut outs in the tacho' body, then remove the bezel. Remove the two screws from the back of the tacho' and the internal assembly can be withdrawn.

Examine the internals of the tacho' : you will see the connections to the external spade terminal and post. These connections have to be swapped. The resistor connected to the spade terminal must be un-soldered and connected to the post immediately to its left, and the wire previously connected to this post should be connected to the spade terminal to which the resistor was originally connected. Re-assemble the tacho' and fit it back to the car ensuring that the loop is set for negative earth as described above.

Finally contact your local parts specialist and order a period negative earth warning sticker for the car, one from a late MGB, sprite or Midget (like the one below) should do nicely.



### **Addendum: The importance of connecting the coil the right way round**

At this point you may be wondering what difference it makes if you don't swap the coil connections. Whilst the car will still run ok, having the coil connected round the wrong way can cause weird ignition problems, including mis-fires when hot. The reasons for this are somewhat esoteric but for those who are interested then here is why:

Whilst the coil will work when connected the wrong way round its effective output voltage can be reduced by up to 40% so weakening the spark . Additionally if the LT side of the coil is reversed then the HT Polarity is also reversed so the electrical pulse and hence the spark at the plug travels in the opposite direction to the normal (normal direction for the spark is from the center electrode to the spark plug arm).

Electrons leave a hot surface better than a cooler one, and in service the arm of the spark plug is more efficient at dissipating heat than the central electrode. Therefore running the

system in reverse will give a weak spark for this reason in addition to the reduced HT voltage.

If the spark is travelling the wrong way you will also get above average erosion on the spark plug arm as the greatest erosion happens at the electrode from which the spark leaves. The central electrodes of spark plugs are specially designed to help compensate for this but obviously the arm is not. Above average increases in the spark plug gap can indicate that the system is operating in reverse and obviously incorrect spark plug gaps will again lead to a weaker spark.

A neat little trick appeared in a Practical Classics magazine recently for checking if the coil is connected the right way round: Place the tip of a pencil between the bare end of a disconnected HT lead and the top of the plug, leaving a gap between each. If the polarity is correct then a spark appears between the lead and the pencil and there is a flare on the plug side, otherwise it will be the other way round.

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