A Recent Electrical Problem:

Recently Paul Zink was on his way over for me to take a look at his carburetors (he was thinking of switch to a Weber down draft) and before he arrived I got a call from him saying that his voltmeter was indicating 16 volts which is way above the green (normal) level. I told him to stop the engine and disconnect the alternator since if he kept running at 16 volts it would cook the battery. He did that and arrived at my house running on the battery only. Fortunately it was daytime and he did not have to have the lights on.

I pulled off the alternator (a reproduction high output Lucas look alike from British Parts Northwest). I swapped in a used Lucas alternator and it appeared to work OK. When he was ready to leave he found that his headlights were not working. It turns out that he had used the lights while the alternator was misbehaving and had blown his Halogen lights. Not all the lights blew out, and I was able to replace what was needed from a spare he had and one I had.

I had the alternator repaired and the shop found that the rotor assembly was fried and the regulator was bad. The rotor is not available, but I had a used one in good shape which I supplied and they put in a new regulator are repaired the alternator. When Paul came back to have me put his alternator back in he was complaining that sometimes the car would not start. It would not crank. He thought it might be his push button starter switch or his ignition switch. After installing the refurbished alternator we noticed that the voltmeter was a bit unstable. Sometimes it showed a strong charge (almost too high) and sometimes it showed a low voltage. I determined that there had to be a bad connection at the battery or one of the main connections going to the starter motor (where all the wires take their power from and where the alternator connects to charge the battery).

I checked the connections at the starter and then at the battery. The connections to the terminals were good and clean and the connections from the battery to the cut-off switch looked good. The cut-off switch is connected to the negative side and to ground. I found that I could wiggle the ground connection to the chassis from the switch. I took it apart and cleaned the cable end and the chassis area and added a star washer to make a better connection. This fixed the fluctuating voltage. I think this is what initially caused the alternator to fry. Since there was high resistance at the main connection the alternator was trying to generate more and more power (current) and it exceeded the capacity of the alternator. Since the voltage is somewhat fixed, if the resistance increases then the current must increase. This is basic Ohm's Law. When current increases it generates heat. This is what cooked the rotor in the alternator and could have caused the regulator to fail as well.

I have seen several other cases of the regulator in an alternator failing and causing an increased voltage. Since the lights are designed to operate at a maximum of about 14.5 volts (the typical max output on an alternator) anything much over that can blow the filament of the bulb. Incandescent bulbs seem to be a little more tolerant of over-voltage but Halogens, even though they take a higher wattage to operate (more current, but the same voltage) they seem to be susceptible to over-voltage. If you have ever mistakenly put a 3V (two 1.5v battery) bulb into a flashlight that takes 4 X 1.5v batteries (6V) you will see a very bright flash and then it won't work anymore!

Remember, Paul had the alternator installed to increase the ability to operate all his accessory and higher current draw lights and devices. This is OK in theory, but one must be careful in supplying a higher current to wiring that was designed for lower current. There was an article in Classic MotorSports magazine a year or two ago that talked about this. I heavier gauge wire needs to be run specifically to those items that need more current as the old wiring may not be strong enough to support the load. This can be done by adding relays for the low current (switch) side and then running heavier wires to the high current draw items such as headlights

and driving lights. It is also a very good idea to install a fuseable link or circuit breaker in the line that goes from the higher output alternator to the positive battery connection (at the starter). I know Moss Motors and others sell relay panels and extra fuse panels that can be installed to help with this sort of thing, but it does not provide for a circuit breaker. I recall when I installed an electric winch in my Range Rover that it included a 30 amp circuit breaker that would disconnect the power if the maximum current was exceeded.

This discussion has been about MGB cars, but similar concepts apply to the MGA. I know a few owners have “upgraded” to an alternator in an MGA and one must consider the wiring issues and protecting that wiring. In the case of Angus Ross who had an alternator blow out all his lights when the regulator failed a few years ago in his MGA, he went back to a generator.

So, one of the first things to check for when having charging issues is your battery and ground connections both at the battery and from the chassis to the engine. Once you have verified that all is good, then you can troubleshoot the alternator and/or generator. I hope this helps someone in the future to avoid some costly issues.

Safety Fast,

Jack Horner
President, Bay State MGA Club