

A TALE OF TWO SPARK PLUGS

By Jeff Bonacci

Last Fall, while doing routine maintenance on my 1968 MGB, things were going well. Along with completing an OLF, flushing the cooling system, adjusting valve lash, checking ignition timing and installing new spark plugs, I also had the Delco Remy alternator rebuilt as it had begun to fail. (The rebuilt original Lucas alternator does not produce enough energy to run accessories such as wipers, headlights, and blower while the car is idling, so it was removed and sits in the parts bin in case anyone wants it.)

From that point forward (stealing a couple of lines from Charles Dickens) "*it was the best of times and then it was the worst of times*". The next few months felt like years in the Bastille as for some unknown reason my car began to lose engine power, misfire, and then began backfiring violently through the exhaust! I didn't know what to think, so reached out to members of the MG Experience forum as well as fellow club members and received many sincere, helpful responses along with anecdotal histories of similar failures and resolutions.

Since the SU carbs had just recently been cleaned and serviced by myself along with acquiring new, oversized throttle shafts to correct an intake leak in the rear carb body (installed by Gassman Automotive in Waynesboro, Va.), my focus was directed to the ignition system in search of the culprit.

Well, the parts cannon was loaded and fired! Over the next few months, new ignition points, two new condensers, and several different rotors and distributor caps were installed while desperately searching for the problem. (Incidentally, I finally learned how to test an ignition condenser with a multimeter and have two good ones in my trunk along with extra rotors, point sets and distributor caps.)

Then things got even worse; the engine started afterfiring through the carbs and smoke started coming from the area below the carbs near the exhaust manifold raising the fear that the carbs could catch on fire. At this point, I wondered if the intake/exhaust gasket may have been damaged by the backfiring leading to the smoke in the engine bay, so I replaced it with a new, updated metal coated gasket (although the original looked fine.) During the process I also discovered that four of the six brass nuts connecting the exhaust manifold to the downpipe had vibrated off so they were replaced, this time with lock washers, as well. (That downpipe was barely hanging on.)

Unfortunately, smoke continued billowing out of the engine bay, and the engine was still misfiring and occasionally backfiring. I decided to dismantle the distributor, clean and lubricate the weights, springs and check for shaft wear, and check the vacuum advance. It was in fine shape so I followed by verifying that top dead center at piston 1

corresponded with the distributor rotor in the correct position at plug wire 1 as well as the crankshaft TDC timing marks. The static timing was also reset to 10 degrees before TDC since I couldn't run the engine long enough to set it with my timing light (and it wouldn't have been possible since it was misfiring so badly, and I was afraid of starting an engine bay fire.) All of the plug wires were tested for proper resistance along with the high tension lead from the coil. Of course, the coil was eventually replaced with a new one, too, since there apparently is no fool-proof way to test a coil under all running conditions with a multimeter. Since I work alone, I also retested all of the leads using a spark plug tester (light) by cranking over the engine with the fuel line disconnected and all seemed to be fine. The valve train was also re-inspected and lash setting was checked yet again. In order to rule out compression failure of some unknown origin, I also performed a dry compression test on all cylinders which revealed 180PSI on all four cylinders.

By this time, I was ready to give up and decided to seek professional help from Cville Classic Cars which is a restoration/repair shop located just North of Charlottesville. In the back of my mind, I had a nagging feeling that there was something simple I was overlooking, but had tried every suggestion offered and had no further ideas to pursue.

After waiting for about six weeks until the shop could fit my car into their service schedule, I provided them with a list of all work I had performed before the car's arrival via tow truck. Within two days, they called to tell me that two of new (NGK brand) spark plugs I had installed were defective. In fact, one of the plugs had a resistance of 35,000 ohms and the other was worse with 63,000 ohms. (The resistance should have been around 3000-7000 ohms.) So, two of the cylinders never had a fair chance of consistently firing and were obviously loading up with fuel until they eventually fired like a shotgun!

So the moral of this lengthy saga is that new spark plugs can be bad right out of the box and that they should be tested for resistance before being installed. I knew that spark plug ceramic insulators could be damaged or broken, but had no idea that they could be tested (beyond visual inspection) with a multimeter set on the resistance setting and unfortunately, no one ever suggested testing them, likely because they were brand new. I had always considered spark plugs to be like a toothbrush; you just buy them and use them, but don't worry about whether they will actually work as intended, especially when new.

The mechanic at the repair shop told me that he had experienced the same problems years ago with his own vehicle, and he eventually discovered defective plugs were the cause. At this particular shop, they have encountered this problem with enough frequency that they always test new spark plugs for resistance with a multimeter before installing them in any vehicle.

By the way, I never figured out the source of all of the white smoke emanating from the engine bay, but my car is now running well, and I'm finally back on the road after a very expensive lesson!

Happy Motoring!