Technical Notes

Finding a hidden miss in a Packard was a several hours long process

By Paul Rydning

Not too long ago, after completing a rebuild of my 1937 Packard Super Eight engine, I found myself immersed in a puzzle which required several hours to solve.

As usual I started the engine with the full expectation that I would have my normal smooth running Packard motor. Such was not the case!

Instead I had a "hard" miss I could not locate. (I define a "hard" miss as one that results from one cylinder missing on every power stroke.)

As I moved on with my search for clues, I removed the spark plugs and inspected each for any sign of damage. With the plugs removed I did a compression test to check for valve problems.

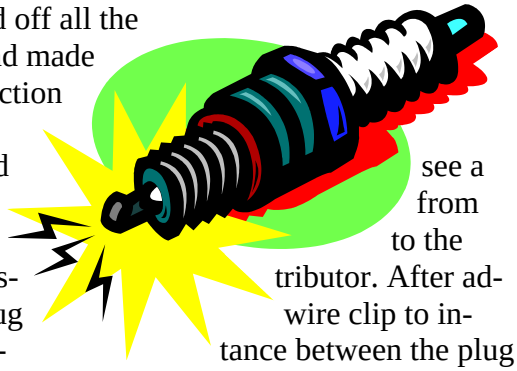
I also inspected the spark plug wiring and the distributor cap for any signs of damage. Nothing unusual was found with any of these tests.

With the tests complete I reinstalled the spark plugs and restarted the engine. The miss was still present but well hidden! I now removed the spark plugs again and replaced all of them with a new set and restarted the engine. It still had a miss.

Ask the man who owns one

My next step was to briefly try running the engine on 12 volts in an attempt to see of the problem lay in the coil system. No change was observed.

However, with the engine running, I thought I could hear a spark jumping some place in the engine bay. In an attempt to locate the spark jump, I turned off all the shop lights and made a visual inspection of the engine.



I now could see a spark jump from the #4 plug to the base of the distributor. After adjusting the plug wire clip to increase the distance between the plug and the distributor I restarted the engine and found I still had an intermittent miss which was especially pronounced when I opened the throttle. When I again tried the 12 volt test I found that my miss had disappeared.

At this point I wanted to try a new Packard coil to try to eliminate the coil as a source of the newly found intermittent miss. A couple of phone calls later, Don Curtis agreed to lend me one that he had in his stock and the test was rerun with the same result.

A logical analysis of the system performance led me to the following conclusions.

First I concluded that there was not a likely cause to be found in the original system because this same system would operate properly with 12 volts but not with 6 volts.

Second, I concluded that the problem lay not in the supply side but was more likely in the demand side. That is to say the engine was demanding more spark (voltage) than the stock system could supply.

A complete test of the low voltage side of the ignition system was made to determine if I had any unusual voltage drop in this system. This included a test of the neutral side of the system.

With these results in mind I did a logical examination of the high voltage system to determine what might cause this system to fail. As part of this analysis, I asked myself what could cause the system to demand more voltage than the coil could supply.

I ruled out the plug wires as I had used copper wires, not the high resistance TVRS wires as are used

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in modern ignition systems. The coil, cap and rotor were new and performed well with 12 volts.

This left me with only the spark plugs as a possible cause of the problem.

I knew that the amount of voltage necessary to fire a spark plug increases as the gap in the plug increases and the compression pressure increases.

With this in mind I removed the plugs and re-checked the plug gap. I found that I had gapped them at .032" as opposed to the factory recommended .025". I reinstalled them and found that my miss had disappeared!

As a footnote, here is some additional information. First I could not find a high performance coil which I could mount in place of the original Packard coil with its top and bottom connections. Second, while rebuilding this engine I had the top of the cylinder block and the cylinder head resurfaced to help prevent head gasket problems. This resulted in increasing the cylinder pressure which also increased the spark demand. As a result of this work I expect I will have to pay close attention to my spark plug condition in the future. As some point I may elect to install a voltage booster to increase the output of the stock coil. Time will tell.