Diagnosis: Misfire, Part II

By Tony Rhodes
Delaware Valley Triumphs

Review: The engine is recently out of extended hibernation. After basic tuning of the engine it is found that the mixture must be kept at an excessively rich level, and there is a mild irregular miss at idle. At the current setting it is running fairly well. If I did not know that there was something wrong, I might not guess it by a cursory drive while listening to the engine. However the mixture is still incorrect, and unable to be corrected (my me, so far), so there must be a basic problem with the engine. One piece of evidence that I think is important is that BOTH carburetors are acting the same. Therefore, whatever is wrong is something that affects both carburetors equally. This suggests against a bad ignition wire unless it is the HT lead from the coil. It also suggests against a bad engine valve, or other basic mechanical engine problem, because most of them would affect one cylinder alone.

I consulted everyone I could think of, including the large Internet Triumphs group. I had many suggestions, most of which were very good. The best suggestions told me to go back to the basics to establish the health of the engine. This is always a good idea when you have a poorly running engine. This is especially true when something about the fuel seems to be wrong. Remember the adage: “99% of fuel problems are electrical”. This means that most running problems are ignition rather than carburetion.

In the last technical article I had said that all the replaceable parts of the ignition were new and SEEM good. So far I have not replaced with them other known good parts, and I may come to regret that laziness. However, I did get back to basics, and tested a number of items. Here is a list of items to check in rough order of importance, and my results (see table 1).

After all the testing, and some slight tweaking of adjustments, the problems with the mixture persisted.

One member, who has a fair amount of experience with these engines , Brian Schlorff, told me that he has seen this difficulty in tuning when the valve guides are worn and allow a leak of crankcase fumes during high vacuum conditions. When I told him that the engine only has 28,000 miles, he said that this is enough for measurable valve

Table 1

Engine Compression	182 lbs equally in all cylinders
Valve lash	10-11 thou in all 8. One was slightly tight, one was slightly loose.
Cam Timing	The TDC mark on the pulley coincides very closely with actual TDC on the #1 piston when checked by a wooden dowel down the sparkplug hole.
Cam Lobes	All the rockers seem to move equally and properly, but I did not actually measure the motions.
Fuel Level in Float Chambers	The floats were reset, and the fuel level in the main jets was within the normal range. The float jets seem to be sealing properly.
Ignition	Timing had been set previously. All the parts are new and supposed good. The coil was replaced with a sport coil. I really ought to try it with known good parts borrowed from a friend.
Intake Air Leak	Carburetor cleaner was sprayed all around the manifold and seals/moving parts of the carburetors and no change in idle speed was detected, suggesting the absence of an air leak in these locations.

guide wear on original engines! I put a vacuum gauge on the PCV port of the intake manifold and found that the vacuum at idle was 17 or 18 inches. Apparently normal vacuum is supposed to be 22 or so. Apparently my valve guides are not sealing well. Brian said that this is sufficient to cause this odd mixture behavior. Upon hearing this, others have said “Balderdash, an air leak should result in a weak mixture, not a rich one”. The carburetors would need to be set up to deliver a rich mixture which gets weakened just as it enters the cylinders. It should still be possible to get and see a proper mixture even with somewhat leaky valve guides. Nevertheless, Brian says he has seen just this effect despite our ability to give a good explanation. Those balderdashers have utterly failed to offer a competing diagnosis of any sort to lead me away from the vacuum loss!

I hesitate to pull the head and rebuild it for two reasons. First and foremost, the engine will probably run quite well for a long time in this condition. Second, I cannot be absolutely positive that the inconvenience and expense of a rebuild and elimination of the valve guide air leak will actually cure the problem of the inability to accurately set the mixture. One person suggested installing valve guide seals on the intake valve guides. I am considering this option.

Diagnosis: UNSOLVED, pending further testing.