

My MGB Finally Gives-up Smoking at the age of 42

by Rick Astley with a lot of help from Harry Mac Lean

A few years ago, I was on a club tour and stopped at a junction in my MGB roadster when Steve and Ruth Swarin pulled up beside me and asked if they might go in front of me. That seemed strange, but later, when we stopped for coffee, Steve explained that every time I pulled away after a stop, he and Ruth had been choking on the blue smoke coming from my tail pipe. One of the great things about being in a friendly club like ours is first that Steve didn't hit me (but he was still coughing after all) and second, I had good advice on hand from Guy St. John. Guy said that blowing blue smoke like this was typical of worn valve guides and that the valve stem seals may be shot too. Guy also reminded me that oil is cheap and so, other than making a mental note to check the dip-stick more often, I ignored the problem.

It turns out that when at idle, the carburetor butterfly is nearly closed so that the cylinder gets very little air and the vacuum in it is correspondingly very high. The engine thus tries to suck air from wherever it can get it, including through the valve guides from where it also draws in oil. The oil is not very combustible but once the throttle is opened wide again, when for example pulling away from a light, far more oxygen becomes available and the built up oil burns and produces its characteristic blue smoke.

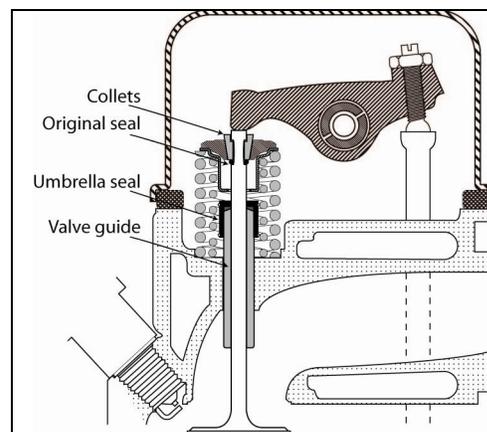
Perhaps my environmental consciousness finally got the better of me but I recently decided to look into a remedy. I consulted fellow member Harry Mac Lean, who pointed me toward a solution that was inexpensive and not very time consuming. Harry was a mechanic at GM for decades and he is very familiar with an effective type of valve stem seal often referred to as an 'umbrella' seal. In fact, the one developed for the GM Dura-built 140 engine and known as SS70373 also fits the BMC 'B' engine in and is available from almost any auto parts store for a few dollars. The GM 140 engine was, like the BMC engine, a 4-cylinder, 2 valve per cylinder unit, so the seals come in sets of 8, together with a handy plastic sleeve that aids installation.

I'm no mechanic, so won't try to describe the whole process, but with the right tools, even I was able to install the umbrella seals in a couple of hours. Those tools were a special spring compressor that can grab the valve springs without removal of the cylinder head, an air-compressor and an adaptor that allows the application of compressed air to the cylinder via the spark plug holes and which prevents the valves falling into the cylinder. I was able to borrow the spring-compressor, already have the air-compressor and I found I had the adaptor in a cylinder compression test kit I'd owned some time and often wondered what it was for.

The drawing at right shows how the umbrella seal fits over the valve guide and stops oil from going down the valve stem and entering the cylinder. It also shows the original seals, which don't seem well positioned to do very much at all. In order to fit the new seals, the rocker arm assembly has to be removed, the valve spring compressed and the collets withdrawn, all of which then allows the springs to be removed and the valve guides to be accessed.

If you're considering doing this job, there are a few things I learned that are worth passing on. The piece of kitchen towel behind the spring compressor in the picture wasn't there by accident. The collets have a mind of their own when they are released and paper or rag helps prevent them from falling down the valve push-rod holes. Reinstalling the collets can be frustrating, and to save work, you may wish to only fit the new seals to the inlet valves that do all the sucking, oil leakage through the exhaust valve guides being much less severe. Take Harry's advice and remove the original seals because once the umbrella seals are in place the almost ineffectual old seals become totally useless and refitting the collets without them is much easier. Be prepared to have to use a little muscle to compress the inner valve spring since the compressor only grabs the stronger outer one. Don't take any notice of anyone who says that the new seals will starve the valve guides of oil; as Harry points out, these are not very sophisticated seals and leak just sufficient oil to do the job. Lastly, you'll be working from the right side of the engine bay and although I used a broomstick to prop the bonnet up, my head found the sharp cornered bonnet-stay bracket on a couple of occasions and I wished I'd taken the time to either tape a pad over it or wear a hat, so making the job that much less bloody.

Do the seals work? Absolutely. In fact, after initial testing I forgot about them but was reminded of them every time I looked in the rear view mirror. Obviously I'd unconsciously become used to a blue tinge to the view from there, so the crystal clear sight I now see instead, is still a surprise to me!



Quitting Smoking can be Hard

by Rick Astley

In the November/December 2012 issue of *The Can-Am Connection*, I wrote about how I virtually eliminated the smoking problem with my MGB roadster by fitting so-called umbrella seals to the valve stems. The car drove well all through 2013 and I looked on the problem as a thing of the past — until I took it out for its first run in early-May this year. The exact same problem reoccurred. There would be no obvious smoke from the tail pipe when driving normally but, after stopping at a light for 30 seconds or more and then accelerating away, clouds of blue smoke billowed from the back.

I discussed the matter with several people and the conventional wisdom was that the same symptoms were almost certainly the result of the same problem. Perhaps the umbrella seals had split or maybe the valve guides had become so worn that nothing could now stop oil being sucked past them into the combustion chambers. I had to agree, and I had a solution. For the last 10 years, I've had an engine sitting on a stand ready for me to do some work on it to cure a bottom-end knock. The head, however, was good and so I decided a head-swap was in order. That's not a terribly difficult job but nevertheless takes a little time as well as the expense of a new head-gasket and sundry other items.

Once everything was put back together I gave the car a quick test run to check it out, only to get a sinking feeling as I saw that familiar smoke again when I took off from a light. What could be the problem? I had been pretty sure it wasn't worn piston rings because I'd gotten good and consistent compression test results. The car was running pretty badly too and so I decided that the carburetors needed tuning for the new head. It was that process that provided the clue.

I found tuning to be almost impossible and decided there was an air leak somewhere. Strategically squirting carburetor cleaner around the inlet manifold area usually reveals the source of a leak when the idle speed increases a little, but I found no leak that way. Then my attention was drawn to the PCV (Positive Crankcase Ventilation) valve, part of the system that allows gases to escape in a controlled manner from the crankcase and return them to the engine rather than pollute the atmosphere. This is necessary because internal combustion inevitably involves a small but continual amount of blow-by, which occurs when some of the gases from the combustion leak past the piston rings. The PCV valve provides that control by doing a delicate dance between letting just enough gas return to the inlet manifold without allowing so much as to upset the fuel/air mixture to any significant extent. Sealing off the inlet manifold from the PCV valve and letting the engine vent to air improved things no end.



Inspecting the PCV valve showed its diaphragm to have a split in it, so, rather than continue venting engine gases to the environment I replaced that for about \$5.

Unfortunately, while it somewhat improved the smoke problem, there was definitely still an air leak, and I decided that there were probably worn springs and seals in the inaccessible parts of the original valve. What did bring things back to normal, however, allowing me to tune the engine better than it's been for years, was changing

the original PCV valve for a \$2.99 generic type from Pep Boys.

The bad reputation for BMC A and B OHV engines have to drip oil is in some part due to the poor seal between the tappet chamber side covers and the block, making many of us very aware of how much oil swims around in that area. From about 1963 to 1971, the MGB (and I believe Spridget) crankcase breather pipe came from the front tappet cover so, with a defective PCV valve, my car was sucking oil out of there as if it were a straw sipping Coke. At idle, the manifold vacuum is at maximum, and it was then that the oil was being sucked up, but not fully burned until I opened the throttle to provide the oxygen necessary for the oil's combustion.

Lessons learned? For me they were: conventional wisdom is not always the wisest and always try to think of the easiest and least expensive solutions first.