PCV (Positive Crankcase Ventilation) and other engine breathing matters

In response to a recent request by a reader, asking about PCV, I did my due diligence and emailed Tom Aczel to check if I understood the process. What I got was a response FAR in excess of what I expected or understood. It's when you read something like this (below) you realize what a true enthusiast appreciates about their hobby. I asked Tom if he'd mind me printing his response to which he replied… "Ok, but please emphasise as a leading note that this is the conception of someone who is neither an engineer nor even a mechanic, but rather a (former) medical practitioner." I think it shows far more than that. *Roger Sharpe Nov, 2025*

"Getting back to engine breathing, it surprises me how often people set up their MGB's with no form of breathing for the crankcase, or even the top end. Even just recently there was a discussion on MGE about the need for a PCV valve or, presumably, any ventilation for the bottom end. Somewhat disconcertingly, not a single contributor to the discussion tried to dissuade the person from deleting his PCV valve and related plumbing. Some, (but not all), encouraged that some, generally crude, ventilation be installed to deal with the top end, such as a rocker cover tube or vent. Not one participant suggested that the crankcase needed venting as well. Again it's the same old theme, where amateur owners assume they know more than the extremely competent engineers who set these cars up in the first place.

My take on the matter is that you have four pistons going up and down that repeatedly compress and "suck" above AND below the pistons as they go up and down. For the engine below the pistons it's not as simple as "well it should all even out as there are always two pistons going up, and two going down" (presuming these people even think it through to that extent). The flow of air back and forth below is restricted by the conrods, main bearings and their supporting webs, the crankshaft and the bottoms of the cylinders. To not have something to relieve the ebb and flow of these oscillating pressures is bound to, firstly, rob power from the engine, having to waste energy on 'pumping' and secondly the oscillating increased crankcase pressures will potentiate any tendency to oil leaking through any vulnerable points (rear main seal and tappet cover gaskets mostly). Incidentally it is the "emptier" crankcase in the three bearing engines compared to the five bearing engines that allows freer movement of the air in the crankcase with the cycling of the pistons, leading to the earlier engines revving out more readily and putting out a little more power than the five bearing engines and is why the factory continued to race with the 3 bearing engines even after the 5 bearing engines arrived. They claimed back then that "they were more familiar with the earlier engine". but the real reason was that they could get more power and a freer revving engine with the 3 main bearing crankshafts. The lesser friction from two fewer main bearings contributed, sure, but the late Dave Headly said the main reason was the freer movement of air inside the crankcase.

The best MGB engines for our street cars are the ones left exactly as Messrs Enever, Cox, Brockelhurst etc set them up in the first place. Many have commented on driving my MGB on "what a sweet engine" it has and how "it has a surprising amount of torque".

The two Fogarty twins who spent a significant portion of their working lives at the BMC (Australia) factory in Zetland (Peter worked on the racing Cooper S cars for the Zetland factory) claim that my MGB is "the only MGB they have ever driven that is worth driving!" The secret? It's absolutely exactly set as per factory specs. Nothing else.

Regards Tom."

Further to this email, Tom sent an additional email …

"I should add that in our discussion we didn't even enter the subject of "blow-by" where some of the combusted mixture gets forced down into the crankcase, contaminating the oil, with wear promotion consequences. It is so much better that these agents are burnt off by recirculating them into the inlet side to be burnt off by some form of crankcase ventilation and re-circulation, or at the very least, incorporating a "draft tube" to allow such gases to vent to the atmosphere, as was the case with the first MGB engines (the 18G series) before the PCV device was incorporated (18GA).

Interestingly the person commenting about the surprising amount of torque my MGB produces owns and regularly drives a modified MGC (triple 1.75" carburettors) and owns three MGA's, two MGA Twin Cams and one MGA 1600 (with a (genuine) Derrington cross flow head).
When Mark was setting up his triple SU's (the factory originally intended it this way, hence the forward "bubble" in the bonnet which in production form is redundant), I commented to Mark that I thought three 1.75" SU's (HS6) were too large for a 2.9 litre engine and would affect his low speed torque through the loss of velocity in the incoming mixture, and that I thought triple 1.5" SU's would work better. When I last spoke to Mark about this, he was now in agreement with me and he was considering changing to triple HS4 carburettors."