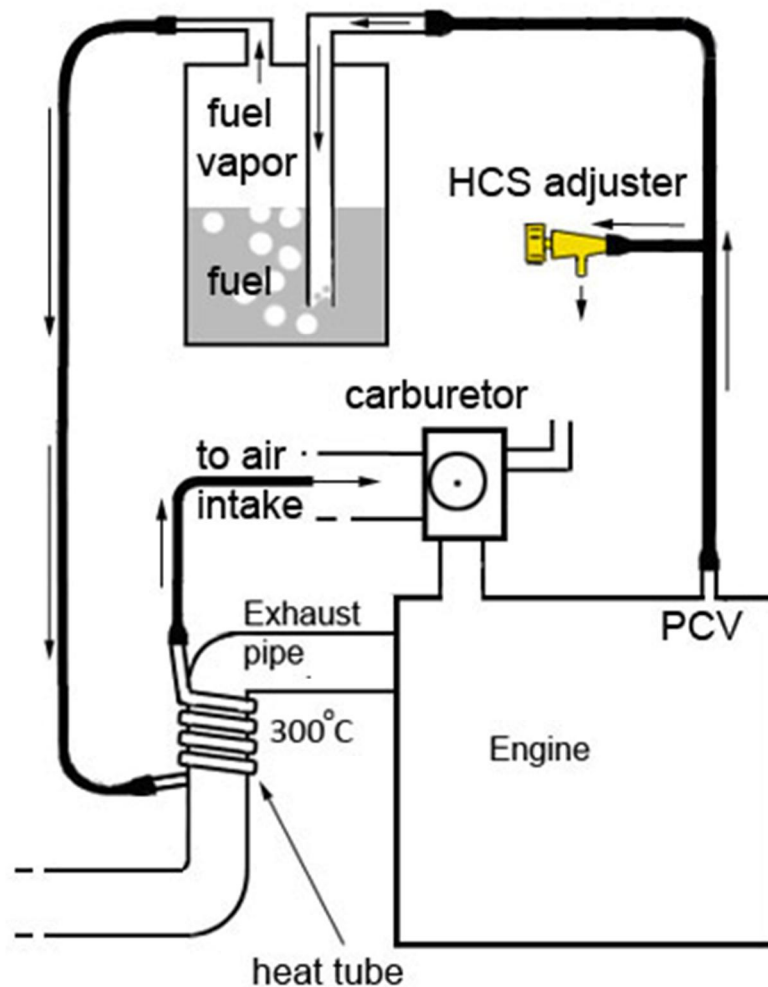


Positive Crankcase Ventilation Conversion

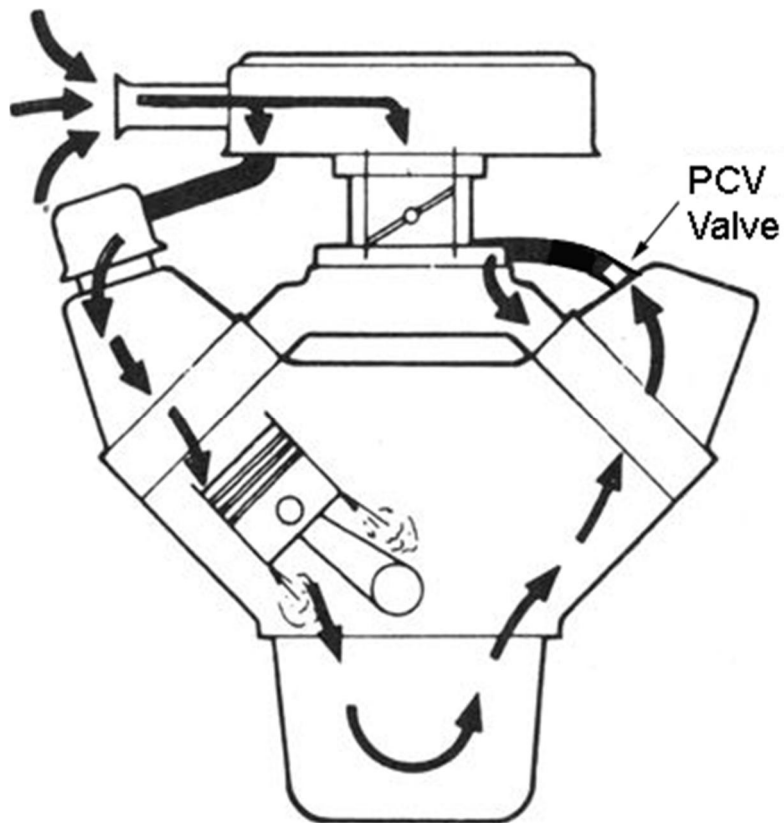
The best way to operate HCS is to pull the vapors through the system by means of a Venturi Vacuum. The Venturi follows engine speed and thus provides less Hydrogen at low revs and more at high revs; directly in line with the engine's requirements.

If no such vacuum inlet can be found on an engine; the best alternative is to push the vapors through the HCS and into the air filter using the variable pressure from the PCV system. Here is a schematic drawing of a PCV operated HCS:

HCS using Positive Crankcase Ventilation



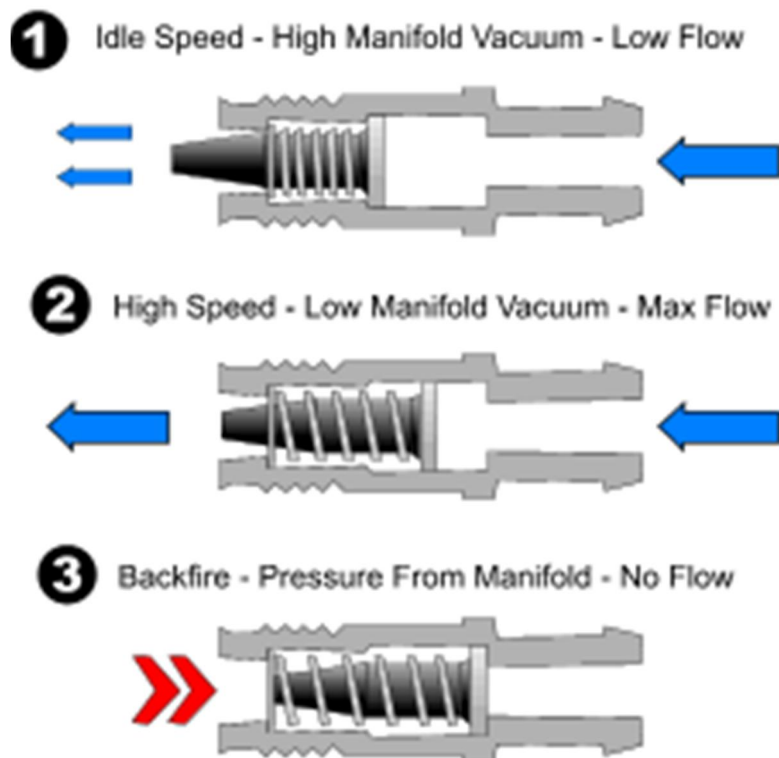
This shows the engine as having a simple PCV system where the accumulated pressure from the 'blow-by' leaking past the piston rings is ventilated passively through the outlet marked PCV. On most motorcycle engines and older car engines; this is exactly what happens and such PCV systems will need no modification at all. On more modern car engines; the blow-by gases are force-evacuated from the crankcase using a manifold vacuum and are replaced with fresh air from the air filter. Here is a schematic of this system:



This 'circulation' system is not immediately useful to us and will need a little modification in order to convert it to a simple pressure ventilation system that we can use to operate the HCS.

The PCV valve has three positions:

PCV Valve Typical

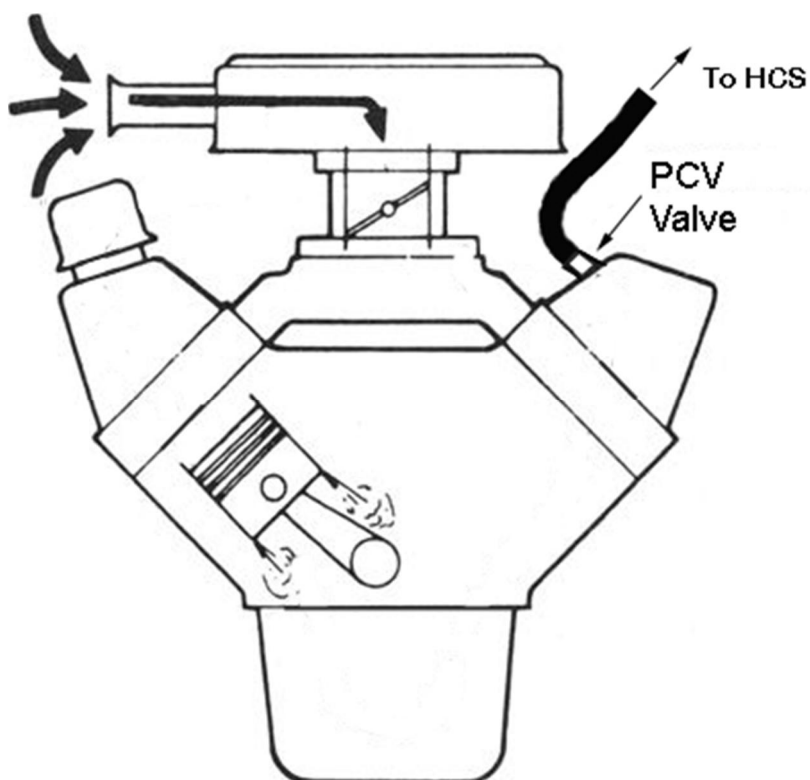


The first position is partially closed when the high manifold vacuum pulls it into this position. As we will be disconnecting the manifold vacuum; the valve will never be in this half-open position.

The second position is the valve's 'rest' position and is fully open allowing unrestricted ventilation of the blow-by pressure in the crankcase. This is the position that will be maintained constantly once we have modified (simplified) the PCV 'circulation' system.

The third position is a failsafe position that closes the PCV valve shut should the engine backfire. As we will be disconnecting the manifold vacuum tube from the PCV valve; it will no longer need this safety feature and will never close.

Here is a schematic of the modified system which now simply ventilates any blow-by pressure from inside the crankcase:



The breather tube has been disconnected from the air filter and the breather inlet to the crankcase blanked off. The tube connecting the PCV valve to the manifold vacuum has been disconnected and the manifold vacuum inlet has been blanked off.

The PCV system has been easily converted to one that can be used to power the HCS. In this way; HCS can be fitted to any 4-stroke engine making HCS a 'plug and play' system.