

The Corvair Ignition System

Let's talk about the ignition system in your Corvair. The Corvair was designed to use mechanical points to switch the ignition coil on and off to generate the high voltage spark necessary to make the engine run. Each time a piston approaches the top of its firing stroke the spark plug must receive a high voltage charge to ignite the compressed air/fuel mixture, which will then deliver the power to drive the piston down on its power stroke. If the engine is operating at 6000 rpm this spark must occur 3000 times a minute or 50 times a second. This means the points must close then open 50 times each second. Can you imagine switching a room light on and off 50 times a second? The switch would probably last about 5 minutes. But you expect the points in your Corvair to last for 30,000 miles. Using points to operate the ignition system is a bad choice but was "state of the art" automotive engineering in the 60s.

Where points give you the most problem is they operate just backwards of what the engine needs. The points are set to 30 degrees of dwell, which means they are closed for 30 degrees of distributor rotation then open and close once more for 30 degrees. During the time that the points are closed electricity flows through the primary winding of the ignition coil. When the points open the electricity stops flowing and as the magnetic field collapses it induces a high voltage in the secondary windings of the coil. To get maximum voltage from the coil the primary windings must be saturated. In other words, the magnetic field must have time to reach its maximum level. At low rpm this is no problem because 30 degrees of distributor rotation is long enough for this to happen, but at high rpm this is not enough time to saturate the coil.

At low rpm the current through the points lasts too long and the points heat up and in some cases cause them to become welded together. At high rpm the points break or open before the coil is fully saturated causing an arc or heavy spark to occur between the points, which will pit the points surfaces. Both conditions cause the points to either fail or become completely out of adjustment. The points can close down, decreasing the gap, increasing the dwell to the point where they do not open at all and the engine will not run. Or it may start but run rough and eventually shutdown after the distributor heats up. In the case where the points open up too much the dwell decreases till the engine runs OK at low rpm but runs rough or cuts out at high rpm.

The truth about points is that as soon as they are properly adjusted they begin to go out of adjustment. Now don't blame Chevy or GM for this problem, as it was because it's what they had when the Corvair was designed and built. Today we have several choices to upgrade the ignition system to a more modern and reliable system. The simplest and about the most reliable is the Pertronix Ignitor type electronic ignition system. Basically this simply replaces the mechanical points with an electronic switch. With this unit there is nothing to wear as with points and the dwell never needs to be adjusted. Another system is the CSD or "Capacitive Spark Discharge system". It uses either the points or a Pertronix system to operate it but the current is so low at the switching device that the points do not burn or very often go out of adjustment. A third system is the MSD or "Multiple Spark Discharge" system. This system also uses a switch to trigger it and then delivers a very hot spark of long duration. This is very good to get better ignition of the fuel/air mixture. All three systems are far superior to and more reliable than the stock mechanical points and all three systems are very easy to install on a Corvair.