

### Rochester Carburetor Idle Corrections

Most of the maintenance articles I write about are inspired by some type of Corvair related challenge I have experienced recently; this article falls in that category.

While performing service work last month on a '65 140 I noticed it did not idle as well as it should. The owner had not mentioned an idle problem but it was there and despite balance check and mixture screw adjustment, it remained.

Diagnosing idle problems can be broken down into three areas all of which definitely affect idle:

1. **Overall engine tune condition:** This would include correct valve adjustment, a compression check which shows all cylinders the same with reasonable compression, and minimal blow-by. Check air filter. The distributor shaft, cam, advance mechanism, wires, plugs, cap, rotor, and initial timing can affect idle. Be sure the balancer check marks have not moved. Old gas can affect performance more than you think, so don't overlook that when checking things. Note: a high performance camshaft (260+) can cause a "lumpy" idle.
2. **Vacuum leaks:** They lean out a mixture beyond what an idle mixture adjustment can correct. There are a lot of possibilities: base gasket/insulator issues, loose carburetor mounts, damage to carburetor base mounting areas or head flange areas, split or swelled balance tube hoses (very common), ruptured choke pull offs or their hoses, the 2 hoses for the vacuum modulator on Powerglide models, PCV hoses can harden and leak if original, the fixed orifice (0.062) may have been drilled out by others, and the PCV valve can have a weak spring (check by plugging the carburetor end and observe the idle change). In general, replacing the PCV valve with a fixed orifice (0.062) is a good upgrade for idle performance. Be sure 140 secondary carburetors are not leaking vacuum; mist carburetor cleaner over them or simply put your hand over the top and see if you feel vacuum. The secondary carburetors have no idle circuit so a miss-aligned throttle plate is simply a vacuum leak that affects primary carburetor idle.
3. **Carburetors:** First check the balance with a vacuum gauge or Unisyn and be sure the vacuum advance is not being pulled in by the right side carburetor. Look for linkage that does not return properly. Remove idle mixture screws and use compressed air to blow through the holes. If idle problems persist, use a can of spray carburetor cleaner (not Brakleen) to gently mist over the carburetors one at a time at idle. If the idle smoothes out, and both 1 & 2 above have been checked, you obviously have an internal carburetor problem.

Our carburetors were designed by engineers working with flow principals based on fuel that we no longer are using, so some modifications are helpful. Generally speaking, slightly richer mixtures benefit our aging designs, particularly with ethanol infected gas. When you clean and check carburetors look at the following: worn throttle shafts (vacuum leak), miss-matched mixture needles and the holes they meter (broken tips stuck in the hole are not uncommon), metering jets should be 0.053 or even larger, correct float level, no loose throttle plates and with the notch (when applicable) in the throttle plate lined up with the transition slot. The major item is to have matched venturi clusters: check for warped cluster bases (straight edge them) and check that all specs are the same from side to side. The small brass pickup tubes must be clear and identical from side to side.

Also check the size of the air bleed on the top above the pickup tube. Use small numbered drill bits to confirm sizes match.

In my recent search for the cause of a poor idle I checked off the items in 1-3 above with no resolution so I disassembled the carburetors, cleaned and checked everything but found nothing. That was confirmed when I re-installed them on the engine. I had the same poor idle that improved with misting carburetor cleaner over the tops at idle. With the carburetors apart the second time I drilled out the pickup tube on the venturi to 0.030 from the original 0.026. I left the air bleed at 0.074. Once the carburetors were back on the car the idle was back to normal.

I reviewed my collection of clusters and found that I have eight different combinations of venturi cluster idle pickup tube/air bleed sizes listed for 64 and later models. The majority of the clusters were 26/74 but there were also six venturi clusters that were between 28/74 and 30/74. Maybe those were A/C cars, but it does indicate that a richer mixture was required for some engines. The pickup tube to air bleed combinations for early models I have checked are 23/86 and 26/86.

I am continually learning things and the next time I have an idle problem I will refer to this article; it would have saved me one extra carburetor R & R.