

Opel 1.9 Vacuum System Operation

The "Opel Vacuum Solution" flyer, originally printed in the January 1996 OMC Blitz newsletter, is one of the most widely distributed OMC Tech Tips. This page will help to update the 1.9L engine tune-up.

The **Opel 1.9L** engine draws the carburetors fuel/air mixture through the intake manifold "round the bend" into the cylinder head, past the valves into the combustion chamber. **Ported** Vacuum advances the ignition timing via the distributor vacuum advance, and the **Manifold** Vacuum retards the timing via the Vacuum Advance at idle. Manifold vacuum also operates the Brake Booster, ventilates the Crank Case, and on automatic transmissions operates the Vacuum Modulator.

Therefore, it's important to test and identify any vacuum leak sources.

Diagnosis isn't difficult. Typical symptoms include: Hesitation, Stumble or Surge pattern of acceleration, and an inability to idle smoothly below about 1100 RPM. (The engine may idle smoothly at higher than normal idle speeds, such as 1300 to 1800 RPM) A loss of engine "torque" may also be noted. If you can turn the Idle Mixture Screw 'IN' all the way (without the engine stalling), you most likely have the idle speed rpm screw set too high, possibly indicating that you have a vacuum leak somewhere.

Testing for a Vacuum Leak at the Intake Manifold

Use a can of common Carburetor Cleaner.

Insert and aim the long red straw nozzle, at the gasket between the cylinder head and intake manifold, and spray a short stream of carb cleaner. If the engine begins idling faster, smoother, stops misfiring, or decreases rpm, you have found the location of a vacuum leak.

This same procedure can be used to test the carburetor base gasket & carb throttle shaft area, to check the brake booster fitting, hose, check valve and fitting, as well as the master cylinder to brake booster seal and the booster itself.

Testing for a Leak in the Vacuum Hoses

Once you know there is no vacuum leak at the intake manifold gaskets, or at the brake booster fitting, then test the vacuum hoses, while the engine is idling. Pull each hose, one-by-one, and place your finger over its exposed port. If the engine speed goes faster, that hose or fitting is leaking somewhere.

Brake Booster and Hose: Disconnect the if booster hose from the manifold and plug to test. If the engine idles better, that hose may be leaking. You also want to check/test the booster check valve, inlet fitting and seal, as well as the master cylinder to booster "O" ring.

Note: Another symptom of a leaking booster, is when an idling engine dies as you depress the brake pedal.

Notes:

"A" Booster Hose to Booster. Use a proper reinforced air hose.

Do NOT use ordinary heater hose — it will collapse under vacuum.

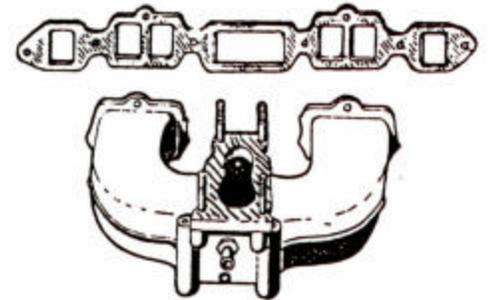
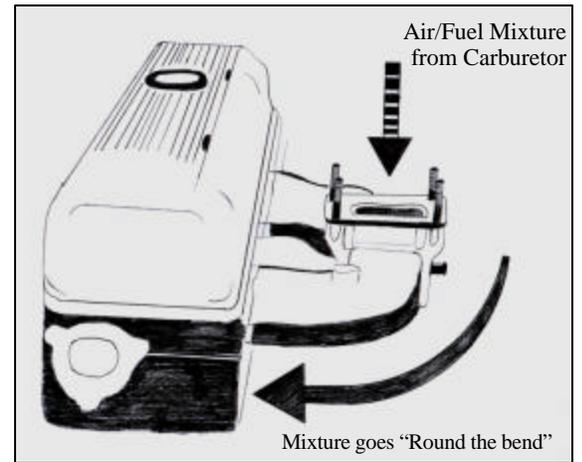
Note: The Booster "Check Valve" is originally located within 10 inches of the intake manifold fitting.

"B" Integral PCV Fitting for engine, via the small valve cover hole. *(You may use regular vacuum hose for this fitting.)*

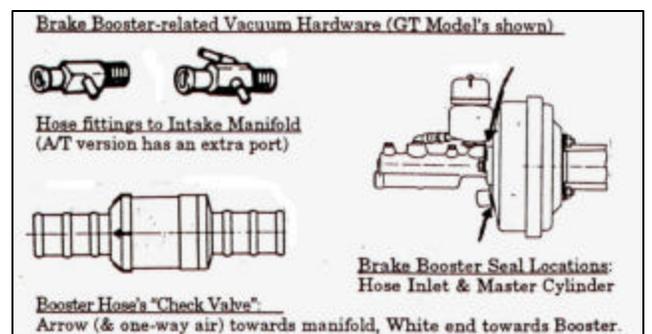
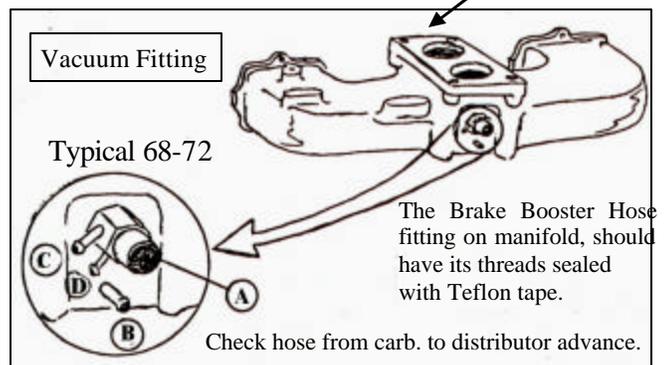
Note: The Integral PCV fitting was relocated to back side of manifold on the 1973-74 engines, for a port to operate the 1973-74 EGR valve.

"C" Manifold Vacuum to Distributor Retard Port on distributor.

"D" Manifold Vacuum for the Automatic Transmission Modulator (when vehicle is equipped with an automatic transmission only!)



Integral PCV Fitting located on 1973 & 74 manifolds.



After locating and repairing any and all vacuum leaks, readjust carburetor idle mixture and idle speed as necessary.