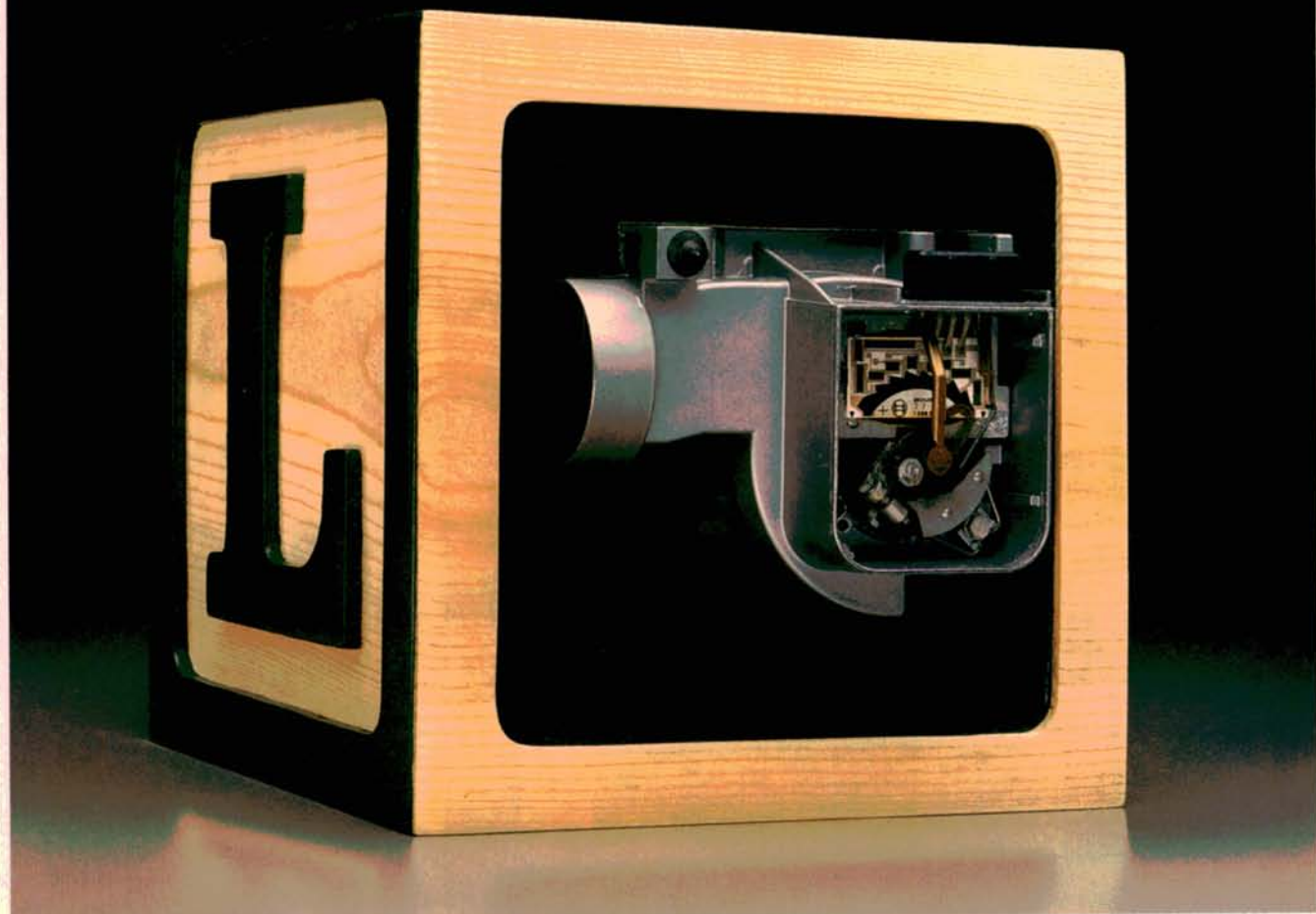


Elementary L-Jetronic



Do you like automotive trivia? Then you'll want to know what the L in L-Jetronic stands for. It stands for *luft*, the German word for air. Many of us know L-Jetronic as the AFC system. AFC means air flow-controlled fuel injection.

Although L-Jetronic is relatively basic and reliable, it does break. When it breaks, it can throw you for a loop. So grab your manuals and your notebook. Be sure you're not missing the basic troubleshooting steps we've outlined here.

Always do a complete ignition analysis before you fuss with the fuel injection. Be it breaker-point or electronic ignition, the L system depends on it for a reliable RPM signal.

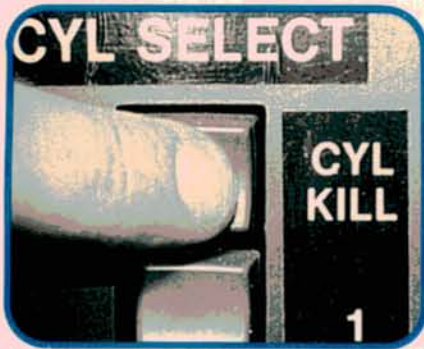
Analyze the charging system. Bad diodes can drive the fuel injection computer crazy. Remember that higher supply voltages trick the computer into richening the system and vice-versa.

Check system pressure. Higher fuel pressure tends to richen the system, lower pressure tends to lean it out. But, higher pressure does reduce or eliminate fuel percolation and hard hot starting.

If the pressure regulator sticks closed, you can encounter hard starting or an erratic hard-starting problem.

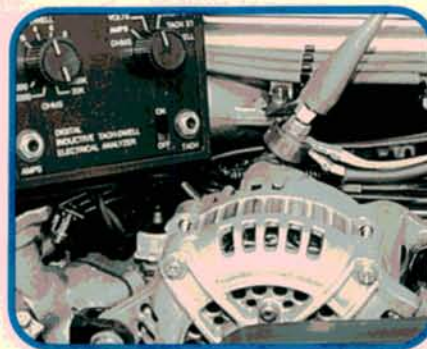
Check throttle switch adjustment. If the switch is dirty or out of adjustment, the engine may hesitate off-idle when it's warm.

—By Dan Marinucci



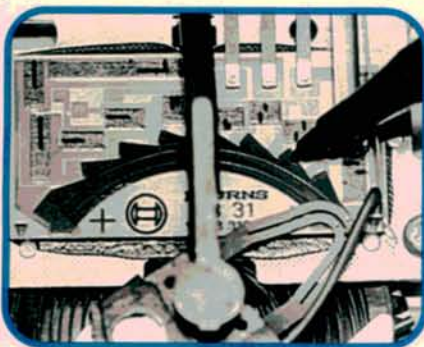
1

Do a power balance test on that rough engine to find the weak cylinder(s). If the ignition scopes out okay, squirt light oil around the injector-to-engine o-ring and the intake gasket. No vacuum leaks? Then pull the injector and check its spray pattern. Maybe the injector's clogged with crud.



2

Want to see an L system really misbehave? Just allow the alternator to undercharge or overcharge. Ask anyone who's been through it—the few minutes you spend on a thorough charging system analysis beforehand can save you *days* of troubleshooting time. Remember basic charging system tests? I hope so!



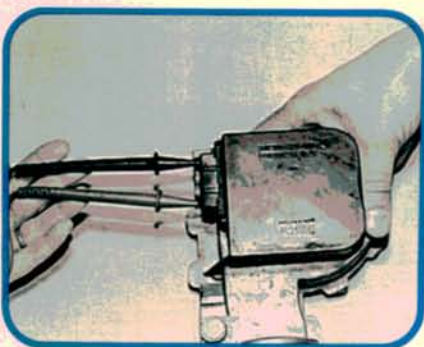
3

Basically, the air flow meter is a big variable resistor. Air flap movement varies the voltage signal to the L-Jetronic computer according to air flow. These normal wear grooves you see on this circuit board contact strip cause flat spots and hesitation during acceleration.



4

When engine backfiring bends the air flow meter flap, you'll get symptoms such as hot hesitation, engine cut-out, acceleration flat-spots, etc. But these are also fuel starvation symptoms. Always do a thorough fuel pressure/volume test before you condemn the air flow meter.



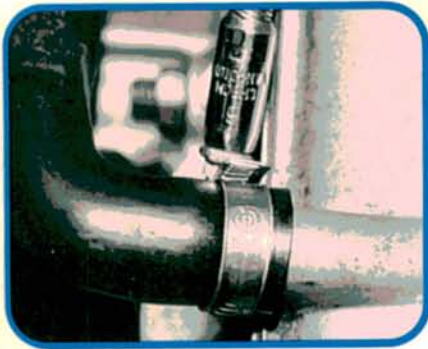
5

Identify and back-probe the air flow meter's input and output terminals. With the key on, slowly move the air flap with your fingers. If the voltage reading across these terminals doesn't change (increase or decrease) smoothly and gradually as you move the flap, replace the air flow meter.



6

When there's a complaint about driveability, rough idle, or backfiring, get in the habit of inspecting all the duct work and plumbing between the air flow meter and the engine. Any air leaks on the engine side of the air flow meter will lean out the engine and raise all sorts of havoc.

**7**

Crankcase air leaks such as a torn valve cover gasket, a loose oil filler cap, a leaking crankshaft seal, and an unseated dipstick can upset the mixture. Remember, the L system's calibrated to run on a certain amount of crankcase vapor—and no more!!

**8**

We've seen leaking injectors raise the engine's oil level as much as two inches! Rich conditions dilute the oil with fuel. Fuel-diluted oil not only shortens engine life, it also causes inaccurate mixture adjustments. Always change the diluted oil—and the filter—before you adjust the CO.

**9**

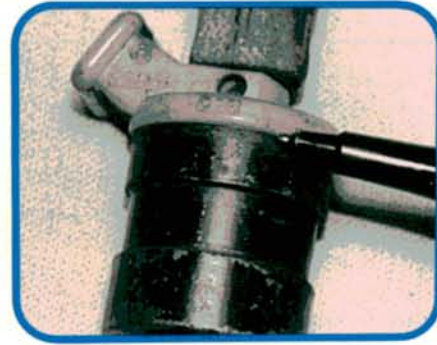
To make accurate, consistent CO adjustments on any system—L-Jetronic included—be sure the engine's at the right temperature. Dip your pyrometer probe into the crankcase. When the oil's about 175 degrees F, adjust the CO. Oil temperature is always more stable than coolant temperature is.

**10**

Someone else worked on the car? Watch out for a cracked, pinched, or disconnected vacuum-sensing hose. This regulator—which is non-adjustable—needs a constant and accurate manifold vacuum signal. Running rich? Pull off this hose. If fuel gushes out of the regulator, the regulator's bad.

**11**

The engine's rich and system pressure's too high. Disconnect this return hose. Route a hose from the regulator return nipple into a container. If the pressure drops down within spec, you know the return line's restricted somewhere. If the pressure's still too high, you know the regulator's bad.

**12**

There's a raw-gas odor that only occurs in the morning. These injectors can develop a cold leak at this seam. Some guys chill the injector with a choke-chilling device, switch on the fuel pump, and watch for leaks. If you insist on chilling injectors with R-12, please wear eye protection!



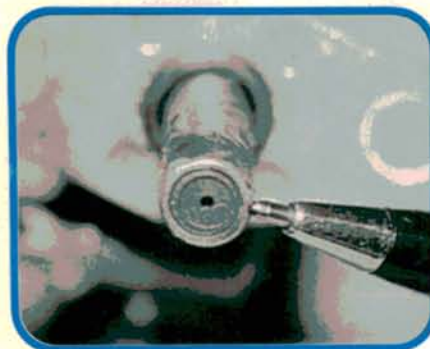
13

Corroded injector terminals can cause a surging condition during steady-throttle driving. Spray the corroded terminals with electrical contact cleaner. Then pull the connector off the injector and plug it back on several times to clean the connection.



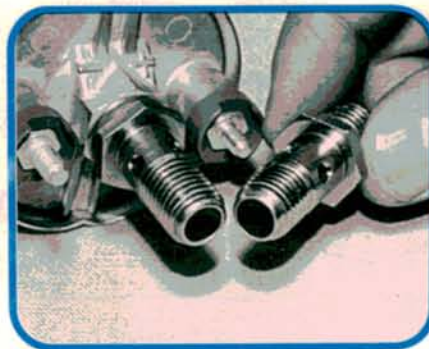
14

Before condemning a cold start valve, pull the electrical connector and hook a test light across the terminals. (Grounding the light on the engine won't let you check the ground circuit to the injector.) Crank the engine. If the light shines briefly, the thermo-time switch and circuit are okay.



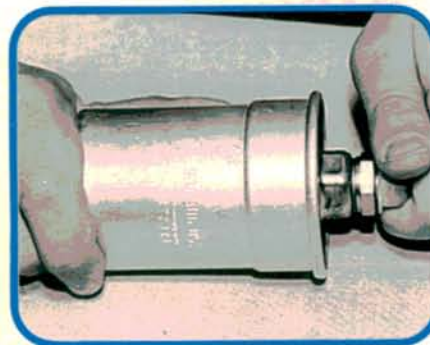
15

If you don't use it, you're going to lose it! In warmer climates, the cold start injector may only spray a few times a year. Therefore, it's not uncommon for the tip of the cold-start injector to rust shut on Sun-Belt cars. First cold snap or first trip north, the car won't start.



16

Suppose the fuel pump's outlet check valve begins leaking. When you shut the engine off, system pressure will bleed back into the pump. Often, the first symptom of this loss of rest pressure is hard starting after a hot soak. Fortunately, the check valve is a serviceable item.



17

Some guys install these filters dry and insist they never have problems. Other guys argue that you must douse the new filter with clean gas or the incoming blast of fuel will knock tiny pieces of filter loose into the system. Let experience be your guide here. Change this filter at least at 24/24 intervals.



18

Thankfully, the temperature sensor usually fails in either the full-hot or the full-cold position. Remember that as temperature goes up, sensor resistance goes down. In air-cooled engines, this sensor threads into the cylinder head.