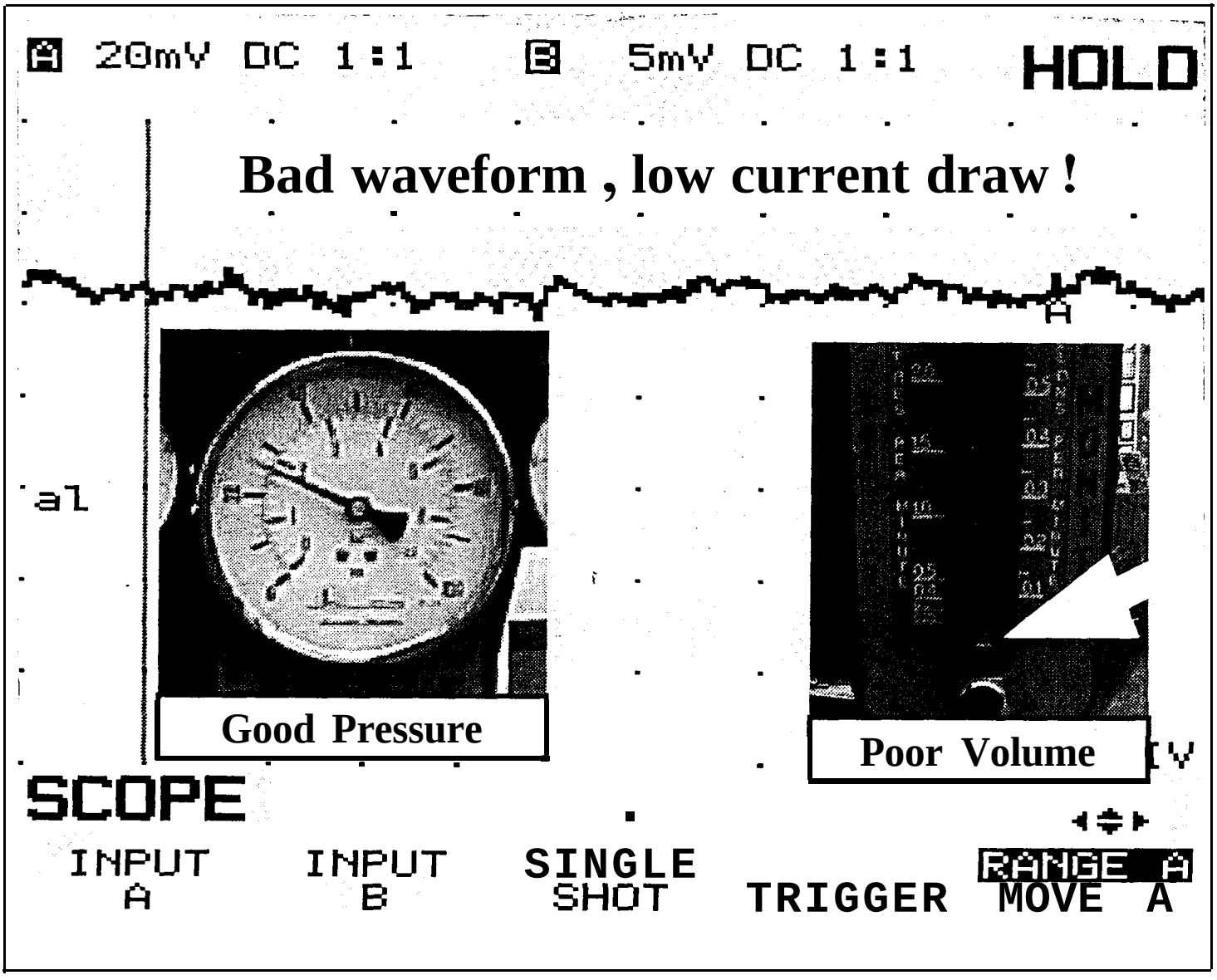
FEBRUARY 2000

LTS Networking

The Official Newsletter of LINDER TECHNICAL

TECH TRAINING

BAD WAVEFORM, LOW CURRENT DRAW!



FUEL INJECTION SERVICE UPDATE

FROM THE INJECTION WIZARD - DOUG GARRIOT

ANOTHER CSFI TIP

Well, here we go again. I have another tip regarding the General Motors **Central Sequential Fuel Injection** system. This time the customer complaint was that he had fuel in the wiring harness connector part of the fuel meter body assembly. With the unit in hand, I proceeded to run my tests. The pressure test revealed that fuel was leaking from #1 injector (see fig. 1).

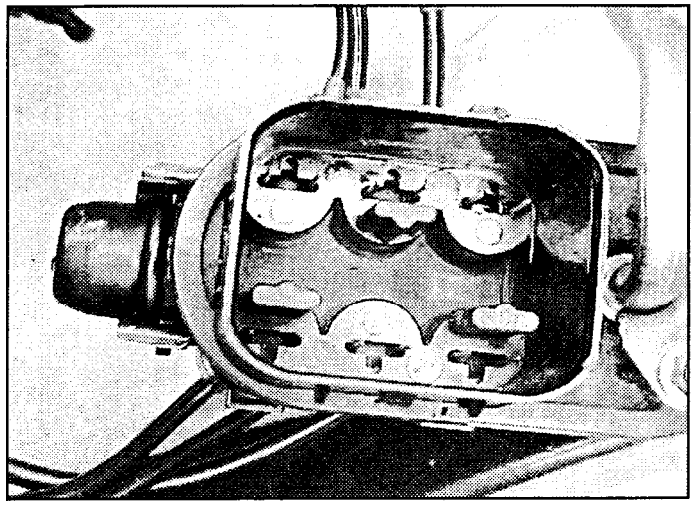


FIG. 1

I replaced the o-rings, reinstalled the injector and pressure checked again. The injector still leaked. A replacement injector was installed and all worked fine.

This unit, as with others, suffered from an injector that leaked fuel into the meter body. In some cases the fuel will even travel through the wiring harness to the PCM causing damage. Other cases this may lead to burnt intake plenums.

I was told that the CSFI unit and/or components are warranted for 3yrs./36,000mi. If damage to the PCM occurs it is warranted for 8yrs. 80,000 mi.

Another Problem with these units is the poppet valves themselves are prone to sticking. GM has a TSB, #87-65-07 that refers to this problem. It states that a customer may comment on a rough idle after start, when vehicle has sat overnight. The symptom may be intermittent and there may be a S.E.S light with misfire trouble codes. GM recommends that after proper diagnosis, a Port Fuel Injector Detergent may be used to free the poppet so it may resume normal operation.

PLEASE NOTE: When removing and installing the fuel meter body assembly, notice it is numbered on the sides to indicate poppet nozzle order. These number MUST match the injector poppet nozzle to corresponding cylinder. On a V-8, the lines cross, so pay close attention.

To remove a nozzle, squeeze the locking tabs and lift. The fuel meter body assembly is removed by releasing the bracket locking tab with a screwdriver.

LTS Fuel Injection Service has the capability to clean these injector/poppet assemblies and service the complete meter body unit including new pressure regulators. We also offer the complete unit with NEW INJECTORS.

Call Doug for more details.

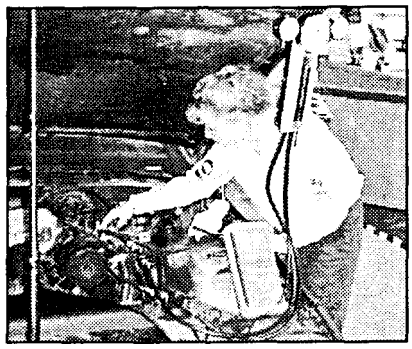
D.A.T.A. Center

DYNAMIC AUTO TEST ANALYSIS

FROM THE ANALYSIS SLEUTH
MICHELE POGUE

TOTAL FUEL PUMP TESTING

What do I mean by "TOTAL FUEL PUMP TESTING"?



Here's the case study. A 1987 Chevy Camaro with a 2.81 engine and a 5-speed came into the shop with the complaint that it stumbles in first gear and does all right in higher gears. Since it was a cold morning and the windows were frosty, I went out to warm the car before I took off on a test drive.

I noticed right away that the car cranked for a long time before starting and then immediately died several times before it would stay running on its own.

Once it was running, it seemed to idle very smooth. I decided to take the car for a quick test drive to verify the complaint. As soon as I pulled out on to the road, the car started bucking and backfiring and would only go about 5mph. Needless to say, I turned around and pulled right into the shop.

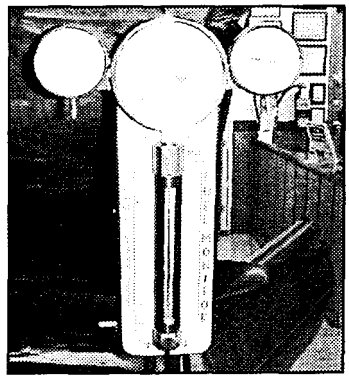


FIG. 1

I started with a visual inspection (after I found a hood prop) and noticed the vehicle was equipped with a Delco mass air flow sensor. As a "pattern failure" item, I thought I would do a tap test on the MAF and see if I could save a little time... no luck. So, I proceeded with a full system test. Everything on the test looked good; the engine was solid, had good vacuum and the ignition system checked ok. Now I decided it was time to check fuel pressure. Engine idling pressure was 30psi. (Fig. 1)

I thought it sounded a little low, but not enough to cause a problem. I looked up the spec in alldata and found key on pressure should be 40-47psi and engine idle pressure should be 30psi. Since my running pressure was normal and the customer complaint was lack of power, not hard starting, I ran a volume test. First I connected the tester with the pressure line from the tank coming in and the return line going back to the tank.

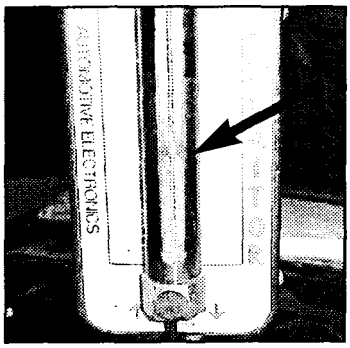


FIG. 2

This completely eliminated the rail, injectors and regulator from the test. From the ALDL, I powered up the fuel pump.

Note: This open, no load test shows pump volume in a non-restricted flow test.

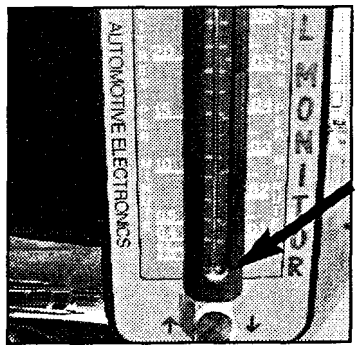


FIG. 3

The ball eventually came up, but was very low. (Fig. 2)

Next I connected the tester in series with the pressure line and hooked up the return to the regulator, and started the car.

This time with the car running the ball in the tube didn't even rise from the bottom of the tube. (Fig. 3)

Now I was sure the pump was defective. Since I had gone this far, I decided to do one last test-current ramp. The pattern was very uneven and the pump was drawing just under lamp. Way too low!!! (Fig. 4)

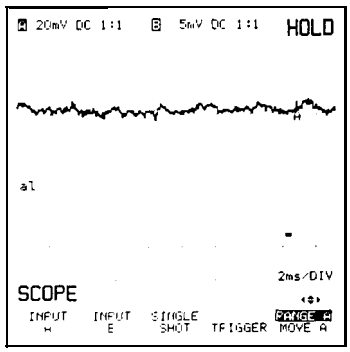
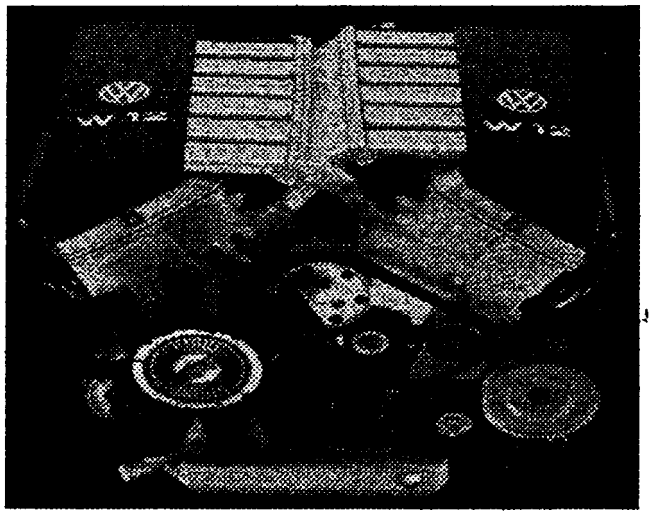


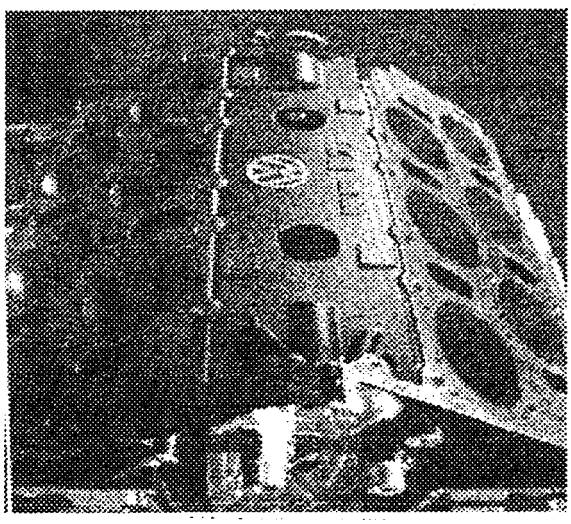
FIG. 4

I guess the moral to the story is always look up the spec. first! If I hadn't looked the spec up to begin with, after the initial key on pressure test, I would have proclaimed the pump good and started testing other things.

Also, if you don't have a pressure/volume tester ..GET ONE!

NEW TECHNOLOGY





Volkswagen has plans for a new engine to go in a new roadster.
The new engine is a 12 cylinder 5.6-litre engine that is basically two narrow angle VR6 engines sharing a single crankshaft at a 72-degree angle. This makes it one of the most compact 12-cylinder engines in the world. The engine develops 420 hp.

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