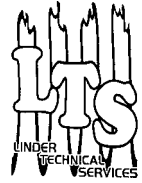


Networking

Newsletter



The “Krylon Special” or how to build a hot rod in 60 days!!

A little something different from me this month as I have been consumed by a project called the “Krylon Special”. The Special began as a 1918 Dodge Roadster body hanging in a friend’s garage and a warped vision of what it would look like going down the street some day.



As an avid hot-rodder I remember what hot rods used to be like (before the 50K fiberglass 32 Fords) and remember when a bunch of us guys hung out building cars with just spare (often free) parts and nothing else. This project started last winter when a friend had called me with a bucket T-frame project for sale as well as a roller w/ no body, just new homemade frame and a speedway motors suspension along with a disc brake S-10 Chevy rear axle etc. The price was fair and I bought it, promptly disassembled it and stored it away with my other treasures. The LTS Christmas party was at Michele’s new house and her friend, Jamie, had another piece of the puzzle: a newly rebuilt Chrysler slant six, bored 040 over with an Isky camshaft and twin Holley single barrel carbs. This was another deal too good to pass up and I bought the engine combo with transmission and all parts (including the twin dodge dart air cleaners). Early in June my friend, Denny, who owns a shop nearby called Hammer Art was trying to purchase an engine I had and a deal was put together for him to repair the rusty body and weld in all mounts for the engine and it would be an even trade. The only thing was, it had to be done and back to me in 30 days or NO DEAL. Denny agreed and was set to start the project in a couple of days. Terry, Dustin and I quickly put all the parts in a pile, made a roller chassis and took the stuff to Hammer Art so Denny could start on the job. A goal was set of when we wished to actually drive the project and away we went. The project design rules were fairly simple: just use what you have in the building or around the area and make a car. WOW, not sure I ever wish to do this again. I have to admit that later in the project I wished I had something else to work on as it consumed ever waking hour of my life for a few weeks! The chassis was quickly done and returned to us and the body work started with new lower metal, new door skins, a fab windshield and paint by Tyler (Bondo dude) at T&K Auto Body next door. We painted the engine, added an Offy valve cover (found on ebay) and rebuilt the carbs. Dustin (the krylon king) and Terry painted the parts with spray cans and reassembly was done a couple of times. Master brakes supplied the parts for the four wheel brake system and I added a power brake booster from a previous project. All in all this car was done in 60-70 days and all parts came from the garages and shops around us. Wally and his crew from Indy Auto performed the four wheel alignment last Friday and the car was off 1/4 of an inch on one side! (easily fixed with a single turn of an end joint). A few shake down runs have been made and I leave for my second show this morning and have plans of a trip to another car show in October consisting of a few hundred miles! I built this thing to drive and enjoy! Stay tuned for the continuing adventures of the “Krylon Special”!!

Analysis from the guest sleuth, John Thornton

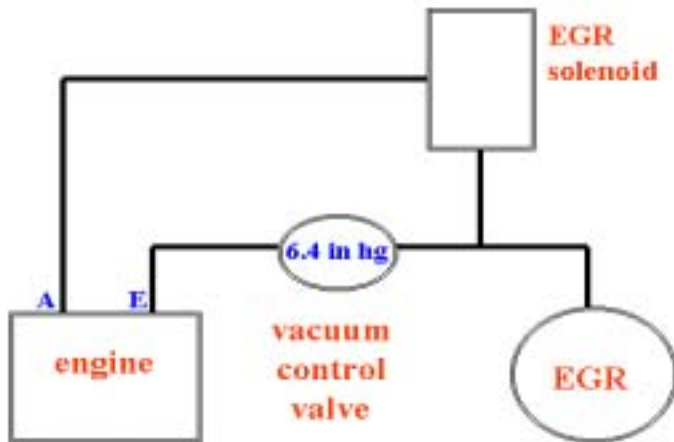
This month is the beginning of a 2-part case study given to us by John Thornton. Michele will be taking a break from writing newsletter articles until the first of next year, but John was kind enough to submit this to us to help fill in while Michele is taking a break.

The vehicle is a 1997 Mitsubishi Eclipse Spyder equipped with a 2.4L 16- valve SOHC engine and about 90,000 miles on the odometer. Customer complaint is MIL on with a code PO400 (EGR flow malfunction). The EGR solenoid has already been replaced in order to try and cure the problem. Using the Snap-On MT2500 scan tool, let's look at the freeze frame information:

```

1997 MITSUBISHI      A/C
2.4L L4 MFI         A/T
** FREEZE FRAME DATA. OK TO DRIVE. **
  OBD II DATA
ENGINE RPM_____1632 FUEL SYS1___OL DRV
COOLANT(BF)_____192 ST TRIM B1(%)__0.0
LT TRIM B1(%)___6.3 VEH SPEED(MPH)___47
    
```

Next, John consulted a diagram of this particular EGR system. While the Mitsubishi diagram looked sort of complicated, it showed that this system was like many others and consisted of a solenoid, an EGR valve and a vacuum control valve. In order to make it more simple for us, John has re-drawn this system. See the picture below:

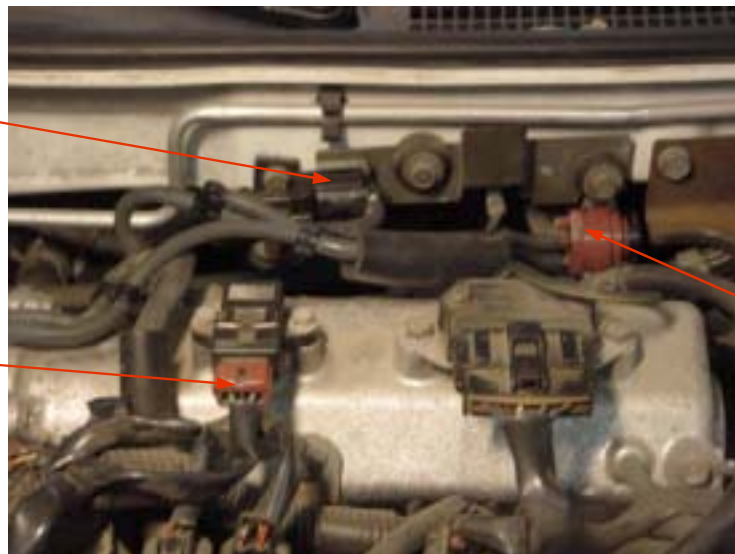


Here's how this system operates.

- ∅ Manifold vacuum is applied to the vacuum control valve from Port E.
- ∅ The vacuum control valve regulates vacuum to a measured 6.4”hg (The spec in Alldata was 6.7”hg).
- ∅ The EGR solenoid, when de-energized, bleeds manifold vacuum off to a vent at the throttle body Port A.
- ∅ When energized by the PCM, the EGR solenoid blocks the bleed and vacuum is applied to the EGR.

EGR Solenoid

Manifold Differential Pressure Sensor



Before we go any further, let's take a look under the hood and locate and identify the parts to this system.

Vacuum Control Valve

Fuel Injection Service Update from the “Wizard”



HAS THE SYSTEM BEEN CLEANED?

Here's a case where the tech must have been more concerned about who was going to win the Olympics than what was happening in his service bay. We sold a customer a set of injectors and when they sent the cores back, I just about had a heart attack. All of the injectors were plugged up at the filter. I also noticed that one of the injectors had previously been replaced. I had to call to find out if they knew what had happened to cause this. The tech said he hadn't noticed the filters when he replaced the injectors. So, I had to ask:
HAS THE SYSTEM BEEN CLEANED?



The phone was silent for a few seconds and then came the ultimate question “What do you mean?” I explained the from the looks of the injector filters, the entire fuel system was probably contaminated. He asked me “how do I clean it? I told him the steps that needed to be done to clean the system. When I hung up the phone I thought that this was I good time to cover a fuel system cleaning.



Often the question is asked about fuel system contamination. No, not where one or two injectors seem to be lean and fail a pressure drop test, but the incident where all or most of injectors are plugged. I have seen this caused by a few different factors. Some foreign material the entered the system at the tank or as one manufacturer representative told me “Our tanks were not compatible with some blends of fuel and it caused them to rust”. Whatever the cause, this is the worst-case scenario.

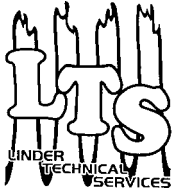
What can you do? Start at the tank, drain it, and then remove it. I recommend saving a gas sample to show the customer. The tank must be cleaned; some radiator shops will do this. The fuel pump will need to be replaced also. Remove the fuel filter and discard; you will need to install a new one of these too. Using the supply and return connections, hook up a *two line* fuel injection cleaning system. This will allow you to flush the lines and rail. This may be a lengthy process that takes an hour or two. Once the flushing process has gotten the system clean it's time to remove to the injectors. Remove the injectors and have them serviced off the car or just call LTS for a replacement set. Don't forget to check the system pressure to make sure there is no damage to the regulator.

If you are using a single line type fuel injection cleaning tool it's difficult to do a rail flush. So it might be a good idea to just go ahead and send the rail to us along with the injectors. We can clean the rail in our large ultrasonic tank and make the job that much easier for you.

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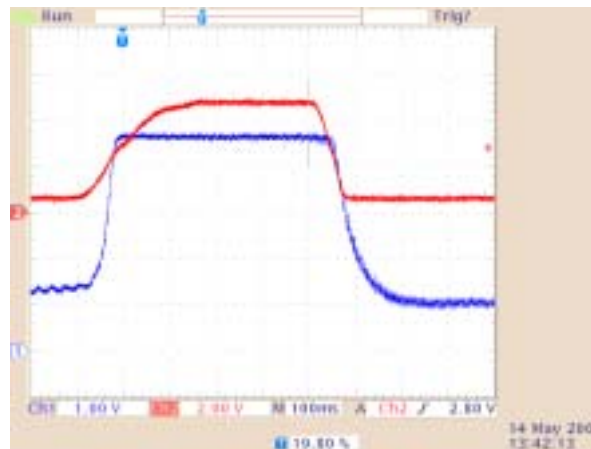


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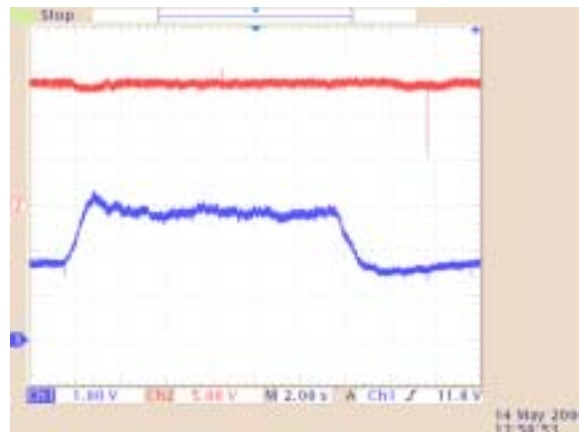
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Analysis (continued from page 2)

According to Alldata, it appears that the EGR monitor checks for flow on deceleration using the manifold differential pressure sensor. We don't know what level of vacuum or voltage change the PCM is looking for and we also don't know how long the PCM runs the EGR flow test on decel (although a monitoring time of 2 seconds is documented from the code info).



In order to verify that the manifold pressure sensor was working and would respond quickly to throttle movement, John did a quick W.O.T. snap in park. The picture to the right shows it appears to be very responsive. (TPS on top in red, Pressure sensor on the bottom in blue).



The next picture shows the EGR solenoid on top in red and the pressure sensor again at the bottom in blue. This is what happened when John used a mityvac to open the EGR valve at idle. It made a significant difference in both engine rpm and also in manifold pressure. Maybe not the best test, but it tells us that some EGR flow occurs.

We're out of room! Watch for the conclusion in the August newsletter!!!!!!!!!!!!!!