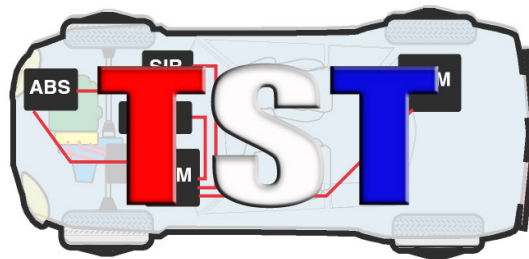


March 2009



Technicians Service Training

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G Truglia

April 13th - 16th

*Cam and Crankshaft Diag-
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John Thompson

May 4th - 7th

Diagnostic Essentials

Mark Warren

Editor

Jerry "G" Truglia

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Stalling 2004 Chrysler Pacifica

I was called by a local dealership to diagnose a recently sold 2004 Chrysler Pacifica that stalls after it starts. When the outside ambient temperatures reach 30 to 40 degrees F, the vehicle will run and then stall repeatedly, rendering the vehicle undrivable.



First, I had to gather some background information about the car. This Chrysler Pacifica has a 3.5 liter engine with 52,000 miles. The Engine Control Module (ECM) is the NGC3 (New Generation Controller), which combines both the PCM and TCM into itself. Lastly, just the day before the throttle plate had been cleaned by the technician—but the problem remained.

So, I performed a visual inspection but found no obvious problems. Afterward, I checked for DTCs and found two stored in memory, but they were codes for fuel level sensor performance issues. Next, I checked the scan tool data (PIDs) with the key off and then started the vehicle. I monitored the scan data up to and during the engine stalling event, but *still* there was nothing that indicated a problem.

Now it was time for me to use my "Eight" channel labscope (EScope). I wanted to back probe into the **CKP** (crankshaft sensor) signal, **CMP** (camshaft sensor) signal, **ECT** (engine coolant sensor) signal, **MAP** (manifold absolute pressure sensor) signal, **Ignition** coil control circuit, **Injector** control circuit, **5-volt** reference, and **reference** ground circuits.
(Con't on page 3)

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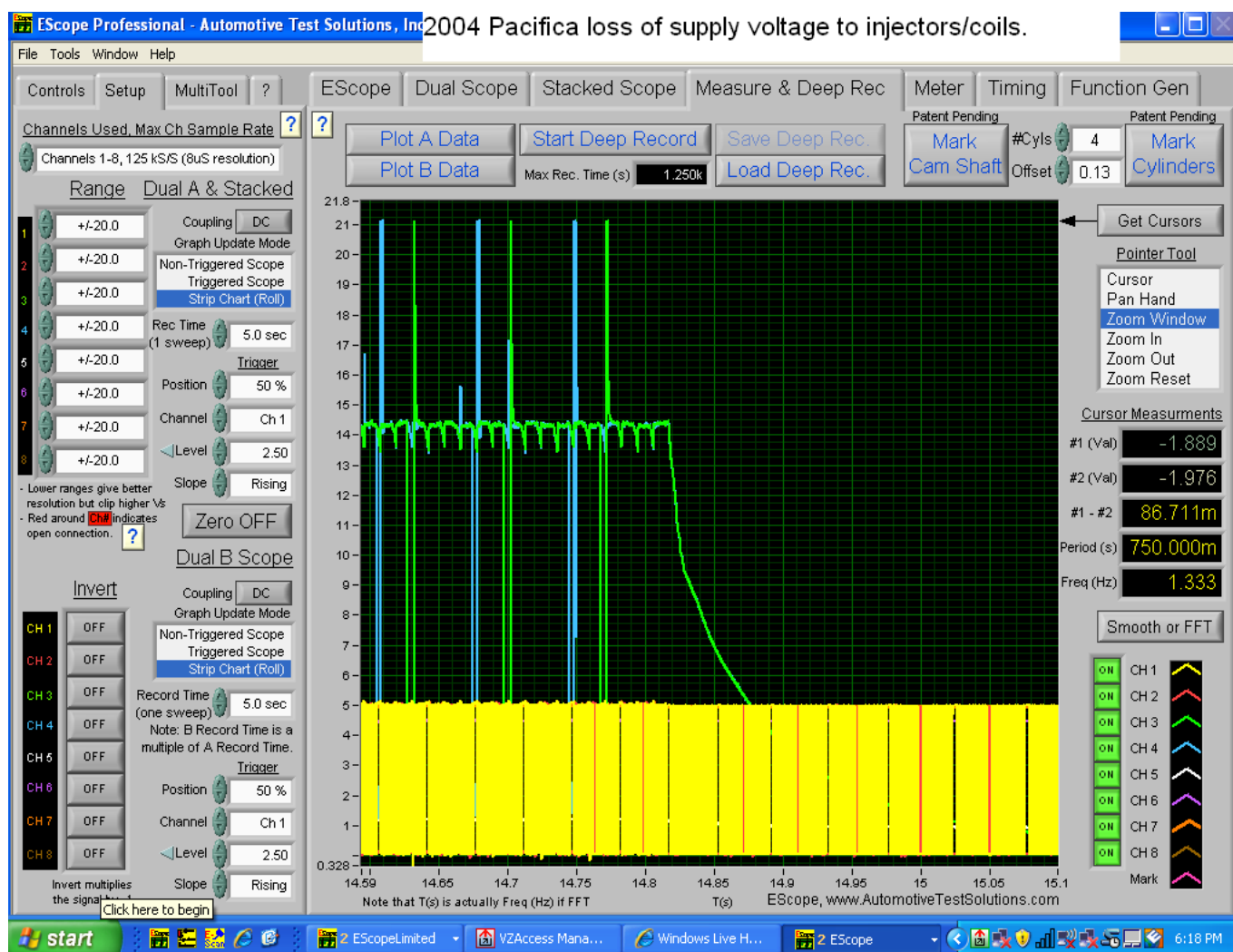
Jerry “G” Truglia National Instructor & owner of A.T.T.S. Inc.

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Stalling 2004 Chrysler Pacifica (con't from p. 1)

The best place to splice into these circuits was at the NGC3 control module itself. It is located in the left front inner fender, mounted to the frame rail, behind the windshield washer reservoir. To gain access to it, the left front tire and inner fender shielding needs to be removed.

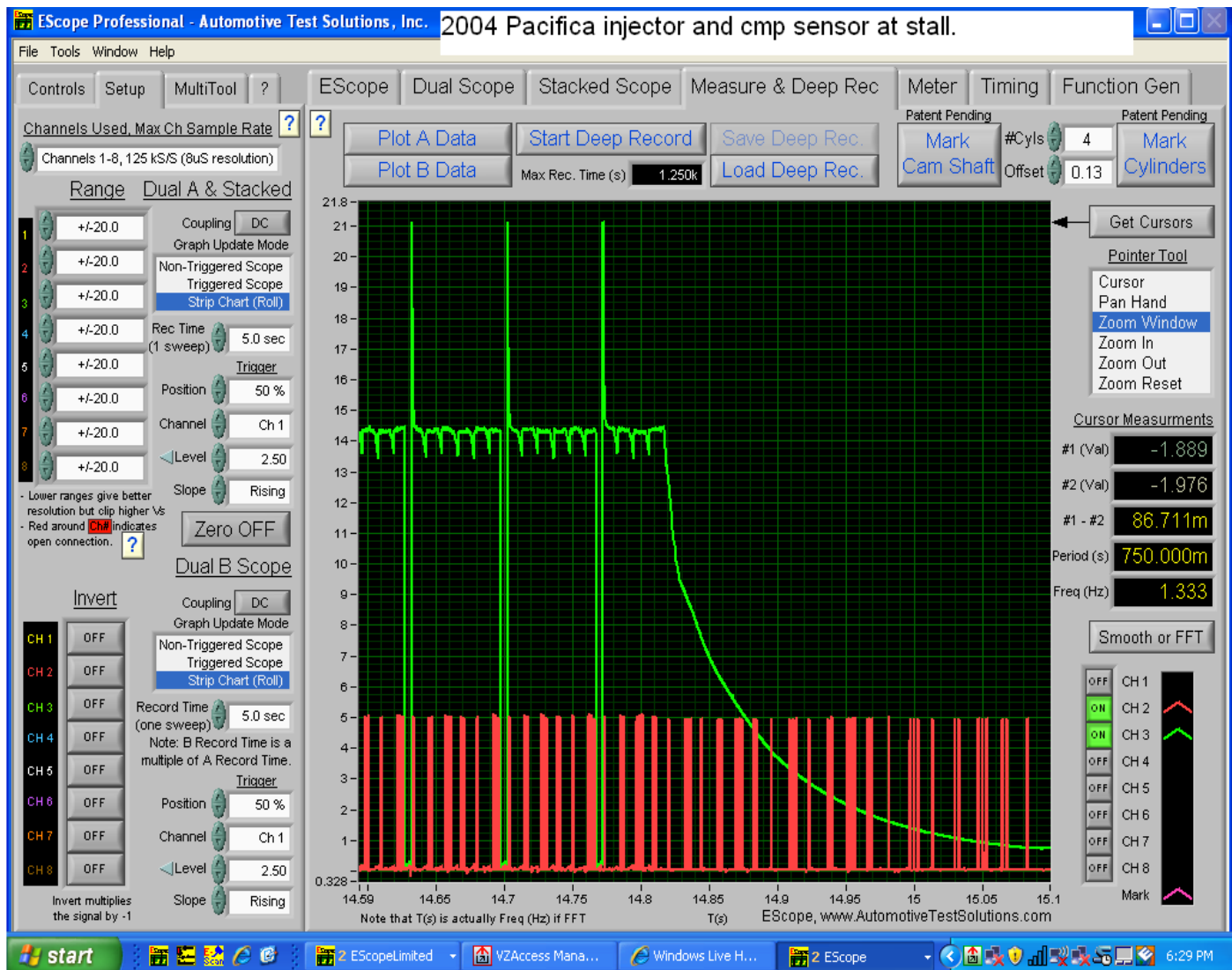
Once I gained access to the PCM and back probed the circuits I wanted to monitor, I started the vehicle and recorded these circuits until the vehicle stalled.



The yellow channel is the CKP sensor, the green channel is #6 injector, and the blue channel is the #6 ignition coil. We can see the drop off of the supply voltage for the #6 injector and ignition coil, which results in the stalling condition.

(Con't on page 4)

Stalling 2004 Chrysler Pacifica (con't from p. 3)



Here I stripped away all the channels besides the red channel representing the CMP signal and the green channel for the #6 injector. I did this to show the CMP sensor signal was present and that we did not look over it trying to find what was causing the stall. In fact, the loss of the CMP signal will not result in a stall—only a MIL lamp and DTC with the new style NGC3 control unit.

So, now we need to find out what circuit supplies power to the injectors and ignition coils. I used the applicable Chrysler wiring schematic and it showed the ASD (automatic shut down) relay supplies. After consulting the schematic, I confirmed that the source voltage was the same as in the previous Chrysler model years.

As a result, I decided to move on to the ASD relay circuits. After starting by loading the 2 voltage supply circuits to the ASD relay with a headlamp (this checks the integrity of the circuits), I checked the ASD relay coil circuit controlled by the NGC3 controller as well as the ASD voltage supply circuit to the injectors/coils.

(Con't on page 6)

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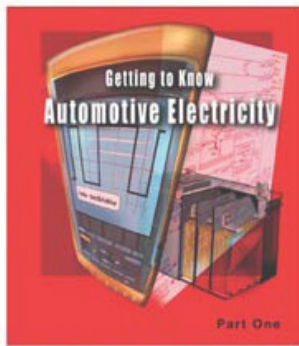
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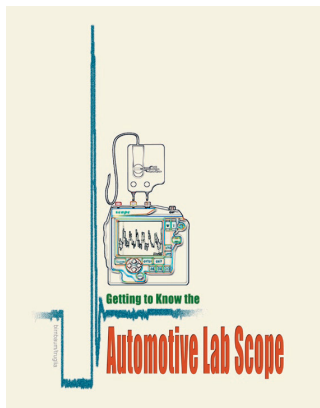
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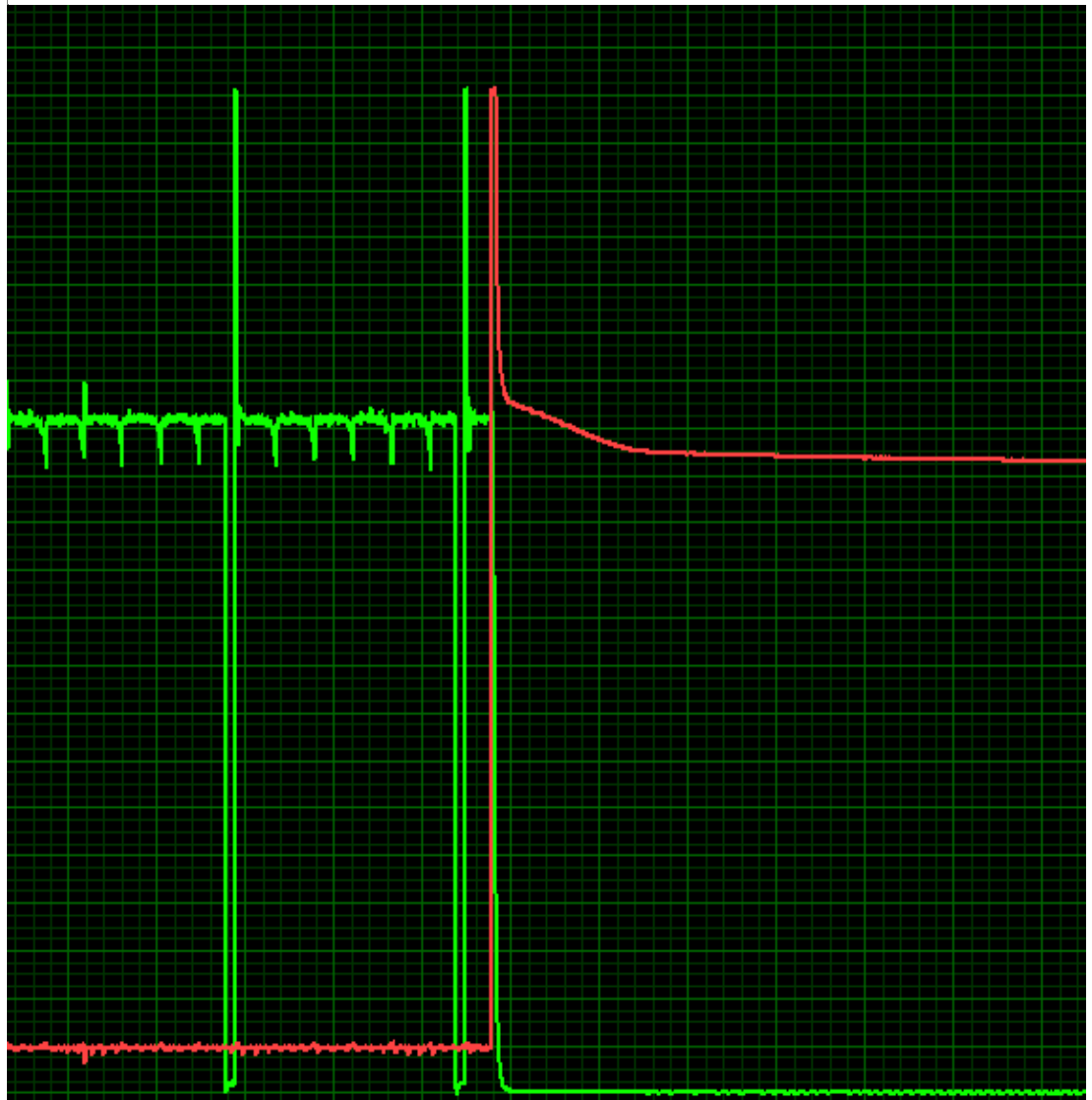


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Stalling 2004 Chrysler Pacifica (con't from p. 4)



The red channel is the ASD relay coil controlled by the NGC3 controller and the green channel is the #6 injector circuit. As we can see at the time of the stall, the NGC3 controller releases the ground control for the ASD relay which in turns eliminates the supply voltage for the #6 injector.

Now, I wanted to know if the ASD relay control circuit was the only circuit being affected, so I physically jumped the ASD relay to supply uninterrupted source voltage to the injectors and coils. I started the vehicle in order to see if the stalling had been eliminated, but while the vehicle was still cold the vehicle stalled out. Taking this into account I discerned that the NGC3 controller was losing its ability to control the coils and injectors when cold.

(Con't on page 7)

Stalling 2004 Chrysler Pacifica (con't from page 6)

It appeared to me that the NGC3 controller was losing its ability to control the coils and injectors when it was too cold. In order to confirm my diagnosis, I placed the PCM/NGC3 controller in the freezer overnight to isolate that *it* was the cause of the cold-start problem.

The next morning I reinstalled the PCM back into the vehicle and attempted to start it. It wouldn't start. Then I took a heat gun and slowly warmed up the PCM until I created the start-and-stall condition. Then, I heated the PCM up a little longer until the vehicle started and ran without stalling.

I had the service department order a new PCM/OEM NGC3 controller from the dealer and programmed it when it arrived. The vehicle has been running great ever since.

Article courtesy of David Decourcey (Mobile Technician, Instructor, and ASE Master Certified L1, TST Associate)

Jetta Electrical Problems: 2001 VW Jetta With Problems

I was called to a body shop to look at a 2001 VW Passat. The customer's complaint was that the door and windows were not working. The vehicle had been in an accident and there was some wiring repairs done to the vehicle.



So, I went over the wiring repairs with the technician. I printed out a wiring schematic and performed a visual inspection. Afterward, I had the technician remove the driver's door panel. I wanted to start my diagnosis by load testing the power and ground circuits for the door controls.

The power feed circuit to the door was faulty, but the ground circuit tested okay. So, using the wiring schematic, I moved on to the circuit breaker in an auxiliary panel under the dash on the driver's side. I located this circuit breaker for the doors and it tested okay. Next, the wiring schematic showed that there was a splice located in the power circuit after the circuit breaker. The power from the circuit breaker supplies power to all the doors at that splice.

(Con't on page 8)

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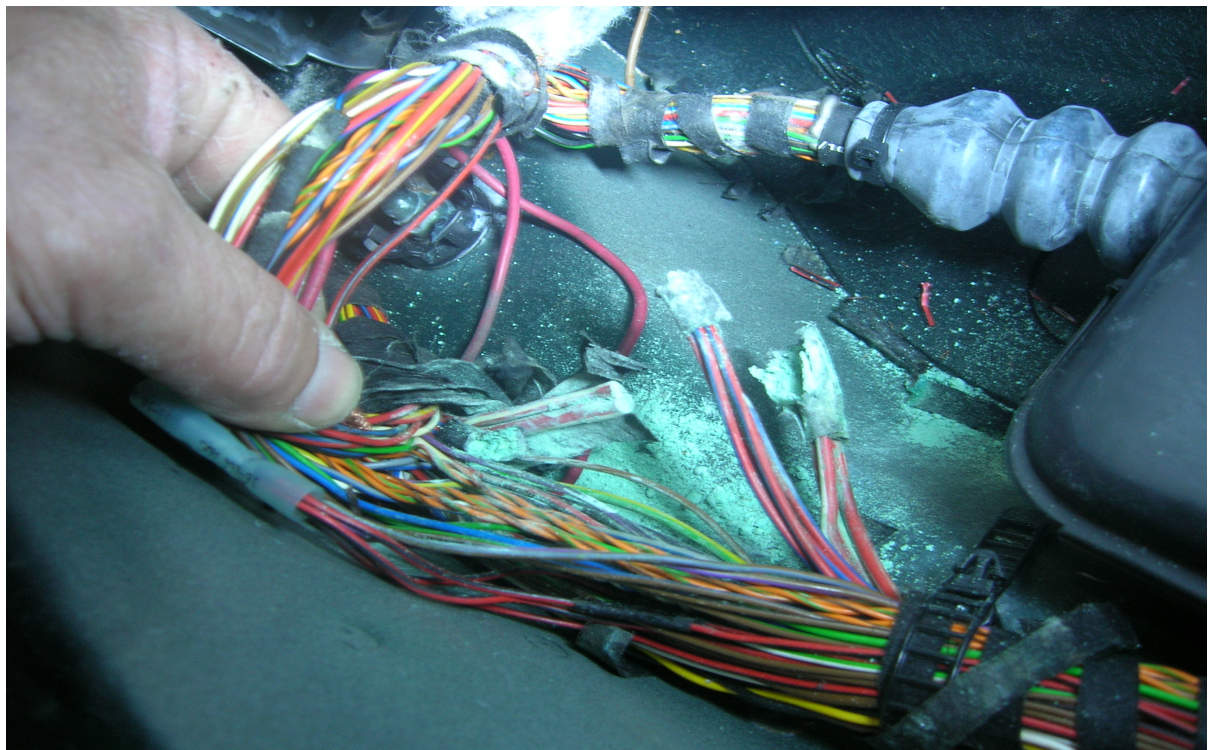
**Thank you,
G Truglia**

2001 VW Jetta With Electrical Problems (con't from page 7)

Alldata described the location of the splice as being in the rear of passenger compartment. However, after removing the rear seat and lifting up the rug there was no splice to be found in the rear of the vehicle.

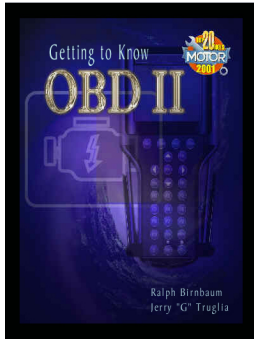
We traced the harness back to the front of the vehicle. The splice was located in the harness (just before the A-pillar) going to the Body Control Module located on the floor in front of the driver's seat.

The soldered splice was so corroded that it bled through the harness covering. After unwrapping the wiring harness, I found out that the splice was located on the bottom side. Any moisture under the rug or insulation would start the corrosion process immediately.



Did you notice how dry the sheet metal is in this picture? It was obviously wet at one time or another. I'm seeing a lot of corroded soldered wiring splices on VWs lately. So I thought this case study would be a good example of what I have been seeing for some time now.

(Con't on page 9)



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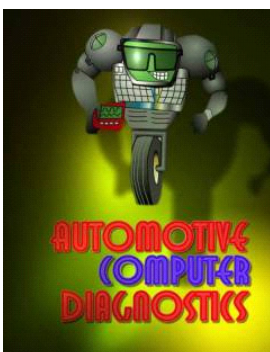


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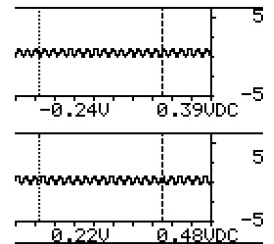
Ranger ABS Misbehavior

Some time back, we had a 2000 Ranger 4X4 pick-up with 3-channel ABS and it had false ABS activation on every stop. It was almost impossible to stop the truck in the last 10 or so feet. Suspecting I was dealing with one or more weak wheel speed sensors, I set out to do what we generally do with a false ABS problem.

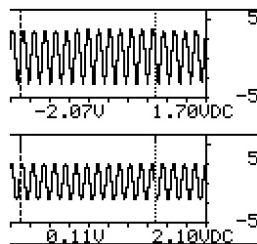
I connected a scan tool and put up dump or isolation valves on all the circuits. Then I went for a ride to see which valves were active during the false stop. This indicates which wheel the controller “thinks” is skidding. Generally, the WSS on that wheel will be weak or have excessive air gap between itself and the tone ring, yielding a low AC sine wave amplitude (voltage) on a scope or GMM.

I found that we had no data for any isolation or dump valves. My PDS showed dashes and the NGS had “N/A.” My buddy Jeff found that the valves would work when commanded in bi-directional mode. So, I noticed that I'd lose ABS data & communication when the system operated during an ABS stop. Loading both powers & grounds at the ABS module with a big halogen lamp showed no issues—must be a bad ABS module, I thought.

I always like to do a search for TSBs, and look for any similar problems in the Identifix “Direct Hit” database as well as poking around iATN’s knowledge base section when I’m faced with something new or strange. I found an identical post in Identifix that was solved with replacement of both front WSSs. The post also noted the same communication loss that we experienced. I scoped our sensors and they never got over 1V peak to peak.



Clearly, the sensors are active, but weak. I felt that I could rule out circuit issues in the sensor wiring, as we had activity on the scope.



I had a good WSS sensor on hand that I'd removed from a comparable Explorer, so I figured I'd install that in one front wheel hub and see what I had for amplitude while on the lift. Just spinning the hub generated more voltage that I had with the old sensor. So, I ordered another sensor for the opposite side, installed it, and took a ride. The false ABS symptom was gone and I had acceptable signal strength from both sensors.

You'll note a variation in amplitude from side-to-side. Although it bothered me initially, it didn't present a problem. You'll notice 5-7 VAC peak-to-peak versus the 1VAC we had with the old sensors. I could have traded the good used sensor for another new one but the customer wasn't going to spend more money.

I was still concerned and curious about the scan tool loss of communication and lack of valve data. It seemed strange to me, particularly with 2 different OE scan tools. A few days later we had a 2002 Mazda B3000 (rebadged Ranger) in for performance issues. My buddy Jeff checked and found the same lack of valve data and loss of communication as we had with the 02 Ranger. Weird for sure. Guess it's “normal” on this system. Hope this prevents someone from unnecessarily replacing a good ABS module as I was about to on the Ranger.

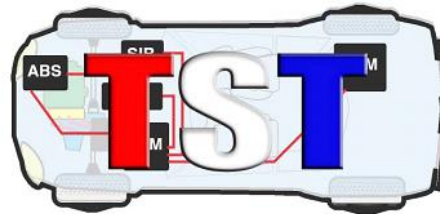
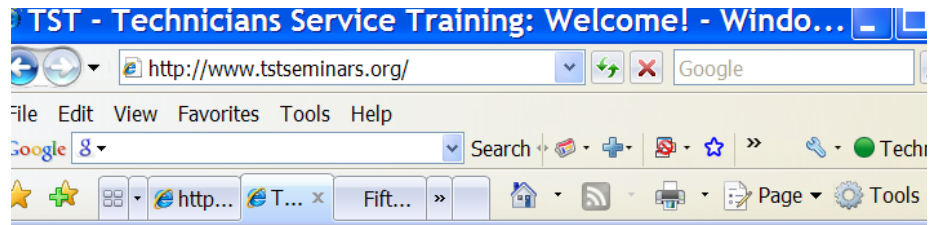
Article courtesy of Rusty Savignac of Paxton Garage (ASE CMAT, CMTT, L-1, L-2)—email: seapig@bigplanet.com

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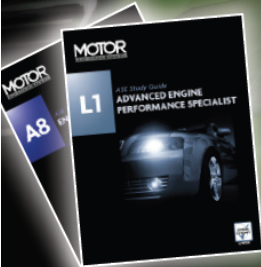
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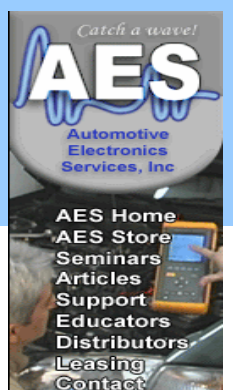
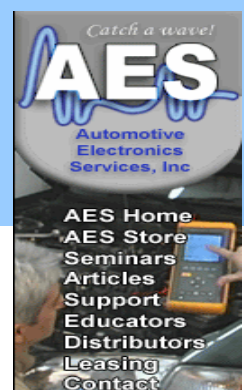
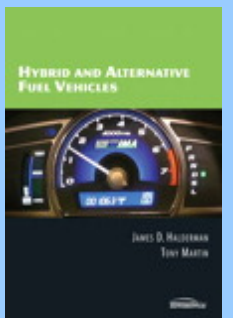
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