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Volvo V70 R - 2003 - Fuel Pressure Fault

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Volvo V70 R - 2003 - Fuel Pressure Fault

by [STC](#) » Tue Aug 23, 2016 10:14 pm

I have this throwing a 211A - Fuel Pressure Regulation Fault.

They have kept the local parts supplier busy, Fuel Pump & Fuel Pressure sensor and all shiny and new 😊

It has a Fuel Pump Control Module Under the car next to the Fuel filter (Which is gleaming, shiny, new & genuine)

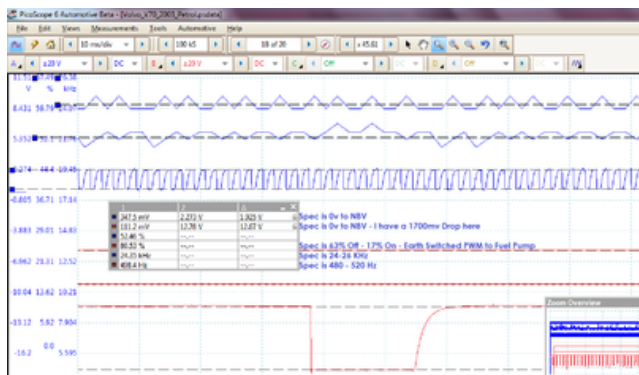
5 Wires.

1. Duty Cycle Command from ECU

2 & 3. Power and Ground from Power Distribution. Ground is Good under load but the Positive has a Volt Drop of nearly 2v. It comes from a relay so that needs to be looked at, however I did feed it directly from the battery eliminating the drop and is not the cause of this DTC, I will deal with that next time.

4. Positive Feed to Fuel Pump

5. Duty Cycled Ground to Demand Controlled Fuel Pump



Channel A BLUE is the Ground Duty Cycle to the Pump I have added maths channels for Frequency and Duty

Channel B RED is ECU Command Duty Cycle. Again I have added maths channels for Frequency and Duty.

Clearly the input is good and the output to the pump is bad and this Control Unit is Donald Duck ? The Volt drop needs to be addressed. Wiring, Relay, Fuse Contact ???

My concern is how does the ECU know to throw that code ?

Is it looking at Duty Cycle or Pressure sensor on the rail ?? Perhaps a relationship between the two ??



[STC](#)

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Posts: 790

Joined: Sun Sep 13, 2015 4:10 am

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [steevegt](#) » Wed Aug 24, 2016 1:29 am

Have you check the current on the feed wire to the fuel pump and also on the feed to the fuel pump module?

Just guessing, but a short (not dead short) on the pump feed wiring to ground, could cause the high voltage drop on the power feed. That could also cause the 2 volts that we see on the A channel. If it is only getting 2 volts to the pump, we could only see 2 volts on the ground when not on. This is very unlikely I guess...

I think it is more likely that It could be a short on the ground wire to the pump, putting the pump at full speed all the time. That explains the voltage drop and the 2 volts max on the ground wire. Maybe someone been there and did that before trying to solve something? If the code is set because of the pressure (from pressure sensor) not matching the command (I believe it is the only way) that is explained too. The short could be inside the module also...

A current measurement could refute or validate this...

[steevegt](#)

TwoWaves



Posts: 66

Joined: Wed May 13, 2015 12:05 am

[Top](#)

[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [STC](#) » Wed Aug 24, 2016 10:29 am

Good thinking,

I had it my head that the short was internal within the module, indeed it could be in the wire from module to pump !!!

I couldn't see a PID for fuel Pressure, that threw me a bit.

Last edited by [STC](#) on Wed Aug 24, 2016 4:21 pm, edited 1 time in total.



[STC](#)

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Posts: 790

Joined: Sun Sep 13, 2015 4:10 am

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [volrem](#) » Wed Aug 24, 2016 1:18 pm

Hi

Could you please give me the VIN code (via PM if needed).

And post psdata file if possible.

[volrem](#)

TwoWaves



Posts: 209

Joined: Fri Jan 03, 2014 5:43 pm

Location: Estonia

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [STC](#) » Wed Aug 24, 2016 4:14 pm

YV1SW52X742367280

Attachments

 [Volvo_V70_2003_Petrol.psd](#)
(2.19 MiB) Downloaded 73 times



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Posts: 790

Joined: Sun Sep 13, 2015 4:10 am

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [volrem](#) » Wed Aug 24, 2016 8:01 pm

Hi

To be precise this car is V70 MY2004 with B5254T4 engine. It's important because as far as I know MY -2003 had no fuel pump control module.

Anyway this fault code has actually four sub-types. Faulty signal, signal missing, signal too high and signal too low. These sub-types help to go in right direction but unfortunately can be read out only with original Volvo diagnostic tool (DICE + VIDA).

Faulty signal is stored if target pressure is not reached while control is maxed out.

Signal too high/low is stored if measured pressure deviates too much from target pressure.

Signal missing is stored if pressure pulses too much.

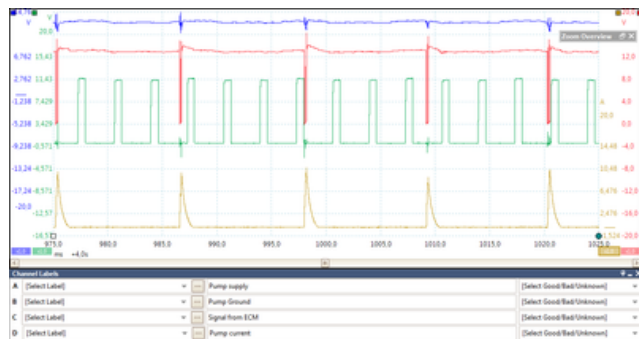
First thing is to check that actual pressure (measured with gauge) is the same with pressure sensor value in diagnostic tool.

Duty cycle from ECM should be about 35% (+/- 5) but you have about 81% so it seems to be maxed out.

Control signal to fuel pump should also be PWM between 0 and 12V. I don't like 2V range you have.

Measure pump power and ground at PEM and add current also and post here.

Good one should look something like this:



PEM good

Oh and when replacing PEM (Pump Electronic Module) it now has to be installed into spare wheel well. New wiring needed also. There is an old bulletin for that from year 2008 or even earlier.

[volrem](#)

TwoWaves



Posts: 209

Joined: Fri Jan 03, 2014 5:43 pm

Location: Estonia

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [STC](#) » Thu Aug 25, 2016 1:04 am

First thing is to check that actual pressure (measured with gauge) is the same with pressure sensor value in diagnostic tool.

That is the problem, I could not see a PID for Fuel Pressure, neither Actual, Desired or ECU Duty to PEM using KTS. Next time I will try Snap On or Autocom. We will see ?

Control signal to fuel pump should also be PWM between 0 and 12V. I don't like 2V range you have.

Alas we agree 😊

Indeed with the car running (alternator charging at ~14v) with the Volt Drop on the Positive Side (nearly 2v) that wire is still carrying 12v loaded with the pump and a 21w bulb. With the Earth switching at 2v, that is still 10v (12v minus 2v) potential difference at the pump at 83% duty.

I did look at Injector durations. I expected to see 2.6 - 2.8 (from experience - not technical data) and they were steady at 2.1ms. Although I accepted that figure as ok at the time tied with it being in "Closed Loop" and Lambda switching between 0.98 - 1.02.

Assuming my expectations were right or close, we have more evidence that Fuel Pressure is higher than desired and the Controller is able to keep Lambda happy by strangling the Injection events.

Measure pump power and ground at PEM and add current also and post here.

My Customer has sourced a used PEM which will arrive in a day or so. When I go back I will first test to confirm the ground wire to fuel pump is not shorted to ground or contaminated.

I have a feeling it will get fixed next time. I can smell it in the air 😊

Then I will get Before & After Captures, Post & Upload to Library.

Volrem, Steevegt.

Thank you for your help, advice and information.

Will update soon



[STC](#)

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Posts: 790

Joined: Sun Sep 13, 2015 4:10 am

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [volrem](#) » Thu Aug 25, 2016 7:21 am

STC wrote: That is the problem, I could not see a PID for Fuel Pressure, neither Actual, Desired or ECU Duty to PEM using KTS. Next time I will try Snap On or Autocom. We will see ?

Have you selected 2003 or 2004 model in KTS? Since 2003 doesn't have PEM possibly these PIDs are not listed.

[volrem](#)

TwoWaves



Posts: 209

Joined: Fri Jan 03, 2014 5:43 pm

Location: Estonia

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [STC](#) » Thu Aug 25, 2016 11:09 am

Have you selected 2003 or 2004 model in KTS? Since 2003 doesn't have PEM possibly these PIDs are not listed.

Good thinking Batman 😊

Will try that. thanks again !

[STC](#)

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Posts: 790**Joined:** Sun Sep 13, 2015 4:10 am[Top](#)

[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [STC](#) » Fri Aug 26, 2016 11:31 pm

As you know I used Bosch KTS on this car, and chose the Auto ID. Out of 3 options Motronic ME 7.0.1 - V1, V2, & V3 it chose V2.

I have just looked with KTS in Demo mode and only V3 had PIDS for Fuel Pressure Actual, Desired & Pump Duty.

The option for the Model Year is 03 3003 to 07/2007 with 2 sub headings: to 08/2004 & 09/2004 on. The UK number plate ??03/ ??? suggests it was registered between 01/03/2003 and 31/07/2003.

Being a Bosch Tool and a Bosch ECU in the car how could that possibly go wrong! It is usually very reliable. And it did give me some good info and specs with regard to Duty Cycle, Frequency, Accurate Wiring Diagrams, Location of PEM, Fuses, Relays

I have not tried communicating with the car and forcing it in as a V3 yet so I may need to eat those words.....

Are you able to tell which version it is, for sure, from your database ??

[STC](#)

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Volvo V70 R - 2003 - Fuel Pressure Fault

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[Re: Volvo V70 R - 2003 - Fuel Pressure Fault](#)

by [volrem](#) » Sat Aug 27, 2016 6:40 pm

Hi

I have never used KTS so I'm not familiar with this tool. OE scanner reads out VIN and selects correct profile. And then communication is selected to match read out diagnostic ID of each module. So I don't know what version in KTS is correct.

Your model year is 2004 (position 10 in VIN code).

09/2004 would be already model year 2005 and this would not work. Till 2004 this car had 250 kbit High Speed CAN network and from 2005 there is 500 kbit High Speed CAN network.

If Bosch won't display these PIDs then I would suggest using different tool. Not sure but perhaps EOBD would display pressure at least.

[volrem](#)

TwoWaves

**Posts:** 209**Joined:** Fri Jan 03, 2014 5:43 pm**Location:** Estonia[Top](#)[Previous](#)

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