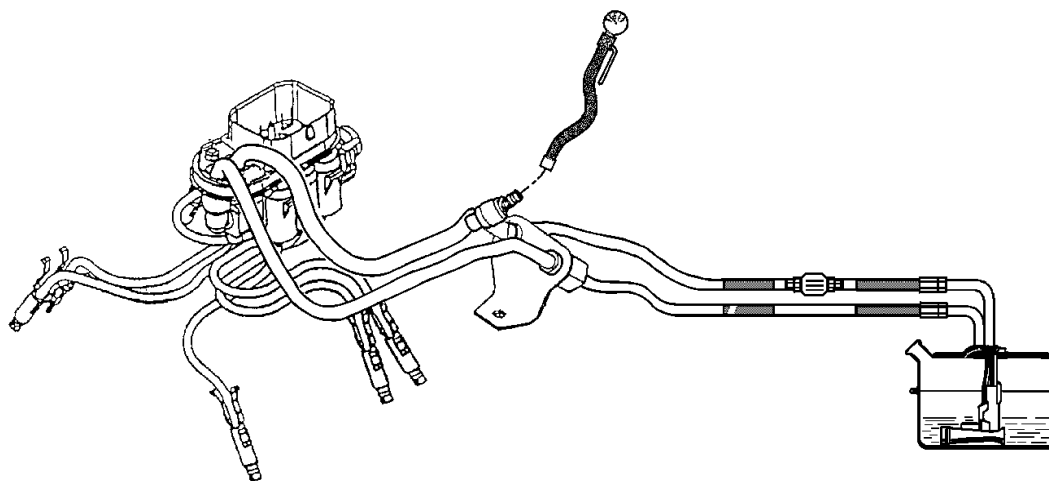
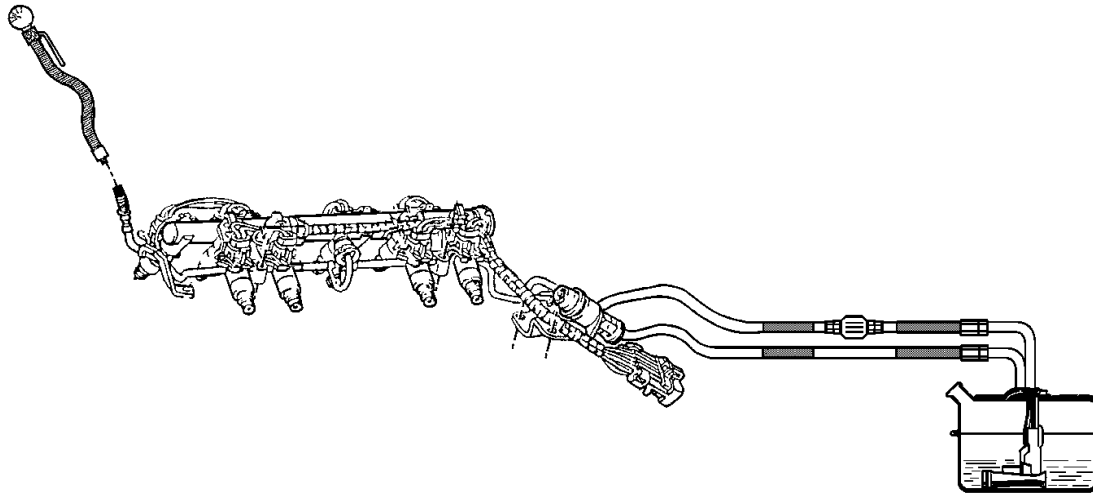


Fuel System Diagnosis (System Check)





Circuit Description

When you turn ON the ignition switch, the Vehicle Control Module (VCM) turns ON the in-tank fuel pump. The pump remains ON as long as the engine is cranking or running and the VCM is receiving reference pulses. If there are no reference pulses, the VCM shuts the fuel pump OFF within 2 seconds after the ignition was switched to the ON position or if the engine stops. The VCM will also turn ON the fuel pump for 2 seconds when the ignition is turned to the OFF position.

An electric fuel pump pumps the fuel through an in-line filter to the Central SFI unit. The pump is attached to the fuel level meter assembly inside of the fuel tank. The pump is designed to provide fuel pressure above what is needed by the fuel injectors. The pressure regulator keeps the fuel available to the injectors at a regulated pressure. Unused fuel is returned to the fuel tank by the fuel return pipe.

Diagnostic Aids

Tools Required

- J 34730-1A Fuel Pressure Gage in J 34730-E or
- J 34730-1A Fuel Pressure Gage with J 34730-250 Fuel Pressure Adapter Kit.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2. Wrap a shop towel around the fuel pressure connection to absorb any small amount of fuel leakage that may occur when installing the fuel pressure gauge. Turn ON the ignition, the fuel pressure should be 415-455 kPa (60-66 psi) for the Central SFI and 385-430 kPa (56-62 psi) for

the SFI. This pressure is controlled by a spring pressure within the regulator assembly.

4. The fuel pressure that continues to fall is caused by one of the following items:
 - The in-tank fuel pump check valve not holding.
 - A partially disconnected fuel pulse dampener (pulsator).
 - The fuel pressure regulator valve leaking.
 - A central SFI injector and poppet valve leaking.
 - An SFI injector is leaking
5. When the engine is idling, the manifold pressure is low (high vacuum) and is applied to the fuel pressure regulator diaphragm. This will offset the spring and result in a lower fuel pressure. This idle pressure will vary somewhat depending on the barometric pressure; however, the pressure idling should be less indicating the pressure regulator control.
16. The fuel pressure less than 415 kPa (60 psi) for Central SFI or 385 kPa (56 psi) for SFI, falls into the following 3 areas:
 - A regulated pressure but less than 415 kPa (60 psi) for Central SFI or 385 kPa (56 psi) for SFI. Amount of fuel to injector OK, but pressure is too low. System will run lean and may set a DTC. Also, hard starting cold and overall poor performance or may not start at all. Refer to Engine Cranks but Does Not Run
 - A restricted flow causing pressure drop -- Normally, a vehicle with a fuel pressure of less than 300 kPa (44 psi) at idle is undrivable. However, if the pressure drop occurs only while driving, the engine will normally surge then stop running as the pressure begins to drop rapidly. This is most likely caused by a restricted fuel line or plugged filter.
 - A leaking or contaminated pressure regulator valve or seat interface may not allow the regulated pressure to be achieved. Refer to .

22. Notice: DO NOT allow the fuel pressure to exceed 517 kPa (75 psi). Excessive pressure may damage the fuel system.

Restricting the fuel return line allows the fuel pressure to build above regulated pressure. With the battery voltage applied to the fuel pump test terminal, the pressure should rise above 455 kPa (66 psi) for Central SFI 430 kPa (62 psi) for SFI, as the valve in the return line is partially closed.

Step	Action	Value(s)	Yes	No
1	<p>Important: Before clearing DTCs, use the scan tool in order to record the freeze frame and the failure records for reference because the Clear Info function will lose the data.</p> <p>Was the Powertrain On-Board Diagnostic (OBD) System Check performed?</p>	--	Go to Step 2	Go to Powertrain On Board Diagnostic (OBD) System Check
2	<ol style="list-style-type: none"> 1. Install the fuel pressure gauge J 34730-1A or the equivalent. 2. Turn off the ignition for 10 	Central SFI - 415-455 kPa	Go to Step 3	Go to step 9

	<p>seconds with the A/C off.</p> <ol style="list-style-type: none"> Turn ON the ignition. The fuel pump should operate for 2 seconds. Monitor the fuel pressure with the fuel pump running. It should measure within the specified value. <p>Important: The ignition may have to be cycled on more than once in order to obtain the maximum fuel pressure.</p> <p>Is the fuel pressure within the specified value?</p>	<p>(60-66 psi)</p> <p>SFI - 385-430 kPa (56-62 psi)</p>		
3	<ol style="list-style-type: none"> Turn off the ignition for 10 seconds with the A/C off. Turn ON the ignition. The fuel pump should operate for 2 seconds. Monitor the fuel pressure after the pump stops running. The pressure may vary a few pounds then the pressure should hold steady. <p>Does the fuel pressure hold steady within the specified value?</p>	<p>Central SFI - 415-455 kPa (60-66 psi)</p> <p>SFI - 385-430 kPa (56-62 psi)</p>	Go to Step 5	Go to Step 4
4	<ol style="list-style-type: none"> Turn off the ignition for 10 seconds with the A/C off. Turn the ignition ON. Block the fuel pressure line by pinching the flexible hose. The pressure should hold steady. <p>Does the fuel pressure hold steady within the specified value?</p>	<p>Central SFI - 415-455 kPa (60-66 psi)</p> <p>SFI - 385-430 kPa (56-62 psi)</p>	Go to Step 6	Go to Step 8
5	<ol style="list-style-type: none"> Start the engine. Idle until the engine reaches the normal operating temperature. Open the throttle quickly. Monitor the fuel pressure. The fuel pressure should approach the specified value. 	<p>Central SFI - 415-455 kPa (60-66 psi)</p> <p>SFI - 385-430 kPa (56-62 psi)</p>	Go to Driveability Symptoms	Go to Step 8

	Is the fuel pressure at the specified value?			
6	Check for a partially disconnected fuel pulse dampener (Pulsator). Was a problem found?	--	Go to Step 7	Go to Step 13
7	Repair connection at the fuel pulse dampener (pulsator). Refer to <i>Wiring Repairs</i> in Engine Electrical. Is the action complete?	--	Go to Step 28	--
8	Inspect the fuel feed line between the pinch and the throttle body. Was a problem found?	--	Go to Step 27	
9	<ol style="list-style-type: none"> 1. Turn off the ignition for 10 seconds with the A/C off. 2. Turn ON the ignition. The fuel pump should operate for 2 seconds and then turn off. 3. Monitor the fuel pressure after fuel pump stops running. Is fuel pressure present?	--	Go to Step 14	Go to Step 10
10	<ol style="list-style-type: none"> 1. Turn off the ignition. 2. Connect a 10 amp fused jumper wire from B+ to the fuel pump test terminal. 3. Listen for the fuel pump running. Does the fuel pump run?	--	Go to Step 11	Go to Fuel Pump Circuit Diagnosis
11	Perform the following checks: <ul style="list-style-type: none"> • Plugged in-line fuel filter • Plugged fuel pump strainer • Restricted fuel line • Disconnected fuel pulse dampener (pulsator) 	--	Go to Step 12	Go to Step 13

	Was a problem found?			
12	<ol style="list-style-type: none"> 1. Repair as necessary. 2. Replace as necessary. <p>Is the action complete?</p>		Go to Step 28	--
13	<p>Replace the in-tank fuel pump. Refer to <i>Fuel Pump Replacement (Main)</i> .</p> <p>Is the action complete?</p>	--	Go to Step 28	--
14	<ol style="list-style-type: none"> 1. Turn off the ignition for 10 seconds with the A/C off. 2. Turn ON the ignition. The fuel pump should operate for 2 seconds. 3. Monitor the fuel pressure. <p>Is the fuel pressure above the specified value?</p>	<p>Central SFI - 455 kPa (66 psi)</p> <p>SFI - 430 kPa (62 psi)</p>	Go to Step 15	Go to Step 16
15	<ol style="list-style-type: none"> 1. Relieve the fuel pressure. Refer to <i>Fuel Pressure Relief Procedure</i> . 2. Disconnect the engine compartment fuel return line 3. Attach a 5/16 I.D. flex hose to the pressure regulator side of the fuel return line. 4. Insert the other end into an approved gasoline container. 5. Monitor the fuel pressure within 2 seconds after the ignition is turned ON. <p>Is the fuel pressure above the specified value?</p>	<p>Central SFI - 415 kPa (60 psi)</p> <p>SFI - 385 kPa (56 psi)</p>	Go to Step 17	Go to Step 19
16	<ol style="list-style-type: none"> 1. Turn off the ignition for 10 seconds with the A/C off. 2. Turn ON the ignition. The fuel pump should operate for 2 seconds. 3. Monitor the fuel pressure. 	<p>Central SFI - 415 kPa (60 psi)</p> <p>SFI - 385 kPa (56 psi)</p>	Go to Step 20	Go to Step 28

	Is the fuel pressure below the specified value			
17	Check for a restricted fuel line from the fuel pressure regulator to the point where the fuel line was disconnected. Is the fuel line restricted?	--	Go to Step 18	Go to Step 23
18	Repair the restriction in the fuel line from the fuel pressure regulator to the point where the fuel line was disconnected. Is the action complete?	--	Go to Step 27	--
19	Repair the restriction in the fuel return line to the fuel tank. Is the action complete?	--	Go to Step 27	--
20	Perform the following items: <ul style="list-style-type: none"> • Check for a restricted fuel line. • Ceck for a restricted in-line fuel filter Was a problem found?	--	Go to Step 21	Go to Step 22
21	Repair as necessary or replace as necessary the following items: <ul style="list-style-type: none"> • The restricted fuel line • The restricted fuel line filter Is the action complete?	--	Go to Step 27	--
22	<ol style="list-style-type: none"> 1. Turn off the ignition. 2. Connect a 10 amp fused jumper wire from B+ to the fuel pump test terminal. <p>Notice: DO NOT allow the fuel pressure to exceed 517 kPa (75 psi). Excessive pressure may damage the fuel system.</p> <ol style="list-style-type: none"> 3. Gradually pinch the fuel return 	Central SFI - 455 kPa (66 psi) SFI - 385 kPa (56 psi)	Go to Step 23	Go to Step 24

	flexible hose. The pressure should rise above the specified value. Is the fuel pressure above the specified value?			
23	Replace the fuel pressure regulator. Refer to <i>Fuel Pressure Regulator Replacement (Central SFI)</i> for the 5.0L, 5.7L. Refer to Fuel Pressure Regulator Replacement for the 7.4L. Is the action complete?	--	Go to Step 28	--
24	Is the fuel pressure less than the specified value?	Central SFI - 415 kPa (60 psi) SFI - 385 kPa (56 psi)	Go to Step 25	Go to Step 28
25	Perform the following items: <ul style="list-style-type: none"> • Check for a faulty fuel pump • Check for a partially disconnected fuel pulse dampener (pulsator) • Check for a partially restricted fuel pump strainer • Check for an incorrect fuel pump Was a problem found?	--	Go to Step 26	Go to Step 28
26	Repair or replace as necessary: <ol style="list-style-type: none"> 1. Fuel pump 2. Partially disconnected fuel pulse dampener (Pulsator) 3. Partially restricted fuel pump strainer 4. Incorrect fuel pump Is the action complete?	--	Go to Step 27	--
27	Replace the fuel feed line.	--	Go to Step 28	--

	Is the action complete?			
28	<p>1. Using the scan tool, select the DTC and the Clear Info. 2. Attempt to start the engine.</p> <p>Does the engine start and continue to run?</p>	--	Go to Step 29	Go to Step 2
29	<p>1. Allow the engine to idle until normal operating temperature is reached. 2. Select DTC and the Failed This Ign.</p> <p>Are any DTCs displayed?</p>	--	Go to The Applicable DTC Table	Go to Step 30
30	<p>Using the scan tool, select the Capture Info and the Review Info.</p> <p>Are any DTCs displayed that have not been diagnosed?</p>	--	Go to The Applicable DTC Table	System OK

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