**CDX Distance Learning**

**Exercise #27**

**Fuel System Test**

**Estimated Completion Time:** 30 mins.

**Student Name:** Click or tap here to enter text.

Click or tap the check box next to the answer choice that best completes the statement or answers the question. Viewing the animations will be required to answer the following question(s) correctly. Read the question and use the link provided to open the animation. Follow the directions in the questions and select the correct answer. When complete, close the animation window and move on to the next question(s).

[**Fuel System Animation 1**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/GF/GF_FuelTstAss07_C1/GF_FuelTstAss07_C1/GF_FuelTstAss07_C1.html)

1. If the fuel pump cannot maintain a steady pressure to the fuel rail, this can cause the engine to surge as the pressure changes. As the engine oscillates revolutions per minute, the vacuum will also surge based on the changing rpm. Using the above animation, which of the following items could be a potential outcome of this condition?
   1. This could affect the amount of fuel that is being introduced into the cylinder, which could cause a running issue.
   2. This engine will overcome the varying fuel pressure and maintain proper rpm for the situation.
   3. This situation will not affect engine operation, and the operator will not feel any difference.
   4. The output of the fuel pump will not affect a change in engine rpm.
2. Looking at the animation, what will happen to the fuel pressure if the fuel filter becomes clogged?
   1. The pump will max out on fuel pressure and hit the fuel pump limit switch, which causes the fuel pump to shut off.
   2. The fuel pump will then bypass the fuel filter so that the engine will maintain the proper fuel pressure.
   3. Fuel pressure and volume will decrease, which then will cause the engine to struggle.
   4. The pressure will increase in the engine as the restriction will increase the pressure within the open part of the line.

[**Fuel System Animation 2**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/GF/GF_FuelTstAss05_C1/GF_FuelTstAss05_C1/GF_FuelTstAss05_C1.html)

1. When an engine operates, it requires a specific amount of fuel pressure and volume. When either the fuel pressure or volume does not reach specification, the engine reacts negatively. Within the above animation, the fuel volume is drastically failing as the engine operates. The fuel pressure does not move much (8 psi), which means a technician may not see that slight drop in pressure as a major issue. The volume reading is more of a concern for proper engine operation. Using the animation, which of the following statements are true about the operation of this engine?
   1. Volume is directly related to the amount of fuel that the fuel pump can move from the fuel tank through the associated lines to the engine fuel rail.
   2. When the volume drops dramatically in a quick event, the engine will idle fine; but, when put under a load, the engine will not be able to keep up with the requested amount of work needed to move the vehicle.

* 1. The volume drop is a sign of a fuel pump that cannot put out the proper amount of fuel into the fuel injection system. This is an indicator of a failing fuel pump.
  2. All of the above could be correct.

1. When looking at the animation, what is the component that is moving to allow fuel to be injected into the intake port?
   1. The fuel injector coil
   2. The fuel injector pintle
   3. The fuel injector return spring
   4. The fuel injector operational cylinder

**[Fuel System Animation 3](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/GF/GF_FuelTstAss02_C1/GF_FuelTstAss02_C1/GF_FuelTstAss02_C1.html)**

1. When looking at a low-pressure situation in the animation above, which of the following can cause the low fuel pressure condition? Select *all* that apply.
   1. A failed fuel pump
   2. A restricted fuel filter
   3. A low voltage condition to the fuel pump
   4. Using the wrong octane of fuel

**[Fuel System Animation 4](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/GF/GF_FuelTstAss01_C1/GF_FuelTstAss01_C1/GF_FuelTstAss01_C1.html)**

1. A vehicle comes in as a no-start with the attached fuel system animation. Using the animation as a guide, which of the following could be the cause of the no-start?
   1. The engine vacuum is too high for the fuel system to operate correctly.
   2. The fuel pressure is at 8 psi (0.5 bar) which will not allow for proper fuel atomization or engine operation.
   3. The fuel injector is not actuating properly because of the low fuel pressure and must be replaced to fix the fuel pressure issue.
   4. The fuel pressure regulator is stuck, preventing the engine from building enough fuel pressure.
2. What is used on the fuel system that is present in animation 4 so that unused fuel can be sent back to the fuel tank?
   1. The fuel tank vent valve
   2. The fuel pump check valve
   3. The fuel filter return line
   4. The fuel pressure regulator return line

[**Fuel System Animation 5**](http://d2jw81rkebrcvk.cloudfront.net/assetscdx2/202003%20-%20COVID/Assessments/MS/ANIM/GF/GF_FuelTstAss04_C1/GF_FuelTstAss04_C1/GF_FuelTstAss04_C1.html)

1. Using the above animation and utilizing the reading on the vacuum gauge, what can the technician determine about how the engine is running?
   1. The engine has a timing issue because the vacuum is not moving.

* 1. The steady vacuum reading means the engine is at a steady rpm.
  2. The engine is not running at all as it will retain the last vacuum reading that was an output of the engine.
  3. The vacuum reading is low and means you have a mechanical timing issue within the engine.

1. When diagnosing an engine fuel injection issue, the technician should be looking at which module to verify that there is not an electrical issue causing a fueling issue?
   1. ECM/PCM
   2. Ignition module
   3. BCM
   4. CKP
2. What can cause the fuel pump in the animation to fail within the fuel tank?
   1. The wrong type of fuel
   2. A failed FTP sensor
   3. Low voltage to the fuel pump
   4. Low fuel level causing the pump to overheat