LDT Multifuel Engines

# ***The FDC and LDT Engine Multifuel Capabilities***

A discussion on bypassing the Fuel Density Compensator and whether or not it alters the multifuel capabilities of LDT diesel engines.

So, you want to bypass your FDC (**F**uel **D**ensity **C**ompensator) but you are afraid that the truck will no longer be "Multifuel" capable. That conclusion would be categorically wrong. Read on and I will explain.

The LDT engines are multifuel capable by design regardless of the FDC. The FDC was added to the system so that the injection pump would automatically compensate for the different BTU's available from different fuels based on the density of the fuel itself. A crude design, but very effective.

Let's say that you are running down the road at 45 mph and it takes 50% throttle to maintain that speed using #2 diesel. The FDC adjusts the injected quantity of fuel based on the density of the #2 diesel. Now let's say that you are running an alternative fuel of some type at the same 45 mph road speed. Maybe that alternative fuel has 20% less available energy available per gallon. Based on the density of that fuel the FDC makes an adjustment and is now injecting more fuel to make the same power required to maintain 45 mph at 50% throttle application. The FDC is simply compensating for the lower BTU available from the fuel being used.

Now, let's say that you bypass the FDC to eliminate the chance of it leaking fuel into your crankcase and contaminating your engine oil. The FDC can no longer see the current fuel density so it defaults to the full compensation setting or max fuel. **Note:** The default "full fuel" setting is why you need to adjust the fuel down via readings on an aftermarket EGT (**E**xhaust **G**as **T**emperature) gauge to keep your maximum exhaust gas temperatures in the safe range.

At this point the truck is still 100% multifuel capable. You haven't changed the basic design of the engine that allows it to burn multiple fuel types. It's just that now your foot on the throttle takes place of the Fuel Density Compensator.

Back to our example, but now without the FDC in the loop. With the fueling level properly turned down based on EGT's and a tank full of #2 diesel it still takes 50% throttle to maintain the hypothetical 45 mph. The difference shows when alternative fuels are used. If you now switch to a fuel with 20% less BTU the FDC won't be there hiding behind the scenes making adjustment for you. If you have 20% less power available from your fuel of choice you will need to apply additional throttle to maintain the same road speed. It's really just that simple.

Again, the engine is still a multifuel. The only difference is that to make the need HP for a given situation the operator will need to adjust throttle position accordingly instead of the FDC doing it for them.

Hopefully this answers some questions regarding the FDC and why bypassing it does not make the truck diesel fuel only as is often painted on the fuel tank after an FDC bypass.

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