

On the Line

Diesel Fuel Filters

And the Challenge of Fuel System Aeration

You just serviced the customer's Duramax diesel and installed a new fuel filter. You followed the proper bleeding procedure to remove the air, and the vehicle started and ran perfectly. To your surprise, the customer calls the next morning with a no-start condition. The vehicle is towed to your shop and aerated fuel is determined to be the reason for the no-start condition. The system is bled and the engine starts and runs perfectly, but the condition repeats itself in the following days.

Out of frustration, the customer takes the vehicle to the GM dealer, who advises that only an OE filter will work properly on their vehicle. They make the necessary repairs and the customer returns to your shop seeking reimbursement. There was an additional component listed on the repair ticket, but you did not question the customer and just refunded the cost of the repair.

To keep the customer happy, you had no choice. The quality of the filter had nothing to do with the aerated fuel condition; however, the fact that the fuel filter was changed could have led to the aerated fuel condition. Does that make sense? It will, once you finish reading.

CAUSES OF FUEL AERATION

Normally, when we consider aerated fuel, the source is usually from one of the following:

- 1) Running the fuel tank empty.
- 2) Improper fuel filter replacement.
- 3) Fuel lines disconnected during a service procedure.
- 4) The fuel filter water drain opened while the engine is running.

Caution: The diesel engine will not run well on aerated fuel. Priming the system will be necessary following the installation of a new filter. Never dry start an engine, hoping it will self-purge. Make certain that all fuel lines are secured.

RECURRING AERATED FUEL SYSTEM

The solution to the recurring aerated fuel system was not an original equipment fuel filter from the GM dealer. The additional component that we mentioned on the dealership repair order was the solution to the aeration concern. And that component would be the filter adapter and primer pump assembly (GM part number 12642623).

The adapter lists for \$157.89 and comes packaged with a new fuel filter.

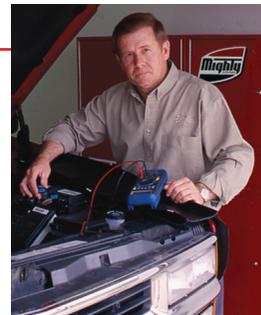
There was nothing wrong with the quality of the filter that you installed or your installation procedure. The problem was with some aged O-rings and seals within the primer pump, which is a part of the filter adapter. It is not uncommon to experience a failure of the seals and O-rings during the bleeding procedure following the fuel filter installation. Once the aged O-rings or seals are disturbed, they lose their ability to seal, allowing air to be drawn into the system. When this occurs, there may be no evidence of fuel leakage on the filter adapter, as this is a suction type system. Air is drawn in while no fuel seeps out. The pump will usually prime perfectly and then the fuel system will become aerated hours or days later resulting in a no-start condition or poor engine performance.

We have disassembled the primer pump assemblies on numerous units to find damaged O-rings and seals. Contaminates in the fuel can result in the same conditions. In one case we found a fragment of plastic from the fuel filter wrapping that had lodged between the seals on the primer pump, allowing air to be drawn into the system.

Seal and O-ring kits are available from some aftermarket suppliers to rebuild the priming pumps. Unfortunately, they do not contain two rubber check valves, which are part of the primer pump assembly, and they are not available as a replacement item. Without the check valves, your rebuild may not prove successful.

When encountering repeated fuel aeration concerns on a Duramax diesel there is a reason for it, and it is not due to the design of the fuel filter. When the vehicle is taken to the dealer with these concerns it will get the mentioned primer pump assembly GM # 12642623. It is the only way to alleviate the recurring aerated fuel condition. The only thing you will achieve in installing the second or third fuel filter is alienating the customer, as they will make numerous returns for the same symptoms.

For a full description and illustrations concerning fuel aeration challenges with the Duramax diesel, refer to Mighty Tech Tip #168 "AERATED DURAMAX...Getting the Air Out of the System."



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SUBTLE CLUES REVEAL THAT BERNIE MAY
NEED A LITTLE MORE TRAINING IN
FUEL AERATION SYMPTOMS.