



# Tech Tip

FILTERS 148

## FILTER SOLUTIONS For Some Challenging Conditions

### GM'S DURAMAX FUEL FILTERS

Complaints of leakage following a fuel filter installation are not uncommon with the Duramax applications. The vehicles affected include GM's Duramax turbocharged diesel applications produced from 2001–2009. Part of the problem is the accessibility of the filter. Unfortunately, the major problem is with the preparation of the filter, prior to making the installation. Lubing the o-rings prior to installing the filter is imperative in eliminating leakage on any filter installation, regardless of whether it is a fuel filter or an oil filter. The lack of lubricant will promote gasket roll or shear as the technician tightens the filter, resulting in leakage.

A second condition involves technicians complaining of a difficult fuel filter installation. A frequent complaint is the filter will not thread onto the filter adapter. The installer is usually certain that damaged filter housing threads are the reason for the installation difficulty. The culprit is usually a grommet from the previous filter that is still attached to the filter adapter, making it impossible to install the new filter (see Fig. 1).



Check for detached filter grommet.

**Caution...** The water-in-fuel sensor must be removed from the old filter and transferred to the new filter. A replacement o-ring is packaged with the new filter.

Be certain to lube the o-ring prior to installation. The sensor is made of plastic and is easily damaged if over-tightened. Do not use pliers or tools to tighten the sensor. Once the sensor o-ring makes contact with the filter, tighten the sensor ½ turn, by hand.

### WATER-IN-FUEL LAMP

Ford reports that a flickering or illuminated water-in-fuel lamp may be encountered on some 2003–2005 Ford F-Super Duty vehicles built prior to 9/22/2004, 2003–2005 Excursion vehicles built prior to 1/10/05 and 2004–2005 E-Series vehicles built prior to 9/16/2004, all equipped with 6.0L diesel engines. The intermittent condition may be present while cornering, braking or driving uphill/downhill.

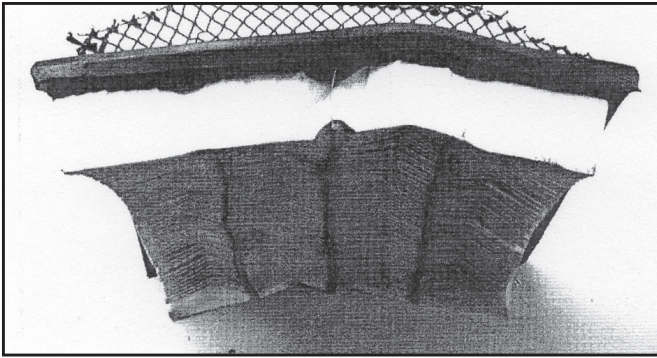
Some 2003–2007 F-Super Duty and 2003–2005 Excursion vehicles may encounter a continuous illuminated water-in-fuel lamp without the presence of water in the reservoir, due to debris in the reservoir, or corrosion on the water-in-fuel sensor pins.

Some 2003–2007 F-Super Duty and 2003–2005 Excursion vehicles may encounter both an intermittent and flickering water-in-fuel lamp due to the mentioned corrosion and may also require a PCM calibration update.

Ford's TSB 06-22-12 illustrates the revised PCM calibration and the procedure for cleaning the residue from the sensor housing and the replacement of the water-in-fuel sensor with a service kit.

### FILTER RESTRICTIONS FROM WATER AND SNOW

Water and snow are not good air filter companions, especially for turbocharged diesel engines. Either can destroy a lot of expensive parts very quickly. The filter illustrated in Fig. 2 was removed from a Dodge Turbo Diesel that ingested road splash. The water sealed the filter media and the filter was almost pulled from the air box housing. Obviously, the filter lost its seal with the housing, allowing debris to be sucked into the turbocharger and engine. Fortunately, the



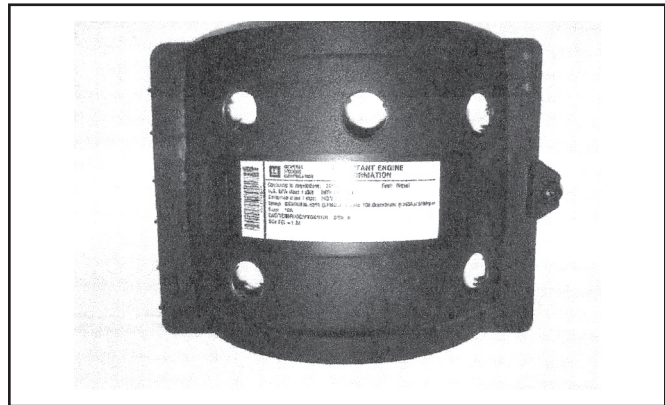
**FIG. 2**

filter remained intact and was not shredded, which could have caused major mechanical damage. Snow entry can promote the same scenario. Following are modifications made by Ford and GM to alleviate snow related filter restrictions:

**Ford's F-Super Duty...** Ford advises that 2008–2009 6.4L F-Super Duty vehicles operated in the snow states may experience a lack of power during acceleration and a possible illumination of the “Check Air Filter” message in the instrument cluster message center. These conditions may be the result of snow entering the air cleaner housing, restricting air flow through the air filter. Ford’s TSB 09-6-8 recommends installing a winter grill cover on vehicles built before 9/18/2007 and replacing the Filter Minder Indicator with P/N 8C34-9N622-AB (if not already equipped). If the filter is wet, a new filter should be installed, in addition to a snow deflector gasket, which should be attached to the rim of the air box. The winter grill cover must be removed when temperatures are greater than 50 degrees F or 32 degrees F when towing, or engine damage can occur. The grill cover may restrict air flow around the Outside Air Temperature Sensor, resulting in an inaccurate ambient temperature reading and inputs to the Electronic Automatic Temperature Control operation. The snow deflector gasket may remain on the vehicle year-round.

**GM's Duramax...** GM advises that some owners of 2007–2009 Chevrolet Silverado and GMC Sierra 2500/3500 series vehicles may complain of an illuminated Check Engine light with diagnostic trouble code P0101 (mass air flow sensor performance) stored in memory as a history code or current event, and a Reduced Power Message on the DIC. These conditions are the result of snow being ingested into the air cleaner housing and restricting the engine's intake air.

GM recommends purchasing a new air cleaner cover P/N 20821430 and drilling five 25mm holes in the cover as shown in Fig. 3. Install emission label GM P/N 19180225 on the modified cover as shown. Remove the existing air cleaner cover and replace it with the modified cover. Retain the original cover for summer use. A grill opening cover, GM P/N 25822811 for GMC and P/N 25822812 for Chevrolet, should be installed as part of the repair. This modification allows warm air to be circulated into the air cleaner housing, which melts the snow.



**FIG. 3**

**Remember...** water entry will seal the filter, creating the same restriction scenario as the snow. A good indication of a filter that has been exposed to water or snow will be a service minder that indicates a restriction, and when the filter is examined there is no debris on the air cleaner element.

## **BE OBSERVANT**

On any diesel application, inspect all latches and retainers to be certain the filter can be secured and sealed in the housing. Never use a retainer or spring clamp to pull a filter into position, as damage to the housing can occur. Broken latches or latch tabs will require replacement of the air box housing.

Servicing the turbo-diesel applications should be left to the experienced technician, as a seemingly unimportant event can lead to a catastrophic failure.

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