

If you are purchasing your own injectors, you should purchase from a reputable, OE manufacturer. If considering injectors from a non-OE endorsed manufacturer, be sure to ask the following questions to determine if the cost savings is worth the risk:

Do these injectors use new or reconditioned components?

It is preferred that the remanufactured injector use all new high-wear components vs. salvaged components.

How are the remanufactured injectors tested?

You want injectors that are tested to exact OE test specifications and not reverse engineered specifications.

What type of testing equipment is used?

- ▶ It is preferable that their testing equipment is certified by the OEM.
- ▶ It should be traceable back to the OE manufacturers testing.

Is there a warranty?

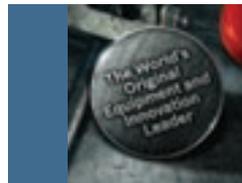
Many reputable manufacturers offer at least a one-year warranty.

Are the remanufactured/rebuilt injectors upgraded to meet new OE specs?

Are component improvements added to match changes made by the engine manufacturers?

Bosch is the world's leading supplier of diesel fuel injection systems and is standard equipment on many diesel engines today. You can be confident when you install Bosch OE injectors, Bosch remanufactured injectors, or Bosch-authorized rebuilt injectors.

To find a local Bosch Diesel Service Center, visit www.boschcarservice.us and click on "Find a Service Center".



Robert Bosch LLC
2800 South 25th Avenue
Broadview, IL 60155-4594
www.boschautoparts.com

BOSCH is a trademark licensed by Robert Bosch GmbH and/or its affiliated entities.
© 2014 Robert Bosch LLC, USA. All rights reserved.

14040154 F00E381749 4GU

A Bosch Guide to Potential Causes of Common Rail Injector Failures



BOSCH
Invented for life



The common rail system is a major advancement in diesel technology. However, common rail engines are less forgiving of poor quality than older fuel injection technologies. What used to be acceptable in the past can cause the engine to malfunction and often result in a costly repair.

The key causes of injector failures are:

- ▶ Fuel Contamination
- ▶ Poor Fuel Filtration
- ▶ Incorrect Installation
- ▶ Non-OEM approved remanufactured products

Fuel Contamination



- 1 New Bosch valve body.
- 2 Image of corroded valve body

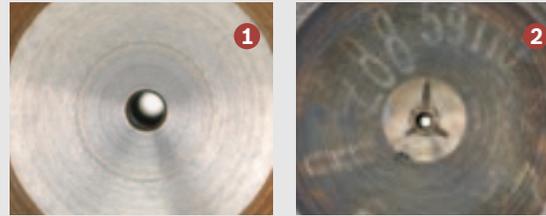
The majority of diesel engine problems stem from contaminated fuel. Common problems include corrosion from excessive water in the fuel, micro fine particles in the fuel and improper fuel storage, which is caused by water in the fuel.

There are two ways in which water can get into the fuel: through the delivery system and through the tank vent.

What Can I Do?

Solution: Always purchase fuel from a reputable service provider and use a proper fuel/water separator. Periodic inspection of the vehicle's tank vent is also recommended.

Poor Fuel Filtration



- 1 Sealing surface for a new Bosch valve body.
- 2 Sealing surface of a competitor valve body showing ball seat erosion.

A common problem with diesel injectors is erosion of the control valve. The heart of the common rail injector is the valve through which fuel passes at extremely high pressure. The passage opening is sealed using a pressurized ball that is only 1mm in size. A proper seal is critical for exact injector performance. Abrasive contaminants, released by inadequate filtration, can erode and damage the control valve and not allowing the ball to seal. This can lead to excessive smoke, starting or idling problems and potential engine failure.

What Can I Do?

Solution: To ensure exact performance within the designed service life of the injector, use only OE filters or filters having the same OE micron rating and follow the recommended OE filter change interval. Using anything less can cost you more in the long run.

Non-OEM Approved Remanufactured Products

Not all remanufactured injectors are the same. The quality of any remanufactured injector depends on the remanufacturing process and components. Some manufacturers sell refurbished/used injectors and market them as rebuilt. However, instead of being rebuilt, they are merely cleaned and polished, and the tips are not replaced. You might get a great deal on these non-OEM approved products, but you are taking a huge risk that these injectors may not be better than the one you are trying to replace.

What Can I Do?

Solution: Make sure your car is being serviced by a reputable shop and ask about the parts they use on your diesel engine to ensure they are from the OEM or from an authorized Bosch supplier.

Incorrect Installation

Missing sealing rings, incorrect tightening torque, incorrect cleaning of the nozzle can cause poor performance, misfiring, black smoke and check engine light (MIL) to come on.

What Can I Do?

Solution: Always follow the engine manufacturer's maintenance procedures and have repair work done by a reputable shop.

Bosch's remanufactured injectors follow the same fit, form, and function as OE injectors. Bosch remanufactured injectors include all OE updates, so they can often be superior to the OE injectors that they replace.

