

Bosch common rail diesel injectors – problems relating to the following symptoms

- Hard or difficult starting
- Erratic or uneven tick over or idle
- Lumpy running
- Hesitation on acceleration
- Smoke on tick over or acceleration
- Black “tar” around the injectors
- Chuffing sound from the engine when running

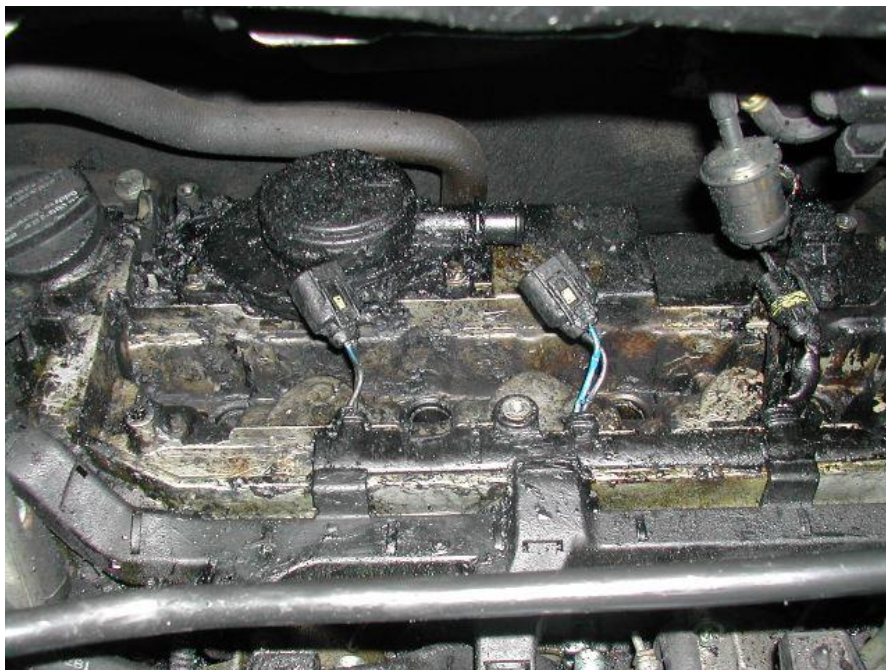
Injector Blow-by

Injector ‘blow-by’ can be the cause of some of the above symptoms. Injector ‘blow-by’ occurs when the injector does not seal against the injector seat in the cylinder head. Often a chuffing sound is heard or black “tar” can be seen around the injectors. The engine could also experience one or more of the above symptoms. On some engine applications if this continues serious engine damage could result due to the fact that the ECU will over compensate the fuelling on the cylinder or cylinders with the seating problem causing piston washing or cylinder over fuelling.

Even if the injector is removed, cleaned, a new copper washer fitted and then replaced it will not always rectify the problem. The reason for this is that the seat in the cylinder head has been eroded by the escaping combustion gases resulting in damage to the seat. The only way to reface the seat is to use a seat cutting tool and gently reface the seat in the head.

How to re cut an injector seat.

Once the engine cowling and covers have been removed, you will be faced with something that resembles a volcanic eruption.



These injectors have been removed but it did take some time. I have been told of many different products that can be used and help with the softening of the carbon and might help with the removal of the injectors, they are, oven cleaner, vinegar, Coca cola, brake and carburettor cleaner but we have now found the most effective carbon remover, it is a product manufactured by Innotec called Turbo clean set, see our site http://www.uniteddiesel.co.uk/diesel_engine_products/15/

Should you have difficulty removing the injectors please contact us as we do specialize in various injector removal kits.

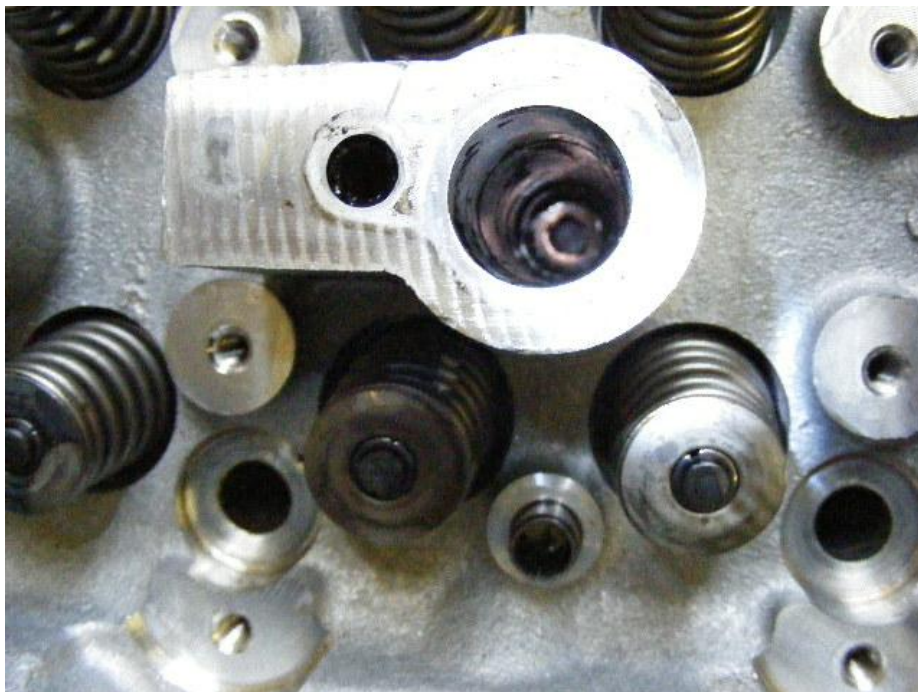


An injector that has suffered from blow-by, notice the carbon up the stem.

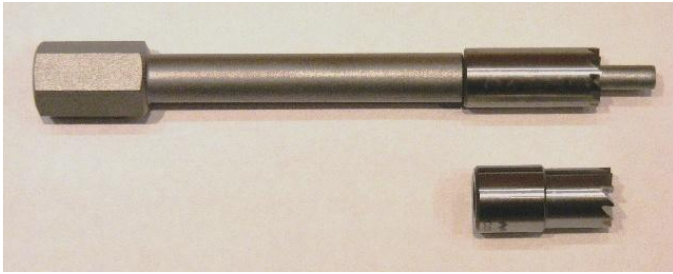


This injector has been seating correctly, the seat and copper washers have prevented any blow-by.

In this picture the head has been removed hence there is no rocker cover shown.

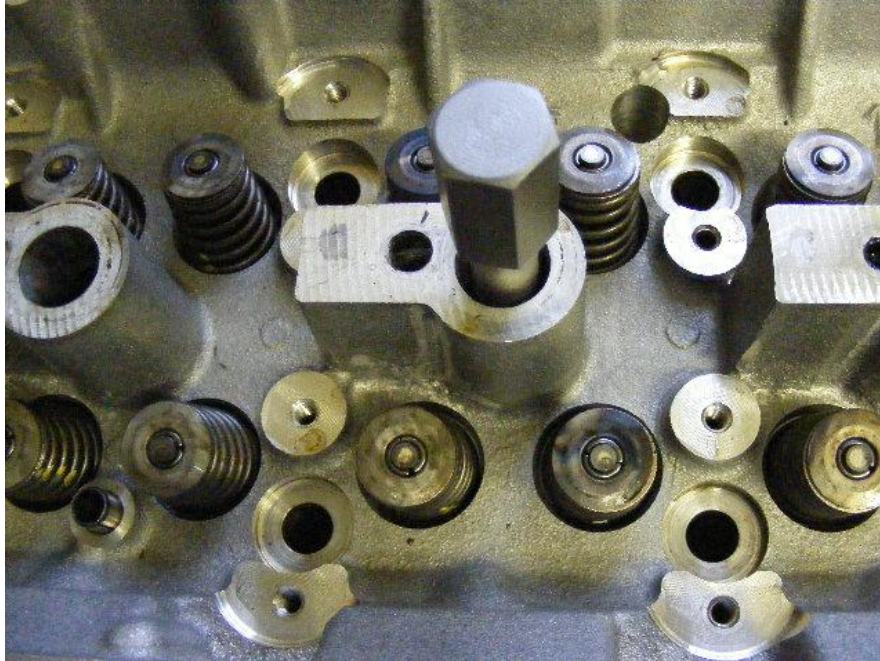


Notice how the copper heat shield washer has been left behind, this will need to be removed so that the cylinder seat can be cleaned.



This is an example of an injector seat cutter; there are various cutters available depending on the engine application,

This has a stepped cutter 19/17 mm and is used for most Mercedes Benz applications.



Once the injector/injectors are removed the seat cutter is placed in the injector recess and with a *little downward* pressure rotated in a clockwise direction for a few revolutions. A small amount of a lubricant like WD40, sprayed on the teeth of the cutter will help to prevent the cutter from chattering and causing a stepped cut rather than a nice clean finish.

Remove the seat cutter and using either compressed air or a vacuum cleaner, clean the recess and inspect the seat. Continue until you are left with a clean seat in order for the new copper washer to seal.

To refit the injectors, leave the inlet plastic protective plugs on, remove the nozzle protective cap and using a small amount of the Mercedes-Benz white grease, "paste" the copper washer onto the injector nozzle / cap nut so that it does not fall off when you insert the injector into the injector recess.

Smear the injector body with a little Mercedes-Benz white grease and place the injector into the recess, fit the injector clamp and **tighten to specifications**.

PLEASE DO NOT USE COPPER SLIP GREASE

Continue with the remaining injectors.

Once engine fires, do not over rev, but rather let engine tick over for a while.

Make a solution of dish washer soap and water and whilst the vehicle is running squirt this solution around the injector to check for any more blow-by.

Should you have any question please do not hesitate to contact us at 01939 291155.