



## Schaeffler Vitesco Service Info



# Piezo common rail (PCR) injectors

## Instructions for handling and commissioning

Piezo common rail injectors are nowadays used mainly in modern diesel engines. The injector needle in the injector is no longer controlled by an electromagnet, but by a high-precision piezo actuator. This consists of over 300 wafer-thin ceramic plates, layered on top of each other. The piezo actuator expands as soon as a switching voltage is applied, whereby the injection holes of the nozzle are opened within milliseconds. Thanks to these extremely short response times, the fuel can be injected precisely and consistently up to seven times per combustion cycle. This contributes significantly to combustion efficiency.

Piezo common rail diesel injectors may malfunction after high mileage due to wear. This can be manifested by various symptoms:

- Loss of power
- Engine running rough
- Difficulties starting
- Increased exhaust emissions
- Soot or white smoke
- Knocking noises from the engine
- Increased fuel consumption
- Check engine lamp lights up

If an injector is suspected to be defective, a test should be carried out using the diagnostic tool. A return flow rate measurement can also be carried out. The injector must only be replaced if a fault is confirmed.

### Removing the injector:

- Thoroughly clean the repair area
- Remove the return line (Caution: fuel can escape due to residual pressure. Wear safety goggles and gloves!)
- Remove the rail line from the injector and seal the open end immediately
- Use suitable special tools and/or release sprays to remove the injector
- Check the injector shaft and clean if necessary.
- Remove the old combustion chamber seal (sealing washer)
- If necessary, rework the seat of the combustion chamber seal in the cylinder head using a suitable tool

### You want more? We can help!

Phone: +44 (0) 1432 264 264  
 Fax: +44 (0) 1432 375 760  
 aftermarket.uk@schaeffler.com  
 www.repxpert.co.uk



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Figure 1: Piezo common rail injector

### Fitting the new injector:

- Note the encoding of the new injector
- Do not remove the protective caps on the injector until immediately before installation to prevent contamination and damage
- Replace the combustion chamber seal (if it is not part of the new injector), note the stepped versions
- Insert the new injector
- Insert the clamping claw with a new screw and fasten it to the tightening torque specified by the vehicle manufacturer
- Replace the high-pressure line if the vehicle manufacturer stipulates that this is necessary when replacing the injector
- Install the high-pressure line without tension and fasten it to the tightening torque specified by the vehicle manufacturer
- Enter the previously noted encoding for the new injector in the engine control unit using a suitable diagnostic tool
- Replacing the connection adapters of the return line and their safety clips is recommended
- With the engine running, inspect the rail and return lines for leaks

### Important!

A PCR injector is a precision component that must be handled sensitively and carefully!

Please observe the vehicle manufacturer specifications!