

Tips & Technology

For Bosch business partners

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Diesel Injection



BOSCH
Invented for life

Diesel eXchange Program

Bosch is the no. 1 OEM supplier of diesel fuel injection systems worldwide. As a leading developer and manufacturer, Bosch has unique diesel know-how. This is complemented by over 40 years of remanufacturing of used parts. The Bosch eXchange program incorporates both aspects when it comes to remanufacturing diesel replacement products.



This is how the remanufacturing system works

In certified Bosch plants all wear parts are systematically replaced with original Bosch parts. The remaining system components are thoroughly cleaned and checked to ensure exact compliance with the permissible tolerances. If necessary, they are reworked or replaced with new parts as well. In addition, all product improvements from series production are incorporated into the remanufacturing process. The result: replacement parts from Bosch eXchange that meet the same high quality standards as new parts. This is how Bosch can also give the same warranty.

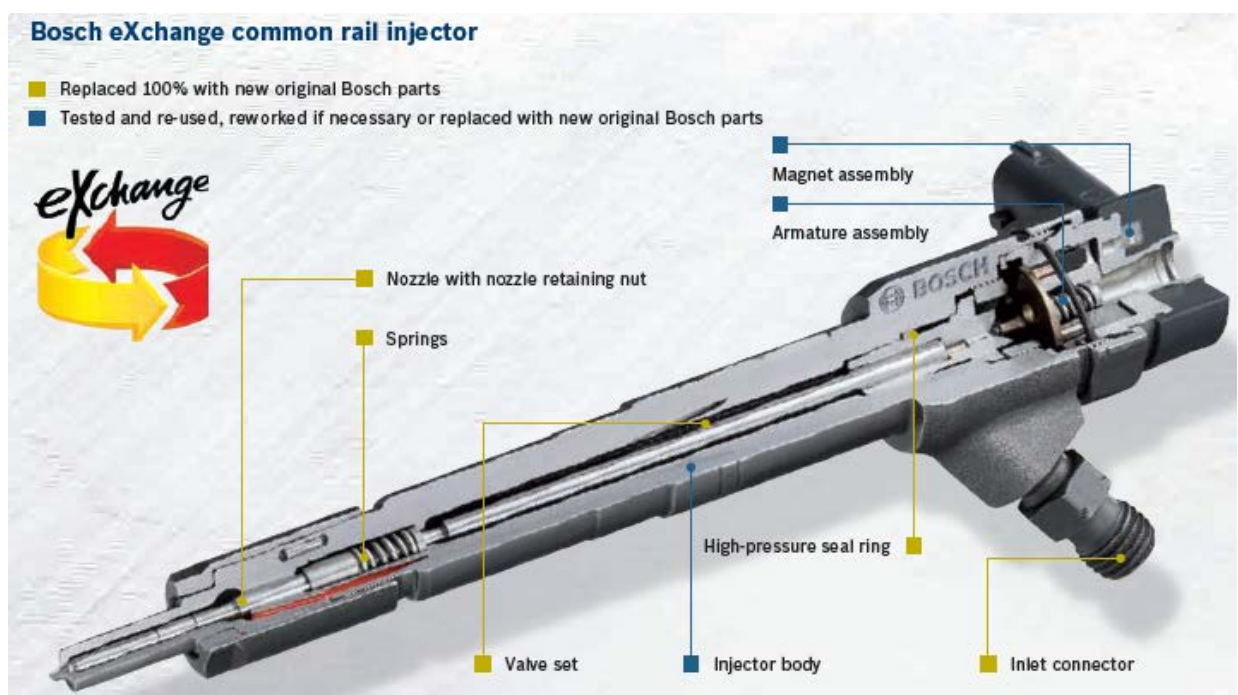
Common rail components that are sent in are repaired in audited Bosch plants in accordance with ISO/TS 16949. The entire Bosch remanufacturing process is certified and follows carefully defined steps. A limit sample catalog based on new part specifications provides the basis for reliable quality control of the individual components. The final inspection takes place on test stands for OEM parts.

The factory remanufacturing process is described in detail in the following:

1. Visual inspection of the old parts
2. Cleaning of the old parts
3. Complete disassembly of the old parts
4. Cleaning of the components
5. Technical check of the components: The components are inspected on the basis of OEM specifications and either reconditioned or replaced with new parts
6. Replacement of wear parts: All wear parts are replaced with new parts
7. Assembly: Assembly in accordance with the latest OEM specifications; all product improvements from new part production are incorporated into the remanufacturing process
8. Final inspection: Final inspection as in new part production



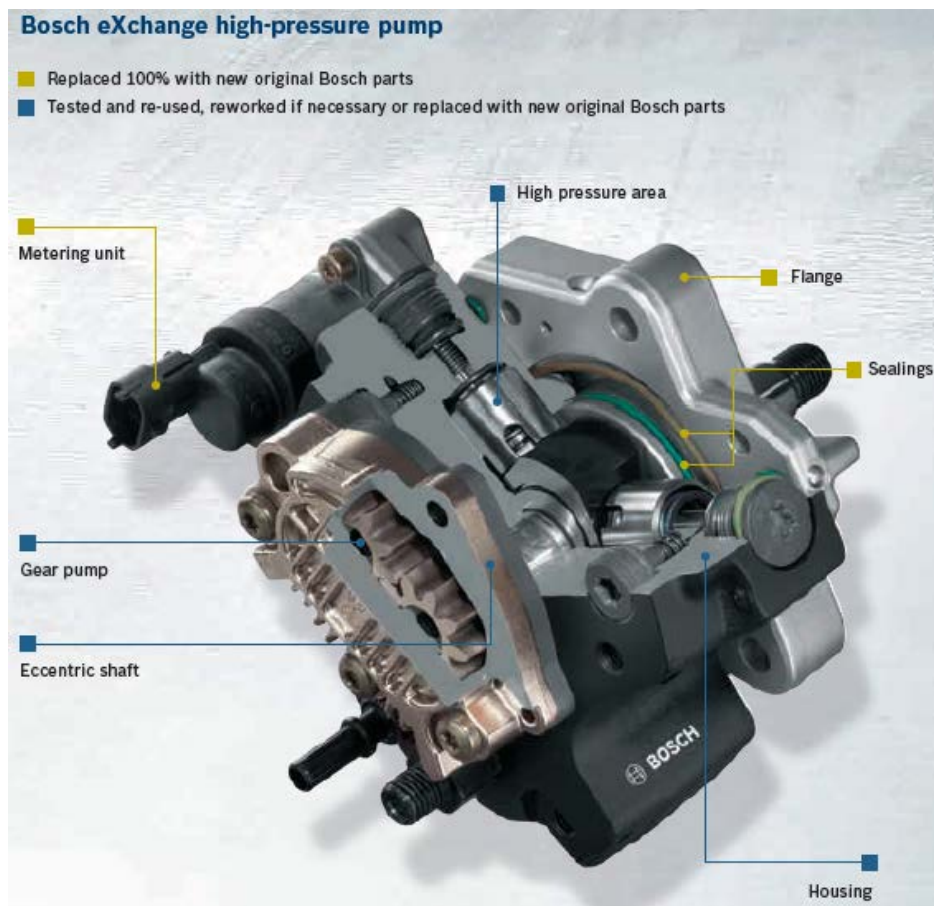
Bosch eXchange common rail injector



The use of non-OEM Bosch replacement injectors is not recommended, since this can have serious consequences:

Cause	Possible consequence	Associated risks
Reuse of the used nozzle and nozzle retaining nut	Nozzle and/or nozzle retaining nut leaks or delivers incorrect spray pattern	Reduced engine output, adverse effect on exhaust emissions extending possibly to engine damage
Valve set not replaced with new OEM parts	Nozzle operation with millisecond accuracy no longer assured and return quantity increased	Rough engine, reduced engine output, increased fuel consumption
Reuse of springs	Loss of spring force, broken spring, incorrect spray pattern	Adverse effect on exhaust emissions, engine damage
High-pressure seal ring not replaced with new OEM parts	Leaks, incorrect spray pattern	Reduced output to possible engine damage
Reuse of the inlet connector	Leak with escape of fuel, edge-type filter faulty	Reduced engine output, adverse effect on exhaust emissions extending possibly to engine damage
Mechanical damage or corrosion on the injector body	Leak with escape of fuel	Engine shutdown, engine fire

Bosch eXchange high-pressure pump



Use of non-OEM Bosch replacement high-pressure pumps can also have serious consequences:

Cause	Possible consequence	Associated risks
Mechanical damage to the pump housing	Leaks, insufficient pressure	Engine shutdown, engine fire
Bearing bushing and shaft seal rings not replaced with new OEM parts	Leak with escape of fuel, Dilution of engine oil	Total failure of the pump as the result of seizing
Reuse of seals/gaskets and bolts	Internal and external leaks	Engine shutdown, engine damage
Mechanical damage to the cylinder head	Unequal compression against the valves	Dilution of engine oil, reduced engine output
Metering unit not replaced with new OEM part	Reduced functionality caused by rust and deposits	Reduced or compromised engine output
Eccentric shaft not remanufactured	Dilution of engine oil	Total failure of the pump as the result of seizing, engine damage
Wear in the high-pressure area	Imprecise fuel delivery	Reduced engine output, starting problems extending to total failure of the pump as the result of seizing

The Bosch eXchange program for diesel vehicles

Overall, more than 1,000 diesel parts can be ordered as replacement products.

The Bosch eXchange range for diesel vehicles			
Bosch eXchange product	Application	System pressures up to	Used in the following vehicle makes
Common rail injector (CRI, CRIN)	Cars, CVs	2 500 bar	Audi, BMW, Citroen, Fiat, Ford, Hyundai, Isuzu, Iveco, Kia, MAN, Mercedes-Benz, Opel, Peugeot, Renault, Toyota, Volkswagen, Volvo
High-pressure pump (CP1, CP3, CP4)	Cars	2 500 bar	Audi, BMW, Citroen, Fiat, Ford, Hyundai, Isuzu, Iveco, Kia, MAN, Mercedes-Benz, Opel, Peugeot, Renault, Toyota, Volkswagen, Volvo
Unit injector	Cars	2 200 bar	Audi, Ford, Seat, Skoda, Volkswagen
Unit injector	CVs	2 050 bar	Iveco, Scania, Volvo
Unit pump	CVs	1 800 bar	DAF, Deutz, Liebherr, Mack, Mercedes-Benz, MTU
Distributor injection pump	Cars, CVs		BMW, Fiat, Ford, Isuzu, Iveco, GM, Opel, Peugeot, Renault
Nozzle-and-holder assembly	Cars, CVs	1 800 bar	BMW, Citroen, Ford, MAN, Mercedes-Benz, Opel, Renault, Scania, Volkswagen, Volvo
Denoxtronic supply module	CVs		DAF, Renault, Volvo

Acceptance of returned used parts

Returned used parts are accepted on the basis of the following criteria:

- The item number must be legible
- The old part must not be disassembled
- The old part must be complete; no parts may be missing
- The old part may not be severely damaged

Processing is based on the "Back-in-Box" principle:

1. Delivery of the new product: You receive your new eXchange product from Bosch.
2. Installation: You replace the old part with the new product.
3. Return 'Back-in-Box': You return the old product in the original Bosch packaging.
4. Redemption of deposit value: Bosch redeems the deposit value of the eXchange product.

The advantages of the "Back-in-Box" principle are that the old parts are protected during return shipment, processing of the returned old parts is faster through easy identification of the old part, disposal of the packaging is no longer necessary, and the old parts do not make other parts dirty.

Parts are even accepted if they

are coked ✓



show signs of corrosion ✓

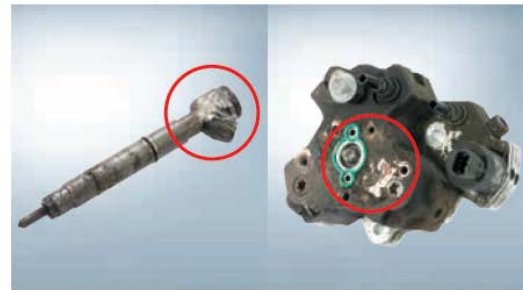


exhibit light mechanical damage ✓



Parts are not accepted if they

are incomplete ✗



are disassembled ✗



exhibit heavy mechanical damage ✗



The advantages for the workshop

Removal of the defective part takes place with standard tools. The replacement part is ordered from a large dealer at a fixed list price and supplied complete and ready to install. As of last year, the necessary heat-sealing washers are supplied with common rail injectors as well. This saves time and the vehicle does not need to be in the workshop as long.

Use of replacement products provides a price advantage of up to 40% compared to new parts while receiving the same warranty. The replacement product can also be use in the case of warranty claims.

The benefits for the customer

The customer receives a repair at a cost that is in line with the age of the vehicle and the time needed for the repair is shorter. Existing vehicle warranties remain in full effect.

Moreover, it is becoming increasingly important for many motorists to behave in an environmentally friendly manner. Using remanufactured used auto parts saves material and energy. By selling eXchange products, Bosch is able to reduce CO₂ emissions by 23,000 tons annually. Energy savings and CO₂ emission reductions come to almost 50%; raw material savings from remanufacturing total almost 90%.