

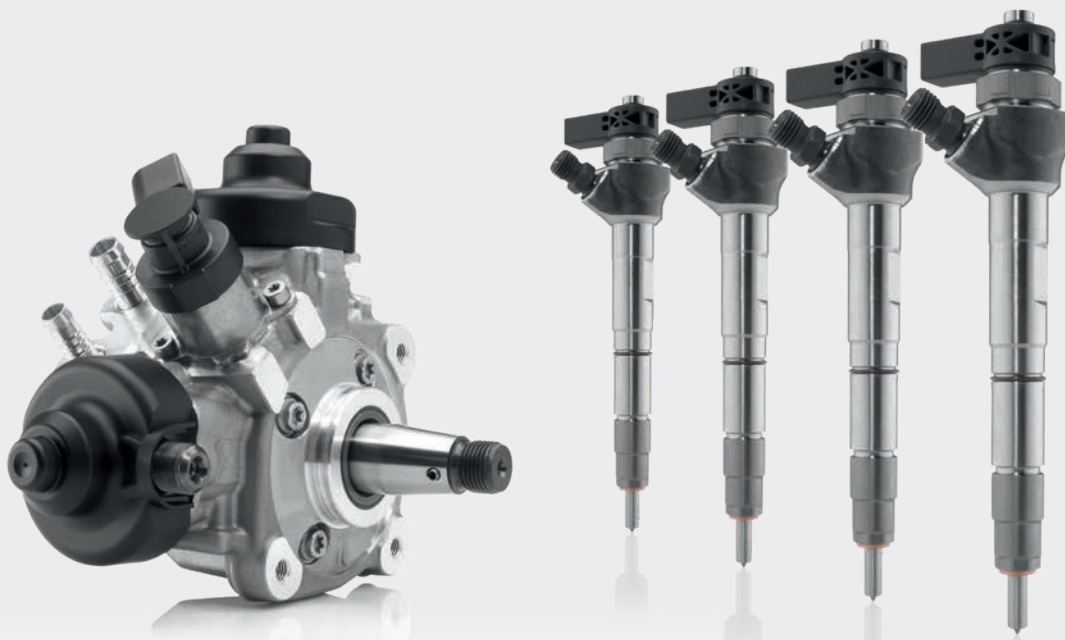
Invented for life



BOSCH

Bosch eXchange

for common-rail systems



Bosch eXchange common-rail systems

Overview

Bosch is one of the world's leading manufacturers of diesel injection systems and has outstanding diesel expertise. The Bosch eXchange program for common-rail systems offers workshops a high-quality alternative for repairing passenger cars and commercial vehicles in line with their current value. The exchange parts are tested to the same quality standards as the original parts, but are more affordable. This enables workshops to make attractive offers to their customers that are tailored to the age of the vehicle.

Comprehensive range

The Bosch eXchange program consists partly of series-remanufactured products. However, to provide a comprehensive range, a high market coverage and capability, it can also be complemented by new parts.

Certified series remanufacturing

Series remanufacturing is carried out in certified plants that comply with the high standards of the automotive industry. This ensures the remarkable quality and reliability of Bosch eXchange products.

High market coverage

The common-rail exchange program offers a wide range of products for the majority of vehicles equipped with common-rail technology from Bosch.

More than 50 years of experience

Bosch has decades of experience in remanufacturing automotive parts. The first distributor injection pump was remanufactured in 1971.

Proven quality

The Bosch eXchange original seal on the packaging provides assurance that the Bosch eXchange product has been inspected and tested as rigorously as new Bosch products.



Excellent value for the price

With a **price advantage** of up to

30 %

over comparable components from new product programs, Bosch eXchange products are an excellent solution for vehicle repairs that reflect the current value of the vehicle.

And they come with the same warranty as new products.



Responsibility and sustainability

Reusing products supports the sustainable use of natural resources. By returning used parts, workshops are therefore making an important contribution to the circular economy.



Bosch eXchange common-rail systems

Product range & details



| | Bosch eXchange common-rail high-pressure pumps | Bosch eXchange common-rail injectors |
|--|--|--|
| | <p>Bosch eXchange common-rail high-pressure pumps compress the fuel to up to 2,700 bar and deliver it in the required quantity. To do this, they constantly pump fuel into the high-pressure accumulator (rail) and maintain the system pressure. The required pressure is available even at low engine speeds, as pressure generation is decoupled from engine speed.</p> | <p>Bosch eXchange common-rail injectors inject fuel directly into the combustion chamber. They are supplied with fuel from the pressure accumulator (rail) via short high-pressure fuel lines. The engine control unit controls the switching valve integrated in the injector, which opens and closes the injector. The switching valve can be controlled electromagnetically or via a piezo element.</p> |

Scope of application 

- Advantages at a glance**
- **High engine performance and smooth running** through volume and pressure generation in line with demand
 - **High efficiency**, due to rail pressure already being available at low rotational speeds
 - **Reduced consumption** in combination with start-stop system
 - **Long service life** thanks to robust design
 - **Highly efficient fuel injection** thanks to extremely short injection intervals and multiple injection
 - **Efficient fuel combustion, smooth running and high engine performance** in every driving situation through pre-, main- and post-injections
 - **Quiet, highly efficient combustion** due to individually controlled injection into each cylinder
 - **Rapid injection stop** by hydraulically closing the nozzle needle

Comprehensive Bosch eXchange program for diesel vehicles

| Bosch eXchange product | Application | System pressures up to | Used in the following vehicle brands |
|--|-------------------|------------------------|--|
| Common-rail injector (CRI, CRIN) | Car, CV, off-road | 2,700 bar | AGCO, Audi, BMW, Citroen, CNH, Dacia, Deutz, Fiat, Ford, Hyundai, Isuzu, Iveco, John Deere, Kia, MAN, Mercedes-Benz, Nissan, Opel, Peugeot, Renault, Toyota, Volkswagen, Volvo |
| Common-rail high-pressure pump (CP1, CP3, CP4) | Car, CV, off-road | 2,700 bar | AGCO, Audi, BMW, Citroen, CNH, Dacia, Deutz, Fiat, Ford, Hyundai, Isuzu, Iveco, John Deere, Kia, MAN, Mercedes-Benz, Nissan, Opel, Peugeot, Renault, Toyota, Volkswagen, Volvo |
| Unit injector | Car | 2,200 bar | Audi, Ford, Seat, Skoda, Volkswagen |
| Unit injector | CV, off-road | 2,050 bar | Iveco, Scania, Volvo |
| Unit pump | CV, off-road | 1,800 bar | DAF, Deutz, Liebherr, Mack, Mercedes-Benz, MTU |
| Nozzle holder assembly | Car, CV, off-road | 1,800 bar | Audi, BMW, Citroen, Ford, John Deere, MAN, Mercedes-Benz, Opel, Renault, Scania, Volkswagen, Volvo |
| Denoxtronic supply module | CV, off-road | Low pressure range | AGCO, CNH, Cummins, DAF, Deutz, Iveco, MAN, Renault, Scania, Volvo |

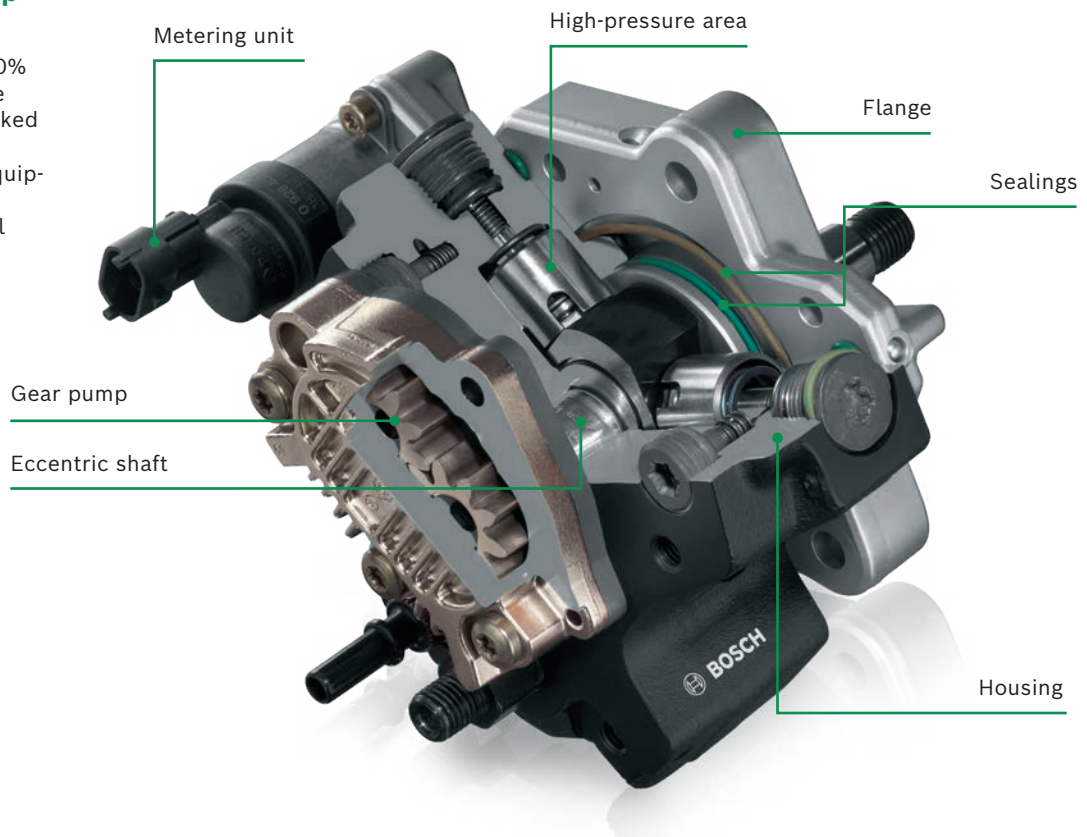
Bosch eXchange common-rail pump

Details of series remanufacturing

Fitting inferior remanufactured diesel products can cause problems in the vehicles of workshop customers and even result in engine damage. The consequences can be significant, given the operating pressures of up to 2,700 bar in common-rail systems. The reliable solution: Bosch eXchange.

Bosch eXchange common-rail pump

Wearing parts are 100% replaced. All reusable components are checked and reworked on the basis of original equipment expertise and replaced with original parts from Bosch as required.



Possible risks when not using original high-pressure pumps from Bosch

| Cause | Possible effect | Associated risks |
|--|---|--|
| 1. Mechanical damage at pump housing | Leakage, insufficient pressure | Engine cut-out, engine fire |
| 2. Bushing and radial shaft sealings not replaced with genuine new parts | Leakage of fuel, engine oil dilution | Total failure of pump due to seizure |
| 3. Re-use of sealings and bolts | Internal and external leakage | Engine cut-out, engine damage |
| 4. Mechanical damage at cylinder head | Differing compression (valves) | Engine oil dilution, reduced engine power |
| 5. Metering unit not replaced with genuine new part | Impaired operation due to rust and deposits | Reduced or impaired engine power |
| 6. Eccentric shaft not reworked | Engine oil dilution | Total failure of pump due to seizure, engine damage |
| 7. Wear at high-pressure area | Imprecise fuel supply | Reduced engine power, starting problems or even total failure of the pump due to seizure |

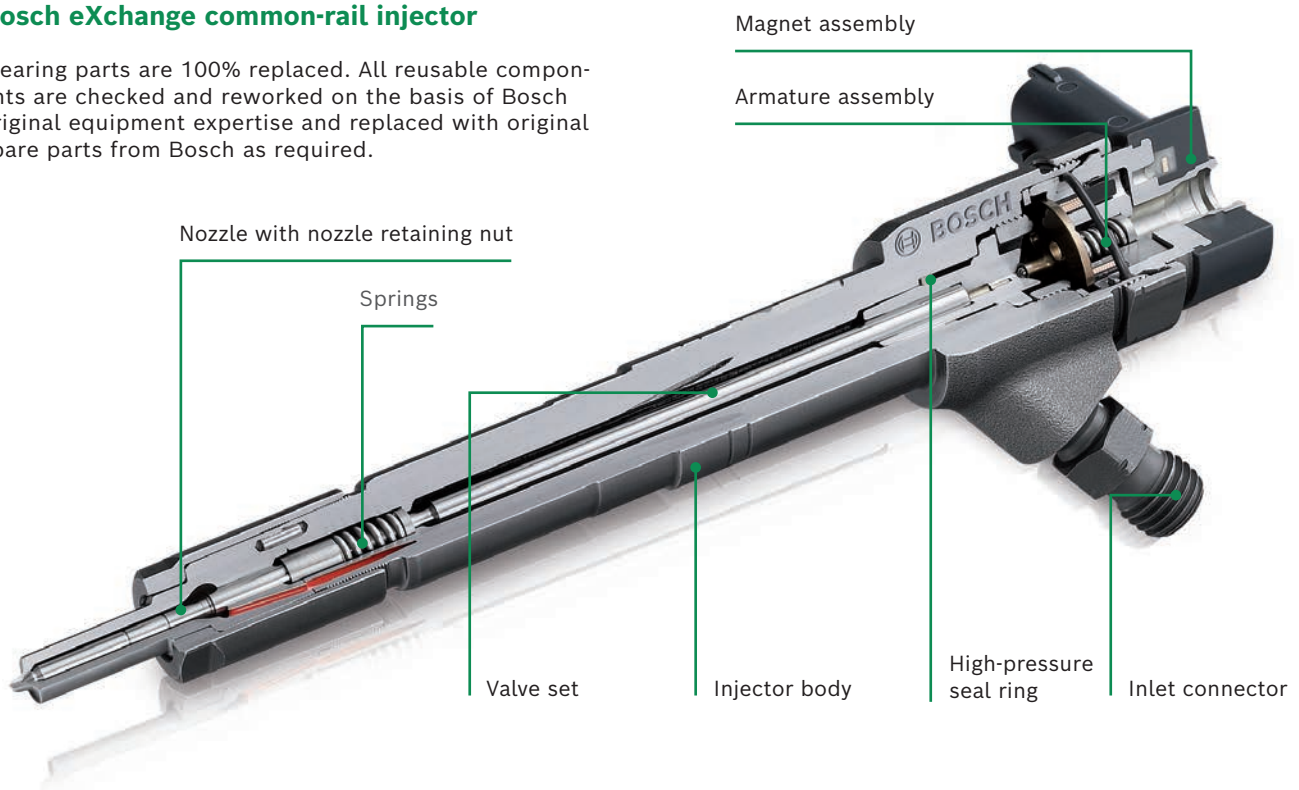
Bosch eXchange common-rail injector

Details of series remanufacturing

Series remanufacturing from Bosch involves not only replacing all wearing parts but – most importantly – all critical components with 100% new parts. Maximum operational reliability is additionally guaranteed by high-precision manufacturing standards and stringent quality control.

Bosch eXchange common-rail injector

Wearing parts are 100% replaced. All reusable components are checked and reworked on the basis of Bosch original equipment expertise and replaced with original spare parts from Bosch as required.



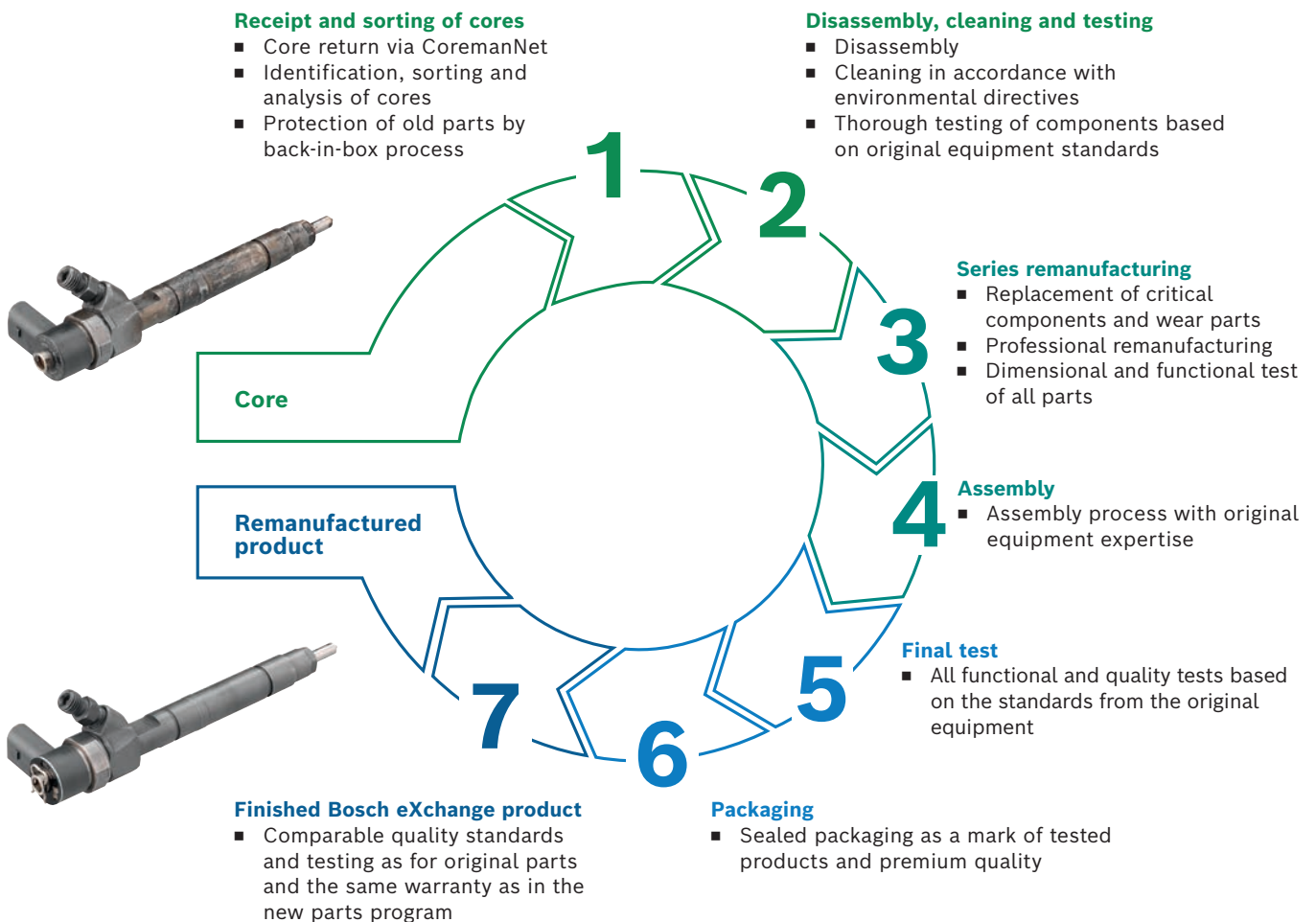
Possible risks when not using original eXchange injectors from Bosch

| Cause | Possible effect | Associated risks |
|---|--|--|
| 1. Re-use of old nozzle and nozzle retaining nut | Nozzle/nozzle retaining nut leakage or incorrect injection action | Reduced engine power, negative effect on emissions and potential engine damage |
| 2. Valve set not replaced with genuine new parts | Millisecond accuracy of nozzle actuation no longer guaranteed and increased fuel backflow rate | Rough engine running, reduced engine power, increased fuel consumption |
| 3. Re-use of springs | Loss of spring force, spring fracture, incorrect injection action | Negative effect on emissions, engine damage |
| 4. High-pressure seal ring not replaced with genuine new part | Leakage, different injection action | Loss of power and even engine damage |
| 5. Re-use of inlet connector | Leakage of fuel, edge-type filter defective | Reduced engine power, negative effect on emissions and potential engine damage |
| 6. Mechanical damage or corrosion at injector body | Leakage of fuel | Engine cut-out, engine fire |

Bosch eXchange common-rail systems

Quality in every detail

Series remanufacturing in certified Bosch plants uses proven and documented procedures for each individual work step. A strict quality assurance system monitors the entire process. Even before the start of series remanufacturing, all products must pass an approval process based on original equipment standards. They are tested under extreme conditions for service life, vibration resistance, robustness against environmental influences and leak tightness. The result: Bosch quality on a par with the production of new parts.



Bosch eXchange common-rail systems

A good choice

Bosch eXchange offers the opportunity to carry out vehicle repairs in line with the current value of the vehicle, helps the workshop to calculate economically, and keep costs low. The products are delivered ready for installation and reduce the workload for the workshop and the length of time customers' vehicles are out of service. They also offer a significant price advantage over the new product range and conserve resources and the environment. It pays off to rely on Bosch eXchange.

Advantages at a glance

- High functional reliability, long service life
- Technically up to date
- Wide product range, high market coverage
- Time savings thanks to ready-to-install Bosch eXchange products
- Price certainty through precise calculation
- Price advantage compared to new parts program
- Vehicle warranties remain valid
- Contribution to compliance with statutory emissions standards
- Same warranty as in the new parts program
- Protection of resources and the environment



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Bosch eXchange: the safety package for workshops

When using a replacement product, Bosch recommends using genuine Bosch eXchange products. This minimizes risks for the workshop customers' vehicles.

Bosch replaces not only defective components, but all components that are relevant for the **long service life and functional reliability** of the replacement part.

What drives you, drives us

Bosch technologies are used in most vehicles worldwide.
People, and assuring their mobility, is what we are focused on.

Therefore, we have dedicated over 130 years of pioneering spirit
and expertise in research and manufacturing to achieving this.

We provide the aftermarket and workshops worldwide with modern diagnostic and
workshop equipment and a wide range of spare parts for passenger cars and commer-
cial vehicles:

- Solutions for efficient and effective vehicle repairs
- Innovative workshop equipment and software
- One of the world's most comprehensive ranges
of new and exchange parts
- Large network of wholesale customers,
for quick and reliable parts supply
- Competent technical support
- Comprehensive educational and training offers
- Targeted sales and marketing support

Find out more at:
boschaftermarket.com

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