

The Automotive Aftermarket division provides the aftermarket and repair shops worldwide with a complete range of diagnostic and repair shop equipment and a wide range of spare parts – from new and exchange parts to repair solutions – for passenger cars and commercial vehicles.

Its product portfolio includes products made as Bosch original equipment, as well as aftermarket products and services developed and manufactured in-house. More than 17,000 associates in 150 countries, as well as a global logistic networks, ensure that some 650,000 different spare parts reach customers quickly and on time.

In its "Automotive Service Solutions" operations, AA supplies testing and repair-shop technology, diagnostic software, service training, and information services. In addition, the division is responsible for the "Bosch Service" repair-shop franchise, one of the world's largest independent chains of repair-shops, with some 16,000 franchises.



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**Bosch Spare Parts:**  
All what you need!



# Bosch Quality Assurance without Borders

The Bosch Group is the largest provider of automotive technology in the world. Since its founding in 1886, in Germany, it's been distinguished by continuous innovation and high quality standards established in all sectors: Automotive Technology, Industrial Technology, Energy and Building Technology and Consumer Goods.

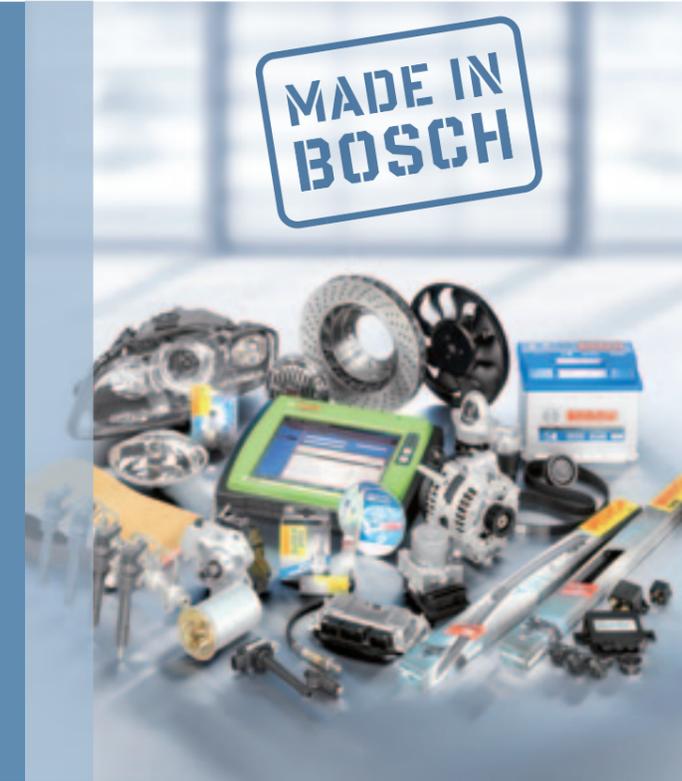
The Bosch Group is present in approximately 50 countries with over 300 subsidiaries. In all these countries Bosch operates with the same principles; continuously investing in manufacturing platforms and systems that ensure the quality of its systems and components are not jeopardized.



# Bosch automotive highlighted in the Bosch Group

Bosch is the largest independent provider of parts and systems in the world, in direct response to the primary sector (vehicle assembly) and the aftermarket.

The Automotive Technology segment corresponds to approximately 60% of the overall company operation, providing innovative products such as diesel injection systems, gasoline systems, brake components, active safety (such as ABS), energy and onboard electronics, among other components.



## 293 factories, more than 300 000 associates; Same production system everywhere

To ensure that all products manufactured at various plants across the world have the same standard of quality and performance, Bosch created a unique production system called the BPS (Bosch Production System). The objective of BPS is to support the process improvement - continuous quality, delivery and cost, and performing rigid control in production methods to ensure the highest standards in final products.

Bosch employees worldwide that are actively involved with the improvement process are constantly receiving specific training on the values within the Bosch Group.



## New factory in China: producing global excellence

With investments of over U.S. \$ 170 million, the new plant Bosch Nanjing, China, is responsible for the annual production of more than 100 parts with Bosch quality.

The new factory employs more than 3000 employees and has a new Development Center

## One Source - Complete Solutions

In addition to genuine high quality spare parts, Bosch provides test equipment software, hardware and services for diagnostic maintenance of heavy and light vehicles.

Added to that, technical information on products and Bosch systems are also provided by the company; providing a complete solution to the aftermarket. Completing the circle of market delivery, is a wide network of specialized workshops guarantees the best service to drivers for repair and maintenance in more than 130 countries.

Bosch has the right products that will satisfy every requirement. We offer you a single source solution for your car, whether it is an Asian, American or European.

Bosch provides superior quality products such as batteries, brakes, wipers, bulbs and spark plugs just to name few. With Bosch you will find the right product for your vehicle giving you a cleaner, safer and more comfortable driving experience



# The right power for every application: The Bosch battery range

Modern vehicles are being fitted with more and more components which run on electricity. A high-performance, reliable power supply is essential.

Bosch batteries can guarantee that. And now, thanks to the new S6 AGM and S5 EFB batteries, they can also be installed in start/stop systems. The batteries are maintenance-free and meet the exact requirements of original equipment.



## Bosch S6 battery for passenger cars featuring start/stop systems with recuperation

- ▶ Longer service life and up to four times greater cycle resistance than conventional batteries
- ▶ Outstanding short distance tolerance
- ▶ Micro fiberglass mats to absorb the acid (AGM)
- ▶ Suitable for installation in any position, 100% leak-proof and tilt-resistant
- ▶ 100% maintenance-free

## Bosch S3-S4-S5 batteries for passenger cars

- ▶ Tailor-made range
- ▶ New PowerFrame technology for a guaranteed long service life
- ▶ Up to 30% more colder starting power
- ▶ 100% maintenance-free
- ▶ High short distance tolerance
- ▶ Maximum reliability
- ▶ For around 97% of all vehicles
- ▶ For European and Asian vehicles

## S5 batteries with EFB technology

| Bosch TTN  | ETN       | HBK   | Ah | A   | C <sup>1</sup> | E <sup>2</sup> | A <sup>3</sup> | Dim. (L/W/H) |
|------------|-----------|-------|----|-----|----------------|----------------|----------------|--------------|
| 0092S5E050 | 560500056 | S5E05 | 60 | 560 | 0              | 1              | B13            | 242 175 190  |
| 0092S5E070 | 565500065 | S5E07 | 65 | 650 | 0              | 1              | B13            | 278 175 175  |
| 0092S5E080 | 570500065 | S5E08 | 70 | 650 | 0              | 1              | B13            | 278 175 190  |
| 0092S5E100 | 575500073 | S5E10 | 75 | 730 | 0              | 1              | B13            | 315 175 175  |
| 0092S5E110 | 580500073 | S5E11 | 80 | 730 | 0              | 1              | B13            | 315 175 190  |

## S6 batteries with AGM technology

| Bosch TTN  | ETN       | HBK   | Ah  | A   | C <sup>1</sup> | E <sup>2</sup> | A <sup>3</sup> | Dim. (L/W/H) |
|------------|-----------|-------|-----|-----|----------------|----------------|----------------|--------------|
| 0092S60050 | 560901068 | S6005 | 60  | 680 | 0              | 1              | B13            | 242 175 190  |
| 0092S60080 | 570901076 | S6008 | 70  | 760 | 0              | 1              | B13            | 278 175 190  |
| 0092S60110 | 580901080 | S6011 | 80  | 800 | 0              | 1              | B13            | 315 175 190  |
| 0092S60130 | 595901085 | S6013 | 95  | 850 | 0              | 1              | B13            | 353 175 190  |
| 0092S60150 | 605901095 | S6015 | 105 | 950 | 0              | 1              | B13            | 393 175 190  |

C<sup>1</sup> = Circuit, E<sup>2</sup> = End terminals, A<sup>3</sup> = Attachment

## Bosch S3-S4-S5 batteries with PowerFrame technology

- ▶ Up to 30% longer service life
- ▶ Up to 30% more colder starting power
- ▶ 100% maintenance free, ready to install and start
- ▶ Carrying handles for ease of transportation and installation
- ▶ Short distance tolerance thanks to high current input
- ▶ Leak-proof labyrinth-type cover with backfire protection
- ▶ Also suitable for installation in the passenger compartment



Reduced corrosion, optimized power flow and longer service life with the PowerFrame grid



## When servicing batteries in start / stop systems the following information must be observed:

- ▶ Replace AGM with AGM
- ▶ Replace EFB with EFB or AGM
- ▶ Conventional lead-acid battery cannot be used
- ▶ Use of a Bosch KTS-series diagnostics tester is often required to register the battery newly installed on the control unit

## Bosch S5 battery for passenger cars featuring start/stop systems

- ▶ Two times higher cycle resistance than conventional starter batteries
- ▶ With an additional polyester scrim material between the plate and separator (EFB)
- ▶ Highest short distance tolerance
- ▶ Leak-proof and tilt-resistant
- ▶ 100% maintenance-free

# Bosch T- batteries

## Power up for commercial vehicles

Commercial vehicles need a great deal from their energy supply: Long downtimes and a large number of electrical consumers can drain a battery completely.

The T3, T4 and T5 from Bosch are specifically designed to deal with this. These batteries are also maintenance-free, which means cost savings for fleet operators.



### Reliable and powerful starting - Bosch M4 and M6 batteries

All Bosch M4 and M6 batteries come complete with an acid pack and filling aid. They contain the exact quantity of acid required.



#### Starting power with no compromises: T3

Benefits of the basic type include:

- ▶ Reliable starting power
- ▶ Long service life

#### More power right from the start: T4

Designed for continuous applications with the engine switched off

- ▶ Copes with frequent charging and discharging
- ▶ Reliable power supply for all energy consumers

#### Maximum power and cycle resistance: T5

For extremely high power requirements and frequent discharges

- ▶ Ideal for vehicles with a sleeper cab
- ▶ Ideal for trucks with a lifting platform, and also coaches



**T3, T4, T5:**  
Commercial vehicle batteries from Bosch.  
More power, reliability and convenience in everyday use.

#### M6 – Bosch motorcycle battery with AGM technology

- ▶ 100% maintenance-free
- ▶ With fixed electrolyte
- ▶ Outstanding starting power with plenty to spare
- ▶ Vibration-resistant
- ▶ Tilt-resistant and leak-proof
- ▶ Minimal self-discharge
- ▶ 20% longer service life

#### M4 – motorbike battery

- ▶ Low-maintenance
- ▶ Powerful start regardless of weather condition
- ▶ Central gas venting system

#### Mobile and independent for leisure activities and lighting: Bosch L4 batteries

Bosch L4 batteries provide power that customers can rely on. With their outstanding deep cycle resistance and long service life, these “power packs” ensure full mobility and optimum reliability whatever the application.



| Features                         | T3   | T4                                 | T5  |
|----------------------------------|--|------------------------------------|---|
| Absolutely maintenance free      | Maintenance free, topping-up with water possible | ✓                                  | ✓   |
| Installation in vehicle interior | Not Possible                                     | ✓                                  | ✓   |
| Deep cycle resistance            | Satisfies EN standard                            | Up to 300%                         | Up to 400%                                      |
| Service life                     | 100%   | 120%, thanks to silver technology  | 120%, thanks to silver technology and glass mat |
| Vibration resistance*            | Extremely vibration-resistant                    | Ten times more vibration-resistant | Ten times more vibration-resistant              |
| Starting power                   | 100%   | 120%                               | 130%  |
| Shelf life                       | Up to 12 months                                  | 15 months                          | 18 months                                       |



#### T3-T4-T5 for commercial vehicles

- ▶ 100% maintenance-free – saving costs for fleet owners
- ▶ For the harshest conditions
- ▶ With innovative silver alloy (T4, T5)
- ▶ Fewer types for optimum warehouse management
- ▶ Excellent starting power

#### L4: batteries for leisure activities and lighting

Mobile power supply for a wide range of applications. Ideal for example for

- ▶ Motor homes, caravans
- ▶ Boats
- ▶ Signal systems, solar installations

#### M4-M6: batteries for motorcycles

For more than 80% of all motorcycles, scooters and mopeds.

- ▶ Maintenance-free as per EN
- ▶ Powerful start regardless of weather condition
- ▶ With acid pack
- ▶ M6 batteries with AGM technology

# Bodyguard for the engine: Filters from Bosch

Bosch filters ensure the smooth running of the injection system, the engine and the welfare of passengers – with a range of more than 2,000 filters for almost every vehicle. The range is constantly being updated and extended, which means dealers and workshops always have the latest filters on hand from Bosch, the worldwide filter experts.

## Final Stop for Dirt Particles of All Kinds

Bosch air filters lead to low fuel consumption and compliance with the applicable exhaust gas standards. For example, 1.5 kg of dust is collected in the air inlet of a bus with a 160 kW engine after 30,000 km – dust that can never find its way into the engine thanks to efficient air filters.

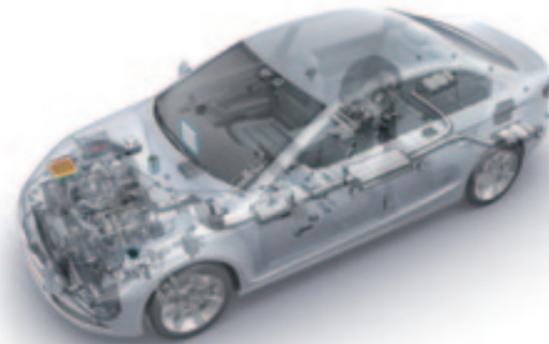


## Bosch DENOX Filters: Reduced Emissions, Lower Consumption

Emission limits, particularly for commercial vehicles, are set to be further reduced over the next few years. SCR catalytic converters and the DENOXTRONIC® metering system from Bosch will enable you to comply with future emission limits and keep down fuel consumption. Bosch has developed special filters that are designed specifically for this metering system and reliably protect the injection valve.

## AdBlue and DENOXTRONIC® from Bosch

AdBlue is precisely injected into the exhaust gas flow by DENOXTRONIC® and converts up to 85% of emissions into water and air. Bosch DENOX filters ensure that the SCR catalytic converter components are protected against impurities and that the AdBlue is always correctly metered.



Intelligent environmental protection pays off – 10% lower fuel consumption means that the SCR system can be amortized within around 110,000 km.

## Air filters

- ▶ Accurate fit avoids bypass of dirty air into the engine
- ▶ High quality microfiber media – a perfect combination of air permeability and dirt retention ensures maximum engine performance
- ▶ Increased safety thanks to flame-retardant media

## Strong arguments for Bosch DENOX filters:

- ▶ Years of experience with AdBlue; the filter is perfectly compatible with the DENOXTRONIC® system
- ▶ High-quality materials offering exceptional resistance against the aggressive AdBlue
- ▶ Regular filter replacement guarantees precise metering of AdBlue and thus compliance with EU emission standards



## Oil filters

- ▶ Effective filtering
- ▶ A long service life thanks to specially impregnated, tear-resistant filter media
- ▶ Bypass valve and return flow check valve ensure sufficient engine lubrication during idling and cold start
- ▶ Environment friendly metal-free filter elements



## Fuel filters

- ▶ Pioneer in fuel filtration for more than 80 years
- ▶ Advanced fuel filters to suit modern injection systems
- ▶ Unrivalled engine protection thanks to special filter media with a high dirt retention and efficiency



- ▶ Long service life thanks to high-quality filter media with large filtering surfaces
- ▶ Highly resistant to temperature fluctuations, pressure and corrosive fuels, such as bio diesel applications



## Cabin filters

- ▶ Effective filtering of pollen, dirt particles and pollutants provides a healthy ambience
- ▶ Excellent air quality inside the vehicle promotes concentration of the driver
- ▶ Added comfort of fresh air even in tunnels and congested traffic
- ▶ Activated carbon cabin filters provide extra protection by absorbing odorous and hazardous gases such as ozone and nitrogen oxides.



- ▶ Bosch cabin filters have a huge coverage for American, Asian and European vehicles.
- ▶ Growing market thanks to increasing original equipment volume
- ▶ Supplied with detailed fitting instructions
- ▶ Convenient replacement of conventional cabin filters with equivalent activated carbon versions

# Leading Technology and Safety: Brakes from Bosch

Bosch offers a complete range of brakes in original equipment quality, all from a single source: with over 10,000 products, we provide excellent market coverage – from individual components to customized systems. As a pioneer of electronic driving safety systems, Bosch also provides the highest level of functionality in this area too, thanks to in-depth research and close cooperation with vehicle manufacturers. Bosch is a global leader when it comes to products such as anti-lock braking systems (ABS), traction control systems (TCS) and electronic stability programs (ESP®). Our diagnostics and testing technology, coupled with our service training and technical support, provide ideal solutions for retailers and workshops.



## Bosch Superfit: metal-free permanent lubrication for brake assembly

Excellent durability and long-term reliability are a must for high-performance brake lubricants, therefore Bosch Superfit offers

- ▶ Extremely low oil separation
- ▶ Less prone to becoming pasty compared to other products on the market
- ▶ High level of flush resistance
- ▶ Excellent temperature characteristics
- ▶ Resistance to heat and cold
- ▶ Ideal for vehicles with ABS as it is metal and acid-free and not a conductor
- ▶ Non-corrosive and compatible with all metals and most rubber materials
- ▶ Ideal for steel/aluminum brake calipers
- ▶ Can also be used to assemble and protect compressors, central lubricating systems, seat rails, sliding sunroof guides, door catches and battery terminals



## Safety and comfort: you can always rely on Bosch

As a leading manufacturer of brake systems, Bosch also sets benchmarks for safety and comfort when it comes to replacement parts for drum brakes.

- ▶ All drum brake components are of the very best quality
- ▶ We offer extensive expertise from research and development, to application, production and service
- ▶ Cooperation and coordination with all well-known automotive manufacturers
- ▶ Ongoing safety checks
- ▶ Solutions for all common passenger car models



- 1) Friction material** - Specially customized for the relevant vehicle application
- 2) Intermediate coating** - Improved compression behavior; reduces heat transfer
- 3) Adhesive** - High shear resistance; binds the friction material to the carrier plate
- 4) Carrier plate** - Excellent material strength
- 5) Insulation material** - For improving comfort characteristics



### Optimum reliability: Actuation mechanisms

- ▶ Master cylinders
- ▶ Brake boosters
- ▶ Brake power regulators

### Exceeding all standards: Transfer mechanisms

- ▶ Brake fluid
- ▶ Brake hoses
- ▶ Brake cables

### Everything from a single source:

- ▶ Disc brakes
- ▶ Brake discs
- ▶ Disc brake pads
- ▶ Disc brake pad accessories
- ▶ Wear indicators
- ▶ Brake calipers – also available as exchange calipers and repair kits

### A market leader: electronic driving safety systems

- ▶ Hydraulic modulators with add-on control units
- ▶ Control units
- ▶ Wheel speed sensors
- ▶ Steering angle sensors
- ▶ Yaw-rate sensors
- ▶ Acceleration sensors

### Perfectly matched: Drum brakes

- ▶ Brake drums
- ▶ Drum brake shoes
- ▶ Wheel cylinders
- ▶ Drum brake shoes accessories
- ▶ Kit Pro
- ▶ Kit Super Pro

# The success story from the system specialists: Gasoline injection from Bosch

An increasing number of vehicles are being equipped with gasoline injection. It is therefore best to rely on the unique technological expertise of the market leader for service and parts supply. Benefit from the advantages of a single supplier and outstanding Bosch original equipment quality throughout – the whole spectrum from service training and diagnostic tools to complete gasoline systems with spare parts.



## Sensors: Increasing original equipment figures – growing demand for replacement parts

The number of different sensors in the automotive sector has increased dramatically in recent years. Compact vehicle models are fitted with up to 50 individual sensors. And the number is increasing.

## Huge potential for active workshops

Sensors are wearing parts. This is an area of huge potential for active workshops. With more than 2,300 different products Bosch can provide a broad market coverage in all the major sensor categories – from engine management to passive safety systems. This includes air mass meters, pressure sensors, temperature sensors, phase sensors and crankshaft sensors for instance. As you can see: Bosch can supply the full sensor range and of course original equipment quality throughout.



### Lambda sensors – From the no. 1 manufacturer

As wearing parts, Lambda sensors should be checked after every 30000 km and exchanged as a precaution on reaching the recommended replacement interval. Only Lambda sensors in perfect working order

- ▶ Can save fuel
- ▶ Ensure compliance with stringent emission legislation
- ▶ Prevent catalytic converter damage

### Ignition coils

- ▶ Always just the right ignition voltage and energy level
- ▶ Long spark duration
- ▶ Low weight
- ▶ High electric strength
- ▶ Thermally stable and vibration-resistant
- ▶ Laser-based coil winding

### Ignition modules

- ▶ Absolutely leak-proof and with maximum corrosion protection
- ▶ No exposed connecting cables
- ▶ Secure attachment
- ▶ Good thermal stability and reliable operation
- ▶ Extremely shatter-proof
- ▶ Excellent thermal capacity and conductivity

### Original equipment gasoline injection systems from Bosch can be found for example in vehicles from:

|              |          |               |         |            |
|--------------|----------|---------------|---------|------------|
| Alfa Romeo   | Chrysler | Land Rover    | Peugeot | Smart      |
| Aston Martin | Citroën  | Lancia        | Porsche | Toyota     |
| Audi         | Ferrari  | Maybach       | Renault | Volkswagen |
| Bentley      | Fiat     | Mercedes-Benz | Saab    |            |
| BMW          | Ford     | Nissan        | Seat    |            |
| Bugatti      | Jaguar   | Opel          | Skoda   |            |



### Ignition cables

- ▶ Corrosion-resistant
- ▶ Optimum interference suppression
- ▶ Shatter-proof
- ▶ Long service life
- ▶ Highly conductive
- ▶ Porsilock clip for easy connection

### Fuel pumps and in-tank units

- ▶ Excellent operating characteristics and reliability
- ▶ Optimum flow rate
- ▶ Easy to install
- ▶ Quiet running for pleasant driving
- ▶ Outstanding interference suppression

### Lambda sensors

- ▶ Expertise from the inventors and leading suppliers
- ▶ Ideally prepared for rapid installation
- ▶ Genuine connector and matching cable length
- ▶ 100% tested for operation
- ▶ Patented

### Injectors

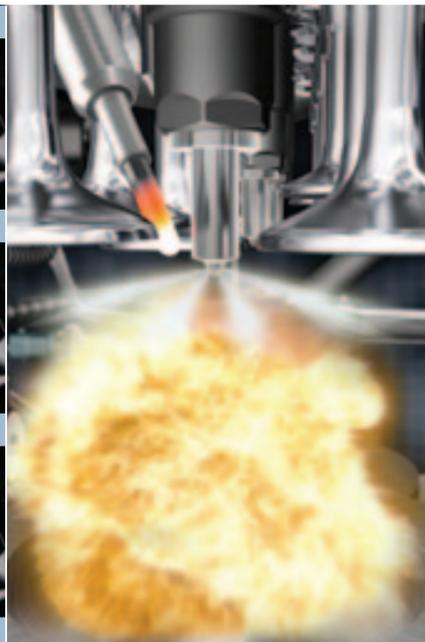
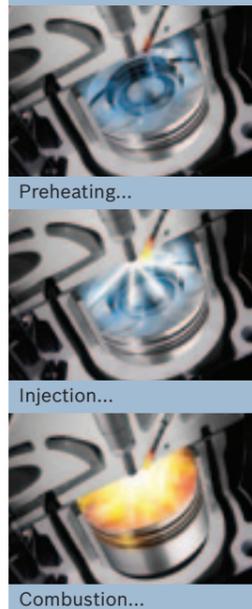
- ▶ Far and away the most experienced manufacturer: More than 1 thousand billion produced to date
- ▶ Extremely tight tolerances
- ▶ Corrosion-resistant
- ▶ Optimum spray pattern
- ▶ Outstanding hot starting performance

### Air mass meters

- ▶ Maximum precision and long service life thanks to the latest hybrid technology
- ▶ Model-specific applications
- ▶ General homologation for Germany on replacement

# Bosch Diesel Injection Systems: Quality guaranteed

## Perfect Interaction



## Bosch Fuel Injection: Where Superlative Lives

### Tolerance

0.002 mm for moveable parts. In comparison, a human hair is 30 times thicker.



### Fuel is injected into the combustion chamber at a pressure of 2,200 bar.

This is equal to concentrating the weight of a luxury sedan on a finger nail.



### Injection Quantity

Ranges from 1 mm<sup>3</sup> to 350 mm<sup>3</sup>. This quantity is injected at a rate of 2,000 KPH through an orifice measuring 0.25 mm<sup>2</sup>.



### Much Faster than the Blink of an Eye.

Injection takes place in 1 to 2 milliseconds. The blink of an eye (0.4 seconds) takes longer than 200 injections.



High-tech performance comes from precision manufacturing.

## New diesel systems - High pressure for optimum results

Common rail systems have long since become state-of-the-art in modern commercial vehicles. This offers vast potential for every Bosch workshop, as diesel engine components are also subject to wear. Bosch can supply component packages for the common rail systems of almost all vehicle manufacturers.

### Bosch CRS3-25 with 2,500 bar pressure

- ▶ Higher injection pressure
- ▶ Increases torque
- ▶ Instant reaction time for combustion

### Common rail high-pressure pumps

- ▶ Broad range for the third and fourth generation of common rail systems
- ▶ Repair work can be performed at a Diesel Center

### Common rail injectors

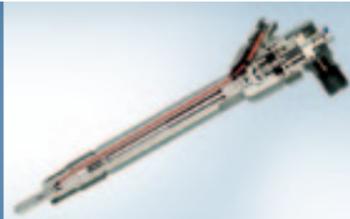
- ▶ Solenoid-controlled injectors
- ▶ Piezo injectors for the third generation common rail system
- ▶ Repair work can be performed at a Diesel Center
- ▶ Exchange range

### Unit injectors

- ▶ A unit consisting of pump and injector
- ▶ Repair work can be performed at a Diesel Center
- ▶ Up to 2,200 bar

### Common application for large engines

- ▶ Stationary applications (Generators)
- ▶ Special Vehicles (construction, mining and agricultural vehicles)
- ▶ Marine applications (Propulsion engines and generators)
- ▶ Railway applications



## Flexible, versatile, global, worldwide leader in the production of nozzles

At Bosch the production of parts is organized into international production network, with production sites all around the globe. World Wide universal Bosch standards ensure consistency at all Bosch manufacturing sites.

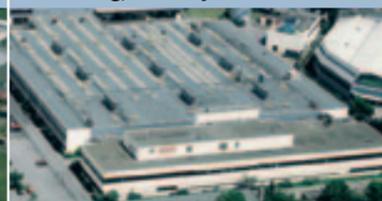
### Curitiba, Brazil



### Wuxi, China



### Bamberg, Germany



### Rodez, France



### Nashik, India



### Yorii, Japan



### Engels, Russia



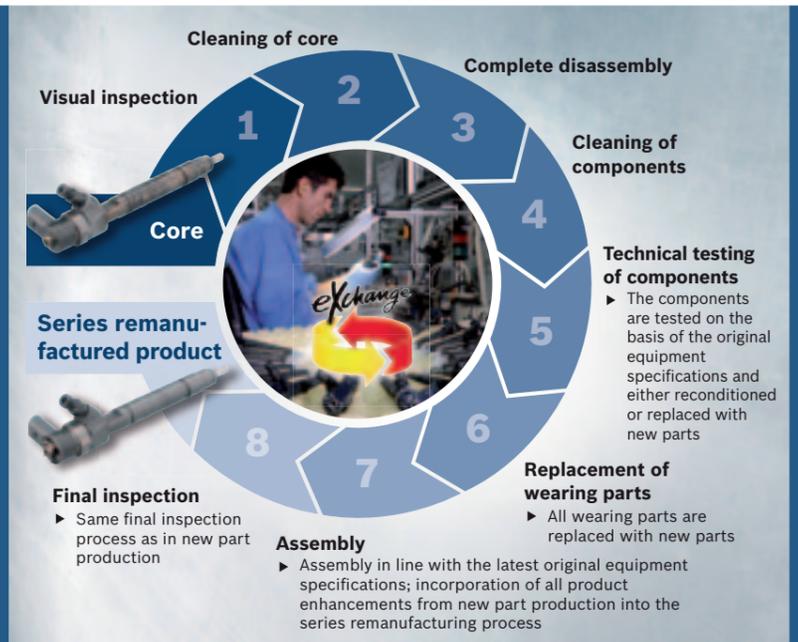
## Bosch eXchange: Efficient, Easy, Fast

The BX programme is an opportunity for a service station to purchase reconditioned Bosch products and install them in cars. A reconditioned Bosch product undergoes a repair process by Bosch which provides the same high quality, reliability and the same warranty as a new product.

### BX programme advantages:

- ▶ Lower prices compared new products.
- ▶ Time saving: no need to wait for new parts while repairing old products.
- ▶ Compensation for the core cost if the old products is returned in the original package and meets the specified criteria.

The BX programme offers car-owners more than 1,000 types for diesel injection systems including: High pressure pumps, Diesel injectors, distributor high pressure fuel pumps, unit pumps, common rail pumps and injectors, etc.



## Only Trust Original Bosch Nozzles

| Bosch Nozzle   | Fake Nozzle |
|--|-------------|
|  |             |
| <b>Characteristic:</b> Excessively pointed nozzle pin of a fake nozzle   |             |
| <b>Risk:</b> Tip of nozzle pin may break, engine damage  |             |
|  |             |
| <b>Characteristic:</b> Rough surface of fake nozzle  |             |
| <b>Risk:</b> Uncontrolled combustion due to sealing problems   |             |
|  |             |
| <b>Characteristic:</b> Wrong nozzle-seat diameter of fake nozzles  |             |
| <b>Risk:</b> Different opening pressure, wrong injection timing, weakened engine performance, increased fuel consumption and emissions   |             |
|  |             |
| <b>Characteristic:</b> Sharp transition of fake nozzle   |             |
| <b>Risk:</b> Nozzle may break, engine damage   |             |
|  |             |
| <b>Characteristic:</b> Over-size sack hole of fake nozzle  |             |
| <b>Risk:</b> Incomplete combustion, increased emissions, failure to comply with emissions regulations                                    |             |
|  |             |
| <b>Characteristic:</b> Needle guide diameter of fake nozzle is too small   |             |
| <b>Risk:</b> Different opening pressure, wrong injection timing, incomplete combustion, increased emissions, weakened engine performance |             |

# Bosch Starter Motor & Alternator

## Energy System for Reliable Power Delivery

As a premium automotive technology supplier, Bosch has unparalleled expertise in automotive electrical systems. For over 100 years Bosch has been at the cutting edge of electrical technology and continues to produce market-leading products to the highest quality standards. The commitment to quality is evident in the Bosch range of starter motors and alternators.



### Superior Features

- ▶ Wide Asian and European application coverage across passenger cars, light and heavy commercial vehicles
- ▶ Manufactured to Original Equipment specifications, in accordance to strict Bosch quality standards
- ▶ Produced using high quality components, 100% tested before leaving the assembly line
- ▶ Premium Bosch branding and comprehensive Bosch warranty\*

### Key Benefits

- ▶ A wide Bosch Starter & Alternator range to fit all your top customers' needs
- ▶ Original Equipment performance, Aftermarket pricing
- ▶ No quality problems that are associated with cheap reconditioned, refurbished or repaired units
- ▶ Reputable brand ensures long term value, your customers' satisfaction and your peace of mind



### Production Sites --- Starters, Alternators, Reman

Bosch combines precision German engineering and local suppliers' know-how to provide a comprehensive portfolio of quality Bosch Starters and Alternators in your markets.

In the automotive aftermarket, supply flexibility is essential. Our advanced manufacturing facilities are capable of handling high volume demands and

variations in product specifications. Our global market presence ensures that customer requirements are constantly analyzed and our products ultimately suit the market.

The quality of a product is not determined by where it is made but by whom. With Bosch, you are guaranteed starters and alternators of industry-leading quality for your greatest peace of mind.

| Year | Product/Technology                 | Description   |
|------|------------------------------------|---|
| 2011 | Efficiency Line Generators         | Introduction of <b>Efficiency Line Generators</b> : increased degree of efficiency up to 77% with use of High Efficiency Diodes (HED) |
| 2008 | new baseline generators            | Introduction of <b>new baseline generators</b> with standard functionality and robust design for local needs from 70 A - 115 A.       |
| 2007 | Start/Stop Starter Motor           | <b>Start/Stop Starter Motor</b> for Start/Stop System   |
| 2006 | Compact direct starter motor (CDS) | <b>Compact direct starter motor (CDS)</b> optimized for small gasoline applications up to 1.4 l.                                      |
| 2005 | highline generators                | Introduction of <b>highline generators</b> high efficiency combined with impressive power output, ranging from 150 A - 230 A.         |
| 2000 | GVB starter motor                  | <b>GVB starter motor</b> - first overhung pinion, reduction gear starter for CV.  |
| 1995 | reduction gear starter motor       | First <b>reduction gear starter motor</b> for commercial vehicles with a total power of 4.0 kW  |
| 1989 | Compact generators LI-C            | <b>Compact generators LI-C</b> - with internal fan - low-noise, light-weight and powerful.  |
| 1982 | DW starter motor                   | <b>DW starter motor</b> - compact, light-weight and extremely powerful.   |
| 1967 | 1A silicon diodes                  | Start of production of <b>1A silicon diodes</b> for generators.   |
| 1959 | Generator - 1st products           | <b>Generator</b> - 1 <sup>st</sup> products from Bosch for buses.   |
| 1958 | Variode                            | <b>"Variode"</b> - first semiconductor element for the use in generators  |
| 1933 | Bosch starter-generator            | <b>"Bosch starter-generator"</b> - first unit worldwide, combining generator and starter motor.                                       |
| 1914 | Type S starter motor               | <b>"Type S"</b> starter motor - first Bosch inertia starter motor with special roller-type overrunning clutch.                        |
| 1913 | Bosch light                        | <b>"Bosch light"</b> - generator, regulator switch and headlight.   |

# Always the first choice: The Bosch spark plug range

Pioneering technology, excellent reliability and quality – those are the winning features of Bosch spark plugs. They reflect more than a hundred years of Bosch experience and are the result of close and successful cooperation with international vehicle manufacturers. That means you and your customers can be sure of original equipment quality from Europe's leading spark plug manufacturer.

Bosch recognises the aftermarket sector and workshops with the same importance as original equipment, supplying both sectors with state-of-the-art technology. So put your trust in Bosch spark plugs – the superior technology.



## The benefits of outstanding spark plug technology from Bosch

|                                    |   |
|------------------------------------|---|
| Original equipment quality         | ▶ From Europe's leading original equipment supplier   |
| Broad market coverage              | ▶ The right spark plug for almost every engine  |
| Innovative alloys                  | ▶ With nickel and yttrium or precious metals<br>▶ For a longer service life and improved ignition energy transmission |
| Optimized electrode geometry       | ▶ Profiled ground electrode, pin-to-pin, multiple ground electrodes<br>▶ For ideal ignition properties                |
| Heavy-duty ceramic mixtures        | ▶ Specially developed to meet the demands of modern engines<br>▶ Optimum dielectric strength for high voltages        |
| Innovative laser welding technique | ▶ Top reliability and service life  |
| Copper core                        | ▶ Enhanced heat dissipation<br>▶ Provides protection against pre-ignition and soot deposits                           |
| Also for gas engines               | ▶ All Bosch spark plugs guarantee top performance for both gasoline and gas (CNG, LPG) operation                      |
| Motorsport innovations             | ▶ Incorporated into spark plug production for series vehicles   |

### The procedure has not changed in any way:

The order numbers, applications, type designations, short ID numbers and EAN codes are all still the same.

### Modern new packaging design

- ▶ Modern concept with the emphasis on technology
- ▶ Easy to find on the shelf

### White strip with Bosch logo on blue packaging

- ▶ Clear identification of Bosch brand
- ▶ No risk of mix-ups

### Product illustration and information

- ▶ Easy to pick out the right article

### Strong packaging

- ▶ Reliable product protection during transportation and for storage

### Information block showing electrode gap and torque

- ▶ Fitting instructions on the product packaging

### QR code

- ▶ Quick access for additional product details

### Spark plugs in packs of one, four and ten

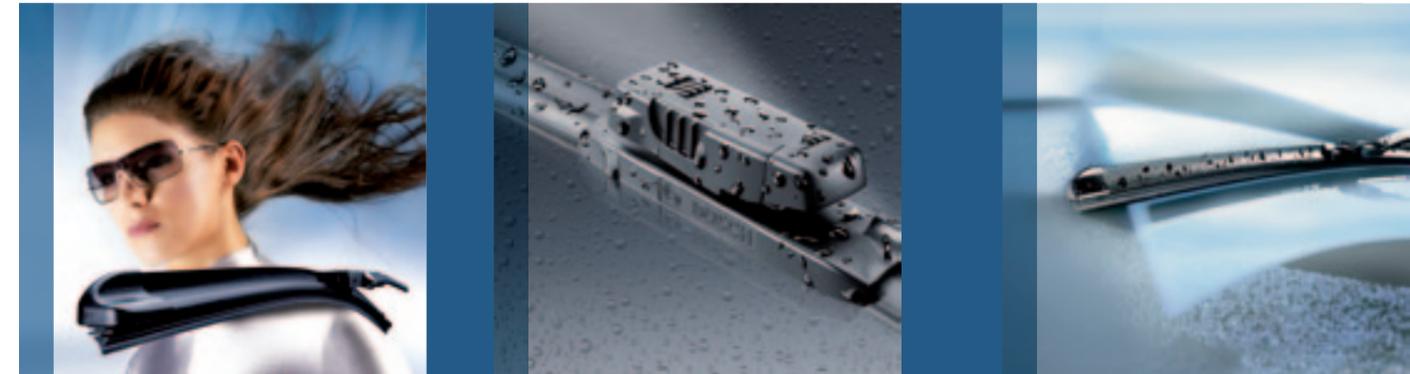
- ▶ Convenient packaging, suited to the needs of workshops and dealers

### Bosch original equipment spark plugs

Alfa Romeo, Audi, Bajaj Auto, BMW, BYD, Changan, Chery, Chevrolet, Chrysler, Citroën, Daewoo, Fiat, Ford, Geely, Haima, Holden, Honda, JAC, KTM, Lamborghini, Maruti Suzuki, Mercedes-Benz, Mini, Mitsubishi, Opel, Peugeot, Piaggio, Porsche, Renault, Seat, Skoda, Smart, SsangYong, Suzuki, Tata, Vauxhall, Volkswagen, Volvo, Weichai

# Wiper blades from Bosch: A range to suit every requirement

Nothing but the best for your customers from Bosch wiper blades: maximum safety, a long service life and top quality. The comprehensive range from Bosch offers just the right wiper blades for every vehicle type – including commercial vehicles.



### Bosch Aerotwin with Multi-Clip: The wiper blade from the wind tunnel

- ▶ Universal fitting: The new pre-assembled Aerotwin Multi-Clip is compatible with four of the most important wiper arm interfaces on the entire motor vehicle market
- ▶ Original equipment standard
- ▶ Low-noise, ideal for high speeds
- ▶ Aerodynamic design
- ▶ Perfect wiping performance: Clear vision, no judder or squeaking
- ▶ Now also available for retrofitting on most vehicle models

### Bosch Twin: For more effective wiping

- ▶ With Quick-Clip adapter for quick and easy fitting
- ▶ Perfect wiping performance: Clear vision, no judder or squeaking
- ▶ Robust, all-metal bracket system for a long service life
- ▶ As standard or spoiler-type wiper blades



### Bosch Rear Programme: top quality for the rear window as well

- ▶ For a variety of vehicle models
- ▶ Genuine original equipment quality
- ▶ Now available: Bosch Aerotwin rear window wipers

### Bosch Twin for commercial vehicles: Professional technology for professional road users

- ▶ Excellent wiping performance and perfect cleaning
- ▶ Blade element with flexible back for less wiper noise
- ▶ Long service life thanks to a wear-resistant wiper blade edge

### Bosch Aerotwin for commercial vehicles: The first of its kind

- ▶ Low-noise
- ▶ Aerodynamic design
- ▶ Now also available for retro-fitting

# Quality is what drives us:

## Drive belts from Bosch

### Complete Range – Reliable Safety

Drive belts are wearing parts and are subject to considerable stress within a vehicle. Tensioning elements and deflection and guide pulleys are also exposed to considerable strain. For this reason, these components should also be replaced when changing timing belts. Drive belts and all tensioning elements from Bosch always provide the high original equipment quality you have come to associate with us. Furthermore, over 1,000 types are available. This means you can work on over 90% of all European and Asian vehicles. Parts are made available quickly, even for new models. This is because Bosch is constantly updating its range of drive belts and kits.



#### Benefits for Trade

- ▶ Optimum storage thanks to the range of kits
- ▶ Covers up to 90% of all vehicles
- ▶ Rapid supply capability for all types
- ▶ The Bosch brand is well-known and widely used
- ▶ Appealing sales support

#### Benefits for Vehicle Workshops

- ▶ When purchasing kits, all required parts are included under a single part number
- ▶ High level of safety and customer satisfaction thanks to lasting original equipment quality
- ▶ Rapid and reliable product information through clear numerical codes
- ▶ Up-to-date, reliable equipment and service information, including information on replacement intervals
- ▶ Environmentally friendly packaging, 100% recyclable



#### Drive Belt Kits

- ▶ For all current vehicle models
- ▶ All parts included under a single part number and package – optimizing storage and simplifying the order process
- ▶ 3 product variants and approx. 300 types
- ▶ Timing belt / tensioner pulley kit
- ▶ Timing belt / tensioning element kit
- ▶ Timing belt / water pump kit **(New!)**



#### Timing Belts

- ▶ Synchronized transfer
- ▶ Good operating safety throughout the service life
- ▶ Quiet operation



#### V-belts

- ▶ For universal use in compact drive designs
- ▶ High-tolerance V-belts for drives with multiple grooves

#### Ribbed V-belts / Double Ribbed V-belts

- ▶ For vehicles with comprehensive fittings as standard
- ▶ For fast belt speeds
- ▶ For optimum power transfer

#### Elastic Ribbed V-Belts

- ▶ No wear-in period; optimal tension without retensioning
- ▶ Optimal damping and extremely durable
- ▶ Easy to fit using elastic toolkit 1.0

# The latest lighting technology:

## The complete range from Europe's leading supplier

Bosch lighting systems satisfy the highest standards and offer exactly the right product for every application. The extensive lighting systems range includes auxiliary lamps, work lamps, rotating beacons and a wide selection of bulbs.



#### Auxiliary lamps

- ▶ Modern, top quality design
- ▶ Flexible installation options
- ▶ Durable, heavy duty Bosch quality for SUV and commercial vehicles
- ▶ High light output providing perfect illumination



#### Rotating beacons

- ▶ Individual solutions for the most diverse requirements and applications
- ▶ Convenient operation, installation and bulb replacement
- ▶ Wear-free design: No maintenance and a long service life
- ▶ Optimum warning effect with high visibility



#### Flood lamps and spot lamps

- ▶ Xenon and halogen range for a wide variety of applications
- ▶ Robust, high quality designs: shatter-proof as well as corrosion and impact-resistant
- ▶ Flood lamps for bright illumination of larger areas
- ▶ Spot lamps with a concentrated beam of light for focusing on distant individuals and objects

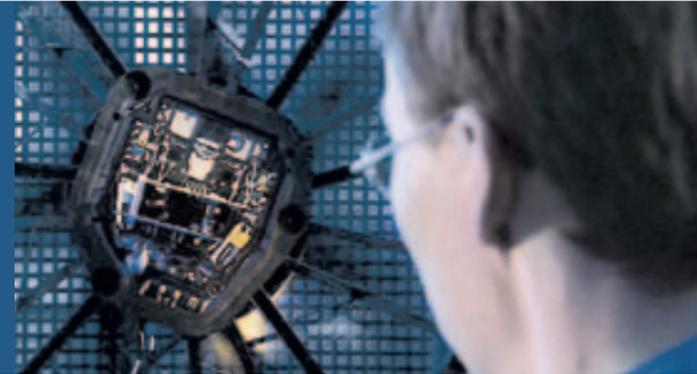


#### Bulbs

- ▶ A wide range: Suitable for more than 95% of all vehicles in Europe
- ▶ Range available in practical workshop packaging and popular DIY packaging
- ▶ Attractive sales displays
- ▶ Good selection of product lines with different focuses: The right bulb for every application

# Added value with comfort and safety: Vehicle electronics from Bosch

As innovation leader in the vehicle electrics and electronics sector, Bosch offers a broad product range bursting with new ideas and future-facing developments. From the electric motors to accessories: Bosch covers all workshop and trade requirements – in the Bosch quality you have come to expect. That is why leading car manufacturers worldwide equip their vehicles with Bosch vehicle electronics.



## Cooling system technology

High cooling outputs are required in motor vehicles even at low speed. The radiator thus needs an additional source of ventilation: The fan is driven electrically by DC brush motors or brushless DC motors. Bosch engine cooling fans feature extremely effective sickle blades, infinitely variable speed regulation, reverse polarity and overvoltage protection, electronics with diagnostics capability and blockage prevention.

## From the commercial vehicle to the motorcycle: Bosch offers a complete range of horns and sounders to suit every requirement

| Commercial vehicles / Buses | Europe                  | 2-3 Tone        | Trucker  |            |                         |        |          |
|-----------------------------|-------------------------|-----------------|----------|------------|-------------------------|--------|----------|
|                             |                         |                 |          |            |                         |        |          |
| Transporters / Mini-buses   | Megatone Oldtimer Style | Europe          | 2-3 Tone |            |                         |        |          |
|                             |                         |                 |          |            |                         |        |          |
| Cars / SUV / Pick-Ups       | FC9                     | FC4 / FD4       | Windtone | EC9 / EC9C | Megatone Oldtimer Style | Europe | 2-3 Tone |
|                             |                         |                 |          |            |                         |        |          |
| Motorcycles                 | FC4 / FD4               | Motorcycle Mini | FC9      |            |                         |        |          |
|                             |                         |                 |          |            |                         |        |          |

## No matter what you need: Bosch offers you the right relay and electrical accessories

| Relay       | Electrical accessories |                  |   |
|-------------|------------------------|------------------|---|
|             |                        |                  |   |
| Micro relay | Parking socket         | Plug             | Electrical coils for trailer connection |
|             |                        |                  |   |
| Step relay  | Butt coupling          | Blade receptacle | Cable lug                               |
|             |                        |                  |   |
| Mini relay  | Universal plug         | Plug-in fuse     | Shrink-sleeve set                       |



### Electric motors

- ▶ For a variety of functions: Wipers, climate control, adjustment of windows, sun roof and seats
- ▶ Top quality from Europe's largest manufacturer of electric motors

### Engine Cooling Fans

- ▶ Aftermarket leader, for more than 35% of all vehicles in Europe
- ▶ Workshop range: engine cooling modules, fans and shrouds
- ▶ Original parts of original equipment quality

### Horns and sounders

- ▶ For all applications: from motorcycles through passenger cars to commercial vehicles
- ▶ Long service life: with corrosion resistance and robust construction
- ▶ Compact size
- ▶ Simple assembly

### Relays

- ▶ Extensive array of products: from the micro to the power relay
- ▶ Broad range: suitable for 12V and 24V components
- ▶ Also for switching high outputs
- ▶ Exemplary vibration and shock resistance

### Switches

- ▶ Technology that has proven itself a million times over
- ▶ For diverse vehicle types: passenger cars, commercial vehicles, construction, agricultural and special-purpose machines
- ▶ Guaranteed availability: even for switches from older vehicles

### Joining technology

- ▶ Plugs and connectors
- ▶ Helical lines
- ▶ Line connectors
- ▶ Universal plugs and extension cables
- ▶ Fuses and fuse holders