



BOSCH

Invented for life



**Bosch solutions
and components**
for off-highway applications

The full program around diesel engines



Bosch is a leading manufacturer of components for diesel engines in both the on-highway and off-highway segments and continually sets new standards with its diesel innovations. Bosch offers a comprehensive portfolio of high-quality components and systems for both segments. A large proportion of off-highway diesel engine and generator manufacturers take advantage of this and benefit from excellent power dynamics, low emissions and low fuel consumption.



Off-highway diesel engines with a power output of less than 560 kW



| System | Conventional fuel-injection systems | Common-rail systems |
|--------------|--|--|
| Description | Bosch has been a supplier of OEM products and replacement parts for conventional systems for more than 90 years. These systems comprise of nozzle-holder assemblies and mechanically/electronically controlled inline pumps or distributor pumps. Conventional systems are particularly robust. This is why they are often used in a range of off-highway applications. The injected fuel quantity can be quickly, evenly and simply varied. | Bosch offers a broad spectrum of common-rail systems that delivers state-of-the-art answers to typical requirements. Bosch common-rail injectors for the off-highway segment work with pressures between 1 400 and 2 700 bar. The various types of common-rail pumps are suitable for use in a wide range of applications. |
| Applications | | |

Overview of customer benefits

- ▶ Same product in aftermarket as in OEM series, thus ensuring quality and longer maintenance intervals
- ▶ Fair-value-oriented customer solutions with new or remanufactured goods or replacement parts for repairs
- ▶ Worldwide production network

Large diesel engines with a power output of more than 560 kW



| System | Conventional fuel-injection systems | Modular common-rail systems MCRS |
|--------------|---|---|
| Description | Bosch can draw on over 40 years of experience with mechanical fuel-injection systems for large engines. The Bosch PF single injection pump with a nozzle holder assembly for each engine cylinder is a particularly successful example among these. Due to the robust design, the PF pump can be operated with a large selection of fuel types. | In comparison with conventional fuel-injection systems, the modular common-rail systems (MCRS) from Bosch reduce fuel consumption by up to 8% with a simultaneous reduction of running noise. They are designed for pressures between 1 600 and 2 200 bar and engines with up to 20 cylinders. The injection pressure is independent of engine speed. With an operational lifespan of up to 20 000 hours, the components are particularly robust. |
| Applications | | |

Overview of customer benefits

- ▶ Stringently fulfills the OEM specifications
- ▶ Product options for use with heavy fuel oil (HFO) with full power output capacity
- ▶ Robust and reliable, thanks to proven series-production technology
- ▶ Worldwide production network



Bosch expertise for installation, conversion and retrofitting

Whether they use starters or spark plugs, many manufacturers of diesel engines and related applications rely on components from Bosch.

With good reason: testing procedures and quality assurance processes at Bosch go far beyond prescribed standards. At the same time, customers benefit from a comprehensive portfolio of Bosch products that provides ideal solutions for almost every need.



| Technical data | HEF109-M 24V | HEF109-MP 24V | HEF109-L 24V | HEP109-MP 24V (2x) | HEP109-L 24V (2x) | HEP109-MP 24V (3x) | HEP109-L 24V (3x) |
|---|--------------|---------------|--------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Mechanical peak performance (at -20°C and SoC*=80%) | 7.62 kW | 8.24 kW | 10.0 kW | 16.5 kW | 20.0 kW | 24.7 kW | 30.0 kW |
| Typical scope of application: displacement up to (diesel) | ... 16 l | ... 24 l | ... 30 l | ... 48 l | ... 60 l | ... 72 l | ... 90 l |
| Typical scope of application: displacement up to (gas/gasoline) | ... 32 l | ... 48 l | ... 60 l | ... 96 l | ... 120 l | ... 144 l | ... 180 l |
| Max. battery cold testing current EN | 1300 CCA | 1500 CCA | 2000 CCA | 3000 CCA (2x1500 CCA parallel) | 4000 CCA (2x2000 CCA parallel) | 4500 CCA (3x1500 CCA parallel) | 6000 CCA (3x2000 CCA parallel) |
| Starter weight | 11.6 kg | <14 kg | <17 kg | 2x16.5 kg | 2x19.5 kg | 3x16.5 kg | 3x19.5 kg |
| Pole housing diameter | 109 mm | 109 mm | 109 mm | 109 mm | 109 mm | 109 mm | 109 mm |
| Installation length (starter flange/commutator bearing cap) | 287.5 mm | 287.5 mm | 319.5 mm | 287.5 mm | 319.5 mm | 287.5 mm | 319.5 mm |
| Typical control current | 2 A | 2 A | 2 A | 2x2 A | 2x2 A | 3x2 A | 3x2 A |

Scope of application



* SoC = state of charge

M18 industrial spark plugs



| | 7305 | 7306 | 7308 |
|---------------------------------|------------------|--------------------|------------------|
| Type | MR 3 DII 360 | MR 3 DPP 330 | MR 3 DII 360 |
| Type number | 0 242 356 512 | 0 242 356 504 | 0 242 356 515 |
| Wrench size | 22.2 mm (7/8") | 22.2 mm (7/8") | 20.8 mm (13/16") |
| Thread | M 18 x 1.5 mm | M 18 x 1.5 mm | M 18 x 1.5 mm |
| Thread length | 20.6 mm (13/16") | 20.6 mm (13/16") | 20.6 mm (13/16") |
| Precious-metal center electrode | Iridium | Platinum / Iridium | Iridium |
| Precious-metal ground electrode | Iridium | Platinum | Iridium |
| Electrode gap | 0.3 mm (0.011") | 0.3 mm (0.011") | 0.3 mm (0.011") |
| Resistance | 6 kΩ | 3 kΩ | 6 kΩ |
| Adjustable electrode gap | Yes | No | Yes |

Re-Gapping Tool for M18 industrial spark plugs



During their operation, industrial spark plugs wear out and the electrode gap increases. This would result in misfires. The Bosch re-gapping tool is a professional tool for accurate readjustment of the electrode gap of Bosch M18 iridium industrial spark plugs to increase life.

Type number: 0 986 600 001

M14 industrial spark plugs



| | 7315 | 7322 |
|---------------------------------|------------------|---------------|
| Type | WR 3 CII 360 | FR 3 CII 360 |
| Type number | 0 242 255 519 | 0 242 255 518 |
| Wrench size | 20,8 mm (13/16") | 16 mm (5/8") |
| Thread | M 14 x 1,25 mm | |
| Thread length | 19 mm (3/4") | |
| Precious-metal center electrode | Iridium | |
| Precious-metal ground electrode | Iridium | |
| Electrode gap | 0,3 mm (0,011") | |
| Resistance | 6 kΩ | |
| Adjustable electrode gap | Yes | |

Customer benefits at a glance

- ▶ First-class ignitability for high performance due to specifically developed precious-metal alloys at the center and ground electrode
- ▶ Outstanding engine protection due to nickel-plated housing and thread
- ▶ Hassle-free spark plug replacement due to factory-set electrode gap
- ▶ High wear resistance due to a highly heat-conductive center electrode
- ▶ Reliable thermal characteristics due to heat-shrink assembly

Generator technology for stringent demands

Generators ensure uninterrupted power supply independent of public power grids. In many cases, they are used as emergency power supplies to protect companies, buildings and institutions such as hospitals and data centers against power outages. When a connection to a power grid is not an option, generators are used in continuous operation as power supply systems for various different applications – for example, as main domestic power suppliers, in industrial applications, in mining operations and on construction sites. Bosch offers a wide range of components for diesel and gas generators for these and similar scenarios.

Diesel generators

When it comes to generators, the demands on diesel technology are particularly high, as they sometimes have to deliver uninterrupted power supplies around the clock. As one of the leading manufacturers of components for diesel engines, Bosch can draw on its particular expertise in the field of diesel technology, providing solutions for diesel generator components. With this, Bosch products ensure a long service life for generators.

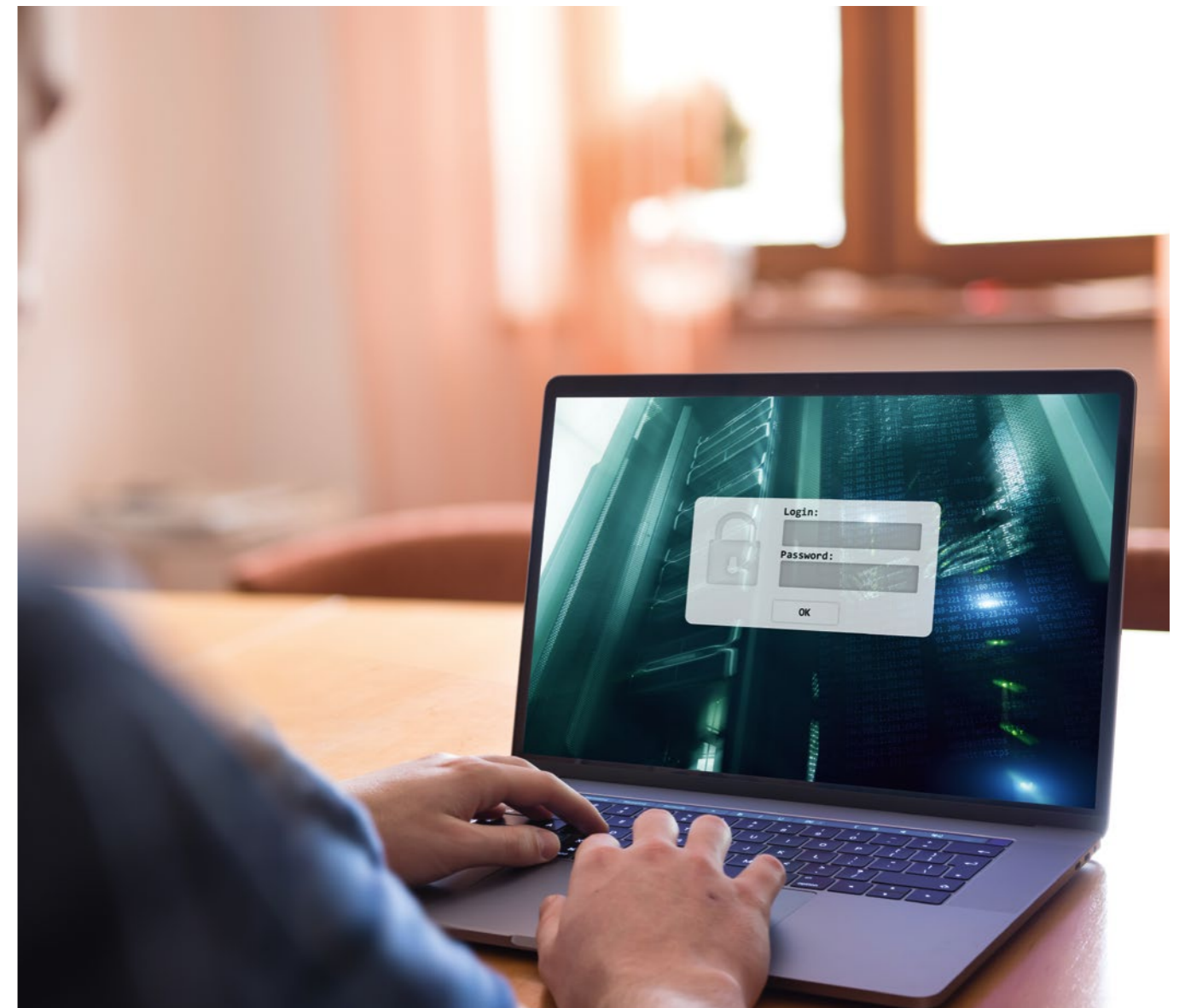


Gas generators

Gas generators around the world are fitted with high-quality components from Bosch. For instance, Bosch industrial spark plugs ensure the reliability of generators and assure continuous and dependable power output.

LEDI (Large Engine Database Information)

Anyone looking for a comprehensive overview of currently available Bosch products and systems for large engines, or wanting to compare Bosch products with OEM products, should take a look in LEDI – Large Engine Database Information. This is a fast and easy way to find the answers to your questions.



The platform for all Bosch partners with regard to large engines

LEDI is a useful technical platform that enables Bosch partners to compare various components and systems. Bosch partners can quickly and easily find out where the components are installed. On top of this, LEDI is a source of

valuable cross-references such as exploded views and technical documentation and provides information about components and systems currently available from the Bosch product portfolio.

What drives you, drives us

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

Therefore, we have dedicated the last 125 years of pioneering spirit and expertise in research and manufacturing to achieving this.

We continue to work on our unique combination of solutions for spare parts, diagnostic devices, workshop equipment and services:

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

Find out more at:
www.boschoffhighway.com

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