BOSCH
Invented for life

Driven by
COMFORT

Reliable energy supply:
Bosch commercial-vehicle batteries with PowerFrame®

Reliability and profitability along the way
Reduced idle times, increased planning certainty

Today Paris, tomorrow already heading towards Barcelona. Where asphalt glows in midday heat today, the rising sun will make frosty roads glow in half a year. What sounds like idyllic trucker lifestyle is rather a race against the clock. Anyone knows: trucks can only make money if they are out on the roads. Whoever wants to increase profitability doesn't make any compromises and relies on excellent Bosch quality.

Commercial vehicle parts, diagnostics and workshop services

The workshop and retail range includes high-quality spare parts, diagnostics and workshop equipment as well as special training courses and a technical hotline. The diagnostic software ESI[tronic] Truck covers 90 % of the European commercial vehicle market and works with diagnostic tester Bosch KTS Truck.

Value-based solutions

Bosch eXchange offers a high-quality alternative for value-based repairs. The exchange products are treated according to the same standards as original parts and have to pass strict functional and quality tests. This ensures high quality and reliability at lower prices while still providing the same warranty as in the new parts program.

Global presence

More than 17 000 associates in 150 countries as well as an extensive dealer network, reliably ensure target-oriented workshop support and local availability of the spare parts range.

Competence and know-how

Bosch knows the technical requirements of commercial vehicles very well and offers innovative and reliable solutions within its aftermarket range.

Did you know?

Every year, some

13.4 million

commercial vehicles with more than 6 tons of GVW circulate on European roads – covering an annual overall distance of some 145 000 km in long-haul traffic.

ESI[tronic] 2.0 Truck

More than

600,000

failure codes are covered with the diagnostic software ESI[tronic] 2.0 packages for commercial vehicles.

Commercial-vehicle batteries
Overview

Did you know?

Vibration resistance is of increasing importance for commercial-vehicle batteries. More and more often, the battery is installed close to the rear axle thus clearing the space required for AdBlue® and SCR catalytic converters. In order to cope with the strong vibrations at the rear axle, however, a high vibration resistance is absolutely indispensable.

A tough job for today's commercial-vehicle batteries

Reliability
On an average, modern trucks cover some 145 000 km every year. Often, the drivers sleep inside the cab up to 5 nights per week. And yet the batteries need to provide enough starting power to start the engine the next day.

Performance
Even in case of stationary operation, the batteries power a wealth of safety and convenience features. And yet they are to cope with frequent charge and discharge cycles.

Economy
Low maintenance efforts help reducing the fleet operating costs.

Vibration resistance
As commercial-vehicle batteries are installed close to the rear axle more and more often, they are subject to increased vibrations. High robustness and vibration resistance are thus required.

As batteries have to cope with increasing strains, according to several statistics, they are one of the key reasons for breakdowns. Good to know, you can fully rely on Bosch commercial-vehicle batteries. They are powerful, vibration-resistant and even maintenance-free. This will cut the fleet operating costs.

Commercial-vehicle batteries: EFB and AGM

Product range

	TA AGM	TE EFB
	Most powerful commercial-vehicle battery within the Bosch range with AGM technology and patented PowerFrame® (grid) – supporting start/stop systems and especially designed for advanced hoteling functions with parking cooler/heater, providing energy reliably for commercial-vehicles with the extensive electrical demand of long-distance traffic, even if many days on the road or at low stage of charge	**Extremely powerful and vibration-resistant commercial-vehicle battery with EFB technology** – designed to cope with the huge energy demands of long-distance traffic, numerous convenience and comfort functions as well as off-highway and heavy-duty applications
Technology	AGM **AGM (Absorbent Glass Mat):** acid absorbed by micro-fiberglass mat allows more energy to pass through	EFB **EFB (Enhanced Flooded Battery):** positive plate coated with polyester scrim ensures additional retention of the active material and a high deep-cycle resistance
Scope of application	Long-haul trucks, distribution traffic/trucks with tail lift, coaches and buses, applications with advanced hoteling functions – including parking cooler/heater	Long-haul trucks, distribution traffic/trucks with tail lift, construction machinery and off-road trucks, coaches and buses, municipal vehicles with a high rate of city traffic and fire-fighting vehicles, agricultural vehicles, applications with numerous electrical consumers
Service life	●●●●●	●●●●
Cold starting performance	●●●	●●●
Deep-cycle resistance	●●●●	●●●
Number of electrical consumers	●●●●	●●●
Vibration resistance	●●● V4/EN-50342-1	●●● V4/EN-50342-1
Maintenance and water consumption	Absolutely maintenance-free and leakproof – reduces fleet operating costs Very low water consumption	Absolutely maintenance-free – reduces fleet operating costs Very low water consumption thanks to labyrinth lid
Installation inside the vehicle	Yes	Yes
Installation angle	0°	0°
Shelf life	18 months	18 months

Commercial-vehicle batteries: Lead-acid SLI

Product range

	T5 SLI	T4 SLI	T3 SLI
	Particularly powerful and deep-cycle-resistant commercial-vehicle starter battery with flow-optimized grid design – for high energy demands on long-distance trips	**Persistent commercial-vehicle starter battery with patented PowerFrame® (grid) for optimized current flow and reduced corrosion –** for average energy demands	**Reliable commercial-vehicle starter battery with patented PowerFrame® (grid) for optimized current flow and reduced corrosion –** ideal for vehicles with low energy demands
Technology	**Lead-acid SLI:** Starting-Lighting-Ignition/starter battery		
Scope of application	Long-haul trucks, distribution traffic/trucks with tail lift, construction machinery and off-road trucks, coaches, applications with numerous electrical consumers	Long-haul trucks, distribution traffic/trucks with tail lift, construction machinery and off-road trucks, coaches	Distribution traffic/trucks with tail lift, vans and LCVs
Service life	●●●	●●●	●●
Cold starting performance	●●●	●●●	●●
Deep-cycle resistance	●●	●●	●
Number of electrical consumers	●●	●●	●
Vibration resistance	●● V3/EN-50342-1	●● V3/EN-50342-1	● V2 or V3 (depending on type)/ EN-50342-1
Maintenance and water consumption	Absolutely maintenance-free – reduces the fleet operating costs Very low water consumption thanks to labyrinth lid	Absolutely maintenance-free – reduces the fleet operating costs Very low water consumption thanks to labyrinth lid	Low maintenance requirement*
Installation inside the vehicle	Yes	Yes	No
Installation angle	0°	0°	0°
Shelf life	18 months	15 months	12 months

* Depending on type, hybrid-lid allows topping-up with electrolythe in case of excessive use

TA AGM commercial-vehicle battery
Product details

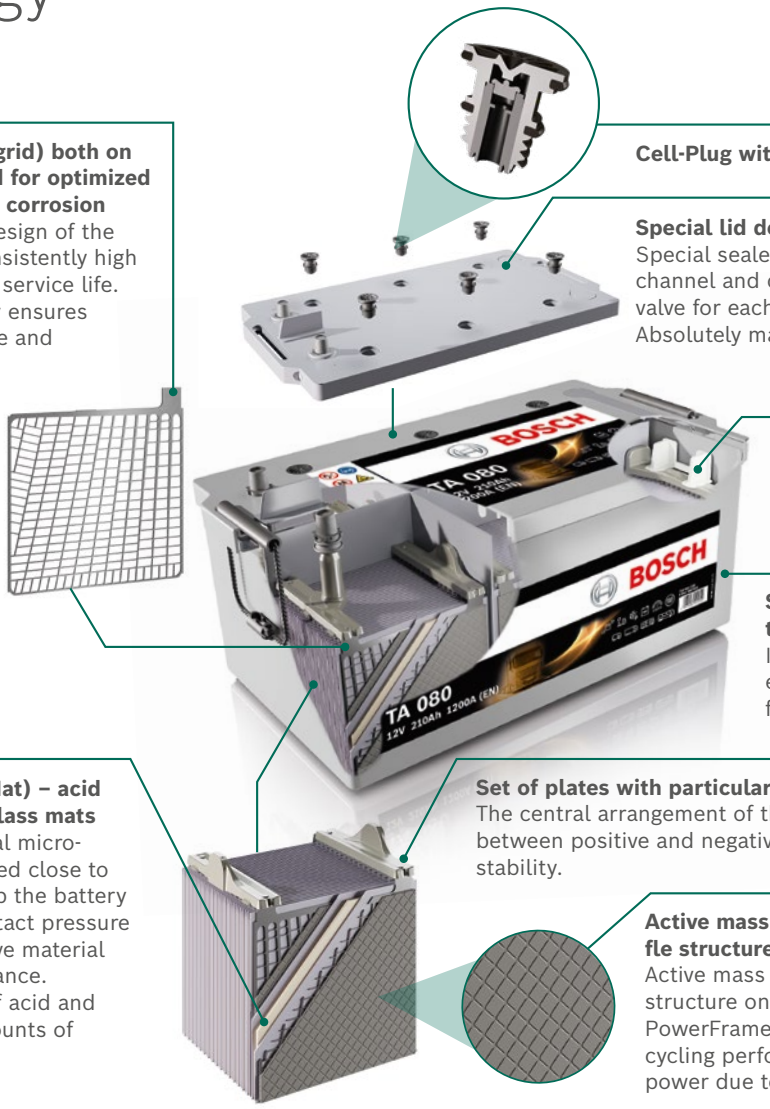
Most powerful commercial-vehicle battery within the Bosch range with AGM technology and patented PowerFrame® (grid) – supporting start/stop systems and especially designed for advanced hoteling functions with parking cooler/heater, providing energy reliably for commercial-vehicles with the extensive electrical demand of long-distance traffic, even if many days on the road or at low stage of charge

Advantages at a glance

- **Acid absorbed by micro-fiberglass mats (AGM technology) allows higher amounts of energy to be provided:** ensures a 6 times higher deep-cycle resistance than conventional batteries with up to 80% DoD (Depth of Discharge), ensuring constant power in stationary mode and stop-and-go traffic
- **Reliable starting power and improved cycling performance:** active mass with specially designed waffle-structure on both negative and positive PowerFrame grids lead to very low internal resistance
- **Highest vibration resistance V4 according to EN-standard and for safe installation at the rear axle:** due to additional reinforcements and a central arrangement of intercell connectors
- **Absolutely maintenance-free and leakproof – reducing fleet operating costs:** special sealed lid design with degassing channel and cell plugs with integrated valve for each individually sealed cell
- **High quality and outstanding starting power:** material quality and standards equivalent to the ones used for original equipment

AGM (Absorbent Glass Mat)
Technology

Patented PowerFrame® (grid) both on positive and negative grid for optimized current flow and reduced corrosion
The flow-optimized grid design of the PowerFrame® ensures consistently high starting power and a long service life. In addition, a special alloy ensures a high corrosion resistance and lower self-discharge.



Cell-Plug with integrated valve

Special lid design with degassing channel
Special sealed lid design with degassing channel and cell plugs with integrated valve for each individually sealed cell. Absolutely maintenance-free and leakproof.

Additional stabilization for vibration resistance (V4 according to EN-standard)

Special Case for AGM technology
Increased wall thickness to ensure durable compression for particularly high stability.

AGM (Absorbent Glass Mat) – acid absorbed by micro-fiberglass mats
In AGM technology, special micro-fiberglass mats are installed close to the lead plates and absorb the battery acid completely. High contact pressure minimizes the loss of active material at very low internal resistance. Due to the fast reaction of acid and plate material, higher amounts of energy can be provided.

Set of plates with particularly robust connection
The central arrangement of the intercell connectors between positive and negative plates ensures additional stability.

Active mass with specially designed waffle structure for improved performance
Active mass with specially designed waffle structure on both negative and positive PowerFrame® (grids) ensures improved cycling performance and reliable starting power due to very low internal resistance.

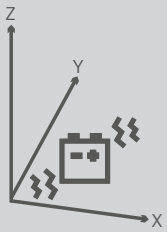
Did you know?

Remarkable deep-cycle resistance at up to

80 % DoD

(Depth of Discharge)

3D stress tests in the laboratory



To be classified as V4 according to EN-standard the battery has to undergo stress tests whereby real driving conditions are simulated. Three dimensions are tested – vertical, horizontal and diagonal. These tests are much more extensive than for the EN V3-requirement where only the vertical dimension is tested.

Increasing demands placed on batteries
Trends in long-haul traffic

Due to the growing number of electronic consumers on board and changing usage profiles, commercial-vehicle batteries have to meet ever higher demands

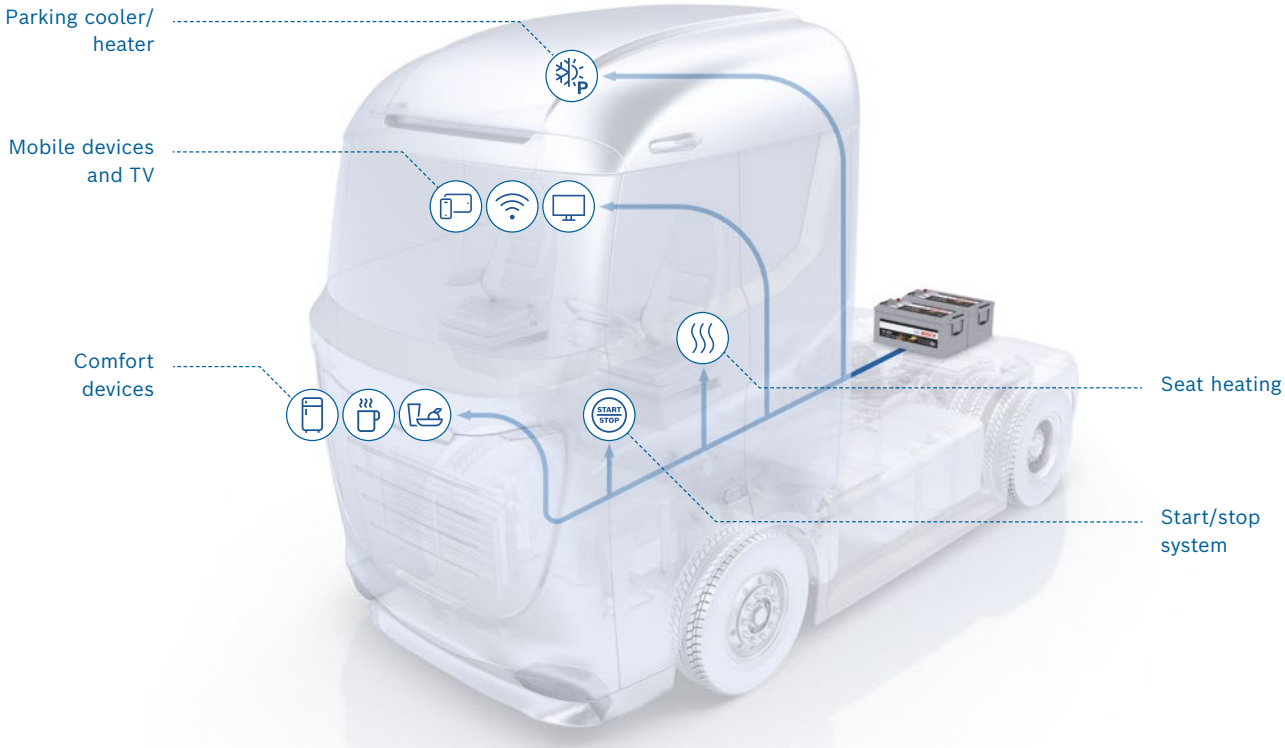
A lot of electrical consumers

In modern long-haul traffic, truck drivers spend more and more days and nights at their truck's cabin. Accordingly, comfort and convenience features are of increasing importance. These electrical consumers on board modern commercial vehicles need to be powered in stationary operation as well. Nonetheless, there must always be enough energy left for reliable engine startups. These increased demands call for particularly powerful and deep-cycle resistant batteries.

Changed usage profile

Concomitantly with a growing number of overnight stays on board, the individual stages get shorter thus reducing the time to recharge the batteries during the journey. This results in increased power consumption and reduced battery recovery periods. To reduce the risk of failure and downtimes, extremely powerful commercial-vehicle batteries are thus required which allow quick recharging and ensure increased charge acceptance.

Functions reliably powered by modern truck batteries



TE EFB commercial-vehicle battery
Product details

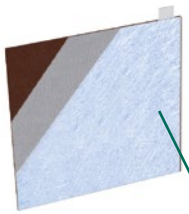
Extremely powerful and vibration-resistant commercial-vehicle battery with EFB technology – designed to cope with the huge energy demands of long-distance traffic, numerous convenience and comfort functions as well as off-highway and heavy-duty applications

Advantages at a glance

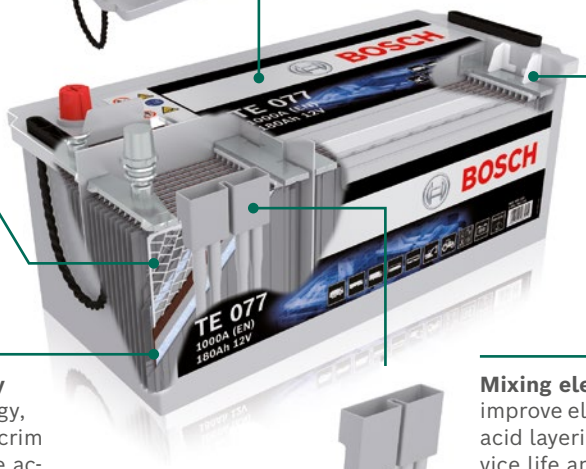
- **Extremely powerful commercial-vehicle battery – for tremendous electrical demands as well as several convenience and comfort functions in stationary operation:** EFB (Enhanced Flooded Battery) technology ensures twice the deep-cycle resistance of conventional batteries – the battery copes much better with frequent discharging and charging
- **Particularly vibration resistant according to EN V4-requirement and for safe installation at the rear axle, off-highway vehicles and heavy-duty construction machinery:** specially glued polyester fleece reliably keeps the battery plates in position, additional reinforcements and stabilized connectors make the battery highly vibration-resistant
- **Above-average service life and starting power:** material quality and standards equivalent to the ones used for original equipment
- **Absolutely maintenance-free and leakproof – reducing fleet operating costs:** the labyrinth lid ensures evaporated liquid to remain inside the battery; this results in very low water consumption

EFB (Enhanced Flooded Battery)
Technology

Patented PowerFrame® (grid) for optimized current flow and reduced corrosion
The special grid-stamping technique makes this battery particularly corrosion-resistant and durable. The flow-optimized PowerFrame® grid design ensures consistently high starting power. This results in a very low self-discharge rate.



Labyrinth lid
The double lid with labyrinth design returns condensed water to the battery. As a result, TE batteries are absolutely maintenance-free and leak-proof. They consume very little water. The integrated central degassing, back-fire protection and an additional sealing ring ensure high operational safety.



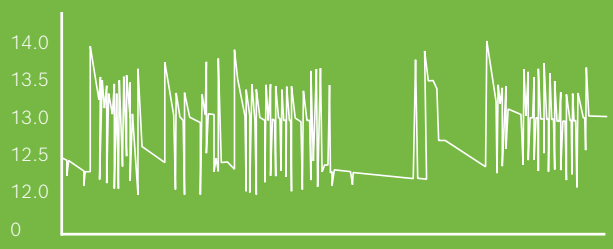
Additional stabilization for vibration resistance (V4 according to EN-standard)

EFB (Enhanced Flooded Battery) technology
At EFB (Enhanced Flooded Battery) technology, the positive plate is coated with a polyester scrim (fleece). It ensures additional retention of the active material on the battery plates doubling the deep-cycle resistance in comparison with conventional batteries. The specially glued polyester fleece reliably keeps the battery plates in position. As a consequence, the battery remains operational even if subject to strong and lasting vibrations.

Mixing elements
improve electrolyte mixing and prevent acid layering – thus expanding the service life and improving the deep-cycle resistance.

Straining of batteries due to frequent starts and stops as well as a large number of electrical consumers

Frequent starts and stops, e.g. in inner-city traffic, and a lot of electrical consumers, such as convenience functions in long-distance traffic, often cause a negative energy balance.

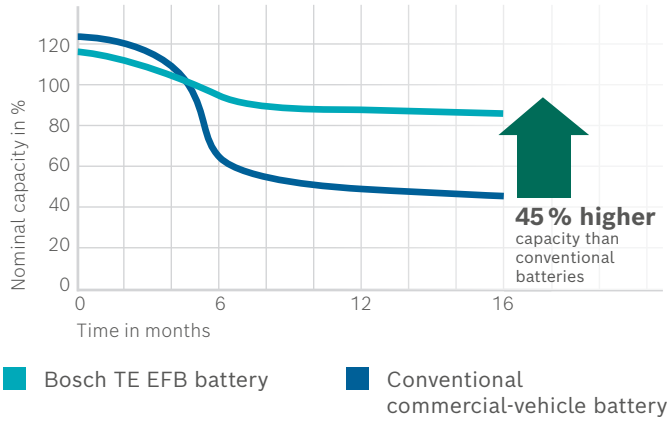


With their high capacity, Bosch TE EFB batteries cope better with frequent charging and discharging. As a result, the energy efficiency, for instance in start/stop traffic, is increased significantly. The high deep-cycle resistance is particularly beneficial for long-haul trucks. At these vehicles, the battery supplies the large number of convenience functions. The result: reliable long-term operation.

EFB (Enhanced Flooded Battery)
Quality tests

High performance, long service life

Field test with renowned commercial-vehicle manufacturers proves:
- Capacity of 85 % after 16 months – despite large amount of comfort and convenience functions
- Noticeably longer service life and higher reliability



Above average

A benchmark test proves:
- There is hardly any other battery meeting the test criteria as Bosch TE batteries do

Test criteria and results of Bosch TE EFB battery
Capacity according to EN at 20 h: Low loss of capacity throughout the complete service life
Cold starting performance according to EN at -18 °C: Very high
Deep-cycle resistance according to EN at 50 % DOD*: Above average
Water consumption according to EN: Extremely low thanks to labyrinth lid
Vibration resistance according to EN: Meets V4 (highest vibration resistance within the EN requirements)
Acid layering: None – thanks to effective mixing elements

* DOD: depth of discharge

High quality pays off

Cutting fleet operating costs:
Choosing the right battery, the general maintenance costs, the fuel costs and the costs for servicing and repairs can be cut. Wear and maintenance efforts are reduced as well.

Bear in mind: The outstanding battery management reduces the risk of losses of earnings caused by unexpected downtimes or repairs.

Example:		
Type of costs	**Not maintenance-free battery**	**Bosch commercial-vehicle battery**
Acquisition costs	EUR 300.00	EUR 425.00
Maintenance costs	EUR 350.00	EUR 0
Downtime costs	EUR 131.25	EUR 0
Total:	**EUR 781.25**	**EUR 425.00**

T5 SLI lead-acid commercial-vehicle battery
Product details

Particularly powerful and deep-cycle-resistant commercial-vehicle starter battery with patented PowerFrame® (grid) for optimized current flow, reduced corrosion and high energy demands on long-distance trips

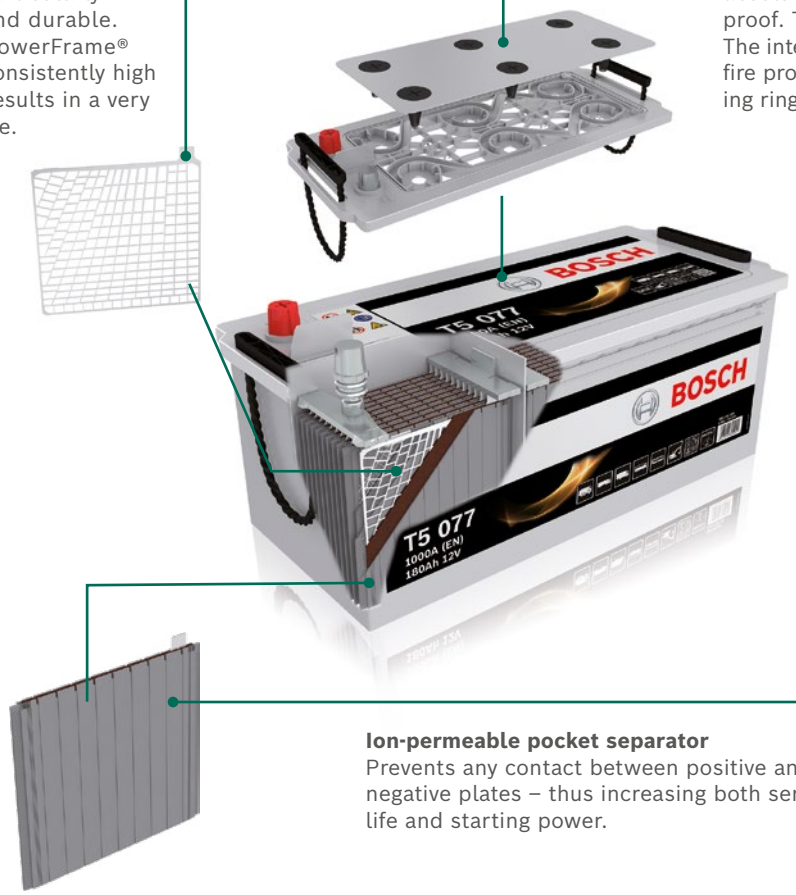
Advantages at a glance

- **Very long service life and reliable starting power, even after extended downtimes:** special grid stamping technique for optimized current flow, reduced corrosion and a long service life
- **Reliably covers the high energy demands of long-distance operation:** very high quality standards for materials and production
- **Very high resistance to vibrations:** thanks to their robust design, T5 batteries meet the vibration resistance V3 according to EN-standard
- **Absolutely maintenance-free and leak-proof – reducing fleet operating costs:** the labyrinth lid ensures evaporated liquid to remain inside the battery; this results in very low water consumption

PowerFrame®
Technology

Patented PowerFrame® (grid) for optimized current flow and reduced corrosion
The special grid-stamping technique makes this battery particularly corrosion-resistant and durable. The flow-optimized PowerFrame® grid design ensures consistently high starting power. This results in a very low self-discharge rate.

Labyrinth lid
The double lid with labyrinth design returns condensed water to the battery. As a result, T5 batteries are absolutely maintenance-free and leak-proof. They consume very little water. The integrated central degassing, back-fire protection and an additional sealing ring ensure high operational safety.



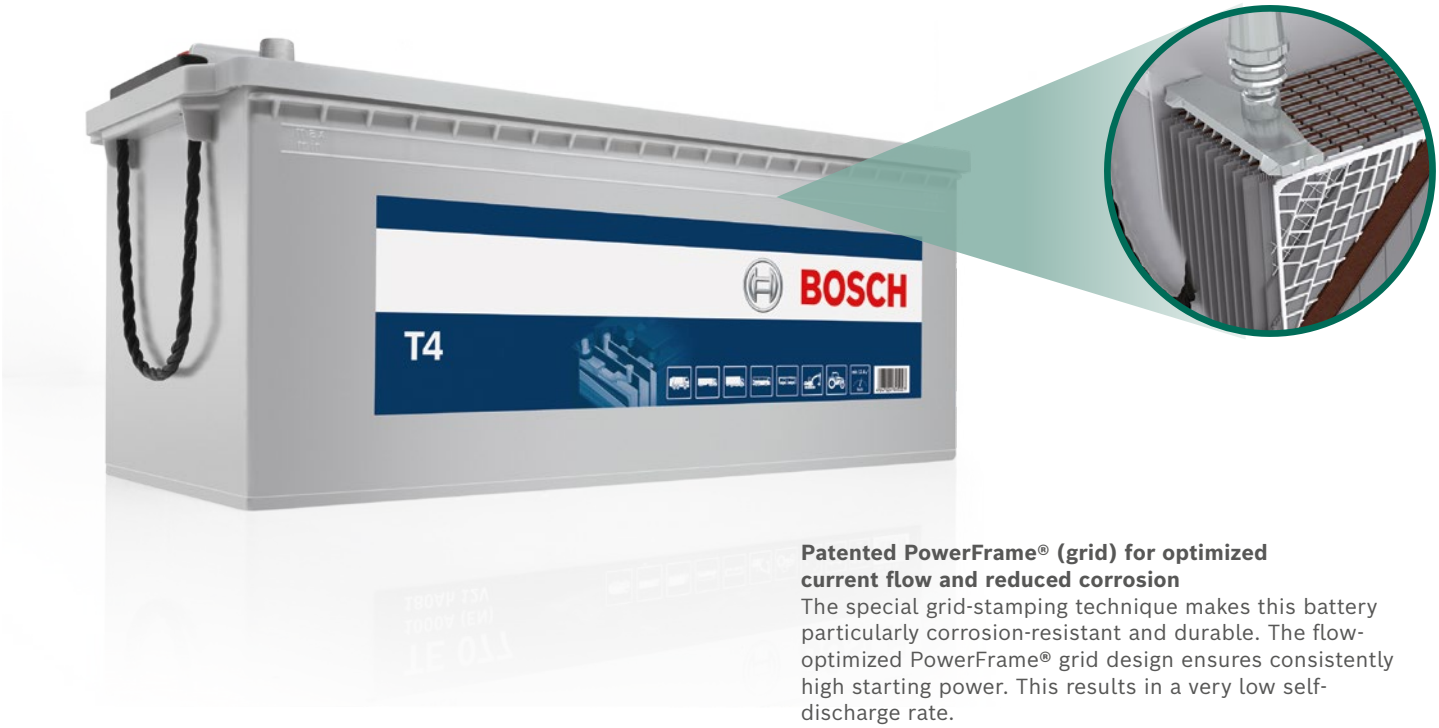
Ion-permeable pocket separator
Prevents any contact between positive and negative plates – thus increasing both service life and starting power.

KTS Truck: ECU diagnoses for modern commercial-vehicle electronics

- KTS Truck Module for trucks, vans, trailers, buses and agricultural, construction machinery and engines
- Comprehensive diagnostics, maintenance and service by combination with the separately available diagnostic software ESI[tronic] 2.0 Package Truck
- Clear communication through multiplexer and cable adapter-recognition: K- and L-Line, SAE and CAN switchable to all possible terminals on the OBD connector
- Integrated Bluetooth module with high range for high flexibility in the daily workshop routine
- Bluetooth USB adapter for connection to Bosch DCU 220 or a laptop/PC
- Robust housing suitable for workshop use

T4 SLI lead-acid commercial-vehicle battery
Product details & technology

Persistent commercial-vehicle starter battery with patented PowerFrame® (grid) for optimized current flow and reduced corrosion – for average energy demands



Patented PowerFrame® (grid) for optimized current flow and reduced corrosion
The special grid-stamping technique makes this battery particularly corrosion-resistant and durable. The flow-optimized PowerFrame® grid design ensures consistently high starting power. This results in a very low self-discharge rate.

Advantages at a glance

- **Long service life and high starting power:** special grid stamping technique for optimized current flow and reduced corrosion – prevents early battery failure
- **High resistance to vibrations:** thanks to their robust design, T4 batteries meet the vibration resistance V3 according to EN-standard
- **Absolutely maintenance-free and leakproof – thus reducing fleet operating costs:** the labyrinth lid ensures evaporated liquid to remain inside the battery, this results in very low water consumption

Did you know?

Battery expert since 1922

In 1922, Bosch produced its first battery in Stuttgart-Feuerbach.

T3 SLI lead-acid commercial-vehicle battery
Product details

Reliable commercial-vehicle starter battery with patented PowerFrame® (grid) for optimized current flow and reduced corrosion – ideal for vehicles with low energy demands

Advantages at a glance

- **Average service life and reliable starting power:** special grid stamping technique for optimized flow of current and reduced corrosion – prevents early battery failure
- **Vibration resistant:** T3 batteries meet depending on type the vibration resistance V2 or V3 according to EN-standard
- **Maintenance-Free:** depending on type, hybrid-lid allows topping-up with electrolythe in case of excessive use

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 commercial 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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