Tips and Technology

For Bosch partners

Current information for the successful workshop No. 06

Trucks

BOSCH
Invented for life

Batteries

Requirements

The demands on batteries in commercial vehicles are stringent. Commercial vehicles have long service lives, are frequently exposed to extreme temperature fluctuations and have many electrical consumers integrated in the vehicle.

Even when the engine is turned off, the electrical consumers continue to operate. The sleeping cabin must be heated or cooled. The refrigerator, television, computer or microwave oven require energy. The load must be cooled. This and other energy consumers require batteries which can withstand these loads.

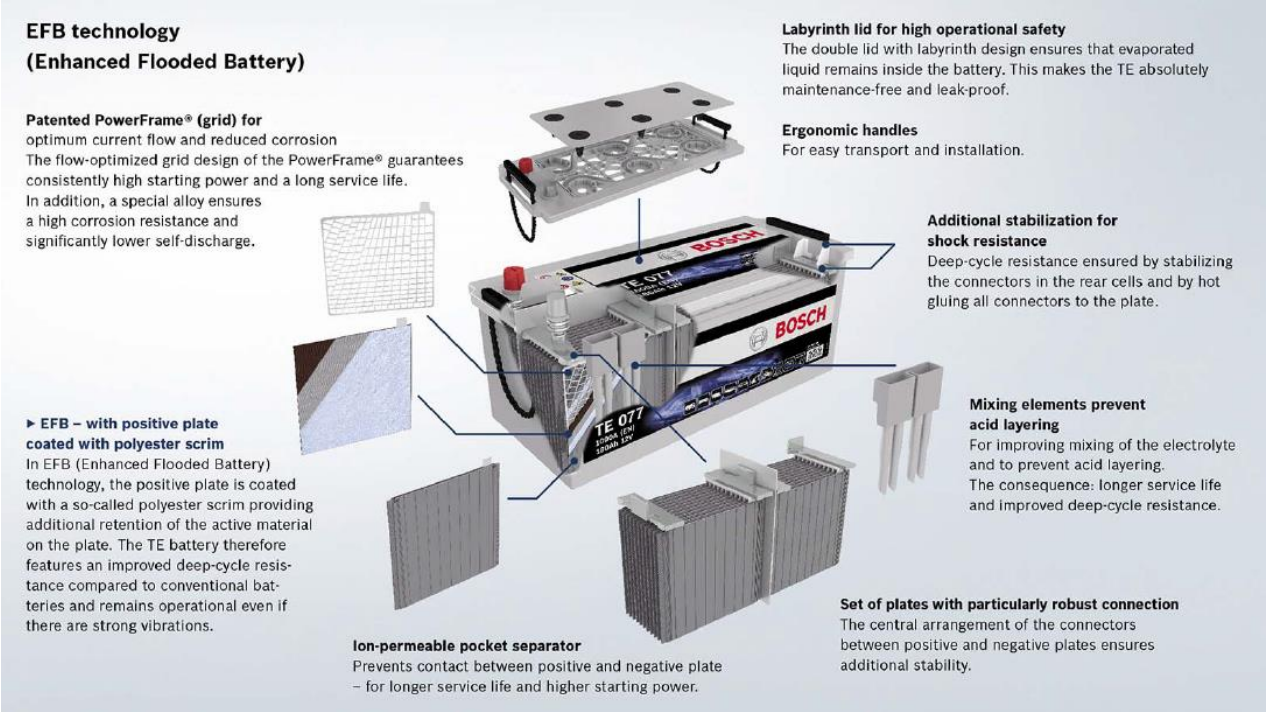
Bosch batteries for commercial vehicles

Line	EFB[1]	SLI[2]		
Battery	TE	T5	T4	T3
Technology	EFB (enhanced flooded battery)[1] PowerFrameR[3] Labyrinth lid[4]	PowerFrame® Labyrinth lid[4]	PowerFrame® Labyrinth lid[4]	PowerFrame® Hybrid technology[5]
Uses	Trailer trucks with a sleeper, distribution haulage/ Truck with a lifting platform, fire trucks, construction machinery, off-road trucks, touring coaches and city buses, Municipal vehicles with a great deal of city traffic	Trailer trucks with a sleeper, Distribution haulage/truck with a lifting platform, Truck with a lifting platform, fire trucks, touring coaches and Municipal vehicles with a great deal of city traffic	construction machinery and off-road trucks; Applications that require a great deal of starting power	Small commercial vehicles, vans, Tractors
Maintenance	Absolutely maintenance-free – lowers fleet operation costs	Absolutely maintenance-free – lowers fleet operation costs	Absolutely maintenance-free – lowers fleet operation costs	Maintenance-free – Can be refilled with water
Installation in the vehicle interior	Yes	Yes	Yes	No
Cold start performance	OOO	OOO	OO	O
Number of electronic consumers	OOO	OOO	OO	O
Cycle stability	OOO	OO	OO	O
Suitable for short distances	OOO	OO	OO	O
Vibration resistance	OOO	OOO	OO	O
Installation angle	0°	0°	0°	0°

(1) EFB (enhanced flooded battery): The positive panel coated with a polyester scrim promotes the grip of the active material and enhances cycle stability
(2) SLI: Starting lighting ignition battery with PowerFrame®
(3) PowerFrame®: Patented stamping process for optimum power flow, reduced corrosion and a long service life
(4) Labyrinth lid: Returns condensed water into the battery; the integrated central degassing, backfire protection and additional sealing ring ensure high operating safety
(5) Hybrid technology: Allows the battery to be refilled with water, maintenance free

TE Battery

The TE battery comes with EFB (enhanced flooded battery) technology. The positive plate is coated with a polyester scrim. This increases the retention of the active material to the panel. The cycle stability is enhanced, and the battery remains ready to use even after strong vibrations.

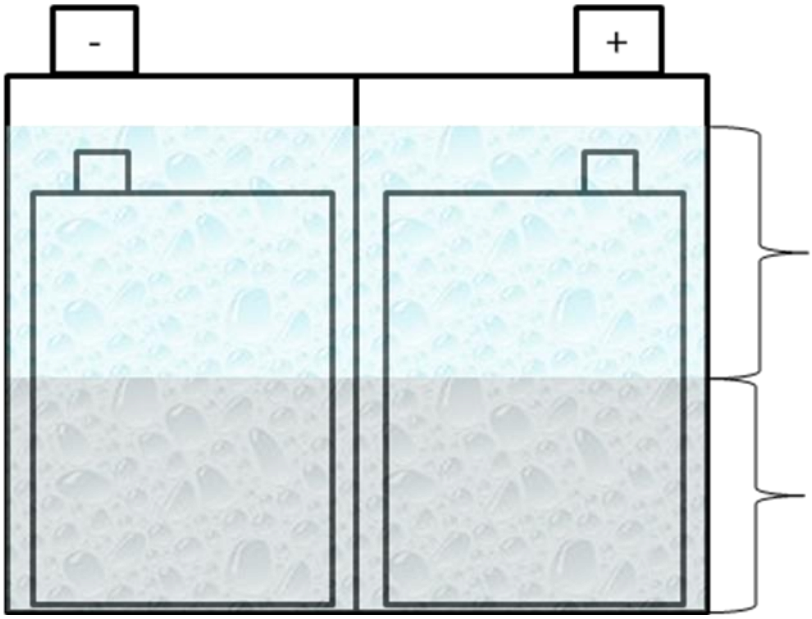


Advantages of the Bosch TE battery with EFB technology

- Very long service life and doubled cycle stability in comparison to conventional batteries
- Satisfies at a minimum vibration resistance standard V3
- Very low water consumption due to the labyrinth lid
- Integrated flame arrester
- Absolutely maintenance-free
- Particularly effective charging
- Safe even when installed in the vehicle interior

Acid circulation – Problem of acid coating

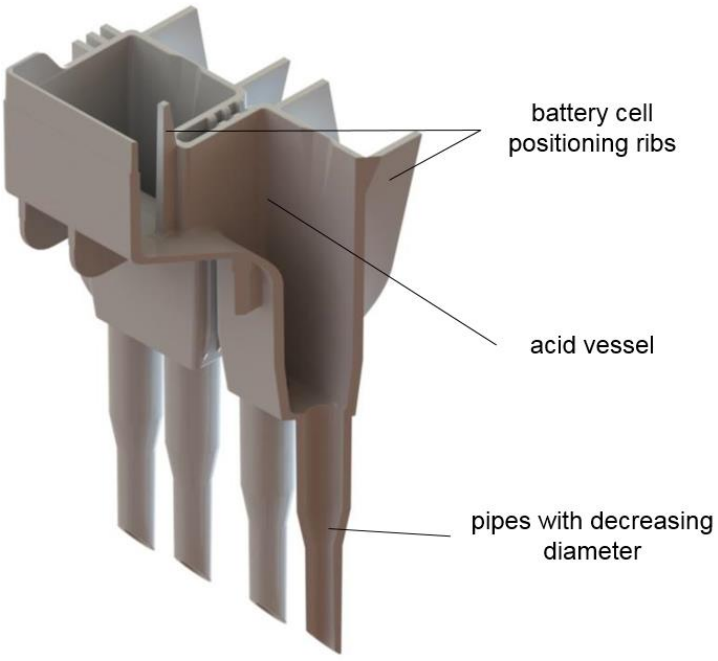
When charging lead acid cells, acid is produced with a high density in the plates. These heavy drops drip down and accumulate on the bottom of the cell whereas drops that are less dense accumulate at the top of the cell. This acid coating can reduce the capacity and even cause premature failure.



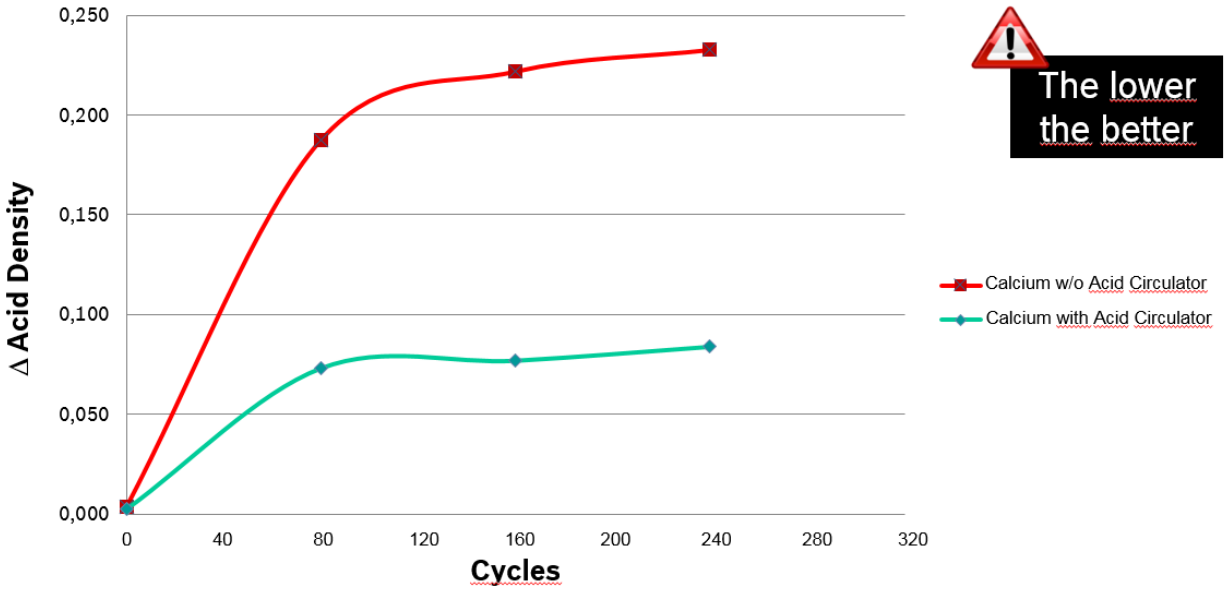
The top part of the cell primarily contains water. A low acid density into the cells promotes charging.

In the bottom part with a higher acid content, the plates reject the charging process. This increases the chance of corrosion.

An acid circulator can prevent this effect.



When the acid flows through the constriction, the speed increases and the pressure decreases (Bernoulli effect). The movement of the vehicle is used, and a hydrostatic equilibrium is attained above the plates. This effect counteracts the acid coating and increases the life of the battery.



Polyester scrim and adhered fleece

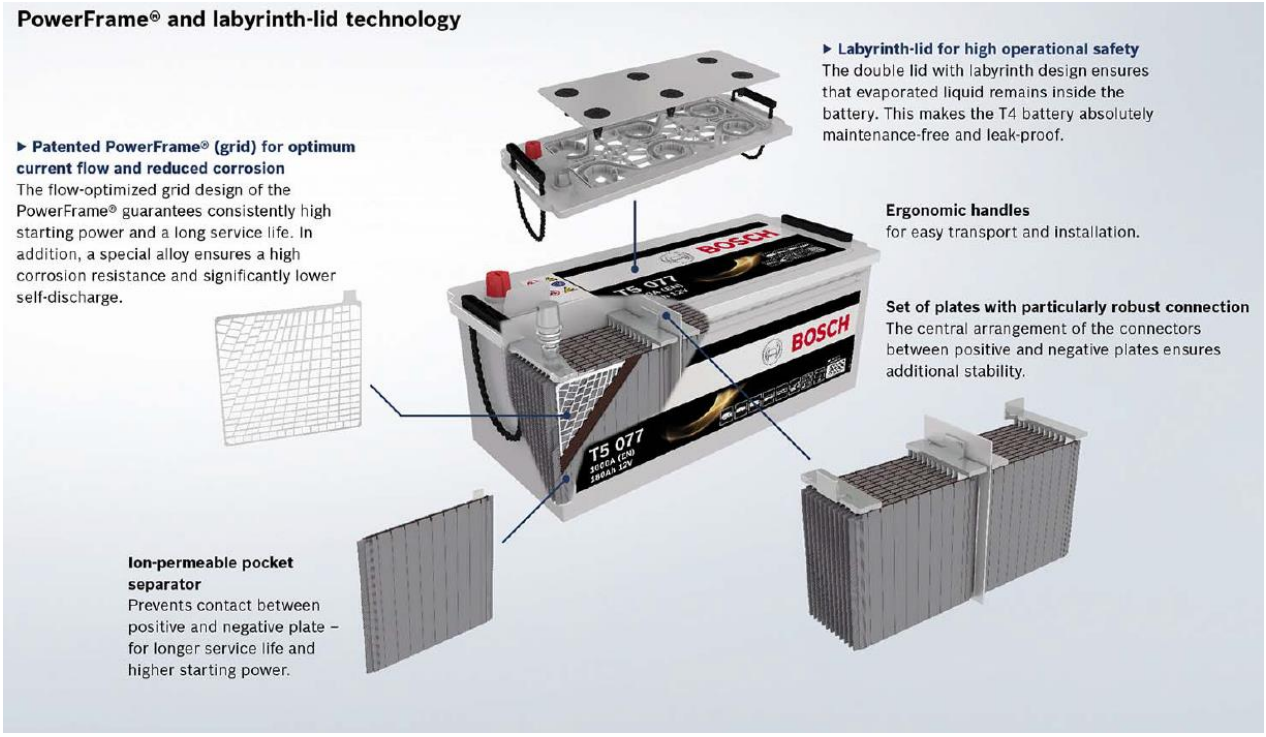
With the EFB battery, the positive plate is coated with a polyester scrim consisting of polymer fibers. It ensures that the active material always remains on the positive plate and does not come off.

In addition, a separator is used with an adhered fleece of fiberglass fibers. By using this method, the plates can be inserted in the battery under high pressure during production; the cells will not experience any damage, and the material remains in the designated positions.

In addition, the fleece absorbs acid so that the plates always remain optimally coated with acid.

T5 and T4 battery

The Bosch T5 and T4 batteries come with patented PowerFrame® technology. This optimizes the flow of current and significantly extends the battery's life. Both the T5 and T4 are absolutely maintenance-free. The labyrinth lid ensures a high level of operational safety.



Advantages of the T5 battery

- A longer service life and increased cycle stability in comparison to conventional batteries
- Very strong starting power: Reliable starting time after long downtimes
- Satisfies the requirement for EN-4 and vibration resistance standard V3
- Absolutely maintenance-free
- Very low water consumption due to the labyrinth lid
- Integrated flame arrester
- Safe even when installed in the vehicle interior
- Fast charging and discharging
- Can be stored for 18 months

Advantages of the T4 battery

- Long service life and increased cycle stability in comparison to conventional batteries
- Strong starting power: Reliable starting time after long downtimes
- Satisfies the requirement for EN-3 and vibration resistance standard V2
- Absolutely maintenance-free
- Very low water consumption due to the labyrinth lid
- Integrated flame arrester
- Safe even when installed in the vehicle interior
- Fast charging and discharging
- Can be stored for 15 months

PowerFrame® technology

The grid is key to the performance and reliability of the battery. The patented PowerFrame® by Bosch offers significant advantages over conventional grids: It optimizes the current flow and prevents corrosion as well as premature battery failure.

T3 battery

The T3 is ideal for batteries with low energy requirements. Thanks to the hybrid technology, the T3 is maintenance-free, and it is easy to add water.

Advantages of the T3 battery

- Satisfies the requirement for EN-2 and vibration resistance standard V1
- Hybrid technology: Allows the battery to be refilled with water, maintenance-free
- Can be stored for 12 months