

# Exide Training Graphic Assets

Module 04 | Commercial Vehicle (CV) Batteries

Edition 2  
Revised 05.2021



# Introduction

## Module 04 | Commercial Vehicle (CV) Batteries

### Exide Lead-Acid Batteries Training Modules

- Module 01 | Lead-Acid Battery Basics
- Module 02 | Battery Evolution and the Environment
- Module 03 | (LV) Light Vehicle Batteries
- Module 04 | (CV) Commercial Vehicle Batteries
- Module 05 | (MC) Motorcycle Batteries
- Module 06 | (ML) Marine Leisure Batteries
- Module 07 | Battery Testing and Installation
- Module 08 | Battery Handling, Storage and Recycling
- Module 09 | Battery Aftermarket

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# Broad spectrum of Commercial Vehicle Applications

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Long-Haul

With 'hotel loads' for driver convenience and comfort



Delivery Trucks

With electrically powered lifts/loaders



Urban Transport

With passenger information and security systems



Agricultural

Rough field, harvesting and produce handling plus cattle transportation



Construction

Uneven ground, mineral and material handling.



Special Equipment

With heavy on-board power equipment

**Different CV batteries for specific needs and operating conditions**

# Key factors to consider

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# Vibration Resistance

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### New Rear-Chassis Battery Location



To accommodate SCR system and AdBlue tank, some new Euro 5/6 truck designs position batteries in a high vibration rear-chassis location.

### Bad Roads & Rough Terrain



Vehicles operating on bad roads or rough terrain can also cause long-term damage resulting in shorter battery life.



# Cycling Endurance

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High cycling endurance is important in batteries for...



Long-haul trucks with life on-board electrical loads during stopping periods.



Delivery and service vehicles undertaking intensive urban journeys.



Specialist vehicles with extensive energy requirements.



# Cranking Power

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High cranking power allows for engine starts in cold climates and is required for many power-intensive vehicles in...



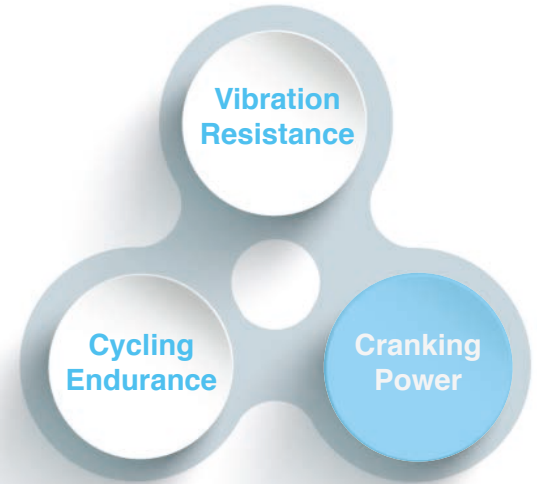
Agriculture



Construction












Forestry and  
quarrying



# Select the right battery by vehicle type

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Type of vehicle	Application	StrongPRO EFB+	EndurancePRO EFB	Endurance+PRO GEL	PowerPRO	PowerPRO Agri & Construction	StartPRO
 	Long-haul modern trucks, standard trucks	✓	✓				
 	Express delivery (lifters), city bus	✓		✓			
	Long-haul modern trucks	✓	✓				
	Standard trucks or vehicles with large/highly compressed engines				✓		
 	Tractors, construction machines					✓	
	Standard truck						✓



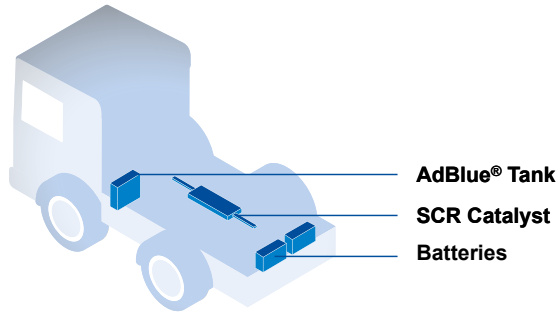
# Euro 5/6 Truck battery in rear-chassis position

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### New challenges, new solution

Many Euro 5/Euro 6 vehicles have a new chassis layout to integrate the Selective Catalytic Reduction (SCR) system and AdBlue tank, leading truck manufacturers to move batteries into the rear-chassis position.

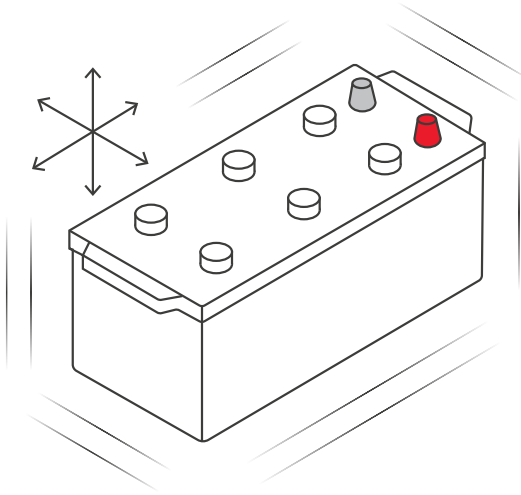
The lifespan of ordinary batteries is greatly reduced by higher vibrations at the rear of the chassis of the vehicle. In 2016 Exide worked with truck manufacturers to develop the new High Vibration Resistant (HVR®) battery in the market, one of the first to meet the new V4\* vibration test.



\* EN50342-1

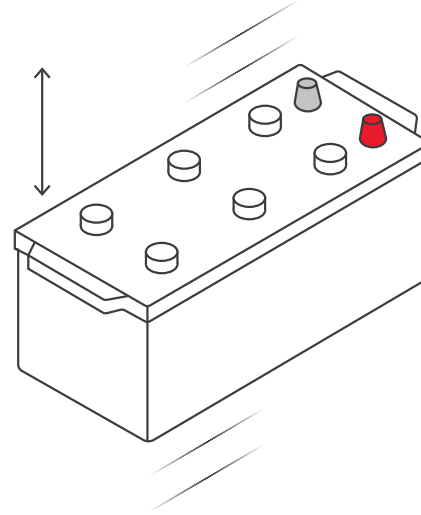
# Exide HVR<sup>®</sup> and V4\* vibration test

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**V4\* Three axis test**

HVR technology allows Exide batteries to pass the strict V4\* vibration test, which uses three-axis motion simulating real-life conditions.



**Single axis test**

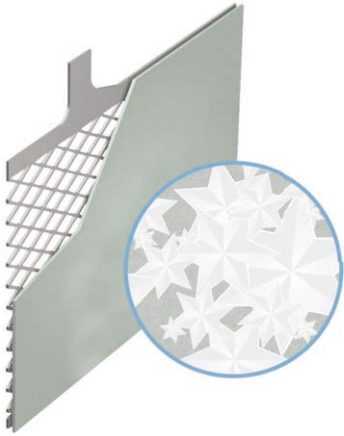
The V1-3 tests used single-axis vibration only.

\* EN50342-1

# The Carbon Boost effect

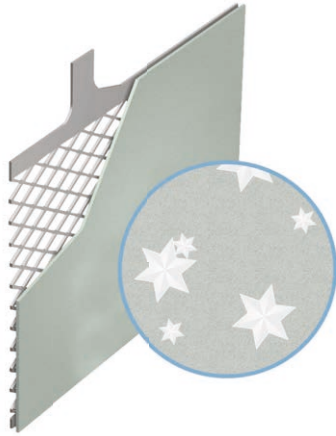
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Without  
Carbon Boost

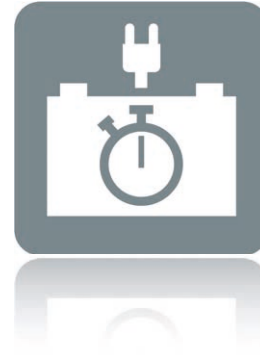


The plates are covered  
with sulphate

 **carbon  
boost**<sup>®</sup>



Sulphate is  
greatly reduced



**Super-fast recharge  
and improved cycling**

# Exide Endurance+PRO GEL

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### Benefits:

- Impressive energy throughput over the battery lifetime: safe DoD of 90%, vs 50% of standard flooded batteries, and 5 times more cycles than a comparable standard flooded battery
- Withstands deep discharges for maximum reliability
- Valve regulated: maximum safety and highly vibration resistant
- Very low self discharge
- Maintenance free
- Designed for OE applications



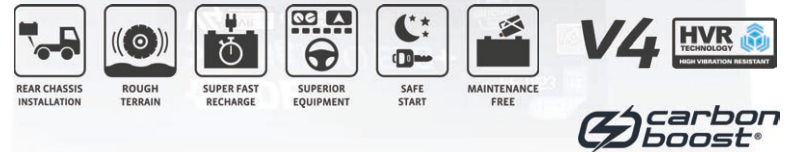
# Exide StrongPRO EFB+

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SPARE  
ORIGINAL  
PART

## Benefits:

- Better rechargeability and charge acceptance than previous generation StrongPRO
- Better control over gassing and stronger anti-stratification effect
- Extremely robust – with HVR® technology, meeting V4 requirements
- Up to 70% savings on TCO within 2 years period when compared with standard batteries
- Maximum starting reliability after overnight stay
- OE experience inside
- First class safety features
- Maintenance free - no topping up



# Exide StrongPRO EFB+ – Inside the box

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**Reinforced Container**  
wall with additional ribs\*

**3DX Negative Grids**  
with Carbon Boost® for  
super-fast recharge and  
improved cycling

**Framed Positive Grids**  
with heavy-duty polyethylene  
separator and glass ribs\*  
for homogeneous compression



**Labyrinth Integrated**  
into the lid with flame arrestor  
and central degassing outlet  
for maximum safety

**Additional Hot Melt**  
spots locking the cell group\*

**New Extended Side**  
and top fixation\*

**Bottom Plate**  
adhesion for extra fixation\*

\*Latest generation of Exide's leading HVR® design, meeting V4 requirements (EN 50342-1:2015)

# Exide EndurancePRO EFB

## Module 04 | Commercial Vehicle (CV) Batteries

SPARE  
ORIGINAL  
PART

### Benefits:

- Extremely robust – Now with HVR® technology, meeting V4 requirements
- Perfect for deep cycling applications:  
2 x more cycle life compared to standard truck battery (advanced SHD technology with glass matt layers pasted on active mass) allowing excellent cycling performance (up to 200 cycles at 50% DoD)
- Improved durability
- OE experience inside



# Exide PowerPRO

## Module 04 | Commercial Vehicle (CV) Batteries



### Benefits:

- Superior cranking power  
(more plates and active material to maximise grid surface)
- Robust and reliable design with hot melt fixation of plate groups
- Maintenance free - no topping up
- OE experience inside



SUPERIOR  
POWER



COLD  
TEMPERATURE



MAINTENANCE  
FREE





# Exide PowerPRO Agri & Construction

## Module 04 | Commercial Vehicle (CV) Batteries



### Benefits:

- Superior cranking power  
(more plates and active material to maximise grid surface)
- Robust design with hot melt fixation of plate groups
- Wide range including special types
- True OE design and construction (original part)
- Maintenance Free - no topping up



TRUE OE  
AGRI FIT



TRUE OE  
CONSTRUCTION FIT



SUPERIOR  
POWER



MAINTENANCE  
FREE

# Exide StartPRO

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### Benefits:

- Ideal for trucks without special requirements in terms of vibration resistance, cycling or cranking power
- Robust and reliable design with hot melt fixation of plate groups
- Complete range covering almost 100% of vehicle parc, including special types
- Low maintenance - may need water topping up



# OE References – Trusted by leading manufacturing

## Module 04 | Commercial Vehicle (CV) Batteries



### TRUCKS

Astra  
Daimler Trucks  
Isuzu  
Iveco  
MAN  
Nissan  
Piaggio  
Renault Trucks  
Scania  
Volvo Trucks

### BUS & COACH

Evobus  
Iveco  
MAN  
Scania  
Sennebogen  
Solaris

### CONSTRUCTION & AGRICULTURE

AGCO  
Argo Tractors  
Atlas  
Case New Holland  
Claas  
Doosan Bobcat Group  
Hinowa  
John Deere  
Komatsu  
Kubota  
Manitou  
Mecalac  
McCormick  
Ravo  
Same Deutz Fahr  
Sennebogen  
Steyr  
Terberg  
Terex  
Wacker Neuson Group  
Wirtgen Group  
Yanmar

# Exide Technical Guide Lead-Acid Batteries

Exide Technologies has been at the forefront of Lead-Acid battery innovation since 1880 to the current day. The company was the inventor of the world's first starter battery in 1912 and more recently the first manufacturer to introduce AGM and EFB battery technology into the European aftermarket.

Exide's expertise and knowledge enabled the publication of the easy-to-understand Exide Technical Guide. The latest edition is available to view and download as a PDF at:

[www.exidegroup.media/techguide](http://www.exidegroup.media/techguide)

