

# Exide Training Graphic Assets

## Module 03 | (LV) Light Vehicle Batteries

Edition 2  
Revised 05.2021



# Introduction

## Module 01 | Lead-Acid Battery Basics

### 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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# Battery range for Light Vehicles (cars & vans)

Module 03 | (LV) Light Vehicle Batteries



AGM



EFB



AGM Auxiliary



Premium



Excell



Classic

# Battery range for Light Vehicles (cars & vans)

## Module 03 | (LV) Light Vehicle Batteries



**AGM**

**EFB**

**Premium**

**Excell**

**Classic**

**Start-Stop Powertrain**

Recommended  
OE Replacement

Recommended  
OE Replacement

×

×

×

**Non Start-Stop Powertrain**

×

Unless specified by vehicle  
manufacturer

**Extra life**  
for  
conventional vehicles

**Carbon Boost® 2.0**  
Faster recharge for high  
equipment level

**Widest Range**  
to fit almost 100% of car  
parc

**Cost Effective**  
for older and more basic  
vehicles

**Vehicle  
Requirements**

**Regenerative Braking**



×

×

×

**Intensive Urban Use**



**Power Hungry Equipment**



**Battery  
Performance**

**CCA Cold Cranking Amperes**



**Charge Acceptance\***



**Cycle Life**



**Extra Energy\*\***



\* Charge Acceptance (in A/Ah) \*\* Energy throughput during lifetime

# AGM & EFB batteries for Start-Stop vehicles

Module 03 | (LV) Light Vehicle Batteries



**RECOMMENDED  
FOR START-STOP**



Designed and built to endure continuous battery discharge and recharge of Start-Stop systems



Typical pattern of State of Charge during a journey with Start-Stop system

# Exide Auxiliary – complement to starter battery

## Module 03 | (LV) Light Vehicle Batteries

### The reliable secondary battery

Auxiliary batteries power the electrical equipment in certain cars, as a complement to the main starter battery.

#### Benefits:

- 3 times higher cycle life
- Long shelf life
- VRLA (valve regulated) for leak-proof security
- Original equipment experience inside



ABSORBENT  
GLASS MAT



INTENSIVE  
USE




3 x STANDARD  
CYCLABILITY

# Start-Stop battery technology Adopted (%) by European car manufacturers


Module 03 | (LV) Light Vehicle Batteries

## AGM


## EFB




BMW Group	
<b>AGM</b>	<b>98%</b>
EFB	0%
Lithium 12V	2%



Mercedes-Benz	
<b>AGM</b>	<b>98%</b>
EFB	0%
Lithium 12V	2%



Fiat Chrysler Automobiles	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%



Ford Group	
AGM	10%
<b>EFB</b>	<b>90%</b>
Lithium 12V	00%



Honda Group	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%




PSA Group	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%



Geely Volvo	
<b>AGM</b>	<b>100%</b>
EFB	0%
Lithium 12V	0%



Hyundai Group	
<b>AGM</b>	<b>100%</b>
EFB	0%
Lithium 12V	0%




Renault-Nissan-Mitsubishi	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%



Suzuki Group	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%



Toyota Group	
AGM	00%
<b>EFB</b>	<b>100%</b>
Lithium 12V	00%



Volkswagen Group	
AGM	33%
<b>EFB</b>	<b>66%</b>
Lithium 12V	1%

# EFB batteries – extra life for conventional vehicles

Module 03 | (LV) Light Vehicle Batteries



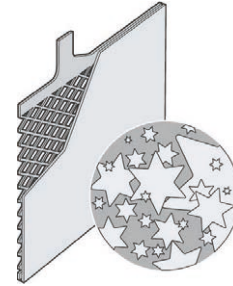
Exide EFB offers significant performance advantages over a conventional battery also when fitted into a car without Start-Stop system.

CONVENTIONAL Battery	EFB BATTERY with Carbon Boost 2.0
CHARGE ACCEPTANCE	X2
CYCLE LIFE	X3
ENERGY AVAILABILITY	X3

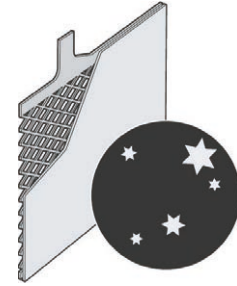


# EFB & Premium batteries with Carbon Boost® 2.0

Module 03 | (LV) Light Vehicle Batteries



**without Carbon Boost**  
Plates covered with sulfate



**with Carbon Boost**  
Sulfate greatly reduced



Carbon Boost 2.0 uses improved carbon additives, combining an optimised surface structure with significantly better conductivity. This enables a better current flow within the battery, resulting in unmatched charge acceptance. It also helps to dissolve the lead sulfate deposits that usually consolidate on a battery's discharged negative plates, reducing its ability to charge back efficiently.

# Exide AGM

## Module 03 | (LV) Light Vehicle Batteries

### Benefits:

- Top charge acceptance
- Higher energy throughput over battery lifespan thanks to new LifeGrid® technology
- Optimised for partial state of charge operations
- Ideal for large cars, SUVs, vans and vehicles with Start-Stop and power-hungry electrical equipment
- Top-level safety features and absolutely no free acid
- Recombinant VRLA (valve regulated)
- Latest generation approved by car manufacturers
- Great car parc coverage from a limited number of SKUs
- Long shelf life



SPARE  
ORIGINAL  
PART



ABSORBENT  
GLASS MAT



SUPERIOR  
POWER



REGENERATIVE  
BRAKING



INTENSIVE  
USE



RECOMMENDED  
FOR START-STOP

# Exide AGM - inside the box

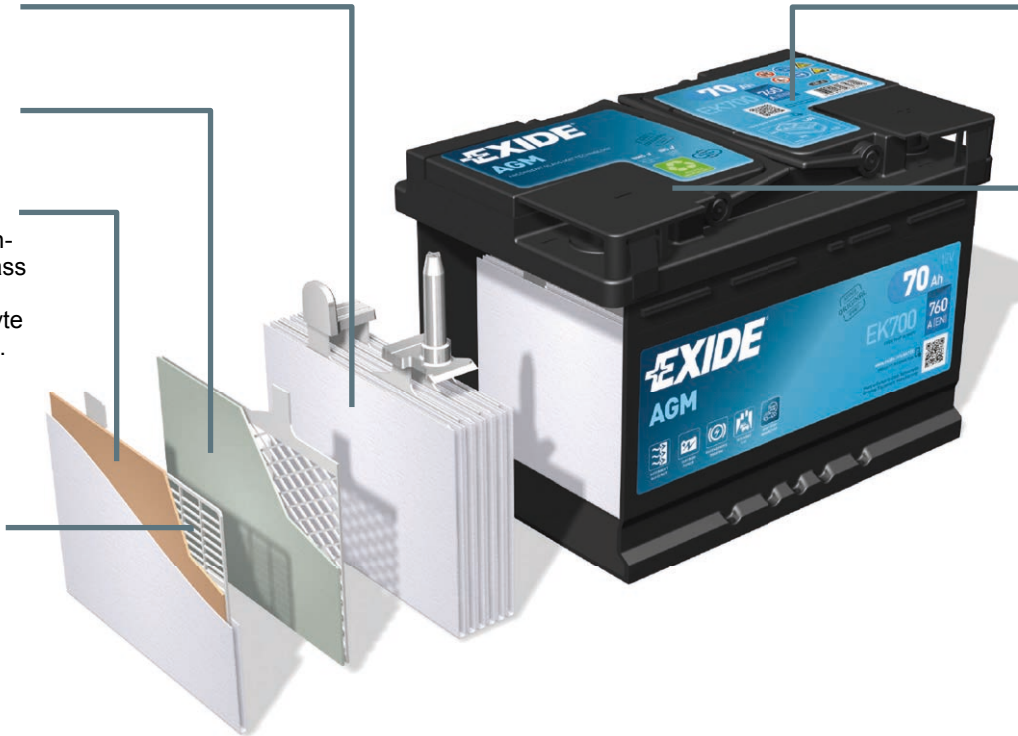
## Module 03 | (LV) Light Vehicle Batteries

**Tall plate group**  
with high compression

**Negative plate**  
Framed negative plate

**Positive plate**  
New framed grid design with high-tech alloy. The high-capillarity glass mat separator provides extra absorption for maximum electrolyte volume and to avoid stratification.

**LifeGrid® grid design**  
provides consistent power and longer battery life



**Sealed double security lid**  
with degassing outlet and flame  
arrestor

**Exide unique**  
**valve regulated venting**

# Exide EFB

## Module 03 | (LV) Light Vehicle Batteries

### Benefits:

- High dynamic charge acceptance over life of battery
- Extra energy for vehicles with and without Start-Stop systems
- Optimised regenerative braking functionality in vehicles with Start-Stop systems – ensuring maximum fuel savings and less CO<sub>2</sub> emissions
- High-level safety features
- Optimal operation in engine compartment
- Latest generation approved by car manufacturers
- Great car parc coverage from a limited number of SKUs
- Long shelf life



3DX GRID  
TECHNOLOGY



REGENERATIVE  
BRAKING



INTENSIVE  
USE



RECOMMENDED  
FOR START-STOP



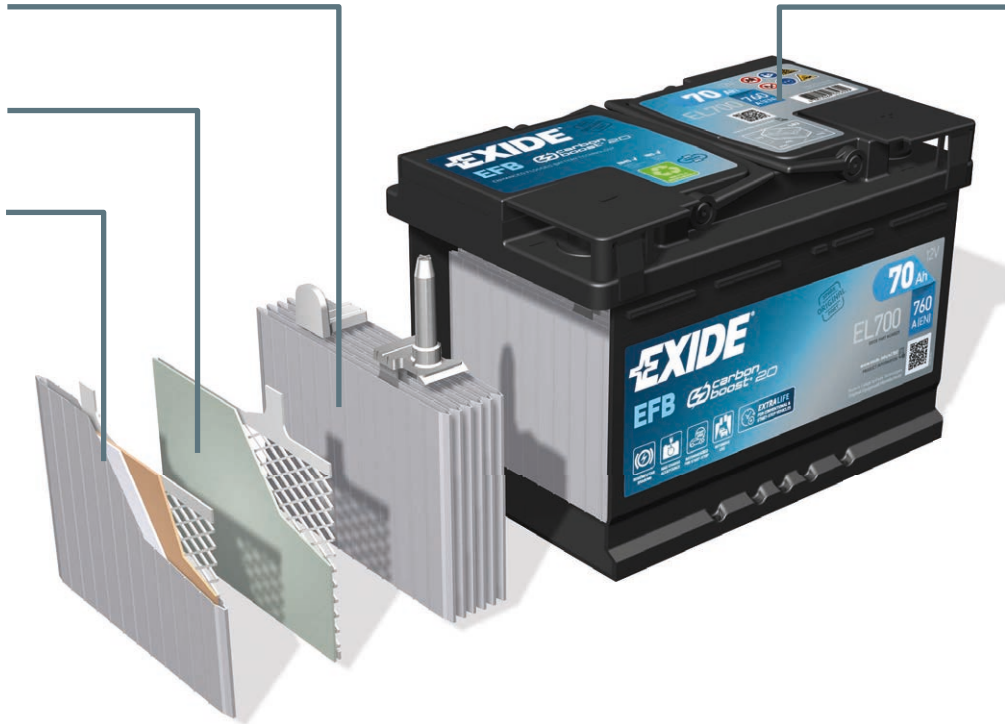
# Exide EFB - inside the box

## Module 03 | (LV) Light Vehicle Batteries

**Plate group**  
with medium compression

**Negative plate**  
3DX grid with Carbon Boost 2.0

**Positive plate**  
3DX grid and advanced glass mat  
retainer covering active mass



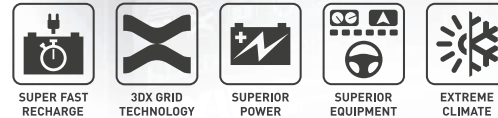
**Spill-proof security lid**  
with flame arrester

# Exide Premium

## Module 03 | (LV) Light Vehicle Batteries

### Benefits:

- Recharges up to 2 times faster compared to other conventional batteries
- Latest plate design for greater robustness and increased resistance to high temperatures
- Updated top label – ‘CAUTION’ label to prevent conventional batteries to be installed on Start-Stop vehicles
- 30% extra starting power
- Ideal for highly equipped cars with powerful engines and demanding electrical needs
- Ideal for extreme weather and urban driving conditions
- Original equipment experience inside
- Meets OE requirements
- Comprehensive range covering around 90% of car parc



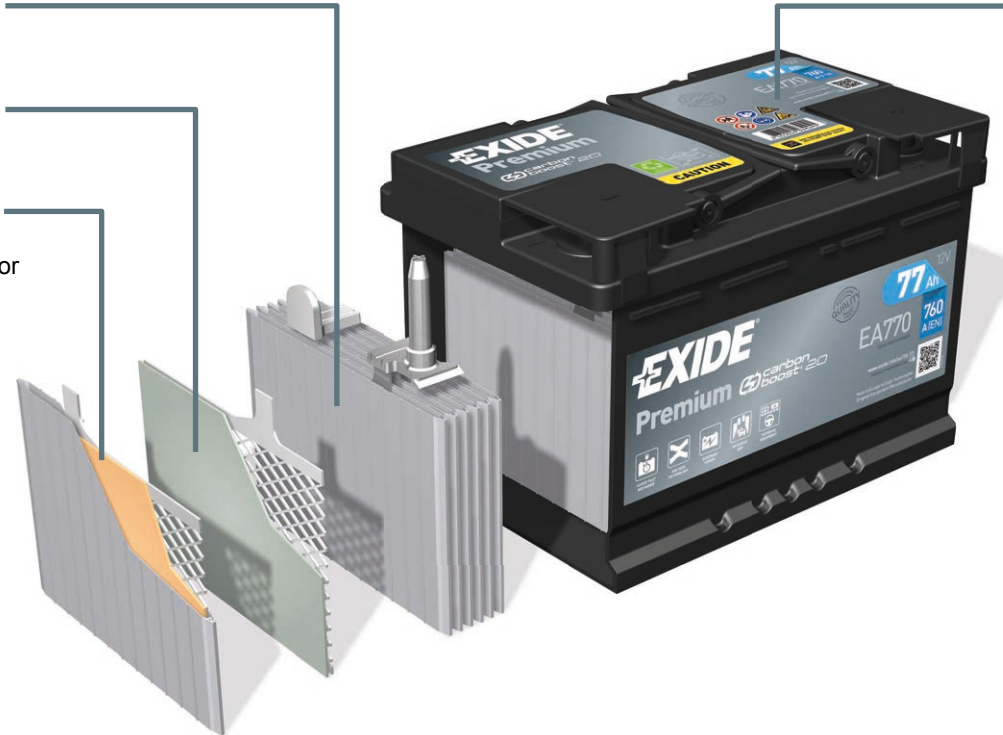
# Exide Premium - inside the box

Module 03 | (LV) Light Vehicle Batteries

**Tall plate group**  
with high compression

**Negative plate**  
3DX grid with Carbon Boost 2.0

**Positive plate**  
3DX grid enveloped with high-  
performance polyethylene separator



**Patented labyrinth**  
for extreme safety

# Exide Excell

## Module 03 | (LV) Light Vehicle Batteries

### Benefits:

- Updated top label –'CAUTION' label to avoid conventional batteries to be installed on Start-Stop vehicles
- 15% extra starting power
- All-round battery for standard use
- Complete range covering almost 100% of car parc
- Original equipment experience inside



3DX GRID  
TECHNOLOGY



MEDIUM  
POWER



STANDARD  
EQUIPMENT



# Exide Classic

## Module 03 | (LV) Light Vehicle Batteries

### Benefits:

- Updated top label –'CAUTION' label to avoid conventional batteries to be installed on Start-Stop vehicles
- Economy solution
- Ideal for cars with basic power needs



3DX GRID  
TECHNOLOGY

# Battery upgrade path for conventional vehicles

Module 03 | (LV) Light Vehicle Batteries



**Exide Excell**



## Standard battery option

for medium size and/or older cars with limited electrical devices, used for low domestic needs and local journeys.



**Exide Premium**

with Carbon Boost 2.0 for faster recharge



## Best battery

for newer models fitted with luxury packages and multiple electrical devices, used for regular commuting, business, touring, etc.



**Exide EFB**



## The ultimate upgrade

for constant short journeys in urban environments and more reliance on electrical devices. Highest endurance and critical starting for taxis, emergency and public service vehicles, etc.

# Electric Vehicles – Did you know...

Module 03 | (LV) Light Vehicle Batteries

## ...most electric vehicles are equipped with lead-acid batteries?

The 12V lead-acid battery remains a reliable power source for the majority of electric and hybrid vehicles. It maintains the entire electrical system before the traction battery is connected and whilst the electric car is parked. Safety systems, security, keyless sensors, clock and the computer memory are all crucial loads, that are supported by the lead-acid battery.



# Battery range for Electric Vehicles

## Module 03 | (LV) Light Vehicle Batteries

77% of electric car parc has a lead-acid battery

Exide provides the exact match for optimum performance



Make	Model	Year from	AGM	EFB	Auxiliary	Premium	Excell
BMW	I3	01/11/17			AGM12-23		
Citroën	C-Zero	01/10/10					EB356
Hyundai	Ioniq	01/03/16				EA386	
Kia	Soul II	01/09/14					EB504
Mercedes-Benz	B-Class	01/11/14	EK600				
Mitsubishi	I Miev	01/07/09				EA386	EB356
Nissan	E-NV200	01/05/14		EL550		EA530	EB500
Nissan	Leaf	01/11/10					EB454
Nissan	Leaf	01/08/17		EL550		EA530	EB500
Opel	Ampera	01/11/11	EK600				
Opel	Ampera-E	01/05/17		EL550			
Peugeot	ION	01/11/10					EB356
Renault	Kangoo Express	01/10/11		EL700		EA770	EB740
Renault	Zoe	01/06/12		EL550		EA530	EB500
Smart	Fortwo	01/11/09	EK600				
Smart	Fortwo	01/05/17		EL600		EA640	EB620
Tesla	Model X	01/09/15					EB357
VW	Golf VII	01/03/14	EK600	EL600		EA640	EB620
VW	Up	01/07/13					EB440

# Exide (OE) Original Equipment Manufacturer – LV

## Module 03 | (LV) Light Vehicle Batteries

Alfa Romeo

GM

Mazda

Skoda

Audi

Hyundai

Maserati

Suzuki

Bentley

Infiniti

Mini

Toyota

Chrysler

Jaguar

Nissan

Vauxhall

Citroën

Jeep

Peugeot

Volkswagen

Dacia

Kia

Piaggio

Volvo

DS

Lancia

Porsche

Fiat

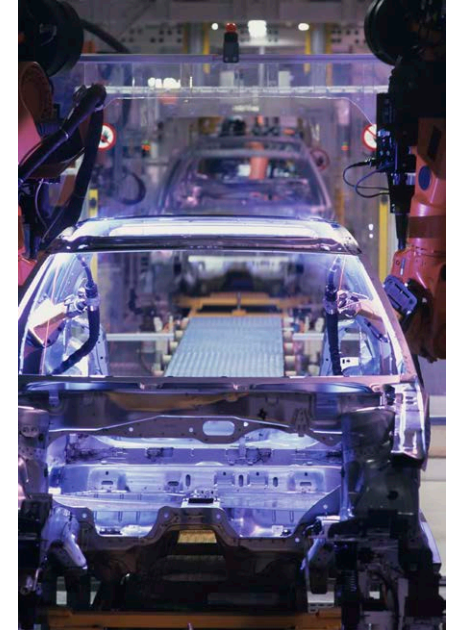
Land Rover

Renault

Ford

LEVC (London Taxi)

Seat



# 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)

