

# VARTA® THE ORIGINAL.

All about our products and services.



[www.varta-automotive.com](http://www.varta-automotive.com)

*It all starts with*  **VARTA®**

Johnson  
Controls 

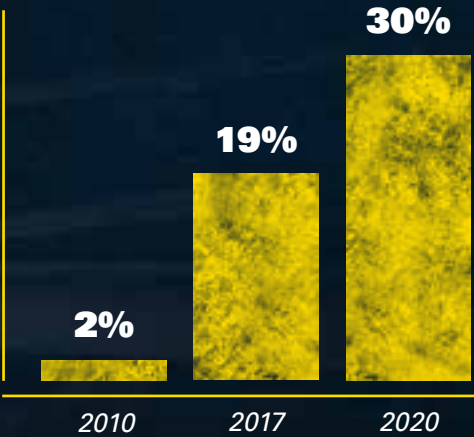




Changing technology, new opportunities:

# START-STOP IS HERE. ARE YOU PREPARED?

The battery market is changing rapidly. By the time you read this, more than 90% of all newly manufactured cars will have start-stop technology built in. And by 2020, more than 30% of all cars entering a workshop will be equipped with a start-stop system.



In a few years, more than 30% of all cars arriving at a workshop will come with start-stop technology.

See more on this at:  
[varta-automotive.com/en-gb/start-stop](http://varta-automotive.com/en-gb/start-stop)




The challenges of a changing market.

# QUICK, HOW MANY ELECTRIFIED DEVICES NEED BATTERY SUPPLY?


“Apps on wheels” is a term coined in recent years to describe the entertainment, comfort and safety machines our cars have become in the past 20 years.

Satnav? DVD screen? Smartphone interface? 20 years ago, no one would have known what these words mean. Today, these are but a few of the features modern car batteries have to take care of – next to their actual duty, which is being the heart of the car.

So, with both car technology and the market changing rapidly, it’s safe to say that workshops need to adapt to modern technology – in theory as well as in practice. But worry not – VARTA® has it laid out already, making it as easy for you as possible.




**20 years ago**, a car battery had to power 20 electrified devices (and 2 computer modules).




**Today**, a battery has to energize 150 electrified devices (and 50 computer modules and on top of these, a start-stop system). Needless to say that today, a conventional battery won't do anymore.


## Workshops should be prepared for these upcoming challenges:



In more than 40% of modern vehicles, batteries are not fitted under the hood.



What is the right battery technology for the car? Conventional, EFB or AGM?



Service time has increased from 15 to 60 min. It can take up to 28 steps to replace the battery.

Want to be prepared for the future? Please see pages 20 and 21 in this brochure.

Start-Stop vehicles need special types of batteries.

# “WHAT’S THE BIG DEAL”, YOU MIGHT ASK? WELL, HERE IT IS...

## Start-Stop vehicles need high-tech batteries.

You see, reducing up to 15% of fuel in inner-city traffic by switching off idle engines is just one of the tasks of a start-stop battery. As more and more power-consuming loads are built into cars, a robust energy supply has to be in place. And that’s a task conventional SLI batteries are simply not able to fulfill. Which, by the way, makes it mandatory to change an AGM battery like-to-like.

Why start-stop systems only run with AGM or EFB batteries. What that means for you.

In a vehicle fitted with an AGM battery, the battery is intricately linked to the vehicle’s on-board electronics via a battery management system (BMS) and intelligent battery sensor (IBS).

Upon replacement, it has to be integrated into the system and paired with the BMS/IBS, which requires specialist equipment. Without the equipment, and without introducing the battery into the system, the vehicle could illuminate error messages on the dash, fail to charge the battery or simply not start at all.

## Important to know for any workshop:



Start-Stop technology makes the battery one of the most critical spare parts.



AGM or EFB batteries are required.



Finding and fitting the battery correctly is key in increasingly complex vehicles.



“Like-for-Like” replacement.

# ONCE AN AGM ALWAYS AN AGM THE IMPORTANCE OF EXACT FIT.

As a rule of thumb you should always replace a battery with a spare part that is classed as “OE part”. With VARTA® you are on the safe side, as all batteries, except the Black Dynamic, are classed as “Original Spare Part”.

**AGM Batteries:**  
“like-for-like” replacement



If the OE has designed a vehicle to be equipped with an AGM, you must replace it with an original spare part: VARTA Silver Dynamic AGM. Some entry-level start-stop vehicles come with an EFB. EFB batteries should always be replaced with like-for-like OE spare parts: VARTA Blue Dynamic EFB.

**Upgrade to AGM for following benefits:**

- ▶ Increased fuel efficiency
- ▶ Higher energy throughput
- ▶ Higher electrical performance
- ▶ More reliable starting in extreme conditions

**EFB Batteries:**  
“like-for-like” or “like-for-better” replacement



**Beware of the dangers of replacing AGM or EFB with a conventional battery!**

Serious performance and safety risks might occur when a conventional battery is fitted to a start-stop vehicle. This applies even if the start-stop function will be deactivated by the driver.

The importance of original spare parts.

# 8 OUT OF 10 NEWLY MANUFACTURED AGM CARS ARE FITTED WITH VARTA®. BUT WHY?

VARTA batteries stand for superior quality. That’s why car manufacturers consider them the best fit for their cars. But besides the quality aspects, there are other important reasons for making VARTA batteries the first choice.



Inspection at the battery factory in Hanover.

It’s these two factors where the VARTA Silver Dynamic AGM outperforms.

But the success didn’t come overnight. Starting in 2002 on a broad scale, we have put in place more than 100 process and product parameters and variables which are being inspected and monitored during the production of the AGM batteries. This has made us the No. 1 supplier for the automotive industry.

One example for highest production stability is our patented PowerFrame® grid which is fitted to all VARTA batteries. PowerFrame® ensures fast recharge, highest corrosion resistance and reliable starting power in any vehicle application and weather condition.

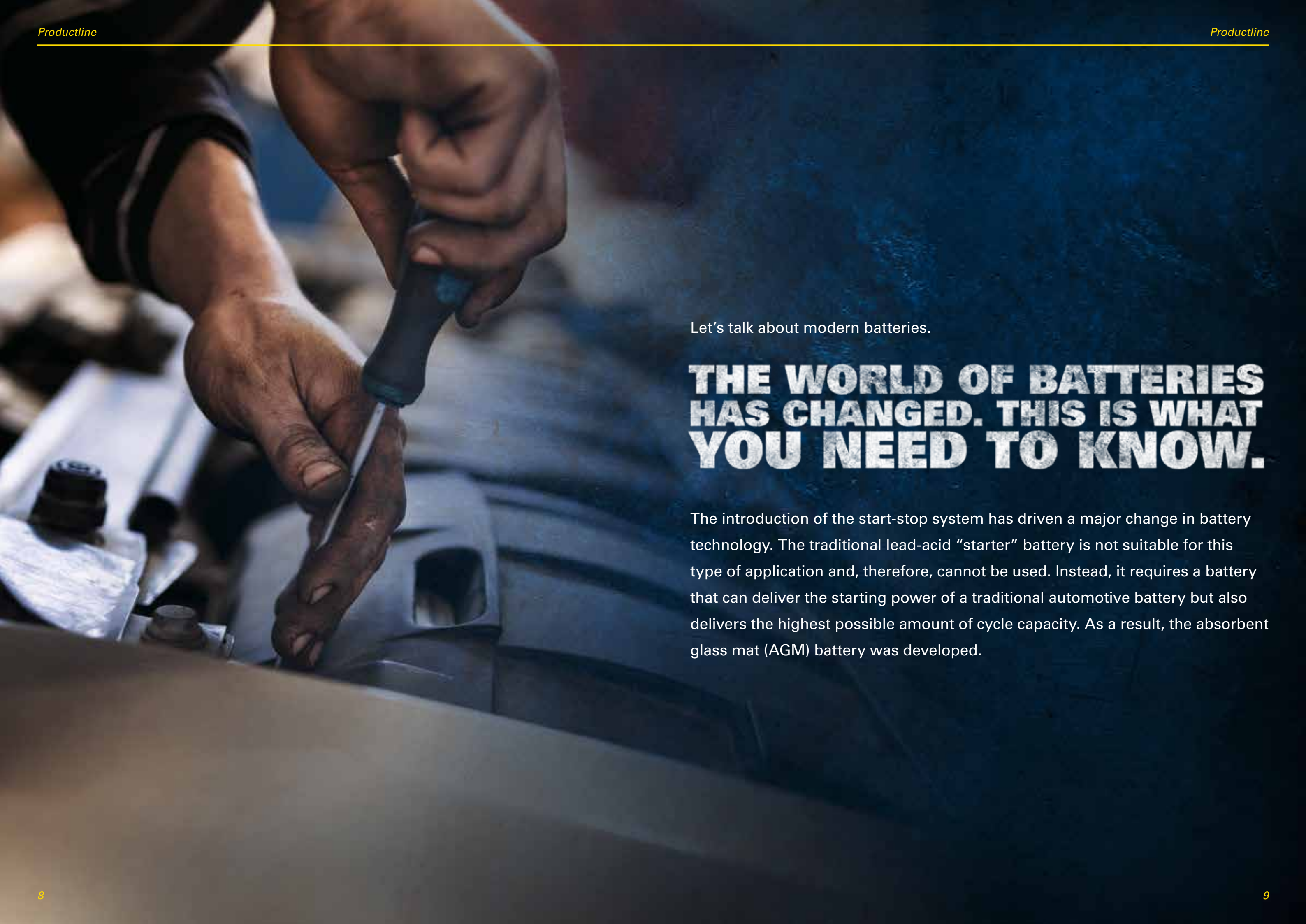
So every time you replace a battery with a VARTA battery, rest assured that while you take it off your shelf, it was originally produced to run in a newly manufactured car. That’s what the OE logo stands for.

There are two things car manufacturers look into before deciding which 3rd-party component they build into their cars. The first is performance, and the second is a next-to-zero fail rate.



An “original spare part” is a part coming from the same production line as the original equipment, but sold directly to the aftermarket. BER 461/2010 article 5(c) and para. (24) automotive guidelines.





Let's talk about modern batteries.

## **THE WORLD OF BATTERIES HAS CHANGED. THIS IS WHAT YOU NEED TO KNOW.**

The introduction of the start-stop system has driven a major change in battery technology. The traditional lead-acid “starter” battery is not suitable for this type of application and, therefore, cannot be used. Instead, it requires a battery that can deliver the starting power of a traditional automotive battery but also delivers the highest possible amount of cycle capacity. As a result, the absorbent glass mat (AGM) battery was developed.



The start-stop benchmark.

# VARTA® SILVER DYNAMIC AGM: UNPARALLELED PERFORMANCE FOR START-STOP SYSTEMS.

There are a couple of reasons 8 out of 10 newly manufactured AGM cars in Europe are fitted with a VARTA Silver Dynamic AGM.

When we started our AGM serial production in 2002, we didn't just want to meet the demands of car manufacturers. We wanted a battery so powerful that it would become the benchmark in the start-stop segment. Here is the result: VARTA Silver Dynamic AGM.

We consider the VARTA Silver Dynamic AGM battery as the mandatory replacement for any vehicle equipped with an AGM battery (remember, an AGM battery must always be replaced with an AGM).

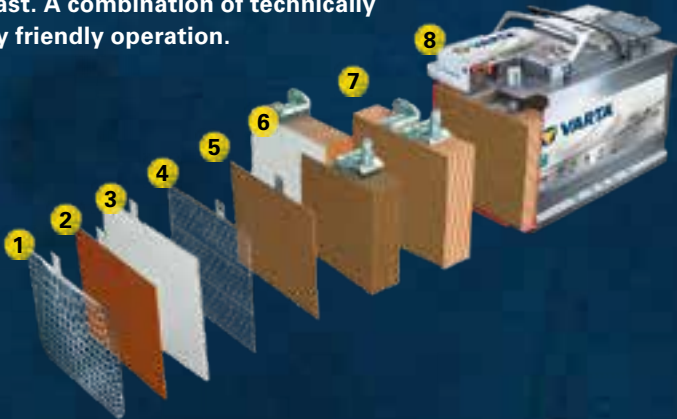
You'll find a VARTA Silver Dynamic AGM in 80% off newly manufactured start-stop cars with AGM batteries, underlining VARTA's leadership as the trusted OE supplier for the vast majority of car manufacturers. It's made in Germany. And it has the highest manufacturing standards in the world's largest AGM plant.

- ▶ 3x the cycle life compared to conventional batteries
- ▶ For vehicles with the highest energy demands due to tougher driving schedules, cold winters, hot summers or multiple accessories & equipment

## Battery technology trusted by car manufacturers

The VARTA Silver Dynamic AGM is built to perform – and built to last. A combination of technically advanced components enables powerful, safe and environmentally friendly operation.

1. Positive patented PowerFrame®
2. Positive plate with special mass recipe
3. Positive plate with OE glass mat separator
4. Negative patented PowerFrame®
5. Negative plate with special mass recipe
6. Positive and negative plate group
7. Plate set
8. Reinforced patented container



Made in Germany in the world's largest AGM production plant.



"Like-for-like" replacement of the battery sold to the OE channel.



Patented PowerFrame® grid for reliable starting power, fast recharge and corrosion resistance.



Suitable for all start-stop vehicles – kicks in earlier, works harder, lasts longer (part of OE design ensuring highest fuel savings in start-stop systems).

Discover more on the power and safety features of the VARTA® Silver Dynamic AGM at [www.varta-automotive.com/en-gb/agm](http://www.varta-automotive.com/en-gb/agm)

## These car manufacturers fit VARTA:

Audi	Bentley	BMW	Bugatti	Chevrolet	Chrysler	Citroën	Ferrari	Fiat	Ford	GMC	
Honda	Hyundai	Jaguar	Kia	Lamborghini	Land Rover	Maserati	Mercedes-Benz	Nissan	Opel		
Peugeot	Porsche	Renault	Seat	Škoda	Vauxhall	Volkswagen	Volvo				





For superior power needs.

## VARTA® BLUE DYNAMIC EFB: THE SOLID CHOICE FOR ENTRY LEVEL START-STOP SYSTEMS.

Entry level start-stop systems are usually equipped with an EFB (enhanced flooded battery). The Blue Dynamic EFB is an exact “like-for-like” replacement choice. It’s outperformed only by the Silver Dynamic AGM to increase fuel savings, reduce emissions and increase the reliability of the vehicle comfort functions.

Its start-stop legacy makes it a powerful conventional replacement.

The VARTA® Blue Dynamic EFB fits vehicles with higher than normal energy demands. So if you’re looking for a battery with extended cycle life compared to a conventional battery, the VARTA Blue Dynamic EFB is the right choice.

- ▶ Engineered in Germany
- ▶ Ready for entry level start-stop systems
- ▶ 2x the cycle life compared to conventional batteries



Meets all **original criteria** of the car manufacturer.



**Patented PowerFrame® grid** for reliable starting power, fast recharge and corrosion resistance.

For additional power.

## VARTA AUXILIARY BATTERIES: DUAL BATTERY SYSTEM FOR HIGH-LEVEL START-STOP DRIVING.

Modern cars consume a significant amount of electricity. Therefore, these cars with a combustion engine often come with two batteries: a regular 12 volt starter battery and an auxiliary battery.

Depending on the car manufacturer, auxiliary batteries service different functions: They can increase the length of the start-stop moment, support comfort functions during engine starts, or support electromechanical brake systems (brake-by-wire), as well as protect the electric vehicle system and provide emergency support.

VARTA Auxiliary Batteries ensure that comfort features, safety devices, and fuel-saving functions work seamlessly.

When it comes to replacing a weak or defective auxiliary battery, it is vital to rely on a high performing substitution. Furthermore, it is important to always replace an AGM auxiliary battery with another AGM auxiliary battery to avoid the risk of malfunctions and car breakdown.

### Features of the VARTA Auxiliary Batteries

- ▶ EN compliant degassing hole
- ▶ Flame arrestor
- ▶ Spill and leak proof
- ▶ 100% maintenance free



For **backup applications**



Replace **AGM** with **AGM** only



For **backup applications**



**Made in Germany**



“Like-for-like” **replacement** of the battery sold to the OE channel





For medium energy needs.

VARTA® SLI RANGE:  
THE RIGHT CHOICE  
FOR NON-START-STOP SYSTEMS.

Conventional batteries, i.e. flooded lead-acid batteries, are the most common battery type. This technology is often referred to as SLI, named after what used to be the battery’s main purpose in a car: Starting, Lighting, Ignition.

Note that “the most common battery type” means batteries that cars all over the world are still equipped with, while only about 10% of newly manufactured cars in Europe today are fitted with conventional batteries, as all other vehicles come with modern start-stop technology.

All VARTA SLI batteries come with VARTA quality.

- ▶ PowerFrame® grid technology delivers reliable cold-cranking power and long-term performance
- ▶ Engineered in Germany



Patented PowerFrame® grid for reliable starting power, fast recharge and corrosion resistance.

Battery	Engineered in Germany	Power Frame®	BER Classification	Applications	Consumers	Cold Cranking Amps
Silver Dynamic	✓	✓	Original spare part	All premium conventional vehicles		
Blue Dynamic	✓	✓	Original spare part	Standard conventional vehicles		
Black Dynamic	✓	✓	Matching spare part	Older vehicles built before 2000		



# CUSTOMERS HAVE DEMANDS. CARS HAVE DEMANDS. WE HAVE SOLUTIONS.

When it comes to battery power, cars can be pretty demanding. Even in older cars there are huge differences when it comes to energy consumption: the number of electronic devices, the climate conditions or what sort of traffic drivers typically experience e.g. around town vs. highway. That's why there's a range of batteries according to what consumers need.

	Start-Stop	Cold Cranking Amps	Consumers	Cycle life compared to conventional batteries	Temperatures	
<b>START-STOP</b>  AGM must be replaced with AGM. EFB can be replaced with EFB or AGM.				3x		
				2x		
	Entry-Level					
<b>CONVENTIONAL</b>  Batteries should always be replaced with the equivalent battery to meet the car's needs. You need more power because of extreme climate conditions or more electronic devices? Decide for best performance with a VARTA AGM or upgrade within our SLI product range.						
						
						

Start-Stop applications batteries



**Silver Dynamic AGM**  
All start-stop applications + modern cars with superior power needs.



**Blue Dynamic EFB**  
Cars with entry-level start-stop power needs.

Conventional batteries/ Non-Start-Stop



**Silver Dynamic**  
Cars with superior power needs.



**Blue Dynamic**  
Cars with average power needs.



**Black Dynamic**  
Cars with lower power needs, built before 2000.

Beware of the dangers of replacing AGM or EFB with a conventional battery.

Serious performance and safety risks might occur when a conventional battery is fitted to a start-stop vehicle. This applies even if the start-stop function will be deactivated by the driver.



Loss of warranty



Failure of comfort functions



Start-Stop function will not work properly



Acid spillage can cause damage to other engine parts



Overcharging may cause the battery to become hot and rupture



Workshops face new conditions.

# HOW WE MAKE SURE EVERY WORKSHOP IS FIT TO FIT.

Although a relatively "young" technology, start-stop systems already account for more than 4,000 different start-stop models on the road today. In order to make sure every vehicle is being fitted with the correct part in the correct way, VARTA has introduced a range of tools and services to support the workshop – increasing efficiency, and keeping time and costs to a minimum. The VARTA Partner Portal, The VARTA Battery Test-Check Program and valuable Workshop Tailored Trainings, have all been developed to aid the mechanic in this increasing complex environment. Our mantra, VARTA makes it easy to find, test, sell and fit batteries to today's intricate vehicles.

Which battery technology ensures reliable performance?

Do you know the battery location of every car model?

Did you know there are more than 4,000 different start-stop models?

Find all the answers you need at [varta-automotive.com](http://varta-automotive.com)

Can you imagine that battery replacement time can increase up to 4 times depending on model and battery location?





How to become a battery expert.

# WE SUPPORT WORKSHOPS WITH MODERN TOOLS & SERVICES.

The VARTA Partner Portal is your custom-built online solution dedicated to give you fast & free access to all the information you need. Just log in and benefit.



The VARTA Partner Portal – accessible on all devices.

## Why you should consult the Partner Portal:

- ▶ Helps you to locate the battery and OBD socket
- ▶ Recommends the right VARTA original spare part battery
- ▶ Gives you fitment time
- ▶ Provides you with step-by-step replacement instructions
- ▶ Supplies you with in-depth battery knowledge
- ▶ Covers the right battery fit for 99% of the car park (start-stop + conventional)

Visit [www.varta-automotive.com/en-gb/partner-portal](http://www.varta-automotive.com/en-gb/partner-portal)

# SPECIALIZED TRAINING FOR WORKSHOPS.



It is one thing to view tips and instructions online, but it is another to experience them live.

In addition to instructional videos on techniques and battery replacement on our homepage, we are convinced that a 1:1 live training course is the ideal preparation for battery replacement in modern vehicles. After all, it's one thing to read or digitally retrieve knowledge, but it's quite another to be able to try something live without fear of doing something wrong and thus possibly causing unnecessary costs. This is why we are working on further expanding our hands-on training. Find out where and when these training courses are offered by contacting your Johnson Controls sales team.

# THE VARTA BATTERY TEST-CHECK PROGRAM.

The question is not only „how“ but „when“ to check the battery.

Statistically there is a clear answer for the importance of a battery check: nearly 40%\* of all car breakdowns are caused by the battery. Why is the battery the no 1 reason for breakdowns? Drivers simply forget about the importance of the battery. And no one reminds them of the importance of this spare part. This should now be part of the service offering of the workshops to frequently look after the battery.

Modern vehicles with a huge variety of electronical devices and start-stop functionality need a reliable power supply. Therefore, the battery has to work hard, harder, the hardest.

Make sure to keep your customers on the road by testing every car battery entering your workshop.

- ▶ Test every battery
- ▶ Explain the role of the battery
- ▶ Increase awareness, service and profit



\* Source: ADAC statistics 2017





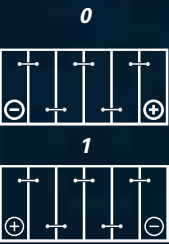
		Technical specifications						Silver Dynamic AGM						Blue Dynamic EFB						Silver Dynamic						Blue Dynamic						Black Dynamic					
Case Size		L (mm)	B (mm)	H (mm)	Circuit	Terminal	Base hold-down	ETN Number	VARTA Code	Short Code	UK Ref	Capacity C20 (Ah)	Cold test EN (A)	ETN Number	VARTA Code	Short Code	UK Ref	Capacity C20 (Ah)	Cold test EN (A)	ETN Number	VARTA Code	Short Code	UK Ref	Capacity C20 (Ah)	Cold test EN (A)	ETN Number	VARTA Code	Short Code	UK Ref	Capacity C20 (Ah)	Cold test EN (A)	ETN Number	VARTA Code	Short Code	UK Ref	Capacity C20 (Ah)	Cold test EN (A)
European battery types (EN)	H3/L0	175	175	190	0	1	B13																			544 401 042	313 2	B36	202	44	420	540 406 034	312 2	A16	202	40	340
	T4/LB1	207	175	175	0	1	B13													552 401 052	316 2	C6	063	52	520	544 402 044	313 2	B18	063	44	440	541 400 036	312 2	A17	063	41	360
	H4/L1	207	175	190	0	1	B13													554 400 053	316 2	C30	012	54	530	552 400 047	313 2	C22	012/079	52	470	545 412 040	312 2	B19	012/079	45	400
	H4R/L1R	207	175	190	1	1	B13																									545 413 040	312 2	B20	077	45	400
	T5/LB2	242	175	175	0	1	B13													561 400 060	316 2	D21	075	61	600	560 409 054	313 2	D59	075	60	540	553 401 050	312 2	C11	065	53	500
	H5/L2	242	175	190	0	1	B13	560 901 068	B85 2	D52	027	60	680	560 500 064	D84 2	N60	027	60	640	563 400 061	316 2	D15	027	63	610	560 408 054	313 2	D24	027	60	540	556 400 048	312 2	C14	027	56	480
	H5R/L2R	242	175	190	1	1	B13													563 401 061	316 2	D39	077	63	610	560 127 054	313 2	D43	077	60	540	556 401 048	312 2	C15	078	56	480
	6V VW*	178	175	188	0	1	B04																									066 017 036	312 2	D42W	404/422	66	360
	T6/LB3	278	175	175	0	1	B13							565 500 065	D84 2	D54	100	65	650	574 402 075	316 2	E38	100	74	750	572 409 068	313 2	E43	100	72	680	570 144 064	312 2	E9	100	70	640
	H6/L3	278	175	190	0	1	B13	570 901 076	B85 2	E39	096	70	760	570 500 076	D84 2	N70	096	70	760	577 400 078	316 2	E44	096	77	780	574 012 068	313 2	E11	096	74	680	570 409 064	312 2	E13	067/096	70	640
	H6R/L3R	278	175	190	1	1	B13																			574 013 068	313 2	E12	086	74	680						
	T7/LB4	315	175	175	0	1	B13							575 500 073	D84 2	E46	110	75	730	585 200 080	316 2	F18	110/115	85	800	580 406 074	313 2	F17	110/115	80	740						
	H7/L4	315	175	190	0	1	B13	580 901 080	B85 2	F21	115	80	800	580 500 080	D84 2	N80	017	80	800	585 400 080	316 2	F19	115	85	800	580 400 074	313 2	F16	115	80	740						
	T8/LB5	353	175	175	0	1	B13																									588 403 074	312 2	F5	024/017	88	740
	H8/L5	353	175	190	0	1	B13	595 901 085	B85 2	G14	019	95	850	595 500 085	D84 2	N95	019	95	850	600 402 083	316 2	H3	019	100	830	595 402 080	313 2	G3	019	95	800	590 122 072	312 2	F6	017	90	720
H9/L6	393	175	190	0	1	B13	605 901 095	B85 2	H15	020	105	950								610 402 092	316 2	I1	020	110	920												
Asian battery types (JIS)	B19H	187	140	227	0	3	B01																			540 125 033	313 2	A13	054H	40	330						
	B19	187	127	227	0	3	B00																			540 126 033	313 2	A14	054	40	330						
	B19R	187	127	227	1	3	B00																			540 127 033	313 2	A15	055	40	330						
	E2	219	135	225	0	1	B01																									545 077 030	312 2	B23	048	45	300
	E2R	219	135	225	1	1	B01																									545 079 030	312 2	B24	049	45	300
	D23	232	173	225	0	1	B00							565 501 065	D84 2	N65	005	65	650							560 410 054	313 2	D47	005	60	540						
	D23R	232	173	225	1	1	B00																			560 411 054	313 2	D48	014	60	540						
	B24	238	129	227	0	3	B00																			545 155 033	313 2	B31	156	45	330						
	B24R	238	129	227	0	1	B00																			545 156 033	313 2	B32	044/053	45	330						
	B24S	238	129	227	1	3	B00																			545 157 033	313 2	B33	155	45	330						
	B24RS	238	129	227	1	1	B00																			545 158 033	313 2	B34	043/057	45	330						
	D26	261	175	220	0	1	B01							572 501 076	D84 2	N72	068	72	760							570 412 063	313 2	E23	068	70	630						
	D26R	261	175	220	1	1	B01																			570 413 063	313 2	E24	069/072	70	630						
	D31	306	173	225	0	1	B01							585 501 080	D84 2	N85	335	85	800							595 404 083	313 2	G7	335	95	830						
	D31R	306	173	225	1	1	B01																			595 405 083	313 2	G8	334	95	830						



Technical specifications								Silver Dynamic Auxiliary AGM						Silver Dynamic Auxiliary					
Case Size		L (mm)	B (mm)	H (mm)	Circuit	Terminal	Base hold-down	ETN Number	VARTA Code	Short Code	Ah (20 HR)	Ah (10 HR)	Cold test EN (A)	ETN Number	VARTA Code	Short Code	Ah (20 HR)	Ah (10 HR)	Cold test EN (A)
AGM	YTX9	151	87	106	1	Y4	B00	509 106 013	G41 2	AUX9	9	8	130						
	YTX14	150	87	146	1	Y4	B00	513 106 020	G41 2	AUX14	13	12	200						
SLI	POB4	212	175	140	0	1	B13							535 106 052	G41 2	AUX1	35	–	520

Technical diagrams

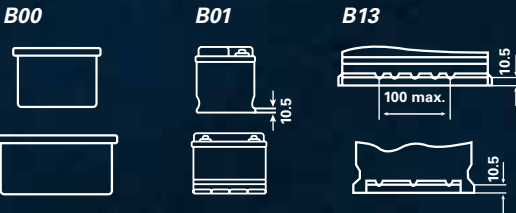
Layout



Terminal types



Base hold-down



\* 6 Volt model; all other models are 12 Volt.



As the world's largest manufacturer of automotive batteries, we supply approximately 152 million batteries every year to car manufacturers and aftermarket retailers. When you choose a VARTA® battery, you can rely on the expertise of a global technology leader.



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