

ON LAND AND AT SEA:  
POWER DESIGNED FOR  
EVERY APPLICATION

It all starts with  **VARTA®**



Your essential guide to **LEISURE BATTERIES**, 2013/2014

## NOW IT'S EVEN EASIER TO FIND EXACTLY WHAT YOU NEED

This catalogue is an essential guide to the facts you need about the extensive range of VARTA® products, technology and services.

### ***How and where to find the right VARTA battery***

On our homepage, at [www.varta-automotive.com](http://www.varta-automotive.com), key in the vehicle manufacturer and model, or selected performance features, and the online Product Finder quickly finds what you need.

Then, when you're armed with the name of the product, simply enter your country and postcode, and our Retailer Search gives you a list of local dealers.

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







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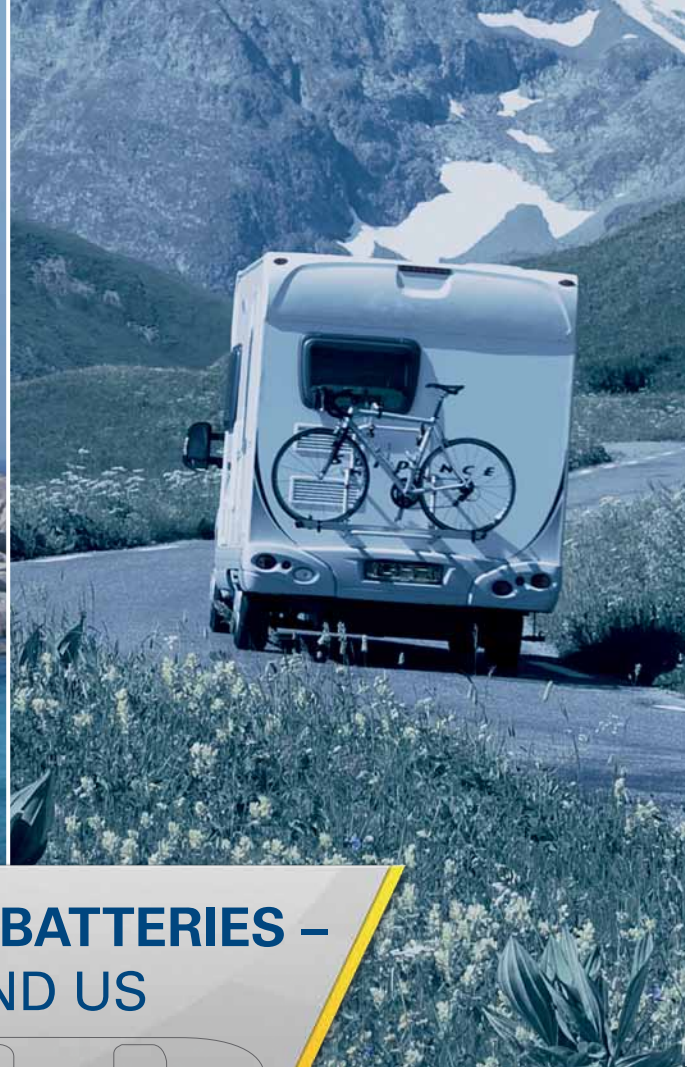
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## WHY YOU CAN TRUST VARTA® BATTERIES – AND CONFIDENTLY RECOMMEND US TO YOUR CUSTOMERS

Over the last century, vehicle technology has evolved enormously and VARTA has been at the forefront of developing both world-class battery technology and innovative services. As a result, we have built an unparalleled reputation and earned the trust of Original Equipment (OEM) and Aftermarket customers around the world.

***Today, you'll find our products in millions of cars, heavy commercial vehicles, motorcycles, powerboats, motorhomes...***

So every day, millions of people and businesses around the world rely on VARTA. And when you choose any one of our products, you can too.

VARTA products are designed to deliver superior power and reliability, less corrosion and greater efficiency for longer battery life, all resulting in lower cost of ownership.

### ***Our comprehensive range includes:***

- For boats and caravans, the **Professional range** offers excellent reliability and best value for money and discharge cycles
- For standard automotive use, the **Dynamic Trio** has our patented **PowerFrame®** stamped grid technology
- For vehicles with Start-Stop features, our **Start-Stop range** with advanced AGM technology ensures greater fuel efficiency and extremely reliable cycling performance
- For commercial vehicles and heavy commercial vehicles, our **Promotive Trio** combines high durability and exceptionally reliable performance with low Total Cost of Ownership
- For motorbikes, jetski, quads and snowmobiles, the **Powersports range** supports many applications





SVB

Many leading car manufacturers trust VARTA®. And with unrivalled experience, innovation, performance, service and support to count on, so can you and your customers.

*It all starts with VARTA®*





## PROFESSIONAL PERFORMANCE FOR EVERY NEED

Our Professional range is purpose built to power marine craft such as electric boats, yachts and motorboats, plus all kinds of caravans and motorhomes. So you get reassuringly dependable power for both essentials like interior lighting and fridges, and little luxuries such as satellite TV. For golf carts and caddies, choose our Professional Deep Cycle or Professional Deep Cycle AGM batteries for exceptional performance and reliability.

### Deep Cycle

#### Applications

- Powering electrical systems & traction
- With higher electrical requirements for systems and devices such as radios, lighting and winches. Long-lasting consumption
- The electrical unit to measure service supply need is Ah

#### Technology

- Innovative plate technology for a greater quantity of active mass paste: thicker positive plates and/or more viscous mass plate lead to a longer cycle life
- Further options for extending the cycle life are securing the active mass paste through the use of special separators, such as the AGM technology and maintaining pressure on the plate set
- Cyclic durability even at high depths of discharge (e.g. 80 % DOD)
- Indicator: capacity measured in ampere-hours (Ah), e.g. on a C20, C10 or C5 basis







## Dual Purpose

### Applications

- Start of combustion engines and service other electrical system requirements
- Require batteries with extreme high current output for brief periods and ability to withstand a variable power drain
- The electrical unit to measure dual supply need is Ah

### Technology

- Battery with high cranking capability and additional features to increase cyclic stability like use of glass mat separators for securing the active mass paste
- Use the Labyrinth lid to increase the recuperation to minimize loss of water while charging. This leads to an extended service life
- Use the latest plate material to reduce water consumption, minimize internal resistance and increase mechanical stability



## Starter

### Applications

- Start of combustion engines
- Require batteries for starter applications and minimal electrical system requirements; such boats include inflatable boats and smaller rigid-hulled boats
- Require extremely high current output levels for brief periods
- The electrical unit used to measure engine start need is CCA

### Technology

- Requirements for extremely high current output levels on short periods of time (the first ten seconds until engine started)
- For this reason, starting power is the primary requirement of an SLI battery – measured in cranking amperes (CCA/MCA)
- Multiple thin plates combined to create the largest plate surface area, facilitating extremely high current output levels
- Use of state of the art grid technology for optimised current flow
- These batteries are less suitable for cyclic applications
- At low temperatures, the ability to deliver high currents becomes more essential





## VARTA® PROFESSIONAL DEEP CYCLE AGM

Especially developed for the latest electric boats, yachts and motorhomes, this high performance product uses our Absorbent Glass Mat technology for huge energy reserves to power multiple electric devices throughout its long life. With minimal self-discharge, it's perfect for seasonal use and completely maintenance-free.

### Key benefits

- Ideal for high-performance electric boats, yachts and motorhomes
- AGM technology for superb shock and vibration resistance
- Exceptionally long lasting: up to eight times the cyclic stability of conventional batteries (up to 800 cycles @50% DOD)
- Tough, leak-proof construction
- Ideal to power your heavy loaded electrical systems and traction applications







## VARTA® PROFESSIONAL DEEP CYCLE

When you need a battery to get you through multiple rounds of golf, the VARTA Professional Deep Cycle are built to provide the deep cycle performance you need. These robust products are purpose made to last with high density active material and a specially formulated grid alloy that enables them to withstand the stress of repetitive cycling and vibration without the loss of active material or capacity.

### Key benefits

- 40–50 % more cycles than competition (GC2 > 700 cycles @ 80 % DOD)
- OE certified supplier for Club Car
- GC-2 (6V) and GC-8 (8V) models offer more time between charges and better durability
- Range ranks among the highest in reserve capacity, recharge acceptance and overall battery life
- The caps open all vent ports with one twist for easy maintenance
- Ideal for traction applications like Golf Carts







## VARTA® PROFESSIONAL DUAL PURPOSE AGM

For leisure applications with moderate energy demands, the Professional Dual Purpose AGM can be used to deliver service power for accessories and electronics, and to start the engine. This battery is ideal for seasonal use due to its low self-discharge.

### Key benefits

- Designed for leisure applications which you find in moderate equipped motorhomes, caravans and boats
- Long lasting: up to four times the cyclic stability of conventional flooded batteries (up to 400 cycles @ 50% DOD)
- Minimal self-discharge makes it ideal for seasonal use
- AGM technology for superb shock and vibration resistance
- Ideal for dual power applications (can be used for both service and starting)







## VARTA® PROFESSIONAL DUAL PURPOSE

Lower spec boats and motorhomes still need the right product to perform at their best. That's why we've developed the Professional Dual Purpose. Long lasting and maintenance-free, it's ideal for seasonal use.

SWLB

### Key benefits

- Designed for standard motorhomes, caravans and boats with less or moderate energy demand
- Long lasting – up to twice the cyclic stability of conventional flooded batteries (up to 200 cycles @ 50% DOD)
- Minimal self-discharge makes it ideal for seasonal use
- Ideal for dual power applications (can be used for both starting and overall service)





## VARTA® PROFESSIONAL STARTER

Professional Starter is purpose made for all marine starter applications, it can also service minimal electrical system requirements, such as inflatable boats and smaller rigged-hull boats. With a high energy output, it delivers outstanding performance, time after time, with no maintenance required.

### **Key benefits**

- Ideal for cranking purpose of small boats with inboard and outboard engines
- Exceptional cold starting performance
- Highly reliable





# TECHNOLOGY YOU CAN TRUST ON LAND AND AT SEA

Explore our most advanced AGM technology, sealed in a purpose-built shock and vibration resistant case. It's not only the latest in high performance battery engineering, but also maintenance-free. And our affordable, reliable professional flooded technology makes the VARTA® Professional our best-selling range of marine and motorhome products.

## **Absorbent Glass Mat (AGM) technology**

### ***Innovative plate technology***

Delivering up to eight times the cyclic stability of conventional flooded batteries for a longer battery life.

### ***Glass mat separators***

For reduced internal resistance, faster charging times and improved current output.

### ***Optimum use of volume***

Provides greater capacity than other batteries of the same dimensions.

### ***High rate discharge capability***

High current output without the voltage loss that's typical of gel batteries.

### ***Quick-charging***

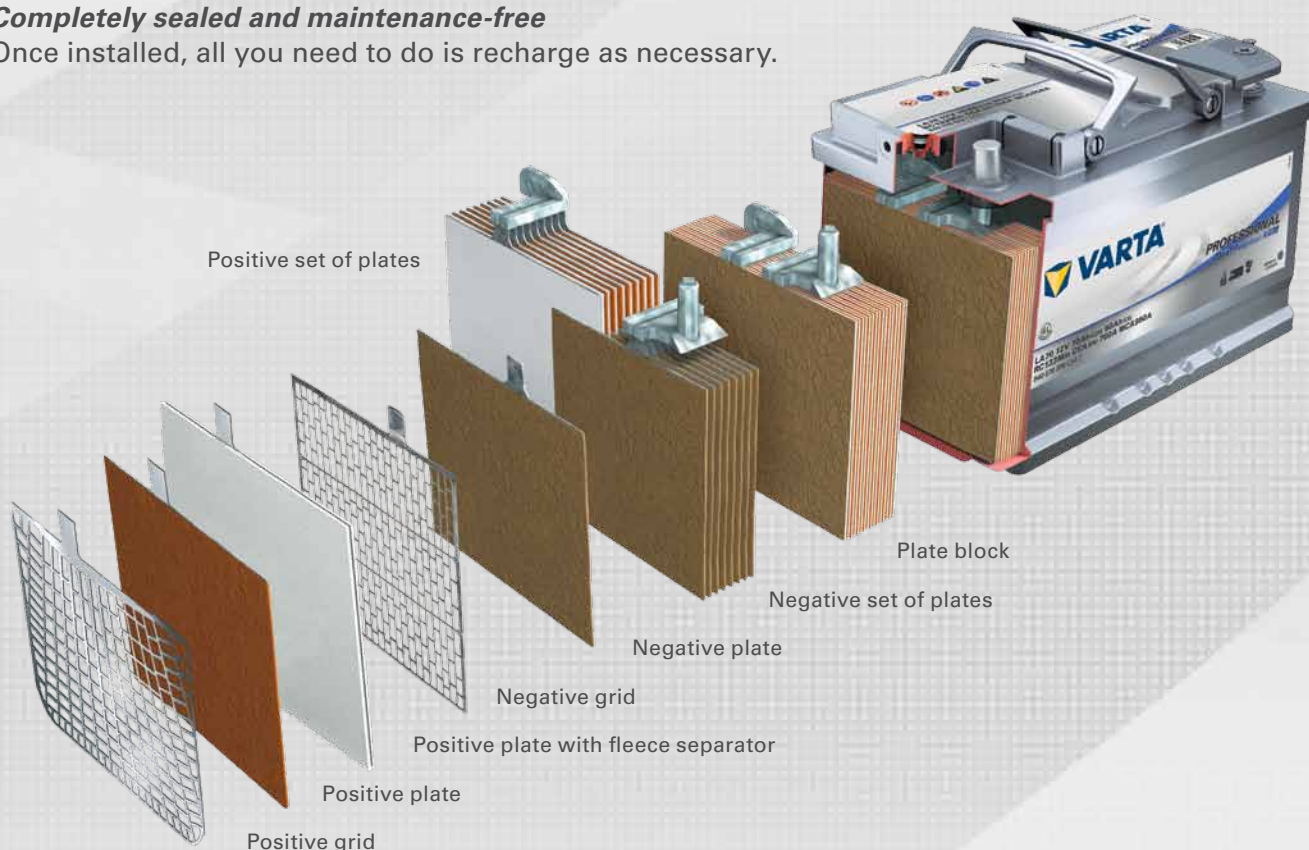
Charges in far less time than conventional flooded or gel batteries.

### ***Vibration resistance***

More protection against knocks and shocks than flooded batteries for a longer service life.

### ***Completely sealed and maintenance-free***

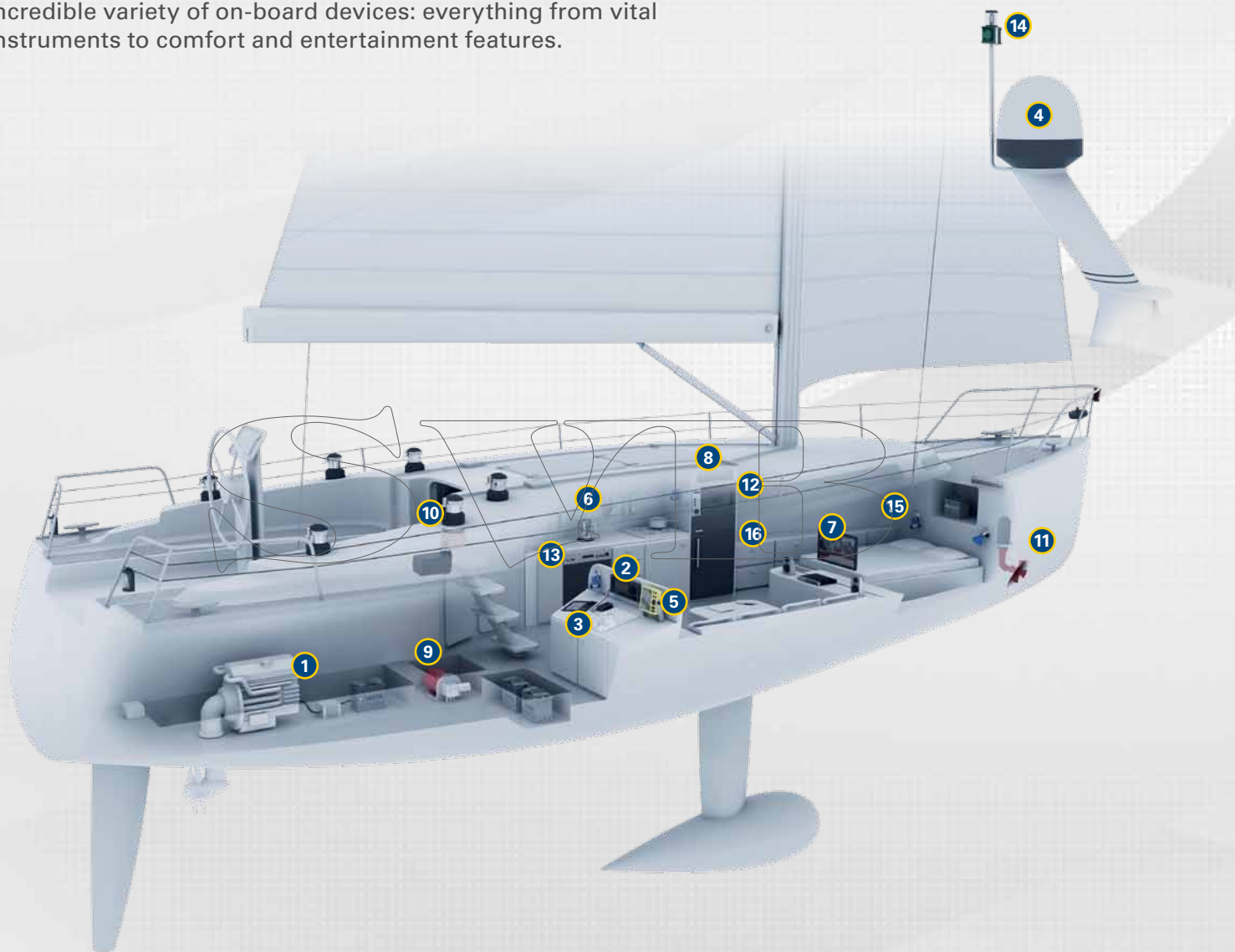
Once installed, all you need to do is recharge as necessary.



# PERFORMANCE YOU CAN TRUST

Peace of mind means trusting technology, such as communications equipment and navigational instruments, to perform every time you leave land behind.

The VARTA® Professional range has the capability to power an incredible variety of on-board devices: everything from vital instruments to comfort and entertainment features.



## Devices

- |          |                   |           |                             |           |                   |
|----------|-------------------|-----------|-----------------------------|-----------|-------------------|
| <b>1</b> | Starting/cranking | <b>7</b>  | Satellite receiver/TV       | <b>13</b> | Dishwasher        |
| <b>2</b> | SSB radio         | <b>8</b>  | Air conditioning unit       | <b>14</b> | Navigation lights |
| <b>3</b> | Autopilot         | <b>9</b>  | Pumps                       | <b>15</b> | Lighting          |
| <b>4</b> | Radar             | <b>10</b> | Electric winches            | <b>16</b> | Fridge-freezer    |
| <b>5</b> | Fishfinder        | <b>11</b> | Bow thruster                |           |                   |
| <b>6</b> | Kettle            | <b>12</b> | Microwave and electric oven |           |                   |



# MAKE THE MOST OF YOUR FREE TIME

Motorhomes and caravans contain an ever-growing list of on-board gadgets for the demanding traveller. And all require power. So if you want real independence on the open road, without sacrificing your creature comforts, make sure you fit VARTA® Professional batteries.



## Devices

- |          |                       |           |                             |
|----------|-----------------------|-----------|-----------------------------|
| <b>1</b> | Mover                 | <b>7</b>  | Microwave and electric oven |
| <b>2</b> | Air conditioning unit | <b>8</b>  | Hi-fi                       |
| <b>3</b> | Pumps                 | <b>9</b>  | Power inverter              |
| <b>4</b> | Kettle                | <b>10</b> | Lighting                    |
| <b>5</b> | Coffee machine        | <b>11</b> | Fridge-freezer              |
| <b>6</b> | Satellite receiver/TV | <b>12</b> | Satellite dish              |



## FIND THE PERFECT VARTA® BATTERY

No matter how you like to spend your free time, whether it's on the high seas, the open road, or playing the fairways; there's a perfect VARTA Professional battery for you.

Features		Professional Starter	Professional Dual Purpose	Professional Dual Purpose AGM	Professional Deep Cycle	Professional Deep Cycle AGM
Engine Start		●	●	●		
Motorboats			●	●		●
Sailing & Motor Yachts			●	●		●
Electric Boats						●
Mobile Homes		●	●	●		●
Caravans			●	●		●
Movers						●
Golf Carts					●	●
Golf Caddies						●

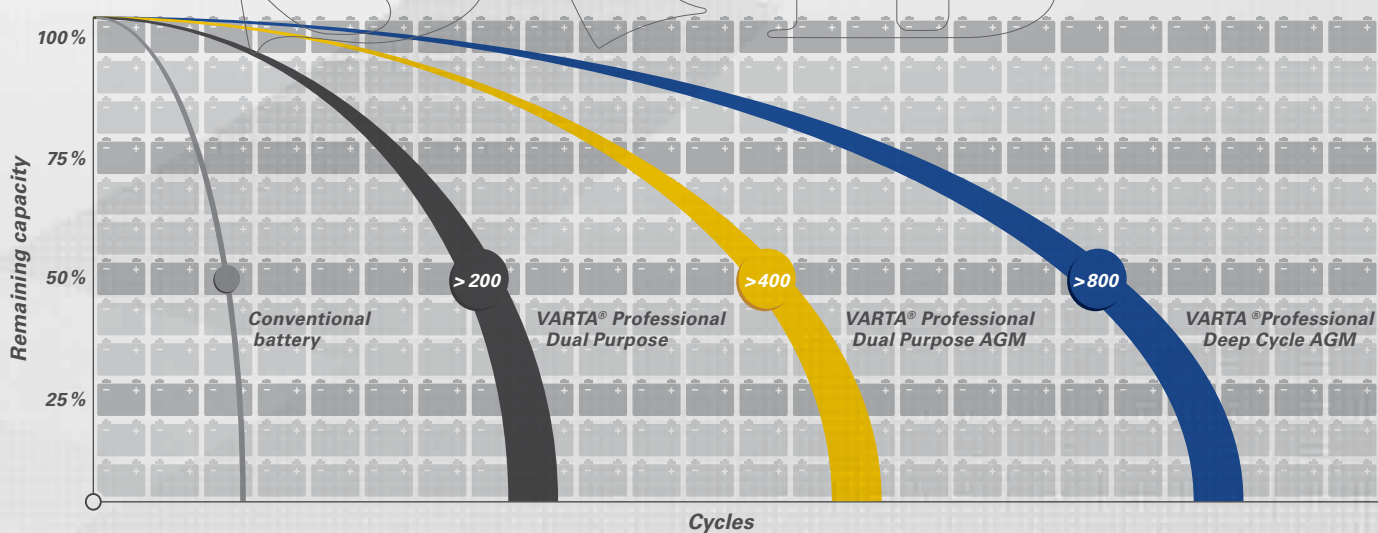
Performance					
Starting Power	●●	●●	●●●	●	●●
Cycling Durability	●	●●	●●●	●●●●	●●●●
Charge Acceptance	●	●	●●●	●●	●●
Vibration Resistance	●	●●	●●●	●●	●●●



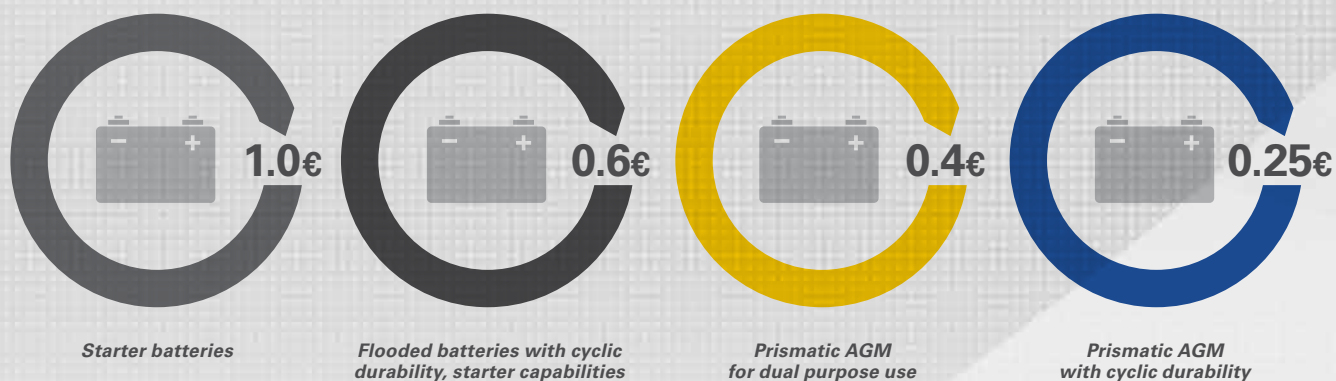


Remember, it pays to choose a battery with a higher cyclic durability as they have a longer service life.

#### Relationship between the number of cycles and remaining capacity



#### Cost Euros per cycle (estimated)



# TIPS TO HELP YOU GET THE MOST FROM YOUR BATTERY

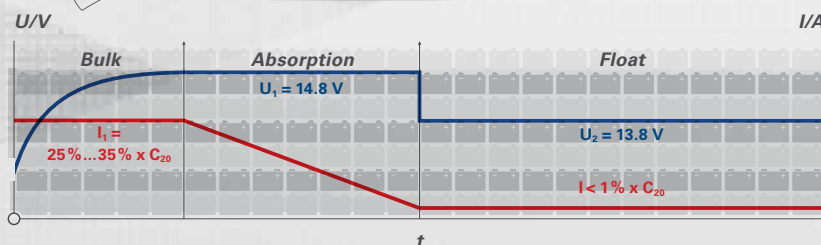
## Installing and removal

- Never cover the vents or expose them to excessive dirt or grime
- Ensure the area is well ventilated
- Before installing or removing the battery, turn off all electrical devices to prevent sparks
- When removing the battery, disconnect the negative terminal first and then the positive terminal
- When installing the new battery, connect the negative terminal last to avoid tools creating a short circuit

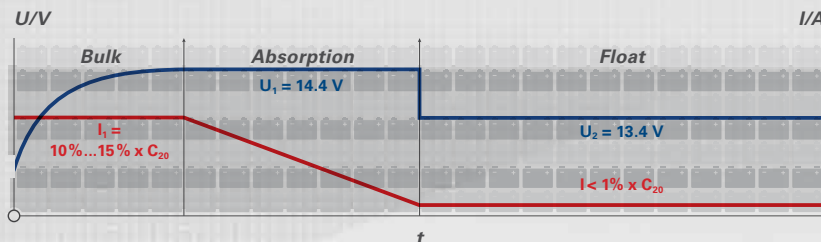
## Charging your battery safely

- Fully recharge the battery as soon as possible following each discharge
- Always check that the battery charger is suitable for the battery
- Never use a battery charger without automatic shut-off
- An electronic voltage-controlled battery charger, preferably based on an IUoU charge profile is recommended
- Recommendation:
  - Standard charging method:**
    - IU charging characteristic for
    - AGM:  $I = 25\%$  of nominal capacity,  $V_{\max} = 14.8 \text{ V}$ ,
    - Flooded:  $I = 10\%$  of nominal capacity,  $V_{\max} = 14.4 \text{ V}$ ,
    - GC:  $I = 10\text{--}15\%$  of nominal capacity,  $V_{\max} = 2.47 \text{ V/cell}$
  - Permanent charge:**
    - Limit charging voltage per cell to  $2.3 \text{ V}$  (AGM),  $2.23 \text{ V}$  (flooded) and  $2.20 \text{ V}$  (GC)
    - In alternative use charge with IUoU charging characteristics with  $I = 10\%$  of nominal capacity
  - Charging to avoid acid stratification (not needed for AGM):**
    - Use a charger with IU characteristics and higher charging voltage ( $2.6 \text{ V/cell}$ )
    - This 'overcharge' should only be used for a short time period to avoid water loss

### Charging Recommendation AGM



### Charging Recommendation Flooded



- The open-circuit voltage after charge should be  $2.12\text{--}2.13 \text{ V/cell}$
- Never charge frozen batteries or batteries with a temperature above  $40^\circ\text{C}$
- Connect the positive battery terminal (+) with the positive charger terminal, and the negative battery terminal with the negative charger terminal
- Do not turn on the charger until the battery has been fully connected
- When charging is complete, first turn off the charger
- Stop charging if the battery becomes hot or acid escapes!
- When charging, ensure good ventilation





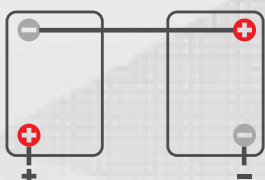
## Layout and Wiring

- When connecting the battery, ensure that sufficiently heavy-duty conductor cross sections are used to avoid unnecessary power loss and heat generation
- In series/parallel battery banks, it is preferable for all series cables to be the same length and all parallel cables to be the same length
- Power loss can result from cables that are too long or smaller in diameter
- Do not run a voltage tap off individual batteries in the circuit (e.g. 12 V off a battery contained in a 24 V series circuit); use a voltage converter
- It is recommended not to connect more than 4 batteries in a serial/parallel connection
- Always connect batteries of the same type, capacity, age and state of charge

### a) Serial connection for 24 V, 75 Ah (example)

Total voltage = sum of single voltages

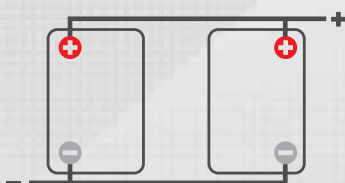
Total capacity = single capacity



### b) Parallel connection for 12 V, 150 Ah (example)

Total voltage = single voltage

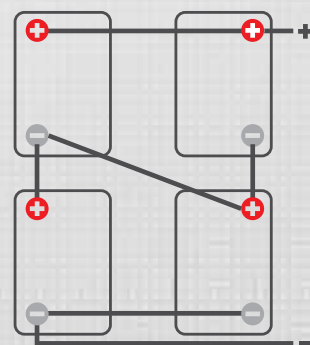
Total capacity = sum of single capacities



### c) Serial-parallel connection for 24 V, 150 Ah (example)

Total voltage = sum of 2 single voltages

Total capacity = sum of 2 single capacities



## Seasonal use

### Prior to the rest period



- Charge the battery completely, switch off all electrical devices and, if possible, disconnect the battery
- Store in a cool, dry place
- Store batteries fully charged
- Fully charged batteries can be stored even at temperatures well below zero
- Partially charged batteries can freeze at temperatures just below zero

### During the rest period



- Check the state of charge/voltage regularly
- Should the voltage drop below 12.4 V, recharge the battery

### After the rest period



- Fully recharge the battery and, if applicable, reconnect the electrical devices
- Check that everything works

# SPECIFICATION CHARTS



## VARTA® Professional Deep Cycle AGM

Short code	Size	ETN	Voltage	C20	C10	C5	Reserve capacity @ 25 A	CCA (EN)	MCA	Overall dimensions in mm			Weight (Kg)	Layout	Terminal type	Base holdown
										L	W	H				
LAD24	24	830 024 016	12V	24 Ah	22 Ah	20 Ah	27 Min	145 A	195 A	165	176	125	8.9	0	M5	B00
LAD60	60	830 060 037	12V	60 Ah	54 Ah	49 Ah	100 Min	340 A	450 A	265	166	188	20.7	0	1	B00
LAD70	70	830 070 045	12V	70 Ah	63 Ah	58 Ah	115 Min	410 A	540 A	260	169	230.5	23.8	0	1	B00
LAD85	85	830 085 051	12V	85 Ah	77 Ah	70 Ah	145 Min	465 A	600 A	260	169	230.5	25.1	0	1	B00
LAD115	115	830 115 060	12V	115 Ah	104 Ah	91 Ah	200 Min	550 A	710 A	328	172	233.5	32.8	0	1	B00
LAD150	150	830 150 090	12V	150 Ah	135 Ah	123 Ah	285 Min	825 A	1070 A	484	171	241	45.5	0	1	B00
LAD260	260	830 260 120	12V	260 Ah	234 Ah	214 Ah	578 Min	1100 A	1440 A	521	269	239.5	78.2	3	1	B00



## VARTA® Professional Deep Cycle

Short code	Size	ETN	Voltage	C20	C10	C5	Reserve capacity @ 25 A	CCA (EN)	MCA	Overall dimensions in mm			Weight (Kg)	Layout	Terminal type	Base holdown
										L	W	H				
GC2_1	GC2	300 208 000	6V	208 Ah	184 Ah	163 Ah	415 Min	-	-	260.4	181	282.6	28.80	0	UTL	B00
GC2_2	GC2	300 216 000	6V	216 Ah	194 Ah	174 Ah	445 Min	-	-	260.4	181	282.6	29.20	0	UTL	B00
GC2_3	GC2	300 232 000	6V	232 Ah	206 Ah	183 Ah	475 Min	-	-	260.4	181	282.6	30.20	0	UTL	B00
GC8	GC8	400 170 000	8V	170 Ah	153 Ah	138 Ah	337 Min	-	-	260.4	181	287.9	31.00	1	UTL	B00



## VARTA® Professional Starter

Short code	Size	ETN	Voltage	C20	C10	C5	Reserve capacity @ 25 A	CCA (EN)	MCA	Overall dimensions in mm			Weight (Kg)	Layout	Terminal type	Base holdown
										L	W	H				
LFS52	H4/ L1	930 052 047	12V	52 Ah	-	-	-	470 A	588 A	207	175	190	12.40	0	1	B13
LFS60	H5/ L2	930 060 054	12V	60 Ah	-	-	-	540 A	675 A	242	175	190	15.00	0	1	B13
LFS74	H6/ L3	930 074 068	12V	74 Ah	-	-	-	680 A	850 A	278	175	190	17.87	0	1	B13
LFS95	H8/ L5	930 095 080	12V	95 Ah	-	-	-	800 A	1000 A	353	175	190	21.32	0	1	B13





## VARTA® Professional Dual Purpose AGM

Short code	Size	ETN	Voltage	C20	C10	C5	Reserve capacity @ 25 A	CCA (EN)	MCA	Overall dimensions in mm			Weight (Kg)	Layout	Terminal type	Base hold-down
										L	W	H				
LA60	H5/ L2	840 060 068	12V	60 Ah	57 Ah	55 Ah	125 Min	680 A	850 A	242	175	190	17.5	0	1	B13
LA70	H6/ L3	840 070 076	12V	70 Ah	65 Ah	60 Ah	133 Min	760 A	950 A	278	175	190	20.4	0	1	B13
LA80	H7/ L4	840 080 080	12V	80 Ah	77 Ah	75 Ah	176 Min	800 A	1000 A	315	175	190	22.76	0	1	B13
LA95	H8/ L5	840 095 085	12V	95 Ah	90 Ah	85 Ah	198 Min	850 A	1063 A	353	175	190	26.4	0	1	B13
LA105	H9/ L6	840 105 095	12V	105 Ah	100 Ah	95 Ah	224 Min	950 A	1188 A	394	175	190	29.4	0	1	B13

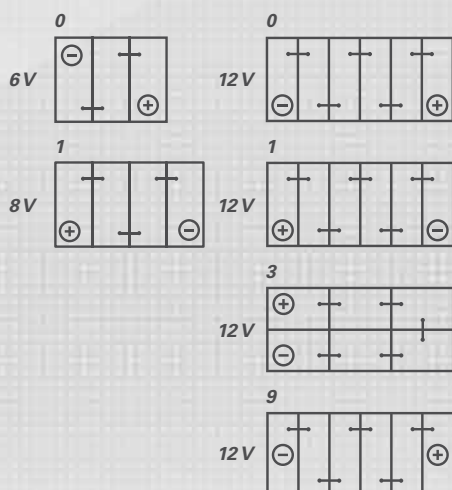


## VARTA® Professional Dual Purpose

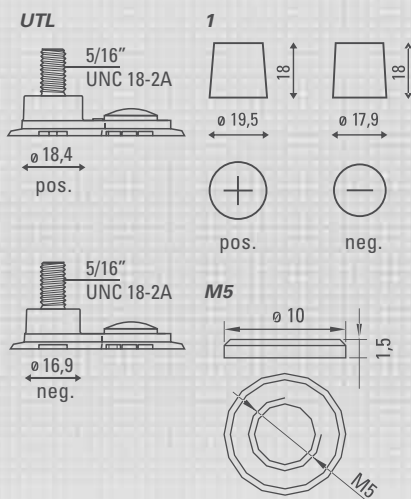
Short code	Size	ETN	Voltage	C20	C10	C5	Reserve capacity @ 25 A	CCA (EN)	MCA	Overall dimensions in mm			Weight (Kg)	Layout	Terminal type	Base hold-down
										L	W	H				
LFS75	EG4	812 071 000	12V	75 Ah	67 Ah	60 Ah	124 Min	600 A	750 A	260	175	225	17.22	1	1	B01
LFS105	Grp31	811 053 075	12V	105 Ah	94 Ah	85 Ah	190 Min	750 A	938 A	330	175	240	23.25	9	1	B00
LFD60	H5/ L2	930 060 056	12V	60 Ah	55 Ah	51 Ah	109 Min	560 A	700 A	242	175	190	16.80	0	1	B13
LFD75	H6/ L3	930 075 065	12V	75 Ah	69 Ah	64 Ah	141 Min	650 A	813 A	278	175	190	19.50	0	1	B13
LFD90	H8/ L5	930 090 080	12V	90 Ah	83 Ah	77 Ah	174 Min	800 A	1000 A	353	175	190	24.60	0	1	B13
LFD140	A	930 140 080	12V	140 Ah	129 Ah	119 Ah	284 Min	800 A	1000 A	513	189	223	36.62	3	1	B00
LFD180	B	930 180 100	12V	180 Ah	166 Ah	153 Ah	377 Min	1000 A	1250 A	513	223	223	45.10	3	1	B00
LFD230	C	930 230 115	12V	230 Ah	212 Ah	196 Ah	499 Min	1150 A	1430 A	518	276	242	56.75	3	1	B00

## Technical information

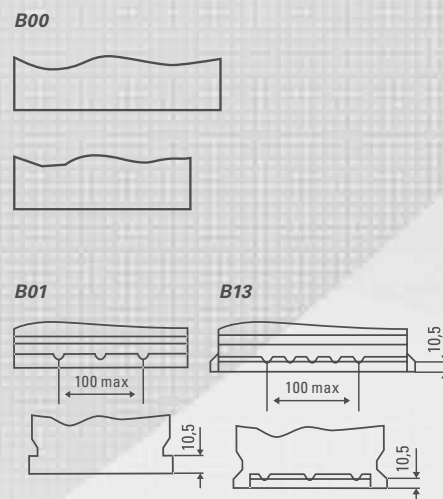
### Layout



### Terminal types



### Base hold-down



# ECOSTEPS® IS THE RESPONSIBLE, SUSTAINABLE WAY TO RECYCLE BATTERIES



is a recycling program run by Johnson Controls in which certified retailers and workshops ensure professional recycling and contribute to environmental protection. The used batteries are directly fed into an effective recycling process according to the highest environmental standards. Johnson Controls recycling process ecosteps 'closes' the recycling 'loop' preserving resources and protecting the environment. It's an initiative that's also easy to sign up to, administrate and benefit financially from.

## CLOSED-LOOP RECYCLING PROCESS




### ***For wholesalers and workshops: a better way to sell batteries***

With our ecosteps initiative, it's easy to demonstrate your commitment to the environment, meet all current legal obligations, increase profits and offer lower prices. Once you've signed up, all you have to do is keep the spent batteries you replace with new products. We'll pick them up when we next make a delivery and recycle them safely and responsibly. And each spent battery you return will help your business save money. That's because we'll credit your account, lowering your costs of new VARTA® batteries.

***To learn more and discover the countries involved, please visit: [www.varta-automotive.com](http://www.varta-automotive.com)***





SVB

**Johnson  
Controls**



***Backed all the way by a global market leader***

VARTA® is powered by Johnson Controls Power Solutions, the global leader in lead-acid automotive batteries and advanced batteries for Start-Stop, hybrid and electric vehicles. In fact, our 50 manufacturing, recycling and distribution centres supply more than one third of the world's lead-acid batteries to major automakers and aftermarket retailers.

And through our innovations, we are building the advanced battery industry for hybrid and electric vehicles too: we were the first company in the world to produce lithium-ion batteries for mass-production hybrid vehicles.

Our commitment to sustainability is also evidenced by our world-class technology, manufacturing and recycling capabilities.

11-09-2013en

**Great Britain**

***Johnson Controls Batteries Ltd.***

Aston House, 3rd Floor  
62 - 68 Oak End Way  
Gerrards Cross  
SL9 8BR  
United Kingdom

Tel.: +44 (0)1753 480610  
Fax: +44 (0)1753 480611  
E-Mail: [vb-uk-enquiries@jci.com](mailto:vb-uk-enquiries@jci.com)  
[www.varta-automotive.com](http://www.varta-automotive.com)

**Export**

***Johnson Controls Autobatterie GmbH & Co. KGaA***

Am Leineufer 51  
Germany - 30419 Hannover

Tel.: +49 (0) 511 975 - 0  
Fax: +49 (0) 511 975 - 1680  
[export@varta-automotive.com](mailto:export@varta-automotive.com)  
[www.varta-automotive.com](http://www.varta-automotive.com)

