FEDERALIA BATTERIES

www.federalbatteries.com.au 1300 133 980

BATTERY
8 ACCESSORIES
CATALOGUE



















Welcome to Bapcor & Federal Batteries

Federal Batteries has serviced the automotive, commercial and industrial customers in the Australian battery market for over 30 years.

Federal Batteries is a part of Bapcor Limited, Australasia's leading provider of automotive aftermarket parts, accessories, automotive equipment and services. Bapcor takes pride in developing our specialist and knowledgeable team, culture and capability, coupled with an unrelenting focus on excellence in customer service. We employ over 4,500 team members in more than 950 locations across Australia, New Zealand and Thailand.

Backed by Bapcor, Federal Batteries continues to expand its customer service reach and product range to keep delivering the best solutions to you.

Representing leading global brands exclusively, we specialise in and distribute nationally, a diverse range of energy storage solutions for applications in:

- Automotive
- . Marine
- Caravan & Motorhomes
- Trucks & Heavy Vehicles
- Electric Vehicles
- Personal Mobility Devices
- Off-Grid Solar & Remote Communications
- Floor Scrubbers & Sweepers and much more.

Our value is built on meeting the demands of growing electrification in all industries through best in class, high performance brands suitable for harsh Australian conditions.

With over 100 years of combined experience, our Federal Batteries team of technical and application experts, sourcing and logistics specialists ensure you and your customers receive high quality, fit for purpose products on time. Every. Single. Time.

To deliver on our promise, we utilise best practice charging systems and methodologies, a national network of distribution centres and highly trained staff. We are proud of our people and our products.

In addition to this catalogue you can visit our Federal Batteries comprehensive website, designed to provide fast and convenient access to full specifications and up to date information for easier selection. Featuring a fitment database, you can search and identify the right product for over 2000 auto, cycle and leisure vehicles. An account portal also provides added support to our valued partners.

You can also call The Federal Team on 1300 133 980.

Thank you for taking the time to discover Federal Batteries: Superior products for the best solutions.

Darryl Abotomey

Chief Executive Officer & Managing Director

Bapcor Limited.

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ENDURANT.



+ START MASTER
FLOODED AUTOMOTIVE STARTING

Maintenance Free Calcium Technology



THE ENDURANT START
MASTER RANGE
IS AUSTRALIA'S
RESPECTED CHOICE FOR
AUTOMOTIVE STARTING
BATTERIES.

- Calcium Technology
 Start Master batteries
 provide the benefit
 of excellent cranking
 performance and proven
 long life.
- Start Master is produced by CLARIOS.
- Reliable and long established technology.
- Compared to traditional plate construction, the EnduraFrame grids:
- Are up to 66% more durable.
- Ensure plate rigidity, strength and durability.
- Provides up to 70% improved electrical flow.



Passenger Applications only excl. Start-Stop & Commercial Please refer to T&C on page 98

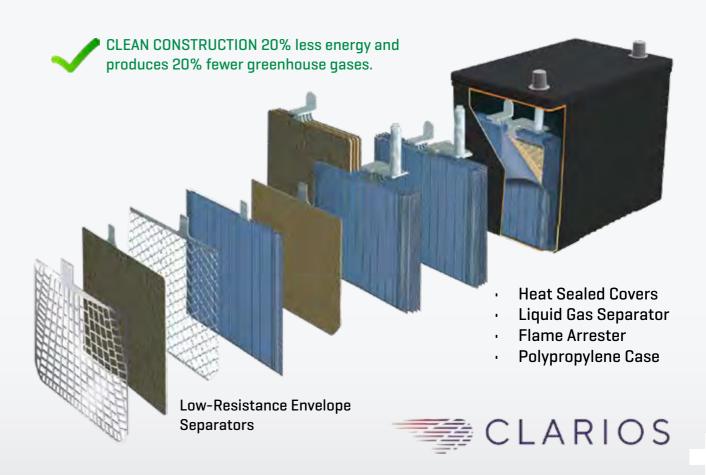
ENDURANT FLOODED MAINTENANCE FREE AUTOMOTIVE

STARTING TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
U1-260MF	12N24-4	1	-	LUG	12V	260	33	26	197	130	184	7.8
U1R-260MF	12N24-3	0	-	LUG	12V	260	33	26	197	130	184	7.8
NS40ZLMF	NS40L	0	-	JIS	12V	330	55	35	196	128	225	10.2
NS40ZLSMF	NS40ZAL	0	-	SAE	12V	330	55	35	196	128	225	10.2
NS40ZMF	NS40	1	-	JIS	12V	330	55	35	196	128	225	10.2
NS40-330DMF	NS40ZAL	3	-	D/F	12V	330	55	35	196	128	225	11.1
22NF-330DMF	N40/41	3	-	D/F	12V	330	60	40	238	134	204	11.9
51BR-430MF	NS60AL	0	-	SAE	12V	430	80	45	237	128	225	12.4
51R-430MF	NS60L	0	-	JIS	12V	430	80	45	237	128	225	12.4
51-430MF	NS60A	1	-	SAE	12V	430	80	45	237	128	225	12.4
NX100-S6MF	NS60	1	-	JIS	12V	430	80	45	237	128	225	12.4
50D20LMF	50D20L	0	SF	SAE	12V	450	80	50	206	172	205	15.2
22F-520MF	N51	0	AF	SAE	12V	520	95	60	240	172	209	15.3
22FR-520MF	N50	1	AF	SAE	12V	520	95	60	240	172	209	15.3
22F-610MF	N51	0	AF	SAE	12V	610	90	55	240	172	209	15.3
22FR-610MF	N50	1	AF	SAE	12V	610	90	55	240	172	209	15.3
55D23LMF	55D23L	0	-	SAE	12V	550	90	55	229	172	225	16.1
55D23RMF	55D23R	1	-	SAE	12V	550	90	55	229	172	225	16.1

EUROPEAN SIZES

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
90R-500MF	DIN55	0	AF	SAE	12V	500	90	54	242	175	175	14.5
56219MF	DIN55H	0	AF	SAE	12V	580	95	62	242	175	190	14.8
56530MF	DIN66	0	AF	SAE	12V	550	110	65	278	175	175	17.4
57412MF	DIN66H	0	AF	SAE	12V	680	135	74	278	175	190	19
57413MF	DIN66HL	1	AF	SAE	12V	680	140	74	278	175	190	19
DIN70-770MF	DIN66HL	1	AF	SAE	12V	770	140	74	278	175	190	19.5
58039MF	DIN77	0	AF	SAE	12V	730	140	80	315	175	175	20
58515MF	DIN88	0	AF	SAE	12V	750	165	85	354	175	175	22.9
60038MF	DIN88H	0	AF	SAE	12V	800	180	100	354	175	190	22.9







CLARIOS

Made in EU

Passenger Applications only excl. Start-Stop & Commercial Please refer to T&C on page 98

EUROPEAN FLOODED MAINTENANCE FREE AUTOMOTIVE

VARTA AUTOMOTIVE RANGE POWERFRAME TECHNOLOGY

	BLUE Dynamic	SILVER Dynamic
Primary function	Engine Start	Engine Start
Cold cranking power	CCA 110%	CCA 122%
Battery technology	Tin Calcium Alloy	Tin Silver Calcium Alloy
Positive grid / Negative grid	PowerFrame® / Expanded	PowerFrame® / Expanded
OE quality	Meets OEM requirements	Exceeds OEM requirements

VARTA SILVER DYNAMIC AUTOMOTIVE

Code	Case	Layout	BHD	Term	Volts	CCA (EN)	CCA	Res Cap	Ah C20	L	W	TH	Weight
C30	DIN44H	0	AF	SAE	12V	530	582	95	54	207	175	190	13.1
D21	DIN55	0	AF	SAE	12V	600	659	110	61	242	175	175	14.6
D15	DIN55H	0	AF	SAE	12V	610	670	115	63	242	175	190	15.3
D39	DIN55HL	1	AF	SAE	12V	610	670	115	63	242	175	190	15.3
E38	DIN66	0	AF	SAE	12V	750	824	130	74	278	175	175	17.4
E44	DIN66H	0	AF	SAE	12V	780	857	140	77	278	175	190	19.6
F18	DIN77	0	AF	SAE	12V	800	879	150	80	315	175	175	21
F19	DIN77H	0	AF	SAE	12V	800	879	155	85	315	175	190	21.6
Н3	DIN88H	0	AF	SAE	12V	830	912	179	100	354	175	190	22.6
L1	DIN100	0	AF	SAE	12V	920	1011	195	110	395	175	190	25.2

VARTA BLUE DYNAMIC AUTOMOTIVE

Code	Case	Layout	BHD	Term	Volts	CCA (EN)	CCA	Res Cap	Ah C20	L	W	TH	Weight
B32	NS60AL	0	-	SAE	12V	330	363	80	45	237	128	225	11.7
B34	NS60A	1	-	SAE	12V	330	363	80	45	237	128	225	11.7
D47	55D23L	0	-	SAE	12V	540	593	100	60	229	172	225	15.8
G7	N70ZZL	0	SF	SAE	12V	830	912	165	95	306	173	225	23.5
G8	N70ZZ	1	SF	SAE	12V	830	912	165	95	306	173	225	23.5
C22	DIN44H	0	AF	SAE	12V	470	516	90	52	207	175	190	12.7
D24	DIN55H	0	AF	SAE	12V	540	593	100	60	242	175	190	14.6
E43	DIN66	0	AF	SAE	12V	680	747	122	72	278	175	175	16.3
E11	DIN66H	0	AF	SAE	12V	680	747	126	74	278	175	190	17.3
E12	DIN66LH	1	AF	SAE	12V	680	747	126	74	278	175	190	17.3

VARTA Silver Dynamic and Blue Dynamic Automotive Batteries use the most advanced technology to support the demands of any vehicle.

The patented PowerFrame grid technology maximises energy flow for cranking performance, and high quality plate construction ensures maximum corrosion, heat and vibration resistance. VARTA Automotive Batteries are proven to be reliable in a wide range of environmental conditions.









FEATURING POWER-PERFORM™ PLATES.

- Full-frame positive and negative plates prevent life robbing electrical shorts from exposed wire.
- Maximises power and energy storage capacity.
- Fortified posts, straps & welds resist vibration damage, maximise current transfer.
- Ultra-pure demineralised electrolyte precision filled for extended life.
- Enhanced crystallisation of Power-Perform[™] plates provides more powerper-pound.

DEKA FLOODED MAINTENANCE FREE AUTOMOTIVE

The Deka Gold Maintenance Free Series features the exclusive Power-Perform® Plate technology, delivering high quality and reliable performance.

- Premium starting and reserve power Power-Perform™ plates with full-frames

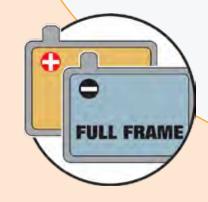
MF AUTOMOTIVE

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	L	w	TH	Weight
551MF	NS60A	1	-	SAE	12V	450	70	237	128	225	12.8
551R	NS60AL	0	-	SAE	12V	450	70	237	128	225	12.8
526MF	Grp 26	1	SH	SAE	12V	540	80	222	171	203	13.4
526RMF	Grp 26R	0	SH	SAE	12V	540	80	222	171	203	13.4
570MF	Grp 70	1	SH	Side	12V	540	80	222	178	181	13.5
658MF	Grp 58	1	SF	SAE	12V	580	85	254	184	178	14.5
658RMF	Grp 58	0	SF	SAE	12V	560	85	254	184	180	14.5
675MF	Grp 75	1	SH	Side	12V	650	90	248	178	184	15
535MF	Grp 35	0	SH	SAE	12V	550	90	248	175	225	15.3
624FMF	Grp 24R	0	SH	SAE	12V	650	115	273	171	229	18.2
624MF	Grp 24	1	SH	SAE	12V	650	115	273	171	229	18.2
627FMF	N70ZZL	0	АН	SAE	12V	710	120	305	173	229	20.7
627MF	N70ZZ	1	SH	SAE	12V	710	120	305	173	225	20.7

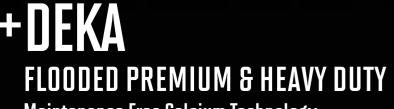
DIN MF AUTOMOTIVE

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap			TH	Weight
690MF	DIN55	0	AF	SAE	12V	600	90	242	175	175	16.1
691MF	DIN66	0	AF	SAE	12V	700	100	278	175	175	16.6
647MF	DIN55H	0	AF	SAE	12V	650	100	242	175	190	18.5
648MF	DIN66H	0	AF	SAE	12V	680	120	278	175	190	19.1
694RMF	DIN77H	0	AF	SAE	12V	790	140	315	175	190	20.5
693MF	DIN88	0	AF	SAE	12V	800	130	354	175	175	21.1
649MF	DIN88H	0	AF	SAE	12V	900	185	354	175	190	25.7
695RMF	DIN100	0	AF	SAE	12V	850	190	395	175	190	29.4









Maintenance Free Calcium Technology



Made in USA with US and imported materials



Please refer to T&C on page 98

ENDURANT.



+ AGM MASTER
AGM TECHNOLOGY

Maintenance Free Calcium Technology





THE ENDURANT AGM MASTER RANGE IS AUSTRALIA'S RESPECTED CHOICE FOR AUTOMOTIVE STOP START BATTERIES.

- Calcium Technology
 AGM Master batteries
 ideal for vehicles with
 Start-Stop functionality
 and high electrical loads.
- AGM Master is produced by CLARIOS.
- Reliable and long established technology.
- Compared to traditional plate construction, the EnduraFrame grids:
- Are up to 66% more durable.
- Ensure plate rigidity, strength and durability.
- Provides up to 70% improved electrical flow.



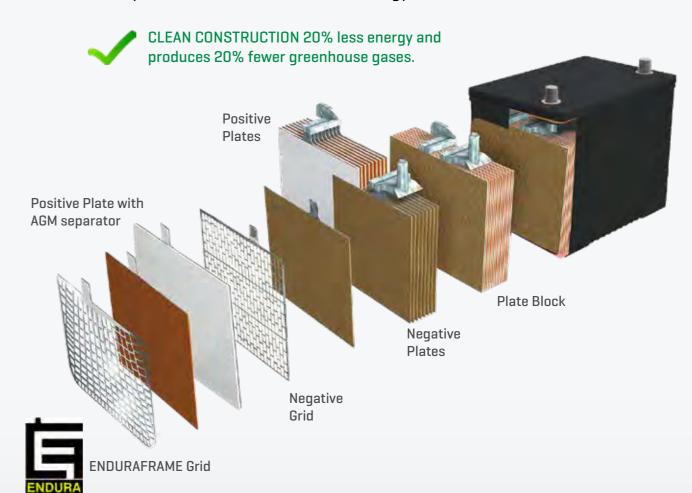
Start-Stop Applications Excludes Commercial Please refer to T&C on page 98

ENDURANT ADVANCED START-STOP AGM

START-STOP AGM TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH
35-AGM	Grp 35	0	SH	SAE	12V	650	110	55	230	175	225
24F-AGM	Grp 24R	0	SH	SAE	12V	710	120	70	273	171	220
25-AGM	Grp 25	1	SH	SAE	12V	550	110	55	240	175	225
31T-AGM	Grp 31	3	-	M8 Stud	12V	825	200	100	330	173	241
DIN66H-AGM	DIN66H	0	AF	SAE	12V	760	120	70	278	175	190
DIN77H-AGM	DIN77H	0	AF	SAE	12V	800	140	80	315	175	190
DIN88H-AGM	DIN88H	0	AF	SAE	12V	850	160	90	354	175	190

- Extended cycle life **3x** compared with a conventional battery.
- · Vibration resistance, non-spillable, and maintenance free.
- Minimal gassing and acid leakage vs. SLI products.
- Designed for harsh climates and demanding conditions.
- · AGM technology with outstanding performance.
- · Suited for powerful engines and highly equipped cars.
- · Clean manufacturing with 20% less energy and 20% fewer greenhouse gas emissions.
- Heat resistance 20-40% higher heat deflection capabilities due to homopolymer resin which also provides improved stability at elevated temperatures.
- Produced by the world's leader in AGM technology.







VARTA ADVANCED START-STOP AGM

SILVER DYNAMIC START-STOP AGM TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA (EN)	CCA	Res Cap	Ah C20	L	W	TH	Weight
D52	DIN55H	0	AF	SAE	12V	680	747	125	60	242	175	190	17.5
E39	DIN66H	0	AF	SAE	12V	760	835	133	70	278	175	190	20.4
F21	DIN77H	0	AF	SAE	12V	800	879	176	80	315	175	190	23
G14	DIN88H	0	AF	SAE	12V	850	934	198	95	354	175	190	26.4
H15	DIN100	0	AF	SAE	12V	950	1044	224	105	395	175	190	29.4

The VARTA Silver Dynamic AGM stands for unparalleled performance with 3 times the cycle life of conventional batteries. The VARTA Silver Dynamic AGM is the perfect choice for vehicles with the highest energy demands. This can be due to heavier usage, cold winters, hot summers or multiple accessories and equipment.



ADE IN GERMANY

Designed and manufactured to the highest quality standards and precision engineering criteria.



Start-Stop PLUS READY

Designed for vehicles with advanced Start-Stop functionality and regenerative braking.



POWERFRAME GRID TECHNOLOGY

VARTA batteries offer extreme reliability and last longer thanks to the patented PowerFrame® grid design.



3 × LONGER CYCLE LIFE

Extended cycle life compared with conventional batteries.



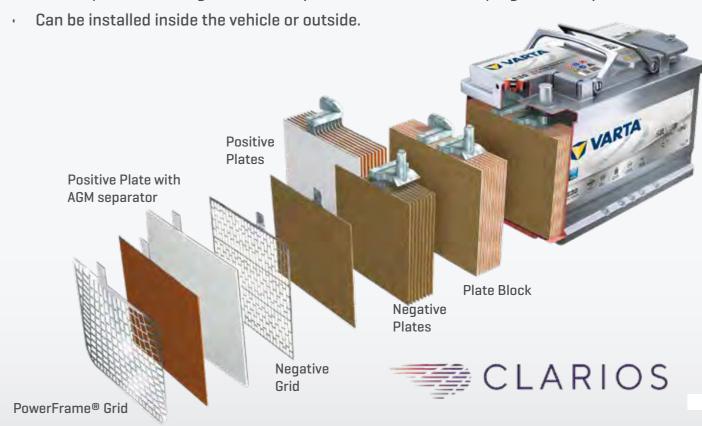
SAFE AND HIGHLY LEAK RESISTANT VARTA AGM Technology will not leak even if the case is damaged.



(AGM) AGM ADVANCED TECHNOLOGY

VARTA AGM technology with outstanding performance for vehicles with demanding cranking applications and high electrical loads.

- AGM technology prevents corrosion due to acid stratification.
- Highest performance, extreme life cycle and spill-proof.
- Electrolyte held in the glass fleece separator exerts a uniformly high contact pressure.







+ ADVANCED AGM TECHNOLOGY Maintenance Free Silver Calcium Technology



Made in USA with US and imported materials

FEATURING HEAVY DUTY POWER-PERFORM™ PLATES.

- Full-frame positive and negative plates prevent life robbing electrical shorts from exposed wire.
- Maximises power and energy storage capacity.
- Fortified posts, straps
 welds resist vibration
 damage, maximise
 current transfer.
- Ultra-pure demineralised electrolyte precision filled for extended life.
- Enhanced crystallisation of Power-Perform[™] plates provides more powerper-pound.
- Valve Regulated
 Flame arresting, low
 pressure, self-sealing
 valves are 100% factory
 tested.



DEKA ADVANCED AGM

The Deka Intimidator & Ultimate AGM battery series delivers highly efficient energy storage and power delivery solutions for the evolution of your battery needs.

- Premium maintenance-free power delivers optimised starting performance.
- Spill-proof for traditional and start-stop vehicles design provides added safety for user and protection for sophisticated electronic equipment
- Intimidating durability withstands demanding conditions like start and stop driving
- Faster, more efficient recharging and higher cold temperature pe<mark>rformanc</mark>e
- Heavy-duty Power-Perform™ plates with full-frames.
- Electrolyte suspension system enables a spill-proof and leak-proof design
- Optimised component compression provides extra vibration resistance
- Longer life in temperature extremes

INTIMIDATOR AGM TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20			TH	Weight
9A51P	Grp 51	0	-	JIS	12V	325	60	46	238	129	228	13.9
9A35/85	Grp 35/85	0	SH	SAE	12V	640	100	50	229	175	206 / 225*	16.7
9A75DT	Grp 75/86	1	SH	Side/SAE	12V	680	100	50	248	180	206 / 225*	16.7
9A34	Grp 34	1	SH	SAE	12V	775	120	55	273	175	203 / 222*	18.6
9A34R	Grp 34R	0	SH	SAE	12V	775	120	55	273	175	203 / 222*	18.6
9A78	GRP 78	1	SH	Side	12V	775	120	55	273	178	184	18.7
9A78DT	Grp 34/78	1	SH	Side/SAE	12 V	775	120	55	<mark>27</mark> 6	175	203	19.3
9A31	Grp 31	3	-	M6 Stud	12V	925	190	100	330	173	241	31.2
9A31P	Grp 31	3	-	SAE	12V	925	190	100	<mark>3</mark> 30	173	241	31.2
9A47	DIN55H	0	AF	SAE	12V	600	100	60	242	175	190	17.8
9A48	DIN66H	0	AF	SAE	12V	760	120	70	278	175	190	20.7
9A94R	DIN77H	0	AF	SAE	12V	800	140	80	315	175	190	23.4
9A49	DIN88H	0	AF	SAE	12V	850	170	92	354	175	190	26.6

ULTIMATE AGM ADVANCED GENERATION TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20			TH	Weight
8AMU1R	12N24-3	0	-	SAE	12V	320	45	-	211	130	184	11.4
9AGM47	DIN55H	0	AF	SAE	12V	600	100	60	242	175	190	17.8
9AGM48	DIN66H	0	AF	SAE	12V	760	120	70	278	175	190	20.7
9AGM49	DIN77H	0	AF	SAE	12V	800	140	80	315	175	190	23.4
9AGM94R	DIN88H	0	AF	SAE	12V	850	180	92	354	175	190	26.6

Experience the Deka Advantage

All Deka Batteries are made with precision-focused manufacturing approach ensures the process behind the technology delivers critical quality at each stage of battery production to optimise the life, power and durability of the battery's design and performance.





GERMAN ENGINEERED
TO EXCEED THE
REQUIREMENTS OF
CONVENTIONAL STARTSTOP VEHICLES AND HIGH
CRANKING APPLICATIONS.

- Ready for entry-level start-stop systems.
- Engineered to the highest German standards.
- Patented PowerFrame® grid.
- "Like-for-like" OE replacement.



+ START-STOP EFB TECHNOLOGY

Maintenance Free Calcium Technology







Start-Stop Applications
Excludes Advanced SS & Commercial
Please refer to T&C on page 98

VARTA START-STOP EFB

START STOP, ENHANCED FLOODED BATTERY (EFB) TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
M-42/60B20L	NS40AL	0	-	SAE	12V	400	70	40	198	128	227	11.2
M-42R/60B20R	NS40A	1	-	SAE	12V	400	70	40	198	128	227	11.2
N-55/80B24L	NS60AL	0	-	SAE	12V	500	92	55	238	128	227	13.8
N-55R/80B24R	NS60A	1	-	SAE	12V	500	92	55	238	128	227	13.8
Q-85/115D23L	55D23L	0	SF	SAE	12V	660	125	70	229	172	225	18
Q-85R/115D23R	55D23R	1	SF	SAE	12V	660	125	70	229	172	225	18
S-95/130D26L	NS70L	0	SF	SAE	12V	720	150	75	260	172	225	19.8
S-95R/130D26R	NS70	1	SF	SAE	12V	720	150	75	260	172	225	19.8
T-110/145D31L	N70ZZL	0	SF	SAE	12V	820	170	90	305	173	225	23.5
T-110R/145D31R	N70ZZ	1		SAE	12V	820	170	90	305	173	225	23.5
D54	DIN66	0	AF	SAE	12V	710	100	65	278	175	175	18.6
E46	DIN77	0	AF	SAE	12V	800	130	75	315	175	175	21.2
D54	DIN66	0		SAE	12V	710	100	65	278	175	175	18.6

Manufactured by VARTA Korea

The VARTA EFB range are higher performance versions of Calcium/Calcium technology batteries to meet the demands of Start-Stop systems. EFB technology advantages include thicker calcium plates and more robust separators that allows for cycling ability. Thicker grids incorporate polyester fibre to enhance paste adhesion and provide greater cyclic resistance.



Start-Stop READY EFB technology is designed for vehicles with conventional Start-Stop functionality.



2 × LONGER CYCLE LIFE

Extended cycle life compared with conventional

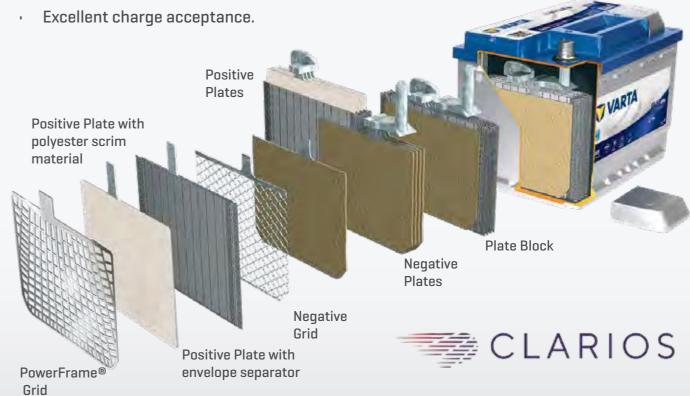


POWERFRAME® GRID TECHNOLOGY
VARTA batteries offer extreme reliability and last
longer thanks to the patented PowerFrame® grid
design.



EFB ENHANCED TECHNOLOGY
VARTA Enhanced Flooded Battery technology
with consistently high performance for highly
equipped cars.

EFB uses special poly-fleece "scrim" to hold additional active material.



ENDURANT.



+ LOAD MASTER

STARTING

- Maintenance Free Technology





THE CALCIUM TECHNOLOGY WITHIN ENDURANT LOAD MASTER BATTERIES CONTINUES TO PROVIDE THE ADVANTAGES OF BEING **MAINTENANCE FREE** WITH PROVEN CRANKING PERFORMANCE AND LONG LIFE.

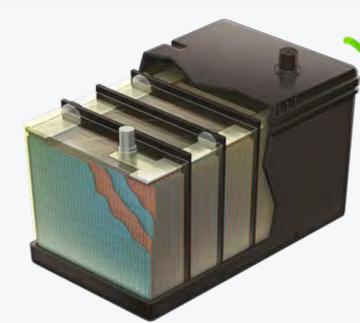
- The ENDURANT battery is produced by CLARIOS.
- Reliable and long established technology.

Commercial Applications Please refer to T&C on page 98

ENDURANT COMMERCIAL STARTING

STARTING TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
NX110-5LMF	N53	0	-	SAE	12V	600	135	75	260	172	225	18.6
NX110-5MF	N52	1	-	SAE	12V	600	135	75	260	172	225	18.6
NX120-7LMF	N70ZZL	0	SF	SAE	12V	620	140	80	305	173	225	21
NX120-7MF	N70ZZ	1	SF	SAE	12V	620	140	80	305	173	225	21
27H-710MF	N70ZZ	1	SF	SAE	12V	710	160	90	305	173	225	22
27HR-710MF	N70ZZL	0	SF	SAE	12V	710	160	90	305	173	225	22
31-900MF	Grp 31	3	-	SAE	12V	900	160	100	330	172	240	26.1
31-900TMF	Grp 31	3	-	M8 Stud	12V	900	160	100	330	172	240	26.1
31-1000MF	Grp 31	3	-	SAE	12V	1000	160	100	330	172	240	25.4
N100LMF	N100L	0	-	SAE	12V	750	185	100	406	172	231	28.3
N100MF	N100R	1	-	SAE	12V	750	185	100	406	172	231	28.3
N120	N120	4	-	SAE	12V	800	230	120	503	182	231	34.5
N150MF	N150	4	-	SAE	12V	1050	300	150	507	213	231	41.5
N200MF	N200	4	-	SAE	12V	1300	440	210	510	275	238	59.9
N200LMF	N200L	5	-	SAE	12V	1300	440	210	510	275	238	59.9



CLEAN CONSTRUCTION 20% less energy and produces 20% fewer greenhouse gases.

- Maintenance-free.
- Heat Sealed Covers.
- Durable Polypropylene case.
- Highest vibration resistance.

CALCIUM TECHNOLOGY

The commercial range of batteries provide excellent levels of quality through reliable calcium plate design and construction. This Calcium/Calcium construction allows for a fully maintenance free battery that can handle the heavy electrical loads and higher charge rates of modern commercial vehicles.

They feature a very robust cell design, highly resistant to vibration and cycling demands of heavy duty applications.









VARTA PROMOTIVE

- Made in Europe to the highest standards.
- Designed for starting use in Trucks and Heavy Vehicles.

FEATURING PROMOTIVE SILVER & BLUE'S UNIQUE LABYRINTH LID.

 Includes Labyrinth System, Safety Caps, Flame Arrestors, and central degassing.

VARTA PROFESSIONAL DUAL PURPOSE.

- Minimal self-discharge.
- Ideal for dual power applications Made in Europe to the highest standards.

+EUROPEAN

COMMERCIAL STARTING

Maintenance Free Calcium Tin Alloy Technology





VARTA



Commercial Applications 12 Months ProMotive Black Please refer to T&C on page 98

VARTA EUROPEAN COMMERCIAL STARTING

	ProMotive Black	ProMotive Blue	ProMotive Silver
Primary Function	Engine Start	Engine Start and Enhanced Power Supply	Engine Start and Enhanced Power Supply
Battery Capacity	Good	Better	Best
Technology	Conventional Flooded	Labyrinth Lid	Labyrinth Lid
Grid Alloy	Calcium	Silver Calcium Alloy	Tin Silver Calcium Alloy
Vibration Resistance	Long Life (EN2 V1 Standard)**	Long Life Heavy Duty (EN3 V2 Standard)**	Long Life Super Heavy Duty (EN4 V3 Standard)**
Quality Level	Meets OEM requirements	Meets OEM requirements	Exceeds OEM requirements
Self Discharge Performance*	12 Months	15 Months	18 Months
Water Consumption	Low	Very Low	Extremely Low
Key: * Compared to conventional nor	maintenance-free hatteries *	* Subject to European Norm (EN) Canacit	v and vibration testing

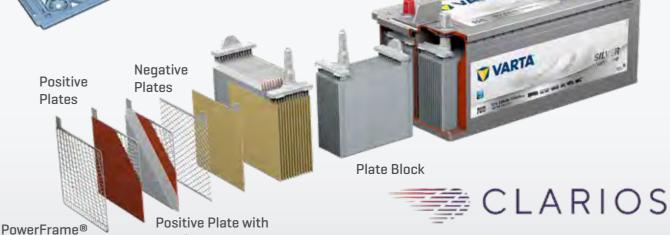
VARTA PROMOTIVE

Code	ProMotive	Case	Layout	BHD	Term	Volts	CCA (EN)	CCA	Ah C20	L	w	TH	Weight
B90	Silver EFB	N150L	5	-	SAE	12V	1050	1150	190	513	223	223	47.2
C40	Silver EFB	N200L	5	-	SAE	12V	1200	1300	240	518	276	242	59.7
K7	Silver	DIN135D	5	-	SAE	12V	800	879	145	513	189	223	37
K8	Black	N120L	5	AF	SAE	12V	800	879	140	513	189	223	35
J10	Black	N120L	5	AF	SAE	12V	1000	1099	135	513	175	223	35
M18	Silver	DIN165D	5	-	SAE	12V	1000	1099	180	513	223	223	45
М7	Black	N150	4	AF	SAE	12V	1100	1208	180	513	223	223	47
М8	Blue	N150L	5	-	SAE	12V	1000	1099	170	513	223	223	44
N9	Silver	N200L	5	-	SAE	12V	1150	1263	225	518	276	242	57

VARTA PROFFESIONAL DUAL PURPOSE

Code	Case	Layout	BHD	Term	Volts	CCA (EN)	CCA	Res Cap	Ah C20	L	w	TH	Weight
LFD60	DIN55H	0	AF	SAE	12V	560	615	109	60	242	175	190	17
LFD75	DIN66H	0	AF	SAE	12V	650	714	141	75	278	175	190	20
LFD140	N120L	5	-	SAE	12V	800	879	284	140	513	189	223	37
LFD180	N150L	5	-	SAE	12V	1000	1099	377	180	513	223	223	45
LFD230	N200L	5	-	SAE	12V	1150	1260	499	230	518	276	242	57

The VARTA's unique Labyrinth Lid includes Labyrinth System, Safety Caps, Flame Arrestors, and central degassing that make the ProMotive Silver and Blue batteries stronger, safer, and more resistant to leaks and spills. That's why VARTA Promotive is the manufacturers' choice.



envelope separator



DEKA COMMERCIAL STARTING & CYCLE SERVICE

Keep your heavy-duty equipment operating.

Demanding commercial equipment requires nothing less than the most powerful, reliable batteries. This complete line of the toughest commercial product is specially engineered for durability while meeting high power ratings for heavy-duty engines.

HEAVY DUTY

Code	Case	Layout	Term	Volts	CCA	Res Cap	L	w	TH	Weight
403E	Grp 3EE	-	SAE	12V	400	95	489	108	229	20
1231MF	Grp 31	3	M6 Stud	12V	1000	185	330	172	240	28.4
1231PMF	Grp 31	3	SAE	12V	1000	185	330	172	240	28.4
94DLT	Grp 4DLT	5	SAE	12V	850	240	508	208	202	35.5
904D	Grp 4D	4	SAE	12V	1050	290	527	216	258	45.3
708D	Grp 8D	4	SAE	12V	1100	325	527	279	254	53.4
908DFT	Grp 8D	4	SAE	12V	1425	440	527	279	254	60.1
901MF	Grp 12B	2	SAE	6V	640	130	229	175	222	15.3
93EH	Grp 3EH	3	SAE	6V	875	250	489	127	254	21.4
801	Grp 1	0	SAE	8V	520	102	229	175	225	14.3

HEAVY DUTY DUAL PURPOSE

Constant stops can shorten the life of any ordinary commercial battery. Your customers depend on you to deliver on time...time after time. To keep them satisfied, you need a battery you can depend on to keep your trucks on the move.

The 7T31P Deka Dual Purpose battery is specially designed to withstand the daily stopand-start abuse of multi-stop delivery vehicles. This battery provides plenty of cold cranking power for easy starting and ample reserve power to handle the cycling demands typical of these types of commercial applications.

Code	Case	Layout	Term	Volts	CCA	Res Cap			TH	Weight
7T31P	Grp 31	3	SAE	12V	730	190	330	173	241	24.8

INTIMIDATOR DUAL PURPOSE AGM

Today's heavy-duty trucks depend on batteries to do much more than crank the engine. Starting batteries alone aren't designed to withstand the continuous discharge that new auxiliary equipment demands.

The Intimidator's faster recharging and 2x more cycle life* can accommodate multiple accessory loads without shortening the battery's performance and life. Features like up to 20 x more vibration resistant* are critical for commercial vehicles that frequently undergo intense wear and daily abuse.

^{*}Compared to conventional designs

Code	Case	Layout	Term	Volts	CCA	Res Cap	L	W	TH	Weight
8A31DTM	Grp 31	1	D/T	12V	800	200	329	171	245	31
8A4D	Grp 4D	4	SAE	12V	1110	380	527	216	254	58.5
8A8D	Grp 8D	4	SAE	12V	1450	480	527	279	254	72

Made in USA with US and imported materials

Commercial Applications
Please refer to T&C on page 98

ENDURANT.



+ CRANK MASTER

PERFORMANCE STARTING

Maintenance Free Silver Calcium Technology



WITH SILVER CALCIUM
TECHNOLOGY THAT
ELEVATES PERFORMANCE
AND DURABILITY
FOR EXTREME
APPLICATIONS AND HIGH
TEMPERATURES.

- High Corrosion Resistance
- High resistance to "buckling"
- Higher density paste.
- Superior Heat Resistance.
- The Endurant CRANK MASTER is produced by CLARIOS.



Passenger Applications only excl. Start-Stop & Commercial Please refer to T&C on page 98

ENDURANT CRANK MASTER

SILVER CALCIUM TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
22F-680MF	N51	0	AF	SAE	12V	680	105	60	230	172	200	15.3
22FR-680MF	N50	1	AF	SAE	12V	680	105	60	230	172	200	15.3
90D23LMF	55D23L	0	SF	SAE	12V	650	125	75	229	172	225	16.6
125D31LMF	N70ZZL	0	SF	SAE	12V	760	165	95	305	173	225	20.5
125D31RMF	N70ZZ	1	SF	SAE	12V	760	165	95	305	173	225	20.5



Features

- Silver Calcium plates made from high quality and highly refined lead alloy guaranteeing a low self-discharge rate.
- · Advanced Clarios expanded patented grid technology that has a fine grain structure that is resistance to deep inter-granular corrosion.
- · Heavier paste densities along with alloy additives provide exceptionally strong grids.
- Additional plastic border framing the base of the grid for extra protection.
- Superior Heat Resistance.
- · High strength polypropylene case with heat sealed leak proof cover.
- Flame arrestors on vents.
- Patented liquid and gas separators to prevent fluid loss.
- Low resistance envelope separators.
- · Centre cast connectors.



ENDURANT.



+ HEAT MASTER

SUPERIOR GRADE STARTING

Maintenance Free SILVER Calcium Technology



Made in USA with US and imported materials

THE ENDURANT HEAT MASTER BUILT FOR AUSTRALIA'S HARSH CLIMATE AND CONDITIONS.

- With Silver Calcium Technology that elevates performance and durability for extreme applications and high temperatures.
- Enhanced crystallisation of Silver Calcium Power-Perform™ plates provides more "power-per-pound".
- Fortified posts, straps
 welds resist vibration
 damage, maximise current
 transfer.
- High-impact heat sealed cover with fused forged terminal bushings.
- High Corrosion Resistance
- High resistance to "buckling"
- Higher density paste.
- Superior Heat Resistance.



Passenger Applications only excl. Start-Stop & Commercial Please refer to T&C on page 98

ENDURANT HEAT MASTER

Manufactured with state-of-the-art maintenance-free Silver Calcium technology with special features and precision-focused manufacturing process that deliver the long life and high performance.

SILVER CALCIUM TECHNOLOGY

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	L	W	TH	Weight
85D23L-HM	55D23L	0	SH	SAE	12V	550	90	248	175	225	15.2
95D26L-HM	NS70L	0	SH	SAE	12V	600	90	273	171	229	18.1
95D26R-HM	NS70	1	SH	SAE	12V	600	90	273	171	229	18.1
105D31L-HM	N70ZZL	0	SH	SAE	12V	710	140	321	171	229	21.1
105D31R-HM	N70ZZ	1	AF	SAE	12V	710	140	321	171	229	21.1
125D31L-HM	N70ZZL	0	AH	SAE	12V	840	140	321	171	229	23.1
125D31R-HM	N70ZZ	1	AF	SAE	12V	840	140	321	171	229	23.1

Features

- Reinforced internal components resist accelerated corrosion damage at higher temperature conditions.
- · Forged terminal bushings are fused into the cover to provide maximum resistance to acid seepage, corrosion and black posts.
- High-impact cover is heat sealed to the case under extreme pressure. This helps prevent electrolyte leakage, improve reliability and reduce breakage.
- · High-impact polypropylene case.
- · Remote safety vents are flame-retardant.
- Continuous-cast, full-frame, negative grids enhance efficiency of current flow and resist corrosion and vibration damage for trouble-free service.
- Positive centre-lug, full-frame grid design directs more current to the terminals to deliver maximum starting power every time.



- Silver Calcium lead alloy reduces water loss and self discharge.
- Premium narrow-rib, deep-pocket envelope separators:
 - · Virtually eliminate shorting.
 - Reduce separator corrosion.
- Dramatically improve reliability.
- High-impact polypropylene case.
- Remote safety vents are flameretardant.



FEATURING POWER-PERFORM™ PLATES WITH ADVANCED GENERATION TECHNOLOGY.

- Full-frame positive and negative plates prevent life robbing electrical shorts from exposed wire.
- Maximises power and energy storage capacity.
- Fortified posts, straps
 Welds resist vibration
 damage, maximise
 current transfer.
- Ultra-pure demineralised electrolyte precision filled for extended life.
- Enhanced crystallisation of Power-Perform™ plates provides more power-per-pound.

42 MONTHS START Passenger Applications only

excl. Start-Stop & Commercial

Please refer to T&C on page 98

Made in USA with

US and imported materials

DEKA FLOODED MAINTENANCE FREE AUTOMOTIVE

The Ultimate Maintenance Free Series features the exclusive Heavy Duty Power-Perform® Plate technology, delivering high quality and reliable performance.



- EXTREME service.
- · All weather battery.
- Dependable starting and reserve power.
- · Heavy-duty Power-Pe<mark>rform™</mark> pl<mark>ates.</mark>

MF AUTOMOTIVE HEAVY DUTY

								/			
Code	Case	BHD	Layout	Term	Volts	CCA	Res Cap		W	TH	Weight
734MF	Grp 34	SH	1	SAE	12V	800	115	273	175	203	17.5
734RMF	Grp 34R	SH	0	SAE	12V	800	115	273	175	203	17.5
765MF	Grp 65	SF	1	SAE	12V	750	140	305	187	195	18.2
778DT	Grp 78	SH	1	SIDE/SAE	12V	800	115	273	178	206	18.7
778MF	Grp 78	SH	1	Side	12V	800	115	273	178	184	18.7
727FMF	N70ZZL	SH	0	SAE	12V	840	140	305	173	229	22.5
727MF	N70ZZ	AH	1	SAE	120	840	140	305	173	225	22.5



Flush cover design enhances overall battery performance, maintenance, safety, and convenience

Fortified posts, straps, & welds resist vibration damage, maximize current transfer

Enhanced crystallization of Power-Perform plates provides more power-per-pound

Short-protector separators have thicker backweb material that prevents plate-to-plate shorts

Ultra-pure demineralized electrolyte precision filled to exacting levels for extended life

Heavy-Duty Power-Perform Plates

- Full-frame positive and negative plates prevents life robbing electrical shorts from exposed wire
- Longer life in temperature extremes
- Withstands severe service demands
- Maximizes power and energy storage capacity









THE ULTIMATE POWER SOURCE™



- THE ULTIMATE POWER SOURCE™ SPIRALCELL TECHNOLOGY® HIGH PERFORMANCE, AGM STARTING, MARINE AND DEEP CYCLE.
- Unstoppable power for extreme enthusiasts.
- Over 40-year history of technological innovation and engineering.
- 15 times more vibration resistance and increased cycle life compared to traditional batteries.
- Spill-proof and maintenance-free.
- All OPTIMA batteries are constructed from the highest-quality materials including 99.99% pure lead.

+OPTIMA STARTING & DEEP CYCLE Spiral AGM Technology







PERFORMANCE STARTING & DEEP CYCLE

OPTIMA REDTOP

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
6V	19L	1	-	SAE	6V	800	100	50	254	90	208	17.3
34	Grp 34	1	SF*	SAE	12V	800	100	50	254	171	199 / 225**	17.3
34R	Grp 34	0	SF*	SAE	12V	800	100	50	254	171	199 / 225**	17.7
34/78	Grp 34/78	1	SF*	SIDE/SAE	12V	800	100	50	254	173	199 / 225**	14.5
25	Grp 25	1	SF*	SAE	12V	720	90	44	238	175	198 / 225**	14.5
35	Grp 35	0	SF*	SAE	12V	720	90	44	238	175	198 / 225**	15.1
75/25	Grp 75/25	1	SF*	SIDE/SAE	12V	720	90	44	238	175	198 / 225**	15.1



- High-performance AGM batteries deliver a powerful burst of ignition power for a reliable start every time in the most demanding cranking applications.
- Impressive high power delivery and extreme resistance to vibration,
- Ideal for trucks, SUV's, hot rods, street cars and other high performance applications that require a spill proof starting battery.

OPTIMA BLUETOP

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
34M	Grp 34	1	SF*	D/T	12V	800	1000	100	50	254	171	199 / 225**	19.6
D34M	Grp 34	1	SF*	D/T	12V	750	870	120	55	254	171	199 / 225**	24.5
D27M	Grp 27	1	SF	D/T	12V	800	1000	140	66	309	173	222	27.3
D31M	Grp 31	1	-	D/T	12V	900	1125	155	75	329	171	238	27.3



- High performance AGM battery equals exceptional cranking and cycling power.
- Provides outstanding vibration resistance and efficient power delivery and faster recharge time.
- Ideal for demanding marine and RV applications operating extensive electronic systems and electrical loads.

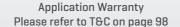
OPTIMA YELLOWTOP

Code	Case	Layout	BHD	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight	
D51T1 / D51RT1	Grp 51	1/0	-	JIS	12V	450	66	38	238	129	228	11.8	
D51T2 / D51RT2	Grp 51	1/0	-	SAE	12V	450	66	38	238	129	228	11.8	
D35	Grp 35	0	SF*	SAE	12V	650	98	48	238	173	199 / 225**	19.6	
D34	Grp 34	1	SF*	SAE	12V	750	120	55	254	171	199 / 225**	16	
D75/25	Grp 75/25	1	SF*	SIDE/SAE	12V	650	98	48	238	173	199 / 225**	19.9	
D34/78	Grp 34/78	1	SF*	SIDE/SAE	12V	750	120	55	254	171	199 / 225**	24.1	
D27F	Grp 27	0	SF	SAE	12V	830	140	66	309	172	219	27.3	
D31A	Grp 31	3	-	SAE	12V	900	155	75	329	171	238	27.3	
D31T	Grp 31	3	-	M8 Stud	12V	900	155	75	329	171	238	27.3	
H6***	DIN66H	0	AF	SAE	12V	800	140	72	278	175	190	24.5	
H7***	DIN77H	0	AF	SAE	12V	880	154	80	315	175	190	-	



- High performance AGM battery with premium cranking power and impressive cycling capability, perfect for modern, accessory loaded vehicles.
- Low internal resistance also provides more consistent power output and faster recharges.
- Provides ultimate starting and deep cycle power. * custom base holddown adapters (cannot be used with spacer) **with spacer / 2x spacer *** New Radial Grid



















+FOUR-BY-FOUR

AGM DUAL PURPOSE & DEEP CYCLE



OFFERING A VARIATY OF DUAL PURPOSE AND DEEP CYCLE TECHNOLOGIES TO SUIT ALL 4WD APPLICATIONS

- FLOODED suitable for installation under the bonnet.
- AGM AND GEL suitable for installations within the vehicle's interior.
- AGM WITH FLAME
 ARRESTING, LOW
 PRESSURE, SELF
 SEALING VALVES
 suitable for both
 under the bonnet
 and interior
 installations.
- Meets or exceed IEEE and UL requirements.



FOUR-BY-FOUR APPLICATIONS

Federal Batteries offers a wide range of batteries technologies suitable for 4WD and dual battery applications.

UNDER THE BONNET ONLY

Code	Brand	Technology	Case	Layout	BHD	Term	CCA	Res Cap	Ah C20	L	w	TH
DC24MF	ENDURANT	FLOODED	Grp 24	1	-	D/T	580	140	82	273	171	225
DC27MF	ENDURANT	FLOODED	Grp 27	1	-	D/T	680	162	97	309	173	225
DC31MF	ENDURANT	FLOODED	Grp 31	3	SF	D/T	730	190	110	330	173	241
LFD60	VARTA	FLOODED	DIN55H	0	AF	SAE	615	109	60	242	175	190
LFD75	VARTA	FLOODED	DIN66H	0	AF	SAE	714	141	75	278	175	190
DC24	DEKA	FLOODED	Grp 24	1	SH	D/T	500	130	75	273	171	238
DC27	DEKA	FLOODED	Grp 27	1	SH	D/T	575	175	90	324	173	241
DC31DT	DEKA	FLOODED	Grp 31	3	-	D/T	650	185	105	330	173	241

INTERIOR ONLY

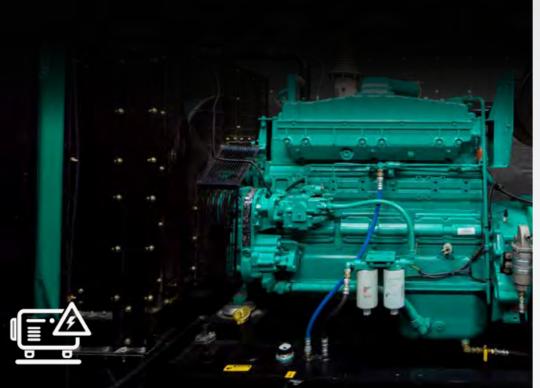
Code	Brand	Technology	Case	Layout	BHD	Term	CCA	Res Cap	Ah C20	L	W	TH
RM12-80DC	REMCO	AGM		1		М6			80.4	259	168	214
RM12-100DC-M8	REMCO	AGM	Grp 27	1		М6			100	306	168	214
RM12-120DC-M8	REMCO	AGM		1		М8			120	330	173	220
RM12-100FT	REMCO	AGM				М6			100	508	110	238.5
RM12-110FT	REMCO	AGM				М8			106	394	110	285
8G24SS	DEKA	GEL	Grp 24	1	SH	М6	335	132	74	277	171	220
8G27M	DEKA	GEL	Grp 27	1	SH	D/T	505	160	88	324	173	251
8G31DTM	DEKA	GEL	Grp 31	1	-	D/T	550	180	98	329	171	251

INTERIOR AND UNDER THE BONNET

Code	Brand	Technology	Case	Layout	BHD	Term	CCA	Res Cap	Ah C20	L	W	TH
24F-AGM	ENDURANT	AGM	Grp 24	0	SH	SAE	710	120	70	273	171	220
DIN66H-AGM	ENDURANT	AGM	DIN66H	0	AF	SAE	760	120	70	278	175	190
DIN77H-AGM	ENDURANT	AGM	DIN77H	0	AF	SAE	800	140	80	315	175	190
31T-AGM	ENDURANT	AGM	Grp 31	3	-	M8 Stud	825	200	100	330	173	241
DIN88H-AGM	ENDURANT	AGM	DIN88H	0	AF	SAE	850	160	90	354	175	190
9AGM47	DEKA	AGM	DIN55H	0	AF	SAE	600	100	60	242	175	190
9AGM48	DEKA	AGM	DIN66H	0	AF	SAE	760	120	70	278	175	190
9AGM49	DEKA	AGM	DIN77H	0	AF	SAE	800	140	80	315	175	190
8A24M	DEKA	AGM	Grp 24	1	-	D/T	525	135	79	273	171	251
8A27M	DEKA	AGM	Grp 27	1	-	D/T	580	175	92	324	173	251
8A31DTM	DEKA	AGM	Grp 31	1	-	D/T	800	190		329	171	245
9AGM94R	DEKA	AGM	DIN88H	0	AF	SAE	850	180	92	354	175	190
D27F	OPTIMA	AGM	Grp 27	0	SF	SAE	830	140	66	309	172	219
D31A	OPTIMA	AGM	Grp 31	3	-	SAE	900	155	75	329	171	238
D31T	OPTIMA	AGM	Grp 31	3	-	M8 Stud	900	155	75	329	171	238
GPL-2400T	LIFELINE	AGM	Grp 24	0		M10/M8	650	172	75	282	168	235
GPL-2700T	LIFELINE	AGM	Grp 27	0		M10/M8	745	206	95	333	168	235
GPL-3100T	LIFELINE	AGM	Grp 31	0		M10/M8	810	228	100	328	172	236

Never install any type of battery in a completely sealed container. Although most of the normal gasses (oxygen and hydrogen) produced in an AGM and GEL battery will be recombined and not escape, oxygen and hydrogen will escape from the battery in an overcharge condition.

+ GENERATOR STARTING APPLICATIONS











Please refer to T&C on page 98

Mobility Applications Please refer to T&C on page 98

GENERATOR STARTING APPLICATIONS

When it comes to safety and performance, selecting the right battery to start a generator is critical. Federal Batteries recommends premium valve regulated AGM batteries with flame arrestors for standby diesel engine starting application.

Code	Brand	Case	Layout	Term	Volts	CCA	Res Cap	Ah C20	L	W	TH	Weight
8A24M	Deka	Grp 24	1	D/T	12V	525	135	79	273	171	251	24
8A27M	Deka	Grp 27	1	D/T	12V	580	175	92	324	173	251	29
8A31DTM	Deka	Grp 31	1	D/T	12V	800	200	105	330	173	251	31
9A31	Deka	Grp 31	3	M6 Stud	12V	925	190	100	330	173	241	31.2
9A31P	Deka	Grp 31	3	SAE	12V	925	190	100	330	173	241	31.2
8A4D	Deka	Grp 4D	4	SAE	12V	1110	380	198	527	216	258	58.5
8A8D	Deka	Grp 8D	4	SAE	12V	1450	480	245	527	279	254	72
34	Optima	Grp 34	1	SAE	12V	800	100	50	254	171	198	17.3
34R	Optima	Grp 34	0	SAE	12V	800	100	50	254	171	199	17.7
GPL-1400T	LifeLine	-	1	М8	12V	550	90	43	244	126	174	14.5
GPL-2400T	LifeLine	Grp 24	0	M10/M8	12V	650	172	75	282	168	235	24.1
GPL-2700T	LifeLine	Grp 27	0	M10/M8	12V	745	206	95	333	168	235	28.6
GPL-3100T	LifeLine	Grp 31	0	M10/M8	12V	810	228	100	328	172	236	30.4
GPL-4DL	LifeLine	Grp 4D	0	Blade *1	12V	1100	390	210	527	222	266	61.2
GPL-8DL	LifeLine	Grp 8D	0	Blade *1	12V	1350	475	255	527	278	260	73.6

^{*1} SAE terminals option available

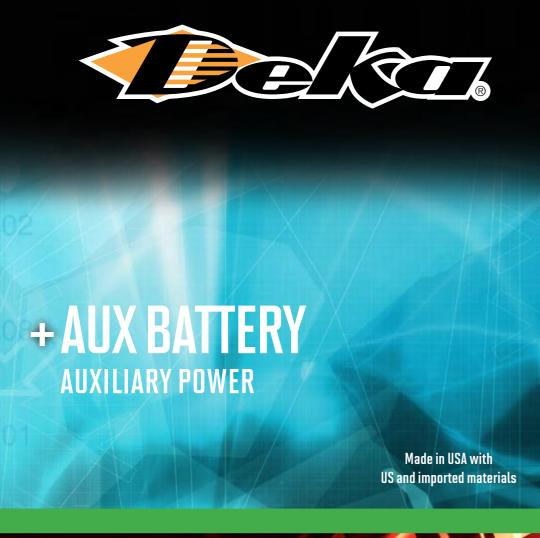
Contact Federal Batteries for additional sizes and voltages to suit your application.

Deka **FREMCO**Tenewable energy manufacturing company + MOBILITY **Deep Cycle Batteries**

MOBILITY DEEP CYCLE BATTERIES

Federal Batteries offer a vast range of the best deep cycle batteries for mobility applications.

Code	Brand	Warranty	Technology	Term	Volts	Ah C20	L	W	TH	Weight
RM12-12DC	REMCO	12 Months	DC AGM	F2	12V	12	151	98	101	3.5
RM12-20DCM	REMCO	12 Months	DC AGM	Т3	12V	19.3	181.5	77	167.5	6
RM12-26DC	REMCO	12 Months	DC AGM	М5	12V	24	166	175	125	8.57
RM12-33DCM	REMCO	12 Months	DC AGM	М6	12V	33	195	130	182	11.65
RM12-40DC	REMCO	12 Months	DC AGM	М6	12V	44	197	165	170	14.2
RM12-55DC	REMCO	12 Months	DC AGM	М6	12V	55	229	138	230	17.7
RM12-65DC	REMCO	12 Months	DC AGM	М6	12V	68.2	348	167	178	21
RM12-80DC	REMCO	12 Months	DC AGM	М6	12V	80.4	260	168	214	22.3
8GU1H	DEKA	18 Months	DC GEL	LUG	12V	32	211	132	183	11
8G22NF	DEKA	18 Months	DC GEL	DF	12V	51	228	139	235	17.1
8G40C	DEKA	18 Months	DC GEL	SOCKET	12V	40	197	168	175	14.4
8G34R	DEKA	18 Months	DC GEL	SOCKET	12V	60	259	175	185	17
8G24SS	DEKA	18 Months	DC GEL	SOCKET	12V	74	277	171	220	24.3
8G24M	DEKA	18 Months	DC GEL	D/T	12V	74	276	171	238	24.3
8G27M	DEKA	18 Months	DC GEL	D/T	12V	88	324	173	251	28.7
8G31DTM	DEKA	18 Months	DC GEL	D/T	12V	98	329	171	251	31
8G24SS 8G24M 8G27M	DEKA DEKA DEKA	18 Months 18 Months 18 Months	DC GEL DC GEL DC GEL	SOCKET D/T D/T	12V 12V 12V	74 74 88	277 276 324	171 173	238 251	2



BUILT TO DELIVER MULTI-PURPOSE AUXILIARY POWER SOLUTIONS

- Unquestionable reliability.
- Maximum cycling performance.
- Durable, reinforced case, cover, and terminal design.

36 MONTHS

Auxiliary Applications Please refer to T&C on page 98

DEKA AUX (AUXILIARY) BATTERY

Auxiliary Power Solutions For Today's Versatile Battery Demands

The Deka AUX Battery is specially designed and uniquely capable to deliver dependable auxiliary support to critical vehicle functions. Premium AGM technological innovation optimizes valve-regulation and recombination efficiency through an individual cell venting system. That's why the leading automotive manufacturers from around the world are integrating this product as an essential component in their complex electrical systems. A durable, reinforced case, cover, and terminal design further protect the battery's critical performance in almost any location of the vehicle.

Code	Case	Layout	Volts	CCA	Ah C20	L	W	TH	Weight
AUX12	YTX12-BS	1	12V	180	10	150	88	130	4.3
AUX14	YTX14-BS	1	12V	200	12	150	88	145	5.1
AUX18L	Y50-N18L-A	0	12V	300	20	206	91	163	8.2

Premium AGM Technology

Superior glass mat electrolyte retention and protection against vibration maximizes long-term capacity.

Individual Cell Venting System

Optimized valve-regulation and internal moisture creation process extends battery performance.

Exclusive Moulded Terminal Design

Ensures best electrical connection and the spill-proof durability.

Reinforced Poly Composite Case and Cover

Resists heat and damage while enhancing internal compression to extend life.

Power-Perform®, Full-Frame Plates

Combine a highly efficient current network with high-energy storage.



BUILT TO BE
MOUNTED IN
A CAR, BOAT,
BUGGY OR TRUCK
AT ANY ANGLE
AND REMAIN
LEAK AND SPILL
PROOF.







Please refer to T&C on page 98

EXTREME RACING BATTERIES

Race Cars, Race Boats, Racing Tractors, Race Trucks, Dragsters and other High Performance vehicles come standard with some of the most sophisticated electronics on the road today. On the other hand, horsepower requires all the sparks most batteries can provide in lieu of those electronics. These two opposing needs for power bring many issues to racing electrical systems. There is always a thirst for more electricity to operate at peak performance to be longer, stronger and faster.

LIFELINE 16V AGM RACING BATTERY

Enter the 16Volt Lifeline Racing Battery! This battery packs a whopping 1050 race cranking amps into a 19Kg shell! The Lifeline LL-1640TB is specifically designed for the rigorous cranking demands of the racing industry. Lifeline Racing batteries are made in the USA.

Code	Layout	Term	Volts	CCA	MCA	Res Cap	L	W	TH	Weight
LL-1640TB	0	М6	16V	750	950	85	259	168	211	19

ODYSSEY EXTREME RACING BATTERIES

Odyssey Extreme racing batteries feature rugged construction and tightly packed pure lead plates. The non-spillable AGM design protects against shock and vibration that can often destroy other batteries. The pure lead plates make for twice the amount of power of a normal battery and a lifespan 3 times as long.

Code	Layout	Term	Volts	CCA	MCA	Res Cap	L	w	TH	Weight
PC950	0	M6 Stud	12V	400	500	60	250	97	156	9
PC1100	0	M6 Stud	12V	500	650	87	250	97	206	12.5



RELIABLE DEEP CYCLE SOLUTION FOR BATTERY POWERED GOLF CARTS

- Plate design that has a larger surface area and higher density paste.
- Envelope separators and an increased electrolyte reserve meaning your battery will run for longer.



ROLLS FLOODED DEEP CYCLE

Manufacturing batteries for over 75 years, Rolls Batteries are experts in engineering reliable and durable batteries that will not let you down.

- Powerful and dependable battery.
 - Reliable, low-maintenance battery.
- Greater level of performance with high current applications.
- Rigid and durable.
- · Perfect blend of power and durability.

6 VOLT FLOODED DEEP CYCLE

Code	Case	Term	Volts	@ 75A	@ 25A	Ah C5	Ah C20	L	W	TH	Weight
6FSGC	GC6	D/T	6V	112	434	170	215	258.8	181.1	279.4	27
6FSGC-HC	GC6	D/T	6V	119	455	186	235	258.8	181.1	279.4	29
6FS145	GC6H	D/T	6V	144	524	198	250	258.8	181.1	290	32

8 VOLT FLOODED DEEP CYCLE

Code	Case	Term	Volts	@ 75A	@ 25A	Ah C5	Ah C20	L	W	TH	Weight
8FSGC	GC8	UTL	8V	79	284	122	155	259	181.1	279.4	27
8FSGC-HC	GC8	UTL	8V	93	356	144	182	259	181.1	279.4	29.5

12 VOLT FLOODED DEEP CYCLE

Code	Case	Term	Volts	@ 75A	@ 25A	Ah C5	Ah C20	L	W	TH	Weight
12FSGC-HC	GC12	UTL	12V	79	284	122	155	333.5	182.1	274.3	37.5



+ Lawn & Garden

AGM, GEL and FLOODED Technology



DESIGNED FOR RIDE ON MOWERS AND GARDEN TRACTORS.

Please refer to T&C on page 98

- Performance in winter's bitter cold and summer's scorching heat.
- Robust cases that resist breakage under the roughest conditions.

LAWN & GARDEN

The Lawn & Garden range offers a variety of batteries that are designed for ride on mowers, kit cars, garden tractors and specialist applications.

DEKA OUTDOORSMAN FLOODED MAINTENANCE FREE

Code	Case	Layout	Term	Volts	CCA	L	w	TH	Weight
7U1L	12N24-4	1	LUG	12V	195	197	130	184	6.8
7U1R	12N24-3	0	LUG	12V	195	197	130	184	6.8
10U1L	12N24-4	1	LUG	12V	300	197	130	184	7.8
10U1R	12N24-3	0	LUG	12V	300	197	130	184	7.8
11U1L	12N24-4	1	LUG	12V	350	197	130	184	8.7

ENDURANT FLOODED MAINTENANCE FREE

Code	Case	Layout	Term	Volts	CCA	L	w	TH	Weight
U1-260MF	12N24-4	1	LUG	12V	260	196	128	184	7.8
U1R-260MF	12N24-3	0	LUG	12V	260	196	128	184	7.8

DEKA INTIMIDATOR AGM BATTERY

Code	Case	Layout	Term	Volts	CCA	L	w	тн	Weight
8AU1H	12N24-4	1	LUG	12V	200	211	130	184	10.9
8AMU1R	12N24-3	0	SAE	12V	320	211	130	184	11.4

DEKA DOMINATOR GEL BATTERY

Code	Case	Layout	Term	Volts	CCA	L	W	TH	Weight
8GU1H	12N24-4	1	LUG	12V	200	211	130	184	11



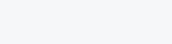
DESIGNED SPECIFICALLY FOR THE RAILROAD INDUSTRY.

- Plate design that has a larger surface area and higher density paste.
- High Density Polyethylene dual container construction that eliminates breakage and moisture.
- Fully Envelope microporous polyethylene separators and an increased electrolyte

reserve meaning your battery will run for longer and allowing 185 days watering intervals.

 Positive plates individually wrapped in fibreglass matting to extend active material and reduces shedding.







Locomotive Starting Applications

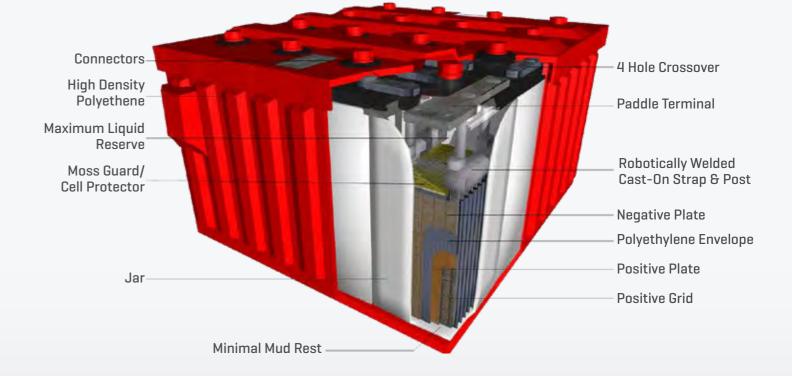
Please refer to T&C on page 98

ROLLS RAIL STARTING BATTERIES

Established in 1935, One of North America's leading lead-acid battery manufacturers and the Nation's only remaining independent battery manufacturer. Located in Springhill, Nova Scotia, Surrette produce a wide range of batteries for use in OE railroad diesel locomotive starting applications. The broad range of Rail & Diesel starter batteries are designed specifically for the railroad industry.

FLOODED DEEP CYCLE

4000		ED DEEL OIG											
4000 6 HHG 31P 36 Months 6V 275 344 742 1444 31 527.1 203.2 301.6 56.7 4000 6 EHG 31P 36 Months 6V 328 410 934 1721 31 527.1 203.2 323.9 60.3 5000 6 CS 17P 48 Months 6V 426 546 1083 1357 17 558.8 209.6 463.6 100. 5000 6 CS 21P 48 Months 6V 549 820 1624 2184 25 558.8 285.8 463.6 144. 5000 6 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.6 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 209.6 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 16 CH 25P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 500. 730.	Series	Code	Warranty	Volts	Ah C8	Ah C20	CCA	MCA	P/Cell	L	W	TH	Weight
4000 6 EH6 31P 36 Months 6V 328 410 934 1721 31 527.1 203.2 323.9 60.3 5000 6 CS 17P 48 Months 6V 426 546 1083 1357 17 558.8 209.6 463.6 100. 5000 6 CS 21P 48 Months 6V 533 683 1353 1764 21 558.8 247.7 463.6 122. 5000 6 CS 25P 48 Months 6V 549 820 1624 2184 25 558.8 285.8 463.6 144. 5000 8 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 EH6 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EH6 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.6 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 209.6 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CH 33P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	4000	4 CH 23P	36 Months	4٧	405	605	1866	2333	23	365.1	209.6	463.6	58.1
5000 6 CS 17P 48 Months 6V 426 546 1083 1357 17 558.8 209.6 463.6 100. 5000 6 CS 21P 48 Months 6V 533 683 1353 1764 21 558.8 247.7 463.6 122. 5000 6 CS 25P 48 Months 6V 549 820 1624 2184 25 558.8 285.8 463.6 144. 5000 6 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 301.6 75.7 5000 8 CH 17E 48 Months 8V 343 440 1357	4000	6 HHG 31P	36 Months	6V	275	344	742	1444	31	527.1	203.2	301.6	56.7
5000 6 CS 21P 48 Months 6V 533 683 1353 1764 21 558.8 247.7 463.6 122. 5000 6 CS 25P 48 Months 6V 549 820 1624 2184 25 558.8 285.8 463.6 144. 5000 6 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 405 605 1866	4000	6 EHG 31P	36 Months	6V	328	410	934	1721	31	527.1	203.2	323.9	60.3
5000 6 CS 25P 48 Months 6V 549 820 1624 2184 25 558.8 285.8 463.6 144. 5000 6 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 <t< td=""><td>5000</td><td>6 CS 17P</td><td>48 Months</td><td>6V</td><td>426</td><td>546</td><td>1083</td><td>1357</td><td>17</td><td>558.8</td><td>209.6</td><td>463.6</td><td>100.2</td></t<>	5000	6 CS 17P	48 Months	6V	426	546	1083	1357	17	558.8	209.6	463.6	100.2
5000 6 CS 27P 48 Months 6V 697 893 1759 2366 27 558.8 285.8 463.6 155. 4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000	5000	6 CS 21P	48 Months	6V	533	683	1353	1764	21	558.8	247.7	463.6	122.9
4000 8 HHG 31P 36 Months 8V 275 344 1444 1805 31 685.8 203.2 301.6 75.7 4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 209.6 463.6 159. 5000 8 CH 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	6 CS 25P	48 Months	6V	549	820	1624	2184	25	558.8	285.8	463.6	144.2
4000 8 EHG 31P 36 Months 8V 328 410 1721 2151 31 685.8 203.2 323.9 80.7 5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109.5 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116.5 5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116.5 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159.5 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187.5 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472.5 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.5 5000 16 CH 33P 48 Mont	5000	6 CS 27P	48 Months	6V	697	893	1759	2366	27	558.8	285.8	463.6	155.1
5000 8 CH 17E 48 Months 8V 343 440 1357 1697 17 546.0 136.5 444.5 98.0 5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000	4000	8 HHG 31P	36 Months	8V	275	344	1444	1805	31	685.8	203.2	301.6	75.7
5000 8 NS 23P 48 Months 8V 351 450 1520 1900 23 717.6 209.6 463.6 109. 5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000	4000	8 EHG 31P	36 Months	8V	328	410	1721	2151	31	685.8	203.2	323.9	80.7
5000 8 CH 23P 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 CH 17E	48 Months	8V	343	440	1357	1697	17	546.0	136.5	444.5	98.0
5000 8 CH 23P-QR 48 Months 8V 405 605 1866 2333 23 717.6 209.6 463.6 116. 5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 NS 23P	48 Months	8V	351	450	1520	1900	23	717.6	209.6	463.6	109.8
5000 8 NS 33P 48 Months 8V 439 655 2204 2755 33 717.6 285.8 463.6 159. 5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 CH 23P	48 Months	8V	405	605	1866	2333	23	717.6	209.6	463.6	116.1
5000 8 CH 33P 48 Months 8V 596 890 2648 3310 33 717.6 285.8 463.6 187. 5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 CH 23P-QR	48 Months	8V	405	605	1866	2333	23	717.6	209.6	463.6	116.1
5000 16 CS 15P 48 Months 32 V 382 478 2027 2534 15 855.1 685.8 520.7 472. 5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 NS 33P	48 Months	8V	439	655	2204	2755	33	717.6	285.8	463.6	159.7
5000 16 CH 25P 48 Months 32 V 515 660 2027 2534 25 855.1 685.8 520.7 562. 5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	8 CH 33P	48 Months	8V	596	890	2648	3310	33	717.6	285.8	463.6	187.8
5000 16 CH 33P 48 Months 32 V 590 881 2648 3310 33 1092.2 685.8 508.0 730.	5000	16 CS 15P	48 Months	32 V	382	478	2027	2534	15	855.1	685.8	520.7	472.0
	5000	16 CH 25P	48 Months	32 V	515	660	2027	2534	25	855.1	685.8	520.7	562.0
5000 16 CH 35P 48 Months 32 V 627 936 2814 3518 35 1092.2 685.8 508.0 758.	5000	16 CH 33P	48 Months	32 V	590	881	2648	3310	33	1092.2	685.8	508.0	730.0
	5000	16 CH 35P	48 Months	32 V	627	936	2814	3518	35	1092.2	685.8	508.0	758.0





+ROLLS

STARTING APPLICATIONS

RAIL



MOTORCYCLE & POWERSPORT

VARTA POWERSPORT AGM TECHNOLOGY

ode	Industry Part #	Layout	Term	Volts	CCA	Ah C20	Length	Width	Height	Weight
TTZ7S-BS	TT7S/TTZ7S-BS	0	Y5	12V	120	5	113	70	107	1.39
TTZ10S-BS	TTZ10S/TTZ10S-BS	1	Y11	12V	150	8	150	87	93	2.01
TTZ12S-BS	TTZ12S/TTZ12S-BS	1	Y11	12V	200	9	150	87	110	3.05
TTZ14S-BS	TTZ14S/TTZ14S-BS	1	Y11	12V	230	11	150	87	110	3.9
YT4L-BS	YT4L-4/YT4L-BS	0	Y5	12V	40	3	113	70	88	1.07
YTX7A-BS	YTX7A-4/YTX7A-BS	1	Y5	12V	105	6	151	88	94	1.82
YT7B-BS	YT7B-4/YTX7B-BS	1	Y11	12V	120	7	150	66	94	1.83
YTX7L-BS	YTX7L-4/YTX7L-BS	0	Y5	12V	100	6	114	71	131	1.83
YTX9-BS	YTX9-4/YTX9-BS	1	Y5	12V	135	8	151	87	106	2.05
YT9B-BS	YT9B-4/YTX9-BS	1	Y11	12V	115	8	149	70	105	2.09
YT12B-BS	YT12-B4/YT12B-BS	1	Y11	12V	215	12	151	71	131	2.77
YTX12-BS	YTX12-B4/YTX12-BS	1	Y5	12V	150	10	152	88	131	3.03
YTX14-BS	YTX14-4/YTX14-BS	1	Y5	12V	200	12	152	88	147	3.06
YTX16-BS	YTX16-4/YTX16-BS	1	Y4	12V	210	14	150	87	161	3.72
YT12A-BS	YT12A-4/YT12A-BS	1	Y5	12V	160	11	150	88	105	4.1
YTX20-BS	YTX20-4/YTX20-BS	1	Y4	12V	250	18	177	88	156	4.36
YTX20L-BS	YTX20L-4YTX20L-BS	0	Y4	12V	250	18	177	88	105	3.50

VARTA Powersport AGM are designed for hard revving, long rides and all kinds of weather. You always have maximum power with no loss in performance. Plus the strong case provides excellent resistance against vibration, even when crossing choppy water or rutted tracks.

Developed especially for high performance motorcycles, utility terrain vehicles and jet-skis. Delivers maximum power, even in extreme



VARTA POWERSPORT FRESHPACK

conditions.

Motorcycle & Powersport Applications Please refer to T&C on page 98

Code	Industry Part #	Layout	Term	Volts	CCA	Ah C20	Length	Width	Height	Weight
YB9L-A2	YB9L-A2/CB9L-A2	0	Y2	12V	130	9	135	75	139	2.97
YB10L-A2	YB10L-A2/CB10L-A2	0	Y8	12V	150	11	136	91	146	4.03
YB14L-A2	YB14L-A/12N14-3A	0	Y8	12V	190	14	135	90	167	4.51
YB16CL-B	YB16CL-B/CB16CL-B	0	Y5	12V	240	19	176	101	176	6.21
YB30L-B	YB30L-B/YB30L-B	0	Y4	12V	300	30	168	132	176	8.98

VARTA Powersport Freshpack batteries are powerful, long-lasting batteries that are simple and cost-effective to install.

VARTA POWERSPORT GEL TECHNOLOGY

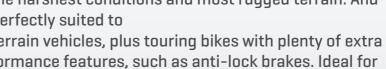
Code	Industry Part #	Layout	Term	Volts	CCA (EN)	Ah C20	Length	Width	Height	Weight
519901017	51814	0	T5	12V	170	19	186	82	173	6.40

VARTA Powersport Gel, featuring our unique leak-proof gel technology, is a maintenance-free product that's designed for the harshest conditions and most rugged terrain. And it's perfectly suited to

all-terrain vehicles, plus touring bikes with plenty of extra performance features, such as anti-lock brakes. Ideal for touring bikes with extra features. CLARIOS









DESIGNED FOR SEASON-TO-SEASON RELIABILITY.

- Supplied ready to fit **Endures the damaging** effects of vibration.
- Low discharge rate for off season storage.
- Full sealed non-spill designs.
- No acid leaks to cause terminal corrosion.



Motorcycle & Powersport Applications Please refer to T&C on page 98

MOTORCYCLE & POWER SPORTS

AGM TECHNOLOGY

Deka Power Sports AGM batteries are designed for reliable performance.

- Plate design that has a larger surface area and higher density paste.
- Completely sealed spill-proof design
- Highly porous micro fibre separators which completely absorb and trap the electrolyte.
- Moulded top and side connection terminals provide versatility, increased strength and durability.

Code	Case	Layout	Term	Volts	CCA	Ah C10	L	w	TH	Weight
ETX9	YTX9-BS	1	14	12V	120	8	150	88	106	2.9
ETX12	YTX12-BS	1	14	12V	180	10	150	88	130	4.3
ETX14	YTX14-BS	1	14	12V	220	12	150	88	145 / 162 / 179*	5.4
ETX14L	YS12-14LBS	0	14	12V	220	12	150	88	145	5.4
ETX15	YB14-BS	1	14	12V	220	14	134	90	166 / 176*	6.5
ETX15L	YB14L-A1	0	14	12V	220	14	134	90	166	6.5
ETX16	YB16C-B	1	14	12V	325	19	175	100	155 / 175*	7.7
ETX16L	YB16CL-B	0	14	12V	325	19	175	100	155 / 175*	7.7
ETX18L	Y50-N18L-A	0	14	12V	340	20	206	91	163	8.2
ETX20L	YTX20L-BS	0	14	12V	310	17.5	177	88	155	5.7
ETX30LA	YIX30L	0	14	12V	400	30	168	131	175 / 197*	9.8

^{*} with spacer / 2x spacer

+ ODYSSEY STARTING & DEEP CYCLE

ODYSSEY BATTERIES PERFECT FOR A RANGE OF APPLICATIONS, INCLUDING AUTOMOTIVE, MARINE, **COMMERCIAL, RACING & POWER SPORTS.**

- AGM technology.
- Vibration resistant.
- Massive starting Power.



Application Warranty Please refer to T&C on page 98

PERFORMANCE STARTING

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
PC310	YTX9-BS	0	-	М4	12V	100	155	9	8	138	86	99	2.7
PC535	YB16-B	1	-	Stud M6	12V	200	265	21	14	170	99	159	5.4
PC545MJT	YTX20L-BS	0	-	М6	12V	150	220	18	13	178	86	130	5.2
PC625	YB16CL-B	0	-	Stud M6	12V	200	340	27	18	170.2	99.1	166.5	6
PC680P	12V18	0	-	М6	12V	170	280	24	16	184.7	79	168	7
PC680MJT	12V18	0	-	M6 / SAE	12V	170	280	24	16	184.7	79	191.8	7
PC925MJT	12V26	0	-	M6 / SAE	12V	330	480	48	28	168.7	179.1	148.1	10.8
PC925LMJ	12V26	1	-	M6 *	12V	330	480	48	28	168.7	179.1	148.1	10.8
PC1200MJT	12V40	0	-	M6 / SAE	12V	540	725	78	42	200	168	193	17.4
PC1220	Grp 48	0	-	DIN	12V	680	860	135	70	278	175	190	20.7
PC1230	Grp 75/86	1	-	Side/SAE	12V	760	815	110	55	240.3	179.8	201.2	20.6
PC1350	Grp 49	0	-	DIN	12V	770	960	195	95	353	175	190	27.4
PC1400-25	Grp 25	1	SF	SAE	12V	850	950	130	65	240.3	173.7	220.7	22.7
PC1400-35	Grp 35	0	SF	SAE	12V	850	950	130	65	240.3	173.7	220.7	22.7
PC1500	Grp 34/78	1	SH	Side/SAE	12V	850	1050	135	68	275	179	200	22.4
PC1700MJT	12V65	0	-	M6 / SAE	12V	810	1175	142	68	331	168.4	197.6	27.6
PC1750-65	Grp 65	1	SF	SAE	12V	950	1070	145	74	300.5	182.9	197.6	26.3
PC2150MJT	Grp 31	0	-	M6 / SAE	12V	1150	1370	205	100	331.7	175	243.6	35.3
PC2250MJT	Grp 6TL	2	-	D/T	12V	1225	1550	240	126	286	269	233	39
* BTSAE-2PK	required for S	SAE											



Low Maintenance Flooded Technology

DEKA MARINE MASTER BATTERIES OFFER RELIABLE, PROVEN, DEEP CYCLE PERFORMANCE.

- Deep pocket envelope plate separators.
- Vibration resistant design.
- Exclusive 300 quality control checks.
- Exclusive calcium alloy, full frame grids and plates.
- Enhanced crystallisation of Power-Perform[™] plates provides more "power-per-pound".

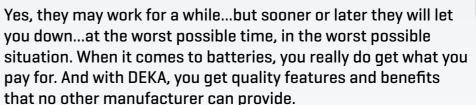


Marine Master batteries are renown for their proven dependability and solid performance. This flooded battery line offers a complete array of starting and deep cycle solutions for virtually any marine need. Even under challenging marine conditions like wave pounding vibration, stubborn engine starting, heavy house power, auxiliary and trolling, Marine Master batteries rise to the top in user-friendly, marine-tough service and extended reliability.

MARINE MASTER

- High cranking power for quick engine starts
- Extra reserve capacity for emergencies
- · Maintenance-free design

In the starting mode, a gas or diesel marine engine places a demand for high starting current, to "crank the engine" up to starting RPM. This high starting current must be delivered quickly month after month after month. Why risk a potentially dangerous "no-start" condition by purchasing an inexpensive, "barqain basement" so-called marine battery? Many times these inexpensive batteries are nothing more than cheap car batteries with fancy marine labels.





Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	L	W	TH	Weight
24M5	Grp 24	1	SH	D/T	12V	550	675	90	273	171	238	16.4
24M6	Grp 24	1	SH	D/T	12V	650	800	115	273	171	238	18.6
24M7	Grp 24	1	SH	D/T	12V	800	1000	130	273	171	238	20.5
27M6	Grp 27	1	SH	D/T	12V	840	1050	182	324	173	241	25.5

MARINE MASTER DEEP GYGLE

- Built-in protection against deep discharge damage
- Rugged vibration-resistant construction
- Reliable power for modest starting

In contrast to the quick surge of power that is required for starting, deep cycle batteries are called upon to deliver smaller amounts of current over long periods of hours or days, rather than seconds.

While DEKA deep cycle batteries can deliver plenty of starting power, they are specifically designed to withstand the special rigours of long, deep discharges and long, slow recharges. The DEKA MARINE MASTER DEEP CYCLE series is specifically designed to withstand this harsh environment.



Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
DC24	Grp 24	1	SH	D/T	12V	500	615	130	75	273	171	238	20.5
DC27	Grp 27	1	SH	D/T	12V	575	705	175	90	324	173	241	24.1
DC31DT	Grp 31	3	-	D/T	12V	650	800	185	105	330	173	241	27



ENDURANT.



+ BOAT MASTER
PREMIUM GRADE STARTING

Maintenance Flooded Free Calcium Technology





THE ENDURANT BOAT
MASTER RANGE
FEATURES HEAVIER
POSITIVE PLATES AND
INCLUDES VIBRATION
AND CYCLING RESISTIVE
SEPARATORS.

- Maintenance free construction reduces gas emitted from the battery, reducing corrosion around the terminals and lowering ventilation requirements.
- Wrought lead-calcium grids.
- Low-Resistance envelope separators.
- High strength polypropylene case.
- Heat sealed covers.
- Dual terminals.
- Exclusive patented liquid gas separator.
- Built in Hygrometer.
- Great vibration resistance.



Marine Applications
Please refer to T&C on page 98

ENDURANT BOAT MASTER FLOODED

The Endurant Boat Master range consists of a complete line of Marine starting, trolling and dual purpose batteries that deliver the excellent performance and reliability. Ensure that the correct size and type of battery is selected for the application. Contact Federal Batteries for assistance and additional information.

MARINE STARTING FLOODED - MAINTENANCE FREE - CALCIUM TECHNOLOGY

The Endurant Boat Master starting range is a premium calcium technology providing excellent coverage for most outboard motor and marine starting applications. Featuring heavier calcium plates to ensure high levels of shock and vibration resistance, without sacrificing performance.

Code	Case	Layout	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	w	TH	Weight
MS24-680	Grp 24	1	D/T	12V	680	780	160	80	275	172	229	19.6
MS27-780	Grp 27	1	D/T	12V	780	820	185	100	305	172	225	22.6
MS31-1000	Grp 31	1	D/T	12V	1000	1050	180	100	330	172	234	24.8

DUAL PURPOSE FLOODED MAINTENANCE FREE - CALCIUM TECHNOLOGY

The Endurant Boat Master Dual Purpose range balances both reliable starting power and semi cycling capability. Suitable for a wide range of dual purpose applications including Recreational Vehicles, 4x4, Motorhomes and Marine applications.

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	w	н	Weight
M24MF	Grp 24	1	-	D/T	12V	600	780	115	70	273	171	225	19.3
M27MF	Grp 27	1	-	D/T	12V	750	975	145	90	309	173	225	20.3
M27RMF	Grp 27	0	-	D/T	12V	750	975	145	90	309	173	225	20.3
M31MF	Grp 31	3	SF	D/T	12V	720	935	185	110	330	173	241	25.5

CYCLE MASTER - MAINTENANCE FREE - CALCIUM TECHNOLOGY

The Endurant Cycle Master is a flooded technology battery specifically designed to withstand the demand of deep discharges and slow recharges. A great solution the customer who demands quality and longevity in a cyclic application.

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
DC24MF	Grp 24	1	-	D/T	12V	580	755	140	82	273	171	225	20.1
DC27MF	Grp 27	1	-	D/T	12V	680	885	162	97	309	173	225	23.7
DC31MF	Grp 31	3	SF	D/T	12V	730	950	190	110	330	173	241	27

The Endurant Boat Master maintenance free range uses the latest Calcium/Calcium technology to meet the demanding requirements of marine engine starting. The sealed, maintenance free design eliminates any need for adding electrolyte to the battery.

Features include an integrated 'magic eye', offering a swift and easy assessment of the state of the battery and dual terminals on most models for time saving installations of the battery and accessories.





Rolls



PREMIUM DEEP CYCLE BATTERIES

- Plate design that has a larger surface area and higher density paste.
- Envelope micro-porous polyethylene separators and an increased electrolyte reserve meaning your battery will run for longer.
- Positive plates individually wrapped in fibreglass matting to extend active material and reduces shedding.

ROLLS FLOODED DEEP CYCLE

Manufacturing batteries for over 75 years, Rolls Batteries are experts in engineering reliable and durable batteries that will not let you down.

- · Powerful and dependable battery.
- Reliable, low-maintenance battery.
- Greater level of performance with high current applications.
- Rigid and durable.
- Perfect blend of power and durability.

6 VOLT FLOODED DEEP CYCLE

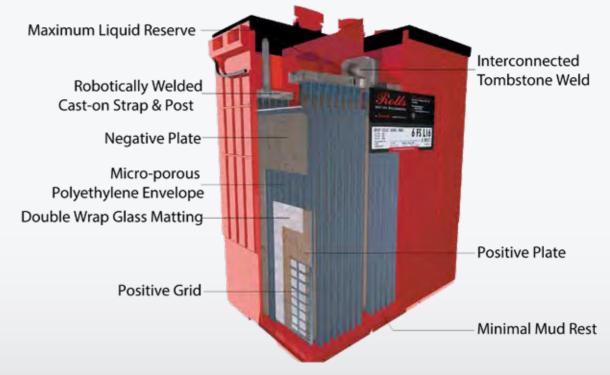
Code	Case	Term	Volts	CCA	MCA	@ 75A	@ 25A	Ah C5	Ah C20	L	W	TH	Weight
6FSGC	GC6	D/T	6V	547	684	112	434	170	215	258.8	181.1	279.4	27
6FSGC-HC	GC6	D/T	6V	625	781	119	455	186	235	258.8	181.1	279.4	29
6FS145	GC6H	D/T	6V	710	888	144	524	198	250	258.8	181.1	290	32
6FS250-SC	901	D/T	6V	799	998	164	587	222	281	298.4	181.1	286	40
6FS305-HC	902	D/T	6V	844	1055	175	642	237	300	311	181.1	362	44
6FSL16	L16	D/T	6V	847	1058	206	840	263	375	318	177.8	425.9	51
6FSL16-HC	L16	D/T	6V	968	1209	239	960	300	428	318	177.8	425.9	55.5
6FSGC-DIN	GC-DIN	SAE	6V	710	888	127	484	198	250	244	191	269	32

8 VOLT FLOODED DEEP CYCLE

Code	Case	Term	Volts	CCA	MCA	@ 75A	@ 25A	Ah C5	Ah C20	L	w	TH	Weight
8FSGC	GC8	UTL	8V	469	586	79	284	122	155	259	181.1	279.4	27
8FSGC-HC	GC8	UTL	8V	469	586	93	356	144	182	259	181.1	279.4	29.5

12 VOLT FLOODED DEEP CYCLE

Code	Case	Term	Volts	CCA	MCA	@ 75A	@ 25A	Ah C5	Ah C20	L	w	TH	Weight
12FS24	Grp 24	D/T	12V	550	690	43	150	69	85	279	171.4	238	21.5
12FS27	Grp 27	D/T	12V	650	845	53	185	85	105	321	171.4	238	24.5
12FS31	Grp 31	D/T	12V	670	906	64	216	105	125	335	171.4	241.3	29.5
12FSGC-HC	GC12	UTL	12V	563	703	79	284	122	155	333.5	182.1	274.3	37.5
12FS185-HC	921	D/T	12V	648	810	112	406	166	210	390.9	178	365	61





DEEP CYCLE Flooded Technology









...the heart of your system ®



EVERY LIFELINE BATTERY IS EXPERTLY HAND **BUILT IN CALIFORNIA TO DEMANDING MILITARY** SPECIFICATIONS.

- Manufactured without compromise to exacting standards.
- Purpose built for this most demanding applications.
- Non-spillable, completely maintenance free.
- Feature the best pressure safety values available.

+ LIFELINE

STARTING & DEEP CYCLE

AGM Technology







Deep Cycle Applications Please refer to T&C on page 98

STARTING & DEEP CYCLE

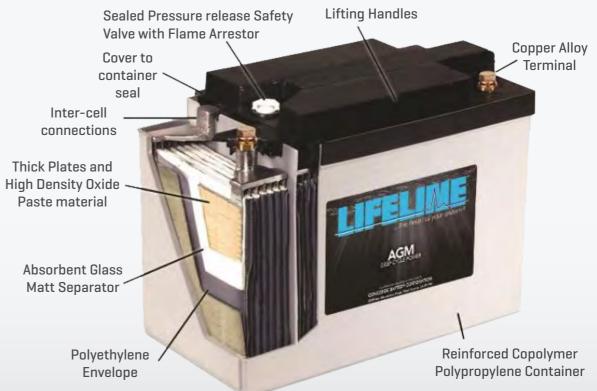
Lifeline are the pioneers of fully sealed, maintenance free AGM technology with features such as a superior cell construction with a low resistance for class leading cranking amps, rapid recharging capabilities, ultra-low self-discharge rates (only 2% per month), unmatched life-cycles and a worldwide proven reliability under demanding shock and vibration loads.

AGM TECHNOLOGY - STARTING BATTERIES

Code	Case	Layout	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	Н	Weight
GPL-1400T		1	M8	12V	550	700	90	43	244	126	174	14.5
GPL-2400T	Grp 24	0	M10 POS, M8 NEG	12V	650	790	172	75	282	168	235	24.1
GPL-2700T	Grp 27	0	M10 POS, M8 NEG	12V	745	900	206	95	333	168	235	28.6
GPL-3100T	Grp 31	0	M10 POS, M8 NEG	12V	810	950	228	100	328	172	236	30.4

AGM TECHNOLOGY - DEEP CYCLE BATTERIES

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Code	Case	Layout	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	Н	Weight
GPL-4CT-2V	GC2	0	M8 x4	2V	2025	2500	1476	660	261	181	294	31.8
GPL-6CT-2V	GC2	0	M8 x4	2V	2500	2750	2076	900	262	181	330	42.6
GPL-L16-2V	L16	0	M8 x2	2V	3645	4552	2850	1200	296	177	399	54
GPL-31T-2V	Grp 31	0	M8 x2, M10 x2	2V	3240	4050	1170	630	328	172	227	31.4
GPL-4CT	GC6	0	М8	6V	760	925	492	220	261	181	252	30
GPL-6CT	GC6	0	М8	6V	925	1025	692	300	262	180	330	40.8
GPL-L16T	L16	0	М8	6V	135	1675	950	400	296	177	399	54
GPL-U1T	Grp U1	0	М6	12V	215	275	50	33	196	132	175	10.9
GPL-24T	Grp 24	0	M10 POS, M8 NEG	12V	550	680	149	80	283	168	235	25.5
GPL-27T	Grp 27	0	M10 POS, M8 NEG	12V	575	715	186	100	333	168	235	29.5
GPL-30HT	USA 89	0	М8	12V	700	850	315	150	342	172	304	43.5
GPL-31T	Grp 31	0	M10 POS, M8 NEG	12V	600	750	195	105	328	172	236	31.4
GPL-31XT	Grp 31	0	M10 POS, M8 NEG	12V	650	800	230	125	328	172	236	34
GPL-4DA	Grp 4D	0	SAE	12V	1100	1360	390	210	527	222	257	61.2
GPL-4DL	Grp 4D	1	Blade Terminal	12V	1100	1360	390	210	527	222	266	61.2
GPL-8DA	Grp 8D	0	SAE	12V	1350	1675	475	255	527	278	251	73.6
GPL-8DL	Grp 8D	0	Blade Terminal	12V	1350	1675	475	255	527	278	260	73.6





INTIMIDATOR





Made in USA with US and imported materials

DESIGNED WITH EXTRA PROTECTION AGAINST DEEP DISCHARGES

• Enhanced crystallisation of Full-frame positive and negative Power-Perform™ plates.



- Enhanced electrolyte suspension system.
- Twice the Cycle Life and twenty times more vibration protection.
- Fortified posts, straps and welds resist vibration damage, maximize current transfer.
- Valve Regulated with Flame arrestors.
- Over 300 Quality Checks.



Deep Cycle Applications
Please refer to T&C on page 98

INTIMIDATOR DEEP CYCLE AGM MARINE / RV SERIES

AGM DEEP CYCLE MARINE

The DEKA INTIMIDATOR AGM DEEP CYCLE SERIES provides an ideal solution for heavy marine house power, renewable energy powered equipment, portable power needs, golf cars and other types of electric vehicles. Completely spill-proof and maintenance-free AGM technology eliminates watering and unnecessary maintenance. DEKA INTIMIDATOR Deep Cycle batteries spend less time on the charger and more time in service by actually recharging faster than conventional batteries. A high deep discharge abuse tolerance provides added resiliency for dependable deep cycle service.

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
8AU1H	12N24-4	1	-	LUG	12V	200	240	45	32	211	130	184	10.9
8A22NFM	Grp 22NF	1	-	D/F	12V	350	420	85	55	238	140	235	17.5
9A34M	Grp 34	1	SH	D/T	12V	750	860	120	55	273	175	203	18.9
8A24M	Grp 24	1	-	D/T	12V	525	800	135	79	273	171	251	24
8A27M	Grp 27	1	-	D/T	12V	580	900	175	92	324	173	251	29
8A31DTM	Grp 31	1	-	D/T	12V	800	1000	200	105	330	173	251	31
8A4D	Grp 4D	4	-	SAE	12V	1110	1420	380	198	527	216	258	58.5
8A8D	Grp 8D	4	-	SAE	12V	1450	1800	480	245	527	279	254	72
8AGC2	GC6	2	-	D/T	6V	680	900	380	190	260	181	280	32

INTIMIDATOR AGM DEEP CYCLE SERIES HAS EXTRA PROTECTION AGAINST DEEP

DISCHARGING Ultra-deep discharging is what causes life-shortening plate shedding and accelerated positive grid corrosion, which can destroy a battery. Intimidator deep cycle batteries are designed to use the optimised amount of acid (no more, no less). This means that the power in the acid is used before the power in the plates. This design, along with the enhanced durability in the glass mat and plate construction, protects the internal components from ultra-deep discharges.

- Exclusive AGM electrolyte and filling process uses high purity sulphuric acid and pure, demineralised and deionised water to eliminate contaminants that compromise performance.
- Enhanced electrolyte suspension system absorbs more electrolyte, protects internal components.
- Micro-porous glass separators prevents acid spills and terminal corrosion.
- Premium maintenance-free with longer Deep Cycle Life and starting service.
- Lower internal resistance ensures higher discharge rates.

Convenient Handle maximizes ease of transport and installation (also available without handle)	
2. Stainless Steel Studs (SAE post available) resists life-robbing corrosion	
3. Safety Relief Valve System prevents capacity loss and controls pressure	
4. Fortified Posts, Straps, and Welds — resist vibration damage, maximize current transfer	
5. Heavy-Duty Power-Perform Plates optimize battery's power and energy storage capacity	
6. Enhanced Electrolyte Suspension System ————————————————————————————————————	
7. Optimized Component Compression provides superior vibration resistance	
Ultra-Pure Demineralized Electrolyte precision filled for extended life	

DOMINATOR









FEATURING THIXOTROPIC GEL ELECTROLYTE.

• Enhanced Full-frame positive and negative Power-Perform[™] plates.



- Dual layer separators.
- Polyester fibre sheets prevent plate growth.
- Forged terminals and bushings assure no leakage.
- Valve Regulated with Flame arrestors.
- Long service life even in the most challenging environments.
- Over 300 Quality Checks.



DOMINATOR DEEP CYCLE GEL MARINE / RV SERIES

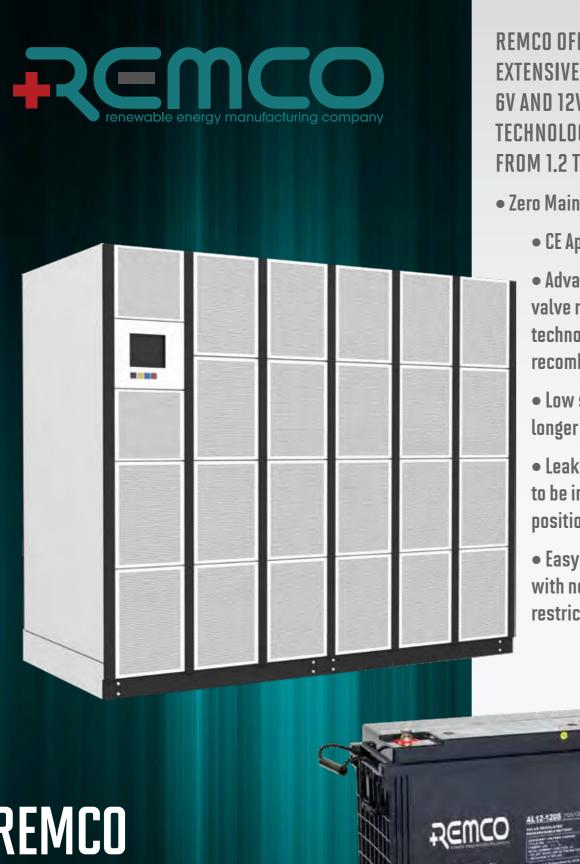
DOMINATOR GEL EXTREME DEEP CYCLE

DEKA DOMINATOR GEL EXTREME DEEP-CYCLE BATTERIES are designed to provide maximum power and life for deep cycle applications. The DEKA DOMINATOR contains electrolyte that is permanently locked in a thixotropic gel, instead of conventional messy liquid acid, offering many significant advantages over traditional liquid acid deep-cycle batteries.

Code	Case	Layout	BHD	Term	Volts	CCA	MCA	Res Cap	Ah C20	L	W	TH	Weight
8GU1H	12N24-4	1	-	LUG	12V	200	290	44	32	211	132	183	11
8G22NF	Grp 22NF	1	SH	D/F	12V	210	300	77	51	228	139	235	17.1
8G40C	-	1	-	М6	12V	225	325	59	40	197	168	175	14.4
8G34R	Grp 34R	0	SH	М6	12V	300	420	90	60	259	175	185	17
8G24SS	Grp 24	1	SH	М6	12V	335	470	132	74	277	171	220	24.3
8G24M	Grp 24	1	SH	D/T	12V	410	575	132	74	276	171	238	24.3
8G5SHP	Grp 5SHP	0	-	SAE	12V	450	640	200	115	345	172	290	38.6
8G27M	Grp 27	1	SH	D/T	12V	505	700	160	88	324	173	251	28.7
8G31DTM	Grp 31	1	-	D/T	12V	550	780	180	98	329	171	251	31
8G4D	Grp 4D	4	-	SAE	12V	970	1245	375	183	527	214	254	59.9
8G8D	Grp 8D	4	-	SAE	12V	1150	1470	475	225	527	279	254	76
8GGC2	GC6	2	-	D/T	6V	585	850	345	180	260	181	280	32.5
8GTE35	GC-DIN	2	-	SAE	6V	-	-	-	196	245	191	270	31
8G8VGC	GC8	1	-	D/F	8V	400	575	250	140	260	181	280	33

- Exclusive gel formula and proprietary computerised gel mixing operation that ensures controlled temperatures and homogeneous consistency for unequalled life and performance.
- Requires absolutely no maintenance, eliminating the need to check liquid levels or add water.
- Gelled construction prevents vibration damage to plates.
- Designed for convenient transportation, the DOMINATOR can be transported by air without the need for special containers.
- Extremely shock resistant under the most demanding conditions.
- Recharges substantially faster than conventional liquid acid batteries.
- Easily installed in hard-to-reach locations.
- Dual layer separators which lock active material onto plates to prevent capacity degradation and allow the gel to reach the entire surface of the plates.
- Specially designed polyester fibre sheets wrap around the edge of each element to prevent "mossing" (plate growth) as batteries age.
- Multi-staged filling and vacuum operation fills and vacuums each cell several times to ensure complete evacuation of air and complete gel-to-plate contact, with before and after weights compared to ensure proper gel levels.
- Completely maintenance-free. Sealed construction eliminates periodic watering, corrosive acid fumes and spills.
- Electrolyte will not stratify, no equalisation charging required. Allows faster recharge.





REMCO OFFER AN EXTENSIVE RANGE OF **6V AND 12V VRLA AGM** TECHNOLOGY BATTERIES FROM 1.2 TO 200 Ah

- Zero Maintenance
 - CE Approved.
 - Advanced AGM valve regulated technology with gas recombination system.
 - Low self discharge, longer shelf life.
 - Leak Proof, designed to be installed in any position.
 - Easy to transport, with no transport restrictions.

+REMCO **VRLA STANDBY**

AGM Technology





Standby / Stationery Applications Please refer to T&C on page 98

VRLA AGM STANDBY

Extensively proven throughout Australia, the REMCO Stationary battery range have been specifically designed for reliable standby backup power for applications such as emergency lighting, fire, security, standby and UPS.

AGM TECHNOLOGY 1.2Ah - 33Ah - 5 years design life in float service.

Code	Term	Volts	Ah C20	L	W	TH	Weight
RM12-1.2	T1	12V	1.2	97	43	58	0.57
RM12-2	T1	12V	1.9	178	35	66	0.88
RM12-2.9S	T1	12V	2.9	79	56	105	1.1
RM12-3	T1	12V	3.2	134	67	66.5	1.35
RM12-5	T1	12V	5.4	90	70	107	1.65
RM12-7.2	T1	12V	7.2	151	65	99	2.35
RM12-9HR	T2	12V	8.5	151	65	99	2.45
RM12-12	T2	12V	12	151	98	101	3.24
RM12-17	Т3	12V	18	181.5	77	167.5	5.4
RM12-26	M5	12V	26	166	175	125	7.8
RM12-33	T5	12V	33	195	130	178	10.5
RM6-4.5	T1	6V	4.5	70	47	106	0.81
RM6-7.2	T1	6V	7.2	150	34	100	1.2
RM6-12	T2	6V	12	151	51	100	1.8

AGM TECHNOLOGY 40Ah - 200Ah - 10 years design life in float service.

			-	_			
Code	Term	Volts	Ah C20	L	w	TH	Weight
RM12-40	М6	12V	40	197	165	170	12.2
RM12-65	М6	12V	65	348	167	178	19.2
RM12-75	М6	12V	78	260	168	214	22.3
RM12-90	М8	12V	93.6	330	173	220	27.8
RM12-150	М8	12V	156	483	170	239	43.2
RM12-200	М8	12V	208	522	240	224	59.8

AGM TECHNOLOGY FRONT TERMINAL

Code	Term	Volts	Ah C20	L	W	TH	Weight
RM12-100FT	М6	12V	100	508	110	238.5	35
RM12-110FT	М6	12V	106	394	110	285	32.6
RM12-150FT	М8	12V	150	551	110	287	46.6

Complies with IEC, BCI, and BS EN standards, including:

- IEC60896-21/22
- BS EN 60254-1:2005
- AS/NZS 4029.2.2000







VDS 3812: 2019 FIRE & SECURITY CERTIFICATION

VdS 3812 - Independently approved by VdS Schadenverhütung GmbH for fire alarm systems and smoke / heat exhaust ventilation systems.

Code	VDS Cert	Term	Volts	Ah C20	L	W	TH	Weight
RM12-1.2	G105108	T1	12V	1.2	97	43	58	0.57
RM12-2.9S	G116025	T1	12V	2.9	79	56	105	1.1
RM12-7.2	G112003	T1	12V	7.2	151	65	99	2.35
RM12-12	G112004	T2	12V	12	151	98	101	3.24
RM12-17	G112005	Т3	12V	18	181.5	77	167.5	5.4
RM12-26	G112006	М5	12V	26	166	175	125	7.8
RM12-40	G112007	М6	12V	40	197	165	170	12.2
RM12-65	G112009	М6	12V	65	348	167	178	19.2
RM6-12	G112001	T2	6V	12	151	51	100	1.8





DEEP CYCLE BATTERIES ESPECIALLY DESIGNED FOR CYCLIC USE.

- Thick plate construction.
- Advanced AGM valve regulated technology with gas recombination system.
- Low self discharge, longer shelf life.
 - Leak Proof, designed to be installed in any position.
- Easy to transport, with no transport restrictions.











Recreational Vehicles Applications excluding mobility & cleaning Please refer to T&C on page 98

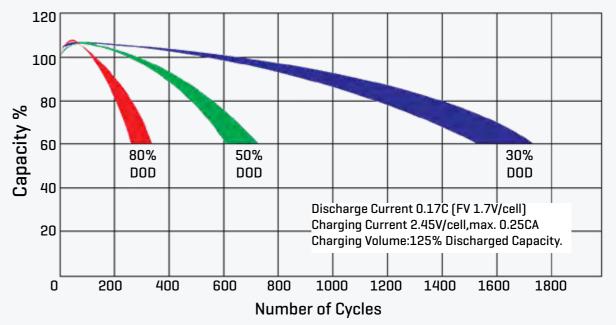
VRLA AGM DEEP CYCLE

AGM TECHNOLOGY DEEP CYCLE (FOR CYCLIC USE)

The REMCO DEEP CYCLE range offers superior, deeper discharge recovery thanks to the use of thicker and heavier plates and lower internal resistance. Unlike other VRLA batteries, DC batteries are purpose built to handle the demanding requirements of repeated deep cycle discharge.

Code	Layout	Term	Volts	Ah C20	Ah C10	L	W	TH	Weight
RM12-7.2DC	5	T1	12V	7.72	7.2	151	65	99	2.5
RM12-12DC	5	T2	12V	13.9	13	151.5	99.5	100	4.3
RM12-26DC	0	М5	12V	26	24	166	175	125	8.7
RM12-20DCM	0	Т3	12V	20	18	181.5	77	167.5	6
RM12-33DCM	1	T5	12V	35.4	33	195	130	182	11.65
RM12-40DC	0	М6	12V	40.7	38	197	165	170	14.2
RM12-55DC	1	М6	12V	59	55	228	137	230	17.7
RM12-65DC	1	М6	12V	68.2	65	348	167	178	21
RM12-80DC	1	М6	12V	80.4	75	259	168	214	22.3
RM12-100DC-M8	1	М6	12V	100	99	306	168	214	27.1
RM12-120DC-M8	1	М8	12V	120	110	330	173	220	30.6
RM12-140DC	1	М8	12V	160.8	150	485	170	240	43.5
RM12-185DC	4	М 8	12V	187.2	180	532	207	220	52.8
RM12-200DC	4	М8	12V	214.4	200	522	240	224	62.5
RM12-260DC	4	М8	12V	287.5	262	522	268	226	77
RM6-225DC	2	М8	6V	225	194	260	180	253	30.5

Cycle Life vs. Depth of Discharge



260 - 320 cycles at 80% discharge @ 25°C 600 - 700 cycles at 50% discharge @ 25°C 1500 - 1700 cycles at 30% discharge @ 25°C









BATTERY CHARGERS BATTERY JUMP STARTERS BATTERY ACCESSORIES TECHNICAL INFORMATION

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Warranty Statement

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genius[®]



+ NOCO GENIUS

Multi-Purpose, next generation battery chargers and maintainers







- Stabilises internal battery chemistry for increased performance and longevity.
- Advanced diagnostics automatically tests and detects a bad, damaged, or shorted battery.
- Ultra-compact, portable, energyefficient design that's impact, UV and waterresistant (IP60)
- Includes spark-proof technology and reverse polarity protection.
- Dynamically changes charge current when a load is placed on the battery.
- Minimises energy consumption when full power is not needed.



Please refer to T&C on page 98



Plug-in, set and forget. The versatility and genius behind NOCO chargers is its ability to charge a variety of battery technologies — including lithium-ion. From automotive, marine, powersport, lawn and garden to deep-cycle batteries, NOCO chargers are engineered to replenish lost capacity in just about any vehicle or equipment. It's suitable for popular battery chemistries such as wet cell, gel cell, AGM and LiFePO4, as well as advanced AGM and EFB for micro-hybrid start-stop vehicles.

	Volts	Current	WET	GEL	MF	EFB	AGM	LiFe PO4	12V Repair mode +1.5A	Supply Mode 13.6v 5A	Jump Charge 30A 5Min
LVG750AU	6/12	0.75A	✓	✓	✓	✓	✓				
LVG1100AU	6/12	1.1A	✓	✓	✓	✓	✓	✓			
LVG3500AU	6/12	3.5A	✓	✓	✓	✓	✓	✓	✓		
LVG7200AU	12/24	7.2/3.6A	✓	✓	✓	✓	✓	✓	✓	✓	
LVG1500AU	12/24	15/7.5A	✓	✓	✓	✓	✓	✓	✓	✓	
LVG26000AU	12/16/24	26/19.5/13A	✓	✓	✓	✓	✓	✓	✓	✓	✓

LVG750AU

Ideally suited for 0 - 30Ah



LVG1100AU

Ideally suited for 0 - 40Ah



LVG3500AU

Ideally suited for 0 - 120Ah



LVG7200AU

Ideally suited for 18 - 230Ah



LVG15000AU

Ideally suited for 50 - 400Ah

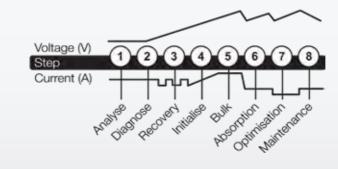


LVG26000AU

Ideally suited for 50 - 500Ah



Charging Steps



((い))

CANBUS.

Automatically enables the charging port to charge CANBUS systems.



Maintenance Plus.

Keeps the battery fully charged without over-charging, indefinitely



Thermal Monitor.

Internal temperature sensors adjust charge based on ambient climate.



NOCO 💥 **ACCESSORIES**



+ NOCO GENIUS

12V Battery Charger Accessories

with NOCO CONNECT®





1914

• NOCO CONNECT®

- Solid weatherproof connection
- Maximum current flow
- Fast & Easy interconnecting
- Rugged, waterresistant plug-nplay connections for maximum performance.
- Compatible with cigarette lighter, 12V auxiliary ports, direct connect or more.
- Heavy duty design.
- Made from a high conductivity 16AWG 100% copper wire encased in flexible insulation, built for maximum current flow.
- Built with moulded strain relief's and durable, high performance insulated wire for flexibility in cold weather...

NOCO

BATTERY CHARGER ACCESSORIES

Permanently mount eyelet connectors on multiple vehicles to make hard-to-access batteries easy to charge. Charge through the 12V auxiliary or OBDII port from inside a vehicle, or simply extend the reach of your accessories.

LVGC001



X-Connect Battery Clamp Connector

LVGC002



Eyelet Terminal Connector

LVGC003



X-Connect 12V Male Pluq

LVGC004



X-Connect 10' Extension Cable

LVGC008



XL Eyelet Terminal

LVGC009



X-Connect SAE Adaptor

LVGC010



X-Connect 12V Female Pluq

LVGC011



12V Dual-Size Male

LVGC012

LVGC017



X-Connect **OBDII Connector**



LVGC013



X-Connect Male-to-Male Coupler

LVGC015



X-Connect 3/8" 12V Indicator

LVGC016



X-Connect 3/8" 12V Dash-mount Indicator



12V Pluq with Battery Clamps

LVGC018



12V 3/8" Pluq with Eyelet Terminals

LVGC019



12V Plug 12' Extension Cable

LVGC020



12V Plug 2-Way Splitter

BATTERY CHARGERS



QUI-Q SERIES BATTERY CHARGERS

The versatile design of QuiQ 1000 provides manufacturers with flexibility and battery charging performance. The QuiQ 1000 is usable on or off-board, and contains up to 10 optimized charge profiles for lead acid and lithium-ion batteries. All QuiQ Series chargers share an identical mechanical design and IP66-rated ingress protection, so they are easy to deploy across machine platforms based on the needed output power and voltage.

Code	Description	Volts	Current
Q24-25	Delta-Q QuiQ 24V 25A Charger	24	25
Q36-21	Delta-Q QuiQ 36V 21A Charger	36	21
Q48-18	Delta-Q QuiQ 48V 18A Charger	48	18
QUIQ USB	Delta-Q USB Programmer		
			-
			4

Key Specifications

Operating Conditions

Summary		QuiQ	1000			QuiQ	1500	_ I	i ii	QuiQ-dc	
Available models	24 V	36 V	4HV	72 V	48 V	72 V	48V	72 V	48V	72 V	96 V
Max DC output current	25 A	21 A	18 A	12 A	25 A	17 A	30 A	20 A	18 A	12 A	8.5 A
Max DC output power	695 W	B75 W	1000 W	1000 W	1200W	1200 W	1500 W	1500 W	1000 W	1000 W	945 W
AC input range		85-26	55 VAC		100-1	100-190 VAC 190-265 VAC			85-265 VAC		
Max AC input current	10	10 A @120 VAC: 5 A @230 VAC		12A@	12 A @ 120 VAC 7 A @ 230 VAC		30 VAC	10 A @ 120 VAC: 5 A @ 230 VAC			
Warranty	Warranty r	Warranty provided by OEM or distributor point of sale									

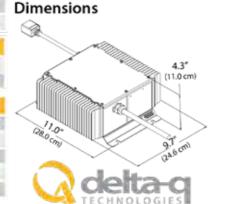
Converter DC Output	QuiQ-dci					
Available models	48VDC	72 VDC	96 VDC			
Battery DC input voltage range	35-87 V	50-130 V	60-150 V			
DC output voltage	13.5 +/- 0.7 V					
Continuous / peak output current	30 A / 60 A					
Output lines	Switched, direct (unswitched)					

QuiQ Programmer Tool (sold separately)

Features

Operating temperature	-22°F to 122°F (-30°C to +50°C)	Derated at >86°F (30°C), <32°F (0°C)
Storage temperature	-40°F to 158°F (-40°C to +70°C)	
Mechanical		
Dimensions	11.0 x 9.7 x 4.3" (28.0 x 24.6 x 11.0	cm)
Weight	< 11 lbs (< 5 kg)	
A DESCRIPTION OF THE PERSON OF	and includes a Supplementary or an extra contract of the contr	

IEC320 / C14; available IP66 sealed AC input connector OEM specific with 12 AWG wire DC output connector Enclosure rating



Multi-color LED indicator for: faults, AC

power, charge status, charge current

Download charge / event data using the



Some items may not always be in stock, please check availability with your branch.

BATTERY CHARGERS



IC650 SERIES BATTERY CHARGER

The IC650 has proven itself as a high-performance battery charger for electric pallet jacks, floor care machines, scissor lifts and e-mobility scooters. With the touch of a button, users can switch between charge profiles for lead acid (wet/flooded, sealed AGM or Gel) battery chemistries and brands. Lithium-ion applications are supported by connecting to a battery management system or controller using CAN bus.

Code	Description	Volts	Current
IC650-24	24V 27A Industrial Charger	24	27
IC650-36	36V 18A Industrial Charger	36	18
IC650-48	48V 13.5A Industrial Charger	48	13.5
10900-24	24V 37.5A Industrial Charger	24	37.5
10900-36	36V 25A Industrial Charger	36	25
IC1200-24	24V 50A Industrial Charger	24	50
IC1200-36	36V 33A Industrial Charger	36	33
DQ-475-0351	DQ DC Harness 1.8M 3/8" Ring T		
IC-HANDLE	Delta-Q IC Handle and Feet Kit		
IC-QUIPLATE	Delta-Q IC-QUI Adapter Plate		
IC650-RTS	Remote Temp Sensor DeltaQ		
IC-DC	2M output Cables 50A/175A		



Key Specifications

DC Output	24 VDC	36 VDC	48 VDC
Maximum DC output voltage	36 V	54 V	72 V
Maximum DC output current	27.1 A	18.1 A	13.5 A
Maximum DC output power		650 W	
Deep discharge recovery (minimum voltage)	1.2 V	1.8V	2.4 V
Maximum C3 interlock signal current	1.5 A (15 A with external interlock device, 24V model only)		
Battery type	Lead acid (Wet / AGM / GEL), Lithium Ion		
Reverse polarity	Electronic protection with auto-reset		
Short circuit	Electronic current limit		

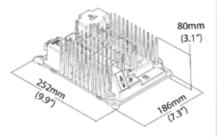
85-270 VAC		
100-240 VAC		
50 / 60 Hz		
7	7,5 A	
7.3 A @ 100 VAC	6.0 A @ 120 VAC	
3.1 A @ 230 VAC	2,9 A @ 240 VAC	
>0.99 @ 120 VAC	>0.98 @ 230 VAC	
	100- 50 / 7.3 A @ 100 VAC 3.1 A @ 230 VAC	

Mechanical		
Dimensions	25.2 x 18.6 x 8 cm (9.9 x 7.3 x 3.1")	
Weight	< 3 kg (< 6.5 lbs)	
AC input connector	IEC320 / C14 (requires country-specific cord)	
DC output connector	M6 threaded fasteners for ring terminals	
Service port	Sealed (IP66) USB 2.0 Host Port (Type A) with dust cover	
Mounting holes	Allows for safe installation on shelf, wall or bulkhead	
Cooling	Normal operation in any orientation with passive cooling	

Features

- Optional CAN bus communication for machine integration or lithium BMS
- Multi-color LED indicator for AC source, battery status, charging, error, fault
- ★ Numeric display for charge profile, alarm/fault codes
- + Field programmable with up to 25 charge profiles
- ★ Auto-recharge for low voltage in maintenance mode
- + OEM customizable, field replaceable cable design
- + Optional carrying handle

Dimensions



Some items may not always be in stock, please check availability with your branch.

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+ NOCO GENIUS BOOST

Battery Jump Starters





1914

- Protects against reverse polarity, sparks, over-charging, over-current, opencircuits and overheating.
- Recharge virtually any USB device (smartphones, tablets).
 Recharge the unit from any USB port or 12V charger included.
- Ultra-bright dual LED flashlight for visibility and with 7 modes, including SOS and emergency strobe.
- Full power to jump start a vehicle a number of times in one charge. Refer to table.





Ultra-compact and powerful lithium-ion battery jump starters with patented safety technology to provide spark-proof connections and reverse polarity protection. NOCO Boost XL Jump Starters holds their charge for over a year, without experiencing any detrimental effects if left uncharged.

NOCO Boost XL Jump Starters are capable of delivering starting currents up to 4,000 Amps. Perfect for jump starting cars, boats, motorcycles, trucks and more up to 10 Litres. And they can power your favourite 12-volt devices (like a tyre pump, power inverter, light and more), and gives up to 500 lumen's of light.

	Volts	Peak Current	LED	Jump start per Charge	12V Supply	Volt Meter	Protective Case	Weight
LVGB20	12	400A	100lm	20 x			LVGBC013	0.95Kg
LVGB40	12	1000A	100lm	20 x			LVGBC013	1.1Kg
LVGB50	12	1500A	200lm	30 x			LVGBC017	1.23Kg
LVGB70	12	2000A	400lm	40 x	✓		LVGBC014	2.26Kg
LVGB150	12	4000A	500lm	80 x	✓	✓	LVGBC015	3.4Kg
LVGB500	12/24	20000A	2200lm	400 x	✓	✓	LVGBC016	8.73Kg

LVGB20

Engines up to 4.0L Petrol.



LVGB40

Engines up to 6.0L Petrol and 3.0L Diesel



LVGB50

Engines up to 7.0L Petrol and 4.5L Diesel



LVGB70

Engines up to 8.0L Petrol and 6.0L Diesel



LVGB150

Engines up to 10.0L +



LVGB500

12 & 24VClass 8+ and CE



LVGC4 POWER ADAPTER

Rapid fast charger with a 4A AC wall outlet to 12V XGC input, compatible with the LVGB70, LVGB150 and LVGB500





Refer to table



09

BATTERY TESTING



CARBON PILE BATTERY LOAD TESTER 12V 500A

LV8102

- Analogue display 0-16V
- · Capacity Range: 100 1000CCA
- · Tests: Batteries, Alternators and Regulators
- 500Amp adjustable load with temperature scale
- Maximum load "ON" time: 20 Seconds
- · Cool down time: 2 minutes
- Buzzer sounds after 15 seconds
- · Colour-coded temperature compensation chart
- Colour-coded separate voltmeter and ammeter
- Heavy duty insulated battery clamps



DIGITAL BATTERY TESTER 12V

LV8110

LV8110 is an accurate digital tester that delivers quick results. It features proven conductance technology and algorithms required for accurate testing.

- · Large easy to read LED Display
- Voltage Range 7.6V 17V
- · Operation Range: 100 1400CCA (SAE)
- Voltmeter mode for testing both the starter and charging system
- Shows available battery CCA at test completion
- · Tests: SAE, DIN, EN, IEC, & JIS Batteries

DIGITAL BATTERY TESTER WITH PRINTER

LV8111

LV8111 is an accurate digital tester that delivers quick results. It features proven conductance technology and algorithms required for accurate testing.

- · Large easy to read LED Display
- · Battery Test: 6V / 12V
- · Alternator Test: 12V
- Starter Test: 12V
- · Operation Range: 50 1400CCA (SAE)
- Voltage Range 7.6V 17V
- Test data can be stored
- Tests: SAE, DIN, EN, IEC, & JIS Batteries





BATTERY TESTING

BATTERY REPLACEMENT RESET TOOL

EQP-061

- · Battery replacement validation
- Display of battery condition
- Display of battery replacement history
- Regenerates Diesel Particulate Filters
- Static Regeneration
- Numerous Systems Covered
- · Supports Vehicles from year 2000 onward
- Directly powered from vehicle
- Easily upgradable software, free for first 3 years.



BATTERY ANALYSER AND PRINTER

EQP-114

The EQP-114 uses the latest Battery testing technology for fast, accurate and consistent results:

- Battery condition and state of charge
- Starter motor earth circuit
- Charging System / Alternator test function
- Customised reports via downloadable software
- · Integrated Printer

MULTIMETER AND INFRARED THERMOMETER

EQP-102

This automotive auto ranging multimeter is suited to the automotive professionals, with features that will assist in their comprehensive electrical testing:

- · 1000V rated that allows the safe use on Hybrids.
- · 18 test functions and 48 ranges.
- Water resistant housing to IP67 standards
- Laser quided infrared temperature sensor
- Hybrid Safe CAT III 1000 volt safety rated
 Milliseconds PW Measures Fuel Injector ON -TIME
- Inductive RPM Readings for DIS and Conventional Ignition



BATTERY TOOLS

Deka

DK05408

CABLE CUTTER
Heavy Duty cutters for up to
AWG 4/0 or 107mm2 cable



DK00256

BATTERY TERMINAL LIFTER Removes the tightest of terminals



DK00197

BATTERY CARRY HANDLE



DK00318

BATTERY FILLER BOTTLE
Automatic shut off that stops
filling once battery has reached
correct level



DK00235

BATTERY PLIERS Essential for hassle-free removal of damaged battery terminal bolts



DK00682

3-WAY CLEAN CUTTING TOOL Removes corrosion and restores posts and cable terminal surfaces



DK03501

BATTERY CARRY HANDLE Multi-adjustable



DK00257

BATTERY FILLER-PUMP Squeeze filler with 15cm spout



DK00231

HYDROMETER - DEKA Standard glass Hydrometer



DK00255

TERMINAL SPREADER
Widens battery terminal



DK00254

POST & TERMINAL CLEANER Cleans SAE posts and matching terminal connections



DK00194 / 551

BATTERY CARRY HANDLE



DK05409

CABLE CRIMPER Heavy Duty crimp tool for up to AWG 4/0 or 107mm2 cable



BATTERY MAINTENANCE

DK04367

SELF FUSING TAPE Red
Fuses upon itself
Forms airtight and waterproof bond
Alternative to Heat Shrink on battery terminals



DK00317

BATTERY PROTECTION KIT



DK01940

TERMINAL PROTECTORS 50 JAR (ANTI-CORROSIVE PADS)

- 25 Red & 25 Black
- Reduces terminal corrosion
- Prolongs battery life



DK01253

TERMINAL PROTECTORS
[ANTI-CORROSIVE PADS]

- Pair Black/Red
- · Reduces terminal corrosion
- · Prolongs battery life

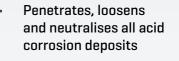


DK04368

SELF FUSING TAPE Black
Fuses upon itself
Forms airtight and waterproof bond
Alternative to Heat Shrink on battery terminals

DK00450

BATTERY TERMINAL CLEANER SPRAY 312gm



Yellow spray turns pink on contact with acid



DK00320

BATTERY TERMINAL PROTECTION SPRAY 285gm

- Resists Battery Corrosion
- · Prolongs battery life



DK00321

BATTERY CLEANER SPRAY WITH ACID INDICATOR 425gm

- · Battery cleaner spray
- Penetrates, loosens and neutralises all acid corrosion deposits.
- Helps eliminate energy loss with regular maintenance.





BATTERY TERMINALS

These high quality solid brass terminals meet the standard for trade workshops. The forged brass terminals ensure strength and quality over the cast terminals in the market.



DKUэччч Universal **Gold Plated Post**

SADDLE TYPE TERMINAL



LV4000BL / LV4011BL Universal STD / Heavy Duty Saddle Type 10mm stud

OUICK DISCONNECT



DK00191 Universal **Designed for Top Post**

SADDLE TYPE TERMINAL



LV4007BL JIS Positive & Negative Pack **Brass Post Pack**

REAR ENTRY BOLT



LV4014BL / LV4015BL 10mm Brass bolt

BOLT TYPE TERMINAL



Positive / Negative Heavy Duty

VT-VZ COMMODORE



LV4017BL / LV4018BL Positive / Negative 8mm Brass Stud

VT-VZ COMMODORE



LV4016BL Positive & Negative Pack 8mm Brass Stud

MARINE TERMINAL

Brass Solderless

LV4006BL

Universal



DK05307 Universal Brass Plated wing nut

MARINE TERMINAL



LV4012BL / LV4013BL Positive / Negative Heavy Duty 10 mm Stud & Steel wing nut

MARINE TERMINAL



LV4002BL / LV4003BL Positive / Negative 8mm Stud & Steel wing nut

MARINE TERMINAL



LV4001BL Positive & Negative Pack 8mm Stud & Steel wing nut



DK00351 Universal Heavy Duty Replacement Side Terminal

SIDE TERMINAL BOLT



DK05304 Replacement Side Terminal bolt

SIDE TERMINAL



DK05323 **OE Replacement Short bolt** 3/8"-16 UNC thread



DK00148 Positive & Negative Epoxy Coated wing nut Set

CONVERSION STUD



DK05318 Universal SAE to 3/8" stud

CONVERSION POSTS



DK05768 / DK05769 Positive / Negative 3/8" Stud to SAE

CONVERSION POSTS



BTL Positive / Negative M6 insert to UT Lead

CONVERSION POSTS



BTSAE-2PK Positive & Negative M6 Insert to SAE Brass

BATTERY CABLE

The complete range of common fast-moving pre-made battery leads are made using quality forged brass battery terminals and electro-tin plated copper 10mm lugs. With high grade oxygen free 32.15mm² copper cable, protected with durable polyolefin heat shrink creating a quality finished product.

LUG TO SAE

Code	Length
LV6500	200mm
LV6501	230mm
LV6502	250mm
LV6503	300mm
LV6504	380mm
LV6506	460mm
LV6508	530mm
LV6510	610mm
LV6512	690mm
LV6513	760mm
LV6516	910mm
	_
0	

LUG TO LUG

	Code	Length	
	LV6580	200mm	
	LV6581	300mm	
	LV6583	380mm	
	LV6585	460mm	
	LV6587	530mm	
	LV6588	610mm	
	LV6592	760mm	
a			
	Code	Length	
	DK04332	200mm	

DK04333

DK04334

SAE TO SAE

	Code	Length	
	LV6530	200mm	
	LV6532	300mm	
	LV6533	380mm	
	LV6535	460mm	
	LV6538	530mm	
62			
-) N		Ω
	RATTERY F	ARTH STRAF)

RALIEKT FAKIH PIKAL

Code	Length
LV6529	200mm
LV6532	230mm
LV6533	250mm

HEAVY DUTY POWER CONNECTORS





50 AMP SERIES APP



LV2400 Grey 50A / 600V LV2404 Red 50A / 600V

175 AMP SERIES

LV2401 Grey 175A / 600V

LV2405 Red 175A / 600V

APP



300mm

380mm

120 AMP SERIES



LV2408 Grey 120A / 600V

APP

350 AMP SERIES



LV2402 Grey 350A / 600V LV2406 Red 350A / 600V

BATTERY MAINTENANCE

BATTERY FILLING SYSTEMS

On-board battery watering systems provide the most convenient and accurate means of filling and maintaining proper battery water levels. Hard to reach batteries are just as easy to fill as batteries on the workbench.

Several batteries can be filled safely and simultaneously from a remote position without ever having to touch a battery or removing a cap. The automatic control valves ensure each cell is closed when the precise level is reached.





Kit Number	Volts	12V	24V	36V	48V	72V	96V
6FS145	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FS250-SC	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FS305-HC	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FSGC	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FSGC-HC	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FSL16	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FSL16-HC	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
6FSGC-DIN	6V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
8FSGC	8V		BG-U24V-6G		BG-U48V-6G	BG-U72V-6A	
8FSGC-HC	8V		BG-U24V-6G		BG-U48V-6G	BG-U72V-6A	
12FS185-HC	12V	BG-U12V-1G	BG-U24V-1G	BG-U36V-1G	BG-U48V-1G	BG-U72V-1G	BG-U96V-1G
12FSGC-HC	12V	BG-U12V-7G	BG-U24V-7G	BG-U24V-7G	BG-U48V-7G	BG-U72V-7G	BG-U96V-7J



BATTERY MAINTENANCE

BATTERY HOLD DOWNS

AC545

Odyssey Bracket PC545



AC1200SM

Odyssey Bracket PC1200



DK00246

UNIVERSAL BATTERY HOLD DOWN Adjustable width: 15cm to 21cm requires Hold Down bolts

Deka



DK00241

HOLD DOWN BOLTS Heavy tempered steel bolts, with wing nuts for quick easy assembly 6 Inch / 152mm

DK00916

HOLD DOWN BOLTS Heavy tempered steel bolts, with wing nuts for quick easy assembly 8 Inch / 203mm

DK00242

HOLD DOWN BOLTS Heavy tempered steel bolts, with wing nuts for quick easy assembly 10 Inch / 254mm



DK00236

Fixed width: 17.5cm Metal construction Excludes J bolts, washers and nuts.



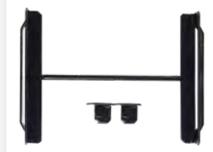
DK00251

Universal Base Mount



DK00250

Adjustable Mount 17.5cm Metal construction Excludes J bolts, washers and nuts.



DK0678

Rubber Hold-down kit includes 2 x 10" J bolts, washers and nuts.



DK09645

Front Base Mount Wedge



DK09646

Side Base Mount Wedge







Snap-Top



+ NOCO **Snap-Top Battery Boxes and Battery Trays**



1914

- Designed with an engineered polymer that maintains its impact properties down to -28.9°C
- Designed with UV inhibitors and colour stabilisers to prevent structure degradation, and colour fading.
- Designed, engineered, and made in the USA.
- Ventilated meets the USA USCG Code of **Federal Regulations** 183.420 and the ABYC's E-10.7 code requirements.
- Impact and UV resistant, plus heavyduty carrying handles.



Please refer to T&C on page 98

NOCO

SNAP-TOP BATTERY BOXES

The NOCO Snap-Top Battery Box is a battery storage solution for Automotive, Marine, and RV batteries. It features locking tabs to fasten the cover securely to the battery case, reinforced plastic handles to prevent cracking during battery relocation, and allows adequate ventilation of battery acid vapours. This rugged battery box maintains its impact properties down to minus 28.9°C, as well as, resistant UV, oil, gas and other contaminants.

LVHM082BK

Group U1



LVHM300BK

Group 24 (NS70/N50ZZ)

LVHM306BK



GC 6 (US2200 / T105)



LVHM318BK

Group 24-31 (N50ZZ-N86)



LVHM327BK

Group 27 (N70ZZ)



BATTERY TRAYS

Extremely rugged, structurally reinforced battery trays that provide uncompromising protection for any battery application. Perfect for installation in a car, truck, tractor, utility vehicle, lawn/garden equipment or generator equipment.

LVBT24

Group 24 (NS70/N50ZZ)



LVBT27

Group 27 (N70ZZ)



LVBT31

Group 24-31 (N50ZZ-N86)





+ NOCO Commercial Battery Boxes





1914

- Designed with an engineered polymer that maintains its impact properties down to -28.9°C
- Designed with UV inhibitors and colour stabilisers to prevent structure degradation, and colour fading.
- Designed, engineered, and made in the USA.
- Ventilated meets the USA USCG Code of Federal Regulations 183.420 and the ABYC's E-10.7 code requirements.
- Large cable entry holes for heavy gauge wires
- Large internal reservoir to collect battery acid.



NOCO

COMMERCIAL BATTERY BOXES

The NOCO Commercial Battery Box is a battery storage solution for Marine, RV and Commercial equipment batteries. It features a four corner fastening system and captive lid for easy installations, large cable entry holes for heavy gauge wires, full flow ventilation for releasing battery gasses, and a large battery acid reservoir. Its rugged, rotationally moulded design provides ultimate protection in low-temperature environments and protects against UV, oil, gas and other contaminants.

LVHM462 Dual Group L16 (x 2) Dual Group GC6 (x 2) Group 4D (N150)

LVHM484

Group 8D (N200)



LVHM485

Dual 8D (N200 x 2)



Please refer to T&C on page 98

SPECIFICATION TABLE KEY



COMMERCIAL #

★ MARINE

™ MOTORBIKE

POWERSPORT

₽ RV

CARAVAN

CLEANING

🚂 MOTIVE

EWP

GOLF

₩ MOBILITY

RENEWABLE

LAWN & GARDEN

RACING

💂 TRAIN

FIRE & SECURITY

FOUR-BY-FOUR

CCA (Cold Cranking Amps)

Internationally recognised SAE Cold Cranking Performance test. CCA Rating represents the number of amps that a new fully charged battery at - 18°C can deliver for 30 seconds while maintaining a voltage of 1.2V per cell or more. NOTE: This is the measurement of a batteries ability to start engines.

EN (European Norm)

Tested at -18°C for 10 seconds while maintaining voltage equals or greater to 7.5V. Additionally, after a rest of 10 seconds the battery is subject to another test to maintain a voltage greater or equal to 6.0V for 90 seconds at a current 60% of the initial test. EN ratings will always show slightly lower than CCA rating.

Ah (Ampere Hours)

Ah C20, unit of capacity that is calculated by multiplying the current in amps that the battery can deliver for 20 hours at 25°C to 10.5 volts for a 12 volt battery.

Ah C10, unit of capacity that is calculated by multiplying the current in amps that the battery can deliver for 10 hours at 25°C to 10.5 volts for a 12 volt battery.

MCA (Marine Cranking Amps) & CA (Cranking Amps)

Internationally recognised SAE Marine Cranking Performance test. MCA or CA Rating represents the number of amps that a new fully charged battery at 0°C can deliver for 30 seconds while maintaining a voltage of 1.2V per cell or more. NOTE: This is the measurement of a batteries ability to start engines in a marine environment.

Res Cap (Reserve Capacity)

This rating is the time in minutes that a new fully charged battery can supply a current of 25 Amps and maintain a terminal voltage above 10.5v for a 12v battery and 5.25v for a 6v battery. NOTE: This represents the approximate time that a vehicle will run with a night time electrical load should its engine charging system fail.

Battery Measurements

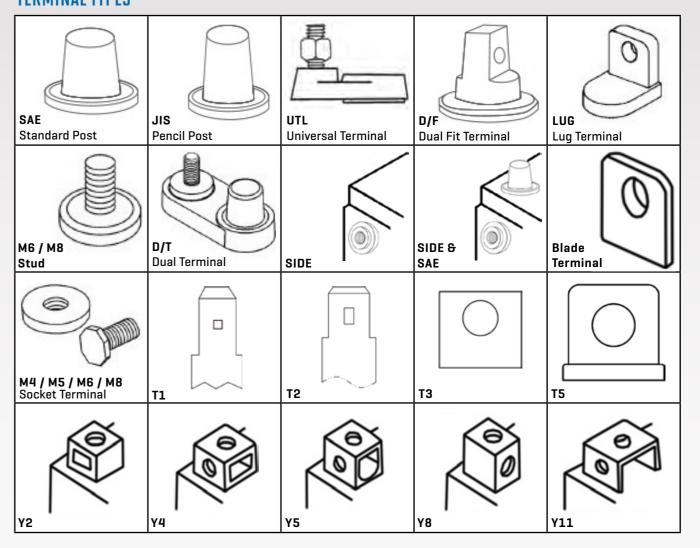
(L x W x TH) are taken at the extremities of the battery including hold downs and handles. Box height is to the upper mounting surface and total box height includes posts, caps or highest extremity.

BHD (Battery Hold Down)

Hold Down Ledge



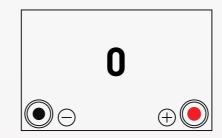
TECHNICAL INFORMATION TERMINAL TYPES

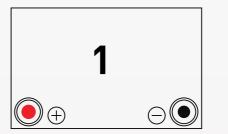


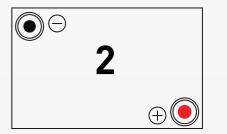
LAYOUT

Terminal Configuration

Check for correct polarity when fitting a battery.













CARE & MAINTENANCE OF DEEP CYCLE BATTERIES

- New batteries should be given a full charge before use.
- New deep cycle batteries need to be cycled several times before reaching full capacity (50-125 cycles, depending on type).
 Capacity will be limited during this period.
- Battery cables should be intact, and the connectors kept tight at all times. Always use insulated tools to avoid shorting battery terminals. Regular inspection is recommended.
- Vent caps should be correctly installed and tight during vehicle operation and battery charging.
- Batteries should be kept clean and free of dirt and corrosion at all times.
- Batteries should always
 be watered after charging
 unless plates are exposed
 before charging. If exposed,
 plates should be covered
 by approximately 3mm of
 electrolyte (add distilled water
 only). Check electrolyte level
 after charge. The electrolyte level
 should be kept 6mm below the
 bottom of the fill well in the cell
 cover.
- Water used to replenish batteries should be distilled or treated not to exceed 200 T.D.S. (total dissolved solids...parts per million). Particular care should be taken to avoid metallic contamination (iron).
- For best battery life, batteries should not be discharged below 80% of their rated capacity.
 Proper battery sizing will help avoid excessive discharge.
- Battery chargers should be matched to fully charge batteries in an eight hour period. Defective and unmatched chargers will damage batteries or severely reduce their performance.
- Avoid charging at temperatures above 48°C or ambient, whichever is higher.
- As batteries age, their maintenance requirements change. This means longer charging time and/or higher

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- finish rate (higher amperage at the end of the charge). Usually older batteries need to be watered more often as their capacity decreases.
- Deep cycle batteries need to be equalised periodically. Equalising is an extended, low current charge performed after the normal charge cycle. This extra charge helps keep all cells in balance. Actively used batteries should be equalised once per month. Manually timed charger should have the charge time extended approximately 3 hours. Automatically controlled charger should be unplugged and reconnected after completing a charge.
- In situations where multiple batteries are connected in series, parallel or series/parallel, replacement battery(s) should be of the same size, age and usage level as the companion batteries. Do not put a new battery into a pack which has 50 or more cycles. Either replace with all new or use a good used battery(s).
- Periodic battery testing is an important preventative maintenance procedure. Hydrometer readings of each cell (fully charged) gives an indication of balance and true charge level. Imbalance could mean the need for equalising; is often a sign of improper charging or a bad cell. Voltage checks (open circuit, charged and discharged) can locate a bad battery or weak battery. Load testing will pick out a bad battery when other methods fail. A weak battery will cause premature failure of companion batteries.

- Always use a matched charger and battery pack system. Unmatched chargers will cause potential problems.
- Lead acid batteries should be brought up to full charge at the earliest opportunity. Avoid continuously operating batteries in a partially charged condition. This will shorten their life and reduce their capacity.
- Extreme temperatures can substantially affect battery performance and charging. Cold reduces battery capacity and retards charging. Heat increases water usage and can result in overcharging. Very high temperatures can cause "thermal run-away" which may lead to an explosion or fire. If extreme temperature is an unavoidable part of an application, consult a battery/charger specialist about ways to deal with the problem.
- Inactivity can be extremely harmful to all lead acid batteries.
 If seasonal use is anticipated, we recommend the following:
- A Completely charge the battery before storing.
- B Remove all electrical connections from the battery, including series/parallel connectors.
- C Store the battery in as cool a place as possible. However, do not store in a location which will consistently be below 0°C. Batteries will discharge when stored, the lower the temperature the lower the self discharge.
- D When not in use, boost every two months.



TECHNICAL INFORMATION

CARE & MAINTENANCE OF DEEP CYCLE BATTERIES

ADDITIONAL POINTS WORTH CONSIDERING

As mentioned previously, charging of lead acid batteries to fully charged generally takes between 6 and 8 hours but 80% to 90% of charge can be returned in much shorter times. In practice house batteries in boats rarely become fully charged while in use on the water. If the batteries are not periodically taken to a full charged state (say every two to three months) a portion of the capacity is permanently lost. Correct maintenance practices must be followed.

The higher the battery capacity of a battery the greater the ability of the battery to absorb power. This is another reason why correct battery sizing is critical.

Alternator sizing is also very important and sized according to the desired charging time. For example a boat with a daily power consumption of 80 ampere hours, a 220 ampere hour battery and a 80 amp output alternator would require approximately 1.25 hours of charging time. Obviously batteries

are not 100% efficient and typically absorb between 85% and 90% of the capacity provided by the alternator. Whilst some manufacturers make claims of superior efficiency in practice these differences have no effect. If measurements were made of this system the batteries would operate between 40% and 85% of state of charge. The final 15% of charge can only be "trickled" in and takes several hours.

Care should be taken when working around batteries, particularly when they are on charge of have recently been charged. Batteries emit explosive gases which if ignited can cause serious injury, particularly to the eyes. Safety glasses should be worn at all times when working on or around batteries.

When doing the design for a new installation, or the addition of accessories in an existing boat, it is advisable to take into account possible additions of electrical load. For example if you are considering putting a microwave

oven on your boat at some stage in the future consideration to the increased load should be made. This may be in the form of allowing for an additional battery bank to be added (say in parallel to the existing one) and also alternator size wherever possible. The addition of an accessory which significantly increases the load on the batteries and charging may stress the system to such an extent that problems will arise. This could be likened to increasing your engine size by say 30% and using the same diameter propeller shaft. You may be able to do this if the original shaft was heavy enough in the first place.

Charging voltages are critical. Small differences in charging voltages (as low as 0.4 V) can have significant effects. This easily understood when remembering that the voltage rise. which causes charging current to flow, is very low. A 50% discharged battery has a terminal voltage of around 12.2 V. A charging voltage of 14.0 V represents 1.8 V rise. A charging voltage of 14.6 volts (the recommended for flooded deep cycle batteries) provides a rise of 2.4 volts. This is 33% higher than that which is provided by the lower charging voltage. Charging current is proportionally higher and charging time using the higher charging voltage is significantly reduced.

The 14.6 volt charge rate setting also induces gassing within the cells which mixes the electrolyte. Stratification of the electrolyte occurs when charging and discharging of the battery takes place. Discharge produces water which is lighter and floats to the top. Charging produces acid which is heavier and tends to sink to the bottom. Most common cause of poor battery performance is insufficient charging voltages. Lower recharge voltages often result in shortened battery life.

Deep Cycle Calculator	12 Volt System				
	Number	Watts	Amps	Hrs/Day	A/Hrs/day
Saloon LED Lights	5	3	1.3	3	3.8
Cockpit LED Lights			0.0		0.0
Fwd Cabin LED Lights			0.0		0.0
Fresh Water Pump	1	50	4.2	4	16.7
VHF	1	5	0.4	0.5	0.2
Log/Depth	0	10	0.0	8	0.0
Stereo/CD	1	30	2.5	8	20.0
Fridge - Electric	1	8	0.7	24	16.0
Total Daily Ampere Hour Usage					56.6
Minimum Battery Capacity Requir	ed		Factor	2.5	141.6
			Factor	3	169.9
Circuits with Engine Running					
GPS	1	20	1.7	1	1.7
Total Running Load	1	20	1.7		1.7
Solar	1	20	1.7	6	10.0
Total Renewable Energy					10.0
Engine Running Time					
Ampere Hour required			56.6		
Alternator Output			60		
Running Load			1.7		
Charging Amps Available			58.33333333		
Renewable Energy			10.0		
Charging Hours required			1.0		

Sharging Hours required 1.0

VEHICLE BATTERY REPLACEMENT SAFETY INSTRUCTIONS

GFNFRA

These safety instructions are to be observed when handling the battery. When working on the battery, start by reading the vehicle's operating manual and follow the guidelines it sets out. Keep these safety instructions with the vehicle's operating manual.

Installation should only be done by suitably qualified and trained personnel.

Ensure that the new battery is a suitable replacement, verify the specifications including the Cold Cranking Amps (CCA), the Amp Hours and the Reserve Capacity.

Additionally, a conventional flooded battery may not be suitable for some of these vehicles and they may require technology such as an Absorbed Glass Mat (AGM) or an Enhanced Flooded (EFB). Installing the incorrect battery and incorrect vehicle programming may void the battery warranty and potentially damage the vehicle.

It is becoming increasing common that fitting new batteries to certain modern vehicles requires the OBD (Electronic Codes) error codes to be reset and the new battery be registered on the vehicle so full functionality can be regained on the vehicle. The internal car systems such as airbags, sensors and other comfort functions may require recalibrating.

For such cars it is advisable to let the battery replacement be handled by a professional workshop.

FIRST AID

If acid comes into contact with the eyes, rinse for several minutes with clear water before seeking immediate medical attention. If acid is swallowed, consult a doctor immediately. Should acid get on skin or clothing, neutralise straight away using soapsuds or an acid neutraliser and then rinse thoroughly with water.

PRECAUTIONS

- Prohibit smoking and naked flames in the vicinity of the battery.
- Do not wear metallic objects, such as jewellery, while working on batteries.
- Do not store non insulated tools in pockets or tool belt while working in the vicinity of the battery.

RECOMMENDED PPE

- Safety glasses with side shields, goggles or face shields are appropriate.
- Electrically insulated gloves that are appropriate for the installation.
- Protective aprons and safety shoes.
- Eye wash facility within the vicinity for rinsing eyes and skin in case of contact with acid electrolyte.
- Class C fire extinguisher.
- Acid neutralising agent.
- Adequately insulated tools.
- Lifting devices of adequate capacity, when required.

REPLACING THE BATTERY

NB: Interruptions to the power supply may cause electrical devices to malfunction.

- Only install batteries that have been sufficiently charged, i.e. with a minimum terminal voltage of 12.5V to 12.7V.
- Switch off the engine and all electrical devices prior to removing the battery.
- When removing the battery, disconnect the negative terminal before the positive terminal.
- When removing the battery:
- Never lift a battery by the terminal posts.
- Always lift the battery by the bottom or by the handles.
- Take care when handling the battery as it is heavy and may require two people to safely remove.
- The old battery may be contaminated with residual sulphuric acid. Deka DK00450 can be used to identify acid contamination, the yellow spray turns pink when it encounters acid.

- Check the battery compartment for corrosion. Also thoroughly inspect the brackets for rust and damage. Clean the battery compartment and repair as necessary. Corrosion in the area of the battery can indicate leaked battery acid. In this case a workshop should investigate the reason for this.
- Clean the battery terminals and terminal connectors, as this causes increased contact resistance and therefore considerable malfunctions or premature battery failure. Treat the terminals with Battery Terminal Protection Spray. Refer to our range of Deka Battery Maintenance products on page 71.
- Take parts such as terminal covers and the terminal clamp holder from the previous battery, inspect for damage and connect as before.
 Replace if needed. Refer to the Federal Battery range of battery holddowns on page 75.
- Take care that the battery is properly seated on installation. Tighten the hold-down clamps with a torque wrench. The correct torque can be found in the vehicle manual.
- When installing the new battery, connect the positive terminal before the negative terminal. Ensure that the terminal clamps are firmly fitted in order to eliminate contact interruptions due to vibrations.
 When connecting the terminal clamps, care must also be taken that the battery terminals are not damaged by torsion or other mechanical stresses.
- If applicable, ensure that the battery vent tube is not damaged and has been reinserted into the battery vent outlet.
- Recalibrate vehicle as per vehicle manufacturer's instructions.

DISPOSAL OF OLD BATTERY

Car batteries are hazardous waste and do not belong in domestic garbage. Battery resellers, workshops and recycling centres usually accept old batteries. Did you know that 99% of a battery can be recycled. This recycling system prevents pollution of the environment.

TECHNICAL INFORMATION

BATTERY TYPES

INTRODUCTION

Lead Acid batteries fall into two main categories, Flooded and Valve Regulated. Flooded batteries include, Low Maintenance (the most common type) and Maintenance Free. Low maintenance batteries require periodic checking and topping of the electrolyte levels in each cell. Valve regulated batteries come in the form of Gelled Electrolyte and Absorbed Glass Mat (AGM).

MARINE ENGINE START

To start an engine, high current delivery for a short duration is required. Typically, to start an engine, only approximately 1% of the battery capacity is used. Engine Starting batteries are constructed specifically to meet this demand. A larger number of thinner plates are used as the current output is effected by plate surface area. Plates are constructed so the acid can more easily mix with the active material that produces the current during starting.

DEEP CYCLE

Deep Cycle batteries are required to provide a lower level of current output for a much longer duration to a deeper level of discharge than an engine starting battery. If you were to regularly discharge an engine starting battery to 50% of its capacity (called 50% DoD – Depth of Discharge) the battery

would only provide a relatively low number of discharges (cycles) before the plates would deteriorate and the battery would fail. Deep Cycle batteries are made of thicker plates with a more dense active material which resists this deterioration. Different separators are used along with the anti-vibration construction found in Endurant Marine Batteries. With these features, the battery can withstand the potentially damaging effects of continual deep discharge and recharge.

VRLA GEL BATTERIES

Sealed, Valve-Regulated (SVR) Gelled-electrolyte batteries offer many significant advantages over conventional "flooded" batteries. Gel batteries are spill proof and leak proof, and resist overdischarges that can shorten the life of the battery. Gel batteries have a self-discharge rate of less than 1% per month (20°C). They provide ample cranking amperage for quick, sure starts. Their SVR design minimises gassing, making them safe to install around people and sensitive electronic equipment. Gel batteries offer a viable alternative when you can only choose one battery. Gel batteries are maintenance free.

Charging for long life, always use a good, constant potential, voltage-regulated charger. For 12V batteries, (charge to at least 13.8V but NO MORE THAN 14.6V @ 20°C, for 6v batteries, charge to at least 6.9V but NO MORE THAN 7.3V @ 20°C. Do not charge in a sealed container. For Sealed Lead Acid Gels please follow battery side label voltage information. Please note that the Gel battery charging specification has increased from previous model Gel batteries sold prior to 2012.

VRLA AGM BATTERIES

Sealed, Valve-Regulated (SVR)

Absorbed Glass Mat (AGM) batteries use special absorbed electrolyte technology that is superior to flooded lead-acid batteries. Fine, highly porous micro fibre glass separators absorb the electrolyte, increasing efficiency by lowering internal resistance and boosting capacity. Lower internal resistance also means AGM batteries can be recharged faster than conventional batteries, allowing the user to put them back into operation sooner. The completely sealed, valveregulated AGM battery minimises gas emissions and acid leakage for longer and safer battery operation. AGM batteries are also completely maintenance free. Charging: Use a quality, constant potential, voltage-regulated charger. For 12V AGM batteries, charge to at least 14.4V, but no more than 14.6V at 20°C). Do not charge in a sealed

container.

OPEN CIRCUIT VOLTAGE VS. STATE OF CHARGE COMPARISON

Charge	Silver Calcium	Flooded Calcium/Calcium	Flooded Lead Antimony	Gel	AGM
100	12.80V	12.80V	12.65V	12.70-12.80V	12.80-12.90V
75	12.65V	12.65V	12.45V	12.65V	12.60V
50	12.44V	12.44V	12.24V	12.35V	12.30V
25	12.19V	12.19V	12.06V	12.00V	12.00V
Ω	11.97V or less	11.97V or less	11.89V or less	11.80V	11.80V

Notes:

- 1. Divide the values in half for 6V batteries
- 2. Endurant Commercial Calcium/Calcium batteries have a fully charged voltage of 12.65V 12.70V

The "True" O.C.V. (Open Circuit Voltage) of a battery can only be determined after the battery has been removed from the load (charge or discharge) for 24 hours.

MARINE & HOUSEBANK SIZING

GENERAL

Sizing of marine batteries is critical to the performance of electrical items on any vessel. Insufficient capacity results in systems failure, poor battery performance and shortened battery life. Excessive capacity results in unnecessary weight, cost and space usage.

To ascertain the correct battery size a simple arithmetic calculation of power usage of each electrical accessory between charging periods (usually daily) is required. From this a calculation of current each accessory uses (amps) multiplied by the duration of use (hrs) gives the ampere hour consumption of the vessel. Ampere hours is the unit of measurement of battery capacity.

It is a characteristic of lead acid batteries that regular discharges below 50% of capacity will result in a disproportionate reduction in life. When a battery is discharged, up to 85% of capacity can be restored relatively quickly. The remaining 15% required to bring the battery to full charge has to be "trickled" in at relatively low current rates resulting in a full charge time from, say, 50% depth of discharge (DoD), of around 6 to 8 hours. Therefore the best workable capacity results from a battery bank which is 2.5 to 3 times the daily consumption. It is commonly recommended that capacities should be twice daily usage but this sizing results in discharges well below 50% and a significantly shorter recharge time because a larger battery can absorb greater ampere hours before the regulating voltage control causes a tapering down of the charging current.

Remembering that a battery simply stores power it is obvious that the charging capacity coupled with the number of charging hours is equally as critical to good battery performance. Insufficient charging system output or insufficient charging time will result in system

failure. If a battery is operated at low levels of charge the battery efficiency is reduced. Failure to periodically bring the battery to full charge will result in reduced battery performance possibly to the point of failure.

THE BATTERY SIZING CALCULATION

Using the worksheets we have available for download at www. federalbatteries.com.au, list all of the electrical accessories on the boat. Include either the current draw in amps of the power usage expressed in watts. This information can be obtained from the specifications contained in the appliance instruction book or from the supplier. Take care to ensure that the true position is indicated. For example, you may have six lights on your boat but realistically only use three at any one time.

Because the battery capacity is expressed in Ampere/hours we need to convert any wattage figures into amps of load. This is simply done by dividing the watts by the system voltage. For example a 12 volt 100 watt spotlight consumes 8.5 amps. 100 divided by 12 equals 8.5.

When extending the figures into the "A/hrs/day" column, only extend the circuits which apply when the boat is at rest or when the engine is not running. For example the electric clutch on and engine driven compressor drawing eight amps would not be included as the current draw stops when the engine is turned off. However, these current demands need to be taken into account when calculating the available charging current and should be deducted from the alternator output.

Once all of the accessories have been included and their individual consumption calculated, simply add the right hand column. This will provide you with the power

usage. From this the battery capacity is established. The power usage calculated should represent between 33% and 40% of the total battery capacity. Please note, whilst this is generally a "daily" figure, individuals may decide that they only wish to run their charging system once every three days. This is possible provided the calculations reflect the number of hours of usage between charges.

ALTERNATOR SIZING & CHARGING TIMES

Selection of an alternator with an output equal to the daily ampere hour load would result in a required running time of approximately 1.25 hours per day provided the charging voltage is no less than 14.4 volts and the battery capacity is at least 2.5 times the daily a/hr usage. The use of alternators which have a higher output than the daily a/hr usage will reduce engine running time but only within limits unless a larger battery capacity is fitted.

To calculate the required engine running time you can take the daily a/hr usage and divide by the alternator size and multiply by 1.2. Example: 100 A/Hrs per day/80 amp alternator = 1.25 * 1.2 = 1.5hrs.



TECHNICAL INFORMATION

CHARGING & EQUALISATION

1. CHARGING - FLOODED TYPES

- A. Deep Cycle Batteries in a cycling application require a recharging voltage of 2.43 to 2.45 volts per cell. This is 14.6/14.7 volts for a 12 volt nominal installation and 29.2/29.4 volts in a 24 volt site.
- B. To fully recharge the cells this charging voltage needs to be applied until the charging current tapers to approximately 3% of the total capacity of the battery. E.g. A 220amp/hr bank is considered to be fully charged when the charging current reaches 8 to 10 amps with a charging voltage of 2.43 to 2.45 volts per cell.
- C. It is not necessary to fully charge the batteries after each cycle. If the batteries are working hard then a maximum discharge level of 60% (leaving 40%) for using true Industrial Deep Cycle Batteries you will still achieve a reasonable life. However this is not the recommended depth of discharge for every cycle, which is 50%, but occasional discharges to 60% is acceptable. A recharge back up to 80% to 85% after each cycle is also acceptable provided the cells are fully charged every 4 to 6 weeks. Regular very deep discharges to 80% will result in a reduced battery performance and a reduced life. Both of these systems are the result of high levels of lead sulphate, which diminish the batteries charge acceptance and cause premature positive plate failure.
- D. This recharge should result in some gassing (to mix the electrolyte) and hydrometer levels should be restored to the fully charged state.
- E. During partial recharge (to 80%) only a slight rise in electrolyte temperature should be detected. This would be of the order of 5 °C. A full recharge should see a maximum temperature rise of 10 °C.

- 3. EQUALISATION CHARGE
- A. Equalisation charges may be necessary as it is common in lead acid batteries for cell capacities to vary which results in an increasing difference between the state of charge of independent cells within the battery and a corresponding variation in SG readings. deterioration is often less than the
 - B. Equalisation charge is a form of over charge which, when applied allows the flatter cells to catch up.
- temperature compensated. That C. Effectively the charging takes the form of a current limited is, as the battery temperature charge with a higher voltage raises the charging voltage needs setting. This results in a to be reduced. Most modern continuation of the charge quality regulated chargers are through the battery even when temperature compensated. some cells reach a fully charged H. Care should be taken when state and their voltage rises. working around batteries on This allows the remaining cells charge or when recently charged to continue to receive charge.
 - may be present which, if ignited D. Equalisation charging voltages are of the order of 2.6 to 2.7 volts per cell with the current ideally limited to 10% of the C10 rating of the cells.
 - E. During Equalisation charges, high levels of gas will be emitted. Ventilation of the surrounding area is essential. Eye-wear protection must be worn and care to avoid sparks of flames should be taken.

2. DISCHARGING

A. Discharge levels should be as per section 1.C.

to levels of hydrogen and oxygen

dangerous explosion. The wearing

by a mere spark, can cause a

of eye protection is essential.

F. Once the battery is fully charged

and 26.8 to 27.0 for 24volt).

This is called a "Float" charge.

However it is worth noting that

this float charge does cause some

deterioration in the cells but this

damage caused by the batteries

being left in an under charged

G. All charging voltages need to be

state.

it can be maintained by applying

a charging voltage of 2.24 to 2.25

volts per cell (13.4-13.5 for 12volt



Please note whilst every endeavour has been made to ensure the correctness of the products and specifications shown within this specification booklet, Federal Batteries cannot accept responsibility for errors contained within. Performance ratings are supplied by the

manufactures of the product. Methods of testing are up to world standards and are in line with normal battery industry procedures. Products and specifications are subject to change without notification.

AN UNDERSTANDING OF THE NEW GENERATION OF BATTERY TECHNOLOGY FITTED TO MODERN DAY CARS & THE NEED TO REPLACE WITH EQUIVALENT TECHNOLOGY.

BACKGROUND

With the current increasing global warming issues, the environmental pressures on vehicle manufacturers to reduce their vehicle exhaust carbon dioxide emissions alongside improve fuel economy has been reinforced with EU Legislation. This new EU legislation on emissions targets which were passed in 2009 have committed vehicle manufacturers to cut average CO2 emissions from new cars to 130g/km by 2015 and 95g/km by 2020.

Various methods are being used to influence the vehicle manufacturers to reduce their emissions, from increased costs of vehicle duty, increased fuel taxation, increased frequency of inner city road toll charges and other costs on high emission vehicles through to be introduced government introduced "Showroom tax" on new vehicles proposed to be increased over forthcoming years based on fleet average emissions of vehicles made by the particular manufacturer.

REVIEW OF REQUIREMENTS

 It is clear from the above changes in vehicle technology, that the battery is becoming a critical component in ensuring that the new eco – initiatives will deliver the fuel and CO2 saving needed by the legislation.

- Battery Technologies have been developed over recent years to meet the increasing demands of the vehicle now entering the aftermarket. It should hopefully be clear that it is impossible to expect the current day standard flooded lead acid battery to meet the requirement of Stop Start and Micro hybrid 2 and 3 fitted vehicles. In the after-market, It is therefore essential to replace the manufacturer specified battery with that of the same or increased technology.
- The fitting of a standard battery to a Start-Stop only vehicle will result in a significantly lower life and also increased likelihood that the battery will go flat in service and it will be unable to recover sufficiently during its residual driving cycles.
- The fitting of a standard battery to a Alternator Management and Brake Energy Recovery, will again lead to a major reduction in expected life and an even greater chance of the battery repeatedly going flat in service and the charge acceptance of the battery is even more critical to ensure that the battery can accept the available current from the alternator and the brake regeneration.

BATTERY TECHNOLOGIES

The constant requirement for more efficient, cleaner and technologically advanced vehicles means that the introduction and development of vehicles featuring these systems will have increased to approximately 70-80% of all vehicles produced in Europe by 2015 (over 30 million vehicles within the EU alone) as the EU legalisation starts to bite the vehicle manufacturers sales verses competitors who have invested and gained the fuel and emission savings.

For volume productions cars, two advanced development modifications of the Lead Acid battery are currently being installed onto the first generation of vehicles (volume introduction starting back in 2008/09).

- For high performance vehicles, with advanced Start-Stop functionality with alternator/brake energy recovery, AGM technology is used
- For Entry level Start-Stop vehicles (usually where fuel emission/CO2 saving requirements are less) a more cost effective solution based on an improved flooded design (being recognised in the market as EFB)

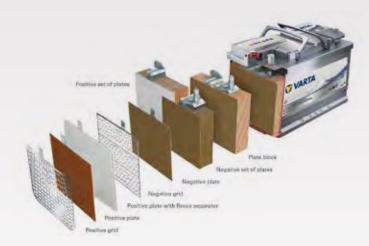
VARTA VARTA VARTA VARTA VARTA VARTA VARTA VARTA VARTA VIETBA-A VIE

TECHNICAL INFORMATION

UNDERSTANDING OF TECHNOLOGY
1: AGM (ABSORBED GLASS MAT)

The AGM battery shares a few design technologies with the traditional flooded battery but additional features from Industrial and Motorcycle batteries such as:

- Fully sealed and leak proof
- VRLA "recombinant" technology
- Calcium/calcium plates



THE AGM BATTERY HAS UNIQUE FEATURES THAT DIFFERENTIATE IT FROM THE TRADITIONAL FLOODED BATTERY DRAMATICALLY INCREASING ITS ALL-ROUND PERFORMANCE IN AN AUTOMOTIVE APPLICATION.

These include:

- AGM separators between plates to retain the electrolyte in the ideal position for discharge and recharge chemical reaction to take place
- Electrolyte starved cells with no free reservoir of acid above the plate level
- Anti-spill with no acid leakage even if the battery case is damaged
- Extremely low self-discharge rates when compared to conventional flooded type
- High levels of vibration resistance and durability due to high cell pack pressures
- Increased plate numbers per cell, larger plates, increased operating pressures and higher levels of purer lead when compared to conventional flooded give a low internal resistance resulting in much reduced discharge and recharge times.
- The ability to operate the battery at high pack pressures significantly improves cyclic durability of the battery (with a flooded battery, higher pack pressures leads to acid being forced out from between the plates and the battery dying due to lack of acid to maintain the chemical charge/discharge
- As all the acid is held between the plates, the AGM battery does not suffer as much in lower states of charge from what is called acid starvation, which in a standard lead acid battery can lead to the acid strength increasing between the plates and increasing the rates of corrosion and life of the battery.

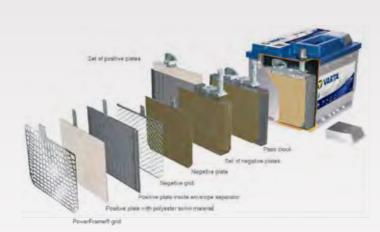
BENEFITS OF AGM OVER STANDARD FLOODED BATTERIES

- Typically increased cold cranking power by 30-40% over standard flooded battery enabling faster engine cranking speeds and lower CO2 emissions.
- Cycle Life endurance at deep discharge (50% DOD) typically 3-6x of standard after-market flooded battery.
- Cyclic operation in partial state of charge (50%)- Original AGM product 3-5x that of standard after-market, 2013 model year vehicles up to 8-12 x that of standard battery.
- Maintenance of dynamic charge acceptance (DCA) currently up to 3x that of standard flooded battery.
- (DCA ability to accept charge immediately after restarting engine and from energy from brake recovery)

UNDERSTANDING OF TECHNOLOGY 2: IMPROVED FLOODED (EFB) TECHNOLOGY

The improved flooded battery (increasing known as EFB technology in the market) is based on an improved flooded battery design with increased cyclic durability and improved ability to accept charge current by various changes to battery construction.

The EFB technology offers a cost effective solution for entry level vehicles, where the batteries are not operating across such a low range of battery state of charge as AGM, this is due to the vehicle manufacturer having to reduce his vehicle emissions by a lower amount to meet the EU targets, as the base line vehicles already have a lower emission level than the high performance vehicles where an AGM battery is required.



BENEFITS OF EFB OVER STANDARD FLOODED

- Typically increased cold cranking power by 15-20% over standard flooded battery enabling faster engine cranking and starting and lower C2 emission.
- Cyclic durability endurance at deep discharge (50% DOD) typically 2-4x than of standard after-market battery
- Cyclic operation in partial state of charge (50%) typical 2-3x that of standard flooded battery.
- Maintenance of dynamic charge acceptance currently up to 2x that of standard flooded battery.

COST IMPLICATIONS & DANGERS

Due to the increase in performance, higher production costs and unique characteristics of AGM batteries battery care, replacement battery sales, controlling battery warranty claims and enhancing customer satisfaction become more important.

When installed on the vehicle AGM battery charging voltages are the same as for any standard battery with no need for any special adjustments to the charging system. This is due the extremely low internal resistance of the battery which results in almost no heating of the battery even under heavy charge and discharge currents.

Due to the extremely low internal resistance of AGM batteries and acid specified for the vehicle is an AGM and discharge time it is essential when charging off the vehicle that the correct type of equipment is

Constant current or boost chargers must not be used as this will result

- Heating of the battery
- Boiling of the electrolyte
- Increased internal battery pressure
- Loss of recombinant gases to the atmosphere through the Pressure Relief Valve
- · Drying out of the battery

All of these factors will greatly reduce the lifespan and performance of the battery and cannot be rectified due to the sealed VRLA design.

REPLACEMENT BATTERY SALES

Due to the high retail cost of a replacement AGM battery, retailers may encounter customer resistance to the compulsory purchase of an AGM over conventional flooded or EFB types based on the level of technology on their vehicle.

If the battery application guide stipulates that the only battery type starved design and reduced charging then an AGM type is the only battery that is fit for purpose on that vehicle. Installation of a conventional flooded or EFB type over an AGM battery will result in premature battery failure due to:

- Excessive battery cycling as conventional and EFB type batteries have significantly lower cycling specifications.
- Plate damage caused by high depths of discharge which conventional or EFB batteries are not designed to support.
- Accelerated loss of battery plate surface area and resultant capacity which can be as much as 16% in the first week of service.

TECHNICAL INFORMATION

CONCLUSION

- To achieve the emission and fuel savings designed into the vehicle by the OE Manufacturer, it is essential that a battery originally fitted with an AGM battery should be replaced with an AGM battery of equivalent quality and design.
- The fitting of a standard flooded or EFB battery, even with the more attractive initial purchase price will quickly lead to loss of Micro hybrid functionality on the vehicle, seen by loss of increased emissions and increase fuel economy and early failure of the battery. This is likely to be seen very quickly by the battery going flat or over cycled.
- A standard flooded battery should not be fitted to these vehicles.
- The same applies to vehicles fitted originally with EFB Technology; it is essential that the battery is replaced with an equivalent quality EFB battery (or higher specification AGM battery if recommended by the battery manufacturer).
- A standard flooded battery should not be fitted to these vehicles.

GENERAL COMMENT

It is becoming increasing common that fitting new batteries to "Micro hybrid" fitted (Start-Stop) vehicles requires the OBD (Electronic Codes) error codes to be reset and new battery registered on the vehicle so full functionality can be regained on the vehicle.

Whether the vehicle requires such coding, such be advised by the retailer of the battery at the time of purchase. The vendor should be required to advise customer how and where the reprogramming of the vehicle can be carried out, giving the customer the option to find his own garage to carry this out, but noting that the battery was clearly sold with advice only but with the vehicle not being reprogrammed by the retailer. (Not recommended supply option by battery manufacturer).



Warranty & Customer Satisfaction

The higher numbers of these vehicle types on our roads will therefore mean an increase in AGM and EFB battery sales and conversely a reduction in the sale of conventional flooded types. With this in mind it becomes very important for battery retailers to understand the technology behind AGM, the special requirements placed on the battery and the consequences of supplying batteries unsuitable for application.

If EFB or conventional flooded type batteries are supplied in place of specified AGM types they will almost definitely fail a short time after the start of the battery warranty period. This situation results in

increased false warranty claims and loss of customer satisfaction.

It is therefore essential that battery retailers understand the technological reasons for the correct application of AGM batteries and the consequences of fitting batteries such as EFB or conventional flooded that are not fit for purpose.

Using this information, battery retailers can make customers fully aware of the reasons for the high cost of AGM batteries and the technological and performance limits of other battery types that will affect the performance of their vehicle and potentially result in expensive recovery or repair costs.

BATTERY CROSS REFERENCE

AUTOMOTIVE BATTERIES

REPLACE WITH

AUTOMOTIVE DATTERIES				REPLACE WIT		
CASE	DELKOR	CENTURY	SUPERCHARGE	VARTA	DEKA	ENDURANT
NS40	NS40ZMF	NS40Z MF NS40ZX MF	MF40B20 SMFNS40ZX			NS40ZMF
NS40L	NS40ZLMF	NS40ZL MF NS40ZLX MF	MF40B20L SMFNS40ZLX			NS40ZLMF
NS40A	NS40-330D	NS40ZS MF NS40ZSX MF	MF40B20ZA SMFNS40ZAX			NS40-330DMF
NS40ZAL	NS40ZLSMF	NS40ZLS MF NS40ZLSX MF	MF40B20ZAL SMFNS40ZALX			NS40ZLSMF
N40/41	22NF-330D	41 43	MF41 MF43			22NF-330DMF
NS60A	51-430	NS60S MF NS60SX MF	MF55B24RS SMFNS6ORS	В34	551MF	51-430MF
NS60	NX100-S6MF	NS60 MF NS60X MF	MF55B24R SMFNS60R			NX100-S6MF
NS60AL	51BR-430	NS60LS MF NS60LSX MF	MF55B24LS SMFNS60LS	B32	551R	51BR-430MF
NS60L	51R-430	NS60L MF NS60LX MF	MF55B24L SMFNS60L			51R-430MF
N50	22FR-520	57 MF	MF50 SMF57			22FR-520MF 22FR-610MF
N51	22F-520	58VTS MF MF58	MF53 MF51 SMF58VT SMF58			22F-520MF 22F-610MF
N50	22FR-680	67 MF				22FR-680MF
N51	22F-680	68 MF				22F-680MF
50D20L	50D23L	50D20L MF	MF50D20L			50D20LMF
55D23L	55D23L	55D23L MF	MF75D23L SMF55D23L	D47	535MF	55D23LMF
55D23R	55D23R	55D23R MF	MF75D23R SMF55D23R			55D23RMF
55D23L	90D23L	75D23L MF	MF75D23L			90D23LMF 85D23L-HM
Grp 58		48L	MF58		658MF	
Grp 58R	900R-500	48R	MF58R		658RMF	

START - STOP EFB

REPLACE WITH

CASE	DELKOR	CENTURY	SUPERCHARGE	VARTA
55D23L	SQ85D23LEFB	Q85 MF	MFD23EF	Q-85/115D23L
55D23R	SQ85D23REFB	Q85R MF	MFD23EFR	Q-85R/115D23R
NS40A	EFB M-42 60B20R			M-42R/60B20R
NS40AL	EFB M-42L 60B20L			M-42/60B20L
NS60A	EFB N-55 80B24R			N-55R/80B24R
NS60AL	SN55B24LEFB		MFB24EF	N-55/80B24L
NS70L	SS95D26LEFB	S95 MF	MF26EF	S-95/130D26L
NS70	SS95D26REFB			S-95R/130D26R
N70ZZL	ST110D31LEFB	T110 MF	MFD31EF	T-110/145D31L
N70ZZ	ST110D31REFB			T-110R/145D31R
DIN66	LBN3-65EFB	DIN65L MF		D54
DIN77	LBN4-75EFB	DIN75L MF		E46

BATTERY CROSS REFERENCE

DIN AUTOMOTIVE BATTERIES

REPLACE WITH

CASE	DELKOR	CENTURY	SUPERCHARGE	VARTA	DEKA	ENDURANT
DIN44H	55534	DIN44LH MF	MF44H	C22 C30		
DIN55	90R-500	DIN53L MF DIN53LX MF	MF55 SMF53L	D21	690MF	90R-500MF
DIN55H	56219	DIN53LH MF	MF55H	D24 D15	647MF	56219MF
DIN66	57030	DIN65L MF	MF66 SMF65L	E43 E38	691MF	56530MF
DIN66H	58012 57412	DIN65L MF	MF66H SMF66H	E11 E44	648MF	57412MF
DIN66HL	DIN70-770	DIN65L MF	MF66HR	E12		57413MF DIN70-770MF
DIN77	58039	DIN65L MF	MF77	F18		58039MF
DIN77H	59096	DIN75LH MF	MF77H	F19		
DIN77HR	DIN90-912	DIN75LH MF	MF77HR		694RMF	
DIN88	59015	DIN75LH MF	MF88 SMF85L		693MF	58515MF
DIN88H	60038	DIN85LH MF	MF88H	Н3	649MF	60038MF
DIN100	61044		DIN100L	L1	695RMF	

START - STOP AGM

REPLACE WITH

CASE	DELKOR	CENTURY	SUPERCHARGE	VARTA	DEKA	ENDURANT
DIN55H	LN2 AGM	DIN53LH AGM	MF55HSS	D52	9A47	
DIN66H	LN3 AGM	DIN65LH AGM	MF66HSS	E39	9A48	DIN66H-AGM
DIN77H	LN4 AGM	DIN75LH AGM	MF77HSS	F21	9A94R	DIN77H-AGM
DIN88H	LN5 AGM	DIN85LH AGM	MF88HSS	G14	9A49	DIN88H-AGM
DIN100	LN6 AGM			H15		

BATTERY CROSS REFERENCE

COMMERCIAL BATTERIES

REPLACE WITH

CUITITILING	AL DATTERILD			REPLACE V	VIII		
CASE	DELKOR	CENTURY	SUPERCHARGE	VARTA	DEKA	ENDURANT	Heat Master
NS70L	NX110-5MF	NS70L MF N70ZZLHX NS70X MF	MF52 SMFNS70LX		624FMF	NX110-5MF	95D26L-HM
NS70	NX110-5LMF	NS70 MF N70ZZHX NS70LX MF	MF53 SMFNS70X		624MF	NX110-5LMF	95D26R-HM
N70ZZ	27H-680 27H-780	N70ZZXHD N70ZZHX	MF95D31RW MF95D31R SMFN7OZZX TMN7OZZ	G8	627MF	125D31RMF 27H-710MF NX12O-7MF	105D31R-HM 125D31R-HM
N70ZZL	27HR-680 27HR-780	N70ZZLXHD N70ZZLHX	MF95D31LW MF95D31L SMFN7OZZLX TMN7OZZL	G7	627FMF	125D31LMF 27HR-710MF NX120-7LMF	105D31L-HM 125D31L-HM
Grp 31	31-900	86Z	N87LX MF31-931		1231MF	31-900MF 31-1000MF	
Grp 31	31-900T	86ZT MF	MF31-930		7T31P	31-900TMF	
Grp 4DLT		94 Squat	MF94 TMN94P		94DLT		
N100L	N100L	N100L MF	MFN100L			N100LMF	
N100R	N100R	N100 MF	MFN100			N100MF	
N120	N120	N120 MF N120	MFN120 TMN120P			N120	
N120L	N120L			LFD140 J10 K8			
N150	N150	N150 MF N150	MFN150 TMN150P	М7	904D	N150MF	
N150L	N150R	N150L MF		LFD180 M8 B90			
N200	N200	N200 MF	MFN200		708D	N200MF	
N200L	N200L			LFD230 N9 C40		N200LMF	

BATTERY CROSS REFERENCE

MARINE & DEEP CYCLE BATTERIES

CASE	ENDURANT MARINE MASTER FLOODED	OPTIMA AGM	ROLLS DC FLOODED	LIFELINE DC AGM	DEKA MARINE MASTER FLOODED	DEKA Dominator Gel	DEKA Intimidator AGM
STARTING							
Grp 24	MS24-680				24M5,24M7		
Grp 27	MS27-780				27M6		
Grp 31	MS31-1000						
Grp 34		34M					
DUAL PUR	POSE						
GC6							8AGC2
Grp 22NF							8A22NFM
Grp 24	M24MF						8A24M
Grp 27	M27MF/RMF						8A27M
Grp 31	M31MF						8A31DTM
Grp 34							9A34M
DEEP CYC	LE						
901			6FS250-SC				
902			6FS305-HC				
921			12FS185-HC		8C12		
GC12			12FSGC-HC				
GC2				GPL-4CT/6CT-2V			
GC6			6FSGC/HC	GPL-4CT/6CT		8GGC2	
GC6H			6FS145				
GC8			8FSGC/HC			8G8VGC	
Grp 22NF						8G22NF	
Grp 24	DC24MF		12FS24	GPL-24T	DC24	8G24M/SS	
Grp 27	DC27MF	D27M	12FS27	GPL-27T	DC27	8G27M	
Grp 31	DC31MF	D31M	12FS31	GPL-31T,GPL-31T-2V	DC31DT	8G31DTM	
Grp 34		D34M				8G34R	
Grp 4D				GPL-4DA,GPL-4DL		8G4D	
Grp 8D				GPL-8DA,GPL-8DL		8G8D	
Grp 5SHP						8G5SHP	
L16			6FSL16/HC	GPL-L16-2V,GPL-L16T	8L16		
USA 89				GPL-30HT			

WARRANTY STATEMENT

Federal Batteries Pty Ltd warrants that the goods supplied to an original purchaser will be free from defects for the applicable Warranty Period and Applications set out below subject to the terms and conditions stated herein. All benefits under this warranty are additional to other rights and remedies under the applicable law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.

Brand	Start-Stop	Advanced Start Stop	Passenger	Commercial	Taxi	Dual Purpose	Generator	Lawn
Deka Gold			40	12	6			
Deka Ultimate			42	24	6			
Deka Ultimate AGM	36	36	42	12	6		24	
Deka Intimidator	36	36	42	12	6		24	
Deka Intimidator DC	36	36	42	12	6	24	24	
Deka Precision Built				18				
Deka Outdoorsman			24					18
Deka PowerSports								
Deka Marine Master DC						24		
Deka Marine Master Starting				24				
Deka Dominator						24		18
Deka Aux								
VARTA Blue Dynamic			40		6			
VARTA Silver Dynamic			42		6			
VARTA Silver AGM	36	36	42	12	6		24	
VARTA EFB	24		42		6			
VARTA Promotive Black				12				
VARTA Promotive Blue				18				
VARTA Promotive Silver				18				
VARTA LFD				24		12		
Varta Powersports								
Endurant Start Master			36		6			12
Endurant Load Master				12				
Endurant AGM Master	24	24	36	12	6		24	
Endurant Crank Master			42		6			
Endurant Heat Master			42		6			
Endurant Cycle Master DC						18		
Endurant Boat Master DP						18		
Endurant Boat Master Starting								
Odyssey			24	12				
Optima Blue			36	12	6	12		
Optima Red			36	12	6		24	
Optima Yellow			36	12	6	12		
LifeLine Starting			36	12	6		24	
LifeLine DC						24		
Rolls FS Series						18		
Rolls Rail Series 4000 / 5000								
LifeLine Racing								
Oddessey Racing								
Remco DC						24		
Remco General Purpose								

You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. This warranty does not cover goods imported into Australia other than by Federal Batteries Pty Ltd.

If a failure with the goods or a service does not amount to a major failure, you are entitled to have the failure rectified in a reasonable time. If this is not done, you are entitled to a refund for the goods and to claim a refund from the installer of any services associated with the installation of the goods.

				ly services c				8000	
PowerSports	Aux	Racing	Marine Starting	Deep Cycle incl RV / Marine	RE	Golf	Mobility	Standby	Rail
			24						
			36						
			36						
			36						
			36	24					
			18						
30									
			24	24					
			36						
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			24	12	12		12	12	
			36						
			36	36	36	18	24		
			18	18	18	18			
									36/48
		18							
		18							
			18	24	18		12	24	
								24	

WARRANTY COVERAGE

If Federal Batteries Pty Ltd (itself or through a reseller) finds on examination that the battery is defective due to faulty manufacturing and is within the specified warranty period, then the battery will be replaced with an equivalent battery free of charge. The warranty period is not renewed or extended as a result of this replacement subject to your rights under the Australian Consumer Law.

This warranty covers batteries that become unusable or unserviceable due to defects in material and/or workmanship. Warranty period commences from date of original purchase. This warranty covers the product ranges listed below, provided that they are sized properly and used in the Application for which it was intended and charged with an approved charging profile. This warranty only applies to the original purchaser of the goods. Proof of purchase and return of good(s) in question must accompany any request for warranty. No exceptions will be accepted.

Table 1 lists the relevant intended use applications and the applicable warranty period for each product.

WARRANTY EXCLUSIONS

This warranty does not apply to batteries that break or fail due to abuse or neglect such as:

- Incorrect or under specified battery type fitted to vehicle/application.
- Charge system problem/incorrect charging creating an over-charge or under-charge situation.
- Prolonged storage of the car or very minimal use.
- Deep discharge applications (heavy accessory loads etc).
- Electrical faults, Shorts, Excessive loads and loose wiring
- Damage to the battery caused by the consumer or other in-car and/or application fault.
- Any battery modifications such as acid additives, lead terminal changes, or any other contaminates.

To verify a warranty claim, the battery must be fully charged prior to adjudication. A flat (discharged) or sulphated battery is not considered to be a manufacturing defect and is not covered under this warranty.

If the battery fails during the warranty period, you can return the battery to the place of purchase with your original proof of purchase receipt. The battery will then be tested as per Federal Batteries Pty Ltd Test Procedure. You must bear any expense you may incur in making the claim (other than our costs of remedying the defect the subject of this warranty). The warranty is provided by Federal Batteries Pty Ltd 16 South Street Rydalmere NSW 2116. Contact No. 1300 133 980 or www.federalbatteries.com.au for full terms and conditions.

It is becoming increasing common that fitting new batteries to certain modern vehicles requires the OBD (Electronic Codes) error codes to be reset and new battery registered on the vehicle so full functionality can be regained on the vehicle. Installation to be done by suitably trained and qualified persons.

Additionally, a conventional flooded battery may not be suitable for some vehicles and they may require technology such as Absorbed Glass Mat (AGM) or an Enhanced Flooded (EFB). This warranty does not extend to any goods that have been installed to an incompatible vehicle or incorrect vehicle programming which will void the warranty and potentially damage the vehicle.

Please refer to our website www.federalbatteries.com.au for this Warranty Statement.

DISCLAIMER

Federal Batteries Pty Ltd attempts to ensure the correctness of the product description and data contained herein. We reserve the right to change designs, specifications and pricing at any time without notice or obligation. It is the responsibility of the reader of this information to verify any and all information presented herein.

