CONTENTS

ENDURANT+

+START MASTER

PREMIUM AUTOMOTIVE STARTING

Maintenance Free Technology - AGM
- Calcium

THE ENDURANT START MASTER RANGE IS NEW ZEALAND'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 in one of the largest and most sophisticated battery manufacturing facilities in the world.

AUTOMOTIVE START MASTER

STARTING TECHNOLOGY

ENDURANT BATTERIES

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap	Type
02	6	L6 (B0)	STD	210	170	170	190	525	110	CAL/CAL
03	6	L6 (B0)	STD	185	170	170	195	270	80	CAL/CAL
12N24/3	12	L (B0)	LUG	175	125	160	183	290	45	CAL/CAL
12N24/3HP	12	L (B0)	LUG	195	130	155	180	350	N/A	CAL/CAL
U1R-280	12	L (B0)	LUG	196	128	162	184	280	33	CAL/CAL
12N24/4	12	R (B0)	LUG	175	125	160	183	290	45	CAL/CAL
12N24/4HP	12	R (B0)	LUG	195	130	155	180	350	N/A	CAL/CAL
U1-280	12	R (B0)	LUG	196	128	162	184	280	33	CAL/CAL
NS40Z	12	R (B0)	STD	185	125	200	220	330	56	CAL/CAL
NS40ZL	12	L (B0)	STD	185	125	200	220	330	56	CAL/CAL
NS40ZPP	12	R (B0)	PP	185	125	200	220	330	56	CAL/CAL
NS40ZLPP	12	L (B0)	PP	185	125	200	220	330	56	CAL/CAL
NS40ZLPP-BH	12	L (B4)	PP	185	125	200	220	330	56	CAL/CAL
NS60A	12	R (B0)	STD	235	125	200	220	430	75	CAL/CAL
NS60AL	12	L (B0)	STD	235	125	200	220	430	75	CAL/CAL
NS60APP	12	R (B0)	PP	235	125	200	220	430	75	CAL/CAL
NS60ALPP	12	L (B0)	PP	235	125	200	220	430	75	CAL/CAL
125	12	L (B9)	D/F	240	130	180	202	300	52	CAL/LA
126	12	R (B9)	STD	240	130	180	202	300	52	CAL/LA
127	12	R (B5)	STD	225	170	185	205	400	67	CAL/CAL
127HP	12	R (B5)	STD	236	175	180	202	550	115	CAL/CAL
127/11F	12	R (B0)	STD	225	170	185	205	450	75	CAL/CAL
156	12	L (B5)	STD	225	170	185	205	400	67	CAL/CAL
156HP	12	L (B5)	STD	236	175	180	202	555	115	CAL/CAL
156/11F*	12	L (B0)	D/F	225	170	185	210	450	75	CAL/CAL
156/11	12	L (B5)	STD	225	170	185	205	450	75	CAL/CAL
26-500	12	R (B1)	STD	206	172	183	205	500	75	CAL/CAL
50D20L	12	L (B0)	STD	200	170	200	220	400	78	CAL/CAL
55D23L	12	L (B1)	STD	230	170	200	220	550	90	CAL/CAL
55D23L-BH	12	L (B7)	STD	230	172	203	225	550	90	CAL/CAL
55D23R	12	R (B1)	STD	230	170	200	220	550	90	CAL/CAL
65/820	12	R (B0)	STD	290	190	170	190	780	140	CAL/CAL
75/650	12	R (B0)	SIDE	230	180	185	185	660	105	CAL/CAL
DIN36	12	L (B3)	STD	205	175	175	175	410	80	CAL/CAL
DIN44	12	L (B3)	STD	205	175	190	190	410	80	CAL/CAL
DIN45	12	L (B3)	STD	240	175	175	175	410	75	CAL/CAL
DIN55	12	R (B3)	STD	240	175	175	175	500	90	CAL/CAL
DIN55L	12	L (B3)	STD	240	175	175	175	500	90	CAL/CAL
DIN55LAGM	12	L (B3)	STD	240	175	190	190	640	60	AGM
DIN55LH	12	L (B3)	STD	240	175	190	190	525	90	CAL/CAL
DIN63	12	L (B3)	STD	275	175	175	175	630	120	CAL/CAL
DIN66	12	L (B3)	STD	275	175	190	190	680	135	CAL/CAL
DIN66AGM	12	L (B3)	STD	275	175	190	190	760	70	AGM
DIN66R	12	R (B3)	STD	275	175	190	190	600	120	CAL/CAL
DIN75	12	L (B3)	STD	310	175	175	175	730	140	CAL/CAL
DIN75AGM	12	L (B3)	STD	315	175	190	190	800	80	AGM
DIN75R	12	R (B3)	STD	310	175	175	175	730	140	CAL/CAL
DIN85	12	L (B3)	STD	350	175	175	175	750	165	CAL/CAL
DIN92	12	L (B3)	STD	350	175	190	190	800	180	CAL/CAL
DIN92LAGM	12	L (B3)	STD	350	175	190	190	850	90	AGM
DIN110	12	L (B3)	STD	350	175	190	190	900	190	CAL/CAL
DIN105LHAGM	12	L (B3)	STD	393	175	190	190	950	105	AGM

Key: * Terminal rotated 90°

It all starts with VARTA®

INTRODUCING VARTA START/STOP TECHNOLOGY. DESIGNED AND MANUFACTURED IN GERMANY TO MEET THE DEMANDING QUALITY REQUIREMENTS OF EUROPEAN VEHICLES.

+ START-STOP

AGM & EFB TECHNOLOGY

Maintenance Free Calcium Technology

AUTOMOTIVE START-STOP

SILVER DYNAMIC START-STOP AGM TECHNOLOGY

VARTA Code	HCB Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
D52	DIN55LAGM	12	L (B3)	STD	242	175	190	190	680	
E39	DIN66AGM	12	L (B3)	STD	278	175	190	190	760	
F21	DIN75AGM	12	L (B3)	STD	315	175	190	190	800	
G14	DIN92LAGM	12	L (B3)	STD	353	175	190	190	850	
H15	DIN105LHAGM	12	L (B3)	STD	393	175	190	190	950	

MADE IN GERMANY · START STOP PLUS READY · POWER FRAME GRID TECHNOLOGY · 3x CYCLE LIFE · SAFE AND LEAK PROOF · AGM ADVANCED TECHNOLOGY

BLUE DYNAMIC EFB TECHNOLOGY

VARTA Code	HCB Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
D54	DIN63	12	L (B3)	STD	278	175	175	175	650	65
E46	DIN75	12	L (B3)	STD	315	175	175	175	730	75

MADE IN GERMANY · EFB ENHANCED TECHNOLOGY · OE ORIGINAL SPARE PART · START STOP · POWER FRAME GRID TECHNOLOGY

START-STOP, ENHANCED FLOODED BATTERY (EFB) TECHNOLOGY

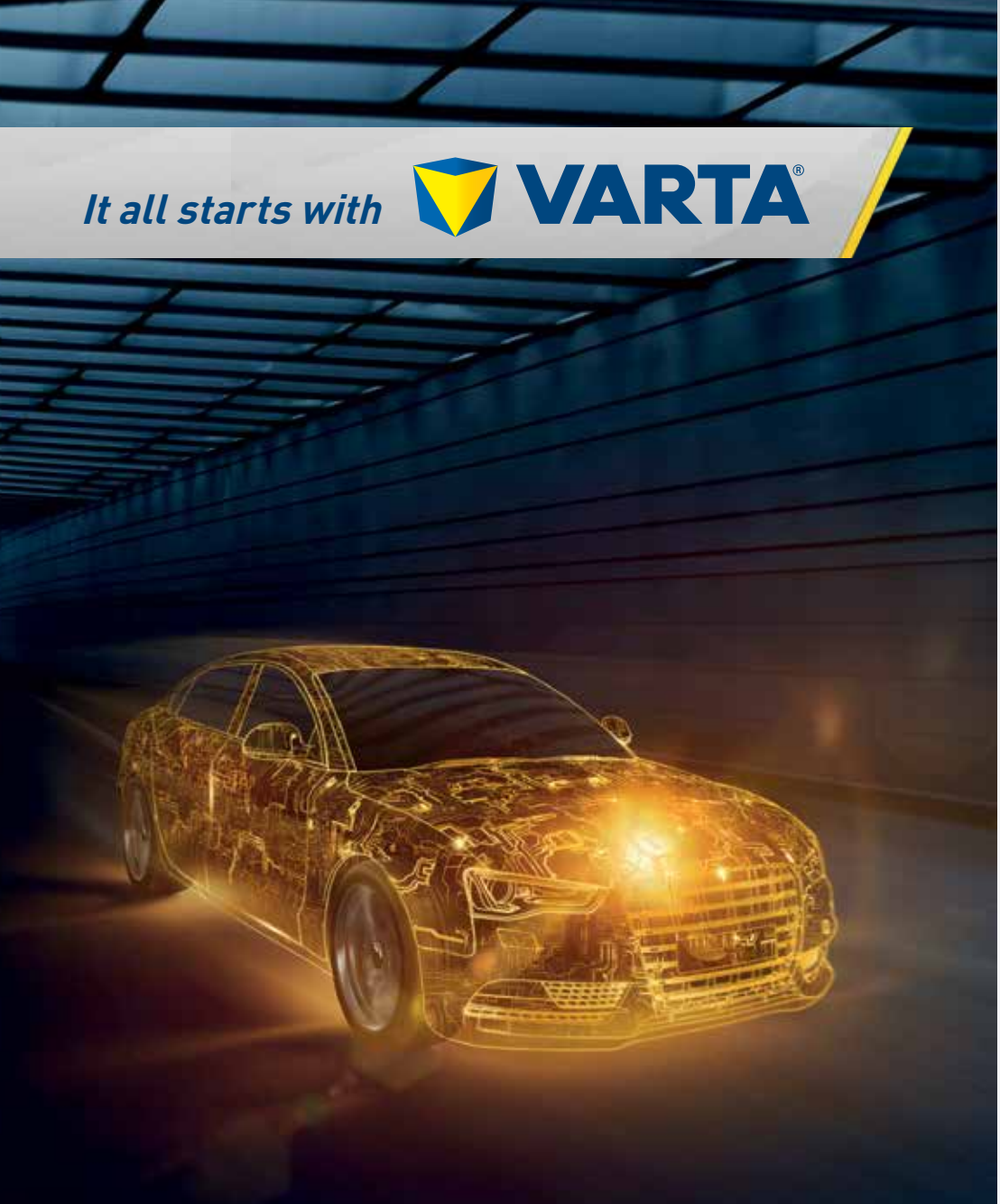
VARTA Code	HCB Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap
M42REFB*	NS40ZPP	12	R (B0)	PP	196	128	200	220	400	70
M42LEFB*	NS40ZLPP	12	L (B0)	PP	196	128	200	220	400	70
N55REFB*	NS60APP	12	R (B0)	PP	238	128	200	220	500	92
N55LEFB*	NS60ALPP	12	L (B0)	PP	238	128	200	220	500	92
Q85REFB*	55D23R	12	R (B7)	STD	230	175	205	225	660	125
Q85LEFB*	55D23L	12	L (B7)	STD	230	175	205	225	660	125
S95REFB*	NS70	12	R (B7)	STD	260	172	200	225	720	150
S95LEFB*	NS70L	12	L (B7)	STD	260	172	200	225	720	150
T110REFB*	N70Z	12	R (B7)	STD	305	172	200	225	820	170
T110LEFB*	N70ZL	12	L (B7)	STD	305	172	200	225	820	170

Key: * Manufactured by VARTA Korea

The VARTA EFB range are higher performance versions of Calcium/Calcium technology batteries to meet the demands of Stop-Start 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.

Note: See page 7 for CCA (EN) to CCA conversion
Note: See page 90-93 for start-stop technical information

It all starts with VARTA®



FEATURING PATENTED POWERFRAME TECHNOLOGY.

MEETS AND EXCEEDS OEM REQUIREMENTS.

PERFECT FOR VEHICLES WITH HIGH ELECTRICAL LOADS.

MADE IN EUROPE TO THE HIGHEST STANDARDS.

DE
MADE IN GERMANY

+ EUROPEAN
AUTOMOTIVE STARTING
Maintenance Free Calcium Tin Alloy Technology

EUROPEAN AUTOMOTIVE STARTING

VARTA AUTOMOTIVE RANGE POWERFRAME TECHNOLOGY

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

VARTA SILVER DYNAMIC AUTOMOTIVE

VARTA Code	Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/hrs
D15	DIN55LH	12	L (B3)	STD	242	175	190	190	610	
D21	DIN55L	12	L (B3)	STD	242	175	175	175	600	
E38	DIN63	12	L (B3)	STD	278	175	175	175	750	
E44	DIN66	12	L (B3)	STD	278	175	190	190	780	
F18	DIN75	12	L (B3)	STD	315	175	175	175	800	
H3	DIN92	12	L (B3)	STD	353	175	190	190	830	

Key: For more technical information see page 84

VARTA Silver Dynamic Automotive Batteries use the most advanced technology to support the demands of any vehicle.
The patented Power Frame 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.

D15

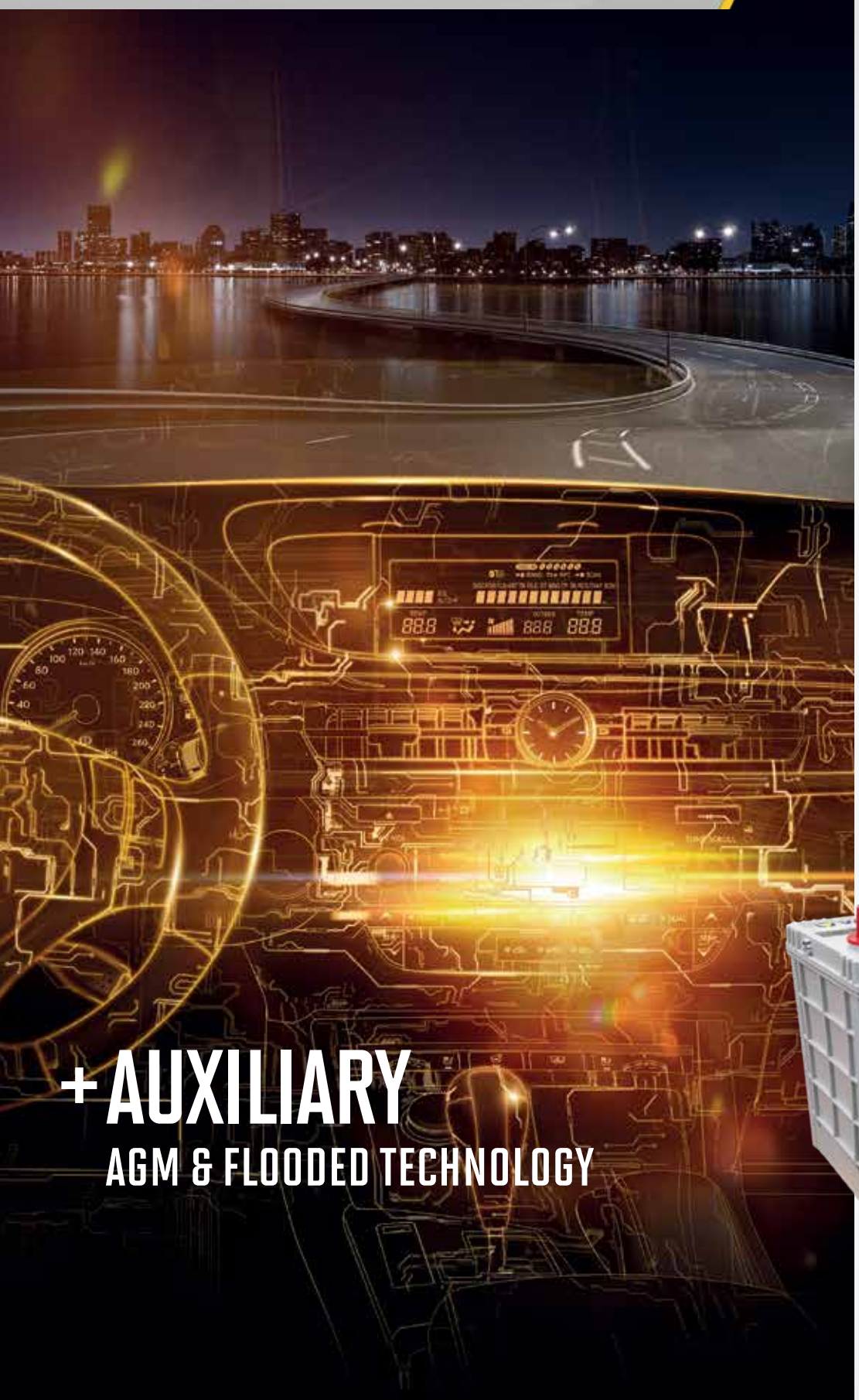
HOW TO READ VARTA CCA(EN)

VARTA product is tested using EN (European Norm) standards which results in CCA (EN) differing from the CCA ratings. Approximate ratings differ by 10% i.e. a VARTA battery rated at 630 CCA(EN) is around 690 CCA.

EN	CCA	EN	CCA
540	593	800	879
600	659	830	912
610	670	900	989
630	692	950	1044
680	747	1000	1099
750	824	1150	1263
780	857	1200	1318

It all starts with VARTA®

VARTA® AUXILIARY BATTERIES PROVIDE ELECTRICAL COMPONENTS WITH SEAMLESS FUNCTIONALITY.



+AUXILIARY

AGM & FLOODED TECHNOLOGY

AUTOMOTIVE AUXILIARY

SILVER DYNAMIC AXILLARY

Modern cars consume a significant amount of electricity. Therefore, these cars with a combustion engine often come with two batteries: a regular 12 volt starter battery and an auxiliary battery. Thus, when it comes to replacing a weak or defective auxiliary battery, it is vital to rely on a high performing substitution. Furthermore, it is important to always replace an AGM auxiliary battery with another AGM auxiliary battery to avoid the risk of malfunctions and car breakdown.

Made for a dual battery system.

- Increase the length of the start-stop moment
- Support comfort functions during engine start
- Support the electrical system (brake-by-wire)
- Protect the electrical system
- Serve as emergency support

SILVER DYNAMIC AXILLARY KEY BENEFITS

- For backup applications
- EN compliant degassing hole
- Flame arrestor
- Maintenance free

VARTA SILVER DYNAMIC AUXILIARY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	A/H	Type
34B17L	12	L (B0)	PP	167	127	207	225	280	47	CAL/CAL
AU1X	12	L (B13)	STD	212	175	140	140	420	36	CAL/CAL
AUX14	12	L (B0)	SOCKET	151	87	145	145	200	13	AGM
AUX9	12	L (B0)	SOCKET	151	87	106	106	130	9	AGM
S46B24R	12	R (B0)	PP	236	126	195	224	370	45	AGM
S34B20R	12	R (B0)	PP	195	126	210	224	340	35	AGM

Key: For more technical information see page 84

ENDURANT+

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

The Endurant Load Master range is produced in one of the largest and most sophisticated battery manufacturing facilities in the world.

+ LOAD MASTER

COMMERCIAL GRADE STARTING

Maintenance Free Technology - Silver Calcium
- Calcium

COMMERCIAL LOAD MASTER

ENDURANT BATTERIES

STARTING TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap	Type
N617	6	L6 (BO)	STD	230	175	195	220	640	210	CAL/CAL
N621	6	L6 (BO)	STD	260	170	200	225	675	200	CAL/CAL
N625	6	L6 (BO)	STD	300	170	200	225	800	310	CAL/CAL
NS70	12	R (B1)	STD	255	170	200	220	580	115	CAL/CAL
NS70SC	12	R (BO)	STD	268	172	200	221	780	140	SIL/CAL
NS70L	12	L (B1)	STD	255	170	200	220	580	115	CAL/CAL
NS70LSC	12	L (BO)	STD	268	172	200	221	780	140	SIL/CAL
NS70/15	12	R (B1)	STD	255	170	200	220	680	145	CAL/CAL
NS70L/15	12	L (B1)	STD	255	170	200	220	680	145	CAL/CAL
N70Z	12	R (BO)	STD	300	170	200	220	640	135	CAL/CAL
N70ZSC	12	R (BO)	STD	302	171	200	221	710	160	SIL/CAL
N70ZL	12	L (BO)	STD	300	170	200	220	640	135	CAL/CAL
N70ZLSC	12	L (BO)	STD	302	171	200	221	710	160	SIL/CAL
N70Z/17	12	R (B1)	STD	300	170	200	220	730	150	CAL/CAL
N70ZL/17	12	L (B1)	STD	300	170	200	220	730	150	CAL/CAL
31-900	12	C (BO)	STD	330	172	218	240	900	160	CAL/CAL
31-1000	12	C (BO)	STD	330	172	218	240	1000	160	CAL/CAL
149/17	12	L (BO)	STD	330	170	210	230	780	200	CAL/CAL
148/17	12	R (BO)	STD	330	170	210	230	780	200	CAL/CAL
N100	12	R (BO)	STD	405	170	210	235	680	165	CAL/CAL
N100L	12	L (BO)	STD	405	170	210	235	680	165	CAL/CAL
N120	12	3R (BO)	STD	500	180	210	235	860	230	CAL/CAL
N120SC	12	3R (BO)	STD	513	186	206	217	1135	230	SIL/CAL
N150	12	3R (BO)	STD	500	220	210	235	950	290	CAL/CAL
N150SC	12	3R (BO)	STD	509	222	195	216	1270	300	SIL/CAL
N200	12	3R (BO)	STD	515	275	220	245	1100	400	CAL/CAL
N200SC	12	3R (BO)	STD	511	276	225	235	1385	375	SIL/CAL
CODE55	12	3L (BO)	STD	505	205	185	205	820	270	CAL/LA
DIN135	12	3L (B3)	STD	515	190	195	210	910	220	CAL/LA
DIN135D	12	3L (BO)	STD	515	190	195	210	910	220	CAL/LA
DIN165DSC	12	3L (BO)	STD	509	222	195	216	1270	300	SIL/CAL
DIN165SC	12	3L (B3)	STD	509	222	210	210	1270	300	SIL/CAL

Key: For more technical information see page 84

CALCIUM TECHNOLOGY

Endurant Load Master 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.

Load Master batteries feature a very robust cell design, highly resistant to the vibration and cycling demands of heavy duty applications.

It all starts with VARTA®

DE
MADE IN GERMANY

FEATURING PATENTED POWERFRAME TECHNOLOGY.

MEETS AND EXCEEDS OEM REQUIREMENTS.

PERFECT FOR VEHICLES WITH HIGH ELECTRICAL LOADS & VIBRATIONS.

MADE IN EUROPE TO THE HIGHEST STANDARDS.

+ EUROPEAN
COMMERCIAL STARTING
Maintenance Free Calcium Tin Alloy Technology

EUROPEAN COMMERCIAL STARTING

VARTA COMMERCIAL RANGE LABYRINTH LID TECHNOLOGY

	ProMotive Black	ProMotive Silver
Primary Function	Engine Start	Engine Start and Enhanced Power Supply
Battery Capacity	Good	Best
Technology	Conventional Flooded	Labyrinth Lid
Vibration Resistance	Long Life (EN2 V1 Standard)**	Long Life Super Heavy Duty (EN4 V3 Standard)**
Quality Level	Meets OEM requirements	Exceeds OEM requirements
Self Discharge Performance*	12 Months	18 Months
Water Consumption	Low	Extremely Low

Key: * Compared to conventional non maintenance-free batteries ** Subject to European Norm (EN) Capacity and vibration testing.

VARTA PROMOTIVE EFB

VARTA Code	Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
B90 (EFB)	DIN165D	12	3L (B0)	STD	513	223	205	223	1050	
C40 (EFB)	N200*	12	3L (B0)	STD	518	276	215	242	1200	

Key: For more technical information see page 84 | * Reverse polarity, European fit

VARTA PROMOTIVE SILVER

VARTA Code	Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
K7	DIN135D	12	3L (B0)	STD	513	189	205	223	800	
M18	DIN165D	12	3L (B0)	STD	513	223	205	223	1000	
N9	N200*	12	3L (B0)	STD	518	276	215	242	1150	

Key: For more technical information see page 84 * Reverse polarity, European fit

VARTA PROMOTIVE BLACK

VARTA Code	Application	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
I6	John Deer OEM	12	L (B3)	STD	413	175	205	220	850	
K11	New Holland OEM	12	L (B1)	STD	508	174	185	205	900	

Key: For more technical information see page 84

VARTA PROFESSIONAL DUAL PURPOSE

VARTA Code	Equivalent (Indicative of size)	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA (EN)	A/Hrs
LFD90	DIN92	12	L (B3)	STD	353	175	190	190	800	90

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

ENDURANT+

Made in USA

+ CRANK MASTER

SUPERIOR GRADE STARTING

Maintenance Free Calcium Technology

THE ENDURANT CRANK MASTER RANGE IS NEW ZEALAND'S BENCHMARK FOR HIGH PERFORMANCE ENGINE STARTING.

Precision manufactured in the USA in state-of-the-art facilities, each Crank Master features deep pocket envelope separators and compucast grids to provide superior performance.

PERFORMANCE STARTING CRANK MASTER

ENDURANT BATTERIES

CALCIUM TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap
CM24	12	C (B1)	STD/SIDE	275	180	180	200	850	115
CM27L	12	L (B1)	STD	325	170	205	230	840	140
CM27	12	R (B1)	STD	325	170	205	230	840	140
CM148SS	12	C	STD	330	175	220	240	730	190
CM31	12	C	STD	330	175	215	235	1000	185
CM4D	12	3R	STD	525	215	225	255	1050	290
CM8D *	12	3R	STD	525	275	225	255	1425	440

Key: *Calcium hybrid technology For more technical information see page 84

Endurant Crank Master Calcium batteries are designed and manufactured in the USA using the latest calcium technologies. Heavier duty calcium plates help prevent shorts and maximise energy storage and delivery.

The robust design of the Crank Master range provides improved vibration resistance, suitable for use in a wide variety of heavy duty applications.

CM31

AGM TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap
CM24AGM	12	R (B1)	STD/SIDE	270	180	175	200	775	120
CM31AGM	12	C	STD	330	170	220	240	925	190
CM31AGMS	12	C	STD	330	170	220	240	925	190

The Endurant Crank Master AGM range meets the needs of late model commercial vehicles where the starting battery may be subject to cyclic loads, common in vehicles with a large number of accessories. AGM technology offers enhanced safety being non-spill, faster recharge and higher cyclic resistance.

CM24AGM

WARNING

Over length bolts damage the battery.
Use OEM bolts for side mount terminal batteries.

DK00325
OEM Bolt. To suit side mount terminals (1 pair per pack)
Suits: CM24/750AGM, CM24/930 & 75/650

ENDURANT+

THE MARINE GRADE ENDURANT BOAT MASTER STARTING RANGE FEATURES HEAVIER POSITIVE PLATES THAN AN AUTOMOTIVE BATTERY 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.

+ BOAT MASTER

PREMIUM GRADE STARTING

Maintenance Free Calcium Technology

PERFORMANCE STARTING BOAT MASTER

ENDURANT BATTERIES

MAINTENANCE FREE - CALCIUM TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	MCA	Res Cap	A/Hrs
MMF22/430	12	R (B5)	D/F	230	170	185	210	430	580	75	45
MMF24/500	12	R (B1)	D/T	260	170	200	220	500	630	100	60
MMF24/680	12	R (B1)	D/T	260	170	200	220	680	810	137	75
MMF27/780	12	R (B1)	D/T	300	170	200	220	780	910	160	80
MMF31/930	12	C (B0)	STD	330	170	215	235	930	1060	195	100

Key: For more technical information see page 84

MAINTENANCE FREE

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.

MMF24/500

MAINTENANCE FREE PERFORMANCE STARTING

The Endurant Crank Master range is also suitable for marine applications. See page 15 for more in the performance starting Crank Master range.

CM31

ENDURANT+

ENDURANT CYCLE MASTER BATTERIES ARE MANUFACTURED IN THE USA AND OFFER RELIABLE, PROVEN, DEEP CYCLE PERFORMANCE.

Plate grids range from 2.2mm to 5mm in thickness, with glass mat separators and hot melt cell group bonding. This robust construction provides excellent cycle life and a high resistance to corrosion when subjected to top off charge and float duty charging voltages.

Made in USA

+CYCLE MASTER

SUPERIOR CYCLING

Low Maintenance Flooded Technology

DEEP CYCLE / CYCLE MASTER

ENDURANT BATTERIES

6 VOLT FLOODED DEEP CYCLE

Code	Trojan Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @75 Amps	Minutes @25 Amps	Kg
12B **		6	L6	STD	230	170	190	210						
US2000	T105	6	L6	D/T	260	180	260	285	220	194	172	115	445	25
US2200	N/A	6	L6	D/T	260	180	260	285	232	206	181	122	474	28
US145	T145	6	L6	U/T	260	180	285	300	251	236	213	154	562	32
US250	J250P	6		Offset	295	181	275	295	255	239	217	159	34	34
US305	J305P	6	L6	D/F	300	180	265	370	310	294	261	195	715	41
USL16	L16P	6	L6	LUG	300	180	405	425	385	337	297	225	865	50
USL16HC	L16H	6	L6	LUG	300	180	405	425	420	368	323	250	965	54

Key: * Has 17mm s/s stud which can be cut off ** Not USA manufactured For more technical information see page 84

MDC = Marine Deep Cycle, heavy duty, designed for general marine, RV & Commercial use

8 VOLT FLOODED DEEP CYCLE

Code	Trojan Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @75 Amps	Minutes @25 Amps	Kg
US8VGC	T875	8	R	U/T	260	180	260	285	170	153	138	90	337	29
US8VGCHC	T890	8	R	U/T	260	180	260	285	183	164	147	95	365	30

12 VOLT FLOODED DEEP CYCLE

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	A/Hrs
DC24	12	R (B1)	D/T	280	175	205	230		70
DC27	12	R (B1)	D/T	320	175	205	230		80
DC31	12	C (BO)	D/T	330	175	210	235		100
MDCN150/180	12	3R	STD	505	220	230	240	1250	180

Key: For more technical information see page 84

MDC = Marine Deep Cycle, heavy duty, designed for general marine, RV & Commercial use

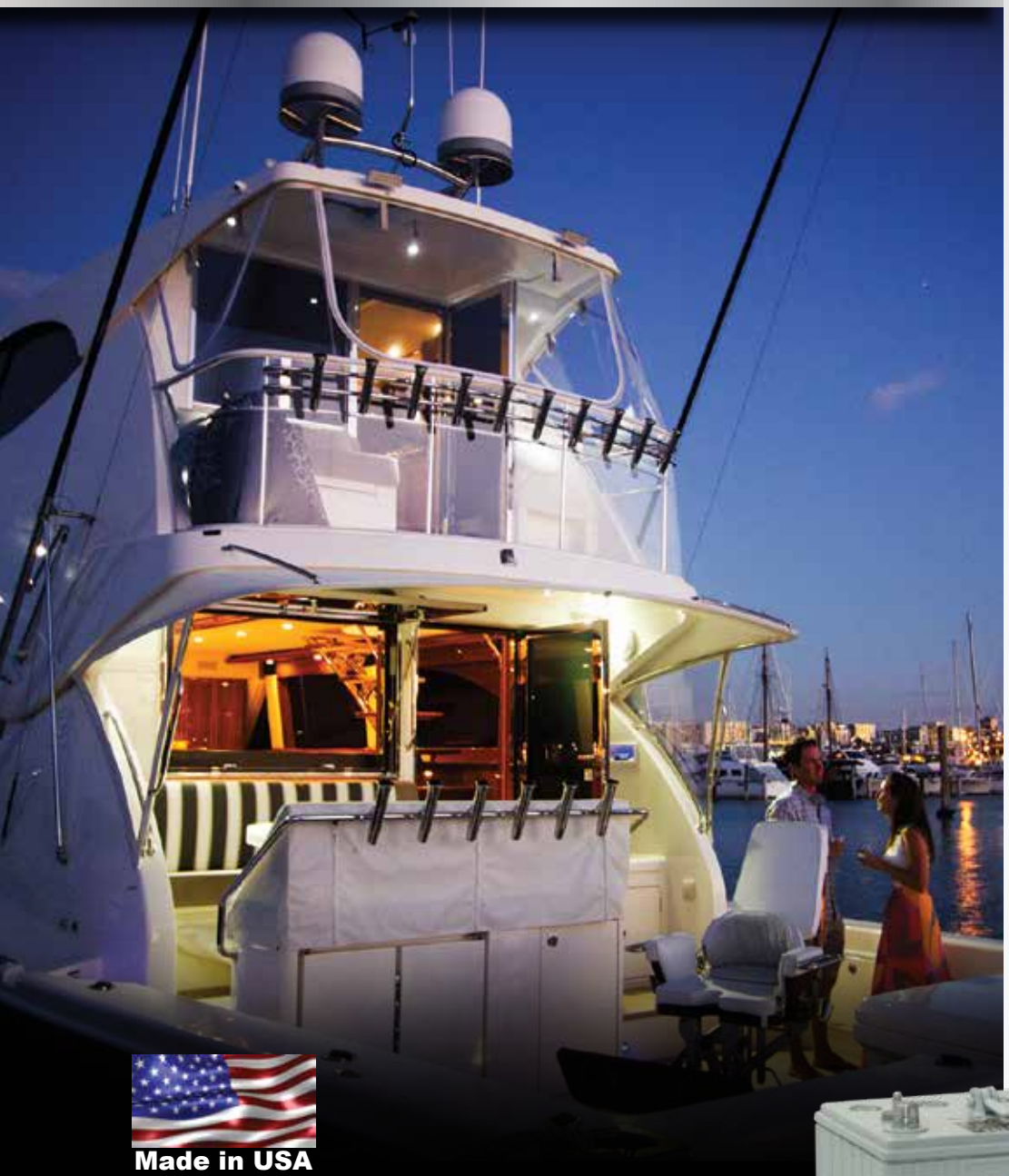
12 VOLT FLOODED DEEP CYCLE / MADE IN USA

Code	Trojan Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @75 Amps	Minutes @25 Amps	Kg
MDC24		12	R	D/T	275	170	205	235	75					19
MDC27		12	R	D/T	320	170	205	235	90					22
MDC31		12	R	D/T	330	170	220	240	105					27
US24DC	24TMX	12	L	D/T	285	170	220	235	85	76	68	38	145	23
US27DC	27TMX	12	R	D/T	320	170	220	235	105	97	89	54	205	27
US31DC	SCS225	12	R	D/T	330	170	220	235	130	114	99	59	225	30
US12V	N/A	12	R	U/T	330	175	275	290	155	138	122	77	292	39
US185	J185P	12	L	D/F	395	180	365	380	185	163	144	93	355	48
US8D-HC		12	3R	STD	525	280	220	245	240	206	177	115	470	58

America has long been recognised for its Deep Cycle batteries used in Golf Carts, Marine, Aerial work platforms and scrubber/cleaning machines. They are still the industry standard for most manufacturers in these industries and used as a benchmark for others.

Made in USA

ENDURANT+



ENDURANT GEL/AGM MASTER BATTERIES UTILISE ADVANCED USA COMPUTER AIDED DESIGN AND MANUFACTURING TECHNIQUES FOR SUPERIOR DEEP CYCLE AND ENGINE STARTING PERFORMANCE. GEL/AGM MASTER SETS THE STANDARD BY WHICH ALL OTHER GEL/AGM BATTERIES ARE JUDGED.

Made in USA

+ GEL/AGM MASTER

SUPERIOR CYCLING

Fully Sealed Gel & AGM Technology

DEEP CYCLE / GEL MASTER

GEL TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	A/Hrs
GGC2	6	L6	D/F	260	180	245	275	585	180
GU1H	12	R	LUG	210	130	155	185	200	32
G22NF	12	L	D/F	230	140	205	235	210	51
G24	12	R	D/F	275	170	225	250	335	74
G24S	12	R (B1)	SOCKET	260	170	205	220	335	74
G27	12	R	D/F	320	170	205	235	400	88
G31DT *	12	R	D/T	330	170	220	240	550	98
G4D	12	3R	STD	525	215	225	255	970	183
G8D	12	3R	STD	525	280	225	250	1150	225

Key: * Has 17mm s/s stud which can be cut off For more technical information see page 84

Endurant Gel Master technology features electrolyte locked in a thixotropic gel, rather than conventional acid liquid, ensuring a completely sealed and maintenance free design.

Gel Master batteries are completely spill and leak proof, highly resistant to vibration and may be installed in hard to reach locations as there is no need to check fluid levels. By replacing traditional battery acid with gel electrolyte, there is no need for watering, eliminating the risk of damage due to possible over or under watering.

DEEP CYCLE / AGM MASTER

AGM TECHNOLOGY

Code	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	A/Hrs
AU1H	12	R	LUG	195	135	155	185	200	32
A22NF	12	L	D/F	230	140	205	235	350	55
A24	12	R	D/F	275	170	205	235	525	79
A27	12	R	D/F	320	170	205	235	580	92
A31DT *	12	R	D/T	330	170	220	240	800	105
A4D	12	3R	STD	535	215	220	250	1110	198
A8D	12	3R	STD	530	280	225	255	1450	245

Key: * Has 17mm s/s stud which can be cut off For more technical information see page 84

The Endurant AGM Master range provides good cold cranking performance and excellent cycle life, well suited for engine start, high current for short periods or lighting and accessory loads.

The batteries are valve regulated lead acid designs where the electrolyte is immobilised with the cells using the Absorbed Glass Mat technology. Utilising a valve in the top of each cell and advanced plate chemistry, gasses produced during use are recombined, making the batteries completely maintenance free.

LIFELINE

...the heart of your system ®

EVERY LIFELINE BATTERY IS EXPERTLY HAND BUILT IN CALIFORNIA TO DEMANDING MILITARY SPECIFICATIONS. LIFELINE ARE THE PIONEERS OF FULLY SEALED, MAINTENANCE FREE, AGM TECHNOLOGY FOR STARTING & DEEP CYCLE APPLICATIONS.

Made in USA

+ LIFELINE

STARTING & DEEP CYCLE

AGM Technology

STARTING & DEEP CYCLE

AGM TECHNOLOGY - STARTING BATTERIES

Code	Volt	Assy	Term	Length	Width	Box Height	CCA	MCA	A/Hrs	Kg
GPL-1400T	12	L	Socket M8	250	125	175	550	700	57	15
GPL-2400T	12	R	Socket M10 POS, M8 NEG	280	170	235	650	790	75	24
GPL-2700T	12	R	Socket M10 POS, M8 NEG	330	170	235	745	900	95	29
GPL-3100T	12	R	Socket M10 POS, M8 NEG	330	170	235	810	950	100	30

AGM TECHNOLOGY - DEEP CYCLE BATTERIES

Code	Volt	Assy	Term	Length	Width	Box Height	CCA	MCA	A/Hrs	Kg
GPL4CT2V	2	R	Socket M8 x4	260	180	250	2025	2500	660	30
GPL6CT2V	2	R	Socket M8 x4	260	180	330	2500	2750	900	41
GPLL16T2V	2	R	Socket M8 x2	295	175	400	3645	4552	1200	54
GPL31T2V	2	R	Socket M8 x2, M10 x2	330	170	230	3240	4050	630	30
GPL4CT	6	R	Socket M8	260	180	250	760	925	220	30
GPL6CT	6	R	Socket M8	260	180	330	925	1025	300	41
GPLL16T	6	R	Socket M8	295	175	400	1350	1675	400	54
GPLU1T	12	R	Socket M6	195	135	175	215	275	33	11
GPL24T	12	R	Socket M10 POS, M8 NEG	285	170	235	550	680	80	26
GPL27T	12	R	Socket M10 POS, M8 NEG	330	170	235	575	715	100	28
GPL30HT	12	R	Socket M8	340	170	305	700	850	150	44
GPL31T	12	R	Socket M10 POS, M8 NEG	330	170	235	600	750	105	29
GPL31XT	12	R	Socket M10 POS, M8 NEG	330	170	235	650	800	125	34
GPL4DA	12	R	STD	530	220	220	1100	1360	210	56
GPL4DL	12	L	Blade Terminal	530	220	220	1100	1360	210	56
GPL8DA	12	R	STD	530	275	220	1350	1675	255	71
GPL8DL	12	R	Blade Terminal	530	275	220	1350	1675	255	71

Key: For more technical information see page 84

Lifeline technology offers market leading 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.

RAPID RECHARGE

Lifeline batteries facilitate a significant increase in recharge rate, with amazingly high current limitations when the charging voltage is correctly regulated.

GPL-4CT

LOW SELF DISCHARGE

Lifeline technology offers a superior charge retention rate compared to flooded and gelled technologies. Lifeline batteries self discharge around 2% per month compared to up to 10% per month for other batteries.


GPL-8DL

Rolls

BATTERY ENGINEERING

FOR OVER SIX DECADES, SURRETTE BATTERY COMPANY HAS BEEN MANUFACTURING IN CANADA ROLLS - BRANDED PREMIUM DEEP CYCLE LEAD ACID BATTERIES.
CHOSEN FOR MARINE, RAILROAD, RENEWABLE ENERGY & MOTIVE POWER APPLICATIONS.

+ ROLLS

FS SERIES, DEEP CYCLE

Flooded Technology

DEEP CYCLE

Rolls BATTERY ENGINEERING

6 VOLT FLOODED DEEP CYCLE

Code	US Battery Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @ 75 Amps	Minutes @ 25 Amps	Kg
6FS235	US2200	**6**	L6	D/T	260	180	260	279	235	207	186	119	455	29
6FS300	US305	**6**	L6	D/F	311	181	265	362	300	264	237	175	642	44
6FS400	USL16HC	**6**	L6	LUG	318	181	405	425	400	352	300	320	960	54

8 VOLT FLOODED DEEP CYCLE

Code	US Battery Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @ 75 Amps	Minutes @ 25 Amps	Kg
8FS180	US8VHC	**8**	R	U/T	260	181	260	279	182	160	144	93	356	29.5

12 VOLT FLOODED DEEP CYCLE

Code	US Battery Equiv.	Volt	Assy	Term	Length	Width	Box Height	Total Height	A/hrs @ 20Hr Rate	A/hrs @ 10Hr Rate	A/hrs @ 5Hr Rate	Minutes @ 75 Amps	Minutes @ 25 Amps	Kg
12FS85	US24DC	**12**	R	D/T	279	171	220	238	85	72	69	43	150	21.5
12FS105	US27DC	**12**	R	D/T	321	171	220	238	105	89	85	53	185	24.5
12FS130	US31DC	**12**	R	D/T	330	171	220	241	125	111	105	64	216	29.5
12FS155	US12V	**12**	R	U/T	333	182	275	274	155	136	122	79	284	37.5

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
- Robotically welded cast strap and post

Made in Canada

6FS235

OPTIMA™
BATTERIES
THE ULTIMATE POWER SOURCE™

SPIRALCELL TECHNOLOGY®
HIGH PERFORMANCE, AGM STARTING, MARINE, & DEEP CYCLE.

+OPTIMA

STARTING & DEEP CYCLE

Spiral AGM Technology

PERFORMANCE STARTING & DEEP CYCLE

AGM TECHNOLOGY

Code	Colour	Volt	Assy	Term	Length	Width	Box Height	Total Height	CCA	Res Cap	A/Hrs	kg
6V	**REDTOP**	6	C (BO)	STD	255	90	185	205	800	100	N/A	8
25	**REDTOP**	12	R (B1)	STD	240	175	175	195	720	100	N/A	14
34	**REDTOP**	12	R (B1)	STD	255	175	180	200	800	100	N/A	17
34/78	**REDTOP**	12	R (B1)	STD/SIDE	255	175	180	200	800	110	N/A	17
34M	**BLUETOP**	12	R (BO)	D/T	255	175	180	200	800	100	N/A	17
D34M	**BLUETOP**	12	R (BO)	D/T	255	175	180	200	750	120	55	20
D31M	**BLUETOP**	12	C (BO)	D/T	325	175	205	230	900	155	75	27
D34	**YELLOWTOP**	12	C (BO)	STD	255	175	180	200	750	120	55	20
D31A	**YELLOWTOP**	12	C (BO)	STD	325	175	205	230	900	155	75	27

Key: For more technical information see page 84

OPTIMA REDTOP

OPTIMA® REDTOP® high-performance AGM batteries deliver a powerful burst of ignition power for a reliable start every time in the most demanding cranking applications.

With impressive high power delivery and extreme resistance to vibration, REDTOP® is ideal for trucks, SUV's, hot rods, street cars and other high performance applications that require a spill proof starting battery. OPTIMA's reputation as a truck or automotive battery is unsurpassed.

34/78

OPTIMA BLUETOP

Installing an OPTIMA® BLUETOP® high performance AGM battery equals exceptional cranking and cycling power.

BLUETOP® provides outstanding vibration resistance and efficient power delivery and faster recharge time. This flexible AGM battery is ideal for those who need a sure starting, strong cranking, maintenance free power source.

BLUETOP® is also ideal for demanding marine and RV applications operating extensive electronic systems and electrical loads.

D34M

OPTIMA YELLOWTOP

The OPTIMA® YELLOWTOP® is a high performance AGM battery with premium cranking power and impressive cycling capability, perfect for modern, accessory loaded vehicles.

YELLOWTOP® can repeatedly be brought back from deep power drains to full charge. Low internal resistance also provides more consistent power output and faster recharges.

Vehicles with winches, high demand electronics and audio systems, commercial vehicles and heavy equipment can all rely on this battery to provide ultimate starting and deep cycle power.

D34

FULLRIVER BATTERY

+ FULLRIVER
STARTING & DEEP CYCLE

THE FULLRIVER ENGINE STARTING BATTERY RANGE PROVIDES HIGH CRANKING AMP RATINGS FROM SMALLER BOX SIZES, SAVING WEIGHT & SPACE.

HC8

ODYSSEY®

+ ODYSSEY
STARTING & DEEP CYCLE

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

PC925

PERFORMANCE STARTING

AGM TECHNOLOGY

Code	Volt	Terminal	Length	Width	Box Height	Total Height	CCA	Res Cap	A/Hrs	Kg
HC8	12	M6	140	85	100	100	100	8	8	3
HC14A	12	M6	170	100	155	155	200	20	14	6
HC14B	12	M6	180	85	130	130	185	15	14	5
HC18	12	M6	170	100	175	175	265	26	18	7
HC20	12	M6	180	80	165	165	230	28	20	7
HC28	12	M8	165	175	125	125	410	48	28	11
HC44	12	M8	200	165	170	170	560	80	44	15
HC65	12	M8	216	172	183	187	825	135	65	15
HC105	12	M8	330	170	215	220	1050	242	105	34

Key: Fullriver batteries are not suitable for use in deep cycle applications | For more technical information see page 84
Some items may not always be in stock, please check availability with your branch.

PERFORMANCE STARTING

AGM TECHNOLOGY

Code	Volt	Assy	Terminal	Length	Width	Box Height	Total Height	PHCA (5 sec)	CCA	Res Cap	A/Hrs	Kg
PC310	12	L	SOCKET	140	85	100	100	310	100	9	8	3
PC535	12	R	SOCKET	170	100	155	155	535	200	21	14	5
PC545	12	L	SOCKET	175	85	130	130	545	185	18	13	6
PC625	12	L	SOCKET	170	100	175	175	625	265	27	18	6
PC680*	12	L	U/T	185	80	170	170	680	220	24	16	7
PC925*	12	L	U/T	170	180	130	130	925	380	52	28	12
PC1200*	12	L	U/T	200	170	170	170	1200	550	78	42	17
PC1230	12	R	STD/SIDE	240	175	200	200	1230	730	100	55	21
PC1400-25	12	R	STD	240	170	220	220	1400	820	125	65	23
PC1400-35	12	L	STD	240	170	220	220	1400	820	125	65	23
PC1500DT	12	R	STD	275	170	200	200	1500	880	135	68	22
PC1700*	12	L	STD	330	170	175	175	1700	875	142	68	28
PC1750-65	12	R	STD	300	180	190	190	1750	930	135	74	26
PC2150	12	C	D/T	330	170	240	240	2150	1150	205	100	35
PC2250	12	L6	D/T	285	270	230	230	2250	1225	240	126	39

Key: * Can be fitted with brass automotive terminal | For more technical information see page 84
Some items may not always be in stock, please check availability with your branch.

Deka®

POWER SPORTS

MOTORCYCLES,
PERSONAL
WATERCRAFT,
ATV'S,
SNOWMOBILES
& MORE.

Made in USA

+ DEKA
POWER SPORTS
AGM Technology

MOTORCYCLE & POWER SPORTS

AGM TECHNOLOGY

Code	Volt	Length	Width	Box Height	CCA	Midtronics Tested CCA**	A/hrs	Foot Notes	Kg
ETX9	12	150	90	105	120	250	8		3.20
ETX12	12	150	90	130	180	290	10		4.30
ETX14	12	150	90	145*	220	410	12	2 x 17mm spacers included	5.40
ETX14L	12	150	90	145*	220	410	12	10mm bottom spacer included	5.40
ETX15	12	135	90	165	220	325	14		5.00
ETX15L	12	135	90	165	220	325	14		5.00
ETX16	12	175	100	155*	325	435	19	20mm bottom spacer included	7.70
ETX16L	12	175	100	155*	325	435	19	20mm bottom spacer included	7.70
ETX18L	12	205	90	165	340	450	20		8.20
ETX20L	12	175	90	155	310	430	17.5		7.00
ETX30LA	12	170	130	175*	400	480	26	22mm bottom spacer included	9.80

Key: * Dimensions do not include spacer |**HCB bench tested using Midtronics MDX-P300

Deka Power Sports AGM batteries are designed for reliable performance. The completely sealed spill-proof design provides season-to-season reliability, reducing the need for frequent battery replacement and ongoing maintenance.

Deka Absorbed Glass Mat (AGM) technology increases cranking power while improving rider and environmental safety.


ETX9

Key to Deka's AGM technology are highly porous micro fibre separators which completely absorb and trap the electrolyte. Moulded top and side connection terminals provide versatility, increased strength and durability.


ETX16L

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
No vent tubes


ETX20L

It all starts with VARTA®

OUR VARTA® POWERSPORT AGM & GEL IS SPECIFICALLY DEVELOPED FOR THE HARSHEST CONDITIONS & MOST RUGGED TERRAIN.

It's perfectly suited to touring bikes with plenty of extra performance features, such as anti-lock brakes. AGM and Gel featuring our unique leak-proof technology, this zero maintenance product is great for all terrain and utility terrain vehicles.

+VARTA®
POWERSPORT
AGM & Gel Technology

MOTORCYCLE & POWERSPORT

VARTA® POWERSPORT AGM TECHNOLOGY

Code	Industry Part Number	Volt	Assy	Length	Width	Box Height	CCA	A/Hrs	Weight
YT4L-4	YT4L-4/YT4L-BS	12	L	113	70	85	40	3	1.07
YTR4A-4	YTR4A-BS	12	R	113	48	86	40	2.5	0.83
YTX5L-4	YTX5L-4/YTX5L-BS	12	L	113	70	105	80	4	1.46
YTX7L-4	YTX7L-4/YTX7L-BS	12	L	113	70	130	100	6	1.83
YTX7A-4	YTX7A-4YTX7A-BS	12	R	150	87	93	100	6	1.82
YTX9-4	YTX9-4/YTX9-BS	12	R	150	87	105	135	8	2.05
YTX12-4	YTX12-B4/YTX12-BS	12	R	150	87	130	170	10	3.03
YTX14-4	YTX14-4/YTX14-BS	12	R	150	87	145	200	12	3.06
YTX16-4	YTX16-4/YTX16-BS	12	R	150	87	161	210	14	3.72
YTX20-4	YTX20-4/YTX20-BS	12	R	175	87	154	250	18	4.36
YTX20L-4	YTX20L-4YTX20L-BS	12	L	175	87	155	250	18	4.36
YT7B-4	YT7B-4/YTX7B-BS	12	R	151	66	92	120	7	1.83
YT9B-4	YT9B-4/YTX9-BS	12	R	151	69	105	135	8	2.09
TTZ7S	TT7S/TTZ7S-BS	12	R	113	70	107	85	6	1.39
TTZ10S	TTZ10S/TTZ10S-BS	12	R	150	88	93	150	8.6	2.01
TTZ12S	TTZ12S/TTZ12S-BS	12	R	150	87	105	200	9	3.05
YT12B-4	YT12-B4/YT12B-BS	12	R	150	70	130	215	12	2.77
YT14B-4	YYT14B-4/T14B-BS	12	R	150	70	145	190	13	3.13
YTX14AH-4	YTX14AH	12	R	134	89	166	210	12	3.52
YTX14AHL-4	YTX14AHL	12	L	134	89	166	210	12	3.52
YTX16CL-B-4	YB16CL-B	12	L	175	102	178	270	19	6
YTX20H-4	YTX20H	12	R	172	87	155	320	18	4.74
YTX20CH-4	YTX20CH	12	R	150	87	161	270	18	4.11
YTX30CL-B-4	YB30CL-B	12	L	167	131	192	395	30	7.09

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 conditions.

51914

VARTA® POWERSPORT GEL TECHNOLOGY

Code	Alternate Part Numbers	Volt	Length	Width	Box Height	CCA (EN)	A/Hrs	Weight (kg)
51913	519 901 017, 51814	12	186	82	173	170	19	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 antilock brakes. Ideal for touring bikes with extra features.

EU
MADE IN EUROPE

MOTOBATT

OUR MOTOBATT AGM BATTERIES ARE SPECIFICALLY DEVELOPED FOR THE HARSHEST CONDITIONS AND THE MOST RUGGED TERRAIN.

They are perfectly suited to touring bikes with plenty of extra performance features, such as anti-lock brakes. AGM featuring our unique leak-proof technology, this zero maintenance product is great for all terrain and utility terrain vehicles.

+ MOTOBATT
POWER SPORTS
AGM & Lithium Technology

MOTORCYCLE & POWER SPORTS

AGM TECHNOLOGY

Code	Volt	Terminals	Length	Width	Box Height	CCA	A/Hrs	Notes	Kg
MBT6N4	6	2	70	70	95	N/A	4		0.73
MBT6N6	6	2	95	55	110	N/A	6		1.05
MB2.5U	12	2	80	70	105	N/A	2.5		1.18
MB3U	12	2	100	55	110	50	3.8		1.34
MBT4BB	12	2	115	40	90	40	2.5		1.05
MTR4	12	2	115	50	85	45	2.5		1.15
MBTX4U	12	2	115	70	90	70	4.7		1.57
MB5U	12	4	120	60	130	90	7		2.30
MB5.5U	12	4	135	60	130	90	7		2.48
MB7U	12	2	150	65	95	100	6.5		2.40
MBTX7U	12	2	115	70	130	115	8		2.60
MBTZ7S	12	2	115	70	105	100	6.5		2.10
MB7BB	12	4	150	60	130	150	9		3.00
MBTX9U	12	4	150	90	105	160	10.5	Includes 5mm bottom spacer	3.40
MB9U	12	4	135	75	135	140	11	Includes 6mm or 21mm bottom spacer	3.35
MBT9B4	12	2	150	70	105	140	9		2.82
MBTZ10S	12	4	150	90	95	190	8.6		2.90
MB10U	12	4	135	90	145	175	14.5	Includes 9mm bottom spacer	4.30
MB12U	12	4	135	80	160	160	15	Includes 14mm bottom spacer	4.40
MBTX12U	12	4	150	90	130	200	14	Includes 5mm or 15mm bottom spacer	4.40
MBT12B4	12	2	150	70	130	150	11		3.52
MBT14B4	12	2	150	70	145	175	13		4.10
MBTX14AU	12	4	135	90	170	190	16.5	Includes 8mm bottom spacer	5.40
MBTX16U	12	4	150	90	160	250	19		5.65
MB16U	12	4	160	90	160	240	20		5.90
MB16A	12	2	150	90	180	200	17.5		5.47
MB16AU	12	2	205	70	165	230	20.5		6.25
MB18U	12	4	180	90	160	250	22.5		6.80
MB51814	12	4	185	80	170	220	22		6.75
MBTX20U	12	4	175	90	155	310	21	Includes 20mm bottom spacer and 13mm side spacer (yellow case)	6.50
MBTX20UHD	12	4	175	90	155	310	21	Includes 20mm bottom spacer and 13mm side spacer (black case)	6.50
MBTX24U	12	4	205	90	160	285	25	Includes 14mm bottom spacer	7.45
MBTX30U	12	4	165	125	175	380	32	Includes 17mm bottom spacer (yellow case)	10.20
MBTX30UHD	12	4	165	125	175	380	32	Includes 17mm bottom spacer (black case)	10.20
MBHD12H	12	2	200	130	165	390	33		10.80

Key: For industry code cross reference see page 97

Discover®

Innovative Battery Solutions

DRY CELL EV TRACTION TECHNOLOGY

Innovative Technology
Proven Expertise
Best in class solutions

+ DISCOVER

DRY CELL EV TRACTION

Gel & AGM Technology

ELECTRIC VEHICLE

Discover®
Innovative Battery Solutions

AGM TECHNOLOGY

Code	Volt	Capacity				Minutes of Discharge			Length	Width	Box Height	Total Height	Weight (kg)
		(20hr)	(10hr)	(5hr)	(1hr)	@25A	@56A	@75A					
EVGT6A-A	6	260	240	222	150	575	225	155	260	180	268	272	36.0
EVGC6A-A	6	220	200	190	130	475	185	125	260	180	254	274	30.0
EV627A-A	6	210	200	180	130	470	180	125	306	168	221	225	28.5
EV506A-230	6	230	210	195	130	485	185	130	244	189	254	275	30.0
EV305A-A	6	330	305	285	210	770	315	220	295	180	345	365	48.5
EVL16A-A	6	390	365	335	240	915	375	265	295	180	383	385	55.0
EVGC8A-A	8	160	150	130	90	320	115	80	260	180	266	286	30.0
EVGT8A-A	8	185	180	156	115	410	160	110	260	180	295	300	37.0
EV512A-24	12	26	24	22	16	31	-	-	166	175	125	125	8.5
EVU1A-A	12	33	31	28	20	45	17	12	195	130	164	180	10.5
EV512A-45	12	50	45	40	29	75	27	18	197	165	170	170	13.5
EV22A-A	12	58	55	50	35	105	37	25	229	138	210	214	17.5
EV34A-A	12	65	60	55	39	115	42	28	258	167	178	198	19.5
EV24A-A	12	85	78	72	54	155	57	38	258	172	214	235	24.0
EV24LA-A	12	85	78	72	54	155	57	38	258	172	206	228	24.0
EV27A-A	12	100	95	87	65	195	73	50	308	172	212	232	29.1
EV31A-A	12	115	110	96	72	235	89	63	330	172	216	236	32.5
EV12A-A	12	140	130	120	90	300	110	80	327	180	254	274	39.5
EV185A-A	12	230	210	198	135	490	200	135	386	178	352	372	63.0
EV4DA-A	12	235	220	200	135	515	205	140	524	225	222	242	62.5
EV8DA-A	12	280	260	240	170	630	270	185	522	275	222	242	78.0

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

EV GEL CELL TECHNOLOGY

Code	Volt	Capacity				Minutes of Discharge			Length	Width	Box Height	Total Height	Weight (kg)
		(20hr)	(10hr)	(5hr)	(1hr)	@25A	@56A	@75A					
EV506G-180	6	205	188	180	117	428	167	113	244	189	271	271	31.0
EV506G-250	6	285	270	250	190	675	275	200	293	180	343	345	45.0
EV512G-063	12	73	67	63	42	110	37	21	258	172	214	216	23.0
EV512G-080	12	90	85	80	60	180	65	38	330	172	231	231	29.0
EV512G-103	12	115	110	103	70	220	85	55	327	180	274	274	36.0

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

Discover® Dry Cell/Gel, EV Traction Batteries, provide superior high integrity and reliability. The maintenance-free, traction plate construction, designed to deliver excellent run time and very good cycle life in hard, high rate discharging applications with repeated deep discharging, makes the EV Series the definitive choice for robust Traction applications.

51914

REMCO
renewable energy manufacturing company

+ LEAD CARBON
TECHNOLOGY

REMCO® LEAD CARBON BATTERIES ARE DESIGNED FOR RECREATIONAL VEHICLES, RENWEABLE ENERGY, AND MARINE DEEP CYCLE APPLICATION.

CARBON ADDED TO THE NEGATIVE PLATE GIVES BETTER CORROSION RESISTANCE ESPECIALLY WHEN DEEP DISCHARGED SILICON DIOXIDE ADDED TO ELECTROLYTE GIVES BETTER CYCLE LIFE LESS SULPHATION IN CASES OF PARTIAL STATE-OF-DISCHARGE OPERATION.

RENEWABLE ENERGY

2V LEAD CARBON TECHNOLOGY

- Design life: 15 years @25°C
- Cycle life: 60%DOD≥4000 @25°C
- Carbon technology
- Performs well at partial state of charge (PSOC)
- Fast charging acceptance
- Modular design and installation for less space, easy installation & maintenance
- Integrating GEL and AGM technology
- Comply with IEC, IEEE, UL, EN, CE standards
- Horizontal installation, eliminates electrolyte stratification and saves space

REMCO	Voltage	(10 hr)	(5 hr)	(3 hr)	Length	Width	Height	Kg	Terminal
LRC2-300	2	321	282	244	158	181	350	24.5	T11
LRC2-400	2	428	376	325	191	181	350	31	T11
LRC2-500	2	536	469	412	225	181	350	37.5	T11
LRC2-600	2	643	563	483	303	181	350	47.5	T11
LRC2-800	2	857	740	638	370	181	350	60.6	T11
LRC2-1000	2	1071	925	797	440	181	350	76	T11

6V & 12V LEAD CARBON TECHNOLOGY

- Designed for Recreational vehicles and Marine Deep cycle application
- Carbon added to negative plate gives better corrosion resistance especially when deep discharged
- Silicon Dioxide added to electrolyte gives better cycle life
- Less sulphationb in cases of partial state-of-discharge operation
- The LDC series has higher capacity and better cycle life at 50% of depth of discharge (DOD) giving around twice the life of standard AGM

REMCO	Box Size	Voltage	(20 hr)	(10 hr)	(5 hr)	Length	Width	Height	Total Height	Kg	Terminal
RM6-224LC	GC2	6	224	210	192	260	180	247	253	30.5	T11(M8)
RM6-400LC	L16	6	400	375	342	295	180	406	428	54.2	DT-5/16
RM12-95LC	24 (NS70)	12	90	85	77	260	168	208	232.5	23.8	DT-5/16
RM12-120LC	31(148)	12	118	113	107	330	173	212	237	31.7	DT-5/16
RM12-200LC	4D (N150)	12	200	190	172	527	214	222	244	56.1	DT-3/8
RM12-285LC	8D (N200)	12	285	262	225	527	280	230	252	78	DT-3/8

REMCO
renewable energy manufacturing company

REMCO OFFER AN EXTENSIVE RANGE OF 6V AND 12V VRLA AGM TECHNOLOGY BATTERIES FROM 1.3 TO 20 A/HRS

Extensively proven throughout New Zealand, REMCO VRLA are especially suited to the fire, security, stationary and emergency lighting markets.

+REMCO

VRLA STANDBY

AGM Technology
5 Year Design Life

VRLA

VRLA - AGM TECHNOLOGY

REMCO	Volt	Term	Length	Width	Box Height	(20 hr)	(10 hr)	(5 hr)	(1 hr)	Kg
RM6-1.3	6	T1	100	25	50	1.2	1.1	1	0.7	0.30
RM6-3.2	6	T1	135	67	60	3.2	3	2.7	2	0.62
RM6-4	6	T1	70	47	100	4	3.7	3.4	2.5	0.75
RM6-7.2	6	T1	150	35	95	7.2	6.7	6.1	4.5	1.10
RM6-12	6	T1	150	50	100	12	11.2	10.2	7.5	1.75
RM12-0.8	12	E Plug	95	25	60	0.8	0.74	0.68	0.5	0.36
RM12-1.3	12	T1	95	45	50	1.2	1.12	1.02	0.75	0.57
RM12-2.3	12	T1	180	35	60	2.3	2.14	1.95	1.44	0.97
RM12-2.9	12	T1	80	55	100	2.9	2.7	2.45	1.82	1.06
RM12-3.2	12	T1	135	67	60	3.2	3	2.7	2	1.35
RM12-5	12	T1	90	70	100	5.4	5	4.6	3.4	1.65
RM12-5W	12	T2	90	70	100	6	5.6	5.1	3.8	1.77
RM12-7	12	T1	150	65	95	7	6.5	6	4.55	2.18
RM12-7.2	12	T2	150	65	95	7.5	6.98	6.37	4.71	2.15
RM12-9	12	T2	150	65	95	8.5	7.91	7.22	5.3	2.45
RM12-10W	12	T2	150	65	110	10	9.3	8.1	6.28	3.20
RM12-12	12	T2	150	100	95	12	11.2	10.2	7.54	3.50
RM12-18	12	T3	180	77	167	18	16.7	15.9	10.6	5.16
RM12-20	12	T12	180	77	167	20	18.6	17	12.6	5.78

Key: For more technical information see page 84
Some items may not always be in stock, please check availability with your branch.

- Purpose built for standby applications
- Ultra long service life
- AGM technology
- Zero maintenance

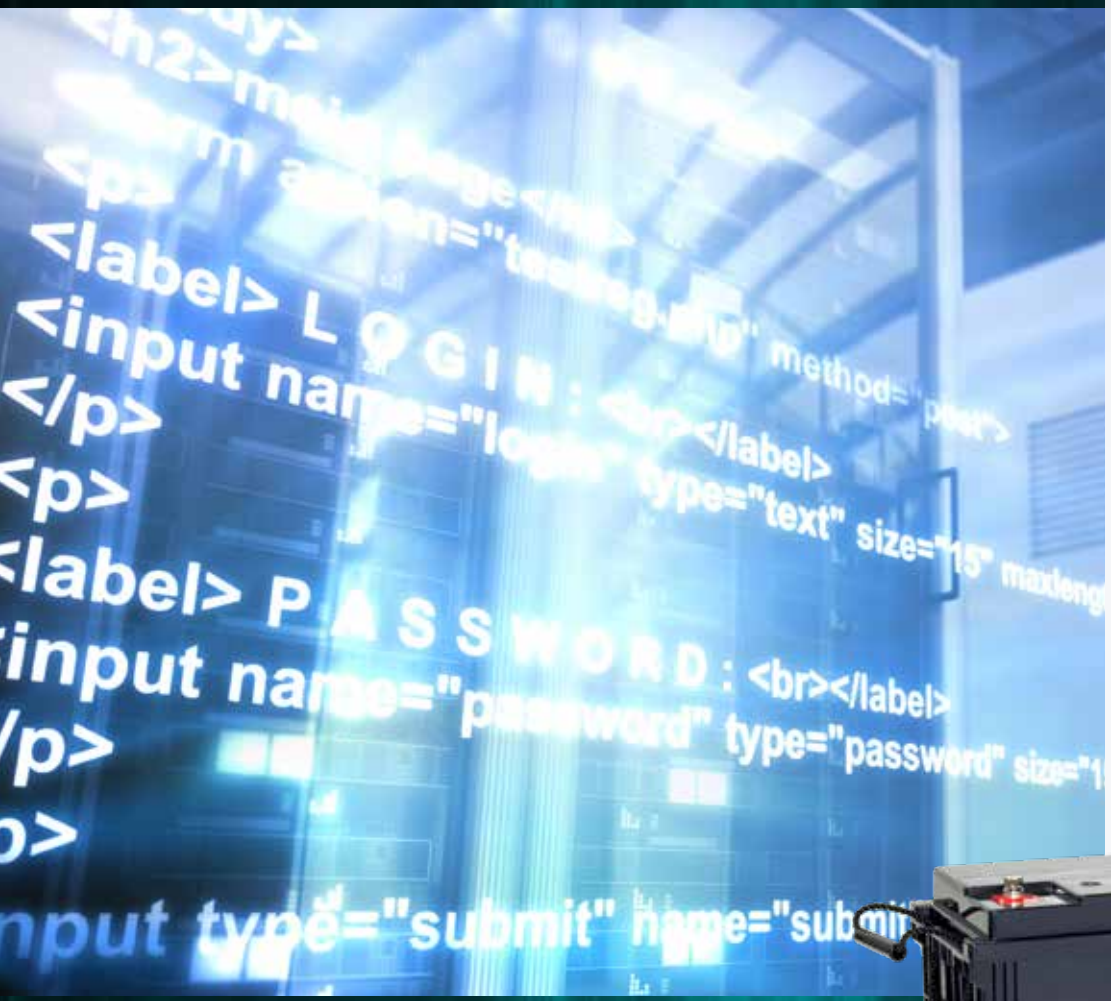
STATIONARY - AGM TECHNOLOGY (BULK SUPPLY OPTIONS)

Code	Volt	Term	Length	Width	Box Height	(20 hr)	(10 hr)	(5 hr)	(1 hr)	Kg
SA12-7	12	T1	150	65	95	7	6.5	6	4.55	2.06
SA12-7-Q10 **	12	T1	150	65	95	7	6.5	6	4.55	2.06
SA12-7-Q100 **	12	T1	150	65	95	7	6.5	6	4.55	2.06
SA12-7-Q200 **	12	T1	150	65	95	7	6.5	6	4.55	2.06
SA12-7-Q500 **	12	T1	150	65	95	7	6.5	6	4.55	2.06

Key: ** Q in part code signifies quantities (Q10 = 10) | For terminal configuration see page 43 $ year design life in float application

The Remco Stationary battery range is specifically designed for reliable standby backup power of applications such as emergency lighting, security and UPS through to small portable electronic equipment.

+REMCO
renewable energy manufacturing company



THE REMCO LONGLIFE & FT SERIES ARE GENERAL PURPOSE 12V AGM TECHNOLOGY BATTERIES WITH A 10 YEAR DESIGN LIFE IN FLOAT CHARGE USE.

As with all Remco batteries, the AL series are rechargeable, highly efficient, leak proof and completely maintenance free.

+REMCO

VRLA STANDBY

AGM Technology
10 Year Design Life

VRLA

AGM TECHNOLOGY LONG LIFE

REMCO	Volt	Term	Length	Width	Box Height	(20 hr)	(10 hr)	(5 hr)	(1 hr)	Kg
RM12-28	12	T12	165	175	125	29.6	28	24.3	17.2	8.15
RM12-33	12	T12	195	130	155	35	32.6	29.7	22	9.70
RM12-45	12	T6	200	165	170	48.1	45	39.1	27.9	13.80
RM12-65	12	T6	350	165	180	69.5	65	56.5	40.3	19.60
RM12-75	12	T11	260	170	210	80.2	75	65.3	46.5	22.40
RM12-90	12	T6	305	170	210	96.3	90	78.3	55.8	27.50
RM12-100	12	T11	330	170	220	107	100	87	62	28.00
RM12-120	12	T11	405	175	210	128.4	120	104.4	74.4	33.80
RM12-200	12	T11	490	240	220	214	200	174	124	57.00

10 year design life in float application. Terminal details see below.

AGM TECHNOLOGY FRONT TERMINAL

REMCO	Volt	Term	Length	Width	Box Height	(10 hr)	(8 hr)	(5 hr)	(1 hr)	Kg
RM12-55FT	12	T13	277	106	222	55	53	48.2	35.9	17
RM12-100FT	12	T11	508	110	238.5	100	95.2	87	65	35
RM12-150FT	12	T11	551	110	288	150	142.4	130.5	97.5	46

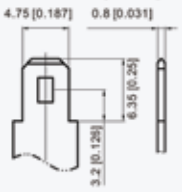
10 year design life in float application

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

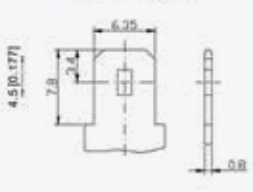
Remco Long Life VRLA technology provides reliable, robust and flexible back up of any critical electrical applications and carries a proven history supporting telecommunications, utility and power station distribution throughout New Zealand.

TERMINAL CONFIGURATION

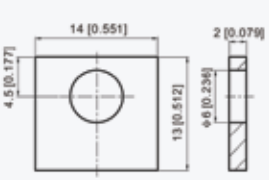
T1 Terminal
Unit: mm [inches]



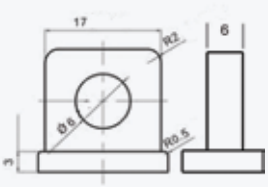
T2 Terminal
Unit: mm [inches]



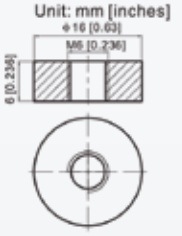
T3 Terminal
Unit: mm [inches]



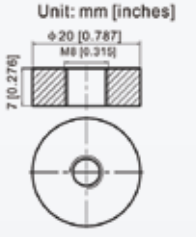
T10 Terminal
Unit: mm [inches]



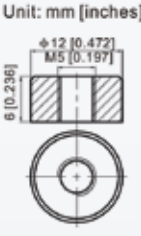
T6 Terminal
Unit: mm [inches]



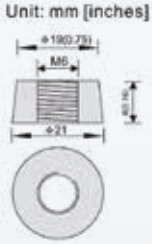
T11 Terminal
Unit: mm [inches]



T12 Terminal
Unit: mm [inches]



T13 Terminal
Unit: mm [inches]



REMCO
renewable energy manufacturing company

THE REMCO DC & G SERIES ARE DEEP CYCLE BATTERIES ESPECIALLY DESIGNED FOR CYCLIC USE. HEAVY DUTY LEAD CALCIUM ALLOY GRIDS PROVIDE AN EXTRA MARGIN OF PERFORMANCE & SERVICE LIFE ON DEEP DISCHARGE CYCLIC APPLICATIONS.

+REMCO

VRLA DEEP CYCLE

AGM Technology

10 Year Design Life

VRLA

AGM TECHNOLOGY DEEP CYCLE (FOR CYCLIC USE)

REMCO	Volt	Term	Length	Width	Box Height	(20 hr)	(10 hr)	(5 hr)	Kg
RM6-210DC	6	DT	260	180	274	210	198	185	30
RM6-225DC	6	T11	260	180	253	224	194	179	31
RM6-245DC	6	T11	243	188	275	245	221	198	32
RM6-390DC	6	DT	387	80	400	390	360	331	54
RM12-18DC	12	T3	180	77	167	19.3	18	15.8	6
RM12-26DC	12	T3	165	175	125	27.8	26	22.8	9
RM12-75DC	12	T11	260	170	214	80.4	75	65.8	23
RM12-95DC	12	T11	306	169	212	100	94	82	27
RM12-100DC	12	T11	330	170	220	107	100	87.7	31
RM12-120DC	12	T11	328	171	220	120	108	95	32
RM12-150DC	12	T11	480	170	240	160	150	131	45
RM12-200DC	12	T11	522	240	224	214	200	175	62
RM12-250DC	12	T11	522	268	226	262	250	218	74

10 year design life in float application Terminal details see page 43

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.

AGM & GEL TECHNOLOGY DEEP CYCLE FOR ELECTRIC TRUNDLERS

	Volt	Term	Length	Width	Height	(20 hr)	(10 hr)	(5 hr)	Kg
LCXC12-21P	12	T3	180	75	170	21	16.7	15	5
LCXC12-28P	12	T3	165	125	175	28	24	22	9
GU1H*	12	LUG	210	130	155	32	29	25	11
EV512A-24	12	T13	166	175	125	26	24	22	9

Key: * Gel technology Terminal details see page 43

GEL TECHNOLOGY

REMCO	Volt	Term	Length	Width	Height	(20 hr)	(10 hr)	(5 hr)	Kg
RM12-30G	12	T10	195	130	160	30	27	24	10
RM12-40G	12	T6	200	165	170	38	35.3	30.4	14
RM12-50G	12	T6	230	140	205	50	46.5	40	17
RM12-70G	12	T6	260	170	210	70	65.1	56	23
RM12-80G	12	T6	350	170	185	85	78	68	27

Key: Terminal details see page 43
Some items may not always be in stock, please check availability with your branch.

The Remco deep cycle range also offers cost effective AGM and Gel technology batteries for applications such as golf carts, communications, in-house power, marine & RV, caravans, motorhomes, and medical applications.

+ BATTERY ACCESSORIES

CONTENTS
BATTERY ACCESSORIES

BATTERY CHARGERS

OZ CHARGE PRODUCT COMPARISON TABLE

Model:	OC-61201	OC-121.5	OC-1206U	OC-1212U	OC-1225U	OC-2406U	OC-2412U	OC-W12120P	OC-1210PS	OC-2404M	PX-2408M
Input	100 VAC 240 VAC	100 VAC 240 VAC	100 VAC 240 VAC	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC	240 VAC
Power consumption Max	0.35 A 0.18 A	0.4 A 0.22 A	1.4 A 0.75 A	1.8 A	3 A	1.8 A	3 A	8 A	1.1 A	1.2 A	1.6 A
Nominal out-put voltage	6V/12V Selectable	12V	12V	12V	12V	24V	24V	12V	12V	24V	24V
Output current	1A	1.5A	1A 4A 6A	1A 8A 12A	2A 15A 25A	1A 4A 6A	2A 8A 12A	120A	10A	4A	8A
Boost Charge	7.2V 14.4V	14.4V	14.1V 14.4V 14.7V	14.1V 14.4V 14.7V	14.1V 14.4V 14.7V	28.2V 28.8V 29.4V	28.2V 28.8V 29.4V	14.4V 14.7V	14.1V 14.4V 14.7V	28.8V	28.8V
Equalisation Charge	-	-	14.3V 14.6V 15.5V	14.3V 14.6V 15.5V	14.3V 14.6V 15.5V	28.6V 29.2V 31.0V	28.6V 29.2V 31.0V	15.5V -	14.3V 14.6V 15.5V	29.2V	-
Float / Trickle Charge	6.75V 13.5V	13.6V	13.6V	13.6V	13.6V	27.2V	27.2V	13.8V	13.7V	13.7V	27.2V
Cooling Fan	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Ideal for Charging	1Ah-20Ah	5Ah-35Ah	3Ah-120Ah	3Ah-240Ah	6Ah-500Ah	3Ah-120Ah	6Ah-240Ah	<1000Ah	10Ah-200Ah	5Ah-80Ah	5Ah-160Ah
Ideal for Maintaining	1Ah-100Ah	5Ah-120Ah	3Ah-180Ah	3Ah-360Ah	6Ah-750Ah	3Ah-180Ah	6Ah-360Ah	<1500Ah	10Ah-300Ah	5Ah-120Ah	5Ah-240Ah
Power Supply Mode	No	No	No	No	Yes	No	Yes	No	Yes	No	No
Charging Stages	3 [4,8,9]	8 [1-5,7-9]	9 [1-9]	9 [1-9]	9 [1-9]	9 [1-9]	9 [1-9]	4 [4-6,8]	6 [2-6,8]	9 [1-9]	4 [3-5,8]
Short Circuit Protected	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reverse Polarity Protected	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Safety Timer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Types Supported	AGM, Wet, Flooded, EFB & Gel	AGM, Wet, Flooded, EFB & Gel	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB Gel & Calcium	AGM, Wet, Flooded, EFB & Gel	AGM, Wet, Flooded, EFB & Gel
Display	LED	LED	LED	LED	LED Remote LCD Optional	LED	LED Remote LCD Optional	LED	LED	LED	LED
Output Connections	1,8 m [SAE]	1,8 m [SAE]	1,8 m [SAE]	1,8 m [PP30]	1,8 m [SB50]	1,8 m [SAE]	1,8 m	3 m	1,8 m [PP30]	1,8 m [3 pin XLR]	1,8 m [3 pin XLR]
Weight	0.4Kg	0.45Kg	0.75Kg	1.1Kg	2.0Kg	1.1Kg	2.0Kg	2.2Kg	1.0Kg	1.1Kg	1.7Kg
Dimensions [mm]	100x 65x36	109x 72x29	189x 98x51	218x 102x57	267x 165x77	267x 165x77	218x 102x57	294x 141x67	140x 145x55	218x 102x57	185x 153x70

BATTERY CHARGERS 12V

6/12V 1 AMP SELECTABLE CHARGER

Code **OC-61201**
Battery Charger & Maintainer designed for Gel, AGM and WET Batteries
Suits batteries 1 to 20 A/Hr
No fan
Includes quick connect ring terminals and alligator clips
2 year warranty

12V 1.5 AMP 8 STAGE SELECTABLE CHARGER

Code **OC-121.5**
Battery Charger & Maintainer designed for Gel, AGM and WET Batteries
Suits batteries 5 to 35 A/Hr
No fan
Includes quick connect ring terminals and alligator clips
2 year warranty

12V 6 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-1206U**
Battery Charger & Rejuvenator designed for Gel, AGM,
EFB and WET Flooded batteries
Suits Batteries 3 to 120 A/Hr
With fan
Includes alligator clips
2 year warranty

12V 12 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-1212U**
Battery Charger & Rejuvenator designed for Gel, AGM,
EFB and WET Flooded batteries
Suits Batteries 3 to 260 A/Hr
With fan
Includes alligator clips
2 year warranty

BATTERY CHARGERS 12V

12V 25 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-1225U**
Battery charger, rejuvenator & power supply designed for Gel, AGM, EFB and WET Flooded batteries
Suits Batteries 6 to 500 A/Hr
With Fan
Includes quick connect ring terminals and alligator clips
2 year warranty

OC-1225U

12V 120 AMP WORKSHOP BATTERY CHARGER

Code **OC-W12120P**
Workshop battery charger, maintainer & power supply
EFB and WET Flooded batteries
Suits Batteries < 1000 A/Hr
With Fan
Includes alligator clips & 3 metre cable
2 year warranty

OC-W12120P

12V 10 AMP RV & MARINE / POWER SUPPLY

Code **OC-1210PS**
RV marine battery charger & maintainer designed for Gel, AGM, EFB and WET flooded batteries
Suits Batteries 5 to 160 A/Hr
No Fan, **IP64** dust & water resistant
Includes Ring Terminal connections
2 year warranty

OC-1210PS

BATTERY CHARGERS 24V

24V 12 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-2412U**
Battery charger & maintainer
Designed for VRLA (all AGM, Calcium, Gel, SMF & Wet)
Suits batteries 6 to 240 A/Hr
With fan
Includes quick connect ring terminals and alligator clips
2 year warranty

24V 8 AMP MOBILITY CHARGER

Code **PX-2408M**
Mobility battery charger & maintainer
Designed for Gel, AGM, EFB and WET flooded batteries
Suits batteries 10 to 200 A/Hr
No Fan, **IP51** Rated
Heavy duty cables with amphenol XLR type 3 connector
External dimensions: L185 x W153 X H70mm
Complies with AS/NZS 3696.14 for powered chairs
2 year warranty

24V 4 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-2404M**
Battery charger & maintainer
Designed for VRLA (all AGM, Calcium, Gel, SMF & Wet)
Suits batteries 5 to 80 A/Hr
No fan
Includes quick connect ring terminals and alligator clips
2 year warranty

24V 6 AMP 9 STAGE SELECTABLE CHARGER

Code **OC-2406U**
Battery charger & maintainer
designed for VRLA (all AGM, Calcium, Gel, SMF & Wet)
Suits batteries 3 to 120 A/Hr
With fan
Includes quick connect ring terminals and alligator clips
2 year warranty

BATTERY CHARGERS 12V

12V 50 AMP LOW VOLTAGE DISCONNECT

Code **OC-LVD50**
The OC-LVD50 will automatically disconnect your load/s once the battery voltage goes below 10.2V
No fan
Cut in Voltage: 12.5V / Cut-out Voltage 10.2V
Standby current: 150mA
Dimensions: L124 x W117 x H45mm
2 Year warranty

OC-LVD50

12V BATTERY MONITOR / STATE OF CHARGE INDICATOR

Code **OC-BMSOC**
Check your battery condition with the press of a button
Waterproof design, quick and easy installation
Green LED = Battery OK
Red LED = Battery needs charging
2 year warranty

OC-BMSOC

ALLIGATOR CLIPS & RING TERMINALS

Code	Harness	Suits
OC-AC-8A	Alligator Clips	Suits 8 Amp Chargers
OC-AC-16/21A	Alligator Clips	Suits 16 & 21 Amp Chargers
OC-AC-900/2A	Alligator Clips	Suits 900mA, 1 & 2 Amp chargers
OC-CC1-8	Replacement Alligator clips	Suits 1-8 Amp Chargers
OC-CC10-21	Replacement Alligator clips	Suits 10-21 Amp Chargers
OC-RT-4/6A	Ring Terminals	Suits 4 & 6 Amp Chargers
OC-RT-8A	Ring Terminals	Suits 8 Amp Chargers
OC-RT-16/21A	Ring Terminals	Suits 16 & 21 Amp Chargers
OC-RT-900/2A	Ring Terminals	Suits 900mA, 1 & 2 Amp chargers
OC-RT1-8	Replacement Ring Terminals	Suits 1-8 Amp Chargers
OC-RT10-21	Replacement Ring Terminals	Suits 1-8 Amp Chargers


OC-RT1-8


OC-RT10-21

BATTERY CHARGERS 12V

12V 1 AMP WATER BOY

Code **MBPDCWB**
Splash proof, suitable for outdoors
9 step algorithm
Suggested for 2 to 20 A/hr batteries
Includes: 21" clip and eyelet and maintenance leads
1 year warranty

12V 2 AMP FAT BOY

Code **MBPDCFB**
Lithium, AGM and standard lead acid settings
9 step algorithm
Suits 4 to 40 A/hr batteries
Includes: 21" clip and eyelet and maintenance leads
1 year warranty

MOTOBATT CHARGER WIRING HARNESS

Code	Description
MBCL5	5 foot extension cable to suit MotoBatt Chargers
MBCUSBSET	MotoBatt USB cable set, for charging phones on bikes

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
912-2400	Delta-Q, QuiQ **24V 25A** Smart Charger	24	25
912-3600	Delta-Q, QuiQ **36V 21A** Smart Charger	36	21
912-4800	Delta-Q, QuiQ **48V 18A** Smart Charger	48	18

Key Specifications

Summary	QuiQ 1000				QuiQ 1500				QuiQ-dci		
Available models	24 V	36 V	48 V	72 V	48 V	72 V	48 V	72 V	48 V	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	875 W	1000 W	1000 W	1200 W	1200 W	1500 W	1500 W	1000 W	1000 W	945 W
AC input range	85-265 VAC				100-190 VAC		190-265 VAC		85-265 VAC		
Max AC input current	10 A @120 VAC; 5 A @230 VAC				12 A @ 120 VAC		7 A @ 230 VAC		10 A @120 VAC; 5 A @230 VAC		
Warranty	Warranty provided by OEM or distributor point of sale										

Converter DC Output	QuiQ-dci		
Available models	48 VDC	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)		

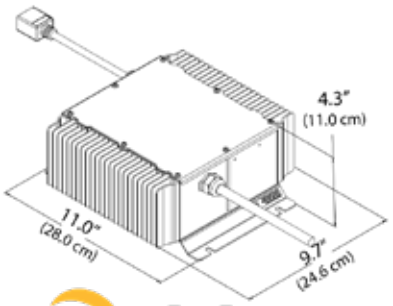
Operating Conditions		
Operating temperature	-22°F to 122°F (-30°C to +50°C)	Derated at >86°F (30°C), <32°F (0°C)
Storage temperature	-40°F to 158°F (-40°C to +70°C)	

Mechanical	
Dimensions	11.0 x 9.7 x 4.3" (28.0 x 24.6 x 11.0 cm)
Weight	< 11 lbs (< 5 kg)
AC input connector	IEC320 / C14; available IP66 sealed
DC output connector	OEM specific with 12 AWG wire
Enclosure rating	IP66 (NEMA4)

Features

- Multi-color LED indicator for: faults, AC power, charge status, charge current
- Download charge / event data using the QuiQ Programmer Tool (sold separately)

Dimensions



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
940-0001	Delta-Q IC650 24V 27A Industrial Charger	24	27
940-0002	Delta-Q IC650 36V 18A Industrial Charger	36	18
940-0003	Delta-Q IC650 48V 13.5A Industrial Charger	48	13.5
900-0089-02	Delta Q USB Programmer		
475-0354	Delta-Q IC Series Remote Temperature Sensor		
475-0353	Delta-Q IC Series DC Output Cable 2m SB50 Gray		
475-0409	Delta-Q IC Series DC Output Cable 2m SB50 Red		
475-0354	Delta-Q IC Series DC Output Cable 2m SB175 Gray		
900-0112	Delta-Q IC-QUI Adaptor Plate		
900-0111	Delta-Q IC Handle and Feet Kit		

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	1.8 V	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		

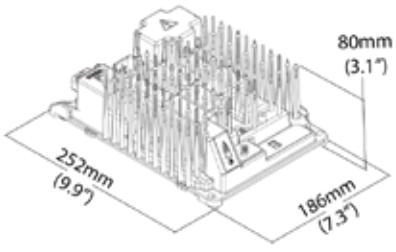
AC Input		
AC input voltage range	85-270 VAC	
Nominal AC input voltage	100-240 VAC	
Nominal AC input frequency	50 / 60 Hz	
Maximum AC input current	7.5 A	
Nominal AC input current	7.3 A @ 100 VAC	6.0 A @ 120 VAC
	3.1 A @ 230 VAC	2.9 A @ 240 VAC
Power factor	>0.99 @ 120 VAC	>0.98 @ 230 VAC

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.

BATTERY CHARGERS

S.P.E. BATTERY CHARGERS

S.P.E. Elettronica Industriale manufactures on-board and stand-alone Smart battery chargers for Wet and Gel traction batteries, both Traditional and High Frequency, with fully programmable charging process. With over 40 years of experience and a proud tradition of quality and innovation, S.P.E. Elettronica Industriale has become a leader in the electronic battery charger field.

Code	Description	Volts	Current	5h	20h
CBHD1-24-10	S.P.E. **24V 10A** Smart Charger	24	10	60-100ah	70-130ah
CBHD2-24-20	S.P.E. **24V 20A** Smart Charger	24	20	120-195ah	150-235ah

- High frequency system with advanced technology
- Lightweight & compact
- Customisable according to customer needs
- Universal input voltage 85 Vac – 264 Vac, 50 Hz – 60 Hz
- On-board or stand-alone use
- 12 V & 24 V versions available
- Efficiency > 85%
- Charging process fully controlled by microprocessor
- Possibility to choose from curves for typical Lead-Acid, Gel & AGM batteries, all other curves are available upon request
- Protection: IP30 (IP33 available upon request for some models)

BATTERY CHARGERS

POWER TRAIN BATTERY CHARGERS

PTC20A

POWER TRAIN PRODUCT COMPARISON TABLE

Code	Rating	Voltage	Charging Current	Battery Type	Charging Stages	Output voltage
PTC12V1.6A	up to 30A/hr up to 350CCA	12	1.6A	Lead Acid Calcium AGM, Gel	1	Lead Acid 14.7V Calcium 15.6V Gel 14.3V
PTC2500MA	up to 60A/hr up to 400CCA	12	2.5A	Lead Acid Calcium AGM, Gel	3	Lead Acid 14.7V Calcium 15.6V Gel 14.3V
PTC6000MA	up to 100A/hr up to 600CCA	12	2/4/6A	Lead Acid Calcium AGM, Gel	3	Lead Acid 14.7V Calcium 15.6V Gel 14.3V
PTC10000MA	up to 140A/hr up to 800CCA	12	4/7/10A	Lead Acid Calcium AGM, Gel	3	Lead Acid 14.7V Calcium 15.6V Gel 14.3V
PTC12V6A7S	up to 125A/hr up to 750CCA	12	6A	Lead Acid Calcium AGM, Gel	7	Lead Acid 14.7V Calcium 15.6V Gel 14.3V
PTC20AL	up to 360A/hr up to 1500CCA	12	20A	Lead Acid Calcium AGM, Gel	7	Lead Acid 14.7V Calcium 15.6V
PTC30AL	up to 450A/hr up to 2000CCA	12	30A	Lead Acid Calcium AGM, Gel	7	Lead Acid 14.7V Calcium 15.6V
PTC40AL	up to 500A/hr up to 2500CCA	12	40A	Lead Acid Calcium AGM, Gel	7	Lead Acid 14.7V Calcium 15.6V
SBC10M	up to 150A/hr up to 800CCA	6/12/24	10A	Lead Acid Calcium AGM	3	Lead Acid 14.7V Calcium 15.6V
PTC 12V20AX3	up to 400A/hr up to 1500CCA	12	20A	Lead Acid Calcium AGM		Lead Acid 14.7V Calcium 15.6V

BATTERY CHARGERS 12V

12V 1.6 AMP MOTORCYCLE CHARGER

Code **PTC12V1.6A**
Lead acid, SLA, Calcium, Gel, and AGM batteries
Suits starting batteries up to 350 CCA
Suits deep cycle batteries up to 30 A/hr
Short circuit, reverse polarity & overload protection
LED charging status indicator
240V wall plug
1 year warranty


PTC12V1.6A

12V 2.5 AMP 3 STAGE CHARGER

Code **PTC2500MA**
Lead acid, SLA, calcium, Gel, and AGM batteries
Suits automotive up to 400 CCA
Suits deep cycle up to 60 A/hr
Over charge & short circuit protection
Reverse polarity protection with warning lights
& audible buzzer
1 year warranty


PTC2500MA

12V 2/4/6 AMP 3 STAGE CHARGER

Code **PTC6000MA**
Lead acid, SLA, Calcium, Gel, and AGM batteries
Selectable output current: 2A, 4A, 6A
Suits automotive batteries up to 600 CCA
Suits deep cycle batteries up to 100 A/hr
Over charge & short circuit protection
Reverse polarity protection with warning lights
& audible buzzer
1 year warranty


PTC6000MA

12V 4/7/10 AMP 3 STAGE CHARGER

Code **PTC10000MA**
Lead acid, SLA, Calcium, Gel, and AGM batteries
Selectable output current: 4A, 7A, 10A
Suits automotive batteries up to 800 CCA
Suits deep cycle batteries up to 140 A/hr
Over charge & short circuit protection
Reverse polarity protection with warning lights
& audible buzzer
1 year warranty


PTC10000MA

BATTERY CHARGERS 12V

12V 20 AMP 7 STAGE CHARGER

Code **PTC20AL**
Lead acid, SLA, Calcium, Gel, and AGM batteries
Suits automotive batteries up to 1500 CCA
Suits deep cycle batteries up to 360 A/hr
digital voltmeter, ammeter & capacity LED display
Over charge & short circuit protection
Reverse polarity protection with warning lights
& audible buzzer. Last setting recall
1 year warranty

12V 30 AMP 7 STAGE CHARGER

Code **PTC30AL**
Lead Acid, SLA, Calcium, Gel, and AGM batteries
Suits automotive batteries up to 2000 CCA
Suits deep cycle batteries up to 450 A/hr
Digital voltmeter, ammeter & capacity LED display
Over charge & short circuit protection
Reverse polarity protection with warning
lights & audible buzzer. Last setting recall
1 year warranty

12V 40 AMP 7 STAGE CHARGER

Code **PTC40AL**
Lead Acid, SLA, Calcium, Gel, and AGM batteries
Suits automotive batteries up to 2500 CCA
Suits deep cycle batteries up to 500 A/hr
Digital voltmeter, ammeter & capacity LED display
Over charge & short circuit protection
Reverse polarity protection with warning
lights & audible buzzer. Last setting recall
1 year warranty

BATTERY CHARGERS

12V 20 AMP 3 OUTPUT CHARGER

Code **PTC12V20AX3**
Lead acid & calcium battery selector switch
Charge 3 batteries simultaneously (can be different sizes, must be same technology)
Maintains 20 Amp charge on each battery
Over charge & short circuit protection
Reverse polarity protection with warning lights & audible buzzer
1 year warranty

6/12/24V 10 AMP 3 STAGE WORKSHOP CHARGER

Code **SBC10M**
Selectable for 6 / 12 / 24V batteries
Heavy Duty Aluminium case
Lead Acid & Calcium battery selector switch
Short circuit and reverse polarity protection
Suits batteries up to 800CCA or up to 150 A/hr (Charge) up to 300 A/hr (Maintain)
10 A maximum charging output
1 year warranty

12V BATTERY STATE INDICATOR

Code **CR1**
2 pin charging connector compatible with PTC2500MA, PTC6000MA, PTC10000MA, PTC16000MA, PTC12V6A7S
Easy to read LED display indicator: Flat/charged/requires charge
Weatherproof with IP 65 Rating
Mounting hardware supplied
Up to 16A Charge Current

12V 6 AMP 7 STAGE MARINE CHARGER

Code **PTC12V6A7S**
Lead acid, SLA, Calcium, Gel, and AGM batteries
Suits starting batteries up to 750CCA
Suits deep cycle batteries up to 125A/hr
IP65 weatherproof rating
Meets EMC & CE standards, C-tick approved
Over charge & short circuit protection
Reverse polarity protection with warning lights & audible buzzer
1 year warranty

SOLAR PRODUCTS

12V 10 AMP SOLAR CONTROLLER

Code **OC-SR10**
Suit Gel, AGM, Conventional Lead-Acid and Calcium batteries
No fan
Selectable boost voltage (maximum charge voltage) - digital voltmeter
Input: 12V Solar Panel (Max. 23V) / Output: DC12V 10A
Suitable for 12V Panels up to 170 watts.
Dimensions: L120 x W75 x H25mm
2 year warranty

OC-SR10

12V 30 AMP SOLAR CONTROLLER

Code **OC-SR30**
Suit Gel, AGM, Conventional Lead-Acid and Calcium Batteries
No fan
Selectable Boost Voltage
(Maximum Charge Voltage) Digital volt and Amp meter
Input: 12V Solar Panel (Max. 25V) / Output: DC12V 30A
Suitable for 12V Panels up to 360 watts.
Dimensions: L175 x W110 x H45mm
2 year warranty

OC-SR30

12V 30 AMP SOLAR CONTROLLER

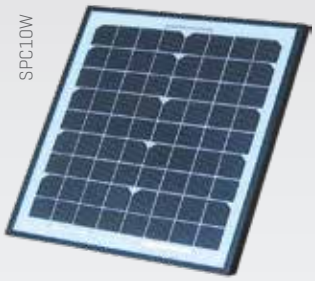
Code **OC-SR30M**
Suit Gel, AGM, conventional Lead-Acid and Calcium batteries
No fan
30 Amp load control, disconnects up to 30 Amp max
Digital Volt and Amp Meter (Displays Load & Charge Amps)
Input: 12V Solar Panel (Max. 28V) / Output: DC12V 30A
Suitable for 12V Panels up to 360 watts
Dimensions: L169 x W92 x H41mm
2 year warranty

OC-SR30M

SOLAR PRODUCTS

12V 10W SMART SOLAR PANEL MAINTAINERS

Code **SPC10W**
Mono-Crystalline cells – 30 cells in each series
Inbuilt 2 stage charge controller / regulator
Charge current 800mA
Boost voltage 15V, Float voltage 14V
Rugged Aluminium Frame
1.5m cable
Dimensions: L301 x W356 x H28mm
Weight: 2kgs



12V 20W SMART SOLAR PANEL MAINTAINERS

Code **SPC20W**
Mono-Crystalline cells – 30 cells in each series
Inbuilt 2 stage charge controller / regulator
Charge current 1600mA
Boost voltage 15V, Float voltage 14V
Rugged Aluminium Frame
1.5m cable
Dimensions: L621 x W281 x H28mm
Weight: 3kgs

12V 90W MONO SOLAR PANEL

Code **SPC90W**
Mono-Photovoltaic module
Double bus-bar design
Positive power tolerance (+3%)
Anti-reflective glass (excellent output in low light conditions)
Excellent performance in low light environments
creating better Kwh/Kw ratio
Potential Induced Degradation (PID) free
Four bypass diodes (better shaded performance)
Dimensions: L1195 x W541 x H40mm
Weight: 9kgs

12V 150W MONO SOLAR PANEL

Code **SPC150W**
Mono-Photovoltaic module
Triple bus-bar design (lower impedance and higher efficiency)
Positive power tolerance (+3%)
Anti-reflective glass (excellent output in low light conditions)
Excellent performance in low light environments
creating better Kwh/Kw ratio
Potential Induced Degradation (PID) free
Four bypass diodes (better shaded performance)
Dimensions: L1482 x W674 x H40 mm
Weight: 12kgs

INVERTERS

Model	PT600WL	PT1000WL	PT2000WL
Waveform type	Pure Sine Wave	Pure Sine Wave	Pure Sine Wave
Output	240v AC 50Hz	240v AC 50Hz	240v AC 50Hz
Continuous Output	600W	1000W	2000W
Number of 240V sockets	1	1	2
Input Voltage	11-15V DC	11-15V DC	11-15V DC
Low Voltage Protection	9.5V + -0.5 V DC	9.5V + -0.5 V DC	9.5V + -0.5 V DC
Safety Protection	Short Circuit, Overload, Over Temperature, Over & under voltage	Short Circuit, Overload, Over Temperature, Over & under voltage	Short Circuit, Overload, Over Temperature, Over & under voltage
Weight	1.87 kg	2.52 kg	5.36 kg
Dimensions	L250 x W181 x H82mm	L312 x W312 x H82mm	L470 x W200 x H82mm
Working Temperature	- 15 to 50 degree's Celsius	- 15 to 50 degree's Celsius	- 15 to 50 degree's Celsius

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

BATTERY TESTER

FOXWELL NT644 PRO NZ EDITION (HOLDEN & AUS FORD INCLUDED)

Delicately developed by the most distinguished experts of the industry, NT644 provides workshops, technicians and enthusiasts alike affordable professional diagnostic solutions. It stands out in a variety of similar tools by delivering wider coverage of vehicles, more accurate diagnosis, more reliable performance and better user experience.

Our units include the Holden and Aus Ford software. perfect for the home mechanic right up to the professional garage. With the extra OBDI adapter set the coverage of this unit combined with the affordable price makes it a must have tool for your workshop!

What makes this stand out from other scan tools on the market? Foxwell offers regular updates as this range of scan tools is their main focus. Other brands don't release updates that often, Foxwell are very pro-active with their updates. Combine this with NZ support and backup and you have a scan tool you can trust.

Features:

- Coverage includes over 60 manufacturers!
- Works on the latest vehicles
- Dealer level oil light service light reset functions on over 30 manufacturers
- Compatible with both OBDI and OBDII vehicles
- Reads and clear codes and turns off MILs of all systems
- Requests and records live sensor data
- Provides live data graphing
- Merges PID graphs for easy and intuitive diagnosis
- Displays freeze frame data
- Retrieves ECU information
- Supports all 10 OBDII test modes, such as live data, 02 sensor test, component test and more
- Enhanced OBDII Mode 6 functionality
- Code troubleshooters provide you faster and easier diagnosis
- Multilingual menu options and code definitions
- SD memory card for data backup and software update
- Free updates for life!!
- As easy as 1-2-3 with large TFT 4.3" color screen and menu-driven operations
- Ergonomic design and ruggedly built with a rubberised sleeve for both shop and road tests

Systems Covered:

- Engine
- Transmission
- ABS, SRS, EFP, DPF
- Oil Service reset
- Throttle Position Sensor
- Throttle Body Alignment
- Battery Configuration
- plus many more

Package Includes:

- NT644 Scan Tool
- User's Guide
- Memory Card
- Diagnostic Cable
- Plastic Mold Carry Case

Vehicle Coverage:

Abarth, Acura, Alfa-Romeo, Audi, Bentley, BMW, Bugatti, Daewoo, Chrysler, Citroen, Dacia, USA Ford, AUS Ford, EU Ford, Fiat, GM, Holden, Honda, Hyundai, Infiniti, Isuzu, Jaguar, Kia, Lancia, Land Rover, Lexus, Maserati, Maybach, Mazda, Mercedes Benz, Mini, Mitsubishi, Nissan, Opel, Perodua, Peugeot, Porsche, Proton, Renault, Saab, Scion, Seat, Skoda, Smart, Sprinter, Subaru, Suzuki, Toyota, Vauxhall, Volvo, VW

BATTERY TESTING

AUTOMOTIVE & LIGHT COMMERCIAL BATTERY TESTER

These testers adopt the world's most advanced conductance testing technology to easily, quickly and accurately measure the actual cold cranking amps capability of the vehicle starting battery, and common fault of the vehicle starting system and charging system. Both products have the same testing ability and specifications with the only difference being the ability to print results with the MICRO568.

Model	MICRO468	MICRO568
Battery Types Tested:	Flooded, EFB, Spiral AGM, Flat Plate AGM and Gel	Flooded, EFB, Spiral AGM, Flat Plate AGM and Gel
Test Standards:	CCA, BCI, EN, CA, MCA, JIS, DIN, IEC, GB.	CCA, BCI, EN, CA, MCA, JIS, DIN, IEC, GB.
Battery Tests:	Voltage, state of health, charging, actual CCA value, conductance value, internal resistance	Voltage, state of health, charging, actual CCA value, conductance value, internal resistance
Vehicle Tests:	Starting and Charging System	Starting and Charging System
Test range:	100 - 2000 CCA	100 - 2000 CCA
Printout:	NO	YES

MICRO468

MICRO568

ACCESSORIES

Code	Description
MICRO-LEADS	Replacement leads
MICRO-PAPER	Replacement paper rolls for MICRO568 (per each)

BATTERY TESTING

MIDTRONICS

BATTERY CONDUCTANCE & ELECTRICAL SYSTEM TESTER

Code **MDX-P300**
A 12 volt tester complete with integrated printer determines the curent state of the battery and electrical system
Tests batteries from 100 to 900 CCA
Tests discharged batteries down to 1 volt
Tests starting and charging voltages
Bad cell detection
Built in printer
(Not to be used on 24 volt systems)


MDX-P300

BATTERY & ELECTRICAL SYSTEM ANALYSER

Code **MDX-650P**
Tests the health of the battery and electrical system.
In-built printer for convenience
Accurate and precise measurements in seconds
Simple and easy to use.
Tests batteries from 100 to 2000 CCA
6V, 12V and 24V charging systems, starter and alternator testing
Built in printer


MDX-650P

HEAVY-DUTY BATTERY AND ELECTRIC SYSTEM ANALYSER

Code **MDX-700PHD**
Great Testing Functionality for Heavy-Duty/Commercial Vehicles
Comes with extra-long 15 foot cable, and heavy duty clamps
Complete system information in an easy-to-read format
Tests 6V and 12V batteries, plus 12V and 24V starting/charging systems
Quick starter analysis without disabling the ignition
Advanced menu-driven interface for a complete charging system analysis in seconds
Built in printer

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


MDX-700PHD

BATTERY TESTING

MIDTRONICS

BATTERY & ELECTRICAL DIAGNOSTIC ANALYSER

Code **EXP-800NM**
Accurately and quickly measures the health of the battery
Utilises advanced technology to improve accuracy and decisiveness
Advanced algorithms for identifying batteries as they approach end-of-life
Tests batteries from 100CCA to 3000CCA
Tests 6V and 12V batteries, plus 12V and 24V starting/charging systems
Built in printer

ADVANCED DIGITAL DIAGNOSTIC TESTER

Code **EXP-1000**
The most advanced hand-held diagnostic tool
Extremely easy to read back-lit display
Accurately tests battery, starter and alternator
Tests 6V and 12V batteries from:
100CCA to 3000CCA
Comes with carrying case with accessories
Optional printer (part code A088)

BATTERY CONDUCTANCE & ELECTRICAL SYSTEM TESTER

Code **SCP6/12**
Simple method of testing sealed batteries for security systems,
Emergency lighting, mobility vehicles and power supplies
Utilises patented conductance technology
Measures the state of health of 6V and 12V sealed lead acid batteries
Tests conductance from 20 to 1200 Siemens
Satisfies all IEEE testing standards

DEEP CYCLE BATTERY TESTER

Code **TEC-4500BP**
Effective evaluation of all stationary batteries, and uninterruptible power supplies
Suits deep cycle, traction and stationary batteries from 6V to 16V
Measures from 100 to 9990 Siemens
Tests each cell in under 10 seconds
Measures individual cell and overall string health and voltage
Provides advanced warning of potential battery failures
Optional printer (part code A088)

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

BATTERY TESTING

6V & 12V AUTO METER BATTERY LOAD TESTER

Code **SB5**
Variable load carbon pile
12V - Tests up to 800A
6V - Tests up to 400A
0 - 1600CCA
Precise colour-coded, pass/fail indication
Separate voltmeter and ammeter
15 second timer
Spare parts available
U.S. manufactured

SB5

SPARE PARTS

Code **SBVolt**
Voltmeter for SB5 Battery Tester

Code **SBAmp**
Amp meter for SB5 Battery Tester

SBVOLT

6V & 12V LINDFORD BATTERY LOAD TESTER

Code **BT450**
Places 450A load on the battery
Ideal for batteries up to 120 A/Hr
Precise colour-coded, pass/fail indication
35mm heavy duty test leads
Heavy duty load clips, braid looped for extra protection
10 second timer
Spare parts available

DEKA VOLTMETER

Code **DK08751**
One cable design for quick testing of batteries
No internal battery required

BATTERY SAFETY

BATTERY CARRY HANDLE

Code **DK00197**
Heavy duty construction
One hand carry control
Saw tooth gripping
arms grasp tightly to all surfaces

BATTERY CARRY HANDLE

Code **DK00194**
Universal post carry
Suits standard post batteries
Heavy duty
Acid resistant
Plated metal parts

BATTERY CARRY HANDLE

Code **DK00551**
Suits: R220, R232, R245, 8V
Heavy duty
Acid resistant
Plated metal parts

BATTERY CARRY HANDLE

Code **DK03501**
Heavy duty construction
One hand carry control
Multi-adjustable

BATTERY TOOLS

CABLE CUTTER

Code **DK05408**
Heavy Duty cutters for up to
AWG 4/0 or 107mm2 cable


DK05408

BATTERY PLIERS

Code **DK00235**
Essential for hassle-free removal
of damaged battery terminal bolts


DK00235

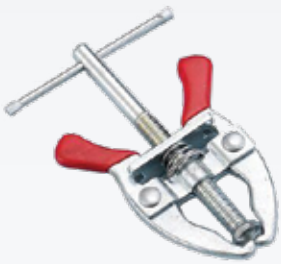
TERMINAL SPREADER

Code **DK00255**
Widens battery terminal without damage


DK00255

BATTERY TERMINAL LIFTER

Code **DK00256**
Removes the tightest of terminals


DK00256

3-WAY CLEAN CUTTING TOOL

Code **DK00682**
Removes corrosion and restores battery
posts and cable terminal surfaces


DK00682

POST & TERMINAL CLEANER

Code **DK00254**
Cleans SAE top posts and matching
terminal connections


DK00254

CABLE CRIMPER

Code **DK05409**
Heavy Duty crimp tool for up to
AWG 4/0 or 107mm2 cable


DK05409

BATTERY TOOLS

BATTERY FILLER-PUMP

Battery Filler Bottle
Code **DK00318**
Automatic shut off that stops filling once battery has reached correct level

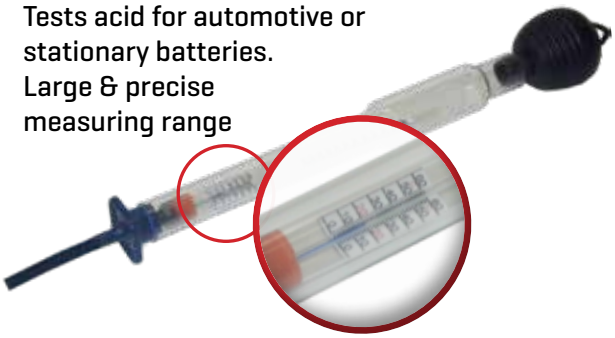
BATTERY FILLER-PUMP

Code **DK00257**
Squeeze filler with 15cm spout

HYDROMETERS - GEFO

Code **GEFO6500**
Thick and durable glass cylinder
Tests acid for automotive or stationary batteries
Large and precise measuring range

Code **GEFO6600**
With built-in thermometer displaying 0 to 60 °C
Thick and durable glass cylinder.
Tests acid for automotive or stationary batteries.
Large & precise measuring range



HYDROMETER - DEKA

Code **DK00231**
Standard glass Hydrometer

HYDROMETER - DEKA

Code **DK00198**
Plastic Disc Hydrometer

BATTERY MAINTENANCE

SELF FUSING TAPE

Code **DK04367** Black
Code **DK04368** Red
Fuses upon itself
Forms airtight and waterproof bond
Alternative to Heat Shrink on battery terminals

BATTERY PROTECTION KIT

Code **DK00317**
Kit Includes:
Cleaner Spray
Protection Spray
Terminal Brush
Terminal Protectors
Hand cleaning towel

BATTERY TERMINAL CLEANER SPRAY

Code **DK00450**
Penetrates, loosens and neutralises all acid corrosion deposits
312gm spray can
Yellow spray turns pink on contact with acid

BATTERY TERMINAL PROTECTION SPRAY

Code **DK00320**
Prolongs battery life
Lead free
285gm spray can
D.G. Flamable

BATTERY CLEANER SPRAY WITH ACID INDICATOR

Code **DK00321**
Battery cleaner spray
Penetrates, loosens and neutralises all acid corrosion deposits
Helps eliminate energy loss with regular maintenance.

BATTERY MAINTENANCE

TERMINAL PROTECTORS 50 JAR (ANTI-CORROSIVE PADS)

Code **DK01940**
25 red
25 black
Reduces terminal corrosion
Prolong battery life

DK01940

SODA ASH 25KG

Code **SPILLSODA**
Soda Ash 25kg bag

TERMINAL PROTECTORS (ANTI-CORROSIVE PADS)

Code **DK01253**
Pair - black/red
Reduces terminal corrosion
Prolong battery life

BATTERY ACID

Code **ACID20L**
20 Litre

Class 8 UN No 2796. SG 1.270

DEIONISED WATER

Code **ZDW2**
2 Litre

Code **ZDW20**
20 Litre

HYDROCAPS

Greatly reduces the amount of hydrogen gas by recombining it into harmless water. Hydrocaps are best suited for float applications and must be removed during equalise charging.

Code **HCAPT**
Hydrocap threaded version. Suits: N100, N120, N150, N200.

Code **HCAP**
Hydrocap 1/4 turn version. Suits: US2200, US145, USL16, US8V


HCAPT

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.

TRADE KITS

Kit Number	System	Battery Manufacturer	Batteries
BG-U12V-9G	12 Volt	U.S. Battery (R220, R232, L16), Crown, Trojan	2 x 6 Volt
BG-U24V-9G	24 Volt	U.S. Battery (R220, R232, L16), Crown, Trojan	4 x 6 Volt
BG-U36V-9G	36 Volt	U.S. Battery (R220, R232, L16), Crown, Trojan	6 x 6 Volt
BG-U48V-9G	48 Volt	U.S. Battery (R220, R232, L16), Crown, Trojan	8 x 6 Volt
BG-U36V-7	36 Volt	Trojan T105 Plus Series	6 x 6 Volt
BG-U48V-AG	48 Volt	U.S Battery (8V), Crown, not Trojan	6 x 8 Volt

BA-MS-630 hand pump not included in kits

PRO-FILL RV KITS

Kit Number	System	Battery Type	Batteries
RV-2000	12 Volt	Fits most 6V batteries with a standard 3-cell spacing 1/4 turn caps (No Pump)	2 x 6 Volt

RV-2020 hand pump not included in kits

QUIK-FILL KITS

Kit Number	System	Battery Type	Batteries
MP-2000	24 Volt	Battery Group sizes 24, 27 & 31 with standard 3-cell spacing (No Pump)	2 x 12 Volt
MP-2010	12 Volt	Battery Group sizes 24, 27 & 31 with standard 3-cell spacing (No Pump)	1 x 12 Volt

HAND PUMPS

Part Number	Suits
BA-MS-630	Bulk packed large hand pump suit all BGU trade kits only
RV-2020	Retail boxed small hand pump for RV2000, MP2000, MP2010 only

RV-2020 hand pump not included in kits

BATTERY MAINTENANCE

SMALL BATTERY BOX

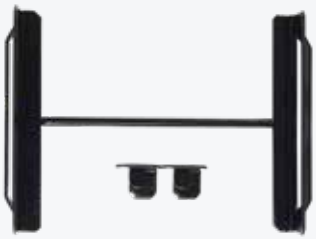
Code **DK03009**
Suits up to NS70 Box Size (24 box size)
Includes Strap
Internal size: L260 x W170 x H210mm
External size: L360 x W250 x H275mm

LARGE BATTERY BOX

Code **DK03189**
Suits up to 148/17 or IDC31DT Box Size (24, 27, 31 box size)
Includes Strap & Spacer to determine battery sizes
Internal size: L315 x W175 x H210mm
External size: L420 x W250 x H275mm

BATTERY HOLD DOWN

Code **DK00236**
Fixed width: 175mm
Metal construction
Requires Hold Down Bolts



UNIVERSAL BATTERY HOLD DOWN

Code **DK00246**
Adjustable width: 146mm to 216mm, requires Hold Down Bolts

BATTERY ANTI-VIBRATION MATTING

Code **AVMAT1**
Anti-vibration matting to be placed under batteries in commercial vehicles
L500 x W520mm
Assists reduction of vibration extending battery life

HOLD DOWN BOLTS

Heavy tempered steel bolts,
with wing nuts for quick easy assembly
Code **DK00241** 6 Inch / 152mm
Code **DK00916** 8 Inch / 203mm
Code **DK00242** 10 Inch / 254mm

JUMP STARTING

BOOSTER CABLES 750AMP

Code **BC750SP**
Suits all petrol, diesel & light commercial vehicles
Fully insulated clamps with bridging strap
Surge protection guards vehicle electronics from voltage spikes
3.5 meters long


BC750SP

BOOSTER CABLES 900AMP

Code **BC900SP**
Suits all vehicles including heavy commercial & industrial vehicles
Fully insulated clamps with bridging strap
Surge protection guards vehicle electronics from voltage spikes
3.5 meters long


BC900SP

12V JUMP STARTER 250 AMP

Code **APS1200**

12V JUMP STARTER 420 AMP

Code **APS1700**

Features:

- Inbuilt spark and surge protection.
- Built in extra bright, low current LED emergency light
- Inbuilt safety systems for over load, reverse polarity, 24V battery connection and accidental short circuit (when unit main switch is ON)
- Built in 5V/2.4A USB socket for powering or recharging USB devices.

KEMAX STACKABLE UNIT

Code **HUB-100**

The Hub controller is used to distribute the power from the connected batteries tghrough to devices by 2 x USB, 1 x Merit socket, 1 x 50a Anderson socket and an accesory socket. Overload protection with audible alert and LED's. Use normal battery charger that does AAGM, max 16amps

Code **PBG-26**

26a/h AGM stackable unit
Peak amp Output (per unit): 1000Amps
Weight: 7.92kg
Dimensions: 320L x 250W x 120H

12 volt 26amp stackable AGM battery unit. Take away with you camping, fishing holiday for a power source to power all your devices. Add more units as you add more devices.

BATTERY ACCESSORIES

BATTERY TERMINALS

HCB are proud to supply top quality cable lugs with the features our industry demands.
Lugs are capable of being both soldered or crimped and feature a long neck to ensure a more secure and conductive connection with the cable.
The heavy duty construction is designed to last in harsh applications and also features a bell mouth that enables improved movement at the cable/lug junction.

Code	Cable Size	Hole Diameter	Pack Qty
LUG-3508	35 mm2	8 mm	10
LUG-3510	35 mm2	10 mm	10
LUG-3512	35 mm2	12 mm	10
LUG-5008	50 mm2	8 mm	10
LUG-5010	50 mm2	10 mm	10
LUG-5012	50 mm2	12 mm	10
LUG-7008	70 mm2	8 mm	10
LUG-7010	70 mm2	10 mm	10
LUG-7012	70 mm2	12 mm	10

BATTERY SHIMS

Code **PPSHIM**
Convert Pencil Post to standard post
1 x Positive & 1 x Negative per pack

BATTERY POST MOULDS

Code **BPMS**
Rebuild Pencil Battery Posts
1 x Positive & 1 x Negative per pack
Code **BPML**
Rebuild Standard Battery Posts
1 x Positive & 1 x Negative per pack

BATTERY SIDE MOUNT BOLTS

Code **DK00325**
Charge post for use on side mount terminals
Quantity 2 per pack
Suits: CM24/750AGM, CM24/930, 75/650

BATTERY CHARGING POSTS

Code **DK00032**
OEM Bolt to suit stud terminals
Quantity 2 per pack
Suits: CM31/925AGMS

BATTERY TERMINALS

STUD WINGNUT TERMINAL

BT6POS - Positive 8mm stud and steel wingnut
BT6NEG - Negative 8mm stud and steel wingnut
BT6POS-BP - Positive 8mm stud and steel wingnut in blister pack
BT6NEG-BP - Negative 8mm stud and steel wingnut in blister pack

BT6POS

SADDLE TYPE TERMINAL

BT10POS - Positive standard post. Cable sizes 10mm² - 33mm²
BT10NEG - Negative standard post. Cable sizes 10mm² - 33mm²
BT10POS-BP - Positive standard post. Cable sizes 10mm² - 33mm² (blister pack)
BT10NEG-BP - Negative standard post. Cable sizes 10mm² - 33mm² (blister pack)

BT10POS

BOLT TYPE TERMINAL

BT23J-POS - Positive 6mm bolt to suit Japanese pencil post applications
BT23J-NEG - Negative 6mm bolt to suit Japanese pencil post applications
BT23J-POSBP - Positive 6mm bolt, pencil post applications (blister pack)
BT23J-NEGBP - Negative 6mm bolt, pencil post applications (blister pack)

BTJ23J-POS

BOLT TYPE TERMINAL

BT23-8POS - Positive 8mm bolt to suit standard post applications
BT23-8NEG - Negative 8mm bolt to suit standard post applications
BT23-8POSBP - Positive 8mm bolt standard post (blister pack)
BT23-8NEGBP - Negative 8mm bolt standard post (blister pack)

BT23-8POS

BOLT TYPE TERMINAL

BT19POS - Positive standard post 10mm steel hex bolt
BT19NEG - Negative standard post 10mm steel hex bolt
BT19POS-BP - Positive standard post 10mm steel hex bolt (blister pack)
BT19NEG-BP - Negative standard post 10mm steel hex bolt (blister pack)

BT19POS

MARINE TERMINAL

DK00148
Pair to suit standard post applications in blister pack
Lead terminal with brass-plated wing nut specifically for Marine applications
Epoxy coating aids in corrosion resistance and polarity identification

DK00148

BATTERY ACCESSORIES

STANDARD TERMINAL TO LUG

Code	Length mm	Cable Diameter
CBS300-12	300	25 mm²
CBS450-18	450	25 mm²
CBS525-21	525	25 mm²
CBS600-24	600	25 mm²
CBS750-30	750	25 mm²
CBS900-36	900	25 mm²

HEAVY DUTY TERMINAL TO LUG

Code	Length mm	Cable Diameter
HDBS300-12	300	35 mm²
HDBS375-15	375	35 mm²
HDBS450-18	450	35 mm²
HDBS525-21	525	35 mm²
HDBS600-24	600	35 mm²
HDBS750-30	750	35 mm²
HDBS900-36	900	35 mm²
HDBS1200-48	1200	35 mm²

STANDARD LUG TO LUG

Code	Length mm	Cable Diameter
CSS300-12	300	25 mm²
CSS375-15	375	25 mm²
CSS450-18	450	25 mm²
CSS525-21	525	25 mm²
CSS600-24	600	25 mm²
CSS750-30	750	25 mm²
CSS900-36	900	25 mm²

HEAVY DUTY LUG TO LUG

Code	Length mm	Cable Diameter
HDSS150-6	150	35 mm²
HDSS250-10	250	35 mm²
HDSS300-12	300	35 mm²
HDSS375-15	375	35 mm²
HDSS450-18	450	35 mm²
HDSS525-21	525	35 mm²
HDSS600-24	600	35 mm²
HDSS750-30	750	35 mm²
HDSS900-36	900	35 mm²
HDSS1200-48	1200	35 mm²

STANDARD TERMINAL TO TERMINAL

Code	Length mm	Cable Diameter
CBB250-10	250	25 mm²
CBB300-12	300	25 mm²
CBB375-15	375	25 mm²
CBB450-18	450	25 mm²

EXTRA HEAVY DUTY TERMINAL TO TERMINAL

Code	Length mm	Cable Diameter
EDBB250-10	250	50 mm²
EDBB300-12	300	50 mm²
EDBB450-18	450	50 mm²

HEAVY DUTY TERMINAL TO TERMINAL

Code	Length mm	Cable Diameter
HDBB200-8	200	35 mm²
HDBB250-10	250	35 mm²
HDBB300-12	300	35 mm²
HDBB375-15	375	35 mm²
HDBB450-18	450	35 mm²

BATTERY CABLE

BATTERY CABLE ROLLS

Applications: Battery and Starter Cable
Conductor: OXYGEN FREE Plain Copper Wire to AS1125
Insulation: V90 PVC to AS3808

Code	Cable Diameter	Colour	Length	Cable / Insulation
CABB26-10	26 mm²	Blk	10m	Single Insulated
CABB32-10	32 mm²	Blk	10m	Single Insulated
CABB49-10	49 mm²	Blk	10m	Single Insulated
CABB64-10	64 mm²	Blk	10m	Single Insulated

DOUBLE INSULATED WELDING CABLE ROLLS

Applications: For fixed power applications
Conductor: Nominal 0.2mm stranded flexible Plain Copper Wire to AS1125
Insulation: Nitrile (NBR) Modified PVC to comply with AS3808 V90HT
Sheath: Nitrile (NBR) Modified PVC to comply with AS3808 V90HT
Sheath Colour: Black, (other colours available by request)
Packs: 10 metres, 30 metres (50M & 100M available by request)
Typical Properties - Standard: PVC Insulated Unprotected to AS5000.1

Code	Cable Diameter	Colour	Length	Cable / Insulation
CABW35-10	35 mm²	Blk	10m	Double Insulated
CABW35-30	35 mm²	Blk	30m	Double Insulated
CABW50-10	50 mm²	Blk	10m	Double Insulated
CABW50-30	50 mm²	Blk	30m	Double Insulated
CABW70-10	70 mm²	Blk	10m	Double Insulated
CABW70-30	70 mm²	Blk	30m	Double Insulated

MARINE TINNED CABLE ROLLS

Applications: Pleasure Craft Low Voltage Applications 60 VOLT
Conductor: Tinned Copper Wire (TCW) to AS1125
Insulation: RoHS Compliant V90 PVC to AS3808

Code	Cable Diameter	Colour	Length	Cable / Insulation
CABM25-10	25 mm²	Blk	10m	Tinned Single Insulated
CABM35-10	35 mm²	Blk	10m	Tinned Single Insulated
CABM50-10	50 mm²	Blk	10m	Tinned Single Insulated

Should you require longer length rolls of cable please contact your HCB representative.

MERCHANDISING

ENDURANT BATTERIES

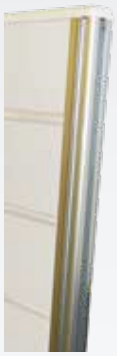
WALL MOUNT PLANK WALL

Code **PW2400X1200**
H2400mm x W1200mm Plank Wall NO FRAME
Join multiple panels to fill more than 1200mm wide wall
See Plank Wall Frame

PLANK WALL FRAME

Aluminium frame to neatly finish off the edges of the PW2400X1200
Code **PWPOST**
Aluminium side frame
Code **PWCAP**
Aluminium top frame 1200mm long
Code **PWCORNER**
Aluminium Corner to suit frame
Code **PWJOINER**
Aluminium H shape joining strip to join two PW2400X1200 together
Code **PWSIGNCLIP**
Mounting bracket to clip the display header card into

PWPOST



PWCORNER

PWJOINER

PWCAP

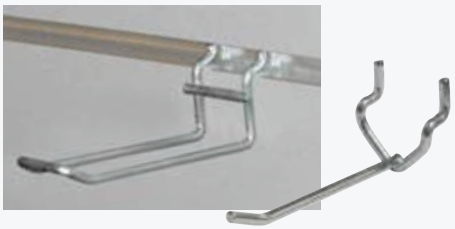
PWSIGNCLIP

FREE STANDING PLANK WALL

Code **PW1500X900**
H1500mm x W900mm double sided
With Frame & Stand
To display in middle of showroom

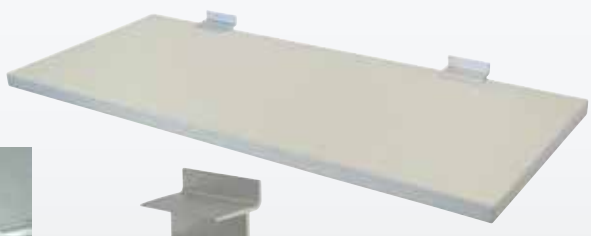
WALL HOOKS

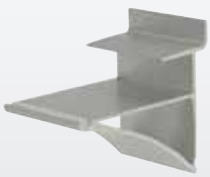
Code **PWHOOKS**
Single prong 100mm
Code **PWHOOKD**
Double prong 100mm



WALL SHELVES

Code **PWSHELF190**
Shelf Melamine L600mm x W190mm x H6mm White
Code **PWBRACKET**
Bracket to support shelf





MERCHANDISING

BATTERY STANDS

Code	Colour	Depth	Width	Total Height	Number of Shelves
Motobatt	Yellow	240	450	1600	6
ZSTAND3	Black	370	800	1050	3

3 TIER BATTERY STANDS

Endurant Stand
Motobatt Stand

3 TIER BATTERY STAND HEADER CARDS

Endurant Automotive
Endurant Marine
Motobatt

FOOTPATH SIGNS

Endurant

MERCHANDISING VARTA

VARTA BATTERY STAND & HEADER CARDS

Code	Colour	Depth	Width	Total Height	Number of Shelves
Varta Battery Stand	Blue	460mm	530mm	1200mm	3

VARTA-HEADER-CARD-AUTOMOTIVE

VARTA-HEADER-CARD-EFB

Merchandising

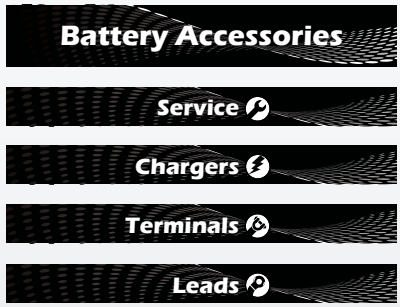
HCB branded header cards and category cards for Terminals, Chargers, Leads and Servicing will highlight the wide range of battery associated products and offers a great showroom platform to provide retail display of all battery associated accessories.

Wall Display

Plank Wall PW2400x1200 sheets, joiners, capping, shelving, single and double wall hooks are available to customise your retail display. See your HCB representative for further details.

Free Standing Display

Plank Wall PW1500X900 units are available for showroom floor areas providing double sided display. Smaller header cards, shelving, single & double wall hooks are available to customise your retail display. See your HCB representative for further details.



TECHNICAL INFORMATION

SPECIFICATION TABLE KEY

Battery measurements (L x W x H) 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.

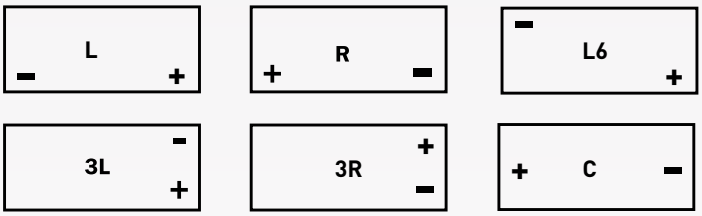
Bottom hold down (BHD)

B0	No hold down
B1	2 bottom hold down 10.5mm high on long sides
B3	4 bottom hold down 10.5mm high on all four sides
B4	2 bottom hold down 19mm high on long sides
B3/B4	B4 bottom hold down available with adapter on long sides
B7	4 bottom hold down 9.7mm high on all four sides, long sides extend 6mm either side.

Abbreviations

A/Hrs	Ampere Hours (20 Hr Rate unless otherwise stated)
CCA	Cold Cranking Amps
EN	European Norm
D/C	Deep Cycle
MCA	Marine Cranking Amps
HCA	Hot Cranking Amps
PHCA	Pulse (5 sec) Hot Cranking Amps
Res Cap -R/C	Reserve Capacity

Battery Assemblies
Check for correct polarity when fitting a battery.



STD
Standard Post

PP
Pencil Post

D/F
Dual Fit Terminal

LUG
Lug Terminal

U/T
Universal Terminal

SOCKET
Socket Terminal

D/T
Dual Terminal

SIDE
Side Terminal

SIDE/STD
Side Terminal & Standard Post

WHAT DO THE RATING & SPECIFICATIONS SIGNIFY?

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 Degrees 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.

A/Hrs (Ampere Hours)
A unit of capacity that is calculated by multiplying the current in amps that the battery can deliver for 20 hours 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.

WARRANTY

The batteries detailed in this catalogue are guaranteed against faulty workmanship or materials on the part of the battery. This warranty commences from the date of sale to the end user and is identified on the top of the individual battery block by a month and year code. This used A to L for the month (January A, February B, etc) and a number depicting the year. The length of the warranty is dependent upon the product type and is detailed on the top of each battery with a warranty label. The warranty is void through misuse, misapplication, abuse or any other factors which negatively affect the battery life.
The warranty is provided by HCB Technologies Limited, New Zealand.

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 over-discharges 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 minimizes 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/ Synergy 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. This new information applies to batteries from 2012 onwards (13.8V to 14.1V applies to all batteries 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, valve-regulated 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 68°F (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
0	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.

TECHNICAL INFORMATION

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^{0}C or ambient, whichever is higher.
- As batteries age, their maintenance requirements change. This means longer charging time and/or higher finish rate (higher amperage at the end of the charge). Usually older batteries need to be watered more often. And, their capacity decreases.
- Deep cycle batteries need to be equalized periodically. Equalizing 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 equalized 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 equalizing; 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.

ENDURANT BATTERIES

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 Required			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 Hrs required			1.0		

TECHNICAL INFORMATION

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.hcb.co.nz**, 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 degrees Celsius. A full recharge should see a maximum temperature rise of 10 degrees Celsius.

F. Once the battery is fully charged it can be maintained by applying a charging voltage of 2.24 to 2.25 volts per cell (13.4-13.5 for 12volt 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 deterioration is often less than the damage caused by the batteries being left in an under charged state.

G. All charging voltages need to be temperature compensated. That is, as the battery temperature raises the charging voltage needs to be reduced. Most modern quality regulated chargers are temperature compensated.

H. Care should be taken when working around batteries on charge or when recently charged to levels of hydrogen and oxygen may be present which, if ignited by a mere spark, can cause a dangerous explosion. The wearing of eye protection is essential.

2. DISCHARGING

A. Discharge levels should be as per 1. c above.

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.

B. Equalisation charge is a form of over charge which, when applied allows the flatter cells to catch up.

C. Effectively the charging takes the form of a current limited charge with a higher voltage setting. This results in a continuation of the charge through the battery even when some cells reach a fully charged state and their voltage rises. This allows the remaining cells to continue to receive charge.

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. Eyewear protection must be worn and care to avoid sparks of flames should be taken.

TECHNICAL INFORMATION

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 aftermarket, 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 Stop-Start 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).

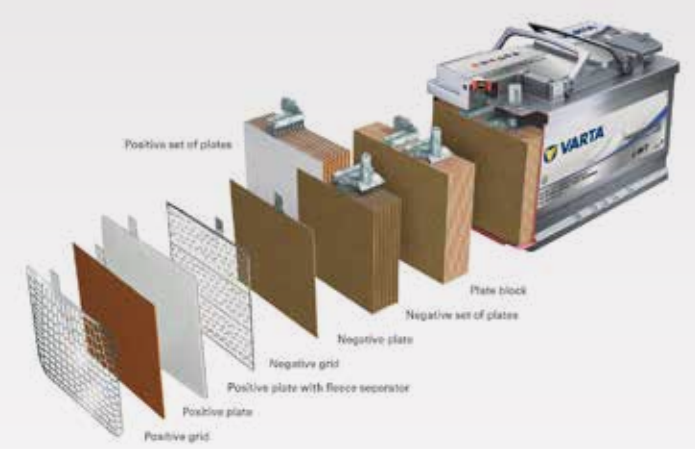
- For high performance vehicles, with advanced Stop-Start functionality with alternator/brake energy recovery, AGM technology is used
- For Entry level Stop-Start vehicles (usually where fuel emission/CO2 saving requirements are less) a more cost effective solution based on an improved flooded design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

TECHNICAL INFORMATION

UNDERSTANDING OF TECHNOLOGY 1: AGM (ABSORPTIVE 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 reaction)
- 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

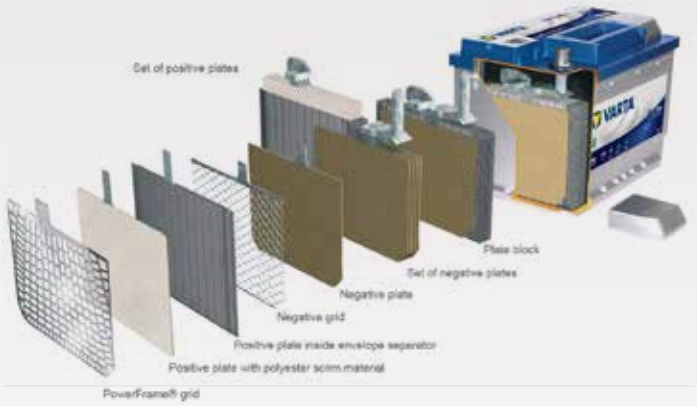
- Typically increased cold cranking power by 30-40% over standard flooded battery enabling faster engine cranking speeds and lower CO2 emissions.
- Cycle Life endurance at deep discharge (50% DOD) typically 3-6x of standard aftermarket flooded battery.
- Cyclic operation in partial state of charge (50%) - Original AGM product 3-5x that of standard aftermarket, 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)

TECHNICAL INFORMATION

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 aftermarket 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 starved design and reduced charging and discharge time it is essential when charging off the vehicle that the correct type of equipment is used.
Constant current or boost chargers must not be used as this will result in:

- Heating of the battery
- Boiling of the electrolyte
- Increased internal battery pressure
- Loss of recombinant gases to the atmosphere through the PRV (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 replacement AGM batteries 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 specified for the vehicle is an AGM 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 fitted 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 (Stop-Start) 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

ENDURANT BATTERIES

AUTOMOTIVE BATTERIES

ENDURANT	ULTRA	CENTURY	EXIDE	SUPERCHARGE	AA
02	02U				
03	03U	03	N03		6603
12N24/3	12N24/3U	C12N24/3	N05	N05	
12N24/4	12N24/4U	C12N24/4	N06	N06	
12N24/3HP	12N24/3HPU	U1MF	U1LMF	MFU1	
12N24/4HP	12N24/4HPU	U1RMF	U1RMF	MFU1R	
NS40ZL	NS40ZLU	NS40ZLSMF	40CMF	SMFNS40ZALX	2122
NS40Z	NS40ZU	NS40ZSMF	40DMF	SMFNS40ZAX	2121
NS40ZPP	NS40ZPPU	NS40ZMF	40DPMF	SMFNS40ZX	2123
NS40ZLPP	NS40ZLPPU	NS40ZLMF	40CPMF	SMFNS40ZLX	2124
NS40ZLPP-BH	NS40ZLPP-BHU				
NS60A	NS60AU	NS60SMF	X60DMF	SMFNS60R	2133
NS60AL	NS60ALU	NS60LSMF	X60CMF	SMFNS60LS	2134
NS60APP	NS60APPU	NS60MF	X60DPMF	SMFNS60R	2135
NS60ALPP	NS60ALPPU	NS60LMF	X60CPMF	SMFNS60L	2136
127	127U	46	LM50D		
156	156U	47	LM50C		
127/11	127/11U	57MF	LM51D	SMF57	2175
127/11F	127/11FU	57EFMF	54DMF		
156/11	156/11U	58MF	53CMF	SMF58	2176
156/11F	156/11FU	58EBMF	54CMF	SMF58EB	2504
50D20L	50D20LU	50D20LMF	50D20LMF		
55D23L	55D23LU	55D23LMF	55D23CMF	SMF55D23L	2178
55D23R	55D23RU	55D23RMF	55D23DMF	SMF55D23R	2177
34L	34LU				
34R	34RU				
58L	58LU	48LMF	58CMF		2582
58	58U	48RMF	58DMF		
65/820	65/820U	N65DMF	65DMF	MF65	
75/650	75/650U	75SMF			
DIN36	DIN36U			SMF44	3372
DIN44	DIN44U	DIN44MF	DIN44MF		5344
DIN45	DIN45U			SMF53ZL	
DIN55F	DIN55FU	DIN55FMF			
DIN55LH	DIN55LHU		55HMF	MF55H	3554
DIN55L	DIN55LU	DIN53ZLMF	DIN55MF	SMF55	3552
DIN55	DIN55U	DIN53ZRMF	DIN55DMF	SMF55R	3551
DIN63	DIN63U	DIN65ZLMF	DIN66MF	SMF65L	3662
DIN66R	DIN66RU		DIN70MF	MF66HR	3665
DIN66	DIN66U			SMF66H	3664
DIN75	DIN75U	DIN74ZLMF	DIN77MF	MF77	5372
DIN75R	DIN75RU			MF77R	
DIN85	DIN85U	DIN85ZLMF	DIN88MF	SMF85L	3882
DIN92	DIN92U	DIN88LZMF	88HMF		3884
DIN110	DIN110U	DIN110ZLMF		MF88H	
125	125U	41		SMF43	2134
126	126U	43		SMF43	2133

BATTERY CROSS REFERENCE

ENDURANT BATTERIES

START/STOP AUXILARY

ENDURANT	ULTRA	CENTURY	EXIDE	SUPERCHARGE	AA
DIN55LAGM	DIN55LAGMU	DIN55ZLAGMF	SSAGM-55EU	MF55HSS	5526
DIN66AGM	DIN66AGMU	DIN66ZLAGMF	SSAGM-66EU	MF66HSS	5536
DIN75AGM	DIN75AGMU	DIN75LAGM	SSAGM-77EU	MF77HSS	5556
DIN92LAGM	DIN92LAGMU	DIN88LAGM	SSAGM-88EU	MF88HSS	3888
DIN105LHAGM	DIN105LHAGMU				5566
M42REFB	M42REFB			MFB24EF	
M42LEFB	M42LEFB				
N55REFB	N55REFB				
N55LEFB	N55LEFB		SSEFB-B24		
Q85LEFB	Q85LEFB	Q85	SSEFB-D23	MFD23EF	4031
Q85REFB	Q85REFB				4032
S95LEFB	S95LEFB		SSEFB-D26		
S95REFB	S95REFB	S95		MFD26EF	
T110LEFB	T110LEFB	T110	SSEFB-D31		4092
T110REFB	T110REFB			MFD31EF	
AUX14	AUX14U				
34B17L	34B17LU	34B17L			
S46B24R	S46B24RU	S46B24R			5511

COMMERCIAL BATTERIES

ENDURANT	ULTRA	CENTURY	EXIDE	SUPERCHARGE	AA
N617	N617U		12B		6612
N621	N621U	23	115		
N625	N625U	26	26B	TMN25	6626
NS70L	NS70LU	NS70LMF	N50ZZL	SMFNS70LX	4504
NS70	NS70U	NS70MF	N50ZZ	SMFNS70X	4503
NS70/15	NS70/15U	NS70ZMF	XN50ZZMF	MF80D26R	
NS70L/15	NS70L/15U	NS70ZLMF	XN50ZZLMF	MF80D26L	
N70Z	N70ZZU	N70ZMF	N70ZZ	TMN70ZZ	4703
N70ZL	N70ZZLU	N70ZLMF	N70ZZL	TMN70ZZL	4704
N70Z/17	N70Z/17U	N70ZZMF	XN70ZZMF	SMFN70ZZX	
N70ZL/17	N70ZL/17U	N70ZZLMF	XN70ZZLMF	SMFN70ZZLX	
31-900	31-900U	31-1000	31-950C	MF31-931	4862
N100L	N100LU	N100LMF		MFN100L	
N100	N100U	N100MF	N100	MFN100	4901
N120	N120U	N120MF	N120	MFN120	4922
N150	N150U	N150MF	N150	MFN150	4952
N200	N200U	N200MF	N200	MFN200	
149/17	N87U	87Z	86A	TMN87LZ	
148/17	N86U	86Z	86B		
157	157U	89			
158	158U	89B			
CODE55	N94U	94B	94B	TMN94P	
DIN135D	DIN135DU		N120EURO		
DIN135	DIN135U	DIN120L		EMFN120L	
DIN165	DIN165U	DIN165	N150EURO	EMFN150L	

BATTERY CROSS REFERENCE

ENDURANT BATTERIES

MARINE DEEP CYCLE

ENDURANT	ULTRA	CENTURY	EXIDE	SUPERCHARGE	AA
MMF22/430	MMF22/430U	M57MF	MSST22	MFM48	7401
MMF24/500	MMF24/500U		MSST24		
MMF24/680	MMF24/680U	M24MF		MFM50	7501
MMF27/780	MMF27/780U	M27MF	MSST27	MFM70	7601
MMF31/930	MMF31/930U	M30MF	MSST31		
DC24	DC24	24DCMF	MSDP24	MRV50	5503
DC27	DC27	27DCMF	MSDP27		5601
DC31	DC31	30DCMF	MSDP31	MRV87	5862
MDC24	MDC24U		MSDC24	D50Z	
MDC27	MDC27U		MSDC27		
MDC31	MDC31U		MSDC31	D87L	
IDC24	IDC24U	C24DC US	DC12V80		
IDC27	IDC27U	C27DC US	DC12V105		
IDC31	IDC31U	C31DC US	DC12V115		
MDCN150/180	MDCN150/180U				
MDC8D/240	MDC8D/240U			D200P	
12B	12BU		ED1		
R220	R220	C105	DC6V225	GC2-6V	
R232	R220U	C232OS US			
R245	R245U		DC6V245		
L16/380	L16/380U	C16S US	DC6V375		
L16/420	L16/420U	C16HCS US			
R155	R155U	C12VS US	DC12VXC		
8V	8VU	C8VGC US	DC8V150	GC2-8V	

POWER SPORTS CROSS REFERENCE

VARTA MOTOBATT Deka

CONVENTIONAL	MOTOBATT	VARTA	DEKA
6N4-2A	MBT6N4		
6N4-2A-3			
6N4-2A-4			
6N4-2A-5			
6N4-2A-6			
6N4-2A-8			
6N4C-1B			
6N6-1B			
6N6-3B			
6N6-3B-1			
6N6-1D			
6N6-1D2			
12N5-3B	MB5U		
12N5.5-3B			
12N5.5-4A			
12N7-3A	MB9U		
12N7-3B			
12N7-4A			
12N7-4B			
12N7D-3B			
12N9-3A			
12N9-3A-1			
12N9-3B			
12N9-4B-1			
12N10-3A	MB10U		
12N10-3A-1			
12N10-3A-2			
12N10-3B			
12N11-3A			
12N11-3A-1			
12N11-3B			
12N12-4A			
12N12A-4A-1			
KMX14-BS	MBTX12U		ETX14
12N14-3A	MBTX14AU		ETX15
12N14-3B			
12N16-3A	MBTX20U		ETX20L
12N16-3B			
12N16-4A			
12N16-4B			
12N18-3	MBTX24U		ETX18L
12N18-3A			
Y50-N18A-A			
Y50-N18L-A			
Y50-N18L-A2			
Y50-N18L-A3			
SY50N18LA			
SY50-N18L-AT			
Y50-N18L-A-CX			

CONVENTIONAL	MOTOBATT	VARTA	DEKA
12N24-3	MBTX30U		ETX30LA
12N24-4	MBTX30U		ETX30LA
12N24-3A			
12N24-4A			
53030			
Y60-N24-A			
Y60-N24L-A			
Y60-N24L-A2			
Y60-N24AL-B			
Y60-N30L-A			
Y60-N30L-B			
YB2-5-C	MB2.5U		
YB2.5-C-1			
YB2.5-C-2			
YB3LA	MB3U		
YB3LB			
YB4L-A	MBTX4U		
YB4L-B			
YB5L-B	MB5U		
YB7B-B	MB7BB		
YB7-A	MB9U		
YB7AA			
YB7L-A			
YB7L-B			
YB9A			
YB9A-A	MB9U		
YB9A2			
YB9-B			
YB9B2			
YB9L-A2			
YB9L-B2			
YB9L-B			
YB10A-A2	MB10U		
YB10L-A2			
YB10L-B			
YB10L-B2			
YB12A-A	MB12U		
YB12AAS			
YB12A-A-WS			
YB12A-B			
YB12AL-A			
YB12AL-A2			
YB12BB2	MBTX12U		ETX12
YB12C-A	MB12U		

POWER SPORTS CROSS REFERENCE

VARTA MOTOBATT Deka

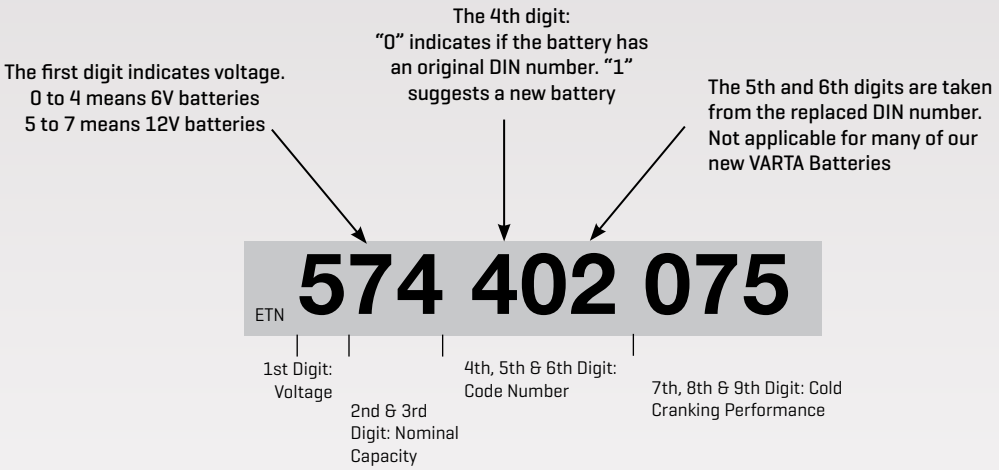
CONVENTIONAL	MOTOBATT	VARTA	DEKA
YB14-A1	MBTX14AU		ETX15
YB14-A2			
YB14AA			
YB14A-A1			
YB14A-A2			
YB14-B1			
YB14-B2			
YB14L-A1			ETX15L
YB14L-A2	MBTX14AU		ETX15L
YB14L-A2-WS			
YB14L-B1			
YB14L-B2			
SYB14L-A2			
SYB14L-B2			
YB16A			ETX20L
YB16A2	MBTX20U		
YB16AL-A2	MB16AU		
HYB16AA			
HYB16A-AB			
YB16B-A	MB16U		
YB16B-A1			
YB16B-A2			
YB16L-A	MBTX20U		ETX20L
YB16L-A2			
YB16-B			
YB16-B2			
YB16LB2			
SYB16L-B			
YB16-B-CX			
YB16C-B			
YB16CL-B		YTX16CL-B-4	
YB16HL-A-CX			
YB16L-B			
YB18-A	MB18U		
YB18L-A			
YB18L-A2			
YB30L-B	MBTX30U		ETX30LA
YB30CL-B		YTX30CL-B-4	
YHD-12H	MBHD12H		
YT4B-BS	MBT4BB		
YTR4A-BS	MT4R	YTR4A-4	
YT4L-BS	MBTX4U	YT4L-4	
YTX4L-BS			
YTX5L-BS	MBTZ7S	YTX5L-4	
YT7B-BS	MB7U		
YTX7A-BS	MBTZ10S	YTX7A-4	
YTX7L-BS	MBTX7U	YTX7L-4	
YTX9-BS	MBTX9U	YTX9-4	ETX9
YT9B-BS	MBT9B4	YT9B-4	
YT12A-BS	MBTX9U		ETX9

CONVENTIONAL	MOTOBATT	VARTA	DEKA
YT12B-BS	MBT12B4	YT12B-4	
YTX12-BS	MBTX12U	YTX12-4	ETX12
YT14B-BS	MBT14B4	YT14B-4	
YTX14AH	MBTX14AU		ETX15
YTX14AHBS		YTX14AH-4	
YTX14AHLBS	MBTX14AU	YTX14AHL-4	ETX15
YTX14-BS	MBTX12U	YTX14-4	ETX14
YTX14H-BS			
YTX14L-BS			ETX14L
YTX15L-BS			ETX12
YTX16-BS	MBTX16U	YTX16-4	
YTX16-BS-1			
YTX20CH-BS		YTX20CH-4	
YTX20-BS	MBTX20U	YTX20-4	ETX20L
YTX20A-BS	MBTX16U		
YTX20H-BS	MBTX20U	YTX20H-4	ETX20L
YTX20HL-BS			
YTX20HL-BS-PW			
YTX20L-BS			
YTX24HL	MBTX24U		ETX18L
YTX24HL-BS			
YT9B4	MBT9B4		
CTX18-BS	MBTX24U		ETX18L
CTX18L-BS			
CTX19-BS	MBTX20U		ETX20L
CTX19L-BS			
GT16-BS			ETX20L
GT16L-BS			
GTX18L-BS	MBTX24U		ETX18L
YT7B-4	MB7U	YT7B-4	
YT12B-4	MBT12B4	YT12B-4	
YT14B-4	MBT14B4		
YTZ6S	MBTZ7S		
YTZ7S		TTZ7S	
YTZ10S	MBTZ10S	TTZ10S	
YTZ12S	MBTX9U	TTZ12S	ETX9
YTZ14S			
51814	MB51814	51913	
51913			
51815	MB18U		
GYZ20L	MBTX20U		ETX20L
GYZ20HL			
GYZ16H	MBTX12U		ETX14
GYZ16HL			ETX14L
GYZ32HL	MBTX30U		ETX30LA
YTX20HL	MBTX20U		ETX20L
YTX20HL-PW			
YTX24HL	MBTX24U		ETX18L
YTZ8V	MBTX7U		
YTZ5S	MBTX4U		

POWER SPORTS CROSS REFERENCE

CONVENTIONAL	MOTOBATT	VARTA	DEKA
YTX30L	MBTX30U		ETX30LA
YTX30L-PW			
YT19BL-BS	MB51814		
YTX30L-BS	MBTX30U		ETX30LA
YTX30L-BS-PW			
YB6L-B			
YB7C-A			
Y50-N18L-A3	MBTX24U		ETX18L
6N2-2A	MBT6N4		
6N2-2A-1			
6N2-2A-3			
6N2-2A-4			
6N2-2A-8			
6N2A-2C			
6N2A-2C-1			
6N2A-2C-3			
6N4A-4D	MB3U		
6N4B-2A			
6N4B-2A-3			
6N4B-2A-5			
6N5.5-1D	MBT6N6		
6N11-2D	MBT9B4		
6N11A-1B	MB5U		
B54-6			
6N12A-2D			
B38-6A			
6YB8L-B	MBTX4U		
6YB11-2D	MBT9B4		
12N5-4B	MB5U		
12N5.5A-3B			

EUROPEAN NORM (EN) ETN CODES EXPLAINED



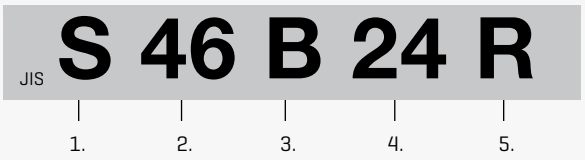
The 2nd and 3rd digits indicate nominal capacity.
For batteries with a capacity above 100A/Hrs, the first digit increases by 1.
For example:
"574" indicates the battery is 74A/Hrs,
so "636" would indicate 136A/hrs.

- 5 = up to 99A/hrs
- 6 = 100A/hrs to 199A/hrs
- 7 = 200A/hrs to 299A/hrs

The 7th, 8th, and 9th digits indicate cold cranking capacity (EN rated).
This is multiplied by 10 to give the CCA (EN) rating of your battery.

- For example, 75 x 10 = 750 CCA (EN)

JAPANESE INDUSTRY STANDARD (JIS) CODES EXPLAINED



1. 'S' prefix indicates AGM
2. Indicates performance rating, varies between manufacturers but roughly based on starting and capacity.
3. Approximate size of the narrow side (refer table)
4. Indicates approximate length
5. 'R'ight or 'L'eft terminal position

Symbol	Width	Box Height
A	127	162
B	129(127)	203
D	173	204
E	176	213
F	182	213
G	222	213
H	279	220