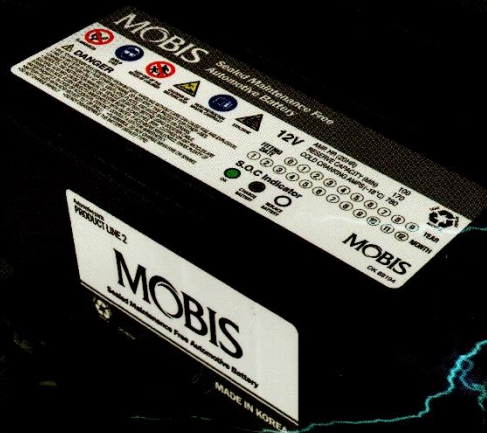


# MOBIS

Automotive parts  
**PRODUCT LINE 2**  
Sealed Maintenance Free Automotive Battery



## STRUCTURE & CHARACTERISTICS



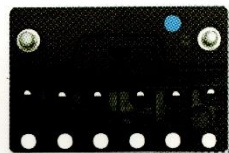
### 01 Hydrometer

- at full charge, the electrolyte specific gravity is 1.280 while at 50% of charge considered the minimum serviceable condition, the specific gravity is typically 1.220. In a typical situation when the specific gravity drops to 1.100, the battery is fully discharged.



### 02 Heat-Sealed Covers

- prevents leakage and contamination.
- adds to case strength and rigidity.
- include permanent flame arresters to prevent an accidental explosion from external sparks or flame.
- have hydrometer built in for faster checking.



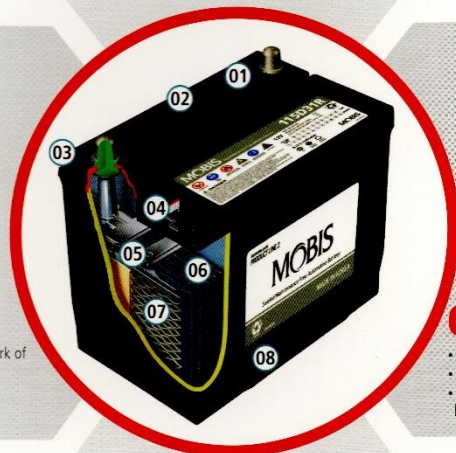
### 03 Exclusive Patented Liquid Gas Separator

- prevents electrolyte losses by collecting electrolyte vapor and returning liquid to the reservoir.
- vents allow the battery to "breathe" during temperature changes and charging.



### 04 Flame Arrester

- safety system
- prevents possibility of explosion from spark of outside
- minimizes acid-leakage
- prevents inflow of dust.



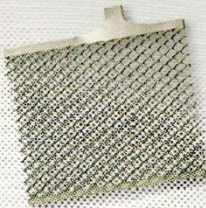
### 05 Low-Resistance Envelope Separators

- encapsulate negative plates
- improve vibration durability
- prevent "treeing" and internal shorting between positive and negative plates



### 06 Centered Cast-on Plate Straps

- stronger than the thinner gas-burned conventional connectors.
- reduce the lever action movement resulting from road shock.



### 07 Wrought Lead-Calcium Grids

- offer considerable strength
- resistant to grid corrosion
- over-charge resistant
- minimal gassing and water usage
- less self-discharge
- resist thermal runaway





### 08 Polypropylene Case

- reinforced design is precisely tailored to support the battery elements for resistance to vibration and road shock damage.
- material is light weight, exceptionally strong, durable and resistant to handling and impact damage.

## TECHNOLOGY OF THE GRID




### WROUGHT GRID TECHNOLOGY

TYPE	Wrought Expanded Lead Calcium Alloy Product Line 2 MF	
Technology	<ul style="list-style-type: none"> <li>• Fine Grain Structure</li> <li>• High Resistance to Corrosion</li> <li>• High Resistance to "Buckling"</li> <li>• Retain Physical &amp; Electrical Integrity</li> <li>• Improved High Temperature Performance</li> <li>• Eliminates Electro-Chemical Effect of Arsenic-Antimony (Gassing, Water Loss, Self-Discharge)</li> </ul>	 <p><b>No Corrosion</b> (One Year Grid Comparison)</p> <ul style="list-style-type: none"> <li>• No Deep Intergranular Corrosion</li> <li>• No Loss in Performance</li> </ul>
	 <p>Wrought Calcium Product Line 2 MF</p>	

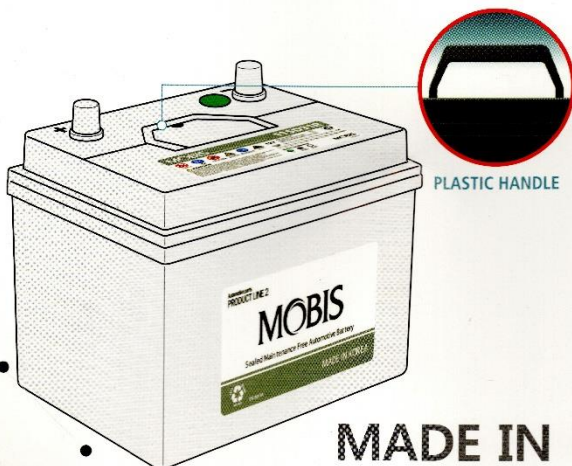
Wrought  
Grid

ONE YEAR GRID COMPARISON

### CAST GRID TECHNOLOGY

TYPE	Cast Antimony (Dry/Conventional)	Cast Calcium (Hybrid MF)
Technology	<ul style="list-style-type: none"> <li>• Large Grain Size</li> <li>• Poor Resistance to Cycling</li> <li>• Poor Resistance to "Buckling"</li> <li>• Poor Resistance to Deep Corrosion</li> <li>• Loss of Physical &amp; Electrical Integrity</li> <li>• Poor High Temperature Performance</li> </ul>	
	 <p>Cast Antimony (Dry/Conventional)</p>	 <p>Cast Calcium (Hybrid MF)</p>
		 <p><b>Corrosion</b> (One Year Grid Comparison)</p> <ul style="list-style-type: none"> <li>• Deep Penetrating Corrosion</li> <li>• Reduced Electrical Performance</li> <li>• Reduced Physical Strength</li> <li>• (Broken Grid Wire-Loss of Electrical Contact)</li> </ul>

Cast Grid



MADE IN KOREA

## CALCIUM LEAD GRID TECHNOLOGY

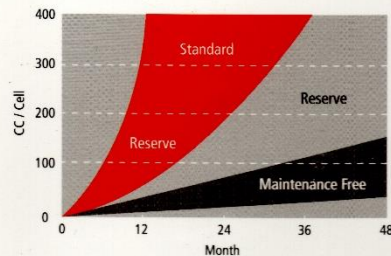
### 01 Recharging free

Due to the phenomenon of self-discharge, the lead-acid battery is characterized by its charged power being consumed even when the battery is not in use, such as during storage.

The reason behind such phenomenon is that impurities contained in lead alloy induces local action, causing electric energy to be consumed. Compared with the lead-acid battery, Product Line 2 battery uses carefully selected, highly refined lead alloy, rendering extremely low rate of self-discharge, and maintaining high performance even during long-term standing.

#### Water Usage

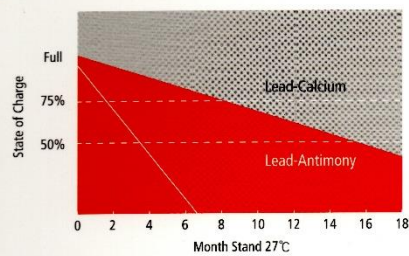
Total Water Usage During Service Life



### 02 Distilled water supplementation free

As the lead-antimony conventional battery incurs unnecessary local action inside battery due to the effects of antimony ion during battery use and discharges gas by electrolyzing water contained in electrolyte, the amount of electrolyte is decreased rapidly. The battery performance is deteriorated and operating life reduced unless distilled water is supplemented frequently to compensate for such decrease of electrolyte. Product Line 2 battery, however, uses specially alloyed calcium-lead, which leads to extremely low level of electrolyte decrease. Hence, if the charging system of vehicle remains error-free until the battery is worn out there is no need to supplement distilled water at all.

#### Self-Discharge Characteristics

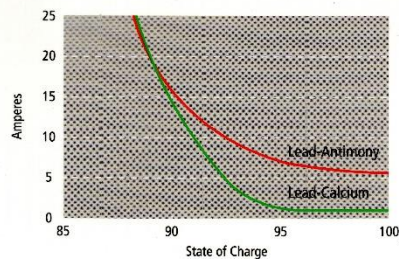


### 03 Overcharge risk free

The battery mounted on vehicles can always be charged while vehicles are in operation. In general, the current being charged is adjusted to high or low level by the regulator which controls the size of voltage. When battery is in the state of near full charge under the condition of voltage already set, the value of current being charged must be decreased to prevent battery from being overcharged to maintain high performance for a long time. As shown on graph, the charging current of Product Line 2's Calcium battery is reduced to extremely low level when the battery is in near full-charge state, eliminating to near zero the danger of battery being overcharged.

#### Charging Acceptance at Constant Voltage

(14.5Volts at 27°C)

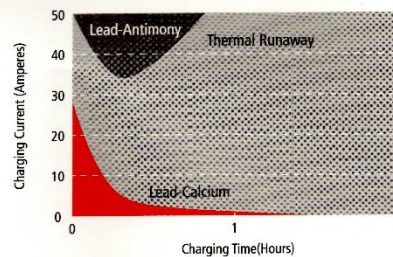


### 04 Thermal runaway free

When battery is in near full-charge state while battery is being used in hot places (temperature approximately 70°C), the current being charged must be decreased to prevent battery damage resulting from overcharging. The charging current level of lead-acid battery decreases at initial stage but rises again soon due to the effects of a few kinds of substance contained in the grid alloy, and the grid is damaged and performance deteriorated due to this thermal phenomenon. Product Line 2 battery, however, is free of substance containing such harmful effects, and the current being charged becomes extremely low level when battery is fully charged in high-temperature, leading to the prevention of overcharging.

#### Charging Characteristic at High Temperature

(70°C-Full Charge 14.5Volts)



## PRODUCT LINE 2 MF Battery Specification

S/N	JANUP	MODEL	Capacity at 20m Rate		Cranking Amp at 0°C (Cmp)	Overall Dimensions (mm)			Haville	Gate Color	Terminal Type	Cell Layers	Batteries	
			Capacity	kg		Length	Width	Height						
B19	4248.9L	NS4021	537115428.9L	35	52	300	186	126	275	PH	BLACK	B	0	80
B19	4248.9R	NS4022	537115428.9R	35	52	300	186	126	275	PH	BLACK	B	0	80
B19	4481.9L	NS4021	537115448.9L	40	60	350	186	126	275	PH	BLACK	B	0	80
B19	4481.9R	NS4022	537115448.9R	40	60	350	186	126	275	PH	BLACK	B	0	80
NS40	3882.0R	NS4021	5371153882.0R	35	52	310	206	172	183	PH	BLACK	A	1	90
GP26	5902.0L	NS9021	5371155902.0L	50	80	450	206	172	183	PH	BLACK	A	0	87
GP26	5902.0R	NS9022	5371155902.0R	50	80	450	206	172	183	PH	BLACK	A	0	87
GP35 (9' STD)	5502.3L	NS5023	5371155502.3L	60	92	480	229	172	203	PH	BLACK	A	0	87
GP35 (9' STD)	5502.3R	NS5023	5371155502.3R	60	92	480	229	172	203	PH	BLACK	A	0	87
GP35 (9' STD)	7502.3L	NS7023	5371157502.3L	65	118	520	229	172	203	PH	BLACK	A	0	87
GP35 (9' STD)	7502.3R	NS7023	5371157502.3R	65	118	520	229	172	203	PH	BLACK	A	0	87
NS80	8002.3L	NS8023	5371158002.3L	68	120	600	229	172	203	PH	BLACK	A	0	87
NS80	8002.3R	NS8023	5371158002.3R	68	120	600	229	172	203	PH	BLACK	A	0	87
NS80	5582.4L	NS6023	5371155582.4L	45	80	430	237	128	225	PH	BLACK	B	0	80
NS80	5582.4R	NS6023	5371155582.4R	45	80	430	237	128	225	PH	BLACK	B	0	80
NS60	5582.4L	NS6023	5371155582.4L	45	80	430	237	128	225	PH	BLACK	A	0	80
NS60	5582.4R	NS6023	5371155582.4R	45	80	430	237	128	225	PH	BLACK	A	0	80
NS50	6582.4L	NS5024	5371156582.4L	52	82	480	237	128	225	PH	BLACK	B	0	80
NS50	6582.4R	NS5024	5371156582.4R	52	82	480	237	128	225	PH	BLACK	B	0	80
GP24 (10')	4802.6L	NS00	5371154802.6L	50	81	350	260	172	203	PH	BLACK	A	0	87
GP24 (10')	4802.6R	NS00	5371154802.6R	50	81	350	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
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GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
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GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
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GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
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GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
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GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6L	NS00	5371155502.6L	55	96	475	260	172	203	PH	BLACK	A	0	87
GP24 (10')	5502.6R	NS00	5371155502.6R	55	96	475	260	172	203					

Sealed Maintenance Free Automotive Battery

MOBIS

## PRODUCT LINE 2 MF Battery Specification

Cell Layout	Terminal Type	Bottom Hold Down Type
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### Terminal Type

### Bottom Hold Down Type

	Sealed Maintenance Free Automotive Battery			
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