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# MSV 400 ▶ 2V 400Ah

MSV 400 is a long service life battery up to 15 years expected life under normal float charge. As with all CSB batteries, all are rechargeable, highly efficient, leak proof and maintenance free.



## ► Specification

Cells Per Unit	1
Voltage Per Unit	2
Capacity	400Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F)
Weight	Approx. 24.7 kg(54.45 lbs)
Maximum Discharge Current	2400A(5sec)
Internal Resistance	Approx. 0.40 mΩ
Operating Temperature Range	Discharge: -20°C~50°C (-4°F~122°F) Charge: 0°C~40°C (32°F~104°F) Storage: -20°C~40°C (-4°F~104°F)
Nominal Operating Temperature Range	25°C±3°C (77°F±5°F)
Float Charging Voltage	2.23±0.02/Cell at 25 °C (77°F) Temp. Coefficient ±3.3mV/°C (±1.8mV/°F)
Recommended Maximum Charging Current Limit	120A
Equalization / Cycle Use Charging Voltage	2.35V Temps coefficient ±3.3mV/°C (±1.8mV/°F)
Terminal	Pb-Ca-Sn Alloy(L / Recessed Terminal)
Container Material	The container and cover are made of flame retardant plastics which meet ABS(UL 94-V0/File E88637) specifications. The oxygen index level is higher than 28

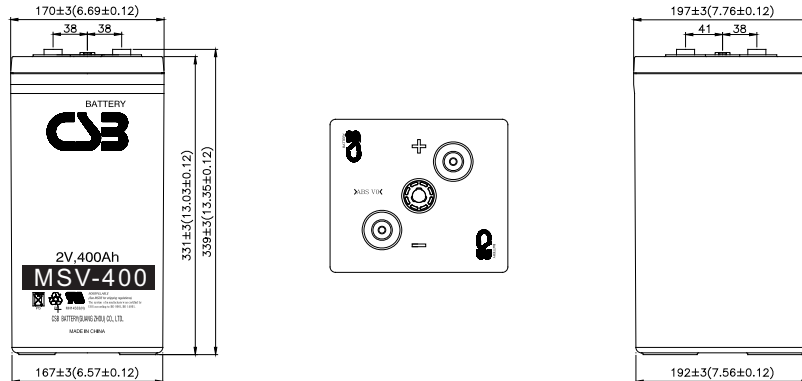
CSB-manufactured VRLA batteries are UL-recognized components under UL924 and UL1989.

CSB is also certified by ISO 9001 and ISO 14001.

## ► Dimensions :

Unit: mm (inch)

Overall Height (H)	Container height (h)	Length (L)	Width (W)
339±3 (13.35±0.12)	331±3 (13.03±0.12)	197±3 (7.76±0.12)	170±3 (6.69±0.12)



## Constant Current Discharge Characteristics Unit:A (25°C, 77°F)

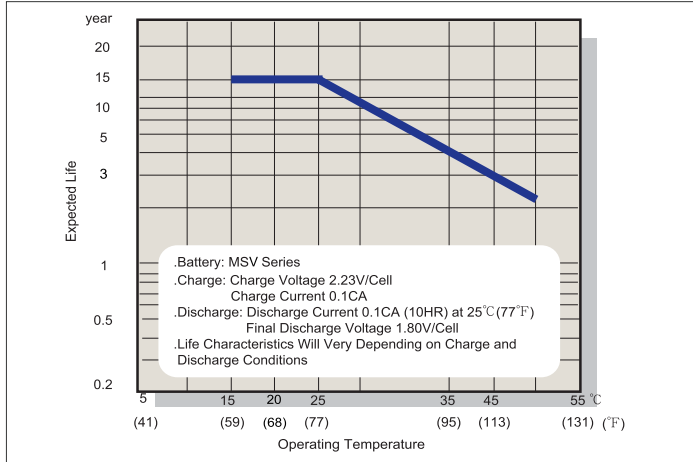
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	569	392	259	153	115	91.0	77.0	67.0	53.0	45.0
1.67V	519	373	247	148	109	88.0	74.0	64.0	52.0	44.0
1.70V	482	364	243	145	108	87.0	73.0	63.0	51.0	43.0
1.75V	421	336	224	137	101	82.2	69.0	60.0	49.0	41.0
1.80V	366	294	211	132	97.0	79.1	67.0	59.0	48.0	40.0
1.83V	318	259	195	124	93.0	75.0	64.0	56.0	45.6	39.0

## Constant Power Discharge Characteristics Unit:W (25°C, 77°F)

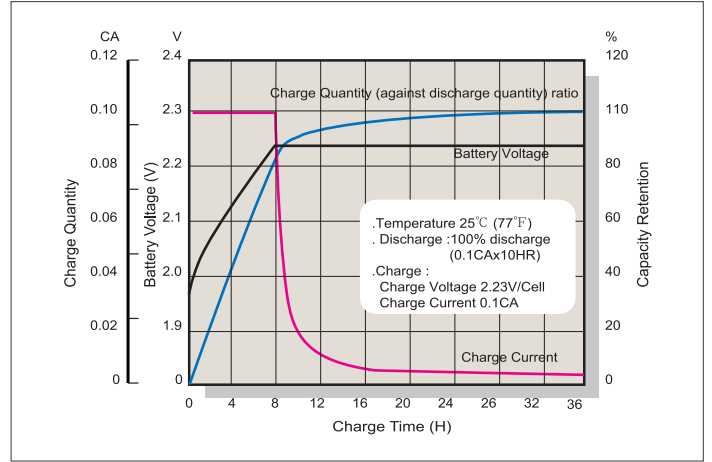
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	933	689	461	277	208	167	141	124	100	84.0
1.67V	854	659	460	275	205	165	140	123	99.0	83.0
1.70V	813	638	445	269	201	164	139	121	97.0	82.0
1.75V	737	596	416	257	193	157	133	116	95.0	80.0
1.80V	671	533	392	247	185	151	129	113	92.0	79.0
1.83V	572	462	361	232	177	144	123	108	88.0	76.0

Ratings are preliminary and subject to change.

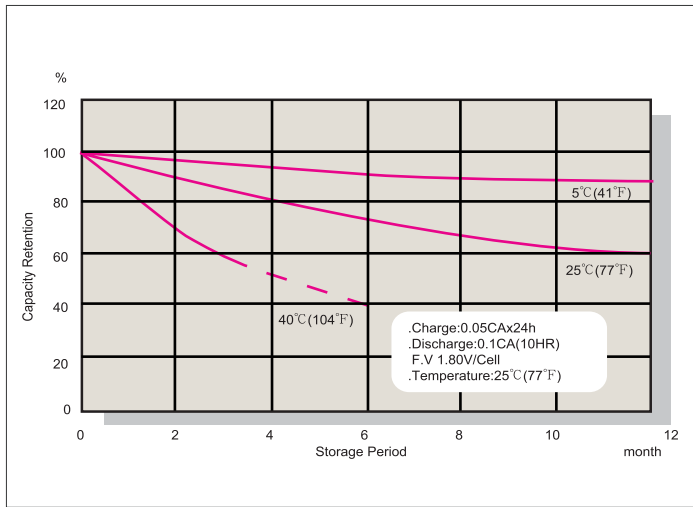
### Expected Life V.S Operating Temperature



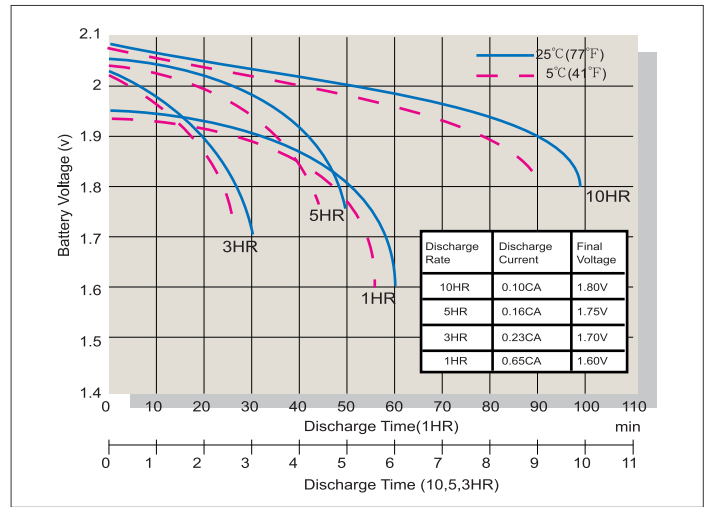
### Typical Constant Voltage Charge Characteristics



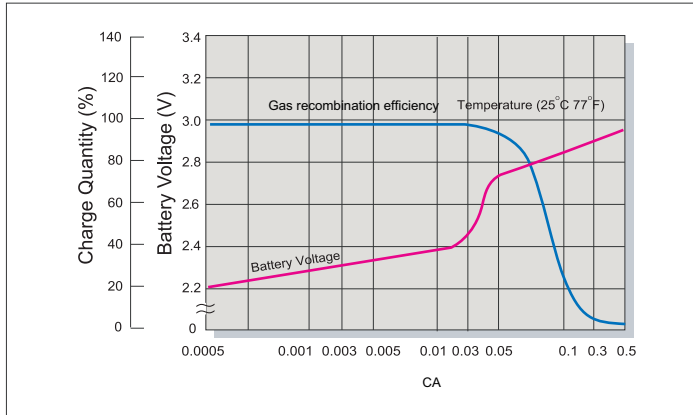
### Capacity Retention Characteristics



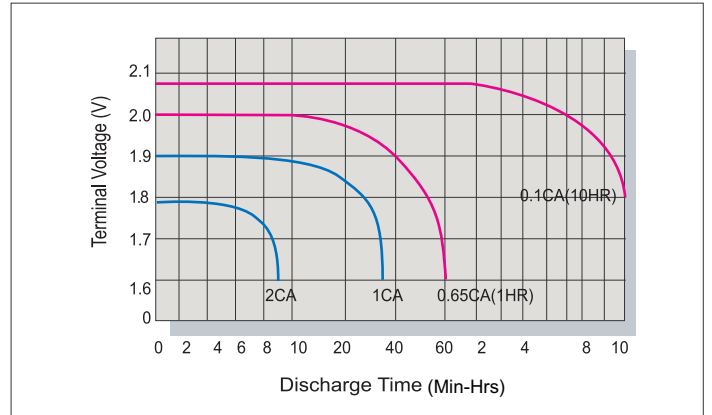
### Discharge Characteristics



### Oxygen Recombination Efficiency Chart



### Terminal Voltage (V) and Discharge Time 25°C (77°F)



### Charging Procedures

Application	Charge Voltage (V/Cell)			Max. Charge Current
	Temperature	Set Point	Allowable Range	
Standby	25°C (77°F)	2.23	2.21-2.25	0.3C

### Discharge Current VS. Discharge Voltage

Discharge Current (A)	Final Discharge Voltage (V/Cell)
0.05C > A	1.90
0.15C > A ≥ 0.05C	1.80
0.20C > A ≥ 0.15C	1.75
0.40C > A ≥ 0.20C	1.70
A > 0.40C	1.60

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