



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 kg(52.91 lbs)
Maximum Discharge Current	2400A(5sec)
Internal Resistance	Approx. 0.41 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 and Cycle Service	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

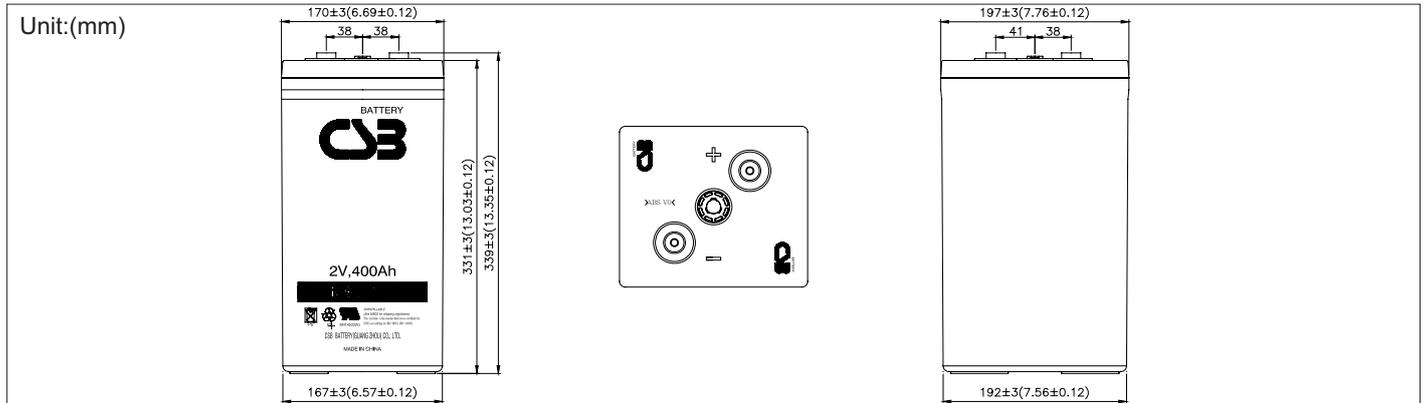
UL
MH14533(N)

tüv CERT
ISO9001
No :041005117

RWTV
ISO 14001
NO.UM 1-12-0045

CSB-manufactured batteries are UL-recognized components under UL924 and UL1989. CSB is also certified by ISO 9001 and ISO 14001.

Dimensions



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

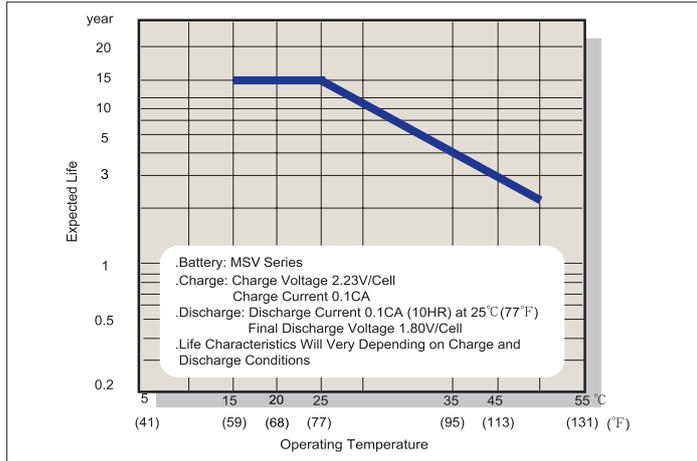
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	635	421	259	153	115	91.0	77.0	67.0	53.0	45.0
1.65V	604	404	247	148	109	88.0	74.0	64.0	52.0	43.0
1.70V	564	381	243	145	108	87.0	73.0	63.0	51.0	43.0
1.75V	500	339	224	137	101	83.0	69.0	60.0	49.0	41.0
1.80V	431	312	211	132	97.0	82.0	67.0	59.0	48.0	40.0
1.83V	364	281	195	124	93.0	75.0	64.0	56.0	45.0	39.0

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

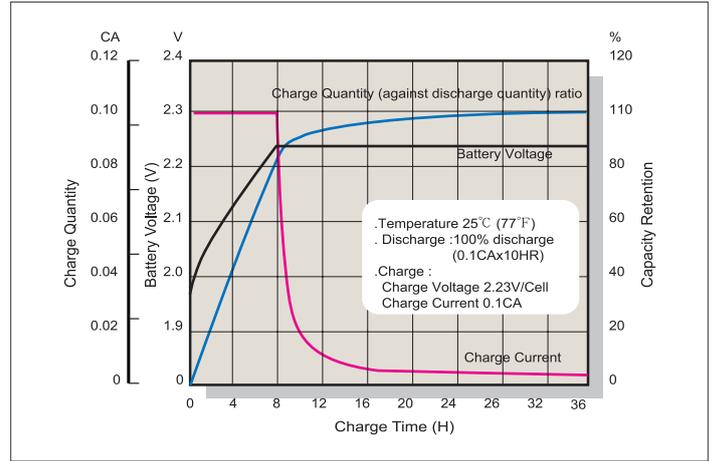
F.V/Time	15MIN	30MIN	60MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	1112	749	461	277	208	167	141	124	100	84.0
1.65V	1101	745	460	275	205	165	140	123	99.0	83.0
1.70V	1013	693	445	269	201	164	139	121	97.0	83.0
1.75V	912	625	416	257	193	157	133	116	95.0	80.0
1.80V	784	576	392	247	185	153	129	113	92.0	79.0
1.83V	663	519	361	232	177	140	123	108	88.0	76.0

- All mentioned values are average values.
- Cycle Information : 300~400 cycles@DOD80%, 600~700 cycles@DOD50%, 900~1200 cycles@DOD30%

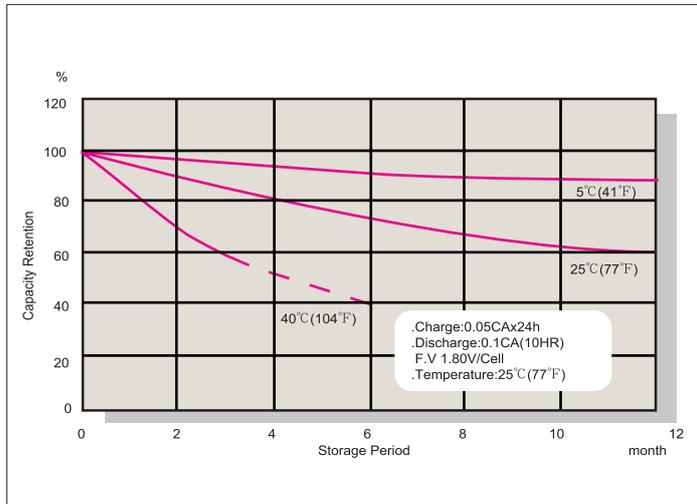
Expected Life V.S Operating Temperature



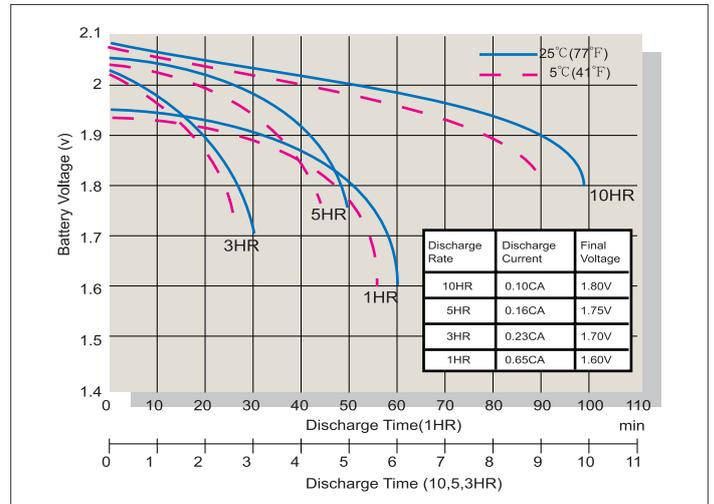
Typical Constant Voltage Charge Characteristics



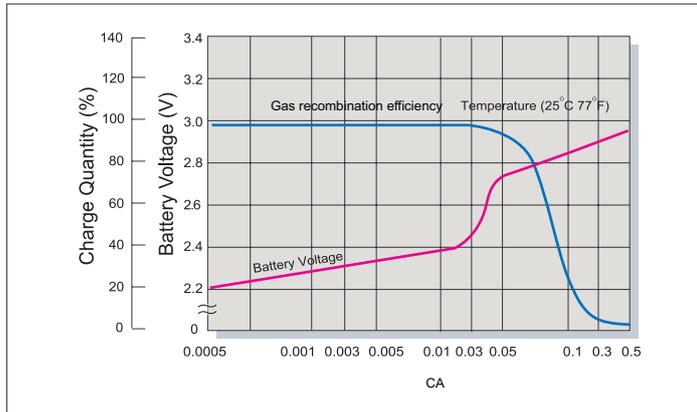
Capacity Retention Characteristics



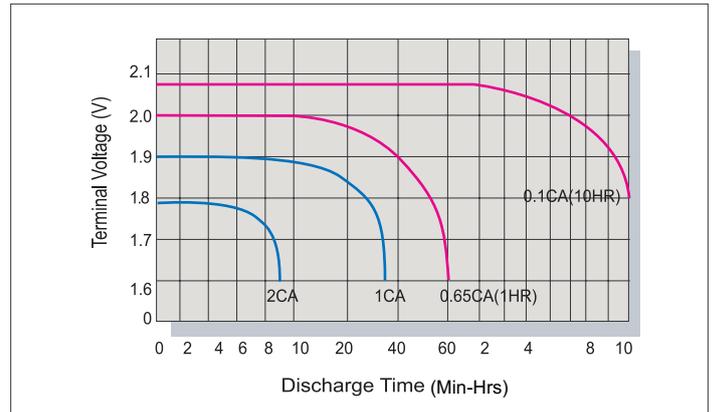
Discharge Characteristics



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
0.20 C > A ≥ 0.15C	1.75
0.40 C > A ≥ 0.20 C	1.70
A > 0.40 C	1.60

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