

# MSV 200

## 2V 200Ah

MSV-200 is a Long service life battery with 15~20 years expected life under normal float charge. As with all CSB batteries, all are rechargeable, highly efficient, leak proof and maintenance free.



### Specification

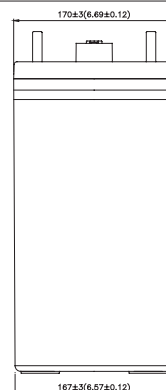
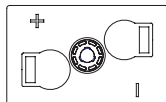
|                                            |                                                                                                                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Cells Per Unit                             | 1                                                                                                                                             |
| Voltage Per Unit                           | 2                                                                                                                                             |
| Capacity                                   | 200Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F)                                                                                             |
| Weight                                     | Approx. 12kg(26.4 lbs)                                                                                                                        |
| Maximum Discharge Current                  | 1200A(5sec)                                                                                                                                   |
| Internal Resistance                        | Approx. 0.62 mΩ                                                                                                                               |
| Operating Temperature Range                | Discharge: -15°C~50°C (5°F~122°F)<br>Charge: -15~40°C (5°F~104°F)<br>Storage: -15°C~40°C (5°F~104°F)                                          |
| Nominal Operating Temperature Range        | 25°C±3°C (77°F±5°F)                                                                                                                           |
| Float Charging Voltage                     | 2.23±0.02/Cell AT25°C (77°F) Temp.<br>Coefficient-3.3mV/°C (-1.8mV/°F)                                                                        |
| Recommended Maximum Charging Current Limit | 60A                                                                                                                                           |
| Equalization and Cycle Service             | 2.35V Temps coefficient -3.3mV/°C (-1.8mV/°F)                                                                                                 |
| Terminal                                   | Pb-Ca-Sn Alloy                                                                                                                                |
| Container Material                         | The container and cover are made of flame retardant plastics which meet UL-94V-0 specifications.<br>The oxygen index level is higher than 28. |



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

### Dimensions

Unit:(mm)



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

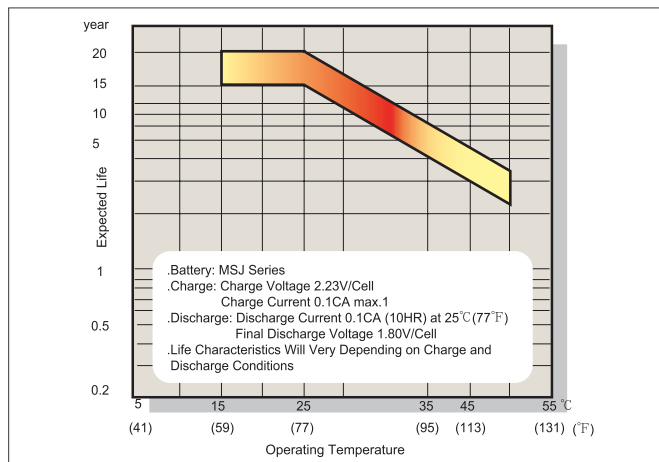
| F.V/Time | 15MIN  | 30MIN  | 60MIN  | 2HR   | 3HR   | 4HR   | 5HR   | 6HR   | 8HR   | 10HR  |
|----------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 1.83V    | 182.00 | 141.00 | 97.00  | 62.00 | 47.00 | 38.00 | 32.00 | 28.00 | 23.00 | 19.40 |
| 1.80V    | 215.00 | 156.00 | 105.00 | 66.00 | 49.00 | 40.80 | 34.00 | 29.00 | 24.00 | 20.00 |
| 1.75V    | 250.00 | 169.00 | 112.00 | 69.00 | 51.00 | 41.20 | 35.00 | 30.00 | 24.50 | 20.60 |
| 1.70V    | 282.00 | 191.00 | 121.00 | 73.00 | 54.00 | 43.00 | 36.00 | 31.70 | 25.00 | 21.30 |
| 1.65V    | 302.00 | 202.00 | 123.00 | 74.00 | 55.00 | 44.00 | 37.00 | 32.00 | 26.00 | 21.60 |
| 1.60V    | 317.00 | 211.00 | 129.00 | 77.00 | 57.00 | 45.00 | 38.00 | 33.00 | 27.00 | 22.50 |

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

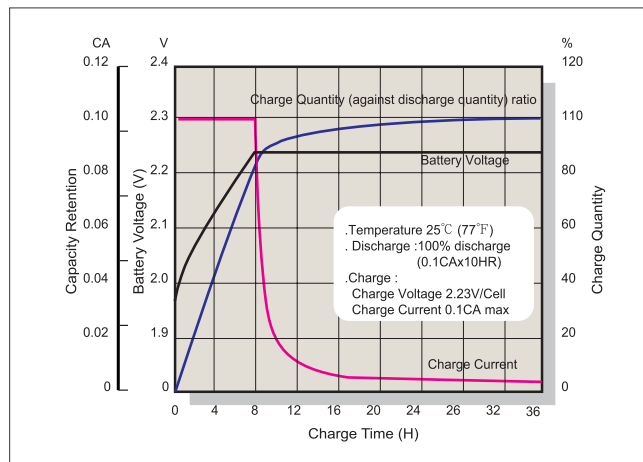
| F.V/Time | 15MIN  | 30MIN  | 60MIN  | 2HR    | 3HR    | 4HR   | 5HR   | 6HR   | 8HR   | 10HR  |
|----------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
| 1.83V    | 331.00 | 260.00 | 181.00 | 116.00 | 88.00  | 70.00 | 61.00 | 54.00 | 44.00 | 38.00 |
| 1.80V    | 392.00 | 288.00 | 196.00 | 123.00 | 93.00  | 76.00 | 65.00 | 57.00 | 46.00 | 39.00 |
| 1.75V    | 456.00 | 312.00 | 208.00 | 129.00 | 97.00  | 77.00 | 66.00 | 58.00 | 47.00 | 40.00 |
| 1.70V    | 507.00 | 347.00 | 223.00 | 135.00 | 101.00 | 82.00 | 69.00 | 61.00 | 48.00 | 41.00 |
| 1.65V    | 551.00 | 373.00 | 230.00 | 137.00 | 102.00 | 83.00 | 70.00 | 61.50 | 49.00 | 41.50 |
| 1.60V    | 556.00 | 375.00 | 231.00 | 139.00 | 104.00 | 84.00 | 71.00 | 62.00 | 50.00 | 42.00 |

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

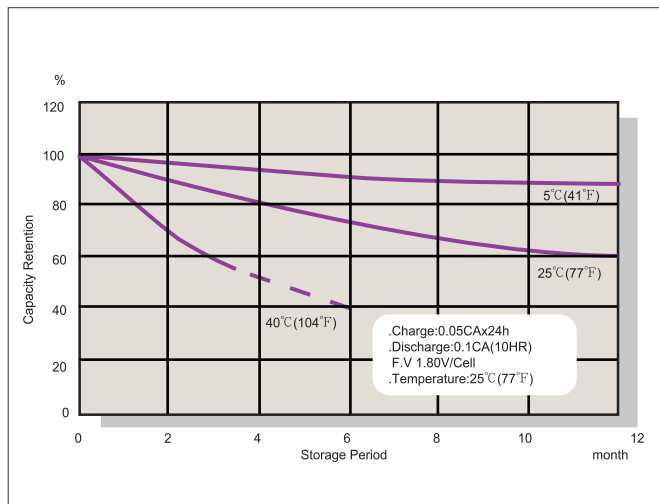
### Expected Life V.S Operating Temperature



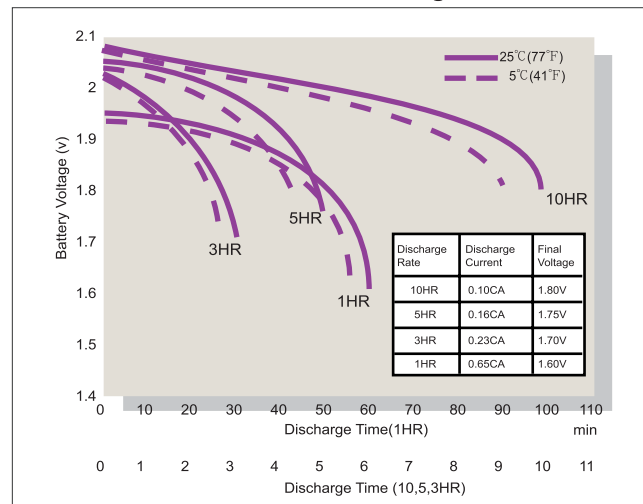
### Typical Constant Voltage Charge Characteristics



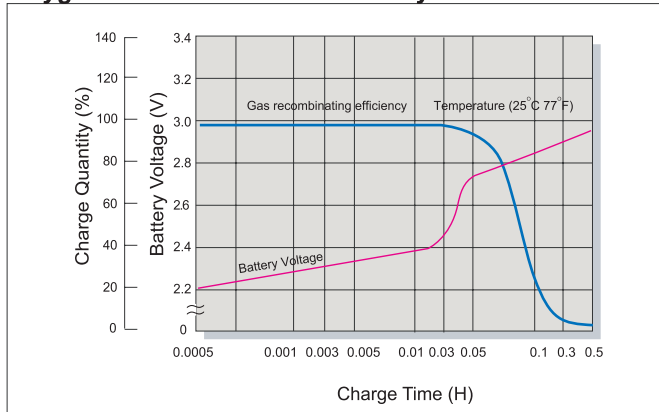
### Capacity Retention Characteristics



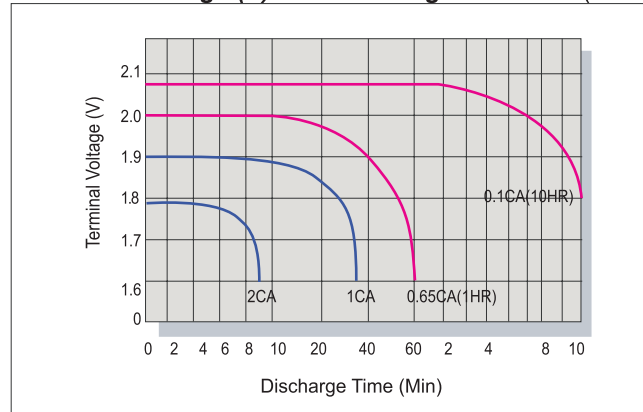
### Discharge Characteristics



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

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