



# HRA12-150 (12V150Ah)

HRA12-150 یک باتری همه منظوره با ۱۰ سال عمر طراحی شناور، مطابق با استاندارد BS, JIS, IEC و EUROBAT است. باتری های سری HRA با شبکه های سنگین، صفحات ضخیم، افزودنی های ویژه، عمر طولانی و قابل اعتماد آماده به کار دارند. باتری های سری HRA ما برای عملکرد بهتر در استفاده سری، پایداری بالایی دارند



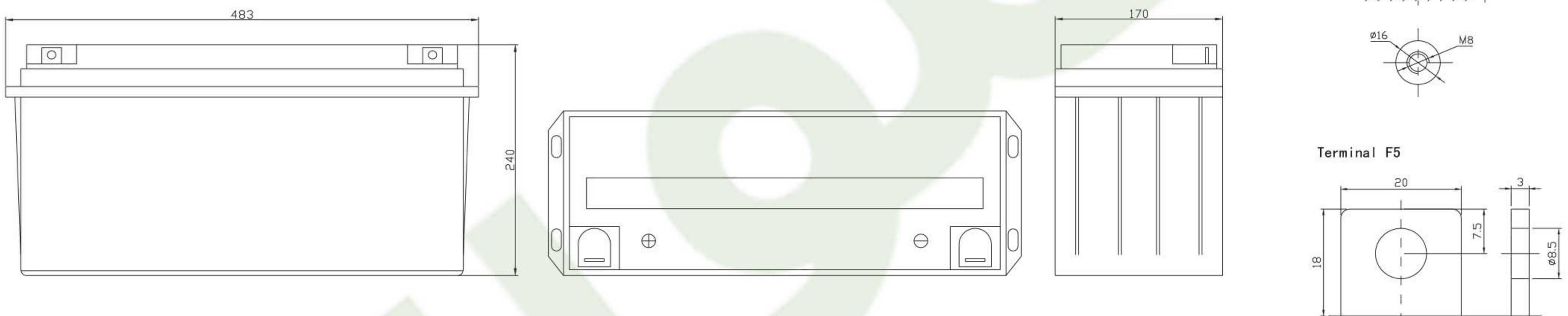
## Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	150Ah@10hr-rate to 1.80V per cell @25°C
Weight	Approx. 44.5 Kg
Max. Discharge Current	1500A (5 sec)
Internal Resistance	Approx. 4 mΩ
Operating Temperature Range	Discharge: -20°C~60°C Charge: 0°C~50°C Storage: -20°C~60°C
Normal Operating Temperature Range	25°C ± 5°C
Float charging Voltage	13.6 to 13.8 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	45A
Equalization and Cycle Service	14.6 to 14.8 VDC/unit Average at 25°C
Self Discharge	HITACO Valve Regulated Lead Acid (VRLA) batteries can be stored for more than 6 months at 25°C. Self-discharge ratio less than 3% per month at 25°C. Please charge batteries before using.
Terminal	Terminal F5/F12
Container Material	A.B.S. (UL94-HB), Flammability resistance of UL94-V1 can be available upon request.



## Dimensions

Unit: mm Dimension: 483(L)×170(W)×240(H)



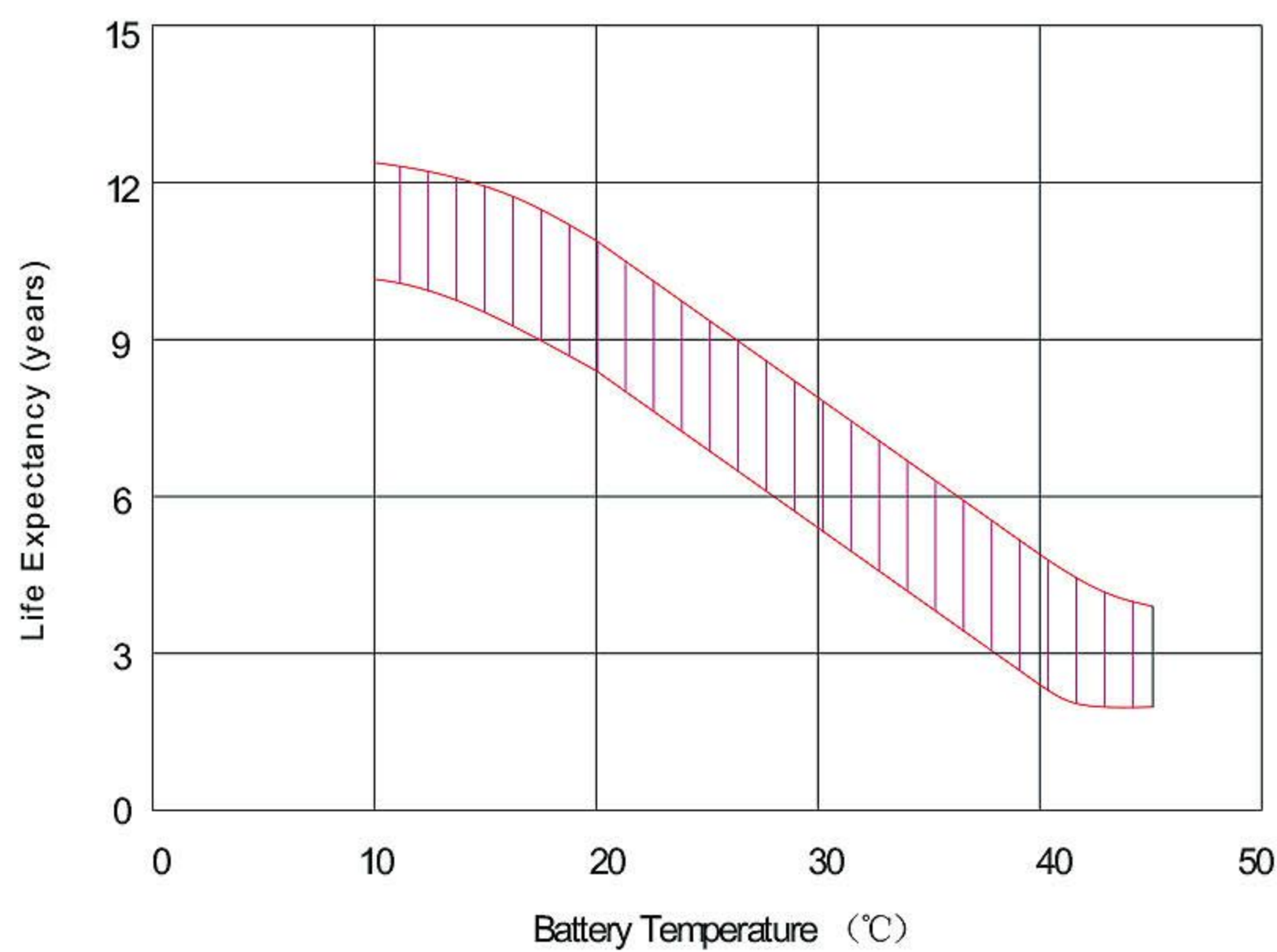
### Constant Current Discharge Characteristics: A (25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	432.9	323.3	272.1	169.0	97.50	58.34	40.32	33.05	27.05	18.63	15.75	8.665
10.0V	420.4	307.6	266.5	166.2	97.05	57.90	40.17	32.90	26.89	18.48	15.60	8.507
10.2V	407.9	296.7	262.4	164.7	96.15	57.46	39.86	32.74	26.73	18.33	15.45	8.350
10.5V	366.3	273.8	249.8	160.6	95.25	57.03	39.71	32.44	26.41	18.18	15.30	8.192
10.8V	330.6	249.7	230.3	153.6	93.00	56.00	38.63	31.67	25.94	17.88	15.15	8.035
11.1V	282.3	223.1	206.5	143.9	88.35	53.52	36.93	30.14	24.82	17.12	14.69	7.562

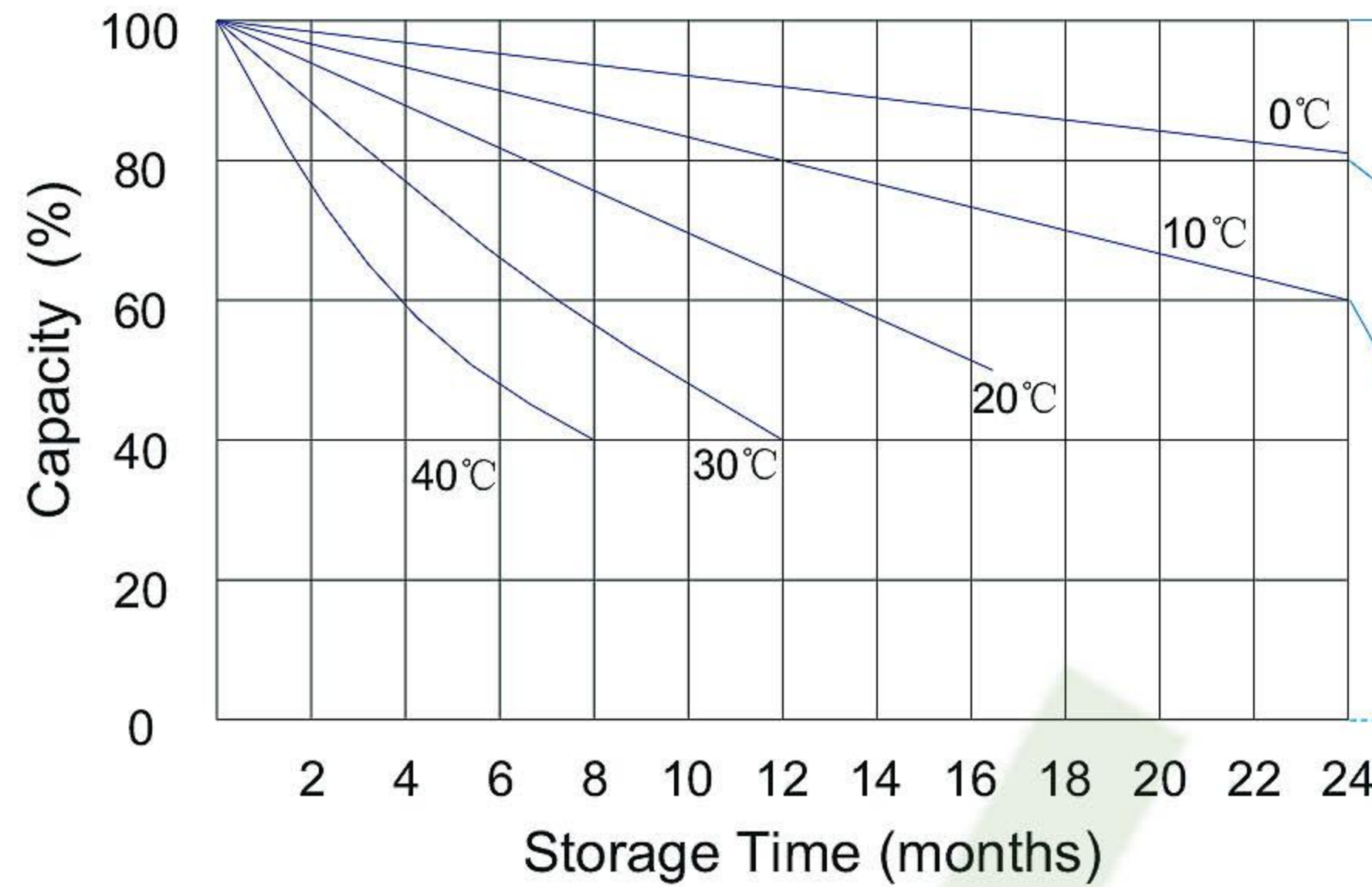
### Constant Power Discharge Characteristics: W(25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.6V	4477	3443	2993	1927	1127	687.6	479.9	393.9	322.7	222.5	188.3	103.9
10.0V	4389	3337	2945	1903	1124	684.0	480.0	393.4	321.9	221.4	187.1	102.1
10.2V	4339	3249	2912	1890	1115	679.9	477.9	392.6	320.8	220.0	185.4	100.2
10.5V	3950	3026	2778	1846	1105	674.9	476.1	388.9	317.0	218.1	183.6	98.31
10.8V	3598	2789	2567	1769	1085	666.3	463.1	380.1	311.2	214.5	181.8	96.42
11.1V	3160	2522	2311	1662	1038	641.6	443.1	361.7	297.9	205.4	176.3	90.75

### Effect of temperature on long term float life



### Storage characteristic



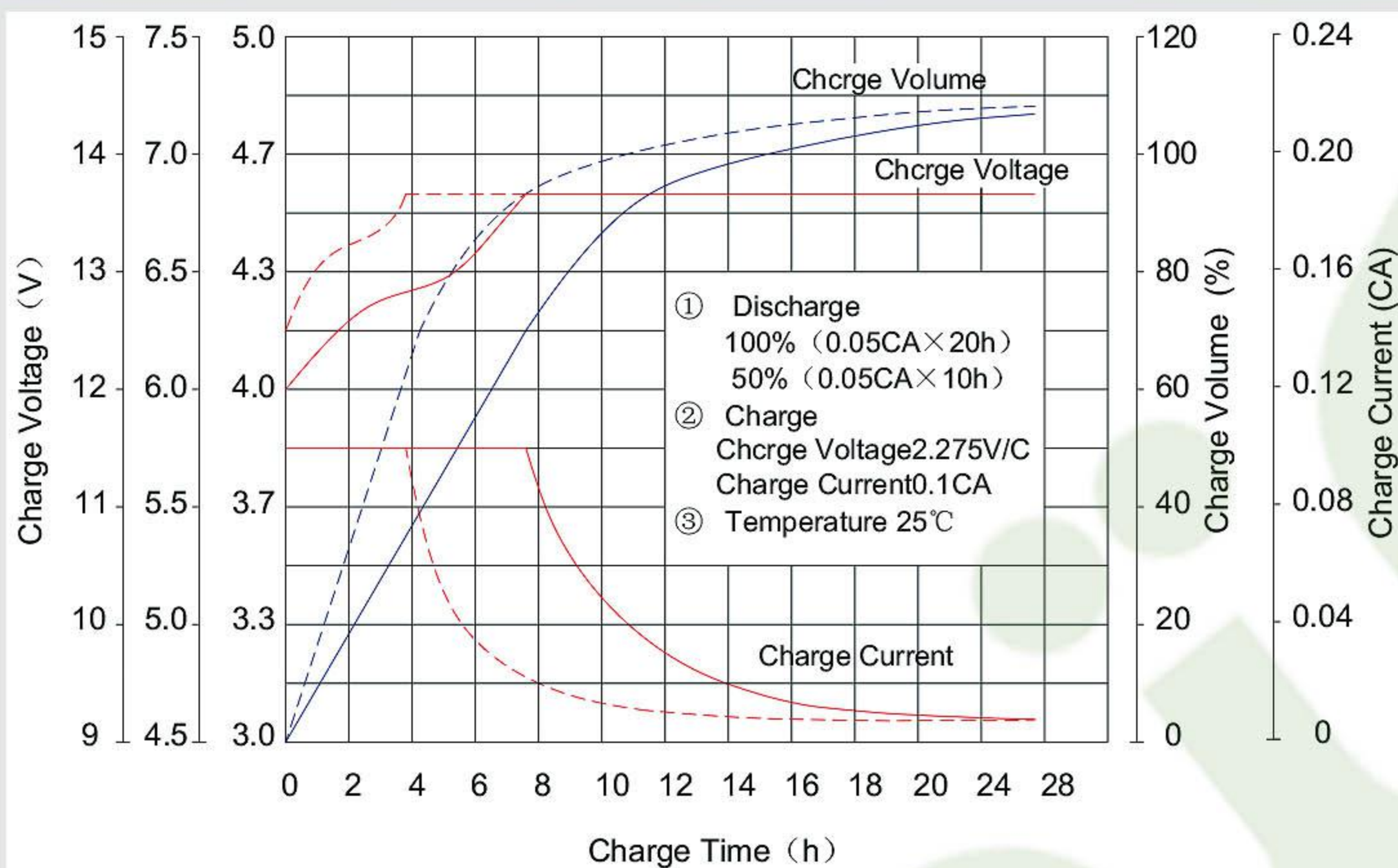
Supplementary charge required (Carry out supplementary charge before use if 100% capacity is requires)

Supplementary charge required before use. This supplementary charge will help to recover the capacity and should be made as early as possible.

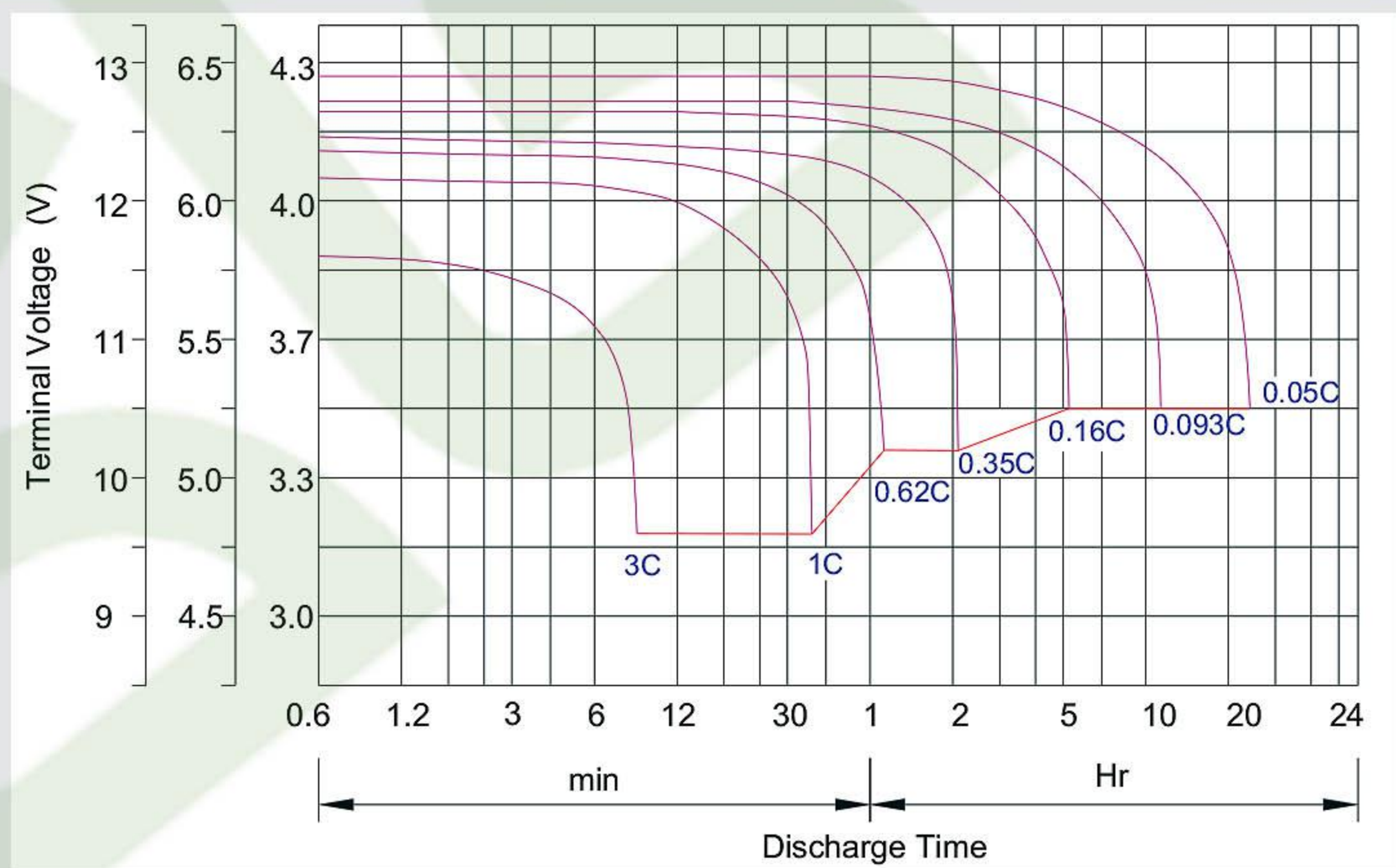
Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached

Supplementary charge and storage guidelines

### Charge characteristic Curve for standby use



### Discharge characteristic Curve



### Capacity Factors With Different Temperature

Battery Type		-20°C	-10°C	0°C	5°C	10°C	20°C	25°C	30°C	40°C	45°C
GEL Battery	6V&12V	50%	70%	83%	85%	90%	98%	100%	102%	104%	105%
	2V	60%	75%	85%	88%	92%	99%	100%	103%	105%	106%
AGM Battery	6V&12V	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%
	2V	55%	70%	80%	85%	92%	99%	100%	104%	108%	110%

### Discharge Current VS. Discharge Voltage

Final Discharge Voltage V/cell	1.75V	1.70V	1.60V
Discharge Current (A)	(A) ≤0.2C	0.2C < (A) < 1.0C	(A) ≥1.0C

**Charge the batteries at least once every six months, if they are stored at 25°C.**

Charging Method:

Constant Voltage	-0.2Cx2h+2.4-2.45V/cellx24h, Max. Current 0.3CA
Constant Current	-0.2Cx2h+0.1CAx12h
Fast	-0.2Cx2h+0.3CAx4.0h

### Maintenance & Cautions

<b>Float Service:</b>
✘ Every month, recommend inspection every battery voltage.
✘ Every three months, recommend equalization charge for one time.
Equalization charge method:
Discharge: 100% rate capacity discharge.
Charge: Max. current 0.3CA, constant voltage 2.4-2.45V/Cell charge 24h.
✘ Effect of temperature on float charge voltage: -3mV/°C/Cell.
✘ Length of service life will be directly affected by the number of discharge cycles, depth of discharge, ambient temperature and charging voltage.