

HA12-33G (12V33Ah)



Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	33Ah@10hr-rate to 1.80V per cell @25°C
Weight	Approx. 10.2 Kg (Tolerance±3%)
Internal Resistance	Approx. 9 mΩ
Terminal	F11(M6)/F7(M8)
Max. Discharge Current	330A (5 sec)
Cold Cranking Ampere(CCA)	230A
Maximum Charging Current	9.9 A
Reference Capacity	C3 25.5AH C5 28.1AH C10 33.0AH C20 35.4AH
Float Charging Voltage	13.6 V~13.8 V @ 25°C Temperature Compensation: -3mV/°C/Cell
Cycle Use Voltage	14.6 V~14.8 V @ 25°C Temperature Compensation: -4mV/°C/Cell
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
Self Discharge	Valve Regulated Lead Acid (VRLA) batteries can be stored for up to 6 months at 25°C and then recharging is recommended. Monthly Self-discharge ratio is less than 3% at 25°C. Please charged batteries before using.
Container Material	A.B.S. UL94-HB, UL94-V0 Optional.

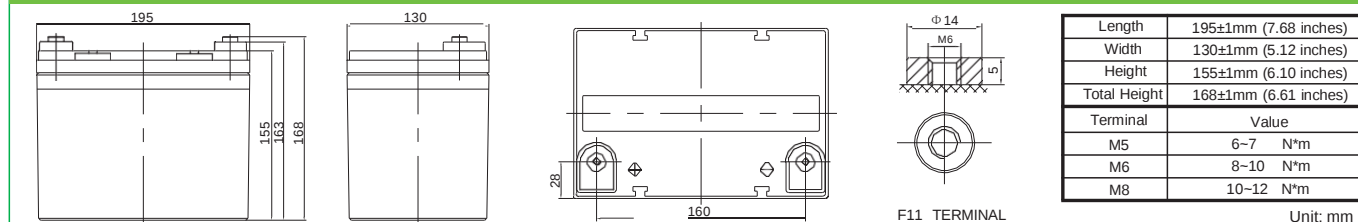
HA-G (Electric Vehicle) series is specially designed for frequent discharge and deep cycle application.

By using the specially designed active material, strong grids and thick plate construction, the **HG - EV** series battery offers reliable performance in high load situations and could provide competitive cycle performance.

Suitable for Electric Vehicle and Golf cart; Industrial equipment, Floor Machines, Forklifts, Aerial lifts, and Robotics; Marine, RV, and no-idle solutions; Mobility and Medical Equipment; and most outdoor application.



Dimensions



Constant Current Discharge Characteristics : A(25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
1.60V	118.7	86.8	64.7	37.2	21.5	12.7	9.07	7.09	5.92	4.18	3.54	1.84
1.65V	114.3	83.9	62.7	36.4	21.1	12.5	8.93	6.99	5.85	4.13	3.51	1.82
1.70V	108.5	80.2	60.2	35.4	20.5	12.2	8.75	6.86	5.75	4.07	3.46	1.80
1.75V	101.0	75.1	56.8	34.0	19.8	11.8	8.49	6.68	5.61	3.99	3.39	1.77
1.80V	90.9	68.4	52.2	32.0	18.8	11.3	8.14	6.44	5.42	3.87	3.30	1.72
1.85V	77.2	59.1	45.8	29.3	17.4	10.5	7.64	6.08	5.15	3.69	3.17	1.66

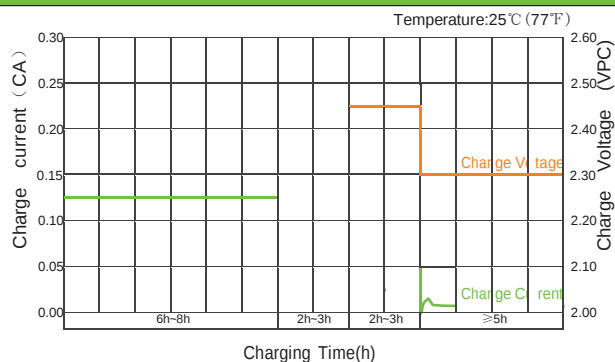
Constant Power Discharge Characteristics : WPC(25°C)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
1.60V	201	148	113	67.5	40.2	24.1	17.3	13.6	11.4	8.17	6.96	3.62
1.65V	199	146	112	67.1	39.8	23.9	17.2	13.5	11.3	8.10	6.91	3.59
1.70V	191	141	108	65.6	38.9	23.4	16.8	13.3	11.2	7.99	6.82	3.55
1.75V	181	135	104	63.6	37.7	22.7	16.4	13.0	10.9	7.83	6.70	3.49
1.80V	166	125	96.7	60.6	36.0	21.8	15.8	12.5	10.6	7.62	6.52	3.41
1.85V	143	110	86.1	56.0	33.5	20.4	14.9	11.9	10.1	7.29	6.27	3.29

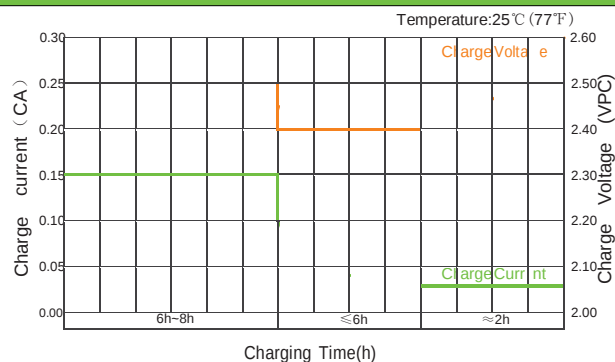
(Note) The above characteristics data are average values obtained within three charge/discharge cycle not the minimum values.

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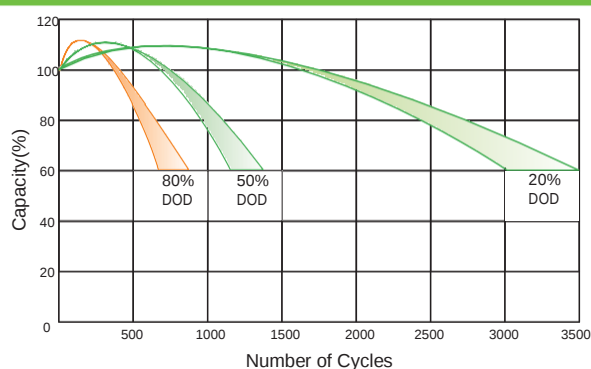
Charge Characteristic Curve for Cycle Use(IUUU)



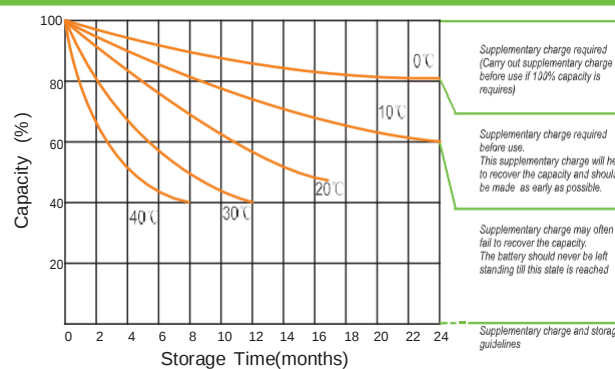
Charge Characteristic Curve For Cycle Use(IUI)



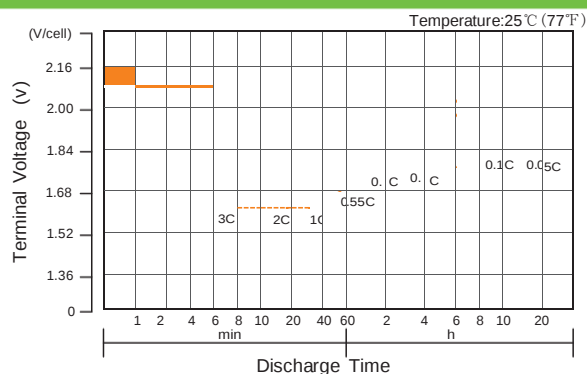
Cycle Life in Relation to Depth of Discharge



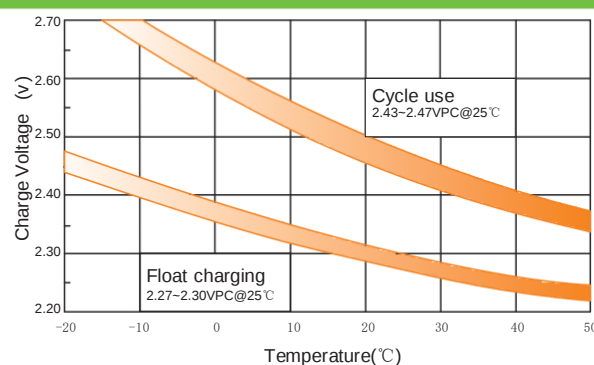
Storage Characteristics



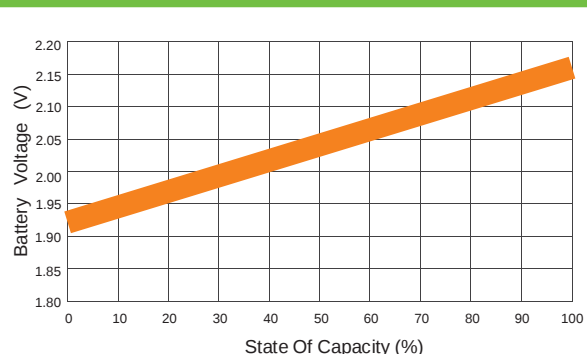
Discharge Characteristics Curve



Relationship Between Charging Voltage and Temperature



Relationship of OCV And State of Charge(20°C)



Temperature Effects on Capacity

