



# RA12-90DG (12V90Ah)

RA12-90DG is GEL Deep cycle battery, with 12 years floating design life, superiorly designed for frequent cyclic discharge applications under extreme temperature. By using strong grid to insure reliable performance under frequent cyclic discharge use. 400 cycles could be available at 100% DOD. Offering extra-durable cyclic performance, high efficiency of recovery, that is more suitable for solar, mobility, E-toll, marine, deep discharge UPS etc..



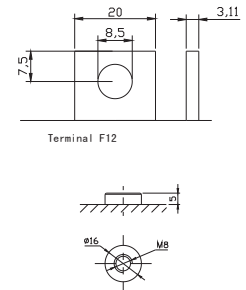
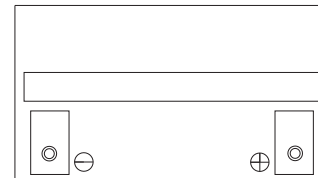
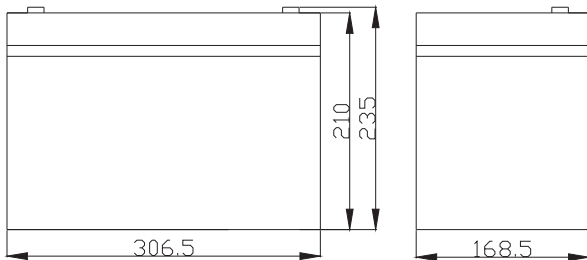
## Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	90Ah@20hr-rate to 1.75V per cell @25°C
Weight	Approx. 28.5 Kg
Max. Discharge Current	900 A (5 sec)
Internal Resistance	Approx. 6.0 mΩ
Operating Temperature Range	Discharge: -40°C~60°C Charge:-20°C~50°C Storage: -40°C~60°C
Normal Operating Temperature Range	25°C±5°C
Float charging Voltage	13.6to 13.8 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	18A
Equalization and Cycle Service	14.2 to 14.4VDC/unit Average at 25°C
Self Discharge	RITAR 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 F15/F12
Container Material	A.B.S. (UL94-HB), Flammability resistance of UL94-V1 can be available upon request.



## Dimensions

Unit: mm Dimension: 306.5 (L) × 168.5 (W) × 210 (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	235.78	175.60	137.41	90.356	52.956	31.670	21.869	18.116	15.252	10.418	8.6414	4.6109
10.0V	228.96	167.08	134.59	88.863	52.712	31.432	21.786	18.032	15.162	10.334	8.5583	4.5271
10.2V	222.18	161.18	132.48	88.077	52.223	31.194	21.618	17.948	15.073	10.249	8.4752	4.4432
10.5V	201.85	150.50	127.62	88.265	51.734	30.955	21.534	17.780	14.893	10.164	8.3921	4.3594
10.8V	184.31	138.86	119.00	87.593	50.512	30.400	20.948	17.361	14.624	9.995	8.3090	4.2756
11.1V	159.18	125.54	107.97	82.792	47.987	29.051	20.026	16.522	13.996	9.5714	8.0597	4.0241

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

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	2487.5	1870.1	1498.0	1013.9	611.94	373.28	260.25	215.94	181.96	124.40	103.26	55.285
10.0V	2438.5	1812.8	1473.9	1002.3	610.48	371.30	260.34	215.66	181.49	123.80	102.61	54.325
10.2V	2410.6	1765.0	1457.3	1004.9	605.76	369.06	259.20	215.20	180.87	122.99	101.70	53.319
10.5V	2220.4	1663.1	1406.4	1007.7	600.31	366.38	258.20	213.19	178.72	121.97	100.71	52.313
10.8V	2045.8	1551.0	1315.0	1001.2	589.24	361.71	251.16	208.33	175.49	119.94	99.708	51.307
11.1V	1817.6	1418.6	1197.4	951.94	564.01	348.28	240.31	198.27	167.95	114.86	96.717	48.289

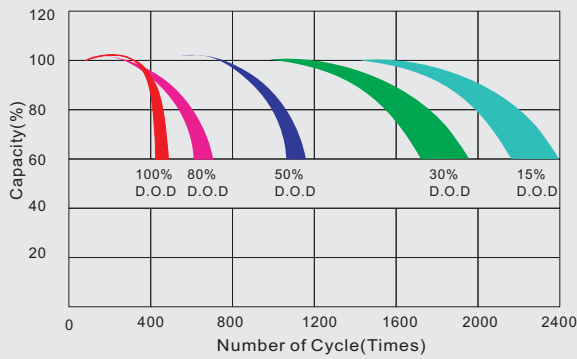
All mentioned values are average values.

# RA12-90DG

12V90Ah



## Life characteristics of cyclic use



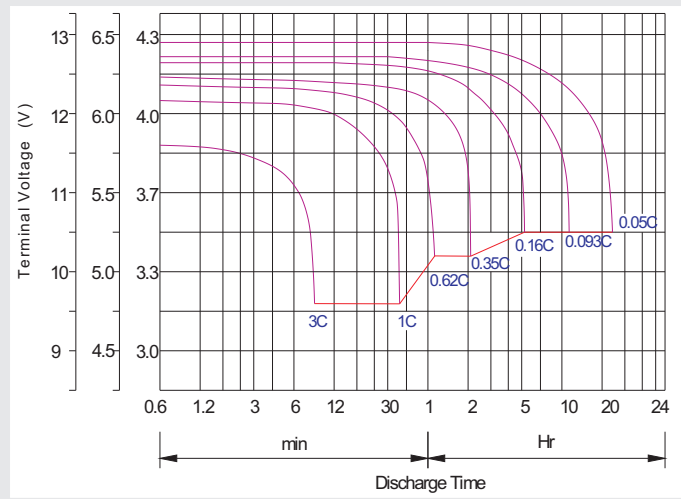
## Storage characteristic



## Charge characteristic curve for cyclic 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

## Maintenance & Cautions

### Cycle service

- ※ Avoid battery over discharge, especially battery series connection use.
- ※ Charged with recommend voltage, ensure battery can be full recharged.
- In general, recharge capacity should be 1.1-1.15 times discharge capacity.
- ※ Effect of temperature on cycle charge voltage: -4mV/°C/Cell.
- ※ There are a number of factors that will affect the length of cyclic service.
- The most significant are depth of discharge, ambient temperature, discharge rate, and the manner in which the battery is recharged.
- Generally speaking, the most important factors is depth of discharge.

**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