

energy is forever

The One-Stop Solutions for  
Rechargeable Products Applications

THE BEST MANUFACTURER OF  
RECHARGEABLE BATTERY  
YOU SHALL TRUST

**Products Manual**

08/2009

*energy is forever*

### Our Strength:

Consistent quality performance that exceed customer expectations

Strong R&D competence to design special model

Excellent customer service

Proactive response including time to product, time to market, and time to volume

Continuous process improvement to drive cost competitiveness and quality performance

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## COMPANY PROFILE

ReDeal was set up as a manufacturer of rechargeable batteries in 1993 and now has four plants (one in Shenzhen, one in Yixing city, one in Xiaoguan city and the other in Huizhou city), with total manufacturing facilities of around 80,000 square meters. ReDeal generated, with a group of highly qualified staff in the rechargeable battery industry in China and overseas, from a good demand for quality batteries. It has enjoying a sound reputation for proven quality batteries for the last 15 years. Now we can produce 9 series batteries to meet different applications.

ReDeal brings you not only reliable battery and technology, but also excellent services and real value you shall expect and enjoy.

Compared with most other Chinese battery manufacturers, FirstPower can really supply

customers with reliable batteries for various applications. Further we have a strong capability to work together excellently with our customers, so that our batteries are compatible with global standards of JISC8702 (1998), BS6290-4, DIN (IEEE1188), IEC60896-2, IEC60896-1, etc.

We welcome orders with " ReDeal " brand; We are also flexible to accept orders on OEM basis. Contact us now! Your partnership with ReDeal will prove worthy of it.

International certifications:

ISO9001 approval, file No. Q3105105131

UL approval, file No. MH28204

CE approval, file No. G2M20201-0102-E-16

KS approval, file No. KS C 8519

VDS approval

BS approval



Shaoguan Plant



Huizhou Plant

## HISTORY

HISTORY PROVED QUALITY    QUALITY ENSURE FUTURE

**1993**

R&D center in Shenzhen China

**1995**

Introduced into international advanced technology and equipment to produce battery in Shenzhen China

**1996**

Acquired the testing certification of Battery quality supervision and inspection China

Set up sales and service networks around China

**1997**

Acquired ISO9001-1994 international quality system certification

**1998**

Acquired UL and CE certification

**1999**

Set up oversea sales branches in Asia Europe America

Acquired the certification of Ministry of information industry China

**2000**

Acquired the certification of Ministry of electric power industry China  
Established Chinese-Korean joint venture company (with VOLTA TECH. Co., LTD KOREAN)

**2001**

Acquired ISO9001-2000 international quality system certification

**2002**

Set up a joint venture plant to produce battery plates in Fujian.

**2003**

Acquired KS certification

Set up a plant to produce motor cycle and electric bike battery in Jiangsu.

**2004**

The qualified supplier approved by LG (Korean)

The qualified supplier approved by SAMSUNG (Korean)

**2006**

Set up ourselves plates plant in Shaoguan Guangdong province.

Acquired VDS certification

**2008**

With more than 1500 employees, 80,000 m<sup>2</sup> plant, exporting to more than 40 countries including America, Germany, Japan, Italy, United Kingdom, Australia, Russia, Spain, Turkey, Brazil, Korean, India, Singapore, Malaysia, Thailand, Nigeria, Venezuela, Zimbabwe etc., and sales turnover is 90 million USD

# BATTERY OVERVIEW

ARRAY OF BATTERIES IN THE INDUSTRY.

## Applications

- Telecommunication equipments
- Electronic instruments
- Alarm and security systems
- Emergency lighting
- Cable Television
- Computers
- Electronic cash registers
- Geophysical equipment
- Marine equipment
- Medical equipment
- Power tools
- Toys
- Portable cine and video lights
- Solar power systems
- Wind power systems
- Television and video recorders
- Vending machine
- Uninterruptible power supplies

## Products Range

Standard Battery Series		High Rate Discharge Battery Series	Page: 22
RDS T YPE	Page: 17	High Temperature Battery Series	Page: 22
RDB TYPE	Page: 19	Gelled Battery Series	Page: 23
RDC TYPE	Page: 20	RDC [OPzV] Battery Series	Page: 24
Deep Cycle Battery Series	Page: 21	RDC[OPzS] & RDB[OPzS] Battery Series	Page: 24
Long Life Battery Series	Page: 21	Motor Cycle Battery Series	Page: 25

# VRLA(AGM) BATTERIES

## 1. Features of ReDeal VRLA Batteries

### 1.1 Nonspillable

The ReDeal VRLA battery uses an absorbed electrolyte system. All of the electrolyte is absorbed into the positive plates, negative plates, and the separators. Coupled with the use of special sealing epoxies, and long sealing paths for posts, ReDeal VRLA batteries have exceptional leak resistance, and can be used in any position.

### 1.2 Sealed and Maintenance-free Operation

There is no corrosive gas generation during normal use and no need to check the specific gravity of the electrolyte or to add water during the service life.

### 1.3 High Quality and High Reliability

The ReDeal VRLA battery has stable and reliable capacity. The battery can withstand overcharge, over discharge, vibration, and shock. To assure this high quality and reliability, the batteries are 100% tested on production line for voltage, capacity, seals and the safety valve are 100% visually inspected before the final assembly process.

### 1.4 Exceptional Deep Discharge Recovery

ReDeal batteries have exceptional deep discharge recovery and charge acceptance, even after deep or prolonged discharge.

### 1.5 Low Self-discharge

Because of the use of lead calcium grids alloy and highly purity materials. ReDeal VRLA battery can be stored long periods of time without recharge. The rate of ReDeal VRLA battery self-discharge on open circuit is less than 2% per month at 20°C/68°F to 25°C/77°F.

### 1.6 Long Service Life

The ReDeal VRLA battery has long life in standby or cyclic service.

### 1.7 Solid Copper Terminals

Ensures highest current carrying capability.

### 1.8 Tank-formed Plates

The initial capacity will be 100% and optimize cell voltage balance, due to the tank formation of the plates.

### 1.9 Computer-aided Design and Manufacturing

Ensures quality products through control of processes and standards.

### 1.10 UL and CE Recognized.

UL approval, file No. MH28204

CE approval, file No. G2M20201-0102-E-16

## 2 General Characteristics

### 2.1 Discharging

#### 2.1.1 Final Discharging Voltage

The final discharging voltage is the battery terminal voltage in close circuit voltage per cell to which a battery discharging safely and maximize battery life. The higher discharging current is, the lower final discharging voltage of battery should be .

Discharging Current	Final Discharging Voltage (vpc)
Up to 0.1CA	1.75
0.11-0.17CA	1.70
0.18-0.25CA	1.67
0.26-1CA	1.60
Above 1.1CA	1.30

#### 2.1.2 Battery Discharging Characteristics:

The discharging capacity of battery depends on the discharge rate being used and ambient temperature.

Figure 1, 2 and 3 show the different discharging current corresponding to discharging capacity at 20°C(68°F) to 25°C(77°F) for RDS, RDB AND RDC types batteries. They show that the rated capacity of a battery is reduced when it is discharged at a value of current that exceeds its 10-hours or 20-hours rate.

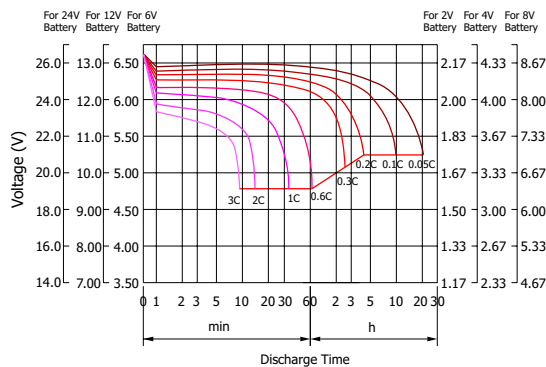


Figure 1: Discharge Characteristics Typically for FP Type

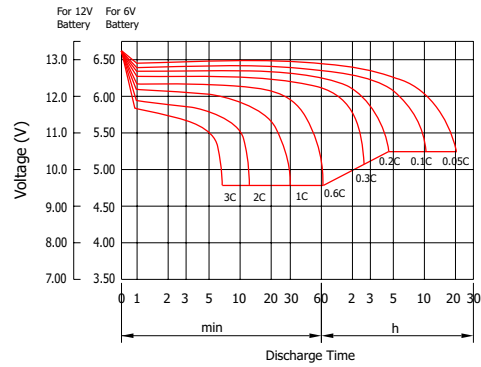


Figure 2: Discharge Characteristics Typically for RDB Type

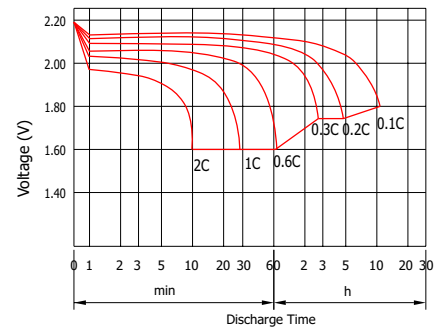


Figure 3: Discharge Characteristics Typically for RDC Type

#### 2.1.3 Temperature Effects in Relation to Battery Capacity.

At a higher temperature, the capacity of battery increases and conversely at a lower temperature, the capacity of battery decreases. Figure 4 shows the effects of different temperature in relation to battery capacity.

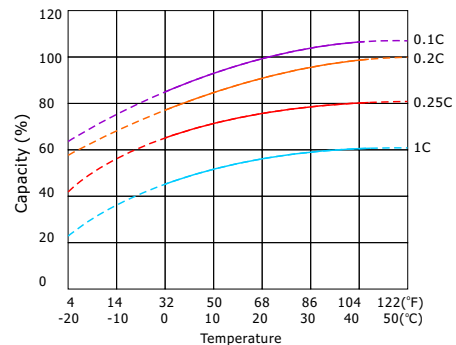


Figure 4: Effect of Temperature and Discharge Rate on Available Capacity



## 2.2 Charging

### 2.2.1 Charging Methods

Correct charging is one of the most important factors to consider when using valve regulated lead acid batteries. Battery performance and service life will be directly affected by the charging methods.

There are four major methods of charging.

Constant voltage charging.

Constant current charging.

Two stages constant voltage charging.

Taper current charging.

#### 2.2.1.1 Constant Voltage Charging

This is the recommended method of charging for VRLA batteries. It is necessary to closely control the actual voltage to ensure that it is within the limits advised.

Standby service:

2.23-2.30 vpc at 20°C(68°F) to 25°C(77°F)

Cycle service:

2.40-2.50 vpc at 20°C(68°F) to 25°C(77°F)

It is suggested that the initial current be set within 0.4CAmps. Figure 5 and 6 indicate the time taken to fully recharge the battery. It is also seen that the charging current is decreased to approx 0.5-4mA/Ah under charging voltage 2.30 vpc, and 3-10mA/Ah under charging voltage 2.40vpc when the battery is fully charged at 20°C(68°F) to 25°C(77°F).

Note: it is necessary to ensure that the voltage is correctly set. The charging voltage set too high will increase the corrosion of the positive plates causing loss of capacity and ultimately shortening the life of the battery.

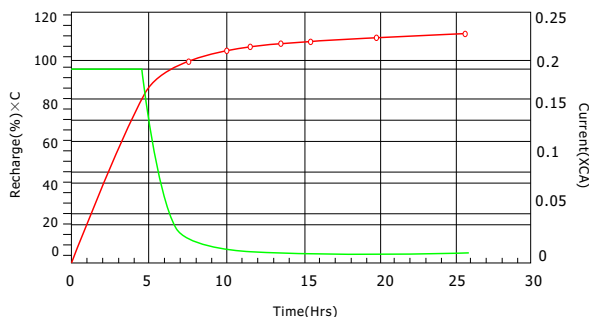


Figure 5: Charge 0.2C AMP Limit & 2.30 V/C Following Full Discharge

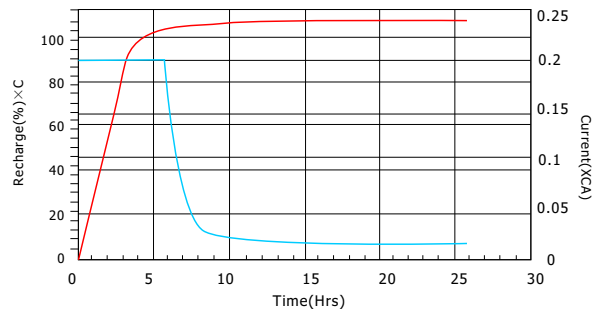


Figure 6: Charge 0.2C AMP Limit & 2.40 V/C Following Full Discharge

#### 2.2.1.2 Constant Current Charging

This method of charging is generally not recommended for VRLA batteries. It is necessary to understand that if the batteries are not removed from the charger as soon as possible after reaching a state of full charge. Considerable damage will occur to the batteries due to over charging. The required recharged capacity is 1.07 to 1.15 times as discharged capacity.

#### 2.2.1.3 Two Stages Constant Voltage Charging

This method should not be used where the battery and load are connected in parallel, however, if this method is to be used, it is suggested that the ReDeal technical department be contacted.

#### 2.2.1.4 Taper Current Charging

This method is not recommended for VRLA batteries, however, if this method is to be used it is suggested that the ReDeal technical department be contacted.

### 2.2.2 Effect of Temperature on Charging Voltage

As temperature rises, electrochemical activity in the battery increases. Similarly, as temperature falls, electrochemical activity decreases. Therefore, as temperature rises, charging voltage should be reduced to prevent overcharge, as temperature falls, charging voltage should be increased to avoid

undercharge. In general, to assure optimum service life, use of a temperature compensated charger is recommended. The recommended compensation factor for ReDeal VRLA batteries is  $\pm 3\text{mV}/^\circ\text{C}$  Cell (standby use) and  $\pm 4\text{mV}/^\circ\text{C}$  cell(cyclic use). The standard central point for temperature compensation is  $20^\circ\text{C}/68^\circ\text{F}$ . Figure 7 shows the relationship between temperatures and charging voltages in both cyclic and standby applications.

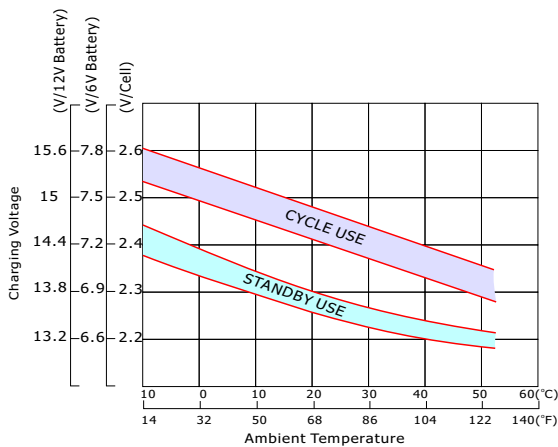


Figure 7: Relationship Between Charging Voltage and Temperature

### 2.2.3 Charging Time

The time required to complete each charge depends on the discharge condition of battery, characteristics of charge used, or the temperature during charge. For cyclic use, using constant voltage charging, this time can be estimated by the following expression at  $25^\circ\text{C}/77^\circ\text{F}$ .

(1) Discharge current: Larger than 0.25CA

$$T_{ch} = C_{dis}/I + 3 \sim 5$$

(2) Discharge current: Less than 0.25CA

$$T_{ch} = C_{dis}/I + 6 \sim 10$$

$T_{ch}$ : time required for charge (hours)

$C_{dis}$ : ampere-hour discharged before charge started(Ah)

$I$ : initial charging current(A).

Complete charge time for float service will be slightly more than 24 hours.

Note: The minimum recharge capacity should be 1.02~1.05 times of discharge capacity

## 2.3. Battery Life

Battery life depends on a number of key factors.

These include:

Operating temperature of the battery;

Method of charging utilized;

Actual use of the product i.e.: standby or cycle service etc.

### 2.3.1 Cyclic Life

Giving due consideration to the above factors, the actual life of a battery in cycle service is dependent on the depth of discharge of each cycle. The greater the depth of discharge of each cycle, the less the number of cycles available from the battery.

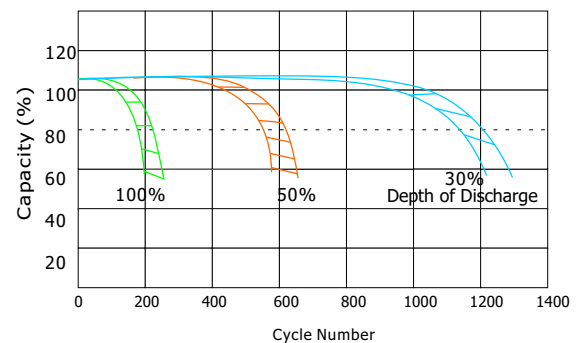


Figure 8: Cycle Life Vs Depth of Discharge For Standard Series RDS, RDB, Long Life, RDC

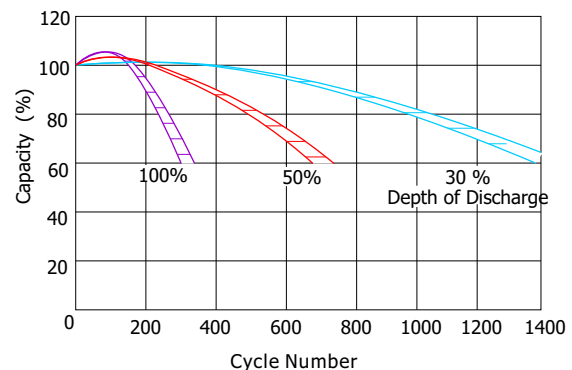


Figure 9: Cycle Life Vs Depth of Discharge For Deep Cycle Series RDS, RDB Types

### 2.3.2 Standby Life

The estimated life under float service of RDS type is 7 years at  $20^\circ\text{C}/68^\circ\text{F}$ ; RDB type is 12 years at  $20^\circ\text{C}/68^\circ\text{F}$ ; RDC type is more than 20 years at  $20^\circ\text{C}/68^\circ\text{F}$ . The float service life is affected by the

factors listed above and the number of discharging, the depth of discharging the battery suffers during its life time. The more discharges suffered and the deeper the discharges, the shorter the battery life. The higher the temperature, the shorter the battery life. If the battery temperature remains at an elevated level for an extended period of time, the expected life is reduced by 50% for each 8 to 10°C of constant temperature above 20°C/68°F.

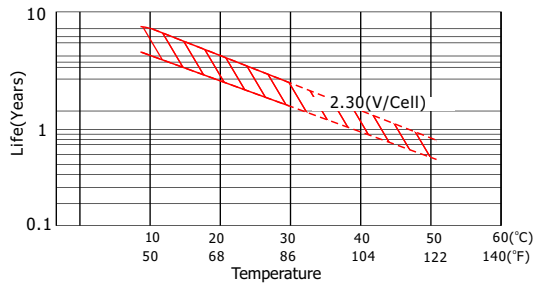


Figure 10: Effect of Temperature on Long Term Float Life (RDS Type)

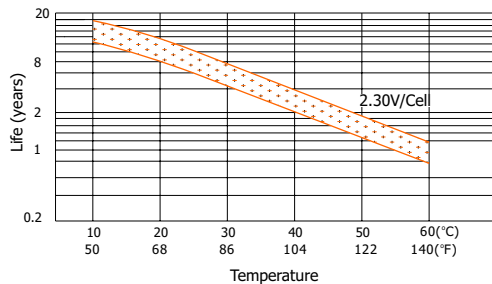


Figure 11: Effect of Temperature on Long Term Float Life (RDB Type)

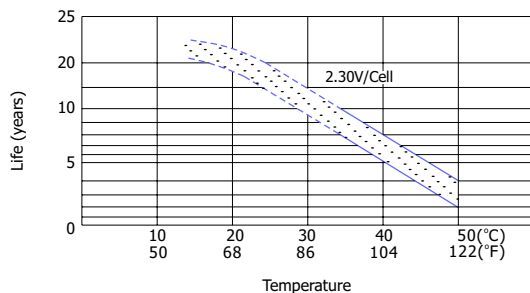


Figure 12: Effect of Temperature on Long Term Float Life (CFP Type)

## 2.4. Battery Storage

### 2.4.1 General Storage Conditions:

The battery should be stored under the following conditions.

- (1) Low humidity
- (2) 5 to 122°F (-15 to 50°C)
- (3) Clean, and avoid direct sunlight.

### 2.4.2 Capacity after Long Term Storage

After long term storage, all batteries deliver less than rated capacity on first cycle. In cyclic application, full capacity may be obtained through several charge/discharge cycles, typically 2-3 cycles.

### 2.4.3 Refresh Charge

When batteries are placed in extended storage, it is recommended that they receive a refresh charge at recommended intervals as following;

Storage Ambient:	Recommended Interval
Below 20 °C(68°F):	12 months
20 to 30°C(68 to 86°F):	6 months
30 to 40°C(86 to 104°F):	3 months

Refresh charging method:

3 to 5 hours of constant current 0.1C Amps or 12 to 16 hours at constant voltage of 2.45V/cell

### 2.4.4 "Self Life"- typical capacity vs. time

Self-discharge rate is very much dependent on the storage temperature as shown in Figure 13. Lower temperatures allow the battery to be stored for longer periods. (Each ten degree centigrade drop results in a halving of self-discharge rate and doubles storage time.)

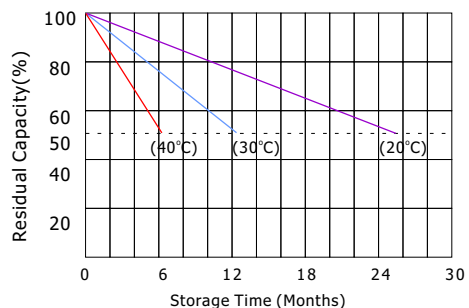


Figure 13: Self Life vs Storage Temperature

2.4.5 "Self Life"-storage time vs. temperature  
 Figure 14 shows the time for the capacity to decrease to 50% of nominal capacity at each temperature during storage. If the storage temperature is known, the graph may be used for finding the most useful recommended refresh charge intervals.

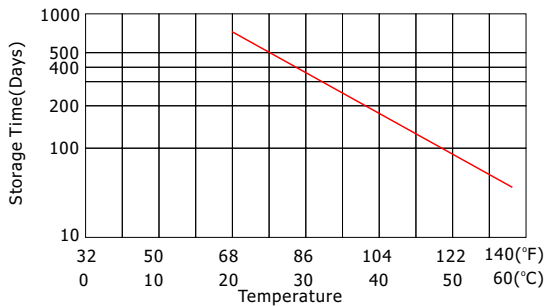


Figure 14: Self Life-Storage Time Temperature

2.4.6 Open Circuit Voltage and Residual Capacity  
 Residual capacity can be estimated by measuring the open circuit voltage as shown in Figure 15.

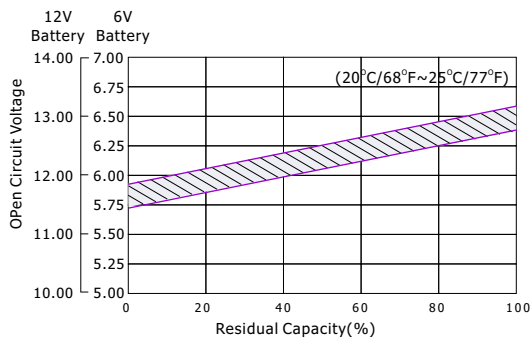


Figure 15: Open Circuit Voltage vs Residual Capacity

### 2.5 Battery Internal Resistance

The internal resistance of a battery is lowest when the battery is in a fully charged state. The battery internal resistance will be increased gradually during discharge.

Figure 16 shows the changing of internal resistance of FP1272(12V7.2Ah) battery during different rated discharging

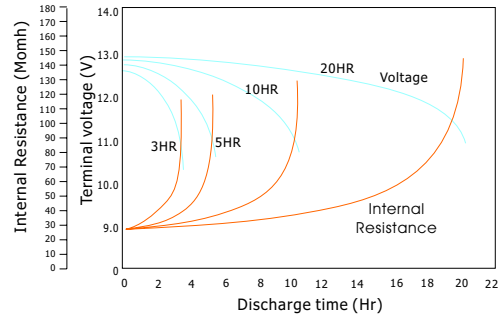


Figure 16: Internal resistance VS discharging

## 3 Battery Capacity Selection

The individual battery model specification sheet([www.ReDeal.pt](http://www.ReDeal.pt)) can be used to determine the minimum battery size, exper in Ampere hours of capacity if know the discharging current(power) and the discharging time. The battery life(cycle service life or floating service life) should be considered for final battery capacity selection.

# GELLED BATTERY

## 1. Introduction

The ReDeal gelled battery uses the sealed gel technology and is designed for high reliable, maintenance-free power for renewable energy applications. Depending on the advantage gel technology, optimum grid and plate design, the

ReDeal gel battery offers highest power and reliability for your equipments.

## 2. Features & Benefits

- Gelled electrolyte By the high-tech gelled electrolyte, gel battery is completely leakproof and spillproof for easy installation in virtually any position even under water. It eliminates ultra deep discharge and acid stratification damage.
- Critical pressure control valve maintains critical internal pressure while safety expelling excess gas generated during overcharging, for longer battery life. 100% tested for highest performance.
- Brushed plate lugs provide the benefits. Low-resistance straps with outstanding lug-to-knit and eliminate dropped and loose plates that reduce performance and shorten battery life.
- Heavy-duty plates with high density and deep-cycle oxide active materials, advanced grid alloy for deep cycle use, provide quick recharge ability and superior deep-cycle and float performance in the most demanding applications.
- Be good at recovery from deep discharge Gelled battery has a tight structure and relative supplies of gelled electrolyte, always has some ions left to conduct charge current resulting in the excellent recovery from deep discharge characteristics.
- Completely maintenance-free use the "recombination" technique to replaces the oxygen and hydrogen normally lost in a met cell. Particularly in deep cycle applications (normally

use the wet battery), and offer a really maintenance free battery.

- Tank formed plates offer optimum computerized formation, additional quality control and improved voltage matching.
- Premium glass mat separators reduce gassing and improve gel filling and electron flowing, providing more power.
- Well low temperature performance, even at very low temperature the gelled electrolyte will not be frozen and provide a well performance. Gel battery is well suited to low temperature applications.
- Superior life. The ReDeal gelled battery maintain a long cycle and float life, provide a lowest cost per month or lowest cost per cycle.

## 3. Applications

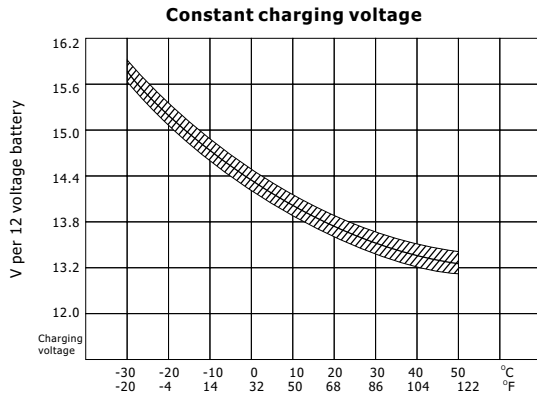
- Water pumping
- Wind generation
- Cathodic protection
- Communications
- Solar system
- Electric powered vehicles
- Golf cars
- Commercial deep cycle applications
- Power plant
- UPS systems

## 4. Charging

While the ReDeal gelled battery will accept a charge extremely well due to its low internal resistance.

For using the sealed design, over-charging will dry out the electrolyte by driving the oxygen and hydrogen out of the battery, through the safety valves. Capacity is reduced and life is shortened

If a battery is continually under-charged, a power robbing layer of sulfate will buildup on the plates. Battery performance is reduce, life is reduced. So what is important for gelled battery that is: charge at least 2.30V/Cell volts but no more than 2.35V/Cell volts at 68°F(20°C). Constant current chargers should never be used on gelled battery.

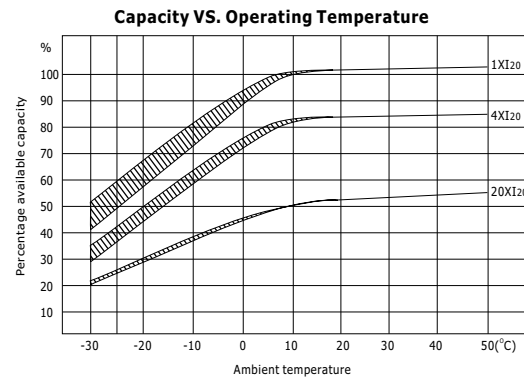
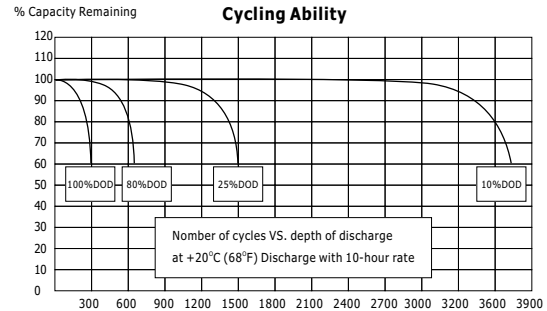


Constant charging voltage: Shown is the constant charging voltage in relation to the ambient temperature. The bandwidth shows a tolerance of  $\pm 30\text{mV/Cell}$ . This constant voltage is suitable for continuing charging and cyclic operation. In a parallel standby mode it always keeps battery in a fully charged state; in a cyclic mode, it provide for a rapidly recharging and highly cyclic performance.

#### 4.5. Discharge & cycling ability

Battery discharge capacity and cycle life are depended on the depth of discharge (DOD), and the ambient temperature.

ReDeal gelled battery is designed to the "acid limited." This means that the power in the acid is used before the power in the plates. This design prevents the plates from ultra-deep discharges. Ultra-deep discharging is what causes life-shortening plates shedding and accelerates positive grid corrosion which destroy a battery.



Capacity vs. operating temperatures: shown are the changes in capacity for a wider ambient temperature range, giving the available capacity, as a percentage of the rated capacity, at different ambient temperatures, for 3 different load examples, with uninterrupted discharge to the appropriate discharge cut-off voltage.

The values for the upper edge of the curves were obtained from charging at an ambient temperature of +20°C with a voltage limit to 2.30V/Cell. For the lower edge, charging was carried out at the specified ambient temperature. The curves show the behavior of battery after a number of cycles.

## RDC(OPzV) BATTERY

The **RDC (OPzV)** series stationary batteries are the newly products which were developed at the end of 2005. The performances meet the standard **DIN40742**

### Characteristics

- Gelled electrolyte, no flow, no leakage or no gradation of sulfuric acid.
- The positive plate is tubular plate, which can effectively prevent the active materials from falling off.
- PVC-SiO<sub>2</sub> separator, which is special for gel battery with tiny holes. The separator has high volume porosity, low electrical resistance and excellent wettability
- Maintenance-free during the whole service life.
- Low self discharge rate
- Proof against deep discharge according to DIN 43539 T5

### Technical parameters

Environment temperature	-20°C ~50°C
Environmental temperature for best utilization	25°C +5°C
Float charging voltage	2.25V/unit
Equalization voltage	2.35V/unit
Temperature adjustment coefficient	-3mV/°C/unit
Max charging current	0.20C <sub>10</sub> A
Design service life	20 years(20°C)
Self-discharge rate	Less than 40% after 2-year storage at 20°C
Recover performance after deep discharge	The battery can be recharged to 95% of the rated capacity after 12-hour deep discharge
The gas recombination efficiency exceeds	More than 99%

## RDC(OPzS) & RDB(OPzS) BATTERY

The **RDC (2V)** and **RDB (6V/12V)** series stationary batteries (**OPzS battery**) are the newly products which were developed at the end of 2005. The performances meet the standard **DIN40736** and **IEC60896-21**

### Characteristics

- Positive plate:  
It is a tubular plate that can prevent the active material from falling off. The grid of positive plate is Pb-Sb multi-alloy
- Separator:  
With the combined application of porous rubber and porous PVC, the separator has a high porosity and good corrosion-resistance
- Acid-proof bolt:  
It is of a special shape of funnel having the function of filtering acid smog and retarding flame. It can measure the density and temperature of electrolyte.
- The design life is more than 20 years
- Ensuring sufficient electrolyte for battery discharge

# MOTOR CYCLE BATTERY

The ReDeal Motorcycle battery is engineered to protect against seepage and corrosion, deliver high cranking power, even when the weather's dealing its worst. It's the rugged, reliable and dependable battery that customers are looking for. The high-tech. Power-boosting design, ReDeal Motorcycle battery can provide right battery for right job – that's where it all starts.

The industry standard for motorcycles snowmobile and riding mowers, our motorcycle battery offers high cranking power, nice cold cranking performance, minimal internal resistance, maximum power.

With the lead-calcium technology and the AGM used, our Dry Charged Maintenance-free type and Maintenance-free VRLA type motorcycle battery assume really sealed, Never needs refilling, offer a really maintenance-free battery for you.

ReDeal Motorcycle batteries include three types:

## A. Conventional Type

- provide high cranking power.
- resist vibration damage packs in extra plates.
- resist corrosion for longer battery life.
- resist damage from gas, oil, impact.
- protects against seepage and corrosion.

## B. Dry Charged Maintenance-free Type

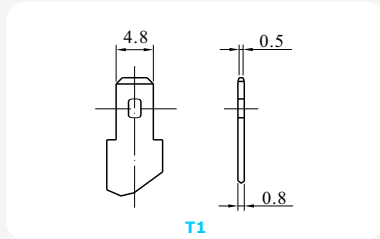
- never need to check electrolyte or add water ever again.
- can be used immediately after filling electrolyte.
- higher cold cranking amps.
- longer and need less charging in standby on storage mode.
- dramatically reduce battery-killing plates sulfation.
- virtually no possibility of leaks pumping up starting power.

## C. Maintenance-free Sealed VRLA Type

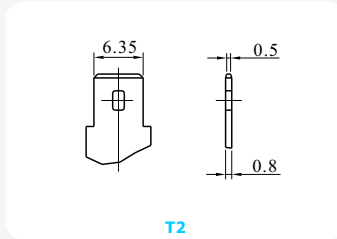
- Non-spillable (no acid leakage).
- Can be used immediately and not need activation procession.
- High cranking current for rigors of cold weather starting.
- resist vibration damage packs in extra plates.
- resist corrosion for longer battery life.
- resist damage from gas, oil, impact.



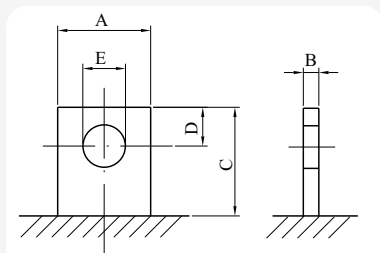
# TERMINALS AND POSITION



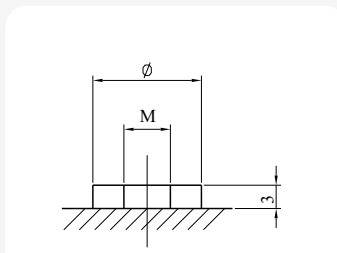
T1



T2



T3 T4 T5 T6 T7 T16 T17 T18 T19 T20



T8 T9 T10 T11 T12 T13 T14 T15

Type	A	B	C	D	E	Material
T3	12	2.0	14	5.0	5.5	Cu
T4	20	3.0	16	7.0	6.0	Cu
T5	22	3.5	22	8.5	8.0	Cu
T6	17	9.0	18	8.0	6.0	Pb
T7	17	6.0	16	7.0	8.0	Pb
T16	20	3.0	18	7.5	8.0	Cu
T17	18	7.0	20	7.5	7.0	Pb
T18	23	7.0	19	8.5	7.0	Pb
T19	25	7.0	24	10.5	9.0	Pb
T20	27	8.0	29	12.0	9.0	Pb

Type	M	Ø	Material
T8	5	12	Cu
T9	6	14	Cu
T10	8	20	Cu
T11	8	16	Cu
T12	8	14	Cu
T13	10	20	Cu
T14	8	18	Cu
T15	6	16	Cu

## Motor Cycle Battery Terminal



1



2



3



4

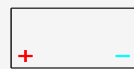
## Terminal Position



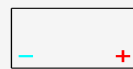
A



B



C



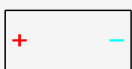
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E



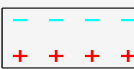
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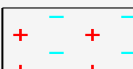
G



H



I



J



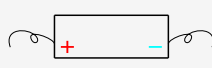
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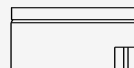
L



M



N



O



P



Q



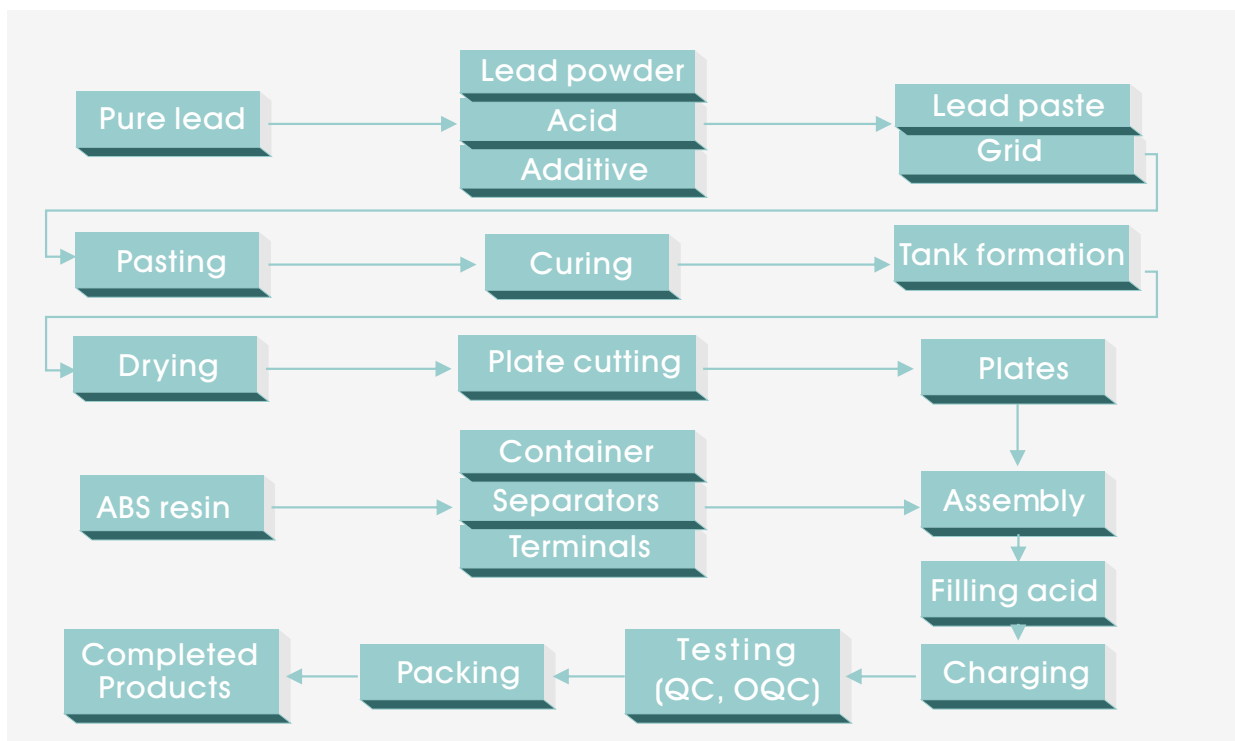
R

## HANDLING PRECAUTIONS

Charging and Handling Precautions for ReDeal VRLA Batteries as Following.

- Never charge the battery in a sealed container.
- Never disassemble the battery.
- Never short-circuit battery terminals.
- Never incinerate batteries, for they may explode.
- Do not press and/or bend the terminals, or overheat them.
- Do not mix old and new batteries together, neither use batteries of different types or brands.
- Do not dispose of with household waste.
- Be sure to use the specified charger for battery, and follow the charging instructions correctly.
- Be sure to charge the batteries between the temperatures 0°C/32°F to 45°C/113°F.
- Be sure to position batteries securely, protecting them from abnormal shocks and /or vibration.
- Be sure to keep sufficient space between batteries for ventilation (where possible > 10mm).
- Be sure to install batteries in a cool and well ventilated place.
- The surrounding temperature must remain between -20°C/4°F to 50°C/122°F during storage.
- Recharge the batteries at least every 6 months during storage.
- Be sure to consult ReDeal engineers any time you are to use ReDeal VRLA batteries for your products, or preparing your technical specifications of ReDeal VRLA batteries.

## PRODUCTION PROCESS OF REDEAL BATTERIES



## Standard Series

Voltage : 2V, 4V, 6V, 8V, 12V

Capacity : 0.3AH to 3000AH

Designed floating service life at 20°C/68°F :

RDS type-5years

RDB type-10years

RDC type-18years

### **Applications**

Telecommunication equipment

Electronic instruments

Fire alarm and security devices

UPS power supply

Emergency lighting

# Standard Series: RDS Type List

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)		
				Length		Width		Height		Total Height						
				mm	in	mm	in	mm	in	mm	in					
RDS245	2	4.5	8.5	46	1.81	25	0.98	100	3.94	106	4.17	T1	0.28	12		
RDS250	2	5.0	8										0.30			
RDS260	2	6.0	7	51	2.01	33	1.30	99	3.90	105	4.13	T1	0.36	13		
RDS270	2	7.0	6.5										0.38			
RDS2150	2	15.0	3.5	70	2.76	47	1.85	101	3.98	107	4.21	T1	0.80	14		
RDS405	4	0.4	130	39	1.54	14	0.55	50	1.97	50	1.97	Tab	0.07	15		
RDS408	4	0.8	110	35	1.38	22	0.87	64	2.52	71	2.80		0.10			
RDS432	4	3.2	22	90	3.54	34	1.34	60	2.36	66	2.60	T1	0.44	16		
RDS434	4	3.4	20										0.46			
RDS440	4	3.3	30	32	1.26	32	1.26	135	5.31	146	5.75	T1	0.35	17		
RDS445	4	4.5	15	48	1.89	48	1.89	102	4.02	108	4.25	T1	0.50	18		
RDS445A	4	4.5	15	48	1.89	52	2.05	94	3.70	99	3.90	T1	0.55	19		
RDS4100	4	10.0	8.5	102	4.02	44	1.73	95	3.74	101	3.98	T2/T1	1.05	20		
RDS4200	4	20.0	6.5	149	5.87	43	1.69	154	6.06	165	6.50	T3	2.25	21		
RDS605	6	0.4	180	57	2.24	14	0.55	51	2.01	51	2.01	plug	0.10			
RDS610	6	1.0	54	51	2.01	42	1.65	51	2.01	57	2.24	T1	0.25	22		
RDS612	6	1.2	50	97	3.82	24	0.94	52	2.05	58	2.28	T1	0.29	23		
RDS623	6	2.0	40	43	1.69	37	1.46	76	2.99	76	2.99	Tab	0.34	24		
RDS628	6	2.8	25	66	2.60	33	1.30	97	3.82	104	4.09	T1	0.49	25		
RDS628A	6	2.8	26	66	2.60	33	1.30	100	3.94	106	4.17	T1	0.49			
RDS632	6	3.2	30	134	5.28	35	1.38	61	2.40	67	2.64	T1	0.63	26		
RDS634	6	3.4	26										0.65			
RDS632A	6	3.2	26	67	2.64	34	1.34	118	4.65	124	4.88	T1	0.61	27		
RDS632B	6	3.2	30	125	4.92	33	1.30	61	2.40	67	2.64	T1	0.61	28		
RDS635	6	3.5	35	194	7.64	25	0.98	50	1.97	56	2.20	T1	0.62	29		
RDS640	6	4.0	28	70	2.76	47	1.85	101	3.98	107	4.21	T1	0.70	30		
RDS645	6	4.5	25										0.75		34	
RDS650	6	5.0	20										0.83			37
RDS660	6	6.0	20										0.92			
RDS640A	6	4.0	28	70	2.76	47	1.85	101	3.98	106	4.17	Tab	0.70	31		
RDS645A	6	4.5	25										0.75		35	
RDS640B	6	4.0	28	70	2.76	47	1.85	102.5	4.04	103	4.06	T1	0.70			
RDS645B	6	4.5	25										0.75			
RDS640K	6	4.0	28	70	2.76	47	1.85	98	3.86	104	4.09	T1	0.70			
RDS645K	6	4.5	25										0.75			
RDS640WA	6	3.6	55	39	1.54	39	1.54	150	5.91	150	5.91	plug	0.62	32		
RDS640WB	6	4.0	50	194	7.64	25	0.98	62	2.44	62	2.44	plug	0.73	33		
RDS649	6	4.9	35	242	9.53	35	1.38	47	1.85	47	1.85	plug	0.90	36		
RDS650A	6	5.0	21	170	6.69	35	1.38	70	2.76	76	2.99	T1	0.93	38		
RDS660S	6	6.0	18	85	3.35	48	1.89	100	3.94	106	4.17	T1	1.05			
RDS665	6	6.5	17	151	5.94	34	1.34	94	3.70	100	3.94	T1/T2	1.08	40		
RDS670	6	7.0	15										1.15			
RDS672	6	7.2	15										1.17			
RDS685	6	8.5	13										1.35			
RDS690	6	9.0	12.5										1.40			
RDS680	6	8.0	13	98	3.86	56	2.20	117	4.61	119	4.69	T1	1.35	41		
RDS680A	6	8.0	13	98	3.86	56	2.20	110	4.33	114	4.49	T1	1.35	42		
RDS6100	6	10.0	12	151	5.94	50	1.97	94	3.70	100	3.94	T1/T2	1.60	43		
RDS6120	6	12.0	11										1.82			
RDS6140	6	14.0	12	108	4.25	71	2.80	140	5.51	140	5.51	+T2/-T1	2.25	44		

# Standard Series: RDSType List

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDS6200	6	20.0	9	157	6.18	83	3.27	125	4.92	130	5.12	T3	3.60	
RDS832	8	3.2	32	68	2.68	49	1.93	91	3.58	91	3.58	Tab	0.90	45
RDS832A	8	3.2	33	134	5.28	36	1.42	63	2.48	69	2.72	T1	0.90	46
RDS1208	12	0.8	260	96	3.78	25	0.98	62	2.44	62	2.44	plug	0.34	47
RDS1212	12	1.2	95	97	3.82	43	1.69	52	2.05	58	2.28	T1	0.55	48
RDS1214	12	1.4	85										0.61	
RDS1212A	12	1.2	105	97	3.82	48	1.89	51	2.01	57	2.24	T1	0.56	49
RDS1220M	12	1.6	125	150	5.91	20	0.79	90	3.54	90	3.54	Tab	0.68	50
RDS1220C	12	1.6	150	144	5.67	24	0.94	65	2.56	65	2.56	Tab	0.60	51
RDS1220	12	2.0	65	178	7.01	35	1.38	61	2.40	67	2.64	T1	0.82	52
RDS1223	12	2.3	60										0.92	
RDS1223C	12	2.0	130	182	7.17	24	0.94	62	2.44	62	2.44	Tab	0.71	54
RDS1223CA	12	2.0	120	201	7.91	24	0.94	62	2.44	62	2.44	Tab	0.72	55
RDS1220A	12	2.0	60	70	2.76	48	1.89	98	3.86	104	4.09	T1	0.75	53
RDS1223A	12	2.3	52										0.80	
RDS1226A	12	2.6	48										0.85	
RDS1226	12	2.6	45	178	7.01	34	1.34	60	2.36	71	2.80	T1	0.92	56
RDS1225	12	2.5	47	104	4.09	48	1.89	70	2.76	70	2.76	+T2/-T1	0.92	57
RDS1227	12	2.7	40										0.99	
RDS1228	12	2.8	45	67	2.64	67	2.64	97	3.82	103	4.06	T1	1.00	58
RDS1228A	12	2.8	45	132	5.20	33	1.30	98	3.86	104	4.09	T1	1.00	59
RDS1229	12	2.9	42	79	3.11	56	2.20	99	3.90	105	4.13	T1	1.10	60
RDS1232	12	3.2	50	134	5.28	67	2.64	61	2.40	67	2.64	T1	1.25	61
RDS1234	12	3.4	45										1.30	
RDS1242	12	4.2	45	195	7.68	47	1.85	70	2.76	76	2.99	T1	1.48	63
RDS1245A	12	4.5	40										1.58	
RDS1240	12	4.0	45	90	3.54	70	2.76	101	3.98	107	4.21	T1	1.40	62
RDS1245	12	4.5	40										1.47	
RDS1250	12	5.0	33										1.67	
RDS1260	12	6.0	32										1.82	
RDS1250A	12	5.0	34	140	5.51	48	1.89	102	4.02	103	4.06	+T2/-T1	1.67	65
RDS1265	12	6.5	24	151	5.94	52	2.05	94	3.70	99	3.90	T2/T1	1.92	67
RDS1265S	12	6.5	24	151	5.94	51	2.01	95	3.74	100	3.94	+T2/-T1	1.92	
RDS1265A	12	6.0	28	151	5.94	65	2.56	111	4.37	117	4.61	T2/T1	2.10	71
RDS1270	12	7.0	25										2.25	
RDS1272	12	7.2	25										2.30	
RDS1275	12	7.5	24										2.32	
RDS1285	12	8.5	20										2.45	
RDS1290	12	9.0	19										2.65	
RDS12100A	12	10.0	22	151	5.94	65	2.56	111	4.37	117	4.61	T2/T1	2.85	
RDS12100	12	10.0	22	151	5.94	98	3.86	95	3.74	101	3.98	T2	3.50	72
RDS12120	12	12.0	19										3.60	
RDS12150A	12	15.0	19	160	6.30	76	2.99	159	6.26	162	6.38	T3	4.50	74
RDS12150	12	15.0	18	181	7.13	77	3.03	167	6.57	167/167	6.57/6.57	T3/T8	5	73
RDS12170	12	17.0	17										5.2	
RDS12180	12	18.0	17										5.4	
RDS12200	12	20.0	15										5.8	
RDS12220	12	22.0	14	181	7.13	77	3.03	166	6.54	166	6.54	T8	6.3	77
RDS12240	12	24.0	12	166	6.54	175	6.89	125	4.92	125/125	4.92/4.92	T3/T8	8.0	78
RDS12240A	12	24.0	12	165	6.50	125	4.92	175	6.89	182/175	7.17/6.89	T6/T8	8.1	79
RDS12260	12	26.0	12	165	6.50	176	6.93	127	5.00	127	5	T3	8.1	80
RDS12280	12	28.0	10	166	6.54	175	6.89	125	4.92	125/125	4.92/4.92	T3/T8	8.8	81
RDS12280A	12	28.0	11	165	6.50	125	4.92	175	6.89	182/175	7.17/6.89	T6/T8	9.0	82

# Standard Series: RDB Type

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)	
				Length		Width		Height		Total Height					
				mm	in	mm	in	mm	in	mm	in				
RDB636	6	36	6.5	162	6.4	88	3.5	164	6.5	170	6.7	T2	5.5		
RDB642	6	42	6.2										6.2		
RDB645	6	45	6										6.8		
RDB6100	6	100	3.5	194	7.6	170	6.7	205	8.1	210	8.3	T9	16.5	83	
RDB6100A	6	100	3.5	281	11.1	128	5.0	189	7.4	204	8.0	T11	16.0		
RDB6150	6	150	3.3	260	10.2	180	7.1	245	9.6	250	9.8	T11	23.5	84	
RDB6180	6	180	3.2	307	12.1	169	6.7	220	8.7	225	8.9	T11	27.0		
RDB6200A	6	200	3.1										30.5		86
RDB6190	6	190	3.2	243	9.6	187	7.4	253	10.0	276	10.9	T11	28.5		
RDB6220	6	220	3										33.0		
RDB6200	6	200	3.1	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	31.0	85	
RDB1233	12	33	10	195	7.7	130	5.1	155	6.1	180/166	7.1/6.7	T7/T9	10.2		
RDB1235	12	35	9.7										10.7		88
RDB1234	12	34	10	310	12.2	77	3.0	166	6.5	172/180	6.8/7.1	T2/T3	9.50		
RDB1238	12	38	9.7	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	12.5		
RDB1240	12	40	9.5										13.3		89
RDB1245	12	45	8										14.0		90
RDB1240A	12	40	9.5	197	7.8	165	6.5	175	6.9	182/175	7.2/6.9	T6/T9	13.3		
RDB1245A	12	45	8										14.0		
RDB1240B	12	40	9.5	197	7.8	166	6.5	170	6.7	170	6.7		13.3		
RDB1250	12	50	6.2	229	9.0	138	5.4	208	8.2	230/211	9.1/8.3	T5/T9	16.5		
RDB1255	12	55	5.8										17.5		91
RDB1260B	12	60	5.7	250	9.8	160	6.3	178	7.0	200	7.9	T5	19.3	93	
RDB1260	12	60	5.7										19.5		
RDB1270	12	70	5.5	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	22.2		
RDB1275	12	75	5.5										23.0		94
RDB1280A	12	80	5.4										24.0		
RDB1285	12	85	5.3										25.0		95
RDB1265A	12	65	6	350	13.8	166	6.5	174	6.9	174	6.9	T17/T9	21.5		
RDB1265B	12	65	6	330	13.0	173	6.8	167	6.6	170	6.7	T9	21.2		
RDB1265	12	65	6	350	13.8	167	6.6	179	7.0	186/179	7.3/7.1	T5/T9	21.2	92	
RDB1278	12	78	5.5										23.5		
RDB1280	12	80	5.4										24.0		
RDB1290	12	90	5.5	306	12.0	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	27.0		
RDB1295	12	95	5										28.0		96
RDB1290A	12	90	5	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	27.0		
RDB12100	12	100	4.5										30.5		97
RDB12120A	12	110	4										32.5		
RDB12100A	12	100	4.5	406	16.0	173	6.8	208	8.2	238	9.4	T19/T5/T11	31.5		
RDB12110	12	110	4	281	11.1	267	10.5	207	8.1	210	8.3	T11	34.0		
RDB12120	12	120	4	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	35.0	98	
RDB12134	12	134	3.8	342	13.5	172	6.8	280	11.0	285	11.2	T11	42.5	100	
RDB12145	12	145	4.5	428.5	16.9	177	7.0	258	10.2	258	10.2	M6 bolt	47.5		
RDB12150A	12	150	4.4										50.0		
RDB12160A	12	160	4.2										52.0		
RDB12150	12	150	3.5	485	19.1	172	6.8	240	9.4	242/240	9.5/9.5	T5/T11	44.5	101	
RDB12150S	12	150	3.8	494	19.4	206	8.1	209	8.2	235/235	9.3/9.3	T20/T11	50.5	102	
RDB12180	12	180	3.5										54.0	103	
RDB12200	12	200	3	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	62.5	104	
RDB12225	12	225	2.8										65.0	107	
RDB12200S	12	200	3	499	19.6	260	10.2	218	8.6	241	9.5	T12	61.5	105	
RDB12220S	12	220	2.8										64.5	106	
RDB12250	12	250	2.6	521	20.5	269	10.6	220	8.7	242/223	9.5/8.8	T5/T11	74.5	108	

# Standard Series: RDC Type

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDC250	2	50	1.1	161	6.3	50	2.0	166	6.5	175	6.9	T4	3.0	
RDC2100	2	100	0.9	171	6.7	72	2.8	206	8.1	209	8.2	T10	5.8	109
RDC2150	2	150	0.83	171	6.7	102	4.0	206	8.1	221	8.7	T10	8.5	110
RDC2200	2	200	0.7	173	6.8	109	4.3	330	13.0	364	14.3	T10	14	111
RDC2250	2	250	0.67										15	
RDC2300	2	300	0.65	171	6.7	151	5.9	330	13.0	364	14.3	T10	19.5	112
RDC2350	2	350	0.6										20.5	
RDC2400	2	400	0.5	210	8.3	176	6.9	330	13.0	367	14.4	T10	26.5	113
RDC2450	2	450	0.45										27.5	
RDC2500	2	500	0.4	241	9.5	171	6.7	330	13.0	365	14.4	T10	31.5	114
RDC2550	2	550	0.35										32.5	
RDC2600	2	600	0.32	302	11.9	175	6.9	330	13.0	367	14.4	T10	39	115
RDC2800	2	800	0.24	410	16.1	175	6.9	330	13.0	367	14.4	T10	54	116
RDC21000	2	1000	0.2	475	18.7	175	6.9	330	13.0	367	14.4	T10	64	117
RDC21200	2	1200	0.18										69	
RDC21500	2	1500	0.16	400	15.7	350	13.8	345	13.6	382	15.0	T10	100	118
RDC22000	2	2000	0.12	490	19.3	350	13.8	345	13.6	382	15.0	T10	128	119
RDC22400	2	2400	0.11										138	120
RDC23000	2	3000	0.11	710	28.0	350	13.8	345	13.6	382	15.0	T10	197	121
RDC2200S	2	200	0.7	206	8.1	103	4.1	355	14.0	390	15.4	T13	15	122
RDC2250S	2	250	0.68	206	8.1	124	4.9	355	14.0	390	15.4	T13	19	123
RDC2300S	2	300	0.65	206	8.1	145	5.7	355	14.0	390	15.4	T13	22.5	124
RDC2400S	2	400	0.5	206	8.1	145	5.7	471	18.5	506	19.9	T13	27.5	126
RDC2500S	2	500	0.4	206	8.1	166	6.5	471	18.5	506	19.9	T13	32.5	127
RDC2600S	2	600	0.32	206	8.1	145	5.7	646	25.4	681	26.8	T13	42.5	128
RDC2800S	2	800	0.24	210	8.3	191	7.5	646	25.4	681	26.8	T13	61	129
RDC21000S	2	1000	0.2	233	9.2	210	8.3	646	25.4	681	26.8	T13	72	130
RDC21200S	2	1200	0.18	275	10.8	210	8.3	646	25.4	681	26.8	T13	86	131
RDC21500S	2	1500	0.16	275	10.8	210	8.3	796	31.3	831	32.7	T13	107	132
RDC22000S	2	2000	0.12	399	15.7	210	8.3	772	30.4	807	31.8	T13	148	133
RDC22500S	2	2500	0.11	487	19.2	212	8.3	772	30.4	807	31.8	T13	185	134
RDC23000S	2	3000	0.1	576	22.7	212	8.3	772	30.4	807	31.8	T13	220	135

## Deep Cycle Series

Voltage: 6V, 12V & 24V

Capacity: 4.5AH to 3000AH

Designed cycle life more than 350 cycles  
at 80% DOD at 20°C/68°F

**Applications:**

Electric powered vehicles

Golf cars and buggies

PDA equipment as laptop computer, camera,

Phone sets, medical sets

Power tools, lawn mowers, vacuum cleaners

Solar power applications

Toys



# Deep Cycle Battery Series

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDB1250D	12	5	33	90	3.5	70	2.8	101	4.0	107	4.2	T1	1.67	139
RDB1270D	12	8	25	151	5.9	65	2.6	94	3.7	100	3.9	T1	2.25	140
RDB1290D	12	9	19										2.65	141
RDB12120D	12	12	19	151	5.9	98	3.9	95	3.7	101	4.0	T2	3.6	142
RDB12180D	12	18	17	181	7.1	77	3.0	167	6.6	167/167	6.6/6.6	T3/T8	5.5	143
RDB12200D	12	20	15										5.8	144
RDB12240D	12	24	12	166	6.5	175	6.9	125	4.9	125/125	4.9/4.9	T3/T8	8.0	145
RDB12280D	12	28	10										8.8	146
RDB1870D	18	7	42	151	5.9	102	4.0	100	3.9	100	3.9	plug	3.8	
RDB1890D	18	9	40										4.0	
RDB2445D	24	4.5	60	206	8.1	77	3.0	74	2.9	74	2.9	plug	3.2	147
RDB24100D	24	10	50	301	11.9	65	2.6	102	4.0	102	4.0	plug	5.8	148
RDB24140D	24	14	45	300	11.8	98	3.9	103	4.1	103	4.1	plug	8.2	149
RDB36120D	36	12	60	190	7.5	150	5.9	115	4.5	115	4.5	plug	9.8	
RDB6100D FA	6	100	3.3	194	7.6	170	6.7	205	8.1	210	8.3	T9	16.5	150
RDB6150D FA	6	150	3.2	260	10.2	180	7.1	245	9.6	250	9.8	T11	23.5	151
RDB 6200D FA	6	200	3.1	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	31.0	152
RDB 1233D FA	12	33	10	195	7.7	130	5.1	155	6.1	180/166	7.1/6.5	T7/T9	10.2	153
RDB 1240D FA	12	40	9.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	13.2	154
RDB 1255D FA	12	55	5.8	229	9.0	138	5.4	208	8.2	230/211	9.1/8.3	T5/T9	17.5	156
RDB 1260D FA	12	60	5.7	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	20.0	157
RDB 1270D FA	12	70	5.5										22.2	159
RDB 1280D FA	12	80	5.4										24.0	160
RDB 1265D FA	12	65	6	350	13.8	167	6.6	179	7.0	186/179	7.3/7.0	T5/T9	21.2	158
RDB 1290D FA	12	90	5.5	306	12.0	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	27.0	161
RDB12100D FA	12	100	4.5	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	30.5	162
RDB12120D FA	12	120	4	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	35.0	163
RDB12150D FA	12	150	3.5	485	19.1	172	6.8	240	9.4	242/240	9.5/9.4	T5/T11	44.5	164
RDB12180D FA	12	180	3.5	494	19.4	206	8.1	209	8.2	235/235	9.3/9.3	T20/T11	54.0	165
RDB12200D FA	12	200	3	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	62.5	166
RDB12250D FA	12	250	2.6	521	20.5	269	10.6	220	8.7	245/223	9.7/8.8	T5/T11	74.5	167

## Long Life Series

Voltage: 6V&12V

Capacity: 33AH to 250AH

Designed floating service life can target  
12 years at 20°C/68°F:

Applications:

Telecommunication equipment

Electronic instruments

UPS systems

## Long Life Battery Series

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDB 6200L FA	6	200	3.1	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	32.0	171
RDB1240L FA	12	40	9.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	13.8	172
RDB1265L FA	12	65	6	350	13.8	167	6.6	179	7.0	186/179	7.3/7.1	T5/T9	22.5	175
RDB1260L FA	12	60	5.7	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	21.0	174
RDB1270L FA	12	70	5.5										24.0	176
RDB1280L FA	12	80	5.4										25.5	178
RDB1290L FA	12	90	5.2	306	12.0	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	29.0	179
RDB12100L FA	12	100	5	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	32.0	181
RDB12120L FA	12	120	4.3	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	37.0	182
RDB12150L FA	12	150	3.7	485	19.1	172	6.8	240	9.4	242/240	9.5/9.5	T5/T11	46.5	185
RDB12200L FA	12	200	3.5	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	65.0	187
RDB12250L FA	12	250	2.8	521	20.5	269	10.6	220	8.7	242/223	9.5/8.8	T5/T11	78.0	188
RDB1250FT FA	12	50	6.2	277	10.9	106	4.2	221	8.7	221	8.7	T9	17.0	173
RDB1255FT FA	12	55	6.0										17.5	173
RDB1275FT FA	12	75	5.5	562	22.1	114	4.5	189	7.4	189	7.4	---	27.0	177
RDB12100FT FA	12	100	5.0	506	19.9	110	4.3	224	8.8	239	9.4	---	32.5	180
RDB12105FT FA	12	105	4.2	395	15.6	110	4.3	286	11.3	286	11.3	T9	35.0	
RDB12125FT FA	12	125	4.0	436	17.2	108	4.3	317	12.5	317	12.5	---	40.5	183
RDB12150FT FA	12	150	3.6	551	21.7	110	4.3	287	11.3	287	11.3	T11	50.0	184
RDB12180FT FA	12	180	3.3	546	21.5	125	4.9	317	12.5	323	12.7	T11	59.0	186
RDB12180KFT FA	12	180	3.3	560	21.5	126	4.9	280	12.5	280	12.7	---	53.0	186

## High Temperature Series

Voltage: 6V&12V

Capacity: 7AH to 250AH

Battery performance can be expected at the ambient temperatures at  $-15^{\circ}\text{C}/5^{\circ}\text{F}$  to  $70^{\circ}\text{C}/158^{\circ}\text{F}$

**Applications:**

Fire alarm systems

Lighting equipment

Outdoor telecommunication equipment

Solar system

## High Temperature Battery Series

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDB1270T	12	7	25	151	5.9	65	2.6	94	3.7	100	3.9	T1	2.35	191
RDB12120T	12	12	17	151	5.9	98	3.9	95	3.7	101	4.0	T2	3.8	192
RDB12180T	12	18	17	181	7.1	77	3.0	167	6.6	167/167	6.6/6.6	T3/T8	5.5	193
RDB12240T	12	24	12	166	6.5	175	6.9	125	4.9	125/125	4.9/4.9	T3/T8	8.1	194
RDB6200T FA	6	200	3.1	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	32.0	195
RDB1233T FA	12	33	10	195	7.7	130	5.1	155	6.1	180/166	7.1/6.5	T7/T9	10.5	196
RDB1240T FA	12	40	9.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	13.8	197
RDB1265T FA	12	65	6	350	13.8	167	6.6	179	7.0	186/179	7.3/7.1	T5/T9	22.5	199
RDB1260T FA	12	60	5.7	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	21.0	198
RDB1270T FA	12	60	5.5										24.0	200
RDB1280T FA	12	80	5.4										25.5	201
RDB1290T FA	12	90	5.2	306	12.0	169	6.7	211	8.3	233/220	9.2/8.7	T5/T9	29.0	202
RDB12100T FA	12	100	5	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	32.0	203
RDB12120T FA	12	120	4.3	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	37.0	204
RDB12150T FA	12	150	3.7	485	19.1	172	6.8	240	9.4	242/240	9.5/9.5	T5/T11	46.5	205
RDB12200T FA	12	200	3.5	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	65.0	206
RDB12250T FA	12	250	2.8	521	20.5	269	10.6	220	8.7	242/223	9.5/8.8	T5/T11	78.0	207

## High Rate Discharge Series

Voltage : 6V, 12V

Capacity : 4.5AH to 250AH

Designed floating service life at 20°C/68°F :

RDS type-5years

RDB type-10years

### **Applications**

Telecommunication equipment

Electric power vehicles

Fire alarm and security devices

UPS power supply

Emergency lighting

# High Rate Discharge Battery Series

Model	Nominal Voltage (V)	15 min. Rate (Watts/cell)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
					Length		Width		Height		Total Height				
					mm	in	mm	in	mm	in	mm	in			
RDB645HR	6	19	4.5	20	70	2.8	47	1.9	101	4.0	107	4.2	T1/T2	0.83	211
RDB650HR	6	22	5.0	19.5										0.92	212
RDB670HR	6	31	7.0	13	151	5.9	34	1.3	94	3.7	100	3.9	T1/T2	1.35	213
RDB690HR	6	34	9.0	12.5										1.40	214
RDB6120HR	6	51	12.0	10	151	5.9	50	2.0	94	3.7	100	3.9	T1/T2	2.05	215
RDB1245HR	12	19	4.5	33	90	3.5	70	2.8	101	4.0	107	4.2	T1/T2	1.65	216
RDB1250HR	12	22	5.0	32										1.80	217
RDB1260HR	12	24	6.0	18	151	5.9	52	2.0	94	3.7	99	3.9	T2/T1	2.15	218
RDB1270HR	12	31	7.0	20	151	5.9	65	2.6	94	3.7	100	3.9	T1/T2	2.45	219
RDB1290HR	12	34	9.0	19										2.60	220
RDB12120HR	12	51	12.0	17	151	5.9	98	3.9	95	3.7	101	4.0	T2	4.05	221
RDB12180HR	12	76	18.0	15	181	7.1	77	3.0	167	6.6	167/167	6.6/6.6	T3/T8	5.8	222
RDB12200HR	12	82	20.0	14	181	7.1	77	3.0	166	6.5	166	6.5	T8	6.3	223
RDB12240HR	12	100	24.0	10	166	6.5	175	6.9	125	4.9	125/125	4.9/4.9	T3/T8	8.8	224
RDB12280HR	12	110	28.0	11	165	6.5	125	4.9	175	6.9	182/175	7.2/6.9	T6/T8	9.5	225
RDB1233HR FA	12	125	33	9.7	195	7.7	130	5.1	155	6.1	180/166	7.1/6.6	T7/T9	10.7	231
RDB1245HR FA	12	160	45	7	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	14.5	232
RDB1265HR FA	12	240	65	5.5	350	13.8	167	6.6	179	7.0	186/179	7.3/7.1	T5/T9	22.0	233
RDB1270HR FA	12	250	70	5.5										23.0	234
RDB1275HR FA	12	282	75	5.3	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	24.0	227
RDB1280HR FA	12	290	80	5.3										25.0	235
RDB1290HR FA	12	330	90	4.5	306	12.0	169	6.7	211	8.3	233/214	9.2/8.4	T5/T9	30.0	228
RDB12100HR FA	12	390	100	4	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	32.5	229
RDB12120HR FA	12	425	120	4	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	38.0	236
RDB12134HR FA	12	475	134	3.8	342	13.5	172	6.8	280	11.0	285	11.2	T11	43.0	230
RDB12150HR FA	12	535	150	3.5	485	19.1	172	6.8	240	9.4	242/240	9.5/9.4	T5/T11	47.5	237
RDB12200HR FA	12	710	200	3	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	65.0	238
RDB6200HR FA	6	620	200	3.1	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	32.5	226

## Gel Series

Voltage: 2V、 6V、 12V

Capacity: 12AH to 3000AH

Service life:

Designed floating service life at 20°C/68°F

RDSType: 5 years

RDBType: 12 years

RDCType: 20 years

Designed cycle life at 80% DOD at 20°C/68°F

RDSType: more than 350 cycles

RDBType: more than 350 cycles

RDC Type: more than 600 cycles

### **Applications:**

Telecommunication equipment

Wind power

Electric powered vehicles

Golf cars and buggies

PDA equipment as laptop computer, camera, phone sets,  
medical sets

Power tools, lawn mowers, vacuum cleaners

Solar power applications

Toys



# Gel Battery Series

Model	Nominal Voltage (V)	Capacity (Ah)	Internal Resistance (mΩ)	Dimensions								Terminal Type	Weight ±4%(Kg)	Date sheet (Page)
				Length		Width		Height		Total Height				
				mm	in	mm	in	mm	in	mm	in			
RDB6100G FA	6	100	3.9	194	7.6	170	6.7	205	8.1	210	8.3	T9	16.8	
RDB6200G FA	6	200	3.4	321	12.6	176	6.9	226	8.9	246/229	9.7/9.0	T5/T11	32.0	
RDB1233G FA	12	33	11.0	195	7.7	130	5.1	155	6.1	180/166	7.1/6.5	T7/T9	10.5	
RDB1240G FA	12	40	10.5	197	7.8	165	6.5	170	6.7	170/170	6.7/6.7	T4/T9	13.8	241
RDB1255G FA	12	55	6.4	229	9.0	138	5.4	208	8.2	230/211	9.1/8.3	T5/T9	20.0	
RDB1265G FA	12	65	6.6	350	13.8	167	6.6	179	7.0	186/179	7.3/7.1	T5/T9	21.5	
RDB1260G FA	12	60	6.3	260	10.2	168	6.6	211	8.3	233/214	9.2/8.4	T5/T9	21.0	242
RDB1270G FA	12	70	5.8										23.0	
RDB1280G FA	12	80	5.6										24.5	
RDB12100G FA	12	100	5.0	330	13.0	171	6.7	214	8.4	224/220	8.8/8.7	T5/T9	31.5	
RDB12120G FA	12	120	4.4	409	16.1	176	6.9	225	8.9	225/225	8.9/8.9	T5/T11	36.0	
RDB12134G FA	12	134	4.2	342	13.5	172	6.8	280	11.0	285	11.2	T11	43.5	
RDB12150G FA	12	150	3.9	485	19.1	172	6.8	240	9.4	242/240	9.5/9.4	T5/T11	45.5	243
RDB12180G FA	12	180	3.9	494	19.4	206	8.1	209	8.2	235/235	9.3/9.3	T20/T11	55.0	
RDB12200G FA	12	200	3.3	522	20.6	238	9.4	218	8.6	238/221	9.4/8.7	T5/T11	63.0	
RDB12250G FA	12	250	2.9	521	20.5	269	10.6	220	8.7	242/223	9.5/8.8	T5/T11	75.0	
RDC2100G	2	100	0.99	171	6.7	72	2.8	206	8.1	209	8.2	T10	6.0	
RDC2200G	2	200	0.77	173	6.8	109	4.3	330	13.0	364	14.3	T10	14.5	244
RDC2300G	2	300	0.72	171	6.7	151	5.9	330	13.0	364	14.3	T10	20	
RDC2400G	2	400	0.55	210	8.3	176	6.9	330	13.0	367	14.4	T10	27	
RDC2500G	2	500	0.44	241	9.5	171	6.7	330	13.0	365	14.4	T10	32	
RDC2600G	2	600	0.35	302	11.9	175	6.9	330	13.0	367	14.4	T10	39.5	
RDC2800G	2	800	0.26	410	16.1	175	6.9	330	13.0	367	14.4	T10	55	
RDC21000G	2	1000	0.22	475	18.7	175	6.9	330	13.0	367	14.4	T10	65	245
RDC21500G	2	1500	0.18	400	15.7	350	13.8	345	13.6	382	15.0	T10	102	
RDC22000G	2	2000	0.13	490	19.3	350	13.8	345	13.6	382	15.0	T10	130	
RDC23000G	2	3000	0.12	710	28.0	350	13.8	345	13.6	382	15.0	T10	200	
RDC2200SG	2	200	0.77	206	8.1	103	4.1	355	14.0	390	15.4	T13	15.5	
RDC2250SG	2	250	0.75	206	8.1	124	4.9	355	14.0	390	15.4	T13	19.5	
RDC2300SG	2	300	0.72	206	8.1	145	5.7	355	14.0	390	15.4	T13	23	
RDC2400SG	2	400	0.55	206	8.1	145	5.7	471	18.5	506	19.9	T13	28	
RDC2500SG	2	500	0.44	206	8.1	166	6.5	471	18.5	506	19.9	T13	33	
RDC2600SG	2	600	0.35	206	8.1	145	5.7	646	25.4	681	26.8	T13	44	
RDC2800SG	2	800	0.26	210	8.3	191	7.5	646	25.4	681	26.8	T13	62	246
RDC21000SG	2	1000	0.22	233	9.2	210	8.3	646	25.4	681	26.8	T13	73	
RDC21200SG	2	1200	0.20	275	10.8	210	8.3	646	25.4	681	26.8	T13	87	
RDC21500SG	2	1500	0.18	275	10.8	210	8.3	796	31.3	831	32.7	T13	108	
RDC22000SG	2	2000	0.13	399	15.7	210	8.3	772	30.4	807	31.8	T13	150	
RDC22500SG	2	2500	0.12	487	19.2	212	8.3	772	30.4	807	31.8	T13	187	
RDC23000SG	2	3000	0.11	576	22.7	212	8.3	772	30.4	807	31.8	T13	223	247