

# **Operation and Maintenance Manual for Nickel-Cadmium Super high rate alkaline storage Batteries**



**BOSFA INDUSTRIAL BATTERY  
CO.,LTD**

**Bosfa** industrial battery Co., Ltd. has been selling valve-regulated lead acid batteries since 1992 and it is one of the companies which pioneered selling maintenance-free lead acid batteries in China. With more than 10 years' sales experience, we have more than 1000 customers in China. After accumulating and developing for years, now we become experts who could research, develop, manufacture and sell different types of batteries. With many engineers and proficient technicians, as well as sufficient financial investment, we could guarantee every customer here receives excellent services.

**Bosfa** industrial battery Co., Ltd. especially concentrates on providing an equal platform for battery-trading, supplying the original high-quality products at competitive prices, re-establishing the normal battery market in China and fighting against counterfeiting, huge profits and vicious competition. The aim of the Battery Trading Website is to be the biggest battery trading platform and guarantee the users at quality and prices.



Order hotline : (+86-20)38320841 38320842 Email: Sales@bosfabattery.com

**Bosfa** industrial battery Co., Ltd. is mainly engaged in selling famous batteries in China such as standby batteries (telecom, electricity , UPS), power batteries (electric cars, forklifts, electric machines and draw machines), starting batteries (batteries in the car and fuel-machinery starting batteries), deep recycle solar batteries and alkaline batteries. What' s more, it also imports batteries with excellent quality overseas. We are engaged in the field of industrial batteries and offer you the batteries, testing instruments at the most competitive prices and with best services. Together with the perfect battery-testing scheme, we will help you to find the best solution to the disposition of batteries and make you set your heart at rest while using the batteries.

**Bosfa** batteries, which is developed and manufactured by us, are famous for the good quality and high performance. Form UPS batteries to the high volume batteries used in electrical and telecommunication field, has become the representative of high quality batteries. They are of high quality and special structure, with special and

---

qualified polarity board, reasonably designed polarity pole as well as unique airproof structure of the end polar pole.

**Bosfa** battery, with more than 400 models and dimensions, then series of ordinary, deep cycling (sun energy). colloid, long time, high multiple ratio, European front placing end, motor car, and oil machine starting up. With more than 1,000 pages' technology introduction in original English version, (details in the website of BOSFA battery), all of these can definitely meet any of your requirements on storage battery.

Our manufacturing base for BOSFA BATTERY is mainly located in Guangzhou, Dongguan, Shenzhen.

Each manufacturing base has very strong economy strength. With registering fund of RMB30,000,000, over 50,000,000 fixed asset, flowing asset is over RMB100,000,000. Shenzhen base has a 4 floors manufacturing building, covering about 10,000 m<sup>2</sup> area. As well as a building for office dormitory, eatery with a area of about 3,000 m<sup>2</sup>. Besides, there are also such additional establishments as storeroom, water and electricity room etc. with an area of about 1,000 m<sup>2</sup>, green-covered area are about 3,000 m<sup>2</sup>.

Within the manufacturing workshop, we have 10 lines of complete independent working lines for low density, average density, and fixed (high) density storage battery, the annual production value reaching RMB200 million.

Regarding the manufacturing equipments, we own "microcomputer controlling exact fixing" up to 50 sets of such high developed manufacturing equipments. Besides there are more than 400 meters' length technical assemble workbench and 60 meters' length of specially use for prompt roast channel completely automatic temperature controlling.

Referring to the inspection of products and original materials, we are equipped with essential and advanced devices for testing and relevant equipments for counting and gauging.

In the aspect of the maintenance of Technology quality, we have not only high-class technology person with doctor, master' s degree or high technology professional, but also middle class technology workers with good operation skills and abundant professional experiences,. Besides, our prominent quality control are essentially supported by fundamental working elites who are not only equipped with great operation skills and knowledge, but also with tough mind and strong responsibility.

The factory adopt ISO9001-2000 system to manage the production, we stick on inspecting and authenticating the suppliers of main original material and auxiliary equipments, insist on checking all the material before entering factory, refusing putting unqualified material into production.

We strictly meet the requirements of ISO9001-2000 system referring to every aspect varied from production, equipment controlling and resource managements.

There are mainly nine series of products, which are divided into 3 varieties (viz. small density, middle density, and fixed completely airproof maintenance-free storage batteries), together more than 40 specifications. Moreover, they have the feature of nice sculpt, good structure, installing flexibly, simple maintenance, high enduring overcharging capacity, safety usage and reliability.

With more than ten years development and market test, our products are sold not only nationwide, but also abroad as in about tens of countries, like the U.S.A., Italy, Brazil , Turkey , Hong Kong, etc. Our products are wildly used in fields like military products, telecom equipments, Electricity supply, UPS power supply , computer power supply, railway motorcycle, ships, transportation equipments, fire and police alarm system , and medical equipment, etc.

Bosfa battery has gained the license form ISO9001-2000system hierarchy, UL, CE , and the registration permission from Telecom Bureau and quality inspection report from Electrical Bureau. Owing to our exquisite workmanship and excellent quality, an increasingly enlarging market and rapidly boost of sale are happening to BOSFA..

Bosfa industrial battery Co., Ltd. is looking forward to establishing long-time and good cooperation with all our customers with our excellent quality, faithful management and trust after-sales service.



## CONTENTS

<b>1. Configuration drawing of the battery.....</b>	<b>3</b>
<b>2. Checking before the battery be operated.....</b>	<b>3</b>
2.1 Checking for opening case	
2.2 Checking for battery tightness	
2.3 Checking for the container	
2.4 Checking for the electrolyte level	
2.5 Change plug of the battery	
2.6 Primary Checking for the voltage	
2.7 Checking for the charged battery before delivery	
<b>3. Connection and installation of the battery.....</b>	<b>5</b>
3.1 Connection in series for the battery	
3.2 The requirement for the charging voltage after the battery being connected with the charger	
3.3 Operating the battery at the floating charge	
<b>4. Activation before operation.....</b>	<b>5</b>
4.1 For the new battery delivered or the battery stored in discharged state for a long period.	
4.2 For the new battery delivered in charged state	
<b>5. The operation and maintenance of the battery.....</b>	<b>6</b>
5.1 Operation	
5.1.1 Charging method	
5.1.2 Floating charge	
5.2 Maintenance	
5.2.1 Maintenance for the battery	
5.2.2 Maintenance for the metal parts	
5.2.3 Adding water for the battery	
5.2.4 Replace the electrolyte inside the battery	
5.2.5 Maintenance for the vent plug	
5.2.6 Maintenance for the tighten parts	
5.3 Maintenance tools of the battery	
5.3.1 Voltmeter	
5.3.2 Thermometer	
5.3.3 Plastics bottle for sucking the electrolyte	
5.3.4 Special spanner	
<b>6. Safety information.....</b>	<b>7</b>
<b>7. Transportation and storage.....</b>	<b>8</b>
<b>8. Troubles and trouble shootings.....</b>	<b>8</b>
<b>9. Guiding for the products.....</b>	<b>9</b>
9.1 Initial operation	
9.2 Maintenance guarantee	
9.3 Warranty	
9.4 Service	
9.5 Maintenance interval	

## Introduction

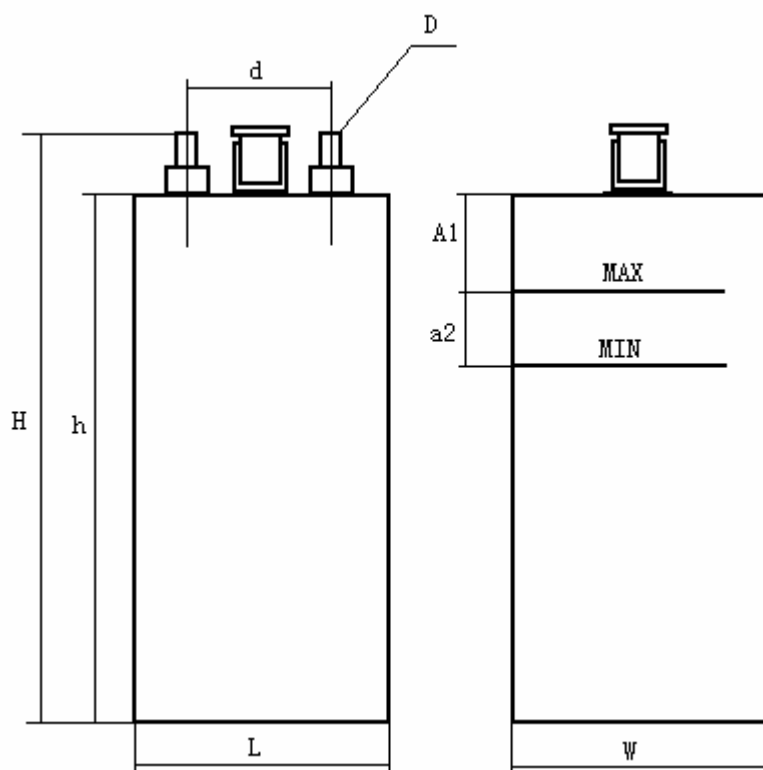
### Dear customers

- Thanks for selecting our products. This manual will tell you how to installation, operation, storage, charge and maintenance our battery, so that you can obtain best performance of our products.
- To ensure a proper, safe and effective operation, please read the manual carefully in advance and keep the manual carefully for necessary reference.
- We established a complete quality assurance system for our battery and we are ready to provide any service.
- Although the manual was checked and reviewed carefully, may some careless contents or wrong words happen, please do not hesitate to advise us of your options so that we could prefect the manual.
- The contents in the manual just for the instructing to the operation and maintenance and storage of the battery. Please note that the writer will not be responsible for any suggestive words or the words described clearly in this manual.

### Glossary explanation

1. **Nominal Capacity:** Normally refers to the 5-hour rate discharged capacity after fully charged and the final discharge voltage is 1.0V per cell, the ambient temperature is  $20\pm5^{\circ}\text{C}$  (The nominal capacity is described in the surface of the battery container).
2. **Charge and Discharge Current:** Nominal Capacity / Discharge Rate (hrs). The discharge rate usually is 5-hour rate, the other rates (such 1-hour, 2-hours, etc.) is available.
3. **Calculation for the Capacity:**  $C = I \times t$   
In which:  $C$  means Capacity (Ah)  
 $I$  means discharge current (A, mA)  
 $t$  means discharge duration (h, min)
4. **Constant Current Charge:** Refers to during the whole charging, the Charging Current will be kept steady and constant, but the charging voltage is changing along with the charge time.
5. **Constant Voltage Charge:** Refers to during the whole charging, the Charging Voltage will be kept steady and constant, but the charging current is changing along with the charge time.
6. **Floating charge:** The rectifier could provide energy for the loads and make up self-discharge by small current. The battery could provide energy for the loads once the rectifier stopped working because of AC fault.

## 1. Configuration drawing of the battery



## Parts of the battery

Name	Function
Plate	Channel between the charge & discharge current for the plates groups and external power source or loads
Nut	Tighten container
Plastic washers	Polarity Marks (The red means the positive and The blue stands for the negative)
Vent Plug	Prevent the electrolyte from overflowing during the transportation and allow the gas escaping and the electrolyte overflowing during the working.
Container	Containing the plates groups and the electrolyte, protect the electrolyte and internal parts from being damaged.

## 2. Checking before operation

**2.1** Normally, the batteries leave factory in charged state with the electrolyte. Before operation, please check one by one the quantity of the cells and the accessories (including connectors, nuts and plastic covers) in accordance with the packing list enclosed in the cases. Any



---

**shortage found, please contact with us immediately.**

- **It is important to check the quantity of the batteries, model and spare parts. Otherwise, it may bring some troubles and inconveniences to you because of the shortage.**

**2.2 Check whether the tightening nuts are loose or not, otherwise, please tighten them with special spanner supplied with the batteries.**

**2.3 Check carefully whether there are some mechanical damages occurred in the battery's container, covers or frames. If found, please take them out separately, and then contact with us in time.**

- **Please do not handle the damaged battery by yourselves, because the electrolyte is made of the chemistry materials (Strong alkali) with corrosiveness.**

**2.4 Check the electrolyte level, the standard electrolyte level should be between the upper (Max.) and down (Min.) level. If the electrolyte is lower than the minimum level, please fill in the electrolyte in reasonable amount. Otherwise, It will take some troubles in operating the battery.**

## **2.5 Change the vent plug**

**Please change the vent plug from the transportation plugs to operation plugs before the battery putting into operation.**

- **Prior to the charge, please be certain of the operation plugs are in good condition and no blocks inside the plugs. The transportation plugs must be changed.**

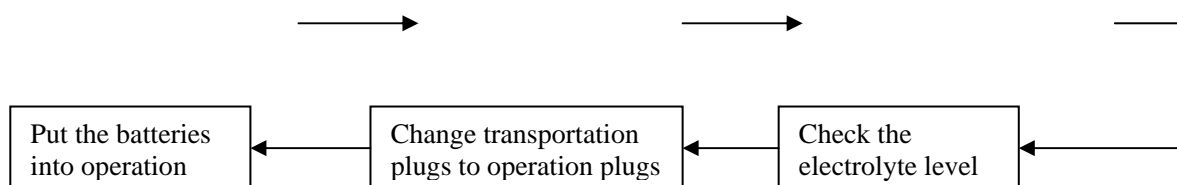
**2.6 Primary Checking for the voltage: Before the battery putting into operation, please charge the battery at 0.2C<sub>5</sub>A for 7 hours, and then the measured voltage shall be not less than 1.2V per cell. If the problem that the charging voltage does not grow up within 1~2 hours during the charging is met by you, please contact with our Service Department in time, we will offer you our satisfactory service.**

**2.7 Checking for the charged battery before delivery: In specially, the battery were delivered in charged state with electrolyte. Please pay more attention to the mark of “delivered in charged state ” in the package. Under this condition, the batteries can be put into operation directly after the transportation plugs being changed. Of course, it is necessary to do some other checks in accordance with the following Check Procedure (From clause 2.1 to 2.6). Any abnormal or unclear, please consult to our service department.**

## **Enclosed: Check Procedure**

Check in accordance with the packing list	Check the tightness of the nuts	Check the outlooks of the containers or frames
--	------------------------------------	---





### 3. Connection and installation of the battery

3.1 Please arrange the single cells in order and connect the cells with the connectors or cables one by one in accordance with the correct polarities connection, and then tighten the nuts with the special spanner. After being correctly assembled, the battery can be connected with the charger.

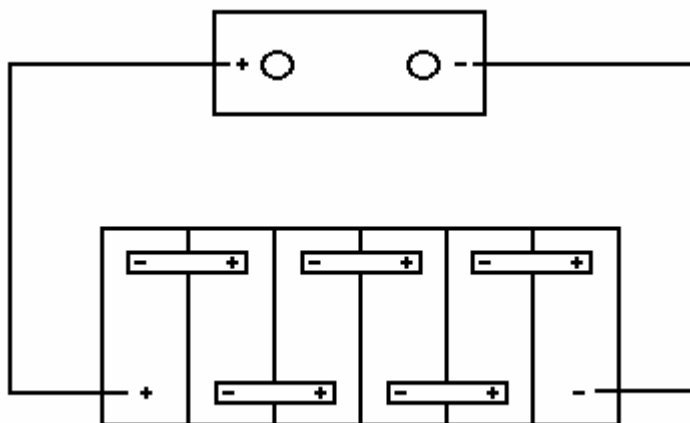


Figure 2: The assembling figure of the battery

- Connection the cells in series is much better than parallel connection, if the parallel connection must be used, prior to the operation, please consult to our service department.

3.2 The charging voltage not less than  $2n$  ( $n$  means quantity of cells) after the cells are assembled.

3.3 The battery could be used in floating charge.

### 4. Activation before operation

4.1 For the new battery delivered or the battery stored in discharged state for a long period

4.1.1 Firstly, please check whether the electrolyte is filled in the battery. If not, please fill the stipulated electrolyte. If the electrolyte is filled, please check the electrolyte level according to Clause 2.4.

4.1.2 Clean the surface of the battery.

4.1.3 Change the transportation plug to the operation plug.

4.1.4 Connecting the cells in series according to figure 2, and then cost the Vaseline oil around the nuts, posts and the connectors.

4.1.5 The battery shall be charged at  $0.2C_5A$  for 7~8 hours, and then store the battery for 1~2hrs, then discharged at  $0.2C_5A$  to end voltage of  $1.0nV$  ( $n$  means quantity of the cells), the discharge duration shall be not less than 5 hours. If the duration is lower than 5 hours, another charge and discharge cycle shall be done once again, but more than five cycles is not allowed.

**4.2 For the new battery delivered in charged state****4.2.1 Clean the surface of the battery****4.2.2 Change the transportation plug to the operation plug.**

**4.2.3 Connecting the cells in series according to figure 2, and then cost the Vaseline oil around the nuts, the posts and the connectors.**

**5. Operation and maintenance of the battery****5.1 Operation****5.1.1 Charge method**

**5.1.1.1 Charge at constant current:** Prior to the operation, the battery shall be charged at Normal Charge in accordance with Table 1 and the ambient temperature shall be  $20\pm 5^{\circ}\text{C}$ . The final charged voltage shall be not exceed 1.65~1.78V per cell.

**5.1.1.2** After one year's operation, the capacity refreshing must be done. The method is: Discharge the battery at  $0.2C_5A$  to a final voltage of 1.0V per cell or  $n\times 1.0V$  ( $n$  means numbers of the single cells per the battery), and then charge the battery at Normal Charge in accordance with Table 1.

**Table 1**

Charge method	Charge current	Charge voltage	Charge duration
Normal charge	$0.2 C_5A$	1.65~1.78V/cell	7~8h
Floating charge	1~2mA/Ah	1.38~1.40V/cell	Long period

**5.1.2 Floating charge:** The battery can be operated at the floating charge after being normal charged, during floating charge, The voltage between the terminals of the cell shall meet the requirement of the cell that should accord with table 1.

- If the terminal voltage is too much higher, it will accelerate the consumption of the electrolyte and shorten the service life of the battery. However, if the terminal voltage is too low, it cannot keep the battery being fully charged and it will affect the normal performance of the battery.

**5.2 Maintenance of the battery**

**5.2.1 Cleaning for the container:** It shall keep the batteries clean and dry during the operation. If the electrolyte is overflowed, it shall be cleaned up with wrested wet cloth in time.

- Please do not clean the battery with organic solvents such as benzine, alcohol and so on. Otherwise, it will damage the container and cause the electrolyte overflowing, which will affect the normal performance of the battery and be dangerous to the safety of the body or the facilities.

**5.2.2 Cleaning for the metal parts:** After the metal parts, such as the posts, nuts and connectors, being cleaned, please coat Vaseline oil as protection in them.

**5.2.3 Water adding:** During the normal charge or floating charge, the electrolyte shall be kept between the maximum and the minimum marks. If the electrolyte is lower than minimum mark, it shall add pure water to available level, while higher than maximum mark, it shall

suction some electrolyte out with the suction bottle to avoid the electrolyte overflowing.

**5.2.4 Replacing electrolyte:** The electrolyte will be consumed along with the operation. So, it shall add the pure water to adjust the electrolyte as requested. However, the electrolyte must be replaced after 3 years' service.

- 1. The electrolyte must be replaced as requested; otherwise, it will affect the normal performance of the battery.
- 2. Before the electrolyte being replaced, the battery shall be discharged at  $0.2C_5A$  to end voltage of  $1.0V$  or  $n \times 1.0V$  ( $n$  means quantity of cells).
- 3. After the electrolyte replaced, the battery shall be charged according to table 1, and then can be put into operation.
- 4. The electrolyte level must be controlled between the maximum and minimum marks

Note: The electrolyte is strong corrosive chemistry material. If the property and preparation method of the electrolyte is not known, please consult to our service department in time.

**5.2.5 Maintenance for the plug:** Check the gassing of the plug every half-year. If it is blocked, please dip the plug into the clean water and wash it till to the plug is ventilated.

- It is very important that keep the plug gassing, otherwise, it may damage the battery and affect the performance of the battery.

**5.2.6 Maintenance for the tighten parts:** It shall often check the tightness of the connection leads and tighten parts to ensure the battery to be normally operated.

### 5.3 Maintenance Tools

**5.3.1 Voltmeter:** The measure range of the voltmeter shall be  $-3 \sim +3V$ , and it could measure voltage of the single cell

**5.3.2 Thermometer:** it shall be alcohol thermometer or mercury thermometer. If necessary, please open the vent plug, and then put the thermometer into the electrolyte and stay one minute, the temperature value can be read directly.

**5.3.3 Plastics bottle for sucking the electrolyte:** It can be used to inhale or suck out the pure water or electrolyte, if necessary, please add a certain long plastic tube, it will be much easier to control the electrolyte level.

**5.3.4 Special spanner:** It can be used to tighten or loosen the connection parts of the battery.

## 6. safety information

If the dirty water or others impurities is mixed into the electrolyte, please do not operate the battery. It shall empty the electrolyte, and then replace the refresh electrolyte.

Please pay more attention to short circuit the terminals directly. Otherwise, it will damage the battery.

Do not put the battery at too cold or too heat places, it is better to do the charge at normal temperature range, the operation temperature range shall be  $-18 \sim +55^{\circ}C$ .

Please pay more attention to the environment protection. The wasted batteries shall be collected together. Please do not put the wasted batteries into fire, it may cause explode.

The charge and discharge cycles of the battery can reach hundreds of cycles, but the nominal capacity will trend to reduction.

**Please don't open the battery by yourselves.**

**If the electrolyte happens to splash into the skin, please wash the skin with plenty of water immediately, and then wash with diluted boric acid solution. If the electrolyte splashed into the eyes, after the washing with plenty of water, please consult to the doctor immediately.**

## **7. Transportation and Storage**

**7.1 The battery can be delivered by any conveyances, but during the transportation, it shall keep the battery from being inversed, sun-shining, raining and impacting, etc.**

**7.2 Normally, the battery should be delivered in discharged state. If the battery is delivered in charged state, the transportation by road is recommended**

**7.3 The battery should be stored in discharged state with the transportation plug and kept clean.**

**7.4 The battery should be stored in the room that dry and ventilated, and the ambient temperature shall be not more than 35℃, the relative humidity shall be not more than 75%.**

**7.5 The surface of metal parts should be coated with vaseline oil.**

**7.6 Put the battery on the steps after being packed.**

**7.7 It is prohibited to store the alkaline battery with acid batteries or store the place with acid materials.**

**7.8 Check the storage condition of the battery termly.**

## **8. Troubles and Troubleshooting**

<b>No.</b>	<b>What's the trouble</b>	<b>Troubleshooting</b>
<b>1</b>	<b>The voltage of cell is 0 V</b>	<b>1. Recharge it and check again. 2. Add the electrolyte and recharge the battery, adjust the density of the electrolyte.</b>
<b>2</b>	<b>Capacity reduced</b>	<b>1. Take out the cell and carry out capacity restoration 2. Add the electrolyte and adjust the density of the electrolyte. 3. Control the Charging temperature at 20±5℃ 4. Revised the charging circuit 5. Tighten the connecting parts.</b>
<b>3</b>	<b>Electrolyte overflowing</b>	<b>1. Adjust the electrolyte level 2. Check whether the container or cover is damaged or not. 3. Tighten the nuts and recheck the sealing.</b>
<b>4</b>	<b>The charge voltage of the cell too high when start charging</b>	<b>Add the electrolyte and adjust electrolyte level</b>
<b>5</b>	<b>The charged voltage of the cell is less than 1.4V</b>	<b>1. Check whether the cell is stayed in the high temperature condition.</b>

		<b>2. Check charge current and output voltage of the charger.</b>
<b>6</b>	<b>Spumes happened inside the battery</b>	<b>Replacing electrolyte</b>
<b>7</b>	<b>The cell container swells</b>	<b>1. Clean and wash the vent plug with hot water to keep un-blocked. 2. If needed, replace the cell</b>
<b>8</b>	<b>The electrolyte is consumed too fast or all the battery's temperature is 5℃ higher than room temperature</b>	<b>1. Reduce the floating charge voltage 2. Strengthen air ventilation and cooling. 3. Check whether the ambient temperature is too high. If yes, please reduce the ambient temperature to normal temperature range, and then recharge or discharge battery.</b>
<b>9</b>	<b>The metal parts are rusted.</b>	<b>1. Clean the metal parts and coat with Vaseline oil. 2. Keep away from the corrosive gases or materials.</b>
<b>10</b>	<b>The working current can't meet the requirement</b>	<b>1. Replace some cells 2. Tighten the nuts</b>
<b>11</b>	<b>Heating happened in the batteries or among the connectors</b>	<b>Tighten the nuts</b>

## 9. Guiding for the products

**9.1 Initial operation:** If our products are firstly used by you, please read this manual carefully before the battery put into operation. If you want to know more about the battery, such as structure, discharge performance, operation and maintenance, you can get the technology manual from us.

**9.2 Maintenance guarantee:** During the warranty, we'll repair and change the new products free of charge if the products have any quality problem. But if the warranty is invalidity, we still can service you and we will just get some basic costs

**9.3 Warranty:** within one year from the date of delivery, but six months for the spare parts.

**9.4 Service:** Consultation by the phone, technical service, installation and service at the spot.

**9.5 Maintenance interval:** 3 years.

## Technical Index of Bosfa Extra High Rate Cadmium-nicked Battery

Models	Rated capacity(Ah)	Dimension (mm)			Weight (g)	Electrolyte volume (ml)
		length	width	height		
GNC5-(3)	5	81	26	163	505	30
GNC10-(2)	10	81	26	163	580	60
GNC10-(3)	10	81	33.5	245	1070	130
GNC10-(5)	10	81	26	163	600	60
GNC10-(6)	10	81	33.5	245	1240	100
GNC20-(4)	20	81	33.5	245	1220	120
GNC20-(6)	20	81	33.5	245	1220	120
GNC20-(8)	20	138	61	266	2800	500
GNC20-(10)	20	81	43	266	1760	70
GNC20-(11)	20	138	61	266	2750	530
GNC30	30	81	43	266	1680	165
GNC40-(5)	40	81	43	266	1850	200
GNC40-(7)	40	138	61	266	3300	500
GNC40-(9)	40	100	85	138	1600	200
GNC40-(11)	40	81	43	266	1760	180
GNC40N	40	138	61	266	3250	530
GNC50	40	95	87	135	1900	230
GNC60	50	138	61	266	3500	350
GNC70	60	138	61	266	3800	550
GNC80	70	138	61	266	4000	330
GNC90	80	138	61	266	4100	400
GNC100	90	138	61	266	4310	310
GNC100N	100	138	61	266	4300	200
GNC100-(2)	100	138	61	259	4220	200
GNC110	100	139	79	291	5500	900
GNC110-(2)	110	138	61	266	4500	305
GNC120	110	139	79	291	5500	870
GNC120-(5)	120	138	61	266	460	200
GNC130-(2)	120	139	79	291	5500	850
GNC140	130	139	79	291	5600	950
GNC140-(2)	140	165	105	350	9800	1500
GNC150	140	139	79	362	9000	1800
GNC150-(2)	150	165	105	350	1000	1720
GNC160	150	139	79	362	9300	1850
GNC170	160	165	105	350	1000	1700
GNC170-(2)	170	165	105	350	10000	1500
GNC170-(5)	170	139	79	362	10000	1950
GNC190	170	139	79	362	7600	1950
GNC200N	190	165	105	350	10400	1650

GNC210	200	70	137	440	9000	1000
GNC210N	210	165	105	350	11000	2000

Technical Index of Bosfa High, Middle Rate Cadmium-nicked Battery

Models	Rated capacity (Ah)	External Dimension (mm)			Weight (KG)	Electrolyte volume (L)
		length	width	height		
GNG30(10)	30	142	67	227	3.60	0.80
GNG40	40	139	79	291	5.10	1.30
GNG50	50	139	79	291	5.30	1.20
GNG60	60	139	79	361	6.50	1.70
GNG70	70	139	79	361	6.90	1.40
GNG80	80	164	104	345	9.80	2.30
GNG100	100	164	104	345	10.00	1.85
GNG120	120	167	162	348	13.50	3.50
GNG150	150	286	174	348	23.00	5.00
GNG200	200	286	174	410	24.50	6.00
GNG250	250	232	172	505	27.00	5.50
GNG300	300	291	174	505	33.00	6.50
GNG350	350	291	174	505	34.50	7.00
GNG400	400	291	174	562	36.00	7.50
GNG500	500	398	184	227	53.00	15.00
GNZ30	30	142	67	291	5.00	0.83
GNZ50	50	139	79	361	6.50	1.30
GNZ75	75	139	79	350	9.50	2.00
GNZ100	100	165	105	343	13.00	2.50
GNZ120	120	167	162	343	14.50	3.50
GNZ150-(2)	150	167	162	348	24.50	4.00
GNZ200	200	286	174	348	26.00	5.83
GNZ250	250	286	174	540	23.00	5.83
GNZ300-(2)	300	176	161	501	41.00	6.0
GNZ500	500	291	174	566	57.50	9.00
GNZ600	600	398	184	566	3.50	17
GNZ700	700	398	184	566	61.50	16
GNZ800	800	398	184	566	64.00	15

Technical Index of Bosfa Low Rate Cadmium-nicked Battery

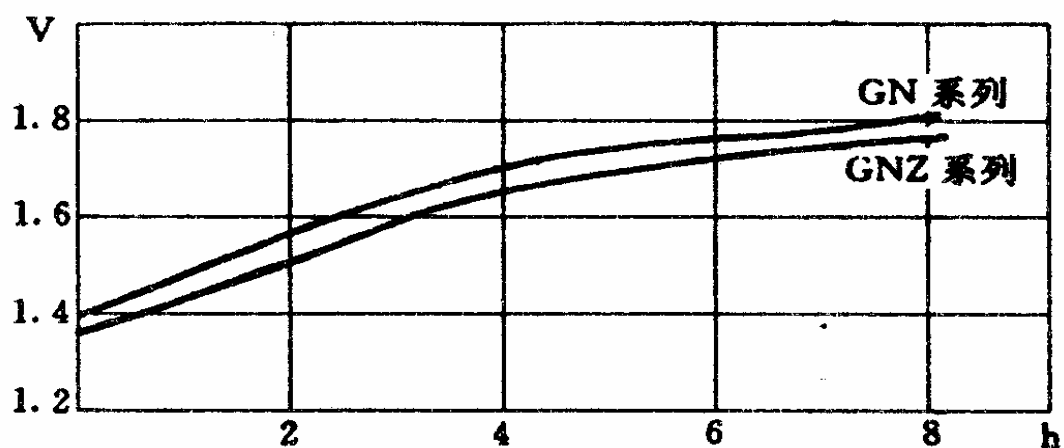
Models	Rated capacity (Ah)	External Dimension (mm)			Weight (KG)	Electrolyte volume (L)
		length	width	height		
GN10-(2)	10	85	39	126	0.66	0.12
GN40	40	145	54	248	2.70	0.60
GN50	50	142	67	223	3.20	0.70
GN60-(2)	60	135	52	373	3.90	1.00
GN100(2)	100	139	79	362	6.50	1.70
GN120	120	139	89	362	7.20	2.00
GN150	150	167	162	343	13.0	3.30
GN200	200	167	162	343	14.0	3.30
GN250-(2)	250	176	161	557	17.0	4.00
GN250-(3)	250	277	139	420	19	5.00
GN300-(2)	300	176	161	557	22.8	4.00
GN300-(3)	300	277	139	450	21.0	6.00
GN350-(2)	350	176	161	557	23.0	4.00
GN400-(2)	400	176	161	557	25.0	4.20
GN400-(3)	400	232	172	410	24.0	5.00



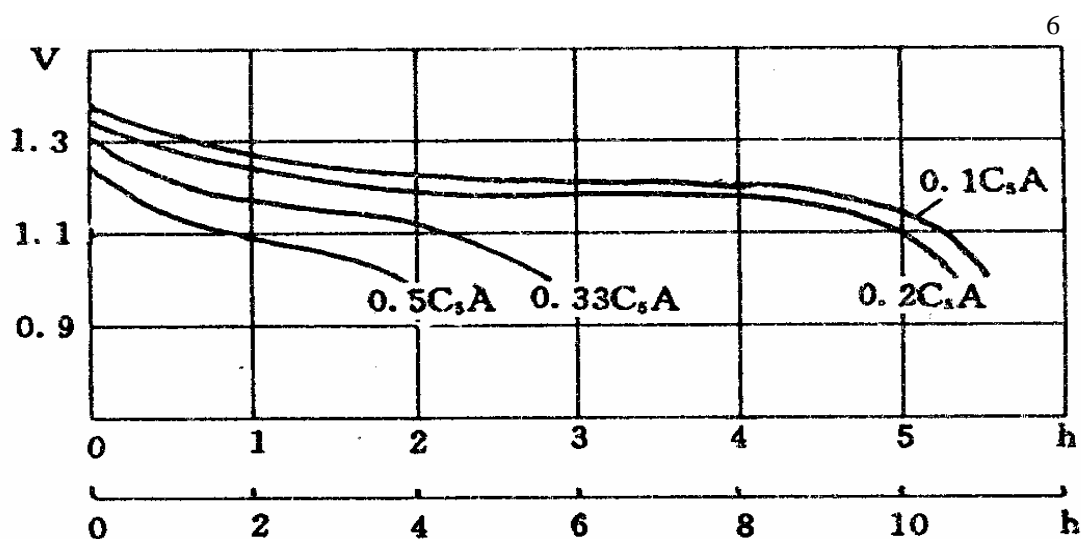
GN500-(3)	500	290	172	505	39	5.00
GN600-(2)	600	290	172	505	50	6.00
GN800-(2)	800	398	184	562	63.0	18.30
GN1000-(2)	1000	398	184	572	73.0	18.30
5GN10-(2)	10	197	91	135	3.80	0.60
5GN100-(2)	100	391	152	392	35.00	8.50
3GN200	200	563	209	362	63.00	10.00
3GN400-(3)	400	555	241	435	80.00	15.0



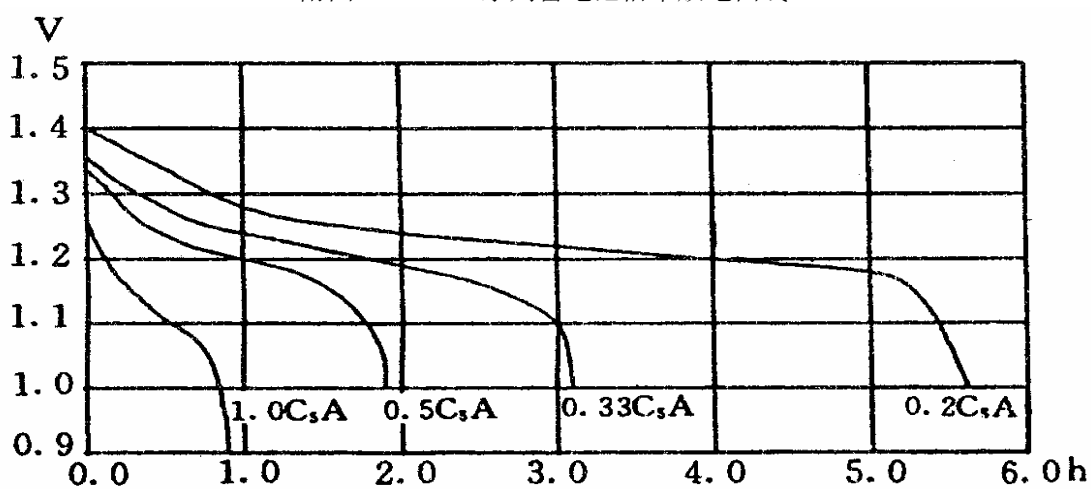
## 附录四 镉镍中、低倍率碱性蓄电池的充、放电参考曲线 1~9



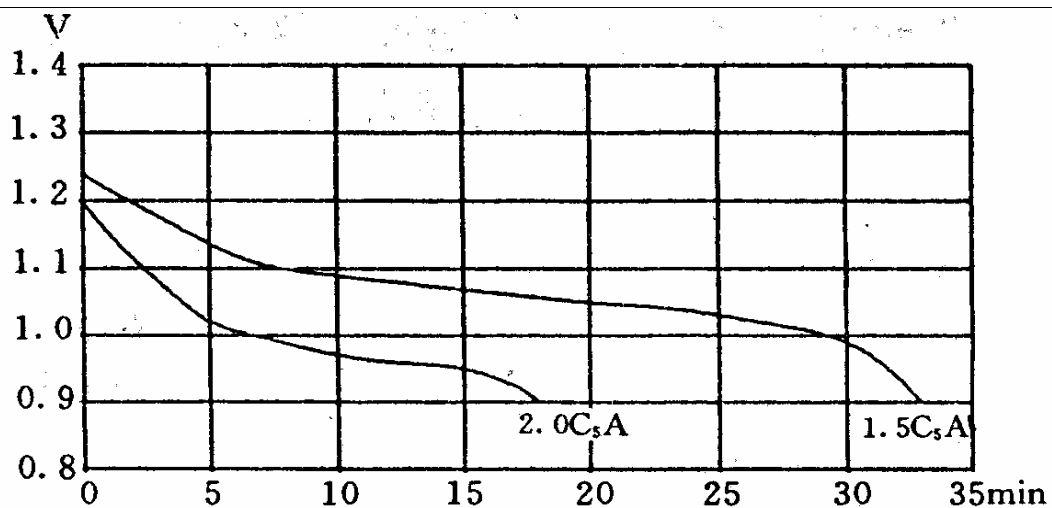
附图1 镉镍袋式碱性蓄电池 0.2C<sub>5</sub>A充电曲线



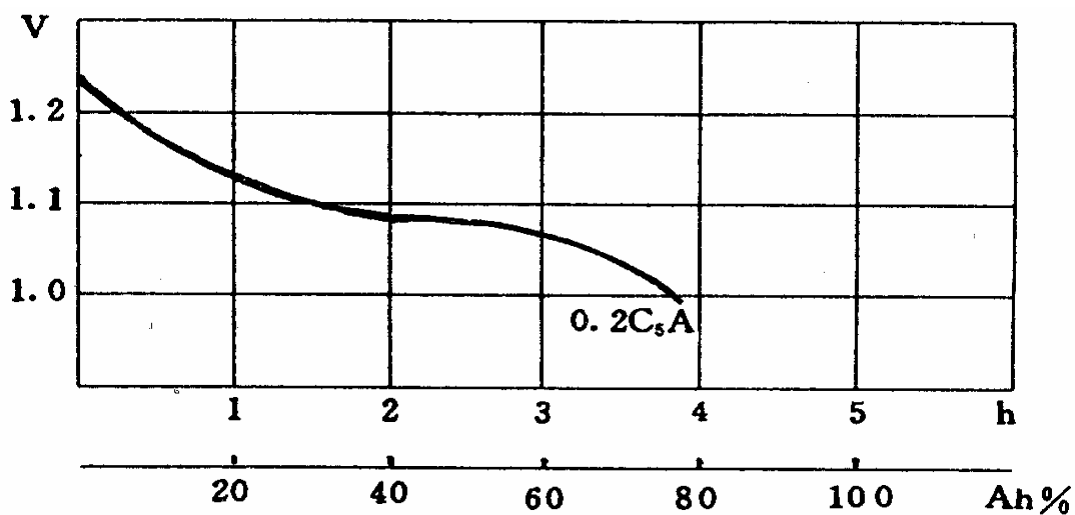
附图2 20°C GN 系列蓄电池倍率放电曲线



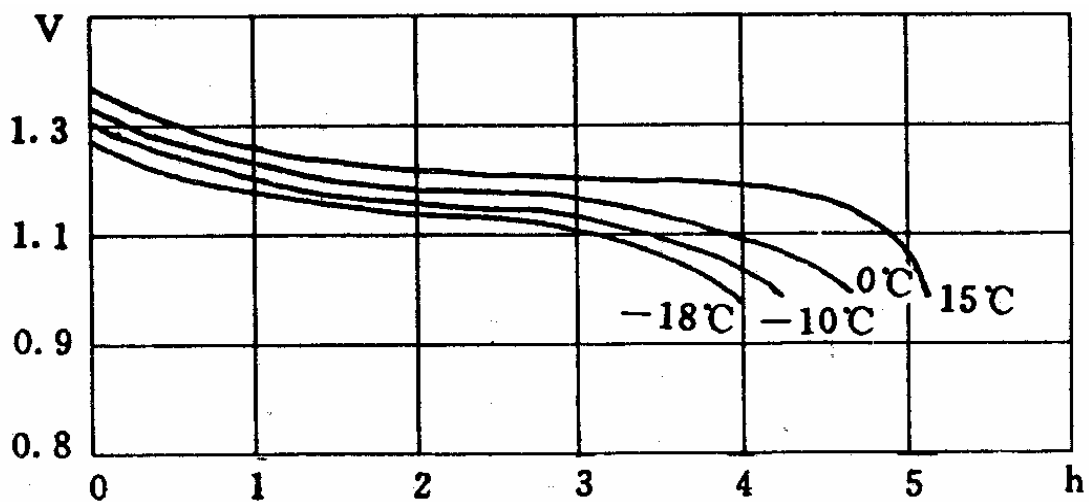
附图3 20°C GNZ 系列蓄电池倍率放电曲线



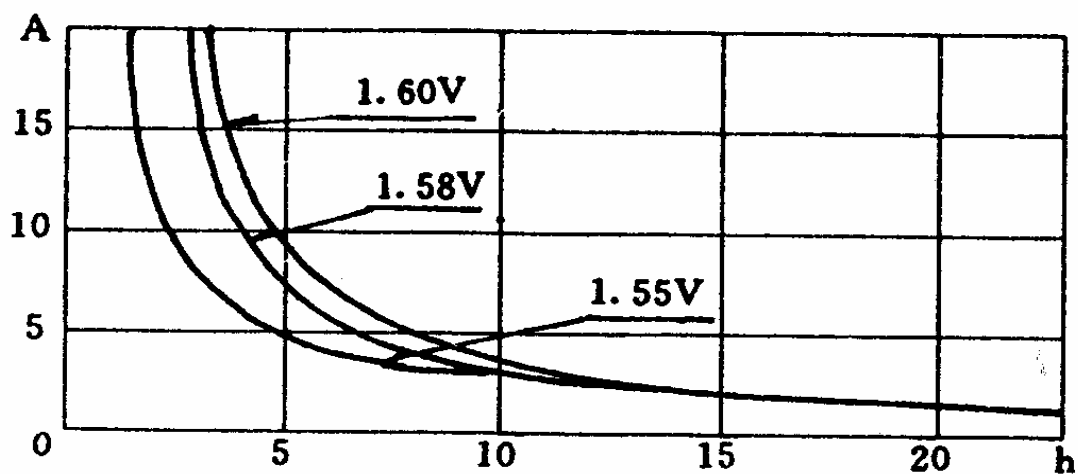
附图 4 20°C GNZ 系列蓄电池倍率放电曲线



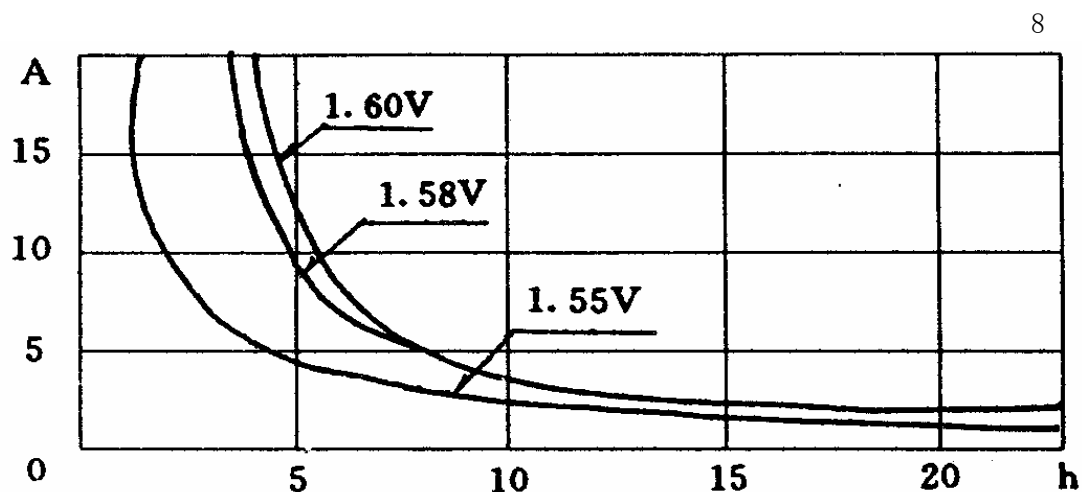
附图 5 GN 系列蓄电池低温 (-18°C) 0.2C<sub>5</sub>A 放电曲线



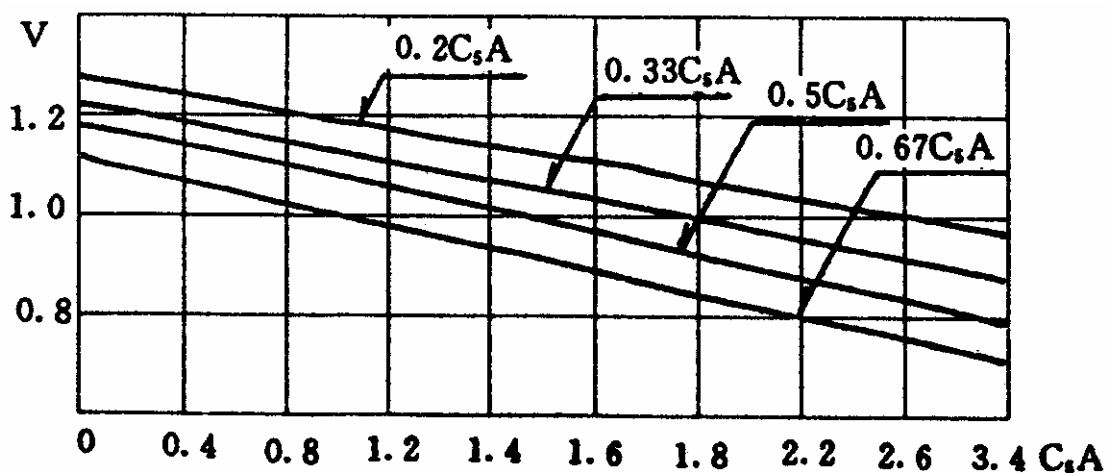
附图 6 GNZ 系列蓄电池不同低温条件 0.2C<sub>5</sub>A 放电曲线



附图 7 20°C GN 系列蓄电池恒压充电 A-h 曲线



附图 8 20°C GNZ 系列蓄电池恒压充电 A-h 曲线



附图 9 20°C GNZ 系列 1.45V/只浮充电状态不同倍率放电 1h 冲击放电曲线