POWER KINGDOM

SHENZHEN POWER KINGDOM CO.,LTD (CHINA)

Company Profile

Shenzhen Power Kingdom Co., Ltd (SPK), being the member of China Industrial Association of Power Sources, invested by Henan Yuguang Gold & Lead Group Co., Ltd., is specialized in producing sealed lead acid battery.

Henan Yuguang Gold & Lead Group Co. Ltd is a large national corporation and the No.1 lead producer in Asia. Its Lead Ingots and Silver Ingots are registered in London Metal Exchange (LME) and London Bullion Market Association (LBMA) separately. In 2005, the output of lead ingots and miner's lamps was topped and silver the third place in the industry in China. Also the output of sealed lead acid battery reached the first place in the industry in Henan province. Yuguang began to research and manufacture lead acid battery in 1958. Fifty years' experience has equipped it with advanced technology and extended experience of production. Especially after the die casting machine, with advanced world-class lever, was come into use, miner's lamp and traction battery have been leading in the industry in China on some main characteristics such as the cycle life.

Relying on the advantages of Yuguang's technology, funds & self-producing electrolyte lead , SPK has researched and manufactured VRLA Battery, Traction Battery, etc, including eight large series: PS, PK, PL, Long life ,High rate, Deep cycle, Gel, Traction, with more than 200 models including 2V, 4V, 6V, 8V, 12V and 24V, and the rated capacity from 0.5AH to 3000AH. All the performances have met the Standards: GB, JISC, IEC, DIN and BS. All the products are UL, CE, and ISO9001: 2000 certified and widely used in the telecom system, electric power system, coal mine, national defense, railway, bank, marine equipment, UPS, electric powered equipment and toys, electric vehicle, motorcycle and emergency lighting system etc.

At present, more than 90 percent of the "POWER KINGDOM" products are exported and are highly salable in more than 30 countries and areas in Europe, America and Asia, Africa, Latin America, etc. SPK has set up the sales net work in USA, Canada, Britain, Australia, Singapore and Hong Kong, etc. The head office of SPK is located in Shenzhen Special Economic Zone, next to Hong Kong,and our warehouse is well located in Bogongao Industrial Zone, Shenzhen, China, which is next to Ji-he Expressway (from Shenzhen Airport to Heao).Our production base is located in Yuguang Gold & Lead Group Co.,Ltd (In Jiyuan city, Henan province).

Insisting on the management concept "Honesty & Credit, Mutual Benefits", SPK will strive to provide high quality products and efficient customer services.

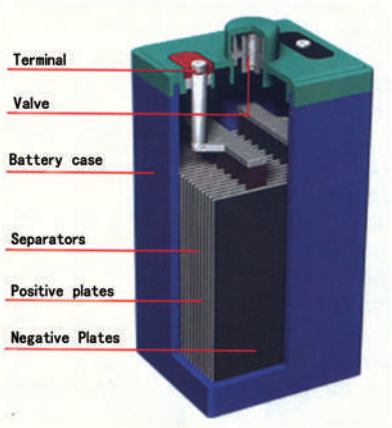
CE certification


UL Certificate

ISO9001 Certificate

CATALOG

1. Battery structure



Positive plates: Positive plates are plate eiectrodes of which a grid frame of lead-tin-calcium alloy holds porous lead dioxide as the active material.

Negative plates: Negative plates are plate electrodes of which a grid frame of lead-tin-calcium alloy holds spongy lead as the active material.

Electrolyte: Diluted sulphuric acid is used as the medium for conducting ions in the electrochemical reaction in the battery.

Separators: Separators, which retain electrolyte and prevent shorting between positive and negative plates adopt a nonwoven fabric of fine glass fibers that is chemically stable in the diluted sulfuric acid electrolyte. Being highly porous, separators retain electrolyte for the reaction of active materials in the plates.

Valve (One way valve): The valve is comprised of a one way valve made of material such as neoprene. When gas is generated in the battery under extreme overcharge consideration due to erroneous charging, charger malfunctions or other abnormalities, the vent valve opens to release excessive percific rang (5 to 45 kpa). During ordinary use of the battery, the vent valve is closed to shut out outside air and prevent oxygen in the air from reacting with the active material in the negative electrodes.

Positive and negative terminals: Positive and negative electrode terminals may be fasten tab type, bolt fastening type,threaded post type, or lead wire type, depending on the type of the battery. Sealing of the terminal is achieved by a structure which secures long adhesive-embedded paths and by the adoption of strong epoxy adhesives.

Battery case: Materials of the body and cover of the battery case are manufactured from ABS resins, unless otherwise specified.

2. Battery Characteristics

Sealed Construction
Power Kingdom's unique construction and sealing technique ensure that no electrolyte leakage can occur from the terminals or case of any Power Kingdom battery. This feature insures safe, efficient operation of Power Kingdom batteries in any position. Power Kingdom batteries are classified as "Non-Spillable" and will meet all requirements of the International Air Transport Association.

Absorptive Glass Mat System (AGM System)
Power Kingdom batteries make use of fine mat separators (glass fiber) wherein sufficient electrolyte is absorbed to provide the longest life and steady serive. This system prevents escapte of electrolyte from the separator which causes leakage.

Gas Recombination
Power Kingdom batteries are incorporated unqiue design that effectively controls generation of gas and allows recombination of over 90% of gas generated during the normal use.

Maintenance-Free Operation
During the expected floating service life of Power Kingdom batteries, there is no need to check the specfic gravity of the electrolyte or add water, which means they require no maintenance serive. In fact, there is no provision for these maintenance functions.

Position-Free and Leakage-Free
The combination of the sealed construction and the use of absorptive mat separators permits operaton of Power Kingdom batteries in any position without loss of capacity, electrolyte and service life. Power Kingdom batteries are made to operate in any position.

Stable Quality & High Reliability
Power Kingdom batteries have stable and reliable performance. It can be easily maintained to permit proper operation of the equipment that it powers. The battery can withstand overcharge, overdischarge, vibration, and shock, and is capable of extended storage.

Long Service Life, Float or Cyclic
Power Kingdom batteries have long life in float or cyclic service. The expected life of float service is shown on Figure 5 and life of cyclic service *Figure 4*.

Low Pressure Venting System
Power Kingdom batteries are equipped with a safe, low pressure venting system, which operates at 1 psi to 6 psi, designed to release excess gas and reseal automatically in the event that gas pressure rises to a level above the normal rate. Thus, there is no excessive build up of gas in the batteries. This low pressure venting system, coupled with the extraordinarily high recombination efficiency, make Power Kingdom batteries the safest sealed lead acid batteries available.

Heavy-Duty Grids
The heavy-duty lead-calcium alloy grids in Power Kingdom batteries provide an extra margin of performance and service life in both float and cyclic applications, even in conditions of deep discharge.

Low Self Discharge
Because of the use of Lead-calcium grids alloy, Power Kingdom batteries can be stored long periods of time without recharge.

High Recovery Capability
Power Kingdom batteries have an excellent charge acceptance and recovery capability even after deep discharge.

UL&CE Component Recognition
Power Kingdom batteries are UL and CE approved.

3. Standard Features Battery

2.1 Discharging

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 cut-off discharging voltage of battery will be.

Discharging Current(A)	Cut-off Discharging Voltage(PVC)	
	PS Series	PK & PL Series
0.05 – 0.2 C	1.75	1.80
0.21 – 0.5 C	1.70	1.80
0.51 – 1 C	1.60	1.75
Above 1 C	1.30	1.60

2. Battery Discharging Characteristics
The discharging capacity of battery depends on the discharge rate being used and ambiengt temperature. *Figue 1* shows the different discharging current corresponding discharging capacity at 25°C(77°F). 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.

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 2* shows the effects of different temperature in relation to battery capacity.

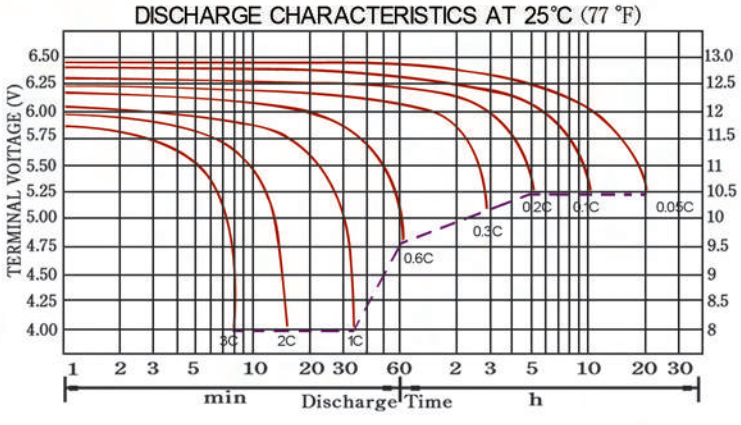


Figure 1

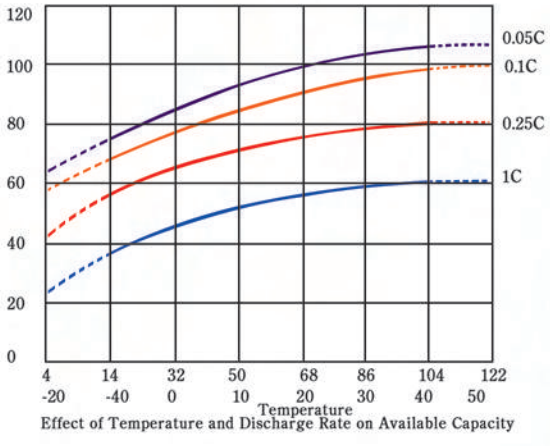


Figure 2

2.2 Charging

1. Charging Methods

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

A、Constant voltage charging.

B、Constant current charging

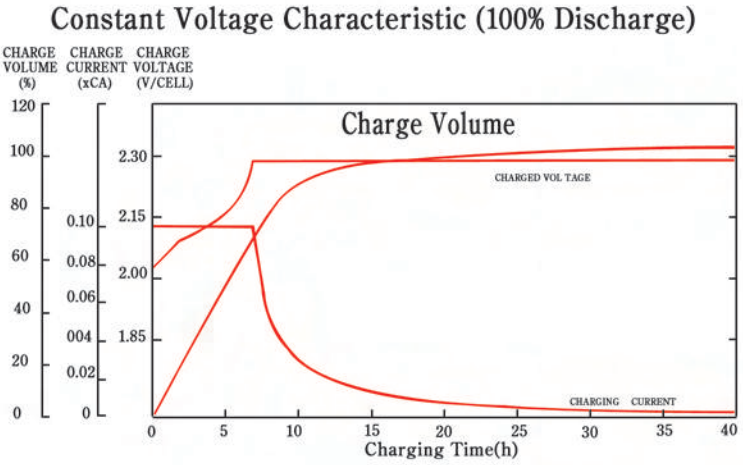


Figure 3

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 with the limits advised

A. Standby service: 2.23-2.30 vpc at 25℃/77℉

B. Cycle service: 2.40-2.50 vpc at 25℃/77℉

It is suggested that the initial current be set within 0.3C Amps. *Figure 3* indicates 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 2.40 vpc when the battery is fully charged at 25℃/77℉. 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.

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 discharged capacity.

2.3 Battery Life

1. Influencing Factor of Battery Life

Battery life depends on a number of key factors. These include

A. Cycle use or standby use

B. Operating temperature of the battery

C. Method of charging utilized

2. 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 is the lesser the number of cycles available from the battery will be. (as shown in *Figure 4*).

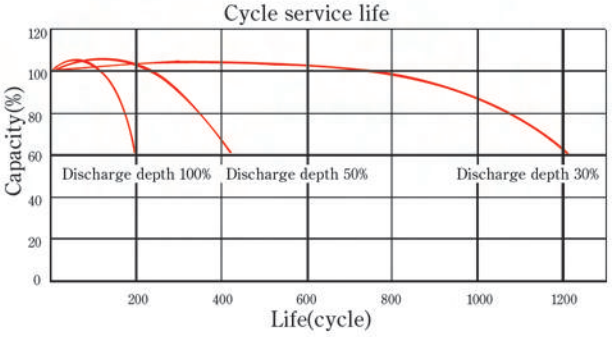


Figure 4

3.Standby Life

The estimated life under float service of PS series are 5 years at 20℃ /68℉; PK series are 10 years at 20℃/68℉; PL series are 15 years at 20℃/68℉ 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 service life. The more and the deeper a battery discharges, the shorter the battery life will be. The higher the temperature is, the shorter the battery life will be. 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℃ of constant temperature above 20℃/68℉ (as shown in *Figure 5*)

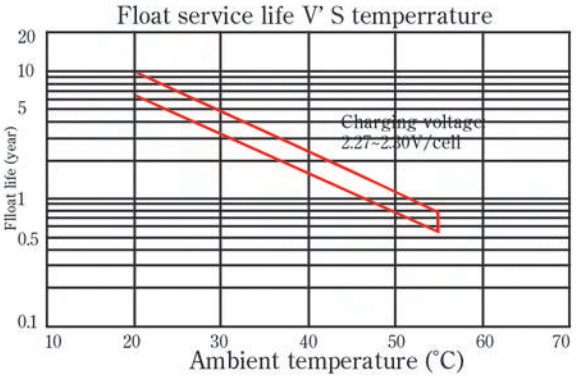


Figure 5

2.4 Storage of Battery

Storage Ambient	Recommended Interval
Below 20℃ (68℉)	12months
20℃ to 30℃ (68℃ to 86℉)	6months
30℃ to 40℃ (86℃ to 104℉)	3months

1. General Storage Conditions
The battery should be stored under the following conditions.
A、Low humidity
B、5 to 104℉ (-15 to 40℃)
C、Clean, and avoid direct sunlight.
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. When batteries are placed in extended storage, it is recommended that they receive a refresh charge at recommended intervals.

2."Shelf Life" - typical capacity vs. time
Self-discharge rate is very much dependent on the storage temperature as shown in *Figure 6*. Lower temperatures allow the battery to be stored for longer periods. (Each 10 degree centigrade drop results in a halving of self-discharge rate and doubles storage)

3. Open Circuit Voltage and Residual Capacity
Residual capacity can be estimated by measuring the open circuit voltage as shown in *Figure 7*.

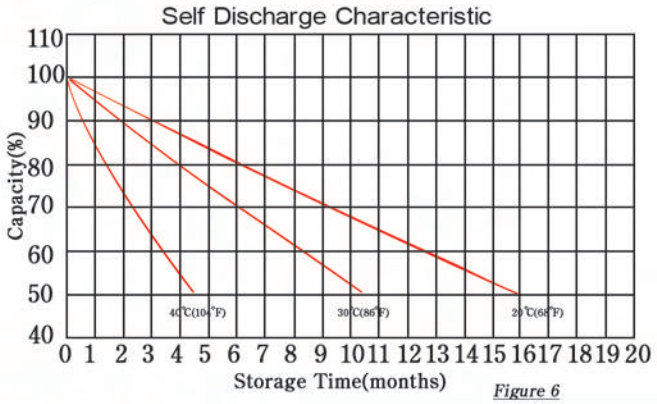


Figure 6

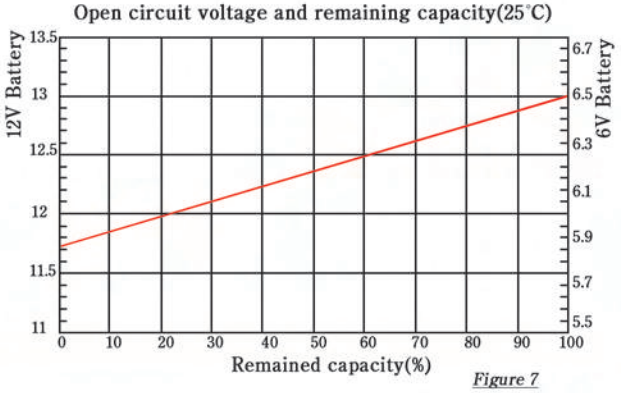
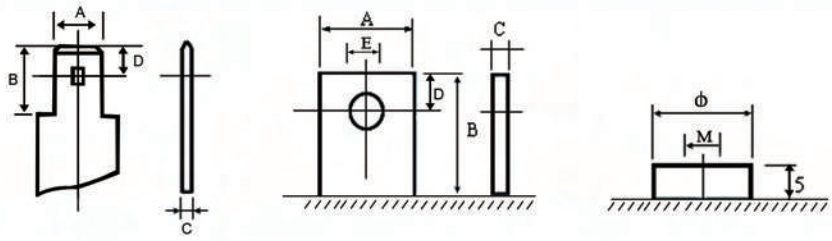


Figure 7

4. Terminal

Terminal Type	A	B	C	D	E	Φ	M
T1	4.8	6.35	0.8	3.15	---	---	---
T2	6.35	6.35	0.8	3.15	---	---	---
T3	12	12	2.0	5.0	5.0	---	---
T4	17	19	3.0	6.0	6.0		
T5	20	19	3.0	6.0	6.0	---	---
T6	22	18	3.0	10	8.0	---	---
T7	17	18	9.0	8.0	6.0	---	---
T8	17	16	6.0	7.0	8.0	---	---
T9	25	18	3.0	10.0	8.0	---	---
T10	---	---	---	---	---	12	5
T11	---	---	---	---	---	14	6
T12	---	---	---	---	---	15	6
T13	---	---	---	---	---	18	6
T14	---	---	---	---	---	20	8



5. Handling Precautions

Small VRLA battery

Product Manual

Thank you for choosing Power kingdom products, please read the Product Manual carefully before using.

1. Foreword

Power kingdom's small VRLA battery accords with GB/T19639.1-2005 "Small VRLA Battery" standards and meets the JIS, IEC, and other national and international standards. For battery size and capacity and other parameters, please refer to Power kingdiom's website at www.powerkingdom.com.cn.

2. Applications

Power kingdom battery, for its security, no leakage, long service life, big capacity and many other advantages, is widely used in UPS (uninterruptible power supply), emergency lighting, alarm systems, medical equipment, power tools, electric toys, etc.

3. Product features

1. Maintenance-Free: no need to add water or other liquid throughout the usage of battery within its service life.
2. High reliability and Long life: special sealed structures and fire-retardant battery case ensure no electrolyte leakage in the course of the use, let alone fire.
3. High rate between weight and energy, cubage and energy, small resistance, high-output power.
4. Low self-discharge rate: monthly self-discharge rate is not more than 2% under 20°C.
5. Batteries are fully charged before dispatched from factory, no flowing electrolyte, and safe transportation.
6. Easily recovery: over discharge the battery to 0 V, place the battery under short circuit condition after 15 days, it can still be recovered after recharging.
7. Solid copper terminal: easy to install and connect; strong conductivity.

4. Battery storage and Supplementary Charge

The ideal storage condition for battery is under ventilation, dry place and the temperature is 25°C. The self-discharge rate is closely related to the storage temperature under open circuit condition. The higher the temperature is, the less the capacity left after storage. The battery capacity will be reduced due to self discharge during storage. If it is not recharged in time, the battery may be damaged or out of service. The remaining capacity can be generally estimated by measuring the open circuit voltage of the battery, which helps to decide whether or not to give the battery supplementary charge. It' suggested that if the single Grid voltage is lower than 2.1V or the battery has been stored for longer than 6 months, it is necessary to recharge the battery timely. After storage, it's advised that battery should be recharged uninterruptedly under constant voltage (14.4 - 15.0 V), which should be not more than 16 hours.

5. Daily maintenance of battery

5.1. Transportation Instruction

1. Keep Battery and carton dry.
2. The battery should be upwards when transportation to prevent unnecessary shock.

5.2. Installation:

In accordance with the following operations, the battery performance and life can be the best.

1. Do not use the battery in fully sealed room.
2. If you want the maximum battery life, please recharge the battery after discharge as soon as possible. Do not store battery without recharging.
3. Although the battery workable temperature can be -15°C - 40°C, but keep it at 20°C - 25°C, battery life will be longer.
4. When using batteries, be sure to connect equipment tightly to the terminals, and keep batteries from shock as much as possible.
5. Keep enough distance between batteries, which should be more than 15mm.
6. Avoid mixed usage of batteries differing in capacity, type, manufacturers or history of use (charge or discharge) which may damage the batteries or the equipment due to the difference in characteristics values.
7. With cycling application, if the batteries are recharged by Constant Voltage Charging method, the charging voltage and current should be as follows: 6V battery :7.25 - 7.45 V; 12V battery :14.5 - 14.9 V, the maximum current is not more than 0.3C (A).
8. After discharge, the battery should be recharged timely to avoid sulfide, which causes adverse influence to the internal structure of battery and reduce the capacity. If the battery is stored too long without recharge, it cannot be recovered to its rated capacity even if it's recharged.

5.3. Other Instruction

1. When several batteries are connected together in parallel and the voltage is over 100 volts, special attention should be paid to prevent the leakage of electricity.
2. Terminal connection cable cannot be welded. A brazing of more than 100 watts will be needed which should be finished within 3 seconds if there is a necessary need.
3. Do not put metal wire or other metal material together with battery terminals, which might cause short circuit, battery damage, etc
4. Do not install the battery upside down (the terminals face downwards), which may cause leakage of electrolyte.
5. Do not dismantle battery to avoid corrosion on skin or clothing.
6. Do store or install battery away from children to avoid personal injury.

Installed-valve-regulated lead-acid battery

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3. Do not install the battery upside down (the terminals face downwards), which may cause leakage of electrolyte.
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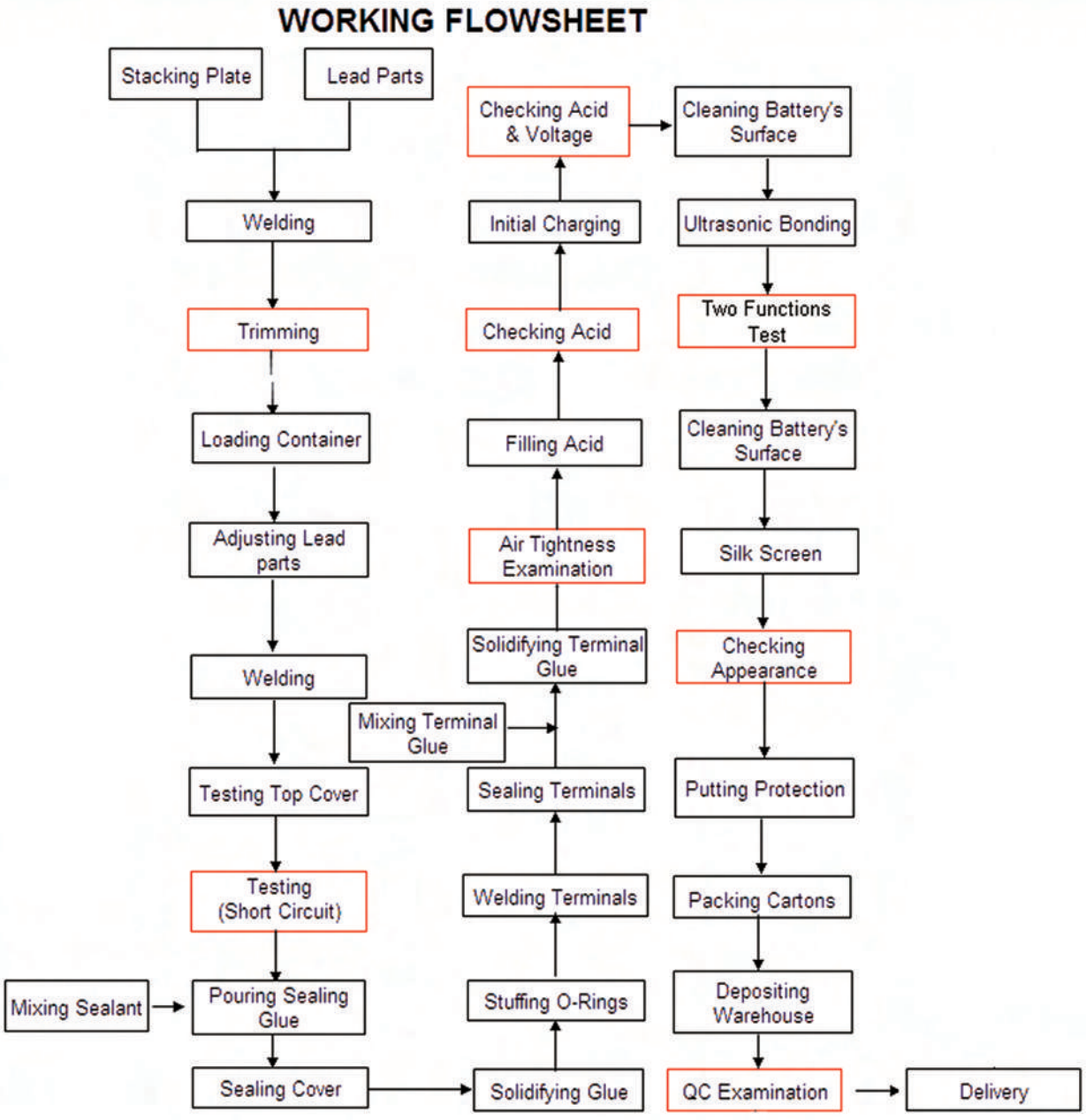
6. Production Process



7. Products Series

7.1 PS Series

Nominal Voltage: 4V 6V 12V
Capacity: from 0.8AH to 28AH
Design Life: 5 years
Applications: emergency lighting system, electric tool, geodesic apparatus, fire alarm, security and UPS system.
Characteristic: special lead- calcium alloy plate, high capability adsorptive clapboard, valve-regulated and sealed configuration, no dissociative acid, maintenance-free operation, low self-discharge, used safely turn 90°.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PS0.8-4	4	0.8	35	22	64	71	0.1	/	/
PS4.5-4	4	4.5	47	47	101	106	0.49	T1	/
PS10-4	4	10	102.5	44.3	82	94.5	1.03	T2	/
PS1.2-6	6	1.2	97	24	52	58	0.3	T1	C
PS2.8-6	6	2.8	66	33	97	104	0.6	T1	E
PS3.2-6	6	3.2	134	35	61	67	0.68	T1	C
PS4-6	6	4	70	47	101	107	0.68	T1	E
PS4-6S	6	4	70	47	101	107	0.68	Special	E
PS4.5-6	6	4.5	70	47	101	107	0.73	T1	E
PS5-6	6	5	70	47	101	107	0.82	T1	E
PS5.5-6	6	5.5	70	47	101	107	0.86	T1	E
PS7-6	6	7	94	48	101	110	1.06	T1	E
PS7-6B	6	7	151	34	94	100	1.05	T1	E
PS8-6	6	8	98	56	115	115	1.4	T1	E
PS10-6	6	10	151	50	94	100	1.58	T1/T2	C
PS12-6	6	12	151	50	94	100	1.72	T1/T2	C
PS14-6	6	14	107	69	140	140	2.26	Special	/
PS0.8-12	12	0.8	96	25	62	62	0.36	Special	/
PS1.2-12	12	1.2	97	43	52	58	0.6	T1	A
PS2.3-12	12	2.3	178	35	61	67	0.98	T1	C
PS2.5-12	12	2.5	101	47.6	60.5	69.8	0.92	Special	/
PS2.6-12	12	2.6	70	48	101	107	0.86	T1	C
PS2.9-12	12	2.9	79	56	99	105	1.1	T1	F
PS3.2-12	12	3.2	134	67	61	67	1.4	T1	B
PS4-12	12	4	90	70	101	107	1.5	T1	F
PS4.5-12	12	4.5	90	70	101	107	1.58	T1	F
PS5-12	12	5	90	70	101	107	1.6	T1	F
PS5-12Z	12	5	139	48	102	107	1.68	Special	C
PS5.5-12	12	5.5	151	51	92.8	96.8	1.78	T1	C
PS6-12	12	6	151	65	93	99	1.9	T1/T2	A
PS6.5-12	12	6.5	151	65	93	99	1.95	T1/T2	A
PS7-12	12	7	151	65	93	99	2.05	T1/T2	A
PS7.2-12	12	7.2	151	65	93	99	2.09	T1/T2	A
PS7.5-12	12	7.5	151	65	93	99	2.25	T1/T2	A
PS8-12	12	8	151	65	93	99	2.36	T1/T2	A
PS9-12	12	9	151	65	93	99	2.44	T1/T2	A
PS9-12S	12	9	151	65	144	120	2.59	T2	A
PS10-12	12	10	151	98	95	101	3.3	T2	A
PS10-12S	12	10	151	65	114	120	3.2	T2	A
PS12-12	12	12	151	98	95	101	3.6	T2	A
PS16-12	12	16	181	77	167	167	4.7	T3/T10	D
PS18-12	12	18	181	77	167	167	5.2	T3/T10	D
PS25-12	12	25	175	166	125	125	8.0	T3/T10	C
PS28-12	12	28	175	166	125	125	8.1	T3/T10	C

7.2 PK Series

Nominal Voltage: 12V
Capacity: from 33AH to 250AH
Design Life: 10 years
Applications: large UPS equipment, telecom system, medical equipment, solar power system and wind power system.
Characteristic: special lead-calcium alloy plate, high capability adsorptive clapboard, valve-regulated and sealed configuration, no dissociative acid, maintenance-free operation, low self-discharge and used safelyT turn 90°, good consistency and no need uniform charge.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PK33-12	12	33	195	130	155	180	10.2	T11/Lead	C
PK35-12	12	35	195	130	155	180	10.5	T11/Lead	C
PK40-12	12	40	197	165	170	170	12.8	T4/T11	C
PK45-12	12	45	197	165	170	170	14	T4/T11	C
PK55-12	12	55	229	138	210	228	17	T5/T12	C
PK65-12	12	65	355	167	179	183	20.6	T5/T12	C
PK70-12	12	70	258	166	210	228	22.6	T5/T12	C
PK75-12S	12	75	562	114	188	188	23.6	Front access	C
PK80-12	12	80	355	167	179	183	21.6	T5/T12	C
PK90-12	12	90	330	171	220	227	25.8	T6/T12	C
PK90-12B	12	90	406	174	208	233	28	Lead	C
PK100-12	12	100	330	171	220	227	30.6	T6/T12	C
PK100-12S	12	100	506	110	238	238	31	Front access	B
PK100-12SG	12	100	394	109	285	285	32.5	T13	B
PK110-12	12	110	280	265	206	210	34	T12	E
PK120-12	12	120	410	175	227	227	33.4	T9/T13	C
PK150-12	12	150	485	172	240	240	42.6	T9/T13	C
PK150-12S	12	150	551	109	287	287	44	Front access	B
PK200-12	12	200	522	238	218	236	61	T9/T13	B
PK250-12	12	250	520	268	220	249	68.5	T9/T14	B

7.3 PL Series

Nominal Voltage: 2V
Capacity: from 100AH to 3000AH
Design Life: 15 years
Applications: electric power equipment, telecom equipment and railway equipment.
Characteristic: special lead-calcium alloy plate and high purity additive ensure long life of battery, high purity electrolyte and additive make battery low self-discharge, valve-regulated and sealed configuration, no dissociative acid, maintenance-free operation, good consistency and no need uniform charge.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PL100-2	2	100	169	71	206	206	7.2	T14	/
PL150-2	2	150	172	102	205	227	9.2	T14	/
PL200-2	2	200	173	111	329	365	15	T14	/
PL400-2	2	400	211	176	329	367	31	T14	/
PL600-2	2	600	301	175	331	366	36.8	T14	/
PL800-2	2	800	410	175	330	365	45.8	T14	/
PL900-2	2	900	410	175	330	365	57	T14	/
PL1000-2	2	1000	482	175	330	367	66	T14	/
PL1500-2	2	1500	400	350	345	382	115	T14	/
PL2000-2	2	2000	491	351	341	383	133.6	T14	/
PL3000-2	2	3000	712	353	341	382	195.5	T14	/

7.4 Long Life Series

Nominal Voltage: 6V 12V
Capacity: from 4AH to 250AH
Design Life: 8 years for PS series and 13 years for PK series.
Applications: UPS system, telecom equipment, medical equipment, solar power and wind power system, fire alarm and security system, emergency lighting, electric tools and toys.
Characteristic: special design for demand of long life, special lead-calcium alloy plate and high purity additive ensure long life of battery, high purity electrolyte and additive make battery low self-discharge, valve-regulated and sealed configuration, no dissociative acid, maintenance-free operation.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PS5L-6	6	5	70	47	101	107	0.85	T1	E
PS10L-6	6	10	151	50	94	100	1.85	T1	C
PS12L-6	6	12	151	50	94	100	2.1	T1/T2	C
PS5L-12	12	5	90	70	101	107	1.8	T1	F
PS7.5L-12	12	7.5	151	65	93	99	2.66	T1/T2	A
PS10L-12	12	10	151	98	95	101	3.6	T1/T2	C
PS12L-12	12	12	151	98	95	101	4.1	T2	A
PS20L-12	12	20	181	77	167	167	5.7	T3/T10	D
PS28L-12	12	28	175	166	125	125	8.6	T3/T10	C
PK33L-12	12	33	195	130	159	180	10.5	Lead/T11	C
PK45L-12	12	45	197	165	170	170	15.2	T4/T11	C
PK50L-12S	12	50	277	106	222	222	17	Front access	B
PK55L-12	12	55	229	138	210	228	11.2	T5/T12	C
PK65L-12	12	65	355	167	179	183	23.2	T5/T12	C
PK70L-12	12	70	258	166	210	228	24.8	T5/T12	C
PK75L-12S	12	75	562	114	188	188	25.8	Front access	C
PK80L-12	12	80	355	167	179	183	26.4	T5/T12	C
PK100L-12	12	100	330	171	220	227	33.8	T6/T12	C
PK100L-12S	12	100	506	110	238	238	33.8	Front access	B
PK100L-12SG	12	100	394	109	285	285	33.8	T13	B
PK120L-12	12	120	410	175	227	227	38.8	T9/T13	C
PK150L-12	12	150	485	172	240	240	51.0	T9/T13	C
PK150L-12S	12	150	551	109	287	287	51.2	Front access	B
PK200L-12	12	200	522	238	218	236	71.4	T9/T13	B
PK250L-12	12	250	520	268	220	249	76.8	T9/T13	B

7.5 Deep Cycle Series

Nominal Voltage: 12V
Capacity: from 4AH to 250AH
Applications: tour car,forklift, golf car, cropper, electric car and solar power system.
Characteristic: special lead-calcium alloy plate and high purity additive ensure more than 350 cycles on 80% deep discharge, long life and low self-discharge, high recovery capability on deep discharge.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PS4.5D-12	12	4.5	90	70	101	107	1.6	T1	F
PS5D-12	12	5	90	70	101	107	1.7	T1	F
PS7D-12	12	7	151	65	93	99	2.26	T1	A
PS7.5D-12	12	7.5	151	65	93	99	2.35	T1/T2	A
PS8D-12	12	8	151	65	93	99	2.4	T1/T2	A
PS9D-12	12	9	151	65	93	99	2.60	T1/T2	A
PS10D-12S	12	10	151	65	114	120	3.6	T2	A
PS12D-12	12	12	151	98	95	101	3.8	T2	A
PS18D-12	12	18	181	77	167	167	5.6	T3/T10	D
PS20D-12	12	20	181	77	167	167	5.9	T3/T10	D
PS22D-12	12	22	181	77	167	167	6.4	T3/T10	D
PS24D-12	12	24	175	166	125	125	8.6	T3/T10	C
PS28D-12	12	28	175	166	125	125	9.2	T3/T10	C
PS33D-12	12	33	195	130	155	180	10.8	T8/T11	C
PK45D-12	12	45	197	165	170	170	14.8	T4/T11	C
PK55D-12	12	55	229	138	210	228	18	T5/T12	C
PK65D-12	12	65	355	167	179	183	21.6	T5/T12	C
PK70D-12	12	70	258	166	210	228	22.8	T5/T12	C
PK75D-12S	12	75	562	114	188	188	25.8	Front access	C
PK80D-12	12	80	355	167	179	183	25.8	T5/T12	C
PK100D-12	12	100	330	171	220	227	31.2	T6/T12	C
PK100D-12S	12	100	506	110	238	238	31.6	front access	B
PK100D-12SG	12	100	394	109	285	285	31.6	T13	B
PK110D-12	12	110	330	171	220	227	33.6	T12	E
PK120D-12	12	120	410	175	227	227	36.8	T9/T13	C
PK150D-12	12	150	485	172	240	240	46.8	T9/T13	C
PK150D-12S	12	150	551	109	287	287	46.6	front access	B
PK200D-12	12	200	522	238	218	236	65.4	T9/T13	B
PK250D-12	12	250	520	268	220	249	75.8	T9/T14	B

7.6 High Rate Series

Nominal Voltage: 12V
Capacity: from 4AH to 250AH
Applications: UPS system, startup standby power supply system, electric tool.
Characteristic: high energy density, special lead-calcium alloy plate and high purity additive ensure to supply high deferent rate.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
PS4.5P-12	12	4.5	90	70	101	107	1.68	T1	F
PS5P-12	12	5	90	70	101	107	1.82	T1	F
PS7P-12A	12	7	151	65	93	99	2.15	T1/T2	A
PS7P-12	12	7	151	65	93	99	2.48	T1/T2	A
PS7.5P-12	12	7.5	151	65	93	99	2.54	T1/T2	A
PS8P-12	12	8	151	65	93	99	2.60	T1/T2	A
PS9P-12	12	9	151	65	93	99	2.68	T1/T2	A
PS10P-12S	12	10	151	65	114	120	3.5	T2	A
PS12P-12	12	12	151	98	95	101	3.9	T2	A
PS18P-12	12	18	181	77	167	167	5.8	T3/T10	D
PS20P-12	12	20	181	77	167	167	6.4	T3/T10	D
PS24P-12S	12	24	165	125	175	182	8.5	T7	C
PS24P-12	12	24	175	166	125	125	9.2	T3/T10	C
PS28P-12	12	28	175	166	125	125	9.6	T3/T10	C
PK33P-12	12	33	195	130	155	180	11.2	Lead/T11	C
PK45P-12	12	45	197	165	170	170	14.8	T4/T11	C
PK55P-12	12	55	229	138	210	228	18	T5/T12	C
PK65P-12	12	65	355	167	179	183	24.8	T5/T12	C
PK70P-12	12	70	258	166	210	228	25.2	T5/T12	C
PK75P-12S	12	75	562	114	188	188	25.6	Front access	C
PK80P-12	12	80	355	167	179	183	25.6	T5/T12	C
PK100P-12	12	100	330	171	220	227	32.8	T6/T12	C
PK100P-12S	12	100	506	110	238	238	32.8	Front access	B
PK100P-12SG	12	100	394	109	285	285	32.8	T13	B
PK110P-12	12	110	280	265	206	210	34.8	T12	E
PK120P-12	12	120	410	175	227	227	38	T9/T13	C
PK120P-12T	12	120	406	174	208	233	38	T13	C
PK134P-12	12	134	342	172	280	285	47.6	T13	C
PK150P-12	12	150	485	172	240	240	47	T9/T13	B
PK150P-12S	12	150	551	109	287	287	47	Front access	B
PK200P-12	12	200	552	238	218	236	65.8	T9/T13	B
PK250P-12	12	250	520	268	220	249	76.8	T9/T14	B

7.7 GEL Series

Nominal Voltage: 12V
Capacity: From 7AH to 250AH
Design Life: 8 years for GS series, 12 years for GK series
Applications: Solar power system and wind power system,large UPS equipment, telecom system, medical equipment,
Characteristic: Superior deep cycle design; High power density; Thick plates and high-density active material; Longer life in deep cycle applications; Excellent recovery from deep discharge.

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Terminal	
			Length	Width	Height	Total Height		Type	Position
GS7-12	12	7	151	65	95	101	2.1	T1/T2	A
GS7.2-12	12	7.2	151	65	95	101	2.15	T1/T2	A
GS8-12	12	8	151	65	95	101	2.45	T1/T2	A
GS10-12	12	10	151	98	95	101	3.3	T2	A
GS12-12	12	12	151	98	95	101	3.6	T2	A
GS18-12	12	18	181	77	167	167	5.2	T3	D
GS20-12	12	20	181	77	167	167	5.8	T3	D
GS25-12	12	25	166	175	125	125	8.2	T3-24	C
GS28-12	12	28	166	175	125	125	8.8	T3-24	C
GK33-12	12	33	195	130	155	160	9.9	T11	C
GK38-12	12	38	197	165	170	170	12.6	T11	C
GK40-12	12	40	197	165	170	170	13.9	T11	C
GK55-12	12	55	229	138	210	213	17	T12	C
GK65-12	12	65	355	167	179	179	20.6	T12	C
GK70-12	12	70	258	166	210	213	22.6	T12	C
GK75-12	12	75	258	166	210	213	23.6	T12	C
GK90-12	12	90	307	169	210	213	27	T12	C
GK100-12	12	100	330	171	220	223	30.6	T12	C
GK120-12	12	120	410	175	227	227	35	T13	C
GK135-12	12	135	342	172	280	285	41	T13	C
GK150-12	12	150	485	172	240	240	44.5	T13	C
GK160-12	12	160	532	207	215	218	48	T13	B
GK200-12	12	200	522	238	218	222	61	T13	B
GK250-12	12	250	520	260	220	224	70	T13	B
GK100-6	6	100	195	170	210	213	16	T12	K
GK150-6	6	150	260	180	248	252	23	T13	K
GK180-6	6	180	298	17	228	232	30	T13	E
GK190-6	6	190	243	188	275	275	30	T13	K
GK300-6	6	300	295	178	345	350	44	T13	K
GK180-8	8	180	260	182	295	300	38.5	T13	C

7.8 Traction Series

Nominal Voltage: 2V

Capacity: from 210AH to 630AH

Design Life: 800 cycles

Applications: power supply of electric towing trolley, forklift and van, sightseeing vehicles

Characteristic:With special multiple alloy formula,lead paste formula and tubular positive plate, highly deep discharged performance with strong traction power and longer service life

Battery Type	Rated Voltage (V)	Rated Capacity (AH)	Dimensions(MM)				Weight (KG)	Electrolyte (Yes/No)
			Length	Width	Height	Total Height		
D330KT	2	330	138	181	460	460	17.5	No
D385KT	2	385	138	181	460	460	19.5	No
D440KT	2	440	175	181	460	460	22.5	No
D330KT(A)	2	330	138	181	395	395	17	No
D440KT(A)	2	440	175	181	395	395	22.3	No
D560KT	2	560	145	160	580	580	26.5	No
D-250	2	250	208	138	340	340	14.5	No
D-300	2	300	175	181	338	338	16.8	No
D-330	2	330	138	181	460	460	17.5	No
D-440	2	440	175	181	460	460	22.5	No
D-580	2	580	178	160	475	475	27.5	No
D-630	2	630	172	198	475	475	31.1	No
3D180(A)	6	180	276	183	315	315	24.7	No
3D210(A)	6	210	264	180	295	295	28.5	No
3D210(B)	6	210	264	180	295	295	25	No

8. The Whole Industrial Chain

Lead mine

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ADVANTAGES:

- Invested by No. 1 lead mine group in Asia
- 50 years' experience in manufacturing lead acid battery
- High purity lead and own lead plate factory
- Lead mine--->Smelting--->Lead plates-->SLA battery