

# PS-Series General Purpose Batteries

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All PS Series batteries feature:

- Absorbent Glass Mat (AGM) technology for superior performance.
- Valve regulated, spill proof construction allows safe operation in any position.
- Power/volume ratio yielding unrivaled energy density.
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified.
- U.L. recognized under file number MH 20845.
- CE certified.



2-volt



4-Volt



6-Volt



8-Volt



12-Volt

## PS-1238 12 Volt 3.8 AH

### Rechargeable Sealed Lead Acid Battery

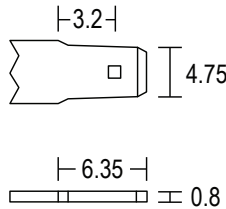


We've Got The Power.™

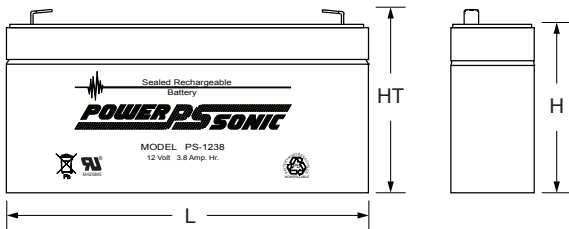


### Terminals (mm)

- F1 - Quick disconnect tabs, 0.187" x 0.032" - Mate with AMP. INC. FASTON "187" series



### Physical Dimensions: in (mm)



L: 7.68 (195) W: 1.85 (47) H: 2.91 (74) HT: 2.99 (76)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

### Features

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, spill proof construction allows safe operation in any position
- Power/volume ratio yielding unrivaled energy density
- Rugged impact resistant ABS case and cover (UL94-HB)
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized under file number MH 20845

### Performance Specifications

**Nominal Voltage** ..... 12 volts (6 cells)

**Nominal Capacity**

20-hr. (190mA to 10.50 volts) .....	3.80 AH
10-hr. (350mA to 10.50 volts) .....	3.50 AH
5-hr. (640mA to 10.20 volts) .....	3.20 AH
1-hr. (2.4A to 9.00 volts) .....	2.40 AH
15-min. (7.4A to 9.00 volts).....	1.85 AH

**Approximate Weight** ..... 3.50 lbs. (1.59 kg)

**Energy Density** (20-hr. rate) ..... 1.10 W-h/in<sup>3</sup> (67.30 W-h/l)

**Specific Energy** (20-hr. rate) ..... 13.03 W-h/lb (28.72 W-h/kg)

**Internal Resistance** (approx.) ..... 45 milliohms

**Max Discharge Current** (7 Min.) ..... 11.4 amperes

**Max Short-Duration Discharge Current** (10 Sec.)..... 38.0 amperes

**Shelf Life** (% of nominal capacity at 68°F (20°C))

1 Month .....	97%
3 Months.....	91%
6 Months .....	83%

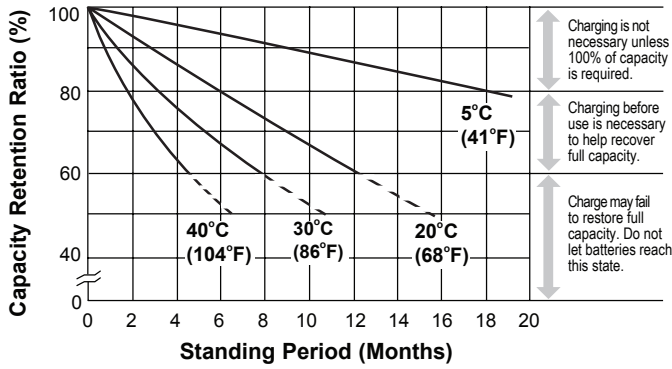
**Operating Temperature Range**

Charge.. .....	-4°F (-20°C) to 122°F (50°C)
Discharge.....	-40°F (-40°C) to 140°F (60°C)

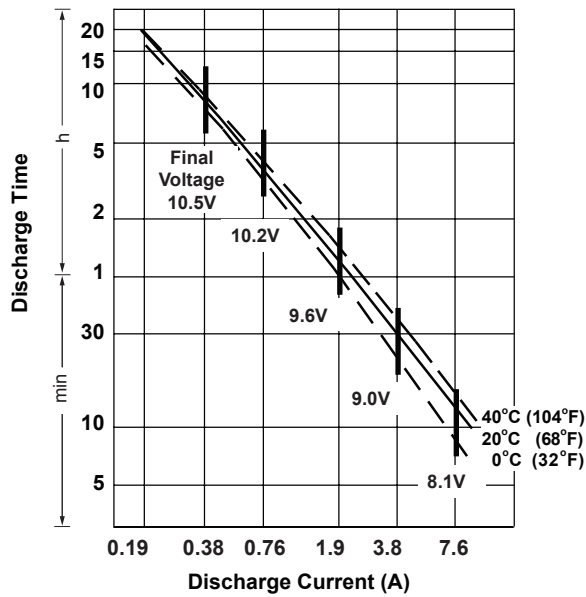
**Case** ..... ABS Plastic

**Power-Sonic Chargers** .....PSC-12300A, 12500A, 12300A-C, 12500A-C

### Shelf Life & Storage



### Discharge Time vs. Discharge Current



### Charging

**Cycle Applications:** Limit initial current to 1.14A. Charge until battery voltage (under charge) reaches 14.4 to 14.7 volts at 68°F (20°C). Hold at 14.4 to 14.7 volts until current drops to under 38mA. Battery is fully charged under these conditions, and charger should be disconnected or switched to “float” voltage.

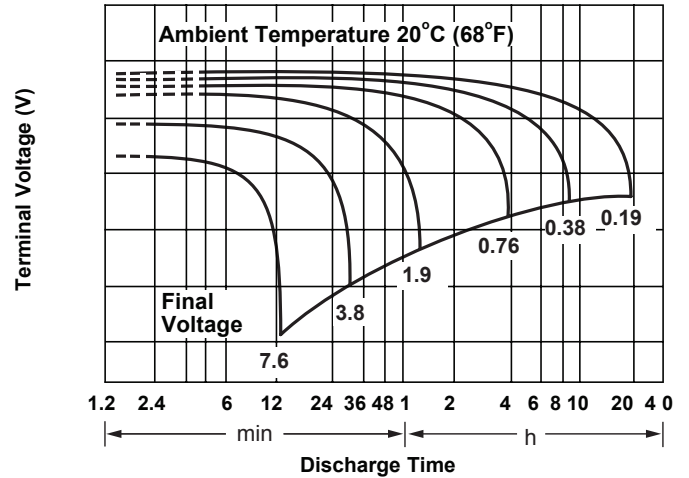
**“Float” or “Stand-By” Service:** Hold battery across constant voltage source of 13.5 to 13.8 volts continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

**Note:** Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged within 6 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation.

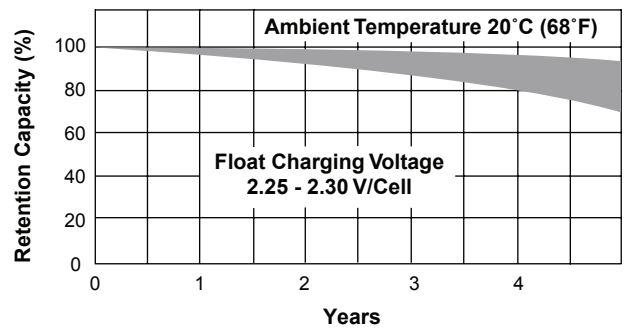
### Chargers

Power-Sonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for “C-Series Switch Mode Chargers” and “Transformer Type A and F Series”. Please contact our Technical department for advice if you have difficulty in locating suitable models.

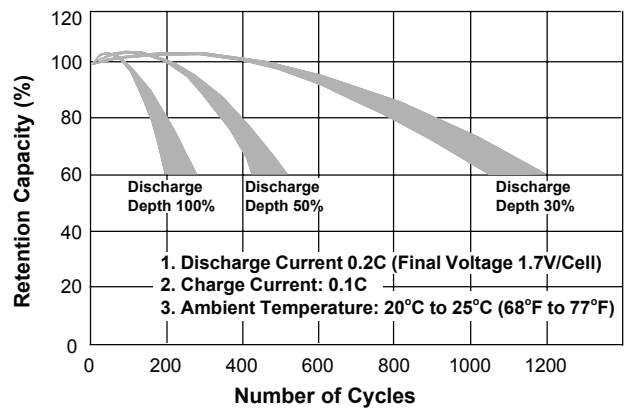
### Discharge Characteristics



### Life Characteristics in Stand-By Use



### Life Characteristics in Cyclic Use





## Engineered With Vision. Built With Care.

Power-Sonic has more than 38 years of battery industry experience and today our batteries are sold in more than 70 countries world-wide. Since our inception in 1970, our focus has been the design, manufacture and marketing of rechargeable batteries, specifically:

- Sealed lead-acid (SLA), also called valve regulated lead-acid (VRLA) batteries
- Powersport batteries
- Sealed nickel-cadmium (NiCd) and nickel-metal hydride (NiMH) batteries
- NiCd and NiMH configured packs (cell assemblies)
- SLA battery chargers
- NiCd and NiMH battery chargers

Our products are widely used in an ever broadening range of electronic and industrial applications. Our batteries continue to be used wherever cost effective and reliable DC power is required, be it as the principal power or standby power source.

Our aim is the ongoing improvement of our existing products, coupled with the development of new tailored products, to meet the ever increasing needs for stand alone power. Our advanced engineering techniques and state-of-the-art manufacturing processes ensure that we remain on the cutting edge of battery technology. These skills, coupled with our selection of the finest raw materials, allow us to produce batteries combining superior performance and value.

Providing our customers with reliable, yet economical, products is the cornerstone of our mission.

## Features

### Sealed/Maintenance-Free

The valve regulated, spill-proof construction allows trouble-free, safe operation in any position. There is no need to add electrolyte, as gases generated during overcharge are recombined in a unique "oxygen cycle."

### Valve Regulated Design

Our batteries incorporate a series of one-way low pressure valves. These self sealing valves allow the venting of any excess gasses that may be produced in the battery due to severe overcharging. Valve regulated batteries should never be recharged inside a sealed container.

### Design Flexibility

Batteries may be used in series and/or parallel to obtain choice of voltage and capacity. Due to recent design breakthroughs, the same battery may be used in either cyclic or standby applications. Over 60 models are available to choose from.

### Compact

Power-Sonic batteries use state-of-the-art design, high grade materials, and a carefully controlled plate-making process to provide excellent output per cell. The high energy density results in superior power/volume and power/weight ratios.

### Rugged Construction

The high impact resistant battery case is made of non-conductive ABS plastic to UL94-HB. This material imparts very good resistance to shock, vibration, chemicals and heat. Certain models feature flame retardant (FR) cases/covers to UL94 V-O.

### Wide Operating Temperature Range

Power-Sonic batteries may be discharged over a temperature range of -40°C to +60°C (-40°F to +140°F) and charged at temperatures ranging from -40°C to +50°C (-40°F to +122°F).

### Long Service Life

Under normal operating conditions, four or five years of dependable service life can be expected in stand-by applications, or between 200 and 1000 charge/ discharge cycles depending on the average depth of discharge.

### Deep Discharge Recovery

Special separators, advanced plate composition, and a carefully balanced electrolyte system have greatly improved the ability to recover from excessively deep discharge.

### Lead Calcium Plates

Heavy duty lead calcium plates provide an extra margin of performance and life in both cyclic and float applications and give unequalled recovery from deep discharge.

### Economical

The high watt-hour per dollar value is made possible by the materials used in a sealed lead-acid battery: they are readily available and low in cost.

### Operation in any Orientation

Our SLA batteries can be discharged in any orientation, without reduction in performance or leakage of electrolyte.

### High Rate Discharge

Low internal resistance allows discharge currents of up to ten times the battery's rated capacity. Relatively small batteries may thus be specified in applications requiring high peak currents.

### Long Shelf Life

A low self discharge rate allows storage of fully charged batteries for extended periods of time before charging is required. Lower storage temperatures further enhance shelf life characteristics.

## PS and PSG-SERIES: General Purpose Batteries

Model	Nominal Voltage V	Nominal Capacity A.H.	Current @ 20-hr. rate mA	Length		Width		Height		Ht. Over Terminal		Weight		Standard Terminals
				in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.	
PS-260	2	6.0	300	1.97	50	1.34	34	3.94	100	4.13	105	0.89	0.40	F1
PS-445	4	4.5	225	1.89	48	2.09	53	3.70	94	3.86	98	1.30	0.59	F2
PSG-450	4	5.0	250	3.54	90	1.94	49	2.87	73	2.87	73	1.40	0.64	F2
PSG-480	4	8.0	400	3.54	90	1.94	49	4.00	102	4.00	102	2.09	0.95	F2
PS-490	4	9.0	450	4.01	102	1.73	44	3.74	95	4.02	102	2.20	1.00	F2
PS-4100	4	10.0	500	4.01	102	1.97	50	3.70	94	3.85	98	2.50	1.13	F1
PS-605	6	0.5	25	2.24	57	0.55	14	1.97	50	1.97	50	0.20	0.09	WL
PS-610	6	1.1	55	2.00	51	1.65	42	2.00	51	2.20	56	0.44	0.20	F1
PS-612	6	1.4	70	3.82	97	0.94	24	2.00	51	2.20	56	0.66	0.30	F1
PSG-625	6	2.5	125	4.15	105	1.63	41	2.70	69	2.70	69	1.17	0.53	F1
PS-628	6	2.9	145	2.60	66	1.30	33	3.86	98	4.06	103	1.30	0.59	F1
PS-630	6	3.5	175	5.28	134	1.34	34	2.35	60	2.56	65	1.37	0.62	F1
PS-632	6	3.5	175	2.60	66	1.30	33	4.65	118	4.80	122	1.37	0.62	F1
PS-640	6	4.5	225	2.76	70	1.86	47	3.94	100	4.25	108	1.60	0.73	F1
PS-650LS & LF	6	5.0	250	2.64	67	2.64	67	3.94	100	4.64	118	1.80	0.82	F1 or SP
PSG-650	6	5.0	250	5.28	134	1.94	49	3.00	76	3.00	76	2.15	0.98	F2
PS-665	6	6.5	325	3.86	98	2.20	56	3.78	96	4.02	102	2.70	1.22	FP
PS-670	6	7.0	350	5.95	151	1.34	34	3.70	94	3.94	100	2.42	1.10	F1
PSG-680	6	8.0	400	5.28	134	1.94	49	3.98	101	3.98	101	3.19	1.45	F2
PS-682	6	9.0	450	3.86	98	2.20	56	4.65	118	4.72	120	3.20	1.45	F1
PS-6100	6	12.0	600	5.95	151	2.00	51	3.70	94	3.86	98	4.30	1.95	F1 or F2
PS-6120FP	6	12.0	600	4.25	108	2.80	71	5.55	141	5.55	141	4.80	2.18	FP
PS-6120 Toy	6	13.0	650	4.25	108	2.80	71	5.55	141	5.55	141	4.80	2.18	TH or TS
PS-6200	6	20.0	1000	6.18	157	3.27	83	4.92	125	4.92	125	7.10	3.22	NB1
PS-6360	6	36.0	1800	6.25	159	3.35	85	6.50	165	6.93	176	12.10	5.49	F2 or NB1
PS-6580	6	58.0	2900	7.28	185	4.41	112	8.07	205	8.07	205	19.50	8.85	F2
PS-62000	6	210.0	10500	12.05	306	6.65	169	8.65	220	8.96	228	63.93	29.00	T8
PS-832	8	3.2	160	5.29	134	1.42	36	2.49	63	2.70	69	1.65	0.75	F1
PS-1208	12	0.8	40	3.78	96	0.98	25	2.44	62	n/a	n/a	0.77	0.35	WL
PS-1212	12	1.4	70	3.78	96	1.69	43	2.04	52	2.28	58	1.20	0.54	F1
PS-1220	12	2.5	125	7.00	178	1.38	35	2.36	60	2.56	65	2.10	0.95	F1
PS-1221	12	2.0	100	5.63	143	0.94	24	2.56	65	2.56	65	1.30	0.59	PC
PS-1221S	12	2.0	100	5.91	150	0.80	20	3.52	89	n/a	n/a	1.50	0.68	F1/0
PS-1223	12	2.3	115	7.17	182	0.94	24	2.40	61	2.40	61	1.70	0.77	PC
PS-1227	12	2.9	145	3.11	79	2.20	56	3.90	99	4.13	105	2.40	1.09	F1
PS-1228	12	2.8	140	5.24	133	1.30	33	3.82	97	4.09	104	2.60	1.18	F1
PS-1229	12	2.9	145	7.00	178	1.38	35	2.36	60	2.60	66	2.30	1.04	F1
PS-1230	12	3.4	170	5.24	133	2.64	67	2.36	60	2.60	66	2.90	1.32	F1
PS-1238	12	3.8	190	7.68	195	1.85	47	2.91	74	2.91	74	3.50	1.59	F1
PS-1250	12	5.0	250	3.54	90	2.76	70	3.98	101	4.21	107	3.50	1.59	F1 or F2
PS-1251FP	12	5.4	270	5.50	140	1.90	48	4.00	102	4.06	103	4.10	1.86	FP
PS-1270	12	7.0	350	5.95	151	2.56	65	3.70	94	3.86	98	4.80	2.18	F1 or F2
PS-1272	12	7.2	360	5.95	151	2.56	65	3.70	94	3.86	98	5.80	2.63	F1 or F2
PS-1282L	12	9.0	450	7.72	196	2.20	56	4.65	118	4.65	118	6.90	3.13	F1
PS-1282S	12	9.0	450	3.86	98	4.40	112	4.65	118	4.65	118	6.90	3.13	F1
PS-1290	12	9.0	450	5.95	151	2.56	65	3.70	94	3.86	98	6.00	2.72	F2
PS-12100	12	12.0	600	5.95	151	4.00	102	3.70	94	3.86	98	8.14	3.69	F1 or F2
PS-12120	12	12.0	600	5.95	151	3.86	98	3.70	94	3.94	100	7.92	3.59	F2
PS-12120L	12	12.0	600	8.45	215	2.75	70	5.75	146	5.75	146	8.80	3.99	FP
PS-12140	12	14.0	700	5.95	151	3.86	98	3.70	94	3.94	100	9.25	4.20	F2
PS-12180	12	18.0	900	7.13	181	3.00	76	6.59	167	6.59	167	12.60	5.72	F2 or NB2

\* FR: UL94 V-0 flame retardant case & cover

All data subject to change without notice.

## PS and PSG-SERIES: General Purpose Batteries *(continued)*

Model	Nominal Voltage V	Nominal Capacity A.H.	Current @ 20-hr. rate mA	Length		Width		Height		Ht. Over Terminal		Weight		Standard Terminals
				in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.	
PS-12260	12	26.0	1300	6.56	167	6.97	177	4.92	125	4.92	125	17.00	7.71	F2 or NB2
PS-12280	12	28.0	1400	6.50	165	4.92	125	6.97	177	6.97	177	20.70	9.39	NB1
PS-12350	12	35.0	1750	7.80	198	5.20	132	6.22	158	7.07	180	24.70	11.20	NB3
PS-12400	12	40.0	2000	7.76	197	6.50	165	6.69	170	6.69	170	29.10	13.20	NB4
PS-12550	12	55.0	2750	9.04	230	5.45	138	8.15	207	8.98	228	36.00	16.33	U
PS-12750	12	75.0	3750	10.25	260	6.60	168	8.15	207	8.98	228	50.60	22.95	U
PS-121000	12	100.0	5000	12.00	305	6.60	168	8.15	207	8.98	228	68.00	30.84	U
PS-1211000	12	110.0	5500	13.00	330	6.73	171	8.35	212	8.66	220	69.50	31.52	T11
PS-121400FR*	12	140.0	7000	13.50	343	6.73	171	10.80	274	11.15	283	99.00	44.91	T11

\* FR: UL94 V-0 flame retardant case & cover


## PSH-SERIES: High-Rate Discharge Batteries


- High capacity versions of standard size models designed primarily for high rate discharge applications.
- Exceptionally high energy density (watt-hours per cubic inch).
- Low internal resistance, well suited for short duration high rate discharge

PSH-655FR*	6	5.5	275	2.76	70	1.85	47	3.94	100	4.17	106	2.10	0.95	F1
PSH-1255FR*	12	6.0	300	3.54	90	2.76	70	3.98	101	4.21	107	4.00	1.81	F2
PSH-1280FR*	12	8.5	425	5.94	151	2.56	65	3.70	94	3.86	98	6.00	2.72	F2
PSH-12100FR*	12	10.5	550	5.94	151	2.56	65	4.37	111	4.61	117	7.00	3.18	F2
PSH-12180FR*	12	21.0	1050	7.14	181	3.03	77	6.59	167	6.59	167	13.20	5.99	NB2

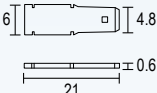
\* FR: UL94 V-0 flame retardant case & cover


## Terminal Options

**F1**  **FASTON**  
0.187" x 0.032"  
quick disconnect tabs.

**F2**  **FASTON**  
0.250" x 0.032"  
quick disconnect tabs

**FP**  **FASTON POLARIZED**  
Positive: "F2", Negative: "F1"

**F1/0**   
6 4.8  
± 0.6  
21

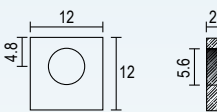
**SP**  **SPRING TERMINALS**  
Fully collapsible positive and negative contacts

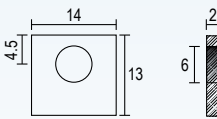
**TH**  **TOY BATTERY CONNECTORS**  
H-connector PS-6120 TH

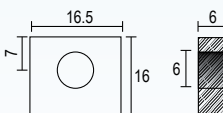
**TS**  **TOY BATTERY CONNECTORS**  
S-connector PS-6120 TS

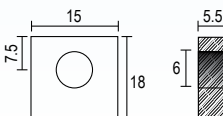
**PC** **PRESSURE CONTACTS**

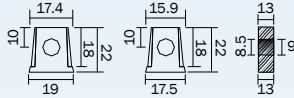
**WL** **INSULATED WIRE LEADS**  
• Molex Housing 5264-02 & 5263-PBT plug on PS-605  
• AMP Housing 1-480318-0 & 8116-1 on PS-1208

**NB1**   
12 12 4.8 5.6 2  
Torque: 2.0~3.0 Nxm

**NB2**   
14 13 4.5 6 2  
Torque: 3.9~5.4 Nxm

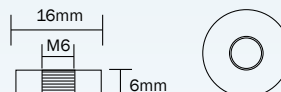
**NB3**   
16.5 16 7 6 6  
Torque: 3.9~5.4 Nxm

**NB4**   
15 18 7.5 6 5.5  
Torque: 3.9~5.4 Nxm


**U**   
17.4 15.9 13 19 17.5 13 13 13  
Positive Negative

Torque: 11.0~14.7 Nxm

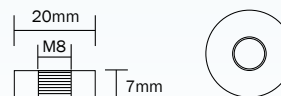
**T6** **THREADED INSERT - 6mm STUD**

  
16mm M6 6mm  
Torque: 3.9~5.4 Nxm

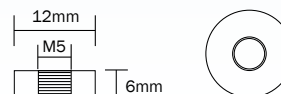
**T8** **THREADED INSERT - 6mm STUD**

  
20mm M6 6mm  
Torque: 3.9~5.4 Nxm

**T11** **THREADED INSERT - 8mm STUD**

  
20mm M8 7mm  
Torque: 11.0~14.7 Nxm

**T12** **THREADED INSERT - 5mm STUD**

  
12mm M5 6mm  
Torque: 2.0~3.0 Nxm

All data subject to change without notice.

## Battery Construction

### Terminals

Depending on the model, batteries come either with AMP Faston type terminals made of tin plated brass, post type terminals of the same composition with threaded nut and bolt hardware, or heavy duty flag terminals made of lead alloy. A special epoxy is used as sealing material surrounding the terminals.

### Relief valve

In case of excessive gas pressure build-up inside the battery, the relief valve will open and relieve the pressure. The one-way valve not only ensures that no air gets into the battery where the oxygen would react with the plates causing internal discharge, but also represents an important safety device in the event of excessive overcharge. Vent release pressure is between 2-6 psi; the seal ring material is neoprene rubber.

### Plates (electrodes)

Power-Sonic utilizes the latest technology and equipment to cast grids from a lead-calcium alloy free of antimony. The small amount of calcium and tin in the grid alloy imparts strength to the plate and guarantees durability even in extensive cycle service. Lead dioxide paste is added to the grid to form the electrically active material. In the charged state, the negative plate paste is pure lead and that of the positive lead dioxide. Both of these are in a porous or spongy form to optimize surface area and thereby maximize capacity. The heavy duty lead calcium alloy grids provide an extra margin of performance and life in both cyclic and float applications and give unparalleled recovery from deep discharge.

### Separators

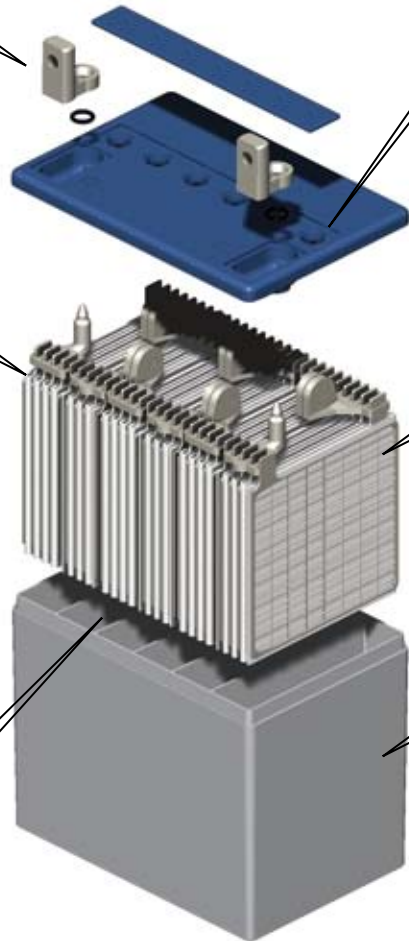
Power-Sonic separators are made of non-woven glass fiber cloth with high heat and oxidation resistance. The material further offers superior electrolyte absorption and retaining ability, as well as excellent ion conductivity.

### Electrolyte

Immobilized dilute sulfuric acid:  $H_2SO_4$ .

### Container & case sealing

Case and lid material is ABS, high impact, resin with high resistance to chemicals and flammability. Case and cover are made of non-conductive ABS plastic to UL94-HB or UL94 V-0. Depending on the model the case sealing is ultrasonic, epoxy or heat seal.



## Typical Applications

### Power Sources

- Back-up power
- Computers
- UPS

### Communications

- GPS equipment
- Marine communications
- Telecommunication systems

### Lighting

- Emergency lighting
- Exit lights
- Hand held lights

### Security Systems

- Burglar / Fire alarms
- Monitoring alarms
- Metal detectors

### Automotive

- Electronic memory accessories
- Braking / Fuel systems

### Recreation

- Fish finders
- Ride-on toys
- Electrical bicycles/scooters

### Portable Equipment

- Audio-visual devices
- Test and measuring equipment
- Consumer electronics

### Monitoring Equipment

- Fiber-optic test equipment
- Scientific instruments
- Weather instrumentation

### Agricultural

- Livestock/game feeders
- Containment fencing

### Military

- Aerospace
- Aircraft instrumentation
- Fire control systems

### Miscellaneous

- Invisible fences
- DC power lifts
- Floor scrubbers
- Laser products
- Robotics
- Advertising signs

## Battery Chargers

Power-sonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for "C-Series Switch Mode Chargers" and "Transformer Type A and F Series". Please contact our technical department for advice if you have difficulty in locating suitable models.