



Sealed Lead-Acid Batteries



FEATURES

Sealed/Maintenance-Free

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

Easy Handling

No special handling precautions or shipping containers – surface or air – are required due to leak-proof construction.

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.

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.

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 40 models are available to choose from.

Rugged Construction

The high impact resistant battery case is made of non-conductive ABS plastic. Large capacity batteries frequently have polypropylene cases. All of these materials impart great resistance to shock, vibration, chemicals and heat.

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.

High Discharge Rate

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

Long Shelf Life

A low self-discharge rate permits storage of fully charged batteries for up to a year at room temperature before charging is required. Lower storage temperatures enhance shelf life characteristics even further.

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 -20°C to +50°C (-4°F to +122°F).

Deep Discharge Recovery

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

SPECIFICATIONS

SEALED LEAD-ACID 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	0.86	0.39	F1
PS-445	4	4.5	225	1.89	48	2.09	53	3.70	94	3.86	98	1.40	0.65	F2
PS-490	4	9.0	450	3.97	101	1.73	44	3.74	95	4.02	102	2.50	1.14	F2
PS-4100	4	10.0	500	4.02	102	1.97	50	3.72	94.5	3.92	99.6	3.10	1.41	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	0.60	0.30	F1
PS-612	6	1.4	70	3.82	97	0.94	24	2.00	51	2.19	56	0.60	0.30	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	4.6	230	2.76	70	1.86	47	3.94	100	4.25	108	1.80	0.82	F1
PS-650L	6	5.0	250	2.63	67	2.63	67	3.78	96	4.28	109	2.00	0.91	SP
PS-665	6	6.5	325	3.86	98	2.20	56	4.05	103	4.06	103	2.10	0.95	FP
PS-670	6	7.0	350	5.95	151	1.34	34	3.70	94	3.94	100	2.80	1.27	F1
PS-682	6	9.0	450	3.86	96	2.20	56	4.65	118	4.65	118	3.35	1.52	F1
PS-6100	6	12.0	600	5.95	151	2.00	51	3.70	94	3.86	98	4.40	2.00	F1 or F2
PS-6120	6	13.0	650	4.26	108	2.795	71	5.54	141	5.54	141	5.30	2.40	FP
PS-6120 Toy	6	13.0	650	4.26	108	2.795	71	5.54	141	5.54	141	5.30	2.40	TS or TH
PS-6200	6	20.0	1000	6.18	157	3.27	83	4.92	125	4.92	125	7.52	3.41	NB
PS-6360	6	36.0	1800	6.25	159	3.35	85	6.50	165	6.95	177	13.70	6.20	F2 or NB
PS-832	8	3.2	160	5.29	134	1.42	36	2.49	63	2.70	69	1.90	0.86	F1
PS-1208	12	0.8	40	3.78	96	0.98	25	2.42	62	2.42	62	0.80	0.36	WL
PS-1212	12	1.4	70	3.82	97	1.69	43	2.05	52	2.28	58	1.32	0.60	F1
PS-1220	12	2.5	125	7.01	178	1.38	35	2.36	60	2.56	65	2.20	1.00	F1
PS-1221S	12	2.0	100	5.94	151	0.79	20	3.50	89	3.50	89	1.50	0.68	F1
PS-1223	12	2.3	115	7.17	182	0.94	24	2.42	62	2.42	62	1.68	0.76	PC
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	7.01	178	1.34	34	2.36	60	2.56	65	2.60	1.18	F1
PS-1230	12	3.4	170	5.28	134	2.64	67	2.36	60	2.60	66	2.90	1.32	F1
PS-1250	12	5.0	250	3.54	90	2.76	70	3.98	101	4.21	107	3.75	1.70	F1 or F2
PS-1251FP	12	5.4	270	5.50	139.7	1.89	48	4.02	102	4.06	103	4.20	1.90	FP
PS-1270	12	7.0	350	5.95	151	2.56	65	3.70	94	3.86	98	5.70	2.59	F1 or F2
PS-1282	12	9.0	450	3.86	98	4.40	112	4.65	118	4.65	118	7.45	3.38	F1
PS-12100	12	12.0	600	5.95	151	4.00	102	3.70	94	3.86	98	8.80	4.00	F1
PS-12120	12	12.0	600	5.95	151	3.86	98	3.70	94	3.94	100	8.50	3.86	F2
PS-12180	12	18.0	900	7.13	181	3.00	76	6.59	167	6.59	167	12.60	5.70	F2 or NB
PS-12260	12	26.0	1300	6.54	166	6.88	175	4.95	126	4.95	126	18.00	8.18	F2 or NB
PS-12280	12	28.0	1400	6.54	166	4.95	126	6.89	175	6.89	175	21.40	9.70	NB
PS-12330	12	35.0	1750	7.80	198	5.20	132	6.22	158	7.07	180	26.50	12.00	NB
PS-12400	12	40.0	2000	7.76	197	6.50	165	6.69	170	6.69	170	30.50	14.09	NB
PS-12550	12	55.0	2750	9.04	230	5.45	138	8.15	207	8.98	228	41.30	18.77	U
PS-12750	12	75.0	3750	10.25	260	6.60	168	8.15	207	8.98	228	55.00	25.00	U
PS-121000	12	100.0	5000	12.00	305	6.60	168	8.15	207	8.98	228	68.70	31.20	U
PS-121100	12	110.0	5500	13.00	330	6.76	172	8.40	213	8.70	221	71.20	32.36	B
PS-121400	12	140.0	7000	13.50	343	6.75	171	10.80	275	11.15	283	102.00	46.36	B

UPS High Rate Series

PSH-1255	12	6.0	24 Watts/Cell*	3.54	90	2.76	70	3.98	101	4.21	107	4.19	1.90	F2
PSH-1280	12	8.5	37 Watts/Cell*	5.95	151	2.56	65	3.70	94	3.86	98	6.00	2.72	F2
PSH-12100	12	10.5	41 Watts/Cell*	5.95	151	2.56	65	4.37	111	4.61	117	7.00	3.18	F2
PSH-12180	12	21.0	77 Watts/Cell*	7.14	182	3.03	77	6.59	168	6.59	168	13.30	6.00	NB

* Watts/cell @ 15 min. rate to 1.67V

The **PSG Series** of batteries correspond in size to Hawker models of same voltage and capacity.

PSG-450	4	5.0	250	3.54	90	1.94	49	2.87	73	2.87	73	1.70	0.77	F2
PSG-480	4	8.0	400	3.54	90	1.94	49	4.00	102	4.00	102	2.50	1.14	F2
PSG-625	6	2.5	125	4.15	105	1.63	41	2.70	69	2.70	69	1.50	0.68	F1
PSG-650	6	5.0	250	5.28	134	1.94	49	3.00	76	3.00	76	2.50	1.14	F2
PSG-680	6	8.0	400	5.28	134	1.94	49	3.99	101	3.99	101	3.70	1.68	F2

F1 FASTON - 0.187" x 0.032" quick disconnect tabs

WL Insulated stranded wire leads terminated with:
 • Molex housing 5264-02 & 5263-PBT plug on PS-605
 • AMP Housing 1-480318-0 & 8116-1 on PS-1208

PC Pressure contacts

F2 FASTON - 0.250" x 0.032" quick disconnect tabs

TS/TH Toy battery connectors:

NB Terminal posts with nut & bolt connector

FP FASTON Polarized
 Positive: "F2", Negative: "F1"

• S-connector on 6120 TS  • H-connector on 6120 TH 

U Universal automotive post with nut & bolt ("NB") terminal connectors

SP Spring terminals for positive and negative contacts.

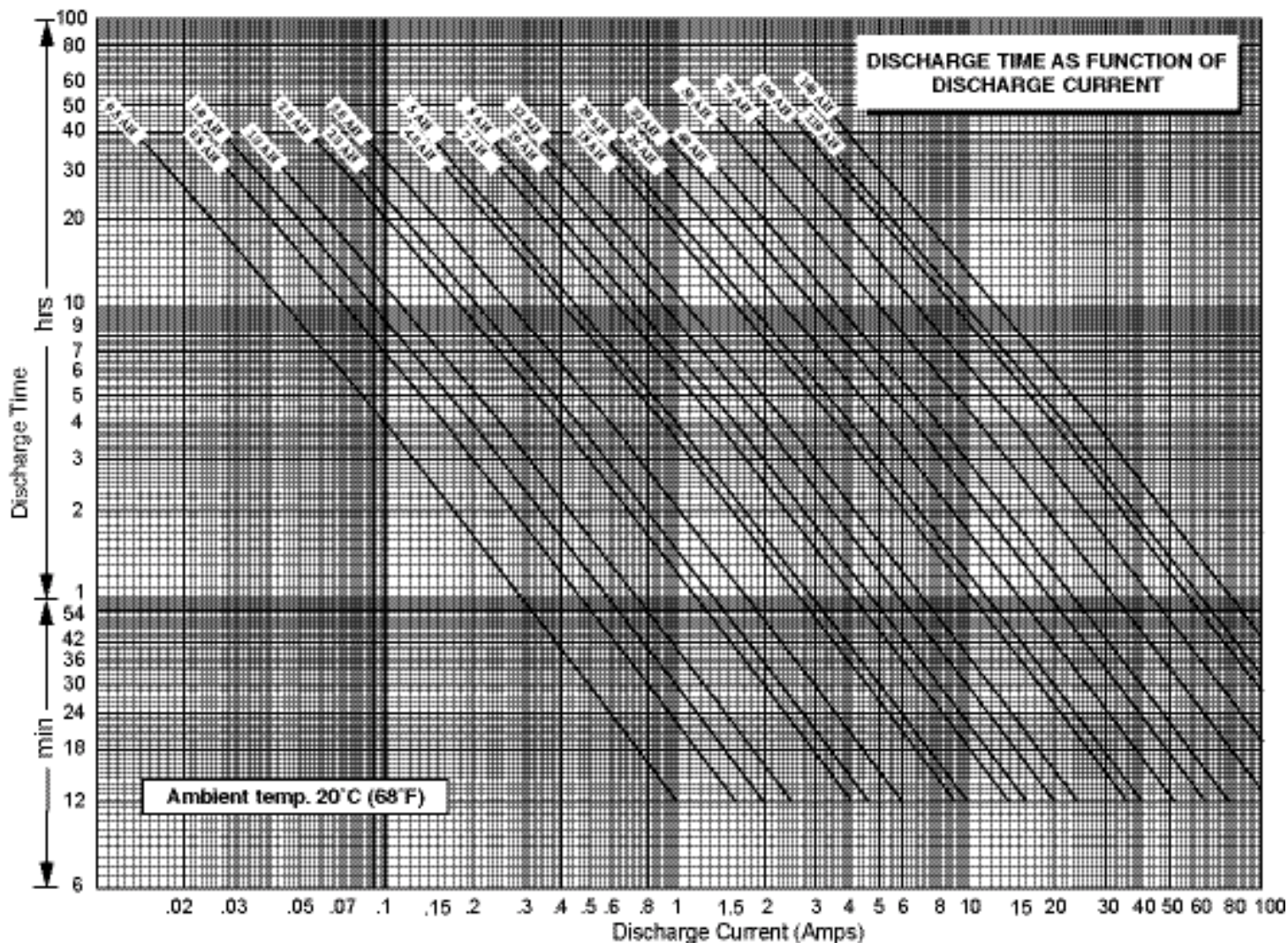
B Threaded copper insert terminals

CAPACITY VARIATION BY CURRENT LOAD

When a battery discharges current at a constant rate, its capacity changes according to the amperage load. Capacity increases when the discharge current is less than the 20-hour rate and decreases when the current is higher.

The graph below shows capacity curves for major Power-Sonic battery models with different ampere-hour ratings. Amperage is on the horizontal scale and the time elapsed is on the vertical scale; the product of these values is the capacity.

Proper selection of the battery for a specific application can be made from this graph if the required time and current are known. For example, to determine the proper capacity of a battery providing 3 amps for 20 minutes, locate the intersection of these values on the graph. The curve immediately above that point represents the battery which will meet the requirement.

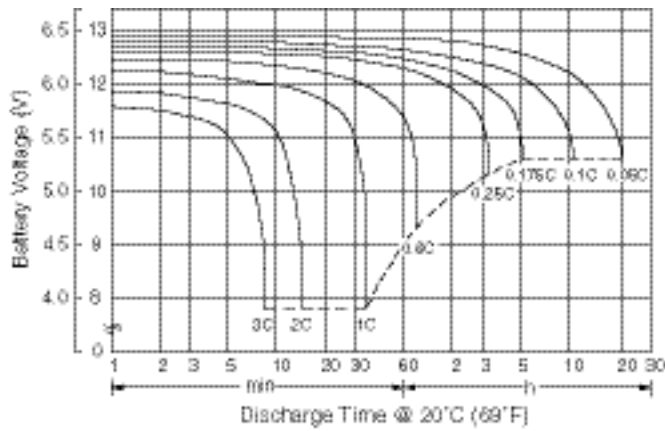


The discharge times reflect cut-off voltages which vary with the discharge current:

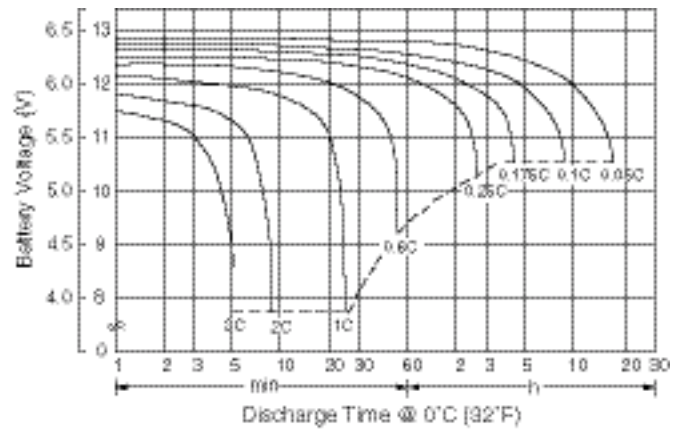
LOAD CURRENT	FINAL VOLTAGE
0.05 C	1.75 V/cell
0.10 C	1.75 V/cell
0.20 C	1.75 V/cell
0.50 C	1.67 V/cell
1.00 C	1.50 V/cell
2.00 C	1.50 V/cell
3.00 C	1.37 V/cell

“C” = Capacity of battery
 Example: The 0.5 C current for an 8 A.H. battery is 4 A. The 0.1 C current 800 mA.

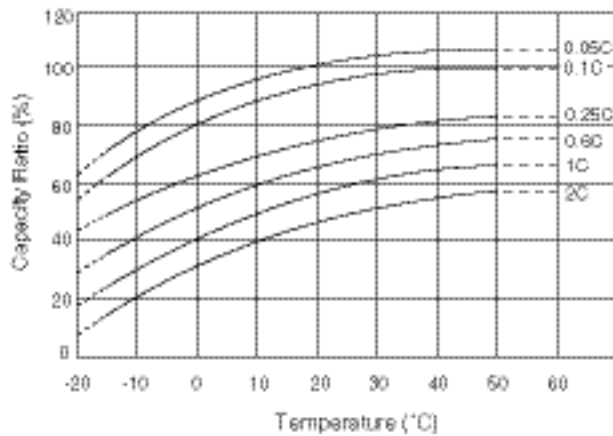
PERFORMANCE CHARACTERISTICS



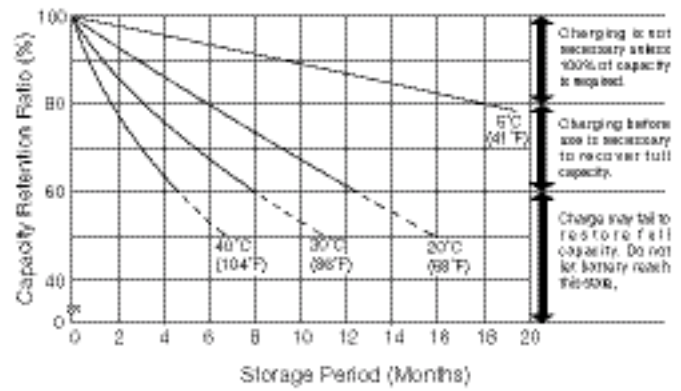
Characteristic Discharge Curves



Characteristic Discharge Curves



Effect of Temperature on Capacity



Self-Discharge Characteristics

CHARGING

Dependable performance and long service life depend upon correct charging. Faulty procedures or inadequate charging equipment result in decreased battery life and/or unsatisfactory performance.

To charge a Power-Sonic battery, a DC voltage higher than the open circuit voltage of 2.15 volts per cell is applied to the terminals of the battery. Any of the conventional charging techniques may be used, but to obtain maximum service life and capacity, along with acceptable recharge time, constant voltage - current limited charging is recommended.

During constant voltage or taper charging, the battery's current acceptance decreases as voltage and state of charge increase. The battery is fully charged once the current stabilizes at a low level for a few hours.

Cycle Applications: Limit initial current to 0.30C (C is the nominal A.H. capacity of the battery). Charge until battery voltage (under charge) reaches 2.45 volts per cell at 68°F (20°C). Hold at 2.45 volts per cell until current drops to approximately 0.01C ampere. Battery is fully charged under these conditions, and charger should either be disconnected or switched to "float" voltage.

"Float" or "Stand-by" Service: Hold battery across constant voltage source of 2.25 to 2.30 volts per cell continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

APPLICATION NOTES

Continuous over- or undercharging is the single worst enemy of a lead-acid battery. Caution should be exercised to insure that the charger is disconnected after cycle charging, or that the float voltage is set correctly.

Because there is a chance of off-gassing hydrogen and oxygen if the battery is overcharged, it is important to provide adequate air circulation. Never charge or discharge a battery in a hermetically sealed enclosure.

Batteries should not be stored in a discharged state (or in a hot place). If a battery has been discharged for some time it may not readily take a charge. To overcome this, leave the charger connected and the battery should eventually begin to accept a charge.

Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged after 6-9 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation. To prolong shelf life without charging, store batteries at 50°F (10°C) or less.