



**TROJAN**  
BATTERY COMPANY

DATA SHEET

**SOLAR SIND 02 1990**

MODEL **SIND 02 1990**  
 VOLTAGE **2**  
 CAPACITY **1990Ah @ 100Hr**  
 MATERIAL **Polypropylene** (internal cell container) **Polyethylene** (outer container)  
 BATTERY **Deep-Cycle Flooded/Advanced Lead Acid Battery**  
 COLOR **Maroon**  
 WATERING **Single-Point Watering Kit (Optional)**  
 PRODUCT **Smart Carbon™ for Improved Performance**  
 HIGHLIGHTS **17 Years Battery Life Based on IEC 61427**



WITH **SMART CARBON** TECHNOLOGY



**2 VOLT**

**PHYSICAL SPECIFICATIONS**

MODEL NAME	TERMINAL TYPE <sup>D</sup>	DIMENSIONS <sup>B</sup> INCHES (mm)			WEIGHT <sup>E</sup> LBS. (kg)	HYDROLINK OR SPWK	HANDLES
		LENGTH	WIDTH	HEIGHT <sup>C</sup>			
SIND 02 1990	14	15.33 (389)	10.22 (260)	24.01 (610)	235 (107)	SPWK	Molded

**ELECTRICAL SPECIFICATIONS**

VOLTAGE	CAPACITY <sup>A</sup> AMP-HOURS (Ah)						ENERGY (kWh)
	10-Hr	20-Hr	48-Hr	72-Hr	100-Hr	100-Hr	
2	1393	1547	1771	1889	1990	3.98	

**CHARGING INSTRUCTIONS**

CHARGER VOLTAGE SETTINGS (AT 77°F/25°C)				
SYSTEM VOLTAGE	6V	12V	24V	48V
Maximum Charge Current (% of C <sub>20</sub> Rate)*	13%			
Maximum Absorption Phase Time (hours)	4			
Absorption Voltage **	7.35	14.70	29.40	58.80
Float Voltage	6.75	13.50	27.00	54.00
Equalization Voltage	8.10	16.20	32.40	64.80

Do not install or charge batteries in a sealed or non-ventilated compartment. Constant under or overcharging will damage the battery and shorten its life as with any battery.

\*If charging time is limited contact Trojan Technical Support for assistance.

\*\*In cases where controller has a bulk voltage setting, use absorption voltage setting above.

**RECYCLE RESPONSIBLY**



**CHARGING TEMPERATURE COMPENSATION**

ADD	SUBTRACT
0.005 volt per cell for every 1°C below 25°C 0.0028 volt per cell for every 1°F below 77°F	0.005 volt per cell for every 1°C above 25°C 0.0028 volt per cell for every 1°F above 77°F

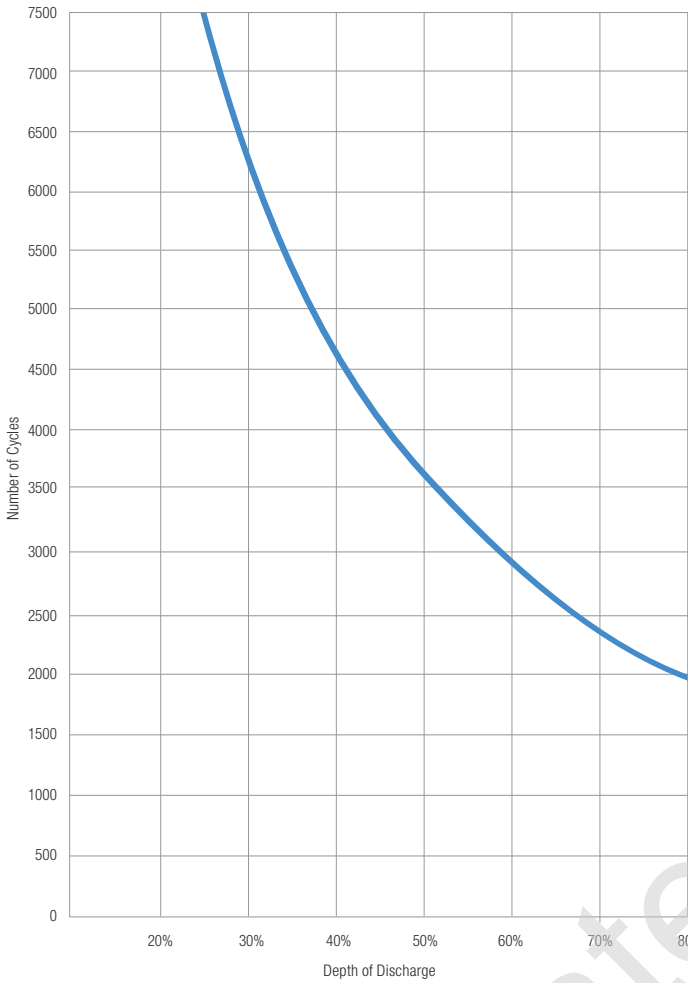
**OPERATIONAL DATA**

OPERATING TEMPERATURE	SELF DISCHARGE
-4°F to 113°F (-20°C to +45°C). At temperatures below 32°F (0°C) maintain a state of charge greater than 60%.	5 – 15% per month depending on storage temperature conditions.

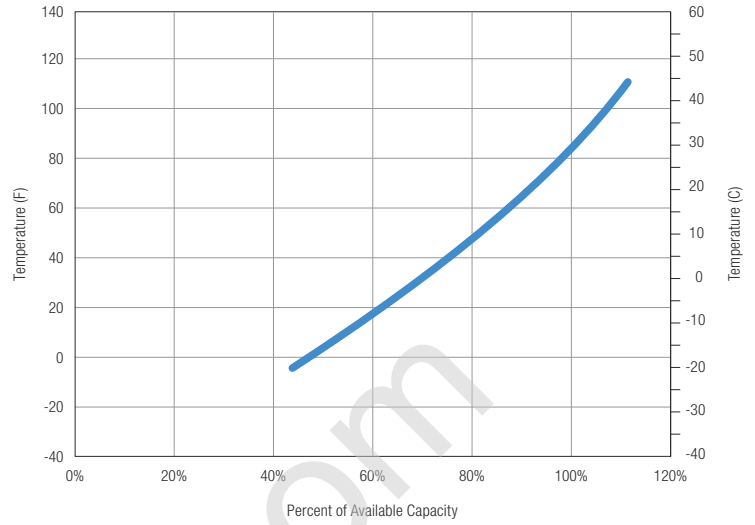
**STATE OF CHARGE MEASURE OF OPEN-CIRCUIT VOLTAGE**

PERCENTAGE CHARGE	SPECIFIC GRAVITY	2 VOLT
100	1.260	2.11
90	1.246	2.09
80	1.227	2.07
70	1.207	2.05
60	1.187	2.03
50	1.165	2.01
40	1.142	1.99
30	1.119	1.96
20	1.096	1.94
10	1.072	1.92

## DOD VS CYCLE LIFE IN A STATIONARY APPLICATION



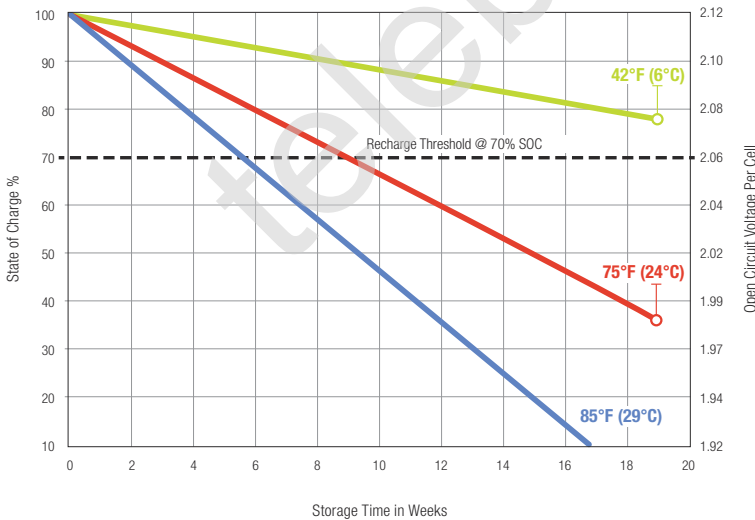
## PERCENT CAPACITY VS. TEMPERATURE



## EXPECTED LIFE VS. TEMPERATURE

Chemical reactions internal to the battery are driven by voltage and temperature. The higher the battery temperature, the faster chemical reactions will occur. While higher temperatures can provide improved performance the increased rate of chemical reactions will result in a corresponding loss of battery life. As a rule of thumb, for every 10°C increase in temperature the reaction rate doubles. Thus, a month of operation at 35°C is equivalent in battery life to two months at 25°C. Heat is an enemy of all lead acid batteries, FLA, AGM and gel alike and even small increases in temperature will have a major influence on battery life.

## SELF DISCHARGE VS. TIME\*



## SMART CARBON™

Deep-cycle batteries used in off-grid and unstable grid applications are heavily cycled at partial state of charge (PSOC). Operating at PSOC on a regular basis can quickly diminish the overall life of a battery, which results in frequent and costly battery replacements. To address the impact of PSOC on deep-cycle batteries in renewable energy (RE), inverter backup and telecom applications, Trojan Battery has now included Smart Carbon™ as a standard feature in its Solar Industrial and Solar Premium flooded battery lines.

## \*PERIODIC CHARGE

### FREQUENCY

Provide a periodic freshening charge to maintain a SOC greater than the threshold of 70%.

14	IND	IND TERMINAL
		<b>Terminal Height Inches (mm)</b> 1.50 (38) <b>Torque Values: in-lb (Nm)</b> 100 – 120 (11 – 14) <b>Bolt Size</b> 5/16" – 18

FLIP TOP	BAYONET