



INDUSTRIAL LINE FLOODED

IND23-4V

2800 CYCLES @ 50 % DOD

• TRULY DEEP CYCLE – MAXGUARD T2

- BCI Group N/A, 4V
- Reserve Capacity [Ah@20hr rate]: 1270
- Reserve Capacity [Ah@100hr rate]: 1654
- Energy [kWh]: 6.62
- Weight: 370 lbs.
- Length: 22.38 in (568 mm)
- Width: 10.34 in (264 mm)
- Height: 23.56 in (598 mm)
- IND
- BAYONET / FLIP TOP / SINGLE POINT



Industrial Line Flooded

Premium Line features:

Alpha Plus® Paste with T2 Technology™ which optimizes porosity development in the active material enabling the active material to be used more effectively. This results in sustained battery performance over a longer period of time.

DuraGrid™ Design provides a thick grid structure that resists corrosion, and when combined with the Alpha Plus Paste with T2 technology, increases overall battery life.

Reinforced Protection Wrap which is a five component wrapping and insulating system that includes an edge-protecting Koroseal with a plastic boot to protect the bottom of the plate. This advanced plate construction safeguards against shedding, and assures the electrochemical performance of the battery's active materials improving the battery's overall performance.

Maxguard® XL Separator is exclusively available in Trojan's Industrial and Premium lines. It features a wide- channel design which increases acid flow for optimum battery performance and provides greater resistance to stratification, a typical mode of failure in batteries used in renewable energy systems.

Rugged Construction and Intelligent Design includes removable 2-volt cell components assembled in a rugged polypropylene housing, which are then bundled in a secondary polyethylene containment case to form single, high-capacity 4-volt and 6-volt battery solutions. The intelligent design protects against damage caused by harsh environmental conditions such as moisture and dirt buildup, safeguards against potential acid leaks, and provides for easier maintenance.





DATA SHEET

MODEL **IND23-4V**
 VOLTAGE **4V**
 CAPACITY **1270Ah @ 20Hr**
 MATERIAL **Polypropylene (Internal container) Polyethylene (External Container)**
 BATTERY TYPE **Deep Cycle Flooded / Wet Lead Acid Battery**

4V

PRODUCT + PHYSICAL SPECIFICATIONS

BCI Group Size	Type	Voltage	Cell(s)	Terminal Type ^g	Dimensions ^c Inches (mm)			Weight Lbs. (kg)
N/A	IND23-4V	4	2	14	Length	Width	Height ^f	370 (168)
					22.38 (568)	10.34 (263)	23.56 (598)	

ELECTRICAL SPECIFICATIONS

Cranking Performance		Capacity ^a Minutes		Capacity ^b Amp-Hours (AH)							Energy (kWh)	Internal Resistance (mΩ)	Short Circuit Current (amps)
C.C.A. ^d @ 0°F (-18°C)	C.A. ^e @ 32°F (0°C)	@ 25 Amps	@ 75 Amps	2-Hr	5-Hr	10-Hr	20-Hr	48-Hr	72-Hr	100-Hr	100-Hr		
—	—	—	—	—	1000	1129	1270	1490	1587	1654	6.62	—	—

CHARGING INSTRUCTIONS

System Voltage	Charger Voltage Settings (at 77°F/25°C)					
	4V	8V	12V	24V	36V	48V
Bulk Charge	4.94	9.88	14.82	29.64	44.46	59.28
Float Charge	4.50	9.00	13.50	27.00	40.50	54.00
Equalize Charge	5.40	10.80	16.20	32.40	48.60	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.

CHARGING TEMPERATURE COMPENSATION

Add	Subtract
0.005 volt per cell for every 1°C below 25°C	0.005 volt per cell for every 1°C above 25°C
0.0028 volt per cell for every 1°F below 77°F	0.0028 volt per cell for every 1°F above 77°F

OPERATIONAL DATA

Operating Temperature	Self Discharge
-4°F to 122°F (-20°C to 50°C) At temperatures below 32°F (0°C) maintain a state of charge greater than 60%	Less than 3% per month depending on storage temperature conditions

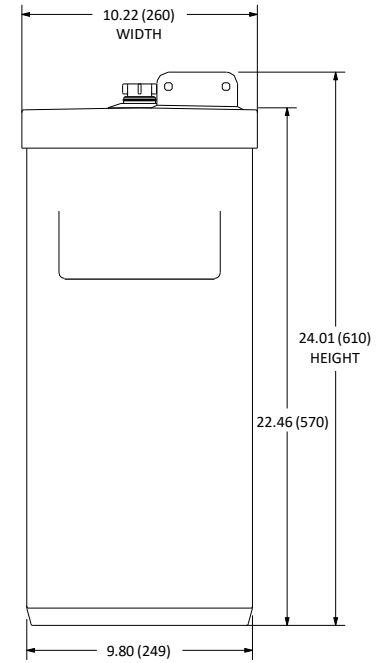
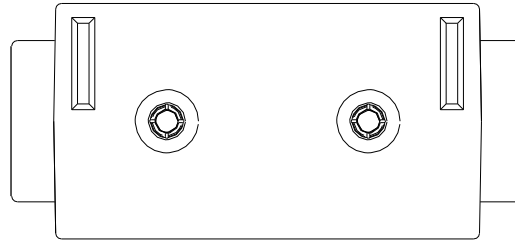
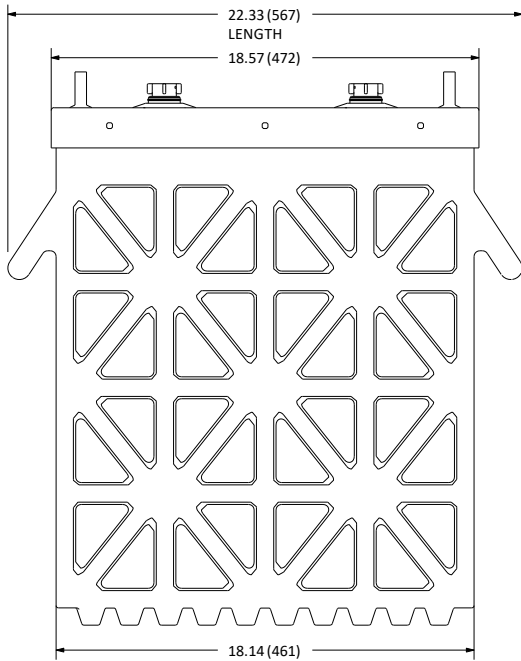
STATE OF CHARGE MEASURE OF OPEN-CIRCUIT VOLTAGE

Percentage Charge	Specific Gravity	Cell	4 Volt
100	1.260	2.11	4.22
90	1.246	2.09	4.18
80	1.227	2.07	4.14
70	1.207	2.05	4.10
60	1.187	2.03	4.06
50	1.165	2.01	4.02
40	1.142	1.99	3.98
30	1.119	1.96	3.92
20	1.096	1.94	3.88
10	1.072	1.92	3.84




Designed in compliance with applicable BCI, DIN, BS and IEC standards. Tested in compliance to BCI and IEC standards.






TERMINAL CONFIGURATION

14	IND	IND Terminal
		Terminal Height Inches (mm) 1.75 (44)
		Torque Values in-lb (Nm) 95 – 105 (11 – 12)
		Bolt 5/16"

VENT CAP OPTIONS

Flip Top	Bayonet
	

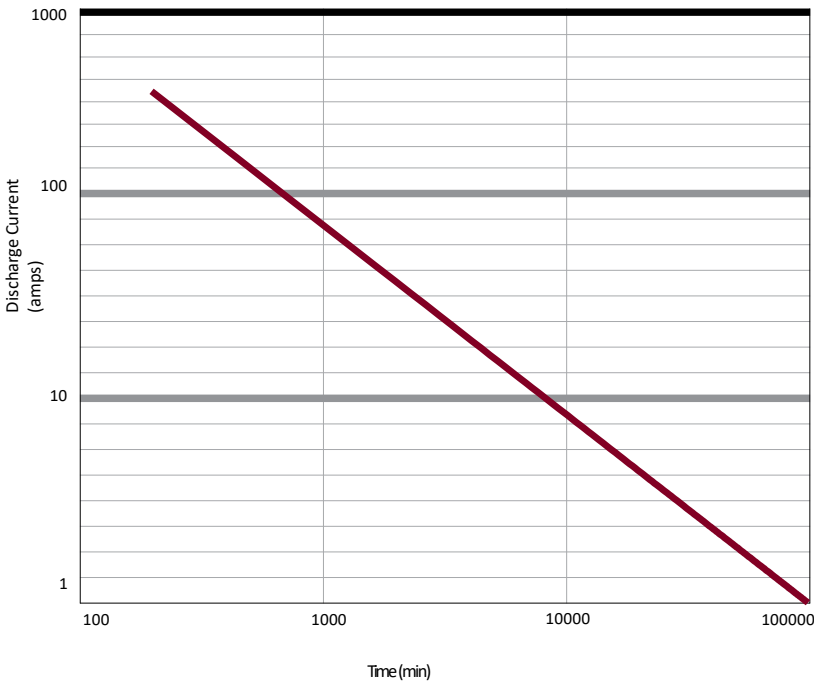
CAPACITY AMP-HOURS (AH)

Cutoff Voltage	5-Hr	10-Hr	20-Hr	48-Hr	72-Hr	100-Hr	240-Hr
1.75 vpc	1000	1129	1270	1490	1587	1654	1659
1.80 vpc	904	1061	1219	1452	1548	1609	1614
1.85 vpc	820	960	1120	1297	1413	1516	1520
1.90 vpc	600	775	935	1084	1200	1347	1349

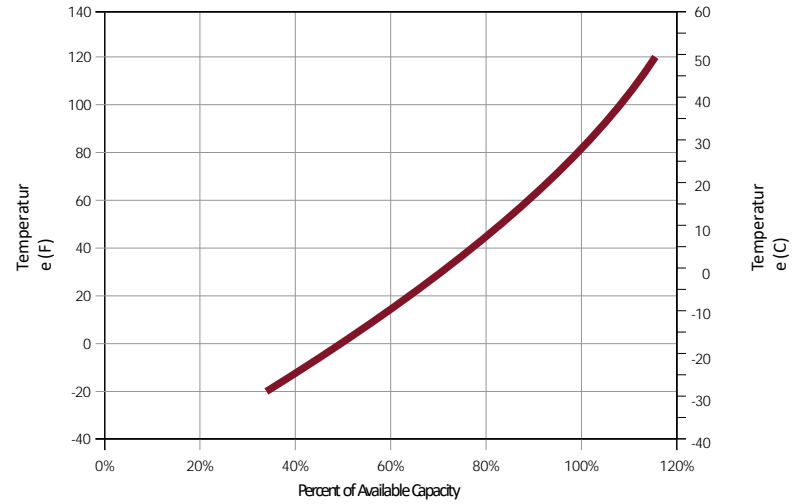
A. The amount of amp-hours (Ah) a battery can deliver when discharged at a constant rate at 86°F (30°C) for all rates and maintain a voltage above 1.75 V/cell. Capacities are based on peak performance.
 B. Dimensions may vary depending on type of handle or terminal. Batteries should be mounted with 0.5 inches (12.7 mm) spacing minimum.

C. Height taken from bottom of the battery to the highest point on the battery. Heights may vary depending on type of terminal.
 D. Terminal images are representative only.
 E. A boost charge should be performed every 6 months when batteries are in storage.
 F. Weight may vary.

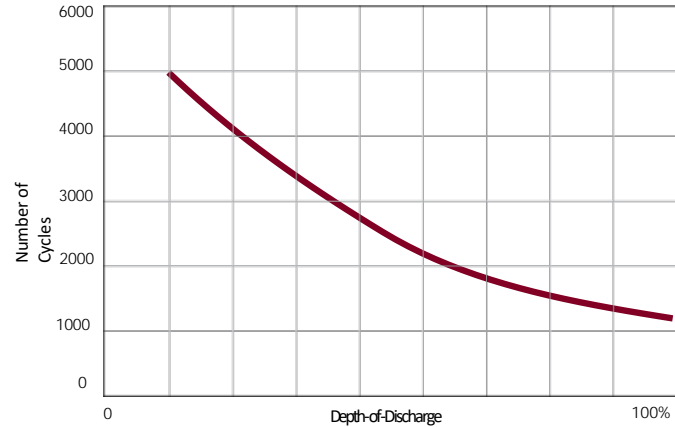
TROJAN IND23-4V PERFORMANCE



PERCENT CAPACITY VS. TEMPERATURE



TYPICAL CYCLE LIFE IN A STATIONARY APPLICATION



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 discharge 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, AGV and gel alike and even small increases in temperature will have a major influence on battery life.

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 Industrial and Premium flooded battery lines.

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