

EV

# GOLF / UTILITY VEHICLES



**Trojan**<sup>®</sup>  
BATTERY COMPANY

*Clean energy for life*<sup>™</sup>

**Made in the USA**



# [ HARNESSING THE POWER OF INGENUITY ]

**FOR OVER 85 YEARS, TROJAN BATTERY HAS BEEN AN INNOVATOR IN DEEP-CYCLE BATTERY TECHNOLOGY. WE KNOW THAT BUILDING THE HIGHEST PERFORMANCE-RATED BATTERIES DOESN'T JUST COME BY CHANCE. IT REQUIRES KNOWING THE NEEDS OF OUR CUSTOMERS. IT REQUIRES KNOWING OUR COMPETITORS AND THE PRODUCTS THEY BUILD. IT REQUIRES INGENUITY, SHEER DETERMINATION AND AN UNWAVERING COMMITMENT TO QUALITY.**

**EVERY DAY, GOLF CAR AND ELECTRIC VEHICLE MANUFACTURERS ARE INTEGRATING TECHNOLOGICAL ADVANCEMENTS REQUIRING MORE POWERFUL BATTERY TECHNOLOGY. TROJAN'S BATTERY DESIGNS PLAY AN ESSENTIAL ROLE IN ENHANCING YOUR EXPERIENCE ON AND OFF THE COURSE BY DELIVERING A WHOLE NEW CLASS OF DEEP-CYCLE TECHNOLOGY.**

**A LEGACY OF MANUFACTURING INNOVATION AND EXCELLENCE HAS ALWAYS BEEN THE CORNERSTONE OF TROJAN BATTERY'S SUCCESS IN THE DEEP-CYCLE BATTERY INDUSTRY. TROJAN UTILIZES THE FINEST MATERIALS PAIRED WITH TECHNICAL DEVELOPMENTS AND PRODUCTION ENHANCEMENTS INCLUDING CAST ON STRAP TECHNOLOGY, ADVANCED ROBOTICS AND OTHER AUTOMATED TECHNOLOGY. TROJAN IS DEDICATED TO PRODUCING BATTERIES THAT DELIVER SUPERIOR PERFORMANCE, DURABILITY AND RELIABILITY DAY IN AND DAY OUT.**



## Introducing a NEW Class of Deep-Cycle Battery Technology

Trojan's new Traveler™ 8V and Ranger™ 160 batteries deliver an entirely new class of deep-cycle battery technology that addresses two core golf market needs – longer life and longer range. There simply are no comparable batteries on the market today.

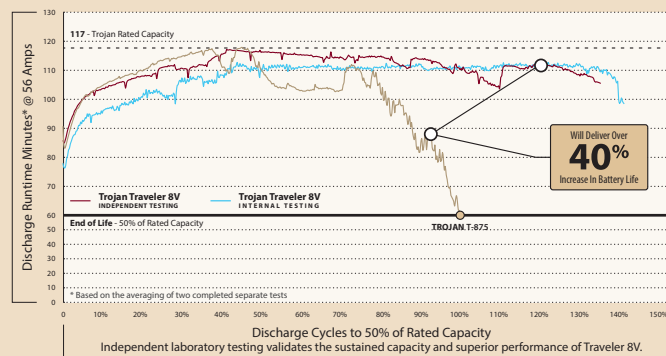
### Traveler™ 8V

Trojan's break through Traveler 8V deep-cycle battery revolutionizes the golf car market. It incorporates more than four years of R&D and delivers over 40% longer life than traditional 8-volt batteries. The Traveler 8V battery's advanced internal components and external case improvements include a new Internal Battery Protection System (IBP System). The IBP System features thicker grids, membrane-wrapped plates, Trojan's exclusive T2 Technology™ with Maxguard® T2 multi-rib separators, as well as an advanced moss guard that insulates and protects the top of the battery plates from damage. Traveler 8V also is compatible with Trojan's HydroLink™ single-point watering system, setting it apart from the competition.

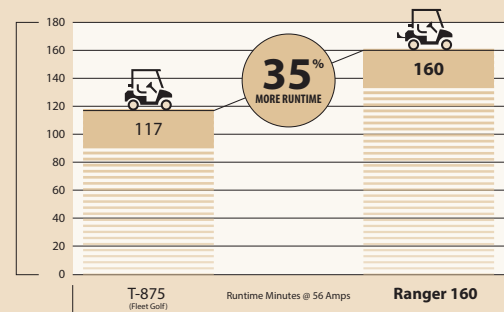
### Ranger™ 160

Trojan's Ranger 160 deep-cycle battery is optimized for excursions that require significantly more range than a typical golf car battery can manage. Ranger 160 delivers 35% more travel time between recharging than traditional 8-volt golf car batteries offer, enabling consumers to embark on longer excursions using electric power than what was previously possible. As an 8-volt, high-performance battery, Ranger 160 is rated at 160 minutes when discharged at 56 amps, and is the first U.S.-made, long range battery that meets the increasing demands of golf carts, utility and low-speed passenger vehicles, as well as hunting buggies. The internal design of Ranger 160 includes more active material delivering higher performance for long range driving requirements, as well as Trojan's exclusive T2 Technology.

#### TRAVELER 8V TESTING



#### RANGER 160



## Advanced Research & Development Facilitates World-Class Innovation

Every day golf car manufacturers are integrating technological advancements to enhance your day on the course and Trojan batteries play an essential role in powering your game. For this reason, it is our responsibility to remain on the cutting edge of battery technology.

Trojan has dedicated two state-of-the-art research and development centers devoted exclusively to the advancement of battery technology. Within these facilities engineering teams work together to innovate and bring to market new technologies that enhance our battery performance. Charger characterization equipment, prototype centers as well as analytical, chemical and evaluation labs are used to develop new generation products. This steady stream of research and development

has resulted in the creation of Trojan's patent-pending T2 Technology™ and our full portfolio of products.

As stewards for the advancement of battery technology, Trojan is a technical research partner with the Bulgarian Academy of Sciences, a world-renowned international institute of scientific research. This collaboration has resulted in intensive electrochemical analysis, battery performance evaluation and design improvements.

Trojan also is a proud member of the Battery Council International (BCI) where our senior executive and engineering staffs serve as board and committee members in the research, development and publication of technical data and engineering standards.



*Trojan's battery analysis focuses on continuous improvement of Trojan technologies and overall product quality*



*Trojan's on-site labs use the latest equipment to analyze and enhance battery technology and functionality.*

## Manufacturing Excellence Ensures Product Quality

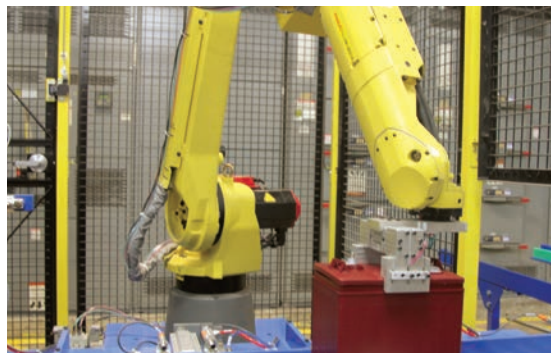
Trojan's state-of-the-art manufacturing is just one of the ways we build industry-leading quality into our products. At Trojan we are investing at record levels in manufacturing and production improvement projects at our U.S. facilities. Our recent addition of advanced robotics, state-of-the-art cast-on-strap (COS) technology, automated acid fill stations, and heat seal and testing equipment ensures the overall quality of our products.

With ISO 9001:2008 certified manufacturing plants in California and Georgia, Trojan is dedicated to producing batteries that deliver superior performance, durability and reliability day in and day out.



### **Cast-On-Strap**

*Trojan's automated cast-on-strap equipment uses cutting-edge technology to enhance product quality. Aligning the battery plates with lugs ensures a series circuit between the lead plates for optimum performance.*



### **Advanced Robotics**

*Advanced robotics are used throughout Trojan's manufacturing plant to ensure a higher level of product consistency and quality. Robotics streamline our battery production and improve our manufacturing lead time.*

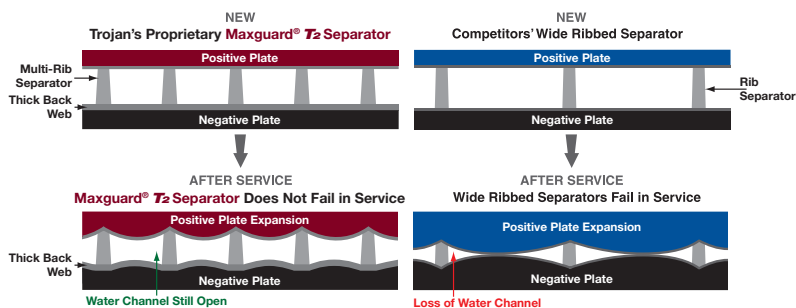
# T2 Technology... Trojan's Next Generation of Deep-Cycle Battery Advancement



## Innovative Deep-Cycle Battery Technology

Engineered specifically to meet the increasing demands of today's golf cars, Trojan's T2 Technology™ builds upon our historically-proven technology and incorporates improvements resulting in a superior battery with maximum sustained performance, longer life and increased total energy.

### THE MAXGUARD® T2 SEPARATOR DIFFERENCE



#### 1 Alpha Plus® Paste with T2 Technology™

##### Maximum Operating Performance

Trojan's Alpha Plus Paste is a proprietary, high density paste formulation engineered to deliver outstanding battery performance. It optimizes porosity development in the active material utilizing the active material more effectively resulting in sustained battery performance over a longer period of time. Trojan's T2 Technology introduces a patent-pending T2 metal agent into Alpha Plus Paste strengthening its electrochemical processing capabilities. Alpha Plus Paste with T2 Technology increase both sustained capacity and total overall ampere-hours resulting in more operating power. It's a key reason why Trojan batteries consistently outperform the competition.

#### 2 Trojan Grid Technology Reduced Downtime

Trojan's grid technology is a lead antimony alloy grid mixture formulated specifically for use with Trojan's Alpha Plus Paste with T2 Technology. The grid formulation provides exceptional structural adhesion between the Alpha Plus Paste and the grid frame. Thick grids reinforce the strength of the frame and reduce overall corrosion. The grid configuration is optimized to enhance current flow through the grid network providing exceptional battery performance, reducing downtime and lowering overall maintenance costs.

#### 3 Maxguard® T2 Separator Longer Battery Life

Exclusively available in Trojan batteries is our Maxguard T2 advanced separator. Its multi-rib geometry design keeps acid channels open longer enhancing electrochemical processing while reducing the risk of stratification. Maxguard's proprietary rubber-based material formulation inhibits antimony transfer between the positive grids and negative plates; a protection not available in many other competitor batteries. A newly fortified, thick back web provides even greater separator strength resulting in a more robust battery with increased protection against failures caused by separator degradation. Trojan's Maxguard T2 advanced separator sustains performance, provides longer battery life and significantly lowers operating costs.

# HydroLink™ Watering System



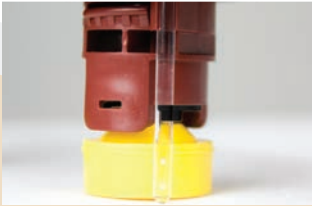
## Battery Watering Made Easy

Proper maintenance and periodic watering are important factors in maximizing the performance and life of Trojan deep-cycle, flooded batteries. Battery maintenance can be a costly, time-consuming and messy job. With Trojan's HydroLink™ advanced, single-point watering system, precise battery watering is made easy saving valuable time and money.

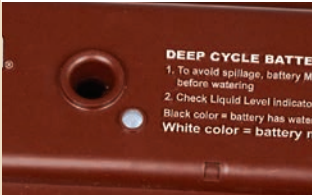
## Convenient Installation

Trojan's HydroLink watering system is specifically designed to work with Trojan's 6-volt, 8-volt and 12-volt flooded batteries\* and takes the guess work out of properly watering flooded batteries. In addition, the design of the HydroLink watering system prevents direct access to a battery's electrolyte and reduces acid splash, enhancing safety during the battery watering process. With a simple installation of the HydroLink manifolds and tubing, the system is ready for use. Once installed, a complete set of batteries can be filled in less than 30 seconds.

Independent Water Level Indicator



Water Indicator Signal and Dual Flame Arrestors



Snake™ Tubing



Clampless Tubing



Coupler Connection with Water Flow Indicator



## HydroLink™ Vent Assembly

The HydroLink™ vent assembly is unique and features an independent water level indicator, valve shut off and dual flame arrestors.

### Independent Water Level Indicator

Maintaining the proper electrolyte level can extend the performance and life of Trojan flooded batteries. However, determining the correct level can be a challenge. Trojan's HydroLink vent features an independent water level indicator that accurately displays whether a battery needs watering. A white indicator signals that the battery needs water. A black indicator signals that the battery has enough water...it's that simple.

### Valve Shut Off

The valve shut off accurately controls cell electrolyte levels. Using a balanced valve design, the shut off valves automatically cut the water flow into the individual cells eliminating the potential of overflow or acid splash caused by overfilling. HydroLink's valve shut off works in conjunction with the hose end assembly and flow indicator to provide precise battery watering.

### Dual Flame Arrestors

The HydroLink system is equipped with dual flame arrestors, an important safety feature not standard on many other watering systems. The internal flame arrestors prevent internal sparks from passing through the watering system to neighboring cells while the external flame arrestor prevents external sparks from entering the Trojan battery.

## Snake™ or Clampless Tubing

The HydroLink system offers a patented Snake™ tubing assembly. This one-piece unit eliminates the need for multi connections resulting in fewer parts and quicker watering. HydroLink is also available with clampless tubing for customizable configurations.

## Warranty

HydroLink™ watering system comes with a four-year, limited warranty.

BCI GROUP SIZE	TYPE	CAPACITY <sup>A</sup> Minutes			CAPACITY <sup>B</sup> Amp-Hours (AH)				ENERGY (kWh)	TERMINAL Type <sup>E</sup>	DIMENSIONS <sup>C</sup> Inches (mm)			WEIGHT lbs. (kg)	HydroLink <sup>TM</sup> or Single-Point Watering Kit <sup>F</sup>
		@25 Amps	@56 Amps	@75 Amps	5-Hr Rate	10-Hr Rate	20-Hr Rate	100-Hr Rate	100-Hr Rate		Length	Width	Height <sup>D</sup>		
<b>6 VOLT DEEP-CYCLE FLOODED BATTERIES - with T2 TECHNOLOGY<sup>TM</sup></b>															
GC2	T-605	383	-	105	175	193	210	232	1.39	1, 2, 3, 4	10.30 (262)	7.11 (181)	11.07 (281)	58 (26)	HydroLink
GC2	T-105	447	-	115	185	207	225	250	1.50	1, 2, 3, 4	10.30 (262)	7.11 (181)	11.07 (281)	62 (28)	HydroLink
GC2	T-105 Plus	447	-	115	185	207	225	250	1.50	1, 2, 3	10.30 (262)	7.11 (181)	11.07 (281)	62 (28)	Single-Point
GC2	T-125	488	-	132	195	221	240	266	1.60	1, 2, 3, 4	10.30 (262)	7.11 (181)	11.07 (281)	66 (30)	HydroLink
GC2	T-125 Plus	488	-	132	195	221	240	266	1.60	1, 2, 3	10.30 (262)	7.11 (181)	11.07 (281)	66 (30)	Single-Point
GC2H	T-145	530	-	145	215	239	260	287	1.72	1, 2, 3, 4	10.30 (262)	7.11 (181)	11.90 (302)	72 (33)	HydroLink
GC2H	T-145 Plus	530	-	145	215	239	260	287	1.72	1, 2, 3	10.30 (262)	7.11 (181)	11.90 (302)	72 (33)	Single-Point
<b>8 VOLT DEEP-CYCLE FLOODED BATTERIES - with T2 TECHNOLOGY<sup>TM</sup></b>															
GC8	T-875	295	117	-	145	155	170	189	1.51	1, 2, 3	10.21 (259)	7.06 (179)	11.14 (283)	63 (29)	HydroLink
GC8H	Traveler 8V	295	117	-	145	155	170	189	1.51	2	10.21 (259)	7.10 (180)	11.90 (302)	70 (32)	HydroLink
GC8	T-890	340	132	-	155	175	190	211	1.69	1, 2, 3	10.21 (259)	7.06 (179)	11.14 (283)	69 (31)	HydroLink
GC8H	Ranger 160	430	160	-	169	186	204	225	1.80	2	10.21 (259)	7.10 (180)	11.90 (302)	76 (34)	HydroLink
<b>12 VOLT DEEP-CYCLE FLOODED BATTERIES - with T2 TECHNOLOGY<sup>TM</sup></b>															
N/A	T-1260 Plus	260	90	60	113	126	140	155	1.86	1	12.96 (329)	7.13 (181)	10.71 (272)	78 (35)	Single-Point
N/A	T-1275	280	102	70	120	134	150	166	1.99	1	12.96 (329)	7.13 (181)	10.71 (272)	82 (37)	HydroLink
N/A	T-1275 Plus	280	102	70	120	134	150	166	1.99	1	12.96 (329)	7.13 (181)	10.71 (272)	82 (37)	Single-Point
<b>6 VOLT DEEP-CYCLE GEL BATTERY</b>															
GC2	6V-GEL	394	-	-	154	167	189	198	1.19	6	10.25 (260)	7.08 (180)	10.82 (275)	68 (31)	N/A
<b>12 VOLT DEEP-CYCLE AGM BATTERY</b>															
24	24-AGM	137	-	-	67	70	76	84	1.01	6	10.77 (264)	6.84 (174)	8.62 (219)	54 (24)	N/A

A. The number of minutes a battery can deliver when discharged at a constant rate at 80°F (27°C) and maintain a voltage above 1.75 V/cell. Capacities are based on peak performance.  
 B. The amount of amp-hours (AH) a battery can deliver when discharged at a constant rate at 77°F (25°C) for Flooded & Gel Lines and maintain a voltage above 1.75 V/cell. Capacities are based on peak performance.  
 C. Dimensions are based on nominal size. Dimensions may vary depending on type of handle or terminal. Batteries to be mounted with .5 inches (12.7 mm) spacing minimum.  
 D. Dimensions taken from bottom of the battery to the highest point on the battery. Heights may vary depending on type of terminal.  
 E. Terminal images are representative only.  
 F. N/A = Not Available. For more information on the Single-Point Watering Kit (SPWK), please contact your Trojan Battery representative. Trojan's battery testing procedures adhere to both BCI and IEC test standards.

## Terminal Configurations



**1 ELPT**  
Embedded Low Profile Terminal



**2 EHPT**  
Embedded High Profile Terminal



**3 EAP**  
Embedded Automotive Post Terminal



**4 EUT**  
Embedded Universal Terminal



**5 LT**  
L-Terminal



**6 DT**  
Automotive Post & Stud Terminal



## Experience The Trojan Difference – *Reputation Built on Quality, Leadership and Innovation*

### Leadership

Founded in 1925 by co-founders George Godber and Carl Speer, Trojan Battery Company is the world's leading manufacturer of deep-cycle batteries. From deep-cycle flooded batteries to deep-cycle gel and AGM batteries, Trojan has shaped the world of deep-cycle battery technology with over 85 years of battery manufacturing experience. With the invention of the golf car battery for the Autoette vehicle in 1952, Trojan pioneered the development of deep-cycle battery technology for the golf industry; successfully introducing mobilization to the game of golf. For Trojan, this began a legacy of leadership and innovation that prevails today in the global, deep-cycle markets spanning applications for golf, floor machines, transportation, renewable energy, aerial work platforms, marine and recreational vehicles. Trojan batteries are available worldwide through our global network of master distributors.

Headquartered in Santa Fe Springs, Calif., Trojan's operations include ISO 9001:2008 certified manufacturing plants in California and Georgia, two advanced research and development centers dedicated exclusively to deep-cycle battery technologies and international offices located in Europe, U.A.E. and Asia. Trojan is a proud member of the Battery Council International (BCI) and a technical research partner with the Bulgarian Academy of Sciences.

### Leading-Edge Technical Support

At Trojan one of our core strengths is the dedication and support we provide to our customers. Our expertise as the world's leading manufacturer of deep-cycle batteries provides us with a unique knowledge and understanding of battery technology in a variety of applications. We apply this knowledge and experience to the benefit of our customers by offering outstanding technical support provided by experienced engineers. To assist our customers with in-depth understanding of battery technologies and systems specifications, Trojan offers comprehensive over-the-phone and email technical support.

### Environmental Stewardship

At Trojan Battery, when we say, "Clean energy for life™", we mean every word. As proactive supporters of environmental sustainability, our environmental stewardship focuses on clean energy initiatives and recycling programs.

- Trojan batteries are 97% recyclable. The container plastic, battery lead and electrolyte from old deep-cycle batteries can be recycled to produce new Deep-Cycle batteries.
- Through its partnership with Southern California Edison (SCE) Trojan saves over 8 million kilowatt hours and cuts CO2 emissions by over 12 million pounds significantly reducing our annual energy consumption and carbon foot print.



**TROJAN BATTERY  
COMPANY WITH  
QUALITY SYSTEM  
CERTIFIED BY DNV  
= ISO 9001:2008 =**



Your Local Trojan Battery Representative:

**For more information,  
call 800.423.6569  
or + 1.562.236.3000  
or visit [www.trojanbattery.com](http://www.trojanbattery.com)**

