

Element™ 12 Volt Group 24/27 and  
6 Volt Group 27 Deep Cycle Batteries

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## Application

Valve-Regulated deep cycle batteries designed for use in Element™ systems, maintenance (scissor) lifts, wheel chairs, neighborhood electric vehicles (NEV's), golf carts, personnel carriers, and other small powered electric vehicles.

These BCI Group 24 and Group 27 size batteries are engineered to provide full shift performance to an 80% depth of discharge (D.O.D.), equal to 1.90 volts per cell. Tests performed to measure battery life expectancy have resulted in battery life up to 400 cycles and 2 year life span under appropriate operating conditions.

## Battery Warranty

GNB's Element™ Group 24 and Group 27 deep cycle batteries are warranted for 90 days. When purchased as a replacement for a GNB Element™ system, GNB will honor the warranty remaining on the original system if longer than 90 days. Contact your local GNB Sales Representative for warranty details.

## Less Maintenance

GNB's Element™ Valve-Regulated batteries mean reduced maintenance. Most of the expense, time and safety concerns typically associated with conventional flooded battery maintenance are reduced under normal operating conditions, including cell watering, acid equalization, acid spills, corrosion and waste treatment systems.

## “Designed In” Quality Manufacturing Made in USA.

Quality manufacturing processes for the Element™ series of Deep Cycle batteries incorporate some of the industry's most advanced technologies including: 100% automated helium leak detection system, computer controlled “fill by weight” acid filler, and capacity testing of every unit.

The Element™ battery is manufactured in an ISO 9001:2004 (Quality Management System) and ISO 14001:2004 (Environmental Management System).

## Required Charging Profile

The Element™ battery requires a specific “I-E-I” (constant current-constant voltage-constant current) recharge profile be used to maximize battery life. Use of a charger with the incorrect recharge profile will significantly shorten your Element™ battery's life and void your battery warranty. For more information contact your local GNB Sales Representative.

The following is the recommended charging algorithm for the Element™ Valve-Regulated deep cycle batteries at 25°C (77°F):

- Step 1. Charge at 20 Amps/100 Amp-hours to 2.37 volts per cell.
- Step 2. Charge at 2.37 volts per cell until current is less than 2 Amps/100 Amp-hours.
- Step 3. Charge at 2 Amps per 100 Amp-hours and a maximum voltage of 2.55 vpc. Termination should occur from a dv/dt sensor during step 3 or 4 hour timer initiated at the beginning of step 2

For temperatures other than 25°C (77°F), the following formula can be used to determine the correct charge voltage

$$V \text{ corrected} = V_{25^{\circ}\text{C}} - [(T \text{ actual} - 25^{\circ}\text{C}) * (.00474 \text{ V}/^{\circ}\text{C})] \text{ or}$$

$$V \text{ corrected} = V_{77^{\circ}\text{F}} - [(T \text{ actual} - 77^{\circ}\text{F}) * (.00263 \text{ V}/^{\circ}\text{F})]$$

The minimum corrected voltage for charging is 2.25 volts per cell, and the maximum corrected voltage for charging is 2.50 volts per cell.

## Innovative Element™ Technology

Because of Element's design, there is virtually no gassing while charging under normal operating conditions, eliminating the need for special ventilation and a dedicated charging room.

## Fully Recyclable

GNB Industrial Power takes pride in its commitment to a better environment. Its Total Battery Management program, an integrated approach to manufacturing, distributing and recycling of lead acid batteries, has been developed to help ensure a safe and responsible life cycle for all of its products.

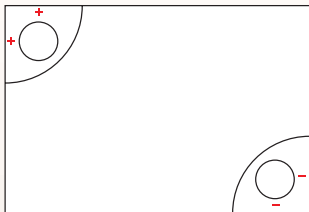
## Element™ Deep Cycle Battery Specifications

Battery Part Number	Battery DC Volts	20 Hour Rate		Capacity 6 Hour Rate		3 Hour Rate		Battery Dimensions (inches/mm)			Nominal Weight <sup>2</sup> (lbs./kg)
		AMP-HRS	KWH	AMP-HRS	KWH	AMP-HRS	KWH	X LGTH	Y WDT	Z HT <sup>1</sup>	
M83CHP12V24	12	92	1.10	80	0.94	70	0.82	10.25 260	6.85 174	8.80 224	60 27.2
M83CHP12V27	12	110	1.30	95	1.10	85	1.00	12.05 306	6.85 174	8.80 224	70.4 31.9
M83CHP06V27	6	220	1.30	195	1.15	175	1.03	12.05 306	6.85 174	8.80 224	75 34

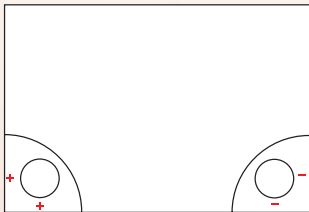
<sup>1</sup> Height to top of post. Bolt, washer and connector typically increases height by 0.450 in. (11mm)

<sup>2</sup> Weight +/- 1kg. +/-2.2lbs

## Terminal Position



6 Volt Unit



12 Volt Unit

### NOTE:

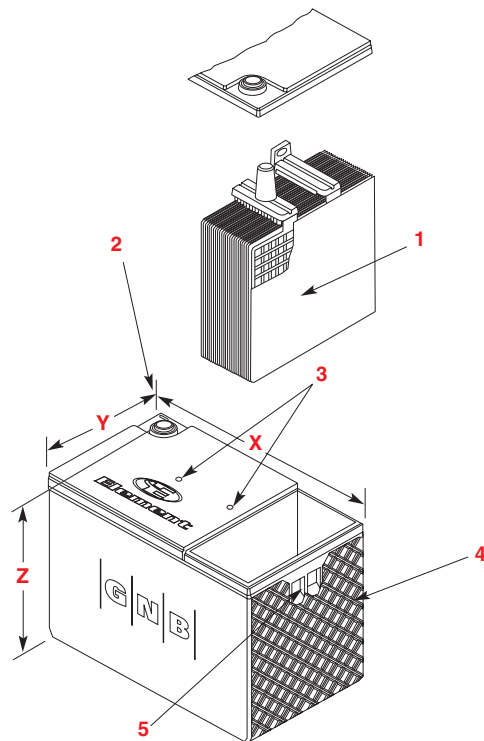
Packaged complete with SS-316 bolts and washers.

Weekly Self-Discharge 0.5 - 1.0%

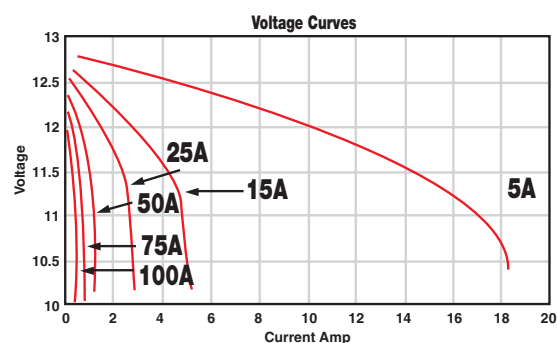
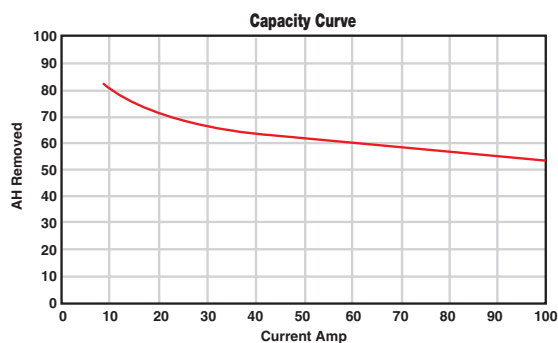
Design or specifications subject to change without notice

# Element™ Deep Cycle Battery Design

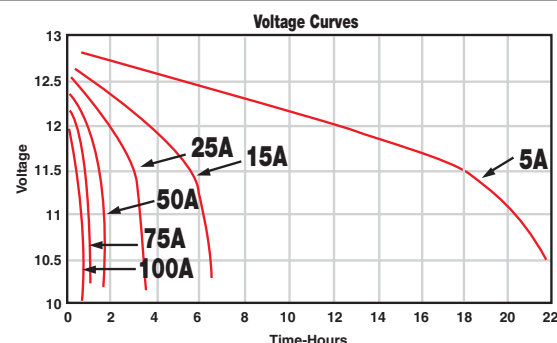
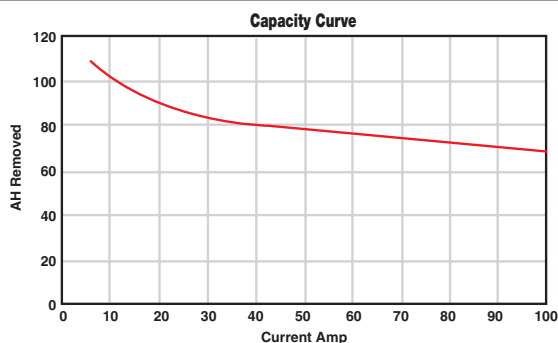
- Absorbed Glass Mat Separator -**  
Retains electrolyte in highly porous mat to help prevent leakage and promote efficient recombination. NO WATERING REQUIRED under normal operating conditions.
- M6 Bolts, Brass Inserts and Bolt-On Connectors**  
Reduced electrical resistance and increased voltage.
- Self-Resealing Pressure Relief Valve & Flash Arrestor**  
Relief valves control internal pressure for efficient recombination during recharge. The safety vent opening pressure is 1-4 psi. Anti-flame design prevents sparks from entering cell.
- Reinforced Polypropylene Container & Cover**  
Side rib pattern for extra support.
- Lead Calcium Alloy Negative Plate**



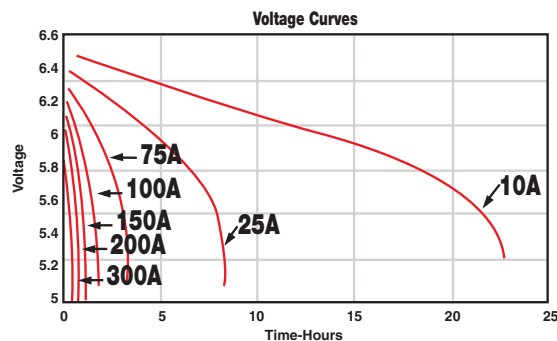
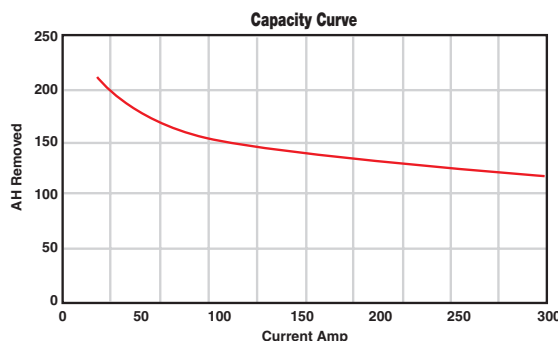
## Element™ M83CHP12V24 Discharge Characteristics [At 25°C (77°F)]



## Element™ M83CHP12V27 Discharge Characteristics [At 25°C (77°F)]



## Element™ M83CHP6V27 Discharge Characteristics [At 25°C (77°F)]



# Exide Technologies - The Industry Leader.



**Element™**

**G N B**

**LIBERATOR**

**TUBULAR-HP™**  
HIGH PERFORMANCE

**Sonnenschein®**

GNB Industrial Power, a division of Exide Technologies, is a global leader in motive power battery and charger systems for electric lift trucks and other material handling equipment. With a strong manufacturing base in both North America and Europe and a truly global reach (operations in more than 80 countries) in sales and service, GNB Industrial Power is best positioned to satisfy your power needs locally as well as all over the world.

Based on over 100 years of technological innovation, the Motive Power Division leads the industry with the most recognized global

brands, such as GNB®, TUBULAR-HP™, ELEMENT™, LIBERATOR® and SONNENSCHN®. They have come to symbolize quality, reliability, performance and excellence in all the markets served.

Exide Technologies takes pride in its commitment to a better environment. Its Total Battery Management program, an integrated approach to manufacturing, distributing and recycling of lead acid batteries, has been developed to help ensure a safe and responsible life cycle for all of its products.

*Note: Design and/or specifications are subject to change without notice. If questions arise, contact your local sales representative for clarification.*

## **GNB Industrial Power**

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