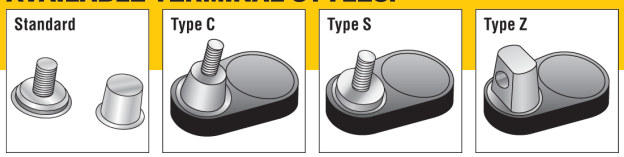
TECHNICAL DATA SHEET

CR235-HD

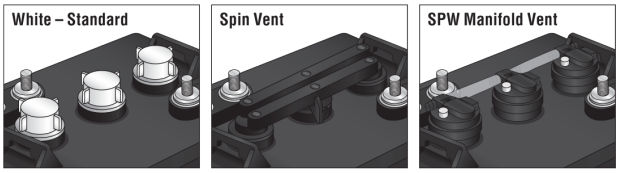
INDUSTRIAL DEEP CYCLE BATTERY

We offer a complete lineup of high-performance and low-maintenance industrial deep cycle batteries produced in standard Battery Council International group profiles for voltage, electrical capacity and physical dimension. Our innovative and proven deep cycle product design makes it the battery of choice for many tough commercial battery applications, including commercial floor care and aerial access equipment, electric vehicles, personnel carriers, material handling systems and renewable energy systems.

AVAILABLE TERMINAL STYLES:



VENT CAP OPTIONS:



PHYSICAL SPECIFICATIONS

BCI Group Size	Model Description	Nominal Voltage	Length		Width		Container Height		Terminal Height		Weight		Cover & Container Material	Case to Cover Seal Method
			in	mm	in	mm	in	mm	in	mm	lbs	kgs		
GC2	CR235-HD	6	10.25	260	7.06	179	9.88	251	10.94	278	63	28.6	Polypropylene Plastic	Heat Seal

ELECTRICAL SPECIFICATIONS

Ampere Hour Capacity (Ah)							Discharge Capacity Minutes					KWH (kWh)	Internal Resistance
100 Hr	72 Hr	48 Hr	20 Hr	10 Hr	5 Hr	2 Hr	100A	75A	50A	25A	10A	100 Hr	80°F / 27°C
290	275	255	235	199	190	154	88	125	205	459	1361	1.740	5.1mΩ

CHARGING INSTRUCTIONS

We specifie the following standard battery charge profile for the CR235-HD deep cycle battery when used in an electric vehicle service:

Phase 1: Constant Current (I1) I1 = highest amperage available < 60 amps

Phase 1: Constant Current (I1)I1 = minimum amperage available > 25 amps

Normal transition to Phase 2 at 2.37 Volts Per Cell.

Safety transition to END OF CHARGE of dV / dt <0V / 1 hr, dt = 1 hr. (NEGATIVE SLOPE).

Timeout for Phase 1 = 10 hours.

Phase 2: Constant Voltage (U2)U2 = 2.37 VPC

Normal Transition to Phase 3 at I2 = 5.0 amps or approximate. Safety transition to END OF CHARGE of I dI/dt I < 0.4 amp / 1 hr, dt = 1 hr.

Phase 3: Constant Current (I3) I3 = 5.0 amps or approximate. Normal transition to END OF CHARGE at 115 - 118% of AH returned.

Timeout for charging phases 1 - 3 at 16 hours.

Temperature compensation coefficient = +/- 3 mV / °C.

Recommended Equalization Charge: Every seven (7) days. 4 additional hours at normal finish rate of 5.0 amps.

Safety transition to END OF CHARGE at maximum voltage of 2.7 VPC.

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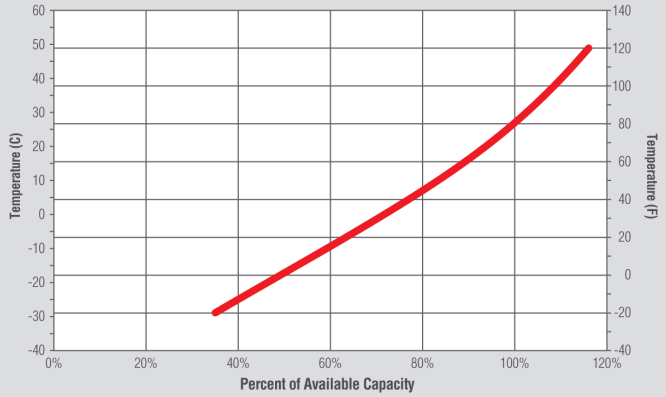
CR235-HD

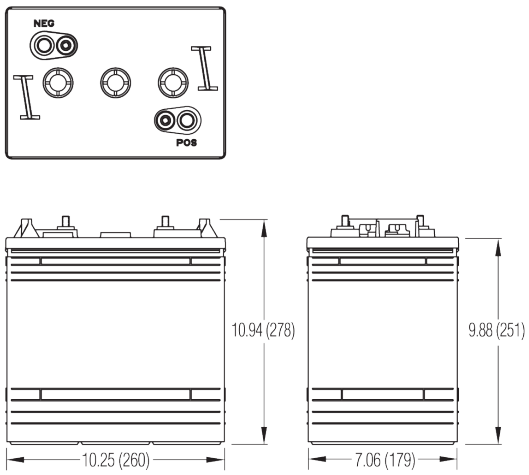
APPLICATION RECOMMENDATIONS

Specific Gravity	Operating Temperature Range	Self Discharge	Terminal Torque Specifications
Fully charged battery specific gravity (100% state-of-charge) is 1.275 Fully discharged battery specific gravity (100% depth-of-discharge) is 1.125	-40°F to 120°F (-40°C to 49°C). Flooded lead acid battery capacities are temperature sensitive: refer to the temperature / capacity projection chart below to identify available capacity at the application operating temperature. **Application Note:** Maintain a state of charge greater than 60 percent when operating flooded lead acid batteries at temperatures below 32°F (0°C).	Fully charged batteries that are stored at a temperature of 80°F (27°C) will self-discharge at a rate of 3.5% per week.	SAE / Automotive Terminal Style: 50 to 70 in-lbs / 6 to 8 Nm Stainless Threaded Terminal (Types C, S, Z): 100 to 120 in-lbs / 11 to 14 Nm

Application Note: Lead acid batteries contain corrosive battery electrolyte and generate highly flammable hydrogen gas. When working near batteries wear protective clothing, gloves, and safety glasses when handling batteries and electrolyte and always work in a well-ventilated area. Do not over-torque terminals. Over-torque can result in terminal damage, breakage, terminal meltdown or fire. This flooded lead acid deep cycle batteries require periodic preventative maintenance and effective charging service to ensure dependable service life.

AVAILABLE CAPACITY AT APPLICATION OPERATING TEMPERATURE

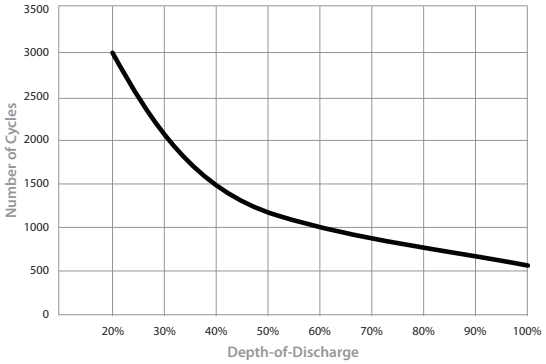




TYPICAL BATTERY CYCLE LIFE / DEPTH OF DISCHARGE

Battery Model	100% DOD Cycles	End-Cycle Voltage	50% DOD Cycles	End-Cycle Voltage	40% DOD Cycles	End-Cycle Voltage	20% DOD Cycles	End-Cycle Voltage
CR235-HD	500	1.75 VPC	1200	1.94 VPC	1500	1.97 VPC	3000	2.05 VPC

The battery life references presented above are estimations based upon stationary life cycle testing conducted at our testing Center. The data references are nominal and should not be construed as maximum or minimum values for specifications or for final design. Data for this product type may vary from that shown herein, and the manufacturer makes no warranties – expressed or implied – based upon the data shown above.



Effect of Battery Temperature on Battery Life

Lead acid batteries are electrochemical storage devices that store and release chemical energy upon demand in the form of electricity. By virtue of their design lead acid batteries are highly reactive to temperature – with the rate of chemical reactions that occur within the battery being affected by the operating temperature where the battery is used. Higher operating temperatures will result in faster chemical reactions within the battery – delivering improved discharge performance; conversely, cooler operating temperatures will result in slower internal chemistry. However, higher operating temperatures also result in shortened battery life as the increased rate of chemical reactions will accelerate the rate of deterioration of internal components. Typical battery life is based upon a baseline operating temperature of 80°F / 27°C. Temperature increases of 15°F / 10°C over the baseline will cause the battery's rate of internal chemical reactions to double – something that will reduce battery life due to the accelerated deterioration of internal components. Please contact the manufacturer to discuss any minimal requirements for battery life when operating batteries in temperatures greater than 80°F / 27°C.

Your local dealer :

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