

ROYAL

Semi Sealed Maintenance Free Lead Acid Batteries

Complete protection against reduction of sulphuric acid

Preventing electrolyte losses by returning liquid to the reservoir

Consistent starting performance

High durability achieved by adoption of special wrought lead calcium grids and low resistance envelope separator

Longer lifetime

Longer lifetime achieved by minimizing vibration which reduces battery lifetime



APPLICATIONS

Industrial Backup • Small Wind Energy Sites • UPS Backup & Lighting
Small Solar Application Sites • Automotive Industry • Marine

The Royal calcium battery is a general purpose semi-sealed battery with a design life up to 3 to 5 years in standby service.

Royal batteries use specially alloyed calcium-lead, which leads to extremely low levels of "electrolyte decrease". Therefore there is no need to supplement distilled water if the charging system remains error-free. Special liquid-gas separators keep the electrolyte inside. An electrolyte is any substance containing free ions that behaves as an electrically conductive medium. These separators are also used between the positive and negative plates of a lead acid battery to prevent a short circuit through physical contact. No filler caps are required therefore there is no electrolyte contamination, overwatering or damage in use. Unique wrought lead-calcium grid design means less internal corrosion and efficient current conductivity for more power and longer life. It also cuts gassing, resists overcharge, heat and thermal runaway.



- Complete protection against reduction of sulfuric acid.
- Preventing electrolyte losses by collecting and returning liquid to the reservoir.
- Consistent starting performance.
- High durability achieved by adoption of special wrought lead calcium grids.
- Low resistance envelope separator.

Model	Nominal Voltage	Terminal Type	Nominal Capacity (20hr/Ah)	Weight (Approx. kg)	Reserve Capacity (Minutes)	Cold Cranking Amps @ -18°C	Height (mm)	Dimensions Length (mm)	Width (mm)
NS40	12	SAE Post	35	9.54	52	310	230	200	135
NS60	12	SAE Post	45	11.52	75	325	230	240	135
NS70	12	SAE Post	65	16.86	110	550	230	265	190
56637	12	SAE Post	66	16.08	110	550	175	275	175
1111K	12	SAE Post	100	22.00	160	750	240	320	175
1150K	12	Nut	102	24.78	180	625	240	335	175
N120	12	SAE Post	120	34.16	230	800	235	510	185
N150	12	SAE Post	150	41.50	300	900	230	510	220
N200	12	SAE Post	200	55.70	430	1000	245	520	280

Terms and ratings

Cold cranking amperes (CCA) is the amount of current a battery can provide at 0 °F (−18 °C). The rating is defined as the current a lead-acid battery at that temperature can deliver for 30 seconds and maintain at least 1.2 volts per cell (7.2 volts for a 12-volt battery). It is a more demanding test than those at higher temperatures.

Hot cranking amperes (HCA) is the amount of current a battery can provide at 80 °F (26.7 °C). The rating is defined as the current a lead-acid battery at that temperature can deliver for 30 seconds and maintain at least 1.2 volts per cell (7.2 volts for a 12-volt battery).

Reserve capacity minutes (RCM), also referred to as reserve capacity (RC), is a battery's ability to sustain a minimum stated electrical load; it is defined as the time (in minutes) that a lead-acid battery at 80 °F (27 °C) will continuously deliver 25 amperes before its voltage drops below 10.5 volts.

The hydrometer measures the density, and therefore indirectly the amount of sulfuric acid in the electrolyte. A low reading means that sulfate is bound to the battery plates and that the battery is discharged. Upon recharge of the battery, the sulfate returns to the electrolyte.

Clamping Options

Automotive batteries typically have different types of terminals. In past years, the most common design was the SAE Post, consisting of two lead posts in the shape of truncated cones, positioned on the top of the battery, with slightly different diameters (to ensure correct polarity).



Packaging

Convenient battery boxes are supplied with each unit, for ease of carrying as well as stacking of batteries.



What is the difference between a normal lead-acid car battery and a deep cycle battery?

A car's battery is designed to provide a very large amount of current for a short period of time. This surge of current is needed to turn the engine over during starting. Once the engine starts, the alternator provides all the power that the car needs, so a car battery may go through its entire life without ever being drained more than 20 percent of its total capacity. Used in this way, a car battery can last a number of years. To achieve a large amount of current, a car battery uses thin plates in order to increase its surface area. A deep cycle battery is designed to provide a steady amount of current over a long period of time. A deep cycle battery can provide a surge when needed, but nothing like the surge a car battery can. A deep cycle battery is also designed to be deeply discharged over and over again (something that would ruin a car battery very quickly). To accomplish this, a deep cycle battery uses thicker plates. Typically, a deep cycle battery will have two or three times the RC of a car battery, but will deliver one-half or three-quarters the CCAs. In addition, a deep cycle battery can withstand several hundred total discharge/recharge cycles, while a car battery is not designed to be totally discharged.

Royal Marine Series

Features

- Low-Resistance envelope separators
- Flame arrester
- Hydrometer
- Heat-Sealed covers
- Polypropylene Case
- Wrought Lead-calcium grids
- Centered Cast-on plate straps
- Exclusive patented liquid gas separator



BCI Group Size	Catalogue Number	Nominal Voltage	Terminal Type	Nominal Capacity (20hr/Ah)	Weight (Approx. kg)	Reserve Capacity (Minutes)	Cranking Amps @ 0°C	Dimensions Height mm	Length mm	Width mm
24	DC24	12	SAE Posts & Wing Nut	70	20.12	120	620 (MCA)	240	260	172
27	DC27	12	SAE Posts & Wing Nut	80	23.7	145	720 (MCA)	240	300	172
31	DC31	12	SAE Posts & Wing Nut	100	27.0	180	790 (MCA)	250	320	161

Battery Council International (BCI) Trade organization of lead-acid battery manufacturers
Cranking amperes (CA), also sometimes referred to as marine cranking amperes (MCA), is the amount of current a battery can provide at 32 °F (0 °C).

Charging Instructions

The battery is an energy storage reservoir. When energy is removed from the battery it must be put back by recharging. The amount of energy to be put back depends on how much was taken out. The time it will take depends on the ampere out of the charger used. The Delkor Royal Marine and Deep Cycle battery has a built-in state-of-charge indicator to show how much energy is left in the battery. A green colored ball or black colored ball may be visible in the indicator. The indicator is also used to determine how long the battery should be recharged as follow.

Indicator Colour	Black		Green	• Temperature during charge: 15.5 oC to 26.6 oC • Recommended charging ampere: 0.1C; Therefore 0.1 x 100A/h (1150K) = 10Amps charging
State-of-charge	Below 50%	50~70%	Above 70%	
Minimum Charge Time	24 Hours	12 Hours	8 Hours	

How to handle and Store batteries

- Batteries should be stored in cool, dry (27 °C) places and out of direct sunlight (make sure the battery is fully charged)
- Delkor Royal batteries are tightly sealed to prevent acid leakage. However, tilting the battery to an angle of 45 degrees can cause acid to leak through the vents on the sides. Therefore, batteries should always be stored in their upright positions. Prevent placing any aqueous or solid (i.e. conductors) bodies on top of the battery.
- UN2794 "United Nations Committee of Experts on transport of dangerous goods defines the batteries as wet, filled with acid and electric storage.
- It is extremely dangerous to use tools, such as hammers, on the battery terminals when connecting cables to the mounted battery.
- When storing the battery for long periods of time, check the voltage of the battery every 6 months. If the voltage (OCV) drops below 12.5V, recharge the battery before placing it back in storage.
- Check the hydrometer periodically on stored batteries. If 1 or 2 of the indicators appear black, immediately recharge the respective lot.