

WHAT ARE COLD CRANKING AMPS

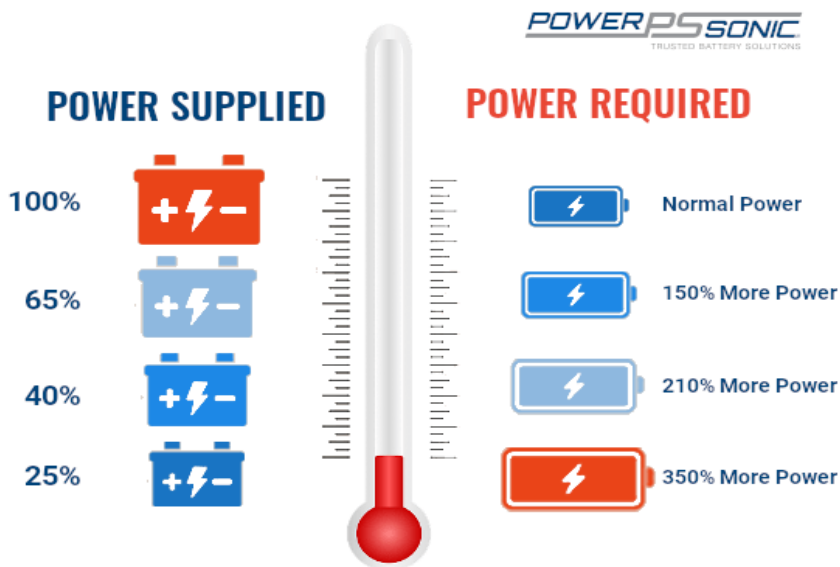
In order to understand where the term “Cranking Amps” comes from, it is important to understand the history behind traditional automobile engines. Prior to the electric car starting system, a hand crank was used to turn over the engine. This was a dangerous task and required a lot of strength from whomever was physically cranking the engine.

In 1912, Cadillac introduced the electric engine starter in all their models. In this new advancement, a battery was used to start the engine. The battery provided enough power and current (or “Cranking Amps”) to start the engine without the need to hand-crank. Just 8 years later, the rest of the car industry followed, and the automotive battery industry was born.

Initially, little was known about how much amperage would be needed to effectively start an engine, and it was still unclear as to if temperature had any effect on how the battery worked with the starting mechanism and the engine itself. It was quickly discovered that these starter batteries would need to provide a very large amount of current to the engine very quickly – about 30 seconds of high-rate discharge - and that temperature did affect how much current (Cranking Amps) was able to be delivered. Cold temperatures seemed to have a clear effect on the engine and its fluids. The fluid inside the engine increases in viscosity when it is colder, making it harder to start the engine.

It is important to note these temperature affects, because engines aren't the only vehicle component that behave differently in cold weather. SLA batteries also act differently in cold temperatures. The viscosity of the battery's electrolyte increases which in turn increases the impedance and limits the amount of current that can be provided. The battery's voltage is lower in cold temperature, which means it also has less energy when it is cold outside. Therefore, when you start your car in the dead of winter in Michigan, it may take a few tries before the engine turns over.

COLD CRANKING AMP TEMPERATURE CHART



GLOBAL HEADQUARTERS (USA AND INTERNATIONAL EXCLUDING EMEA)

Power-Sonic Corporation
365 Cabela Dr Suite 300,
Reno, Nevada 89523
USA
T: +1 619 661 2020
E: customer-service@power-sonic.com

POWER-SONIC EMEA (EMEA – EUROPE, MIDDLE EAST AND AFRICA)

Smitspol 4, 3861 RS Nijkerk,
The Netherlands
T NL: + 31 33 7410 700
T UK: + 44 1268 560 686
T FR: + 33 344 32 18 17
E: salesEMEA@power-sonic.com

WHAT ARE COLD CRANKING AMPS

The current delivered in cold temperature (typically anything below 32°F, but often tested at much colder temperature) is called “Cold Cranking Amps” and are lower than standard Cranking Amps (above freezing temperatures). In traditional SLA starter batteries, you will see a CA (Cranking Amp) and a CCA (Cold Cranking Amp) rating on the battery for this reason.

It is because of temperature’s effects on the battery and the engine that global standards were created. Batteries needed to work in both warm and cold temperatures, and to ensure they would do so, several agencies (like SAE, JIS, and DIN) have standards centered around automotive (cars, trucks, and other large-engine vehicles) CCAs and CAs.

Most of these standards feature similar testing procedures with temperatures ranging from -15°C and -18°C, testing lasting 10-30 seconds, with various voltage requirements that the battery must stay above during testing. For example, in the SAE J537 June 1994 American Standard, a 12-Volt SLA battery must deliver a specified Cold Cranking Amp current for 30 seconds at -18°C without dropping below 7.2 Volts.

WHAT IS DIN STANDARD?

The DIN is a German standard that is like the SAE standard in that it is also conducted at -18°C, but this test discharges the battery to 6 Volts at the specified Cold Cranking Amp. The Voltage must be at or above 9 Volts after 30 seconds and it cannot take longer than two and a half minutes to reach 6 Volts.

WHAT IS JIS STANDARD?

Another common standard is the JIS standard D5301:1999. The testing for this standard is done at -15°C, but the test is run with 150A or 300A (depending on the size of the battery) at 10s or 30s to 6 Volts. This is a good standard to evaluate the battery but does not yield true Cold Cranking Amps.

All the standards mentioned in this blog are related to SLA automotive batteries, not power sport, lithium automotive, or lithium power sport batteries. It is interesting to note that as it is today, there are no Cold Cranking Amp standards for lithium batteries. When looking for a lithium battery for your starter application needs, it is more important to focus on Cranking Amps and watt-hours. In the next blog, we will go cover the standards for power sport batteries, and other CA/CCA points as they relate to lithium batteries.

Have a look at what CCA means for motorcycle batteries in part 2 of our blog on CCA.

GLOBAL HEADQUARTERS (USA AND INTERNATIONAL EXCLUDING EMEA)

Power-Sonic Corporation
365 Cabela Dr Suite 300,
Reno, Nevada 89523
USA
T: +1 619 661 2020
E: customer-service@power-sonic.com

POWER-SONIC EMEA (EMEA – EUROPE, MIDDLE EAST AND AFRICA)

Smitspol 4, 3861 RS Nijkerk,
The Netherlands
T NL: + 31 33 7410 700
T UK: + 44 1268 560 686
T FR: + 33 344 32 18 17
E: salesEMEA@power-sonic.com