



Is Your Battery Ready for Winter

Cold winter weather can mean hard starts for your vehicle so it is important to make sure your electrical system is in good operating condition. The battery is the heart of your vehicle and, if it is not healthy, your vehicle may fail to start on a cold morning. An engine and battery operate most efficiently at 25 degrees Celsius. At zero degrees Celsius a fully charged battery's cranking capacity drops to 65 percent, while the engines starting requirements increase from 100 percent to 155 percent. At -18 degrees Celsius a fully charged battery now has only 40 percent of its cranking ability, while the engine's starting requirements increase to 210 percent. By the time the temperature reaches -28 degrees Celsius a fully charged battery possesses only 18 percent of its original cranking power, while the engine's starting requirements increases to 268 percent. Why does this occur? It's simply the decrease in chemical activity within the battery's plates as temperature drops. Therefore, it is important that the battery be in good condition to do its job when the mercury plummets.

Good maintenance begins with dirt-free and corrosion-free batteries. Dirt, corrosion and moisture provide a path for energy to escape from the battery.

Defective cables and poor connections are two top reasons for cranking problems. The rule of thumb is "bright and tight" for maximum performance. Also be aware that low charge levels can allow batteries to freeze at -5 degrees Celsius and there is danger of the battery exploding if you connect booster cables from another vehicle or battery.

Vibration is also a battery killer. When hold-down clamps are missing or not tight, the battery case bounces about and the vibration may loosen the battery's internal structure resulting in premature failure or poor performance.

How do I know my battery is healthy? This is done with a "battery load tester". It is a device that applies "an electrical load" to the battery to test its capacity (it simulates the short high amperage draw or load the battery would experience cranking a cold engine). It is set at one half the battery's cold-cranking amperage rating (CCA rating which is the number of amps that a battery can produce at 0 degrees Celsius for 30 seconds) this number is imprinted on the top of most batteries. The battery is discharged at that rate for 15 seconds. If the reading is 9.5 volts or better at 20 degrees Celsius the battery is in good shape and does not need recharging. If the reading is below 9.5 volts, recharge the battery and test again. If the battery fails the second time it is recommended to replace the battery as it may well leave you stranded in the near future.

Batteries are often the catalyst for other problems that cause no starts in winter. For example, defects in the charging system such as slipping belts, a faulty alternator or high resistance in the wiring will cause a battery to discharge. Low battery output will result in too slow a cranking speed along with extended cranking time for an engine to fire up. This will cause your starter motor to overheat and damage itself. In addition, when a vehicles electrical load exceeds its alternators charging capacity, excessive battery cycling (deep draining) can result. A car battery



is designed to provide a very large amount of current for a short period of time. This surge of current is needed to crank the engine during starting. Once the engine starts, the alternator provides all the power that the vehicle needs. Excessive cycling can shorten battery life, (even slow speed driving with too many accessories operating can cause battery cycling). Do not confuse this with RV or "deep cycle batteries" which are designed to provide a steady amount of low current over a long period of time. A deep cycle battery can provide a small surge when needed, but not 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). Another fact of today's automobiles is that electrical demands on batteries are higher than the vehicles of yesteryear so the life span of a battery can well be shorter.

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