THE HIDDEN DANGER IN JUMP-STARTING ANOTHER VEHICLE

A camping friend turns his vehicle ignition key and instead of the engine roaring to life, he hears a click. Something has most likely drained the battery and he asks you to provide a jump-start. ***Be aware your alternator can be permanently damaged in an effort to provide assistance if proper procedures are not followed.*** When jump-starting a vehicle keep these steps in mind. The hidden danger is in step #6.

1. Keep heavy-duty cables on hand. These have thicker wire (6 gauge) for better amp flow; stronger clamp springs for better bite contact; and clamp teeth configured for top or side battery terminal use.
2. Pull the booster vehicle close to but not touching the other vehicle. Shut off the engine.
3. Always connect RED clamps to positive and Black clamps to negative terminals. Hold or position the two clamps on one end of the cable so they will not touch. Hook the clamps on the other end to the appropriate battery terminals on the good battery. The two will-not-touch clamps are now 12-volt hot without fuse protection and due caution should be exercised so they do not make contact. Usually more expensive cable sets have clamps that are plastic or rubber coated on everything but the tooth area to help avoid a direct short if they accidentally flop together.
4. Connect the Red clamp to the positive terminal of the ailing battery.
5. Since the fourth-clamp connection usually produces a spark, do not connect it directly to the negative terminal of the ailing battery. There is the possibility of flammable gasses coming out of the ailing battery that could be ignited by the spark and produce an explosion, cracking the battery case and rendering it useless. Instead connect the Black clamp to a bare metal part bolted directly to the engine block or to the engine block itself. (See picture)
6. Check to make sure the jumper cable will not become tangled in fans, belts, or other moving parts of either engine. Start the good vehicle and run the engine slightly above idle for about four minutes to fast charge the ailing battery. Then shut down the engine before attempting to start the other vehicle. It may seem like a good idea to start and high-idle the good vehicle and keep it running***,*** so that more amps will flow through the cables for a better attempt to start the ailing vehicle. ***Do Not Keep It Running!*** If you do and the ailing vehicle engine roars to life, it may reverse the current flow in the jumper cables, which will damage the alternator in the good vehicle. Therein lies the ***hidden danger*** since there is no immediate sign that this damage has occurred. If you always shut down the engine, no damage can occur to your alternator while trying to start another vehicle.
7. Once the ailing battery has had a four-minute boost, the good engine is shut down, and the jumper cables are still attached, try to start the other vehicle. If it starts, remove the cables in exact reverse order being careful to avoid running fans or belts. Also, remember to keep the hot ends from touching one another.
8. But what if your camping buddy's engine still hasn't started? Start and run the good vehicle above idle for ten minutes, and then shut it off. If the ailing vehicle will not start with this final attempt, reverse-order disconnect the cables, call for roadside assistance, and wait. They will have 100 Amp engine boosters and other professional equipment to get the vehicle started.

What Hidden Alternator Damage Occurs? Alternators have three windings to provide for low/ medium/high voltage needs. Each winding utilizes a diode that is a one-way-electric valve. With the good

engine running and the ailing engine starting, the reversed current flow in the jumper cables can blow one of your alternator diodes. Your alternator will subsequently work no higher than two thirds of capacity.

Later when numerous 12-volt accessories (lights, wipers, high speed fan, radio) are running and the alternator cannot produce enough amps, the draw will deplete your battery. When your vehicle won't subsequently start and an automotive technician tests the battery and alternator output, he will conclude that a new alternator is needed.

Attach the last cable clamp to an engine block ground and avoid potential sparks near explosive battery gasses.

Two Other Possibilities For No-Start:

1. A battery with such low voltage it is hopelessly dead.
   After unsuccessful attempts to jump-start an old car that had not run for several years and had a dead (no voltage) battery, an automotive technician explained that ***it is impossible to jump-start a car with an absolutely dead battery***. He said to mount a good battery in the old car instead. After removing the dead battery and moving the good battery from the newer car to the old one, the old car did start!
2. A seriously corroded battery terminal or loose battery cable
   The failure to start may not be an ailing battery but poor contact between the battery terminal and the cable attached to it. Turn on the ailing vehicle headlights. If they are dim then the corrosion or loose contact is probably contributing to the problem. ***Seriously corroded battery terminals may effectively provide almost no amps to their attached battery cables***. Removing the cable(s), wire-brushing the points of contact, and reinstalling with a wrench may cure the problem. Keep your cable connections clean!