

TOP TEN RULES of JUMP STARTING

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When the service call is for a no-crank or slow-crank condition, try to determine from the owner if the cranking system was "run down" from excessive cranking in a no-start condition, or if a known condition, such as leaving the lights on, was the cause. This information will aid in the type of testing which should be done to determine the cause of the failure.

There are a few basic rules to remember when jump starting a vehicle in a no-crank or slow crank situation. If these few rules are remembered, it will be almost impossible to damage a vehicle's electrical system while performing the service.

1. **Protect yourself.** Eye protection should be worn at all times. Battery explosion is always a threat when sparks are present .
2. **Inspect the battery.** Try to determine the physical condition of the battery, by checking the fluid level or the charge indicator eye, if the battery is a sealed, maintenance-free type. If the indicator eye is light or silver, the cells are dry. If cells are dry or the battery is frozen, a safety hazard exists. Jump starting is not recommended under these circumstances. If the battery or its connections are in poor condition, the owner must be advised that corrections must be made before the vehicle will operate reliably. The battery state of charge can be confirmed by performing an open circuit voltage test. This should be done whenever the charge indicator eye shows a good battery, but the vehicle does not crank properly. It is possible for a battery to be fully charged and still be defective.
3. **Turn EVERYTHING off and pocket the keys.** Make absolutely certain that all systems, (lights, wipers, ignition, accessories,) are turned off before attaching the jumper cables. Where it is possible, turn off the dome light and courtesy lights manually to prevent them from coming on when the door is opened. This will minimize the number of live circuits in case a voltage spike or reverse polarity voltage should occur. If the vehicle is equipped with an amplifier or other aftermarket equipment that is wired directly to the battery and "hot" at all times, it should be disconnected. If the vehicle is equipped with a cellular phone, disconnect the power cable at the power pack or vehicle battery. Failure to do so may result in damage to the phone's sensitive electronic circuits. When possible, roll down a window or remove the keys from the ignition, as some models may deadbolt the doors when the jumper cables are connected with a totally dead or disconnected battery.
4. **Avoid voltage spikes and look for special precautions.** If you are using a jumper unit which is live at all times, connect the ground cable to the dead vehicle last. Make the connection away from the battery, preferably to the engine block. The safest method, and the least likely to cause damage, is to connect the cables to the dead vehicle first and then plug the cables into the service vehicle. If you are using a portable jumper box or jump start unit which is live only when switched on, the order of hookup does not matter. NOTE: Refer to special procedures for BMW, Ford, Honda, Hyundai, Jaguar, Laforza, Maserati, Porsche, Rolls Royce, Saab, Subaru and others. The special precautions are found on the individual vehicle pages in the *AAA/CAA Towing and Service Manual*.
5. **Check for proper polarity.** In all cases, double check the vehicle battery before hookup to make certain that the jumper cables will not be reversed. Most jump start units will allow current to flow in the wrong direction, at least momentarily. This is long enough to damage the alternator diodes or any other live circuit with solid-state electronic components.

6. **Check the cables.** Once the unit is correctly connected, make certain that all cables are clear of fan blades, belts and any other moving parts . Be sure that all persons stand clear of the engine compartment area..
7. **Crank and observe.** Attempt to crank the vehicle. While cranking, observe the cranking speed and listen for unusual engine noises. If the engine sounds abnormal, (no compression on some cylinders, knocking, etc.), do not attempt to start it. Do not crank the engine for more than ten seconds at a time, with a one minute waiting period between tries. If the engine does not start after thirty seconds of cranking, stop the procedure and begin diagnosing the engine systems, or tow the vehicle.
8. **If cranking is slow, check the voltage.** If the cranking speed is very slow, place a voltmeter across the battery on the dead vehicle and observe the voltage while cranking. If the voltage is less than 9 volts, you may have too much resistance in your cables or jump start unit. Allow a few minutes with the jumper unit connected for the vehicle's battery to build up a surface charge. If the cranking speed improves, your cables are too small, or you have a bad connection in your jump starting unit. If the voltage across the battery while cranking is 9 volts or above, but the cranking speed is slow, the starter motor is probably at fault.
9. **Let the engine run before disconnecting.** After starting, allow the engine to return to idle speed. **Do not rev the engine above 2,000 rpm, as transmission damage may occur on some models.** Disconnect the cables and/or jumper unit in the reverse order of installation.
10. **DO NOT apply more than normal charging system voltage of 13-14.8 volts under any circumstances.** Starting units with higher voltage outputs are unsafe to use on any vehicle with solid-state electronic components. **Damage may occur to any live circuit on the vehicle.**