



SAFE BOOSTER STARTS

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It always seems to be the coldest night of the year. You open the car door and notice that the interior light isn't as bright as usual. After inserting the key in the ignition switch and turning it to start, all you hear is a weakening growl from the starter motor. The engine does not turn over nearly fast enough to start. Trying the headlights, you notice that they are orange instead of the normal piercing white. At this moment you realize that your vehicle is not going to start without help - without a boost from another vehicle.

A friend stops and asks, "Won't start, huh, can I give you a boost?"

Your reply is, "Yeah, got some cables?"

Then comes the dilemma of connecting the cables. How do you do it without damaging either of the vehicles or blowing up a battery and spreading battery acid all over everything and everyone?

How Booster or Jump Starting Works

A boost start, or jump start as it may sometimes be called, is the process of using the power from a charged battery to supplement the power of a discharged battery and successfully starting the engine. It is accomplished with the use of booster or jumper cables. These cables are used to safely connect the two vehicles, with their batteries, completing a boosting circuit. The circuit must 1) add the electrical system of the running vehicle to the electrical system of the other in such a way that no damage is suffered by either of the two vehicles and 2) insure your safety.

Safe Steps To Booster Starting

Use the correct procedure when boosting from another battery. Incorrect booster starting is dangerous.

1. Remove the cell caps from the dead battery, when possible. Some batteries are sealed and the caps cannot be removed; if so, move on to the next step. If the caps can be removed, check the electrolyte level and add distilled water, if needed. Replace the caps if they are the vented type, otherwise cover the cell holes with a damp cloth. When temperatures are below freezing, check for ice in the dead battery. Never try to boost a frozen battery; replace it or thaw it completely.
2. Make sure that both batteries are of the same voltage. Do not attempt to boost a 6-volt battery with a 12-volt battery or a 12-volt battery with a 6-volt battery. One of the two vehicles may be damaged in the process.
3. Turn off the ignition and all accessories in both vehicles.
4. Put both vehicles in park or neutral with parking brakes set. The vehicles must not touch each other, but should be close enough that the booster cables will reach without stretching or crossing over the engine compartments.
5. Decide which cable of the booster cables will be positive and which will be negative; usually red or yellow is assigned to be positive and black is assigned to be negative.
6. Attach one end of the positive booster cable to the positive terminal of the booster battery. Attach the other end of the positive booster cable to the positive terminal of the dead battery. Good metal-to-metal contacts are absolutely necessary. Sometimes, wiggling the cable clamp slightly will help to insure a good contact. However, don't over do it.

Warning: Do not allow the ends of both cables to touch while attached to the batteries; sparks and short circuits will result!
7. Then attach one end of the other cable, the negative cable, to the negative terminal of the booster battery. Before making this connection, be certain that the opposite end of the negative cable is not contacting either the positive cable or any part of either vehicle. Again, be sure of good metal to metal contact.

8. Connect the remaining end of the negative cable to the engine block or thick metal frame of the vehicle with the dead battery. Do not connect it to sheet metal or any rotating part; damage will result. The connection should be made at a level lower than the battery and as far away from it as possible, but still under the hood. This will reduce the possibility of igniting any hydrogen gas that may be present above the dead battery.

An illustration showing all connections is shown in Figure 1.

9. Start the engine of the vehicle that has the booster battery. Let it run for a few minutes with the cables attached. Then try to start the engine of the vehicle with the dead battery. Do not use the starter motor more than 30 seconds at a time.

Warning! Cranking the engine for more than 30 seconds at a time may overheat the starter motor and damage it.

10. After the boosted engine has been started, disconnect the booster cable connections in the reverse order of attaching them.

The negative cable from the block or frame.

The negative cable from the booster battery. The positive cable from the dead battery.

Finally, the positive cable from the booster battery.

11. If vent caps were removed from the boosted battery, replace them.
12. Use the accessories on the boosted vehicle sparingly until the battery is fully charged. If the engine should stop before the battery is charged up, it may need another boost.

Selection of Booster Cables

Good booster cables are a lot like insurance; you want good coverage - you hope that you'll never need to use it - but you know it is going to cost you some money. Qualities to look for in booster cables.

- Copper wire for conductivity and flexibility. Four, 6, or 8 gauge stranded cable.
- Clamps made of heavy gauge metal with strong springs.
- Thick rubber insulation. Plastic insulation tends to stiffen and crack in cold temperatures.
- Length of 10 to 12 feet. Longer cables tend to tangle and cause more voltage drop; shorter ones frequently won't reach.

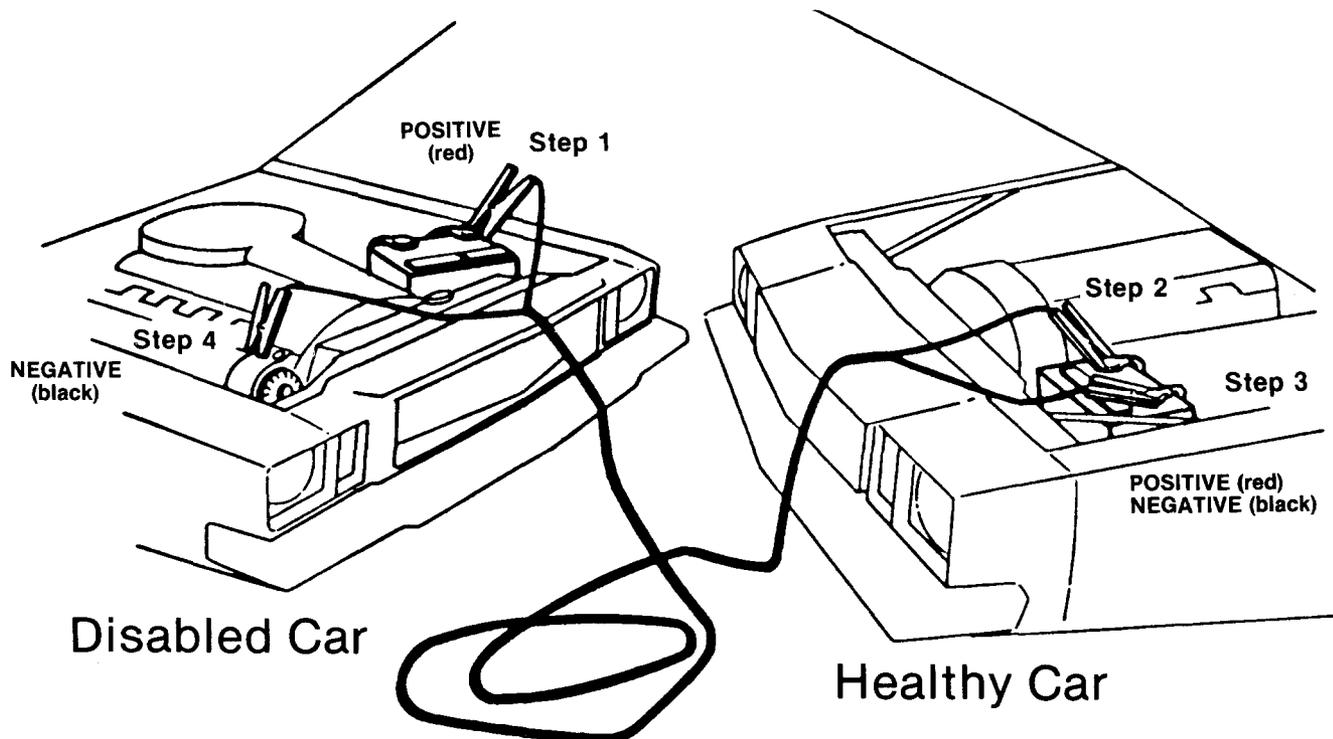


Figure 1. Illustration of All Boosting Connections

How To Reduce The Need For Booster Starts

Follow these steps to reduce the need for booster starts.

1. Maintain the battery. Keep the battery and its connections clean and tight. Keep the electrolyte level up with distilled water.
2. Do not expect more life from a battery than it is rated to provide. The warranty life of a battery is a good indicator.
3. Realize that repeated heavy use of a battery will shorten its productive life. Be careful that the boost starts you give are done correctly.
4. Do not use vehicle accessories without the engine running fast enough to replace the electricity used. Using accessories when the engine is not running will drain the battery. Turn off the accessories, such as headlights, before you turn off the engine.
5. Be careful when adding aftermarket accessories to your vehicle that you do not overload the capabilities of the battery and charging system output. An alternator or generator can produce only a limited amount of electricity before it is overloaded.

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