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PRINTABLE SAFETY GUIDE

Jump-starting a car safely

The four-clamp order and why it is not symmetrical, the inspection before you connect anything, what to do when the car starts and then dies, and the cases where a jump is the wrong answer. With a two-minute battery test for the day after.

thefixcar.com editorial team · Reviewed by Ray Donovan, Fleet Maintenance Specialist · October 2026

Free to print and share unchanged. Keep a copy in the bag with the jumper cables.

1 Before you connect anything

A jump start moves a lot of current through a battery that may have been venting hydrogen for hours. Two minutes of looking before the first clamp goes on is what keeps the procedure boring.

Inspect the dead battery

- ☐ Case not cracked, bulged or leaking. A damaged battery can fail under the current of a jump.
- ☐ Not frozen. A frozen battery will not accept charge and can crack further. Warm the car first.
- ☐ No strong rotten-egg smell before anything is connected. Persistent sulphur smell at rest means a failed cell: replace, do not boost.
- ☐ Terminals free of heavy white or blue crust. Light corrosion: scrub with a wire brush so the clamp can bite bare metal.
- ☐ No fuel smell or visible fuel leak in the engine bay. Sparks and fuel vapour do not mix, whatever the cable order.

Set up both cars

- ☐ Both cars in Park (manual: in neutral with the parking brake set), engines off, keys out of the start position.
- ☐ Cars close enough for the cables but not touching. Two bodies in contact make a direct current path between frames.
- ☐ Hybrids and EVs: find the designated jump terminals in the owner's manual. They are often on a terminal block in the engine bay, not at the battery. Never touch an orange cable or connector.
- ☐ Safety glasses on, gloves on, jewellery off.

LEVEL	WHAT TO CARRY
Essential	Cables of 12 AWG (about 3.3 mm ²) or thicker, at least 16 ft (5 m) long, with a stated continuous amperage, not just a clamp rating. Both cars with conventional 12 V batteries.
Better	Safety glasses, nitrile gloves, a torch, a wire brush for the posts.
Alone a lot	A lithium jump pack. It starts the car without a second vehicle and holds a charge for months; check its indicator each autumn.

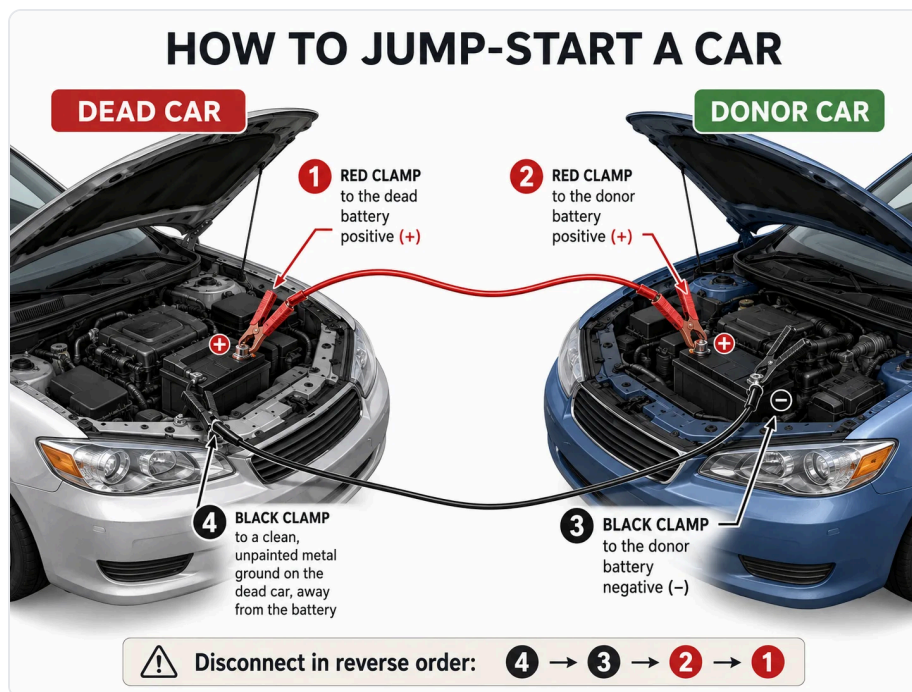
Why the cable gauge matters

Thin 16-gauge cables with "800 A" clamps are common at fuel stations. The clamp rating says nothing about the wire. On a cold morning or a large engine, thin wire heats up during a long crank and may not pass enough current to start the car at all. Twenty-foot cables also let you park both cars safely off the carriageway instead of nose-to-nose in a lane.

Do not jump: a cracked, swollen, leaking or frozen battery; a car with a fuel leak; any high-voltage component on a hybrid or EV. Arrange a tow or a replacement instead.

2 The four-clamp order

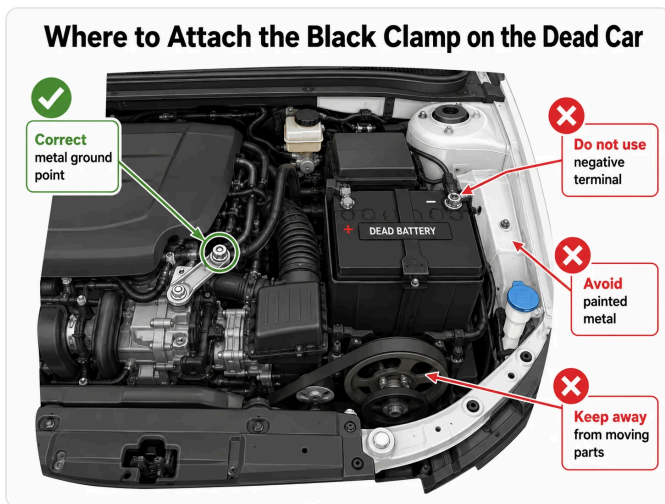
Positive first, negative last, and the last clamp goes on bare metal of the dead car, not on its battery. The asymmetry is the whole point: it moves the spark that completes the circuit away from the battery vents.



The connection order. Red to the dead battery first, red to the donor, black to the donor, black to a metal ground on the dead car.

- 1 **Red clamp to the positive (+) post of the dead battery.** Seat it on bare metal, not on a plastic shroud. The post is marked + and often has a red cover.
- 2 **Red clamp to the positive (+) post of the donor battery.** From now on the other end of the red cable is live: keep the loose black clamps in hand or on rubber trim, never resting on the bodywork.
- 3 **Black clamp to the negative (-) post of the donor battery.**
- 4 **Black clamp to unpainted metal on the dead car:** a bolt on the engine block, an alternator bracket, a strut-tower bolt. At least 30 cm (12 in) from the battery, away from fuel lines, belts and plastic. A brief small spark here is normal. Sustained arcing is not: disconnect and check the first three clamps.
- 5 **Start the donor car and let it run for two to three minutes** so its alternator pushes some charge into the dead battery before you ask that battery to crank.
- 6 **Start the dead car.** If it cranks slowly but starts, keep it running. If it does not start in two tries, wait two minutes and try once more. Three failures with good connections mean the battery is too far gone or has a failed cell.

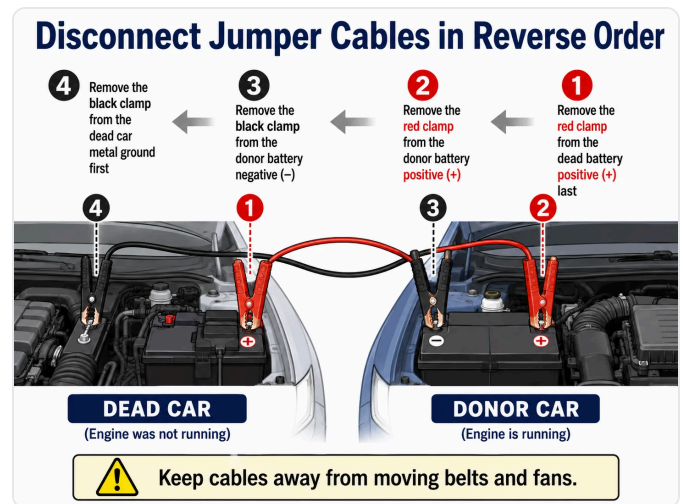
3 Where the last clamp goes, and how to disconnect



A clean, unpainted bolt or bracket on the engine or chassis. Not the battery's negative post, not a fuel line, not a moving part.

The engine block and chassis are connected to the battery's negative post, so a ground point completes the same circuit as the post would. The difference is where the spark happens. A battery that has been dead for hours may have hydrogen near its vent caps; a spark on the post is a spark in that gas. On the engine block, 30 cm away, it is just a spark.

Wrong-order connections and loose clamps resting on bodywork also cause voltage spikes. Cars built after about 2000 carry a dozen control modules, and some of them are sensitive to a spike through the alternator or the engine computer.

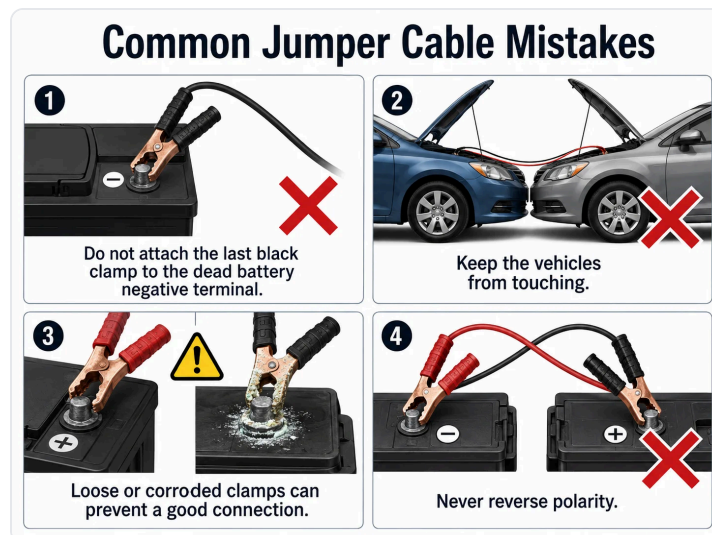


Disconnect in exact reverse: black from the ground point, black from the donor, red from the donor, red from the previously dead battery.

Once the dead car is running

1. Leave everything connected for at least a minute. The battery has just cranked an engine from empty and its voltage is unstable.
2. Remove the clamps in reverse order (see diagram), keeping the clamps from touching each other or any metal while they come off.
3. Drive for 20 to 30 minutes without stopping if the charging system is healthy. Short trips with the lights and heater on will not recover a deeply discharged battery; connect a plug-in charger overnight instead.
4. Do not switch the engine off to go back for a bag. If the battery is marginal, it may not restart.

4 Common mistakes



The four mistakes seen most often at the roadside.

MISTAKE	WHY IT GOES WRONG
Last black clamp on the dead battery's negative post	"One red on each battery, so one black on each" feels consistent. It puts the circuit-completing spark directly above the vent caps.
A loose clamp resting on the bodywork	Once the first red clamp is on, any unattached clamp touching metal of the dead car completes a partial circuit. Setting a clamp down on the wing "for a second" is a short with no warning.
Not cleaning corroded posts	Heavy corrosion resists current. The car does not start, the driver blames the battery, and the clamp never made contact. Thirty seconds with a wire brush.
Reversed polarity	Red to negative, black to positive: sparks, blown fuses, and on modern cars a damaged alternator or engine computer. Read the symbols on the posts, not the colour of the cable covers, which are sometimes missing.
Cars touching	Two bodies in contact create a direct current path between frames.
Cables sized for a small car on a large engine	Cold-start current on a V8 or a diesel is far higher than on a four-cylinder. Thin cables overheat and fail to crank.
Removing the cables the moment it starts	The battery's voltage is unstable for the first minute. Keep everything connected briefly, then disconnect in reverse order.
Guessing the terminals on a hybrid or EV	The 12 V battery is often in the boot or under the floor and the jump terminals are on a block in the engine bay. Connecting to the wrong point damages modules. The manual's diagram takes two minutes.

5 It started, then it died: battery or alternator?

The battery starts the engine; the alternator runs the car and recharges the battery. A car that stalls minutes after a jump, or the moment the cables come off, is telling you the alternator side has failed.

WHAT HAPPENS	MOST LIKELY AREA
Starts with the jump, dies immediately when the cables come off	Alternator not charging, loose terminal, or broken belt
Starts with the jump, runs 5 to 30 minutes, then dies	Charging system not keeping up; the car ran on the battery's reserve
Starts, keeps running, but will not restart later	Weak battery or a parasitic drain while parked
Battery warning light stays on with the engine running	Charging-system fault
Belt squeal, heavy steering, overheating	Serpentine belt broken or slipping
Terminals spark when touched, move by hand, show heavy corrosion	Bad battery connection

What to check

1. **Voltage with the engine running**, across the battery posts: 13.7 to 14.7 V is a working charging system. Below about 13 V, the alternator is not charging.
2. **The serpentine belt**, engine off: missing, cracked, glazed, or more than about 12 mm (½ in) of play when pressed.
3. **The battery light**. Lit with the engine running, it reports the charging system, not the battery.
4. **Terminal clamps** by hand: they must not rotate or lift. Green or white crust means resistance.
5. **The ground strap** from the battery to the chassis and from the engine to the body: fraying or corrosion at the bolt end.
6. **A load test** at a parts store, usually free. A battery that passes but still dies after a jump confirms the fault is in the charging system.

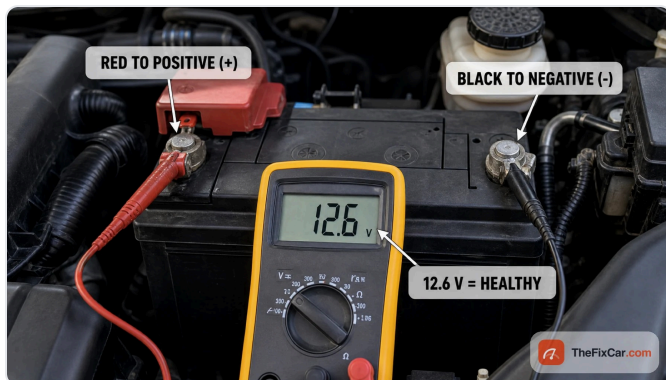
Is it safe to drive?

No. Without charging, the car stalls when the battery runs out, often in traffic, with little warning beyond dimming dash lights. As voltage falls, electric power steering, ABS and stability control can shut down before the engine does. If the car must move, drive straight to a workshop at low speed with every accessory off, and plan for stopping short.

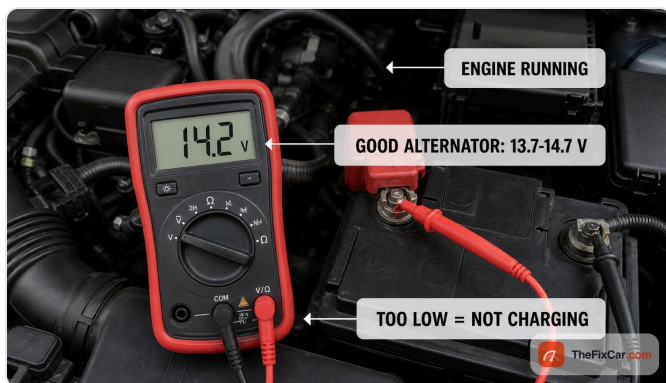
Urgent signs: dash lights dimming or flickering while driving; a burning rubber smell; the battery light on within minutes of the jump; steering or brake pedal suddenly heavier; headlights pulsing at idle.

6 The two-minute test for the next day

A multimeter costs about the price of a tank of fuel and tells you, in three readings, whether yesterday's jump was a one-off or the first of many.



Rested battery, engine off. Red to +, black to -.



Engine running: the charging system.

- 1 Let it rest.** A few hours parked, or headlights on for one minute and off again, to burn off the surface charge that makes a weak battery look full.
- 2 Rested voltage.** Meter on DC volts, red probe on +, black on -. 12.6 to 12.8 V: charged. 12.4 V: about 75 %. 12.2 V: about 50 %. Below 12.0 V: discharged. Below 12.4 V, recharge fully and test again before judging.
- 3 Cranking.** Probes on the posts, a helper cranks: a healthy battery stays above about 9.6 V. A dip toward 8 V points to a weak battery or a high-current fault even if the resting reading looked fine.
- 4 Engine running.** 13.7 to 14.7 V is normal. Near the resting voltage: not charging (belt, fuse, alternator). Above about 15 V: the regulator is overcharging.

RESULT	POINTS TO
Low at rest and collapses while cranking	The battery
Healthy at rest, low with the engine running	The alternator or its wiring
Reads well, flat again after a night	A parasitic drain
Erratic, jumping readings	Clean and tighten the posts, test again

Voltage shows the state of charge, not capacity. A battery can read 12.6 V and still fail under load; have a borderline battery load-tested before replacing it.

7 Hybrids, EVs, and when to call a tow instead

Hybrids and electric vehicles

Every hybrid and EV has a 12 V auxiliary battery separate from the high-voltage pack. When the car shows no sign of life, it is almost always this small battery, not the drive pack. It is jump-started with the same four-step sequence, from the designated terminals shown in the owner's manual; these are often on a relay or terminal block in the engine bay, because the battery itself may be in the boot or under the floor.

- Never connect to anything orange: orange cables, connectors and covers carry high voltage.
- A hybrid does not crank; the donor only needs to wake the system. Follow the manual's instruction on whether the donor engine runs.
- Do not use a hybrid or EV as the donor unless its manual allows it; some manufacturers forbid it.

Call for help instead of jumping when

- ☐ The battery case is cracked, swollen, leaking or frozen.
- ☐ There is a smell of rotten eggs before anything is connected.
- ☐ There is a fuel leak or a strong fuel smell in the engine bay.
- ☐ The last clamp arcs continuously on the ground point.
- ☐ The car stalls within two or three minutes of the cables coming off.
- ☐ You are on a hard shoulder next to fast traffic, on a slope, or in the dark with no safe place to stand.

Keep in the car

- ☐ Jumper cables, 12 AWG or heavier, 20 ft, with a stated continuous amperage
- ☐ Lithium jump pack, charged each autumn
- ☐ Safety glasses and a pair of nitrile gloves
- ☐ Wire brush or terminal cleaner
- ☐ Torch with fresh batteries
- ☐ This checklist, in the cable bag

Sources and further reading

- Jumper cable connection order: step-by-step checklist, EV notes and mistakes. thefixcar.com/safety/jumper-cable-connection-order/
- Car starts with a jump then dies: battery or alternator? thefixcar.com/symptoms/car-starts-with-a-jump-then-dies-battery-or-alternator/
- How to test a car battery with a multimeter: rested, cranking and charging readings. thefixcar.com/maintenance/how-to-test-car-battery-with-multimeter/
- Battery light came on while driving. thefixcar.com/symptoms/battery-light-came-on-while-driving/
- AAA, "How to use jumper cables"; Midtronics, "The right way to jump start a battery"; OSHA 29 CFR 1926.441 on battery charging and hydrogen ventilation.

General guidance for 12 V lead-acid systems. The owner's manual for your car is the authority for terminal locations and any model-specific procedure. © thefixcar.com, 2026. Free to print and distribute unchanged for non-commercial use, including driver education, fleet safety training and roadside kits.