

Troubleshooting a car that will not run

YES Electric • a plain-language course for shop helpers and car buyers

First edition (October 2026). Prices and hours in this course are rough numbers for a 2008–2016 sedan and will change by car and by year. Treat them as a guide for deciding, not a quote.

Every engine needs the same four things to run: electricity to crank it, a spark, gas, and squeeze. A dead car is missing at least one. The whole job is finding which one, starting with the cheapest and fastest checks and working toward the expensive ones. Here is the order.

Step 1. Look and listen before you touch anything. Pop the hood. Is there oil all over the engine? Is the coolant tank empty? Is anything melted, chewed by mice, or hanging loose? Smell for gas and burned plastic. Check the oil dipstick: no oil, or oil that looks like a milkshake, means the engine itself may be the problem, and you can stop early. This step costs nothing and catches the worst cars.

Step 2. Turn the key to "on" without cranking. Do the dash lights come on? Do you hear a two-second hum from the back of the car? That hum is the fuel pump waking up. No dash lights means no battery power at all. Lights but no hum means the fuel pump may be dead. Write down what you see.

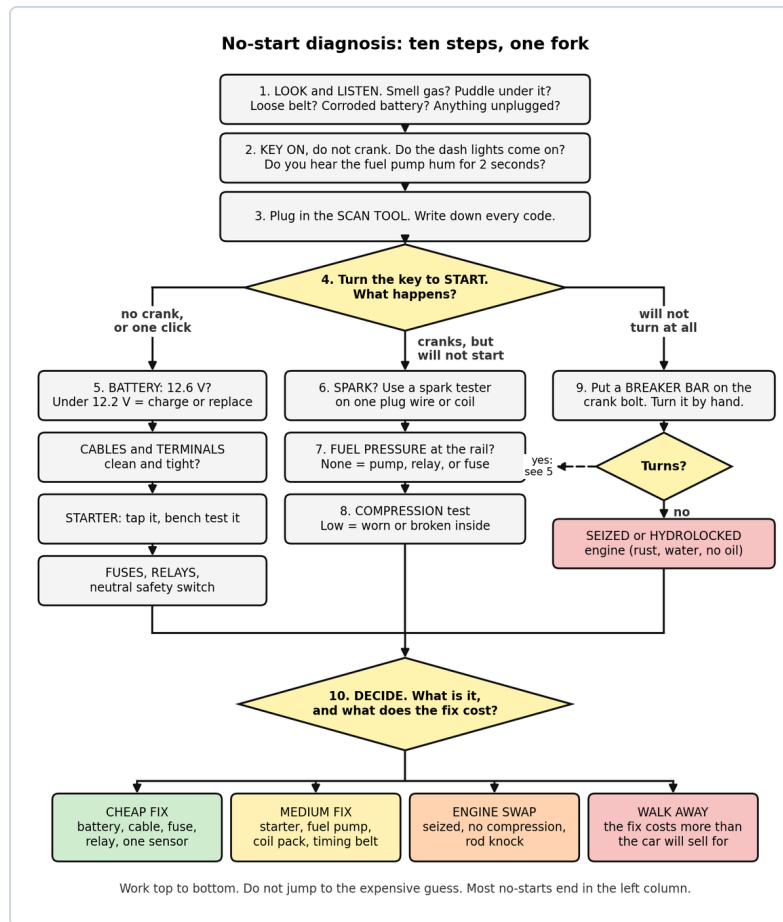
Step 3. Plug in the scan tool. Every car since 1996 has a port under the dash. The scan tool reads the codes the computer stored when things went wrong. A code pointing at the crank sensor, or at one cylinder, or at the fuel system, tells you where to look first. It also shows whether the car is seeing the key. A flashing security light and a code for the immobilizer means the car does not recognize the key, and nothing else matters until that is fixed.



An instrument cluster with the check-engine light (the yellow engine shape) and the battery light lit up. When a light like this stays on, plug in a scan tool and read the codes before guessing at parts.

Photo: File:Warning lights on a vehicle's dashboard glow brightly, indicating possible engine problems. The display shows the time as 1806 on September 4, 2020, creating urgency.jpg by Shixart1985, CC BY 2.0.

Step 4. Now try to crank it, and listen. This is the fork in the road. Three things can happen.



The ten-step no-start flowchart. Steps 1 to 3 are the same for every car; the fork at step 4 sends you down one of three paths depending on whether it clicks, cranks without starting, or will not turn at all. All paths end at the decision in step 10.

Drawing made for this course.

What you hear	What it means	Where to go next
Nothing, or one click	Electricity is not reaching the starter	Step 5
Cranks normally but never catches	Electricity is fine, but it is missing spark, gas, or squeeze	Step 6
A loud clunk, or it will not turn at all	Something inside is jammed	Step 9

Step 5. If it will not crank: chase the electricity. Put a meter on the battery. A healthy one reads about 12.6 volts. Under 12, charge it or hook up a jump pack and try again. If it now cranks, you had a dead battery. If the battery is good and you still get one click, wiggle the battery cables. Corroded or loose cables are the number one cheap fix. If the cables are tight and clean and you still get a click, tap the starter with a hammer while someone cranks. If it suddenly spins, the starter is worn out. If the battery is good, cables are good, and the starter never clicks at all, check the fuses and the neutral safety switch, which is what keeps the car from starting in Drive.



A digital multimeter set to DC volts with its probes on the two posts of a car battery. A healthy, fully charged battery reads about 12.6 volts. This one reads only 4.5 volts, which means it is dead and will not crank the engine.

Photo: Dead 12 Volt Car Battery by techmsg, CC BY 2.0.

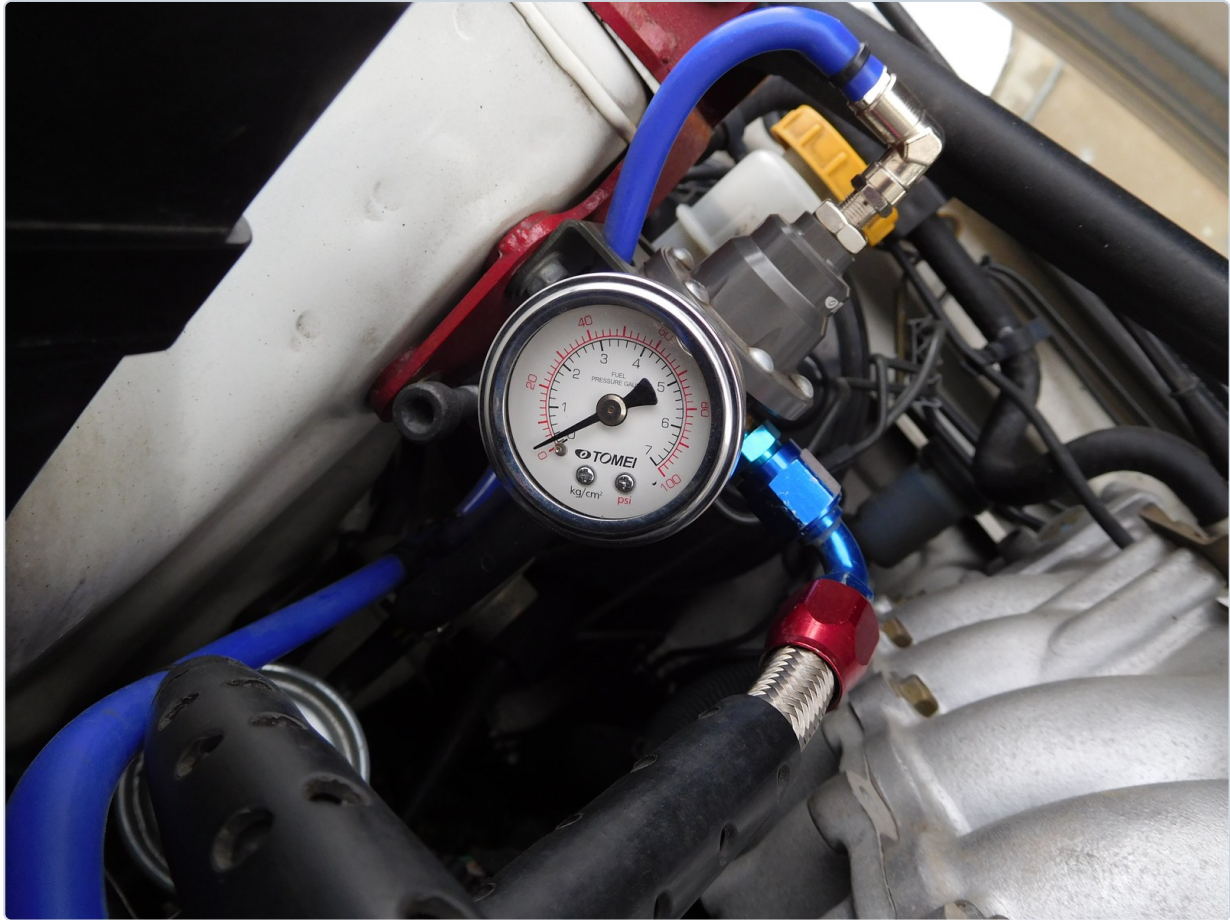


A car battery post covered in blue-green and white crust. This buildup blocks the flow of electricity, so the car may not crank even when the battery itself is charged. Clean it off before testing anything else.

Photo: File:Battery Terminal Corrosion.jpg by MarkBuckawicki, CC0.

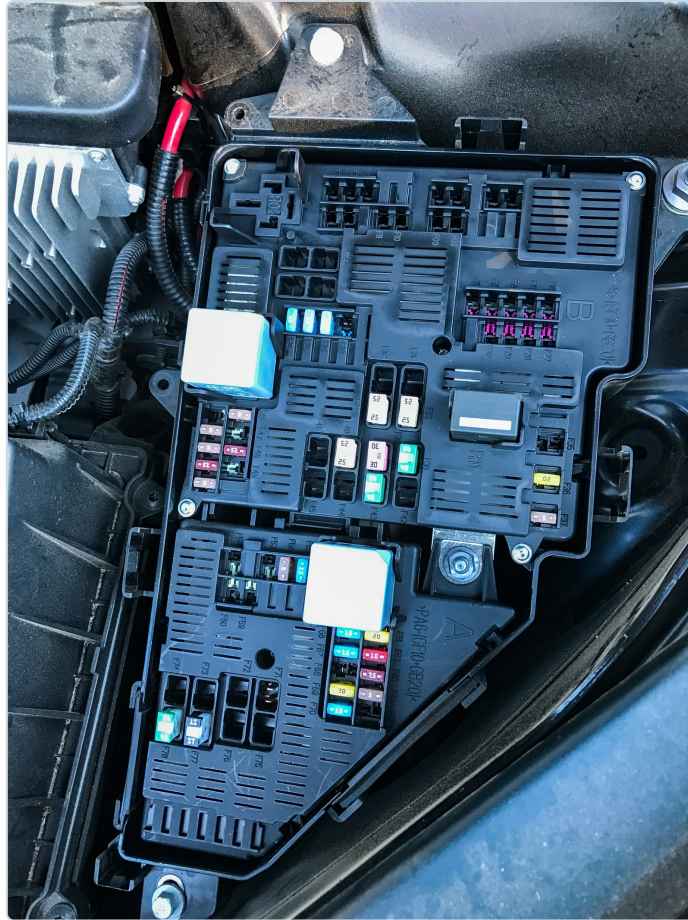
Step 6. If it cranks but will not catch: check spark. Pull one spark plug wire or coil, stick a spare plug in it, lay the plug on bare metal, and have someone crank. You should see a blue spark jump. No spark on any cylinder means the problem is upstream, and the usual suspect is the crank sensor, which is the computer's eyes. If the computer cannot see the engine turning, it refuses to fire. The scan tool helps here. While cranking, watch the engine speed reading. If it says 0 while the engine is clearly spinning, the crank sensor is dead. That is a \$40 part and a one-hour job, and it is the exact failure the plan is hunting for.

Step 7. If spark is good: check gas. Screw a fuel pressure gauge onto the fuel line, turn the key on, and read it. Most cars want about 40 to 60 pounds. Zero means the pump is not pushing, which means the pump, its fuse, or its relay. Pull the pump fuse and look at it. Swap the pump relay with a matching one from somewhere else in the fuse box. If the fuse and relay are good and you still have zero pressure, the pump is dead. A quick cheat: spray a shot of starting fluid into the air intake and crank. If the engine fires for two seconds and dies, you have proven spark and squeeze are fine and the only thing missing is gas.



A fuel pressure gauge mounted on the fuel line in an engine bay. The needle shows how hard the pump is pushing fuel to the injectors. A test gauge hooked to the fuel rail works the same way; a low or zero reading points to the pump, filter, or a leak.

Photo: File:Nissan Skyline R34, Tomei fuel pressure gauge.jpg by Cjp24, CC BY-SA 4.0.

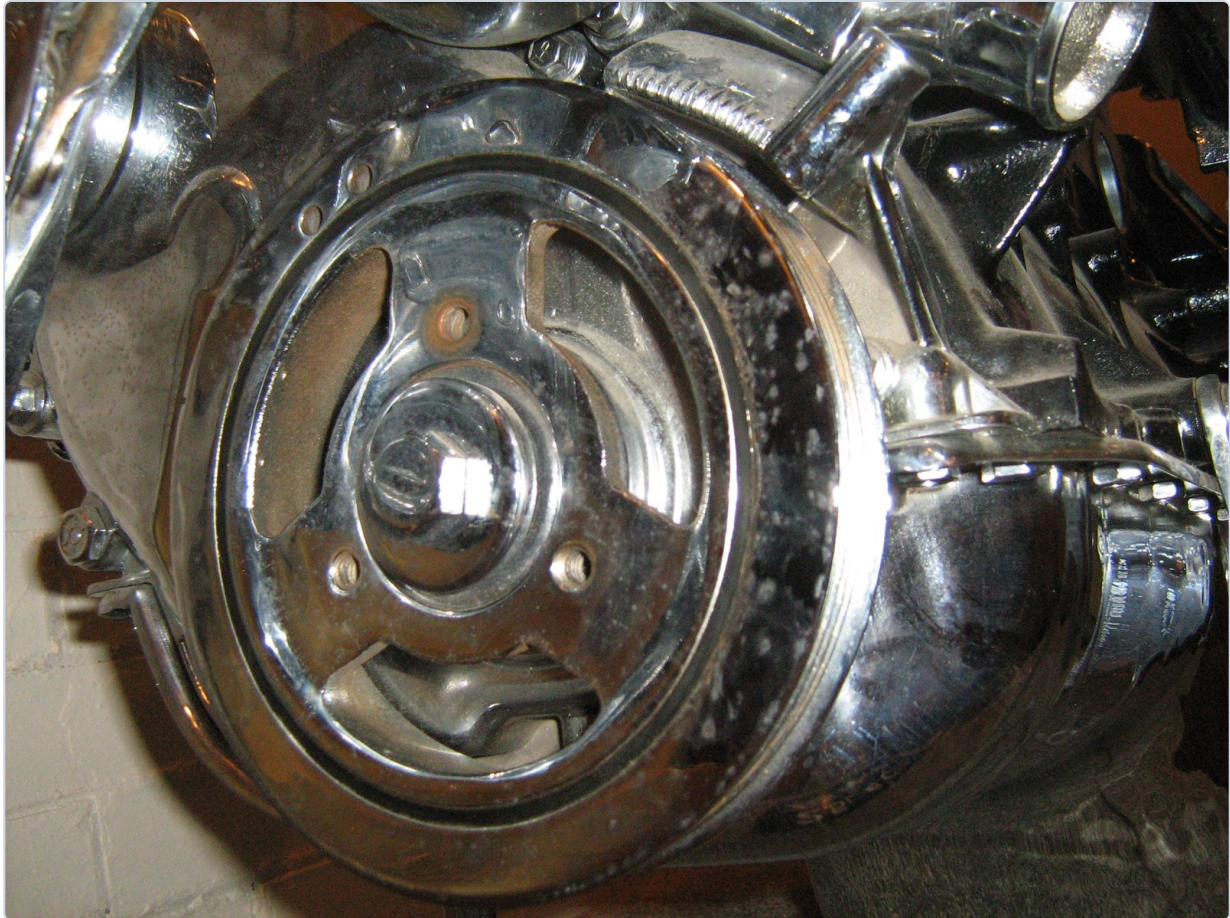


An under-hood fuse and relay box with the lid off. The small colored pieces are fuses, and the larger square blocks are relays. If the engine will not start, check that the fuel pump and ignition fuses and relays here are good.

Photo: File:Automotive Fuse Box - Volvo XC90 Car (52953529388).jpg by Tony Webster, CC BY 2.0.

Step 8. If spark and gas are good: check squeeze. This is the compression test. Pull all the spark plugs, screw the gauge into one hole, crank for five seconds, and read it. Do every cylinder. Healthy is 150 to 200 and all cylinders within about 10 percent of each other. One cylinder reading 0 means a bent valve, broken piston ring, or a hole in the head gasket. All of them reading low and even means the timing belt or chain has jumped and the doors are opening at the wrong time. All of them at 0 means the belt is broken. On most engines a broken belt also means bent valves, and the car becomes an engine-swap job.

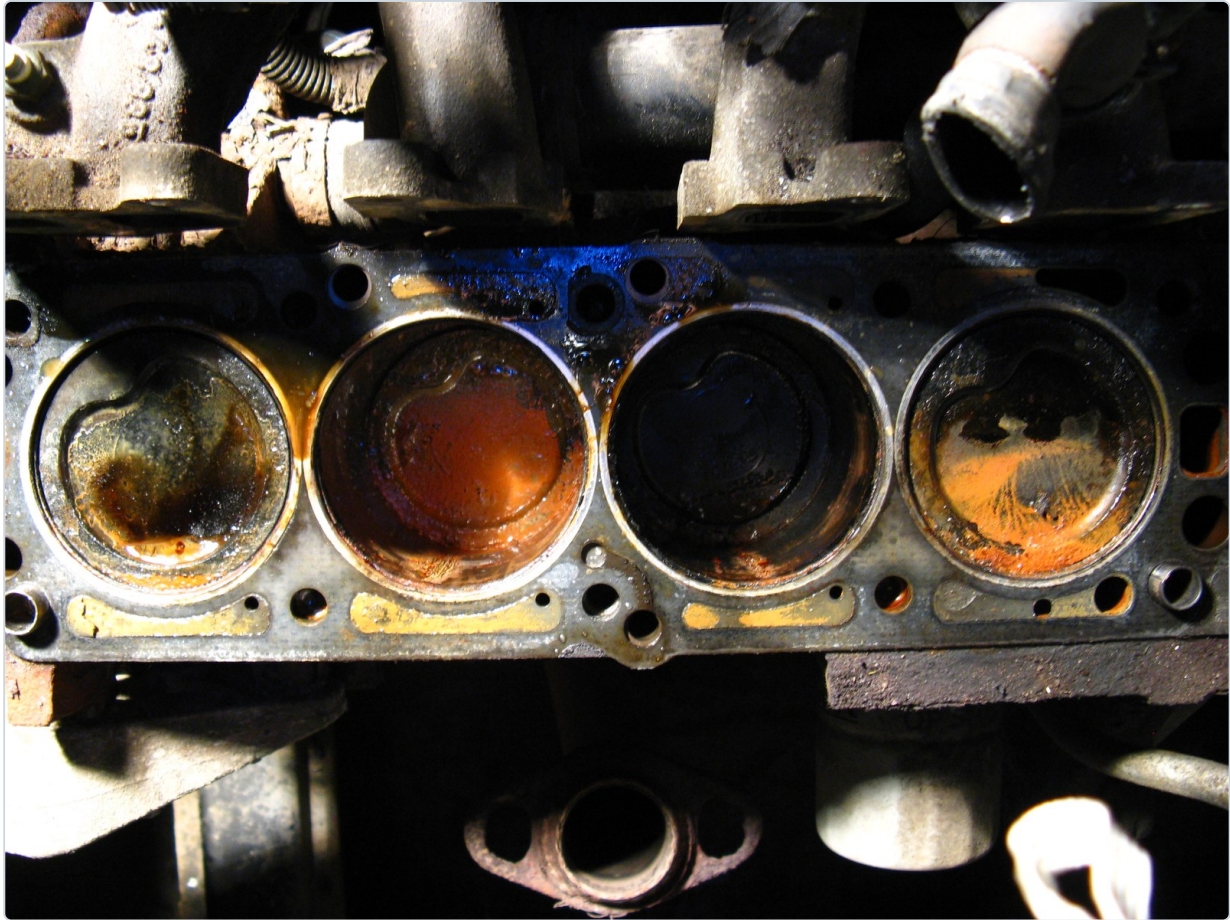
Step 9. If it will not turn at all: see if the engine is seized. Put a big socket on the crankshaft bolt at the front of the engine and try to turn it by hand with a breaker bar. If it turns, the engine is not seized and the starter is just jammed or dead. If it will not budge, the engine is locked up. Pull a spark plug and look in with a light. Water or rust inside means it sat with a bad head gasket or got flooded. A locked engine is a used-engine swap, and that sets the most you can pay for the car.



The crankshaft pulley (also called the harmonic balancer) on the front of an engine, with the large center bolt.

Putting a socket and breaker bar on this bolt lets you turn the engine by hand to see if it is locked up.

Photo: File:Jeep 2.5 liter 4-cylinder engine chromed p.jpg by CZmarlin — Christopher Ziemnowicz, releases all rights but a photo credit would be appreciated if this image is used anywhere other than Wikipedia. Please leave a note at Wikipedia here. Thank you!, Public domain.



An engine with the cylinder head removed. The orange on the piston tops and cylinder walls is rust from water getting inside. Rust like this can lock the engine so it will not turn, and it scars the cylinder walls.

Photo: File:Opel engine X14NZ-rust on the pistons.jpg by Kychot, CC BY-SA 3.0.

Step 10. Decide. By now you know which of the four things is missing and roughly what it costs. Dead battery, bad cable, starter, crank sensor, fuel pump relay: cheap, buy the car. Fuel pump, coil pack, timing belt still intact: medium, buy it at the right price. Zero compression on one cylinder, jumped timing, seized engine: a used-engine job, and the plan says only pay about \$1,700 to \$2,650 depending on the car. Milkshake oil on an engine that also will not turn: walk away.

At an auction yard you cannot do steps 6 through 9 because they ban jump packs and tools. You get steps 1, 2, and 3, plus turning the crank bolt by hand if you can reach it. That is why the plan says to bid lower on yard cars and do the full sequence on Marketplace cars and at the dealer in-op lanes where you can bring the tools.

Image credits

Photos are used under the licenses listed. Drawings without a credit line were made for this course.

Figure	Source	Author	License
v06-09	File:Warning lights on a vehicle's dashboard glow brightly, indicating possible engine problems. The display shows the time as 1806 on September 4, 2020, creating urgency.jpg	Shixart1985	CC BY 2.0
v06-02	Dead 12 Volt Car Battery	techmsg	CC BY 2.0
v06-03	File:Battery Terminal Corrosion.jpg	MarkBuckawicki	CC0
v06-05	File:Nissan Skyline R34, Tomei fuel pressure gauge.jpg	Cjp24	CC BY-SA 4.0
v06-06	File:Automotive Fuse Box - Volvo XC90 Car (52953529388).jpg	Tony Webster	CC BY 2.0
v06-07	File:Jeep 2.5 liter 4-cylinder engine chromed p.jpg	CZmarlin — Christopher Ziemnowicz, releases all rights but a photo credit would be appreciated if this image is used anywhere other than Wikipedia. Please leave a note at Wikipedia here. Thank you!	Public domain
v06-08	File:Opel engine X14NZ-rust on the pistons.jpg	Kychot	CC BY-SA 3.0