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Test starter solenoid

Today, we’re diving into automotive repair. We’ll focus on one crucial component of your ride – the starter. But what happens when it gives you the silent treatment? That’s where your multimeter, a nifty little tool, comes into play. Quick Summary of Steps Well Cover: Step 1: Dive into your car’s engine to find the starter. Step 2: Clear out any parts or covers blocking your path to the starter. Step 3: Grab your multimeter and set it to continuity mode. Step 4: Connect one lead of the multimeter to the solenoid’s S terminal and the other to its housing. A beep confirms the solenoid is good. Step 5: Hook your multimeter to the starter’s main connections and look for a 12-volt reading, which means it is in good shape. This is more than just a handy skill; it’s a way to save time and money and avoid those “stranded in the parking lot” moments. Let’s talk about those telltale signs that your car’s starter might be on the fritz. It’s like your car is trying to tell you something; all you need to do is listen and watch for the clues. Video | TutoBuild Eng I’ve seen a few of these symptoms in my time, and they’re pretty good indicators that it’s time to whip out that multimeter and get to testing. Slow Cranking: When you turn the key and the engine turns over slowly, it’s often a sign that your starter is struggling. I once had a car that cranked so slowly I thought it had forgotten how to start! The Dreaded Click: Have you ever turned the key and heard a single loud click but nothing else? That’s a classic starter symptom. Your car says, “I want to start, but I just can’t!” The No-Show: Sometimes, you’ll turn the key and… nothing: no sound, no cranking, just silence. Frequent Clicking: This is when you turn the key and hear a rapid clicking sound. This often points to a power issue with the starter. Grinding Noises: If it sounds like your car is grinding coffee under the hood when you start it, that’s a red flag. It could mean the starter gear is worn or not engaging properly. I remember this sound from an old truck I fixed up – it was a dead giveaway that the starter needed some love. Intermittent Issues: Sometimes, your car might start fine one day and give you grief the next. But a clear signal something’s amiss. Smoke or Burning Smell: If you see smoke or smell burning when you try to start your car, it’s a serious sign. It could mean your starter is overheating due to overuse or a short circuit. This happened to me once on a road trip – talk about a heart-stopper! These signs can sometimes point to other issues, like a dying battery or alternator problems. So, always approach with some detective work – and get a professional opinion when in doubt. Stay safe and happy diagnosing! RELATED What Wires Go to The Starter Solenoid (Simple Guide) Let’s roll up our sleeves and learn how to test your car’s starter using a multimeter. Safety first, as always! The starters usually hang out where the engine and transmission are best buddies. It’s often near the flywheel. Video | CarsNToys Roll up those sleeves and remove any covers or parts blocking your way to the starter. Remember, a clear workspace is a happy workspace. Video | CarsNToys It’s time to whip out your trusty multimeter. Set it to continuity mode (look for that Wi-Fi symbol). We’re testing the starter solenoid first. Video | CarsNToys Connect one multimeter lead to the solenoid’s S terminal and the other to the housing. A beep means we’re in business – the solenoid’s good! Video | CarsNToys Connect your multimeter to the two main connections on the starter. Then, look at the multimeter display for a reading of 12 volts. Video | CarsNToys If it shows 12 volts, your starter is in good shape and should work properly. Just remember, if you’re ever in doubt, there’s no shame in calling a professional mechanic for backup. Stay safe, and have fun turning those wrenches. RELATED How to Fix a Starter with a Hammer (4 Steps) Sometimes, things get a little quirky when testing your car’s starter with a multimeter. Don’t sweat it – I’ve been there and am here to help you navigate these tricky waters. Let’s break down some common issues and how to tackle them, all in a handy table format. IssueTroubleshooting TipsStarter Spins Without Cranking EngineFirst, inspect the gear teeth on both the starter pinion and flywheel. If the teeth look good, the issue might be with the solenoid not fully engaging the pinion with the flywheel.Loud Clicking, No Engine TurnoverThis classic symptom often points to a power issue. Check your battery’s charge – it might be time for a jumpstart.Also, tighten up those battery connections. Loose connections can be like a wobbly bridge; they don’t deliver the necessary power.The Starter Motor Gets HotIf your starter’s getting hot enough, it’s working too hard. This can be due to internal resistance or a sticking mechanism.Let it cool down, then check for obstructions or internal damage. Frequent Burnout of Starter MotorsAn underlying electrical issue, like a faulty ignition switch or a problem with the charging system, could be the real troublemaker. These extra troubleshooting tips are like hidden clues in a mystery novel – they can lead you to the real solution. Keep tinkering, stay curious, and always prioritize safety. RELATED How to Test Solenoid with a Multimeter (4-Step Guide) Let’s dive into some down-to-earth tips on keeping your starter and solenoid in top shape. I’ve seen my fair share of starters acting up, and let me tell you, a little preventative maintenance goes a long way. Regular Cleaning: Give your starter and solenoid a good cleaning now and then. Dirt, grease, and grime can build up, leading to poor connections. I remember helping a buddy clean his starter, and it was like uncovering buried treasure – the difference was night and day! Corrosion Check: Periodically check for any signs of rust or corrosion, especially around the terminals. A bit of corrosion control spray can do wonders. Tight Connections: Ensure your starter and solenoid connections are snug and secure. Battery Maintenance: Your starter’s best friend is your battery. Keeping it charged and clean ensures your starter has the power it needs. Listen and Observe: Sometimes, your car will talk to you. Strange sounds or sluggish starting can be early signs that your starter or solenoid needs attention. Regular Testing: Now and then, grab your multimeter and quickly test your starter and solenoid. Professional Check-ups: If you’re ever in doubt or things seem over your head, don’t hesitate to get a professional opinion. Sometimes, an expert eye can spot things we might miss. I’ve learned a ton from just watching pros do their thing. Keep these tips in your back pocket; you’ll be set for many smooth starts! Stay safe, and keep tinkering! RELATED Can a Bad Starter Drain a Battery? (Find Out How & Why) Is It Safe To Test My Starter If I’m Not A Mechanic? Safety first, always! You don’t have to be a pro mechanic, but you do need to follow safety guidelines. Wear protective gear, make sure the car is stable and secure, and always follow the manufacturer’s instructions. It’s like handling power tools – respect and caution are key. What Should I Do If My Multimeter Shows ‘OL’ When Testing The Starter? ‘OL’ stands for ‘Open Loop’ – consider it a missing puzzle piece. This reading means there’s a break in the circuit, and your starter could be waving a white flag. It might be time for some professional troubleshooting. Can A Bad Battery Affect My Starter? You bet! A bad battery is like a weak heart – it doesn’t give enough juice to get things moving. Always check your battery’s health as part of your starter troubleshooting. Are There Any Quick Visual Checks I Can Do? Absolutely! Pop the hood and give your starter a quick once-over. Check for loose connections or visible damage – sometimes, the problem is in plain sight. RELATED What Wires Go to The Starter Solenoid (Simple Guide) Organizations: Books: Website Resources: Video References: CarsNToys TutoBuild Eng About Sam OrlovskyCertifications: B.E.E. Education: University Of Denver - Electric Engineering Lives In: Denver Colorado Electrical engineering is my passion, and I’ve been in the industry for over 20 years. This gives me a unique ability to give you expert home improvement and DIY recommendations. I’m not only an electrician, but I also like machinery and anything to do with carpentry. One of my career paths started as a general handyman, so I also have a lot of experience with home improvement I love to share. | Reach Me 1 Open the hood of the vehicle. The starter and solenoid are located on the engine of your vehicle. In order to gain access to it, pull on the hood release located near the door on the driver’s side of the vehicle.[1] You will need to release the safety latch on the front of the vehicle in order to open the hood as well. If you are unable to locate the safety release, refer to your vehicle’s owner’s manual for directions. 2 Find the starter. The starter is usually located near where the engine and transmission meet. The starter itself is usually cylindrical in shape with a smaller cylinder attached to it. There should be a wire coming directly from the positive terminal of the battery to the starter.[2] While starters come in many sizes, they are usually shaped the same. Refer to your vehicle’s service manual if you are unable to locate the starter. Advertisement 3 Identify the cylinder on the side of the starter. The smaller cylinder attached to the top or side of the starter is the starter solenoid. It is a fairly simple electrical mechanism that can fail, preventing the starter from engaging and starting the motor.[3] The starter solenoid will have two terminals coming out of its end. The wire from the battery will connect to one of those two terminals. 4 Listen for the solenoid to click when the key is turned. Have a friend turn the key in the ignition to attempt to start the vehicle. Listen carefully, as you should hear a click when the starter solenoid engages. If you do not hear a click, the starter solenoid is likely not functioning properly. If you do hear clicking, the solenoid may be engaging, but not sufficiently.[4] Hearing clicking without the starter motor moving means the solenoid is transferring the electricity, but it may not be enough. No clicking means the solenoid is not properly engaging, but this may also be due to a dead battery. EXPERT TIP Jason Shackelford Auto Technician Jason Shackelford is the Owner of Stingray Auto Repair, a family owned and operated auto repair shop with locations in Seattle and Redmond, Washington. He has over 24 years of experience in auto repair and services, and every single technician on Jason’s team has more than 10 years of experience. Our Expert Agrees: If your starter solenoid is bad, you may hear a clicking sound when you turn the key, or your vehicle may not have any power at all. 5 Check the battery. If your starter is failing to engage, it may be because the battery does not have sufficient energy to power it. Rule this out by testing the battery with a volt meter. Low power could result in the starter clicking but failing to engage. Place the positive (red) lead on the voltmeter on the positive terminal of the battery and negative (black) lead on the negative terminal. [5] Your battery should measure at around 12 volts at a rest before you attempt to start the vehicle. If the voltage is low, the battery may just need to be charged. Advertisement 1 Connect a test light to the output terminal of the solenoid. There are two small terminals sticking out of the face of a starter solenoid. One is the 12 volt positive (top) that comes from the battery. When the starter solenoid is activated, it connects the lower terminal to the upper one internally, engaging the starter motor.[6] There should be continuous power going to the top solenoid terminal. Press the red lead from the test light onto the top terminal and hold it in place. 2 Ground the black lead from the test light. The black lead from the test light must be connected to a grounded surface in order to complete the circuit and test the power passing through it. Any part of the body of the vehicle will suffice as a ground, provided it is bare metal.[7] You can touch the black lead to any bare metal on the body of the vehicle. You may also touch it to the negative terminal on the battery. 3 Observe the light. If the light comes on when you have the test light touching the top terminal on the starter solenoid and the other lead grounded, it means there is electricity coming from the battery to the starter solenoid itself. This means there could be an issue with the solenoid, rather than simply a dead battery.[8] Once you have confirmed that there is power going to the solenoid, you can test if the solenoid is transferring it properly. 4 Switch the red lead to the lower terminal on the solenoid. Now that you have confirmed that there is power going into the solenoid, the next step is to determine whether or not the solenoid is transferring the power properly. Place the red lead on the lower terminal that should only have power when the vehicle is starting.[9] Hold the lead in place on the lower terminal. Keep the black lead grounded. 5 Have a friend turn the ignition. While you hold the two leads in place, ask a friend to turn the ignition. This should make the solenoid bridge the connections internally and send electricity to the lower terminal on the solenoid.[10] Be careful not to get your hands or clothes in the way of any engine components that may move if the vehicle starts. Do not allow the test light wiring to hang into the area around the belts. 6 Look for the light to come on. If the test light comes on, it means the solenoid is transferring power from the battery to the starter. If the starter fails to activate despite the light coming on, the starter itself may need to be replaced. If the light does not come on, it means the solenoid is failing to transfer the power and will need to be replaced.[11] You can often purchase a starter and starter solenoid together, as it may be easier to replace them both at once. Make sure to tell the clerk at your local auto parts store the correct year, make and model of your vehicle to purchase the right replacement parts. Advertisement 1 Connect the voltmeter to the positive terminal on the battery. A voltmeter will show you how much voltage is currently passing through the circuit the meter is a part of. Start by attaching the positive lead (red) from the voltmeter to the positive terminal on the battery.[12] The positive terminal will be labeled with the letters “POS” or the positive (+) symbol. Some volt meters may clip into place, while others may require you to hold to lead onto the battery. 2 Connect the negative lead to the ground terminal. This test is to determine how much voltage the starter solenoid is drawing from the battery when it is attempting to start. Place the negative lead (black) from the voltmeter on the negative terminal on the battery to complete the circuit.[13] With the positive and negative leads connected to the battery, the voltmeter should turn on. 3 Observe the reading on the voltmeter. Your car battery should produce approximately 12 volts when nothing is drawing off of it. Read the display on the volt meter to ensure your battery is producing an adequate level of power.[14] If the voltmeter reads less than 12 volts, the vehicle may not be starting due to insufficient charge on the battery. The number may jump around as you move the leads a bit and the meter tries to read the voltage. Wait for it to settle to determine the baseline voltage. 4 Have a friend turn the ignition. While holding the leads on the positive and negative terminals on the battery, have a friend turn the key in the ignition to attempt to start the vehicle. Be careful to stay clear of anything that may move if the engine actually starts.[15] The voltage reading from the battery should drop approximately half a volt while the starter attempts to start the vehicle. If the voltage does not drop, there is an issue with the connection from the battery to the starter. 5 Move the voltmeter to the leads on the starter solenoid. Place the positive lead from the voltmeter on lower terminal from the solenoid (closer to the starter). Then place the negative lead on the upper most terminal coming from the battery. Have your friend turn the key again.[16] Ensure the leads are firmly touching or attached to the terminals coming from the solenoid for a good reading. 6 Look for an appropriate voltage drop. The voltage drop you see on the solenoid should match the drop you saw on the battery. The drop in voltage should not exceed a half a volt. If you do not read any voltage at all, the solenoid needs to be replaced.[17] If the voltage drops less than a half a volt, there is an issue inside the solenoid. If the voltage drops too much, there may be a fault somewhere in the connection, such as a crimped line from the battery to the solenoid. Advertisement Ask a Question Advertisement This article was co-authored by Jason Shackelford. Jason Shackelford is the Owner of Stingray Auto Repair, a family owned and operated auto repair shop with locations in Seattle and Redmond, Washington. He has over 24 years of experience in auto repair and services, and every single technician on Jason’s team has more than 10 years of experience. This article has been viewed 1,174,491 times. Co-authors: 17 Updated: March 18, 2024 Views: 1,174,491 Categories: Car Batteries and Ignitions Print Send fan mail to authors Thanks to all authors for creating a page that has been read 1,174,491 times. "It was well written, easy to understand, and follow." Share your story 1 Open the hood of the vehicle. The starter and solenoid are located on the engine of your vehicle. In order to gain access to it, pull on the hood release located near the door on the driver’s side of the vehicle.[1] You will need to release the safety latch on the front of the vehicle in order to open the hood as well. If you are unable to locate the safety release, refer to your vehicle’s owner’s manual for directions. 2 Find the starter. The starter is usually located near where the engine and transmission meet. The starter itself is usually cylindrical in shape with a smaller cylinder attached to it. 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