

FAQ

What method of wire repair should I use?

Good question. Vehicle manufacturers recommend all wire repairs performed under the hood, or where the repair could be exposed to the elements, be weatherproof. The most commonly recommended methods include:

- * Crimp-and-seal connector. These connectors are special and are not like low cost insulated-type crimp connectors. This type of connector is recommended by General Motors and others and is sealed using heat after the mechanical crimp has secured the wire ends together.

- * Solder and adhesive-lined heat shrink tubing. This method is recommended by Chrysler and it uses the special heat shrink that has glue inside that melts when heated to form a sealed connection. Regular heat shrink tubing can be used inside a vehicle, but should not be used where it can be exposed to the elements.

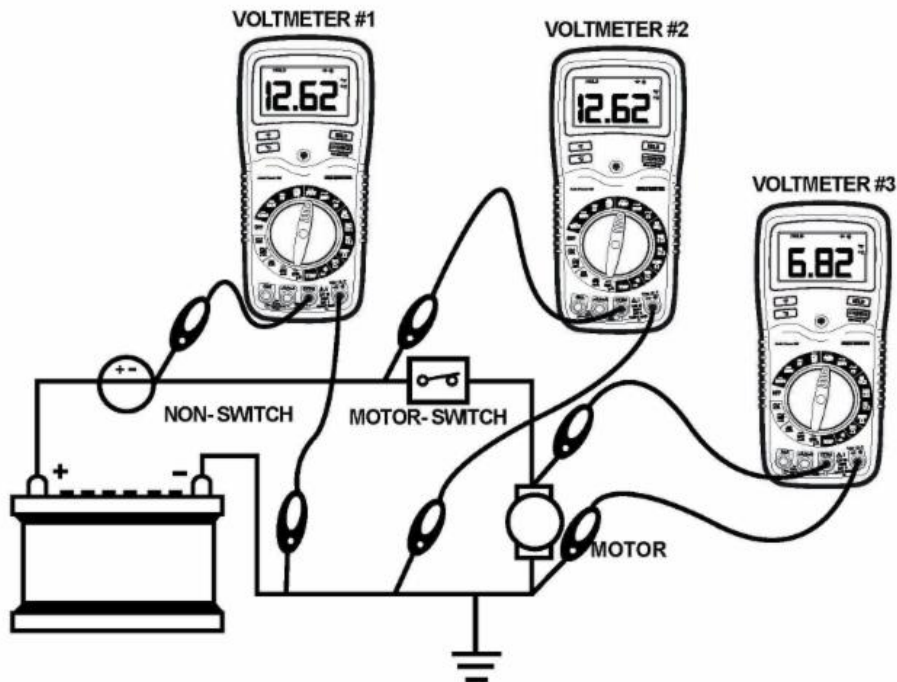
- * Solder and electrical tape. This is acceptable to use inside the vehicle where the splice will not be exposed to the outside elements. It is best to use a crimp and seal even on the inside of the vehicle for best results.



Sample ASE certification-type question

Question:

The motor circuit shown is being tested by measuring the voltage at several locations in the circuit.



- Voltmeter #1 = 12.62
- Voltmeter #2 = 12.62
- Voltmeter #3 = 6.82

What is the most likely cause?

- Normal operation-no fault
- High resistance in the motor
- A shorted ignition switch
- High resistance in the motor switch

Answer/Explanation:

The correct answer is d. The voltmeter readings indicate that less than 7 volts is available to operate the motor, yet the voltage is okay up to the motor switch. This indicates that there is high resistance (high voltage drop) either in the switch or the wiring from the switch to the motor. Answer a is not correct because only 6.82 volts is available to operate the motor and this indicates a high resistance fault in the circuit. Answer b is not correct because the electrical load (motor) should create the highest voltage drop and this is the case even though the motor has less available voltage than it should for proper operation. Answer c is not correct because the meter is reading the difference in voltage between the input to the switch and the ground which shows a normal reading.

Tech Tip

Purchase a digital meter that will work for automotive use

Try to purchase a digital meter that is capable of reading the following:

- DC volts
- AC volts
- DC amperes (up to 10 A or more is helpful)
- Ohms up to 40 M(40 million ohms)
- Diode check

Additional features for advanced automotive diagnosis include:

- Frequency (hertz, abbreviated Hz)
- Temperature probe (°F and/or °C)
- Pulse width (millisecond, abbreviated ms)
- Duty cycle (%)

Straight Talk

From the May 27, Wheels section of Dayton Daily News

Reader asks about gasoline

Wheels:

Don H. writes by email:

"I appreciated your recent article on the use of proper fuels in new cars. Do you have much experience with small engines, such as Tecumseh and Briggs & Stratton that are used on walk behind lawn mowers? My last two mowers (one of each engine) no longer have manual chokes and specify the use of 87 octane gasoline. With both mowers, I have had great problems starting them (10 - 20 pulls) on their supposed "guaranteed start with one or two pulls" of starter cord. Returning the mowers to the point of purchase dealers for correction has resulted in only handling fees, disruption and delay in my mowing cycle. The dealer's response to the supposed cause for not promptly starting is the use of regular (87 octane) gas. I always have used new, fresh 87 octane gas, but have been told instead to only use premium gas because it has better starting qualities. Previous to these mowers, I never had any trouble starting mowers by pushing the manual bulb chokes when using regular gas. Is there anything you can suggest to improve starting without the purchase of premium gas or additives? Calls to Tecumseh and Briggs & Stratton have resulted in nothing of use. Thanks for all your useful auto articles and my hope for the small engine cure"

Halderman:

Thanks for writing. You are correct that there is a lot of misunderstanding out there. One of the reasons that many lawn mower shops recommend the use of premium is that they often backfire when being shut off and this is reduced, but not cured by using premium. Another issue that may or may not be your issue is that gasoline has a "shelf life" of three months (90 days). This means that for best performance from gasoline, it should be used within three months of purchase. What happens is that the "light ends" (most volatile) parts of the fuel tend to evaporate which would make the mower harder to start. If you are purchasing five gallons of fuel at a time, consider using a smaller 2 gallon gas container to help make sure that the gasoline is fresh. I suggest that you use a gasoline stabilizer in all of the gas being used for small equipment.



Have an automotive question? Please write to Jim with your questions at jim@jameshalderman.com

Trivia question answer: A.

Please let me know what you think of the newsletter. I would love to include any of your automotive news, trivia questions or any tech tips you might have. Send me your suggestions! You can email me [here](#) or visit [my website](#). You can connect with me on Facebook, Twitter and LinkedIn too (links above).

Regards,
Jim Halderman

James D. Halderman writes automotive technology textbooks for [Pearson Education](#). He is an ASE-certified Master Technician with more than 20 years instructional experience.