Technical Training Tip of the Month

"Include Jumper Wires in Your Collection of Test Tools"

By Grant Wolter

I've touched on the use of several tools for electrical/electronic system testing in previous articles. These have included voltmeters, ammeters, ohmmeters, and testlights. While these tools are invaluable for performing *measurements* in the pursuit of diagnosing an electrical or electronic problem, let's not discount the value of swapping out components in a circuit with "known good components" to "see if it works". Many technicians stockpile commonly used electrical and electronic components in their toolbox for the purpose of temporarily replacing a component to see if the circuit then works. This completely valid diagnostic technique can be a valuable time saver. Consider jumper wires as falling into the category of "known good components" and use them in the same manner as you would other *test components*.

In their simplest form, a jumper wire can simply be a length of wire that is used to *overlay* or substitute a wire in a harness that you suspect has a problem. Considerations in this instance would, of course, be to select a wire of sufficient gauge and length. Care must also be taken to ensure that you are actually connected to the circuit you want to overlay and not shorting out some other circuit, creating more problems than you started with. You might say, in this case, that you're using a "known good" harness. On the caution side of using jumper wires, never bypass a load, or a circuit protection device (such as a fuse), as you might end up with a very hot wire in your hand!

Another good use for jumper wires is to jumper or bypass a switch. This is useful in both basic electrical circuits, where you can bypass a simple control switch or the contact side of a relay circuit. In an electronic circuit, you can use a jumper wire to temporarily bypass a switched input that is used for a signal, such as a door switch or parking brake switch.

A key element of using jumper wires for diagnosis is to select an appropriate location or test point in the circuit to connect them. Remember that one of the goals is to save time; so it pays to have a look at a wiring diagram and select test points that will do the trick *and* be easy to get to. Along the lines of "easy to get to", it is often not necessary to actually go to a switch that you want to bypass and uncover it to expose the terminals. In the case of bypassing a door switch input of an electronic circuit for example, it may be best to backprobe the connection where the wire from the switch comes into the control module, and jumper it to the ground or power that the switch would normally provide.

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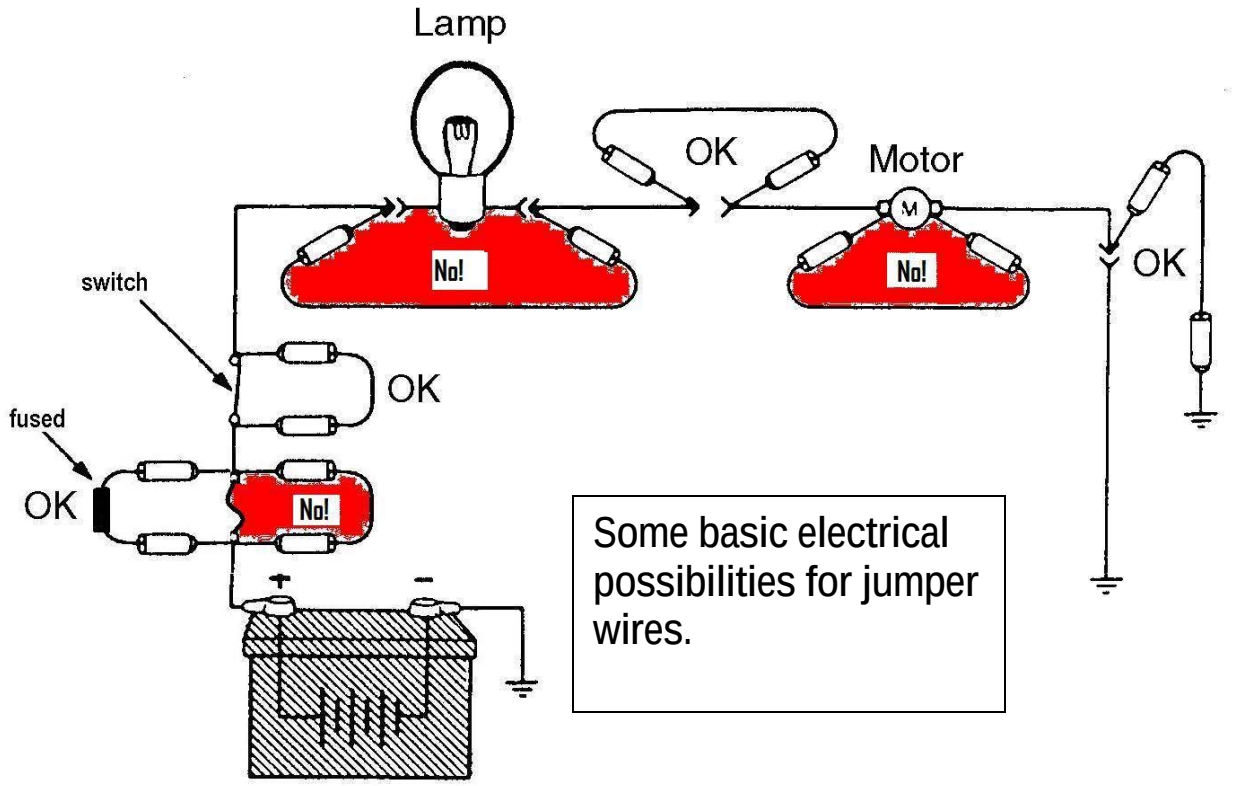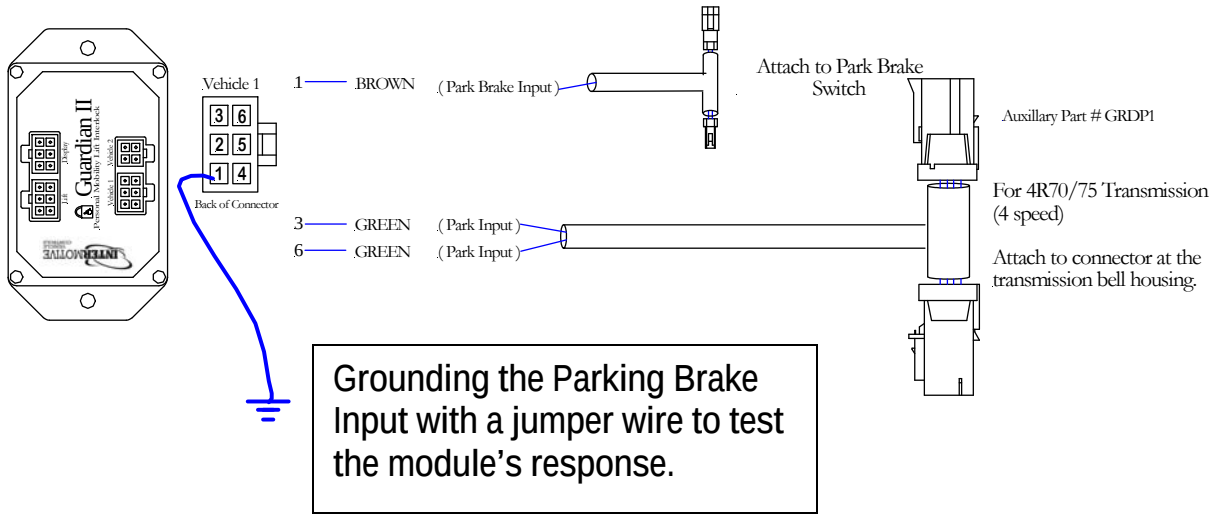
Have a Look at the graphics shown below for some examples of using jumpers wires for testing: