Lesson 6: Connecting the 7-Way Round Harness

Trailer Circuits STEM Kit Curriculum

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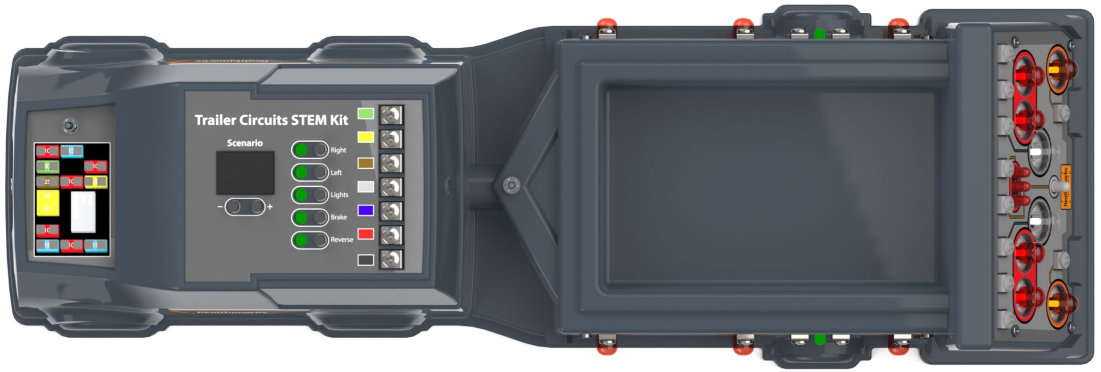
You Will Need



You will need the following:

- Trailer Circuits Truck ***with power off***
- Already wired 7-way harness:
  - Both sides = disconnected.
- Screwdriver
- Wire cutter
- 13 U-shaped crimp terminals
- Access to the 7 different colored spools of wire

Divide Up the Work

Half of the team works on the vehicle side of the harness.

Half of the team works on the trailer side. Skip ahead in the slides to the trailer side wiring section.

Wiring the *Vehicle* Side of the Harness

Connect the Wires From the Harness

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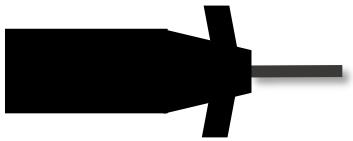
Connect the wires from the harness to the control panel terminals, matching the colors.

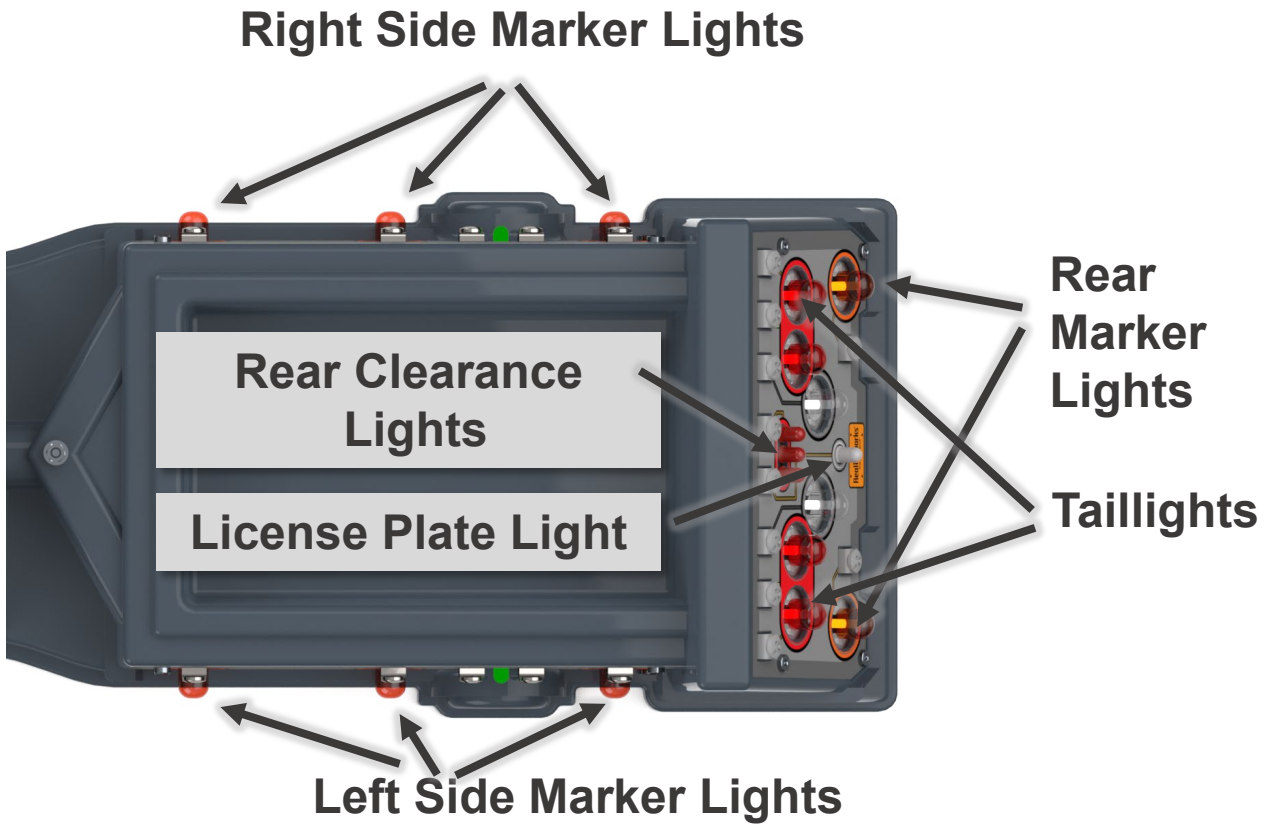
When the wires are connected, set this side of the harness down next to the Trailer Circuits Truck and help wire the other half.

Wiring the *Trailer* Side of the Harness

Step 1: Brown

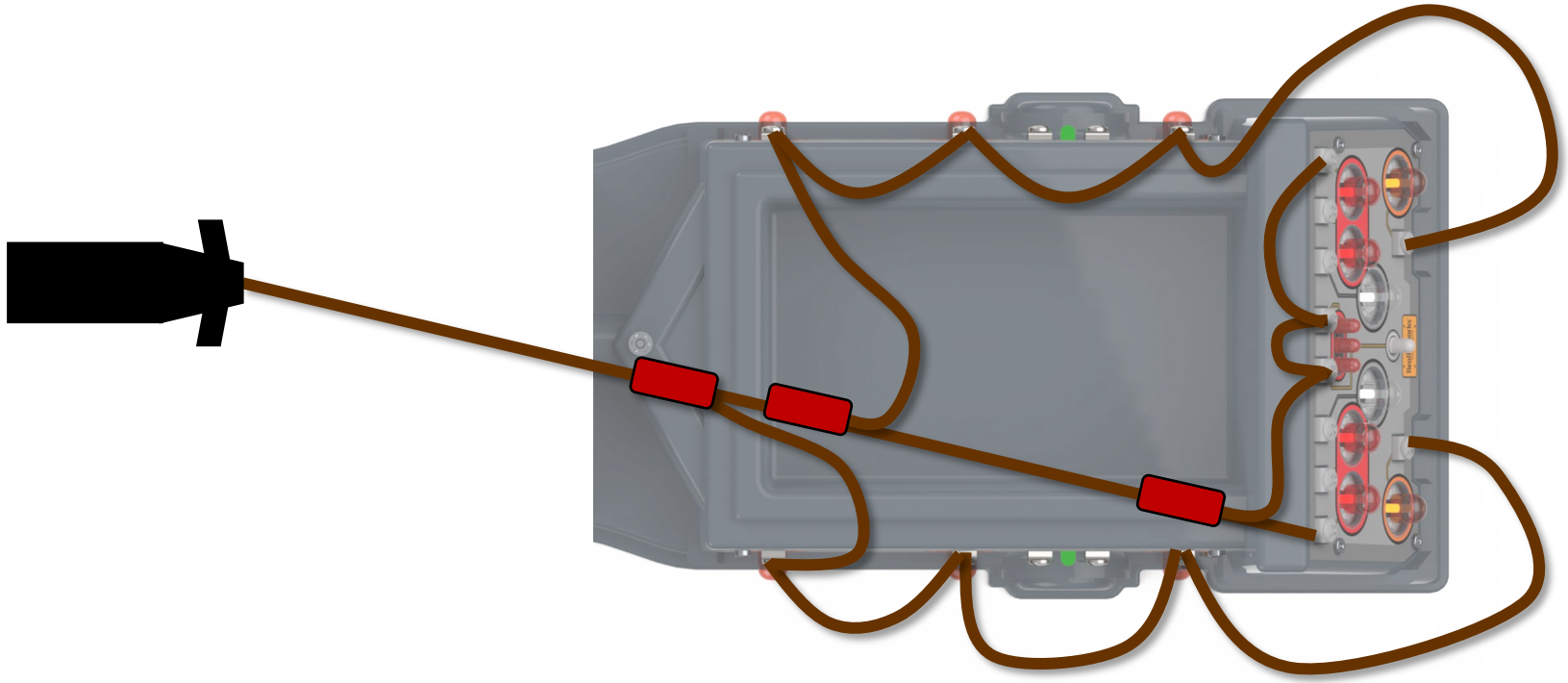
The brown wire supplies power to the rear and both sides and is the most complex task.





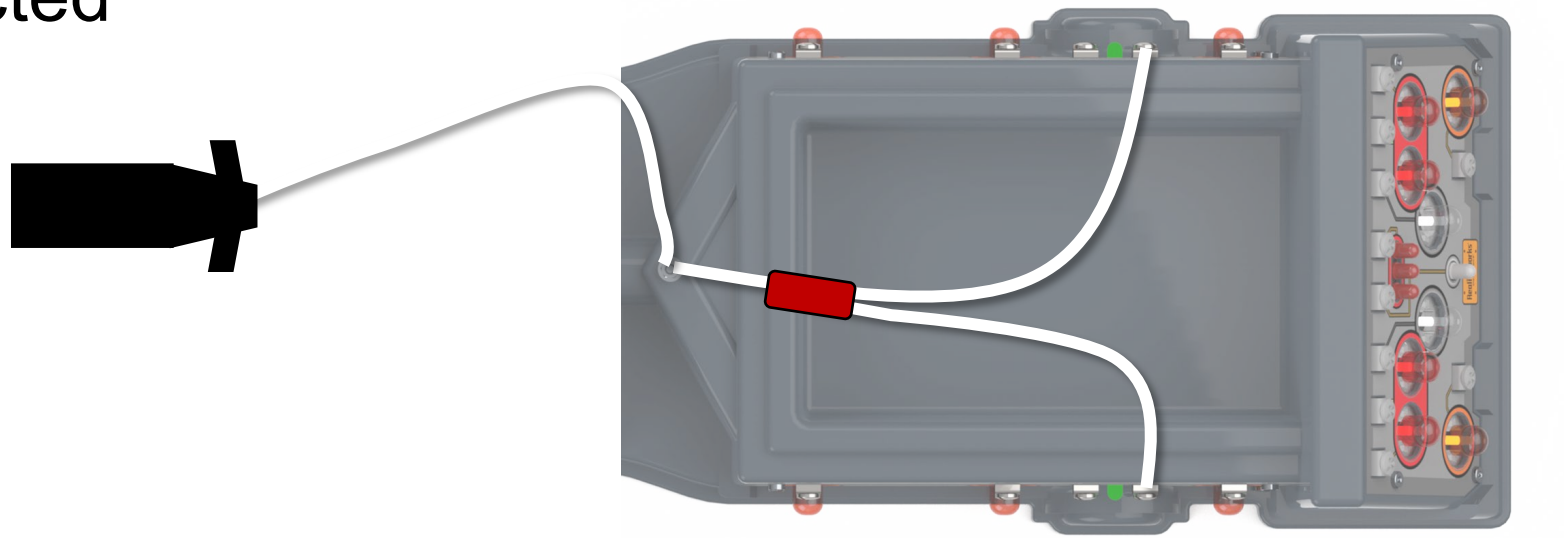
Step 1: Brown

- Use the diagram below to make your brown wire connections are correct
- Remember, every time you connect to a trailer screw terminal, you should use a U-shaped crimp terminal on the wire's end
- You can attach 2 U-shaped crimp terminals on 1 screw terminal
- Before moving on, have another person check **each** connection in the diagram on your Trailer Circuits Truck to make sure each terminal is connected



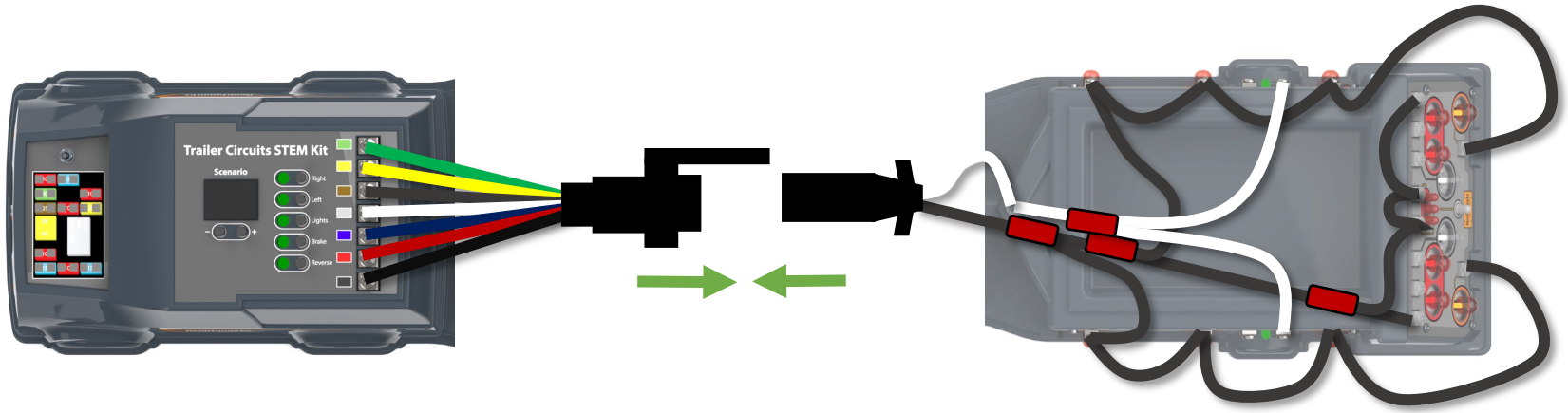
Step 2: White

- White wires complete the circuit for all the components on a trailer
- Use the diagram below to make your white wire connects to the ground pole
  - Each electric brake needs its own wire to the ground pole
- Before moving on, have another person check **each** connection in the diagram on your Trailer Circuits Truck to ensure each terminal is connected



Step 3: Test Brown and White

- Your trailer should look like this now, with white and brown wires as shown
- Connect the vehicle and trailer harness sides together, making complete electrical connections between the vehicle and trailer
- Turn on the power to the Trailer Circuits Truck
- Gently push the Lights button on the control panel
- Do all the connected marker, license plate, clearance, and taillights turn on?
  - **Yes! Move on to Step 4.**
  - **No… Uh oh.** Can you use the auto light tester or multimeter to figure out where the break is?

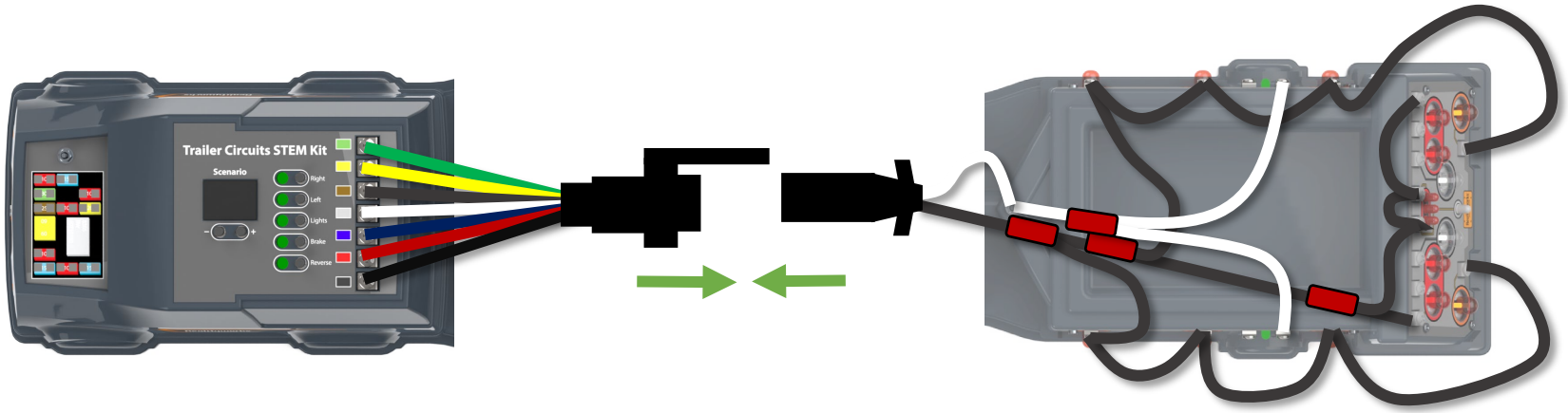


Review: Brown and White

Remember from lesson 2 when you learned about series and parallel circuits?

Try this…

1. Pick one Side Marker Bulb and gently pull the bulb out of the socket.
2. Notice… even with the bulb gone, do any of the other lights connected by brown wire change their state?
3. What does this tell you about the circuit you have wired?



Power ***Off*** the Trailer Circuits Truck

- Power ***off*** the Trailer Circuits Truck before moving on
- Remember… never work on live circuits

Step 4: Yellow

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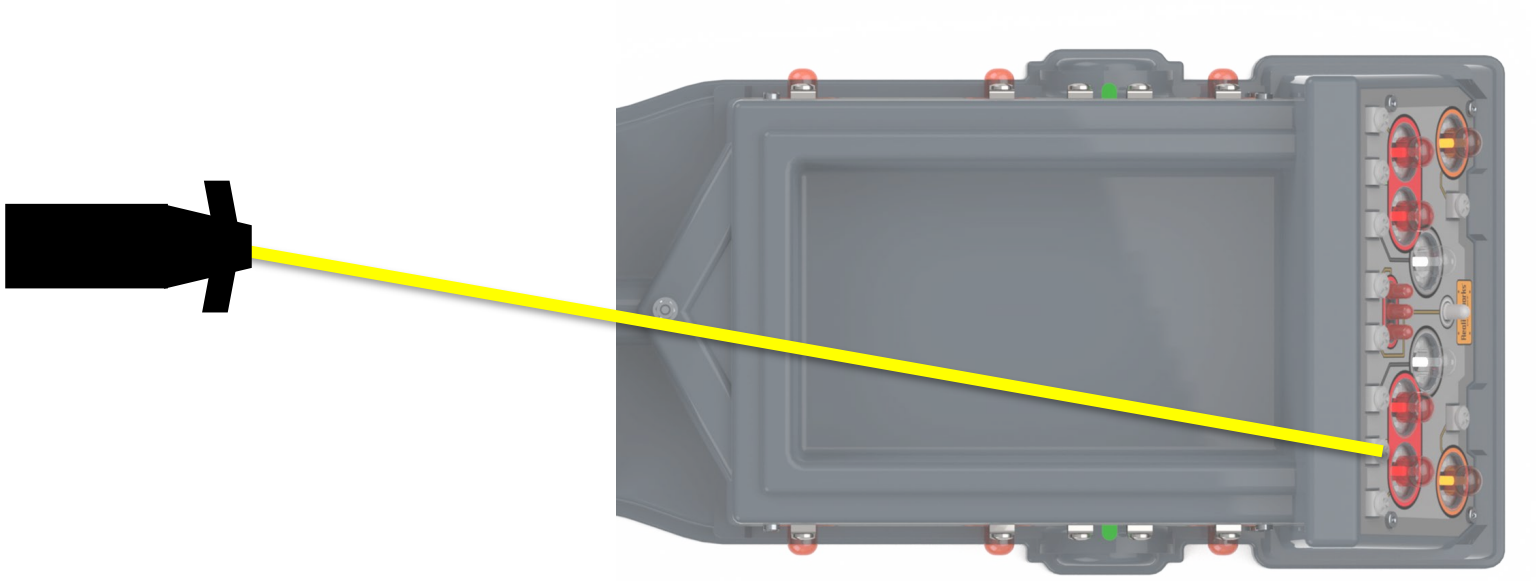
Use the diagram below to ensure your yellow wire connects to the left turn/brake light.



Step 5: Green

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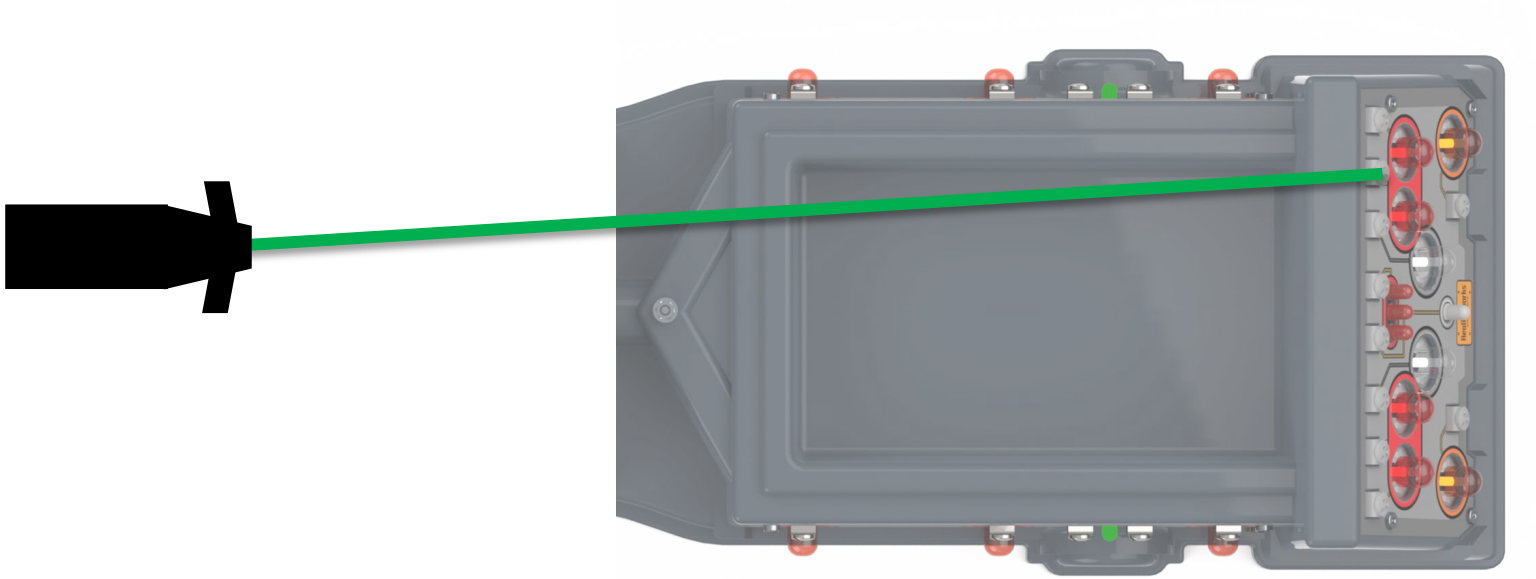
Use the diagram below to ensure your green wire connects to the right turn/brake light.



Step 6: Black

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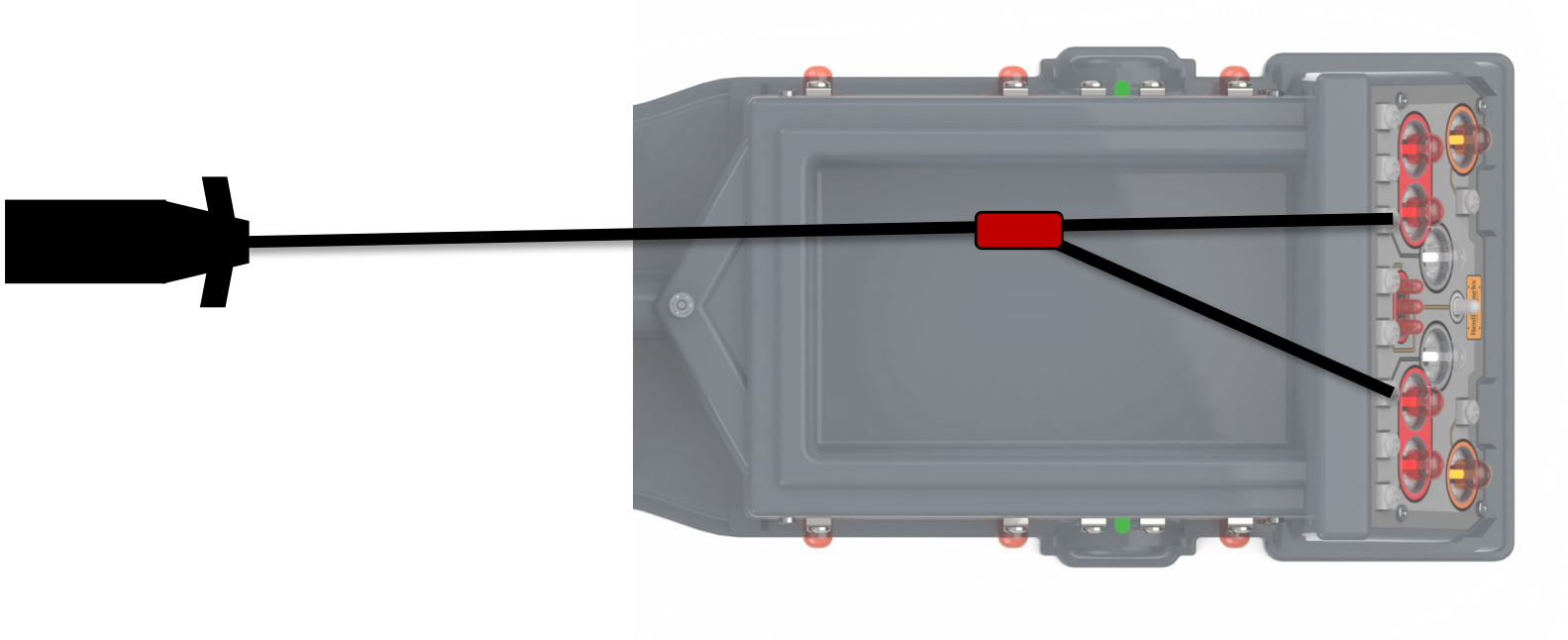
Use the diagram below to ensure your black wires connect to the reverse lights.



Step 7: Blue

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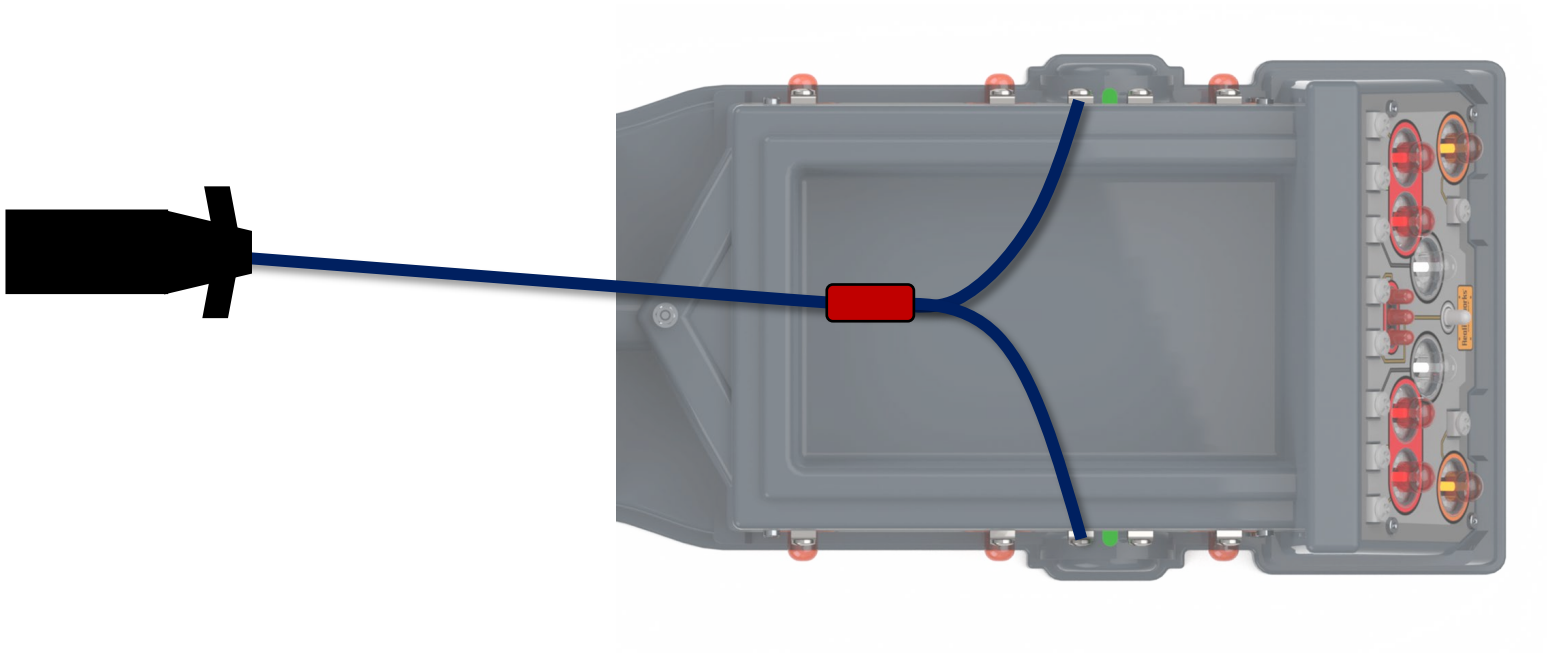
Use the diagram below to ensure your blue wires connect to the electronic brakes on either side of the trailer.



Step 8: Red

What is that red wire for? Right now… nothing! Put some tape over the end to prevent accidental shorts. Let it lay to the side of the Trailer Circuits Truck.

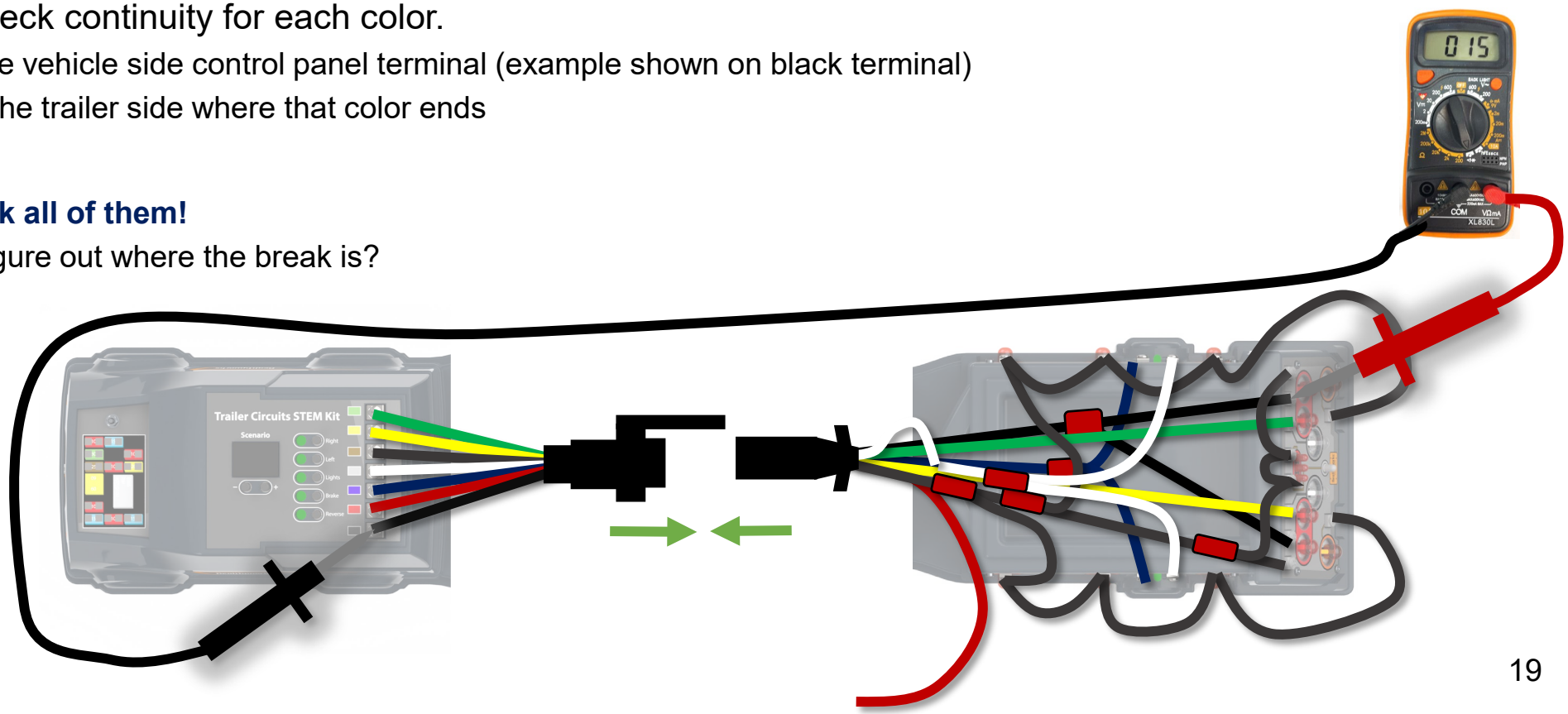
In a real trailer, this wire provides power to accessories, such as:

- Fans
- Additional lighting
- Speakers
- Power jacks

Use the Lesson 6 7-Way Wiring Test Table in your Student Workbook to record your work on the next few slides.

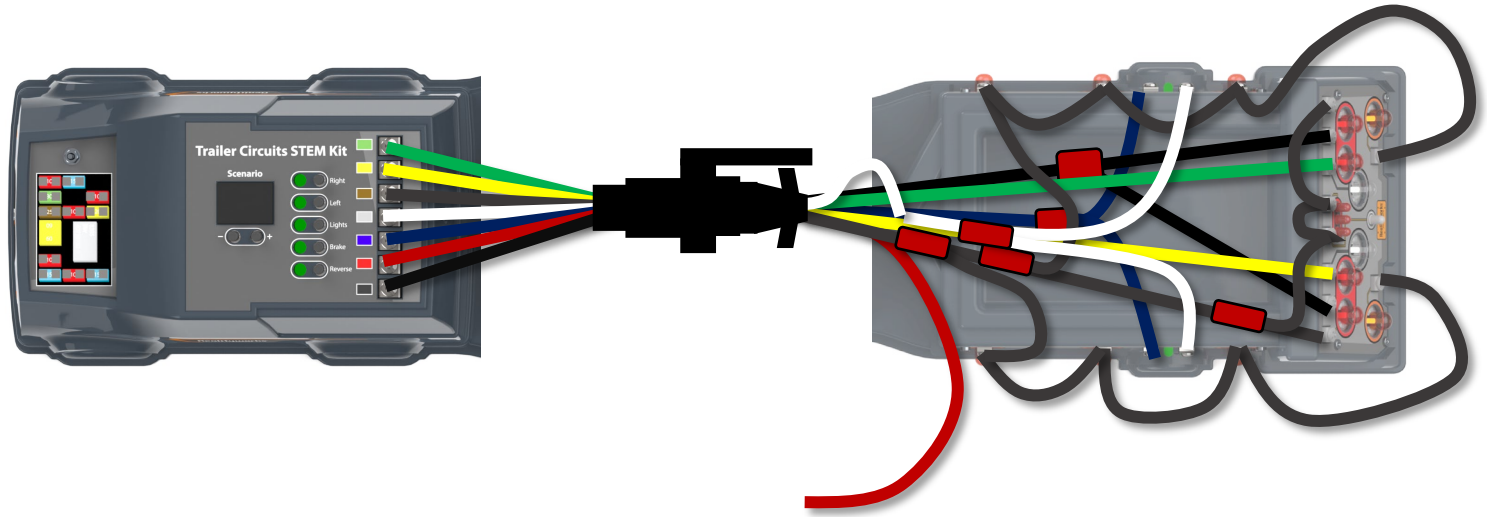
Connect the Harnesses

- Connect the harnesses and check for continuity
- Keep the **Trailer Circuits Truck powered off**
- If not done so already, connect the vehicle and trailer harness sides together, making complete electrical connections between the vehicle and trailer
- Use the multimeter to check continuity for each color.
  - Place one probe on the vehicle side control panel terminal (example shown on black terminal)
  - Place other probe on the trailer side where that color ends
- **Is there continuity?**
  - **Yes! Keep going. Check all of them!**
  - **No… Uh oh.** Can you figure out where the break is?



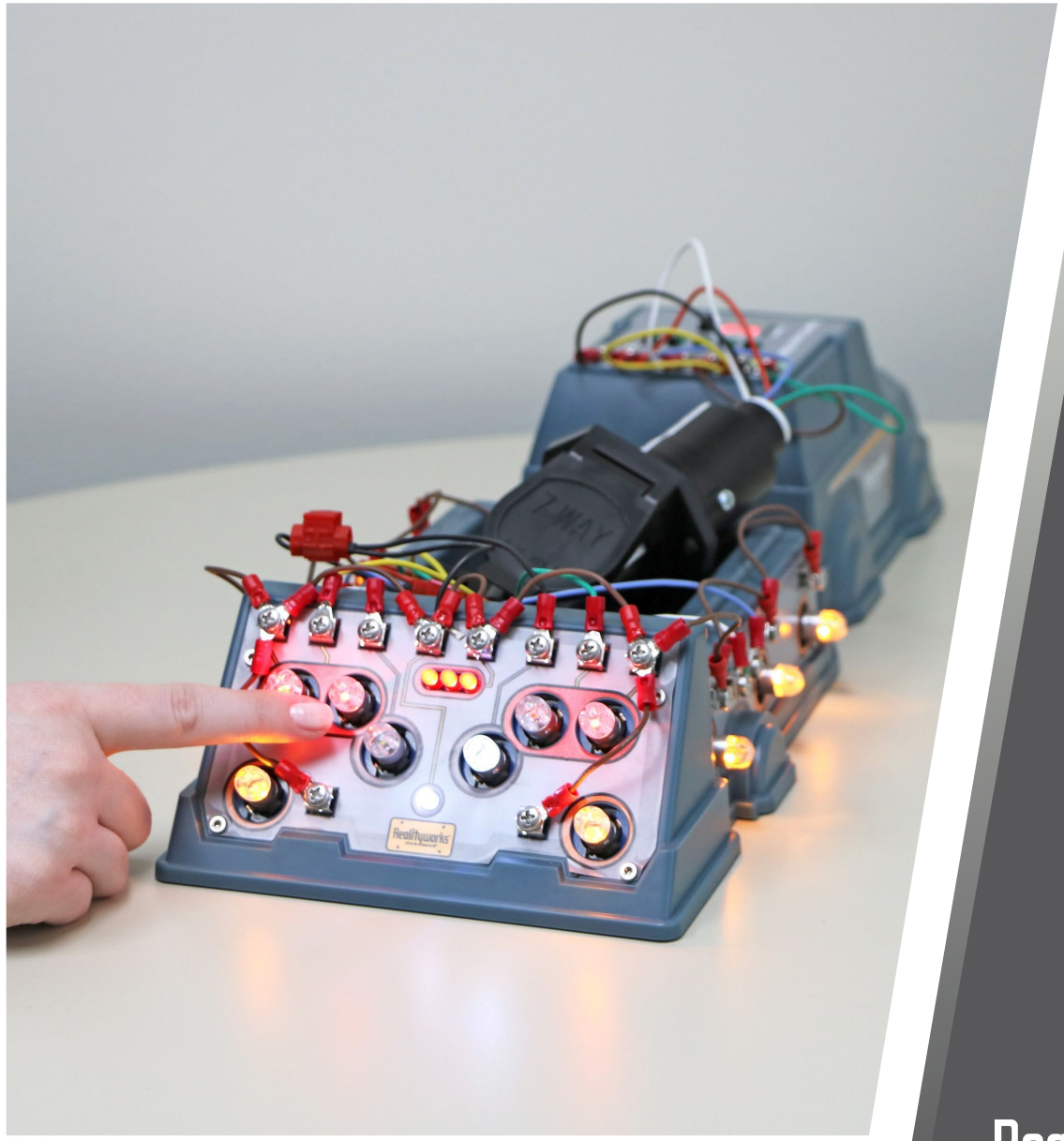
Test All the Lights

- Power the Trailer Circuits Truck **on**
- Using your student workbook, systematically test and document, 1 at a time, all the light systems on the control panel
- Does everything work the way it should?
  - ***Show your instructor that you have successfully wired your trailer with the 7-way round harness.***



Congratulations!

Your 7-way round harness is successfully powering your trailer light systems!



Done with the student workbook for lesson 6?

See your instructor to check the key and/or turn in.

For more information, please contact Realityworks, Inc.
through email at information@realityworks.com
or call toll free at 800.830.1416

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