

## FEATURED PRODUCT

### Red and Blue Rubber Air Lines

- Tractor end includes swivel fitting for easy installation and spring guard for strain relief
- Resistant to abrasion, cracking, kinking and weathering
- Large grips for easy coupling/uncoupling
- Colored red and blue to denote emergency and service airline connections



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PAST ISSUES

## Voltage Drop Test Procedures - Exposed Wiring

Last month we covered symptoms of possible circuit issues and how to perform a voltage drop test on a sealed harness system. When wiring is not contained in a sealed harness and you have access to both positive and ground circuits use the following methods to determine voltage drop:

### Voltage Drop Test for Exposed Wiring:

You will need a multimeter to perform this test.

1. Power up the circuit you are testing, usually by turning on the ignition. If you are diagnosing a cranking issue, disable the start system by pulling the fuse for the fuel side of the system so the truck will not start when cranking the engine. Make sure you test both the positive side and the ground side of each circuit.
2. With your multimeter set to DC volts, place one end on the voltage source, usually the power distribution panel, batteries or other power source on the positive side. Place the other side on the positive wire at the component.
3. First take the voltage on the positive side wiring from the power source to the component. The reading will be the voltage drop. Check the allowable drop for the size and length of wiring you are testing. If outside of this range, you need to work your way back between connections until you find the section of wire where the issue is. Once found, replace the wire.
4. If no problems are found do the same test on the ground side. Start at the main ground for the component and work your way through the ground path to find the issue. Most prob-

lems found will be on the ground side. Pay special attention to any frame grounds as corrosion, paint under the connection and loose connections can all create voltage drop.

5. If voltage drop is minimal on both sides of the circuit, then the issue is likely the component.

Voltage drop tests can be completed quickly. They eliminate wiring as the issue, and prevent future replacement of non-failed components. Always complete a voltage drop prior to replacing expensive components to eliminate wiring as the issue of the failure.



Digital Multimeter

## TIPS

Have technical questions? Get the latest tips from a skilled Phillips engineer!  
Call: 888-959-0995 OR e-mail: [techtips@phillipsind.com](mailto:techtips@phillipsind.com)

- To determine how much voltage drop is acceptable in a cable you can use any of the calculators on the internet to help you determine the range of allowable drop.
- Remember, the longer the cable, and the smaller the wire size, the greater the drop will be. Shorter cables with larger wire will have significantly less voltage drop.
- Make sure your values are correct for the wire size and length of wire you are testing.