

Fleet Maintenance Training Series

Basic Electrical and Troubleshooting

Course length – 2 days

Prerequisites – None

Typical class size – 6 to 8 individuals

Instructors – One (1)



Course Summary

We hear over and over from fleet managers, service managers and shop owners that technicians/mechanics lack sufficient electrical troubleshooting training and they need extensive on-the-job training that drive the cost of repair up and increase repair failure.

They tell us that even good technicians/mechanics cannot answer simple electrical troubleshooting questions or have any real understanding of the theory of electricity. Most Technicians/Mechanics are not competent using a Digital Multi Meter (DMM) and do not understand DMM readings. A prime example; is that most of them do not understand voltage drop measurements, what voltage drops are, what voltage drops indicate and have never utilized voltage drop measurements while troubleshooting vehicle electrical system problems.

The Basic Electrical and Troubleshooting Course is designed to provide practical instruction which includes both lecture (theory) and practical (hands-on) troubleshooting. This 1.5 day class is designed to give your technicians the training they need to properly check and diagnose electrical circuits using a Digital Multi Meter.

Course Topics

Items to be covered during the training:

- Learn fundamentals of electricity.
- Understand current, voltage & resistance and relationship between each one.
- Demonstrate the ability to use ohm's law to solve basic problems in electrical circuits.
- Be able to construct basic D.C. Circuits to demonstrate what current, voltage & resistance does in series, parallel & series/parallel circuits.
- Develop a comfortable skill level in using a digital volt ohm meter in troubleshooting circuits.
- Understand fully – short circuits and open circuits.
- Understand Voltage Drops and how they affect a circuit
- Describe the operation and purpose of resistors, relays, and switches.
- Be aware of the basic safety procedures and practices to be used when dealing with electricity and related devices.

Course Deliverables

Following the course, participants will be able to:

- Understand basic electrical concepts of voltage, current, and resistance and magnetic field
- Demonstrate an understanding of electrical system precautions and safety
- Identify and properly use required electrical testing tools - Voltmeter, Ammeter and Ohmmeter
- Identify resistors, diodes, SPST switches, DPDT switches and relays
- Identify schematic symbols
- Understand Voltage drops
- Use Ohm's Law to identify Voltage, Current, Resistance and Power

Client Responsibilities

In order for this training to be effective, the client will need to provide:

Class Room:

Adequate classroom space free of distractions to include:

- Presentation projector (notify Fleet Group in advance if we need to provide the projector)
- Projector screen
- Dry erase board w/markers of various colors (flip chart if dry erase board is not available)
- Seating and table for all participants and trainer (Large enough for each participant to use a meter, solderless breadboard etc.)
- Catered lunch for each day
- The names of each participant at least 6 days prior to the training session

Fleet Group Responsibilities

- Course material
- Provide Trainer(s)
- All meters for hand-on exercises
- All electronic components for hands-on exercises
- Calculators for each participant to use