

# The “Hands On” Vehicle Testing Reference

A guide for the professional vehicle technician as well as the interested DIY. Over 800 photos and illustrations show "How To" test: batteries, computer/modules and sensors, continuity, current paths, connections, switch contacts, fuses, fusible links, circuit breakers, generators (alternators), relays, starters, shared current paths (the vehicle base system), engine compression, cylinder leak, fuel, fuel pumps, fuel injectors, as well as miscellaneous tests from "How To" use a mechanic's stethoscope to six different ways to check for a blown head gasket. Detailed information about the DVOM - digital-volt-ohmmeter and where and "How To" place the meter probes to do effective troubleshooting is included as well as amp draw testing with a DVOM and "How To" correctly read and use the inductive pick up.

This book was designed as an illustrated “hands on ready reference”. Its purpose is to save you time by giving you illustrated clear examples of the tests, while informing and helping you understand each test as you do them; and above all, to help you improve your electrical, electronic, as well as some mechanical troubleshooting skills. Each test can be quickly located and used at the vehicle with the “Quick Index” that begins on page 4.

The book clearly explains voltage drop and how to find its root cause. Whether you work on gasoline or diesel engines, you will find this book helpful in honing and improving your troubleshooting skills.

If you have just picked this book up and are trying to determine if it can help you troubleshoot, I encourage you to look over the index - pages 4 though 15. I know you will be glad you added this ready reference to your tool box.

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“This is just the INDEX, wait until you see the book!

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- 517 How to Check for Acid Content In Coolant With a Voltage Drop Test.
- 518 How to Check for Water in Brake Fluid Using a Voltage Drop Test.
- 519 How to Find Volts, Amps, Ohms, and Watts.
- 520 Understanding the term “Bar”.
- 521 How to Deal With that “Chirping Belt”.
- 522 How to Inspect an Engine Belt Using a Timing Light.
- 523 Observed Wire Sizes Used In Vehicles.
- 524 Temperature Conversion Chart – Centigrade to Fahrenheit / Fahrenheit to Centigrade.
- 525 Where to Start When Dealing with a No Start due to a “No Crank”.
- 525 Where to Start When Dealing with a No Start but Engine does Crank.
- 526 Understanding the Relay Coil Winding “Control” Circuit and the “Load” Circuit.
- 527 How to Test the Voltage Drop of a Relay Contact.
- 528 How to Troubleshoot a Relay Controlled Circuit.
- 529 How To Test a Relay Coil Winding For Engineered Resistance Value.
- 530 How to Bench Test for a Relay’s Contact Resistance.
- 532 How to “Hot Wire” a Relay Coil For the “Click”.
- 533 How to Test a Relay With a Diode Across The Coil Winding.
- 535 About Relays with a Surge Suppression Diode.
- 537 How to Test a Relay With a Resistor Across The Coil Winding.
- 538 About Relays With a Resistor Across the Coil Windings.
- 539 How to Troubleshoot a Non-Computer Controlled Relay Circuit.
- 543 How to Load Test a Relay Coil Winding.
- 544 More About Relays.
- 545 About “Starter Solenoids” and “Continuous Duty Solenoids”.
- 546 How to Test the Cranking Voltage Available to the Starter Motor.
- 548 How to Find the Actual Voltage Drop Between: the Battery (+) Terminal and the Starter Motor Armature Lead.
- 550 How to Test the Voltage Drop of the Starter Motor Ground.
- 552 How to Test the Voltage Drop Between the Starter Housing and the Block.
- 554 How to Test the Voltage Drop of a Starter Mounted or Remote Mounted Solenoid.
- 556 Quick Test for Cranking, Charging Voltage Looking for Excessive Starter Amp Draw With No Inductive Pick-Up Using MIN/MAX.
- 558 How to do a Starter Motor Amperage Draw Test With an Inductive Pick Up Plugged Into a Digital Voltmeter.
- 560 How to do a Starter Motor Amp Draw Test with a VAT 40 or 45.
- 562 How to do a Starter Motor Amp Draw Test With a Load Tester That has a Voltmeter and Amp Meter, but No Inductive Pick Up.
- 563 Understanding “Starter Motor Heat Soak” Starts Cold, Once Hot - No Start.
- 564 A Suggestion for the Color Blind Using Wiring Diagrams.
- 564 Smokes Bad Only When First Started Cold, Once Running, No More Smoke?
- 565 Working Alone? Some Suggestions.
- 566 How to Deal with a Rusted or Seized, Brake Bleeder, Tapered Plug, Nut, etc.
- 567 How to Remove a Rusted Disc Brake Drum or Rotor.
- 568 In The Event Your Cell Phone Goes in The Hot Tub, or Your Scan Tool or Voltmeter Get Soaked
- 569 About Parts Removal and Replacement.
- 570 To Use a Torque Stick or Not.
- 571 General Rules for Allowable Voltage Drop in Vehicle Circuits.
- 573 Sources for Useful Information on Vehicle Understanding and Testing.
- 574. The author, Joe Glassford’s, experience.

**Relay & Solenoid Testing**

**Starter Testing**