



# The “Hands On” Vehicle Testing Reference

**Do It Yourself Auto/Truck Testing**

Quick tests, short cuts, insight, information, advice, and encouragement from the “Auto Shop Teacher”

## A Suggestion On How To Use My “Hands On” Reference Book.

If you are an experienced technician or a DIY, you can start right out with the "***How To***" “hands on” tests. If you are a little “rusty” about a particular test, and need some additional background information before you begin, I suggest you read any added information that I may have included for a particular test under the index titles that do *not* begin with "***How To***". Your level of experience will determine where you begin. My book is arranged with an extensive “index” that begins on the next page .

Many years of my experience are in this book. I started out in the fifties repairing lawn mowers with my brother Tim as a result of having a lawn mowing business when we were in Junior High school. Our business allowed us to buy a “Cushman” motor scooter which we of course drove without a license. Starting with a one cylinder carbureted engine was my beginning.

I have been a student, technician, and teacher. During my career I have wondered, questioned, assumed, used gut feelings, diagnosed, troubleshot, tested, scanned, and scoped. I have both repaired and rebuilt engines. I have replaced both good, bad, and defective new parts. I have made mistakes along the way and have learned from them. My experiences have given me a background for what I have included in this book.

During my teaching for Delta Corporate Services and General Motors in Illinois, Michigan, and California, I have had many conversations with working technicians that have given me insight into testing techniques that they have used. Some of those are shared in this book. In teaching classes for Allen Test Products, and much later for myself to independent technicians, I have also had the opportunity to gain insight into testing techniques, some of these are shared in this book.

I have always been interested in “why” as well as “how”. This book is a "***How To***" format to get you right at a particular test quickly. If you too are interested in “why”, read the additional information I have added as well as the information on how to do the test. The more information you have about the testing equipment you use and about the test procedure you will perform the more accurate your test results will be and the easier it becomes the next time you use the equipment and face a similar testing procedure.

I wish you the best, and I know that this book will improve your troubleshooting.

***Joe Glassford***

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- 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.
- 537 Don't Waste Time Testing a Relay With a Resistor Across The Coil Winding.
- 539 How to Troubleshoot a Non-Computer Controlled Relay Circuit.
- 543 How to Load Test a Relay Coil Winding.
- 535 About Relays with a Surge Suppression Diode.
- 538 About Relays With a Resistor Across the Coil Windings.
- 526 Understanding the Relay Coil Winding "Control" Circuit and the "Load" Circuit.
- 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.
- 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.
- 556 Quick Test for Cranking, Charging Voltage Looking for Excessive Starter Amp Draw With No Inductive Pick-up Using MIN/MAX.
- 563 Understanding "Starter Motor Heat Soak" Starts Cold, Once Hot - No Start.
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- 564 Smokes Bad Only When First Started Cold, Once Running, No More Smoke? What is the Cause?
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- 566 How to Deal with a Rusted or Seized, Brake Bleeder, Tapered Plug, Nut, etc.
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- 569 About Parts Removal and Replacement.
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## Starter Testing