

**Technician's Version**  
**NEW! Vehicle "How To" Test Guide. NEW!**

25 years of vehicle testing techniques on one CD.

107 Slides in Power Point Show viewed on any computer.

Over 50 descriptive photos of "hands on how to" tests with expected results..

27 slides on meter set up and probe placement techniques for testing voltage and voltage drop.

General rules for allowable voltage drops in vehicle circuits - 5 page word doc.

Written by Auto Instructor: Joe Glassford, author of:

AVI Video LBT 101 "Voltage Drop Testing".

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All slide programs are in Power Point Show format.  
You must have Power Point to view them.

This technician's version covers the following:

**Meters**

How Accurate is Your Test Meter?

Understanding What a Voltmeter is Reading.

How to: Set a Digital Volt Ohm Meter for Reading: Open Circuit Voltage, Charging Voltage, or Source Voltage.

Set the Digital Volt Ohm Meter, Leads, and Probes for Reading: The voltage drop between: the battery positive (+) terminal and the input pin to any load on the vehicle.

Set the Digital Volt Ohm Meter, Leads, and Probes for Reading: The voltage drop between: the battery negative (-) terminal and the output pin or case ground from any load on the vehicle.

Set the Digital Volt Ohm Meter, Leads, and Probes for Reading: The amount of source voltage available to any load on the vehicle.

Calibrate an Inductive Pick Up That Plugs into a Voltmeter.

Read a 100 millivolts per amp Inductive Pick up.

Make and Use a 10X Inductive Multiplier.

Extend Meter Leads When Testing a Long Distance From the Battery.

**Battery Testing**

How to: Test the Voltage Drop Between the Battery (+) Post and Clamp.

Test the Voltage Drop Between The Battery (-) Post and Clamp.

Test the Open Circuit Voltage of the Battery.

Charge the Battery.

Do a Battery Load Test Using a VAT 40 or 45.

Do a Battery Load Test Without a Load Tester.

Find the Parasitic Drain on any Battery Using an Auxiliary Battery.

Do a 3 - Minute Charge Test on a Battery.

Test the Voltage Drop Between: the Battery (+) Terminal and the Starter Motor Armature Lead.

Test the Voltage Drop Between: The Battery Positive (+) Terminal and Fuses.

Test The Voltage Drop of a Battery Positive + Pigtail Wire.

Test Connectors and Connections of Positive + Pigtail Wires.

Test the voltage drop between: the wire and the clamp material in a battery positive (+) pigtail.

Test the Voltage Drop Between: the Battery Negative (-) Terminal and Where the Negative (-) Cable Attaches to the Frame or the Block.

Test the Voltage Drop Between: the Battery Negative Cable Conductor and its Connector.

Test the Voltage Drop Across a Suspect Negative Pigtail Cable or Wire Connector.

**Computer/Module Testing**

How to: Test the Voltage Drop of Computer Voltage Feed Wires That Can Be Back-probed.

Test the Voltage Drop of Computer Ground Wires That Can Be Back-probed.

Load Test Computer Voltage Feed Wires.

Load Test Computer Ground Wires.

**Continuity Testing and Ohmmeter Usage**

How to: Test for Continuity with an Ohmmeter.

Cautions When Using an Ohmmeter.

How To: Tell if Solid State Components are Affecting Ohmmeter Resistance Readings. ©

**Current Path, Connections, and Switch Contact Testing**

#### **How to: Test the Voltage Drop of Any Length of Wire**

Test for Available Voltage to a “Hot at All Times” Connection.  
Test for Available Voltage to a “Hot In Start or Run” Connection.  
Load Test a “Hot at all Times” Connection.  
Load Test a “Hot in Start or Run” Connection.  
Test Any Mechanical Switch Using an Ohmmeter.  
Tests the Voltage Drop of Any Mechanical Switch.  
Test the Voltage Drop of a “Suspect Wire Connector”.

#### **Fuse, Fusible Link, and Circuit Breaker Testing**

**How to: Test the Voltage Drop Across a Fuse Connection.**  
Use a Blown Fuse to Direct Your Troubleshooting.  
Find a Short to Ground (that resulted in a blown fuse), Using a Light Bulb Load.  
Test Fusible Link Wire.  
Test a Suspect Circuit Breaker.

#### **Generator Testing**

**How to: Test the Generator Charging Voltage.**  
Test the Voltage Drop Between: the Generator Output and the Battery Positive (+) Terminal.  
Test the Voltage Drop Between: the Battery Negative (-) Terminal and the Generator Housing.  
Test the Voltage Drop Between: The Generator Housing and the Block.  
Test for Generator "AC Riding on DC."  
Check For Bad Diodes in a Non Computer Controlled Generator using the “Diode Test Mode” of the Digital Volt Ohm Meter.  
Test for Shorted Diodes in the Generator Using the “Micro Amp Range” of the Digital Volt Ohm Meter.  
Verify a Good Generator.  
Test the Battery as a Possible Cause of Multiple Generator Replacements.

#### **Relay Testing**

**How to: Deal With a “Suspect Relay”.**  
Troubleshoot a Relay Controlled Circuit.

#### **Starter Testing**

**How to: Test the Cranking Voltage Available to the Starter Motor.**  
Test the Voltage Drop Between: the Battery (+) Terminal and the Starter Motor Armature Lead.  
Test the Voltage Drop of a Starter Mounted or Remote Mounted Solenoid.  
Test the Voltage Drop Between: Battery Negative (-) Terminal and the Starter Motor Housing.  
Test the Voltage Drop Between: the Starter Housing and the Block.  
Do a Starter Motor Amp Draw Test with a VAT 40 or 45.  
Do a Starter Motor Amperage Draw Test With a Load Tester That Has a Voltmeter & Amp Meter, but No Inductive Pick Up.  
Do a Starter Motor Amperage Draw Test With an Inductive Pick Up Plugged Into a Digital Voltmeter.

#### **Shared Current Path and Voltage Drop Testing**

**How To: Find Open Circuit, Charging, Or Source Voltage.**  
Find The Amount Of Source Voltage Available To Any Load.  
Find The Voltage Drop Between: The Battery Positive Terminal And The Input Pin To Any Load.  
Find The Voltage Drop Between: The Ground Side Of Any Load And The Battery Negative Terminal.  
Find The Voltage Drop Between: Truck Bed And Cab Sheet Metal.  
Find The Voltage Drop Between: The Battery Negative (-) Terminal And The Bulkhead Ground Strap.  
Find The Voltage Drop Between: The Bulkhead And The Block.  
Find the Voltage Drop Between: The Battery Negative (-) Terminal and A Battery Negative (-) Pigtail Attached To Sheet Or Frame Metal.

#### **Other Tests and Information**

**How to: Stop Electrical Switch Popping “Noise” in a Radio.**  
**How a Voltage Drop Can Cause Ring Gear Damage.**  
**How To: Find the Percent of Alcohol in Gasoline.**  
Check for Water in Brake Fluid Using a Voltage Drop Test.  
Check Acid Content In Coolant With a Voltage Drop Test.  
Test a Rear Window Defogger Using a Test Light.  
Test a Rear Window Defogger using a Voltmeter.  
Test Thermistor Temperature Sensors.  
**Battery Drain Times When Components are Left On.**  
**Wire Sizes, Diameter, Ohms/1000Ft. and Rated Continuous Amperage.**  
**Observed wire sizes used on a 2007 C/K GMC.**  
**How DC “Motor Drag” Can Affect Voltage Drop.**  
**How DC Motor In-Rush Current Can Affect Voltage Drop.**  
**Precautions to Observe Whenever a Vehicle Component is Unplugged.**  
**When the Voltage Drop Is Still Excessive after Repair, Then What? ©**