

TECHNICIAN TRAINING
BY DORMAN PRODUCTS

DORMAN®

Training Center
Presents:
"Understanding The DVOM And Using It To Diagnose Electric Circuits"

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DORMAN®

Aftermarket Innovators

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Your Instructor For This Seminar

"G" Jerry Truglia

- National Trainer, ASE World Class, Master Auto, Truck, School Bus, L1, L3, CNG and...
- **ATTP Master Instructor, New York State, CT and New Jersey**
- STS (Service Technician Society) 2003 President
- **TST (Technicians Service Training) Founder and President**
- Author / Co Author/ Technical adviser on 25 plus books including OBD II and Mode 6, and Understanding and Diagnosing Hybrid Vehicles
- **Published articles for multiple newsletters, and magazines**
- Picked as one of the Top Instructors in the country by EPA & SAE
- **Numerous Radio, TV, Internet, and SAE Video appearances**
- PTEN, MotorAge and TST Webcast Instructor
- **Motor Magazine Top 20 award winner**
- Provider of OBD II Training for 14 states, Ontario Canada and the US EPA
- **Guest speaker at SAE Congress, IM Solutions and Clean Air Conference**

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What We Will Cover:

In this Dorman Lunch & Learn we will provide an overview of the DVOM meter along with how to test electric circuits with it. This webinar is a great review for the seasoned tech and an excellent starting point for someone that may not know as much as they need to know about what test the meter can perform.

Topics covered include:

- **Meter usage (DMM) - All about the meter**
- **Circuits and circuit testing**
- **Voltage Drops**

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Electrical Testing Tools



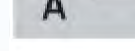
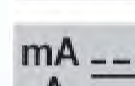
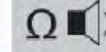
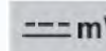
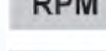
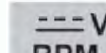
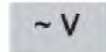
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Meters



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Meter Symbols



What is the definition for the above symbols?

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Meters - What Are You Working With



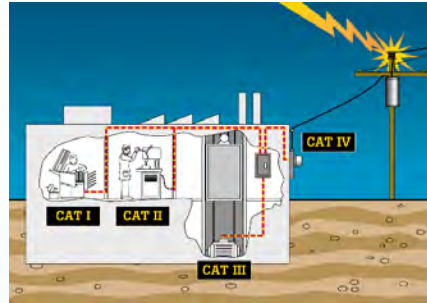
Fingerprints burned into probes



Source Fluke Corporation

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Meters - What Are You Working With



Overvoltage category	Working voltage (dc or ac - rms to grd)	Peak impulse transient (20 repetitions)	Test source (Ohm = V/A)
CAT I	600V	2500 V	30 ohm source
CAT I	1000V	4000 V	30 ohm source
CAT II	600V	4000 V	12 ohm source
CAT II	1000V	6000 V	12 ohm source
CAT III	600V	6000 V	2 ohm source
CAT III	1000V	8000 V	2 ohm source

Courtesy
Fluke Corporation



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Meters Ohm Testing



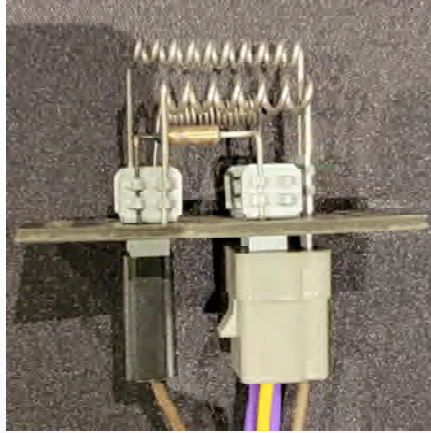
Zero or Delta



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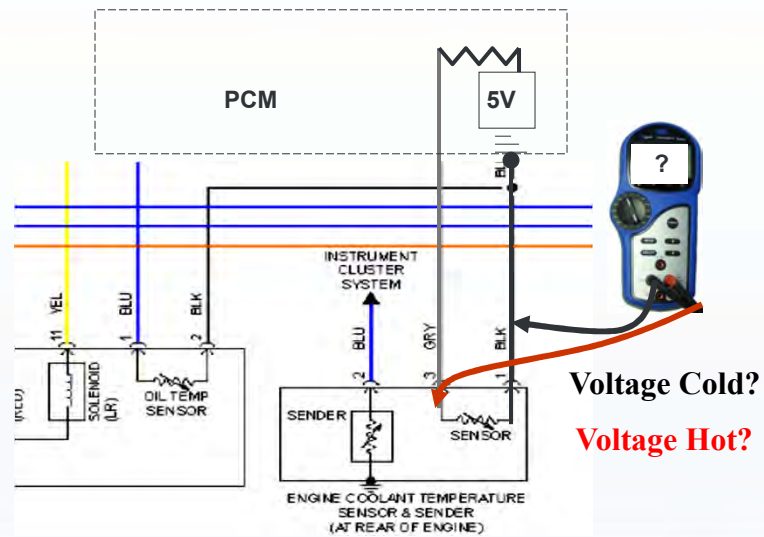
Checking Resistance



What should you do with the meter prior to testing?

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Coolant Sensors And Other NTCs



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Meters Amp Testing



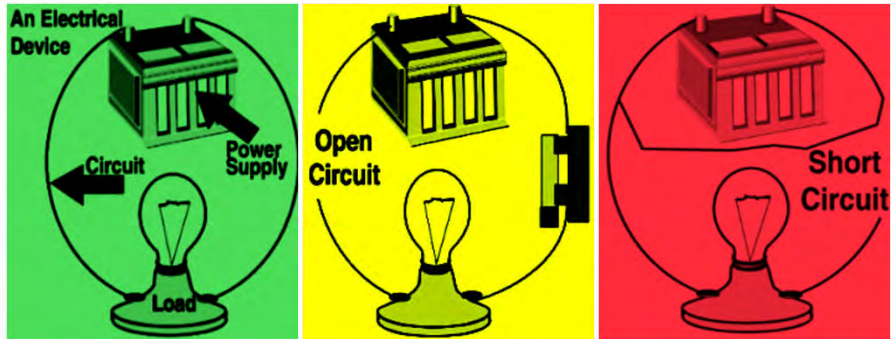
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The See Saw Of Electricity



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Electrical Circuits



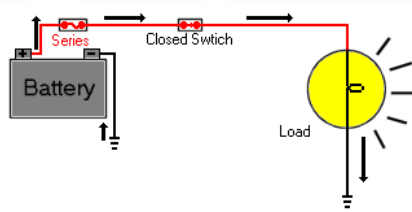
Think of electricity as a circle

Everything flows from Negative to Positive

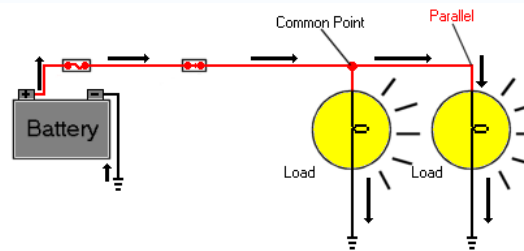
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Circuits

Series Circuit

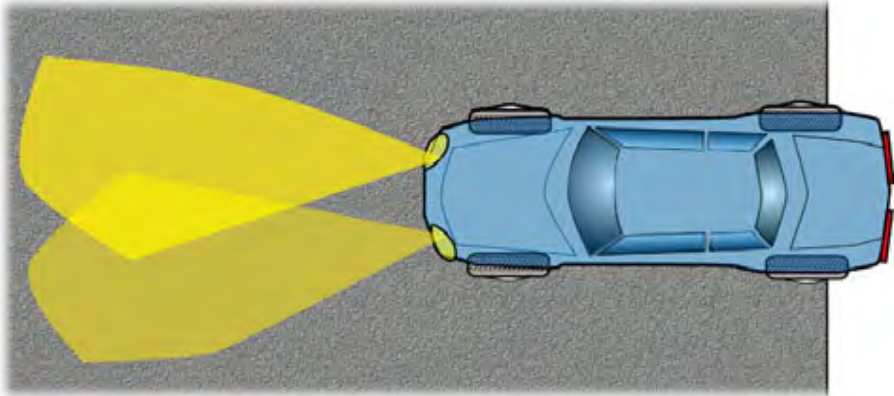


Parallel Circuit



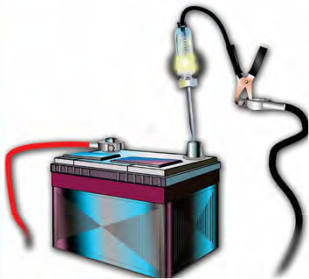
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Key Off Battery Drain - Parasitic



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Checking Parasitic Draw



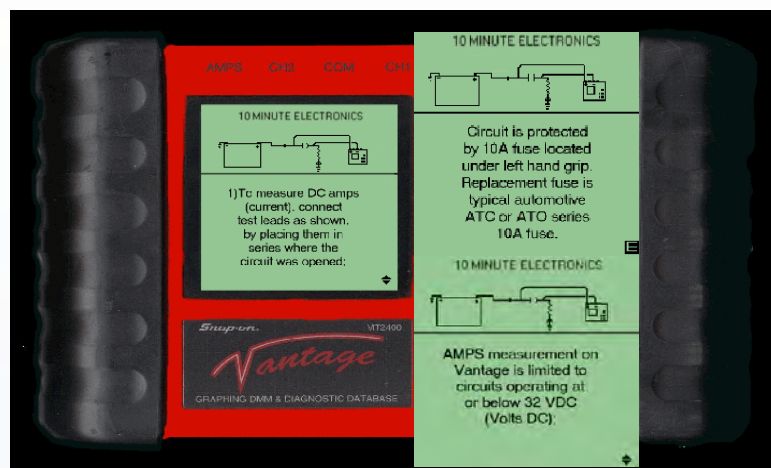
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Checking Parasitic Draw



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Checking Parasitic Draw



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Parasitic Draw

Courtesy of General Motors Corp.

GENERAL MOTORS PARASITIC LOAD TABLE (MILLIAMPS)

Component	Normal Draw	Maximum Draw	Time-Out (Minutes)
Anti-Theft System	0.4	1.0	...
Auto Door Lock	1.0	1.0	...
Body Control Module	3.6	12.4	...
Central Processing System	1.6	2.7	20
Electronic Control Module	5.6	10.0	...
Electronic Level Control	2.0	3.3	20
Heated Windshield Module	0.3	0.4	...
HVAC Power Module	1.0	1.0	...
Illuminated Entry	1.0	1.0	1
Light Control Module	0.5	1.0	...
Oil Level Module	0.1	0.1	...
Multi-Function Chime	1.0	1.0	...
Pass Key Decoder Module	0.75	1.0	...
Power Control Module	5.0	7.0	...
Retained Accessory Power	3.8	3.8	...
Radio	7.0	8.0	15
Twilight Sentinel Module	1.0	1.0	...
Voltage Regulator	1.4	2.0	...

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Checking Parasitic Draw With Voltage Drop



Ghost Voltage ?

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Checking Parasitic Draw With Voltage Drop

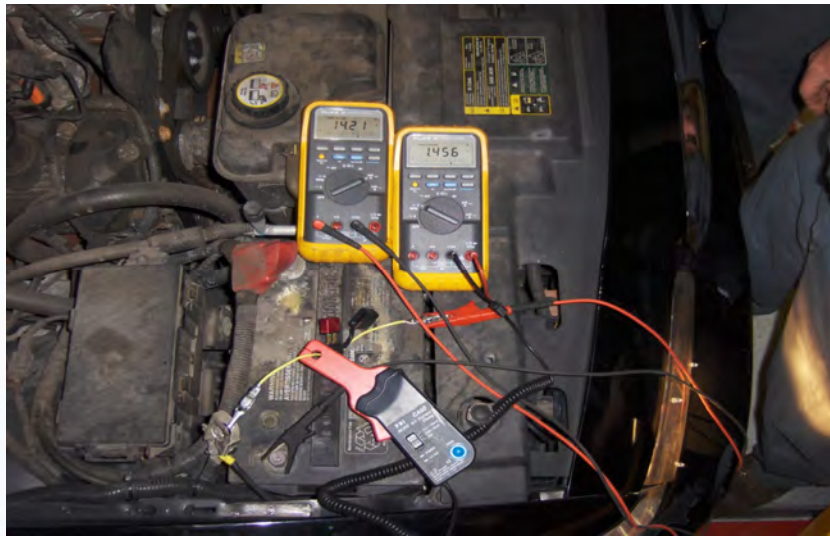


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Checking Parasitic Draw With Current



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Checking Starter Circuit



Voltage Drop (VD)
Ground Side
No Circuit Load

Checking Starter Circuit



VD Ground Side - Circuit Loaded

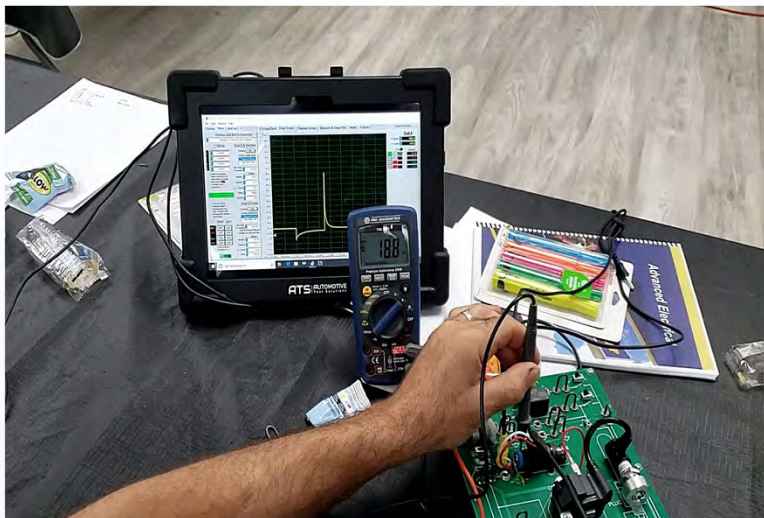
Checking Starter Circuit



**Positive side VD
Starter Using A
Power Probe**

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VD Voltage Drop



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VD Voltage Drop

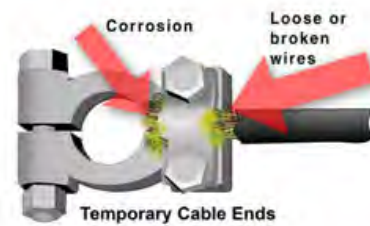


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Voltage Drop

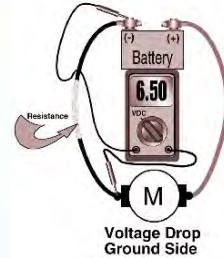
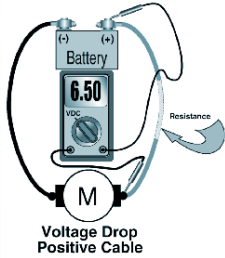


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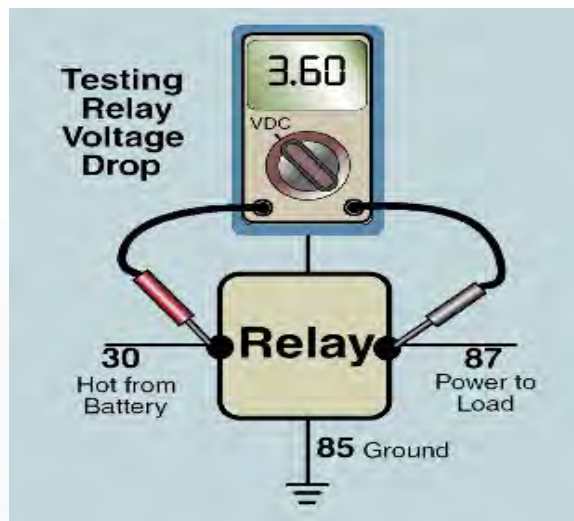
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Voltage Drops



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Voltage Drop



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Voltage Drops

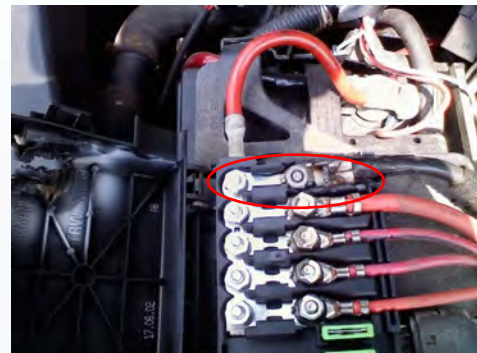


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VW Burned Connector

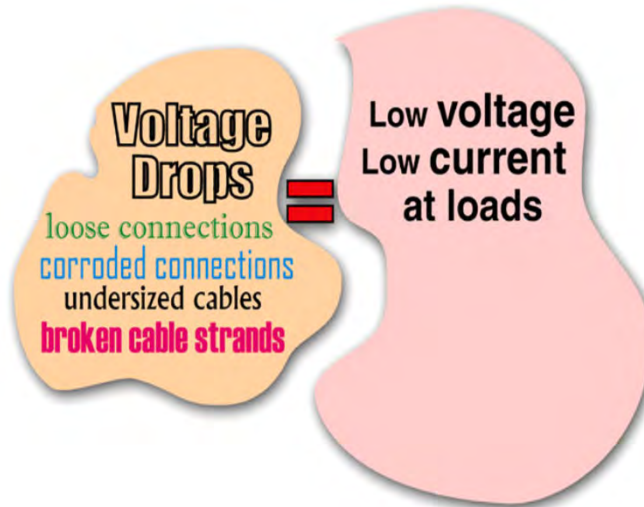
The fuse block with a burned block was replaced. After cleaning the terminal and replacing the fuse block, the block was getting so hot that it could not be touched. The shop realized that there was something wrong, so they call us to diagnosis. We performed a voltage drop test from the alternator B + terminal to the batter B+. The reading was .2 or 200mv, however after further investigation we found the entire .2 drop to be in the crimp of the eye terminal.

The FIX was replacing the eye terminal. This was too much of a voltage drop in such a short distance.



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Voltage Drop Review



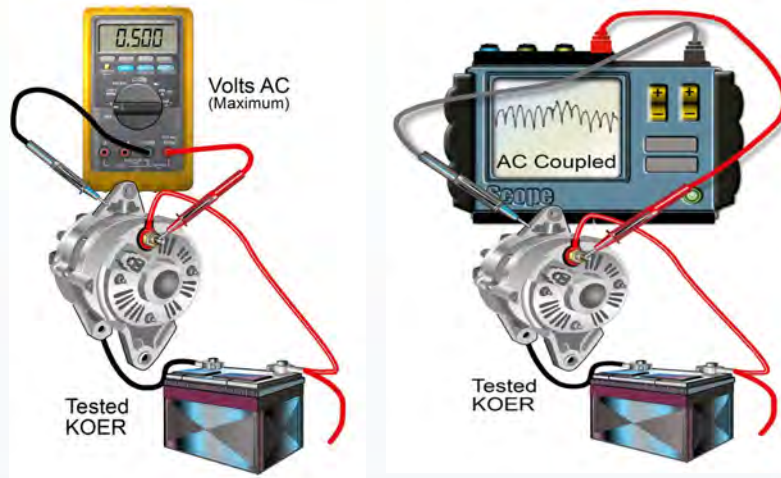
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Check Alternator Output With A Meter Or Scope



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Check Alternator AC With DMM Or Scope



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Radiator Voltage

Connect the negative voltmeter lead to battery negative and immerse the **positive lead** into the coolant. A reading of 0.300 V or greater indicates corrosion is probably occurring.



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Radiator Voltage

Connect the **positive lead** voltmeter lead to battery **positive** and immerse the **negative lead** into the **coolant**. **Note that system voltage will be displayed.**



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Dorman "Mastering the Technology" **All Day Training Event** **& Trade Show!**

Saturday, September 23rd, 2023
8:00am to 6:00pm
ATC (Warminster Campus)

900 Johnsville Blvd, Warminster, PA 18974

[\(Directions\)](#)

4 Plus Top Instructors!
with Dorman's lead trainer

"G" Jerry Truglia,
with **Pete Meier,**
Kenneth Zanders,

Two Spanish Classes
with **Oscar Gomez**

Special Key Keynote Speaker:

Carm Capriotto from
"Remarkable Results"
for more info. email:
drestucc@DormanProducts.com

"CAN BUS Communication" 2023 - Instructor Ken Zanders

This class/seminar explains the working of the control area network and what is needed to know and test. Provided is CAN BUS communication diagnosing and testing using scan tools, meters, BOB (break out box) and Labscoopes. and more...

"Advanced Automotive LabscopeX" Instructor Pete Meier

Are you ready to become a Labscope Power User? Learn how to connect, display, and interpret labscope readings on all major brands of labscoopes. and more...

"Advanced Drivability Diagnostics" Instructor "G" Truglia

This class/seminar utilizes real-world strategies for effective diagnosis and repairs. There will be only ADVANCED procedures taught in this seminar. and more...

ONLY \$199.00

get a \$20.00 Discount!
Color Manuals, Lunch Included

Spanish Classes:

"Electrónica Automotriz- Para los Vehículos de hoy"

Instructor Oscar Gomez

Los temas cubiertos incluyen circuitos y pruebas de circuitos, aperturas, cortocircuitos, caídas de voltaje, pruebas de relés, uso de medidores (DMM), uso de medidores de laboratorio gráficos, sensores, actuadores. También se cubren el arranque, la batería, el alternador, los sensores, las computadoras y más. Esta capacitación brindará información sobre cómo aprovechar al máximo sus herramientas y equipos, para que pueda encontrar y reparar problemas eléctricos en los vehículos de hoy.

"Pensamiento Crítico - Estrategias de Diagnóstico 2023" Instructor Oscar Gomez

Esta popular clase/seminario se actualizó a partir de 2021. El éxito en el diagnóstico de los sistemas de alta tecnología actuales requiere un enfoque de alta tecnología. Esta clase/seminario cubre las herramientas que necesita para hacer frente a estos desafíos. Aprenderá a desarrollar un proceso de diagnóstico y un "Plan de juego" de diagnóstico. Cómo usar las herramientas que le brindan los OEM, Estrategias de ECM, criterios de configuración de códigos, análisis PID y cómo se pueden usar los ajustes de combustible para orientarlo en la dirección correcta. Este seminario también analiza las baterías, incluida la codificación y la reprogramación, el consumo parásito, la caída de voltaje, las pruebas del motor, incluida la compresión relativa, las pruebas de compresión, las fugas de los cilindros, el análisis de gases, las pruebas de flujo de combustible, el ajuste de combustible, el aumento de corriente, las pruebas de PCM, los transductores de presión y la reprogramación. una nueva forma de probar EVAP y mucho más. Esta nueva clase proporcionará las herramientas para el éxito en el diagnóstico de los sistemas de alta tecnología de hoy que requieren un enfoque de alta tecnología. ¡Cubiertas están las herramientas que necesita para hacer frente a estos desafíos!

<https://www.dormantraininglive.com/>

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Electronic Class LIVE TRAINING

Topics covered include circuits and circuit testing, opens, shorts, voltage drops, relay testing, meter usage (DMM), labscope / graphing meter usage, sensor, actuators, and hands-on testing to use on an array of applications such as batteries, alternators, starters, fuel delivery, ignition, sensors, computers, and more. Through this hands-on training, you'll be instructed how to get the most out of your tools and equipment to find and repair electrical problems on today's vehicles instead of watching those expensive tools collect dust. **Bring your meter, scope, graphing meter amp clamp and any other electrical tools.**

Class Limit of 18 technicians

Price \$1000.00, Includes Electrical book and Lunch

Diagnosing Electrical Problems On Today's Motor Vehicles ©

Art: Over 90 illustrations, photos, and charts

Pages: 105 in color

Binding: Wire bound

Overview: This book is designed to help all technicians develop a better understanding of electrical systems. Covered subjects: batteries, starters, alternators, common testers, Circuits, Ohm, Volts, Amps and
Retail price: \$60.00

Diagnosing Electrical Problems
On Today's Motor Vehicles



© Jerry Triglia



Dates: Fri. October 13th Sat. October 14th and Sun. October 15th, 2023

8:00 AM to 4:30 PM



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6 Week On-Line Electronic Class - 90 mins. ea.

6 Week One Night per (Monday) On-line Electronic Class

The classes will cover elec. circuits & circuit testing using a HANDS On approach using a DMM and the Elenco Snap Circuit board. It will cover Voltage testing Including Voltage Drops, Open, shorts, relay testing, meter usage, labscope usage, batteries, starter, alternators and more.....



Dates: Starts October 2nd, 2023

6:30 PM to 8:00 PM EST



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We offer greater freedom to fix cars and trucks
by engineering exclusive, labor-saving
and cost-effective repair solutions.

Thank You !

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