



Dorman Training Center Presents:

"EXPLORING AUTOMOTIVE LABSCOPES"



1

1

Your Instructor For This Webinar

- National Trainer, ASE World Class, Master Auto, Truck, School Bus, L1, L3, CNG
- 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, Motor Age and TST Webcast Instructor - Dorman Training Director
- 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



"G" Jerry Truglia

gtruglia@dormanproducts.com



2

2

What Will Be Covered

Instructions For This Webinar

This webinar will be approx. 1 + hours long

- All slides that are presented are in your handout and are numbered
- Have a pen or pencil and paper for notes
- Questions can be asked at anytime

- 01 Scope essentials - setting voltage, time and triggers
- 02 DC versus AC coupling
- 03 Using scope accessories - amp probes,
- 04 Major signal types
- 05 Live waveform on vehicle

Scope Info

Labscopes



DORMAN
TRAINING CENTER
5

5

Scopes Compared To Other Testers



If you can use a test light, logic probe, meter, or graphing meter, you can use a scope. Scopes take accurate measurements that other testers miss. It's the MRI (magnetic resonance imaging) of the automotive industry.

DORMAN
TRAINING CENTER
6

6

The Scope Screen



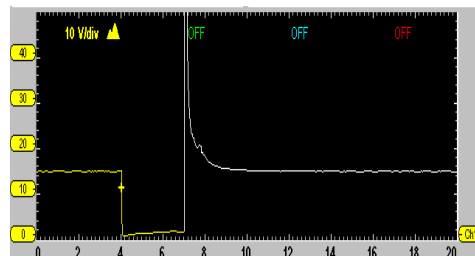
The grid is usually 10 rows high and 10 columns wide, dividing the screen into 100 blocks, called major divisions. Older labscopes were 8 rows high and 10 columns wide, dividing the screen into 80 blocks, called major divisions.

In digital scopes where the grid is made of light segments or dots instead of paint on the glass screen, you may have the option of turning the graticule off or changing the spacing or number of lines or dots that make up the grid.

Trigger Sources

Internal - The scope is triggered by the sampled voltage at one of the scope's input channels. In other words, the scope is triggered.

External - This is a separate scope input (commonly marked ext) that triggers the scope from an external source, regardless of the channel settings or channel voltage.



AC & DC

Alternating Current (AC) Signals

Common types of sensors or devices in a vehicle that produce AC signals are:

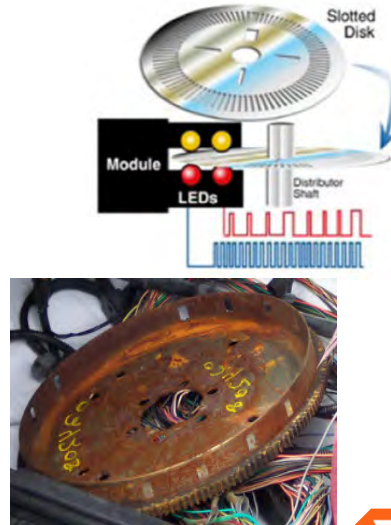
- **Magnetic inductive vehicle speed sensors (VSS)**
- **Magnetic inductive antilock brake system (ABS) wheel speed sensors**
- **Magnetic inductive camshaft (CMP) and crankshaft (CKP) position sensors**
- **Knock sensors (KS)**
- **Electric Motors**
- **Alternator charging voltage AC content**



Variable Frequency DC Signals

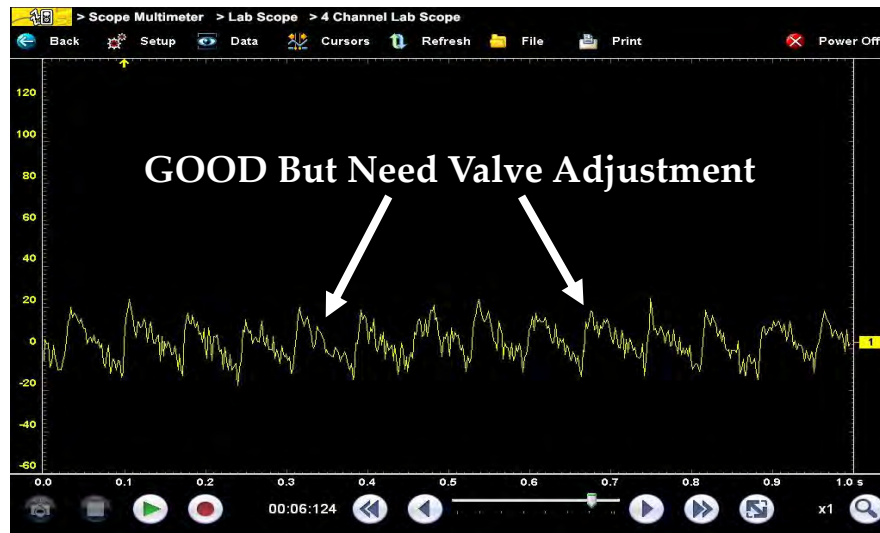
Sensors that produce Frequency Modulated signals include:

- Digital mass airflow sensors (MAF)
- **Ford digital MAP sensors**
- Optical vehicle speed sensors (VSS)
- **Hall Effect vehicle speed sensors (VSS)**
- Optical camshaft (CMP) and crankshaft (CKP) sensors
- **Hall Effect camshaft (CMP) and crankshaft (CKP) position sensors**
- Vortex airflow meter



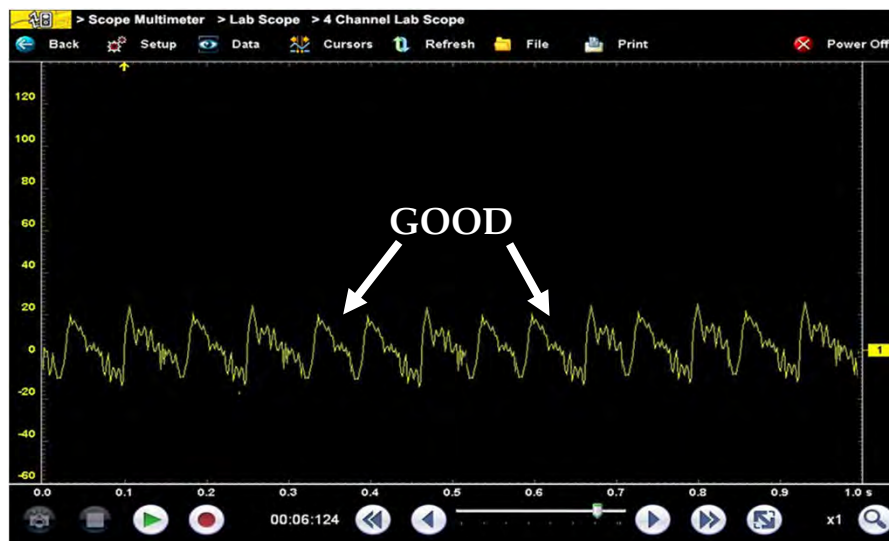
Relative Compression

Relative Compression



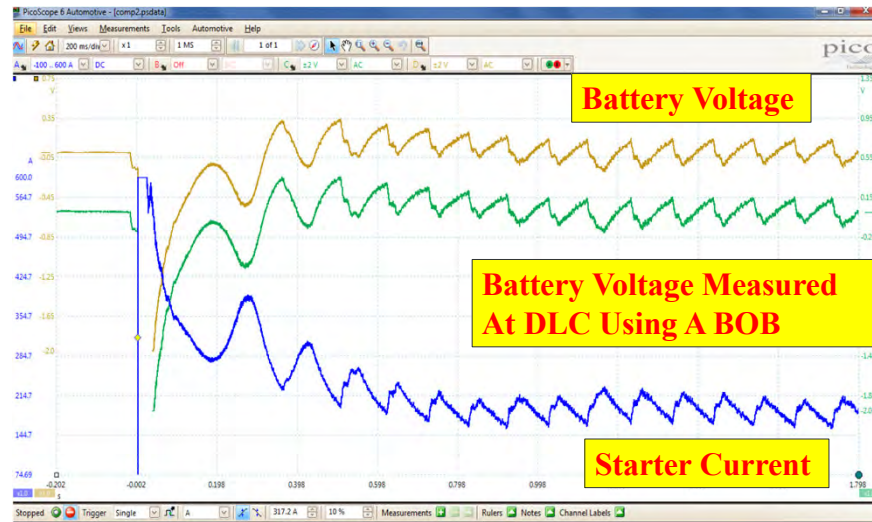
13

Relative Compression



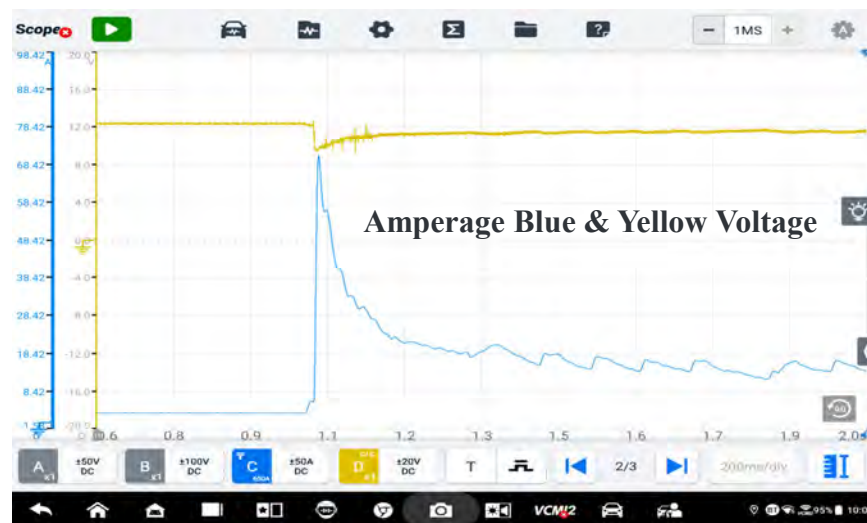
14

Current Or Voltage - Does It Matter?



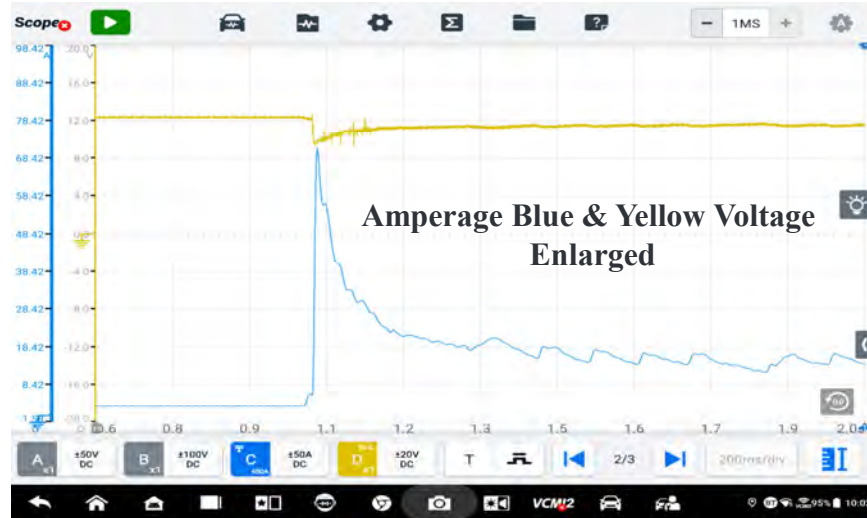
15

Relative Compression - Autel Ultra S2



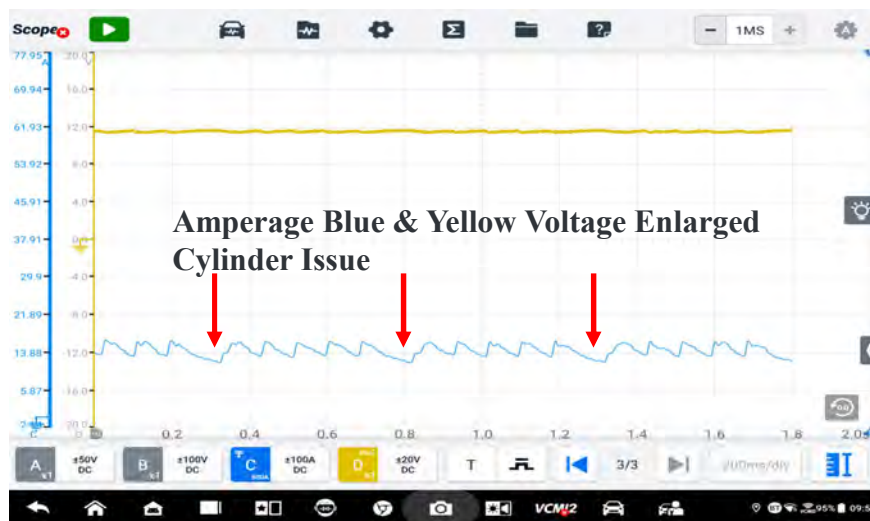
16

Relative Compression - Autel Ultra S2



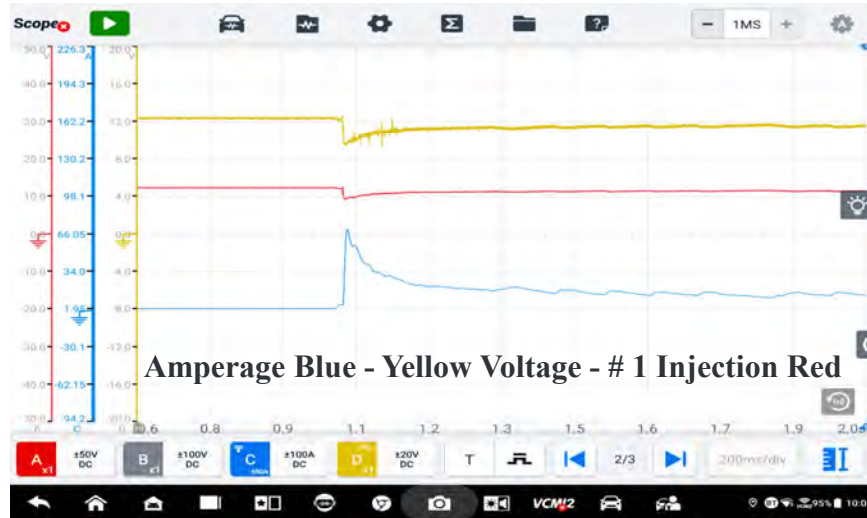
17

Relative Compression - Autel Ultra S2



18

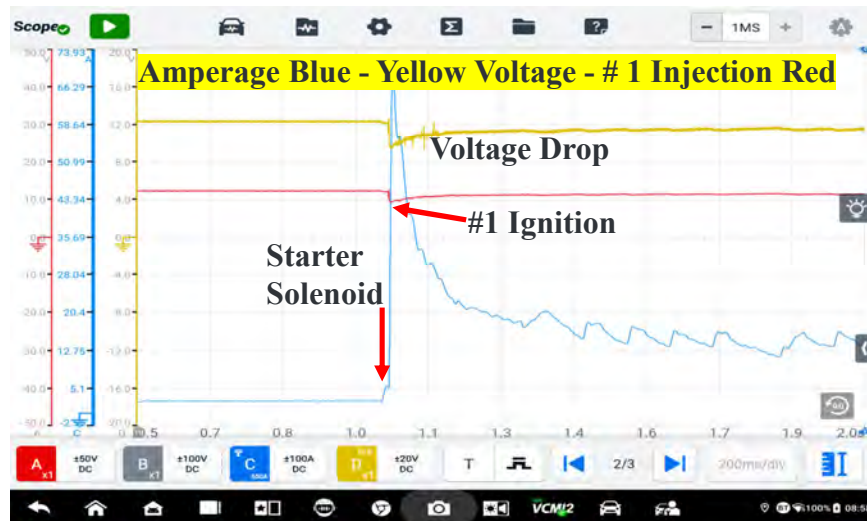
Relative Compression - Autel Ultra S2



Amperage Blue - Yellow Voltage - # 1 Injection Red

19

Relative Compression - Autel Ultra S2



Amperage Blue - Yellow Voltage - # 1 Injection Red

Voltage Drop

#1 Ignition

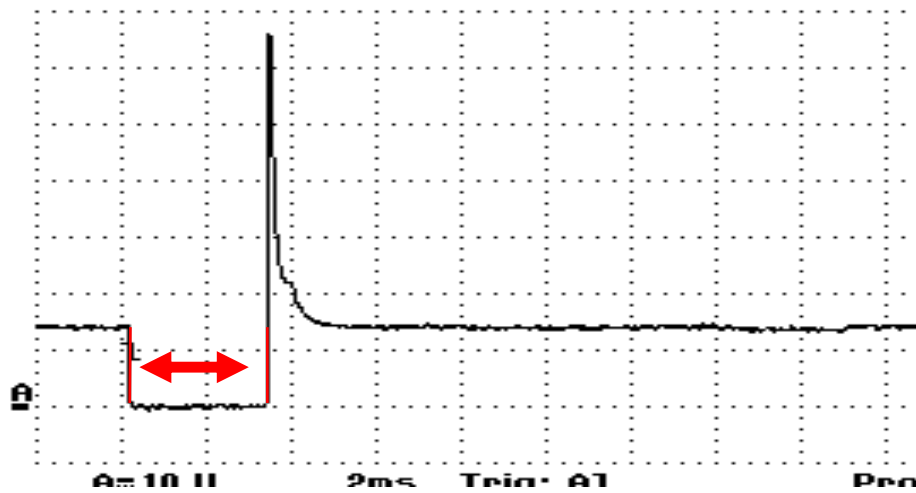
Starter Solenoid

20

Fuel Components

21

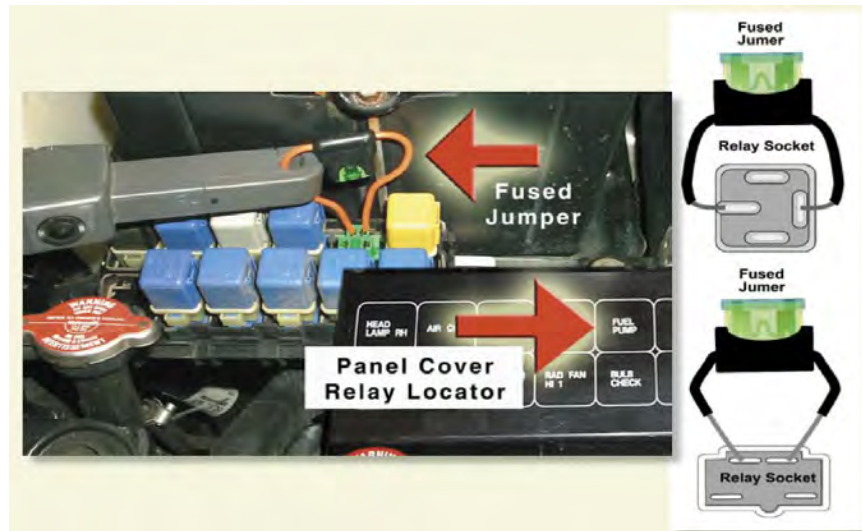
Fuel Injector - Solenoid On Time



Injector on time 3.6 ms

22

Current Ramping A Fuel Pump



Ignition

Ignition - Voltage & Amperage



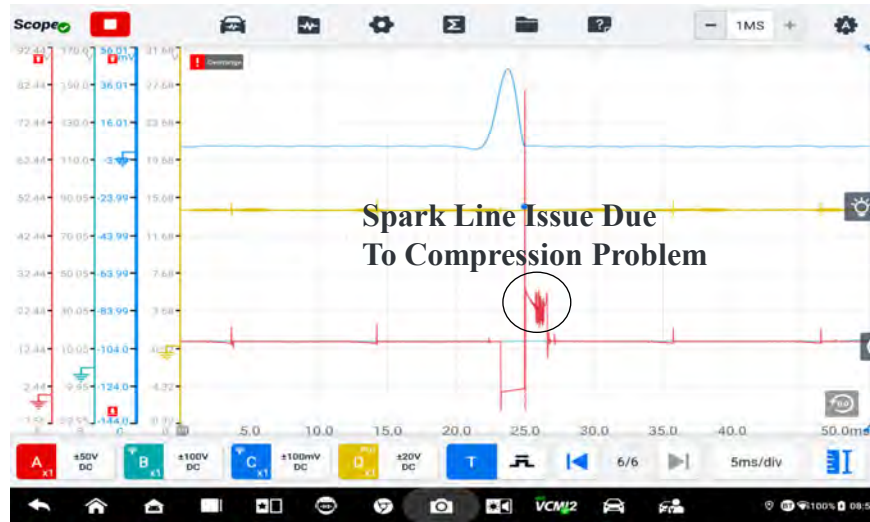
25

Ignition - Voltage & Amperage



26

Ignition - Voltage & Amperage



27

*Amp Clamps –
Network - Picket
Fence - CMP/CKP*

28

Amp Clamps



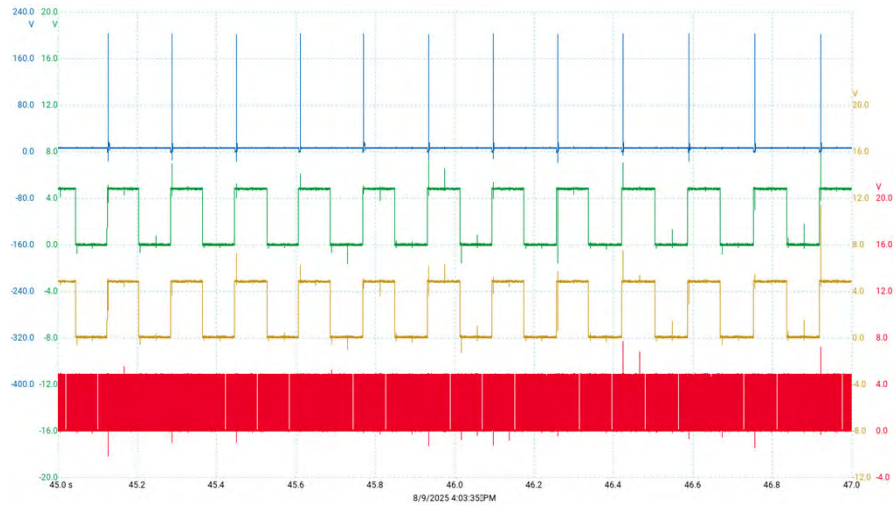
29

Network Testing - Good



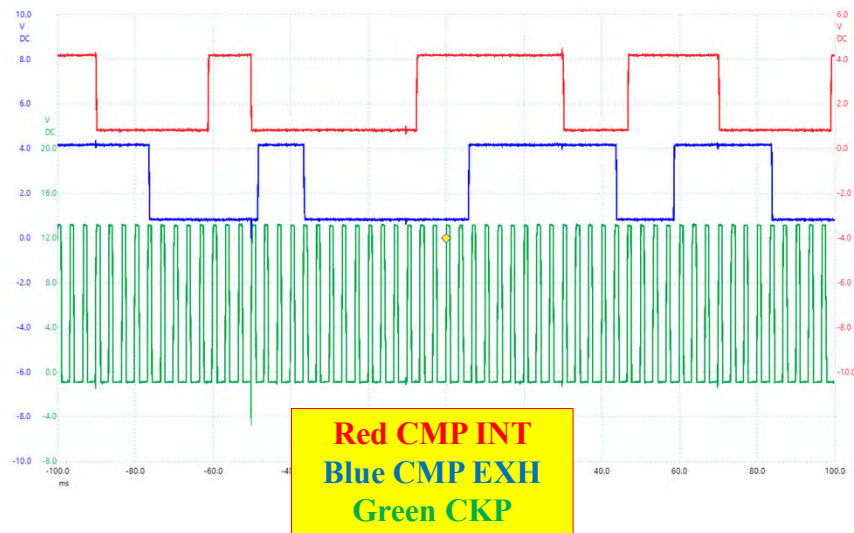
30

Increasing Time To Gather Lots Of Data – “Picket Fence” Technique



31

Using CMP/CKP Patterns To Check VVT And Cam Timing



32



"Dorman Training"

Hands-On: Advanced Automotive Lab Scopes (Part 1)



In the first part of this series, students will learn how to unlock the power of their digital storage oscilloscope (DSO). Whether you have never used a scope, have just begun to explore what it can do, or have been using it routinely, this class will help you move to the next level of competency.

Students will learn:

- How to acquire a signal using the voltage, time and trigger settings on the scope

- The difference between DC and AC coupling and how to use them

- How to acquire a variety of common signal types

- How to use both high and low amp current probes

- How to analyze common system and component waveforms

In addition to interactive classroom demonstrations, this class will also feature real world applications on subject vehicles in the Dorman Proving Grounds garage.

Students must bring their personal lab scope to the class. Our instructors can assist users of the most popular brands (Autel, EScope, Launch, Pico, and Snap-On). **Price: \$300.00**

Class attendance is limited to 12 students.

Lunch will be provided. **Date: Saturday, October 25, 2025**

Instructor: G Truglia **Sign-in and food: 7:30 a.m. EST**

Training: 8:00 a.m. - 3:00 p.m. EST

**In Shop LIVE
TRAINING**
**gtruglia@
dormanproducts.com**

Heavy Duty Advanced Braking Systems



This course is intended to meet the needs of the in-service heavy vehicle technician to service, repair, maintain and diagnose various types of heavy vehicle brake systems.

This full-day course will cover:

- An ABS module and covers regulations

- Brake system theory and operation

- Components and how they function

- The impact of friction material

- How to maintain a balanced braking system

Emphasis is placed on the importance of proper repairs and inspections to meet all of today's regulations pertaining to the brake system. **Date: EITHER Fri Oct 31 or Sat Nov 1**

Included in price: \$300.00 - Full color workbook

8:00 a.m. - 4:30 p.m. EST

Breakfast and Lunch - Dorman Training Center

Instructor: Swede Oun & G Truglia



33

Questions?



34

Thank You !

Please click or scan the **QR codes** to fill out a quick **survey** about this webinar, join our **Facebook group** or sign up for our **newsletters**.



Webinar Survey



Facebook Group



Newsletters



35