



Dorman Training Center Presents:

END OF YEAR DIAGNOSTIC GRAB BAG AND CanDo SCAN TOOL REVIEW



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Thursday December 19th, 2024

Heavy Duty Lunch & Learn 12:00pm to 1:00pm ET

"End Of Year Diagnostic Grab Bag and CanDo Scan Tool Review"

The following will be covered:

- **Brief Industry Perspective**
- **Variety of simple diagnostic case examples**
- **Review of the CanDo HD Pro scantool**

Instructor: Swede Oun

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Instructor

- Owner, O&K Truck and Auto Repairs Ltd.
- ATTP Master Instructor, New York State
- Author, “Medium/Heavy Duty Truck Electricity and Electronics”
- Training provider for various Associations, industry and various NY State agencies
- Developed trainings that range from four hours to multiple days, specializing in brakes, electrical, regulations and many other subjects relating to our industry.
- Member of various organizations such as SAE, CVSA, TANY



Sulev “Swede” Oun

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Industry perspective by the numbers

Where do we fit in?

- **“13 million trucks”** move over 72% of all US freight. (10,715,697 Straight trucks)
- They drive **327 “billion”** miles every year.
- There’s approximately 2.5 million Class 8 trucks on our highways.
- 300,000 Diesel technicians/mechanics.
- **25,600** openings for diesel service technicians and mechanics are projected for each year. WHY?
 - **Need to replace workers due to retiring and transfers to different occupations**



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Industry perspective by the numbers

Digging deeper

- Older generation with decades of experience are leaving. “How do you replace that kind of knowledge”?
- Tech schools can’t provide enough techs to supplement. “Seems like nobody wants to work with their hands anymore”. This isn’t for everybody. If anyone can do it, we wouldn’t be having this discussion.
- **How do both older and entry-level tech’s keep up with or acquire the knowledge to repair today’s vehicles. Not to mention the still existing older vehicles. This requires a broad set of skill sets.**

Hopefully, private industry like Dorman Products (and others) and so many trainers like myself can keep providing the knowledge needed.

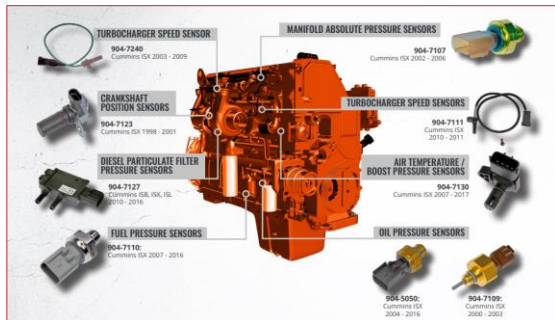
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Industry perspective by the numbers

Today’s vehicles are **“data driven”** both mechanically (indirectly) and electronically. Even more today due to:

- Application of telematic technologies that are meant to reduce service and maintenance costs and will probably create an increase in maintenance and service costs. “Just think about this contradiction”.

You probably realize it better than any statistics data because you’re on the front line (ground floor) dealing with all the challenges that go along with it.



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Telematics. What Is It?

You already are familiar with it every time you turn on the ignition on a new truck. Just observe the instrument panel display to see all the information available. Today's truck is an intelligent computer on wheels that can generate and send data on every detail you can imagine and then some, such as:

- Speed
- Driving behavior (braking, acceleration etc.)
- Engine performance
- Faults
- Location

A typical telematic system uses a combination of GPS tracking, real-time data used for:

- Predictive maintenance (This is just a partial list)
- Safety enhancements
- Route optimization
- Fuel reduction enhancement

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New tool to keep up with technology. "I Am Ready"

Custom fit helmet with connectors going through helmet and connected to my brain.

Infra red heads-up display.

LED display for ABS diagnostics.

Note: One of the connectors is used to update my brain periodically.



Capacitor to jump start the connection to brain and prevent surges.

Master Disconnect Switch

One of numerous connections to scan tools and meters

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Industry perspective by the numbers

What's in the future?

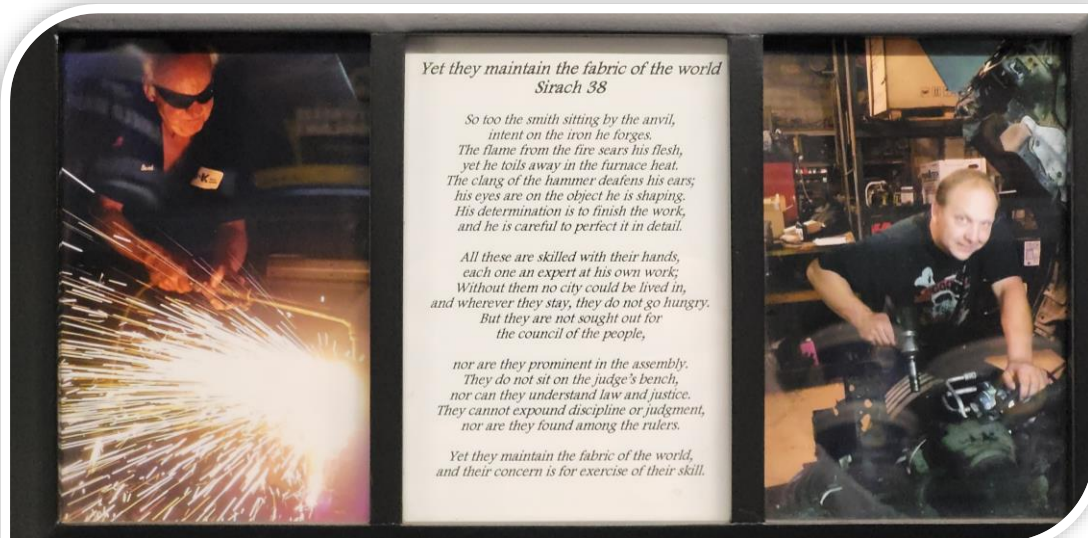
- More mandated safety systems. (Automatic Emergency Braking (AEB)).
- Possible CAN communications extending between tractors and trailers instead of PLC (see previous multiplex and ABS Lunch and learns about PLC)
- Follow “Clean Air Regulations” and you will see an increased push towards alternative such as CNG, Hydrogen etc. besides electrical powertrains.

Are we capable of keeping up with these technologies?

I'm saying **“YES”**, because of techs like you, that for years have been willing to learn and change with the times. Not to mention all the dedicated trainers and companies providing the tools and knowledge to tackle anything that are thrown at us.

**You are the true “Warriors” keeping this country going.
If we fail, the trucking industry fails.
If trucking fails, the country fails.**

This one is for all of you that keep this country going.



*Yet they maintain the fabric of the world
Sirach 38*

*So too the smith sitting by the anvil,
intent on the iron he forges,
The flame from the fire sears his flesh,
yet he toils away in the furnace heat.
The clang of the hammer deafens his ears;
his eyes are on the object he is shaping.
His determination is to finish the work,
and he is careful to perfect it in detail.*

*All these are skilled with their hands,
each one an expert at his own work;
Without them no city could be lived in,
and wherever they stay, they do not go hungry.
But they are not sought out for
the council of the people,*

*nor are they prominent in the assembly.
They do not sit on the judge's bench,
nor can they understand law and justice.
They cannot expound discipline or judgment,
nor are they found among the rulers.*

*Yet they maintain the fabric of the world,
and their concern is for exercise of their skill.*

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“Thank You”



The Real World



Industry perspective by the numbers

A DECLARATION

THE RISE OF THE MECHANICAL AND TECHNOLOGY SPECIALIST

Nothing is More Powerful Than an Idea Whose Time Has Come

A Standard For Auto Repair Specialists

A Vision - A Movement - An Intention - An Action

A Language Shift
by Carm Capriotto

The Auto Service Aftermarket Podcast Pioneer, Host, Producer of Remarkable Results Radio and the Aftermarket Radio Network

REMARKABLERESULTS.BIZ/RISE

Excerpts from a letter posted on “Remarkable Results Radio”, Carm Capriotto “Aftermarket Podcast Pioneer”

Title: “The Training Paradox: When Actions Don’t Match Beliefs”



Simple diagnostics emphasizing critical thinking.



What are you seeing here?

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Simple diagnostics emphasizing critical thinking.

Truck came in for an **“Annual Inspection”**.

Observation:

- Brakes on both side steer axle applying very slowly.
- Brakes release (return) quickly.
- Rust on drums.

Most obvious cause – not enough air (pressure) reaching chambers.

Note: Returning brakes indicate no mechanical issue.

Areas to check:

- Start with foot valve: Air? Yes!
- Quick Release Valve: Air? Barely!

Solution:

“Replaced air line from foot valve to quick release valve”.

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Simple diagnostics emphasizing critical thinking.

Note: That line runs from firewall through a very crowded frame and crossed many areas that can cause pinching, melting etc. **Did Brian bother to figure out where? NO!**

Ran new line. "WORKS PERFECT"

Guessing? Where is the issue? It could have been the foot valve, quick release valve, ABS valve, service chambers and maybe even cams.

Mechanical was **immediately** eliminated because the brakes returned quickly. The rest is knowing how foot valves, ABS and quick release valves work.

For Example: The bottom portion of the foot valve is the secondary portion and applies front service air.

This knowledge saves you time because you're going directly to the right port of the foot valve to check for application air for the front chambers. Picking the wrong port could have taken you down the rabbit hole because it was very hard to trace the line.

Electrical Diagnostics

Back to the Basics.

Everything Starts With/At The Battery

The following video combines meter usage and simple voltage drop

Electrical Diagnostics



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Electric Diagnostic

Light – Short to power



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Electrical diagnostics



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Electrical diagnostics



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Electrical diagnostics

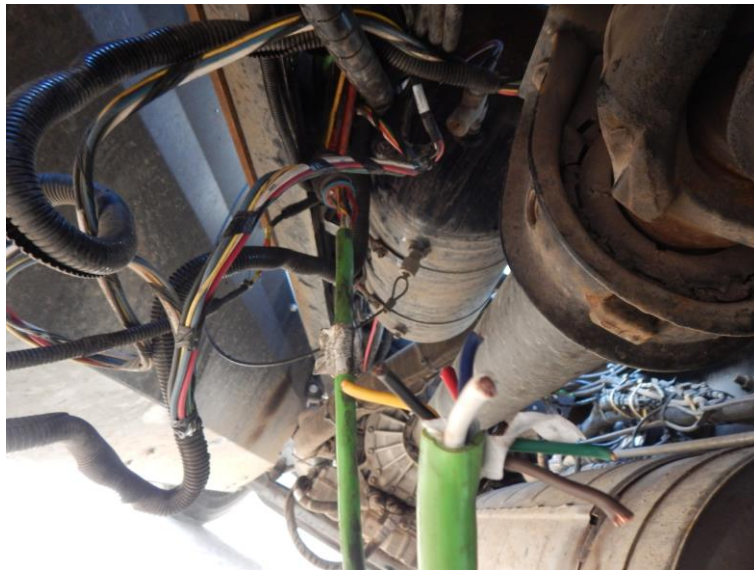


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Electrical diagnostics

So much for
plug and play.

I had
mentioned add-
ons in the
multiplex series.



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Electrical Diagnostics



Small hole due to installation welding.



Funny how one issue leads to a discovery of another issue.

While working on electrical, Brian kept hearing a very faint air leak. Installer created issue.

“In Life, It’s the little things that matter”

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People Networking

The following is a good diagnostic process my friend Geno Majchrzak e-mailed to me.

As a side note. We first met in 2003. He was a student going through my ATTP automotive classes. He lives and breaths electrical and diagnostics.

This is meant to encourage networking with each other and me.

He wanted to share the type of parasitic draw test that he has been using for a long time.

The following is a way of reducing the risk of losing the cause of the draw when people use the “removing fuses method”, if you have determined that the draw is electronically related.

The problem is, removing the fuse might eliminate the draw for now, but the vehicle returns in days or even weeks with the same problem.

A good thing to point out here is if we see a draw of say, 1 or 2 amps or more it probably is related to a light bulb, motor, or solenoid that draws this type of amperage. But draws under that would indicate that it is electronic related.

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Non-Intrusive Draw Test

The following method works because the circuit does not get interrupted:

Vehicle set-up for test that Geno uses:

- Open all doors and go to each door and manually move each door latch into the closed position. Latch the hood latch (vehicle dependent).
- Make sure all fuse boxes are readily accessible for testing.
- Wait for systems to go to sleep. When ready:
- With voltmeter, go across all of the fuses. This is the same as measuring a voltage drop across a circuit.

If the voltmeter picks up on any activity across a fuse, you just found the circuit causing the draw. Especially when you know that circuit should be dead.

Note: The above pertaining to door latches and hood latches is vehicle dependent (strategies). However, it's a good method of testing for draw in any vehicle.

People Networking

The following is something else Geno does with cars pertaining to a light staying on in the glove box, center console or trunk.

- Put your cell phone into video record.
- Place the phone in the compartment.
- It will always show a light on or turning on shortly and of course, does it turn off.

Geno is relating to cars, but what about trucks, especially sleepers with all the various accessories and compartments. It's like driving an RV.

What ever happened to the good old days, where all you had was a blanket and you slept on or across the seats. Watch out for the shifter.

Scan tools Review from Multiplex Part 2

Electronic Service Tools (ESTs)

Before we continue our journey, let's look at different options of connecting to a vehicle's Electrical/Electronic system.

An electronic service tool (EST) is used to perform the following:

- View system identification data
- Access active codes and history codes
- Erase (clear) inactive (history) codes
- View data
- Perform bi-directional tasks (diagnostic tests) on various subcomponents
- Snapshot function
- Reprogram customer data parameters on engine and chassis systems
- Enable updates

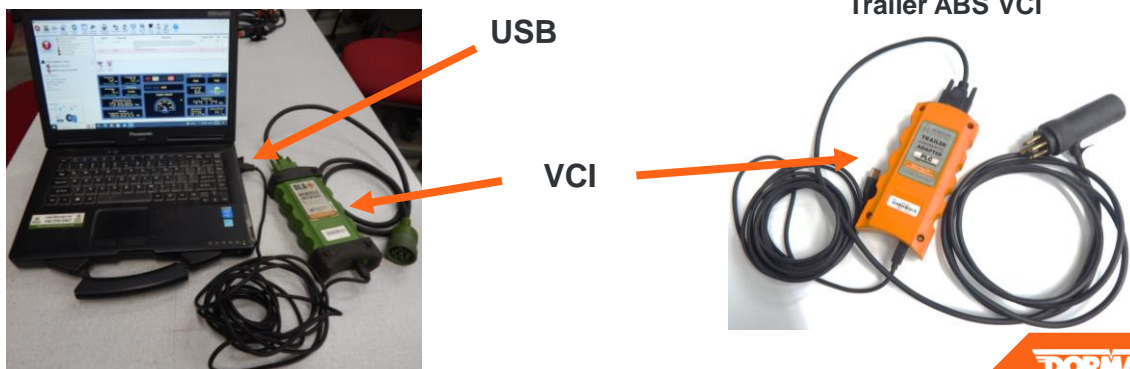
Note: There are also "read-only" scan-tools. Usually, the smaller hand-held type with minimal command keys to display fault codes and system status. Usually used to service vehicles and not necessarily repair vehicles.

➤ **The test tool (scan tool) must locate the messages and convert them to useful data.**

Scan tools Review from Multiplex Part 2

- A typical tester is connected to a device called a "**Vehicle Communication Interface**" (VCI).
- The VCI acts as a converter between the external interface of the tester and the diagnostic link connector (DLC).

Note: An example of the external interface of the tester is a USB connector. It could also be Bluetooth, Ethernet or WiFi.



Scan tools Review from Multiplex Part 2

- The physical layer is based on CAN and the “Open System Interconnect” (OSI) higher layers are based on J1939 (9 pin).

Note: J1587/J1708 . J11587 data bus was the original truck data backbone using a 6-pin connector for access. J1587 governs the communications protocols used for data transactions. J1708 governs all the hardware standards used on a J1587 data bus.

- The typical HD connector (DLC) is a J1939 (9 pin) connector. However, because HD trucks need to also meet OBD requirements, some manufacturers will also use the J1962 (16 pin) connector.
- VCI's utilize an “Application Programming Interface” (API).
 - The API contains the procedures and commands for “initializing” the connection.
 - Perform diagnostic communications in both directions and
 - Terminate the connection.

BENEFIT:

- VCI's from different suppliers can be connected to any tester tool that supports the same standardized API.

Simply put: A standardized API supports the connecting of different tester applications and different

VCI's

Scan tools review from Multiplex Part 2

Connecting the service tool

- Initializing process permits the chassis electronic system to communicate with the EST (scan tool).
- The first information usually displayed will be the system software identification, which identifies the chassis system.

Once the application has finished loading, the typical tool allows options such as:

- Reading fault codes.
- Monitor various parameters.
- Diagnostic (bi-directional) tools.
- Customer programming.

Scan tools Review from Multiplex Part 2




Non-VCI. Cables have OBD 16 pin to allow tablet internally convert/request to communicate.




Scan tool Review


DEMO CanDo HD Pro Scan-Tool






"Dorman Training"







Thursday, December 19, 2024
Live Webinar: 7:00 p.m. — 9:00 p.m. EST
In this course, technicians will learn to diagnose and address the needs of internal combustion engines like mechanical, ignition and air fuel systems. Common no start causes like anti-theft and bus communication faults will also be covered.
[View Event >>](#)




Automotive Electronics for Today's Vehicles
Tue, Jan 7, 2025, — Thu, Jan 9, 2025,
Homewood Suites by Hilton Allentown (map)
5:30 p.m.—10:00 p.m. EST | Bethlehem, PA | In-Person
In this course, build useful electronic skills for diagnosing and repairing late-model vehicles. Technicians will learn about circuits and circuit testing, opens, shorts, voltage drops, relay testing, DTCM usage, lab scope/graphing meter usage, sensors and actuators.
Note: This is a three-day class
[View Event >>](#)



Utilizing the Autel Diagnostic Tool Part 1
Tuesday, January 7, 2025
Fort Myers Technical College (map)
5:30 p.m.—10:00 p.m. EST | Fort Myers, FL | Hands-On
In the first part of this series, learn how to maximize the effectiveness of your Autel scan tool. Technicians will learn button functions, diagnostic aids, pre- and post-scan reports, graphing techniques, interpretation and use cases for Modes 6, 9 and 10, plus an overview of generic and enhanced modes for the tool.
[View Event >>](#)



Automotive Electronics for Today's Vehicles
Tue, Jan 7, 2025, — Thu, Jan 9, 2025,
ATTS Training Center (map)
5:30 p.m.—10:00 p.m. EST | Mahopac, NY | Hands-On
In this course, build useful electronic skills for diagnosing and repairing late-model vehicles. Technicians will learn about circuits and circuit testing, opens, shorts, voltage drops, relay testing, DTCM usage, lab scope/graphing meter usage, sensors and actuators.
Note: This is a three-day class
[View Event >>](#)



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"Dorman Training"

"Important Announcement"

New for 2025!

Due to numerous requests for live HD trainings, we are going to roll out classes that will range from 3hours to 2day classes.

Examples:

- 2-day HD brake classes
- 2-day HD electrical classes
- 1-day Regulations and Inspection classes

Classes will take place at O&K Truck Repairs classroom in Tonawanda, NY and any other location convenient throughout the country. For specific class requests:

Contact: gtruglia@dormanproducts.com

Instructor: Swede Oun

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Classroom pictures



Classroom at O&K in Tonawanda, NY



Classroom pictures

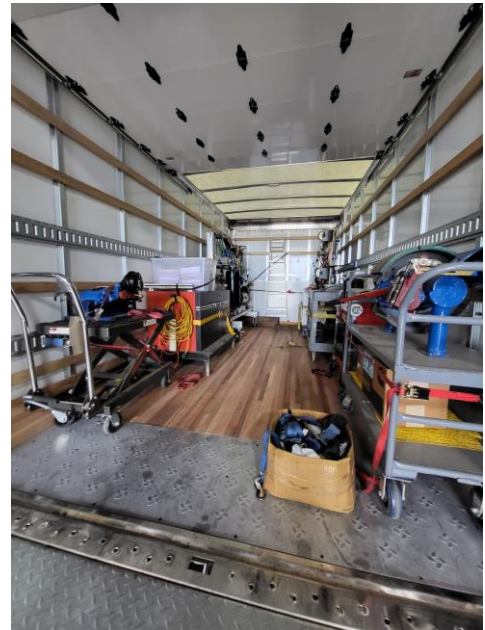


Two Day Brake Class at Adirondack Beverage Saratoga Springs.

Canonsburg PA



Classroom pictures



2 Day Brake Class in Dayton Ohio.
**We travel. Truck loaded with all the boards etc.
I use for training.**



Classroom pictures

Hands – on electrical class. Building circuits and using DVOM.



Classroom pictures



“You The Inspector” Class.
Interactive Regulations
 class pertaining to
 regulations, roadside and
 annual inspections.
This is a very interactive
class where everyone gets a
regulation book, and we go
through them. It’s a
journey.

Classroom pictures

Quick classroom video.



Classroom pictures

For more class content and description, you can also reach me at: okswede1@aol.com
Tel: 716-874-5450

Dorman Products is ready to expand the HD truck Training.
We can also tailor trainings to your needs.



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Questions?



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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