February 2018

Technicians Service Training

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Dave Crippen

Solving Diagnostic Repair Issues April 23rd, 24th, 25th & 26th 2018

TST Big Event Saturday March 17th, 2018

Tarrytown, New York

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Jim Moritz—SNAP-ON

Ed Hazzard –South East Mobile Tech

Chris Chesney – Advanced / CarQuest - Keynote Speaker

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Editor

"G" Jerry Truglia

"Reprogramming Not Just Plug & Play"

Sometimes no matter how experienced you are, programming and reprogramming is not just plug and play. There are a few things that rather than making your day, will totally break your day. My intention in this article is not to scare you, but rather make you aware of some of the things that you need to know rather than wasting time.

Start With The Laptop

Let's start out with the laptop that you are going to use. Do you know if it's a 32 or 64 bit? If your lost already don't panic because it's usually easy enough to figure out. Right click on the Windows start menu at the left lower side of the screen, then a menu will appear, select System by left clicking to see your computer information. The reason that you need to know this is that some companies (such as Jaguar, Land Rover and Range Rover) all need to use a 32-bit processor in order for their SDD (Symptom Driven Diagnostics) scan tool to operate properly. I was asked by one of my students that works on those vehicle lines to setup his new laptop so he could use the SDD scan tool. Since there are functions in an OE tool that aftermarket tools do not have he would be able to more effectively diagnosis and program those vehicles.

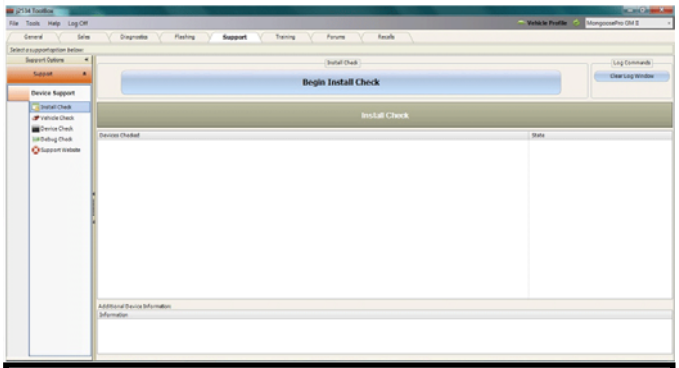
(Con't on page 2)

"Reprogramming Not Just Plug & Play" *(con't from p. 1)*

In his case, the next step was to proceed to the NASTF.org (National Automotive Service Task Force) website, where I can access all the OEM service sites from one place. From there, I select the Jaguar website and go to http://diagnosticdelivery.jlrext.com/idscentral so I could download the latest version of the software. It seemed that all was going well including the software registering, so all I had to do is follow the screen prompts to complete the SDD install. The SDD install went well as it had done for me on my own shop 32-bit laptop so I thought I was good to go. When everything was completed I connected the laptop to a Land Rover that I had in the shop but could not communicate with the vehicle. The first thing I did was double check the hardware installation of the Drew Tech Cardaq M interface that I was using as the SDD approved interface. The Drew Tech software "Tool Box" allows the user to check the connection of the laptop to the Cardaq M hardware as well as checking the connection to the vehicle to ensure that the hardware is functioning properly. There are also helpful videos and other information such as pitfalls on manufacturers installs. So before installing any OE software, be sure to RTFB (Read The Frickin' Book!) or in this case the computer screen before performing any installs. After using the Drew Tech software to confirm if the hardware was in fact connected to the laptop and communicated with the OBD II side of the vehicle, I was able to rule out the problem with hardware. After reading the hardware requirement as it pertained to the computer carefully on the OE site, I checked the computer information as

You can find all the information resources you need if you start off at the National Automotive Service Task Force's web site. Do your homework first, especially if it's your first time.

Drew Tech Tool Box



Many OEMs allow for J2534 reprogramming of modules related to emissions, and others even allow access to body and chassis modules. The Drew Tech Tool Box

(Con't on page 4)

What is TST?

TST is a group of dedicated technicians and instructors committed to the continuing education of our fellow technicians. We provide training seminars to technicians at a reasonable price. TST brings our members nationally known instructors and state of the art training.

Our Goal & Mission Statement

- ***Keep our fellow technicians up to date with the latest technology.***
- ***Provide training seminars for a reasonable price.***
- ***Deliver information that the technician can use now.***
- ***Keep technicians informed of information affecting our industry.***
- ***Increase consumer awareness of what a good technician is.***

Why join TST?

TST membership includes special pricing on weekday night seminars and the occasional full Saturday seminar. With a **$75.00 yearly membership, the seminars are only $50.00. TST seminars are NOT sales or product seminars.** The instructors that TST brings in are all "hands-on" industry experts with up to date, cutting edge knowledge that you can use in your shop the next day. That's 75 dollars for a seminar in which you are able to learn something useful, for fixing those tough jobs that we all see on a regular basis. Our instructors are masters at making the complex understandable. Membership also includes a newsletter full of real world technical articles, diagnostic case studies, and solutions to the kinds of problems you see in your bays each week.

The following are some of TST's regular instructors:

Bernie Thompson of ATS
John Thornton of Autotrain Inc.
Wayne Colonna of ATSG
Jorge Menchu the "Labscope Guru," AES Wave
John Anello of Auto Tech On Wheels
Mark Warren of World Pac / Motor Magazine
Bob Pattengale of Bosch
Peter Meier of Motor Age Magazine
Ken Zanders of Illinois Air Team
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Currently there are TST chapters in Connecticut, Massachusetts, New Jersey, New York and membership continues to grow. For more information you can call TST headquarters at:

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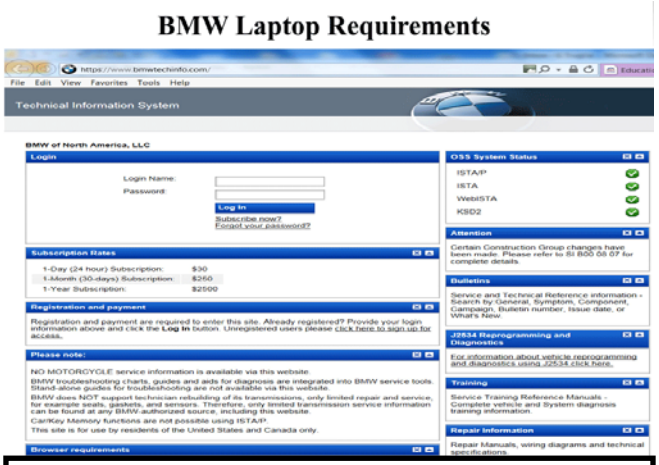
www.TSTseminars.org

"Reprogramming Not Just Plug & Play" *(con't from p. 2)*

I described previously. What I found was that the laptop my student had purchased was a 64 bit, which is the more common, rather than the 32 bit required by the Jaguar group. (Their computer requirements are the following; minimum PC specs: Intel® Core I5-2520M 2.5GHz processor with Turbo Boost up to 3.2GHz, 4GB SDRAM 1333MHz expandable to 8GB, 320GB (7200 RPM) HD, that must be running IE8 (internet explorer) and WIN7, 32Bit for SDD to operate).

I had to reinstall Windows 7 Professional and select 32 Bit followed by reinstalling the Drew Tech and SDD software again so I could communicate with the Land Rover. The moral of this story is to make sure before you install any OE software, be sure and carefully read the computer requirements and know your computer specifications.



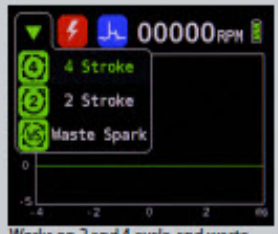
We may live in the age of Windows 10, but that doesn't mean the OEM model you want to flash does. Be sure to check the OEM's requirements for

When Normally OK Turns Abnormally Not OK

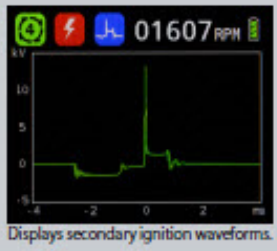
My next example is one that recently occurred while I was teaching a reprogramming class. Now I have been teaching this same class for years and it usual goes well without any glitches. It was going to be a different story this time since it was the class from hell on the software side. Everything seemed to be going well until we went out to the shop and downloaded the software we needed from the GM website. Let me explain how the class usually goes, before we get out to the shop I explain the procedure using Power Point slides in the classroom to prepare the techs on what we will be doing in the shop. I always start with GM, since they have been providing programming from the nineties and is one of the most common vehicle lines to program. Normally the process is easy for us in our shop since we use our GM GDS (Global Diagnostic Software) subscription all the time. Well in the class I want to make the experience as real as possible so I use a different *(Con't on page 7)*

GTC505
Engine Ignition Analyzer

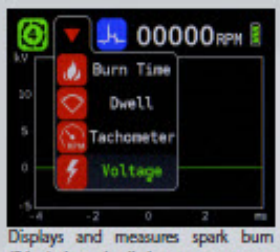
Complete ignition system diagnostic:



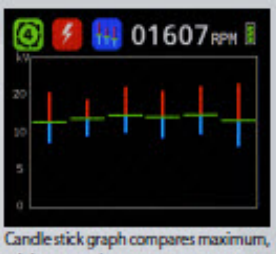
Works on 2 and 4 cycle, and waste spark ignition systems engines.



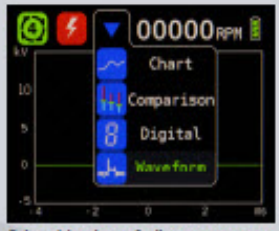
Displays secondary ignition waveforms.



Displays and measures spark burn (firing) time, dwell time, current ramp time, RPM, and spark plug peak voltage.



Candle stick graph compares maximum, minimum and average measurements of several cylinders.



Selectable view of all measurements modes as chart, compare graph, analog gauge / digital readout and waveforms.

Analog gauge and digital readout with maximum and minimum.

Quick, powerful and easy to use

- Plug the appropiate sensor pick-up into the flexible probe
- Select the engine's cycle (4-stoke, 2-stroke, or waste spark)
- Select the measurement type and display format
- Place the pick-up on top of the ignition module, or over the spark plug wire
- The GTC505 will automatically detect and adjust all parameters to provide accurate measurements and clear graphs

Useful for troubleshooting:

- Non-starts
- Misfires
- Intermittent problems
- Primary and secondary coil circuits faults
- Fouled or damaged spark plugs
- Damaged spark plug wires


Specially designed pick-ups for coil on plug ignition modules (left) and spark plug wires (right).

Chart mode used for detecting intermittent or infrequent failures and misfires.

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GTC
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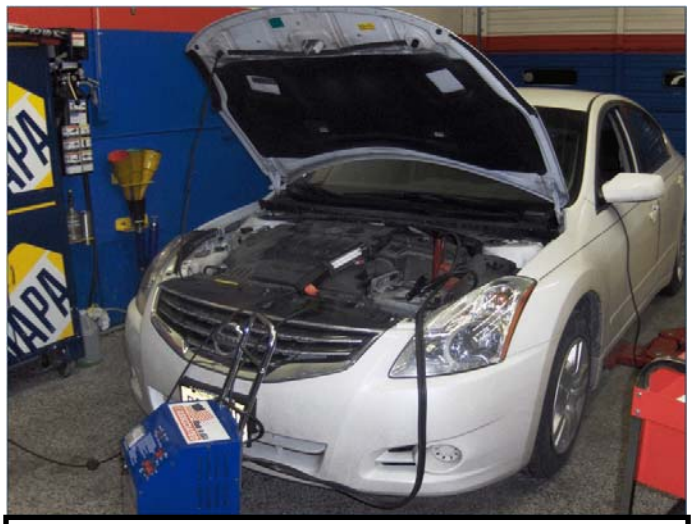
"Reprogramming Not Just Plug & Play" *(con't from p. 4)*

laptop that has no programing software on it. The laptop I decided to use was a new one that I had purchased a few months ago so it should be a breeze. The process should take about 20 minutes, and that includes opening a browser, going to NASTF.org, selecting GM, and paying the $55.00 for the 3-day subscription. The proceeding process when fine, in fact it went very fast on the new Windows 7 Professional, 64 bit, 1T (terabyte) hard drive with 8 gig of memory. So now its show and tell time, right?

No, not really, I had the techs in the class connect to a GM vehicle that one was driving but we could not communicate properly. At first I thought it was the vehicle, but before switching vehicles I checked the device and vehicle connection with the Drew Tech Tool Box software. The connection was fine but we could not communicate, I tried to reinstall the GM software only to have the same non-responsive results. To make a long story short, since I was teaching a class and it was starting to get late I had to figure out what to do next. In a way, this was a good example of what can go wrong for my students when they try this in their shop.

I knew the computer was capable of running different software since I have the Mazda factory software along with the EScan and a few other programs that all work fine on it. It got to the point after switching vehicles, that my first thought was to switch laptops, but I decided that this is a good learning moment that we can all get something from.



Once the process is started, do NOT let anything interrupt it. Even opening a door in mid-flash can cause problems and certainly allowing the battery voltage to drop below minimum is a no-no.

I called the GM tech hotline and was surprisingly, someone answered. The lady tech rep asked if she could take control of my laptop and diagnosis it remotely. I allowed her access while all 15 of my students and I watched her every move on the big display monitors on the wall that duplicate my laptop screen. The GM tech rep was checking the laptop

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specifications to make sure that they were correct along with verifying the Java scripts. After a half hour, the tech rep informed me that the problem was going to take about an hour more to straighten out. I decided that I would get the techs back into the classroom and move on with other material that I needed covered. I checked backed in a half hour when it was break time and spoke to the tech rep who informed me that there was some sort of Java conflict that she was trying to correct. What finally resolved the problem was that the tech rep had to remove all the Java scrips and reinstall them since one of them was corrupted during the install. After all that time, we were ready to connect to the GM vehicle and reprogram it without a glitch. The moral of this nightmare is to make sure that your computer is compatible with the software that you are trying to use. Plan ahead and practice on a good vehicle, leaving enough time before you have to use the laptop and software on a problem vehicle.

The Big Fear – Killing A Module

Another problem that you may encounter is bricking an ECM or another computer. I remember years back in a class that I was in, where the GM instructor did exactly that. The instructor had everything connected properly, the battery maintainer connected, only one key fob near the vehicle, a good internet connection and a proper connection to the vehicle. It all seemed to be going well as myself and others watched the GM instructor proceed to program the vehicle when it just suddenly stopped. The software had a warning message that it could not proceed. The instructor was surprised, as we all were, that the process had an issue since he had programmed this PCM many times before without a glitch. Unfortunately, the PCM could not be saved even though he followed all the GM recommendations of not shutting the ignition key off and trying to reprogram the PCM again, followed by turning the key off and retrying the procedure. The only way that this Corvette was going to run again was to get another PCM and start from scratch. The next day the PCM arrived, installed and programmed it over

(Con't on page 12)

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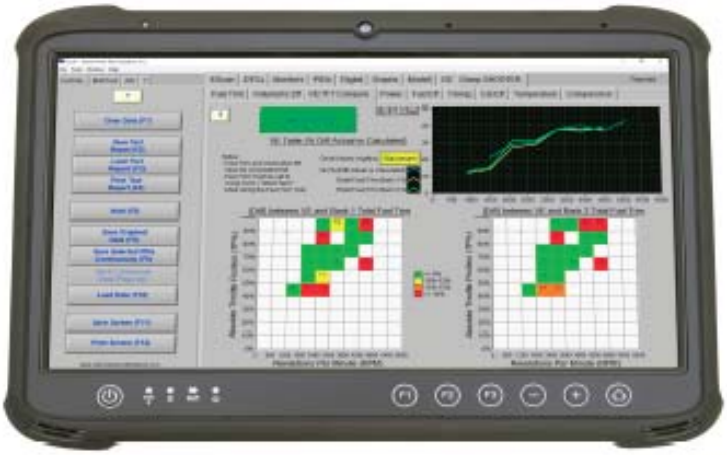

With the Farsight tablet, you have access to patented ATS diagnostic software. This gives you a hand held no-code drivability analyzer, testing fuel trim, catalyst efficiency, mass air flow, relative compression test, inspection camera & 4-channel oscilloscope.

"Reprogramming Not Just Plug & Play" *(con't from p. 9)*

and over by all of us in the class without a problem.

One more GM example that I encountered was on a 2000 Chevy Silverado that we were trying to reprogram. The GM software gave us this screen reprogramming error. The first thing GM suggest is to make sure that the interface device (MDI/GM scan tool or J2534 device) is properly connected. This is followed by more information on not replacing the control module just yet and making sure the software is correct. GM and other OE's also suggest not turning off the ignition key before retrying the reprogramming procedure again. If that procedure fails then turn off the ignition and retry once again before replacing the computer. On this Silverado, I reloaded the programming file and retried the procedure, and that time it completed successfully. The next procedure that needed to be performed on this vehicle was using a capable scan tool to relearn the Cam / Crank variation. This procedure requires depressing the park brake, following the scan tool screen prompts to depress the throttle pedal to the floor until the rev limiter is reached and the engine cuts in and out. If completed successfully the scan tool will displayed Cam / Crank synced. With the procedure successfully completed the vehicle was properly reprogrammed and ready to be shipped.

Software Glitches

Moving on to Toyota and using their website's sign up procedure so we could use the factory scan tool function is usually very easy. In this example, not that easy. So, let's go through the process of signing up and download the Toyota Techstream and what I experienced while I was teaching a class. Even though I have download the Toyota Techstream many times before successfully, this time would be a different story. Once the Techstream software is downloaded you need to register the software. The next step after selecting registration is filling in the Key number that was emailed to you. I copied and

One answer for many shops is the Remote Assist Program offered by Drew Technologies. The kit allows Drew Tech staff to handle the actual programming remotely, freeing you up to focus on other tasks in the shop.

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"Reprogramming Not Just Plug & Play" *(con't from p. 12)*

pasted as instructed. Next I made sure the registration number was correct and clicked on "Software Registration". Now I was not done yet since I needed to click on the Setup tab and select the correct interface. This can be a bit confusing if you are using a laptop that has other interfaces being use on it. As you can see I selected the Drew Tech Mongoose cable that can be used for Toyota vehicles. Next you must select North America followed by the language, English in my case.

You're still not done yet since there is one more screen that can be confusing and prevent the scan tool from functioning. The last important step is making sure you select the Public User or the Techstream will not work. What happened in the class was the wrong selection was clicked on and the tool would not work making this another learning moment. If you follow the information that I provided the process is easy, it's when you don't know the procedure that it becomes difficult. That old saying practice makes perfect, applies in this case. If you decide to purchase the yearly subscription or already have the Techstream software installed but it expired, you don't have to go through these steps since the setting will be already be set up on the computer. The Toyota Techstream allows the user to program the vehicle very easily by first performing a Health Check and notifying you if an update is available (notice the section is in red upper right side of the screen).

Inherited Issues

We had a Mazda come in from another shop that had already replaced the PCM and could not get the engine to run. Well it's not rocket science, the reason that the engine would not crank or run was due to the replacement PCM needing to be programmed. When replacing a PCM it's a good idea to keep the old PCM around until you have the new one in and programmed. The other shop thought that this was a plug and play process and unplugged the old one and then installed the new PCM but the engine would still not crank or run. Well that's not the way it works. In many instances, you need the "build as" information along with the replacement PCM

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"Reprogramming Not Just Plug & Play" *(con't from p. 18)*

so it can be programmed.
Unfortunately, the other shop had already sent back the old PCM to the part store, who had sent it back to the PCM remanufacturer. Now this just made my job that much harder since now the built as information was gone. Now I had to look up all the Build As Date from the Motorcraft website in order to program the correct information into the replacement PCM. Mazda's software is made by the same company that makes the Ford, Honda and the Jaguar group software but it all work a bit differently. I proceeded to download the Mazda J2534 software since at that time I had not renewed my Mazda subscription. The process of downloading the software was not that difficult until I selected a user name along with other required normal information. Thinking the software would now be capable of programming the vehicle I was working on, I tried to proceed but was unable to. The software keep returning to the username and password that I selected, apparently, it did not like something. Instead of the username that I had made, it wanted the email address that I used when I registered the software. Once again, it's a matter of being familiar with the OE's process. I had to replace the username from "autoclinic" to the email address in order for the software to work like a charm.

Programming And Antivirus Software

One last quick tip when programming is to follow all the information provided on the OE website including computer requirements and virus protection. One of my students could not program a vehicle because he

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had Norton antivirus protection installed on his computer. The OEs recommend that no antivirus or firewall software be installed on the computer that is going to be used for reprogramming. The computer used for reprogramming should not be used to surf the internet, if you have to surf the internet you can install the virus software but you need to disable it before performing any reprogramming procedures. In most cases you can disable the virus and firewall software until start up. If you're not familiar with how to disable the virus and firewall protection do not proceed to (re) program or you may brick the computer. I use Norton on one of my laptop's that has Mazda and GM software on it, I easily disable the protection when I have to program a vehicle. The process is easy by simply going to the lower right side on the screen and locating Norton, then right clicking and selecting antivirus and firewall. Select turn off antivirus and firewall until restart that will allow you to perform a programming function without being interrupted during the process.

Acura – Honda -This Is What You Will Get If The Computer You Are Using Has Virus Protection

It is important to close any anti-virus software you have on your laptop before attempting to reprogram. You'll also want to make sure that various programs "play nice" with one another if installed on one PC.

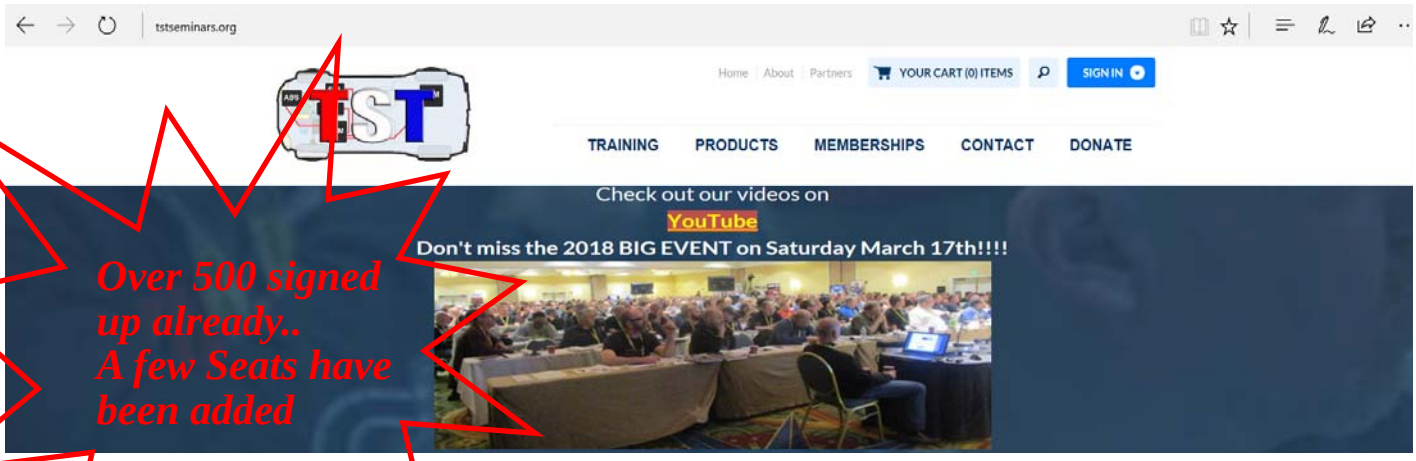
Be prepared and practice on a vehicle that you don't have to rush on. Practicing will help you gain confidence and experience in becoming a tech that programs vehicles. You will see it's not that hard!

Article By
"G" Truglia
TST Founder and President
ASE World Class Triple Master
L1, L3, F1, A9, X1 C1, Technician

"2008 Hyundai Accent 'Invisible Misfire"

A 2008 Hyundai Accent came in with a complaint of the Check Engine light illuminated. We connected our scan tool to check and see what fault (s) illuminated the light, only finding a P0300 (Random Misfire) DTC. Now, many Hyundai 's have come in with a P0300 or other misfire DTCs, but the driver usually experiences a driveability problem. This time was different, the vehicle owner did not notice a misfire, he only came in because the Check Engine light was on. Upon checking the vehicle, we found that it had recently been tuned up using aftermarket spark plugs. We explained and suggested to the vehicle owner that non OE spark plugs can cause a misfire and suggested to replace them with the OE ones. After we replaced the aftermarket spark plugs and installed the correct OE plugs, the misfire problem was still there. This prompted us to do some research, we found a TSB that recommends updating the PCM software for a misfire problem that can illuminate the Check Engine light. We went to the NASTF.org website and linked to the Hyundai website, then selected reprogramming files so we could check the Calibration ID and compare it to the one in the vehicle's PCM. The TSB reference Calibration file was different then the one in the PCM so we prepared to go forward with the reflash. Our next step was to connected our battery maintainer, making sure all accessories in the vehicle were off, followed by connecting our Drew Tech J2534 box to the vehicle and laptop, then proceed to reflash the vehicle. Once the process was completed we checked to make sure the PCM had the suggested and latest Calibration ID and rescanned the vehicle's computer systems. The scan report on the vehicle came up clean, no misfire DTCs. We test drove the vehicle and rechecked the PCM for codes along with viewing Mode 6 data to make sure that there were no misfires. Since everything looked normal we explained to the customer what repairs we performed and provided him screen shots of the Hyundai TSB and programming completion screen shot.

Article By "G" Truglia TST Founder and President
ASE World Class Triple Master
L1, L3, F1, A9, X1 C1, Technician



Over 500 signed up already.. A few Seats have been added

TST 2018 15th Annual BIG EVENT Saturday March 17th, 2018

Sign Up Today* ONLY $125.00 *After Feb 11th $150.00

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- **High Load circuit test, shortcut to intermittent failures**
- **Needing more than just an OHM meter**
- **Simplified current ramping v= increased productivity**
- **Quick and easy electronic compression testing**
- **Using existing tools to quickly work through CAN/LAN faults.**

Ed Hazzard South East Mobile Tech Diagnosis and Repairs From The Street

Chris Chesney Advanced / CarQuest—Keynote Speaker

Bernie Thompson ATS Understanding Control Area Network (CAN)

Communications have been essential from the beginning of history. In the modern vehicle communications are vital in order to control the on board systems within the vehicle. The first electrical data communications was Morse Code, where on-off signals were timed to provide information that would be sent on a wire. This basic idea of on (high) - off (low) signals is still the main way on board vehicle communications send and receive communications. This class will cover how the Control Area Network (CAN) works, how to diagnose the CAN system, and how to properly repair bus problems. With many real world case studies you will learn how to quickly diagnose this advanced communication system where it counts, in your service bays.