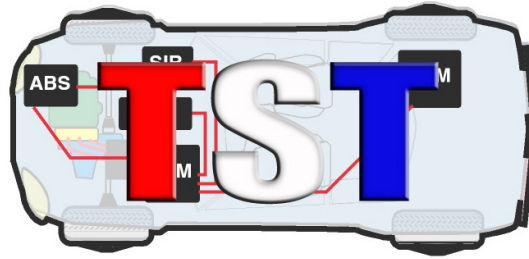


October 2020



Technicians Service Training

INSIDE THIS ISSUE:

"European Mixed Bag Case Studies" P. 1 - 24

Upcoming Webinar / Seminars:

November 11th

Joe Hyde

SAVE MONEY by signing up for Membership...

Simulcast \$30.00 member price

Checkout TST TechFlix over 85 videos with more being added. TST Members \$9.99 a month

Check out our YouTube channel tstseminars

Like us Facebook

Editor

"G" Jerry Truglia

© 2020 ATTS INC.

"European Mixed Bag Case Studies"

We begin our European case studies with a 2004 VW Jetta 2.0L at 161K miles. It came in with the complaint of an illuminated Check Engine light. We followed our usual game plan with the customer along with a Q&A session to find out when the Jetta owner first noticed any symptoms. We also tried to find out when the Check Engine light first illuminated. Our diagnosis started with a visual check followed by a scan of the vehicle's systems that uncovered two DTCs. The DTCs that were revealed were P0140 (HO2S2 Oxygen Sensor Heater Circuit, Bank 1 Sensor 2 No Activity) and the dreaded P0420 (Catalyst Efficiency Below Threshold Bank 1). We now had enough data to formulate a game plan.

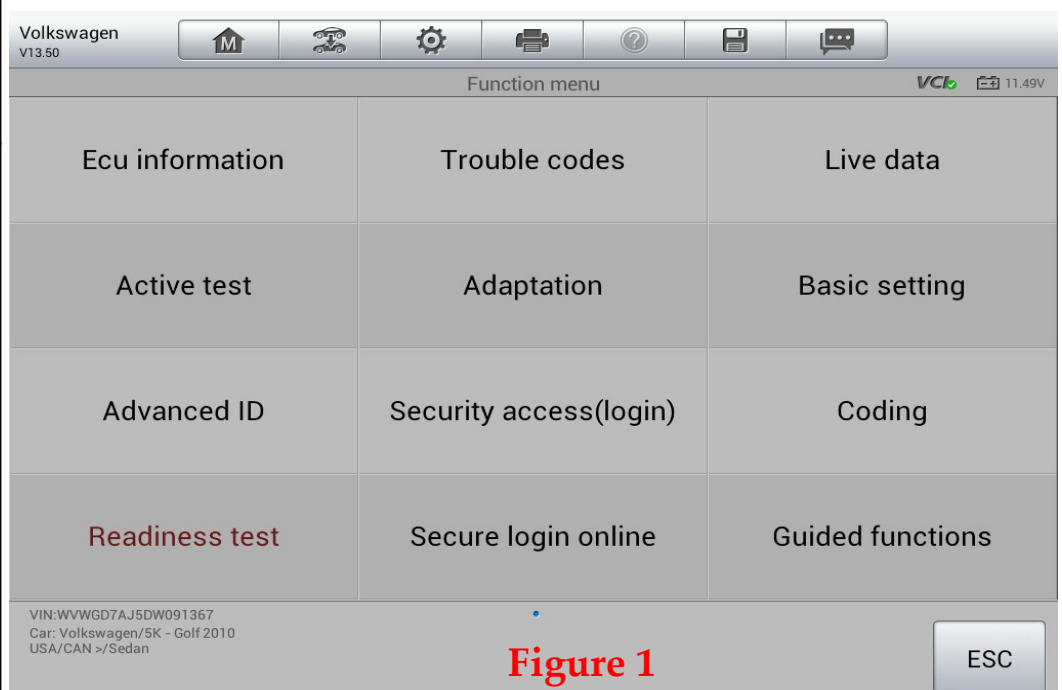


Figure 1

(Con't on page 2)

"European Mixed Bag Case Studies" (con't from p. 1)

The next step was to measure the O2 sensor heater circuit, where we found both good voltage and ground reference. This concluded that there was a problem internally with the sensor. To confirm that the sensor was the issue, we connected an Ohm meter to check for resistance on the heater circuit. The results of the Ohm test revealed a reading of OL (infinite resistance/open circuit), confirming that the sensor was bad. After completing our testing, we called the vehicle owner and explained that the first course of action to repair this VW was to replace the O2 sensor. This would be followed by clearing the DTCs, setting Monitors and test driving the vehicle. The results after a couple of test drives were that the MIL stayed off and all Monitors were Ready.

It is important to make sure that the Monitors are Ready to confirm your repair. Many techs do not understand how important Monitors are. When a Monitor is not Ready, you do not know if you've fixed the drivability problem on the vehicle. On Audi/VW products (and a few other OEs), you can run the Monitors to Ready right from your scan tool to check the vehicle systems out faster **(Figure 1) on page 1**. I usually recommend performing this step so a test drive can illuminate the MIL quicker, confirming if the vehicle repair was successful or not. On this Jetta, the vehicle was indeed repaired since the MIL stayed off.

The customer was happy and drove away, but it would not be the last time that we see this VW. At 165K miles, the vehicle returned with the MIL illuminated again and a Jetta owner who was not sure that we had repaired the Jetta correctly. We explained that we would diagnose the vehicle and if the same DTC for the O2 heater circuit was the cause of the illuminated Check Engine light, we would repair the vehicle, free of charge.

Don't you just love it? Once you touch it, some customers want you to own it and repair everything for free.

(Con't on page 6)

THIS SHIFT IS SERIOUS.



NG
NextGear

NEXTGEAR IS HERE. BOLT ON TECHNOLOGY's game-changing digital vehicle inspection and customer communication tool is now available to any shop, anytime, anywhere. So every automotive professional, whether you have a compatible management system or not, can tap into our award-winning **digital vehicle inspection**, **two-way texting**, and **advanced appointment setting** tools, plus our new **SecondGear Text to Pay** feature, with just a cell phone or tablet with internet access. **Shift your shop into high gear with NextGear.**

NextGear BOLT ON
Shift your shop into high gear

NextGearNow.com | 610-880-3711



FIX MORE CARS FASTER

OTC DIAGNOSTICS
DRIVEN BY BOSCH



PROFESSIONAL REPAIR AND COLLISION DIAGNOSTICS

- Quickly scans all modules and performs special tests and resets to diagnose and repair faster
- Includes one year of software updates for access to new tests, vehicle-ECU combinations and data items
- Wi-Fi enabled to wirelessly print, send and save reports for customers or insurers
- Evolve includes wiring diagrams for vehicles 1986 and newer and wireless, J2534-compliant VCI
- Newest 3.0 software includes more than 30 million likely repairs and troubleshooting tips
- Optional 3914 wireless battery and charger/starter system tester works with software version 2.10 and newer

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 individual or shop \$250.00 membership**, the simulcast are only **\$20.00**. **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

"G" Jerry Truglia of A.T.T.S. Inc.



Technicians Service Training

HOME ABOUT US UPCOMING SEMINARS SEMINARS ON DVD CONTACT US HEADQUARTERS MEMBERSHIP RATES/BOOKS STORE CATALOGS LINKS



Copyright © 2007 Technicians Service Training. All rights reserved.

Technicians Service Training

11 Lupi Plaza

Mahopac, NY 10541

Phone: (845) 628-6928

Fax: (845) 628-9109

Email:

Info@tstseminars.org

**TST on YouTube...type
in tstseminars**

No part of this newsletter may be reproduced, stored in a retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of the authors.

Information contained in this newsletter is intended for use by professional auto repair technicians familiar with approved vehicle repair procedures. The authors are not responsible for physical injury or property damage resulting from the incorrect application of information or procedures outlined in this volume.

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:

(845) 628-6928

www.TSTseminars.org

"European Mixed Bag Case Studies" (con't from p. 2)

Following a complete vehicle scan, we uncovered a P2177 (System Too Lean Off Idle) that could mean that the engine has a fuel delivery problem (**Figure 2**). The first place to start is by checking the fuel trim numbers. If you don't own an ATS EScan than you not only need to look at fuel trim numbers, but you need to find out what fuel cell the DTC has set in. Since we do have the EScan, it's easy for us to identify what fuel cell the problem is occurring in. If the fuel trim block numbers are high/positive at the lower end, then it's a vacuum-related problem. If it's high at the top of the chart, the problem is fuel delivery (that could be a clogged filter, voltage drop on the fuel pump circuit or a bad fuel pump). If neither one of these exist and the chart has high fuel trim numbers from bottom to top, then the problem is a load sensor (**Figure 3**).

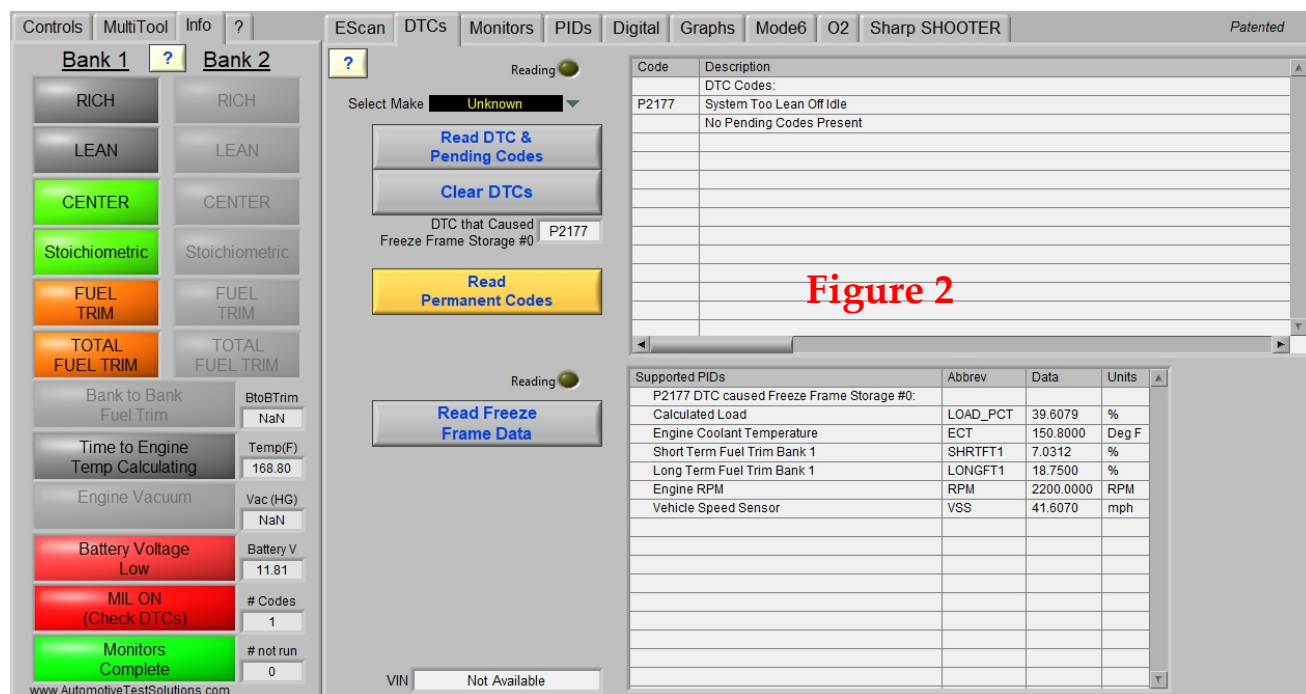


Figure 2

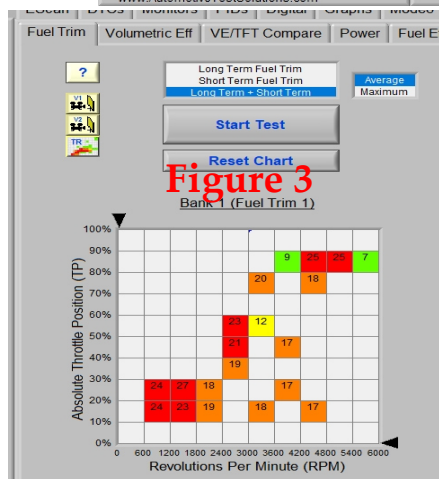


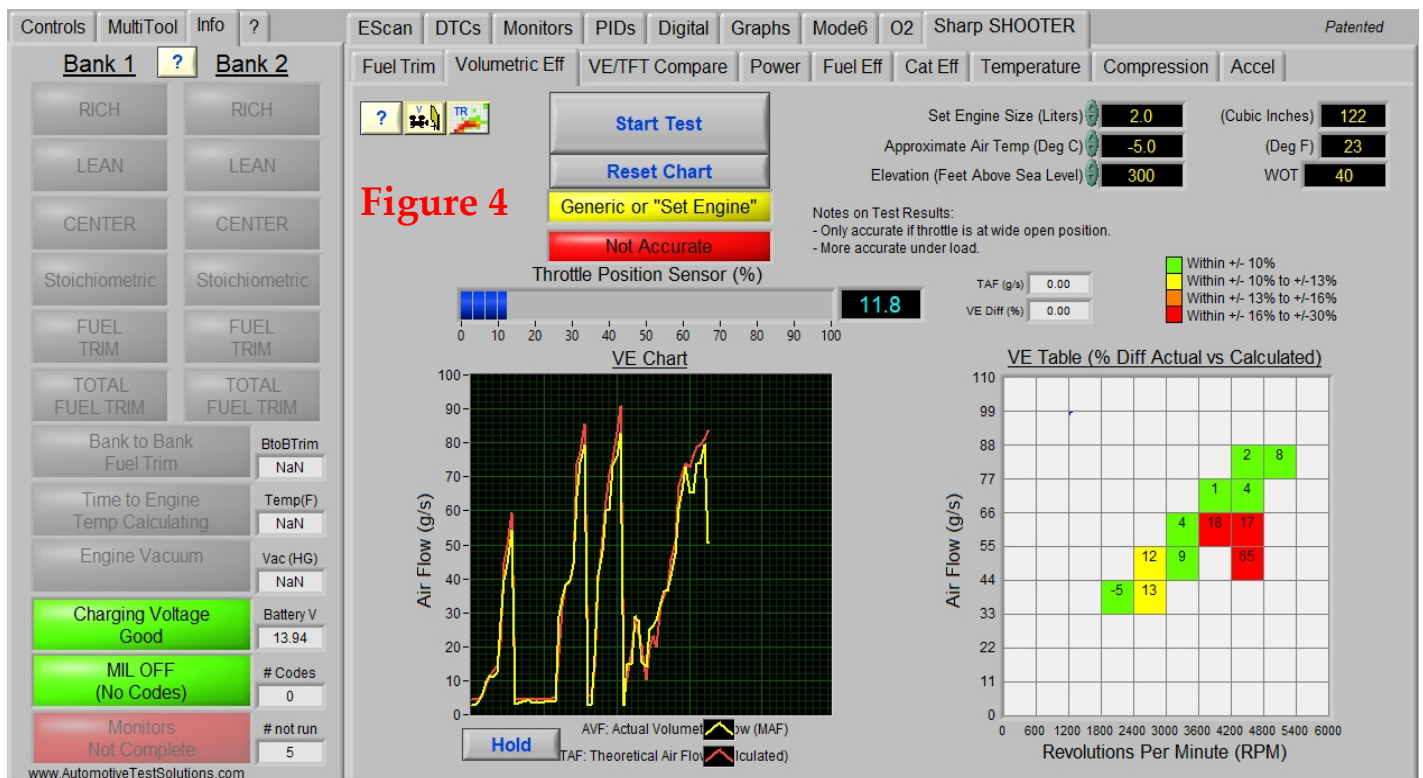
Figure 3

Jetta's use an MAF sensor, so the next logical test to perform would be an MAF sensor volumetric efficiency test (VE test). On the EScan, we selected the VE test and ran it, confirming that the MAF sensor had an issue (**Figure 4**) on page 7. The MAF sensor on this engine cannot be cleaned, so the only path of repair would be to recommend a rebuilt or new MAF sensor.

(Con't on page 7)

"European Mixed Bag Case Studies" (con't from p. 6)

I am not a fan of the rebuilt sensor, since many of them will not perform correctly (we learned by experience). After we printed out and provided the test results to the VW owner, she understood and gave us the OK to repair the vehicle. That old saying "paper sells" is true. We always provide a printout or electronic copy of the diagnostic report so the vehicle owner can see the before and after difference. In this case, it helped keep the Jetta owner calm, rather than her blaming us for not diagnosing and repairing her vehicle properly.



With that out of the way, we still needed to explain that a 165K mile vehicle will have parts that have worn or gone bad. Since this VW engine had a lean condition, there was a chance that the P2177 (System Too Lean Off Idle) could cause a very rich mixture, taking the catalytic converter over the edge and illuminating the Check Engine light (again, setting a P0420 DTC). Luckily for this Jetta owner, after the MAF sensor replacement and a couple of road tests, the VW was DTC-free.

A 2005 BMW X3- MIL/Misfire on page 10

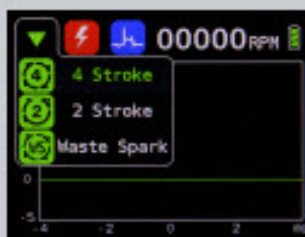
(Con't on page 10)

GTC505

Engine Ignition Analyzer



Complete ignition system diagnostic:



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



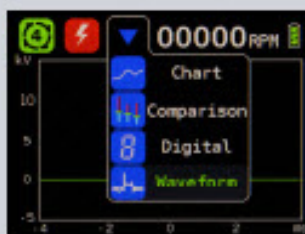
Displays secondary ignition waveforms.



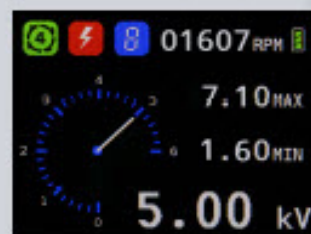
Displays and measures spark burn (firing) time, dwell time, current ramp time, RPM, and spark plug peak voltage.



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 appropriate sensor pick-up into the flexible probe
- Select the engine's cycle (4-stroke, 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.

General Technologies Corp. #121-7350 72nd Street Delta, BC V4G 1H9 - Canada
Toll Free: 800-440-5582 / Tel: 604-952-6699 / Fax: 604-952-6690 www.gtc.ca / info@gtc.ca

GTC
WWW.GTC.CA



FEATURED PRODUCTS

A Family of Targeted G.D.I. Fuel System Products Offer solutions for your customer's G.D.I. deposit problems!

The Run-Rite® G.D.I. Fuel System Cleaning Kits contain products that were specifically formulated to address the unique needs of G.D.I. engines, while still providing the same high level cleaning required on P.F.I. engines. Safe for use on: Gasoline Direct Injection, Port Fuel Injection and Turbos & Inter-coolers. Recommended every 15,000 miles or annually. The G.D.I. Preventive Maintenance Kit is recommended in between annual services, every 7,500 miles, to maintain optimum G.D.I. engine performance.



Run-Rite® 2-Step G.D.I. Fuel System Cleaning Kit

Part #7017 12 kits/case

Contains one bottle G.D.I. Fuel System Cleaner and one can Direct Injection Deposit Cleaner.

Run-Rite® 3-Step G.D.I. Fuel System Cleaning Kit

Part #1077 8 kits/case

Contains one bottle G.D.I. Fuel System Cleaner, one can Direct Injection Deposit Cleaner and one bottle G.D.I. Oil System Treatment.

Run-Rite® G.D.I. Preventive Maintenance Kit

Part #1501 12 kits/case

Contains one bottle of Sledgehammer and a Fuel Shot.

BATTERY

Run-Rite® Battery Maintenance Kit

Part #6210 12 kits/case

- 2-step kit containing Battery Wash and Battery Corrosion Protectant



RE-INTRODUCING

iQ3 Performance Oil

Part #7300 12 bottles/case

- Engineered for higher performance, reduced emissions & increased fuel economy.
- 1 quart



1-800-872-8921

www.Run-Rite.com

©2018 C.A.T. Products, Inc. (Run-Rite)

"European Mixed Bag Case Studies" (con't from p. 7)

A 2005 BMW X3- MIL/Misfire

A 2005 BMW X3 3.0L at 178K miles came in with a complaint of a check engine light illuminated and an engine misfire. This "Bimmer" was in bad shape, but we were told only to diagnose and repair the engine misfire. We followed the X3 owner's wishes and concentrated on the problem at hand. After we spoke to the X3 owner, we were as much in the dark about the problem on this X3 as we were before we asked him. Our game plan on this vehicle would be to perform a visual inspection and follow-up with a complete system scan. The visual inspection provided us with an abundant amount of problem areas, such as: • exceptionally low engine oil • missing air filter • loose spark plugs • missing passenger seat • metal-to-metal front brakes.

The interior of this BMW resembled a garbage dumpster (debris everywhere) along with dirty windows (that I could barely see out of) and a messed up clutch pedal (it was missing the rubber pad and exhibited a noise with the pedal depressed). The first thought that came to my mind was "do I really want to work on this vehicle?" After some more thought, I realized that this sloppy mess is not the type of vehicle we work on at our shop, AutoClinic. I had to come to the reality that the vehicle owner was the son of my HVAC guy. I could not be rude, so as all good techs must do, I just had to get over it and move on to diagnosing and repairing this mess. After we got over the condition that this vehicle was in, we started diagnosis by scanning the vehicle with our AutoLogic. We then switched over to the Snap-on ZEUS scan tool. As can be seen in **(Figure 5) on page 11**, the following DTCs in the Engine controller (DME/DDE), were uncovered: • 27C3 (Thermal Oil Level Sensor) • 2882 (Mixture Preparation, Bank 1 Mixture Too Lean) • 2883 (Mixture Preparation, Bank 2 Mixture Too Lean)

There were DTCs found in other systems such as antilock brakes, air-bags, AC and transfer case, but we were only concerned with the engine issues. My technician, Franklin, took the next step by looking up all

(Con't on page 11)

"European Mixed Bag Case Studies" (con't from p. 10)

AutoClinic
9 Lupi Plaza
Mahopac, New York 10541
845 628-6668
WE TEST NOT GUESS
www.autoclinicofny.com

2005 BMW X3 (E83) X3 3.0i (3.0L M54B30)

Pre Scan Vehicle System Report

VEHICLE INFORMATION

VIN	WBXPA93435WA32000
YEAR	2005
MAKE	BMW
MODEL	X3 (E83)
ENGINE	X3 3.0i (3.0L M54B30)
SYSTEM	
LICENSE	

CODE SCAN RESULTS

Systems Analyzed: 10

- ⚠ Engine (DME/DDE)
- ⚠ Antilock Brakes (ABS/ASC/DSC)
- ⚠ Airbag (MRS/ASCM)
- ⚠ Air Conditioning (IHKA/IHKB/IHKS)
- ✅ Electronic Immobilizer (CAS/EWS)
- ✅ Instrument Panel (KOMBI)
- ✅ Lamp Control Module (LCM)
- ✅ Multifunction Steering Wheel (MFL)
- ✅ Steering Angle Sensor (LWS)
- ⚠ Transfer Box (VGS)

Engine (DME/DDE)

27C3 | Thermal Oil Level Sensor
2882 | Mixture Preparation, Bank 1 Mixture Too Lean
2883 | Mixture Preparation, Bank 2 Mixture Too Lean

Antilock Brakes (ABS/ASC/DSC)

5EB1 | Steering Angle Sensor: LWS - Signal Relative. Steering Wheel Central Position
Unidentified. Learning Quadrant.
5F23 | Engine Management Interface Error
5DD2 | Control Unit (Voltage Too High)
5F3A | Transfer Case Internal

5D8D | Hydraulic Pump Unit

Airbag (MRS/ASCM)

8A | B - Column X - Direction Right
3 | Ignition Circuit ZK2 / Belt Tensioner Passenger
61 | Belt Contact Passenger
71 | Occupant Classification System (OC3)
50 | Supply Voltage

Air Conditioning (IHKA/IHKB/IHKS)

20 | AUC Heating
1E | AUC Sensor

Electronic Immobilizer (CAS/EWS)

Instrument Panel (KOMBI)

Lamp Control Module (LCM)

Multifunction Steering Wheel (MFL)

Steering Angle Sensor (LWS)

Transfer Box (VGS)

54C6 | Oil Wear

Figure 5

Figure 5

the information associated with the oil sensor, before moving on to the lean condition. Franklin already knew that the engine oil level was low, so he added the correct amount to protect the engine and eliminate the possible cause of the oil level sensor fault.

As you can imagine, the problem was not solved yet. Through testing, Franklin came to the conclusion that the oil level sensor was defective. He ordered the oil level sensor and when it arrived, installed it. This solved the oil level DTC issue. Franklin was now able to move on to the lean condition issue. Using the EScan by ATS (Figure 6) page 14, he found the fuel trims were substantially off from normal. As you can see, the chart indicated high positive numbers, from the bottom of the chart to the mid-level. If

this engine was running better, it would have revved higher and the fuel trim cells would have populated the chart to the top, rather

(Con't on page 14)

Are you ready for R-1234yf?



We are!



Neutronics
Refrigerant Analysis

1 (610) 524 - 8800

www.refrigerantid.com

eSCOPE ELITE4™

Electronic Lab Scope 4 Channel



eSCOPE ELITE4
with Surface Pro 4 Tablet
(ESL3000)



eSCOPE ELITE4 (ESL3100)

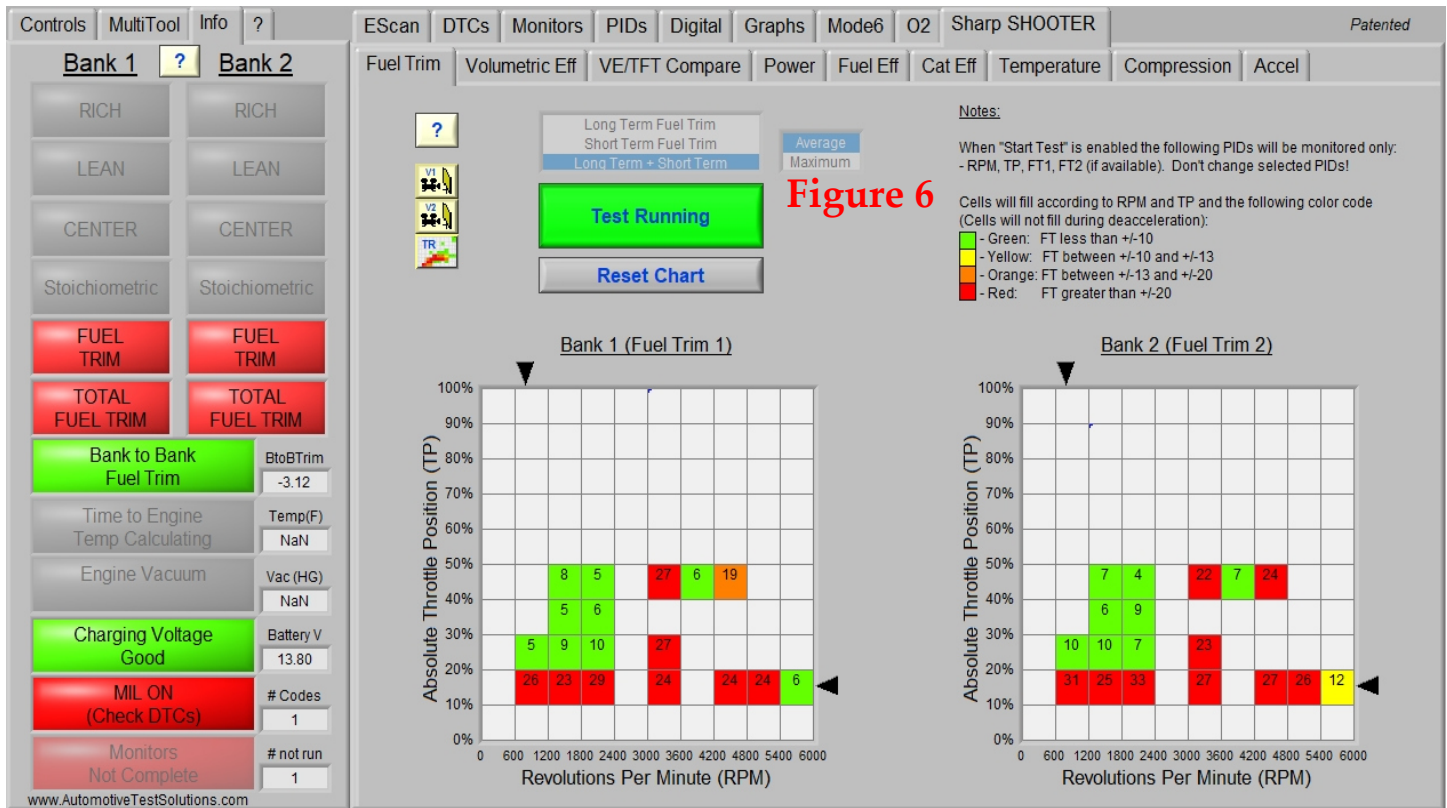


eSCOPE ELITE4
Handle Articulation

eSCOPE ELITE4 - 4 Channel scope

- ▶ **Capture All Data:** ATS' unique circular buffer system does not drop data.
- ▶ **Ultra Sharp Waveforms:** No need for filters that can mask data. ATS designs our scopes so the signal is accurate and clean.
- ▶ **Dual Time Base:** This allows two different frequencies to be displayed on one screen with two different scope displays, simultaneously.
- ▶ **Pull Down Circuit:** A Controlled pulse that sinks power from vehicle circuit to ground. Control circuits like ignition coils, fuel injectors and solenoids.
- ▶ **TTL Output:** Sends a 0-5v square wave signal out of scope. Turn on devices such as ignition coil drivers, test vehicle's circuits, and test vehicle's circuits for loading.
- ▶ **Automatic Test Lead Connection Detection:** This unique feature allows you to know the scope lead has a good connection. "Red" = Bad connection. "Green" = Good connection. It's that easy!
- ▶ **Patented Overlay Technology:** ATS' unique programming overlays an engine cycle grid over your waveforms.
- ▶ **Automatic voltage attenuator:** Just change the voltage setting and the scope does the rest.
- ▶ **Deep Record Function:** No time, voltage, or trigger setup needed.
- ▶ **Pressure Transducers:** Drives four pressure transducers at once.

"European Mixed Bag Case Studies" (con't from p. 11)



than just the middle. Franklin asked me what I thought of the readings, and I confirmed his diagnosis of a bad load sensor. I called the customer and told them that we were far from done with diagnosing the engine problem, but that we needed to start by replacing the MAF sensor. With the X3 owner's approval, we ordered and installed a new MAF and rechecked the engine's performance and fuel trim readings. The test results were the following reading -20 and -18 fuel trim (at idle) that went away while we increased the load on the engine. The results confirmed that the replacement load sensor fixed the high positive fuel trim number (that we had before), but why did the computer command such negative numbers after the repair?

We thought that we would reset the adaptive fuel trim and take the vehicle for a good test drive. When we returned to the shop, the fuel trim numbers were still a very negative numbers but only at idle. When fuel trim numbers are commanded negative, it usually means that there is an unwanted fuel source (such as leaking injectors, high fuel pressure, EVAP purge issue, contaminated engine oil, E85 issue or other).

(Con't on page 17)

GO WITH THE **FLO!**

FLO- DYNAMICS®

**THE LEADER IN FLUID
MAINTENANCE EQUIPMENT**



BRAKE



TRANSMISSION



A/C



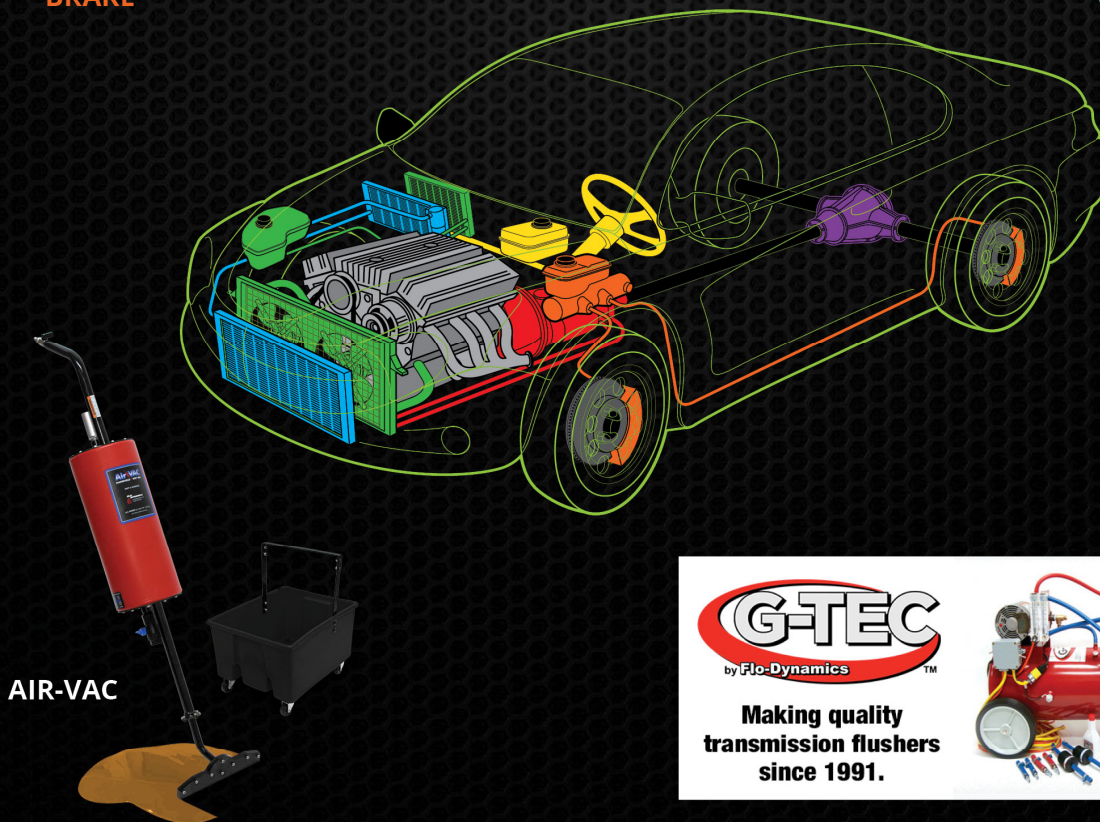
DIFFERENTIAL



**POWER
STEERING**



COOLANT



AIR-VAC



**Making quality
transmission flushers
since 1991.**





INTERNATIONAL AUTOMOTIVE TECHNICIANS NETWORK

WHERE THE PROFESSIONALS GO FOR
ADVICE ON TOUGH TO SOLVE JOBS

**MORE THAN
80,000 MEMBERS**

**FROM OVER
170 COUNTRIES**

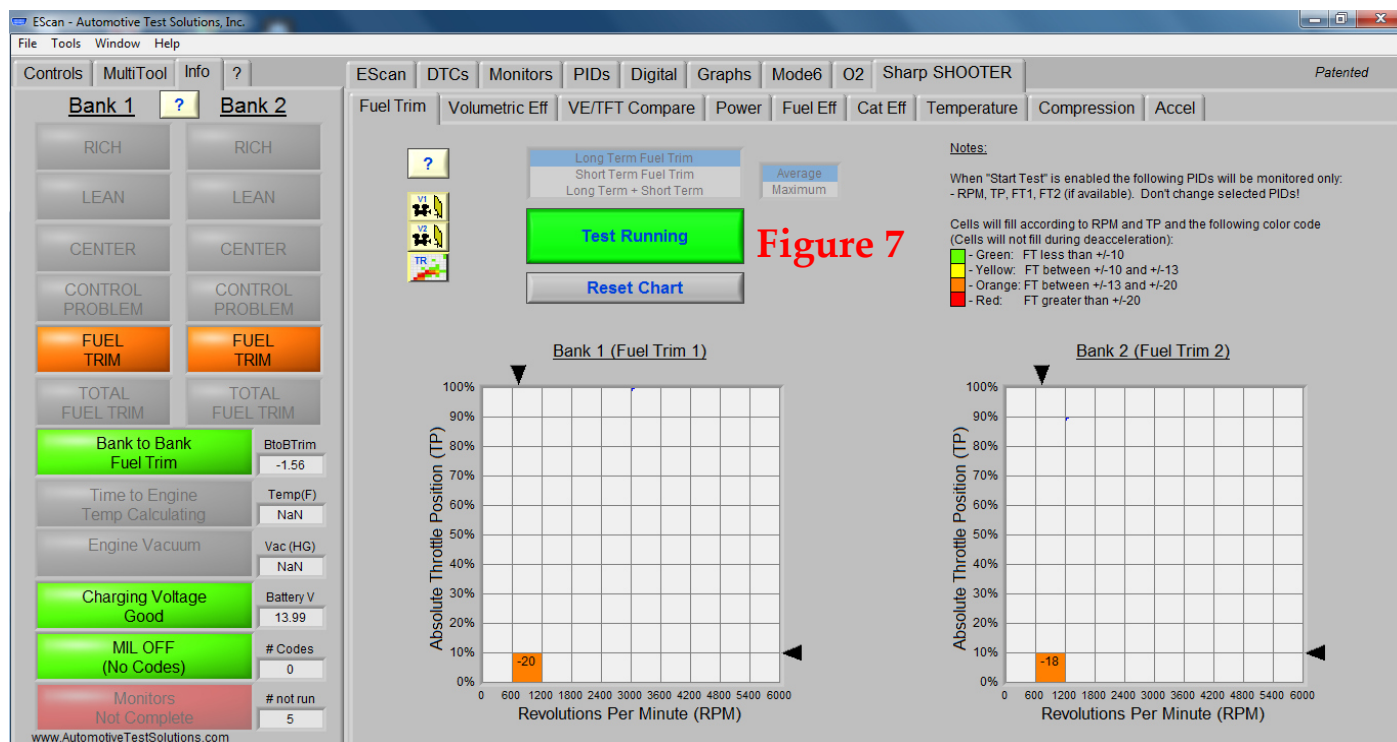
**SHARING A COMBINED
2 MILLION YEARS OF EXPERIENCE**

WWW.IATN.NET

"European Mixed Bag Case Studies" (con't from p. 14)

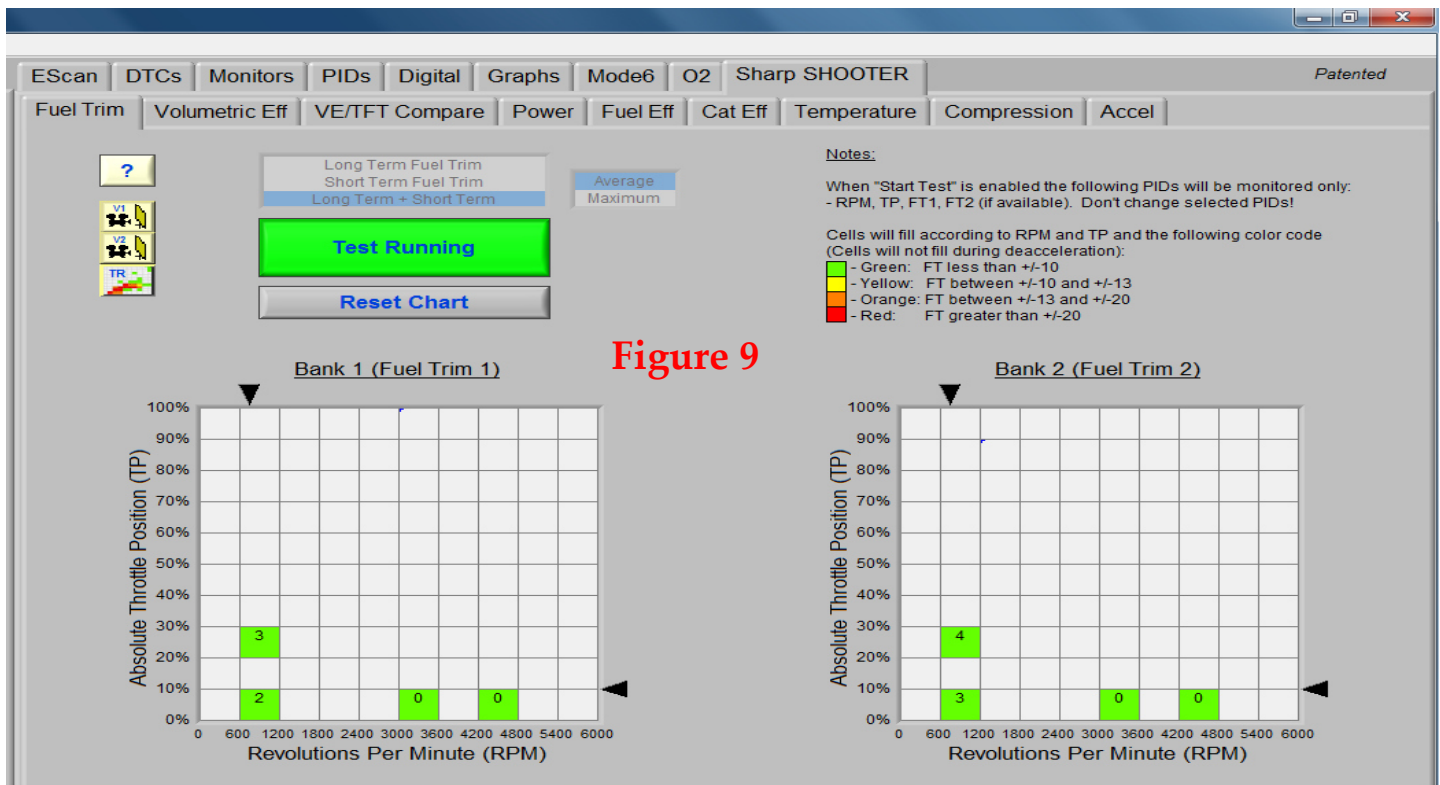
Franklin and I check everything and came up empty. We needed to regroup and try to figure out what is causing the -20 and -18 fuel trim readings (**Figure 7**). When both banks of trim are affected, there has to be a common point, so we decided to smoke-test the engine to see if there were any leaks. You won't believe what we came up with! We found a dipstick seal that was leaking (at the base of the oil tube) and contaminated engine oil (**Figure 8**). We installed a new dipstick o-ring, changed the engine oil and filter, reset the additive fuel trim and test drove the vehicle.

When we returned, we connected the EScan and checked the fuel trim reading again. We found that the BMW was now back to a normal under all operating conditions (**Figure 9**) on page 18. Now, at least the engine of this X3 was running as designed. There was still other work that needed to be completed to get this pile of junk back to normal.



(Con't on page 18)

"European Mixed Bag Case Studies" (con't from p. 17)



2006 VW GTI 2.0L turbo-MIL

Our next vehicle was the complete opposite of the X3. This is 2006 VW GTI 2.0L turbo with 46K miles is just one of five vehicles that this customer owns. Let me tell you that this GTI looks better than when the vehicle was purchased new. All of her vehicles are very well taken care of and are a pleasure to work on. Any time there is even a minor issue on the vehicle, the owner is right on top of it and brings it in for repair.

This visit to the shop was for concern of an illuminated Check Engine light and her (2,000 miles or less) synthetic oil and filter change. We started by following our normal diagnostic plan and asked when she first noticed the Check Engine light. We inquired if she just refueled the vehicle or if there was there something else done that could have caused the problem. We connected our EScan and found a P0301 along with the associated Freeze Frame data. We found all of the System Readiness Monitors in a "Ready" state **(Figure 10) on page 23.**

Examining Freeze Frame data provided us with the

(Con't on page 23)

THE FUTURE IS NOW!

**PREMIUM PREVENTATIVE
MAINTENANCE PRODUCTS**



**GDI
Fuel and Air
Differential
Transfer Case
Power Steering
Automatic Transmission/CVT**

**Brake
Coolant
Battery Service
Climate Control
Diesel Injection
DPF Maintenance**

***Lifetime*
BG Protection Plan**

 **Lubri-Care.com**

203-877-5690

LAUNCH
TECH USA
CREATE • CHANGE

X-431 Torque



- 431 Torque

"EXPERIENCE THE EASE"
"FEEL THE POWER"

WWW.LAUNCHTECHUSA.COM

1820 S. MILLIKEN AVE • ONTARIO, CA 91761 • PH : 1-877-528-6249



At AE Tools & Computers we help the aftermarket repair facility do everything the OEM dealer can do with regards to diagnostics. We give them the ability to keep their customer's vehicles in their bays through completion of the repair. This generally starts with a phone consultation to determine the TRUE needs of the individual repair facility. We do not want to just sell another tool. We want to sell the tool that meets the needs of the repair shop that we are servicing. **We are selling Solutions.**

YOU'VE GOT TECH SUPPORT

Simply call us when you have questions or problems. We will log in remotely to help you through the issues you are having. This support is REAL. This is not cable replacement support. Anyone can do that. We are actually helping you with the things that get the lights to go out on the dash, so you can deliver the car to the customer, get paid and move on to the next job.

HAVE QUESTIONS? **TALK TO A REAL PERSON!**

913.856.6678

SUPPORT@AETOOLS.US

LIVE SUPPORT HOURS **MONDAY - FRIDAY 8 AM - 6 PM CST**

WWW.AETOOLS.US

WHAT MAKES OUR
LAPTOPS
SO SPECIAL?



COVERAGE AT THE PRICE YOU NEED

3 RELIABLE DIAGNOSTIC SERVICE TOOLS



ADVANCED
SERVICE FUNCTIONS+
ALL SYSTEMS DIAGNOSTICS

AFFORDABLE
SERVICE FUNCTIONS+
ALL SYSTEMS DIAGNOSTICS

COMPLETE
DIAGNOSTIC CODING & ADAPTATIONS+
ADVANCED SERVICE FUNCTIONS+
ALL SYSTEMS DIAGNOSTICS

MAXIMIZE BILLABLE LABOR HOURS, SHORTEN DIAGNOSTIC TIME AND COMPLETE REPAIRS FASTER WITH AUTEL SERVICE TOOLS.



MAXICHECK MX808 7" SCREEN

SERVICE + SYSTEM DIAGNOSTICS

- Advanced Service Functions
- All Systems Diagnostics
- AutoVIN + AutoSCAN Detection
- MaxiSYS Suite Applications



MAXIDIAG MD808P

SERVICE + SYSTEM DIAGNOSTICS

- Affordable Service Functions
- All Systems Diagnostics
- AutoSCAN Detection
- FREE Lifetime Software Updates



MAXISYS MS906TS 8" SCREEN

COMPLETE DIAGNOSTICS

- Bi-Directional Control
- Advanced Service Functions
- All Systems Diagnostics
- MaxiSYS Suite Applications



(855) 288-3587
maxitpms.com



autel.com

Register and update tools for latest coverage
©2017 Autel Intelligent Technology Inc.

Follow Us @AutelTools
Facebook Twitter Instagram YouTube

AUTEL

"European Mixed Bag Case Studies" (con't from p. 18)

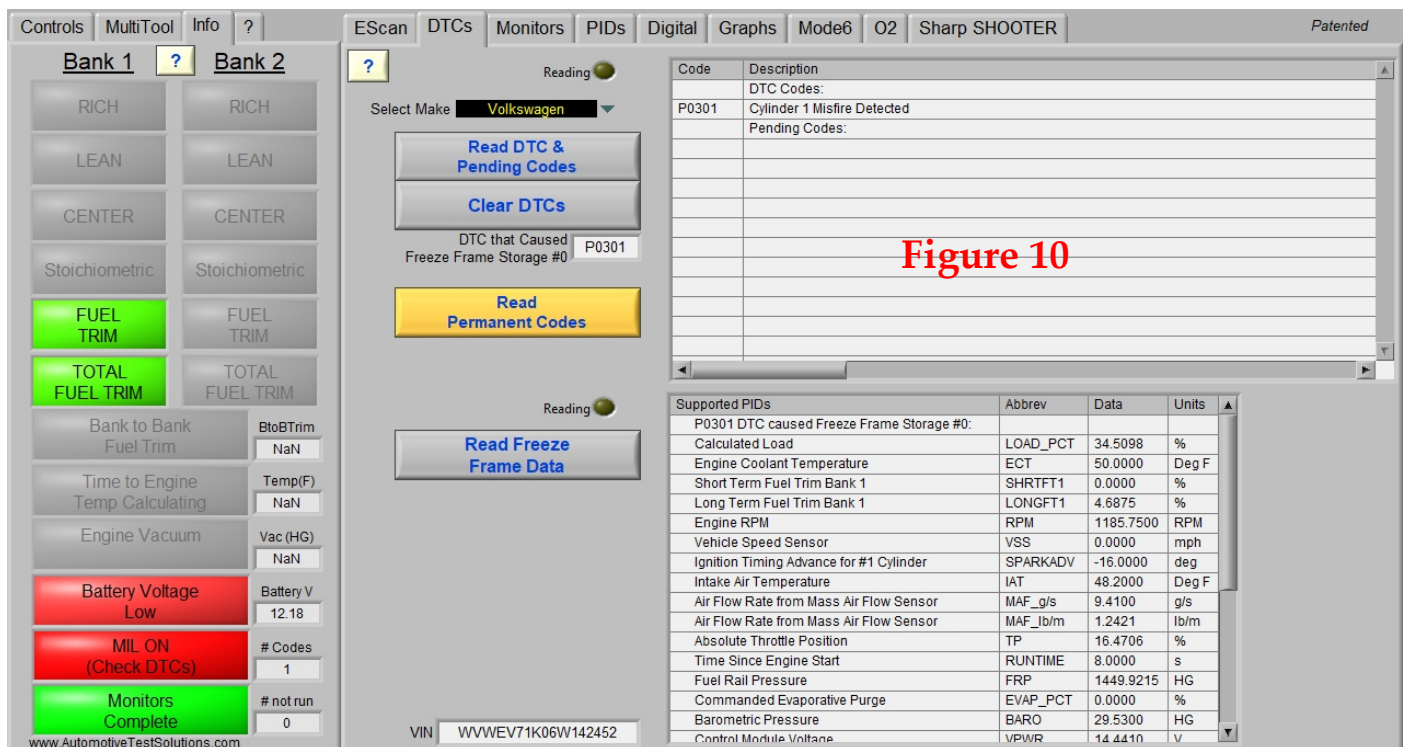


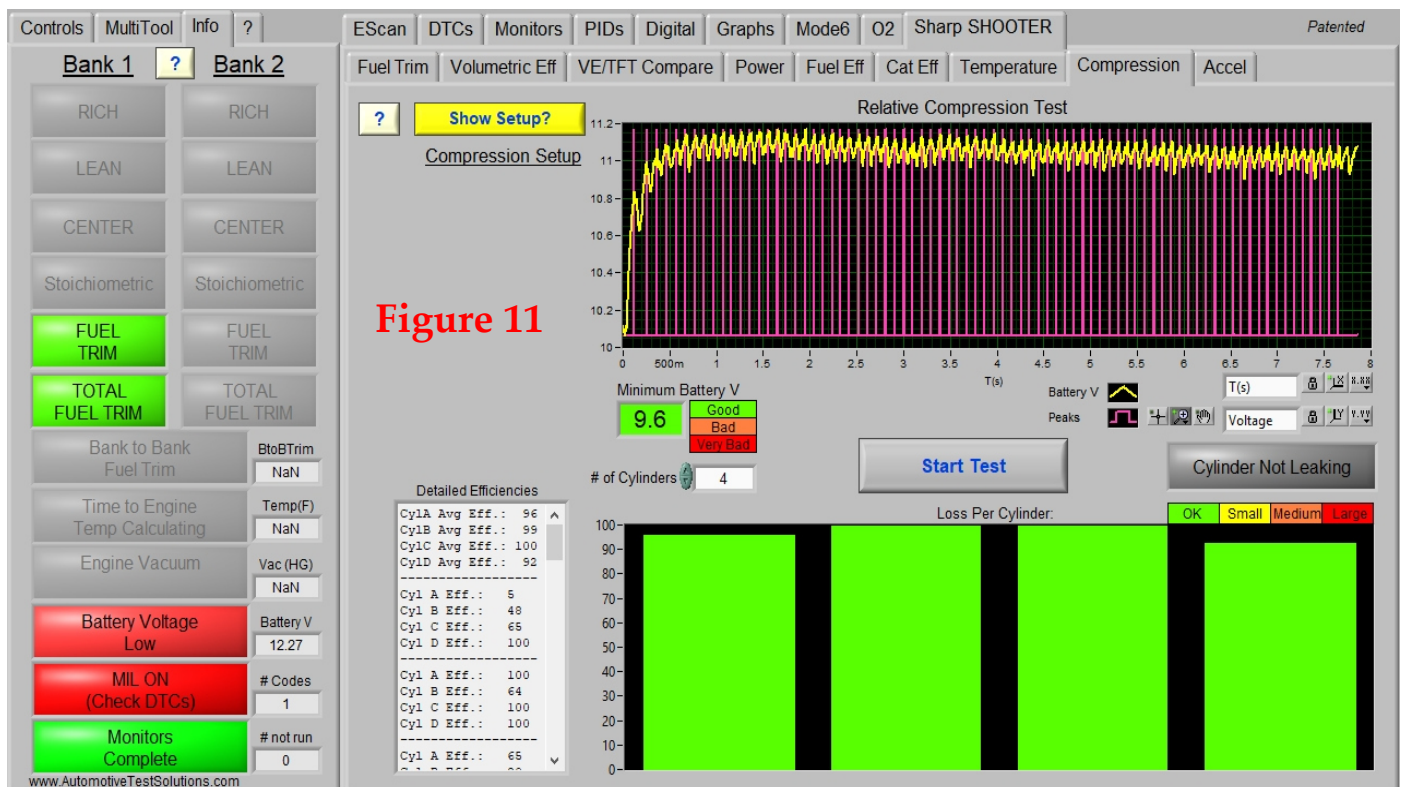
Figure 10

information on when the P0301 had occurred. The engine temperature was at 50 degrees Fahrenheit with an engine RPM of 1185. Since the engine was not currently misfiring, we needed to duplicate the problem. With Freeze Frame info, we knew that we had to have the engine cooled down to check for the misfire, since none were present with the engine at operating temperature. We left the vehicle outside overnight and made sure that we would have all our tools ready when we started the engine up in the morning. The tools we would use were the EScan and the GTC505 ignition tester.

We unlocked the vehicle, popped the hood, connected the scan tool and fired the engine up. Our patience waiting until the engine was cold paid off. The engine started to misfire for us. To rule out a mechanical fault condition, we ran a Relative Compression test on the EScan (**Figure 11**) on page 24. Next, my tech Bill powered up the GTC505 and started testing the ignition system, finding that the #1 cylinder was misfiring when the engine was cold. Bill removed the coil and spark plug only to find that there was some carbon on the spark plug electrode. He advised the vehicle owner to perform

(Con't on page 24)

"European Mixed Bag Case Studies" (con't from p. 23)



a GDI (Gasoline Direct Injection system) cleaning, since the spark plug tested good. This was determined by moving the plug to another cylinder that was not misfiring.

The customer decided that she would take the VW and drive it to see if there would still be an issue. We were surprised by her decision considering she always wants her vehicles in "tip-top" shape! We cleared the DTC and had her drive the vehicle, asking her to return in a couple of weeks. Upon the VW's return, we connected the scan tool and found that there were no DTCs or pending DTCs and all Monitors were Ready.

We assumed that the misfire was caused by the carbon build-up that affected the number1 cylinder only when cold. The problem cleared up when Bill removed the spark plug to check for an issue before installing a pressure transducer for a compression test. The results of the in-cylinder transducer test did not reveal any mechanical problem so that only left one thing to check. We had to wait until the engine cooled down before using

(Con't on page 25)

"European Mixed Bag Case Studies" (con't from p. 24)

our video scope so we would not fog the lens or ruin the video inspection camera. The inspection with the video camera uncovered heavy carbon build-up that we have seen before on other GDI engines (especially Audi and VW). With the video screen shots, we explained to the owner that a GDI fuel system cleaning was needed to prevent the engine from misfiring in the future. The owner (for some unknown reason) decided not to perform the cleaning at this time. Again, we were a bit taken aback by this decision. Maybe it was because of the pandemic and that she had just had us perform two clutch replacements (one on this GTI and the other on her Audi). Anyway, we are still waiting for the MIL to illuminate again (since these 2.0L turbo tend to build up carbon up and cause misfires). Only time will tell, but I'll bet that this VW will be back with an issue soon!

Update, the vehicle came two weeks ago with a misfire when the engine was cold. The customer requested that we do what was needed to fix this problem. We performed a ATS 3C GDI cleaning and now the engine no longer misfires.

I hope these few European case studies shed some light on helping you diagnose problem vehicles. Remember no professional team plays a game without a game plan, and neither should you.

*Article By
"G" Jerry Truglia
TST Founder and President
ASE World Class Triple Master
Auto, Truck, School Bus L1, L2, F1, X1, C1, Technician*



THE LATEST TOOLS FOR AUTOMOTIVE SERVICE AND REPAIR

Built by technicians, for technicians



REMOVE SLUDGE, ETHANOL AND WATER AND REDUCE OIL VAPORS THAT CAUSE VALVE DEPOSITS.

Quickly breaks down and removes all sludge, varnish and deposits, and holds them in suspension until they are drained. Eliminates ethanol-related fuel issues with exclusive HydroBond™ Technology.

400-1206 6Di Maintenance Kit
400-6000 Engine Oil Cleaner
400-6220 Engine Treatment
400-2001 Fuel System Cleaner



NEXT GENERATION LEAK DETECTION FOR FORCED INDUCTION GASOLINE AND DIESEL ENGINES.

Cool Smoke® HP delivers market-leading ease of use, reliability and leak detection.

600-0160 Cool Smoke HP with Turbo Adapter Kit
600-0160NA Cool Smoke HP without adapters



QUICKLY AND EFFICIENTLY RECOVER, RECYCLE, AND RECHARGE AUTOMOTIVE A/C SYSTEMS.

Patented unique, fast and complete refrigerant changeover system with 7" color touch-screen control, patented oilless compressor and motor-controlled ball valves and 1-2-5 warranty.

FX154A SAE J2788H R-134a
FX1234 SAE J2843 R-1234yf
FX3030 SAE J3030 R-134a & R-1234yf



Proud sponsor of

Technicians Service Training
13 Cape Place
Middletown, New York, NY 10941
845.628.6828 F: 845.628.6889 V: 1-877-Technician.org

 **cps** Automotive

DIAGNOSTICS WITH>> THE EXPERTS



The diagnostic platform you'll need tomorrow, available today.

DrivePRO enables technicians to quickly diagnose and program vehicles across Asian, Domestic, and European makes.

Combining advanced technology with industry-leading technical support, **DrivePRO** is the diagnostic solution you've been asking for.



**AutologicLive
Technical Support**



**Enhanced
Diagnostics**



**Flash Programming
and Coding**

To learn more about **DrivePRO**, contact our sales team today!



sales-us@autologic.com



(877) 945-6442



Tackle every job with:

- More Confidence
- Better Efficiency
- Greater Profitability



AUTOLOGIC

AN OPIUS COMPANY

us.autologic.com

©2019 Autologic. 011119-1

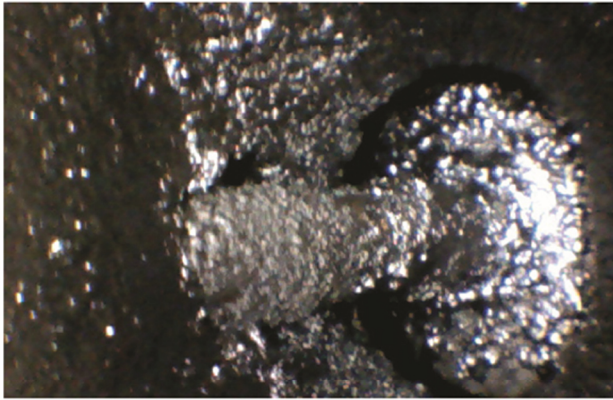


Finally...

A Cleaning Solution That Actually Works!

1.6L Turbo Mini Cooper at 83,000 miles

Before Cleaning



After Cleaning



3C Intelligent Induction Cleaner

Patent Pending

3C Intelligent Induction Cleaner (Patent Pending) removes heavy carbon deposits from the internal combustion engine's induction system in just 20 minutes.

Air Assist Injection Nozzle (Patent Pending) delivers chemical in small droplets that are suspended and carried to the carbon deposits by the engine's air flow. This air assisted nozzle is superior to any other nozzle available for carbon removal.

Chemical Layering (Patent Pending) removes more carbon because it alters the application of chemical mixtures between chemical A and Chemical B in on/off cycles, then washes the induction system with Chemical C.

Micro-Burst Injection Technology (Patent Pending) delivers the maximum amount of chemical during the cleaning process while still allowing the engine to run well.

3C Chemical A, 3C Chemical B, 3C Chemical C (Patent Pending) are laboratory proven to remove more carbon weight from different carbon types than any other commercially available induction carbon cleaning chemical, while having a low HMIS health rating of (2).