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Technicians Service Training

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Upcoming

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TST Big Event Saturday, April 6th 2024

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Editor

"G" Jerry Truglia

"Dealing With Europeans"

A2 013 Audi A4 came in with a complaint of low power along with an illuminated Check Engine light that we were asked to diagnose. After we listened and questioned the owner about his A4, we sold him our basic diagnostic check. Th e check includes a search of applicable TSBs and connecting the ODIS, the factory scan tool, to the vehicle so we could perform a complete vehicle health check. Th e results of our vehicle check uncovered a P0302 DTC that most likely was the cause of the power loss concern and no TSBs. Th e next step was to confi rm that the misfire was indeed from cylinder #2.

My at the time tech Franklin used the GTC505 ignition analyzer to test the ignition system and confirm the misfire. Franklin also noticed that the ignition coil on #2 cylinder had severe burn marks on it that could be the result of the ignition coil being fired in a cylinder that had a wide spark plug gap or lean air fuel mixture. Franklin's next step was to remove the ignition coil and spark plug from the engine only to find that the spark plug electrode was severely worn.

You missed a step!

Since the engine only had 63,000 miles on it, he recommend the replacement of all the spark

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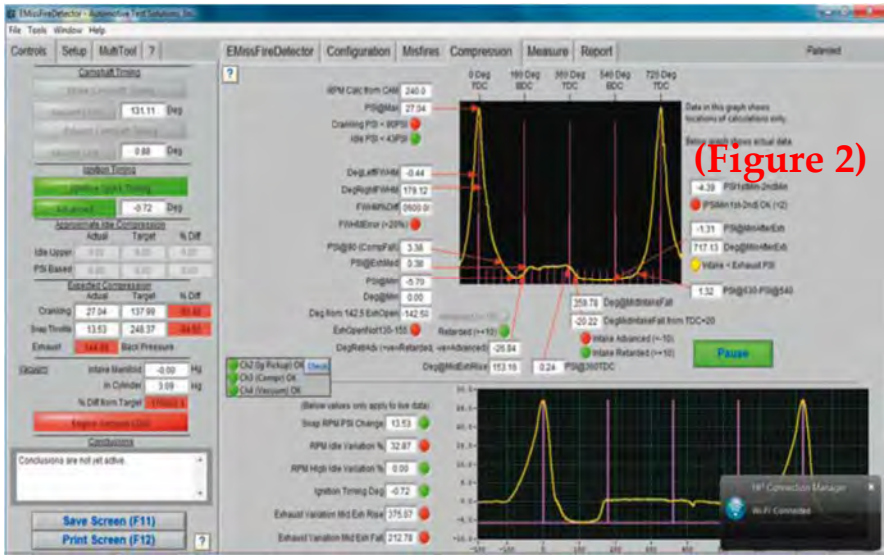
"Dealing With Europeans" (con't from p. 1)

and the #2 ignition coil, as they displayed signs of wear. Unfortunately for the Audi owner and us, the problem was not just the spark plugs and ignition coil. An important fi rst step was overlooked and not performed, and we missed the root cause of the P0302 misfire. After the plug and coil replacement was completed, Franklin realized that he should have not taken for granted the mechanical condition of the engine. Since the engine was now only running slightly better than before and the P0302 returned, Franklin decided to perform a Relative Compression test **(Figure 1)** followed by a cranking pressure transducer compression test **(Figure 2)** that both resulted in displaying a cylinder problem.

(Figure 1)



(Figure 2)

Now Franklin needed to confirm what was causing the mechanical problem, so he proceeded to perform a cylinder leak down test. With the air being pumped into the cylinder pouring out of the intake manifold, it was evident the loss of compression was in the top end. Franklin informed the Audi owner of the test results along with the information from our inspection camera pictures.

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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.***

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Jorge Menchu the "Labscope Guru," AES Wave
John Anello of Auto Tech On Wheels
Mark Warren of World Pac / Motor Magazine
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Peter Meier of Motor Age Magazine
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"Dealing With Europeans" (con't from p. 6)

The pictures displayed a piece of one intake valve missing that was most likely causing the misfire problem. Franklin explained to the Audi owner that there was a possibility of a piston or cylinder wall issue as well, due to the missing piece potentially bouncing around in there. The Audi owner was told the price of a replacement motor both new and used so he could decide which way he would like to proceed.

The A4 owner decided to approve the cylinder head removal, so we proceeded to remove the cylinder head and checked for the broken pieces of the valve. We carefully checked all the cylinder walls **(Figure 3)**, especially cylinder #2 for any damage. We looked everywhere possible for any remnants **(Figure 4)** from the damaged valve, including in the front catalytic converter. Since no scratches or marks were found we continued to clean everything up, then sent the cylinder head out to the machine shop. When we received the cylinder head back, we aligned the complex timing chains up, making sure that we were right on the marks. As you can see by the picture **(Figure 5)**, this engine has one hell of a chain system that you need to make sure is right on the money. We used our special Audi/ VW tools that hold the engine and chains in place to prevent the engine from moving. After we were done, we double and triple checked the timing marks and proceeded to very carefully rotate the engine, making sure it moved freely without interference. With the engine totally back together we connected the ODIS scan tool and checked for any and all DTCs, along with checking the exhaust readings **(Figure 6)** that confirmed the engine was running as good as new. We test drove the vehicle until the monitors were completed to make sure that there were no problems before we returned it to the owner.

(Figure 3)

VW Golf Tire Out

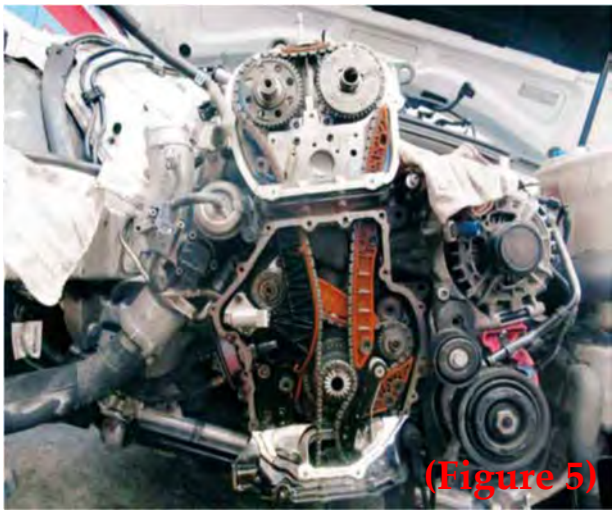
(Con't on page 8)

"Dealing With Europeans" (con't from p. 6)

Nowadays it is not always a drivability problem that requires using service information, scan tools and your diagnostic experience. Sometimes something so simple as a TPMS sensor can turn into a complicated diagnosis and repair. We recently had such a problem on a 2010 VW Golf that the vehicle owner had sitting around since last summer. When he came in with the vehicle, he wanted us to check the Golf out, change the oil, extinguish the TPMS light and perform a New York state inspection.


(Figure 4)

The Golf only had 3,096 miles on it since the vehicle is only used in town in the summer. Sometimes - as we know -it's not mileage but time that may dictate service and/or a repair. When we tested the battery life of all the TPMS sensors they reported a 60 percent level, indicating that the TPMS battery was not the problem. Most likely the TPMS light was illuminated due to the vehicle's 12-volt battery going dead, and the module losing its learned connection. We followed the TPMS system directions and drove the vehicle until the TPMS light went out.


(Figure 5)

(Con't on page 11)

"Dealing With Europeans" (con't from p. 8)

After we returned the vehicle to the owner he started to drive it home but did not make it more than 5 miles when the TPMS light illuminated again. He returned to the shop and left the Golf with us to check out the problem. We started our diagnosis by connecting our scan tool and found a DTC 01325 Tire Pressure Monitoring No or Incorrect Basic Settings/ Adaptation and 01044 Gateway Control module incorrectly coded. Since the scan tool provided us with DTCs, we used our newest Autel TPMS tool only to come up with the same results that we had discovered previously - one tire not connected or learned. We tried to reset and relearn the problem sensor, but were unable to register the tire or turn the TPMS light off.

Next, we decided to move on to the other three TPMS tools we have only to come up with the same results. We even diagnosed the TPMS system with the VW ODIS factory scan tool and utilized the factory service information. The VW service information was similar to the aftermarket in that it stated to press the reset button in the glove box or in the center console. The only problem was that this 2010 Golf did not have a reset button in either place or for that matter anywhere on the vehicle. After all three of us looked everywhere and even called a friend who worked for VW, we came to the conclusion that this Golf had a TPMS system that must have been designed in a model year that did not have a reset button. We went back to our new aftermarket scan tool because it was easier to use, saving us time over using the ODIS. We followed the instructions for the TPMS system that does not utilize a reset button to get the system back to normal. The procedure is making sure the vehicle is in a KOEO state followed by at least 20 minutes of wait time. It is important that the vehicle is not disturbed during the wait time - that means not even opening the door. After the 20 minutes of wait time, a test drive of 7 minutes must be completed so the sensors go into relearn mode. The next step is to use a scan tool capable of setting the tires to winter or regular wheels use; on our Golf we selected regular. This is followed by checking the tire pressure and making sure they all read 2.4 bar/ 34 psi. Once we confirmed that the tire pressure was correct, we made sure the

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"Dealing With Europeans" (con't from p. 11)

Tire Pressure Security Adaptation code was also correct. Since the code was not correct, we entered the correct code of 015403 and the adaptation was complete.

Once the coding was complete, the vehicle had to be driven again to make sure all the wheels would transmit the proper information. The drive is an important part of the reset procedure so that the computer can automatically recognize and read the wheel speed sensors then log them into the control module. After we completed the lengthy procedure, the TPMS light went out and the vehicle was returned to the customer.

The Possessed X5

A 2008 BMW X5 came in to us on a cold, wet December day with all four windows completely down. The vehicle owner informed us that she was unable to get the windows to go back up in the closed position. She stated that when she parked her vehicle the previous night, all the windows were fully closed in the up position. After listening to the BMW owner, we drove the vehicle in the bay and connected our scan tool to perform a complete vehicle scan. The X5 had some of the normal codes that we expected to see such as telephone and radio DTCs but none that pertained to our problem at hand with the windows.

We decided to check all the window switches and read up on how the system works. What we found was that the window switch on the left rear door seemed to have a problem as well as the master driver door switch **(Figure 8)**. We proceeded to remove the window switches and blow them dry with shop air then reinstall them to see if they would work. The result was that the master switch started to work, allowing us to get the windows in the up position. After the windows were back in the closed position, we tried to select the down position only to find that some of the windows would go down while the left rear door stayed up. We tried directly using the window switch on the left rear door, but the window refused to go down. We decided that we would remove the left rear switch and replace it with the right rear switch to confirm that the left door switch was defective. The results were that the left rear switch needed to

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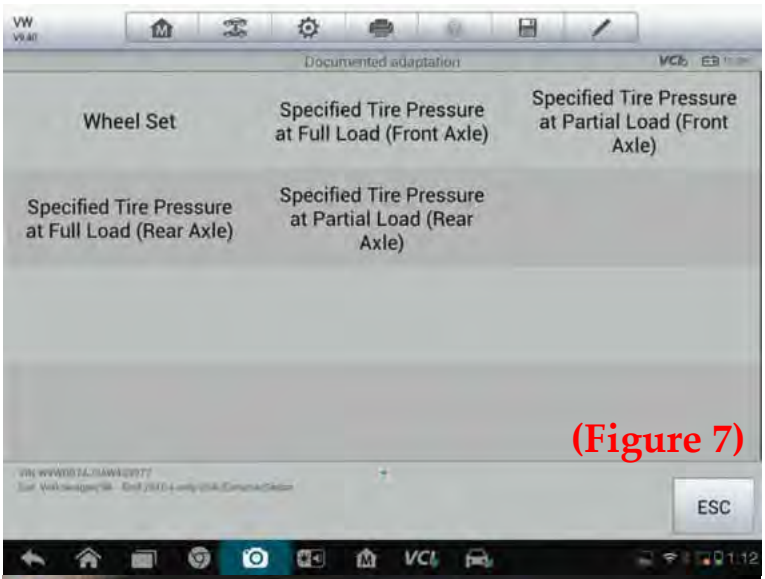
"Dealing With Europeans" (con't from p. 11)

be replaced so we now concentrated on the master door switch making sure that all the functions operated as designed.

(Figure 6)

As we were test ing the master switch, we found too many inconsistences that led us to the decision of ordering a master door switch along with one window switch. The switches were installed allowing the windows to work properly and were no longer just going all the way down on their own anymore. The X5 owner left happy, but was not certain that the windows would no longer go down on their own. We called her twice, once a week after the repair and the other time about a month later to check and make sure that she no longer experienced any problems.



(Figure 7)

Six months forward we received a call from the BMW owner explaining that her X5 windows went half way down while she was in line at Whole Foods. This was the first time that the windows have not stayed in the closed position, she explained. We asked her if she was in close proximity of the vehicle when this happened, our thinking was that she had her key fob in her bag, something hit the key fob down window command. She replied that the key fob was in her hand with some groceries that she was purchasing. She continued stating that we did not fix her BMW correctly since the windows were not staying closed.

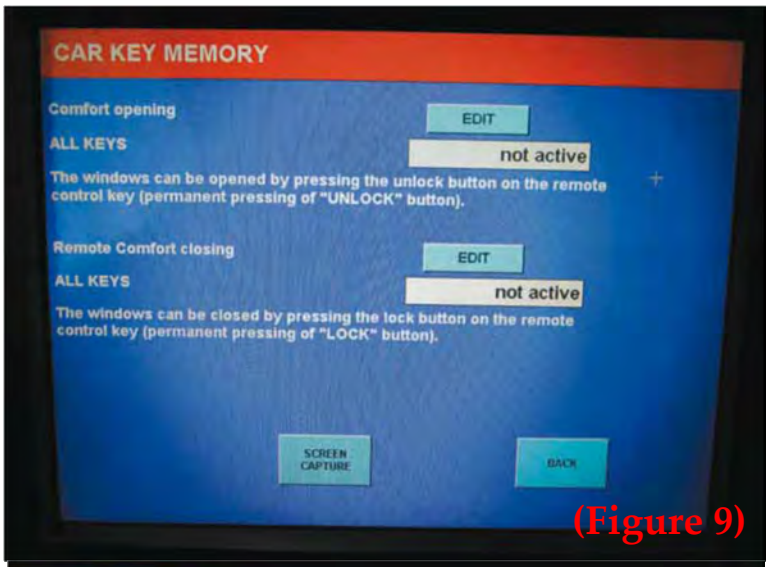

(Figure 8)

(Con't on page 19)

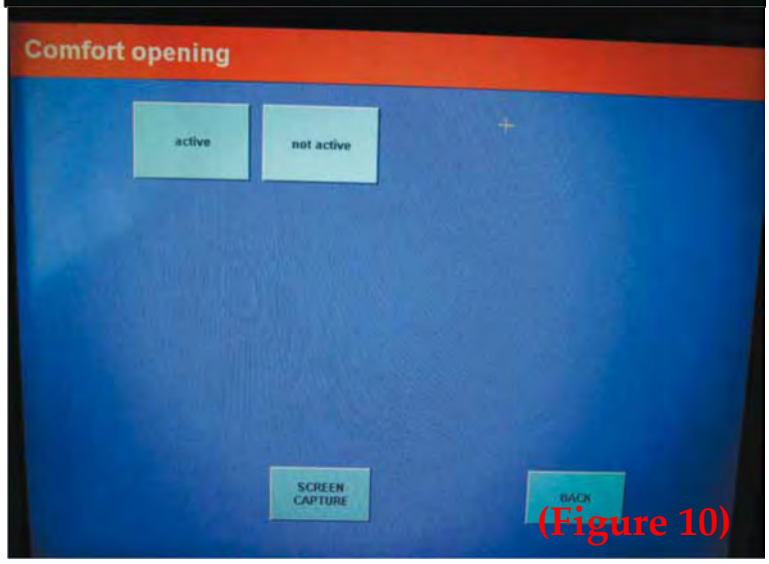
"Dealing With Europeans" (con't from p. 17)

We tried to calm her down and explain that it seems like a different problem than the one we repaired since all the windows now only went halfway down. She proceeded to tell us that all the windows returned to the fully closed position when she selected the up position on the master switch. She would not accept the explanation and stated that she was unhappy since we did not fix her vehicle correctly.

After some time on the phone, Bill finally convinced her to bring the vehicle in and leave it with us so we could observe the windows. We told her we would run a complete scan of all the computer systems on her vehicle and monitor the windows. After checking the X5 out with our scan tool, we found that all the systems were working as designed and the windows did not go down on their own. We suggested that we remove a function from her key fob that allows for the windows to go halfway down. She disagreed with us and insisted that her key fob could have not caused the windows to go down until we told her that we could prove it to her, since it is a function on her BMW X5. We once again asked her for approval to remove the function from the key fob we had for the vehicle. Bill told her that when she came to pick the vehicle up we would show her with the other key fob she had for the BMW that we could command the windows half way down repeatedly. Finally, she agreed to grant us permission to remove the command from the fob and body controller. We connected our scan tool **(Figure 9)** and removed the Comfort opening from the vehicle Car Key



(Figure 9)



(Figure 10)

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"Dealing With Europeans" (con't from p. 19)

Memory **(Figure 10)** options.

When she arrived at the shop to pick the BMW up we showed her what most likely happened when she was in Whole Foods. The owner stated that she was not aware that the vehicle had that function and thought it best to remove it. We granted her request and returned the X5 to her at no charge since she was previously so upset. In the automotive business, it's not always black and white, and as a shop owner sometimes we cannot fix the customer, but rather we have to make them happy to retain them as a customer. Since she was now satisfied, we were able to sell her a 12-volt battery after explaining it was weak, along with showing her the results of the battery test we performed. In this case, even though we did not make money on her windows, we were able to retain the customer and make money on a battery that she needed.

2012 Mercedes-Benz Not Blowing

A good customer of ours came in with his 2010 MB C300 that had a complaint of his blower fan not working. As you know, it's not the days of your father's Oldsmobile where it would be a 10-minute job to check the resistor or blower motor. Working on a newer vehicle is a different story where there are sensors, actuators, control heads and a computer that now controls the operation of the blower fan. Bill started his diagnosis by connecting the scan tool to the Benz and checking for body DTCs, but found none. He followed this by going into the bi-directional part of the scan tool to see if the blower fan could be commanded on. Since there was no action from the blower motor, Bill decided to go to the load first, ruling out the blower motor by applying power and ground from his Power Probe. As luck would have it, the motor was blowing but not at full force, so Bill tapped it and heard a difference of air volume. Just to make sure it was the motor, he removed it and tapped on the side of the motor with a screwdriver handle. The results: the blower motor would sometimes stop or blow at a speed that did not seem to be its maximum. We ordered a new MB blower from WorldPac and when it arrived we compared the new against the original one. Watch the results at MotorAge.com/MBblower, and you can see that a resistance test

(Con't on page 21)

"Dealing With Europeans" (con't from p. 20)

that confirmed the blower motor was in fact defective. The difference with the Power Probe connected to each is easily displayed. Bill installed the new blower motor **(Figure 11)** and tested all of the settings before returning the vehicle to the owner. Now the Benz blows just fine.

(Figure 11)

Article By
"G" Jerry Truglia
TST Founder and President
ASE World Class Triple Master
Auto, Truck, School Bus L1, L3, F1, X1, C1,Technician

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