VDSPro

Instruction Manual

Version 2.09

October 17, 2000

Table of Contents

DISCLAIMER

All information contained in this document is correct to the best of our knowledge. Errors may occur, therefore Baum Tools Unlimited Inc. makes no warrantee, guarantee or assurance that damage may not occur from the use of this information or equipment. The user takes all responsibility for its use.

LIMITATION OF WARRANTIES AND LIABILITY

The product is provided on an "as is" basis, without any other warranties or conditions, express or implied, including, but not limited to, warranties of merchantable quality, merchantability or fitness for a particular purpose, or those arising by law, statute, usage of trade, or course of dealing. The entire risk as to the results and performance of the product is assumed by you. Neither we nor our dealers or suppliers shall have any liability to you or any other person or entity for any indirect, incidental, special, or consequential damages whatsoever, including, but not limited to, loss of revenue or profit, lost or damaged data or other commercial or economic loss, even if we have been advised of the possibility of such damages, or they are foreseeable. We are also not responsible for claims by a third party. Our maximum aggregate liability to you and that of our dealers and suppliers shall not exceed the amount paid by you for the product. The limitations in this section shall apply whether or not the alleged breach or default is a breach of a fundamental condition or term or a fundamental breach. Some states/countries do not allow the exclusion or limitation of liability for consequential or incidental damages, so the above limitation may not apply to you.

ACKNOWLEDGMENT

Products mentioned in this manual are mentioned for identification purpose only. Product names appearing in this manual or in the Scanner screen may or may not be registered trademarks or copyrights of their respective companies.

VW is a registered trademark of **Volkswagen AG**, Germany.
Audi is a registered trademark of **Audi AG**, Germany.
SEAT is a registered trademark of **SEAT S.A.**, Spain.
SKODA is a registered trademark of **SKODA automobilova a.s.**, Czech.

*NOTICE

The specifications, information, and illustrations contained in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

This instruction manual tells you how to use the VDSPro software to perform diagnostic tests and find possible locations of vehicle problems. It does NOT tell you how to correct the problems. Consult the manufacturer vehicle service manual or other publication for repair instructions.

To take full advantage of the software, you should be knowledgeable and well trained in each of the vehicle computer control systems described in this manual.

Service data that appear to be non-functional on some vehicles may be due to vehicle manufacturing design changes. Always refer to the manufacturers specification for the month and year of production of the model in question.

INTRODUCTION

VDSPro Diagnostic Software consists of a suite of programs allowing you to communicate with and analyze diagnostic information from the Volkswagen, Audi, Seat or Skoda automobiles from the 1988 096/097 automatic transmission controllers through the ME7.X engine controllers used in 2000 later model vehicles, as well as a variety of other chassis, body and convenience feature computers.

VWTool.exe - This is the diagnostic program that communicates with the cars electronic system controllers.

DataView.exe - Software that allows you to view, analyze and print the captured data block information files from VWTool file that contains the saved block data from VWTool.exe.

ConfigVW.exe - Select the communications port and display units.

The package includes

- 1 3.5" diskette containing:
  - VDS-PRO Diagnostic Software version 2.09
  - DATAVIEW Analysis Software
  - CONFIGVW Port Selection Software
- Electronic Interface Cable (RS232 to ISO)
- Adapter for 1988-93 VW and Audi's
- Adapter for 1994-98 VW and Audi's (OBD II)
- this Software Users Manual

System Requirements

- IBM compatible 486/33 or better processor
- Windows 3.1, 3.11 or Windows 95/98/NT (100Mhz minimum CPU necessary)
- 4 Meg. Ram
- 1 Serial Port

SOFTWARE INSTALLATION

- Start **Windows** (version 3.11, 95 or 98)
- Insert the VDSPro Installation disk into drive A
- From the Program Manager, choose **Run** from the File Menu
- Type **a:\Setup** and press Enter

The Setup program will decompress and copy all files to the directory you have selected. These include certain DLL files needed by Windows to run the programs. If these files are already present on your machine then you will be prompted that they may be in use. Follow the on screen prompts to finish loading the program.

The Setup Program will then run the **ConfigVW** program. The ConfigVW program will allow you to select the serial communications port to use and whether to display the speed and temperature in **English** or **Metric** units. The Setup program will then create a Program group called VWTool and install three icons for the programs.

Common Installation Problems

The most common installation problem is serial port interrupt conflicts. On an IBM PC com1 and com3 share an interrupt, com2 and com4 share another interrupt. This means that if you use com1 for the OBDII interface and there is any serial device on com3, the software will not work due to the serial device on com3 stealing the interrupt. Remove the serial device on com3 to correct the problem. Laptop users, beware of Infrared Ports on some newer laptops. This port can be mapped over one of the serial ports or may be set to "poll" all interupts. This can cause interrupt conflicts and loss of communications by the software. The address and interrupt used by the infrared port is set in the BIOS of the laptop. It is best to disable the Infrared port during the use of the VWTool program.

Need a longer cable? The white cable included with the VDSPro software is a standard 9 pin serial extension cable, also known as an RS232 DB9 serial cable. These cables can be purchased at most computer stores in variety of lengths. We recommend not exceeding 50 feet as some controllers use very low voltage levels for communications. If longer lengths are needed use only the highest quality cable available.

SAFETY

If you use the **VWTool** communications software in a laptop for analysis while driving, **use a second person to observe the computer screen**.

At 30 mph a car travels 44 feet/sec. You cannot look at the computer screen, refocus your eyes, read the screen, and refocus your eyes back to driving, in any reasonable length of time. Even a glance will divert to much attention from driving.

Use a second person when doing drive tests!

There are electrical and mechanical hazards that are unique to each vehicle model type. Consult the factory workshop manuals and all service bulletins for the vehicle you are working on. Workshop manuals can be purchased at reasonable cost at the following sources:

Baum Tools Unlimited Inc.
PO Box 5867
Sarasota FL 34277-5867
800-848-6657 Toll Free USA/Canada
941-927-1414 Intl.
941-927-1612 Fax
www.baumtools.com
sales@baumtools.com

Call or write for a complete listing.

Bentley Publishing
1033 Massachusetts Ave.
Cambridge, MA 02138
800-423-4595

FedWorld
www.fedworld.gov/cleanair

The VDS Diagnostic Software System has been designed as an alternative to the VAG1551 and VAG1552 Volkswagen/Audi Diagnostic Analyzers. VDS software is IBM PC compatible and adds user friendliness, data storage and graphing capabilities to all the features previously only found in the factory tools.

The VW/Audi Diagnostic program covers the following controllers

Engine
Transmission (Auto)
Brakes (ABS 3 and Later)
Airbag (SRS 2 and Later)
AC/Heating
Electronic Clutch
Suspension Control
Instrument Cluster (Including Service Interval Reset)
ASC (Anti-slip Control)
Automatic Roof Control System
Anti-theft System
Central Locking System
Power Seat Adjustment Control
Electronic Diesel Pump Control
Leveling Control
Interior Monitor
Headlight Range Control
Steering Wheel Control
Convenience Features
Radio
Seat/mirror Adjustment
Parking Aid
Auxiliary Heater

Features include

- Read and reset Error Codes
- Activate Components
- "One Button" Service Interval Indicator Resetting
- Alter Adaptation Values
- Set ECU to Basic Values
- Read Individual Data Block Values
- Recode ECUs
- Graphically Display, Store and Recall component values during road testing.
- 2 hour 'Flight Recorder' for extensive glitch capture.

Values that can be recorded include

- O2 Value
- RPM
- Throttle Angle
- Ignition Angle
- % Engine Load
- Engine Temperature
- EGR Temperature
- Intake Air Temperature
- IAC Value
- IAC Duty Cycle
- Speedometer Reading
- O2 at Idle (Learned)
- O2 at High Speed, Low Load
- O2 at High Load
- Battery Voltage

VDSPro works on the following specific systems

Volkswagen engines

PG	DIGIFANT I	10/90-Newer
RV	DIGIFANT I	10/90-Newer
2H	DIGIFANT I	10/90-Newer
9A	CIS-E MOTRONIC	10/90-Newer
AAA	MOTRONIC 2.9/5.9	1992-95/1996-Newer
ABA	MOTRONIC 2.9/5.9	1992-95/1996-Newer
ACC	MONO MOTRONIC	1993-Newer

All 1998 and newer engines.

Audi Engines

3A	1989-90
3B	1990-
7A	1990-
AAN	1992
ABH	YES
MC	MID 1989
MC	MID 1989
NF	California models only
NG	1988-
PT	1990

All 1998 and newer engines.

All diagnosable optional subsystems on these models (automatic transmission, ABS, SRS...etc).

*Other engines do not have high speed output. Such engines may be diagnosed with the jumper wire supplied under the rear seat.

A more complete listing of applicable controllers is in Appendix B page 28.

The program is 16 bit. It has not been tested under OS/2.

SELF DIAGNOSIS OPERATION

All electronic control systems in a car function in similar ways. The sensors supply information to the control unit as to the present operating state of the vehicle. The control unit analyzes this information, applies a control strategy, then adjusts the output elements, to achieve the desired results. The control unit then takes inputs from other sensors to detect weither the adjustment is correct to maintain optimal operation. These sorts of sensors include exhaust Oxygen (O2 or Lambda sensors) and pressure sensors.

An example of this type of control system is the engine coolant temperature. The modern day car is required to start and run smoothly under all conditions, cold to hot and idle to full load. The control unit requires information regarding the engine temperature in order to make decisions on how these functions are to be performed. This information is supplied by the Engine Coolant Temperature (ECT) sensor (G62). The ECT sensor is located so that it is in the constant flow of engine and measures the temperature of the engine. The ECT then sends this engine temperature to the control unit in the form of a voltage level. The control unit then applies the strategy determined by the factory engineers to regulate the proper ignition angle, injection timing, and idle speed stabilization. The controller then adjusts these output control elements. The engine temperature is also used by several other system functions, such as:

Knock control system (KS)
Lambda control system (Fuel mixture)
Fuel tank ventilation system (EVAP)
Exhaust gas recirculation system (EGR)

The Engine Coolant Temperature Sensor is a Negative Temperature Coefficient (NTC) thermistor which reduces its resistance as the temperature increases. This means that the voltage measured at the controller increases with increasing temperature.

The measuring range is -35 ^{0}C to 120 ^{0}C. This is specified by the software in the controller and any temperature higher or lower is considered as faulty or as an implausible (out of range) reading. The fault is then stored in the fault memory of the controller. This type of fault is known as a **Component Malfunction Fault**.

The controller stores three numbers for each fault it detects. First is the Fault Source which describes the component that was checked. Second is the Fault Type which is information regarding the electrical state at the time of the fault (Open, Short, High, Low, Etc.). Third is whether the fault is permanent or intermittent. A fault is only stored as permanent if it is present for a specified period of time.

If the controller recognizes that the temperature signal is no longer being received, it will substitute a value (e.g. 80 ^{0}C), to ensure continued operation and “log” a fault in the fault memory of the controller. This sort of substitution will cause rough running during the cold start and during the warm-up phase.

The Service Tool will interrogate the controller fault memory, read the fault numbers, translate the numbers into text and display the text on the computer screen.

Example #1:

00522 Engine Coolant Temperature Sender - G62
Open circuit / Short circuit to positive (/ Intermittent)

now known under OBD-II (includes VAG and SAE code) as

16500 P0116 Engine Coolant Temperature Circuit - G62
Range/Performance Problem (/ Intermittent)

This fault is due to the engine coolant input reading 5 volts. This would correspond to a temperature of minus 35 (-35) ^{0}C.

There are two possible causes:

There is an open circuit in the wiring. As a result of the “pull- up” resistor in the controller, the engine temperature sensor indicates a voltage of 5 volts.

A short circuit in the wiring to battery voltage, will also result in a 5 volt reading at the engine temperature controller input.

The controller is not able to distinguish between the two possible causes of the fault. The "/ Intermittent" tells you that the fault occurred for brief period of time and is possibly due to a loose connection.

Example #2:

00522 Engine Coolant Temperature Sender - G62
Short circuit to earth/ground

now known under OBD-II (includes VAG and SAE code) as

16501 P0117 Engine Coolant Temperature Circuit Low Input - G62

The voltage of the engine temperature input is 0 volts. This would be a temperature of greater than 120^0C. This fault is possibly due to worn insulation in the wiring harness or a defective sender.

If the adjustments made by the control unit are insufficient to maintain optimal operation or allow exhaust emissions to exceed standards then a **System Malfunction Fault** will be stored.

Examples of system malfunction faults are found in the;

Lambda Control System
EVAP Control System
Secondary Air System

etc...

These codes are the result of conditions not being met to maintain proper operation of the engine.

One of the most common System Malfunction Faults is the Oxygen Sensor (Lambda) Control Fault.\

Example #3:

00537 Oxygen Sensor (Lambda) Control

now known under OBD-II (includes VAG and SAE code) as

16554 P0170 Fuel Trim - Malfunction (Bank 1)

This code is stored when the controller detects excessive deviations in the air-fuel mixture (too rich or too lean) for longer than 10 seconds. This is may be caused by faulty O2 sensor, in which case an O2 sensor code is stored as well.

Other possible causes are:

Fuel tank ran empty
Incorrect Fuel Pressure
Injector valve defective or coked
Engine Temperature Sensor defective
Secondary air leak
Fuel evaporation control system defective
Air Mass Meter defective
O2 sensor aging (slow response)
Combustion disturbed by mechanical failure (Spark plugs, compression, intake/exhaust valves, ...etc.)

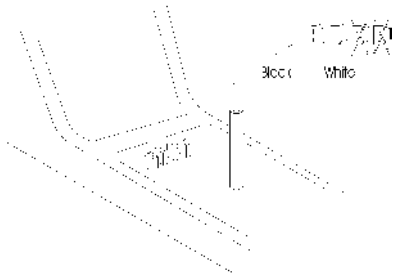
Please note, the controller detects faults in input or output circuits. An electrical circuit consists of: wiring harness, connectors, and sensors. To troubleshoot a specific circuit consult the workshop manuals for detailed test instructions and troubleshooting.

GETTING CONNECTED

Connect the 9 pin RS232 DB9 connector to the serial port of the computer which will run the software. Next connect the appropriate connector to the vehicle under test.

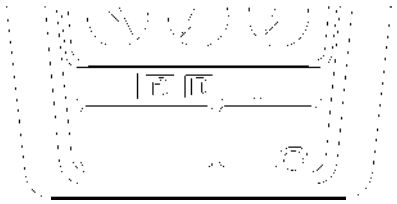
VOLKSWAGEN

Golf, Jetta, Corrado, Passat, Cabriolet (1988-93) Diagnostic connector is located in the gear-lever box. Remove shift lever cover. Connect the Black and White Service Tool Connectors to the matching connectors under the shift lever cover. For the Cabriolet model the Yellow connector is fr transmission diagnosis and the Red is for SRS.
For some Golf models, the connector is between the seats behind the ashtray.

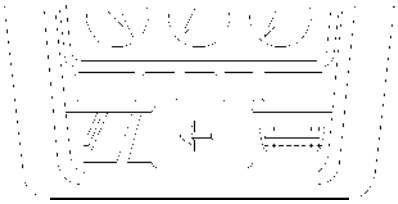


Some 1993 model year cars

Unclip the cover located below the heating / ventilation controls.
Connect the Black and White Service Tool Connectors to the matching connectors under the shift lever cover.



Golf, Jetta, Cabrio, GTI (1994-99) Diagnostic connector is located on center of the dashboard, beside the ashtray. Remove the ash tray and slide the cover to expose the OBDII connector.
Connect the 16 pin OBDII Service Tool connector.



Passat (1994-99) Diagnostic connector is located on right side of the instrument panel.
T4 Eurovan Diagnostic connector is located in the fuse box under driver side dashboard.
New Beetle Diagnostic connector is located under dash, left lower side above the clutch pedal.

AUDI

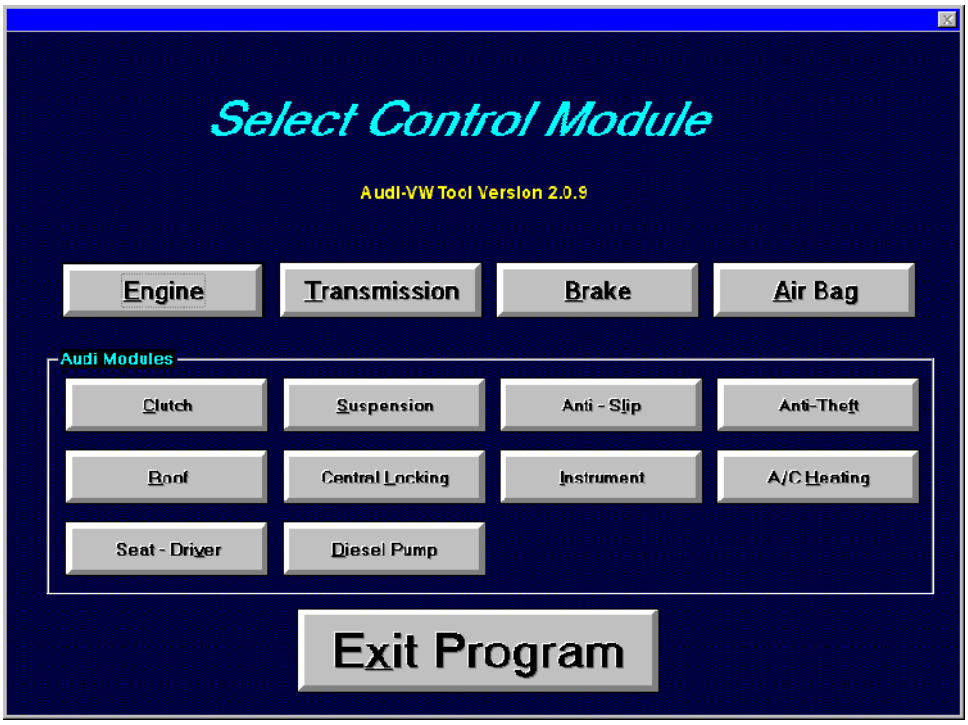
80, 90 (1989-93)	Diagnostic connector is located in the engine compartment, under driver side fuse box, in the drivers footwell near pedal cluster or behind stereo.
A3, A4 (1988-96)	Vehicle diagnostic connector is located in center console toward rear seat beside the ashtray.
100, A6 (1988-93)	Diagnostic connector is located in the engine compartment or under driver side fuse box.
100, A6 (1994-99)	Diagnostic connector is located in the center console next to the parking brake.
A8 (1990-93)	Diagnostic connector is located in the passenger footwell, under carpet.
A4, A8, Cabriolet (1997-00)	Diagnostic connector is located under dash, left of the steering column.
200	Diagnostic connector for SRS, below the climate control head and the ash tray housing.

Establishing Communications

Once connected to the vehicles diagnostic socket turn the ignition key on to the run position (KOEO) or start the engine (KOER). Now start the **VWTool** software.

The opening screen will be displayed allowing you to select the control module you wish to interrogate.

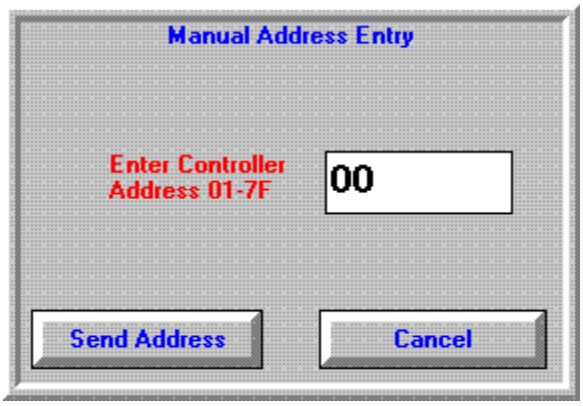
Select Control Module Screen



You can select which Control Unit you wish to communicate with by clicking on the appropriate button or by using the hot key (ALT + Underlined Character). The software will then attempt to establish communications with the selected controller.

If the control module is not listed it may still be possible to communicate with the controller by using the **Manual Address Entry** feature.

Manual Address Entry



To activate Manual Address Entry click once on the version number displayed on the main screen. This will activate the Entry screen.

Next you will need the decimal number for the controller you wish to query.

Below is a list of known controllers and their ID numbers.

Controller ID Number	System
08	Air Conditioning/Heating Controller
15	Airbag (SRS)
57	Airbag (SRS) - Cabriolet (1990-93) only
22	All-Wheel drive
18	Auxiliary Heating System
03	Brake Electronics (ABS)
45	Car Interior Alarm System
46	Central Comfort System Control
35	Central Locking System
12	Clutch Electronics
41	Diesel Pump Electronics
09	Electronic Switchboard
75	Emergency Call System
02	Gearbox Electronics
55	Headlight Control
25	Immobilizer
17	Instrument Cluster
34	Leveling Control
01	Motor (Engine) Electronics
37	Navigation System
76	Parking Control
56	Radio Control Module
36	Seat Position Control - Drivers Side
66	Seat/Mirror Memory System
47	Sound System
16	Steering Wheel Electronics
26	Sunroof Control
14	Suspension Electronics
65	Tire Pressure Monitor
24	Wheel Traction Control

Next press Send Address and the controller will be called.

If the controller does not respond it may be non standard or too new for the VDSPro software to identify. This is the case with many 2001 and later controllers utilizing the ISO14230 communications protocol.

The VWTool software will make three attempts to establish communications with the selected controller. The software will show the following Alert Box to inform you what it is doing.

Opening Interrogation Screen

Each attempt takes four seconds. If after three attempts the Service Tool cannot establish communications with the controller, the following Alert Box will be displayed and you will be returned to the Select Module Screen.

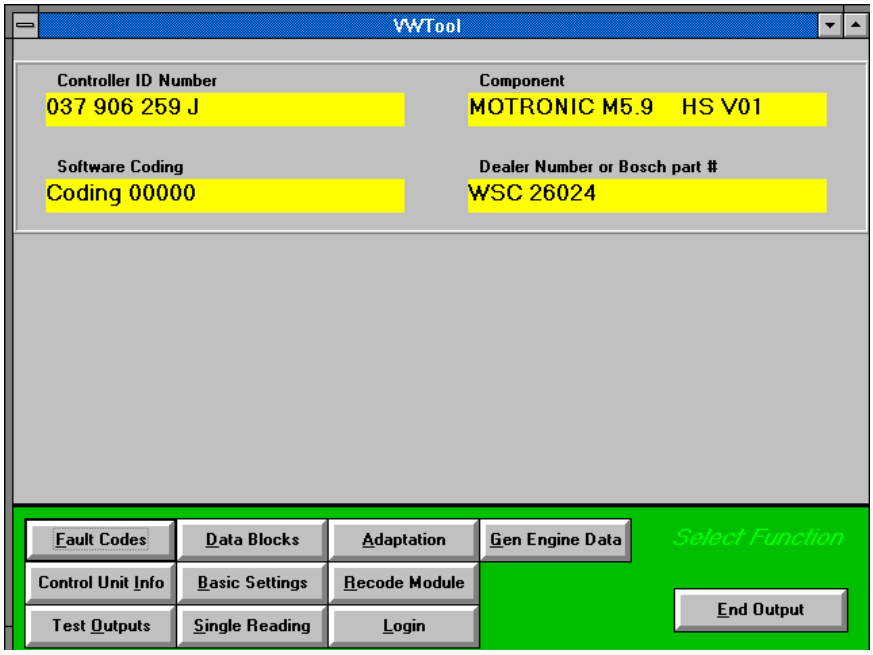
If communications with the controller cannot be established check the following items.

Ignition Switch is in the RUN position
The VDSPro Cable Connections are intact
The vehicle battery is at least 10 volts

If still no communication is received follow the troubleshooting in Appendix A (page 25).

When VWTool establishes communications with the select module, the Electronic Control Unit Identification Screen is displayed.

Control Unit Identification Screen



The top part of the screen will contain the control unit identification numbers. This information can be reread at any time by clicking the Control Unit Info button.

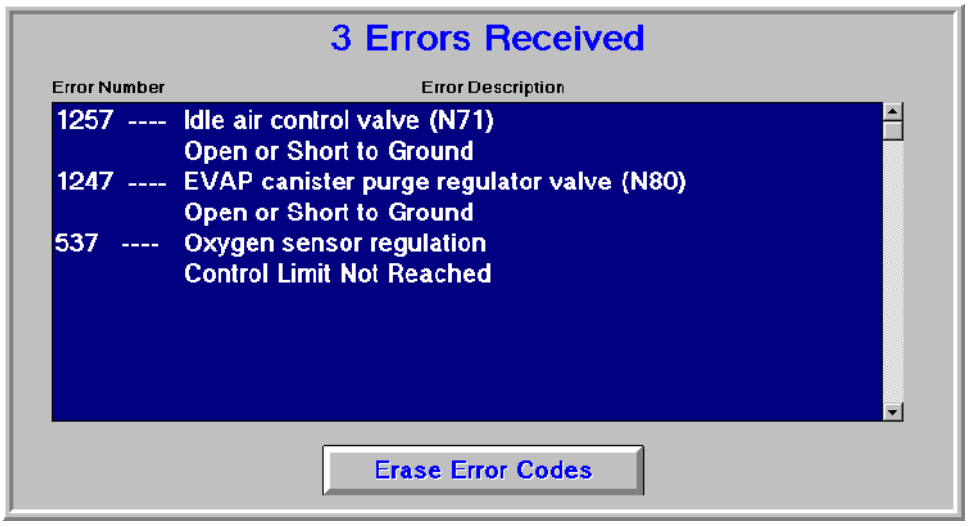
The bottom part of the screen contains the Main Function Buttons. These are the functions the software is capable of for this control unit type. Not all functions are supported by all controllers. Refer to the workshop manuals to determine which functions are supported for each controller. A partial listing can be found in Appendix B (page 28).

If you select an unsupported function, the Service Tool will display the Unknown Function Warning Box and return to the Control Unit Identification Screen.

The rest of this document will explain each function button.

VWTOOL FUNCTIONS

Fault Codes



The Fault Code function will interrogate the Control Unit and display the Fault Code Number (sometimes referred to as a Diagnostic Trouble Code or DTC), the Fault Source, and the Fault Type in the Display window. The top line will display

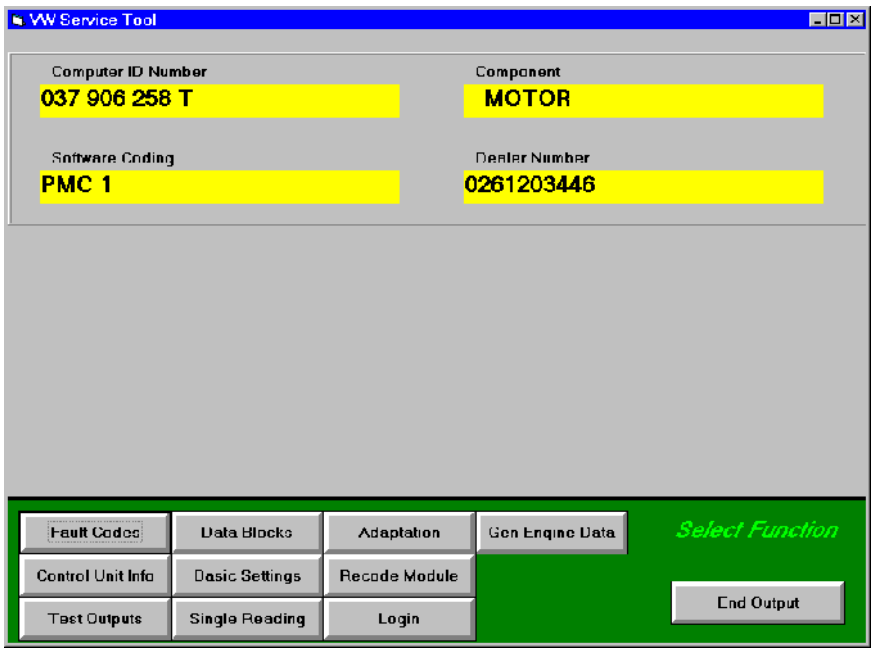
the total number of Faults detected. The scroll bars on the right side will allow the screen to scroll up or down if several faults are detected.

Note: Click on the scroll bar. If you hold down the mouse button for more than 1 second, you will lose communications with the controller and VWTool with have to reestablish communications.

Please refer to the workshop manual to determine the operating mode (Example: Engine running or engine off) to accurately read the Fault Codes.

To erase the fault codes, click on the Erase Error Codes Button. VWTool will erase the fault codes stored in the controller. Now wait 10 seconds, then re-interrogate the controller. The software will display any new or persisting fault codes.

Control Unit Information Function



This function displays the control unit identification numbers. The display appears when you first establish communications with any control unit.

The **Computer ID Number** box contains the VW part number of the controller.

The **Components Box** will contain the type of component (Engine, Transmission, Etc.) and the identification of the software being used by the control unit (If the software ID exists in the control unit). The **Software Coding Box** shows the current Coding of the Controller.

The unlabeled box on the lower right can contain two different types of numbers.

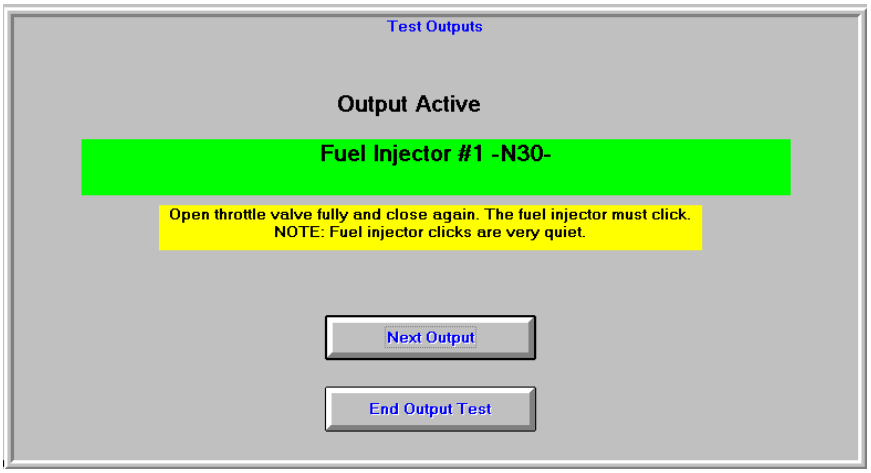
If the controller supports Software Coding, the box will contain the letters “WSC” and a 5 digit number. WSC stands for WorkShop Code and is the number of the last shop to code the controller. The WSC number for the manufacturer of the controller is WSC 00000. The assembly plants have numbers generally beginning with 6XXXX and each point of entry and each dealer is assigned a number.

Baum Tools Unlimited Inc. Inc. uses WSC #00222.

it is recommended that independent repair facilities use WSC #01283

If the controller does not support Software Coding, the box will contain the Bosch or manufacturers part number of the controller.

Test Outputs Function



This function tests the activation of electrical components by the controller. It can only be used when the ignition is in the Key On Engine Off (KOEO) position (engine not running). The **Output Active Box** will show which output is presently active (Output buzzing or output on) and any special notes will appear in the **Note Box**.

To change to the next output click on the **Next Output Button**.

The order in which the outputs activate is determined by the control module. To get the sequence of the outputs active, refer to workshop manual.

If the output shown in the Output Active Box is not active, check that output's plug connection, wiring harness, or the electrical/mechanical part for faults. When you are done with the Output Test Function, click the **END Output Test Button**, this will end communications with the controller and return you to the Select Module main screen.

Block Data Function

Data Display

The top four displays contain the data block information read from the car controller. This data has been scaled to real world units (Example: RPM, Deg C, mS injection time, etc.). A label describing the measured data will be displayed.

If the service tool software does not recognize the measured data, "Unscaled" will be displayed as the units and the raw data (0 - 255) will be displayed in the data display. If "Unscaled " is displayed check the workshop manual to determine what data is being measured for that block number.

Graph

The Raw Data (0 - 255) is plotted vertically for each data variable and is color coded to match the Data Display for easy identification. The graph will display 100 samples horizontally before scrolling. The graph is useful for showing trends, spikes, and O_2 response time.

The VWTool software reads a data block 3 to 4 times a second. This is determined by the Electronic Control Unit. The graph represents approximately 30 seconds of data.

This information can be continuously recorded to the PC (See **Save Data to File Button** on page 18) and reviewed using the **DATAVIEW** software package.

Remember, the graph is of the raw data (0 - 255), the data display shows the raw data scaled to real world units.

Change to Basic Settings
Click this button to go to the basic setting mode. This forces the controller to fixed values used for defaults when a component failes. (Example: The Evaporative purge system Off). Please refer to the workshop manual for more information on the effects the basic setting mode has on the controller.

***** Warning! ***** The basic setting must only be performed in the operating state recommended for the vehicle. For example, Engine temperature must be above 80 ^{0}C. For the recommended state refer to the workshop manual. Changing to Basic Setting when the engine is cold can cause stalling and even damaging knock conditions..

Block Selection
The Data Blocks are predetermined by the controller and are different depending on the make, model and system type. It is imperative to have the Factory repair Manuals in order to properly interpret this data.

There are three ways to select the block data to monitor.

Click the **Enter Block Number** text box and enter the block number using all 3 digits, then click the **Accept button**.

The software has been set up to allow easy access to the first 7 data blocks by just clicking on the block # button. To access all higher data blocks use the Next button or enter the data block number directly into the Enter Block Number text box.

Please refer to the workshop manual to determine what data blocks are available and the diagnostic interpretation and procedures that use the data.

Click on one of the Data Block Buttons. The first 7 data blocks are usually “General Controller Data”.

Click on the Next or Previous Buttons to scroll through data blocks.

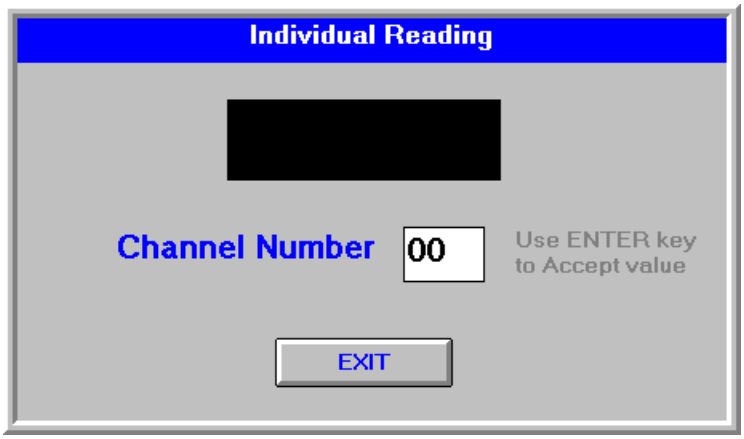
See Appendix C (page 33) for some sample Data Blocks.

Save Data to File Button
Selecting this button will save the incoming block data to the file “Capture.dat”. Click this button again to stop saving the data.

Note: When you save data to file the previous contents of “Capture.dat” are lost. Use DataView or DOS to rename “Capture.dat” file if you want to save the contents.

Main Functions Button
Clicking this button will return you to the opening Main Functions screen.

Single Readings Function



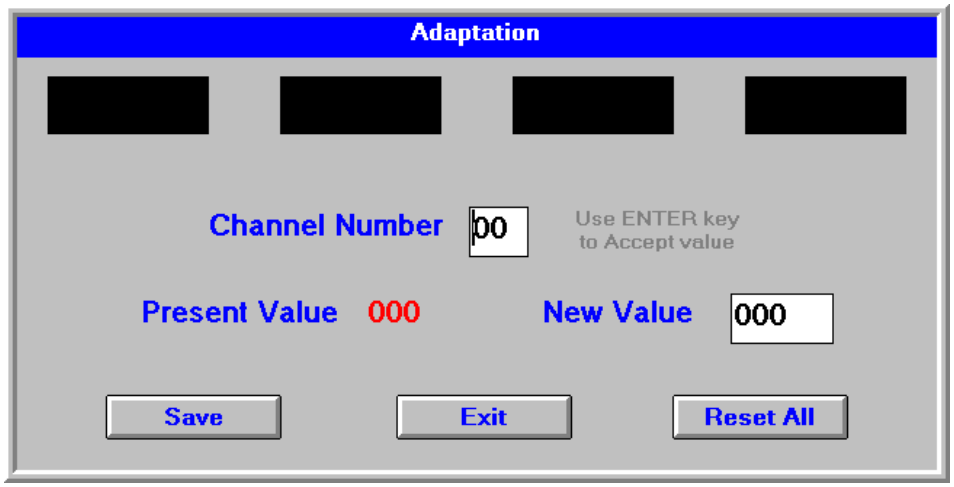
This function allows you to display an **individual data channel**. Individual channels that are supported by the controller are listed in the Factory Workshop manual.

To read an individual channel, click on the Channel Number Text Box and enter the desired channel number. Press the Enter key to accept the number.

The reading displayed is Unscaled (0 - 255).

Click on the Exit Button to exit the Single Reading Function.

Adaptation Function



Refer to the workshop manual on Adaptation before you attempt to use this function.

The **Adaptation Function** allows you to alter the learned correction values into the controller (Examples: Injector Open Time, Idle speed, etc...).

Adaption values are altered in three steps:

1. **Read Present Value**
2. **Test New Value**
3. **Store New Value in Controller**

Read Present Value - Select the **Channel Number Text Box** and enter the channel number (2 digits). Press the Enter key to accept the channel number. The VWTool software will interrogate the controller for the present value and any relevant data the controller wants to send. The relevant data (if present) will be displayed in the top four boxes. The present data value will be displayed in the Present Value Box.

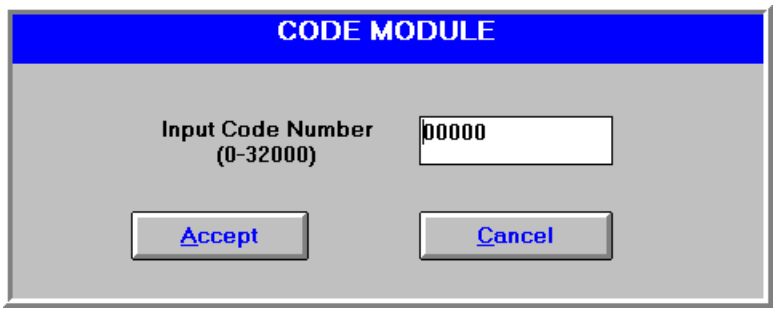
Test New Value - Click on the **New Value Text Box** and enter the new value to test (3 digits). Press the Enter key to accept the new value. The VWTool software will send the temporary new value and interrogate the controller. The Present Value display will change to the new value and the relevant data display will reflect how the new value affects the system.

Store the New Value in the Controller - If the new value had the expected result, you can make it permanent by clicking the **Save Button**.

If you do not want to save the new value and revert back to the original value, click the **Exit Button**.

If you want to reset ALL adaptation values to the original factory settings, click the **Reset All Button**.

Code Module Function



***** Warning! *** You must refer to the workshop manual when using this function.**

The Code Module Function enables you to adapt the operation of the electronic controller to different conditions.

Examples:

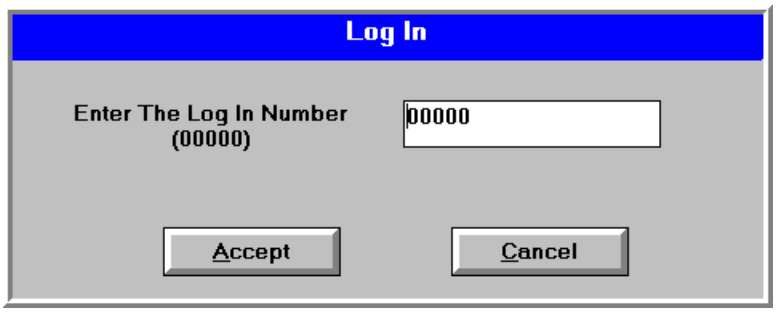
- Different engine and transmission combinations.
- Different fuel qualities.
- Different emission standards.
- Country of sale requirements.

Only the workshop manual or the VW/Audi technical site on the Internet will list the proper Coding for a particular model! The tech site is http://tech.vw.com .

To change the coding of a control unit, click on the Input Code Number text box and enter the new coding number. Click on the Accept button to change the Coding or the Cancel button to make no change and exit this function. If you click the Accept Button, the service tool will code or recode the control unit and display the Control Unit Information Screen. The software coding box will show the new Coding.

Note: On 1996 and later models you must do a successful **Login Function** before you can code or recode some control units.

Login Function



This function is used on later models (1995/96 up) and allows you to enter a WSC number or a password number (password numbers are contained in the workshop manual).

An example of controllers requiring WSC numbers are Engine controllers. Also Instrument cluster reset functions require the use of a Login WSC number.

Examples of controllers requiring password numbers are Climatronic A/C controllers and Radios.

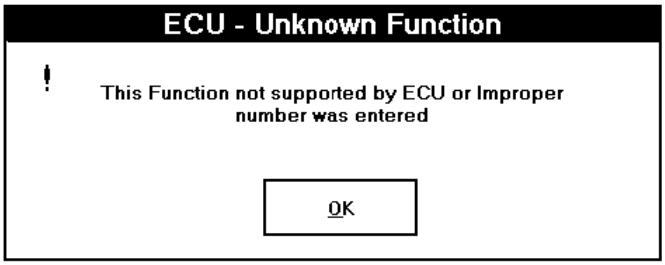
You must complete a successful Login to change the controller Coding. Note: you get only one chance to enter the correct number. If you enter the wrong number, turn Off the ignition, wait 5 seconds, turn On the ignition, reestablish communications, select the Login Function again and enter the correct Login number.

If a controller does not require a Login number it will respond with the Function Not Supported dialog box (page 21).

General Engine Data

This function displays Data Blocks 1-6 at the same time. The General Engine Data display gives an overall view of the present state of the engine. The General Engine Data Function only works on 93 and later Golf III's, Jetta III's, and 92 - up Corrado's. The update rate of this display is slower than reading an individual Data Block, but is faster and more convenient than scrolling through all six Data Blocks.

ECU Unknown Function



This warning box appears when the VWTool software tried to perform an illegal function or a function unsupported by the control unit.

There are three main reasons why the function cannot be performed.

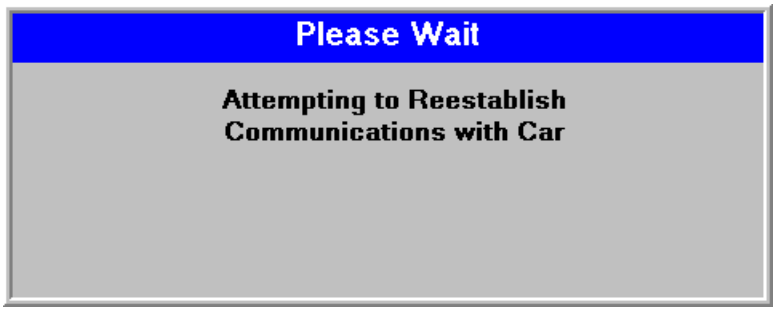
The control unit does not support this function.
Example: Mono-Motronic engine controllers and some ABS controllers do not support Block Data functions or data block funtions other than 000.

The Function cannot be performed at this time.
Example: The engine is running and you try the Test Outputs Function. (Engine NOT running and ignition ON, is the proper mode for the Test Outputs Function.)

You entered an improper number.
Example: Data Block #999, Individual Reading Channel #999.

Check the workshop manual for the proper procedure and / or functions available for a particular model.

Reestablish Communications Alert



This Alert Box will appear if the VWTool software has lost communications with the controller. The software will make three attempts to reestablish the communication link and continue with the present function.

If you receive frequent Reestablish Communication Alerts, Please check the following possible causes.

Check all connections on the interface cable.
Check that the vehicle voltage is at least 10.0 volts.
Check that the cable is not near - spark plug wires, ignition coil, electric motors, or fluorescent lights.

If you are using a IBM serial extension cable with the VDSPro interface, it should be less than 100 feet and of the highest quality possible.

Maximum allowable resistance in the cable is 12ohms over the entire length.

DataView Program

Open File
From the File Menu select Open. Choose the file you wish to view. The data will be displayed on the screen.

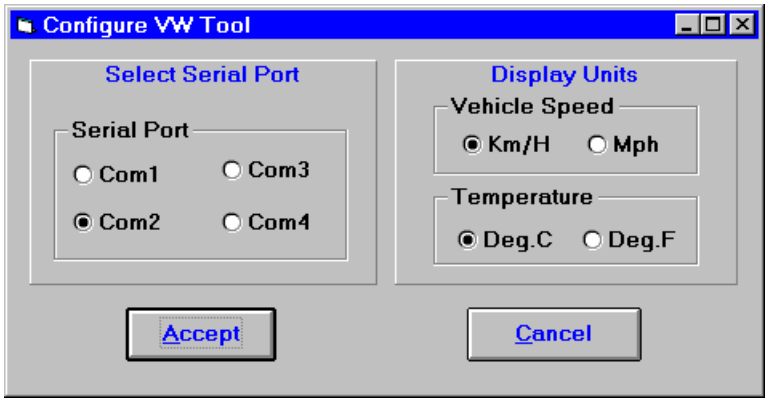
Cursors
Use the left or right cursor scroll bars to move the cursors to any data point of interest. The data at the cursors will be displayed in the display boxes. On the cursor scroll bars, click on the arrow to move one data point at a time, Click on the area between the arrow and the position indicator to move 20 data points at a time, and click and hold the position indicator to move larger increments.

Zoom Buttons
The Zoom IN button will redraw the graph with the data between the cursors. The Zoom All button will display all the data in the file. Use the Zoom buttons to magnify a data point of interest.

Print Screen
The Print Screen button will send a bit map of the screen to the default Windows printer.

File Save as
The File save will allow you to save the present data to any file name. Use this command to rename the “Capture.Data” file to another name. Remember the “Capture.Data” file is erased every time the block data Save to File in VWTool is used.

Configure Program



The Configure program allows you to select the communications (serial) port that the interface cable will use.

You can also select the display units (Metric or British Units) for Vehicle speed and Temperature.

The Accept button will store the selected setting in the VWTool.ini file which is read every time the VWTool program is started.

The Cancel button will exit the program and not save any changes.

APPENDIX A

Troubleshooting
VDSPRO

Installation Problems:

Q: The error message "Cannot access A:\XXXXX.DLL because destination file is already in use." appears and when I click on OK the installation process halts. What's wrong?

A: This most often occurs when running the Windows 98 SE operating system. The error message means that Windows is currently utilizing one of the "Run Time Libraries" needed by Visual Basic applications. To successfully install, shut down Windows and restart in "Safe" mode. To enter "Safe" mode press and hold the CTRL key after the Bios status screen (most computers issue a beep sound after the bios status message). Then just continue installing the software.

Q: After installing the new version of VDSPro I still get the old version when I start the program. What's wrong?

A: Delete all the programs in the VWTOOL directory then reinstall the software.

Running Problems

Q: I can't get the program to communicate with the car.

A: Here are some things to check.

1) Check that the car is equipped with on board diagnostics (OBD) or OBD-II. This can be determined by the presence of a CHECK ENGINE, MIL or SERVICE ENGINE light display on the dash. Cars without this feature do not have VW/Audi OBD or OBD-II. For OBD-II vehicles verify the presence of the J1962 (16-pin) OBD-II socket in under the dash, along the centerline of the car or in the dash. Confirm the presence of pin #7 and pin #15. Note: After 1995 not all vehicles require pin #15, but all must have pin #7.

2) Next, verify the presence of a COM port on your computer. COM or serial ports are 9 or 25 pin male connectors. Printer ports are 25 pin female connectors. Printer ports cannot serve as serial ports. The 9 pin connector on the computer is traditionally specified as serial port COM1, built-in Modems are traditionally designated serial port COM2. Infrared serial ports should be disabled.

3) Check for other COM port devices. These devices can include:
MODEM or FAX/MODEM
MOUSE
NETWORK CARD
GPS CARD

4) Verify the serial port COM specification is available to software.

Windows 3.1 or 3.11 - Choose the MAIN program group. Double click on the MS-DOS PROMPT icon. Type MSD and press ENTER. This will start the Microsoft Diagnostic Software. After analyzing your system, the program will inform you that Windows is currently running. Choose OK. The program will then display a screen which will show the system components. Look for COM Ports on the right hand column of the screen. It should show at least 1 COM port. Press the C key and the COM Port information will be displayed. The address of the COM ports should correspond to the following chart. Press ESC. Now press Q. This will display the INTERRUPT (IRQ) numbers.

The interrupts should correspond to the following chart.

Port #	Address	Interrupt
COM1	03F8H	IRQ4
COM2	02F8H	IRQ3
COM3	03E8H	IRQ4
COM4	02E8H	IRQ3

Now press ESC and look for the MOUSE on the left of the screen. Press U. This displays the mouse information. If the mouse is a serial mouse there may be a conflict with the serial ports. Press ESC and check for network cards under the NETWORK section. If cards are present conflicts may occur with the serial ports.

Windows 95 - Choose CONTROL PANEL from the MY COMPUTER icon. Next choose SYSTEM. Choose the DEVICE MANAGER tab. Go down the list to PORTS (COM & LPT). Double click on the PORTS icon, then double click on the first Communications Port displayed. This should be COM1. Then click on the RESOURCES tab. The interrupt Request and Input Output Range should correspond to the chart above. Check the CONFLICTING DEVICE LIST at the bottom of the screen. It should report NO CONFLICTS. Repeat for all Communications Ports. Check for other devices such as MODEMS and NETWORK cards which may conflict with the serial ports.

Communication error messages returned by Windows

8006 - No COM port of this number is installed in the computer
8010 - Two devices are competing for the same COM port IRQ (interrupt request).
8013 - Device already open by another device. (Another device is already using this port.)

5) If all the above is satisfied, we next need to check for software conflicts. This can occur when TSR programs loaded at startup "POLE" the serial ports. First check for any programs started by Windows. These generally can be found in the STARTUP program group. Temporarily disable any programs you find. Reboot your computer and attempt a diagnosis as in step 2.

6) Next check the CONFIG.SYS and AUTOEXEC.BAT files for TSRs which may conflict. These can be anti-virus software, fax/modem fax software, DOS mouse drivers and network drivers. If you are unsure of what these files consist of please email or fax me copies at 415-566-0694 USA for analysis.

7) “Runtime Error 5" can be caused by corrupted DLL files, faulty disk drives or display drivers lower than 800x600 resolution. Most often resetting of the display to 800x600 resolution or higher solves this problem.

8) To see if any communications is occurring, start the program.

For VDS-Pro click once on the word SELECT in the opening screen. You will see no change at this time.
Next click on ENGINE to attempt communication.
Two boxes should appear at the top of the next screen marked TRANSMIT and RECEIVE.

The program should send a string of zeros to the cars computer. This can be seen in the TRANSMIT box. The RECEIVE box should go blank then show the hexidecimal (base 16) output from the car. If the communications fails, email the information strings found in the TRANSMIT and RECEIVE boxes to tech@baumtools.com for analysis.

9) “No characters received from interface. “ This usually indicates that the vehicle is not OBD-II compliant.

Using MSCONFIG

1. Go to START | RUN and type "msconfig" (without the quotes) in the "Open" box; click on "OK".

2. Under the General tab, click on "Selective startup"

3. Click on the Config.sys and Autoexec.bat tabs and remove all checks.

4. Click on the Win.ini tab, click on the "+" sign next to [windows] and remove the checks for any run= and load= entries.

5. Click on the Startup tab and remove all checks EXCEPT for ScanRegistry and SystemTray.

6. Click on "Apply" and restart the system. If the problem is resolved, you can add the checks back one at a time (restarting the system each time) until you find which entry is causing the problem. Once the program has been identified, then place all the checks back into the appropriate boxes.

ACCESSING THE BIOS

Bios Mfg.	Key to Depress
AMI	[F1] or [Del] on bootup
AST	[Ctrl]-[Alt]-[Esc] on bootup
Award	[Del] on Bootup
Compaq	[F10] on Bootup
Phoenix	[F2] on Bootup
IBM PS1 &Value Point	[F1] on Bootup
Other Systems	Unless the POST (Power On Self-Test) message displays the BIOS access method or it is written in the documentation; Qualtel, DTK, Kaypro, AST, IBM, NEC, NCR, and other older systems will either have a POST message or include a setup/diagnostics disk that includes a BIOS configuration procedure.

APPENDIX B

VW/Audi Controllers Ability Cross reference

Note: X or date represent feature is available, dash (-) represents not available. Chart is still under development .August 24, 2000

	ECU ID	Fault Codes R/C	Output Diagnostic Test Mode	Basic Setting	Read Data Blocks	Adaptation	Readiness Code	Individual Component Monitoring	Code ECM
ENGINE TYPE (Code can be found on vehicle data plate)									
1Z (diesel) 11/93-	X	X	X	X	X	-	-	-	-
2H DIGIFANT II (49 state)	-	-	-	-	-	-	-	-	-
2H (Digifant I) 10/90-9/92	-	X	-	-	X	-	-	-	-
3A CIS-Motronic 1989-90	-	Blink Only	-	-	-	-	-	-	-
3B Motronic MPI 3/90-		X	-	-	X	-	-	-	-
7A Motronic MPI 3/90-		X	-	-	X	-	-	-	-
9A (CIS-E Motronic) 1/90-9/92		X	-	-	X	-	-	-	-
AAA (M2.9) 1993-94	X	X	X	X	X	-	-	-	-
AAA (M5.9) 1995-97	X	X	X	X	X		X	X	X
AAB (diesel)	-	-	-	-	-	-	-	-	-
AAF	X	X	10/91-	10/91-	X			10/91-	
AAH Motronic MPI 11/91-	X	X	X	X	X	MMS 300 and higher		MMS 100, 200, 300 only	MMS 300, 411 only
AAN Motronic MPI 1992-	X	X	X	X	X				
AAZ (diesel) 10/93-	-	-	-	-	-	-	-	-	-
ABA (M5.9)	X	X	X	X	X	-	-	X	X
ABA (M2.9) 1994-95	X	X	X	X	X	-	-	-	-

	ECU ID	Fault Codes R/C	Output Diagnostic Test Mode	Basic Setting	Read Data Blocks	Adaptation	Readiness Code	Individual Component Monitoring	Code ECM
ABG (Digifant I) 10/90-9/92		X	-	-	X	-	-	-	-
ABH	?	X	X	X					
ABH Motronic MPI 1991		X	-	-	X	-	-	-	-
ACC (Mono Motronic) 10/92-95	X	X	?	?	X	-	-	-	-
ACU	X	X	X	X	X			X	
AEB (M3.8.2) 8/97-8/99	X	X	X	X	X	X	-	-	L
AEG ( )	X	X	X	X	X	X			L
AES (M5.9)	X	X	X	X	X			X	X
AFC Motronic MPI 11/91-		X	-	-	X	-	-	-	-
AFC Motronic MPI 11/91-		X	-	-	X	-	-	-	-
AHA (M5.9) 8/97-	X	X	X	X	X	X	X	-	X
AHH (Diesel) 10/97-2000	X	X	X	X	X	-	X	-	X
ALH (Diesel)	X	X	X	X	X	-	-	-	X
ALL 1988 CIS-E MODELS	-	Blink Only Use fuel pump relay jumper to pull codes	-	-	-	-	-	-	-
APH (ME7.5) 2/99-	X	X	X	X	X	X	X	-	X
ATQ (ME7.1)	X	X	X	X	X	X	X	-	X
ATW (ME7.5) 9/99-	X	X	X	X	X	X	X	-	X
CS (Diesel)	-	-	-	-	-	-	-	-	-
CV AFC	-	-	-	-	-	-	-	-	-
DH (Digijet)	-	-	-	-	-	-	-	-	-
GX (CIS/CIS-E)	-	-	-	-	-	-	-	-	-

	ECU ID	Fault Codes R/C	Output Diagnostic Test Mode	Basic Setting	Read Data Blocks	Adaptation	Readiness Code	Individual Component Monitoring	Code ECM
HT (CIS-E)	-	-	-	-	-	-	-	-	-
JH (CIS)	-	-	-	-	-	-	-	-	-
JN (CIS/CIS-E)	-	-	-	-	-	-	-	-	-
MC CIS-E (1 KNOCK) 1988-7/90	-	Blink Only	-	-	-	-	-	-	-
MC CIS-E (2-knock) 7/90-		X	-	-	?	-	-	-	-
MV (Digifant II)	-	-	-	-	-	-	-	-	-
MZ (CIS)	-	-	-	-	-	-	-	-	-
NF CIS-E III (CALIF)	-	Blink Only	-	-	-	-	-	-	-
NF CIS-E III (49 STATE)	-	NO	-	-	-	-	-	-	-
NG CIS-III 1988-90	-	Blink Only	-	-	-	-	-	-	-
PG (Digifant II)	-	-	-	-	-	-	-	-	-
PG (Digifant I) 10/90-9/92	?	X	-	-	X	-	-	-	-
PL CIS-E	-	-	-	-	-	-	-	-	-
PT	?	X	X	X	-	-	-	-	-
PT Motronic MPI 1990-		X	-	-	X	-	-	-	-
RD CIS-E	-	-	-	-	-	-	-	-	-
RV Digifant II	-	-	-	-	-	-	-	-	-
RV Digifant I 10/90-9/92		X	-	-	X	-	-	-	-
UM CIS/CIS-E	-	-	-	-	-	-	-	-	-
TRANSMISSION									
096	X	X		X	X				
097	X	X		X					
098	X	X		X	X				
01M	X	X		X	X				
01N	X	X		X	X				

	ECU ID	Fault Codes R/C	Output Diagnostic Test Mode	Basic Setting	Read Data Blocks	Adaptation	Readiness Code	Individual Component Monitoring	Code ECM
01P	X	X		X	X				
01V	X	X		X	X				
ABS									
Teves 02 ABS Grey or Blue Plug (1990-94)		Blink Only							
Teves 02 ABS/EDL White Plug (1990-94)	X	From 8/91							
ABS (1992-96)	X	X			X			X	
ABS/EDL (1996-99)	X	X	X	X	X				X
ITT MARK 20 IE 1998-2000	X	X		EDL only	X				X
ABS/EDL (Bosch 5.0) 1996-97	X	X			X				
ABS/EDL (Bosch 5.3) 1998-2000	X	X	X		X				
ABS/EDL/ASR (Bosch 5.3) 1998-2000	X	X			X				X
AIRBAG									
SRS	X	X			X				X
SRS (ZAE)	X	X							X
SRS (VW) 1998-2000	X	X			X	X			X
SRS (Audi) 1997-1999	X	X	X		X				X
SRS (Airbag 8) 1999-2000	X	X	X		X				X
CLIMATE CONTROL									
A/C	X	X	X		X				X
A/C (Audi) 1997-	X	X	X	X	X				X

	ECU ID	Fault Codes R/C	Output Diagnostic Test Mode	Basic Setting	Read Data Blocks	Adaptation	Readiness Code	Individual Component Monitoring	Code ECM
A/C Climatronic	X	X	X	X			X		X
BODY DIAGNOSTIC									
COMFORT SYSTEM w/Power Windows	X	X	X		X	X			X
COMFORT SYSTEM wo/Power Windows	X	X	X		X	X			X
Central Locking (Audi) 1996-2000	X	X	X		X				X
Ultrasonic Monitor (1997-2000)	X	X	X		X	X			X
ELECTRICAL EQUIPMENT									
Instrument Cluster (VW) 1998-2000	X	X	X		X	X			X
Instrument Cluster (Audi) 1996-99		X	X		X	X			X
Radio (VW)	X	X	X		X				X
Radio (Audi) 1998-2000	X	X	X		X				X
Anti-Theft Ignition Keys	X	X			X	X			L
Cruise Control					X				
Headlight Position	X	X	X	X	X				X
Seat/Mirror Adjustment	X	X			X				
Gateway Databus	X	X			X				

APPENDIX C

VW Data Blocks for Engine

Data Block Group: 000

Display Field:	1	2	3	4	5
Indicated	ECT	Engine Load	RPM	O2 Factor	LTFT
Specification (digital)	182-224	26-44	80-88	92-164	83-241
Corresponding Value	80-110C	1.3-2.2ms	800-880rpm	0.7-1.3	0.87-1.22

Display Field:	6	7	8	9	10
Indicated	STFT (Part Load)	STFT (Full Load)	Air Correction	Not Used	Ignition Angle
Specification (digital)	NA	92-164	114-154		93-76
Corresponding Value	NA	0.7-1.3	2.8-5.2Kg/h		2.25-15º

Data Block Group: 001

Display:	RPM	Engine Temperature (C)	O2	Ignition Timing
Indicated	Engine Speed	Engine coolant temperature	O2 sensor factor	Ignition (degrees)
Specifications	800-880 RPM	80-110C	0.7-1.3v	2.25-15

Data Block Group: 002

Display:	RPM	Injector timing	Charging System	Exhaust Temperature
Indicated	Engine Speed	Injection timing period	Battery voltage	Exhaust temperature in Celsius
Specifications	800-880 RPM	2.8-5.2ms	12.5-15 volts	127.4 C (lowest figure displayed)

Data Block Group: 003

Display:	RPM	Load Signal	Throttle angle	Intake Temperature
Indicated	Engine Speed	Engine load signal	Throttle valve angle	Intake manifold temperature
Specifications:	800-880 RPM	0-5%	5-19 Degrees	Approximate ambient temperature

Data Block Group: 004

Display:	RPM	Load Signal	Km/h	xxxxx
Indicated	Engine Speed	Engine load signal	Road speed signal	Operating mode (5 digit number)*
Specifications:	800-880 RPM	0-5%	0 Km/h	See footnotes

Data Block Group: 005

Display:	RPM	Kg/h	Duty cycle	Adjustment conditions
Indicated	Engine Speed	Learned value for idle stabilization	Idle control valve	Not determined as of present
Specifications:	800-880 RPM	2.8-5.2 kg/h	50-60%	N/A

Data Block Group: 006

Display:	O2	x.x	x.x	x.x
Indicated	O2 factor	Idle adaptation	Part load adaptation	Full load adaptation
Specifications:	0.7-1.3 volts	0.87-1.22 volts	N/A	0.7-1.3 volts

VW - PASSAT CIS/MOTRONIC 9A

The engine controller of the 9A 16-valve found in the 1992 Passat has very little real time data available in it's native data stream.

The one available data block, 000, contains the following in decimal 0-255;

Field	Description	Nominal Values	Value Range
1	Engine coolant temperature		0-255
2	Engine load		0-255
3	Engine speed		0-255
4	Idle stabilizer adaptive		0-255
5	Idle stabilizer working		0-255
6	Differential pressure regulator working		0-255
7	Differential pressure regulator adaptive		0-255
8	Vehicle speed		0-255
9	Switching values		0-255
10	Engine timing		0-255

Nominal values will be found in the Passat Official Factory Repair Manual for 1990-93.

Reading Individual Measuring Values Channel Numbers

Note: Disconnect EVAP canister purge regulator valve connector before checking channels 00 and 01.

Audi

Channel	Component	Range
00	Oxygen Sensor (02S) control factor for Cyl. 1-3	120-136
01	Oxygen Sensor (02S) control factor for Cyl. 4-6	120-136
02	02S 1 output voltage	300-600mv
03	02S 2 output voltage	300-600mv
04	Injection time, Cyl. 1-3	~2.3ms@idle
05	Mass Air Flow (MAF) sensor ground voltage loss	0-40mv
06	Duty cycle (control) for EVAP canister purge regulator valve -N80	0 (open)-255 (closed)
07	Duty cycle (control) for Idle Air Control (IAC) valve -N71	~128
08	Current regulation for IAC valve -N71	
09	Throttle valve angle	0 at Idle
10	EGR temperature (via EGR temperature sensor -G98-)	C
11	Throttle Position (TPS) sensor -G69- output voltage	12-25 ~19 at Idle
12	Ignition Map Switching	<128 Map 1 (Base) >128 Map 2 (Retarded Timing)
13	Ignition Timing with Knock Regulation and ISC	Ign. Timing in Crank Degree
14	ECM battery positive voltage supply (B+)	10.56-14.56 Volts
15	Current road speed	Km/h

Volkswagen/Audi
SRS (Airbag)
Data Block Definitions

Display Group No.	Display Field	Designation	Display Content	Definition of display content	Correction
001	1	Driver's Side Airbag Igniter - VW N95	1111 0111 1011 1101 1110	Resistance OK Resistance value too high Resistance value too low Short to Ground (GND) Short to positive (B+)	Check wiring by visual inspection. Check circuit connections for correct and secure fit while simultaneously watching display.
	2	Passenger's Side Airbag Igniter - VW N131	1111 0111 1011 1101 1110	Resistance OK Resistance value too high Resistance value too low Short to Ground (GND) Short to positive (B+)	If display content changes to 1111 (resistance OK), then erase DTC Memory. If wiring and connections are OK and a malfunction is still indicated (1111 is not displayed), erase DTC Memory conduct test drive and check DTC Memory again If display content still indicates a malfunction, replace igniter. If necessary, replace Airbag Control Module - J234.
	3	Left Seat Belt Tensioner Igniter - VW N153	1111 0111 1011 1101 1110	Resistance OK Resistance value too high Resistance value too low Short to Ground (GND) Short to positive (B+)	
	4	Right Seat Belt Tensioner Igniter - VW N154	1111 0111 1011 1101 1110	Resistance OK Resistance value too high Resistance value too low Short to Ground (GND) Short to positive (B+)	

Display Group No.	Display Field	Designation	Display Content	Definition of display content	Correction
002	1	Voltage supply (B+)	0 1	Voltage too low	Check Battery Positive Voltage (B+), Check Generator (GEN), Wiring Diagrams. Check wiring by visual inspection only

Volkswagen/Audi
ABS
Data Block Definitions

Volkswagen

Display Group No.	Display Field	Designation	Display Content	Value Not Moving	Units	Correction
001	1	Wheel speed - Left Front	0-255	2-6	Km/h	Check for variations in wheel speed between all sensors. Variation indicates damaged or polluted sensors or high wire resistance.
	2	Wheel speed - Right Front	0-255	2-6	Km/h	
	3	Wheel speed - Left Rear	0-255	0-2	Km/h	
	4	Wheel speed - Right Rear	0-255	0-2	Km/h	
002	1	Wheel speed - Left Front	2-255	255	Km/h	This is the speed at which the ABS controller detected activity in the pulse transmitters. This is a good indicator of properly functioning wheel sensors. Nominal values are 1-6 Km/h. High values indicate low voltage.
	2	Wheel speed - Right Front	2-255	255	Km/h	
	3	Wheel speed - Left Rear	0-255	255	Km/h	
	4	Wheel speed - Right Rear	0-255	255	Km/h	
003	1	Brake Pedal Not Depressed	0			This tests the brake pedal stop lamp switch and lamp circuit.
		Brake Pedal Depressed	1			

Audi

Display Group No.	Display Field	Designation	Condition	Display Content	Value Not Moving	Units	Correction
001	1	Wheel speed - Left Front		1-19	1	Km/h	Check for variations in wheel speed between all sensors. Variation indicates damaged or polluted sensors or high wire resistance.
	2	Wheel speed - Right Front		1-19	1	Km/h	
	3	Wheel speed - Left Rear		1-19	1	Km/h	
	4	Wheel speed - Right Rear		1-19	1	Km/h	
	5	Brake Pedal	Not Depressed	0			This tests the brake pedal stop lamp switch and lamp circuit.
		Brake Pedal	Depressed	1			
	6	Brake Pedal	Not Depressed	0			
		Brake Pedal	Depressed	1			
	7	Voltage at ABS return flow pump -V39-	Not Running	0			
			Running	1			No permissible
	8	ABS solenoid valve relay	Relay Open				
			Relay Closed	1			

In all Audi's, above 19Km/h (12mph) the OBD function of the ABS controller is terminated.

APPENDIX D - Control Unit Programming Code List

ENGINE CODING NUMBERS

VW

PASSAT 2.8L VR6 WITHOUT OBD-II

1 Manual Transmission without EGR
2 Automatic Transmission without EGR
3 Manual Transmission with EGR
4 Automatic Transmission with EGR

PASSAT 2.0L WITHOUT OBD-II

1 HS Manual Transmission with EGR and EVAP
2 AG Automatic Transmission with EGR and EVAP

PASSAT 2.8L VR6 WITH OBD-II

00000 Manual Transmission
00001 Automatic Transmission

PASSAT 2.0L WITH OBD-II

00006 Manual Transmission
00007 Automatic Transmission

JETTA/GOLF/GTI 2.0L WITH OBD-II

00000 Manual Transmission
00001 Automatic Transmission

EUROVAN 2.5L 5 cylinder

Not necessary to 1999.

EUROVAN 2.8L VR6 WITH OBD-II

00000 Manual Transmission
00001 Automatic Transmission

ECM codes for model year 2000 and later.

Engine	Manual	Automatic	ABS	Airbag	Code
1. 9 Liter TDI	No	Yes	Yes	Yes	00001
1. 9 Liter TDI	No	Yes	Yes	No	00001
1. 9 Liter TDI	Yes	No	Yes	Yes	00002
1. 9 Liter TDI	Yes	No	No	Yes	00002
1. 9 Liter TDI	Yes	No	Yes	No	00002
1. 9 Liter TDI	No	Yes	No	Yes	00004
1. 9 Liter TDI	No	Yes	No	No	00004
2.0 Liter	Yes	No	No	No	00001
2.0 Liter	Yes	No	Yes	No	00011
2.0 Liter	Yes	No	No	Yes	00021
2.0 Liter	Yes	No	Yes	Yes	00031
2.0 Liter	No	Yes	No	No	00003
2.0 Liter	No	Yes	Yes	No	00013
2.0 Liter	No	Yes	No	Yes	00023
2.0 Liter	No	Yes	Yes	Yes	00033

Golf, Jetta, Beetle 1999-2000

Vehicle Type	ECM Part # / EPROM Level	Vehicle Engine ECM Coding			
		5 Speed Transmission		AG4 Automatic Transmission	
		ABS	No ABS	ABS	No ABS
Tier1 w/cruise	06A 906 018 BG 06A 906 018 P / V07	00000	00040	00001	00041
Tier1 w/o cruise	06A 906 018 BH 06A 906 018 AE / V06	00000	00040	00001	00041
LEV w/cruise	06A 906 018 J 06A 906 018 CR / V03	00000	00040	00001	00041
LEV w/o cruise	06A 906 018 J 06A 906 018 CQ / V03	00000	00040	00001	00041

Tier 1 = Federal
LEV = 50 State

AUDI

AUDI 2.8L V6 MMS 300

CODING	TRANSMISSION TYPE	EQUIPPED WITH	NOT EQUIPPED
00000	Manual	Heated O2 Sensor, EVAP	EGR
00001	Automatic (AG4)		
00002	Automatic (HP18)		
00003	Manual	Heated O2 Sensor, EVAP, EGR, EGR Temp. Sensor, Speed Limiter	
00004	Automatic (AG4)		
00005	Automatic (HP18)		
00006			
00007			
00008			
00009	Manual		O2 Sensor, EVAP, EGR
00010	Automatic (AG4)		
00011	Automatic (HP18)		

AUDI 2.8L V6 MMS 311

1ST AND 2ND DIGIT	3RD DIGIT	4TH DIGIT	5TH DIGIT
Exhaust Gas Standard/Country	**Special Functions**	**Transmission Type**	**Vehicle Type**
00 = -	0 = Front Wheel Drive without ATC	0 = 5-Speed	0 = -
01 = USA with EGR	1 = Front Wheel Drive with ATC	1 = -	1 = 90, 90 Quattro
02 = Sweden and all countries not 01, 03, 04, 06	2 = All Wheel Drive without ATC	2 = Automatic (097)	2 = A6, A6 Quattro Sedan A6 Wagon A6 Quattro Wagon
03 = South Africa no O2 sensor	3 = -	3 = Automatic 097 (Phase 2)	3 = -
04 = European Union (EU) and Norway	4 = -	4 = Automatic (01K/01F)	4 = Cabriolet
05 = -	5 = -	5 = -	5 = -
06 = California (Frt. Wheel drive and Automatic trans. With EGR and EVAP	6 = -	6 = -	6 = -

ex. 01042 - USA, Frt. Wheel Drive w/o ATC, Auto Trans (01K/01F), Audi A6

AUDI 2.8L V6 MMS 400 WITH OBD-II

Not required. Coding of 01002 cannot be changed.

AUDI 2.8L V6 MMS 411 WITHOUT OBD-II

1ST AND 2ND DIGIT	3RD DIGIT	4TH DIGIT	5TH DIGIT
Exhaust Gas Standard/Country	**Special Functions**	**Transmission**	**Vehicle Type**
00 = With EVAP	0 = Front Wheel Drive without ATC	0 = 5-Speed Manual	0 = -
01 =With EVAP and Differential Pressure Sensor	1 = Front Wheel Drive with Automatic Traction Control (ASR)	1 = 6-Speed Manual	1 = A4, TT
02 = -	2 = All Wheel Drive without Automatic Traction Control (ASR)	2 = -	2 = A6
03 = -	3 = -	3 = -	3 = -
04 = -	4 = -	4 = Automatic (01K/01F)	4 = -
05 = -	5 = Front wheel drive w/ASR, ESP, CAN Bus	5 = 5-Speed Automatic	5 = -
06 = USA; TLEV With EGR and Secondary Air (AIR) Vehicle with LDP	6 = All wheel drive w/ASR, ESP, CAN Bus	6 = -	6 = -
07 = -	7 = -	7 = -	7 = -
08 = -	8 = -	8 = -	8 = -
09 = EGR	9 = -	9 = -	9 = -
10 = With EVAP, Differential Pressure Sensor, EGR and Secondary Air Injection (OBD-II)			

TRANSMISSION CODING

VW
Not required to 1998.

AUDI
Not required to 1998.

ABS CODING

VW
Passat 04505

AUDI A6 Front Wheel Drive
000 Manual
001 Automatic

AUDI A6 All Wheel Drive
Not required at this time.

SRS CODING

VW Airbags to 2000

VW Chassis	Model	Index (ECU Part # suffix)	Coding
A3	Golf/Jetta	D J T	00068 00074 00084
A3	Cabrio	D J T ZF	00068 00074 00084 23110
A4	Golf/Jetta	C J	00067 00074
B4	Passat	G	00071
B5	Passat	B	00066
NB	New Beetle	F AQ	00070 16721
T4	Eurovan	M AJ	00077 16714
A2	Corrado (Canada)	C	00067

Audi Airbag III, V - 1995-97
00127

Audi Airbag up to week 35.98 for use with Control Modules "**4B0959655D**" or "**4B0959655K** only.

Code	Airbag Features
00004	Vehicles with Front Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00006	Vehicles with Front Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners
00104	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00106	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners
00115	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners, 2 Rear Seat Belt Tensioners, Belt Inquiry and Front Seat Occupied Sensor
00117	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners, 3 Rear Seat Belt Tensioners, Belt Inquiry and Front Seat Occupied Sensor
00204	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00205	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 2 Rear Seat Belt Tensioners and Seat belt Fastened Sensor
00206	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners
00207	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 3 Rear Seat Belt Tensioners and Seat belt Fastened Sensor

Controller Numbers to week 35/98
4B0959655D Front and Side Airbags
4B0959655K Front and Side Airbags
4B0959655A Front Airbags Only (Code as 00127)

Audi Airbag 8 , week 36/98 to 2000

Code	Airbag Features
00004	Vehicles with Front Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00006	Vehicles with Front Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners
00104	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00106	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners
00204	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners and 2 Rear Seat Belt Tensioners
00205	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 2 Rear Seat Belt Tensioners and Seat belt Fastened Sensor
00206	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners and 3 Rear Seat Belt Tensioners

00207	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 3 Rear Seat Belt Tensioners and Seat belt Fastened Sensor
00304	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners, 2 Rear Seat Belt Tensioners and Head-level Airbags
00306	Vehicles with Front Airbags, Front Side Airbags, Front Seat Belt Tensioners, 3 Rear Seat Belt Tensioners and Head-level Airbags
00404	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 2 Rear Seat Belt Tensioners and Head-level Airbags
00406	Vehicles with Front Airbags, Front Side Airbags, Rear Side Airbags, Front Seat Belt Tensioners, 3 Rear Seat Belt Tensioners and Head-level Airbags

Controller Numbers from week 36/98
4B0959655H Front and Side Airbags
4B0959655F Front and Head-level Airbags

ANTI-THEFT IMMOBILIZER

VW - See http://tech.vw.com/pdf/v019911.pdf

CENTRAL LOCKING

VW See http://tech.vw.com/pdf/01-98-15.pdf and http://tech.vw.com/pdf/01-98-16.pdf

FACTORY SERVICE DEALER CODE

(**LOGIN**)

WSC NUMBER 01283, 06432, 04362

APPENDIX E

Volkswagen / Audi
Instrument Cluster Service Interval Reset

The service interval is reset the same way as the Audi, by using the VAG1551, VAG1552 or the VDS-PRO software to access the instrument cluster controller.

Here are the steps for the VAG units for a 12000Km oil inspection reset.

1) Enter instrument cluster address word 17.
2) Accept with Q.
3) Select function for adaptation address word 10.
4) Accept with Q.
5) Now select the Service Interval channel 05.
6) Accept with Q.
7) Now scroll through the menu to "Input adaptation value XXXXX" screen. The adaptation is set in kilometers with 00000 = 0Km and 00012 = 12000Km. 00012 is the value for standard oil changes.
8) Enter 00012.
9) Accept with Q.
10) Move to next screen with Q.
11) Accept changed value with Q.

Other inspections are on channels 06, 07 and 08 at 24000, 36000 (360 days) and 48000Km (720 days) respectively.

With the VDS-Pro software the reset is as follows.

Choose Instrument Cluster
Choose Service Interval Reset
Choose the reset you wish to make oil, inspection 1 (24000Km), 1 (360 days) or 2(720 days).
Choose accept.

The VAG1552 and the VDS-Pro are both at our website http://www.baumtools.com .

For vehicles with Mechanical SRI resets (1994-97)

1) Switch ignition On.
2) Press and hold the odometer reset button located below the speedometer.
3) Switch ignition OFF and release odometer reset buttion. OEL will appear in the SRI display.
4) Press and hold the lower digital clock reset button or the analog clock reset button until 5 dashes (- - - - -) apperar in the display. OEL SRI is now reset to 7500 miles (12,000 km) or 6 months, whichever comes first.

Once the OEL is reset, the other displays can be reset in the same way without switching the engine on or off again.

5) Press the odometer reset button to perform the inspection 01. The IN 01 should be displayed. Reset using the clock reset button.
6) If necessary, repeat the procedure for inspection 02.
7) To end turn ignition on. When the IN 01 appears switch off ignition.

APPENDIX F

VW/Audi

Engine/Transmission Initiating Basic Setting

The basic setting should be initiated after performing the following repairs:

* Exchanging engine
* Replacing Engine Control Module (ECM)
* Replacing/altering throttle valve
* Adjusting throttle valve (setting idling speed).
* Replacing Throttle Position (TP) Sensor
* Altering Throttle Position (TP) Sensor setting
* Replacing Transmission Control Module (TCM)

For Transmissions 096, 097, 01M, 01N

1. Connect CS2000 Scan Tool and choose “TRANSMISSION”, then “Automatic Transmission” then choose the function "Basic Setting".
2. The Accelerator Pedal must remain in Closed Throttle Position.
3. Now enter “000" as the block number. Choose to accept with ENTER. The CS2000 will then verify.
4. The system is now in basic setting mode.
5. Depress Accelerator Pedal as far as kickdown and hold in this position for at least 5 seconds.
6. Release and press EXIT. The Basic Alignment of Engine and Transmission is now complete.

Engines AEB, AEG, ATW, AHA, APH - ALL

1. Connect CS2000 Scan Tool and choose “ENGINE”, then “GASOLINE” then choose the function "Basic Setting".
2. The Accelerator Pedal must remain in Closed Throttle Position.
3. Now enter “060" as the block number. Choose to accept with ENTER. The CS2000 will then verify.
4. The vehicle will then perform the basic setting of the throttle. wait at least 30 seconds.
5. The display should now show the correct values in fields 1, 2 and 3 and ADP, OK in the 4th field.. If the 4th field displays ADP, ERROR the adaptation has not been successful. Check for error code 17967 and refer to the appropriate factory repair manual.

Engines ATW (Diesel) Automatic Transmissions with KICK DOWN Learning

1. Connect CS2000 Scan Tool and choose “ENGINE”, then “GASOLINE” then choose the function "Basic Setting".
2. The Accelerator Pedal must remain in Closed Throttle Position.
3. Now enter “0630" as the block number. Choose to accept with ENTER. The CS2000 will then verify.
4. The system is now in basic setting mode.
5. Depress Accelerator Pedal as far as kickdown and hold in this position for at least 5 seconds.
6. Release and press EXIT. The Basic Alignment of Engine and Transmission is now complete.

APPENDIX G

Procedure After Restoring Electrical Power

1999 and later vehicles.

z *The following procedures are abbreviated. if necessary, complete instructions can be found in the appropriate Repair Manuals.*

z *For vehicles equipped with Immobilizer, the Key code is maintained when power is interrupted for any reason. Therefore, recoding the key/instrument cluster is not required.*

-- Check all systems for stored DTC's.
-- Make appropriate repairs, if necessary.
-- Clear DTC memory, if DTC's were found.
-- Set engine basic settings (Electronic Throttle Control Adaptation).
-- Set transmission basic settings.
-- Set Climatronic, power window, and power seat adaptation.
-- Check Readiness code and set.
-- Reset clock and radio anti--theft code.

APPENDIX H

Cabriolet SRS (Airbag) System 1990-94

1) Start the VDS-Pro program.
2) Click once on the version number. (i.e. click on **2.0.9**)
3) A window will open allowing you to manually enter the controller address number.
4) Enter **57** for the Cabriolet SRS controller and click on **SEND ADDRESS**.
5) You will now be able to read and reset the Diagnostic Trouble Code (DTC). Please note that there is no explanation for many of the Cabriolet SRS codes as the system is not documented by VAG.

Contact Information

A catalog of tools for all models is available by calling

Baum Tools Unlimited Inc.
800-848-6657 USA/Canada
941-927-1414 International
941-927-1612 Fax

Manuals for most models are available from our **Technical Publications** division. To order or request a listing call

Baum Tools Unlimited - West
415-566-9229
415-566-0694 Fax

Visit our website.

http://www.baumtools.com

Email:

For sales information

sales@baumtools.com

or for technical help

tech@baumtools.com