USER MANUAL

STAR Auto Scanner

AÚTOBOSS®

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To take full advantage of the unit, you should be familiar with the engine.

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Introduction

STAR Auto Scanner is the latest automotive diagnostic innovative product based on both automotive electronics and information technology.

Features

Convenient to Update

- **J** The function of software update via Internet makes it easy for customer to get the latest diagnostic program and keep pace with the development of automotive technology.
- **J** Multilanguage display makes operation convenient in different countries and areas.

Advanced

- **J** STAR Auto Scanner is the most advanced automobile diagnostic unit in the world at present. It is compactly designed and with large LCD touch screen. Mini printer makes the operation easy.
- **J** The product is combination of the automobile industry and the communication technology, which STAR Auto Scanner the new development trend in the automobile diagnosis field. It provides a new way of automotive diagnosis for vehicle service station.

Precaution on operation

- **J** Try your best to keep the screen facing upward and leveled during the testing.
- **J** Be careful when plugging and unplugging the main cable and diagnostic connector. Tighten the screw before operation so as to avoid unexpected disconnecting and/or damage to the port.
- **J** Hold the STAR Auto Scanner main unit during the operation. Avoid hitting. Unplug the power after operation.
- **J** Do not insert and pull out CF memory card too frequently. Press ejector button before pulling out the CF memory card. Insert the CF memory card into the CF memory card slot, keep the face labeled "Hi-Speed" upward, and make sure the
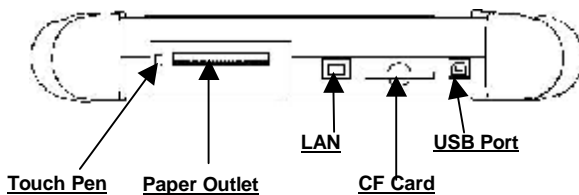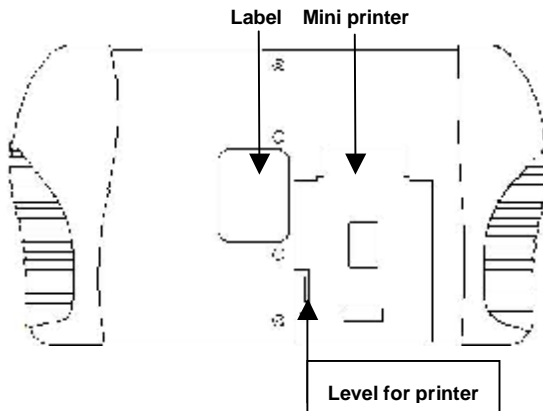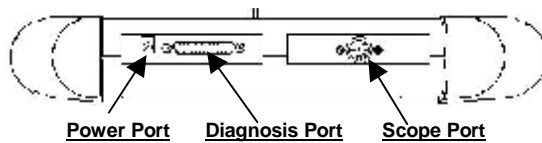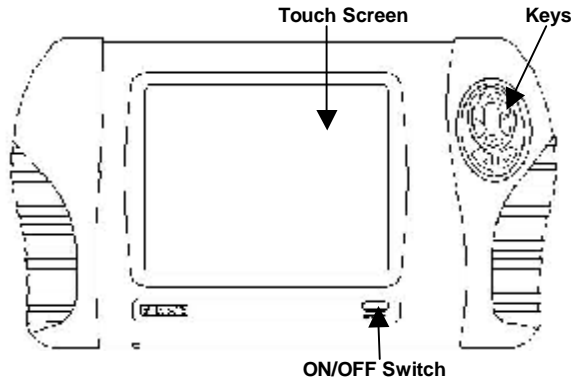
----4----

card is fully seated.

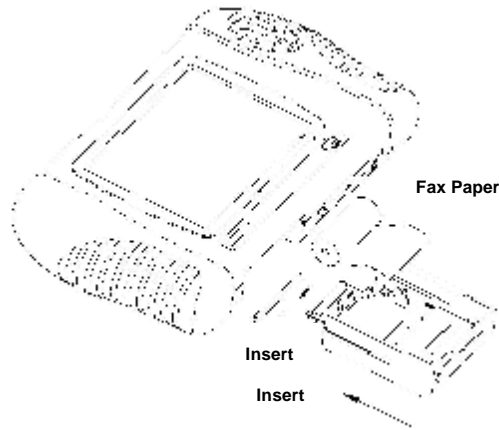**J** Hold the connector when plug or unplug it. Do not pull the cable for unplugging.

Maintenance

J Store the STAR Auto Scanner on a flat and dry place with suitable temperature.

J Never put the STAR Auto Scanner in direct sunlight or near the heating source.

J Prevent smoke, water and oil form entering the STAR Auto Scanner.

J Avoid shock, dust, moisture and extremely high temperature.

J Do not disassemble the main unit. Clean the outside surface and screen with soft cloth when the machine is turned off and the power cable is removed.

J Periodically turn on the STAR Auto Scanner main unit if it is not operated for long time to avoid moisture.

J Do not put anything on the main unit to avoid damage to the internal parts.

J Use the equipped stylus to click the screen. Do not use fingernail or other sharp object to touch the screen.

J Dust may be accumulated on the LCD screen owing to the electrostatic. It is suggested to buy the special LCD screen wiper to clean the screen gently. Do not wipe the screen with bare finger.

J Never use chemicals to clean the screen.

J Turn off the power if it is expected not to operate the STAR Auto Scanner for a long time. It can extend the life of screen.

Layout of STAR Auto Scanner

LAN   **USB Port**

Touch Pen   **Paper Outlet**   **CF Card**

Touch Screen   **Keys**

ON/OFF Switch

Power Port   **Diagnosis Port**   **Scope Port**

Label   **Mini printer**

Level for printer

Fax Paper

Insert

Insert

Illustration for printer

Explanation of buttons

The descriptions of the button:

Button	Function	Description
	Paper-in	To feed the paper through the Paper-in Button
	Print current page	To print the current page at the diagnosis mode
	Turn the screen 180°	Convenient for viewing the diagnosis result
	Save the files	To save files after recording the live data. Enter the file name and save the file in order to recall.
	Open the files	To open the files saved before.

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	Retrieve the Data Stream	Click the button , and then click to retrieve the data saved before.
	Record the data Stream	To record the live data. Enter the file name after recording, and then click to save the file.
	To the Internet	To update the software through the Internet.
	GPRS Update	GPRS internet update
	Working at the mode of PC-A8	PC-A8 working mode

Diagnosis

AutoScanner: **Diagnosis function**

Path: Diagnosis----AutoScanner

MB, BMW, VW/Audi, Opel, SAAB, Hyundai, Nissan, Toyota, Honda, OBDII…available

Setting

User Information: Workshop Info

Path: Setting----User Information

The user can record the repair information including the name, telephone number, fax and address etc. The information input can be realized via the keyboard. Press the button **[Keys]** and then select the icon of keyboard.

STAR Auto Scanner prompts the user to input the workshop information. If wrong number is entered, click [←] to delete the wrong number and input the correct one.
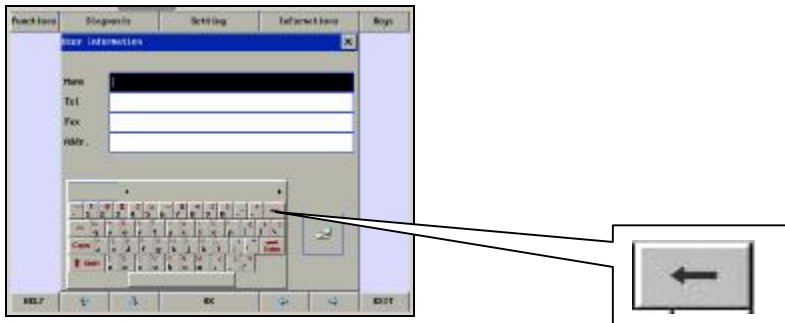
Language >:   Language switchover

Path: Setting----Language

NOTE: The default is English. You can select to Chinese by pressing the button.

Contrast: Adjust the contrast and brightness

Path: Setting----Contrast

NOTE: The screen is set the optimum contrast in the factory before delivery.

Follow the procedures listed below if the screen is too white or too dark during the testing:

1. Select the item [Setting], and then select [Display], the following page will pop out:
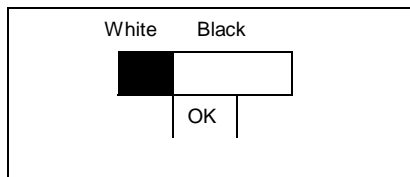
2. Adjust the optimum contrast with the pen and press [OK].

Touch Set: Touch screen calibration

Path: Setting----Touch Set

NOTE: The screen is calibrated in the factory before delivery. Do not touch the screen without purposes since it will affect the accuracy of the screen. The following procedures will be carried out when the screen is not accurate:

1.   Turn off STAR Auto Scanner first.

2.   Wait for more than 5 seconds and then turn on STAR Auto Scanner.

3.   Press the company logo AUTOBOSS with the pen for several seconds till the following picture displayed (see Step 1):

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+ Please click cross
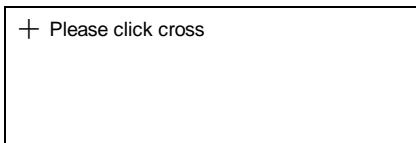
(See Step 1)

4. Press the center of the cross with the pen and then the following page will be displayed

(see Step 2):

+ Please click cross
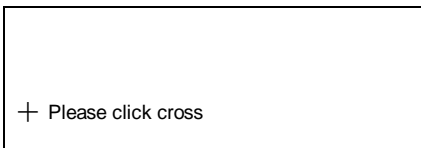
(See Step 2)

Repeat the step mentioned above. STAR Auto Scanner returns to the original configuration.

PowerPoint: Education function for the current information transmitted to the PC via serial port

Path: Setting----PowerPoint

The customer can make education DEMO anywhere at the mode of PowerPoint.

Run the file of **Powerpoint.exe** to display the page shown on the left. Click the button to capture the pictures. The screen of the STAR will transfer the information to PC before Clicking the touch screen.

Connect the cables as the picture shown on the left by the 9-pin cable.

The information is sent to PC. The dialogue box will disappear when all the information is

transferred.
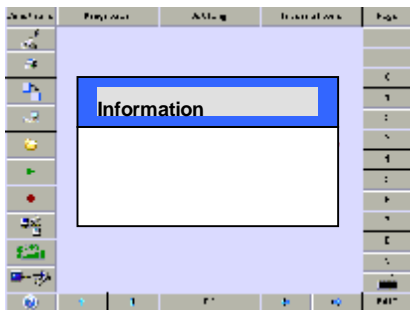
Internet Update: Same function as

Path: Setting---- Internet Update
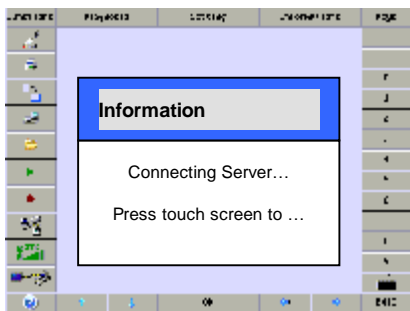
USB Update: USB Card Reader Mode

Path: Setting-----USB Update

Update the software via the USB mode.

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After selecting the USB Update, the following message will pop out:
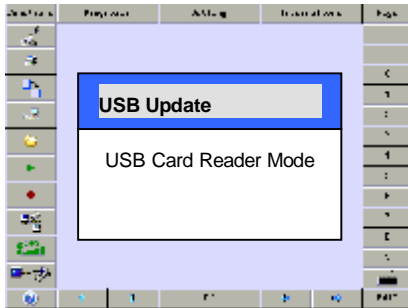
Note: Turn off the power after using.

Information

Circuit: Consult the electric circuit

Path: Information-----Circuit

To provide the reference for the car repair. After selecting the item [Circuit], the following page will pop out:

PDF created with pdfFactory trial version www.pdffactory.com

Select the year, model, make and system according to your requirement; the following page

will pop out:

View the circuit by the button of $\leftarrow \uparrow \rightarrow \downarrow$
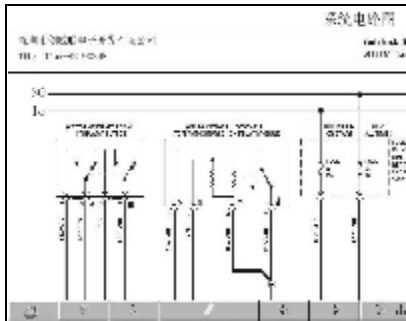
Print the circuit after connection the cable as following:
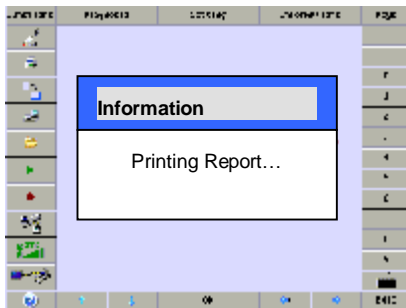
And the connections between STAR and PC and printer is shown as following:

STAR   Printer

PC
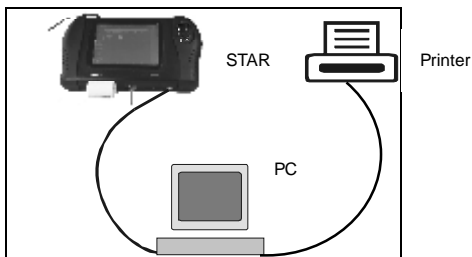
Dictionary: English--Chinese dictionary

Path: Information-----Dictionary

Enter the words to be searched through the in-built keyboard:

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Keys

The following page listed below illustrates the keys on the touch screen:

In-built keyboard
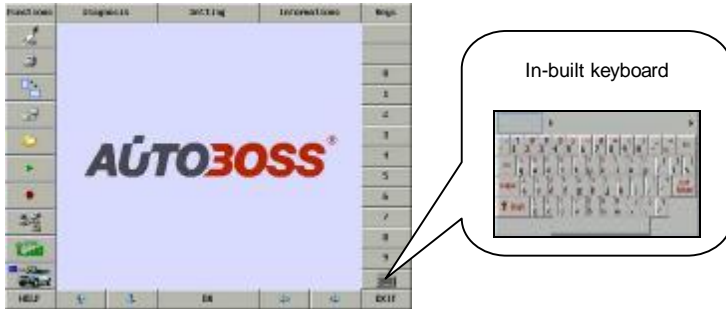
Update of Diagnostic Software

1.   Precaution

1) Select and install the diagnostic card correctly.

2) Ensure the reliable cable connection and power supply. Avoid the card damaged or slow update speed due to power breakdown or the harness connection.

3) Do not touch the PC and main body of STAR Auto Scanner during the software update.

4) Check the cards after the software update. Please re-download the diagnostic program and update or contact with the local distributor if the screen is a mass or displaying the main body number.

5) Power supply

   DC voltage: DC 12.5~13.5V   AC voltage: AC220V (Via WU-60 Stabilizer)

2.   Preparation

1) PC computer with operating system: WIN98/WIN2000

2) STAR Auto Scanner and diagnostic card

3) USB Cable and WU-60 Stabilizer

4) Visit the website: www.autoboss.net

3.   Procedure

1) Select *English* to enter the homepage of the AUTOBOSS or enter the website directly from the address bar: http://www.autoboss.net

2) Select **Download** for **Update**

3) Select *I accept*.
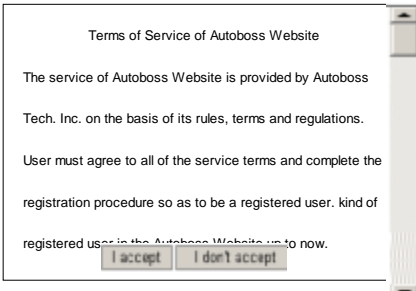
4) Enter the mobile number and password and press [OK] to submit.

Mobile:	<Enter the mobile number>
Password	
	OK
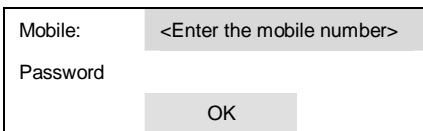
5) The following picture will be displayed if the registration succeeded!

Registration
Signed out successfully!
The password has been sent to your email.
Please check it!
OK

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6) The following picture will be displayed if the registration failed!

Registration
Registration failed!
You have input a wrong serial number!
Contact your local agent for details!
OK
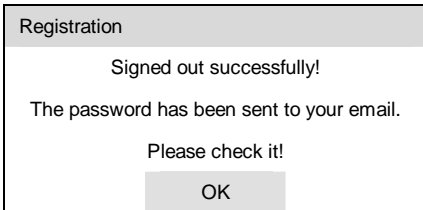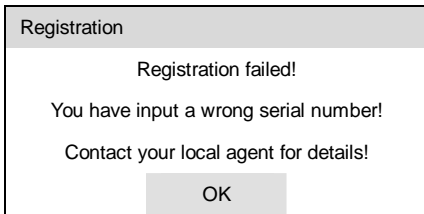
7) Select the items to be updated. Refer to the pictures shown below:

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8) Connect STAR to PC by the USB adaptor.
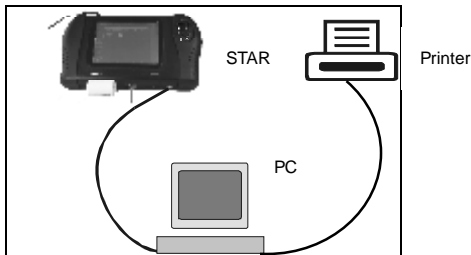
9) Double click the **system configuration** and select USB Mode.

10) When the CF card is installed successfully, a Removable disk icon will be

added in the catalogue of **My Computer**.

NOTE: Do not unplug the CF card reader/writer from the USB port while its LED is blinking, otherwise data would be damaged!

Vehicle Diagnosis Description

Diagnostic socket location

The diagnostic socket of Volkswagen vehicle is located in the cab under the instrument at the driver side.

Pin definitions

4pin diagnostic socket

The 4pin diagnostic socket is shown as following:
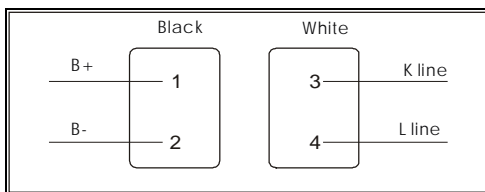
Pin	Definition
1	L line
2	K line
3	Grounding
4	Power

16pin diagnostic socket
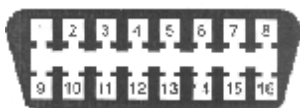
Pin	Designation	Pin	Designation
1	TCU	9	ASC
2	BUS+	10	EMPTY
3	EMPTY	11	A/C
4	GND	12	SRS
5	GND	13	EMPTY
6	TCS	14	EMPTY
7	K-line	15	L-line
8	ABS	16	Battery

Select Diagnostic Adaptor

Various diagnostic connectors are supplied with STAR Auto Scanner. The principle for the cable connection is same. Select a specific connector according to the tested vehicle.

1: A hole used to connect the power

2: Connect with the main cable

3: Connect to the diagnostic socket

There are two ways to get power voltage for testing:

Method 1: From the WU-60 adaptor

******Insert the connector into the hole on the side of any adaptor to get power from WU-60 adaptor when testing.

Method 2: From the battery

******Insert the connector into the hole on the side of any adaptor to get power after the connection with the vehicle battery when testing.

Let's take Volkswagen vehicle as example to describe the test procedure.

Please select the Volkswagen 4pin or 16pin diagnostic adaptor.

NOTE: The test procedure for different vehicle make is similar. Please refer to the described procedure and the screen prompts when diagnosing other vehicles.

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Volkswagen vehicle is usually equipped with 4pin or 16pin diagnostic socket.

Path: Diagnosis-----Auto Scanner

Select [European] and click the icon of Volkswagen on the vehicle make menu. The screen will be displayed as shown on the left:

Button description:

[EXIT] or X: Go back to the previous menu.

After selecting Volkswagen, the left screen will pop out. See the left page. Select the item to be tested by the arrow ↑ and ↓

Button description:

[EXIT] or X: Go back to the previous menu.

[↑] or [↓]: To scroll the testing items one by one for view.

After selecting the item, the left picture will be displayed for reference.

If the connection is good, the testing will continue. Otherwise, the following page will be display after pressing [HELP].

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Button description:

[EXIT] or X: Go back to the previous menu.

FAQ

STAR Auto Scanner is a hi-tech product. With the development of modern automotive industry, more and more new technology will be adopted and there may be questions during operation. Read the user's manual to get the answer whenever you have any questions, or contact our Customer Service Center for help.

Here we list some frequently asked questions and answers relating to STAR Auto Scanner.

About Software Update

Question: Why can't the main unit recognize the replaced CF card?

Answer: There are two possible reasons:

1. The original 64M CF card has not been fully copied. Please delete the incomplete file and copy again.

2. The CF card is not compatible with the CF card. Mono-functional CF card is better in such situation.

Question: How to make a new STAR CF card when the data in old one is lost or damaged?

Answer: In case STAR CF card is damaged and the program in the card cannot be read, please follow the listed procedures to make a new CF card:

1. Purchase same model CF card from the market.

2. Format the STAR CF card.

3. Download the software program from autoboss website.

4. Connect STAR Auto Scanner and PC through with the USB cable for software update.

About Hardware

Question: Why does the saved data disappear?

Answer: Your CF card is damaged.

Question: The screen does not respond or responds wrongly when I click it with pen. What should I do?

Answer: It is necessary to calibrate the screen. Please refer to the section **"Touch Set"** in the User's Manual.

Question: What can I do when the screen is confused?

Answer: Please exit the current interface and run it again. If the problem still exits, please restart the system.

Question: How to know what applications (interfaces) are opened?

Answer: Click the active taskbar icon, then the pop-up list will display the applications (interfaces) opened.

Question: Why can't I do operation in current interface?

Answer: There are two possible reasons:

1. Your current interface has exited illegally. In this situation, you may not see the name of the application (interface) in the pop-up list when you click the active taskbar icon.

2. The system is busy, please wait patiently, or click the active taskbar icon to switch to another application.

Question: Why does the LCD screen respond so slowly?

Answer: It is because the ambient temperature is close to the lower limit of operating

temperature range (0~50℃). In this situation, it is necessary to warm up the machine for 20 minutes before testing.

Question: The screen keeps blank after flashing when the machine is turned on. What should I do?

Answer: Take out the CF card and restart the machine to see if there is normal display. If the display is normal when the CF card is taken out, the CF card should be replaced. If the screen is still blank, please contact the local agent.

Question: Why does the system prompt that "checking CF card" when the machine is turned on?

Answer: The possible cause is that no CF card is in the machine or CF card is inserted improperly or damaged. If it is damaged, it is necessary to make a new one.

Question: What should I do if I can't get into the diagnostic interface during test?

Answer: The possible cause is that no CF card is in the machine or CF card is inserted improperly or damaged. If it is damaged, it is necessary to make a new one.

Question: Why can't the data be inputted after the keyboard is activated?

Answer: The position where the cursor lies can't be edited. Or you have not activated the cursor on the input position. Please use the pen to click the part to edit. When the cursor twinkles, you can input the data.

About System Setting

Question: The screen is too white and characters cannot be seen. What is the reason and what should I do?

Answer: It may be caused by improper contrast. Please refer to the section **"Contrast"** to adjust the contrast.

Question: The screen is inactive after the cross cursor appears on the screen. Why?

Answer: The system is calibrating the touch screen. The machine will work after the screen is calibrated. Refer to the section **"Touch Set" in User's Manual.**

Question: Why does the screen flicks during engine starting?

Answer: It is caused by the electromagnetic interference. No problem with STAR Auto Scanner.

Question: Why is operation interrupted during diagnosis?

Answer: It may be caused by electromagnetic interference or incorrect connection of connector.

Question: Why is there no response from vehicle ECU at communication?

Answer: Make sure that the voltage of vehicle battery, ignition timer and idle speed are in standard range; the throttle is in the closed position; and all electric devices, such as A/C, headlight, stereos etc, are turned off.

Question: Some systems cannot be diagnosed. Why?

Answer: The diagnostic socket for the system on some early vehicle may be separated. Refer to the vehicle instruction manual.

Question: Why are there two many trouble codes?

Answer: It may be caused by poor contact or poor grounding. Make sure that the vehicle model/year is selected correctly and the vehicle is equipped with the system.

Appendix 1: about VIN
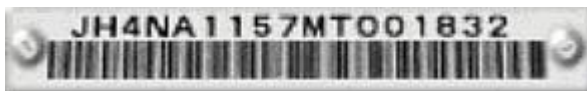
Every vehicle has a unique VIN (Vehicle Identification Number). The VIN number is stamped onto a small metal plate and is attached to the drivers side of the dash where it meets the window. The VIN allows the Department of Motor Vehicles or the Department of Transportation to keep track of the vehicles registered owner.

Police also use this number to verify that a vehicle has not been stolen and is in the possession of the original owner. However, it takes professional thieves only seconds to replace this plate with one from a legally purchased junk car of the same make and model.

Vehicle Identification Number (VIN)
What is it?

Vehicle identification number (VIN) is the automotive equivalent of human "DNA".

It sets the vehicle apart from the millions of other vehicles out there. In recent times it has been reflected in 17 digit characters. It displays a car's uniqueness and heritage and provides a form of "factory to scrap yard" identification. It can be used to track recalls, registrations, warranty claims, thefts and insurance coverage. Each character or digit has a particular purpose.

History of the VIN

Detroit automobile manufacturers began stamping and casting identifying numbers on cars and their parts in the mid 1950's . The primary purpose of this vehicle identification number (VIN) was to give an accurate description of the vehicle when mass production numbers were STAR Auto Scanner to scale in very significant numbers. The early VIN's came in a range of variations depending on the individual manufacturer at that time.

In the early 1980's the U.S. National highway Traffic Safety Administration (USDOT) required that all road vehicles must contain a 17 character VIN. This established the standard fixed VIN system which major vehicle manufacturers use currently. The result was a unique "DNA" style number for each individual vehicle rolled off the assembly line.

The Vehicle Identification Number was originally described in ISO Standard 3779 in February 1977 and last revised in 1983. The ISO-VIN was designed to identify motor vehicles, trailers, motorcycles and mopeds and consists of several parts described below.

How to read a VIN

1st character- Identifies the country in which the vehicle was manufactured.

For example: U.S.A.(1or 4), Canada(2), Mexico(3), Japan(J), Korea(K), England(S), Germany(W), Italy(Z)

2nd character- Identifies the manufacturer. For example; Audi(A),BMW(B), Buick(4), Cadillac(6), Chevrolet(1), Chrysler(C), Dodge(B),Ford(F), GM Canada(7), General Motors(G), Honda(H), Jaquar (A), Lincoln(L), Mercedes Benz(D), Mercury(M), Nissan(N), Oldsmobile(3), Pontiac(2or5), Plymouth(P), Saturn(8), Toyota(T), VW(V), Volvo(V).

3rd character- Identifies vehicle type or manufacturing division.

4th to 8th characters- VDS - Vehicle Descriptor Section. These 5 characters occupy positions 4 through 8 of the VIN and may be used by the manufacturer to identify attributes of the vehicle. Identifies vehicle features such as body style, engine type, model, series, etc.

9th Character-The check digit "character or digit 9" in the sequence of a vehicle identification number (VIN) built beginning with model year 1981 (when the 17 character digit format was established) can best be described as identifying the VIN accuracy.

A check digit shall be part of each vin (since 1981) and shall appear in position nine (9) of the VIN on the vehicle and on any transfer documents containing the vin prepared by the

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manufacturer to be given to the first owner for purposes other than resale. Thus, the vins of any two vehicles manufactured within a 30 year period shall not be identical. The check digit means a single number or letter "x" used to verify the accuracy of the transcription of the vehicle identification number.

After all other characters in the VIN have been determined by the manufacturer the check digit is calculated by carrying out a mathematical computation specified. This is based on vin position, sample vin, assigned value code, weight factor and multiply assigned value times weight factors. The values are added and the total is divided by 11. The remainder is the check digit number.

The correct numeric remainder - zero through nine (0-9) will appear. However, if the remainder is 10 the letter "X" is used to designate the check digit value/number.

10th character- Identifies the model year. For example: 1988(J), 1989(K), 1990(L), 1991(M), 1992(N), 1993(P), 1994(R), 1995(S), 1996(T),1997(V), 1998(W), 1999(X), 2000(Y)------2001(1), 2002(2), 2003(3)

11th character- Identifies the assembly plant for the vehicle.

12th to 17th characters- VIS - Vehicle Identifier Section. The last 8 characters of the VIN are used for the identification a of specific vehicle. The last four characters shall always be numeric. Identifies the sequence of the vehicle for production as it rolled off the manufacturers assembly line.

Appendix 2: Block and parameter for Volkswagen vehicle

The Block Number Of Audi A8 (MPI 2.8L 2 Valves)

Group	Basic Setting		Designation
Number	Address	Display	
00	A	135~160	A: momentary coolant temperature, readout: 50=…℃ If the value is out of the range, check sensor or circuit or ECU
	B	150~165	B: output voltage of air mass flow readout: 100=1V
	C	28~32	C: momentary engine speed readout: 25=…rpm
	D	0~10 or 240~255	D: learning value of idling speed stabilization, manual gearbox in neutral or automatic gearbox with selector lever in P or N
	E	0~10 or 240~255	E: learning value of idling speed stabilization, manual gearbox with drive mode engaged (average value 0). [0 is always displayed for vehicles with manual gearbox.]
	F	126~130	F: feedback of idling speed stabilization (average value 128)
	G	20	G: shift input

	H	120~136	H: Lambda control value (average value 128/ cylinder 1 to 3) [0 is always displayed for engines without Lambda probe.]
	I	0 or 3	I: Lambda learning demand in idling and part load range [0= Lambda learning demand in idling and part load range] [3= Lambda learning process in idle complete]
	J	50~100	J: learning value of throttle valve potentiometer G69 readout: 5=…mV
01	A	80~105℃	A: coolant temperature If the value is out of the range, check sensor or circuit or ECU

	B	1.470~1.620V	B: air mass flow output voltage 1) if the voltage is lower than 1.47V, check the leakage between MAF and intake air manifold 2) if the voltage is higher than 1.62V, please check the following items: ①whether the electric applications closed or not ②whether the power steering in the middle position (the vehicle wheel in straight line) ③whether the shift lever in P/N
	C	---	C: air mass flow sensor ground wire If the value is 0.02V, it means the ground wire defective.
	D	12~14V	D: MPI control unit voltage supply
02	A	0.250~4.750V	A: throttle valve potentiometer voltage (coarse) 1) the sensor voltage should be .025V when the throttle closed 2) the sensor voltage should be 4.75V when the throttle wide open 3) if the value is out of the range, please check the throttle valve or throttle position sensor

B	0.500~1.270V	B: throttle valve potentiometer voltage (fine) 1) the sensor voltage should be 0.5V when the throttle closed 2) the sensor voltage should be 1.27V when the throttle is at lower load 3) if the value is out of the range, please check the throttle valve or throttle position sensor	
C	0.250~0.500V	C: learning value of throttle valve potentiometer please check the following items: 1) whether the electric applications closed or not 2) whether the power steering in the middle position (the vehicle wheel in straight line) 3) whether the shift lever in P/N	
D	0=open 1=closed	D: mechanical idling speed switch If the value is out of the range, please check the throttle position sensor or electric circuit	

03	A	700~800rpm	A: idle speed 1) if the idle speed is lower than 700rpm, please check TP switch or IAC valve 2) if the idle speed is higher than 800rpm, please check TP switch or IAC valve or the leakage of intake air system, meanwhile, be sure the shift lever in P/N
	B	15.0~32.0%	B: engine load 1) whether the electric applications closed or not 2) whether the power steering in the middle position (the vehicle wheel in straight line) 3) whether the shift lever in P/N 4) check TP sensor or EGR valve or IAC valve damaged
	C	Full load 95%	C: throttle valve angle 1) the value should be 0% at idle speed 2) the value should be higher than 95% when the throttle is open 3) check TP sensor or electric circuit
	D	…Km/h (in accordance with vehicle speed)	D: road speed If the odometer can not display the vehicle speed, check the electric circuit between odometer and ECM

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04	A	0±2	A: idling speed regulator
	B	M/T: +4~-16 A/T: 0~+20	B: learning value of idling speed stabilization
	C	A/T:+10~-20	C: learning value of idling speed stabilization

	D	0011	D: shift inputs
			  1= always "1", except "0" if gear engaged in automatic gearbox
			  2= mechanical idling speed switch (0= open 1=closed)
			  3= AC compressor
			 (0= off 1= on)
			 4= always "0"

05	A	-25%……+25%	A: Lambda learning value at idling speed (Bank 1)
	B	-25%……+25%	B: Lambda learning value at part load (Bank 1)
	C	-25%……+25%	C: Lambda learning value at part load (Bank 1)
	D	-25%……+25%	D: Lambda learning value at part load (Bank 1)
06	A	-25%……+25%	A: Lambda learning value at idling speed (Bank 2)
	B	-25%……+25%	B: Lambda learning value at part load (Bank 2)
	C	-25%……+25%	C: Lambda learning value at part load (Bank 2)
	D	-25%……+25%	D: Lambda learning value at part load (Bank 2)

07	A	0.0±6.0%	A: Lambda control (Bank 1) If the value is out of the range, please check the leakage of intake air system, the injector or O2 sensor learning value
	B	…%	B: O2 sensor learning value
	C	XXXX	C: Lambda learning demand diagnosis (If diagnosis has been performed, the appropriate value is set to "1".) X1, X2= idling speed (Bank 1, 2) X3, X4= part load 1 (Bank 1, 2) X5, X6= part load 2 (Bank 1, 2) X7, X8= part load 3 (Bank 1, 2)

	D	XXXXXXXX	D: Lambda learning demand display
			  0= request for renew learning
			  1= learning process ended
			X1, X2= idling speed (Bank 1, 2)
			X3, X4= part load 1 (Bank 1, 2)
			X5, X6= part load 2 (Bank 1, 2)
			  X7, X8= part load 3 (Bank 1, 2)

08	A	0.0±6.0%	A: Lambda control (Bank 2) If the value is out of the range, please check the leakage of intake air system, the injector or O2 sensor learning value
	B	…%	B: O2 sensor learning value

	C	XXXXXXXX	C: Lambda learning demand diagnosis (if diagnosis has been performed, the appropriate value is set to "1".) X1, X2= idling speed (Bank 1, 2) X3, X4= part load 1 (Bank 1, 2) X5, X6= part load 2 (Bank 1, 2) X7, X8= part load 3 (Bank 1, 2)
	D	XXXXXXXX	D: Lambda learning demand display 0= request for renew learning 1= learning process ended X1, X2= idling speed (Bank 1, 2) X3, X4= part load 1 (Bank 1, 2) X5, X6= part load 2 (Bank 1, 2) X7, X8= part load 3 (Bank 1, 2)
09	A	0.0±6.0%	A: Lambda control (Bank 1) If the value is out of the range, please check the leakage of intake air system, the injector or O2 sensor learning value
	B	0.0±6.0%	B: Lambda control (Bank 2) If the value is out of the range, please check the leakage of intake air system, the injector or O2 sensor learning value
	C	0.0~99.0%	C: EVAP canister purge valve
	D	idling: 0% full load: 95%	D: throttle valve angle

10	A	less than 8%	A: total from Lambda control (Bank 1) and momentary Lambda learning value (Bank 1)
	B	less than 8%	B: total from Lambda control (Bank 2) and momentary Lambda learning value (Bank 2)
	C	greater than 0.6V or less than 0.3V	C: voltage signal Bank 1 Lambda probe 1 --- O2 sensor should be lower than 0.3V or higher than 0.6V, otherwise check O2 sensor or heater
	D	greater than 0.6V or less than 0.3V	D: voltage signal Bank 2 Lambda probe 1 --- O2 sensor should be lower than 0.3V or higher than 0.6V, otherwise check O2 sensor or heater
11	A	…° BTDC	A: ignition timing point without knock control and without digital idling speed stabilization when TP closed, the ignition angle is 12°BTDC.
	B	…° BTDC	B: ignition timing point with knock control and with digital idling speed stabilization when engine load is over 40%, knock control begins to work.

	C	…±℃A	C: ignition timing point manipulation for digital idling speed stabilization
	D	0= open 1= closed	D: idling speed switch function
12	A	…rpm	A: engine speed
	B	…%	B: engine load
	C	1st map or 2nd map	C: ignition timing map changeover
	D	…±℃A	D: ignition timing retardation of knock control
13	A	1st map or 2nd map	A: ignition timing map changeover
	B	…±℃A	B: ignition timing retardation of knock control (cylinder 1)
	C	…±℃A	C: ignition timing retardation of knock control (cylinder 2)
	D	…±℃A	D: ignition timing retardation of knock control (cylinder 3)
14	A	1st map or 2nd map	A: ignition timing map changeover
	B	…±℃A	B: ignition timing retardation of knock control (cylinder 4)
	C	…±℃A	C: ignition timing retardation of knock control (cylinder 5)
	D	…±℃A	D: ignition timing retardation of knock control (cylinder 6)
15	A	…rpm	A: engine speed
	B	…V	B: knock sensor signal (cylinder 1)
	C	…V	C: knock sensor signal (cylinder 2)
	D	…V	D: knock sensor signal (cylinder 3)
16	A	…map	A: engine speed
	B	…V	B: knock sensor signal (cylinder 4)

	C	…V	C:	knock sensor signal (cylinder 5)
	D	…V	D:	knock sensor signal (cylinder 6)
17	A	700~800rpm	A:	idle speed
	B	…%	B:	engine load
	C	…%	C:	EGR duty cycle
	D	0…255℃	D:	exhaust gas recirculation temperature
18	A	…%	A:	internal specified cycle of idling speed stabilization valve-N71
	B	AMPS	B:	current consumption of idling speed stabilization valve-N71
	C	-40~+60%	C:	current control of idling speed stabilization valve-N71
	D	12~14V	D:	voltage supply of MPI control unit
19	A	…%	A:	engine load
	B	…g/s	B:	air volume induced
	C	Km/h	C:	road speed
	D	…m/s	D:	injection time
22	A	0~12	A:	reducing stage
	B	…±℃A	B:	ignition timing retardation as a consequence of ASR
	C	-68Nm~250Nm	C:	reduced engine torque
	D	-68Nm~250Nm	D:	non-reduced engine torque
99	A	…rpm	A:	engine speed
	B	…%	B:	engine load
	C	℃	C:	coolant temperature
	D	λ con. OFF or λ con. ON	D:	Lambda control OFF/ON

The Block Number Of Passat B5

Group Number	Basic Setting		Designation
	Address	Display	
00	A	170~204	A: momentary coolant temperature (equals to 80~105℃)
	B	17~44	B: engine load (equals to 0.85~2.2ms)
	C	82~90	C: idle speed (equals to 820~900rpm) 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	D	142~206	D: MPI control unit voltage supply (equals to 10~14.5V)
	E	0~12	E: throttle valve angle (equals to 0~5°)
	F	123~133	F: idle speed regulator (equals to –2.5~+2.5g/h)
	G	120~136	G: feedback of idling speed (equals to –4.0~+4.0kg/h) stabilization (average value 128)
	H	77~179	H: Lambda control value (equals to –10%~+10%)

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	I	115~141	I: Lambda learning value (equals to –0.64~+0.64ms) (average value 128)
	J	117~138	J: Lambda learning value (equals to –8.0~+8.0%)
01	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load if the value is higher than 2.50ms, please check the following items: 1) the blockage of injector or spark plug 2) the throttle control unit 3) the power steering should be in the middle position 4) shift lever should be in P/N

	C	0~5°	C: throttle valve angle If the throttle valve angle is higher than 5°, please check the following items: 1) the adaptation between engine ECU and the throttle control unit 2) the throttle control unit 3) adjust accelerator cable 4) fuel supply system 5) throttle operating system
	D	5.25°~14.25°v.OT	D: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage
02	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system

	B	1.00~2.50ms	B: engine load 1) if the value is lower than 1.00ms, please check purge valve, because the fuel evaporation in purge canister too high or you can check the injection rate 2) if the value is higher than 2.50ms, please check the electric load, for example, A/C compressor or power steering, etc
	C	2.00~5.00ms	C: injection time 1) check the activated carbon canister solenoid 2) check the fuel system and activated carbon canister 3) check the injection rate
	D	2.0~4.0g/s	D: air volume induced 1) if the value is lower than 2.0g/s,it means there is a lot of air mass which is not be calculated by the mass air flow meter. 2) if the value is higher than 4.0g/s, please check the following items: ----shift selector not in P/N ----turn off electric applications (air conditioner, power steering etc)

03	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	10.000~14.500V	B: MPI control unit voltage supply 1) if the voltage is lower than 2.000V, please check the following items: ① check the voltage and charge the battery ② increase engine speed for several minutes and turn off the electric applications ③ check the power supply of engine control unit ④ check the creep of electricity 2) if the voltage is higher than 14.500V, check the voltage and change the regulator if necessary

	C	80~105℃	C: coolant temperature 1) if the coolant temperature is lower than 80 ℃ ,please check the following items: ① make a road test if necessary ② check coolant temperature sensor 2) if the coolant temperature is higher than 105℃,please check the following items: ① clean the radiator ② check the cooling fan ③ check the thermostat ④ check the coolant temperature sensor
	D	**---**℃	D: intake air temperature According to the environment temperature. if the value is always at 19.5 ℃, please check intake air temperature sensor G42 or circuit
04	A	0~5°	A: throttle valve angle If the throttle valve angle is higher than 5°, please check the following items: 1) the adaptation between engine ECU and the throttle control unit 2) the throttle control unit 3) adjust accelerator cable 4) fuel supply system 5) throttle operating system
	B	-1.70~+1.70g/s	B: learning value of mass air flow idling speed stabilization

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	C	-1.70~+1.70g/s	C: learning value of mass air flow idling speed stabilization
	D	idling	D: idle speed, full load, part load, power enrichment, overdrive cutoff
05	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	860rpm	B: idle speed (M/T)
	C	-10.0~+10.0%	C: Lambda learning value at part Load (idle speed regulator)
	D	2.0~4.0g/s	D: air volume induced
06	A	0~2550rpm	A: engine speed
	B	-10.0~+10.0%	B: Lambda learning value at part load (idle speed regulator)
	C	-10.0~+10.0%	C: Lambda learning value at part load (idle speed regulator) check the following items: 1) the leakage of intake air system 2) the rate of injection 3) λ learning value

	D	-10°~+45°v.OT	D: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage
07	A	-10.0~+10.0%	A: Lambda learning value at part load (idle speed regulator)
	B	0.000~1.000V	B: O2 sensor voltage 1) if the mixture air is rich, the voltage of O2 sensor is 0.7~1.0V. 2) if the mixture air is lean, the voltage of O2 sensor is 0.0~0.3V. 3) the displayed value should be lower than 0.3V and higher than 0.6V now and then, when the value is lower than 0.45V, it means air mixture too lean; when the value is higher than 0.45V, it means air mixture too rich.
	C	0~99%	C: EVAP canister purge valve
	D	0.30~1.10	D: Lambda for fuel tank vent valve

09	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	-10.0~+10.0%	B: Lambda control value
	C	0.000~1.000V	C: O2 sensor voltage 1) if the mixture air is rich, the voltage of O2 sensor is 0.7~1.0V. ---check fuel pressure regulator and holding pressure ---check the injector ---contaminated, repair or replacement ---check coolant temperature sensor ---check purge solenoid valve 1 2) if the mixture air is lean, the voltage of O2 sensor is 0.0~0.3V. ---check spark plug 3) the displayed value should be lower than 0.3V and higher than 0.6V now and then, when the value is lower than 0.45V, it means air mixture too lean; when the value is higher than 0.45V, it means air mixture too rich. ---check the leakage of intake air system

	D	-10.0~+10.0%	D: Lambda value at idle speed (add.)
10	A	0~99%	A: EVAP canister purge valve
	B	0.30~1.20	B: Lambda correction for fuel tank vent
	C	-3~+32	C: fuel tank vent evaporative -3: no fuel evaporation in charcoal purge +32: fuel evaporation saturated in charcoal purge
	D	0.00~0.30	D: EVAP tank vacuum decay slope 0.00: no fuel in purge canister 0.30: 30% of fuel evaporation coming from AKF
11	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position

	C	0 km/h	C: road speed
	D	0.50~1.50 l/h	D: fuel consumption
14	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position
	C	0~15.0°kW	C: ignition timing retardation of knock control (cylinder 1) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the knock control begins to work when engine load is higher than 40%

	D	0~15.0°kW	D: ignition timing retardation of knock control (cylinder 2) If the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded The knock control begins to work when engine load is higher than 40%
15	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1)　lower value only occurs at the conditions of overdrive cutoff 2)　if the value is higher than 2.5ms, please check the following items: ----mass air flow meter damaged ----throttle control unit damaged ----electric applications ----adjust power steering to middle position

	C	0~15.0°kW	C: ignition timing retardation of knock control (cylinder 3) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the knock control begins to work when engine load is higher than 40%
	D	0~15.0°kW	D: ignition timing retardation of knock control (cylinder 4) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the knock control begins to work when engine load is higher than 40%
16	A	0.300~1.400V	A: knock sensor signal (cylinder 1) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the signal voltage of knock control can reach 5.1V at high speed

	B	0.300~1.400V	B: knock sensor signal (cylinder 2) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the signal voltage of knock control can reach 5.1V at high speed
	C	0.300~1.400V	C: knock sensor signal (cylinder 3) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the signal voltage of knock control can reach 5.1V at high speed
	D	0.300~1.400V	D: knock sensor signal (cylinder 4) 1) if the voltage difference is higher than 50% between max. and min., the possible reason is that the connector corroded 2) the signal voltage of knock control can reach 5.1V at high speed

18	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position
	C	---	C: engine load, throttle open angle
	D	-30.0~+25.0%	D: altitude correction value -30%: equals 700mbar 25% : equals 1250mbar

19	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position
	C	X1X or X0X	C: cylinder block status
	D	12.0°v.OT	D: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage

20	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	Neutral Gear selected ON	B: shift status
	C	A/C High or A/C Low	C: A/C status
	D	compressor ON or compressor OFF	D: A/C compressor switch check A/C compressor signal
21	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system

	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position
	C	-39~+140℃	C: coolant temperature
	D	λ -Reg. OFF or λ -Reg. ON	D: Lambda control
23	A	100000	A: learning value demand display
	B	72.0~95.0%	B: TPS position at minimum display the last learning value
	C	67.0~83.0%	C: TPS position at emergency display the last learning value
	D	18.0~54.0%	D: TPS position at maximum display the last learning value
24	A	0~6800rpm	A: engine speed
	B	0~10.00ms	B: engine load
	C	20°n.OT~40°n.OT	C: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage

	D	0~72.0°kW	D: ignition timing retardation angle (cylinder 1~4)
25	A	---	A: engine working status
	B	-30~+30°kW	B: Hall sensor adjustment
	C	X00	C: MAP/CAM changeover
	D	-3~+21°kW	D: camshaft adjustment
26	A	0~6800rpm	A: engine speed
	B	0~10.00ms	B: engine load
	C	X00	C: MAP/CAM changeover
	D	-3~+21°kW	D: camshaft adjustment
95	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	1.00~2.50ms	B: engine load 1) lower value only occurs at the conditions of overdrive cutoff 2) if the value is higher than 2.5ms, please check the following items: ---mass air flow meter damaged ---throttle control unit damaged ---electric applications ---adjust power steering to middle position

	C	12.0°v.OT	C: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage
	D	80~105℃	D: coolant temperature 1) if the temperature is lower than 80℃, you must make a road test and check the coolant temperature sensor 2) if the temperature is higher than 110℃, please clean the radiator, electric fan, coolant regulator as well as coolant temperature sensor
98	A	---	A: throttle valve potentiometer voltage G69
	B	0.5~4.9V	B: throttle position sensor voltage G127
	C	idling part throttle	C: engine running status
	D	RUNNING OK ERROR	D: adaptation mode

99	A	820~900rpm	A: idle speed 1) if the engine speed is lower than 820rpm, please check the throttle control unit and the leakage of intake air system 2) if the engine speed is higher than 900rpm, please check the throttle control unit and the leakage of intake air system
	B	-40~125℃	B: coolant temperature
	C	-10%~+10%	C: Lambda value at idle speed
	D	λ-Reg. OFF λ-Reg. ON	D: Lambda control OFF/ON

The Block Number Of Audi 100/200 2.6E

Group	Basic	Setting	Designation
No.	Address	Display	
00	---	---	no designation
01	A	680~820rpm	A: idle speed 1. if idle speed is higher than 820rpm: 　　①idle switch F60 defective 　　②air leakage, check intake air system 　　③idle speed control valve N71 fault 2. if idle speed is lower than 680rpm: 　　①idle speed control valve N71 fault 　　②idle switch F60 defective
	B	MAP	B: intake air manifold absolute pressure 　　100% = 1022 hPa 　　32%　= 327 hPa 　　29~59%: at idle speed

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	C	6~12° BTDC	C: ignition angle
			If the value is out of the range, please check the following items:
			  ---electric applications
			  ---adjust power steering to middle position
			  ---air leakage

	D	18~75 steps	D: steps for idle speed control valve N71 If the step value is out of the range, N71 valve will be blocked or inactive.

02	A	0~85%	A: throttle angle
			  0%: throttle valve closed (idle speed)
			  85%: throttle wide open
			  if the value is higher than 0% at idle speed, the throttle potentiometer G69 maybe damaged.
			  if the value is lower than 85% at the throttle valve wide open, the throttle potentiometer G69 is defective.

	B	MAP	B: manifold absolute pressure
			  100% = 1022 hPa
			  32%　= 327 hPa
			  29~59%:　at idle speed

	C	81~111℃	C: coolant temperature if the coolant temperature is higher than 111℃, the coolant temperature sensor or circuit failure.
	D	---℃	D: intake air temperature relative to environment temperature

| 03 | A | 0.75~1.25 | A: Lambda control value (cylinder 1~3)

1) if the value is lower than 0.75:
    ①fuel system pressure too high
    ②fuel injector leakage
    ③O2 sensor /heater failure
please check the following items:
    ①check fuel pressure and holding pressure
    ②check fuel injector
    ③check O2 sensor or O2 sensor heater

2) if the value is higher than 1.25:
    ①fuel system pressure too low
    ②fuel injector blocked
    ③O2 sensor /heater failure
    ④catalytic system leakage
please check the following items:
    ①check fuel pressure and holding pressure
    ②check fuel injector
    ③check O2 sensor or O2 sensor heater |

	B	0.75~1.25	B: Lambda control value (cylinder 4~6) 1) if the value is lower than 0.75: 　　①fuel system pressure too high 　　②fuel injector leakage 　　③O2 sensor /heater failure *please check the following items:* 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater 2) if the value is higher than 1.25: 　　①fuel system pressure too low 　　②fuel injector blocked 　　③O2 sensor /heater failure 　　④catalytic system leakage ***please check the following items:*** 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater
	C	0.75~1.25	C: Lambda control value (cylinder 1~3) if the value is out of the range, it means the mixture air is too rich, the quantity of fuel injection must be reduced; or the mixture air is too lean, the quantity of fuel injection must be raised

	D	0.75~1.25	D: Lambda control value (cylinder 1~3) if the value is out of the range, it means the mixture air is too rich, the quantity of fuel injection must be reduced; or the mixture air is too lean, the quantity of fuel injection must be raised
04	A	Lambda control adaption	A: refer to the Lambda control table enclosed
	B	---	B: Lambda control adaption for purge canister
	C	0.75~1.25	C: Lambda control value (cylinder 1~3) if the value is out of the range, it means the mixture air is too rich, the quantity of fuel injection must be reduced; or the mixture air is too lean, the quantity of fuel injection must be raised
	D	0.75~1.25	D: Lambda control value (cylinder 1~3) if the value is out of the range, it means the mixture air is too rich, the quantity of fuel injection must be reduced; or the mixture air is too lean, the quantity of fuel injection must be raised
05	A	680~820rpm	A: Idle speed 1) If idle speed is higher than 820rpm: ①idle switch F60 defective ②air leakage, check intake air system ③idle speed control valve N71 fault 2). if idle speed is lower than 680rpm: ①idle speed control valve N71 fault ②idle switch F60 defective

	B	60°	B: Knock control If the value is too low, it means the components loose or intake air temperature too high
	C	6~12° BTDC	C: ignition angle If the value is out of the range, please check the following items: ---electric applications ---adjust power steering to middle position ---air leakage
	D	81~111℃	D: coolant temperature if the coolant temperature is higher than 111℃, the coolant temperature sensor or circuit failure.
06	A	10~60	A: steps for idle speed control valve N71 if the step value is out of the range, it means intake air system failure or idle speed control valve damaged.
	B	18~75 steps	B: idle speed control value (current) If the value is always 35, please check idle speed control valve.
	C	--	C: idle speed control is affected by other signal
	D	--	D: idle speed control
07	A	10~60	A: steps for idle speed control valve N71 if the step value is out of the range, it means intake air system failure or idle speed control valve damaged.

	B	81~111℃	B: coolant temperature If the coolant temperature is higher than 111℃, the coolant temperature sensor or circuit is defective.
	C	0.75~1.25	C: Lambda control value (cylinder 1~3) 1) if the value is lower than 0.75: 　①fuel system pressure too high 　②fuel injector leakage 　③O2 sensor /heater failure *please check the following items:* 　① check fuel pressure and holding 　　pressure 　②check fuel injector 　③ check O2 sensor or O2 sensor 　　heater 2) if the value is higher than 1.25: 　①fuel system pressure too low 　②fuel injector blocked 　③O2 sensor /heater failure 　④catalytic system leakage ***please check the following items:*** 　① check fuel pressure and holding 　　pressure 　②check fuel injector 　③ check O2 sensor or O2 sensor 　　heater

	D	0.75~1.25	D: Lambda control value (cylinder 4~6) 1) if the value is lower than 0.75: 　①fuel system pressure too high 　②fuel injector leakage 　③O2 sensor /heater failure *please check the following items:* 　①check fuel pressure and holding pressure 　②check fuel injector 　③check O2 sensor or O2 sensor heater 2) if the value is higher than 1.25: 　①fuel system pressure too low 　②fuel injector blocked 　③O2 sensor /heater failure 　④catalytic system leakage ***please check the following items:*** 　①check fuel pressure and holding pressure 　②check fuel injector 　③check O2 sensor or O2 sensor heater
08	A	10~60	A: steps for idle speed control valve N71
	B	81~111℃	B: coolant temperature

	C	0.75~1.25	C: Lambda control value (cylinder 1~3) 1) if the value is lower than 0.75: 　①fuel system pressure too high 　②fuel injector leakage 　③O2 sensor /heater failure *please check the following items:* 　①check fuel pressure and holding pressure 　②check fuel injector 　③check O2 sensor or O2 sensor heater 2) if the value is higher than 1.25: 　①fuel system pressure too low 　②fuel injector blocked 　③O2 sensor /heater failure 　④catalytic system leakage ***please check the following items:*** 　①check fuel pressure and holding pressure 　②check fuel injector 　③check O2 sensor or O2 sensor heater

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	D	0.75~1.25	D: Lambda control value (cylinder 4~6) 1) if the value is lower than 0.75: 　　①fuel system pressure too high 　　②fuel injector leakage 　　③O2 sensor /heater failure *please check the following items:* 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater 2) if the value is higher than 1.25: 　　①fuel system pressure too low 　　②fuel injector blocked 　　③O2 sensor /heater failure 　　④catalytic system leakage ***please check the following items:*** 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater
09	A	81~111℃	A: coolant temperature If the coolant temperature is higher than 111℃, the coolant temperature sensor or circuit is defective.
	B	0: OFF 1: ON	B: idle switch status

	C	6~12° BTDC	C: ignition angle
			If the value is out of the range, please check the following items:
			  ---electric applications
			  ---adjust power steering to middle position
			  ---air leakage

	D	680~820rpm	D: idle speed
			1) if idle speed is higher than 820rpm:
			   ①idle switch F60 defective
			   ②air leakage, check intake air system
			   ③idle speed control valve N71 fault
			2) if idle speed is lower than 680rpm:
			   ①idle speed control valve N71 fault
			   ②idle switch F60 defective

10	A	81~111℃	A: coolant temperature
	B	0: OFF 1: ON	B: idle switch status

	C	0.75~1.25	C: Lambda control value (cylinder 1~3) 1) if the value is lower than 0.75: 　　①fuel system pressure too high 　　②fuel injector leakage 　　③O2 sensor /heater failure *please check the following items:* 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater 2) if the value is higher than 1.25: 　　①fuel system pressure too low 　　②fuel injector blocked 　　③O2 sensor /heater failure 　　④catalytic system leakage ***please check the following items:*** 　　①check fuel pressure and holding pressure 　　②check fuel injector 　　③check O2 sensor or O2 sensor heater
	D	680~820rpm	D: idle speed 1) if idle speed is higher than 820rpm: 　　①idle switch F60 defective 　　②air leakage, check intake air system 　　③idle speed control valve N71 fault 2) if idle speed is lower than 680rpm: 　　①idle speed control valve N71 fault 　　②idle switch F60 defective

11	A	680~820rpm	A: idle speed 1) if idle speed is higher than 820rpm: 　①idle switch F60 defective 　②air leakage, check intake air system 　③idle speed control valve N71 fault 2) if idle speed is lower than 680rpm: 　①idle speed control valve N71 fault 　②idle switch F60 defective
	B	MAP	B: intake air manifold absolute pressure 　100% = 1022 hPa 　32% = 327 hPa 　29~59%: at idle speed
	C	81~111℃	C: coolant temperature 　if the coolant temperature is higher 　than 111℃, the coolant temperature 　sensor or circuit is defective.
	D	Lambda control	D: ON: Lambda active 　OFF: Lambda inactive
99	A	680~820rpm	A: idle speed 1) if idle speed is higher than 820rpm: 　①idle switch F60 defective 　②air leakage, check intake air system 　③idle speed control valve N71 fault 2) if idle speed is lower than 680rpm: 　①idle speed control valve N71 fault 　②idle switch F60 defective
	B	engine load (actual value)	B: intake air manifold absolute pressure 　100% = 1022 hPa 　32% = 327 hPa 　29~59%: at idle speed

	C	81~111℃	C: coolant temperature 　　if the coolant temperature is higher 　　than 111℃, the coolant temperature 　　sensor or circuit failure.
	D	-10~+10%	D: Lambda control

Lambda control table

Value	Lambda Control Status	Reason and Remedy
0	---	ACF not work
1	coolant temperature too low	Not reach engine coolant temperature 85℃
		Read fault code
		Check coolant temperature sensor G62
4	idle speed too low	Close all electric applications
		Read fault code
		Check idle speed
5	idle speed too high	Read fault code
		Check idle speed
6	O2 sensor not work	Read fault code
		Check O2 sensor
7	Lambda control fault	not reach engine coolant temperature 85℃
		Read fault code
		Check throttle potentiometer
10	not reach the set value	not reach engine coolant temperature 85℃
		Read fault code
11	ignition count too few	Read fault code
		O2 sensor defective
12	Ignition count too much	Read fault code
		O2 sensor defective
16	ACF not work	