

KW590

User's Manual

OBD2/EOBD SCANNER



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1. Safety Precautions and Warnings

To prevent personal injury or damage to vehicles and/or the scan tool, read this instruction manual first and observe the following safety precautions at a minimum whenever working on a vehicle:

- Always perform automotive testing in a safe environment.
- Wear safety eye protection that meets ANSI standards.
- Keep clothing, hair, hands, tools, test equipment, etc. away from all moving or hot engine parts.
- Operate the vehicle in a well ventilated work area: Exhaust gases are poisonous.
- Put blocks in front of the drive wheels and never leave the vehicle unattended while running tests.
- Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These components create hazardous voltages when the engine is running.
- Put the transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) and make sure the parking brake is engaged.
- Keep a fire extinguisher suitable for gasoline/chemical/ electrical fires nearby.
- Don't connect or disconnect any test equipment while the ignition is on or the engine is running.
- Keep the scan tool dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the scan tool, when necessary.

2. General Information

2.1 On-Board Diagnostics(OBD)II

The first generation of On-Board Diagnostics (called OBD I) was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new generation of On-Board Diagnostic system was developed. This second generation of On-Board Diagnostic regulations is called "OBD II".

The OBD II system is designed to monitor emission control systems and key engine components by performing either continuous or periodic tests of specific components and vehicle conditions. When a problem is detected, the OBD II system turns on a warning lamp (MIL) on the vehicle instrument panel to alert the driver typically by the phrase of "Check Engine" or "Service Engine Soon". The system will also store important information about the detected malfunction so that a technician can accurately find and fix the problem. Here below follow three pieces of such valuable information :

- 1) Whether the Malfunction Indicator Light (MIL) is commanded 'on' or 'off';
- 2) Which, if any, Diagnostic Trouble Codes (DTCs) are stored;
- 3) Readiness Monitor status.

2.2 Diagnostic Trouble Codes (DTCs)

OBD II Diagnostic Trouble Codes are codes that are stored by the on-board computer diagnostic system in response to a problem found in the vehicle. These codes identify a particular problem area and are intended to provide you with a guide as to where a fault might be occurring within a vehicle. OBD II Diagnostic Trouble Codes consist of a five-digit alphanumeric code. The first character, a letter, identifies which control system sets the code. The other four characters, all numbers, provide additional information on where the DTC originated and the operating conditions that caused it to set. Here below is an example to illustrate the structure of the digits:

Identifying specific malfunctioning section of the systems

Code Type

Generic (SAE):

P0,P2,P34^P39

B0.B3

CO, C3

U0,U3

Manufacturer specific:

PI, P30-P33

B1,B2

C1,C2

U1,U2

Sub-systems

1=Fuel and Air Metering

2=Fuel and Air Metering

3=Ignition System or Engine Misfire

4=Auxiliary Emission Controls

5=Vehicle Speed Control and Idle

Controls

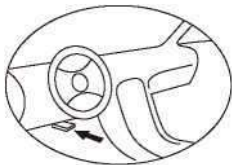
6=Computer Output Circuits

7=Transmission Controls

8=Transmission Controls

2.3 Location of the Data Link Connector (DLC)

The DLC (Data Link Connector or Diagnostic Link Connector) is the standardized 16-cavity connector where diagnostic scan tools interface with the vehicle's on-board computer. The DLC is usually located 12 inches from the center of the instrument panel (dash), under or around the driver's side for most vehicles, IF Data Link Connector is not located under dashboard, a label should be there telling location, For some Asian and European vehicles, the DLC is located behind the ashtray and the ashtray must be removed to access the connect If the DLC cannot be found, refer to the vehicle's service manual for the location.



2.4 OBDII Readiness Monitors

An important part of a vehicle's OBD II system is the Readiness Monitors, which are indicators used to find out if all of the emissions components have been evaluated by the OBD II system. They are running periodic tests on specific systems and components to ensure that they are performing within allowable limits.

Currently, there are eleven OBD II Readiness Monitors (or I/M Monitors) defined by the U.S. Environmental Protection Agency (EPA). Not all monitors are supported by all vehicles and the exact number of monitors in any vehicle depends on the motor vehicle manufacturer's emissions control strategy.

Continuous Monitors — Some of the vehicle components or systems are continuously tested by the vehicle's OBD II system, while others are tested only under specific vehicle operating conditions. The continuously monitored components listed below are always ready:

- 1) Misfire
- 2) Fuel System
- 3) Comprehensive Components (CCM)

Once the vehicle is running, the OBD II system is continuously checking the above components, monitoring key engine sensors, watching for engine misfire, and monitoring fuel demands.

Non-Continuous Monitors — Unlike the continuous monitors, many emissions and engine system components require the vehicle to be operated under specific conditions before the monitor is ready. These monitors are termed non-continuous monitors and are listed below:

- 1) EGR System
- 2) O₂ Sensors

- 3) Catalyst
- 4) Evaporative System
- 5) O2 Sensor Heater
- 6) Secondary air
- 7) Heated Catalyst
- 8) A/C system

2.5 OBDII Monitor Readiness Status

OBDII systems must indicate whether or not the vehicle's PCM, s monitor system has completed testing on each component. Components that have been tested will be reported as "Ready", or "Complete", meaning they have been tested by the OBD II system. The purpose of recording readiness status is to allow inspectors to determine if the vehicle's OBD II system has tested all the components and/or systems.

The power train control module (PCM) sets a monitor to "Ready" or "Complete" after an appropriate drive cycle has been performed. The drive cycle that enables a monitor and sets readiness codes to "Ready" varies for each individual monitor. Once a monitor is set as "Ready" or "Complete", it will remain in this state. A number of factors, including erasing of diagnostic trouble codes (DTCs) with a scan tool, can result in Readiness Monitors being set to "Not Ready". Since the three continuous monitors are constantly evaluating, they will be reported as "Ready" all of the time. If testing of a particular supported non-continuous monitor has not been completed, the monitor status will be reported as "Not Complete" or "Not Ready".

In order for the OBD monitor system to become ready, the vehicle should be driven under a variety of normal operating conditions. These operating conditions may include a mix of highway driving and stop and go, city type driving, and at least one overnight—off period. For specific information on getting your vehicle's OBD monitor system ready, please consult your vehicle owner's manual.

2.6 OBD II Definitions

Power train Control Module (PCM) -- OBD II terminology for the on-board computer that controls engine and drive train.

Malfunction Indicator Light (MIL) -- Malfunction Indicator Light (Service Engine Soon, Check Engine) is a term used for the light on the instrument panel. It is to alert the driver and/or the repair technician that there is a problem with one or more of vehicle's systems and may cause emissions to

exceed federal standards. If the MIL illuminates with a steady light, it indicates that a problem has been detected and the vehicle should be serviced as soon as possible. Under certain conditions, the dashboard light will blink or flash. This indicates a severe problem and flashing is intended to discourage vehicle operation. The vehicle on board diagnostic system can not turn the MIL off until the necessary repairs are completed or the condition no longer exists.

DTC --Diagnostic Trouble Codes (DTC) that identify which section of the emission control system has malfunctioned.

Enabling Criteria -- Also termed Enabling Conditions. They are the vehicle-specific events or conditions that must occur within the engine before the various monitors will set, or run. Some monitors require the vehicle to follow a prescribed “drive cycle” routine as part of the enabling criteria. Drive cycles vary among vehicles and for each monitor in any particular vehicle.

OBD II Drive Cycle - - A specific mode of vehicle operation that provides conditions required to set all the readiness monitors applicable to the vehicle to the “ready” condition. The purpose of completing an OBD II drive cycle is to force the vehicle to run its on board diagnostics. Some form of a drive cycle needs to be performed after DTCs have been erased from the PCM's memory. Running through a vehicle's complete drive cycle will “set” the readiness monitors so that future faults can be detected. Drive cycles vary depending on the vehicle and the monitor that needs to be reset. For vehicle specific drive cycle, consult the vehicle's Owner's Manual

Freeze Frame Data --When an emissions related fault occurs, the OBD II system not only sets a code but also records a snapshot of the vehicle operating parameter to help in identifying the problem. This set of values is referred to as Freeze Frame Data and may include engine parameters such as engine RPM, vehicle speed, air flow, engine load, fuel pressure, fuel trim value, engine coolant s, ignition timing advance, or closed loop status.

3. Using the Scan Tool

3.1 Tool Description



1) GREEN LED - Indicates that engine systems are running normally (The number of monitors on the vehicle which are active and performing their diagnostic testing is in the allowed limit, and no DTCs are present).

2) YELLOW LED - Indicates there is a possible problem. A “pending” DTC is present and/or some of the vehicle’s emission monitors have not run their diagnostic testings

3) RED LED - Indicates there is a problem in one or more of the Vehicle’s systems ○ The red LED is also used to show that DTCs are present. DTCs are shown on the Scan Tool’s emission monitors have not run their diagnostic testing ◦

4) ESC BUTTON - Returns to previous menu .

5) ENTER BUTTON - Confirms a selection (or action) from a menu list ◦

6) UP SCROLL BUTTON — Moves UP through menu and sub menu items in menu mode. When more than one screen of data is retrieved, moves UP through the current screen to next screens for additional data.

7) DOWN SCROLL BUTTON — Moves down through menu and sub menu items in menu mode. When more than one screen of data is retrieved, moves down through the current screen to next screens for additional data. It is also used as the language setup hot key when pressed.

8) OBD II CONNECTOR — Connects the scan tool to the vehicle’s Data Link Connector (DLC).

9) RUBBER BOOT Protects the scan tool from drop, abrasion and etc.

3.2 Specifications

- 1) Display: Back lit, 128 x 64 pixel display with contrast adjustment
- 2) Operating Temperature: 0 to 60[^](32 to 140 F°)
- 3) Storage Temperature:-20 to 701 (-4 to 158 F°)
- 4) External Power: 8.0 to 18.0 V power provided via vehicle battery
- 5) Dimensions:

Length	Width	Height
127mm(5.00")	78mm(3.07")	20mm(0.79")

- 6) NW:0.23kg(0.501b), GW:0.31Kg(0.68 lb)

3.3 Accessories Included

- 1) User's Manual -- Instructions on tool operations
- 2) OBD2 cable -- Provides power to tool and communicates between tool and vehicle
- 3) Carry case ——A nylon case to store the scan tool when not in use.

3.4 Keyboard

No solvents such as alcohol are allowed to clean the keypad or display. Use a mild nonabrasive detergent and a soft cotton cloth. Do not soak the keypad as the keypad is not waterproof.

3.5 Extrnal Power

External power of the scan tool is provided via the vehicle Data Link Connector (DLC). Just follow the steps below to turn on the scan tool;

- 1) Connect the OBDII Cable to scan tool.
- 2) Find DLC on vehicle.

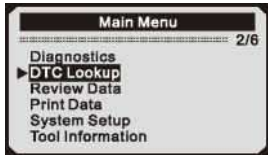
A plastic DLC cover may be found for some vehicles and you need to remove it before plugging the OBD2 cable.

- 3) Plug OBD II cable to the vehicle 's DLC.

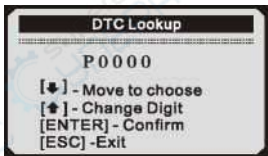
3.6 DTC Look up

The DTC Look up function is used to search for definitions of DTCs stored in built-in DTC library.

- 1) From Main Menu, use UP/DOWN scroll button to select DTC Lookup and press ENTER button.



- The number “x/x” to the right indicates total number of items under this menu and sequence of highlighted item.
 - The“?” to the right indicates help information available. Press HELP button to view help information for selected item..
- 2) From DTC Lookup menu, use DOWN button to move to the desired character, use UP button to change selected digit/ character and press ENTER button to confirm.



- 3) View the DTC definition on screen. When DTC definition covers more than one screen, use DOWN button to view additional information on previous/next screens.
- For manufacturer specific codes, you need to select a vehicle make on an additional screen to look for DTC definitions.
 - If definition could not be found (SAE or Manufacturer Specific), the scan tool displays “DTC definition not found! Please refer to vehicle service manual!”
- 4) To view next or previous DTC in the built-in DTC library, use UP button.

- 5) To enter another DTC, press ESC button to return to previous screen.
- 6) To exit to Main Menu, press ESC button.



3.7 Product Setup

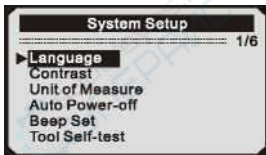
The scan tool allows you to make the following adjustments and settings:

- 1) Language: Selects the desired language.
- 2) Contrast adjustment: Adjusts the contrast of the LCD display.
- 3) Unit of measure: Sets the unit of measure to English or Metric.
- 4) Auto Power-OW: Sets automatic power-off Limits.
- 5) Beep Set: Turns on/off beep.
- 6) Tool self-test: Checks if the LCD display and keyboard are working normally.

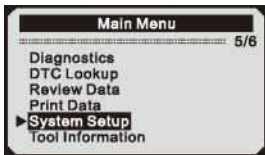
Settings of the unit will remain until change to the existing settings is made.

To enter the setup menu mode

From the keyboard: Press ESC button to enter System Setup menu. Follow the instructions to make adjustments and settings as described in the following setup options.



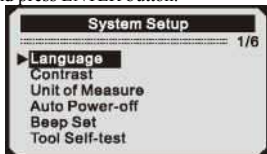
From the Main Menu: Use the UP/DOWN scroll button to select System Setup, and press ENTER button. Follow the instructions to make adjustments and settings as described in the following setup options.



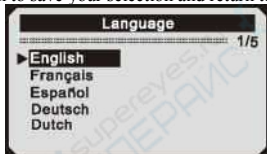
Language Setup

English is the default language.

- 1) From System Setup menu, use UP/DOWN scroll button to select Language, and press ENTER button.



- 2) Use UP/DOWN scroll button to select the desired language and press ENTER button to save your selection and return to previous menu.

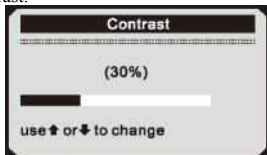


Contrast Adjustment

- 1) From System Setup menu, use UP/DOWN scroll button to select Contrast, and press ENTER button.

Unit of Measure Auto
Power-off Beep Set
Tool Self-test

- 2) From Contrast menu, use UP/DOWN scroll button to increase or decrease contrast.

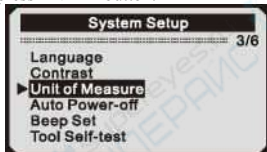


- 3) Press ENTER button to save your settings and return to previous menu.

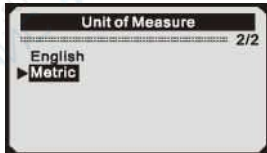
Unit of Measurement

Metric is the default measurement unit.

- 1) From System Setup menu, use UP/DOWN scroll button to select Unit of Measure and press ENTER button.



- 2) From Unit of Measure menu, use UP/DOWN scroll button to select the desired unit of measurement.

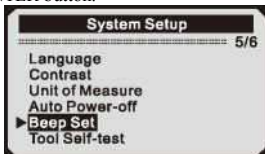


- 3) Press ENTER button to save your selection and return to previous menu.

Beep Set

The default setting is Beep On.

- 1) From System Setup menu, use UP/DOWN scroll button to select Beep Set and press ENTER button.



From Beep Set menu, use UP/DOWN scroll button to select Beep ON or Beep OFF to turn on/off the beep.



- 3) Press ENTER button to save your selection and return to previous menu.

Tool Self-test

The Tool Self-test function checks if the display and keyboard are working properly.

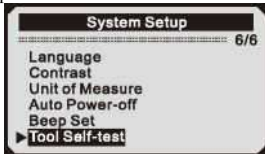
A. Display test

The Display Test function checks if the LCD display is working normally.

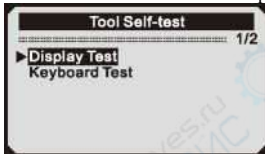
- 1) From System Setup menu, use UP/DOWN scroll button to select Tool

Tool Self -test

Self-test, and press ENTER button.



- 2) Select Display Test from Tool Self-test menu and press ENTER button.

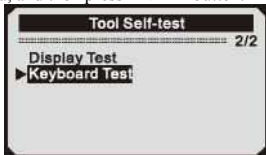


- 3) Press ENTER button again to start test. Look for missing spots in the solid black characters.
- 4) When completed, press ESC button to return.

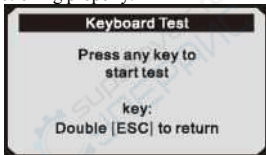
B. Keyboard Test

The Keyboard Test function verifies if the keys are functioning properly.

- 1) Use UP/DOWN scroll button to select Keyboard Test from the Tool Self-test menu, and then press ENTER button.



- 2) Press any key to start test. When you press a key, the key name should be observed on the display. If the key name does not show up, then the key is not functioning properly.



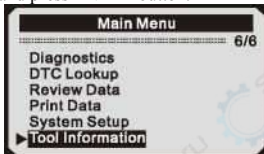
- If you press and hold the power switch, the key name does not show on the screen, but resets the scanner when powered by vehicle battery, If it does not restart the scanner or power off the scanner, the key is not working properly.

- 3) Double press ESC to return to previous menu.

3.8 Tool Information

The Tool Information function allows viewing of some important information such as serial number and software version number of the scanner.

- 1) From Main Menu, use UP/DOWN scroll button to select Tool Information and press ENTER button.



- 2) View tool information on screen.



3.9 Vehicle Coverage

The KONNWEI KW 590 OBDII/EOBD Scanner is specially designed to work with all OBD II compliant vehicles, including those equipped with the next-generation protocol —Control Area Network (CAN). It is required by EPA that all 1996 and newer vehicles (cars and light trucks) sold in the United States must be OBD II compliant and this includes all Domestic, Asian and European vehicles.

A small number of 1994 and 1995 model year gasoline vehicles are OBD II compliant. To verify if a 1994 or 1995 vehicle is OBD II compliant,

check the Vehicle Emissions Control Information (VECI) Label which is located under the hood or by the radiator of most vehicles. If the vehicle is OBD II compliant, the label will designate “OBD II Certified” • Additionally, Government regulations mandate that all OBD II compliant vehicles must have a “common” sixteen- pin Data Link Connector (DLC).

For your vehicle to be OBD II compliant it must have a 16-pin DLC (Data Link Connector) under the dash and the Vehicle Emission Control Information Label must state that the vehicle is OBD II compliant.

3.10 Product Troubleshooting

Vehicle Linking Error

A communication error occurs if the scan tool fails to communicate with the vehicle' s ECU (Engine Control Unit). You need to do the following to check up:

- Verify that the ignition is ON;
- Check if the scan tool' s OBD II connector is securely connected to the vehicle' s DLC;
- Verify that the vehicle is OBD2 compliant;
- Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and continue the testing.
 - Verify the control module is not defective.

Operating Error

If the scan tool freezes, then an exception occurs or the vehicle's ECU (Engine Control Unit) is too slow to respond to requests. You need to do the following to reset the tool:

- Press and hold POWER button for at least 2 seconds to reset the scan tool.
- Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and continue the testing.

Scan tool doesn't power up

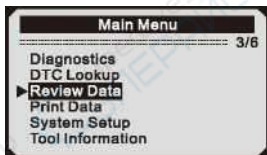
If the scan tool won't power up or operates incorrectly in any other way, you need to do the following to check up:

- Check if the scan tool's OBDII connector is securely connected to the vehicle's DLC;
- Check if the DLC pins are bent or broken. Clean the DLC pins if necessary.
- Check vehicle battery to make sure it is still good with at least 8.0 volts.

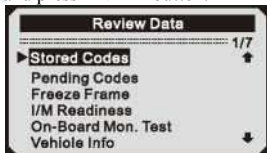
4. Review Data

The Review Data function allows viewing of data from last test recorded by the scan tool.

- 1) Use UP/DOWN scroll button to select Review Data from Main Menu, and press ENTER button

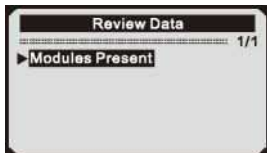


- 2) Use UP/DOWN scroll button to select the desired item from Review Data menu, and press ENTER button.



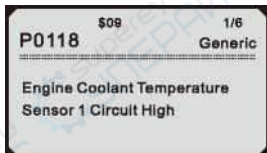
- If no data from previously tested vehicle is recorded, only

Module Present data containing module ID and protocol type can be reviewed.



3) Review selected data on screen.

- If there is no data stored for selected item, a "Not Supported or Stored No Data!" message shows on the screen.

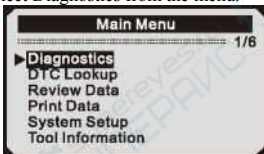


5. OBDII Diagnostics

When more than one vehicle control module is detected by the scan tool, you will be prompted to select the module where the data may be retrieved. The most often to be selected are the Power train Control Module [PCM] and Transmission Control Module [TCM].

CAUTION: Don't connect or disconnect any test equipment with ignition on or engine running.

- 1) Turn the ignition off.
- 2) Locate the vehicle's 16-pin Data Link Connector (DLC).
- 3) Plug into the scan tool cable connector to the vehicle's DLC.
- 4) Turn the ignition on. Engine can be off or running.
- 5) Press ENTER button to enter Main Menu. Use UP/DOWN scroll button to select Diagnostics from the menu.



- 6) Press ENTER button to confirm A sequence of messages displaying the OBD2 protocols will be observed on the display until the vehicle protocol is detected.
 - *If the scan tool fails to communicate with the vehicle's ECU (Engine Control Unit), a "LINKING ERROR!" message shows up on the display.*
 - Verify that the ignition is ON;
 - Check if the scan tool's OBD II connector is securely connected to the vehicle's DLC;
 - Verify that the vehicle is OBD2 compliant;
 - Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and repeat the procedure from step 5.

- If the "LINKING ERROR" message does not go away, then there

**Erase previously
stored data to save
data from this test?**

YES NO

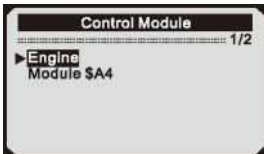
Diagnostic

might be problems for the scan tool to communicate with the vehicle. Contact your local distributor or the manufacturers customer service department for assistance.

- 7) You will be prompted to erase previously stored data.
 - Review previously stored data thoroughly before erasing.
 - If no data is stored in the scan tool, above prompt will not show up.
- 8) If you wish to erase the data, press ENTER button; if you do not want to erase the data, press ESC or use UP/DOWN button to select NO and press ENTER to continue.
- 9) View a summary of system status (MIL status, DTC counts, Monitor status) on screen, Wait a few seconds or press any key for Diagnostic Menu to come up.

If more than one module is detected, you will be prompted to select a module before testing.

System Status	
MIL Status	ON
Codes Found	6
Monitous N/A	3
Monitous OK	3
Monitous INC	5



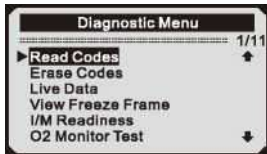
- Use UP/DOWN scroll button to select a module and press ENTER button.

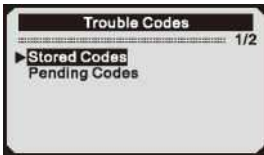
5.1 Reading Codes

- ◆ *Reading Codes can be done with the key on engine off (KOEO) or with the key on engine running (KOER)*
- ◆ *Stored Codes are also known as "hard codes" or "permanent codes". These codes cause the control module to illuminate the malfunction indicator lamp (MIL) when emission-related fault occurs.*
- ◆ *Pending Codes are also referred to as "maturing codes" or "continuous monitor codes". They indicate problems that the control module has detected during the current or last driving cycle but are not considered serious yet. Pending Codes will not turn on the malfunction indicator lamp (MIL). If the fault does not occur within a certain number of warm-up cycles, the code clears from memory.*

1) Use UP/DOWN scroll button to select Read Codes from Diagnostic Menu and press ENTER button.

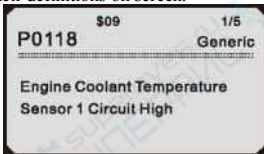
2) Use UP/DOWN scroll button to select Stored Codes or Pending Codes from the Trouble Codes menu and press ENTER button.





- If there are no Diagnostic Trouble Codes present, the display indicates "No(pending) codes are stored in the module!" Wait a few seconds or press any key to return to Diagnostic Menu.

3) View DTCs and their definitions on screen.



- The control module number, sequence of the DTCs, total number of codes detected and type of codes (Generic or Manufacturer specific) will be observed on the upper right hand corner of the display.

4) If more than one DTC is found, use UP/DOWN scroll button, as necessary, until all the codes have been shown up.

If retrieved DTCs contain any manufacturer specific or enhanced codes, a "Manufacturer specific codes are found! Press any key to select vehicle make!" message comes up prompting you to select vehicle manufacturer to view DTC definitions. Use UP/DOWN scroll button to select manufacturer and then press ENTER button to confirm.



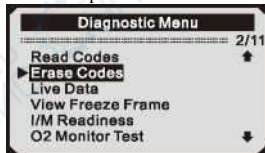
- If the manufacturer for your vehicle is not listed, use UP/DO WN scroll button to select Other and press ENTER button.

5.2 Erasing Codes

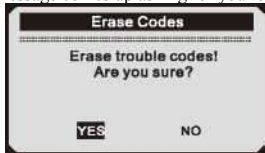
CAUTION: Erasing the Diagnostic Trouble Codes may allow the scan tool to delete not only the codes from the vehicle's on-board computer, but also "Freeze Frame" data and manufacturer specific enhanced data. Further, the I/M Readiness Monitor Status for all vehicle monitors is reset to Not Ready or Not Complete status. Do not erase the codes before the system has been checked completely by a technician.

- ♦ This function is performed with key on engine off (KOEO). Do not start the engine.

- 1) Use UP/DO WN scroll buttons to select Erase Codes from Diagnostics Menu and press ENTER button.



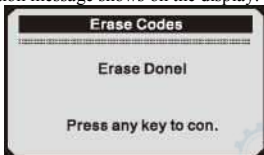
- 2) A warning message comes up asking for your confirmation.



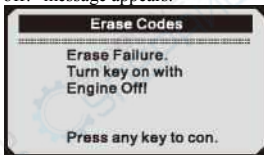
- If you do not want to proceed with erasing codes, press ESC button or use UP/DOWN scroll button to select NO to exit. A message of "Command Can celled!" show ups. Wait a few seconds or press any key to return to Diagnostic Menu.

3) Press ENTER button to confirm.

- If the codes are cleared successfully, an "Erase Done!" confirmation message shows on the display.



- If the codes are not cleared, then an "Erase Failure. Turn Key on with Engine off!" message appears.



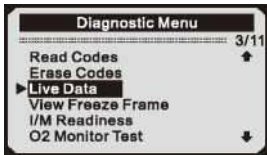
4) Press any button to return to Diagnostic Menu.

5.3 Live Data

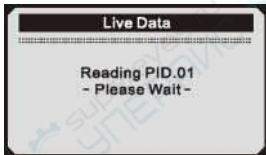
Viewing Data

The View Data function allows viewing of live or real time PID data of vehicle's computer module(S).

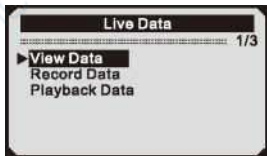
- 1) To view live data, use UP/DOWN scroll button to select Live Data from Diagnostic Menu and press ENTER button.



- 2) Wait a few seconds while the scan tool validates the PID MAP.

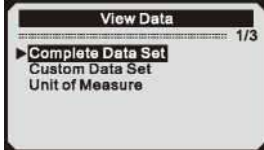


- 3) Use UP/DOWN scroll button to select View Data from Live Data menu and press ENTER button.

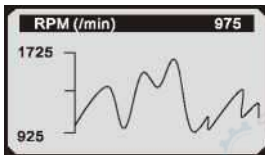


Viewing Complete Data Set

- 4) To view complete set of data, use UP/DOWN scroll button to select Complete Data Set from View Data menu and press ENTER button.



- 5) View live PIDs on the screen. Use UP/DOWN scroll button for more PIDs if an UP or DOWN arrow appears on the screen.



- The number "x" to the right of the screen indicates sequence of highlighted item.
- If you want to view full name of the highlighted PID, press Help button.
- If the "G" icon appears when a PID is highlighted, it indicates graphic information is available. Press ENTER to view graph.

Live Data		1/84
▶ DTC_CNT	0	↑
DTCFRZF	P0000	
FUEL SYS1	CL	
FUEL SYS2	CL	
LOAD_PCT(%)	0.0	
ECT(°F)	417	↓

- 6) Press ESC button to return to previous menu.

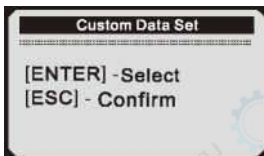
Viewing Custom Data Set

- 7) To view customized PID data, use UP/DOWN scroll button to select Custom Data Set from View Data menu and press ENTER button.

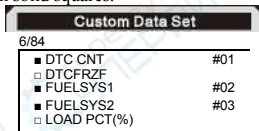
Unit of Measure

Complete Data Set

- 8) Observe on-screen instructions.



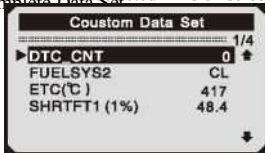
- 9) use UP/DOWN scroll button to move up and down. Selected parameters are marked with solid squares.



- The number "x" to the upper right corner of the screen indicates sequence of highlighted item; and "#x" are the order that the parameters are selected and will be displayed.

. You are allowed to pick up a maximum of 18 PIDs, If the selected PIDs exceed 18, a "The selected data list is full!" message displays on the screen.

- 10) Press ESC button to view selected PIDs on screen.
Recording Configuration



- 11) Use ESC button to return to View Data menu and/or return to Live Data menu.

Recording Data

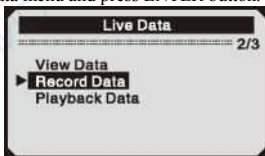
The Record Data function allows recording vehicle modules' Parameter Identification (PID) data to help diagnose intermittent vehicle problems. A recording includes 5 frames of live data before trigger event and several frames after trigger event.

There are two trigger modes used to record data:

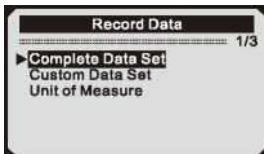
- A. Manual Trigger - allows user to press ENTER button to start recording.
- B. DTC Trigger - automatically records PID data when a fault that causes a DTC to set is detected by vehicle.

CAUTION : DO NOT try to drive and operate the scan tool at the same time!
Always have another person operate the scan tool while driving-

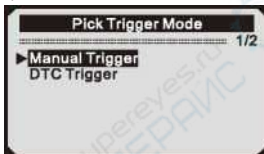
- 1) To record live data, use UP/DOWN scroll button to select Record Data from Live Data menu and press ENTER button.



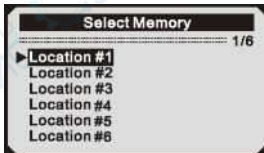
- 2) To record complete set of live data, use UP/DOWN scroll button to select Complete Data Set from Record Data menu and press ENTER button.



- 3) Use UP/DOWN scroll button to select a trigger mode and press ENTER button.

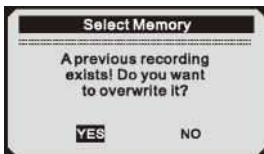


- 4) Use UP/DOWN scroll button to select a memory location and press ENTER button.



- The asterisk (1) icon on the screen indicates that there is a previous recording in the memory location.
• If you select a location marked with an asterisk (*) icon, a message

Recording Complete Data Set
prompting to overwrite old recording displays.



- If you wish to proceed with overwriting the old recording, press ENTER button; if you do not wish to overwrite it, use UP/DOWN button to select NO or press ESC button to pick another memory location
- 5) Observe on-screen instructions.

- If Manual Trigger is selected, following screen shows:

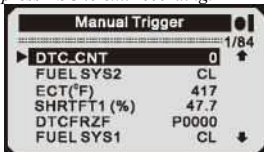


- If DTC Trigger is selected, following screen shows:



- 6) Wait for DTC to trigger recording or press ENTER to start recording.

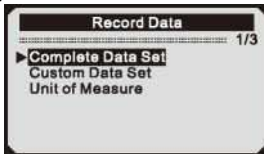
- ◆ Drive till a DTC is detected when DTC Trigger is selected, If no DTCs are detected, press ESC to exit recording.



- The number "x/x..." to the upper right corner of the screen indicates the maximum frames that can be recorded and the number of recorded frames.
- 7) The scan tool keeps recording PID data until user presses ESC button, selected memory location is full, or it completes recording. A message prompting to playback data shows on the screen.



- If you wish to playback recorded data, press ENTER button; if you do not wish to playback, press ESC button, or use UP/DOWN button to select NO and press ENTER button to return to Record Data menu.



- 8) To record customized data, **Deselect** use UP/DOWN scroll button to select Custom Data Set from Record Data menu and press ENTER button.



- 9) Observe on-screen instructions. Wait a few seconds or press any key to continue.



- 10) Use ENTER button select/deselect data parameters, Selected parameters are marked with solid squares. Press ESC button to confirm.

You are allowed to pick up a maximum of 18 PIDs. If the selected PIDs exceed 18, a "The selected data list is full!" message displays on the screen.

- A message comes up to ask for your confirmation.

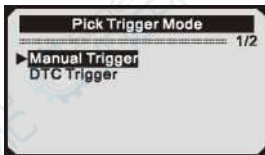
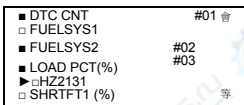
<input checked="" type="checkbox"/> DTC CNT	#01
<input type="checkbox"/> FUELSYS2	
<input checked="" type="checkbox"/> ETC(°F)	#02
<input checked="" type="checkbox"/> SHRTFT1 (%)	#03
<input type="checkbox"/> DTCFRZF	

Recording Custom Data Set

Deselect all
selected PIDs?

NO

- . If you decide to deselect these items, press ENTER; if you decide not to, press ESC button, or use UP/DOWN button to select NO



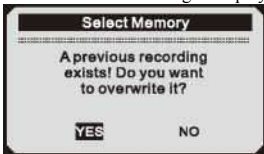
and press ENTER to continue PID selections.

- 11) Use UP/DOWN scroll button to select a trigger mode and press ENTER button.
- 12) Use UP/DOWN scroll button to select a memory location and press ENTER button.



Location #2
▶ Location #3 *
Location #4
Location #5 36
Location #6

- The asterisk (*) icon on the screen indicates that there is a previous recording in the memory location.
- If you select a location marked with an asterisk (*) icon, a message prompting to overwrite old recording is displayed.



- If you do not wish to proceed with overwriting old recording, press ENTER button; if you do not wish to overwrite it, press ESC button, or use UP/DOWN button to select NO and press ENTER to pick another memory location.

13) Observe on-screen instructions.

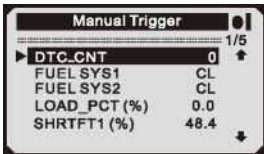
- If Manual Trigger is selected, following screen shows:



- If DTC Trigger is selected, following screen shows:



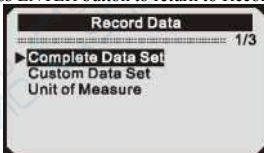
14) Wait for DTC to trigger recording or press ENTER to start recording.



- 15) The scan tool keep recording PID data until user presses ESC button, the selected memory location is full, or it completes recording, A message prompting to playback data shows on the screen.



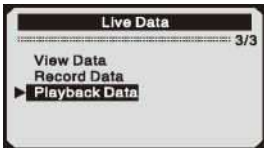
- If you wish to playback recorded data, press ENTER button; if you do not wish to playback, press ECS button, or use UP/DOWN button to select NO and press ENTER button to return to Record Data menu.



Playing Back Data

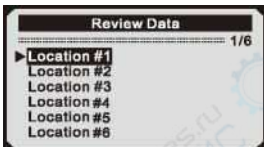
The Playback Data function allows viewing of previously stored PID data.

- 1) To playback recorded data, use UP/DOWN scroll button to select Playback Data from Live Data menu and press RENTER button.



- You are also allowed to playback recorded data immediately after recording.

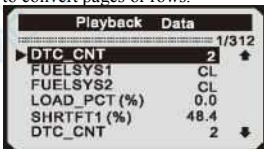
2) Use UP/DOWN button to select the memory location marked with an asterisk (*) icon.



- If there is no recording in selected location, a message “Not Supported or Stored No Data” displays on the screen.
- For data stored in temporary cache, you do not have to select memory location.

3) Use UP/DOWN button to view recorded PIDs of each frame.

- Use ENTER to convert pages or rows.



- The number "x/x" to the upper right corner of the screen indicates total number of recorded frames and sequence of frame being displayed.
- Negative frames indicate data recorded prior to trigger event, and positive frames indicate data recorded after trigger event.

4) Use UP/DOWN button to view PIDs of next or previous frames.

Playback Data	
4/312	
DTC_CNT	2 ↑
FUELSYS1	CL
FUELSYS2	CL
▶ LOAD_PCT (%)	0.0
SHRTFT1 (%)	48.4
DTC_CNT	2 ↓

5.4 Viewing Freeze Frame Data

- 1) To view freeze frame data, use UP/DOWN scroll button to select View Freeze Frame from Diagnostic Menu and press ENTER button.

Diagnostic Menu	
4/11	
Read Codes	↑
Erase Codes	
Live Data	
▶ View Freeze Frame	
I/M Readiness	
O2 Monitor Test	↓

- 2) Wait a few seconds while the scan tool validates the PID MAP.

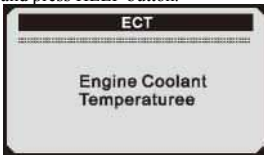
View Freeze Frame	
Reading PID.01 - Please Wait -	

- 3) If retrieved information covers more than open screen, then a down arrow will appear. Use DOWN scroll button, as necessary, until all the data have been shown up.

View Freeze Fram	
1/8	
▶ DTCFRZF	B0090 ↑
LOAD_PCT (%)	0.0
ETC(°F)	417
MAP(InHg)	76.2
RPM(/min)	12210
VSS(mph)	157 ↓

- If there is no freeze frame data available, an advisory message "No freeze frame data stored!" shows on the display.

- 4) If you want to view full name of a PID, use UP/DOWN scroll button to select the PID, and press HELP button.



- 5) Wait a few seconds or press any button to return to previous screen.

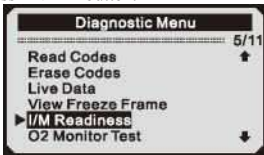
5.5 Retrieving I/M Readiness Status

I/M Readiness function is used to check the operations of the Emission System on OBD2 compliant vehicles. It is an excellent function to use prior to having a vehicle inspected for compliance to a state emissions program. Some latest vehicle models may support two types of I/M Readiness tests:

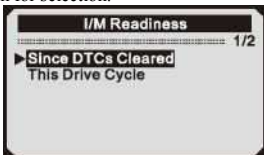
- A. DTCs Cleared - indicates status of the monitors since the DTCs are erased.
- B. *This Drive Cycle* — indicates status of monitors since the beginning of the current drive cycle.

An I/M Readiness Status result of “NO” does not necessarily indicate that the vehicle being tested will fail the state I/M inspection. For some states, one or more such monitors may be allowed to be “Not Ready” to pass the emissions inspection.

- “OK” — Indicates that a particular monitor being checked has completed its diagnostic testing.
 - “INC” — Indicates that a particular monitor being checked has not completed its diagnostic testing.
 - “N/A” — The monitor is not supported on that vehicle.
- 1) Use UP/DOWN scroll button to select I/M Readiness from Diagnostic Menu and press ENTER button.



- 2) If the vehicle supports both types of tests, then both types will be shown on the screen for selection.



- 3) Use UP/DOWN scroll button, as necessary, to view the status of the MIL light ("ON" or "OFF") and the following monitors:

- Misfire monitor -- Misfire monitor
- Fuel System Mon — Fuel System Monitor
- Comp.Component — Comprehensive Components Monitor
- EGR — EGR System Monitor
- Oxygen Sens Mon -- 02 Sensors Monitor
- Catalyst Mon —Catalyst Monitor
- EVAP System Mon --- Evaporative System Monitor
- Oxygen Sen htr —02 Sensor Heater Monitor
- Sec Air System -- Secondary Air Monitor
- Htd Catalyst — Heated Catalyst Monitor
- A/C Refrig Mon — A/C system Monitor

Since DTCs Cleared	
MIL Status	ON
Misfire Monitor	N/A
Fuel System Mon	N/A
Comp. Component	N/A
Catalyst Mon	N/A
Htd Catalyst	N/A

- 4) If the vehicle supports readiness test of "This Drive Cycle", a screen of the following displays:

This Drive Cycle	
MIL Status	OFF
Misfire Monitor	N/A
Fuel System Mon	N/A
Comp. Component	OK
Catalyst Mon	N/A
Htd Catalyst	N/A

- 5) Press ESC button to return to Diagnostic Menu.

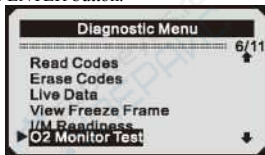
5.6 O2 Monitor Test

OBD2 regulations set by SAE require that relevant vehicles monitor and test the oxygen (O2) sensors to identify problems related to fuel efficiency and vehicle emissions. These tests are not on-demand tests and they are done automatically when engine operating conditions are within specified limits. These test results are saved in the on-board computer's memory.

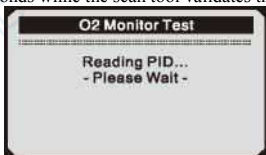
The O2 Monitor Test function allows retrieval and viewing of O2 sensor monitor test results for the most recently performed tests from the vehicle's on-board computer.

The O2 Monitor Test function is not supported by vehicles which communicate using a controller area network (CAN). For O2 Monitor Test results of CAN-equipped vehicles, see chapter "On-Board Mon.Test2".

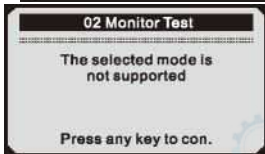
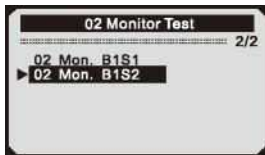
- 1) Use UP/DOWN scroll button to select O2 Monitor Test from Diagnostic Menu and press ENTER button.



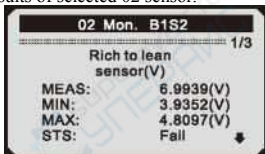
- 2) Wait a few seconds while the scan tool validates the PID MAP.



- 3) Use UP/DOWN scroll button to select O2 sensor from O2 Monitor Test menu and press ENTER button.
If the vehicle does not support the mode, an advisory message will be displayed on the screen.



- 4) View test results of selected 02 sensor.

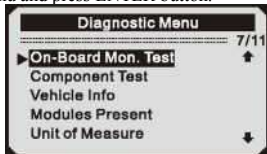


- 5) Use UP/DOWN scroll button to view more screens of data if an UP or DOWN icon displays.
- 6) Press ESC button to return to the previous menus.

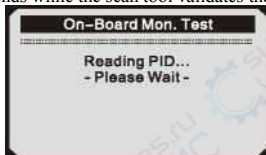
5.7 On-Board Monitor Test

The On-Board Monitor Test is useful after servicing of after erasing a vehicle's control module memory. The On-Board Monitor Test for non-CAN-equipped vehicles retrieves and displays test results for emission-related power train components and systems that are not continuously monitored. The On-Board Monitor Test for CAN-equipped vehicles retrieves and displays test results for emission-related power train components and systems that are and are not continuously monitored. Test and components IDs are determined by the vehicle manufacturer.

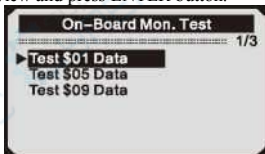
- 1) Use UP/DOWN scroll button to select On-Board Mon. Test from Diagnostic Menu and press ENTER button.



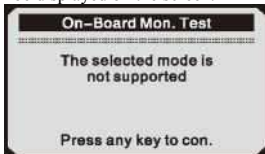
- 2) Wait a few seconds while the scan tool validates the PID MAP.

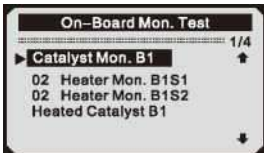


- 3) From On-Board Mon. Test menu, use UP/DOWN scroll button to select a test to view and press ENTER button.

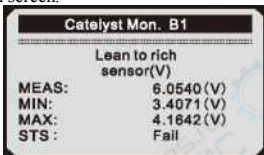


- . If the vehicle under test does not support the mode, an advisory message will be displayed on the screen.

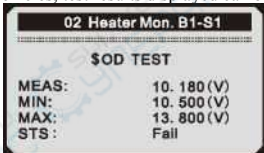




- 4) Use UP/DOWN scroll button to select the desired monitor from On-Board Mon. Test menu and press ENTER button.
- 5) View test data on screen.



. For CAN-equipped vehicles, test results displayed can be as below:

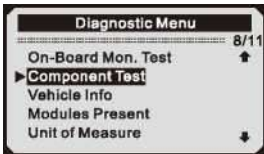


- 6) Press ESC button to return to the previous menus.

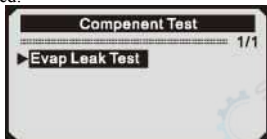
5.8 Component Test

The Component Test function allows initiating a leak test for the vehicle's EVAP system. The scan tool itself does not perform the leak test, but commands the vehicle's on-board computer to start the test. Different vehicle manufacturers might have different criteria and methods for stopping the test once it has been started. Before starting the Component Test, refer to the vehicle service manual for instructions to stop the test.

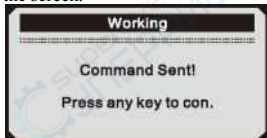
- 1) Use UP/DOWN scroll button to select Component Test from Diagnostic Menu and press ENTER button.



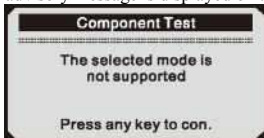
- 2) From Component Test menu, use UP/DOWN scroll button to select the test to be initiated.



- 3) If the test has been initiated by the vehicle, a confirmation message will be displayed on the screen.



- Some vehicles do not allow scan tools to control vehicle systems or components. If the vehicle under test does not support the EVAP Leak Test, an advisory message is displayed on the screen.



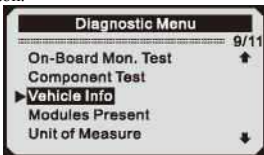
- 4) Wait a few seconds or press any key to return to Diagnostic Menu.

5.9 Viewing Vehicle Information

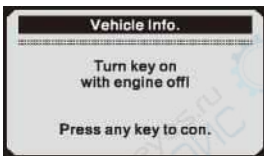
The Vehicle Info, function enables retrieval of Vehicle Identification No. (VIN), Calibration ID(s), Calibration Verification Nos. (CVNs) and In-use

Performance Tracking on 2000 and newer vehicles that support Mode 9.

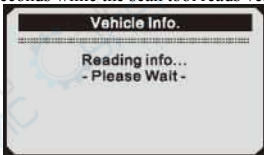
1) Use UP/DOWN scroll button to select Vehicle Info, from the Diagnostic Menu and press ENTER button.



2) An advisory message comes up to remind you. Wait a few seconds or press any key to continue.

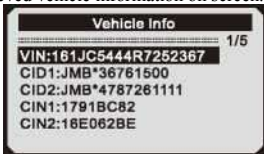


3) Wait a few seconds while the scan tool reads vehicle information.



• If the vehicle does not support this mode, a message shows on the display warning that the mode is not supported.

4) View retrieved vehicle information on screen.

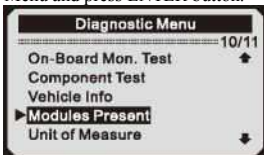


5) Press ESC button to return previous menu

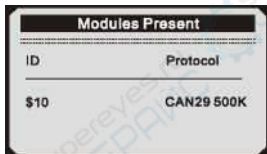
5.10 Modules Present

The Modules Present function allows viewing of the module IDs and communication protocols for OBD2 modules in the vehicle.

- 1) Use UP/DOWN scroll button to select Modules Present from Diagnostic Menu and press ENTER button.



- 2) View modules present with their IDs and communication protocols.



The image shows a screen titled "Modules Present" displaying a table of module information. The table has two columns: "ID" and "Protocol".

ID	Protocol
\$10	CAN29 500K

6 LED and AUDIO

6.1 LED Interpretation

1) GREEN LED — Indicates that engine systems are “OK” and operating normally (the number of Monitors supported by the vehicle which have run and performed their self-diagnostic testing is in the allowed limit. MIL is off). There are no stored and pending DTCs. The vehicle is ready for an Emissions Test, and there is a good possibility that it can be certified.

2) YELLOW LED -- With MEL off, there may be three possible conditions to cause the yellow LED to light.

A. If a “Stored” Diagnostic Trouble Code is causing the Yellow LED to light, it is still possible that the vehicle will be allowed to be tested for emissions and certified.

B. If a “Pending” Diagnostic Trouble Code is causing the Yellow LED to light, it is still possible that the vehicle will be allowed to be tested for emissions and certified.

C. If the illumination of the Yellow LED is being caused by monitors that have not completed their diagnostic testing, then the issue of the vehicle being ready for an Emissions Test depends on the emissions regulations and laws of your local area.

NOTE: From the code retrieval procedure, determine the status of each monitor, take this information to an emissions professional to determine (based on your test results) if your vehicle is ready for an Emissions Test.

3) RED LED — Indicates there is a problem with one or more of the vehicle’s system. A vehicle displaying a red LED is definitely not ready for an Emissions Test. The red LED is also vehicle’s instrument panel will light steady. The problem that is causing the red LED to light must be repaired before an Emissions Test can be performed. It is also suggested that the vehicle be inspected/required before driving the vehicle further.

A. Repair the vehicle yourself. If you are going to perform the repairs yourself, proceed by reading the vehicle service manual and following all its procedures and recommendations.

B. Take the vehicle to a professional to have it serviced. The problem(s) causing the red LED to light must be repaired before the vehicle is ready for an Emissions Test.

6.2 Audio Tone Interpretation

The audio tone is configured according to the I/M readiness Status. This function is invaluable when performing diagnostics and driving at the same time, or working in bright areas where LED illumination alone is not sufficient.

Different audio tone with different LED light indicates different I/M Readiness Status.

LED light	Audio Tone	Beep Interval
Green LED	Two long beeps	5 seconds
Yellow	short,long,short beep	5 seconds
Red LED	Four short beeps	5 seconds

After you have read the information, pres ESC to exit Hie other buttons are disabled to prevent misoperation.

7* Print Data

The Print Data fonction allows printing out diagnostic data recorded by the scan tool or customized test reports.

• To print out retrieved data, yon need the following tools:

1. Scan tool
 2. A PC or laptop with USB ports
 3. A USB cable
- 1) downloading the applications from our website: www.itoscanner.com or our distributors site.
- 2) Connect the scanner to computer with the USB cable supplied.
- 3) Run uplink.exe in your computer.

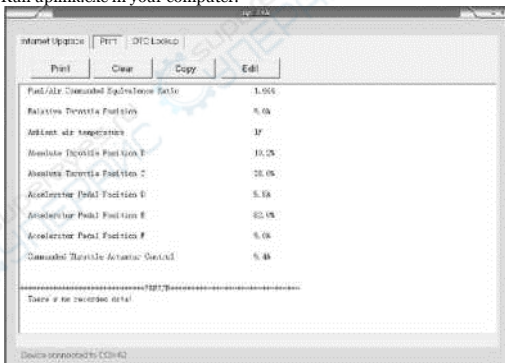


Figure 5.1 53

- 4) Use the UP/DOWN scroll button to select Print Data from Main Menu in the scan tool, and press the OK button. (Figure 5.2)

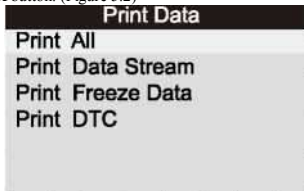


Figure 5.2

- 5) Use the DP/DOWN scroll button to select the desired item to print from Print Data menu.

- To print all retrieved data, use the UP/DOWN scroll button to select Print All Data from Print Data menu.

6) Press the OK button to upload data to the computer.

7) In the uplink .exe Tool Kit, you could edit .delete, copy and print the data in the text box by selecting the by selecting the icons on the upper right of window.

NOTE: Data stored in a language different from current system settings of the scan tool will not be printable, please adjust language settings before printing. A reminder would pop up under such circumstances.

8. Update Mode

This function allows you to update the scan tool software and DTC library through a computer.

- To print out retrieved data, you need the following tools:

1. Scan tool
2. A PC or laptop with USB ports
3. A USB cable

- 1) Downloading the applications from our website www.itoscanner.com:
- 2) Run uplink.exe in your computer (Mac OS does not compatible); (Figure 6.1)
- 3) press and hold any button until the USB cable is connected with

computer and Release it after the scan tool displays a message “ Update Mode”;

- 4) Open the uplink software, click “Check update” button, will download the upgrade file from internet then update to scan tool.
- 5) Wait for few minutes until update succeed
- 6) During the update procedure.
- 7) Restart the scan tool to finish the whole update.

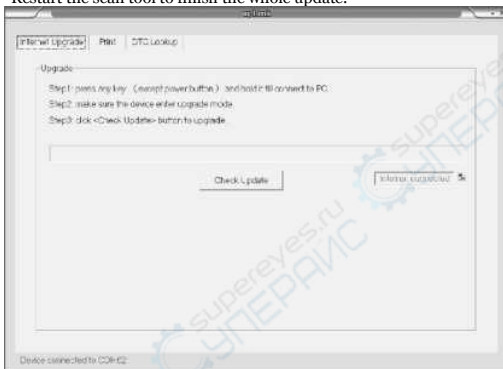


Figure 6.1

NOTE: When you made a wrong choice and the scan tool is unable to work properly, you may need to update the programs. To hold LEFT scroll button and power on the scan tool, you will enter the update mode forcedly. Then follow the update procedure to refresh the program.

9. Service Procedures

If you have any questions, please contact your local store, distributor or visit our website at www.itoscanner.com

If it becomes necessary to return the scan tool for repair, contact your local distributor for more information.

