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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

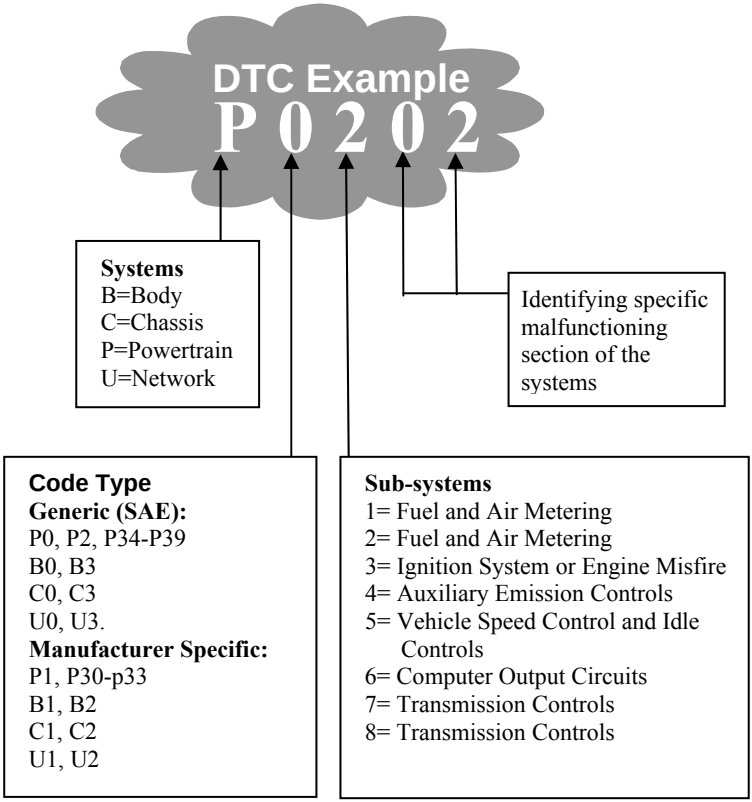
The first generation of On-Board Diagnostics (called OBD I) was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new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

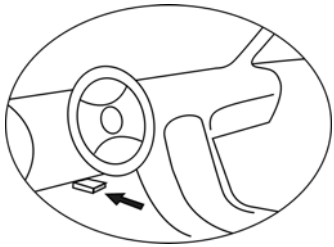
2.2 Diagnostic Trouble Codes (DTCs)

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:



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 connector. If the DLC cannot be found, refer to the vehicle's service manual for the location.



2.4 OBD II 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 OBD II Monitor Readiness Status

OBD II 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 powertrain 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 or a disconnected battery, 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

Powertrain 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 onboard 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 onboard diagnostics. Some form of a drive cycle needs to be performed after DTCs have been erased from the PCM’s memory or after the battery has been disconnected. 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 parameters to help in identifying the problem. This set of values is referred to as Freeze Frame Data and may include

important engine parameters such as engine RPM, vehicle speed, air flow, engine load, fuel pressure, fuel trim value, engine coolant temperature, ignition timing advance, or closed loop status.

3. Using the Scan Tool

3.1 Tool Description

① **LCD DISPLAY** -- Indicates test results. Backlit, 128 x 64 pixel display with contrast adjustment.

② **Y BUTTON** -- Confirms a selection (or action) from a menu. When a DTC's definition covers more than one screen, it is used to move down to the next screen for additional data. It is also used to reset the tool when being pressed and held simultaneously with the **N** button for at least 3 seconds.

③ **N BUTTON** -- Cancels a selection (or action) from a menu or returns to the menu. It is also used to setup the system or exit the DTC Lookup screen when being pressed and held for at least 3 seconds.

④ ⩓ **UP SCROLL BUTTON** -- Moves up through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves up through the current screen to the previous screens for additional data.

⑤ ⩔ **DOWN SCROLL BUTTON** -- Moves down through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves down through the current screen to the next screens for additional data.

⑥ **OBD II CONNECTOR** -- Connects the scan tool to the vehicle's Data Link Connector (DLC).

3.2 Specifications

1) Display: Backlit, 128 x 64 pixel display with contrast adjustment
2) Operating Temperature: 0 to 50°C (32 to 122 F°)
3) Storage Temperature: -20 to 70°C (-4 to 158 F°)
4) Power: 8 to 16 Volts provided via vehicle battery
5) Dimensions:

Length	Width	Height
178 mm (7.00")	95 mm (3.74")	35 mm (1.38")

6) NW: 0.70kg (1.54lb), GW: 1.0kg(2.20lb)

3.3 Accessories Included

1) **User's Manual** -- Instructions on tool operations
2) **CD** -- Includes user's manual, DTC lookup library and etc.
3) **OBD2 cable** -- Provides power to tool and communicates between tool and vehicle
4) **USB Cable** -- Used to upgrade the scan tool
5) **Carry Case** -- A nylon case to store the scan tool when not in use

3.4 Navigation Characters

Characters used to help navigate the scan tool are:

1) **"►"** -- Indicates current selection.

2) **"≽"** -- A **DOWN** Arrow indicates additional information is available on the next screen.
3) **"≼"**-- An **UP** Arrow indicates additional information is available on the previous screen.
4) **"Pd"** -- Identifies a Pending DTC when viewing DTCs.
5) **"$"** -- Identifies the control module number from which the data is retrieved.

3.5 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.

3.6 Vehicle Power

The 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 OBD II Cable to scan tool.
2) Find DLC on vehicle.

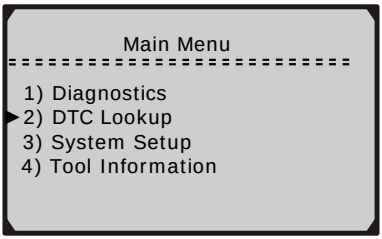
- ***A plastic DLC cover may be found for some vehicles and you need to remove it before plugging the OBD2 cable.***

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

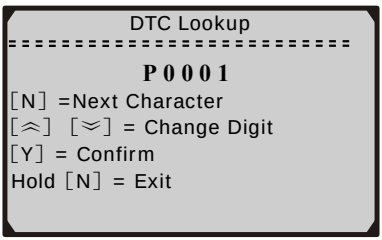
3.7 Code Lookup

The Code Lookup function is used to search for definitions of DTCs stored in the Scan Tool.

1) From the **Main Menu**, use the **UP/DOWN** scroll buttons to select **DTC Lookup** and press the **Y** button.



2) From the **DTC Lookup** menu, use the **N** button to move to the desired character, use ≯ or ≮ arrow buttons to change selected digit/character and press **Y** button to confirm.



3) View the DTC definition on screen
4) To view next or previous DTC in the built-in DTC library, use [≮] or [≯] arrow button.
5) To enter another DTC, press [N] button to return to previous screen
6) To exit to **Main Menu,** press and hold **N** button for at least 3 seconds.

- ***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!"***

3.8 Product Setup

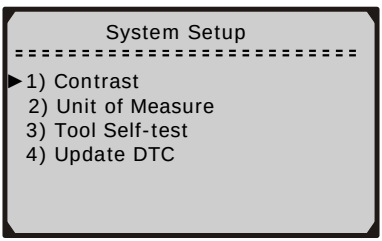
The scan tool allows you to make the following adjustments and settings:

1) **Contrast adjustment:** Adjusts the contrast of the LCD display.
2) **Unit of measure:** Sets the Unit of Measure to English or Metric.
3) **Tool self-test:** Tests the LCD display and the keyboard.

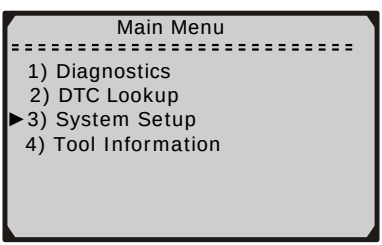
- ***The settings of the unit will remain until change to the existing settings is made.***

To enter the setup menu mode

From the keyboard: Press and hold the **N** button for at least 3 seconds until **System Setup** menu shows up. Follow the instructions to make adjustments and settings as described in the following setup options.

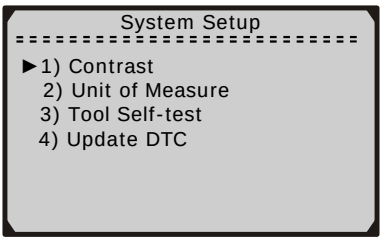


From the Main Menu: Use the **UP/DOWN** scroll buttons to select **System Setup**, and press the **Y** button. Follow the instructions to make adjustments and settings as described in the following setup options.

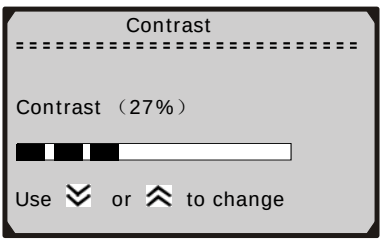


Contrast Adjustment

1) From the **System Setup** menu, use the **UP/DOWN** scroll buttons to select **Contrast**, and press the **Y** button.



2) From the **Contrast** menu, use the **UP/DOWN** scroll buttons to decrease or increase the contrast.

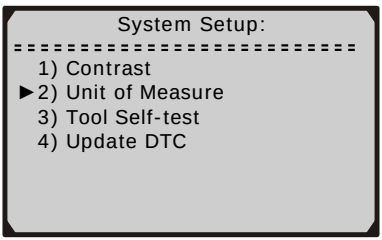


3) Press the **Y** button to save your selection and return to previous menu.
4) Press the **N** button to return to **Main Menu**.

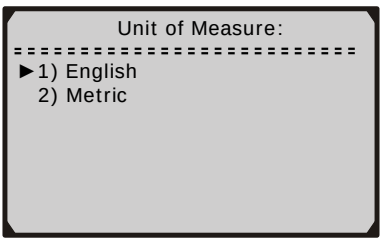
Unit of Measurement

English is the default measurement unit.

1) From the **System Setup** menu, use the **UP/DOWN** scroll buttons to select **Unit of Measure** and press the **Y** button.



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



3) Press the **Y** button to save your selection and return to previous menu.
4) Press the **N** button to return to **System Setup** menu.

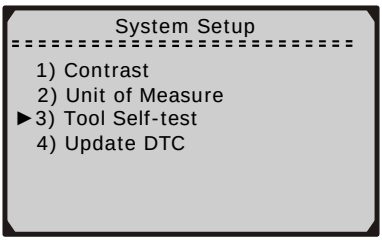
Tool Self-test

Tool Self-Test checks the display and keyboard.

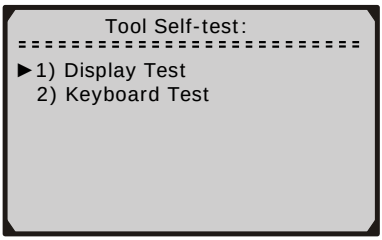
A. Display test

The Display Test is used to check the LCD display.

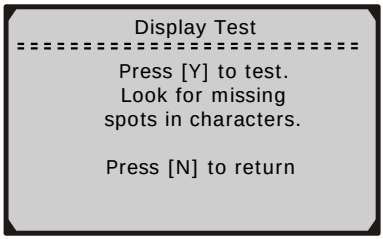
1) From the **System Setup** menu, use the **UP/DOWN** scroll buttons to select **Tool Self-Tes**t, and press the **Y** button.



2) Select **Display Test** from the **Tool Self-Test** menu and press the **Y** button.



3) Press the **Y** button again to start test. Look for missing spots in the solid black characters.

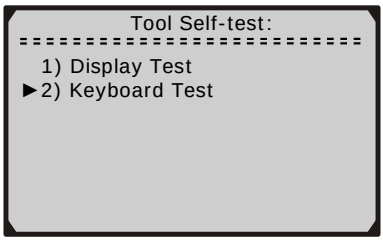


4) When completed, press the **N** button to return.

B. Keyboard Test

The Keyboard Test is used to verify that the keys are functioning properly.

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



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

3) Double press [**N**] to return to the menu.

3.9 Vehicle Coverage

The Maxscan™ 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 the **Y** and **N** buttons simultaneously for at least 3 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 OBD II 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. OBD II Diagnostics

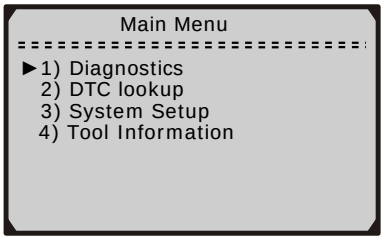
When more than one vehicle control module is detected by the scan tool, you will be prompted to select the module where the data may be retrieved. The most often to be selected are the Powertrain Control Module [PCM] and Transmission Control Module [TCM].

4.1 Reading Codes

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

- 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) 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 the **Y** button to enter the **Main Menu**. Use the **UP/DOWN** scroll buttons to select **Diagnostics** from the menu.



6) Press the **Y** 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;

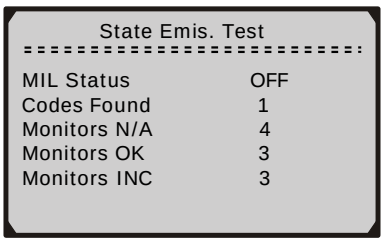
✓ Check if the scan tool's OBD II connector is securely connected to the vehicle's DLC;

✓ Verify that the vehicle is OBD2 compliant;

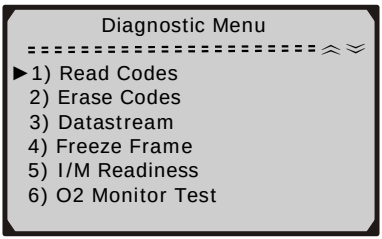
✓ Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and repeat the procedure from step 5.

- ***If the "LINKING ERROR" message does not go away, then there might be problems for the scan tool to communicate with the vehicle. Contact your local distributor or the manufacturer's customer service department for assistance.***

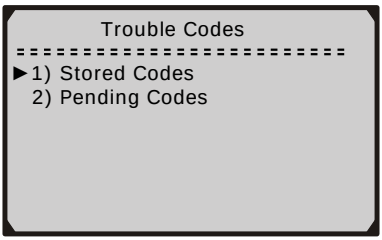
7) After the result of State Emission Test is displayed (MIL status, DTC counts, Monitor status), press any key for the **Diagnostic Menu** to come up.



8) Use the **UP/DOWN** scroll buttons to select **Read Codes** from the menu and press the **Y** button.

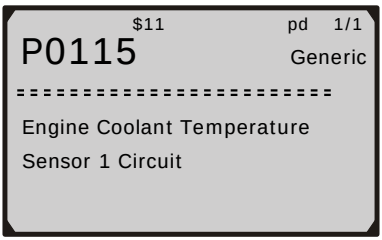


9) Use the **UP/DOWN** scroll buttons to select **Stored Codes** or **Pending Codes** from the **Trouble Codes** menu and press the **Y** button.



- ***If there are no Diagnostic Trouble Codes present, the display will indicate "No Codes Are Stored in the Module!"***

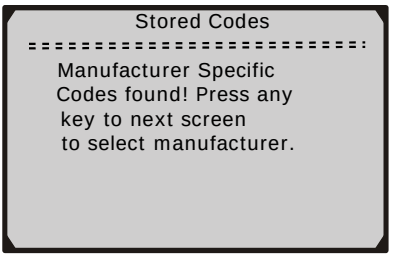
10) View DTCs and their definitions on screen.

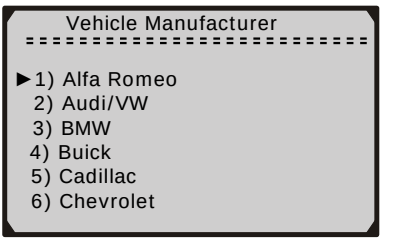


- The control module number, sequence of the DTCs, total number of codes detected and type of codes (Generic or Manufacturer specific, Stored or Pending codes) will be observed on the upper right hand corner of the display.
- When a DTC's definition covers more than one screen, use the **Y** button, as necessary, to view any additional information.

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

- If the retrieved DTCs contain any manufacturer specific or enhanced codes, you will be prompted to select the vehicle manufacturer to view DTC definitions. Use the **UP/DOWN** scroll buttons to select the manufacturer and then press the **Y** button to confirm.





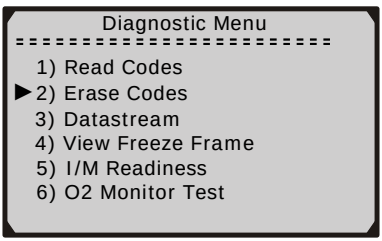
- If the manufacturer for your vehicle is not listed, use the **UP/DOWN** scroll buttons to select **Other** and press the **Y** button.

4.2 Erasing Codes

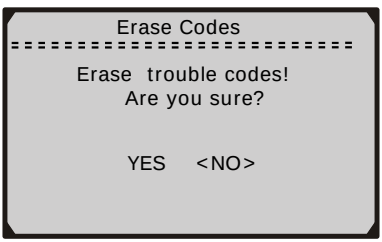
CAUTION: Erasing the Diagnostic Trouble Codes may allow the scan tool to delete not only the codes from the vehicle's on-board computer, but also "Freeze Frame" data and manufacturer specific enhanced data. Further, the I/M Readiness Monitor Status for all vehicle monitors is reset to Not Ready or Not 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) If you decide to erase the DTCs, use the **UP/DOWN** scroll buttons to select **Erase Codes** from the **Diagnostics Menu** and press the **Y** button.

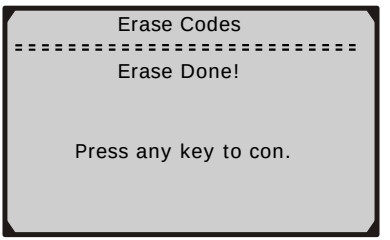


2) A warning message comes up asking for your confirmation.

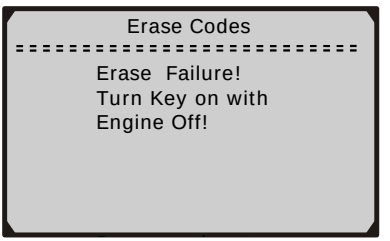


- If you do not want to proceed with erasing the codes, press the **Y**/**N** button to exit. A message of **"Command Cancelled"** will show up. Press any key to return to **Diagnostic Menu**.
- If you do wish to proceed to erase the codes, then use the **UP/DOWN** scroll buttons to select **YES**. Press the **Y** button to confirm.

3) If the codes are cleared successfully, an "**Erase Done!**" confirmation message will show on the display. Press any button to return to the **Diagnostic Menu**.



4) If the codes are not cleared, then a message "**Erase Failure! Turn Key on with Engine off!"** will appear.

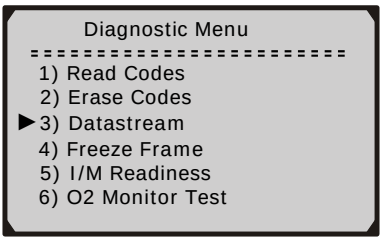


5) Press any button to return to the **Diagnostic Menu.**

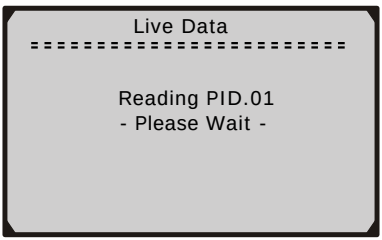
4.3 Datastream

The Datastream function allows viewing of live or real time PID data of the vehicle's computer modules.

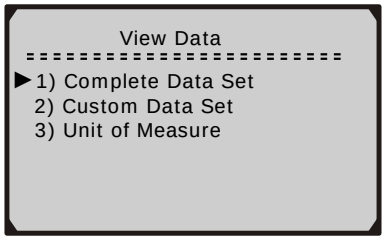
1) To view **datastream**, use the **UP/DOWN** scroll buttons to select **Datastream** from the **Diagnostic Menu** and press the **Y** button.



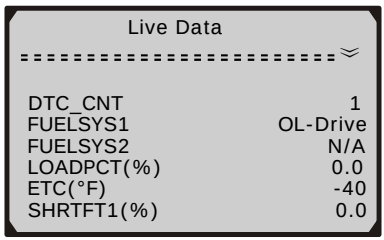
2) Wait a few seconds while the Scan Tool validates the PID MAP.



3) To view entire data set, use the **UP/DOWN** scroll buttons to select **Complete Data Set** from the **View Data** Menu and press the **Y** button.

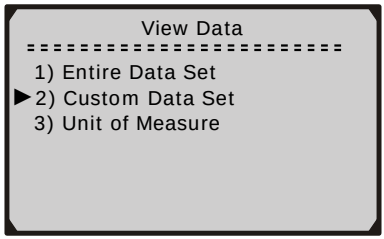


4) View live PIDs on the screen. Use the **UP/DOWN** scroll buttons for more PIDs if an **UP/DOWN** arrow at the upper right hand corner of the screen indicates that more than one page of data is available.
   - A down arrow ⩔ indicates that there are more data available on the next screen.
   - An up arrow ⩓ indicates that there are more data available on the previous screen.

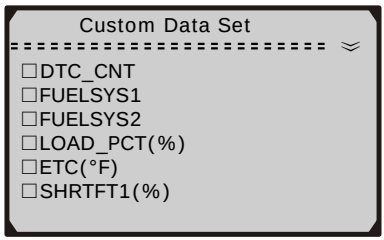


5) To return to **View Data** menu, press the **N** button.

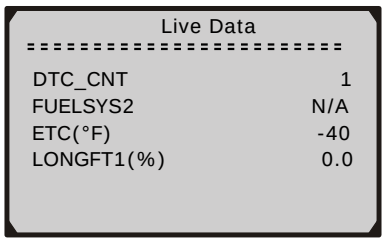
6) To view **custom data set**, use the **UP/DOWN** scroll buttons to select **Custom Data Set** from the **View Data** menu and press the **Y** button.



7) Use the **UP/DOWN** scroll buttons to move up and down list, and press the **Y** button to select or deselect data parameters to view. Selected parameters are marked with solid squares.



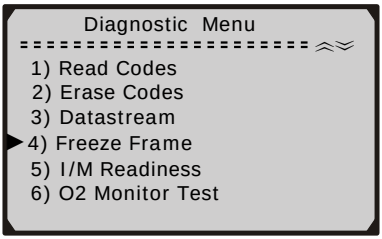
4) Press the **N** button to view selected PIDs on screen.



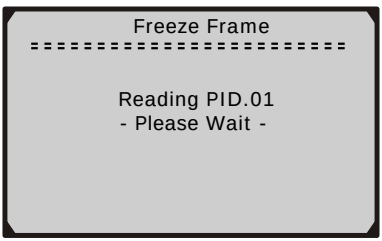
5) Use the **N** button to return to **View Data** menu and / or the **Diagnostic Menu**.

4.4 Reading Freeze Frame Data

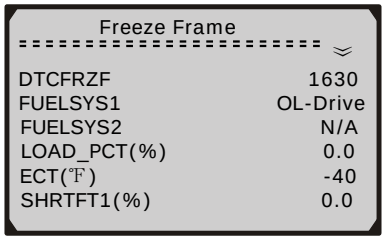
1) To view Freeze Frame Data, use the **UP/DOWN** scroll buttons to select **Freeze Frame** from the **Diagnostic Menu** and press the **Y** button.



2) Wait a few seconds while the Scan Tool validates the PID MAP.



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



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

4) Press the **N** button to return to the **Diagnostic Menu.**

4.5 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:**

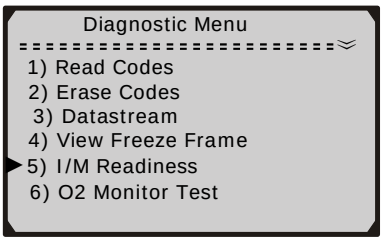
A. ***Since DTCs Cleared*** - indicates status of the monitors since the DTCs are erased.

B. ***This Drive Cycle*** - indicates status of monitors since the beginning of the current drive cycle.

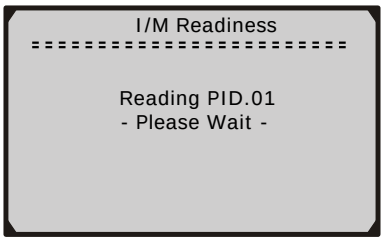
◆ **An I/M Readiness Status result of "NO" does not necessarily indicate that the vehicle being tested will fail the state I/M inspection. For some states, one or more such monitors may be allowed to be "Not Ready" to pass the emissions inspection.**

- **"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.

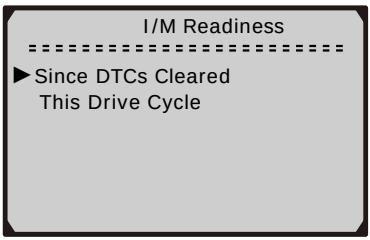
1) Use the **UP/DOWN** scroll buttons to select **I/M Readiness** from the **Diagnostic Menu** and press the **Y** button.



2) Wait a few seconds while the Scan Tool validates the PID MAP.

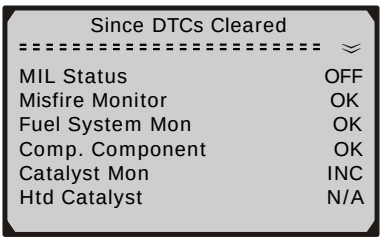


3) If the vehicle supports both types of tests, then both types will be shown on the screen for selection.

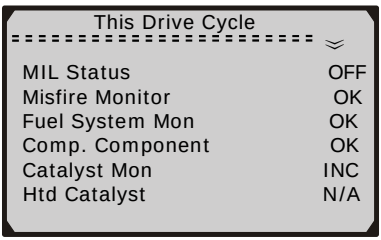


4) Use the **UP/DOWN** scroll buttons, as necessary, to view the status of the MIL light (**"ON" or "OFF**) and the following monitors:

- **Misfire monitor** -- Misfire monitor
- **Fuel System Mon --** Fuel System Monitor
- **Comp. Component** -- Comprehensive Components Monitor
- **EGR --** EGR System Monitor
- **Oxygen Sens Mon** -- O2 Sensors Monitor
- **Catalyst Mon --** Catalyst Monitor
- **EVAP System Mon** -- Evaporative System Monitor
- **Oxygen Sens htr** --O2 Sensor Heater Monitor
- **Sec Air System** -- Secondary Air Monitor
- **Htd Catalyst --** Heated Catalyst Monitor
- **A/C Refrig Mon** -- A/C system Monitor



5) If the vehicle supports readiness test of "**This Drive Cycle**", a screen of the following will be displayed:



6) Press the **N** button to return to the **Diagnostic Menu.**

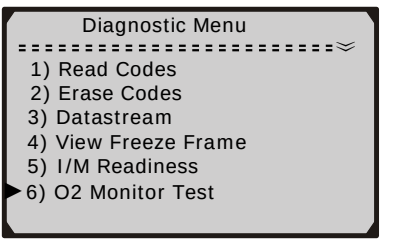
4.6 O2 Monitor Test

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.

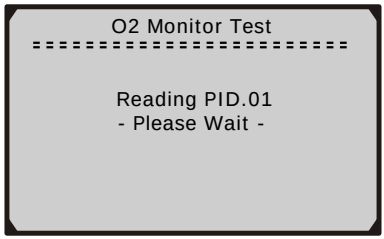
The O2 Monitor Test function allows retrieval and viewing of O2 sensor monitor test results for the most recently performed tests from the vehicle's on-board computer.

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. Test".

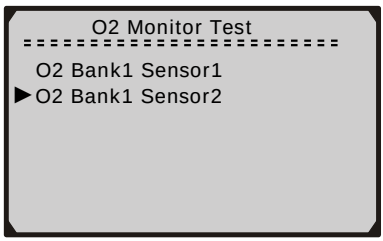
1) Use the **UP/DOWN** scroll buttons to select **O2 Monitor Test** from the **Diagnostic Menu** and press the **Y** button.



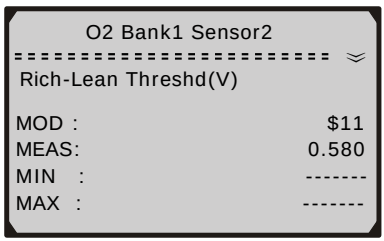
2) Wait a few seconds while the Scan Tool validates the PID MAP.



3) Use the **UP/DOWN** scroll buttons to select the O2 sensor from the **O2 Monitor Test** menu and press the **Y** button.



4) View test results of selected O2 sensor.



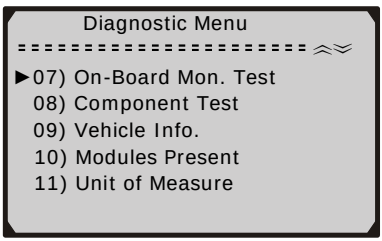
5) Use the **UP**/**DOWN** scroll buttons to view more screens of data if an **UP**/**DOWN** arrow displays.

6) Press the **N** button to return to the previous menus.

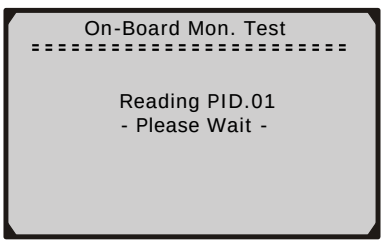
4.7 On-Board Monitor Test

The On-Board Monitor Test is useful after servicing or 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 powertrain 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 powertrain components and systems that are and are not continuously monitored. Test and components IDs are determined by the vehicle manufacturer.

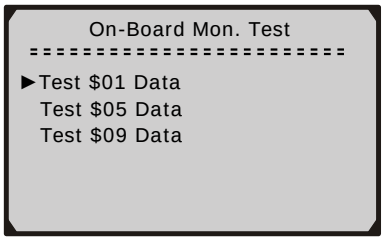
1) Use the **UP/DOWN** scroll buttons to select **On-Board Mon.Test** from the **Diagnostic Menu** and press the **Y** button.



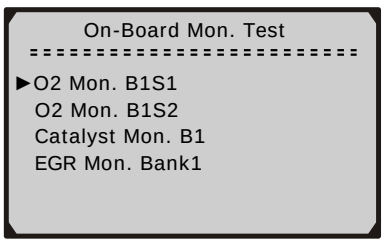
2) Wait a few seconds while the Scan Tool validates the PID MAP.



3) From the **On-Board Mon.Test** menu, use the **UP/DOWN** scroll buttons to select the test to view and press the **Y** button.

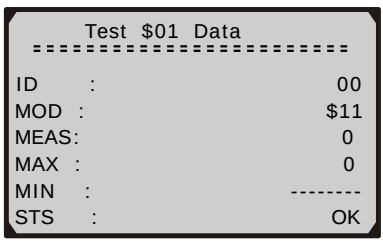


For CAN-equipped vehicles, the test selections can be as below:

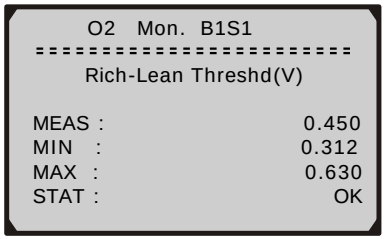


1) Use the **UP/DOWN** scroll buttons to select desired monitor from **On-Board Mon.Test** menu and press the **Y** button.

2) View the test data on screen.



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

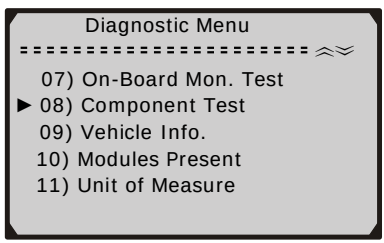


3) Press the **N** button to return to the previous menus.

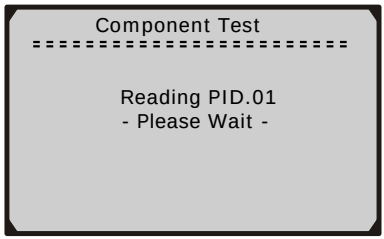
4.8 Component Test

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.

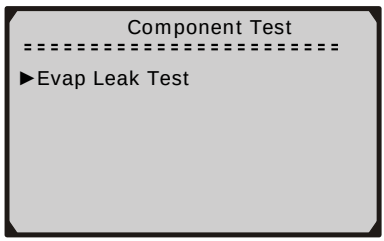
1) Use the **UP**/**DOWN** scroll buttons to select **Component Test** from the **Diagnostic Menu** and press the **Y** button.



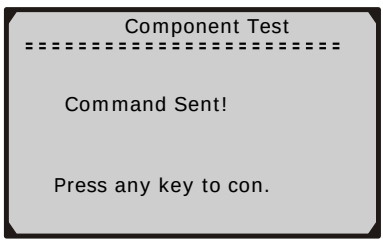
2) Wait a few seconds while the Scan Tool validates the PID MAP.



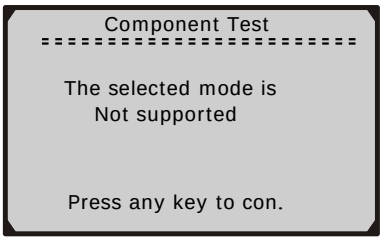
3) From the **Component Test** Menu, use the **UP**/**DOWN** scroll buttons to select the test to be initiated.



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



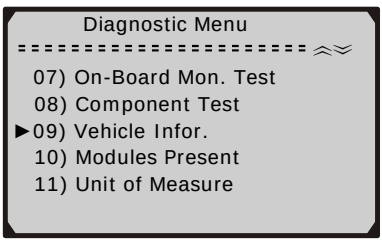
- ***Some vehicles do not allow scan tools to control vehicle systems or components. If the vehicle under test does not support the EVAP Leak Test, an advisory message is displayed on the screen.***



4.9 Viewing Vehicle Information

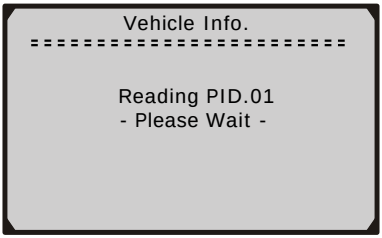
The Vehicle Information function enables the retrieval of the Vehicle Identification No.(VIN), Calibration ID(s), Calibration Verification Nos.(CVNs) and In-use Performance Tracking on 2000 and newer vehicles that support Mode 9.

1) Use the **UP/DOWN** scroll buttons to select **Vehicle Info.** from the **Diagnostic Menu** and press the **Y** button.

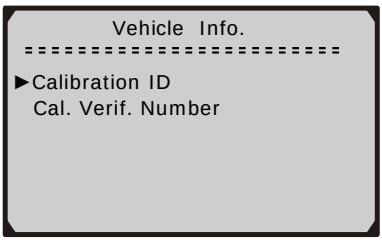


- ***If the vehicle does not support this mode, a message will show on the display warning that the mode is not supported.***

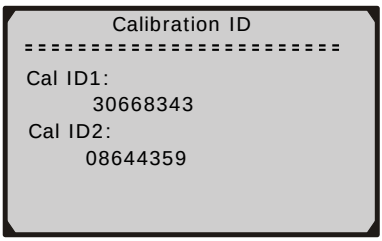
2) Wait a few seconds while the Scan Tool validates the PID MAP.



3) From the **Vehicle Info.** menu, use the **UP**/**DOWN** scroll buttons to select the available items to view and press the **Y** button.



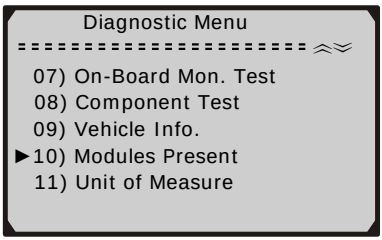
4) View the vehicle information retrieved.



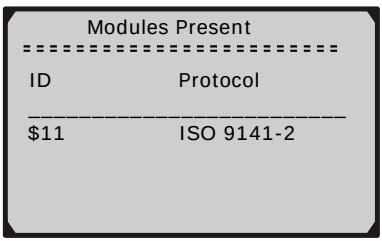
4.10 Modules Present

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

1) Use the **UP/DOWN** scroll buttons to select **Modules Present** from the **Diagnostic Menu** and press the **Y** button.



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



5. Appendix

5.1 Appendix 1----PID List

PID Abbreviation	Full Name
DTC_CNT	DTC Stored Number
DTCFRZF	DTC
FUELSYS1	Fuel System 1 Status
FUELSYS2	Fuel System 2 Status
LOAD_PCT(%)	Calculated Load Value
ETC(°F)	Engine Coolant Temperature
ETC(°C)	Engine Coolant Temperature
SHRTFT1(%)	Short Term Fuel Trim-Bank1
SHRTFT3(%)	Short Term Fuel Trim-Bank3
LONGFT1(%)	Long Term Fuel Trim-Bank1
LONGFT3(%)	Long Term Fuel Trim-Bank3
SHRTFT2(%)	Short Term Fuel Trim-Bank2
SHRTFT4(%)	Short Term Fuel Trim-Bank4
LONGFT2(%)	Long Term Fuel Trim-Bank2
LONGFT4(%)	Long Term Fuel Trim-Bank4
FRP(kPa)	Fuel Rail Pressure(gauge)
FRP(psi)	Fuel Rail Pressure(gauge)
MAP(kPa)	Intake Manifold Absolute Pressure
MAP(inHg)	Intake Manifold Absolute Pressure
RPM(/min)	Engine RPM
VSS(km/h)	Vehicle Speed Sensor
VSS(mph)	Vehicle Speed Sensor
SPARKADV(\x82)	Ignition Timing Advance for #1
IAT(°F)	Intake Air Temperature
IAT(°C)	Intake Air Temperature
MAF(g/s)	Mass Air Flow Sensor
MAF(lb/min)	Mass Air Flow Sensor
TP(%)	Absolute Throttle Position
AIR_STAT	Commanded Secondary Air Status

O2SLOC	Location of O2 Sensors
O2B1S1(V)	O2 Sensor Output Voltage(B1S1)
SHRTFTB1S1(%)	Short Term Fuel Trim(B1S1)
O2B1S2(V)	O2 Sensor Output Voltage(B1S2)
SHRTFTB1S2(%)	Short Term Fuel Trim(B1S2)
O2B1S3(V)	O2 Sensor Output Voltage(B1S3)
SHRTFTB1S3(%)	Short Term Fuel Trim(B1S3)
O2B1S4(V)	O2 Sensor Output Voltage(B1S4)
SHRTFTB1S4(%)	Short Term Fuel Trim(B1S4)
O2B2S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB2S1(%)	Short Term Fuel Trim(B2S1)
O2B2S2(V)	O2 Sensor Output Voltage(B2S2)
SHRTFTB2S2(%)	Short Term Fuel Trim(B2S2)
O2B2S3(V)	O2 Sensor Output Voltage(B2S3)
SHRTFTB2S3(%)	Short Term Fuel Trim(B2S3)
O2B2S4(V)	O2 Sensor Output Voltage(B2S4)
SHRTFTB2S4(%)	Short Term Fuel Trim(B2S4)
O2B1S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB1S1(%)	Short Term Fuel Trim(B2S1)
O2B1S2(V)	O2 Sensor Output Voltage(B1S2)
SHRTFTB1S2(%)	Short Term Fuel Trim(B1S2)
O2B2S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB2S1(%)	Short Term Fuel Trim(B2S1)
O2B2S2(V)	O2 Sensor Output Voltage(B2S2)
SHRTFTB2S2(%)	Short Term Fuel Trim(B2S2)
O2B3S1(V)	O2 Sensor Output Voltage(B3S1)
SHRTFTB3S1(%)	Short Term Fuel Trim(B3S1)
O2B3S2(V)	O2 Sensor Output Voltage(B3S2)
SHRTFTB3S2(%)	Short Term Fuel Trim(B3S2)
O2B4S1(V)	O2 Sensor Output Voltage(B4S1)
SHRTFTB4S1(%)	Short Term Fuel Trim(B4S1)
O2B4S2(V)	O2 Sensor Output Voltage(B4S2)
SHRTFTB4S2(%)	Short Term Fuel Trim(B4S2)

OBDSUP	OBD Require To Which Vehicle Designed
O2SLOC	Location of O2 Sensors
RUNTM(sec)	Time Since Engine Start
MIL_DIST(km)	Distance Travelled While MIL Activated
MIL_DIST(mile)	Distance Travelled While MIL Activated
FRP(kPa)	FuelRail Pres. Relative To Manifold Vacuum
FRP(PSI)	FuelRail Pres. Relative To Manifold Vacuum
FRP(kPa)	Fuel Rail Pressure
FRP(PSI)	Fuel Rail Pressure
EQ_RATB1S1	Equivalence Ratio(wide range O2S)(B1S1)
O2B1S1(V)	O2 Sensor Voltage(wide range O2S)(B1S1)
EQ_RATB1S2	Equivalence Ratio(wide range O2S)(B1S2)
O2B1S2(V)	O2 Sensor Voltage(wide range O2S)(B1S2)
EQ_RATB1S3	Equivalence Ratio(wide range O2S)(B1S3)
O2B1S3(V)	O2 Sensor Voltage(wide range O2S)(B1S3)
EQ_RATB1S4	Equivalence Ratio(wide range O2S)(B1S4)
O2B1S4(V)	O2 Sensor Voltage(wide range O2S)(B1S4)
EQ_RATB2S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B2S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB2S2	Equivalence Ratio(wide range O2S)(B2S2)
O2B2S2(V)	O2 Sensor Voltage(wide range O2S)(B2S2)
EQ_RATB2S3	Equivalence Ratio(wide range O2S)(B2S3)
O2B2S3(V)	O2 Sensor Voltage(wide range O2S)(B2S3)
EQ_RATB2S4	Equivalence Ratio(wide range O2S)(B2S4)
O2B2S4(V)	O2 Sensor Voltage(wide range O2S)(B2S4)
EQ_RATB1S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B1S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB1S2	Equivalence Ratio(wide range O2S)(B1S2)
O2B1S2(V)	O2 Sensor Voltage(wide range O2S)(B1S2)
EQ_RATB2S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B2S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB2S2	Equivalence Ratio(wide range O2S)(B2S2)
O2B2S2(V)	O2 Sensor Voltage(wide range O2S)(B2S2)

EQ_RATB3S1	Equivalence Ratio(wide range O2S)(B3S1)
O2B3S1(V)	O2 Sensor Voltage(wide range O2S)(B3S1)
EQ_RATB3S2	Equivalence Ratio(wide range O2S)(B3S2)
O2B3S2(V)	O2 Sensor Voltage(wide range O2S)(B3S2)
EQ_RATB4S1	Equivalence Ratio(wide range O2S)(B4S1)
O2B4S1(V)	O2 Sensor Voltage(wide range O2S)(B4S1)
EQ_RATB4S2	Equivalence Ratio(wide range O2S)(B4S2)
O2B4S2(V)	O2 Sensor Voltage(wide range O2S)(B4S2)
EGR_PTC(%)	Commanded EGR
EGR_ERR(%)	EGR Error
EVAP_PCT(%)	Commanded Evapoative Purge
FLI(%)	Fuel Level Input
WARM_UPS	Number of Warm-ups Since DTC Cleared
CLR_DIST(km)	Distance Since DTC Cleared
CLR_DIST(mile)	Distance Since DTC Cleared
EVAP_VP(Pa)	Evap System Vapor Pressure
EVAP_VP(inH2O)	Evap System Vapor Pressure
BARO(kPa)	Barometric Pressure
BARO(inHg)	Barometric Pressure
EQ_RAT11	Equivalence Ratio(wide range O2S)(B1S1)
O2S11(mA)	O2 Sensor Current(wide range O2S)(B1S1)
EQ_RAT12	Equivalence Ratio(wide range O2S)(B1S2)
O2S12(mA)	O2 Sensor Current(wide range O2S)(B1S2)
EQ_RAT13	Equivalence Ratio(wide range O2S)(B1S3)
O2S13(mA)	O2 Sensor Current(wide range O2S)(B1S3)
EQ_RAT14	Equivalence Ratio(wide range O2S)(B1S4)
O2S14(mA)	O2 Sensor Current(wide range O2S)(B1S4)
EQ_RAT21	Equivalence Ratio(wide range O2S)(B2S1)
O2S21(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT22	Equivalence Ratio(wide range O2S)(B2S2)
O2S22(mA)	O2 Sensor Current(wide range O2S)(B2S2)
EQ_RAT23	Equivalence Ratio(wide range O2S)(B2S3)
O2S23(mA)	O2 Sensor Current(wide range O2S)(B2S3)

EQ_RAT24	Equivalence Ratio(wide range O2S)(B2S4)
O2S24(mA)	O2 Sensor Current(wide range O2S)(B2S4)
EQ_RAT11	Equivalence Ratio(wide range O2S)(B2S1)
O2S11(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT12	Equivalence Ratio(wide range O2S)(B1S2)
O2S12(mA)	O2 Sensor Current(wide range O2S)(B1S2)
EQ_RAT21	Equivalence Ratio(wide range O2S)(B2S1)
O2S21(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT22	Equivalence Ratio(wide range O2S)(B2S2)
O2S22(mA)	O2 Sensor Current(wide range O2S)(B2S2)
EQ_RAT31	Equivalence Ratio(wide range O2S)(B3S1)
O2S31(mA)	O2 Sensor Current(wide range O2S)(B3S1)
EQ_RAT32	Equivalence Ratio(wide range O2S)(B3S2)
O2S32(mA)	O2 Sensor Current(wide range O2S)(B3S2)
EQ_RAT41	Equivalence Ratio(wide range O2S)(B4S1)
O2S41(mA)	O2 Sensor Current(wide range O2S)(B4S1)
EQ_RAT42	Equivalence Ratio(wide range O2S)(B4S2)
O2S42(mA)	O2 Sensor Current(wide range O2S)(B4S2)
CATEMP11(°F)	Catalyst Temperature Bank1Sensor1
CATEMP11(°C)	Catalyst Temperature Bank1Sensor1
CATEMP21(°F)	Catalyst Temperature Bank2Sensor1
CATEMP21(°C)	Catalyst Temperature Bank2Sensor1
CATEMP12(°F)	Catalyst Temperature Bank1Sensor2
CATEMP12(°C)	Catalyst Temperature Bank1Sensor2
CATEMP22(°F)	Catalyst Temperature Bank2Sensor2
CATEMP22(°C)	Catalyst Temperature Bank2Sensor2
VPWR(V)	Control Module Voltage
LOAD_ABS(%)	Absolute Load Value
EQ_RAT	Commanded Equivalence Ratio
TP_R(%)	Relative Throttle Position
AAT(°F)	Ambient Air Temperature
AAT(°C)	Ambient Air Temperature
TP_B(%)	Absolute Throttle Position B

TP_C(%)	Absolute Throttle Position C
APP_D(%)	Accelerator Pedal Position D
APP_E(%)	Accelerator Pedal Position E
APP_F(%)	Accelerator Pedal Position F
TAC_PCT(%)	Commanded Throttle Actuator Control
MIL_TIME	Minute run by Engine While MIL activated
CLR_TIME	Time since Diagnostic Trouble Code Clear

5.2 Appendix 2—In-use Performance Tracking Data List

Abbreviation	Full Name	Definitions
OBDCOND	**OBD Monitoring Conditions Encountered Counts**	OBD Monitoring Conditions Encountered Counts displays the number of times that the vehicle has been operated in the specified OBD monitoring conditions (general denominator).
IGNCNTR	**Ignition Counter**	Ignition Counter displays the count of the number of times that the engine has been started.
CATCOMP1	**Catalyst Monitor Completion Counts Bank 1**	Catalyst Monitor Completion Counts Bank 1 displays the number of times that all conditions necessary to detect a catalyst system bank 1 malfunction have been encountered (numerator).
CATCOND1	**Catalyst Monitor Conditions Encountered Counts Bank 1**	Catalyst Monitor Conditions Encountered Counts Bank 1 displays the number of times that the vehicle has been operated in the specified catalyst monitoring conditions (denominator).
CATCOMP2	**Catalyst Monitor Completion Counts Bank 2**	Catalyst Monitor Completion Counts Bank 2 displays the number of time that all conditions necessary to detect

		a catalyst system bank 2 malfunction have been encountered (numerator).
CATCOND2	**Catalyst Monitor Conditions Encountered Counts Bank 2**	Catalyst Monitor Conditions Encountered Counts Bank 2 displays the number of times that the vehicle has been operated in the specified catalyst monitoring conditions (denominator).
O2SCOMP1	**O2 Sensor Monitor Completion Counts Bank 1**	O2 Sensor Monitor Completion Counts Bank 1 displays the number of time that all conditions necessary to detect an oxygen sensor bank 1 malfunction have been encountered (numerator).
O2SCOND1	**O2 Sensor Monitor Conditions Encountered Counts Bank 1**	O2 Sensor Monitor Conditions Encountered Counts Bank 1 displays the number of times that the vehicle has been operated in the specified oxygen sensor monitoring conditions (denominator).
O2SCOMP2	**O2 Sensor Monitor Completion Counts Bank 2**	O2 Sensor Monitor Completion Counts Bank 2 displays the number of time that all conditions necessary to detect an oxygen sensor bank 2 malfunction have been encountered (numerator).
O2SCOND2	**O2 Sensor Monitor Conditions Encountered Counts Bank 2**	O2 Sensor Monitor Conditions Encountered Counts Bank 2 displays the number of times that the vehicle has been operated in the specified oxygen sensor monitoring conditions (denominator).
EGRCOMP	**EGR Monitor Completion Condition Counts**	EGR Monitor Completion Condition Counts displays the number of time that all conditions necessary to detect an EGR system malfunction have been encountered (numerator).

EGRCOND	**EGR Monitor Conditions Encountered Counts**	EGR Monitor Conditions Encountered Counts displays the number of times that the vehicle has been operated in the specified EGR system monitoring conditions (denominator).
AIRCOMP	**AIR Monitor Completion Condition Counts (Secondary Air)**	AIR Monitor Completion Condition Counts (Secondary Air) displays the number of time that all conditions necessary to detect an AIR system malfunction have been encountered (numerator).
AIRCOND	**AIR Monitor Conditions Encountered Counts (Secondary Air)**	AIR Monitor Conditions Encountered Counts (Secondary Air) displays the number of times that the vehicle has been operated in the specified AIR system monitoring conditions (denominator).
EVAPCOMP	**EVAP Monitor Completion Condition Counts**	EVAP Monitor Completion Condition Counts displays the number of time that all conditions necessary to detect a 0.020" EVAP system leak malfunction have been encountered (numerator).
EVAPCOND	**EVAP Monitor Conditions Encountered Counts**	EVAP Monitor Conditions Encountered Counts displays the number of times that the vehicle has been operated in the specified EVAP system leak malfunction monitoring conditions (denominator).

6. Warranty and Service

6.1 Limited One Year Warranty

Autel warrants to its customers that this product will be free from all defects in materials and workmanship for a period of one (1) year from the date of the original purchase, subject to the following terms and conditions:

1) The sole responsibility of Autel under the Warranty is limited to either the repair or, at the option of Autel, replacement of the scan tool at no charge with Proof of Purchase. The sales receipt may be used for this purpose.
2) This warranty does not apply to damages caused by improper use, accident, flood, lightning, or if the product was altered or repaired by anyone other than the Manufacturer's Service Center.
3) Autel shall not be liable for any incidental or consequential damages arising from the use, misuse, or mounting of the scan tool. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.
4) All information in this manual is based on the latest information available at the time of publication and no warranty can be made for its accuracy or completeness. Autel reserves the right to make changes at any time without notice.

6.2 Service Procedures

If you have any questions, please contact your local store, distributor or visit our website at www.auteltech.com.
If it becomes necessary to return the scan tool for repair, contact your local distributor for more information.