

# LAUNCH

The Global Leader In Diagnost ics

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- There is a possibility that this unit is inapplicable to some of the vehicle models or systems listed in the diagnosis section due to different countries, areas, and/or years. Do not hesitate to contact LAUNCH if you come across such questions. We are to help you solve the problem as soon as possible.

**Disclaimer**

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

- All information, illustrations, and specifications contained in this manual are based on the latest information available at the time of publication. The right is reserved to make change at any time without notice.
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**Safety Precautions and Warnings**

To prevent personal injury or damage to vehicles and/or the Millennium HD Pro, please read this user's manual first carefully and observe the following safety precautions at a minimum whenever working on a vehicle:

- Always perform automotive testing in a safe environment.
- Do not attempt to operate or observe the tool while driving a vehicle. Operating or observing the tool will cause driver distraction and could cause a fatal accident.
- 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 P (for A/T) or N (for M/T) 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 Millennium HD Pro dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the Millennium HD Pro, when necessary.

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## **1. Introduction**

The Millennium HD Pro is specially developed by LAUNCH, which support all 10 modes of OBD II test for a complete diagnosis. They all feature the 4.0" color LCD.

For Millennium HD Pro, it is also a multipurpose code reader with large-size color display. It provides full HDOBD/EOBD diagnostic functions. Millennium HD Pro provides one or multiple of the following functions to meet the different requirements: DPF reset.

It can be connected to PC through the USB cable for upgrade to keep updated with the latest software version. But here we strongly recommend that you should use the memory card reader to update your tools.

Note: Millennium HD Pro may automatically reset while being disturbed by strong static electricity. THIS IS A NORMAL REACTION.

## **2. General Information**

### **2.1 On-Board Diagnostics (OBD) II**

The first generation of On-Board Diagnostics (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 second character, a number, 0-3; other three characters, a hex character, 0-9 or A-F 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:

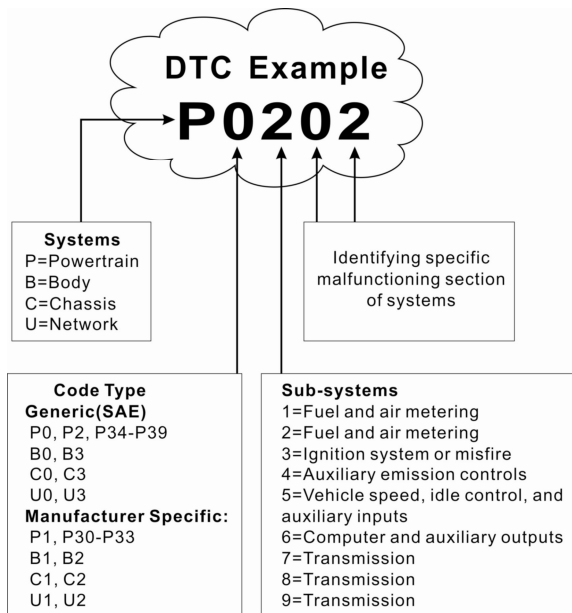


Figure 2-1

### 2.3 Location of the Data Link Connector (DLC)

The DLC (Data Link Connector or Diagnostic Link Connector) is typically a 16-pin connector where diagnostic code readers 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.



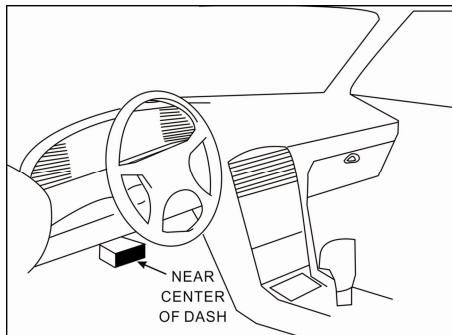


Figure 2-2

## 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 in every vehicle 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) O<sub>2</sub> Sensors
- 3) Catalyst
- 4) Evaporative System
- 5) O<sub>2</sub> Sensor Heater
- 6) Secondary air Injection
- 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 code reader 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) – It is the 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 cannot turn the MIL off until the necessary repairs are completed or the condition no longer exists.

DTC -- Diagnostic Trouble Codes (DTC) that identifies 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. Please refer to the vehicle's factory service manual for specific enabling procedures.

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 service 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.

Fuel Trim (FT) -- Feedback adjustments to the base fuel schedule. Short-term fuel trim refers to dynamic or instantaneous adjustments. Long-term fuel trim refers to much more gradual adjustments to the fuel calibration schedule than short-term trim adjustments. These long-term adjustments compensate for vehicle differences and gradual changes that occur over time.


### 3. Product Descriptions

#### 3.1 Outline of Millennium HD Pro



Figure 3-1 Millennium HD Pro Front View

No.	Name	Descriptions
1	<b>DB-15 connector</b>	To connect vehicle's DLC (Data Link Connector) with Millennium HD Pro via the diagnostic cable.
2	<b>LCD</b>	Indicates test results.
3	<b>I/M(F3)</b>	I/M refers to Inspection and Maintenance that is legislated by the Government to meet federal clean-air standards.
4	<b>DPF (F4)</b>	Press DPF key to enter the engine selection menu
5	<b>OK</b>	Confirms a selection (or action) from a menu list.
6	▲/▼	Move cursor up and down for selection.
	◀/▶	Move cursor left or right for selection; Or turn page up and down when more than one page is displayed.
7	<b>Mini USB port</b>	To connect on PC to upload data or print test results.

8	 (ESC)	Exit the current program or return to the previous screen.
9	<b>DTC(F1)</b>	To read the DTCs.
10	<b>ER(F2)</b>	To erase the DTCs.
11	<b>Memory card slot</b>	To insert the memory card to update your tool.

### 3.2 Specifications

- Screen: 4.0" color LCD
- Input voltage range: 12~24V
- Working temperature: -10 to 50°C (14 to 122 F°)
- Storage temperature: -20 to 70°C (-4 to 158 F°)
- External Dimension: 195mm(L) x 86mm(W) x 32mm(H)
- Weight: 460g

### 3.3 Accessories Included

1. Millennium HD Pro handset
2. Diagnostic cable
3. User's Manual
4. Memory card (Built-in)
5. Memory card reader
6. USB cable

## 4. Connection

### 4.1 Connect Millennium HD Pro

1. Turn the ignition off.
2. Locate vehicle's DLC socket: It provides standard 16 pins and is generally located on driver's side, about 12 inches away from the center of dashboard. See Figure 2-2. If DLC is not equipped under dashboard, a label indicating its position will be given. In case no DLC is found, please refer to Automobile Repair Manual.
3. Plug one end of the diagnostic cable into the DB15 connector of Millennium HD Pro, and connect the other end of the diagnostic cable into the vehicle's DLC.

4. Turn the ignition on. Engine can be off or running.
5. After finishing, the system will start initializing. After initialization, the system will enter the main menu interface.

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

## 4.2 Settings

Select [Settings] in the main menu and press [OK], the system will enter the following screen:

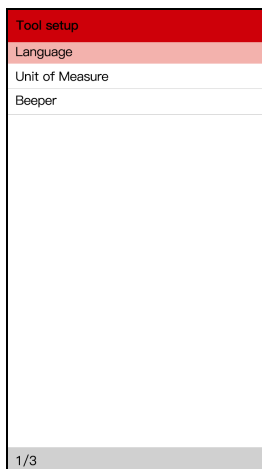


Figure 4-1

### **1) Language**

This option enables you to set the user interface language.

Note: Due to continuous software upgrade, language interface may differ from different software versions.

### **2) Unit of Measure**

This option allows you to set measurement unit.

### **3) Beeper**

It is used to set On/Off the buzzer.

## 5. Diagnose

Select [Hdobb/Eobd] in Main Menu and press [OK], the screen will display Monitor Status interface as following figure 5-1:

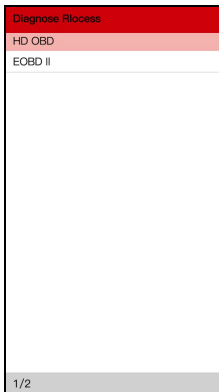


Figure 5-1

### 5.1 HD OBD Diagnosing

Select [HD OBD] in Figure 5-1 and press [OK], the screen will the interface as following figure 5-2:

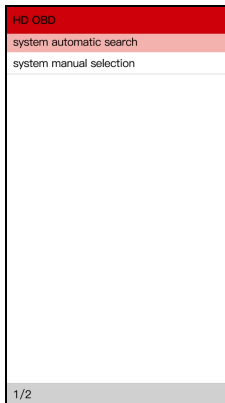


Figure 5-2



Select [System automatic search] in Figure 5-2 and press [OK], the screen will the interface as following figure 5-3:

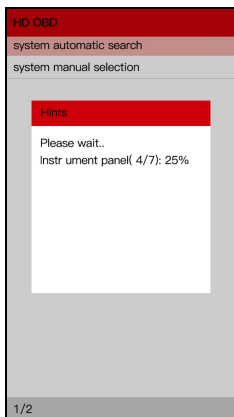


Figure 5-3

Select [System manual selection] in Figure 5-2 and press [OK], the screen will the interface as following figure 5-4:

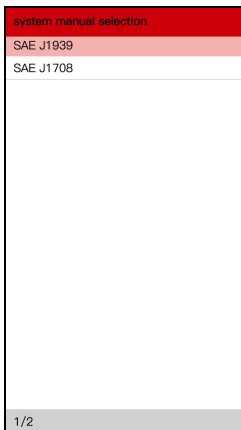


Figure 5-4

Select [SAE J1939] in Figure 5-4 and press [OK], the screen will the interface as

following figure 5-5:

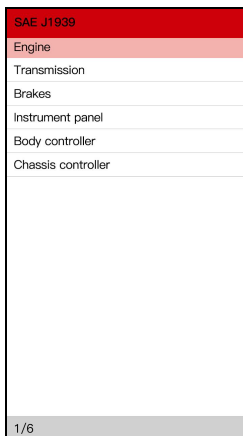


Figure 5-5

Select [SAE J1708] in Figure 5-4 and press [OK], the screen will the interface as following figure 5-6:

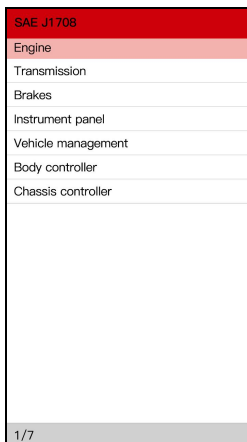


Figure 5-6



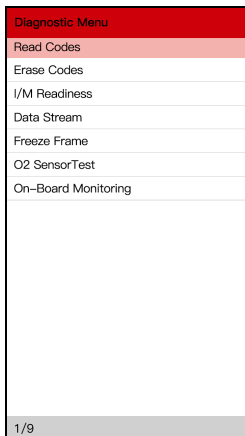


Figure 5-8

It mainly includes the following functions:

### **1. Read Codes**

This option is used to identify which section of the emission control system has malfunctioned.

### **2. Erase Codes**

After reading the retrieved codes from the vehicle and certain repairs have been carried out, you can use this function to erase the codes from the vehicle. Before performing this function, please be sure the vehicle's ignition key is in the ON position with the engine off.

#### **Notes:**

- Before performing this function, make sure to retrieve and record the trouble codes.
- After clearing, you should retrieve trouble codes once more or turn ignition on and retrieve codes again. If there are still some trouble codes in the system, please troubleshoot the code using a factory diagnosis guide, then clear the code and recheck.

### **3. I/M Readiness**

I/M refers to Inspection and Maintenance that is legislated by the Government to meet federal clean-air standards. I/M Readiness indicates whether or not the

various emissions-related systems on the vehicle are operating properly and are ready for Inspection and Maintenance testing.

The purpose of the I/M Readiness Monitor Status is to indicate which of the vehicle's Monitors have run and completed their diagnosis and testing (as described in Chapter 2.5), and which ones have not yet run and completed testing and diagnosis of their designated sections of the vehicle's emissions system.

I/M Readiness Monitor Status function also can be used (after repair of a fault has been performed) to confirm that the repair has been performed correctly, and/or to check for Monitor Run Status.

#### **4. Data Stream**

This option retrieves and displays live data and parameters from the vehicle's ECU.

#### **5. View Freeze Frame**

When an emission-related fault occurs, certain vehicle conditions are recorded by the on-board computer. This information is referred to as freeze frame data. Freeze Data is a snapshot of the operating conditions at the time of an emission-related fault.

Note: If DTCs were erased, Freeze Data may not be stored in vehicle memory depending on vehicle.

#### **6. O2 sensor test**

The results of O2 sensor test are not live values but instead the results of the ECU's last O2 sensor test. For live O2 sensor readings, refer to any of the live sensor screens such as Graph Screen.

Not all test values are applicable to all vehicles. Therefore, the list generated will vary depending on vehicle. In addition, not all vehicles support the Oxygen Sensors screen.

#### **7. On-board monitor test**

This function can be utilized to read the results of on-board diagnostic monitoring tests for specific components/systems.

#### **8. EVAP System Test**

The EVAP test function lets you initiate a leak test for the vehicle's EVAP system. The Millennium HD Pro does not perform the leak test, but signals to vehicle's

on-board computer are to initiate the test. Before using the system test function, refer to the vehicle's service repair manual to determine the procedures necessary to stop the test.

## **9. Vehicle Info**

This option displays the vehicle information, such as VIN (Vehicle identification Number), CID (Calibration ID) and CVN (Calibration Verification Number).

## **6. Dpf Reset**

Select [Dpf] in Main Menu and press [OK], the screen will display the interface for vehicle model list as following figure 6-1:

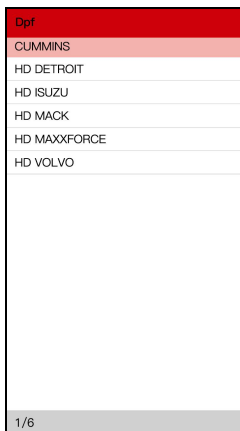


Figure 6-1

## **7. Help**

This menu enables you to view tool information and OBD introduction. In main menu, select [Help] and press [OK] to enter Figure 7-1.

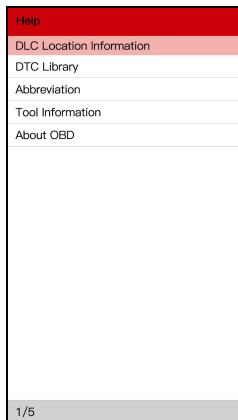


Figure 7-1

## 7.1 DLC Location Information

This option helps you to find the location of the vehicle's DLC.

## 7.2 DTC Library

In Figure 7-1, select [DTC Library] and press [OK] to enter the following screen.

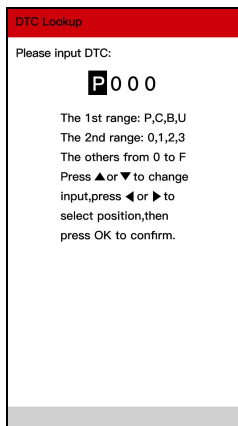


Figure 7-2

Press [▶]/[◀] button to move the highlight bar to different position. Press [▲]/[▼] button to alter the value, then press [OK] button, the screen will display definition of the DTC.

### 7.3 Abbreviation

This option allows you to view the full name and detailed explanation of the automotive glossary abbreviations.

### 7.4 Tool Information

This option displays the related information of your tool.

In Figure 7-1, select [Tool Information] and then press [OK].

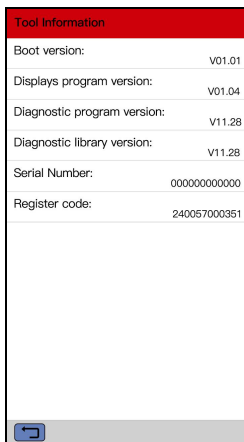


Figure 7-3

**Note:** You are strongly recommended to note down the Serial Number and Register Code in Figure 7-3 since these 2 pieces of information are required while registering your Millennium HD Pro.

Press [ESC] to return to the previous screen.

### 7.5 About OBD

This option allows you to have a general knowledge of OBD.



## **8. FAQ**

Here we list some frequently asked questions and answers relating to Millennium HD Pro.

Question: System halts when reading data stream. What is the reason?

Answer: It may be caused by a slackened connector. Please turn off the Millennium HD Pro, firmly connect the connector, and switch it on again.

Question: Screen of main unit flashes at engine ignition start.

Answer: Caused by electromagnetic disturbing, and this is normal phenomenon.

Question: There is no response when communicating with on-board computer.

Answer: Please confirm the proper voltage of power supply and check if the throttle has been closed, the transmission is in the neutral position, and the water is in proper temperature.

Question: Why are there so many fault codes?

Answer: Usually, it's caused by poor connection or fault circuit grounding.

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