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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. Neither CST nor its affiliates shall be liable to the purchaser of this unit or third parties for damages, losses, costs or expenses incurred by purchaser or third parties as a result of: accident, misuse, or abuse of this unit, or unauthorized modifications, repairs, or alterations to this unit, or failure to strictly comply with CST operating and maintenance instructions.CST shall not be liable for any damages or problems arising from the use of any options or any consumable products other than those designated as Original CST Products or CST Approved Products by CST.

Safety Precautions and Warnings. To prevent personal injury or damage to vehicles and/or the Creader8, 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 Creader8 dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the Creader8, when necessary

CoderReader8 User's Manual CST **Table of Contents**

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1. INTRODUCTION

CodeReader8, the eighth portable general auto diagnostic tool, is newly designed by CST Automotive Electronics Group in 2012. This product uses the latest low power comsuption ARM processor, 3.2 inches full color LCD display, humanized menu and swift response, easy to use. And it has three background subject choices and intelligent light sensor design. It is more convenient for the users to use it in the dark car. Support all the functions of OBDII&EOBD, it also can update freely forever!

NOTICE: Code Reader 8 MAY AUTOMATICALLY RESET WHILE BEING
DISTURBED BY STRONG STATIC ELECTRICITY.THIS IS A NORMAL
REACTION.

2. General Information-About OBDII/EOBD

2.1 On-Board Diagnostics (OBDII)

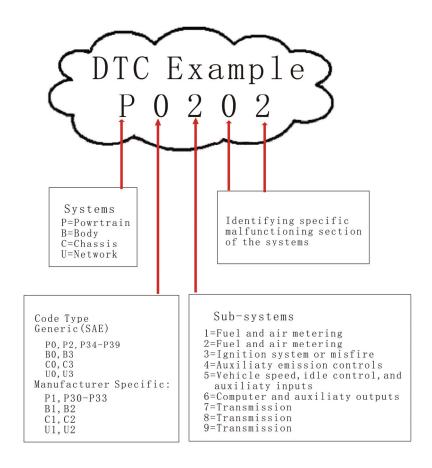
The first generation of On-Board Diagnostics(called OBD II)was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new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

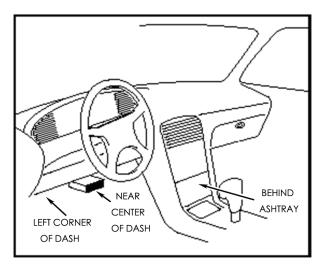
2.2 Diagnostic Trouble Codes (DTCs)

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.OBDII 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:



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 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.

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 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 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 OBDII 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 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) –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 Da—When an emissions related fault occurs, the OBDII 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 CodeReader8



Figure 3-1

A/B: **UP/DOWN BUTTONs** -- Move cursor up or down for selection

C/D: **LEFT/ RIGHT BUTTONs** -- Move cursor left or right for selection; Also turn pageup or down when more than one page is displayed

E: **INFORMATION BUTTON**--Trouble Shooting information

F: **RETURN BUTTON**-- Returns to previous menu

G: ENTER BUTTON-- Confirms a selection (or action) from a menu list

H: Cable with OBD II CONNECTOR -- Connects the CodeReader8 to the vehicle's Data Link Connector (DLC)

I: LCD DISPLAY -- Indicates test results

J: **LED INDICATOR LAMP** -- No DTC; when there are no DTC, the green indicator lamp will light up

-- Permanent DTC; when there are Permanent DTC, the red indicator lamp will light up

K: **LED INDICATOR LAMP** -- Confirmed DTC; when it displays" Confirmed DTC", the red indicator lamp will light up

L: **LED INDICATOR LAMP** -- Pending DTC; when it not sure or unknown DTC, the yellow indicator lamp will light up

3.2 Specifications

1) Screen: 3.2", 320*240 Pixels full color LCD display

2) Input voltage range: 9~16V

3) Operating current: <70mA@12V (Typical)

4) Power consumption: <0.84W (Typical)

5) Operating temperature: 0°C~60°C /32°F~140°F

6) Storage temperature: -20°C ~ 70°C /-4°F~158°F@ RH60%

7) Size: L*W*H: 145*95*25 mm /5.7"*3.8"*1.0"

8) Weight: <700g /1.54lb

3.3 Accessories Included

- 1) CodeReader8 main unit *1
- 2) USB cable *1
- 3) CD *1
- 4) 6 feet OBDII connected cable *1
- 5) Portable bag *1

3.4 Power supply

The power of the CodeReader 8 is provided via the vehicle Data Link Connector (DLC).

Follow the steps below to power it up:

1) Find DLC on vehicle

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

2) Plug the connector at the end of OBD II cable to the vehicle's DLC.

4. OPERATION

4.1 Connection

- 1) Turn the ignition off.
- 2) Locate the vehicle's 16-pin Data Link Connector (DLC).
- 3) Plug the OBDII cable into the vehicle's DLC.
- 4) Turn the ignition on. Engine can be off or running.
 - 1. The screen will display the interface as shown below:



Figure 4-1

The CodeReader8 allows you to make the following adjustments, settings: You can press [\checkmark] and [\checkmark] key to select press [\checkmark] to confirm. The system will display interface at once.

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

2. General Information: The CodeReader8 will display your car's Information and press [], the screen will display the interface as below:

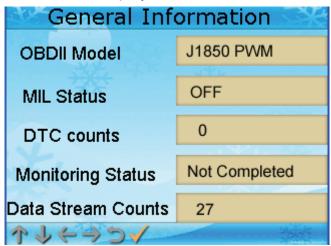


Figure 4-2

4.2 Diagnostic

Select [Diagnostic] in [Main Menu] and press [], the screen will display:



Figure 4-3

4.2.1 Read Codes

Select [Read Codes] and press [] in Diagnostic Menu. If there are some codes, the screen will display the codes as shown below:

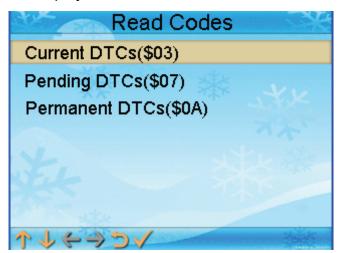


Figure 4-4

1) According to the above figure to select different item by pressing [1] or [1] and press [1] to confirm



Figure 4-5

After viewing all the codes, you can press [] to return to the Menu.

2) According to the above figure to select different item by pressing [1] or [1] and press [1] to confirm

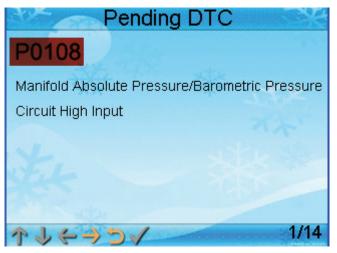


Figure 4-6

After viewing all the codes, you can press [] to return to the Read Codes Menu.

3) According to the above figure to select different item by pressing [or [and press [or]] or [or]



Figure 4-7

After viewing all the codes, you can press [] to return to the Diagnostic Menu.

4.2.2 Erase Codes

Select [Erase Codes], the screen will display the interface as shown below:

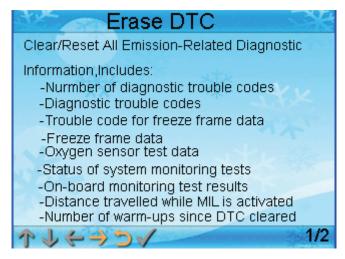


Figure 4-8

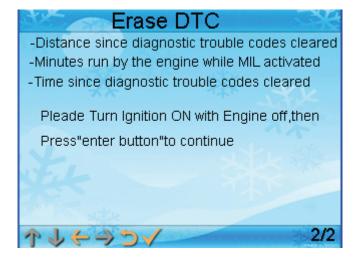


Figure 4-9



Figure 4-10

Notes:

- * Before performing this function, make sure to retrieve and record 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.

4.2.3 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. The 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 Select [I/M Readiness] and press [VV], the screen will display the interface as shown below:



Figure 4-11

You can use [1] [1] button to select and press [12], the screen will display the interface as shown the car's detail status. Press [12] to return to Diagnostic Menu.

NO: means not available on this vehicle, INC means incomplete or not ready,

YES: means Completed or Monitor Ok.

4.2.4 Data Stream

Press [1] or [1] button to select Data Stream in Main Menu interface and then press [1] button to confirm, the screen will display the interface as shown below:



Figure 4-12

1) Select [View All Items] and press [] button, the screen will display the interface as shown,:

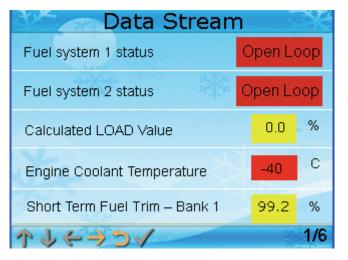


Figure 4-13

You can use [➡] [➡] button to view other data streams. Press [➡] to return to Diagnostic Menu.

2) Select [select Items] in data stream menu and press [], the screen will display the interface as shown:

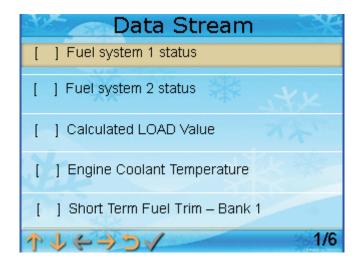


Figure 4-14

You can use [1] [1] button to select data stream items, and press [3] [5] button to turn page, the screen will display the interface as shown on the next page. After selected items and press [1], the screen will display the interface as shown your want. Press [5] to return to Diagnostic Menu.

3) Select View Graphic Items in Data stream menu and press [], the screen will display the interface as shown .You can use [] button to select single data stream items to view item of live data with a graph, and press [] button, the screen will display the interface as show Press [] to return to Diagnostic Menu. You can view all data stream items or select a certain item of live data with a graph.

4.2.5 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.

Select [Freeze Frame] in main menu interface, the screen will display the interface as shown below:

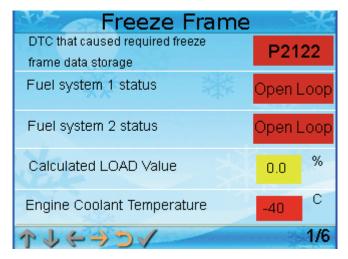


Figure 4-15

You can use [] [] button to view the data. Press [] to return to Diagnostic Menu.

4.2.6 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. For results of latest mandated on-board oxygen sensor monitoring test, see Figure 4-21 below:

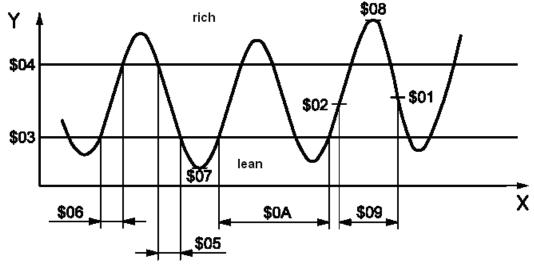


Figure 4-16

Select [O2 Sensor Test] in [Diagnostic] menu and press [] and the screen will display as shown below:



Figure 4-17

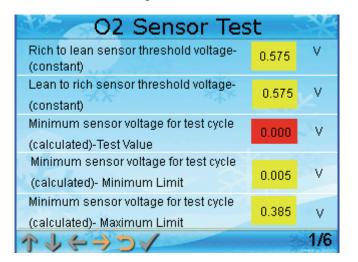


Figure 4-18

Press [] to return to Diagnostic Menu.

4.2.7 On-board monitor test

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



Figure 4-19

Select [ON-board Monitoring] in Diagnostic menu and press [and the screen will display as shown below:



Figure 4-20

You can use [1] [1] button to select an item and press [1], the screen will display as shown below:



Figure 4-21



Figure 4-22

Press [] to return to [Select Monitor ID] menu.

Select [Low sensor voltage for switch time calculation (constant)] in [Select Monitor ID] menu and press [] and the screen will display as shown below:

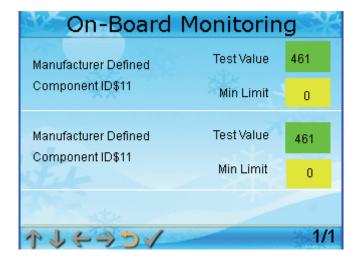


Figure 4-23

Press [] to return to [Select Monitor ID] menu.



Figure 4-24

Press [] to return to [Select Monitor ID] menu.



Figure 4-25

Press [to return to Diagnostic Menu.

4.2.8 EVAP System Test

The EVAP test function lets you initiate a leak test for the vehicle's EVAP system. The CodeReader8 does not perform the leak test, but signals to vehicle's on-board computer 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.



Figure 4-26

Select [EVAP System Test] and press [], the screen will display there active information about EVAP system. Some vehicle manufacturers do not allow external devices to control vehicle system. If the cars don't support this function, it will display as below:

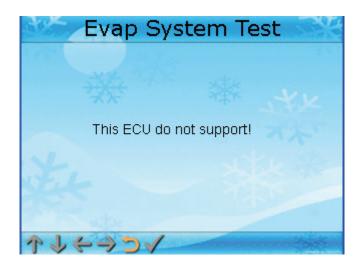


Figure 4-27

4.2.9 Vehicle Infomation

Select [Vehicle Information] and press [], the screen will display the information, such as VIN(Vehicle identification Number), CALID(Calibration Identifications) and CVN (Calibration verification number), IPT as shown below:



Figure 4-28



Figure 4-29



Figure 4-30



Figure 4-31



Figure 4-32

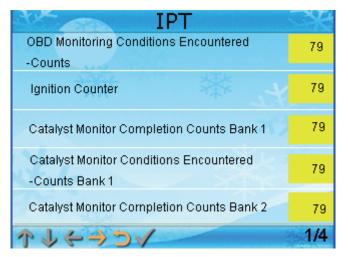


Figure 4-33

Press [5] to return to Diagnostic Menu.

4.3 Performance



Figure 4-34



Figure 4-35

4.3.1 Fuel Consumption

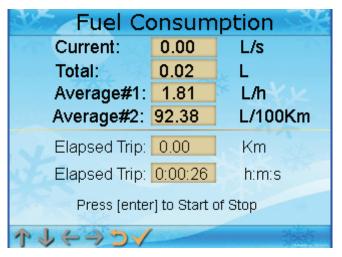


Figure 4-36

4.3.2 The 0~100Km/h Acceleration

Detection of vehicle speed from 0 to 100 km, the elapsed time Select the [0~100Km/h Acceleration] in main menu and press [] and the screen will display as shown below:



Figure 4-37



Figure 4-38

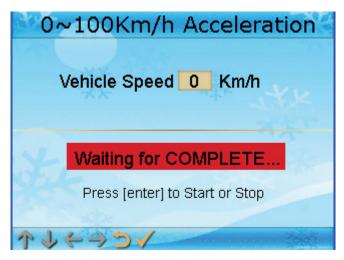


Figure 4-39

4.4 Code Lookup



Figure 4-40



Figure 4-41

You can use [1] [1] key to change the first letter. It can be switched among "P", "B", "C" and "U". And press [12] moves the cursor to next. And then Press [12] key to input number. After you input the code number, press [12] to view the definition of the code. After viewing the definition, press [12] to return to the Main Menu.

4.5 Review

This function is used to review the recorded Data Streams, DTC, and Freeze Frame.

Select [Review] in the Main Menu and press [] and the screen will display the interface as shown below:



Figure 4-42



Figure 4-43

1) Review DTC

Select [Review DTC] in the Review and press [and the screen will display the interface as shown below:

Review DTC				
Date & Time	DTC num	DTC type		
1012-02-28(16:48:12) LCGJD52E76H283435	18	Current		
1012-02-28(16:58:22) LCGJW52E76H283635	18	Pending		
Jet .				
A State				
个 し ケ 今 つ /		1/1		

Figure 4-44

The recorded DTC will be displayed as shown.

You can use [1] [1] key and press [1] button to view detailed information,

2) Review Data stream

The operation is similar to the "Review DTC" function.

3) Review Freeze Frame

The operation is similar to the "Review DTC" function.

4) Delete DTC



Figure 4-45

Press [1 to confirm, and press [1 to return to Main Menu.

5) Delete Data stream

The operation is similar to the "Delete DTC" function.

6) Delete Freeze Frame

The operation is similar to the "Delete DTC" function.

4.6 Configuration

This function is Configuration to view Tool Information: "Theme", "Unit of Measure", "Record", "Beeper", "Backlight Mode", "Backlight Threshold", "Time And Date". It has three Themes: "Cyan", "Blue" and "Purple".

Select [Configuration] in the Main Menu and press [] and the screen will display the interface as shown below:



Figure 4-46

Configuration			
Theme	Cyan		
Unit of Measure	Metric		
Record	OFF		
Beeper	OFF		
Backlight Mode	Auto		
Backlight Threshold	0		
Time And Date			
↑↓←⇒5/	3%5_		

Figure 4-47

Configuration			
Theme	Cyan		
Unit of Measure	Metric		
Record	OFF		
Beeper	OFF		
Backlight Mode	Auto		
Backlight Threshold	0		
Time And Date			
↑↓←⇒5/	3945		

Figure 4-48



Figure 4-49

4.7 Help

This function is used to view Tool Information, About OBD, and About Data stream.



Figure 4-50



Figure 4-51

Tool Information: includes: software version, hardware version, serial number, supported, time and date.

About OBD: Relevant introductions information about OBD.

5. Upgrading

As you buy Code Reader 8, please visit our website to register, only after successfully registered, you can logon at the site and can download the CodeReader8 driver & latest version program of CodeReader8,.Log on to the website, download the latest version of the CodeReader8 upgrade package and decompress the software to local disk. Connect the CodeReader8 to computer through USB cable and run theCodeReader8 Upgrade.exe, Select the language, enter the serial number and then click "Start" when a message of upgrading succeed pops out, click" Exit", unplug USB cable to complete upgrade.

6 FAQ

Here we list some frequently asked questions and answers relating to Code Reader 8 .

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

Answer: It may be caused by a slackened connector. Please turn off the Creader8, firmly connect the connector, and switch on it 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.

7 Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO PERSONS WHO PURCHASE CST PRODUCTS FOR PURPOSES OF RESALE OR USE IN THE ORDINARY COURSE OF THE BUYER'S BUSINESS.

CST auto electronic Co.,LTD product is warranted against defects in materials and workmanship for one year (12 months) from date of delivery to the user.

This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any automotive meter found to be defective is repair or replacement, and CST shall not be liable for any consequential or incidental damages.

Final determination of defects shall be made by CST in accordance with procedures established by CST. No agent, employee, or representative of CST has any authority to bind CST to any affirmation, representation, or warranty concerning CST automotive meters, except as stated herein.

8 Order Information

Replaceable and optional parts can be ordered directly from your CST authorized tool supplier. Your order should include the following information:

- 1. Quantity
- 2. Part number
- 3. Item description

9 Customer Service

If you have any questions on the operation of the unit, please contact local dealer, or contact:

CST auto electronic Co., LTD

Tel: 86-755-

E-mail: