



GDS - Diagnosis

Ver. 04. 06. 2010





Basic Inspection offers standard checklists of each system for the users' vehicles.

Last selecting items such as "Engine", "T/M and Driving", "Brake and Steering" and "Others System" will appear on the Basic Inspection Menu at the left sub menu.

Inspection results will be shown on the right side of the page when an item in the end node is selected.

Select one option from the checklist section among Good (G), Repair(R) and Exchange (E) after verifying "Check Point", "Current Status", and "Normal Value".

Click "Save" button to save. The content saved will be shown in the "VIN Info" when the same VIN is selected in the future.

Engine System

| | | 🔘 VCI : USB On 🛛 😔 VMI : | On 🥥 Internet : On | | | | - × |
|-------------------------------------|--|--------------------------|-----------------------------------|--------------|---------------|----------------|------|
| GD | Preparatio | n Diagnosis | Vehicle S/W Management | Repair | | 0 | |
| Cee'd(ED) | 2008/G 1.4 DOHO | ; | System 🕨 Engine/Engine Con | trol | | | ð 2 |
| Diagnosis | 📕 Basic Inspecti | on. | | | | | |
| Basic Inspection | Title : Engine System Good Good Repair | | | | | | je |
| Engine System | •Vehicle : C | ee'd(ED) • Modelyear : 2 | 2008 • Engine : G 1.4 DOHC | • VIN : U5Y | FF2312 | 8L016 | 546 |
| | | Check Point | Current Status | | Option | | n |
| Brake and Steering System Others | | | | | C | 0 | • |
| | Engine Oil/Filter | Oil Level TIP | LU | - F | 0 | 0 | 0 |
| | | Oli Color TIP | 🔿 Red 🔿 Black 🔿 Gray 🔿 B | Brown | Ø | 0 | 0 |
| | | Oil Leak | 🕐 None 🕐 Slight 🕐 Medium | Heavy | 0 | 0 | 0 |
| | | Maintenance interval | | | 0 | 0 | 0 |
| | Spark Plug/Cable | Damage, Carbon Heap | 💿 None 💿 Slight 💿 Medium | Heavy | 0 | 0 | 0 |
| | | Maintenance interval | | | 0 | 0 | 0 |
| <[| | Damage | O None O Crack O Pollution | Abrasion | 0 | 0 | 0 |
| DTC Analysis | Timing Belt/Drive Belts | Tension | 🔿 Normal 💮 Over 🔿 Lack | | 0 | 0 | 0 |
| Data Analysis | | Timing Belt Maintenance | | | 0 | 0 | 0 |
| Case Analysis | | Line Leak, Damage | 🗇 None 🕤 Slight 🕤 Medium 💮 Heavy | | 0 | 0 | 0 |
| Cuse Analysis | Fuel Line/Filter | Maintenance interval | | | 0 | 0 | 0 |
| Symptom Analysis | Coolant/Radiator | | LO | F | 0 | 0 | 0 |
| Flight Record | | | | | 0 | 0 | 0 |
| Oscilloscope | | | | | | | |
| CARB OBD-II | | Save | | Clear | | | |
| Setup A Manual | TSB Case Analysis | DTC Current Data Actu | ation Ist Flight Record DVOM C | Simi Simi | lation est | Intern Upda | te • |

Figure 1. Basic Inspection - Engine System

T/M and Driving System

| GD | Preparatio | on Diagnosis | Vehicle S/W Management Repair | ti | | 0 | |
|--------------------------|---|--------------------------|--|--------------|--------------------------------|------|--|
| VIN Cee'd(ED)/2 | 008/G 1.4 DOH | c C | System 🕨 Engine/Engine Control | | | 6 | |
| Diagnosis | Basic Inspect | ion | | | | | |
| lasic Inspection | Title : T/M and Driving System Good Good Repair | | | | 🞯 Good 🛛 🔞 Repair 🛛 🖨 Exchange | | |
| Engine System | •Vehicle: 0 | Geerd(ED) • Modelyear : | 2008 • Engine : G 1.4 DOHC • VIN : U5YFI | F23128L01654 | | 5546 | |
| Brake and Steering Syste | | Check Point | Current Status | 0 | 0 | | |
| Others | | Fluid Level TIP | COLD O HOT | Ø | 0 | 0 | |
| | 1.00.00.11 | Flud Color TIP | Red O Discoloration | 0 | 0 | 0 | |
| | AV I Fluid | Fluid Leak | 🕤 None 🕤 Slight 🏐 Medium 🕤 Heavy | 0 | 0 | 0 | |
| | | Maintenance interval | | 0 | Ó | 0 | |
| | | Clutch Pedal Free-Play | 🗢 sood 🔿 Bad | 0 | 0 | 0 | |
| | Clutch | Bearing Noise | 🗇 None 🔿 Exist | 0 | 0 | 0 | |
| | Clutch Fluid Maintenance | | | 0 | 0 | 0 | |
| OTC Analysis | Driverhet/Luie | Boot, joint Part Damage | 🗇 None 🗇 Slight 🔿 Medium 🗇 Heavy | 0 | 0 | 0 | |
| ata Analysis | Unvesnaty Axie | Oil Leak | 🗇 None 🔿 Slight 🔿 Medium 🔿 Heavy | 0 | 0 | 0 | |
| Case Analysis | | Pressure-Front | Lett (Kpa) / Right (Kpa) | 0 | 0 | 0 | |
| Amplein Applurie | 1200 | Pressure-Rear | Left (Kpa) / Right (Kpa) | 0 | 0 | 0 | |
| symptom Analysis | Tire Thread Abrasion-Front TIP | | Left(good Bad) / Right(good Bad) | 0 | 0 | 0 | |
| light Record | | Thread Abrasion-Rear TIP | Left(| 0 | 0 | 0 | |
| scilloscope | | 0.000 | | | | | |
| CARB OBD-II | | save | Clear | | | | |

Figure 2. Basic Inspection – T/M and Driving System

Brake and Steering System

| | | 🔵 VCI : USB On 🛛 🔵 VMI : | On 🥥 Internet : On | | |
|------------------------|--------------------------------------|--------------------------|---|-----------------|-----------------|
| GD | Preparatio | n Diagnosis | Vehicle S/W Management Repa | air | 0 |
| Cee'd(ED) | 2008/G 1.4 DOHO | | System 🕨 Engine/Engine Control | | 02 |
| Diagnosis | Basic Inspecti | on | | | 1 |
| Basic Inspection | • Title : B | rake and Steering System | Good Brepair | () Ex | change |
| Engine System | •Vehicle : C | ee'd(ED) • Modelyear : 2 | 2008 • Engine : G 1.4 DOHC • VIN : U5Y | 'FF2312 | 8L016546 |
| T/M and Driving System | Check Point | | Current Status | 0 | Option |
| Others | | | 1401 0 | 0 | 0 0 |
| | | Fluid Level | MAX () MIN | 0 | 0 0 |
| | Brake Fluid | Fluid Leak | None Slight Medium Heavy | 0 | 0 0 |
| | | Maintenance interval | | 0 | 0 0 |
| | Brake Lining/Pad | Pad Thickness TIP | 🗇 good 💮 Bad | 0 | 0 0 |
| | | Lining Thickness | good Bad | 0 | 0 0 |
| | Olegaine Ulbergi | Free-Play TIP | 🕤 good 💿 Bad | 0 | 0 0 |
| (L | Steering Wheel Steering Wheel Center | | © good ⊚ Left ⊚ Right | 0 | 0 0 |
| DTC Analysis | | Fluid Level | MAX [] MIN | 0 | 0 0 |
| Data Analysis | Power Steering Ruid | Fluid Leak | 🗇 None 🔿 Slight 🔿 Medium 🔿 Heavy | 0 | 0 0 |
| Case Analysis | 1000 | Maintenance interval | | 0 | 0 0 |
| Cuse Analysis | 10.127280-00205 | Joint Part damage | 🔿 None 🔿 Exist | 0 | 0 0 |
| Symptom Analysis | Tie Rod End Boot Damage | | 🔿 None 🔿 Exist | 0 | 0 0 |
| Flight Record | | | | | |
| Oscilloscope | | | | | |
| CARB OBD-II | | Save | Clear | | |
| Setup | TSB Case Analysis | DTC Current Data | ation Flight Record DVOM Oscilloscope Sim | ulation Test | Internet Update |

Figure 3. Basic Inspection – Brake and Steering System

Others

| GD | Preparatio | n Diagnosis | Vehicle S/W Management Rep | pair | | C |
|---|-------------------------------------|-----------------------|----------------------------------|----------|--------|----|
| MN Cee'd(ED)/ | 2008/G 1.4 DOH0 | ; | System > Engine/Engine Control | | | 6 |
| Diagnosis | Basic Inspecti | ph | | | | |
| Basic Inspection 🛛 🚺 | • Title : 0 | thers | Good @Repair | O E | chan | ge |
| Engine System T/M and Driving System | venicie. C | ee d(ED) • Modelyear. | 2008 Chgine. GI.4 Dono VIN. 00 | 11772312 | Option | |
| Brake and Steering System | | Check Point | Current Status | O | 0 | 0 |
| Others | | Magnetic Clutch | Work Bad | 0 | 0 | 0 |
| | | Cooling Capacity | 🔿 Work 🔿 Bad | 0 | 0 | 0 |
| | Air Conditioning System Co Co | Refrigerant Leak | 🕤 None 🕤 Exist | 0 | 0 | 0 |
| | | Condenser Pin Damage | 🗇 None 🔿 Slight 🔿 Medium 🔿 Heavy | 0 | 0 | 0 |
| | | Condenser Fan | Normal Bad | 0 | 0 | 0 |
| | | Maintenance interval | | 0 | 0 | 0 |
| | Power Window | Switch Operation | Normal Bad | 0 | 0 | 0 |
| TC Analysis | TO NOT THIS OF | Open/Close Velocity | 🗇 Normal 🗇 Bad | 0 | 0 | 0 |
| ata Analysis | Muttler | External Damage | None Slight Medium Heavy | 0 | 0 | 0 |
| ase Analysis | | Noise | ⊜ good ⊜ Bad | 0 | 0 | 0 |
| vmptom Analvsis | | | | | | |
| light Record | | | | | | |
| | | | | | | |
| ARB OBD-II | | Save | Clear | | | |

Figure 4. Basic Inspection – Other Systems



The "DTC Analysis" function retrieves DTC data from a specific system and retrieves diagnostic procedures/TSB data for any DTCs found.

There are three ways to access this function:

- Select "DTC Analysis" from the main page.
- Select "Go To DTC Analysis" from the "Fault Code Searching" window after selecting a specific DTC.
- Select the "DTC" button from the bottom of the main page.

TSB (in DTC Analysis): Function for accessing TSB information for the DTC found through the communication with the control module in the vehicle Selection.

DTC Searching

Configure setting for the diagnosis through the communication between VCI and vehicle control modules. Next, start diagnosis through the communication between VCI and vehicle control module by selecting the "DTC Analysis" menu as shown in [Figure 1].



Figure 1. DTC Analysis – Communication Open

DTC Result

After the communication with the ECU is established, DTC data will be retrieved and displayed on the upper section of the screen. Then related TSB list will be shown in the lower section.

| | 🕒 VCI : USB On 🛛 😌 VMI : On 👋 Internet : On | - × |
|---|---|-----------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC System > Engine/Unleaded GEN | 0 🖶 |
| Diagnosis | DTC | |
| Basic Inspection | Erase All DTC Freeze Frame DTC Status Erase Selective DTC | |
| DTC Analysis 🛛 🕨 | Description | State |
| Select a DTC code to view its relative information. | P0118 Engine Coolant Temperature Circuit High Input P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input TSB | |
| Data Analysis | | |
| Case Analysis | | |
| Symptom Analysis | There is no searched data. | |
| Flight Record | | |
| Oscilloscope | | |
| CARB OBD-II | | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test | Internet Update |

Figure 2. DTC Analysis – DTC Result

DTC Display

The state of a DTC is shown in the "State" field on the right-hand side of the screen. ("H" indicates a history code for supported systems; "P" indicates a pending code for supported systems.) In addition, the "DTC Status" function is available on supported systems to provide more information regarding a specific DTC.

The DTC display will update every 25 seconds; the display may be updated manually by selecting "DTC Analysis".

The screen configuration may be changed using the appropriate icons located at the upper-right portion of the display."

| | 🜔 VCI : USB On 🛛 🜔 VMI : On 👋 Internet : On | – × |
|---|---|--------------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC System DEngine/Unleaded GEN | o e |
| Diagnosis | UTC | |
| Basic Inspection | Erase All DTC Freeze Frame DTC Status Erase Selective DTC | _ |
| DTC Analysis 🛛 🕨 | Description | State |
| Select a DTC code to view its relative information. | P0118 Engine Coolant Temperature Circuit High Input P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input Image: State Stat | |
| Data Analysis | | |
| Case Analysis | | |
| Symptom Analysis | There is no searched data. | |
| Flight Record | | |
| Oscilloscope | | |
| CARB OBD-II | | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test | Internet Update |

Figure 3. DTC Analysis - DTC Display-Split screen

| | | 🔍 💛 VCI : USB On 🛛 🔵 VN | ll : On 🛛 🌔 Internet : On | | - X |
|--|---------------------|---|--|---------------------------------|--------------------|
| GD | Preparatio | ion Diagnosis | Vehicle S/W Managem | nent Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC | | System > Engine/Unlead | ed GEN | p e |
| Diagnosis | DTC | | | | () e |
| Basic Inspection | Erase All DT | TC Freeze Frame | DTC Status Erase | Selective DTC | _ |
| DTC Analysis 🛛 🕨 | D | Description | | | State |
| •Select a DTC code to view its relative information. | P0118 Ex P0108 M | Engine Coolant Temperature Circuit Vanifold Absolute Pressure/Barome | High Input tric Pressure Circuit High Input | | |
| Data Analysis | | | | | |
| Case Analysis | | | | | |
| Symptom Analysis | | | | | |
| Flight Record | | | | | |
| Oscilloscope | | | | | |
| CARB OBD-II | | | | | |
| Setup Manual | TSB Case Analysi | sis DTC Current Data | ctuation Test Flight Record DVOM | Oscilloscope Simulation Test | Internet Update |

Figure 4. DTC Analysis - DTC Display-Full screen

DTC Erase

Erase All DTC

Selecting the "Erase All DTC" button will clear DTC data in the current ECU.



Figure 5. DTC Analysis - Erase All DTC

Erase Selective DTC

"Erase Selective DTC" button function is for erasing the selected DTC information form the assigned control module. "Erase Selective DTC" function is only for supported control modules. To erase DTC item, first choose the item and press "Erase Selective DTC" button.

Freeze Frame Display

The FREEZE FRAME DATA displays the data values stored in the Engine Control Module at the point when the first confirmed DTC (Engine ECU Only) is detected.

| | 🜔 VCI : USB On 🛛 🜔 VMI : On 💛 Internet : On | - × |
|--|--|---------------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/200 | 06/G 1.6 DOHC System > Engine/Unleaded GEN | 0 2 |
| Diagnosis | DTC | |
| Basic Inspection | Erase All DTC Freeze Frame DTC Status Erase Selective DTC | |
| DTC Analysis 🛛 🕨 | Description | State |
| P0118:Engine Coolant General Information Monitor Scantool Data Inspection/Repair Verification of Vehicle | P0118 Engine Coolant Temperature Circuit High Input P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input P0108 Freeze Frame | |
| <) | DTC CAUSE TO SYSTEM ERROR : P0123 | |
| Data Analysis | Sensor Name Value Unit Fuel System Status-Bank1 | ^ |
| Case Analysis | Calculated Load Value 0.0 % Engine Coolant Temperature Sensor -40.0 °C | = |
| Symptom Analysis | Short Term Fuel Trim-Bank1 0.0 % | |
| Flight Record | Short Term Fuel Trim-Bank2 0.0 % Long Term Fuel Trim-Bank2 -0.8 % | |
| Oscilloscope CARB OBD-II | Manifold Absolute Pressure Sensor 0 kPa Engine Speed 0 RPM Vehicle Speed 0 km/h | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Flight Record DVOM Oscilloscope Simulat Test | ion Internet Update |

Figure 6. DTC Analysis – Freeze Frame

DTC Guide

After selecting a DTC procedure from the left-hand menu, the following options (dependent on specific DTC) will be displayed:" Component-level and system-level wiring diagrams (DTC dependent) are also available.

- General Information
- Monitor Scantool Data
- Inspection/Repair
- Verification of Vehicle
- Full Circuit
- Component Circuit



• Figure 7. DTC Contents – General Information



Figure 8. DTC Contents – Monitor Scantool Data



Figure 9. DTC Contents – Infpection/Repair



Figure 10. DTC Contents – Verification of Vehicle

| | 💛 VCI : USB On 🛛 VMI : On 🕒 Internet : On | - × |
|--|---|---|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/200 | 06/G 1.6 DOHC System > Engine/Unleaded GEN | 0 🗄 |
| Diagnosis | EDTC | |
| Basic Inspection | Erase All DTC Freeze Frame DTC Status Erase Selective DTC | |
| DTC Analysis 🛛 🕨 | Description | State |
| P0118:Engine Coolant General Information Monitor Scantool Data Nonitor Scantool Data Spection/Repair Verification of Vehicle | P0118 Engine Coolant Temperature Circuit High Input P0108 Manifold Absolute Pressure/Barometric Pressure Circuit High Input | |
| | Component Info | |
| < <u> </u> | P0118:Engine Coolant Temperature Circuit High Input>General Information | () () () () () () () () () () () () () (|
| Data Analysis | Component Location | |
| Case Analysis | | |
| Symptom Analysis | | |
| Flight Record | | |
| Oscilloscope | | |
| CARB OBD-II | | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test | Internet Update |

Figure 11. Circuit Diagram

| 234 | | |
|-----|---|--|
| | win conduct, professi (win): win conduct, professi (win): 2001 a 10 | |
| | terrent | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | Zoom In Zoom Out 100% | |
| | | |

Figure 12. DTC Contents – Full Circuit

| Zoom In Zoom Out 100% | |
|-----------------------|--|





To monitor ECU input/output information (Current Data), the user may select "Data Analysis" from the main page or "Current Data" from the bottom of the screen."

Communication open of current data

Configure setting for the diagnosis through the communication between a VCI and a vehicle control module. Run diagnosis through the communication between the VCI and vehicle control module as shown in [Figure 1].

| | 💛 VCI : U | JSB On 🛛 🥥 VMI : On | 🔵 Internet : On | | - × |
|---|-----------------------|-----------------------------|-----------------------|---------------------------------|-----------------|
| GD | Preparation | Diagnosis \ | /ehicle S/W Managemen | t Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC | System | Engine/Unleaded | GEN | 0 🗄 |
| Diagnosis | Current Data | | | | Retry 🗖 |
| Basic Inspection | | | | | |
| DTC Analysis | | | | | |
| Data Analysis 🏾 🕨 | | | | | |
| Select a Sensor Data item to view its relative information. | Vehicle Con | Intunication | D) | | |
| Case Analysis | | | | | |
| Symptom Analysis | | | | | |
| Flight Record | | | | | |
| Oscilloscope | | | | | |
| CARB OBD-II | | | | | |
| Setup Manual | TSB Case Analysis DTC | Current Data Actuation Test | Flight Record DVOM | Oscilloscope Simulation Test | Internet Update |

Figure 1. Data Analysis – Communication Open

Monitoring for Current Data

The screen will display Current Data and DTC data in a split-screen view as shown below. Expand the Current Data window by selecting the icon marked.

Note: The speed GDS updates data parameters (refresh rate) depends on the communication protocol used by the ECU for data transmission.

If you want to view Current Data on Full-screen, click the button marked as shown below.

| | O VCI : | USB On 🛛 🥥 VMI | : On 🛛 🔵 Internet | : On | | - X |
|---|--|-------------------------|--------------------------|--|---|--------------------|
| GD | Preparation | Diagnosis | Vehicle S/W M | Management | Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC | 8 | System 🕨 Engine | /Unleaded GEN | | 0 🗆 |
| Diagnosis | Current Data | | | | | |
| Basic Inspection | Selective Display 🗘 🛛 Full | List ‡ Graph : | ‡ Items List ‡ Res | et Min.Max Record | Stop 🗘 Grou | iping VSS |
| DTC Analysis | Sensor Name | | | Value | Unit | |
| Data Analysis Select a Sensor Data item to view its relative information. | Transaxle Range Switch A/C On Condition A/C On Condition A/C Switch Malfunction Indicator Lamp A/C Compressor Fan-Low Speed Fan-High Speed Ignition Switch ON Closed Throttle Position DTC Erase All DTC | (MIL) Freeze Frame | DTC Status | P,N,R OFF OF ON OFF ON ON ON OFF | - - - - - - - - - - - - - - - - - - - | |
| | P0118 Engine Coolar | t Temperature Circuit H | igh Input | | | State |
| Case Analysis | P0108 Manifold Abso | lute Pressure/Barometri | ic Pressure Circuit High | n Input | | |
| Symptom Analysis | | | | | | |
| Flight Record | | | | | | |
| Oscilloscope | | | | | | |
| CARB OBD-II | | | | | | |
| Setup Manual | TSB Case Analysis DTC | Current Data Act | uation Flight Record | DVOM Oscilloso | cope Simulation Test | Internet Update |

Figure 2. Data Analysis – Monitoring

| Icon | Description |
|---------------------|---|
| Selective Display 💠 | Function to renew data values for specific items. It toggles with "Normal Display" |
| Normal Display ¢ | Functions to renew data values for all items. It toggles with "Selective Display" |
| Full List 💲 | Function to show Current Data items in two division (right and left) to show more items. It toggles with "Standard List" |
| Standard List \$ | Function to show Current Data items in one division. It toggles with "Full List" |
| Text ≎ | Function to show Current Data values in numbers. It toggles with "Graph" |
| Graph ≑ | Function to show Current Data values in graph. It toggles with "Text" |
| Items List | Function to change Current Data items in the Graph mode. |
| Reset Min.Max | Function to reset the Max. or min. value of Current Data in the Graph mode |
| Record | Function to save "Current Data" in Data File Form to the PC or VCI. |
| VSS | Function to simulate by vehicle speed signal output. This function is not in service. |

Normal / Selective Display

The "Selective Display" function updates selected data parameters (maximum of 8). The default mode is "Normal Display" (all data parameters are updated). Select data parameters by checking the box next to the parameter name; click "Selective Display" to enable the function. Click "Normal Display" to switch back to the default mode.

| | 🔵 VCI : USB On 🛛 🌔 VMI : On 🕘 Internet : On | — × |
|---|---|------------------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repa | air Q |
| RIO(JB)/200 | 06/G 1.6 DOHC System Engine/Unleaded GEN | • |
| Diagnosis | Current Data | |
| Basic Inspection | Normal Display 🗘 🛛 Full List 💠 🗘 Graph 💠 Items List 🗘 Reset Min.Max 🛛 Record 🗌 Stop | Crouping VSS |
| DTC Analysis | Sensor Name Value Unit | |
| Data Analysis D | Battery Positive Voltage 4.8 V Throttle Position 5.0 V | |
| Adapted Throttle Position | If Intelle Position 80 % If Intelle Position 80 % If Engine Load 100 % | |
| General Description Specification Signal Waveform | ☑ Adapted Throttle Position 20 % ☑ Air Flow Rate from Mass Air Flow Sensor 0.0 kg/h ☑ Air Flow Rate from Mass Air Flow Sensor 0.0 V | |
| Component Circuit Full Circuit | Engine Speed RPM Battery Charging % Engine Coolant Temperature Sensor °C | |
| | Intake Air femperature Sensor C EVAP Purge Valve % Cylinder 1 Injection Time mS | |
| Case Analysis | Cylinder 2 Injection Time mS Cylinder 4 Injection Time mS | E |
| Symptom Analysis | Actual Torque % Torque Request From TCU % | |
| Flight Record | Oxygen Sensor-Bank1/Sensor1 V Target Idle Speed RPM | |
| Oscilloscope | Idle Speed Control Actuator % Engine Speed-Fine RPM Engine Coll Tomescription % | - |
| Setup Manual T | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Sim | ulation Test Update |

Figure 3. Data Analysis – Selective Display

Full List / Standard List

The difference between "Full List" and "Standard List" is the output method for the "Current Data" items. "Standard List" shows items in one column and "Full List" shows in two divisions.

"Selective Display" and "Graph" functions are not available in "Full List" mode.

| | O VC | i : USB On 🛛 🔵 VMI | : On 🥥 Internet : On | | - × |
|---|---|--------------------------|----------------------------|---|---|
| GD | Preparation | Diagnosis | Vehicle S/W Management | Repair | 0 |
| RIO(JB)/200 | 06/G 1.6 DOHC | | System Engine/Unleaded | GEN | () () |
| Diagnosis | Current Data | | | | |
| Basic Inspection | Selective Display C | ull List 🗧 Graph 🗧 | Items List : Reset Min Max | Record Stop : Group | Ing VSS |
| DTC Analysis | Sensor Name | | | Value Unit | |
| Data Analysis Matunction Indicator Let Component Location General Description Component Circuit Full Circuit | Transacke Range Switch A/C Con Condition A/C Switch Malfunction Indicator Lan A/C Switch Fan-Low Speed Fan-High Speed Japhtion Switch ON Closed Throttle Position Wride Open Throttle(WOT Fuel Cut Status Cranking Signal Fuel Pump | np(MIL) D | | PIN.R - OFF - | , i i i i i i i i i i i i i i i i i i i |
| Case Analysis Symptom Analysis Flight Record Oscilloscope CARB OBD-II | API Control Relay Syncronicing Status-CKI Fuel System Status Knocking Detection Engine Running Status CVVT Status Oxygen Sensor Operatio Canister Phase On Idle Control State | P/CMP n-Bank1/Sensor1 | | OFF - OFF - OFF - OFF - OFF - OFF - OFF - OFF - OFF - | |
| Setup Manual | TSB Case Analysis DTG | C Gurrent Data Acta | ation Flight Record DVOM | Oscilloscope Simulation Test | Internet Update |

Figure 4. Data Analysis – Standard List

| | 🔵 VCI : US | SB On 🛛 🔵 VMI | On | 0 | nternet : On | | | E | - X |
|---|---|---|---|---------|--|--|--|---|-----|
| GD | Preparation | Diagnosis | | Vehic | le S/W Management | F | Repair | (| 9 |
| RIO(JB)/200 | 6/G 1.6 DOHC | | System | n.) | Engine/Unleaded | GEN | | Ø | |
| Diagnosis | Current Data | | | | | | | la | |
| Basic Inspection | Selective Display 2 Standard | List : Graph : | : Iten | ns List | t : Reset Min Max | Record S | stop 😂 Groupin | o VSS | |
| DTC Analysis | Sensor Name | Value | Unit | | Sensor Name | | Value | Unit | |
| Data Analysis Malfunction Indicator Let Component Location General Description Component Circuit Full Circuit | Transade Range Switch AIC Switch AIC Compressor Fan-High Speed Closed Throttle Position Fuel Cut Status Fuel Pump Syncronizing Status CKP/CMP Knocking Detection CVVT Status Canister Punge State Idle Control State Air Flow Rate from Mass Air Fl. Thront Rate from Mass Air Fl. | PNR OFF O | - - - - - - - - - - - - - - - - - - - | | AIC On Condition Malfunction Indicator Fan-Low Speed Ignition Switch ON Wide Open Throttle(V) Cranking Signal MFI Control Relay Fuel System Status Engine Running Stat Oxygen Sensor Open Canister Phase On Air Flow Rate from M Engine Load | Lamp(MIL) VOT) Is ation-Ban ass Air Fl | 0FF 0FF 0N 0N 0N 0FF 0FF 0FF 0FF 0FF 0FF | | - |
| Case Analysis Symptom Analysis Flight Record Oscilloscope CARB OBD-II | Adapted Throttle Position Battery Positive Voltage Engine Coolant Temperature S EVAP Purge Valve Cylinder 2 Injection Time Cylinder 4 Injection Time Torque Request From TCU Target Idle Speed Engine Speed Fine | 20 4.8 20 0 0 100 1360 0 | % V 'C % mS mS % RPM RPM | | Engine Speed Battery Charging Intake Air Temperatur Cylinder 1 Injection Ti Cylinder 3 Injection Ti Actual Torque Oxygen Sensor-Bank Idle Speed Control Ac Engine Oil Temperatu | e Sensor me me 1/Sensor1 tuator re | 0 100 -48 0 0 0.46 52 20 | RPM % °C mS mS % V % °C | |
| Setup A Manual 1 | rSB Case Analysis DTC | Current Data | uation | Fligh | t Record DVOM | Oscilloscope | Simulation Test | nternet Update | • |

Figure 5. Data Analysis – Full List

Text / Graph

The default display format is "Text" mode. To switch to "Graph" mode, perform the following:

- Select up to 8 data parameters.
- Click the "Graph" button.

| | | VCI : USB On 💦 🥥 VMI : On 👋 Internet : On | -× |
|---------------------------|----------------------|---|--------------------|
| GD | Preparation | Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/200 | 06/G 1.6 DOHC | System > Engine/Unleaded GEN | 1 |
| Diagnosis | 🚪 Current Data | | |
| Basic Inspection | Selective Display 💲 | Full List \$ Text \$ Items List \$ Reset Min.Max Record Stop \$ Group | ing VSS |
| DTC Analysis | 18.1 | Battery Positive Voltage Max: 4.8 | |
| Data Analysis 🛛 🕨 | . 0.0 , , , , , | , , , , , , , , , , , , , , , , , Min: 4.8 | 4.8 V |
| Adapted Throttle Position | 5.0 | Throttle Position Max: 5.0 | 5.0 V |
| Specification | <u>0.0</u> , , , , , | Min: 5.0 Throttle Position Max: 80 | |
| Signal Waveform | | | 80 % |
| E Full Circuit | 100 | Engine Load Max: 100 | |
| | | | 100 % |
| | 0, , , , | Adapted Throttle Position Max: 20 | |
| ۰ | | | 20 % |
| Case Analysis | . 0 , , , , , | Air Elev Data from Mana Air Elev Sanaar Marx 0.0 | |
| Symptom Analysis | 1000.0 | | 0.0 kg/h |
| Flight Record | 0.0 | Min: 0.0 | |
| Oscilloscope | 5.0 | Air Flow Kate from Mass Air Flow Sensor Max. U.U | 0.0 V |
| CARB OBD-II | . 0.0 | , , , , , , , , , , , , , , , , , , , | |
| Setup Manual | TSB Case Analysis | DTC Gurrent.Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test | Internet Update |

Figure 6. Data Analysis -Graph

In Graph mode, minimum and maximum values will display on the right-hand side of the screen; use the "Reset Min/Max" button to reset these values.

To add or remove items from the graph, select the "Item List" button. Currently selected items are marked with an asterisk (*). Click on an item to add or remove (8 items maximum). Click the "Item List" button to switch back to "Graph" mode.

| | | VCI : USB On | 🔵 VMI : On | 😑 Inter | net : On | | | - × |
|--|--|--------------|------------------------|------------|---------------|--------------|----------------------|-----------------|
| GD | Preparation | Diag | nosis | Vehicle S | /W Managemer | it I | Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC | | Syste | em 🕨 Eng | gine/Unleaded | GEN | | • |
| Diagnosis | 🚪 Current Data | | | | | | | a = |
| Basic Inspection | Selective Display 🗘 | Full List 🗘 | Text 🗘 Ite | ems List 🗘 | Reset Min.Max | Record | Stop 🗘 Groupi | ng VSS |
| DTC Analysis | 18.1 | Battery Pos | itive Voltage | | | | Max: 4.8 | |
| Data Analysis 🛛 🕨 | | | | | | | Min: 4.8 | 4.8 V |
| Adapted Throttle Position Component Location | 5.0 | Throttle Pos | ition | | | | Max: 5.0 | 5.0 V |
| Specification Signal Waveform Component Circuit Full Circuit | 0.0, <u>, , , , , , , , , , , , , , , , , , </u> | Throttle Pos | ition | _,, | | | Min: 5.0 Max: 80 | 80 % |
| | 100 | Engine Load | | | | | Max: 100 Min: 100 | 100 % |
| < m > | | Adapted Th | rottle Position | | | | Max: 20 Min: 20 | 20 % |
| Case Analysis Symptom Analysis | 1000.0 | Air Flow Ra | te from Mass Air F | low Sensor | | | Max: 0.0 | 0.0 kg/h |
| Flight Record | 5.0 | Air Flow Ra | te from Mass Air F | low Sensor | | | Min: 0.0 Max: 0.0 | |
| Oscilloscope | | | | | | | | 0.0 V |
| CARB OBD-II | 0.0, , , , | | | | | | Min: 0.0 | |
| Setup Manual | TSB Case Analysis | DTC Current | Data Actuation Test | Flight Rec | ord DVOM | Oscilloscope | Simulation Test | Internet Update |

Figure 7. Data Analysis -Graph-Min & Max

| | | VCI : USB On 🛛 🔵 VM | l : On 🛛 🔵 Ir | nternet : On | | | - X |
|---|--|---|--------------------|------------------|--------------|--|--|
| GD | Preparation | Diagnosis | Vehic | le S/W Managemen | t Re | pair | 0 |
| VIN RIO(JB)/200 | 06/G 1.6 DOHC | | System 🕨 | Engine/Unleaded | GEN | | 0 # |
| Diagnosis | 🚪 Current Data | | | | | | |
| Basic Inspection | Selective Display 🗘 | Full List 💠 🛛 Text | ¢ Data | CReset Min.Max | Record Sto | p 🗧 Grouping | VSS |
| DTC Analysis | 18.1 | Battery Positive Voltag | le | | | Sensor Name | * |
| Data Analysis Adapted Throttle Position Component Location General Description Signal Waveform Component Circuit Full Circuit | 0.0, , , , , , , 5.0 5.0 100 0, , , , , , , , , , , , , , , , , , | Throttle Position Throttle Position Engine Load | · · · · | · · · · · | · · · · · · | Battery Positin Throttle Positin Throttle Positin Engine Load Adapted Thrott Air Flow Rate Air Flow Rate Transaxle Ran A/C On Condit A/C Switch Malfunction Infi A/C Compress | ve Volta on on tle Posi from Ma ge Swit ion dicator I |
| < <u> </u> | 0, , , , , 100 | Adapted Throttle Posit | ion | | | Fan-Low Spee Fan-High Spee Ignition Switch Closed Throttle | d ed I ON e Positii |
| Case Analysis Symptom Analysis | 1000.0 | Air Flow Rate from Ma | iss Air Flow Sensi | or | | Wide Open Th Fuel Cut Statu Cranking Sign | rottle(V) is al |
| Flight Record Oscilloscope CARB OBD-II | 5.0 | Air Flow Rate from Ma | iss Air Flow Sensi | or | | Fuel Pump MFI Control Re Syncronizing S | elay Status-C |
| Setup Manual | TSB Case Analysis | DTC Current Data | tuation Test | t Record DVOM | Oscilloscope | Simulation Inte Test Up | ernet date |

Figure 8. Data Analysis -Display item change

VSS

VSS is a function to run simulation by Vehicle Speed Signal output.

Record

Function to save "Current Data" to PC or VCI in "Data File" format.

This function will explain from 'Flight Record Review' section.

Current Data Analysis Functions

When using "Text" mode, additional information is available for supported Current Data items:

- Component Location Shows the location of the selected component.
- General description General information related to the selected component.
- Specification Applicable specifications for the selected component.
- Signal Waveform Standard waveform on selected item can be analyzed.
- Component Circuit Wiring diagram showing only the selected component and related wiring.
- Full Circuit Full wiring diagram for the system related to the selected component.

Click on a Current Data Parameter to access this information.

Sample screens are shown on the following pages.

| | 🔵 VCI : USB On 🛛 🔵 V | /MI : On 🛛 🥥 Internet : On | - × |
|---------------------|---|---|---------------------------------|
| GD | Preparation Diagnosi | s Vehicle S/W Management | Repair Q |
| RIO(JB)/200 | 06/G 1.6 DOHC | System > Engine/Unleaded GEN | 0 2 |
| Diagnosis | Current Data 28/67 | | (in 1997) |
| Basic Inspection | Selective Display ≎ Full List ≎ Grap | h ‡ | Stop ‡ Grouping VSS |
| DTC Analysis | Sensor Name | Value | Unit |
| Data Analysis | Engine Load | 100 | % |
| | Air Flow Rate from Mass Air Flow Sensor | 0.0 | V |
| Component Location | Air Flow Rate from Mass Air Flow Sensor | 0.0 | kg/h |
| General Description | Throttle Position | 5.0 | % |
| Specification | Adapted Throttle Position | 20 | % |
| Signal Waveform | Engine Speed | 0 | RPM |
| Component Circuit | Battery Positive Voltage | 4.8 | V |
| Full Circuit | Ratten/ Charging | 100 | 0/2 |
| Í | 🚪 Component Info | | |
| | Throttle Position>Component Loc | ation | \$ \$ 4 |
| < III + | Component Location | | |
| Case Analysis | THE REAL | | |
| Symptom Analysis | | | |
| Flight Record | | 0. 10 miles - 20 Aug | |
| Oscilloscope | AS SO TRU | | |
| CARB OBD-II | | | |
| Setup Manual | TSB Case Analysis DTC Current Data | Actuation Test Flight Record DVOM Oscillos | cope Simulation Internet Update |

Figure 9. Data Analysis Contents– Component Location

| | 💽 VCI : USB On 🛛 O VMI : On 🔵 Internet | : On | - X |
|---------------------|---|--|----------------------|
| GD | Preparation Diagnosis Vehicle S/W | Management Repair | 0 |
| RIO(JB)/20 | 006/G 1.6 DOHC System > Engine | e/Unleaded GEN | 0 🔡 |
| Diagnosis | Current Data 28/67 | | |
| Basic Inspection | Selective Display ‡ Full List ‡ Graph ‡ Items List ‡ Res | et Min.Max Record Stop 🗘 Grouping | g VSS |
| DTC Analysis | Sensor Name | Value Unit | |
| Data Analysis | Engine Load | 100 % | |
| C Throttle Depition | Air Flow Rate from Mass Air Flow Sensor | 0.0 V | ^ |
| Component Location | Air Flow Rate from Mass Air Flow Sensor Throttle Desition | 0.0 kg/h | |
| General Description | Throttle Position | 80 % | |
| Specification | Adapted Throttle Position | 20 % | |
| Signal Waveform | Engine Speed | 0 RPM | |
| Component Circuit | Battery Positive Voltage | 4.8 V | - |
| | | 1111 % | |
| | Component Info | | |
| | Throttle Position>General Description | Ÿ | - 12 B |
| | General Description | | |
| | The Throttle Position Sensor (TPS) is mounted on the throttl | e body and detects the opening angl | e of the |
| Case Analysis | throttle plate. | | |
| Symptom Analysis | The TPS has a variable resistor (potentiometer) whose chara | acteristic is the resistance changing | |
| Elight Record | according to the throttle angle. During acceleration, the TPS | resistance between the reference 5V | and the |
| T light Necord | signal terminal decreases and output voltage increases; duri | ng deceleration, the TPS resistance | |
| Oscilloscope | The ECM supplies a reference 5V to the TPS and the output | voltage increases directly with the or | enina |
| CARB OBD-II | Lof the throttle valve. The TPS output voltage will varv from 0.3 | 2~0.8V at closed throttle to 4.3~4.8V | at 🖸 |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record | DVOM Oscilloscope Simulation Test | nternet ¹ |

Figure 10. Data Analysis Contents- General Description

| | 🔵 VCI : USB On 🛛 🔵 VMI : On 🕘 Internet : On | - X |
|---|--|-----|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/200 | 06/G 1.6 DOHC System > Engine/Unleaded GEN | 02 |
| Diagnosis | Current Data 28/67 | |
| Basic Inspection | Selective Display \$ Full List \$ Graph \$ Items List \$ Reset Min.Max Record Stop \$ Grouping | vss |
| DTC Analysis | Sensor Name Value Unit | |
| Data Analvsis D | Engine Load 100 % | |
| Throttle Position Component Location General Description Signal Waveform Component Circuit Full Circuit | Air Flow Rate from Mass Air Flow Sensor 0.0 V Air Flow Rate from Mass Air Flow Sensor 0.0 kg/h Throttle Position 5.0 V Throttle Position 80 % Adapted Throttle Position 20 % Engine Speed 0 RPM Battery Positive Voltage 4.8 V Rateour Charmin 100 % | |
| < <u> </u> | Specification | |
| Case Analysis | TDS Desistance (kg) | |
| Symptom Analysis | 1P3 Resistance (Kaz) 2Kaz ± 20% (20 C) | |
| Flight Record | | |
| Oscilloscope | | |
| CARB OBD-II | | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Interr | ite |

Figure 11. Data Analysis Contents- Specification

| | 🔵 VCI : USB On 🛛 🔍 VMI : On 🕒 Internet : On | - X |
|---------------------|---|--------------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/20 | 06/G 1.6 DOHC System > Engine/Unleaded GEN | 0 2 |
| Diagnosis | Current Data 28/67 | a 🗆 |
| Basic Inspection | Selective Display \$ Full List \$ Graph \$ Items List \$ Reset Min.Max Record Stop \$ Gro | uping VSS |
| DTC Analysis | Sensor Name Value Unit | |
| Data Analysis | Engine Load 100 % | |
| | Air Flow Rate from Mass Air Flow Sensor 0.0 V | ^ |
| Throttle Position | Air Flow Rate from Mass Air Flow Sensor 0.0 kg/h | |
| General Description | Throttle Position 5.0 V | |
| Specification | Adapted Throttle Position 80 % | |
| ■ Signal Waveform | Engine Speed | |
| 🗏 Component Circuit | Battery Positive Voltage 4.8 V | |
| Full Circuit | Ratten/ Charning 100 % | - |
| <) | Component Info Throttle Position>Signal Waveform Signal Waveform | |
| Case Analysis | FR CHAI.0 V 500 mS CHE 0.5 V FR CHAI.0 V 200 mS CHE 1.0 V | |
| Symptom Analysis | MAPS | |
| Flight Record | | |
| Oscilloscope | | |
| CARB OBD-II | | ▼ |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscilloscope Simulation Test | Internet Update |

Figure 12. Data Analysis Contents- Signal Waveform



Figure 13. Data Analysis Contents- Component Circuit



Figure 14. Data Analysis Contents- Full Circuit



"Case Analysis" function in the "Diagnostic Guide" menu classifies diagnostic guide cases into module groups (Engine, Transmission, and brakes...). It also classifies specifically into symptoms and supports the most effective repair cases for each symptom.

In Case Analysis, the "Match" mode only checks the selected symptoms for the selected vehicle in "Vehicle Selection", and "All List" mode will access every diagnostic case for selected vehicle.

- Match : Function to access diagnostic cases only for the selected vehicle.
- All List: Function to access diagnostic cases for all symptoms for selected vehicle.

There are two ways to use "Case Analysis" function. The first way is to use "Case Analysis" menu in "Diagnosis" section at the initial main page. The second way is to use "Case Analysis" menu after the selection of "Diagnosis" button in the main menu of the sub screen as shown in [Figure 1].

Match

Case Match menu in the left column of Case Analysis displays the Sub-symptoms that user selected in the VIN selection. Cases related to the symptom can be found in right hand corner.



Figure 1. Case Analysis-Match

All List

With the "Case List" menu selected, all the module groups with symptoms for the selected vehicle appear on the left menu.

Selecting the each symptoms will show relevant case information in bulletin form.

If there is no relevant diagnostic case related to the symptom, the message "There is no searched data" will be displayed.



Figure 2. Case Analysis- All List

Case analysis open

When the user selects the subject name from the case list the Bulletin containing corresponding content for that case appears as a pop-up window.

| Contents | | | | × |
|------------------|---------------------------------------|--------------------|-------------|----------|
| Contents | | | | B X |
| Subject | Hard Starting at Cold | | | ^ |
| Language | English | | | |
| Date | 12/17/2007 | Modified | | _ |
| Model | SPORTAGE(KM) | Group Code | Fuel System | |
| System Code | Engine Control System | Component Code | | |
| | | | | |
| | | Condition | | |
| Hard starting | at cold about under -5□ | | | |
| | | | | |
| | | Cause | | |
| Fuel filter heat | ter relay was wrongly assembled – The | relay pin was bent | | |
| | | | | |
| | | Diagnosis | | |
| [Service Histe | ory] | | | |
| Eucl filter low | nressure numn were renlaced | | | |
| Attach files | | | | |
| | | | | |
| | | | | |

Figure 3. Case Analysis-Contents Open



The "Symptom Analysis" function in the "Diagnostic Guide" menu allows the user to access symptombased troubleshooting data.

The "Symptom Match" function retrieves symptom troubleshooting data based on the symptoms entered at the VIN screen.

The "Symptom List" function retrieves all available symptom troubleshooting data for the selected vehicle.



Figure 1. Symptom Analysis



Figure 2. Symptom Analysis- Symptom Match



Figure 3. Symptom Analysis- Symptom List



"Flight Record" function enables the user to record systems data in PC or VCI, and to analyze the data in various ways and time settings. The data copied or saved on PC can be reviewed at any time.

Flight Record process can be triggered in two ways.

- Entering from Data Analysis page
- □ Entering "Flight Record" from the main page.

Recording Flight Record via Flight Record function

Select "Flight Record" button on the initial page. "Flight Record" menu tips page shown in figure 4. If the selection of vehicle and system is not yet completed, "GDS VIN Search" page will appear instead of "Flight Record" menu tips page.



Figure 1. Flight Record initial screen

Click "VCI Record ON" from the list on the left to go to next step as shown in Figure 2.

| | | : USB On 🛛 🥥 VMI | : On 🛛 🔵 Internet : On | | - X |
|--|------------------------------|--------------------------|---|--------------------------------------|---------------------------------|
| GD | Preparation | Diagnosis | Vehicle S/W Manageme | nt Repair | 0 |
| RIO(JB)/20 | 07/G 1.4 DOHC | | System 🕨 Engine/Unleade | d GEN | 0 = |
| Diagnosis | Preparation | | | | 8 |
| Basic Inspection | | | | | |
| DTC Analysis | 1. Check selected vehicle | model and system. | haven halave | | |
| Data Analysis | 2. Install VCI and trigger n | very important for autom | nown below. atic power on/off of the ∀Cl | | |
| Case Analysis | 3. Vehicle must be IG ON | | | | |
| Symptom Analysis | 4. VCI must be powered C | N. | | | |
| Flight Record 🛛 🕨 | 5. Check the ∨CI's Power | Status LED indicates "N | ORMAL". | | |
| E VCI Record ON Data Copy From VCI Data Review | DLC Check Connector | | Cigar Lighter Socket | | |
| Oscilloscope CARB OBD-II | | о к | | | |
| Setup Manual | TSB Case Analysis DTC | Current Data | uation Flight Record DVOM | Oscilloscope Fault Code Searching | Internet ¹ Update |

Figure 2. VCI Record ON screen

Refer to the 'Connection Guide' carefully, then click "OK". A list of sensor data will be displayed as shown in [Figure 3]. Select sensors to record, then click "Record Condition" button.

| | 🔵 VCI : USB | On 🥥 VMI : On 🕴 |) Internet : On | | - × |
|--------------------|--|-------------------------------|-----------------------|--------------------------------------|--------------------|
| GD | Preparation | Diagnosis V | ehicle S/W Management | Repair | 0 |
| RIO(JB)/20 |)7/G 1.4 DOHC | System | Engine/Unleaded G |)EN | 0 🗄 |
| Diagnosis | VCI Record ON | | | | |
| Basic Inspection | Select All Items Clear Se | elected Items Record | Condition Grouping | | |
| DTC Analysis | Sensor Name | | | Value Unit | |
| Data Analysis | Transaxle Range Switch | | | P,N,R - OFF - | <u> </u> |
| Case Analysis | A/C Switch | | | OFF - | |
| Symptom Analysis | A/C Compressor Fan-Low Speed | | | OFF - ON - | |
| Flight Record 🛛 🕨 | ☐ Fan-High Speed ☐ Ignition Switch ON | | | ON - ON - | |
| VCI Record ON | Closed Throttle Position | | | OFF - | |
| Data Copy From VCI | Wide Open Throttle(WOT) Euel Cut Status | | | OFE - | |
| E Data neview | Cranking Signal | | | OFF - | |
| | Fuel Pump | | | OFF - | |
| | MFI Control Relay | | | ON - | |
| | Syncronizing Status-CKP/CMP Evel System Status | | | OFF - | |
| | Knocking Detection | | | OFF - | |
| | Engine Running Status | | | OFF - | |
| | Oxygen Sensor Operation-Bank | 1/Sensor1 | | OFF - | |
| | Canister Purge State | | | OFF - | |
| | Canister Phase On | | | ON - | |
| | Idle Control State | | | OFF - | |
| Occillogoano | Manifold Absolute Pressure Sen | sor | | 0.0 V 15 nei | |
| Oscilloscope | Engine Load | 301 | | 100 % | |
| CARB OBD-II | Throttle Position | | | 5.0 V | |
| Setup Manual | TSB Case Analysis DTC C | urrent Data Actuation Test | Flight Record DVOM | Oscilloscope Fault Code Searching | Internet Update |

Figure 3. List of recordable data

| lcon | Description |
|----------------------|---|
| Select All Items | Selects all items for recording. |
| Clear Selected Items | Deselects all selected items. |
| Record Condition | Go to next step to customize Record mode after selecting items. |

Click "VCI Record" button after setting configuration for Trigger Setting, Recording Item, Recording Time for one event.

If there are existing recorded files stored in the VCI, a pop up window as shown in Figure 5 will be displayed. And if "YES" is clicked, all the left recorded files will be erased and go into VCI Record Mode. But if "No" is clicked, Flight Record Mode will be canceled and go into next Mode, "Data Copy From VCI".

| PC Record - This mode directly saves Current Data, which is currently appeared on the screen, to the PC. - It saves all the Current Data items that are shown in the screen. - It is possible to save the data, which has been currently shown on the screen, by pressing the "PC Record" button on the left side of the page. Use "Flight Record Review" menu to analyze the data. | | | | | | |
|---|--|--|--|--|--|--|
| Save Current Data To VCI | | | | | | |
| This mode is used for saving C Set up trigger module by refer Press VCI Record' button after starts Self running, with no nee button is pressed. Press blue button of the Trigge VCI connected to the vehicle. It is possible to analyze the VC | urrent Data to the VCI memory, ng the image on the right. selecting following options. VCI d of VCI connection, when the r Module to freeze a data during the driving with CI freeze data by 'Flight Record Review' menu. | J DLC | Cigar Lighter Socket | | | |
| Trigger setting | | Recording Time for o | one event | | | |
| Manual Trigger DTC (Auto Trigger) | Engine Stall | 10 Minutes (Rec 30 Minutes 1 Hours | * Long recording time makes recordable event decrease. | | | |
| Recording Item | | | | | | |
| | * "All Items" makes recording | | | | | |

Figure 4. Record Condition



Figure 5. VCI with existing recorded files left.



Figure 6. VCI save Mode

Recording Flight Record files from Data Analysis to PC

Click 'Data Analysis' button on the initial page of GDS program to access the Flight Record function. This opens the 'Data Analysis' page shown in figure 7. If the selection of vehicle and system has not been completed the '**Vehicle Selection**' page will appear instead. The 'Flight Record' function cannot be accessed without this information. Refer to manual page A-02-008 for '**Vehicle Selection**'.

| | | VCI : USB On 🛛 🥥 VN | 4l : On 🛛 🥥 Internet | : On | | — × |
|--|--|--|--------------------------------|---|--|-----------------|
| GD | Preparation | Diagnosis | Vehicle S/W | Management | Repair | 0 |
| RIO(JB)/20 | 07/G 1.4 DOHC | | System 🕨 Engin | e/Unleaded GEN | | 0 🗄 |
| Diagnosis | 📕 Current Data | | | | | |
| Basic Inspection | Selective Display 🗘 | Full List 🗘 Graph | ✿ Items List \$ Res | set Min.Max Record | Stop 🗘 Groupir | ng VSS |
| DTC Analysis Data Analysis Select a Sensor Data Item to view its relative information. | Sensor Name Transavle Range Swi A/C On Condition A/C Switch Malfunction Indicator A/C Switch Malfunction Indicator A/C Compressor Fan-Low Speed Ignition Switch ON Closed Introttle Posit Wide Onen Throttle/V DTC Erase All DTC | tch Lamp(MIL) ion VOT Freeze Frame | DTC Status | Value P.N.R OFF OFF ON OFF ON ON OFF ON Erase Selective D | Unit - - - - - - - - - - - - - - - - | 4 |
| | Descripti P0118 Engine C | on coolant Temperature Circuit | High Input | | S | tate |
| Case Analysis | PUTUB Manifold | Absolute Pressure/Barom | etric Pressure Circuit Hig | jn input | | |
| Symptom Analysis | | | | | | |
| Flight Record | | | | | | |
| Oscilloscope | | | | | | |
| CARB OBD-II | | | | | | |
| Setup Manual | TSB Case Analysis | DTC Current Data | ctuation Test Flight Record | DVOM Oscilloso | cope Fault Code Searching | Internet Update |

Figure 7. Select the item on Data Analysis page

This mode saves 'Current Data', which is currently shown on the screen, to PC by pressing 'Record' button on the right side of the 'Current Data'. It only saves the checked items, which appear in the 'Current Data' window. When an item on the list is changed, it starts a new store point from that time. It is possible to save the data, which has been currently shown on the screen, by pressing the 'PC Record' button on the right side of the 'Record Condition' page. Use 'Flight Record Review' menu to analyze the saved data.

| PC Record - This - It s Cancel *PC | s mode directly saves Current Data, which is curren aves all the Current Data items that are shown in th possible to save the data, which has been currentl Record" button on the left side of the page. Use "F | tly appeared on the screen, to a screen. y shown on the screen, by pres light Record Review" menu to a | the PC. ssing the analyze the data. |
|---|--|---|---|
| Save Current Data To VCI | | | |
| This mode is used for saving 0 Set up trigger module by refer Press VCI Record button afte starts Self running, with no ne button is pressed. Press blue button of the Trigge VCI connected to the vehicle. It is possible to analyze the V | Current Data to the VCI memory. ing the image on the right. r selecting following options. VCI ed of VCI connection, when the er Module to freeze a data during the driving with CI freeze data by 'Flight Record Review' menu. | Pacading Time for | Cigar Lighter Socket |
| - mgger setting | | | |
| Manual Trigger DTC (Auto Trigger) | Engine Stall | 10 Minutes (Rec 30 Minutes | * Long recording time makes recordable event |
| Recording Item | | O 1 Hour | decrease. |
| | | | |

Figure 8. Record Condition window

| Save jn: 🗀 KNEDE241276253322 💿 🕜 🤣 📂 🖽 - | |
|--|--|
| | |
| | |
| | |
| | |
| | |
| File <u>n</u> ame: RIO(JB)_ENGINE_100409-132746.GSR <u>S</u> ave | |
| Save as type: VCI Record File(*.GSR) | |

Figure 9. Save the Record File to PC



Figure 10. Complete the File saving

Recording Flight Record files from Data Analysis to VCI

Click "Data Analysis" button on the initial page of GDS program to start the Flight Record. Starting page of the 'Data Analysis' shown in figure 11 will appear as below. If the selection of vehicle and system is not yet completed, **'Vehicle Selection'** page will appear instead.

Refer to manual page A-02-008 for 'Vehicle Selection'.

| | | 🔵 VCI : USB | On 🛛 🔵 VMI : | On 🛛 🔵 Internet | : On | | | $-\mathbf{X}$ |
|--|---|--|--|----------------------------------|------------------------------|---|--------------|---------------|
| GD | Preparati | on | Diagnosis | Vehicle S/W | Management | Repai | ir | 0 |
| RIO(JB)/200 | 07/G 1.4 DOHC | | S | ystem 🕨 Engine | /Unleaded GEN | N | | 0 🗄 |
| Diagnosis | Current Dat | а | | | | | | |
| Basic Inspection | Selective Display | ¢ Full List | ¢ Graph ≎ | Items List 🗘 Res | et Min.Max Rec | cord Stop ¢ | Grouping | /ss |
| DTC Analysis | Sensor Name | | | | Va | alue Unit | | |
| Data Analysis Select a Sensor Data item to view its relative information. | Transaxle Ra A/C On Cond A/C Switch A/C Switch Malfunction IP A/C Compres Fan-Low Spe Fan-Low Spe Ignition Switc Closed Thrott Uvide Open T DTC Erase All D D | rge Switch tion dicator Lamp(MIL) sor ad ed h ON h ON h ON h ON h ON h ON h ON h ON | e Frame | DTC Status | P.I C C C C C | N.R - OFF - OFF - ON - ON - ON - ON - ON - ON - ON - Ve DTC | State | |
| 0 | P0118 E P0108 N | ngine Coolant Temp Ianifold Absolute Pr | erature Circuit Hig essure/Barometric | h Input Pressure Circuit Higl | h Input | | | |
| Case Analysis | | | | | | | | |
| Symptom Analysis | | | | | | | | |
| Flight Record | | | | | | | | |
| Oscilloscope | | | | | | | | |
| CARB OBD-II | | | | | | | | |
| Setup Manual | TSB Case Analys | is DTC Cu | urrent Data Te | ation st Flight Record | DVOM Osc | cilloscope Fault Sear | Code Interne | et 1 |

Figure 11. Select the item on Data Analysis page

After selecting, the items to record press the '**Record**' button on the right side of the 'Current Data' window.

This brings up the menu for configuring the VCI to flight record mode. To change the VCI module to Record mode you must connect the VCI module and Trigger module to the vehicle. (REFER TO SECTION A-01-005 'Installation of Trigger Module and Cigar Power Cable') by referring to Figure 7. Connect the trigger unit to the Cigar lighter socket this will provide a power On/Off signal to the VCI. The vehicle Ignition must be ON. VCI power must be ON and that the VCI Power Status LED indicates "NORMAL". Next, Select the Recording conditions on the lower section of the page.

When everything is ready, click 'VCI Record' button in the lower right side of the section.



Figure 12. Record Condition

By clicking 'VCI Record' button a window will open that asks whether to change to Flight Record mode, **(Warning)** this window will delete any previous flight record data, will appear in order. Click YES and check that the VCI is in Flight Record mode. If there is unsaved, data in the VCI a **Warning** will display giving you a chance to save old data. Click **Yes** to continue with flight record setup



Figure 13. VCI Warning for deleting old record



Figure 14. Completion of the mode change

Check VCI and Trigger module are in record mode. The VCI Power LED of will turn red, the Vehicle Communication LED will flash green. The Trigger module Power and Ready LED's will be on steady in the record mode.



Figure 15. VCI Flight Record Mode

By pressing "Enter" button during the flight record process the VCI stops collecting data and starts saving the data the "Ready" Led will flicker for 10 seconds indicating the data is being saved in the VCI.

To exit the VCI Record mode, select the 'DTC Analysis' or 'Data Analysis' from the main menu. A popup window will appear as below.



Figure 16. Confirm VCI Record OFF

When Flight Record mode is released, the VCI Power LED will change from red to green. This indicates that VCI has changed to Normal mode.

| VCI Vehicle Communication Interface | |
|--|--|
| | |

Figure 17. VCI Normal Mode

Data Copy From VCI



Figure 18. Flight Record Review Initial Page

Data Copy from VCI

This menu is for copying recorded/saved data from VCI to PC.

Select the needed data from the recorded data file on the left section of the screen and press the "Start Copy" button. Selected data will be copied and reprocessed in order.

If an "Error" message appears, it means that the data is incomplete.

The name of the data file is saved in a format of 'Vehicle name (Project Name) _yy/mm/dd-hour min sec. REC'.

If the data file copy is successfully completed, a window will open displaying completion of data copy. Data files that are copied will be shown on the right.

| | 🔵 VCI : USB On 🔜 VMI : On 🔵 Internet : On | | - × |
|--------------------|--|---|----------|
| GD | Preparation Diagnosis Vehicle S/W Management | Repair | 0 |
| RIO(JB)/20 | 007/G 1.4 DOHC System Dengine/Unleaded GEN | | • = |
| Diagnosis | 🚦 Data Copy from VCI | | 8 |
| Basic Inspection | Preliminaries | | |
| DTC Analysis | 1. VCI must be power ON. | | |
| Data Analysis | VCI must be connected with PC via USB or wireless LAN. | | |
| Case Analysis | 🖸 Data Copy | | |
| Symptom Analysis | VCI | PC | |
| Flight Record 🛛 🕒 | RIO(JB)_ENGINE_100409-134019.REC D\gvciData\record\RI RIO(JB)_ENGINE_100409-133948.REC | 0(JB)\KNEDE24127625: 💽 | |
| VCI Record ON | RIO(JB) ENGINE 100409-133749.REC RIO(JB) ENGINE 1004 RIO(JB) ENGINE 100409-133605.REC RIO(JB) ENGINE 100409-133605.REC | 409-134019.GSR 409-133948.GSR | |
| Data Copy From VCI | RIO(JB)_ENGINE_1004 RIO(JB)_ENGINE_1004 | 409-133749.GSR 409-133605.GSR | |
| | RIO(JB)_ENGINE_1004 | 409-132746.GSR | |
| | | | |
| | Start Copy | | |
| | Erase all VCI record data | | _ |
| | Erase VCI Data | | |
| Oscilloscope | | | |
| CARB OBD-II | | | |
| Setup Manual | TSB Case Analysis DTC Current Data Actuation Test Flight Record DVOM Oscillo | Scope Fault Code Inter Searching Upo | rnet ate |

Figure 19. Data Copy from VCI

| | ☑ RIO(JB)_ENGINE_100409-134019.REC ☑ RIO(JB)_ENGINE_100409-133948.REC ☑ RIO(JB)_ENGINE_100409-133749.REC ☑ RIO(JB)_ENGINE_100409-133605.REC | | D:\gvciData\record\RIO(JB)\KNEDE24127625 |
|--|--|--|--|
|--|--|--|--|

Figure 20. PC connecting to VCI

| VCI No Record File. | | PC D\gvciData\record\RIO(JB)\KNEDE24127625: |
|------------------------|------------|--|
| | Start Copy | |

Figure 21. No Record File in VCI



Figure 22. Copy the Record File from VCI to PC



Figure 23. Copying Record File from VCI Progress window



Figure 24. Complete the Data Copy from VCI



Figure 25. Erase VCI Data

"Erase VCI Data" button is used to deleting data in the VCI module.



Figure 26. Erase VCI Data Complete

Data Review

This menu is for analysis of recorded data. Press 'Data Review' button to analyze new or previously saved data. With the 'Data Review' window opened, it will ask you to select a record file. Highlight the file to displayed and Open the file. Select the data on the right of the screen to display. Maximum number of items that can be displayed on the screen as a graph is 8.

| Open | | ? × |
|------------------------|-------------------------------------|-----|
| Look in: 🗀 | Record 💽 🕥 😥 🖽 🗸 | |
| RIO(JB) | | |
| temp | | |
| | | |
| | | |
| | | |
| 1 | | |
| File <u>n</u> ame: | <u>O</u> pen | |
| Files of <u>type</u> : | GDS Record File (*.GSR,*.REC) Cance | |
| | Open as read-only | / |

Figure 27. Data Open Window

| | | : USB On | 🔵 VMI : On | 🥥 Internet : | On | | - × |
|-------------------|-----------------------|------------|---------------------|-------------------|--------------|----------------------------------|--------------------|
| GD | Preparation | Diagn | nosis | /ehicle S/W N | lanagement | Repair | 0 |
| RIO(JB)/20 | 07/G 1.4 DOHC | | System | Engine. | /Unleaded GE | N | 0 = |
| Diagnosis | 📕 Data Review | | 0.0 | | 0 T | 0.5 | 8 |
| Basic Inspection | 00000 | | Text \$ Record Star | set Min.Max | Go to Trig | File Info | Items List |
| DTC Analysis | | | | | | · · · · · | |
| Data Analysis | | | | | | | |
| Case Analysis | | | Please s | elect a record fi | le. | | |
| Symptom Analysis | | | | | | | |
| Flight Record 🛛 🕨 | | | | | | | |
| VCI Record ON | | | Se | lect File | | | |
| E Data Review | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Oscilloscope | | | | | | | |
| CARB OBD-II | | | | | | | |
| Setup Manual | TSB Case Analysis DTC | Current Da | Actuation Test | Flight Record | DVOM Os | cilloscope Fault Coo Searchin | le Internet Update |

Figure 28. Data Review Initial Window

| | | I : USB On 🛛 🌔 VMI : On 🔶 Internet : 🛾 | On – X |
|----------------------------------|----------------------|---|--|
| GD | Preparation | Diagnosis Vehicle S/W Ma | anagement Repair Q |
| RIO(JB)/20 | 07/G 1.4 DOHC | System 🕨 Engine/U | Unleaded GEN 👘 😭 |
| Diagnosis | 🛔 Data Review | RID(JB)_ENGINE_100409-132746.GSR | 8 |
| Basic Inspection | 00000 | O.4see/Div. (3) Record Start : 13:26:53 Text Reset Min.Max | Go to Trig File Info Data |
| DTC Analysis | | Transaxle Range Switch | Sensor Name |
| Data Analysis | | | * Transaxle Range Switch * A/C On Condition |
| Case Analysis | | AJC On Condition | * A/C Switch * Malfunction Indicator Lan |
| Symptom Analysis | | A/C Switch | * A/C Compressor * Fan-Low Speed |
| Flight Record 🛛 🕨 | | | * Fan-High Speed * Ignition Switch ON |
| VCI Record ON Data Copy From VCI | | Matfunction Indicator Lamp(ML) | Člosed Throttle Position Wide Open Throttle(WO1 |
| | | A/C Compressor | <u> </u> |
| | | Ean-Low Speed | · · · · · · · |
| | | Fen-High Speed | |
| | | Ignition Switch ON | |
| Oscilloscope | | | |
| CARB OBD-II | | | |
| Setup Manual | TSB Case Analysis DT | C Current Data Actuation Test Flight Record | DVOM Oscilloscope Fault Code Searching Update |

Figure 29. Data shown in graph (Items)

| | | : USB On 💫 VMI : On 🌔 Internet : On | - X |
|--------------------|-----------------------|---|------------------|
| GD | Preparation | Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/20 | 07/G 1.4 DOHC | System 🕨 Engine/Unleaded GEN | ۲ |
| Diagnosis | 📕 Data Review | RID(JB)_ENGINE_100409-132748.65R | |
| Basic Inspection | 00000 | □0.4see/Div. ③ Record Start : 13:26:53 | 13:28:31 List |
| DTC Analysis | | Transaxle Range Switch Max: P/N/R | PNP |
| Data Analysis | | | |
| Case Analysis | | AJC On Condition Max: OFF | OFF |
| Symptom Analysis | | Min: OFF | |
| Flight Record | | AIC Switch Max: OFF | OFF |
| VCI Record ON | | Min: OFF | |
| Data Copy From VCI | | manunun nin ann rang (m.) | ON |
| | | AlC Compressor Max: OFF | |
| | | | OFF |
| | | Fan-Low Speed Max: ON | |
| | | | ON |
| | | Ean Hink Sneed May ON | |
| | | | ON |
| | | Min: ON | |
| Oscilloscope | | Ignition Switch ON Max UN | ON |
| | | | |
| CARB OBD-II | | | • |
| Setup Manual | TSB Case Analysis DTC | Current Data Actuation Flight Record DVOM Oscilloscope Fault Code Int | odate |

Figure 30. Data shown in graph (Value)

| CDS | 1 |
|---|---|
| [File Information] File Name:D:\gvciData\Record\RIO(JB) \KNEDE241276253322\RIO(JB)_ENGINE_100409- 132746.GSR File Size:313 KBytes | |
| [Vehicle Information] Vehicle Name: RIO(JB) Maker: KM | - |
| ОК | |

Figure 31. File Information Window

| Icon | Description |
|------------------|--|
| Select File | Used for loading saved data |
| 00000 | Used to move graph to the left or to the right |
| 00 | Use to magnifies and abridges the data in Graph mode. |
| Tout | Use to change the turn of phrase to 'Text'. It toggles with |
| Text | 'Graph'. |
| Graph A | Use to change the turn of phrase to 'Graph'. It toggles with |
| Graphi + | 'Text'. |
| Reset Min.Max | Reset the Maximum, minimum of item value. |
| | Move to the position that fault code is appeared or move to |
| Go to Trig | the position when the enter button of the trigger module is |
| | pressed. |
| File Info | Shows data information of the loaded record file. |
| Items List | Shows item list of the data |
| | Show the time per division. |
| () Record Start | Shows the time that the record was started |
| ···· Cursor Time | Shows the trigger starting time |
| () Record End | Shows the time that the record was ended |



CARB OBD II mode is used to display generic vehicle powertrain diagnostic data. The vehicle communication protocol is automatically determined when CARB OBD II mode is selected.

Readiness Test

The type and result of the READINESS TESTS supported by more than one MODULE within the vehicle will be displayed. The number of DTCs present and the MIL status will also be displayed.

| | O VC | l:USBOn 🔵 VMI:On 🔵 In | ternet : On | | | - X | |
|---|--------------------------|--|------------------|--------------|-------------------------|-----------------|--|
| GD | Preparation | Diagnosis Vehic | e S/W Managem | ent I | Repair | 0 | |
| | | System 🕨 | | | | 0 🗄 | |
| Diagnosis | 🚪 Readiness Test | | | | | | |
| Basic Inspection | Selective Display 🗘 🛛 Fu | ıll List ≎ | | | | | |
| DTC Analysis | Sensor Name | | Module ID | | Value Unit | | |
| Data Analysis | Number of DTC | | E9 | | 0 - | _ | |
| Case Analysis | Misfire Monitoring | np(MIL) | E9 E9 | NOT APPLI | CABLE - | | |
| | Fuel System Monitoring | | E9 | NOT APPL | CABLE - | | |
| Symptom Analysis | Comprehensive Compon | ent Monitoring | E9 | COMF | CARLE | | |
| Elight Booord | Heated Catalyst Monitor | ing | E9 | NOT APPLI | CABLE - | | |
| Flight Record | EVAP System Monitorin | g | E9 | NOT APPL | CABLE - | | |
| Oscilloscope | Secondary Air System N | E9 | NOT APPL | CABLE - | | | |
| | □ A/C Sγstem Refrigerant | Monitoring | E9 | NOT APPL | CABLE - | <u> </u> | |
| | DTC | | | | | | |
| Readiness Test Current Data | Erase All DTC | | | | | | |
| Freeze Frame Data | Description | | | | Module ID | State | |
| Diagnostic Trouble Code Diagnostic Trouble Code | P0118 Engine Cool | ant Temperature Circuit High | | | EF | Pending | |
| Monitoring Test Results | P0108 Manifold Ab | solute Pressure/Barometric Pressure Ci | rcuit High Input | | EF | Pending | |
| Test or Component Cont | | | | | | | |
| Vehicle Information | | | | | | | |
| 🗏 In Use Performance Trac | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | _ | | |
| Setup Manual T | SB Case Analysis DTO | Current Data Actuation Test Flight | Record DVOM | Oscilloscope | Fault Code Searching | Internet Update | |

Figure 1. Readiness Test

Current Data

The CURRENT DATA MODE allows for sensor values and switch states to be displayed, based upon the concept that one item may be supported by several modules. Supporting module information is displayed in this mode.

| | 🔵 VCI | : USB On 🛛 🔵 VMI : On 🔵 Ir | nternet : On | | | - X | | |
|---------------------------|---|---|-------------------|-----------------|-------------------------|--------------------|--|--|
| GD | Preparation | Preparation Diagnosis Vehicle S/W Management Repair | | | | | | |
| VIN | | System 🕨 | | | | 0 🗄 | | |
| Diagnosis | Current Data | | | | | | | |
| Basic Inspection | Selective Display 🗘 🛛 Fu | ll List ≎ | | | | | | |
| DTC Analysis | Sensor Name | | Module ID | | Value Unit | | | |
| Data Analysis | Engine Coolant Tempera | ure Sensor | E9 E9 | | 80 'C 0 RPM | | | |
| Case Analysis | Vehicle Speed | | E9 | blat | 0 km/h | | | |
| Symptom Analysis | OBD Requirement | 1 Sensor | E9 | EOBD / OBD II - | | | | |
| | Time Since Engine Start | | E9 | | 0 Sec | | | |
| Flight Record | □ Distance After MiL Un □ Number of Warm-ups Sir | ce DTC Cleared | E9 | | 0 - | | | |
| Oscilloscope | Distance Since DTC Clea | ared | E9 | | 0 km | | | |
| | 🔲 Misfire Monitoring | | E9 | NOT APPLIC | ABLE - | <u> </u> | | |
| | DTC | | | | | | | |
| Readiness Test | | | | | | | | |
| E Freeze Frame Data | Liase All Die | | | | | | | |
| 🗏 Diagnostic Trouble Code | Description | ant Tanana anti-an Cinemit Ulah | | 1 | Module ID | State | | |
| O2 Test Results | P0108 Manifold Abs | olute Pressure/Barometric Pressure Ci | ircuit High Input | | EF | Pending | | |
| Monitoring Test Results | | | 3 1 | | | | | |
| Vehicle Information | | | | | | | | |
| 🗏 In Use Performance Trac | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Setup Manual T | SB Case Analysis DTC | Current Data Actuation Test Fligh | t Record DVOM | Oscilloscope | Fault Code Searching | Internet Update | | |

Figure 2. Current Data

Freeze Frame Data

The FREEZE FRAME DATA displays the data values stored in the Engine Control Module at the point when the first conformed DTC is detected.

| | 🜔 VCI | : USB On 🛛 🥥 VMI : | On (Internet : On | | -× | | | |
|--|---|--|-------------------------------|-----------------------------------|--------------------|--|--|--|
| GD | Preparation | Diagnosis | Vehicle S/W Managemer | t Repair | 0 | | | |
| | | S | vstem 🕨 | | 0 🗄 | | | |
| Diagnosis | 📕 Freeze Frame | | | | | | | |
| Basic Inspection | DTC CAUSE TO SYSTEM ERR Selective Display \$ | II List 🗘 | | | | | | |
| DTC Analysis | Sensor Name | | Module ID | Value I | Init | | | |
| Data Analysis | Fuel System Status-Ban | k1 | 11 | OPEN LOOP | | | | |
| Case Analysis | Fuel System Status-Ban | Fuel System Status-Bank2 11 Calculated Load Value 11 | | | | | | |
| Currente de la charie | Engine Coolant Temperat | Calculated Load Value 11 Engine Coolant Temperature Sensor 11 | | | | | | |
| Symptom Analysis | Short Term Fuel Trim-Bai | Short Term Fuel Trim-Bank1 11 | | | | | | |
| Flight Record | Long Term Fuel Trim-Bar | Long Term Fuel Trim-Bank1 Short Term Fuel Trim-Bank2 11 | | | | | | |
| | Long Term Fuel Trim-Bar | -100.0 % | 6 | | | | | |
| Oscilloscope | 🗖 Manifold Absolute Pressu | 0 ii | nHg 🚽 | | | | | |
| CARB OBD-II 🛛 🕨 | | | | | | | | |
| Readiness Test Current Data | Erase All DTC | | | | | | | |
| E Freeze Frame Data | Description | | | Module ID | State | | | |
| Diagnostic Houble Code Diagnostic Houble Code | P0118 Engine Coola | EF | Pending | | | | | |
| Monitoring Test Results | P0108 Manifold Abs | olute Pressure/Barometric | Pressure Circuit High Input | EF | Pending | | | |
| Test or Component Cont | | | | | | | | |
| Sehicle Information | | | | | | | | |
| 🗏 In Use Performance Trac | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Setup Manual T | SB Case Analysis DTC | Current Data Actua | tion st Flight Record DVOM | Oscilloscope Fault Co Searchin | de Internet Update | | | |

Figure 3. Freeze Frame Data

Diagnostic Trouble Code

At this level, DIAGNOSTIC TROUBLE CODES (DTC) are Displayed based upon the concept that several modules may support one DTC. Supporting module information is displayed in this mode.

| | | 💛 VCI : U | SB On 🛛 🥥 | VMI : On | 🔵 Internet : | On | | | _ | X |
|--|----------------|------------------------------------|------------------------------------|----------------------------|------------------|------------|--------------|-------------------------|--------------------|---|
| GD | Prepar | ation | Diagnos | is N | /ehicle S/W N | lanagement | F | Repair | 0 | |
| | | | | System | | | | | 1 | ÷ |
| Diagnosis | DTC | | | | | | | | Retry | 8 |
| Basic Inspection | Erase / | | | | | | | | | |
| DTC Analysis | | Description | | | | | | Module ID | State | |
| Data Analysis | P0118 P0108 | Engine Coolant Manifold Absolut | Temperature Cin e Pressure/Bard | cuit High ometric Press | ure Circuit High | Input | | EF | Pending Pending | |
| Case Analysis | | | | | | | | | | |
| Symptom Analysis | | | | | | | | | | |
| Flight Record | | | | | | | | | | |
| Oscilloscope | | | | | | | | | | |
| CARB OBD-II 🌗 🕨 | | | | | | | | | | - |
| Readiness Test | | | | | | | | | | |
| Freeze Frame Data | | | | | | | | | | |
| Diagnostic Trouble Code O2 Test Results | | | | | | | | | | |
| Monitoring Test Results | | | | | | | | | | |
| Vehicle Information | | | | | | | | | | |
| In Use Performance Trac | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Setup Manual | TSB Case A | nalysis DTC | Current Data | Actuation Test | Flight Record | DVOM | Oscilloscope | Fault Code Searching | Internet Update | |

Figure 4. Diagnostic Trouble Code

O2 Test Result

The results of the on board oxygen sensor monitoring test can be displayed in this mode. Note that only items related to the oxygen sensor will be displayed.

| | (| VCI : USB On 🌔 | /MI:On 🥥 I | nternet : On | 0 | | | G |][X |
|---|---|--|------------------------|--------------|-----------|---------|------------------------|--------------------|-----|
| GD | Preparation | Diagnos | is Vehi | cle S/W Mana | gement | Re | pair | 6 | |
| MN D | | | System 🕨 | | | | | 0 | |
| Diagnosis | 02 Test Result | 8 | | | | | | ଲ | |
| Basic Inspection | Selective Display : | Full List 🕄 Grap | n 🗧 | | | | | | |
| DTC Analysis | Sensor Name | | Module ID | Max | Min | Value | Unit | Result | |
| Data Analysis | Low Sensor Volta | pe for Switch Time Calcul | 11 | - | - | 0.295 | V | - | |
| Case Analysis | Rich to Lean Sens | ge for Switch Time for Switch Time for Switch Time | 11 | 0.000 | 0.000 | 0.000 | Sec Sec | PASS | |
| Symptom Analysis | Test ID \$70 | | 11 | 0 | 0 | 0 | Count Count | PASS | |
| Flight Record | Test ID \$81 | | 11 | 0 | 0 | 0 | * 1 | PASS | ř. |
| Oscilloscope | | | | | | | | | |
| CARB OBD-II | DTO | | | | | | | 101 | |
| Readiness Test Current Data Freeze Frame Data | Erase All DTC | | | | | | | 199 | |
| Diagnostic Trouble Code | Descr | iption | | | | | | State | - |
| C2 Test Results | P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input 11 P2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input 11 | | | | | | 11 | Confirmed | |
| Bank1-Sensor2 | P1295 ETC S | e Actuator Control System System Power Management | - Porced Idle | | | | 11 | | |
| Monitoring Test Results | P0222 Thrott | le/Pedal Position Sensor/Si | witch "B" Circuit L | .ow | | | 11 | Confirmed | - |
| I lest or Component Cont | P0123 Thrott | le/Pedal Position Sensor/S | witch "A" Circuit I | figh | | | 11 | Confirmed | |
| In Lise Parformance Trad | P1610 Immol | bilizer Smartra Error DCM Dower Delay Control (| Sizeuit (Onen | | | | 11 | Confirmed | |
| La in Ose Peroimance Trag | P0005 ECNV P2122 Thrott | e/Pedal Position Sensor/S | witch "D" Circuit I | ow Input | | | 11 | Pending | |
| 1 1 1 | P2127 Thrott | a/Pedal Position Sensor/S | witch "E" Circuit I | ow loout | | | 11 | Pendino | - |
| Setup Manual T | SB Case Analysis | DTC Current Data | Actuation Test Flig | ht Record D | VOM Oscil | loscope | ault Code Searching | Internet Update | • |

Figure 5. O2 Test Result (B1/S1)

| | | : USB On 🛛 🔘 V | MI: On 🧲 | Internet : On | 0 | | | - | X |
|---|--|---|-------------------|-----------------|--------|------------|-------------------------|--------------------|---|
| GD | Preparation | Diagnosis | s Vel | hicle S/W Mana | gement | Re | pair | 0 | |
| VIN D | | | System) | 8 | | _ | | 0 | 8 |
| Diagnosis | O2 Test Results | | | | | | | B | |
| Basic Inspection | Selective Display : Fu | li List 💠 Graph | 1 0 | | | | | | |
| DTC Analysis | Sensor Name | | Module ID | Max | Min | Value | Unit | Result | |
| Data Analysis | Low Sensor Voltage for S | witch Time Calcul Switch Time Calcu | 11 | - | | 0.295 | V V | - | |
| Case Analysis | Rich to Lean Sensor Swit Lean to Rich Sensor Swit Tort ID \$70 | tch Time tch Time | 11 | 0.000 | 0.000 | 0.000 | Sec Sec | PASS PASS | |
| Symptom Analysis Flight Record | Test ID \$70 | | 11 | 0 | 0 | 0 | Count | PASS | |
| Oscilloscope | | | | | | | | | |
| CARB OBD-II 🗈 | DTC | | | | | | | [約] | |
| Readiness Test Current Data Freeze Frame Data | Erase All DTC | | | | | | | | |
| Diagnostic Trouble Code | Description | | | | | M | odule ID | State | * |
| C2 Test Results | P2122 Throttle/Peda P2127 Throttle/Peda | 2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input 2127 Throttle/Pedal Position Sensor/Switch "E" Circuit Low Input 2104 Throttle Actuator Control System - Forced Idle | | | | | 11 | Confirmed | |
| III Bank1-Sensor1 | P2104 Throttle Actu | | | | | | 11 | Confirmed | |
| Monitoring Test Results | P1295 ETC System Power Management | | | | | | 11 | Confirmed | |
| Test or Component Cont | P0222 Throttle/Peda P0123 Throttle/Peda | I Position Sensor/Sw Resition Sensor/Sw | itch "B" Circui | t Low t High | | 11 | Confirmed | | |
| Vehicle Information | P1610 Immobilizer S | Smartra Error | ILLI A VILLI | r i ngu | | | 11 | | |
| In Use Performance Trac | P0685 ECM/PCM P | ower Relay Control Ci | ircuit /Open | | | | 11 | Confirmed | |
| | P2122 Throttle/Peda | I Position Sensor/Sw | itch "D" Circui | t Low Input | | | 11 | Pending | |
| d () | P2127 Throttle/Pads | Position Sensor/Se | itch "F" Circui | t I ow loout | | | 11 | Pendina | - |
| Setup A Manual T | SB Case Analysis DTC | Current Data | Actuation Test | light Record D | VOM Os | cilloscope | Fault Code Searching | Internet Update | • |

Figure 6. O2 Test Result (B1/S2)

Monitoring Test Result

The results of on board monitoring tests conducted during normal driving are displayed this mode.

| | | : USB On 🛛 🥥 VMI : | On 🛛 🔵 Internet | :: On | | | _ | X |
|---|--|------------------------------|---------------------------------------|------------|--------------|-------------------------|--------------------|----------|
| GD | Preparation | Diagnosis | Vehicle S/W | Management | | Repair | 0 | |
| VIN | | S | /stem 🕨 | | | | 0 | |
| Diagnosis | Current Data | | | | | | Retry | |
| Basic Inspection | Selective Display 🗘 🛛 Ful | ll List ≎ | | | | | | |
| DTC Analysis | Sensor Name | Module ID | Comp ID | Max | Min | Value Unit | Result | |
| Data Analysis | Test ID \$04 | 11 | 60 | | 0 | 84 - | PASS | |
| Case Analysis | Test ID \$04 | 11 | 70 | | 0 | 74 - | PASS | |
| Case Analysis | Test ID \$0A | 11 | 03 | | 0 | 0 - | PASS | |
| Symptom Analysis | Test ID \$0A | 11 | 06 | 0 | | 0 - | PASS | - 1 |
| | Test ID \$UA | 11 | 105 | 27769 | | 0 - | PASS | - 1 |
| Flight Record | | | 40 | 32700 | - | 32700 - | FAGO | - 1 |
| Oscilloscope | | | | | | | | |
| CARB OBD-II 🛛 🕨 | | | | | | - | ത | _ |
| Readiness Test Current Data Freeze Frame Data | Erase All DTC | | | | | | Retry (| |
| Diagnostic Trouble Code | Description | | | | | Module ID | State | ^ |
| O2 Test Results | P2122 Throttle/Peda | I Position Sensor/Switch "I | D" Circuit Low Input | | | 11 | | |
| Monitoring Test Results | P2127 Inrottle/Peda P2104 Throttle Actu | ator Control System - Eoro | Circuit Low input | | | 11 | Confirmed | |
| 🗐 Test or Component Cont | P1295 ETC System | Power Management | | | | 11 | Confirmed | |
| Vehicle Information | P0222 Throttle/Peda | I Position Sensor/Switch "I | 3" Circuit Low | | | 11 | Confirmed | - 1 |
| 🗐 In Use Performance Trac | P0123 Throttle/Peda | I Position Sensor/Switch "/ | A" Circuit High | | | 11 | Confirmed | |
| | P1610 Immobilizer S | Smartra Error | | | | 11 | Confirmed | |
| | P0685 ECM/PCM P | ower Relay Control Circuit . | Open | | | 11 | Confirmed | |
| | P2122 Inrottle/Peda P2127 Throttle/Peda | I Position Sensor/Switch "I | J ⁻ Circuit Low Input | | | 11 | Pending | -1 |
| < ► | LEXT/ INMINERPOS | e ensuine season subranden i | | | | | eendin s | - |
| Setup Manual | TSB Case Analysis DTC | Current Data Actua | tion st Flight Record | DVOM | Oscilloscope | Fault Code Searching | Internet Update | |

Figure 7. Monitoring Test Result

Test or Component Control



Figure 8. Test or Component Control

Vehicle Information



Figure 9. Vehicle Information

In-USE Performance Tracking

This data is used to support possible regulatory requirements for In-use Performance Tracking. Manufacturers are required to implement software algorithms that track in-use performance for each of the flowing component:

- Catalyst bank 1
- Catalyst bank 2
- Primary oxygen sensor bank 1
- Primary oxygen sensor bank 2
- Evaporative 0.020" leak detecting system
- EGR system
- Secondary air system

The numerator for each component or system shall track the number of time that all conditions necessary for a specific monitor to detect a malfunction have been encountered. The denominator for each component or system shall track the number of times that the vehicle has been operated in the specified conditions. These conditions are specified for each monitored component or system.

The ignition counter shall track the number of times that the engine has been started. All data items of the In-use Performance Tracking record have to be reported in the order as shown.

| | | 🔵 VCI : USB On 🛛 🥥 | VMI:On ∣ | 🔵 Internet : | On | | | E | X |
|---|---|---|-------------------------|---------------|------------|--------------|-------------------------|--------------------|----|
| GD | Preparation | Diagnos | is V | ehicle S/W N | lanagement | F | Repair | (| 3 |
| | | | System | | | | | 0 | |
| Diagnosis | 🚪 Current Data | | | | | | | Retry | |
| Basic Inspection | Selective Display 🗘 | Full List 💠 | | | | | | | |
| DTC Analysis | Sensor Name | | | Modu | ule ID | | Value Unit | | |
| Data Analysis | OBD Monitoring Counter | conditions Encountered Cou | ints | 1 | 1 | | D Cou | int | - |
| Case Analysis | Catalyst Monitor | Completion Counts-Bank1 | unto Ponki | 1 | 1 | | D Cou | int | 11 |
| Symptom Analysis | Catalyst Monitor | Completion Counts-Bank2 Completions Encountered Co | unts-Bank? | 1 | 1 | | 0 Cou | int | |
| Flight Record | Oxygen Sensor N Oxygen Sensor N | Ionitor Completion Counts I Ionitor Conditions Encounter | Bank1 Bank1 Banks Ba | 1 ank1 1 | 1 | | 0 Cou | int | |
| Oscilloscope | Oxygen Sensor N Oxygen Sensor N Oxygen Sensor N | Ionitor Completion Counts I Ionitor Conditions Encounte | Bank2 Bred Counts Br | 1 ank2 1 | 1 | | 0 Cou | int int | - |
| CARB OBD-II 🛛 🕨 | | | | | | | | ଜା | |
| Readiness Test Current Data Freeze Freme Data | Erase All DTC | | | | | | | Retry | |
| Diagnostic Trouble Code | Desc | iption | | | | | Module ID | State | - |
| O2 Test Results | P2122 Thrott | le/Pedal Position Sensor/S | witch "D" Circ | uit Low Input | | | 11 | Confirmed | |
| Monitoring Test Results | P2127 Thrott | le/Pedal Position Sensor/S | witch "E" Circ | uit Low Input | | | 11 | Confirmed | |
| Test or Component Cont | P1295 ETC : | Reveration Control System System Power Managemen | t - Forcea laie | | | | 11 | Confirmed | |
| Vehicle Information | P0222 Thrott | le/Pedal Position Sensor/S | • witch "B" Circ | uit Low | | | 11 | Confirmed | |
| In Use Performance Trac | P0123 Thrott | le/Pedal Position Sensor/S | witch "A" Circ | uit High | | | 11 | Confirmed | |
| | P1610 Immo | bilizer Smartra Error | | | | | 11 | Confirmed | |
| | P0685 ECM/ | PCM Power Relay Control | Circuit /Open | | | | 11 | Confirmed | |
| | P2122 Throttle/Pedal Position Sensor/Switch "D" Circuit Low Input | | | | 11 | Pending | | | |
| < | P2127 Thrott | le/Pedal Position Sensor/S | witch "E" Circ | uit Low Innut | | | 11 | Pendina | |
| Setup Manual T | SB Case Analysis | DTC Current Data | Actuation Test | Flight Record | DVOM | Oscilloscope | Fault Code Searching | Internet Update | |

Figure 10. In-Use Performance Track



Selection of Actuation Test Item

The "Actuation Test" mode allows supported outputs to be activated by the user to verify proper ECU and component operation.

| | 🜔 VCI : USB On 💦 VMI : On 👋 Internet : On | -× |
|------------------|--|------------|
| GD | Preparation Diagnosis Vehicle S/W Management Repair | 0 |
| RIO(JB)/20 | 007/G 1.4 DOHC | 0 🗄 |
| Diagnosis | 🛔 Actuation Test | |
| Basic Inspection | Test Items | |
| DTC Analysis | Engine Check Lamp(MIL) Fuel Pump Relay | |
| Data Analysis | A/C Compressor Relay Fuel Pump Control | |
| Case Analysis | Immobilizer Lamp Fan Motor Control-High Speed | |
| Symptom Analysis | Fan Motor Control-Low Speed Canister Purge Valve | |
| Flight Record | Idle Speed Actuator | |
| Oscilloscope | Ignition Coil-#2 Ignition Coil-#3 | |
| CARB OBD-II | Ignition Coil-#4 Injector-Cylinder 1 | |
| | Injector-Cylinder 2 Injector-Cylinder 3 Injector-Cylinder 4 • Duration • Conditions • Result Start Stop | |
| | | |
| Setup Manual | TSB Case Analysis DTC Current Date Actuation TEST. Flight Record DVOM Oscilloscope Fault Code Searching Upc | rnet diate |

Figure 1. Selection of Test Item

Preparation of Actuation Test

Each supported actuator test will have specific test duration and ignition key conditions.

Click the "Start" button after selecting the desired test. Note that some tests will continue until the "Stop" button is clicked."

Results (variable based on ECU) may be viewed in the "Result" field, by audible or visible output, by viewing the appropriate data parameter, or by a combination of the previously listed methods.

| | 💛 VCI : U | SBOn 🥥 VMI: On 🌔 | Internet : On | | - X |
|------------------|---|--------------------------------|----------------------------|---------------------------------|-------------------|
| GD | Preparation | Diagnosis Ve | ehicle S/W Management | Repair | 0 |
| RIO(JB)/20 | 007/G 1.4 DOHC | System | Engine/Unleaded GEN | | 0 🗄 |
| Diagnosis | Actuation Test | | | | |
| Basic Inspection | Test Items | | | | |
| DTC Analysis | Engine Check Lamp(MIL) Fuel Pump Relay | | | | |
| Data Analysis | A/C Compressor Relay Fuel Pump Control | | | | |
| Case Analysis | Immobilizer Lamp Fan Motor Control-High Speed | | | | |
| Symptom Analysis | Fan Motor Control-Low Speed Canister Purge Valve | | | | |
| Flight Record | Idle Speed Actuator Ignition Coil-#1 | | | | |
| Oscilloscope | Ignition Coil-#2 Ignition Coil-#3 | | | | |
| CARB OBD-II | Ignition Coil-#4 Injector-Cylinder 1 | | | | |
| | Injector-Cylinder 2 Injector-Cylinder 3 Injector-Cylinder 4 | | | | |
| | Duration | Conditions | Result | | |
| | Until Stop Button | IG. ON/ENG.OFF | | Start Stop | |
| Setup Manual | TSB Case Analysis DTC | Current Data Actuation Test | Flight Record DVOM Oscillo | scope Fault Code I Searching | nternet Update |

Figure 2. Operation of Actuation Test

Duration

Duration represent a time period that Actuator tests after the "Start" button is clicked. Duration can be different for each Actuator items.

Condition

"Condition" represents conditions for actuators to test normally. Configure vehicle setting under the actuation condition before the test. The Conditions can be different for each control module and actuator item.