Specifications and Functions of the Suzuki Diagnosis System

(1) A. The dedicated software of this diagnosis system runs on a standard personal computer (PC) under Windows 7 and 8. The PC-side software performs failure diagnosis by communicating with the onboard computer through SDS-II that translates and converts the signals from the PC via the dedicated communication cable.

B. The SDS-II-side software allows the SDS-II to perform failure diagnosis independently by communicating with the onboard computer via the dedicated communication cable.

C. Similar to B, the SDS-II-side software allows the SDS-II to record data independently by communicating with the battery via the battery cable, and with the onboard computer via the dedicated communication cable.

The above three software A, B, and C are available.

(2) The SDS-II dedicated software is compatible with eleven languages: Japanese, English, French, German, Italian, Spanish, Greek, Portuguese, Chinese (simplified), Thai, and Indonesian.

(3) To use the SDS-II software, activation is required using an access key that can be obtained by purchasing the license. Just installing the software does not allow you to use the software.

(4) Data from various sensors at the time of engine start and stop can be displayed or graphed in real time, and the displayed data and graphs can be saved and printed out.

(5) The types of data to be displayed can be selected.

(6) Saved data can be redisplayed and graphed (only with the PC-side software).

(7) Failure codes (past and present) recorded at the time of a failure can be called up and displayed.

Also, the record of changes in data (only two events) at the time of a failure can be displayed.

(8) A “Trigger” can be set for data (only with the PC-side software). Trigger is a function that records data from the point when the preset value of one or more types of data is exceeded (or not met), or to record the failure code display timing on the monitoring graph screen.

(9) The SDS-II can perform active control independently (resetting ISC learned values etc.).

(10) With the data recorder function of C in (1), approx. 5,000 hours (varies with the model) of operation data or travel data can be recorded, read, and verified using an 4 GB SD card.

(11) The diagnosis system requires the setup of additional functions and the use of dedicated connectors for the onboard ECU. The system supports new models, such as AN 650, introduced after May 2002 and does not support models that were produced prior to that time.
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1. Preparation

1-1. Installing the SDS-II Related Software

(1) Open the PC-side SDS-II software installer folder on the desktop.

(2) Paste
   a) SDS_SetupTool_V***.exe
   b) SDS-II_Ver.*.**_Install.exe into the installer folder.

(3) Execute SDS_SetupTool_V***.exe.

(4) Double click the SDS-II Setup tool icon created on the desktop.

(5) Connect your PC to the Internet.
   Insert the SD card included in the SDS-II package.
   Connect the SDS-II to the PC with a USB cable and turn the mode switch ON.

(6) Paste the access key that can be obtained by purchasing the license (4 digits in each field) and click the Setup key.
(7) Click the Install key for the PC-side SDS-II software.

(8) Click the Next key to continue with the installation.

(9) Confirm that the setup is completed.

(10) Confirm that the PC-side SDS-II software icon has been created on the desktop.

(11) Confirm that the PC-side SDS-II software can be started by double clicking the icon.
1-2. Verifying the Installation of the USB Driver

(1) Connect the SDS-II and the PC with a USB cable.

(2) Connect the failure diagnosis cable to the SDS-II and SDS coupler on the vehicle.

(3) Turn the ignition switch ON.
(4) Turn the SDS-II mode switch ON.
(5) Start the SDS software installer.
(6) Perform automatic installation.
(7) Click Failure diagnosis.

Note: RM-Z250 and RM-Z450 require a battery lead wire (36890-28H00) to connect a battery.
If system selection (i.e., Engine, Transmission, etc.) is finished, the USB driver has been installed successfully.
If system selection is not finished, the USB driver has not been installed successfully. Perform automatic installation again.
Note: When disconnecting the USB cable or K-line cable, turn off the ignition switch beforehand.
2. Operation of Main Menu

When using the PC-side software, connect the SDS-II to the PC with a USB cable and turn the mode switch ON. The PC-side software does not start unless the activated SDS-II is connected.

2-1. Selecting a System

Click Failure diagnosis and select the system to be diagnosed.

There are six systems: Engine, Transmission, Engine and Transmission, ABS, EPS, and Electric motorcycle.

The compatible system for the connected motorcycle is automatically selected and highlighted.

The compatible system for each model can be confirmed on the SDS supported model list.

![Select System](image)

**Procedure**

System selection is performed through the following steps:

1. Execution of **Failure diagnosis**
2. Execution of communication initialization
3. Indication of applicable system

The procedure from (1) to (3) is automatically executed when **Failure diagnosis** is clicked or when the space key is pressed while the cursor is positioned on **Failure diagnosis**.

**Key operation**

↑ and ↓ (Up and Down) keys: Moves the cursor up or down.

Space key: Selects the system on which the cursor is positioned, and performs communication initialization.

**Main menu**

**Failure diagnosis**: Automatically selects a system for failure diagnosis.

**Show saved data**: Redisplays data that has been saved previously.

**SDS operation manual**: Provides information on the SDS operation.

**SDS supported model list**: Lists the models that are compatible with SDS and the systems that are available for the models.

**Exit**: Exits the SDS software.
Items of system selection
Engine: Performs failure diagnosis of engine control such as FI.
Transmission: Performs diagnosis of transmission control such as CVT.
Engine and Transmission: Performs failure diagnosis of FI/CVT-integrated engine and transmission control.
ABS: Performs failure diagnosis of ABS control.
EPS: Performs failure diagnosis of EPS control.
Electric motorcycle: Performs failure diagnosis of electric motorcycle control.
Exit: Exits System selection.

2-2. Executing System Diagnosis

To execute the system diagnosis, click the target system or press the space key while the cursor is positioned on the target system.

When the system diagnosis ends normally, the Input frame No. dialog box appears.

If a frame number is entered here, it is saved simultaneously when data is saved. Later, you can check which data belongs to which motorcycle. If this is not required, you need not input a frame number here. Click OK or Cancel. The Failure diagnosis menu appears.

The failure diagnosis menu varies depending on the item selected from among Engine, Transmission, Engine and Transmission, ABS, EPS, or Electric motorcycle.
**Error during communication initialization**

If an error occurs during communication initialization, an error message is displayed. The following cases are considered to be the major causes of errors, so check these causes. If an error message is displayed without an abnormality, the system selection window is restored after about 8 seconds.

*When power is not supplied = the interface is not connected to the motorcycle, Error 4108 is displayed.*

**Error causes**

- The interface box and the PC are not connected.
  → Referring to "Verifying the Installation of the USB Driver", connect the interface box to the PC.
- The motorcycle and the interface box are not connected.
  → Referring to "Verifying the Installation of the USB Driver", connect the interface box to the motorcycle.
- The motorcycle is not supported by the software.
  → Confirm that the connected motorcycle is included in the SDS supported model list.
- The SDS coupler of the motorcycle is not supplied with 14 V power.
  → Turn on the ignition switch or the main key switch to confirm that 14 V power is supplied between the SDS coupler (14 V) (red) and GND (white).
- The selected system is not compatible with the applicable motorcycle.
  → Confirm the compatible system for the applicable motorcycle from the SDS supported model list.

**Key operation**

↑ and ↓ (Up and Down) keys: Moves the cursor up or down.

Space key: Performs the diagnosis service for the system indicated by the cursor.

**Failure diagnosis menu**

- **Data monitor**: Displays the current status of the motorcycle, both numerically and graphically.
- **DTC inspection**: Displays the failure codes saved to the controller.
- **Show failure data**: Displays the status of the motorcycle before and after the occurrence of failure.
- **Active control**: Temporarily controls the motorcycle from the PC.

The control system can be checked.

**Exit**: Exits the Failure diagnosis menu.
2-3. Showing Saved Data

Open window

Look in: Select the folder of the file to be shown.
File name: Select the name of the file to be shown.
Files of type: Select Save data (*.pds).
System: Displays the motorcycle system subject to sampling.
Part No.: Displays the part number of the controller subject to sampling.
Frame No.: Displays the frame number of the applicable motorcycle if it was specified when the relevant data was saved.
Comment: Displays any comments on the applicable sampling data that were input when the relevant data was saved.

Button operation

Open: Opens the specified file and performs numerical display.
Cancel: Closes the window without showing any data.
2-4. Displaying the SDS Supported Model List

Click SDS supported model list to display the list. This list allows you to check the models that are supported by the SDS software and the systems available for each model. The list supports Japanese, English, French, German, Italian, Spanish, Greek, Portuguese, and Chinese (simplified).

Models covered by the list vary depending on the language (target market). Some models may not be listed in one language, but are listed in other language(s).
3. Executing Individual System Diagnosis

3-1. Engine System

Enter the frame number of the motorcycle to be diagnosed in the Input frame No. dialog box, and click OK. The Failure diagnosis menu appears. Then, click the target menu item or press the space key while the cursor is positioned on the target item.

Key operation

↑ and ↓ (Up and Down) keys: Moves the cursor up or down.
Space key: Performs the diagnosis service for the system indicated by the cursor.

Failure diagnosis menu

Data monitor: Displays the current status of the motorcycle, both numerically and graphically.
DTC inspection: Displays the failure codes saved to the controller.
Show failure data: Displays the status of the motorcycle before and after the occurrence of failure.
Active control: Temporarily controls the motorcycle from the PC. The control system can be checked.
Exit: Exits the Failure diagnosis menu.
3-2. Transmission System

Click Transmission, or press the space key while the cursor is positioned on Transmission. The Failure diagnosis menu appears.

Key operation
  ↑ and ↓ (Up and Down) keys: Moves the cursor up or down.
  Space key: Performs the diagnosis service for the system indicated by the cursor.

Failure diagnosis menu
  Data monitor: Displays the current status of the motorcycle, both numerically and graphically.
  DTC inspection: Displays the failure codes saved to the controller.
  Show failure data: Displays the status of the motorcycle before and after the occurrence of failure.
  Exit: Exits the Failure diagnosis menu.

Active control is not available when Transmission is selected.
3-3. Engine and Transmission System

Select Engine and Transmission. The Failure diagnosis menu appears with the items Data monitor, DTC inspection, Show failure data and Active control, just as when Engine is selected.

• The parameters in Data monitor differ from those in the Engine menu.
The contents of Active control also differ from those in the Engine menu.
For details, refer to the service manual for the motorcycle applicable to the Engine and Transmission menu.
3-4. ABS System

Click ABS or press the space key while the cursor is positioned on ABS. The Failure diagnosis menu appears.

Unlike the Failure diagnosis menu displayed when Engine is selected, the menu displayed when ABS is selected contains only Data monitor, DTC inspection and Active control. Show failure data is not available.

- The parameters in Data monitor differ from those in the other system menus. The only available item in Active control is ABS HU operating. For details on ABS HU operating, refer to the service manual for the motorcycle applicable to the ABS menu.
3-5. EPS System

Click EPS, or press the space key while the cursor is positioned on EPS. The Failure diagnosis menu appears.

Unlike the Failure diagnosis menu displayed when Engine is selected, the menu displayed when EPS is selected contains only Data monitor and DTC inspection. Show failure data and Active control are not available.
3-6. Electric Motorcycle

The Failure diagnosis menu displayed when Electric motorcycle is selected contains Data monitor, DTC inspection, Show failure data, and Active control, just as when Engine is selected.

- The parameters in Data monitor differ from those in the other system menus.
- The available items in Active control are the following two operations:
  - Stand limitation lifted (PC throttle operation); and
  - Stand limitation lifted (motorcycle throttle operation)

For details on Stand limitation lifted (PC throttle operation) and Stand limitation lifted (motorcycle throttle operation), refer to the service manual for the motorcycle applicable to the Electric motorcycle menu.
4. Failure Diagnosis Menu

4-1. Showing Numeric Data on the Data Monitor

The parameters required for checking the status of a motorcycle can be displayed numerically.

The parameters shown vary depending on the system, such as Engine, Transmission, Engine and Transmission, ABS, EPS, and Electric motorcycle. For details on the parameters, refer to the table "Main Items on the Data Monitor".

Names and functions of items on the screen

1. Function key bar: Provides various PC function keys (display of help information, sampling start and stop, numeric data display, graph display, trigger setting, parameter selection, print, data saving, and unit selection).

2. Data comparison bar: Displays comparison data.

3. Sampling status bar: Displays the number of samples and the start time.

4. Data list bar: Displays the failure codes saved to the controller (up to two codes).

5. Status bar: Displays the status for connection and measurement.
**Function key bar**

Help: Displays help information.

Hold / Start: Stops or starts monitoring the data.  
While the data monitoring is executed (run mode), only Hold can be selected.  
While the data monitoring is stopped (hold mode), only Start can be selected.

Graph / Numerical: Toggles between graphical display and numerical display.  
In numerical display mode, only Graph can be selected.  
In graphical display mode, only Numerical can be selected.

Trigger: Allows you to set a trigger.

Select: Allows you to refine the types of data to display only what you need.

Print: Prints the screen data.

Save: Saves the data being monitored.

SI: Allows you to change the unit of the parameter being displayed.  
While data is displayed using SI units, only Non SI can be selected.  
While data is displayed using non-SI units, only SI can be selected.

Exit: Exits the data monitoring.

**Data comparison bar**

The second and third data cannot be selected on Data monitor during data sampling (run mode).  
That data can be selected by clicking Hold on the function key bar to stop the sampling (hold mode).

**Select data window**

When operation is in hold mode, <Sampling data> is indicated in the Select data window.

The field □ indicates the data of the parameters currently displayed.  
<Sampling data> is also displayed at the right of ■. This is the name of the first data.

Right-clicking <No Data> at the right of ■ or ■ displays the following submenu:

- Change the color displayed in the graph
- Load comparison data
- Delete comparison data
- Delete all comparison data

Here, click Load comparison data to select the comparison data read destination.

Note: The color of □ can be changed.
Sampling status bar

(1) While data sampling is being executed (run mode)
   Both the number of samples and the time from the sampling start increases.

   ![Number of samples 91, 17.10 sec from sampling start]

(2) While data sampling is stopped (hold mode)
   The cursor position is displayed with respect to the total number of data samples, and the total sampling time is displayed.

   ![Cursor pos 312/312, 59.06 sec from sampling start]

Data list bar

(1) If no present and past failure codes exist, the following status is displayed:

   ![DTC - NIL]

(2) If any failure codes exist, the following status is displayed:

<table>
<thead>
<tr>
<th>DTC - 2</th>
<th>P0105-H</th>
<th>Manifold absolute pressure circuit malfunction 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Current P0120-L Throttle position sensor A system malfunction</td>
</tr>
</tbody>
</table>

   Up to two failure codes can be displayed in detail at a time.
   The total number of present and past failure codes that can be checked is infinite.
   If more than two failure codes exist, execute **DTC inspection** in the **Failure diagnosis menu**.
Status bar

(1) When a PC is not connected to the motorcycle, the following status is displayed:

<table>
<thead>
<tr>
<th>Status</th>
<th>Icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready</td>
<td>![Ready Icon]</td>
</tr>
</tbody>
</table>

(2) When a PC is connected to the motorcycle, the following status is displayed:

<table>
<thead>
<tr>
<th>Status</th>
<th>Icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready</td>
<td>![Ready Icon]</td>
</tr>
</tbody>
</table>

(3) When a PC is connected and is reading data from the motorcycle, the following two statuses are displayed alternately. The symbol appears to be blinking.

<table>
<thead>
<tr>
<th>Status</th>
<th>Icon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready</td>
<td>![Ready Icon]</td>
</tr>
<tr>
<td>Ready</td>
<td>![Ready Icon]</td>
</tr>
</tbody>
</table>

4-2. Showing Graph Data on the Data Monitor

Click the Graph button on the function key on Data monitor. A graph appears with the time plotted along the horizontal axis and individual parameter values plotted along the vertical axis.

The parameters displayed vary depending on the model and system. Not all parameters can be displayed simultaneously depending on the size of the PC window. Use the scroll bar at the right end to select the necessary parameters.
Displaying only the necessary parameters
To avoid scrolling the screen repeatedly, select the parameters to be displayed as follows:
Click Hold on the function key bar to stop the data sampling process.
Click the box on the left of each parameter to be displayed.
Click Select on the function key bar.
Only the selected parameters are displayed in the graph.
To restore the screen displaying all original parameters, click Return on the function key bar.

Changing the scale of the horizontal and vertical axes
Stop the data sampling process.
Click the Range button on the function key bar, and click ▼ at the right of the field above DTC on the data list bar.
A drop-down list appears.

Click the scale to be changed

In the vertical axis, the upper and lower limits can be set.
To change the value, click ▲ or ▼ at the right of the field, or select the field while holding down the left mouse button to enter a desired value.
After setting the value, click OK on the function key bar.

The original window is restored.

**Directly reading parameter values on the graph**

Stop the data sampling process to enter the hold mode.

The cursor scroll on the data comparison bar enters the normal display mode and becomes operable.

Drag the cursor scroll bar on the sampling status bar, or use ◄ at the left or ► at the right to move the cursor to the position where you want to read a value.

The numerical value displayed under the parameter name is the value of the parameter at the selected position.

<table>
<thead>
<tr>
<th>Item</th>
<th>Range</th>
<th>Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed</td>
<td>5000</td>
<td><img src="image" alt="Graph" /></td>
</tr>
</tbody>
</table>

• **Showing the upper and lower limit lines of the sampling data**

Stop the data sampling process to enter the hold mode.

Click □ at the left of Show min/max line at the lower left of the sampling status bar.

To undo, click □ again.
● Overlapping data
Stop the data sampling process to enter the hold mode.

(1) Right-click <No Data> in the Data comparison bar and execute Load comparison data.

(2) Alternatively, click the Comparison button in the Sampling status bar, and specify the overlapping data to read.

● Correcting data timing mismatches
If the data is just read, the timing of the data is still mismatched as in the above graph.
To match the data timing, click and select the data to be moved.
Confirm that the selected data name is highlighted, and click the graph scroll below the Select data window.
Confirm that the ○ at the left of the graph screen has been changed to •. Drag the cursor scroll bar, or click ◄ at the left or ► at the right of the cursor scroll bar to match the data timing.

Maximum number of data types to compare
Up to three types of data can be compared at a time.
### 4-3. Main Items on the Data Monitor

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle speed</td>
<td>Detected by the speed sensor.</td>
</tr>
<tr>
<td>Engine speed</td>
<td>Detected by the crank position sensor.</td>
</tr>
<tr>
<td>Throttle position</td>
<td>Detected by the throttle position sensor.</td>
</tr>
<tr>
<td>Throttle valve angle (opening) (gasoline engine)</td>
<td></td>
</tr>
<tr>
<td>Throttle grip angle (opening) (electric motorcycle)</td>
<td></td>
</tr>
<tr>
<td>Manifold absolute pressure</td>
<td>Intake air pressure detected by the intake pressure sensor.</td>
</tr>
<tr>
<td>Intake air temperature</td>
<td>Detected by the intake temperature sensor.</td>
</tr>
<tr>
<td>Barometric pressure</td>
<td>Detected by the barometric pressure sensor.</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>Battery voltage (Some models require engine start to detect the voltage.)</td>
</tr>
<tr>
<td>O2 sensor (Bank 1-Sensor 1)</td>
<td>O2 sensor output voltage</td>
</tr>
<tr>
<td>PAIR control solenoid valve</td>
<td>Status (ON or OFF) of pulsed secondary air injection control solenoid valve</td>
</tr>
<tr>
<td>PTC heater</td>
<td>Status (active or inactive) of heater</td>
</tr>
<tr>
<td>Spec select terminal</td>
<td>Spec select terminal (short circuit or disconnected)</td>
</tr>
<tr>
<td>Ignition switch signal</td>
<td>Ignition voltage (normal or abnormal)</td>
</tr>
<tr>
<td>Tip-over (fuel cut) switch</td>
<td>Tip-over (fuel cut) switch</td>
</tr>
<tr>
<td></td>
<td>Status (ON or OFF) of the tip-over sensor</td>
</tr>
<tr>
<td>Starter</td>
<td>Starter signal of the starter button</td>
</tr>
<tr>
<td>Motor speed</td>
<td>Detected by the Hall sensor</td>
</tr>
<tr>
<td>Output torque</td>
<td>Torque generated by the electric current applied to the motor</td>
</tr>
<tr>
<td>Battery total capacity</td>
<td>Capacity of fully charged battery</td>
</tr>
<tr>
<td>Battery remaining capacity</td>
<td>Capacity remaining in the battery in use</td>
</tr>
<tr>
<td>Number of charge</td>
<td>Number of charges until the battery became fully charged</td>
</tr>
<tr>
<td>Battery pack installation sensor</td>
<td>Status (installed or not) of battery pack installation sensor</td>
</tr>
<tr>
<td>Tilt sensor</td>
<td>Status (normal or tilt) of tilt sensor</td>
</tr>
<tr>
<td>Drive power limitation</td>
<td>Status (ON or OFF) of drive power limitation</td>
</tr>
<tr>
<td>Drive mode setting</td>
<td>Drive mode setting (eco or power)</td>
</tr>
<tr>
<td>Brake</td>
<td>Brake status (ON or OFF)</td>
</tr>
<tr>
<td>Sensorless control</td>
<td>Status (ON or OFF) of sensorless control without using a Hall sensor</td>
</tr>
</tbody>
</table>
4-4. Trigger Setting

Set the trigger used for Data monitor.
The following five trigger settings can be specified:

1. Without trigger
2. Any DTC
3. Specific DTC
4. Trigger of input data
5. Manual trigger

The trigger can work to record the DTC display timing or to start recording data to be saved.
If the occurrence status of a problem is not clear, the conditions at the time of occurrence such as
the engine speed and the throttle opening must be correctly checked.
The conditions at problem occurrence can be refined by recording the fact that DTC was
detected as
a trigger. In addition, a change in input data such as the engine speed can also be set as a trigger
(input data trigger).

The trigger setting is composed of the following:

- Specifying the trigger type
- Specifying the DTC
- Specifying the input data trigger
- Setting the after-trigger process
Specifying the trigger type

Specify one of the following types of trigger.

**Setting**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without trigger</td>
<td>Disables the trigger setting.</td>
</tr>
<tr>
<td>Any DTC</td>
<td>Triggered by a change in the number of DTCs detected by the motorcycle.</td>
</tr>
<tr>
<td>Specific DTC</td>
<td>Triggered when a DTC that is selected on the Specific DTC window is detected by the motorcycle.</td>
</tr>
<tr>
<td>Trigger of input data</td>
<td>Triggered by a change in the input data (Data monitor item) value. Details can be set on the Setup trigger of input data window.</td>
</tr>
<tr>
<td>Manual trigger</td>
<td>Triggered when the user presses the F2 key.</td>
</tr>
</tbody>
</table>

**Button operation**

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finish</td>
<td>Sets the specified trigger type and finishes the trigger setting. Enabled only when Without trigger is selected.</td>
</tr>
<tr>
<td>Next</td>
<td>Moves to the following trigger setup windows:</td>
</tr>
<tr>
<td></td>
<td>- Any DTC</td>
</tr>
<tr>
<td></td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
<tr>
<td></td>
<td>- Specific DTC</td>
</tr>
<tr>
<td></td>
<td>Moves to the specific DTC specification window.</td>
</tr>
<tr>
<td></td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
<tr>
<td></td>
<td>- Trigger of input data</td>
</tr>
<tr>
<td></td>
<td>Moves to the input data trigger setup window.</td>
</tr>
<tr>
<td></td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
<tr>
<td></td>
<td>- Manual trigger</td>
</tr>
<tr>
<td></td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
</tbody>
</table>
Any DTC
Select the type of trigger to be generated when any DTC occurs.

Button operation

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next</td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
</tbody>
</table>

After-trigger processing setup window
Specific DTC
Select the type of trigger to be generated when a specific DTC occurs.

Select the DTC that generates a trigger.
Click the check box of the target DTC to select it. To cancel the selection, click the same check box again.

Button operation

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>Returns to the trigger type specification window.</td>
</tr>
<tr>
<td>Next</td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
</tbody>
</table>
Trigger of input data

Select the type of trigger to be generated when data is input.

![Setup trigger](image1)

Select the input data that generates a trigger.

![Setup trigger](image2)

When an item is selected, the Setup trigger of input data window appears.

If a numerical item is selected, the Level field allows a numerical threshold to be set.

![Setup trigger of input data](image3)

Set the details of the numerical item trigger used for the trigger of input data.
Setting

<table>
<thead>
<tr>
<th>Item</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Sets the level for the trigger threshold.</td>
</tr>
<tr>
<td>Slope condition</td>
<td></td>
</tr>
<tr>
<td>Upward</td>
<td>Triggered when an item value equal to or smaller than the level value</td>
</tr>
<tr>
<td></td>
<td>changes to a value greater than the level value.</td>
</tr>
<tr>
<td>Downward</td>
<td>Triggered when an item value equal to or greater than the level value</td>
</tr>
<tr>
<td></td>
<td>changes to a value less than the level value.</td>
</tr>
<tr>
<td>Both</td>
<td>Triggered by either Upward or Downward.</td>
</tr>
<tr>
<td>Combined condition</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>If any of the items specified by OR satisfies a trigger condition, a</td>
</tr>
<tr>
<td></td>
<td>trigger is assumed and after-trigger sampling begins.</td>
</tr>
<tr>
<td>AND</td>
<td>A trigger is assumed only when all items specified by AND satisfy the trigger conditions, and after-trigger sampling begins.</td>
</tr>
</tbody>
</table>

Click the check box of the trigger source to select it. To cancel the selection, click the same check box again.

If a character item is selected, the Level field allows a non-numerical threshold to be set.
## Button operation

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>Returns to the trigger type specification window.</td>
</tr>
<tr>
<td>Next</td>
<td>Moves to the after-trigger processing setup window.</td>
</tr>
</tbody>
</table>
The Details button can be used to check the trigger information on input data.

The following example shows that the selected item is the character item Clutch switch signal, Level is On, Slope condition is ON, and Combined condition is OR.

The letter T is indicated in the □ at the left of the input data item selected as a trigger.
Manual trigger

Select the items to generate a trigger when the Trigger... button is pressed.

A trigger is applied when the Trigger... button (F2 key) is pressed.
After-trigger process setup

Set the action to be performed after trigger detection.

Settings

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of samples after trigger</td>
<td>Specify the number of samples to be taken from the time when a trigger is detected to when the sampling is finished. Sampling one sample takes 0.2 seconds (other than electric motorcycle) or 1.0 second (electric motorcycle).</td>
</tr>
<tr>
<td>Trigger dot display in hold mode transit</td>
<td>The system automatically transitions to the hold mode at the end of the sampling after a trigger. For this parameter, specify where in the graph to show the trigger dot. The number preceding Div indicates the number of ticks along the horizontal axis of the graph.</td>
</tr>
</tbody>
</table>

Press the Finish button to set the trigger settings and close the window.

When the window is closed, all sampling data is cleared. The diagnosis system restarts the sampling when it is set to run mode.
When the number of samples after a trigger is "200"

When the trigger dot display position upon transition to the hold mode is "0 Div"

Data prior to the trigger is not displayed.
4-5. DTC Inspection

Click DTC inspection on the Failure diagnosis menu, or move the cursor to the menu item and press the space key, and then perform DTC inspection.

Past and current failure codes, if detected, are displayed.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description &amp; trouble area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current DTC - 1</td>
<td></td>
</tr>
<tr>
<td>P0105-H</td>
<td>Manifold absolute pressure circuit malfunction 1</td>
</tr>
<tr>
<td>Past DTC - 1</td>
<td></td>
</tr>
<tr>
<td>P0120-L</td>
<td>Throttle position sensor A system malfunction</td>
</tr>
</tbody>
</table>

Past and current failure codes are not displayed in the order of detection but instead are displayed in the order of failure codes. The order of occurrence of up to two failure codes can be checked in Show failure data. Even in Show failure data, the date of a failure cannot be determined.

Clear failure codes to confirm the completion of repair and allow the generation of failure codes for subsequent failures.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description &amp; trouble area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current DTC - 1</td>
<td></td>
</tr>
<tr>
<td>P0105-H</td>
<td>Manifold absolute pressure circuit malfunction 1</td>
</tr>
<tr>
<td>Past DTC - 1</td>
<td></td>
</tr>
<tr>
<td>P0120-L</td>
<td>Throttle position sensor A system malfunction</td>
</tr>
</tbody>
</table>

To delete the past failure codes, click the Clear button. Clearing the codes alone does not record the deletion in the controller. Deletion is recorded in the controller only after the ignition switch (main key switch) is set to OFF.

If the battery is disconnected before the ignition switch (main key switch) is set to OFF, failure codes are not recorded in the controller.
<table>
<thead>
<tr>
<th>DTC</th>
<th>SUZUKI code</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0105-H</td>
<td>C13</td>
<td>Intake pressure sensor</td>
</tr>
<tr>
<td>P0105-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0110-H</td>
<td>C21</td>
<td>Intake temperature sensor</td>
</tr>
<tr>
<td>P0110-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0115-H</td>
<td>C15</td>
<td>Engine coolant temperature sensor</td>
</tr>
<tr>
<td>P0115-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0120-H</td>
<td>C14</td>
<td>Throttle position sensor</td>
</tr>
<tr>
<td>P0120-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0130</td>
<td>C44 (*C45)</td>
<td>O₂ sensor (*: to be displayed depending on the target model)</td>
</tr>
<tr>
<td>P0135</td>
<td>C44</td>
<td>O₂ sensor heater</td>
</tr>
<tr>
<td>P0201</td>
<td>C32</td>
<td>Fuel injector signal #1</td>
</tr>
<tr>
<td>P0202</td>
<td>C33</td>
<td>Fuel injector signal #2</td>
</tr>
<tr>
<td>P0335</td>
<td>C12</td>
<td>Crankshaft position sensor</td>
</tr>
<tr>
<td>P0340</td>
<td>C11</td>
<td>Camshaft position sensor</td>
</tr>
<tr>
<td>P0351</td>
<td>C24</td>
<td>Ignition coil #1</td>
</tr>
<tr>
<td>P0352</td>
<td>C25</td>
<td>Ignition coil #2</td>
</tr>
<tr>
<td>P0230-H</td>
<td>C41</td>
<td>Fuel pump control system</td>
</tr>
<tr>
<td>P0230-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0500</td>
<td>C16</td>
<td>Vehicle speed sensor</td>
</tr>
<tr>
<td>P1450-H</td>
<td>C22</td>
<td>Barometric pressure sensor</td>
</tr>
<tr>
<td>P1450-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1650</td>
<td>C42</td>
<td>Ignition switch signal</td>
</tr>
<tr>
<td>P1651-H</td>
<td>C23</td>
<td>Tip-over sensor</td>
</tr>
<tr>
<td>P1651-L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1652</td>
<td>C40</td>
<td>Idle air control valve (PTC heater)</td>
</tr>
<tr>
<td>P1C61</td>
<td>E- 600</td>
<td>Key sensor detection malfunction at start</td>
</tr>
<tr>
<td>P1C62</td>
<td>E- 610</td>
<td>Primary TPS malfunction at start</td>
</tr>
<tr>
<td>P1C63</td>
<td>E- 611</td>
<td>Secondary TPS malfunction at start</td>
</tr>
<tr>
<td>P1C66</td>
<td>E- 614</td>
<td>TPS signals discrepancies</td>
</tr>
<tr>
<td>P1C67</td>
<td>E- 620</td>
<td>Tilt sensor malfunction at start</td>
</tr>
<tr>
<td>P1C68</td>
<td>E- 621</td>
<td>Tilt sensor malfunction</td>
</tr>
<tr>
<td>U1C01</td>
<td>E- 150</td>
<td>Inverter communication malfunction detected by EV controller at start</td>
</tr>
<tr>
<td>U1C05</td>
<td>E- 105</td>
<td>EV controller communication malfunction detected by inverter at start</td>
</tr>
<tr>
<td>U1C0B</td>
<td>E- 330</td>
<td>Battery communication malfunction detected by inverter at start</td>
</tr>
</tbody>
</table>

Note: This failure code comparison table is a sample. For details, refer to the service manual of the relevant model.
## Parameters of Electric Motorcycle

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>View</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery voltage</td>
<td>V</td>
<td>-</td>
<td>Voltage of dedicated 50 V battery</td>
</tr>
<tr>
<td>Motor speed</td>
<td>rpm</td>
<td>-</td>
<td>Revolutions per minute of drive motor</td>
</tr>
<tr>
<td>Throttle position sensor voltage</td>
<td>V</td>
<td>-</td>
<td>Output voltage of throttle position sensor</td>
</tr>
<tr>
<td>Commanded torque by EV controller</td>
<td>Nm</td>
<td>-</td>
<td>Torque commanded by the EV controller to the inverter</td>
</tr>
<tr>
<td>Commanded torque by inverter</td>
<td>Nm</td>
<td>-</td>
<td>Torque commanded by the inverter to the drive motor</td>
</tr>
<tr>
<td>Output torque</td>
<td>Nm</td>
<td>-</td>
<td>Torque generated by the current flowing to the drive motor</td>
</tr>
<tr>
<td>DC voltage of inverter</td>
<td>V</td>
<td>-</td>
<td>DC voltage supplied from the EV controller to the inverter</td>
</tr>
<tr>
<td>Battery current</td>
<td>A</td>
<td>-</td>
<td>DC current supplied from the dedicated 50 V battery to the EV controller</td>
</tr>
<tr>
<td>DC current of inverter</td>
<td>A</td>
<td>-</td>
<td>DC current supplied from the EV controller to the inverter</td>
</tr>
<tr>
<td>D-axis current</td>
<td>A</td>
<td>-</td>
<td>Current converted in the direction of the magnetic poles of the drive motor</td>
</tr>
<tr>
<td>Battery total capacity</td>
<td>mAh</td>
<td>-</td>
<td>Amount that can be discharged from the fully charged state</td>
</tr>
<tr>
<td>Battery remaining capacity</td>
<td>mAh</td>
<td>-</td>
<td>Amount that can be discharged from the battery during use</td>
</tr>
<tr>
<td>EV controller temperature</td>
<td>°C</td>
<td>-</td>
<td>EV controller circuit temperature</td>
</tr>
<tr>
<td>Inverter temperature</td>
<td>°C</td>
<td>-</td>
<td>Inverter circuit temperature</td>
</tr>
<tr>
<td>Hall IC temperature</td>
<td>°C</td>
<td>-</td>
<td>IC temperature of the Hall sensor circuit of drive motor</td>
</tr>
<tr>
<td>Battery temperature 1 to 3</td>
<td>°C</td>
<td>-</td>
<td>Temperature of each of the three sensors in the dedicated 50 V battery</td>
</tr>
<tr>
<td>Number of cycles</td>
<td>Number</td>
<td>-</td>
<td>Number of cycles of using the dedicated 50 V battery, in terms of the accumulated amount of discharge/total capacity</td>
</tr>
<tr>
<td>Number of charge</td>
<td>Number</td>
<td>-</td>
<td>Number of times the dedicated 50 V battery was charged</td>
</tr>
<tr>
<td>Switch Type</td>
<td>Status</td>
<td>Function</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------</td>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Main key switch</td>
<td>ON or OFF</td>
<td>Starts or stops the electric motorcycle</td>
<td></td>
</tr>
<tr>
<td>Continuity sensor</td>
<td>ON or OFF</td>
<td>Checks for energization of the drive motor</td>
<td></td>
</tr>
<tr>
<td>Center-stand switch</td>
<td>ON or OFF</td>
<td>Checks whether the center stand is standing or stored: OFF when it is standing, and ON when it is stored.</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Unit</td>
<td>View</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>------</td>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Battery pack installation sensor</td>
<td>-</td>
<td>Installed or Not installed</td>
<td>Checks whether the battery pack is installed normally</td>
</tr>
<tr>
<td>Key sensor</td>
<td>-</td>
<td>Normal or Abnormal</td>
<td>Checks the main key switch</td>
</tr>
<tr>
<td>Tilt sensor</td>
<td>-</td>
<td>Normal or Abnormal</td>
<td>Detects the tilt of the motorcycle</td>
</tr>
<tr>
<td>Overcharge sensor</td>
<td>-</td>
<td>Normal or Abnormal</td>
<td>Detects the overcharged state of the dedicated 50V battery</td>
</tr>
<tr>
<td>Power supply</td>
<td>-</td>
<td>ON or OFF</td>
<td>Indicates the power state of the EV controller</td>
</tr>
<tr>
<td>Operating mode (EV controller)</td>
<td>-</td>
<td>Ready, Eco Run, or Power Run</td>
<td>Operating mode of electric motorcycle. Main key switch ON causes Ready, and START/MODE switch ON causes Eco Run or Power Run.</td>
</tr>
<tr>
<td>EV controller drive torque limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of drive torque limitation by EV controller</td>
</tr>
<tr>
<td>EV controller regenerative torque limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of regenerative torque limitation by EV controller</td>
</tr>
<tr>
<td>Charge current limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of charge current limitation</td>
</tr>
<tr>
<td>U phase hall signal</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of input of U phase Hall sensor output to inverter</td>
</tr>
<tr>
<td>V phase hall signal</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of input of V phase hall sensor output to inverter</td>
</tr>
<tr>
<td>W phase hall signal</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of input of W phase Hall sensor output to inverter</td>
</tr>
<tr>
<td>Drive power limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of output torque limitation by inverter</td>
</tr>
<tr>
<td>Inverter drive torque limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of drive torque limitation by inverter</td>
</tr>
<tr>
<td>Inverter regenerative torque limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Status of regenerative torque limitation by inverter</td>
</tr>
<tr>
<td>Motor locked torque limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>Torque limitation due to possibility of locked motor</td>
</tr>
<tr>
<td>Regenerative power limitation</td>
<td>—</td>
<td>ON or OFF</td>
<td>State of regenerative power limitation</td>
</tr>
<tr>
<td>Battery pack connection</td>
<td>—</td>
<td>ON or OFF</td>
<td>State of battery pack connection to the EV controller</td>
</tr>
<tr>
<td>Battery pack unconnection</td>
<td>—</td>
<td>ON or OFF</td>
<td>Battery pack as a single item (not connected with other systems)</td>
</tr>
<tr>
<td>Parameter</td>
<td>View</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------</td>
<td>-------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Low temperature limitation</td>
<td>ON or OFF</td>
<td>Current limitation due to low-temperature battery</td>
<td></td>
</tr>
<tr>
<td>High temperature limitation</td>
<td>ON or OFF</td>
<td>Current limitation due to high-temperature battery</td>
<td></td>
</tr>
<tr>
<td>Drive mode setting</td>
<td>Eco or Power</td>
<td>Run mode</td>
<td></td>
</tr>
<tr>
<td>Brake</td>
<td>ON or OFF</td>
<td>Status of brake</td>
<td></td>
</tr>
<tr>
<td>Sensorless control</td>
<td>ON or OFF</td>
<td>Sensorless control without using Hall senso</td>
<td></td>
</tr>
</tbody>
</table>
4-7. Showing Failure Data

Show failure data in Failure diagnosis menu

Clicking Show failure data displays the following window.

Failures #1 and #2 can be determined.

Note: The dates of failures cannot be determined.

This window allows the user to check the data at the time of a failure.
The data before and after detection of the failure can be confirmed.

The following capture shows the waveforms of sensor output values. The detected values exceeding the normal range have not returned to the normal range even after a few seconds, and it is thus determined as a failure.
**4-8. Active Control**

In active control, the system in the motorcycle is controlled by commands from the PC. This allows the user to check the system operation of the target actuator and reset the learned values to the initial values. The user can thus check the system operation without actual running it and initialize any values that have been incorrectly learned. The active control menus that can be executed vary depending on the system or the model selected. Only Engine, Engine and Transmission, and ABS systems have an active control menu available. — For the ABS system, the available active control menu is ABS HU operating control only.

— For the Transmission system, no active control menu is available.
— For the EPS system, no active control menu is available.

For details, refer to the service manual of the relevant model.

<table>
<thead>
<tr>
<th>System</th>
<th>Active Control</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td>Secondary throttle operating control</td>
<td>Can set the secondary throttle operating control to fully closed or fully open.</td>
</tr>
<tr>
<td></td>
<td>ISC rpm control</td>
<td>Can adjust the ISC valve aperture to the target rpm value.</td>
</tr>
<tr>
<td></td>
<td>ISC air volume control</td>
<td>Can set the ISC valve aperture for throttle valve synchronization.</td>
</tr>
<tr>
<td></td>
<td>ISC aperture learned value reset control</td>
<td>Can reset the learned value of the ISC valve aperture to the initial value.</td>
</tr>
<tr>
<td></td>
<td>Cooling fan relay control</td>
<td>Can operate the cooling fan even when the coolant temperature is low.</td>
</tr>
<tr>
<td></td>
<td>PAIR control solenoid control</td>
<td>Can set the PAIR valve to open or closed.</td>
</tr>
<tr>
<td></td>
<td>TP fully closed learned value reset</td>
<td>Can reset the fully closed learned value of the throttle position sensor to the initial value.</td>
</tr>
<tr>
<td></td>
<td>EVAP purge valve control</td>
<td>Can set the EVAP purge valve to open or closed.</td>
</tr>
<tr>
<td></td>
<td>Steering damper solenoid operating control</td>
<td>Can set the steering damper valve to open.</td>
</tr>
<tr>
<td></td>
<td>Engine run time reset control</td>
<td>Can reset the engine run time to 0.</td>
</tr>
<tr>
<td></td>
<td>PTC heater operating control</td>
<td>Can turn ON and OFF the PTC heater</td>
</tr>
<tr>
<td></td>
<td>Decomp sol operating control</td>
<td>Can turn ON and OFF the Decomp solenoid.</td>
</tr>
<tr>
<td></td>
<td>Exhaust valve operating control</td>
<td>Can set the EXCV to fully open or fully closed.</td>
</tr>
<tr>
<td><strong>Engine and</strong></td>
<td>PPS learned value reset</td>
<td>Can reset the learned value of the pulley position sensor to the initial value.</td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
<td><strong>ABS</strong></td>
<td>Can reproduce the ABS operation</td>
</tr>
<tr>
<td><strong>ABS</strong></td>
<td>ABS HU operating</td>
<td></td>
</tr>
<tr>
<td><strong>EV</strong></td>
<td>Stand limitation lifted (PC throttle operation)</td>
<td>Can control the rear wheel output with values input to the PC.</td>
</tr>
<tr>
<td></td>
<td>Stand limitation lifted (vehicle throttle operation)</td>
<td>Can control the rear wheel output with the throttle grip while the center stand is upright.</td>
</tr>
</tbody>
</table>
1. Example of Engine System (varies with the model)

- Controls the ISC valve so as to attain the target rpm. Fixes the ISC valve to tune the throttle valve.
- Resets the learned value of the ISC valve aperture to the initial value.
- Controls ON/OFF of the cooling fan relay.
- Exits the active control menu.

1.1.1 Purpose of Secondary Throttle Operating Control

To check that the secondary throttle is controlled to be fully open or fully closed.

1.1.2 Using Secondary Throttle Operating Control

1) Click the fully open button and check that **Secondary throttle position sensor** is close to **100%** and **Secondary throttle fully open** is **Fully open**.

If it is not fully open, perform troubleshooting for P1657-L.

2) Click the fully closed button and check that **Secondary throttle position sensor** is close to **0%** and **Secondary throttle fully closed** is **Fully closed**.

When it is not fully closed, perform troubleshooting for DTC code P1657-L.
1.2.1 Purpose of ISC Rpm Control
To check that the ISC valve can be used up to the lower limit value and upper limit value of the control.

1.2.2 Using ISC Rpm Control
1) Operate the button to slowly decrease the Spec to the lower rpm limit.
   Lower rpm limit is set to 1000 rpm in the right figure.

2) Check that Desired idle speed is close to the lower rpm limit and Engine speed is also close to the lower rpm limit.
   If not, perform troubleshooting for DTC code P506.

3) Operate the button to slowly increase the Spec to the upper rpm limit.
   If the engine revs up, cancel ISC rpm control and slowly increase the Spec again to the value right before the engine revved up.
   Upper rpm limit is set to 1400 rpm in the right figure.

4) Check that Desired idle speed is almost the upper rpm limit and Engine speed is also almost the upper rpm limit.
   If not, perform troubleshooting for DTC code P506.
1.3.1 Purpose of Exhaust Valve Operating Control
To adjust the exhaust valve (EXCV) to fully closed or fully open.

1.3.2 Using Exhaust Valve Operating Control
1) Click the **Fully closed** button and check that **Exhaust control valve actuator position sensor** value is almost 0%.

   ![Exhaust valve operating control](image1)

   If not, adjust the EXCV cable.

   If it does not move, perform troubleshooting for DTC code P1658.

2) Click the **Fully open** button and check that **Exhaust control valve actuator position sensor** value is almost 100%.

   ![Exhaust valve operating control](image2)

   If not, adjust the EXCV cable.

   If it does not move, perform troubleshooting for DTC code P1658.

1.4.1. Purpose of ISC Air Volume Control
Sets the ISC valve to the specified position to perform throttle valve synchronization.

1.4.2. Using ISC Air Volume Control
1) Remove the IAP sensor coupler.
2) Remove the IAP sensor vacuum hose from the throttle body.
3) Connect the vacuum hose used for measurement to vacuum nipples on the throttle body.
4) Click **Data monitor**.
5) Warm-up the engine until the specified temperature is reached.

<table>
<thead>
<tr>
<th>Model</th>
<th>Warm-up temperature °C</th>
<th>Model</th>
<th>Warm-up temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN250K7</td>
<td>80</td>
<td>UH200/A</td>
<td>80</td>
</tr>
<tr>
<td>AN650K2</td>
<td>80</td>
<td>VZ400</td>
<td>80</td>
</tr>
<tr>
<td>AN650L3</td>
<td>80</td>
<td>DL650/AK7</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>DL650AL3</td>
<td>90</td>
<td>DL650/AL2</td>
<td>80 ~ 105</td>
</tr>
<tr>
<td>DL1000AL4</td>
<td>90</td>
<td>GSF650SK7</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>GSF1250A/SAK7</td>
<td>80</td>
<td>GSF650A/SAK9</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>GSR250L2</td>
<td>80</td>
<td>GSX1300BKK8</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>GSR750/AL3</td>
<td>80 ~ 105</td>
<td>GSX1300RK8</td>
<td>70 ~ 100</td>
</tr>
<tr>
<td>GSX1300R/RA</td>
<td>70</td>
<td>GSX-R1000K9</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>GSX-R1000K7</td>
<td>70 ~ 100</td>
<td>GSX-R600K8</td>
<td>80 ~ 100</td>
</tr>
<tr>
<td>GSX-R600L1</td>
<td>80 ~ 100</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
6) Select ISC air volume control and click **On**.

7) Check the synchronization of the cylinders #1 and #2 intake negative pressure.

8) Make the cylinder negative pressure uniform by turning the synchronization screws.

9) When it cannot be adjusted correctly, remove the synchronization screws and clean them with a cotton swab soaked with carburetor cleaner (petroleum solvent) and dry by blowing air. Also clean the synchronization screw paths.

10) Repeat from step 5) through step 8) until the negative pressure becomes uniform.

11) Turn the engine OFF, then turn the ignition switch ON again.

12) Perform ISC aperture learned value reset.
1.5.1 Purpose of ISC Aperture Learned Value Reset Control
To change the initial value and learn again when the ISC leaned value may be incorrect because the idle speed is too high or too low, or the target value may change after the service.

1.5.2 Using ISC Aperture Learned Value Reset Control
1) Click ISC aperture learned value reset.
2) Click the Reset button.

3) In the Reset ISC aperture learned value? window, click Yes.

4) Turn the ignition switch OFF then ON again to start the engine.
   Warm up the engine and once the idling is stabilized, stop.
1.6.1. Purpose of Cooling Fan Relay Control
To control the cooling fan relay ON/OFF from the ECM and check the cooling fan operation.

1.6.2. Using Cooling Fan Relay Control
1) Click Data monitor.
2) Check that the engine is at the specified temperature.

<table>
<thead>
<tr>
<th>Model</th>
<th>Specified temperature °C</th>
<th>Model</th>
<th>Specified temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN650L3</td>
<td>Lower than 90°C</td>
<td>GSF650SK7</td>
<td>Lower than 100°C</td>
</tr>
<tr>
<td>DL650AL3</td>
<td>Lower than 100°C</td>
<td>GSF650A/SAK9</td>
<td>↑</td>
</tr>
<tr>
<td>DL1000AL4</td>
<td>↑</td>
<td>GSR600</td>
<td>↑</td>
</tr>
<tr>
<td>GSF1250A/SAK7</td>
<td>↑</td>
<td>GSX-R1000K9</td>
<td>↑</td>
</tr>
<tr>
<td>GSR250L2</td>
<td>↑</td>
<td>GSX-R1000K7</td>
<td>↑</td>
</tr>
<tr>
<td>GSR400K6</td>
<td>↑</td>
<td>GSX-R600K6</td>
<td>↑</td>
</tr>
<tr>
<td>GSR750/AL3</td>
<td>↑</td>
<td>GSX-R600L1</td>
<td>↑</td>
</tr>
<tr>
<td>GSX1300R/RA</td>
<td>↑</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>UH200/A</td>
<td>↑</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

3) Click Cooling fan relay control.

4) Click the Operate button and check the cooling fan operation.

If it does not work, perform troubleshooting for DTC code P0480.
5) Click the **Stop** button and check that the cooling fan stops.

<table>
<thead>
<tr>
<th>Cooling fan relay</th>
<th>Off</th>
</tr>
</thead>
</table>

If it does not work, perform troubleshooting for DTC code P0480.

6) Click the **Off** button and exit the active control.

### 1.7.1. Purpose of PAIR Control Solenoid Valve Control
To check the ON/OFF operation of the solenoid valve which controls secondary air.

### 1.7.2. Using PAIR Control Solenoid Valve Control
Click **On** and check that the parameter **PAIR control solenoid valve** has changed from **Off** to **On** and the operation sound is heard.

<table>
<thead>
<tr>
<th>PAIR control solenoid valve</th>
<th>On</th>
</tr>
</thead>
</table>

### 1.8.1. Purpose of PPS Learned Value Reset
To reset the learned value of the pulley position sensor when the drive V belt is replaced so that the sensor can quickly correspond to the replaced belt.

### 1.8.2. Using PPS Learned Value Reset
1) Click the **Reset** button to reset the learned value of the pulley position sensor (PPS).

2) In the window where successful PPS learned value reset is notified, click **OK**.

3) Turn the ignition switch OFF and remove the SDS tool.

4) Drive in auto mode (CVT drive mode) to have the current pulley position learned. (Slowly accelerate from start to 40-50 km/h to have it learned.)
1.9.1. Purpose of TP Fully Closed Learned Value Reset

To reset the leaned value of the throttle fully closed position with the new sensor or assembly set in place. This is because the throttle fully closed position or fully closed air volume may be different when the throttle position sensor is removed and reinstalled or the throttle body assembly or throttle position sensor is replaced.

1.9.2. Using TP Fully Closed Learned Value Reset

1) Click **Reset**.

2) In the window where TP fully closed learned value reset execution is confirmed, click **Yes**.

3) In the window where successful TP fully closed learned value reset is notified, click **OK**.

1.10.1. Purpose of EVAP Purge Valve Operating Control

To control the EVAP valve to be set to closed or open and check the operation.

1.10.2 Using EVAP Purge Valve Operating Control

1) Click **On** and check that the parameter **EVAP purge valve** turns On.

2) Click **Off** and check that the parameter **EVAP purge valve** turns Off.
1.11.1. Purpose of Steering Damper Solenoid Operating Control
To control the steering damper solenoid valve to be set to closed or open and check the operation.

1.11.2. Using Steering Damper Solenoid Operating Control
1) Click **On** and check that the parameter **Steering Damper solenoid valve** turns On.
2) Click **Off** and check that the parameter **Steering Damper solenoid valve** turns Off.

1.12.1. Purpose of Decomp Sol Operating Control
To control the decomp solenoid to be set to ON or OFF and check the operation.

1.12.2. Using Decomp Sol Operating Control
1) Click **On** and check that the parameter **Decomp solenoid relay** turns On.
2) Click **Off** and check that the parameter **Decomp solenoid relay** turns Off.
2. Example of ABS System

2.1.1. Purpose of ABS HU Operating
To check the ABS operation by reproducing the running state by manually turning a wheel with the vehicle stopped.

2.1.2. Using ABS HU Operating
Click ABS HU operating.

Move the front and rear wheels away from the ground surface using a stand so that the front and rear wheels can be turned by hand.
Operate the brake lever and pedal to check that no air got mixed in the brake lines.

When no air got mixed in, click Next.

Release the brake lock lever if equipped.
Check that the engine is stopped.
Check that the wheels are stopped.
When confirmed, click Next.
Click ○ for the wheel for which ABS HU operating is performed. When changed to ●, select Next.

For the front wheel, squeeze the brake lever to apply the brake and hold that position. For the rear wheel, either depress the brake pedal or squeeze the brake lever to apply the brake and hold that position. Place your hand on the wheel to turn. At the same time Next is clicked, turn the wheel.

When Pressure reduction completed is displayed, release the brake lever and the pedal and wait.
- ABS system is normal.
- Brake line to the ABS hydraulic pressure unit is normal.
- Brake lever and pedal operations are correct.
- Wheel is turned at the right moment with the right strength.

When above conditions are met, it is determined that the pressure was successfully reduced.

**Advice**

The wheel can only be turned within 0.5 sec. after **Next** is clicked. Be adequately prepared before clicking **Next**.
- Place the PC near the vehicle.
- Place your hand on the wheel applying forces beforehand.
3. Electric motorcycle

The motor can be controlled optionally while the motorcycle is placed on the center stand.

Stand limitation lifted (PC throttle operation):

Motor control is enabled with values input to the PC while the motorcycle is placed on the center stand.
System inspections, except the throttle sensors, can be performed.

Stand limitation lifted (vehicle throttle operation):

The motor is controlled by operating the throttles of the motorcycle while the motorcycle is placed on the center stand.
System inspections including the throttle sensors can be performed.
4. Resetting engine run time (on RM-Z450L3 and later, RM-Z250L3 and later)

The total engine run time is recorded in order to know the time of parts replacement. After parts replacement, select this menu to reset the recorded time to 0.

Before resetting the time, confirm the **Engine run time**.

If it should be reset, click **On**.

Confirm that the **Engine run time** is 0.
5. SDS Coupler Position

1. Standard (manual transmission vehicles)
   The SDS coupler is under the seat.

2. RM-Z
   The SDS coupler is inside the radiator cover.

3. AN650K7
   The SDS coupler is inside the maintenance lid.

4. AN650L3
   The SDS coupler is inside the air cleaner box lid.

5. AN400
   The SDS coupler is inside the upper meter panel.
6. **UH125/UH200**  
The SDS coupler is inside the front cover.

7. **VL1500**  
The SDS coupler is inside the frame head cover.

8. **VLR1800**  
The SDS coupler is inside the right frame side cover.

9. **VZ1500**  
The SDS coupler is inside the right frame side cover.

10. **VZR1800**  
The SDS coupler is inside the left frame lower side cover.
6. Using SDS-II Software (Standalone Failure Diagnosis Software)

6-1. Selecting a Mode

When the mode switch is turned ON, the SDS-II starts in the diagnostic mode or data record mode.

Diagnostic mode

When the data recorder setup file has not been created, the SDS-II starts in the diagnostic mode.

Data recorder mode

When the data recorder setup file has been created, the SDS-II starts in the data record mode. (Once the data recorder is used, the SDS-II always starts in the data recorder mode.)

To change to the diagnostic mode, select the diagnostic mode, place the cursor on the Select key, and press the A button. This switches the mode to the diagnostic mode.

To change from the diagnostic mode to the data recorder mode, set up the data recorder and create a data recorder setup file.

Select Data recorder setup from the Failure analysis menu, place the cursor on the Select key, and press the A button.

When the data recorder setup is executed, a data recorder setup file is automatically created and saved.

When the data recorder setup file exists and the positive and negative terminals of the power cable, which is connected to the failure diagnosis cable, is connected to the battery with the mode switch OFF, the SDS-II starts in the data recorder mode.

Recording starts when the ignition switch is turned ON and automatically stops when the ignition switch is turned OFF.
6-2. Selecting a System

1. Selecting the SDS-II Software
   A. Selecting SDS-II diagnosis software

   With the SDS-II standalone diagnosis software selected, move the cursor to the Select key and press the A button. The **Enter vehicle frame number** screen is displayed.

   **Enter vehicle frame number** screen

   Enter the frame number if necessary.
   You can proceed to the next step without entering the frame number.
   When the frame number is entered, it will be included in the data to be saved, so by looking at the data file, you can tell which vehicle that data file is for.

   The controller (ECM, TCM, ABS, EPS, EV) in the vehicle is automatically identified and the available diagnosis system is displayed.

   In this example, **Engine and Transmission** controller was identified and the diagnosis system can be used.
2. Entering Frame Number

Enter the **Frame Number**. (You can proceed to the next step without entering the frame number.)

Letters, numbers, symbols entry window

Letters, numbers, symbols select window

The cursor position in the entry window is shown with the red line.

The space next to the red line is the entry position.

Use ↑, ↓, →, ← hardware keys on the SDS-II to move the blue cursor and select the key to enter from the key pad at the bottom of the screen, then press the A button to confirm.

Once the frame number has been entered, select the return key and press the A button to confirm.

The keyboard layout can be selected from ABC, QWERTY, and AZERTY with the top right key on the keyboard.

ABC layout  QWERTY layout  AZERTY layout

: The letter, number, or symbol with the red line can be deleted.

: The cursor in the entry window can be moved left or right within the range of the letters, numbers, or symbols that are entered.

After entering 1 through 0, if you confirm the left key twice, this is shown in the window.

Then, if you confirm the right key once, this is shown in the window.

Then, if you confirm the delete key once, this is shown in the window.

Esc: Press the A button two times in a row within 1 sec. to return to the previous screen.

B button: Returns to the previous screen.
3. Selecting a System

The software reads the ID stored in the controller and automatically selects the system to be diagnosed.

Note: The system cannot be detected unless the controller is connected.

In the example on the right, as a result of the system auto select, the Engine and Transmission controller was detected, thus the **Engine and Transmission** system can be selected as a system to be diagnosed.

The systems include **Engine, Transmission, Engine and Transmission, ABS, EPS, and Electric Motorcycle**.

A. Key operations

↑Up/↓Down: Moves the cursor up or down.
←Left/→Right: Moves the cursor left or right.

A button: Confirms the key entry on which the cursor is placed.
B button: Returns to the previous screen

B. System descriptions

Engine: Performs failure diagnosis of the engine control such as FI.
Transmission: Performs failure diagnosis of the CVT transmission control.
Engine and Transmission: Performs failure diagnosis of the FI/CVT-integrated engine and transmission control.

ABS: Performs failure diagnosis of the ABS control.
EPS: Performs failure diagnosis of the EPS control.
Electric motorcycle: Performs failure diagnosis of the electric motorcycle control.

C. Key descriptions

Select: The system on which the cursor is placed can be selected.
Back: Goes back to the previous screen.
Setup: Allows you to change the settings.
D. Setup descriptions

Units for speed, temperature, pressure, airflow can be selected.

- Speed: km/h, MPH
- Temperature: °C, °F
- Pressure: kPa, mmHg, inHg, psig
- Airflow: g/s, lb/min

Selection example

Select the speed, place the cursor on the Select key, and press the A button.
The speed unit selection screen is displayed.

Select the unit, place the cursor on the Select key, and press the A button.
When * is displayed to the left of the unit selected, the selection is complete.

E. Items on failure analysis menu (vary with the system)

This is the Failure analysis menu for the Engine, Engine and Transmission, and EV systems.

- Data monitor: Parameter values that show the vehicle conditions are displayed.
- DTC inspection: The current DTCs and past DTCs can be viewed and the past failures can be cleared.
- Show failure data: The parameter values indicating the status of the vehicle before and after the DTC is set can be viewed.
- Active control: Allows the SDS-II to control the vehicle conditions.

F. Failure analysis menu (transmission)

Active control is not on the menu.
G. Failure analysis menu (ABS)
Show failure data is not on the menu.

H. Failure analysis menu (EPS)
Show failure data and Active control are not on the menu.

I. Items on data monitor (vary with the system)
Parameter values that show the vehicle conditions can be viewed.
Parameters that can be viewed vary with the system.
Parameter to be displayed can be selected.

This is an example of the data monitor screen for Engine and Transmission system displayed when the data is selected.

The parameter to be displayed can be selected from Select data.

How to select
With the desired parameter selected, place the cursor on the Sele/Canc key and press the A button to select or cancel.

The parameter value can be viewed once the measurement starts.
Place the cursor on the **Swap disp** and press the A button to display the whole text of parameters.

Display example
**Engine coolant/**

  -> **Engine coolant/oil temperature**

**J. DTC inspection**
The current DTCs and past DTCs can be viewed and the past DTCs can be cleared.

Example: When the current DTCs P0230-L and P2505 exist.

Example: When the past DTCs P0230-L and P2505 exist.

When the DTC code name is long, it cannot be displayed all at once. The text moves from the right to the left to display the whole text.

Also, place the cursor on the **Enlarge** key and press the A button to display the whole DTC name.

**K. Clearing past DTCs**
A display to confirm clearing the past DTCs is shown.
Place the cursor on the **Clear** key and press the A button to clear the DTC.
Confirm that the past DTC has been cleared, move the cursor to the **Complete** key, and press the A button to complete.

**Notes**

The past DTC recorded in the controller is cleared a few seconds after the ignition switch is turned OFF. If the ignition switch was not turned OFF normally, the past DTC code may remain.

After clearing the DTC code, turn the ignition switch OFF normally.

**L. Showing failure data**

**L1. Selecting DTCs**

P C is set can be viewed for up to 2 DTCs.

Parameters indicate the status of the vehicle when the failure occurred.

Parameters that can be displayed vary with the system.

**L2. Selecting data point**

The data point to display can be selected.

(Data points that can be displayed vary with the system.)

For Engine and Transmission system on the example screen,

- Pre-detect
- Detection point
- Post-detect
- Fix point
- Cycle Min
- Cycle Max

(the minimum value during the ignition ON to OFF cycle at the DTC fix point)

Cycle Max (the maximum value during the ignition ON to OFF cycle at the DTC fix point)

Place the cursor on the item to select and press the A button to confirm.
The parameters for the selected point is displayed. The data is from when the DTC is confirmed.

The data shows if the vehicle is running or stopped, the temperature is low or high, the throttle aperture is small or large, etc.

This is the Cycle Min data. Since these values are taken throughout the cycle, each value may not be measured at the same time.

L3. Cycle Min, Max descriptions

When the positions of Max and Min for P1 and P2 during IgOn cycle are different, the values for cycle Max and Min were not measured at the same time. Keep this in mind when analyzing the data.

L4. Data for each time point shown by parameter

Select Details to display the list of selected parameter values for each time point.

The time points vary with the system.
For Engine system, they are
- Pre-detect
- Detection point
- Post-detect
- Fix point
- Max during the ignition cycle
- Min during the ignition cycle

The time from Pre-detect to the Detection point and the time from the Detection point to Post-detect vary with the controller.
**M. Main unit setup**

Select Main Unit Setup to display the following screen.

The brightness, beep volume, and language can be selected.

**Brightness setup**

**Beep ON/OFF setup**
Language setup

Select a language from the following 11 languages: Japanese, English, German, French, Italian, Spanish, Portuguese, Greek, Chinese (simplified), Thai, and Indonesian.

N. Active control

Select **Active control** on the **Failure analysis menu** to display active controls available for the controller on that model.

Select the active control to perform.

Select whether to select the desired parameter to display or display all parameters.
For details on how to select, see Data Monitor section.

Select the items to monitor during active control.
Operate the vehicle to satisfy the active control execution conditions.

This is displayed when the active control execution conditions are not satisfied. Change the vehicle status to satisfy the conditions.

For example, start the engine.
Stop the engine.
Warm up the engine.
Squeeze the brake lever.

Parameters change when the active control is executed.

N1. PAIR control solenoid valve control

Place the cursor on the **PAIR control solenoid valve control** and press the A button.

Select the parameter to display.
There is a parameter that indicates PAIR control solenoid valve ON/OFF.
For details on how to select, see Active Control section.
When it is selected, On/Off switches are displayed.
Place the cursor on the switch to select and press the A button.
When it is confirmed, * mark is displayed to the left of the text of the switch.
N2. ISC air volume control
Place the cursor on the **ISC air volume control** and press the A button.
Select the parameter to display.
When it is selected, On/Off switches are displayed.
Place the cursor on the switch to select and press the A button.
When it is confirmed, * mark is displayed to the left of the text of the switch.

N3. ISC aperture learned value reset
Place the cursor on the **ISC aperture learned value reset** and press the A button.
Select the parameter to display.
When it is selected, Reset switch is displayed.
Press the A button to execute reset.

N4. ISC rpm control
Place the cursor on the **ISC rpm control** and press the A button.
Select the parameter to display.
When it is selected, Up/Down switches are displayed.
Place the cursor on the switch to select and press the A button.
The engine speed changes according to the ISC valve travel distance.

N5. Cooling fan relay control
Place the cursor on the **Cooling fan relay control** and press the A button.
Select the parameter to display.
When it is selected, Off/Stop/Operate switches are displayed.
Place the cursor on the switch to select and press the A button.
Select Operate when the fan is stopped to start the fan.
Select Stop when the fan is running to stop the fan.
Select Off to return to the normal control.
When it is confirmed, * mark is displayed to the left of the text of the switch.
N6. Secondary throttle drive control

Place the cursor on the **Secondary throttle drive control** and press the A button. Select the parameter to display. There is a parameter that indicates secondary throttle valve fully open and fully closed. When it is selected, Off/fully closed/fully open switches are displayed. Place the cursor on the switch to select and press the A button. Select fully open to stop the secondary throttle valve at the fully open position. Select fully closed to stop the secondary throttle valve at the fully closed position. Select Off to return to the normal control. When it is confirmed, * mark is displayed to the left of the text of the switch.

N7. Steering damper solenoid operating control

Place the cursor on the **Steering damper solenoid operating control** and press the A button. Select the parameter to display. There is a parameter that indicates steering damper solenoid ON/OFF. When it is selected, Off/On switches are displayed. Place the cursor on the switch to select and press the A button. When it is confirmed, * mark is displayed to the left of the text of the switch.

N8. TP fully closed learned value reset

Place the cursor on the **TP fully closed learned value reset** and press the A button. Select the parameter to display. When it is selected, Reset switch is displayed. Press the A button to execute reset.
N9. ABS HU operating

Place the cursor on the **ABS HU operating** in the ABS Active control and press the A button.

Select the parameter to display.

There is a parameter that indicates the front and rear wheel speed.

Squeeze the brake lever to check that no air got mixed in.

Prepare for the ABS HU operating control.
1. Release the brake lock lever if equipped.
2. Check that the engine is stopped.
3. Check that the wheels are stopped.

Select the wheel for which ABS HU operating control is performed.

Squeeze the brake lever or depress the brake pedal and hold that position.

The pressure is reduced for 0.5 seconds right after **Next** is pressed.

Place your hand on the wheel to turn and be ready to turn the wheel.

The wheel can be turned in either forward or reverse direction.
The pressure is reduced, and then the pressure is applied again, which stops the wheel. If the wheel does not stop, that means the brake is not sufficiently applied.

The ABS operation is determined to be successful or unsuccessful based on whether or not the wheel speed is fast enough while the pressure is being reduced and the wheel stops while the pressure is being applied.

O. Data recorder setup

To use the data recorder function, create a setup file and set the start mode to the data recorder.

Select **Data recorder setup** on the **Failure analysis menu** to display the **Change start mode** key.

Select **Change start mode** to switch to the data recorder mode.

If a data recorder setup has been executed in the past, the setup file exists. The data recorded with the data recorder may exist as well. Therefore, perform **Overwrite setup file** and **Erase recorded data** to check for any problems.

When performing the data recorder setup for the first time, this is not displayed.

Switching to data recorder mode is indicated on the display.

Turn the SDS-II mode switch OFF and connect the battery terminals and SDS-II.

Notes

If the mode switch is not turned OFF, the battery will go dead.
When connecting the SDS-II battery cable, perform the following procedure in order to prevent electric shock and short circuits.

a) Remove the vehicle harness lead wire (-) from the battery (-) terminal.
b) Loosen the bolt fastening the vehicle harness lead wire and fasten to the battery (+) terminal together with the SDS-II battery cable lead wire (+).
c) Fasten the SDS-II battery cable lead wire (-) and the vehicle harness lead wire (-) to the battery (-) terminal.

P. Recording data

After switching to the data recorder mode, turn the ignition switch ON again with the mode switch OFF to start the data recorder software.
First, data recorder settings file is read.

When reading the settings file is complete, recording starts automatically.

When the ignition switch is turned OFF, recording stops automatically and writing to an SD card starts. When writing data is complete, the system goes to standby state and the screen becomes dark.
Q. Returning from data recorder mode

Turn the mode select switch ON to display the Change start mode menu.
Select **Diagnostic mode** to switch to the diagnostic mode.
If **Data recorder mode** is selected, the mode does not switch.

Turn the ignition switch ON and press the A button to start the data recorder software.

R. Starting data recorder software

The data recorder software is started and reads the settings file.

Notes
After turning the ignition switch OFF and stopping the data recorder, turn the SDS-II mode switch OFF.
If the mode switch is not turned OFF, the vehicle battery will go dead.

When reading the settings file is complete, measurement starts.
Reading the settings file takes about 5 seconds. Data from ignition switch ON to reading end is not recorded.

When the ignition switch is turned OFF, measurement stops automatically.
Writing to an SD card starts.
Writing requires time proportional to the data amount.
Even if the ignition switch is turned ON during writing, data recording does not start.
Writing to an SD card is complete. When the mode switch is OFF, the screen goes off automatically. When the mode switch is ON, turn it OFF to prevent the vehicle battery from going dead.
S. Converting, saving, and displaying data recorded in data recorder

Remove the SDS-II from the vehicle and connect to the PC that has "SDS-II software" installed with a USB cable.

As instructed in "Q. Returning from data recorder mode", turn the mode switch ON to display Diagnostic mode key.

Select the Diagnostic mode key.

The normal start screen is displayed. In this state, start the "SDS-II software" on the PC.

Select DR from the function keys.

A text indicating that the data recorded in the data recorder is being converted is displayed.

When converting is complete, a window appears where save location and file name are specified.
T. Displaying saved data (converted data recorded in the data recorder)

Specify the folder where the converted data was saved, click ▼ at the Files of type and specify drc. The readable drc files are displayed. Select the file to display and click Open.