Kawasaki Diagnostic System
KDS Ver. 3
Instruction Manual

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Consumer Products & Machinery Company

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1 Preface

Thank you for purchasing the “Kawasaki Diagnostic System KDS Ver. 3” (“KDS3”). This Instruction Manual outlines KDS3 and its basic operations for Kawasaki dealers. We assume that the reader is knowledgeable about basic maintenance and technologies of vehicle and is familiar with basic operations of a PC (Personal Computer).

To fully utilize the KDS3 performance and functions, please read this manual thoroughly and familiarize yourself with the contents.

Before using KDS3, read the “User License Agreement Kawasaki Diagnostic System Software” contained in the “Kawasaki Diagnostic System KDS Ver. 3 Setup Manual.” Please use your KDS3 only when you agree with its contents.

Related publications

The following related publications are available. Please read the manual that meets your requirements.

<table>
<thead>
<tr>
<th>Manual Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kawasaki Diagnostic System KDS Ver. 3 Setup Manual</strong></td>
<td>Explains the procedure for the installation of KDS3.</td>
</tr>
<tr>
<td><strong>Kawasaki Diagnostic System KDS Ver. 3 Instruction Manual (This Manual)</strong></td>
<td>Explains basic KDS3 operations.</td>
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1-1 Copyright notice

- Please refer to the respective Service Manual for service information if it is not covered by this manual.

- This manual has been issued for readers who have the basic knowledge of PC operations on the Windows 2000, Windows XP or Windows Vista operating systems (hereafter called the “Windows”). For general terms and operations of Windows, please read the commercial guidebooks.

- The contents of this manual must not be copied in part or in full without our permission.

- The machine names and software versions described in this manual were checked when this manual was released.

- The specifications, design and contents of this manual are subject to change without notice.

- The contents of this manual may be modified for improvement in future without notice.

- Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

---

**WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**NOTICE**

NOTICE is used to address practices not related to personal injury.

**NOTE**

❖ This symbol indicates points of particular interest for more efficient and convenient operation.

(Reference) This information is helpful.

[See] Shows the reference page.
• This product contains the encryption algorithm “MISTY” developed by MITSUBISHI ELECTRIC CORPORATION.

• The Windows 2000, Windows XP (Home Edition/Professional Edition), and Windows Vista (Home Basic/Home Premium/Ultimate) are registered trademarks of Microsoft Corporation.
1-2 Precautions

■ Safety Operating information

- Observe general safety rules to avoid a fire hazard, injury, or burn.
- Do not run the engine in a close area. Exhaust gas contains carbon monoxide, an odorless and deadly poison.
- To avoid injury, do not place hands, feet, or tools near moving parts such as wheels or chain and sprockets.

■ Preliminary inspection

- Check if enough fuel is remaining in the fuel tank.
- Ensure that the battery is fully charged.
- Visually inspect wires and connectors for damage or loose connections. Check that the battery’s terminals are clean and secure.
- Check to see if the spark plugs are in good condition, and that the engine oil and coolant are full.
- Correct known problems such as a low battery, a bad electrical connection, or a loose fuel line before using KDS3.

1-3 Abbreviation

- **UV**: Utility Vehicle
- **ATV**: All Terrain Vehicle
- **RUV**: Recreation Utility Vehicle
2 Common Procedures for KDS3 Software

The following explains the procedures that are common to KDS3 software.

2-1 Displaying basic screens

The following explains the program flow from the start screen to the selection of diagnostic options.

Screen transition

Start the KDS3 software.

NOTICE Message

Main Menu

[With KIPASS]
If the KIPASS ECU (Smart System) is installed

[Without KIPASS]
If the KIPASS ECU is NOT installed

[KDS Main Menu]

[KIPASS]
When diagnosing or servicing the KIPASS ECU and its related parts

[KI-PASS Related Menu]

[FI]
When diagnosing or servicing the FI ECU and its related parts

[FI ECU Related Menu]

[ABS]
When diagnosing the ABS System (K-ACT-ABS)

[ABS Current failure]
2 Common Procedures for KDS3 Software

NOTE

- The ZG1400 is used in the following examples.

1 Plug the USB cable’s B-connector to the KDS converter.

2 Plug the USB cable’s A-connector into any available USB port on the computer.

3 Connect the KDS converter to the model.

4 Double-click the [Kawasaki Diagnostic System Ver. 3] icon on the desktop or select the [Kawasaki Diagnostic System Ver. 3] option from the Start Menu.

   The KDS software will start, and the “Safety Operating Information” and “Preliminary Inspection” message windows open.

5 Turn the ignition switch to the “ON” position.

   Power is supplied to the ECU (KIPASS ECU, FI ECU, and ABS ECU).
6 Read the on-screen messages and click [OK].

The function selection window is opens.

7 Click and select a diagnostic option.

- [With KIPASS]: Diagnoses a vehicle with the KIPASS ECU (Smart System).
- [Without KIPASS]: Diagnoses a vehicle without KIPASS ECU (Smart System).
- [ABS]: Diagnoses the ABS ECU.

• When you click [With KIPASS] or [Without KIPASS], the [KDS Main Menu] is opened. Proceed to the next step.

• When you click [ABS], the [ABS Current failure] window is opened. Refer to “3-3 ABS ECU” (Page 79).

**NOTE**

⚠️ *If communication with the KIPASS ECU (Smart System) has failed, an error message will be displayed. Supply power to the ECU by turning the ignition switch “ON”. Also check that communication cable is securely connected.*

(Reference) If you click [Exit], the KDS3 software terminates.
8. Check to see whether the currently connected model is shown correctly in the [Model Information] window. Select a diagnostic option.

- **[KIPASS]**: Diagnoses and services the KIPASS ECU (Smart System) and its related parts.
- **[FI]**: Diagnoses and services the FI ECU and its related parts.

**NOTE**

- If you selected the [Without KIPASS] option from the function selection window, the [KIPASS] button is disabled.

- If you click [KIPASS], the [KI-PASS Related Menu] window is opened. Refer to “3-1 KIPASS ECU (Smart System)” (Page 13).
- If you click [FI], the [FI ECU Related Menu] window is opened. Refer to “3-2 FI ECU” (Page 47).

*(Reference)* If you click [Return], you can return to the function selection window. If you click [Exit], the KDS3 software terminates.
2-2 Changing data units

You can change the unit of temperature, pressure, and speed. You can change these units from the [Real Time Monitor], [Actuator Tests], or [Failure history (FFD)] window.


1 From the Toolbar, select [View] - [Units].

The unit setup window is opened.

2 Select and change the unit if desired.
   • [Temperature]: °C or °F (C=°C, F=°F)
   • [Pressure]: mmHg, kPa, or kgf/cm²
   • [Speed]: km/h or mph

3 Click [OK] to return to the previous window.
3 Diagnosis and Registration

3-1 KIPASS ECU (Smart System)

The following explains how to diagnose the KIPASS ECU (Smart System) and its related parts, and how to operate the KDS3 software for their registration or replacement. Displays [KI-PASS Related Menu] window by referring to the “2 Common Procedures for KDS3 Software” (Page 8).

[KI-PASS Related Menu] window

<table>
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<tr>
<th>Option</th>
<th>Function</th>
<th>Reference page</th>
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</thead>
<tbody>
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<td>Unit Registration</td>
<td>Registers the steering lock ECU and FI ECU after their replacement.</td>
<td>37, 40</td>
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<tr>
<td>FOB Registration</td>
<td>Registers an additional FOB or registers an existing FOB again.</td>
<td>26</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Displays current failure information and inspection instructions for the parts related to the KIPASS ECU.</td>
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<td>Immobilizer Key Registration</td>
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<td>Deletes a tire air pressure sensor ID.</td>
<td>22</td>
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<tr>
<td>Real Time Monitor</td>
<td>Provides current vehicle information about the parts related to the KIPASS ECU (including engine, failure, and monitor information).</td>
<td>15</td>
</tr>
</tbody>
</table>
Displaying failure information

The [KIPASS Diagnosis] window displays current failure information and inspection instructions for the parts related to the KIPASS ECU (Smart System). Inspect and repair the failure by following the vehicle service manual.

From the [KI-PASS Related Menu] window, click the [Diagnosis] and the [KIPASS Diagnosis] window is opened.

**[KIPASS Diagnosis] window**

- **Failure information area**
  Displays current failure information about the parts related to the KIPASS ECU.
  - When you click failure information, the inspection instructions are shown in the message display area.
  - If there is no failure information, the message “No service codes exist” is displayed.

- **Message display area**
  Displays the inspection instructions.

- **[Return]**
  Closes this window and returns to the [KIPASS Related Menu] window.
3 Diagnosis and Registration

■ Displaying current model information

The [Real Time Monitor] window provides current vehicle information about the parts related to the KIPASS ECU (Smart System) (including engine, failure, and monitor information). This information can also be saved on a PC or printed.

From the [KI-PASS Related Menu] window, click [Real Time Monitor].

[Real Time Monitor] window

- **Display selection list**: Select a type of vehicle information to display.
- **Information area**: Displays system information.
- **[Return]**: Closes window and returns to the [KI-PASS Related Menu] window.
- **[Save]**: Saves the information.
- **[Print]**: Prints the information.
- **[Select]**: Selects the type of information separately.
Selecting vehicle information to display

1. From the display selection list, select the type of information to display.
   - [Engine Information]: Displays current engine information.
   - [Warning Information]: Displays current failure information.
   - [Monitoring Information]: Displays current monitor information.
   - [All Information]: Displays all current information.

2. To set the information type separately, click [Select].
   The information type is listed.

3. Select an item to display.
   Check the box of the item to display, or uncheck the box not to display the item.

4. Click [OK].
   To cancel the selection, click [Cancel].
5 Display information.

The window shows the information that you have selected from the display selection list.

(Reference) If you have unchecked items in Steps 3, they are not displayed here.
Saving information

The information is saved in a CSV file format.

(Reference) CSV file format
Information is saved as a comma delimited file which can be opened as a spreadsheet, database or text file.

1 Click [Save].
   The save selection window opens.

2 Select the type of information you wish to save, and click [OK].
   • [Save all items]: Saves all.
   • [Save selected item only]: Saves only the items you have selected. ([See] Page 16)
   A comment window opens.

3 Enter a comment you wish to record, and click [OK].
   The [Save As] window opens.

   **NOTE**
   ❍ The display window may vary slightly depending on the OS you are running.
4 Select a data storage location, and click [Save].

(Reference) • A file name (yy+mm+dd+"_"+time+2-digit value+".csv") is entered automatically. You may change the file name at any time.
• System information, ECU parts number, model name, model year, and specifications are recorded.

**File contents**

```
Real Time Monitor, Save all
Jan. 19, 2009

This is test.

FI ECU parts number, 21175-0127
Model information, ZG1400A8F, '08, EUR WVTA(FULL H), AU,
,ZG1400B8F, '08, AU

No. Service data, Value, Unit
1. Status of Smart system, Not checked
2. Status of Steering lock ECU ID confirmation, Not checked
3. Status of FI ECU ID confirmation, Not checked

---
```

A message window is displayed when you have saved the data.

5 Click [OK] to return to [Real Time Monitor].
Printing information

1 Click [Print].

The print item select window is opened.

2 Select the information you wish to print, and click [OK].

- [Print all items]: Prints all information.
- [Print selected item only]: Prints only the items you have selected. ([See] Page 16)

The [Print] window is opened.

NOTE

❖ The display window may vary slightly depending on the OS you are running.

(Reference) To cancel printing and return to the previous window, click [Cancel].

3 Select a printer you wish to use, and click [OK].

Information is printed.

When printing is complete, a confirmation window is displayed.
3 Diagnosis and Registration

4 Click [OK] to return to [Real Time Monitor].
■ Replacing the tire pressure sensor

When you replace the tire pressure sensor, delete the identification number (ID) of the old tire pressure sensor from the KIPASS ECU (Smart System). Then, register the ID of the new tire pressure sensor as follows.

1 Write down the ID number that is shown on the mounting surface of the new tire pressure sensor.

   NOTE
   ❍ You cannot retrieve the ID number after you have mounted the tire pressure sensor. Keep the tire pressure sensor ID in a safe location. It will be needed if a KIPASS ECU has failed and needs to be replaced. Otherwise the tire will have to be removed to locate the sensor’s ID numbers.

2 Remove the old tire pressure sensor, and mount a new one.

3 From the [KI-PASS Related Menu] window, click the [Tire Air Pressure Sensor ID Deletion] option.

   The tire pressure sensor ID deletion window is opened.
To delete a sensor’s ID, click either the front or rear wheel.

- **[Front Wheel]**: Deletes the ID of the tire pressure sensor mounted on the front wheel.
- **[Rear Wheel]**: Deletes the ID of the tire pressure sensor mounted on the rear wheel.

(Reference) Click [Return] to return to the [KI-PASS Related Menu].

The confirmation message is displayed.

5. Click [Yes].

Tire pressure sensor ID of the wheel you have selected is deleted from the KIPASS ECU, and the confirmation message is displayed.

6. Click [OK].

Returns to the tire pressure sensor ID deletion window.

7. Check to see that the tire pressure sensor ID is “00000000” for the wheel you have selected.

(Reference) You can also view it from the [Real Time Monitor] window. ([See] Page 15)
8 Click [OK] to return to [KI-PASS Related Menu].

9 From the [KI-PASS Related Menu] window, click the [Tire Air Pressure Sensor ID Registration] option.

   The tire air pressure sensor ID registration window is opened.

10 Click either the front or rear wheel to register the tire pressure sensor ID.

   - [Front Wheel]: Registers an ID of the tire pressure sensor mounted on the front wheel.
   - [Rear Wheel]: Registers an ID of the tire pressure sensor mounted on the rear wheel.

(Reference) If you click [Return], you return to the [KI-PASS Related Menu] window.

   The ID entry window is opened.

11 Enter the ID of the new tire pressure sensor, and click [Registration].

   The confirmation message is displayed.

(Reference) If you click [Return], the tire pressure sensor ID is not registered and you return to the tire pressure sensor ID registration window again.
3 Diagnosis and Registration

12 Click [Yes].

The tire air pressure sensor ID is registered, and the confirmation message is displayed.

13 Click [OK] to return to [Tire Air Pressure Sensor ID Registration].

14 Click [OK] to return to [KI-PASS Related Menu].

You return to the [KI-PASS Related Menu] window.

15 Check to see that the new tire pressure sensor ID has been registered by opening the tire pressure sensor ID deletion window.

(Reference) You can also check it from the [Real Time Monitor] window. ([See] Page 15)
3 Diagnosis and Registration

Registering FOBs

You can register an additional FOB or re-register a deactivated FOB.
When you add a fob, write down its ID number that is printed on the package.
If you are re-registering a deactivated FOB, be sure to have all currently registered FOBs available.

NOTE

○ To re-register or add a new FOB, an already registered FOB must be used to be able to turn ON the vehicle to start the process. If you do not have registered FOB, you must replace the KIPASS ECU (Smart System). You should register at least two FOBs so that you can add a FOB even if you have lost one.

○ You can register up to six FOBs. Two FOBs are registered and attached to the motorcycle during shipment.

○ Once the FOB information is registered, it cannot be deleted from the KIPASS ECU.

○ Place an FOB close to the vehicle (within 1.5 m) during the registration process.
Registering an additional FOB

1. Write down the ID number that is printed on the package of the new FOB.

   **NOTE**
   
   ❍ The identification (ID) number of the FOB is printed on the FOB package only. Write down and keep this ID in a safe place. As the FOB ID is required when you replace a KIPASS ECU.

2. Open the [KI-PASS Related Menu] window.
   [See] “2 Common Procedures for KDS3 Software” (Page 8)

3. From the [KI-PASS Related Menu] window, click the [FOB Registration] option.
   
   The [FOB Registration] window is opened.
4 Click [Additional Registration].

The [Additional FOB registration] window is opened.

(Reference) The total number of FOBs registered and the number of FOBs that can be added may not be immediately seen after a registration process. Restart KDS and the motorcycle to see the number.

5 Enter the FOB ID.

(Reference) If you click [Return], you return to the previous [FOB Registration] window.

6 Make sure that the FOB you are adding is close to the KIPASS ECU (within 1.5 m), and click [Additional Registration].

When the registration process is done successfully, a confirmation message is displayed.

7 Click [OK] to open [FOB Registration].
3 Diagnosis and Registration

8 Check the FOB registration number.

9 Click [OK] to return to [KI-PASS Related Menu].
Re-registering FOBs

You will need to disable FOB if it has been lost.

When you re-register all current FOBs (except for the one that is lost), the lost FOB will automatically be disabled. If the lost FOB is found, you can re-register it for use.

1. **Open the [KI-PASS Related Menu].**
   
   [See] “2 Common Procedures for KDS3 Software” (Page 8)

2. **Click [FOB Registration].**
   
   The [FOB Registration] window opens.
3 Click [Re-registration].
The confirmation window is displayed.

4 Make sure that all the FOBs are close to the KIPASS ECU (within 1.5 m), and click [OK].
The number of FOBs detected by the KIPASS ECU are indicated, and the confirmation window is displayed.

(Reference) If you click [Cancel], you return to the previous [FOB Registration] window.

5 Check that the number of confirmed FOBs corresponds with the number of FOBs you have on hand, click [Yes] to continue.
When the re-registration is successful, the confirmation message is displayed.

(Reference) If you select [No], the current re-registration is canceled and you are returned to the [FOB Registration] window.
6 Click [OK] to return to [FOB Registration].

7 Click [OK] to return to [KI-PASS Related Menu].

(Reference) After the re-registration, the lost FOB will be disabled for use. However, the information about the FOB still remains in the KIPASS ECU (Smart System). The number of FOBs that you can add does not increase, and the number of currently registered FOBs is reduced. If the lost FOB is found, you must re-register it rather than performing an additional FOB registration. The lost FOB's information is restored to active status and the number of FOBs that can be added does not change.
Registering FOB’s immobilizer key (transponder)

You can register FOBs as immobilizer keys. Each FOB has immobilizer key functions. First, prepare an FOB for immobilizer registration. Temporarily register the FOB and then confirm its registration.

**NOTE**

- You can use the immobilizer functions only after you have registered an FOB as the immobilizer key.

(Reference) The immobilizer key functions are controlled by the steering lock ECU that is installed in the steering lock unit close to the key cylinder.

1. From the [KI-PASS Related Menu], click the [Immobilizer Key Registration] option.
   
   The [Immobilizer Key Registration] window opens.

2. Click [Immobilizer Key Registration].
   
   The immobilizer key registration window opens.

**Immobilizer key number**

The number of currently registered keys and the number of temporarily registered keys are shown.
3 Register an immobilizer key temporarily.

When the window shown at right is still open, (slide and release a small lock and) remove the mechanical key from the FOB. Then, place the concave part of FOB (where the mechanical key was mounted) onto the convex part of the steering lock unit.

When the FOB is recognized correctly, it is temporarily registered as an immobilizer key and its confirmation message is displayed.

(Reference) If you click [Stop Registration], the temporary registration is canceled and you return to the [Immobilizer Key Registration] window.

NOTE

- ZG1400C/D has a spare FOB in addition to the primary FOB (portable electronic key). If the primary FOB is lost, the spare FOB can be used as an emergency key. The spare FOB has the immobilizer function, but it does not have the KIPASS function. Therefore, when using the spare FOB, perform the following procedures.
  - Fit the “Triangle Mark” corner of the spare FOB on the projection of the ignition switch so that the “Kawasaki” logo of the spare FOB faces the front, then key knob can be operated after about 2 seconds when the key knob is pushed.
3 Diagnosis and Registration

4 Click [OK].
   The [Immobilizer Key Registration] window is opened.

5 Check the [Registered Key Number (Temporally Registration)] value.

6 To temporarily register another FOB as the immobilizer key, repeat Steps 2 to 5.

7 After you have temporarily registered all immobilizer keys, click the [Confirm changed item].
   The confirmation message is displayed.
8 Click [Yes].

The registration is secured, and the confirmation message is displayed.

9 Click [OK].

The [Immobilizer Key Registration] window opens.

10 Check the [Registered Key Number (Confirmation)] and [Registered Key Number (Temporally Registration)].

11 Click [OK] to return to [KI-PASS Related Menu].
3 Diagnosis and Registration

■ Replacing the FI, steering lock, or KIPASS ECU (Smart System)

Replacing the Fuel Injection (FI) ECU

Whenever an FI ECU has been replaced it must be registered with the KIPASS ECU. All system related service codes will be lost.

1 Replace the FI ECU.

2 Call the [KI-PASS Related Menu].

   [See]  “2 Common Procedures for KDS3 Software” (Page 8)

3 Click the [Unit Registration].

   The registration window opens.
4 Check the [FI ECU] box, and click [Registration].
   The confirmation window is displayed.

5 Click [Yes].
   When the FI ECU is registered successfully, the confirmation message is displayed.

6 Click [OK] to return to the registration window.

7 Click [Return].
   You are prompted to restart both the KDS3 software and motorcycle.
3 Diagnosis and Registration

8 Click [OK].

The KDS3 software terminates.

9 First turn ON the motorcycle then restart the KDS3.

Now start the engine.

**NOTE**

❖ If the engine does not start, the FI ECU may not be correctly registered. Re-register the FI ECU.

10 Check the FI ECU part number.
Replacing the steering lock unit

If you have replaced the steering lock unit, you must register the steering lock ECU mounted in the steering lock unit. Also, you must restart both the vehicle and the KDS3 software after completing the registration process. An FOB must be registered as the immobilizer key.

**NOTE**

- **Differing from the ordinary procedure, do not connect the USB cable to the PC before you start up the KDS3 software.**

*(Reference)* The immobilizer key functions are controlled by the steering lock ECU that is installed in the steering lock unit close to the key cylinder. After you have replaced the steering lock unit, you need to register the FOB as an immobilizer key.

1. **Replace the old switch assembly.**

2. **Connect the USB cable to the computer and Adapter and start KDS3, stop at the System screen.**
   
   [See] “2 Common Procedures for KDS3 Software” (Page 8)

3. **Depress the ignition switch but do not turn it to the ON position, select the [With KIPASS] option.**

   **NOTE**

   - **Do not turn the ignition switch to the “ON” position, and depress the switch.**
   - **Message “Steering lock ECU ID is not confirmed” is displayed, but this is not an error. Proceed to Step 4.**
4 Click the [Steering lock unit registration] button.
The confirmation window is displayed.

5 Click [Yes].
When the steering lock ECU is registered successfully, the confirmation message is displayed.

6 Click [OK].
You are prompted to restart both the KDS3 software and vehicle, and the confirmation message is displayed.

7 Click [OK].
8 **Restart both the KDS3 software and vehicle.**

Restart the vehicle and KDS3 software referring to “Common Procedures for KDS3 Software” (Page 8).

To restart the vehicle, (1) Turn the ignition switch to the “OFF” position, (2) Depress the ignition switch when the key marker disappears from the meter, and (3) Turn the ignition switch to the “ON” position again.

9 **Turn the ignition switch to the “ON” position, and check to see that the initial meter operation is normal.**

If you can turn the ignition switch to the “ON” position, the steering lock has been released. It shows that the steering lock ECU has been correctly registered.

10 **Register FOB as an immobilizer key.**

[See] “Registering FOB’s immobilizer key (transponder)” (Page 33)
3 Diagnosis and Registration

Replacing the KIPASS ECU (Smart System)

When ever the KIPASS ECU has been replaced it must be registered with the other ECUs and components: FI ECU, Steering Lock ECU. Tire Pressure Sensors and FOB Immobilizer keys.

NOTE

❍ A replacement KIPASS ECU is delivered with two registered FOBs. You do not need to register the transmitter side of the FOBs, however the transponder side (immobilizer key) must be registered.

1 Replace the old KIPASS ECU (Smart System).

2 Register the steering lock ECU, and register the Immobilizer Keys on the new FOBs (included in the KIPASS ECU package).

   Follow steps 2 to 10 of “Replacing the steering lock unit” (Page 40).

   (Reference) Register other FOBs if necessary.

3 Register the FI ECU.

   Follow steps 2 to 10 of “Replacing the Fuel Injection (FI) ECU” (Page 37).

4 Register the tire pressure sensor(s).

   [See] “Replacing the tire pressure sensor” (Page 22)
## Replacement and operation of the parts related to the KIPASS ECU (Smart System)

The following explains how to replace and operate the parts related to the KIPASS ECU (Smart System). Actual operations may vary depending on the combination of parts you replace at the same time.

<table>
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<th>No.</th>
<th>Replacement parts</th>
<th>Operation and reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steering lock unit</td>
<td>KIPASS ECU</td>
</tr>
</tbody>
</table>
| 1   | ●                 | –             | –      | –    | 1. Replace the steering lock unit, and register the FOBs as immobilizer keys.  
[S]ee “Replacing the steering lock unit” (Page 40) |
| 2   | –                 | ●             | –      | ●    | ✓  A replacement KIPASS ECU is delivered with two FOBs. You do not need to register the transmitter side of the FOBs, however you will need to register the Immobilizer Keys on the new FOBs.  
1. Replace the KIPASS ECU, and then register the steering lock ECU, FOBs immobilizer keys, FI ECU, and tire pressure sensors.  
[S]ee “Replacing the KIPASS ECU (Smart System)” (Page 43) |
| 3   | –                 | –             | ●      | –    | 1. Replace the FI ECU.  
[S]ee “Replacing the Fuel Injection (FI) ECU” (Page 37) |
| 4   | –                 | –             | –      | –    | 1. Replace the tire pressure sensors.  
[S]ee “Replacing the tire pressure sensor” (Page 22) |
### Diagnosis and Registration

#### No. Replacement parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Steering lock unit</th>
<th>KIPASS ECU</th>
<th>FI ECU</th>
<th>FOBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>●</td>
<td>●</td>
<td>–</td>
<td>●</td>
</tr>
<tr>
<td>6</td>
<td>–</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>7</td>
<td>●</td>
<td>–</td>
<td>●</td>
<td>–</td>
</tr>
</tbody>
</table>

#### Operation and reference page

- **5**
  - A replacement KIPASS ECU is delivered with two FOBs. You do not need to register the transmitter side of the FOBs, however you will need to register the Immobilizer Keys on the new FOBs.
  
  1. Replace the steering lock unit.
  2. Replace the KIPASS ECU and register the steering lock ECU, FOBs immobilizer keys, the FI ECU and tire pressure sensors.
  
  [See] “Replacing the KIPASS ECU (Smart System)” (Page 43)

- **6**
  - A replacement KIPASS ECU is delivered with two FOBs. You do not need to register the transmitter side of the FOBs, however you will need to register the Immobilizer Keys on the new FOBs.
  
  1. Replace the KIPASS ECU.
  
  [See] “Replacing the KIPASS ECU (Smart System)” (Page 43)

- **7**
  - 1. Replace the steering lock unit and FI ECU.
  2. Register the steering lock ECU.
  
  [See] “Replacing the steering lock unit” (Page 40), Steps 2 to 9
  
  3. Register the FI ECU.
  
  [See] “Replacing the Fuel Injection (FI) ECU” (Page 37), Steps 2 to 10
  
  4. Register FOBs immobilizer keys.
  
  [See] “Registering FOB’s immobilizer key (transponder)” (Page 33)
# Diagnosis and Registration

A replacement KIPASS ECU is delivered with two FOBs. You do not need to register the transmitter side of the FOBs, however you will need to register the Immobilizer Keys on the new FOBs.

1. Replace the steering lock unit, KIPASS ECU, and FI ECU.
2. Register FOBs immobilizer keys.
   
   [See] “Registering FOB’s immobilizer key (transponder)” (Page 33)
3. Turn the ignition switch to the “ON” position, and check to see that the initial meter operation is normal.

<table>
<thead>
<tr>
<th>No.</th>
<th>Replacement parts</th>
<th>Operation and reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steering lock unit</td>
<td></td>
</tr>
</tbody>
</table>
| 8   | ●                 | A replacement KIPASS ECU is delivered with two FOBs. You do not need to register the transmitter side of the FOBs, however you will need to register the Immobilizer Keys on the new FOBs.  
   1. Replace the steering lock unit, KIPASS ECU, and FI ECU.  
   2. Register FOBs immobilizer keys.  
   [See] “Registering FOB’s immobilizer key (transponder)” (Page 33)  
   3. Turn the ignition switch to the “ON” position, and check to see that the initial meter operation is normal. |
|     | KIPASS ECU        |                             |
|     | ●                 |                             |
|     | FI ECU            |                             |
|     | ●                 |                             |
| 9   | _                 | 1. Register the FOBs transmitter and Immobilizer Keys.  
   [See] “Registering FOBs” (Page 26) |
3 Diagnosis and Registration

3-2 FI ECU

The following explains how to diagnose the FI ECU and its related parts, and how to operate the KDS3 software for parts operation test. You can operate the KDS3 software from the [FI ECU Related Menu]. For the procedure to call the [FI ECU Related Menu], refer to “2 Common Procedures for KDS3 Software” (Page 8).

[FI ECU Related Menu] window

<table>
<thead>
<tr>
<th>Option</th>
<th>Function</th>
<th>Reference page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Time Monitor</td>
<td>Displays current engine, sensor, and historical failure information.</td>
<td>56</td>
</tr>
<tr>
<td>Real Time Monitor (Graphs)</td>
<td>Displays selected information in a graph format.</td>
<td>74</td>
</tr>
<tr>
<td>Actuator Tests</td>
<td>Tests the function of ECU controlled components.</td>
<td>63</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>Displays current failure information.</td>
<td>48</td>
</tr>
<tr>
<td>Erase Stored Service Codes</td>
<td>On some models you can use erase stored failure information.</td>
<td>54</td>
</tr>
</tbody>
</table>
### Displaying failure information

The [FI ECU Diagnosis] window displays current failure information. Refer to the service manual for inspection and repair procedures.

Select [Diagnosis] in [FI ECU Related Menu].

**[FI ECU Diagnosis] window**

- **Failure information area**
- **Message display area**
  - Displays the inspection instructions.
- **[Return]**
  - Closes this window and returns to the [KI-PASS Related Menu] window.

**[Failure history]**
- Displays past failure information.
### NOTE

*With some failures KDS3 cannot communicate with the ECU.*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immobilizer failure</td>
<td>In case of immobilizer component failure KDS3 cannot communicate with the ECU although the failure is recorded in the history. The problem must be fixed before KDS3 can communicate. However, a warning will flash in the instrument panel of the vehicle to indicate there is a problem. Follow the service manual instructions to diagnose and repair.</td>
</tr>
<tr>
<td>Sensor short</td>
<td>If the 5V sensor feed is internally shorted to ground, KDS3 cannot communicate with the ECU. In this case there is no visual indication of a FI related problem as the FI warning light does not illuminate. The tell tale (audible) sign here is that the fuel pump does not operate when the ignition switch is turned on. To identify the source of this problem, connect fuel pump wiring &amp; fuel pipe and turn on the ignition switch. One by one disconnect each 5V powered sensor, when the faulty sensor is disconnected you should hear the fuel pump start up.</td>
</tr>
</tbody>
</table>
Displaying past failure information

The [Failure history FFD] window displays past failure information, which can be printed or saved to a PC. Select [Failure history] in [FI ECU Diagnosis].

(Reference) Up to a maximum of three failure records can be displayed, with some models limited to only two.

[Failure history (FFD)] window

- **[Print]** Prints past failure information.
- **[Return]** Closes this window and returns to the [FI ECU Diagnosis] window.
- **[Save]** Saves past failure information.

**Display selection list**

- **[Engine Information]**: Displays current engine information.
- **[Warning Information]**: Displays current failure information.
- **[Monitoring Information]**: Displays current monitor information.
- **[All Information]**: Displays all current information.

**Failure information area**
3 Diagnosis and Registration

Saving past failure information

Past failure information is saved as a CSV file.

(Reference) CSV file format
Information is saved a comma delimited file which can be opened as a spreadsheet, database or text file.

1 Click [Save].

A comment window opens.

2 Enter additional information (a comment) if you wish to record it together with past failure information.

3 Click [OK].

A [Save As] window opens.

NOTE

❖ The display window may vary slightly depending on the OS you are running.
4 **Select a data storage location, and click [Save].**

*(Reference)* • A file name (yy+mm+dd+"_"+time+2-digit value+".csv") is entered automatically.
• The file name can be edited as required. The FI ECU part number and applicable model information are recorded together with the data and any comments.

**File contents**

<table>
<thead>
<tr>
<th>Failure History (FFD), Save all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 19, 2009</td>
</tr>
</tbody>
</table>

This is test.

FI ECU parts number, 21175-0117
Model information, ZG1400A8F, '08,EUR WVTA(FULL H)

No. Service data, Value, Unit
1. Record 1: Cranking SW, Off (Released),
2. Record 1: Emergency stop SW, Off (Released),
3. Record 1: Throttle opening angle, 0.68, V

When the information is saved, a confirmation message is displayed.

5 **Click [OK] to return to [Failure history (FFD)].**
Printing past failure information

1. Click [Print].
   The [Print] window opens.

   **NOTE**
   ❍ *The display window may vary slightly depending on the OS you are running.*

2. Select a printer you wish to use, and click [OK].
   When printing is complete, a confirmation window is displayed.

3. Click [OK] to return to [FI ECU Diagnosis].
Erasing past failure information

On some models past failure information can be erased.

NOTE

❍ Not all FI ECU models support this function.

1 Select [Erase Stores Service Codes] in the [FI ECU Related Menu].

The confirmation message is displayed.

2 Click [Yes].

When past failure information are erased, the confirmation message is displayed.
3 Click [OK] to return to the [FI ECU Related Menu].

4 Exit KDS3, turn the ignition switch OFF then ON and restart KDS3.

5 Open the [Failure history (FFD)] window, and check to see that past failure information has been erased.

[See] “Displaying past failure information” (Page 50)
Information display selection

The [Real Time Monitor] displays current engine, sensor, and historical failure information, which can be printed or saved to a PC.
Select [Real Time Monitor] in [FI ECU Related Menu].

[Real Time Monitor] window

- **Display selection list**
- **Information area**
- **[Return]** Closes this window and returns to the [KIPASS Related Menu].

[Save]  [Select]  [Print]

Select specific items for display.
3 Diagnosis and Registration

Information to display selection

1 From the display selection list, select type of information required.
   - [Engine Information]: Displays current engine information.
   - [Warning Information]: Displays current failure information.
   - [Monitoring Information]: (This function is not supported now.)
   - [All Information]: Displays all current information.

2 To select individual items, click [Select].
   A new selection window opens.

3 Select the display items.
   Check a box to display its item, or uncheck the box not to display.

4 Click [OK].
   Now, the display items have been selected.
   To cancel the item display, click [Cancel].
5 Check the displayed information.
Selected items should now displayed.
(Reference) If you have unchecked some items in Step 3, they are not displayed here.
3 Diagnosis and Registration

Saving information

Information is saved as a CSV file.

1 Click [Save].

   The saving information selection window is opened.

2 Select a save option and click [OK].

   - [Save all items]: Saves all information.
   - [Save selected item only]: Saves only the items you have selected. ([See] Page 16)

   A comment window opens.

3 Enter additional information (a comment) if you wish to record it, and click [OK].

   A [Save As] window opens.
4 Select a data storage location, and click [Save].

(Reference) • A file name (yy+mm+dd+“_”+time+2-digit value+“.csv”) is entered automatically. The file name can be edited as required.
• The FI ECU part number and applicable model information are recorded together with the data and any comments.

File contents

Real Time Monitor, Save all
Jan. 19, 2009
This is test.
FI ECU parts number, 21175-0127
Model information, ZG1400A8F, '08,EUR WVTA(FULL H), AU
, ZG1400B8F, '08, AU
No. Service data, Value, Unit
1, Status of Smart system, Not checked
2, Status of Steering lock ECU ID confirmation, Not checked
3, Status of FI ECU ID confirmation, Not checked

When you have saved the data, a message window is displayed.

5 Click [OK] to return to [Real Time Monitor].
Printing information

You can print out information as follows.

1. **Click [Print].**
   
   The print options window opens.

2. **Select a print option, and click [OK].**
   
   - **[Print all items]:** Prints all information.
   - **[Print selected item only]:** Prints only the items you have selected. ([See] Page 16)

   The [Print] window opens.

   **NOTE**

   ☚ The display window may vary slightly depending on the OS you are running.

(Reference) To cancel printing and return to the previous window, click [Cancel].
3 Select a printer you wish to use, and click [OK].
When printing is complete, a confirmation window is displayed.

4 Click [OK] to return to [Real Time Monitor].
3 Diagnosis and Registration

■ Testing operation of parts

The function of some ECU controlled components can be tested. Select [Actuator Tests] in the [FI ECU Related Menu].

Key points

○ This manual describes the operational testing of several ECU controlled components, however some of these tests may not be applicable for all models.

[See] "Supported Actuator Test by Model" (Page 87 and 88)
[Actuator Tests] window

Elapsed time display
Test selection list
Display selection list
Information area
Test status area
Displays the current test status.

[Start]
Starts the test.

[Stop]
Stops the test.

[Return]
Closes this window and returns to the [FI ECU Related Menu].
Cylinder drop test (injector off)

1. Select the cylinder you want to drop test by choosing the relevant injector number from the [Select Actuator Test] list.

2. Select the [Engine Speed] from the pull down menu to monitor engine rpm during the test.

3. Keep the engine idling.

4. Click [Start].

The test starts, and it will stop after approximately 5 seconds. Watch out for any changes in [Engine Speed] or engine sound during this test.

(Reference) • During the test elapsed time is indicated, and the test can be stopped at any time by clicking [Stop].
5 After the test, click [Return] to get back to [FI ECU Related Menu].
Testing the fuel pump

1. Select [Fuel Pump Test] from the test selection list.

2. Make sure that engine is stopped, and click [Start].
   The test starts, and it will stop after approximately 5 seconds.
   Listen to the fuel pump sound carefully during the test.
   If the pump sound is not heard, the pump and/or its electrical circuit may have failed.
   (Reference) During the test elapsed time is indicated, and the test can be stopped at any time by clicking [Stop].

3. After the test, click [Return] to get back to [FI ECU Related Menu].
Testing ignition coil operation

1. Select the ignition coil you want to test by choosing the relevant one from the [Select Actuator Test] list.

2. Before performing an ignition coil test, remove the spark plugs from cylinder head.

3. Click [Start].

   The test starts, and it will stop after approximately 5 seconds.

   Confirm spark at plug.

   (Reference) • During the test elapsed time is indicated, and the test can be stopped at any time by clicking [Stop].
4  After the test, click [Return] to get back to [FI ECU Related Menu].
Testing the sub-throttle valve actuator

1. Select [Sub-Throttle Actuator Test] from the test selection list.

2. Select [Sub-Throttle Opening Angle] from the pull down menu to monitor its operation during the test.

3. Make sure that engine is stopped, and click [Start].

The test starts, and it will stop after approximately 5 seconds. Monitor the voltage of the [Sub-Throttle Opening Angle] and listen for the sound of actuator operation.

If the voltage goes above 3.8 volts, the actuator is operating correctly. Refer to the data in the service manual.

(Reference) • During the test elapsed time is indicated and the test can be stopped at any time by clicking [Stop].
4. After the test, click [Return] to get back to [FI ECU Related Menu].
Testing the secondary air solenoid

1. Select the [Second Air Solenoid Test] from the test selection list.

2. Make sure that engine is stopped, and click [Start].

   The test starts, and it will stop after approximately 5 seconds.

   Listen to the second air solenoid sound carefully during the test.

   If the operation sound is not heard, the second air solenoid or its circuit may have failed.

   (Reference) • During the test elapsed time is indicated and the test can be stopped at any time by clicking [Stop].

3. After the test, click [Return] to get back to [FI ECU Related Menu].
Testing the oil control valve solenoid

1. Select the [OCV Solenoid Test] from the test selection list.

2. Make sure that engine is stopped, and click [Start].
   The test starts, and it will stop after approximately 5 seconds.
   Listen to the sound of the oil control valve solenoid carefully during the test.
   If the operation sound is not heard, the oil control valve solenoid or its circuit may have failed.
   (Reference) • During the test elapsed time is indicated and the test can be stopped at any time by clicking [Stop].

3. After the test, click [Return] to get back to [FI ECU Related Menu].
Displaying current engine status graphs

You can graph the current engine status and sensor values detected by the FI ECU.
You can select up to three parameters and display the last 20 seconds of their data. The graph can also be printed.
Select [Graphs] in [FI ECU Related Menu].

[Graphs] window

- [Start]/[Stop]: Starts or stops to capture data.
- [Print]:
- [Select]: Select a parameter for data capturing.
- [Return]: Closes this window and returns to the [KI-PASS Related Menu].
3 Diagnosis and Registration

Selecting parameters for data capture.

1 Click [Select].

   A parameter window to capture data opens.

2 Select parameters to capture data, and click [OK].

   (Reference) If you click [Cancel], your selection is canceled.
Starting to capture data from FI ECU

1 Start to capture data.
   Click [Start].
   Data capturing from the ECU starts, and graphs are created.

2 To end data capturing, click [Stop].
Printing graphs
You can print out graphs as follows.

1 Click [Print].
   The print start time window opens.

2 Select or directly enter a print start time.
   Message “Select or edit start time 0 and X (X = Captured time).” is displayed.
   Select or enter a start time within the allowable range displayed.
   This list is redisplayed every 10 seconds.

3 Click [OK].
   The [Print] window opens.

   **NOTE**
   ✗ The display window may vary slightly depending on the OS you are running.

   **Reference**  To cancel printing and return to the previous window, click [Cancel].
4 Select a printer you wish to use, and click [OK].
   When printing is complete, a confirmation message is displayed.

5 Click [OK] to return to [Graphs].
3-3 ABS ECU

The following explains how to display failure information of the ABS ECU and its related parts. You can display this information in the [ABS Current failure] window. To open the [ABS Current failure] window, refer to “2 Common Procedures for KDS3 Software” (Page 8).

The [ABS Current failure] window displays current failure information. Inspect and repair the failure by following the vehicle service manual.

**[ABS Current failure] window**

- **Failure information area**
  Displays current failure information about the parts related to the ABS ECU. If there is no failure information, the message “No service codes exist” is displayed.

- **[Return]**
  Closes this window and returns to the [Main Menu].

- **[Intermittent failure]**
  Displays past failure information.
Displaying past failure information

You can display past failure information.
Select [Intermittent failure] in [ABS Current failure].

[ABS Intermittent failure] window

Failure information area
Displays past failure information about the parts related to the ABS ECU.
If there is no failure information, the message “No service codes exist” is displayed.

[Erase Stored Service Codes]
Erases past failure information.

[Return]
Closes this window and returns to the [ABS Current failure] window.
3 Diagnosis and Registration

Erasing past failure information

You can erase past failure information.

1 Select [Intermittent failure] in [ABS Current failure].
   The [ABS Intermittent failure] window opens.

2 Select [Erase Stored Service Codes] in [ABS Intermittent failure].
   The confirmation message is displayed.

3 Click [Yes].
   When the information is erased, the confirmation message is displayed.
4 Click [OK] to return to [ABS Intermittent failure].

5 Check to see that past failure information has been erased in the [ABS Intermittent failure] window.

[See] “Displaying past failure information” (Page 80)
## 4 Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software will not install.</td>
<td>Incompatible PC.</td>
<td>Use a PC with 32 bit Operating System (OS), KDS3 does not work on 64 bit OS.</td>
</tr>
<tr>
<td>Software does not operate.</td>
<td>Software is not installed correctly.</td>
<td>Install the KDS3 again and confirm KDS3 is installed correctly.</td>
</tr>
<tr>
<td>Communication error</td>
<td>Main switch is not turned ON.</td>
<td>Turn ON the main switch.</td>
</tr>
<tr>
<td></td>
<td>Communication cable is connected to the wrong connector.</td>
<td>Use this instruction manual to identify the correct type, and location of the KDS3 connector. On some models there are two identical 4-pin connectors, one for KDS and the other for programming the ECU during assembly. Ensure that the correct 4-pin connector is used.</td>
</tr>
<tr>
<td></td>
<td>The cables are broken or shorted.</td>
<td>Replace cables.</td>
</tr>
<tr>
<td></td>
<td>Cannot communicate with vehicle.</td>
<td>Adapter driver not installed or is installed incorrectly. Reinstalled Adapter driver.</td>
</tr>
<tr>
<td></td>
<td>PWC lanyard is not installed.</td>
<td>Install lanyard.</td>
</tr>
<tr>
<td></td>
<td>ECU does not match KDS3 database due to an old or outdated version of software.</td>
<td>Always use the current version of KDS3. The software and database are updated when new models are released.</td>
</tr>
<tr>
<td>Font is not shown correctly.</td>
<td>The software language used is not compatible with the PC.</td>
<td>Change the KDS3 language type to correspond to the PC's language type.</td>
</tr>
</tbody>
</table>
## General Terminologies

<table>
<thead>
<tr>
<th>Item</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>Abbreviation for <em>Antilock Brake System</em>.</td>
</tr>
<tr>
<td>DFI system</td>
<td>Abbreviation for <em>Digital Fuel Injection system</em>.</td>
</tr>
<tr>
<td>ECU</td>
<td>Abbreviation for <em>Electronic Control Unit</em>.</td>
</tr>
<tr>
<td>FI</td>
<td>Abbreviation for <em>Fuel Injection system</em>.</td>
</tr>
<tr>
<td>KIPASS</td>
<td>Abbreviation for <em>Kawasaki Intelligent Proximity Activation Start System</em>.  This device contains an electronic authentication system that can communicate with portable devices (such as an FOB and Smart Key).</td>
</tr>
<tr>
<td>MC</td>
<td>Abbreviation for <em>Motorcycle</em>.</td>
</tr>
<tr>
<td>OCV</td>
<td>Abbreviation for <em>Oil Control Valve</em>. A valve that advances or delays the cam vertex position by switching the oil flow path, and changes the open or close timing of the intake and exhaust valve. It contains a solenoid valve.</td>
</tr>
<tr>
<td>ETV</td>
<td>Electronic Throttle Valve system is a system which opens and closes the throttle valve electrically.</td>
</tr>
<tr>
<td>KTRC</td>
<td>Kawasaki TRaction Control calculates the slip level of the rear wheel and may adjust engine output automatically.</td>
</tr>
<tr>
<td>OS</td>
<td>Abbreviation for <em>Operating System</em> which relates to a personal computer system software of the personal computer and microprocessor.</td>
</tr>
<tr>
<td>PWC</td>
<td>Abbreviation for <em>Personal Water Craft</em>.</td>
</tr>
<tr>
<td>Application</td>
<td>Application software</td>
</tr>
<tr>
<td>Smart System</td>
<td>The KIPASS ECU device.</td>
</tr>
</tbody>
</table>
## 5 Terminologies

<table>
<thead>
<tr>
<th>Item</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software</strong></td>
<td>A program which operates on a personal computer.</td>
</tr>
<tr>
<td><strong>Driver</strong></td>
<td>The driver software</td>
</tr>
<tr>
<td><strong>PC</strong></td>
<td>Abbreviation for “Personal Computer”</td>
</tr>
<tr>
<td><strong>K-ACT (Kawasaki Advanced Coactive-braking Technology Anti-lock Brake System)</strong></td>
<td>When applying the front brake lever, the left and right front brake calipers and the rear caliper are activated. When depressing the rear brake pedal, the rear brake caliper and right front brake caliper are activated.</td>
</tr>
<tr>
<td><strong>FOBs</strong></td>
<td>FOBs, Smart Keys A device that has the telecommunication functions with the KIPASS ECU (Smart System) and the motorcycle immobilizer functions.</td>
</tr>
<tr>
<td><strong>K-ACT</strong></td>
<td>Abbreviation for Kawasaki Advanced Coactive-braking Technology. When a single brake lever (for the front wheel, for example) is gripped, another brake (for the rear wheel, for example) is also controlled by the “K-ACT” mechanism. The ABS system with this “K-ACT” mechanism is called the “K-ACT-ABS” system.</td>
</tr>
</tbody>
</table>
## Real Time Monitor Terminologies

<table>
<thead>
<tr>
<th>Item</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| **Starter Switch**                        | **ON:** The starter button is pressed (starter motor turning).  
|                                           | **OFF:** The starter button is not pressed.                                 |
| **Engine Emergency Stop**                 | **ON:** The side stand switch circuit is activated to stop engine (not the engine stop switch).  
|                                           | **OFF:** At all other times                                                 |
| **Engine stopped**                        | **ON:** Engine is not running.  
|                                           | **OFF:** Engine is running.                                                 |
| **Engine Starting Mode**                  | **ON:** Engine is cranking and r/min is below idle.                          
|                                           | **OFF:** Engine stopped, or r/min is at idle or above.                      |
| **Unknown Item**                          | This is a software error, please ignore this item.                          |
| **Accelerator Position Sensor Failure**   | This refers to the throttle pulley sensor which is rider actuated via cables, not to be confused with the ECU controlled throttle valve sensor.  
| (VN1700 models only)                      |                                                                             |
| **Battery Voltage Malfunction**           | Activated if battery voltage drops below 6.6V                               |
| **ECU Failure (VN1700 models only)**      | The ECU can monitor its internal Electronic Throttle Valve (ETV) control circuit. An ECU failure can be logged if a problem occurs with any of the following:  
|                                           | • CPU verification  
|                                           | • TPS input circuit  
|                                           | • CPU circuit  
|                                           | • ETV relay  
|                                           | • Limp home mode  
|                                           | [See] “Displaying failure information” (Page 48)                            |
# Supported Actuator Test by Model

<table>
<thead>
<tr>
<th>Item</th>
<th>Injector</th>
<th>ISC solenoid</th>
<th>Fuel pump</th>
<th>Ignition coil</th>
<th>Sub-throttle actuator</th>
<th>Second air solenoid</th>
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<th>Discharger pump</th>
<th>Radiator fan</th>
<th>Oil control valve solenoid drive</th>
<th>ETV</th>
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## 6 Supported Actuator Test by Model

<table>
<thead>
<tr>
<th>Item</th>
<th>Model name</th>
<th>Injector</th>
<th>ISC solenoid</th>
<th>Fuel pump</th>
<th>Ignition coil</th>
<th>Sub-throttle actuator</th>
<th>Second air solenoid</th>
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<th>Radiator fan</th>
<th>Oil control valve solenoid drive</th>
<th>ETV</th>
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</table>

- ●: Supported
- –: Not supported

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