

# **Kawasaki Diagnostic Software Version 3 KDS 3**

## **Instruction Manual Revision 1.0**



## Foreword

This Instruction Manual explains the operating principles of KDS to diagnose Kawasaki's Smart (KI-PASS), Digital Fuel Injection (DFI) and ABS systems. This manual is a brief introduction to KDS 3 and assumes that the technician is familiar with PC usage.

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# 1. Kawasaki Diagnostic System Version 3 Outline

## 1.1 System Function

KDS Version 3 was developed for Smart equipped Motorcycles with DFI, non-Smart equipped motorcycles with DFI, and DFI equipped PWC and ATV. The following functions are available.

### Smart System equipped Models

1. Register the Steering Lock unit, FI ECU
2. Register the Fobs, Immobilizer key
3. Register or delete the TPMS sensor ID
4. Diagnose the Smart System
5. Monitor the Smart System

### DFI equipped vehicles

1. Display ECU and model information
2. Perform system diagnostics
3. Display, save, and print service data
4. Actuate individual injectors and other actuators
5. Display, save, and print real-time sensor values
6. Display and print graphs (real-time sensor values)
7. Erase stored service data

### ABS equipped vehicles

1. Diagnose the ABS system
2. Erase stored service data

### Other Features

1. Software can be used in ten languages
2. Software is based on Windows 2000, XP, and Vista
3. Three units (SI, Metric, English) can be selected to display sensor values

### NOTE

- *Some functions are not available on all models*

## 1.2 KDS Version 3 System Configuration

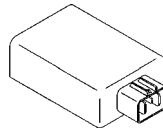
KDS Version 3 operates on a PC and communicates with the unit via a USB communication port, communication cable, and signal converter.

KDS consist of: (1) CD, (2) Signal Converter and USB cable, (3) Communication Cable.

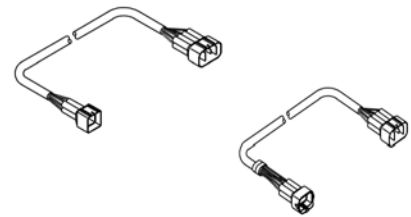
- (1) CD  
(KDS 3 Software)  
**P/No. 57001-1650**



- (2) KDS Adapter  
(Signal Converter)  
**P/No. 57001-1648**  
USB cable (not shown)  
**P/No. C57001-0017**

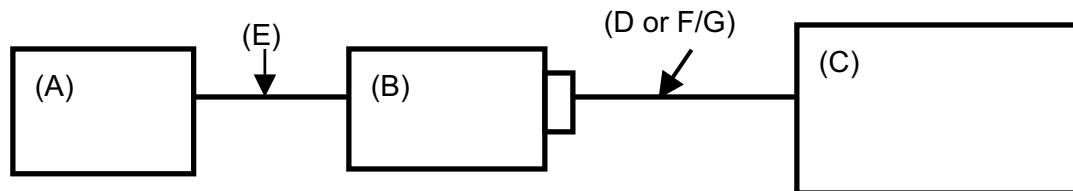


- (3) Communication Cable  
**P/No. 57001-1649 (6-pin/8-pin)**  
**P/No. 57001-1688 (8-pin/4-pin)**



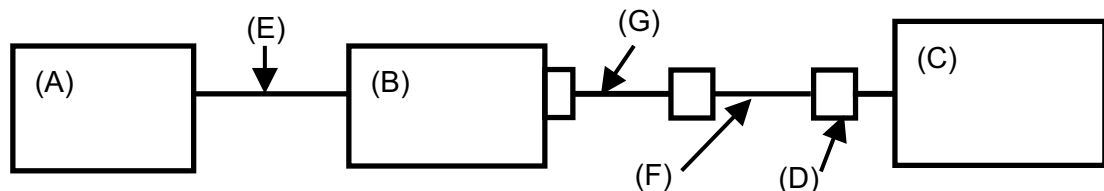
**Fig. 1-1 KDS 3 Components**

5T57164901 G



- A: Personal Computer (PC)      B: KDS Adapter (Signal Converter)  
C: ZG1400      D: 6-pin connector on main harness – KDS 3  
E: USB cable (C57001-0017)      F: 8-pin connector on main harness – KDS 3 ABS  
G: Communication cable (8-pin/6-pin) - KDS 3

**Fig. 1-2 Sample connection on ZG1400 (see section 3.2)**

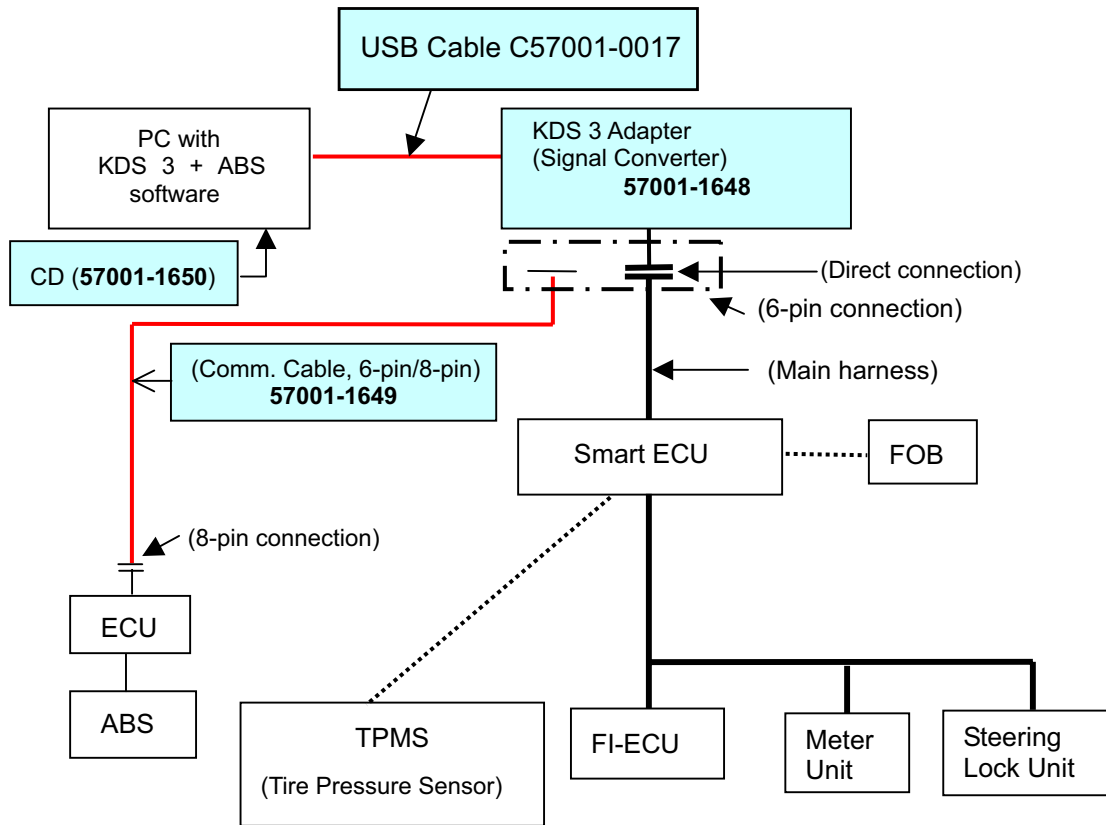


- A: Personal Computer (PC)      B: Adapter (Signal Converter)  
C: DFI model      D: 4-pin comm. connector on main harness  
E: USB cable      F: Communication cable (8-pin/4-pin) 57001-1688  
G: Communication cable (6-pin/8-pin) 57001-1649

**Fig. 1-3 Sample connection on non-Smart vehicles (see section 3.2)**



### 1.3 ZG1400A/B System Configuration



### 1.4 Personal Computer (PC) Minimum System Requirements for KDS 3

Table 1-a PC Requirement

Hardware	Requirements
CPU	Pentium, 133 MHz or faster
OS (Operating System)	Windows 2000, XP, or Vista
Hard Disk	20 MB or more of free space (40 MB or more is recommended.)
Display	SVGA
Disk device	CD-ROM or DVD drive
Printer	Black and White or Color
Interface port	USB port
USB Cable	BUFFALO, USBC2-Sxx

#### NOTE

- Do not use a screen saver.
- Do not use "power management" mode.
- When changing an ECU, exit KDS and then restart.
- When using a Windows 2000, XP, or Vista PC, you must use the PC as an administrator.

## 2. Installation Procedure

Two software programs need to be installed on your PC. One is for the KDS 3 Adapter and the other is for the KDS 3 software.

Windows Autoplay MUST be turned ON.

1. Start the PC and insert the KDS 3 CD and follow the screen directions
2. On Windows Vista, when the *Autoplay* screen appears select *Run KDS3.bat* then follow the screen directions



### 2.1 Installation of KDS 3 Adapter - Windows XP/2000

- Connect the KDS 3 Adapter (P/N 57001-1648) to the unit (see section 3.2). Fig. 2-1
- Connect the USB cable to the KDS Adapter
- Turn ON the ignition switch

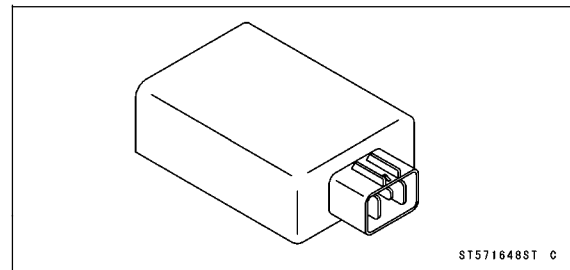


Fig. 2-1 KDS 3 Adapter

- Insert the other end of the USB cable into the computer. The *Found New Hardware Wizard* screen will appear. Select *Advanced Installation*. Fig. 2-2

- Select *Next*



Fig. 2-2 Hardware Wizard

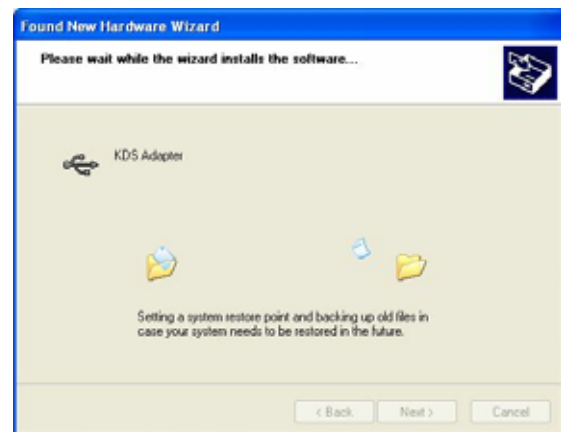
- If the *Windows Logo* pop up screen appears, select *Continue Anyway*.

- When the program asks for the location of the driver, select the CD drive then *OK*. Fig. 2-3



**Fig. 2-3 Locate Driver**

- Installation in progress. Fig. 2-4



**Fig. 2-4 Installation Progress**

- Select *Finish*. Fig 2-5



**Fig. 2-5 Installation Complete**

## 2.1.1 Installation of KDS 3 Adapter - Windows Vista

- Connect the KDS 3 Adapter (P/N 57001-1648) to the unit (see section 3.2). Fig. 2-6

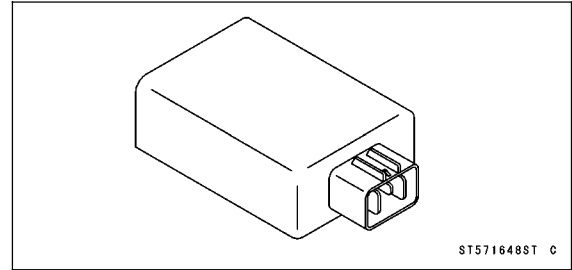


Fig. 2-6 KDS 3 Adapter

- Connect the USB cable to the KDS Adapter
- Turn ON the ignition switch
- Insert the other end of the USB cable into the computer. The *Found New Hardware Wizard* screen will appear. Fig. 2-7

- Select *Locate and install driver software*



Fig. 2-7 Hardware Wizard

- Next select *Browse my computer for driver software*. Fig. 2-8

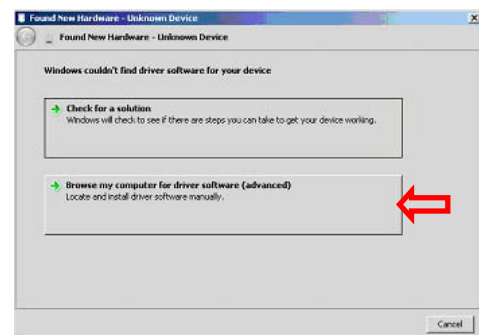
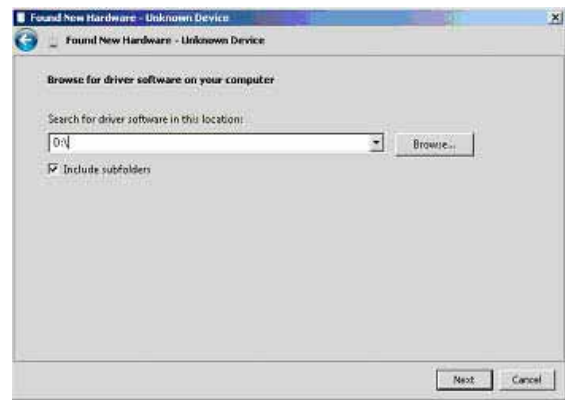


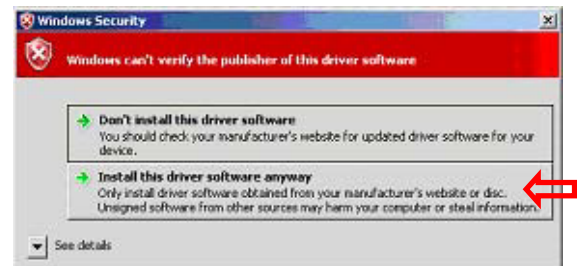
Fig. 2-8 Hardware Wizard

- When the program asks for the location of the driver, select the CD drive then *NEXT*. Fig. 2-9



**Fig. 2-9 Driver Location**

- When the security screen appears, select *Install this driver software anyway*. Fig. 2-10



**Fig. 2-10 Security Screen**

- Installation complete. Fig. 2-11



**Fig. 2-11 Installation Complete**

## 2.2 Installation of KDS 3 Software

- Select the language, then OK. Fig. 2-12

Language abbreviations are as follows.

DE: German, EL: Greek, EN: English,  
ES: Spanish, FR: French, IT: Italian,  
NL: Netherlands, PT: Portuguese, SV: Swedish

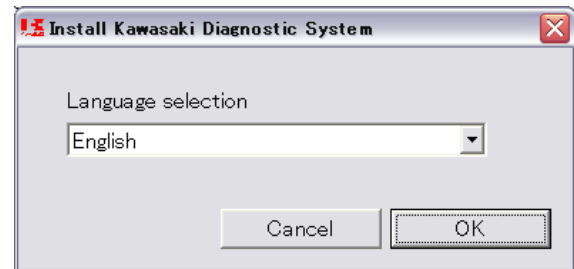


Fig. 2-12 Language Selection

- Installation program starts automatically.  
Fig. 2-13

- Select *Next*

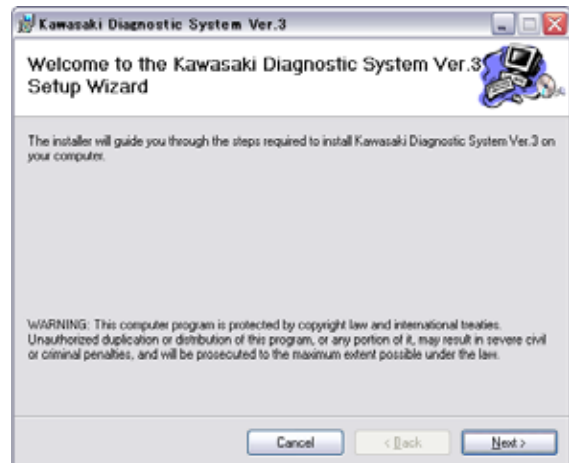


Fig. 2-13 Installation Wizard

- Select Installation Folder. The default folder is:  
*C:\Program Files\Kawasaki Diagnostic System Ver.3* Fig. 2-14

- Select *Just Me*

- Then select *Next*

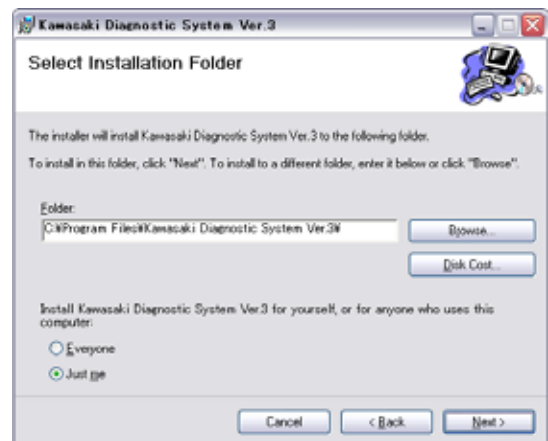


Fig. 2-14 Selection of Installation Folder

- Follow the screens to complete the installation of KDS 3

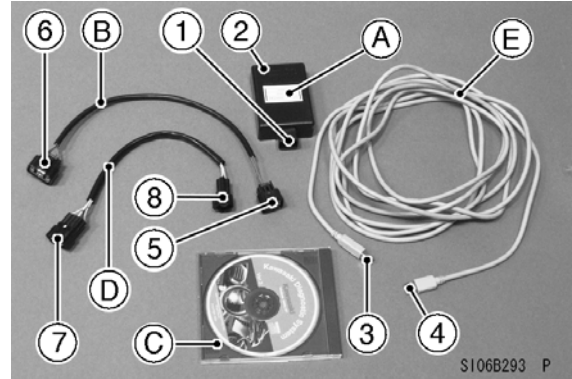
### 3. Cable Connection

#### 3.1 Required Tools

A. KDS 3 Adapter	57001-1648
B. Com. Cable (6-pin/8-pin)	57001-1649
C. KDS 3 Software	57001-1650
D. Com. Cable (8-pin/4-pin)	57001-1688
E. USB Cable	C57001-0017

#### Detail of Connection

1. Connect to main harness of Vehicle
2. USB port of KDS 3 Adapter
3. Connect to KDS 3 Adapter
4. Connect to PC
5. 6-pin port, Connect to KDS 3 Adapter
6. 8-pin port, Connect to ABS ECU port of main harness
7. 8-pin port, Connect to No.6 port
8. 4-pin port, Connect to KDS port of main harness



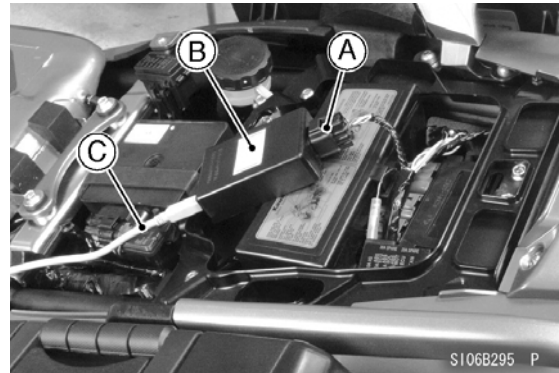
**Fig. 3-1 KDS Components**

#### 3.2 Connecting PC to ECU

##### 3.2.1 ZG1400A/B

#### Smart and DFI Systems

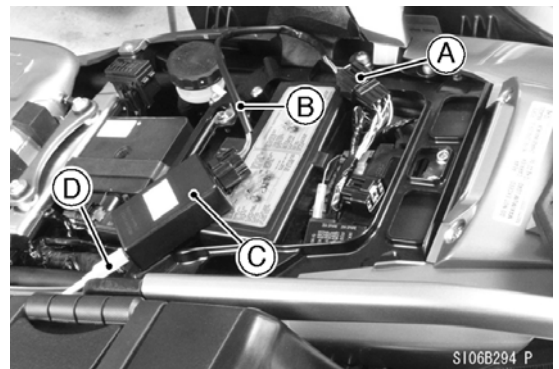
- Remove seat
- Locate the 6-pin connector [A] on the main harness and remove the cover
- Connect the 6-pin connector to the Adapter [B]
- Connect the USB cable [C] to the Adapter



**Fig. 3-2.1 ZG1400A/B**

#### ABS System

- Remove seat
- Locate the 8-pin connector [A] on the main harness and remove the cover (ABS port)
- Connect cable 57001-1649 [B] to the 8-pin ABS port
- Connect the 6-pin connector on 57001-1649 to the Adapter [C]
- Connect the computer's USB cable [D] to the Adapter



**Fig. 3-2.1 ZG1400A/B (ABS)**

### 3.2.2 ZX1200A/B

- Remove the rear compartment cover
- Remove the Diagnostic Port cover
- Connect the comm. cable to the diagnostic port

A. Diagnostic port (4-pin) on harness  
B. Communication Cable

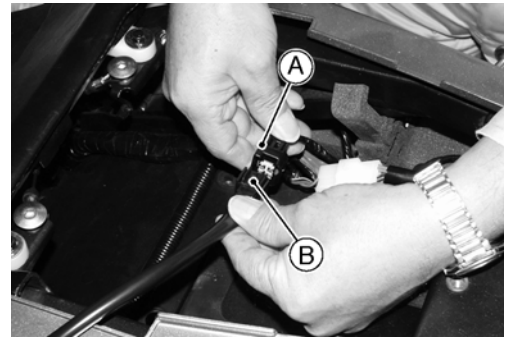


Fig. 3-2.2 ZX1200A/B

### 3.2.3 VN1500P

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port (4-pin)  
B. Battery  
C. ECU

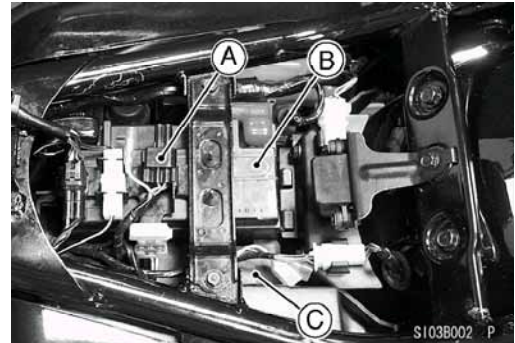


Fig. 3-2.3 VN1500P

### 3.2.4 VN1600, VN2000

- Remove seat (VN1600A/B)
- Remove seat and battery cover (VN2000A)
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port (4-pin)  
B. Battery  
C. ECU

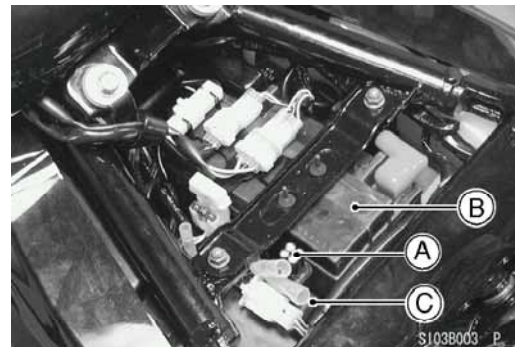


Fig. 3-2.4 VN1600A

### 3.2.5 ZX636, ZX600, ZR1000, ZR750, ZX1000-C

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port (4-pin)  
B. Battery  
C. ECU

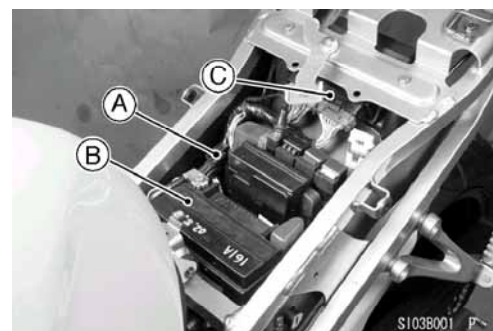


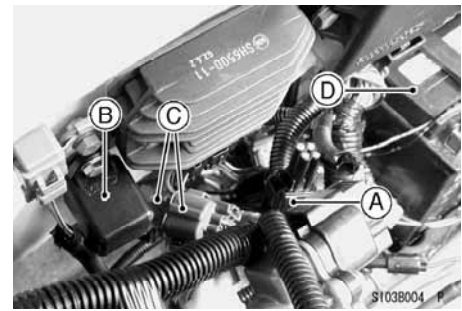
Fig. 3-2.5 ZX636B



### 3.2.6 JT1200B/D, JT1500A

- Remove seat and rear storage pocket
- Disconnect the 8-pin connector [C] and insert the relay cable (57001-1535) between the connectors
- Connect the BK/Y lead on the relay cable to the (-) terminal on the battery
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

- A. Diagnostic Port (4-pin)
- B. Relay Assembly
- C. 8-pin Connector
- D. Battery

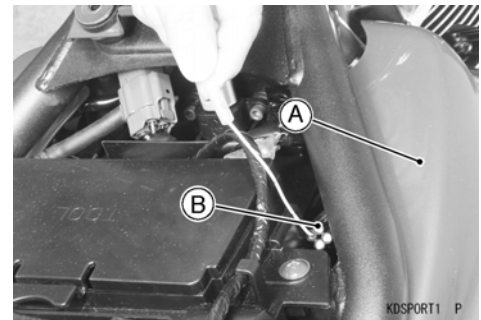


**Fig. 3-2.6 JT1200-B/D, JT1500A**

### 3.2.7 VN900B/D

- Remove seat
- Remove the right side cover [A]
- Access the Diagnostic Port [B] from the right side.
- Remove the cover and connect the comm. cable to the diagnostic port

- A. Right Side Cover
- B. Diagnostic Port (4-pin)

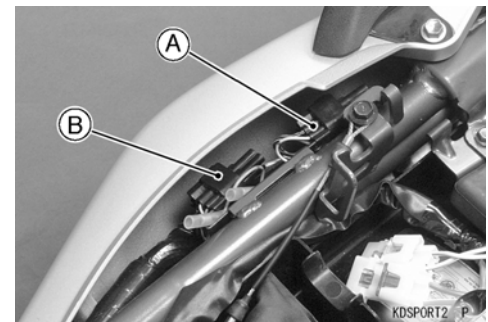


**Fig. 3-2.7 VN900B/D**

### 3.2.8 ER650, EX650

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

- A. Diagnostic Port for KDS (4-pin port)
- B. Diagnostic Port for ABS (8-pin port) ABS model



**Fig. 3-2.8 EX650**

### 3.2.9 ZX1400A/B

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port for KDS (4-pin port)

B. Diagnostic Port for ABS (8-pin port) ABS model

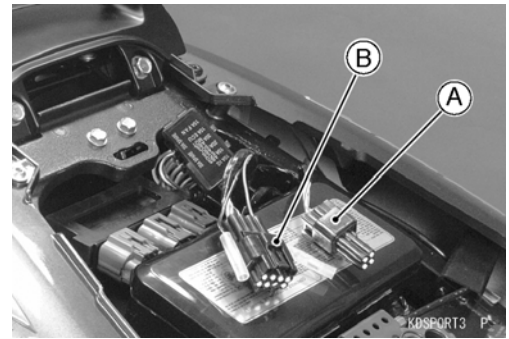


Fig. 3-2.9 ZX1400A/B

### 3.2.10 KLE650

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port for KDS (4-pin port)



Fig. 3-2.10 KLE650

### 3.2.11 '07 ZR750/ZR1000

- Remove seat
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable (57001-1688) to the diagnostic port
- Connect the comm. cable (57001-1649) to the adapter cable

A. Diagnostic Port for KDS (4-pin port)

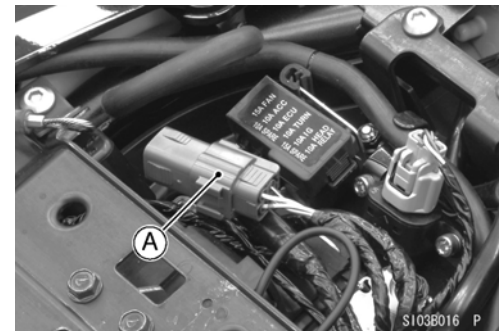


Fig. 3-2.11 ZR1000

### 3.2.12 JT1500B/JT1500C

- Open the front storage compartment cover
- Remove the front storage case
- Remove the battery cover
- Connect the comm. cable to the Diagnostic Port [A] (near the battery)

A. Diagnostic Port for KDS (4-pin port)

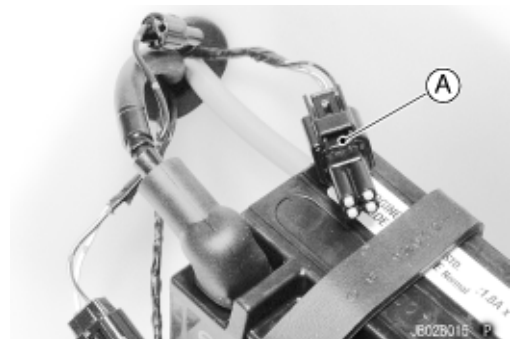
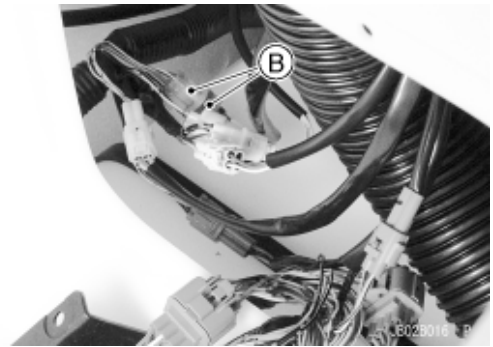
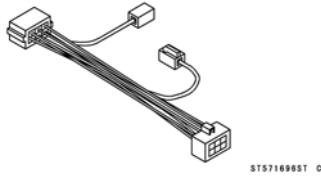


Fig. 3-2.12 JT1500B/C

- Insert Adapter cable (57001-1696) between the 6-pin connector [B] (ignition switch)
- Connect the two leads on the Adapter cable

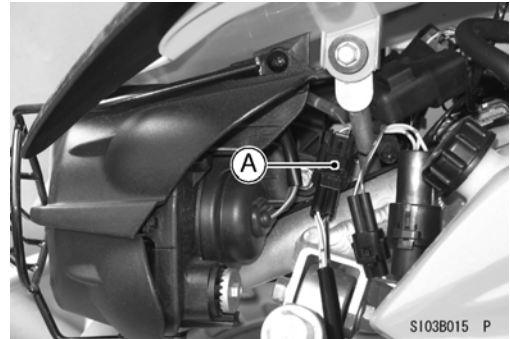


**Fig. 3-14 JT1500B/C**

### 3.2.13 KSF450B

- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port. The port is located under the front cowl.

A. Diagnostic Port for KDS (4-pin port)

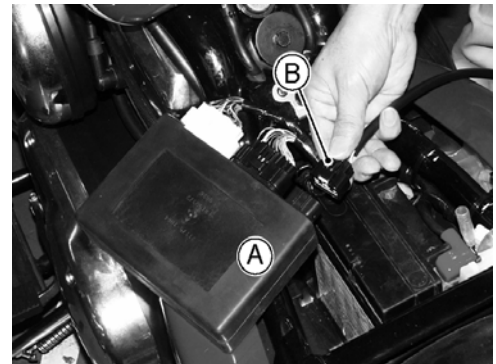


**Fig. 3-15 KSF450B**

### 3.2.14 VN1500J/L/N/R

- Remove seat and battery cover
- Remove ECU from case
- Remove the ECU's diagnostic port cover, then connect the comm. cable

A. Diagnostic Port for KDS (8-pin port)

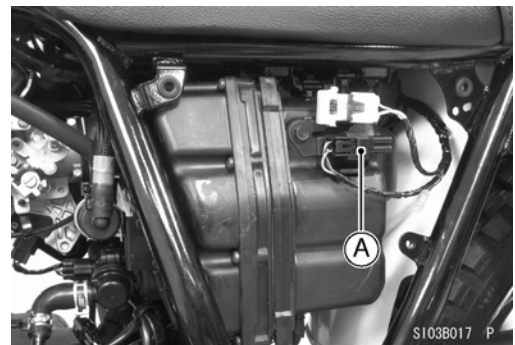


**Fig. 3-16 VN1500J/L/N/R**

### 3.2.15 BJ250K

- Remove the left side cover
- Remove the Diagnostic Port cover [A]
- Connect the comm. cable to the diagnostic port

A. Diagnostic Port for KDS (4-pin port)



**Fig. 3-17 BJ250K**

## 4. Menu Items

### 4.1 Menu Structure

The Menu Structure Diagram and Menu Items Outline are as shown in Fig. 4-1 and Table 4-a, followed by further explanation on each menu. Some functions are not available on all models.

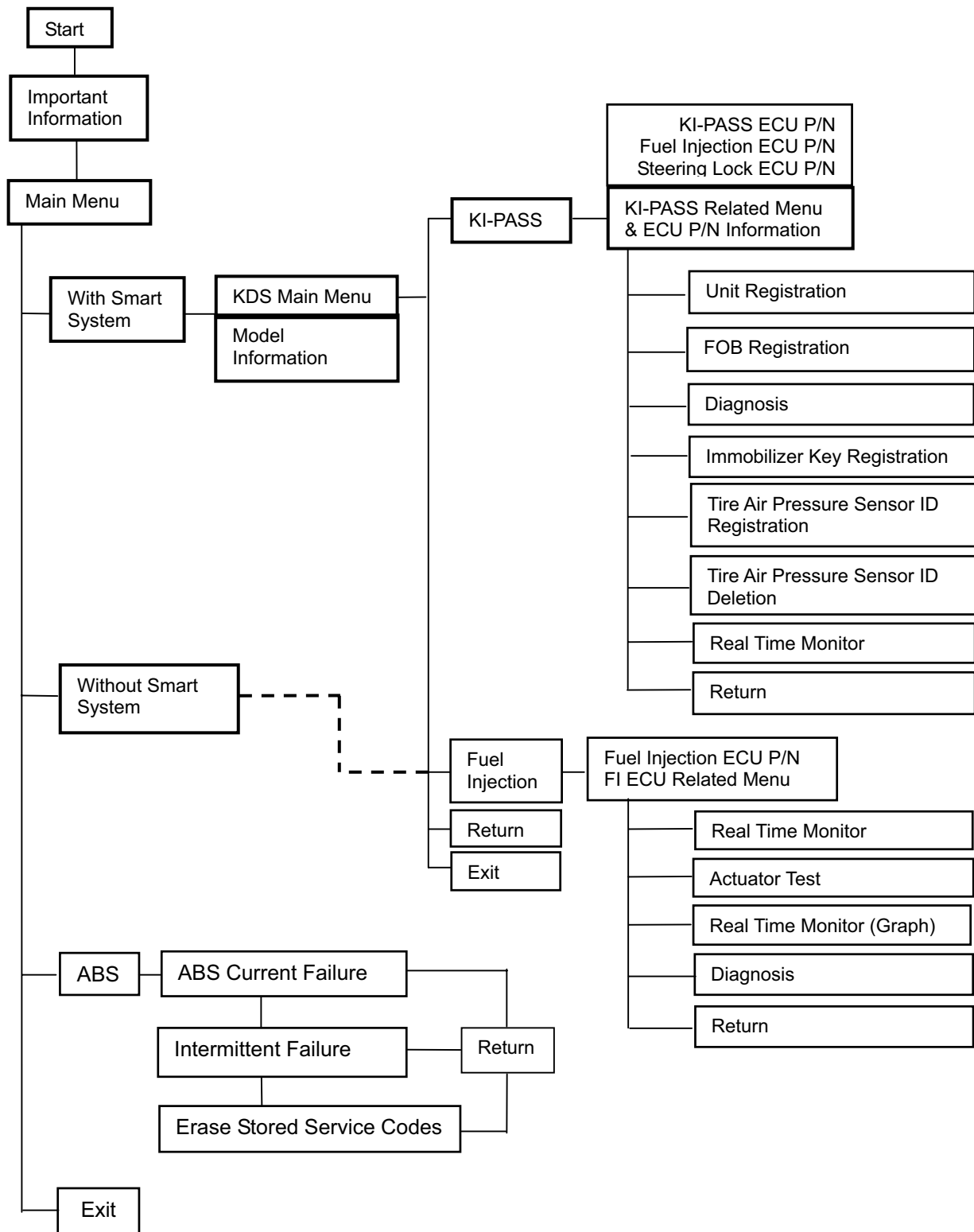


Fig. 4-1 Menu Structure

## 4.2 Function of Menu Items

**Table 4-a Menu Features**

<b>Menu Item</b>	<b>Description &amp; Function</b>
With Smart System	Select for ZG1400A/B
Without Smart System	Select for all non Smart equipped models
Model Information	Displays model information
KI-PASS	Select when diagnosing/servicing the KI-PASS system
KI-PASS Related Menu	Select when diagnosing/servicing the KI-PASS system
Unit Registration	Select when servicing the Steering Lock Unit or FI ECU
FOB Registration	Select when registering a FOB
Diagnosis	Select when diagnosing the KI-PASS system
Immobilizer Key Registration	Select when registering an Immobilizer Key
Tire Air Pressure Sensor	Select when registering a TPMS ID
Tire Air Pressure Sensor	Select when deleting a TPMS ID
Real Time Monitor	Displays real time data (KI-PASS system)
Fuel Injection	Select when diagnosing the FI system
FI ECU Related Menu	Select when diagnosing/monitoring the FI system
Real Time Monitor	Displays real time engine data and previous codes
Actuator Test	Start or stop an actuator
Graph	Draw and display a graph
Real Time Monitor	Displays real time engine data and previous codes
Diagnosis	Displays diagnostic codes
ABS	Select when diagnosing the ABS system
ABS Current Failure	Displays current failure codes (ABS system)
Intermittent Failure	Displays previous failure codes (ABS system)
Erase Stored Service Codes	Erase service codes

## 5. KDS 3 Operation - KI-PASS System

The ZG1400A/B KI-PASS system requires ECU code verifications for the system to function properly.

### 5.1 Starting KDS 3

- Turn on the PC
- Start the *Kawasaki Diagnostic System Ver. 3* from the start menu. Fig. 5-1

Or double-click the *KDS 3* icon on the desktop screen

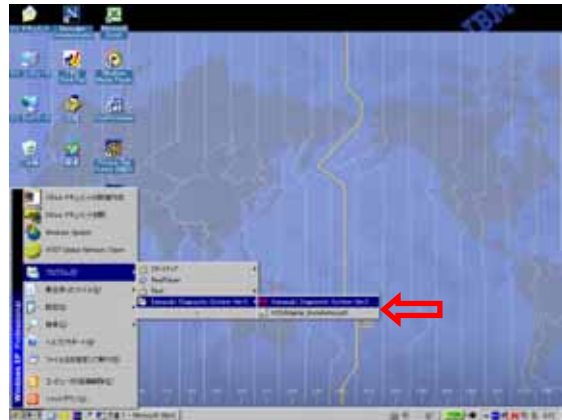


Fig. 5-1 Start Screen

- Fig. 5-2 will appear
- Perform the preliminary inspection
- Select *OK* after performing the inspection

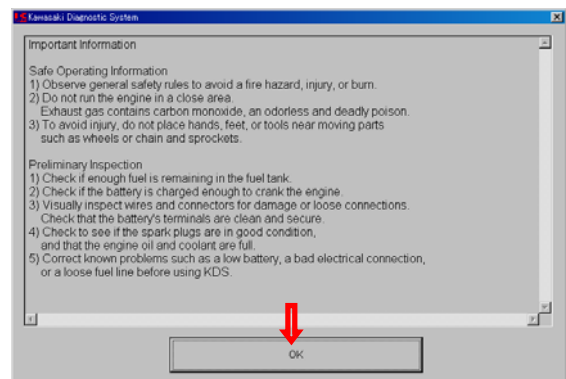


Fig. 5-2 Preliminary Inspection

- Fig. 5-3 will appear
  - On Smart System equipped models, select *With Smart System*.

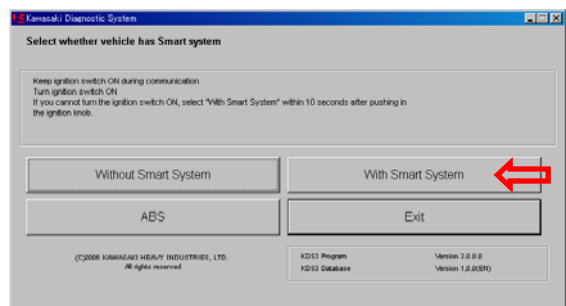


Fig. 5-3 Main Menu

- The *KDS Main Menu* and *Model Information* screen will appear. Fig. 5-4
- Select *KI-PASS*

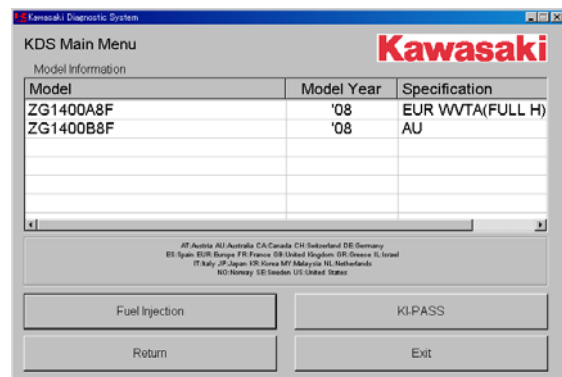
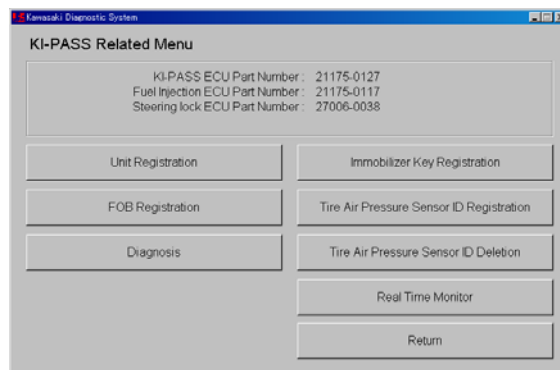


Fig. 5-4 KDS Main Menu

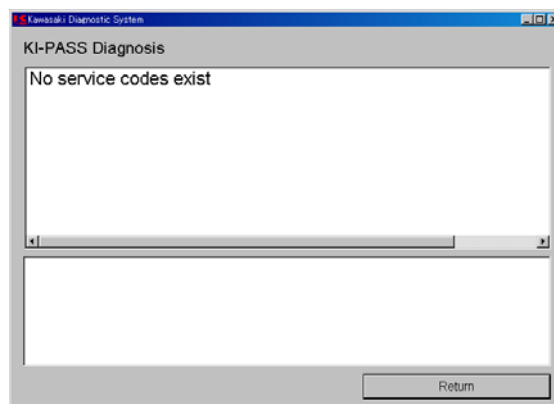
- Select one of the options from the *KI-PASS Related Menu*. Fig. 5-5



**Fig. 5-5 KI-PASS Related Menu**

## 5.2 Diagnosis

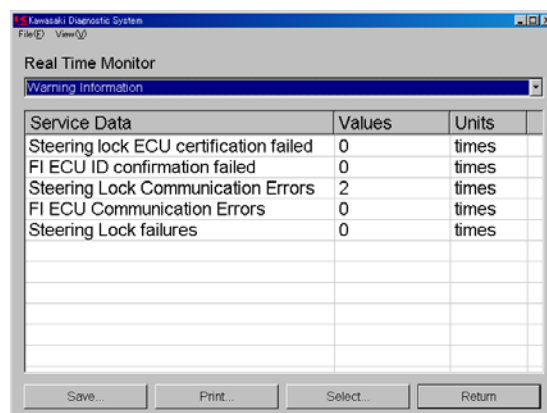
- Select *Diagnosis* from the *KI-PASS Related Menu* to display current failure codes. Fig. 5-6



**Fig. 5-6 Diagnosis**

## 5.3 Real Time Monitor

- To display real time KI-PASS component operation, select *Real Time Monitor* from the *KI-PASS Related Menu*. Fig. 5-7



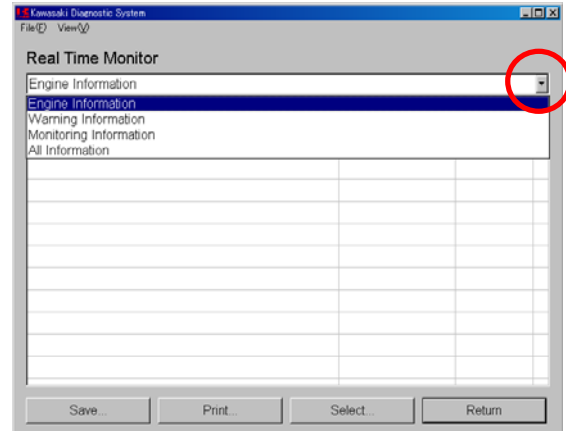
**Fig. 5-7 Real Time Monitor**

### 5.3.1 Selecting Display Items

- First select the group from the pull down menu.  
Fig. 5-8

There are four groups, *Engine Information*, *Warning Information*, *Monitoring Information*, and *All Information*.

*All Information* includes *Engine Information*, *Warning Information*, and *Monitoring Information*

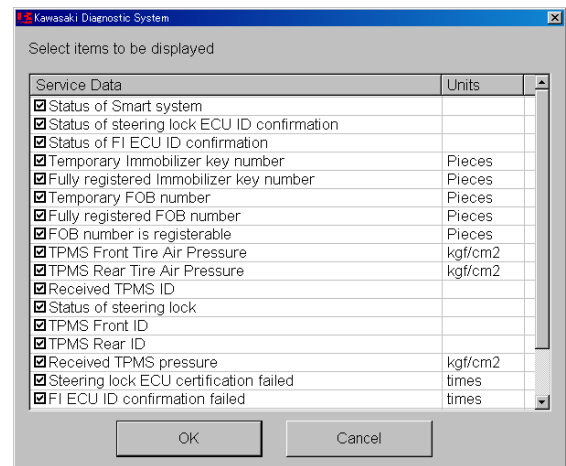


**Fig. 5-8 Real Time Monitor**

- Fig. 5-9 will appear after clicking *Select*
- Select the items then *OK*

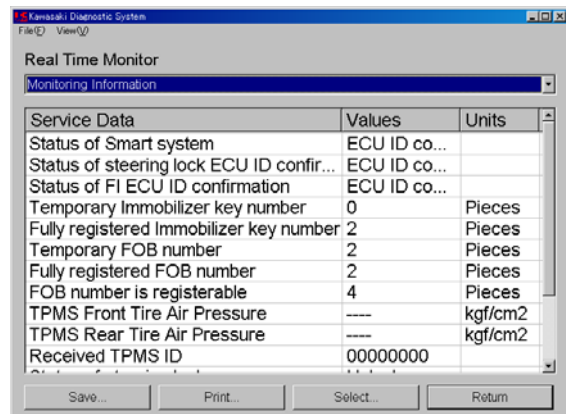
#### NOTE

- Use the "space" key to check or uncheck each item for display



**Fig. 5-9 Select Items**

- Fig. 5-10 is a sample screen



**Fig. 5-10 Real Time Monitor**



## NOTE

- To see the screen more clearly, you can maximize the screen and enlarge the column widths. Fig. 5-11.

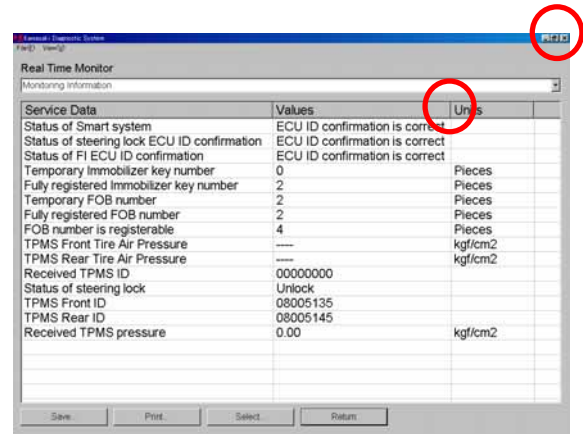


Fig. 5-11 Real Time Monitor

### 5.3.2 Saving Service Data

Data obtained through communication with the ECU can be saved

- Select Save. Fig. 5-11
- Select an option and then select OK. Fig. 5-12
- Enter a comment then select OK. Fig. 5-13

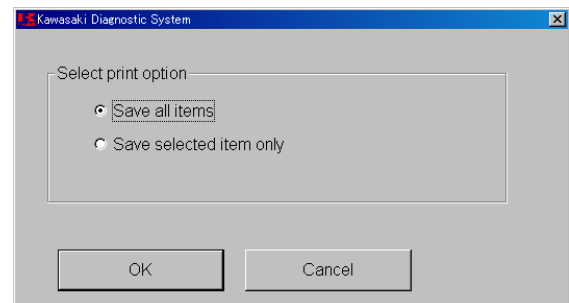


Fig. 5-12 Select Save Options

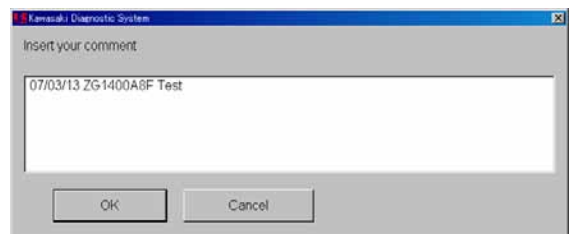


Fig. 5-13 Comment

- When Fig. 5-14 appears, select a folder and press *Enter* (or *Save*) to save the data as a **CSV** file.

The default file name consist of the YY(year), MM(month), DD(day), and two incremental numeric digits (00-99). ECU Part No., Model Name, Model Year, and Specification are saved automatically in the data.



Fig. 5-14 Save Folder

## NOTE:

**CSV:** *comma separated value*

- When Fig. 5-15 appears select OK

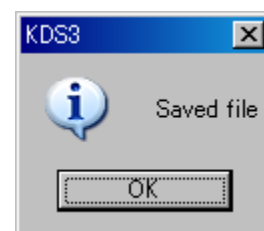


Fig. 5-15 Save Complete

### 5.3.3 Printing

Data obtained through communication with the ECU can be printed.

Select *Print*. Fig. 5-11

Fig. 5-16 will appear

- Select a print option then *OK* to print
  - If a printer is not connected to the PC, a screen print will be created.
- Select *Cancel* to return to the previous screen

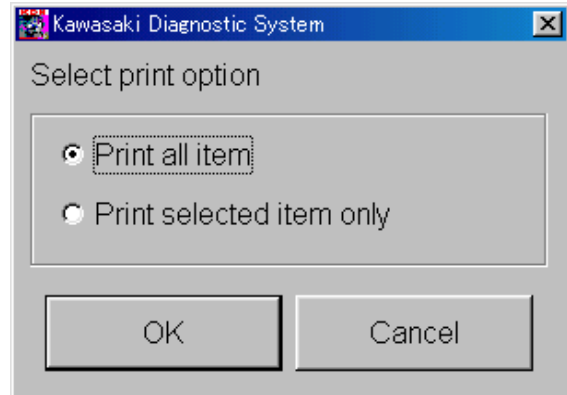


Fig. 5-16 Print Option

## 5.4 Tire Air Pressure Monitoring System (TPMS) Sensor Replacement

During sensor replacement, the replacement sensor's ID must be registered with the Smart ECU. The registration number can be found on the body of the sensor, or on the packaging.  
***The existing sensor's ID numbers can be displayed in Real Time Monitor.***

### 5.4.1 Deleting TPMS ID

- Select "*Tire Air Pressure Sensor ID Deletion*" on the *KI-PASS Related Menu*. Fig. 5-17

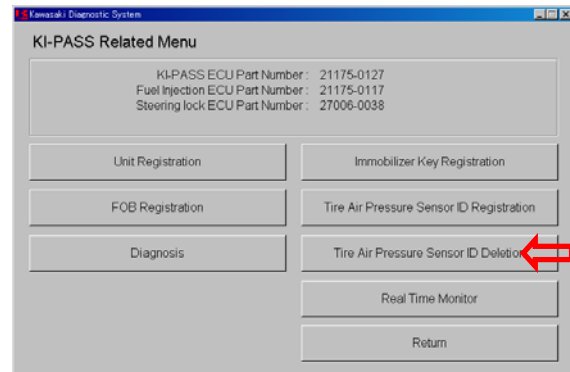


Fig. 5-17 KI-PASS Related Menu

- Currently registered sensor IDs are shown. Fig. 5-18
- Select the wheel sensor to delete

In this example the Front Wheel is selected

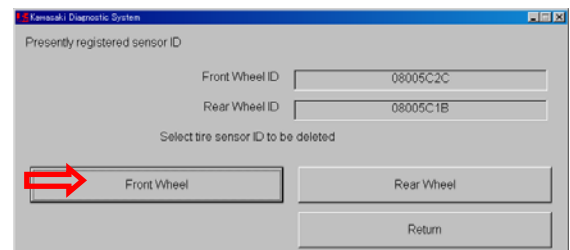


Fig. 5-18 TPMS ID

- When Fig. 5-19 appears select *Yes*

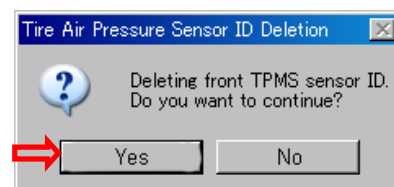


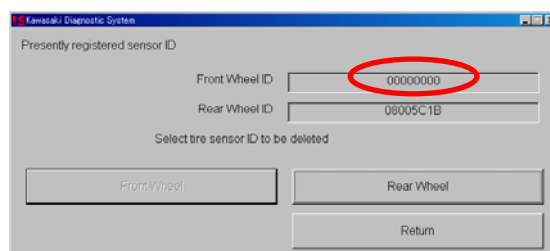
Fig. 5-19 TPMS ID Deletion

- When Fig. 5-20 appears select *OK*



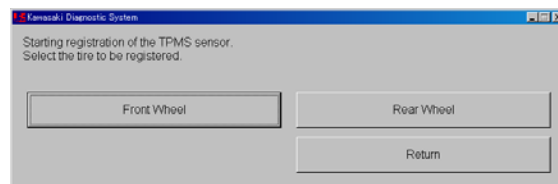
**Fig. 5-20 TPMS ID Deletion**

- Fig. 5-21 shows the Front Wheel ID has changed to 00000000, select *Return*.



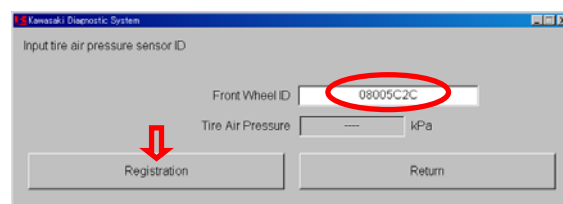
**Fig. 5-21 TPMS ID Deletion**

- Record the new TPMS sensor ID number
  - *TPMS sensors will not operate without the ID number registered*
- Replace the front TPMS sensor
- Select *TPMS ID Registration* on the *KI-PASS Related Menu*. Fig. 5-17
- When Fig. 5-22 appears select *Front Wheel*



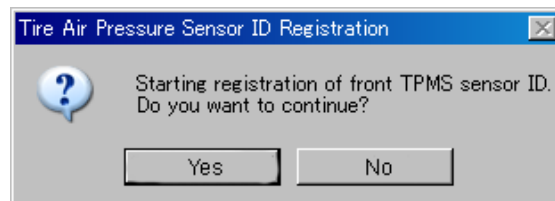
**Fig. 5-22 TPMS ID Registration**

- When Fig. 5-23 appears, input the new TPMS ID then select *Registration*.



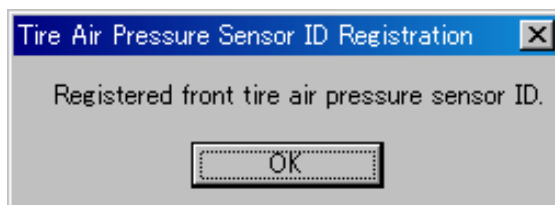
**Fig. 5-23 TPMS ID Registration**

- When Fig. 5-24 appears select *Yes*



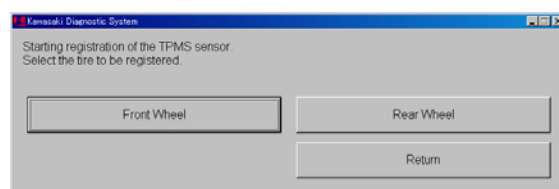
**Fig. 5-24 TPMS ID Registration**

- When Fig. 5-25 appears select *OK*



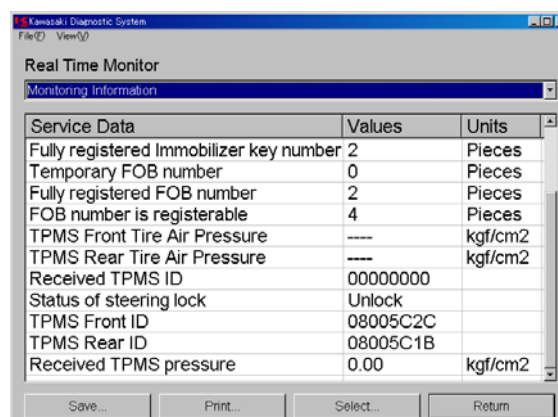
**Fig. 5-24 TPMS ID Registration**

- When Fig. 5-26 appears select *Return*



**Fig. 5-26 TPMS ID Registration**

- Go to the *Real Time Monitor* to confirm that the new TPMS ID is registered. Fig. 5-27



**Fig. 5-27 Registration Confirmation**

## 5.5 FOB Registration (transmitter section of FOB)

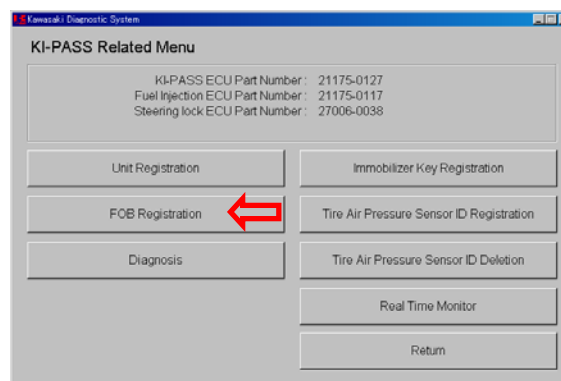
To register an additional FOB(s) or to re-register an existing FOB:

### NOTE

- The maximum number of FOBs that can be registered is 6. The motorcycle comes with 2, an additional 4 can be registered for a total 6. A lost FOB's memory slot in the Smart ECU cannot be erased.

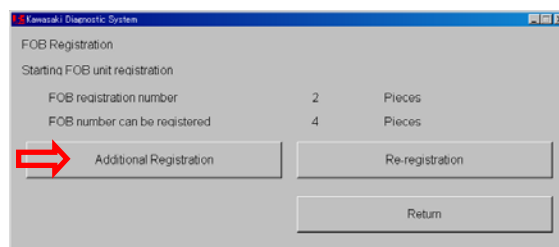
### 5.5.1 To add a new FOB(s)

- Select *FOB Registration* from the *KI-PASS Related Menu*. Fig. 5-28



**Fig. 5-28 KI-PASS Related Menu**

- Current information is displayed. Fig. 5-29



**Fig. 5-29 FOB Registration**

- Select *Additional Registration* if you want to register additional FOBs. Fig. 5-29

- Fig. 5-30 appears. Input the new FOB ID, then select *Additional Registration* with the new FOB placed close to the Smart ECU.

#### NOTE

- The new FOB's ID is located on the shipping package.

- When Fig. 5-31 appears select *OK*



Fig. 5-30 FOB Registration



Fig. 5-31 FOB Registration

- When Fig. 5-32 appears, select *Return* if you are finished, or *Additional Registration* to register another FOB.

++ **IMPORTANT:** when all additional FOBs have been registered, go to section 5.6 to activate the Immobilizer section (transponder) of the FOB.

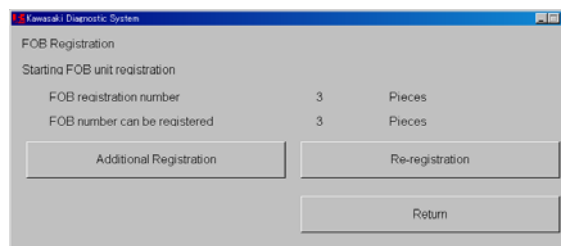


Fig. 5-32 FOB Registration

- Fig. 5-33 is a sample of an additional registration. Enter the FOB's ID number and select *Additional Registration*.

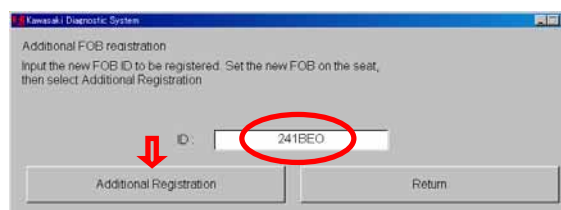


Fig. 5-33 Additional Registration

- Fig. 5-34 appears, select *Return* if completed.

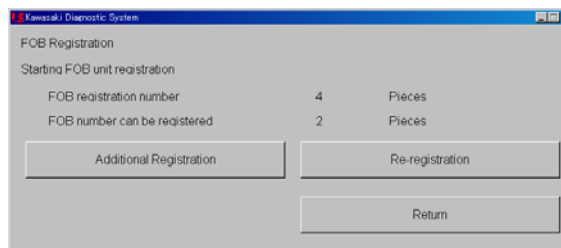


Fig. 5-34 Additional Registration

### 5.5.2 FOB Re-registration

- Select *Re-registration*, Fig. 5-34, then select *OK*, Fig. 5-35. In this example there are 3 FOBs.

#### Note

Place all FOBs to be re-registered close to the Smart ECU

- Fig. 5-36 appears confirming the number of FOBs. Select *Yes*.

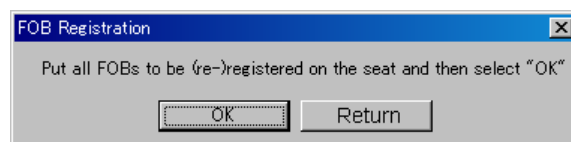


Fig. 5-35 Re-Registration

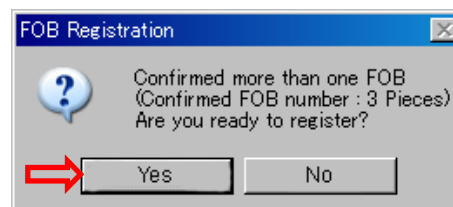
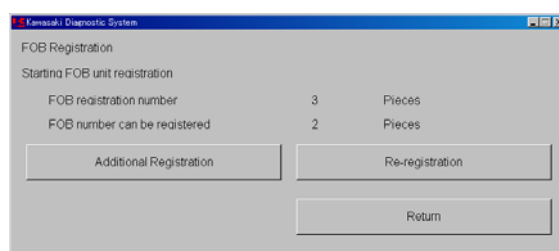


Fig. 5-36 Re-Registration

- Fig. 5-37 appears, select *Return* if completed.

### NOTE

*The Immobilizer section of the FOB does not need to be re-registered*



**Fig. 5-37 Re-registration**

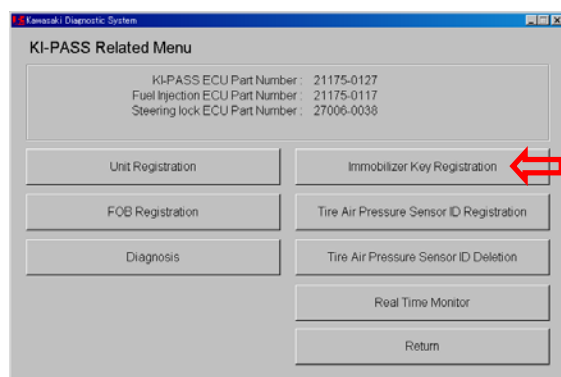
## 5.6 Immobilizer Registration (transponder section of FOB)

To register a FOB's Immobilizer:

### NOTE

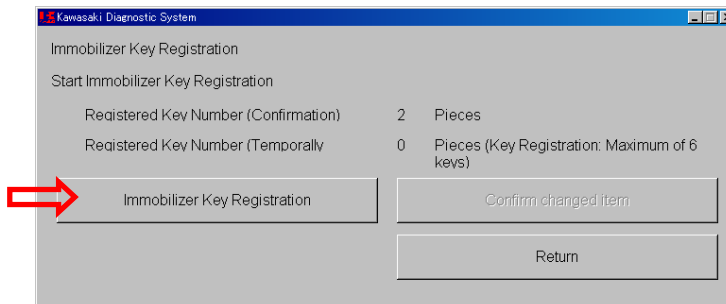
*All currently registered FOBs will have the Immobilizer section deactivated during registration of a new FOB's Immobilizer. All FOBs must have the Immobilizer section registered at the time the new FOB's Immobilizer is registered.*

- Turn unit ON
- Select *Immobilizer Key Registration* from the *KI-PASS Related Menu*. Fig. 5-38



**Fig. 5-38 KI-PASS Related Menu**

- When Fig. 5-39 appears, Select *Immobilizer Key Registration*



**Fig. 5-39 Immobilizer Key Registration**

- Fig. 5-40 appears, select *Stop* to cancel the operation. Fig. 5-40 shows the number of Immobilizers that have been registered



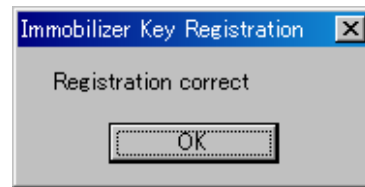
**Fig. 5-40 Immobilizer Key Registration**

- Remove the key from the FOB. Place the FOB's cut out (where the head of the key was located) over the Steering Lock's projection. Fig. 5-41



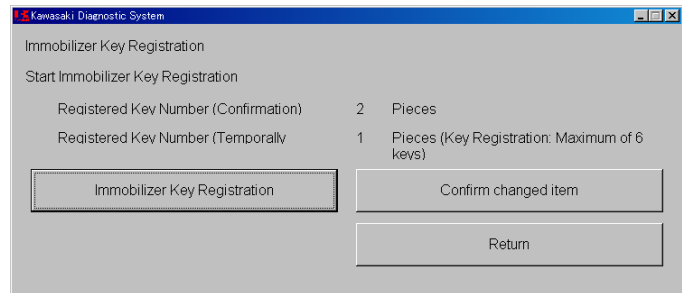
**Fig. 5-41 Key Registration**

- When Fig. 5-42 appears select *OK*



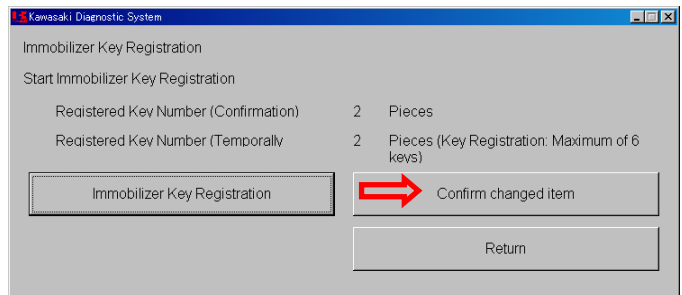
**Fig. 5-42 Location of Key**

- A confirmation screen will appear.  
Fig. 5-43



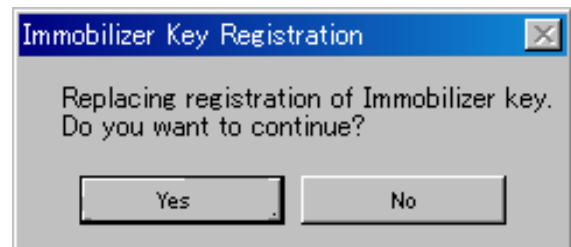
**Fig. 5-43 Updated Immobilizer Key Registration**

- Repeat the previous steps if additional FOBs need registering, or see Fig. 5-44 if finished.
- When all FOBs have been registered, select *Confirm changed item*.  
Fig. 5-44



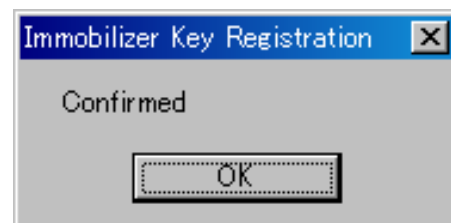
**Fig. 5-44 Confirm Key Registration**

- When Fig. 5-45 appears select *Yes*



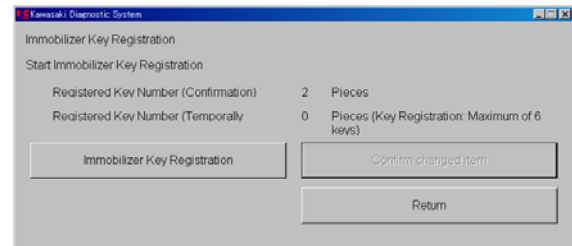
**Fig. 5-45 Key Registration**

- When Fig. 5-46 appears select *OK*



**Fig. 5-46 Confirmation**

- Fig. 5-47 appears
- Select *Return* to return to the *Main Menu*



**Fig. 5-47 Confirmation**

### **To confirm the operation of the FOB Immobilizer (transponder)**

- 1) Remove the battery from the FOB then put it back together (see pg. 73 in the Owner's Manual)
- 2) Place the FOB over the Steering Lock's projection. Fig. 5-42
- 3) Wait approx. 2 seconds then push down on the Steering Lock's key. A key icon should appear on the meter assembly. Turn the switch to ON and the unit should be able to start.
  - If it does not, repeat the Immobilizer registration process (all active FOBs)
- 4) Insert the battery back into the FOB



## 5.7 FI ECU Replacement

**NOTE:** Go to ●-1 if you have just replaced a Smart ECU

- Replace the FI ECU
- 1 Turn ON the switch, "ECU ID Error" will appear on the meter.
- Start KDS 3 and select *With Smart System*, then *KI-PASS*.

- Select *Unit Registration* on the *KI-PASS Related Menu*. Fig. 5-48

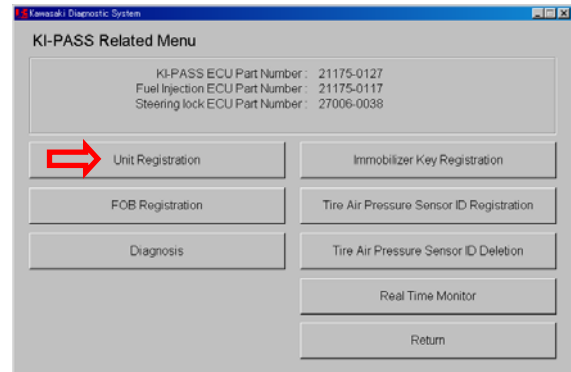


Fig. 5-48 KI-PASS Related Menu

- Select *FI ECU* then *Registration* Fig. 5-49

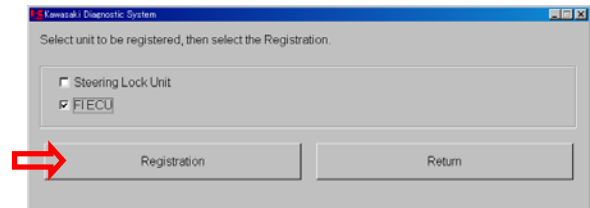


Fig. 5-49 FI ECU Selection

- When Fig. 5-50 appears, select Yes

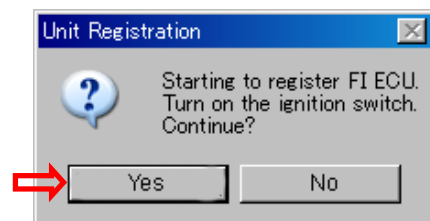


Fig. 5-50 FI ECU Selection

- When Fig. 5-51 appears select *OK*, then *Return*. KDS 3 will automatically close.
- Turn OFF the switch, then ON and start the unit to confirm ECU registration.

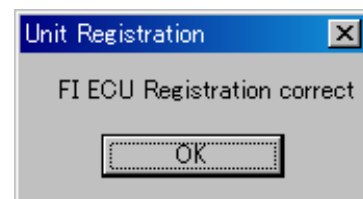
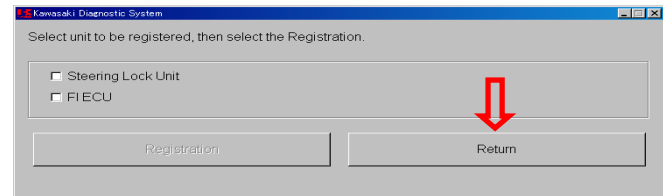


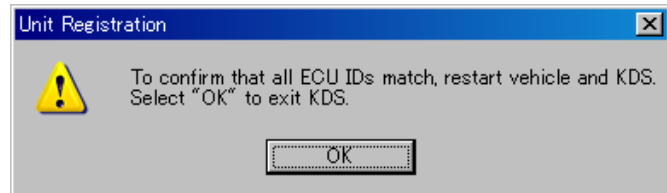
Fig. 5-51 FI ECU Registration

- When Fig. 5-52 appears select *Return*



**Fig. 5-52 FI ECU Registration**

- When Fig. 5-53 appears select *OK*  
This completes the registration process

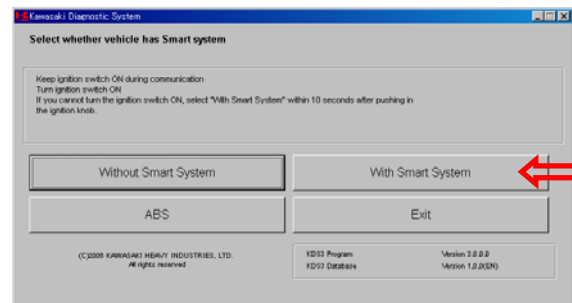


**Fig. 5-53 FI ECU Registration**

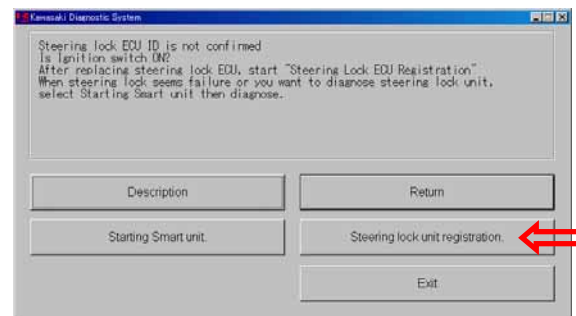
## 5.8 Steering Lock ECU Replacement

To replace the Steering Lock ECU:

- Replace the Steering Lock Unit
- Start KDS 3 and go to the Main Menu, but do not connect the USB cable to the computer.
- Depress the steering lock switch but do not turn it, quickly connect the USB cable into the computer and select *With Smart System*. Fig. 5-54
- When Fig. 5-55 appears select *Steering Lock Unit Registration*

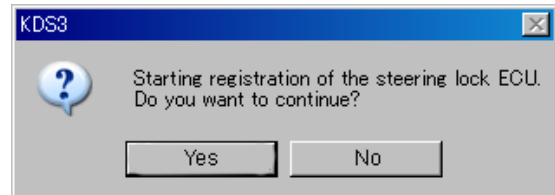


**Fig. 5-54 KDS Main Menu**



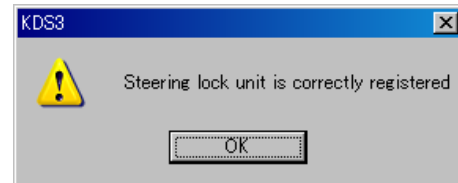
**Fig. 5-55 Selection**

- When Fig. 5-56 appears select **Yes**



**Fig. 5-56 Starting Registration**

- When Fig. 5-57 appears select **OK**



**Fig. 5-57 Registration**

- When Fig. 5-58 appears select **OK**  
Re-start KDS 3 and turn ON the unit

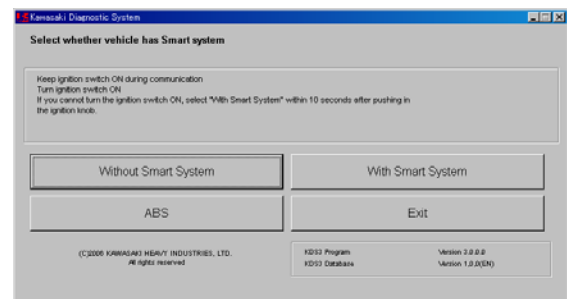


**Fig. 5-58 Registration Complete**

## 5.9 Smart ECU Replacement

The Smart ECU is supplied with two registered FOBs. These FOBs have the transmitters registered. However, the Immobilizer (transponder) portion of the FOB is not and must be registered. To replace the Smart ECU:

- Install the new Smart ECU
- Place 1 of the new FOBs near the Smart ECU
- Install the KDS Adapter and plug the USB cable into the Adapter and computer
- Start KDS 3 and go to the *Main Menu*, Fig. 5-59
- Depress the steering lock switch but do not turn it, within 3 seconds select *"With Smart System"*
- A *"Steering Lock ECU ID is Not Confirmed"* appears on the next KDS screen
- Select *"Steering Lock Unit Registration"* and follow the instructions
- On completion, KDS will close
- Confirm the registration of the Steering Lock ECU by pushing the switch in and turning it ON. When the unit turns ON, *"ECU ID/Registration Error"* will appear on the meter.
- Start KDS 3 and register the following components:
  - (1) FI ECU (sec. 5.7)
  - (2) FOB's Immobilizer transponder (sec. 5.6)
  - (3) TPMS sensors (sec. 5.4)



**Fig. 5-59 KDS Main Menu**

## 6. KDS 3 - FI System Operation

### 6.1 Starting KDS 3

- Turn on the PC
- Start KDS Version 3 from the start menu

Or double-click the *KDS 3* icon on the desktop screen



Fig. 6-1 Start screen

- Fig. 6-2 will appear
- Read the instructions and perform the preliminary inspection
- Select *OK* after performing the inspection

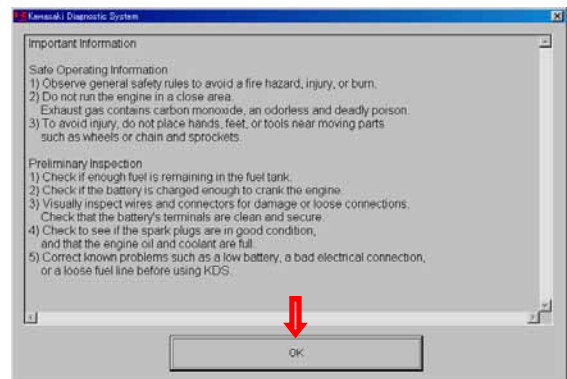


Fig. 6-2 Preliminary Inspection

- Fig. 6-3 will appear
  - On Smart System equipped models, select *With Smart System*.
  - On non-Smart System equipped models, select *Without Smart System*.

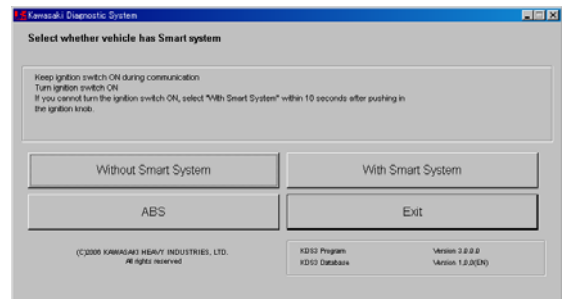


Fig. 6-3 Main Menu

- The *KDS Main Menu* and *Model Information* screen will appear. Fig. 6-4
- Select *Fuel Injection*

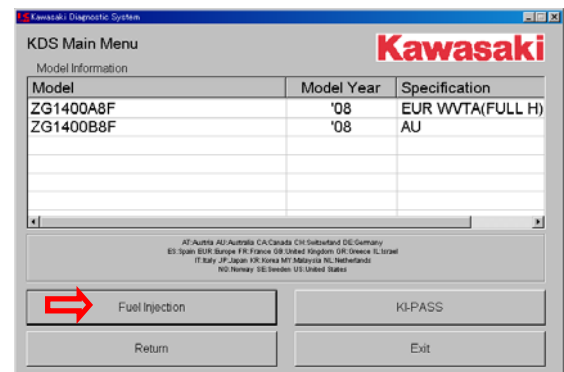
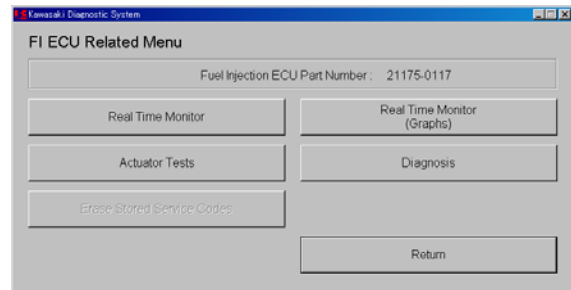


Fig. 6-4 KDS Main Menu

- The *FI ECU Related Menu* will appear. Fig. 6-5

Select one of the following:

- Real Time Monitor
- Actuator Tests
- Real Time Monitor (Graph)
- Diagnosis



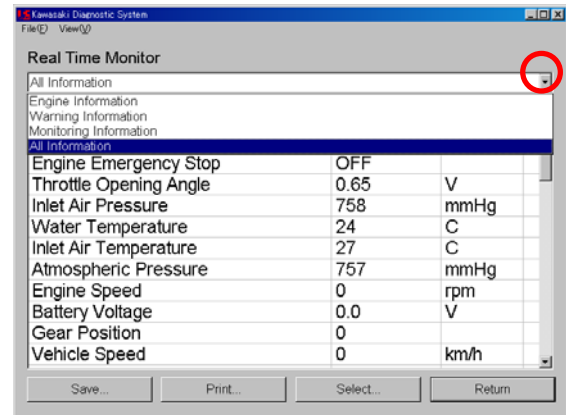
**Fig. 6-5 FI ECU Related Menu**

## 6.2 Real Time Monitor

Fig. 6-6 appears after selecting *Real Time Monitor* from the *FI ECU Related Menu*.

Component values and warning information can be viewed. Fig. 6-6

Up to 10 items can be displayed simultaneously on the screen. The service data can be saved or printed.



**Fig. 6-6 Real Time Monitor**

### 6.2.1 Selecting Display Items

- Select a group from the pull down menu. Fig. 6-6

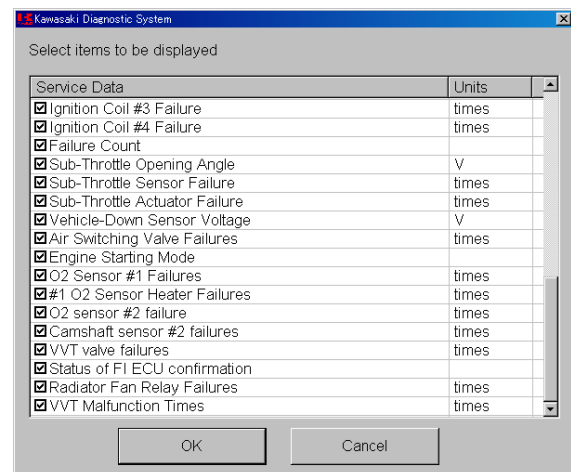
Select *Engine Information*, *Warning Information*, *Monitoring Information*, or *All Information*.

*All Information* includes Engine Information, Warning Information, and Monitoring Information.

- Click *Select*, Fig. 6-6, then Fig. 6-7 will appear.

### NOTE

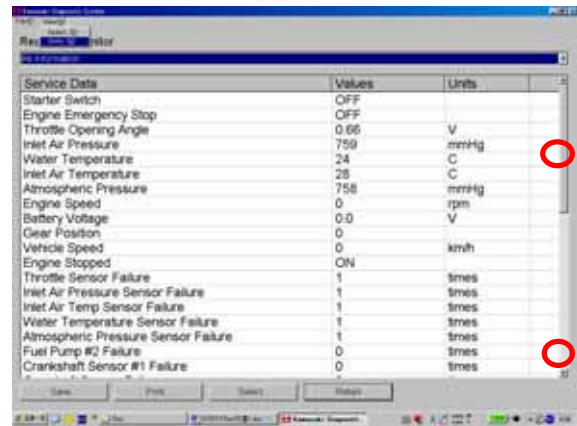
- Use the space key to check or uncheck each item for display
- Use the arrow keys (upward or downward) on the keyboard to move the items



**Fig. 6-7 Select Items**

- To confirm your selection, select *OK* or press *Enter*. To return to the previous selection, select *Cancel*.
- Fig. 6-8 is a sample of All Information.

Other items selected to be monitored can be seen by using the scroll bar



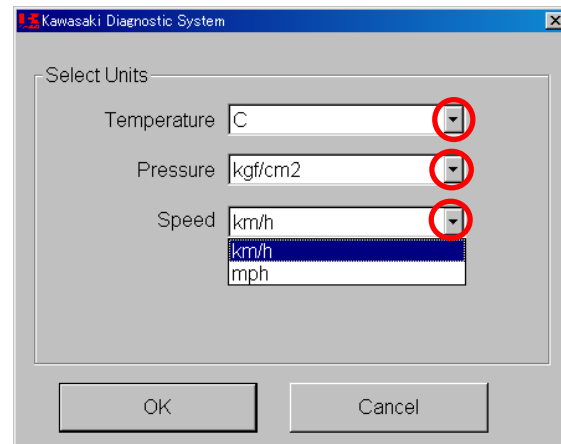
Service Data	Values	Units
Starter Switch	OFF	
Engine Emergency Stop	OFF	
Throttle Opening Angle	0.06	V
Inlet Air Pressure	759	mmHg
Water Temperature	24	C
Inlet Air Temperature	28	C
Atmospheric Pressure	758	mmHg
Engine Speed	0	rpm
Battery Voltage	0.0	V
Gear Position	0	
Vehicle Speed	0	km/h
Engine Stopped	ON	
Throttle Sensor Failure	1	times
Inlet Air Pressure Sensor Failure	1	times
Inlet Air Temp Sensor Failure	1	times
Water Temperature Sensor Failure	1	times
Atmospheric Pressure Sensor Failure	1	times
Fuel Pump #2 Failure	0	times
Crankshaft Sensor #1 Failure	0	times

**Fig. 6-8 Real Time Monitor**

### Selection of Units

- Select *View(V)* located on the upper Tool Bar, then select *Unit(U)*, Fig. 6-9 appears.
- Select units from the pull down menu
- After confirming, select *OK*.

Once the units are selected they will be applied to all displays



**Fig. 6-9 Unit Selection**

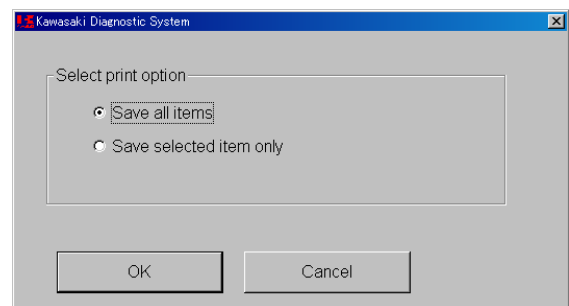
### 6.2.2 Saving Service Data

Data obtained through communication with the ECU can be saved.

- Select *Save*. Fig. 6-8

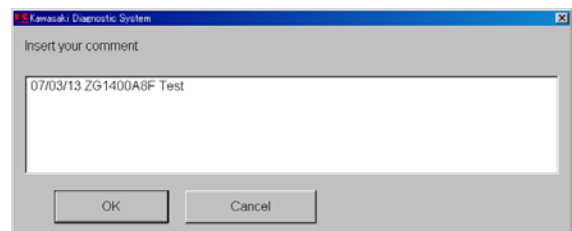
Fig. 6-10 will appear

- Select an option and then *OK*



**Fig. 6-10 Select Save Option**

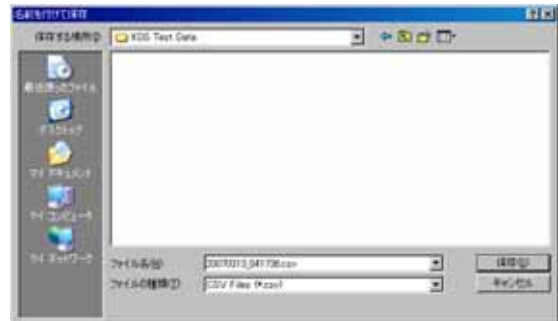
- Enter comment then select *OK*. Fig. 6-11



**Fig. 6-11 Comment**

- Fig. 6-12 appears, select a folder and press *Enter* (or *Save*) to save the data as a **CSV** file.

The file name by default will consist of YY(year)MM(month)DD(day) and two incremental numeric digits (00-99). ECU Part No., Model Name, Model Year, and Specification are saved automatically in the data.

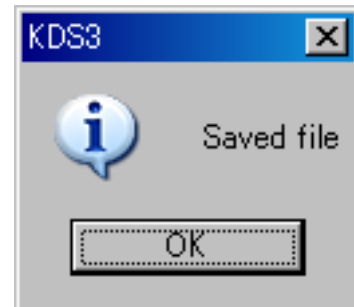


**Fig. 6-12 Save Folder**

**NOTE:**

**CSV:** *comma separated value*

- A message will appear after saving the file. Select *OK*. Fig. 6-13



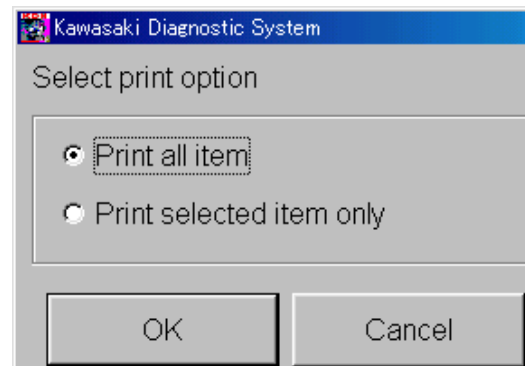
**Fig. 6-13 Saving Complete**

### 6.2.3 Printing

Data from the ECU can be printed

By selecting *Print*, Fig. 6-8, Fig. 6-14 will appear.

- Select a print option and select *OK* to print
  - If a printer is not connected to the PC, a screen print will be created.
- Select *Cancel* to return to the previous screen



**Fig. 6-14 Print Option**

## 6.3 Diagnosis

- Select *Diagnosis* on the *FI ECU Related Menu*. Fig. 6.5
- If no problems are found, Fig. 6-15 appears with *No message*.
- If a problem exists, the corresponding message will appear.

### Note

- *Five items or less can be displayed at a time*

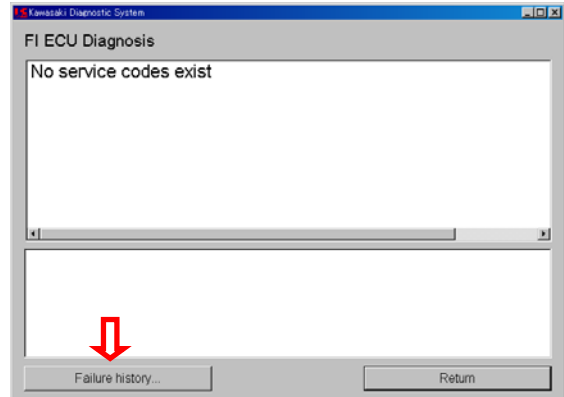


Fig. 6-15 FI ECU Diagnosis

- Select *Failure History* to view the previous failures
- *The last three records are shown*
- *On some models, only the last two records are shown.*

### Note

- *From the pull down menu, select Engine Information, Warning Information, or Monitoring Information.*
- *Failure history can be saved or printed in the same way as the Real Time Monitor.*

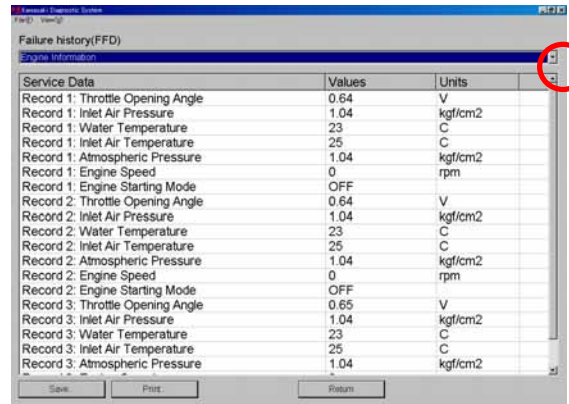


Fig. 6-16 Failure History



## 6.4 Actuator Test

To perform an *Actuator Test*, select *Actuator Tests* from the *FI ECU Related Menu*. Fig. 6-17

Select *Actuator Test*

Select *Display Items*

Up to five items can be displayed at a time. Use the scroll buttons to scroll by line.

### 6.4.1 Selecting a Test Item

Fig. 6-18 appears after the *Actuator Test* is selected

- Select the test item from the pull down menu list

#### NOTE

- Available actuator test items are displayed on the screen

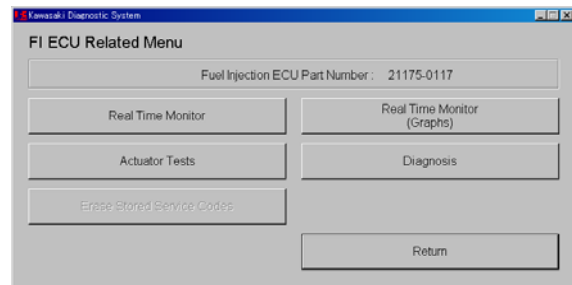


Fig. 6-17 FI ECU Related Menu

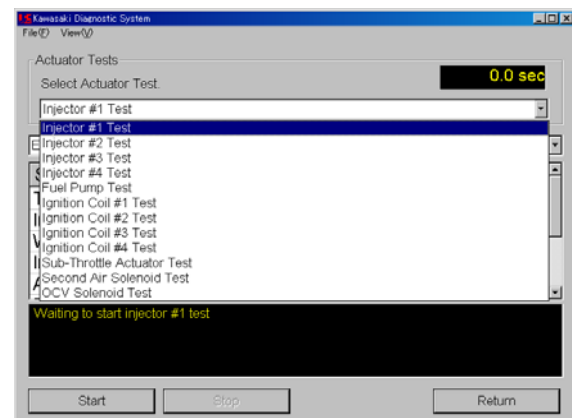


Fig. 6-18 Actuator Test Selection

### 6.4.2 Selecting Display Items

After selecting an actuator test item, select *Engine Information* in the combo box.

The displayed items are *Engine Speed*, *Throttle Opening Angle*, *Inlet Air Temperature*, and *Water Temperature*.

The procedure is the same as 6.2.1

### 6.4.3 Injector Operation Test

- Select Injector number to be tested
- Select display items
- Run engine at idle speed
- Select *Start* to begin test. Fig. 6-19

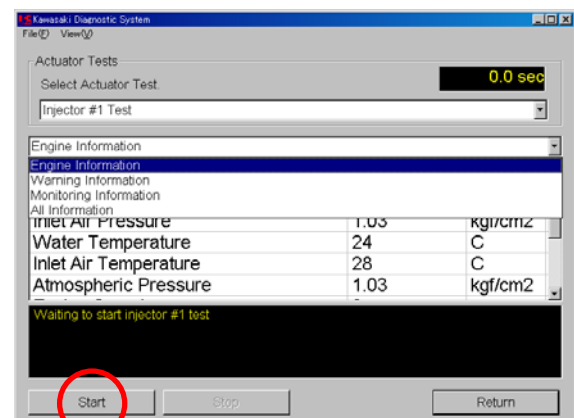


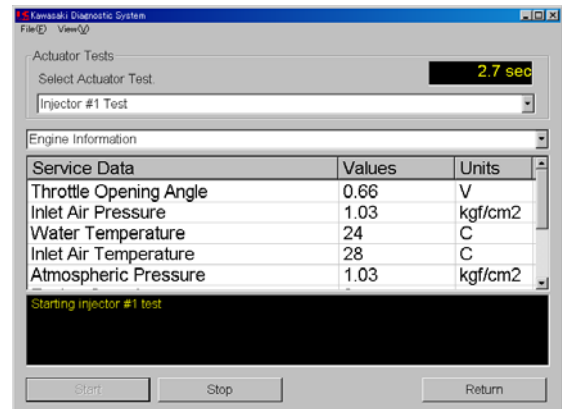
Fig. 6-19 Injector Test

- With the engine is running, monitor the change in engine rpm.

### NOTE

- After starting the test, the Start button changes to a Stop button.

Fig. 6-20 is a sample of the injector operation test

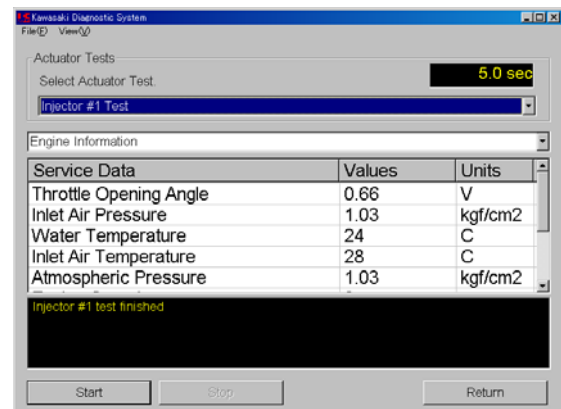


**Fig. 6-20 Injector Test**

- Select *Stop* to stop testing

The test lasts for 5 seconds and will stop automatically

- Fig. 6-21 shows the injector test complete



**Fig. 6-21 Test Complete**

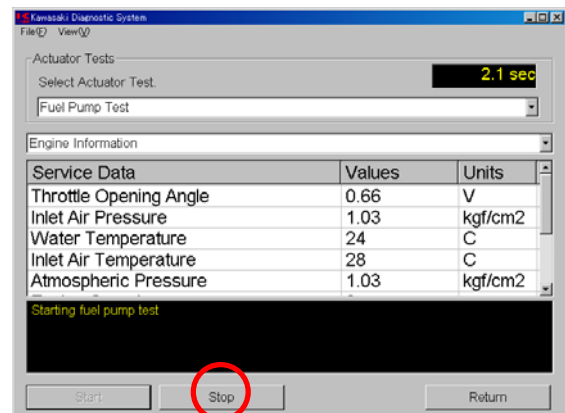
### 6.4.4 Fuel Pump Test

- Select *Fuel Pump Test* from the pull down menu and select *OK*
- Select display item
- Ensure the engine is not running and select *Start*

Fig. 6-22 is displayed when performing the test

- Listen for a sound from the fuel pump. If a mechanical sound is not heard, the fuel pump and/or its electrical circuit has failed.
- Select *Stop* to stop the test

The test lasts for 5 seconds and will stop automatically



**Fig. 6-22 Fuel Pump Test**

### 6.4.5 Ignition Coil Test

- Select *Ignition Coil No. Test* from the pull down menu then select *OK*
- Select display items
- Ensure the engine is not running and select *Start*

#### NOTE

- *Before performing the Ignition coil test, remove the spark plugs from the cylinder head and ground them.*

Fig. 6-23 is displayed during the test

- Confirm spark at the plugs.
- Select *Stop* to stop the test

The test lasts for 5 seconds and will stop automatically.

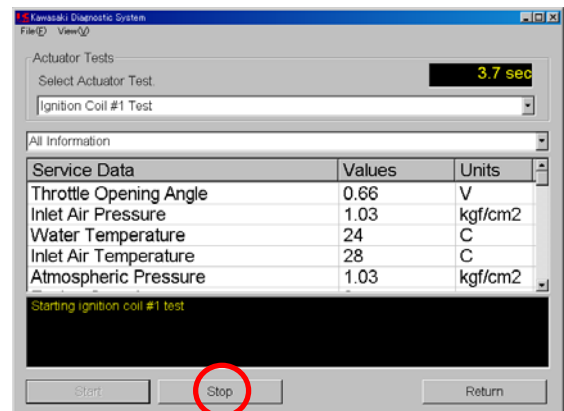


Fig. 6-23 Ignition Coil #1 Test

### 6.4.6 Sub Throttle Valve Actuator Test

- Select *Sub Throttle Actuator Test* from the pull down menu then select *OK*
- Select *Display Items*. *Sub Throttle Opening Angle* should be selected for this test.
- Ensure the engine is not running and select *Start*

Fig. 6-24 is displayed during the test

- Monitor the voltage and listen for a mechanical sound from the actuator

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

The test runs for 5 seconds and will stop automatically

- Select *Stop* to stop test

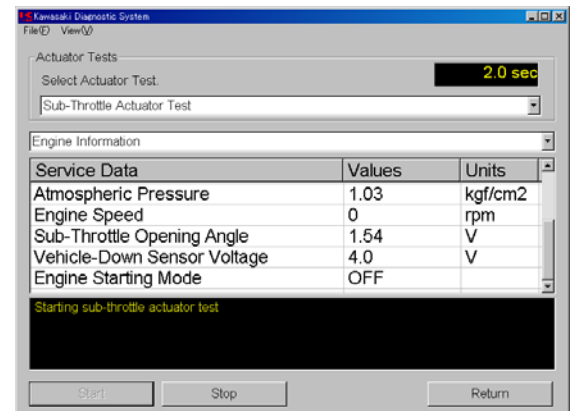


Fig. 6-24 Sub Throttle Actuator Test

#### 6.4.7 Second Air Solenoid Test

- Select *Second Air Solenoid Test* then select *OK*
- Select *Display Items*. Sub Throttle Opening Angle should be selected for this test.

- Ensure the engine is not running and then select *Start*

Fig. 6-25 is displayed during the test

- Listen for a mechanical sound from the solenoid

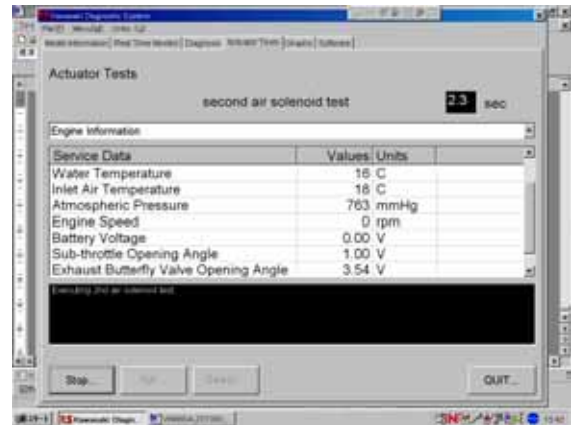


Fig. 6-25 Second Air Solenoid Test

If a mechanical sound is not heard, the solenoid and/or its circuit is malfunctioning.

The test runs for 5 seconds and will stop automatically

- Select *Stop* to stop the test

#### 6.4.8 Oil Control Valve Solenoid Test

- Select *OCV Solenoid Test* then select *OK*

- Select *Display Items*
- Ensure the engine is not running and then select *Start*

Fig. 6-26 is displayed when performing the test

- Listen for a mechanical sound from the solenoid

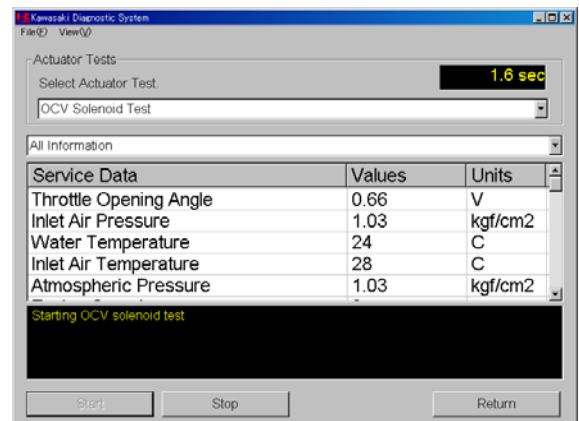


Fig. 6-26 OCV Solenoid Test

If a mechanical sound is not heard, the solenoid and/or its circuit has malfunctioned.

The test runs for 5 seconds and will stop automatically

- Select *Stop* to stop the test

## 7. ABS

### 7.1 Outline

This software can be used on models equipped with ABS, such as the EX650B, ER650B, ZX1400B, and ZG1400A.

### 7.2 Installing Software

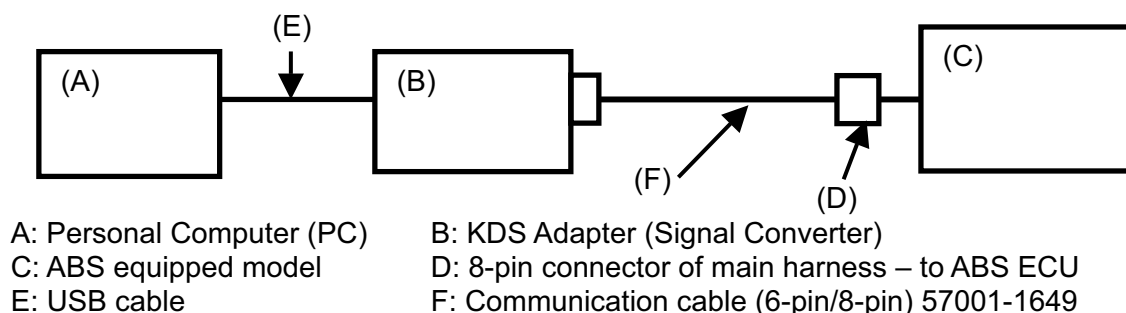
The software will be installed at the same time as KDS Version 3. Fig. 7-1



**Fig. 7-1 Icon of KDS, ABS**

### 7.3 Cable Connection

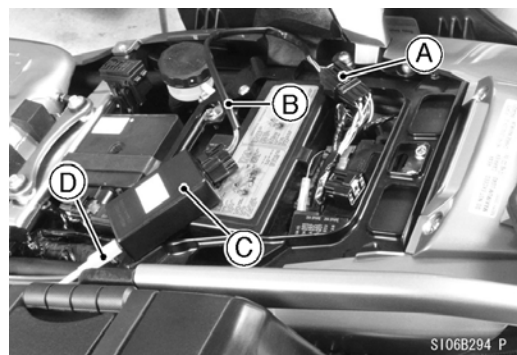
Fig. 7-2 shows a sample connection



**Fig. 7-2 Sample Connection**

#### 7.3.1 ZG1400A

- Remove seat
- Locate the 8-pin connector [A] on the main harness and remove the cover (ABS port)
- Connect cable 57001-1649 [B] to the 8-pin ABS port
- Connect the 6-pin connector on the 57001-1649 to the Adapter [C]
- Connect the computer's USB cable [D] to the Adapter



**Fig. 7-3 ABS Port on EX650B**

### 7.3.2 ER650B/EX650B

- Remove seat
- Remove the ABS Port [B] cover
- Connect the 8-pin connector on 57001-1649 to the ABS port

A. Diagnostic Port for KDS (4-pin port)

B. Diagnostic Port for ABS (8-pin port)

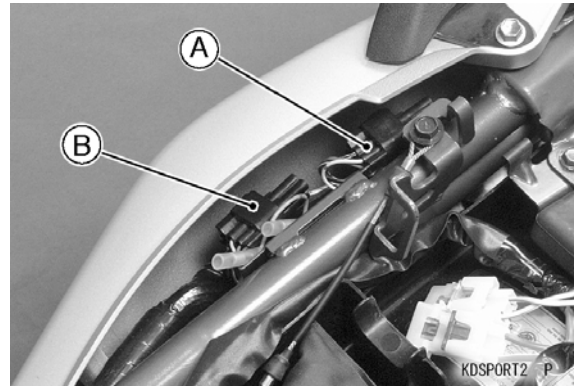


Fig. 7-4 ER650B

### 7.3.3 ZX1400B

- Remove seat
- Remove the ABS Port [B] cover
- Connect the 8-pin connector on 57001-1649 to the ABS port

A. Diagnostic Port for KDS (4-pin port)

B. Diagnostic Port for ABS (8-pin port)

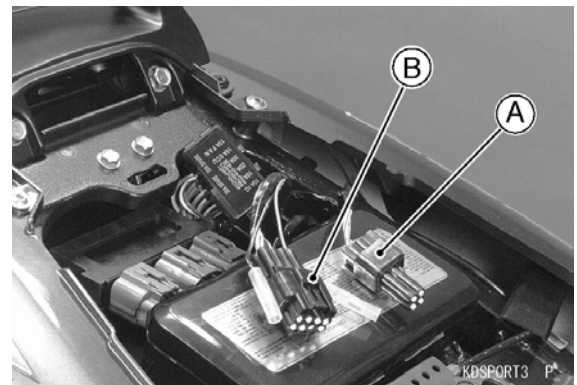


Fig. 7-5 ZX1400B

## 7.4 Menu Structure

The menu structure diagram is shown in Fig. 7-6

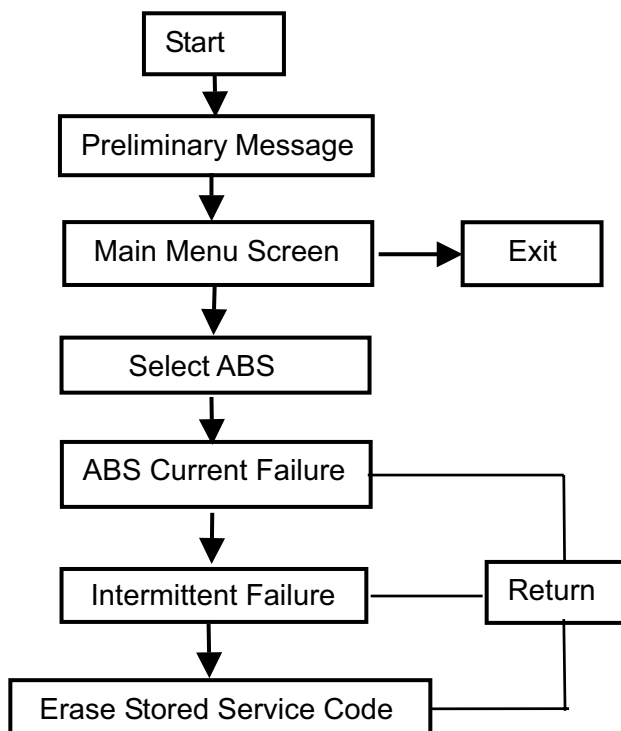


Fig. 7-6 ABS Structure

## 7.5 Operation

### 7.5.1 Starting Program

- Turn on the PC
- Go to the *Main Menu*. Fig. 7-7
- Select *ABS*

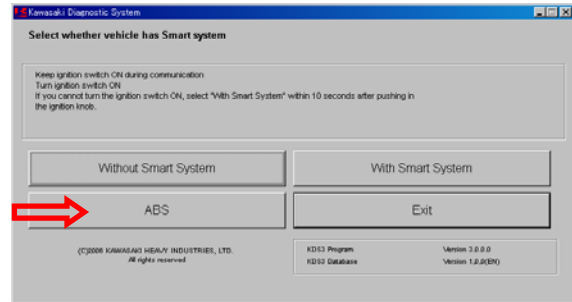


Fig. 7-7 Start Menu

- The *ABS Current Failure* screen appears. Fig. 7-8
  - If there are no failures, the message *No service codes exist* appears.

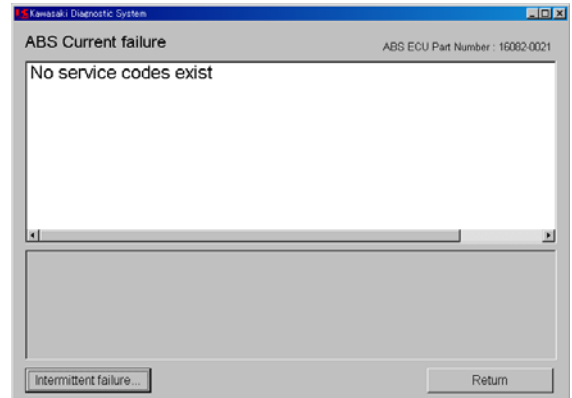


Fig.7-8 Current Failure – No Code

- If a failure exists, it will be listed. Fig. 7-9

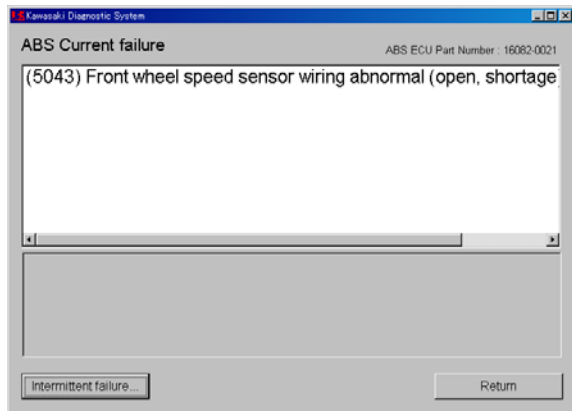


Fig.7-9 Current Failure - Code

- Restart KDS after repairing the failure
- Confirm that *No service codes exist*, Fig. 7-10, then select *Intermittent failure* to see if there are any codes.

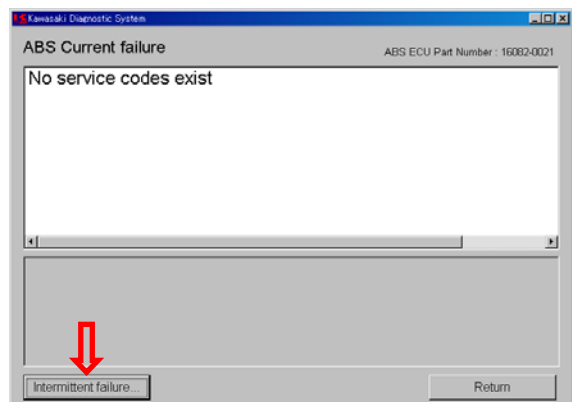
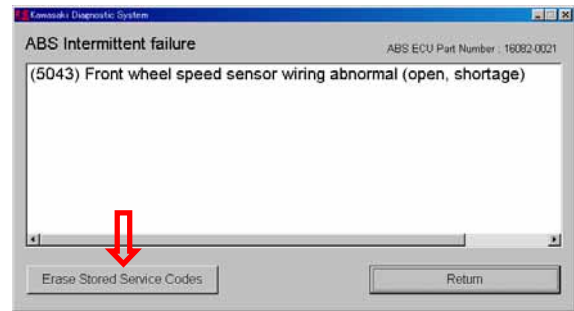


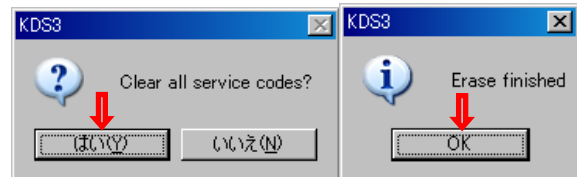
Fig. 7-10 Current Failure

- The *ABS Intermittent failure* screen will appear. Fig. 7-11



**Fig. 7-11 Intermittent Failure**

- To erase all intermittent failure codes, select *Erase Stored Service Codes*. Fig. 7-11
- Select *Yes*, then select *OK*. Fig. 7-12



**Fig. 7-12 Erase Codes**







**KAWASAKI HEAVY INDUSTRIES, LTD.**  
**Consumer Products & Machinery Group**

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